

BMA/BMB-Tool



User Manual

Original User Manual

HBBMA_BV0001EN1116S0

460 988-04 / 11.16

en

Table of contents

1	Safety precautions	4
1.1	General safety precautions.....	4
1.2	Safety precautions for the BMA/BMB Tool	5
1.3	Danger notices – brake fluid.....	6
1.4	Safety precautions – high voltage and line voltage.....	7
1.5	Safety precautions – risk of injury	7
2	Tool description	8
2.1	Delivery contents	8
2.2	Intended use	9
2.3	Tool description	10
3	Assembly of the BMB Tool.....	14
3.1	Assembling the BMB Tool.....	14
4	Initial start-up.....	15
4.1	Preconditions.....	15
4.2	Preparing the BMA/BMB Tool.....	15
5	Working with the BMA/BMB Tool.....	17
5.1	Adjusting the working pressure	17
5.2	Brake systems with brake pressure regulator	17
5.3	Changing the brake fluid/bleeding the hydraulic system	18
5.4	Checking the wheel brake cylinders for free movement.....	20

5.5 Replacing the brake fluid container 21

5.6 Bleeding the BMA/BMB Tool 22

6 General information 23

6.1 Problem solutions 23

6.2 Care and maintenance.....23

6.3 Disposal 24

6.4 Technical data of the BMA/BMB Tool 25

1 Safety precautions

1.1 General safety precautions

	• The BMA/BMB Tool (brake maintenance tool) is for use on motor vehicles only. It is a precondition for the use of the BMA/BMB Tool that the user has knowledge of automotive technology and is therefore aware of the sources of danger and risks in the repair shop and on motor vehicles. • Please read the entire operating instructions carefully before using the BMA/BMB Tool. • All notes given in the individual sections of this user manual apply. The steps and safety precautions stated below must also be followed. • Furthermore, please pay attention to all general instructions from labour inspectorates, trade associations and vehicle manufacturers as well as all laws, legal ordinances and instructions that must be observed by a repair shop.
---	---

1.2 Safety precautions for the BMA/BMB Tool

	In order to avoid incorrect handling and injury to the user or destruction of the BMA/BMB Tool arising from this, pay attention to the following: • Always store these operating instructions together with the BMA/BMB Tool. • The BMA/BMB Tool must only be sold together with the latest operating instructions. • As part of their training, trainees may only operate the BMA/BMB Tool under the supervision of an experienced person. • Protect the BMA/BMB Tool from frost and damp. • Make connections to the vehicle only when the engine is not running. • Protect the BMA/BMB Tool from liquids like water, oil or fuel (it is not waterproof). • Protect the BMA/BMB Tool from heavy shock impact (do not drop or knock over). • Protect the BMA/BMB Tool and connection lines from hot parts. • Before relocation, repairs or work on the BMA/BMB Tool that is not related to its operation: switch off the BMA/BMB Tool and remove the power plug. • In the event of danger, switch off the main switch and remove the power plug. • The BMA/BMB Tool is not designed for use with synthetic brake fluid. • Do not connect the BMA/BMB Tool to compressed air using the quick coupling (17). • Do not clean the BMA/BMB Tool using flammable liquids. • The BMA/BMB Tool must be transported and shipped without brake fluid. • Do not operate the BMA/BMB Tool without brake fluid. • Do not fill or operate the BMA/BMB Tool with DOT 5 brake fluid (not suitable).
---	--

	Do not fill or operate the BMA/BMB Tool with liquids containing mineral oil.
--	--

1.3 Danger notices – brake fluid

	Observe the following when handling brake fluid: - Irritating to skin, eyes and respiratory system. - In the event of contact with the eyes or skin, rinse immediately with plenty of clean water. - Seek medical attention immediately if brake fluid comes into contact with the eyes or is swallowed. - Use protective clothes, protective gloves and protective goggles. - Brake systems may be under (high) pressure. - Always use suitable and compatible brake fluid. Follow the instructions of the vehicle manufacturer. - Never mix DOT 3, DOT 4 or DOT 5.1 (glycol-based) brake fluid with DOT 5 (silicone-based). - Brake fluid damages paint and plastic parts. Immediately remove all brake fluid from paint and plastic parts. - Brake fluid is hygroscopic and absorbs moisture. Moisture in the brake system can lead to failure of the brake system. - Brake fluid must only be stored in sealed original containers. - Mop up any leaked brake fluid immediately using a cloth and dispose of it in an environmentally friendly manner. - Observe the data sheet and regulations of the brake fluid manufacturer.
---	---

1.4 Safety precautions – high voltage and line voltage



Failure to observe the safety precautions with regard to mains voltage can result in serious injury, death or damage to the BMA/BMB Tool. Therefore observe the following:

- Always use original cable sets.
- Regularly check the connecting cable for damage.
- Remove the power plug before relocation, repair or work on the BMA/BMB Tool.

1.5 Safety precautions – risk of injury



There is a risk of injury due to rotating parts or rolling vehicle when working on the vehicle. Therefore observe the following:

- Protect vehicle against rolling away.
- Additionally, park position of automatic gearboxes to P.
- Do not reach into rotating parts when engine is running.
- Do not route connecting cables near rotating parts.
- Check high voltage parts for damage.

2 Tool description

2.1 Delivery contents

Pie-ces	Designation	BMA Tool	BMB Tool	
1	BMA Tool or BMB Tool	X	X	BMA Tool  BMB Tool 
1	Angle adapter for brake fluid reservoir This adapter is fitted to the brake fluid reservoir of the vehicle. Different adapter sizes are required depending on the vehicle.	X	X	
1	Operating instructions	X	X	
1	DVD	X	X	

2.1.1 Checking delivery contents

Please check the delivery contents upon receiving your tool so that complaints can be issued immediately regarding potential damage or missing parts.

Proceed as follows to check the delivery contents:

1. Check the package delivered to ensure that it is not damaged.
Should you identify any damage to the package, then open the package in the presence of the delivery service and check the BMA/BMB Tool for hidden damage. Any transport damage to the package supplied and damage to the BMA/BMB Tool shall be registered in a damage report by the delivery service.
2. Open the package supplied and check for completeness based on the delivery slip.
3. Remove the BMA/BMB Tool from the packaging.
4. Check the BMA/BMB Tool for damage and completeness.

2.2 Intended use

The BMA/BMB Tool (Brake Maintenance A or B model) is a brake maintenance tool for filling and bleeding hydraulic systems containing brake fluid in motor vehicles, e.g. brake or clutch circuits. The BMA/BMB Tool may only be used with DOT 3, DOT 4 or DOT 5.1 (glycol-based) brake fluid. Hydraulic fluid based on mineral oil or DOT 5 brake fluid (silicone-based) is not suitable for the BMA/BMB Tool and must therefore not be used. As brake fluid is very hygroscopic (absorbs and retains moisture), the BMA/BMB Tool must be stored and operated in dry conditions.

For maintenance of the hydraulic system, the BMA/BMB Tool is connected to the associated brake fluid reservoir using a suitable adapter. A pressurised electric pump delivers new brake fluid from the BMA Tool or BMB Tool to the brake fluid reservoir. The supply pressure can be continuously adjusted from 0 to 2.8 bar. The brake fluid current pulsates during the bleeding phase of the hydraulic system. These fluctuations enable a complete bleeding process, as even the smallest amounts of air or moisture at the pipe connections are carried away.

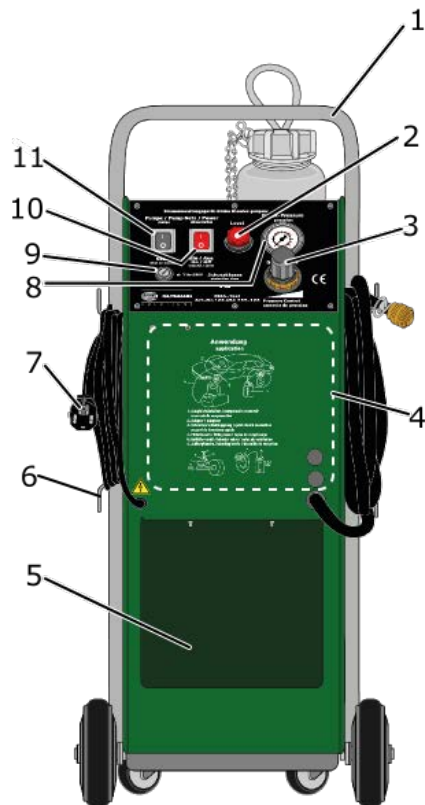
After switching off the electric pump, the pressure in the brake fluid reservoir reduces and the correct brake fluid level is automatically set.

If the brake fluid container is emptied to the minimum filling level, the pump switches off automatically. This ensures that air never gets into the hydraulic system.

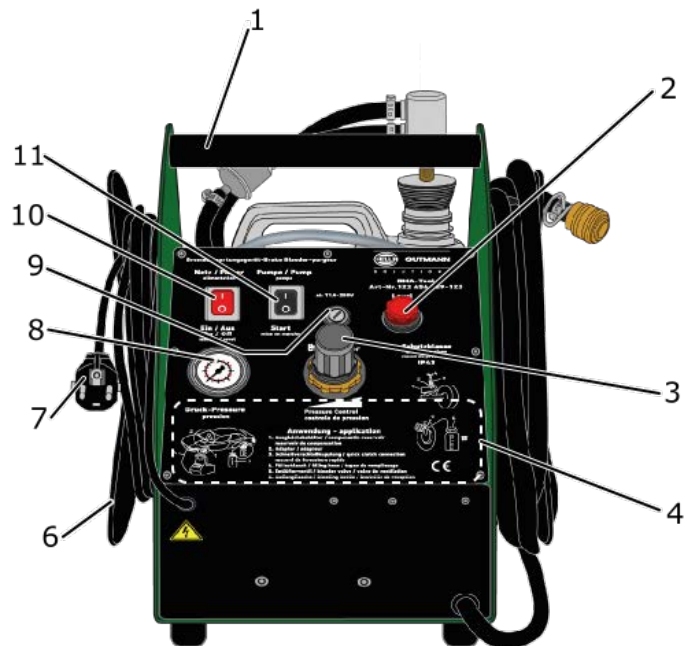
2.3 Tool description

2.3.1 Front side of the BMA/BMB Tool

BMB Tool



BMA Tool

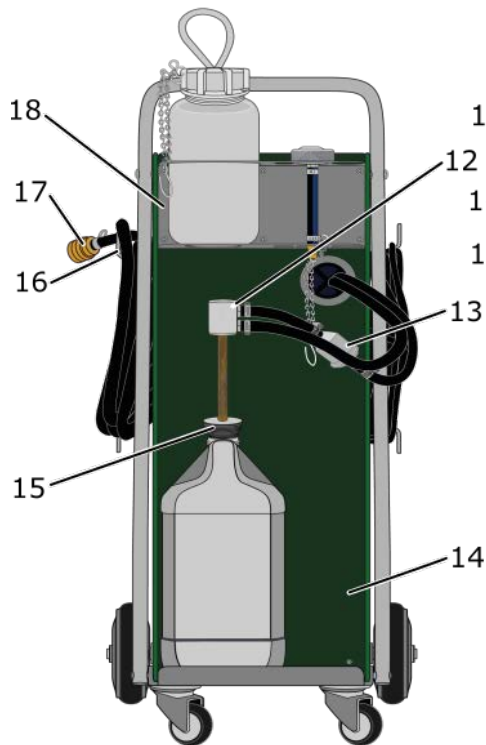


	Designation
1	Handle This can be used to carry or pull the BMA/BMB Tool (depending on the model).
2	Indicator light The red indicator light shows the operating status of the BMA/BMB Tool. If the indicator light is activated, this indicates a fault in the hydraulic system.
3	Pressure regulator This is used to set the desired maintenance pressure of the brake fluid.
4	Quick guide This provides a schematic description of the bleeding procedure of the brake system.

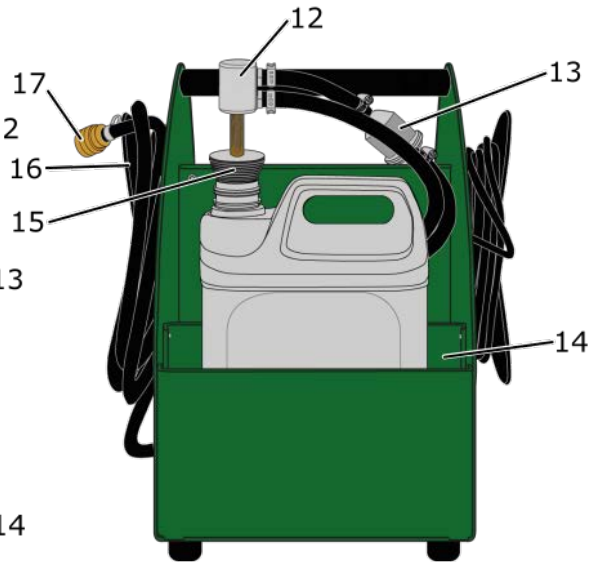
	Designation
5	Storage compartment Various bleed components can be stored here.
6	Holder for power cable Here the power cable can be stored away on the BMA/BMB Tool.
7	Power cable for voltage supply This supplies the BMA/BMB Tool with mains voltage.
8	Pressure gauge This displays the current brake fluid pressure in the BMA/BMB Tool.
9	Electrical fuse This fuses the electric circuit (max. 230 V) of the tool.
10	Main switch This is used to switch the BMA/BMB Tool on or off.
11	Start button for pump This is used to switch the electric pump on or off. The electric pump supplies the maintenance pressure for the brake fluid in the BMA/BMB Tool and the hydraulic system of the vehicle.

2.3.2 Rear of the BMA/BMB Tool

BMB Tool



BMA Tool



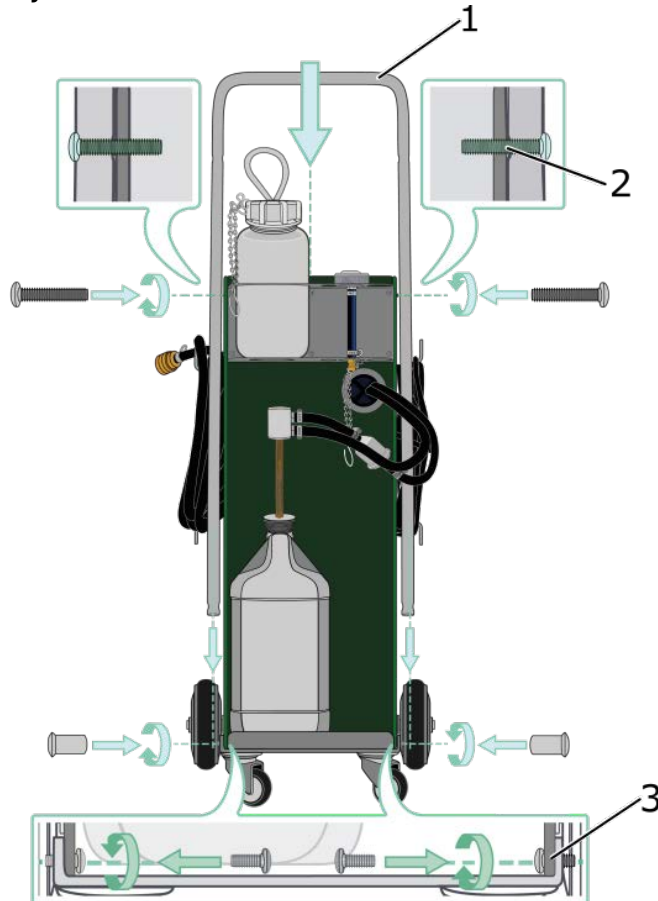
	Designation
12	Tank pipe This sucks in the brake fluid from the brake fluid container and returns it.
13	Fine filter This filters out dirt particles in the brake fluid. This filter is located in the intake line.
14	Storage compartment This is where the brake fluid container is stored and, if necessary, the bleed components.
15	Closing cone This seals the brake fluid container closed.
16	Holder for filler hose The filler hose for brake fluid can be stored here.

	Designation
17	Filler hose with quick coupling This conducts the brake fluid from the BMA/BMB Tool to the vehicle hydraulic system.
18	Holder for bleed components Bleed components can be stored here, e.g. receiver bottle or adapter for the brake fluid reservoir.

3 Assembly of the BMB Tool

3.1 Assembling the BMB Tool

Before initial start-up of the BMB Tool, the handle (1) (supplied separately) may need to be fitted to the tool.



To fit the handle, proceed as follows:

1. Align the boreholes of the handle (1) with the boreholes (2) on top of the tool and on the bottom plate (3).
2. Insert the plug-in nuts into the bottom boreholes of the handle.
3. Insert the 2 hexagon socket screws 6 x 12 mm through the boreholes on the bottom plate into the plug-in nuts and fix loosely.
4. Insert the 2 hexagon socket screws 6 x 30 mm through the top boreholes of the handle and fix loosely
5. Tighten all hexagon socket screws with a size 4 hexagon socket screw key.

4 Initial start-up

4.1 Preconditions

- An adapter for the brake fluid reservoir is available.
- Brake fluid container with contents of at least 5 l is available.

4.2 Preparing the BMA/BMB Tool

To prepare the BMA/BMB Tool for initial start-up, proceed as follows:

1. Insert brake fluid container with at least 5 l content into the BMA/BMB Tool.
2. Remove container seal.
3. Remove filling cap from the intake line of the tank pipe (12).
4. Slide the closing cone (15) of the tank pipe (12) all the way up.
5. Fit the tank pipe (12) to the container.
6. Slide the closing cone (15) onto the tank pipe (12) and press firmly until the container opening is completely sealed.
7. Adjust the pressure regulator (3) to max. pressure by turning clockwise until the end stop.
8. Use the main switch (10) to switch on the BMA/BMB Tool.
9. Press the start button (11) to switch on the pump and hold down until the pressure gauge (8) levels off at a constant value.
10. Use the main switch (10) to switch off the pump or BMA/BMB Tool.
11. Connect any adapter to the filler hose using the quick coupling (17).
12. Hold the adapter above a suitable container that is resistant to brake fluid.
13. Use the main switch (10) to switch on the BMA/BMB Tool.
14. Use the start button (11) to switch on the pump again.
Brake fluid is pumped into the container.
15. Continue with the pump procedure until brake fluid comes out of the filler hose free from bubbles.
16. Use the main switch (10) to switch off the pump or BMA/BMB Tool.
17. Remove adapter for filler hose.

Preparing the BMA/BMB Tool

18. Mop up any leaked brake fluid with a cloth and dispose of the container contents in an environmentally friendly manner.

BMA/BMB Tool has been bled and is ready for operation.

5 Working with the BMA/BMB Tool

5.1 Adjusting the working pressure

The required working pressure can be continuously adjusted using the pressure regulator (3) between approx. 0 and approx. 2.8 bar depending on the brake system or maintenance work. The current pressure can be read from the pressure gauge (8). The default working pressure is approx. 2.1 bar.

**CAUTION**

Excessive pressure may cause the brake fluid reservoir to break or the connecting hoses to come loose.

Uncontrolled leak of brake fluid.

Always use the working pressure prescribed in the manufacturer or service documents.

To set the working pressure, proceed as follows:

1. Connect suitable adapter to the vehicle.
2. Remove the filler hose from the adapter.

Alternatively, the pressure can also be adjusted with the filler hose connected.

3. Use the main switch (10) to switch on the BMA/BMB Tool.
4. Switch on the pump using the start button (11).
Pressure gauge displays the currently set working pressure.
5. Adjust the working pressure using the pressure regulator (8) and read off the current pressure from the pressure gauge.

Turning the pressure regulator to the left reduces the pressure.

Turning the pressure regulator to the right increases the pressure.

6. Use the main switch (10) to switch off the pump or BMA/BMB Tool.
7. Attach filler hose to adapter with quick coupling (17).

The working pressure is now set.

5.2 Brake systems with brake pressure regulator

In brake systems with a load-dependent brake pressure regulator, when carrying out maintenance work with an unloaded rear axle the working

pressure stipulated by the vehicle manufacturer must be set on the BMA/BMB Tool (see section **Adjusting the working pressure (Page 17)**). Only then can it be ensured that the brake pressure regulator does not reduce the working pressure.

As an alternative to adjusting the working pressure, the rear axle of the vehicle can be loaded or an axle load can be simulated by moving the connecting springs between the rear axle and brake pressure regulator.

5.3 Changing the brake fluid/bleeding the hydraulic system

5.3.1 Preconditions

- Suitable adapter for the brake fluid reservoir is available.
- Sufficient brake fluid in the brake fluid container.

5.3.2 Maintenance via the brake fluid reservoir

This section describes the maintenance of the hydraulic system when the BMA/BMB Tool is connected to the brake fluid reservoir and the brake fluid escapes via the bleed screw.

To carry out maintenance, proceed as follows:

1. Mount a suitable adapter on the brake fluid reservoir.
2. Attach filler hose to adapter with quick coupling (17).
3. Use the main switch (10) to switch on the BMA/BMB Tool.



CAUTION

Excessive pressure may cause the brake fluid reservoir to break or the connecting hoses to come loose.

Uncontrolled leak of brake fluid.

Always use the working pressure prescribed in the manufacturer or service documents.

4. Switch on the pump using the start button (11).

Pressure gauge displays the currently set working pressure.

Changing the brake fluid/bleeding the hydraulic system

5. Set the correct working pressure using the pressure regulator (8) and read off the current pressure from the pressure gauge.
Turning the pressure regulator to the left reduces the pressure.
Turning the pressure regulator to the right increases the pressure.
Maintenance can now be carried out via the bleed screw of the brake calliper, wheel brake cylinder or clutch cylinder.
6. Bring the vehicle to working height.
7. Connect hose from receiver bottle for brake fluid to bleed screw.
8. Use a suitable wrench to hold open the bleed screw until new brake fluid escapes without bubbles.
9. Close the bleed screw.
10. Repeat steps 7-9 for additional bleed screws.
11. Use the main switch (10) to switch off the pump or BMA/BMB Tool.

**CAUTION**

Never loosen the adapter from the brake fluid reservoir while the system is pressurised.

Overflowing of the container or uncontrolled leak of brake fluid.

Always switch off the BMA/BMB Tool first and wait for the pressure to reduce.

12. Wait approx. 15 s until the pressure has reduced.
13. Remove the adapter from the brake fluid reservoir.
14. Dispose of any collected brake fluid in an environmentally friendly manner.

5.3.3 Filling up the brake fluid reservoir

To fill up the brake fluid reservoir, proceed as follows:

1. Connect any adapter to the filler hose using the quick coupling (17).
2. Hold the adapter above the open brake fluid reservoir.
3. Use the main switch (10) to switch on the BMA/BMB Tool.

Checking the wheel brake cylinders for free movement

4. Switch on the pump using the start button (11).

**NOTE**

The brake fluid reservoir must be filled with brake fluid up to the marking *MAX*.

Brake fluid flows pressure-free into the brake fluid reservoir.

5. Use the main switch (10) to switch off the pump or BMA/BMB Tool.

5.4 Checking the wheel brake cylinders for free movement

To check the wheel brake cylinders for free movement, proceed as follows:

1. Connect a suitable adapter for the brake fluid reservoir to the vehicle.
2. Using the pressure regulator (3), set the working pressure to minimum (see section **Adjusting the working pressure (Page 17)**).
3. Attach filler hose to adapter with quick coupling (17).
4. Use the main switch (10) to switch on the BMA/BMB Tool.
5. Switch on the pump using the start button (11).
6. Using the pressure regulator (3), gradually increase the working pressure to the maximum maintenance pressure approved by the manufacturer.
7. Turn the wheels to check that the braking effect is the same on all axles.

If the braking effect varies on the wheels, this may be caused by the following:

- Wheel brake cylinder or brake calliper stiff or leaking.
- Different settings of the brake shoes in the drum brake.
- Brake shoes or brake linings worn.
- Brake pressure regulator or brake pressure valves faulty.

8. Use the main switch (10) to switch off the pump or BMA/BMB Tool.
The pressure in the brake system is reduced automatically by the BMA/BMB Tool.

If a wheel is still blocked or stiff, this may be caused by the following:

- Stiff wheel brake cylinder, brake calliper, brake shoes or brake linings.
- Brake hose swollen internally, meaning that the brake pressure can no longer be reduced.

5.5 Replacing the brake fluid container

	CAUTION Never mix DOT 3, DOT 4 or DOT 5.1 (glycol-based) brake fluid with DOT 5 (silicone-based). Brake failure due to destruction of brake components. Only ever use brake fluid of the same specification. If switching to a new brake fluid specification, rinse the BMA/BMB Tool thoroughly with the new brake fluid.
---	---

To change the brake fluid container, proceed as follows:

1. Switch off the BMA/BMB Tool using the main switch (10).
2. Open the sealing cone (15) of the tank pipe (12).
3. Open the container connection of the new brake fluid container.
4. Insert the tank pipe into the new brake fluid container.
5. Seal off the brake fluid container with the sealing cone (15) of the tank pipe (12).
6. Remove the empty brake fluid container from the BMA/BMB Tool and replace with a full brake fluid container.
7. Mop up any leaked brake fluid using a cloth and dispose of it in an environmentally friendly manner.

The brake fluid container has been changed and the BMA/BMB Tool is ready for operation once again.

5.6 Bleeding the BMA/BMB Tool

Preconditions

- Sufficient (at least 2 l) brake fluid available in the brake fluid container.
- An adapter for the brake fluid reservoir is available.

To bleed the BMA/BMB Tool, proceed as follows:

1. Adjust the pressure regulator (3) to max. pressure by turning clockwise until the end stop.
2. Use the main switch (10) to switch on the BMA/BMB Tool.
3. Press the start button (11) to switch on the pump and hold down until the pressure gauge (8) levels off at a constant value.
4. Use the main switch (10) to switch off the pump or BMA/BMB Tool.
5. Connect any adapter to the filler hose using the quick coupling (17).
6. Hold the adapter above a suitable container that is resistant to brake fluid.
7. Use the main switch (10) to switch on the BMA/BMB Tool.
8. Switch on the pump using the start button (11).
Brake fluid is pumped into the container.
9. Continue with the pump procedure until brake fluid comes out of the filler hose free from bubbles.
10. Use the main switch (10) to switch off the pump or BMA/BMB Tool.
11. Remove adapter for filler hose.
12. Mop up any leaked brake fluid using a cloth and dispose of it in an environmentally friendly manner.

BMA/BMB Tool has been bled and is ready for operation.

6 General information

6.1 Problem solutions

The following list is intended to help you solve minor problems yourself. Select the relevant problem description and check and perform the steps listed under "Solution" in sequence as necessary until the problem is solved.

Problem	Solution
BMA/BMB Tool cannot be switched on.	• Check the voltage supply via a domestic mains network. • Electrical fuse (9) is faulty.
Pump does not run.	• Use the main switch (10) to switch on the BMA/BMB Tool. • Brake fluid container empty. • Air in the brake fluid system of the BMA/BMB Tool, bleed the BMA/BMB Tool (see section Adjusting the working pressure (Page 22)).
Red indicator light on.	• Brake fluid container empty. • Air in the brake fluid system of the BMA/BMB Tool, bleed the BMA/BMB Tool (see section Adjusting the working pressure (Page 17)).
Hydraulic pressure too low.	• Brake fluid container empty. • Leak in the hydraulic system between the BMA/BMB Tool and the vehicle. • Fine filter clogged.

6.2 Care and maintenance

- Like every tool, the BMA/BMB Tool must be handled with care.
- Always check hoses/cables/accessories for damage before every use.
- After each use, clean all parts with a dry, lint-free cloth.

- In the event of coarse dirt, clean the BMA/BMB Tool with a solvent-free, non-combustible liquid.
- Clean the fine filter (13) regularly or replace.

6.3 Disposal

6.3.1 Disposal of the BMA/BMB Tool

In accordance with Directive 2012/19/EU of the European Parliament and Council for electrical and electronic waste dated 4 July 2012, as well as the national law regarding the sale, return and environmentally sound disposal of waste electrical and electronic equipment (German ElektroG law) dated 16 March 2005, we undertake to take back this device, which we put into circulation as of 13 August 2005, free of charge at the end of its operating life and to dispose of it in accordance with the regulations above.

Since, in the case of the present tool, this relates to exclusively commercially used equipment (B2B), it must not be handed over to a public disposal facility.

The tool can be disposed of at the following address (specifying the date of purchase and the device numbers):

Hella Gutmann Solutions GmbH
Am Krebsbach 2
79241 Ihringen
GERMANY
WEEE reg. no.: DE25419042
Phone: +49 (0)7668 9900-0
Fax: +49 (0)7668 9900-3999
Mail: info@hella-gutmann.com

6.3.2 Disposal of brake fluid

Brake fluid is listed in the European List of Waste under the waste code *16 01 13*. In the List of Waste, this substance is classified as "hazardous" according to § 48 of the Kreislaufwirtschaftsgesetz (German Law on Life-Cycle Management). These substances must *not* be disposed of through household waste management, but rather through adherence to national and international specifications.

Brake fluid does not fall under the waste oil law and therefore must not be added to waste oil. Brake fluid must be collected separately from other substances and taken to a special waste disposal facility.

6.4 Technical data of the BMA/BMB Tool

	BMA-Tool	BMB-Tool
Supply voltage	230 V/ 50 Hz	230 V/ 50 Hz
Power cable length	ca. 5 m	ca. 5 m
Brake fluid container size	recommended: 5 l max. 10 l	max. 20 l
Brake fluid specification	DOT 3 / 4 / 5.1	DOT 3 / 4 / 5.1
Fuse	250 V / 1A T, time-lag	250 V / 1A T, time-lag
Ambient temperature	recommended: 10...35 °C Working range: 5...45 °C	recommended: 10...35 °C Working range: 5...45 °C
Type of protection	IP 43	IP 43
Pressure generator	Oscillating piston pump 230 V/ 50 Hz / 45 W	Oscillating piston pump 230 V/ 50 Hz / 45 W
Pressure range	approx. 0-2.8 bar	approx. 0-2.8 bar
Filler hose	approx. 3.5 m long, with quick-acting coupling	approx. 3.5 m long, with quick-acting coupling
Weight (net)	approx. 8 kg	approx. 12 kg
Dimensions	394 x 245 x 465 mm (H x W x D)	827 x 370 x 410 mm (H x W x D)

HELLA GUTMANN SOLUTIONS GMBH

Am Krebsbach 2

79241 Ihringen

GERMANY

Phone: +49 7668 9900-0

Fax: +49 7668 9900-3999

info@hella-gutmann.com

www.hella-gutmann.com

© 2016 HELLA GUTMANN SOLUTIONS GMBH

1 STUECK/PIECE(S)



9XQ 460 988-041

Made in Germany