

Installation instructions

Mechanical Load-dependent Brake force regulator



Introduction

Incorrect setting of the brake force regulator can cause accidents

An incorrect setting of the brake force regulator leads to insufficient braking power or to over-braking of the vehicle.

If the braking power is too low, the braking distance increases significantly, on the other hand over-braking can cause the vehicle to skid and tip over.

This can lead to rear-end collisions in which the driver and other people can be seriously injured or died.

Before commissioning, check the correct setting of the brake force controller. The setting is made with the trailer connected to the tractor.

Brake force regulator

These instructions are based on the brake force regulator from the manufacturer Wabco part number: 475 712 004 0.

Before commissioning the MLB, the manufacturer's instructions for the brake force regulator must be observed.

Applicable legislation:

Regulation (EU) No. 167/2013 of the European Parliament and of the Council of February 5, 2013 on the approval and market surveillance of agricultural and forestry vehicles.

Delegated Regulation (EU) 2015/68 of the Commission of October 15, 2014 supplementing Regulation (EU) No. 167/2013 of the European Parliament and of the Council with regard to the requirements for the brakes of vehicles in connection with the type approval of in case of agricultural and forestry vehicles.

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Subject to change without notice.

Current versions and additional information can be found online at www.bpwagrar.com

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1 System overview

1.1 Functionality

1.2 System components

Functionality

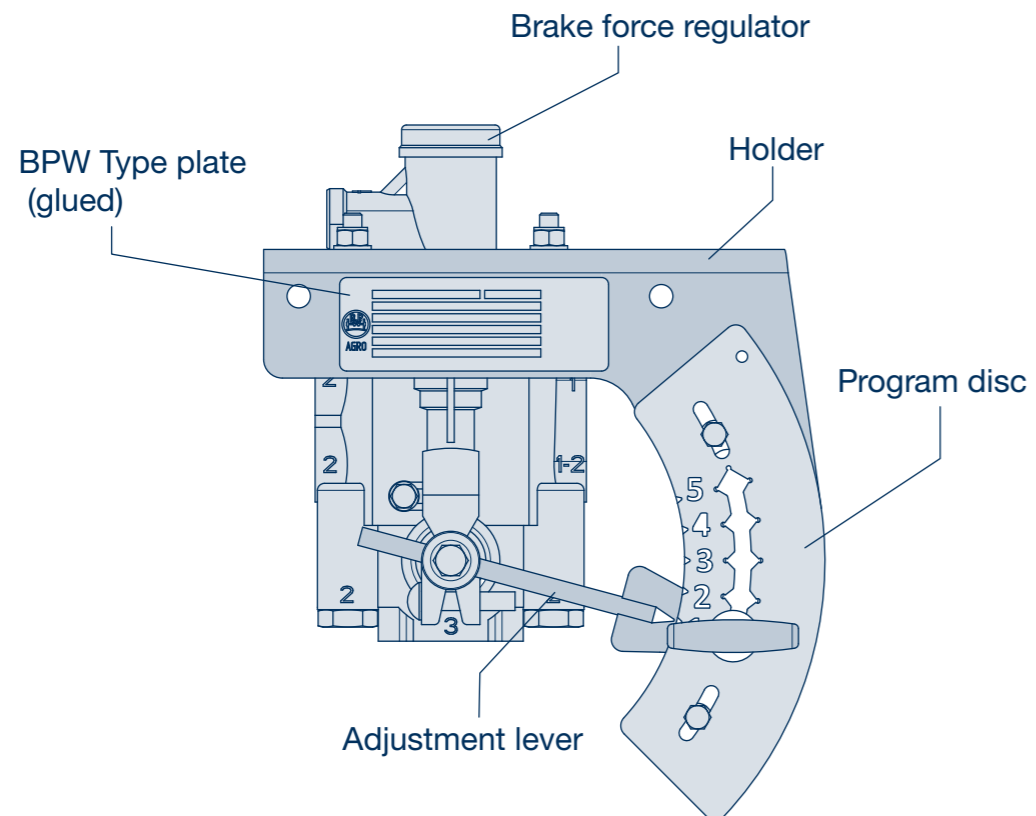
The Mechanical Load-dependent Brake force regulator (MLB) is a unique, patented device for achieving a set pressure value when the brake is applied, where the use of „automatic load-dependent brake force regulator“ (ALB) is not possible.

In contrast to a normal handheld controller, the BPW MLB works with proportional pressure control. As a result, the outlet pressure remains proportional to the control pressure. This solution fully complies with the requirements of the EU regulation.

The MLB is attached to the vehicle using the BPW bracket. Depending on the version, the output pressures for the setting positions on the type plate are filled in at the factory, if not, the information should be given by the vehicle manufacturer, this allows select the proper outlet pressure for the current loaded position of the vehicle.

System components

The brake force regulator is mounted on the BPW holder. The holder is provided with type plate of the BPW. The information on the nameplate enables the complete MLB to be correctly identified at all times - this also enables the required spare parts to be determined - or the associated outlet pressures.



2 Safety regulations, safety information

2.1 Safety regulations

- ⊙ All work must be performed by trained mechanics at competent repair facilities or authorised specialised workshops who have access to all relevant tools and have acquired the know-how required for this work. Anyone who performs maintenance and repair work must have been trained as an automotive mechanic and already have experience in repairing trailers. Anyone who performs brake work must be trained in brake systems.
- ⊙ Comply with local safety regulations.
- ⊙ The relevant operations and service regulations as well as safety regulations of the vehicle manufacturer and of the manufacturers of the vehicle parts must be adhered to.
- ⊙ The dust created from grinding brake linings comprises particles that can cause lung damage. A safety mask must therefore be worn to prevent brake dust from being inhaled.
- ⊙ Use prescribed dust washing devices or vacuum cleaners for cleaning, never use compressed air or other high-pressure devices.
- ⊙ Ensure adequate ventilation at the workplace.
- ⊙ The vehicle must be prevented from moving during repair work. Please observe the relevant safety regulations for repair work on commercial vehicles, in particular the safety regulations for jacking up and securing the vehicle.
- ⊙ During repair work, make sure that the brake is not operated inadvertently.
- ⊙ Do not perform repair work unless wearing protective clothing (gloves, safety boots, safety goggles, etc.) and using the recommended tools.
- ⊙ Work on brake components removed from the vehicle must be carried out with the components fixed in place such as in a vise.
- ⊙ Only use recommended tools.
- ⊙ A second mechanic must provide assistance when working with heavy components (brake drums or brake removal/installation).
- ⊙ All air lines and components must be depressurised before being removed.
- ⊙ Following each repair, perform a function check or a test drive in order to make sure that the brakes are functioning correctly. New drums and linings only have maximum effect after a few braking actions. Avoid hard braking.
- ⊙ All exchanged components must be reused or disposed of in accordance with the applicable environmental regulations, laws and directives.
- ⊙ Tighten bolts and nuts with the prescribed tightening torque.

Safety information 2.2

This workshop manual contains different types of safety instructions, each of which is designated by an icon and a signal word. The signal word describes the severity of the potential danger.



Danger !

Immediate potential danger of serious or fatal injury (severe injury or death).

Warning !

Possible potential danger of serious or fatal injury (severe injury or death).

Caution !

Possible dangerous situation (slight injury or damage to property).



Repair Guide !

Risk of damage to property or consequential damage if this information is not observed.



Note !

Application hints and especially useful information

3 Product identification

3.1 BPW-Type plate / Mechanical Load-dependent Brake force regulator

Depending on the version, the mechanical load-dependent brake force regulator is provided with a filled-in type plate.

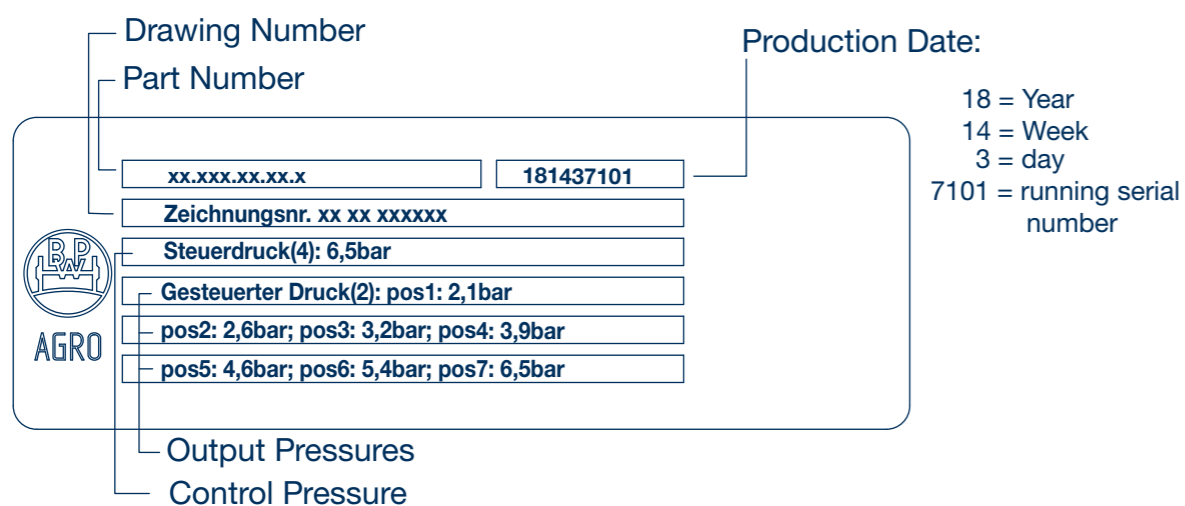
Type plate not filled in: the data must be given by the vehicle manufacturer.

It is glued on the holder of the brake force regulator.

The information on the type plate enables the complete MLB valve to be correctly identified at all times - including the required spare parts - or the associated outlet pressures.



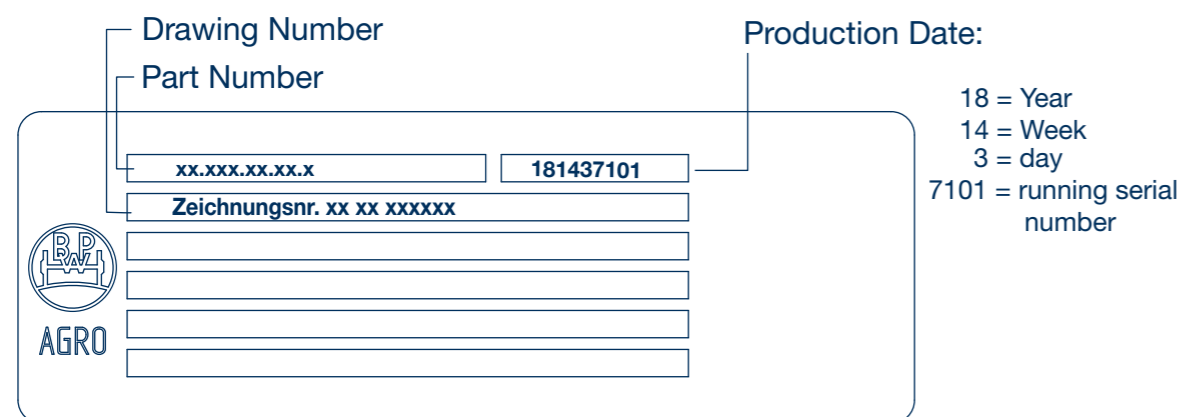
Type plate filled out:



Type plate not filled out:

Note:

The data must be given by the vehicle manufacturer.



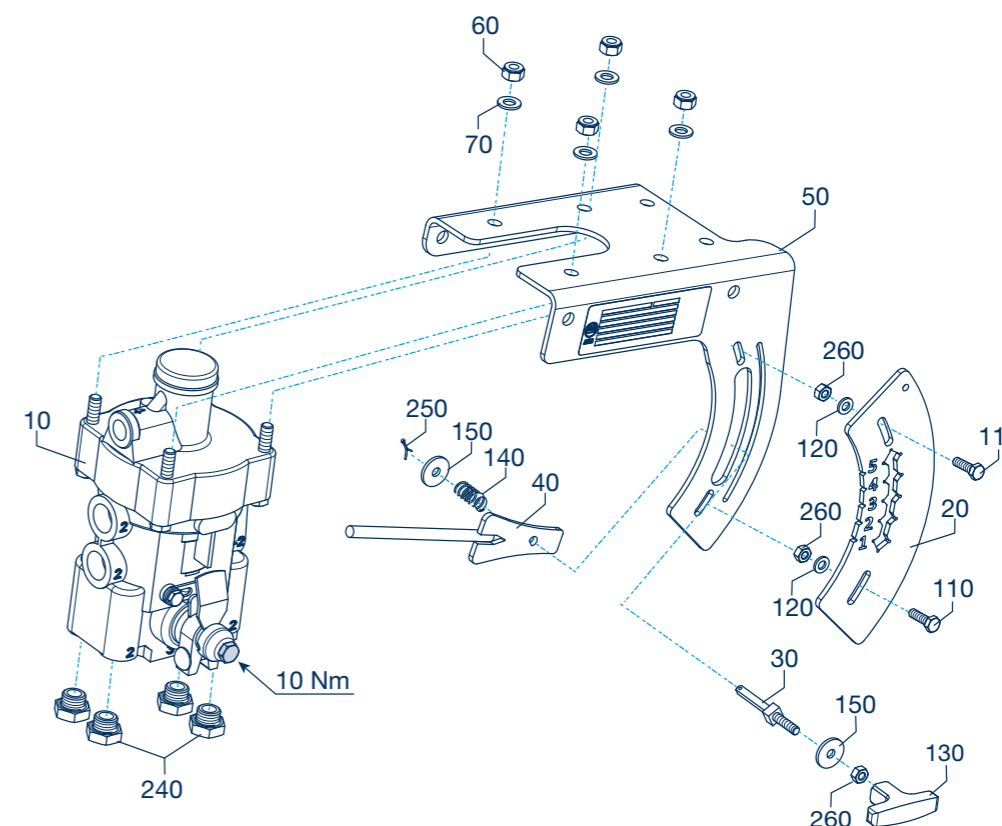
Exploded view / Designation

Mechanical Load-dependent Brake force regulator

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4.1

Pos.	Designation	Dimensions	Tightening torque
10	Brake force regulator		
240	Screw plug	M 16 x 1,5	M = 34 Nm
50	Holder		
70	Washer for fastening the brake force regulator	M 8	
60	Lock nut for fastening the brake force regulator	M 8	M = 19 Nm
20	Program disc		
110	Screw for fastening the program disc	M 6 x 20	
120	Washer for fastening the program disk	M 6	
260	Lock nut for securing the program disc	M 6	M = 8 Nm
	Blind rivet for securing the program disc	Ø 4,8 x 14 (stainless)	
	Cotter pin		
150	Washer	M 6	
140	Compression spring		
40	Connecting rod		
30	Threaded bolt		
260	Hexagon nut	M 6	
130	T-handle (secure thread with Loctite 243)		



5 Technical specifications

5.1 Dimensions

Connections 5.2

The mechanical load-dependent brake force regulator is easy to assemble. The fasten is done with screws (no welding). The required mounting holes on the holder are available. Holder with the pre-assembled brake force regulator can be attached to the vehicle by the help of screws.

MLB unit should be mounted on the vehicle in such a way that the brake force regulator is protected from mechanical damage and the suitable setting position (controlled pressure) can easily be set for the vehicle.

Note:



Must be observe, the manufacturer's instructions for the brake force regulator before commissioning the MLB.

Repair Guide:
 Do not mix up lines!

Pos.	Designation	Dimensions
1	Connection for supply line	M 16 x 1,5 – 12 deep
1-2	Connection for air tank	M 22 x 1,5 – 13 deep
2	Controlled pressure	M 22 x 1,5 (4x) – 13 deep
3	Venting	
4	Control pressure	M 16 x 1,5 – 12 deep

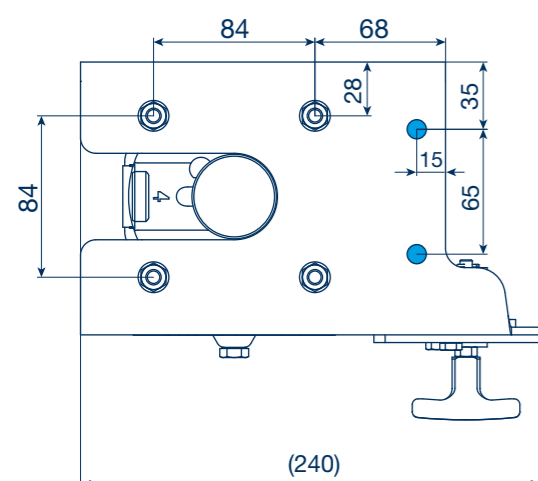
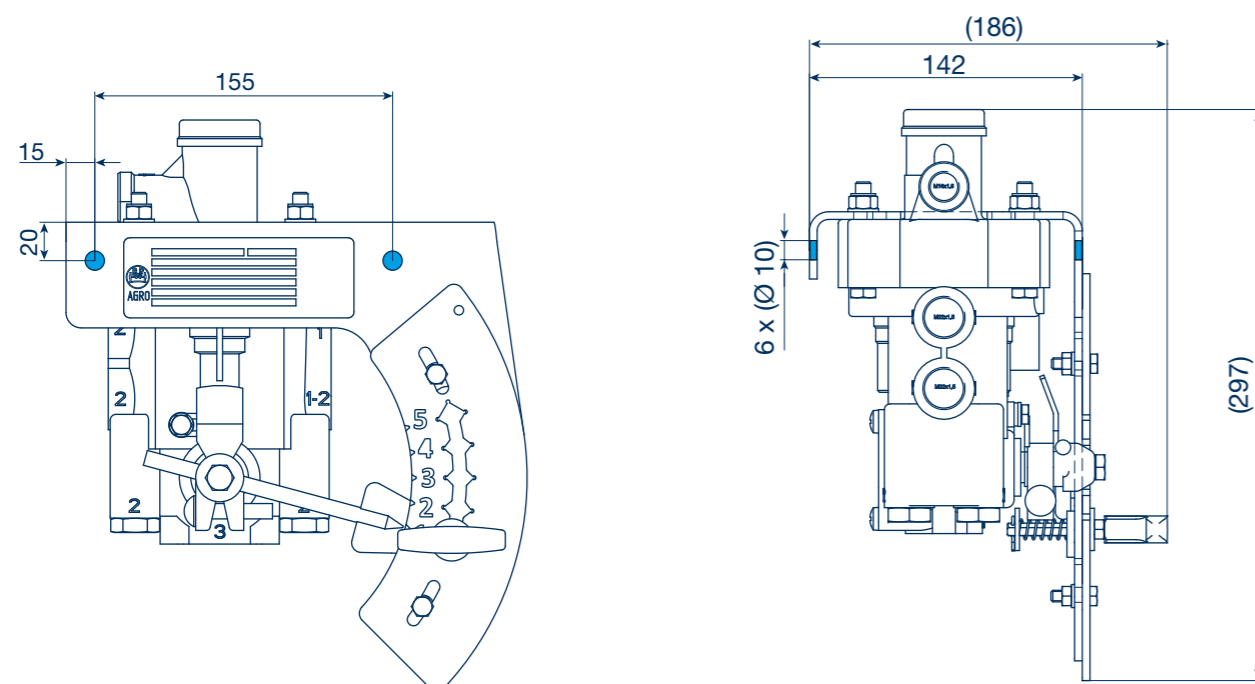
Tightening torques for the screw-in connector:

- M 16 x 1,5 M = max. 34 Nm
- M 22 x 1,5 M = max. 53 Nm

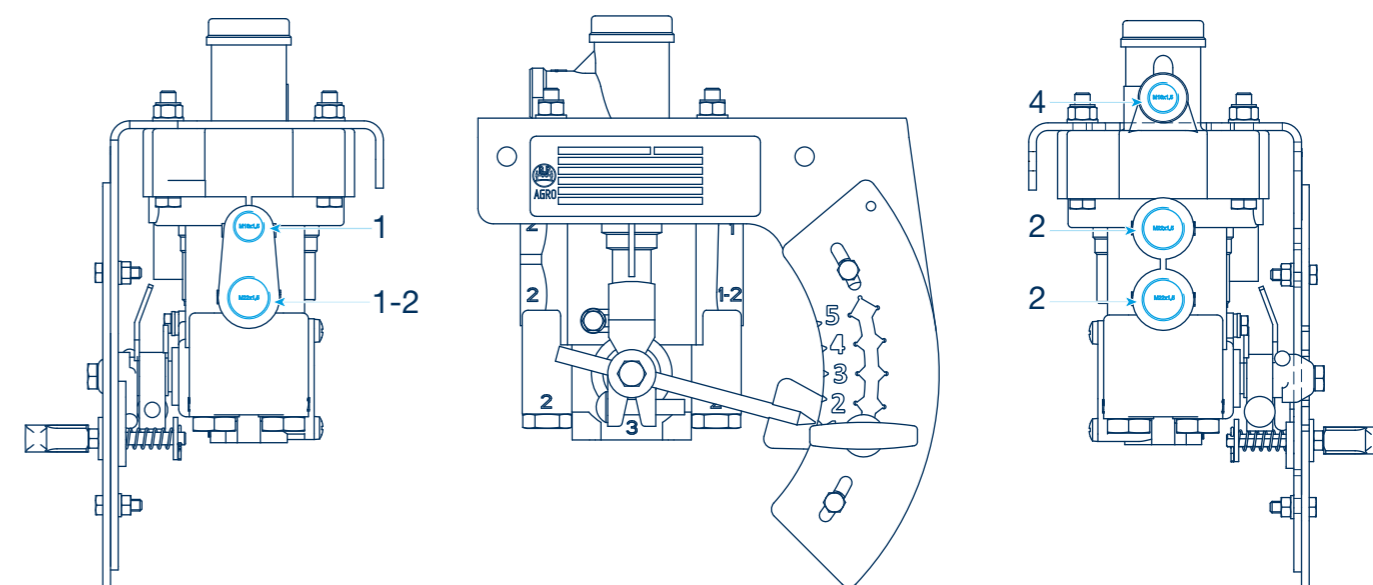
Note:



Before installing the brake lines, the plugs (blue) should be removed from the connections.



Mounting holes ●



5 Technical specifications

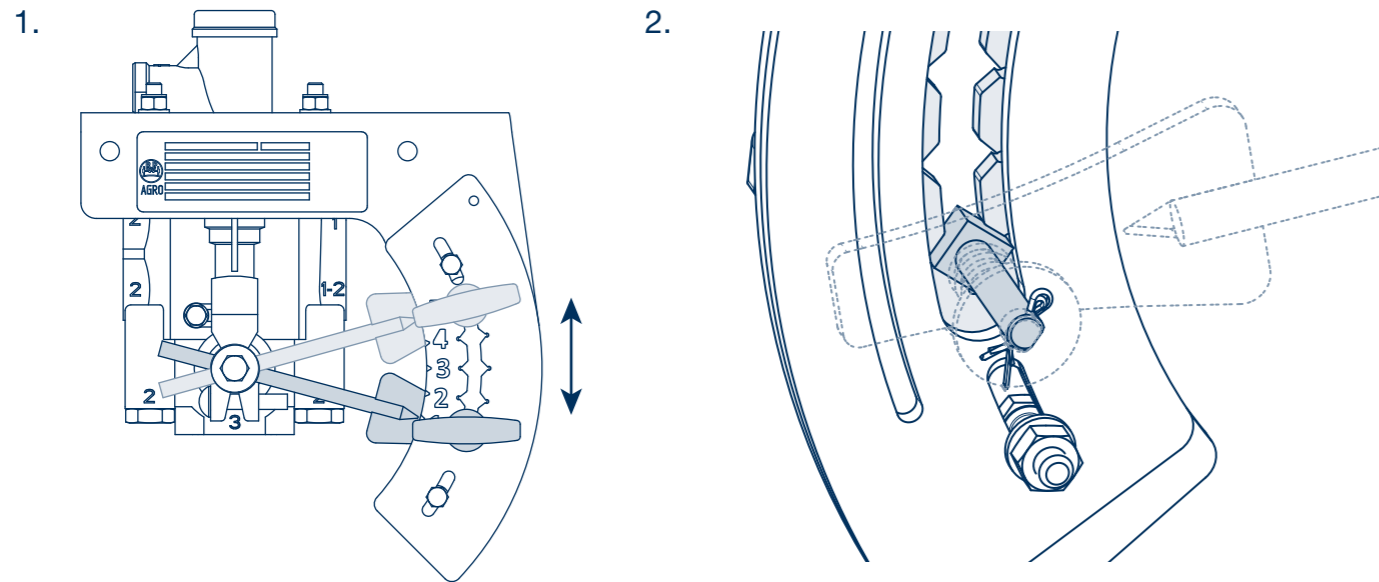
5.3 Selection of the brake pressure to be controlled

Brake force regulator 5.4

The pressure output from the brake force regulator can be adjusted by moving the lever. The setting depends on the actual axle load.

Select braking force (output pressure):

1. Pull out the T-handle (130) from the program disc and set on the appropriate position (outlet pressure) of the controller by moving the adjustment lever.
2. Make sure that the cube part of the threaded bolt (30) is correctly seated in the program disc.



Depending on the version, the brake force regulator or the output pressure of the regulator should be checked and, if necessary, adjusted before commissioning.

The type plate should be filled with the set output pressures and the associated setting positions. Before commissioning the mechanical load-dependent brake force regulator, the manufacturer's instructions for the brake force regulator must be observed. Autom. Brake force regulator / Wabco - No. : 475 712 004 0

Control pressure

When setting the output pressures, the control pressure on the brake force regulator according to the brake calculation (e.g. : 6.5 bar) is a prerequisite.

Setting

To set the output pressures, the program disc should be moved by hand, and the fastening screws or locking nuts should be loosened. After setting the output pressures, the program disc should be attached to the holder with a blind rivet, if not already done at the factory.

The output pressures of the brake force regulator must be set in the completely installed brake system and the output pressures must be measured at the brake cylinder.

Note:



Depending on the version, the program disc is factory attached to the holder with the blind rivet. Before using the brake force regulator, check the pre-set output pressures and the presence of the blind rivet, readjust if necessary.

6 Brake force regulator

6.1 Setting the outlet pressures

Note:

When setting the output pressures, a control pressure of 6.5 bar on the brake force regulator is required.

The output pressures of the brake force regulator must be set in the completely installed brake system and the pressure gauge must be connected to the crafted measuring point connector at the brake cylinder.

- [1] Loosen the lock nut (260) until the program disc (20) become movable by hand on the holder (50).

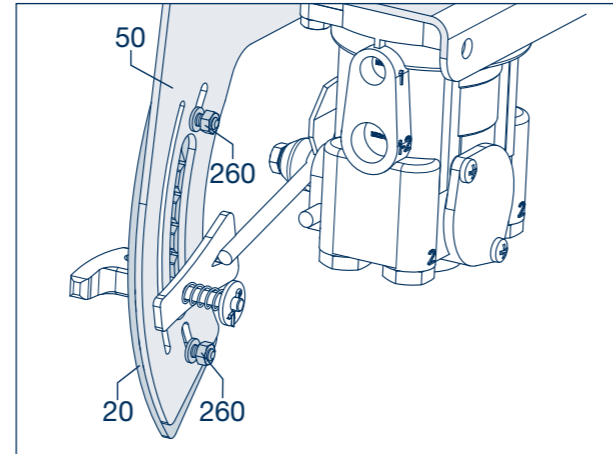


Figure 1

- [2] Pull out the T-handle (130) and place the connecting rod (40) in position number 1.

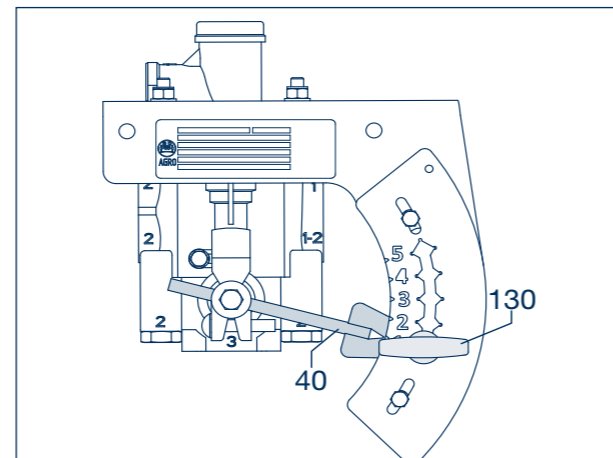


Figure 2

- [3] Set the outlet pressure. To do this, move the program disc (20) up or down on the holder (50) until the prescribed outlet pressure is set.

- [4] After setting the output pressure for position 1.: Tighten the fastening nut (260) and fasten the program disc.

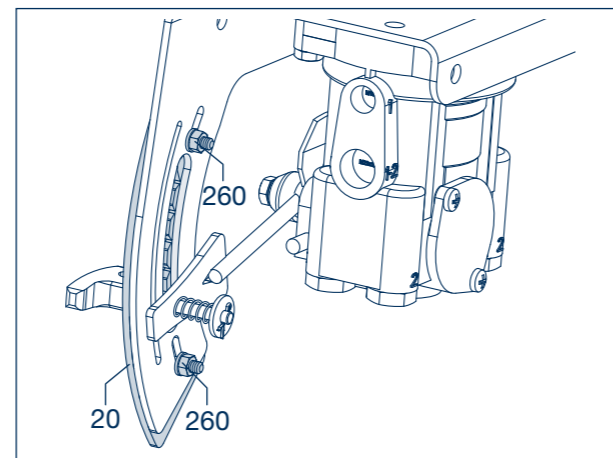


Figure 3

- [5] Check the outlet pressure for all positions, readjust if necessary.

Repair Guide:

When testing and adjusting the brake force regulator, the control pressure should be reduced from 6.5 bar to 0 bar and then raised again to 6.5 bar. This must be executed in each setting position on the current program disc.

- [6] After setting the outlet pressures fasten the program disc: to do this, tighten the lock nut (260) with the specified tightening torque.

Tightening torque:

M 8 M = 8 Nm

- [7] Fix the program disc with the blind rivet. To do this, drill a hole (Ø4.9 mm) through the program disc and holder with a drill. (The program disc is prepared with the hole at the factory.)

Repair Guide:

The prerequisite is that the program disc is fastened before drilling.

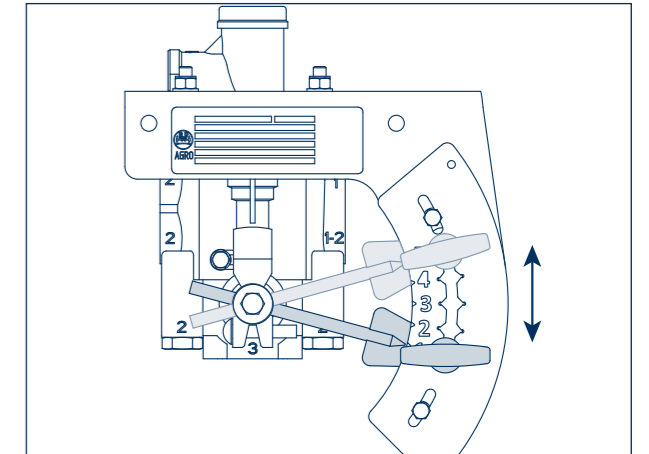


Figure 4

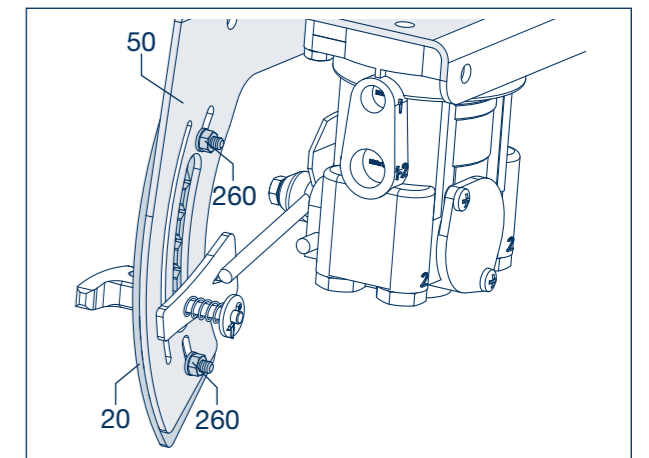


Figure 5

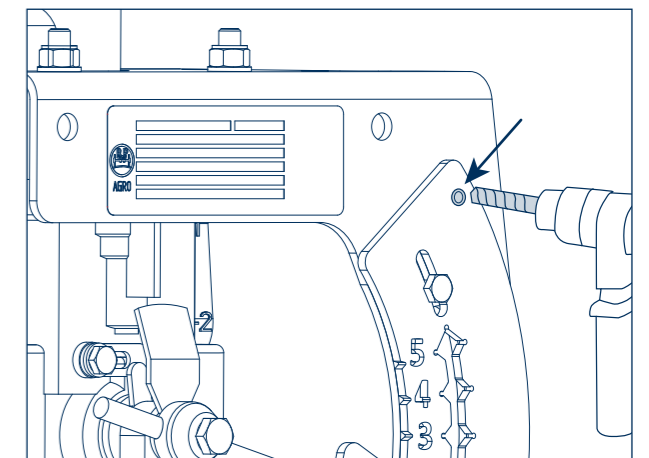


Figure 6

6 Brake force regulator

6.1 Setting the outlet pressures

- [8] Place blind rivet (arrow) in the hole and fasten the program disc.

Blind rivet: Ø 4,8 x 14 mm (stainless)

Note:



The data or the outlet pressures must be given by the vehicle manufacturer.

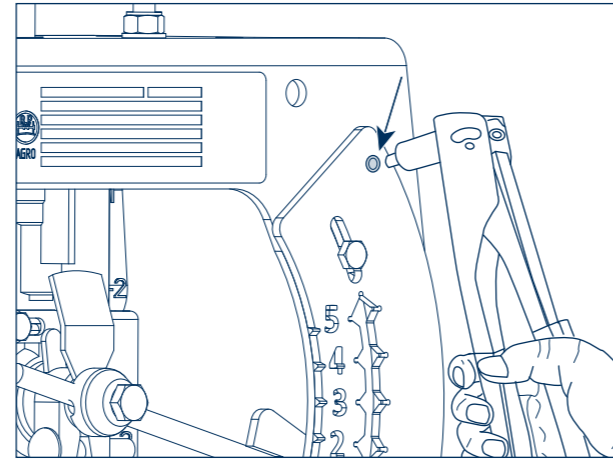


Figure 7

Notes



BPW-EA-MLB 57112201e

BPW is a globally leading manufacturer of intelligent running gear systems for trailers and semi-trailers. As an international mobility and system partner, we offer a wide range of solutions for the transport industry from a single source, from axle to suspension and brake to user-friendly telematics applications. We thereby ensure outstanding transparency in loading and transport processes and facilitate efficient fleet management. Today, the well-established brand represents an international corporation with a wide product and service portfolio for the commercial vehicle industry. Offering running gear systems, telematics, lighting systems, composite solutions and trailer superstructures, BPW is the right system partner for automotive manufacturers.

BPW, the owner-operated company, consistently pursues one target: To always give you exactly the solution which will pay off. To this end, we focus our attention on uncompromising quality for high reliability and service life, weight and time-saving concepts for low operating and maintenance costs as well as personal customer service and a close-knit service network for quick and direct support. You can be sure that with your international mobility partner BPW, you always use the most efficient method.

Your partner on the path to economic viability



BPW Bergische Achsen Kommanditgesellschaft

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