

Operating and Installation Instruction

AirSave



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Valid: 01/06/2024

6th edition

Subject to change without notice.

Current versions and additional information can be found online at www.bpw.de.

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1 Safety instructions

1.1 Safety regulations

- All work must be performed by trained mechanics at qualified service centres and authorised specialist companies 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 be trained in automotive mechanics and already have experience in repairing drawbar trailers and semi-trailers.
 - Comply with local safety regulations.
 - The relevant operating and service instructions and the safety instructions of the vehicle manufacturer or of the other vehicle component manufacturers must be followed.
 - 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.
 - Do not perform repair work unless wearing protective clothing (gloves, safety boots, safety goggles, etc.) and using the recommended tools.
 - Use only recommended tools.
 - All air lines and components must be depressurised before opening.
 - All exchanged components must be reused or disposed of in accordance with the applicable environmental regulations, laws and directives.
 - Tighten screws and nuts to the prescribed tightening torque.
 - The tyre valve must be positioned far enough away from the brake caliper to prevent it and the tyre from becoming damaged.
 - Damaged or missing components must be replaced immediately
 - The components of the BPW AirSave must not be painted.
 - The BPW AirSave hub cap adapter must not be disassembled.
 - Make sure that the vent opening and exhaust are not blocked. Prevent vent openings from becoming blocked to allow system air to escape from the wheel end. Serious personal injury and property damage can result.
 - Test the tyre filling system for air leaks before using the vehicle for the first time. Spray a corrosion-free leak-detection solution on all links and connections (this can be soapy water). Listen for audible leaks and check for bubbles. If you discover a leak, identify the source and replace any parts as needed. Air leaks in tyre filling system can cause damage to components during operation.
 - Do not overtighten the valve hoses. This could damage the hose seal and cause the tyre to lose air when the drawbar trailer is parked. Component damage can result.
 - Before carrying out various activities on the system, the shut-off nozzle must be closed and air vented via the excess pressure valve on the AirSave Control Box. The Control Box 141 must be disconnected from the power supply.
 - A minimum outlet pressure of 6.0 bar is required to ensure faultless function of the BPW AirSave. An incorrectly set pressure can lead to increased tyre wear and fuel consumption, and in the worst case to a tyre failure. A pressure of 9.2 bar is preset on the AirSave Control Box.
 - A round cable with a cross-section of 6 - 10 mm must be used for the cabling. The ADR Directives must be observed for cabling.
 - All lines must be laid in the protected area and be protected from damage, kinking or chafing. All threads must be free from impurities, greases and oils. Adequate clearance must be ensured as the axle extends and compresses.
 - First assemble the hub cap and then the rotor. Assembling the two components at the same time can cause untightness of the O-rings.
 - Valve hoses are not allowed to be kinked, cover wheel nuts or protrude over the rim. A damaged valve hose can cause the tyre to deflate completely.
 - Make sure that you only use the AirSave rotor from BPW (grey cap & white PTFE sealing ring), as this is the only way to ensure tightness.
 - When fitting the rotor, hold the hub cap adapter to make sure that the rotor is screwed in as far as it will go. The valve connection is aligned afterwards by rotating the hub cap adapter (SW 55).
-

Safety instructions 1

Safety instructions 1.2

These installation instructions contains different types of safety instructions, each of which is marked by an icon and a signal word. The signal word describes the severity of the potential danger.



Warning!

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

Caution!

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



Repair note!

Warning of damage to property or consequential damage if these instructions are not observed.



Note!

Application hints and especially useful information.

It is essential that maintenance is carried out in accordance with the prescribed intervals in order to maintain the safe operation and road safety of the vehicle.

Rectification of any defects which are discovered or replacement of worn parts should be carried out by a BPW Service Centre or BPW Direct Service Partner, unless the vehicle owner has the required specialist personnel, the required technical facilities and workshop manuals or possesses an official certificate to perform interim inspections or special brake inspections.

When installing spare parts, it is strongly recommended that only original BPW components are used. Parts authorised by BPW for trailer axles and axle units are regularly subjected to special inspections. BPW accepts product responsibility for such parts.

BPW is unable to determine whether all third party products can be used with BPW trailer axles and axle suspensions without any safety risk; this applies even if an authorised testing organisation has accepted the product.

The warranty becomes null and void if spare parts other than original BPW parts are used for warranty work.

2 Component overview

2.1 Technical data – AirSave

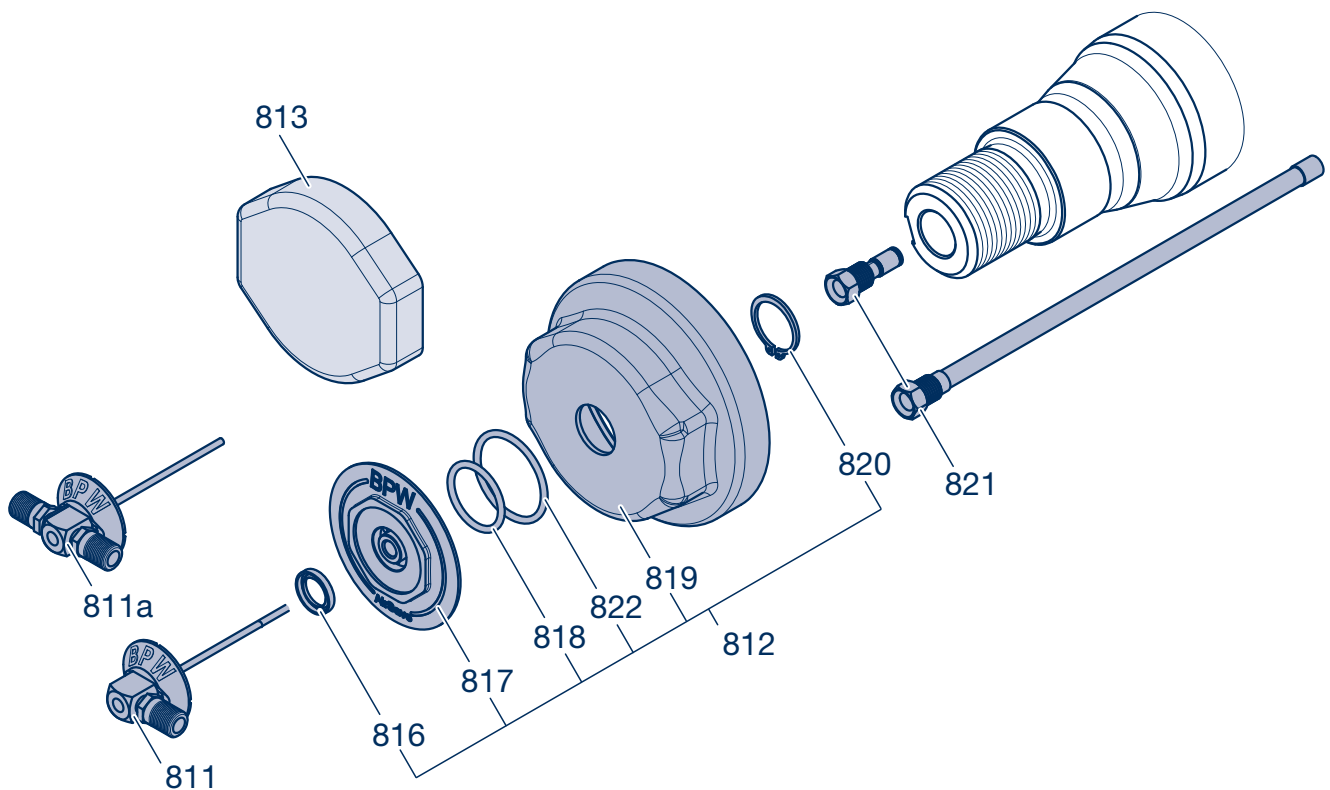
Technical data – AirSave				
Control Box and Control Box 141				
	Para- meters	preset	Comment	
			Control Box	Control Box 141
min. inlet pressure	P_{in}	6,0 bar	invariable	variably adjustable > 6 bar
Excess pressure	P_{max}	11,2 bar (Control Box) 10,5 bar (Control Box 141)	invariable	variably adjustable < 10,5 bar
Outlet pressure	P_{out}	9,2 bar	variably adjustable between P_{in} and P_{max}	variably adjustable between P_{in} and 10 bar
Differential pressure	P_{dif}	0,2 bar	invariable	variably adjustable between 0,2 and 0,5 bar (max. 20 % of P_{out})
Adjustable outlet pressure		Target tyre pressure + 0.2 bar	Recommendation for both versions	
Tightening torques				
Hub cap		ECO Plus 3 ECO Plus	350 Nm 800 Nm	SW 110 SW 110
Rotor			6 Nm	-
Stator			40 Nm	SW 16
Kink protection			5 Nm (hand-tight)	SW 24
Angle piece			35 Nm	SW 22
Lock nut for Control Box assembly			25 Nm	SW 13
Lock nut for Control Box 141 assembly			40 Nm	SW 17
LED flashing intervals				
LED display flashes			The pressure loss is being equalised (there is no need to interrupt the journey).	
LED flashes for more than 10 min			The tyres, compressed air lines and connections must be checked.	
LED display permanently lit			Pressure loss can no longer be equalised. A service centre must be sought immediately.	

Component overview

2

System components

2.2



Item	Designation	Dimension	BPW item number
811	AirSave rotor, single wheels	L = 90 mm	02.0130.00.30
811a	AirSave rotor, twin wheels	L = 90 mm	02.0130.05.30
812	BPW AirSave hub cap, incl. item 816 - 820, 822	9 t - ECO Plus 3 10 t - ECO Plus 3 10 t - ECO Plus	05.801.47.17.0 05.801.47.86.0 05.801.47.18.0
816	Oil seal	Ø 24, Ø 16 x 4	
817	BPW AirSave hub cap adapter		
818	O-ring	Ø 32 x 3 (=> 17.08.2023) Ø 33 x 3.5 (18.08.2023 =>)	
819	Hub cap with O-ring for ECO Plus 3 Hub cap ECO Plus (no O-ring required)	135 x 2 136 x 2.5	
820	Locking ring for shaft	Ø 29 x 2 / DIN 471	
822	O-ring		
813	Cover	SW 110	02.3505.39.00
821	AirSave stator for axle stub	SW 16, short - 43 mm SW 16, long - 287 mm (for round axles without tube system)	02.0130.99.20 02.0130.19.30



Note on painting!

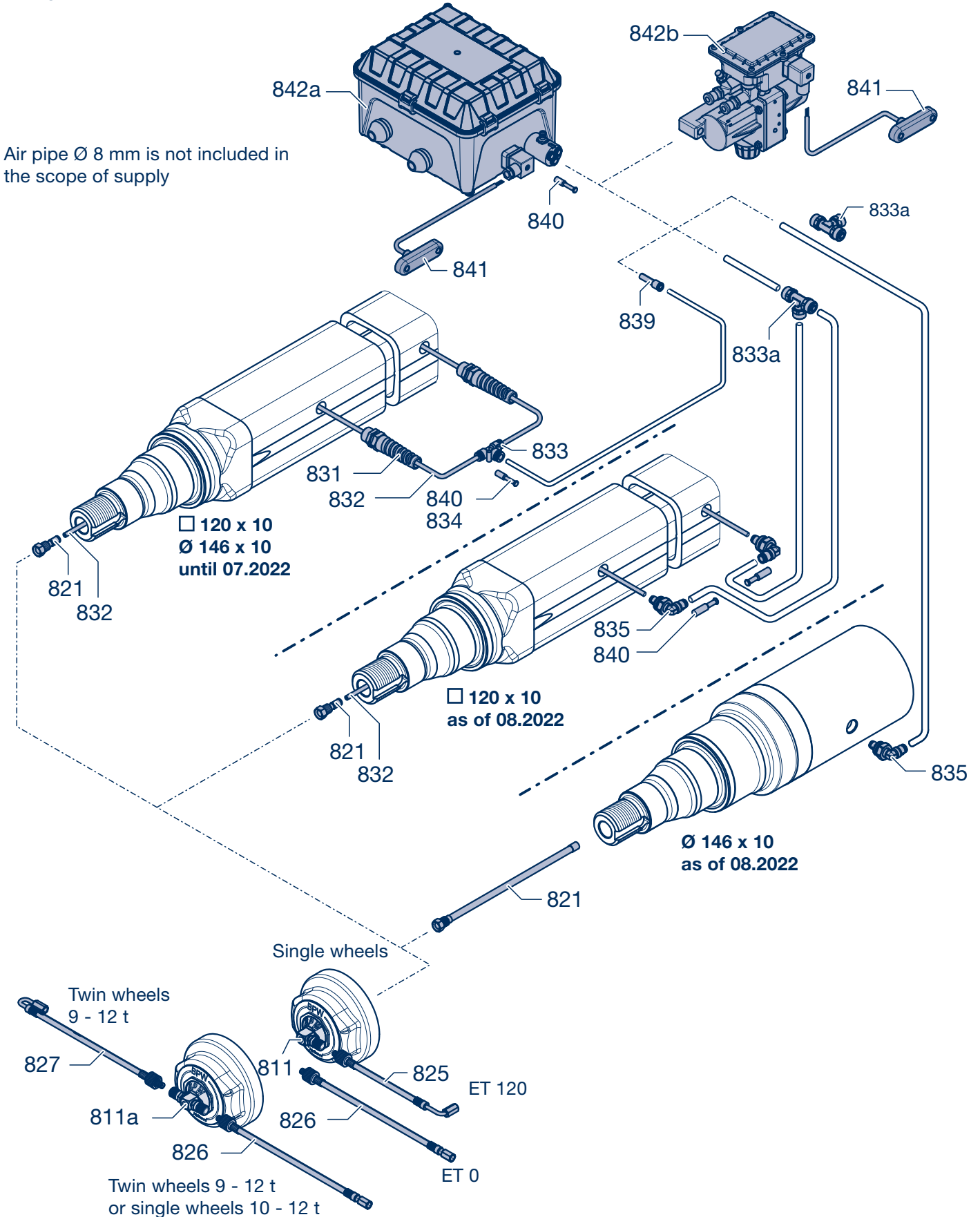
Items 811 to 822 must be covered or masked off before any painting work. Painting is not permitted!

2 Component overview

2.2 System components

Rigid axles

Cable connection to EBS, see overview in Chapter 3.5



Component overview **2**

System components **2.2**

Item	Designation	Dimension	BPW item number
811	AirSave rotor, single wheels	L = 90 mm	02.0130.00.30
811a	AirSave rotor, twin wheels	L = 90 mm	02.0130.05.30
825	AirSave valve hose ET 120		02.3510.06.10
826	AirSave valve hose ET 0	Single and twin wheels	02.3510.05.10
827	AirSave valve hose	Twin wheels	02.3510.07.10
Version up to 07.2022 – all axle beams			
821	AirSave stator for air hose	SW 16, short – 43 mm	02.0130.99.20
831	Kink protection - spiral & kink protection		02.0130.98.20
832	Polyamid tube in the Rigid axles axle beam Steering axles	6 x 1 mm black, L = 1350 mm 6 x 1 mm black, L = 1555 mm	02.3510.04.10 02.3510.13.10
833	AirSave T-piece (connector for air hoses of the axle sides)	3 x Ø 6 mm (=> 09.12.2020) 2 x Ø 6 mm / 1 x Ø 8 mm (10.12.2020 =>)	02.4319.45.00 02.4319.46.00
834	Dummy plug for AirSave T-piece	Ø 6 mm (=> 09.12.2020)	02.3704.98.00
840		Ø 8 mm (10.12.2020 =>)	02.3709.99.00
849	Cable tie	540 x 7.5	02.1809.04.00
850	Cable tie	100 x 2.5	02.1809.05.00
Version as of 08.2022 – □ 120 x 10 mm axle beams			
821	AirSave stator for air hose	SW 16, short – 43 mm	02.0130.99.20
832	Polyamid tube in the axle beam	6 x 1 mm black, L = 1350 mm	02.3510.04.10
833a	AirSave T-piece (connector for air hoses of the axle sides)	3 x Ø 8 mm	02.4319.58.00
835	AirSave angle piece		02.4502.21.00
840	Dummy plug for AirSave T-piece	Ø 8 mm	02.3709.99.00
Version as of 08.2022 – Ø 146 x 10 mm axle beams			
821	AirSave stator	SW 16, long – 287 mm	02.0130.19.30
835	AirSave angle piece		02.4502.21.00
833a	AirSave T-piece (connector for air hoses of multiple axles)	3 x Ø 8 mm	02.4319.58.00
839	Reducer for AirSave Control Box	Ø 8 - Ø 6 mm (not applicable as of 10.12.2020)	02.3141.11.00
840	Dummy plug for AirSave Control Box	Ø 8 mm	02.3704.99.00
841	AirSave LED display CMP5		02.0130.01.30
842a	AirSave Control Box		02.0130.02.30
842b	AirSave Control Box141		02.0130.67.30

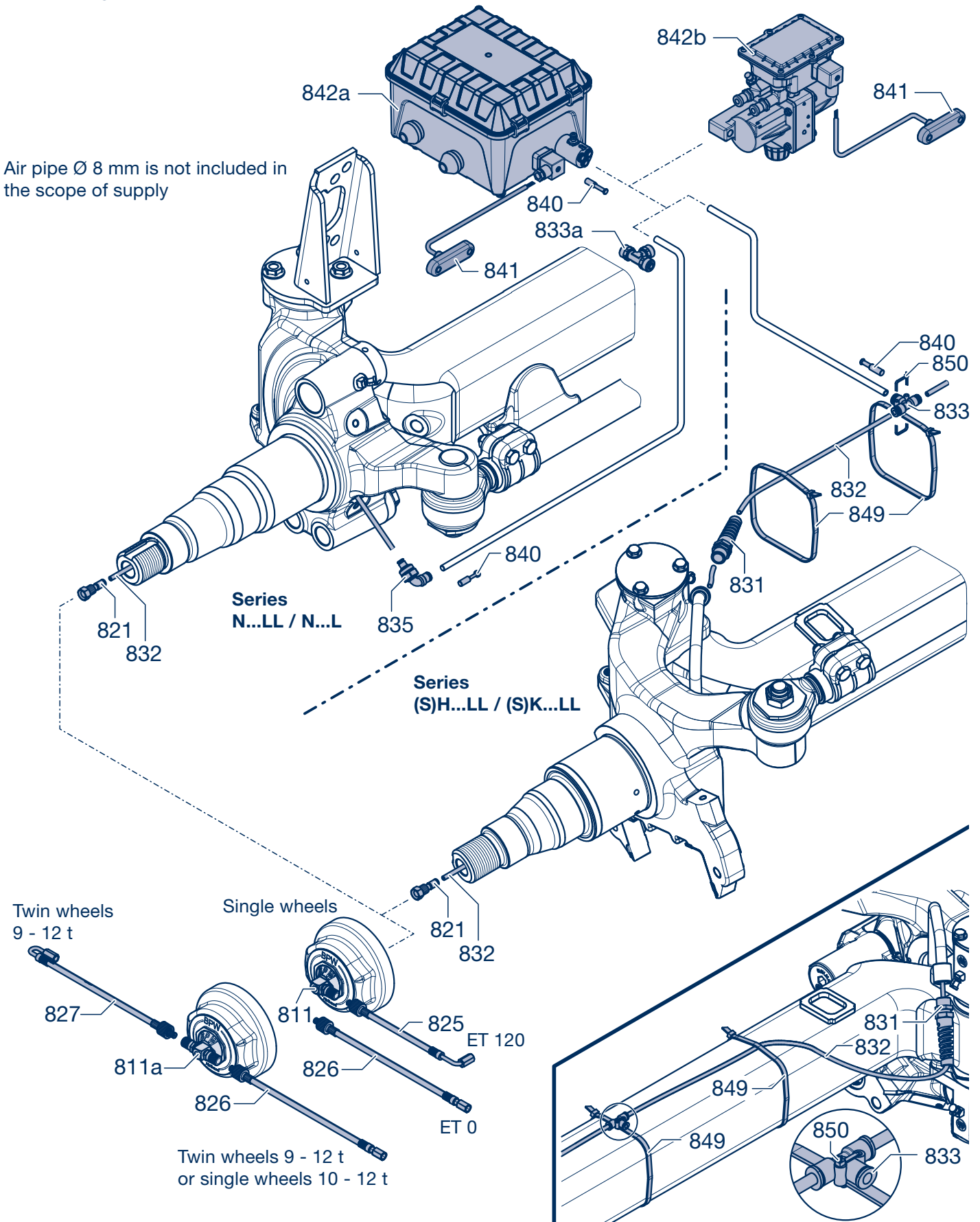
2 Component overview

2.2 System components

Steering axles

Cable connection to EBS, see overview in Chapter 3.5

Air pipe \varnothing 8 mm is not included in the scope of supply



Component overview **2**

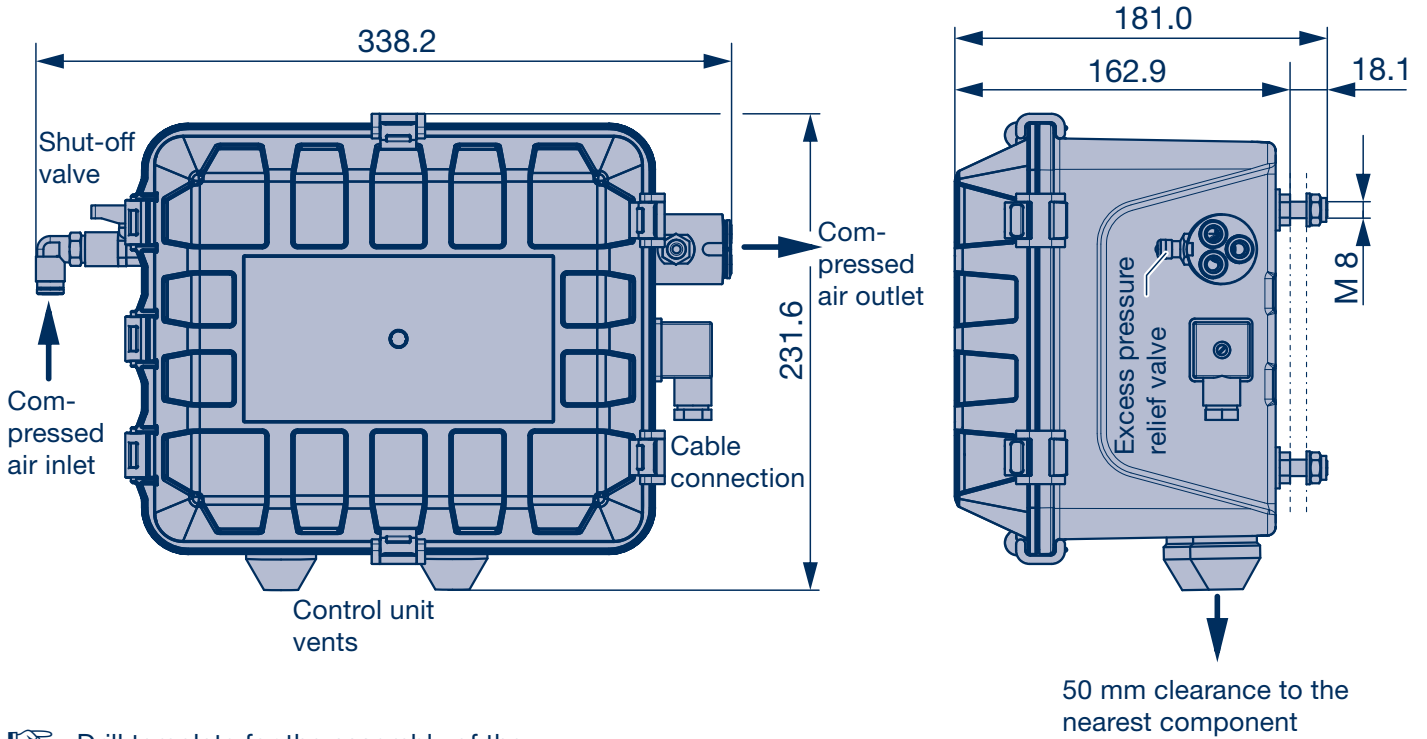
System components **2.2**

Item	Designation	Dimension	BPW item number
811	AirSave rotor, single wheels	L = 90 mm	02.0130.00.30
811a	AirSave rotor, twin wheels	L = 90 mm	02.0130.05.30
825	AirSave valve hose ET 120		02.3510.06.10
826	AirSave valve hose ET 0	Single and twin wheels	02.3510.05.10
827	AirSave valve hose	Twin wheels	02.3510.07.10
Version as of 08.2022 – steering axles ((S)H...LL / (S)K...LL)			
821	AirSave stator for air hose	SW 16, short – 43 mm	02.0130.99.20
831	Kink protection - spiral & kink protection		02.0130.98.20
832	Polyamid tube in the axle beam	6 x 1 mm black, L = 1555 mm	02.3510.13.10
833	AirSave T-piece (connector for air hoses of the axle sides)	2 x Ø 6 mm / 1 x Ø 8 mm	02.4319.46.00
840	Dummy plug for AirSave T-piece	Ø 8 mm	02.3709.99.00
849	Cable tie	540 x 7.5	02.1809.04.00
850	Cable tie	100 x 2.5	02.1809.05.00
Steering axle version (N...LL / N...L)			
821	AirSave stator	SW 16, long – 287 mm	02.0130.19.30
832	Polyamid tube in the axle beam	6 x 1 mm black, L = 1555 mm	02.3510.13.10
835	AirSave angle piece		02.4502.21.00
840	Dummy plug for AirSave Control Box	Ø 8 mm	02.3704.99.00
833a	AirSave T-piece (connector for air hoses of multiple axles)	3 x Ø 8 mm	02.4319.58.00
840	Dummy plug for AirSave Control Box	Ø 8 mm	02.3704.99.00
841	AirSave LED display CMP5		02.0130.01.30
842a	AirSave Control Box		02.0130.02.30
842b	AirSave Control Box 141		02.0130.67.30

2 System overview

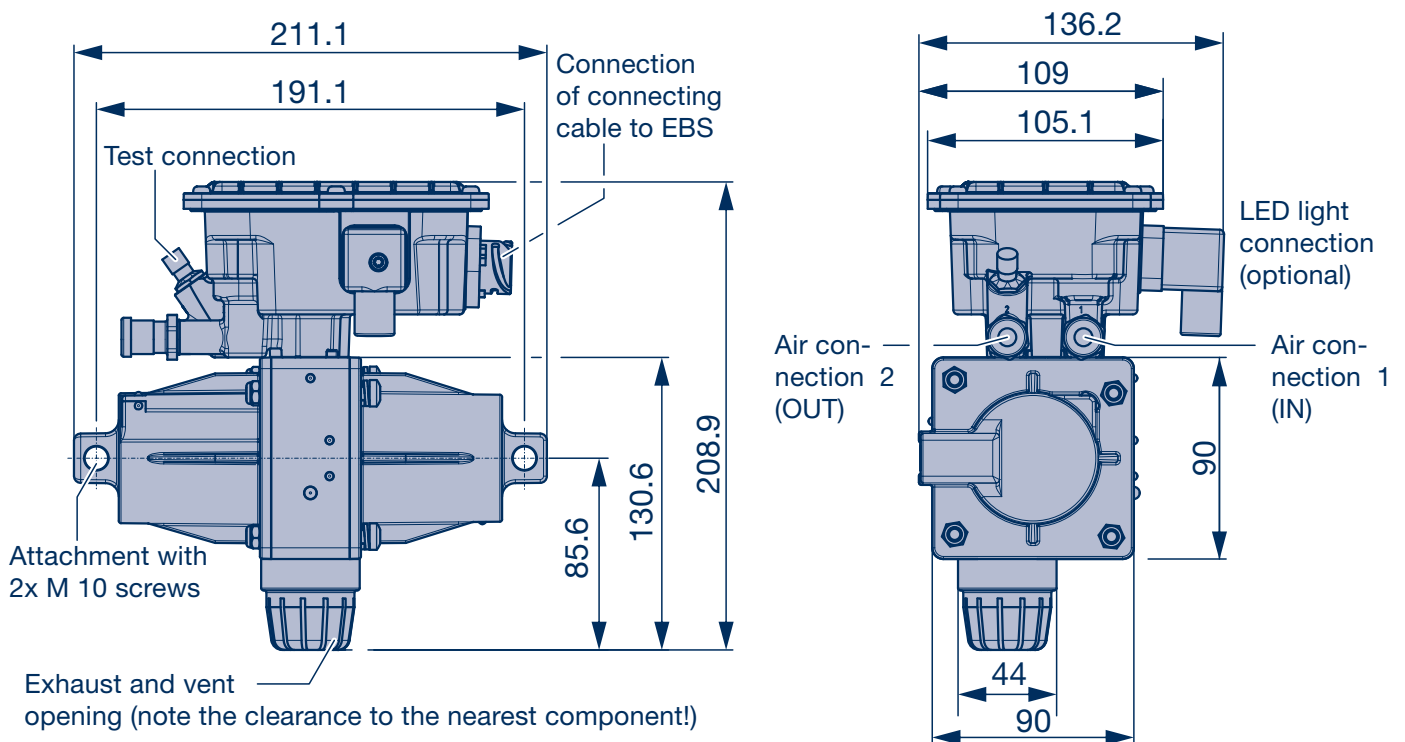
2.2 System components

AirSave Control Box



Drill template for the assembly of the AirSave Control Box - see page 59

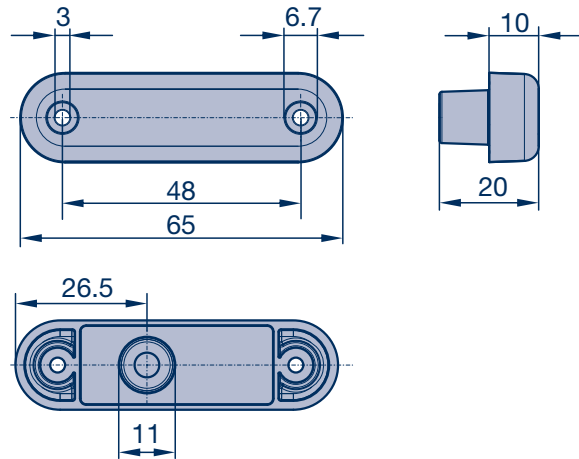
AirSave Control Box 141



System overview 2

System components 2.2

BPW LED light for assembly on the vehicle chassis



 Note: When using the Control Box 141, the installation of the LED light is optional.

2 Component overview

2.3 Component descriptions

AirSave Control Box

The Control Box contains a twin-piston pump, a generator, a pressure relief valve, an excess pressure valve, a pressure regulating valve, a safety valve and a test connection.

The twin-piston pump increases the inlet pressure by a factor of 1.7 until the desired outlet pressure is reached.

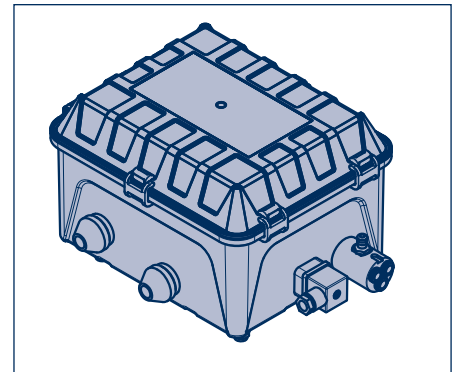
The generator switches on the warning lamp whenever the system delivers an excessive air flow to an untight tyre or an untight tyre filling system component. The warning lamp flashes at different speeds, depending on the air flow.

The pressure relief valve ensures that air is available for other functions of the drawbar trailer. In addition, it retains the pressure in the air tank if a tyre or a tyre filling component becomes damaged.

The excess pressure valve is used to manually relieve the pressure from the tyre filling system. This allows maintenance to be carried out on the components of the drawbar trailer/semi-trailer axle or on the tyre filling system. In addition, the excess pressure valve opens automatically at a pressure greater than 11.2 bar.

The pressure regulating valve is used to set the system air pressure. The system air pressure should be adjusted to the tyre pressure recommended by the customer. The safety valve allows and stops the air supply to the system.

AirSave is a pneumatic system that operates autonomously and does not require a power supply.



Component overview 2

Component descriptions 2.3

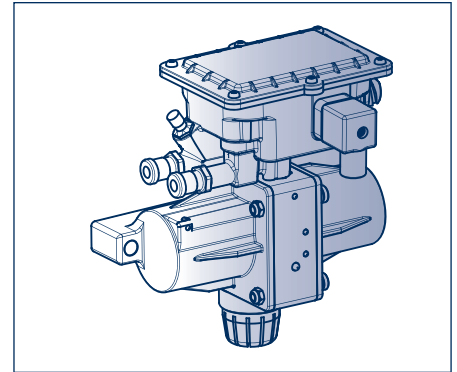
AirSave Control Box 141

The control unit contains two pressure sensors, a control device, two solenoid valves, a two-piston pump and a test connection.

The pressure sensors measure the inlet and outlet pressure. The control device analyses the incoming pressure data and controls the solenoid valves accordingly.

If pressure is lost, the two solenoid valves open and the two-piston pump increases the inlet pressure by a factor of 1.7 until the desired outlet pressure is reached.

The desired outlet pressure is preset in the factory, but can be adjusted using a laptop (see Chapter 5.1). Excess air from the two-piston pump is released into the atmosphere through an exhaust. To ensure that air is available for other trailer functions, the solenoid valves only open when a minimum inlet pressure is present. In the event of a system malfunction, the solenoid valves close automatically when the pressure exceeds 10.5 bar (variable settings), to prevent excess pressure in the tyre/system.



AirSave Control Box - Communication

The measured data is compared with the preset data. Based on the results, the following warning or fault messages are forwarded via the CAN network:

- Warning/low pressure message:
 - The system has detected a loss of pressure and is starting to refill.
 - The message is sent within 2 minutes of the pressure loss occurring.
- Fault message (pressure-related):
 - The system has detected continuous deflation (refill rate < deflation rate).
 - The message is sent within 8 minutes of the refill process starting.
- Fault message (systemic)
 - The system has detected an error:
 - Inlet pressure too low (< 6 bar/variably adjustable);
 - Excess pressure (> 10.5 bar);
 - Voltage too low (< 17 V);
 - Sensor failure;
 - Solenoid valve failure.
 - The message is sent within 8 minutes of a system error occurring.
- The warning and fault message is sent until the system is reset, e.g. by correcting the fault, restoring the tyre pressure or restarting the vehicle



Caution!

If the tyre pressure warning light on the dashboard lights up, appropriate measures must be taken.

In the event of significant air loss, you should pull over and stop the vehicle as quickly as possible.

If there is a slight loss of air, you can continue your journey until you next have an opportunity to stop. Check for punctures.

The tyre pressure warning light must not be ignored.



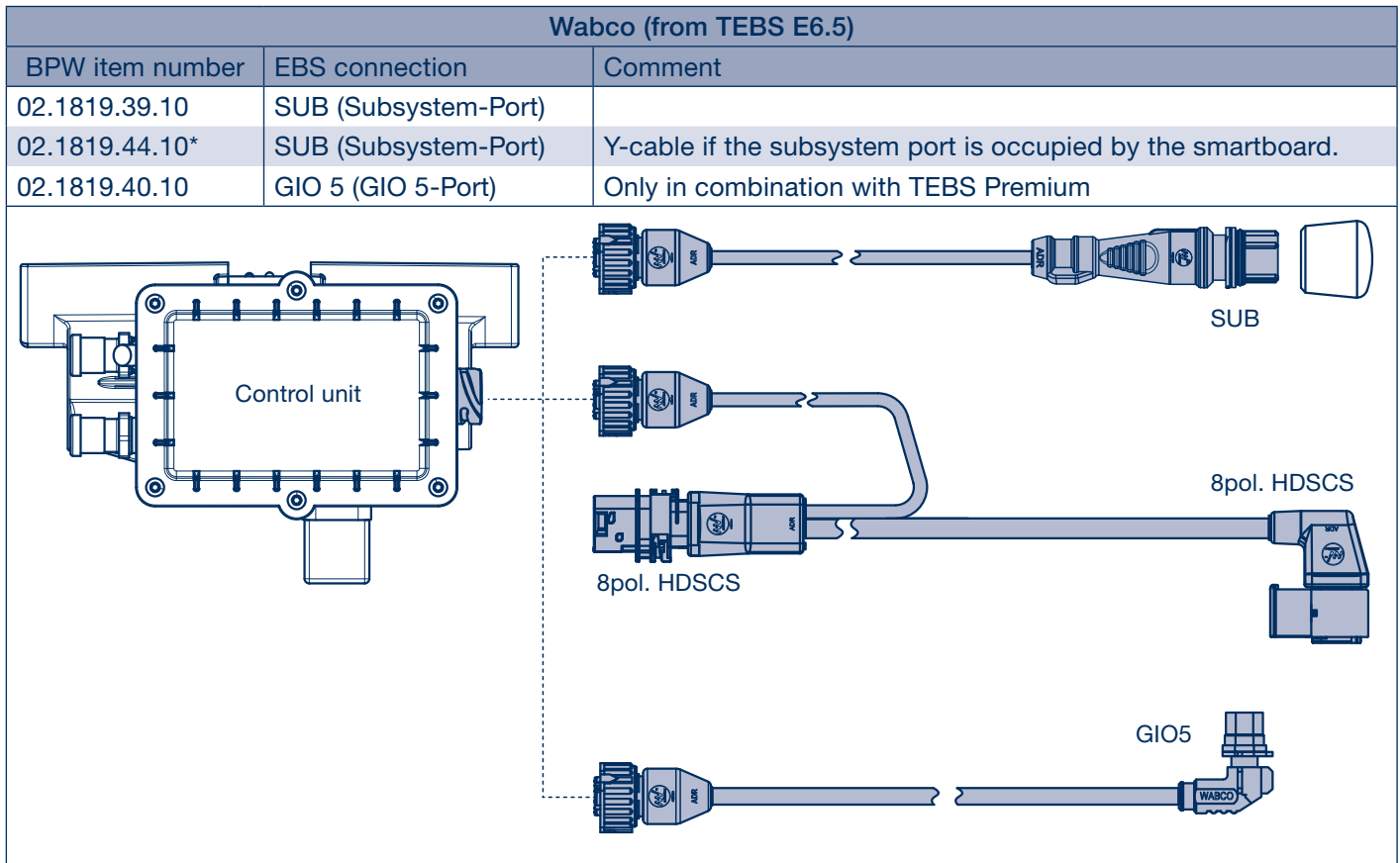
2 Component overview

2.3 Component descriptions

AirSave connecting cable (Item 850)

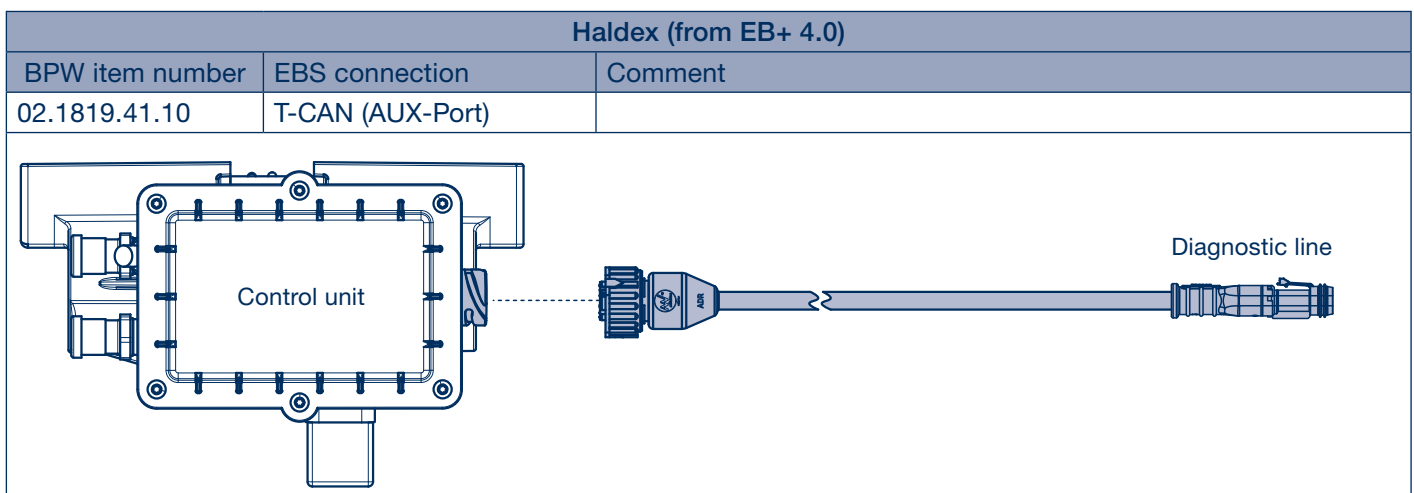
The connecting cables connect the control unit to the EBS units. Depending on the EBS manufacturer, there are various options for connecting the control unit.

Wabco connecting cable



* The extension cable 449 963 XXX from Wabco is also required for the connection.

Haldex connecting cable



Component overview 2

Component descriptions 2.3

Knorr-Bremse connecting cable

Knorr-Bremse (from GEN 2.2)		
BPW item number	EBS connection	Comment
02.1819.37.10	X6 (4pol. HDSCS-Port)	For iTEBS X
02.1819.45.10	X6 (4pol. HDSCS-Port)	For an iTEBS X/Y-cable, if the HDSCS port on the EBS unit is occupied.
02.1819.38.10	1.4 In/Out (open end)	For G2.2

The diagram illustrates three cable configurations for a control unit:

- Top configuration:** A single cable with a 4-pole HDSCS connector on the control unit side and a corresponding 4-pole HDSCS connector on the other end.
- Middle configuration:** A cable with a 4-pole HDSCS connector on the control unit side that branches into two cables, each with a 4-pole HDSCS connector.
- Bottom configuration:** A cable with a 4-pole HDSCS connector on the control unit side and an open end with four individual wires on the other side.

IDEM telematics connecting cable

AirSave in combination with iC Plus		
BPW item number	EBS connection	Comment
02.1819.42.10	Gateway (HDSCS-Port)	AirSave iC Plus Y-cable

The diagram shows a Y-cable configuration for a control unit:

- A single cable with a 4-pole HDSCS connector on the control unit side branches into two cables, each with a 4-pole HDSCS connector on the other end.

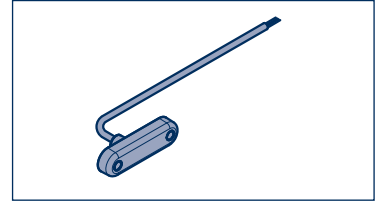
Note: Connecting cables to the EBS are provided in the iC Plus Kit.

2 Component overview

2.3 Component descriptions

AirSave LED display

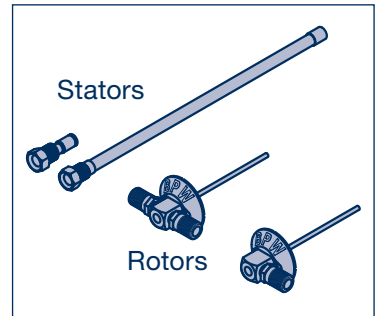
An AirSave LED display assembled on the drawbar trailer/semi-trailer is switched on when the system pumps due to an untight tyre or an untight tyre filling system component.



Stator and rotor

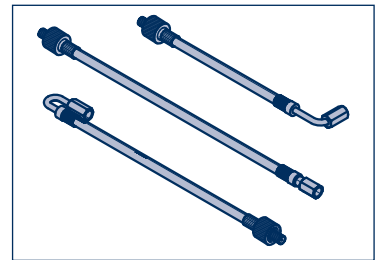
The stator is located within the axle stub and the rotor is fastened to the wheel hub cap. Compressed air flows through a polyamid tube from the AirSave Control Box via a T-piece and through the inside of the axle to the rotating hub via a needle, which extends from the rotor into the stator.

Seals located in the rotor and stator allow rotation without loss of compressed air. The rotor protective cap prevents impurities, such as dirt and water, from entering the wheel end.



Valve hose

The tube is a flexible extension of the tyre valve. A check valve on the knurled end of the tube allows air to flow to the tyre in only one direction. This prevents each tyre from losing air pressure if the tyre filling system or a tyre deflates during operation.



Component overview 2

Axle line kits 2.4

Round axles Ø 146, Offset 0 / 120, Single wheels (RX)

Axle load	Item	Designation	Quantity	BPW item number	BPW item number Axle line kit
8 - 9 t	811	AirSave rotor, single wheels	2	02.0130.00.30	05.801.47.74.0
	826	AirSave valve hose ET 0	2	02.3510.05.10	
	835	AirSave angle piece	1	02.4502.21.00	
8 - 9 t	811	AirSave rotor, single wheels	2	02.0130.00.30	05.801.47.76.0
	825	AirSave valve hose ET 120	2	02.3510.06.10	
	835	AirSave angle piece	1	02.4502.21.00	

Round axles Ø 146, Twin wheels (RX)

Axle load	Item	Designation	Quantity	BPW item number	BPW item number Axle line kit
8 - 9 t	811a	AirSave rotor, twin wheels	2	02.0130.05.30	05.801.47.75.0
	826	AirSave valve hose ET 0	2	02.3510.05.10	
	827	AirSave valve hose, twin	2	02.3510.07.10	
	835	AirSave angle piece	1	02.4502.21.00	

Square axles, offset 120, Single wheels (RV)

Axle load	Item	Designation	Quantity	BPW item number	BPW item number Axle line kit
8 - 9 t	811	AirSave rotor, single wheels	2	02.0130.00.30	05.801.47.79.0
	825	AirSave valve hose ET 120	2	02.3510.06.10	
	833a	AirSave T-piece	1	02.4319.58.00	

Square axles, offset 0, Single wheels (RV)

Axle load	Item	Designation	Quantity	BPW item number	BPW item number Axle line kit
8 - 12 t	811	AirSave rotor, single wheels	2	02.0130.00.30	05.801.47.77.0
	826	AirSave valve hose ET 0	2	02.3510.05.10	
	833a	AirSave T-piece	1	02.4319.58.00	

Square axles, Twin wheels (RV)

Axle load	Item	Designation	Quantity	BPW item number	BPW item number Axle line kit
8 - 12 t	811a	AirSave rotor, twin wheels	2	02.0130.05.30	05.801.47.78.0
	826	AirSave valve hose ET 0	2	02.3510.05.10	
	827	AirSave valve hose, twin	2	02.3510.07.10	
	833a	AirSave T-piece	1	02.4319.58.00	

2 Component overview

2.4 Axle line kits

Axle stub

Item	Designation	Quantity	Note	BPW item number
811	AirSave rotor, single wheels	2		02.0130.00.30
814	BPW AirSave hub cap 10 - 12 t	2		05.801.47.18.0
821	AirSave stator for air hose	2		02.0130.99.20
825	AirSave valve hose ET 120	2		02.3510.06.10
831	Kink protection - spiral & kink protection	2		02.0130.98.20
832	Polyamid tube in the axle beam	2		02.3510.04.10

05.801.47.64.0

Component overview **2**

AirSave basic kits (item 838) **2.5**

AirSave basic system kit for 1 - 2 axle vehicles

	Item	Designation	Quantity	Note	BPW item number	
Control Box	840	Dummy plug for AirSave Control Box Ø 8 mm	2		02.3704.99.00	05.801.47.19.0
	841	AirSave LED display CMP5	1		02.0130.01.30	
	842a	AirSave Control Box	1		02.0130.02.30	
Control Box 141	833	AirSave T-piece	1		02.4319.58.00	05.801.46.28.0
	842b	AirSave Control Box 141	1		02.0130.67.30	
	844	Blind plug warning light	1	factory installed	02.3704.07.10	

AirSave basis system kit for 3 axle vehicles

	Item	Designation	Quantity	Note	BPW item number	
Control Box	841	AirSave LED display CMP5	1		02.0130.01.30	05.801.47.20.0
	842a	AirSave Control Box	1		02.0130.02.30	
Control Box 141	833	AirSave T-piece	2		02.4319.58.00	05.801.46.29.0
	842b	AirSave Control Box 141	1		02.0130.67.30	
	844	Blind plug warning light	1	factory installed	02.3704.07.10	

AirSave basis system kit for 4 axle vehicles

	Item	Designation	Quantity	Note	BPW item number	
Control Box	833	AirSave T-piece	1	01.08.2022 =>	02.4319.58.00	05.801.47.21.0
	841	AirSave LED display CMP5	1		02.0130.01.30	
	842a	AirSave Control Box	1		02.0130.02.30	
Control Box 141	833	AirSave T-piece	3		02.4319.58.00	05.801.46.30.0
	842b	AirSave Control Box 141	1		02.0130.67.30	
	844	Blind plug warning light	1	factory installed	02.3704.07.10	

AirSave basis system kit for 5 axle vehicles

	Item	Designation	Quantity	Note	BPW item number	
Control Box	833	AirSave T-piece	2	01.08.2022 =>	02.4319.58.00	05.801.47.22.0
	841	AirSave LED display CMP5	1		02.0130.01.30	
	842a	AirSave Control Box	1		02.0130.02.30	
Control Box 141	833	AirSave T-piece	4		02.4319.58.00	05.801.46.31.0
	842b	AirSave Control Box 141	1		02.0130.67.30	
	844	Blind plug warning light	1	factory installed	02.3704.07.10	

2 Component overview

2.6 Repair kits

BPW repair kit, BPW AirSave hub cap

Item	Designation	Bearing	Quantity	BPW item number	
				9 t	10 - 12 t
812	BPW AirSave hub cap, incl. O-ring	ECO Plus 3	1	05.801.47.17.0	05.801.47.86.0
	BPW AirSave hub cap	ECO Plus	1	- -	05.801.47.18.0

BPW repair kit for axles up to 07.2022 and all steering axles (S)H...LL / (S)K...LL (Pos. 830)

Item	Designation	Quantity	BPW item number
821	AirSave stator for air hose	2	09.801.09.12.1
831	Kink protection - spiral & kink protection - Screwed joint for air hose gland on the AirSave axle beam	2	
832	Flexible polyamid tube	2	
833	AirSave T-piece (connector for air hoses of the axle sides)	1	
834	Dummy plug for AirSave T-piece Ø 6 mm	1	
840	Dummy plug for AirSave T-piece Ø 8 mm	1	
843	AirSave protective hose	2	
--	AirSave hose connector	1	

BPW kit to convert square axle to version as of 08.2022 (RV)

Item	Designation	Quantity	BPW item number
821	AirSave stator for air hose	2	09.801.09.46.1
832	Flexible polyamid tube	2	
833a	AirSave T-piece	1	
835	AirSave angle piece	2	
843	AirSave protective hose	2	
--	AirSave hose connector	1	

BPW AirSave valve hose kit for twin wheels (Item 824)

Item	Designation	Quantity	BPW item number
826	AirSave valve hose ET 0	2	09.801.09.13.0
827	AirSave valve hose, twin	2	

BPW repair kit, AirSave for steering axles (item 830)

Item	Designation	Quantity	BPW item number
821	AirSave stator for air hose	2	09.801.47.54.0
831	Kink protection - spiral & kink protection - Screwed joint for air hose gland on the AirSave axle beam	2	
832	Polyamid tube in the axle beam 6 x 1 mm, black, L = 1555 mm	2	
833	AirSave T-piece (connector for air hoses of the axle sides)	1	
840	Dummy plug for AirSave T-piece Ø 8 mm	1	
849	Cable tie 540 x 7.5	3	
850	Cable tie 100 x 2.5	1	

Component overview **2**

Repair kits **2.6**

Single wheels, offset 0 / 120

Axle load	Item	Designation	Quantity	BPW item number	Bearing	BPW item number Axle line kit
8 - 9 t	811	AirSave rotor, single wheels	2	02.0130.00.30	ECO Plus 3	05.801.47.23.0
	815	BPW AirSave hub cap 9 t	2	05.801.47.17.0		
	826	AirSave valve hose ET 0	2	02.3510.05.10		
	811	AirSave rotor, single wheels	2	02.0130.00.30	ECO Plus 3	05.801.47.25.0
	815	BPW AirSave hub cap 9 t	2	05.801.47.17.0		
	825	AirSave valve hose ET 120	2	02.3510.06.10		
10 - 12 t	811	AirSave rotor, single wheels	2	02.0130.00.30	ECO Plus 3	05.801.47.93.0
	814	BPW AirSave hub cap 10 - 12 t	2	05.801.47.86.0		
	826	AirSave valve hose ET 0	2	02.3510.05.10		
	811	AirSave rotor, single wheels	2	02.0130.00.30	ECO Plus	05.801.47.26.0
	814	BPW AirSave hub cap 10 - 12 t	2	05.801.47.18.0		
	826	AirSave valve hose ET 0	2	02.3510.05.10		

Twin wheels

Axle load	Item	Designation	Quantity	BPW item number	Bearing	BPW item number Axle line kit
8 - 9 t	811a	AirSave rotor, twin wheels	2	02.0130.05.30	ECO Plus 3	05.801.47.24.0
	815	BPW AirSave hub cap 9 t	2	05.801.47.17.0		
	826	AirSave valve hose ET 0	2	02.3510.05.10		
	827	AirSave valve hose, twin	2	02.3510.07.10		
10 - 12 t	811a	AirSave rotor, twin wheels	2	02.0130.05.30	ECO Plus 3	05.801.47.94.0
	814	BPW AirSave hub cap 10 - 12 t	2	05.801.47.86.0		
	826	AirSave valve hose ET 0	2	02.3510.05.10		
	827	AirSave valve hose, twin	2	02.3510.07.10		
	811a	AirSave rotor, twin wheels	2	02.0130.05.30	ECO Plus	05.801.47.27.0
	814	BPW AirSave hub cap 10 - 12 t	2	05.801.47.18.0		
	826	AirSave valve hose ET 0	2	02.3510.05.10		
	827	AirSave valve hose, twin	2	02.3510.07.10		

2 Component overview

2.7 Spare parts


Spare parts

Item	Designation	Dimension	BPW item number
811	AirSave rotor, single wheels	L = 90 mm	02.0130.00.30
811a	AirSave rotor, twin wheels	L = 90 mm	02.0130.05.30
821	AirSave stator for axle stub	SW 16, short - 43 mm	02.0130.99.20
		SW 16, long - 287 mm (for round axles without tube system)	02.0130.19.30
825	AirSave valve hose ET 120		02.3510.06.10
826	AirSave valve hose ET 0	Single and twin wheels	02.3510.05.10
827	AirSave valve hose, twin	Twin wheels	02.3510.07.10
841	AirSave LED display CMP5		02.0130.01.30
842a	AirSave Control Box		02.0130.02.30
842b	AirSave Control Box 141		02.0130.67.30
850	EBS connecting cable	AirSave Knorr / 4pol. HDSCS	02.1819.37.10
		AirSave Knorr / G2.2 (open end)	02.1819.38.10
		AirSave Knorr / G2.2 (Y-cable)	02.1819.45.10
		AirSave Wabco / SUB	02.1819.39.10
		AirSave Wabco / GIO5	02.1819.40.10
		AirSave Wabco / SUB (Y-cable)	02.1819.44.10
		AirSave Haldex / AUX	02.1819.41.10
		AirSave Y-Kabel iC Plus	02.1819.42.10

Installation 3

Assembling the hub cap and rotor 3.1

3.1 Assembling the hub cap and rotor

 During disassembly / assembly, the wheel can remain assembled on the wheel hub.

Version as of 08.2022 – original equipment

- [1] Remove the transport protection from the fitted hub cap.
- [2] Check the AirSave hub cap adapter (814) for damage and cracks.
- [3] Clean the face-side contact surface of the AirSave hub cap adapter.
- [4] Remove the plug from the hub cap adapter using a screwdriver (Phillips).
Continue with work step [7], page 26.

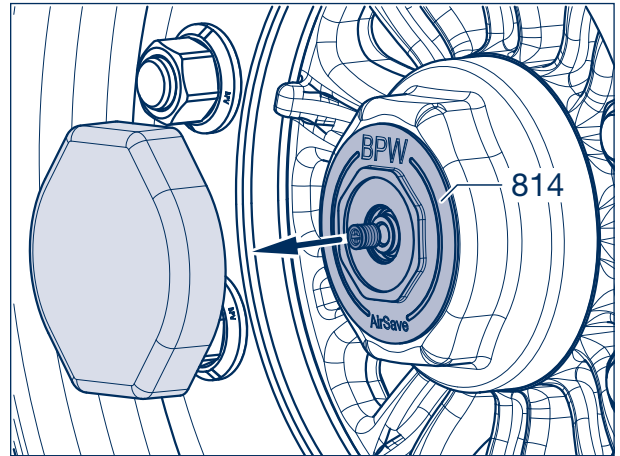


Figure 1

Version up to 07.2022 and in the case of hub caps as spare parts

- [1] Prevent the vehicle from rolling away.
- [2] Unscrew the hub cap (SW 110) from the wheel hub.
- [3] Remove the O-ring (459) from the wheel hub groove. (The O-ring is not required for axles with ECO Plus Unit).

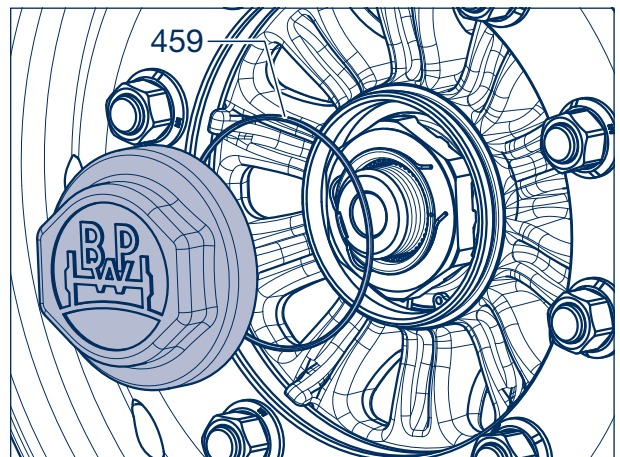


Figure 2

- [4] Insert a new O-ring (459) into the groove of the wheel hub (arrow). (The O-ring is not required for axles with ECO Plus Unit).
- [5] Cover the pre-assembled hub cap for BPW AirSave (814) in the area of the O-ring contact surface (for ECO Plus 3 only) and the thread with a thin coat of BPW special longlife grease **ECO Li Plus**.
- [6] Screw the hub cap onto the wheel hub and tighten to the prescribed tightening torque.

Tightening torques:

ECO Plus 3 hub cap	SW 110	350 Nm
ECO Plus hub cap	SW 110	800 Nm

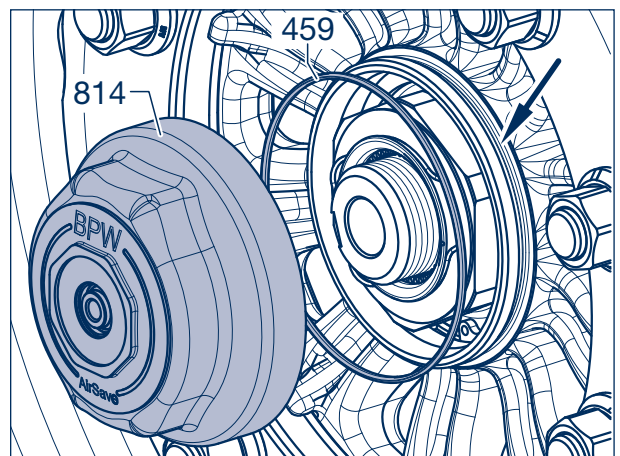


Figure 3

3 Installation

3.1 Assembling the hub cap and rotor

- [7] Check soft sealing ring of the rotor (811 or 811a, depending on tyre) for correct seat at the end of the thread, push up to the bumper if necessary (Fig. 4, Section).
- [8] Guide the rotor into the adapter (817) of the hub cap and the stator (821) in the axle stub and push until contact is made. There will be a slight resistance.
- [9] Screw the rotor into the adapter and hand-tighten (approx. 6 Nm).

**Installation and repair guide!**

When fitting the rotor, hold the hub cap adapter (817) to make sure that the rotor is screwed in as far as it will go. The valve connection is aligned afterwards by rotating the hub cap adapter (SW 55).

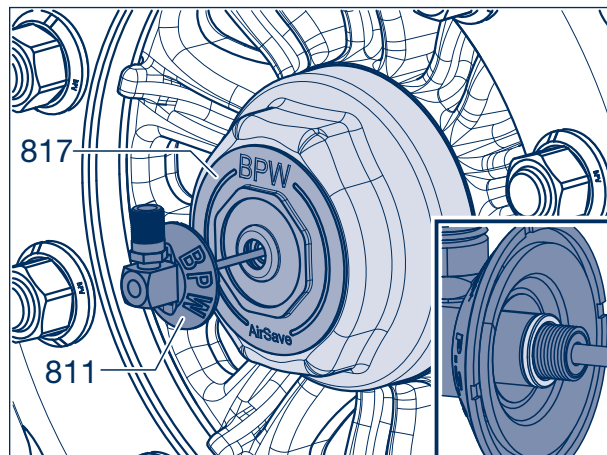


Figure 4




[AirSave on youtube](#)

Installation 3

Hosing of axle stubs 3.2

3.2 Hosing of axle stubs

- [1] Push the air pipe (832, polyamide tube, length 1350 mm) through the central bore hole of the axle stub.
- [2] Slide the air pipe into the stator (821) up to the bumper. Make sure that the pipe ends are cut off at right angles to the tube.

 The connecting lines from the axle lines to the control box are routed by the vehicle manufacturer in accordance with the vehicle conditions and are not included in the scope of supply of BPW Bergische Achsen KG.
(Control box connections for the connecting lines $\varnothing = 8 \times 1 \text{ mm}$)

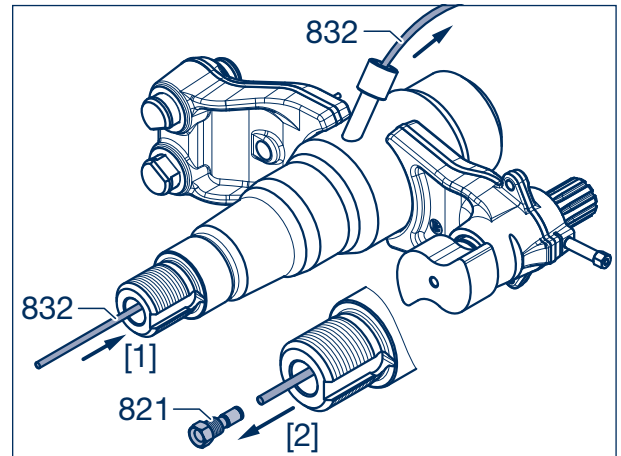


Figure 5

- [3] Push the stator all the way into into the axle stub together with the air pipe.
- [4] Screw the stator (821) into the axle stub using a box spanner (SW 16) and tighten to a torque of 40 Nm.

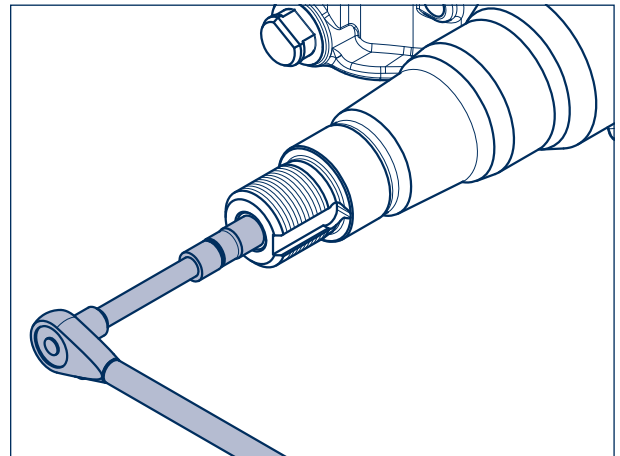


Figure 6

- [5] Push the anti-kink adapter (831b) onto the air pipe and screw it into the welded hose gland (arrow) on the stub axle. Hand-tighten with a spanner (SW 24) (5 Nm).
- [6] Push the spiral-shaped anti-kink device (831a) onto the air pipe and screw it by hand (5 Nm) onto the adapter that is already fitted (831b). This fixes the air pipe onto the axle beam and seals it.

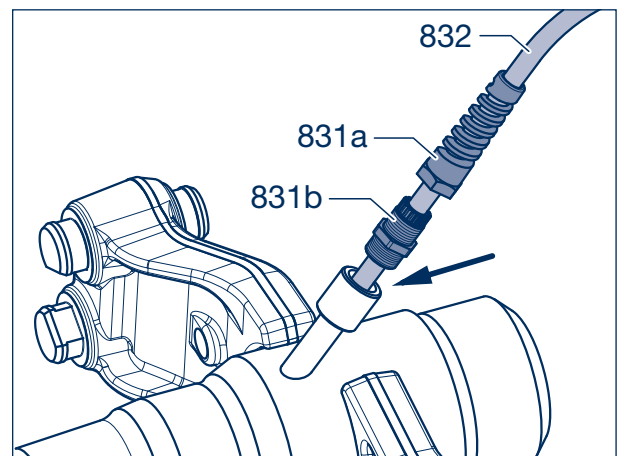


Figure 7

3 Installation

3.3 Assembling the valve hoses

3.3 Assembling the valve hoses



Installation and repair guide!

When laying the valve hoses, make sure they do not become kinked.

Wheel nuts must not be covered!

Contact with wheel nuts or wheel studs must be avoided to prevent chafe marks.

- [1] Attach valve hose (825, 826 or 827, depending on tyre) to the tyre valve, use a valve extension if necessary.
- [2] Hand-tighten the union nut (SW 11) on the valve hose and then tighten a further half-turn using a spanner.
- [3] Check that the air can penetrate by pushing the valve needle in the valve hose.
- [4] Turn the hub cap adapter (817) using a spanner (SW 55) or spring pliers until the screwed joint of the rotor can be connected to the valve hose (see Figure 9).
Do not turn back the rotor!!
- [5] Hand-tighten the valve hose on the AirSave rotor (811 or 811a).
- [6] Check valve hose for untightness.

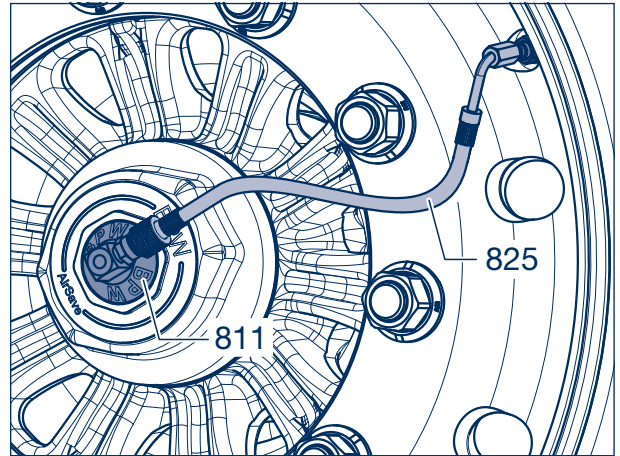


Figure 8

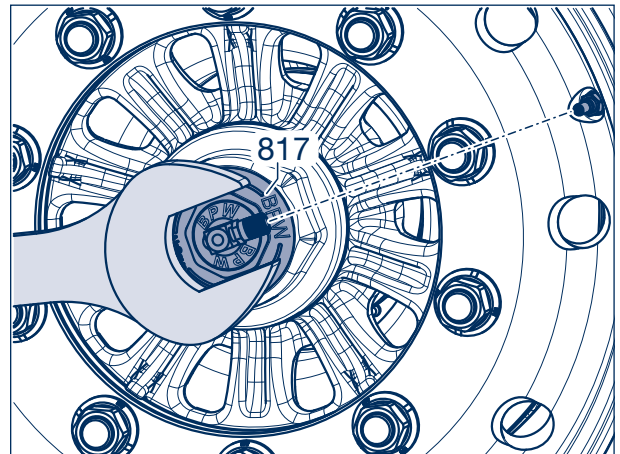


Figure 9



Installation and repair guide!

The valve hose must not be pointing in the screw-off direction of the AirSave rotor, see Figure 10.



[AirSave on youtube](#)

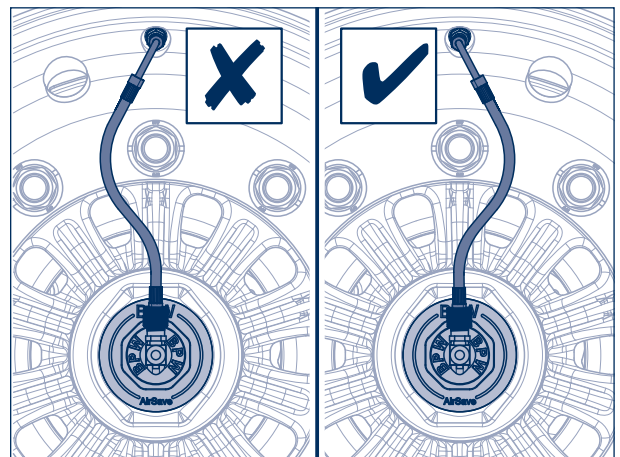


Figure 10

Installation 3

Installation of the AirSave Control-Box 3.4

AirSave Control Box 141 3.4.1

3.4 Installation of the AirSave Control Box

3.4.1 AirSave Control Box 141



Installation and repair guide!

When drilling the fastening holes, pay attention to power and pneumatic lines and to mounting parts.

To connect to the vehicle cabling, use only round cables with a cross-section $\varnothing 6 - 10$ mm to guarantee the sealing of the PG11 screwed joint.

The AirSave Control Box should be assembled in a protected and easily accessible area, in the vicinity of the pneumatic fittings.

A clearance between the outlet and adjacent parts must be maintained.

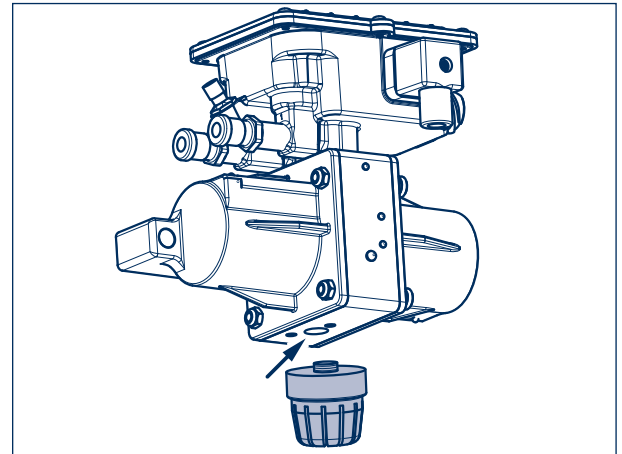


Figure 11

- [1] Screw the exhaust into the lower hole of the AirSave Control Box 141 (842b).
- [2] Hold the AirSave Control Box 141 (842b) in the required installation position.

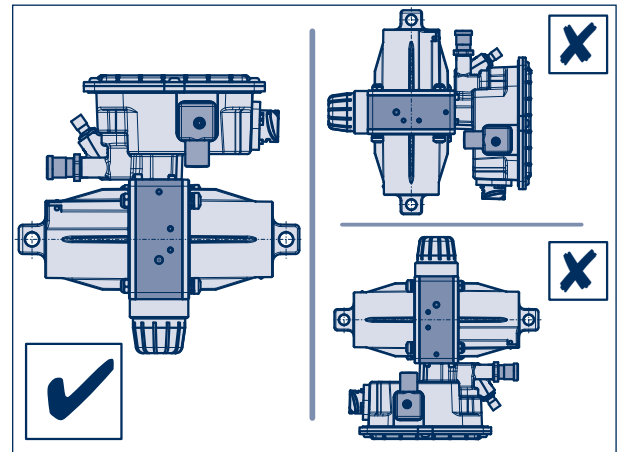


Figure 12

- [3] Mark positions for the fixing holes.
- [4] Drill holes $\varnothing 11$ mm at a distance of 191.1 mm and deburr lightly.

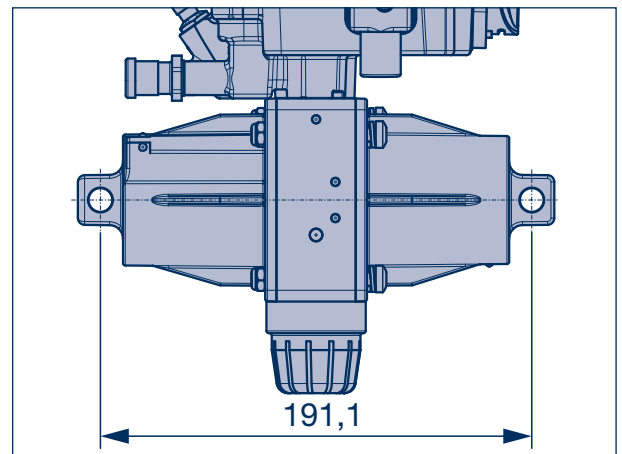


Figure 13

3 Installation

3.4 Installation of the AirSave Control-Box

3.4.1 AirSave Control Box 141

- [5] Insert the AirSave Control Box into the bore holes on the frame with the fixing screws and the spacer. Make sure that the control box is correctly aligned, see Figure 12.
- [6] Screw on the lock nuts (SW 17) with washers and tighten to a tightening torque of 40 Nm.

**Installation and repair guide!**

When screwing the lock nuts onto the screws, a torque of approx. 40 Nm must be overcome for a short time. This is necessary to overcome the resistance of the plastic lock.

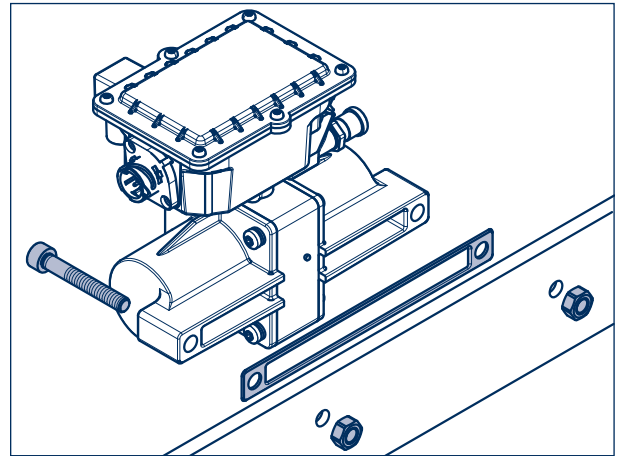


Figure 14

Installation 3

Installation of the AirSave Control-Box 3.4

AirSave Control Box 3.4.2

3.4.2 AirSave Control Box



Installation and repair guide!

When drilling the fastening holes, pay attention to power and pneumatic lines and to supporting parts.

To connect to the vehicle cabling, use only round cables with a cross-section $\varnothing 6 - 10$ mm to guarantee the sealing of the PG11 screwed joint.

The AirSave Control Box should be assembled in a protected and easily accessible area in the vicinity of the pneumatic fittings.

The switch box cover plate must be removable for adjustment work and must not be locked.

There must be a clearance of min. 50 mm in front of the vent.

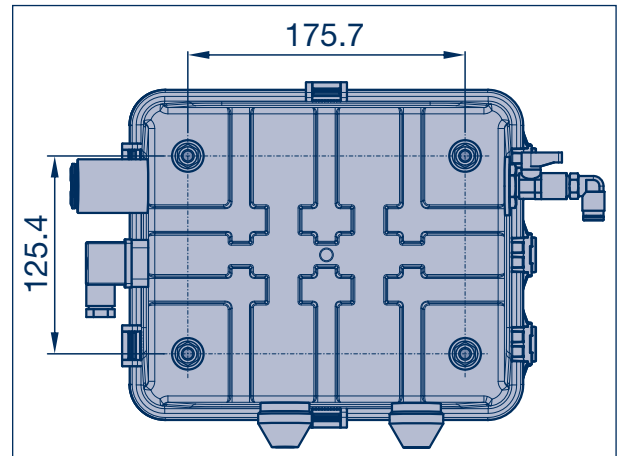


Figure 15

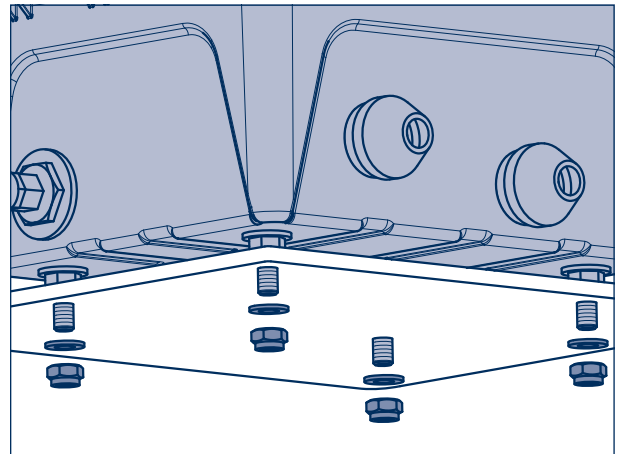



Figure 16

- [1] Hold the AirSave Control Box (842) in the required installation position.
- [2] Mark positions for the fixing holes.
- [3] Drill $\varnothing 9$ mm holes and deburr slightly.
-  Drilling template see page 59.
- [4] Insert the AirSave Control Box into the bore holes with the fixing screws.
- [5] Screw on the lock nuts (SW 13) with washers and tighten to a tightening torque of 25 Nm.

3 Installation

3.5 Installation of the cables on the AirSave Control Box 141



Installation and repair guide!!

General information:

Do not use any tools when assembling or disassembling the connection cable.

The cable ties for the installation of the connection cables are not included in the scope of delivery.

Handling plug connections and electrical cables

To avoid stress fractures, leaks, oxidised contacts and resulting consequential damage, the following should be observed:

- Do not expose transport containers to environmental influences (e.g. rain, snow, dust, etc.) as there may be open connectors in the containers.
- Do not expose open connectors to direct environmental influences (e.g. rain, snow, dust, etc.).



Installation and repair guide!

Laying electrical cables

During laying/installation, cables must be attached to rigid components with a firm and permanent connection so that they are not exposed to mechanical stress (e.g. shock, friction, abrasion).

When connecting the cables, ensure that the radii are as large as possible ($r = 10 \times \text{diameter}$).

The cable connection must be secured without tension (e.g. with cable ties). There must be no misalignment or deflection of the connection, and no force acting on it.

When fastening with cable ties, do not tighten them too tightly.

Damage to the cable insulation or the cable harness in the cable itself must be avoided.

A freely movable distance of approx. 120 mm must be maintained before and after plug connections.

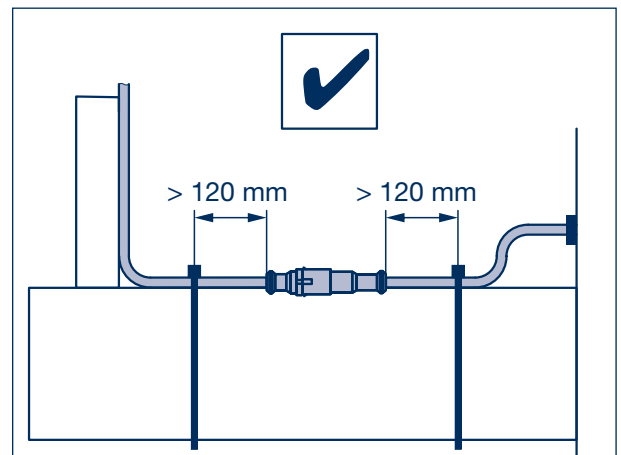


Figure 17

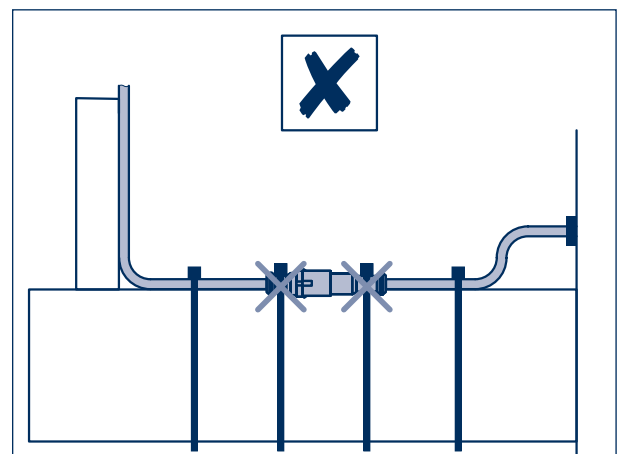


Figure 18

Installation 3

Installation of the cables on the AirSave Control Box 141 3.5

Connecting cables to the AirSave Control Box

- [1] Align the centring groove of the connecting plug with the connector of the control unit.
- [2] Connect the connecting cable to the control unit by squeezing it firmly.
- [3] Secure the connection by turning the bayonet lock firmly.
- [4] Check the connection for optimal fit.

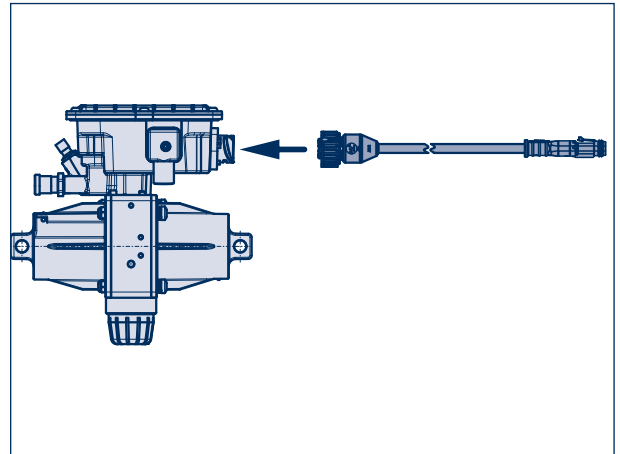


Figure 19

EBS cable connection

- [5] Align the centring groove of the connecting plug with the connector of the EBS unit.
- [6] Connect the connecting cable to the EBS following the manufacturer's instructions.
- [7] Secure the connection following the manufacturer's instructions.

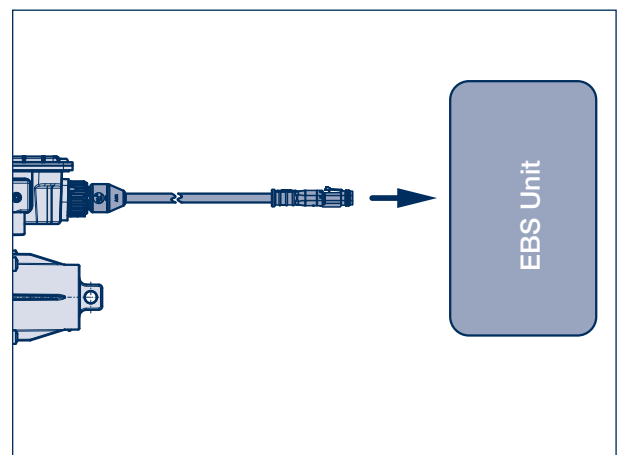


Figure 20

Connection to the TC telematics gateway

In addition to the connection to the EBS of the vehicle, the AirSave system activities and pressure warnings can be recorded and transmitted via a telematics gateway from Idem.

For this purpose, the telematics gateway is connected to the AirSave Control Box as shown in Figure 21 using the AirSave Y-cable (AirSave Y-cable iC Plus BPW, part no.: 02.1819.42.10).

For all matters relating to idem TC Trailer Gateway products, the idem telematics GmbH technical support team is available from Monday - Friday between 08:00 and 18:00 CET.

Telephone: +49 (0)89 720 13 67 10
E-mail: support@idemtelematics.com

Before contacting the support team, please be sure to have the relevant product and vehicle data to hand.

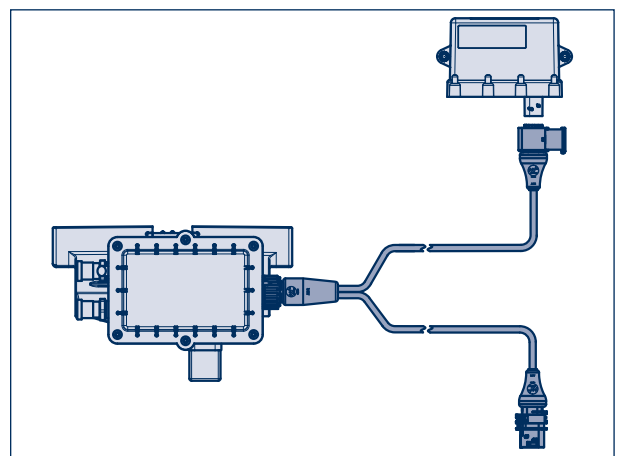


Figure 21

3 Installation

3.6 Installation of the AirSave LED display and adhesive label

3.6 Installation of the AirSave LED display and adhesive label




Installation and repair guide!

The AirSave LED display must be visible to the driver in the rear-view mirror!

The connection lines to the AirSave Control Box must be laid such they are protected from damage and chafing.

When using the Control Box 141, the use of the AirSave LED display is optional.

- [1] Assemble the AirSave LED display (841) in the driver's rearward field of vision.
 - [2] Drill the hole for the cable gland (\varnothing 11 mm) and for the fixing screws if necessary.
-  Drilling template see page 59.
- [3] Lay connection lines to the Air Save Control Box (842a and 842b) and connect according to the sketch.

Function check:

For the function check, remove the cover plate from the test connection (arrow) and vent some air. When the installation or connection is correct the AirSave LED display starts to flash and the AirSave Control Box equalises the pressure. Finally assembly the cover plate.

- [4] Attach the adhesive label supplied in the vicinity of the AirSave LED display.

AirSave LED display flashes:

AirSave is working and equalising the pressure loss in the tyre. The journey must not be interrupted.

AirSave LED display flashes for longer than 10 minutes:

The tyres, compressed air lines and connections must be checked.

AirSave LED display illuminates continuously:

AirSave can no longer equalise the pressure loss in the system or there is a malfunction.

A service centre must be sought immediately.

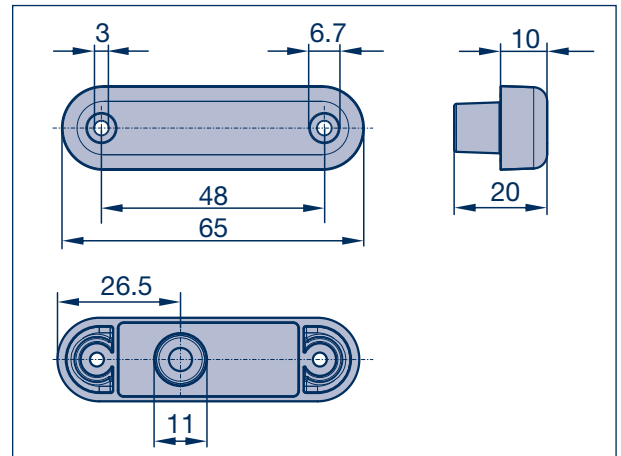


Figure 23

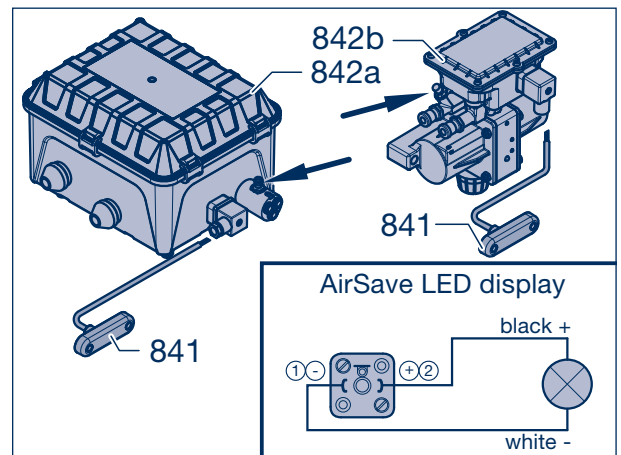


Figure 24

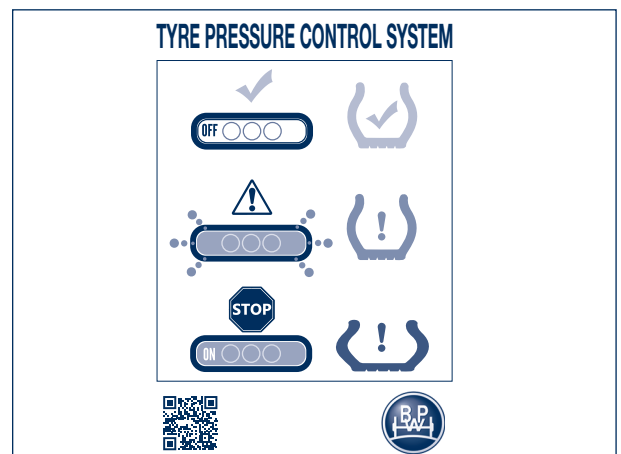


Figure 25

Installation 3

Assembling the pressure lines 3.7

Tubeless round axles Ø 146 as of 08.2022 3.7.1

3.7 Assembling the pressure lines

3.7.1 Tubeless round axles Ø 146 as of 08.2022

- [1] Remove the plug (1, SW 14) from the axle tube.
- [2] Screw the AirSave angle piece (835, SW 22) into the axle beam.
- [3] Align the angle piece and tighten the integrated nut, incl. O-ring, to a specified tightening torque of **35 Nm** (30 - 40 Nm).

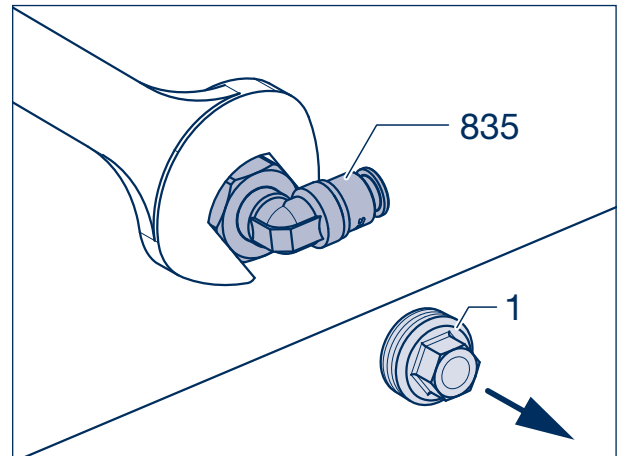


Figure 26

- [4] Cut off the air pipe Ø 8 x 1 mm at the end with a straight cut.
- [5] Push the air pipe into the AirSave angle piece (835) as far as it will go. You will feel resistance at two points. The insertion length is approx. 20 mm.



Installation and repair guide!

The air pipe is inserted far enough if two successive locking steps have been cleared and the line has been mounted to the bumper.

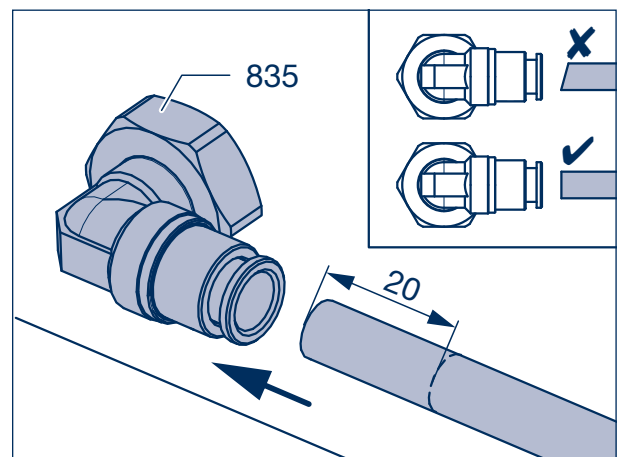


Figure 27

3 Installation

3.7 Installation of the pressure lines

3.7.2 Axles with tube system as of 08.2022

3.7.2 Axles with tube system as of 08.2022

- [1] Remove the plug (840) from the angle piece (835).
To do this, press the face-side ring into the angle piece while removing the plug.
- [2] Fit the air pipe, see chapter 3.7.1 work steps [4] and [5].

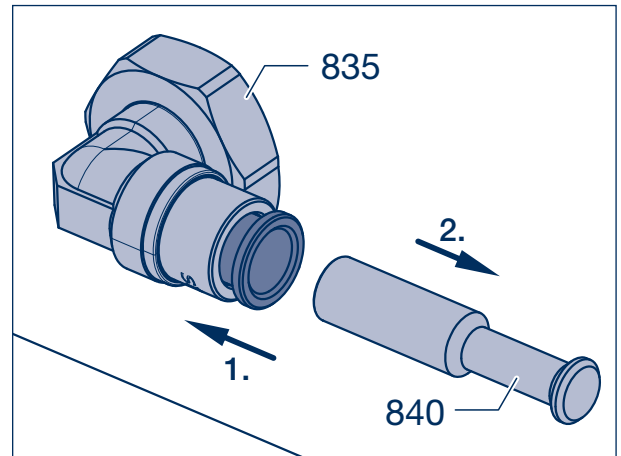


Figure 28

Installation 3

Installation of the pressure lines 3.7

Connecting to the Control Box 141 3.7.3

3.7.3 Connecting to the Control Box 141



Installation and repair guide!

Before assembling the compressed air lines, the pneumatic circuit must be depressurised.

The pressure lines to the AirSave Control Box 141 and the axles must be laid such that they are protected from damage and chafing.

The line position/length must be selected such that the lines are not damaged as the axle extends and compresses.

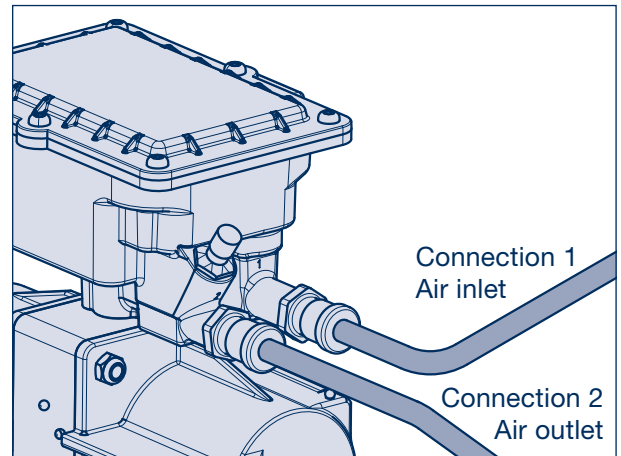


Figure 29

- [1] For axles with air suspension, connect supply lines ($\varnothing 8 \times 1$ mm PA line) to the AirSave Control Box 141 (Figure 29) directly at the air tank of the trailer air suspension.

An inlet pressure of 6.0 bar is required to ensure that the Control Box is functioning correctly.

In the case of mechanical or hydraulic suspensions, the connection to the brake circuit must be made with an additional 6.0 bar pressure limit valve.

Axles with tube system

- [2] Insert the compressed air lines ($\varnothing 8 \times 1$ mm) into the connection 1 on the Control Box 141 and connect to the AirSave T-piece on the axle. If the vehicle has other axles, a T-piece must also be integrated into the pneumatic circuit of each one, see Figure 30. No more than 5 axles per Control Box are allowed to be connected. A second Control Box must be installed for 6 axles or more.

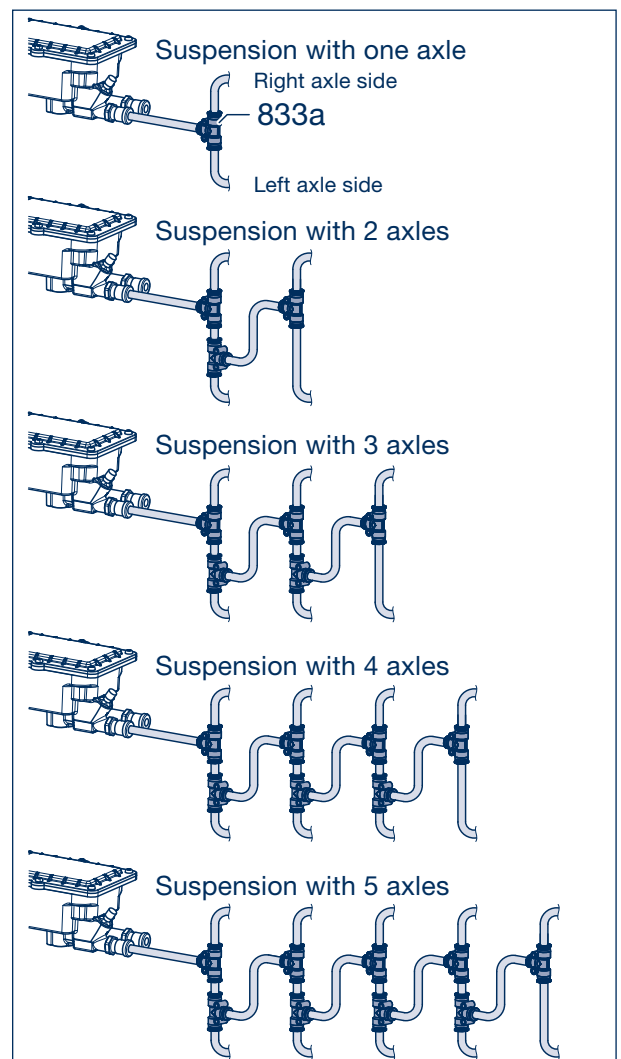


Figure 30

3 Installation

3.7 Installation of the pressure lines

3.7.4 Connecting to the Control Box

3.7.4 Connecting to the Control Box



Installation and repair guide!

Before assembling the compressed air lines, the pneumatic circuit must be depressurised.

The pressure lines to the AirSave Control Box and the axles must be laid such that they are protected from damage and chafing.

The line position/length must be selected such that the lines are not damaged as the axle extends and compresses.

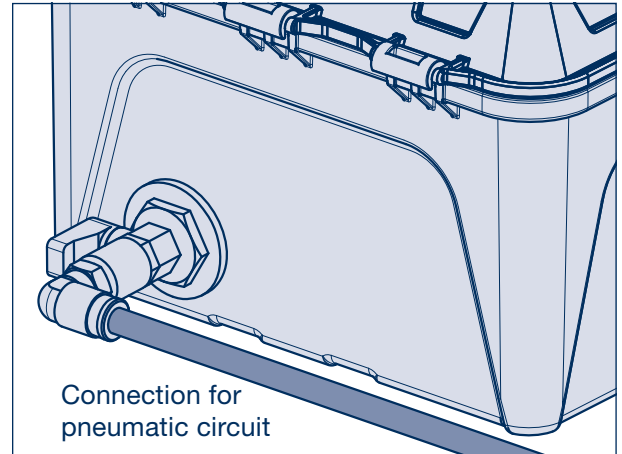


Figure 31

- [1] For axles with air suspension, connect supply lines (\varnothing 8 x 1 mm PA line) to the AirSave Control Box (Figure 31) directly at the air tank of the trailer air suspension.

An inlet pressure of 6.0 bar is required to ensure that the Control Box is functioning correctly.

In the case of mechanical or hydraulic suspensions, the connection to the brake circuit must be made with an additional 6.0 bar pressure limit valve.

- [2] Insert reducers (839) into the pressure outlet on the Control Box.
As of 10/12/2020, the connection for the supply line on the AirSave T-piece (833) has been designed for a diameter of 8 mm. Reducers are not used in these versions!
- [3] Unoccupied compressed air outlets must be sealed using dummy plugs (840).
- [4] Remove dummy plugs (834, 840) from the AirSave T-piece (833).

Axles with tube system

- [5] Insert the compressed air lines (\varnothing 8 x 1 mm) into the connection on the Control Box and connect to the AirSave T-piece on the axle. (On versions released up to 09/10/2020, compressed air lines (\varnothing 6 x 1 mm) and reducers (839) must be used at the Control Box connection.)
If the vehicle has other axles, a T-piece must also be integrated into the pneumatic circuit of each one, see Figure 32.
No more than 5 axles per Control Box are allowed to be connected. A second Control Box must be installed for 6 axles or more.

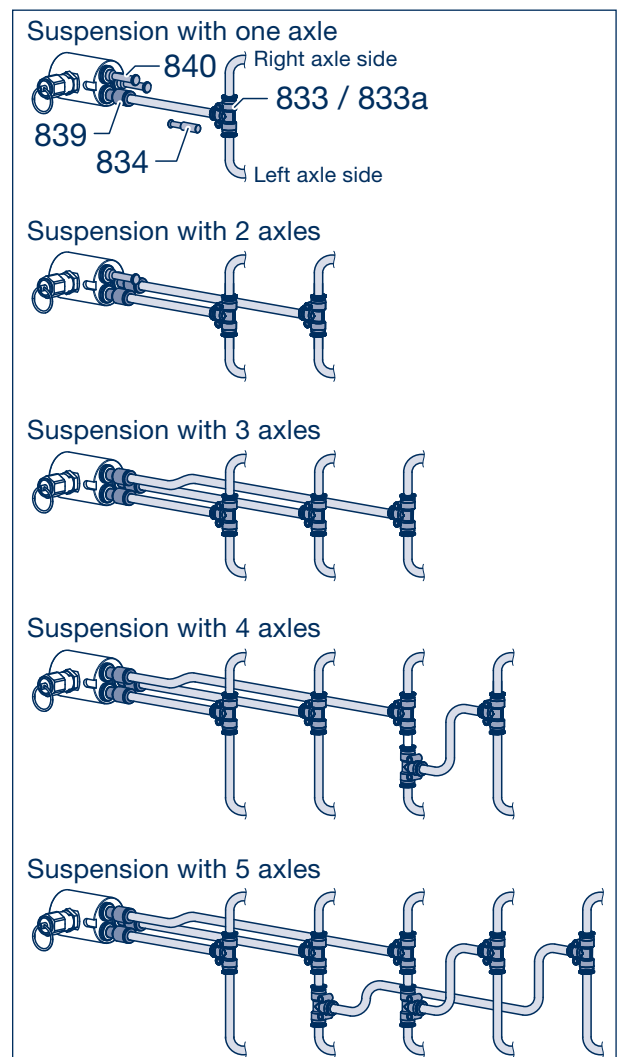


Figure 32

Installation 3

Installation of the pressure lines 3.7

Screwing in the T-piece 3.7.5

For assembly, the knurled nuts must be unscrewed and slid over the relevant air pipe.

Push the air pipe onto the AirSave T-piece as far as it will go (arrow) and screw hand-tight with the knurled nuts.

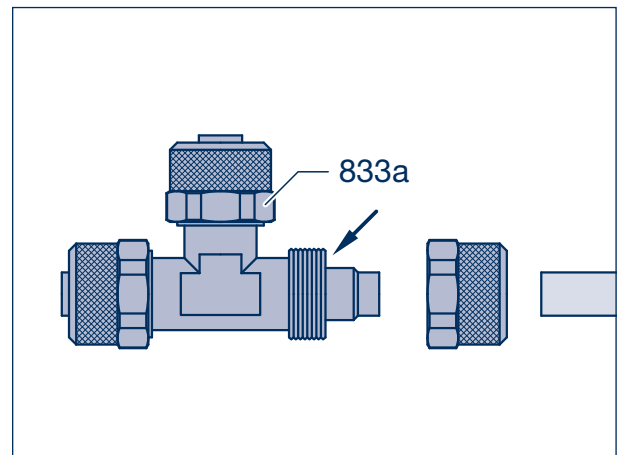


Figure 33

3 Installation

3.7 Installation of the pressure lines

3.7.6 Connecting the steering axles

Steering axles N...LL / N...L



Note:

For steering axles from the N...LL / N...L series, an angle piece (835) is inserted into each steering pivot assembly on the axle. Due to the limited installation space in the vehicle, the centreline AirSave T-piece (the connecting piece for compressed air lines on the axle sides) is no longer required. The \varnothing 8 mm air pipes are connected to the AirSave T-piece (833a) on the vehicle frame and routed to the control box.

The axles are only equipped with AirSave up to the angled piece in the steering arm groups.

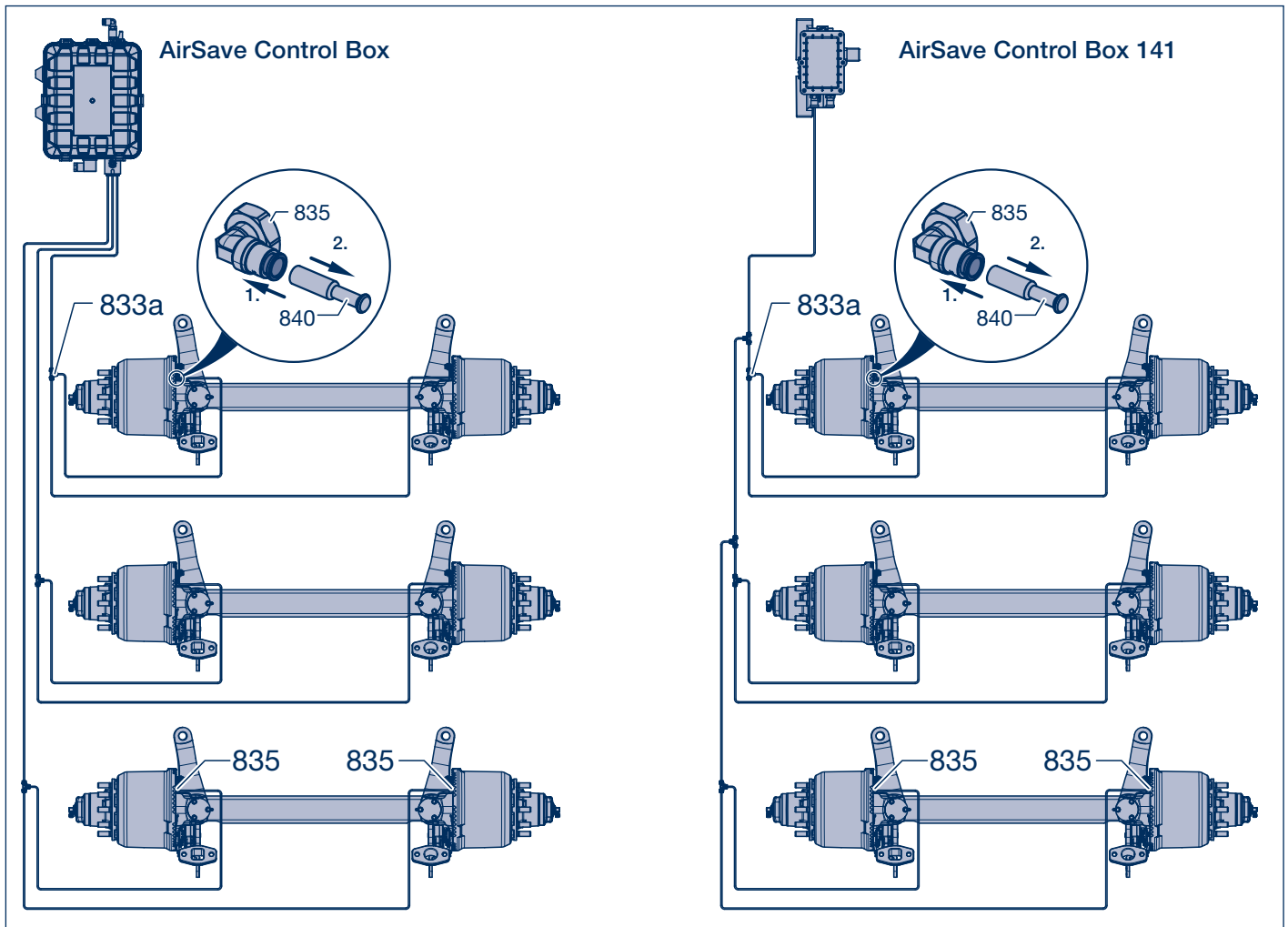


Figure 34

Installation instructions 4

Installation in air-sprung axles:

The control box is connected to the air suspension storage tank. If there are several reservoirs, the replacement reservoir or the accessory reservoir is used.

Installation in mechanically sprung axles:

It is permissible to connect the control box to the brake reservoir, if an additional pressure limit valve is connected between them. If there is an additional storage container, it is preferable to mount the control box onto this.

General

Air connections with an M22 thread are generally required for both the reservoir and the EBS valve.

The installation of a separate pressure relief valve is not absolutely necessary, as this is included in the control box.

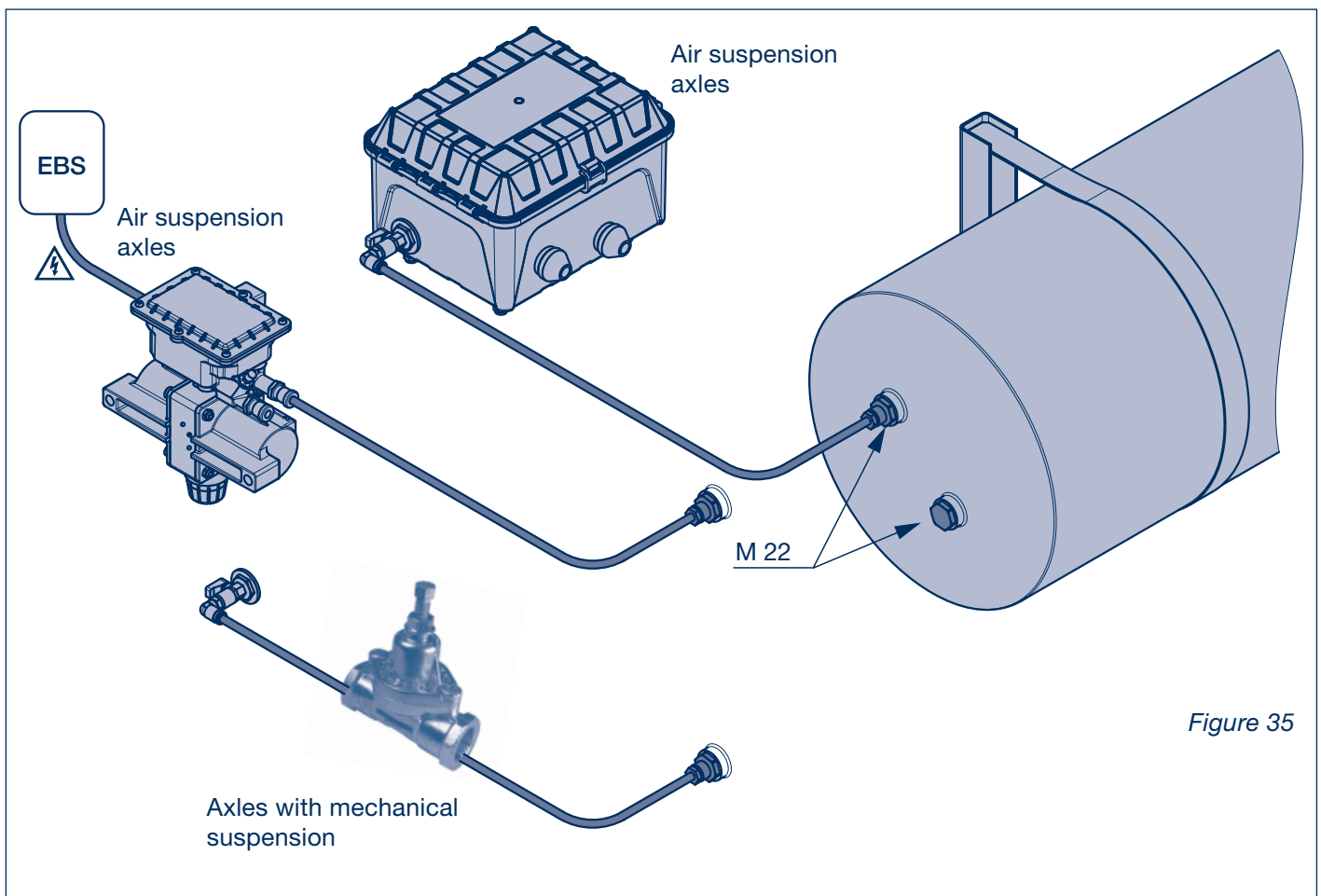


Figure 35

5 Setting into operation

5.1 AirSave Control Box 141

5.1.1 Setup for initial operation



Note:

The AirSave Control Box 141 can only be used in combination with the following electric braking systems:

- Haldex EBS from Version EB+ 4.0
- Wabco TEBS from Version 6 with software version 6.5
- Knorr EBS from Version 2.2

To ensure functionality and compatibility between the towing vehicle and BPW AirSave, the towing vehicle must comply with the ECE R141 standard. If problems arise, it may be that the installed EBS is not yet ECE R 141 compliant. If this is the case, contact the EBS manufacturer.

A service kit is required for the commissioning of the Control Box 141:

AirSave ECE R 141 cable (laptop) kit (BPW item number 02.1819.43.10)

With the help of a laptop, a CAN reader and the software for the Control Box 141, the CAN data can be read out and the system parameter input can be configured.

The software can be downloaded from the Download Centre on the BPW website.

A suitable PC/laptop with Windows 10 or later is required.

5.1.1 Setup for commissioning

The following prerequisites must be met in order to carry out commissioning:

- The EBS (electronic braking system) must be fully assembled and the EBS end of line test must have been successfully completed.
- AirSave must be fully assembled.
- The AirSave Control Box 141 is connected to a power source (12 V/24 V).
- The AirSave Control Box 141 is connected to a compressed air supply.
- The EBS is configured for communication with AirSave. Consult the EBS manufacturer about the parameter input of the EBS.

[1] Remove the AirSave connecting cable to the EBS.

[2] Connect the service kits to the AirSave Control Box 141, to the AirSave connecting cable to the EBS, and to the laptop.

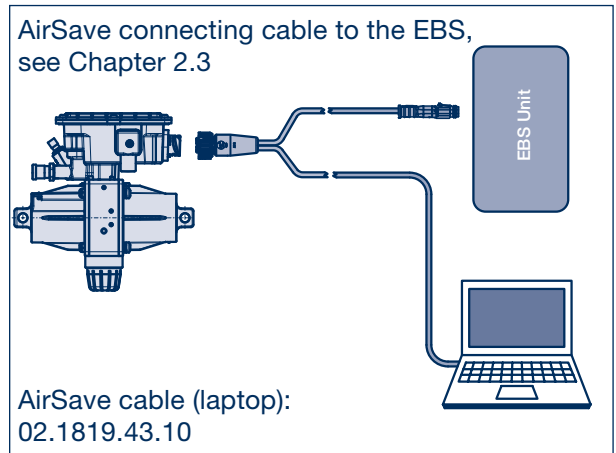


Figure 36

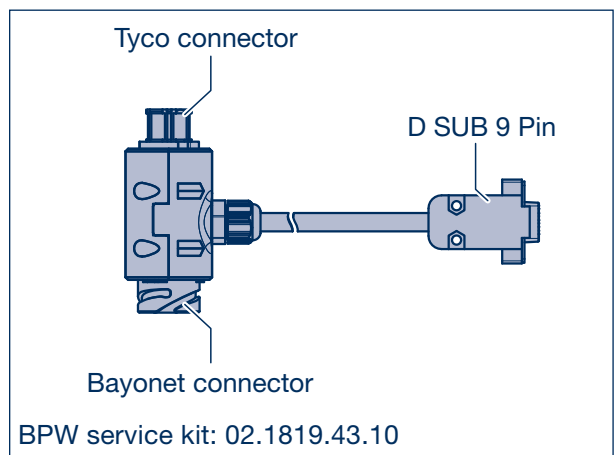


Figure 37

Setting into operation 5

AirSave Control Box 141 5.1

Software configuration 5.1.2

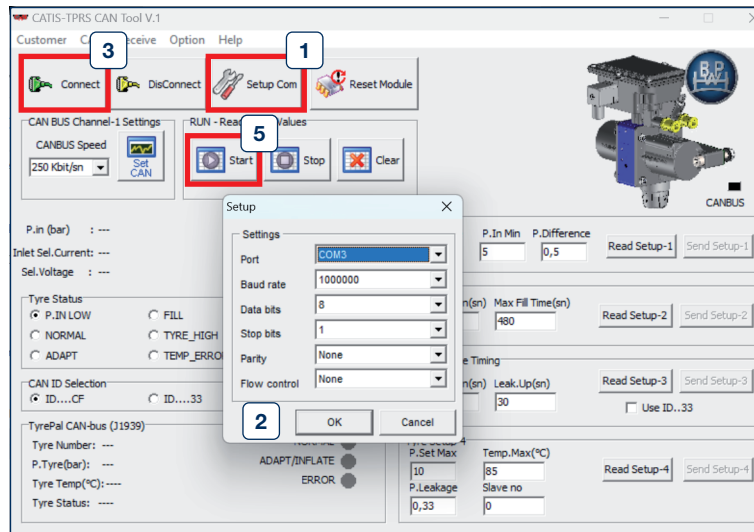


Figure 38

- [1] Open the software and in the „Setup COM“ tab, select the port „COM3“.
- [2] Click on „OK“ to confirm the selection.
- [3] Click on the „Connect“ tab to connect with the Control Box 141.
- [4] CAN communication is configured when the CANBUS light flashes (see Figure 39).
- [5] Optionally, CAN communication can also be configured by clicking on “Start”.

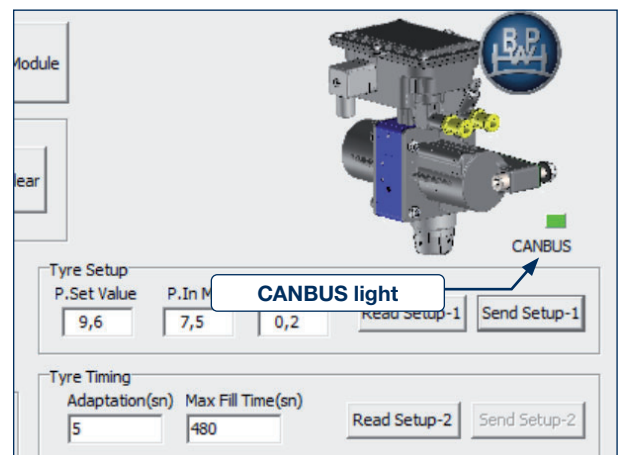


Figure 39

5 Setting into operation

5.1 AirSave Control Box 141

5.1.3 Checking and adjusting the outlet pressure

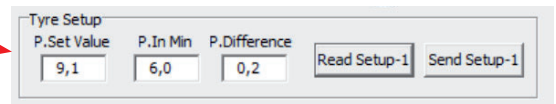
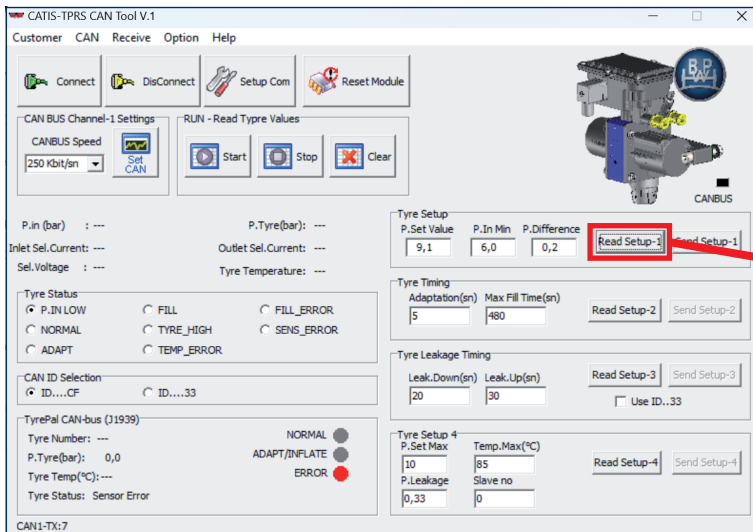


Figure 40

5.1.3.1 Checking the outlet pressure

Checking using the pressure gauge

- [1] Remove cap on the pressure connection (Figure 41).
- [2] Connect pressure gauge to the test connection (thread 8V1). (Attention, pressure gauge is not included in the scope of supply)!
- [3] Read the pressure on the pressure gauge.
- [4] Remove pressure gauge.
- [5] Relieve pressure at the valve.
- [6] Wait for the AirSave Control Box 141 pumping process and then reassemble the pressure gauge.
- [7] Repeat the test procedure twice.
- [8] Remove the pressure gauge and screw on the cap.

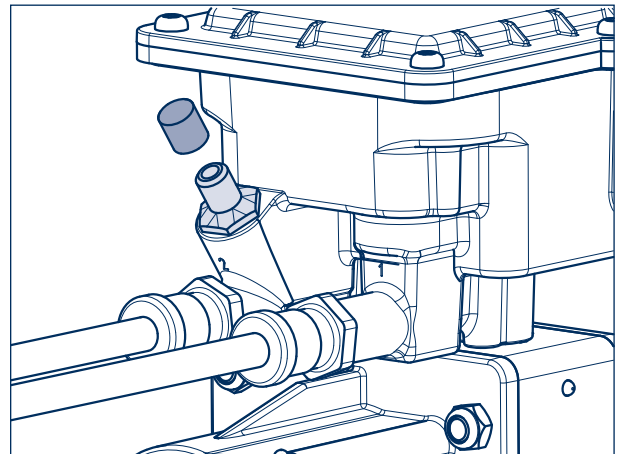


Figure 41

Checking using the software

- [1] Read the current parameters by clicking on the „Read Setup-1“ button, see Figure 40.

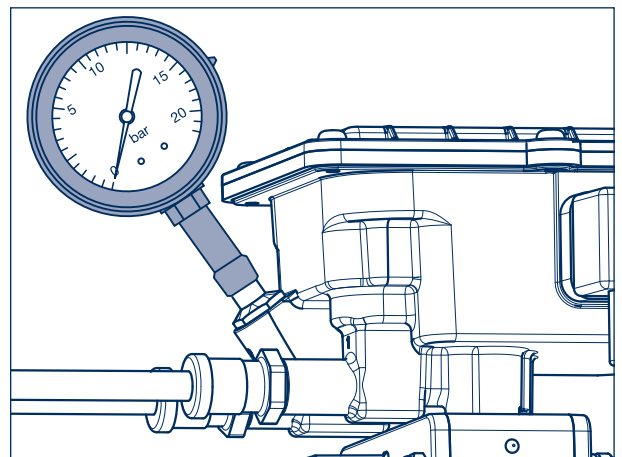


Figure 42

5 Setting into operation

5.1 AirSave Control Box 141

5.1.4 End of line test



Note:

Carrying out an end of line test is not mandatory, but is recommended.

The axles can be filled with compressed air via the test connection (max. 0.5 bar below the outlet pressure).

E.g. if outlet pressure = 9.0 bar, pressure in the axles is at least 8.5 bar

End of line test using the software

Communication test – system malfunction

- [1] Adjust the parameter P_{in} (see Chapter 5.1.3.2) and set the value above the current inlet pressure. (e.g. existing inlet pressure = 7.5 bar, adjust P_{in} to 8 bar).
Alternatively, the air supply to the AirSave Control Box 141 can be disconnected.
- [2] Checking the communication/malfunction:
 - a) Communication is established when the traffic light changes colour
 - b) A warning message is sent when the red traffic light comes on
 - c) The external warning light comes on without flashing (optional)
- [3] If the result is positive, set the parameter P_{in} to the original value or the desired minimum inlet pressure, or reconnect the air supply.

Communication test – system malfunction

- [4] Release air through the test valve and reduce the outlet pressure by at least P_{dif} .
- [5] Checking the function:
 - d) The Control Box 141 starts pumping and the outlet pressure increases
 - e) Communication is established (the traffic light changes to red)
 - f) The set outlet pressure is reached (the AirSave Control Box 141 stops pumping and the traffic light changes to green)
 - g) The external warning light flashes (optional).
- [6] If the result is positive, the end of line test has been successfully completed.
- [7] Remove the service kit and reconnect the AirSave Control Box 141 to the EBS cable.

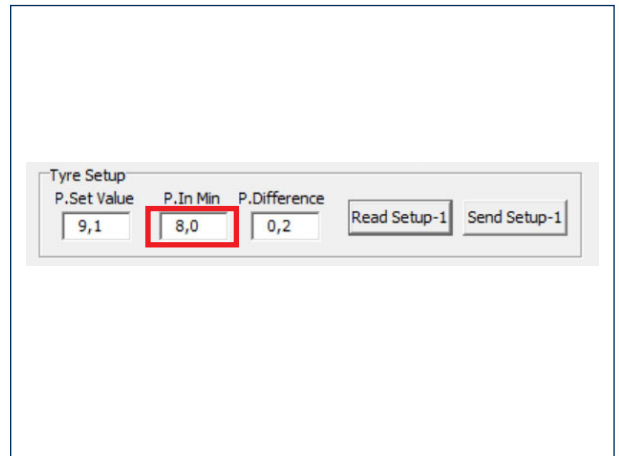


Figure 44

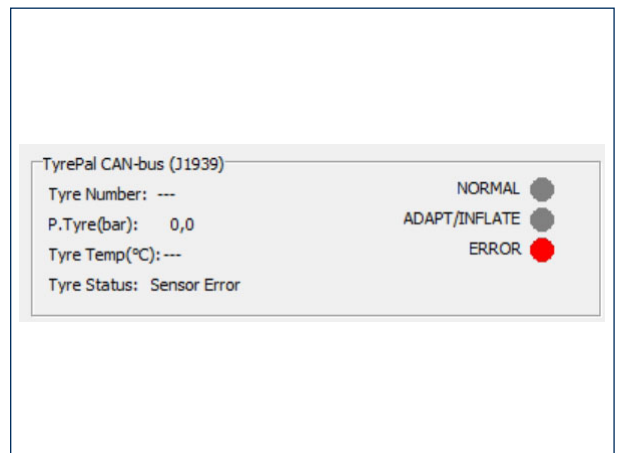


Figure 45

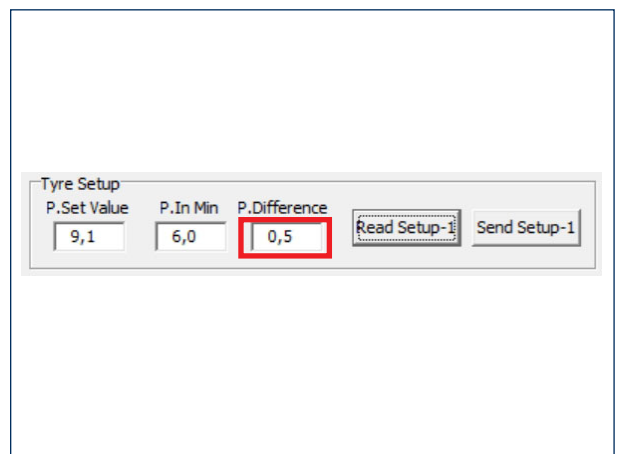


Figure 46

Setting into operation 5

AirSave Control Box 5.2


Checking the control unit outlet pressure 5.2.1



Installation and repair guide!

Before commencing work on the system or on the wheel ends, always close the shut-off valve and relieve air on the excess pressure valve.

The outlet pressure must be 0.1 to 0.2 bar over the manufacturer's recommended tyre pressure in order to equalise the opening pressure of the downstream components.

 The outlet pressure is preset (see AirSave Control Box cover plate) and must be checked before commissioning.

- [1] Remove cap on the pressure connection (arrow, Figure 47).
- [2] Connect pressure gauge to the test connection (thread 8V1).
(Attention, pressure gauge is not included in the scope of supply!)
- [3] Open shut-off valve on the AirSave Control Box (842).
- [4] Read off the pressure on the pressure gauge when the pumping process has ended.



Installation and repair guide!

A minimum outlet pressure of 6.0 bar is required to ensure faultless function of the BPW AirSave.

The working range is between min. 6.0 and 11.2 bar. An incorrectly set pressure can lead to increased tyre wear and fuel consumption, and in the worst case to a tyre failure. A pressure of 9.2 bar is preset on the AirSave Control Box.

- [5] Remove pressure gauge.
- [6] Relieve pressure at the valve.
- [7] Wait for the AirSave Control Box pumping process and then reassemble the pressure gauge.
- [8] Repeat the test procedure twice.
- [9] Remove pressure gauge and screw the cap onto the valve.

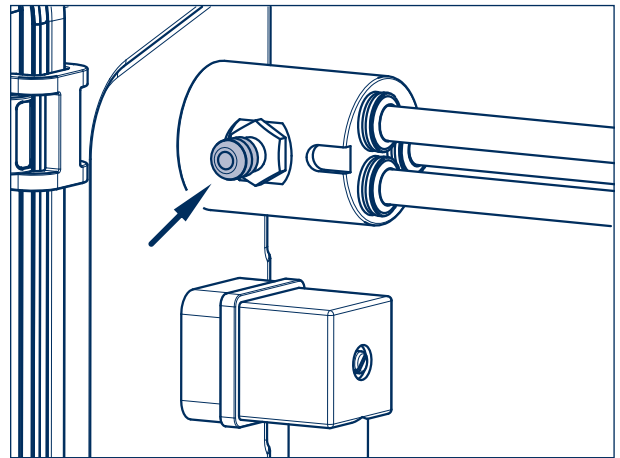


Figure 47

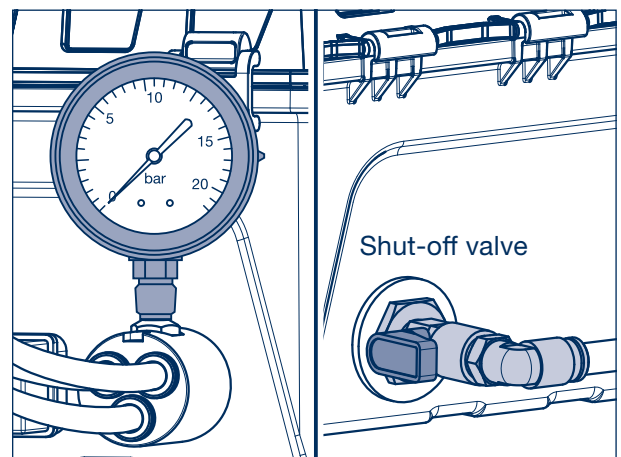


Figure 48

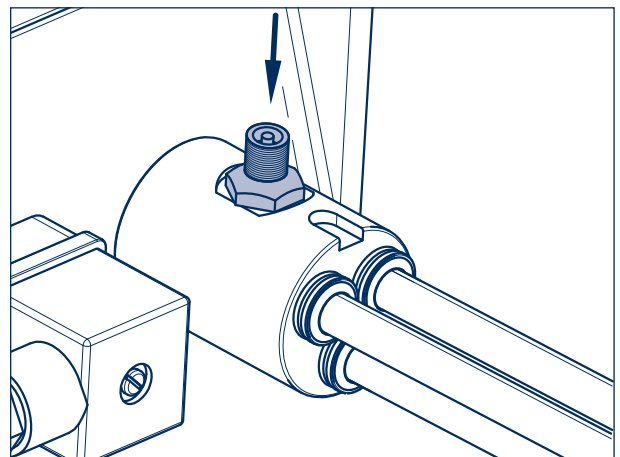


Figure 49

5 Setting into operation

5.2 AirSave Control Box

5.2.2 Adjusting the control unit outlet pressure

Adjusting the outlet pressure

- [1] Connect the pressure gauge as described in [1] and [2] and read off the pressure.
- [2] Remove pressure gauge and relieve air via the valve.
- [3] Wait for the pumping process, re-connect the pressure gauge and read-off the outlet pressure on the pressure gauge.



Repair note!
Before opening the AirSave Control Box, always close the shut-off valve and relieve the air on the excess pressure valve.

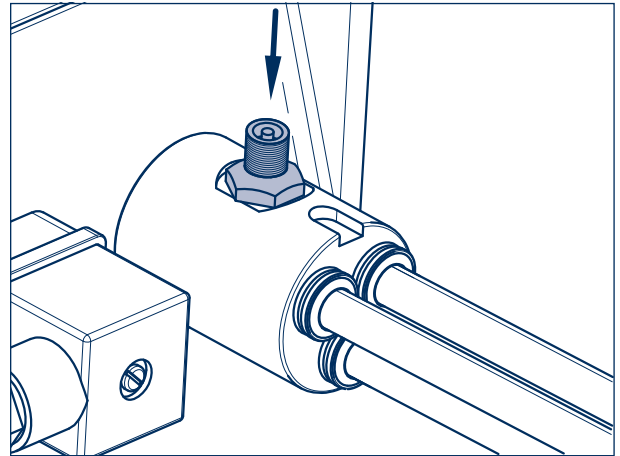


Figure 50

- [4] Detach the fixing tabs from the Control Box cover plate and open the cover plate.
- [5] Unlock the adjusting knob by pulling up and turning in small steps.
 - Increase the outlet pressure by turning clockwise
 - Reduce the outlet pressure by turning anticlockwise
- [6] Remove pressure gauge and relieve air via the valve.
- [7] Wait for the pumping process, re-connect the pressure gauge and read-off the outlet pressure on the pressure gauge.
- [8] Repeat the test procedure twice.
- [9] Push in the adjusting knob and then lock.
- [10] Place the cover plate on the Control Box and secure with the 4 fixing tabs.
- [11] Check the outlet pressure again and re-adjust if required.

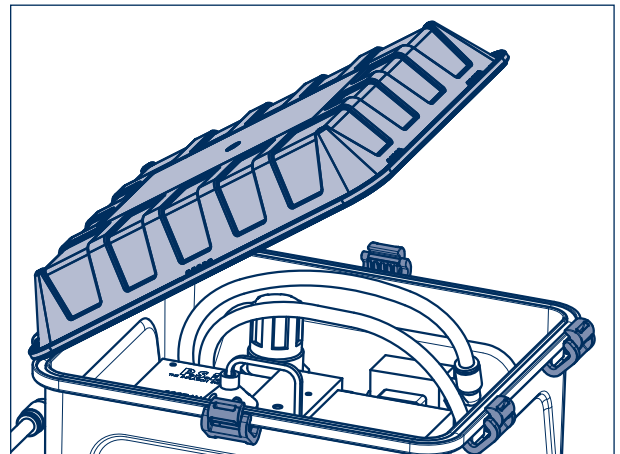


Figure 51

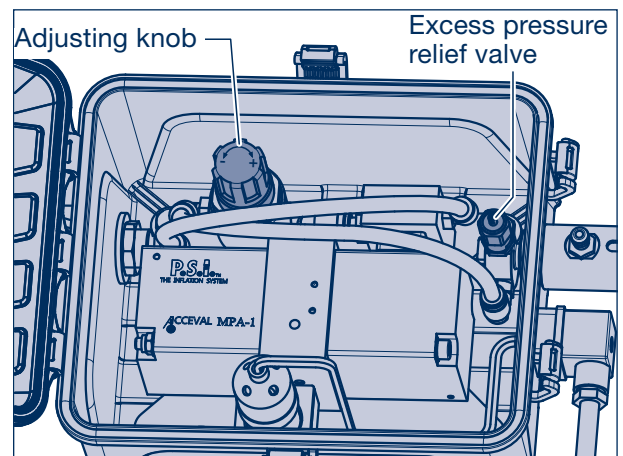


Figure 52

Maintenance intervals / Checks

6

	Commis- sioning	Before each journey	Annually	Every 3 years
Visual inspection				
Inspect all components for damage and untightness	X	X	--	
Check whether the shut-off valve on the AirSave Control Box is opened	X	X	--	
Check connection lines, valve hoses and rotors	--	X	--	
Check electrical and pneumatic lines	--	--	X	
Check the stator with filter element (RX axles) for dirt	--	--	--	X
Function checks				
Check outlet pressure on the AirSave Control Box (see chapter 5) and all tyres	X	--	X ¹⁾	
Check AirSave LED display CMP5	X	--	X	
Check rotor and BPW AirSave hub cap adapter for untightness	X	--	X	
Check connection lines for untightness	X	--	X	
Replace the rotor	--	--	--	X

¹⁾ 6 months after installation, then annually

For heavy-duty applications, check more frequently (e.g. off-road, extreme weather conditions)

7 Wheel change

Wheel disassembly

- [1] Detach valve hose (825, 826, 827, depending on tyre) from rotor (811 or 811a).
- [2] Detach valve hose from tyre valve.



Note:

For quicker and easier assembly, it is advisable to mark the position of the rim on the wheel hub and recreate this during assembly.

- [3] Changing wheels.

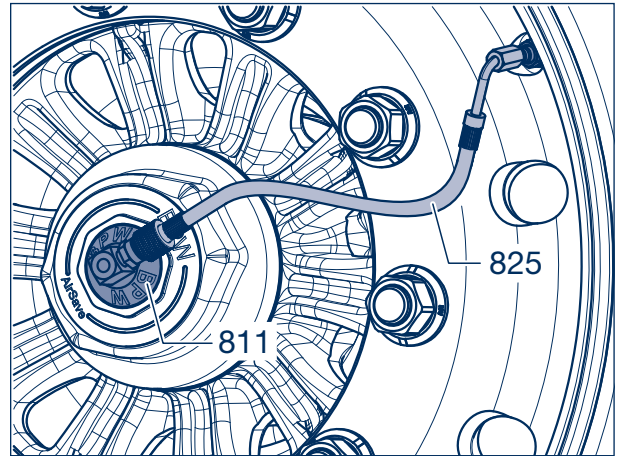


Figure 53

Wheel assembly

- [4] Turn the hub cap adapter (817) using a spanner (SW 55) or spring pliers until the screwed joint on the rotor is pointing towards the tyre valve (required only if the position of the rim on the wheel hub has changed).
- [5] Attach valve hose (825, 826 or 827, depending on tyre) to the tyre valve, use a valve extension if necessary.
- [6] Hand-tighten the union nut (SW 11) on the valve hose and then tighten a further half-turn using a spanner.
- [7] Check that the air can penetrate by pushing the valve needle in the valve hose.
- [8] Hand-tighten the valve hose on the AirSave rotor (811 or 811a).
- [9] Check the valve hose and the connections for untightness.

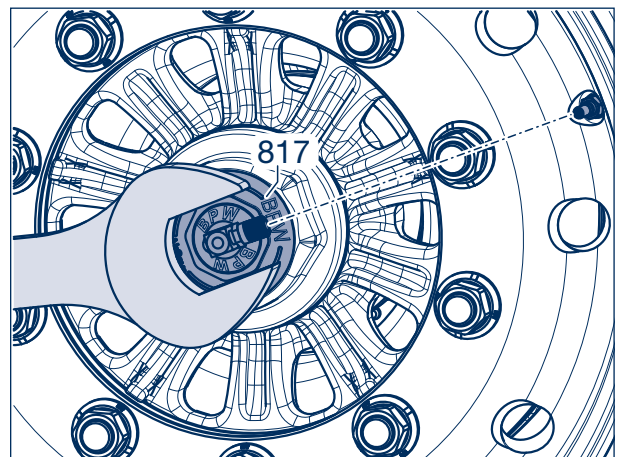


Figure 54

Repairs to the stator and internal tube

8



Installation and repair guide!

Before commencing work on the system or on the wheel ends, always close the shut-off valve of the control box and let air out of the excess pressure valve.

When using the Control Box 141, the power supply must be disconnected.

- ☞ During disassembly / assembly, the wheel can remain assembled on the wheel hub.
- [1] Prevent the vehicle from rolling away.
- [2] Loosen valve hoses (825, 826, 827 - depending on version) from the rotor (811 or 811a).
- [3] Screw rotor out of the AirSave hub cap adapter (817) and pull out.
- [4] Screw hub caps (819, SW 110) off the wheel hub.
- [5] Remove the O-ring (459) from the wheel hub groove. (The O-ring is not required for axles with ECO Plus Unit).

Axles with tube system up to 07.2022

- [6] Detach the polyamide tube (832) on the respective axle side from the AirSave T-piece (833).
- [7] Unscrew the kink protection (831b) with spiral (831a, SW 24) from the axle beam and remove via the polyamide tube. Make sure that the tube is not pulled out of the axle beam or off the stator. Continue with work step [9] on page 52.



Installation and repair guide!

Converting from the kink protection / spiral version (831) to the angle piece (835) is permitted. The tube system in the axle beam must be retained or replaced if necessary.

Axles with tube system as of 08.2022

- [6] Press the face-side ring into the angle piece (835) and pull the air pipe \varnothing 8 mm out of the angle piece at the same time.
- [7] Unscrew the angle piece (SW 22) from the axle beam.
- [8] Press the face-side ring into the angle piece and pull out the polyamide tube (832, \varnothing 6 mm) at the same time. Make sure that the polyamide tube is not pressed into the axle beam.

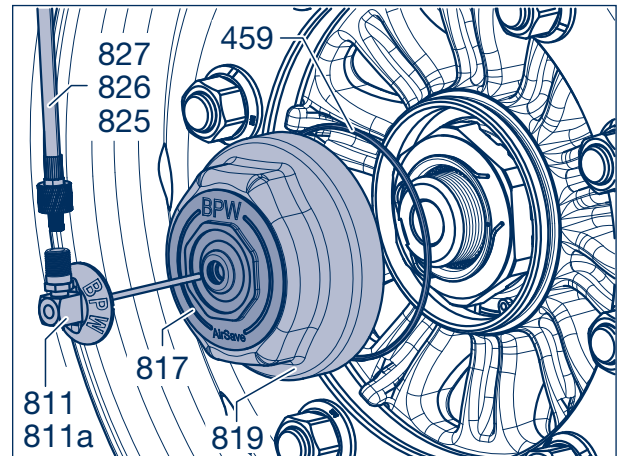


Figure 55

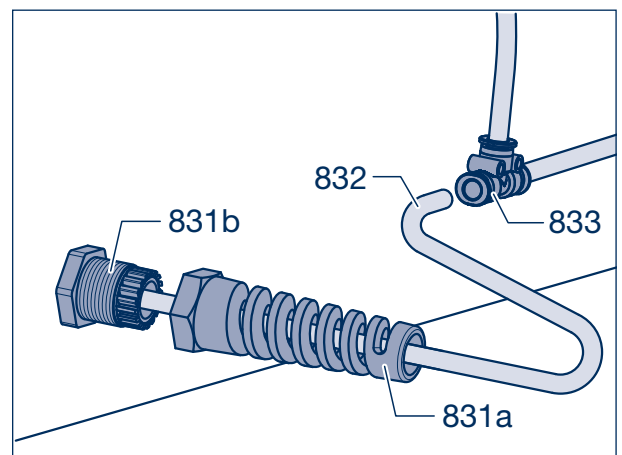


Figure 56

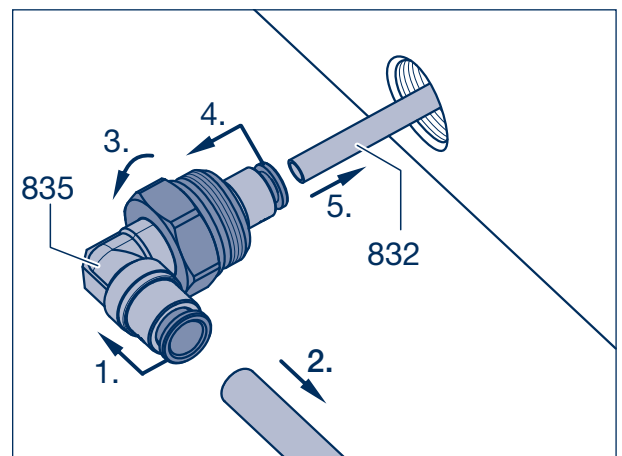


Figure 57

8 Repairs to the stator and internal tube

- [9] Use a tube connector to connect the new polyamide tube (832, Ø 6 mm) to the tube being replaced.

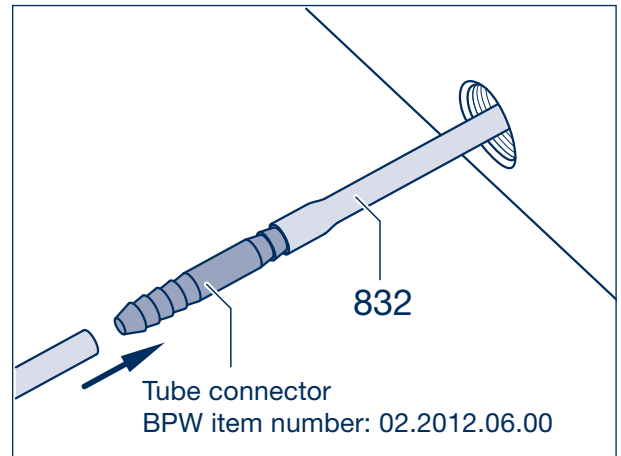


Figure 58

- [10] Unscrew stator (821) from the axle stub using a box spanner (SW 16).
- [11] The tube can now move freely in the axle beam and can be replaced if required.



Note:

When pulling out the polyamide tube, push the new tube a little way into the socket for the angle piece (835) on the axle beam.

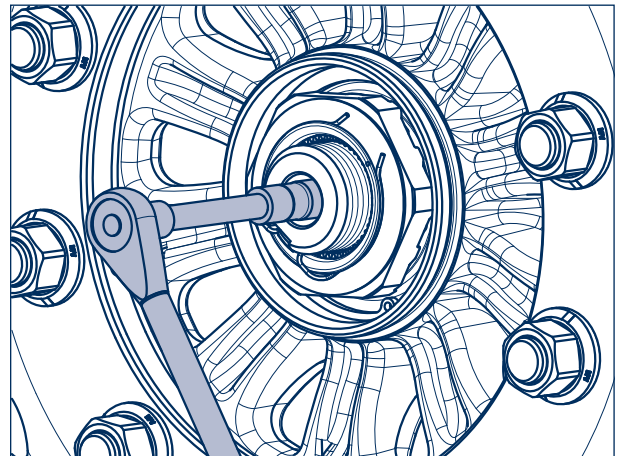



Figure 59

- [12] Press the face-side ring into the stator (821) and disconnect it from the old polyamide tube (832) at the same time.
- [13] Press the new polyamide tube all the way into the stator.
- [14] Apply a suitable liquid seal (e.g. Loctite 511 or Teflon tape) to the thread of the stator (arrow).
- [15] Screw the stator into the axle stub.
Tightening torque: **40 Nm** (34 - 45 Nm)

-  For axles with tube system up to 07.2022 and steering axles, see work step [16] on page 54.

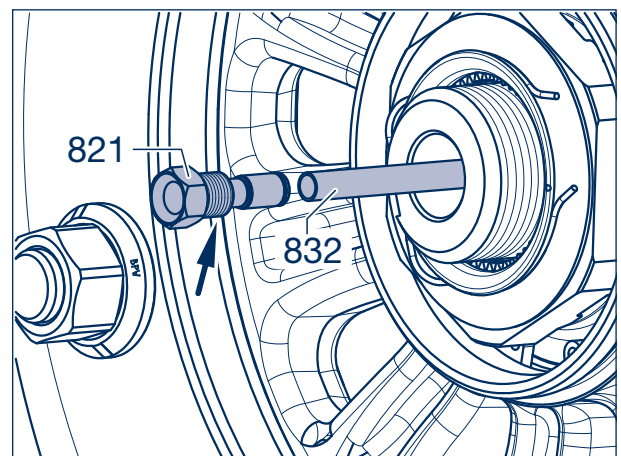


Figure 60

Repairs to the stator and internal tube

8

Axles with tube system as of 08.2022

- [16] Gently pull the polyamide line (832) taut at the axle beam hole.
- [17] Remove the tube connector.
- [18] Cut off the line with suitable tube pliers / scissors approx. 30 mm before the end with a straight cut and keep hold of it.
- [19] Push the polyamide line all the way into the straight connection of the angle piece (835).
- [20] Apply a suitable liquid seal (e.g. Loctite 511 or Teflon tape) to the thread of the elbow union (arrow).

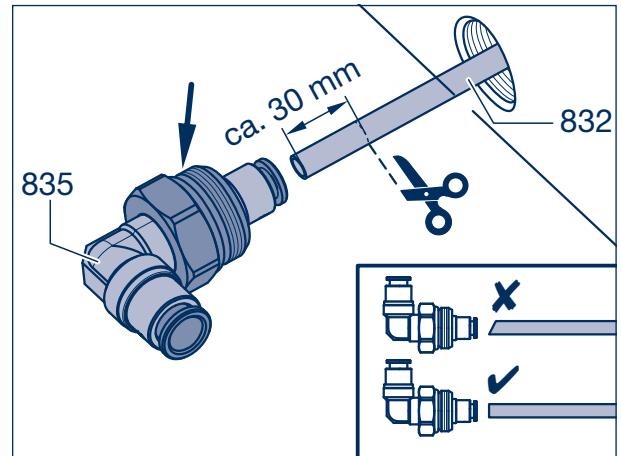


Figure 61

- [21] Screw the AirSave angle piece (835, SW 22) into the axle beam.
- [22] Align the angle piece and tighten the integrated nut, incl. O-ring, to a specified tightening torque of 35 Nm (30 - 40 Nm).

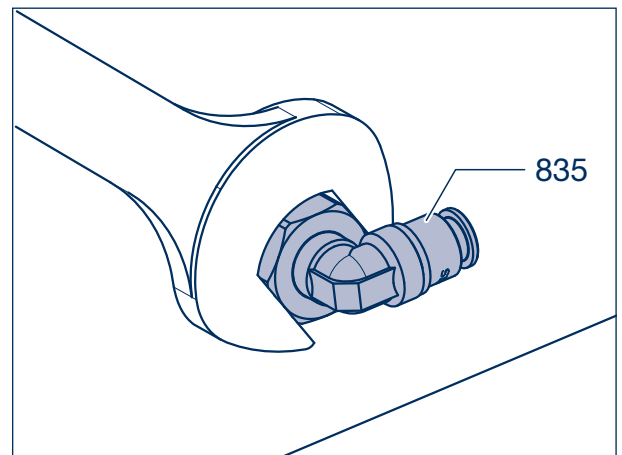


Figure 62

- [23] Cut off the air pipe $\text{Ø} 8 \times 1 \text{ mm}$ at the end with a straight cut.
- [24] Push the air pipe into the AirSave angle piece (835) as far as it will go. You will feel resistance at two points. The insertion length is approx. 20 mm.

 Continue with work step [25] on page 55.



Installation and repair guide!

The air pipe is inserted far enough if two successive locking steps have been cleared and the line has been mounted to the bumper.

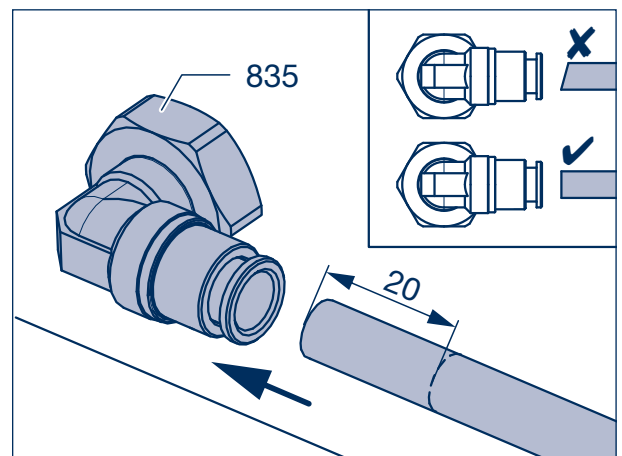


Figure 63

8 Repairs to the stator and internal tube

Axles with tube system up to 07.2022

- [16] Fit the polyamide tube through the kink protection (831b) and the spiral (831a).
- [17] Screw the kink protection (SW 24) into the axle beam and tighten it hand-tight (5 Nm).
- [18] Screw the spiral-shaped kink protection (831a) by hand (5 Nm) onto the adapter that is already fitted (831b). This fixes the air pipe onto the axle beam and seals it.
- [19] Cut off the polyamide line $\varnothing 6 \times 1$ mm at the end with a straight cut.
- [20] Push it all the way into the AirSave T-piece (833).

 Continue with work step [25] on page 55.

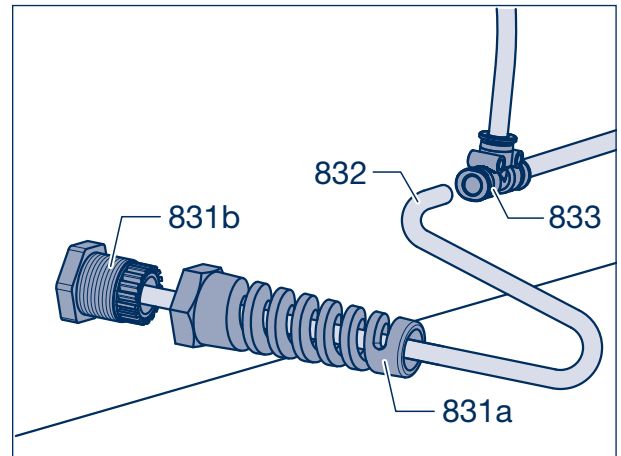


Figure 64

Steering axles

- [16] Fit an anti-kink device (831) onto the camtube of the steering pivot assembly.

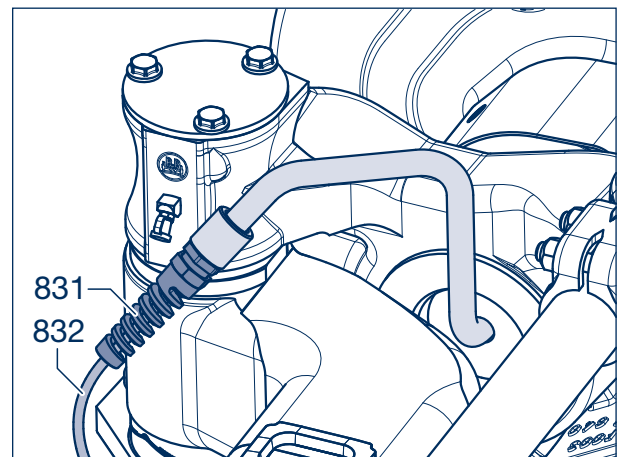


Figure 65

- [17] Lay the tube (832) over the axle beam and fix it in place with a cable tie (849) offset approx. 150 mm from the spring centre in the direction of the centre of the axle.



Repair note!

After assembly, the steering must be checked for freedom of movement. If necessary, adjust the length of the tube between the camtube and the cable tie accordingly.

Sufficient clearance for the suspension components must be provided.

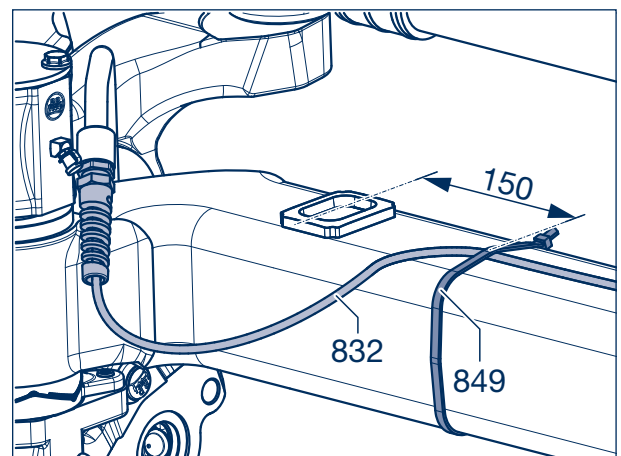


Figure 66

Repairs to the stator and internal tube

8

- [18] Fasten the AirSave T-piece (833) to the long cable tie (849) with a short cable tie (850).
- [19] Using the cable tie, fasten the pre-assembled T-piece to the axle beam near the shaped plate for the steering lock. The distance to the centre of the shaped plate should be approx. 100 mm.
- [20] Cut the valve tubes to length and connect them to the AirSave T-piece.

 Continue with work step [25].

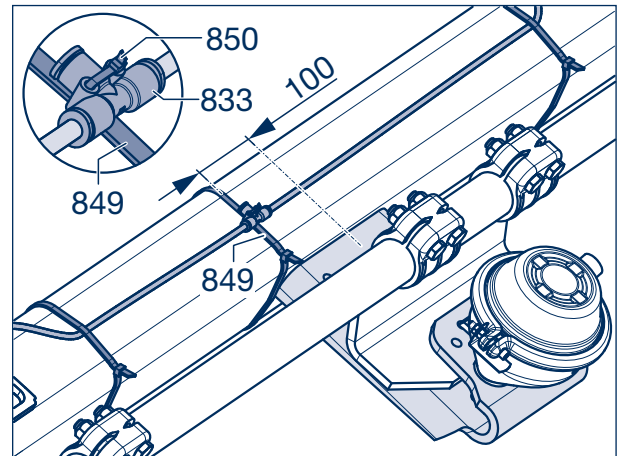


Figure 67

All axles with tube system

- [25] Insert a new O-ring (459) into the groove in the wheel hub. (The O-ring is not required for axles with ECO Plus Unit.)
- [26] Cover the pre-assembled hub cap for BPW AirSave (814) in the area of the O-ring contact surface (for ECO Plus 3 only) and the thread with a thin coat of BPW special longlife grease ECO Li^{Plus}.
- [27] Screw the hub cap onto the wheel hub and tighten to the prescribed tightening torque.

Tightening torques:

ECO Plus 3 hub cap	SW 110	350 Nm
ECO Plus hub cap	SW 110	800 Nm

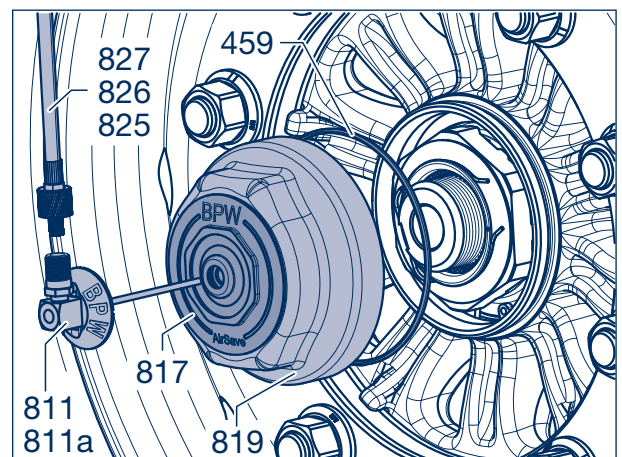



Figure 68

- [28] Check the white sealing ring of the rotor (811 or 811a, depending on tyre) for correct seating at the end of the thread; push up to the bumper if necessary.
 - [29] Guide the rotor into the adapter (817) of the hub cap and the stator (821) in the axle stub and push until contact is made. There will be a slight resistance.
 - [30] Screw the rotor into the adapter and hand-tighten (approx. 6 Nm).
-  For the assembly process for the valve hoses (825, 826, 827 - depending on version), see page 28.

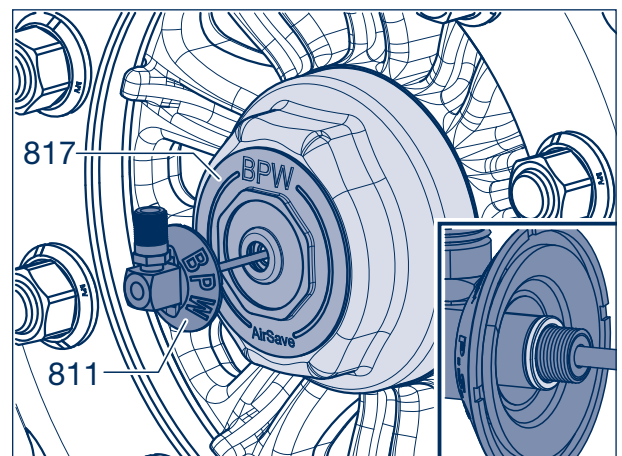


Figure 69

9 Fault diagnostics

Condition	Possible causes	Measures
The AirSave LED display is switched on.	The system supplies air during commissioning.	The system works faultlessly.
	The system supplies air to an untight tyre.	Repair the tyre.
	The system supplies air to an untight system component.	Replace the system component.
	The system is not correctly connected to the hoses	Correct the hoses
The AirSave LED display is switched on and air escapes from the rotor.	The system supplies air to an untight system component.	Replace the system component.
	The rotor is untight.	Replace the rotor.
	The stator O-ring is untight.	Replace the stator.
	The thread of the lengthwise stator is not leak-proof	Seal the stator thread with Teflon tape (or similar) and screw it back in
The AirSave LED display is switched off during system operation, although air flows to the AirSave Control Box.	The AirSave LED display is out of operation.	Replace the AirSave LED display.
	The generator is out of operation.	Replace the AirSave Control Box.
	The system cabling is damaged.	Repair the system cabling.
	The system cabling is defective.	Correct the system cabling.
Air escapes from the rotor.	The rotor is untight.	Replace the rotor.
The tyre pressure is too low.	The shut-off valve is closed.	Open the shut-off valve on the AirSave Control Box.
	The pressure setting at the system is too low.	Increase the system pressure at the AirSave Control Box.
The tyre pressure is too high.	The tyre was filled manually with too much pressure.	Reduce the tyre pressure.
	The pressure setting on the system is too high.	Reduce the system pressure at the AirSave Control Box and reduce the tyre pressure.
The semi-trailer or drawbar trailer deflate when at standstill.	The system tube or the tube/tyre valve connection is untight.	Correctly tighten the connection, replace the seals or replace the tyre valve.
	The tube valve is untight.	Clean or replace the valve.
	The tyre is untight.	Repair the tyre.
The tyre fills only slowly or no air flows to the tyre.	The valve hose to the tyre may be tightened too tightly, causing a blockage in the air flow.	Correctly tighten the connection or replace the tube or seal if it is damaged.

Fault diagnostics 9

Condition	Possible causes	Measures
Control Box is not functioning	Inlet pressure < 6.0 bar	Check the inlet pressure and adjust if necessary
The LED display is permanently lit	major tyre leakage that AirSave can no longer compensate for --> a garage/service station must be consulted immediately	Repair the tyre
	outer damage to the rotor or hub cap adapter --> a garage/service station must be consulted immediately	Replace the defective rotor or hub cap <i>To ensure that the system does not pump incessantly, despite there not being a tyre leak, AirSave can be switched off until repairs are carried out. The ball valve on the ControlBox must be closed for this purpose</i>

10 AirSave warranty conditions

10.1 Axles with RV / RX code

10.2 Axles with R1 / RT / RY code

10.3 Redrilled axles with a BPW-approved drilling device

10.4 Explanation of AirSave axle identification marks

AirSave and all components that are fitted to the axle have a 2-year warranty. BPW axles are subject to the current ECO Plus Warranty Conditions.

10.1 For axles with RV / RX code:

The BPW AirSave System must only be used in combination with axles prepared by BPW. For damages that occur as a result of any other combination, no claims from the BPW ECO Plus Warranty may be made. The AirSave System must be installed before the initial commissioning of the vehicle. Continuous operation of an axle prepared by BPW without an installed BPW AirSave System can lead to damage to the BPW scope of supply. If no BPW AirSave System is used, the BPW axle with RV / RX code must be restored to a safe operating condition (removal of the tubing and assembly of the plugs in the axle beam and axle stub, including replacement of the hub cap).

10.2 For axles with R1 / RT / RY code:

The BPW AirSave System must only be used in combination with axles prepared by BPW. For damages that occur as a result of any other combination, no claims from the BPW ECO Plus Warranty may be made. The AirSave System must be installed before the initial commissioning of the vehicle. Continuous operation of an axle prepared by BPW without an installed BPW AirSave System can lead to damage to the BPW scope of supply. In this case, the steering knuckle plug must be checked every 3 years to ensure a tight seat, and must be replaced if necessary.

10.3 In the case of redrilled axles with a BPW-approved drilling device:

Retrofitting axles to the BPW AirSave system is only permitted using a BPW-certified drilling device. For damages that occur as a result of any other kind of retrofitting, no claims can be made under the BPW ECO Plus Warranty. Operation without prior installation of AirSave components/parts can lead to damage to the BPW scope of supply.

10.4 Explanation of AirSave axle identification marks:

RV - Square tube axle

RX - Round tubeless axle

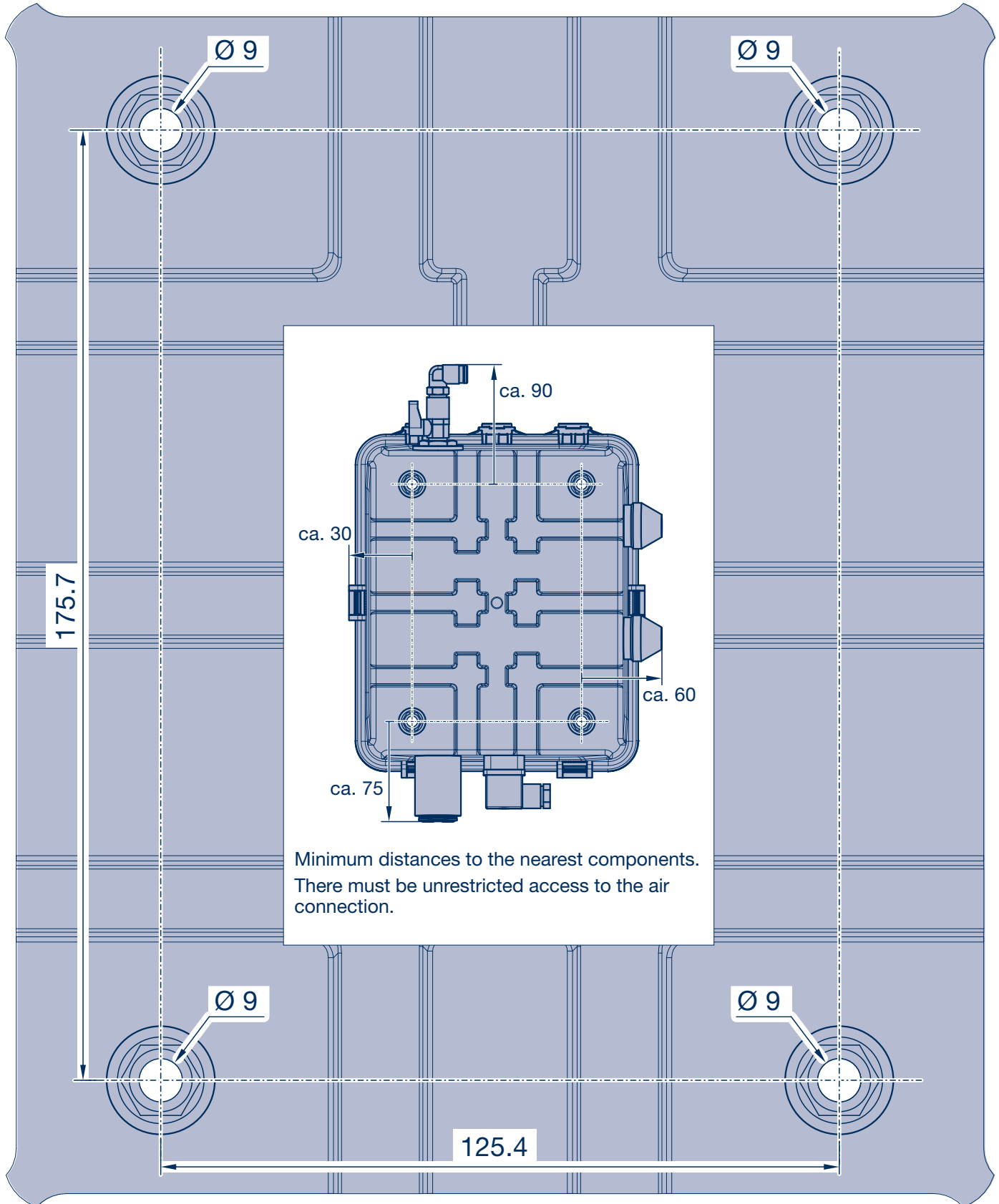
R1 - Square axle for AirSave preparation only

RT - Square axle for AirSave/TireBoss preparation only

RY - Round axle for AirSave preparation only

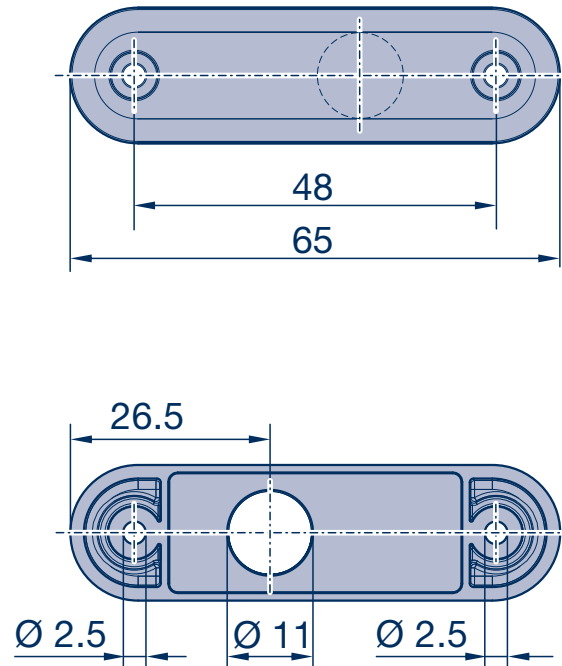
Drilling template 11

AirSave Control Box 11.1



11 Drilling template

11.2 AirSave LED display



Drilling template 1:1 - Select "Actual size" or "Scale to fit" printing setting

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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