BPW AirSave

BPW Axles recently launched its own tyre inflation system. Tyre inflation systems have been around in the market for quite some time and the purpose is to control the tyre pressures. The advantages of these systems are fuel savings, longer tyre life, prevent unnecessary downtimes and reduce CO_2 emissions.
The advantages of the BPW AirSave tyre inflation system is its robustness and reliability thanks to the BPW hubcap adaptor, this also results in a service friendly unit which is 3 years maintenance free. With one source of supply, BPW offer a 2-year warranty on the system.

How does the BPW AirSave tyre inflation system work

Figure 1 shows typical AirSave layout for a tri-axle semitrailer. The AirSave system consists of the following components:

1. Control Box
2. Indicator light
3. AirSave hub cap
4. Pneumatic hosing

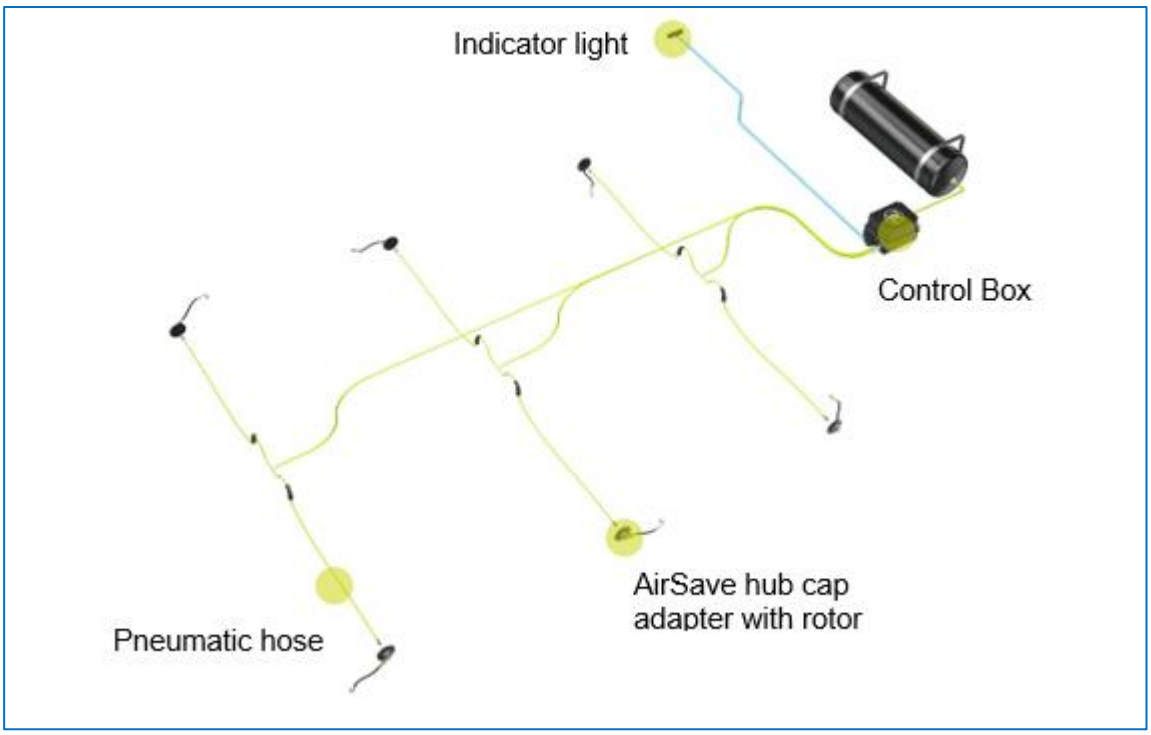


Figure 1

Control Box

The control box is the heart of the system. Figure 2 shows all the components housed in the control box.

1. The pressure booster's operating range is 5.5 – 9.8bar and it does not require any external power source, just merely the input pressure from the air reservoir tank. It also ensures that air is available for other functions (i.e. braking) if there is a leakage in the system such as a burst tyre. The booster stops operating and seals the system if the system pressure falls to below 5.5bar.
2. Pressure regulating valve – this is used to set the system pressure (tyre pressure). The control box is pre-set to a system pressure of 9.2 bar.
3. Excess pressure relief valve – it opens automatically at a pressure greater than 11.3 bar
4. The generator starts powering the light as soon as there is airflow though the system. This has the benefit that no external power source is needed to power the indicator light.
5. The entire control box is open to the ambient, this ensures that there is no pressure build up in the box.

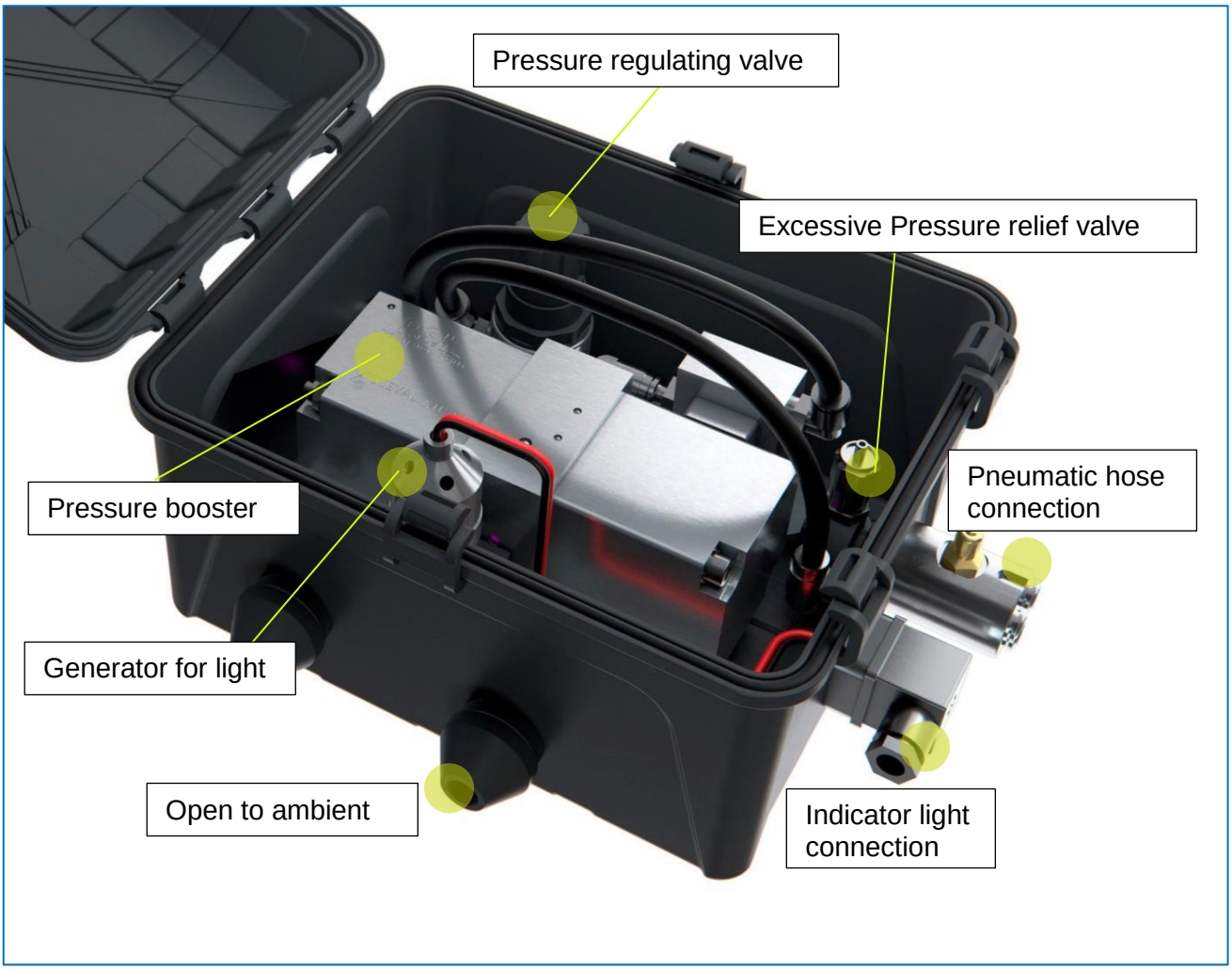


Figure 2

Indicator light

The indicator light starts operating as soon as there is airflow through the system. It is powered by the generator, which is housed in the control box and as such does not require any external power source. The function of the indicator light is to notify the driver that there is pressure loss in the tyre. The indicator light has three types of flashes indicating the state of the system:

1. **LED display flashes** – AirSave is working and equalising the pressure loss in the tyre
2. **LED display flashes for longer than 10 minutes** – The tyres, compressed air lines and connections must be checked
3. **LED display illuminates continuously** – AirSave can no longer equalise the pressure loss in the system. A workshop must be sought immediately

Hub cap adaptor

Figure 3 shows the components that are assembled directly to the axle.

1. The stator screws directly into the axle, the pneumatic hosing connects directly to the stator. This has the advantage reducing potential air leaks. On the inside of the stator sits an O-ring which seals once the needle of the rotor is inserted.
2. The hub cap adaptor kit gets fixed to the hub cap via a circlip. This allows for easy disassemble and maintenance. The sealing of the hub cap adaptor is done via an O-ring and oil seal.
3. Two types of rotors are available, one for super single tyres and one for dual tyre fitment. The rotor screws into the hub cap adaptor and contains the rotating needle that slides into the stator. The rotor also contains an adjustable seal that opens to ambient if there happens to be an excessive pressure build up inside the hub. The rotor works in a similar fashion as the tyre valve, in that it will only allow air to pass through once the valve tube is connected. As soon as the valve tube is removed the system is sealed.
4. The valve tube also works in the same fashion as a tyre valve. As soon as the valve tube is disconnected from the tyre the system seals, preventing any air loss.

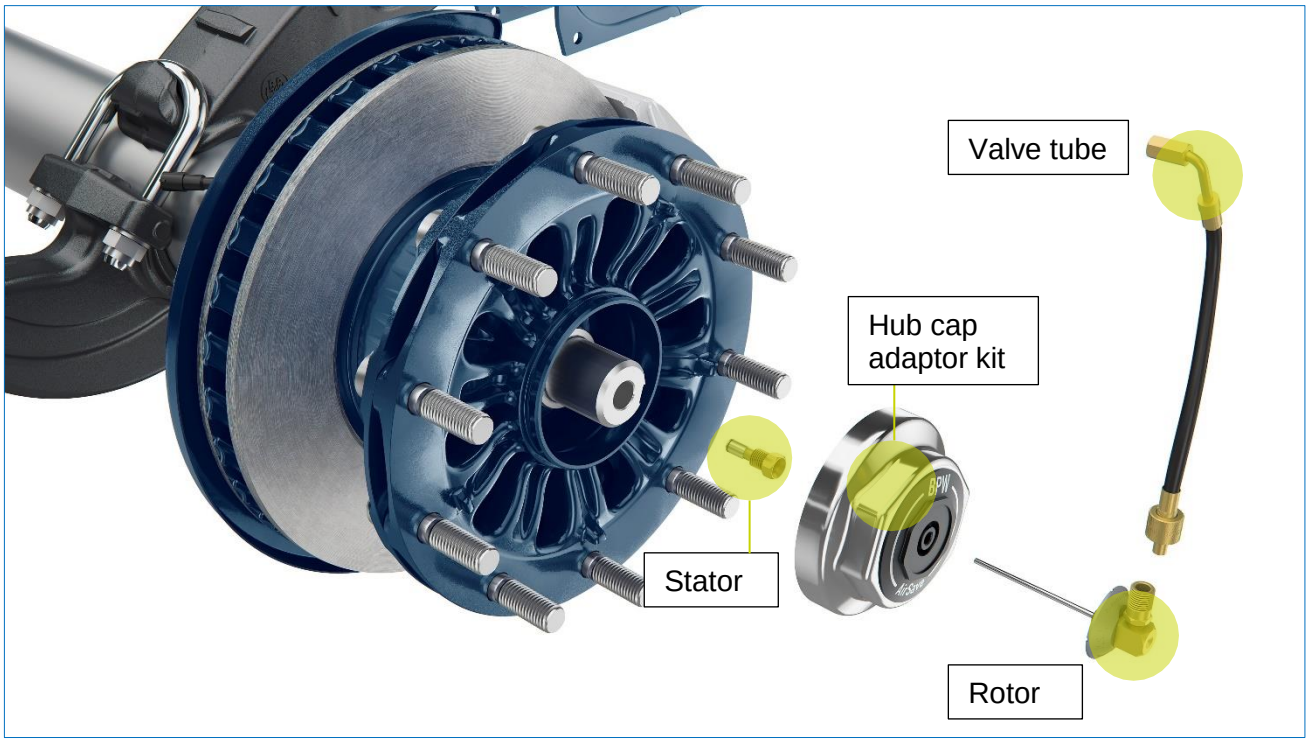


Figure 3

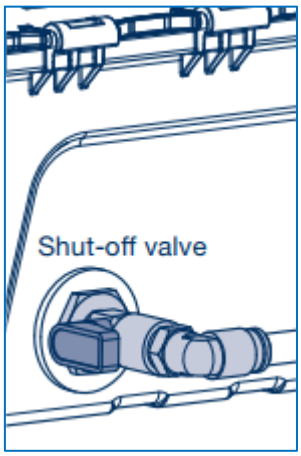
Pneumatic hosing

The control box is directly connected to the stator via pneumatic hosing. This type of connection reduces the risk of potential air leaks and increases the reliability of the system.

Concluding remarks

When maintenance is carried out on the system it must always be ensured that the system is depressurized to prevent any potential injury. Always follow the correct method when wanting to depressurize the system:

First isolate the system from the air reservoir tank. This is done via the shut off valve at the back of the control box.



Using the valve mounted on the outlet manifold of the control box, depressurize the system