

# Installation & Warranty manual

**AIRFLEX® Air Tank**

Version 1.0

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## WARNING!

Prior to installation of the **AIRFLEX®** Air Tank, read these installation and operating instructions.

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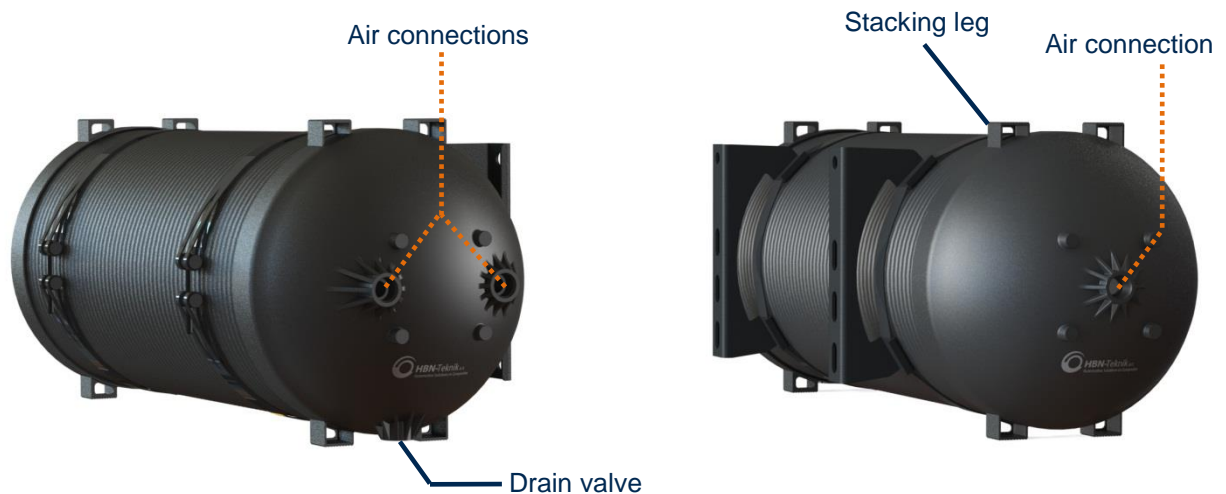
# 1. Introduction

**Make sure to read the following installation instructions carefully.**

The AIRFLEX® Air Tank is a pressure vessel for brakes, air suspensions and other areas requiring compressed air for commercial vehicles. It is an alternative solution that replaces all functions of existing steel and aluminum air-tanks. It is not permitted to use the vessel for other media than air. The air air tank is made of robust glasfibre reinforced plastic material and is manufactured using a patented production process. This makes the air air tank corrosion free.

## 1.1 AIRFLEX® Air Tank

The air tank consists of a cylindrical body and two end caps. The standard end caps on the air air tank are designed as follows:



## 1.2 Label setup

One of the end caps holds an imprinted type label with the following information:

		<b>CE 0035</b>	
Type:	276-60-0001		
Serial Nr:	XXXXX-YYYY-ZZZZZ		
Tmin:	-40°C	Tmax:	+80°C
Ps:	12,5 bar	Ph:	18,75 bar
Ø:	276mm	Vol:	60L
Approval:	TÜV-Rheinland		
Prod. date:	2013-12-01		
Material:	PAGF		
MAX Torque:	25 Nm		

## 2. Safety and Warnings

### 2.1 Safety instructions

- All work on the air tank should be conducted by trained professionals in qualified and authorized workshops, with necessary tools and knowledge to perform any maintenance and/or repairs.
- All local, regional and national health & safety (accident prevention) regulations must be followed.
- All operational, service and safety regulations from vehicle and spare part manufacturers must be followed.
- During all repair work the vehicle should be secured against movement. Observe prescribed rules on repairs on commercial vehicles from the manufacturer with regard to safety rules and secure of vehicle.
- All replaced components must be recycled according to your local environmental regulations, laws and guidelines.
- Screws, nuts and fittings must be tightened to the specified torque ratings indicated in this manual.
- Only in compliance with the mentioned instructions and notes, HBN can ensure the safety and reliability of the air tank, fasteners and its mounting.
- Make sure to familiarize yourself with the basics of working with compressed air and braking systems.

### 2.2 Warning instructions and labels

- It is strictly forbidden to carry out any type of work on the air tank in a pressurized state.
- While removing snow and ice precautions should be taken to ensure that the air tank under no circumstances is damaged by impacts or strokes by a hammer or other hard objects.
- Make sure to remove snow, ice and dirt from the air tank before each trip.
- It is not allowed to use the air tank as an aid climb or to be walked upon.
- It is strictly prohibited to make any mechanical changes, modifications or to drill holes on the air tank.
- The air tank and/ -or the fasteners should be replaced immediately if they are damaged.
- It is strictly prohibited to coat the air tank with a process requiring surface heating. The temperature interval on the engraved air tank label is a mandatory requirement.
- The air tank is delivered with 2 attached warning labels in four languages (DE, EN, RU, FR).
- Warning labels should always be attached and visible under all time, especially if the vessel is coated after delivery.



**Warning:**

Not paying attention to the above mentioned warnings can lead to dangerous situations.

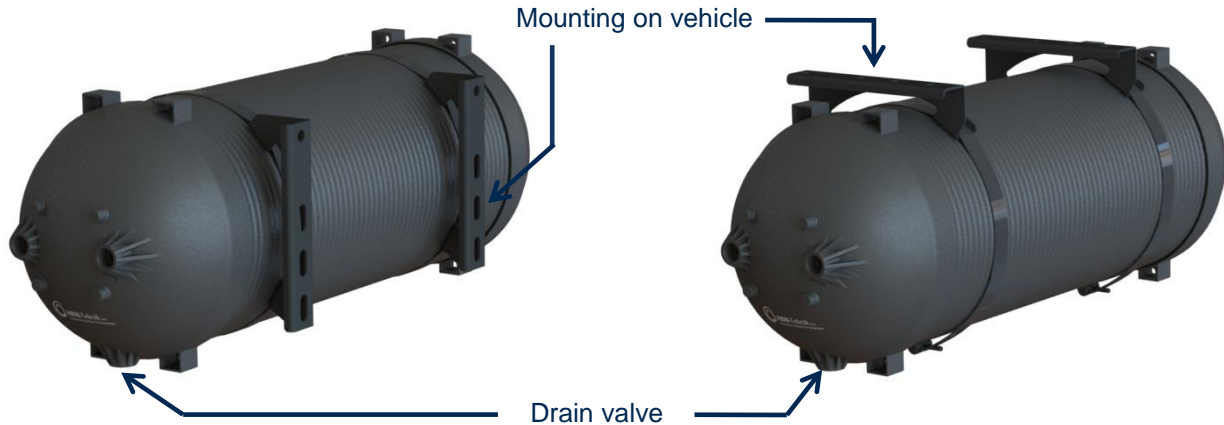
**Important:**

Vehicle manufacturers must include the above mentioned warnings in the vehicle instruction manual.



### 3. Installation

#### 3.1 Positioning of air tank on vehicle

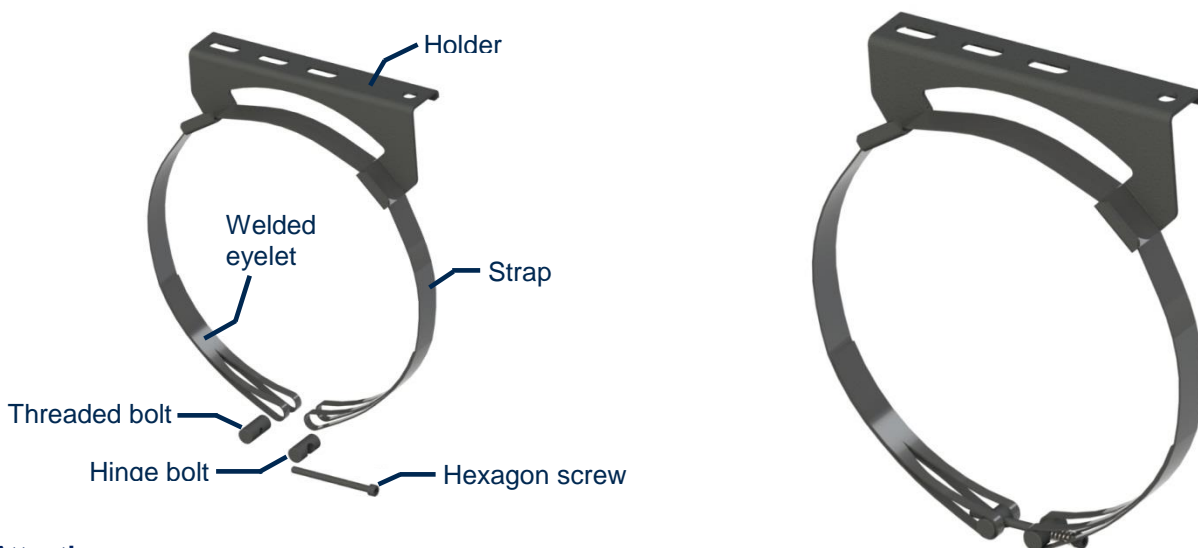


It is important to ensure that the air tank is mounted, as shown above on the vehicle chassis or superstructure. It is recommended that the air tank is mounted in a protected area under the vehicle, e.g. between the longitudinal chassis beams or up in the storage compartment on the superstructure of a vehicle. The air tank must not be mounted in connection to and/ -or close to loose moving parts.

**Attention:** The drain valve should always be located in the lowest position (see illustration above). If the air tank is mounted vertically on the vehicle, use one of the ports on the end cap for drainage. The original drainage port (drain valve) should be plugged and not used as an air coupling port.

#### 3.2 Mounting of strap on the holder

A complete fastener is delivered with 6 separate components un-assembled, unless otherwise agreed upon. The components should be assembled as followed:



**Attention:**

The screw must only be tightened with a torque of 10 Nm,  $\pm 1$  Nm.  
Welded eyelets on both sides of the strap should always face the air tank.

### 3.3 Mounting of air couplings (fittings)

The ports are designed in accordance with the VOSS port geometry (V-thread) standard with a thread size of M 22 x 1.5 mm. Air-couplings (with O-rings) compatible with this standard must only be used. Couplings are not included in the delivery with the air tank but it can be arranged on request.

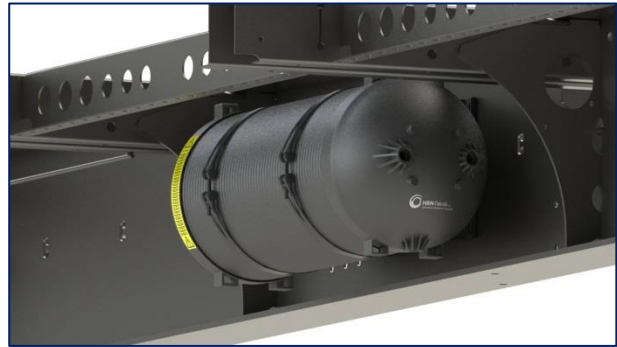
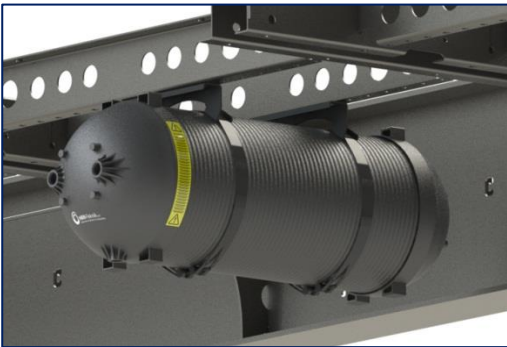
#### Attention:

All ports should be protected during all time with a transport cap or a safety cap/-plug while not in operation. Assembly and removal of air-couplings must only be done in a completely pressureless state of the pneumatic system. Air-couplings must only be tightened with a torque of maximum 25 Nm and a torque wrench must be used. Tightening with a higher torque can lead to thread damages. In order to achieve safe functioning, the connecting port should be cleaned before fitting the coupling element. In particular, any residue of paint still attached to the region of the sealing lip should be removed. Care is also to be taken to ensure that the thread of the component is at right angles to the contact surface of the coupling element during assembly.

No other devices other than standard air-couplings and manifolds are allowed to be connected to the ports. The weight on each single port must not exceed 200 g.

### 3.4 Mounting on vehicle

It is recommended that the fasteners (holder and strap) first are mounted on the vehicle chassis or superstructure without the air tank. This requires four separate screws, with a nut and a washer (two per each fastener) which is not delivered in the package. The holders are designed with a hole and three-four slots for flexible assembly. The nuts must be tightened with a torque of 30 Nm against the vehicle chassis or superstructure.



Separate items required\*:  
 4 pcs DIN 985 Screws M12 Class 8.8\*\*  
 4 pcs DIN 985 Nuts M12\*\*  
 4 pcs ISO 7093 Washer Ø12xØ30x2,5\*\*

\*Items are not included in the standard package

\*\*Delta silver or similar for minimum 500 hour Salt spray test



#### Attention:

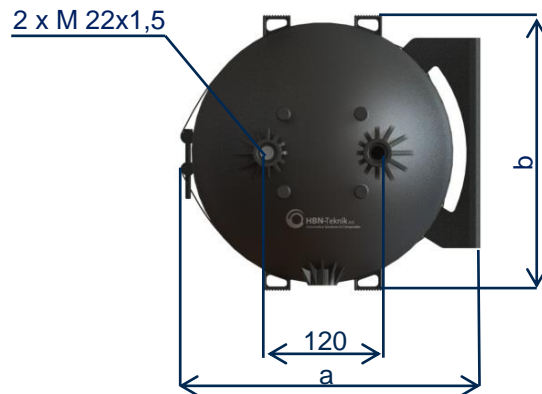
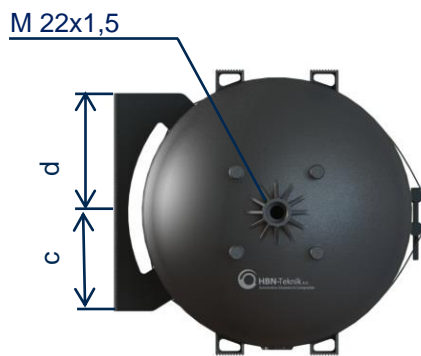
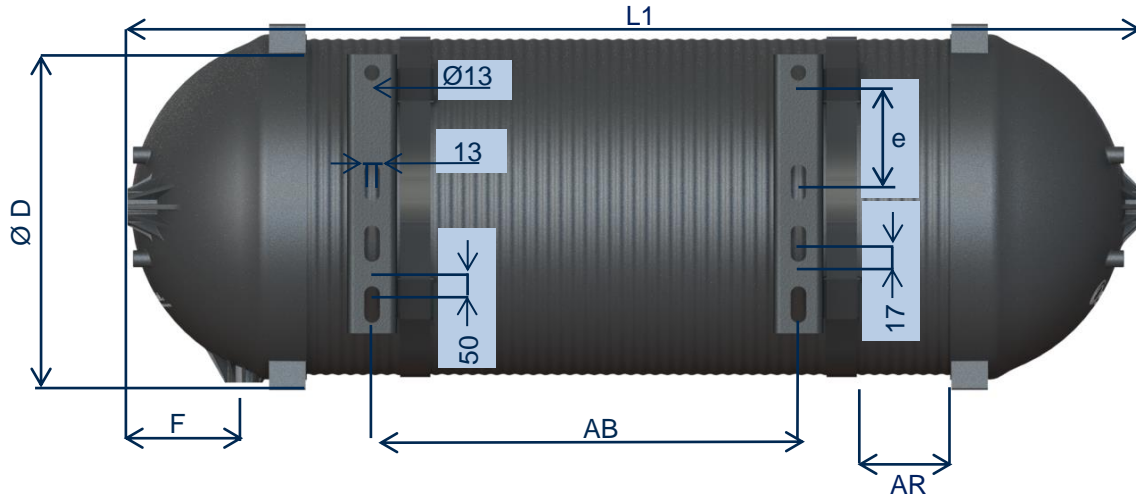
The screw must be tightened with a torque of 30 Nm (28-32 Nm).

The air tank must only be mounted with delivered fasteners (holder and strap).



### 3.5 Positioning of fasteners

The positioning of the holder and strap is variable. The mounting of the fastener may vary depending on tank design as follows to move symmetrically in relation to the end caps:

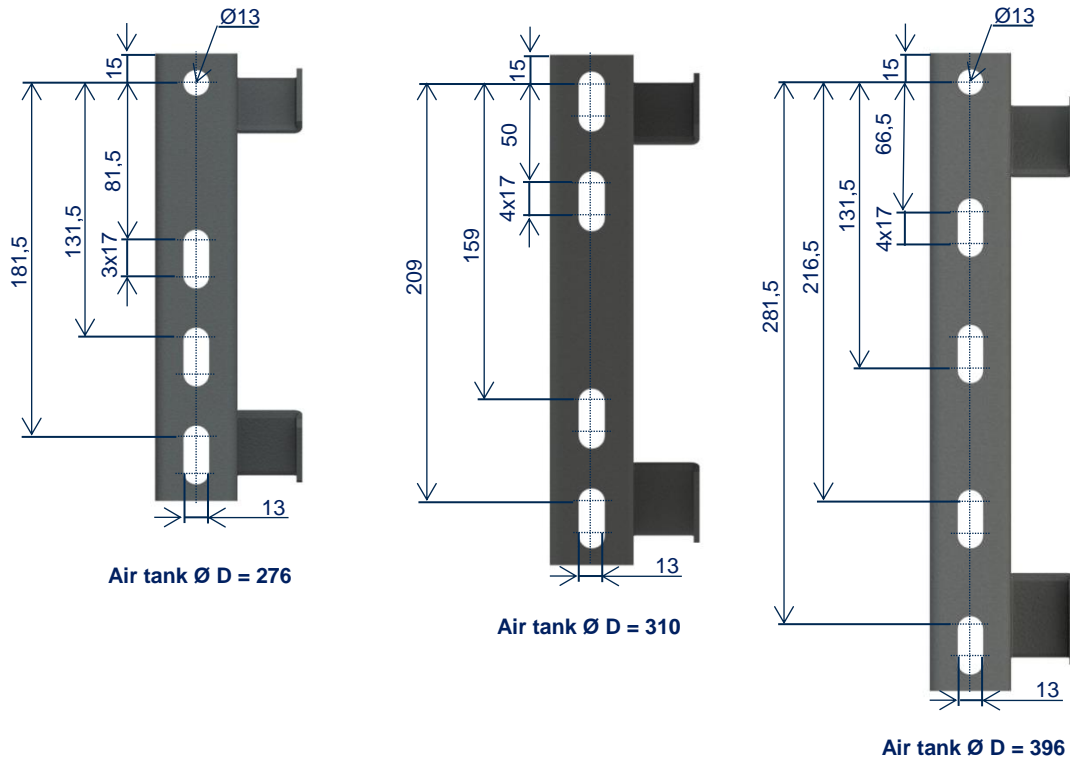


Volume	Air tank			Fastener positioning			Fastener dimension					Weight
	Ø D	L	F	AB	AB min.-max.	a	b	c	d	e		
I	mm	mm	mm	mm	Mm	mm	mm	mm	mm	mm	kg	
30	276	652	96	200	170	320	325	300	104	125	81,5	5,8
40		832		350	200	500						7,0
60		1190		500	450	860						9,0
60	310	988	104	400	350	640	359	334	116	140	50	10,2
80		1275		600	450	930						12,5
60	396	683	143	150	100	250	441	419	144	185	66,5	10,2
80		859		250	250	430						12,0
100		1035		300	250	600						13,7
120		1212		500	400	780						15,4



### 3.6 Dimension of holders

The holders have pre-defined hole structures that must be used. It is strictly prohibited to make any modifications, changes or to drill any holes on the holders' construction. The minimum allowed distance between the screws is 131,5 mm.



### 3.7 Overview tightening torques

	Thread	Tightening torques
Strap screw for fasteners	M 6	Max. 10 Nm
Air connections (fittings)	M 22 x 1,5	Max. 25 Nm
Holder mounted on vehicle	M 12	<b>30 Nm</b> (28-32 Nm)

## 4. Service

In case of an air tank exchange original spare parts must be used. The exchange must only be performed by trained personnel as follows;

### Disassemble:

- [1] Vent the air tank completely.
- [2] Remove air hoses from the tank.
- [3] Secure air tank from falling down.
- [4] Release the hexagon screw (M8) from the thread bolt and remove the screw.
- [5] Remove the tank from the straps.
- [6] If necessary, remove the straps and disassemble the holder by releasing the safety nut (M10) from the screw on the chassis.
- [7] Remove the bolts with the washer from the vehicle chassis and lift down the holder.



### Assemble:

- [1] New holders, screws (DIN 985), lock nuts with nylon insert (DIN 985) and washers (ISO 7093) must be used (see chapter 3.4).
- [2] Mount the screws in provided holes on the vehicle frame.
- [3] Mount the holder through the screws, add a washer and tightened it with a lock nut M12. Check that position is correct on the vehicle and that the right hole constellation of the holders are used (min. distance 131,5mm).
- [4] Tightened the lock nut with a torque of 30 Nm (28-32 Nm).
- [5] Insert the straps inside of the holder.
- [6] Clean the contact surface for the air-coupling (ports). Mount the air-couplings prior to the installation of the air tank with a max torque of 25 Nm (see section 3.3).
- [7] Lift the air tank up against the straps. Wrap the straps around the air tank. Insert the hexagon screw with a compression spring into the threaded bolt and position the screw into the hinge bolt.
- [8] Adjust the position of the straps in accordance to the max/- minimum allowed distances. Tightened the hexagon screw with a tightening torque of 10 Nm,  $\pm 1$  Nm (cf. 3.5 and 3.2).



### Attention:

Caution must always be taken when handling the air tank! If the air tank is dropped, falls or receives an impact, then it is considered as damaged and should be replaced with a new air tank.

## 5. Visual inspections

The air tank should be visually checked on a regular basis on the following points;

	Before journey	Quarterly
Visual damages	X	
Drained from water		X
Clean the tank in a pressureless condition, check for damages on the tank, fasteners (holder and straps) and the air-connections.		X
Check air-couplings (fittings) for tightness M 22 x 1,5      M = max. 25 Nm		X
Check holders against vehicle for tightness M 12              M = max. 30 Nm (28-32 Nm)		X

## 6. Logistics

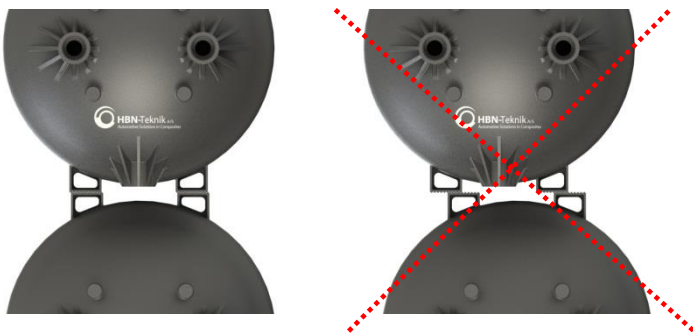
Storage, packaging and transportation of the air tank must be done with existing stacking legs located on the end caps. It is important that the stacking legs are positioned correctly against each other without any off set (cf. picture below) to guarantee the stability. A single air tank must not be exposed to a higher loading pressure of 240 kg (60 kg per stacking leg) and must be free from friction.

An air tank should be stacked on a pallet without overhang, occasionally a wooden board is required on the bottom before stacking, to avoid stacking feet falling between the open areas on the pallet. Once the desired stacking height is achieved, strap the air tanks with minimum 2 plastic straps against the pallet (see pic 2). Then wrap the pallet with a plastic foil wrap until the desired stability is achieved (24m/pallet).

Pallet stacking is prohibited without separating the air tank from the pallet above with a wooden board. It is also required that 2 additional straps are applied around both pallets (see 3). Strapping of goods during transportation must only be done against the pallet and not directly against the air tank (see pic 4).

Precaution should be taken during all time while handling the air tank. If it is dropped, falls or receives an impact of some kind it is considered as damaged and should be scrapped and replaced by a new one.

### 1. Stacking feets



**2. Single stacking****3. Double stacking****4. Strapping of goods in transit****Attention:**

Caution must always be taken when handling the air tank! If the air tank is dropped, falls or receives an impact, then it is considered as damaged and should be replaced with a new air tank.

**7. Technical data**

	<u>Ø276</u>	<u>Ø310</u>	<u>Ø396</u>
Maximal nominal pressure (bar):	12,5	12,5	10
Test pressure (bar):	18,75	18,75	15
Burst pressure (bar):	37,5	37,5	30
Temperature:	-40°C to +80°C		
Approved by:	TÜV Rheinland		
Material:	Glasfibre reinforced plastics (PAGF)		
CE-certificate:	CE-0035		

## 8. Warranty conditions

HBN offers a warranty of 2 years from the date of first delivery for the air tank and its fasteners.

HBN's liability under this warranty shall be limited to repair or exchange, at HBN's option, the air tank and its fasteners free of charge if it fails under normal use due to material or manufacturing defects.

HBN will not be liable for any costs of removal, installation, transportation, or any other charges which may arise in connection with a warranty claim. HBN will not be liable for damage or wear to products caused by abnormal operating conditions, accident, abuse, misuse, unauthorized alteration or repair.

HBN will not accept a warranty under the following conditions:

- a) damages caused by tools and/- or other devices
- b) non-compliance with the installation instructions
- c) installations of the air air tank with non-recommended holders and straps.
- d) mechanical changes or modifications of the air tank, holders and straps.
- e) failure to comply with the technical data.

## 9. FAQ

### 1. What is an AIRFLEX<sup>®</sup> Air Tank and what can it be used for?

It is a pressure vessel that stores compressed air for brake & air-suspension systems, doors, clutches and other areas requiring compressed air for its functionality.

### 2. Can the AIRFLEX<sup>®</sup> Air Tank be painted (coated)?

Yes, it is possible but a wet coating process must be applied (dipping or spraying) with a solvent-free paint. Coating with a heating process is strictly prohibited. The acceptable temperatures are stated on the imprinted label on the air tank or in this manual.

### 3. Is the air tank recyclable?

Yes, there are recycling companies in all countries which handle used fibre reinforced plastic materials.

### 4. Can the air tank also be mounted vertically?

Yes. However, it must be ensured that the drain valve is at the lowest position. This can be achieved by using one of the air-connections (ports) for drainage while plugging the original drainage port.

### 5. Can the air tank be mounted with other fasteners (holder and strap) on a vehicle?

No, the air tank must only be mounted with standard HBN fasteners or with specially customized solutions by HBN for safety reasons.

### 6. Is the air tank resistant to chemicals?

Yes, the vessel has been tested by TÜV-Rheinland with sulfuric acid, caustic soda, and diesel in accordance with ASTM D4814 or equivalent, ammonium nitrate solution and windshield fluid consisting of methanol and water.

**7. Can the air tank be mounted on the end caps?**

No, the air tank must only be mounted with fasteners or with specially customized solutions from HBN.

**8. Is the air tank UV-resistant?**

Yes.

# MAKING THE IMPOSSIBLE

## possible with light weight solutions

HBN-Teknik A/S is one of the leading manufacturers of composite solutions for the automotive industry world-wide. As a pioneer in the field of injection moulding and extrusion technology, we bring unique competences of light weight design, structural analysis, manufacturing processes, testing of materials and products to the industry. With a focus on quality and innovation, we have been able to expand our product portfolio into high-tech areas previously dominated by steel or aluminum components.

Today we can present a global presence, through the BPW Group and other partners, in the heavy commercial vehicle segment with products such as; Air spring pistons, Air Tanks, Mudwings, Anti-sprays and soon also a 9 ton axle. Our solutions are setting new standards in the industry, helping vehicles become a cleaner source on the roads through its contribution to fuel efficiency and tare weight reduction.