

AGRICHEMA
SCHÜTTGUTTECHNIK



Customer Information

Safe operation of Air-Blast Units

1 Introduction

For the safe maintenance, operation and testing of air-blast units, an analysis of the risks must be carried out.

The following are to be taken into account in this analysis:

pressure device

exhaust system

pipes between air-blast unit and
exhaust system

support systems

2 Pressure device

The devices are only approved for commercial and industrial operations.

Any other use beyond this is not deemed as appropriate.

Any technical modification or conversion of the device without prior written consultation with the manufacturer is prohibited for safety reasons.

The manufacturer will accept no responsibility for any resulting damage.

The use of the device is limited to removing flow problems and material deposits in bulk material facilities, for example in:

bunkers and silos

stockpiles and star systems

transfer hoppers and chutes

filter systems and pipes

spray towers and cyclones

suspended gas heat exchangers

grate cooler inlets

travelling gate preheaters

chutes

2.1 Design

The pressure vessels have a volume of 8l to 500l and are filled with compressed air up to 10bar. The air-blast units are put under stress by dynamic load cycles.

The following applies to air-blast units:

the product safety act with the associated ordinances

the industrial safety regulation

the AD 2000 data sheets

the regional regulations

Which EC directives are applied by the manufacture can be seen on the manufacturer's Declaration of Conformity. In case of doubt, it is recommended to ask an approved inspection agency ZÜS (e.g. TÜV or DEKRA).

According to the rules for inspection intervals in the Industrial Safety Regulation and based on the Pressure Equipment Guidelines, acceptance tests must be carried out at the installation site in accordance with points 2.2 and 2.3 below, depending on the pressure liter product (product of air pressure in bar and tank content in liters).

Determining the test intervals is the responsibility of the plant operator. The number of stress cycles can be determined e.g. by a process control system.

2.2 Inspection prior to start-up

According to the Industrial Safety Regulation, the plant operator is responsible for having an inspection prior to start-up and before restart-up after changes requiring testing carried out. Old containers in operation must also be subject to an inspection prior to start-up. (if this has not yet been done).

If containers get a new installation, it must be checked whether a new check before commissioning is necessary.

For a pressure liter product ≤ 200 , this check can be carried out by a qualified person. For a pressure liter product > 200 , this must be done by the approved inspection agency (ZÜS).

2.3 Repeat inspection

Interior inspection

An interior inspection can be carried out on a pressure liter product ≤ 1000 by a qualified person or ZÜS. The test intervals are to be determined by the operator however an inspection is necessary at the latest after reaching half of the defined load cycles.

For a pressure liter product > 1000 , the inspection may only be carried out by an approved inspection agency. The test intervals are to be defined at 5 years max. or after reaching half the number of load cycles.

Once the number of load cycles is reached, evidence is to be provided as to whether the container can be approved again.

Strength test

A strength test can be carried out on a pressure liter product ≤ 1000 by a qualified person or ZÜS. The test intervals are to be defined by the operator.

For a pressure liter product > 1000 , the inspection may only be carried out by an approved inspection agency. The test interval is to be defined at 10 years max.

3 Pipe between air-blast unit and exhaust system

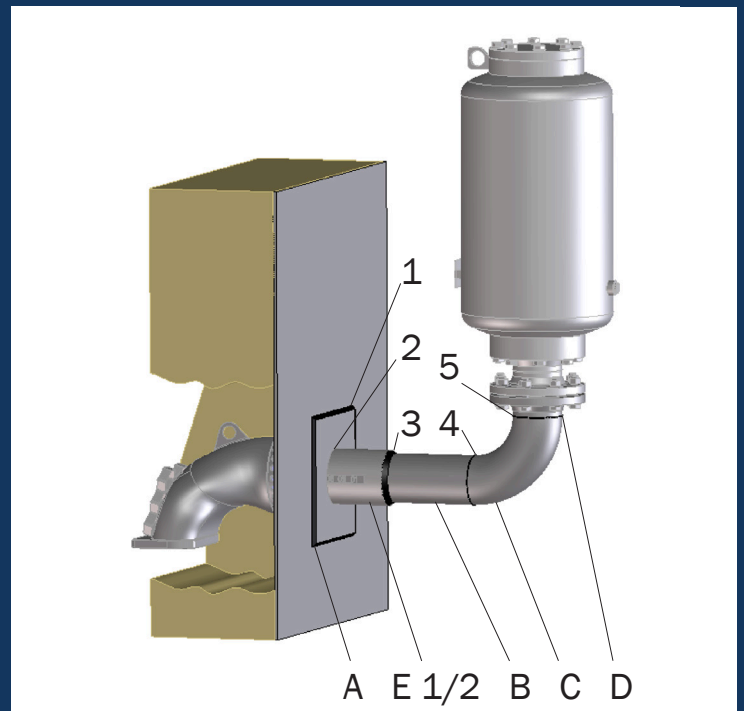
3.1 Wall thicknesses + welding fillers

The pipes between the air-blast unit and exhaust system, as well as the exhaust system itself, are put under stress by mechanical and chemical influences. For safe operation, these parts must be subject to a regular check (e.g. by wall thickness measurements).

We recommend using the following minimum wall thicknesses:

Pos	Description	Wall thickness new	Wall thickness min.
A	Mounting plate	8 mm	8 mm
B	Pipe	6,3 mm	4 mm
C	Pipe bend	6,3 mm	4 mm
D	V-flange	6,3 mm	4 mm
E1	Exhaust system heat-resistant nozzle	12 mm	9 mm
E2	Exhaust system heat-resistant pipe	6,3 mm	4 mm

Illustration 1:
Fastening the heat-resistant nozzle



Comment:

The components must be assembled by skilled personnel. In particular, suitable welding fillers are to be used (see table).

Pos	Description	Recommended electrode for welding
1	Welding seam mounting flange	Normal rod electrode (e.g. Oerlikon Spezial)
2	Welding seam mounting flange/nozzle	Material no.: 2.4648 (e.g. SV Nicro A)
3	Welding seam pipe/nozzle	Material no.: 2.4648 (e.g. SV Nicro A)
4	Welding seam pipe bend/pipe	Normal rod electrode (e.g. Oerlikon Spezial)
5	Welding seam pipe bend/flange	Normal rod electrode (e.g. Oerlikon Spezial)

3.2 Static installation recommendation

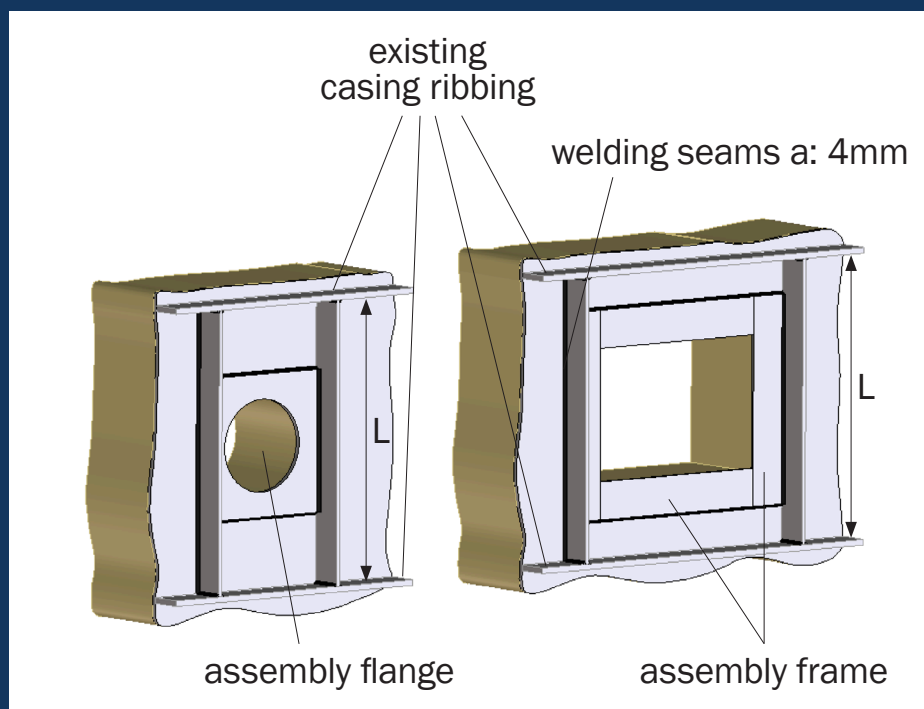
The local operator is responsible for defining the wall penetrations and for checking the statics associated with this.

With regard to the recoil forces generated by the air blasts, the wall penetrations for the heat-resistant nozzles must be checked and reinforced accordingly if necessary.

Recoil forces			
	6 bar	8 bar	10 bar
DN 100	6,5 kN	7,5 kN	9,5 kN
DN 150	12 kN	16 kN	20 kN

For heat-resistant nozzle systems by AGRICHEMA, the design below is recommended:

Illustration 2: HBD installation recommendation



Necessary ribbing for exhaust systems:

L (m)	FL (flat iron) (mm)
0,600	70 x 6
0,800	80 x 8
1,000	80 x 8
1,200	100 x 8
1,400	100 x 8
1,600	100 x 8

4 Support systems

As there is a high risk of accidents from falling components, corresponding safety measures are to be taken.

The pressure vessels can be secured by chains, ropes, pipe clamps or cages.

If using chains or ropes, a minimum load bearing capacity of 2500N is to be provided. Keep chains / ropes as short as possible, but do not put them under tension.

Examples of design types:

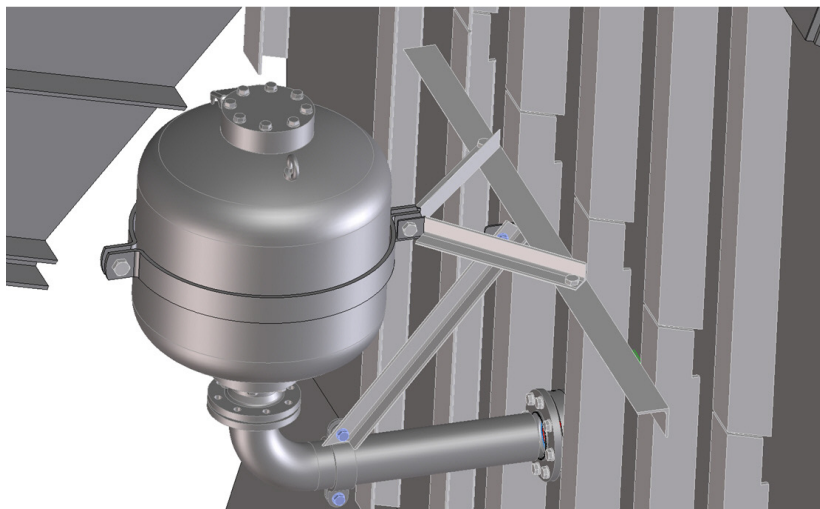


Illustration 3: safety device with pipe clamp

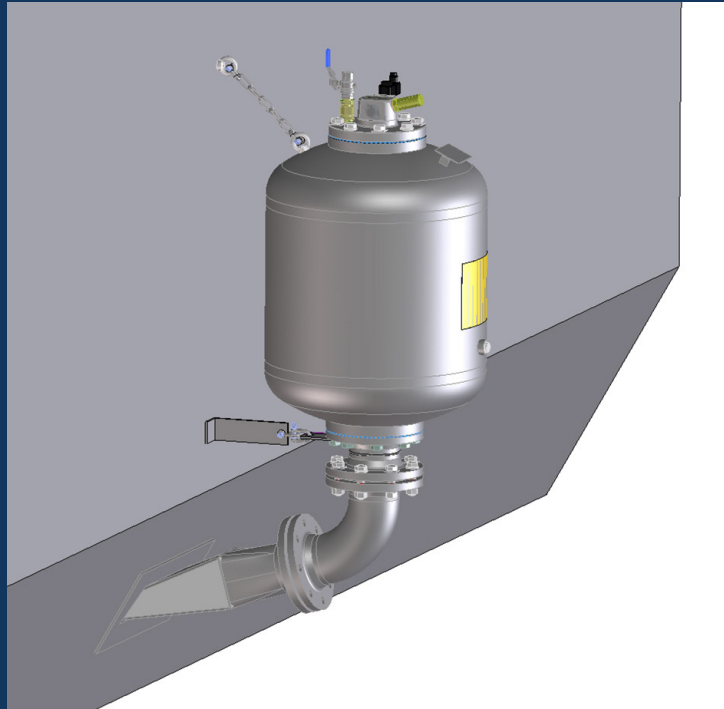


Illustration 4: safety device with chain and flat steel

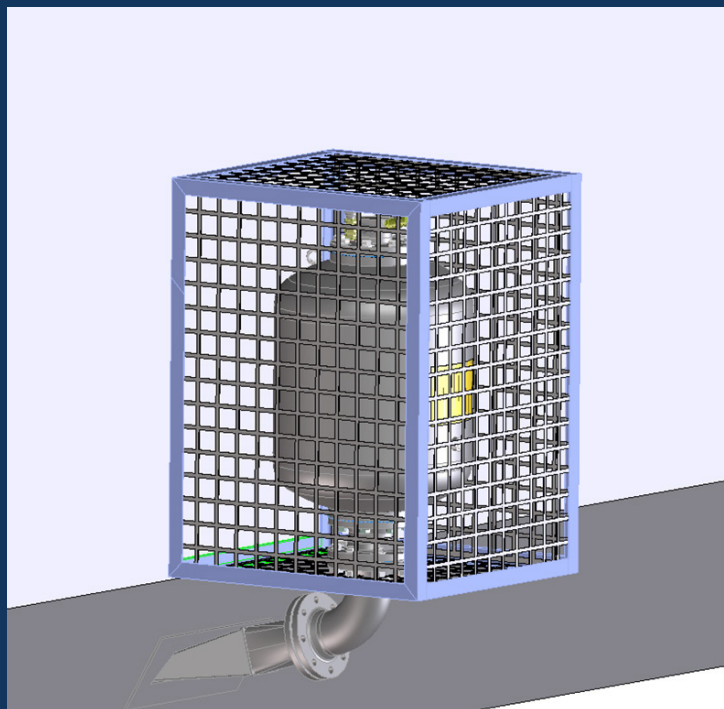


Illustration 5: safety device with cage

In this context we refer you to our recommendation for pipe holders for the Air-blast Units.



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