Air cannons PG for silos and hoppers

A pressure vessel emptied through one fast valve that lays an air blade down along the wall — at 3 to 6 bar.

Wood chips, paper, textile fibres, plastic shavings, bran. Materials with a large and irregular particle shape hold together differently from a fine powder: they interlock, span a bridge across the outlet and stay behind on the cone wall when the rest has run out. Vibration and aeration work on the mass from within and fall short. An air cannon does something else. The PG is a pressure vessel charged to 3 to 6 bar and emptied through one fast valve: between 2.6 and 21 litres of free air leave the nozzle in an instant. The jet is aimed parallel to the internal wall, and the effect is an air blade that sweeps the hopper surface clean. It does not run continuously but in shots — at an interval you set yourself, from 30 seconds to 45 minutes.

Working pressure	Air per shot	Duty cycle	Temperature	Weight
3 to 6 bar	**2.6 to 21 l**	**Discontinuous**	**-20 to 80 °C**	**6 to 21 kg**

Three ways the material stays behind

An air cannon solves three things: the bridge over the outlet, the rathole through the middle and the emptying that never finishes. Any plant engineer knows the first two. The third is the one that costs most, because it does not stop production — it just eats the capacity.

Bridge over the outlet

Chips, flakes and fibres interlock and span an arch across the opening. The silo is full, the discharge works in empty space, and nothing comes out.

Rathole through the middle

A narrow shaft runs down through the centre while the rest stands still along the wall. The silo looks like it is emptying, but most of the contents stay put — and get older by the day.

Incomplete clean out

The material does come out, but a cake stays behind on the cone wall and the silo never empties completely. This is what the air blade is built for: the jet runs along the wall and takes the cake with it.

One shot, along the wall

An air cannon is a pressure vessel. The vessel stands full of compressed air at 3 to 6 bar and does nothing — until the valve opens. The valve is integrated in the head, it is fast, and it empties the whole vessel in an instant: 2.6 litres on the smallest at 3 bar, 21 litres on the largest at 6. Afterwards the vessel recharges, and nothing more happens until the next shot. The duty cycle is therefore discontinuous, and that is why the consumption can be so low: the cannon only uses air in the seconds it is working.

The direction is the whole point. The jet is aimed parallel to the internal wall of the silo, so that materials with an irregular shape, dry and light, flow down without any accumulation. The nozzle is an elbow: it takes the air in through the wall and turns it, so the shot lies down like a blade across the surface instead of drilling into the mass. That is the air blade, and it is what sweeps the hopper surface clean.

It is not quiet, though. The maximum noise level is 105 dB(A), and that is a figure that belongs in the planning of where the cannons sit and who works nearby. The air also has to be clean: quality class 5.4.1, with a filter and a flow control valve in the circuit.

Technical specifications

Application	Hopper and silo

Material in the silo	Large size, irregular shape, fibrous dust and flakes
Problem solving	Bridge, rat-holing and incomplete clean out
Duty cycle	Discontinuous
Working pressure	From 3 bar to 6 bar (from 43 psi to 87 psi)
Air per shot	2.6 to 21 litres, depending on size and pressure
Pneumatic circuit	Filter and flow control valve
Air supply quality	Class 5.4.1
Working temperature	-20 to 80 °C (-4 to 176 °F)
Max noise level	105 dB(A)
Technology	High pressure jet
Material	Aluminium body, steel plate and aluminium head
Air inlet	1/8 in BSPP on the PG 40, 1/4 in BSPP on the PG 63 and PG 80
Directives	Machinery regulation 2023/1230, designed to EN 12100-1 and EN 12100-2
Position	Internal application, in contact with the material. The vessel sits outside on the wall, the nozzle passes in through it

Three sizes, the same build

What separates the three is the volume of the vessel — and therefore how much air there is in one shot. A is the side of the mounting plate, B its thickness, D the overall height of the cannon, Ø E the diameter of the nozzle pipe and F how far the nozzle projects from the plate.

Model	3 bar	6 bar	A	B	D	Ø E	F	Weight
PG 40	2,6	4,6	130	20	223	27	61	6
PG 63	6,4	11,6	160	20	263	42	88	14
PG 80	12,5	21	200	25	318	48	104	21

The number in the model name follows the size of the vessel: the PG 40 is the smallest and the PG 80 the largest. The air inlet is 1/8 in BSPP on the PG 40 and 1/4 in BSPP on the other two, and the pipe diameter is 8 millimetres on all three.

The vessel, the valve and what fires the shot

A PG comes with a mounting plate. The plate bolts to the silo wall, the nozzle pipe passes in through it, and the vessel stays outside. The valve is integrated in the head, and firing can be electric or fully pneumatic.

The vessel and the plate · PG 40 · 63 · 80

The pressure vessel itself is aluminium and stands on a square steel plate that is included. The plate has slotted holes in all four corners so it can be aligned, and the nozzle pipe passes in through the middle.

Sizes	PG 40, PG 63 and PG 80
Plate side	130, 160 or 200 mm
Overall height	223, 263 or 318 mm
Weight	6, 14 or 21 kg
Material	Body and head in aluminium, plate in steel

1. The plate bolts on from the outside of the silo wall.
2. The nozzle pipe passes in through the wall and turns, so the jet runs along the inner face.
3. The vessel sits outside and can be reached for service.
4. The mounting plate is included in the delivery.

The valve and the firing ·

The valve sits inside the head, not as a loose component in the pipe, and it is what makes the shot fast enough to become a blade rather than a puff. On top sits the coil with a manual override. Where the plant has to run without electricity at the cannon, a fully pneumatic activation kit is available instead.

Valve	Integrated in the head
Coils	24 V AC and DC up to 230 V
Timer	Adjustable from 30 seconds to 45 minutes
Control	Electronic board for up to 15 cannons
Without power	Fully pneumatic activation kit

1. The coil opens the valve and the vessel empties in an instant.
2. The timer decides how often it fires.
3. One electronic board can control up to 15 cannons and fire them in turn.
4. The manual override sits on top of the head.

How many cannons are needed and where they should sit depends on the dimensions and angle of the cone, what you handle, and what the compressed air can deliver. Tell us, and we come back with a size, a number and a layout.

Where it sits and what it works in

Plant	Silos and hoppers
Materials	Powders of large particle size and irregular shape, fibrous powders and flakes. Typically wood fibres, textile fibres, paper, plastics and bran
Benefits	Compact design with integrated solenoid valve, suitable for bridge breaking, economical, easy to install, low air consumption and mounting plate included
Sectors	Building and construction, food and feed, heavy industries, plants and machinery, plastics and chemical processing, recycling and environment technology, and renewable energies
Ex areas	OLI states no ATEX classification for the cannon itself. The solenoid coil is available in an ATEX version. If the cannon is to sit in a classified zone, talk to us before ordering

Which size, and how many?

Tell us the dimensions and angle of the cone, what you handle, and what the compressed air can deliver. We come back with a size, a number and a price — not with a catalogue.

Sales and orders	+45 70 23 12 03 · sales@particulair.com
Product page	particulair.eu/flow-aid/en/products/air-cannons/
Product selector	particulair.eu/flow-aid/en/product-selector/

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