

Fluidisation nozzles U for silos and hoppers

A nozzle that screws into a ring welded to the silo — the whole installation happens from the outside.

A dry, fine powder that has stood still holds on to itself. It forms a bridge over the outlet, a rathole through the middle, or it simply comes out sluggishly. The U is OLI's economical answer to that: a nozzle with a porous face that blows a constant stream of low pressure air in along the wall, so the layer nearest the wall becomes something that can flow. There are no moving parts and nothing to control. And what counts most in practice: the whole installation happens from the outside. A steel ring is welded to the silo, the nozzle screws into it and the air line goes on — nobody has to go inside. The series has two models, the U025 and the U060.

Working pressure 0.2-1 bar	Air consumption 27-96 NI/min	Duty cycle Continuous	Temperature -20 to 80 °C	Models U025 and U060
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When the powder will not come out on its own

The catalogue names two symptoms outright, bridges and ratholes, and opens its own paragraph with a third: that the nozzles facilitate the flow of material into silos and hoppers. Those are the three situations a plant engineer calls about.

Bridge over the outlet

The powder spans an arch across the opening and carries its own weight. The silo is full, but nothing comes out, and the discharge works in empty space.

Rathole through the middle

A narrow shaft runs down through the centre while the rest stands still along the wall. The silo appears to empty, but most of the contents stay where they are.

A sluggish flow out of the hopper

The material does come out, but slowly and unevenly, and the dosing further down the plant has to wait. A constant stream of air along the wall is exactly what the catalogue promises against that.

Constant air through a porous face

A fluidisation nozzle does one thing, and it does it all the time. The compressed air enters from behind, distributes itself inside the body and passes out through a porous element at the front. That element is what turns the air into many small streams rather than one jet, and it differs between the two models: the U025 has a sintered brass filter, the U060 a face in high density polyethylene. The body is polyamide on both.

The pressure is low, 0.2 to 1 bar, and the duty is continuous — there is neither a solenoid valve nor a timer in the circuit. The air runs into the layer nearest the wall and turns it into a fluid bed: the material loses its internal cohesion and begins to slide rather than stand. It costs 27 normal litres a minute at 0.2 bar and 96 at 1 bar on the U025. A lower pressure is always preferable.

What makes the U easy to get into a plant that is already running is the mounting. A steel ring is welded to the outside of the silo, and the nozzle screws into that ring from the outside. Nobody has to enter the silo, either to install or to change a unit, and that is what makes the series the obvious one for retro-fitting plant that is already running. The air does have to be dry: quality class 5.4.1 is required, and a porous face is precisely where damp powder would take hold.

Technical specifications

Application	Hopper and silo, piping
Material in the silo	Fine and dry powders (cement and lime)

Problem solving	Bridge and rat-holing
Duty cycle	Continuous
Working pressure	From 0.2 bar to 1 bar (2.9 to 14 psi)
Air consumption	27 to 96 NL/min per nozzle, depending on model 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)
Technology	Fluidisation
Body	Polyamide
Ring	Carbon steel, welded to the silo
Mounting	External, suitable for retrofitting
Position	Internal, in contact with the material

Two nozzles, two porous elements

The U025 is the long, slim one, the U060 the short, wide one. The difference is not only size: each has its own porous element, its own thread into the ring and its own air connection.

Model	Porous element	0.2 bar	1 bar	A	B	CØ	D	E	F
U025	Sintered brass	27	96	40	70	40	33	1"	1/2"
U060	HD polyethylene	30	90	31	48	66	30	2"	3/8"

E is the thread the nozzle screws into the ring with, and F is the air connection at the back. Note that the small nozzle has the larger air connection: the U025 takes 1/2 inch, the U060 only 3/8. A, B and C are lengths and a diameter in millimetres, and D is the internal bore of the nozzle.

The nozzle, the ring and the two versions

Each nozzle comes with a ring in carbon steel. The ring is welded to the outside of the silo over a hole, the nozzle screws into the ring, and the air line goes on at the back. The whole job happens from outside. The two models differ in the porous element and in the two threads.

U025 · the slim one · U025

The long one of the two: 70 millimetres end to end and 40 in diameter. The porous element is a sintered brass filter that stands proud of the body. It screws into a ring with a one inch thread and takes the larger of the two air connections.

Length	70 mm
Diameter	40 mm
Porous element	Sintered brass
Thread into the ring	1 in BSPP
Air connection	1/2 in BSPP
Air consumption	27 NI/min at 0.2 bar, 96 at 1 bar

1. The ring is welded to the outside of the silo.
2. The nozzle screws into the ring from outside, with the hexagon as the spanner flat.
3. The brass filter faces the material.
4. The air line goes onto the 1/2 in BSPP thread at the back.

U060 · the wide one · U060

The short one of the two: 48 millimetres long, but 66 in diameter. The porous element is a face in high density polyethylene covering the whole front, so the air leaves across a larger area. In return it needs a two inch thread in the ring. It has been tested up to 3 bar, where it uses 210 litres a minute.

Length	48 mm
Diameter	66 mm
Porous element	High density polyethylene
Thread into the ring	2 in BSPP
Air connection	3/8 in BSPP
Air consumption	30 NI/min at 0.2 bar, 90 at 1 bar

1. The ring is larger than the U025's, because the thread is two inches against one.
2. The nozzle screws into the ring from outside and the porous face turns towards the material.
3. The air line goes onto the 3/8 in BSPP thread at the back.
4. Check that the plate can carry a hole for a two inch thread.

Which of the two fits depends on how much wall there is to work with, how thick the plate is, and what the compressed air can deliver. Tell us, and we come back with a model, a number of units and a layout.

Where it sits and what it works in

Plant	Silos, hoppers and piping
Materials	Fine and dry powders. The catalogue names cement and lime
Suited to	Retrofitting plant that is already running. The whole installation happens from the outside
Tasks	Silo and hopper emptying, filter cleaning and big-bag emptying
Sectors	Building and construction, heavy industries, plants and machinery, plastics and chemical processing, recycling and environment technology, and renewable energies

The U is not intended for food use. For that we recommend the vibro-aerators, which we carry as the VBS – see the card below

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