URBAR
ingenieros s.a.

Air cannon

CNU

- Solution for material flow problems.
- Simple, efficient, noiseless and economic.
- Safety for the staff.
- Whole capacity of the deposit is useful.
- Membrane shot as the only moving part.
- System patented.

Description

The CNU-M air cannon is a system to solve flow problems of bulk materials such as ash, slag, lime, cement, coal, ore, clay, salts, sawdust, shavings, cuttings, flakes, powder, soya, livestock…

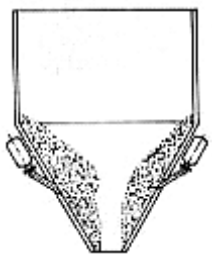
In a fraction of a second the CNU-M air cannon blasts a volume of pressurised air through a broad section pipe, until it reaches the critical areas of the silo where the bulk material has become blocked. This accumulated energy, by being suddenly released, exceeds the adherence friction, and as a result of the airjet, the blocked material again flows normally by gravity, with little sliding friction.

The CNU-M air cannon is a safe method, as the valve used does not produce any sparks or flame. Besides of this, other fluids can be used, as the nitrogen. On the other hand, the structure does not suffer, as the energy is applied directly to the material. The design reduces the backward motion to the minimum, avoiding any possibility of stress on the structure.

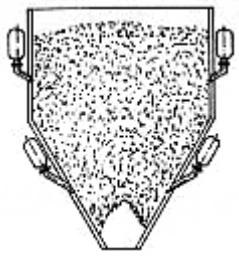



Applications

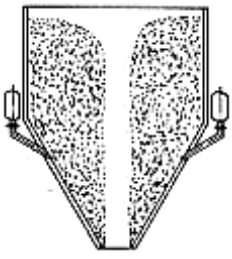
The CNU-M air cannon can be used in concrete, steel, wooden or plastic silos, tanks and hoppers. Any shape, form or inclination can be valid as long as the material to be fed is blocked.



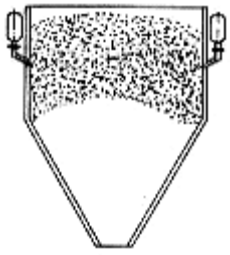
Clinging material
The material clings to the wall structure.



Bridging
The material tends to form a bridge in the central area.



Chimney
Hoppers often become obstructed with settled material.



Dome
The material blocks the upper part of the hopper.

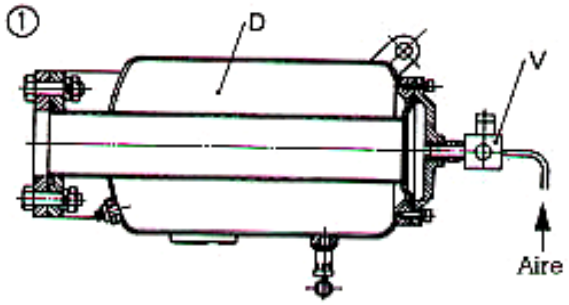
Functioning

The CNU air cannon works with normal air pressure lines, starting form 2 to 10 kg/cm^2. It is highly recommended that the used air is clean and dry. The effectiveness is increased with the pressure. Normally a pressure between 2 and 6 kg/cm^2 is enough.

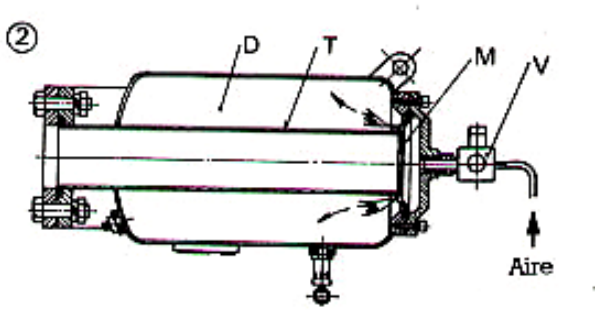
The maximum drive frequency allowed to activate the air cannon is 12 shots per minute, even though a few shots per day are enough under normal conditions.



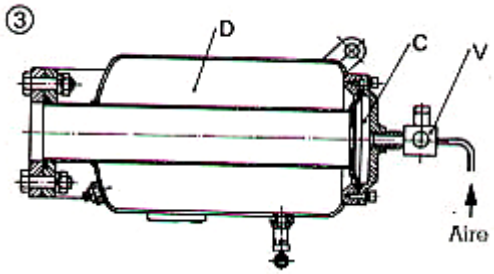

How the CNU-M air cannon works



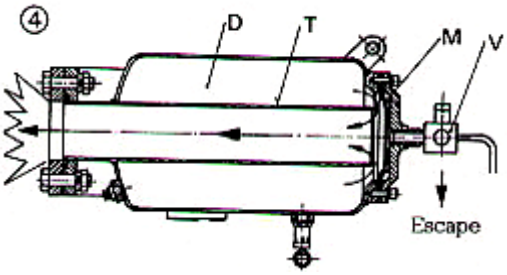
To fill the accumulation chamber D with air, the airline is connected through the valve V



The air presses membrane M against the edges of pipe T, closing chamber D. D is filled with air through the holes of the membrane.



The air passing through the holes in the membrane fills the chamber D until pressure compensation is reached.



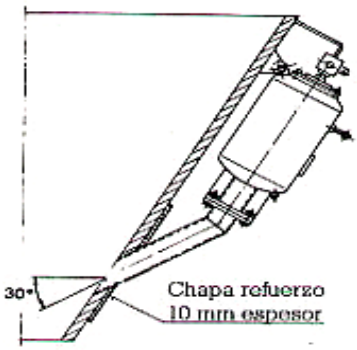
When closing valve V, the air contained in chamber C leaves through the electric valve, opening communication between chamber D and pipe T. The air leaves through T, expanding in the form of an explosion.

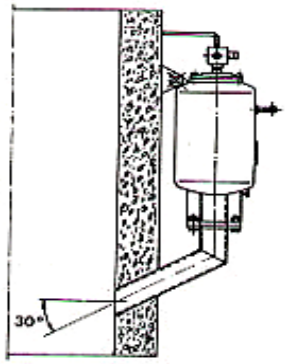
Installation

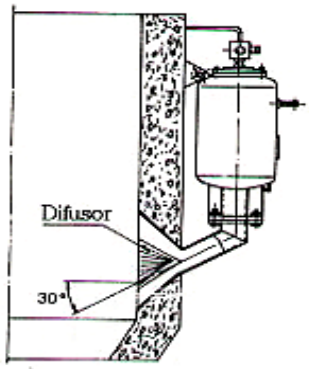
The 3/4" quick exhaust valve V -included in the scope of the supply- has to be installed in the outlet of the air cannon. This exhaust valve has to be commanded by another valve, with a minimum diameter of 3/8".

The air cannon is secured to the tank or hopper with a few accessory pipe elements and is connected to the air pressure network through a control valve sometimes combined with a full automatic pneumatic drive circuit.

The control valve can be a 3/2-way valve, a 5/2-way valve; electrically, pneumatically or manually commanded. It can be connected to the exhaust valve directly or through a rigid tube; in this case, the minimum tube diameter must be 10 mm and the maximum length of 1,5 m.



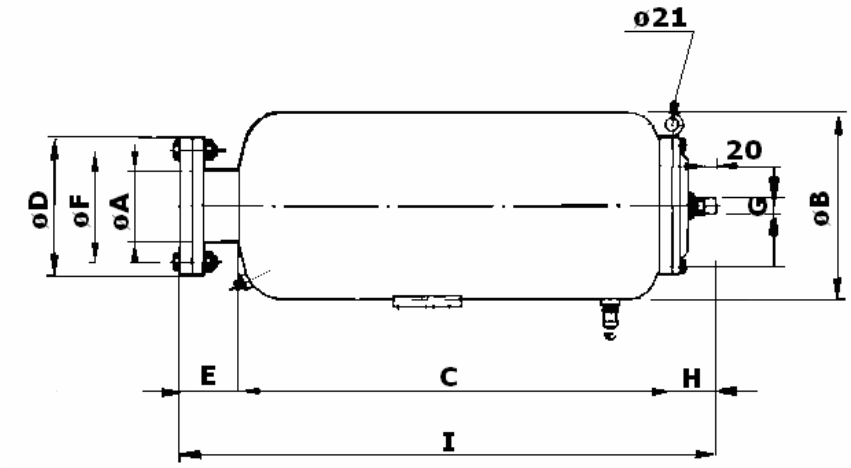




Construction

The only moving part in the CNU-M air cannon is a membrane accessible from the outside without dismantling the unit. This membrane gives the air-tightness to the air cannon.

Dimensions



Type	Vol.* l	A	B	C	D	E	F	G	H	I	Flange	ø	Peso
						mm						mm	kg
CNU-M 0	8	76,6	200	320	165	85	125	3/4''	65	470	4 drills	18	20
CNU-M 1	16	76,6	200	600	165	85	125	3/4''	65	750	4 ''	18	28
CNU-M 2	45	114,8	300	700	220	95	180	3/4''	75	870	8 ''	18	48
CNU-M 3	138	114,8	500	750	220	95	180	3/4''	75	920	8 ''	18	74

* Air volume with 1 kg/cm^2 pressure.



Safety against accidents

CNU air cannons fulfil Council's Directive concerning pressure vessels 87/404/CEE.

Questionnaire

If needed, a questionnaire is available in order to study the necessary data to determine the type and the units to be installed on the silo.

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