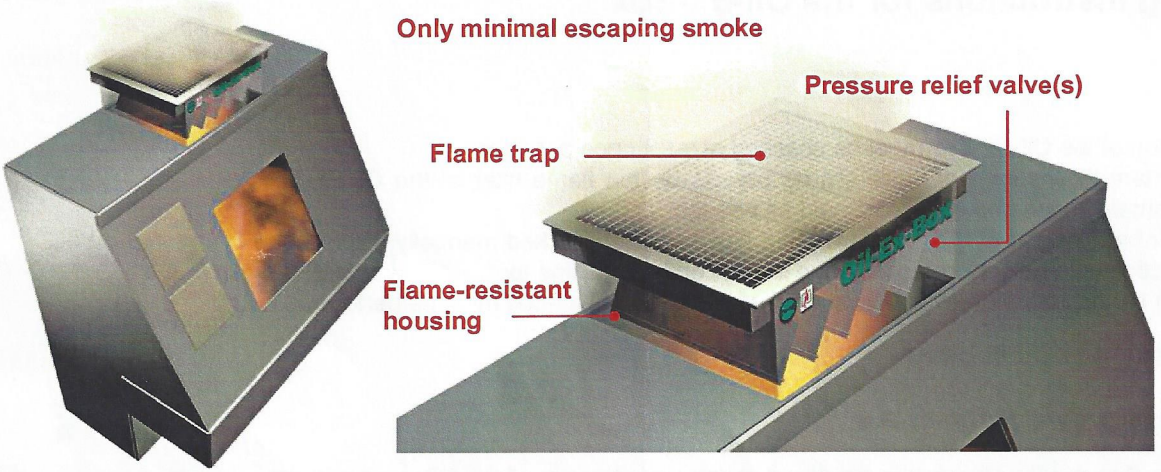
kraft & bauer
BRANDSCHUTZSYSTEME

rembe®

Flameless pressure relief with the Oil-Ex-Box for machine tools

is a cooperative development of the companies KRAFT & BAUER and REMBE®

Certified with confirmation of suitability no. 20612641 DMT



In machine tools with an enclosed working space (lathes, grinding machines, drilling machines, milling machines, etc.), fires and explosions (detonations) may occur when water-immiscible cooling lubricants are used that are nebulised by the process, e.g. by tool breakage, collision or mechanically generated sparks.

The resulting overpressures and escaping flames can represent a major threat for both people and the machine. BGI 719 "Fire and Explosion Protection on Machine Tools" therefore recommends the use of pressure relief devices that safely dissipate dangerous overpressures. A pressure relief cross section of 0.1 m² should be present on the machine per cubic metre of machine working space volume.

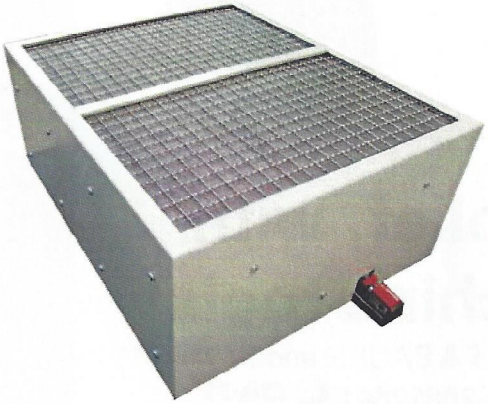
The function of the Oil-Ex-Box is based on a patented process for flameless explosion pressure relief. The overpressure and flame front of an oil-mist explosion are channeled through single- or multiple-vaned pressure relief valves into the housing of the Oil-Ex-Box. There the special REMBE® flame filter absorbs the energy. Unlike conventional pressure relief valves, the Oil-Ex-Box thus safely prevents flames from escaping the pressure relief area of the machine tool. The Oil-Ex-Box thus allows the machine tool to be set up in areas with low ceilings and below the cable trays or similar system components that are essential for operation.

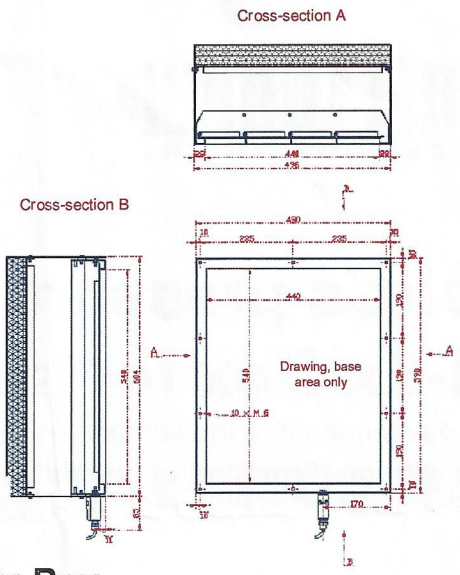
The Oil-Ex-Box protects inexpensive low-strength machines, is available in all desired sizes and is therefore also suitable for retrofitting on old machines. Timely resumption of operation is possible after a fire or explosion event.

Since pressure relief devices are generally not autonomous protective systems as defined by the Explosion Protection Directive 94/9/EC (ATEX 114), it is not necessary to perform an EC type examination.

Nevertheless, the performance of the Oil-Ex-Box under highly demanding field conditions has been certified by experts of the DMT Centre for Fire and Explosion Protection, who found that the flames occurring during a fire or explosion event were effectively contained and no influence on the effectiveness of the pressure relief valves was observed.

Flameless pressure relief valve with the Oil-Ex-Box





Operating instructions for the Oil-Ex-Box

Notes

1. The function of the Oil-Ex-Box must be checked at least once per year.
2. It is important to ensure that there are no objects on the flame filter of the Oil-Ex-Box. Coarse contamination should be removed as needed.
3. Freedom of movement of the pressure-relief fins must be checked manually. If possible, this inspection is to be performed from the interior of the machine tool.
4. After each fire or explosion event, an additional test of the oil ex-box must be performed.

Warranty and product liability

Assembly instructions for the Oil-Ex-Box

The Oil-Ex-Box supplied by us is guaranteed under consideration of the following criteria:

- Installation must be horizontal and is allowed only on the top of machine tools and processing centres. In order to allow an unobstructed pressure relief, a minimum distance of 0.5 m from other fixtures or ceilings must be observed.
- The pressure relief valve must be installed immediately in front of the extraction point (never behind the extraction point) between the processing point and the extraction system.
- Vertical mounting, e.g. on the side wall of the machine, is allowed only via an upward channel which conveys the pressure wave upwards. The channel must then be constructed to be at least as strong as the machine tool.

The Oil-Ex-Box prevents any risk to machine operators from escaping flames on the top of the machine and any deformation of the machine housing from pressure due to explosion.

From today's perspective, we recommend monitoring the relief fins of the Oil-Ex-Box so that any increase in pressure inside the machine enclosure will be noticed. Optionally, a limit switch for switching off the machine tool is also available.

The advantage of a flameless pressure relief valve with an integrated extraction port is that the highest concentration of oil mist is at the extraction opening. The greatest pressure and heat energies in case of an explosion/detonation occur in this version in the vicinity of the Oil-Ex-Box and can be optimally dissipated over a short path.

REMBE® GMBH SAFETY + CONTROL is the inventor of the method of flameless pressure relief of dust explosions and is the technology leader in this sector. Their patented systems have found their way into all international guidelines and have had a permanent impact on classical explosion protection. Created in collaboration with Kraft & Bauer Brandschutzsysteme GmbH, the leading manufacturer of fire extinguishing and protection systems (local application extinguishing systems, air shut-off valves and flame arrestors) for machine tools, the Oil-Ex-Box is a joint product that for the first time enables operators to protect their machines, their employees and the environment safely and cost-effectively.

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