

# Agathon Safety information / Sustainability

## Precision-Parts



# Safety first

## Safety for people and products

### Certified safety

With the certification according to **ISO 45001:2018 - Management System for Safety and Health at Work**, Agathon AG is committed to protecting the health and safety of its employees as its greatest asset. To this end, appropriate safety concepts have been developed and implemented. In addition to the protection of its own employees, the safety and health of customers and their employees is also extremely important to Agathon AG. You will therefore find some tips and recommendations below.

All ISO certificates can be found on our website:  
<https://www.agathon.ch/en/download/> (Downloads Company)



### General information

The various signs for protecting the health and safety of employees are divided into different categories:

| Sign type                         | Category | English term                            | Shape                                        | Example                                                                                                                        |
|-----------------------------------|----------|-----------------------------------------|----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| Warning sign                      | W        | Warn of hazards                         | Equilateral triangle with rounded corners    |  General warning sign                     |
| Prohibition sign                  | P        | Prohibited actions (Must not do)        | Circle with diagonal line                    |  Smoking prohibited                       |
| Fire Safety sign                  | F        | Identifying of fire-fighting equipment  | Square                                       |  Fire extinguisher                        |
| Mandatory sign                    | M        | Mandatory actions (Must do)             | Circle                                       |  Use hearing protection                   |
| Safe Condition sign (Escape sign) | E        | Identifying of safety equipment & exits | Square or rectangular (with direction arrow) |  Escape route, Emergency exit (left hand) |

(Source: [https://en.wikipedia.org/wiki/ISO\\_7010](https://en.wikipedia.org/wiki/ISO_7010))

Missing signs or disregarding the instructions can lead to serious damage or accidents. Everyone is therefore responsible for working safely. Missing or incorrect signs should be reported to the person responsible so that they can correct the situation. The signs are standardized in the ISO 7010 standard.

## Personal protective equipment PPE

If our products are used as intended, they can be classified as safe. We recommend that you consistently comply with and respect local, industry-specific and generally applicable safety regulations. Also motivate your employees to protect their own health and that of their colleagues.



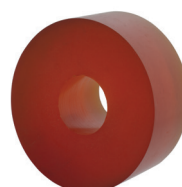
## Springs

### Spiral compression springs (component of products)

Some products contain spiral compression springs to ensure the correct positioning of the rolling element cages (e.g. Fine centering Plus, Mini fine centering, Guiding system Plus, Guide units with CRS). With the exception of guide units with CRS, it is not intended to remove the springs. It is therefore strongly recommended to avoid any manipulation of the ready-to-install systems.

### Gas pressure springs / helical compression springs with square wire cross-section / Eladur spring elements

The manufacturer's specific instructions must be observed for correct handling and disassembly.



## Chemicals

Frequent contact with chemicals (greases, oils, corrosion protection, cleaning agents, solvents, paints, etc.) can lead to skin damage and, in the worst case, to changes in DNA. Particular care must therefore be taken when handling these substances and all necessary protective measures must be taken. For specific information about a product, contact the product's safety data sheet and/or the manufacturer of the chemical in question.

## Pressing parts in and out

High forces are generated when pressing parts in and out, especially when individual parts are glued in. Particular care must be taken to avoid bursting parts. Here it is essential to follow the basic safety instructions.

## Experience and know-how

### Application technology: know-how paired with experience

Experience in tool and mold making is a priceless treasure. By changing the angle of view, exceptionally reliable guides can often be developed. Do you have questions about lifespan, precision, reliability or the behavior of the guide elements? Would you like to optimize your application and be more energy-efficient and sustainable?

The optimal solution is the result of an exchange between specialists. We are at your disposal with our accumulated experience in the areas of development and application technology in a wide range of industries and are happy to learn the tricks of the trade from you so that the applications run exactly as you imagined.

## Substances of Very High Concern (SVHC)

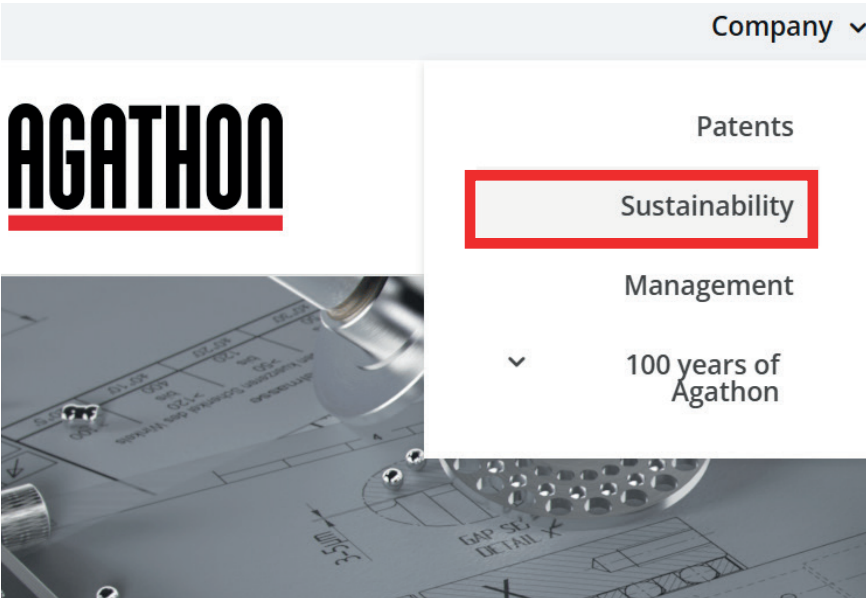
If you have any questions about product safety, please contact us.

We can provide you with materials and ingredients at any time on request. For customized products, the exact material can be defined in the course of the exchange.

We are happy to answer questions on current topics such as 3TG, critical minerals and PFAS.

The necessary information on materials containing lead (SVHC Lead) can be found at <https://www.agathon.ch/REACH> (Customer communication to fulfill the information obligations under REACH Article 33(1) and ChemO Article 71)

# Sustainability



Information on sustainability and securities can be found at:

<https://www.agathon.ch/en/home> >  
Company > Sustainability

## Further information

Further information regarding maintenance / servicing can be found on the specific information sheets. The latest version of these can always be found on the website under [Downloads]:

A-F0108930EN Instructions for the installation and maintenance of Agathon rolling guide elements  
A-F0117520EN Instructions for the installation and maintenance of Agathon centering rolling guide elements  
Catalog: Pages 2.27-2.47

The safety regulations must be observed and complied with during all installation, maintenance and storage procedures.

## Unpacking

- Handle with care: Do not drop
- Do not use a knife → Surface can be damaged
- Observe warning labels on units
- Label parts consecutively, if not already done, do not mount individual parts interchanged → Lifespan



## Corrosion protection / Rust inhibitor

With a few exceptions, the guide elements of Agathon AG are protected against corrosion with an inhibitor.

The exact product specification can be provided on request.

## Cleaning / Cleaning agents

Why the guide elements must be cleaned before installation?

- Rust inhibitor is **not** a lubricant!
- Adhering dirt particles (dust, other particles) lead to premature wear
- Possible incompatibility between anti-corrosion oil and lubricant:
  - No moistening → steel on steel → reduced lifespan
  - Chemical reaction → reduced lifespan

The cleaning method depends on the local possibilities. If the parts are washed together, make sure that the paired units are labeled before cleaning to prevent them from being mixed up during assembly.

Which cleaning agents are to be used?

Generally, industrial cleaners that are stabilized for all affected materials can be used. It is very important to ensure that the locally applicable legal guidelines, the regulations of the specific market segment and other applicable conditions are met.

Procedure

The parts must be cleaned according to the regulations and allowed to dry/air off completely. Regulations may come from the FDA, USDA, EMA, EPA or other organizations. The customer is responsible for compliance with official or customer-specific regulations.

Cleaning agent residues must be avoided to prevent possible incompatibility with lubricants. The manufacturer's instructions must be observed.

Please note that the parts are completely unprotected and susceptible to corrosion after cleaning. The parts should be protected with a fine film of grease to prevent corrosion.

Ultrasonic cleaning

It is recommended that aluminum cages and aluminum parts in general are removed and washed separately. Aluminum can only withstand the stresses of ultrasound to a limited extent (cavitation). Furthermore, the chemical resistance of aluminum is limited.

Brass is generally recommended for mandatory ultrasonic cleaning.

For critical parts, dry ice cleaning can also be considered as an alternative to ultrasonic cleaning.

## Greases / Oils

Greases or oils fulfill a variety of requirements that are decisive for a long lifespan of the guide elements. When selecting a lubricant, company-internal, local and industry-specific regulations must be observed. In general, Agathon's lubricant recommendations are based on experience, feedback from various market segments and discussions with lubricant manufacturers. For specific questions, it is recommended to contact the preferred manufacturer.

In addition to many other requirements, a good lubricant must meet the following specifications:

- Good moistening properties and high pressure absorption capacity
- High resistance to hydrolysis
- Good anti-corrosion properties
- Wear protection
- Possibly conveyable in centralized lubrication systems

Suggestions for lubricants can be found in the catalog on page 2.47.

The correct lubrication and maintenance of the guide elements can significantly increase their lifespan.

## Maintenance: Operational reliability

In order to achieve a high level of operational reliability and optimize the lifespan of all parts involved, regular maintenance is of fundamental importance. This includes cleaning and lubrication. If necessary, the guide elements must be replaced to protect the other elements. Worn guide elements quickly lead to increased wear of the active elements, touching surfaces, etc. The wear of the guide elements can ultimately lead to tool failure. The guides should be replaced as soon as possible if the following problems occur:

- Loss of rolling elements
- Increased wear
- Loss of preload

In any case, the tool book should be observed.

## Storage

To prevent the parts from corroding, the guide elements should never be stored dry or without a protective film. For optimum corrosion protection, the parts should be well sprayed with corrosion protection and, if possible, stored in corrosion protection paper, e.g. VCI paper/foil: Volatile corrosion inhibitor = gaseous corrosion protection.

## Dismantling

Contact corrosion can form if guide elements remain installed for a long time. This can be favored in certain environments. Depending on the severity, corroded bushes and pillars can be sprayed with rust remover. This significantly reduces the pressing out effort.

Glued-in bushings can usually be pressed out by heating (burning the adhesive) and a good tap.

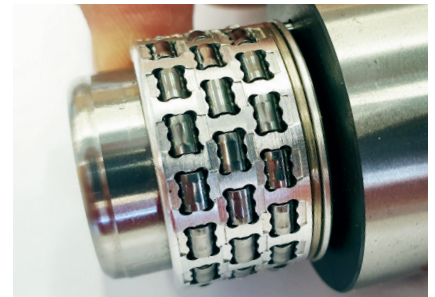
Some bushings have specific properties that allow them to be removed using the extractor set A-8020.000.001. For specific instructions regarding installation and removal of the products, please refer to the corresponding product brochure.

## Maintenance: Agathon Guiding System Plus

- Regular 60° rotation of bushing and pillar
- First remove old grease completely, then apply new grease
- Minimum lubrication is sufficient
- When replacing the O-Ring, observe temperature resistance (FKM/FPM)

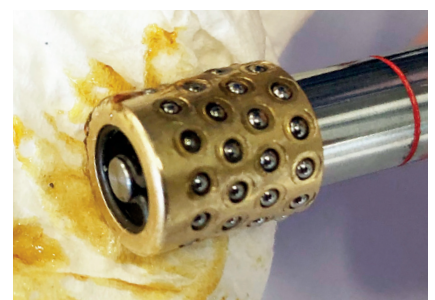
## Maintenance: Agathon Fine Centering Plus

- After delivery: Remove rust inhibitor from the fine centering unit
- During maintenance: Remove old grease without leaving any residue
- Apply a new lubricating grease to the cage of the fine centering unit – see Agathon catalog for recommendations
- For cleanroom applications, excess grease can be wiped off with a fluff-free cloth
- Centering elements must be replaced when the preload is no longer present. Preventive replacement as part of normal maintenance is advisable

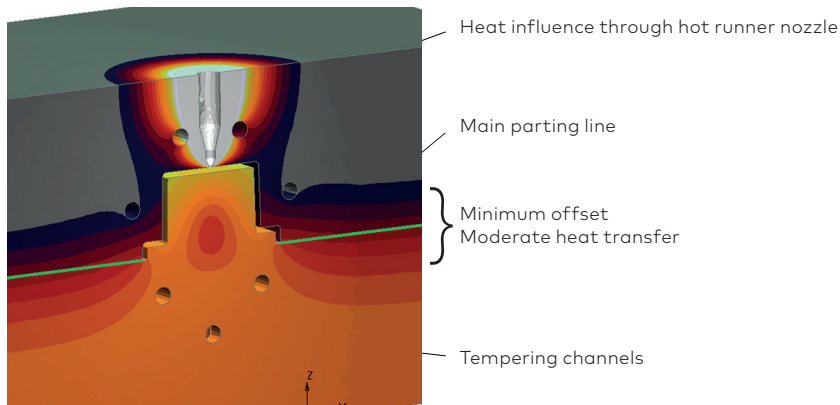


## Maintenance: Agathon Mini Fine Centering

- After delivery: Remove rust inhibitor from the fine centering unit
- During maintenance: Remove old grease without leaving any residue
- Apply a new lubricating grease to the cage of the fine centering unit – see Agathon catalog for recommendations
- Units consisting of pillar and bushing can be interchanged. If possible, however, we recommend using them paired
- For cleanroom applications, excess grease can be wiped off with a fluff-free cloth
- Centering elements must be replaced when the preload is no longer present. Preventive replacement as part of normal maintenance is advisable



## Thermal expansion in injection mold



### Conclusion:

For homogeneously tempered tools up to  $\Delta T$  of 30 K, no problems are to be expected with thermal expansion.

- Case study: asymmetrically tempered tool,  $\Delta T = 50$  K
- Temperature: Ejector side 90 °C (194 °F)  
Nozzle side 40 °C (104 °F)
- Actual offset is reduced by a **factor of 3-5** by heat transfer at the tool separation!
- Analyzed offset at separation: 6.2  $\mu\text{m}$  > Agathon Centering unit / Agathon Guiding System Plus can be used

More information can also be found in our factsheet.

<https://www.agathon.ch/en/download/> (Downloads Precision-Parts EN / Factsheet Thermal Expansion)

## Contact at Agathon

If you have any questions, please contact us at the following address: [Precision-Parts@agathon.ch](mailto:Precision-Parts@agathon.ch)



**STRIVE FOR THE BEST.**