



Installation and storage manual

The background of the slide is a collection of various colored rubber bands and a metal fastener. The rubber bands are in shades of purple, blue, green, teal, grey, white, yellow, and red. They are scattered across the page, some overlapping. A metal fastener, possibly a paperclip or a similar tool, is visible on the right side, partially overlapping a white rubber band. The overall aesthetic is clean and organized.

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Installation tips

1. 安装前检查

- 仔细检查安装工具上可能损伤密封件的東西（刮伤、划痕、毛刺等），并且必须修复。
- 检查要安装的密封件是否已经损坏。不要安装已损坏的密封件。
- 仔细检查硬件上可能损伤密封件的地方（刮伤、划痕、毛刺等），并且必须修复。
- 轻微的硬件和密封件损伤会产生过多的泄漏。

2. 注意事项

- 在安装过程中，注意手指甲损坏密封件。
- 避免使用尖锐的工具，将密封件推入沟槽中。（例如：螺丝起子等）
- 注意不要长时间地将密封件扭曲和弯曲。注意将正确的密封件安装方向。

1. Check before installation

- Carefully inspect the installation tool for things that may damage the seal (scratches, scratches, burrs, etc.) and must repair it.
- Check that the seal to be installed is not damaged. Do not install damaged seals.
- Carefully inspect the areas on the hardware that may damage the seal (scratches, scratches, burrs, etc.) and must repair it.
- Slight hardware and seal damage can create excessive leakage.

2. Precautions

- During installation, pay attention to fingernails damaging the seal.
- Avoid using sharp tools to push seals into the groove. (e.g. screwdriver, etc.)
- Be careful not to twist and bend the seal for a long time. Pay attention to the correct sealing orientation.

重要提示：

- 密封件的密封表面应该确保没有任何的损坏（例如刻痕、刮伤等）。密封件应该避免在安装过程中被硬件损坏。
- 不要使用尖锐的金属工具。
- 在使用前，先润滑和清洁硬件和工具。

Important:

- The sealing surface of the seal should be free of any damage (e.g. nicks, scratches, etc.). The seal should avoid hardware damage during installation.
- Do not use sharp metal tools.
- Lubricate and clean hardware and tools before use.

小贴士：

- 密封件安装会影响到密封件的使用性能。
- 在硬件设计时，要考虑密封件的安装。
- 使用正确的安装工具。
- 好的安装技巧将提高密封件的产品质量

Tips:

- The installation of the seal will affect the performance of the seal.
- When designing the hardware, consider the installation of the seal.
- Use the correct installation tool.
- Good installation techniques will improve the quality of the seal.

3. 工具保存

- 检查工具损坏情况。如果被损坏了，在保存前修复。
- 清洁安装工具。污染物会引起泄漏。
- 安装工具与密封件表面接触的部分，在保存时，应该被保护不被损坏

3. Tool save

- Check for tool damage. If it is damaged, repair it before saving.
- Clean the installation tool. Contaminants can cause leaks.
- The part of the installation tool that comes into contact with the surface of the seal should be protected from damage when stored

4. 安装后检查

- 在密封件被安装在活塞杆或者活塞上前，检查密封件被损坏的情况。
- 当硬件安装后，在活塞或者活塞杆上检查是否有密封件碎片。

4. Post-installation check

- Check for damage to the seal before it is mounted on the piston rod or piston.
- When the hardware is installed, check the piston or piston rod for seal fragments.



Storage requirements

02

密封件和轴承经常作为备件而储存一段较长的周期。绝大多数橡胶在储存期间会因物理性能的改变如：硬化、软化、龟裂、开裂及其他表面退化而导致失效。

这些物性的改变是由于某个特定因素或多种因素如变形、氧气、臭氧、光、热、潮湿或油和溶剂共同作用的结果。

只要采取一些简单的措施，就能相当大地延长橡胶密封件的保存期限。

在下列国际标准中描述了有关橡胶密封件的储存、清洗和维护保养的基本要求，

如：橡胶产品的贮存：DIN 7716/BS 3F68:1977, ISO 2230

最大的贮存期限：MIL-HDBK-695C, MIL-STD-1523A, DIN 9088

这些标准按材料等级针对橡胶密封件的储存条件和保存期限提供了一些建议。

Seals and bearings are often stored as spare parts for a long cycle. Most rubbers fail during storage due to changes in physical properties such as hardening, softening, cracking, cracking and other surface degradation. These changes in physical properties are the result of a specific factor or factors such as deformation, oxygen, ozone, light, heat, moisture, or a combination of oils and solvents.

With a few simple measures, the shelf life of rubber seals can be considerably extended.

The basic requirements for the storage, cleaning and maintenance of rubber seals are described in the following international standards, such as: Storage of rubber products: DIN 7716/BS 3F68:1977, ISO 2230

Maximum shelf life: MIL-HDBK-695C, MIL-STD-1523A, DIN 9088

These standards provide recommendations by material grade for the storage conditions and shelf life of rubber seals.

1

热源 Heat

橡胶密封件的储存温度应当在 +50°C 和 +250°C 之间，须避免直接接触热源，如：锅炉、散热器和阳光直射。如果从低温贮藏室中取出橡胶密封件，则在搬动时应注意勿使其受力变形，因为它们可能已失去弹性而变得僵硬了。此种情况下须待温度上升到 +200°C 左右方可将密封件投入使用。

Rubber seals should be stored between +50°C and +250°C and avoid direct contact with heat sources such as boilers, radiators and direct sunlight. If rubber seals are removed from the cryogenic storage chamber, care should be taken not to deform them by force when moving, as they may have lost their elasticity and become stiff. In this case, the temperature must rise to around +200°C before the seal can be put into service.

2 湿度 Humidity

贮藏室的相对湿度须低于 70%，应避免过于潮湿或过于干燥的情况且不得出现冷凝现象。

The relative humidity of the storage room must be less than 70%, excessive humidity or dryness should be avoided and condensation should not occur.

3 光线 Light

橡胶密封件应避免光保存，特别是阳光直射或带有紫外线的人造强光，此时用能抗紫外线的单独的储存袋 可提供最佳防护。

此外，用红色或橙色窗帘遮住贮藏室的窗户也是可行的方案。

Rubber seals should be protected from light, especially direct sunlight or artificial bright light with UV rays, where a separate UV-resistant storage bag provides optimal protection.

In addition, it is feasible to cover the windows of the storage room with red or orange curtains

4 辐射 radiation

应采取措施保护储存的橡胶密封件，远离或避开所有会造成其损坏的会导致电离的辐射源。

Measures should be taken to protect stored rubber seals from or away from all sources of ionizing radiation that can cause their damage.

5 氧气和臭氧 Oxygen and ozone

应尽可能将橡胶密封件存放在密闭容器内或采用其他合适的手段包装使其隔绝流动空气。因为臭氧对一些橡胶是特别有害的，所以贮藏室内不得有任何会产生臭氧的设备存在，例如：汞气灯、高压电器、电动机 及其他会产生电火花及释放静电的设备。贮藏室应隔绝燃气和有机蒸气，因其可能通过光化学过程产生臭氧。

Rubber seals should be stored in closed containers or packed by other suitable means to keep them out of moving air. Because ozone is particularly harmful to some rubbers, there must not be any ozone-generating equipment in the storage room, such as mercury lamps, high-voltage electrical appliances, electric motors and other equipment that generate electrical sparks and discharge static electricity. The storage room should be isolated from gas and organic vapors, as it may produce ozone through photochemical processes.

6 受力变形 Deformation by force

只要有可能，橡胶密封件应在不受到任何拉伸、压缩或其他变形的自由状态下保存。当密封件是处在无应变的条件下包装的，必须使用原包装来储存。

Whenever possible, rubber seals should be kept free from any tension, compression or other deformation. When seals are packaged without strain conditions, they must be stored in their original packaging.

7 与液体和半固体材料的接触 Contact with liquid and semi-solid materials

橡胶密封件在储存期间的任何时候都不允许接触溶剂、油、润滑脂或任何其它的半固体材料，除了由制造商事先包装好的。

Rubber seals are not allowed to come into contact with solvents, oils, greases or any other semi-solid materials at any time during storage, except when pre-packaged by the manufacturer.

8 与金属和非金属的接触 Contact with metals and non-metals

橡胶密封件储存期间不允许直接接触锰、铁、铜和铜合金，例如黄铜和这些材料的化合物，因其对一些橡胶有危害作用。

由于橡胶的增塑剂和其它添加剂可能会迁移，故橡胶密封件储存时不要接触聚氯乙烯（PVC），不同种类的橡胶密封件最好彼此分开单独存放。

Rubber seals are not allowed to come into direct contact with manganese, iron, copper and copper alloys such as brass and compounds of these materials during storage, as they have a hazardous effect on some rubbers.

Because rubber plasticizers and other additives may migrate, rubber seals should not be stored in contact with polyvinyl chloride (PVC), and different types of rubber seals are best stored separately from each other.

9 清洗 cleaning

必要时，应当用肥皂和水或甲醇酒精进行清洗，但不允许水进入到夹布橡胶密封件、粘接密封件（因为腐蚀）或聚氨酯橡胶内。不得使用消毒剂或其它有机溶剂以及尖锐工具，清洗后的密封件应在室温下晾干，勿靠近热源放置。

If necessary, it should be cleaned with soap and water or methanol alcohol, but water should not be allowed to enter the cloth rubber seal, adhesive seal (due to corrosion) or polyurethane rubber. Do not use disinfectants or other organic solvents and sharp tools, and the cleaned seals should be dried at room temperature and not placed near heat sources.



保存时间

Save time

03

- 橡胶密封件的有效寿命主要取决于橡胶材料，当密封件按上述建议的储存条件贮存时，必须对下表给出的密封材料的保存期限值予以充分考虑。

The effective life of rubber seals depends mainly on the rubber material, when the seal is stored in accordance with the above recommended storage conditions, the shelf life value of the sealing material given in the table below must be fully considered.

材质 Material	保存时间 (年) Retention period (years)
聚氨酯 (AU), 热塑性材料	4
丁腈橡胶 (NBR)、氢化丁腈橡胶 (HNBR)、氯丁橡胶 (CR)	6
三元乙丙橡胶 (EPDM)	8
氟橡胶 (FKM), 硅橡胶 (MVQ) 氟硅橡胶 (FVMQ)	10
全氟醚橡胶 (FFKM,)	18
聚四氟乙烯 (PTFE)	无期限 Indefinitely

- 橡胶密封件存满上述保存期限值后应当予以检查，检查后方可给出延长后的保存期限值。

The rubber seals shall be inspected after the above shelf life values have been stored, and the extended shelf life value can be given only after inspection.

- 厚度不大于 1.5 毫米的橡胶元件更易受到氧化变质的影响。因此，它们应当比上表中提到的保存周期更频繁地进行检查和试验。

It is worth mentioning that rubber elements with a thickness of no more than 1.5 mm are more susceptible to oxidative deterioration, although the storage conditions meet the above recommendations are satisfactory. Therefore, they should be checked and tested more frequently than the retention periods mentioned in the table above.



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