

COMBIFIT

Hygienic & Aseptic Couplings

For Food and Pharmaceutical services

Combifit International B.V.
Platinastraat 20
2718 RZ Zoetermeer

Telephone : 00.31.79.3614929
Fax : 00.31.79.3614917
E-mail : info@combifitinternational.nl



Nut; Liner; T-ring; Male Part;



Flensch; T-ring; Flensch



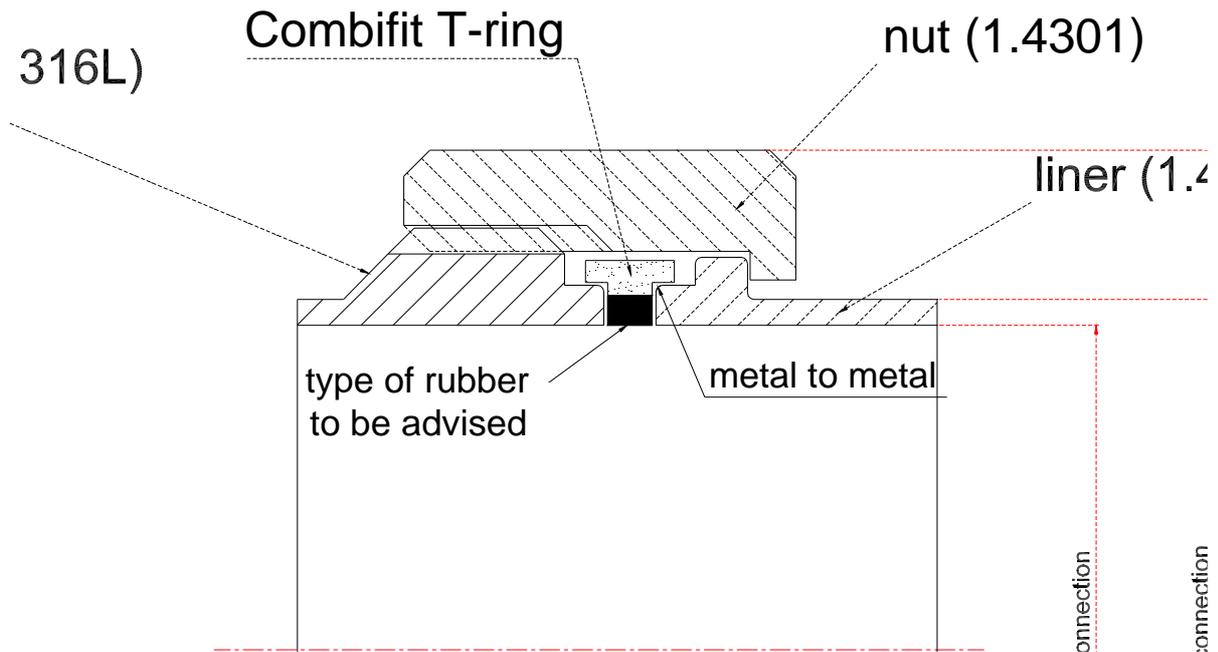
Male Part;T-ring; Liner



T-ring;

COMBIFIT Hygienic Couplings

Design.



Combifit manufacture pipe couplings in accordance with ISO 2853 standards, also corresponding to IDF / ISS norms, and DIN specifications. However the couplings are produced from solid metal and are not cast or forged products. Cast products will always show tiny cavities allowing bacteria to settle.

Producing coupling parts Combifit take special care to comply with stringent requirements for hygienic and aseptic service.

- The parts are manufactured within the tolerances set by ISO 2853.
- No cavities or irregularities on the inside wall are acceptable.
- The surface roughness of the inside wall is kept at about 0,5 Ra in accordance with ISO R468.
- The edges on the inside of the end connection are kept sharp.
- The coupling halves are seated against the special sealing of the Combifit T-seal, being lined up and forming a single flush passage.

Couplings represent only a smaller part of the piping system but most of the hygienic problems arise around the couplings. We mention surface roughness, crevices, improper lining up, rubber seals not being compressed correctly, etc. These defects eliminate the possibility of a proper C.I.P.

Users of Combifit couplings with the T-seals will experience easiness of assembly, longer lifetime of the equipment, shorter shutdown periods and consequently considerable savings in operation.

Cleaning In Place (C.I.P.)

C.I.P. character of the Combifit products is important for the food and the pharmaceutical processes. Also in soap processes the bacteria cultures are to be eliminated. "Germs" will settle in "dead corners" in the process where the flow velocity is low or nil. The process product is allowed to stick onto the inside of the wall serving as a culture medium for bacteria. In these spots also the cleaning liquid will be ineffective. The piping components have to be disassembled to be brushed and cleaned on a regular basis. It is obvious that plant shutdown and discontinuation of the production process is a costly affair and requires manpower for maintenance.

Any improvement to make longer production runs is essential for the company and any improvement to prevent growth of bacteria cultures is most welcome. These bacteria are extremely small creatures hiding in minuscule cavities, being a potential threat to the hygienic character of the production process.

Blind spots will occur:

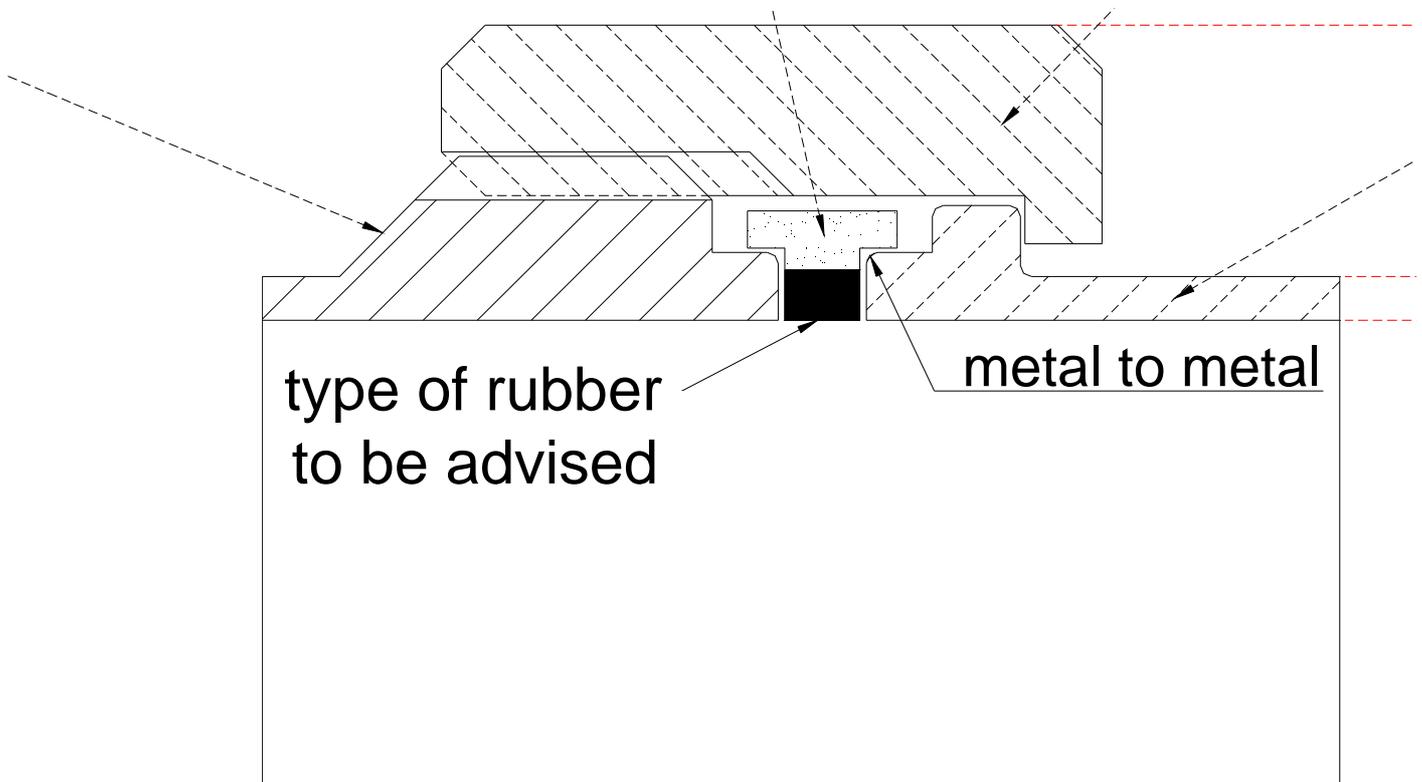
- ❑ When weld beads have not been polished away.
- ❑ When coupling halves have not been lined up properly when tightened.
- ❑ When wrongly shaped rubber seals are used creating disturbance of the flow.
- ❑ When rubber seals have been tightened too much and form a convex surface into the streamway or are cracked by the tightening.
- ❑ When surface roughness is too coarse.

Combifit couplings are not meant to be alternatives for standard commercial cast couplings but shall be installed in processes that need serious hygienic care and C.I.P. applications.

Combifit T-seals shall be supplied when round o-rings are not good enough to guarantee full hygienic operation. O-rings cannot be installed in such a way that dead corners are eliminated where the coupling halves are separated by the rubber. Proper C.I.P. with o-rings is problematic.

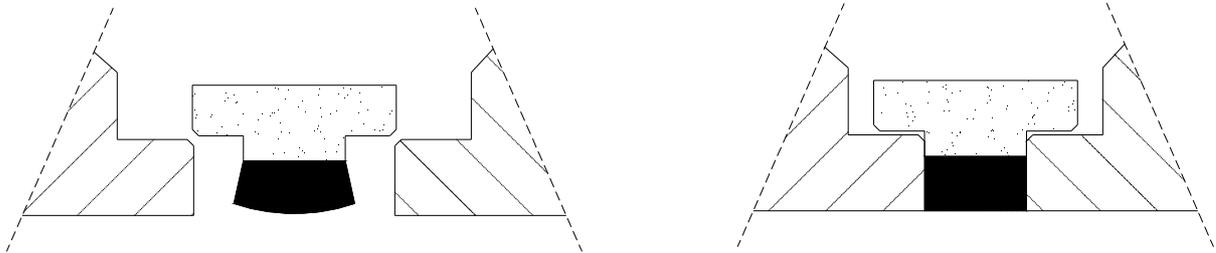
Installations with Combifit couplings experience less maintenance and an increase of production rate by 10-30 percent. The investment will repay itself in short time.

Requirements for hygienic / aseptic couplings



- ❑ All edges have to be sharp and not rounded off in order to prevent crevices in the couplings when installed. This criteria is set to prevent bacteria settling and avoids product deposit in not cleanable corners. It also means less C.I.P. time.
- ❑ The sealing surface must have low roughness for proper sealing.
- ❑ The surface roughness of the inside surface shall max 0,8 Ra for reasons mentioned above.
- ❑ The trapezium threading shall have full square and deep threads. Rounded off or round threads risks loosening of the nut during process operation causing leakage.
- ❑ Metal parts shall not be cast parts as porosities or crevices cause serious bacteria problems.

COMBIFIT T-SEALS



The Combifit T-ring is a seal composed of a stainless steel outer ring having a T-shape profile and a rubber inner ring vulcanised onto the stainless steel outer ring. The T-ring is designed to obtain a hygienic seal in piping connections for food and pharmaceutical processes. These locations are traditional centres for bacteria cultures and regular disassembly often is the only way to clean the unit. Disassembly is expensive and interrupts the production process. Using the Combifit T-seal a full Cleaning In Place (C.I.P.) is possible.

Technical aspects.

1. Because of the specific shape (patent pending), the rubber inner ring will be compressed to have a flat inside wall, flush with the inside wall of the connecting liner and male part of a coupling. Crevices are eliminated.
2. A food quality rubber compound is selected for the inner ring.
3. Because of the T-shape of the ring the connecting coupling parts will be lined up automatically when the coupling is tightened.
4. One of the main features of the T-ring is that it can be snapped into place easily thus saving shutdown time.
5. When installed the rubber seal is enclosed and protected within three metal sides. Therefore silicon rubber can be applied for use in high temperature applications and sterilisation treatments where no ageing of the rubber will occur

6. When the coupling is tightened the destruction of the rubber seal is prevented by metal to metal stop.
7. In addition to the rubber seal a metal to metal seal is realised.
8. Unlike the single rubber seals the T-seal can not be blown out because it is blocked by its seats.
9. The Combifit T-seal can be mounted is all existing IDF or ISO couplings.
10. The T-ring size 1½" has been pressure tested at 250 bar and was found leak tight.
11. Stringent bacteria fouling has been applied but after C.I.P. the seal was clean.
12. The T-seal has a long lifetime.

Commercial aspects.

1. The rapid installation saves time.
2. Shorter sterilisation times are obtained.
3. Because of full C.I.P. no disassembly and maintenance time is required.
4. Longer lifetime generates savings.