

Chapter 7 - D System – Neck Types Overview

A. OVERVIEW

There are many more neck design specifications than shown in this document, but only a few are ever used with D System. Contact us at Micro Matic/DSI for assistance if you have any doubt about the necks in the kegs you own. In any case, we are certain to provide spears with the correct specification ONLY after keg, neck and spear dimensions are positively verified.

For a comprehensive list of the most common D System spears in use in the market today, see Chapter 17, subsection B, where you will also find critical information regarding spear removal and installation, and links to external documents, videos and manuals specific to the spears in your kegs.

If you intend to switch from one spear System to another in your kegs, or from one keg manufacturer to another, or integrate kegs with other Systems spears into your fleet, you must be certain of the exact version of neck in those kegs before ordering new/replacement spears.

Necks in kegs, same as the kegs, are not formally standardized between manufacturers or regions. The exception is when the keg, neck and spear are following German DIN specifications. For example, some D System spears use DIN 3452 threaded necks, 2"x14tpi.

Keep in mind, not only in the new or used kegs that you may purchase, but also among the kegs you already own, there may be slight, or major differences in necks. You must rely on the keg manufacturer's technical drawings for the keg, to include dimensions of the neck, whenever possible.

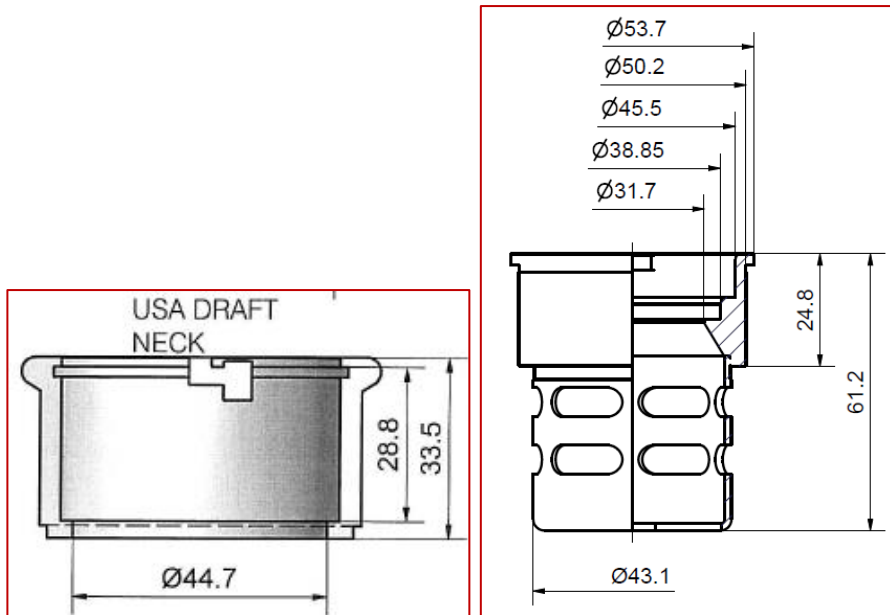
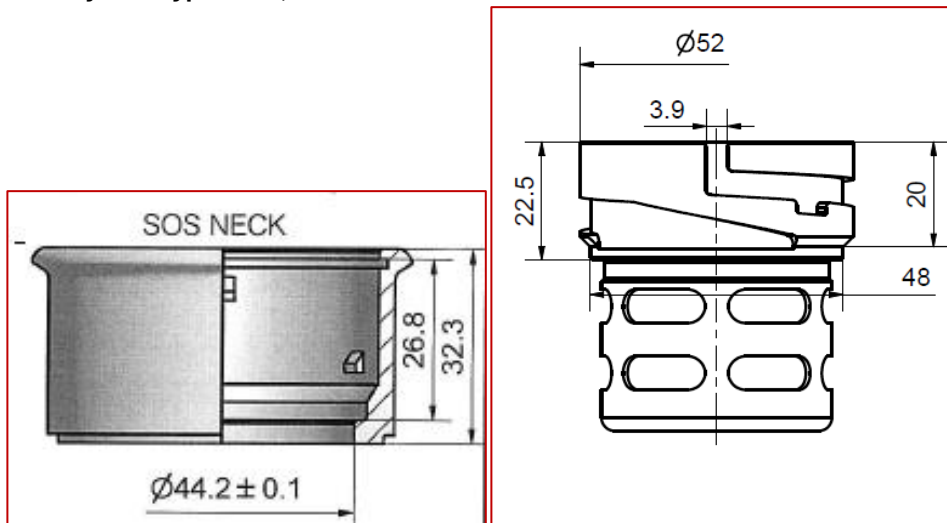
All necks are permanently welded to the keg top dome and shall be positioned so that the spear is not more than 2° out of vertical.

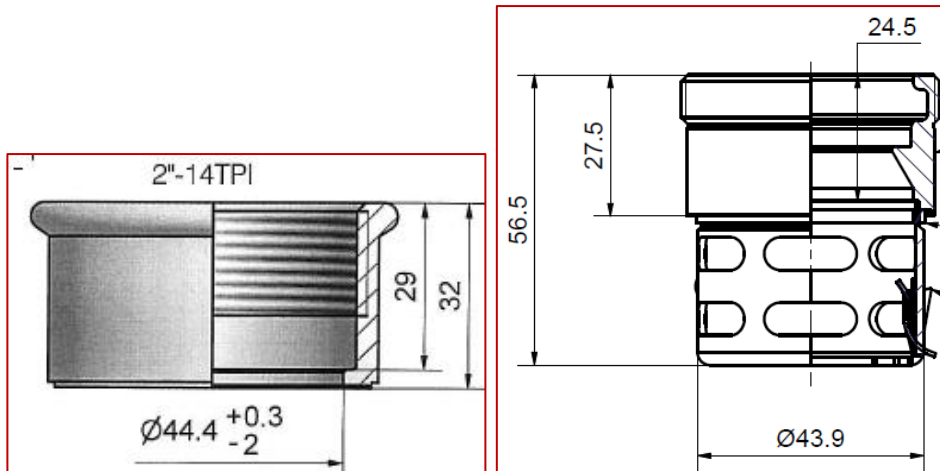
The end of the downtube is positioned in the keg with a gap separating it from the sump in the bottom dome. This makes spear length critical, since a spear too long or too short will decrease or increase this gap. The gap specification is critical both for dispense and for keg washing.

B. THREE PRIMARY NECK TYPES FOR D SYSTEM

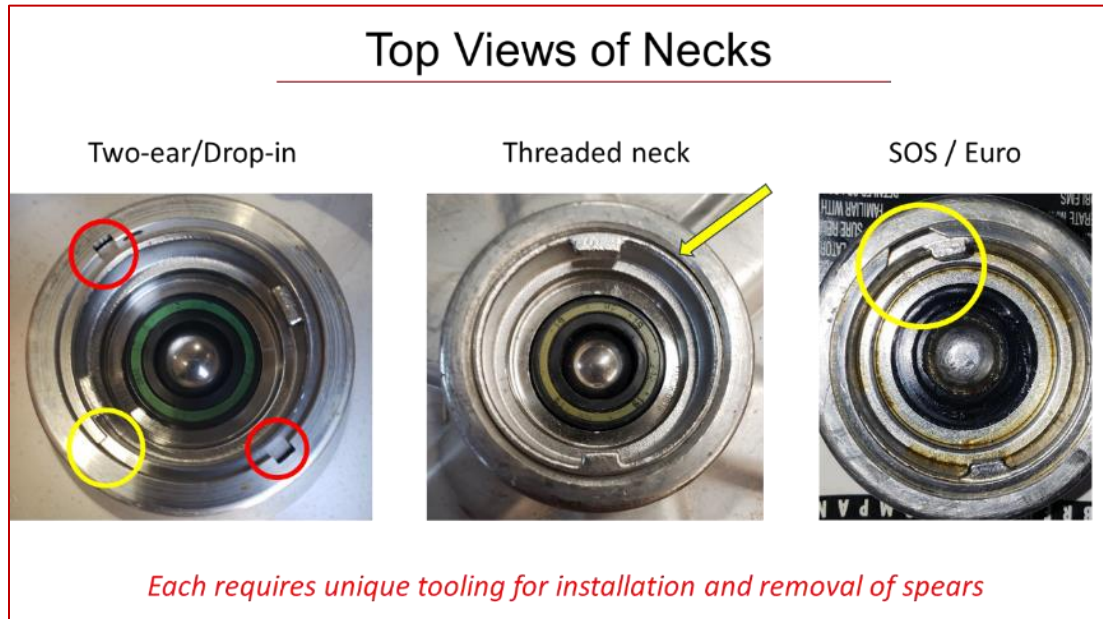
In North America, the most common D System spear and neck types are described below – two bayonet-type and one threaded-type:

1. Bayonet Type: Drop-in, 2-ear (and more rarely, 1-ear), aka Barnes Neck


2. Bayonet-type: SOS, aka Euro Neck

3. Threaded Type: 2-inch / 14TPI Threaded



Top Views of Necks



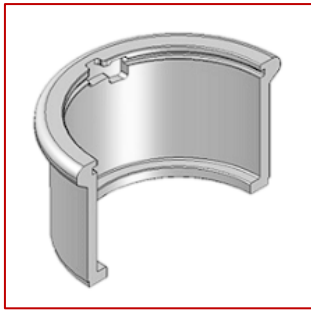
C. “BAYONET” NECKS (Non-threaded)

Bayonet-type necks commonly used for D System are Two-ear/Drop-in and SOS / Euro-type. They are safely locked into the neck by the bayonet design itself, having tabs or “ears” on the spear bodies, and corresponding notches or pockets in the neck – or the other way around. These prevent accidental spear ejection if a circlip is removed without first depressurizing the keg.*

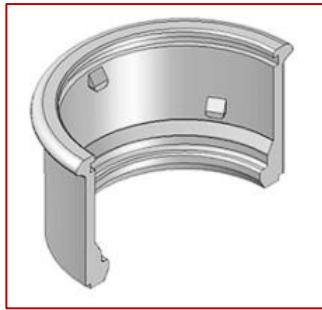
The 2-ear/Drop-in version of bayonet neck is by far the most used for D System spears and kegs.

These spears are further safely-locked into the keg neck with Single or Double Circlips. Upon installation of the spear, a new single- or double-circlip is fitted securely into a groove at the top inside of the neck. Installation and removal of the circlips and spears requires specialized tools. Circlips must never be reused.

Especially with bayonet types of necks in your kegs, the fitment with the spear is crucial to be checked. For threaded versions the thread itself is established by international standards. For bayonet type necks, there are no established technical standards for design, so some variation between keg neck manufacturers may occasionally be encountered.



Drop-In US – Neck



SOS- Neck

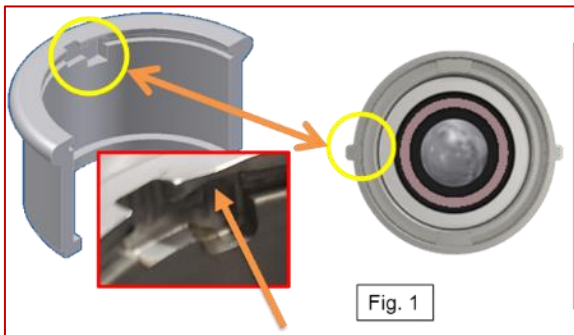


Fig. 1

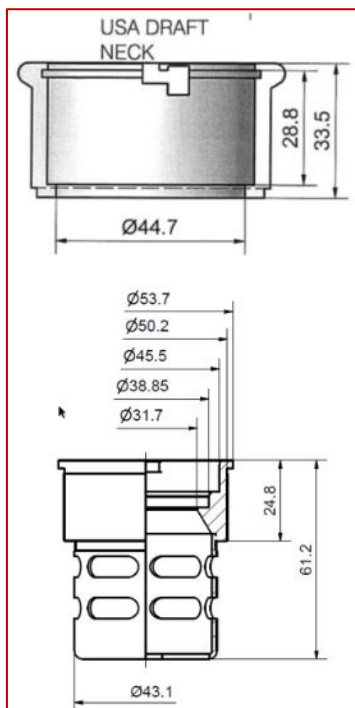


COMMENTS regarding bayonet types of necks:

- The US Drop-In neck has two (rarely, one) Z-notches where the two “ears” (or single “ear”) on the spear body index. Each Z-notch has a small undercut holding back the spear if pressure is still in the keg when a circlip is removed. A Double Circlip is fitted into the groove at top of the neck.
- The SOS Neck has two tabs (lugs) projecting inward at a span of 60°, as well as being on different levels. A single circlip is fitted in the groove at top of the neck.

- A major benefit of non-threaded, bayonet necks over threaded is that routine re-tightening and control of applied torque is not needed. But attention must be paid to the condition of the single- or double-circlip; has it been tampered-with? Has a deformed circlip been re-installed by someone unauthorized (or not properly trained) to work on your kegs? It is recommended that circlips must never be reused. Is the circlip missing completely?
- A range of specialized tools for mounting/demounting will be required for various forms of bayonet spears, and a supply of appropriate single-use replacement circlips must be kept on-hand.

*In theory at least, safety latches or “clips” may be included on the Two-ear / Drop-in spear body during original manufacturing, for additional safety with bayonet versions, similar to those used on threaded neck spears. This will also help prevent unauthorized persons removing the spear, as a specialized tool will be required. But spears of this design for D System have never yet been produced.



D. THREADED NECKS

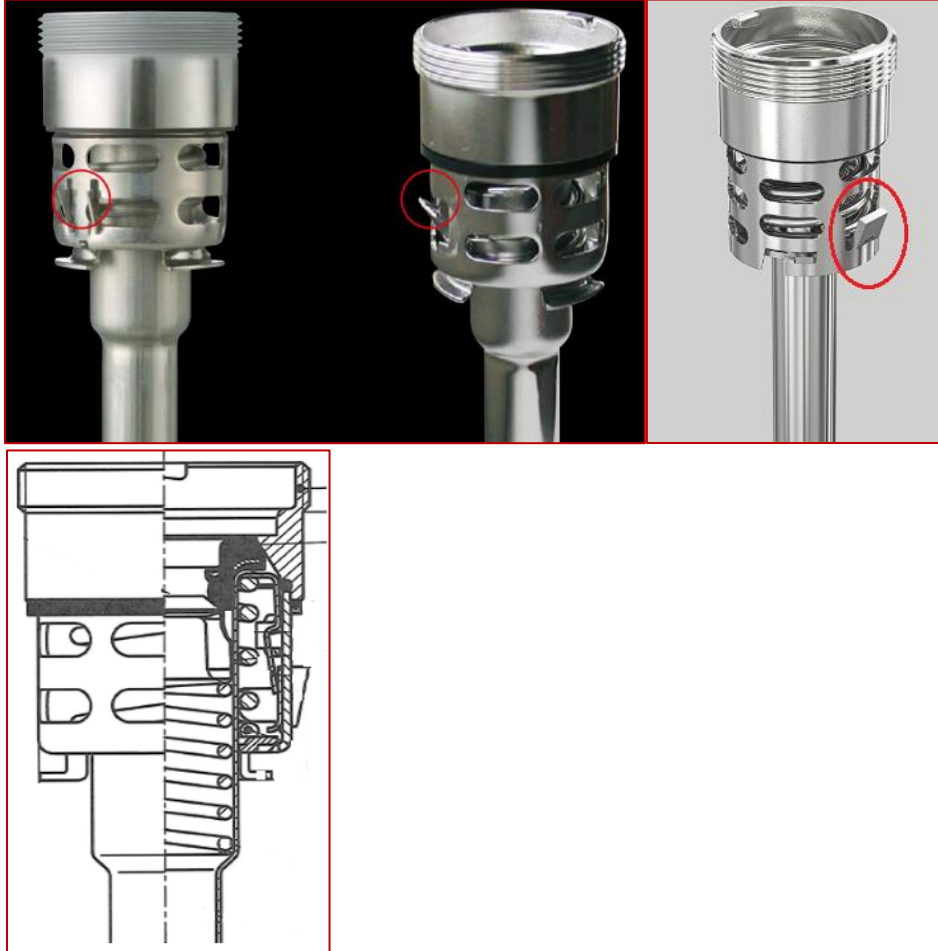
For safety and liability reasons, it's recommended that threaded-neck spears should be equipped with ejection-prevention safety devices of original manufacturer design and quality, either new or after refurbishment/service.

The safety device is usually a spring-loaded “clip” which makes necessary specialized tooling and process for spear removal from the neck of the keg. These are designed to fold or pivot inwards with a special tool, which then enables further removal. The safety clip may be a permanent fixture on the body or a separate assembled component, and may be spring loaded, or activated by the CO2 spring and downtube position.

The safety device, correctly designed and installed, effectively prevents accidental ejection of the spear if it is inadvertently unscrewed from the neck with residual pressure in the keg. It also serves as a security device, preventing unauthorized removal of the spear without the necessary tool.

At the following picture you 'll see from left to right:

- MM Probe-type /“S”-type safety clip
- MM Overstroke “J”-type safety clip
- DSI Overstroke safety clip



MM Overstroke “R”-type safety clip (obsolete)

Standardized threaded necks specified in DIN 3542 can be found on kegs following specifications set by DIN 6647-1. But, remember that not all 2”x14tpi necks are made according to this DIN. Other customized versions exist.

2”/14 TPI Threaded Neck is the second-most used for D System. But threaded necks and D System are not well-matched, since the force of torque applied by repeated application and removal of the D System coupler tends to loosen, or even unscrew the spear in the keg neck, in addition to the usual loosening over time during temperature cycles and vibration during transport and on the filling lines.

- The thread 2” x 14tpi is specified in British Standard (BS) 84 – normal class, meaning:
 - Nominal diameter of the thread is 2” = 50.8 mm
 - Threads: 14tpi is the pitch of 14 turns-per-inch of thread length
 - Fine cut
- The thread Rd 52 x 1/6” is specified acc. DIN 405-1, meaning:

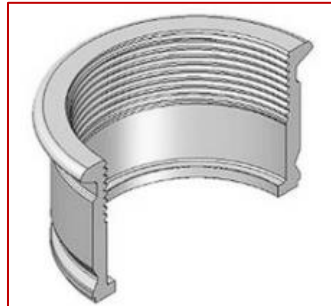
- Nominal diameter of the thread is 52 mm
- Threads: have a pitch of 1/6 inch = 4.23 mm
- Round Cut

At Micro Matic we produce the counter-thread on our spears with an “undercut”, to ensure it will fit in any keg having a neck that is within the specification range for the design. Additionally, we apply a coating to the thread for easy screwing in/out.

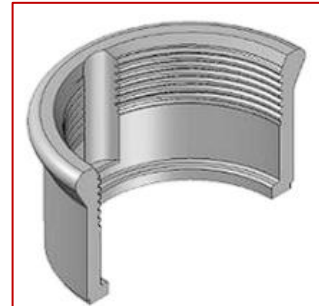
Here are some very common threaded necks:



2” x 14tpi DIN-Neck



2” x 14tpi LH – lefthand thread



2” x 14tpi – venting Neck

COMMENTS regarding threaded necks:

- 2” x 14tpi Neck has a 29 mm depth from top to sealing seat
- Variant: 2” x 14tpi “venting neck” has a vertical cut/groove down to the sealing seat
- A benefit of threaded necks is that the spears are a bit easier and faster to mount/demount than bayonet types. Mounting/demounting of threaded spears in corresponding threaded necks will require specialized tools which are designed to retract various designs of safety clips, and tools will be different from different spear manufacturers. The required torque must be ensured both at initial installation, and when retightened under routine operating procedures.
- Some owners of threaded neck kegs will choose to purchase threaded spears without safety clips installed (unavailable from DSI and Micro Matic) or even remove the existing safety clips from threaded spears. This is so they may more quickly and easily remove and re-install the spears for manual cleaning, addition of flavoring materials into the keg, or other reasons. This is considered to be EXTREMELY poor practice, since these spears may easily be ejected in the event of a coupler sticking on the spear when a bartender trying to disconnect the coupler instead unscrews the spear.