Master Brewers
Safety Toolbox Talk

System Accessories Safety

Rob Williams

Overview

The food and beverage industry requires a multitude of components to make a finished product and to keep equipment clean. This Toolbox Talk focuses on accessories used in the process that can be overlooked as part of the safe use of your entire system.

In meetings with brewers, distillers, and vintners, there are several common concerns. The following are some examples of problems and recommendations for creating a safer workplace.

Gaskets/Sealing Components

Tri-clamp connections are the most common connections used in beverage making. Tri-clamp gaskets are made with various materials to meet the chemical, temperature, and pressure requirements of the system. When the wrong material is chosen or the seals are not placed correctly or used when damaged, they can cause product loss, contamination, and even injury to nearby operators.

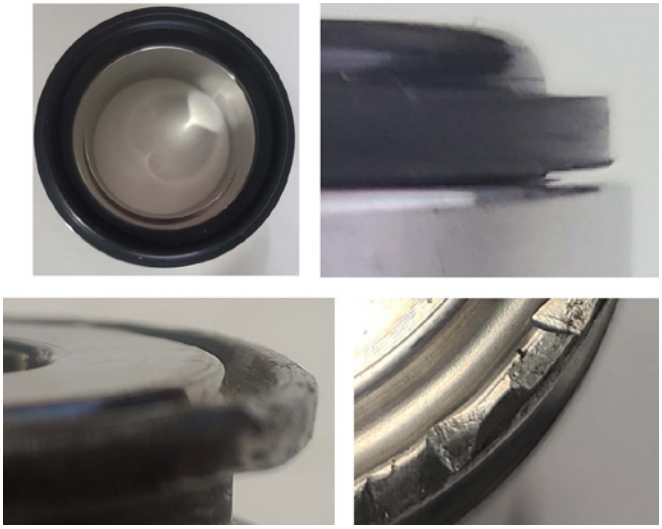

Figure 1. Correct seating method.

Figure 2. Examples of spray nozzles.

The illustrations in Figure 1 show the correct seating method. If the seal of the fitting is damaged or worn in any way, discard and replace it immediately. Seals/gaskets must be seated properly (i.e., centered and flush with the fitting). Damaged fittings will not seal properly.

Spray Nozzles

When discussing nozzle issues, one common complaint is horseplay. Operators spraying each other with the washdown hose or handing the nozzle to someone in the wrong direction. These actions can result in burns due to high temperature liquid. Installing a thermostatic mixing valve can ensure temperatures stay within a safe range. Spray nozzles come with a directional arrow showing the path of output (Fig. 2).

Valves

The most common issue with valves is leakage. Once again, inspect your seals and bushings. Over time these will wear and require replacement (Fig. 3).

Although valves can be closed rather quickly if they are accidentally or intentionally opened, there can be serious injury and product loss as a result. Inspect valves for leaks and check locking mechanisms. The mating surfaces should be inspected for gouges or out-of-round conditions. That type of damage can't be repaired, and the valve should be replaced. Check equipment for pressure and liquid level. Accessories that help indicate both are shown in Figure 4.

Figure 3. Butterfly valve repair kit.

Figure 4. Accessories used to inspect valves and equipment.

If you have questions regarding system accessories safety, please see your supervisor/manager or contact a member of the Safety Committee.

Figure 5. Picture of a brewer with an extreme skin burn caused by a failed clamp disconnection.

Clamps

The tri-clamp was the number 1 accessory mentioned by brewers and distillers that results in injuries and failures. Located in multiple areas of your facility, tri-clamps can be overlooked as a serious safety concern. They can be difficult to connect, especially when trying to connect hoses or other heavier accessories and equipment in hard-to-reach areas. The operator can either overtighten or undertighten the wingnut on the clamp.

Always make sure that each item is aligned properly and that seals are in their correct position, as mentioned earlier. Be sure that you disconnect the correct clamp as well. Figure 5 shows an extreme skin burn caused by a failed clamp disconnection.

Figure 6. Clamp positioned with adjustment screw pointed down.

The industry practice for safe clamp positioning that is used by most brewers positions the clamp with the adjustment screw pointed down, as illustrated in Figure 6. Proper positioning is key to keeping equipment connected and avoiding accidental disconnection.

Examples of other clamps that can provide a safer connection are shown in Figures 7–9.

A squeeze clamp allows the ends to be held together using one hand, freeing the other hand to align the ends (Fig. 7).

A threadless-style clamp applies proper compression to create a seal (Fig. 8). It utilizes an ergonomic concept by not using a wingnut. This design can free up a hand to create a safe seal. It can also be locked out, so the clamp can be removed when authorized.

A bolt-on clamp (Fig. 9) can be used for more permanent connections. It can also be used to maintain constant compression.

Effects of Unsafe Accessory Use

- Injury to self and others (i.e., burns, fitting extraction).
- Product loss
- Slip hazard

It is highly recommended that you convey all your process details to your hose, fitting, and accessory expert, whether an in-house or outside source.

Figure 7. Squeeze clamp.

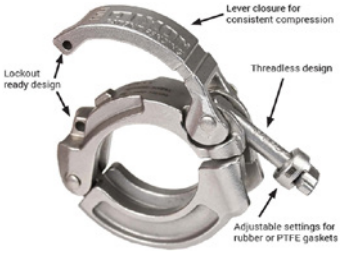

Figure 8. Threadless-style clamp.

Figure 9. Bolt-on clamp.