

# Case study collection

## Swivel joint for Food, beverage, pharmaceutical and chemical plants

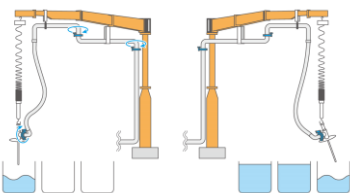
Do you have any of these issues ?

- ✓ To easily change the direction of fixed piping and efficiently distribute fluid...
- ✓ Difficult to handle hoses, hoses are quickly damaged...
- ✓ Wish to simplify piping design, or are concerned about interference with equipment...

"With a sanitary swivel joint, it becomes possible to improve work efficiency, resolve hose issues, and achieve a compact design.

### Feature 01

Since you can move the pipes without attaching or detaching the clamp, work efficiency is improved!



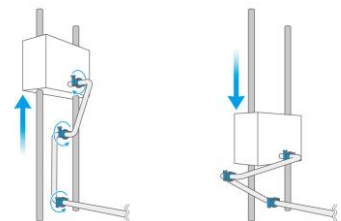
### Feature 02

Problems are resolved with stainless steel swivel joints that have higher strength than hoses



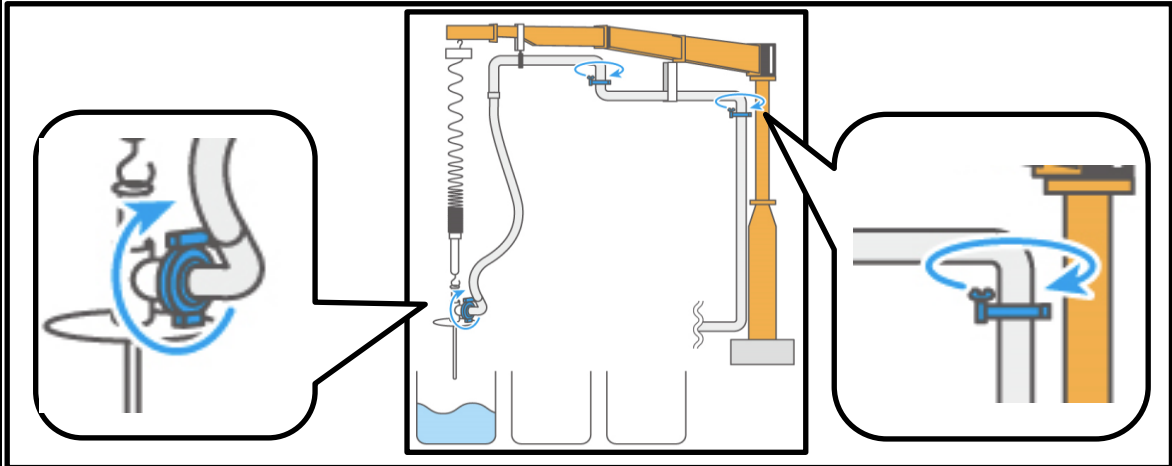
### Feature 03

The range of motion is determined, making pipe design easier



# 360 degrees sanitary swivel joint - Case Studies VOL.1

Combining piping and swivel joints to solve the hose damage issue for a long-established sake brewery, which has been in business for about 100 years.



## Background

**This solution improved work efficiency and addressed concerns about hose damage and hygiene management.**

The traditional method of carrying hoses to barrels in the storage facility resulted in frequent hose damage due to awkward movements, leading to increased costs and time for replacements. Long hoses required time-consuming internal cleaning, posing hygiene concerns in compliance with strict food safety regulations.

## Solution

**Reduced lifecycle costs, improved operability, and enhanced hygiene aspects.**

- Installing a swivel joint at the base of the pouring hose to absorb twists and reduce load, significantly decreasing hose damage frequency.
- Improved maneuverability allowed for replacing hoses with pipes, reducing employee burden.
- Shortening hoses minimized bacterial growth and facilitated easier internal cleaning,

## Features

- 360° rotation for fluid transport and pipe movement tracking, improving piping line durability.
- Clamp handle fixation for easy disassembly, cleaning, and assembly, ensuring hygiene.
- Internal joint design prevents liquid pooling, making it suitable for CIP cleaning.

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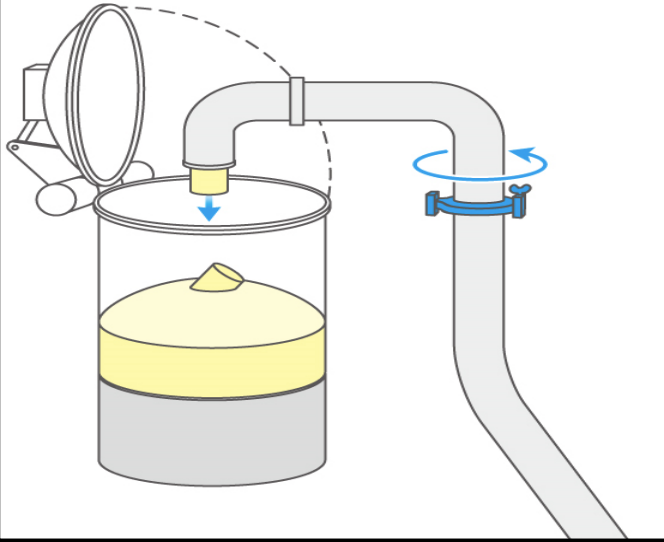
## Sanitary Piping 360° Swivel Joint - Introduction Example Vol.2

No need for detachment!

Easy horizontal movement without obstructing piping!

【Company specializing in dairy product manufacturing and sales】

In the cheese factory of a company with over 100 years of history in manufacturing and selling dairy products, the sanitary swivel joint was utilized for smooth operations.

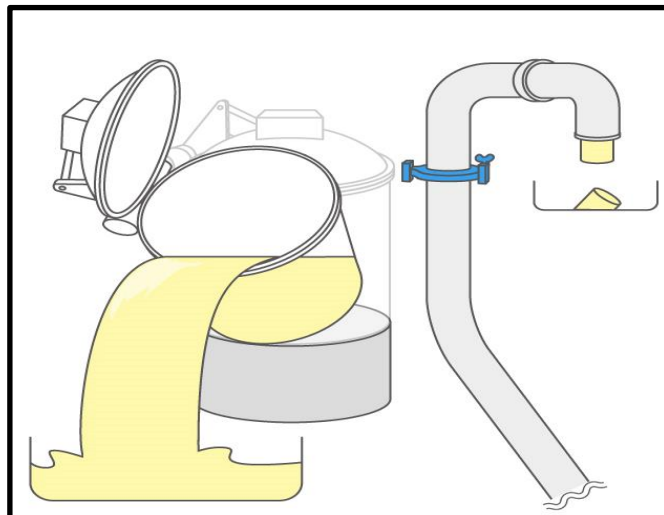


### Background:

The existing process required adjusting the piping position for the opening and closing of the kiln lid, leading to inefficiencies.

The company sought a solution to improve maneuverability and efficiency during the process.

## 360° rotation prevented piping obstruction.



### Solution:

Installation of sanitary swivel joints enabled 360 degrees rotation of the piping without detaching clamps, facilitating smooth lid opening and ingredient pouring.

Swivel joints allowed horizontal movement, improving overall work efficiency in subsequent processes.

### Benefits:

Swivel joint adoption improved operational efficiency and reduced the burden on employees.

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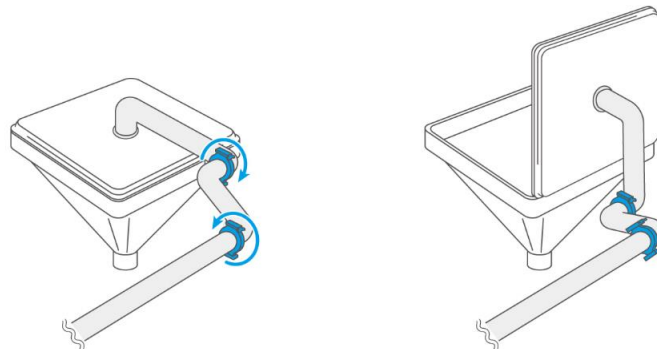
# Sanitary Piping 360° Swivel Joint

## - Introduction Example Vol.3

Adoption of Swivel Joints for an Automatic Uncapping Machine in the Beverage Manufacturing Process.

### Background

When considering hoses for the movable pipe section, issues unique to hoses arose.



Cleaning line follows the automatic

An automatic bag opener is a facility that automatically opens bags containing powder and deposits them into a hopper. The machine automatically opens the bag containing the powder, and after depositing it into the hopper, the interior of the hopper is automatically cleaned.

During cleaning, the lid of the hopper closes automatically, and the attached cleaning line on the lid needs to move in sync with the lid's opening and closing motion. To accommodate this motion, the design team was considering the use of hoses.

However, during the testing phase of the prototype, it was observed that the hose, when subjected to the opening and closing of the lid, would bend significantly in a diagonal direction. With a soft hose, this bending imposed a substantial load, leading to twisting. There were concerns that, if left unaddressed, this could potentially result in damage.

### Solution

**Change part of the design from hoses to fixed pipes + swivel joints**

To address the concerns with the cleaning line, the design was modified from hoses to a combination of fixed pipes and sanitary joints. This change allowed for a smoother motion in the problematic area as initially anticipated. The switch from hoses eliminated concerns about twisting and damage, enabling successful delivery to the customer's factory.

### Additional

**Ease of procedures was also a deciding factor in adoption.**

During the design phase of the prototype, hoses were initially considered for the operational parts. However, during the equipment certification process, it was recognized that a design with fixed pipes would facilitate smoother approval. The use of sanitary joints for the lid's opening and closing motion while maintaining fixed pipes offered advantages in terms of both regulatory approval and versatility, contributing to the decision to adopt this solution.

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## Swivel Joint for Sanitary Piping - Case Study VOL.4

A well-established food company with over 100 years of history, specializing in a wide range of food products, from milling to both commercial and household applications.

### **They utilized swivel joints at both ends of the hose for the filling robot arm.**

The robot arm, responsible for injecting sauces and creams onto food flowing on a conveyor belt, faced challenges.

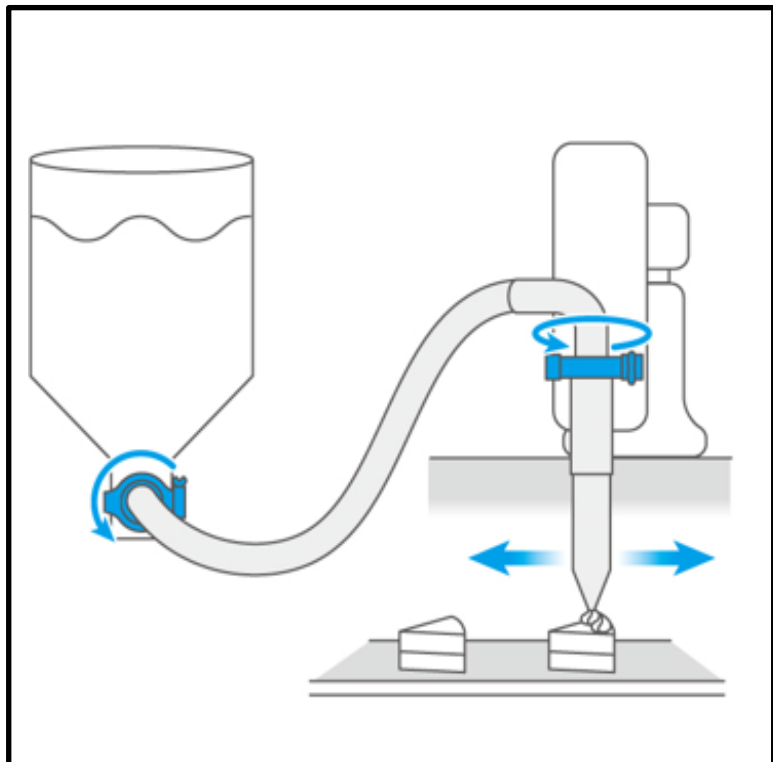
Previously, they used hoses alone. However, by attaching sanitary swivel joints to both ends of the arm's tip injection part and the hose connection part of the replenishment pot, they successfully reduced the strain on the hose. The rapid and precise movements of the robot arm required for injecting onto food on the conveyor belt caused cumulative stress on the hose, leading to damages.

#### **Decision-Making Factors**

Concerns about hose strain led them to search for rotating joints. Discovering "Sanitary Swivel Joints suitable for food use" on TBG's website during this search was pivotal.

After hands-on verification and prototype testing at an exhibition, they decided to adopt the swivel joints.

They are now considering adopting them for other filling robot arms and regularly participate in exhibitions for product demonstrations.

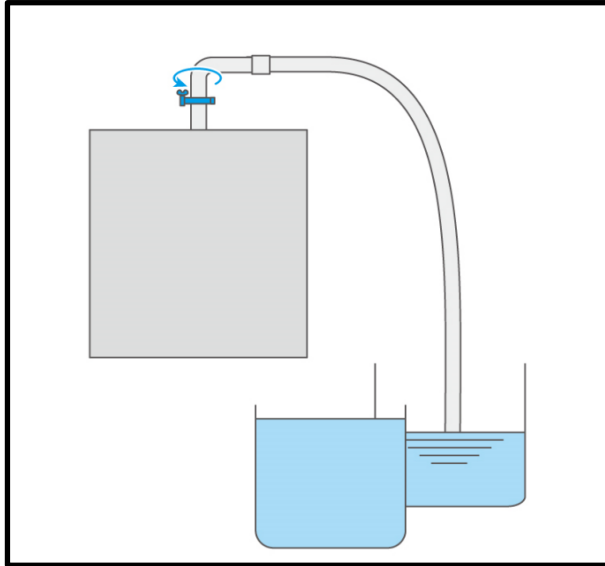


The introduction of sanitary swivel joints alleviated the load on the hose's base, resulting in a decrease in hose replacement frequency.

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## Swivel Joint for Sanitary Piping - Case Study VOL.5

**Application Example in an Engineering Company Specializing in Food Machinery**  
In an engineering company engaged in the manufacture and sale of food machinery, a trial run of a food machine resulted in hose damage.



This occurred during the process of lifting paste-like raw materials from a drum pipe in the transportation line of a food packaging machine (test machine).

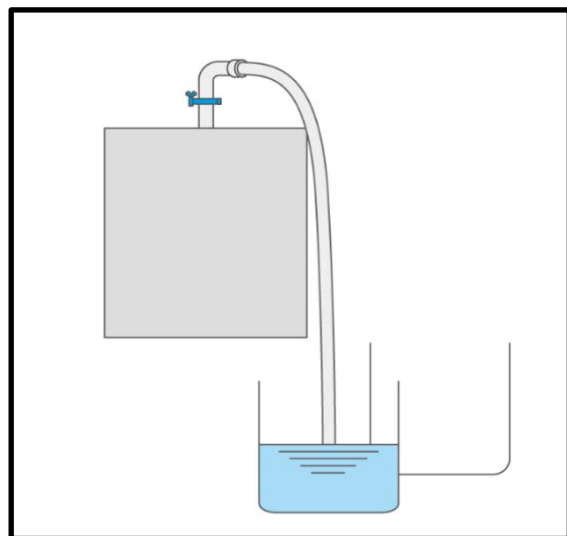
A flexible hose was initially chosen for lifting from the drum pipe, but during internal operation tests, the hose's base suffered damage due to the high viscosity of the fluid and the corresponding pressure.

In search of a replacement hose, they came across the sanitary swivel joint listed on TBG's website and considered its adoption.

**After confirming the actual product with a free sample and deciding to use it**

The responsible party believed that the sanitary swivel joint, with superior strength compared to a standard Teflon hose, could reduce the load and resolve the issue.

By promptly attaching a sanitary joint to the damaged hose's base and retesting, they successfully eliminated the risk of damage, enabling smooth transportation from the drum pipe.



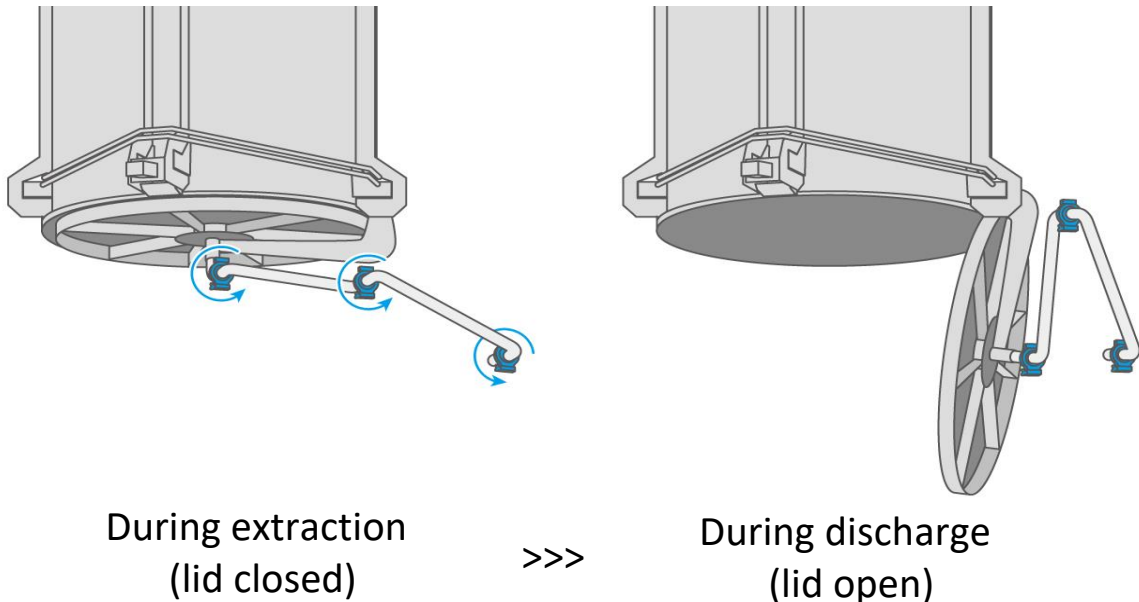
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## Swivel Joint for Sanitary Piping - Case Study VOL.6

Application Example in a Plant Engineering Company specializing in the Design, Manufacturing, Sales, and Installation of Food and Beverage Machinery

**In the manufacturing process of green tea and coffee, a swivel joint was adopted for the extractor.**



Beverages like green tea or coffee involve extracting leaves or coffee beans. The lid of the tank into which the raw materials are introduced is closed during extraction (simmering time).

After extraction, it is necessary to discharge extracted residues from the lower opening and closing lid.

In the past, every time the lid opened or closed, clamps needed to be attached and detached, and pipes had to be removed.

To address this, sanitary swivel joints with straight pipe type were incorporated into the piping.

By incorporating three units, the accompanying pipes are smoothly folded in accordance with the lid's operation.

This eliminates the need for piping attachment and detachment work.

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# Swivel Joint for Sanitary Piping - Case Study VOL.7

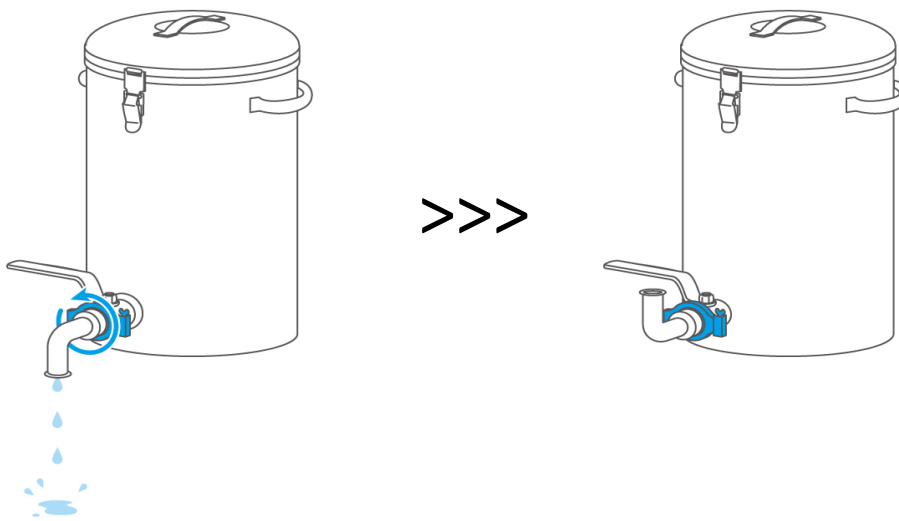
Application Example in a Manufacturer of Hygiene Care Products

## Challenge

**Reduce Hygiene Concerns and Raw Material Waste Due to Dripping from the Tank Pouring Mouth**

During the manufacturing of hygiene care products, there is a process of pouring saline solution from the tank into the drum. Previously, a pipe with an elbow, similar to a faucet, extended from the tank. However, due to the low viscosity of saline solution, dripping occurred from the faucet's outlet after pouring was completed.

To address this issue, a solution involving loosening the clamp band and forcibly tilting it upwards was considered. However, this approach posed risks such as twisting or damage to the helical gasket, as well as the potential for leakage due to forgetting to tighten the clamp.



## Solution

**The ferrule joint (90° elbow) was replaced with a sanitary swivel joint.**

They replaced the ferrule fitting (90° Elbow) with a Sanitary Swivel Joint. Installing a sanitary swivel joint (No.30 Elbow type) at the tank outlet allowed them to change the pipe direction without damaging the gasket, eliminating liquid dripping. The solution provided ease of operation, reduced the risk of leakage, and received positive feedback.

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# Swivel Joint for Sanitary Piping - Case Study VOL.8

## Application Example in a Soy Sauce Manufacturer

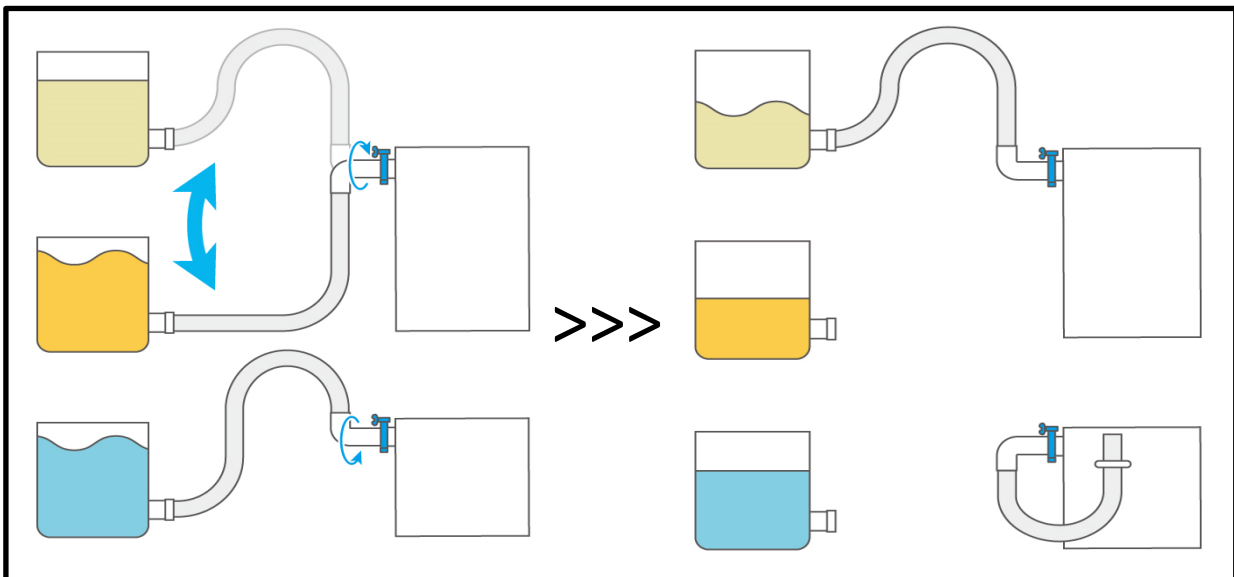
### Challenge

**Easy handling of various liquid mixing/pipe replacement, and reduction of stress on pipes/hoses.**

In the manufacturing of processed foods, primarily soy sauce-based, various seasoning liquids are mixed, and after frequent connections and changes in piping, the liquids are sent to each mixer, filling machine, sterilizer, etc.

The traditional fixed piping specifications required disconnecting clamps to change the piping position and reconnecting for each facility, resulting in poor on-site efficiency.

In response to this challenge, the rotation structure of swivel joint fittings was utilized to explore the possibility of improving operational efficiency.



### Solution

**The design concept was changed from fixed piping to a combination of hoses and sanitary swivel joints.**

By attaching a sanitary swivel joint to the base of the flexible hose, the smooth handling of diverse mixtures and frequent replacement of piping became more efficient, leading to an improvement in production efficiency.

The involved personnel expressed satisfaction with the reduced effort of loosening and tightening clamps and the ease of operation for directing the fluid to desired locations. This change also contributed to reducing the stress on piping and hoses during connection changes.

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# Swivel Joint for Sanitary Piping - Case Study VOL.9

## 【Chemical Product Storage Terminal】 Introducing the application of swivel joints

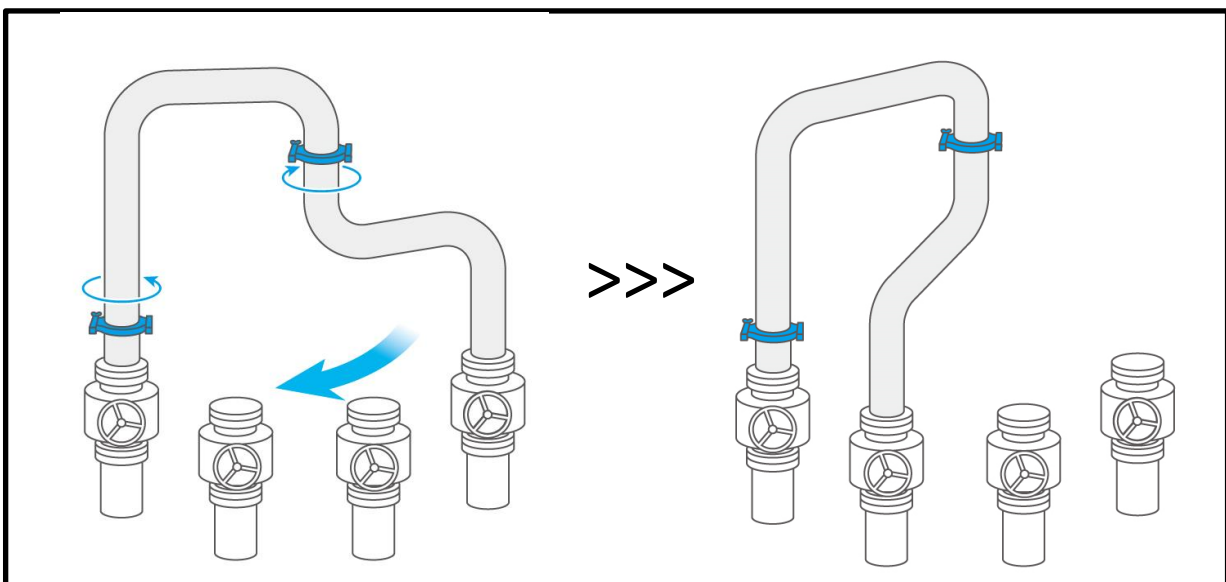
Swivel joints, also known as rotary joints, are widely adopted across various industries for the flexible movement of fixed pipelines.

In chemical plants, they are used to facilitate processes involving the flow of multiple fluids within the same pipeline.

In this case, we present an example of the use of swivel joints in an overseas chemical product storage facility.

Traditionally, separate pipelines are used to prevent fluid mixing by directing each fluid individually. However, in this case, swivel joints were employed to enable a change in the flow path.

### 360-Degree Swivel Joint for Flow Path Redirection



Swivel joints, with their 360-degree rotation capability, allowed the incorporation of two units at the pipeline connection point. This enabled the horizontal movement of two fixed pipelines.

By using swivel joints, it became possible to stop the pipelines at any position, allowing for free movement based on the destination of the fluid. This flexibility in movement facilitates the redirection of the flow path.

Previously, pipeline reconfiguration required time-consuming assembly work for each flow path change. However, with the ease of flow path redirection enabled by swivel joints, the efficiency of operations has significantly improved.

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# 360° Swivel Joint Case Study VOL.10

## Application Example in Fuel Storage Tank

Introducing the use of Swivel Joints (commonly known as Float Suction Skimmer) adopted by a leading engineering company in Southeast Asia with operations in 9 countries.

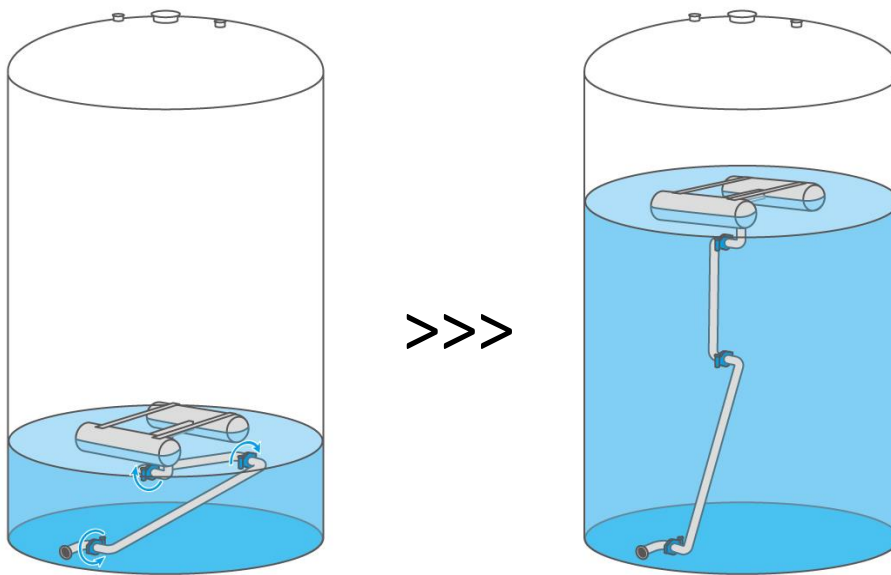
A Swivel Joint is used to rotate pipes or move them in various directions (forward, backward, left, right, up, and down) while transporting pressurized fluids or gases.

In this case, we will introduce a case study of the use of Swivel Joints in a fuel storage tank.

Fuel storage tanks often contain impurities such as water and sediment, distinct from the fuel itself. These impurities, being heavier than the fuel, tend to settle at the bottom of the tank.

Therefore, the customer's requirement was to extract the fuel from the clean upper layer (liquid surface) to avoid these impurities.

**The combination of swivel joint, piping, and a float allows for the pinpoint extraction of the upper layer.**



The float, positioned at the highest point, remains buoyant, always floating on the surface of the fuel. This ensures that the extraction outlet is consistently located near the liquid surface. While the liquid level varies depending on the amount of stored fuel, the inclusion of a swivel joint in the piping allows for the adjustment of the fixed piping to follow changes in the liquid level.

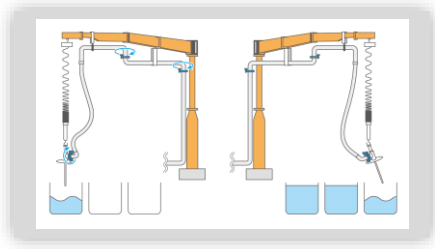
Float suction is an essential facility for maintaining the quality of fuel, and our company contributes to the safety and fuel efficiency of aircraft through the extraction of clean fuel.

TBG's adoption was decided not only for swivel joints but also for the complete assembly (ASS'Y) designed and proposed according to customer requirements.

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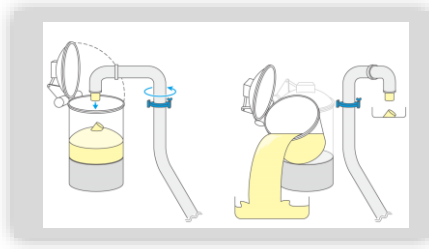
## Testimonial



Efficiency in filling operations has increased, and the hoses that were in the way are now neatly gone

Long-established sake brewer

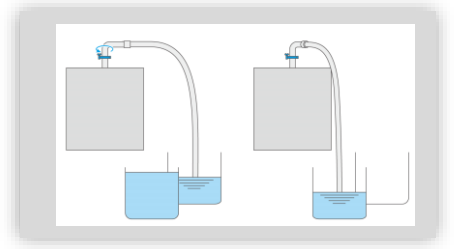
Products : Western liquors, shochu



Since it can be moved horizontally without the need for attachment or detachment, fixed piping does not get in the way

Major dairy manufacturer

Products : Dairy products and food



The trouble of hose damage has been resolved with a sanitary joint

Food machinery manufacturer

Products : Design and manufacture of food processing machinery

## Supply records

Foodstuffs  
(ice cream, cheese)

Beverages  
(Juices and alcoholic beverages)

Seasonings  
(soy sauce, sauce, oil)

Medical supplies

Cosmetics  
(Raw materials)

painting material

Chemistry  
(Materials and slurries)

Semiconductor  
(Cleaning water)

## FAQ

**Q.** How long does it take for production ?

**A.** For 1S, 1.5S, 2S, and 2.5S, we have semi-finished products in stock and can usually produce in about 1-2 weeks. For 3S-4S, please contact us.

**Q.** How many units can I purchase?

**A.** Available from 1 unit.

**Q.** What is the price?

**A.** Varies depending on size and combination, so please contact us for details.

**Q.** What is the material of the body?

**A.** Stainless 316 is standard. Please refer to the catalog for product specifications.

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