Precise Temperature Control and **Zero Corrosion**

Accuracy, efficiency and safety in cooling – these are keywords in meat processing. Danfoss offers a wide range of stainless steel components for the meat processing industry, including the new SVL SS Flexline™ series of modular line components.

**All the valves you need for your refrigeration plant - including stainless steel products for internal placement.**

www.danfoss.com/ir-stainless-steel
The stainless steel products by Danfoss

Danfoss stainless steel products for industrial refrigeration are designed for highly demanding production environments, where corrosion is a risk due to harsh environments, such as process industries and marine applications. A broad temperature range and high pressure approvals make them suitable for refrigerants like CO₂.

All products are designed for industrial refrigeration and are approved for the most commonly used refrigerants within industrial refrigeration such as ammonia, CO₂, HCFC and HFC. Flammable hydrocarbons can be used with some of the products.

The new SVL SS Flexline™ line component range – one platform and all in stainless steel

Modularity and flexibility
The SVL SS Flexline™ line component range in stainless steel is based on the idea of just one housing (angle- or straightway) for multiple functions: Stop, stop/check, check, regulating and filter, all designed to fit into the same housing.

The benefits of choosing SVL SS Flexline™ components are many:

- All functions fit the same standard housing
- High pressure approval
- Color coding making identification of the valve type easier - also once it is fitted in the system
- Shared spare parts allowing for reduced stocking cost and fast and easy service
- Fit and forget thanks to the robust design that gives a smooth and trouble free operation
- Extremely tight and leakage proof design

The new REG-S SS stainless steel regulating valve features a new cone and insert design and an extended lift giving improved precision and regulating performance. The new SCA-X SS and CHV-X SS stainless steel stop/check and check valves feature a new, optimized piston design and a new fully-assembled insert making installation and servicing easier and quicker.

OFV-SS Stainless steel overflow valves
The stainless steel overflow valves from Danfoss (OFV-SS) offer three functions in one valve: Overflow valve, check valve and stop valve. They have a maximum operating pressure of 52 bar and a wide temperature range. The adjustable opening pressure can be adjusted in the range of 2 to 8 bar. The valve can be closed manually, e.g. during plant service. It is fitted with backseating which allows the spindle seal to be replaced with the valve still under pressure.

SNV-SS Stainless steel needle valves
The stainless steel needle valves (SNV-SS) are compact and light service valves. They are especially suited for heavy-duty industrial applications due to their sturdy design and high level of operating safety. Their design provide a high flow characteristic. The SNV-SS valves have a maximum operating pressure of 52 bar in the pressure range of -60 °C to +150 °C.

EVRST Stainless steel solenoid valves
EVRST stainless steel solenoid valves are based on three different principles: Direct, servo or forced servo operation. The forced servo operated valves, designed for keeping open at a pressure drop of 0 bar, can be used in liquid, suction, hot gas and oil return lines. EVRS and EVRST come equipped with a spindle for manual opening and have a working pressure of 50 bar and can handle media temperatures from -40 °C up to +105 °C (max temperature is dependent on coil).

For in-depth technical information, please visit: Danfoss.com/IR-stainless-steel where you can get easy access to all technical data on the different products.
Wherever hygiene really matters and corrosion is a real risk due to the harshness of the environment, stainless steel is your ideal choice for refrigeration systems.

Typical application areas for stainless steel refrigeration systems are the brewing industry, food production, marine cooling, dairy production, meat processing and many other types of process industry applications. Danfoss has developed and produced stainless steel valves for these industries for several years and has a wide specialized application knowledge.

With the introduction of the SVL SS Flexline™ line components in stainless steel, Danfoss now offers a wide range of stainless steel valves for internal placement. With the high pressure approvals for the products the stainless steel valve range now covers all modern refrigeration systems including CO₂.

All products come with a wide range of approvals, of course.

Your benefit: Longer life span of the system and its components and significantly reduced maintenance costs.

**Stainless steel: Longer life span and lower maintenance costs**

**The latest in refrigeration technology**

With innovation as our main focus at Danfoss, you can rely on us to deliver the latest in refrigeration technology. Backed by more than 80 years of experience in the global refrigeration business, we develop and supply the right products for advanced, environmentally friendly cooling installations. With our wide range of components for industrial refrigeration Danfoss can deliver all valves for a project reducing complexity and optimizing project deliveries. Our know-how is always available to you locally – just contact your local Danfoss representative for more information.
**Healthier meat and longer shelf life: Stainless steel components for the meat processing industry**

Handling meat processing from live animal to frozen or cooled product requires fast, safe and secure cooling. Carcass processing, handling, chilling and packaging for storage are production areas in which there is no room for unsafe temperature fluctuations.

The components needed to make meat handling safe and healthy with modern refrigerants, such as CO2 and ammonia, must be produced and fitted with the same care and attention to detail. Danfoss stainless steel components let you maintain a high hygiene and they deliver reliable, efficient and environmentally friendly refrigeration for meat processing applications, regardless of production scale and geographical location.

This diagram shows some of the critical production phases in which Danfoss solutions help producers of fresh and frozen meat products obtain consistently high quality through meticulous temperature control.

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**Pig slaughtering processing flow diagram**

1. **Processing preparation**
2. **Carcass processing**
3. **Chilling and carcass PH rate declining**
4. **Handling and packing**
5. ** Blast chilling and holding**
6. **Chilled fresh product storage**

**Carcass processing**

- **Temperature:** +25 °C (partial working areas)
  - The temperature must meet the strict requirement for special techniques and operation

- **Cooling way:** A refrigeration system is usually operated with glycol or ice water as the secondary refrigerant, lowering the temperature by the use of an ammonia or CO2 heat exchanger

**Chilling and carcass PH rate declining**

- **Rapid chilling**
  - **Temperature:** Below -15 °C (1 to 2 hours)
    - Build up a coat of frost or ice to keep a fresh color during the whole storage period
    - Reduce the purge loss and freezing time to keep the flesh weight
    - Conventional chilling when the internal temperature is reduced to +20 °C

- **Conventional chilling**
  - **Temperature:** Around 0 °C to +4 °C (16 hours)
    - A well-chilled carcass entering the holding cooler shows minimum holding shrinkage, and the rapid temperature reduction is important in reducing the growth rate of microorganisms that may exist on carcass surfaces
    - Packing process when the internal temperature reduced to +7 °C

- **Cooling way:** A refrigeration system is usually operated with ammonia (or CO2) as the primary refrigerant; moreover, the ammonia cooler needs to be defrosted regularly

**Handling and packing**

**Cutting and packaging workshop**

- **Temperature:** +8 °C to +12 °C
  - Ensure the product is processed and stored in a low temperature environment, in order to minimize bacterial contamination and growth and prolong the storage of the fresh product. It is also important to have a proper temperature for the manual working place

**Temporary storage workshop**

- **Temperature:** 0 °C to +4 °C
  - Keep a proper condition of the holding freezer for the acid-drained meat

**Cooling way:** Cutting and packaging: Industrial ethylene glycol air conditioners may be used for refrigeration. The ethylene glycol secondary refrigerant is cooled by the ammonia plate heat exchanger

**Temporary storage:** A refrigeration system is usually operated with ammonia (or CO2) as the primary refrigerant; moreover, the ammonia cooler needs to be hot-gas defrosted occasionally

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**Fresh storing**

- **Temperature:** 0 °C to +4 °C (refrigeration house cold-storage)
  - The frozen product is conveyed by refrigerated transport vehicles to the marketplace

- **Cooling way:** A refrigeration system is usually operated with ammonia or CO2 as the primary refrigerant; moreover, the refrigerator needs to be hot-gas defrosted occasionally

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**Note:** the illustration shows only one of the many possible process setups.
**Danfoss Flexline™**

**Simple. Efficient. Flexible.**

Designed to offer clever simplicity, timesaving efficiency and advanced flexibility the Flexline™ series includes three popular product categories:

- **ICV Flexline™** – Control valve
- **ICF Flexline™** – Complete valve stations
- **SVL Flexline™** – Line components

All products are based on a modular design with no functionality in the house. This set-up reduces complexity right from the design phase to the installation, commissioning and service. All key to lower total life cycle costs – and major savings.

Go to [www.danfoss.com/flexline](http://www.danfoss.com/flexline) for more information on the Flexline™ platform.

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**Global knowhow**

**Local support**

Backed by more than 80 years of experience producing valves and controllers for refrigeration applications Danfoss is a solid partner to turn to when you are looking for quality components.

Our global knowhow combined with local support offers you the best possible products and service.