

ENGINEERING
TOMORROW

Danfoss

Machine builders:
**Improve performance, save
energy and maintenance costs,
enhance safety**

Up to

40%

Savings with optimized
mold cooling

Perfect hydraulic control - for increased productivity, **reliability, energy efficiency** and **safety**

Custom solutions driven by application experience

The machine-building sector is highly versatile, placing a variety of demands on the components used in modern hydraulic applications. If you are looking for high-performance monitoring and control components for industrial hydraulics you will find what you are looking for in the Danfoss product portfolio. Our product program offers a wide range of solutions designed to match your specific requirements no matter the application.

Danfoss is known for its high-quality components for monitoring and control of industrial hydraulic applications. Our products are constantly developed to meet hydraulic requirements today and tomorrow. Close cooperation with the industry have helped us build a unique

expertise and product portfolio that enhance performance and deliver best-in-class quality and product life cycle costs for almost any industrial hydraulic application.

Certified quality

Our zero-defect policy is your guarantee for safe and reliable production processes.

All Danfoss industrial hydraulic components are produced using the same production processes and quality assurance standards worldwide. Our production procedures are certified according to ISO/TS 16949-2009. Rigorous testing of our components ensures high reliability and stable processes of your hydraulic application. All components are CE marked and certified according to specific national,

regional and international standards. All information about certification and technical documentation is available online.

When buying Danfoss components you are sure to get consistently high quality, short delivery times and access to our global service and support network. You can order online or get assistance from our hydraulic experts to select the right components for your application.

Your application – Our products

We take pride in helping machine builders around the world meet the relentless demands to productivity and cost efficiency and to avoid hydraulic system failures caused by for instance high pressure peaks, liquid hammer, cavitation, vibration and mechanical impact.

Close cooperation with OEMs and machine-builders in various industries have helped Danfoss create a unique expertise in how pressure and temperature controls improve performance and safety in different industrial applications. We design the components to maximum performance where they matter most. And we let you fine-tune the processes that deliver the best returns. We specialize in components and solutions for a wide range of industrial hydraulic applications, including:

- **Plastic processing**
- **Presses**
- **Hydraulic power**
- **Temperature control**

All components are designed as compact units to fit into the limited space available in most industrial hydraulic applications.

Built to last

It is our philosophy that components for industrial machinery must be designed to last. Our sensors, switches and valves are produced from the most durable materials and designed to withstand shock, vibration and fluctuations in pressure and temperature during daily operation.

Our components are following all international standards within the industrial hydraulic industry

PRESSURE TRANSMITTERS

Read more on page 6



TEMPERATURE SENSORS

Read more on page 6



PRESSURE AND TEMPERATURE SWITCHES

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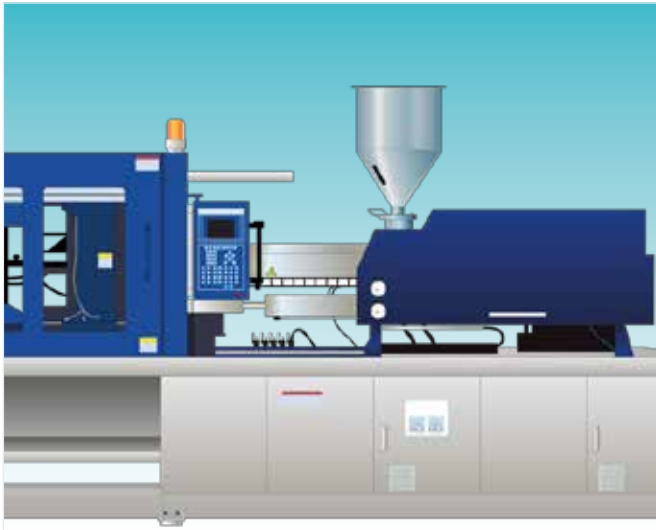


SOLENOID VALVES

Read more on page 7



Full **control** of pressure and temperature - drive **efficiency** to **new heights**



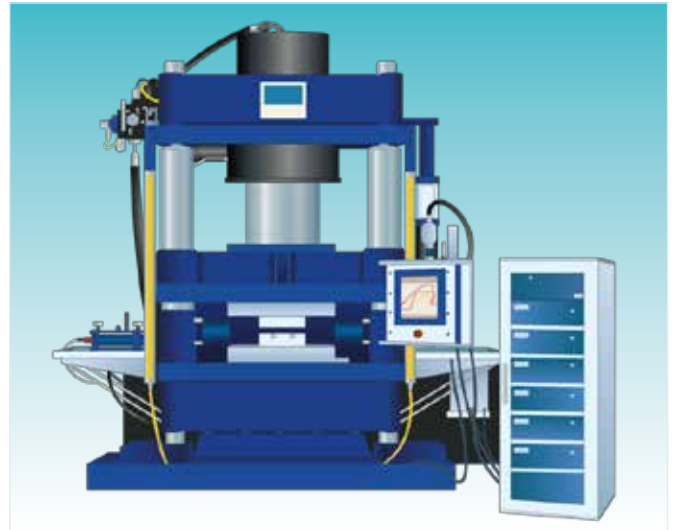
Plastic Processing

The plastic industry is one of the fastest growing industries. Competition is tough and to be at the forefront, equipment and processes have to be top-tuned to reduce costs brought on by e.g. increased energy and material costs. Increasing consumer expectations to product quality and new, innovative materials further fuel the development of next generation plastic processing machines.

Filling ever more complicated shapes in just a fraction of a second requires extremely precise control of injection pressure. At the same time accurate temperature control in heating and cooling processes are decisive for the tight dimensional tolerances and the perfect surface quality of plastic products today and tomorrow.

Through decades, Danfoss has developed a wide range of pressure and temperature sensors for hydraulic applications in the plastic industry. In cooperation with machine builders and plastic processing industries, the product portfolio is constantly developed to deliver reliable and safe operation, high performance and reduced power consumption. The Danfoss product portfolio is optimized for a wide range of applications, including:

- **Extruders**
- **Blow molding machines**
- **Rubber injection presses**
- **Core casting machines**
- **Extruders**



Presses

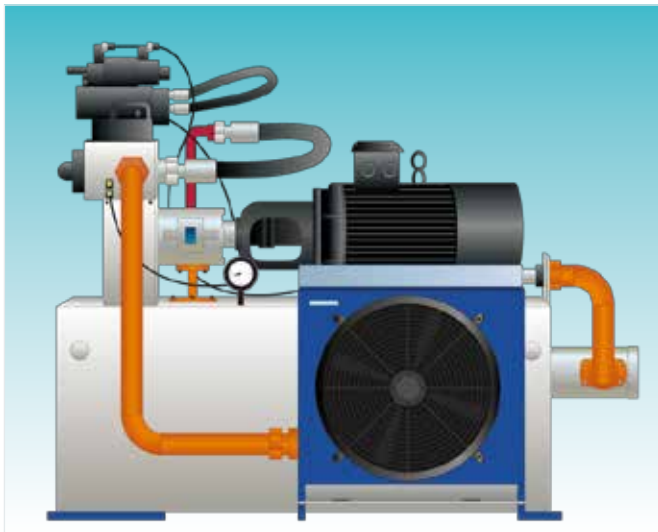
Hydraulic presses are widely used in almost any industrial production process, ranging from heavy-duty, metal applications to pharmaceutical pill production, lamination processes and assembly lines. Due to the immense power of hydraulic presses, personnel safety is a major concern of the industry as is high productivity and reliable operation with little or no down-time.

Pressure and temperature sensors are integral parts of modern, safe and efficient hydraulic presses. Danfoss offers a complete range of sensors that fit almost any hydraulic press application, including;

- **Forming presses**
- **Cutting presses**
- **Hydro-forming presses**
- **Punching presses and pipe**
- **Tube bending machines**

The Danfoss sensors are made from durable materials and perform to the highest standards. The sensors also protect against excessive wear on components to ensure an extended life time of the hardworking presses.

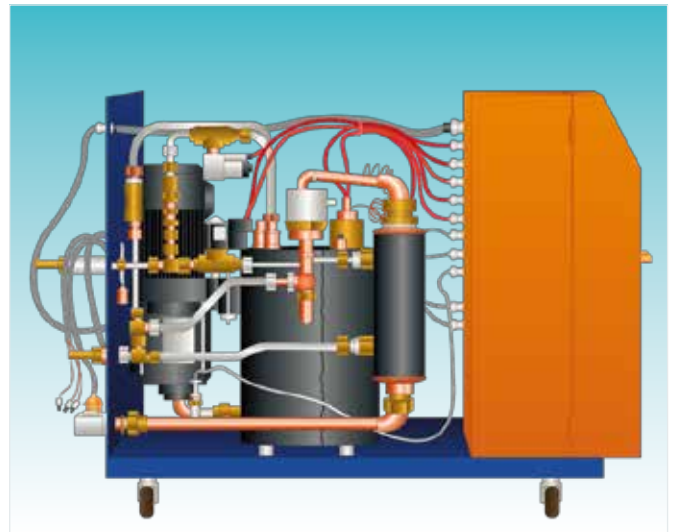
Enhance the **performance** of your hydraulic system from **power supply** to process output



Hydraulic Power

High system performance and energy efficiency of hydraulic applications depend on the power pack. The introduction of hydraulic servo pumps in combination with frequency converters and pressure sensors has greatly enhanced the performance levels and cut down on energy consumption, the size of the hydraulic tank and the amount of piping. In fact, the energy savings achieved with hybrid servo pump solutions can be up to 70 % compared to traditional fixed pump hydraulic systems, and the oil tank volume can be reduced by up to 50 %.

The advantages of the hybrid servo system not only applies to new-built machines, but can easily be built into existing solutions to achieve the benefits offered by this new technology. Danfoss offers pressure sensors and switches for hybrid hydraulic power packs for new as well as existing equipment. The sensors provide excellent control of pressure levels, a high degree of accuracy and outstanding response times.



Temperature control

Temperature is one of the most important process variables in almost any industrial hydraulic application. Accurate temperature control is vital for both system performance and machine lifetime. Experience shows that hydraulic component failures are often caused by fluid problems. For instance, high oil temperatures reduce oil viscosity leading to increased leakage, hardening of seals and potentially increased friction and wear on hydraulic components. Since hydraulic components are constructed with very close tolerances, high oil temperatures and loss of lubrication may result in severe damage or seizure and ultimately down-time and costly repairs.

In production processes like plastic molding, fast and accurate cooling is critical to obtain a consistent and high quality of the molded units. To ensure the right temperature throughout the process, solenoid valves control the supply of cooling water to the relevant parts of the machine, opening and closing the supply of water according to the constant measurements performed by temperature sensors.

For plastic molding processes and other hydraulic applications, precise temperature control creates several advantages such as high efficiency, reduced process time, increased clamping force, low energy consumption and reduced noise levels at the factory. Danfoss specializes in solenoid valves, temperature sensors and switches optimized for use in industrial hydraulics.

Pressure transmitters



Thinfilm - compact design

- From 0-7 bar to 0-2200 bar
- 4-20mA, Absolute voltage, Ratiometric output
- Secondary output for temperature available
- Version with pulse snubber available
- Version upto 125°C
- Wetted parts made of stainless steel
- Wide range of electrical and pressure connections
- High pressure and good accuracy
- Excelent burst pressure ability
- MBS 1200 and 1300 series



Piezo Resistive

- From 0-1 bar to 0-600 bar
- 4-20mA, Absolute voltage, Ratiometric output
- Version with pulse snubber available
- Version upto 85°C or 125°C
- Wetted parts made of stainless steel
- Wide range of electrical and pressure connections
- General use
- Excelent over pressure ability
- MBS 2000, 2200, 3000 3200 series



Piezo Resistive with high accuracy and compact design

- From 0-4 bar to 0-600 bar
- 4-20mA, Ratiometric output
- Version with pulse snubber available
- Version upto 125°C
- Wetted parts made of stainless steel
- Wide range of electrical and pressure connections
- High accuracy only 1% FS TEB -20 to 100°C
- Excelent over pressure ability
- MBS 8200 series

Temperature sensors



Heavy-duty temperature sensors

- Temperature range 50 – 200°C
- Pt 100 or Pt 1000 sensing element
- Interchangeable measuring insert
- Gold plated contacts
- Built-in transmitter
- Output signals 4 – 20 mA
- A wide selection of process and electrical connections
- MBT 5252 series



Temperature sensors with integrated transmitter

- Temperature range -50 – 200°C
- Pt 1000 sensing element
- Fixed measuring insert
- Output signals 4 – 20 mA or ratiometric
- A wide selection of process and electrical connections
- MBT 3560 series



Standard temperature sensors

- Temperature range -50 – 200°C
- Pt 100 or Pt 1000 sensing element
- Interchangeable measuring insert
- Gold-plated connectors
- A wide selection of process and electrical connections
- MBT 5250 series

Pressure and temperature switches



Block pressure switches

- 0.2 – 1 bar to 40 – 400 bar
- Temperature -40 – 85°C (diaphragm version -10 – 85°C)
- Contact load AC 3: 2A, 250 V, AC 15: 0.5A, 250 V
- Plug EN 175301-803-A
- Wide range of pressure connections
- Versions with pulse snubber available
- Can be used with MBV test valves
- MBC 5000 series



Electronic pressure switches

- 0 – 7 bar to 0 – 600 bar
- Available with;
 - Dual output: switch and analog output.
 - NPN/PNP and NO/NC
 - Max load @125°C 500mA
 - Short circuit and overload protected
- Up to 125°C
- Wide range of pressure and electrical connections
- No leakages due to fully welded design
- Versions with pulse snubber available
- MEP 2200 series and MEP 2600 series

Solenoid valves



Servo-operated 2/2-way valves

- Differential pressure 1 – 30 bar/ 0.3 – 16 bar
- Media temperature -30 – 100°C/ -30 – 140 °C
- Thread connection G 1/4 – G 1/G 1/2 – G 2
- DN 6 – 22/15 – 50
- Viscosity up to 50cSt/50cSt
- EV220B series



Directed-operated 2/2-way valves

- Differential pressure 0 – 30 bar
- Media temperature -30 – 120°C
- Thread connection G 1/8 – G 1/4
- DN 1.2 – 3.5
- Viscosity up to 20 cSt
- EV210A series



Thermostatically operated valves

- Differential pressure 0 – 10 bar
- Media temperature -25 – 130°C
- Thread connection G 3/8 – G 1
- Self-acting – no power needed
- AVTA series

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Here **today**. Here **tomorrow**.

Danfoss is a leading global player in the development and production of mechanical and electronic products and controls.

Since 1933, our extensive know-how has made modern life easier, and we continue to break new ground in our core business areas.

We produce more than 250,000 items at 70 factories in 25 countries – every day. Impressive as these figures are, we are most proud of the way our dedicated employees apply the high-quality components in customer solutions, adding value to the end product. Building strong partnerships is of great importance to us, because it is purely by understanding our customers' needs that we can meet the expectations of tomorrow.

This is also true in Industrial Automation, a Danfoss entity dedicated to focusing on the industrial world of today.

Through us, you gain access to the entire Danfoss pool of technologies, with special emphasis on sensors and controls.

We offer safer, more reliable and more efficient solutions in a close cooperation based on firm values.

Danfoss A/S, Industrial Automation

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