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Systems, Components and Fluid Engineering / Service for Cleanliness Technology

Note
The information in this brochure relates to the operating conditions and applications described. For applications and operating conditions not described, please contact the relevant technical department. All technical details are subject to change.
HYDAC has been one of the leading suppliers of fluid technology, hydraulics, electronics and cooling equipment for more than 50 years and has over 9,000 members of staff worldwide.

The width and depth of our range of products, combined with our recognized expertise in development, manufacturing and service, has allowed us for some years now to solve the most demanding challenges associated with cleaning technology and cleanliness in our customers’ production plants worldwide.

In addition to standard products, HYDAC has a wealth of special components and system solutions from the filtration, cooling, sensor and monitoring sectors to ensure technical cleanliness. This range of products is supplemented by a comprehensive range of services.

Our range of services:
- Consultation
- System and process chain analyses
- Optimizing existing systems
- Creating and improving filter concepts
- Developing overall system concepts
- Integral solutions for monitoring the technical cleanliness during production

HYDAC offers you a comprehensive technical range of components, systems and services - fluid engineering / service. The aim is to optimize the availability and process results of machines and fluid technology systems and to reduce operating costs. The system operator’s needs and requirements are always paramount.

We therefore support you as a versatile system partner and offer comprehensive advice and solutions regarding technical cleanliness in cleaning technology. Cooperation with and trust of system operators and manufacturers is our top priority.
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Systematically getting to grips with challenges
Modern drivetrain technologies and higher power densities demand first-class quality in the production of components and systems. Among other things, stringent requirements for technical cleanliness ensure that failures during the warranty period are minimized. Therefore, the production of new system components is closely concerned with the requirements for technical cleanliness. Modern part washers must meet these requirements:

- Maintaining the required critical values of technical cleanliness
- Short cleaning cycles
- Fluid residues adhering to the components must be kept to a minimum
- Extended life of bath fluid
- Cleaning, flushing, deburring and drying in compact systems
- Energy-efficient design
- Filtration without consumables and/or extended filter lifetime with enhanced cleanliness requirements
- Securing the required system availability
- Monitoring operating media (quantity of particles, particle size, amount of residual oil), monitoring system parameters, e.g. pressure, temperature, level, flow rate, and many more.

**Technical cleanliness along the process chain**

The automotive industry is the driving force for further development of technical cleanliness. Due to constantly rising quality standards, the demands on the quality and cleanliness of components are also increasing. Contaminated components entail costs because of faults, complaints and in some cases complete system shutdown.

Wherever critical particles lead to machine and system failures, residues from production may be the cause. The reduction of production stage failures, rework and greater system availability are only some of the advantages of good cleanliness management.

Functioning cleaning and testing processes are crucial for maintaining technical cleanliness across the entire process chain up to the finished product. HYDAC pays close attention here to carefully coordinated filter concepts in all relevant systems and to optimizing their efficiency.

The required cleanliness of the final product determines and defines the requirements on the process and the respective individual steps. Cleanliness technology requirements can therefore be precisely formulated. Thinking in processes is important here. Using HYDAC components and system solutions, we help you bring the degree of contamination in industrial part washers, test rigs and devices relevant to cleanliness down below a predetermined critical value (e.g. no particle > 600 μm) and remove contaminants (e.g. particles, fats).

![Filtration technology and process requirements](image)

**Technical cleanliness along the process chain**

**Goal**
Low
Medium
High
Highest

**Filtration technology and process requirements**

<table>
<thead>
<tr>
<th>Pre-washer</th>
<th>Intermediate washer</th>
<th>Final washer</th>
<th>Testing/Flushing</th>
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<td>Start</td>
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**Level of technical cleanliness**

Degree of contamination

- Low
- Medium
- High
- Highest

**Cleanliness Technology and Your Requirements**

Thinking in Processes.
Cleanliness Technology and Your Requirements
Thinking in Processes.

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and Your Requirements
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Goal

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Systematically getting to grips with challenges

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Filtration Concepts
Perfect Solutions to Your Requirements.

Filtration
The Right Solution for Every Application.

AutoFilt® ATF
Type: GasFlow Strainer
Filtration types: Processmicron® HighFlow 6”
Filtration rates: 25 - 3,000 µm
Pressure ranges:
Filtration type: Processinline filter
Filtration rates: 1 - 200 µm
Wombat Filter WBF
PLF1-1 / PLF1-2

JetFlush – special hydrodynamic
Features:
- No dead spaces or undercuts
- Easy handling and shorter assembly times thanks to clamp connection
- Defined filtration rates and high separation values
- The filter elements protect components such as nozzles, high pressure pumps or working filters, for example in industrial part washers
- No low pressure drop due to large filter area and large flow cross sections
- Easy handling and shorter assembly times thanks to clamp connection
- Compact design with high flow rates, can be used in high flow filters (flow rates from 50 liter per minute to 100,000 liter per minute)
- the elements can be cleaned and used again, the system is reusable and can be used in different applications, for example in the automobile industry
- Energy efficiency, high pressure drops, when the filter is in a closed position
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**Filtration Concepts**

**Perfect Solutions to Your Requirements.**

- **Technical Cleanliness and Filtration in Production**
- **Application.**
- **Filter Housing**
- **The Right Solution for Every Application.**

### AutoFilt® ATF

**Type:** Automatic Backflushing Filter

**Filtration type:**
- High-quality separation of solid particles from low viscosity fluids
- AutoFilt® technology

**Flow rates:**
- Up to 7,500 m³/h

**Filtration ratings:**
- Up to 200 µm

**Pressure ranges:**
- 10 bar / 16 bar

**Filters:**
- Bag filter / candle filter

**Features:**
- Energy-efficient flow control
- Defined filtration rates and high separation values
- Defined cleaning stages and cycle times
- Modular technology

### AutoFilt® RF3

**Type:** Automatic Backflushing Filter

**Filtration type:**
- High-quality separation of solid particles from low viscosity fluids
- AutoFilt® technology

**Flow rates:**
- Up to 1,200 m³/h

**Filtration ratings:**
- Up to 100 µm

**Pressure ranges:**
- 10 bar / 16 bar

**Filters:**
- Bag filter / candle filter

**Features:**
- Self-cleaning system for the continuous separation of solid particles from low viscosity fluids
- AutoFilt® technology
- Defined cleaning stages and cycle times
- Modular technology
- Defined cleaning stages and cycle times
- Defined cleaning stages and cycle times

### Wombat Filter WBF

**Type:**
- Automatic Backflushing Filter

**Filtration type:**
- High-quality separation of solid particles from low viscosity fluids
- AutoFilt® technology

**Flow rates:**
- Up to 200 m³/h

**Filtration ratings:**
- Up to 100 µm

**Pressure ranges:**
- 10 bar / 16 bar

**Filters:**
- Bag filter / candle filter

**Features:**
- Fully automatic filtration system with guaranteed cut-off values
- Defined cleaning stages and cycle times
- Modular technology
- Defined cleaning stages and cycle times
- Defined cleaning stages and cycle times

### PLF1-1 / PLF1-2

**Type:**
- Candle filter

**Filtration type:**
- High-quality separation of solid particles from low viscosity fluids
- AutoFilt® technology

**Flow rates:**
- Up to 400 m³/h

**Filtration ratings:**
- Up to 200 µm

**Pressure ranges:**
- 10 bar / 16 bar

**Filters:**
- Bag filter / candle filter

**Features:**
- Defined cleaning stages and cycle times
- Defined cleaning stages and cycle times
- Defined cleaning stages and cycle times
- Defined cleaning stages and cycle times

### MultiRheo® – AMRF

**Type:**
- Automatic filter

**Filtration type:**
- High-quality separation of solid particles from low viscosity fluids
- AutoFilt® technology

**Flow rates:**
- Up to 400 m³/h

**Filtration ratings:**
- Up to 200 µm

**Pressure ranges:**
- 10 bar / 16 bar

**Filters:**
- Bag filter / candle filter

**Features:**
- Defined cleaning stages and cycle times
- Defined cleaning stages and cycle times
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**NEW**

- Filter bag (standard and economy)
- Filter bag (Economy, Standard and Premium)
- SuperMesh wire mesh filter elements

**Features:**
- Defined cleaning stages and cycle times
- Defined cleaning stages and cycle times
- Defined cleaning stages and cycle times
- Defined cleaning stages and cycle times

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**AutoFilt® RF3 – JetFlush**

**Type:**
- Automatic Backflushing Filter

**Filtration type:**
- High-quality separation of solid particles from low viscosity fluids
- AutoFilt® technology

**Flow rates:**
- Up to 25 m³/h

**Filtration ratings:**
- Up to 1,000 µm

**Pressure ranges:**
- 1 bar / 16 bar

**Filters:**
- Stacked tube filter elements
- SuperMesh wire mesh filter elements

**Features:**
- Defined cleaning stages and cycle times
- Defined cleaning stages and cycle times
- Defined cleaning stages and cycle times
- Defined cleaning stages and cycle times

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**Convincing diversity**

Due to the wide range of filters offered by HYDAC, we can provide a suitable filter for every requirement, whether it is for handling heavy contamination loads, filtering machining chips or providing the optimal solution for each application with the highest cleanliness demands.
**Filtration Concepts**

Perfect Solutions to Your Requirements.

**Requirements.**

- **Good retrofitting**
- **Longest possible chemical and physical resistance of the fluid**
- **Removal of ultra-fine particles from the fluid**
- **The (high) fluid purity required for constantly maintaining technical cleanliness is achieved**
- **Protective and fine filtration**
- **Removal of finer contamination**
- **Maintenance and conditioning of the fluid in the tank**
- **Maintenance filtration**
- **Removal of coarse and (some) fine contamination**
- **Conveying the fluid from the dirt tank to the clean tank**
- **Directly capturing the contaminant load in the return line**
- **Minimal filtration**

**Cleaning fluids with a high level of efficiency. Failures in function-related components are therefore**

**HyDAC back-flushing and candle filters ensure the continuous separation of particles from the**

**between the supply pump and the industrial part washer**

**Application.**

The Right Solution for Every Filter Housing

**Filtering rated**

- **According to particle nature, filtration ratings of**
- **Coarse separation by centrifugal force with**
- **Hybrid consisting of centrifugal separator and**
- **Particularly suitable for the separation of**
- **SuperFlush coating optional**
- **Conical slotted tube filter elements**
- **Filter element type:**
- **Up to 16 bar**
- **Up to 100 bar** (on request)

**Pressure ranges:**

- **Dependent on particle nature**

**Filtration ratings:**

- **Flow rates:**
- **Inline filter with guaranteed cut-offs**
- **Hybrid consisting of centrifugal separator and**
- **Surface filter with JetFlush technology**

**Filtration type:**

- **AutoFilt® ATF**
- **AutoFilt® RF3**
- **AutoFilt® RF3 – JetFlush**
- **Wombat Filter WBF**
- **PLF1-1 / PLF1-2**
- **MultiRheo® – AMRF**

**Features:**

- **New: Optional solenoid technology**
- **SuperFlush non-stick coating**
- **SuperMesh wire mesh filter elements**
- **Slotted tube filter elements**
- **Filter bag (standard and economy)**
- **Flexible (Economy, Standard and Premium)**
- **Wombat filter element (premium)**

**Process inline filter**

- **Processmicron® Highflow 1”**
- **Processmicron® Highflow 5”**
- **Processmicron® HighLoad and Cascade 8”**

**Process micro**

- **Surface filter with JetFlush technology**
- **AutoFilt® RF3 – JetFlush**
- **Wombat Filter WBF**
- **MultiRheo® – AMRF**

**New inline technology**

- **2 sizes (standard size 1+2)**
- **Energy-efficient flow control**
- **Excellent system and component protection**
- **Defined filtration rates and high separation values**
- **The filter elements protect components such as**
- **For open systems subject to the continuous ingress of contamination from the outside**
- **Can be retrofitted without stopping the system or changing the unit**
- **Energy and space saving filter cabinet design**
- **Compact design with high flow rates,**
- **Low pressure drops due to large filter area and large flow cross-sections**
- **Energy handling component is disposable candle filter elements**
Filtration Concepts
Perfect Solutions to Your Requirements.

Filter Housing
The Right Solution for Every Application.

AutoFilt® ATF
- AutoFilt® RF3
- SuperMesh wire mesh filter elements
- Filter element type: Conical wire mesh filter elements
- Pressure ranges: Up to 100 bar (on request)
- Flow rates: Up to 1,000 m³/h
- Filtration ratings: 25 - 3,000 µm
- Filtration type: Automatic Back-Flushing Filter
- Features:
  - Self-cleaning system for the continuous separation of solid particles from low viscosity fluids
  - Compact housing with high flow rates
  - Suitable for applications with the highest cleanliness requirements
  - Energy-efficient flow control
  - Maintenance-free operation
  - SuperMesh wire mesh filter elements
  - Fully automatic Back-Flushing Filter System

AutoFilt® RF3 – JetFlush
- Wombat Filter WBF
- Process inline filter
- Candle filters
- Features:
  - Compact housing with high flow rates
  - Easy handling and shorter assembly times thanks to vertical inflow prevents bypass formation, also with long-term use
  - High contamination retention capacity
  - Protection of the clean side during filter element replacement thanks to fixed support tube
  - More flexibility and optional adjustment to the filter elements
  - Suitable for applications with the highest cleanliness requirements
  - Energy-efficient flow control
  - Maintenance-free operation
  - SuperMesh wire mesh filter elements
  - Fully automatic Back-Flushing Filter System

PLF1-1 / PLF1-2
- MultiRheo® – AMRF
- Features:
  - Suitable for applications with the highest cleanliness requirements
  - High contamination-tection capacity
  - More flexibility and optional adjustment to the application as well as subsequent optimisation in the event of a maintenance-replacement thanks to fixed support tube
  - Easy handling and shorter assembly times thanks to vertical inflow prevents bypass formation, also with long-term use
  - High contamination retention capacity
  - Protection of the clean side during filter element replacement thanks to fixed support tube
  - More flexibility and optional adjustment to the filter elements
High-Quality Filter Elements
Top Quality Pays Off
in the Long Run.

Filter Elements
The Right Solution for Every Requirement.

Candle filters
Bag filter
Processmicron® Candle Filters
Back-flushing filter

Filtration efficiency:
- Standard 1...200 µm
- Premium 1...90 µm

Features:
- Very high fluid cleanliness
- Longer lifetime as filter bag
- High contamination retention capacity
- Lower pressure drop
- Robust element design
- High temperature stability
- Rapid filter element change due to conical design

AutoFilt® Back-flush filter elements

Processmicron® HighFlow / HighLoad

AutoFilt® Back-flush filter elements

Filter Housing Technology

Filter Elements

Improved fluid quality
No interruption to operation
Consistently high quality
Reduced service life
Extended service life

Reduced production costs
Reduced maintenance costs
Reduced cooling capacity

Processmicron® Bag Filter

Filter material:
- Polyester, (glass fibre) pleated

Features:
- Cost-effective 1-layer design for applications with low requirements
- Cleanliness-enhanced 2 and 3-layer designs for applications with high requirements
- Material compound with maximum safety during operation and optimum adaptation to the bag receptacle
- High degree of efficiency
- Sealing lip ensures bypass-free sealing
- Excellent media compatibility
- High efficiency throughout the filter lifetime
- More efficiency thanks to conical element geometry
- Fully cleanable
- Adaptable to a customer application thanks to availability of different element designs

Filter retrofitting

For optimising your filtration processes, HYDAC can offer you suitable alternatives, various sizes and premium and low-cost materials for existing filters.

Continuous, defined, clean!
HYDAC manufactures filter elements for every requirement in line with the filter concept. When choosing the right filter element to suit you, we naturally take both technical and economic aspects into consideration and test new or challenging applications with you.

By using high-quality HYDAC filter elements with a continuous and defined filtration efficiency, absolute filtration of your cleaning fluids is guaranteed.

For optimal fluid quality, HYDAC offers these filters in duplicate so you can switch between the two. Downtimes due to filter exchange are ruled out because HYDAC back-flushing filters clean themselves during operation.

This ensures that one filter is always carrying out the filtration task, while the second filter is available for the exchange, even during full operation of the system.

The aim of the filtration is to keep the cleanliness of cleaning fluids at a continuous cleanliness level throughout the production process. The cleanliness of the cleaning fluid is determined by the cleanliness requirement of the component being cleaned.

Sustainable filter concepts for complying with the cleanliness requirements of the cleaning fluid are important elements of an entire system solution. It is crucial how to correctly choose high-quality filtration when it is required and to select more insensitive solutions whenever possible. An incorrect filter concept or lack of filtration of an industrial part washer can lead to problems during system operation and in the process elements of an entire system solution. It is crucial here to correctly choose high-quality filtration when it is required and to select more insensitive solutions whenever possible.

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Reduced cooling capacity

3. Reduced production costs
4. Reduced maintenance costs
5. No interruption to operation
6. Extended service life
7. Consistently high quality
8. High media compatibility
9. High pressure stability
10. Rapid filter element change due to conical design

More efficiency thanks to conical element geometry
Fully cleanable
Adaptable to a customer application thanks to availability of different element designs

Filter retrofitting

For optimising your filtration processes, HYDAC can offer you suitable alternatives, various sizes and premium and low-cost materials for existing filters.

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Reduced maintenance costs
Reduced cooling capacity

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Top Quality Pays Off in the Long Run.

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Correct preselection
By selecting the correct filter material or by optimizing the existing filter concept, operating costs can be significantly reduced.

Surface filters are generally cleanable filters which can be operated automatically. Downtimes due to filter exchange are ruled out because HYDAC back-flushing filters clean themselves during operation. These filters are particularly suited to handling heavy contamination tasks.

Depth filters are generally non-cleanable filters which have to be replaced. They offer a defined filtration result. Reduced cooling capacity
Component wear, even failure
No interruption to operation
High contamination retention
No particle transfer to the clean side due to thermally welded sealing
Sealing collar ensures bypass-free operation
Material compound with very high fluid cleanliness
Very high pressure drop
Robust element design
High temperature stability
Rapid filter element change due to conical design
More efficiency thanks to conical element geometry
Fully cleanable
Adaptation to customer application thanks to availability of different element designs

Flexmicron Economy / Standard
Filter material: Polypropylene, polymeride, spun spray
Filter material: Polypropylene, glass fibre, pleated
Differential pressure max.: 2 bar
Differential pressure max.: 1.4 bar
Temperature max.: Up to 100 °C
Temperature max.: Up to 60 °C
Features:
-End cap welded, not glued
-All standard element geometries available
-Wide range of adapters (compatible with existing systems)
-Minimum-cost design

Features:
-All standard element geometries available
-Wide range of adapters (compatible with existing systems)
-Stable filtration efficiency also under pressure and flow rate variations
-High media compatibility
-High contamination retention capacity thanks to pleated design
-Robust support for non-woven media to prevent material migration under mechanical stress

Features:
-Cost-effective 1-layer design for applications with low requirements
-Cleanliness-enhanced 2 and 3-layer designs for applications with high requirements
-Material compound with maximum safety during operation and optimum adaptation to the bag receptacle
-High degree of efficiency
-Sealing lip ensures bypass-free sealing
-No particle transfer to the clean side due to thermally welded sealing
-Sealing collar made of polypropylene

Features:
-Very high fluid cleanliness
-Longer lifetime as filter bag
-High contamination retention capacity
-Lower pressure drop
-Robust element design
-High temperature stability
-Rapid filter element change due to conical design
-More efficiency thanks to conical element geometry
-Fully cleanable
-Adaptation to customer application thanks to availability of different element designs

Filter Elements
The Right Solution for Every Requirement.

Candle filters
Bag filter
Bag filter
Processmicron® Candle Filters
Back-flush filter elements

Clean fluid quality
No interruption to operation
Completely high quality
Reduced maintenance costs
Reduced production costs
Reduced service life

Filter Housing Technology

For optimising your filtration processes, HYDAC can offer you suitable alternatives, various sizes, and premium and low-cost materials for existing filters.

Continuous, defined, clean!
HYDAC manufactures filter elements for every requirement in line with the filter concept. When choosing the right filter element to suit you, we naturally take both technical and economic aspects into consideration and test new or challenging applications with you.

By using high-quality HYDAC filter elements with a continuous and defined filtration efficiency, absolute filtration of your cleaning fluids is guaranteed.

Filter retrofitting

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Filter Housing Technology

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Top Quality Pays Off in the Long Run.

High-Quality Filter Elements

Filter Elements
The Right Solution for Every Requirement.

- Continuous, defined clean!
- HYDAC manufactures filter elements for every requirement in line with the filter concept. When choosing the right filter element to suit you, we naturally take both technical and economic aspects into consideration and test new or challenging applications with you.
- By using high-quality HYDAC filter elements with a continuous and defined filtration efficiency, absolute filtration of your cleaning fluids is guaranteed.

- Before any decision is made, HYDAC offers you suitable alternatives, various sizes, and premium and low-cost materials for existing filters.

**Surface filters** significantly reduced. By selecting the correct filter material or by optimizing the existing filter concept, operating costs can be

- Correct preselection
- Preselection for the filter concept that best suits your system
- Adaptation to customer requirements
- High filtration efficiency of the filter bag
- Robust element design
- Extremely durable and robust
- Flow-optimised design for minimum differential pressures during operation
- More efficiency thanks to conical element geometry
- Fully cleanable
- Adaptation to customer application thanks to availability of different element designs

**Filter Housing Technology**
- No interruption to operation
- Component wear, even failure
- Reduced maintenance costs
- Reduced production costs
- Reduced service life
- Improved fluid quality
- Consistently high quality
- Reduced service life
- Reduced cooling capacity
- Improved fluid quality
- Consistently high quality
- Reduced service life
- Improved fluid quality
- Consistently high quality
- Reduced service life
- Improved fluid quality
Filter Overview
The complete filter range at a glance.

Service
All-round carefree production with HYDAC.

System Components
Proven Technology for Stable Processes and High Flexibility.

Filter housing
- WBF
- AMRF
- BG 100
- BG 201 / 236 / 246
- BG 1
- BG 2
- BG 3
- FB
- WB
- FM
- 1 piece
- 5 pieces
- 8 pieces

WBF
BG 100 BG 201 / 236 / 246
BG 1
BG 2
BG 3

AMRF

Filter elements

Optimisation

Standard work and cyclical maintenance of systems at your site

Sizing and optimisation on filter concepts including experiment support

Conversion of systems and filtration upgrade

Global Service – Start Up and Repair

OffLine Separator OLSW
The OffLine Separator Water (OLSW) is a maintenance unit for water-based cleaning fluids contaminated with mineral oils. This separation technique uses the same principle as the composite membrane filter. Ideally, the OLSW is installed as a separate unit in the bypass flow. The delivery from the first-stage service line, which ensures cleanliness of both intermediate contamination and filter contamination. This step-by-step unit offers almost unlimited oil separation thanks to its non-absorbent coalescence elements, high-quality stainless steel housing and an automatic oil drain.

Cooling systems
Whether you are adjusting the temperature of a cleaning bath or cool electrical cabinets, HYDAC offers various energy-efficient solutions to suit your requirements.

We help you in your decentralized or central heat supply by developing concepts for using the process heat from machining centres or individual machines to heat cleaning baths.

Valves, Mounting Technology & Accessories
The wide range of valves, mounting technology and accessories offered by HYDAC allows you to carry out your own efforts to the maximum extent.

HYDAC coaxial valves and solenoid valves (membrane valves) made in stainless steel are space-saving and low-maintenance. Special block solutions reduce the piping requirements for the cleaning systems. Low-dead-space ball valves and external valves are available for mounting technology to suit all components and lines completely in the range.

Whether you are adjusting the temperature of a cleaning bath or cool electrical cabinets, HYDAC offers various energy-efficient solutions to suit your requirements.

Measurement equipment
HYDAC offers a comprehensive range of on-line or in-line measurement systems. HYDAC sensors are used for online monitoring, recording and diagnosis of hydraulic parameters, such as pressure, flow rate, pump speed, temperature, vibrations and other process data.

We are offering a wide range of Analogues (0-10V, 4-20mA), Digital (Transistor & Relay) and serial communication (e.g. DCS/PLC) interfaces. HYDAC is able to offer custom-made in-house transducers for your application and to supply the product to meet that specification.

Condition Monitoring
By using CM-Expert, the condition of individual machines can be monitored throughout the production line directly on our control centre and maintenance and repair measures can be planned preemptively in order to identify deteriorating processes and avoid failures.

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Filter housing

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Optimisation

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Conversion of systems and filtration upgrade

Global Service – Start Up and Repair

OffLine Separator OLSW

The OffLine Separator Water (OLSW) is a maintenance unit for water-based cleaning fluids contaminated with mineral oils. The OLSW is mounted as a separate unit in the bypass flow. The design offers longer service life, improved cleanliness of fluids and technical cleanliness (medication contamination & film contamination). This stop & fill unit offers almost unlimited oil separation thanks to non-absorbing coalescence elements, high-quality stainless steel housing and an automatic oil drain.

Cooling systems

Whether you are adjusting the temperature of a cleaning bath or cooling electrical cabinets, HYDAC offers various energy-efficient products.

We help you in your decentralised or central heat supply by developing concepts for using the process heat from machining centres or individual machine tools to heat cleaning baths.

Valves, Mounting Technology & Accessories

The wide range of valves, mounting technology and accessories ensures HYDAC offers you a variety of solutions.

HYDAC offers valves and special valve units (meticulous valves) made in stainless steel, space-saving and low maintenance. Special block solutions reduce the piping requirements for cleaning systems. Low dead-space ball valves and extensive material varieties in mounting technology to suit all components and lines complete the range.

Whether you are adjusting the temperature of a cleaning bath or cooling electrical cabinets, HYDAC offers various energy-efficient products.

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Measurement equipment

HYDAC offers a comprehensive range of easy-to-use measurement systems. HYDAC sensors are used for online monitoring, recording and diagnosis of fluid-related parameters such as temperature, pressure, flow rate and contamination (in addition to overheating and fluctuations).

With sensors available in a range of Kinds (1-10, 10-200), Digital (Transducer & Relay) and retail communications (e.g. PLC) configurations, HYDAC is able to offer advice on the right transducer for your application and to supply the product to meet that specification.

Condition Monitoring

By using CM-Expert, the condition of individual machines can be monitored throughout the production line clearly in one control centre and maintenance and repair measures can be planned proactively in order to identify deteriorating processes and avoid failures.

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- BG 100, BG 201/236/246
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Cooling systems
Whether you are adjusting the temperature of a cleaning bath or controlling electrical cabinets, HYDAC offers various energy-efficient products.

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The wide range of valves, mounting technology and accessories proposed by HYDAC allows you to meet all requirements. HYDAC offers valves in stainless steel (carbon steel) made in stainless steel, with space-saving and low-maintenance. Special block solutions reduce the piping requirements for cleaning systems. Low-dead-space ball valves and extensive stainless steel mounting technology suit all components and lines completely.

Measurement equipment
HYDAC offers a comprehensive range of oil-in-water measurement systems. HYDAC sensors are used for online monitoring, recording and diagnosis of hydraulic parameters such as temperature, level, flow, pressure, and overheating and faults.

With sensors available in a range of Analogue (0-10v & 4-20mA), Digital (Transistor & Relay) and serial communication (e.g. IO-Link), HYDAC is able to offer advice on the right transducer for your application and to supply the product to meet that specification.

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Technical Cleanliness

Top Quality Puts You a Step Ahead.

Extraction Units

The extraction units developed specifically for analyzing technical cleanliness in accordance with ISO 16232. Their design ensures precise and consistent analysis results. The modules are designed to enable convenient carry-out and classical analyses provide solutions from a single source.

Analyzing the size, type and quantity of contamination is a key requirement to be fulfilled and documented, and the results and calculation procedures to be implemented. HYDAC extraction units from the CTM and CTM-EF modules are optimally designed for component manufacturer and reproduction analysis results.

Contamination Test Module CTM

This HYDAC Contamination Test Module CTM 1300 is used to determine the technical cleanliness of components.

- Supply module CTM-SC: (ready and control) Module for built-up supplies, control and data storage.
- Supply module CTM-SC: for component examination. The modules vary according to the objective (cleanliness or contamination)
- Extraction Flushing CTM-EF: To adapt to the geometry of the component being examined, the modules can be used for flushing components in contact with fluid.

- Cleaning Test Module CTM-EF 3000: For adapting to the geometry of the component being examined, the modules can be used for flushing components in contact with fluid.

Flushing Rigs

You achieve the highest level of cleanliness through HYDAC's state-of-the-art technologies designed by HYDAC. Targeted flushing of cleanliness-relevant components (e.g. internal bores or lines) during processing and production is essential, and therefore means that challenging cleanliness requirements are ultimately achieved.

When designing flushing rigs, HYDAC places great emphasis on needs-based customer-specific adaptations to the customer's requirements. This is why the flushing rigs consist of two modules. The standard interface makes it possible to link up the single modules or the flushing rig to the customer's control and data storage. HYDAC offers the most suitable solution for every requirement. Whether this is for regular cleanliness analysis or for special requirements, HYDAC offers a wide range of innovative and tailor-made solutions.

CTU 1000 is used to determine the analysis results. With HYDAC extraction units from the CTM and CTM-EB modules, they are designed for component examination and can be adapted to the customer’s requirements. Whether this is for regular cleanliness analysis or for special requirements, HYDAC offers a wide range of innovative and tailor-made solutions.

Laboratory analysis

In the HYDAC laboratories, we offer you the service of analyzing your components, filters and flushing rigs. Experienced laboratory staff guarantee expert analyses of component cleanliness based on established standards (ISO 16232 or ISO 18413). HYDAC offers you an optimal service for your personnel and customer satisfaction. HYDAC offers you an optimal service for your personnel and customer satisfaction.

As a member of the industrial association for “Technical Cleanliness” (TecSa), HYDAC played a leading role in developing the ISO 16232 and ISO 18413 guidelines for technical cleanliness. The HYDAC flushing rigs are used in the automotive industry, as well as in the further development of these specifications. The HYDAC flushing rigs are used in the automotive industry, as well as in the further development of these specifications. HYDAC offers you an optimal service for your personnel and customer satisfaction.

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Lab and Turnkey Laboratories

To achieve and maintain high quality, HYDAC offers you the service of analyzing your components, filters and flushing rigs. Experienced laboratory staff guarantee expert analyses of component cleanliness based on established standards (ISO 16232 or ISO 18413). HYDAC offers you an optimal service for your personnel and customer satisfaction.

As a specialist in technical cleanliness, HYDAC can provide support if you are setting up a new laboratory to monitor technical cleanliness. HYDAC offers you an optimal service for your personnel and customer satisfaction.

HYDAC offers you an optimal service for your personnel and customer satisfaction.

- Analyzing and labelling your components
- Monitoring and optimizing your production process
- Adapting to the actual conditions of your production process
- Carry out technical cleanliness analyses without external laboratories
- Providing support in adapting to your individual requirements
- Providing a reliable basis for decision-making and analysis of cleanliness
- Analyzing your components on-site

On-site analysis

With our mobile laboratory we provide rapid testing and analyses support for your production processes. We can carry out technical cleanliness analyses as an alternative to an external laboratory. This allows you to save time and money, and enables the HYDAC mobile laboratory to meet your specific requirements.

We can provide analysis of the actual condition of your production processes for as little as 5 working days. The HYDAC mobile laboratory is able to meet your specific requirements.

Due to the direct on-site analysis, you profit by saving time and money and by receiving feedback on the actual condition of your production processes in a shorter time. This enables HYDAC to provide you with a cost-effective alternative in such cases. HYDAC supports you with our mobile laboratory for the performance of technical cleanliness analyses.

Technical cleanliness is becoming increasingly important in various industries.

In the automotive industry, the agricultural, construction and commercial machinery industries, and the food industry, the agricultural, construction and commercial machinery industries, and the semiconductor and heavy industry sectors.

Transparency in technical cleanliness with HYDAC

Technical cleanliness is becoming increasingly important in various industries. More efficient motors and systems and increasing warranty claims are steadily driving up the demands for cleanliness management. Technical cleanliness analyses are designed to record the current condition and monitor the cleanliness of manufactured components, as well as to check and optimize the production process.
Technical Cleanliness
Top Quality Puts You a Step Ahead.

Extraction Units

The extraction units developed specifically for analyzing technical cleanliness in accordance with directive VDA 19 (ISO 16232 or ISO 16492) have numerous applications, including components with complex geometries. They carry out cleanliness analyses providing solutions from a single source. Analyzing the type, size and quantity of contaminants is possible to the highest degree of accuracy and reproducibility. The HYDAC extraction units are compact and can be easily adapted to almost any application. The laboratory analysis Laboratory Design was set up to support customers with all the necessary requirements to support you, also as in the further development of these and other modules, for e.g. component recognition by using bar codes, adaptation to the control or integration of a wish for special component adapters, adaptations to the housing of the control technology. This allows us to meet the extensive knowledge of our experts the different production steps such as the actual condition of your production process chain analyses to optimize the production processes in view of technical cleanliness. We can give a striking analysis of the sensitive components based on VDA specifications directly on site.

Flushing Rigs

You achieve the highest level of cleanliness when components are subjected to optimized flushing units designed by HYDAC. Targeted flushing of contaminated components (e.g. in internal bores or lines) dumbs grinds the HYDAC flushing pipes and ensures that they are not clogged. It also means that challenging cleanliness requirements are ultimately achieved. When designing flushing rigs, HYDAC places great emphasis on meeting customer needs. This is why the flushing rigs consist of two modules: the standard supply module CTV-SC and the Flushing module CTV-SC 1200, which is integrated into the housing of the control technology. Customarily, every module is equipped with optimally designed wash methods, including component adapters and wash nozzles, optimizing for cleanliness.

Laboratory analysis

In the HYDAC laboratories, we offer you the services of assessing your components, filters and fluids. Experimental laboratories staff guarantee expert analyses of component cleanliness based on established standards (ISO 16232 or ISO 16492). This way, HYDAC offers an expert and customer-specific service for quality assurance and customer satisfaction.

On-site analysis

With our mobile laboratory we provide expert advice and analyses for the quality assurance of components. Hydraulics analysis of sensitive components based on VDA (ISO 16232) or customer specifications directly on site.

Mobile Laboratory

To achieve and maintain high quality standards, you need an expert advice and proactive support for your production processes in view of technical cleanliness. With our mobile laboratory, we provide on-site analysis, which you profit by saving time and money thanks to the mobile on-site analysis. In addition, HYDAC also offers an expert analysis of the actual condition of your production process chain to minimize the influence of logistic and storage errors, the direct plus expertise of HYDAC laboratory staff on-site, and the unique expertise of HYDAC laboratories with respect to the compliance of technical cleanliness.

Laboratory Design and Turnkey Laboratories

As a specialist in technical cleanliness, HYDAC can provide support if you are setting up a new laboratory to monitor technical cleanliness. HYDAC offers a tailor-made solution, from the design of the laboratory through to the fully fit laboratory.

Extraction Unit CTU

This HYDAC Extraction Unit CTU 1500 is used to determine the technical cleanliness of components, Contamination Test Module CTV

The HYDAC Contamination Test Module CTV is a modular system designed to analyze the technical cleanliness of components. The modules can be adjusted to the needs of the individual customer. The modules are delivered complete and ready to supply methods and control data. Due to precisely defined drying steps, it can be guaranteed that the actual condition of the component is obtained. The HYDAC flushing rig is used at the end of a production process chain between the part cleaning step and component testing. Due to precisely defined drying steps, the component is guaranteed to be dry prior to the flushing process.

Extraction Flushing CTU-60

By adapting the geometry of the components being extracted, the extraction can be used for flushing components in contact with fluids.

Transparency in technical cleanliness with HYDAC

Technical cleanliness is becoming increasingly important in many sectors. More efficient motors and systems and increasing warranty claims are steadily driving up the demands for cleanliness management. Technical cleanliness analyses are designed to record the current condition and monitor the cleanliness of manufactured components, as well as to check and optimize the production process.

Technical Collecton Unit CTU

Technical Collecton Unit CTU is used to determine the technical cleanliness of components, System Modules, Service & Components

Simplex Pumps, Service & Components

Hydraulics analysis of sensitive components based on VDA (ISO 16232) or customer specifications directly on site. HYDAC offers a tailor-made solution, from the design of the laboratory through to the fully fit laboratory.

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Technical Cleanliness
Top Quality Puts You a Step Ahead.

Extraction Units

The extraction units developed specifically for analyzing technical cleanliness in accordance with ISO 16232 or VDA 19.1 (ISO 16232 or VDA 19.1) have numerous applications in industrial contexts. They ensure the highest possible system reliability by operating with absolutely pure and reliable extraction results that provide solutions from a single source.

Analyzing the type, size and quantity of contaminants with different approaches to the sampled and documented, and the separable solid and mobile contaminants to be eliminated, the HYDAC extraction units from the CTM and CTM module are used to analyze the contamination and reproduction analysis results.

Contamination Test Module CTV
This HYDAC Contamination Test Module is used to determine the technical cleanliness of components.

Flushing Rigs

You achieve the highest level of cleanliness of components by means of flushing systems specifically designed by HYDAC. Targeted flushing of technical cleanliness is currently being addressed (e.g., in internal brass or iron) during production to increase the overall quality and efficiency of the production process. In the future, it may become even more cost-effective to address technical cleanliness and hygiene more closely than ever before, as opposed to the challenging cleanliness requirements already achieved.

When designing flushing rigs, HYDAC places great emphasis on meeting customer requirements. This is why the flushing rig consists of two modules. The standard sample module with filter and control provides the necessary filtration of the test fluid. The second module in the flushing rig is the housing of the control technology. Custom-made flushers are available as optional additional products, including self-alders and data storage, which are described.

The HYDAC flushing rig is used at the end of a production process chain between the two cleaning systems and contamination testing. Due to precisely defined drying times and the demanding cleanliness requirements, it is a step prior to the flushing process.

Flushing Rigs are developed in-house. This allows us to precisely control the processes and work with components specifically designed to the customer's specifications. The HYDAC flushing rig is used at the end of the production process chain between the post treatment system and contamination testing (e.g., in internal brass or iron).

Laboratory analysis

In the HYDAC laboratories, we offer you the possibility of assessing your components, filters and fluids.

Experienced laboratory staff guarantee expert analyses of component cleanliness based on established standards (ISO 16232 or VDA Volume 19). HYDAC offers comprehensive service for optimal purity and customer satisfaction.

As a member of the industrial association for "Technische Reinheit“ (Technical Cleanliness) and "Technische Reinheit“ (Technical Cleanliness), HYDAC played a leading role in developing the ISO 16232 guidelines for cleanliness testing in the automotive industry, as well as in the further development of these guidelines in cooperation with the relevant industry association. HYDAC is an ideal partner for implementing the latest industry standards and customer requirements.

In the HYDAC laboratories, we offer you the possibility of assessing your components, filters and fluids.

Laboratory analysis is a necessary step for analyzing technical cleanliness in production processes.

To achieve and maintain high quality, HYDAC offers numerous possibilities that are necessary, involving a laboratory specifically designed for technical cleanliness. Cleaning is a fundamental component of quality assurance and there are many ways to achieve this.

Mobile laboratory

With our mobile laboratory we provide mobile service and unique support for technical cleanliness. HYDAC offers a mobile laboratory for testing technical cleanliness. HYDAC offers a mobile laboratory for testing technical cleanliness, which allows us to easily meet our customers’ needs.

HYDAC can provide support if you are considering setting up a new laboratory to maintain technical cleanliness. HYDAC offers support in the planning and design of laboratory facilities. HYDAC offers support in the design of laboratory facilities, including laboratory design through to the fully fitted laboratory.

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At first glance, the initial investment in high-quality HYDAC filtration often seems to be the more costly option. However, numerous practical examples show that our customers have had very positive experiences during operation with the use of HYDAC components and systems. Considering the significantly increased filter lifetimes, the extended life of bath fluid, the reduction of wear on system components and the maintenance savings, the additional investment often seems to pay off within just the first year of use. Our aim is to significantly reduce your running costs and expenditure in accordance with the TCO approach by using high-quality technology.

What top quality means for you
- Increased machine and system availability due to condition-based monitoring
- Improvement of quality image and compliance with quality standards
- Avoidance of recalls
- Reduction of production stage failures
- Lowering of warranty claims
- Reduction of operating fluid consumption due to more intensive media maintenance
- Cost reductions through lower production waste
- Detection and elimination of weak points
- Internal and external process optimisation
- Customized documentation of the technical cleanliness of components

The ten principles of sizing & design
Correctly choosing the right filter for your application depends on many different factors and is of vital importance for determining the optimum solution for your system. The ten principles of sizing and design form a checklist of what information we require from you so we can provide a suitable solution:

- Material resistance to fluid
- Viscosity in cm²/s
- Contamination (amount, form, etc.)
- Operating pressure in bar
- Permitted pressure drop in bar
- Temperature in °C
- Flow rate in l/min
- Filtration rating in µm
- Connection dimensions (diagram, DNXX)
- Economic standpoint
- Cost savings and economic efficiency thanks to:
  - Reduced energy consumption
  - Reduced CO₂ emissions
  - Reduced operating fluids
  - Reduced component wear
  - Reduced maintenance
  - Increased productivity
  - Prevention of initial damages
  - Technical Cleanliness
  - Optional setup functions

HYDAC, your reliable partner for expertise in production.

For over five decades, HYDAC has been working on solutions to extend service life and protect components. HYDAC is responsible for a large proportion of the cooling, energy storage and filtration of fluids used in production, including hydraulic, lubrication and testing oils, cleaning fluids and cooling lubricants. Filtering, cooling and fluid monitoring are vital factors in making fluids last as long as possible and thus to increasing machine and system availability. HYDAC, your reliable partner for expertise in production.

Reduced power consumption and CO₂ emissions due to
- Variable-speed drive systems and hydraulic start/stop technology
- Energy-efficient machine cooling and heat recovery
- Optimised components and systems (e.g. hydraulic accumulators, filters and filter elements, ball valves, valves and control blocks)

Reliable production processes and product quality due to
- Optimisation of industrial part washers and cleaning processes (e.g. filtration concepts)
- Services for technical cleanliness (e.g. process chain analysis, laboratory service, mobile laboratories, training, consulting)
- Products and devices for the technical cleanliness of components and systems (e.g. extraction units, flushing rigs)

Extended service life of fluids and wear parts due to
- High quality and specific filters and filter elements for a wide variety of applications
- Repair and conditioning of fluids (e.g. removing varnish, dewatering and degassing fluids)
- Expert fluid analysis and fluid optimisation of systems

Increased system availability and increased productivity due to
- Sensors for monitoring fluids (e.g. particle contamination, oil condition, pressure, temperature, distance measuring systems)
- Mobile and stationary measuring and display devices for condition monitoring of systems
- Maintenance contracts and service concepts

Your consultation notes:

__________________________________________
__________________________________________
At first glance, the initial investment in high-quality HYDAC filtration often seems to be the more costly option. However, numerous practical examples show that our customers have had very positive experiences during operation with the use of HYDAC components and systems. Considering the significantly increased filter lifetimes, the extended life of bath fluids, the reduction of wear on system components and the maintenance savings, the additional investment often seems to pay off within just the first year of use. Our aim is to significantly reduce your running costs and expenditure in accordance with the TCO approach by using high-quality technology.

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**HYDAC**
All From a Single Source and Present in Your Production Process.

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**Your consultation notes:**

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**Economic standpoint**
- Cost savings and economic efficiency thanks to:
  - Reduced energy consumption
  - Reduced CO₂ emissions
  - Reduced operating fluids
  - Reduced component wear
  - Reduced maintenance
  - Prevention of initial damages

**Process reliability**
- Reduced power consumption
- Reliable production processes
- Optimised components and systems
- High quality and specific filters
- Energy-efficient machine cooling and heat recovery

**System availability**
- Variable-speed drive systems
- Hydraulic start/stop technology
- Energy-efficient machine cooling
- Optimised components and systems
- High quality and specific filters
- Energy-efficient machine cooling and heat recovery

**Energy efficiency**
- Process reliability
- System availability
- Cost savings and economic efficiency

**Production efficiency**
- Process reliability
- System availability
- Cost savings and economic efficiency

**Resource conservation**
- Process reliability
- System availability
- Cost savings and economic efficiency
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NOTE
The information in this brochure relates to the operating conditions and applications described.
For applications and operating conditions not described, please contact the relevant technical department.
All technical details are subject to change.