GRIPPER AND VACUUM TECHNOLOGY
COMPONENTS AND
SYSTEMS AT A GLANCE

Pneumatics
It’s that easy
Vacuum components from AVENTICS: keep a safe, but gentle grip on everything

Vacuum technology ensures precise, secure, ultra-efficient processes that are gentle on materials – if you’ve got the right know-how to implement it. Generating vacuum with compressed air may sound complicated, but it’s actually quite clever.

Effective vacuum technology for various handling tasks
There are many good technical and economical reasons to use vacuum technology. Often, vacuum-based handling is the only reasonable option to automate an application. Both powerful and sensitive, it is ideal for securely and gently moving difficult-to-grip or extremely delicate workpieces. Thanks to an enormous variety of configurable components, vacuum technology can be used in a wide range of applications. It is ideal for realizing custom handling tasks with comparatively little planning and assembly work.

- Versatile, flexible technology for a wide range of industries and applications
- Handling of various objects, materials, and shapes
- Gentle handling without placing a mechanical load on the workpiece

With perfect individual components and technical system expertise, we help you find safe, efficient solutions for your special handling tasks.

▲ Our range of grippers and vacuum solutions includes the NCT system, a special technology for non-contact gripping.
The right components for automation solutions

The quality of individual product components is one thing – the experience to be able to transform them into a system is another. We offer you both in perfect harmony. Your benefit: As a comprehensive provider of pneumatics solutions, AVENTICS also makes sure that the vacuum systems are efficiently integrated into all your application’s automation processes. For you, this means finely-tuned overall solutions, not simple standalones.

- Different components for gripping and moving: non-contact, vacuum-based, or mechanical
- High-tech ejectors for application-specific vacuum generation
- Important accessory components for mounting, connectivity, and system monitoring

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09 Non-contact grippers
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The right gripper and vacuum solution for every handling application

Get some insight, an overview, a preview
This brochure will help you choose the right systems and components for your tasks. It provides information on major functions, preferred applications, and features. A summary of the program at the end of the brochure serves as an introduction to our detailed catalog.

Comprehensive range with innovative features
Because vacuum technology follows very special principles, safe vacuum operation and suitable component design require very specific expertise. Relative and absolute vacuum values, the effect of the natural atmospheric pressure, the holding force depending on the vacuum and effective surface of a vacuum cup, optimized energy needs when generating the required vacuum level, reliable control and monitoring of vacuum circuits – you can safely assume that we know what we’re doing. Our decades of experience in successfully
All components and systems are perfectly matched

implementing vacuum applications in a wide range of industries is reflected in every aspect of our comprehensive vacuum offering. And the best part: All the components are a perfect match for each other, proven in practice.

- Vacuum generators with all options
- Components for gentle gripping
- Accessories for optimized overall solutions

System configuration
In vacuum technology, finding the right system configuration isn’t all that simple. But there are ways to make it as easy as possible. The easiest: Just contact our specialists for an expert consultation. Or, you can start by using our proven Engineering Tools. Either way, we will find the right vacuum solution for you together.

Vacuum suction grippers
- Flat suction cups/bellows suction cups
  - FSR, SGN, FSG
  - FSO
  - BSA, BSG

Mechanical grippers
- UPG-40
- UPG-50
- UPG-64
- UPG-80
- UPG-100
- UPG-125
- UPG-160

Vacuum accessories
- Filters, adapters, sensors, displays, flow valves
- Mounting elements, fittings, tubing
  - Vacuum filters
  - Vacuum distributors
  - Pressure switch
  - Flow valves
  - Angle joint connections
  - PSL spring-loaded plungers
  - Push-in fittings
  - Connection tubing
Optimized vacuum generation according to the Venturi principle

Italian physicist Giovanni Battista Venturi discovered and analyzed the correlation between cross-section narrowing and flow speed as early as the 18th century. Today, the principle named after him is used in many technical applications, forming the core of vacuum ejectors in pneumatics – perfected by AVENTICS.

**Efficient vacuum generation**

In general, three methods can be applied to generate a vacuum: electrical pumps, electrical blowers, or purely pneumatically operated ejectors. In pneumatics, vacuum ejectors according to the Venturi principle are used due to the required suction capacity and high vacuum level.

Our vacuum ejectors work according to the Venturi principle. The supplied compressed air flows through the nozzle, which accelerates and compresses it. Directly downstream of the venturi nozzle, the accelerated air decompresses, resulting in an underpressure which causes the air to be suctioned through the vacuum connection. The suctioned air and the compressed air exit through the silencer.

**As diverse as their applications**

Our products range from simple inline ejectors for direct installation into tubing connectors on the vacuum cup to decentralized compact ejectors with additional integrated functions and automatic air economizers. Suction capacities of 6 to 600 l/min are possible depending on the application.

Single-stage and multistage ejectors are available with different compact, lightweight equipment configurations that are easy to integrate, quickly establish a vacuum, and are wear-free and extremely maintenance-friendly.

- Single-stage ejectors for direct installation into vacuum lines
- Multistage ejectors for an increased suction volume
- Compact ejectors with fully integrated functions and air economizers
EBS-PI series
Inline ejectors are designed for direct installation in the vacuum line. They are ideal for space-saving solutions.

EBS-PT/ET series
EBS series ejectors feature a particularly lightweight, compact design. They are available with or without vacuum switch and are ideal for space-critical situations and dynamic processes. The EBS-ET version with electrical control is intended for cycle-time-optimized applications.

EMS series
Enormous suction capacity with maximum efficiency – the multistage ejectors with multiple Venturi nozzles connected in series offer a very high suction capacity, making it possible to handle workpieces with difficult-to-seal surfaces.

- High-flow version (HF) for porous workpieces
- High-vacuum version (HV) for air-tight workpieces

EMS series multistage ejectors are available in two basic versions and three performance categories for various workpiece conditions. Thanks to the extremely high flow, even porous parts or workpieces with uneven surfaces can be handled safely.
Packing a punch: ejectors with additional integrated functions

**Compact ejectors offer more technical functionality and simplicity**
Compact ejectors combine vacuum generators, pilot valves, filters, switches, and silencers in one turnkey unit. As a result, none of the individual components have to be tuned separately, cutting down the time required for installation.

**ECD series**
From Basic, Smart, Intelligent, to Large: ECD series ejectors are available in four modular versions with functions, sizes, and features that can be selected as needed.

- Ejectors with display and IO-Link
- Comprehensive setting and display options
- Condition monitoring, energy monitoring
- With integrated air economizer function

Thanks to their control functions and finely tuned performance, compact ejectors allow the air consumption to be tailored exactly to requirements.

**Up to 90% less consumption with air economizer function**

Air economizers conserve up to 90% of the compressed air energy! Vacuum generation is controlled via the integrated solenoid valve and precisely adjusted to provide the required vacuum.
For ultra-sensitive or perforated objects and surfaces: non-contact grippers according to the Bernoulli principle

Our non-contact transport systems make for a unique gripping experience: The floating suction pads in the NCT series are masterful in sensitively handling delicate surfaces and difficult-to-grasp materials – in a virtually non-contact and extremely gentle process. Handling with NCT is even possible with a large degree of perforation, contaminated, wet, and dusty surfaces, or soft materials.

**Smooth running with the NCT series**
The targeted control of compressed air and air flow generates a differential pressure and lifting force between the transport unit and the object. As a result, workpieces can be lifted and moved friction-free with virtually no surface contact at all, and without causing any damage or deformation.

**NCT-AL (aluminum) series**
The NCT-AL series floating suction pads are ideal for applications in the electronics, pharmaceuticals, or telecommunication industries. They handle products like food, solar modules, or electronic circuit boards with a large degree of perforation.

**NCT-PK (PEEK) series**
NCT-PK series grippers made of polyetheretherketone are designed for special requirements in the food and semiconductor industries and enable direct contact with foods or silicon.
An entire range of vacuum suction cups for gentle lifting and movement

The name is slightly confusing since no actual suctioning takes place. Instead, an underpressure is generated inside the gripper, and the ambient pressure pushes the workpiece against the gripper. As always – it’s an ideal solution, perfected by AVENTICS.

FSR series, SGN series, FSG series
As a universal gripper, round flat suction cups are the right choice for many standard applications with level, flat workpieces. It is available in a wide range of sizes up to diameters of 300 mm.

FSO series
Oval flat suction cups are ideal for long and cylindrical workpieces. Thanks to their oval shape, the contact surface available for establishing the vacuum is increased and optimized.

BSA series, BSG series
The bellows suction cups are available with 1 1/2 and 2 1/2 bellows. They are suitable for workpieces with curved or inclined surfaces, as well as to compensate for height tolerances or to handle large-surface, non-rigid components such as large, thin sheets.
For tasks requiring a high gripping force: pneumatically controlled mechanical grippers

Whether round or angular, super light or heavy, with irregular shapes and difficult materials – the types and versions of parts and workpieces to be moved are many. As versatile as the gripping tasks may be, AVENTICS has the right solution for every automated handling requirement.

Graduated range of grippers for many standard applications
Our pneumatically controlled mechanical grippers are 2-finger parallel grippers characterized by their high gripping forces, precision, and exact movement of the clamping jaws. They can be selected based on the application requirements and flexibly equipped with object-specific gripper fingers.

UPG series
With seven sizes, the UPG series covers performance needs for virtually any standard application in pneumatic automation. Thanks to their robust kinematics and compact design, these grippers can be used anywhere in handling technology for universal applications.

- Parallel grippers in seven sizes
- Wide range of gripping forces up to 2000 N
- Interface to the Easy-2-Combine modular system

The stable mounting options for gripper fingers and the interface to the Easy-2-Combine modular system make assembling the grippers and exchanging the gripper fingers safe and simple.

► Force transfer from the working piston to the base jaws ensures synchronous gripper control.
Matching vacuum accessories for the perfect overall solution

Accessories are simply a necessity – no more, no less. You may not realize just how critical accessories are until you are missing one. This is why we place a special focus on the details, tailoring your application for high performance.

**Vacuum filters and distributors ensure clean, efficient vacuum supply**

Efficient, trouble-free continuous operation of a vacuum system requires loss-free distribution of high-quality operating air. Special vacuum filters are used to reliably protect the vacuum generators from contamination and damage due to external influences. As a prefilter or microfilter, they can be equipped in two different pore widths for various degrees of contamination. In systems with multiple vacuum cups and a central vacuum generator, aluminum distributors with integrated mounting options distribute the compressed air and vacuum.
Everything under control with the right sensor components
To be able to detect and eliminate errors or malfunctions in the system early on, it is essential to have an overview of all important parameters at all times. Our pressure gauges, switches, and sensors are the perfect solution.

- Vacuum system monitoring
- Continuous information on the system status
- Error reporting and increased process reliability

In addition to pure system monitoring, additional features focus on optimized cycle times, control loops, and power management.

Flow valves for reliable, efficient processes
Flow valves secure the vacuum in the system. If a leak occurs, for example due to a workpiece becoming detached at a vacuum cup, the flow valve automatically closes. In addition, flow valves enable efficient workpiece handling with variable dimensions since the flow is automatically switched off when vacuum cups are not in use.

Mounting with rigid fitting, spring-loaded plunger, or angle joint
The mounting elements are not only there for vacuum cup mounting, but provide important additional functions. Depending on the properties and positioning of the workpiece, there are generally three options for mounting vacuum cups: rigid, spring-loaded, or with a flexible coupling. This allows compensation for inclinations or differences in height, for example.

Fittings and tubing ensure secure pneumatic connections
In a vacuum circuit, the tubing and fittings perform a very important task. To ensure continuous error-free, efficient function, they have to be absolutely secure, leak-tight, and made of the right materials. When configuring the overall system, the tubing also has to be dimensioned exactly.
Let's solve your task together!

Our expertise – your benefit

It's not enough to just offer components, which is why AVENTICS never loses track of the big picture. Our mission is to create solutions tailored to your specific requirements that are both well thought out and state-of-the-art. So, utilize our product and industry experience for your application! After all, good components, a suitable configuration, and the right accessories are one thing, but experience is crucial if you want to transform them into perfect automation solutions.

- Industry and application expertise in all areas of pneumatic automation
- Specialist for customer-specific solutions
- Pioneering components and systems for IoT applications

Tell us what we can do for you, or configure your own solution with our free Engineering Tools. Starting with choosing the right vacuum cup depending on the type, shape, and surface of the workpiece to be moved, to cycle-time-optimized configuration of the suction capacity, through to vacuum system monitoring.

Optimized system configuration in just seven easy steps
1. Define specifications for the workpiece
2. Determine the required gripping force
3. Select the right vacuum cups
4. Select specific mounting elements
5. Dimension the tubing diameter
6. Calculate the total volume to be evacuated
7. Select the vacuum generator

Visit Service & Support on our website www.aventics.com to find our Engineering Tools, including calculation programs to size products for your applications. You will find additional basic information in the “Technical Information” documentation.
Use our consultation and Engineering Tools!

Based on proven expertise and a first-class product portfolio
We are constantly in dialog with our customers and are always a competent contact for both technical and economic questions. The know-how contained in our comprehensive pneumatics product range gives us a solid foundation for our work.

- Cylinders and accessories
- Valves and valve systems
- Air supply management
- Gripper and vacuum technology

Around-the-clock information
The AVENTICS Internet portal is available day or night. Our online catalog provides you with information about our entire product range including all technical details, as well as our sophisticated Engineering Tools.

- Online Catalog
  The fastest point of entry is via our online catalog. Here you can start your search directly by entering a part number or keyword.

- CAD
  Your desired object can be issued here directly as a CAD file in various formats, as a PDF file, or for further configuration in your software.

- Configurators
  The configurator can be reached by clicking the selected product. After selecting your product, you can begin to adapt it to your own specifications.

- Calculation Programs
  Here you can specify the dimensions or durability of your components with a wide variety of calculation options. We also provide an air consumption calculator as a special feature.

- Circuit Diagram Software
  With the D&C Scheme Editor, you can quickly and easily create circuit diagrams that are based on your component layout and linked to your catalog selection.

- eShop
  The eShop is our online shop that answers your price requests and monitors the whole order process up to delivery.

- Cross Reference Tool
  This tool shows our customers the right alternatives to competitor products from within the AVENTICS catalog.

- CylinderFinder
  The CylinderFinder facilitates selection of the suitable cylinder from all available variants and versions.

- Extranet
  The Extranet establishes a direct connection between AVENTICS and our customers and speeds up communication. It also contains a great deal of valuable information.

www.engineering-tools.com
## From vacuum generators to accessories

### Vacuum generators / single-stage ejectors

<table>
<thead>
<tr>
<th>Series</th>
<th>Nozzle diameter</th>
<th>Suction capacity</th>
<th>Max. vacuum level</th>
<th>Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBS-PI</td>
<td>0.5 - 0.7 mm</td>
<td>8 - 15.9 l/min</td>
<td>83 - 85%</td>
<td>Ø 4</td>
</tr>
<tr>
<td>EBS-PT</td>
<td>0.5 - 2.5 mm</td>
<td>7 - 215 l/min</td>
<td>82 - 86%</td>
<td>M5, G1/8, G1/4, Ø 4, Ø 8, Ø 10</td>
</tr>
<tr>
<td>EBS-ET</td>
<td>0.5 - 2.5 mm</td>
<td>7 - 223 l/min</td>
<td>84 - 86%</td>
<td>M5, G1/8, G1/4, Ø 4, Ø 8, Ø 10</td>
</tr>
</tbody>
</table>

### Vacuum generators / multistage ejectors

<table>
<thead>
<tr>
<th>Series</th>
<th>Nozzle diameter</th>
<th>Suction capacity</th>
<th>Max. vacuum level</th>
<th>Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMS 25</td>
<td>2.5 mm</td>
<td>252 l/min</td>
<td>90%</td>
<td>G3/8 - G3/4</td>
</tr>
<tr>
<td>EMS 50</td>
<td>5 mm</td>
<td>432 - 445 l/min</td>
<td>90%</td>
<td>G3/8 - G3/4</td>
</tr>
<tr>
<td>EMS 100</td>
<td>10 mm</td>
<td>822 - 856 l/min</td>
<td>90%</td>
<td>G3/8-G1</td>
</tr>
</tbody>
</table>

### Vacuum generators / compact ejectors

<table>
<thead>
<tr>
<th>Series</th>
<th>Nozzle diameter</th>
<th>Suction capacity</th>
<th>Max. vacuum level</th>
<th>Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECD-BV</td>
<td>1 - 1.5 mm</td>
<td>35 - 64 l/min</td>
<td>85%</td>
<td>Ø 6</td>
</tr>
<tr>
<td>ECD-SV</td>
<td>1 - 1.5 mm</td>
<td>35 - 64 l/min</td>
<td>85%</td>
<td>G1/8</td>
</tr>
<tr>
<td>ECD-IV</td>
<td>IO-Link</td>
<td>35 - 64 l/min</td>
<td>85%</td>
<td>G1/8</td>
</tr>
<tr>
<td>ECD-LV</td>
<td>IO-Link</td>
<td>117 - 170 l/min</td>
<td>87%</td>
<td>G3/8</td>
</tr>
</tbody>
</table>
## Vacuum suction grippers – flat suction cups / bellows suction cups

<table>
<thead>
<tr>
<th>Series</th>
<th>Diameter</th>
<th>Holding force</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSA</td>
<td>5 - 89 mm</td>
<td>0.1 - 45.2 N</td>
</tr>
<tr>
<td>BSG</td>
<td>10.4 - 150 mm</td>
<td>0.95 - 570 N</td>
</tr>
<tr>
<td>FSG</td>
<td>1 - 147.5 mm</td>
<td>0.03 - 842 N</td>
</tr>
<tr>
<td>FSO</td>
<td>2.2 - 90 mm</td>
<td>3.1 - 112.6 N</td>
</tr>
<tr>
<td>FSR</td>
<td>30 - 300 mm</td>
<td>16 - 2560 N</td>
</tr>
<tr>
<td>SGN</td>
<td>6.3 - 30 mm</td>
<td>1.5 - 35 N</td>
</tr>
</tbody>
</table>

## Vacuum accessories – filters, flow valves, mounting elements

<table>
<thead>
<tr>
<th>Series</th>
<th>Diameter</th>
<th>Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>VFI</td>
<td>G1/8, G1/4, G3/8, G1/2</td>
<td></td>
</tr>
<tr>
<td>VFC</td>
<td>G1/8, G14, G3/8, G1/2, G3/4</td>
<td></td>
</tr>
<tr>
<td>VCK</td>
<td>M5, G1/8, G1/4, G3/8, G1/2</td>
<td></td>
</tr>
</tbody>
</table>

## Vacuum accessories – sensors, displays, tubing, fittings

<table>
<thead>
<tr>
<th>Series</th>
<th>Designations</th>
</tr>
</thead>
<tbody>
<tr>
<td>PE2</td>
<td>G1/4 Flange Ø 5 x 1.5 Electronic pressure sensor</td>
</tr>
<tr>
<td>PE5</td>
<td>G1/4 Push-in fitting Ø 4 Electronic pressure sensor</td>
</tr>
<tr>
<td>PE6</td>
<td>Flange Ø 1.2 x 1 Electronic pressure sensor</td>
</tr>
<tr>
<td>QR1-S</td>
<td>Ø 3 - 6 M3 - G1/8 Push-in fittings</td>
</tr>
<tr>
<td>QR2-S</td>
<td>Ø 4 - 16 M5 - G1/2 Push-in fittings</td>
</tr>
<tr>
<td>QR2-C</td>
<td>Ø 4 - 12 M5 - G3/8 Push-in fittings</td>
</tr>
<tr>
<td>TU1</td>
<td>Ø 4 - 16 Plastic tubing, polyethylene</td>
</tr>
<tr>
<td>TU1</td>
<td>Ø 4 - 22 Plastic tubing, polyethylene</td>
</tr>
<tr>
<td>TU1</td>
<td>Ø 3 - 16 Plastic tubing, polyethylene</td>
</tr>
</tbody>
</table>

## Vacuum accessories – non-contact transport

<table>
<thead>
<tr>
<th>Series</th>
<th>Diameter</th>
<th>Lifting force</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCT-AL</td>
<td>20 - 100 mm</td>
<td>2.5 - 46 N</td>
</tr>
<tr>
<td>NCT-PK</td>
<td>20 - 60 mm</td>
<td>2.5 - 12 N</td>
</tr>
</tbody>
</table>

## Mechanical grippers

<table>
<thead>
<tr>
<th>Series</th>
<th>Stroke per jaw</th>
<th>Closing force</th>
</tr>
</thead>
<tbody>
<tr>
<td>UPG-40</td>
<td>2.5 mm</td>
<td>123 - 163 N</td>
</tr>
<tr>
<td>UPG-50</td>
<td>4 mm</td>
<td>140 - 185 N</td>
</tr>
<tr>
<td>UPG-64</td>
<td>6 mm</td>
<td>250 - 340 N</td>
</tr>
<tr>
<td>UPG-80</td>
<td>8 mm</td>
<td>415 - 570 N</td>
</tr>
<tr>
<td>UPG-100</td>
<td>10 mm</td>
<td>660 - 900 N</td>
</tr>
<tr>
<td>UPG-125</td>
<td>13 mm</td>
<td>1080 - 1470 N</td>
</tr>
<tr>
<td>UPG-160</td>
<td>16 mm</td>
<td>1640 - 2210 N</td>
</tr>
</tbody>
</table>

## NCT non-contact transport

<table>
<thead>
<tr>
<th>Series</th>
<th>Diameter</th>
<th>Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSL</td>
<td>47 - 1870 N</td>
<td>Spring-loaded plungers</td>
</tr>
<tr>
<td>AJT</td>
<td>500 - 3000 N</td>
<td>Angle joint</td>
</tr>
</tbody>
</table>

## Pneumatics

- **UPG series**
  - UPG-40: 2.5 mm stroke, 123 - 163 N closing force
  - UPG-50: 4 mm stroke, 140 - 185 N closing force
  - UPG-64: 6 mm stroke, 250 - 340 N closing force
  - UPG-80: 8 mm stroke, 415 - 570 N closing force
  - UPG-100: 10 mm stroke, 660 - 900 N closing force
  - UPG-125: 13 mm stroke, 1080 - 1470 N closing force
  - UPG-160: 16 mm stroke, 1640 - 2210 N closing force

- **NCT non-contact transport**
  - NCT-AL: 20 - 100 mm diameter, 2.5 - 46 N lifting force
  - NCT-PK: 20 - 60 mm diameter, 2.5 - 12 N lifting force

- **Vacuum suction grippers**
  - BSA: 5 - 89 mm diameter, 0.1 - 45.2 N holding force
  - BSG: 10.4 - 150 mm diameter, 0.95 - 570 N holding force
  - FSG: 1 - 147.5 mm diameter, 0.03 - 842 N holding force
  - FSO: 2.2 - 90 mm diameter, 3.1 - 112.6 N holding force
  - FSR: 30 - 300 mm diameter, 16 - 2560 N holding force
  - SGN: 6.3 - 30 mm diameter, 1.5 - 35 N holding force

- **Vacuum accessories**
  - VFI: G1/8, G1/4, G3/8, G1/2
  - VFC: G1/8, G14, G3/8, G1/2, G3/4
  - VCK: M5, G1/8, G1/4, G3/8, G1/2

- **Mechanical grippers**
  - UPG-40: 2.5 mm stroke, 123 - 163 N closing force
  - UPG-50: 4 mm stroke, 140 - 185 N closing force
  - UPG-64: 6 mm stroke, 250 - 340 N closing force
  - UPG-80: 8 mm stroke, 415 - 570 N closing force
  - UPG-100: 10 mm stroke, 660 - 900 N closing force
  - UPG-125: 13 mm stroke, 1080 - 1470 N closing force
  - UPG-160: 16 mm stroke, 1640 - 2210 N closing force

- **NCT non-contact transport accessories**
  - PSL: 47 - 1870 N max. load
  - AJT: 500 - 3000 N max. load

- **Vacuum accessories**
  - PE2: G1/4 Flange Ø 5 x 1.5
  - PE5: G1/4 Push-in fitting Ø 4
  - PE6: Flange Ø 1.2 x 1
  - QR1-S: Ø 3 - 6 M3 - G1/8
  - QR2-S: Ø 4 - 16 M5 - G1/2
  - QR2-C: Ø 4 - 12 M5 - G3/8
  - TU1: Ø 4 - 16
  - TU1: Ø 4 - 22
  - TU1: Ø 3 - 16

- **Vacuum accessories**
  - NCT non-contact transport
  - Mechanical grippers
  - Vacuum suction grippers
  - Vacuum accessories

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**Table Columns**

- **Series**
- **Diameter**
- **Lifting Force**
- **Holding Force**
- **Connections**
- **Designations**
The data specified above only serve to describe the product. No statements concerning a certain condition or suitability for a certain application can be derived from our information. The information given does not release the user from the obligation of own judgment and verification. It must be remembered that our products are subject to a natural process of wear and aging.