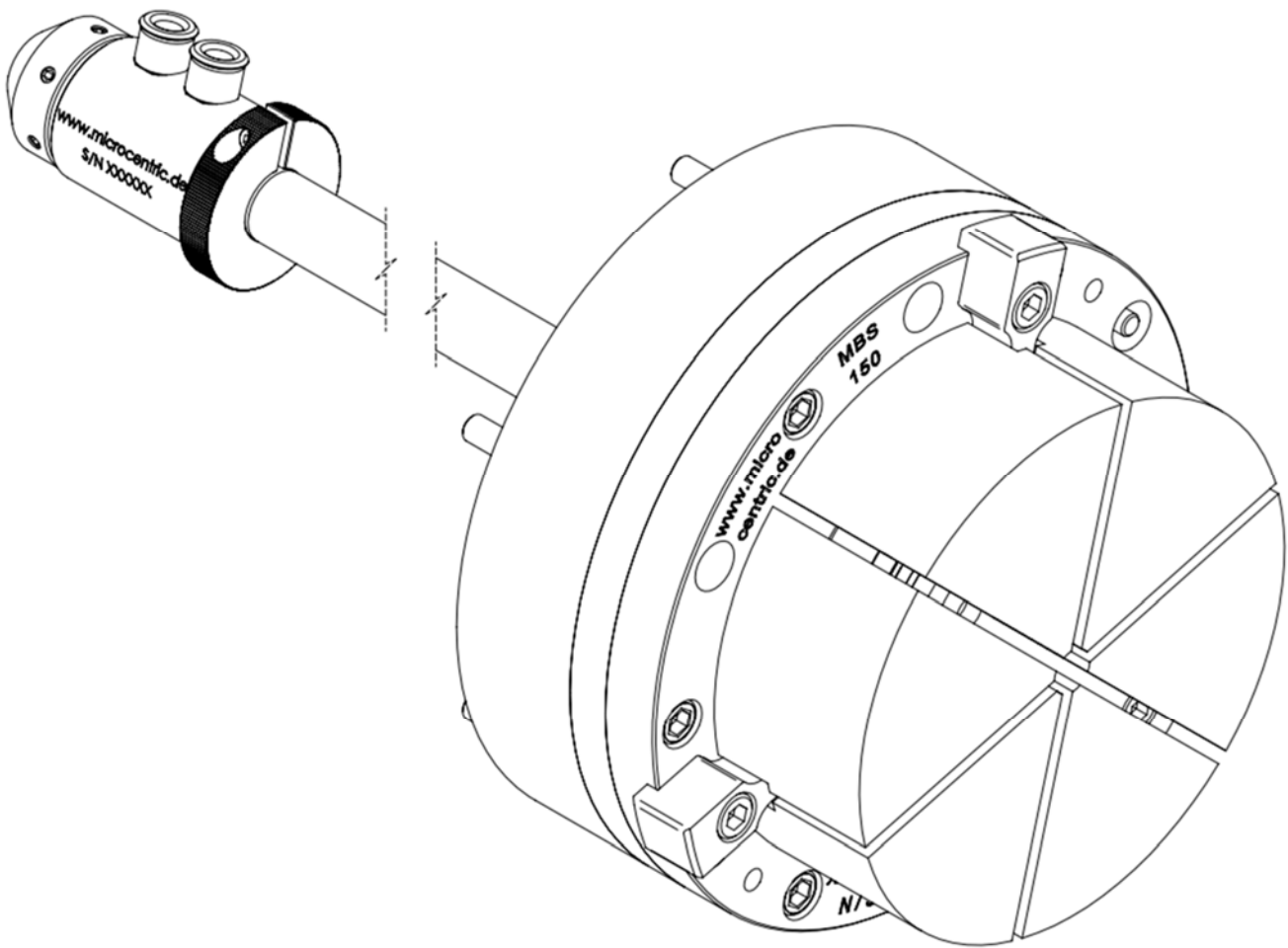


# MBS Diaphragm Chucks

## Operating Manual



**MicroCentric Corp.**  
25 South Terminal Drive  
Plainview, NY 11803 USA  
Toll-Free: 1-800-573-1139  
Phone: 1-516-349-7220  
E-Mail: [sales@microcentric.com](mailto:sales@microcentric.com)  
[www.microcentric.com](http://www.microcentric.com)

## Table of contents

1. **General**
  - 1.1 Introduction
  - 1.2 Information about the instructions
  - 1.3 Warnings
  - 1.4 Limitation of Liability
  - 1.5 Copyright
2. **Basic safety instructions**
  - 2.1 Intended use
  - 2.2 Misuse
  - 2.3 Hazard statements
  - 2.4 Instructions for safe operation
  - 2.5 Qualification of personnel
  - 2.6 Personal protective equipment
  - 2.7 Special hazards
3. **Transport, packaging and storage**
  - 3.1 Unpacking and internal transport
  - 3.2 Packaging material
  - 3.3 Storage
4. **Technical data**
  - 4.1 General information
  - 4.2 Operating conditions
  - 4.3 Product data
    - 4.3.1 Chuck body assemblies of all series
    - 4.3.2 Series MBS-L / MBS-DL
    - 4.3.3 Series MBS-Z / MBS-DZ
    - 4.3.4 Series MBS-N
5. **Structure and function**
  - 5.1 MBS system rotating application:  
Series MBS-L / MBS-DL / MBS-Z / MBS-DZ
    - 5.1.1 Construction
    - 5.1.2 Structure of the chuck body assembly series MBS-L
    - 5.1.3 Structure of the chuck body assembly series MBS-DL
    - 5.1.4 Function of air-actuated chuck body assemblies MBS-L / MBS-DL
    - 5.1.5 Structure of the chuck body assembly series MBS-Z
    - 5.1.6 Structure of the chuck body assembly series MBS-DZ
    - 5.1.7 Function of draw-tube-actuated chuck body assembly MBS-Z / MBS-DZ
  - 5.2 MBS system non-rotating application (vice) MBS-N
    - 5.2.1 Construction
    - 5.2.2 Structure of the MBS-N series chuck body assembly
    - 5.2.3 Function of the MBS-N series chuck body assembly (vice)
  - 5.3 Machine connection
    - 5.3.1 Function
    - 5.3.2 Notes on the design of the adapter plate
    - 5.3.3 Notes on the design of the base plate for the machine table
    - 5.3.4 Notes on the design of the drawtube connector
    - 5.3.5 Attachments for the air tube

- 5.4 Clamping set
  - 5.4.1 Structure
  - 5.4.2 Function
  - 5.4.3 Optional attachments
- 6. Assembly and applications
  - 6.1 Preparations
  - 6.2 Mounting adapter plate
  - 6.3 Mounting MBS system rotating application
    - 6.3.1 Assembly of chuck body assembly series MBS-L / MBS-DL
    - 6.3.2 Assembly of air tube
    - 6.3.3 Assembly of chuck body assembly series MBS-Z / MBS-DZ
  - 6.4 Assembly of MBS system non-rotating application (vice)
  - 6.5 Assembly of clamping set
  - 6.6 Assembly of optional attachments
  - 6.7 Tests
- 7. Dismantling
  - 7.1 Preparations
  - 7.2 Disassembly of the clamping set
  - 7.3 Disassembly of MBS system rotating application
    - 7.3.1 Disassembly of air tube
    - 7.3.2 Disassembly of chuck body assembly series MBS-L / MBS-DL
    - 7.3.3 Disassembly of chuck body assembly series MBS-Z
  - 7.4 Disassembly of MBS system non-rotating application (vice)
  - 7.5 Disassembly of adapter plate
- 8. Care and Maintenance
  - 8.1 Cleaning
  - 8.2 Maintenance
  - 8.3 Post-production activities
  - 8.4 Torques for bolt fasteners
- 9. Troubleshooting
  - 9.1 Preliminary remark
  - 9.2 Troubleshooting
  - 9.3 Commissioning after a fault has been rectified
- 10. Waste disposal and environmental protection
- 11. Supplementary documents and drawings

## 1. General

### 1.1 Introduction

Thank you for purchasing a MicroCentric clamping device. We wish you every success in your work with the system. Please read the operating instructions carefully before setting up and commissioning. This helps you to avoid accidents, malfunctions, and damage and allows you to operate safely.

Clamping devices are the crucial components of a tooling machine when it comes to manufacturing precision parts with high accuracy and concentricity. Our products offer a wide range of advantages and are used in a wide variety of applications, e.g. turning, grinding or milling.

If you would like further information, please do not hesitate to contact our sales and service staff.

### 1.2 Information about the instructions

These instructions are granting safe and efficient handling of the clamping device.

Before commencing any work with and around the clamping device, these operating instructions must have been read and understood by the responsible personnel. Furthermore, the instructions must be stored in the immediate vicinity of the clamping device and made accessible to the operating personnel.

The content of this instruction manual is the basic prerequisite for safe working with the clamping device.

### 1.3 Warnings

In order to illustrate any hazards that may occur, the following signal words and symbols are used in this user manual.



**There is an imminent danger.**  
Failure to follow the instructions will result in death or serious injury.



**There is a threat of a potentially dangerous situation.**  
Failure to follow the instructions may result in death or serious injury.



**It can lead to a dangerous situation.**  
Failure to follow the instructions may result in minor injuries or property damage.



**Information and advice.**  
Failure to follow the instructions may result in property damage.

## 1.4 Limitation of Liability

The MicroCentric clamping device is designed according to today's state of the art and meets the requirements of modern clamping devices.

Likewise, all the information and information in this instruction manual has been compiled taking into account the applicable regulations and standards.

MicroCentric shall not be liable for any damages resulting from:

- Failure to follow the instruction manual
- Improper use
- Inadequately trained staff
- Unauthorized modifications of the clamping device
- Technical changes
- Use of non-approved spare parts or accessories
- Failure to comply with accident prevention regulations

## 1.5 Copyright

This manual is protected by copyright. It is used exclusively for internal purposes of the user for proper use.

Any other use or distribution of the content to third parties - even in excerpts - is not permitted without the written permission of MicroCentric.

## 2. Basic safety instructions

Failure to follow the operating instructions and incorrect handling of this product may cause hazards and damage to people and machine. In case of malfunction of any kind, the operator must be informed immediately and the clamping device must be taken out of service.



**In all cases where the clamping device or accessories abnormal or not working at all, please contact our technical sales department to avoid injury or damage.**

### 2.1 Intended use

The intended use of the MicroCentric MBS system is the clamping of defined workpieces. Intended use means that only the MicroCentric MBS chuck body assembly with the optional MicroCentric attachments is used in the MicroCentric MBS system. The optional attachments, such as the MicroCentric clamping set with stop, top jaws and other options, are developed depending on the respective workpiece.

Proper use implies that the operator of the machine has a received sufficient training and has read and understood the instruction manual.

The clamping device is intended for commercial use only. The operator of the system is responsible for the safe operation of the clamping device and must ensure that all legally standardized safety regulations are complied with.

## 2.2 Misuse

Improper use occurs when the clamping device is used for a purpose other than that listed in Chapter 2.1. This includes, for example:

- The clamping device is operated on a machine that does not comply with the EC Machinery Directive 2006/42/EC
- Staff were not adequately trained
- The instruction manual is disregarded
- The manufacturer's specifications are exceeded
- The working environment does not meet the specifications
- The clamping device is rebuilt or modified without MicroCentric's consent

## 2.3 Hazard statements

This product may pose a risk to personal injury and property damage if, for example:

- Misuse exists
- Installation and maintenance are carried out contrary to the operating instructions
- The relevant accident prevention regulations are not complied with
- No original MicroCentric spare or add-on parts are used

In particular, it is important to note:



**Never use the clamping device during spindle rotation open or close, unless the workpiece is taken over by a counter spindle clamping device. Workpieces can be ejected!**



**Do not exceed the maximum values for air pressure or drawtube force or the maximum recommended speed. Workpieces can be ejected!**



**Never touch the clamping device or accessories or the workpieces during rotation!**



**Make sure that all tools used for assembly have been removed from the clamping device before starting machining. (e.g. hex wrench or devices).**



**The relevant accident prevention regulations are complied with.**



**Only original MicroCentric spare parts may be used.**

## 2.4 Instructions for safe operation

Once the clamping device has been installed, the system must be tested for function. Only then can the clamping device be put into operation. The functional test includes a check of the clamping pressure and the clamping diameter.

- The release of the drawtube connector must only take place when the machine spindle is at a standstill
- The machine spindle must not start until the clamping pressure has been built up and the clamping is within the permissible working range
- Avoid empty clamping

## 2.5 Qualification of personnel

The assembly and disassembly, commissioning, operation and maintenance of the clamping device may only be carried out by qualified specialist personnel who have been instructed in safety matters. Furthermore, all persons carrying out the above-mentioned activities must be granted access to this instruction manual. We also recommend safety training for employees. This can be done by a MicroCentric service technician on request.

## 2.6 Personal protective equipment

In order to minimize hazards that may occur during processing, the relevant occupational health and safety regulations must be observed and the necessary protective equipment must be used.

This includes wearing personal protective equipment and maintaining the necessary safety distances.



**The wearing of loose clothing as well as necklaces, watches or the like is not permitted during processing.**

## 2.7 Special hazards

There are dangers and risks associated with the installation of the clamping device in a machine tool. The operator is required to assess and minimize the risks. When working with the clamping device, the necessary care must therefore be observed.



**Before opening covers or safety gates ensure that the clamping device no longer rotates, as rotating clamping devices pose a significant hazard.**



**Before operating the clamping device, make sure that covers or safety doors are closed, as rotating clamping devices pose a significant danger.**

### 3 Transport, packaging and storage



When working logistically with the clamping device, observe the applicable accident prevention regulations. If necessary, carry out all logistics work with 2 employees or suitable lifting equipment.

#### 3.1 Unpacking and internal transport

From a clamping device weight of 20 kg, threaded holes are attached to the diameter for the fastening of suitable slings. This means that a crane or lifting device can be used for internal transport.

#### 3.2 Packaging material

Depending on the design and weight, the clamping device is delivered in suitable packaging. This protects the clamping device against possible transport damage and corrosion.

The packaging materials can be stored for a return.

The item and its packaging have been made from valuable materials that can be reused. This reduces waste and protects the environment.

If the packaging materials are no longer needed, they must be separated by type of fabric, collected and then disposed of in accordance with local regulations. If necessary, hire a specialist company to dispose of it.

#### 3.3 Storage

For storage, the clamping device should be cleaned.

Subsequently, the clamping device must be protected against influences such as dust, moisture (corrosion) and mechanical damage. To prevent moisture, lightly oil or grease the clamping device or wrap it in anti-rust paper.

The clamping device must be stored in such a way as to prevent unintentional movement from the storage area.



## 4. Technical data

### 4.1 General information

The MicroCentric MBS system is state-of-the-art and has the following features:

- Chuck body assembly sizes from 80 to 300 mm as standard  
Other sizes according to order confirmation
- Highest process reliability
- Short set-up times
- Adjustable clamping force
- Clamping repeatability less than 2 µm
- Change accuracy of clamping sets less than 3 µm
- Maintenance- and lubrication-free
- Long service life
- No open guidance
- Impermeable to contamination
- Centrifugal resistant, speeds up to 11,000 rpm.
- Compatibility with MicroCentric jaw chucks
- Internal coolant supply as standard

### 4.2 Operating conditions

Our clamping devices can be used in all production facilities known to us and conceivable.

The best results are achieved when an approximately constant temperature is present in your production during the entire service life.

Temperatures > 60 °C should be avoided, as the product can reach limits outside these temperature ranges due to material expansion, plastics or liquids.

The processing values are shown in the table in chapter 4.3.

#### **Specific for chuck body assembly MBS-L / MBS-DL / MBS-N**

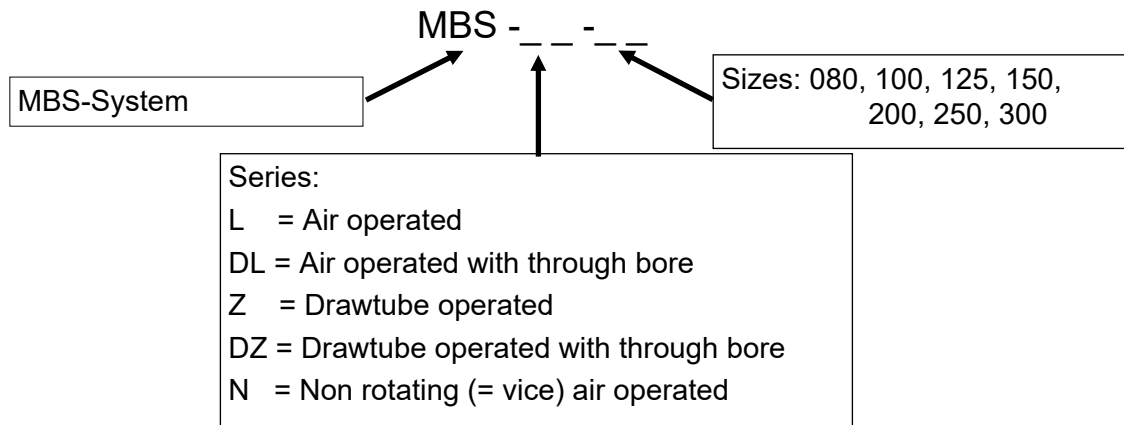
Operated with oiled and filtered air. The use of an air filter-regulator unit for air treatment and pressure adjustment, consisting of an oiler, filter and pressure reducer, is absolutely mandatory, otherwise the chuck body assembly can suffer serious damage. We recommend a special pneumatic oil with a viscosity of 10mm<sup>2</sup>/ at +40°C according to DIN 51562T.1 (item no. 969000-0133-00)

#### **Specific for chuck body assembly MBS-Z / MBS-DZ**

A clamping cylinder is required for chuck actuation.

For technical clarification, please contact our technical sales department.

### 4.3 Product data



S/N XXXXXX = Serial number, always indicate when contacting our technical sales department.

#### 4.3.1 Chuck body assembly of all series

Model	Outside- ø (mm)	Clamping from ø to ø (mm)	Stroke in ø at top jaw height			
			25mm (mm)	38mm (mm)	50mm (mm)	75mm (mm)
MBS-...-080	81	5-48	1,4	2,1	2,8	-
MBS-...-100	102	10-52	1,4	2,1	2,8	-
MBS-...-125	127	10-84	1,4	2,1	2,8	-
MBS-...-150	152	10-104	1,2	1,8	2,4	3,6
MBS-...-200	204	10-145	1,2	1,8	2,4	3,6
MBS-...-250	254	12-181	1,2	1,8	2,4	3,6
MBS-...-300	294	12-221	0,9	1,4	1,8	2,7

The clamping repeatability of the MBS system is less than 2.0 µm.

Clamping stroke in the ø at top jaw height:

Values are understood at 6 diaphragm opening pressure.

Reduced pressure results in less stroke; the stroke is also reduced with a smaller distance to the clamping diaphragm (= lower top jaw height)

The following product data applies to the chuck body assembly without clamping set.

In the MBS system with clamping set and optional attachments, the maximum air pressure, the maximum clamping force and the maximum speed depend on the workpiece and top jaws. For details, see order-specific documentation. (Clamping Set Drawing)



**The order-specific information on air pressure and speed must be adhered to.**

**There is a risk of injury due to loss of clamping force, diaphragm rupture or top jaw fracture.**

### 4.3.2 Specific product data for chuck body assembly series MBS-L / MBS-DL

The maximum speed is significantly influenced by the air pressure and the weight of the top jaws.

Model	Through bore (mm)	Air pressure max. (bar)	Clamping force max. (daN)	Speed max. (1/min)	Weight (kg)
MBS-L-080	-	6	50	11.000	1,3
MBS-L-100	-	6	120	10.000	2,5
MBS-L-125	-	6	300	9.700	3,8
MBS-L-150	-	6	480	9.400	5,4
MBS-L-200	-	6	1.130	7.900	12,1
MBS-L-250	-	6	2.090	6.300	24,9
MBS-L-300	-	6	3.640	5.000	38,6
MBS-DL-125	30	6	250	9.700	3,5
MBS-DL-150	36	6	390	9.400	5,3
MBS-DL-200	52	6	990	7.900	12,7
MBS-DL-250	66	6	1.660	6.300	25,3
MBS-DL-300	95	6	2.740	5.000	38,3



#### **WARNING**

The order-specific information on air pressure and speed must be adhered to.  
There is a risk of injury due to loss of clamping force, diaphragm rupture or top jaw fracture.

#### 4.3.3 Specific product data for drawtube operated chuck body assembly series MBS-Z / MBS-DZ

The maximum speed is significantly influenced by the drawtube force and the weight of the top jaws.

<b>Model</b>	<b>Through bore</b>  (mm)	<b>Drawtube force</b>  <b>max.</b> (daN)	<b>Clamping force</b>  <b>max.</b> (daN)	<b>Speed</b>  <b>max.</b> (1/min)	<b>Weight</b>  (kg)
MBS-Z-080	-	165	50	11.000	1,05
MBS-Z-100	-	270	120	10.000	1,6
MBS-Z-125	-	460	300	9.700	3,4
MBS-Z-150	-	700	480	9.400	4,9
MBS-Z-200	-	1335	1130	7.900	10,5
MBS-Z-250	-	1800	2090	6.300	25,2
MBS-Z-300	-	2680	3640	5.000	37,1
MBS-DZ-125	30	630	330	9.700	3,3
MBS-DZ-150	36	945	550	9.400	4,7
MBS-DZ-200	52	1800	1.540	7.900	10,2
MBS-DZ-250	66	2430	2.380	6.300	24,8
MBS-DZ-300	95	3600	4.360	5.000	36,6

#### 4.3.4 Specific product data for chuck body assembly series MBS-N (vice)

<b>Model</b>	<b>Air pressure</b>  <b>max.</b> (bar)	<b>Clamping force</b>  <b>max.</b> (daN)	<b>Weight</b>  (kg)
MBS-N-080	6	50	1,35
MBS-N-100	6	120	2
MBS-N-125	6	300	3,9
MBS-N-150	6	480	5,5
MBS-N-200	6	1.130	11,2
MBS-N-250	6	2.090	26
MBS-N-300	6	3.640	38



### WARNING

The order-specific information on air pressure and speed must be adhered to.  
There is a risk of injury due to loss of clamping force, diaphragm rupture or top jaw fracture.

## 5. Structure and function

### 5.1 MBS system rotating application: Series MBS-L / MBS-DL / MBS-Z / MBS-DZ

#### 5.1.1 Construction

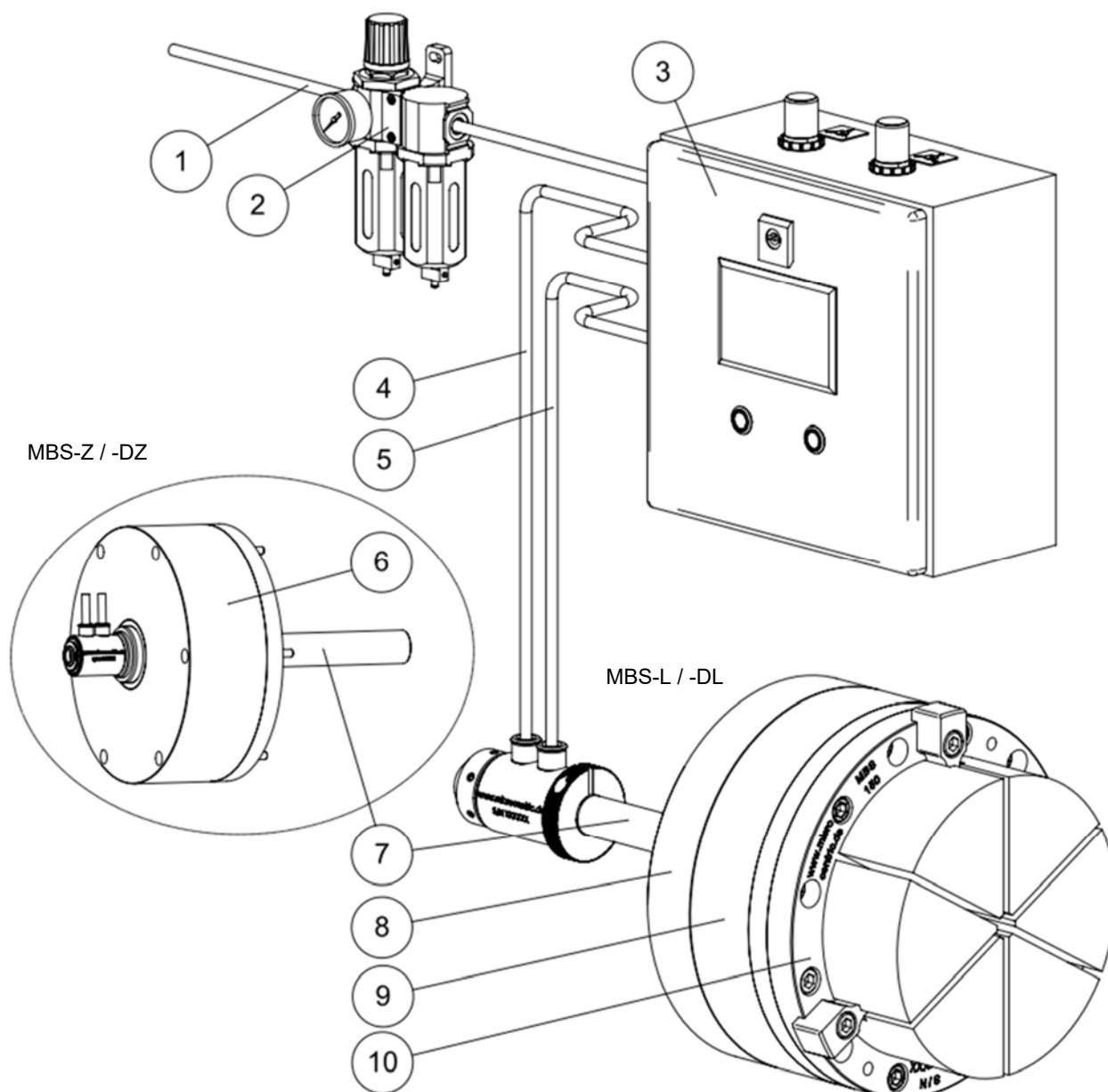


Fig.1

Pos.	Designation
1	System air supply
2	Air filter-regulator lubricator
3	Control unit
4	Supply air L1 / Exhaust L2
5	Supply air L2 / Exhaust L1
6	MBS-Z / -DZ: Clamping

Pos.	Designation
7	MBS-L / -DL: air tube MBS-Z / -DZ: drawtube
8	Adapter plate
9	Chuck body assembly
10	Clamping set



**IMPORTANT**

In addition to the MBS system, a maintenance unit and actuation valves as well as safety devices in accordance with the EC Machinery Directive 2006/42/EC must be installed between the air tube and the air connection.

## 5.1.2 Structure of chuck body assembly series MBS-L

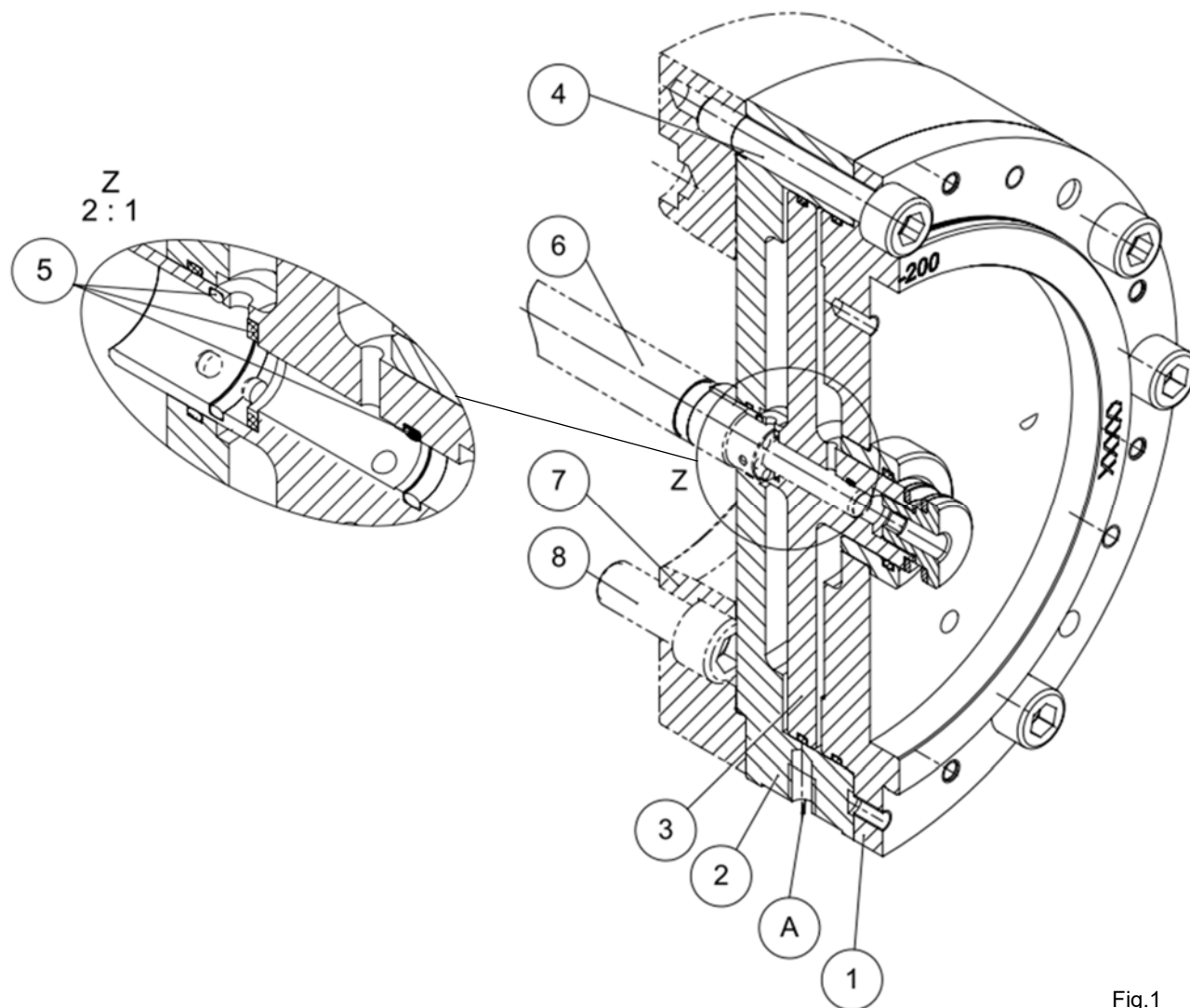


Fig.1

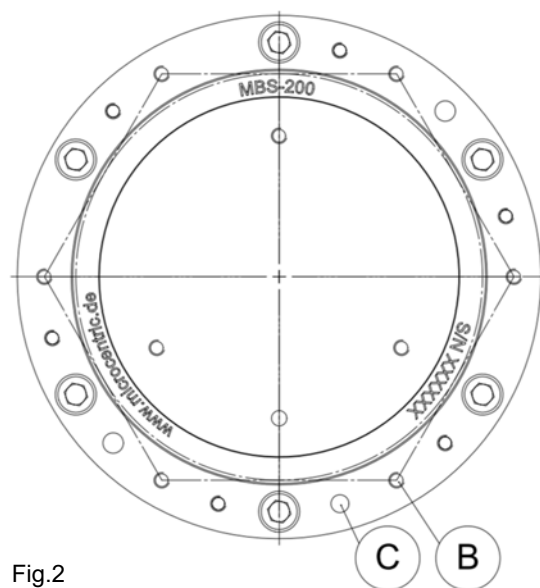


Fig.2

Pos.	Designation
A	Transport threads from size 200
B	Fastening thread clamping set
C	Position bore for clamping set

Pos.	Designation
1	Chuck body
2	Cylinder
3	Piston
4	Chuck body assembly fastening screws DIN 912
5	Sealings
6	Air tube 1)
7	Adapter plate 1)
8	Adapter plate fastening screws DIN 912
Item order number and missing items see order-specific documentation "Chuck body assembly and adapter plate" (Assembly drawing and BOM)	
1) Optional attachment	



### 5.1.3 Structure of chuck body assembly series MBS-DL

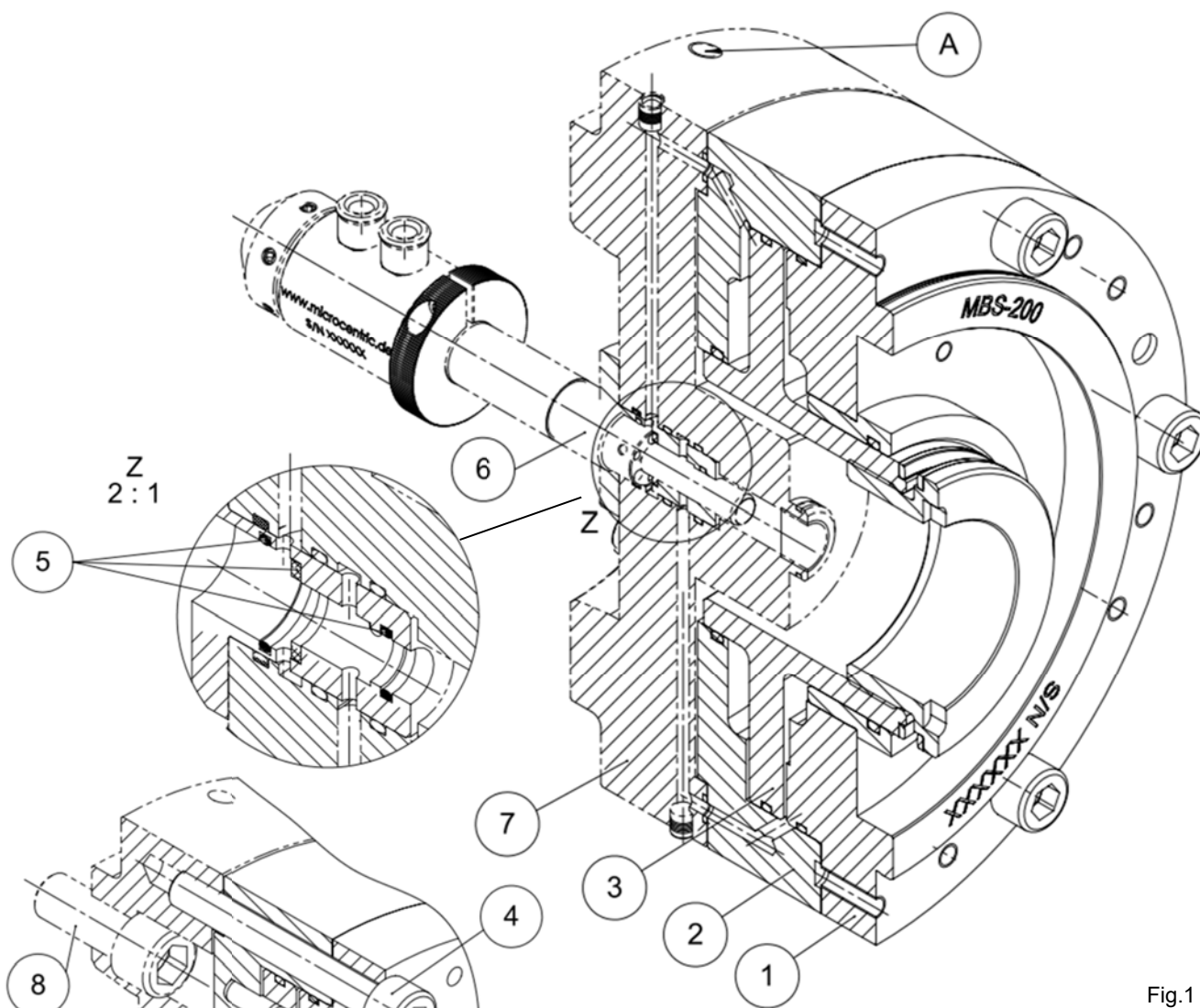


Fig.1

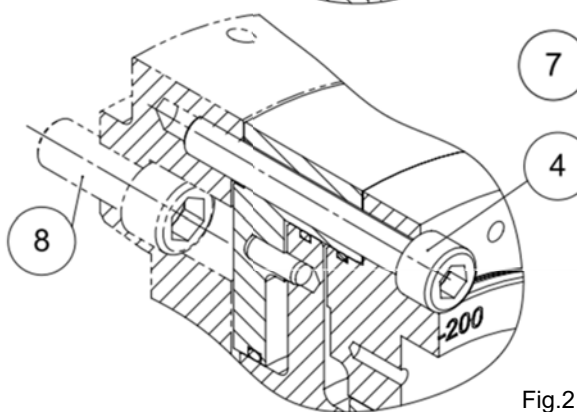


Fig.2

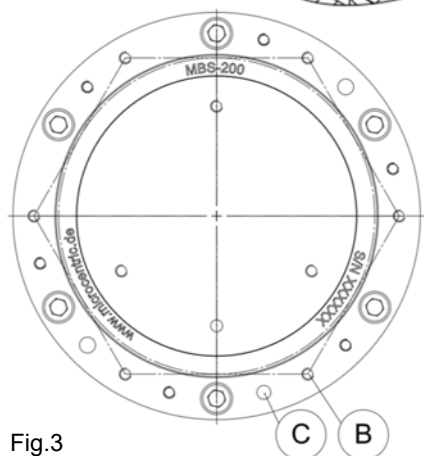


Fig.3

Pos.	Designation
A	Transport threads from size 200
B	Fastening thread clamping set
C	Position bore for clamping set

Pos.	Designation
1	Chuck body
2	Cylinder
3	Piston
4	Chuck body assembly fastening screws DIN 912
5	Sealings
6	Air tube 1)
7	Adapter plate 1)
8	Adapter plate fastening screws DIN 912

Item order number and missing items see order-specific documentation "Chuck body assembly and adapter plate" (Assembly drawing and BOM)

1) Optional attachment

#### 5.1.4 Function of air-actuated chuck body assembly series MBS-L / MBS-DL

The MBS system rotating application with air actuation is mounted on a machine spindle.

(For items see chapter 5.1.1)

The system works by supplying compressed air (pos.1) via the air filter regulator lubricator unit (pos.2) - consisting of an oiler, filter and compressed air reducer - is fed into a control unit (item 3). This is where the signaling for the activation of the MBS system takes place. The pneumatic signal is transmitted via the supply lines (pos.4 or 5) via the rotary distributor (pos.6) and the air tube (pos.7) and actuates the chuck body assembly (pos.9). The interplay of the body assembly and the clamping set (item 10) achieves the clamping and loosening of the workpiece.

The venting of the system is carried out via the drains (pos.4 or 5)

(For items see chapter 5.1.2)

By pressurizing a channel of the air tube, the compressed air is directed into the chuck body assembly and pressure is built up in its spindle-side piston chamber, causing the piston (pos.3) to move in the direction of the clamping set. The 2nd channel is used to vent the piston chamber on the clamping set. In the interaction of the chuck body assembly and the clamping set, the movement process for opening is achieved during the external clamping. For clamping, the piston chamber on the spindle side is vented and, depending on the desired clamping force, the piston chamber on the clamping set side is pressurized via the 2nd channel.

In the case of internal clamping, opening is carried out by pressurizing the piston chamber on the clamping set side and clamping by pressurizing the piston chamber on the spindle side.

The MBS system rotating application with air actuation is divided into 2 types:

MBS-L:

The center of the chuck body assembly is closed and the use of a centric workpiece stop is possible.

MBS-DL:

There is a passage in the middle of the chuck body assembly, up to the air tube. For example, it is possible to mount a lowered stop.

The function of the clamping set is described in chapter 5.4.



**WARNING**

**The order-specific information on air pressure and speed must be adhered to.**  
**There is a risk of injury due to loss of clamping force, diaphragm rupture or top jaw fracture.**



### 5.1.5 Structure of the chuck body assembly series MBS-Z

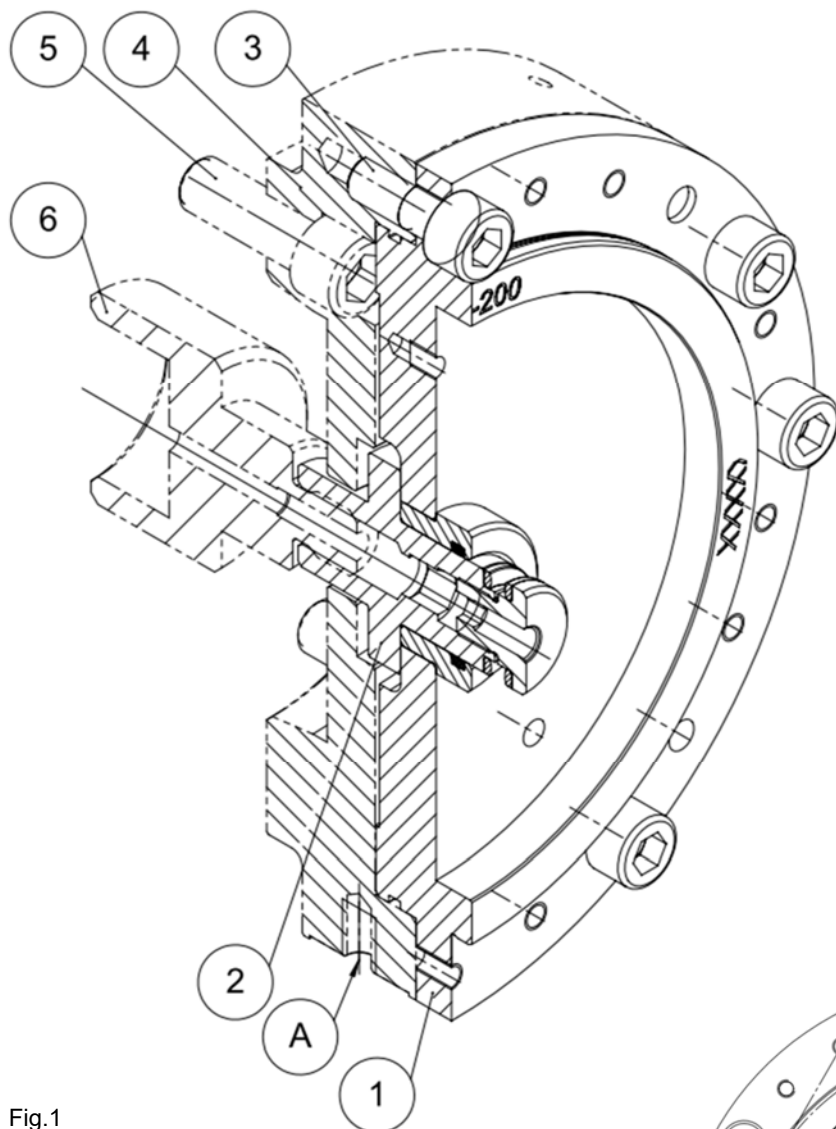


Fig.1

Pos.	Designation
1	Chuck body
2	Pressure piece
3	Chuck fastening screws DIN 912
4	Adapter plate inc. Stroke limiting 1)
5	Adapter plate fastening screws DIN 912
6	Drawtube connector 1)
Item order number and missing items see order-specific documentation "Chuck body assembly and adapter plate" (Assembly drawing and BOM)	
1) Optional attachment	

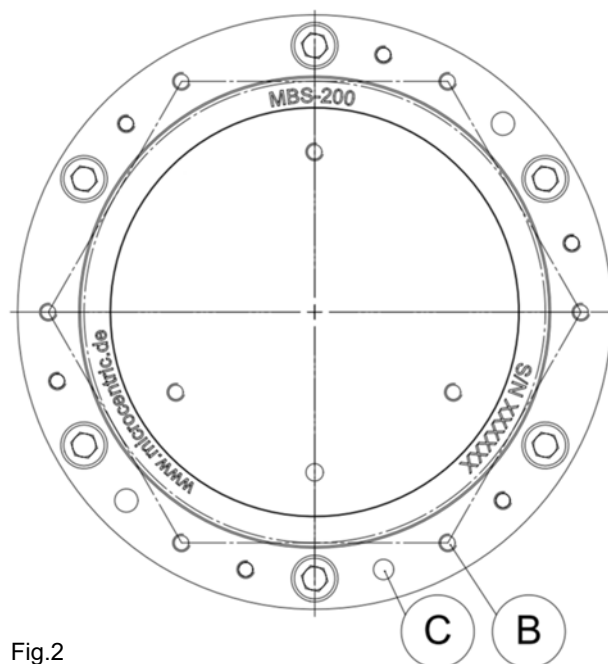


Fig.2

Pos.	Designation
A	Transport threads from size 200
B	Fastening thread clamping set
C	Position bore for clamping set

### 5.1.6 Structure chuck body assembly series MBS-DZ

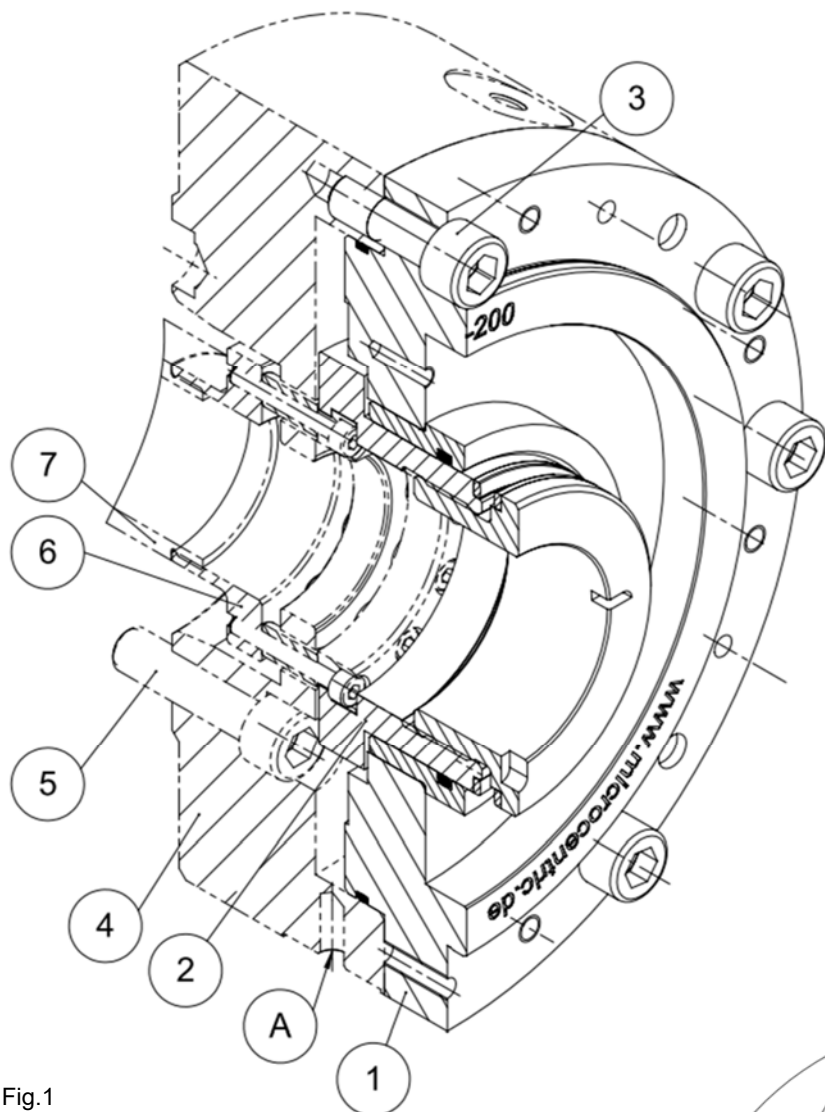


Fig.1

Pos.	Designation
1	Chuck body
2	Pressure piece
3	Chuck fastening screws DIN 912
4	Adapter plate incl. Stroke limiting 1)
5	Adapter plate fastening screws DIN 912
6	Drawtube connector 1)
7	Drawtube 1)
Item order number and missing items see order-specific documentation "Chuck body assembly and adapter plate" (Assembly drawing and BOM)	
1) Optional attachment	

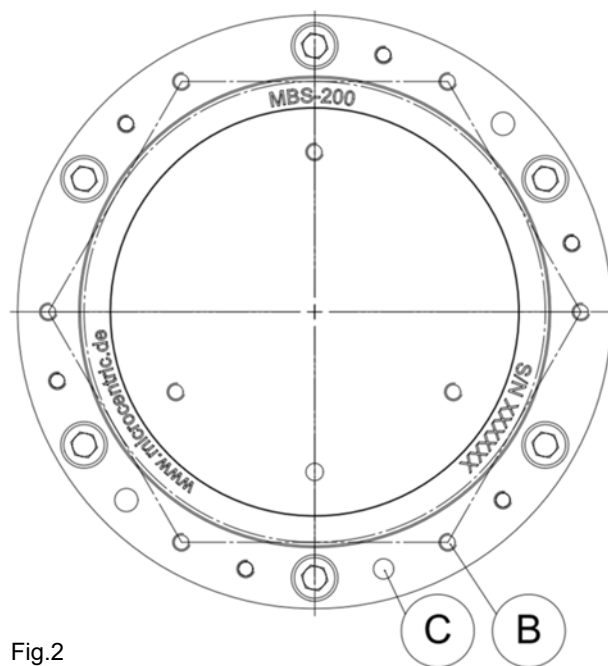


Fig.2

Pos.	Designation
A	Transport threads from size 200
B	Fastening thread clamping set
C	Position bore for clamping set

### 5.1.7 Function of draw-tube-actuated chuck body assembly series MBS-Z / MBS-DZ

(For items see chapter 5.1.1)

The MBS system rotary application is mounted on a machine spindle.

When using a MicroCentric clamping cylinder (pos.6), the system works by directing the supplied compressed air (pos.1) via the air filter regulator lubricator unit (pos.2) - consisting of lubricator, filter and compressed air reducer - to an control unit (pos.3).

This is where the signaling for the activation of the MBS system takes place. The pneumatic signal is transmitted to the clamping cylinder via the supply lines (pos.4 or 5). In the clamping cylinder, the pneumatic signal is converted into an axial movement of the spindle drawtube. The actuating force is applied mechanically to the chuck body assembly (item 9) via the drawtube (item 7). The interplay of the chuck body assembly and the clamping set (item 10) achieves the clamping and loosening of the workpiece.

The venting of the system is carried out via the drains (pos.4 or 5)

Alternatively, depending on the machine configuration, a hydraulically actuated clamping cylinder can be used.

(For items see chapter 5.1.5)

The axial movement is continued from the drawtube via the drawtube connector (pos.6) and moves the pressure piece (pos.2) in the direction of the clamping set. In the interplay of the chuck body assembly and the clamping set, the movement process for opening is achieved during the external clamping. To clamp, the drawtube is moved in the opposite direction. The piston stop surface in the adapter plate limits the stroke, which prevents the diaphragm from being overstretched. In the case of internal clamping, the opening and tensioning is carried out by the opposing movement sequences.

The MBS system rotating application with drawtube actuation is divided into 2 series:

**MBS-Z:**

The center of the chuck body assembly is closed and the use of a centric workpiece stop is possible.

**MBS-DZ:**

There is a passage in the middle of the chuck body assembly, so it is possible, for example, to use bar material or to mount a lowered stop.

The function of the clamping set is described in chapter 5.4.



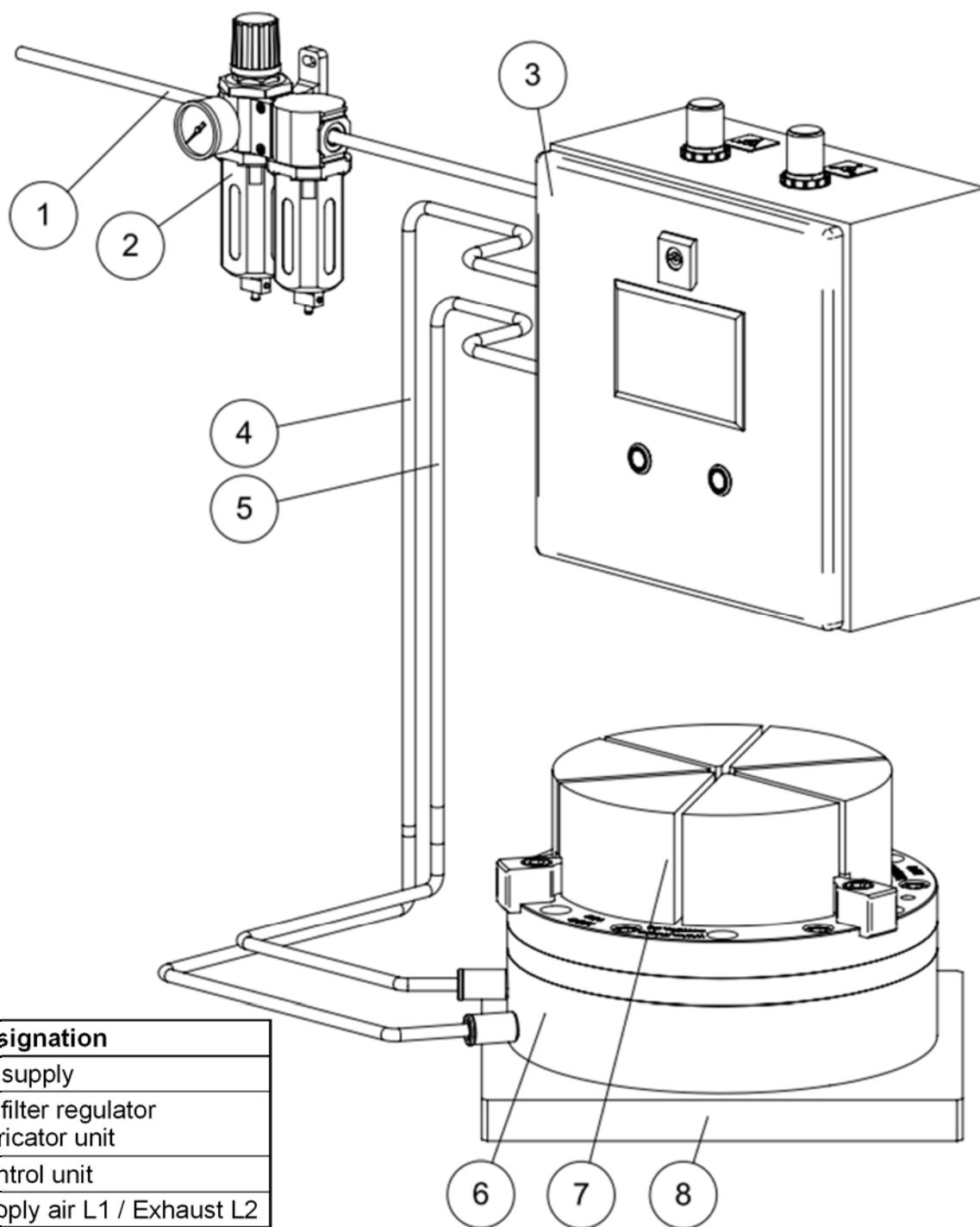
**WARNING**

**The order-specific information on air pressure and speed must be adhered too.**

**There is a risk of injury due to loss of clamping force, diaphragm rupture or top jaw fracture.**

## 5.2 MBS system non-rotating application (vice) series MBS-N

### 5.2.1 Construction



Pos.	Designation
1	Air supply
2	Air filter regulator lubricator unit
3	Control unit
4	Supply air L1 / Exhaust L2
5	Supply air L2 / Exhaust L1
6	Chuck body assembly
7	Clamping set
8	Machine table / base plate

L1 Position 1 = Chuck opens (OD Clamping)

L2 Position 2 = Chuck closes, (OD Clamping)



**IMPORTANT**

In addition to the clamping unit, a maintenance unit and operating valves as well as safety devices in accordance with the EC Machinery Directive 2006/42/EC must be installed between the chuck body assembly and the air connection.

### 5.2.2 Structure of chuck body assembly series MBS-N (vice)

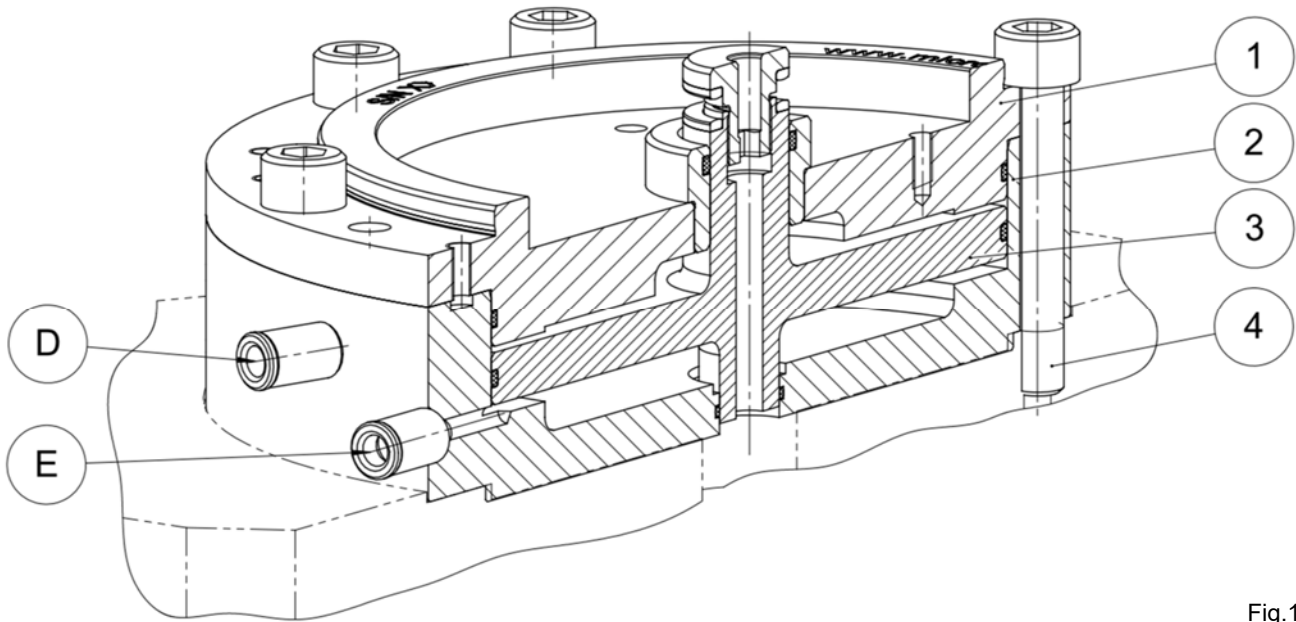


Fig.1

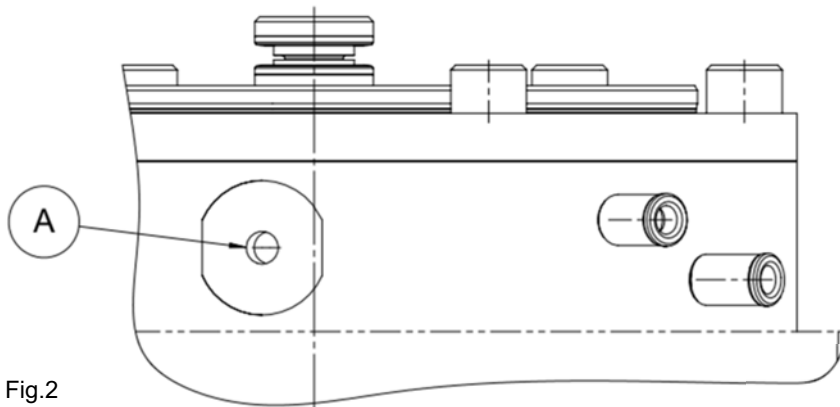


Fig.2

Pos.	Designation
1	Chuck body
2	Cylinder
3	Piston
4	Chuck fastening screws DIN 912
Item order number and missing items see order-specific documentation "Chuck body assembly and adapter plate" (Assembly drawing and BOM)	

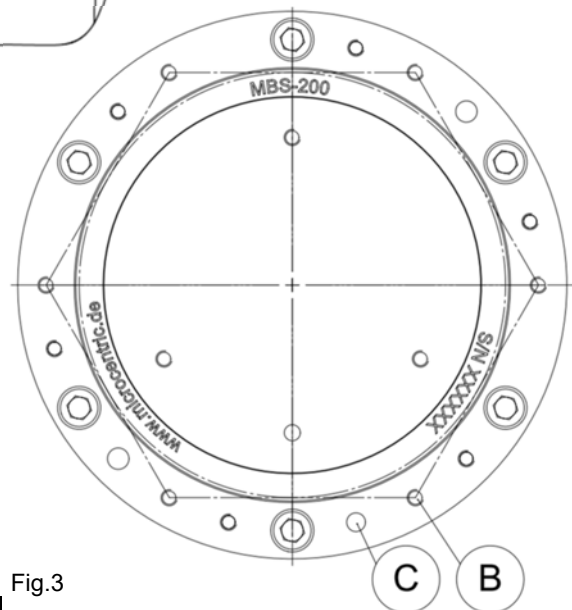


Fig.3

Pos.	Designation
A	Transport threads from size 200
B	Fastening thread clamping set
C	Position bore for clamping set
D	Air connection piston chamber clamping set
E	Air connection piston chamber table side

### 5.2.3 Function of the MBS-N series chuck body assembly (vice)

(For items see chapter 5.2.1)

The MBS system for vice application is mounted on a machine table or a base plate (pos.8).

The system works by directing the supplied compressed air (pos.1) via the air filter regulator lubricator unit (pos.2) - consisting of lubricator, filter and compressed air reducer - into a control unit (pos.3).

This is where the signaling for the activation of the MBS system takes place. Via the supply lines (pos. 4 or 5) the pneumatic signal is transmitted to the chuck body assembly as an actuating force. The workpiece is clamped in the interplay of the chuck body assembly (item 7) and the clamping set (item 6).

The system is vented via the drains (pos.4 or 5).

The center of the chuck body assembly is closed and the use of a centric workpiece stop is possible.

(For items see chapter 5.2.2)

By applying pressure to the piston chamber on the table side (pos. E), pressure is built up in the piston chamber on the table side and the piston (pos.3) moves upwards. The piston chamber on the clamping set side is vented via the air connection piston chamber clamping set (item D). In the interaction of the chuck body assembly and the clamping set, the movement process for opening is achieved during the external clamping. For clamping, the piston chamber on the table side is vented and, depending on the desired clamping force, the piston chamber on the clamping set side is pressurized.

In the case of internal clamping, opening is affected by pressurizing the piston chamber on the spindle side and clamping by pressurizing the piston chamber on the table side.

The function of the clamping set is described in chapter 5.4.

Separate operating instructions are available for the air filter regulator lubricator unit and the control unit.



## 5.3 Machine connection

### 5.3.1 Function

In the case of the MBS system rotating application, the machine connection of the MicroCentric chuck body assembly is made to the machine with an adapter plate (Chapter 5.1.1 Item 8). In the case of the MBS-L series, this is optional, provided that the connection is made possible by the machine manufacturer. In the MBS-DL series, an adapter plate is required for the air connection. In the MBS-Z and MBS-DZ series, an adapter plate is required to achieve a stroke limit.

In the case of the MBS system non-rotating application (vice), the machine connection from the MicroCentric chuck body assembly can be made directly to the machine table or a base plate. Optionally, an adapter plate can be installed as a base plate between the machine table and the chuck body assembly.

### 5.3.2 Notes on the design of the adapter plate

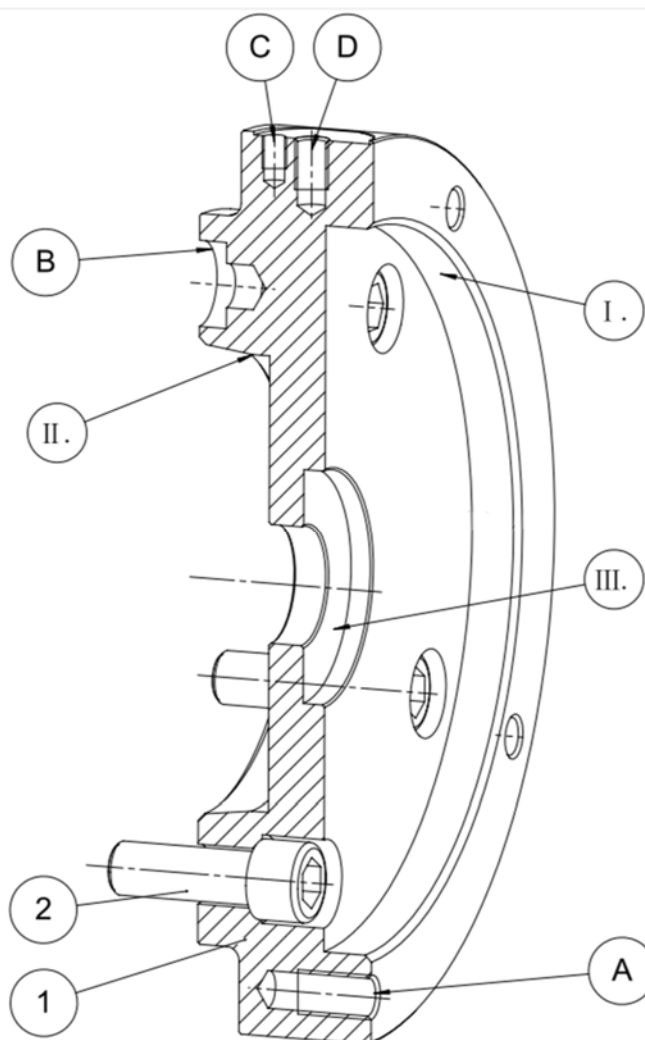
The adapter plate allows alignment between the chuck body assembly and the adapter plate. The recess for positioning (B) prevents incorrect insertion of the clamping unit on the spindle.

The configuration corresponds to the information provided when ordering the clamping unit and is compatible with the spindle end (II.) on one side and the chuck body assembly on the other (I.).

Order-specific threads for balancing screws (C) are optional available. From a weight of more than 15 kg, threads (D) for screwing in an eyebolt or a stop swivel (not included) are included.

Depending on the chuck body assembly, air ducts are inserted into the adapter plate.

In the adapter plate for MBS-Z / MBS-DZ, the stop surface (III.) is designed as a stroke limitation for the pressure piece.



Pos.	Designation
1	Adapter plate
2	Spindle fastening screws DIN 912
Item order number and missing items see order-specific documentation „adapter plate“ (Assembly drawing and BOM)	

Pos.	Designation
A	Thread for chuck fastening screws DIN 912
B	Position bore for Spindle
C	Thread for balancing screws
D	Transport threads from size 200
I .	Chuck body assembly connection
II .	Spindle connection
III.	Stop face for stroke limiting MBS-Z / -DZ

Figure 1.

Exemplary illustration of:

Chuck connection ( I . ) MBZ-200

Spindle connection ( II . ) DIN ISO 702-1-06

**If you manufacture the adapter plate for the MBS-L / MBS-DL / MBS-Z / MBS-DZ series yourself, the following points must be considered:**

1. For the MBS-L / MBS-DL / MBS-Z / MBS-DZ series, a through-hole for the air tube or drawtube is required.
2. For the MBS-Z / MBS-DZ series, a stop surface is required to limit the stroke of the pressure piece.
3. In order to accommodate chuck body assembly, sufficient clearance must be provided in the centering diameter and in the depth.
4. The fastening holes for the chuck body assembly are to be constructed according to the order-specific drawing.
5. The mounting holes for the spindle are to be designed according to the data sheet or drawing of the machine manufacturer.
6. We recommend the use of screws of strength class 12.9.
7. The overall height must be as low as possible and must be determined according to the available machine room and the possible travel distances of the machines.
8. For technical clarification, please contact our technical sales department.

### **5.3.3 Notes on the design of the base plate for the machine table**

**If you manufacture the base plate for the MBS-N series yourself, the following points should be considered:**

1. To accommodate the vice, there must be sufficient play in the centering diameter and in the depth.
2. On the side of the vice, the air supply with hoses is provided, which means that space must be planned accordingly in this area.
3. The fastening holes for the vice are to be designed according to the order-specific vice drawing.
4. The mounting holes for fastening to the machine table must be designed according to the data sheet or drawing of the machine manufacturer.
5. We recommend the use of screws of strength class 12.9.
6. The overall height must be as low as possible and must be determined according to the available machine room and the possible travel distances of the machines.
7. For technical clarification, please contact our technical sales department.

### **5.3.4 Notes for the design of the drawtube connector**

For illustrations, see chapter 5.1.5, item 6

The drawtube connector connects the drawtube of the clamping cylinder to the pressure piece of the chuck body assembly MBS-Z / -DZ. For this series, the actuating force is applied mechanically to the chuck body assembly. The pneumatically or hydraulically generated input pressure force is transferred to an axial movement force via a clamping cylinder and this is introduced into the chuck body assembly by means of a drawtube / drawtube connector.

The configuration corresponds to the information provided when ordering the clamping unit.

If you manufacture the drawtube connector yourself, please contact our technical sales department for technical clarification.

### **5.3.5 Attachments air tube: rotary distributor / support ring / mounting kit / guide bush**

The attachments for the air tube are listed in the separate "Air tube" operating instructions.

The configuration corresponds to the information provided when ordering the clamping unit.



## 5.4 Clamping set

### 5.4.1 Construction

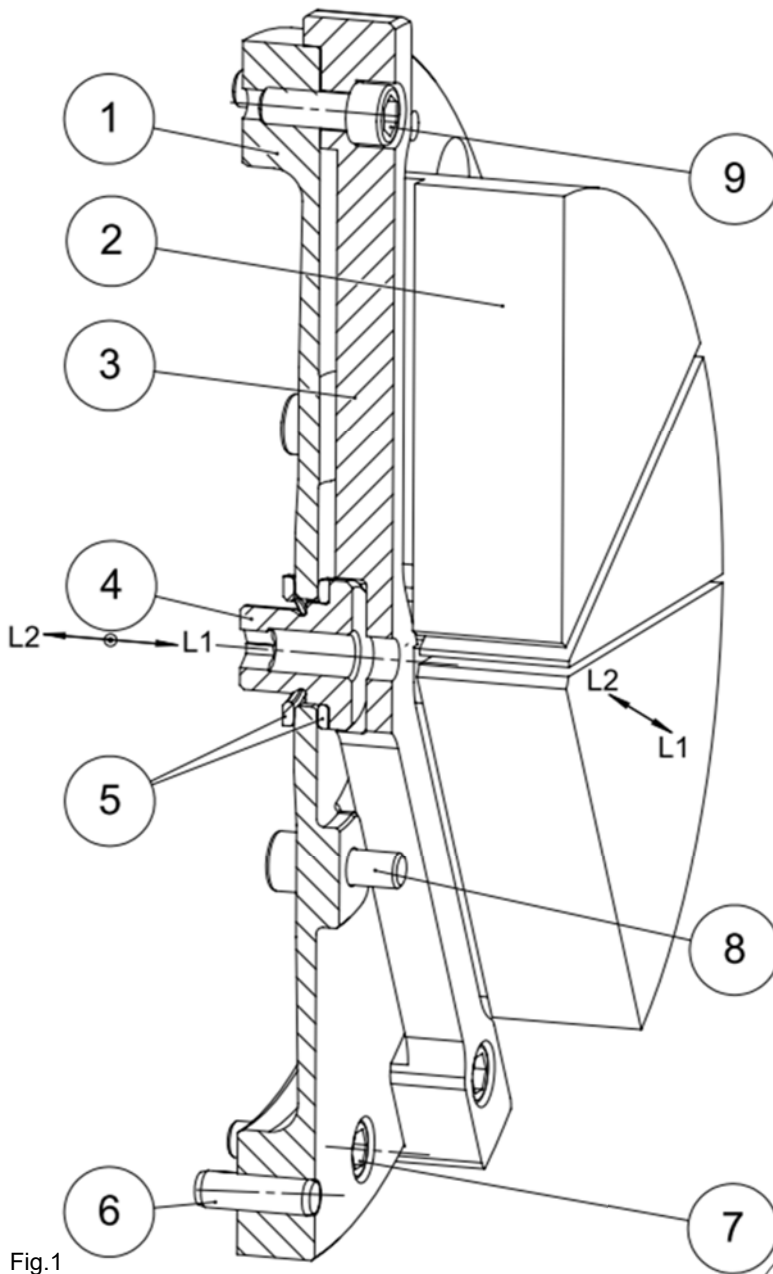


Fig.1

Pos.	Designation
1	Diaphragm
2	Top jaws
3	Part stop spider
4	Actuation screw
5	Actuation washer
6	Positioning pin DIN 6325
7	Clamping set fastening screws
8	Top jaws fastening screws DIN 912
9	Part stop spider fastening screws DIN 912

For item order number and missing items, see order-specific documentation "Clamping set" (Assembly drawing and BOM)

Pos.	Designation
L1	Position 1 = top jaws are opening <sup>1)</sup>
L2	Position 2 = top jaws are clamping <sup>1)</sup>
A	Draw-off thread
B	Top jaw locating cap

1) In order to OD clamping

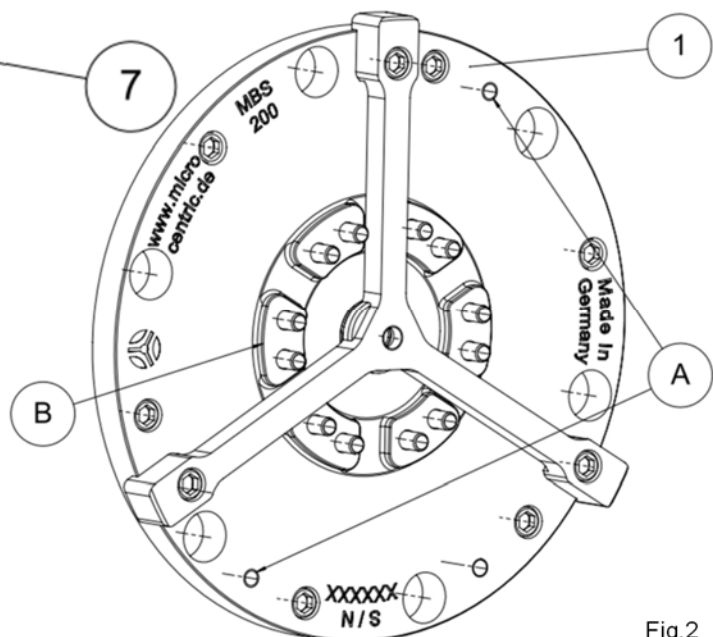


Fig.2

### 5.4.2 Function of clamping set

(For items see chapter 5.4.1)

The intended use of the clamping set involves the clamping of workpieces. To actuate the clamping set, use a MicroCentric MBS chuck body assembly.

The clamping set is specially adapted to the workpiece. Top jaws, part stop and other optional attachments are designed depending on the respective workpiece. The optional attachments in the clamping set, the design of the chuck body assembly and their pairing correspond to the information provided when ordering the MBS system. Depending on the scope of the options, information on construction, function and assembly can be seen from the drawing or a separate operating manual is enclosed.

The clamping set absorbs the actuating force from the chuck body assembly, the axial force is converted into a radial force via the diaphragm, which leads to the clamping of the workpiece.

#### Clamping process for external clamping (basic function):

The diaphragm (pos.1) is connected to the piston or pressure piece of the chuck body assembly by means of an actuating screw (pos.4). In this case, the two fulling rings (pos.5) act as plain bearings. The forward movement (L1) of the piston or pressure piece created by means of pressure exerts compressive force on the diaphragm. The diaphragm is curved in a similar way to a disc spring, so to speak, a spring tension is built up. The top jaws mounted on the diaphragm (pos.2) tilt outwards (L1) and thus increase the clamping diameter.

Open the top jaws.

The top jaws are finished under preclamping. The recommended values can be found in the information on the order-specific drawing.

The workpiece can be inserted.

Pressure relief causes the reverse movement (L2) of the piston or pressure piece to the middle position. Pressure is no longer exerted on the diaphragm and is reshaped by the spring tension. The top jaws, which are fixed on the diaphragm, tilt inwards (L2) and thus reduce the clamping diameter.

The top jaws close and clamp the workpiece.

The deformation of the diaphragm is supported by a pressurized reverse movement (L2) of the piston or pressure piece. This results in a higher clamping force. The clamping force can be adjusted to the top jaw geometry and machining data, and can be adjusted by changing the applied air pressure or the drawtube force. The recommended values can be found in the information on the order-specific drawing.

#### Clamping process for internal clamping (basic function):

The clamping process for the internal clamping takes place in the opposite sequence to the clamping process for the external clamping process. The recommended values for opening pressure and clamping pressure can be found in the order-specific drawing.

The backward movement (L2) of the piston or pressure piece created by means of pressure causes the top jaws (item 2) to tilt inwards (L2) and thus reduce the clamping diameter.

The workpiece can be inserted.

Pressure relief creates the forward movement (L1) of the piston or pressure piece up to the middle position. The top jaws tilt outwards (L1) and thus increase the clamping diameter.

The top jaws clamp the workpiece.

The deformation of the diaphragm can be supported by a pressurized forward movement (L1) of the piston or pressure piece. This results in a higher clamping force.

The clamping force can be designed very flexibly by changing the applied air pressure or the drawtube force.



For loading, a suitable insertion aid is necessary to prevent crushing.

Before opening covers or safety doors, make sure that the base chuck and clamping set are in the end position and at a standstill, as there is a risk of crushing during movement.

The order-specific specifications for clamping pressure and speed must be adhered to.  
There is a risk of injury due to loss of clamping force, diaphragm rupture or top jaw fracture.

In all cases where the clamping device or accessories are damaged, abnormal or do not function at all, please contact our technical sales department. Improper rework can reduce clamping repeatability and clamping force, lead to injury and damage, and void the warranty.

Before inserting a workpiece, make sure that the contact surfaces on the stop and top jaws are free of contamination, scratches, damage and burrs.

Opening sealed screws is not allowed. When opened, the warranty expires, the clamping repeatability and the clamping force can be reduced.

In order to maintain corrosion resistance, the medium provided at the time of ordering must be maintained in operation.

### 5.4.3 Optional attachment







The clamping set is specially adapted to the workpiece. Top jaws, part stop, coolant distributor, air sensing and other optional attachments are designed depending on the respective workpiece.

The optional attachments in the clamping set and their pairing correspond to the information provided when ordering the MBS system.

Depending on the scope of the options, information on the design, function and assembly can be found in the order-specific clamping set drawing or a separate operating manual is enclosed.

If you have any questions, please contact our technical sales department.

## 6. Assembly and applications

	<b>DANGER</b>	Never start the machine spindle or move a machine axis while installing the adapter plate, chuck body assembly, clamping set or attachments!
	<b>CAUTION</b>	It is necessary to check at regular intervals that all fastening screws on the adapter plate as well as the chuck body assembly and accessories are tight.
	<b>IMPORTANT</b>	When aligning, do not hit areas with low wall thickness.
	<b>IMPORTANT</b>	If necessary, carry out the assembly with 2 employees or with suitable lifting equipment.
	<b>IMPORTANT</b>	Before inserting a workpiece, make sure that all contact surfaces are free of contamination, scratches, damage and burrs.
	<b>IMPORTANT</b>	Opening sealed screws is not allowed. When opened, the warranty expires, the clamping repeatability and the clamping force can be reduced.

The machine connection of a MicroCentric chuck body assembly rotating application is made with an adapter plate. In the case of a MicroCentric chuck body assembly non-rotating application (vice), the machine connection is made with a base plate / machine table.

The configuration corresponds to the specifications when ordering the MBS system and is compatible with the spindle end / machine table on one side and the chuck body assembly on the other. Consult the drawings of the clamping unit (= order drawing) to familiarize yourself with the components before installation.

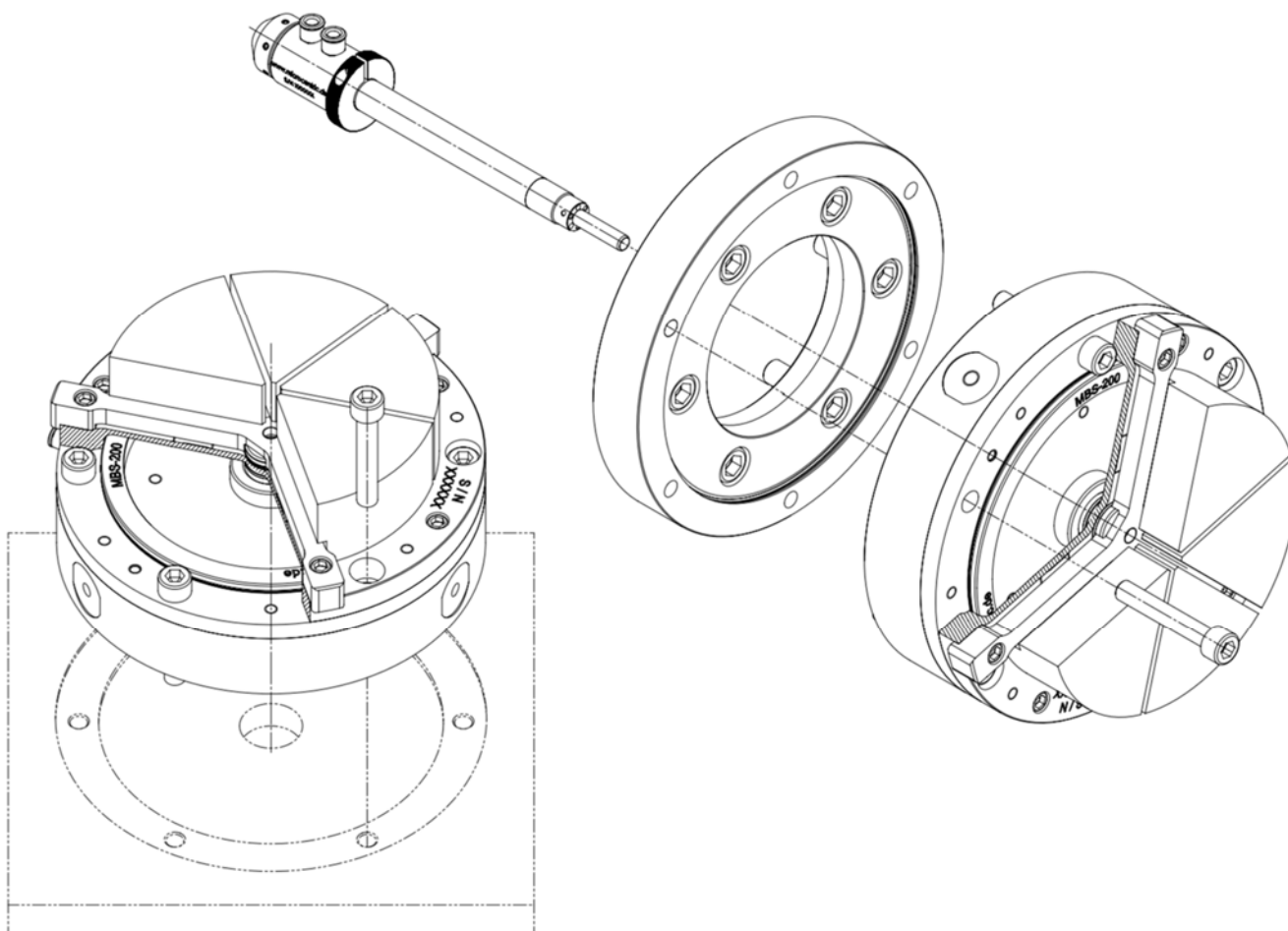
If you make the machine connection yourself, please refer to the design instructions in chapter 5.3.

Depending on the series, an assembly aid or a special key is required for the assembly of the chuck body assembly, which can be seen from the order-specific drawings.

Depending on the series and the scope of the options, an assembly aid or a special key is required for assembly and replacement of the clamping set, which can be seen from the order-specific clamping set drawing or a separate operating manual.

If you have any questions about assembly aids or special keys, please contact our technical sales department.

## 6.1 Preparations



The MBS system is supplied with a fully assembled chuck body assembly and clamping set.

The elements of the clamping set are specially designed for the workpiece. The pairing of top jaws, part stop and other options correspond to the information provided when ordering the clamping unit. At the factory, the top jaws, part stop and, if applicable, available options are matched together on the clamping set in order to achieve the best repeatability.

To mount it in your machine, first mount the adapter plate and then the chuck body assembly.

1. Make sure that the separate operating instructions for the attachments required in Chapters 5.1 and 5.2 are attached to the air filter regulator lubricator unit, control unit, actuation valves or foot switches as well as clamping cylinders and air tube according to order-specific documentation.
2. Ensure that the contact surfaces of the spindle, adapter plate and chuck body assembly are free of contaminants, scratches, damage, and burrs that could prevent the adapter plate and chuck body assembly from fitting properly.
3. A dial gauge is required for the alignment of the adapter plate and the chuck body assembly.
4. Make sure that any necessary assembly aids are available.



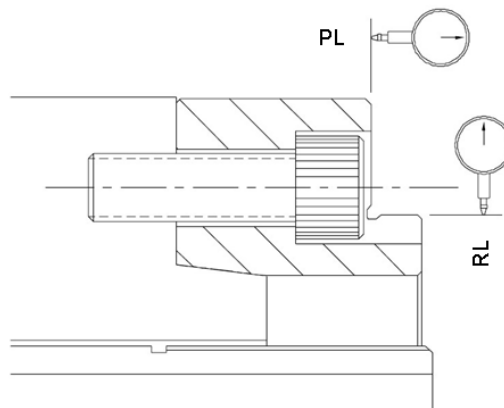
**The use of an air filter regulator lubricator unit consisting of an oiler, filter and pressure reducer is mandatory, otherwise the chuck can suffer serious damage.**

## 6.2 Mounting of the adapter plate

(For items see chapter 5.3.2)

After you have followed the warnings and preparations in Chapters 6 and 6.1, proceed as follows:

1. Mount the adapter plate (pos.1) on the machine spindle and tighten the fastening screws (pos.2) by hand.
2. Use a dial gauge to check the concentricity and axial runout of the mounting surface of the adapter plate and, if necessary, to align it. The concentricity (RL in figure) should not exceed 0.01 mm. The axial runout (PL) of the mounting surface should not exceed 0.005 mm.
3. Tighten the fastening screws evenly until they are tightened with the appropriate torque from the table in Chapter 8.4.
4. If the barrel exceeds these values, remove the adapter plate from the spindle nose and make



**For successful work, the concentricity of the adapter plate should not be worse than 0.01 mm, the axial runout should not be worse than 0.005 mm.**

sure that the dimensions of the adapter plate are in order and the seat of the adapter plate is correct. Repeat from point 1.

5. Furthermore, a small finishing cut can be made on the fitting diameter and the mounting surface of the adapter plate (to the chuck body assembly) to ensure that both surfaces run correctly.



## 6.3 Mounting MBS system rotating application

The MBS system is supplied with a fully assembled chuck body assembly and clamping set.



**Opening sealed screws is not allowed. When opened, the warranty expires, the clamping repeatability and the clamping force can be reduced.**

### 6.3.1 Assembly of chuck body assembly series MBS-L / MBS-DL

(For items see chapters 5.1.2 / 5.1.3)

After you have followed the warnings and preparations in Chapters 6 and 6.1, proceed as follows:

1. Install the adapter plate on the machine spindle in accordance with Chapter 6.2.
2. Insert the chuck body assembly onto the aligned adapter plate and tighten the fastening screws (pos.4) loosely.
3. Align the chuck body assembly radially with the outer diameter of the chuck body (pos.1). Pay attention to the information on the order-specific drawing.
4. Tighten the fastening screws (item 4) evenly until they are tightened with the appropriate torque from the table in chapter 8.4.
5. Install the air tube according to the separate instruction manual.
6. Then carefully connect the air hoses, air filter regulator lubricator unit and control unit as shown in Chapter 5.1.1.
7. Apply the clamping pressure to the MBS system according to the order-specific drawing.

### 6.3.2 Assembly of air tube

Follow the instructions in the separate operating instructions for the air tube.

### 6.3.3 Assembly of chuck body assembly series MBS-Z / MBS-DZ

(For items see chapters 5.1.5 / 5.1.6)

After you have followed the warnings and preparations in Chapters 6 and 6.1, proceed as follows:

1. Position the drawtube with the clamping cylinder on the front layer (clamping set side).
2. Install the drawtube connector (pos.6) on the existing drawtube.
3. Install the adapter plate on the machine spindle in accordance with Chapter 6.3.
4. Screw the pressure piece (pos.2) onto the drawtube connector.
5. Position the drawtube with the clamping cylinder on the rear position (spindle side) with as little force as possible.
6. Insert the chuck body assembly onto the aligned adapter plate and tighten the fastening screws (pos.4) loosely.
7. Align the chuck body assembly radially with the outer diameter of the chuck body (pos.1). Pay attention to the information on the order-specific drawing.
8. Tighten the fastening screws (item 3) evenly until they are tightened with the appropriate torque from the table in chapter 8.4.
9. Apply the clamping force to the MBS system according to the order-specific drawing.

## 6.4 Assembly of MBS system non-rotating application (vice)

The MBS system is supplied with a fully assembled chuck body assembly and clamping set.



**Opening sealed screws is not allowed. When opened, the warranty expires, the clamping repeatability and the clamping force can be reduced.**

For items see chapter 5.2.2)

After you have followed the warnings and preparations in Chapters 6 and 6.1, proceed as follows:

1. (Place the chuck body assembly on the machine table / base plate and tighten the fastening screws (item 4) by hand.
2. Align the chuck body assembly with the outer diameter of the chuck body (pos.1). Pay attention to the information on the order-specific drawing.
3. Tighten the fastening screws (item 4) evenly until they are tightened with the appropriate torque from the table in chapter 8.4.
4. Carefully connect the air hoses, the air filter regulator lubricator unit and the control unit as shown in Chapter 5.2.1.
5. Apply the clamping pressure to the MBS system according to the order-specific drawing.



**In order to maintain a high clamping repeatability in the long term, it is important to keep the top jaws clean and to protect them against rust formation when not in use.**



**Components that appear to require repair should be sent to MicroCentric for professional overhaul.**



## 6.5 Assembly of clamping set

The clamping set is specially adapted to the workpiece. Top jaws, workpiece stops and other optional attachments are designed depending on the respective workpiece. The optional attachments in the clamping set, the design of the chuck body assembly and their pairing correspond to the information provided when ordering the MBS system. Depending on the scope of the options, information on the design, function and assembly can be found in the order-specific drawing or a separate operating manual is enclosed.

In the following, the assembly of a clamping set with basic functions (see chapter 5.4.1) is described.

(For items see chapter 5.4.1)

After you have followed the warnings and preparations in Chapters 6 and 6.1, proceed as follows:

1. Make sure that the chuck body assembly is aligned and it's mounting screws are evenly tightened with the appropriate torque from the table in Chapter 8.4.
2. Position the piston or drawtube on the front layer.
3. Attach a actuating washer (pos.5) with the curved side towards the diaphragm to the seat of the piston or pressure piece with a little grease.
4. Attach the diaphragm (pos.1) to the chuck body with the fastening screws (pos.9) so that the diaphragm has a distance of approx. 2-3 mm from the chuck body. Insert the positioning pin (pos.6) of the diaphragm into the positioning hole in the chuck body and pay attention to the actuation washer on the pressure piece. At the same time, screw in the actuating screw (pos.4) with the second actuation washer (pos.5), curved side towards the diaphragm.
5. Position the piston or drawtube on the rear position with as little force as possible.
6. Tighten the fastening screws (item 9) evenly until they are tightened with the appropriate torque from the table in chapter 8.4. At the same time, tighten the actuating screw with the appropriate torque from the table in chapter 8.4 and position the piston or pull tube with low force in the front-end position. Make sure that the actuation washer is correctly fitted.
7. Adjust the clamping force according to the clamping set drawing and check that the clamping set is working properly. Pay attention to the information on the order-specific drawing.
8. If the desired values are not reached, check that the chuck body assembly is correctly seated.

## 6.6 Assembly of optional attachments

Top jaws, workpiece stops and other optional attachments are designed depending on the respective workpiece. The optional attachments in the clamping set, the design of the chuck body assembly and their pairing correspond to the information provided when ordering the MBS system. Depending on the scope of the options, information on construction, function and assembly can be found in the order-specific drawing or a separate operating manual is enclosed.

## 6.7 Tests

Always check that all fastening screws are tightened after installation. The torques for bolt fasteners from the table in chapter 8.4 must be taken into account.

Further, check that the piston and actuator screw are making the required axial stroke to ensure safe operation of the MBS system.

Pay attention to the information on the order-specific drawing.











In order to maintain a high clamping repeatability in the long term, it is important to keep the top jaws clean and to protect them against rust formation when not in use.

Components that appear to require repair should be sent to MicroCentric for professional overhaul.

## 7. Dismantling

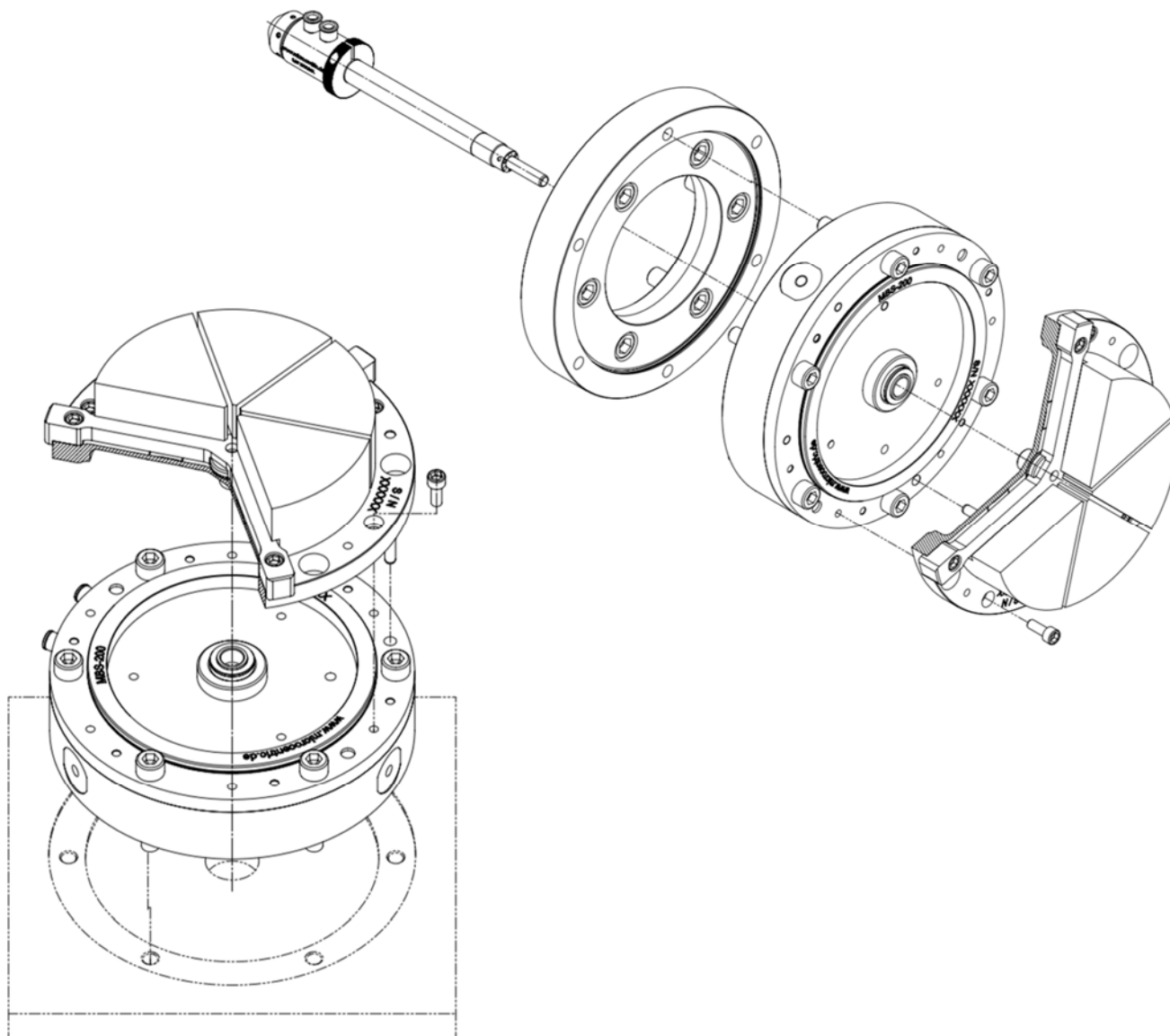
The disassembly of the MBS system is carried out in the reverse order of the assembly described in Chapter 6. Storage is described in Chapter 3.

	<b>DANGER</b>	<b>Never start the machine spindle or operate the turret or move a machine axis while disassembling the chuck body assembly, clamping set or attachments!</b>
	<b>WARNING</b>	<b>To disassemble the order-specific clamping set options, please refer to the order-specific drawing (clamping set) or a separate operating manual.</b>
	<b>CAUTION</b>	<b>Maintenance work with dismantling and reassembly may only be carried out by specially trained employees.</b>
	<b>CAUTION</b>	<b>If the clamping device is disassembled without our consent, we can no longer guarantee the function and thus the safety of the clamping device.</b>
	<b>IMPORTANT</b>	<b>Opening sealed screws is not allowed. When opened, the warranty expires, the clamping repeatability and the clamping force can be reduced.</b>
	<b>IMPORTANT</b>	<b>Chucks that appear to require repair should be sent to MicroCentric for professional overhaul.</b>
	<b>IMPORTANT</b>	<b>All parts are made to match each other. It is therefore of utmost importance that the parts are reassembled in the same place from which they were taken. If necessary, mark the components for this.</b>
	<b>IMPORTANT</b>	<b>If necessary, carry out the dismantling with 2 employees or with suitable lifting equipment.</b>

For the maintenance and care of the MBS system, disassembly in the adapter plate, chuck body assembly and clamping set are provided. Further dismantling of the MBS system can only be carried out by MicroCentric Customer Service.

Top jaws, workpiece stops and other optional attachments are designed depending on the respective workpiece. The optional attachments in the clamping set, the design of the chuck body assembly and their pairing correspond to the information provided when ordering the MBS system. Depending on the scope of the options, information on disassembly can be seen in the drawing or a separate operating manual is enclosed.

## 7.1 Preparation



1. Ensure a clean workplace with enough space to store dismantled parts.
2. Clean parts to be dismantled from chips and production residues with suitable resources (e.g. brush, broom, cloth).
3. Make sure you have all the necessary tools and assembly aids.
4. Make sure that necessary lifting aids are in place.
5. Store removed parts in a suitable container for later use. If necessary, number or mark with permanent marker.
6. Make sure that the separate operating instructions for the attachments required in Chapters 5.1 and 5.2 are available according to order-specific documentation.
7. Check that all the necessary information for disassembling the clamping device has been read and understood.

For the maintenance and care of the MBS system, first disassemble the clamping set, then the air tube, and then the chuck body assembly and the adapter plate.

Depending on the scope of the optional attachments in the clamping set or in the chuck body assembly, information on disassembly can be seen in the drawing or a separate operating manual is enclosed.

## 7.2 Disassembly of the clamping set

After following the preparations in Chapter 7.1 and the warnings, proceed as follows:

(For items see chapter 5.4.1)

1. Position the piston or drawtube in the rear end position (spindle side).
2. Loosen and remove the fastening screws (item 7).
3. Position the piston or drawtube with as little force as possible in the front-end position (clamping set side).
4. Screw-in two screws into the two breaker threads (item A) of the diaphragm, which are used to push the diaphragm off the chuck body assembly. At the same time as screwing in these two screws, loosen the actuation screw (pos.4).
5. Remove the clamping set from the chuck body assembly. Make sure that the actuation washers (item 5) are not lost.



**The top jaws (item 2) and the part stop spider (item 3) must not be removed from the clamping set.**

The optional attachments in the clamping set, the design of the chuck body assembly and their pairing correspond to the information provided when ordering the MBS system. Depending on the scope of the options, information on disassembly can be seen from the drawing (clamping set) or a separate operating manual is enclosed.

## 7.3 Disassembly of MBS system rotating application

### 7.3.1 Disassembly air tube

When disassembling the air tube, follow the instructions in the separate operating instructions.

### 7.3.2 Disassembly chuck body assembly series MBS-L / MBS-DL

After you have followed the warnings and preparations in Chapters 7 and 7.1, proceed as follows:

(For items see chapters 5.1.2 / 5.1.3)

1. Disassemble the clamping set.
2. Depressurize the chuck body assembly.
3. Disassemble the air tube.
4. Loosen the fastening screws (pos.4) and remove except for one screw.
5. Pick up the chuck body assembly with a suitable hoist and secure it against falling.

6. Remove the last screw.
7. Lift the chuck body assembly out of the machine with a suitable hoist and place it safely.  
Make sure that the sealing rings (item 5) are not lost.
8. Clean the assembly and check for damage.

Disassembly of adapter plate according to chapter 7.5

### **7.3.3 Disassembly of chuck body assembly series MBS-Z**

After you have followed the warnings and preparations in Chapters 7 and 7.1, proceed as follows:

(For items see chapters 5.1.5 / 5.1.6)

1. Disassemble the clamping set.
2. Position the drawtube in the rear end position (spindle side).
3. Depressurize the MBS system.
4. Loosen the fastening screws (pos.3) and remove except for one screw.
5. Pick up the chuck body assembly on the chuck body (item 1) with a suitable hoist and secure it against falling.
6. Remove the last screw.
7. Lift the chuck body assembly on the chuck body (item 1) out of the machine with a suitable hoist and place it safely. Make sure that its sealing rings are not lost.
8. Turn the pressure piece (pos.2) counterclockwise down from the drawtube connector (pos.6) of the clamping cylinder. If necessary, loosen and remove the fastening screws between the pressure piece and the drawtube connector.
9. Clean the assembly and check for damage.

Disassembly of adapter plate according to chapter 7.5

### **7.4 Disassembly of MBS system non-rotating application (vice)**

After you have followed the warnings and preparations in Chapters 7 and 7.1, proceed as follows:

(For items see chapter 5.2.2)

1. Disassemble the clamping set.
2. Depressurize the chuck body assembly.
3. Loosen and remove the fastening screws (item 4).
4. Remove the chuck body assembly from the machine with a suitable hoist and place it safely.
5. Clean the assembly and check for damage.

Disassembly of adapter plate according to chapter 7.5

### **7.5 Disassembly of adapter plate**

After following the preparations in Chapter 7.1 and the warnings, proceed as follows:

(For items see chapter 5.3.2)

1. Disassemble the clamping set and the chuck body assembly.
2. Loosen and remove the fastening screws (item 2).
3. Remove the adapter plate from the machine with a suitable hoist and place it safely.
4. Clean the adapter plate and check for damage.

## 8. Care and Maintenance

The service life of your clamping device can be significantly extended by careful and regular care. The following pointers will help you.

Care and maintenance of the order-specific clamping set options can be found in the order-specific drawing or a separate operating manual.



**Follow the instructions from Chapter 7 Disassembly. Additional dismantling is only permitted for disposal purposes and may only be carried out by trained personnel.**



**Heavy contamination of the clamping device can lead to a reduction in clamping force and even a loss of clamping force.**



**Maintenance work, including dismantling and reassembly, may only be carried out by specially trained employees.**



**If the clamping device is disassembled without our consent, we can no longer guarantee the function and thus the safety of the clamping device.**

### 8.1 Cleaning

A prerequisite for achieving concentricity and axial runout tolerances is not only the error-free assembly of the clamping device but also the cleanliness of the clamping- and stop surfaces. Therefore, the areas in contact with the workpiece must be handled carefully and regularly cleaned of chips and dirt with suitable resources.

### 8.2 Maintenance

As part of the maintenance, we recommend the following measures:

Daily:

Visual inspection / cleaning of parts in contact with the workpiece /  
instructions according to chapter 8.3 Activities after the end of production

Weekly:

Check all fastening screws for tightness / clean the clamping device and lightly oil or  
grease after cleaning

Monthly:

Dismantling of clamping set and chuck body assembly.  
Clean the clamping device and lightly oil or grease it after cleaning.

Miscellaneous:

If the machine is operated dry, the clamping device should be protected against rust during  
prolonged standstill (e.g., company holidays)

### 8.3 Post-production activities

1. Make sure that the machine spindle on the machine tool is not started, the turret is not actuated and no machine axis is moved.
2. Open the safety door.
3. Operate the chuck body assembly to bring the clamping device into the open position.
4. Remove the workpiece.
5. Depressurize the MBS system.
6. Clean the chuck body assembly and attachments with suitable resources (e.g. brush, broom, cloth) from chips and production residues and lightly oil them.
7. Close the safety door.

### 8.4 Torques for screw fasteners

Screws with standard threads are installed in the clamping device. The table below shows the indicative values of the bolt tightening torques to be provided for when fastening.

Screw size	Torque	
	Screws 8.8	Screws 12.9
M5	6,0 Nm	10,4 Nm
M6	10,4 Nm	17,9 Nm
M8	25,3 Nm	43,6 Nm
M10	51,0 Nm	88,0 Nm
M12	87,0 Nm	150,0 Nm
M14	139,0 Nm	239,0 Nm
M16	210,0 Nm	360,0 Nm
M20	330,0 Nm	560,0 Nm

Actuating screw inside clamping set Chuck size	Torque
MBS-80	6,0 - 8,0 Nm
MBS-100 to MBS-200	10,0 - 12,0 Nm
MBS-250 to MBS-300	18,0 - 20,0 Nm



## 9. Troubleshooting

### 9.1 Preliminary remark



#### CAUTION

In all cases where the clamping device or accessories work abnormally or not at all, please contact our technical sales department to avoid injury or damage.

### 9.2 Troubleshooting

This manual is intended to identify common causes of problems and eliminate potential difficulties. For further assistance, please contact our technical sales department.

Problem	Possible Cause (see table below)
Not enough clamping force	A, B, C, G
The top jaws move too slowly	A, B, C, G
Poor concentricity of the chuck body and thus of the clamping device	D, E, G
No repeatability	A, B, C, F, G
Insufficient jaw stroke	A, B, C, G

	Possible Cause	Proposal for elimination
A	Insufficient lubrication	Check the filter and lubricator in the air filter regulator lubricator unit and replace them if necessary.
B	Improper assembly	If the interchangeable parts have only recently been dismantled, check whether the assembly has been carried out professionally.
C	Chips - accumulation in chips drain	Disassemble and clean the clamping set so that no chips or dirt are left behind.
D	Fastening screws have come loose	Align the clamping device according to Chapter 6 of the instructions and tighten all fastening screws evenly.
E	Improper chuck assembly on the machine	Inspect the spindle nose and adapter plate for damage and contamination. Check the length and appearance of the fastening screws and tighten them evenly.
F	Damage to the clamping set	Check the individual parts of the clamping set, especially the diaphragm for cracks. Please contact our technical sales department.
G	Wear of the top jaws	Please contact our technical sales department.

### 9.3 Commissioning after a fault has been rectified

After a malfunction, carry out the commissioning of the clamping device using all the steps described in Chapter 6. This is the only way to ensure that the function and safety of the clamping device is perfectly restored.

## 10. Waste disposal and environmental protection

The use of the clamping device provides for the use of lubricants to a small extent. The processing or preservation of the chuck can lead to an accumulation of substances within the system. In this case, please contact a waste management company.

The item and its packaging have been made from valuable materials that can be reused. This reduces waste and protects the environment. If the packaging materials are no longer needed, they must be separated by type of fabric, collected and then disposed of in accordance with local regulations.

If the clamping device is finally taken out of service, the following work must be carried out:



**Preparation for disposal may only be carried out by trained specialists. Care must be taken to ensure that liquids and plastics are disposed of properly.**



**Follow the instructions from Chapter 7 Disassembly. Further dismantling is only permitted for disposal purposes and may only be carried out by trained specialists.**



**For disassembly of the order-specific clamping set options, please refer to the order-specific drawing (clamping set) or a separate operating manual.**

- All clamping devices may contain lubricants in small quantities. First, check to see if there are any liquids in the clamping device. If so, drain liquids, collect them in a suitable container and dispose of them properly in accordance with the legal requirements.
- Disassemble the clamping device professionally in accordance with Chapter 7 Disassembly. The order-specific drawings of the clamping device in the appendix serve as an aid to this.
- Dismantle plastic parts (e.g., seals) installed on the clamping device and dispose of them professionally in accordance with the legal requirements.
- Dispose of the metal parts of the clamping device separately according to material types (steel, aluminum, bronze) as scrap metal.

Alternatively, you can return the clamping device to our address for proper disposal.

## 11. Supplementary documents and drawings

Drawings and BOMs are attached to the operating manual after order confirmation.

## Notes



MicroCentric Corp • 25 So. Terminal Drive, Plainview, NY 11803 USA

Tel: 516-349-7220 • Fax: 516-349-9354 • e-mail: [sales@microcentric.com](mailto:sales@microcentric.com)

*1-800-573-1139*

*[www.microcentric.com](http://www.microcentric.com)*