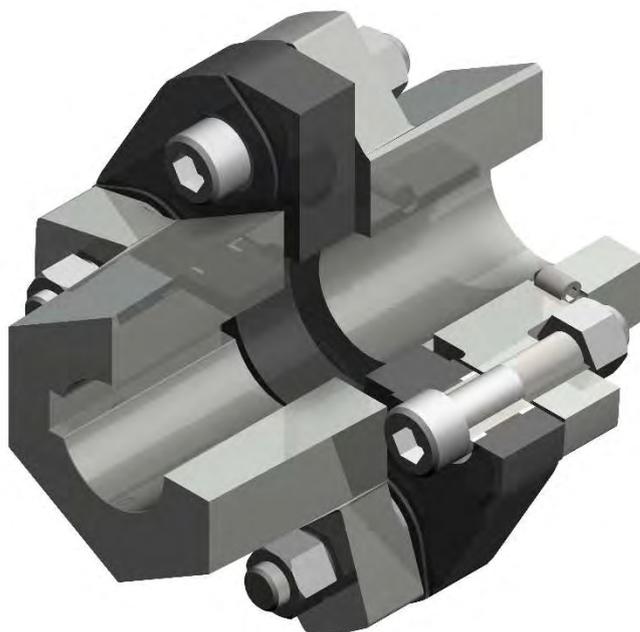


# **Operating and Assembly Instructions**

**HexaFlex  
Type 313.xx**



S

**Doc-ID: T24.0102\_e  
as of: 12/2021**

**Read these operating instructions  
before starting any kind of work!**

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# 1. General

## 1.1. Information about these instructions

These instructions enable safe and efficient handling of the HexaFlex type 313.xx clutch, hereinafter referred to as clutch.

These instructions are a part of the clutch and must be kept in the immediate vicinity of the clutch and be accessible to staff at all times. Staff must read and understand these instructions carefully before beginning any work. Compliance with all safety instructions stated in these instructions constitute the basic requirement for safe working practices.

In addition, local accident prevention regulations and general safety rules apply to the application area of the combination.

## 1.2. Explanation of symbols

### Warnings

All warnings in these operating instructions will be indicated by a warning symbol.

The following warning symbols are used throughout these operating instructions:

Symbol	Meaning
	General warning
	Danger of crushing!
	Danger of environmental pollution
	General instructions and useful suggestions on handling

### Safety precautions

The safety instructions are indicated in these instructions by symbols. The safety instructions are introduced by signal words that are intended to indicate the extent of the danger.

The warning symbol also indicates the type of danger.

The following warnings are used throughout these instructions:

	<b>⚠WARNING</b>
	<p><b>Risk of injury!</b></p> <p>Consequences upon non-observance of the instructions...</p> <p>▶ In order to avoid these...</p>

A warning of this category indicates a potentially dangerous situation.

If the dangerous situation is not avoided, it may lead to serious injury or even death.

Follow the instructions in this warning to avoid the danger of serious injury to persons or even death.

	<b>⚠CAUTION</b>
	<p><b>Injury to persons due to...!</b></p> <p>Consequences upon non-observance of the instructions...</p> <p>▶ In order to avoid these...</p>

A warning of this category indicates a potentially dangerous situation.

If the dangerous situation is not avoided, it may lead to light or minor injuries.

Follow the instructions in this warning to avoid the danger of serious injury to persons.

	<b>ATTENTION</b>
	<p><b>Damage to property due to...</b></p> <p>Consequences upon non-observance of the instructions...</p> <p>▶ In order to avoid these...</p>

A warning of this category indicates potential danger to property.

If the situation is not avoided, it may lead to damage to property.

Follow the instructions in this warning to avoid damage to property.

#### Tips and recommendations

	<b>NOTE</b>
	<p>Descriptive text...</p>

A descriptive text contains additional information that is important for further processing or for simplifying the procedure step explained.

### 1.3. Limitation of liability

All specifications and notes in these instructions were compiled according to all standards and regulations considering the current state of technology and many years of knowledge and experience.

The manufacturer assumes no liability for damages resulting from:

- Upon non-observance of the instructions
- Use for the non-intended purpose
- Deployment of insufficiently qualified staff
- Unauthorized modifications
- Technical modifications
- Use of non-approved spare parts

The commitment as agreed in the delivery contract, the general terms and conditions, the delivery conditions specified by the manufacturer as well as the applicable statutory regulations apply.

We reserve the right to make technical modifications resulting from improvements and further development.

### 1.4. Copyright protection

This documentation is protected by copyright.

The contents and instructions are for internal use only and may not be transferred to a third party, reproduced in any form or manner, either in whole or in part, utilized or communicated without the written permission of the manufacturer.

Infringement obligates damage compensation. We reserve the right to impose further claims.

### 1.5. Spare parts

	<b>▲WARNING</b>
	<p><b>Danger of injury due to wrong or faulty spare parts!</b></p> <p>Incorrect or defective replacement parts can lead to injury, damage, malfunction or total breakdown.</p> <p>► Use original spare parts from the manufacturer only.</p>

<b>NOTE</b>	
<b>i</b>	<p>The use of spare parts other than original Mönninghoff spare parts or use of spare parts not purchased directly from Maschinenfabrik Mönninghoff GmbH &amp; Co. KG invalidates all commitments of Maschinenfabrik Mönninghoff GmbH &amp; Co. KG or its dealers such as guarantee, service contracts etc. without prior notice.</p> <p>► Obtain spare parts from authorized dealers or directly from the manufacturer. See page 7 for the address.</p>

## 1.6. Guarantee conditions

The guarantee conditions are included in the general terms and conditions of the manufacturer.

## 1.7. Customer service

Technical information is available from our customer service department.

### **Maschinenfabrik Mönninghoff GmbH & Co. KG**

Burgstraße 35

Postfach 101749

D – 44867 Bochum

D – 44717 Bochum

Telephone: +49 (0) 2327 3033 - 0

Email: [service@moenninghoff.de](mailto:service@moenninghoff.de)

Internet: [www.moenninghoff.de](http://www.moenninghoff.de)

Moreover, our employees are always interested in new information and experiences, which result from the use of our products or can lead to the improvement of our products.

1.8. Declaration of Incorporation

**Declaration of Incorporation**

**according to EC Machine Directive 2006/42/EC,**

**Annex II B**

Name of the manufacturer: **Maschinenfabrik Mönninghoff GmbH & Co. KG**

Address of the manufacturer: **Maschinenfabrik Mönninghoff GmbH & Co. KG  
Burgstraße 35  
D - 44867 Bochum**

We hereby declare that the product

Model: HexaFlex

Type 313.xx

Project no.:

are intended for installing into a system/machine. Startup is not permitted until it is determined that the system/machine in which this HexaFlex is installed, complies with the requirements of the EC directives.

The following harmonized standards were applied:

**DIN EN ISO 12100** Safety of machinery - General principles for design - Risk assessment and risk reduction

Full technical documentation is available.

The corresponding operating instructions for the machine/machine part are available.

- in their original version and
- in the national language of the user in their original version and in the national language of the user

Bochum,  
07.04.2022

Signature.....  
Managing director: Dipl.-Kfm. Bodo Finger

## 2. Safety

### 2.1. General aspects

This section provides an overview on all safety aspects for optimum protection of staff during assembly and startup as well as safe and trouble-free operation.

<b>⚠WARNING</b>	
	<p><b>Danger due to failure to observe the safety instructions!</b></p> <p>Failure to observe the safety and instructions listed in these assembly instructions can lead to considerable danger.</p> <p>▶ Always pay attention to all warnings and instructions specified here.</p>

### 2.2. Staff requirements

#### 2.2.1. Qualifications

<b>⚠WARNING</b>	
	<p><b>Risk of injury due to insufficient qualification!</b></p> <p>Improper use can result in considerable damage to persons or property.</p> <p>All activities shall only be performed by <b>qualified</b> staff.</p>

The following qualifications are stated in the operating instructions for various different fields of activities.

- **Instructed person**  
was given instruction by the operator on his/her assigned tasks and possible dangers resulting from improper conduct.
- **Specialist staff**  
is able to carry out assigned work tasks as well as recognize and prevent possible dangers based on his/her technical training, knowledge and experience, including knowledge of applicable regulations.

Only those staff members are permitted who can be expected to reliably perform their task. Those staff members whose responsiveness is affected by substances such as drugs, alcohol or medication shall not be permitted.

<b>NOTE</b>	
	<p>Observe all age and occupational regulations at the location of the electromagnetic tooth clutch when selecting staff!</p>

### 2.2.2. Unauthorised persons

	<b>⚠WARNING</b>
	<p><b>Danger due to unauthorized persons!</b></p> <p>Unauthorized persons who do not fulfil the requirements described here, are not familiar with the dangers in the work area.</p> <ul style="list-style-type: none"> <li>▶ Do not permit unauthorized persons to be in the vicinity of the work area.</li> <li>▶ In case of doubt, approach the persons and instruct them to leave the work area.</li> <li>▶ Do not continue with work while the unauthorized person is in the vicinity of the work area.</li> </ul>

### 2.3. Intended use

The clutch was conceived and constructed exclusively for connecting shafts.

The clutch may only be used according to the technical data and operating conditions defined by the manufacturer, see the section **“Technical Specifications”** as well as **“Setup and method of function”**.

The following temperature ranges are permitted for operating the clutch:

- Ambient temperature - 40°C to +60°C
- Surface temperature on the flexible disc - 40°C to +90°C

	<b>⚠WARNING</b>
	<p><b>Danger due to use for other than the intended purpose!</b></p> <p>Any use other than for the intended purpose of the clutch can lead to dangerous situations.</p> <ul style="list-style-type: none"> <li>▶ Only use the clutch for its intended purpose.</li> <li>▶ All information contained in these operating instructions must be strictly complied with.</li> </ul>

The operator is liable for all damage caused from use for other than the intended purpose.

## 2.4. Technical modifications

NOTE	
<b>i</b>	In order not to endanger the operational safety of the clutch, unauthorized modifications and alterations <b>are prohibited!</b>

## 2.5. Personal protective equipment

To minimize health risks during work, it is necessary to wear personal protective equipment.

- The protective equipment corresponding to the work being carried out must be worn at all times.
- Pay attention to all notices on personal protective equipment within the work area.

### Only wear

The following must be worn for all work:

	Close-fitting protective clothing with a low tear strength and no protruding parts. These clothes are principally designed to protect against being caught by moving machine parts.  Do not wear rings, bracelets or other jewellery.
	Goggles to protect the eyes from flying parts and liquids
	Protective footwear with steel caps and oil-resistant soles

## 2.6. Specific dangers

The following section specifies residual hazards identified during risk assessment

Pay attention to the safety instructions and warning notes specified in following sections of these operating instructions in order to reduce the risk of damage to health and avoid dangerous situations.

Moving components

	<b>⚠CAUTION</b>
	<p><b>Risk of injury due to moving parts!</b></p> <p>Rotating and/or linearly moving parts can cause injury.</p> <ul style="list-style-type: none"> <li>▶ Do not reach into moving parts with your hands or tamper with these parts during operation.</li> <li>▶ Do not open the covers during operation.</li> <li>▶ Wear close-fitting protective clothing in the danger zone.</li> </ul>

## 2.7. Signs

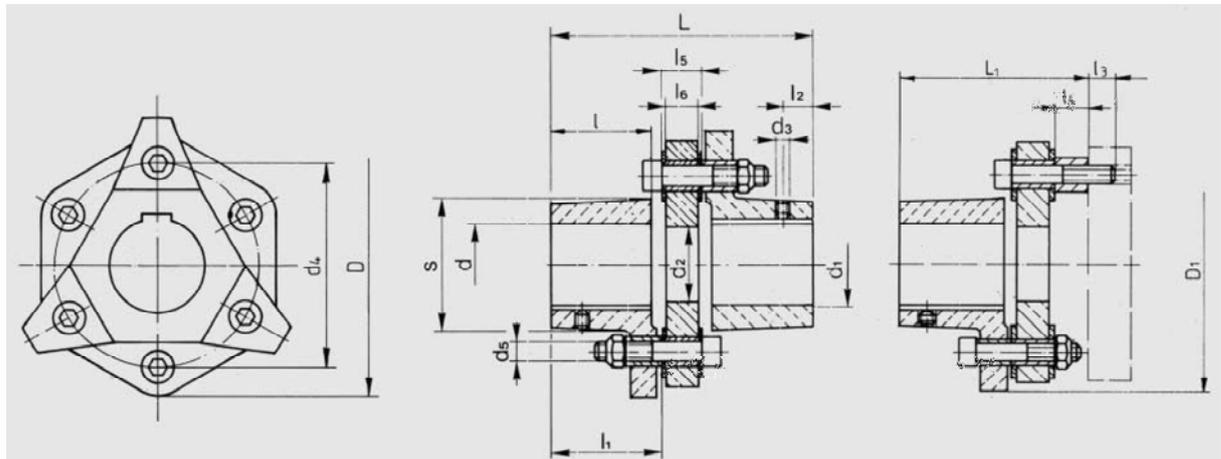
The following symbols and signs are located in the working area. These apply to the area immediately surrounding where they are mounted.

	<b>⚠WARNING</b>
	<p><b>Risk of injury due to illegible symbols!</b></p> <p>Due to dirt or other causes, stickers and signs can become illegible.</p> <ul style="list-style-type: none"> <li>▶ All safety, warning and operating instructions must remain legible.</li> <li>▶ Damaged signs or stickers must be replaced immediately.</li> </ul>

### 3. Technical Specifications

Type X.1

Type X.0



Size		32	38	48	60	70	98
Torque [Nm]	$T_{kNenn}$ type X.1	100	200	350	800	1200	2250
	$T_{kmax.}$ type X.1	200	400	640	1250	1800	4500
	$T_{kNenn}$ type X.0	100	200	350	800	1100	2250
	$T_{kmax.}$ type X.0	200	270	400	930	1100	2500
Alternating torque [Nm]	$T_{kWechsel}$	100	200	300	600	700	1500
Max. rotating speed [rpm]	n	7100	6400	5200	4500	3800	2700
Moment of inertia [ $10^{-3}$ kg m <sup>2</sup> ]	l type X.1	1.1	2.1	4.1	11.1	22.7	191
	l type X.0	0.9	1.8	3.2	8.9	17.9	109
Weight [kg]	m type X.1	1.1	1.7	2.7	4.7	7.1	42.5
	m type X.0	0.8	1.2	1.9	3.3	4.8	22.5
Angle of twist at $T_{kNenn}$ [°]		2.5	1.5	1.5	2.5	1.5	1.5
Max. diffraction angle [°]		3	3	2	2	2	2
Torque [Nm]	$T_A$	49	60	69	150	150	300
Bore diameter d, d1 H7; groove n.DIN6885/1 [mm]	min.	14	19	22	24	30	40
	max.	32	38	48	60	70	95

Dimensions [mm]	D	101	120	143	162	195	244
	D <sub>1</sub>	100	118	145	170	200	250
	d <sub>2</sub>	39	39	63	65	70	112
	d <sub>3</sub>	M5	M6	M6	M8	M8	M8
	d <sub>4</sub>	75	85	106	120	140	200
	D <sub>5</sub>	M10	M10	M10	M16	M16	M24
	L	103	125	136	198	232	286
	L <sub>1</sub>	76	88	93.5	137	155.5	198
	l	40	50	55	80	95	120
	l <sub>1</sub>	43.5	53.5	59	84	99.5	125
	l <sub>2</sub>	11	20	20	30	40	50
	l <sub>3</sub>	12.5	15.5	15.5	22	19	27
	l <sub>4</sub>	16.5	16.5	16.5	23	23	36
	l <sub>5</sub>	16	18	18	30	33	36
	l <sub>6</sub>	16	18	18	27	28	36
	S <sub>6</sub> -kt	51	60	74	86	100	150

<b>i</b>	<b>NOTE</b>
	Obtain further technical data from the assembly drawing. The assembly drawing can be requested from the manufacturer.

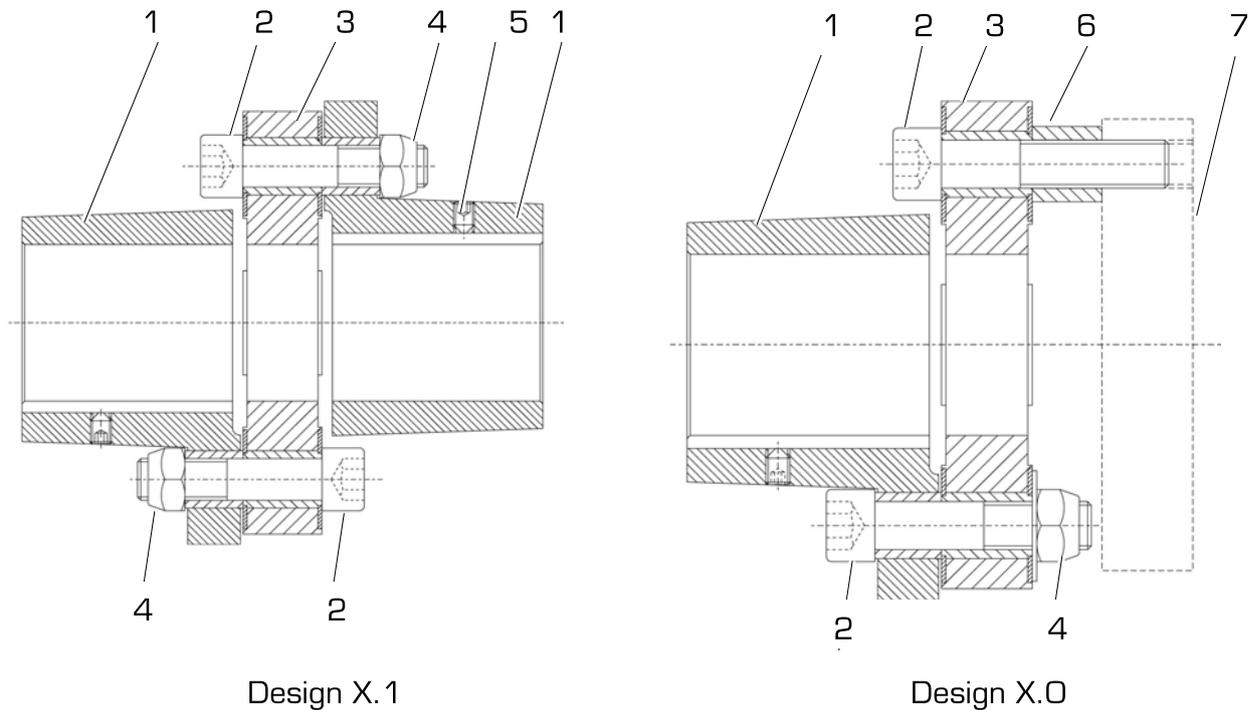
### 3.1. Connection dimensions, connection fixings

Refer to the assembly drawing for connection dimensions and information on connection fixings.

<b>i</b>	<b>NOTE</b>
	The assembly drawing can be requested from the manufacturer.

## 4. Setup and method of function

### 4.1. Setup



1	Flanged hubs	5	Threaded pin
2	Fixing screw	6	Spacing sleeve
3	Flexible disc	7	Customer connection part
4	Nut		

Figure 1: sectional drawing and individual parts

## 4.2. Description

### 4.2.1. Features

Mönnighoff HexaFlex are connecting couplings. A cardan flexible disc serves as a central element. The HexaFlex are distinguished by the following characteristics:

- Compensation of axial, radial and angular displacements
- Suitable for clockwise and counter-clockwise and alternating load operation
- High transmittable torques
- High absorption of torque peaks

### 4.2.2. Media resistance

The clutches do not have special corrosion protection.

The following must be observed with respect to media resistance of the flexible disc:

- The surrounding medium of a flexible disc in operation must be air.
- There is no resistance to oil and fuel.
- There is sufficient resistance to weather and ozone.

### 4.3. Functional method

The clutch connects input and output shaft like a cardan joint.

The shaft flanged hubs attached to both shaft ends are fixed to the shaft by threaded pins.

The flanged hubs are screwed to the flexible disc with high-strength screws. This connection is force locking and therefore wear free.

#### **Design X.0**

The customer connection part is directly screwed to the flexible disc using spacing sleeves.

## 5. Transport, packaging and storage

### 5.1. Safety instructions for transport

#### Improper transport

	<b>ATTENTION</b>
	<p><b>Damage due to improper transport!</b></p> <p>Improper transport can cause considerable damage.</p> <ul style="list-style-type: none"> <li>▶ When unloading the packaged items after delivery, as well as during in-house transport, proceed with care and pay attention to the symbols and instructions on the packaging.</li> <li>▶ Protect the clutch against heavy knocks as well as all types of force during transport.</li> <li>▶ Avoid strong ambient temperature fluctuations to prevent formation of condensation.</li> <li>▶ Remove the packaging immediately prior to installation.</li> </ul>

## 5.2. Transport inspection

The delivery should be checked immediately for completeness and for transport damage.

NOTE	
<b>i</b>	Failure to observe the following instructions will invalidate claims to the insurer for damage.

In the event of obvious visible transport damage, proceed as follows:

- Even if damage is only suspected, sign receipt of delivery (e.g. on the shipping document) with corresponding information under reservation.
- Determine and adhere to deadlines for submission of claims.
- Report the insurance claim immediately to the insurer and provide him with complete documentation of the damage as soon as possible (however, at the latest before possible exclusion and/or limitation periods for compensation claims against third parties expire) to enable acceleration of the claim processing procedure.

NOTE	
<b>i</b>	Register any claim as soon as a defect is detected. Claims for damage can only be accepted within the valid reclamation period.

## 5.3. Packaging

### Regarding the packaging

The individual packages are packed according to the expected transport conditions. Environmentally compatible materials have been used exclusively for packing.

Packaging should protect the individual components from transport damage, corrosion and other damage up until installation. For this reason, do not destroy the packaging and remove it only just prior to installation.

### Handling packing material

The packaging protects the device against damage during transit. The packing materials were selected according to environmental and waste disposal aspects and can therefore be recycled.

Recycling the packaging material for further use saves raw materials and reduces waste. When no longer required, dispose of the packaging materials according to local environmental regulations.

## 5.4. Removing from the packaging

Carefully remove the individual parts of the clutch from the packaging.

## 5.5. Storing the packaged items

Anticorrosion oil was applied to clutch parts, which are not protected against corrosion. In addition, the clutch must be stored in the original packaging.

Check the corrosion protection when the duration of storage exceeds six months. If the corrosion protection was removed during control of received goods, conservation should be renewed (e.g., with Tectyl 472 from Valvoline).

Packages must be stored under the following conditions:

- Do not store outdoors.
- Store at a dry and dust-free location.
- Do not expose to aggressive media.
- Protect against solar radiation.
- Avoid mechanical shocks and damage.
- Storage temperature: +5 to +45 °C.
- Relative humidity: max. 60 pc.
- When storing for longer than 3 months, check the general condition of all parts and the packaging regularly.

<b>NOTE</b>	
	It is possible that instructions for storage are on the packaging that go beyond the stated requirements. Follow these instructions accordingly.

## 6. Installation

### 6.1. Safety

#### Staff

Installation and initial startup may only be carried out by specifically-trained specialist staff.

#### Personal protective equipment

Wear the following protective equipment during all work on installation and initial startup:

	<p>Close-fitting protective clothing with a low tear strength and no protruding parts. These clothes are principally designed to protect against being caught by moving machine parts.</p> <p>Do not wear rings, bracelets or other jewellery.</p>
	<p>Goggles to protect the eyes from flying parts and liquids</p>
	<p>Protective footwear with steel caps and oil-resistant soles</p>

#### Improper installation and initial startup

	<p style="text-align: center;"><b>⚠ CAUTION</b></p>
	<p><b>Risk of injury due to improper installation and initial startup!</b></p> <p>Improper installation and initial startup can lead to personal injury or material damage.</p> <ul style="list-style-type: none"> <li>▶ Before beginning work, make sure that sufficient installation workspace is available.</li> <li>▶ Be careful when handling exposed, sharp-edged components.</li> <li>▶ Pay attention to tidiness and cleanliness at the workplace! Parts and tools lying around or on top of each other can be sources of accidents.</li> <li>▶ Parts must be properly installed. Adhere to the specified screw torques.</li> </ul>

## 6.2. Preparations

Before installation, check the following points:

- The clutch should not show any deformation, scratches and other damage indicating that it was dropped.

## 6.3. Setup

### Instructions on assembly

The clutch is supplied in individual parts with the shaft bore as requested by the customer.

The flanged hubs are not balanced.

In the event of finished bores from the customer, the following concentricity and axial run-out tolerances must be adhered to:

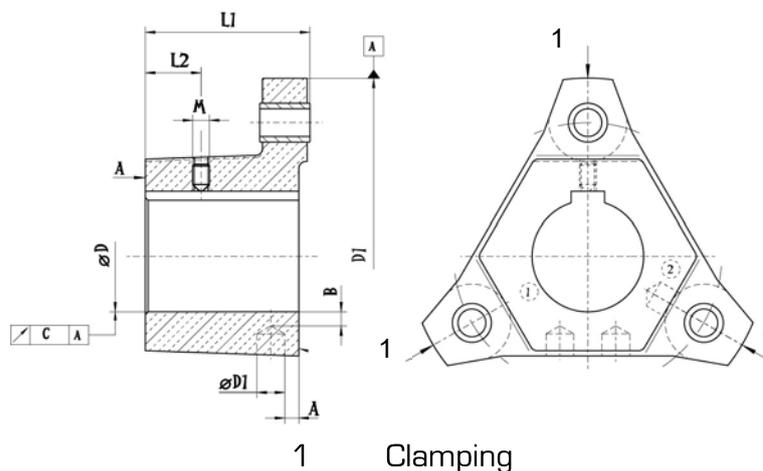


Figure 2: sizes 32-70

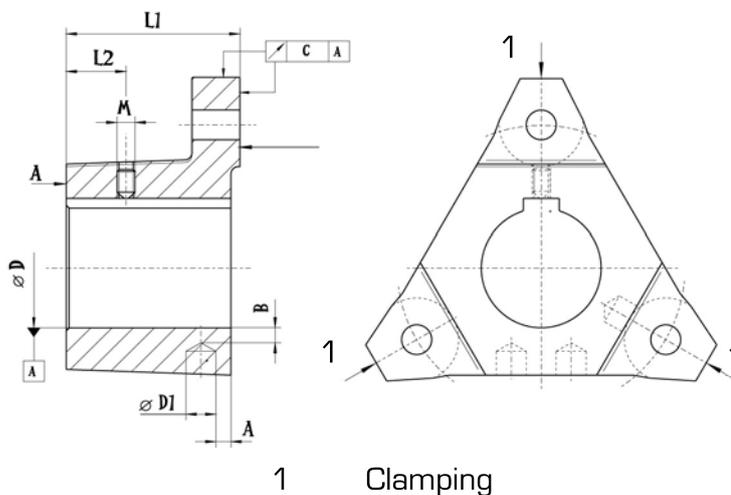


Figure 3: size 98

Size	32	38	48	60	70	98
$\varnothing d_{\max.}$	32	38	48	60	70	100
$\varnothing d_{\max.}$	10	10	10	10	10	14
l1	43.5	53.5	59	84	99.5	125
l2	11	20	20	30	40	50
a <sub>min.</sub>	5	5	6	8	10	10
b <sub>min.</sub>	3	3	4	6	6	6
c	0.04	0.04	0.05	0.05	0.06	0.06

Clamp the flanged hubs simultaneously at the marked positions.

### 6.3.1. Assembling the clutch

Check the parts for completeness, dimensional stability and damage. Check the bore of the flanged hubs for burrs and eliminate them if necessary.

Clean the shaft ends and bores thoroughly.

NOTE	
<b>i</b>	<p>The shaft fitting should be h7 to j6</p> <p>The bore fitting of the hollow shaft for the shaft is H7 by default.</p>

ATTENTION	
	<p><b>Damage due to improper, forced assembly!</b></p> <p>Improper, forceful assembly can cause considerable damage to property.</p> <ul style="list-style-type: none"> <li>▶ Never forcefully strike or press the flanged hub onto the shaft!</li> <li>▶ Installation of the flexible disc must take place without tension.</li> </ul>

NOTE	
<b>i</b>	<p>If the "m" screw assembly dimension cannot be adhered to for installation reasons, the fixing screws for the flexible disc must be inserted into the flanged hubs before pushing them on the shafts.</p>

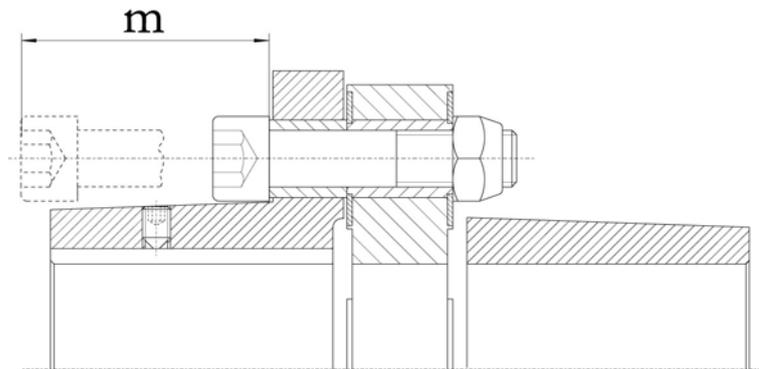


Figure 4

Size	32	38	48	60	70	98
m [mm]	55	60	60	86	91	124

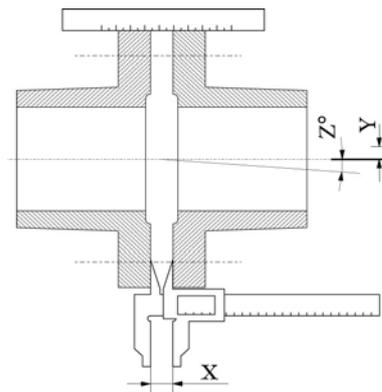
Design X.1

Figure 5

- Push the flanged hubs onto the shaft ends.
- Align both flanged hubs to each other over the outer diameter so that the radial, axial and angular displacement is as small as possible. At the same time, adhere exactly to dimension "X".

Size	32	38	48	60	70	98
Y [mm]	0.7	0.4	0.4	0.3	0.3	0.3
Z [°]	3	3	2	2	2	3
X [mm]	16	18	18	30	33	36

- Fix the flanged hubs onto the shaft with the threaded pins.
- Screw the flexible disc to the flanged hubs. Pay attention to the tightening torques (see section "**Technical Specifications**").

#### Design X.O:

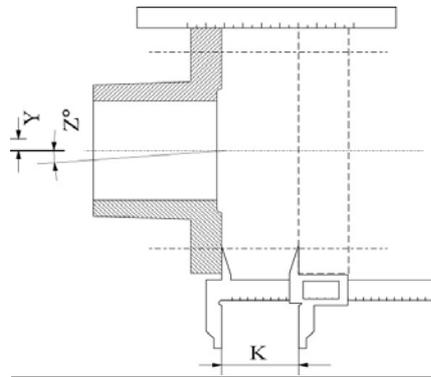


Figure 6

- Push the flanged hub onto the shaft end.
- Align both flanged hubs to each other over the outer diameter of the triangular flange so that the radial, axial and angular displacement is as small as possible. At the same time, adhere exactly to dimension "K".

Size	32	38	48	60	70	98
Y [mm]	0.7	0.4	0.4	0.3	0.3	0.3
Z [°]	3	3	2	2	2	3
X [mm]	32.5	34.5	34.5	53	56	72

- Fix the flanged hub to the shaft with the threaded pin.
- Screw the flexible disc to the flanged hub. Pay attention to the tightening torques (see section "Technical Specifications").
- Insert the screws for fixing to the customer connection part through the associated holes in the flexible disc.
- Push on the spacing sleeve and screw the flexible disc to the customer connection part.

## 7. Startup

### Danger due to rotating components

	<b>⚠ CAUTION</b>
	<p><b>Damage to persons due to moving components!</b></p> <p>Rotating components can cause injury.</p> <ul style="list-style-type: none"> <li>▶ Never reach into the area of the rotating clutch and shafts!</li> <li>▶ Protect the clutch against unintentional access during operation!</li> <li>▶ Mount a suitable protective cover.</li> </ul>

- Check for correct assembly of all components before startup of the clutch.
- Perform a trial run to test the function of the clutch.

	<b>NOTE</b>
	<p>A strong development of noise is an indication of inadequate alignment of the clutch or subsequent settling of the input or output.</p> <p>In this case, stop the trial run <b>immediately</b> and check the installation positions, installation dimension and alignment.</p>

- After 3 hours trial running under normal operating conditions, check the screw connections. Pay attention to the tightening torques (see section "**Technical Specifications**") in order to obey the specified tightening torques
- The clutch can be put into continuous operation after checking for proper function.

## 8. Operation

### 8.1. General aspects

The clutch operates fully automatically after startup. Manual intervention is only required for cleaning and fault rectification.

### 8.2. Recommendations for operation

Pay attention to all relevant safety and accident prevention regulations for the place of operation during operation.

Only operate the clutch according to the protective requirements in DIN VDE 0580.

Operation of the clutch is only permitted under the conditions stated in sections 2, 3 and 4.

#### Danger due to rotating components

	<b>⚠ CAUTION</b>
	<p><b>Damage to persons due to moving components!</b></p> <p>Rotating components can cause injury.</p> <ul style="list-style-type: none"><li>▶ Never reach into the area of the rotating clutch and shafts!</li><li>▶ Protect the clutch against unintentional access during operation!</li></ul>

To protect against inadvertent contact and heavy contamination, the rotating clutch must be covered with a hood.

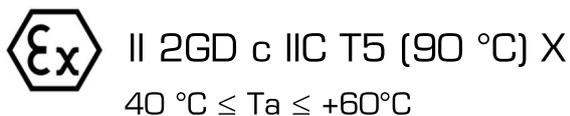
## 9. Usage in potentially explosive areas



### 9.1. Lablling

The HexaFlex 313 clutches fulfill the requirements on non electrical devices of device group II, category 2G and/or 2D (summarized: 2GD) and the requirements of temperature class T6 (or max. surface temperature of 80°C) and explosion group II C.

The following Ex marking is derived in accordance with the EN 13463-1 and 13463-5 standards:



This means in the Ex marking:

- |           |  |
|-----------|--|
| II        | Device of device group II 'Not Mining'.  |
| 2GD       | The product fulfills the requirements of device category 2G (use in zone 1, risk of explosion from combustible gases or vapours or mist from combustible liquids) and/or 2D (use in zone 21, risk of explosion from combustible dust). |
| c         | Explosion protection is ensured by the use of explosion protection 'c' (protection by constructive safety).  |
| IIC       | The HexaFlex 313 clutches may only be used in potentially explosive areas, in which the explosion risk is caused by materials of explosion group IIC (includes explosion groups IIA and IIB).  |
| T5 (90°C) | The HexaFlex 313 clutches fulfill the requirements of temperature class T5, at the permitted ambient temperatures of -40 °C to +60 °C, the surface temperature is maximum 90 °C.   |
| X         | The X in the marking indicates that particular attention must be paid to special conditions when operating the HexaFlex 313 clutches.  |

### 9.2. Special conditions for safe use

- The HexaFlex 313 clutches may only be used when their materials are resistant to mechanical and / or chemical influence or corrosion under the corresponding operating conditions so that an explosion is impossible.
- The HexaFlex 313 clutches must be integrated into the equipotential bonding of the system and grounded.

9.3. EC Declaration of Conformity

**EC Declaration of Conformity**

**according to EC directive 94/9/EC**

Name of the manufacturer: **Maschinenfabrik Mönninghoff GmbH & Co. KG**

Address of the manufacturer: **Maschinenfabrik Mönninghoff GmbH & Co. KG  
Burgstraße 35  
D - 44793 Bochum**

We hereby declare that the product HexaFlex

**Type 313.xx**

fulfills the essential health and safety requirements for intended use in potentially explosive areas as specified in Annex II of RL 94/9/EC.

We hereby confirm that the documentation has been deposited according to the stipulations of RL 94/9/EC, article 8 (1) b) ii) at the NAMED LOCATION IBExU (EU-Ident. No. 0637) under the no. IB-12-4-009d.

EC type examination certificate: IBExU12ATEXBO11 X

**IBExU**  
Institut für Sicherheitstechnik GmbH  
Fuchsmühlenweg 7  
09599 Freiberg

Bochum,  
07.04.2022

Signature.....  
Managing director: Dipl.-Staatswissenschaftler Kai Neubauer

## 10. Faults

Possible causes of faults and their elimination are described in the following section.

If a fault cannot be eliminated after following the instructions provided, the manufacturer should be contacted, see service addresses on page 7.

### 10.1. Safety

#### Staff

- Faults may only be eliminated by specially trained, qualified staff.

#### Danger due to rotating components

	<b>⚠CAUTION</b>
	<p><b>Damage to persons due to rotating components!</b></p> <p>Rotating components can cause injury.</p> <p>▶ Never reach into the area of the rotating clutch!</p>

#### Personal protective equipment

Wear the following protective equipment during work with the clutch:

	<p>Close-fitting protective clothing with a low tear strength and no protruding parts. These clothes are principally designed to protect against being caught by moving machine parts.</p> <p>Do not wear rings, bracelets or other jewellery.</p>
	<p>Goggles to protect the eyes from flying parts and liquids</p>
	<p>Protective footwear with steel caps and oil-resistant soles</p>

Improperly performed work on elimination of faults**⚠ WARNING****Risk of injury due to improperly performed work on elimination of faults!**

Improperly performed work can cause severe damage to persons and property.

- ▶ Before beginning work, make sure that sufficient installation workspace is available.
- ▶ The following applies to the system in which the clutch will be operated: never disable the safety devices in the system.
- ▶ Pay attention to tidiness and cleanliness at the workplace! Loosely stacked or scattered parts and tools are sources of accident.
- ▶ If components are removed, pay attention to correct assembly; replace all fixing elements and adhere to all screw torques.
- ▶ In the event of malfunctions or irregularities, stop the system and clutch and inform the person responsible. If faults cannot be rectified, contact the service department of the Maschinenfabrik Mönninghoff GmbH & Co. KG.
- ▶ In the event of errors, switch off all electrical connections before determining the fault.

## 10.2. Malfunctions

The following table provides an overview of possible faults and their causes. If there are any uncertainties or questions, consult the manufacturer.

<b>Error</b>	<b>Possible cause</b>	<b>Remedy</b>
Strong noise emission	Incorrect assembly.	Check for correct assembly. If in doubt, contact the manufacturer.
Temperature too high	Incorrect assembly.	Check for correct assembly. Pay attention to the permissible displacement.
Knocks or vibration not absorbed	Flexible disc not correctly assembled	Check for correct assembly. The flexible disc must lie completely flat on the flange.

## 11. Maintenance

### 11.1. Maintenance intervals

Check the clutch for wear in the following intervals:

- after the first 10 hours of operation,
- in the case of single-shift operation: annually,
- in the case of two-shift operation: every six months,
- in the case of three-shift operation: every 4 months,

An increased load on the clutch leads to shorter intervals.

### 11.2. Checking for wear

	<b>⚠ CAUTION</b>
	<p><b>Damage to persons due to rotating components!</b></p> <p>Rotating components can cause injury.</p> <ul style="list-style-type: none"> <li>▶ Only check for wear when the machine is at a standstill!</li> <li>▶ Never reach into the area of the rotating clutch!</li> </ul>

- Check screw connections. See "**Technical Specifications**" section for tightening torques.
- Check alignment of the clutch.
- Check flexible disc for mechanical damage.

<b>i</b>	<b>NOTE</b>
	Deformation or damage that deviates from the initial installation condition of the flexible disc are a result of overloading or inadmissible shaft displacement. Overloading also occurs at large angular displacement.

In the case of repairs, the flexible disc and the screw set must be exchanged and the clutch must be realigned.

<b>i</b>	<b>NOTE</b>
	Store spare parts such as flexible disc and screw sets to keep system downtimes as short as possible in the event of a breakdown.

## 12. Dismantling

When the end of the service life is reached, the clutch must be dismantled and disposed of according to environment regulations, see section "**Disposal**".

If premature dismantling is necessary and the components are to be stored for later use, they must be conserved and packed according to the specifications in section 5.5. All other specifications on storage of the components must also be observed.

### 12.1. Safety

#### Staff

- Dismantling may only be performed by qualified staff.

## 12.2. Dismantling

### Power supply

Before dismantling:

- Switch off the system, in which the clutch is installed and secure against being switched on again.
- Physically disconnect the entire power supply.

Subsequently clean modules and components properly and dismantle in accordance with local occupational safety and environmental protection regulations.

## 12.3. Disposal

If no agreement was made on product return and disposal, please submit dismantled components for recycling:

- Scrap metals
- Submit plastic elements for recycling.
- Sort and dispose of other components according to material characteristics.

<b>ATTENTION</b>	
	<p><b>Environmental damage due to improper disposal!</b></p> <ul style="list-style-type: none"><li>▶ Electrical scrap, electronic components, lubricants and other accessories are subject to special waste handling and must be disposed of by authorized specialist companies only!</li><li>▶ The local authorities or special waste disposal companies can provide information on proper disposal according to environmental regulations.</li></ul>

## 13. Applicable standards, guidelines and regulations

<b>Standard</b>	<b>Designation</b>
DIN 740 - 1	Drive technology; flexible shaft couplings; Requirements; technical delivery conditions
DIN 740 - 2	Drive technology; flexible shaft couplings; Terms and calculation bases
DIN 31000	General principles for safety-conscious design of technical products
VDI 2230 sheet 1	Systematic calculation of heavily loaded screw connections; Cylindrical screw-in connections
DIN VDE 0580	Electromagnetic devices
DIN ISO 1940	Requirements on the balancing quality of rigid rotors
ATEX - Directive 94/9/EC	Directive concerning equipment and protective systems intended for use in potentially explosive areas.