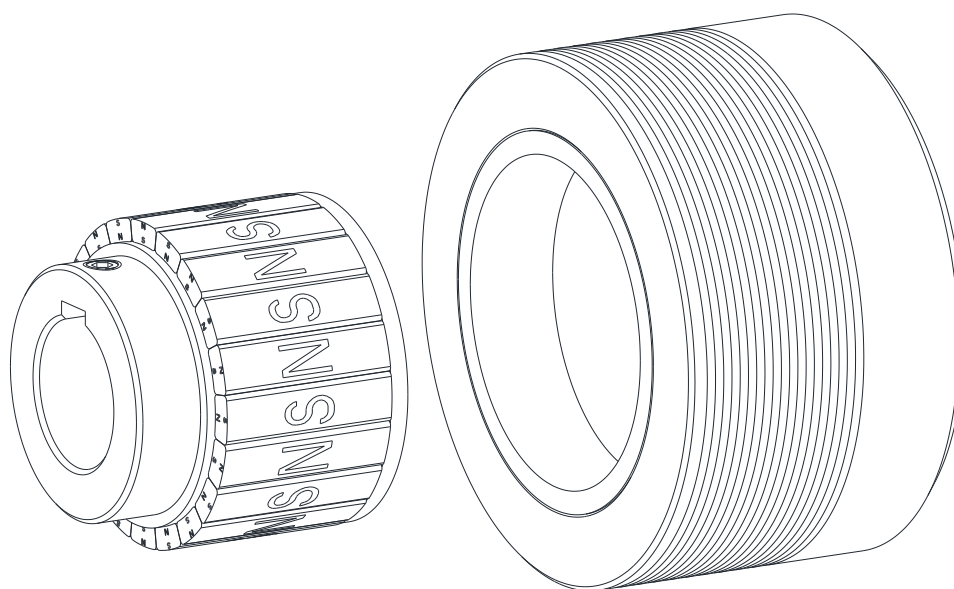




These operating/assembly instructions exclusively apply for types of MINEX®-H.

MINEX®-H hysteresis coupling



Size HA 48/12 to HB 71/20

MINEX®-H is a permanent-magnetic hysteresis coupling which is able to transmit torques without contact through magnetic forces. If used in the overload range, it furthermore provides for reliable torque limitation.

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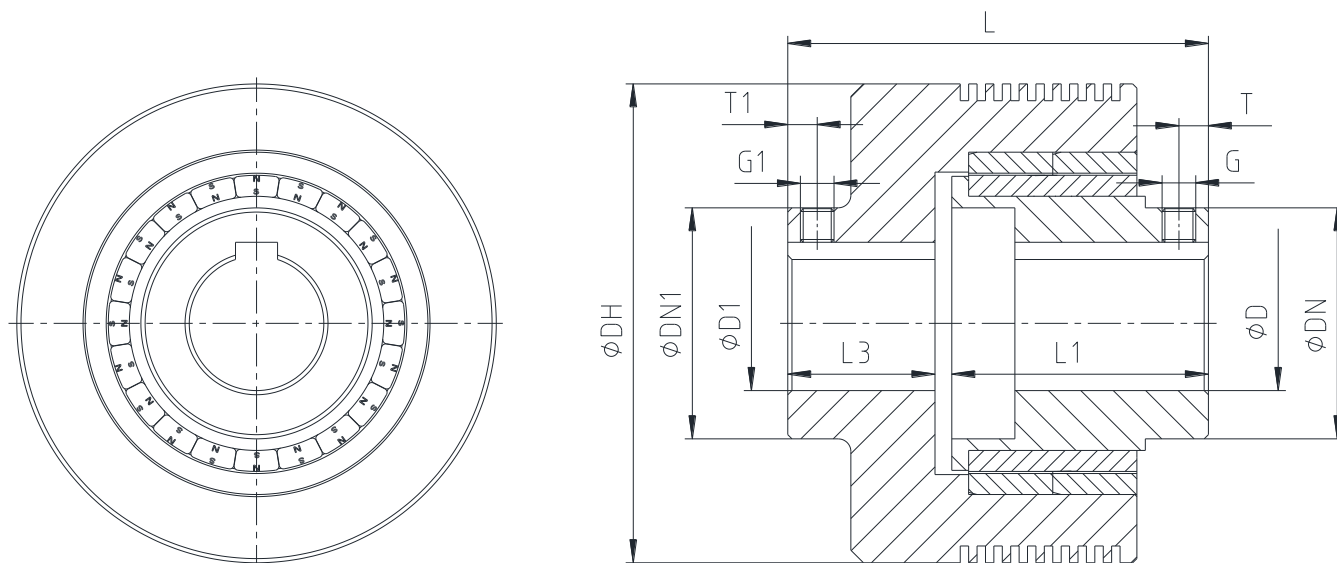
**1 Technical data****1.1 Sizes and dimensions**

Illustration 1: MINEX®-H HA 48/12 to HB 71/20

Table 1: Dimensions - HA 48/12 to HB 71/20

MINEX®-H size	T _K max. in Nm with ~20 °C	Dimensions in mm											
		Finish bore ¹⁾ D, D1		L	L1	L3	DN	DN1	DH	G	G1	T	T1
		min.	max.										
HA 48/12	1.2	5	16	80	41	35	35	35	82	M4	M4	7	7
HB 48/12	2.4			100	61	35	35	35	82	M4	M4	7	7
HA 60/16	2	8	22	80	41	35	45	45	94	M5	M5	7	7
HB 60/16	4			100	61	35	45	45	94	M5	M5	7	7
HA 71/20	3	12	32	80	41	35	55	55	114	M8	M8	7	7
HB 71/20	6			100	61	35	55	55	114	M8	M8	7	7

1) Bores H7 with keyway to DIN 6885 sheet 1 [JS9] and setscrew

1.2 Selection data

Perm. operating temperature: 120 °C

Max. speed: 1800 rpm
Higher speeds are possible on request, if required.

The operation with several max. ratings at the same time must be avoided to undermine operational safety.

The materials of the magnetic coupling result from the application and are bound to the order.

2 Advice

2.1 General advice

Read carefully through these operating/assembly instructions before you start up the coupling. Please pay special attention to the safety instructions!

The operating/assembly instructions are part of your product. Please store them carefully and close to the coupling. The copyright for these operating/assembly instructions remains with KTR.

2.2 Safety and advice symbols



Warning of personal injury

This symbol indicates notes which may contribute to preventing bodily injuries or serious bodily injuries that may result in death.



Warning of product damages

This symbol indicates notes which may contribute to preventing material or machine damage.



General advice

This symbol indicates notes which may contribute to preventing adverse results or conditions.



Warning of hot surfaces

This symbol indicates notes which may contribute to preventing burns with hot surfaces resulting in light to serious bodily injuries.

2.3 General hazard warnings



For people with pacemakers it is dangerous to stay within a distance of 2 m around the MINEX®-H.

With assembly, operation and maintenance of the coupling it has to be made sure that the entire drive train is secured against accidental switch-on. You may be seriously hurt by rotating parts. Make absolutely sure to read through and observe the following safety indications.



A distance of 1 m between MINEX®-H and magnetic data carriers (bank cards, disks, etc.) must be observed. The internal and the external rotor have a strong magnetic field.



Within a distance of 0.5 m around the MINEX®-H uncontrolled handling close to metallic components, sudden mutual attraction of the rotors or magnetizable components may cause injuries or damages on the parts.

- Operations on the MINEX®-H are generally only permitted at standstill and with unpressurized condition.
- All operations on and with the coupling have to be performed taking into account "safety first".
- Make sure to switch off the power pack before you perform your work on the coupling.
- Secure the power pack against accidental switch-on, e. g. by providing warning signs at the place of switch-on or removing the fuse for current supply.
- Do not reach into the operating area of the coupling as long as it is in operation.
- Secure the coupling against accidental contact. Provide for the necessary protection devices and covers.

**2 Advice****2.3 General hazard warnings**

The operator is asked to check within the scope of his safety concept as to which impacts on the environment may be associated with a failure of the magnetic coupling and which additional safety measures protecting people must be taken.

In addition to the advice given in this safety data sheet the general instructions for operational safety and accident prevention must be observed.

2.4 Intended use

You may only assemble, operate and maintain the coupling if you

- have carefully read through the operating/assembly instructions and understood them
- are technically qualified and specifically trained (e. g. safety, environment, logistics)
- are authorized by your company

The coupling may only be used in accordance with the technical data (see chapter 1). Unauthorized modifications on the coupling design are not admissible. We will not assume liability for any damage that may arise. In the interest of further development we reserve the right for technical modifications.

The **MINEX®-H** described in here corresponds to the technical status at the time of printing of these operating/assembly instructions.

2.5 Reference to EC Machinery Directive 2006/42/EC

The couplings supplied by KTR should be considered as components, not machines or partly completed machines according to EC Machinery Directive 2006/42/EC. Consequently KTR does not have to issue a declaration of incorporation. For details about safe assembly, start-up and safe operation refer to the present operating/assembly instructions considering the warnings.



3 Storage, transport and packaging

3.1 Storage



The storage rooms must not include any ozone-generating devices like e. g. fluorescent light sources, mercury-vapour lamps or electrical high-voltage appliances.

Humid storage rooms are not suitable.

Make sure that condensation is not generated. The best relative air humidity is less than 65 %.

A direct contact with metallic components must be avoided.

Direct heat exposure (sun, heating) on the MINEX[®]-H must be avoided.

With the conservation of all units having a MINEX[®]-H installed, the compatibility of the selected preservative with MINEX[®]-H materials must be checked.

3.2 Transport and packaging



In order to avoid any injuries and any kind of damage always make use of proper transport and lifting equipment.

The couplings are packed differently each depending on size, number and kind of transport. Unless otherwise contractually agreed, packaging will follow the in-house packaging specifications of KTR.

4 Assembly

The coupling is supplied in individual parts. Before assembly the coupling must be inspected for completeness.



Make sure the coupling components are not damaged when being unpacked.
The coupling components have a strong magnetic field.

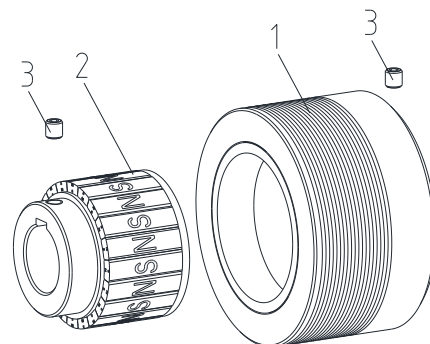
4.1 Components of the coupling

Components of MINEX[®]-H, size HA 48/12 to HB 71/20

Component	Quantity	Description
1	1	External rotor
2	1	Internal rotor
3	2	Setscrew DIN EN ISO 4029 ¹⁾

1) with finish bored type only

Illustration 2:
MINEX[®]-H, size
HA 48/12 to
HB 71/20



**4 Assembly****4.2 Advice for finish bore**

The maximum permissible bore diameters $D/D1$ (see chapter 1 - technical data) must not be exceeded. If these figures are disregarded, the coupling may tear. Rotating particles may cause danger to life.

- Hub bores machined by the customer have to observe concentricity or axial runout, respectively (see illustration 3 and 4).
- Please make absolutely sure to observe the figures for $\varnothing D_{\max.}/\varnothing D1_{\max.}$.
- Carefully align the hubs when the finish bores are drilled.
- Provide for a setscrew according to DIN EN ISO 4029 with a cup point or an end plate to fasten the hubs axially.

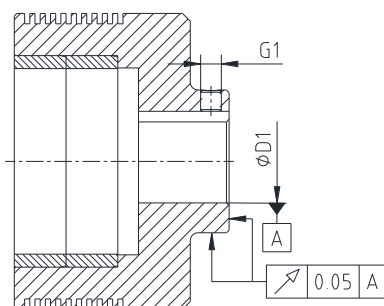


Illustration 3: Concentricity and axial runout on external rotor

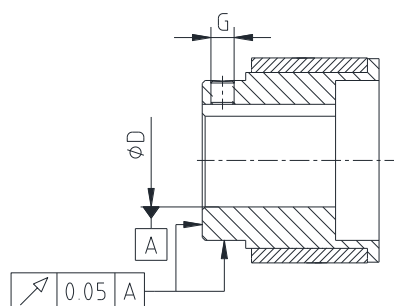


Illustration 4: Concentricity and axial runout on external rotor



The customer bears the sole responsibility for all machining processes performed subsequently on unbored or pilot bored as well as finish machined coupling components and spare parts. KTR does not assume any warranty claims resulting from insufficient remachining.

Table 2: Setscrew DIN EN ISO 4029

Size	48/12	60/16	71/20
Dimension G in mm	M4	M5	M8
Tightening torque T_A in Nm	1.5	2	10

4 Assembly

4.3 Assembly of internal and external rotor



For the assembly we recommend to have the data sheet of the magnetic coupling available. Specifications entered in the dimensional drawing have to be primarily observed.



Impacts and shocks on the coupling components are not permissible. They may cause damages on the components.



We recommend to inspect bores, shaft, keyway and feather key for dimensional accuracy before assembly.

- Mount the hysteresis internal and external rotors on the shafts of driving and driven side.



Heating the internal and external rotor lightly (approx. 80 °C) allows for an easier installation onto the shaft.



Touching the heated hubs causes burns. Please wear safety gloves.

- Observe the distance dimensions of internal and external rotor specified in table 1 and 2. Hereby you ensure that the outer and the inner magnets are aligned on top of each other.



The user must ensure correct alignment of the internal and external rotor.

- Secure the rotors by tightening the setscrews acc. to DIN EN ISO 4029 (see table 2) or by using an end plate and end screw.

4.4 Displacements - alignment of the coupling

The displacement figures specified in table 3 provide for sufficient safety to compensate for external influences like, for example, thermal expansion or foundation settling.



In order to ensure a long service life of the coupling and avoid hazards during use, the shaft ends must be accurately aligned.

Absolutely observe the displacement figures specified (see table 3). If the figures are exceeded, the coupling will be damaged.

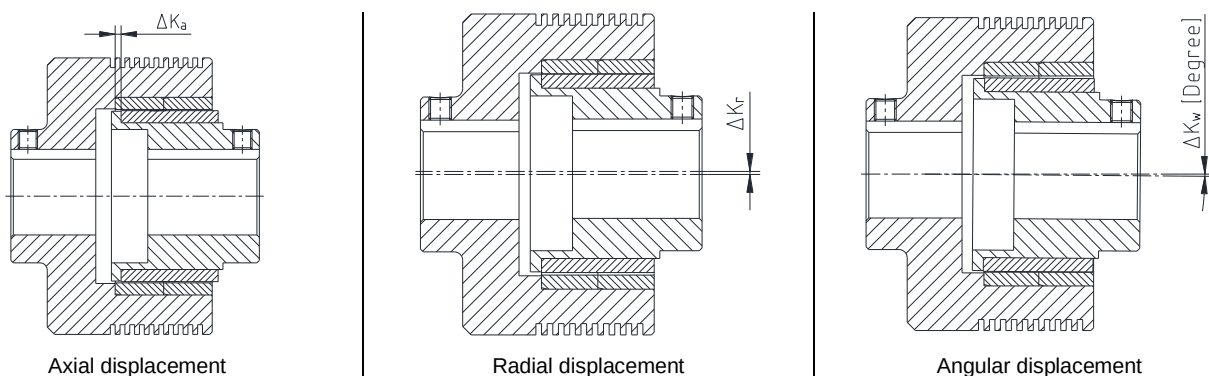
The more accurate the alignment of the coupling, the longer is its service life.

Please note:

- The displacement figures specified in table 3 are maximum figures which must not arise in parallel. If radial and angular displacements arise simultaneously, the permissible displacement figures may only be used proportionally (see illustration 6).
- Inspect with a dial gauge, ruler or feeler gauge whether the permissible displacement figures specified in table 3 can be observed.

4 Assembly

4.4 Displacements - alignment of the coupling



$$\Delta K_w = S_{A2} - S_{A1} \text{ in mm}$$

Illustration 5: Displacements

Examples of the displacement combinations specified in illustration 10:

Example 1:
 $\Delta K_r = 30 \%$
 $\Delta K_w = 70 \%$

Example 2:
 $\Delta K_r = 60 \%$
 $\Delta K_w = 40 \%$

$$\Delta K_{\text{total}} = \Delta K_r + \Delta K_w \leq 100 \%$$

Illustration 6:
Combinations of displacement

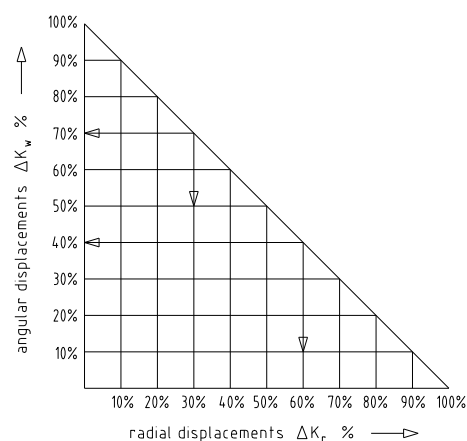


Table 3: Displacement figures

Size	Max. axial displacement ΔK_a in mm	Max. radial displacement ΔK_r in mm	Max. angular displacement	
			ΔK_w in degree	ΔK_w in mm
HA 48/12	± 1	0.15	0.49	0.41
HB 48/12			0.24	0.20
HA 60/16			0.56	0.58
HB 60/16			0.24	0.25
HA 71/20			0.56	0.70
HB 71/20			0.24	0.30

4.5 Disassembly

If you disassemble the magnetic coupling, absolutely observe the instructions that apply for handling hazardous substances and the accident prevention regulations. In case of doubt, gather the necessary information before disassembly.



Observe the warnings and safety instructions.

The disassembly of the magnetic coupling is made in the reverse order of the assembly.

 KTR KTR-Group	MINEX®-H hysteresis coupling Operating/Assembly instructions	KTR-N 46532 EN Sheet: 10 of 12 Edition: 1
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5 Start-up

Before start-up of the coupling, inspect tightening of the setscrews in the hubs, the alignment and adjust, if necessary, and also inspect all screw connections for the tightening torques specified.

Finally the coupling protection against accidental contact must be fitted. It is required in accordance with DIN EN ISO 12100 (Safety of Machinery) and directive 2014/34/EU and must protect against

- access with a little finger
- falling down of solid foreign objects.
- With start-up and after a longer period of standstill it must be tested (by rotating the driving shaft manually) if coupling and power pack can easily be rotated.

Please note:

Before longer periods of standstill liquids tending to solidification, efflorescence, polymerization etc. must be drained from the machine. If necessary, they must be flushed with a suitable liquid.

A troublefree operation of the MINEX®-H can be anticipated if you observe the maximum ratings of operation and the hints given in these instructions.

During operation of the coupling, pay attention to

- different operating noise
- vibrations occurring.



If you note any irregularities with the coupling during operation, the drive unit must be switched off immediately. The cause of the breakdown must be specified by means of the table „Breakdowns“ and, if possible, be eliminated according to the proposals. The potential breakdowns specified can be hints only. To find out the cause all operating factors and machine components must be considered.

Please observe protection note ISO 16016.	Drawn: 2022-03-08 Ka/Brd Verified: 2025-03-10 Ka	Replacing: --- Replaced by:
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6 Breakdowns, causes and elimination

The below-mentioned failures can result in a use of the **MINEX®-H** coupling other than intended. In addition to the specifications given in these operating/assembly instructions make sure to avoid such failures.

The errors listed can only be clues to search for the failures. When searching for the failure the adjacent components must generally be considered.

General failures with improper use:

- Important data for the coupling selection are not forwarded.
- The calculation of the shaft-hub-connection is not considered.
- Coupling components with damage occurred during transport are assembled.
- If the heated hubs are assembled, the permissible temperature is exceeded.
- The clearance of the components to be assembled is not coordinated with one another.
- Tightening torques are fallen below/exceeded.
- Components are mixed up by mistake/assembled incorrectly.
- No original **KTR** components (purchased parts) are used.
- Maintenance intervals are not observed.

Breakdowns	Causes	Elimination
Different operating noise and/or vibrations occurring	Misalignment	1) Set the unit out of operation 2) Eliminate the reason for the misalignment (check the centering of the internal and the external rotor and re-align, if necessary)
	Damaged magnets resulting from faults in assembly	1) Check the rotors for damages on the magnet 2) Replace the rotors and assemble it carefully. Radial guidance must be ensured.



When operating with a worn/defective coupling component proper operation is not assured.

7 Environment and disposal

7.1 Environment

In the interest of the environment our products comply with directive EC 1907/2006 (REACH). Any substances specified in the REACH SVHC list in an impermissible concentration are not used.

7.2 Disposal

In respect of environmental protection we would ask you to dispose of the packaging resp. products on termination of their service life in accordance with the legal regulations and standards that apply. All coupling components consist of metal. Any metal components have to be cleaned and disposed of by scrap metal.

8 Maintenance and service

MINEX®-H is a low-maintenance coupling. We recommend to perform a visual inspection on the coupling **at least once a year**. Pay special attention to the condition of the components in the tight air gap between the magnet rotors.

- Since the flexible machine bearings of the driving and driven side settle with increasing load time, inspect the alignment of the coupling and re-align the coupling, if necessary.
- The coupling components must be inspected for damages.
- The screw connections must be visually inspected.



Having started up the coupling the tightening torques of the screws have to be inspected during the usual inspection intervals.

9 Spares inventory, customer service addresses

We recommend to store major spare parts on site to ensure the readiness for use of the machine in case if a coupling fails.

Contact addresses of the KTR partners for spare parts and orders can be obtained from the KTR homepage at www.ktr.com.



KTR does not assume any liability or warranty for the use of spare parts and accessories which are not provided by KTR and for the damages which may incur as a result.

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