



COMBISTOP N/H/D

INSTRUCTIONS FOR USE | INSTALLATION TYPE 38

Translation of the original manual
Document 20228574 EN 05



Preface

The described devices or add-on parts are products of the KEB Automation KG. The enclosed documents correspond to conditions valid at printing. Misprint, mistakes and technical changes reserved.

Signal words and symbols

Certain operations can cause hazards during the installation, operation or thereafter. There are safety informations in the documentation in front of these operations. Security signs are located on the device or machine. A warning contains signal words which are explained in the following table:

⚠ DANGER	Dangerous situation, which will cause death or serious injury in case of non-observance of this safety instruction.
⚠ WARNING	Dangerous situation, which may cause death or serious injury in case of non-observance of this safety instruction.
⚠ CAUTION	Dangerous situation, which may cause minor injury in case of non-observance of this safety instruction.
NOTICE	Situation, which can cause damage to property in case of non-observance.

RESTRICTION

Is used when certain conditions must meet the validity of statements or the result is limited to a certain validity range.

i	Is used when the result will be better, more economic or trouble-free by following these procedures.
----------	--

More symbols

- ▶ This arrow starts an action step.
- / - Enumerations are marked with dots or indents.
- => Cross reference to another chapter or another page.



Note to further documentation.
www.keb.de/service/downloads



Laws and guidelines

KEB Automation KG confirms with the EU declaration of conformity and the CE mark on the device nameplate or the signing that it complies with the essential safety requirements.

The EC declaration of conformity can be downloaded on demand via our website.

Warranty and liability

The warranty and liability on design, material or workmanship for the acquired device is given in the general sales conditions.



Here you will find our general sales conditions.
www.keb.de/terms-and-conditions



Further agreements or specifications require a written confirmation.

Support

Through multiple applications not every imaginable case has been taken into account. If you require further information or if problems occur which are not treated detailed in the documentation, you can request the necessary information via the local KEB Automation KG agency.

The use of our units in the target products is outside of our control and therefore lies exclusively in the area of responsibility of the customer.

The information contained in the technical documentation, as well as any user-specific advice in spoken and written and through tests, are made to best of our knowledge and information about the intended use. However, they are regarded as being only informal and changes are expressly reserved, in particular due to technical changes. This also applies to any violation of industrial property rights of a third-party. Selection of our units in view of their suitability for the intended use must be done generally by the user.

Tests can only be done within the intended end use of the product (application) by the customer. They must be repeated, even if only parts of hardware, software or the unit adjustment are modified.

Copyright

The customer may use the instructions for use as well as further documents or parts from it for internal purposes. Copyrights are with KEB Automation KG and remain valid in its entirety.

Other wordmarks or/and logos are trademarks (™) or registered trademarks (®) of their respective owners.

Table of Contents

Preface	3
Signal words and symbols	3
More symbols.....	3
Laws and guidelines.....	4
Warranty and liability.....	4
Support	4
Copyright.....	4
Table of Contents	5
List of Figures	8
List of Tables	8
Glossary	9
Standards for mechanical components	10
1 Basic safety instructions	11
1.1 Target group.....	11
1.2 Transport, storage and proper use.....	11
1.3 Installation and mounting.....	12
1.4 Electrical connection	12
1.5 Start-up and operation.....	12
1.6 Maintenance.....	13
2 Product description	14
2.1 Intended use	14
2.2 Residual risks	14
2.3 Improper use.....	14
2.4 Type code	15
2.5 Type code magnet and magnet system.....	16
2.6 Overview COMBISTOP N/H/D Type 38	17
2.7 Functional description	17
3 Technical data	18
3.1 Operating conditions	18
3.1.1 Climatic environmental conditions.....	18
3.1.2 Electrical operating conditions.....	18
3.2 Device data COMBISTOP N/H/D Type 38.....	19
3.2.1 Overview	19
3.3 Dimensions and weights	20
3.3.1 Version without options	20
3.3.2 Version with hand release	21
3.3.3 Version with double brake	22
3.4 Accessories	24
3.4.1 Flange, friction disc	24
3.4.2 Dust protection ring	25

4	Mounting.....	26
4.1	Notes on mounting.....	26
4.1.1	Inspections to be done prior to mounting the brake	26
4.1.2	Observe during mounting.....	27
4.2	Mounting the brake	27
4.2.1	Step 1: Mounting the hub	28
4.2.2	Step 2: Mounting the lining.....	29
4.2.3	Step 3: Mounting the magnetic system	30
4.2.3.1	Check air gap X.....	30
4.3	Microswitch (option)	31
4.3.1	Microswitch as armature position monitoring (default setting)	31
4.3.1.1	Checking the microswitch setting for armature position monitoring	31
4.3.2	Microswitch as wear control	31
4.3.3	Adjustment and change of the microswitch	32
4.3.3.1	Dismounting	33
4.3.3.2	Mounting.....	33
4.3.3.3	Connecting the microswitch	33
4.3.3.4	Adjustment of the microswitch.....	34
5	Electrical connection.....	35
5.1	Connection of the brake	35
5.1.1	AC side switching	36
5.1.1.1	Connection for AC side switching.....	36
5.1.1.2	Connection in the terminal box for AC side switching	37
5.1.2	DC side switching.....	38
5.1.3	DC and AC side switching	39
5.1.4	Protective earth	39
6	Start-up	40
6.1	Inspections prior to start-up of the brake	40
6.1.1	Visual inspection	40
6.1.2	Load-free testing	40
6.1.3	Run in of the brake	40
6.1.3.1	Friction work switching frequency COMBISTOP N, H, D	41
7	Operation.....	42
7.1	Hand release (option).....	42
8	Troubleshooting.....	44

- 9 Maintenance and service 45**
 - 9.1 Maintenance intervals 45
 - 9.2 Service 45
 - 9.2.1 Dismount the brake 45
 - 9.2.2 Check air gap 46
 - 9.2.2.1 Checking the air gap X 47
 - 9.2.3 Readjust air gap 48
 - 9.2.4 Replacing the lining 49
 - 9.2.5 Check the function hand release (option) 49
 - 9.2.5.1 Checking the adjustment dimension 50

- 10 Dismounting and disposal 51**
 - 10.1 Dismounting 51
 - 10.2 Disposal 51

- 11 Certification 52**
 - 11.1 EU declaration of conformity 52
 - 11.2 CSA certificat 54

- 12 Revision history 57**

List of Figures

Figure 1:	Overview COMBISTOP N/H/D Type 38.....	17
Figure 2:	Version without options.....	20
Figure 3:	Version with hand release.....	21
Figure 4:	Version with double brake.....	22
Figure 5:	Flange, friction disc.....	24
Figure 6:	Dimensions dust protection ring.....	25
Figure 7:	Mounting the hub on the motor shaft.....	28
Figure 8:	Consideration of the axial clearance of the motor shaft.....	28
Figure 9:	Mounting the lining.....	29
Figure 10:	Mounting the magnetic system.....	30
Figure 11:	Changing the microswitch.....	32
Figure 12:	Strands for the microswitch.....	33
Figure 13:	Adjustment of the microswitch.....	34
Figure 14:	Connection for AC side switching.....	36
Figure 15:	Connection in the terminal box for AC side switching.....	37
Figure 16:	Connection for DC side switching.....	38
Figure 17:	Connection for DC and AC switching.....	39
Figure 18:	Friction work switching frequency COMBISTOP N, H, D.....	41
Figure 19:	Operation of the hand release.....	42
Figure 20:	Dismount the brake.....	45
Figure 21:	Checking the air gap.....	47
Figure 22:	Adjustment dimension "m" of the hand release.....	50
Figure 23:	EU declaration of conformity.....	53
Figure 24:	CSA certificat.....	56

List of Tables

Table 1:	Type code.....	15
Table 2:	Type code magnet and magnet system.....	16
Table 3:	Ambient temperature.....	18
Table 4:	Construction and degree of protection without options.....	18
Table 5:	Construction and degree of protection with dust protection ring, shaft sealing ring or plug.....	18
Table 6:	Device classification.....	18
Table 7:	Device data COMBISTOP N/H/D Type 38.....	19
Table 8:	Dimensions with double brake.....	23
Table 9:	Dimensions flange, friction disc.....	25
Table 10:	Pre-assembled connection cables.....	35
Table 11:	Run in of the brake.....	40
Table 12:	Actuating forces hand release.....	43
Table 13:	Troubleshooting.....	44
Table 14:	Check air gap.....	46
Table 15:	Check the function hand release.....	49

Glossary

0V	Earth-potential-free common point
1ph	1-phase mains
3ph	3-phase mains
AC	AC current or voltage
Application	The application is the intended use of the KEB product.
AWG	American wire gauge
B2B	Business-to-business
Customer	The customer has purchased a KEB product from KEB and integrates the KEB product into his product (customer product) or resells the KEB product (dealer)
DC	DC current or voltage
DIN	German Institut for standardization
EMC	Electromagnetic compatibility
EN	European standard
End customer	The end customer is the user of the customer product.
FE	Functional earth
GND	Reference potential, ground
IEC	International standard
IP xx	Degree of protection (xx for level)
KEB product	The KEB product is subject of this manual.
Manufacturer	The manufacturer is KEB, unless otherwise specified (e.g. as manufacturer of machines, engines, vehicles or adhesives).
MCM	American unit for large wire cross sections
MTTF	Mean service life to failure
NN	Sea level
PE	Protective earth
PELV	Protective Extra Low Voltage
SELV	Safety Extra Low Voltage (< 60 V)

Standards for mechanical components

VDE 0580	Electro magnetic devices and components
DGUV regulation 3	Electrical installations and equipment
DIN 46228-1	Tubular end-sleeves without plastic sleeve
DIN 46228-4	Tubular end-sleeves with plastic sleeve
DIN IEC 60364-5-54	Low-voltage electrical installations - Part 5-54: Selection and erection of electrical equipment - Earthing arrangements, protective conductors and protective bonding conductors
EN 60204-1	Safety of machinery - Electrical equipment of machines - Part 1: General requirements (IEC 44/709/CDV)
EN 60529	Degrees of protection provided by enclosures (IP Code) (IEC 60529)
EN 60664-1	Insulation coordination for equipment within low-voltage systems - Part 1: Principles, requirements and tests (IEC 60664-1)
EN 60721-3-1	Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities - Section 1: Storage (IEC 104/648/CD)
EN 60721-3-2	Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities - Section 2: Transportation and handling (IEC 104/670/CD)
EN 60721-3-3	Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities; section 3: Stationary use at weatherprotected locations (IEC 60721-3-3)
DIN 748-3	Cylindrical shaft ends - Part 3: For rotating electrical machinery
DIN SPEC 42955	Shaft extension run out and of mounting flanges for rotating electrical machinery, frame size larger then 315 - Tolerances, test
DIN EN 50347	General purpose three-phase induction motors having standard dimensions and outputs - Frame numbers 56 to 315 and flange numbers 65 to 740
DIN 6885-1	Drive type fastenings without taper action, parallel keys, keyways - Deep pattern
DIN 6885-3	Drive type fastenings without taper action, parallel keys, keyways - Low pattern
DIN 332-2	Center holes 60° with thread for shaft ends for rotating electrical machines

1 Basic safety instructions

The following safety instructions have been created by the manufacturer for the area of drive technology. They can be supplemented by local, country-specific or application-specific safety instructions. This list is not exhaustive. Non-observance will lead to the loss of any liability claims.

NOTICE



Hazards and risks due to ignorance.

- ▶ Read the instructions for use!
- ▶ Observe the safety and warning instructions!
- ▶ If anything is unclear, please contact KEB!

1.1 Target group

This manual is determined exclusively for technical staff. Technical staff for the purpose of this manual must have the following qualifications:

- Knowledge and understanding of the safety instructions.
- Skills for installation and assembly, start-up, operation and maintenance of the product.
- Understanding of the function in the used machine.
- Detection of hazards and risks of the drive technology.
- Knowledge about work safety and accident prevention (e.g. *DIN 6885-3*).

1.2 Transport, storage and proper use

The transport is carried out by qualified persons in accordance with the environmental conditions specified in this manual.

Upon delivery the devices are to be checked for visible signs of transport damages. Immediately report transport damages to the transport company and the manufacturer.

Depending on its design and weight appropriate lifting devices must be used for handling.

NOTICE

Damage due to improper storage.

In case of improper storage, no liability is assumed for resulting damages.

Don't storage devices or parts

- in the environment of aggressive and/or conductive liquids or gases.
- with direct sunlight.
- outside the specified ambient conditions.
- in environments that can lead to corrosion and contamination.

1.3 Installation and mounting

NOTICE

Squeezing and pinching of fingers by self-rotation.

- ▶ Before installation, make sure that the drive is load-free.
- ▶ Secure drive against rotation.

Consider the following installation measures to prevent faults

- ▶ Do not operate the brake in an explosive environment.
- ▶ Provide measures against freezing or ice formation on the friction surfaces.
- ▶ Take appropriate measures against high air humidity, aggressive vapours/liquids or similar that lead to corrosion and 'rusting' of the pole surfaces.

1.4 Electrical connection

⚠ DANGER



Electrical voltage at brake and motor!

Danger to life due to electric shock!

- ▶ Any work on the electrical power supply may only be carried out by a qualified electrician.
- ▶ When carrying out any work on the brake, switch off the supply voltage and secure it against switching on.
- ▶ Never bridge upstream protective devices, not even for test purposes.
- ▶ Standard-compliant testing of the protective conductor connection to all touchable metal parts.

1.5 Start-up and operation

The operation must not be started until it is determined that the installation complies with the machine directive; Account is to be taken of [EN 60204-1](#).

⚠ CAUTION

Pay attention to friction work (speed and the frequency of operation)!

Loss or decrease of braking torque!

- ▶ Exceeding the technical specifications can lead to thermal overload of the lining or magnet and to severe signs of wear on the gearing of the hub and lining. This can lead to failure of the brake (=> „[6.1.3.1 Friction work switching frequency type N, H, D](#)“).

⚠ CAUTION**High temperatures due to braking****Burning of the skin!**

- ▶ Cover hot surfaces safe-to-touch.
- ▶ If necessary, attach warning signs on the system.
- ▶ Check the temperature and let the brake cool down if necessary.

⚠ CAUTION**Rotating Parts****Shock or crushing of body parts!**

- ▶ Wear protective goggles against ejected parts and dirt particles, especially during first start-up.
- ▶ Take measures against being pulled into the machine.

NOTICE**Malfunctions of the brake!**

Surrounding magnetic fields or magnetically conductive materials can impair the function of the brake.

1.6 Maintenance

- ▶ Secure the brake against being switched on accidentally during maintenance work.
- ▶ Make the brake load-free during maintenance work to avoid uncontrolled movements.
- ▶ Protection against the ingress of foreign particles into the air gap. These can impede the movement of the rotor and armature.
- ▶ When carrying out maintenance and repair work, the brake must not be energised.
- ▶ The brake lining must not come into contact with cleaning agents or solvents.

In case of malfunction, unusual noises or smells inform a person in charge!

⚠ DANGER**Unauthorized exchange, repair and modifications!****Unpredictable malfunctions!**

- ▶ The brake must not be converted, modified or misused.
- ▶ Only use original manufacturer parts.
- ▶ Infringement will annul the liability for resulting consequences.

2 Product description

The COMBISTOP type 38 brake is an electromagnetically actuated dual-surface spring-applied brake for dry running. The standard series of dual-surface spring-applied brakes are COMBISTOP N and H in two versions.

The brakes are optionally designed for dynamic applications with braking processes at high speed (COMBISTOP N) and for static applications, i.e. braking at low speeds and safe holding of loads (COMBISTOP H).

Using the optional hand release (version 13N/DEN and 13H/DEH), the brake can be manually opened even in the event of a malfunction.

COMBISTOP D stands for double safety and includes a series of double brakes prepared for tasks with redundant brake circuits. The mechanical design with two completely independent safety spring-applied brakes meets the requirements of DIN 56950 (BGV C1).

The brakes are delivered ex works with preset air gaps ready for installation. Extensive design measures reduce switching and running noise to a minimum.

2.1 Intended use

Spring-applied brakes are used to brake rotating masses or to hold shafts.

The operational reliability of the brake is only guaranteed when used according to specified application. In this context, specified application means that the brake is used for the ordered and confirmed purpose.

Any other use is considered a breach of specified application. It may pose unforeseeable risks and is solely and exclusively the responsibility of the operating company.

The technical data and the information on the connection conditions must be taken from the nameplate and the instructions for use and must be observed. Any use beyond the technical specifications is also considered as not specified.

The actual use of the brake in the target products is beyond the control of KEB Automation KG and, therefore, shall be exclusively within the operating company's responsibility.

Restriction

If the product is used in machines which work under exceptional conditions or if essential functions, life-supporting measures or an extraordinary safety step must be fulfilled, the necessary reliability and security must be ensured by the machine builder.

2.2 Residual risks

The brake can overheat or be damaged due to wrong design, improper handling or changed operating requirements. This may lead to failure of the brake.

2.3 Improper use

Improper use exists, if

- the product is operated outside the limit values specified in the technical data.
- unauthorized structural changes have been made to the brake.
- improper repairs have been carried out.
- the product has been incorrectly installed or serviced.

In case of infringements, the brake loses its EU conformity and the liability claims against KEB Automation KG expire.

2.4 Type code

The type designation and the version can be taken from the nameplate or the marking.

x x	3 8	x x	x - x	x x x		
					Variant	Customer versions
					Version	N/DEN: Dynamic application
						H/DEH: Static application
						DDN/ DDH: Double brake ¹⁾
					Hand release	11: Without hand release
						13: With hand release
					Type	COMBISTOP Type 38
					Size	02...11
Table 1: Type code						

¹⁾ Supplied with ready-to-install presetting of the air gaps.



The type code is not used as an order code, but exclusively for identification purposes.



The complete material number is not printed on the brake. Only the magnet is marked with a material number. An assignment of the coupling based on the magnet marking is only possible to a limited extent.

2.5 Type code magnet and magnet system

Magnet designation can be taken from the signing.

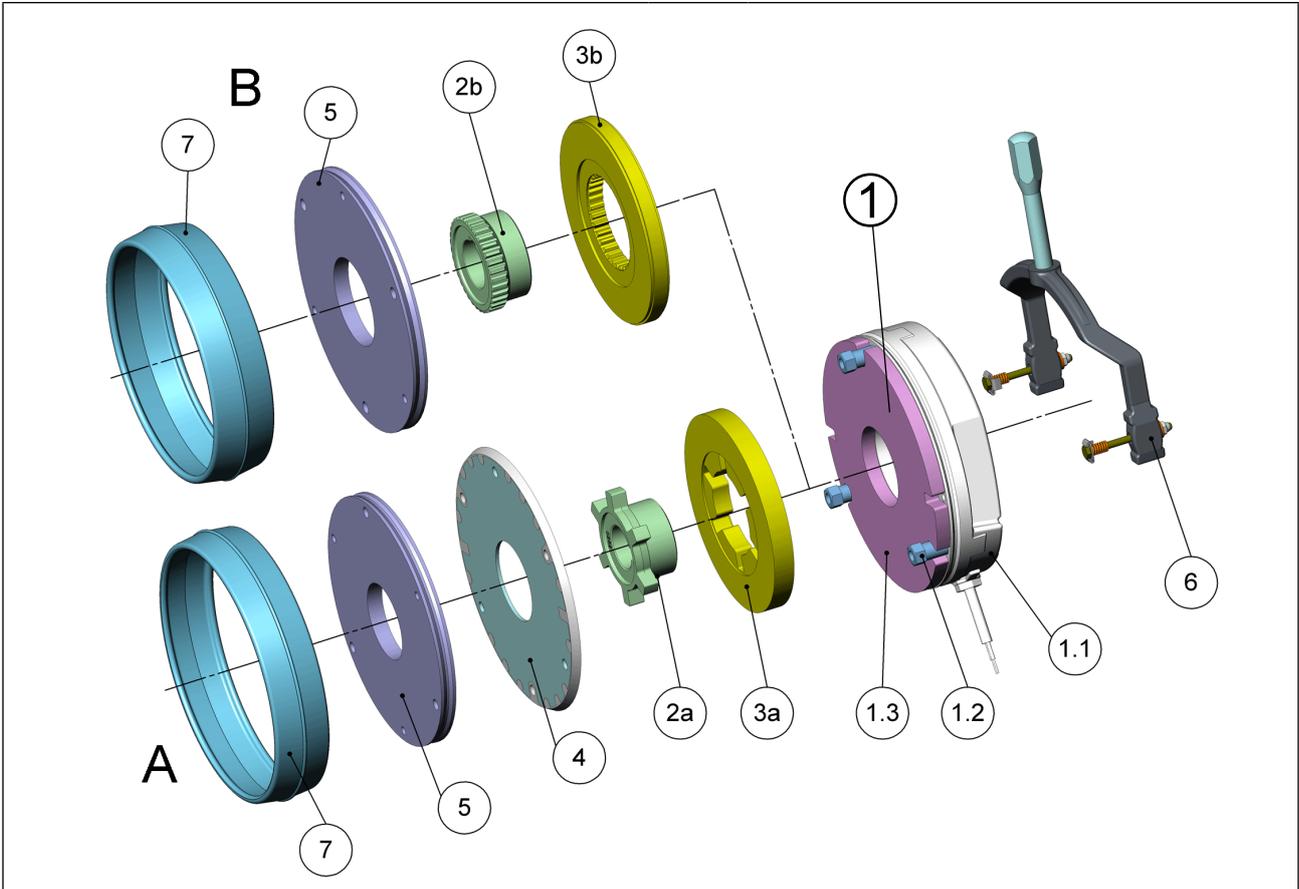
x x	0 3	x x x	-x	x	x	x	x	
								Strands
								Voltage
								Version
								Type
								Size
								Material and length
								e.g. DC 24 V
								100/0NN: Dynamic application
								10H/00H: Static application
								COMBISTOP Type 38
								02...11

Table 2: Type code magnet and magnet system



The type code is not used as an order code, but exclusively for identification purposes.

2.6 Overview COMBISTOP N/H/D Type 38



Legend			
A	Size 02 to 06	2a/2b	Hub
B	Size 07 to 11	3a/3b	Lining
1	Magnet system	4	Friction disc (optional) ¹⁾
1.1	Magnet	5	Flange (optional) ²⁾
1.2	E-piece (adjusting piece)	6	Hand release (optional)
1.3	Armature	7	Dust protection ring (optional)

Figure 1: Overview COMBISTOP N/H/D Type 38

¹⁾ Friction disc optional and alternative to the flange.

²⁾ Flange optional and alternative to the friction disc.

2.7 Functional description

The braking force is generated in de-energised state by pressure springs which press the armature and the lining against the friction surfaces. The lining is twist-proof but can be axially moved while connected to the shaft.

By applying the rated voltage, the coil generates a magnetic field in the magnet, which attracts the armature against the spring force. In this way, the linings are released and the shaft can rotate freely.

After disconnecting the voltage, the armature is de-energised. The pressure springs press the armature against the linings which generate the braking torque on the friction surfaces. This allows for decelerating downstream elements.

3 Technical data

3.1 Operating conditions

3.1.1 Climatic environmental conditions

Operation	Standard	Class	Notes
Ambient temperature	VDE 0580	–	-5...60°C (standard) -40...60°C (CCV: Cold Climate Version)

Table 3: Ambient temperature

Operation	Standard	Installation situation ¹⁾	Class	Notes
Construction and degree of protection	EN 60529	On free machine wall	IP00	Without options
		Under fan cover without hand release	IP66	
		Under fan cover with hand release	IP66	

Table 4: Construction and degree of protection without options

Operation	Standard	Installation situation ¹⁾	Class	Notes
Construction and degree of protection	EN 60529	On free machine wall	IP54	With dust protection ring and shaft sealing ring ¹⁾ or plug
		Under fan cover without hand release	IP55	
		Under fan cover with hand release	IP55	

Table 5: Construction and degree of protection with dust protection ring, shaft sealing ring or plug

¹⁾ The degree of protection of the shaft sealing rings is subject to the respective manufacturer.

3.1.2 Electrical operating conditions

Requirement	Standard	Class	Notes
Overtoltage category	EN 60664-1	III	–

Table 6: Device classification

3.2 Device data COMBISTOP N/H/D Type 38

3.2.1 Overview

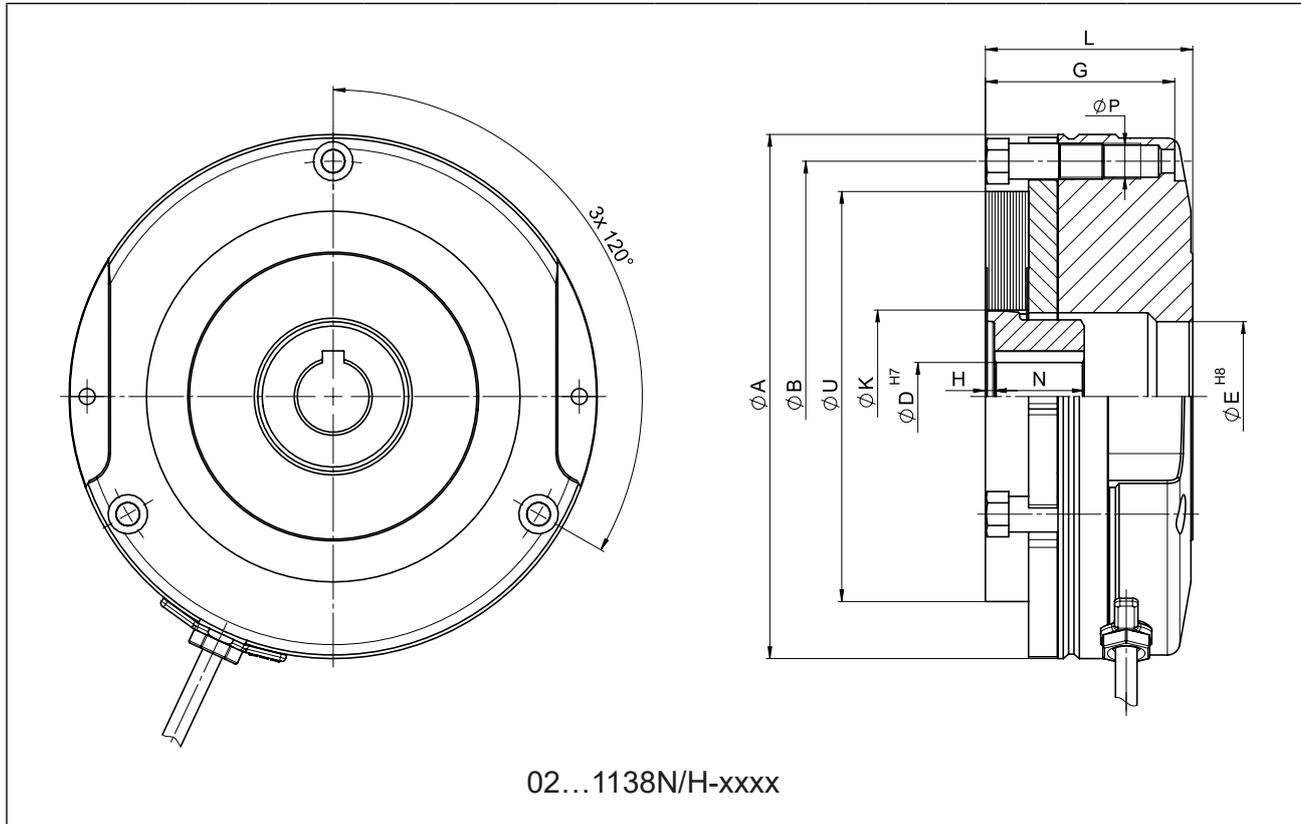
Device size	02	03	04	05	06	07	08	09	10	11
Rated torque N version ¹⁾ M_2 / Nm	6.5	13	25	45	90	130	200	330	665	1335
Rated torque H version ¹⁾ M_2 / Nm	10	20	40	65	120	200	300	500	1000	2000
Rated power N version P_{20} / W	25	30	30	48	62	65	75	80	130	180
Rated power H version P_{20} / W	25	30	30	48	75	90	90	115	180	280
Rated voltage ²⁾ U_{N_dc} / V	24 / 105 / 180 / 205 ³⁾									
Cyclic duration factor $c.d.f. / \%$	100									
Speed for service braking n / rpm	3000							1500		
Max. speed for emergency braking n_{max} / rpm	6000			5000		4500	3500	3000		2000
Mass moment of inertia $J / 10^{-3} \text{kgm}^2$	0.025	0.075	0.227	0.553	0.771	1.84	6.17	17.22	45.28	153.6
Nominal air gap X / mm	0.2				0.3		0.4		0.5	0.6
Switching cycles for half-wave rectifier ⁴⁾ $SC1 / \text{rpm}$	60			25	5			2		1
Switching cycles for bridge rectifier ⁴⁾ $SC2 / \text{rpm}$	120	75	75	50	10			5	3	2
Switching cycles with power box DC $SC3 / \text{rpm}$	55	40	40	25	5			2	1	–
Separation time ⁵⁾ t_2 / ms	40	55	90	110	240	220	320	350	400	750
Separation time with powerbox ⁵⁾ t_2 / ms	20	35	50	60	120	120	150	170	180	–
Response delay AC ⁶⁾ t_{11_ac} / ms	70	100	180	220	260	400	700	900	1400	3100
Response delay DC ⁶⁾ t_{11_dc} / ms	10	15	25	25	25	40	50	60	100	450
Engagig time AC ⁷⁾ t_{1_ac} / ms	100	150	200	240	330	650	900	1200	2000	3500
Engaging time DC ⁷⁾ t_{1_dc} / ms	20	30	50	55	90	120	180	220	300	1000
Feather key	according to DIN 6885-1									
Keyway										
ISO class										

Table 7: Device data COMBISTOP N/H/D Type 38

- ¹⁾ Measured at quasi-static differential speed of 25rpm and 20 °C. Torque tolerance ±25% after conditioning run-in of the friction partners.
The N version can also be ordered with reduced characteristic torques upon request.
- ²⁾ Voltage tolerance ± 10%. Special voltages upon request.
- ³⁾ 105 V/180 V/205 V fall under the Low-Voltage Directive => „11.1 EU declaration of conformity“.
- ⁴⁾ Maximum permissible switching cycles for DC-switching, continuous operation (100 % ED) and max. operating temperature of 80 °C.
- ⁵⁾ Separation time from switching on the current to the beginning of the torque drop. The values are to be regarded as guidelines.
- ⁶⁾ Time from switching off the current until increase in torque. The values are to be regarded as guidelines.
- ⁷⁾ Time from switching off the current until reaching 0.9 x rated torque M_2 . The values are to be regarded as guidelines.

3.3 Dimensions and weights

3.3.1 Version without options



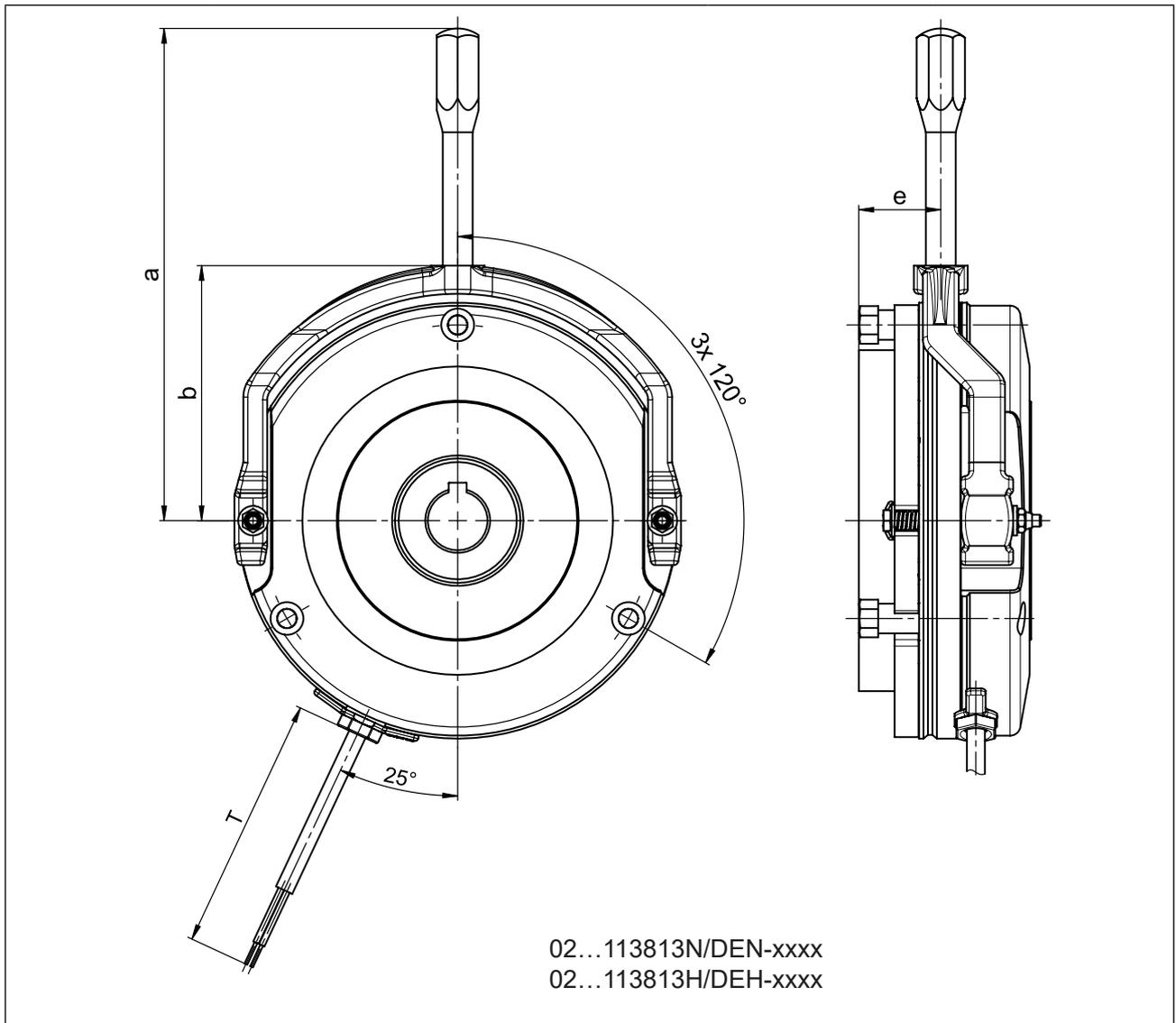
Size	Dimensions / mm											Weight / kg
	A	B	D max.	E	G	H	K	L	N	P	U	3811N/H
02	85	72	15 ¹⁾	22	34.2	1-1.5	22	37.7	18	3x4.2	60	1
03	102	90	20	32	37.2	2-2.5	31	41.7	20	3x5.3	77	1.5
04	127	112	25	38	47.2	2-2.5	37	51.7	20	3x6.5	96	3
05	147	132	30	42	52.7	2.5-3	42	57.7	25	3x6.5	115	4.5
06	164	145	35 ¹⁾	47	59.8	2.5-3	42	68.8	30	3x8.5	115	7
07	190	170	45	62	68	3	57	75.5	30	3x8.5	149	10
08	218	196	60	78	80	4.5	57/76 ²⁾	87.4	35	3x8.5	175	16
09	253	230	60	97	88.2	5	76	101.7	40	3x10.5	206	26
10	307	278	75	120	98.8	9.5	92	110.8	50	6x10.5	252	39
11	363	325	90	140	122.1	—	—	134.5	100	6x12.5	300	80

Figure 2: Version without options

¹⁾ Keyway according to DIN 6885-3.

²⁾ With hub bore > Ø45.

3.3.2 Version with hand release

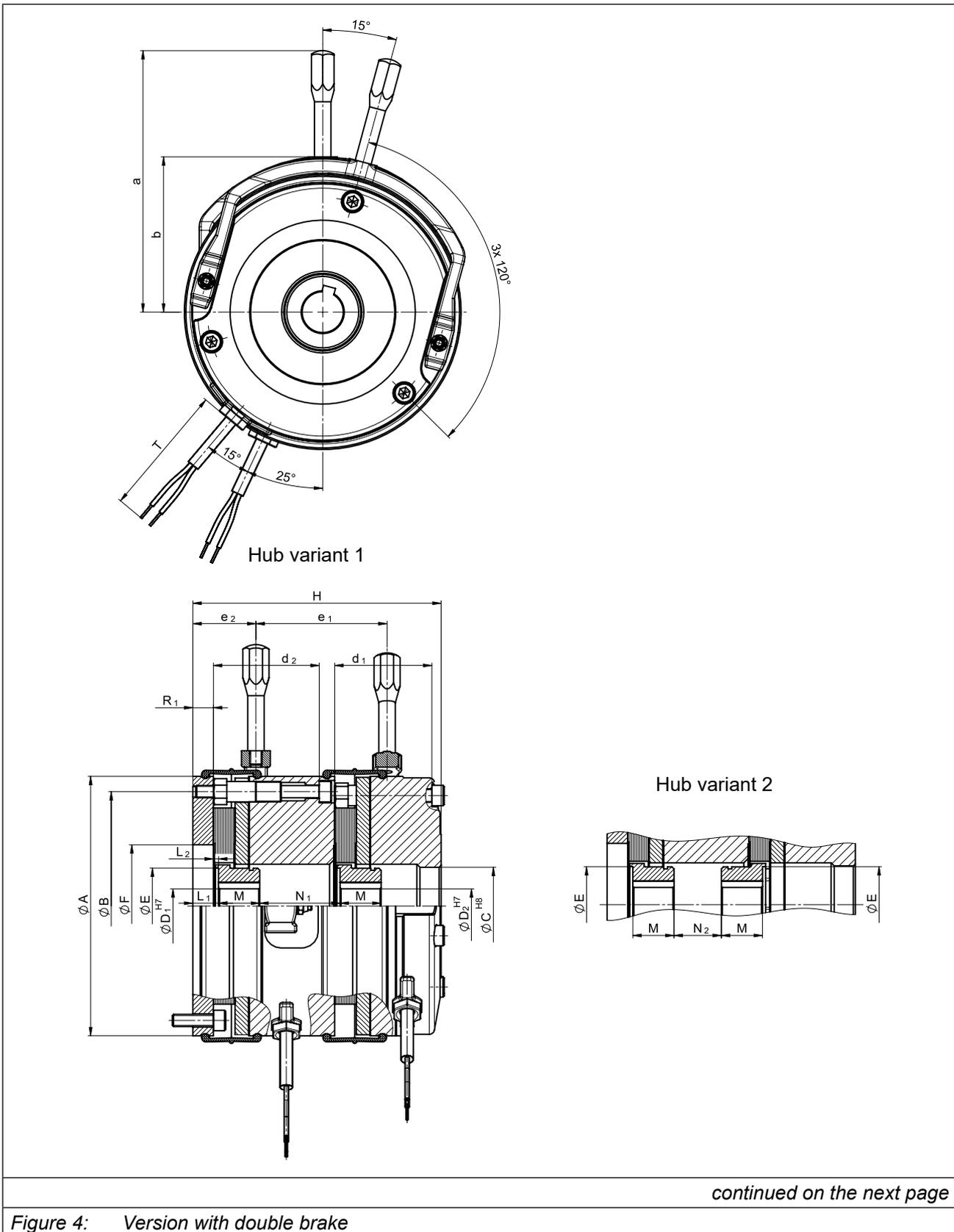


Size	Dimensions / mm			
	a	b	e	T
02	105.5	53.5	23	500
03	114	62	25.5	500
04	128	76	26.2	500
05	166	86	30.5	500
06	176	96	39.5	500
07	225	115	41	750
08	235	125	46.5	750
09	256	146	56	750
10	335	175	59	750
11	1)	1)	1)	1000

Figure 3: Version with hand release

1) Mechanical release with hexagon head screw.

3.3.3 Version with double brake



continued on the next page

Figure 4: Version with double brake

Size	Dimensions / mm						Weight / kg	
	a	b	d ₁	d ₂	e ₁	e ₂		
02	105.5	53.5	34.2	39.4	45.5	22.5	2.5	
03	114	62	37.2	47.5	54	27	4	
04	128	76	47.2	51.4	65	31	7	
05	166	86	52.7	55.9	72	33	11	
06	176	96	59.8	64.6	81	36	16	
07	225	115	68	77.1	94	45	26	
08	235	125	79.9	82.1	97	50	35	
09	256	146	88.9	94.9	107	56	55	
10	335	175	98.6	105	121	61	85	
11	1)							

Size	Dimensions / mm												
	A	B	C	D ₁ /D ₂ max.	E	F	H	L ₁	L ₂	M	N ₂	R ₁	T
02	85	72	22	15 ²⁾	22	36	92	9.5	1.5	18	13	8	500
03	102	90	32	20	31	48	106	12.5	2.5	20	17	10	500
04	127	112	38	25	37	60	121	12.5	2.5	20	23	10	500
05	147	132	42	30	42	70	135	14	3	25	21	11	500
06	164	145	47	35 ²⁾	42	70	157	16	3	30	20	13	500
07	190	170	62	45	57	75	180	18.5	3	30	37	15	750
08	218	196	78	60	57/76 ³⁾	100	192	19.5	5	35	33	14.5	750
09	254	230	97	60	100	100	223	22	5.5	40	45	16.5	750
10	306	278	120	75	120	120	241	27	10	50	36	17	750
11	1)												

Table 8: Dimensions with double brake

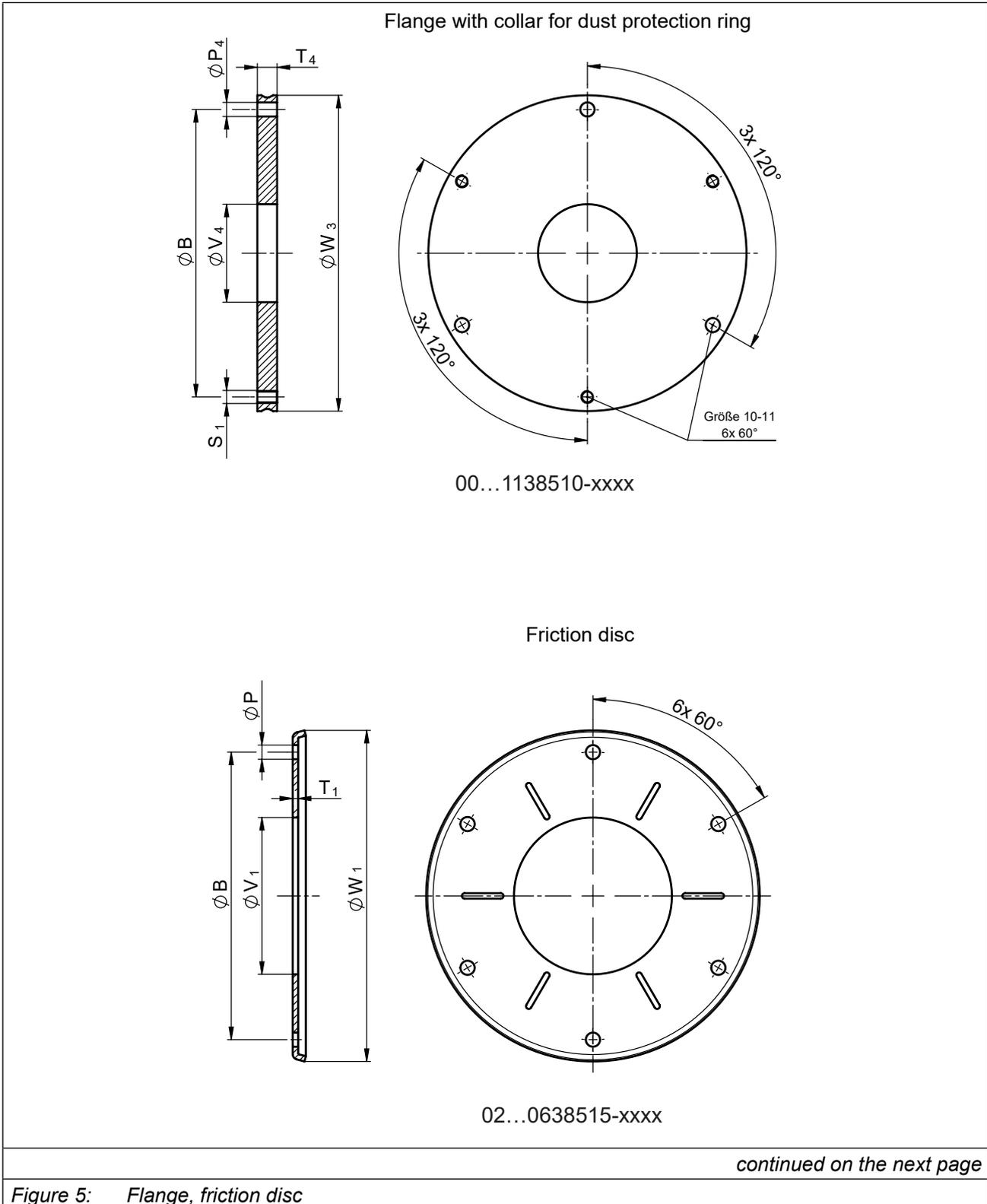
¹⁾ upon request.

²⁾ Keyway according to [DIN 6885-3](#).

³⁾ With hub bore > Ø45.

3.4 Accessories

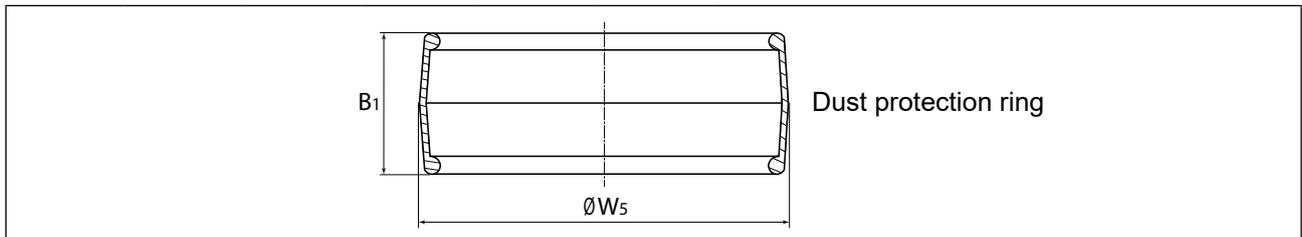
3.4.1 Flange, friction disc



Size	Dimensions / mm									
	B	P	S ₁	T ₁	T ₄	V ₁	V ₄	W ₁	W _s	Weight / kg
00	52	—	—	—	5	—	26	—	60	0.08
02	72	4.5	3xM4	1.5	6	37	20	86	83	0.2
03	90	5.5	3xM5	1.5	7	48	30	106	100	0.35
04	112	6.5	3xM6	1.5	9	60	40	131.5	125	0.75
05	132	6.5	3xM6	1.5	9	72	45	152	145	1
06	145	9	3xM8	1.5	11	72	55	170	163	1.5
07	170	—	3xM8	—	11	—	65	—	190	2.10
08	196	—	3xM8	—	11	—	75	—	217	2.70
09	230	—	3xM10	—	11	—	90	—	254	3.70
10	278	—	6xM10	—	12.5	—	120	—	306	5.90
11	325	—	6xM12	—	20	—	160	—	363	12.7

Table 9: Dimensions flange, friction disc

3.4.2 Dust protection ring



Size	Dimensions / mm									
	02	03	04	05	06	07	08	09	10	11
B ₁	22.5	25	33	33.5	38.5	45.5	49	54.5	63	1)
W _s	86	103	129	149	167	195	222	259	310	

Figure 6: Dimensions dust protection ring

1) upon request.

4 Mounting



Unless otherwise stated, the numbers mentioned in this chapter refer to => „Figure 1: Overview COMBISTOP N/H/D Type 38“.

4.1 Notes on mounting

4.1.1 Inspections to be done prior to mounting the brake

Before mounting the brake, check the following:

- ▶ Compliance of the ordered voltage and performance data with the type plate data.
- ▶ No damage to the brake or contamination by foreign particles in the area of operation or in the air gap of the brake.
- ▶ A suitable second friction surface (steel or cast iron) must be provided. The type of counter friction surface affects the torque. Recommendation for the friction surface: Surface quality Rz6.3 and flatness > 0.07 mm.
- ▶ Avoid sharp-edged interruptions in the friction surface. If such a surface is not available, a flange or a friction disc (available as an accessory) can be used.
- ▶ The friction surfaces must be free from grease and oil.
- ▶ Air humidity, aggressive vapours/liquids or the like may lead to corrosion and cause the lining to stick. In this case, the user needs to provide appropriate measures!
- ▶ The brake must first be de-energised when being mounted.
- ▶ Readjustment of the air gap is not possible! If necessary, check the air gap before mounting => „9.2.2 Check air gap“.

4.1.2 Observe during mounting

During mounting, please observe the following notes/instructions:

- ▶ The friction surfaces of the brake must not come into contact with oil, grease, water or other fluids. Any contamination will result in loss of torque.
- ▶ Never use aggressive fluids (for example, cleaning agents) or the like to clean the brake.
- ▶ When mounting the hub and the magnetic system, the teeth of the hub and the lining must not be damaged.
- ▶ The lining must be easily movable on the hub.
- ▶ The movement of the armature must not be impeded by the ingress of foreign particles into the air gap. Take appropriate safety measures as required.
- ▶ The eccentricity of the mounting hole circle relative to the shaft end must not exceed the following values:

COMBISTOP 38	02	03...06	07...10	11
Eccentricity / mm	0.2	0.4	0.5	0.6

- ▶ The angular deviation of the mounting surface relative to the shaft must not exceed the following values (in relation to the mounting hole diameter):

COMBISTOP 38	02...03	04...05	06...07	08...10	11
Angular deviation / mm	0.04	0.05	0.06	0.08	0.1

4.2 Mounting the brake

NOTICE

No suitable friction surface available!

- ▶ Optionally mount flange or friction disc on motor bearing shield.

4.2.1 Step 1: Mounting the hub

- ▶ Mount the hub on the motor shaft.
- ▶ Secure the hub axially on the motor shaft.
- ▶ The hub and the linings must not be damaged!

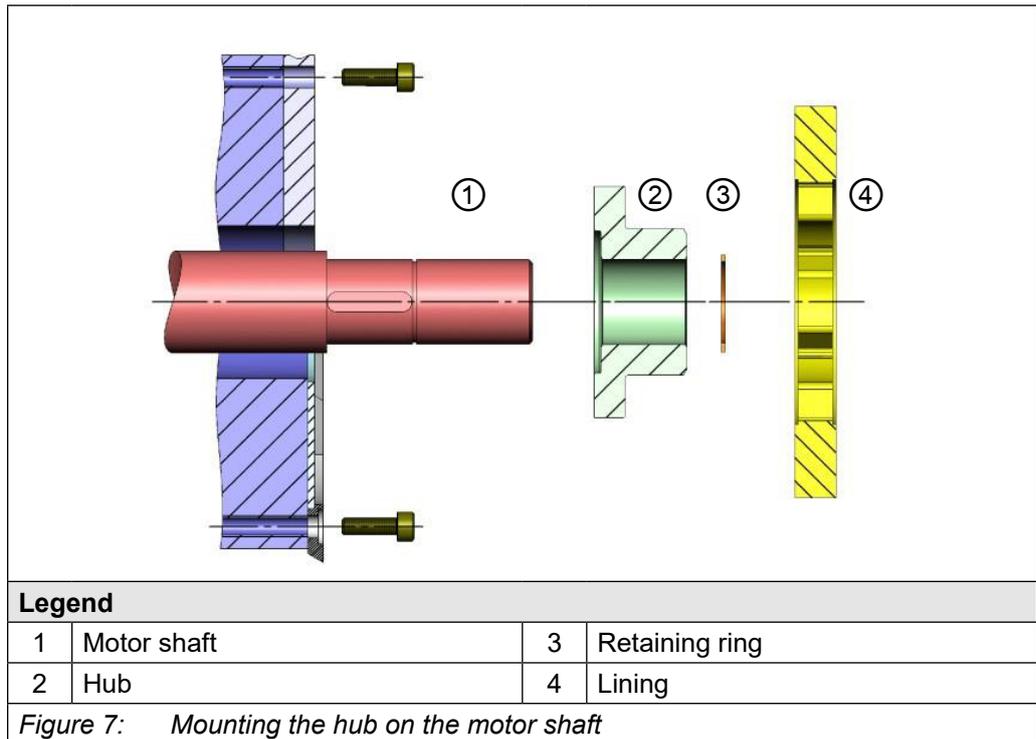


Figure 7: Mounting the hub on the motor shaft

Make sure that the hub cannot run against the second friction surface. Taking into account the axial clearance of the motor shaft, we recommend a distance of 0.5 mm to 1 mm.

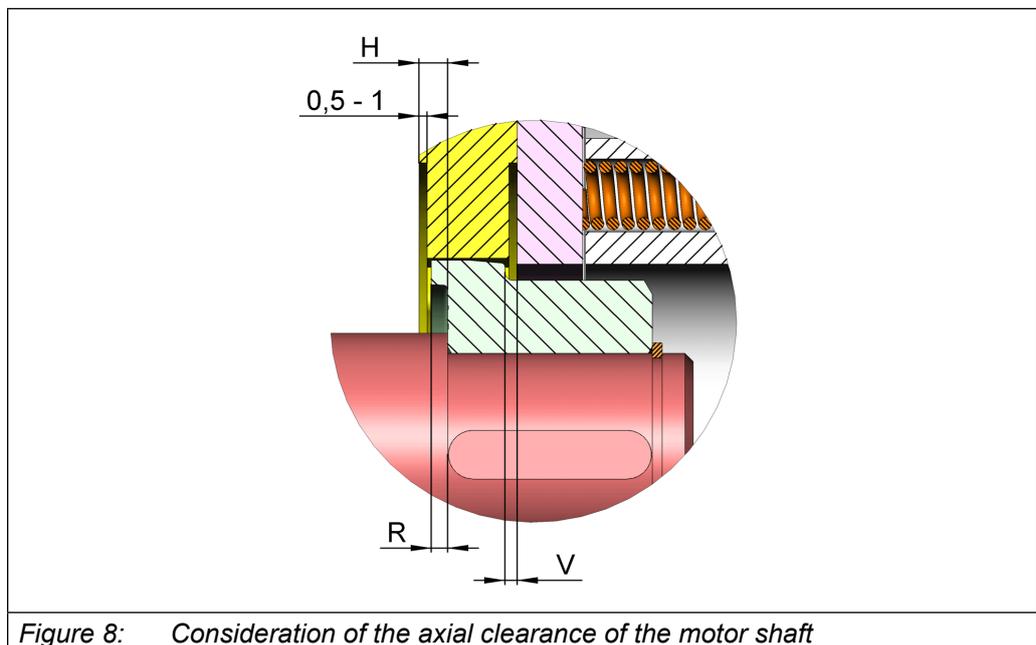
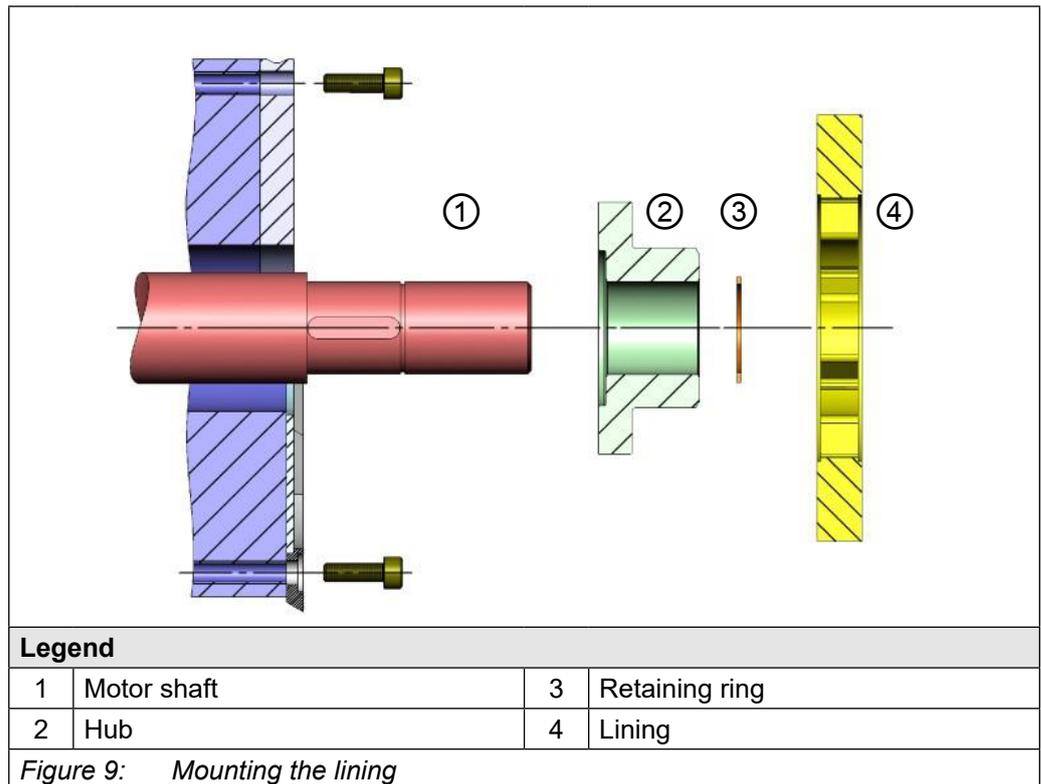


Figure 8: Consideration of the axial clearance of the motor shaft

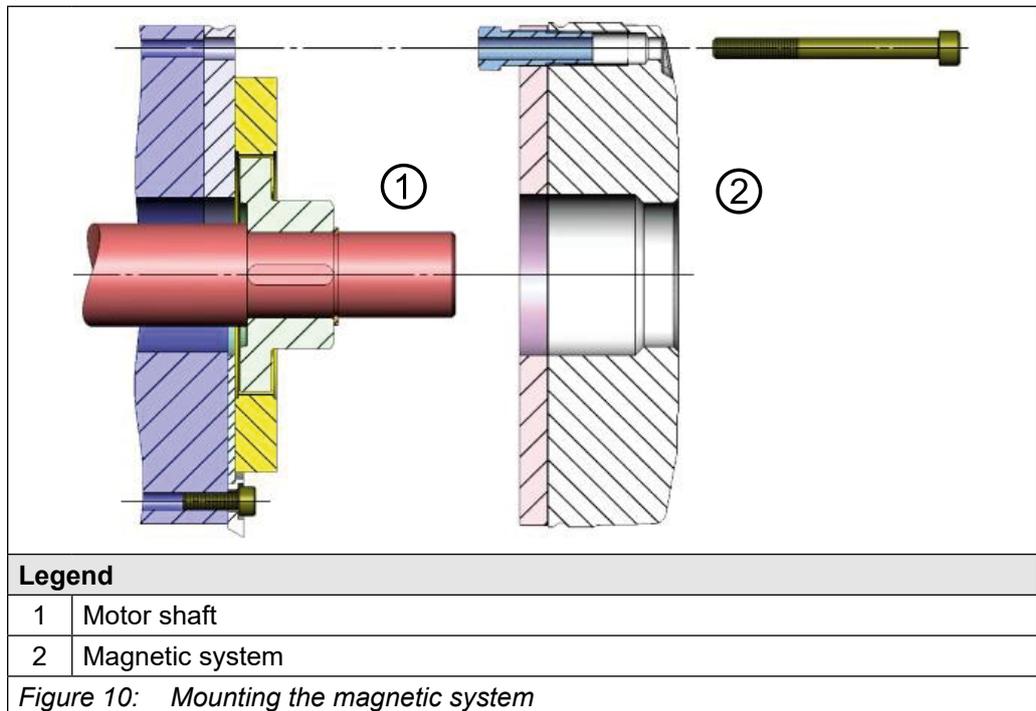
4.2.2 Step 2: Mounting the lining

- ▶ Slide the lining onto the hub.
- ▶ While doing so, be careful not to damage the lining by misaligned or tilted positioning.
- ▶ The lining must be easily movable on the hub.



4.2.3 Step 3: Mounting the magnetic system

- ▶ Slide the fully assembled magnetic system over the hub and the lining.
- ▶ While doing so, make sure that the lining is easily movable
- ▶ Fix the magnet system with three socket head screws without defined torque.
- ▶ Apply rated voltage. Thus the armature is pulled towards the housing in the opposite direction to the spring forces.
- ▶ Tighten the screws to the defined tightening torque. Observe the notes to the socket head screws!



Notes to the socket head screws

For fastening the magnetic system, we recommend socket head screws of strength class 8.8, which should be tightened with the tightening torques recommended by the manufacturer.

4.2.3.1 Check air gap X

Further information on the air gap which becomes larger as a result of wear can be found in section => „9.2.2 Check air gap“.

4.3 Microswitch (option)



A microswitch can only be retrofitted if the brake is prepared for it. That is why the variant must be ordered already ex factory.

The microswitch can be used for armature position monitoring or as wear control.

4.3.1 Microswitch as armature position monitoring (default setting)

A microswitch can be used to monitor the switching state of the armature (brake open/closed). The user is responsible to connect the electrical equipment and to evaluate the signals! The drive control must not allow the motor to start until the armature was attracted by the magnet, i. e., the lining can rotate freely.

The microswitch is factory-mounted to the brake as well as factory-set and secured.

⚠ CAUTION

Malfunction of the brake!

Changing the settings of the microswitch may cause drive / brake malfunctions.

In case of any malfunction affecting the switching function, check the microswitch settings and, if necessary, replace the microswitch (see sections below).

4.3.1.1 Checking the microswitch setting for armature position monitoring

⚠ CAUTION

Loss of braking efficiency!

Before checking the microswitch settings, mechanically secure the load against unintended movements and disconnect the brake from load!

By repeatedly switching the brake, check the two switching states:

- ▶ Brake energised: ON signal (microswitch closed)
- ▶ Brake de-energised: OFF signal (microswitch open)

4.3.2 Microswitch as wear control

The wear of the brake can be monitored by a microswitch. The switching point of the microswitch is set below the wear limit, by way the microswitch emits a signal before brake malfunction.

The user is responsible to connect the electrical equipment and to evaluate the signals. The microswitch is factory-mounted to the brake as well as factory-set and secured.

4.3.3 Adjustment and change of the microswitch

NOTICE

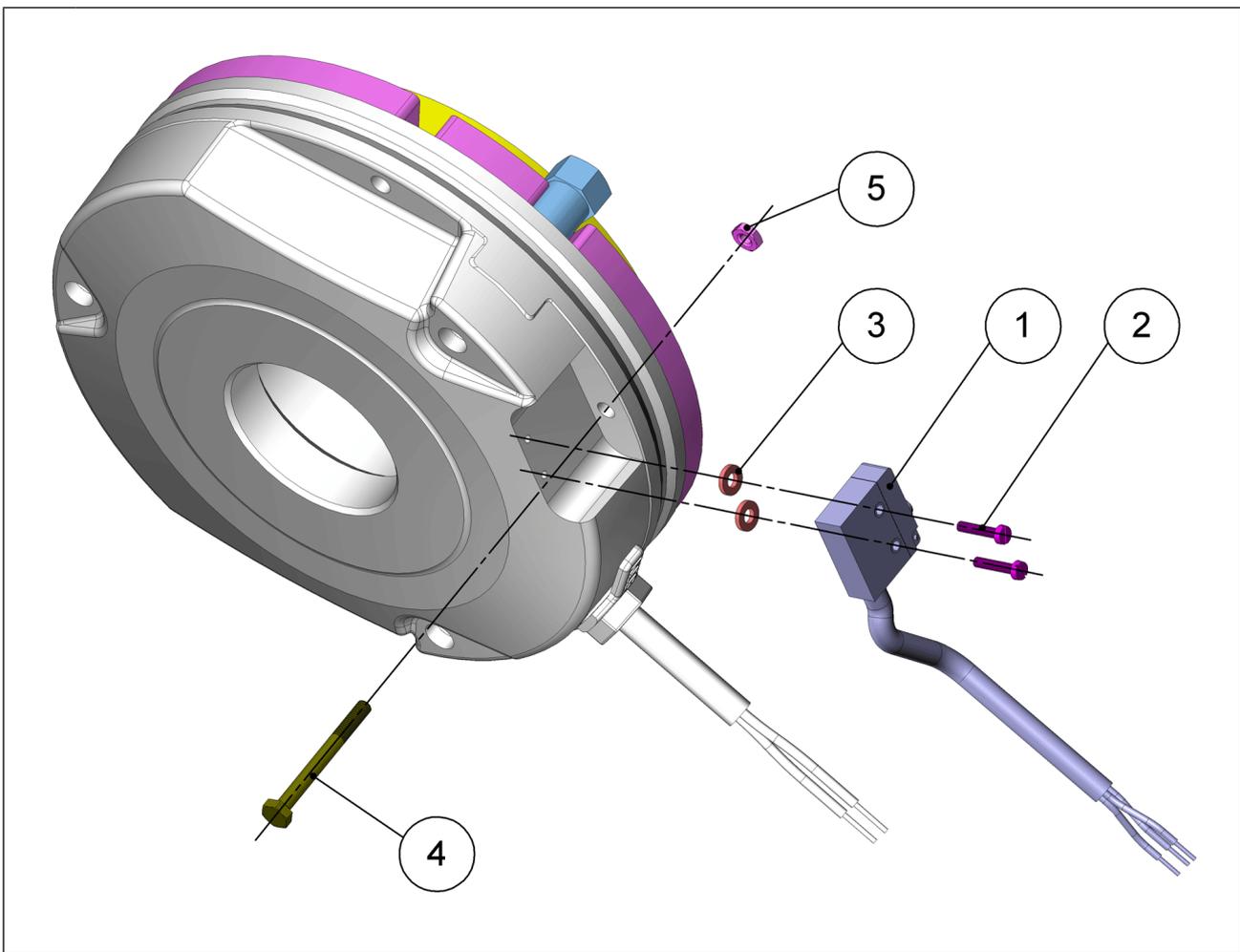
Unauthorized exchange, repair and modifications!

Adjustment and change of the microswitch may only be carried out by qualified personnel!

CAUTION

Loss of braking efficiency!

Before replacing the microswitch, mechanically secure the load against unintended movements and disconnect the brake from load!



Legend	
1	Microswitch
2	Socket head screw
3	Washers
4	Hexagon head screw
5	Hexagon nut

Figure 11: Changing the microswitch

4.3.3.1 Dismounting

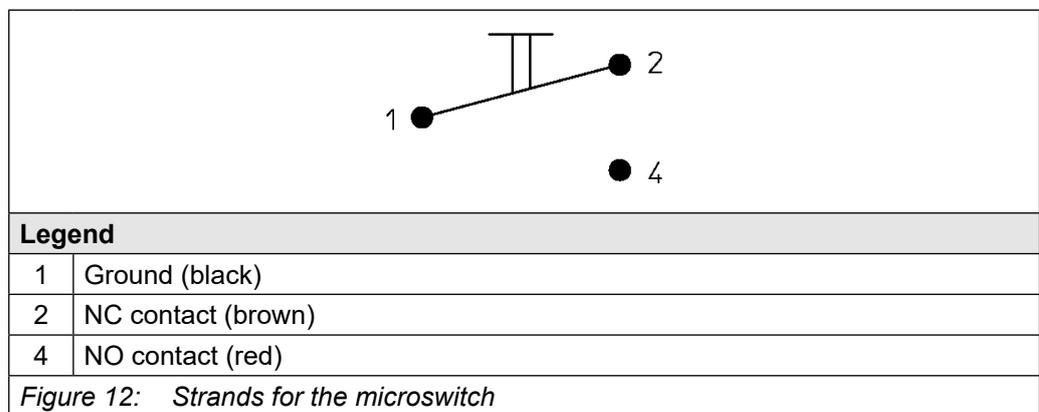
- ▶ Remove the two socket head screws.
- ▶ Remove the microswitch.

4.3.3.2 Mounting

- ▶ The microswitch is mounted in reverse order.
- ▶ Connect the microswitch according to the following connection diagram:

4.3.3.3 Connecting the microswitch

Connect the microswitch as a normally open contact (terminal 1 and 4).

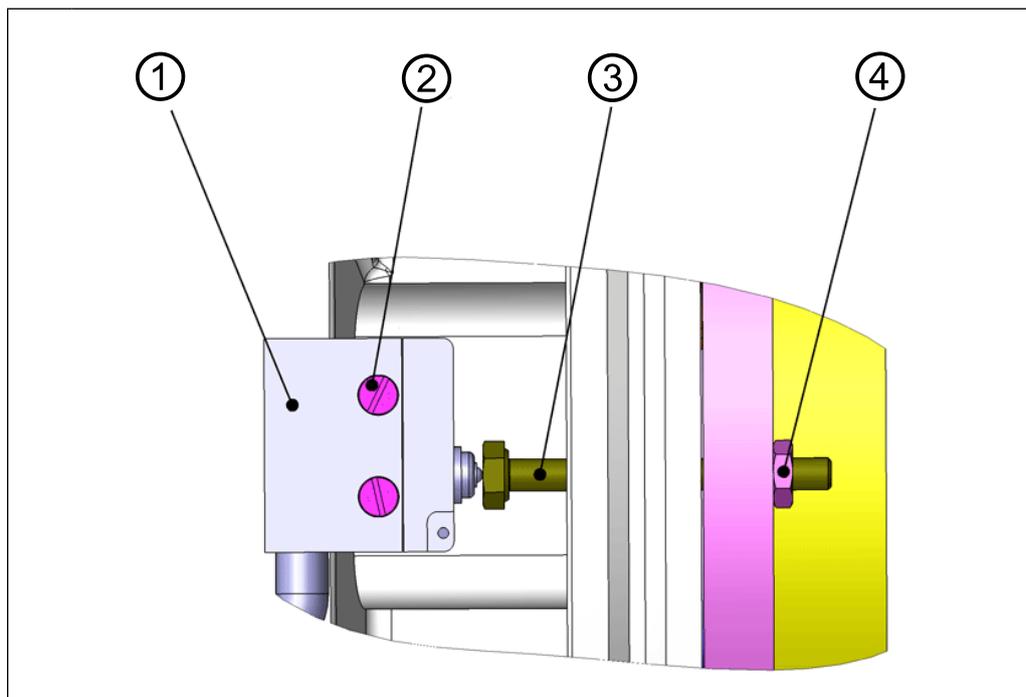


Check the switching point of the microswitch after installation. If an adjustment of the microswitch is necessary => „4.3.3.4 Adjustment of the microswitch“.

4.3.3.4 Adjustment of the microswitch

⚠ CAUTION**Loss of braking efficiency!**

Before checking the microswitch settings, mechanically secure the load against unintended movements and disconnect the brake from load!

**Legend**

1	Microswitch
2	Socket head screw
3	Hexagon head screw
4	Hexagon nut

Figure 13: Adjustment of the microswitch

- ▶ Loosen the hexagon nut.
- ▶ Turn the hexagon head screw towards the microswitch until it contacts the microswitch tappet.
- ▶ Connect the measuring instrument to terminal 1 and 4 (NO contact) of the microswitch.
- ▶ Turn the hexagon head screw towards the microswitch until the NO contact is closed (ON signal).
- ▶ Turn back the hexagon head screw until the normally open contact opens again (OFF signal).
- ▶ Lock the hexagon head screw with the hexagon nut.
- ▶ Check the setting again. If the ON signal does not properly switch to the OFF signal, repeat the readjustment of the microswitch.

5 Electrical connection

⚠ DANGER



Electrical voltage at brake and motor!

Danger to life due to electric shock!

- ▶ When carrying out any work on the brake, switch off the supply voltage and secure it against switching on.

NOTICE

Voltage peaks when switching off!

- ▶ Install protective circuit for brake and control.
- ▶ The protective circuit extends the engaging times.

5.1 Connection of the brake

NOTICE

Destruction of the brake in case of incorrect voltage supply.

- ▶ The brake is operated with DC voltage.
- ▶ Read the rated voltage from the magnet marking of the brake.
- ▶ Compare with existing voltage source.
- ▶ The maximum input voltage U_{in} must not be exceeded.
- ▶ Only connect if the values match.

If no suitable DC voltage is available, the following KEB accessories can be used:

- Half and full-wave rectifier (COMBITRON 91)
- Fast acting rectifier (COMBITRON 98)

The brake COMBISTOP Type 38 is delivered with factory-preassembled connecting cables:

COMBISTOP 38	02...06	07...10	11
Connection cross section	2x0.75 mm ²	2x0.75 mm ²	2x0.75 mm ²
Connection length	500 mm + 100 mm	750 mm + 100 mm	1000 mm + 100 mm

Table 10: Pre-assembled connection cables

NOTICE

Connection for drive controller operation.

- ▶ Rectifiers or power boxes are destroyed when operated on drive controllers.
- ▶ Rectifiers or power boxes may only be connected directly to the mains.

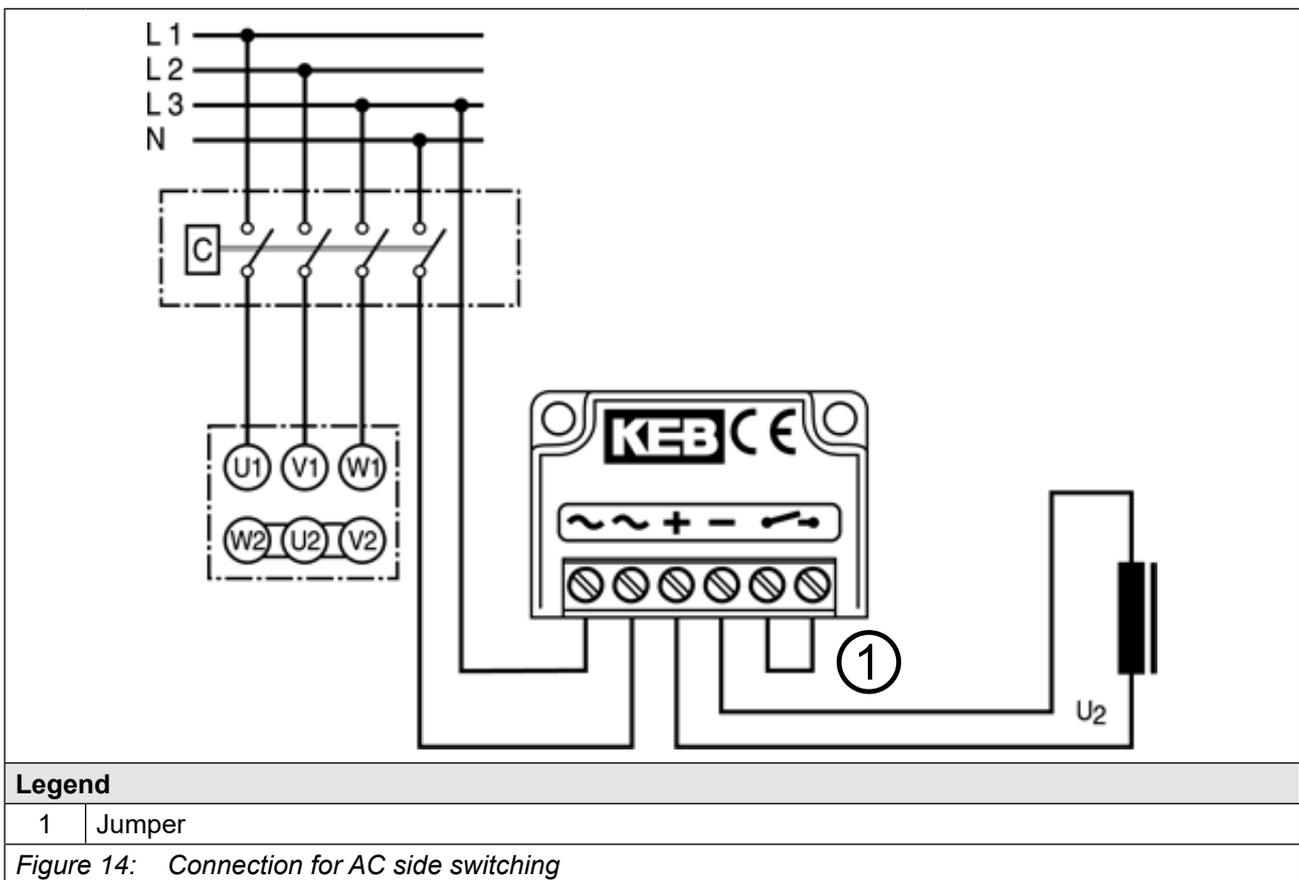


Influence on the engaging time!

The brake can be switched off on the DC or AC side. Switching off on the DC side reduces the engaging time, i.e. the time until the torque is built up for braking.

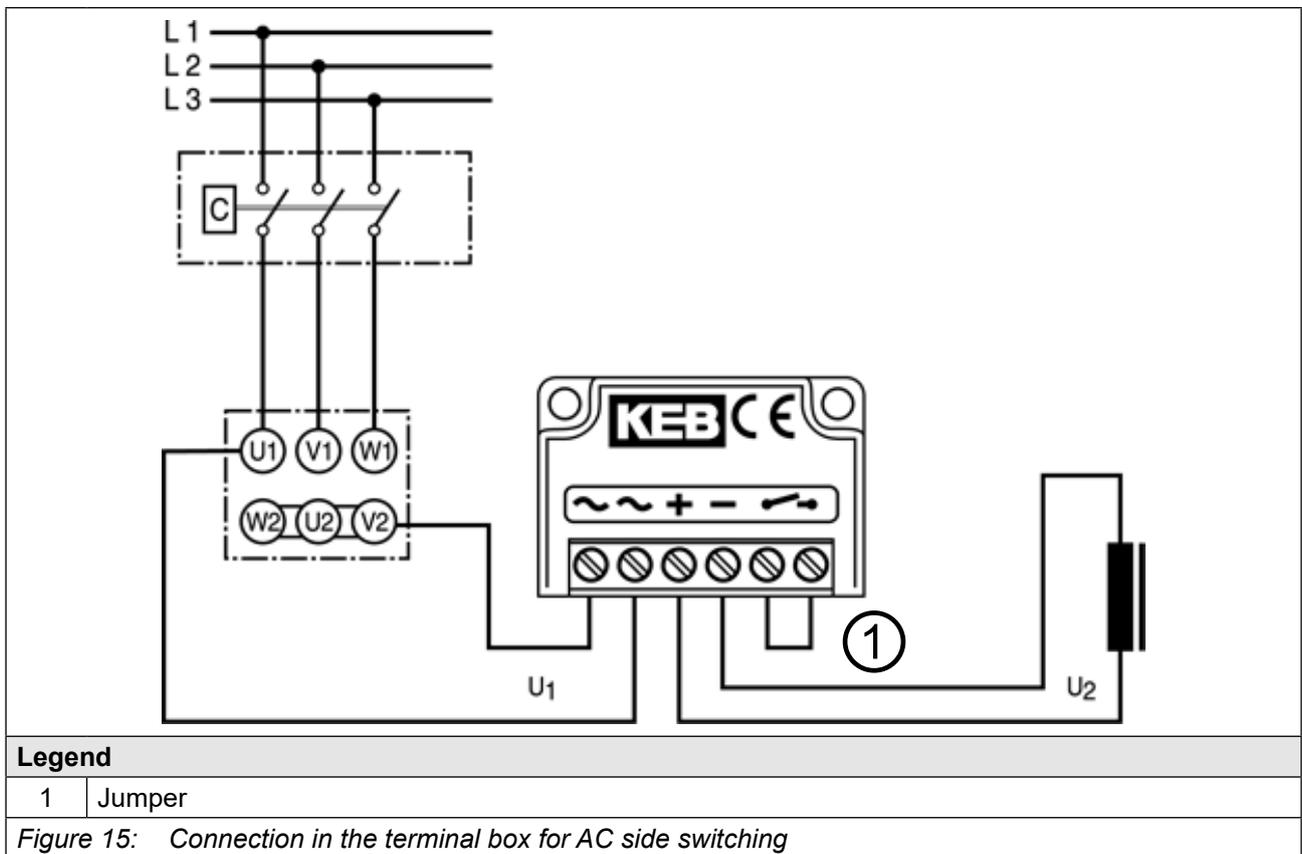
5.1.1 AC side switching

5.1.1.1 Connection for AC side switching



- For cables longer than 10 m between rectifier and brake, an appropriate switch is mandatory.
- Drive controller operation possible, because the power box or the rectifier is supplied from the mains.
- Install wire jumper so that the motor does not work against the brake. For drive controller operation, switch the switch via digital output during ramp-up => „Figure 17: Connection for DC and AC switching“.

5.1.1.2 Connection in the terminal box for AC side switching



- Not permitted for drive controller operation, since the power box or the rectifier would be destroyed.
- Install wire jumper so that the motor does not work against the brake.

5.1.2 DC side switching

Switching occurs between rectifier and brake. KEB rectifiers and power boxes are protected against the voltage peaks resulting from the switching.

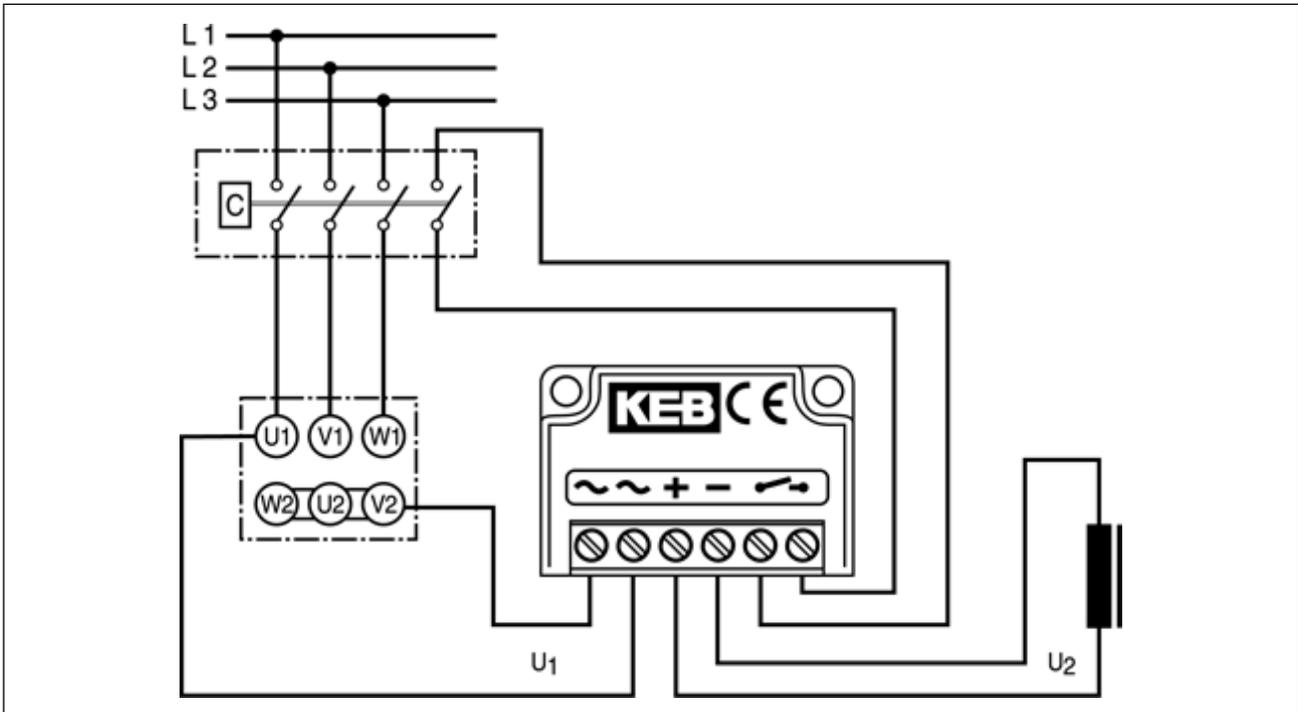


Figure 16: Connection for DC side switching

- Not permitted for drive controller operation, since the power box or the rectifier would be destroyed..

5.1.3 DC and AC side switching

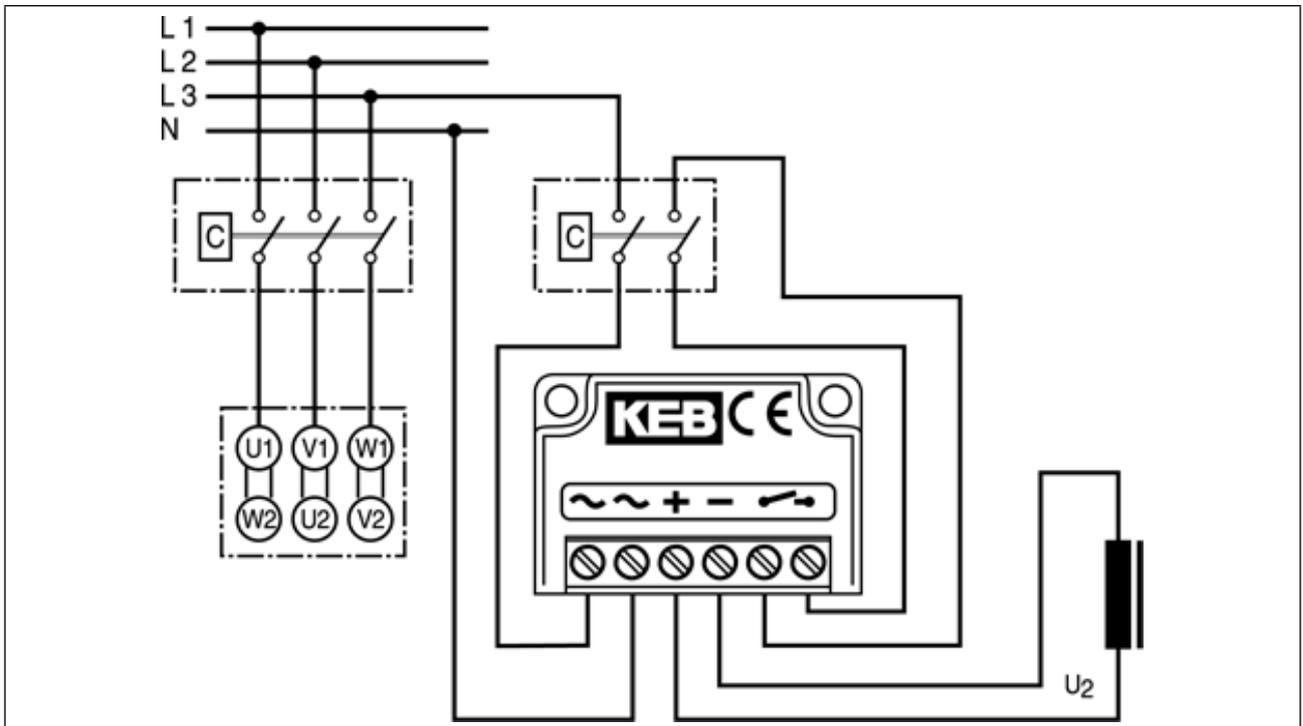


Figure 17: Connection for DC and AC switching

- Drive controller operation possible, because the power box or the rectifier is supplied from the mains.
- For drive controller operation, switch the switch via digital output during ramp-up.
- Enables the shortest switch-off times.
- Reduces the contact erosion.

5.1.4 Protective earth

The brake does not have its own PE connection. The low-resistance connection required for this must be made via the metallic attachment to the grounded motor housing. If necessary, this must be checked by a measurement. In addition, the brake is usually covered by the mounted fan cover and can therefore not be touched directly.

6 Start-up

6.1 Inspections prior to start-up of the brake

6.1.1 Visual inspection

- Do connection and rated voltage (magnet marking) agree?
- Are external damages visible?
- Are there impurities in the functional area or foreign bodies in the air gap of the brake?

6.1.2 Load-free testing

- Ensure that the brake is unloaded.
- Release/close the brake by switching the voltage supply.

NOTICE

Damage due to non-observance!

- ▶ Do not put into operation if one of the tests is not OK.

6.1.3 Run in of the brake

NOTICE

Damage due to insufficient braking torque!

- ▶ The characteristic torque is only reached after the brake has run in.

To run in the brake, some dynamic braking must be carried out. Depending on the brake size and corresponding speed, we recommend a slip and idle time of 2 seconds each for 10 switching operations.

Size	02	03	04	05	06	07	08	09	10	11
Speed in rpm	175	150	125	100	100	80	60	50	40	35

Table 11: Run in of the brake

NOTICE

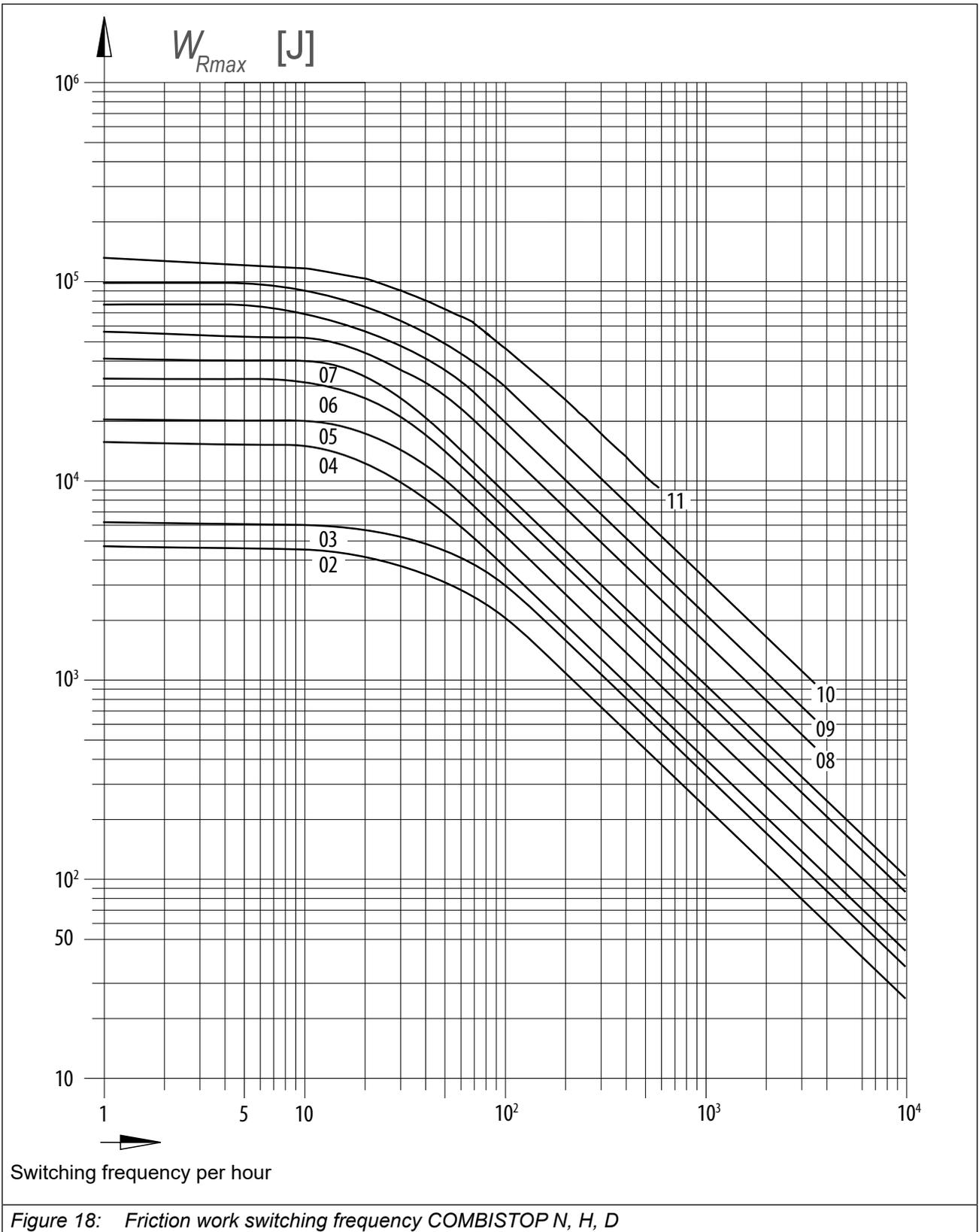
Influences on the brake torque!

- ▶ The braking torque may deviate from the specified values depending on the mounting situation as well as the environmental conditions such as temperature, contamination or corresponding ageing.
- ▶ Using the brake purely as a holding brake can lead to a drop in braking torque, so that regular refreshment must be carried out as part of maintenance.



A maintenance interval of 4 weeks is recommended for normal industrial applications.

6.1.3.1 Friction work switching frequency COMBISTOP N, H, D



7 Operation

The brake is switched via the voltage supply => „5.1 Connection of the brake“. The max. number of switching cycles must not be exceeded => „3.2 Device data COMBIS-TOP N/H/D Type 38“ .

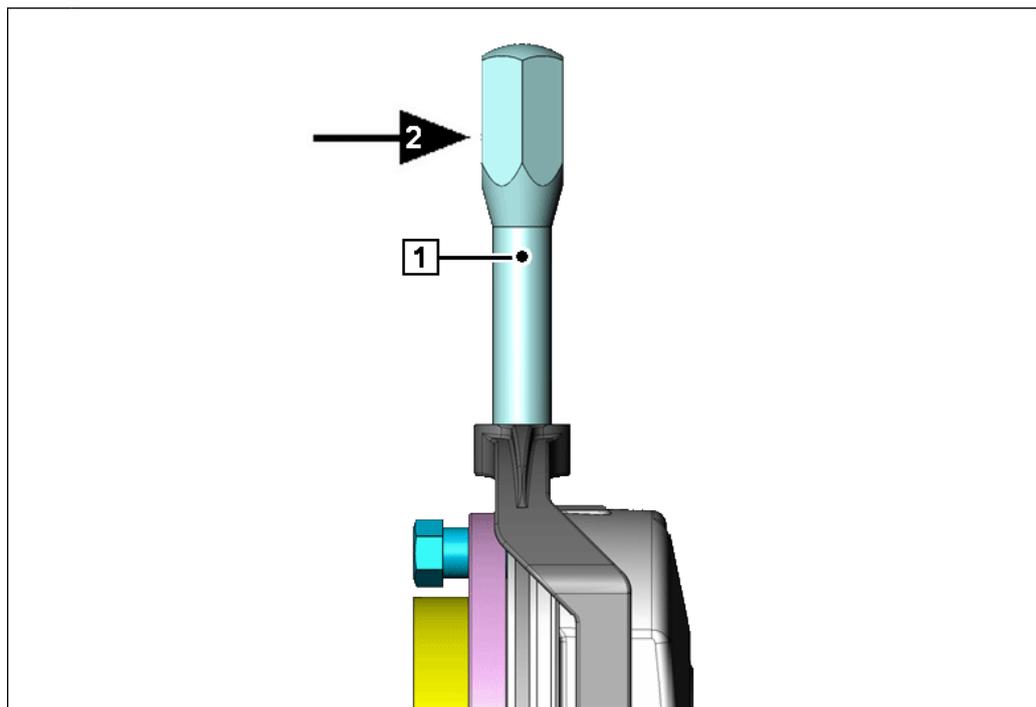
7.1 Hand release (option)

As an option, the brake can be delivered with a hand release. In the event of malfunctions, the brake can be actuated using the hand release.

⚠ CAUTION

Loss of braking effect due to actuation of the hand release!

- ▶ Before actuating the hand release, secure the load mechanically against unintended movement.
- ▶ If necessary, secure the elevator car against falling down.



Legend

1	Lever
2	Arrow direction

Figure 19: Operation of the hand release

- ▶ To release the brake, pull / press the lever of the hand release evenly in arrow direction.
- ▶ The lever does not engage. To engage the brake, simply release the lever.

Actuating forces hand release [N]		
Size	N version	H version
02	25	35
03	50	65
04	70	90
05	120	160
06	270	330
07	170	260
08	250	370
09	300	450
10	350	530

Table 12: Actuating forces hand release



The values are subject to tolerances and depending on where the lever is used.

8 Troubleshooting

The following table shows some causes and solutions of malfunctions during brake operation. If this does not solve the problem or if other malfunctions occur, please contact our service department.

Malfunction	Cause	Measures
Brake does not release	Incorrect voltage	Only operate the brake with the correct voltage (see type plate of the brake).
	Rectifier failed	Replace the rectifier.
	Air gap too large, maximum air gap reached	Change wearing parts.
	Foreign particles between armature and lining	Remove the foreign particles. Clean the brake.
	Solenoid coil or connecting cable defective	Replace the brake.
	Excessive heating	Insert a quick switch (e.g. KEB Powerbox).
No braking function	Damaged tothing prevents the movement of the armature	Replace the lining and the hub.
	Friction surfaces contaminated	Clean the friction surfaces, replace them if necessary.
Brake operates with delay, long engaging time	Brake is switched on the AC side	Switch the brake on the DC side.
<i>Table 13: Troubleshooting</i>		

9 Maintenance and service

- ▶ Observe the general safety instructions.
- ▶ Disconnect the brake from the power supply during maintenance and repair work.
- ▶ Protect electrical and electronic components from splash water.

9.1 Maintenance intervals

Due to its design, the COMBISTOP Type 38 brake can only be checked when it has been removed. When properly designed, the COMBISTOP Type 38 brake is maintenance-free.

9.2 Service

Service is required if, in accordance with the fault table, there are symptoms of damaged or soiled linings, unusual noises or smells.

⚠ CAUTION



Limbs crushed!

Securing the load!

- ▶ Mechanically secure the load against unintended movement.
- ▶ Release brake from load.
- ▶ Dismount the brake according to the manual.

9.2.1 Dismount the brake

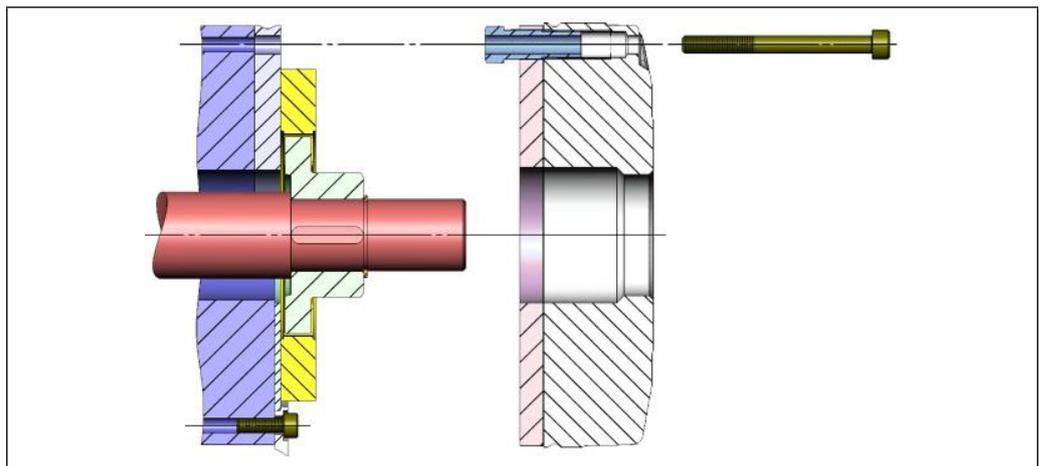


Figure 20: Dismount the brake

- ▶ Disconnect the connecting cables from the voltage supply.
- ▶ If necessary, dismount the fan from the shaft (see instruction manual of the motor).
- ▶ Loosen and remove the three socket head screws alternately piece by piece.
- ▶ Remove the brake from the shaft backwards.

9.2.2 Check air gap

The brakes are delivered ex works with pre-set air gap "X" (nominal air gap) ready for installation. As a result of wear, the air gap increases. To ensure proper functioning, the air gap (distance between magnet housing and armature) must be checked in regular intervals in a de-energised state with feeler gauge. When exceeding the value "X_N" either the wearing parts must be replaced or the air gap must be readjusted (if the brake is designed for this).

Size	Air gap		Minimum permissible Lining thickness g
	Rated value X	Limit value X _N	
	mm	mm	mm
02	0.2	0.4	5.5
03	0.2	0.5	6.5
04	0.2	0.6	8.0
05	0.2	0.6	10.0
06	0.3	1.0	10.0
07	0.3	1.0	10.0
08	0.4	1.2	11.0
09	0.4	1.2	12.0
10	0.5	1.5	14.0
11	0.6	1.5	22.0

Table 14: Check air gap

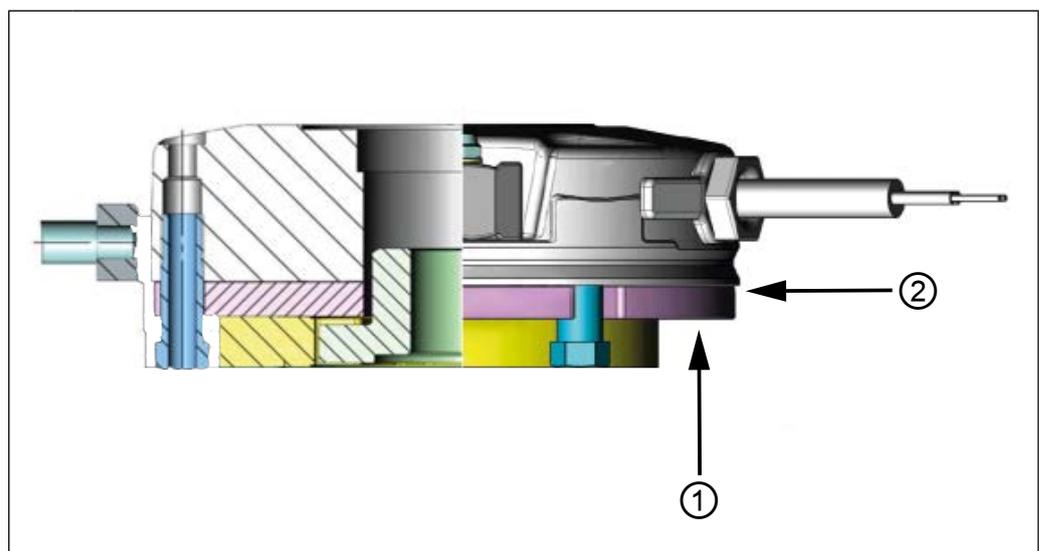
9.2.2.1 Checking the air gap X

Easy control of the air gap:

- ▶ Ensure that the brake is in a de-energised state.
- ▶ Check the air gap between the magnet housing and the armature with a feeler gauge. This is usually sufficient.
- ▶ When the limit value is nearly reached, an accurate air gap measurement must be made.

Accurate measurement of the air gap with a lever gauge:

- ▶ Connect the brake to rated voltage (armature must be applied to the magnet).
- ▶ Place the feeler lever at a point on the anchor surface (=> *“Figure 21: Checking the air gap”*).
- ▶ Adjust the lever gauge with dial gauge (zero position).
- ▶ Switch off the supply voltage (armature falls off the housing).
- ▶ The air gap "X_N" is the difference between zero position and displayed value.
- ▶ Repeat the measuring process at three different positions (approx. 3 x 120°).
- ▶ If a value greater than "X_N" is measured, the wearing parts must be replaced (=> *“9.2.4 Replacing the lining”*) or an adjustment must be made if possible (=> *“9.2.3 Readjust air gap”*).
- ▶ The teeth of the lining and the hub must be checked regularly. Worn parts must be replaced.



Legend	
1	Air gap measurement using a lever gauge
2	Air gap control using a feeler gauge

Figure 21: Checking the air gap

9.2.3 Readjust air gap

NOTICE

Wrong air gap!

Damage of the brake!

- ▶ Check data sheet whether the air gap can be adjusted.
- ▶ Depending on the design, adjusting spacers can be fixed and immovable.

As a result of wear, the nominal air gap increases. In order to ensure a trouble-free function, the air gap should be readjusted after reaching the air gap "X_N" (T1).

NOTICE

Uncontrollable rotational movements due to load effect!

- ▶ Switching the brake without load.
- ▶ Loosen socket head screws.
- ▶ Adjust the air gap by turning the adjusting spacers. Make sure that the adjustment is evenly at all points.
- ▶ Tighten the socket head screws again.
- ▶ Check the air gap again and repeat the procedure if necessary.

This procedure can be repeated until the lining has reached its minimum permissible thickness g_{min} . Then the friction lining and the friction surfaces must be replaced or reworked.

9.2.4 Replacing the lining

⚠ CAUTION



Worn or dirty linings!

Loss of braking efficiency!

- ▶ Securing the load!
- ▶ Prevent damage to the hub by all means.
- ▶ Be careful not to damage the lining by misaligned or tilted positioning.
- ▶ The lining must not come into contact with cleaning agents or solvents.
- ▶ As a general rule, contaminated linings must be replaced.

- ▶ Dismount the brake => *“9.2.1 Dismount the brake”*.
- ▶ Pull the lining off the hub => *“2.6 Overview COMBISTOP N/H/D Type 38”*.
- ▶ Place the lining straight and slide it onto the hub.
- ▶ The lining must slide smoothly onto the hub! The teeth of the hub and the lining must not be damaged!
- ▶ Check the air gap "X" with a dial gauge => *“9.2.2 Check air gap”*.
- ▶ The brake is mounted in reverse order => *“4.2 Mounting the brake”*.
- ▶ Functional test and start-up => *“6 Start-up”*.

9.2.5 Check the function hand release (option)

This section describes the subsequent check of the optional hand release to the brake.



The type of hand release attachment to the brake may vary depending on the ordered design and size of the brake

Size	02	03	04	05	06	07	08	09	10
Dimension m / mm	0.8	1.0	1.4	1.5	1.8	2.0	2.0	2.3	2.7

Table 15: Check the function hand release

NOTICE

Loss of braking efficiency!

- ▶ For the safe operation of the brake, the correct adjustment / inspection of the adjustment dimension "m" is mandatory.
- ▶ Improper adjustment and operation with overexcitation may result in loss of braking efficiency.

9.2.5.1 Checking the adjustment dimension

The adjustment dimension "m" must be checked / adjusted with attracted armature! The adjustment dimension applies to characteristic torque and operation with rated voltage.

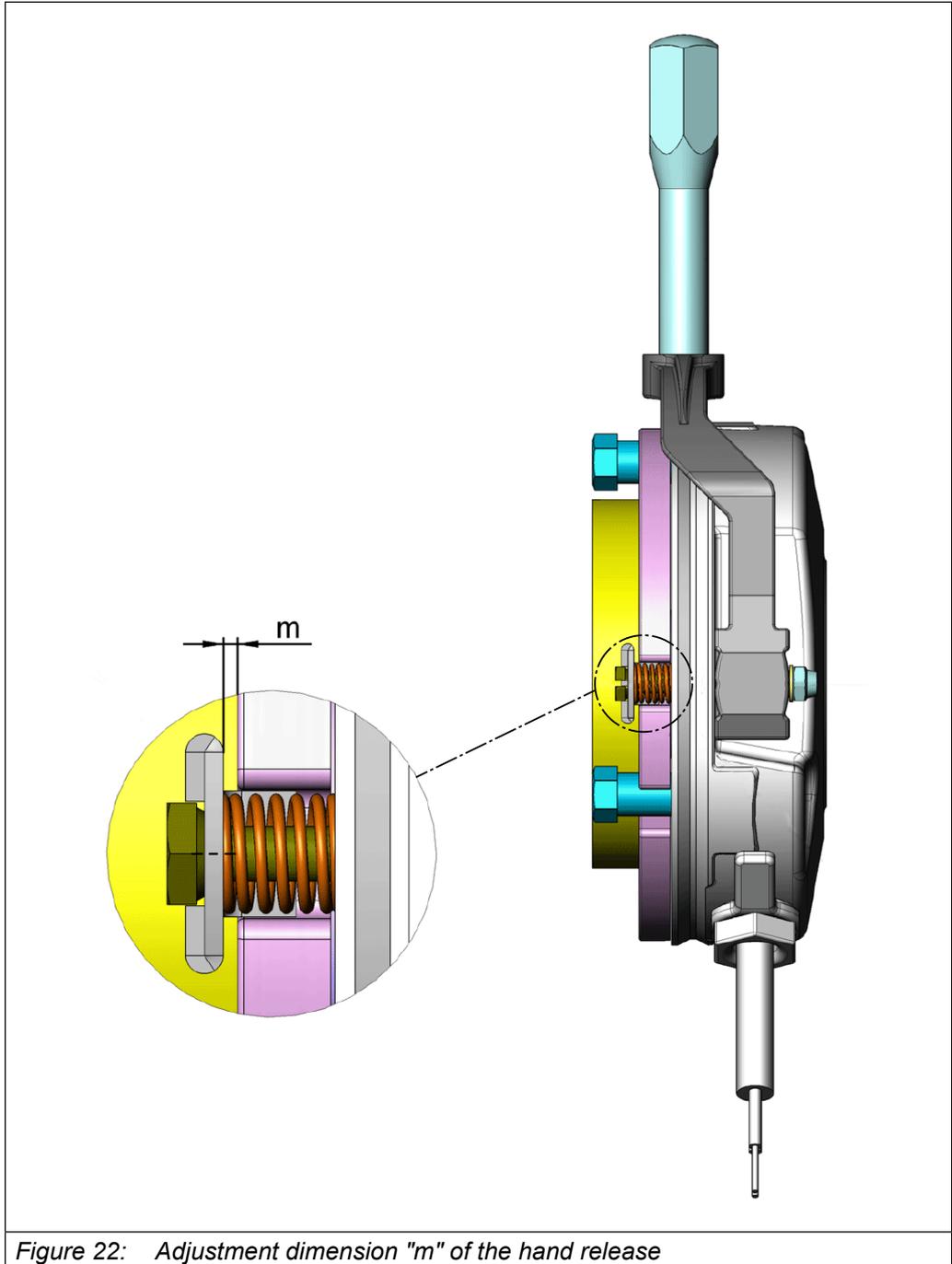


Figure 22: Adjustment dimension "m" of the hand release

10 Dismounting and disposal

10.1 Dismounting

For dismounting the brake => „9.2.1 Dismount the brake“.

10.2 Disposal



Separated according to the materials used, dispose of the electromagnetic brake components in compliance with the applicable local environmental regulations.

The corresponding key numbers are subject to change depending on the disassembling process (metals, plastics and cables).

The components can be disposed of as follows:

Magnet with coil, cables and all other steel parts:

Steel scrap (Key No.: EAK 12 01 02)

Aluminium components:

Non-ferrous metals (copper is also included) (Key No.: EAK 16 01 18)

Lining (incl. steel or aluminium beams):

Brake linings (Key No.: EAK 16 01 12)

11 Certification

11.1 EU declaration of conformity

EU DECLARATION OF CONFORMITY



Document No. / month.year: ce_bc_rns-bc-b_en.docx / 01.2022

Manufacturer: KEB Automation KG
Südstraße 38
32683 BARNTRUP
Germany

Product type: spring applied fail safe brake COMBISTOP
permanent magnet - brake COMBIperm
electromagnet – clutch and brake COMBINORM
clutch – brake –combinations in one housing COMBIBOX

Size 01 up to 14
Voltage category 71...440Vdc (50 ... 690 Vac)

This declaration of conformity is issued under the sole responsibility of KEB Automation KG.

The above given product is in accordance with the following directives of the European Union

Number: **Low voltage : 2014 / 35 / EU**
Text: Directive on the approximation of the laws of the Member States relating to all electrical equipment that has a voltage rating between 50V and 1000V AC or 75V and 1500V DC.

Number: **Hazardous Substances: 2011 / 65 / EEC (incl. 2015 / 863 / EU)**
Text: Directive on the approximation of the laws of the Member States relating on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

Responsible: KEB Automation KG
Südstraße 38
32683 BARNTRUP

Place, date Bartrup, 28. December 2021

Issued by:

i. A. W. Hovestadt / Conformance Officer

W. Wiele / Technical Manager

This declaration certifies the conformity with the named directives, but does not contain any assurance of quality.

The safety instructions, described in the instruction manual are to be followed.

EU DECLARATION OF CONFORMITY



Annex 1

Document-Nr. / Month.year: ce_bc_rms-bc-b_en.docx / 01.2022

Product type:	spring applied fail safe brake	COMBISTOP
	permanent magnet - brake	COMBIPERM
	electromagnet – clutch and brake	COMBINORM
	clutch – brake –combinations in one housing	COMBIBOX
	Size	01 up to 14
	Voltage category	71...440Vdc (50 ... 690 Vac)

The conformity of the above given product to the European Directive 2014/35/EU (for electrical equipment designed for use within certain voltage limits) is given by complete approval / testing to the following European harmonized standards:

EN - standard	
VDE 0580, Version 2011	Electromagnetic devices and components – General specifications
Informative:	Electronic equipment for use in power installations
EN 50178, Version 1997	

The conformity of the above given product to the European Directive 2011/65/EU with changes of 2015/863/EU (for restrictions of the use for certain hazardous substances in electrical and electronic equipment) is given by qualification of components and manufacturing process within the ISO 9001 QM system. The necessary information and declarations are documented and memorized.

EN 63000: 2018 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

The above given product was developed, manufactured and tested within an internal quality management system. This ISO 9001 QM system was approved by:

Notified body:	TÜV - CERT
Address:	Zertifizierungsstelle des RWTÜV Steubenstrasse 53 D - 45138 Essen
No. of approval	041 004 500
Dated:	20.10.1994
Valid until:	December 2024

Figure 23: EU declaration of conformity

11.2 CSA certificat



Certificate of Compliance

Certificate: 1267150 (LR49670)

Master Contract: 172220 (049670_0_000)

Project: 70199031

Date Issued: 2018-10-05

Issued to: **KEB Automation KG**
Suedstrasse 38
32683 Barntrop,
GERMANY

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only.



Issued by: *Khalil Ouldchama*
 Khalil Ouldchama

PRODUCTS

CLASS - C321107 - INDUSTRIAL CONTROL EQUIPMENT-Miscellaneous Apparatus

CLASS - C321187 - INDUSTRIAL CONTROL EQUIPMENT-Miscellaneous Apparatus - Certified to US Standards

Spring Applied Brakes, COMBISTOP, open type, 290 VDC de or less, insulation Class B or F: Type 08 (dimensions OB - 10), 6 - 180 W

- Type 28 (dimensions 01 - 10), 16 - 130 W
- Type 31 (dimensions 01 - 08), 16 - 75 W
- Type 38 (dimensions 02 - 11), 25 - 280 W
- Type 71 (dimensions 00 - 11), 6 - 300 W

Permanent Magnet Brakes, COMBIPERM, open type, 205 VDC or less, insulation Class F:

- Type P1 (dimensions 01 - 10), 8 - 50 W
- Type 15 (dimension 02-10), 8 - 50 W

Electromagnetic Clutches and Brakes, COMBINORM, open type, 205VDC or less, insulation Class B or F:

- Type 02 (dimensions 01 - 13), 6 - 85 W
- Type 03 (dimensions 01 - 13), 6 - 85 W
- Type 04 (dimensions 05 - 12), clutches 15 - 85 W; brakes 15 - 85 W



Certificate: 70199031

Master Contract: 172220

Project: 70199031

Date Issued: 2018-10-05

Notes:

1. The first two figures define the size of the product. The next two figures describe the product type, e.g. COMBISTOP. The following three figures describe the design and the last four figures describe the layout of the product type.
2. Component magnets equipped with not certified leads are supplied with levels acceptable for extra low Voltage, energy limited circuits only. Final acceptability is subjected to re-evaluation by CSA in the end use.

APPLICABLE REQUIREMENTS

CSA-C22.2 No. 14-18 - Industrial Control Equipment
ANSI/UL 508, Ed.17 - Industrial Control Equipment



Supplement to Certificate of Compliance

Certificate: 1267150 (LR49670)

Master Contract: 172220 (049670_0_000)

The products listed, including the latest revision described below, are eligible to be marked in accordance with the referenced Certificate.

Product Certification History

Project	Date	Description
70199031	2018-10-05	Update of report to cover correction of issued address and to update report in accordance with CSA-C22.2 No. 14-18 and Certification notice Industrial Control Equipment No. 60 , dated at April 26, 2018.
1817504	2006-08-25	Alternate construction and re-testing of brakes and clutches, series Combistop, Combiperm and Combinom. Rated voltage raised to 205 Vdc for Combiperm and Combinom.
1267150	2002-04-08	cCSAus Certification on Electromagnetic brakes and clutches; COMBISTOP, Types 08, 28, 31, 38, 71; COMBIPERM, Types PI, 15; COMBINORM, Types 02, 03, 04.

Figure 24: CSA certificat

12 Revision history

Version	Date	Description
01	2011-09	First edition
02	2020-03	Complete editorial revision
03	2021-06	Adaptation of the air gap description, general revision
04	2023-04	Adaption of values, editorial revision
05	2023-11	Adaptation of designations and values

Austria | KEB Automation GmbH

Ritzstraße 8 4614 Marchtrenk Austria
 Tel: +43 7243 53586-0 Fax: +43 7243 53586-21
 E-Mail: info@keb.at Internet: www.keb.at

Benelux | KEB Automation KG

Bd Paapsemiaan 20 1070 Anderlecht Belgium
 Tel: +32 2 447 8580
 E-Mail: info.benelux@keb.de Internet: www.keb.de

Brazil | KEB South America - Regional Manager

Rua Dr. Omar Pacheco Souza Riberio, 70
 CEP 13569-430 Portal do Sol, São Carlos Brazil
 Tel: +55 16 31161294 E-Mail: roberto.arias@keb.de

Czech Republic | KEB Automation GmbH

Videnska 188/119d 61900 Brno Czech Republic
 Tel: +420 544 212 008
 E-Mail: info@keb.cz Internet: www.keb.cz

France | Société Française KEB SASU

Z.I. de la Croix St. Nicolas 14, rue Gustave Eiffel
 94510 La Queue en Brie France
 Tel: +33 149620101 Fax: +33 145767495
 E-Mail: info@keb.fr Internet: www.keb.fr

Germany | Geared Motors

KEB Antriebstechnik GmbH
 Wildbacher Straße 5 08289 Schneeberg Germany
 Telefon +49 3772 67-0 Telefax +49 3772 67-281
 Internet: www.keb-drive.de E-Mail: info@keb-drive.de

Italy | KEB Italia S.r.l. Unipersonale

Via Newton, 2 20019 Settimo Milanese (Milano) Italia
 Tel: +39 02 3353531 Fax: +39 02 33500790
 E-Mail: info@keb.it Internet: www.keb.it

Japan | KEB Japan Ltd.

41-1-601 Kanda, Higashimatsushitacho, Chiyoda Ward
 Tokyo 101 - 0042 Japan
 Tel: +81 3 3525-7351 Fax: +81 3 3525-7352
 E-Mail: info@keb.jp Internet: www.keb.jp

P. R. China | KEB Power Transmission Technology (Shanghai) Co. Ltd.

No. 435 QianPu Road Chedun Town Songjiang District
 201611 Shanghai P.R. China
 Tel: +86 21 37746688 Fax: +86 21 37746600
 E-Mail: info@keb.cn Internet: www.keb.cn

Poland | KEB Automation KG

Tel: +48 60407727
 E-Mail: roman.trinczek@keb.de Internet: www.keb.de

Republic of Korea | KEB Automation KG

Deoksan-Besttel 1132 ho Sangnam-ro 37
 Seongsan-gu Changwon-si Gyeongsangnam-do Republic of Korea
 Tel: +82 55 601 5505 Fax: +82 55 601 5506
 E-Mail: jaeok.kim@keb.de Internet: www.keb.de

Spain | KEB Automation KG

c / Mitjer, Nave 8 - Pol. Ind. LA MASIA
 08798 Sant Cugat Sesgarrigues (Barcelona) Spain
 Tel: +34 93 8970268 Fax: +34 93 8992035 E-Mail: vb.espana@keb.de

Switzerland | KEB Automation AG

Witzbergstrasse 24 8330 Pfaeffikon/ZH Switzerland
 Tel: +41 43 2886060 Fax: +41 43 2886088
 E-Mail: info@keb.ch Internet: www.keb.ch

United Kingdom | KEB (UK) Ltd.

5 Morris Close Park Farm Industrial Estate
 Wellingborough, Northants, NN8 6 XF United Kingdom
 Tel: +44 1933 402220 Fax: +44 1933 400724
 E-Mail: info@keb.co.uk Internet: www.keb.co.uk

United States | KEB America, Inc

5100 Valley Industrial Blvd. South
 Shakopee, MN 55379 United States
 Tel: +1 952 2241400 Fax: +1 952 2241499
 E-Mail: info@kebamerica.com Internet: www.kebamerica.com



MORE KEB PARTNERS WORLDWIDE:

www.keb-automation.com/contact



Automation with Drive

www.keb.de

KEB Automation KG Suedstrasse 38 32683 Barntrup Tel. +49 5263 401-0 E-Mail: info@keb.de