RINGSPANN®
Power Transmission

Installation and operating instructions for Brake MV 022/033/044 FEM-240M/480M

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IMPORTANT

Please read these instructions carefully before installing and operating the product. Your particular attention is drawn to the notes on safety.

These installation and operating instructions are valid on condition that the product meets the selection criteria for its proper use. Selection and design of the product is not the subject of these installation and operating instructions.

Disregarding or misinterpreting these installation and operating instructions invalidates any product liability or guarantee by RINGSPANN; the same applies if the product is taken apart or changed.

These installation and operating instructions should be kept in a safe place and should accompany the product if it is passed on to others -either on its own or as part of a machine- to make it accessible to the user.

SAFETY NOTICE

- Installation and operation of this product should only be carried out by skilled personnel.
- Repairs may only be carried out by the manufacturer or accredited RINGSPANN agents.
- If a malfunction is indicated, the product or the machine into which it is installed, should be stopped immediately and either RINGSPANN or an accredited RINGSPANN agent should be informed.
- Switch off the power supply before commencing work on electrical components.
- Rotating machine elements must be protected by the purchaser to prevent accidental contact.
- Supplies abroad are subject to the safety laws prevailing in those countries.

This is a translation of the original German version!

In the event of discrepancies between the original German version and other versions of these installation and operating instructions, the German version shall take precedence.

Contents

General remarks

1.1 General safety instructions

Please read these installation and operating instructions carefully before installing and operating the brake. Please refer also to the drawings in the various sections.
Safety must be given the highest priority during all work performed on the brake.
Switch off the drive unit before performing work on the brake. The brake should be secured against accidental switch-on.
Rotating components (e.g. brake disc) must be secured by the operator to prevent accidental contact.

1.2 Special safety instructions

Danger to life and limb!
It is essential to secure the entire drive train against inadvertent starts during brake installation and maintenance. Rotating components can cause severe injuries. Therefore, rotating components (e.g. brake disc) must be secured by the operator to prevent accidental contact.

2 Function, Markings, Technical Details, Parts list

2.1 Function

The brakes of type MV are machine components, used for the purpose of braking accelerated masses safely and reliably. The combination of brake and brake disc provides a complete brake unit capable of securing machines and equipment system effectively. Thanks to its universal design, it can perform the following functions:

- As a holding or parking brake, it prevents the unintended start of a stationary shaft.
- As a stopping brake, it brings a rotating shaft to a complete standstill.

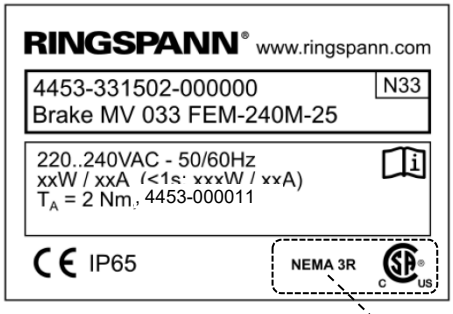
The braking force is generated by a spring, the brake is opened with the use of an electromagnet. In the case of possible lining wear of the friction pads, the holding or braking torque is reduced.

2.2 Markings

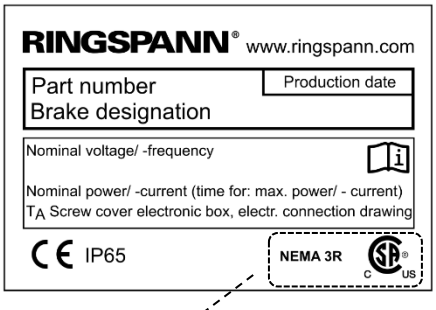
These installation and operating instructions apply to:

- the types MV 022/033/044 FEM, each size for two voltage ranges 240V (220..240VAC) und 480V (380..480VAC).
- installation on horizontal brake discs and vertical brake discs in combination with horizontal shafts
- for models with and without switches
- for different brake pad material and for brake pads with signal cables.
- with cable entry (cCSAus version) and plug as supply connection.

example:



marking:



only for cCSAus-option

2.3 Technical details

	MV 022 FEM / FEA	MV 033 FEM / FEA	MV 044 FEM / FEA
Clamping force	3.800 N	12.000 N	25.000 N
Nominal air gap each side	0,8 mm	0,8 mm	0,8 mm
Weight[kg]	8 kg	19 kg	45 kg
Smallest brake disc diameter	200 mm	300 mm	355 mm
Brake disc thickness Typ	12,5 mm	12,5 mm	25 mm
Brake disc thickness Typ	20 mm	25 mm	30 mm
Supply voltage [1] type 240VAC (one phase, 2 wire)	220 … 240VAC	220 … 240VAC	380 … 480VAC
Supply voltage [1] type 480VAC (one phase, 2 wire)	380… 480VAC	380 … 480VAC	
Supply voltage frequency [2]	50Hz or 60 Hz	50Hz or 60 Hz	50Hz or 60 Hz
Electric fuse	B10 or C6	B10 or C6	B10 or C6
Power consumption when brake is open	20..25 W	25 W	20..25 W
Power consumption during opening (approx. 0.2s)	1800 W	2000 W	2200 W
Electrical degree of protection	IP 65	IP 65	IP 65
Insulation class	I (Schutzleiter)	I (Schutzleiter)	I (Schutzleiter)
Duty cycle	100 %	100 %	100 %
Max. switching frequency at 22°C ambient temperature [3]	360 / h	360 / h	360 / h
Sound level (max. when opening) [4]			
Ambient temperature [3]	-25°C bis +65°C	-25°C bis +65°C	-25°C bis +65°C

[1] The operating voltage can be taken from the nameplate and the sticker on the electronics. There are two variants 240 (220..240VAC) and 480 (380..480VAC).

[2] No adjustment necessary, the brake can be operated with 50Hz and 60Hz.

[3] If the ambient temperature is higher than 22°C, the max. permissible switching frequency per hour is reduced.

[4] Measured according to IEC 61672-2 "Fast"

2.4 Standards and guidelines

The following standards and guidelines have been applied:

2011/65/EU RoHS Directive
2014/35/EU Low Voltage Directive
DIN EN 61000-6-2 EMC - Immunity for industrial environments
DIN EN 61000-6-4 EMC - interference emission for industrial areas
(only with filter 3515-090001-0000 Type 240 or 3515-190001-000000 Typ 480)
Protection class electrical: IP65
Protection class mechanical: IP10

CE In the sense of the low voltage directive 2014/35/EU.

3 Intended use

The brake is a single-phase (2-wire) equipment. The brake can be connected to a single-phase system L and N (e.g. 230VAC) or a three-phase system between two phases L and L (e.g. 400VAC). The brake may only be operated with the electrical voltage specified on the identification plate of the brake.

240 = 220 … 240 VAC
480 = 380 … 480 VAC

The supply voltage frequency must be 50Hz or 60Hz, no setting is required. For electrical connection see also chapter 14.
The brake has been designed for use as a holding and/or stopping brake. Any other use is considered improper. RINGSPANN is not liable for any damage resulting from this; the user alone bears the risk.

4 Unintended use

It is not permitted to operate the brake with an operating voltage other than that indicated on the identification plate.
The operation without brake disc is only allowed when the assembly screw (Pos. 25, **Fehler! Verweisquelle konnte nicht gefunden werden.**)is still applied on the brake and unscrewed by a maximum of 1 mm. Repeated shifting without brake disk or without assembly securing screw can damage the brake.
RINGSPANN is not liable for any damage caused by operating the brake without the brake disc and for unauthorized modifications to the brake; the risk for this is borne solely by the user.
A type 2 overvoltage arrester must be used to protect the brake electronics. The overvoltage arrester must be installed between the switching relay (customer) and the brake electronics.

Attention!
The operation without brake disc is only allowed when the assembly screw (Pos. 25, **Fehler! Verweisquelle konnte nicht gefunden werden.**) is still applied on the brake and unscrewed by a maximum of one turn.

5 Delivery condition

The brake is tested prior delivery. The brake is set to nominal air gap.
The spring for generating the braking force is fixed in the open position by the assembly securing screw, Pos. 25, **Fehler! Verweisquelle konnte nicht gefunden werden.**, so that the brake can be mounted on the brake disk or brake rail without operating voltage.

For later operation, the assembly securing screw pos. 25 must be removed.

Brake size	022	033	044
Assembly securing screw size (Thread up head)	M5x40	M8x50	M8x100
Assembly securing screw size (Thread up head) Valid from date 25.03.2025	M6x50	M8x60	M10x100

6 Handling and storage

The weight of the brake depends on the size, between 8 kg and 45 kg, see also chapter 2.3.
The brake is delivered with anti-corrosion protection and can be stored in an enclosed, dry space for up to 12 months. It is important to prevent condensation from forming. Moist storage areas are unsuitable.

7 Technical requirements for safe and reliable operation

Mounting the brake to stable, low-vibration machine components ensures low-screech, low-noise braking. To protect the brake electronics, the installation of surge arresters is mandatory. These surge arresters (per phase one) must be connected between the customer's switching relay and the brake electronics. In this case, the surge arrester of L1 and L2 is switched to N or PE in order to derive mains disturbances. For 230 / 400V electric grids e.g., surge protection switch of the brand "Bourns 1250-xS-230" can be used.

8 Installation of the RINGSPANN brake

8.1 General instructions for assembly and installation

Before installing the brake, the brake disc must be cleaned with alcohol, e.g. ethyl or isopropyl alcohol or a water-based surfactant solution (soapy water, etc.) and then rubbed dry with a clean cloth.

When cleaning the brake disc with a thinner, acetone or a brake cleaning agent, it is important to ensure that neither these cleaners nor any cleaner residues come in contact with the brake pads. This is especially important in the case of brakes used only as parking brakes, as no dynamic braking operations take place during which thinner residues would be rubbed off the brake disc.

Please note!
Oil and rust-proofing-agent residues reduced friction coefficient and thus diminish transmissible braking torque substantially!

8.2 Installation

Before installation, check that the mounting surface is flat and that the overall axial alignment between the brake disk and the mounting surface is within a tolerance of 0.2 mm.
Check the axial movement of the brake disk. The axial movement cannot be more than ± 0.2 mm. The maximum permissible lateral runout of the brake disk is 0.1 mm. If the lateral runout is more than 0.1 mm, the brake unit can start to chatter and shake during operation. Suitable lifting straps and a lifting device can be used to bring the brake into position for installation.
The brakes are mounted with 4 screws. The tightening torques refer to threads dry or lubricated with oil, use Loctite 243. Hardened washers must be used.

	MV022	MV033	MV044
Distance X [mm]	25	40	50
Distance Z [mm]	28,5	38	46
Distance T [mm]	125	166	230
Dimension for friction surface Y [mm]]	39	55	75
Dimension for brake disk center V [mm]	73±0,2	94±0,2	131±0,2
Dimension for brake disk center V with option "mounting shims" [mm]	73,0 bis 75,0	94,0 bis 96,0	131,0 bis 133,0
Fastening screw	M8 - 8.8	M12 - 8.8	M16 - 8.8
Tightening torque of fastening screw [Nm]	28	96	235

Attention!

Check to ensure that the brake disc rotates freely.

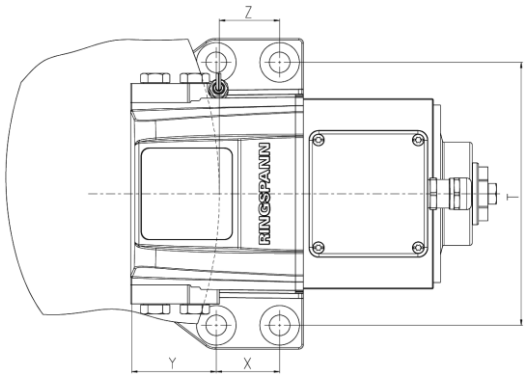


Fig. 8.1

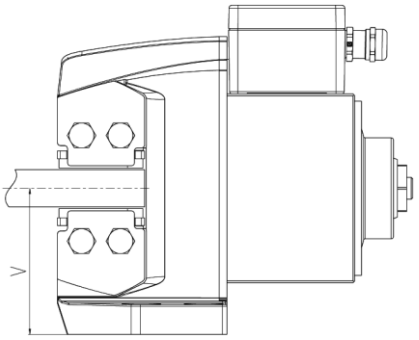


Fig. 8.2

Option "Mounting shims" up to 2mm (4x0.2; 2x0.5, 2x1mm):

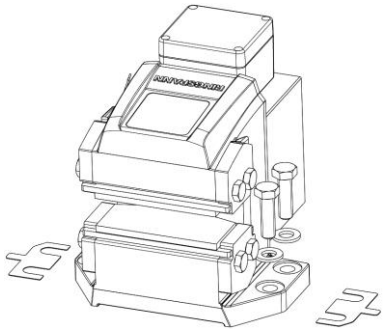


Fig. 8.3

MV022 = 3453-220003-000000
MV033 = 3453-330003-000000
MV044 = 3453-440003-000000

8.3 Electrical Connection

Attention!

To protect the brake electronics, the installation of surge arresters is mandatory. These surge arresters (per phase one) must be connected between the customer's switching relay and the brake electronics.

Attention!

To protect the electronic against too fast switching, a security feature is integrated in the electronic. The security feature locks the supply voltage and the brake cannot be opened. After 40 s the electronic will pass the supply voltage and after a further activation the brake will open.

Attention!

Only trained electrician are allowed to connect the brake with the supply voltage. The trained electrician must be familiar with the relevant standards (e.g. in Germany DIN VDE 0113).

Attention!

To use the brake the electronic (included in the scope of delivery) is required. Do not connect the brake directly to the supply voltage. The operation without brake disc is only allowed when the assembly screw (Pos. 25, **Fehler! Verweisquelle konnte nicht gefunden werden.**) is still applied on the brake and unscrewed by a maximum of one turn.

The following principles must be observed:

a) For safe operation of the brake a sufficient grid quality is necessary. See also the standards of grid quality.

b) Before replacing the electronic, check the coil of the solenoid to be shure that the coil is not damaged. Please consult RINGSPANN.

- Cable gland or plug is included in the scope of delivery.
- The brake can only be connected to 50Hz or 60Hz, no adjustment is required.
- Only cables with copper conductors are allowed to be connected to the electronics. The cables must be selected according to the Canadian Electrical Code, Part1 or the National Electrical Code (NEC).

The brake is a single-phase (2-wire) device. The brake can be connected to a single-phase system L and N (e.g. 230VAC) or a three-phase system between two phases L and L (e.g. 400VAC). Observe the maximum permissible operating voltage on the rating plate.

Size 022

For size 022, the electronic module is not attached to the brake, but must be mounted separately near the brake.

Achtung – Baugröße 022 !!
Do not remove the contacts between the brake and the electronics while the brake is energized, this will destroy the magnet! (see Fig. 8.4).

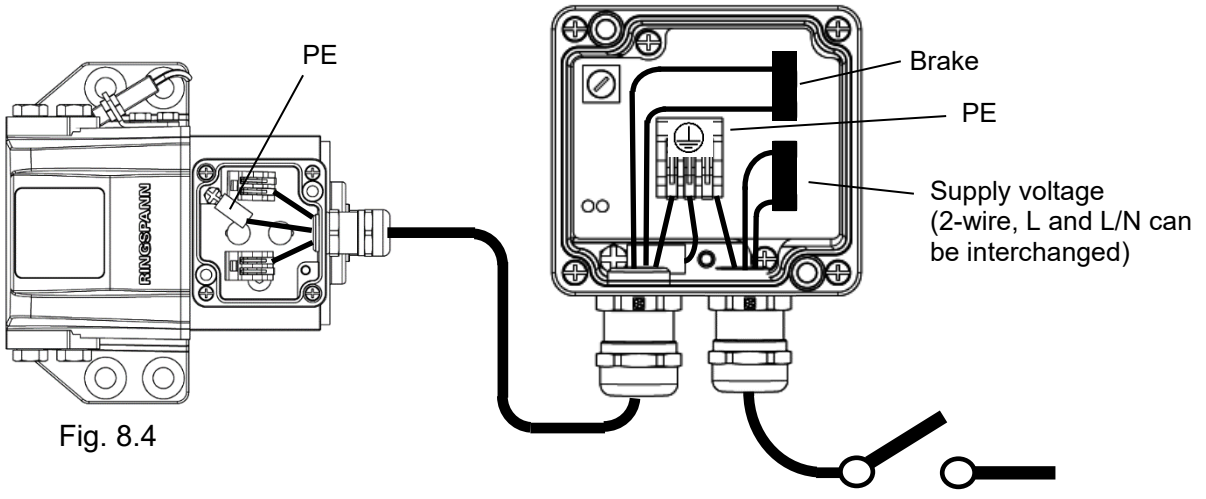


Fig. 8.4

The insulation stripping length of the cables for the WAGO terminals is 9..10 mm.
The brake may only be operated at 50Hz or 60Hz, adaptation is automatic.
The cables must be selected according to the Canadian Electrical Code, Part1 or the National Electrical Code (NEC).
Supply voltage: Operating voltage, 2-wire, is noted on the identification plate.
Fuse protection: 10 A type B or 6 A type C is to be ensured by the user.
Supply line: flexible, 1-1.5 mm²; use cables with copper conductors, max. 50m long; do not lay in cable duct with supply lines to electrical drive machines. Use overvoltage arrester! Cable length between electronics and magnet max. 5m (size MV022).
Cable passage: cable passage = 5-10mm (cCSAus); plug variant = 8-10mm.
PE protective conductor: 1-1.5 mm2 on housing with cable lug and connected via WAGO terminal.
Note for switching device: max. inrush current 6 A rms (15 A peak, 1,5 kW) for 0.2s, thereafter less than 0.6 A rms, two-pole switching between electronics and supply voltage.
After the electrical connection has been completed, the protective conductor function must be checked in accordance with the applicable local (e.g. Germany: DIN VDE 0113 or EN 60204).

Size 033 and 044:

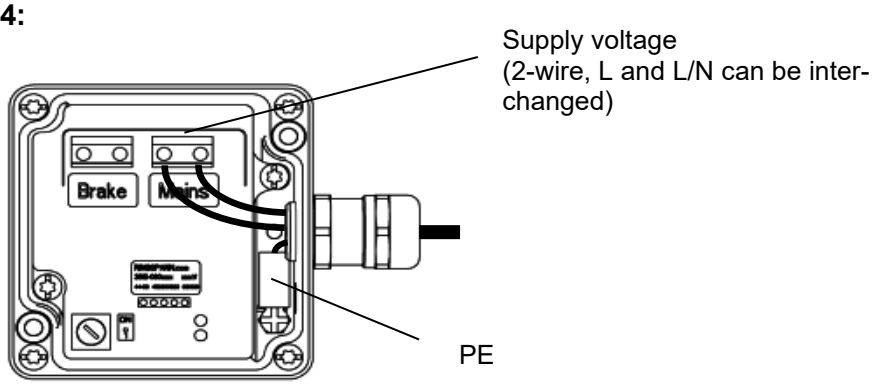


Fig. 8.5

The brake may only be operated at 50Hz or 60Hz, adjustment is automatic.
The cables must be selected according to the Canadian Electrical Code, Part1 or the National Electrical Code (NEC).
Supply voltage : Operating voltage, 2-wire, is indicated on the nameplate.
Fuse protection : 10 A type B or 6 A type C is to be ensured by the user.
Supply cable : flexible, 1-1.5 mm²; use cable with copper conductors, max. 50m long; do not lay in cable duct with supply cables to electrical drive machines. Use surge arrester!
Cable passage: cable passage = 5-10mm (cCSAus); plug variant = 8-10mm.
PE protective conductor: 1.5 mm^2 connected to the housing with cable lug.
Note for switchgear: max. inrush current 6 A rms (15 A peak, 2,5 kW) for 0.2s, then less than 1 A rms, double-pole switching.
After the electrical connection has been completed, the protective conductor function must be checked in accordance with the applicable local
(e.g. Germany: DIN VDE 0113 or EN 60204).

8.4 Braking force

	MV022	MV033	MV044
Nominal clamping force [N]	3800	12000	25000
[1)] Braking force [N]	3050	9600	20000
Friction diameter [mm] D_R =	D_A - 36	D_A - 46	D_A - 72
[1)2)] Braking torque [Nm] at D_A= 200	250	-	-
D_A= 250	320	-	-
D_A= 300	400	1200	-
D_A= 355	480	1500	2800
D_A= 430	600	1800	3600
D_A= 520	740	2250	4500
D_A= 630	900	2800	5600
D_A= 710	1000	3200	6400

[1)] Braking force and braking torque calculated with a theoretical coefficient of friction of μ=0.4.

[2)] D_A = outside diameter of brake disc in mm.

The entire surface of both brake pads must be in contact with the brake disc in order to achieve the optimum braking effect. The brake pads must also be heated briefly to approx. 200°C. Therefore, multiple brief braking operations and rotating brake disc are required to heat the brake pads.

Attention!

If the brake is used as parking brake, the brake torques specified are not met. Reductions of up to 50% of the braking torques are possible.

Attention!

If the brake cannot be run in, the braking torques listed in our publication no. 46 cannot be achieved. Reductions of up to 50% are possible.

8.5 Manual hand release

In order to release the brake manually by hand, the assembly securing screw pos. 25, Fig. 5 can be used. The brake is released by screwing it in.

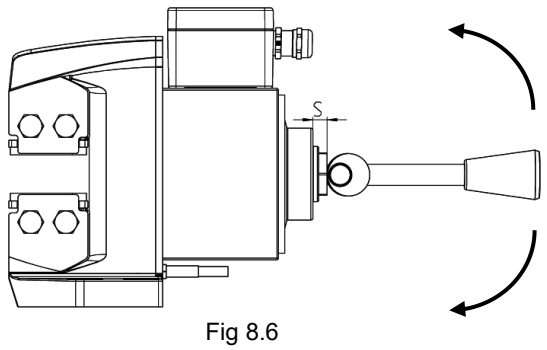


Fig 8.6

For controlled manual opening of the brake, a manual release lever with eccentric with "automatic reset" is optionally available. For safe operation, the manual release lever must be removed again and the opening needs to be closed.

MV022: 4453-000005-000000

MV033: 4453-000004-000000

MV044: 4453-000006-000000

9 Commissioning

Achtung!

The operation without brake disc is only allowed when the assembly screw (Pos. 25, **Fehler! Verweisquelle konnte nicht gefunden werden.**) is still applied on the brake and unscrewed by a maximum of one turn.

Before operating the brake, switch on the power (magnet holds the brake open) and remove the assembly locking screw. Now the brake is ready for operation.

10 Disassembling the brake

Danger to life and limb!

When disassembling the brake, it is essential to ensure that the entire drive train is secured against inadvertent activation. Rotating components can cause severe injuries. Therefore, rotating components (e.g. brake discs) must be secured against accidental contact.

Attention - Size MV 022 !!!

Do not remove the contacts between the brake and the electronics as long as the brake is energized, this will destroy the magnet! (see figure 8.3).

Secure the open position with the mounting lock included in the scope of delivery.
(see Fig. 5.1). To do this, switch on the power (magnet holds the brake open) and turn the screw into the brake. Now switch off the power.

Attention.

Make sure that the brake is de-energized and secure the brake for disassembly.

Remove the screws that are used to fasten the brake. The brake caliper can now be removed from the mounting surfaces.

11 Maintenance

11.1 General maintenance

Maintenance must be performed on the brake at intervals of 4 weeks up to once a year, depending upon the operating load. Perform the following checks during every maintenance operation:

- Check brake pads for wear.
- Check the bolt connection between the brake pad and the machine component as well as the bolt connections for the retaining plates for tightness.
- Check the electric supply cables (sight check)

11.2 Lining wear adjustment, permissable brake pad wear and brake pad replacement

Danger to life and limb!
Brake pads may be replaced only when the equipment system and/or the working machine is at a complete standstill

Attention!
A gap which is not in the range of the table 11.1 reduces the braking force or can lead to a complete loss of braking force. The brake lining may only be worn down to a certain residual thickness (retaining plate thickness plus residual lining). Brake linings should always be replaced in pairs. Only original RINGSPANN brake linings may be used.

Manual wear adjustment:

If the brake linings are worn, the distance between the brake linings and the brake disc can be compensated. To do this, switch on the power supply in order to open the brake. Secure additionally with the locking screw pos. 25 if available. When measuring, use two feeler gauges at the same time, one at the top and one at the bottom. This is important, because if you move one brake pad, the other brake pad will move also. The feeler gauge should be pushed in or out with resistance. Measure always over the middle of the brake pad, in the area of the piston. The air gap can be slightly angular, the narrowest air gap is decisive. If the total gap (sum of upper and lower gap) is out of the range shown in the following table (more than 1,9 mm) you have to adjust the gap. The adjustment is only possible in 0,2mm steps.

[mm]	MV 022	MV 033	MV 044
Nominal gap per side	0,8		
total gap (2x niminal gap + tolerance)	1,5 .. 1,7	1,4 .. 1,7	1,4 .. 1,7
Adjustment from total gap	1,9	1,9	1,9

Tab. 11.1

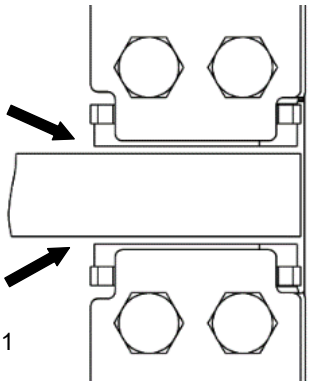
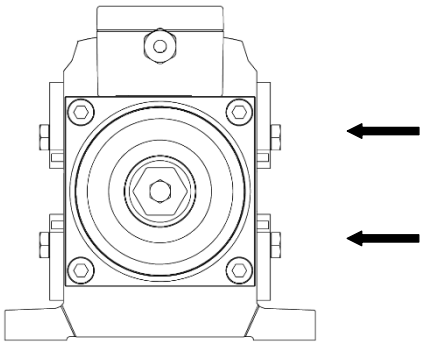
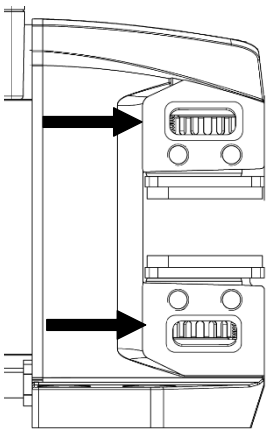


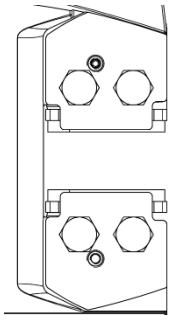
Fig. 11.1



Step 1: Remove the side plates on the right side (with the view from behind).



Step 2: Take a screwdriver and turn the piston in the direction of arrow. One groove more per piston reduces the total gap by 0,2mm (e.g. upper piston one groove more and the lower piston two grooves more reduces the total gap by 0,6mm). Do not reduce the total gap more than mentioned in the table 11.1 (e.g. MV033 the total gap not smaller than 1,4mm). Note the permissible remaining brake pad thickness in table 11.3. We recommend to set the total gap to the double of the nominal gap (0,8mm per side, that means total gap is 1,6mm). The difference between upper gap and lower gap can be 0,3mm if the run out of the disk is within the given tolerances and the disk do not touch the brake pad (e.g. MV033 upper gap 0,65mm and lower gap 0,95mm).



Step 3: Assemble the side plates. Position the side plates with anti-rotation device by hand and make sure that it engages in the groove of the piston without being forced. If the brakes are exposed to the weather, the surface between the brake housing and the side plate must be released with silicone adhesive. Use Loctite 243 for the screws. For the tightening torque, see the table below. Remove the locking screw pos. 25 if used (see Fig. 5.1, and table 11.4).

	MV 022	MV 033	MV 044
Screw side plates	M8 - 8.8	M10-8.8	M14 - 8.8
tightening torque side plates [Nm]	28	56	153
Use Loctite 243 !			

Tab. 11.2

Tab.

Permissible lining wear:

Before replacing the brake linings, make sure that the mass held by the brake is secured against movement, as parts of the brake must be loosened to change them.
Permissible remaining thickness = holding plate thickness plus remaining lining.

MV 022	permissible remaining thickness
brake disc width 12,5 mm	10 mm
brake disc width 20 mm	7 mm

MV 033	permissible remaining lining thickness
brake disc width 12,5 mm	13 mm
brake disc width 25 mm	7 mm

MV 044	permissible remaining lining thickness
brake disc width 25 mm	14 mm
brake disc width 30 mm	13 mm

Tab. 11.3

Replacement of brake pads:

Switch on the power supply in order to open the brake. Secure additionally with the locking screw pos. 25. **For replacing the brake pads you have to use the locking screw pos. 25 to prevent any injuries.**
Perform step 1 as mentioned before when adjusting the gap. Remove the brake pads and turn the piston in the other direction as mentioned to increase the distance, so that the new brake pads will fit into the brake. Perform now step 2 and step 3 to finish the brake pad replacement.

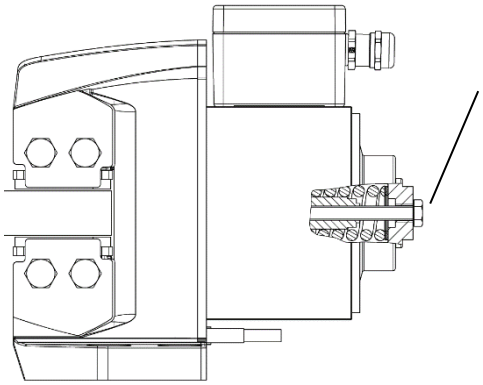


Fig. 11.3

Screw pos. 25	MV 022	MV 033	MV 044
Screw (thread up to head)	M5x40	M8x50	M8x100
Screw (thread up to head) Valid from 25.03.2025	M6x50	M8x60	M10x100

Tab. 11.4

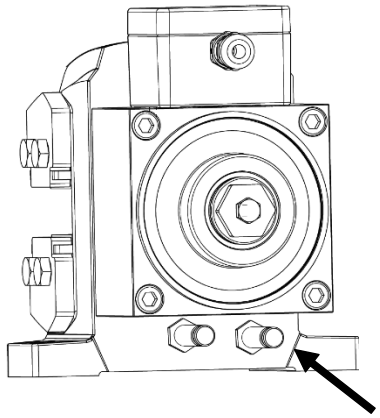
The new brake linings must now be run in by repeatedly braking briefly with the brake disc. See the notes in chapter 8.5.

12 Accessory: operating status and wear monitoring (optional)

12.1 Attachment of inductive sensor for operating status „brake open“

Danger to life and limb!
The inductive proximity switch may be installed and/or replaced only when the equipment system and/or working machine is at a complete standstill!

A sensor is to be installed for the operating state “brake open”, the sensor is supplied loose as an accessory. The installation and adjustment of the sensors takes place only after the brake has been installed and can only be carried out when the brake is open.



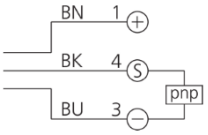
The brake is energized and opened. The sensor is screwed in underneath the magnet on the right side when viewed from behind until it touches metal on the inside. Then unscrew the sensor by two turns. Secure the sensor position with the hex nut. The "brake open" sensor generates a "high signal" when the brake is open.
The perfect function of the status monitoring is to be checked by actuating the brake several times. I.e. the LED must light up when the operating state is reached.

For all sizes:

inductive sensor „brake open“ (optional new since 25.03.25):

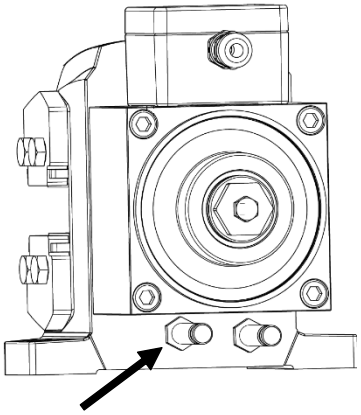
material-no. : 3505-012001-A00005

switching function	: PNP (normally open)	switching distance	: 4 mm
operating voltage	: 10....30 V DC	switching output	: 200 mA
idle current	: 10 mA	voltage drop	: max. 2,4 V
switching indicator	: LED	short circuit protection	: yes
housing material	: nickel-plated brass	protection class	: IP 67
connection type	: plug M12	ambient temperature	: -25°C bis +70°C



12.2 Attachment of inductive sensor for wear (optional)

The brake is spring-applied and continuously loses braking force as the pads wear. The brake can lose up to 25% of its original braking force by the time the sensor signals "Adjust pad wear".
As soon as the "Adjust pad wear" sensor triggers, the user must immediately reduce the air gap on the brake pads. See chapter 11. If the pad wear is not readjusted, this can lead to a complete loss of braking force.



The brake is energized and open. The sensor is screwed in underneath the magnet on the left, seen from the rear, until it touches metal on the inside. Then unscrew the sensor by two turns. Secure the position of the sensor with the hexagon nut. The "brake pad wear adjustment" sensor generates a "high signal" in normal operation. In the event of a "low signal", the brake pad wear must be compensated for immediately. See chapter 11.

inductive sensor „lining worn" (optional new since 25.03.25):

material-no.	: 3505-012001-A00007 **for size 033 and 044**		
switching function	: PNP (normally open)	switching distance	: 10 mm
operating voltage	: 10....30 V DC	switching output	: 200 mA
idle current	: 10 mA	voltage drop	: max. 2V
switching indicator	: LED	short circuit protection	: yes
housing material	: nickel, chromed	protection class	: IP 67
connection type	: cable, 2m	ambient temperature	: -25°C bis +70°C

material-no.	: 3505-012001-A00008 **for size 022**		
switching function	: PNP (normally open)	switching distance	: 8 mm
operating voltage	: 10....30 V DC	switching output	: 200 mA
idle current	: 10 mA	voltage drop	: max. 2V
switching indicator	: LED	short circuit protection	: yes
housing material	: nickel, chromed	protection class	: IP 67
connection type	: cable, 2m	ambient temperature	: -25°C bis +70°C

13 EC-Declaration of Conformity

Note regarding EMC Directive 2014/30/EU

The brake is an uncritical equipment according to the EMC-Directive because of its passive operation. The brake can not be operated independently. After integration into a complete system, the brake can be evaluated according to EMC-Directive. To comply with DIN EN 61000-6-4, the mounting of a line filter (3515-190001-000000) is required as a general rule.

Note regarding EC-Machinery Directive 2009/42/EC

The product is a component for installation in a machine according to the EC-Machinery Directive 2009/42/EC. Together with other components, the product can meet safety-related applications. The necessary measures will emerge from the risk analysis of the machine. Built-in, the brake is part of the machine and the machine manufacturer assesses the conformity of the safety device on the Machinery Directive. The commissioning of the brake is only permitted if the machine fulfills the Machine Directive.

EC-Declaration of Conformity

For the purpose of EC-Low voltage directive 2014/35/EU

We hereby declare that the following products, developed, designed and manufactured by our own responsibility, are In accordance with the EC-Low voltage directive 2014/35 / EU

RINGSPANN GmbH
Schaberweg 30-38
D-61348 Bad Homburg

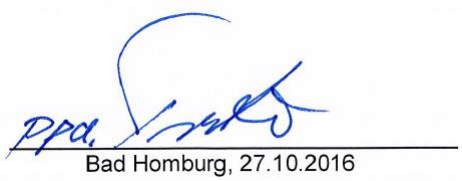
Product:	Electromagnetic released brake disc
Designation:	MV..FEM / FEA
Sizes:	022/033/044
Types:	4453-22x; 4453-33x; 4453-44x

Following standards and directives have been applied and complied with:

Directive		Standard
2014/35/EU	Low voltage directive	
2014/30/EU	EMC directive	DIN EN 61000-6-2

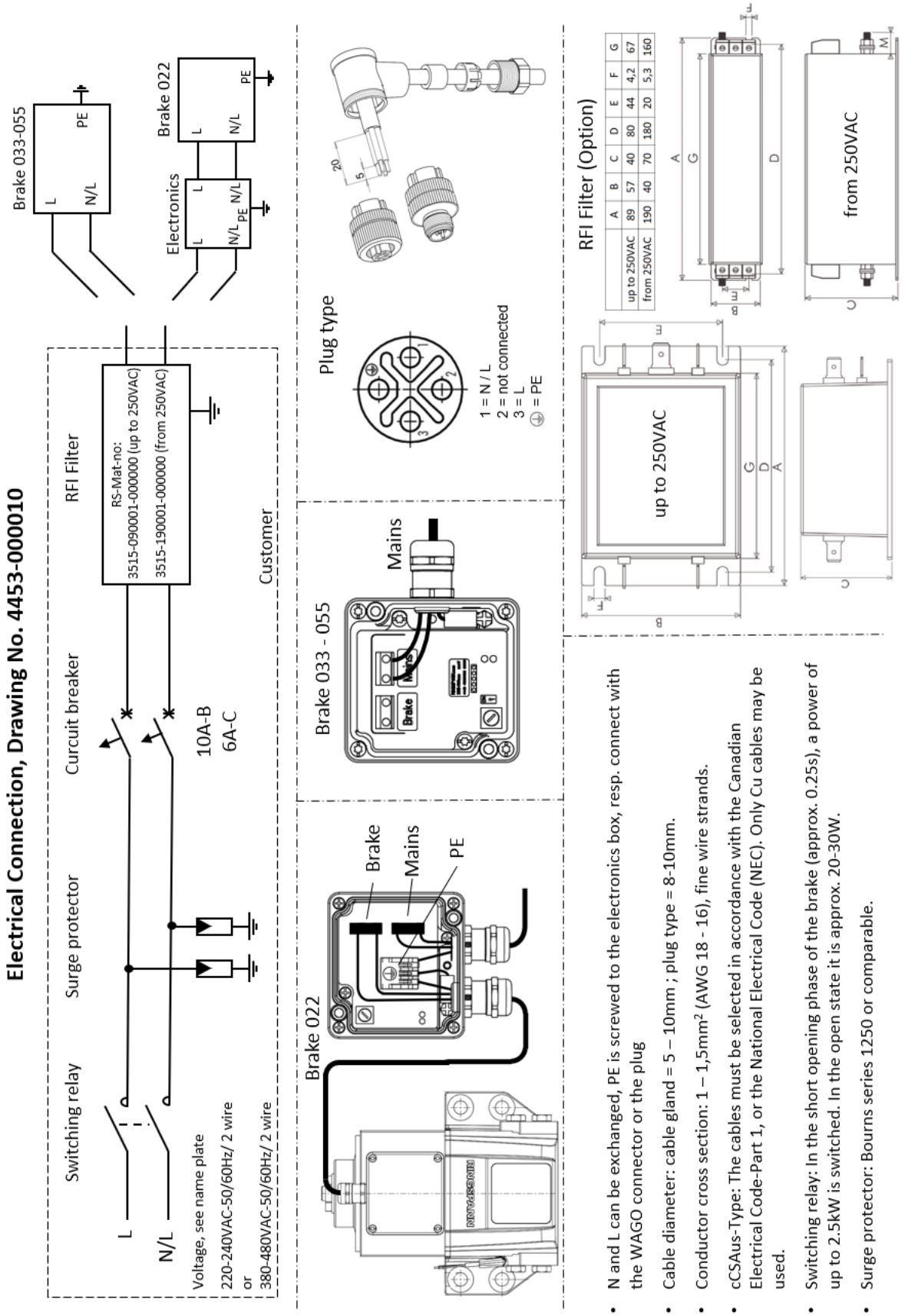
The commissioning of the brake is only permitted when the machine complies with the EC-Machinery Directive 2006/42 / EC.

ppa. Ernst Fritzemeier
RINGSPANN GmbH
Schaberweg 30-38
D-61348 Bad Homburg



Bad Homburg, 27.10.2016

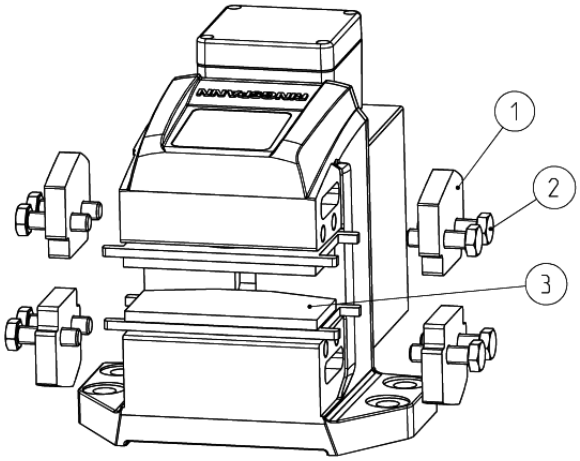
14. Electrical Connection, Drawing No. 4453-000011

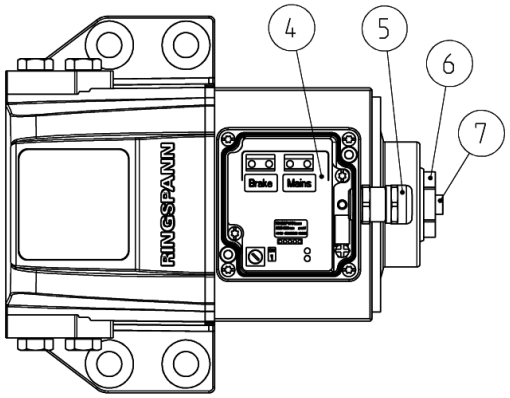


	A	B	C	D	E	F	G
up to 250VAC	89	57	40	80	44	4,2	67
from 250VAC	190	40	70	180	20	5,3	160

- N and L can be exchanged, PE is screwed to the electronics box, resp. connect with the WAGO connector or the plug
- Cable diameter: cable gland = 5 – 10mm ; plug type = 8-10mm.
- Conductor cross section: 1 – 1,5mm² (AWG 18 - 16), fine wire strands.
- cCSAus-Type: The cables must be selected in accordance with the Canadian Electrical Code-Part 1, or the National Electrical Code (NEC). Only Cu cables may be used.
- Switching relay: In the short opening phase of the brake (approx. 0.25s), a power of up to 2.5kW is switched. In the open state it is approx. 20-30W.
- Surge protector: Bourns series 1250 or comparable.

15. Drawings and parts list





Attention !
The part number of the brake is required for clear assignment.

part	description	quantity			
		022	033	044	
1	side plate	4	4	4	
2	hexagonal bolt ISO4017	8	8	8	
3	set of brake linings	1	1	1	
4	electronics 240VAC / elektronics 480VAC	1	1	1	
5	plug or cable gland (cCSAus)	1	1	1	
6	spring stop	1	1	1	
7	lock screw	1	1	1	