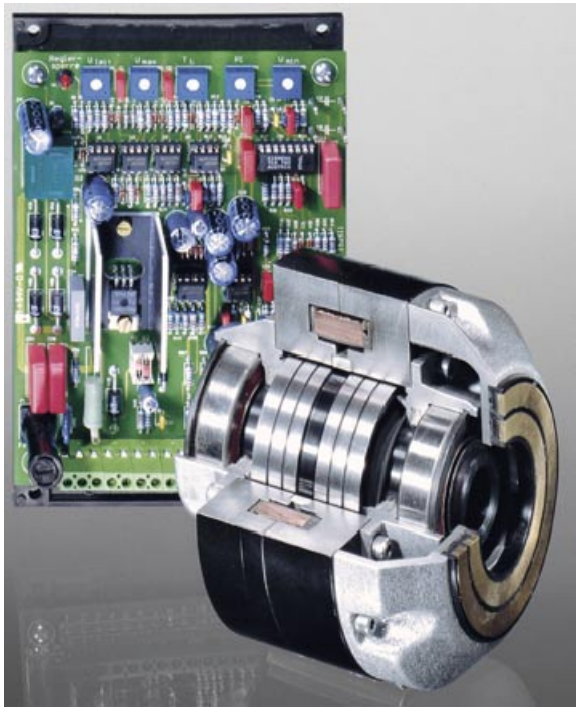
BA 14.9001
392 888 EN

magneta

Operating Instructions



Magnetic-particle clutches

Type 14.501 / 14.502

Magnetic-particle brakes

Type 14.512

Please first read these Operating Instructions before taking any action/s.

Manufacturer / location:

magneta GmbH & Co KG
Dibbetweg 31
D-31855 Aerzen
borough: Groß Berkel
Tel.: (05154) 95 31 31
Fax: (05154) 95 31 41
E-Mail: Info@magneta.de
Internet: www.magneta.de

The year of manufacture is given on the packaging label

These Operating Instructions apply to the

Magnetic-particle clutch Type 14.501
Type 14.502
Magnetic-particle brake Type 14.512

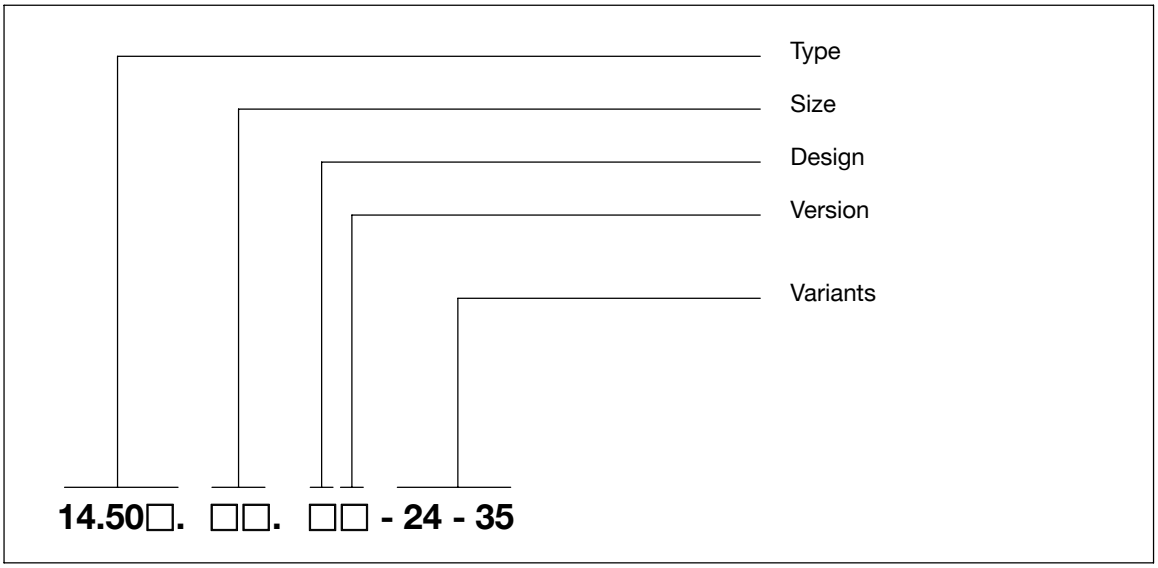
Nameplate

Design

Field	Content			Example
1	Assembly plant		Barcode no.	magneta D Aerzen
2	Name	Materials number		Magnetic-particle brake / No. 116008
3	Type		Torque	Type:14.512.02.1.2 / 20NM
4	Power supply voltage	Capacity	Quantity: pcs.	24V DC 16W / 1 piece
5	Bore		Date of manufacture	14H7 DIN 6885/1 / K 90127

BA 14.9001
Author: magneta GmbH & Co KG
3th edition: 01/02

Type key



Type

14.501 Clutch with spade plug connection

14.502 Clutch with slip rings

14.512 Brake with spade plug connection

Size

01, 02, 03, 04, 08, 16, 32

Design

1 without heat sink

2 with heat sink

3 with heat sink and separate fan

Version

1 with shaft

2 with hollow shaft

Variants

Voltage, bore and/or shaft diameter.

Temperature sensor: normally-closed or opened

Contents

1 Preface and general information

1.1 How to use these Operating Instructions

- These Operating Instructions are intended to ensure that work on and with magnetic-particle clutches and brakes of the 14.501/502/512 type is performed safely. They contain safety information that must be observed.
- All personnel using and/or working on these clutches and brakes must have these Operating Instructions to hand at all times and must observe the relevant information and notes in them.
- These Operating Instructions must always be maintained in complete and perfectly legible condition.

1.1.1 Terminology used

Units

The term ”unit” is used in the text that follows to denote magnetic-particle clutches and/or brakes.

1.2 Scope of delivery

- Unit
- For clutches:
  – Brushes
  – Brush holders
- Commissioning notes
- Check immediately after receipt of shipment that the scope of delivery tallies with the accompanying paperwork.
- Claim:
  – Visible transport damage immediately of the forwarder
  – Visible deficiencies/incompleteness immediately of the magneta company.

1.3 Magnetic-particle clutches and brakes, type 14.501/502/512

1.3.1 Labelling

- magneta- Units are uniquely and unmistakably labelled by the content of their nameplates.
- CE labelling: conforms with EC Guideline “ ”Low-voltage”. No CE labelling is permissible below 75 V DC; from 75 V DC up, such labelling is required and extant.

1.3.2 Application as directed

- Operate the units only under the operating conditions prescribed in these Operating Instructions.

Magnetic-particle clutches and brakes

- are components
  – intended for installation in/on plant and machinery and
  – for assembly together with other components to a machine;
- are electrical components;
- are not to be operated outside their individual performance/capacity limits;
- fulfil the protective requirements of the EC ”Low voltage” Guideline “
- are not machines within the meaning of the EC ”Machines” Guideline “;
- are not household equipment but exclusively intended for commercial use as components.

Magnetic-particle clutches and brakes

- comply with the EC Guideline “on ”Electromagnetic compatibility”, provided they are installed as required by CE-typical drive systems.
- can be used
  – on public and private networks,
  – and in the industrial, commercial and domestic fields.
- The user is responsible for adherence to EC Guidelines where machinery use is concerned.

Any other use shall be deemed inappropriate

1.3.3 Legal regulations

Liability

- The information, data and notes in these Operating Instructions were state-of-the-art at the time of printing. Claims referring to units already supplied cannot be derived from the information, illustrations and descriptions given.
- The process engineering information and circuitry parts given in these Operating Instructions are suggestions whose transferability to particular applications must be checked in every individual case. magneta cannot accept any liability whatsoever for the suitability of the procedures and circuitry parts given.
- We cannot accept any liability whatsoever for damage and/or operational malfunctions due to:
  – disregarding these Operating Instructions,
  – unauthorised modification of/to any unit/s,
  – operating faults,
  – inappropriate/improper working on and/or with the unit/s, and/or
  – inappropriate use.

Warranty

- Conditions of warranty: please refer to our General Terms and Conditions of Business for the goods and services supplied by magneta GmbH & Co KG.
- Warranty claims must be made of magneta immediately the fault/s and/or defect/s concerned is/are detected.
- The warranty is null and void in all cases in which no liability claim/s can be made as well.

2 Safety information

2.1 Persons responsible for safety

Operator

- An operator is any natural or legal person who uses the unit/s or on whose behalf same is/are used.
- The operator or their safety officer must ensure,
  – that all relevant applicable regulations, notes and laws are adhered to,
  – that only qualified personnel work on and/or with the unit/s,
  – that personnel always have these Operating Instructions available to them during all relevant operations, and
  – that unqualified personnel are prohibited from working on/with the unit/s.

Qualified personnel

Qualified personnel are persons who - because of their training, experience, familiarisation, instruction and knowledge of relevant Standards and regulations, accident prevention rules and operating conditions- have been authorised by the person/s responsible for plant safety to perform the activities required and are able to recognise and avoid possible risks in so doing.
(Definition of qualified personnel per IEC 364)

2.2 General safety information

- No claim is made that these safety notes are comprehensive. In the event of queries and/or problems, please refer to the magneta company.
- The units are state-of-the-art when supplied and considered fundamentally safe to operate.
- Risks to life and limb, to the units themselves and to other assets of the operator may arise from operating the units if
  – unqualified staff work on/with the units, and/or
  – the units are used improperly.
- The process engineering and circuitry information given in these Operating Instructions constitute suggestions only and their applicability to the particular individual applications must always be checked in each and every case.
- Use of the units must be such that they fulfil their function in fault-free operation if properly installed and used and do not constitute any danger to persons. This also applies to their interaction with the plant as a whole.
- Take additional measures to limit the consequences of malfunction/s possibly giving rise to any risk to persons and/or damage to material/s.
  – Electrical or non-electrical safety equipment (locking devices or mechanical blocks),
  – System-wide measures.
- Only operate the units when they fully comply with all safety requirements.
- Changes and/or modifications during the warranty period result in all warranty claims becoming null and void. This also applies should repairs be made without our knowledge and consent or if any attempt is made to repair a fault autonomously (Chapter 1.3.3 refers).

2.3 Layout of safety information

- All safety information in these Operating Instructions is laid out uniformly, as below.

Signal word
Note

– The icon labels / the risk type.
– The signal word labels the severity of the risk.
– The note text describes the risk and supplies information on how it may be avoided.

Warning of danger to persons

Icons used	Signal words	
 Warning of hazardous electric voltage	**Danger!**	Warns of **impending danger.** Consequence if disregarded: death or severe injuries.
	Warning!	Warns of **potential very hazardous situations.** Consequence if disregarded: death or severe injuries.
 Warning of general danger	**Caution!**	Warns of **potential hazardous situations.** Consequence if disregarded: light or minor injuries.

Warning of material damage

Icons used	Signal words	
	**Stop!**	Warns of **potential damage to material/s.** Consequence if disregarded: damage to the drive system/device and/or its environment.

Other notes

Icons used	Signal words	
	**Tip!**	Denotes a general useful tip. Following it eases use of the control device/drive system.

3 Technical Data

3.1 Product description

3.1.1 How they work

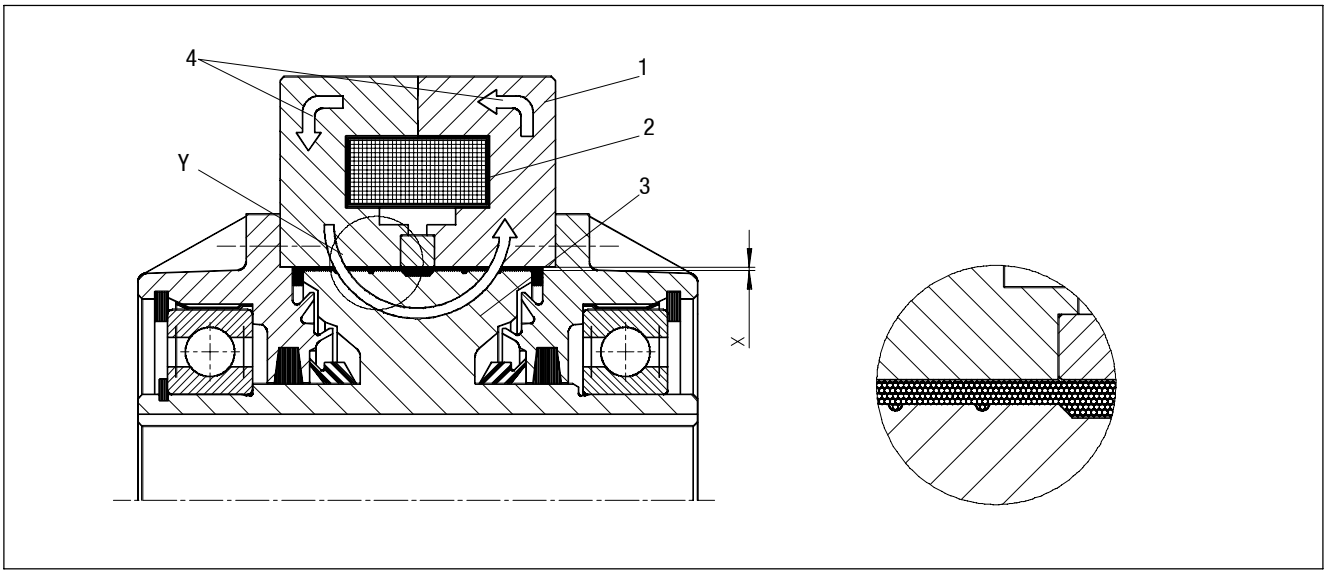


Fig. 1 Magnetic-particle clutch

Fig.1a Detail Y

The characteristic feature of magnetic-particle clutches is that the torque can be smoothly and steplessly changed dependant on the excitation current.

The clutch must be energised with DC current to create the torque required. A magnetic field is thus created as shown in Fig. 1. The torque is transmitted via wear-resistant, non-oxidising iron particles in the electromagnetic field in the air gap between the stator and the rotor. These fine-grain iron particles form magnetic chains as shown in Fig. 1a that are dependant on the electromagnetic energy quantity and thus transmit the torque. Energy quantity determines the rigidity of these chains and therefore also the amount of torque transferable.

3.1.2 Design

magneta - Type 14.502 magnetic-particle clutches are so designed that the field current coil is installed in a rotating outer rotor. Slip rings are therefore needed for current supply. Drive is primarily via the outer rotor. Connection with the motivating power is via an adequate number of tapped bore holes in the outer rotor in axial direction. Power output is via the inner rotor, which has a feather keyway on its hollow shaft. Output and input may also be reversed.

Fig. 2 shows force flow.

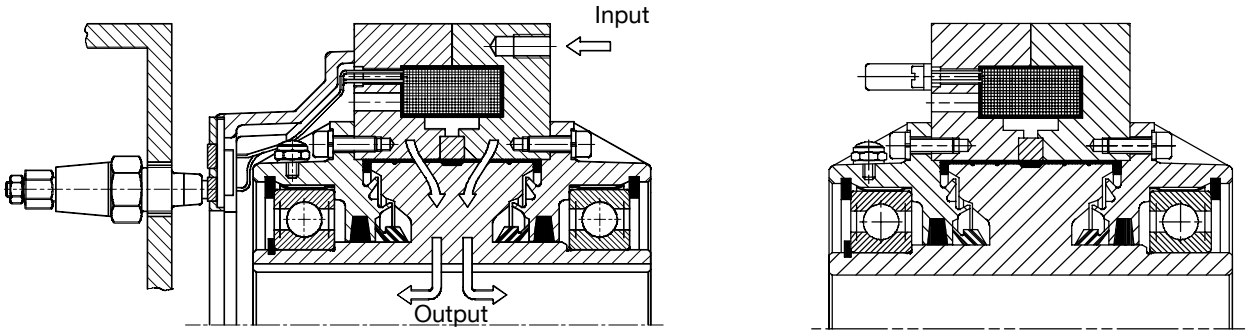


Fig. 2 Magnetic-particle clutch, type 14.502

Fig. 3 Magnetic-particle brake, type 14.512

Magnetic-particle brakes are needed in many specific applications.

If the outer rotor is fixed, a clutch becomes a brake. Slip rings for power supply are no longer needed if the outer rotor is so fixed. The power supply is then via spade plugs on the outer rotor. This is the principle on which magneta magnetic-particle brake design is based(Fig. 3).

1 Flange
2 Spade plug
3 Stator
4 Rotor shaft
5 Inner rotor

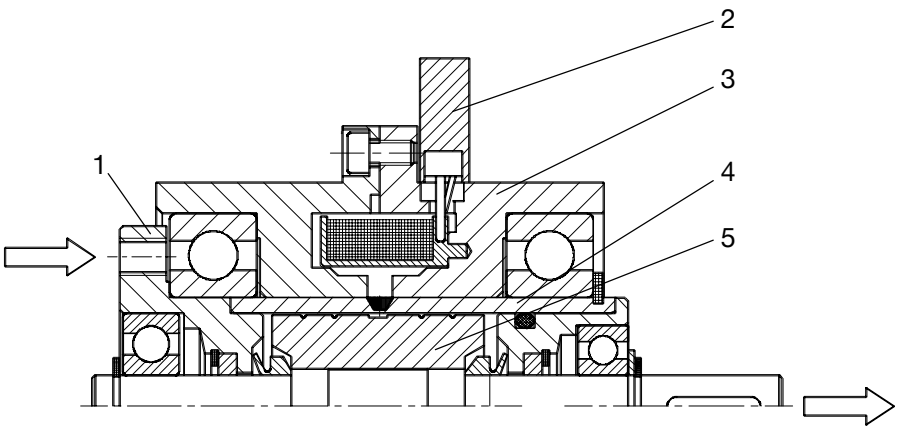


Fig. 4 Magnetic-particle clutch, type 14.501

In applications where power supply via slip rings is not feasible or not permissible, the magneta type 14.501 magnetic-particle clutch is used. The field coil is installed in the fixed stator as shown in Fig. 4.The power supply is via a spade plug.

Input is primarily via the rotor shaft. This has appropriate tapped bore holes in its flange for connection with drive elements such as chain or belt pulleys. Output is via the inner rotor shaft, which has a feather keyway in it. Here again, input and output can be reversed.

3.1.3 Features

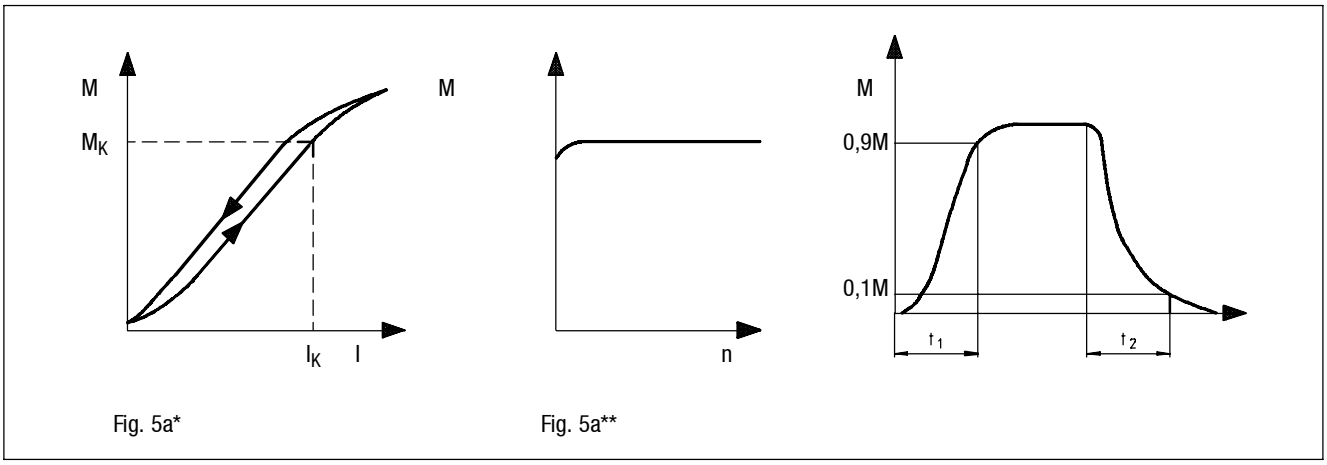


Fig. 5

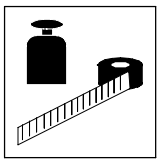
M	=	Torque		M_K	=	Rated torque
I_K	=	Rated current		I	=	Current
n	=	Speed		t	=	Time
t_1	=	Torque rise time		t_2	=	Switch-off time

If the torque set is exceeded, the brake or clutch will slip smoothly.

Magnetic-particle clutches and brakes are designed for constant slip provided the amount of heat that can be dissipated is not exceeded. If so, precise re-calculation will be required.

Characteristic properties

- Linearly adjustable torque via the excitation current (Fig. 5a*)
- Torque can be adjusted independently of the speed (Fig. 5a**)
- Torque can be reproduced at brief intervals
- Operation is possible with constant slip
- Torque is generated smoothly
- Low-noise operation



3.2 Rated data

										n_a	0 min^{-1}	1500 min^{-1}	3000 min^{-1}			
	Size	M_K Nm	P_{20} W	U V	I_{20} A	R Ω	t_1/t_2 ms	M_R Nm		P_v W	P_v W	P_v W	J_a kgm^2	J_i kgm^2	m kg
Type 14.502.--.1.2 (2.2) clutch	01	10	11	24	0.46	52.4	280/ 70 =	0.6		20	140	200	$3.6 \cdot 10^{-3}$	$0.18 \cdot 10^{-3}$	2.7
							280/210 ~		●	65	380	700	$7.2 \cdot 10^{-3}$		3.6
	02	20	16	24	0.67	36.0	540/170 =	1.0		30	200	310	$8.1 \cdot 10^{-3}$	$0.52 \cdot 10^{-3}$	4.4
							540/500 ~		●	90	580	920	$17.5 \cdot 10^{-3}$		5.9
	04	40	19	24	0.77	31.1	840/270 =	2.0		45	280 [1]	*	$23 \cdot 10^{-3}$	$1.7 \cdot 10^{-3}$	8.4
							840/780 ~		●	170	840	1400	$51 \cdot 10^{-3}$		11.1
	08	80	16	24	0.67	36.0	1600/500 =	3.0		75	450 [2]		$76 \cdot 10^{-3}$	$5.3 \cdot 10^{-3}$	16.0
							1600/1400 ~		●	220	1300		0.15		20.8
	16	160	26	24	1.08	22.2	1800/570 =	4.5		100	680 [3]		0.19	$17 \cdot 10^{-3}$	25.8
							1800/1700 ~		●	320	1800		0.39		34.4
	32	320	28	24	1.17	20.6	3000/930 =	7.5		160	1000 [4]		0.59	$68 \cdot 10^{-3}$	40.0
							3000/2700 ~		●	500	3000		1.07		62.6
Type 14.512.--.1.2 (2.2) brake	01	10	11	24	0.46	52.4	280/70 =	0.6		25				$0.18 \cdot 10^{-3}$	2.4
							280/210 ~		●	85					3.3
	02	20	16	24	0.67	36.0	540/170 =	1.0		40				$0.52 \cdot 10^{-3}$	4.0
							540/500 ~		●	120					5.5
	04	40	19	24	0.77	31.1	840/270 =	2.0		60				$1.7 \cdot 10^{-3}$	7.8
							840/780 ~		●	220					10.5
	08	80	16	24	0.67	36.0	1600/500 =	3.0		100				$5.3 \cdot 10^{-3}$	15.2
							1600/1400 ~		●	280					20.0
	16	160	26	24	1.08	22.2	1800/570 =	4.5		130				$17 \cdot 10^{-3}$	24.8
							1800/1700 ~		●	400					33.4
	32	320	28	24	1.17	20.6	3000/930 =	7.5		210				$68 \cdot 10^{-3}$	47.0
							3000/2700 ~		●	630					59.6
Type 14.501.03.1.1		2.5	6	24	0.25	94.3	300/90 =	0.10		28			$0.13 \cdot 10^{-3}$	$0.02 \cdot 10^{-3}$	1.95
							300/260 ~								

Tab. 1

* not applicable
● Version with heat sink

If the speed is exceeded

- [1] 1240 min^{-1}
- [2] 1370 min^{-1}
- [3] 1410 min^{-1}
- [4] 1140 min^{-1}

then the power loss given is achieved by the magnetic-particle unit's residual torque.

P_{20}	=	Coil performance at 20°	M_R	=	Residual torque
U	=	Coil power	P_v	=	Heat dissipation
I_{20}	=	Current at 20°	m	=	Weight
R	=	Resistance	n_a	=	Primary particle speed
t_1/t_2	=	Operating time	J_a	=	Primary particle inertia torque
M_K	=	Rated torque	J_i	=	Secondary particle inertia torque

About 2.5 times the heat can be dissipated in magnetic-particle brakes using a separate fan.

3.3 Dimensions

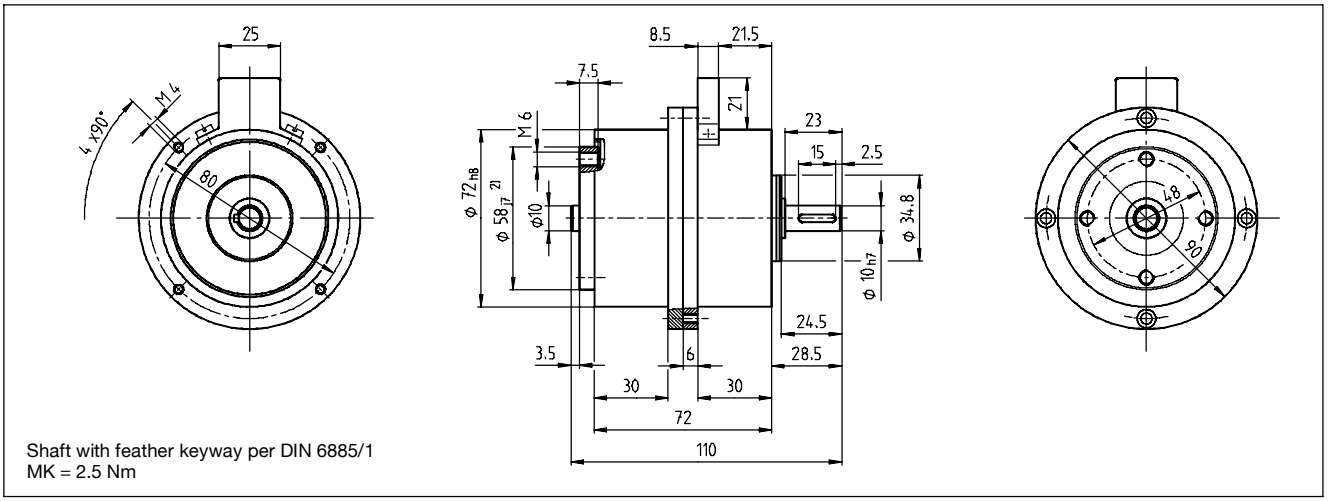


Fig. 6 Type 14.501.03.1.1 clutch

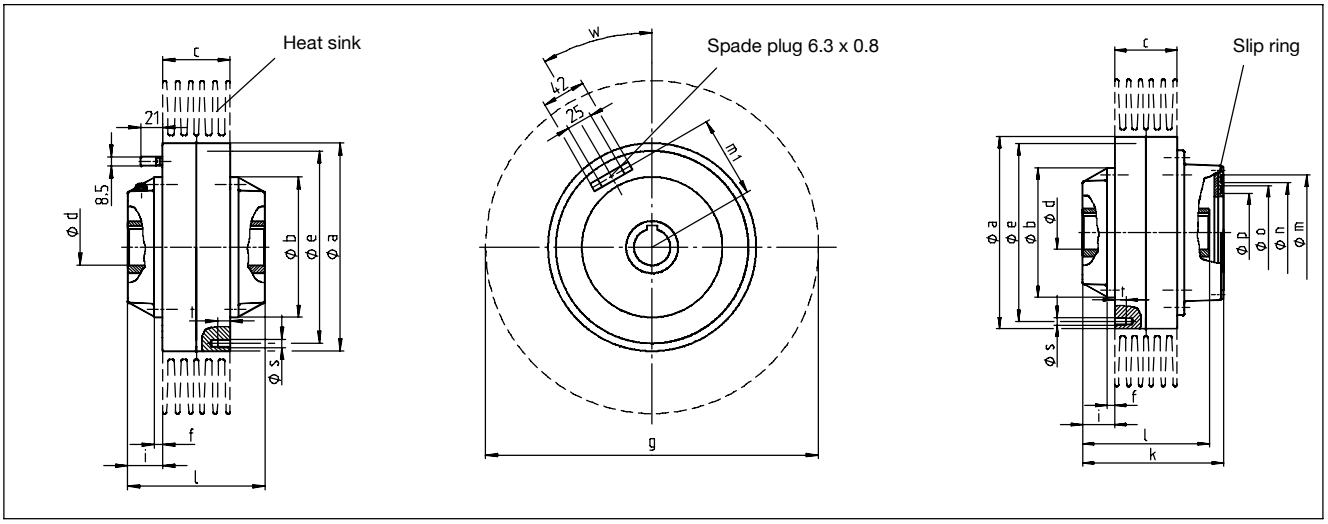


Fig. 7 Type 14.512.□□.1.2 (2.2) brake Type 14.502.□□.1.2 (2.2) clutch

Size	M_K Nm	a_{S7}	b_{j7} 2)	c	d^{H7} Standard			d^{H7} max.	e	f	g	i	k	l	m_1	m	n	o	p	q	s	s_1	t	w
01	10	100	70	45	10	12	-	14[1)]	90	5	160	20	97	85	39	76	62	58	44	12	M5	4.2	10	44°
02	20	120	80	50	14	16	19	20	110	4	200	24	108	98	47	76	62	58	44	10	M6	5	10	30°
04	40	150	96	60	19	22	-	24	135	5	250	24	119	108	58	76	62	58	44	11	M6	5	10	30°
08	80	200	135	65	28	32	-	35	185	8	320	33.5	147	132	82.5	120	104	98	82	15	M8	6.8	12	30°
16	160	250	180	70	35	38	-	42	235	8	400	28	140.5	126	106	120	104	98	82	14.5	M10	8.5	14	30°
32	320	320	235	80	48	55	-	60	300	10	480	35	165	150	137	142	126	120	104	15	M10	8.5	16	30°

Tab. 2 Bores with keyway per DIN 6885/1

[1)] Bores with keyway per DIN 6885/3

[2)] Centring and lateral run out of the mounting surface per DIN 42955-R

4 Installation

4.1 Mechanical Installation

- Check for completeness on unpacking.
- Check nameplate data.

Stop!

Installation must always be horizontal.

Tip!

- We recommend greasing the tapped shaft ends before installation to ease dis-assembly.
- It is recommended the unit be drawn onto shafts with suitable mechanical aids. Use of force may cause damage to bearings.

General information

Input should preferably be on the housing for better cooling and particle distribution (output via hollow shaft). Internal input is, however, feasible (e.g. brakes).

The magnet housing is usually fixed in brake applications. This must be done flexibly or in such a way that it tapers absolutely precisely to the hollow shaft bore so that bearing tension is avoided.

The end of the shaft of the machine to be driven is to be made with an ISO tolerance of k6 or m6. Drive is via feather key compliant with DIN.

Connecting 2 co-axial shafts predicates elastic coupling.

Brush holder inc. brushes need axial installation space.

Brush holders are to be so adjusted that all brushes can maintain contact over their entire diameter with the slip rings when operating.

4.2 Electrical connection

Warning!

Connect to electric power supply only when no voltage is applied.

Magnetic-particle clutch connection to the electric power supply is via the slip rings and the externally installed brush holder supplied. For the magnetic-particle brake, connection is via the 6.3 x 0.8 spade plug attached to the magnet housing. Carbon brush contact pressure is correctly set when their projection is about 2 mm.

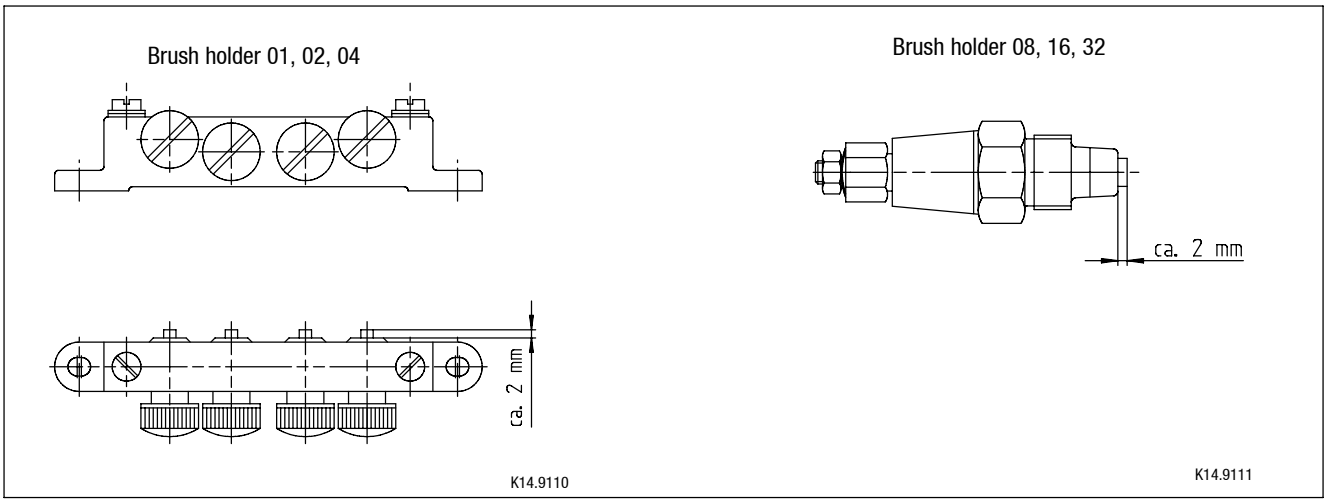


Fig. 8 Brush holder

The units' field current coil is fed with DC current. Voltage applicable is as stated on the nameplate.

If the unit is to be used for control purposes, then the magneta-controller, type 14.422, is to be recommended. The full control range of the units can be utilised with this device and torque variations due to temperature change compensated for. Please see the separate Operating Instructions for this device for information on wiring same.

Torque adjustment for simple applications is manual via potentiometers wired in series. Parallel-wired potentiometers permit a greater control range but have to be of higher capacity than those wired in series. Make sure potentiometer design is correct for the intended purpose/s.

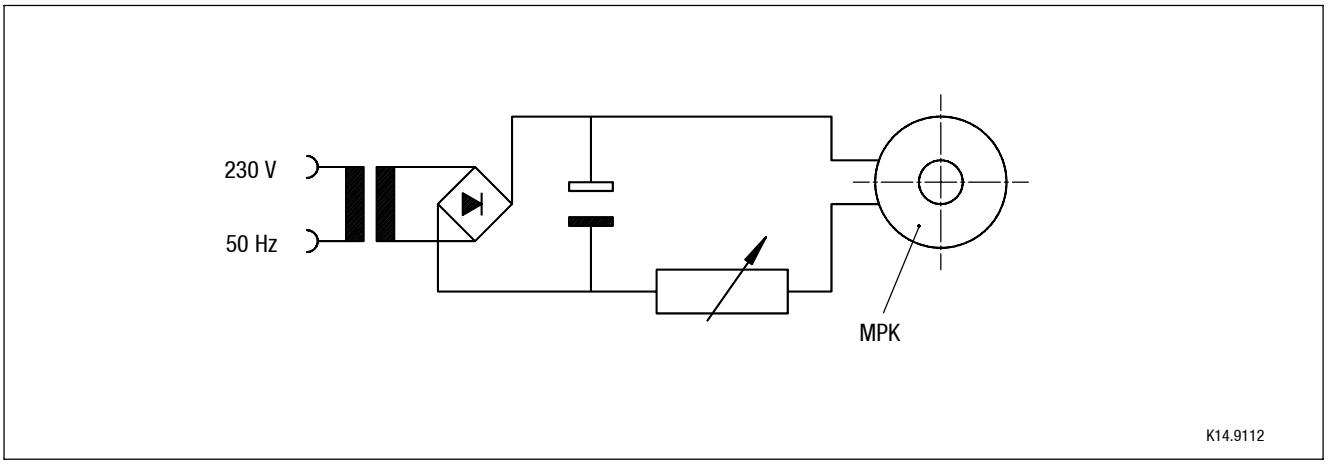
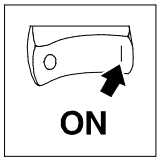


Fig. 9 Wiring diagram

Permissible voltage variation according to VDE0580 § 22: +5 -10 %.
VDE 580 § 23 applies for all other requirements.



5 Commissioning

Stop!

magneta-magnetic-particle clutches and brakes are filled with iron particles.

These iron particles located in the air gap between internal rotor and external rotor are essential for the proper function.

All or parts of these particles may escape from the air gap during transport, handling or assembly. This is unfortunately not visible or noticeable.

After the installation is completed, please take the following steps to ensure that the iron particles are actually distributed in the air gap to fulfil their function of transmitting the torque:

5.1 Particle distribution

1. Drive the unit at 100 – 500 min^{-1} rotational speed difference and let it run for approx. 30 s. Do **not** energize the coil!
2. Shut down the unit, then energize the coil 3 to 5 times from 0 to 24 V.
3. Repeat this procedure following steps 1 and 2.
4. Drive the unit again at around 100 - 500 min^{-1} rotational speed difference and let it run for approx. 3 min.

   While the unit is running, energize the coil between 0 and approx. 8 Volts. Adjust voltage slowly up to approx. 8 V and down to 0 again. Following a break of approx. 5 s, start again until about 3 minutes have passed.

A minimum speed of 100 min-1 should be available after the installation into the machine or into the plant; otherwise the distribution of the particles must be made on separate equipment,, i.e. before the installation. Be careful when mounting the unit, i.e. shocks and blows must definitely be avoided!

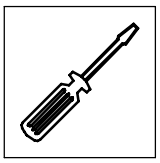
5.2 Function test

The characteristics specified must be present once correct assembly, electrical power supply connection and particle distribution as above have all been carried out.

In the event of any characteristic/s being deficient or lacking, please refer to 7 "Troubleshooting".

5.3 During operation

- Perform regular checks during operation. Pay particular attention to the following when so doing:
  - unusual noises or temperatures;
  - loose fastening elements;
  - the condition of electric wiring and the brushes, and
  - unchanged control behaviour.
- In the event of malfunction, go through the Troubleshooting table in 7 systematically. Should this not cure the problem, please advise Customer Service.



6 Maintenance

6.1 Inspection intervals

- The condition of the magnetic particles is decisive to the functioning of the unit. The service life of the clutch is practically identical with that of the wear-resistant particles. This wears at a rate that differs dependant on operating conditions. Service life is dependant on the wear to which they are subjected and hence the torque loading as well as differential speed.

Tip!

High differential speeds are a major factor here.

- Inspection intervals are to be adapted to operating conditions and may be extended in cases of low wear.

6.2 Inspections

- Magnetic particle wear is not normally erratic but gradual. The particles initially have many microscopically small edges and corners but wear down over time to become smooth balls. The consequence is a change in torque. Current adjustment is used to compensate for this.
- Inspections must keep pace with this process.
- The magnetic particles must be replaced in the event of excessive deviation of actual from rated torque.

Tip!

Document the results of inspections in files classified by machine. This will enable you to carry out planned replacement of the magnetic particles in good time and/or replace the unit.

6.3 Spare parts list

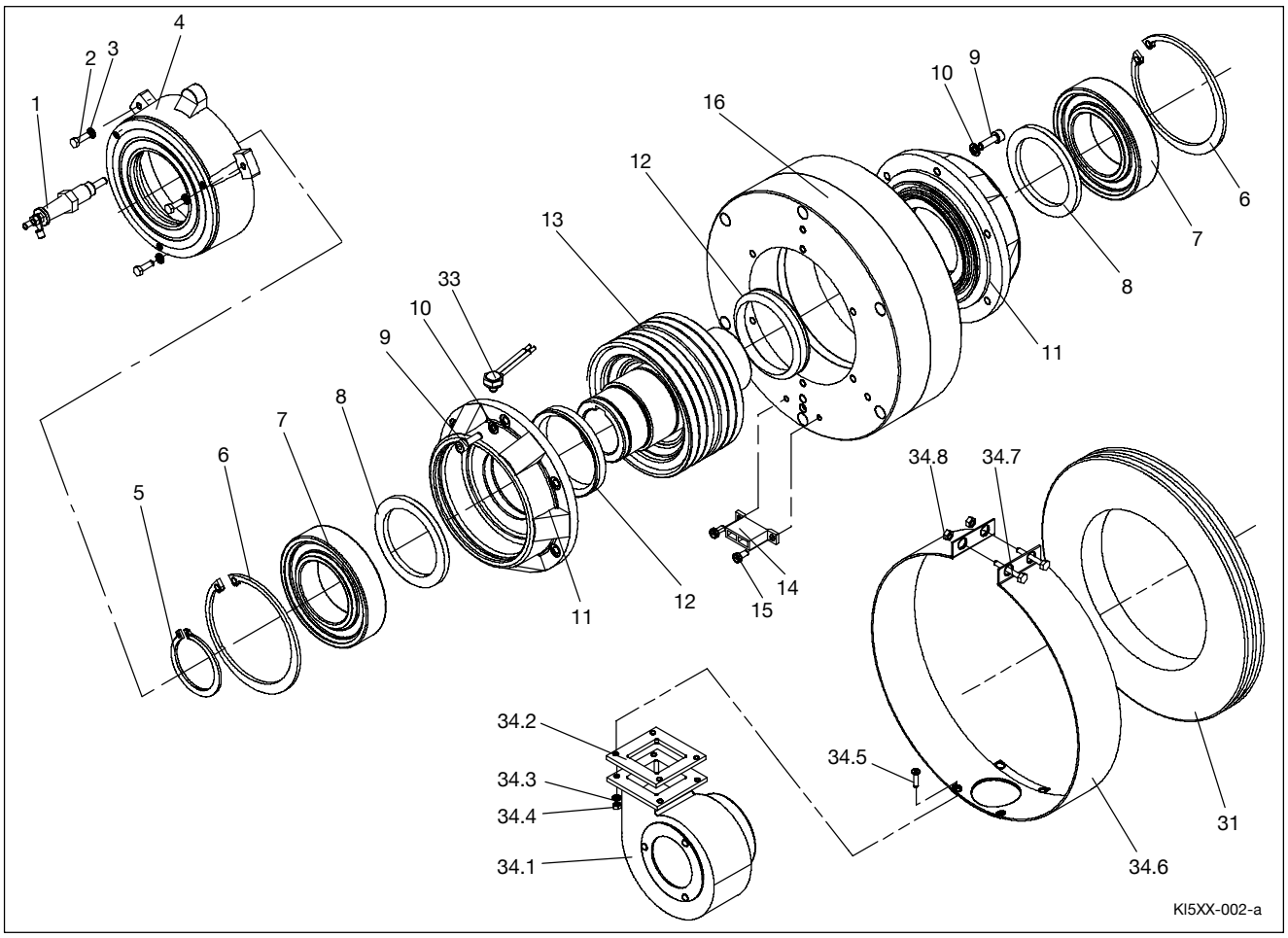


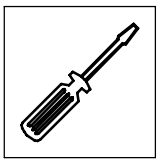
Fig. 10 Magnetic-particle clutch / brake

Item	Name	Item	Name
1	Brush holder with brushes 1)	15	Allen screw DIN 84 2)
2	Screws DIN912 1)	16	Magnet housing
3	Spring-lock washer VHZ 1)	31	Heat sink
4	Slip ring holder 1)	32	Stainless steel powder
5	Circlip DIN471	33	Temperature controller
6	Circlip DIN472	34.1	Separate fan 2)
7	Deep-groove ball bearing DIN 625	34.2	Gasket 2)
8	Felt ring	34.3	Spring-lock washer DIN128 2)
9	Screws	34.4	Hexagonal nut DIN934 2)
10	Discs	34.5	Counter-sunk screw DIN7991 2)
11	Bearing cover housing	34.6	Cover plate 2)
12	V - Ring	34.7	Hexagonal screw DIN931 2)
13	Rotor	34.8	Hexagonal nut DIN934 2)
14	Spade plug 6,3 x 0,8 2)		

Items 30 + 34 Separate fan, complete (only together with heat sink)

1) Magnetic-particle clutches only

2) Magnetic-particle brakes only



6.3.1 Ordering information

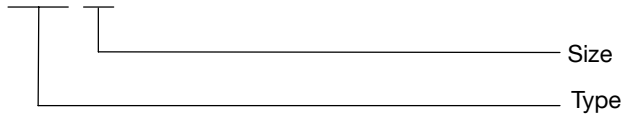
Only parts shown in the following table are available as spare parts.

Non-standard designs must be given as such. Repair is usually uneconomical in our experience for the smallest type 14.501.03.1.1 magnetic-particle clutch due to the low purchase price.

Item 1	Brush holder with brushes
Item. 4	Slip ring holder
Item 7	Deep-groove ball bearing DIN625
Item 8	Felt ring
Item 11	Bearing cover housing
Item 12	V-Ring
Item 13	Rotor
Item 14	Spade plug 6.3 x 0.8
Item 16	Magnet housing
Item 32	Stainless steel powder
Item 33	Temperature controller
Item 34	Separate fan, **complete**

Sample spare parts order

14.502.08 - Item 1



For magnet housings (16), please also state voltage; for rotors (13), please also state bore diameter; for temperature controllers, please also state whether for control device 14.422 or not.

Spare parts are available from

The Customer Service Dept.,
Lenze GmbH & Co KG,
Breslauer Str. 3,
Extertal-Boesingfeld,Germany.
Tel.: ++49 (0) 51 54 / 82 - 1215
Fax: ++49 (0) 51 54 / 82 - 1112

6.4 Powder replacement

Caution!
Although one normally has low voltages to deal with here,
power should nevertheless be switched off.

6.4.1 Removing type 14.502 magnetic-particle clutches

If a heat sink (31) is installed, then the pressed-on part is left on the stator (16).

1. Undo the slip ring holder by removing the screws (2).

Stop!
Proceed cautiously to avoid tearing the soldered-on wiring off the slip ring holder.

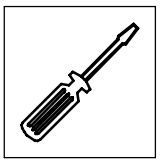
2. Undo the screws (9) on the bearing cover housing (11).
3. Undo the circlip (5) below the slip ring holder on the rotor (13).
4. Press out the rotor (13) with its opposing bearing cover housing (the magnetic particles will fall out in doing so)
5. Press the rotor (13) out of the bearing cover housing (11) or the bearings.
6. The bearing cover housing (11) on the stator (16) can now be easily removed (the bearings on this side are seated in the bearing flange)
7. After removing the circlip (6), press the bearing (7) out of its housing cover (11).
8. Remove the felt rings (8) in the bearing flange.
9. Pull the V rings (12) off the rotor (13).

This completes the procedure, If the bearings are still in usable condition, the seals (V rings and felt rings) should always be replaced before re-assembly.

Assemble in the reverse sequence once all the parts have been cleaned.

Tip!
It is essential the rotor (13) and stator (16) be de-magnetised to permit the magnetic particles later being filled into the air gap.

Use a suitable tool to de-magnetise as needed.



6.4.2 Assembly

1. Put the V rings (12) on the hub of the rotors (13).
2. Install the felt rings (8) in the bearing flange (11).
3. Press the bearing (7) in both flanges (11).
4. Press the bearing flange (11) inc. felt rings (8), bearing (7) and circlip (6) on the rotor (13). Insert circlip (5).
5. Install the complete rotor (13) with bearing flange in the stator (16) from the slip ring holder side.
6. Fill the powder in.

Stop!

Pour in the complete full amount of powder; failure to do so means the rated torque will not be achieved.

Size	01	02	04	08	16	32
Quantity (grams)	16	30	50	76	140	235

7. The magnetic-particle clutch is re-closed using the 2nd complete bearing plate including felt rings and bearing as well as circlip (6).
8. Install the screws (9) with discs (10) and circlip (5).
9. Assembly is complete when the slip ring holder (4) has been installed on the screws (2).

Replacing powder and assembly/dis-assembly of type 14.512 magnetic-particle brakes is carried out as above but without stripping the slip ring holder.

On these units, a spade plug (4) is installed on the magnet housing (16) in place of the slip ring holder.

7 Troubleshooting and fault elimination

Fault	Cause	Remedy
No brake or clutch function	Power supply interrupted	Clutches: – check brushes – check power supply connection. Brakes: – Check plug – Check power supply connection.
	Brush wear	Replace brushes.
	Coil interruption	– Measure coil resistance. If it is too great, replace the entire stator.
	Coil has earth or armature fault/short-circuit	– Measure coil resistance. If it is too great, replace the entire stator. – Check coil for earth fault. If earth fault exists, replace the entire stator. – Check clutch/brake voltage.
	Wiring wrong or defective	– Check and correct wiring. – Check wiring ducting – Replace defective wiring.
Torque too low after assembly	Powder distribution imperfect	Distribute the powder as given in these Instructions.
	Inadequate voltage	Check electric wiring, connection/s and power supply.
	Acceleration with effect/s in the shaft axis direction must be <1 g	Make design change/s.
Torque cannot be transmitted smoothly	Powder distribution imperfect	Distribute the powder as given in these Instructions.
	Electric connection/s not OK	Check stator, brushes and wiring.
	Speed too low	Check design/assembly; install gearing and hence speed change.
Torque too low after long operation	Powder particles worn	Replace powder.
Noisy running	Powder distribution imperfect	Distribute the powder as given in these Instructions.
	Installed vertically	– Alter to horizontal installation. – Carry out powder distribution procedure
	Powder in bearing (note that acceleration with effect in the shaft axis direction must be <1 g).	Repair (replace bearing/s).

Declaration of Conformity / Manufacturer's Certification

CE

EC-Declaration of Conformity

magneta GmbH & Co KG
Dibbetweg 31
D-31855 Aerzen

Telephone (05154) 95 31 31
Telefax (05154) 95 31 41
E-Mail: Info@magneta.de
Internet: www.magneta.de

for the purpose of the EC Low-Voltage Directive (73/23/EEC)

amended by: CE-mark Directive (93/68/EWG)

The following products were developed, designed, and manufactured in compliance with the above-mentioned EC Directive under the sole responsibility of

magneta GmbH & Co KG, Dibbetweg 31, D-31855 Aerzen

The products are intended for assembly into a machine or for assembly with other elements to form a machine. Commissioning is prohibited until it is proven that the whole machine corresponds to the EC Directive.

Product:	**Type:**
Magnetic particle brakes	14.512□□
Magnetic paricle clutces	14.501□□ 14.502□□
Control units	14.422□□

AApplied stanards and regulations:

EN 60529	10/91	Rotating electrical machines
DIN VDE 0470	11/92	
DIN VDE 0580	10/94	Electromagnetic devices

Aerzen, January 4, 1999

(Ogrodowski)

Declaration of Conformity / Manufacturer's Certification

Manufacturer's Certification

magneta GmbH & Co KG
Dibbetweg 31
D-31855 Aerzen

Telephone (05154) 95 31 31
Telefax (05154) 95 31 41
E-Mail: Info@magneta.de
Internet: www.magneta.de

We herewith certify that the below listed products are intended for assembly into a machine or for assembly with other elements to form a machine. Commissioning of the machine is prohibited before it is proven that it corresponds to the EC regulation 98/37/EC.

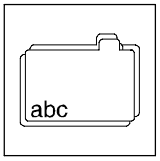
Product:	**Type:**
Magnetic pariticle brakes	14.512□□
Magnetic particle clutces	14.501□□, 14.502□□
Control units	14.422□□

Applied standards and regulations:

EN 60529	10/91	Rotating electrical machines
DIN VDE 0470	11/92	
DIN VDE 0580	10/94	Electromagnetic devices

Aerzen, January 4, 1999

(Ogrodowski)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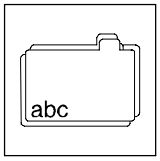

Appendix