Energy Supply Systems

Slip Ring Bodies

5100

wampfler

solutions for a moving world

KAT5100-0001-E

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General

Technical details

Wampfler - a competent partner
For many years Wampfler has provided a wide range of rotary transmissions. This is constantly being extended in order to also meet the developments in signal and data transmission.

Wampfler has developed a comprehensive standard programme that is able to offer optimum solutions. The standard programme enables the creation of slip ring bodies of any number of poles up to 100 for power and data/signal currents.
Amperages up to 1200 A and voltage up to 24 kV are possible. The range of slip rings covers diameters from 30 mm to 320 mm. Combinations with additional rotary transmissions for liquid media (water, hydraulic oil, oil, etc.) and gases (compressed air, argon, etc.) are possible. Slip ring bodies can be supplied either as open slip ring bodies to be built in customers' requirements or in a housing of impact-resistant plastic or sheet metal.

Data Transmission
The transmission of analogue signals of 0 to 20 mA and 0 to 10 V are possible as standard.
In addition digital signals up to max. 500 kBaud have been proven in operation in data transmission on industrial busses such as Interbus-S and Profibus. For Baud rates exceeding 500 kBaud and video transmissions, slip ring bodies are available using special high-quality materials.
Note: The quality of data transmission strongly depends on the structure of the complete data network. Some important factors which need to be considered in the layout of the complete system are the supply cables, their arrangement and screening, the number of terminal boxes, exterior interference factors, the type of automation devices and their conformity with each other.

Accessories
- heaters
- extension units for end coders and potentiometers
- sight windows and doors for heavy slip ring body housings

Special constructions
Our experts would be pleased to advise on special requirements, such as diameters > 10 m high rotation speed, extreme operating conditions, optical fibres (LWL), high-voltage, etc.

Easy assembly and maintenance
Wampfler slip ring bodies are simple to mount and to maintain. The connections are easy to access and the current collectors are easy to replace.
On request rings and current collectors can be completely prewired to built-in terminal boxes.

CE Identification
All types are in accordance with IEC/VDE standards.

Programme

Type	Standard programme I [mA /A]	U[1)] [V]	Ring-ø [mm]	Characteristics	Page
ES/GS30	mA - 16 A	400 (415)	30	Suitable for data transmission	5
ES/GS45/1	mA - 25 A	400 (415)	45	Suitable for data transmission	6
ES/GS45/3	25 A	1000	45		7
ES18	mA - 25 A	630 (690)	102	Suitable for data transmission	8
GS18	mA - 25 A	630 (690)	102	Suitable for data transmission	9
ES/GS45/2	47 A	1000	45		10
ES/GS13	50 A	1000	85		11
ES/GS15	90 A	1000	85		12
ES/GS16	100 A	1000	110		13
ES/GS19	150 A	1000	132		14
ES/GS21	250 A	1000	210		15
ES/GS29	400 A	1000	210		16
ES185	mA - 47 A	1000	185	Suitable for data transmission	17
ES/GS260	mA - 47 A	1000	260	Suitable for data transmission	18
ES170, 220, 330, 450	mA - 47 A	630 (690)	170/200/330/455	Suitable for data transmission	19
GS323	400 A	1000	320		20
GS19/13/18			Combination		21

1) The voltages apply for slip ring bodies, installed in systems (parts of systems) that are not directly fed by the low-voltage net (VDE 0110-1/1997-04: 2.2.1.1.2, table 4). On systems (part of systems) with direct feeding from the low-voltage net, the values in brackets are permissible for alternating voltage (VDE 0110-1/1997-04: 2.2.1.1.1, table 3b).

Applications

Slip ring body in building machines

Rotating die-casting equipment of Krauss-Maffei Kunststofftechnik (Munich); in operation at Johnson Control Interiors (Lüneburg)

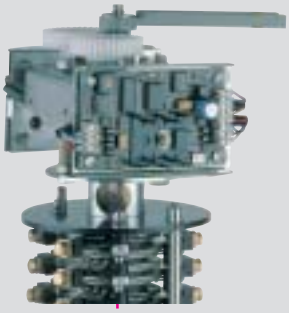
A developed and comprehensive standard programme

Some examples for the application of slip ring bodies: rotary cranes, water treatment works, roundabouts, manipulators, rotary tables, antenna arrays, theatre stages, packing machines, cable reels.

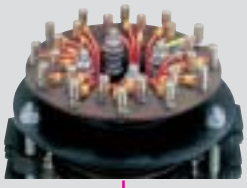
Slip ring body in elevating platforms

General

Combined slip ring body



Optional Phase-rotation indicator and Bus board with installation



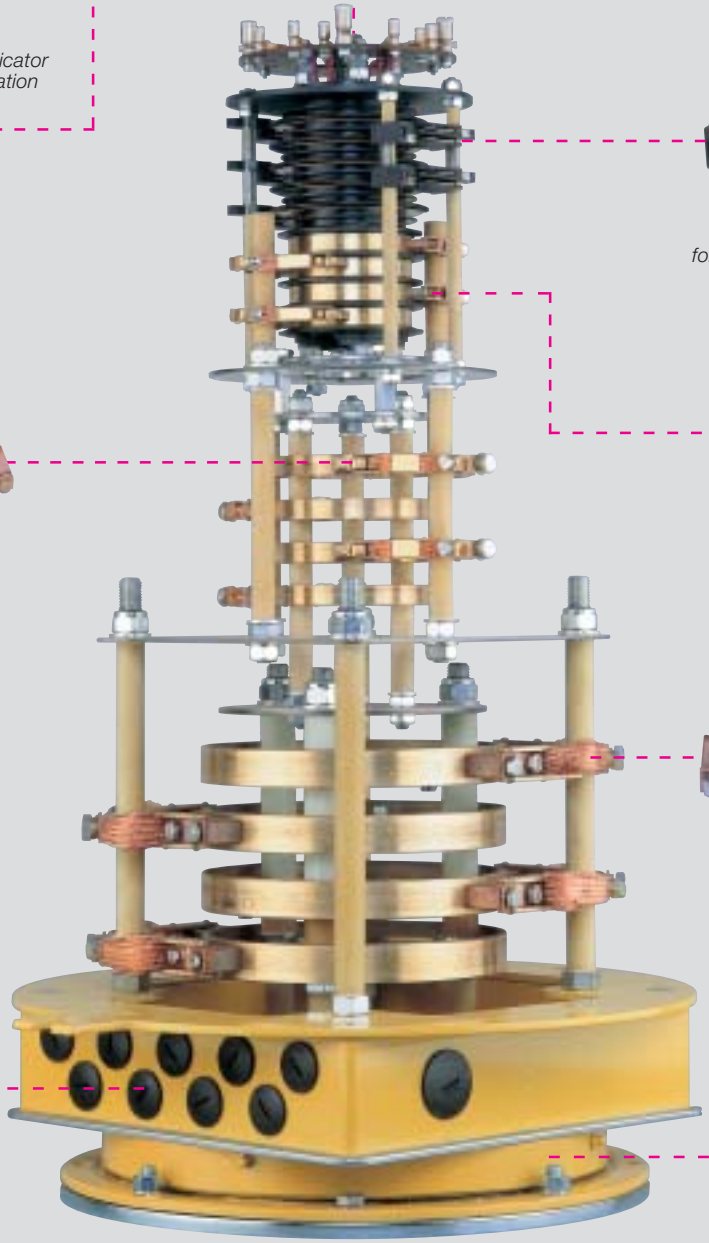
Wiring on clamping board

Multiple current collector for signal and data transmission

Double-wing current collector 90 A

Double-wing current collector 150 A

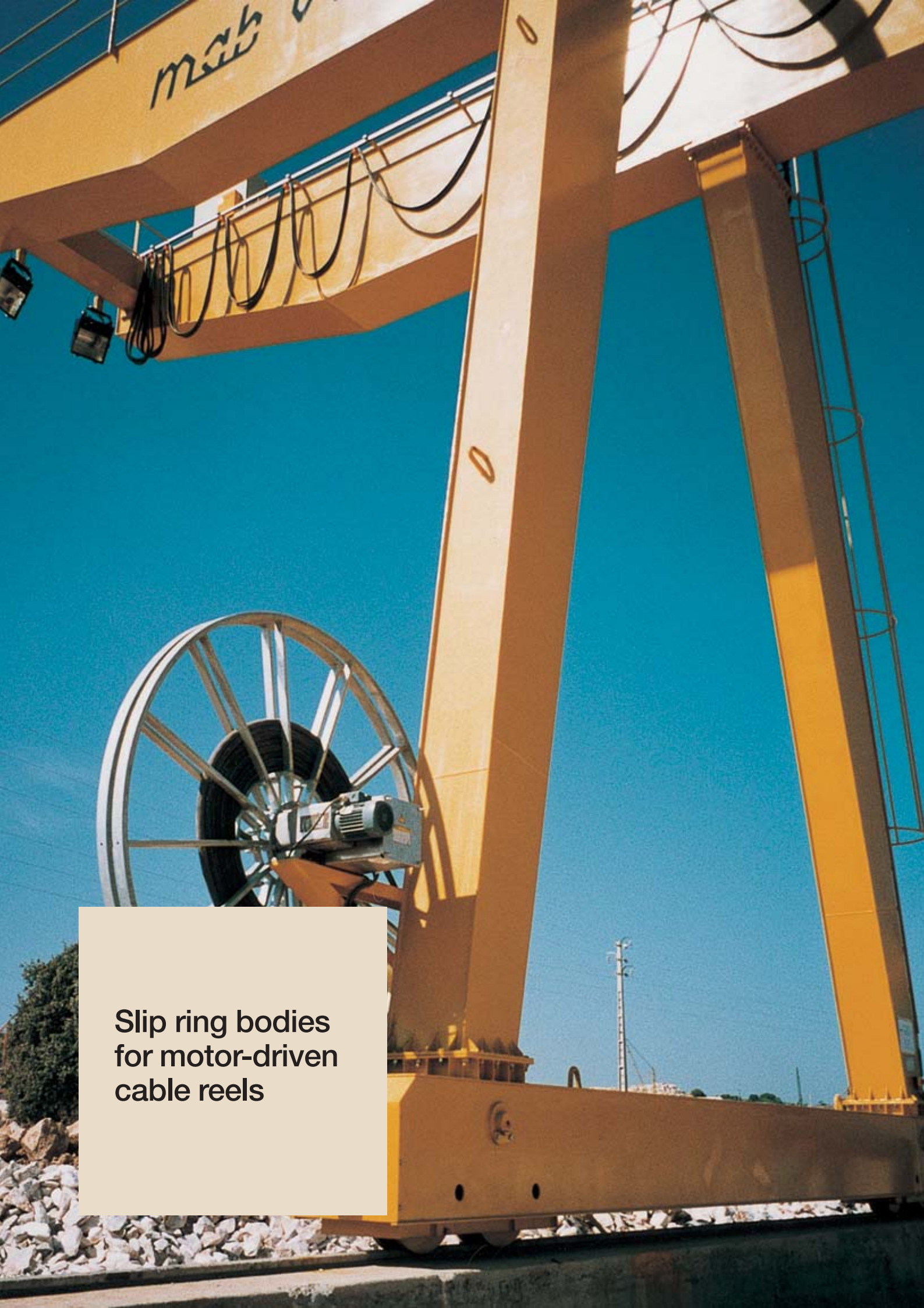
Double-wing current collector 250 A



Entries for wiring

Ball steering rim

Combined slip ring bodies:
GS 2104 / 1904 / 1504 / 1804 / 04ML
3 x 250A + PE + 4 x 150A + 4 x 90A + 4 x 25A + 4 x Data

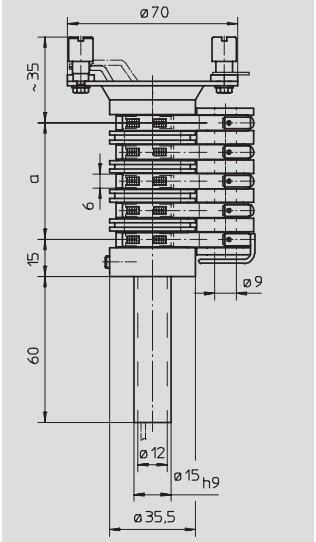


Slip ring bodies for motor-driven cable reels

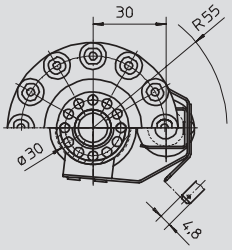
Slip ring bodies

Slip ring body ES30 16 A / 400 V (415 V)[1)]

Electrical data
- Voltage:
  - max. 400 V~= (415 V)[1)]
  - according to DIN VDE 0110
  - overtension category III
  - insulating material group II
  - degree of contamination 3
- Current: mA to 16 A, at max. 30°C and 100% duty cycle
- Slip rings:
  - ø 30 x 6 mm, brass distance between rings 12 mm
- Current collector:
  - support with 2 pressed-on coals 20 x 6.4 mm
  - connecting flat plug 4.8 (DIN 46244) for flat socket 4.8 (DIN 46247)
- Protection class: IP 00



a = (number of poles - 1) x 12



Control and data transmission
- Ring with multi-layer coating (ML) and current collector
  - bronze 25 mA at 24 V and >
- Ring with multi-layer coating (ML) and current collector
  - silver (Ag) 0 - 20 mA at min. 0 - 10 V
  - digital max. 500 kBaud
- Measured data transmissions and video signals require consultation

Wiring and max. number of poles
- Max. 10 (incl. PE)
- Completely wired with 2.5 mm² on a clamping board (sheathed clamps)

More technical details
- Rotational speed: max. 100 U/min
- Insulation:
  - insulating parts PA 6, glass fibre reinforced
- Ambient temperature:
  - -35°C to max. +50°C
  - at > 50°C the max. current load has to be reduced accordingly
  - for higher temperature please inquire
- Position of installation:
  - standing
- Axle tube: d_a=15$_{h9}$mm

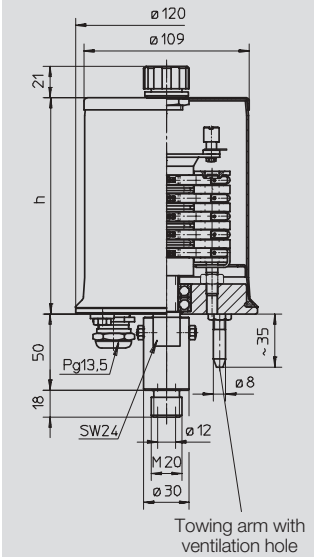
Volume of delivery
- Complete slip ring body with current collectors
- Insulator
- Axle tube (secure on site against torsion with 2 threaded pins M5, DIN 914)
- Without brush bolt

1) The voltages apply for slip ring bodies, installed in systems (parts of systems) that are not directly fed by the low-voltage net (VDE 0110-1/1997-04: 2.2.1.1.2, table 4). On systems (part of systems) with direct feeding from the low-voltage net, the values in brackets are permissible for alternating voltage (VDE 0110-1/1997-04: 2.2.1.1.1, table 3b).

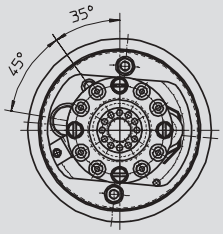
Order example:
ES30/R15-04
Slip ring body
Type 30, 3-pole + PE
with tube d_a=15 mm

Enclosed slip ring body GS30 16 A / 400 V (415 V)[1)]

Electrical data
- According to type ES30
- Exception:
  - protection class: IP 65



Towing arm with ventilation hole



Control and data transmission
- According to type ES30

Wiring and max. number of poles
- According to type ES30

More technical details
- Rotational speed: max. 100 U/min
- Insulation:
  - insulating parts PA 6, glass fibre reinforced
- Ambient temperature:
  - -35°C to max. +50°C
  - at > 50°C the max. current load has to be reduced accordingly
  - for higher temperature please inquire
- Position of installation:
  - standing
  - other positions on request
- Bearing: anti-friction bearing
- Corrosion protection:
  - Steel parts galvanized and powdercoated RAL 1012

Max. poles incl. PE	h [mm]
4	126
6	143
10	193

- Glands:
  - in the axle hole ø 12 mm / M20
  - in the housing Pg 13.5 (on request as angle-Pg)
- Option: With fixing flange

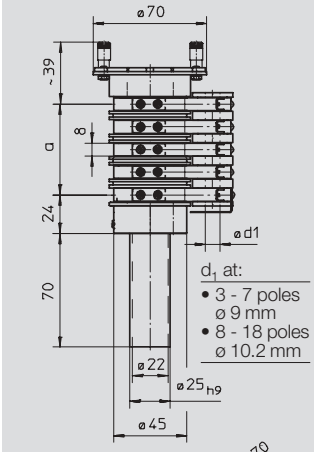
1) The voltages apply for slip ring bodies, installed in systems (parts of systems) that are not directly fed by the low-voltage net (VDE 0110-1/1997-04: 2.2.1.1.2, table 4). On systems (part of systems) with direct feeding from the low-voltage net, the values in brackets are permissible for alternating voltage (VDE 0110-1/1997-04: 2.2.1.1.1, table 3b).

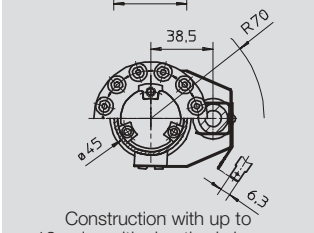
Order example:
GS30-04
Enclosed slip ring body
Type 30
3-pole + PE

Slip ring bodies

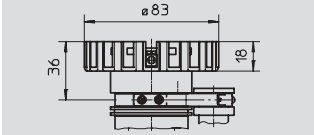
Slip ring body ES45/1 25 A / 400 V (415 V)[1)]

Electrical data
- Voltage:
  - max. 400 V~= (415 V)[1)]
  - according to DIN VDE 0110
  - overtension category III
  - insulating material group II
  - degree of contamination 3
- Current: mA to 25 A, at max. 30°C and 100% duty cycle
- Slip rings:
  - ø 45 x 8 mm, brass
  - distance between rings 14 mm
- Current collector:
  - support with 2 pressed-on coals 20 x 8 mm
  - connecting flat plug 6.3 (DIN 46244) for flat socket 6.3 (DIN 46247)
- Protection class: IP 00





Construction with up to 12 poles with sheathed clamps



Construction 13-18 poles with terminal clamps

Control and data transmission
- Ring with multi-layer coating (ML) and current collector
  - bronze 25 mA at 24 V and >
- Ring with multi-layer coating (ML) and current collector
  - silver (Ag) 0 - 20 mA at min. 0 - 10 V
  - digital max. 500 kBaud
- Measured data transmissions and video signals require consultation

Wiring and max. number of poles
- Max. 18 (incl. PE) completely wired with 2.5 mm² on a clamping board
- up to 12 rings, connection to sheathed clamps
- 13 to 18 rings, connection to terminal clamps

More technical details
- Rotational speed: max. 100 U/min
- Insulation:
  - insulating parts PA 6, glass fibre reinforced
- Ambient temperature:
  - -35°C to max. +50°C
  - at > 50°C the max. current load has to be reduced accordingly
  - for higher temperature please inquire
- Position of installation: standing
- Axle tube: $d_a = 25_{h9}$ mm

Volume of delivery
- Complete slip ring body with current collectors
- Insulator
- Axle tube (secure on site against torsion with 2 threaded pins M5, DIN 914)
- Without brush bolt

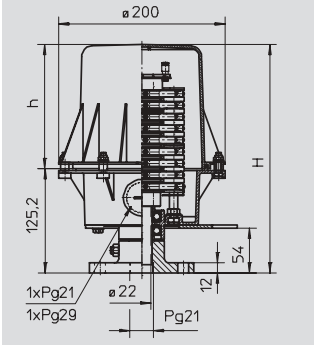
1) The voltages apply for slip ring bodies, installed in systems (parts of systems) that are not directly fed by the low-voltage net (VDE 0110-1/1997-04: 2.2.1.1.2, table 4). On systems (part of systems) with direct feeding from the low-voltage net, the values in brackets are permissible for alternating voltage (VDE 0110-1/1997-04: 2.2.1.1.1, table 3b).

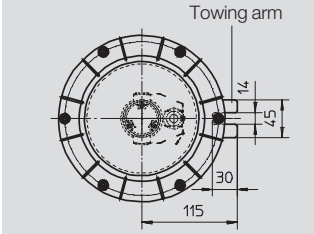
Order example:
ES45/1/R22-04
Slip ring body
Type 45/1 with tube
d_{inside} = 22 mm
3-pole + PE

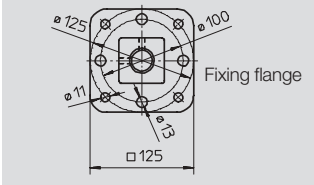
Enclosed slip ring body GS45/1 25 A / 400 V (415 V)[1)]

Electrical data
- According to type ES45/1
- Exception:
  - protection class: IP 65

Wiring and max. number of poles
- According to type ES45/1







h_2 [mm]	H [mm]	max. number of poles (incl. PE) standard	with heating
90	215	5	-
150	275	9	4
190	315	12	7
280	405	18	13

More technical details
- Rotational speed: max. 100 U/min
- Insulation:
  - insulating parts PA 6, glass fibre reinforced
- Ambient temperature:
  - -35°C to max. +50°C
  - at > 50°C the max. current load has to be reduced accordingly
  - for higher temperature please inquire
- Position of installation:
  - standing
  - other positions on inquiry
- Corrosion protection:
  - steel parts galvanized and powdercoated RAL 1012
- Glands:
  - in the fixing flange Pg 21
  - through-holes in the housing bottom part for Pg 21 and Pg 29
- Reinforcing plate for brush bolts for 12 poles or more

Option
Reinforced bearing, Vent plug, Heating, Tube or rotary transmission

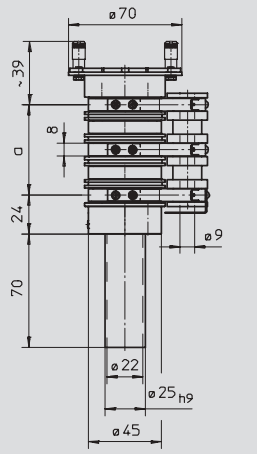
1) The voltages apply for slip ring bodies, installed in systems (parts of systems) that are not directly fed by the low-voltage net (VDE 0110-1/1997-04: 2.2.1.1.2, table 4). On systems (part of systems) with direct feeding from the low-voltage net, the values in brackets are permissible for alternating voltage (VDE 0110-1/1997-04: 2.2.1.1.1, table 3b).

Order example:
GS45/1KS-04
Enclosed slip ring body
Type 45/1 with plastic housing
3-pole + PE

Slip ring bodies

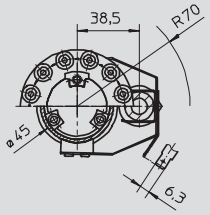
Slip ring body ES45/3 25 A / 1000 V

Electrical data
- Voltage: max. 1000 V~=
  - according to DIN VDE 0110
  - overtension category IV
  - insulating material group II
  - degree of contamination 3
- Current: 25 A, at max. 30°C and 100% duty cycle
- Slip rings:
  - ø 45 x 8 mm, brass
  - distance between rings 28 mm
- Current collector:
  - support with 2 pressed-on coals 20 x 8 mm
  - connecting flat plug 6.3 (DIN 46244) for flat socket 6.3 (DIN 46247)
- Protection class: IP 00



Dimension d_1:
- 3 to 4 poles = ø 9 mm
- 5 to 9 poles = ø 10.2 mm

a = (number of poles - 1) x 28



Wiring and max. number of poles
- Max. 9 (incl. PE), completely wired with 2.5 mm² on a clamping board, sheathed clamps

More technical details
- Rotational speed: max. 100 U/min
- Insulation:
  - insulating parts PA 6, glass fibre reinforced
- Ambient temperature:
  - -35°C to max. +50°C
  - at > 50°C the max. current load has to be reduced accordingly
  - for higher temperature please inquire
- Position of installation:
  - standing
  - other positions on request
- Axle tube $d_a = 25_{h9}$ mm

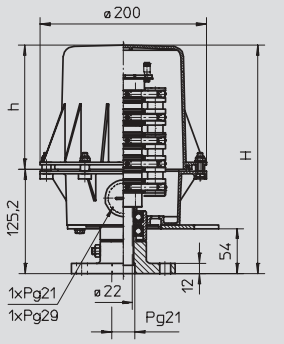
Volume of delivery
- Complete slip ring body with current collectors
- Insulator
- Axle tube (secure on site against torsion with 2 threaded pins M5, DIN 914)
- Without brush bolt

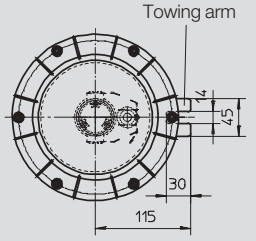
Mounting advice
Attention!
Only every second slip ring is to be fitted with a current collector.

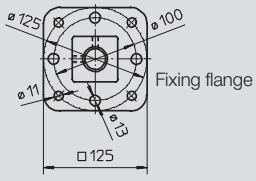
Order example:
ES45/3/R22-04
Slip ring body
Type 45/3
3-pole + PE
Tube d_{inside} = 22 mm

Enclosed slip ring body GS45/3 25 A / 1000 V

Electrical data
- According to type ES45/3
- Exception:
  - protection class: IP 65







h [mm]	H [mm]	Max. number of poles (incl. PE) standard	with heating
90	215	3	-
150	275	5	2
190	315	6	4
280	405	9	7

Wiring and max. number of poles
- According to type ES45/3

More technical details
- Rotational speed: max. 100 U/min
- Insulation: insulating parts PA 6, glass fibre reinforced
- Ambient temperature:
  - -35°C to max. +50°C
  - at > 50°C the max. current load has to be reduced accordingly
  - for higher temperature please inquire
- Position of installation:
  - standing
  - other positions on request
- Corrosion protection:
  - steel parts galvanized and powdercoated RAL 1012
- Glands:
  - on the fixing flange Pg 21
  - through-holes in the housing bottom part for Pg 21 and Pg 29

Option
- Reinforced bearing
- Vent plug
- Heating
- Tube and rotary transmission

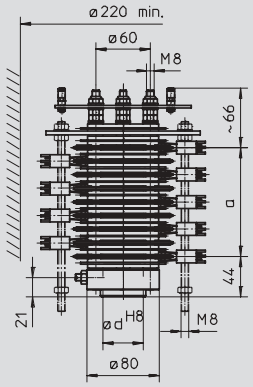
Order example:
GS45/3KS-04
Enclosed slip ring body
Type 45/3
With plastic housing
3-pole + PE

Slip ring bodies

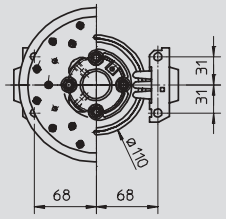
Slip ring body ES18 25 A / 630 V (690 V)[1)]

Electrical data

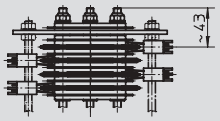
- Voltage: max. 630 V~= (690 V)[1)]
  - according to DIN VDE 0110
  - overtension category III
  - insulating material group II
  - degree of contamination 3
- Current: mA - 25 A, at max. 30°C and 100% duty cycle
- Slip rings:
  - ø 102 mm, brass
  - distance between rings 15 mm
- Current collector:
  - support with 2 contact springs, each with three bronze coal rivets
  - connecting flat plug 6.3 (DIN 46244) for flat socket 6.3 (DIN 46247)
- Protection class: IP 00



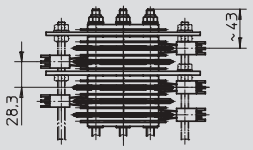
a = (1/2 number of poles - 1) x 15



Standard type



Construction without clamping board



Construction with intermediate support

Order example:

ES18/F45-24

Slip ring body
Type 18, 23-pole + PE
Flange diameter
$d1^{H8}$ = 45 mm

Control and data transmission

- Ring with multi-layer coating (ML) and current collector bronze 25 mA at 24 V and >
- Ring with multi-layer coating (ML) and current collector
  - silver (Ag) 0 - 20 mA at min. 0 - 10 V
  - digital max. 500 kBaud
  - measured data transmissions and video signals require consultation

Wiring and max. number of poles

- Standard construction:
  - up to 4 rings without clamping board
  - 6 to 36 rings on a clamping board mit 2.5 mm²
  - 37 to 48 rings without clamping board with strand wiring 1.5 mm², 2 m from flange
- Special construction:
  - up to 48 rings on a clamping board mit 1.5 mm²
  - up to max. 100 rings without clamping board with strand wiring 1 mm², 2 m from flange
  - 10 rings or more with supporting plate
  - 48 rings or more with intermediate support

More technical details

- Rotational speed for
  - standard construction (MS-rings and bronze coals): 100 U/min
  - data (ML-rings): 30 U/min
- Insulation:
  - insulating parts PA 6, glass fibre reinforced
- Ambient temperature:
  - -35°C to max. +50°C
  - at > 50°C the max. current load has to be reduced accordingly
  - for higher temperature please inquire
- Position of installation:
  - standing
  - other positions on request
- Flange diameter d_1^{H8}:
  - 45 mm (standard)
  - 20, 30 and 35 mm on request

Volume of delivery

- Without brush bolts
- Current collectors loosely enclosed
- Brush bolts on request

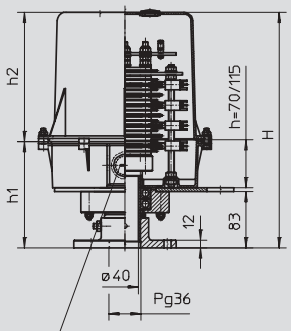
1) The voltages apply for slip ring bodies, installed in systems (parts of systems) that are not directly fed by the low-voltage net (VDE 0110-1/1997-04: 2.2.1.1.2, table 4). On systems (part of systems) with direct feeding from the low-voltage net, the values in brackets are permissible for alternating voltage (VDE 0110-1/1997-04: 2.2.1.1.1, table 3b).

Slip ring bodies

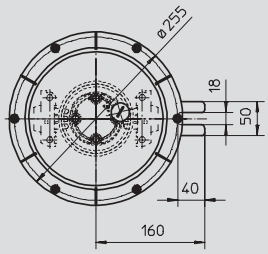
Enclosed slip ring body GS18 25 A / 630 V (690 V)[1)]

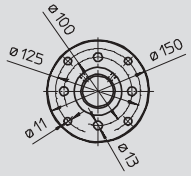
Electrical data

- Voltage: max. 630 V~= (690 V)[1)]
  - according to DIN VDE 0110
  - overtension category III
  - insulating material group II
  - degree of contamination 3
- Current: mA-25 A,at max. 30°C and 100 % duty cycle
- Slip rings:
  - ø 102 mm, brass
  - distance between rings 15 mm
- Current collector:
  - support with 2 contact springs, each with three bronze coal rivets
  - connecting flat plug 6.3 (DIN 46244) for flat socket 6.3 (DIN 46247)
- Protection class: IP 65



h_{70} = 1 x Pg 21, 1 x Pg 29
h_{115} = 1 x Pg 21, 1 x Pg 36





Fixing flange

Order example:

GS18KS-24/08ML/LI

Enclosed slip ring body
Type 18, 23-pole + PE
Combined with type 18, 8-pole
With multi-layer coating
Strand wiring

h_1 [mm]	h_2 [mm]	H [mm]	Max. number of poles incl. PE	with heating
157	125	282	10	-
	190	347	18	8
	280	437	30	20
202	125	327	14	6
	190	392	24	14
	280	482	36	26

Control and data transmission

- Ring with multi-layer coating (ML) and current collector bronze 25 mA at 24 V and >
- Ring with multi-layer coating (ML) and current collector
  - silver (Ag) 0 - 20 mA at min. 0 - 10 V
  - digital max. 500 kBaud
  - measured data transmissions and video signals require consultation

Wiring and max. number of poles

- Standard construction:
  - up to 36 rings on a clamping board mit 2.5 mm²
  - 37 to 48 rings without clamping board with strand wiring 1.5 mm², 2 m from flange
- Special construction:
  - up to 48 rings on a clamping board mit 1.5 mm²
  - up to max. 100 rings without clamping board with strand wiring 1mm², 2 m from flange
  - 10 rings or more with supporting plate
  - 48 rings or more with intermediate support

More technical details

- Rotational speed for
  - standard construction (MS-rings and bronze coals): 100 U/min
  - data (ML-rings): 30 U/min
- Bearing: anti-friction bearing
- Insulation:
  - insulating parts PA 6, glass fibre reinforced.
- Ambient temperature:
  - -35°C to max. +50°C
  - at > 50°C the max. current load has to be reduced accordingly
  - for higher temperature please inquire
- Position of installation:
  - standing
  - other positions on request
- Flange diameter $d1^{H8}$:
  - 45 mm (standard)
  - 20, 30 and 35 mm on request
- Corrosion protection:
  - steel parts galvanized and powdercoated
  - aluminium
  - standard housing of PA6.6 up to 36 poles
  - 37 poles or more steel housing

Volume of delivery

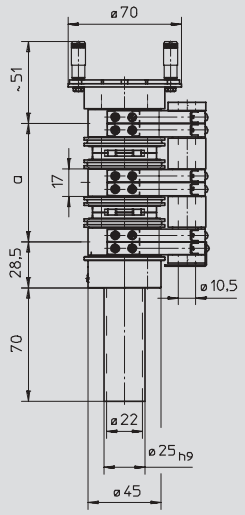
- Standard without Pg glands
- Pg glands on request

1) The voltages apply for slip ring bodies, installed in systems (parts of systems) that are not directly fed by the low-voltage net (VDE 0110-1/1997-04: 2.2.1.1.2, table 4). On systems (part of systems) with direct feeding from the low-voltage net, the values in brackets are permissible for alternating voltage (VDE 0110-1/1997-04: 2.2.1.1.1, table 3b).

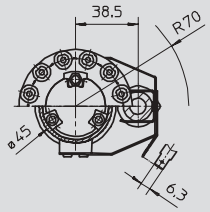
Slip ring bodies

Slip ring body ES45/2 47 A / 1000 V

Electrical data
- Voltage: max. 1000 V~=
  - according to DIN VDE 0110
  - overtension category IV
  - insulating material group II
  - degree of contamination 3
- Current: 47 A, at max. 30°C and 100% duty cycle
- Slip rings:
  - ø 45 x 17 mm, brass
  - distance between rings 36.6 mm
- Current collector:
  - support with 2 current collectors with two pressed-on coals 20 x 8 mm
  - connecting flat plug 6.3 (DIN 46244) for flat socket 6.3 (DIN 46247)
- Protection class: IP 00



a = (number of poles - 1) x 36.6



Wiring and max. number of poles
- Max. 5 (incl. PE) completely wired with 6 mm² on the ring side on a clamping board at sheathed clamps
- current collector in pairs per ring on connecting terminals

More technical details
- Rotational speed: max. 70 U/min
- Insulation:
  - insulating parts PA 6, glass fibre reinforced
- Ambient temperature:
  - -35°C to max. +50°C
  - at > 50°C the max. current load has to be reduced accordingly
  - for higher temperature please inquire
- Position of installation:
  - standing
  - other positions on request
- Axle tube $d_a = 25_{h9}$ mm

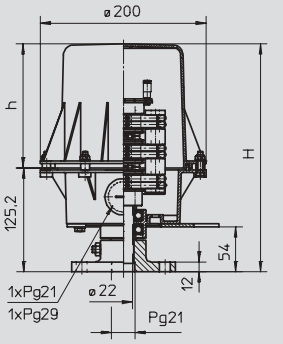
Volume of delivery
- slip ring body complete with current collectors
- Insulator
- Axle tube (secure against torsion on site by means of 2 threaded pins MS, DIN 914)
- Without brush bolt

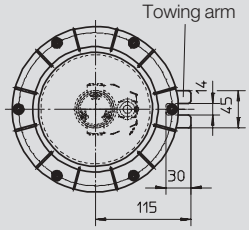
Mounting advice
Attention!
The two current collectors per ring always have to be connected in parallel to a clamping board or similar.

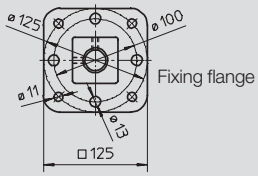
Order example:
ES45/2/R22-04
Slip ring body
Type 45/2
3-pole + PE
Tube d_{inside} = 22 mm

Enclosed slip ring body GS45/2 47 A / 1000 V

Electrical data
- According to type ES45/2
- Exception:
  - protection class: IP 65







h_2 [mm]	H [mm]	Max. number of poles standard	Max. number of poles with heating
90	215	2	-
150	275	4	-
190	315	5	3
280	405	-	5

Wiring and max. number of poles
- According to type ES45/2

More technical details
- Ambient temperature:
  - -35°C to max. +50°C
  - at > 50°C the max. current load has to be reduced accordingly
  - for higher temperature please inquire
- Corrosion protection:
  - steel parts galvanized or powdercoated RAL 1012
- Position of installation:
  - standing
  - other positions on request
- Glands:
  - in the fixing flange Pg 21
  - through-holes in the housing bottom part for Pg 21 and Pg 29

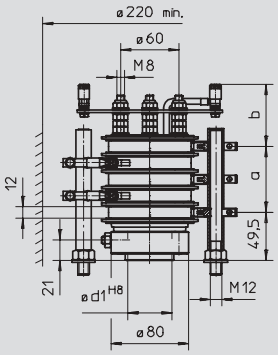
Option
- Reinforced bearing
- Vent plug
- Heating
- Tube and rotary transmission

Order example:
GS45/2KS-04
Enclosed slip ring body
Type 45/2
With plastic housing
3-pole + PE

Slip ring bodies

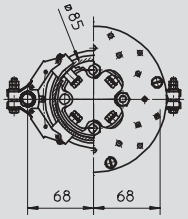
Slip ring body ES13 50 A / 1000 V

Electrical data
- Voltage: max. 1000 V~=
  - according to DIN VDE 0110
  - overtension category IV
  - insulating material group II
  - degree of contamination 3
- Current: 50 A, at max. 30°C and 100% duty cycle
- Slip rings:
  - ø 85 x 12 mm, brass
  - distance between rings 17 mm
  - connection M6
  - max. 60 A
- Current collector:
  - industrial double support with two flexibly hinged, replaceable coals 22 x 6.4 mm
  - connection M5
  - max. 50 A
- Protection class: IP 00

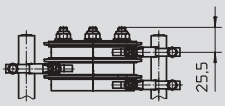


Dimension b:
- up to 7 rings = 63 mm
- 8 rings or more = 90 mm

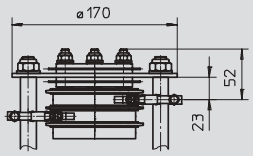
a = (number of poles - 1) x 17



Standard type



Construction with strand wiring



Construction with supporting plate for 8 rings or more

Wiring and max. number of poles
- Max. 28 (incl. PE) completely wired with 10 mm²
- up to 14 poles on clamping board connection to sheathed clamps
- strand wiring 10 mm² up to 28 rings possible
- construction with 8 rings or more with intermediate support (supporting plate)

More technical details
- Rotational speed: max. 100 U/min
- Insulation:
  - insulating parts PA 6, glass fibre reinforced
  - glass filament, fabric tube HGW2375,4 DIN 7735
- Ambient temperature:
  - -35°C to max. +50°C
  - at > 50°C the max. current load has to be reduced accordingly
  - for higher temperature please inquire
- Position of installation:
  - standing
  - other positions on request
- Flange diameter d1 H8:
  - 45 mm standard
  - 20, 30 and 35 mm on request

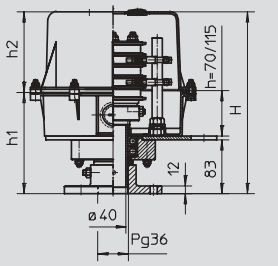
Volume of delivery
- Brush bolts
- Insulating tubes
- Current collectors

Order example:
ES13/F45-04
Slip ring body
Type 13
3-pole + PE
Flange diameter
d1 H8 = 45 mm

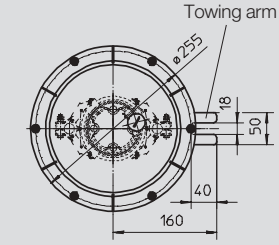
Enclosed slip ring body GS13 50 A / 1000 V

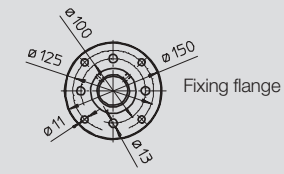
Electrical data
- According to type ES13
- Exception:
  - protection class: IP 65

More technical details
- Rotational speed: max. 100 U/min
- Insulation:
  - insulating parts PA 6, glass fibre reinforced



h_{70} = 1 x Pg 21, 1 x Pg 29
h_{115} = 1 x Pg 21, 1 x Pg 36





Fixing flange

h_1 [mm]	h_2 [mm]	H [mm]	Max. number of poles A	B	C	D
157	125	282	6	4	-	-
	190	347	8	7	5	3
	280	437	14	11	9	7
202	125	327	7	6	4	2
	190	392	11	8	7	6
	280	482	16	14	12	10

A) without clamping board; B) with clamping board; C) without clamping board, with heating; D) with clamping board and heating

- glass filament, fabric tube HGW2375,4 DIN 7735
- Ambient temperature:
  - -35°C to max. +50°C
  - at > 50°C the max. current load has to be reduced accordingly
  - for higher temperature please inquire
- Position of installation:
  - standing
  - other positions on request
- Bearing: anti-friction bearing
- Corrosion protection:
  - Steel parts galvanized or powdercoated
  - aluminium
  - standard housing of PA 6.6

Volume of delivery
- standard without Pg glands (possible on request)
- 17 rings or more with steel housing.

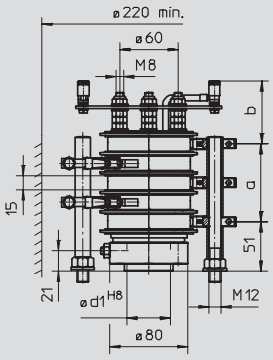
Accessories
Heating; Rotary transmission for gaseous and liquid media.

Order example:
GS13KS-04
Enclosed slip ring body
Type 13
With plastic housing
3-pole + PE

Slip ring bodies

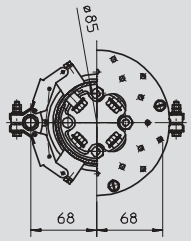
Slip ring body ES15 90 A / 1000 V

Electrical data
- Voltage: max. 1000 V~=
  - according to DIN VDE 0110
  - overtension category IV
  - insulating material group II
  - degree of contamination 3
- Current: 90 A, at max. 30°C and 100% duty cycle
- Slip rings:
  - ø 85 x 15 mm, brass
  - distance between rings 20 mm
  - connection M8
  - max. 100 A
- Current collector:
  - industrial double support with two flexibly hinged, replaceable coals 25 x 8 mm
  - connection M6
  - max. 90 A
- Protection class: IP 00

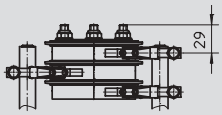


Dimension b:
- up to 7 rings = 65 mm
- 8 rings or more = 91 mm

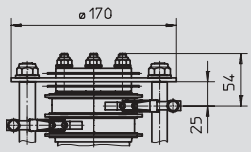
a = (number of poles - 1) x 20



Standard type



Construction without clamping board



Construction with supporting plate for 8 rings or more

Wiring and max. number of poles
- Max. 16 (incl. PE) completely wired with 16 mm²
- up to 8 pole on a clamping board, connection to sheathed clamps
- Strand wiring 16 mm² up to 16 rings possible
- Construction with 8 rings or more with intermediate support (supporting plate)

More technical details
- Rotational speed: max. 100 U/min
- Insulation:
  - insulating parts PA 6, glass fibre reinforced
  - glass filament, fabric tube HGW2375,4 DIN 7735
- Ambient temperature:
  - -35°C to max. +50°C
  - at > 50°C the max. current load has to be reduced accordingly
  - for higher temperature please inquire
- Position of installation:
  - standing
  - other positions on request
- Flange diameter d1 H8:
  - 45 mm standard
  - 20, 30 and 35 mm on request

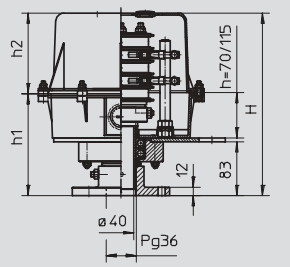
Volume of delivery
- Brush bolts
- Insulating tubes
- Current collectors

Order example:
ES15/F45-04
Slip ring body
Type 15
3-pole + PE
Flange diameter
d1 H8 = 45 mm

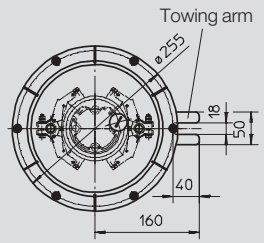
Enclosed slip ring body GS15 90 A / 1000 V

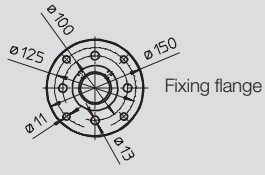
Electrical data
- According to type ES15
- Exception:
  - protection class: IP 65

Wiring and max. number of poles
- According to type ES15



h_{70} = 1 x Pg 21, 1 x Pg 29
h_{115} = 1 x Pg 21, 1 x Pg 36





Fixing flange

h_1 [mm]	h_2 [mm]	H [mm]	Max. number of poles A	B	C	D
157	125	282	5	3	-	-
	190	347	-	6	4	3
	280	437	11	9	7	7
202	125	327	7	5	3	2
	190	392	9	7	7	5
	280	482	14	8	9	8

A) without clamping board; B) with clamping board; C) without clamping board with heating; D) with clamping board and heating

More technical details
- Rotational speed: max. 100 U/min
- Ambient temperature:
  - -35°C to max. +50°C
  - at > 50°C the max. current load has to be reduced accordingly
  - for higher temperature please inquire
- Position of installation:
  - standing
  - other positions on request
- Bearing: anti-friction bearing
- Corrosion protection:
  - steel parts galvanized or powdercoated
  - aluminium
  - standard housing of PA 6.6

Volume of delivery
- Standard without Pg glands (possible on request)
- 14 rings or more with steel housing

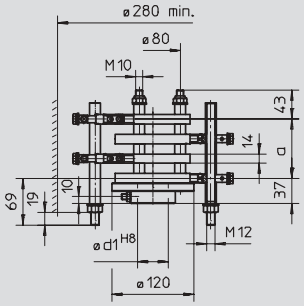
Accessories
Heating; Rotary transmission for gaseous and liquid media

Order example:
GS15KS-04
Enclosed slip ring body
Type 15
With plastic housing
3-pole + PE

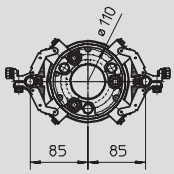
Slip ring bodies

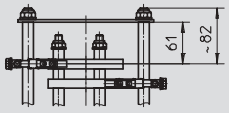
Slip ring body ES16 100 A / 1000 V

Electrical data
- Voltage: max. 1000 V~=
  - according to DIN VDE 0110
  - overtension category IV
  - insulating material group II
  - degree of contamination 3
- Current: 100 A, at max. 30°C and 100% duty cycle
- Slip rings:
  - ø 110 x 14 mm, brass
  - distance between rings 29 mm
  - connection M8
  - max. 100 A
- Current collector:
  - industrial double support with two mobile, replaceable coals 32 x 10 mm
  - connection M8
  - max. 150 A
- Protection class: IP 00



a = (number of poles - 1) x 29





5 poles and more
with connecting bracket

Wiring and max. number of poles
- Max. 12 (incl. PE) connection made by the customer
- Strand wiring 25 mm², 2 m from flange possible at a surcharge
- 5 rings and more with connecting bracket

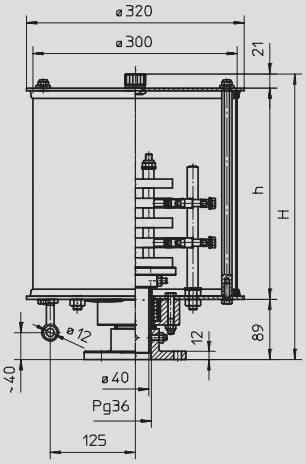
More technical details
- Rotational speed: max. 100 U/min
- Insulation:
  - glass filament, fabric tube HGW2375,4 DIN 7735
- Ambient temperature:
  - -30°C to max. +60°C
  - at > 60°C the max. current load has to be reduced accordingly
  - for higher temperature please inquire
- Position of installation:
  - standing
  - other positions on request
- Flange diameter d1H8:
  - 45 mm standard
  - 35 mm on request

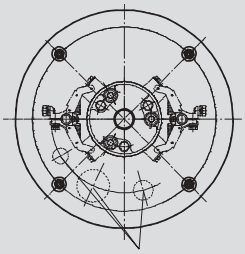
Volume of delivery
- Brush bolts
- Insulating tubes
- Current collectors

Order example:
ES16/F45-04
Slip ring body
Type 16
3-pole + PE
Flange diameter
d1H8 = 45 mm

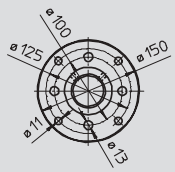
Enclosed slip ring body GS16 100 A / 1000 V

Electrical data
- According to type ES16
- Exception:
  - protection class: IP 54
  - higher protection class on request





Pg-holes at the bottom plate:
1 x ø 48 mm (Pg 36)
1 x ø 29 mm (Pg 21)
1 x ø 23 mm (Pg 16)



Fixing flange

Wiring and max. number of poles
- Max. 9 (incl. PE)
- Further details see ES16

More technical details
- Rotational speed: max. 100 U/min
- Insulation:
  - glass filament, fabric tube HGW2375,4 DIN 7735
- Ambient temperature:
  - -30°C to max. +60°C
  - at > 60°C the max. current load has to be reduced accordingly
  - for higher temperature please inquire
- Position of installation:
  - standing, with reinforced bearing
  - other positions on request
- Bearing: anti-friction bearing
- Corrosion protection:
  - steel parts galvanized or powdercoated
- Protective cover:
  - removable to the top
  - also divided on request, i.e. removable to the side or with sight and assembly window

Volume of delivery
- Standard without Pg glands
- with Pg glands on request

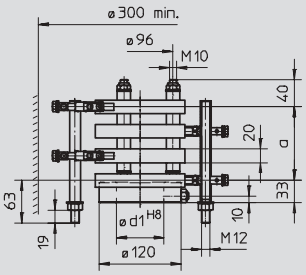
Accessories
- Heating
- Rotary transmission for gaseous and liquid media

Order example:
GS16-04
Enclosed slip ring body
Type 16
With steel housing
3-pole + PE

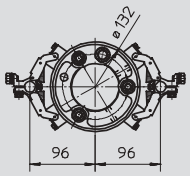
Slip ring bodies

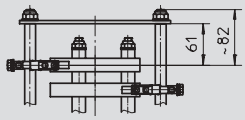
Slip ring body ES19 150 A / 1000 V

Electrical data
- Voltage: max. 1000 V~=
  - according to DIN VDE 0110
  - overtension category IV
  - insulating material group II
  - degree of contamination 3
- Current: 150 A, at max. 30°C and 100% duty cycle
- Slip rings:
  - ø 132 x 20 mm, brass
  - distance between rings 36 mm
  - connection M8
  - max. 150 A
- Current collector:
  - industrial double support with two flexibly hinged, replaceable coals 32 x 10 mm
  - connection M8
  - max. 150 A
- Protection class: IP 00



a = (number of poles - 1) x 36





5 poles and more with connecting bracket

Wiring and max. number of poles
- Max. 18 (incl. PE) connection made by the customer with 35 mm²
- Strand wiring 35 mm², 2 m from flange possible at a surcharge
- According to DIN VDE 0100-540 a outer conductor of 35 mm² cross section only requires a minimum cross section of the earth conductor of 16 mm²
- 5 rings or more with connecting bracket

More technical details
- Rotational speed: max. 100 U/min
- Insulation:
  - glass filament, fabric tube HGW2375,4 DIN 7735
- Ambient temperature:
  - -30°C to max. +60°C
  - at > 60°C the max. current load has to be reduced accordingly
  - for higher temperature please inquire
- Position of installation:
  - standing
  - other positions on request
- Flange diameter d1H8:
  - 70 mm standard
  - 35 and 45 mm on request

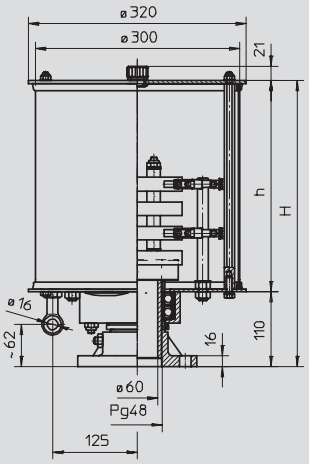
Volume of delivery
- Brush bolts
- Insulating tubes
- Current collectors

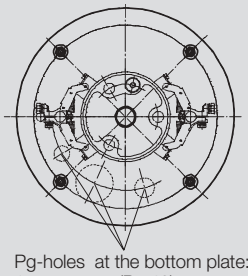
Order example:
ES19/F70-04
Slip ring body
Type 19
3-pole + PE
Flange diameter
d1H8 = 70 mm

Enclosed slip ring body GS19 150 A / 1000 V

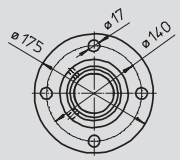
Electrical data
- According to type ES19
- Exception:
  - protection class: IP 54
  - higher protection class on request

Wiring and max. number of poles
- Max. 16
- Otherwise as type ES19





Pg-holes at the bottom plate:
1 x ø 55 mm (Pg 42)
1 x ø 29 mm (Pg 21)
1 x ø 23 mm (Pg 16)



Fixing flange

More technical details
- Rotational speed: max. 100 U/min
- Insulation:
  - glass filament, fabric tube HGW2375,4 DIN 7735
- Ambient temperature:
  - -30°C to max. +60°C
  - at > 60°C the max. current load has to be reduced accordingly
  - for higher temperature please inquire
- Position of installation:
  - standing
  - other positions on request
- Bearing: anti-friction bearing
- Corrosion protection:
  - steel parts galvanized or powdercoated

- Protective cover:
  - removable to the top
  - also divided on request, i.e. removable to the side or with sight and assembly window

Volume of delivery
- Standard without Pg glands
- Pg glands on request

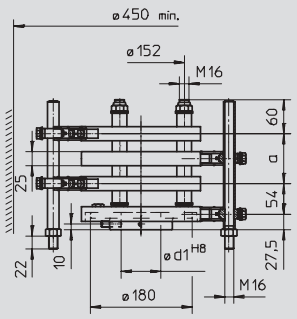
Accessories
- Heating
- Rotary transmission for gaseous and liquid media

Order example:
GS19-04
Enclosed slip ring body
Type 19
With steel housing
3-pole + PE

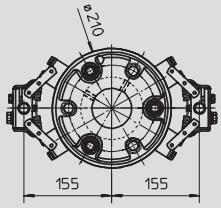
Slip ring bodies

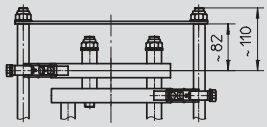
Slip ring body ES21 250 A / 1000 V

Electrical data
- Voltage: max. 1000 V~=
  - according to DIN VDE 0110
  - overtension category IV
  - insulating material group II
  - degree of contamination 3
- Current: 250 A, at max. 30°C and 100% duty cycle
- Slip rings:
  - ø 210 x 25 mm, brass
  - distance between rings 44 mm
  - connection M10/12
  - max. 400 A
- **Current collector:**
  - industrial double support with two flexibly hinged, replaceable coals 45 x 16 mm
  - connection M10
  - max. 300 A
- Protection class: IP 00



a = (number of poles - 2) x 44





5 poles or more
with connecting bracket

Wiring and max. number of poles
- Max. 8 (incl. PE) connection made by the customer with 95 mm²
- Strand wiring 95 mm², 2 m from flange possible at a surcharge
- According to DIN VDE 0100-540 the minimum cross section for the earth conductor is ½ the cross section of the outer conductor
- 5 rings or more with connecting bracket

More technical details
- Rotational speed: max. 100 U/min
- Insulation:
  - glass filament, fabric tube HGW2375,4 DIN 7735
- Ambient temperature:
  - -30°C to max. +60°C
  - at > 60°C the max. current load has to be reduced accordingly
  - for higher temperature please inquire
- Position of installation:
  - standing
  - other positions on request
- Flange diameter d1 H8: 70 mm standard

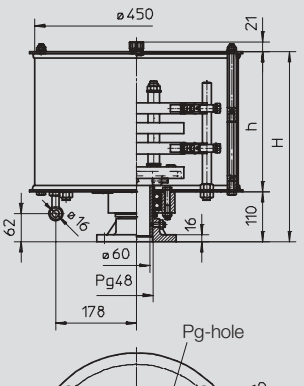
Volume of delivery
- Brush bolts
- Insulating tubes
- Current collectors

Order example:
ES21/F70-04
Slip ring body
Type 21
3-pole + PE
Flange diameter
d1 H8 = 70 mm

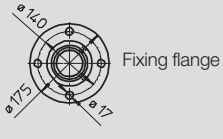
Enclosed slip ring body GS21 250 A / 1000 V

Electrical data
- According to type ES21
- Exception:
  - protection class: IP 54
  - higher protection class on request

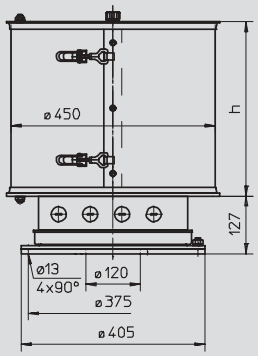
Wiring and max. number of poles
- Max. 7 (incl. PE)
- Otherwise as type ES21



Pg-holes in the bottom plate:
1 x ø 60 mm (Pg 48)
2 x ø 38 mm (Pg 29)



Fixing flange



With ball steering rim
and divided cover

More technical details
- Rotational speed: max. 100 U/min
- Insulation:
  - glass filament, fabric tube HGW2375,4 DIN 7735
- Ambient temperature:
  - -30°C to max. +60°C
  - at > 60°C the max. current load has to be reduced accordingly
  - for higher temperature please inquire
- Position of installation:
  - standing
  - other positions on request
- Bearing:
  - anti-friction bearing (can be lubricated later on)
  - ball steering rim (can be lubricated later on) on inquiry
- Corrosion protection:
  - steel parts galvanized or powdercoated
- Protective cover:
  - removable to the top
  - also divided on request, i.e. removable to the side or with sight and assembly window

Volume of delivery
- Standard without Pg glands
- Pg glands on request

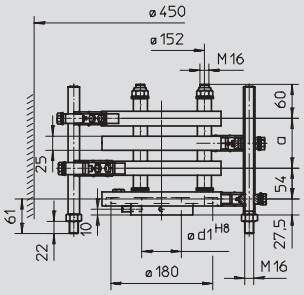
Accessories
- Heating
- Rotary transmission for gaseous and liquid media

Order example:
GS21-04
Enclosed slip ring body
Type 21
With steel housing
3-pole + PE

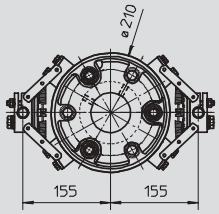
Slip ring bodies

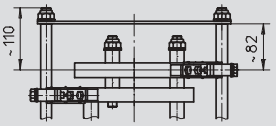
Slip ring body ES29 400 A / 1000 V

Electrical data
- Voltage: max. 1000 V~=
  - according to DIN VDE 0110
  - overtension category IV
  - insulating material group II
  - degree of contamination 3
- Current: 400 A, at max. 30°C and 100% duty cycle
- Slip rings:
  - ø 210 x 25 mm, brass
  - distance between rings 44 mm
  - connection M12
  - max. 400 A
- Current collectors phase:
  - industrial double support with two flexibly hinged, replaceable coals 50 x 20 mm
  - connection M12
  - max. 400 A



a = (number of poles - 2) x 44





5 poles or more with connecting bracket

- Current collectors-PE:
  - as phase, however coal 45 x 16 max. 300 A
- Protection class: IP 00

Wiring and max. number of poles
- Max. 4 (incl. PE) connection made by the customer with 2 x 95 mm²
- Strand wiring 2 x 95 mm², 2 m from flange possible at a surcharge
- According to DIN VDE 0100-540 the minimum cross section for the earth conductor is ½ the cross section of the outer conductor
- 5 rings or more with connecting bracket

More technical details
- Rotational speed: max. 100 U/min
- Insulation:
  - glass filament, fabric tube HGW2375,4 DIN 7735
- Ambient temperature:
  - -30°C to max. +60°C
  - at > 60°C the max. current load has to be reduced accordingly
  - for higher temperature please inquire
- Position of installation:
  - standing
  - other positions on request

- Flange diameter d1^{H8}: 70 mm standard

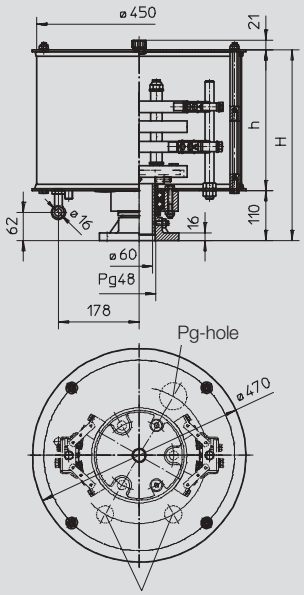
Volume of delivery
- Brush bolts
- Insulating tubes
- Current collectors

Order example:
ES29/F70-04
Slip ring body
Type 29
3-pole + PE
Flange diameter
d1^{H8} = 70 mm

Enclosed slip ring body GS29 400 A / 1000 V

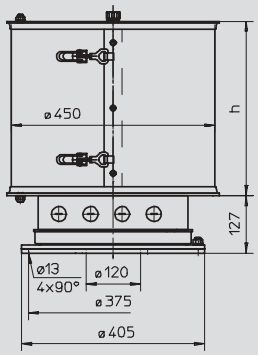
Electrical data
- According to type ES29
- Exception:
  - protection class: IP 54
  - higher protection class on request

Wiring and max. number of poles
- According to type ES29
- with ball steering rim on request



Pg-holes in the bottom plate:
1 x ø 60 mm (Pg 48)
2 x ø 38 mm (Pg 29)

Fixing flange



With ball steering rim and divided cover

More technical details
- Rotational speed: max. 100 U/min
- Insulation:
  - glass filament, fabric tube HGW2375,4 DIN 7735
- Ambient temperature:
  - -30°C to max. +60°C
  - at > 60°C the max. current load has to be reduced accordingly
  - for higher temperature please inquire
- Position of installation:
  - standing
  - other positions on inquiry

- Bearing:
  - anti-friction bearing (can be lubricated later on)
  - ball steering rim (can be lubricated later on) on request
- Corrosion protection:
  - steel parts galvanized or powdercoated
- Protective cover:
  - removable to the top
  - also divided on request, i.e. removable to the side or with sight and assembly window

Volume of delivery
- Standard without Pg glands
- Pg glands on request

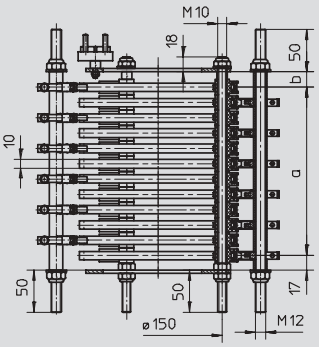
.

Accessories
- Heating
- Rotary transmission for gaseous and liquid media

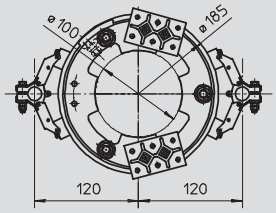
Order example:
GS29-04
Enclosed slip ring body
Type 29
With steel housing
3-pole + PE

Slip ring bodies

Slip ring body ES185 47 A / 1000 V



a = (number of poles - 1) x 18



Electrical data
- Voltage: max. 1000 V~=
  - according to DIN VDE 0110
  - overtension category IV
  - insulating material group II
  - degree of contamination 3
- Current: 47 A, at max. 30°C and 100% duty cycle
- Slip rings:
  - ø 185 x 10 mm, brass
  - distance between rings 18 mm
  - connection M6
  - max. 47 A
- Current collector:
  - industrial double support with two flexibly hinged, replaceable coals 22 x 6.4 mm
  - connection M5
  - max. 50 A
- Protection class: IP 00

Control and data transmission
- Ring with multi-layer coating (ML) and current collector bronze 25 mA at 24 V and >
- Ring with multi-layer coating (ML) and current collector silver (Ag) 5 mA at min. 6 V
- Measure data transmissions and video signals require consultation

Wiring and max. number of poles
- Max. 18 (incl. PE) completely wired with 6 mm² on a clamping boards
- Connection at the clamping board M5

More technical details
- Rotational speed: max. 60 U/min
- Insulation:
  - slip ring holder PA6
  - brush bolt glass filament fabric tube HGW2375,4 DIN 7735
- Corrosion protection: steel parts galvanized
- Tube passage: max. ø 100 mm
- Ambient temperature:
  - -30°C to max. +60°C
  - at > 60°C the max. current load has to be reduced accordingly
  - for higher temperature please inquire
- Position of installation:
  - standing
  - other positions on request
- Possibilities of installation:
  - with 3 screw bolts M10, bolt circle ø 150 mm
  - in site the brush bolts M12 have to be screwed on top and at the bottom

Volume of delivery
- Brush bolts
- Insulating tubes
- Current collectors

Order example:

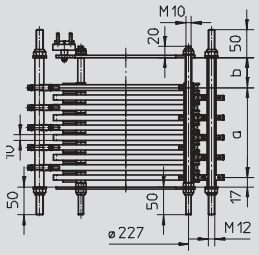
ES185-04

Slip ring body
Type 185
3-pole + PE

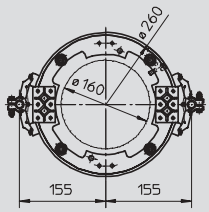
Slip ring bodies

Slip ring body ES260 47 A / 1000 V

Electrical data
- Voltage: max. 1000 V~=
  - according to DIN VDE 0110
  - overtension category IV
  - insulating material group II
  - degree of contamination 3
- Current: 47 A, at max. 30°C and 100% duty cycle
- Slip rings:
  - ø 260 x 10 mm, brass
  - distance between rings 18 mm
  - connection M6
  - max. 47 A
- Current collector:
  - industrial double support with two flexibly hinged, replaceable coals 22 x 6.4 mm
  - connection M5
  - max. 50 A
- Protection class: IP 00



a = (number of poles - 1) x 18



Control and data transmission
- Ring with multi-layer coating (ML) and current collector bronze 25 mA at 24 V and >
- Ring with multi-layer coating (ML) and current collector silver (Ag) 5 mA at min. 6 V
- Measured data transmissions and video signals require consultation

Wiring and max. number of poles
- Max. 24 (incl. PE) completely wired with 6 mm² on a clamping boards
- Connection at the clamping board M5
- > 24 to 36 rings with strand wiring

More technical details
- Rotational speed: max. 60 U/min
- Insulation:
  - slip ring holder PA6
  - brush bolt glass filament fabric tube HGW2375,4 DIN 7735
- Corrosion protection:
  - steel parts galvanized
- Tube passage: max. ø 160 mm
- Ambient temperature:
  - -30°C to max. +60°C
  - at > 60°C the max. current load has to be reduced accordingly
  - for higher temperature please inquire
- Position of installation:
  - standing
  - other positions on request
- Possibilities of installation:
  - with 4 screw bolts M10, bolt circle ø 227 mm
  - on site the brush bolts M12 have to be screwed on top and at the bottom

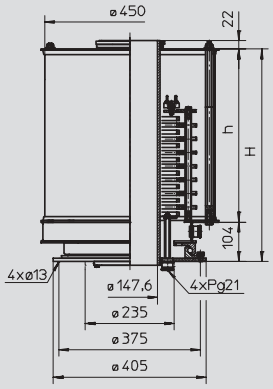
Volume of delivery
- Brush bolts
- Insulating tubes
- Current collectors

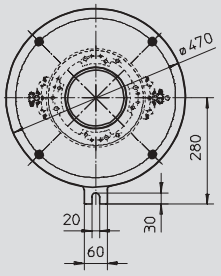
Order example:
ES260-04
Slip ring body
Type 260
3-pole + PE

Enclosed slip ring body GS260 47 A / 1000 V

Electrical data
- According to type ES260
- Exception:
  - protection class: IP 54
  - higher protection class on request

Control and data transmission
- According to type ES260





Wiring and max. number of poles
- According to type ES260

More technical details
- Rotational speed: max. 60 U/min
- Insulation:
  - slip ring holder PA6
  - brush bolt glass filament fabric tube HGW2375,4 DIN 7735
- Corrosion protection: steel parts galvanized
- Tube passage: max. ø 160 mm
- Ambient temperature:
  - -30°C to max. +60°C
  - at > 60°C the max. current load has to be reduced accordingly

Number of poles[1] Without heating	with heating	h [mm]
up to 12	up to 9	300
13 - 18	10 - 15	450
19 -30	16 - 21	600

1) number of poles incl. PE

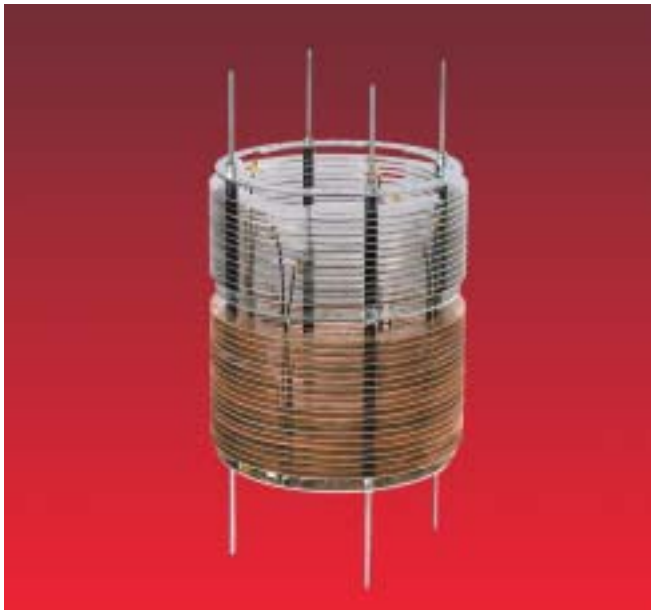
  - for higher temperature please inquire
- Position of installation:
  - standing
  - other positions on request
- Bearing: anti-friction bearing or ball steering rim, to be lubricated later on
- Corrosion protection:
  - steel parts galvanized, powdercoated or stainless steel
- Protective cover:
  - removable to the top
  - standard divided or with sight and assembly window

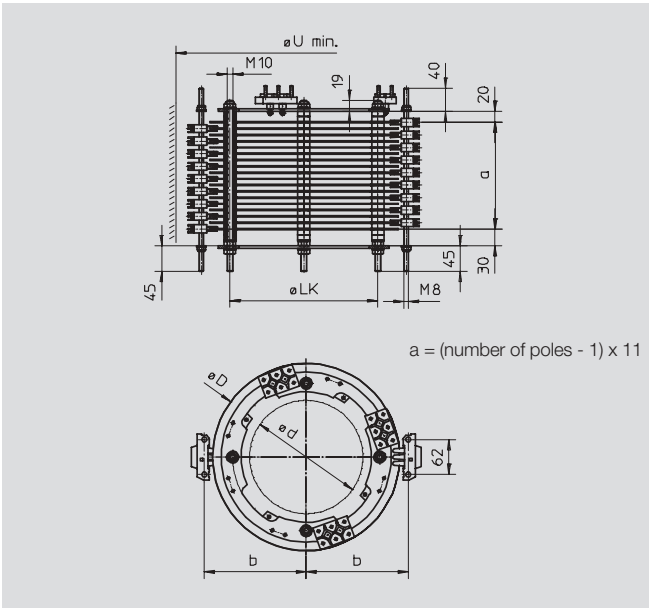
Volume of delivery
- Standard without Pg glands
- Pg glands on request

Order example:
GS260-08
Enclosed slip ring body
Type 260
With steel housing
7-pole + PE

Slip ring bodies

Slip ring body ES170, ES200, ES285 47 A / 630 V (690 V)[1)]





Type	b [mm]	ø d [mm]	ø D [mm]	ø LK [mm]	ø U [mm]	Combination with
ES170	101	75	170	120 – 3 x 120°	290	
ES200	116	100	200	150 – 3 x 120°	320	ES185
ES285	158,5	160	285	227 – 4 x 90°	400	ES260

Electrical data
- Voltage: max. 630V~= (690 V)[1)]
  - according to DIN VDE 0110
  - overtension category III
  - insulating material group II
  - degree of contamination 3
- Current: 47 A, at max. 30°C and 100% duty cycle
- Slip rings:
  - disk rings according to the type ø 170/200/285 x 2 mm, brass
  - distance between rings 11 mm
  - connection M6
  - max. 47 A
- Current collector:
  - support with two bridged contact springs, each with 3 bronze coal rivets
  - connecting flat plug 6.3 (DIN 46244) for flat socket (DIN 46247)
- Protection class: IP 00

Control and data transmission
- Ring with multi-layer coating (ML) and current collector bronze 25 mA at 24 V and >
- Ring with multi-layer coating (ML) and current collector
  - silver (Ag) 0 - 20 mA at min. 0 - 10 V
  - digital max. 500 kBaud
- Measured data transmissions and video signals require consultation

Wiring and max. number of poles
- Max. 18 (incl. PE) completely wired with 6 mm² on a clamping boards
- Connection at the clamping board M5

More technical details
- Rotational speed: max. 60 U/min
- Insulation:
  - slip ring holder PA6
  - brush bolt glass filament fabric tube HGW2375,4 DIN 7735
- Corrosion protection:
  - steel parts galvanized
- Tube passage: see table, diameter d
- Ambient temperature:
  - -30°C to max. +60°C
  - at > 60°C the max. current load has to be reduced accordingly
  - for higher temperature please inquire
- Position of installation:
  - standing
  - other positions on inquiry
- Possibilities of installation:
  - with 3 screw bolts M10
  - on site the brush bolts M10 have to be screwed on top and at the bottom

Volume of delivery
- Brush bolts
- Insulating tubes
- Current collectors

1) The voltages apply for slip ring bodies, installed in systems (parts of systems) that are not directly fed by the low-voltage net (VDE 0110-1/1997-04: 2.2.1.1.2, table 4). On systems (part of systems) with direct feeding from the low-voltage net, the values in brackets are permissible for alternating voltage (VDE 0110-1/1997-04: 2.2.1.1.1, table 3b).

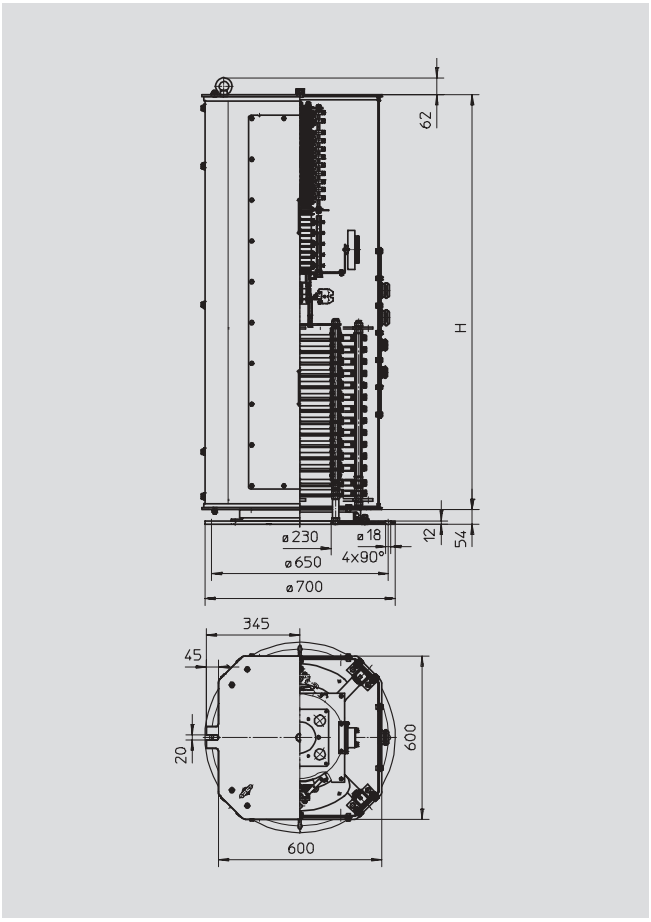
Order example:

ES170-10

Slip ring body
Type 170
9-pole + PE

Slip ring bodies

Enclosed slip ring body GS323 (Combination)



Electrical data
Main current part
- Voltage: max. 1000 V~=
  - according to DIN VDE 0110
  - overtension category IV
  - insulating material group II
  - degree of contamination 3
- Current:
  - 400 A at 60% ED
  - 800 A and 1200 A at parallel connection of rings
- Insulation: HGW2375.4 DIN 7735
- Slip rings: ø 320 mm, cast brass undivided
- Current collector: depending on the amperage one or two current collectors with 2 bronze coal brushes per ring
- General: further combinations for different amperage and voltage are possible
- Protection class: IP 54

Electrical data
Control current part
- Voltage: max. 500V~=
  - according to DIN VDE 0110
  - overtension category IV
  - insulating material group II
  - degree of contamination 3
- Current: 0 mA to 25 A at 100% duty cycle (ES18)
- Insulation: PA 6
- Slip rings: ø 102 mm, brass
- Current collector: support with two contact springs, each with three bronze coal rivets

Control and data transmission
- Ring with multi-layer coating (ML) and current collector bronze 25 mA at 24 V and >
- Ring with multi-layer coating (ML) and current collector
  - silver (Ag) 0 - 20 mA at min. 0 - 10 V
  - digital max. 500 kBaud

Wiring
- Control current part completely wired on clamping bar or claming board
- Main current part with strand wiring on request

More technical details
- Rotational speed for
  - standard type (MS-rings and bronze coal): 100 U/min
  - data (ML-rings): 30 U/min
- Bearing:
  - ball steering rim that can be relubricated
- Insulation:
  - slip ring body and insulator PA6, glass fibre reinforced
- Ambient temperature:
  - -35°C to max. +50°C
  - at > 50°C the max. current load has to be reduced accordingly
  - for higher temperature please inquire
- Corrosion protection:
  - steel parts galvanized
  - sheathing stainless steel
- Installation position: standing

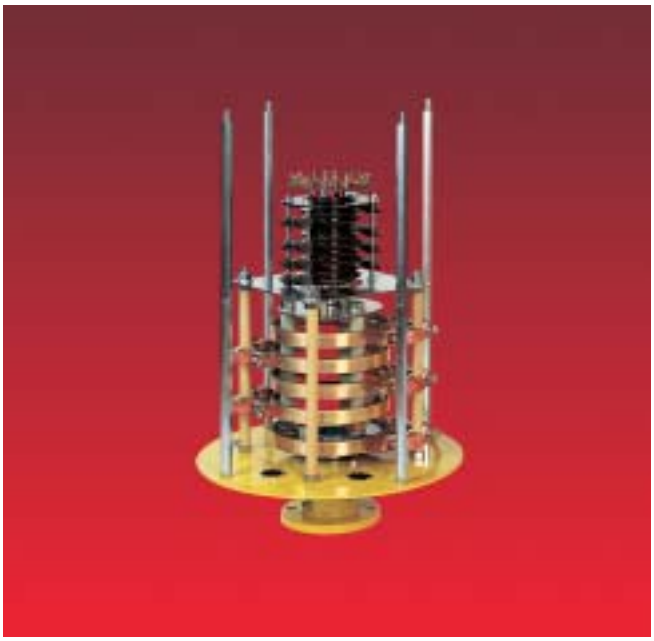
Volume of delivery
- Standard without strand wiring for main current part
- Depending on the ring construction Pg glands are provided as a standard or on special request of the customer

Accessories
- Anti-condensation heater
- Rotary transmission for gaseous and liquid media

Order example:
GS323-14/1510/1836/08ML
Enclosed slip ring body
Type 323, 13-pole + PE
Combined with
type 15, 10-pole,
type 18, 36-pole and
type 18, 8-pole with
multi-layer coating

Slip ring bodies

Combined slip ring bodies e.g. Type GS19/13/18



Electrical data
- Voltage:
  max. 1000/630 V~= (690V)[1)]
  - according to DIN VDE 0110
  - overtension category III
  - insulating material group II
  - degree of contamination 3
- Ring construction:
  - 150 A + PE / 50 A / 25 A
- Protection class:
  - IP 54
  - higher protection class on request

More technical details
- Rotational speed for
  - standard type (MS-rings and bronze coal): 100 U/min.
  - data (ML-rings): 30 U/min
- Bearing: anti-friction bearing
- Cable connection:
  - Main current rings with strand wiring
  - Control rings on clamping board
- Protective cover:
  - to be removed to the top
  - also divided on request; i.e. to be removed to the side or with sight or mounting window
- Corrosion protection:
  - steel parts galvanized or powdercoated
  - sheathing stainless steel on request
- Ambient temperature:
  - -35°C to max. +50°C
  - at > 50°C the max. current load has to be reduced accordingly
  - for higher temperature please inquire
- Position of installation:
  - standing
  - other positions on request

Volume of delivery
- Standard without Pg glands
- Pg glands on request
  .

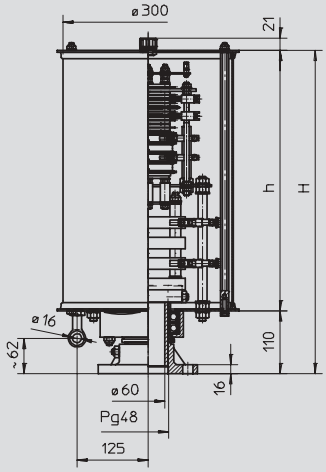
Accessories
- Heating
- Rotary transmission for gaseous and liquid media

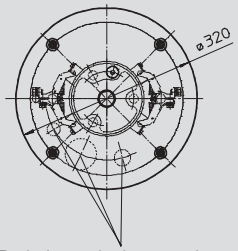
1) The voltages apply for slip ring bodies, installed in systems (parts of systems) that are not directly fed by the low-voltage net (VDE 0110-1/1997-04: 2.2.1.1.2, table 4). On systems (part of systems) with direct feeding from the low-voltage net, the values in brackets are permissible for alternating voltage (VDE 0110-1/1997-04: 2.2.1.1.1, table 3b).

Order example:

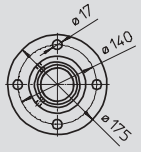
GS19-04/1304/1806

Enclosed slip ring body
Type 19, 3-pole + PE
Type 13, 4-pole
Type 18, 6-pole





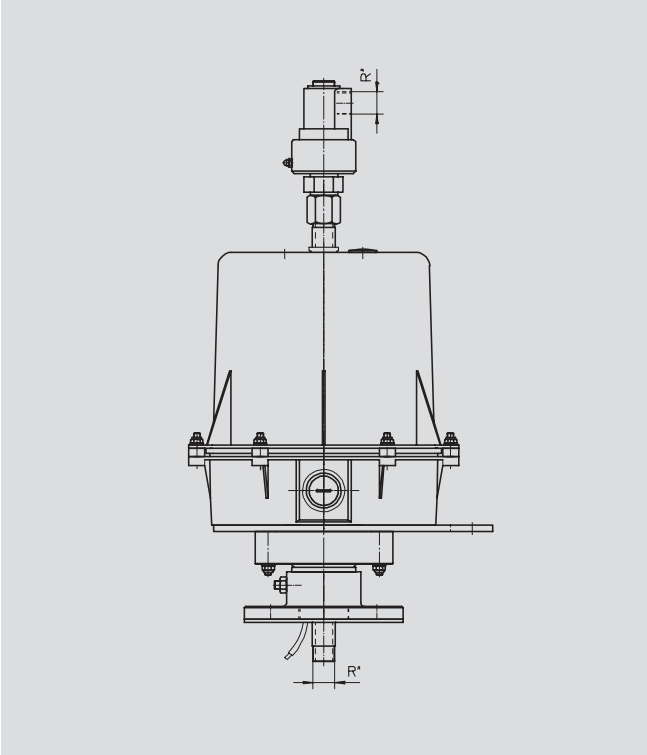
Pg-holes at the bottom plate:
1 x ø 55 mm (Pg 42)
1 x ø 29 mm (Pg 21)
1 x ø 23 mm (Pg 16)



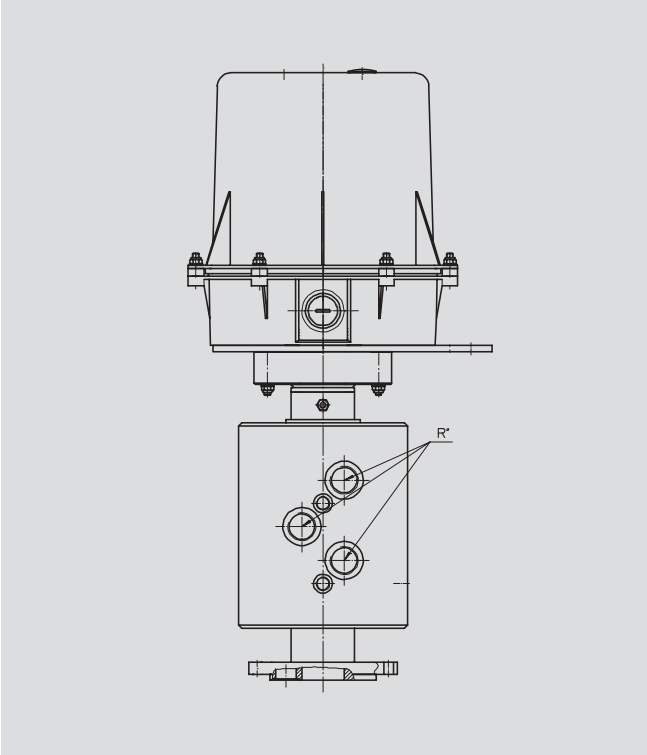
Fixing flange

Slip ring bodies

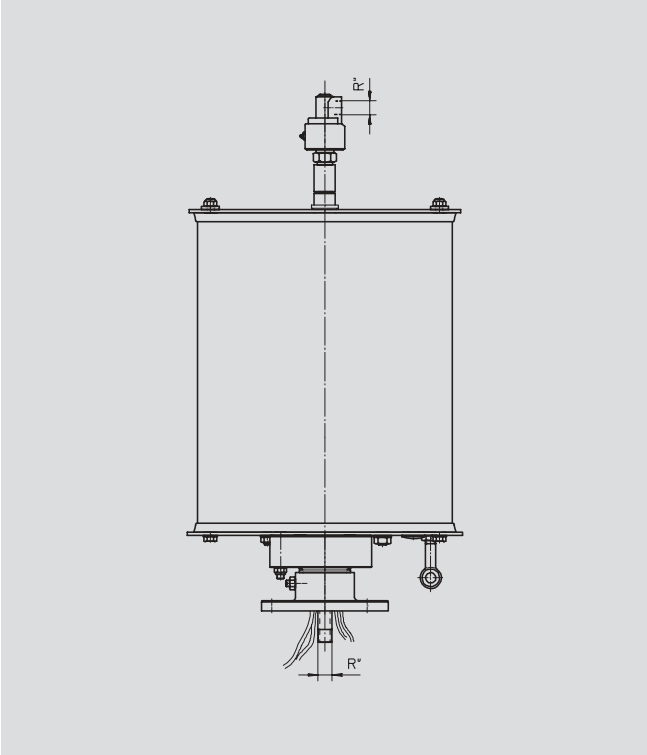
Enclosed slip ring body combined with rotary transmissions for gaseous or liquid media



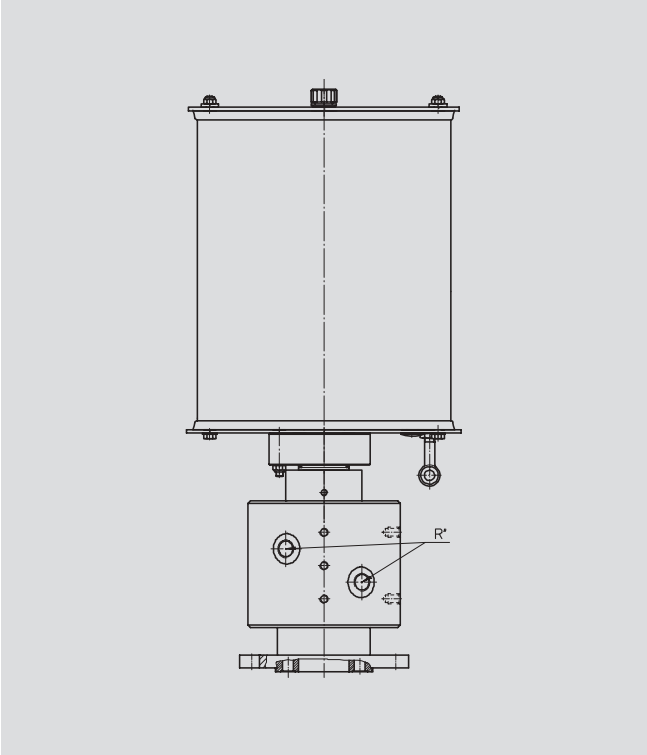
Plastic housing with simple rotary transmission



Plastic housing with multi rotary transmission



Steel housing with simple rotary transmission



Steel housing with multi rotary transmission

Questionnaire

Slip ring bodies

Please fill in the questionnaire in detail, so that we will be able to submit a definite quotation. If you should have any questions beforehand, please contact our consultants.

Application of the slip ring body

_____

_____

_____

_____

Technical details

- **Type of slip ring body:** ❑ Slip ring body
  ❑ Enclosed slip ring body
- **Ring construction:** _____ x Standard Ms + Cu
  _____ x ML + Ag
- **Cable connection:** ❑ Clamping board completely wired
  ❑ Without clamping board
  ❑ With strand wiring
  _____ rings
  _____ m from flange
  _____ current collector
  _____ m from housing
- **Ambient conditions:**
  ❑ dust _____ % humidity
- **Ambient temperature:**
  between _____ [°C] and _____ [°C]
- **Duty cycle:** _____ [% ED]
- **Protection class acc. to DIN 40050:** IP _____
- **Rotational speed:** n = _____ [U/min]
- **Heating:** ❑ yes ❑ no
- **Installation size:** max. outer diameter _____ [mm]
  tube passage required _____ [mm]
  max. height _____ [mm]
- **Special conditions:**

_____

_____

_____

_____

_____

_____

_____

Construction of the slip ring body

_____ x _____ A + PE at _____ V and _____ Hz

_____ x _____ A + PE at _____ V and _____ Hz

_____ x _____ A + PE at _____ V and _____ Hz

_____ x _____ A + PE at _____ V and _____ Hz

_____ x _____ A + PE at _____ V and _____ Hz

The quotation has to be sent to the following address:

Company: _____ Customer No.: _____

Dep./attn.: _____

Address: _____

_____

Tel.: _____ Fax: _____

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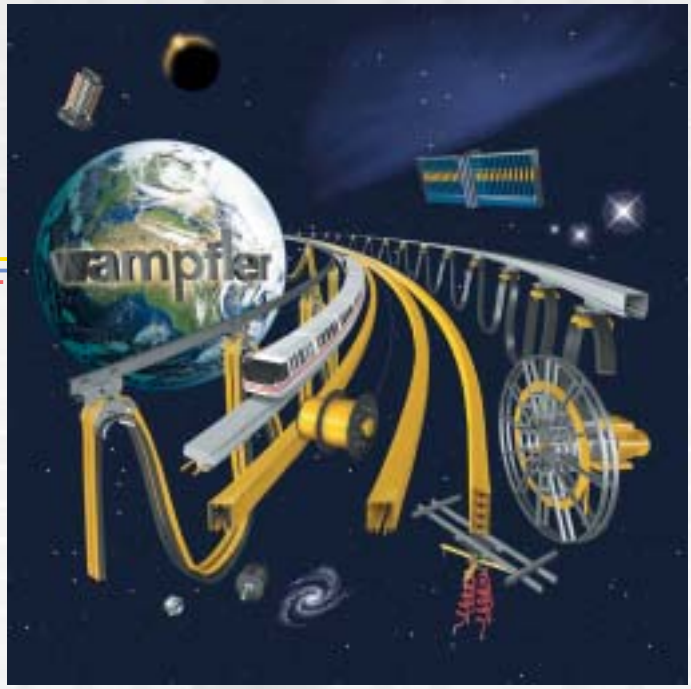

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Safety Systems

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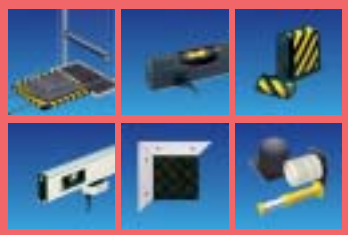

Handling Systems

Equipment carriers, tool transporters, hand-operated overhead conveyor systems, jib booms, turntables, underslung cranes, cable winders, hose winders, balancers, electrical and pneumatic accessories, workbenches.

Energy Supply Systems

Cable trolley systems, energy guiding chains, flat cables, round cables, hoses, conductor bar systems, spring-loaded and motor-driven cable reels, slip ring bodies.

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