

Lumiglas Sight Glass Wiper SW I

3755.171 e

for circular sight glass assemblies to DIN 28120 or similar as well as screwed sight glass assemblies

• Installation:

Into sight glass disc with 10.5 mm central hole (to DIN 7080/8902 or similar, suits sight glass assemblies to DIN 28120 from nominal size DN 50 to DN 400 as well as screwed sight glass assemblies similar to DIN 11851, DN 50, 65, 80, 100, 125, 150.

• Application:

For manual cleaning, when required, of inside glass surface in sightports.

• Operating conditions:

Vacuum tight; pressure tight to at least 2 bar and, depending on glass diameter, to 6 bar. Max. permissible temperature 220°C (though this depends on glass type used).

• Possible combinations:

Unit can simultaneously be combined with a spray device. Combination with Lumistar luminaire mounted on the sight glass unit is possible from viewing dia. 125 (DIN 28120, DN 100) depending on luminaire size (see table overleaf). Lumistar luminaire series USL and ESL can also be combined with the unit. With screwed sight glass assemblies combination with Lumistar luminaire SLM or Lumistar ME is possible with size DN 125. Also available with ratchet-drive lever.

• Certification/testing:

Certification issued by the state material testing authority of Nordrhein-Westfalen, Dortmund, are available.

• Assembly and material alternatives for the complete supply:

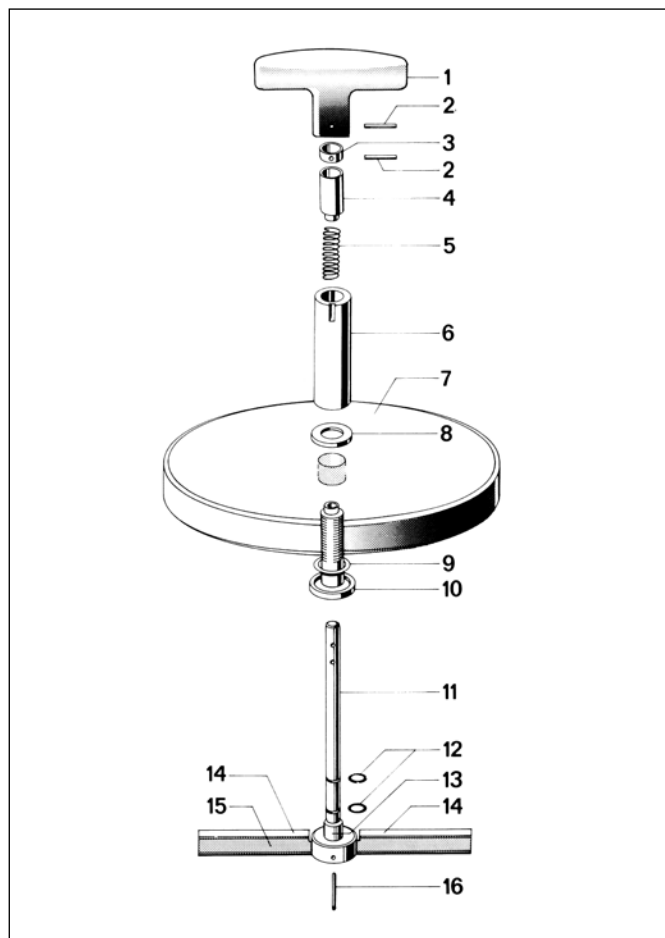
Item	art
1	T grip (or ratchet-drive lever at extra cost) - Polycarbonate (bush brass)
2	locating pins - 1.4310
3	spacer collar - locating - brass or PEEK
4	spacer collar - with spigot - brass or PEEK
5	compression spring - 1.4310
6	bush - threaded female - 1.4401
7	glass disc - Sodaslime or Borosilicate
8	gasket - non asbest fibre, BAS 400 green
9	O-ring seal - Viton
10	bush - threaded female - 1.4401 or 1.4404
11	wiper spindle - 1.4401 or 1.4404
12	O-ring seals - Viton
13	bearing sleeve - PTFE
14	wiper blade - silicon, PTFE or EPDM
15	wiper arm - 1.4571
16	locating pin - 1.4310
- drive lever - 1.4305	
- lever knob - Polycarbonate (bush brass)	
- freewheel unit - steel	
- drive boss - 1.4305	
- dust cap - synthetic resin	
- all product contact parts - stainless steel	

• Fitting and assembly instructions:

If the wiper is ordered separately, i. e. not installed into sight glass disc by the manufacturer, the assembly has to be done with regard to separate installation and operating instructions, attached to the delivery.

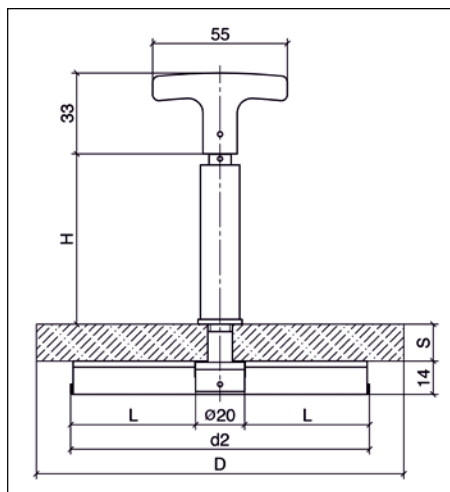


Lumiglas sight glass wiper SW I built into a sight glass disc



Exploded view of components

• Dimensions for Lumiglas sight glass wiper SW I



Lumiglas wiper SW I, fitted into sight glass assembly DIN 28120



Lumiglas wiper SW I, as shown adjoining but with Lumistar luminaire fitted

size		3	4	5*	6*	7*	8*	special sizes			
								9	10	11	12
nominal diameter	DN	50	80	100	125	150	200	250	300	350	400
viewing diameter	d ₁	80	100	125	150	175	225	on request			
dimension für H	mm	70/70	70/70	70/65	70/65	70/65	70/60				
soda lime or borosilicate sight glass disc	D	100	125	150	175	200	250				
	s	15/15 ¹	15/15 ¹	15/19 ¹	15/19 ¹	15/19 ¹	15/25 ¹				
	PN max...bar	6/6 ¹	6/6 ¹	5/6 ¹	4/6 ¹	4/4 ¹	2/4 ¹				
wiper blade	d ₂	77	97	122	147	172	222	depending on glass diameter as well as inside diameter of assembly, max. 460 mm			
part no. 7223__00 (replace with the respective figures, e.g. .065.)		062.	.063.	.064.	.065.	.066.	.067.				

* Combination with luminaire Lumistar possible, NB: Combination with Lumistar 225, drive/lever version, also in combination with some Lumistar luminaires type USL and ESL.

¹ Data valid only for borosilicate glass

• Spare parts

Wiper blades	for sizes	L	silicon rubber, part number	PTFE, part number
	3	28.5	9468.062.00	9468.072.00
	4	38.5	9468.063.00	9468.073.00
	5	51	9468.064.00	9468.074.00
	6	63.5	9468.065.00	9468.075.00
	7	76	9468.066.00	9468.076.00
	8	101	9468.067.00	9468.077.00
	9 to 12	depending on glass diameter and inside diameter of the fitting		
Seals	for sizes	diam. x s	part number	
Viton-O-ring seal (no. 12 overleaf)	1 bis 6	4 x 1	0862.019.00	
Viton-O-ring seal (no. 9 overleaf)	1 bis 6	12 x 2.5	0862.024.00	

• Ordering Information:

- e. g. Lumiglas sight glass wiper SW I, size 3, wiperblade PTFE. If a sight glass disc is needed as well, please specify the following data:
- Borosilicate or soda lime glass
 - Sight glass disc size (diameter x s)
 - nominal fittings diameter DN
 - effective operating pressure for this vessel
 - for wiper blades sizes 9 and larger, please specify the inside diameter of the fitting

• Note:

A sight glass disc is not automatically included in the supply. Please order sight glass disc separately.

All dimensions in mm unless stated otherwise. Subject to change without prior notice. 09.15

Lumiglas sight glass wiper with flexible drive SW II BW

3755.172 b

for use with circular sight glass assemblies to DIN 28120 or similar

• Mounting:

By means of pressure tight glands through both base and cover flange of sight glass assembly; suitable for sight glass discs corresponding to DIN 7080 or DIN 8902.

• Application:

For manually activated cleaning, when required, of inside face of glass in sight ports. Particularly suitable for pressure and vacuum, vessels requiring test certification both **in explosion hazardous as well as non hazardous** operating areas. The glass discs fitted into the assemblies correspond to DIN 7080 or DIN 8902 standards. Suitable for circular sight glass assemblies nominal size DN 100 ... DN 200.

• Operating conditions:

Vacuum tight; pressure tight to 16 bar.
Max. permissible temperature: 220°C (depending, however, on type of glass disc used).

• Possible combinations:

Simultaneous fittings of Lumistar luminaire, flame proof or standard design, is possible with the wiper SW II BW, as is the fitting of a spray device.

• Certification/Testing:

Test certificates issued by the state material testing authority Nordrhein Westfalen, Dortmund, are available.

• Assembly/materials alternatives for the complete supply:

Wiper blade: PTFE or silicone rubber
All product contact parts are of stainless steel.
Mechanical drive internal seal: PTFE



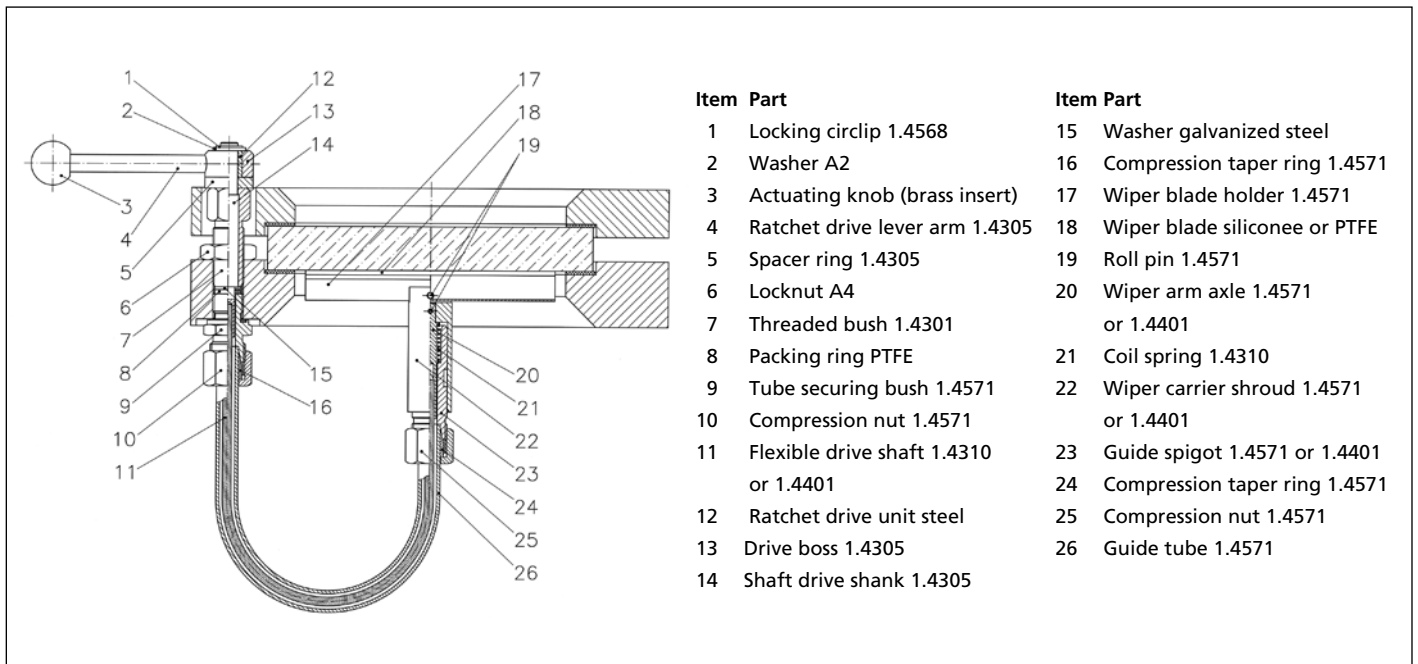
Lumiglas SW II BW mounted into sight glass fitting DIN 28120

• Assembly and installation instructions:

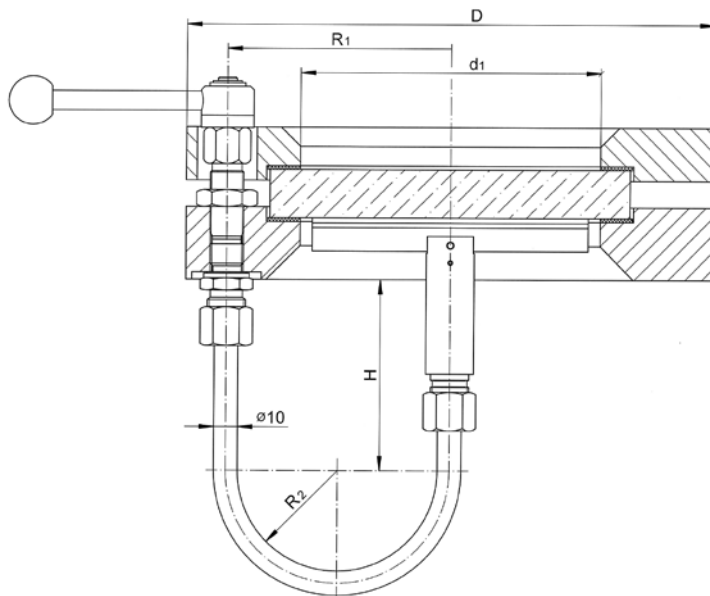
The wiper is actuated by flexible shaft which engages at one end in the wiper blade holder and at the other in a lever operated ratchet drive mechanism which ensures drive shaft is always rotated in same direction.

A separate set of detailed installation instructions is included in the supply.

Should you order a complete sight glass assembly with the wiper SW II BW, the additional machining of the base will be carried out by Papenmeier.



• Dimensions for Lumiglas sight glass wiper SW II BW:



size		1	2	3	4
nominal bore assembly	DN	100	125	150	200
viewing diameter	d1	125	150	175	225
flange	D	220	250	285	340
wiper	R 1	93	105	120	147.5
	R 2	41.5	47.5	55	68.75
	H	79	69,5	85	63,5
part no.		7223.034.00	7223.035.00	7223.036.00	7223.037.00

• Spare parts:

wiper blades	for size/DN	wiper blade length (mm)	silicone part no.	PTFE part no.	
	1/100	115	9468.020.00	9468.031.00	
	2/125	140	9468.021.00	9468.032.00	
	3/150	165	9468.022.00	9468.033.00	
	4/200	215	9468.023.00	9468.034.00	
flexible drive	for size/DN	part no.			
	1/100	9323.014.00			
	2/125	9323.014.00			
	3/150	9323.016.00			
	4/200	9323.016.00			

• Order data:

e. g. Lumistar sight glass wiper SW II BW, size 3, wiper blade silicone rubber.

If ordering with complete sightport assembly please give the following additional information:

1. Sight glass assembly (DN/PN), materials.
2. Type and size of sight glass disc (borosilicate/sodalime).

All dimensions in mm unless stated otherwise. Subject to change without prior notice. 09.15

Lumiglas Spray Device

- for circular circular sight glass fittings to DIN 28120 and similar

• Installation:

Pressure tight screwed gland nozzles, as supplied, pass through clearance hole in cover flange and tapped hole in base flange of sight glass assembly.

• Application:

For intermittent or continuous automatic cleaning of underside of sight port glass disc. Suitable for pressure and vacuum vessels subject to pressure test certification for all standard ratings and use in explosion hazardous as well as non hazardous areas.

• Operating conditions:

Correspond to sight glass fitting rating

• Combination with other features:

Can be combined simultaneously with Lumiglas luminaire and wiper. Care must, however, be taken that max. permissible operating temperature and resistance to temperature cycling for the relevant glass disc are considered.

• Materials:

All metallic contact parts are of stainless steel quality 1.4571.
Seals: PTFE

• Scope of delivery:

Spray jet head, locknut, two seals, connecting nozzle 10 mm OD x 1.5 mm bore with hexagon shank and fitting instructions

• Mounting:

When supplied as part of a complete sight glass assembly, the flanges are ready drilled and tapped to suit at the Lumiglas suppliers works.
Depending on operating requirements, the spray feed line may require a non return valve.

• Parts and materials referred to in adjoining diagram:

item	part	material
1	connecting nozzle	stainless steel, part no. 1.4571
2	seals	PTFE
3	locknut	stainless steel A4
4	spray head	stainless steel, part no. 1.4571

• Dimensions:

The spray device fits all standard sizes of sight glass assembly.
Depending on application, two or more units may be fitted.

• Ordering information:

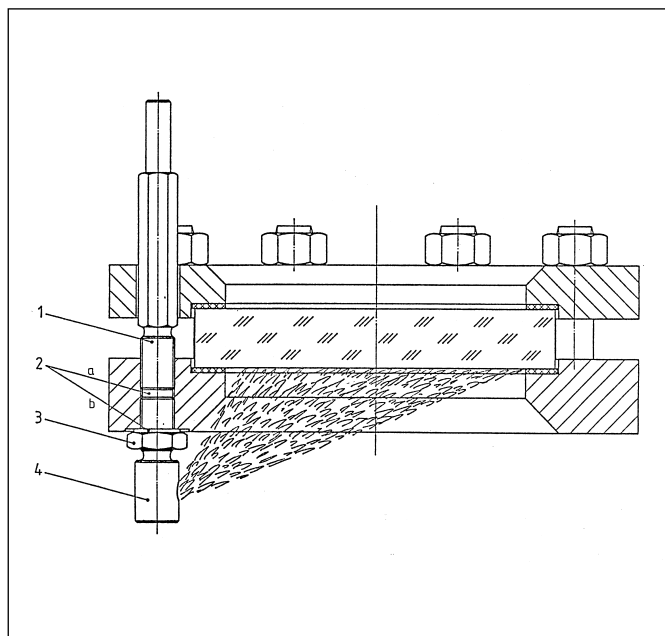
Lumiglas spray device, part no. 1.1098.005.91

If ordering in combination with complete sight glass assembly, please indicate type of fitting and intended form of installation:

1. sight glass fitting (DN/PN), materials
2. dimensions and type of sight glass disc (borosilicate/sodalime glass)



Lumiglas spray device



Lumiglas spray device installed in a sight glass assembly DIN 28120

Lumiglas Ex Motor Drive EMA I-Ex

Ex EEx d IIC T5

specifically developed for connecting to various control elements in potentially explosive environments.

- Versatile, high-performance Ex-class motor drive with compact dimensions for numerous applications
- This data sheet also incorporates the installation and operating instructions
- **Applications:**
The Ex-class motor drive is mainly intended for operating wipers on sight glasses for short-term operation. For other applications it can also be used in long-term operation.

- **Special advantages of the Lumiglas Ex-class motor drive:**
Especially in environments that require the remote monitoring of processes in reactors (e. g. biogas plants), ex-type cameras are frequently mounted on sight glasses, enabling process engineers to observe what is going on in the vessel from a central control room, which is frequently located at some distance from the reactor itself.
This eliminates the need for physical presence at a reactor, frequently entailing safety-relevant situations made more difficult by adverse environmental conditions, e. g. bad weather.

In certain processes, problems can arise if there are deposits of the substance in the reactor on the sight glass screen, thus making it difficult or even impossible for the camera to view the process. This can be remedied by using one of the proven wipers from the Lumiglas range: SW I and SWII. These wipers are normally operated by hand when the observer wants to inspect the reactor.

In many cases, however, the remote observation of reactors, e. g. via Lumiglas camera technology, is mandatory, making it essential to install a motor-driven wiper that can be actuated remotely from the control room.

The Ex motor drive EMA I-Ex has been developed specifically for such applications.

Because remote observation is mainly carried out in potentially explosive environments, an Ex-class motor drive is now available in addition to the Ex camera.

- **Small dimensions, great effectiveness:**
The Ex-class motor drive is designed for both short-term and continuous operations.
- **All development targets have been achieved:**
Compact overall size; high turning moment; excellent motor power; low energy consumption.

The Ex motor drive is thus ideally suited for operating, for instance, Lumiglas screen wipers:

- a) SW I (the wiper blade axis passes through a hole in the sight glass) – for low pressure
- b) SW II (the wiper blade axis is operated from the side through a hole in the sight glass fitting by means of a flexible shaft) – for higher pressure

Combination with a spray facility is also possible.



Lumiglas Ex motor drive

- **General operating conditions:**
 - Approved for use in potentially explosive environments, zones 1 and 2 as well as 21 and 22
 - Approved for use in ambient temperatures of between -20°C and +50°C
- **Type of protection:**
Terminal connection and motor enclosure IP68, motor shaft IP54
- **Structure of compact unit:**
The unit is made up of a DC electric motor with a flanged drive and special coupling by way of which (e. g.) the wiper axis of a screen wiper is turned.

• Special characteristics of the individual components:

1. Motor

- Explosion-proof high-precision DC motor with non-ferrous armature
- High acceleration rate thanks to low weight of rotor
- High degree of efficiency (75% by 4.8 W power output) because there is no hysteresis loss
- Shaft supported on both sides by pre-stressed ball bearings
- Protected against excessive enclosure temperature: the motor is equipped with two non-resettable thermal fuses as protection; operation is also admissible with only one thermal fuse (see instructions for terminal connection)
- Type of protection: EEx d IIC T5
- Nominal voltage: 12 V DC
- Nominal current: up to 0.5 A continuous load at ambient temperature 40°C
- Direction of rotation: as required
- Connecting cable: 5 x 0.5 mm², 5 metres in length, fitted
- Material of motor enclosure: steel

2. Flanged drive

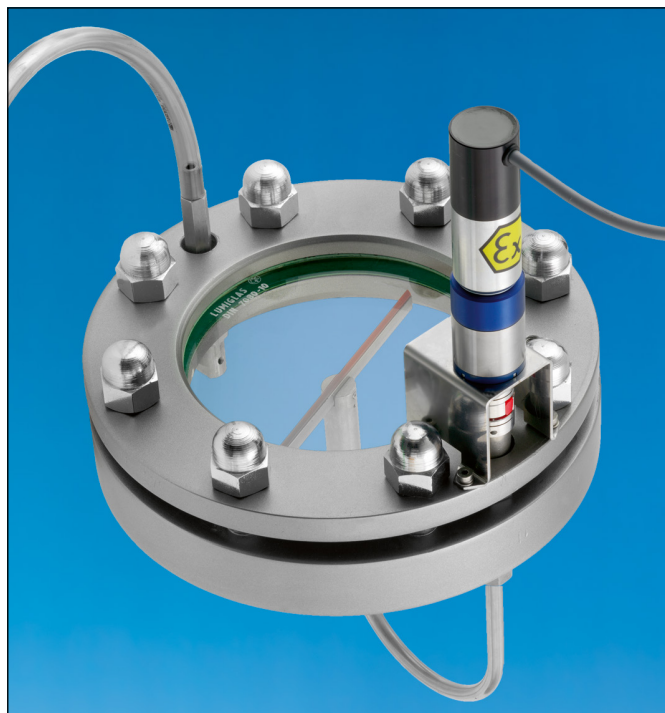
- Planetary gear set, reduction gear ratio (nominal) 159 : 1
- Turning moment: 2 Nm for continuous operations, 4 Nm for short-term operations
- Direction of rotation of shaft: reversible in direction of arrow
- Drive shaft bearing: ball bearings, pre-stressed
- Material: stainless steel

3. Helical coupling

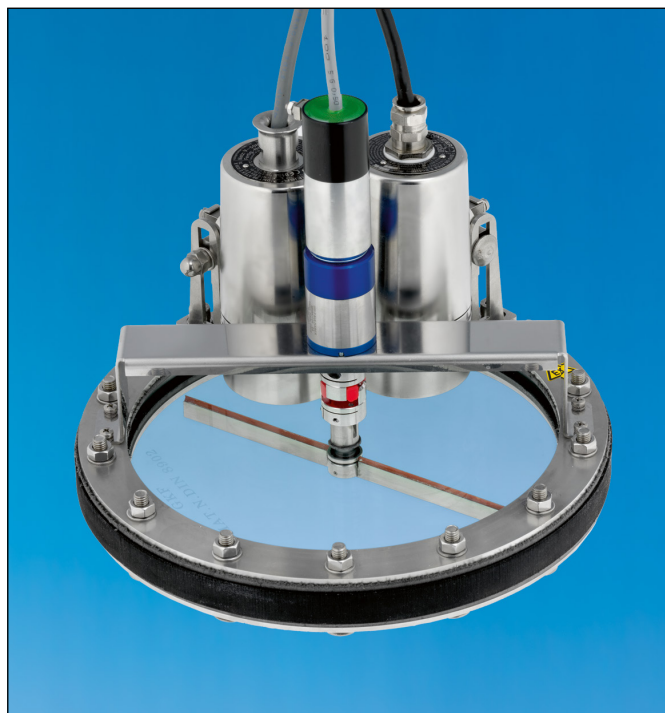
- Material: aluminium (also available as a special version in stainless steel)

4. Mounting

- The individually adapted stainless steel fittings for use in pressure environments (SWII) and in normal environments (SW I) are shown in the illustrations opposite.



Ex-class motor drive combined with Lumiglas wiper SW II



Ex-class motor drive combined with Lumiglas wiper SW I

• Installation/Assembly

1. Mounting

To enable wiper operations, the compact Ex-class motor drive is affixed to the cover flange of a round sight glass fitting by means of a special adapter. Each mounting (stainless steel) is individually adapted and depends on

- a) the type and size of the sight glass fitting
- b) the type of wiper.

Please provide accurate details of the application in your enquiry!

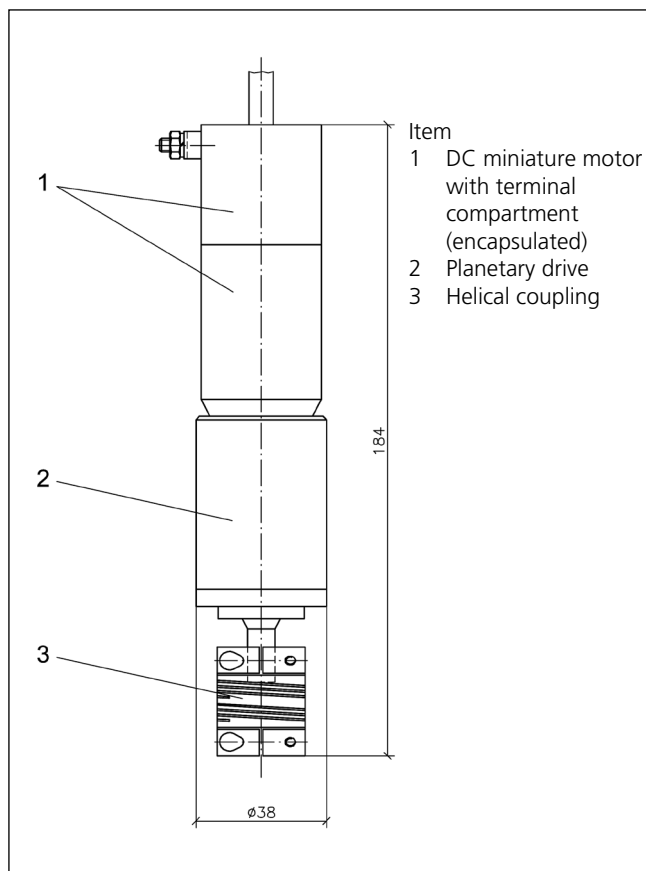
2. Coupling

- Once the mounting has been fastened to the planetary drive, the coupling is fitted on the drive shaft of the transmission and secured to the same with a hexagon socket screw.
- The wiper axis is then guided into the coupling. After that, the Ex-class motor drive is aligned with the attachment and mounted.
- Finally, when it has been positioned free of tension, the wiper blade axis is fixed over the hexagon socket screw.
- It is essential to avoid any strain when installing the coupling and the extension for actuating operating elements (wipers).

• Order data:

- Ex-class drive 12 V DC 0.5 A, part no. 3942.001.00
- Coupling, part no. 3065.001.00
- Ex-class terminal box, part no. 2507.020.00
- Non-Ex power supply unit 230 V AC / 12 V DC 0.42 A, part no. 9306.005.00

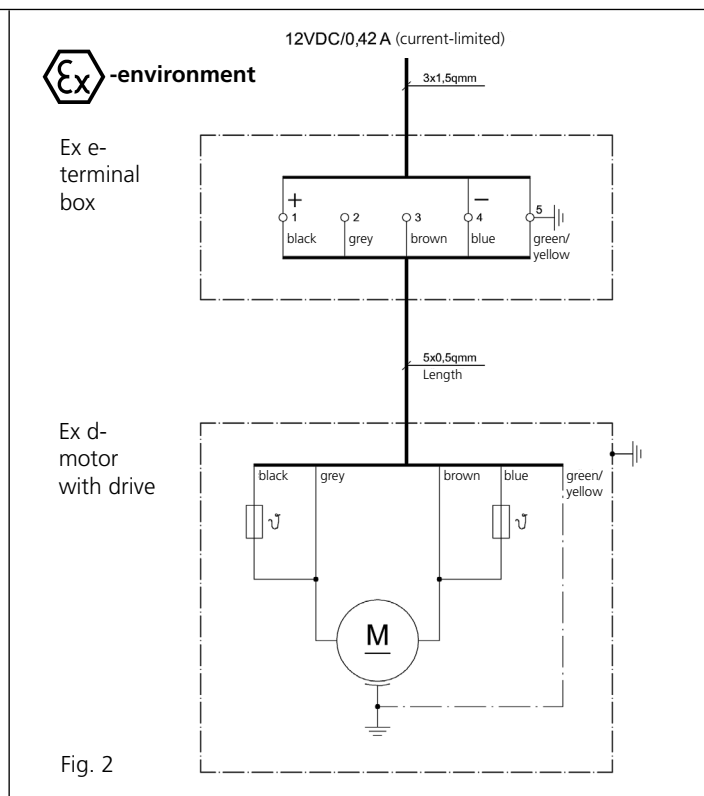
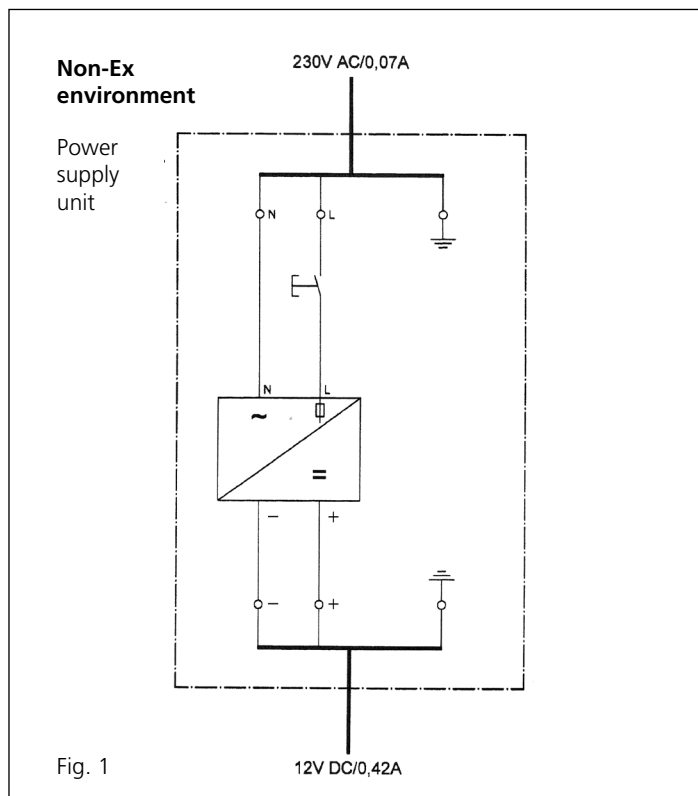
• Dimensions:



• Technical data:

EC Type-Examination Certificate	PTB 03 ATEX 1131
Ignition protection type motor with drive	EEx d IIC T5 CE IIC GD 95°C
Explosion group	IIC (all explosion groups, includes explosion groups IIA and IIB)
Temperature classification	T5
Type of protection	Terminal connection and motor enclosure IP68, motor shaft IP54 acc. to EN 60529
Operating voltage	12V DC
Ambient temperature	$-20^{\circ}\text{C} \leq T_a \leq +50^{\circ}\text{C}$
Terminals (connecting cable fitted)	5 x 0.5 mm ² , cable 5 m
Nominal current	Up to 0.5 A continuous load at 40°C
Direction of rotation	User-defined
Speed	Approx. 13 rpm
Material: motor	Steel, zinc-plated, passivated
Material: drive	Stainless steel with anodised adaptor flange (aluminium)
Material: coupling	Aluminium 7075-T651
Weight	Approx. 1.1 kg

• **Wiring diagram for power supply unit and Ex d wiper drive via terminal box:**



Installation and Operating Instructions

• **Essential precautions:**

The Lumiglas Ex-class motor drive should only be installed, connected and serviced by staff who have been expressly trained and authorised for this purpose.

EC Type-Examination Certificate PTB03 ATEX 1131 must be complied with.

The operating permit for the equipment expires if it is used incorrectly.

• **Electrical termination**

The electrical supply required is 12V DC / 0.42 A (current-limited). If this is not available on-site, a suitable power supply unit is obtainable (to be ordered separately).

When the Lumiglas Ex motor drive is used in potentially explosive environments, the voltage from the non-Ex area is laid to a special Ex-e terminal box to be installed in the explosive zone (to be ordered separately).

The supply voltage is conducted via a 3 x 1.15 mm² line to the Ex-e terminal box and wired to the terminals as follows (see also Fig. 2):

+ to terminal 1

- to terminal 2

Protective conductor to terminal 5

The Ex-d motor is fitted with a connecting cable, 5 metres in length with 5 x 0.5 mm² wires.

The wires in the connecting cable are inserted and fixed by screws in the individual terminals as follows:

Black to terminal 1

Grey to terminal 2

Brown to terminal 3

Blue to terminal 4

Protective conductor (green/yellow) to terminal 5

The two thermal fuses (non-resettable) installed in the motor are activated as a result of this termination.

Caution:

Under certain circumstances, it is possible for the motor to run without the two thermal fuses. It is however essential that this operating mode is verified and approved by an expert prior to start-up!

If the motor is to be operated without thermal fuses, it is only necessary to connect the grey wire to terminal 2, brown to terminal 3, and the protective conductor to terminal 5.