3755.165 a
Data Sheet 01.01

Circular sight glass fitting DIN 28120 or similar

Sight glass fittings acc. to DIN 28120 are circular flanged ports for welding into and onto the vessel wall. The block and the cover flange are screwed together tightly, with the sight glass disk and an independent gasket to the upper and the lower flange respectively positioned between them.
The structure and dimensions comply with the design standards set out in DIN 28120 for sizes DN 50 to DN 200. Flange thicknesses dimensioned according to this standard ensure the distortion-free positioning of the sight glass disk, provided the block flange is properly welded onto or into the wall of the vessel.

Circular sight glass fitting DIN 28120

- **Application:**
  For viewing of internals of pressure vessels, tanks, silos, stirred vessels, separators pipelines etc.

- **Operating conditions:**
  Pressure: 10 bar or 16 bar, depends on size,
  higher pressure rating on request;
  vacuum
  Temperature: max. 150°C with sodalime glass DIN 8902
  max. 200°C with borosilicate glass DIN 7080
  higher temperatures on request

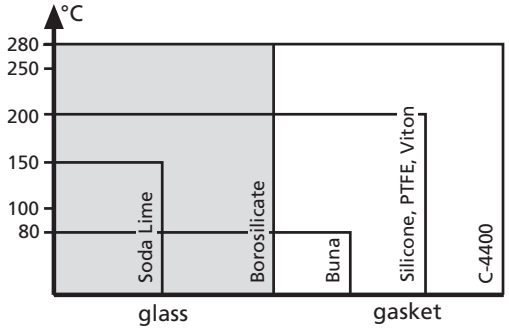
- **Possible combinations:**
  Can be combined with Lumiglas luminaires when **used in explosion hazardous as well as non explosion hazardous areas**. The cover flange is then drilled and tapped to suit luminaire mounting bracket.

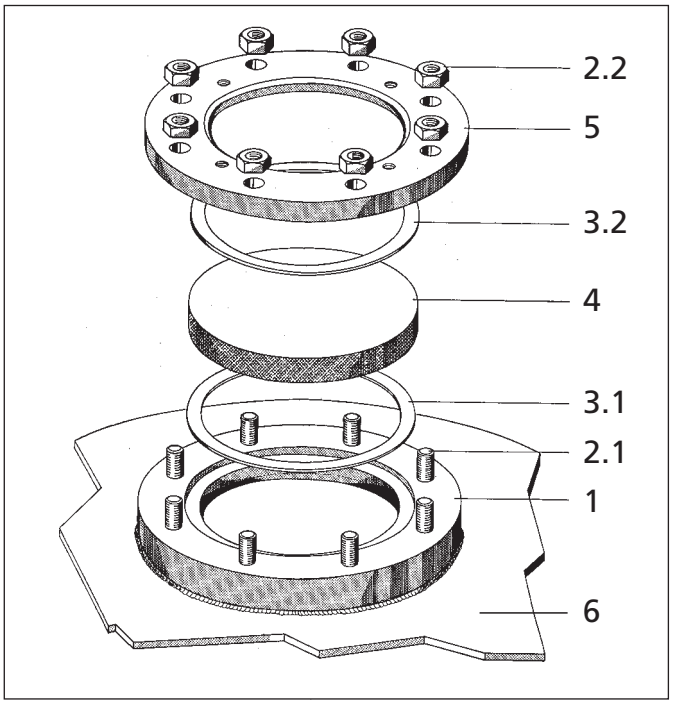
- **Certificates/testing:**
  Depending on customer requirements and at extra cost, can be provided to DIN EN 10204 3.1/3.2

- **Component materials** shown in adjoining exploded view are

item	part	material
1	base flange (welding flange)	carbon steel RSt 37-2, stainless steel or other
2.1, 2.2	fastening bolts	carbon steel 5.6/5 or stainless steel A2
3.1, 3.2	gaskets	KLINGERsil C-4400; silicone, PTFE or other
4	sight glass disc	- sodalime glass: toughened DIN 8902 - borosilicate glass: toughened DIN 7080
5	cover flange	carbon steel RSt 37-2; stainless steel 1.4541 or other
6	vesel wall	

- **The following temperature diagram simplifies material selection:**





Exploded view of circular sight glass fitting DIN 28120

- **Installation:**
  After welding base flange (1) onto or into vessel wall, seals (3.1 & 3.2), glass disc (4) and cover flange (5) are placed together in the order shown. Then the nuts (2.2) in case of studded base flange and washers are progressively tightened, always working on diametrically opposed pairs of nuts at time. Tightening torque values are given in table on overleaf. For more information see DIN 28120.

F.H. Papenmeier GmbH & Co. KG · division Lumiglas
Talweg 2 · 58239 Schwerte · GERMANY
phone: +49-2304 205-0 · fax: +49-2304 205-206
info.lumi@papenmeier.de · www.lumiglas.de

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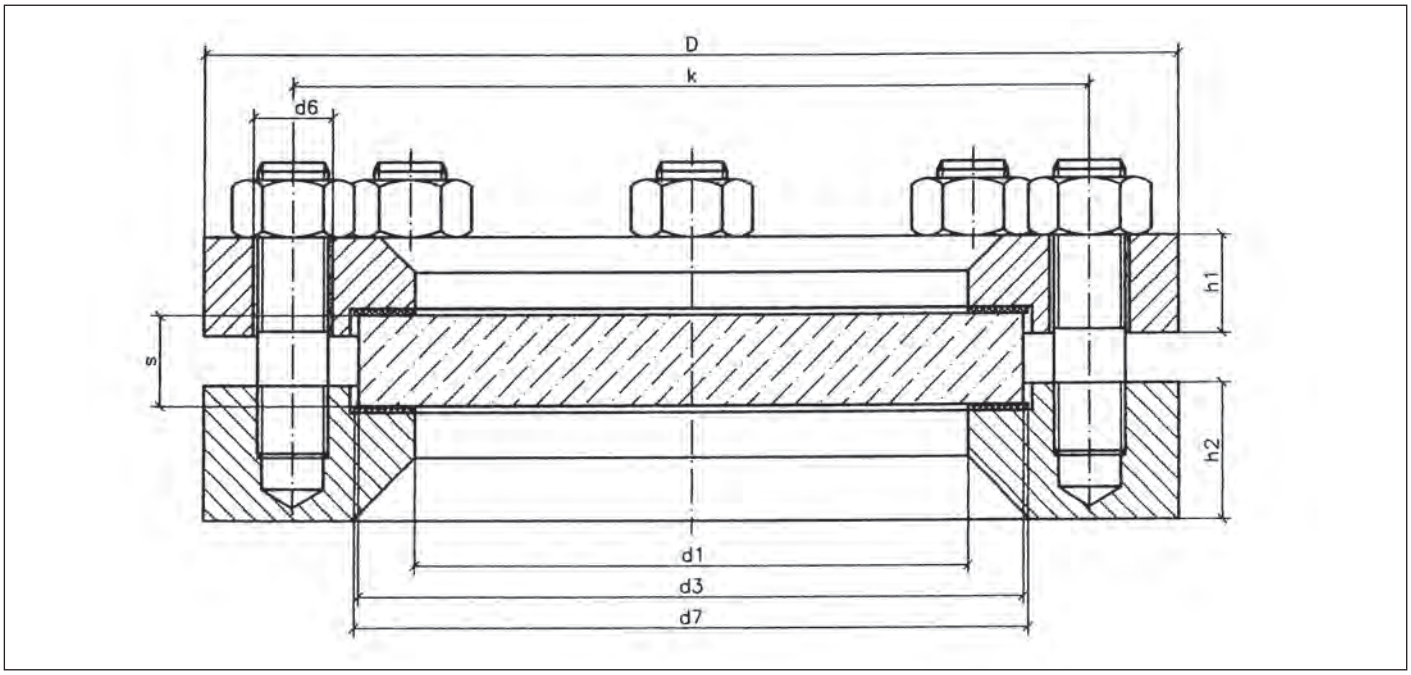
• Dimensions for circlar sight glass fitting DIN 28120/PN 10/16 or similar DIN 28120/PN 6



size		1	2	3	4	5	6
normal bore	DN	50	80	100	125	150	200
pressure rating (bar)	PN	10/16	10/16	(6) 10/16	(6) 10/16	(6) 10/16	(6) 10
viewing diameter	d1	80	100	125	150	175	225
sight glass disc	d3	100	125	150	175	200	250
	s	15/15	15/20	(20) 20/25	(20) 20/25	(20) 25/30	(25) 30
flanges	D	165	200	220	250	285	340
	k	125	160	180	210	240	295
	d6	18	18	18	18	22	22
	h1	16/16	20/20	(18) 22/22	(18) 25/25	(18) 30/30	(20) 35
	h2	30	30	30	30	36	36
fastening bolts	no.	4	8	8	8	8	8
	size	M 16	M 16	M 16	M 16	M 20	M 20
gaskets (side with product contact and atmospheric side)	d1	80	100	125	150	175	225
	d7	102	127	152	177	202	252
tightening torque for bolts lubricant factor/μ 0.1	Nm	28/32	20/23	26/30	32/34	47/54	63

• Order data:
- fitting (DIN)
- nominal bore (DN) / nominal pressure (PN)
- material: base flange, test certification 3.1/3.2 on request
  cover flange, test certification 3.1/3.2 on request
  bolts
  glass disc
  gaskets

• Pressure rating conversion:
6 bar = 87 psi
10 bar = 145 psi
16 bar = 232 psi

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

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Talweg 2 · 58239 Schwerte · GERMANY
phone: +49-2304 205-0 · fax: +49-2304 205-206
info.lumi@papenmeier.de · www.lumiglas.de

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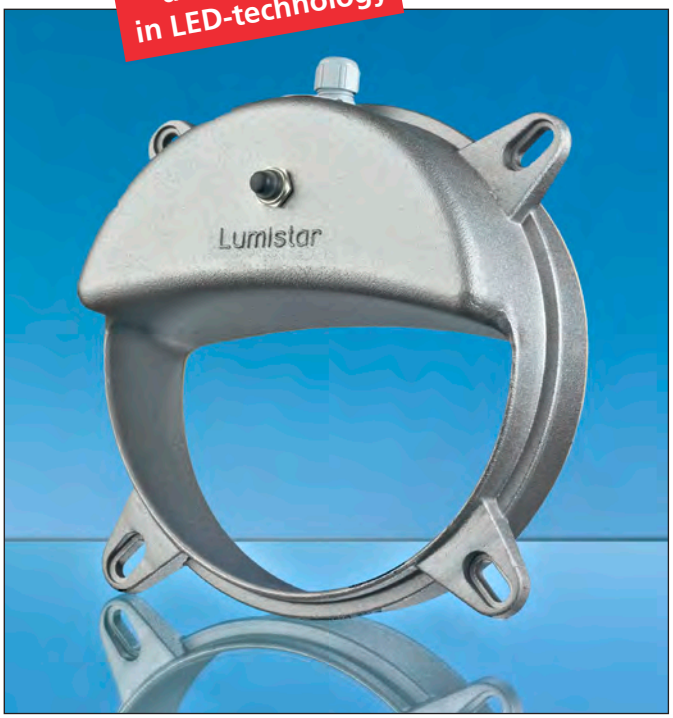
Lumiglas luminaire Lumistar

3755.158 d
Data Sheet 06.01

CE

also available in LED-technology



A complete unit, as supplied, of the Lumistar

- **For use on circular sight glass fittings**
  For combination of sight glass and light glass. Suitable for circular sight glass fittings to DIN 28120 and similar, DN 50 to DN 200.

- **Application:**
  For illumination of internals of pressure vessels, tanks, bunkers, silos, stirred vessels and other normally enclosed containers in **non explosion hazardous areas**.
  Suitable for use in food processings.

- **Protection:**
  When correctly fitted, dust and water jet tight to IP 65 and EN 60 529/DIN VDE 0470 part 1.

- **Operating Conditions:**
  Independent of internal vessel pressure/vacuum;
  max. permissible ambient temperature measured at cable entry gland 80°C. Where ambient temp. > 40°C, heat resistant cable (e. g. type Sinotherm 110 H05GG-F 3G 1,5 mm²) must be fitted.

- **Electrical data:**
  Power supply: 24 V
  Lamp: 2-pin Halogen filament lamp
  Power: depending on size of unit, 20 W, 50 W or 100 W

- **Lamp holder:** 2-pin socket

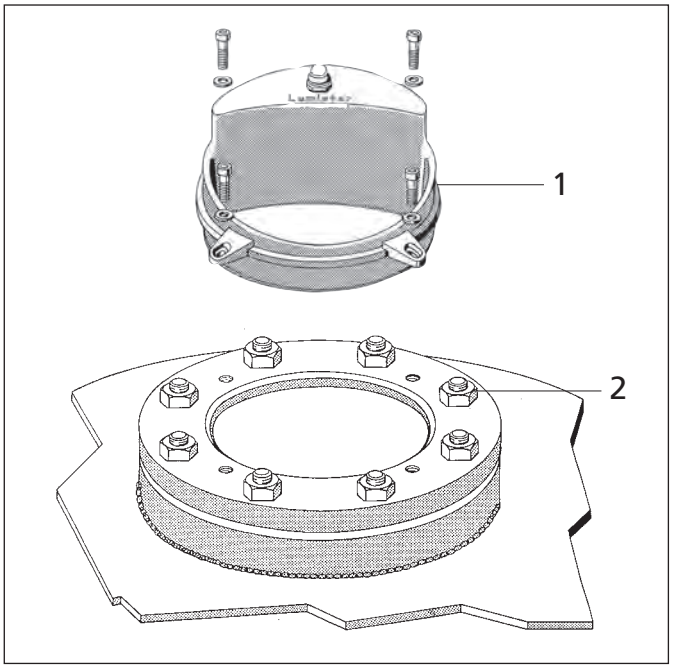
- **Transformers:** Can be supplied as special accessory.

- **Integral switch for brief 'ON' mode:**
  Not maintained push button switch fitted as standard.

- **Mechanical installation:**
  - Before commencing installation please read information sheet 'Important guidelines for mounting sight glass fittings…'.
  - Caution: Do not look into light – danger of impaired eyesight!
  - The luminaire is attached to the cover flange of the circular sight glass unit by two or four bolts. A ring gasket with bridge provides the seal between luminaire and sight glass disc.
  - The fixing bolts (stainless steel A2) are part of the supply.
  - Against additional cost, the Lumistar luminaire can be supplied complete with connecting cable.

- **Electrical connection:**
  - Select connecting cable to suit operating conditions
  - Cable diameter to suit cable entry gland (M16 x 1.5)
  - Remove reflector
  - Bare cable core ends
  - Pass cable through gland into lamp chamber and connect to terminals (max. 2.5 mm²)
  - Tighten cable entry gland
  - Fit separately packed lamp using protective cloth
  - Replace reflector

- **Lamp exchange:**
  - Caution: check luminaire temperature before commencing
  - Ensure power to luminaire switched off
  - Remove luminaire from cover flange
  - Remove reflector and pull out lamp
  - Fit new lamp by holding it with protective cloth and carefully locating into 2-pin socket and push home
  - Replace reflector, checking for cleanliness



Sight- and light glasses are combined.
(1) Lumiglas luminaire Lumistar, with fixing screws
(2) Sight glass fitting DIN 28120 welded into vessel wall

- Check condition of bridge gasket and replace if necessary
- Set luminaire on cover flange and bolt tight
- Switch on power

F.H. Papenmeier GmbH & Co. KG · division Lumiglas
Talweg 2 · 58239 Schwerte · GERMANY
phone: +49-2304 205-0 · fax: +49-2304 205-206
info.lumi@papenmeier.de · www.lumiglas.de

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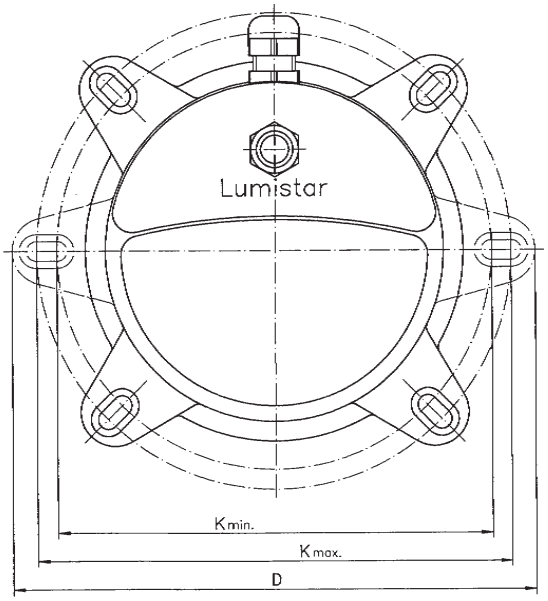
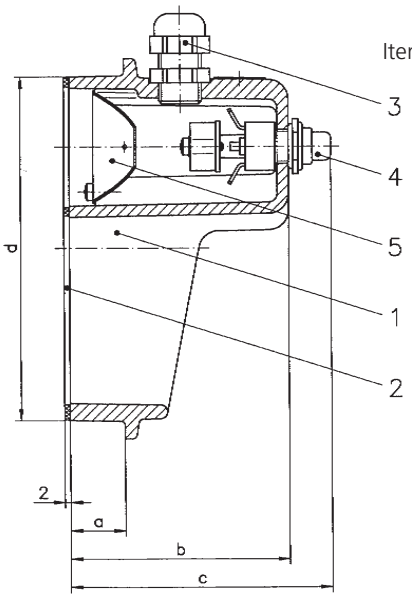
• Dimensions and connecting data for Lumiglas luminaire Lumistar





Item 1 Luminaire body
2 Bridge gasket
3 Cable entry gland
4 Push button with dust cap
5 Reflector

• Parts, construction and materials:

Luminaire body: Corrosion resistant die cast aluminium
Paint finish: RAL 9007

Size		1	2	3*	4*	5*	6*
Type Lumistar (= viewing diameter)		**Lumistar 80**	**Lumistar 100**	**Lumistar 125**	**Lumistar 150**	**Lumistar 175**	**Lumistar 225**
Matches to fitting DIN 28120	DN	50	80	100	125	150	200
Operating voltage	V	24	24	24	24	24	24
Power	W	20	50	50 or 100	50 or 100	50 or 100	50 or 100
Bolt pitch circle Ø	K min.	104	126	155	180	208	258
	K max.	118	140	169	194	222	282
	D	135	157	186	211	243	303
	d	77	97	122	147	172	222
	a	13	17	19	22	27	32
	b	65	75	77	80	85	95
	c	80	90	92	95	100	110
Fixing holes	oval hole	2 p.: 14 x 7	2 p.: 14 x 7	4 p.: 14 x 7	4 p.: 14 x 7	4 p.: 16 x 9	4 p.: 21 x 9
Bolts		M 6 x 16	M 6 x 16	M 6 x 16	M 6 x 16	M 8 x 16	M 8 x 16
Weight appx.	kg	0.300	0.450	0.550	0.650	0.800	1.400
Part no.		3544.001.00	3544.007.00	3544.014.00	3544.019.00	3544.024.00	3544.029.00

*Can be combined with Lumiglas sight glass wiper SW1

• **Order data:** e. g. Lumiglas luminaire Lumistar 125, 24 V/100 W
The appropriate lamp, corresponding to the required power, is separately packed as part of the supply.
Hence the importance of stating desired lamp power; in absence of such information, a lamp considered correct for the specified luminaire model will be sent.

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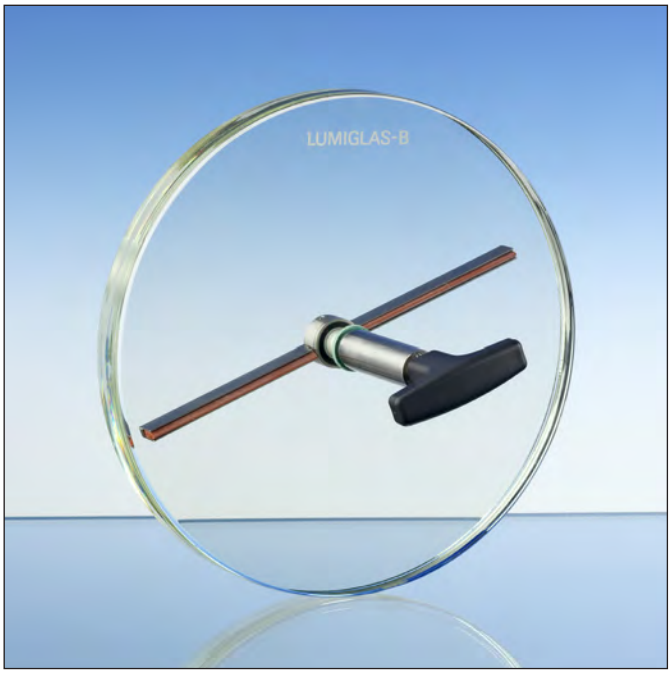
F.H.Papenmeier GmbH & Co. KG · division Lumiglas
Talweg 2 · 58239 Schwerte · GERMANY
phone: +49-2304 205-0 · fax: +49-2304 205-206
info.lumi@papenmeier.de · www.lumiglas.de

Sight Glass Wiper SW I

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

CE

Data Sheet 02.01



Sight glass wiper SW I built into a sight glass disc

- **Installation:**
  Into sight glass disc with 10.5 mm central hole (to DIN 7080/8902 or similar, see also data sheet 00.03); 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). Lumiglas luminaire series USL and ESL can also be combined with the unit. With screwed sight glass assemblies combination with Lumiglas luminaire model SLM or Lumistar ME is possible with size DN 125.

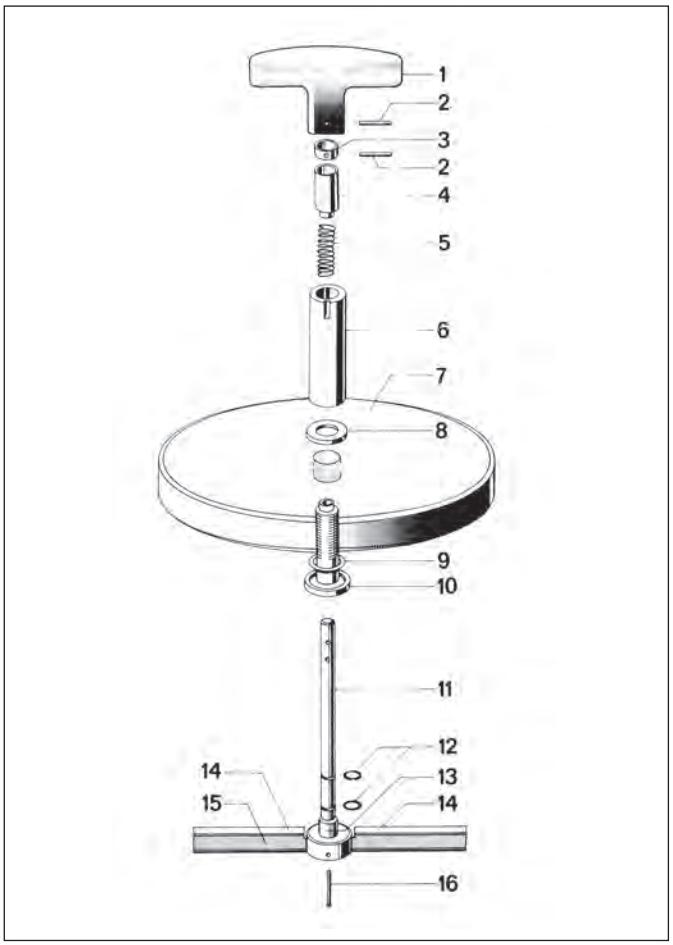
- **Certification/testing:**
  Certification issued by the state material testing authority of Nordrhein-Westfalen, Dortmund, are available.

- **Assembly and material alternatives** for the complete supply:

Item	Part
1	T grip (or ratchet-drive lever at extra cost) - Polycarbonate (bush brass)
2	locating pins - 1.4571
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 - Sodalime 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 - 1.4571

- Drive lever - 1.4305
- Lever knob - Polycarbonate (bush brass)
- Freewheel unit - steel
- Drive boss - 1.4305
- Dust cab - synthetic resin

All product contact parts of the wiper are of stainless steel.



Exploded view of components

- **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 an operating instructions, attached to the delivery.

F.H.Papenmeier GmbH & Co. KG · division Lumiglas
Talweg 2 · 58239 Schwerte · GERMANY
phone: +49-2304 205-0 · fax: +49-2304 205-206
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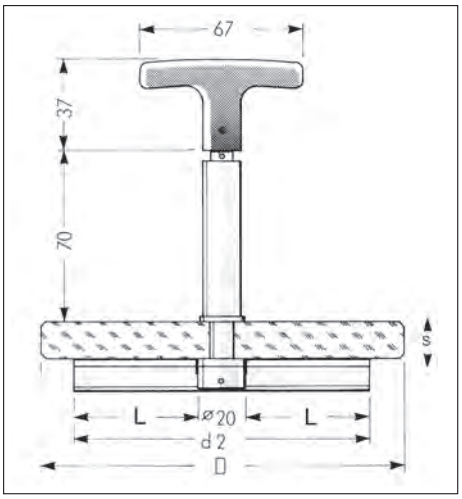
• Dimensions for sight glass wiper SW I



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			
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 Lumiglas luminaire Lumistar possible, NB: Combination with Lumistar 225, drive/lever version, also in combination with some luminaires model 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 (see data sheet 00.03/...)
- 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.
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F.H.Papenmeier GmbH & Co. KG · division Lumiglas
Talweg 2 · 58239 Schwerte · GERMANY
phone: +49-2304 205-0 · fax: +49-2304 205-206
info.lumi@papenmeier.de · www.lumiglas.de

Important guidelines for mounting and use of sight glass fittings, toughened glasses and luminaires:

Before installation and operation/servicing, please read and follow all commissioning and servicing instructions.

1. Installation of sight glass fittings

The installation by welding, brazing etc, must be free of distortion and thus carried out by suitably qualified and authorized personnel.

2. Installing toughened glass discs into a sight glass assembly

2.1 Operating safety of sight glasses depends to a great extent upon their correct installation.

2.2 The gasket seating surfaces in the flanges must be plane, flat and smooth. Ensure the gasket edges are not trapped by, or foul, the flange gasket recess wall.

2.3 The glass disc, with gaskets appropriate to the process application fitted to its top and bottom faces must be located concentrically in the flange assembly.

2.4 Only use gaskets which are in good condition, flat and free of dirt and grease.

2.5 Before tightening nuts or bolts ensure once more that cover and base flanges are correctly aligned and surfaces parallel to one another.

2.6 Tighten the nuts or bolts progressively in diametrically opposed pairs. Tightening moments can be obtained from the relevant data sheets accompanying product (or consult supplier).

2.7 Further tightening down may be required after assembly has bedded down under operating temperature and pressure.

2.8 When installing quartz sight glass discs follow manufacturers' instructions!

3. Max. loading of toughened sight glass discs

3.1 Correctly fitted sight glass discs must be used within the working temperature and pressure ranges laid down for them otherwise they may fail.

3.2 Temperature cycling to be within permitted limits:

- Sodalime glass (DIN 8902), max permissible temperature: +150° C. Temperature change within one minute max from 120° C to 20° C with glass fully immersed.
- Borosilicate glass (DIN 7080), max permissible temp.: + 280° C. Temperature change within one minute max from 230° C to 20° C with glass fully immersed.

3.3 Avoid spraying sight glasses which are still hot with cold fluid. Warning! This can lead to glass disc breakage.

3.4 Safety Precautions when using sight glass discs:

3.4.1 Scheduled Maintenance:
Sight glasses must be included in preventive maintenance, and regularly checked either visually or by ultra sound measurement of wall thickness. Where a disc shows any damage it must be exchanged promptly with the plant shut down. Further, a thorough and regular check of the sight glass should lead to a down time to suit the particular vessel; this will promote a routine for glass exchange suited to the process.

3.4.2 Breakage of glass disc:
In spite of careful fitting and operation in accordance with instructions, it is possible though rare, that due to external effects a glass disc can fail. It is necessary, particularly in the case of critical processes such as in the food industry, that the plant manufacturer or operator takes appropriate safety measures to prevent glass fragments finding their way into the product.

3.5 After dismantling a sight glass assembly, and in accordance with DIN 7080 standard requirements for all type of sight glass disc, the glass disc and gaskets are replaced with new ones before the assembly is put back into operation. This is particularly important where pressure vessels and/or aggressive media are concerned.
The following wording as extracted from DIN 7080 refers:
"Sight glass discs may only be installed by personnel who are thoroughly versed about the following requirements:

- careful treatment of sight glass discs
- cleaning of recesses, discs, gaskets and accessories prior to installation, i. e. the removal of foreign matter (e. g. machining swarf);
- even tightening up of holding down bolts.

Sight glass discs removed from assemblies following operational service may not be reused."

4. Sight glass wiper

4.1 Check that wiper assembly is correctly installed (see separate installation instruction)!

4.2 Wipers may only be used within temperature and pressure ranges specified.

4.3 Drive/spindle housing should be periodically checked to ensure a good seal; if necessary tighten threaded bushes/glands, replace defective seals, clean wiper arms and blades to remove accumulated foreign matter or replace (see installation instruction).

5. Spray device

The spray fluid temperature should be as near as possible to that of vessel contents. On no account use cold spray fluid on hot glass disc (see ‚temperature cycling' under point 3).

6. Sight glass luminaires

6.1 Always ensure that luminaire is connected to correct supply voltage as indicated on identity plate.

6.2 All luminaires are purpose designed and exclusively made for mounting onto flanged sight glass assemblies.

6.3 Never use the luminaire in place of cover flange or a complete sight glass fitting.

6.4 Only certain models of luminaire may be used in continuous ON mode; please check before confirming order; if in doubt ask supplier or manufacturer.

6.5 Luminaires with built in ‚non maintained' switches are for intermittent use and may only be operated with those switches.

6.6 Luminaires intended by the user for continuous ‚ON' mode operation should be controlled by separate external ON/OFF switch.

6.7 The following should also be noted

- Max. permissible temperature at cable entry not to be exceeded (see data sheet).
- Max. permissible temperature of glass not to be exceeded (Vessel temperature + temperature increase caused by luminaire = sight glass temperature; check by measurement!)

6.8. When replacing lamps use identical type with identical power rating; never exceed max. permissible lamp rating recommended for any given luminaire.

6.9 When changing lamps, check condition of lamp socket as a matter of course.

6.10 Excessive voltage will shorten lamp life.

7. Ex Hazardous areas

Ex hazard rated luminaires must not be installed or serviced other than by suitably qualified and authorised personnel. Data and instructions contained in relevant approval test certificates (certificates of conformity) must be adhered to. Some Ex luminaire models are works fitted with permanently encapsulated (resin cast) cable tails; on no account attempt to unscrew or remove cable entry gland! Any inappropriate change in components of Ex certified luminaires can render the relevant certificate invalid.

8. Hinged or screwed sight glass assemblies

Before use, ensure the seals are functioning (if necessary tighten securing nuts/bolts).
The seal between hinged ports and vessel flange is ensured by correctly seated components; flanges to mate up parallel by correctly adjusted swing-bolt/hinge assembly and undamaged, clean seals free of grease.
In the case of hinged units, ensure the material of the hinged glass serround is compatible with vessel contents. When used on pressure vessels, ensure max. operating pressure specified for the sight glass is exceeded.

If in doubt, consult supplier or manufacturer!

All dimensions in mm unless stated otherwise. Subject to change without prior notice.
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F.H.Papenmeier GmbH & Co. KG · division Lumiglas
Talweg 2 · 58239 Schwerte · GERMANY
phone: +49 2304 205-0 · fax: +49 2304 205-206
info.lumi@papenmeier.de · www.lumiglas.de

EG-Konformitätserklärung
EC-Declaration of Conformity
Déclaration de Conformité CE

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hereby declare in our sole responsibility, that the product
déclarons, sous notre seule responsabilité, que le produit

Lumiglas-Schauglasleuchte Lumistar 80, Lumistar 100, Lumistar 125, Lumistar 150, Lumistar 175, Lumistar 225
Lumiglas Luminaire: Lumistar 80, Lumistar 100, Lumistar 125, Lumistar 150, Lumistar 175, Lumistar 225
Projecteur: Lumistar 80, Lumistar 100, Lumistar 125, Lumistar 150, Lumistar 175, Lumistar 225

auf das sich diese Erklärung bezieht, mit folgenden Normen oder normativen Dokumenten übereinstimmt
which is the subject of this declaration, is in conformity with the following standards or normative documents
auquel cette déclaration se rapporte, est conforme aux normes ou aux documents normatifs suivants

Bestimmung der Richtlinie (falls zutreffend) terms of the directive (if applicable) prescriptions de la directive (le cas échéant)	**Nummer sowie Ausgabedatum der Norm** number and date of issue of the standard numéro ainsi que date d'émission de la norme
2004/108/EG: EMV-Richtlinie 2004/108/EC: EMC Directive 2004/108/CE: Directive CEM	EN 55015 : 2006 + A1:2007 + A2:2009 EN 61000-6-2:2005 EN 60598-1:2008 + A11:2009
2006/95/ EG / EG-Niederspannungsrichtlinie 2006/95/EC / Low Voltage Directive 2006/95/CE / Directive Basse Tension	
Qualitätsmanagemet der Produktion: Quality Management System Systéme Qualité Production	**DIN EN ISO 9001:2000**

Benannten Stelle / Notified Body / organisme de certification: **TÜV NORD CERT GmbH**

Schwerte, 19.01.2010 **Ort und Datum** Place and Date Lieu et date	Udo Glittenberg

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