

With design appraisal by LRQA Deutschland GmbH
(formerly Lloyd's Register Deutschland GmbH).

USE:

Observation of the liquid level inside closed vessels (boilers, tanks, silos, etc.).

Sight glass fittings type 330 are rectangular longitudinal sight glass fittings for welding in or on, each completed with a sight glass plate inserted between the gaskets and firmly screwed.

OPERATING CONDITIONS

Temperature: (depending on glass and gasket)	≤ 243°C	Borosilicate glass reflex and transparent DIN 7081 (saturated steam or hot water pressure)
	≤ 280°C	Borosilicate glass reflex and transparent DIN 7081 (without technically significant glass attack)
	≤ 320°C	Borosilicate glass transparent DIN 7081 (with mica protection)
Pressure:	- 0,9 ¹ bar(g) up to 16/40 ² bar(g)	

1) Depending on environment variable
2) See pressure note on the next page

MATERIALS

Base flange:	1.4571; 1.4404
Glass:	Borosilicate glass DIN 7081 reflex or transparent glass
Gasket:³	PTFE; FKM; NBR; C4400; Silicone; EPDM; Graphite
Screws:	A4-70
Special materials on request	

3) See „INFO gasket“ leaflet

INSTALLATION INSTRUCTIONS:

After welding in the base frame, check whether the sealing surface has warped. If necessary, it must be reworked! Also observe the specified torques for the screw connection according to the operating and maintenance instructions! The operating pressure does not apply to the base frame, this must be tested together with the pressure device according to AD leaflet B9!

REFLECTIVE AND TRANSPARENT GLASS:

In the case of clear media, dark or non-illuminated vessels or a closed level indicator, the use of a reflex sight glass is recommended (see adjacent picture).

Due to the refraction of light in the incorporated prisms the level can be seen better. However, if the vessel is illuminated, the medium is very clear or if the color of the medium should be visible, a transparent glass should be used.

Reflex glass cannot be protected with mica glass, as this will prevent reflection.

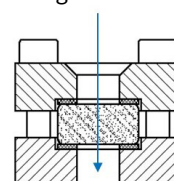
We will be happy to help you select the appropriate design.



The design appraisal by LRQA Deutschland GmbH (formerly Lloyd's Register Deutschland GmbH) does not replace the final acceptance of the entire plant!

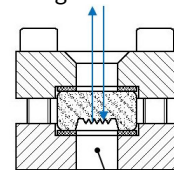


Light beam



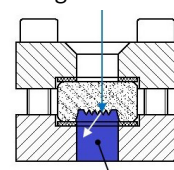
Transparent glass

Light beam



Reflex glass without liquid

Light beam

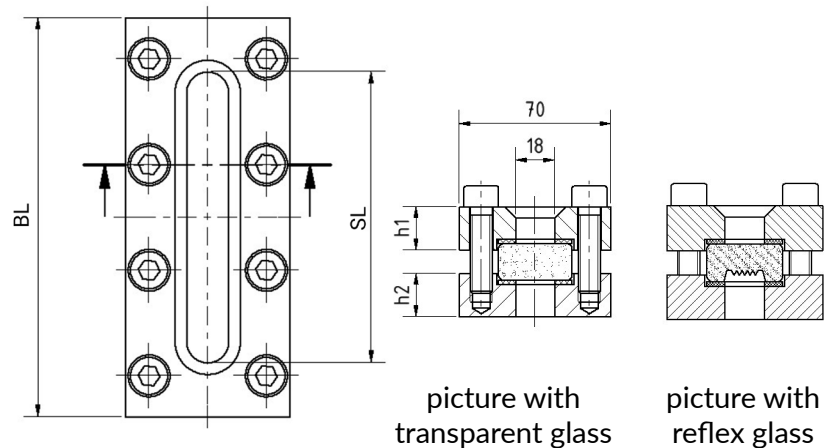


Reflex glass with liquid

BL [mm]	140	170	220	250	300	310	350	370	400	500	600	620	700	740	800	930	1000
SL [mm]	79	124	174	204	264	264	304	324	354	454	564	574	654	694	754	884	954
Consealed view [mm]	0	0	0	0	0	0	0	0	0	1x46	1x36	1x46	1x46	1x46	1x46	2x46	3x46
h1/h2 [mm] (PN 16)	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Weight [kg] (PN 16)	2,8	3,2	4,0	4,6	5,3	5,6	6,3	6,6	7,1	9,1	10,7	11,1	12,5	13,2	14,2	16,7	18,2
h1/h2 [mm] (PN 40)	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Weight [kg] (PN 40)	3,4	4,0	5,0	5,7	6,6	6,9	7,8	8,2	8,8	11,3	13,3	13,8	15,6	16,4	17,7	20,8	22,6

PRESSURE NOTE:

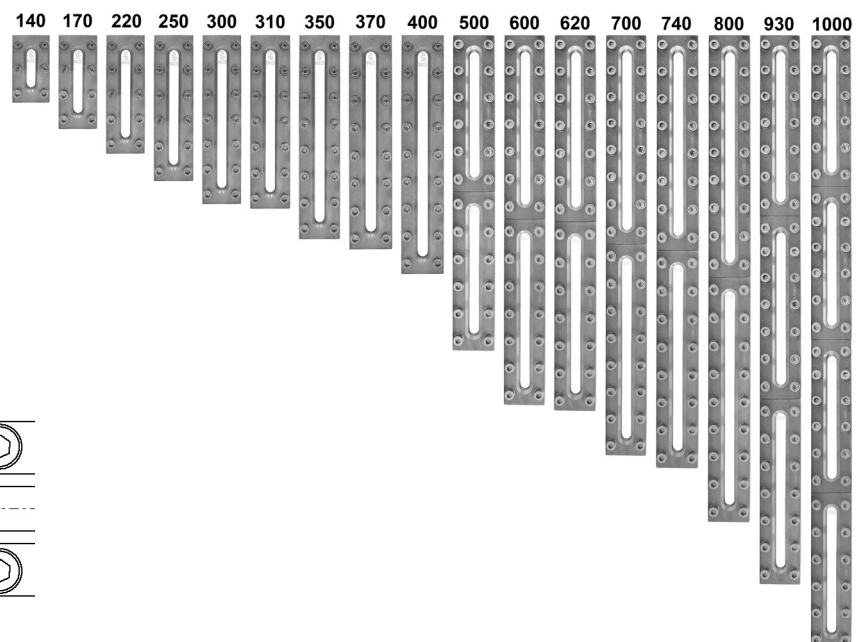
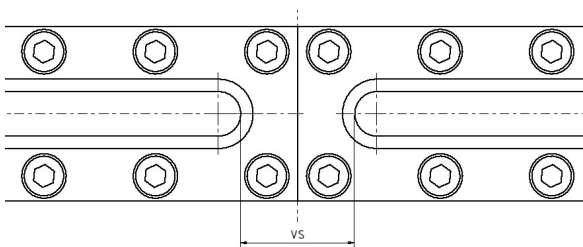
The operating pressure of 40 bar(g) can only be realized with transparent glasses, with liquid media, without technically significant glass attack. For transparent glasses exposed to steam or aggressive media, the maximum operating pressure is PS=35 bar(g). More detailed information can be found in our DIN 7081 information sheet.



CONCEALED VIEW (VS):

In the case of level indicators with long construction lengths, there is an obscured view in the area between the individual longitudinal glasses. This is due to the production length of the longitudinal glass according to DIN 7081. From an overall length of 500 mm, an obscured view is therefore unavoidable. The configuration of the size 140 mm to 1000 mm can be taken from the adjacent illustrations.

Special sizes on request.



PRODUCT CODE:

Example to explain the code composition

11 - 330 - 400 - 2 - 1 - 4 - 1 - 0								
GROUP	TYPE	TOTAL LENGHT	BASE FRAME ¹		GLASS	GASKET	PN	VARIANT
11	330	140	2)	1.4571	1) Borosilicate glass (DIN 7081) transparent	1) PTFE	1) 16	0) Standard
		170	4)	1.4404	2) Borosilicate glass (DIN 7081) transparent	2) FKM	2) 40	
		220	8)	Special	+ mica discs	3) NBR		
		250			3) Borosilicate glass (DIN 7081) reflex glass	4) C4400		
		300			4) Borosilicate glass untempered ² transparent	5) Silicone		
		310				6) EPDM		
		350				7) Graphite		
		370				8) Special		
		400						
		500						
		600						
		620						
		700						
		740						
		800						
		930						
		1000						

1) Cover frame according to offer/order confirmation

2) Without LRQA Deutschland GmbH (formerly Lloyd's Register Deutschland GmbH) design appraisal



Unless otherwise stated, the highlighted factory standard is supplied.

EXAMPLE:

11-330-400-2-1-4-1-0 equivalent to:

ACI Type 330

400 mm long

Base frame made of 1.4571

Cover frame made of 1.4571

Borosilicate glass DIN 7080 transparent

Gasket C4400

PN 16

Standard version

- Special length possible on request

QUICK OVERVIEW:



PN 16/40-
-0,9¹ up to 16/40²
bar(g)



heat-resistant up to
320 °C



for liquid
media



for gaseous
media



Nominal size
DN 140 - 1000



Customized products
possible



> 50 gasket
materials



Additional equipment
available

OPERATING CONDITIONS:

Operating conditions depend on the
choice of glass and gaskets:

		SIGHT GLASS				GASKETS						
		Borosilicate glass (DIN 7081) transparent	Borosilicate glass (DIN 7081) transparent + mica discs	Borosilicate glass (DIN 7081) reflex glass	Borosilicate glass unhardened ³ transparent	PTFE max. 200 °C	FKM max. 200 °C	NBR max. 80 °C	C4400 max. 175 °C	Silicone max. 180 °C	EPDM max. 130 °C	Graphite > 400 °C
TEMPERATURE	up to 80 °C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	up to 130 °C	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	✓
	up to 175 °C	✓	✓	✓	✓	✓	✓	✗	✓	✓	✗	✓
	up to 200 °C	✓	✓	✓	✓	✓	✓	✗	✗	✗	✗	✓
	up to 243 °C	✓	✓	✓	✓	✗	✗	✗	✗	✗	✗	✓
	up to 280 °C	✓	✓	✓	✓	✗	✗	✗	✗	✗	✗	✓
	up to 320 °C	✗	✓	✗	✓	✗	✗	✗	✗	✗	✗	✓
PRESSURE	-0,9 ¹ up to 16/40 ² bar(g)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

✓ suitable ✗ unsuitable

1) Depending on environment variable

2) See pressure note on page 2

3) Without LRQA Deutschland GmbH (formerly Lloyd's Register Deutschland GmbH) design appraisal

OPTIONAL EQUIPMENT:



Mica discs

FEP protective screen/ coating

> up to 320°C with borosilicate glass
DIN 7081 transparent

> for high pH values



For aggressive media or steam, mica discs should be used to protect the glass.

CONSTRUCTION:

Screws

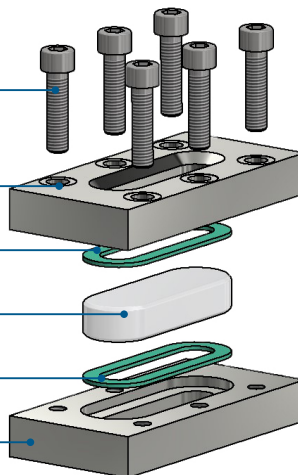
Cover frame

Gasket (on the atmosphere side)

Sight glass

Gasket (on the media side)

Base frame



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