Sight glasses, type SG, SGR, SGI, SGN, SGH, SGRI, SGRN and SGRH

REFRIGERATION AND
AIR CONDITIONING

Technical leaflet

Introduction

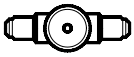
Sight glasses are used to indicate:

1. The condition of the refrigerant in the liquid line of the plant.
2. The flow in the oil return line from the oil separator.
3. The moisture content in the refrigerant.

The SG and SGR are mainly used to indicate the condition of the refrigerant as well as the liquid level in the receiver or the oil level in the compressor.

The SGI/N/H and SGRI/N/H are equipped with sensitive indicators that reflects a colour, depending on the moisture content in the refrigerant.

Available types

 Solder version  Flare verison	**SG:** Without moisture indicator
 Socket	**SGR:** Socket type without moisture indicator
 Solder version  Flare verison	**SGI:** With CFC/HCFC moisture indicator **SGN:** With HFC moisture indicator **SGH:** With special R410A moisture indicator
 Socket  Saddle	**SGRI:** Saddle sight glass with CFC/HCFC moisture indicator **SGRN:** Saddle sight glass with HFC moisture indicator **SGRH:** Saddle sight glass with R410A moisture indicator

Features

Type SG / SGR

- For CFC / HCFC / HFC
- Indicates lack of subcooling
- Indicates refrigerant deficiency
- Indicates liquid level in receiver
- Indicates oil level in compressor
- Flare-/solder connection or socket type

Type SGI / SGRI

- For CFC and HCFC refrigerants
- Indicates too high water content in the refrigeration system
- Indicates lack of subcooling
- Indicates refrigerant deficiency
- Flare-/solder connection or socket type

Type SGN / SGRN

- For HFC refrigerants
- Indicates too high water content in the refrigeration system
- Indicates lack of subcooling
- Indicates refrigerant deficiency
- Flare-/solder connection or socket type

Type SGH / SGRH

- For R410A specific
- Indicates too high water content in the refrigeration system
- Indicates lack of subcooling
- Indicates refrigerant deficiency
- Flare-/solder connection or socket type

Choice of sight glass

Before choosing a sight glass with moisture indicator, the following should be considered:
- type of refrigerant
- water solubility of refrigerant
- the level on which a danger signal is required.

Be aware that polyester oil for HFC refrigerants, e.g. R134a, R404A, R407C and R410A react with water in a hydrolysis generating acid and alcohol.

The recommended levels of moisture content are usually between 30 and 75 ppm, where hermetic compressors only tolerate very low moisture content, while semi-hermetic and other compressors normally tolerate higher moisture contents in the refrigerant.

The color on the sight glass indicator depends on the moisture content of the refrigerant.

The values under "green/dry" are to be considered as perfect condition meaning full protection against harmful effects from moisture. In other words, the filter drier is working perfectly.

If the green color starts to fade, the color change has begun and the indicator should therefore be watched more carefully. If the color changes to yellow it is a clear signal, that the capacity of the filter drier is exceeded and should be replaced as soon as possible.

Technical data

Ambient temperature
–50°C → +80°C

Max. working pressure

SG	PS/MWP = 35 bar
SGI / SGN	PS/MWP = 35 bar
SGR / SGRI / SGRN	PS/MWP = 35 bar
SGH 6, 6s –22s / SGRH	PS/MWP = 46 bar

SGI / SGRI for CFC and HCFC refrigerants

	Moisture content ppm = parts per million					
	SGI					
	25°C			43°C		
	Green/ dry	Intermed. color	Yellow/ wet	Green/ dry	Intermed. color	Yellow/ wet
R22	< 150	150 - 300	>300	< 250	250 - 500	> 500

SGN / SGRN for HFC and HCFC refrigerants

	Moisture content ppm = parts per million					
	SGN / SGRN					
	25°C			43°C		
	Green/ dry	Intermed. color	Yellow/ wet	Green/ dry	Intermed. color	Yellow/ wet
R22	< 30	30 - 120	>120	< 50	50 - 200	> 200
R134a	< 30	30 - 100	>100	< 45	45 - 170	>170
R404A	< 20	20 - 70	> 70	< 25	25 - 100	>100
R407C	< 30	30 - 140	>140	< 60	60 - 225	>225
R507	< 15	15 - 60	> 60	< 30	30 - 110	>110

SGH / SGRH for HFC refrigerants

	Moisture content ppm = parts per million					
	SGH					
	25°C			43°C		
	Green/ dry	Intermed. color	Yellow/ wet	Green/ dry	Intermed. color	Yellow/ wet
R410A	< 20	20 - 165	> 165	< 40	40 - 350	>350

Note: For moisture values of other refrigerants, please contact Danfoss.

Ordering *(cont.)*

HFC

	Type	Version	Connection in.	Connection mm	Code no.
	SGN 6	Flare ext. × ext.	1/4 × 1/4	6 × 6	**014-0161**
	SGN 10		3/8 × 3/8	10 × 10	**014-0162**
	SGN 12		1/2 × 1/2	12 × 12	**014-0163**
	SGN 16		5/8 × 5/8	16 × 16	**014-0165**
	SGN 19		3/4 × 3/4	19 × 19	**014-0166**
	SGN 6	Flare int. × ext. [2]	1/4 × 1/4	6 × 6	**014-0171**
	SGN 10		3/8 × 3/8	10 × 10	**014-0172**
	SGN 12		1/2 × 1/2	12 × 12	**014-0173**
	SGN 16		5/8 × 5/8	16 × 16	**014-0174**
	SGN 19		3/4 × 3/4	19 × 19	**014-0175**
	SGN 6s	ODF × ODF solder	1/4 × 1/4		**014-0181**
	SGN 10s		3/8 × 3/8		**014-0182**
	SGN 12s		1/2 × 1/2		**014-0183**
	SGN 16s		5/8 × 5/8	16 × 16	**014-0184**
	SGN 19s		3/4 × 3/4	19 × 19	**014-0185**
	SGN 22s		7/8 × 7/8	22 × 22	**014-0186**
	SGN 22s		1 1/8 × 1 1/8		**014-0187**
	SGN 6s	ODF × ODF solder		6 × 6	**014-0191**
	SGN 10s			10 × 10	**014-0192**
	SGN 12s			12 × 12	**014-0193**
	SGN 18s			18 × 18	**014-0195**
	SGN 6s	ODF × ODM solder	1/4 × 1/4		**014-0201**
	SGN 10s		3/8 × 3/8		**014-0202**
	SGN 12s		1/2 × 1/2		**014-0203**
	SGN 16s		5/8 × 5/8	16 × 16	**014-0204**
	SGN 22s		7/8 × 7/8	22 × 22	**014-0206**

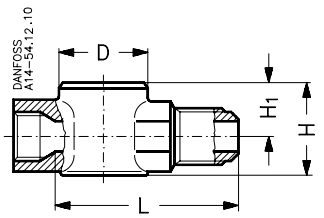
R410A

	Type	Version	Connection in.	Connection mm	Code no.
	SGH 6	Flare ext. × ext.	1/4 × 1/4	6 × 6	**014-1660**
	SGH 6s	ODF × ODF solder	1/4 × 1/4		**014-1090**
	SGH 10s		3/8 × 3/8		**014-1092**
	SGH 12s		1/2 × 1/2		**014-1091**
	SGH 16s		5/8 × 5/8	16 × 16	**014-1094**
	SGH 22s		7/8 × 7/8	22 × 22	**014-1096**
	SGH 22s		1 1/8 × 1 1/8		**014-1098**

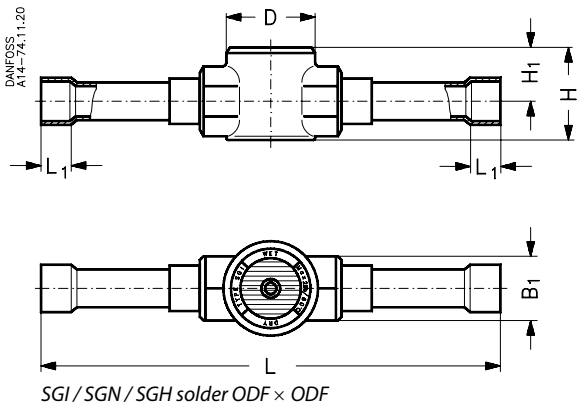
[2]) Can be screwed directly into the filter drier.

(continued...)

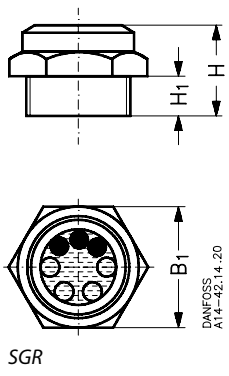
Dimensions and weights



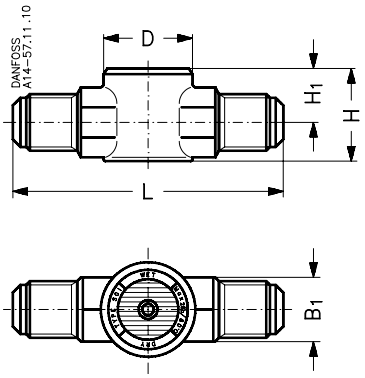
SGI / SGN flare, int. × ext.



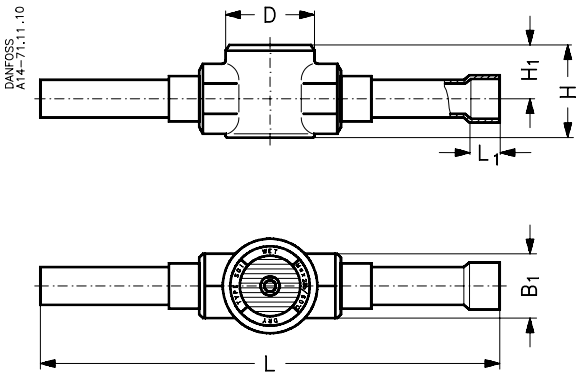
SGI / SGN / SGH solder ODF × ODF



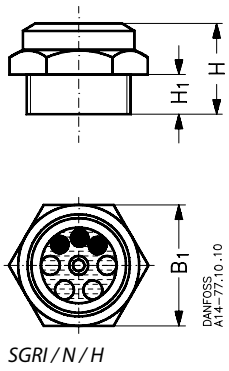
SGR



SGI / SGN / SGH flare, ext. × ext.



SGI / SGN solder ODF × ODM



SGRI / N / H

Type	Version	L mm	L_1 mm	H mm	H_1 mm	B_1 mm	Ø D mm	Weight kg
SGI/SGN/SGH 6	Flare ext. × ext.	67		24	14	14	27	0.1
SGI/SGN 10		82		28	16	19	32	0.2
SGI/SGN 12		88		30	18	22	32	0.3
SGI/SGN 16		104		37	21	27	37	0.4
SGI/SGN 19		110		41	22	32	37	0.4
SGI/SGN 6	Flare int. × ext.	46		24	14	16	27	0.1
SGI/SGN 10		57		30	18	22	32	0.2
SGI/SGN 12		59		30	18	24	32	0.3
SGI/SGN 16		71		37	21	27	37	0.4
SGI/SGN 19		75		41	22	32	37	0.6
SGI/SGN/SGH 6s	ODF × ODF solder	101	7	24	14	14	27	0.1
SGI/SGN/SGH 10s		119	9	24	14	14	27	0.1
SGI/SGN/SGH 12s		146	10	28	16	19	27	0.2
SGI/SGN/SGH 16s		146	12	30	18	22	27	0.2
SGI/SGN 18s		173	14	37	21	27	37	0.2
SGI/SGN/SGH 22s		173	17	37	21	27	27	0.2
SGI/SGN 6s	ODF × ODM solder	101	7	24	14	14	27	0.1
SGI/SGN 10s		119	9	24	14	14	27	0.1
SGI/SGN 12s		146	10	28	16	19	27	0.2
SGI/SGN 16s		146	12	30	18	22	27	0.2
SGR $^1/_2$	NPT			30	18	27		0.1
SGR $^3/_4$	Pipe thread			23	10	32		0.1
SGR $^3/_4$	NPT			31	18	32		0.1
SGRN $^1/_2$	NPT			30	18	27		0.1