Refrigeration and Air Conditioning Controls

Technical leaflet

Sight glasses
Type SGI, SGN, SGR and SGRN

REFRIGERATION AND AIR CONDITIONING

Introduction

Sight glasses are used to indicate:
1. The condition of the refrigerant in the plant liquid line.
2. The moisture content in the refrigerant.
3. The flow in the oil return line from the oil separator.

The SGI, SGN, SGR or SGRN can be used for CFC, HCFC and HFC refrigerants.

The SGI and SGN are fitted with an indicator which changes colour to show the moisture content in the refrigerant.
The SGR is used to indicate the liquid level in a receiver or the oil level in a compressor crankcase.
The SGRN is a sight glass like SGR, but supplied with a moisture indicator.
The moisture indicator in the sight glasses are dirt repelling.

Features

Type SGI
- *For HCFC and CFC refrigerants*
- *Indicates too high water contents in the refrigeration system*
- *Indication of lack of subcooling*
- *Indication of refrigerant deficiency*
- *Flare- or solder connection*

Type SGN / SGRN
- *For HFC and HCFC refrigerants*
- *Indicates too high water contents in the refrigeration system*
- *Indication of lack of subcooling*
- *Indication of refrigerant deficiency*
- *Flare- or solder connection*

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 conscious that polyester oil for HFC refrigerants, e.g. R 134a, R 404A and R 407C 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.

Indicator is colour dependent on moisture content of refrigerant
The values under “green/dry” are to be taken as the max. permissible if full protection against the harmful effects of moisture is to be ensured. When the green colour starts to fade, the colour change has begun and the indicator should therefore be watched more carefully.
If the colour changes to yellow, the filter drier must be replaced.

If you have any questions, please ask your compressor supplier.

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Technical data

Ambient temperature
–50°C → +80°C

Max. working pressure
SGI / SGN: 6 → 12: PB = 35 bar
SGI / SGN: 16s (solder): PB = 35 bar
SGI / SGN: 16 (flare): PB = 28 bar
SGI / SGN 19 → 22: PB = 28 bar
SGR / SGRN: PB = 35 bar

HFC and HCFC refrigerants

	Moisture content ppm = parts per million					
	SGN / SGRN					
	25°C [1])			43°C [1])		
	Green/ dry	Intermed. color	Yellow/ wet	Green/ dry	Intermed. color	Yellow/ wet
R 22	< 30	30 - 120	>120	< 50	50 - 200	> 200
R 134a	< 30	30 - 100	>100	< 45	45 - 170	>170
R 404A	< 20	20 - 70	> 70	< 25	25 - 100	>100
R 407C	< 30	30 - 140	>140	< 60	60 - 225	>225
R 507	< 15	15 - 60	> 60	< 30	30 - 110	>110

HCFC refrigerants

	Moisture content ppm = parts per million					
	SGI					
	25°C [1])			43°C [1])		
	Green/ dry	Intermed. color	Yellow/ wet	Green/ dry	Intermed. color	Yellow/ wet
R 22	< 150	150 - 300	> 300	< 250	250 - 500	> 500

[1]) The values refer to liquid temperature of +25°C and 43°C.

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

Ordering

Type	Version	Connection in	Connection mm	Code no.
SGI 6	Flare ext. × ext.	1/4 × 1/4	6 × 6	**014-0007**
SGI 10		3/8 × 3/8	10 × 10	**014-0008**
SGI 12		1/2 × 1/2	12 × 12	**014-0009**
SGI 16		5/8 × 5/8	16 × 16	**014-0024**
SGI 19		3/4 × 3/4	19 × 19	**014-0028**

Type	Version	Connection in	Connection mm	Code no.
SGI 6	Flare int. × ext. [1]	1/4 × 1/4	6 × 6	**014-0021**
SGI 10		3/8 × 3/8	10 × 10	**014-0022**
SGI 12		1/2 × 1/2	12 × 12	**014-0025**
SGI 16		5/8 × 5/8	16 × 16	**014-0026**
SGI 19		3/4 × 3/4	19 × 19	**014-0043**

Type	Version	Connection in	Connection mm	Code no.
SGI 6s	ODF × ODF solder	1/4 × 1/4		**014-0034**
SGI 10s		3/8 × 3/8		**014-0035**
SGI 12s		1/2 × 1/2		**014-0036**
SGI 16s		5/8 × 5/8	16 × 16	**014-0044**
SGI 19s		3/4 × 3/4	19 × 19	**014-0047**
SGI 22s		7/8 × 7/8	22 × 22	**014-0039**

Type	Version	Connection in	Connection mm	Code no.
SGI 6s	ODF × ODF solder		6 × 6	**014-0040**
SGI 10s			10 × 10	**014-0041**
SGI 12s			12 × 12	**014-0042**
SGI 18s			18 × 18	**014-0045**

Type	Version	Connection in	Connection mm	Code no.
SGI 6s	ODF × ODM solder	1/4 × 1/4		**014-0125**
SGI 10s		3/8 × 3/8		**014-0126**
SGI 12s		1/2 × 1/2		**014-0127**
SGI 16s		5/8 × 5/8	16 × 16	**014-0128**
SGI 22s		7/8 × 7/8	22 × 22	**014-0130**

Type	Version	Connection in	Connection mm	Code no.
SGR 3/4	Pipe thread NPT	G 3/4 A [2]		**014-0004**
SGR 3/4		3/4 NPT		**014-0005**
SGR 1/2		1/2 NPT		**014-0002**

[1] Can be screwed directly into the filter drier.
[2] ISO 228/1.

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**

Type	Version	Connection in	Connection mm	Code no.
SGN 6	Flare int. × ext. [1]	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**

Type	Version	Connection in	Connection mm	Code no.
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**

Type	Version	Connection in	Connection mm	Code no.
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**

Type	Version	Connection in	Connection mm	Code no.
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**

Type	Version	Connection in	Connection mm	Code no.
SGRN	NPT	1/2 NPT		**014-0006**

[1] Can be screwed directly into the filter drier.

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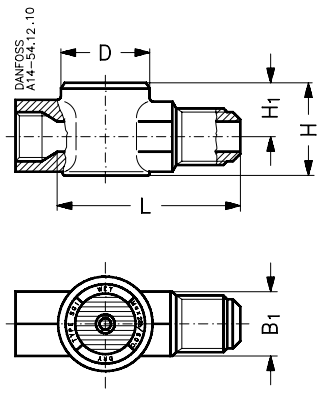
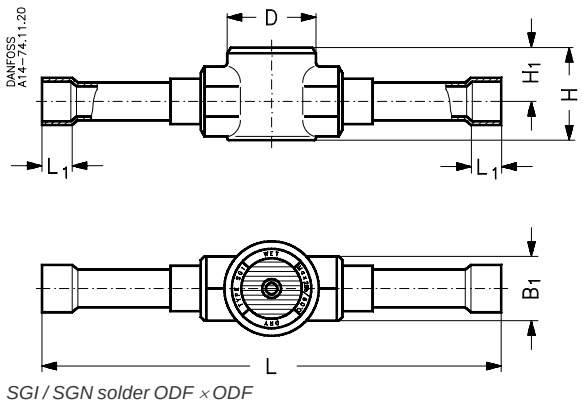
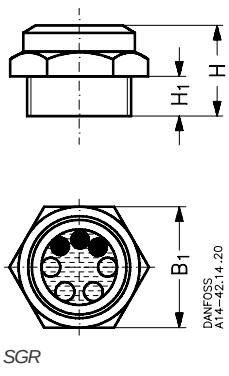
Dimensions and weights



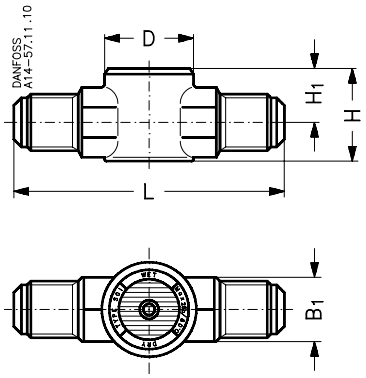
SGI / SGN flare, int. × ext.



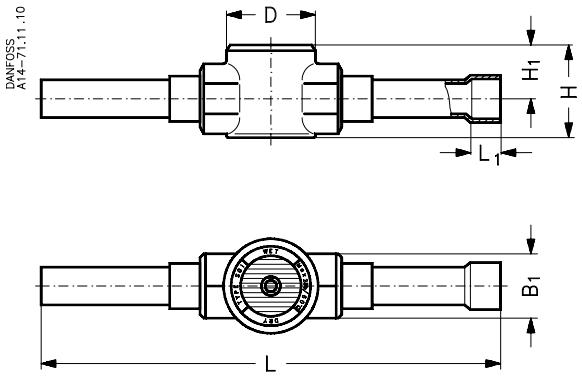
SGI / SGN solder ODF × ODF



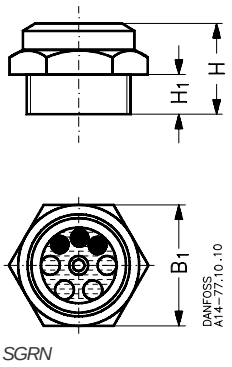
SGR



SGI / SGN flare, ext. × ext.



SGI / SGN solder ODF × ODM



SGRN

Type	Version	L mm	L_1 mm	H mm	H_1 mm	B_1 mm	∅ D mm	Weight kg
SGI/SGN 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 6s	ODF × ODF 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	32	0.2
SGI/SGN 16s		146	12	30	18	22	32	0.2
SGI/SGN 18s		173	14	37	21	27	37	0.2
SGI/SGN 22s		173	17	37	21	27	37	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	32	0.2
SGI/SGN 16s		146	12	30	18	22	32	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

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DK-6430 Nordborg
Denmark

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