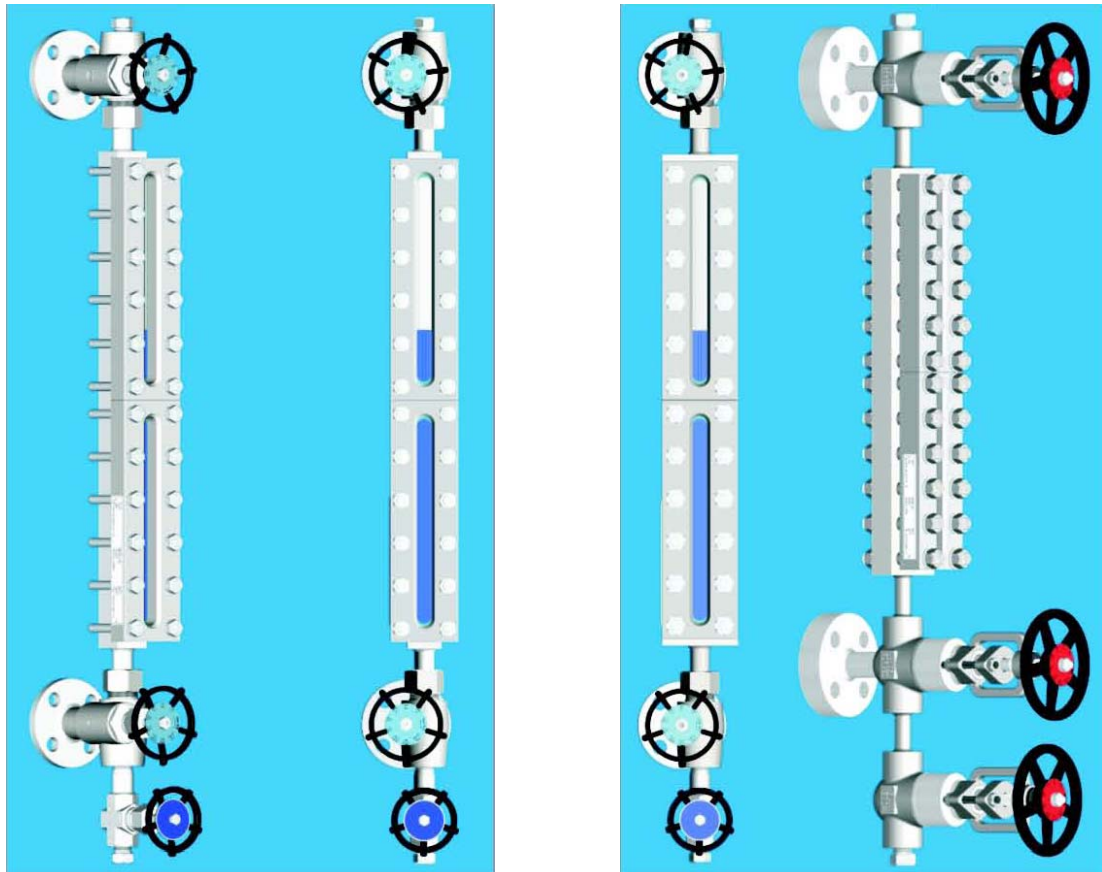


REFLEX LEVEL GAUGES



Technical Information

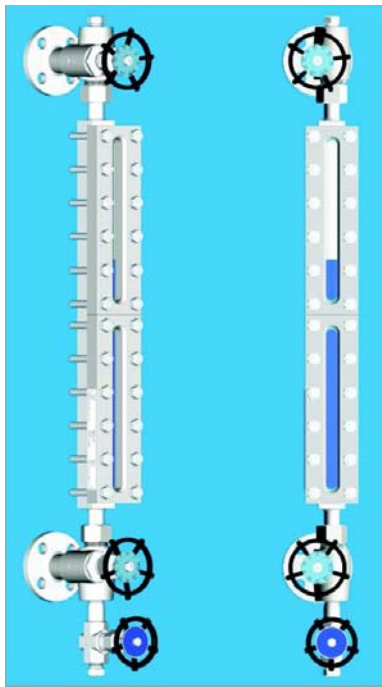
October 2008

General description (SRG series)

Reflex Liquid Level Gauges use the R-form sight glasses. One side surface of Reflex Glass to use flat glass has several grooves for reflecting prism. The principle of the Reflex Glass is based on the difference in the refractive indices of liquid and gas or in particular of water and steam. Liquid level shows conspicuously dark hard color from liquid space and light white color for empty space. These Reflex series are not used with a mica shield. Therefore, this kind of level gauge is not recommended for use with caustic, hydrofluoric, distilled water or other liquid corrosive to glass.

The Reflex Gauge is assembled firmly with gasket, reflex glass, cushion gasket and gauge cover on the body by U-bolts for SRG-1 & 2 and stud bolts for SRG-3 & 4.

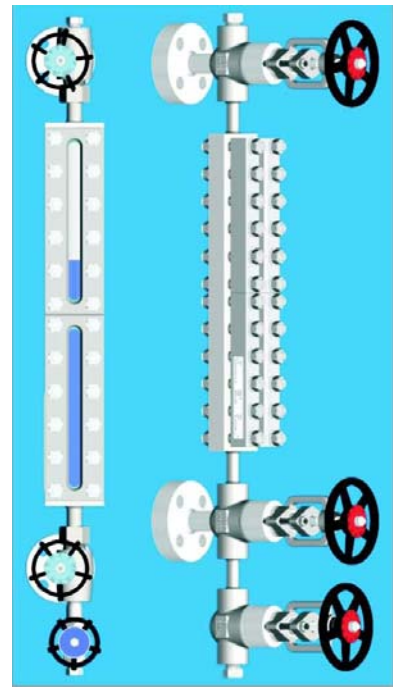
SRG-1 / SRG-2



Options:

- scale plate (units: cm, Liter)
- vent (needle valve / gate valve / globe valve / nipple & cap)
- drain (needle valve / gate valve / globe valve / nipple & cap)
- bracket (longer than 300 mm of c to c)
- gauge valve (hand wheel with chain / arm lever)

SRG-3 / SRG-4

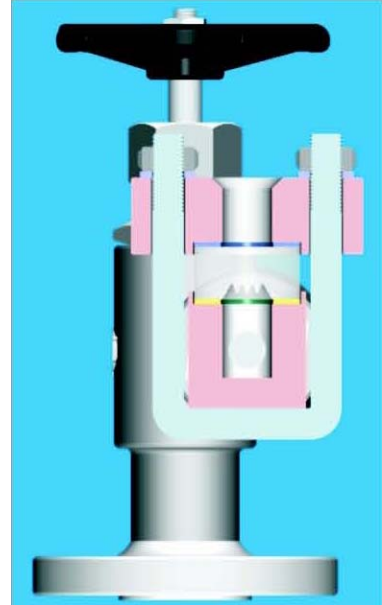
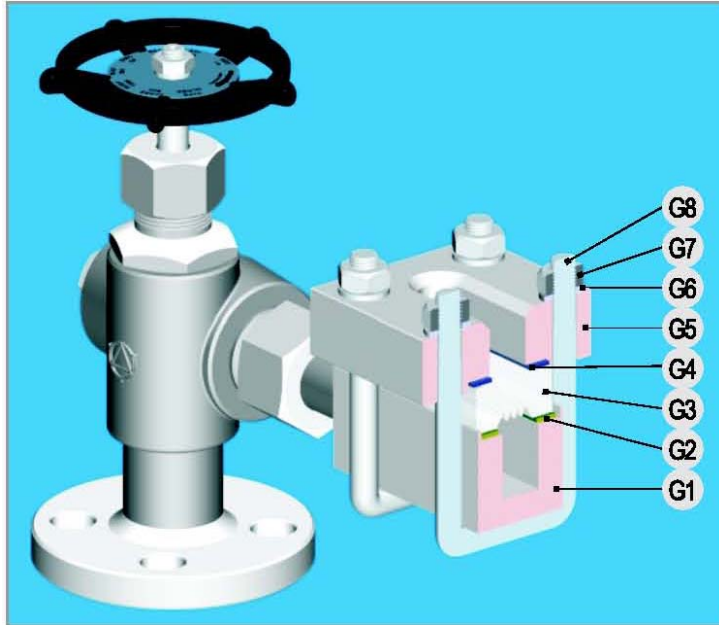


Specifications:

- material : CS, LTCS, stainless steel, A182F11, 22, 5, 9, 91 & Monel, Titanium, Hastelloy, Alloy-20 etc.
- visible length : 90...3510 mm
- max. no. of sections : 10 sections
- vessel connection : 3/4" or 1" flanged ANSI 150...2500#
- gauge body & gauge valve connection : not rotatable & 360° rotatable
- shell test pressure : 1,5 times max. working pressure.

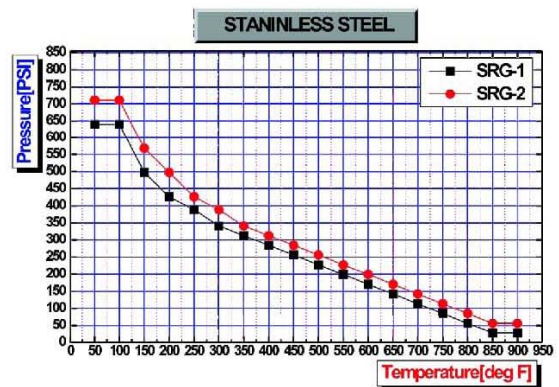
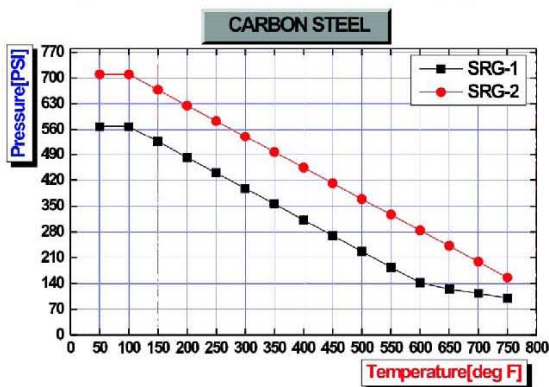
For other specifications, please let us have your request.

Section for types: SRG-1 & 2

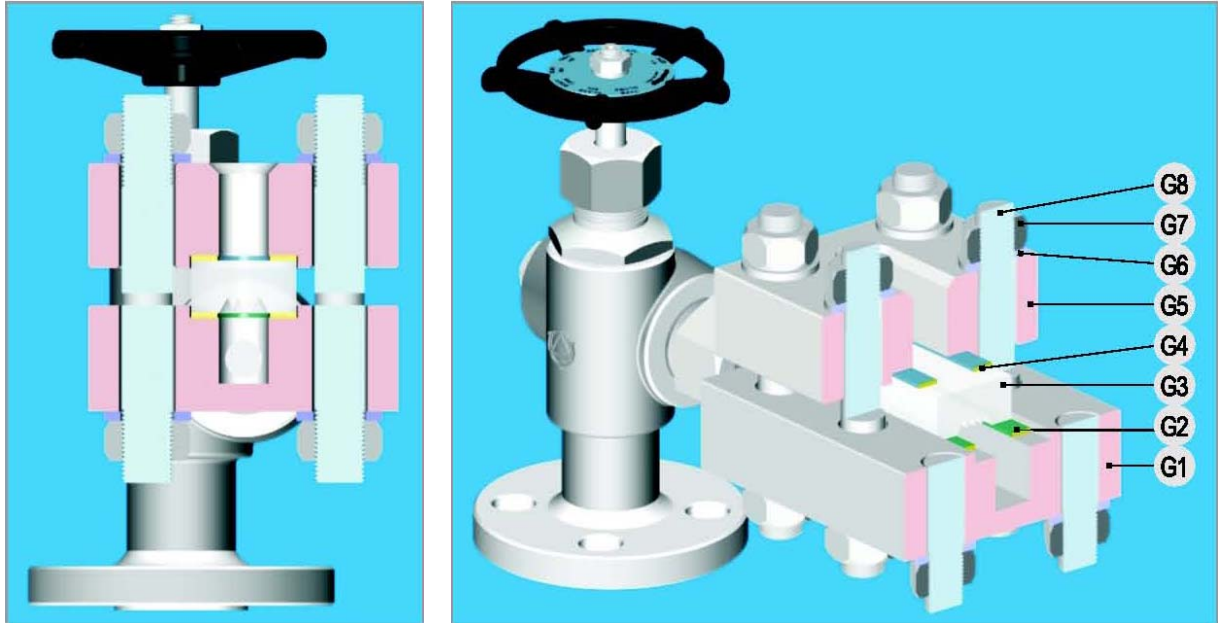


No.	Part	Material	No.	Part	Material
G1	Gauge Body	CS, SS	G5	Gauge Cover	CS
G2	Sealing Gasket	Graphite	G6	Washer	SWRH-62B
G3	Reflex Glass	Borosilicate	G7	Nuts	A194 Gr.2H
G4	Cushion Gasket	Non-Asbestos	G8	Stud-Bolts	A193 Gr.B7

Pressure-Temperature rating for the different types:

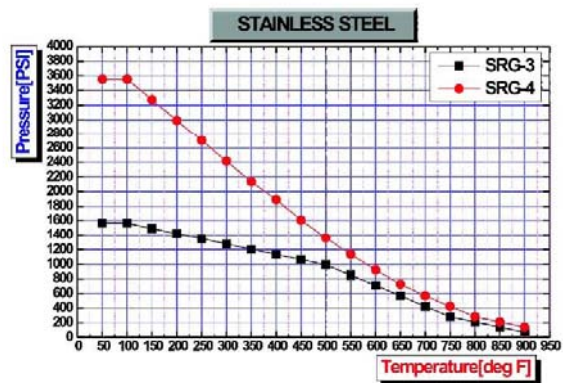
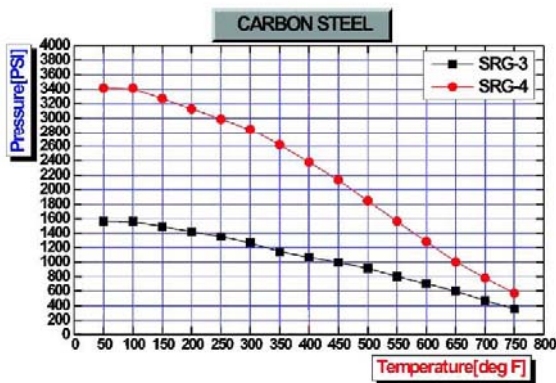


Section for types: SRG-3 & 4



No.	Part	Material	No.	Part	Material
G1	Gauge Body	CS, SS	G5	Gauge Cover	CS
G2	Sealing Gasket	Graphite	G6	Washer	SWRH-62B
G3	Reflex Glass	Borosilicate	G7	Nuts	A194 Gr.2H
G4	Cushion Gasket	Non-Asbestos	G8	Stud-Bolts	A193 Gr.B7

Pressure-Temperature rating for the different types:

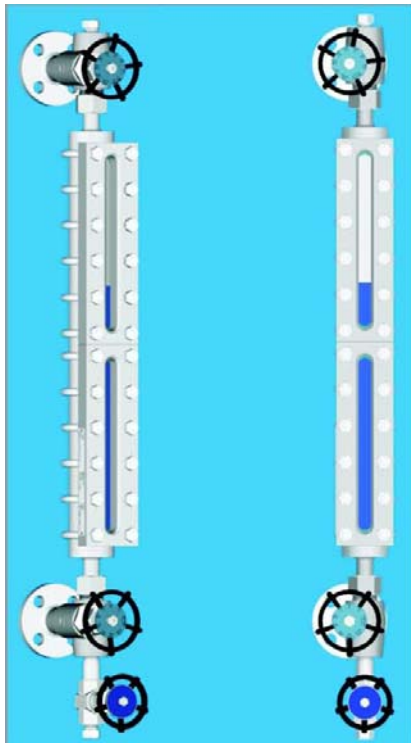


General description (SRLG series)

The most advantage of this type is for easy reading of boiling liquids. In the event of liquids boiling, the bubbling make indistinct the surface level. In this type of gauge with larger volume of the liquid chamber the bubbling will be reduced. This type is also applicable for highly dense and viscous liquid, as the body is made of seamless pipe.

Our large chamber reflex level gauges are classified in 4 different types (SRLG-1, 2, 3 & 4) according to the process conditions which are max. working pressure and temperature.

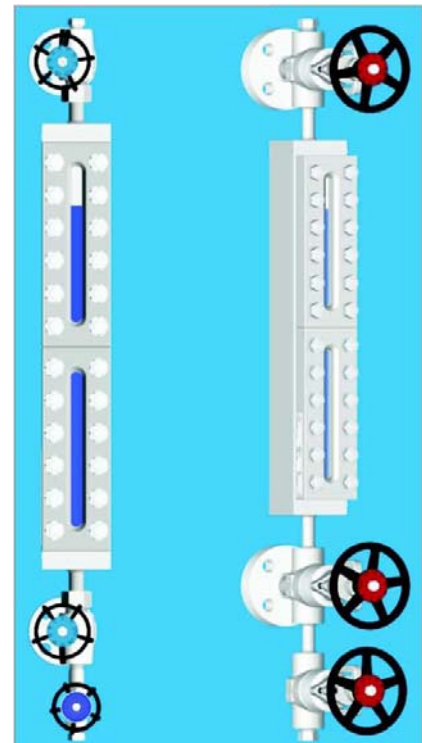
SRLG-1 / SRLG-2



OPTIONS:

- Scale plate (units: cm, liter)
- Vent (needle valve, gate valve, globe valve, nipple & cap)
- Drain (needle valve, gate valve, globe valve, nipple & cap)
- Bracket (c to c > 3000 mm)
- Gauge valve (Hand wheel with chain / Arm lever)

SRLG-3 / SRLG-4



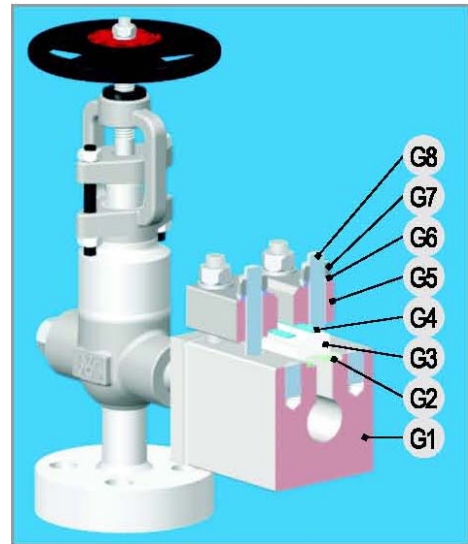
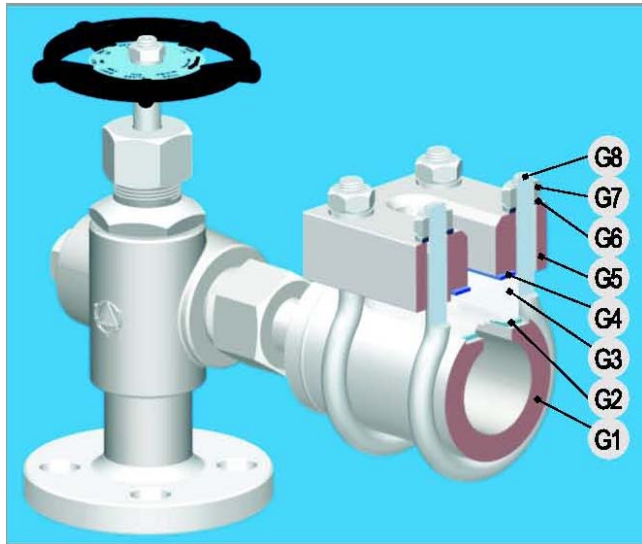
Specifications:

- material : CS, LTCS, stainless steel, A182F11, 22, 5, 9, 91 & Monel, Titanium, Hastelloy, Alloy-20 etc.
- visible length : 90...3510 mm
- max. no. of sections : 10 sections
- vessel connection : $\frac{3}{4}$ " or 1" flanged ANSI 150...2500# [900#...2500#: special type]
- gauge body & gauge valve connection : not rotatable & 360° rotatable
- shell test pressure : 1,5 times max. working pressure.

For other specifications, please let us have your request.

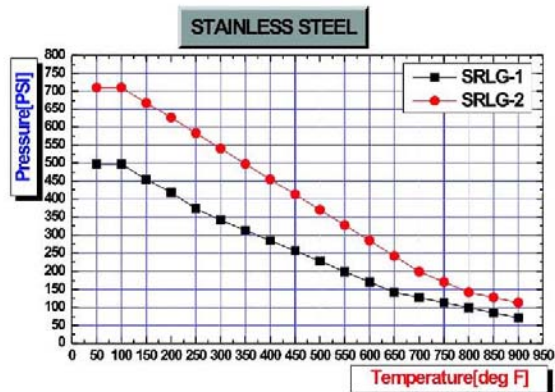
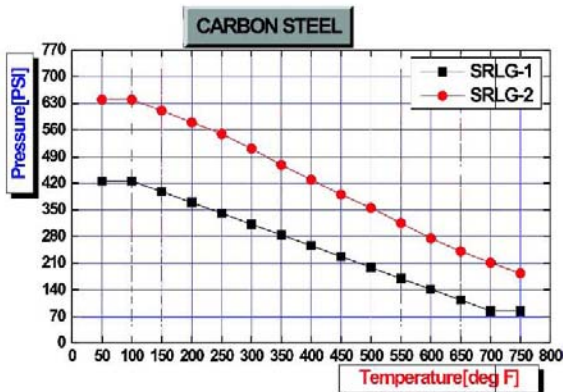
The SRLG is designed and manufactured for easy and accurate reading the liquid level of highly foamy liquids. The gauge has a relatively spacious internal area where foamy liquid is held from forming foams. It provides rather more accurate level observations.

Section for types: SRLG-1 & 2 / SRLG-3 & 4



No.	Part	Material	No.	Part	Material
G1	Gauge Body	CS, SS	G5	Gauge Cover	CS
G2	Sealing Gasket	Graphite	G6	Washer	SWRH-62B
G3	Reflex Glass	Borosilicate	G7	Nuts	A194 Gr.2H
G4	Cushion Gasket	Non-Asbestos	G8	Stud-Bolts	A193 Gr.B7

Pressure-Temperature rating for the different types:

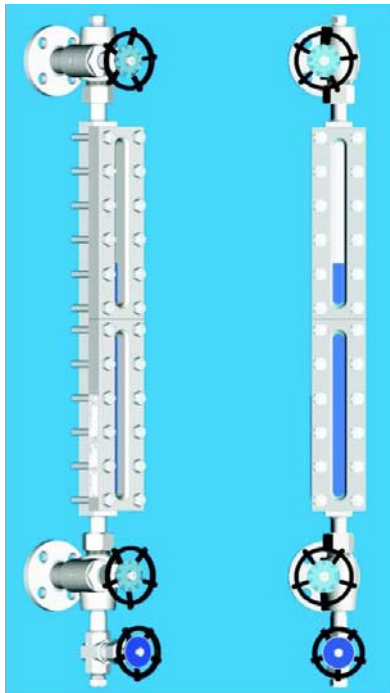


General description (SRNG / SRLNG series)

If a conventional level gauge is used for extremely low temperature applications, it becomes difficult to observe the level of liquid as the gauge front tends to freeze. To get rid of this problem, the acrylic non-frosting plate window is mounted in the front of the gauge as below and you will be able to observe the level easily far better.

Our non-frosting reflex level gauges are classified into 2 types with 4 models each (SRNG-1, 2, 3, 4 & SRLNG 1, 2, 3, 4) according to the process conditions. Depending on the working temperature conditions, the height of the non-frosting plate window may be selected from 75 to 250 mm.

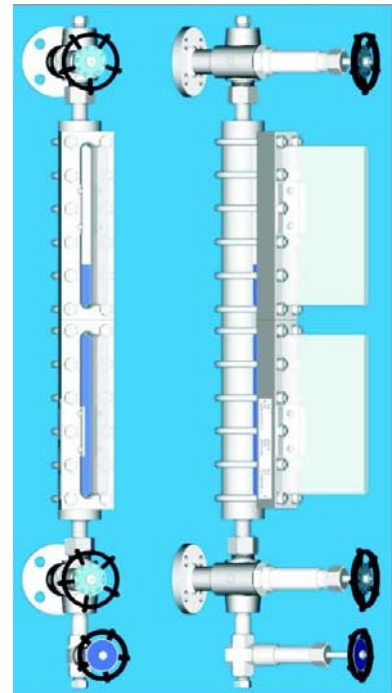
SRNG-1 / -2 / -3 / -4



OPTIONS:

- Scale plate (units: cm, liter)
- Vent (needle valve, gate valve, globe valve, nipple & cap)
- Drain (needle valve, gate valve, globe valve, nipple & cap)
- Bracket (c to c > 3000 mm)
- Gauge valve (Hand wheel with chain / Arm lever)

SRLNG-1 / -2 / -3 / -4



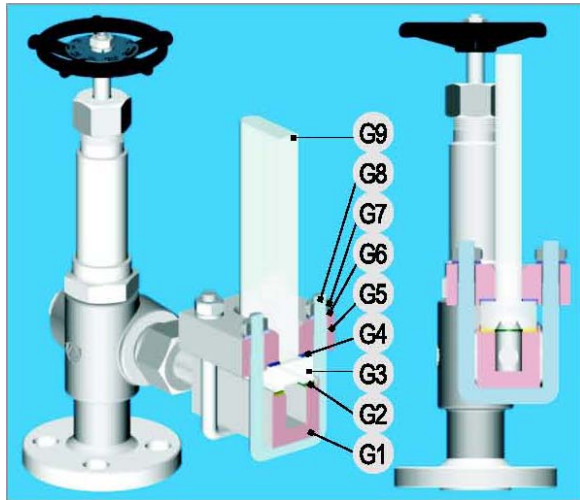
Specifications:

- material : LTCS, stainless steel
- visible length : 90...3510 mm
- max. no. of sections : 10 sections
- vessel connection : ¾" or 1" flanged ANSI 150...2500#
- gauge body & gauge valve connection : not rotatable & 360° rotatable
- shell test pressure : 1,5 times max. working pressure.

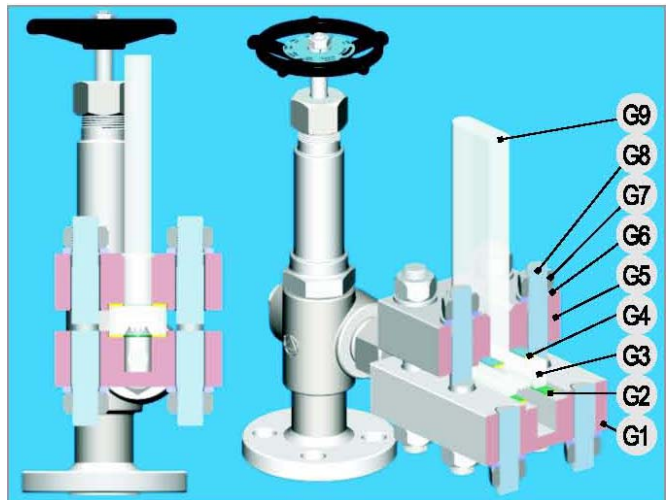
For other specifications, please let us have your request.

Section for types: SRNG-1 & 2 / SRLG-3 & 4 / SRLNG-1 & 2 / SRLNG-3 & 4

SRNG-1 / SRNG-2



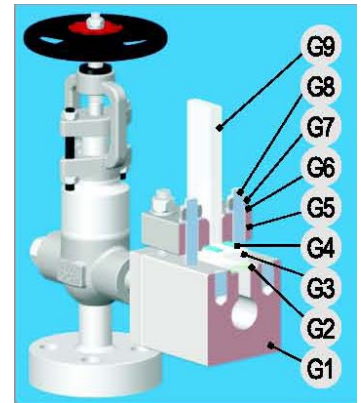
SRNG-3 / SRNG-4



SRLNG-1 / SLRNG-2



SRNG-3 / SRNG-4



Since these types are used at a temperature below the freezing point, gauge valve and drain valve are used with long bonnet to prevent chilblains on your hands.

No.	Part	Material	No.	Part	Material
G1	Gauge Body	LTCS, SS	G6	Washer	SWRH-62B
G2	Sealing Gasket	Graphite	G7	Nuts	A194 Gr.2H
G3	Reflex Glass	Borosilicate	G8	Stud-Bolts	A193 Gr.B7
G4	Cushion Gasket	Non-Asbestos	G9	Non-Frosting	Acrylic
G5	Gauge Cover	LTCS, SS			

Temperature rating and dimensions of non-frosting plates:

Temperature °C	0...-20	-21...-45	-46...-100	-101...-160	-161...-200
Materials	LTCS	LTCS	304SS	316SS	316LSS
Acrylic Height mm	75	100	150	200	250

General description (SRJG / SRLJG series)

This type is usually called a jacket type. This gauge is used to read the level of high congealable or ebullient liquids. The principle is to inflow a steam for congealable liquids and a cold water for ebullient liquids through the inside of the jacket to ensure accurate and reliable level observation.

Our jacket reflex level gauges are classified into 2 types and 4 models each (SRJG-1 /-2 /-3 /-4 & SRLJG-1 /-2 /-3 /-4) according to the process conditions which are max. working pressure and temperature.

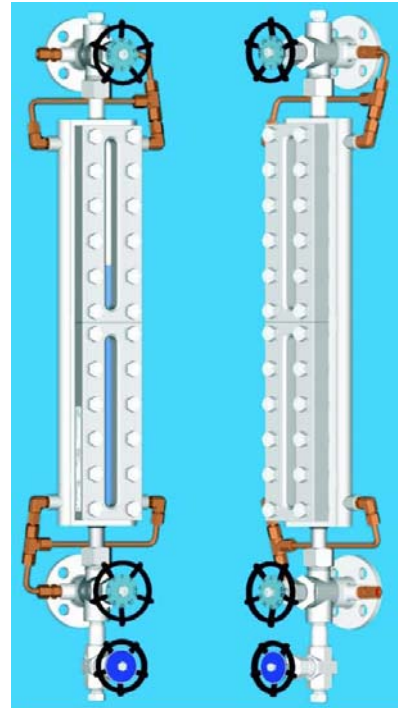
SRJG-1 / SRJG-2



OPTIONS:

- Scale plate (units: cm, liter)
- Vent (needle valve, gate valve, globe valve, nipple & cap)
- Drain (needle valve, gate valve, globe valve, nipple & cap)
- Bracket (c to c > 3000 mm)
- Gauge valve (Hand wheel with chain / Arm lever)

SRJG-3 / SRJG-4



Specifications:

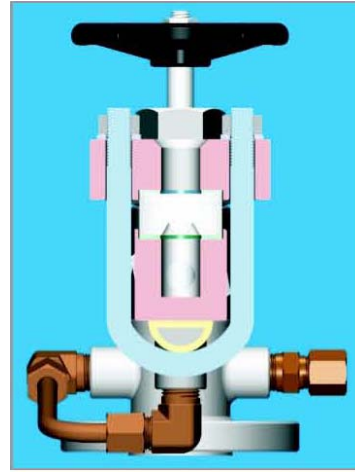
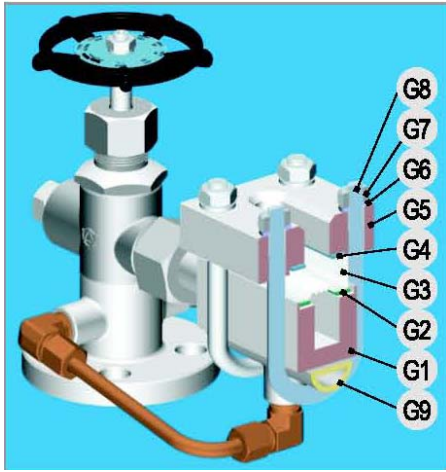
- material : CS, LTCS, stainless steel, A182F11, 22, 5, 9, 91 & Monel, Titanium, Hastelloy, Alloy-20 etc.
- visible length : 90...3510 mm
- max. no. of sections : 10 sections
- vessel connection : ¾" or 1" flanged ANSI 150...2500#
- gauge body & gauge valve connection : not rotatable & 360° rotatable
- shell test pressure : 1,5 times max. working pressure.

For other specifications, please let us have your request.

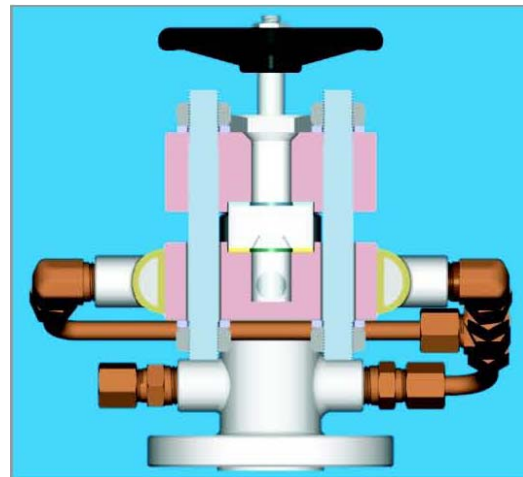
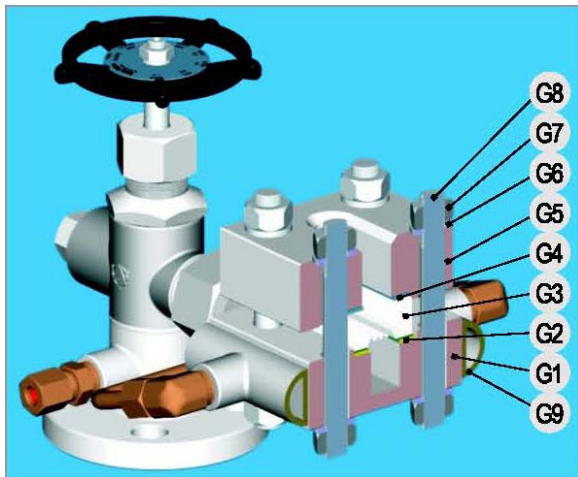
This type is used for observing the fluid by changing it into state of liquid after heating or cooling it through jacket according to fluid's features. Our standard is that the inlet of the jacket for steam or cold water is ½" NPT(M). Others are available on request.

Section for types: SRJG-1 & 2 / SRJG-3 & 4

SRJG-1 / SRJG-2



SRJG-3 / SRJG-4

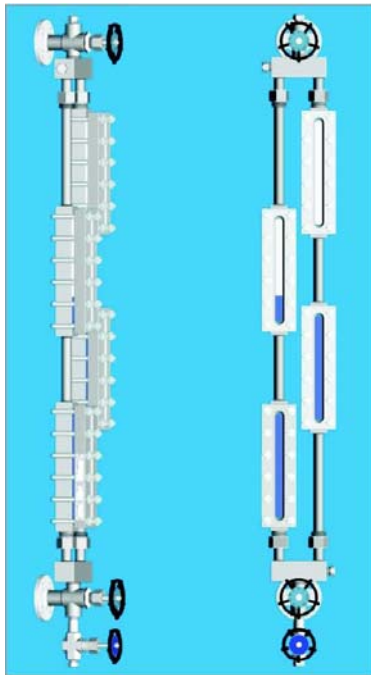


No.	Part	Material	No.	Part	Material
G1	Gauge Body	CS, SS	G6	Washer	SWRH-62B
G2	Sealing Gasket	Graphite	G7	Nuts	A194 Gr.2H
G3	Reflex Glass	Borosilicate	G8	Stud-Bolts	A193 Gr.B7
G4	Cushion Gasket	Non-Asbestos	G9	Jacket Pipe	CS or SS
G5	Gauge Cover	CS			

General description (SRZG series)

The most advantage of this type is that it has no invisible sections (dead band). Our standard overlapped section is 10 mm as minimum and the gauge is so designed that supporting brackets as illustrated on next page can be equipped to protect a long multiple connected gauge from distortion of fall down. The scale plate to mount alongside the gauge may be available on request by customers to observe the liquid level more accurately.

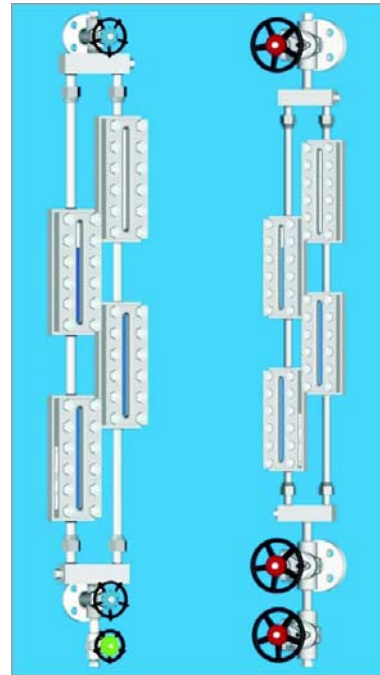
SRZG-1 / SRZG-2



OPTIONS:

- Scale plate (units: cm, liter)
- Vent (needle valve, gate valve, globe valve, nipple & cap)
- Drain (needle valve, gate valve, globe valve, nipple & cap)
- Bracket (c to c > 3000 mm)
- Gauge valve (Hand wheel with chain / Arm lever)

SRZG-3 / SRZG-4

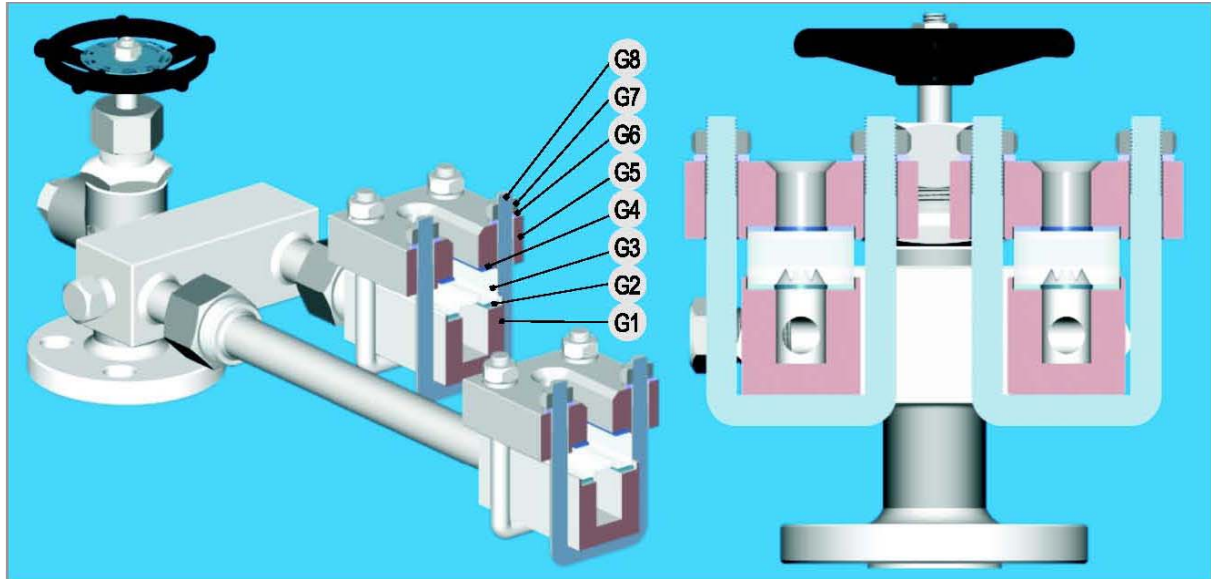


Specifications:

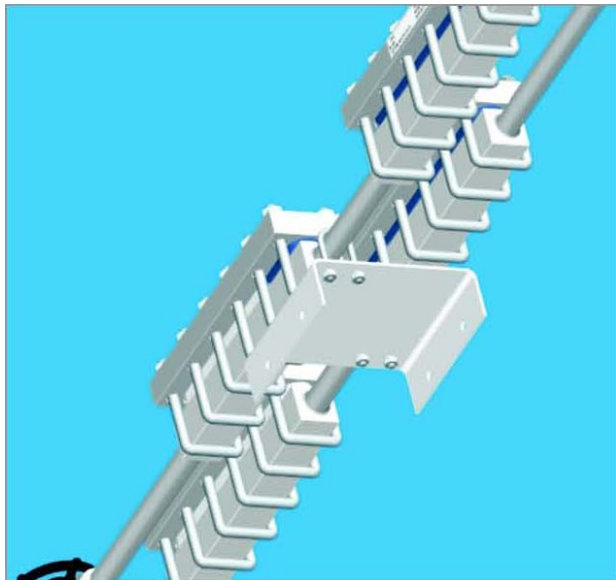
- material : CS, LTCS, stainless steel, A182F11, 22, 5, 9, 91 & Monel, Titanium, Hastelloy, Alloy-20 etc.
- visible length : Max. 6050 mm
- max. no. of sections : 20 sections
- vessel connection : ¾" or 1" flanged ANSI 150...2500#
- gauge body & gauge valve connection : not rotatable & 360° rotatable
- shell test pressure : 1,5 times max. working pressure.

For other specifications, please let us have your request.

Section for types: SRZG-1 & 2

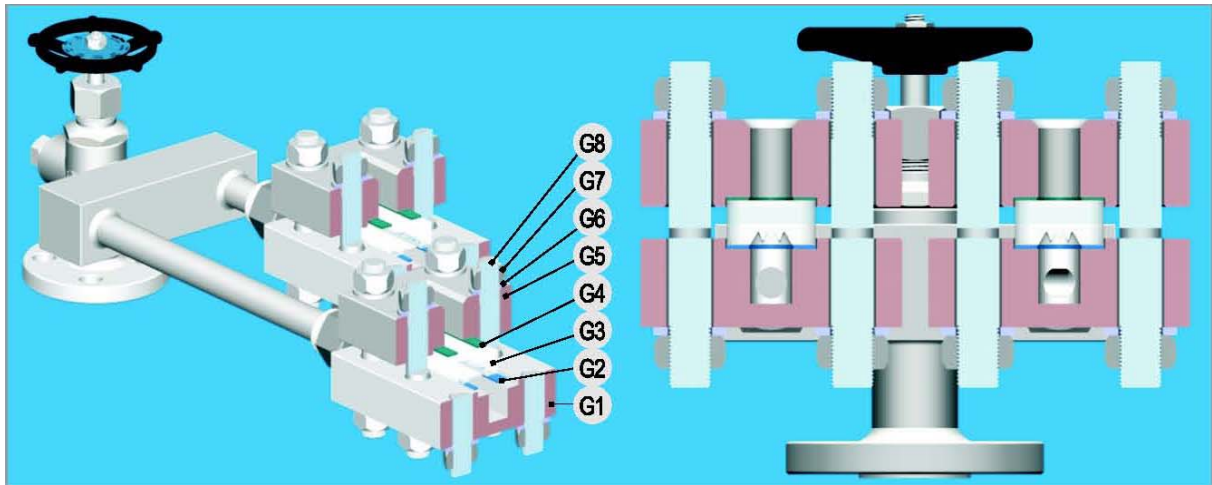


No.	Part	Material	No.	Part	Material
G1	Gauge Body	CS, SS	G5	Gauge Cover	CS
G2	Sealing Gasket	Graphite	G6	Washer	SWRH-62B
G3	Reflex Glass	Borosilicate	G7	Nuts	A194 Gr.2H
G4	Cushion Gasket	Non-Asbestos	G8	U-Bolts	A193 Gr.B7



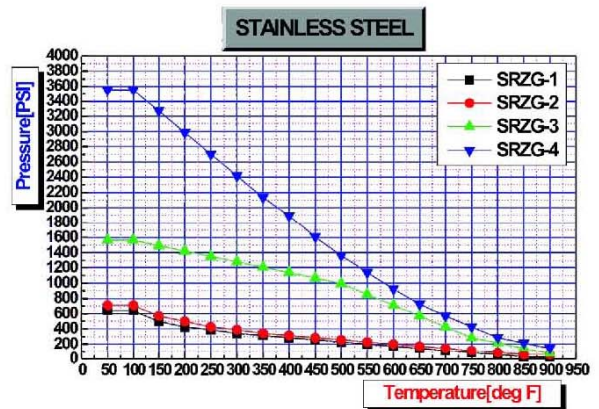
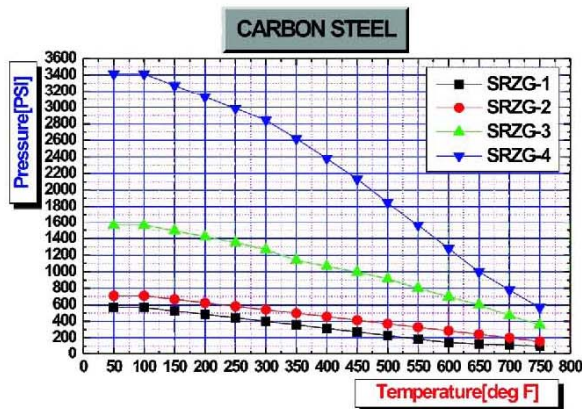
- Details of the Bracket dimension will be indicated on the drawing for submittal and may be changed on request by customers.
- As shown on the left, this is our standard and you can connect the supporting form our supporting bracket to vessel.
- Bracket fro supporting is built on this mode for 7 gauges (=7 sections) and over as standard.
- Assembly – Dismantling of the body is easy.

Section for types: SRZG-3 & 4

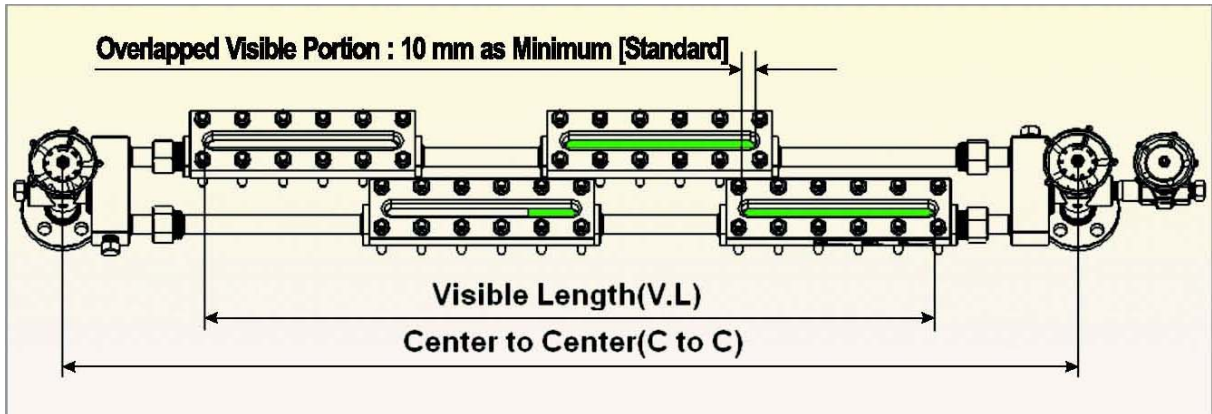


No.	Part	Material	No.	Part	Material
G1	Gauge Body	CS, SS	G5	Gauge Cover	CS
G2	Sealing Gasket	Graphite	G6	Washer	SWRH-62B
G3	Reflex Glass	Borosilicate	G7	Nuts	A194 Gr.2H
G4	Cushion Gasket	Non-Asbestos	G8	U-Bolts	A193 Gr.B7

Pressure-Temperature rating for the different types:



Solid drawing & dimensions



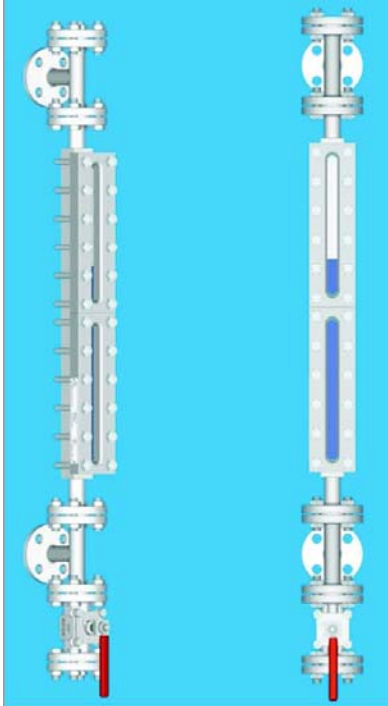
No. of gauge sections	Glass no. 7		Glass no. 8		Glass no. 9	
	c to c [mm]	VL [mm]	c to c [mm]	VL [mm]	c to c [mm]	VL [mm]
2 gauges	800	500	880	580	920	620
3 gauges	1040	740	1160	860	1220	920
4 gauges	1290	990	1450	1150	1520	1220
5 gauges	1530	1230	1720	1420	1820	1520
6 gauges	1770	1470	2000	1700	2120	1820
7 gauges	2000	1700	2300	2000	2420	2120
8 gauges	2250	1950	2550	2250	2720	2420
9 gauges	2500	2200	2850	2550	3020	2720
10 gauges	2750	2450	3100	2800	3300	3000
11 gauges	3000	2700	3400	3100	3600	3300
12 gauges	3200	2900	3700	3400	3900	3600
13 gauges	3450	3150	3950	3650	4200	3900
14 gauges	3700	3400	4250	3950	4500	4200
15 gauges	3950	3650	4550	4250	4800	4500
16 gauges	4200	3900	4800	4500	5100	4800
17 gauges	4400	4100	5100	4800	5400	5100
18 gauges	4650	4350	5400	5100	5700	5400
19 gauges	4900	4600	5650	5350	6000	5700
20 gauges	5100	4800	5900	5600	6300	6000

Visible + 300 mm = c to c

General description (SRG-LD / SRLG-LD series)

More severe demands may often be required on liquid level gauges in terms of resistance to corrosion, and this is accomplished by lining or coating all wetted parts. The most important aspect of this process is the preparation of the metal substrate. Our lined reflex level gauges are classified in two types (SRG-1LD & SRLG-1LD) according to the fluid's properties.

SRG-1LD



Options:

- scale plate (units: cm, liter)
- bracket (c to c > 3000 mm)

SRLG-1LD



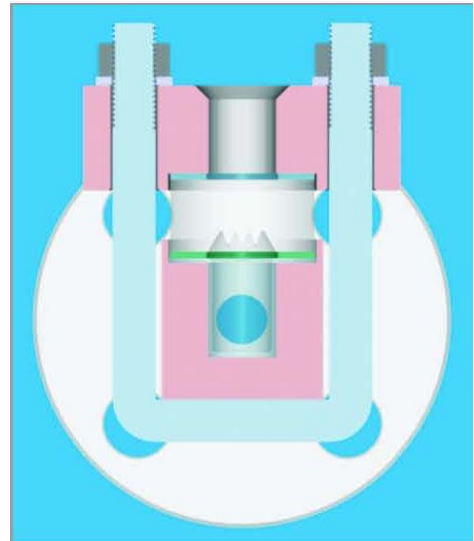
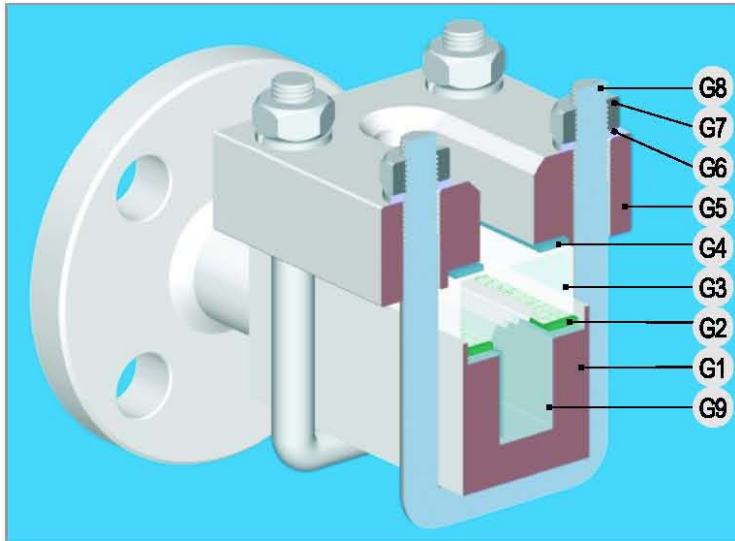
Specifications:

- material : CS, stainless steel
- visible length : 90...3510 mm
- max. no. of sections : 10 sections
- vessel connection : ¾" or 2" flanged ANSI 150...300#
- shell test pressure : 1,5 times max. working pressure.

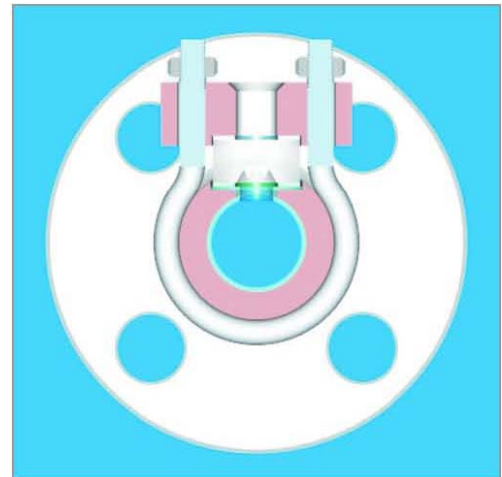
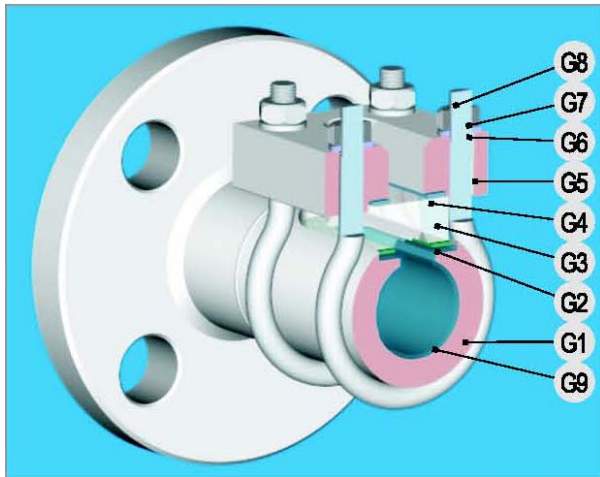
For other specifications, please let us have your request.

Section for types: SRG-1LD & SRLG-1LD

SRG-1LD



SRLG-1LD

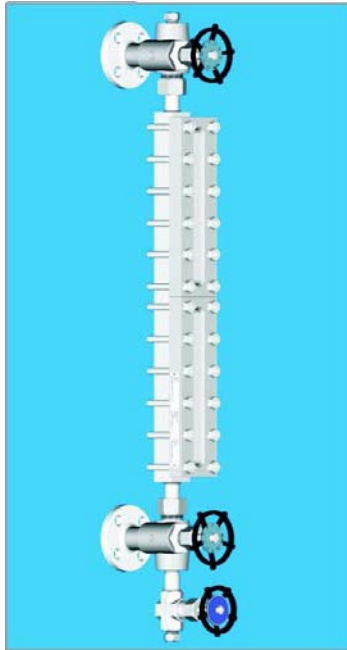


No.	Part	Material	No.	Part	Material
G1	Gauge Body	CS, SS	G6	Washer	SWRH-62B
G2	Sealing Gasket	Rubber, PTFE	G7	Nuts	A194 Gr.2H
G3	Reflex Glass	Borosilicate	G8	Bolts	A193 Gr.B7
G4	Cushion Gasket	Non-Asbestos	G9	Lining	Hard rubber, PTFE
G5	Gauge Cover	CS			

General description (SRG-BC series)

This gauge is used with a special reflex type gauge glass which has wider V-shaped refractive groove and red coating on the outside of the glass. It provides a clear observation of liquid level because of made refracting red colour on the V-groove for steam or beyond portion of the level and its colour of fluid itself for liquid portions. Our Bi-colour reflex level gauges are classified into 2 types (SRG-1BC & SRG-2BC) according to process conditions which are max. working pressure and temperature.

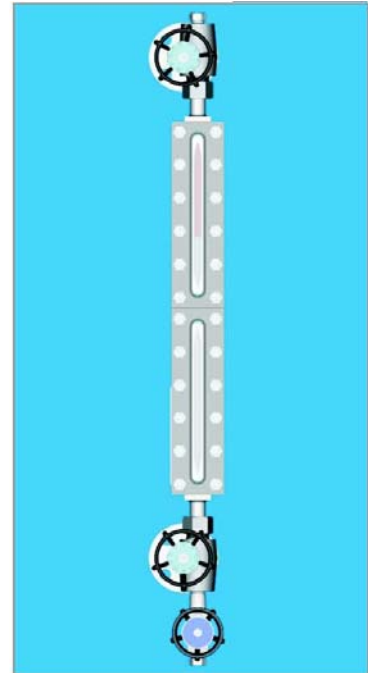
SRG-1BC



OPTIONS:

- Scale plate (units: cm, liter)
- Vent (needle valve, gate valve, globe valve, nipple & cap)
- Drain (needle valve, gate valve, globe valve, nipple & cap)
- Bracket (c to c > 3000 mm)
- Gauge valve (Hand wheel with chain / Arm lever)

SRG-2BC

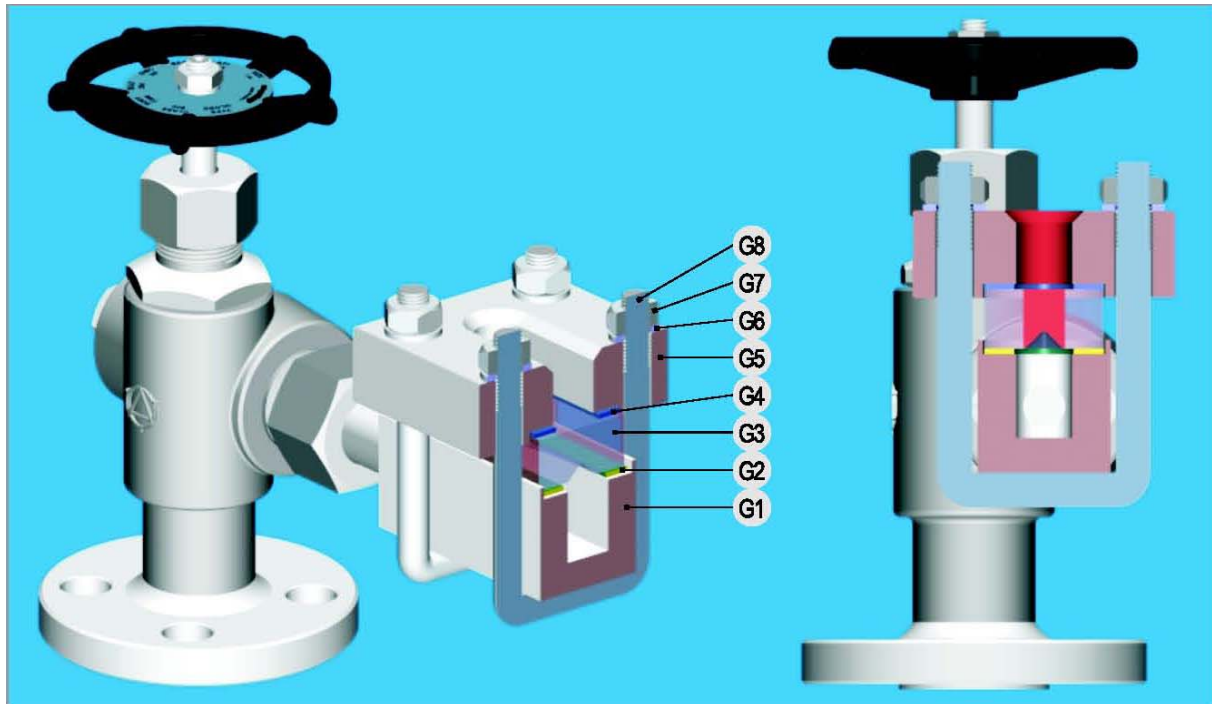


Specifications:

- material : CS, LTCS, stainless steel, A182F11, 22, 5, 9, 91 & Monel, Titanium, Hastelloy, Alloy-20 etc.
- visible length : 90..3510 mm
- max. no. of sections : 10 sections
- vessel connection : 3/4" or 1" flanged ANSI 150...600#
- gauge body & gauge valve connection : not rotatable & 360° rotatable
- shell test pressure : 1,5 times max. working pressure.

For other specifications, please let us have your request.

Section for types: SRG-1BC & SRG-2BC



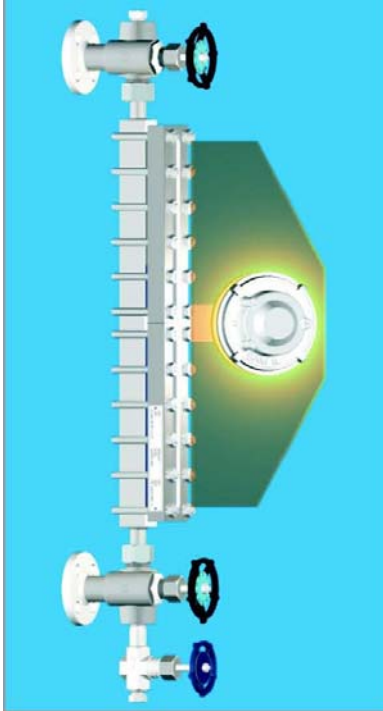
No.	Part	Material	No.	Part	Material
G1	Gauge Body	CS, SS	G5	Gauge Cover	CS
G2	Sealing Gasket	Graphite	G6	Washer	SWRH-62B
G3	Reflex Glass	Borosilicate	G7	Nuts	A194 Gr.2H
G4	Cushion Gasket	Non-Asbestos	G8	U-Bolts	A193 Gr.B7

General description (SRG-IL series)

The features and principles are the same as for the basic reflex level gauges except for the fact that the illuminator is mounted to the reflex level gauge. Reflex level gauges with illuminator are useful for observing the fluid level in a dim place or at night by using an explosion-proof and weather-proof.

The illuminator can be mounted on all types of reflex level gauges.

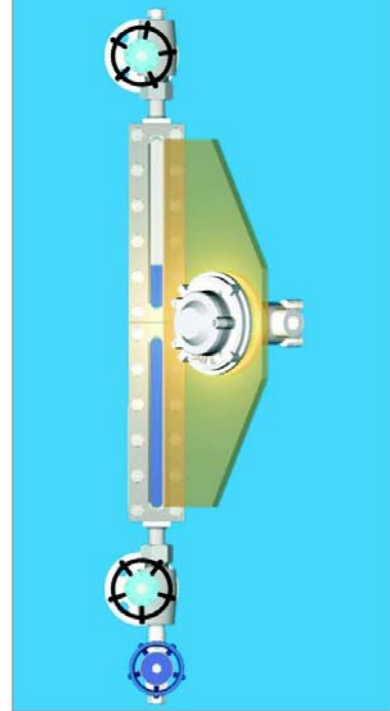
SRG-IL



OPTIONS:

- Scale plate (units: cm, liter)
- Vent (needle valve, gate valve, globe valve, nipple & cap)
- Drain (needle valve, gate valve, globe valve, nipple & cap)
- Bracket (c to c > 3000 mm)
- Gauge valve (Hand wheel with chain / Arm lever)

SRLG-IL

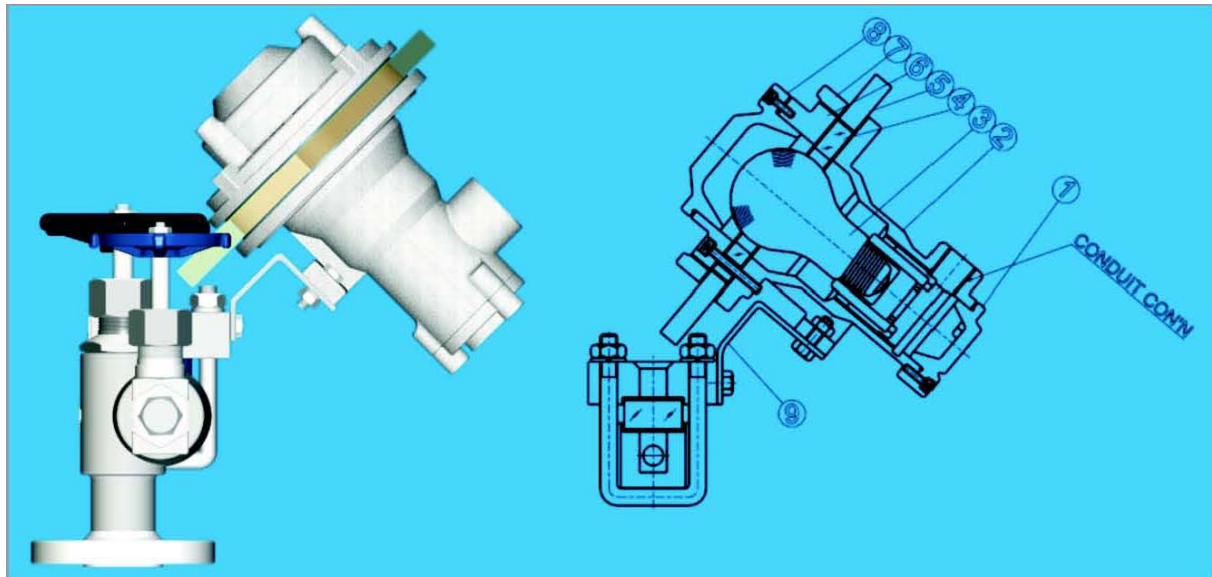


Specifications:

- material : CS, LTCS, stainless steel, A182F11, 22, 5, 9, 91 & Monel, Titanium, Hastelloy, Alloy-20 etc.
- visible length : 90..3510 mm
- max. no. of sections : 10 sections
- vessel connection : ¾" or 1" flanged ANSI 150...600#
- gauge body & gauge valve connection : not rotatable & 360° rotatable
- shell test pressure : 1,5 times max. working pressure.

For other specifications, please let us have your request.

Section for type: SRG-IL



No.	Part	No.	Part
1	Cover	6	Glass cover
2	Bulb housing	7	Front cover
3	Bulb	8	Bulb cover
4	Glass plate	9	Bracket
5	Reflector		

Conduit Connection Dimension		
Size [PT/NPT]	Outside diam. [mm]	Thread per inch
1/2"	21,34	14
3/4"	26,67	14
1"	33,40	11 1/2

Electricity:

Standard:

- Voltage : AC 110...220V, 50 Hz, 60Hz
- Bulb light : 30...100 W
- Explosion proof : Ex d IIB + H₂ T5
- others : Division 1+2; Cl. I: Gr. B, C, D
 Division 1+2, Cl II, Gr. E, F, G
 Division 1+2, Cl III, type 4 at FM approved
 Division 1+2; Cl. I: Gr. B, C, D
 Division 1+2, Cl II, Gr. E, F, G
 Division 1+2, Cl III, type 4 at CSA certified Ex d

The Certificate of CENELEC is available on EExd IIB+H₂ T4, IP66

The Certificate of U.L: is available on Cl. I, Gr. C and D, Temp Code T4A; Division 1

The Certificate of U.L: is available on Cl. I, Gr. B, Temp Code T2A; Division 2

General description (SRG-1SM series)

The Marine gauge is used for observing the fluid of oil tank for ship and It's light weight rather than typical level gauge for land.



OPTIONS:

- scale plate: units: cm, liter

Main applications:

- Fuel and water tanks on diesel locomotives
- Marine water tanks
- Vehicle fuelling installations
- Liquid chemical, industrial & agricultural storage tanks for low pressure.

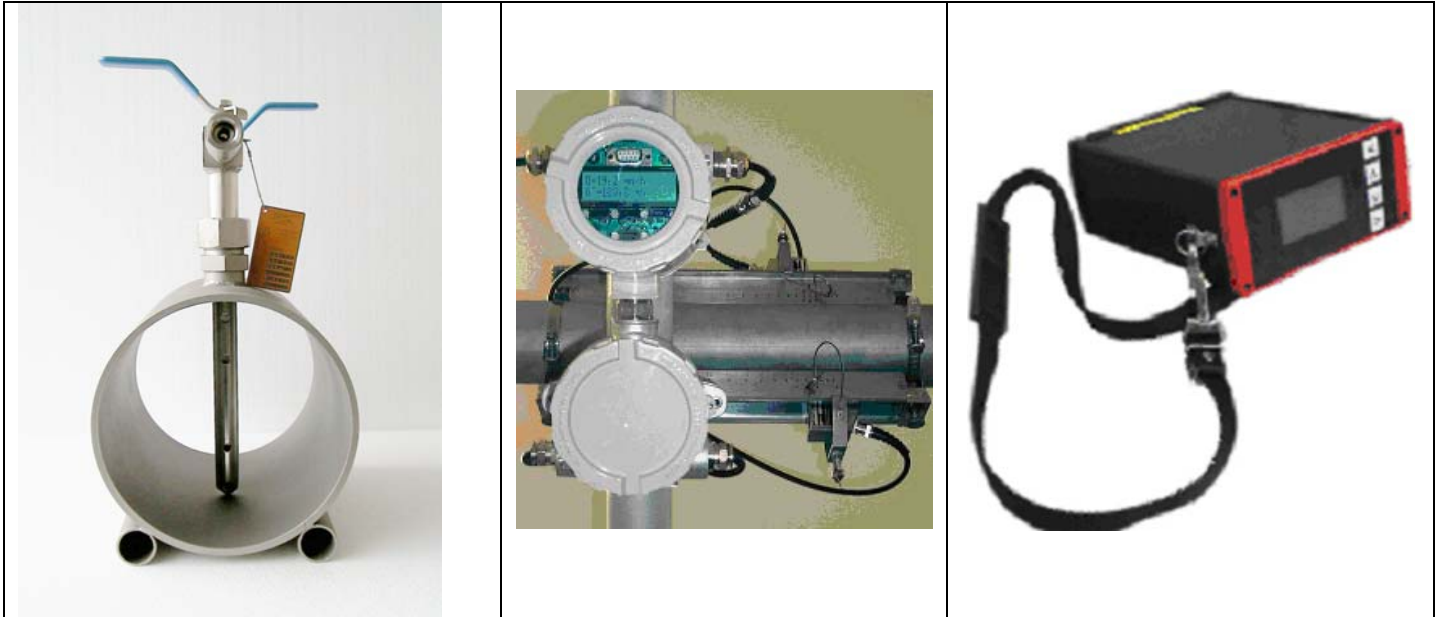
Specifications:

- material : Stainless steel & Bronze
- visible length : 90..3510 mm
- max. no. of sections : 10 sections
- vessel connection : $\frac{3}{4}$ " or 1" flanged ANSI 150#
- gauge body & gauge valve connection : not rotatable & 360° rotatable
- shell test pressure : 1,5 times max. working pressure.

For other specifications, please let us have your request.

Besides the products covered by this brochure, Intra-Automation GmbH also manufactures other high-quality and high precision instruments for industrial measurement tasks. For more information, please contact us (contact details on the backside of this brochure).

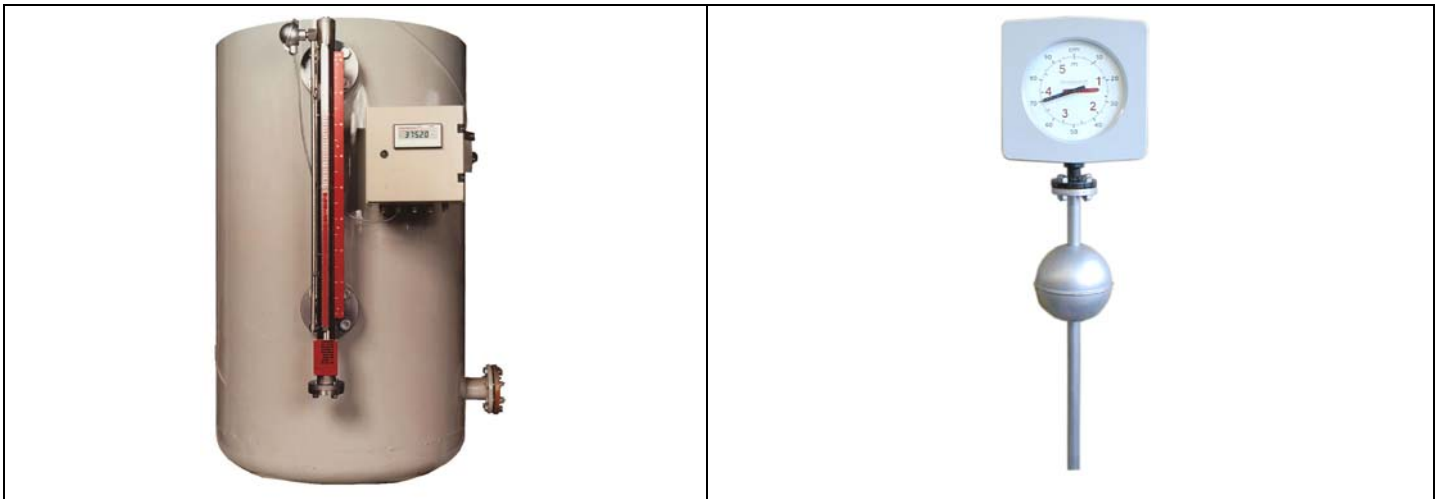
Flow Measurement



Itabar®-Flow-Sensors

IntraSonic IS200 Ultrasonic Flow Meters

Level Measurement



ITA-mag. level gauges

MAGLINK level indicators

Other measurement tasks:



DigiFlow Flow and Level Computers

IntraCont digital Controllers

IntraDigit digital indicators



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