



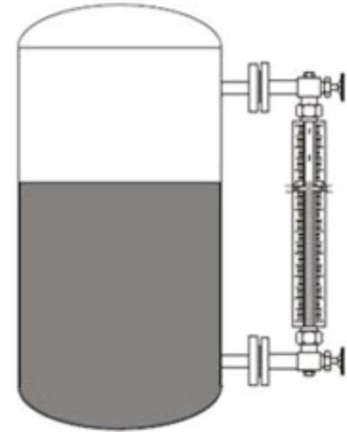
LEVEL MEASURING WITH SIGHT GLASS





Introductions

Aramak's Flat Glass Gauges are used where direct visual observation of process fluids is required. These gauges are suitable for a wide range of applications with pressures up to 100 Barg @ 80°C, and temperatures up to 200°C @ 50 Barg. Level gauges are available in a wide variety of construction materials, connections and other options to meet most specifications



Applications

Typical industries:

- Oil and gas production
- Petrochemical
- Chemical
- Power generation
- Water and wastewater treatment
- Food and beverage
- Pharmaceutical
- Pulp and paper
- Biotech
- Semiconductor

Typical applications:

- Oil
- Water
- High and low pressure separators
- Oil and water interface
- Acids - hydrofluoric, hydrochloric, nitric, sulfuric, etc.
- Refined petrochemical - gasoline, propane, butane, ethylene, etc.
- Solvents - acetone, toluene, xy-

lene, naphtha

- Gas condensate
- Heat transfer fluids - diathermy, thermion and glycol
- Black, green and red liquor
- Refrigerants
- Alcohols
- Caustics
- Chlorine
- Steam condensate - boiler feedwater heater boiler drum level control
- Bitumen
- Vacuum tower bottoms
- Ammonia
- Liquid Sulphur
- Most liquid to liquid interfaces

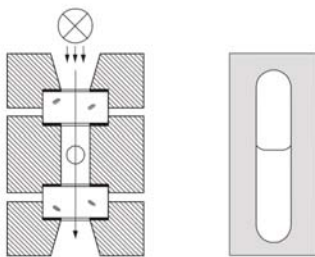


Description

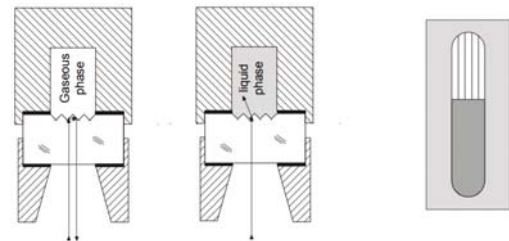
Reflex gauges have a single piece of glass, mounted on one side of the chamber. This piece of glass is flat on the outside, and has a series of prisms on the inside, facing the process fluid. When light strikes the portion of the glass covered by a liquid, the light is reflected from the back of the chamber. This area appears “black”. When light strikes the glass where no liquid is present, the prisms reflect the light directly out of the gauge. This area appears “silvery”. Reflex gauges provide an excellent way to measure clear, or difficult to see fluids. The “silvery”/black” interface is easy to see from several feet

away.

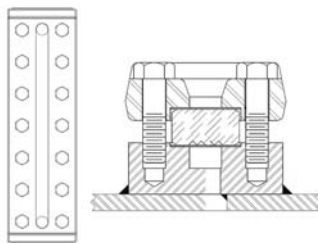
Transparent gauges have two pieces of glass on opposite sides of the chamber. Light enters the gauge from one side, and the level is viewed from the other. Transparent gauges are useful when the actual liquid characteristics need to be seen. They are also commonly used for liquid-liquid interfaces. Mica shields can be used in transparent gauges to protect the glass in steam environments. Kel-F shields should be used in corrosive environment



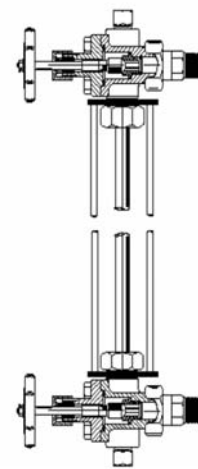
Reflex



Transparent



Welded



Tubular

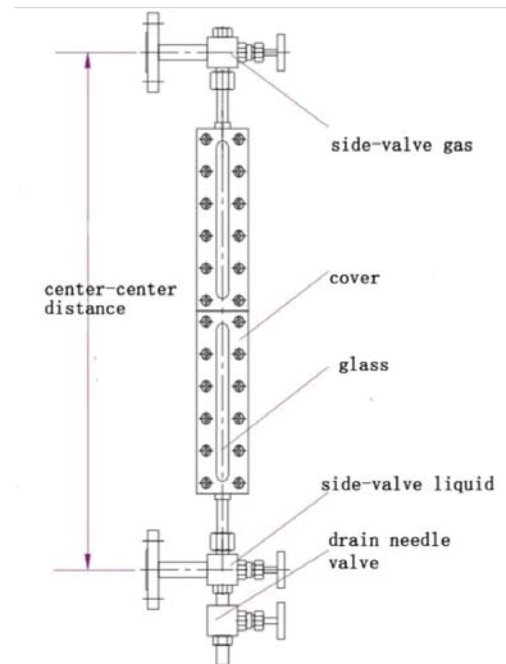


Construction

The main part of the sight glass level gauge is the chamber. A duct for the medium (or heating agent) is machined into the gauge body as well as the support surfaces for the gaskets and glasses or micas. Glass plates and/or micas are mounted with gasket and cushion and are fixed with the cover plate or pressure frames and bolts. The glass plates used for sight glass level gauges correspond to DIN 7081 and are suitable for temperatures up to 243 °C (280 °C when protected with mica) for steam, up to 300 °C for other Liquids, and in special Gauge body Contains the liquid duct, the level corresponds with the level in the vessel. Cover Clamping for Glass plate. Gasket Recessed sealing between liquid duct and ambient cases up to 400 °C. Borosilicate glass is standard quality.

For conditions above the natural mineral mica is used. The process connection normally is equipped with gauge valves.

Drain valves are used for draining the gauge and are generally mounted on the lower end of the gauge body. In Special cases a vent valve can be installed on the upper end. Cover Bolt Nut Gauge body Gasket Glass Cushion Glass plates according to DIN 7081, made of Borosilicate Glass, quartz, Aluminum silicate Cushion Mechanical protection between cover and glass Bolt / Nut Take up the forces of the pressure inside.





Specification

Connections between housing and cocks

With grinded pipes and stuffing box (view can be turned can be positioned by the customer during installation) fixed center-to-center distance with metal seal (view can be turned can be positioned during manufacture)

Wetted parts:

Standard: ASTM A105 or A105 LF2 carbon steel, ASTM A182 F316L stainless steel
Additional options: on request

Non-wetted parts:

Standard: Carbon steel, AISI 316/316L stainless steel
additional options: on request
Glasses: transparent borosilicate glasses, thermally pre-stressed and extra hard as per the DIN 7081 standard

Shut-off:

Standard: upper valve and lower valve (side/side, top/bottom)
Additional options: on request

Drain:

standard: Plug
additional options: on request

Vent:

standard: Plug (for fixed center-to-center version)
Additional options: on request

Tank connections:

Flanged:

UNI standard: PN40 DN15 / DN20 / DN25
ANSI standard: #150 / #300 ,DN ½" / ¾" / 1"
Additional options: on request

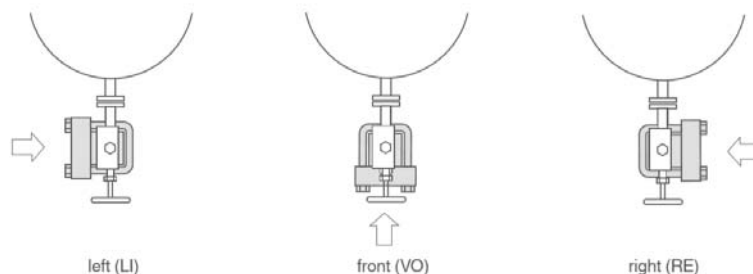
Threaded:

BSP (GAS) standard: ½"-M / ¾"-M - NPT
standard: ½"-M / ¾"-M
Weld-on: from ½" to 1" BW or SW
Option: further connections type or direct connections to the process without shut-off cocks

Shut-off cocks, drain cock and vent cock:

Cylindrical plug cocks
Globe valves
Gate Valve
Ball valves

View direction onto vessel





Accessories

Steam or electrical heat trace

Used to uniformly heat or cool process fluid

Vibration Isolator Connections

Absorbs large amounts of vibration

Eliminates signal distortion

Recommended for use on compressor and pump skids

Oversized chambers

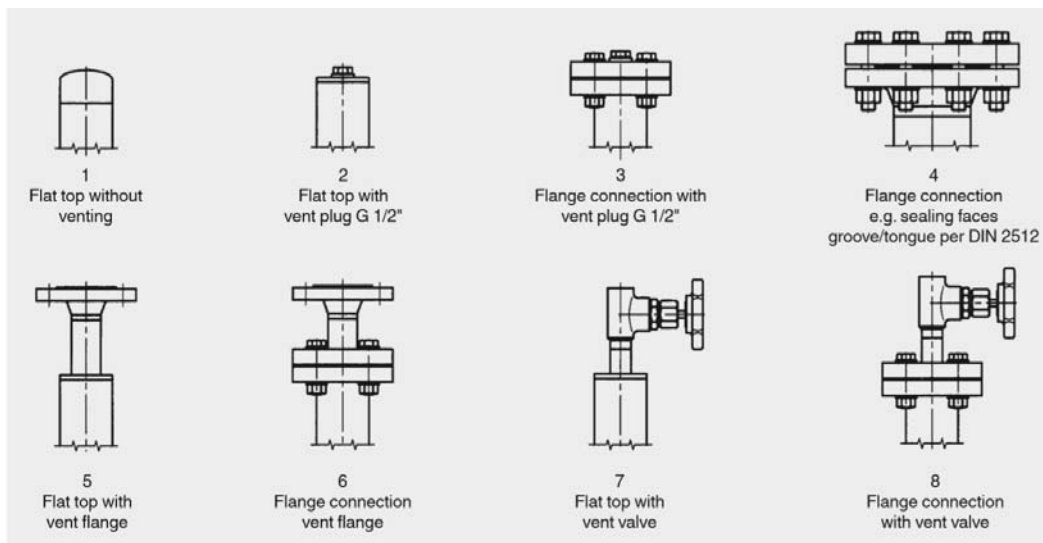
Used to uniformly heat or cool process fluid allows vapors to pass floats when a

fluid is close to vapor pressure and can be used in fluids with small suspended particles. Also used in conjunction with Teflon S coating for non-stick.

High temperature insulation

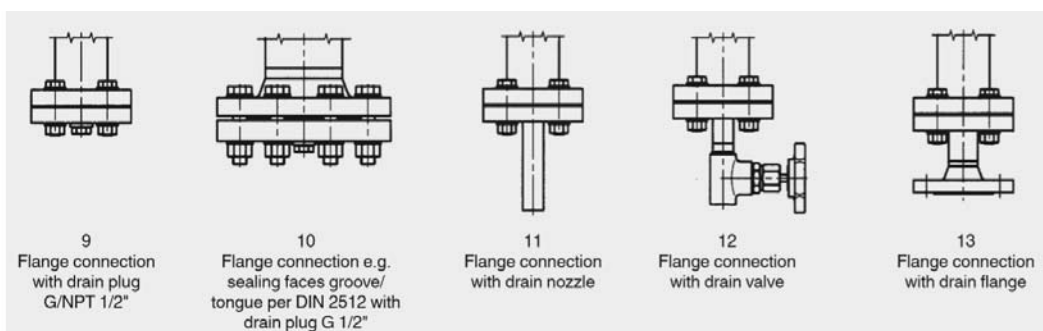
For extreme temperature environments, the ARAMAK magnetic level gauge is factory furnished/fabricated to offer high temperature insulation.

Bypass Chamber end Top



Other ends on request

Bypass Chamber end Bottom



Other ends on request



Visible length and glass

Glass type	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
	L	75	95	120	145	170	200	230	260	300	320	350	380	410	440	480	510	540	580	610	640	680
L + A	120	140	165	190	215	245	275	305	345	365	395	425	455	485	525	555	585	625	655	685	725	
Visible length SL																						
nos of segments n	1	75	95	120	145	170	200	230	260	300	320	350	380	410	440	480	510	540	580	610	640	680
	2	195	235	285	335	385	445	505	565	645	685	745	805	865	925	1005	1065	1125	1205	1265	1325	1405
	3	315	375	450	525	600	690	780	870	990	1050	1140	1230	1320	1410	1530	1620	1710	1830	1920	2010	2130
	4	435	515	615	715	815	935	1055	1175	1335	1415	1535	1655	1775	1895	2055	2175	2295	2455	2575	2695	2855
	5	555	655	780	905	1030	1180	1330	1480	1680	1780	1930	2080	2230	2380	2580	2730	2880	3080	3230	3380	3580
	6	675	795	945	1095	1245	1425	1605	1785	2025	2145	2325	2505	2685	2865	3105	3285	3465	3705	3885	4065	4305
	7	795	935	1110	1285	1460	1670	1880	2090	2370	2510	2720	2930	3140	3350	3630	3840	4050	4330	4540	4750	5030
	8	915	1075	1275	1475	1675	1915	2155	2395	2715	2875	3115	3355	3595	3835	4155	4395	4635	4955	5195	5435	5755
	9	1035	1215	1440	1665	1890	2160	2430	2700	3060	3240	3510	3780	4050	4320	4680	4950	5220	5580	5850		
	10	1155	1355	1605	1855	2105	2405	2705	3005	3405	3605	3905	4205	4505	4805	5205	5505	5805				
	11	1275	1495	1770	2045	2320	2650	2980	3310	3750	3970	4300	4630	4960	5290	5730						
	12	1395	1635	1935	2235	2535	2895	3255	3615	4095	4335	4695	5055	5415	5775							

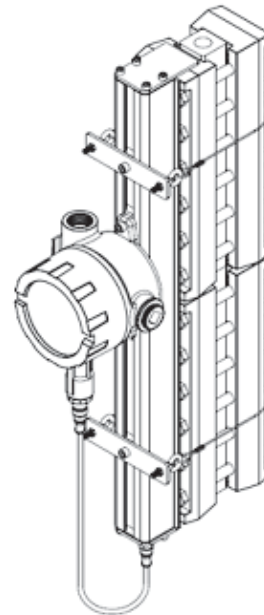
Illuminator

Applications The illuminations are designed for illuminating sight windows according to DIN 7081 and mica sight windows.

By variation segment length and number of segments as well as the optical power illumination can be adapted to most applications. Can be operated in hazardous area. **Special Features** Even bright illumination

LED, highlight-performance and long lifetime .

General Data Material housing LED, Aluminum , Acryl-Glass, **Design Data** Ex-classification II 2 GD Ex d (Ex de) IIC T2...T6 Surface temperature depends on temperature class and LED power Ambient temperature -50...+55°C **Electrical Data** Power supply 24 VDC/120 / 230 VAC power max. 40 W **Illustration with Ingress protection** IP 66.





Ordering Information

SLG	XX	XX	XXXX	XX	XXX	XX	XX	XXX	XXX	XX	XX	XX	XXX	XXX	XXX
Design															
Reflex	RF														
Transparent	TR														
Gauge Welded	GW														
Tubular	TU														
Mounting															
Side-Side	SS														
Side-Bottom	SB														
Top-Bottom	TB														
Top Mount	TM														
Special	ST														
Center to Center Distance (mm)															
..... (mm, inside Diameter)			XXX												
Process Connection:															
1/2"				11											
3/4"				12											
1"				13											
1 1/2"				14											
2"				15											
Welded				16											
Option				17											
Operating Pressure/Temperature															
XX barg/XXX C					XXXX										
Connection Rating															
ANSI Class 150						A1									
ANSI Class 300						A2									
ANSI Class 600						A3									
ANSI Class 900						A4									
ANSI Class 1500						A5									
ANSI Class 2500						A6									
PN 10						P1									
PN 16						P2									
PN 25						P3									
PN 40						P4									
PN 63						P5									
PN 100						P6									
PN 160						P7									
NPT-Female						T1									
NPT-Male						T2									
G-Male						T3									
G-Female						T4									



Ordering Information

Not Applicable (For Gauge Welded)	T5									
Option	A0									
Chamber and Wetted Part Material										
C.S A105	CS									
Galvanized Carbon Steel	GS									
316L stainless	S1									
304L stainless steel	S2									
Other	O1									
Vessel Direction										
Left	LE									
Front	FR									
Right	RI									
Other	OT									
Chamber End Top (Fig.)										
Flat Without End	FV0									
Flat with 1/2" vent Plug	FP1									
Flat with 3/4" vent Plug	FP2									
Flat with 1" vent Plug	FP3									
Flanged with 1/2" vent Plug	FV1									
Flanged with 3/4" vent Plug	FV2									
Flanged with 1" vent Plug	FV3									
High pressure Flanged	HV1									
Flat top with vent Flanged	FF1									
Flanged top with vent Flanged	FF1									
Flat Top with 1/2" vent valve	PP1									
Flat Top with 3/4" vent valve	PP2									
Flat Top with 1" vent valve	PP3									
FlangeTop with 1/2" vent valve	PF1									
Flange Top with 3/4" vent valve	PF2									
Flange Top with 1" vent valve	PF3									
Other	PP0									
Chamber End Bottom (Fig.)										
Flanged with 1/2" vent Plug	FV0									
Flanged with 3/4" vent Plug	FP1									
High pressure Flanged	FP3									
Flanged Bottom with vent Flanged	FV1									
Flange Bottom with 1/2" vent valve	FV2									
Flange Bottom with 3/4" vent valve	FV3									
Other	PP0									
Illuminator (for Transparent Type)										
Not Applicable							10			
24 VDC, LED							11			
110 VAC, LED							12			
220 VDC, LED							13			
24VDC, LED with Exd Case							14			
110 VAC, LED with Exd Case							15			



Ordering Information

220 VAC, LED with Exd Case	I6			
Other	I7			
Switch				
Not Applicable	S1			
1 conductive, 24VDC	S2			
2 conductive, 24VDC	S4			
1 conductive ,with Ex Case	E1			
2 conductive, with Ex Case	E2			
Other	O1			
Isolating Vavle				
Not Applicable	0			
Off center Carbon Steel Cock valve	1			
Conventional Carbone Steel Cock valve	2			
Off center Stainless Steel Cock valve	3			
Conventional Stainless Steel Cock valve	4			
Gate Valve Carbon Steel	5			
Gate Valve Stainless Steel	6			
Ball Valve Stainless Steel	7			
Other	8			
Certification				
Material certificates	C0			
Material NACE MR0175	C1			
Material NACE MR0103	C2			
Internal Pressure Test	C3			
100% dimensional check	C4			
Hardness survey	C5			
Impact testing @ -196 °C (-320.8 °F)	C6			
Others	C7			
Added requirements				
Manufactured to customer drawing	DW			
Heated or Coling Jacket	HJ			
Electrical Heat Trace	ET			
External Chamber	EC			
Vibration Isolator	VI			
Others	OT			



Ordering Information



Contact us

**Instrumentation
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& designer**

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