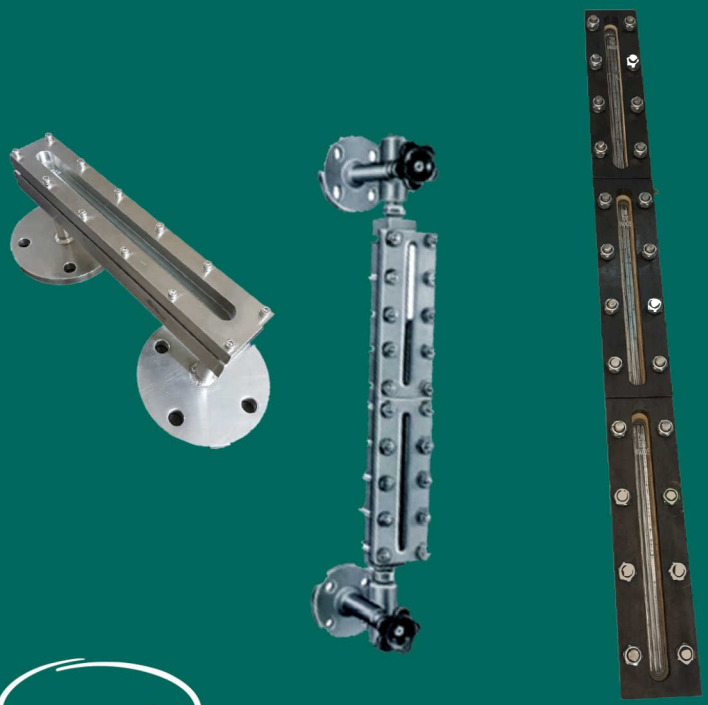
LEVEL MEASURING

WITH TRANSPARENT SIGHT GLASS



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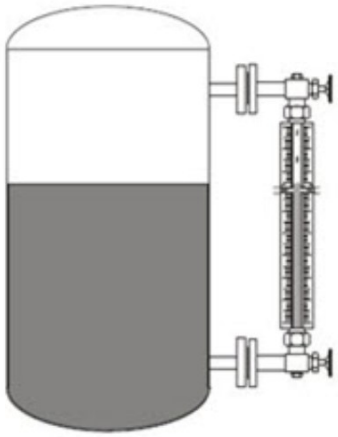
Introduction

Flat Sight Glass Level Gauges are used where direct visual observation of process fluids is required. Aramak level 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 Client's 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

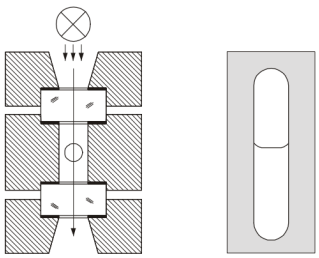
Typical applications:

- 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, xylene, 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

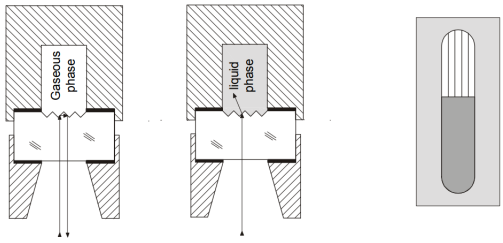
Description

Reflex sight glass level 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.

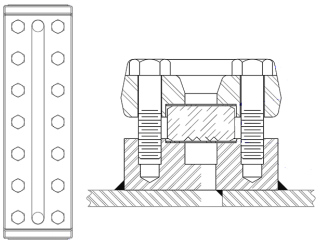
Transparent level gauges have two pieces of glass on opposite sides of the chamber. Light enters the gauge from one side, and the level is viewed from the other side. Transparent level gauges are useful when the actual liquid characteristics need to be seen. They are also commonly used for liquid-liquid 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.



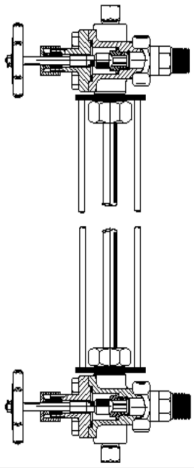
Transparent



Reflex



Welded



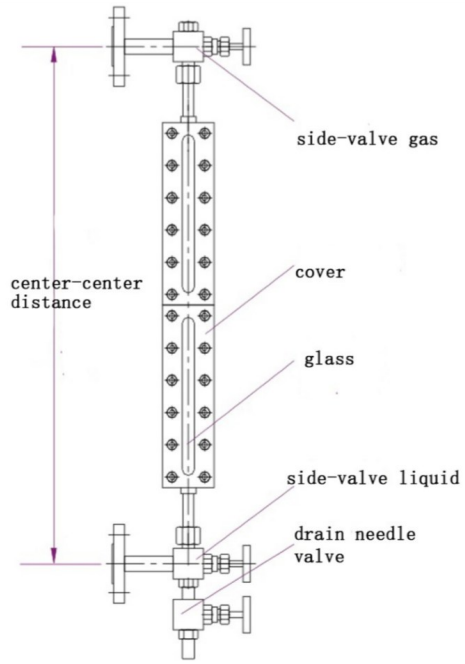
Tubular

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 cases where gauge body contains the liquid duct, the level corresponds with the level in the vessel. Borosilicate glass is standard quality. However for high temperature conditions mineral mica shield 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, are made of Borosilicate Glass, quartz, Aluminum silicate Cushion. Mechanical protection between cover and glass Bolt / Nut takes up the forces of the pressure inside.



Specification

Connections between housing and cocks

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

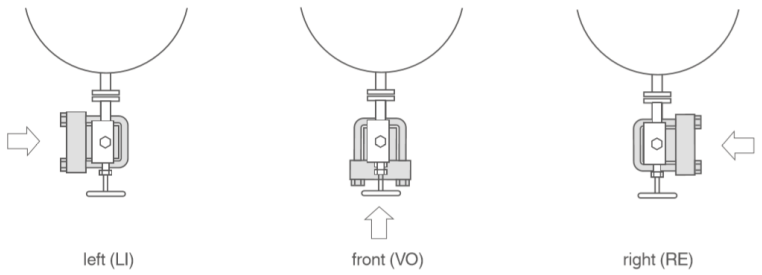
Cylindrical plug cocks

Globe valves

Gate Valve

Ball valves

View direction onto vessel



Accessories

Steam or electrical heat tracing

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

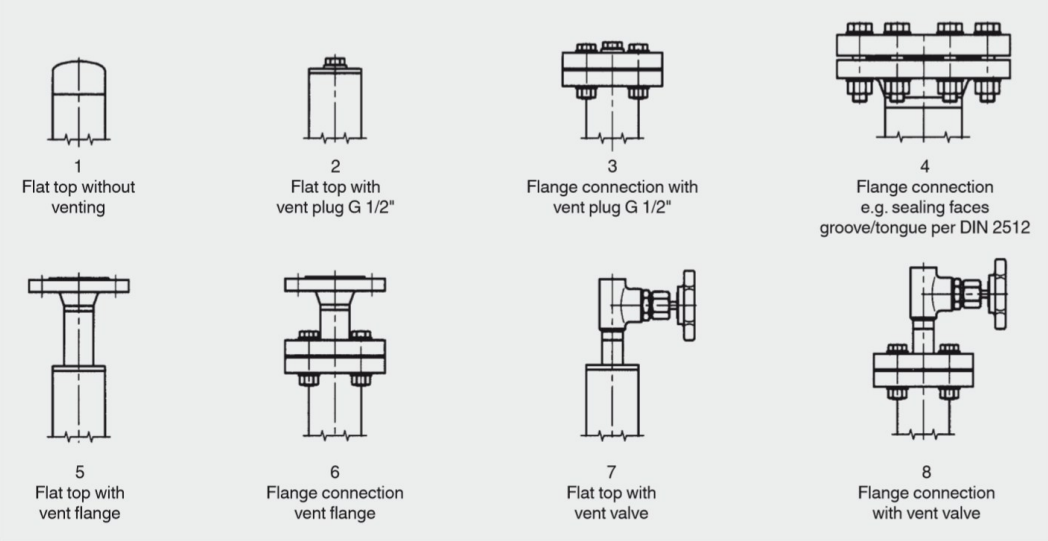
Oversized chambers

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

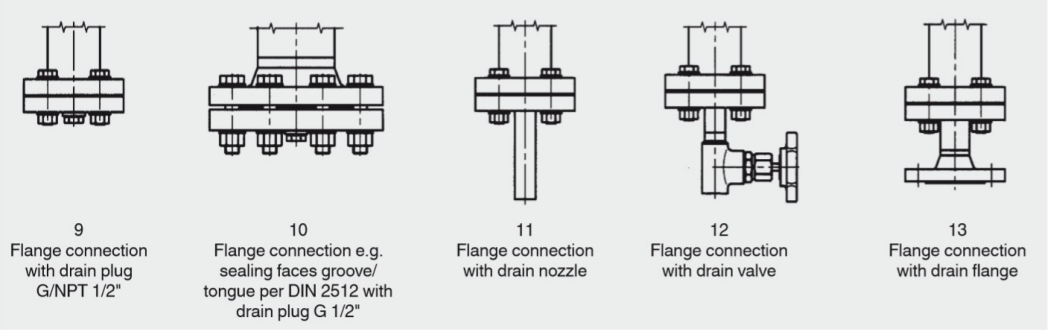
For extreme temperature environments, the ARAMAK magnetic level gauge is factory furnished/ fabricated to offer high temperature insulation.

Bypass Chamber end Top



Other ends on request

Bypass Chamber end Bottom



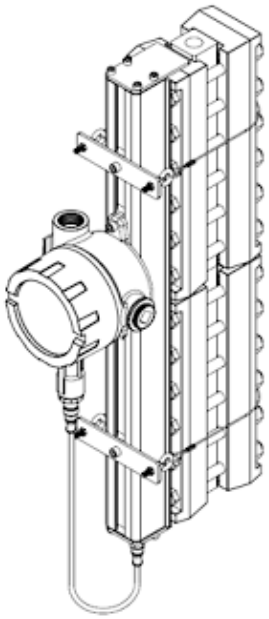
Other ends on request

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

- In certain applications the illuminators are designed for illuminating sight glass windows according to DIN 7081 and mica sight glass windows.
- Illuminators are tailor made as per the segment length and number of segments as well as the illumination optical power.
- 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 power with Ingress protection IP 66.



Ordering Code Information

Please check the order code in our website. (Click here)

Contact us

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