



## KLINGAGE Tubular Type Liquid Level Gages

**Tubular glass** forms a liquid chamber between upper and lower gage valves. It is the most simple and inexpensive liquid level gage which can be used under normal or relatively low pressures. However it is not approved by High Pressure Gas Regulation Law in JAPAN. Various types of tubes are available according to application and type of liquid. For example glass tube marked with a red line for ease of liquid level observation, fluorocarbon tubes for corrosive service acrylic tubes and PVC tubes etc

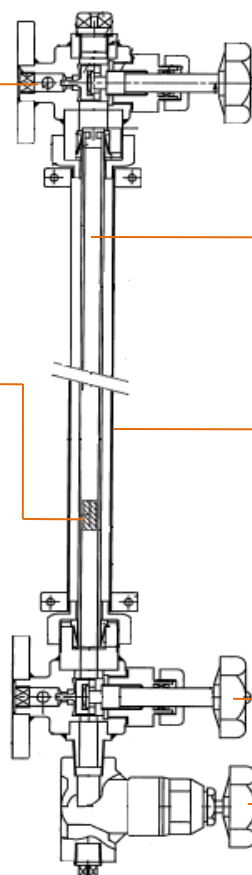


Upper Valve and Lower Valve are ball check valve, the internal ball function is to stop the liquid automatically in case the tube broken

Option float for better observation of transparent liquid



PVC Valves is excellent for chemical resistance.



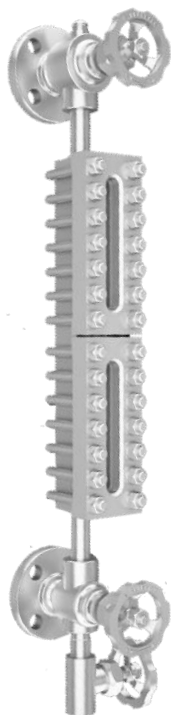
Selectable tube material suit to customer application process : Borosilicate Glass, Fluorocarbon, Acrylic and PVC

Selectable protector material is Aluminum / Stainless Steel

Valve material : Carbon Steel, Stainless Steel and PVC



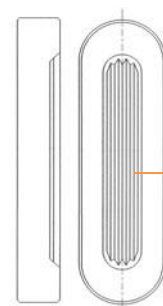
## KLINGAGE Reflex Liquid Level Gages






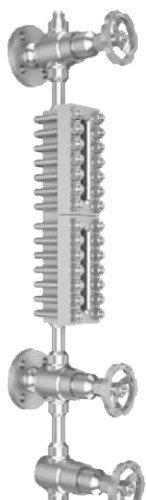
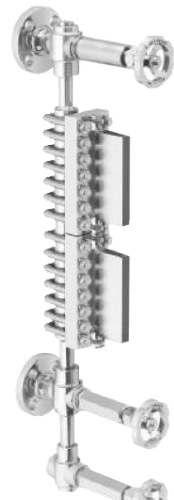
Five 90° prismatic serrations are cut into the liquid contact surface of tempered reflex glass to give a prism effect over the whole visual area. Incident light is passed through glass at the liquid phase and is reflected back to the observer at the gaseous phase by the effect of the prism. Therefore, the liquid level can be observed as an interface between the dark liquid phase and the bright gaseous phase.



Top View

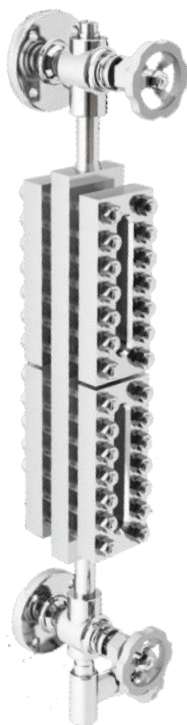


Reflex Glass

Screw Type	Union Type	Jacket Type	High Pressure Type	Non-Frosting Type
				

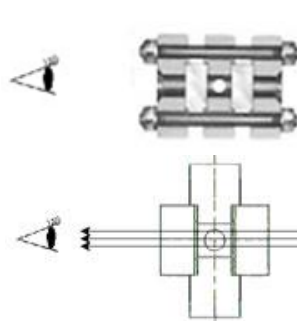


## KLINGAGE Transparent Liquid Level Gages

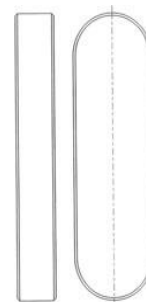


One sheet of flat tempered glass for Water Level Gages (JIS B8211) is mounted on each side of the liquid chamber and held between gage covers. The liquid level interface level and liquid color can be observed by differential transmission of light emitted from the illuminator behind the page.

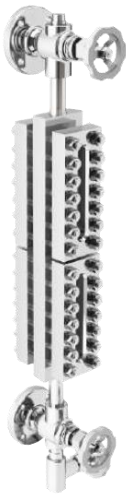
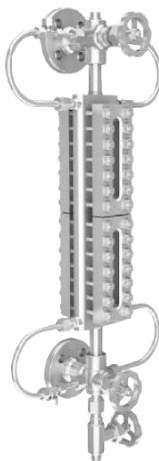
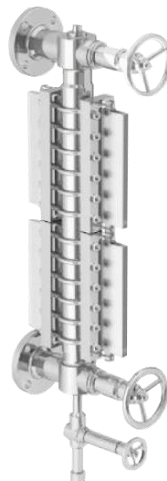

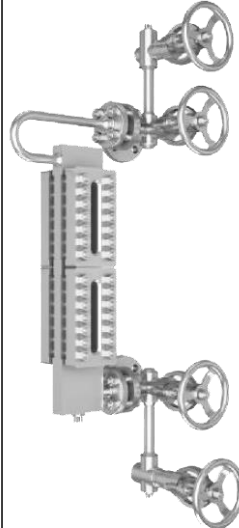
Transparent liquid level gages are applicable to almost all liquids especially for observation of interface between two liquids observation of liquid color and liquids and steam which require corrosion protection by shielding with mica or fluorocarbon resin



Top View

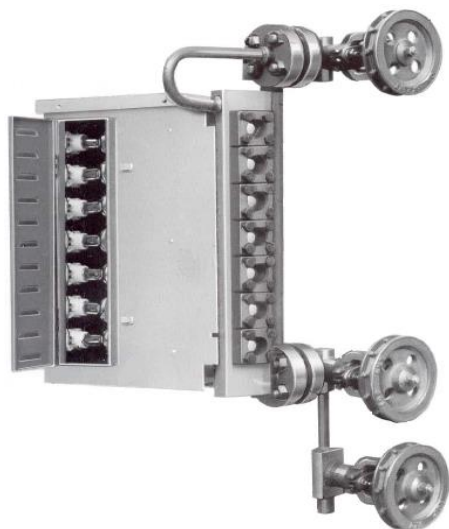


Transparent Glass

Standard Type	Jacket Type	Non-Frosting Type	Medium Pressure Type	High Pressure Type
				

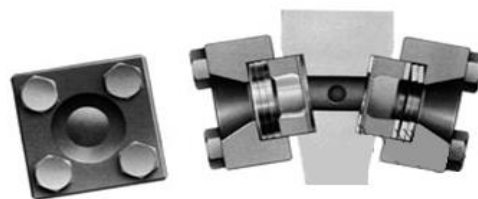


## KLINGAGE Bi-Color Level Gages for Boiler



KLINGAGE **super-high pressure** multiport (multi-window) liquid level gages equipped with KLINPORT(R) are highly they offer a high level of safety by preventing the dispersion of broken pieces if glass should be damaged.

Also, it is improving remarkably compared with the water level gage that the maintenance, too, is old and the reduction of the maintenance cost becomes possible.

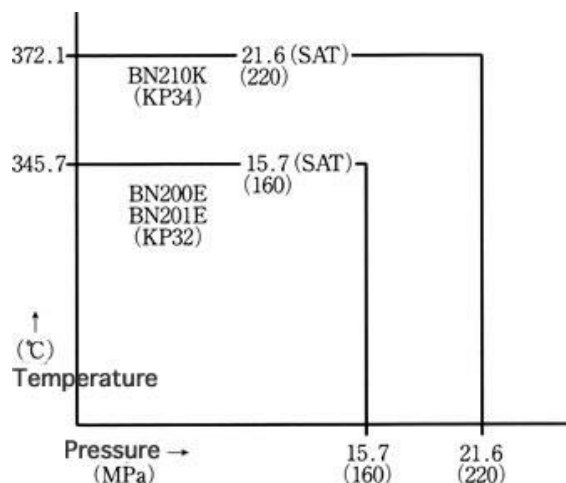


**KLING Port Assembly**

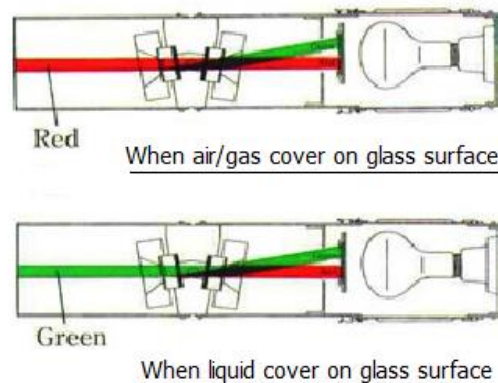
### BN200 Series Pressure Rating

Model	Max. working pressure(MPa)
B200E	15.7MPa(160kgf/cm <sup>2</sup> )
BN201E	
BN210K	21.6MPa(220kgf/cm <sup>2</sup> )

### BN200 Series Pressure/Temperature Rating



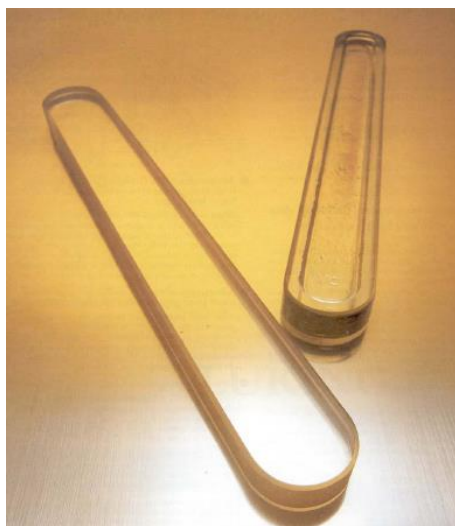
### Bi-Color Display







## LUKING-AR(R)



Glass has excellent corrosion resistance in general. However, it is extremely weak in the face of high temperature steam, hot water and alkali solutions. LUKING-AR(R) is an extremely innovative new type of glass not corroded by alkalis.

### Alkali corrosion resistance

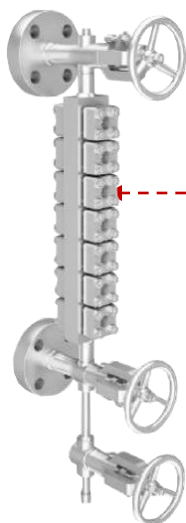
Our tests shown that LUKIN-AR glass has excellent alkali corrosion resistance and shows a reduction in alkali corrosion of **800** times in the case of alumino- silicate glass, and **1,750** times in the case of borosilicate glass

### Heat resistance

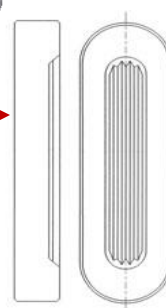
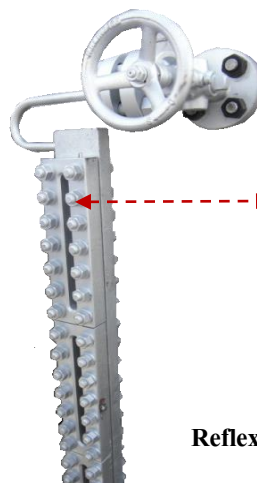
The maximum service temperature is 500°C, which means it has excellent heat resistance compared to conventional glass products.

Glass	Amount of corrosion (alkali resistance)		Comments
LUKING-AR glass	0.004 mg/cm <sup>2</sup>	0.020 mm/Year	Based on our test results
Alumino silicate	3.2 mg/cm <sup>2</sup>	21.7 mm/Year	Based on data from maker
Low expansion borosilicate (Pyrex)	7.0 mg/cm <sup>2</sup>	53.1 mm/Year	JIS B8211 Standard under 7.0 mg/cm <sup>2</sup>
Borosilicate	7.0 mg/cm <sup>2</sup>	53.1 mm/Year	

Test condition : Fluid N2OH 300mg/l, 50kgf/cm<sup>2</sup>, 262°C x 5 hours (corrosion resistance test using JIS B8211 autoclave)



Kling Port with LUKING-AR



Reflex Type with LUKING-AR

**\*\*\* 2 Years No Leak Guaranty**



## Teflon® (PFA) Coat Glass -KLEARCOAT® Glass

**KLEARCOAT® Glass** is the observing material which NIHON KLINGAGE CO.,LTD.(N.K.G) was first developed in the world. It is produced by coating glass surface with TEFLON® PFA film by a special technique

### ■ Superior chemical resistance

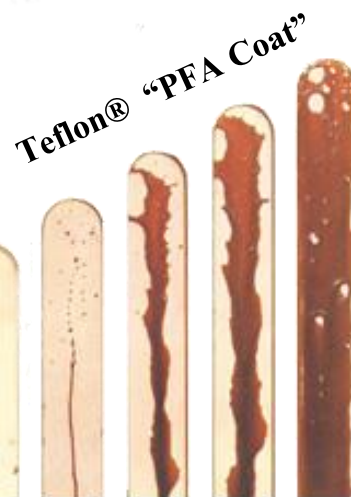
Coated with TEFLON® PFA film, KLEARCOAT® Glass has outstanding resistance to those chemicals that corrode glass; caustic soda, hydrofluoric acid. (the only exception being molten alkali metals)

### ■ Remarkable High Temperature Resistance

TEFLON® PFA has a better high temperature resistance than any other fluoroplastics. KLEARCOAT® GLASS can be continuously used at the temperature of 260°C. Heat cycle test (200°C to 10°C) shows no observable signs such as peeling.

### ■ Superior non-sticking property

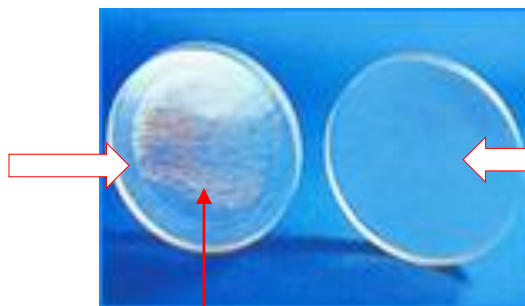
The surface coated with TEFLON® PFA film repels water, oil and almost all sticky substances. If such a substance should stick to it, it can be easily washed off.



It pickled KLEARCOAT glass into the Snuff oil.

## Corrosion Resistance Comparison

Conventional Glass  
after corrosion test



Some corrosion happened

KLEARCOAT® Glass  
after corrosion test



## KLINGAGE MG (Magnet Float) Type Level Gage

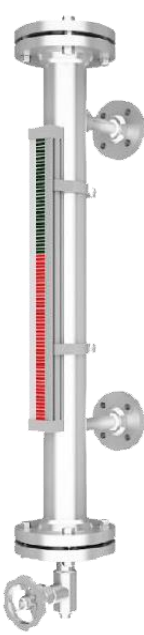




NKG MG series have three components; a float chamber, a magnetic float and an external indicator. As the Float moves with the changes in the liquid level, the magnetic attraction between the Indicator and Float will ensure that the Indicator will track the position of the float exactly and thus, the liquid level is measured precisely.

### KLINGAGE The Magnetic Float

The magnetic float, originally designed according to pressure, temperature, density and liquid type, is manufactured by our precision machining and experienced welding. Especially, the density is important to determine the float length. The float contains patented magnetic assembly that generates a sharp magnetic circuit



Standard Model	High Pressure/Temp. Model	Low Temp. Model
		



## KLINGAGE MG (Magnet Float) Type Level Gage (continue)

### Special Float for High Pressure & High Temp. Boiler

With NKG technology, their special float for high pressure and high temperature was made, shorter and lighter than the conventional float

Shorter with Titanium Alloy float 155 mm. Max. (SG. 0.7)

The advantage of shorter float is;

- Less chance of clogging
- Faster responding to level changing
- Less error when water density changed



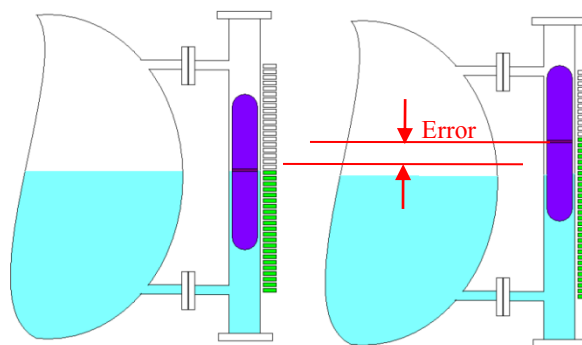
NKG Float



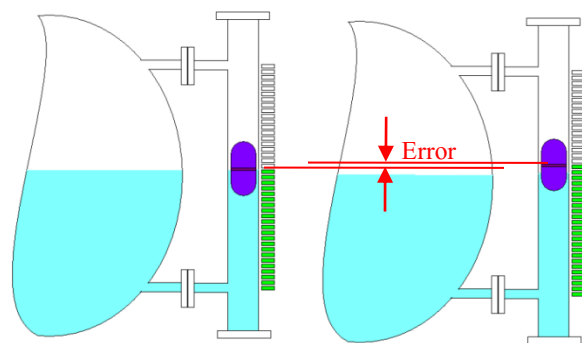
NKG Float

Conventional Float

### Error from density change comparison



With Conventional Float



With NKG Float





## KLINGAGE KLINPORT(Metal-to-glass Sealed)

Main purpose is to monitor the fluid flow present/absent in pipe line or internal tank/vessel fluid observing, Nihon Klingage can provide variety sizes, types which can adapt to customer application.



**Type AX** Thread setting type  
KLINPORT® economic model  
easy installation



**Type KPF** Flange setting type  
KLINPORT® cross glass



**Type KP-360** Weld On type  
KLINPORT



**Type KPT, KPS** Thread setting  
type KLINPORT® with  
Octagon or Hexagon shape



**Type KPT-2** Thread setting  
type KLINPORT® cross glass



**Type KP-363** Weld On type  
KLINPORT



**Balanced Flapper** type



**Ball Floating** type



**Side type with Oval**  
sight glasses