



NKG liquid level gages  
ensure reliable measurement technologies and safety.

# NIHON KLINGAGE

COMPREHENSIVE PRODUCT CATALOG

## KLINGAGE LEVEL GAGE

DIRECT READING LIQUID LEVEL GAGE  
BOILER WATER LEVEL GAGE  
MAGNET FLOAT TYPE LEVEL GAGE  
KLEARCOAT GLASS  
KLINPORT

ISO 9001



### Contact Information

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## NIHON KLINGAGE

A registered manufacturer of high pressure gas-related equipment,  
qualified by Japan Government.

Distributor





Since 1953,  
our company has specialized in the manufacture and  
the development of Liquid Level Gages.

**Over 60 years, KLINGAGE is known as a company providing products  
with high quality, safety and reliability.**

KLINGAGE has been well recognized world-wide.

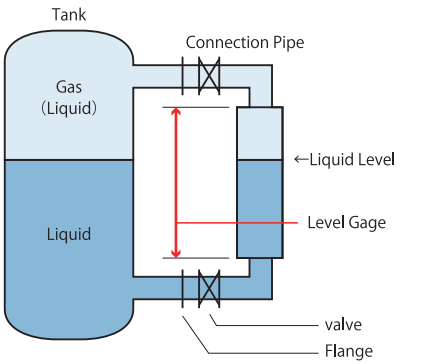
For industries all over the world  
A registered manufacturer of high pressure gas-related equipment, qualified by Japan Government.

1-1 Definition

The Level Gage refers to the instrument for measuring the boundary surface among the flowable matters. The boundary surface among fluid materials is referred to as "Level".

1-2 Classification

Glass Type (Direct Reading Type), Magnetic Type (Indirection Type), Displacer Type, Differential pressure Type, Electrostatic capacity Type, Ultrasonic Type, Float Type, and so on. NIHON KLINGAGE manufactures Glass Type and Magnetic Float Type.



Principle diagram of Glass gage level meter

1-3 Diagram of the principle of glass gage level meter

The fluid level in the vessel is equal to the fluid level of the tube connected with communicating pipe. Through the transparent glass, the fluid level in the tube is monitored directly.

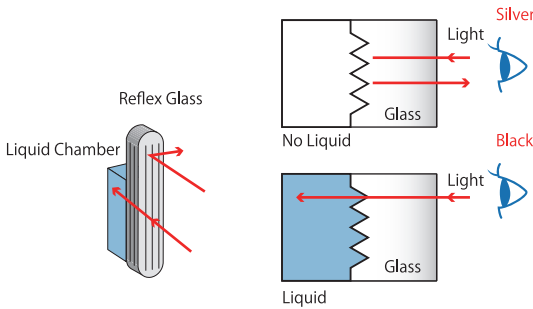
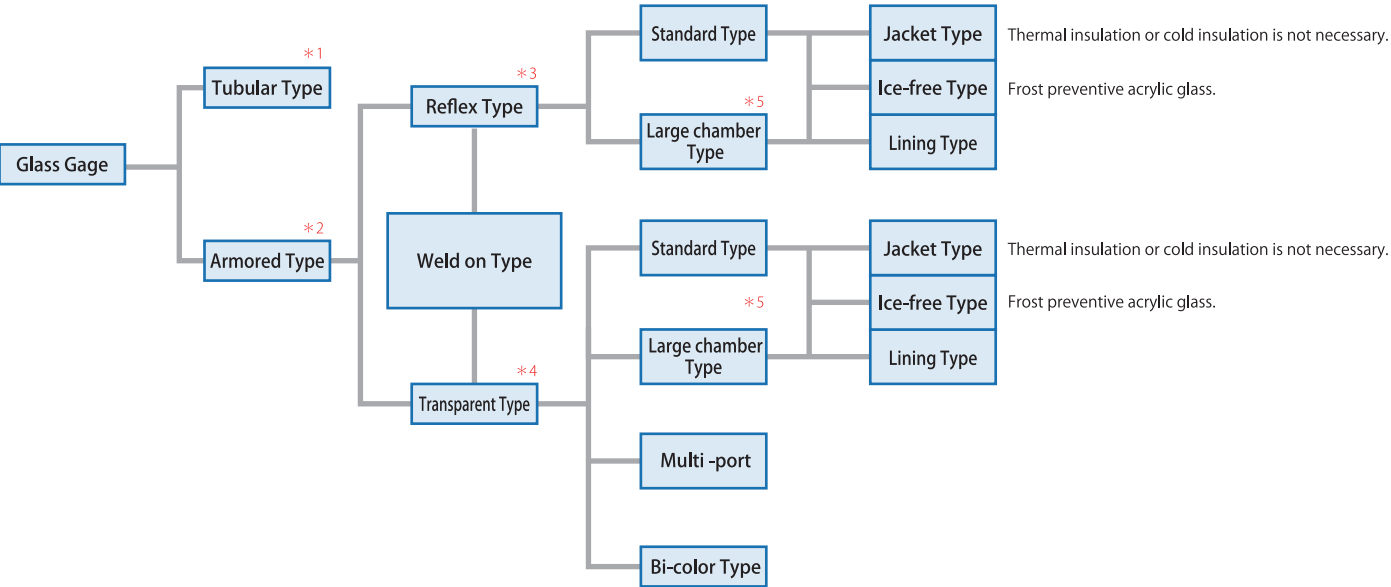


Diagram of the principle and structure of reflex type

1-4 Classification of Glass Gages



\* 1) Transparent resin or glass tube is used to see the liquid.  
\* 2) Monitor the level through plate glass installed into metal frame.  
\* 3) Reflex type is ideal for clean total level indication applications for refining, petrochemical and general use applications. The reflex prisms are molded and polished to provide a crisp black silver bi-color indication of the fluid level. As light passes into the reflex glass, if there is fluid present, the light continues through the glass and impacts the back of the level gage, providing a black color for fluid level regardless of the actual color properties of the process fluid. If fluid is not present, the light is reflected back towards the user providing a shiny silver.  
\* 4) Transparent type is constructed with two pieces of flat polished glass assembled on opposite sides of the level gage chamber. It is easy to view the fluid properties, such as color. The use of an illuminator is recommended on a transparent gage.  
\* 5) Suitable for low boiling point fluid, high viscosity fluid and coagulation easy liquid application.

1-5 Principle of Magnetic Level Gages

Magnetic level gauges include a “floatable” device that can float both in high and low density fluids. The float moves with level at the same time. The indicator consists of magnetic flappers and the magnetic force of the float inside the chamber rotates flappers on indicator.

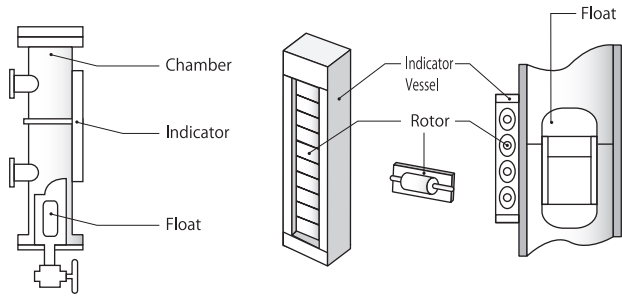
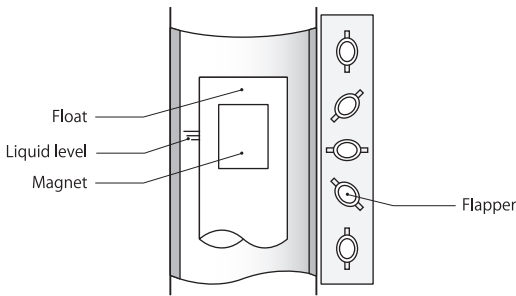
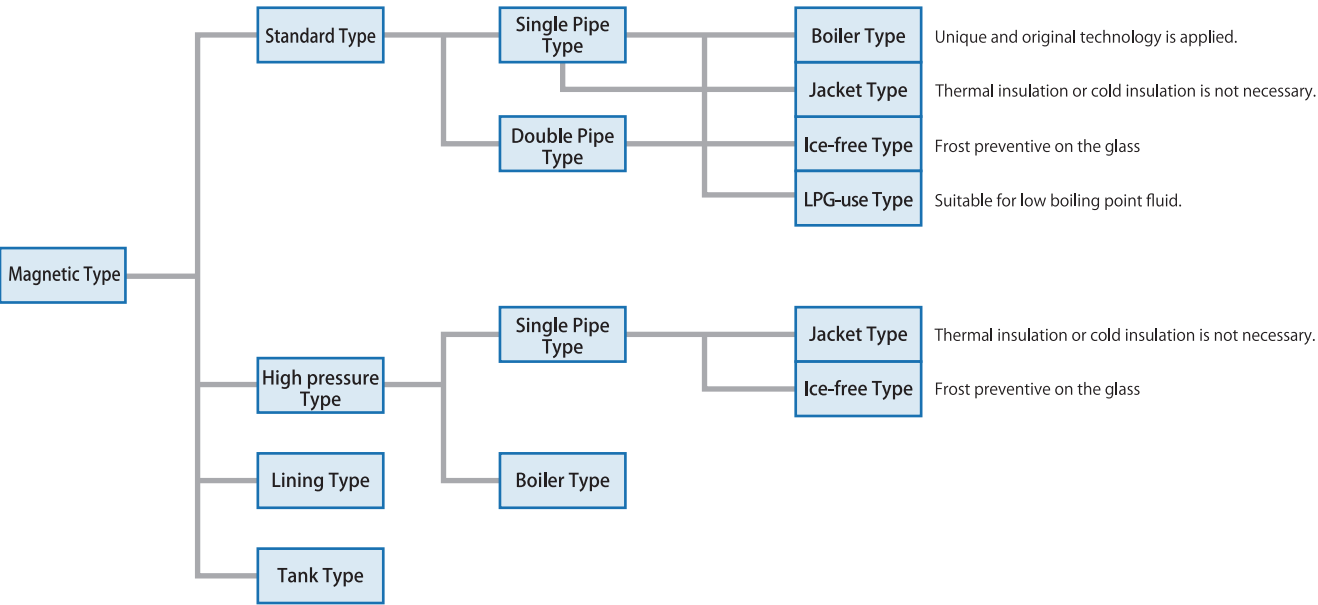


Diagram of magnetic level gage

1-6 Type of Magnetic Level Gages



Working principle

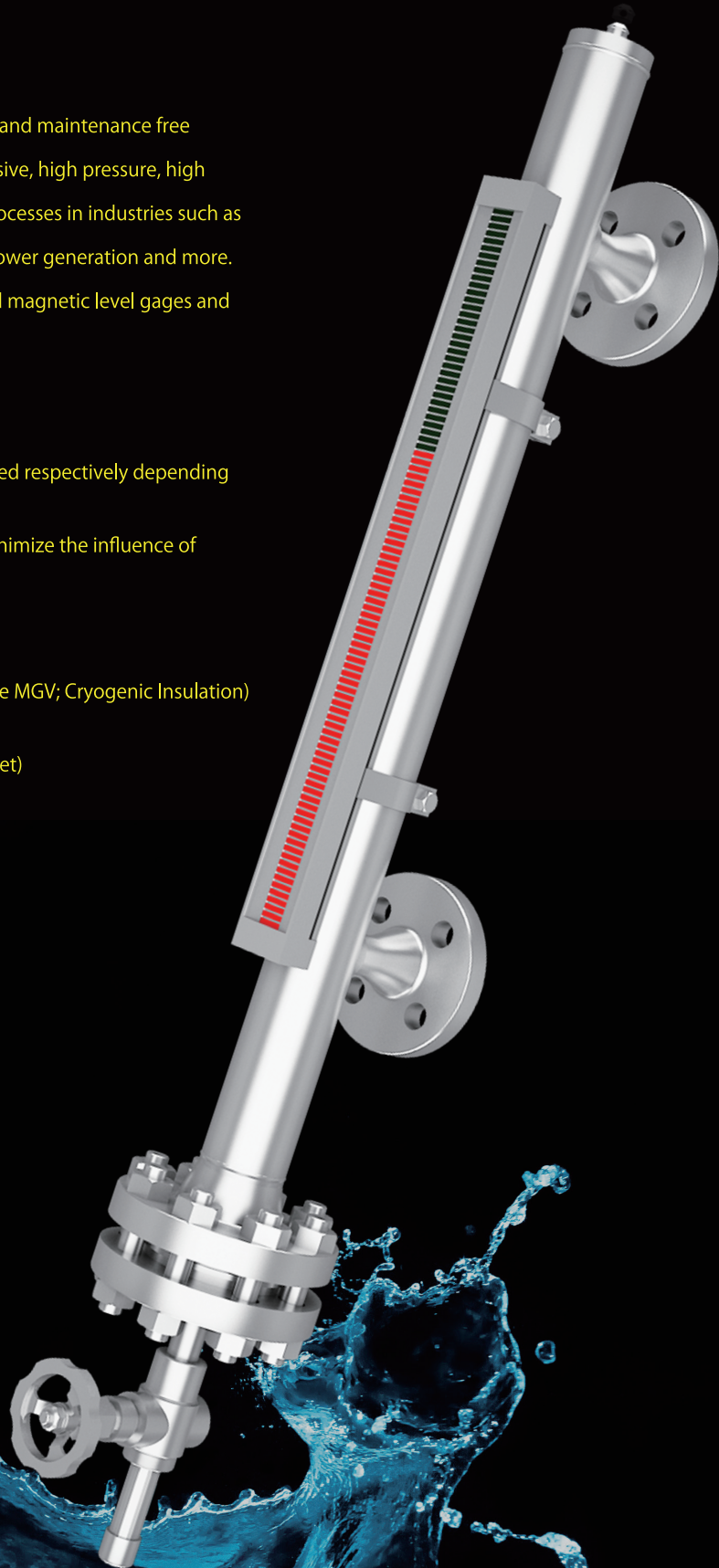


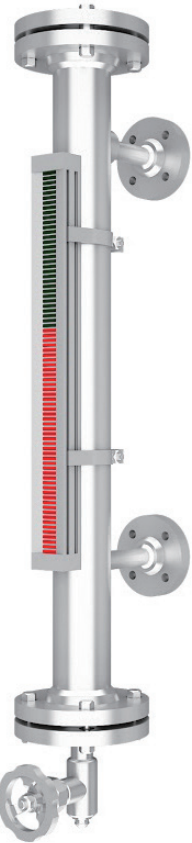
## Magnetic Level Gages

Our Magnetic Level Gages provide safe, reliable and maintenance free solutions to liquid level detection of toxic, corrosive, high pressure, high temperature and extremely low temperature processes in industries such as oil and gas, refinery, chemical, petrochemical, power generation and more. Since 1955, NIHON KLINGAGE has manufactured magnetic level gages and provided the products overseas.

### Features

- Floats are designed individually and are optimized respectively depending on a specific work condition.
- The float length is designed minimal so as to minimize the influence of gravity and to provide stable measurement.
- Applicable for various conditions.
- \*High Pressure(Type MGS)
- \*Low Temperature(Type MGE; Non-frosting/Type MGV; Cryogenic Insulation)
- \*Low Boiling Point(Type MGB)
- \*Temperature Fluctuation(Type MGJ; Outer Jacket)
- \*Corrosive Liquid(MGN; Lining)



| Type MGS(Standard)                                                                                                                                                       | Type MGJ for Jacket Type                                                                                                                                              | Type MGE for Low Temperature                                                                                                                                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Flange : JIS, ANSI, ASME, JPI etc.<br>Material : Stainless Steel, Titanium, Hastelloy, PVC etc.<br>Max. Operating Pressure: 19.7MPa<br>Max.Operating Temperature : 400°C | Flange : JIS, ANSI, ASME, JPI etc.<br>Material : Stainless Steel; SUS304, 304L, 316, 316L, etc.<br>Max.Operating Pressure:5.0MPa<br>Max.Operating Temperature : 400°C | Flange : JIS, ANSI, ASME, JPI etc.<br>Material : Stainless Steel, Titanium, Hastelloy, etc.<br>Max. Operating Pressure: 19.7MPa<br>Min.Operating Temperature : -196°C |
|                                                                                      |                                                                                   |                                                                                   |

#### Options



Reed Switch

Max. Insulating DC-W : 250V  
 Liquid Temperature : -100 ~ 330°C  
 Max. Load : 10W  
 Max. Current : 0.5A  
 Wiring Tube Diameter : G1/2



Level Detector

Power : DC24V±5%  
 Output : DC4 ~ 20mA  
 Liquid Temperature : -50 ~ 230°C  
 Wiring Tube Diameter : G1/2



Magnetostrictive Level Transmitter

Power : DC24V±5%  
 Output : DC4 ~ 20mA with HART  
 Accuracy : ±1%F.S.  
 Liquid Temperature : -20 ~ 100°C



## Reflex Level Gages

Prismatic serrations of the whole visual area on the liquid contact surface of reflex glass gives a prismatic effect, providing a crisp black and silver bi-color indication of the fluid level.

### Features

Since no mica plate can be attached on the surface of prismatic serration, the Reflex types are not suitable for the exposure to alkaline liquid.

LUKING-AR, our original alkaline resistant glass, is made for high pressure boiler applications.

The technology has improved safety issue and Cost of Ownership.

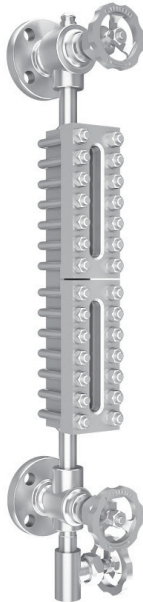


### Reflex Type Level Gages

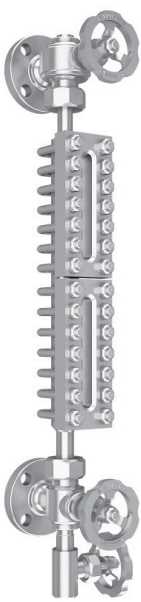
#### Standard Type

Flange : JIS, ANSI, ASME etc.  
Material : Carbon Steel, Stainless Steel ; SUS304,304L,316,316L etc  
Max. Operating Pressure : 37MPa  
Max.Operating Temperature : 400℃

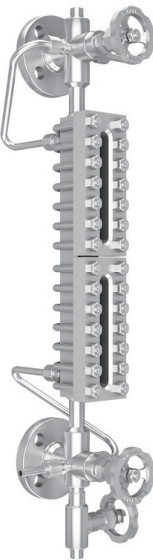
— Screw Connection Type —



— Union Type —



— Jacket Type —



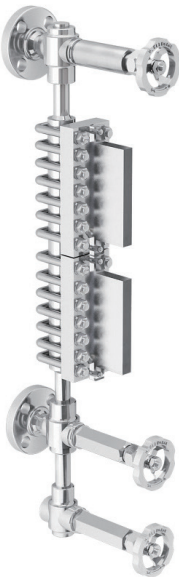
#### High Pressure Type

Flange : JIS, ANSI, ASME etc.  
Material : Carbon Steel, Stainless Steel ; SUS304,304L,316,316L etc  
Max. Operating Pressure : 37MPa  
Min.Operating Temperature : -196℃



#### Non-Frosting Type

Flange : JIS, ANSI, ASME etc.  
Material : Carbon Steel, Stainless Steel ; SUS304,304L,316,316L etc  
Max. Operating Pressure : 25MPa  
Min.Operating Temperature : -196℃



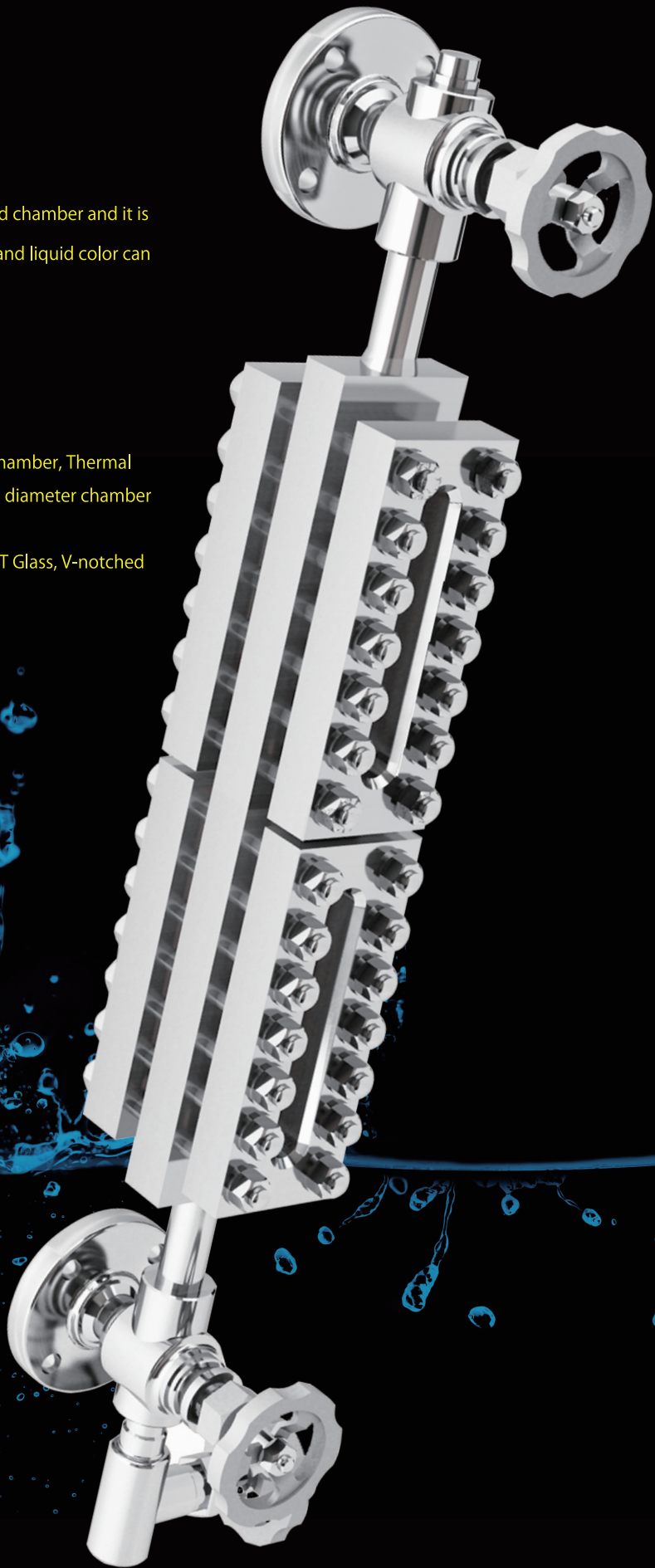


## Transparent Level Gages

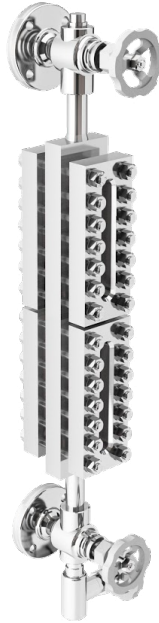
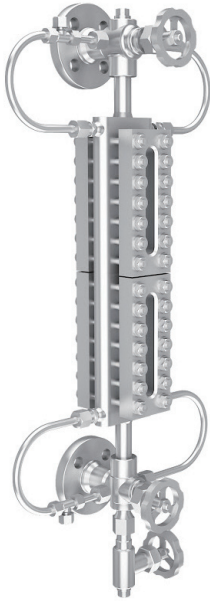
Flat tempered glass is mounted on each side of the liquid chamber and it is held between gage covers. Liquid level, boundary level and liquid color can be observed.

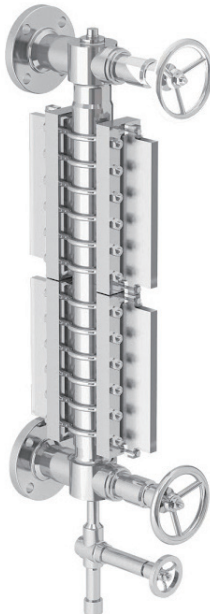
### Features

- \*Applicable for almost all kinds of liquid.
- \*Various options : Ultraviolet cut plate, Light-shielding chamber, Thermal jacket, Non- frosting window for low temperature, Large diameter chamber for high viscosity
- \*Various glass options : Teflon Coated Glass –KLEARCOAT Glass, V-notched Color Glass



#### Transparent Type Level Gages

| Standard Type                                                                                                                                                                                    | Jacket Type                                                                                                                                                                                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Flange : JIS, ANSI, ASME etc.<br>Material : Carbon Steel, Stainless Steel (SUS304,304L,316,316L),<br>Other special metals<br>Max. Operating Pressure : 23MPa<br>Max.Operating Temperature : 400℃ | Flange : JIS, ANSI, ASME etc.<br>Material : Carbon Steel, Stainless Steel (SUS304,304L,316,316L),<br>Other special metals<br>Max. Operating Pressure : 23MPa<br>Max.Operating Temperature : 400℃ |
|                                                                                                              |                                                                                                              |

| Ultra-High Pressure Type                                                                                                                                                | Non-Frosting Type                                                                                                                                                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Flange : JIS, ANSI, ASME etc.<br>Material : Carbon Steel, Stainless Steel (SUS304,304L,316,316L)<br>Max. Operating Pressure : 37MPa<br>Max.Operating Temperature : 400℃ | Flange : JIS, ANSI, ASME etc.<br>Material : Carbon Steel, Stainless Steel(SUS304,304L,316,316L)<br>Max. Operating Pressure:6.0MPa<br>Min.Operating Temperature : -196℃ |
|                                                                                    |                                                                                   |

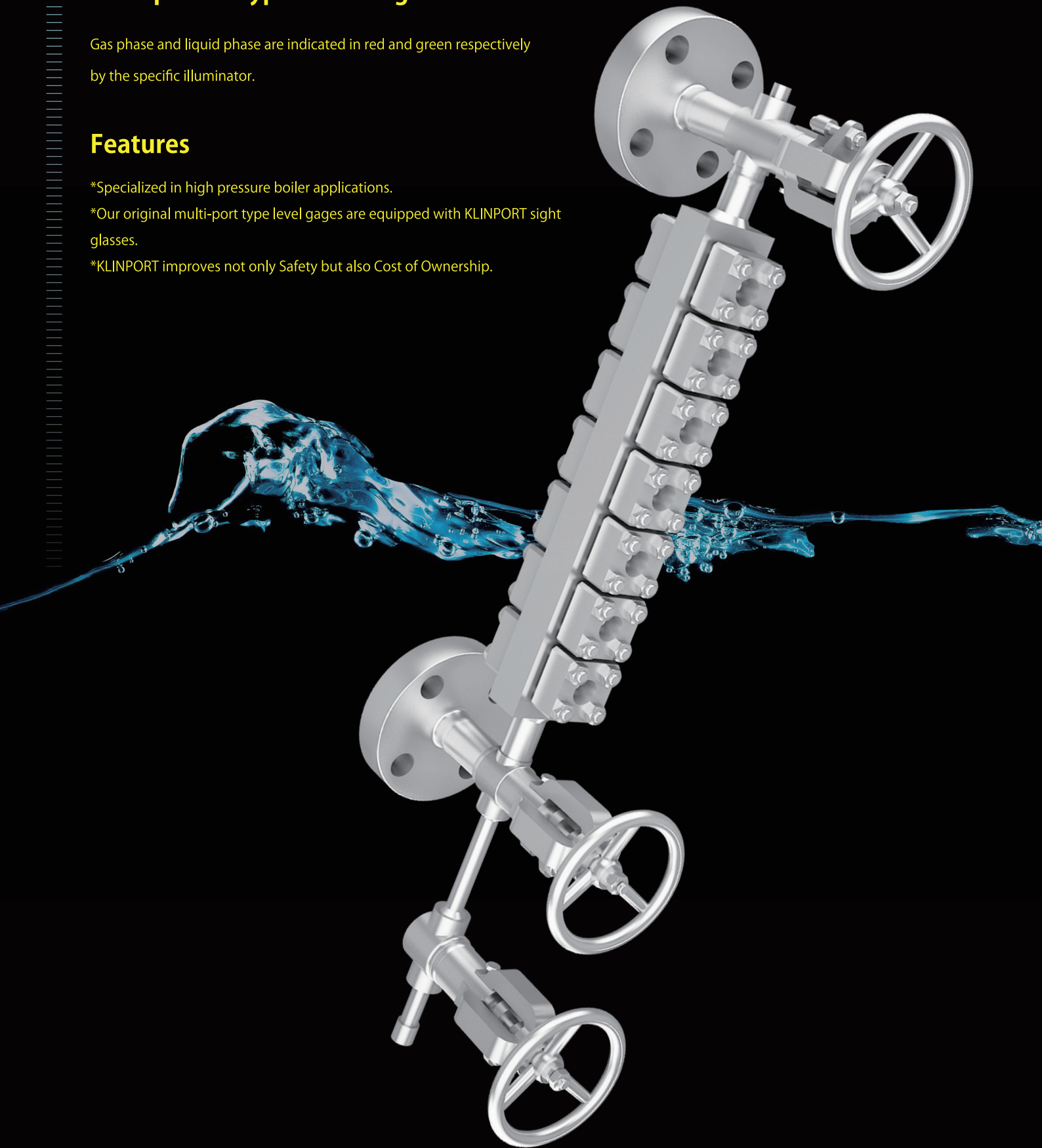


## Transparent Type Level Gages for boiler

Gas phase and liquid phase are indicated in red and green respectively by the specific illuminator.

### Features

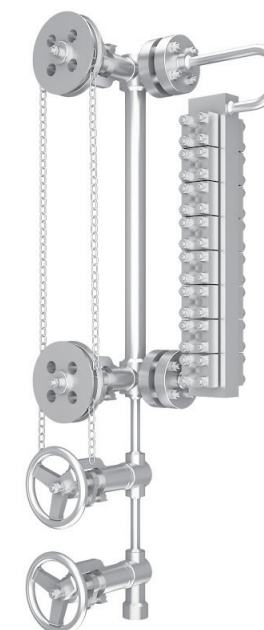
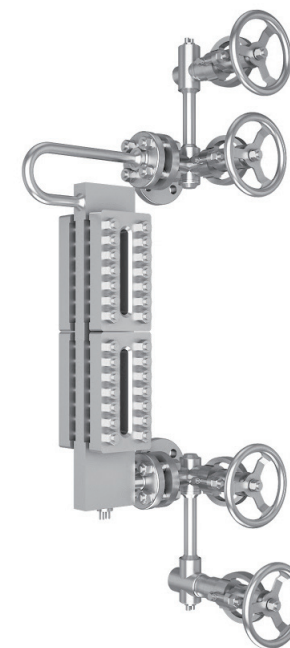
- \*Specialized in high pressure boiler applications.
- \*Our original multi-port type level gages are equipped with KLINPORT sight glasses.
- \*KLINPORT improves not only Safety but also Cost of Ownership.



### Transparent Type Level Gages for boiler

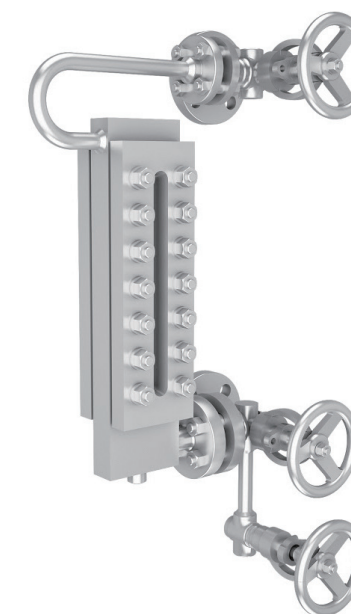
#### High Pressure Type

Flange : JIS, ANSI, ASME, JPI etc.  
Material : Carbon Steel, Stainless Steel (SUS304,316)  
Max. Operating Pressure : 22MPa  
Max.Operating Temperature : 372.1°C



#### Middle Pressure Type

Flange : JIS, ANSI, ASME, JPI etc.  
Material : Carbon Steel, Stainless Steel (SUS304,316)  
Max. Operating Pressure : 5.5MPa  
Max. Operating Temperature: 270°C



### Tubular Type

A glass tube is used between lower and upper gage valves. This is the most inexpensive liquid level gage used under limited conditions (i.e. normal/relatively low pressure).

Tubular Material: Glass, Acrylic, PVC, PFA  
Max. Operating Pressure: 1MPa (Glass)/0.3MPa (Other material)

### KLINPORT

KLINPORT is a trade name of a type of sight glasses invented by NIHON KLINGAGE. Glass components and metal components are tightly together by fusion bonding technique that creates an efficient air-tight environment.



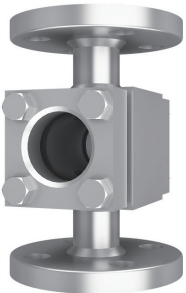
| Types               | Materials                            | Operating Pressure (MPa) |
|---------------------|--------------------------------------|--------------------------|
| Standard            | Carbon Steel, Stainless Steel        | AP ~ 2.0 or Vac ~ 2.0    |
| High Pressure       | Carbon Steel, Stainless Steel        | 17.3                     |
| Ultra-high Pressure | Stainless Steel, Special Alloy Steel | 49<br>15.7@345.7℃        |
| High Temperature    | Special Alloy Steel                  | 21.6@372.1℃              |

### Sight Glass

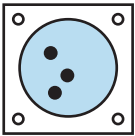
Applicable under the high temperature/pressure condition. Upon request of a customer, Sight Glass can be designed.

Material : Carbon Steel, Stainless Steel (SUS304,304L,316,316L), Other special metals  
Max Operating Pressure: 49.0MPa  
Max.Operating Temperature : 260℃

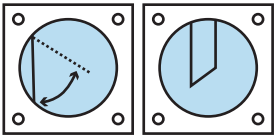
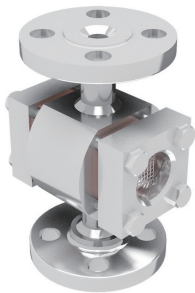
#### — Cross Type —



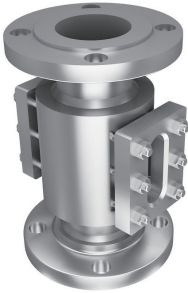
KLEARCOAT - Teflon (PFA) Coat Glass



#### — Flapper/Nozzle Type —



#### — Rectangular Window Type —



### KLEARCOAT - Teflon (PFA) Coat Glass

KLEARCOAT, a glass coated with Teflon film in order to strengthen the material, is applied to glass gages and sight glasses.

Benefit : Resistance to chemical reaction and corrosion  
Our unique coating technologies including Teflon film coating provide remarkable resistance against chemical reaction and corrosion.



### LUKING-AR Alkaline Resistant Glass

Though the Glass has high corrosion resistance, it can be damaged by alkaline solution. High alkaline component and high temperature increase the vulnerability of the Glass. LUKING-AR has excellent resistance to high alkaline/high temperature environment so that it enables the reflex type gage to adapt to the high pressure boiler application.

**① Alkaline resistance**  
LUKING-AR is 800 times and 1,750 times durable than aluminosilicate glass and borosilicate glass respectively.

**② Mechanical strength**  
Bending strength : 270N/mm2(27kgf/mm2).

**③ Temperature resistance**  
Maximum service temperature : 500℃.

**④ Cost of Ownership**  
No Mica plate, No frequent maintenance.

