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

JAB CM007
ISO 9001 95QR·015

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NIHON KLINGAGE

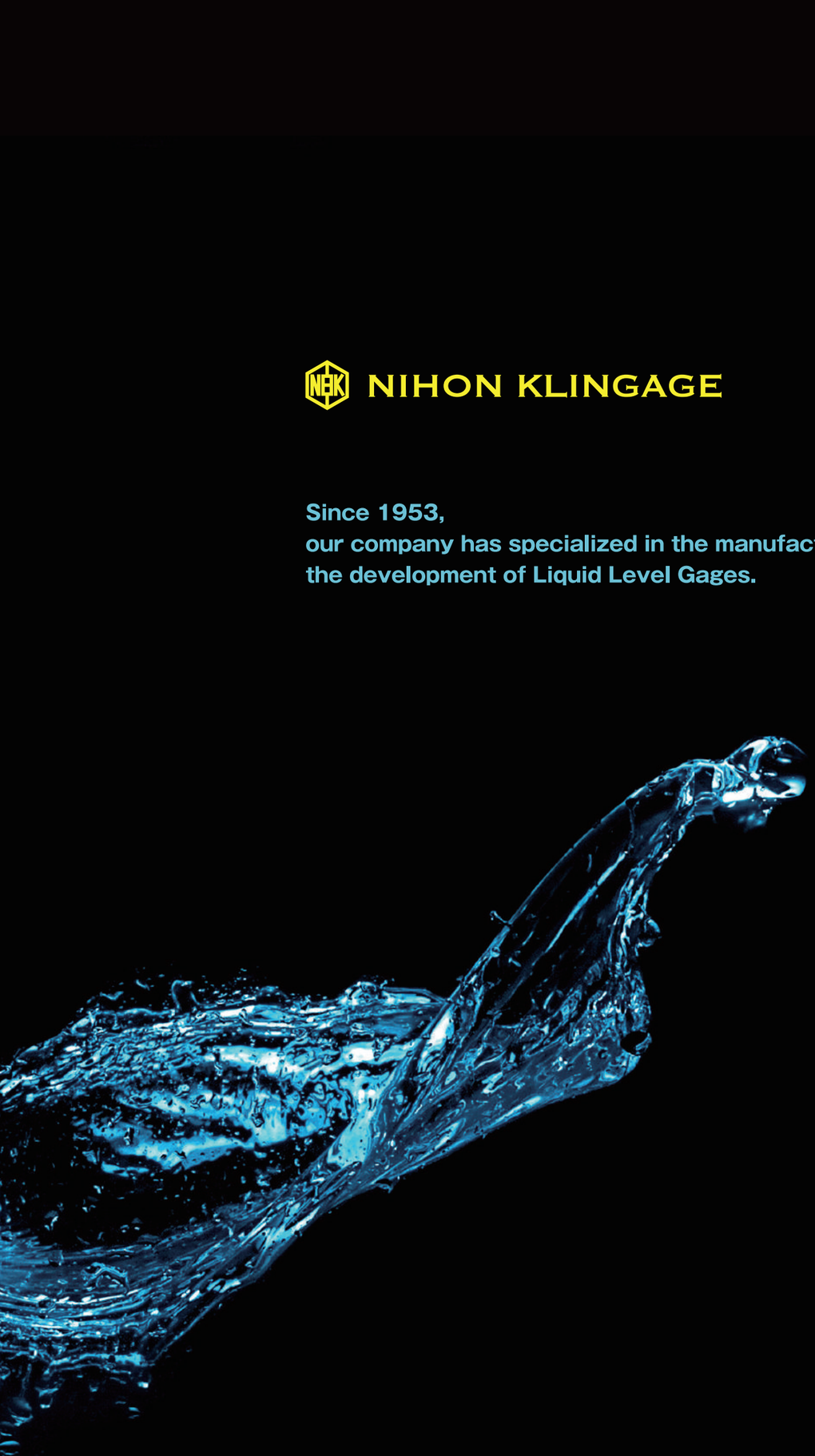
A registered manufacturer of high pressure gas-related equipment, qualified by Japan Government.

Distributor

CATALOG NO. C001J ◇4

NIHON KLINGAGE

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.

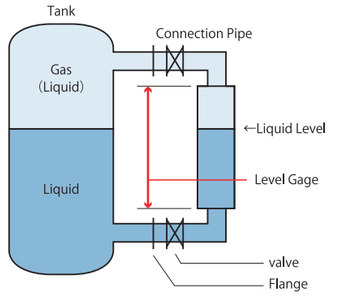
For Industries all over the world
A registered manufacturer of high pressure gas-related equipment, qulalified by Japan Government.

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.

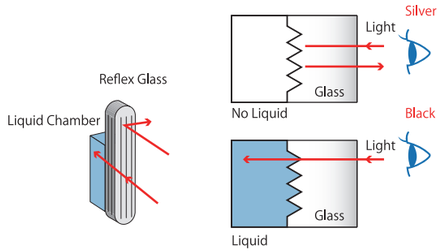
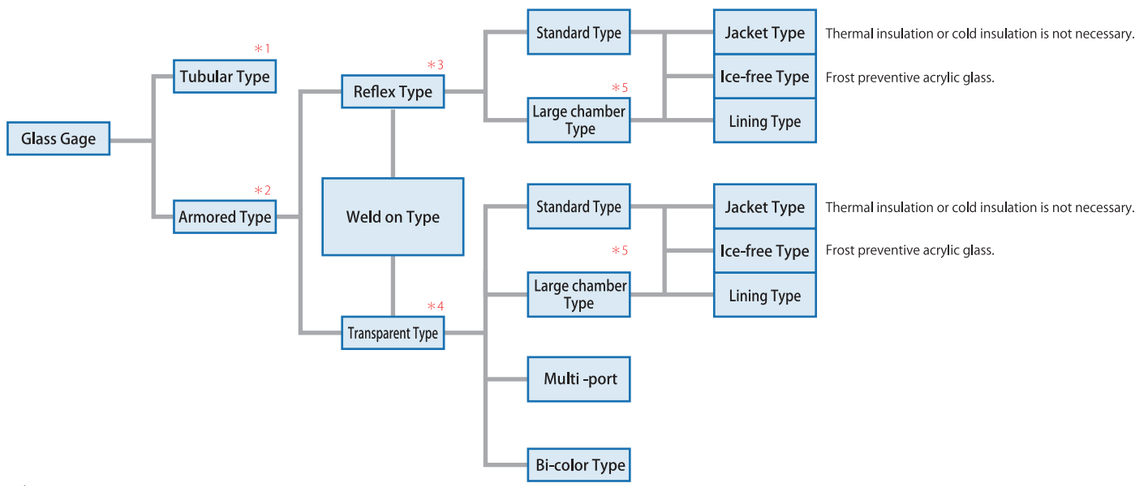


Diagram of the principle and structure of reflex type

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.

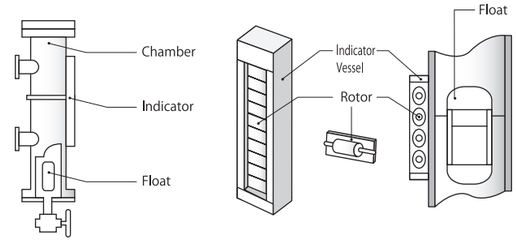
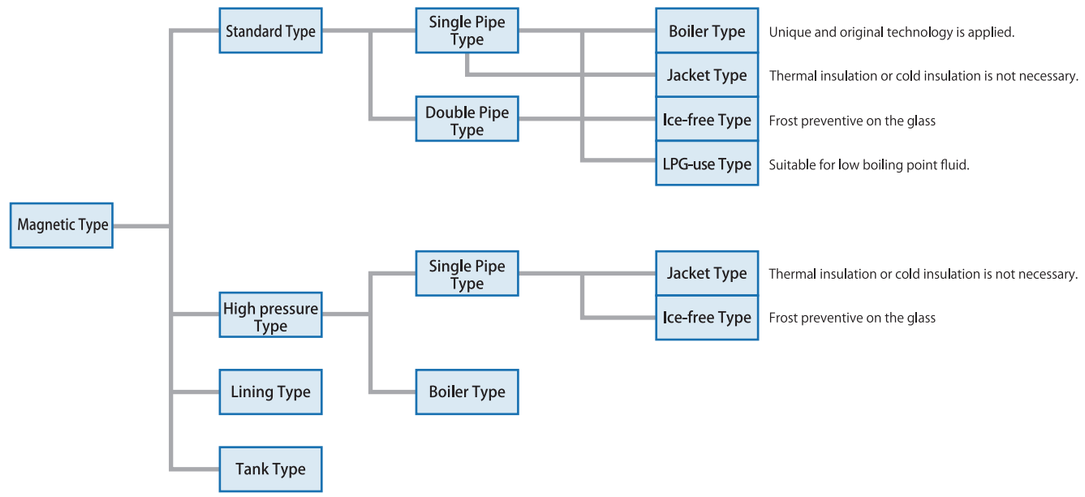
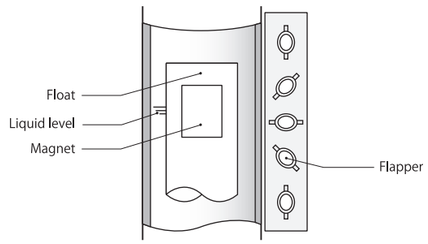


Diagram of magnetic level gage

1-6 Type of Magnetic Level Gages





Working principle

01

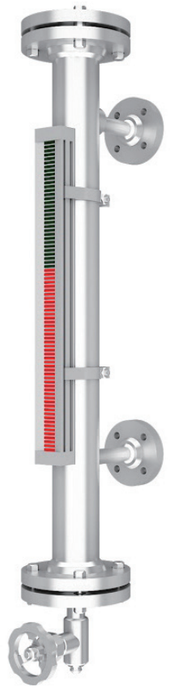
NIHON KLINGAGE®

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. Material : Stainless Steel, Titanium, Hastelloy, PVC etc. Max. Operating Pressure: 19.7MPa Max.Operating Temperature : 400℃	Flange : JIS, ANSI, ASME, JPI etc. Material : Stainless Steel; SUS304, 304L, 316, 316L, etc. Max.Operating Pressure:5.0MPa Max.Operating Temperature : 400℃	Flange : JIS, ANSI, ASME, JPI etc. Material : Stainless Steel, Titanium, Hastelloy, etc. Max. Operating Pressure: 19.7MPa Min.Operating Temperature : -196℃
		

Options

Reed Switch

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

Level Detector

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

Magnetostrictive Level Transmitter

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

02

NIHON KLINGAGE®

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℃

03

NIHON KLINGAGE®

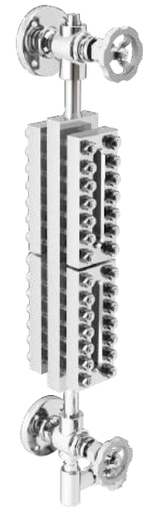
Transparent Level Gages

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. Material : Carbon Steel, Stainless Steel (SUS304,304L,316,316L), Other special metals Max. Operating Pressure : 23MPa Max.Operating Temperature : 400℃	Flange : JIS, ANSI, ASME etc. Material : Carbon Steel, Stainless Steel (SUS304,304L,316,316L), Other special metals Max. Operating Pressure : 23MPa Max.Operating Temperature : 400℃
	

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

04

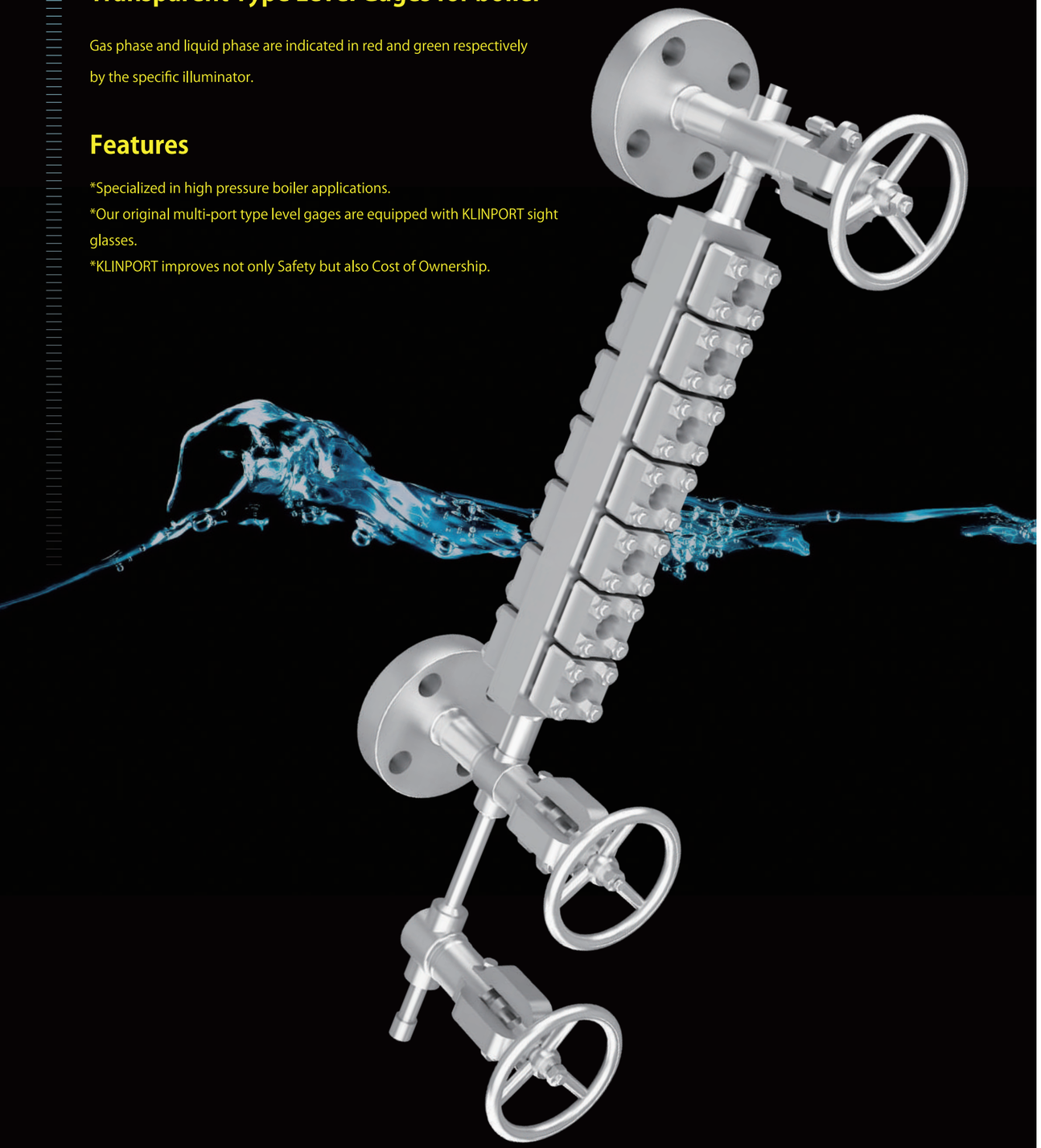
NIHON KLINGAGE®

Transparent Type Level Gages for boiler

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

Features

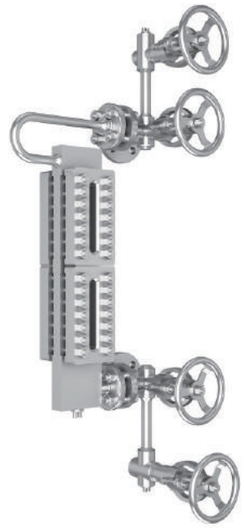
*Specialized in high pressure boiler applications.
*Our original multi-port type level gages are equipped with KLINPORT sight glasses.
*KLINPORT improves not only Safety but also Cost of Ownership.



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℃



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℃

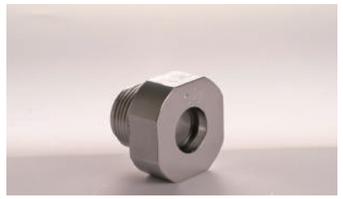
Tubular Type

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.

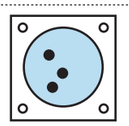
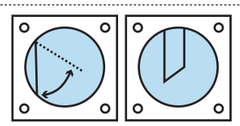


Types	Materials	Operating Pressure (MPa)
Standard	Carbon Steel, Stainless Steel	AP ~ 2.0 or Vac ~ 2.0
High Pressure	Carbon Steel, Stainless Steel	17.3
Ultra-high Pressure	Stainless Steel, Special Alloy Steel	49 15.7@345.7℃
High Temperature	Special Alloy Steel	21.6@372.1℃

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 —	— Flapper/Nozzle Type —	— Rectangular Window Type —
		
KLEARCOAT - Teflon (PFA) Coat Glass		
		

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.

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

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

❸ Temperature resistance
Maximum service temperature : 500℃.

❹ Cost of Ownership
No Mica plate, No frequent maintenance.