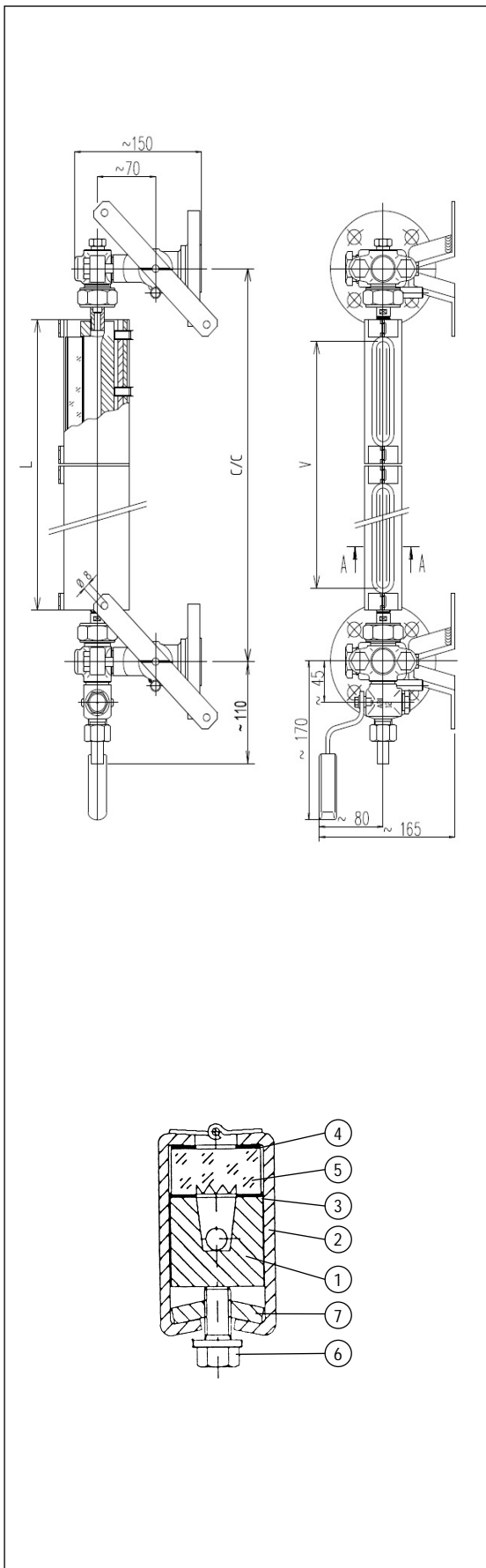


# KLINGER MARINE TRANSPARENT & REFLEX LEVEL GAUGES



FOR STEAM AND CONDENSATE

**REFLEX LEVEL GAUGE  
FOR 20 BARG STEAM**  
MR 25-D  
DN25/PN40 flange connections



Size	Body length	Sight length	Minimum center to center distance (mm)
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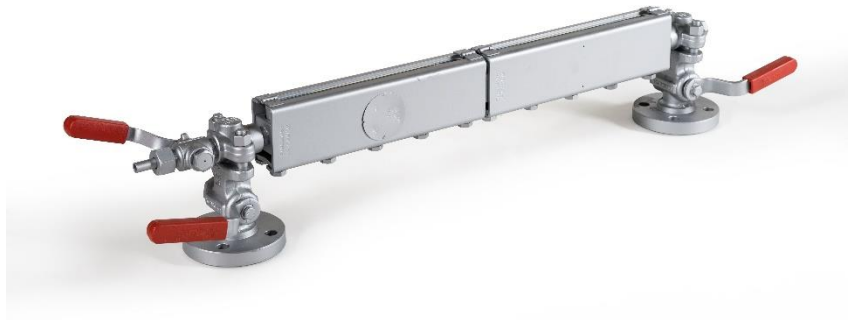
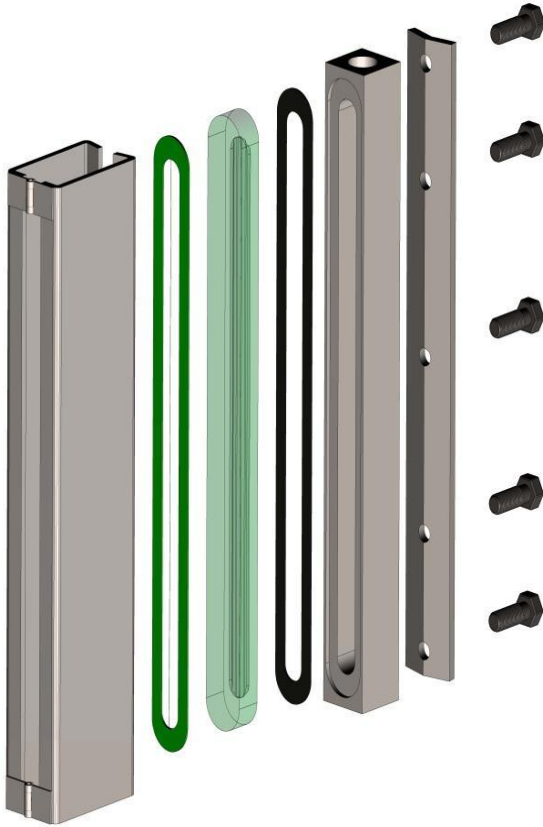
	<b>L</b>	<b>V</b>	<b>C/C min</b>
<b>I</b>	128	93	230
<b>II</b>	153	118	255
<b>III</b>	178	143	280
<b>IV</b>	203	168	305
<b>V</b>	233	198	335
<b>VI</b>	263	228	365
<b>VII</b>	293	258	395
<b>VIII</b>	333	298	435
<b>IX</b>	353	318	455
<b>2 x IV</b>	408	373	510
<b>2 x V</b>	468	433	570
<b>2 x VI</b>	528	493	630
<b>2 x VII</b>	588	553	690
<b>2 x VIII</b>	668	633	770
<b>2 x IX</b>	708	673	810
<b>3 x VI</b>	793	758	895
<b>3 x VII</b>	883	848	985
<b>3 x VIII</b>	1003	968	1105
<b>3 x IX</b>	1063	1028	1165
<b>4 x VII</b>	1178	1143	1280
<b>4 x VIII</b>	1338	1303	1440
<b>4 x IX</b>	1418	1383	1520
<b>5 x VII</b>	1473	1438	1575
<b>5 x VIII</b>	1673	1638	1775
<b>5 x IX</b>	1773	1738	1875
<b>6 x VIII</b>	2008	1973	2110
<b>6 x IX</b>	2128	2093	2230
<b>7 x VIII</b>	2343	2308	2445
<b>7 x IX</b>	2483	2448	2585

**Parts**

**Materials**

	<b>FS/H</b>
1 Level gauge body	ASTM A 105
2 Cover	Fe 430
3 Sealing gasket	KLINGER PSM 150
4 Cushion joint	KLINGER MARINE
5 Glass "A"	Borosilicate
6 Bolts	8.8
7 Threaded plate	Fe 430

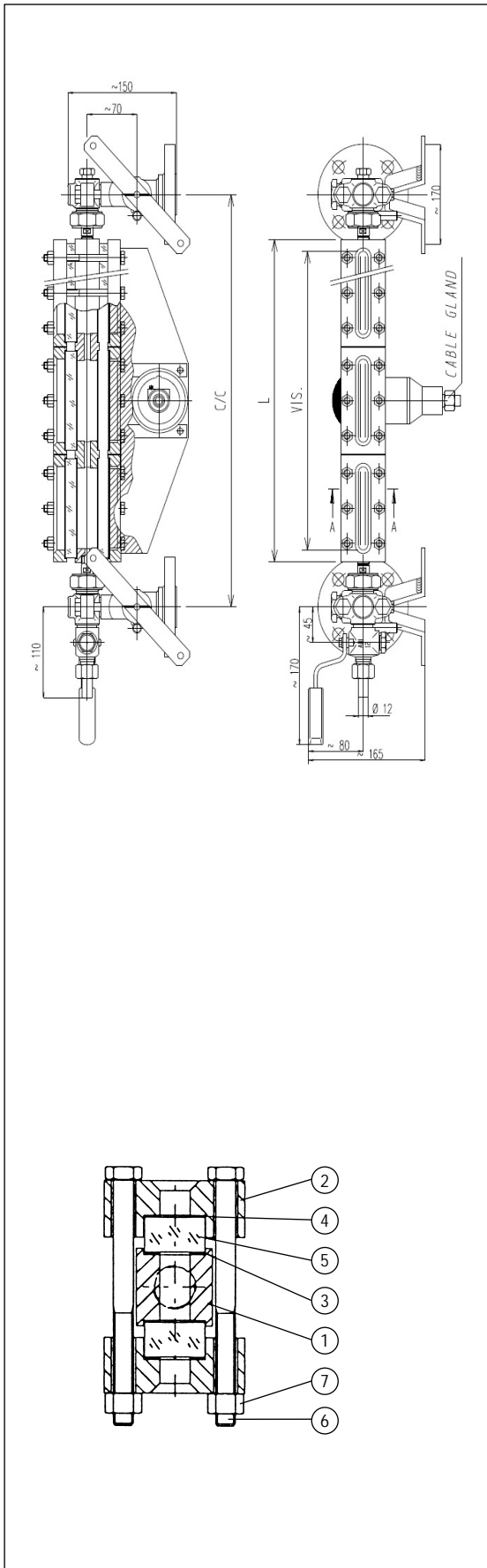
# MR25



# TRANSPARENT LEVEL GAUGE FOR 30 BARG STEAM

MT 100-D

DN25/PN40 flange connection

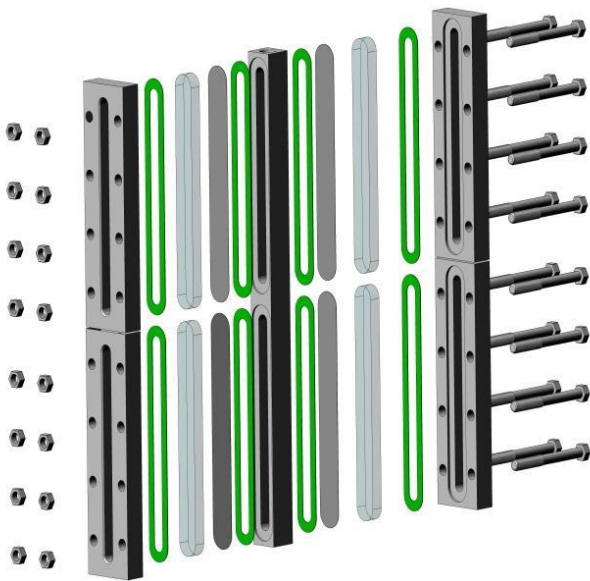


Size	Body length	Sight length	Minimum center to center distance (mm)
	L	V	C/C min
I	128	93	230
II	153	118	255
III	178	143	280
IV	203	168	305
V	233	198	335
VI	263	228	365
VII	293	258	395
VIII	333	298	435
IX	353	318	455
2 x IV	408	373	510
2 x V	468	433	570
2 x VI	528	493	630
2 x VII	588	553	690
2 x VIII	668	633	770
2 x IX	708	673	810
3 x VI	793	758	895
3 x VII	883	848	985
3 x VIII	1003	968	1105
3 x IX	1063	1028	1165
4 x VII	1178	1143	1280
4 x VIII	1338	1303	1440
4 x IX	1418	1383	1520
5 x VII	1473	1438	1575
5 x VIII	1673	1638	1775
5 x IX	1773	1738	1875
6 x VIII	2008	1973	2110
6 x IX	2128	2093	2230
7 x VIII	2343	2308	2445
7 x IX	2483	2448	2585

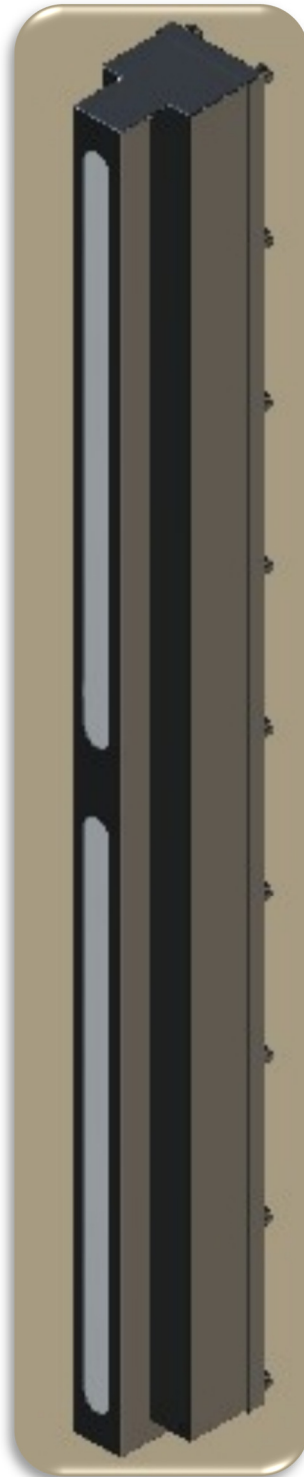
Parts	Materials
	FS/H
1 Level gauge body	ASTM A 105
2 Cover	ASTM A 105
3 Sealing gasket	KLINGER PSM 150
4 Cushion joint	KLINGER MARINE
5 Glass "A"	Borosilicate
6 Bolts	B7
7 Nuts	2H

Options: Klinger Illuminator

# MT100



## KLINGER ILLUMINATOR LED



Klinger LED Illuminator		
SIZE	Length	Kg
I	128	0,8
II	153	0,9
III	178	1,1
IV	203	1,2
V	233	1,4
VI	263	1,6
VII	293	1,8
VIII	333	2
IX	353	2,1
2xIV	408	2,4
2xV	468	2,8
2xVI	528	3,2
2xVII	588	3,5
2xVIII	668	4
2xIX	708	4,2
3xVI	793	4,8
3xVII	883	5,3
3xVIII	1003	6
3xIX	1063	6,4
4xVII	1178	7,1
4xVIII	1338	8
4xIX	1418	8,5
5xVII	1473	8,8
5xVIII	1673	10

MATERIAL: AISI 316  
 CABLE GLAND M 20 x 1.5

## FEATURES

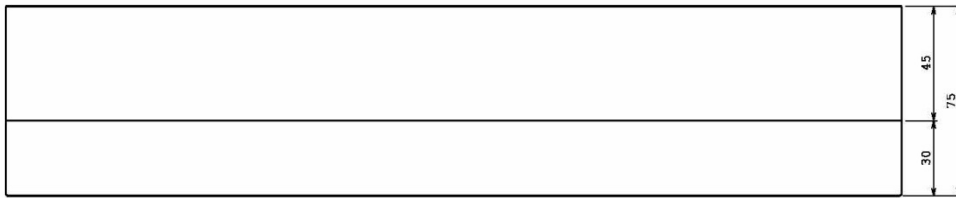
Protection IP 66  
 Resistance to humidity 100%  
 Temperature 50°C

### OUTPUT

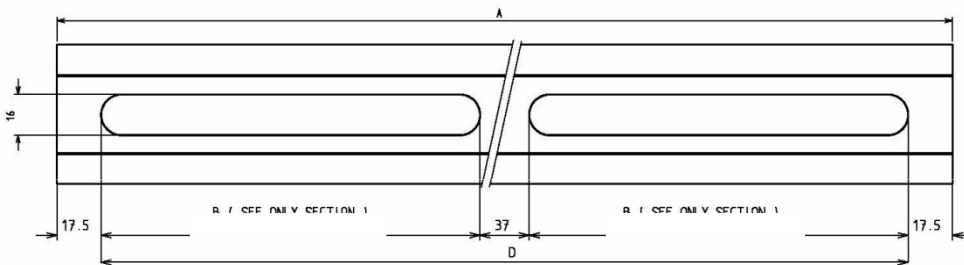
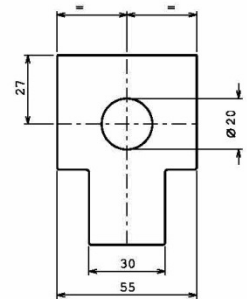
Internal Transformer	LPH 12v	LPH 24v	LPH 36v
Nominal Power	15 A	0.75 A	0.5 A
Current Range	~ 0-15A	~ 0-0.75A	~0-0.5A
Rated Power	18W	18W	18W

### INPUT

Voltage Range	180 ~ 264VAC    254 ~ 370VDC
Frequency Range	47 ~ 63 Hz

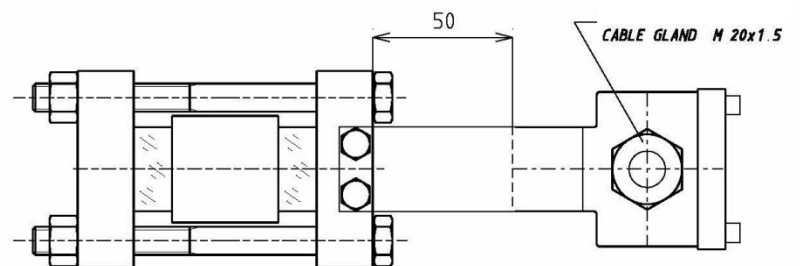


ONLY MULTIPLE SECTION



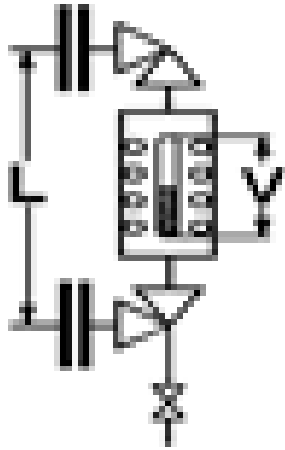
SECTION	A	B	D
I	128	93	/
II	153	118	/
III	178	143	/
IV	203	168	/
V	233	198	/
VI	263	228	/
VII	293	258	/
VIII	333	298	/
IX	353	318	/
2xIV	408	/	373
2xV	468	/	433
2xVI	528	/	493
2xVII	588	/	553
2xVIII	668	/	633
2xIX	708	/	673
3xVI	793	/	758
3xVII	883	/	848
3xVIII	1003	/	968
3xIX	1063	/	1028
4xVI	1178	/	1143
4xVIII	1338	/	1303

ONLY STEAM



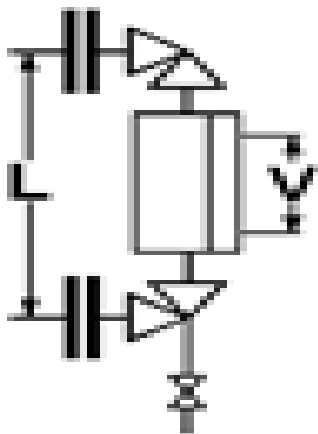


# Level Gauge - Standard Configuration



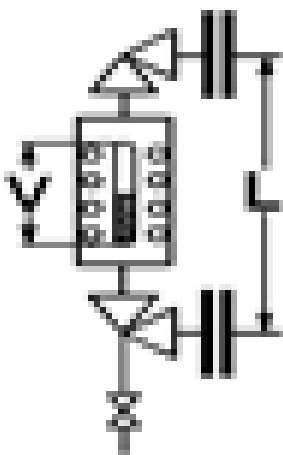
Configuration A2

Connection orientation - LEFT when view



Configuration A1

Connection orientation - BACK when view



Configuration A3

Connection orientation - RIGHT when view

KLINGER Marine Level Gauge-> Complete Spare part kit for Level gauge valves, shut off upper and lower + drain cock

SPARE KIT FOR KLINGER ORIGINAL VALVES

KLINGER Denmark Item no. 90 25 10 01

N. 2 PACKING SLEEVE AB18



N. 1 PACKING SLEEVE AB12



N. 2 PDII ISCJO.atc•



N. 2 Packing KUt6



H. 2 Nkket OrsC. . .



N. 2 Topchem gaskets



N. 1 Ous;nt;un G skol



SPARE KIT FOR KLINGER/COMPETITOR VALVES

KLINGER Denmark Item no. 90 25 10 02

N. 2 PACKING SLEEVE AB18



N. 1 PACKING SLEEVE AB12



N. 2 PLUG AB18 + 4 Split rings



N. 1 PLUG AB12 + 2 Split Rings



N. 2 PRIME 1500 Gaskets



N. 2 Packing KUt6



tf. 2 H, d/cl Gaskets



N. 2 Topchem gaskets



N. 1 Owinium MC





Marine & Offshore  
Division

Certificate number: 38836/AO BV

File number: ACM 141 /2530/01

Productcode:3714H

*This certificate is not valid when presented without the full attached schedule composed of 7 sections*

www.veristar.com

## TYPE APPROVAL CERTIFICATE

*This certificate is issued to*

**KLINGER ITALV S.r.l.**

Mazzo di Rho - MI - ITALY

*for the type of product*

**LEVEL GAUGES/ INDICATORS**

MR25 & MT100

**Requirements:**

- BUREAU VERITAS Rules for the Classification of Steel Ships
- BUREAU VERITAS Rules for the Classification of Offshore Units

*This certificate is issued to attest that BUREAU VERITAS did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.*

**This certificate will expire on: 04 Aug 2019**

**For BUREAU VERITAS,**

At BV GENOA, on 04 Aug 2014,

Gianni Pirovano



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with BUREAU VERITAS. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of BUREAU VERITAS Marine & Offshore Division available on the internet site [www.veristar.com](http://www.veristar.com). Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against BUREAU VERITAS for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

The electronic version is available at: <http://www.veristamb.com/veristarnb/jsp/viewPublicPdfTypepec.jsp?id=neage15qst>

BV Mod. Ad.E 530 May 2009

This certificate consists of 3 page(s)

## THE SCHEDULE OF APPROVAL

### 1. PRODUCT DESCRIPTION

#### **Level Gauge MR25 & MT100 Series**

##### 1.1 Technical data

Series	Nominal Length (mm)	Working Pressure (bar)	Testing Pressure (bar)	Connection
MR 25	128 to 3903	25	38	16 mm
MT 100	128 to 3903	40	60	16 mm

##### 1.2 Material specification

Body	ASTM A105
Glass	Borosilicate Type A
Sleeve	Graphite PSM 150

### 2. DOCUMENTS AND DRAWINGS

- Drawing N°TA/MR25/A Rev.1 dated 27/01/2014
- Drawing N°TA/MR25/B Rev.1 dated 27/01/2014
- Drawing N°TA/MR25/C Rev.1 dated 27/01/2014
- Instruction Manual for MR 25
- Drawing N°TA/MT100/A Rev.1 dated 27/01/2014
- Drawing N°TA/MT100/B Rev.1 dated 27/01/2014
- Drawing N°TA/MT100/C Rev.1 dated 27/01/2014
- Instruction Manual for MT 100

### 3. TEST REPORTS

- Hydraulic pressure tests carried out at the manufacturer workshop and reviewed by a BV Surveyor
- Test report N° 2014/613 dated 03/06/2014

### 4. APPLICATION / LIMITATION :

- 4.1 May be used as tank level indication for fresh water, fuel oil, lubricating oil and other media which have a flash point above 60 °C according to requirements Pt C, Ch 1, Sec 10 [2.9.2] of Bureau Veritas Rules.
- 4.2 The level gauges are not admitted for oil fuel and other flammable oils on board passenger ships having to comply with SOLAS Convention, as amended unless otherwise permitted on a case by case ship basis.
- 4.3 Approval valid for ships intended to be granted with the following additional class notations: AUT-UMS, AUT-CCS, AUT-PORT and AUT-IMS.
- 4.4 The fitting of the devices is to be in accordance with the manufacturer's instructions as well as the Rules and Regulations applicable to the ship.
- 4.5 The devices are to be installed and tested to the Surveyor's satisfaction.
- 4.6 Each device is to be supplied with its manuals for installation, use and maintenance.

### 5. PRODUCTION SURVEY REQUIREMENTS

- 5.1 The products are to be supplied by **KLINGER ITALY S.r.l.** in compliance with the type described in this certificate and in compliance with the requirements stated on the front page of this certificate. This type of product is within the category HBV of BUREAU VERITAS Rule Note NR 320.
- 5.2 **KLINGER ITALY S.r.l.** has to make the necessary arrangements to have its works recognized by BUREAU VERITAS in compliance with the requirements of NR 320 for HBV products.
- 5.3 No BUREAU VERITAS Certificate is required.

#### Place of production

**KLINGER ITALY S.r.l.**  
**Via De Gasperi 88,**  
**I-20017 Mazzo di Rho - MI**  
**ITALY**

## **6. MARKING OF PRODUCT**

The product shall be marked with at least:

- Manufacturer's name or logo
- Type designation
- Operational data

## **7. OTHERS**

This approval is given on the understanding that the manufacturer will accept full responsibility for informing shipbuilders or their sub-contractors of the proper method of fitting and general maintenance of their products and of the conditions of this approval.

**\*\*\* END OF CERTIFICATE \*\*\***



# DET NORSKE VERITAS

## TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **P-14774**

This is to certify that the  
**Gauge Glass Level Indicator**

with type designation(s)  
**MR25, MT100**

Issued to  
**KLINGER ITALY SRL CON UNICO SOCIO**  
**RHO MI, Italy**

is found to comply with  
**Det Norske Veritas' Rules for Classification of Ships**

Application  
**Glass level gauges for use on pressure vessels and boilers designed to DNV Ship Pt.4 Ch.7**

<b>Type:</b>	<b>Temperature range:</b>	<b>Max. working press.:</b>	<b>Design:</b>
<b>MR25</b>	<b>See cert.</b>	<b>See cert.</b>	<b>Reflex Type</b>
<b>MT100</b>	<b>See cert.</b>	<b>See cert.</b>	<b>Transparent Type</b>

This Certificate is valid until **2018-06-30**.

Issued at **Høvik** on **2014-04-02**

DNV local station: **Milan**

Approval Engineer: **Simon Ratcliffe**

for **Det Norske Veritas AS**



Digitally Signed By: Ragavendhra Rao, Vishnumurthi  
Location: DNV Høvik, Norway  
Signing Date: 15.04.2014

on behalf of **Marianne Spæren Marveng**  
**Head of Section**

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.  
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.

## Product description

Transparent (MT 100) and Reflex (MR 25) glass level gauges with drain cocks, vent plugs and double levers.

Body material: ASTM A105 (FS-H)  
 Glass: Borosilicate  
 Vessel connection: DN25 PN40  
 Soft packing sleeve: Graphite PSM 150

## Application/Limitation

Model	Glass/Reflex Rating	Max. Working Pressure		Max. Temp		Hydro test pressure
		Hydrocarbon	Steam	Hydrocarbon	Steam	
MR 25	PN25	25 bar	20 bar	400 °C	215 °C	38 bar
MT 100	PN40	40 bar	30 bar	400 °C	235 °C	60 bar

All level gauges shall be subject to hydrostatic pressure testing.

Level gauges may be delivered with a manufacturer's product certificate only.

The water level indicators shall be so located that the water level can be ascertained despite the movement and inclination of the ship at sea. See DNV Ship Pt.4 Ch.7 Sec.6 E for more requirements concerning the positioning of water level gauges.

Level gauges for boilers shall be attached to the boiler with closing valves on each connection side.

## Type Approval documentation

Drawing no.	Rev.	Description	Status
TA/MT100/A	Rev.0	Transparent level Gauge mod. MT 100/D/FS-H with Drain Cock, vent Plug and Double Lever	Type Approved
TA/MT100/B	Rev.0	Transparent level Gauge mod. MT 100/D/FS-H with Drain Cock, vent Plug and Double Lever	Type Approved
TA/MT100/C	Rev.0	Transparent level Gauge mod. MT 100/D/FS-H with Drain Cock, vent Plug and Double Lever	Type Approved
TA/MR25/A	Rev.0	Transparent level Gauge mod. MR 25/D/FS-H with Drain Cock, vent Plug and Double Lever	Type Approved
TA/MR25/B	Rev.0	Transparent level Gauge mod. MR 25/D/FS-H with Drain Cock, vent Plug and Double Lever	Type Approved
TA/MR25/C	Rev.0	Transparent level Gauge mod. MR 25/D/FS-H with Drain Cock, vent Plug and Double Lever	Type Approved
		Klinger Instructions for Installation and Operation of Reflex Level Gauges Type MR 25	For Info
		Klinger Instructions for Installation and Operation of Reflex Level Gauges Type MT 100	For Info
IST No.11	Rev.6	Operating Instructions, dated 2013-11-14.	For Info
2013/1.500		Klinger Work Test Certificate UNI-EN 10204 – 3.1, dated 2013-12-12, reviewed by DNV.	For Info
2013/1.498		Klinger Work Test Certificate UNI-EN 10204 – 3.1, dated 2013-12-12, witnessed by DNV.	For Info
2014/53		Klinger Work Test Certificate UNI-EN 10204 – 3.1, dated 2014-01-21, witnessed by DNV.	For Info
2014/76		Klinger Work Test Certificate UNI-EN 10204 – 3.1, dated 2014-01-27, witnessed by DNV.	For Info
Pk30–12/04		Reflex level gauges - catalogue	For Info
Pk31–12/04		Transparent level gauges - catalogue	For Info
		Working condition for glass level gauges – 2008	For Info

## Tests carried out

Hydrostatic testing of gauge bodies to 1.5 x MWP

## Marking of product

Each level gauge shall be permanently and legibly marked with the following information:

- a) the name and domicile of the manufacturer
- b) the manufacturer's type designation and serial number
- c) the year of manufacture
- d) MWP and temperature
- e) the hydraulic test pressure
- f) DNV's identifying mark.

**Periodical assessment**

For retention and renewal, a DNV Surveyor shall perform a survey every four years, before the expiry of the certificate, to verify that the conditions for the approval are complied with.

END OF CERTIFICATE





# Type Approval Certificate

*This is to certify that the undernoted product(s) has/have been tested with satisfactory results in accordance with the relevant requirements of the Lloyd's Register Type Approval System.*

This certificate is issued to:

<b>PRODUCER</b>	Klinger Italy Srl Viale De Gasperi 88 20017 Rho (Milano) Italy
<b>DESCRIPTION</b>	Glass Level Gauges for boilers additionally available with safety ball device.
<b>TYPE</b>	MT 100 (Transparent Type) MR 25 (Reflex Type)
<b>APPLICATION</b>	For level indication on steam boilers and other pressure vessels.
<b>STANDARD</b>	Lloyd's Register Rules and Regulations for the Classification of Ships 2014
<b>RATINGS</b>	MR25: design pressure 25 bar MT100: design pressure 40 bar
<b>OTHER CONDITIONS</b>	The Auto Ball safety device should only be used for applications where in the event of glass breakage a leakage rate of 3,5 l/min is acceptable. All boiler mountings are to be subjected to a hydraulic test of twice the approved design pressure to the satisfaction of the attending surveyor.

*"This Certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register EMEA of any modification or changes to the equipment in order to obtain a valid certificate."*

*The Design Appraisal Document No. HTS/ENS 32567-15 and its supplementary Type Approval Terms and Conditions form part of this Certificate.*

<b>Certificate No.</b>	15/20036
<b>Issue Date</b>	30 April 2015
<b>Expiry Date</b>	29 April 2020
<b>Sheet</b>	1 of 1



Torsten Schröder  
Hamburg Technical Support Office  
Lloyd's Register EMEA

Lloyd's Register EMEA  
71 Fenchurch Street, London EC3M 4BS

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