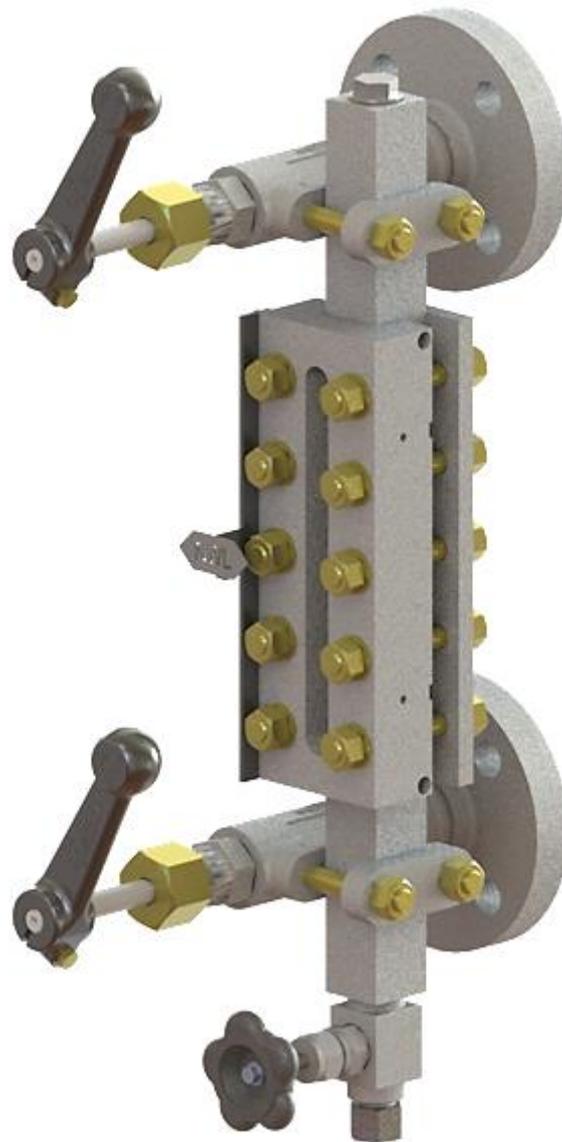




# Reflex Level Gauge

## RG200



Edition 06/2021

D-02-B-50107-EN-01

**ASSEMBLY and OPERATING MANUAL**



## Product philosophy

**Thank you for placing your trust in IGEMA and deciding in favour of one of our high-quality products.**

For more than 100 years, measuring and control systems have been developed, produced and sold worldwide under the IGEMA brand name.

“Steam is our passion” and we offer you the entire programme for the safe and economic operation of your plants, especially in the steam and condensate sector.

Please read the installation and operating instructions carefully to ensure a safe and reliable operation.

In addition to the information on installation and operation, you will also find important information on maintenance, care, safety and value retention of your measuring and control system.



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# 1. Important safety instructions

## KEEP THESE INSTALLATION AND OPERATING INSTRUCTIONS IN A SAFE PLACE!

Commissioning as well as maintenance and repair work may only be carried out by qualified persons in compliance with the installation instructions given in this operating manual. The correct installation, commissioning, maintenance and operation of the device presupposes that the person in charge is familiar with measurement and control systems and complies with the general installation and safety instructions. In addition, the correct and intended use of tools and the handling of safety devices must be ensured. Unqualified persons must not be assigned the above tasks!

IGEMA GmbH accepts no liability for damage to property or personal injury caused by unqualified persons or by failure to observe these installation and operating instructions. If no sufficiently qualified person can be found, IGEMA GmbH can be commissioned with the installation/maintenance.

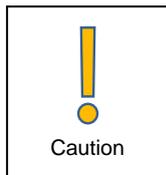
## 1.1 Symbols used in these instructions

In the following installation and operating instructions, safety instructions are marked with the following symbols:

 Danger	This symbol and signal word refer to a potentially hazardous situation which could result in death or injuries if ignored.
 Caution electrical voltage	This symbol and signal word indicate live parts with an immediate danger of death from electric shock.
 Caution hot	This symbol with a signal word indicates a potentially hazardous situation that can result in severe burns and scalds all over the body.

 Caution	This symbol and signal word refer to a potentially hazardous situation which could result in personal injury, property and environmental damage if ignored.
 Caution	This symbol and signal word refer to a potentially hazardous situation which could result in damage to the equipment if ignored.
 Info	This symbol indicates useful information and recommendations as well as measures that will prolong the value of your measuring and control system.

## 1.2 Intended use of the device



Use these installation and operating instructions, the identification on the rating plate (see 5.6) and the technical data sheet to check whether the device is suitable for the intended use/application. The device complies with the requirements of the European Pressure Equipment Directive 2014/68/EU.

The device may only be used to indicate fill levels on containers.

The maximum values of the pressure and temperature range of the device must be checked before installation. If the maximum allowable operating values of the device are lower than those of the system on which it is to be installed, protective instruments for the device, such as pressure reducers or similar, must be provided to avoid limit situations. The device may only be used in accordance with the information in these installation and operating instructions or for the parameters and applications agreed in the supply contract. (see rating plate, 5.6) The operator of the direct water level indicator is obliged to familiarise himself on the compatibility of the medium and the device. In case of doubt, contact the relevant installation manager or site manager.

The correct installation position, alignment and flow direction of the device must be observed! Before installing the IGEMA product on boilers or containers, it is essential to remove all protective covers and, if necessary, the protective film from rating plates and sight glasses.

### 1.3 Safety at work



Before installation or carrying out maintenance work on the device, safe access must be ensured and a secure working area with sufficient lighting must be defined and marked out. Always use lifting equipment for heavy loads!

Before starting any work, carefully check which liquids or gases are or have been in the pipeline. (flammable substances, irritating substances, substances hazardous to health) When opening or dismantling the device, residues of the medium can escape. Subsequent fumes are also possible in unpressurized and cold systems. Use designated PPE such as safety goggles and respiratory protection!

Special attention must be paid to the condition of the environment around the installation or maintenance site. Be aware of e.g.: potentially explosive atmospheres, lack of oxygen in tanks and pits, dangerous gases/liquids, extreme temperatures, hot surfaces, fire hazard (e.g. during welding) and moving machine and system components. Protect yourself from excessive noise by taking the required protective measures.

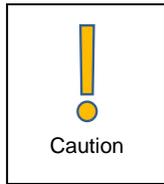
For all maintenance work or new installations, on new or existing boilers or vessels, it is imperative to check that the boiler or vessel has been depressurised and that the pressure has been safely reduced to atmospheric pressure. In principle, no system should be regarded as unpressurized even if indicated by pressure measuring devices such as pressure gauges or sensors. When releasing the pressure, make sure that no persons are in the release area. Carefully check whether you and/or other persons in the vicinity need PPE to protect yourself from external influences such as high and low temperatures, radiation, noise, danger to eyes, loose objects that can fall down or chemicals.

There is always a risk of injury when handling large and/or heavy equipment. Observe the load handling regulation as a minimum requirement for working with loads. Avoid handling the device with your own physical force, e.g. by lifting, pulling, carrying, pushing or supporting it, especially to prevent back injuries. Use lifting equipment to move heavy and bulky equipment in accordance with Article 1, Section 2 of the German Load Handling Regulation (LasthandhabV).



Under normal operating conditions the surface of the device can become very hot! Under the maximum operating conditions, the surface temperature can exceed 350°C. After shutting off or, if necessary, shutting down the boiler, wait until the temperature has normalized to room level. To avoid the risk of burns and scalds, always use PPE including safety goggles!

## 1.4 Safety instructions for this device



These installation and operating instructions are an integral part of the device and must be forwarded to the responsible departments "Goods inward, Transport, Installation, Commissioning and Maintenance". They must be kept in such a way that the technical staff have access to these documents at all times. If the device is passed on to a third party, these installation and operating instructions must also be included in the national language of the third party.

Avoid shocks and hard contact during transport, as this can lead to damage. During intermediate storage, the device must be kept dry and secured against damage.

When servicing the unit, make sure to use sharp-edged internal parts and avoid shards of broken glass. There is a risk of cutting hands and arms! Always wear work gloves when changing packing, valve seat and valve plug.

For units with a dead weight of 30 kg or more, the customer must provide adequate support (e.g. via a spring suspension device, etc.). This can be attached to the holding strap/eyelet on the device.

When returning goods to IGEMA GmbH, the applicable safety and environmental laws according to GGVSEB [German ordinance on the national and international carriage of dangerous goods by road, rail, and inland waterways] must always be observed. If there are any risks to health or the environment due to residues or the device has a mechanical defect this must be indicated when returning the device and the necessary precautionary measures must be taken. If the returned goods are devices that have come into contact with or contain hazardous substances, a safety data sheet must be enclosed, and the goods must be clearly marked. In addition, the hazardous substance must be reported to the logistics service provider.

## 1.5 Exclusion of liability

IGEMA GmbH Mess- und Regelsysteme will assume no liability if the above regulations, instructions and safety precautions are not observed and followed. If they are not expressly listed in the installation and operating instructions, changes to an IGEMA device are carried out at the risk of the user.

## 2. Scope of supply

### 1 RG200

The unit is delivered as complete unit (see page 11):

- 1 level gauge (1)
- 1 upper shutoff valve (2)
- 1 lower shutoff valve (3)
- 1 drain valve (4)
- 1 Level mark - Optional (Item 13.2)

### 2. Installation and operating instruction

### 3. Important information

#### 3.1 Intended use

##### Reflex level gauge:

The reflex level gauge LG40-CS is a direct fluid level gauge which can be used for steam boilers and containers.

In the sight opening, the fluid level is indicated dark and the steam light.

This product is in accordance to EU-directive 2014/68/EU. Applied policy acc. to DIN EN 13445 and ASME Boiler and Pressure Vessel Code. Considered regulations AD2000. Furthermore, as a plant component for large water room boilers and water tube boilers, this product meets the requirements of the standards DIN EN 12952-7 and DIN EN 12953-6.

#### 3.2 Limitations of use



The following limitations of use apply to both the single sight length and the superimposed variant. The values given here must under no circumstances be exceeded!!

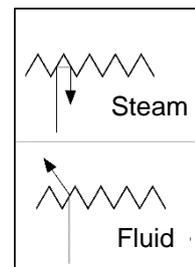
			RG200
For media with significant glass attack, e.g. saturated steam, hot water, alkalis	All. Pressure	PS [bar]	35
	All. Temp.	TS [°C]	243
For media without significant glass attack, e.g. oils, hydrocarbons	All. Pressure	PS [bar]	200
	All. Temp.	TS [°C]	250

### 4. System description

#### 4.1 Function

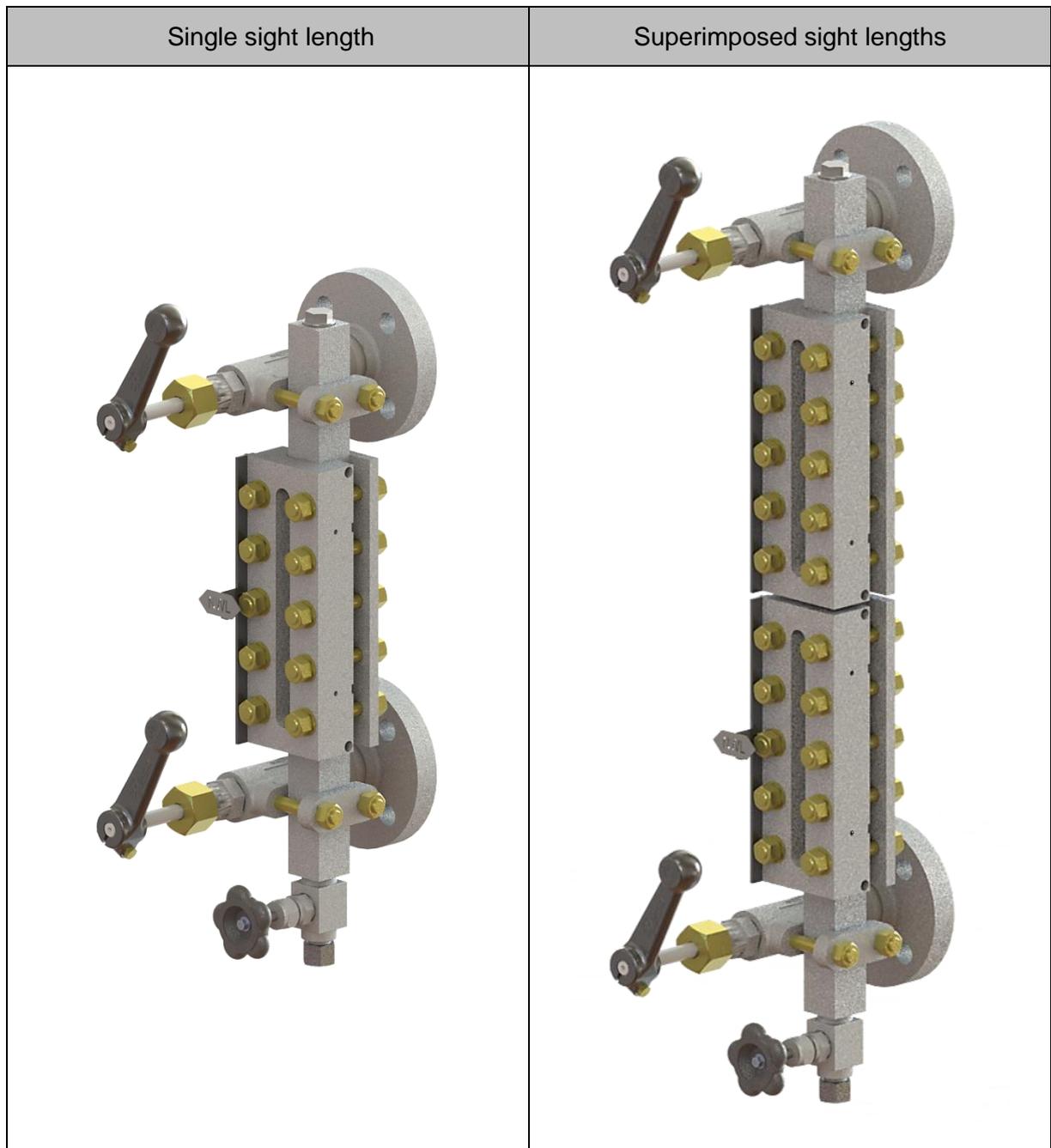
The reflex level gauge in different versions is used to detect the fluid level of containers and steam generators.

The level gauge works according to the physical law of the communicating tubes. It is equipped with a longish sheet glass with prismatic grooves on the surface turned to the medium. The fluid space is indicated dark and the steam space light due to the different reflection (refraction) of the light.



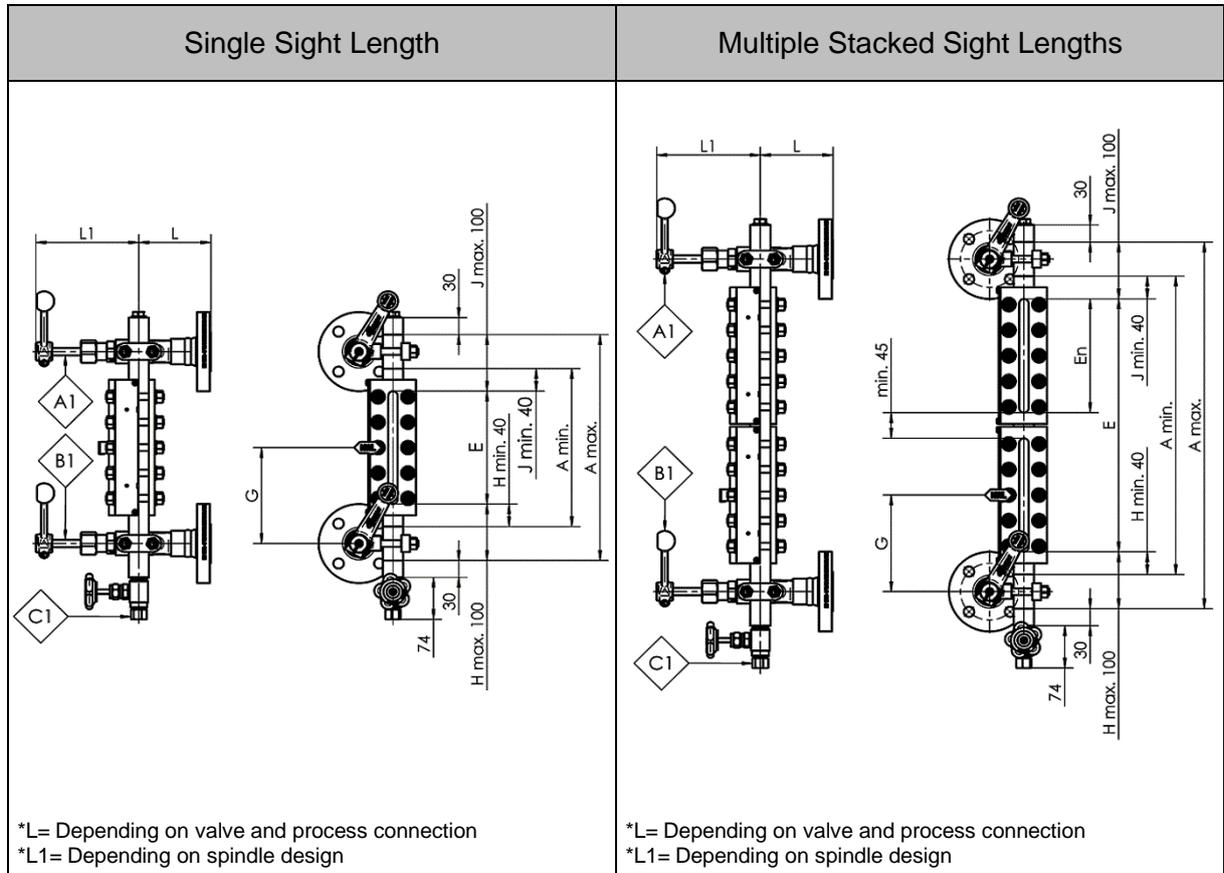
## 4.2 Variants

The RG120 and RG200 reflex level gauges are available as standard in two variants, one with a simple sight length and one with superimposed sight lengths. In the superimposed variant, there is always a dead space of at least 45mm to the nearest sight length. The two variations are presented below.



## 5. Technical data

### 5.1 Dimensions



The dimensions H/J, E and A are stated in your order and can be viewed.  
All other dimensions can be found in the following tables.

#### Single sight length standard design:

	Sight glass size	Sight length (E dimension)	Process connection dimension (A- dimension )	
			A-min.	A-max.
1	5	200	280	400
2	6	230	310	430
3	7	260	340	460
4	8	300	380	500
5	9	320	400	520
6	10	350	430	550
7	11	380	460	580

### Multiple stacked sight lengths standard design:

	Design	Sight glass openings	Sight length (E dimension)	Process connection dimension (A- dimension )	
				A-min.	A-max.
1	5/2ü	2	445	645	525
2	5/3ü	3	690	890	770
3	5/4ü	4	935	1135	1015
4	6/2ü	2	505	705	585
5	7/6ü	6	1785	1985	1865
6	7/6ü - Special length	6	1785	2100	1865
7	9/5ü - Special length	5	1780	2100	1860
8	5/4ü stainless steel	4	935	1135	1015
9	5/2ü stainless steel	2	445	645	525
10	5/3ü stainless steel	3	690	890	770
11	7/3ü stainless steel - Special length	3	870	1160	950

There is a dead space of 45mm between the individual show lengths of the multiple stacked sight lengths.

### Valves:

Valve	Type
Shut off valve	A120-CS; A140-CS
Drain valve	AV250

## 5.2 Type of connection

Standard : flanges according to DIN EN 1092-1

On request : flanges as per ASME  
Butt welding ends according to DIN or ASME

## 5.3 Materials

Components in contact with the medium and pressure-holding components are made of C steel or stainless steel according to DIN or ASME.

## 5.4 Application limits

Max. allowable pressure <b>PS</b>	[bar]	32
Max. allowable temperature <b>TS</b>	[C°]	239

## 5.5 Corrosion resistance

The safety of the unit is not influenced by corrosion if it is used as intended.

## 5.6 Identification plate / Marking

According to EN19 are marked on the identification plate:

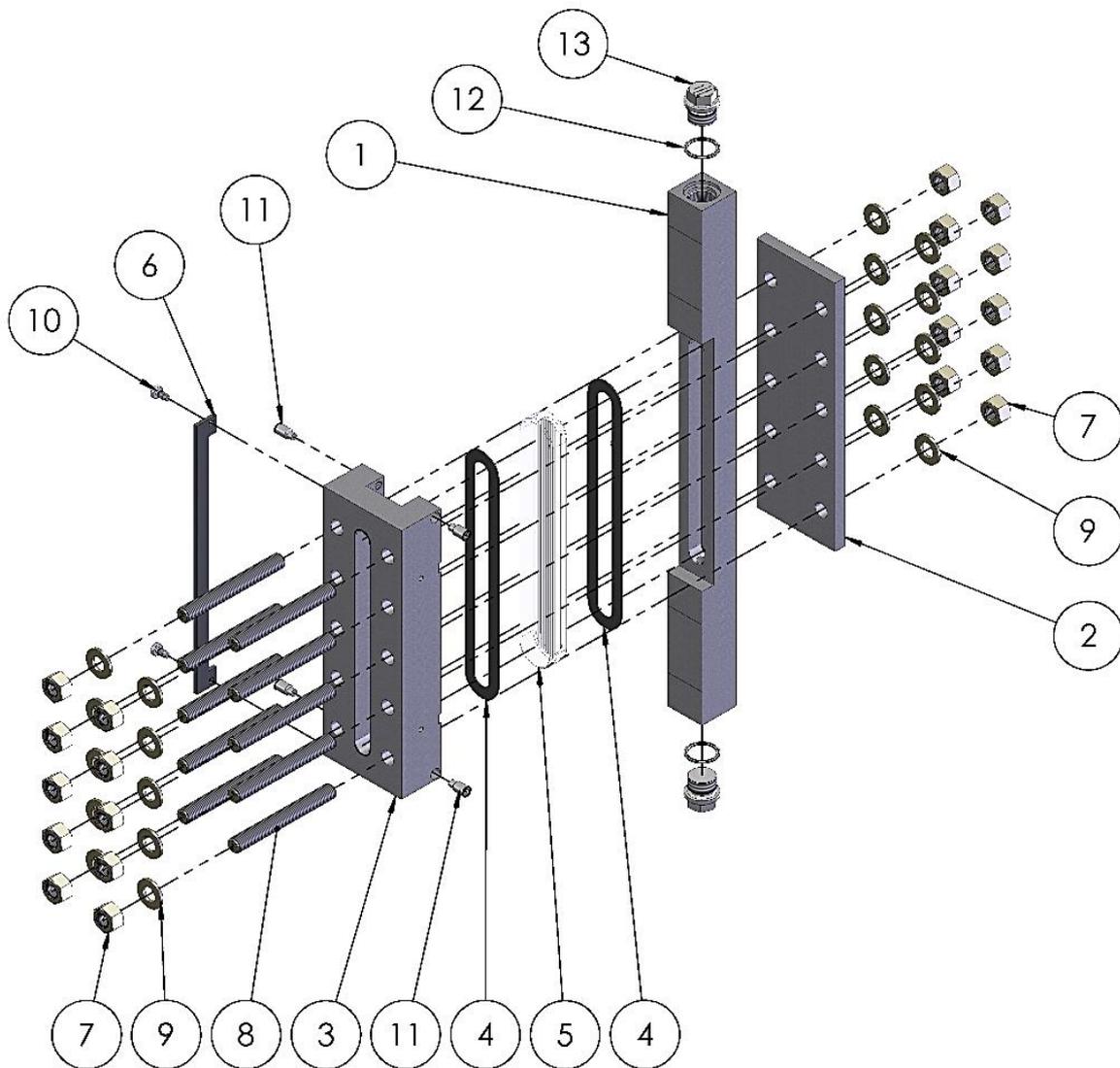
 IGEMA GmbH Mess-und Regelsysteme Antwerpenerstraße 1 Germany - 48163 Münster   * See installation instructions  	Built	<b>A</b>	Type	<b>B</b>
	PS	<b>C</b>	bar	TS <b>D</b> °C
	Conn. Type	PN <b>E</b>	DN <b>F</b>	
		<b>G</b>		

\* Marking depending on the realization

- A Date of manufacture
- B Type of unit
- C Max. all. pressure
- D Max. all. temperature
- E Nominal pressure (not listed)
- F Nominal diameter
- G TAG-no. (Optional)

## 6. Construction

For example: single design



- |                              |                                   |
|------------------------------|-----------------------------------|
| (1) Body RG                  | (8) Threaded bolt                 |
| (2) Counter plate RG         | (9) Washer                        |
| (3) Cover rail               | (10) Flat head screw              |
| (4) Sealing reflective glass | (11) Set screw                    |
| (5) Reflective glass         | (12) Sealing ring                 |
| (6) Holder for level mark    | (13) Screw plug G $\frac{1}{2}$ " |
| (7) Hexagon nut              |                                   |

The following position information on the reflective indicator refers to the position numbers listed here.

## 7. Assembly

### 7.1 Version with flange

- Observe the installation position!
- Remove the protecting caps from the connection flanges. The protective caps are only used as transport protection.
- Ensure that sealing surfaces are clean and undamaged.
- Install the reflex level gauge.

### 7.2 Version with butt welding end

- Observe the installation position!
- Remove the protecting caps from the connection flanges. The protective caps are only used as transport protection.
- Assembly only by using welding process 111 and 141.

### 7.3 Heat treatment of weld seams

Supplementary temper tests of weld seams are not required!

### 7.4 Drain piping

- Close valves (A1, B) after installation.
- Install the drain line on the drain valve (C1) (The drain line is not included in the scope of delivery).



**Ensure that drain piping has free outlet to atmosphere and is protected from pressure peaks!**

## 8. Commissioning



**Commissioning and maintenance must be carried out by qualified personnel! If no sufficiently qualified person can be employed, IGEMA GmbH can be commissioned to carry out the commissioning. In principle IGEMA GmbH recommends commissioning the indicator at the same time as the boiler (point 8.2). If it is not possible to commission the indicator according to point 8.2, the indicator can be commissioned with the boiler under pressure and temperature (point 8.3)**

All liquid level gauges are subjected to 100% pressure testing before delivery. In individual cases, material settling may occur during transport, longer storage or during assembly. All screw connections must therefore be checked for tight fit and appropriate torque (see following text).

## 8.1 Before commissioning



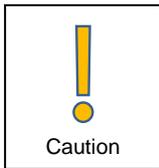
**It must be checked for appropriate torque.  
Non-compliance can lead to leakage and glass breakage.**

### All screw connections except pressure screws

- Before commissioning of level gauge, check all screw connections: plugs, valve and flange connections and screw caps of shutoff valves / drain valve (see special operating instructions shutoff valves / drain valve).
- We suggest observing the level gauge especially during first days after commissioning.
- Re-tighten firmly screw connection where leakage appears.

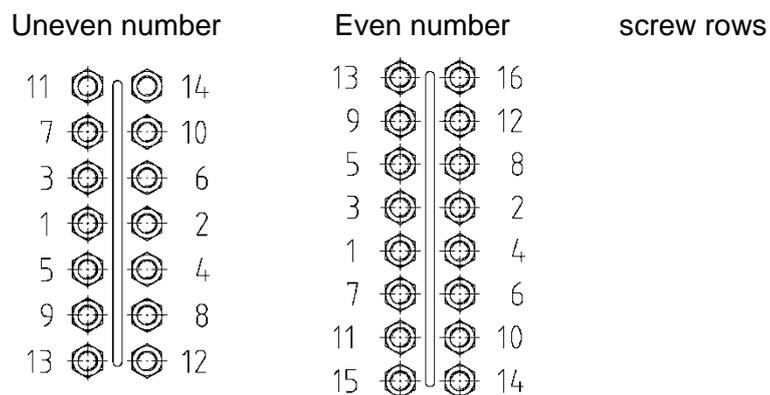
### Pressure screws

- Pressure screws have been tightened and tested in our factory with the corresponding tightening torques (see table chapter 9.6). Never re-tighten pressure screws during mounting / commissioning.
- Check if level gauge shows any leakages especially during first days after commissioning.



**The following shows the correct tightening sequence for the cover rails!  
The appropriate torque must be checked.  
Non-compliance can lead to leakage, glass and seal breakage.**

The following tightening sequence must be ensured at the cover rails (drawing below). Non-compliance can lead to leaks, which are not covered by the warranty. Tighten the screw connection to the tightening torque **Md** max. according to the table (see item 9.6).



At the latest 24 h after commissioning, the screw connections must be checked and tightened again with the torques specified above in the listed tightening sequence due to material settlements that cannot be ruled out! This should be repeated until the bolts permanently hold the specified torques.

The union nuts of the valves must be tightened so that no leakage occurs at the spindle and the handwheel / hand lever can still be turned.



**Note!**

After commissioning, slight leaks can occur in the valves, but these will reappear after a short time due to temperature and pressure.

## 8.2 Commissioning the indicator at the same time as the boiler

Check material, pressure and temperature specifications!



**First make sure that the drain valve (C1) is closed. Then open the shut-off valves (A1, B1) to the stop. The boiler can now be commissioned with the indicator. After commissioning the indicator must be checked for function and leakage. The specified torques and the described tightening sequence (item 7.1) apply.**

## 8.3 Commissioning of the indicator, when the boiler is under pressure and temperature



**The shut-off valves (A1, B1) must be closed, and the drain valve (C1) needs to be fully open. Next, slowly and carefully open the upper shut-off valve (A1) a little so that the glasses and its sealing will be carefully heated with steam, until the operating temperature has been reached. This takes about 5-10 minutes. Afterwards close the upper shut-off valve. Next, close the drain valve (C1). Now the upper shut-off valve (A1) can be opened slowly until it stops. Next, the lower shut-off valve (B1) must be opened slightly (lever approx. 5min position), so that the ball in the valve cannot obstruct the valve passage. After pressure equalization, open the lower shut-off valve (B1) until it stops. Wait for the water level to be adjusted and then check the indicator for leakage.**

(If water level is not visible, see 10.1 General information and operating instructions "self-closing ball")

## 9. Maintenance

It is assumed that the person charged with the maintenance tasks is fully conversant with measurement and control systems. Untrained persons must not carry out maintenance work! If there is no adequately qualified person available, IGEMA GmbH can be brought in to service your measurement and control system.

**When replacing components, it must be ensured that only original IGEMA GmbH parts are used.**

**Any warranty is void if components from other manufacturers are used.**

### Preventive Maintenance

The following points should be observed to maximize gauge life:

Proper cleaning and maintenance of level gauges in steam service is vital for enhanced performance and service life. The gaskets and mica shields shall always be replaced during maintenance, even if they appear to be in perfect condition. Gaskets relax and can harden over time while defects in mica (i.e., chips or scratches) become points of high stress concentration. Even with no visible defects, a used glass has surface stresses induced from the original assembly and pressurization of the gauge. If reassembled, the gaskets and sealing surfaces will apply new stresses, which are likely to break the mica either during assembly or when the gauge is pressurized.

Therefore, new mica is always required. The gauge glass must be kept clean to ensure the visible water level in the chamber accurately represents the water level in the boiler.

The user must determine upon evaluation of his or her own operating experience an appropriate maintenance schedule necessary for the specific application. Note that the frequency and method of blow-down/purging may affect service life and performance of glass level gauges. Realistic maintenance schedules can only be determined with full knowledge of the services and application situation involved.

## 9.1 Leakage

Re-tighten corresponding screw connection in case of leakage

If necessary, replace gasket and check sealing surface.



**Severe burns and scalding's on the whole body are possible!**  
**Replace gaskets only if level gauge is empty and pressure less!**

### Leakage at pressure screws

- In case of leakage, close upper and lower shutoff valve (A1, B1) and slowly open drain valve (C1) a little.
- Fully open drain valve if pressure has escaped.
- Re-tighten pressure screws from top to bottom in several steps (see table item 9.6) starting in the centre and using successively opposite diagonal tightening up to a tightening torque of **Md<sub>max.</sub>**

## 9.2 Cleaning of glasses

During first commissioning or re-commissioning, oil or grease residues can deposit on the inside of the glass.

In this case:

- Close the shutoff valves (A1, B1).
- Open drain valve (C1). Wait until temperature and pressure are back to ambient.
- After removing plug (13), the glasses and channel of the gauge body can be cleaned with a circular brush.

## 9.3 Cleaning / purging of level gauge



**Close top and bottom shutoff valves (A1, B1).**  
**Open drain valve (C1), unit will empty; this normally signifies that cleaning is completed.**  
**Put the device into operation as described under item 8.**

### If cleaning was not sufficient:

- Close upper and bottom shutoff device (A1, B1).
- Open upper and bottom shutoff device (A2, B2) (if exists) and the drain valve (C1). Following that, slowly open upper shutoff device (A1) and steam flowing through the unit cleans the glasses.
- Close upper shutoff device (A1) and drain valve (C1) again.
- For commissioning see point 7.

If this cleaning was not sufficient, replace glass.

**Spares kits and product numbers are listed in item 13 Spare Parts and Accessories.**

## 9.4 Exchange of glass

**As soon as the cover rails are loosened, new mica panes and seals must always be installed!**

For safety and for full use of the indicator, the mica and seals must be replaced annually. Without the annual replacement, IGEMA will not accept any warranty if this causes damage to the sealing surfaces of the indicator body.



**Achtung! Demontage nur im kalten Zustand!**

**Always place a new glass, a new gasket and a new cushion!**

- Close the shutoff devices (A1, A2, B1, B2).
- Open the drain valve (C1), the device discharges.
- Unfasten the pressure screws (Hexagon nut 7, Threaded bolt 8) and remove.
- Remove cover rail (3), Counter plate RG (2), glass (5) and sealings reflective glass (4).
- Remove sealing residues.
- Clean the sealing surface of body RG as well as the contact surface of the cover rail.

## 9.5 Assembly

- Grease the Threaded bolt (8) with copper paste. Position the graphite sealing (4), the reflective glass (5) and another graphite sealing (4 -serves as a pressure cushion) in the cover rail in this order.

**Install the glass with grooves turned to the medium!**

- Carefully position the cover rail (3) and its contents on the body RG (1) of the indicator. Then hand-tighten the set screws (11) on the sides just enough to hold the cover rail to the indicator.
- The hexagon nuts (7) must be tightened, starting from the centre, alternately crosswise (see chapter 8.1) in three steps (see chapter 9.6), to tightening torque **Md max = 45 Nm**.
- Recommission the reflex level gauge as described under point 8.

## 9.6 Tightening torques

max. allowable pressure PS	Tightening torque Md → <b>Md<sub>max</sub></b> [Nm]		
	in steps		
	1	2	3
32	20	35	<b>45</b>

## 10. Shutoff valve

Type marking:

A	2	20, 40
Shutoff valve	No. of shutoff possibilities	Serial no.

### 10.1 General Information and operating instructions

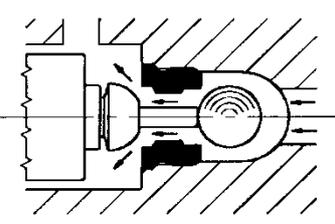
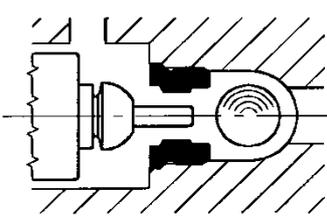
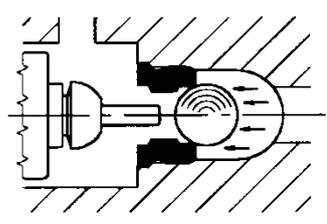
IGEMA shutoff valves are mostly maintenance-free and easy to handle. All IGEMA valves are equipped with metal gaskets, the valve spindles are sealed with a gland packing. The shutoff valve versions go from simple shutoff (designation A1--) to double shutoff (designation A2--). All main valve spindles are equipped with a quick closure function that ensures that the valve can be opened or closed with a 1/3 turn.

### 10.2 Functional principle

Handle/handwheel rotated clockwise: shutoff valve is closed.  
 Handle/handwheel rotated anticlockwise: shutoff valve is opened.  
**Tools to increase hand torque are not permitted.**

### 10.3 Self-closing ball safety function

All IGEMA GmbH shutoff valves are equipped with a self-closing ball function. The self-closing ball is a safety device which automatically closes valve passage of shutoff valve if e.g. level gauge is damaged (e.g. mica break).

Fig.1	Fig.2	Fig. 3
		
Ball position during commissioning or flushing / purging	Ball position during normal operation	Ball position during glass/mica break or incorrect commissioning



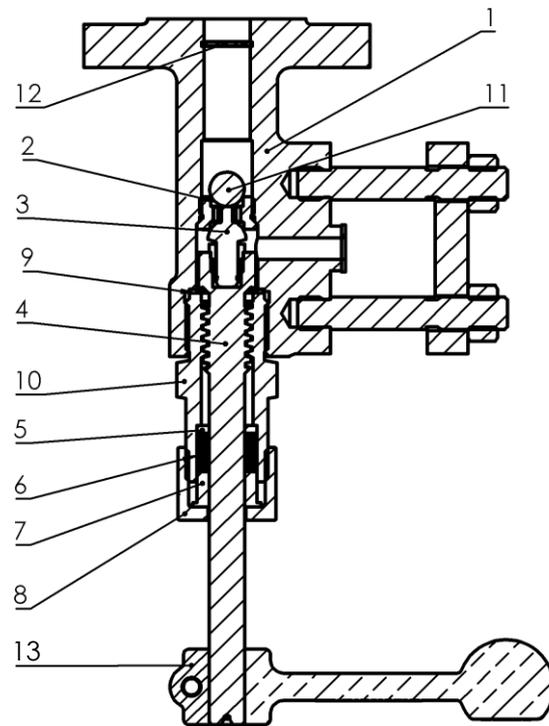
**Functioning of self-closing ball is only guaranteed if valve is fully opened. Residues (dirt, welding beads etc.) can put self-closing ball out of action.**

## 10.4 Construction

### A120-CS und A140-CS

- Lateral connection M12x48
- Always equipped with hand lever

On request: with quick closing spindle



- |                        |                       |
|------------------------|-----------------------|
| (1) Valve housing      | (8) Cap nut           |
| (2) Seat               | (9) Sealing ring      |
| (3) Cone set with stud | (10) Upper part valve |
| (4) Valve spindle      | (11) Ball             |
| (5) Base ring          | (12) Retaining spring |
| (6) Gland packing      | (13) Hand lever       |
| (7) Stuffing box       |                       |

## 10.5 Commissioning



**Before commissioning, recommissioning, repair or conversion, all installation and assembly work must be properly completed, and the valve must be in the correct functional position. Check specifications of material, pressure and temperature!**

- Slightly open shutoff valves with self-closing ball on boiler nozzles containing steam and water counterclockwise for approximately 5 minutes to prevent that ball closes valve passage (see fig. 1). Fully open spindle after accomplished pressure balance (backseat).
- Compare function of level gauge and fluid level height with the other safety fittings.

## 10.6 Maintenance



**Carry out maintenance works and disassembly only if boiler and level gauge are empty and pressure less.**



**Observe that lubricant is suitable for medium and operating temperature. Keep spindle thread always greased.**

### **Leakages on spindle (4, 13) / gland packing (6)**

- Re-tighten screw cap (8).  
Life of valve can be increased by regular control on tightness.

### **Replacement of seat (2), cone set (3) and ball (12)**

- Screw out upper part of valve (10) with valve spindle (4, 13) and remove valve housing (1).
- Unfasten screw cap (8) and remove valve spindle (4, 13) from valve housing (1) / upper part of valve (10).
- Remove and replace cone set (3).
- Screw out seat (2) with socket wrench (A120-CS, A140-CS = AF10).
- Remove ball (11), check and replace if necessary.
- Grease thread of new seat (2) and screw in.  
A120-CS, A140-CS ⇒ **70 Nm**
- For assembly see item 10.7.

### **Replacement of packing set**

#### **[Base ring (5), gland packing (6), stuffing box (7)]**

- Screw out upper part of valve (10) with valve spindle (4, 13) and remove from valve housing (1).
- Unfasten screw cap (8) and screw out valve spindle (4, 13) from valve housing (1) / upper part of valve (10).
- Remove packing set (5, 6, 7).
- Carefully remove deposits on valve spindle (4, 13).
- For assembly see item 10.7.

## 10.7 Assembly

1. Grease thread of valve spindle (4, 13) and screw in valve spindle in valve housing (1) / upper part of valve (10).
2. Insert base ring (5), gland packing (6) and stuffing box (7).
3. Screw on screw cap (8) and tighten gradually.  
- *spindle must stay movable* -
4. Screw in complete upper part of valve (10) with new sealing ring (9) into valve housing (1) with tightening torque  **$M_d \text{ max} = 280 \text{ Nm}$**
5. Close shutoff device.

## 11. Drain valve

### 11.1 Information



The drain piping to the drain valve must ensure that no leakage of the medium into the atmosphere is possible and must be protected from pressure surges.

If the drain valve is equipped with a Ø12 cutting ring screw, the Ø12x1 pipe (from material 35.8) must be mounted as per DIN 2353. With a welding end only welding processes 111 and 141 are permitted.

### 11.2 Functional principle

Handwheel rotated clockwise: drain valve is closed.

Handwheel rotated anticlockwise: drain valve is opened.

**Tools to increase hand torque are not permitted.**



Spare parts and further information can be found in the product-specific assembly and operating instructions or in the data sheet.

### 11.3 Assembly



The drain line to the drain valve must ensure that no free escape of the medium into the atmosphere is possible and must be secured against pressure surges.

- Firmly screw on drain valve with sealing ring (2) on existing unit.
- Cutting ring connection: Assemble pipe  $\varnothing$  12x1 (made of material P235GH) on site to the screw connection (14) provided in accordance with DIN 2353. (AF24).  
Welding end: weld on  
Flange: screw on

### 11.4 Commissioning

Rust, sand or similar impurities inside of the medium or during first flushing can cause leakage if they remain in the area of the seat.

**Purging of valve:**

- Fully open valve for purging. The pre-pressed gland packing can lose its denseness due to a longer storage (see item 11.4).
- Close valve.

## 11.5 Maintenance



**Dismantle only when the level indicator is depressurised and empty.**

In case of defects and leaks, the complete drain valve must be replaced!

### Exchanging of the valve



**The exchanging of the valve may only be carried out by specialists!**

Loosen the pipe screw connection from the drain valve and pull off the pipe. Unscrew the shut-off valve from the transparent level gauge.

Screw a new drain valve with a new seal (supplied with shut-off valve) into the transparent level gauge, paying attention to the position of the handwheel. Screw the pipeline onto the shut-off valve. Check for leaks, tighten screw connections if necessary.



**Spare parts and further information can be found in the product-specific assembly and operating instructions or in the data sheet.**

## 12. Case of damage



**Provide security in the danger zone!**  
**Severe burns and scalding's on the whole body are possible!**

- Check if no further steam escapes at the damaged place.
- **Set boiler pressure less!** Close valves as follows:
  - 1 Close valves on steam and water holding stud.
  - 2 Slowly open drain valve. Level gauge becomes pressure less and water is drained.
  - 3 For commissioning with new spare parts see chapter 8.

Fault	Cause:	Action	Possible troubleshooting
Leakage	<ul style="list-style-type: none"> <li>- glass breakage</li> <li>- packing set not tight</li> <li>- gasket damaged</li> </ul>	<ol style="list-style-type: none"> <li>1. close shut-off valves</li> <li>2. slowly open drain valve (depressurise gauge)</li> </ol>	<ul style="list-style-type: none"> <li>- change glass</li> <li>- replace packing set / seal</li> <li>retighten screw connections</li> </ul>
No medium visible in the gauge	<ul style="list-style-type: none"> <li>- shutoff valves are not open</li> <li>- inlet or outlet pipe is blocked</li> <li>- connection bores in the gauge are blocked</li> </ul>	<ol style="list-style-type: none"> <li>1. close shut-off valves</li> <li>2. slowly open drain valve (Depressurise gauge)</li> </ol>	<ul style="list-style-type: none"> <li>- carefully open shutoff valves</li> <li>- clean inlet and outlet pipes</li> <li>- clean gauge</li> </ul>

### 12.1 Technical customer service

Our competent team at IGEMA GmbH will be happy to answer any questions you may have. In order to be able to guarantee a problem-free service, we ask you to provide us with the following data:

- Date of manufacture + order number
- Device type

You can find the details on the data plate (see item 5.6) of your gauge. As soon as you have described your question or fault, our customer service will immediately seek a solution. If repairs or maintenance are due, we shall make you a proposal for the type and date for the work.

## 13. Spare parts



When ordering spare parts, always state the article number and the device number given on the data plate!

### 13.1 Reflex Level Gauge

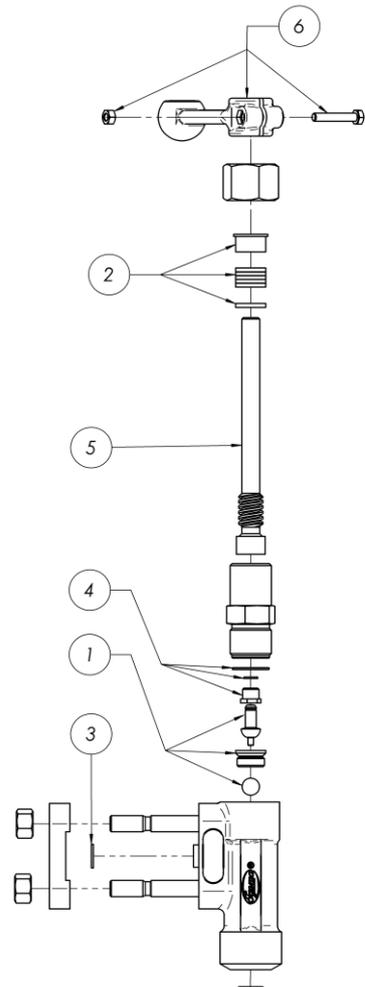
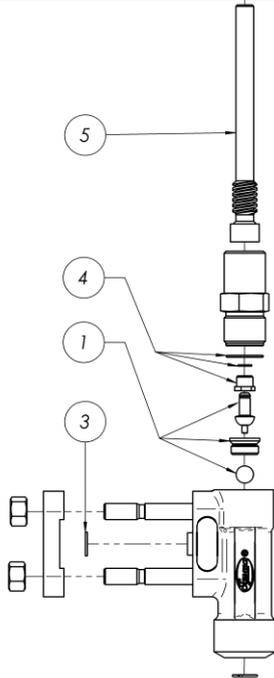
Spare part no.:	Designation	Size	Article no.	Quantity required	
				Single sight length	Superimposed sight openings
1	Screw plug	G½"	40-10492	1	1
2	Sealing ring carbon steel	for G½"	40-00099	1	1
2	Sealing ring stainless steel	for G½"	40-00128	1	1
<b>Spare parts package RG200</b>					
3	Spare parts package	5	15-13060	1	nx1
3	Spare parts package	6	15-13061	1	nx1
3	Spare parts package	7	15-13062	1	nx1
3	Spare parts package	8	15-13063	1	nx1
3	Spare parts package	9	15-13064	1	nx1
3	Spare parts package	10	15-13065	1	nx1
3	Spare parts package	11	15-14186	1	nx1
n = number of sight openings . Spare parts package 3 consisting of 2x seal and 1x reflective glass .					

### 13.2 Accessories

Designation	Marking / labelling	Article-no.
Level mark	NW-LWL-NB	25-13645
Level mark	HHWL	25-13717
Level mark	HWCO	25-13697
Level mark	HWL	25-13716
Level mark	NWL	25-13698
Level mark	LWL	25-13718
Level mark	LWCO	25-13699
Level mark	LLWL	25-13719
For each level mark, two thread-forming screws are required for fastening. Article-no.: 40-11121		

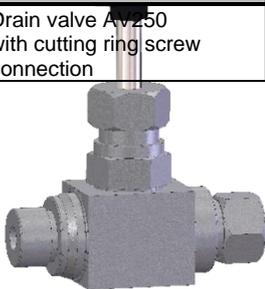
### 13.3 Shut off valve

Pos.-No.	Designation	Article-No.	Quantity
1	Cone set, Seat, Ball	15-00116	1
2	Packaging unit	15-00113	1
3	Sealing ring $\varnothing 9 \times \varnothing 17,5 \times 1,5$ mm	40-00109	1
4	Sealing ring $\varnothing 22 \times \varnothing 27,5 \times 1,5$ mm	40-00117	1
5	Spindle	25-00126	1
6	Hand lever set	25-00102	1



### 13.4 Drain valve

Pos. no.	Designation	Max. all. pressure PS [bar]	Article-no.
-	Drain valve AV250 with cutting ring screw connection	250	15-16613



AV250

## 14. Decommissioning



**Severe burns and scalding's on the whole body are possible!**

**Before detaching flange connections, screws of stuffing box, pressure screws or screw plugs, all connected lines must be pressure less (0 bar) and cooled off to ambient temperature (20°C)!**

### 14.1 Disposal

Dismount unit and separate waste products.

When disposing the unit, observe legal regulations for waste disposal.



This high-quality IGEMA product was designed, manufactured and tested with the application of the QM System guidelines in accordance with DIN EN ISO 9001:2015.

If the device supplied indicates transport damage or gives cause for complaint in spite of our final quality control, please contact our SERVICE department on telephone +49 2501 92424-0 by return.

## 15. Manufacturer's Declaration







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