



# Aquarian 3000Visual Bi-colour Water Level Gauge

The Aquarian 3000Visual is a 3000 psi ported gauge that produces a red/green image to indicate the water level in a high-pressure steam drum. The body is precision machined into a trapezoidal shape. Light projected through steam produces a red image. Light projected through water is refracted (bent) and produces a green image. The gauge fulfills the requirements in the 2001 ASME Boiler and Pressure Vessel Code Section 1 PG-60.1 that states:

“Boiler with an MAWP of 400 psi or less and electric boilers of the electrode type, require at least one gage glass. Except for electric boilers of the electrode type, boilers with an MAWP over 400 psi require at least two gage glasses. Forced flow steam generators with no fixed steam and waterline, and high-temperature water boilers of the forced circulation type, do not require a gage glass.

When two gage glasses are required, one of the gage glasses may be replaced by two independent remote level indicators. When both remote level indicators are operating reliably, the remaining gage glass may be shut off, but shall be maintained in serviceable condition. When fitted with two gage glasses, both gage glasses may be connected to a singled water column or directly to the drum. At least one gage glass shall be readily visible to the operator in the area where immediate control actions are initiated. Alternately, two dependable indirect indications shall be provided, either by transmission of the gage glass image or by remote level indicators. A gage glass image transmitted to the operator’s working area by means of a fiber optic signal, is considered to provide direct reading of the gage glass water level.”

### OPTIONS

- Visibility: Gauges are available in a range of standard visibilities from 12-1/2” up to 42-1/2” to suit every application
- End Connection options: Flanged with pipe expansion loop, or pipe nipple ended for use with tubular packing box valves
- Gauge flange spacing: Standard flange centers, or customized to suit retrofit applications
- Solid-state Illuminator with Level Display provides clear red/green image and a 10 year maintenance free service life. Illuminator can be easily modified for use in hazardous (explosive) areas. See Fossil Gauge Illuminator Brochure 9340-1116 for more information
- Gauges can be incorporated with other standard components and provided as part of a complete boiler level equipment package including:
  - Plain water column to match drum centers and gauge flange centers
  - Aquarian electronic level column with probes, remote indication and controls
  - Gauge isolation valves with chain wheel operators and chain
  - Column isolation valves and drain valves



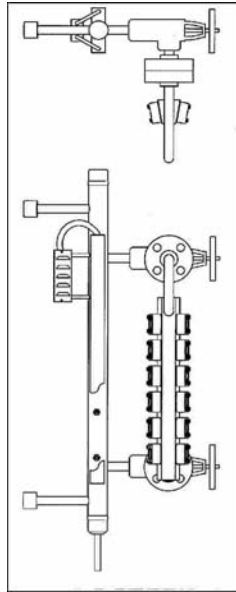
AQUARIAN 3000Visual FLANGED GAUGE

Controlling  
the **power**  
of **steam**

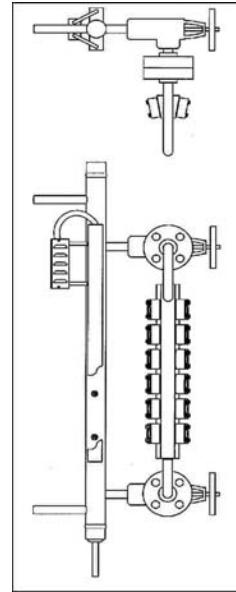
# Aquarian 3000Visual

## FEATURES

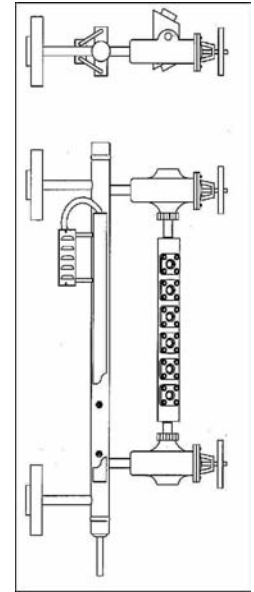
- Designed for 3000 psi (207 Bar) and 696°F (369°C) steam service
- One piece type 304L stainless steel body and covers provide corrosion resistance and long service life
- Belleville spring washers maintain gasket loading under thermal and pressure cycles
- Precision tempered and ground Aluminosilicate glass provides clear visibility
- Laminated and die formed graphoil sealing gasket  
Two discs of premium V-1 quality clear ruby mica protect the glass from the steam and extend the service life
- Constructed to the ASME Boiler and Pressure Vessel Code requirements for design, materials and construction



SIDE FLANGE MOUNTING



BOTTOM FLANGE MOUNTING

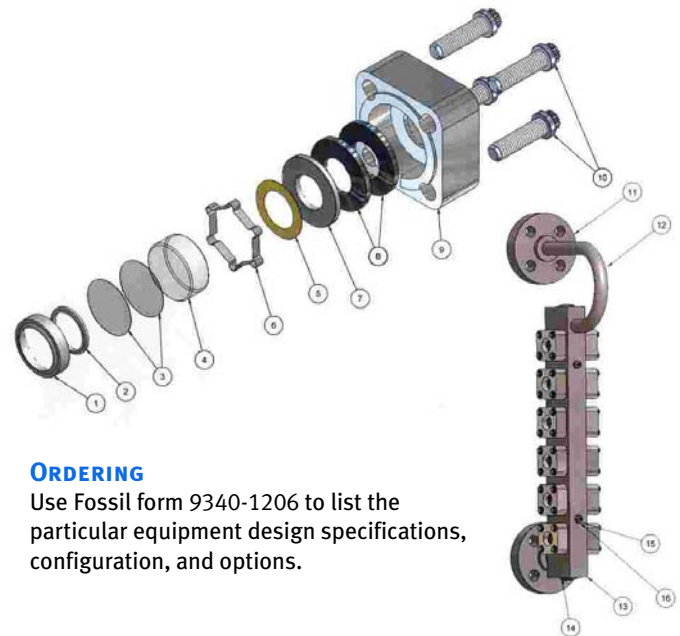


PIPE NIPPLE MOUNTING

## AQ3000Visual GAUGES INSTALLED ON THE AQUARIAN ELECTRONIC LEVEL COLUMN

ITEM	QTY	DESCRIPTION	MATERIAL
*1	1	GASKET RETAINER	STAINLESS STEEL
*2	1	SEALING GASKET	GRAPHOIL
*3	2	MICA	MICA
*4	1	GLASS	TEMPERED ALUMINOSILICATE
*5	1	CUSHION GASKET	NON-ASBESTOS
6	1	GLASS RETAINING SPRING	STAINLESS STEEL
7	1	FLAT WASHER	STAINLESS STEEL
8	2	BELLEVILLE WASHER	STAINLESS STEEL
9	1	PORT COVER	ASME SA 351 CF8
10	4	COVER BOLT	ASME SA 193 B7
11	2	FLANGE	ASME SA 105
12	1	PIPE	ASME SA 106 GR.B
13	1	GAGE BODY	ASME SA 479 TYPE 304
14	2	PLUG	ASME SA 182 TP 304
15	4	5/16-18 STUD	STAINLESS STEEL
16	4	5/16-18 NUT	STAINLESS STEEL

\* Included in 3000V Port Repair Kit: P/N 9320-0109



## ORDERING

Use Fossil form 9340-1206 to list the particular equipment design specifications, configuration, and options.

\* American Society of Mechanical Engineers

The manufacturer reserves the right to change the designs and materials of its products without notice.

DISTRIBUTED BY:



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## WATER LEVEL MEASUREMENT

WATER LEVEL MEASUREMENT AND INDICATION FOR THE STEAM POWER INDUSTRY

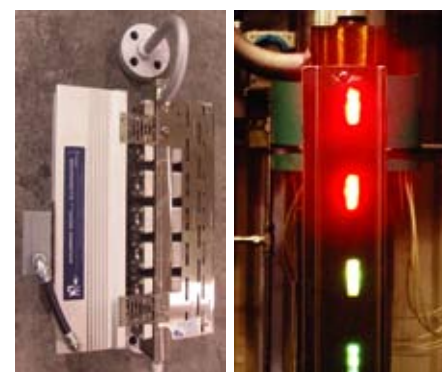
### Aquarian 3000 Visual Bi-Colour Gauge Illuminator Series 2 and Display

The Aquarian 3000 Visual is a high pressure ported water level gauge used to measure the water level in high-pressure boiler steam drums. The ASME Boiler and Pressure Vessel Code states that “ported gages or end-connected strip gages, shall be equipped to afford obvious visual discrimination between the appearance of water or vapor in the individual sections.” The Solid State Bi-Colour Gauge Illuminator and Display attach to the 3000 psi ported gauge to produce a red or green image on the display. A red image indicates that steam is present and a green image indicates that water is present. The red/green image is produced by an array of solid-state light emitting diodes (LED’s) and precision lenses that focus the image through the gauge body onto the display. The LED’s replace the unfocused incandescent light bulb and colored glass that are currently used in conventional bi-colour illuminators.

The LED arrays and precision Plano-convex lens provide a bright, clear and unmistakable image in the presence of steam and water. The high intensity narrow beam LED’s are mounted on an electronic printed circuit board with current limiting resistors. A precision 24VDC power supply provides the Illuminator with the exact current that is required for a constant clean image.

#### FEATURES

- All stainless steel and aluminum construction provides corrosion resistance and long service life
- LED’s are immune to failure from vibration
- Extremely efficient; converts virtually all energy into light, reducing power consumption and costs. Only 0.5 watts per port
- Average LED life is 11 years, resulting in reduced maintenance and service costs
- Absence of fragile colored glass prevents unnecessary repairs
- Display and Illuminator can be installed on either side of the gauge to provide viewing flexibility
- Side vents for internal cooling
- Indoor or outdoor installations rated NEMA 4X
- Adjustable end plate for exact placement of viewing screen, providing an unmistakable image
- Easily removed for gauge port inspection or repair
- Illuminator and display are extremely light weight and compact
- Illuminator power supply can utilize voltage of either 120 or 240VAC
- 6 LED’s per port produce extremely bright image, visible at more than 100 ft away
- Level Display enables operator to easily view image without standing at a precise spot



HALF FULL GAUGE, ILLUMINATOR AND DISPLAY ASSEMBLY

Controlling  
the power  
of steam

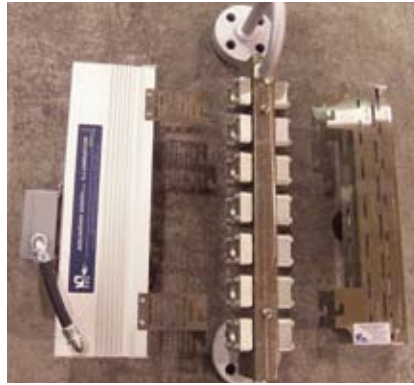
# Aquarian 3000Visual Bi-Colour Gauge Illuminator and Display

## OPTIONS

- Display hood, for increased visibility of display in bright sunlight
- Mirror or closed circuit TV for remote viewing

## ORDERING

Use Fossil form 9340-1206 to list the particular equipment design specifications, configuration, and options



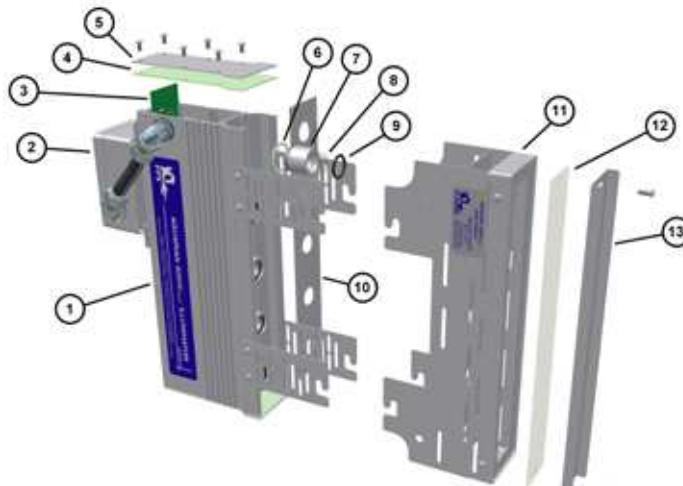
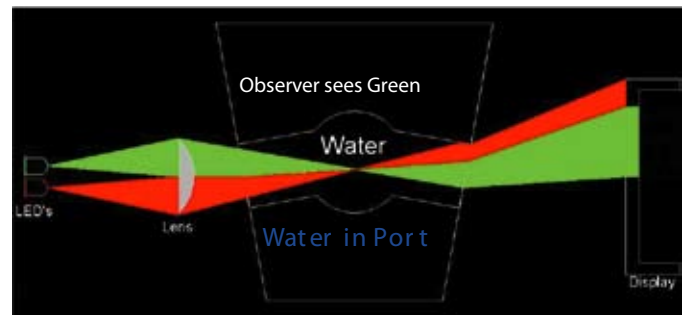
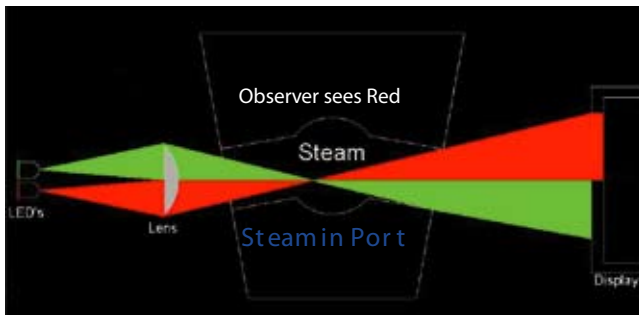
## STANDARD BI-COLOUR GAUGE ILLUMINATOR SYSTEM

A small power supply (120 or 240 VAC input) in a NEMA 4X enclosure is provided with each Illuminator

**U.S. Patent NO.'s: 6,938,477;  
7,197,926; 7,213,457**

**Canada Patent No.: 2,465,601**  
Europe, Japan and China Patent Pending

## BI-COLOUR GAUGE OPERATION



1	Illuminator Cabinet
2	Power Supply
3	LED PCB
4	Gasket
5	Cover
6	Lens Gasket
7	Lens Holder
8	Lens
9	Oring
10	Heat Divider
11	Display Cabinet
12	Display Window
13	Adjustable End Plate

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