

# Flat Glass Water Gages and DuraStar



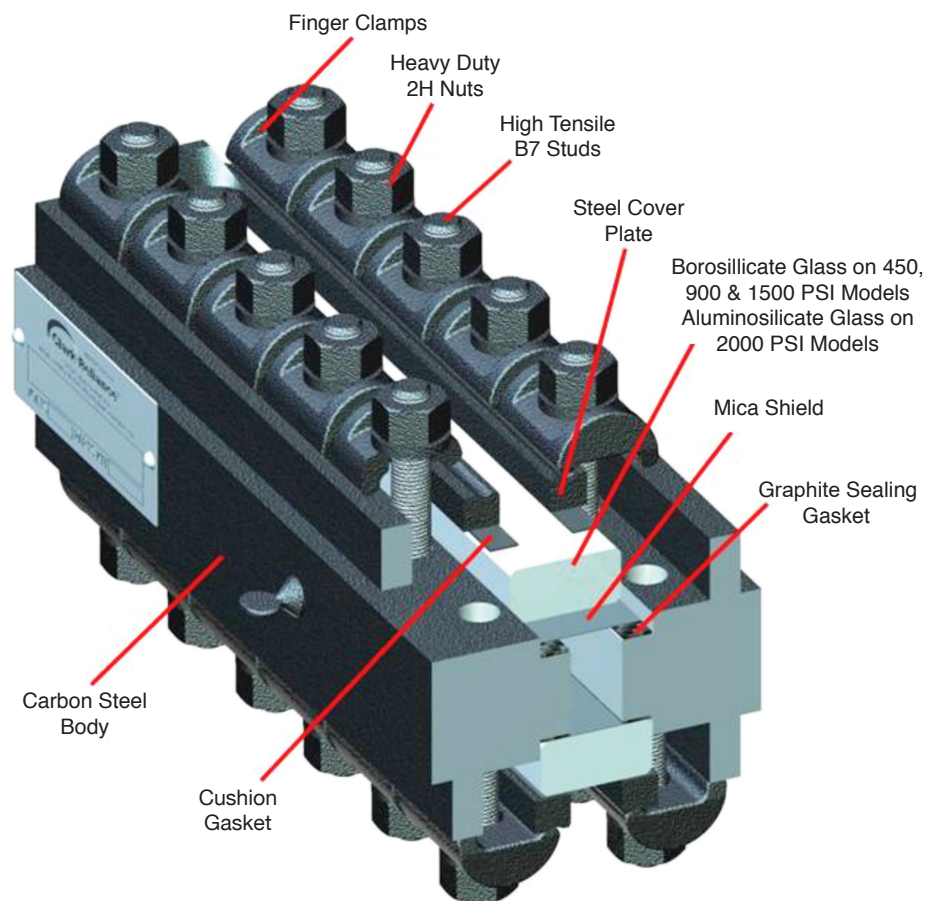
**Reliance**<sup>®</sup>  
A PRODUCT OF CLARK-RELIANCE

# Reliance<sup>®</sup> Flat Glass Gages

The precision manufacturing of these time-tested designs assures outstanding performance and service life. Choose from single, double or up to six windows for ultimate visibility to meet your specifications.

FG Series Gages provide wide-body construction for added strength and rigidity. Tempered flat glass composition of premium quality to resist thermal shock. All glass is tested for surface trueness prior to assembly and is protected with a high quality mica shield for steam applications.

All models feature finger-clamps which impart a uniform, perpendicular load across the glass surface, assuring gasket tightness. This design allows easy dismantling for cleaning and servicing.



A window slot, 5/8" (15.9 mm) wide, provides high visibility gage reading. For many installations, Water Gage Illuminators are recommended to improve gage readability.

**\*Complies with ASME Section I Requirements**

# Flat Glass Water Gages

## 450 – 2000 PSI

FG Series Flat Glass Gages feature four design classes:

### To 450 PSI

(31 Bar G, 31.6 Kg/cm<sup>2</sup>)

SINGLE WINDOW GAGES						
MODEL NUMBER	VISIBILITY		MINIMUM WATER GAGE CENTERS			
			BG404S		SG854	
	INCHES	MM	INCHES	MM	INCHES	MM
FG404	6-5/8	168	14	356	17	432
FG405	7-3/4	197	16	406	18	457
FG406	9	229	17	432	20	508
FG407	10-1/8	257	18	457	21	533
FG408	11-3/4	298	20	508	22	559
FG409	12-1/2	318	20	508	23	584
DOUBLE WINDOW GAGES						
FG466	15	381	24	610	28	660
FG477	17-1/2	444	26	660	29	737
FG488	20	508	29	737	31	787
FG499	21-1/2	546	30	762	33	838

Three or more window models available upon request.



### To 900 PSI

(62.1 Bar G, 63.27 Kg/cm<sup>2</sup>)

SINGLE WINDOW GAGES						
MODEL NUMBER	VISIBILITY		MINIMUM WATER GAGE CENTERS			
			BG404S		SG854	
	INCHES	MM	INCHES	MM	INCHES	MM
FG904	6-5/8	168	17			432
FG905	7-3/4	197	18			457
FG906	9	229	20			508
FG907	10-1/8	257	21			533
FG908	11-3/4	298	22			559
FG909	12-1/2	318	23			584
DOUBLE WINDOW GAGES						
FG966	15	381	26			666
FG977	17-1/2	444	29			737
FG988	20	508	31			787
FG999	21-1/2	546	33			838

Minimum centers quoted apply to Clark-Reliance Gage Valve SG800 Series.



### To 1500 PSI

(103.4 Bar G, 105.5 Kg/cm<sup>2</sup>)

SINGLE WINDOW GAGES					
MODEL NUMBER	VISIBILITY		MINIMUM WATER GAGE CENTERS		
			INCHES		MM
	INCHES	MM	INCHES	MM	MM
FG1504	6-5/8	168	20		508
FG1505	7-3/4	197	21		533
FG1506	9	229	23		584
FG1507	10-1/8	257	24		609
FG1508	11-3/4	298	25		635
FG1509	12-1/2	318	26		660
DOUBLE WINDOW GAGES					
FG1566	15	381	29		737
FG1577	17-1/2	432	31		787
FG1588	19-1/2	495	33		838
FG1599	21	533	35		889

Three or more window models available upon request.  
Minimum centers apply to Clark-Reliance Gage Valve SG800 Series.



### To 2000 PSI

(138 Bar G, 140.6 Kg/cm<sup>2</sup>)

SINGLE WINDOW GAGES					
MODEL NUMBER	VISIBILITY		MINIMUM WATER GAGE CENTERS		
			INCHES		MM
	INCHES	MM	INCHES	MM	MM
FG2004	6-5/8	168	15		381
FG2005	7-3/4	197	16		406
FG2006	9	229	17		432
FG2007	10-1/8	257	19		483
DOUBLE WINDOW GAGES					
FG2055	12	305	20		508
FG2066	15	381	23		584
FG2077	17	432	25		635

Three or more window models available upon request.  
Minimum centers apply to Clark-Reliance Gage Valve Series SG777.  
All FG2000 Series Gages are supplied with flanged connections.



# Reliance®

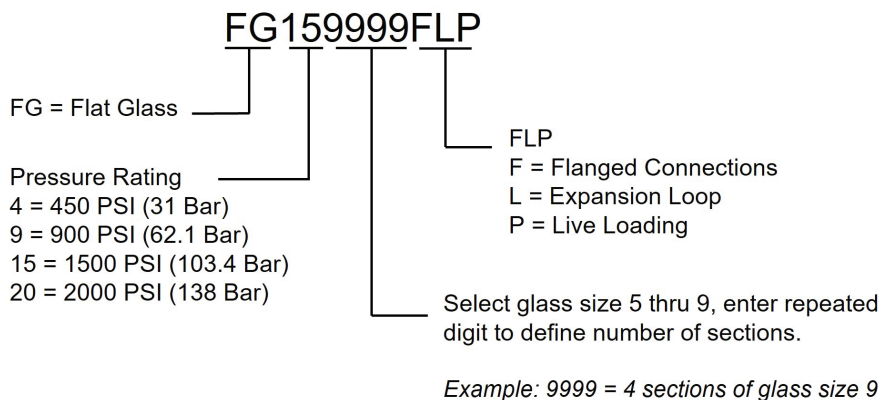
## Sizing Multiple Section Gages

### Maximum Water Gage Visibility for Flat Glass Gages

Dimensions - Inches (mm)

# of Sections	Glass Size				
	5	6	7	8	9
Three	21.25 (540)	25 (635)	28.375 (721)	33.25 (845)	35.5 (902)
Four	28 (711)	33 (838)	37.5 (953)	44 (1118)	47 (1194)
Five	34.75 (883)	41 (1041)	46.625 (1184)	54.75 (1391)	58.5 (1486)
Six	41.5 (1054)	48 (1219)	55.75 (1416)	65.5 (1664)	70 (1778)

- 1" (25.4 mm) minimum overlap on all multiple section designs to meet ASME Section I requirements
- Size 8 and 9 are not available for FG2000 series



Notes:

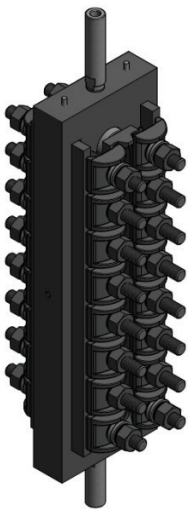
1. Gages with more than 3 sections will be offered with flanged connections.
2. All FG2000 Series Gages are supplied with flanged connections.



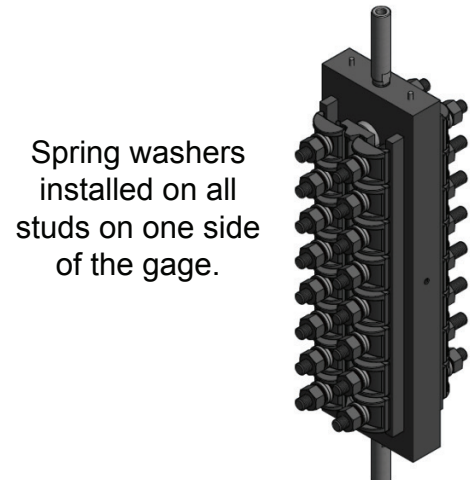
# Reliance®

## Live Loading Options

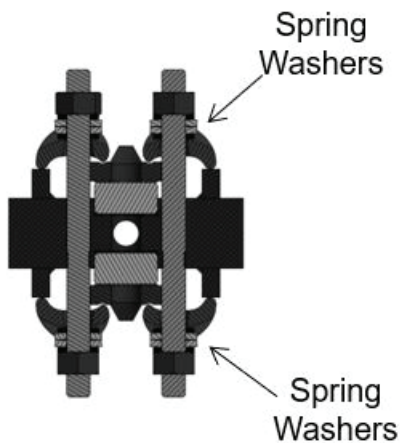
For longer life on FG1500/FG2000 series installed on applications with frequent cycling.



Spring washers installed only on the 4 corners on both sides. (see note below).

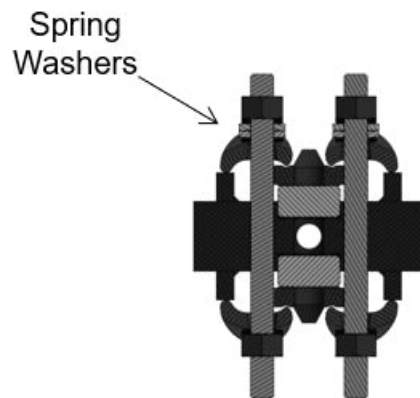


Spring washers installed on all studs on one side of the gage.



Spring Washers

Spring Washers



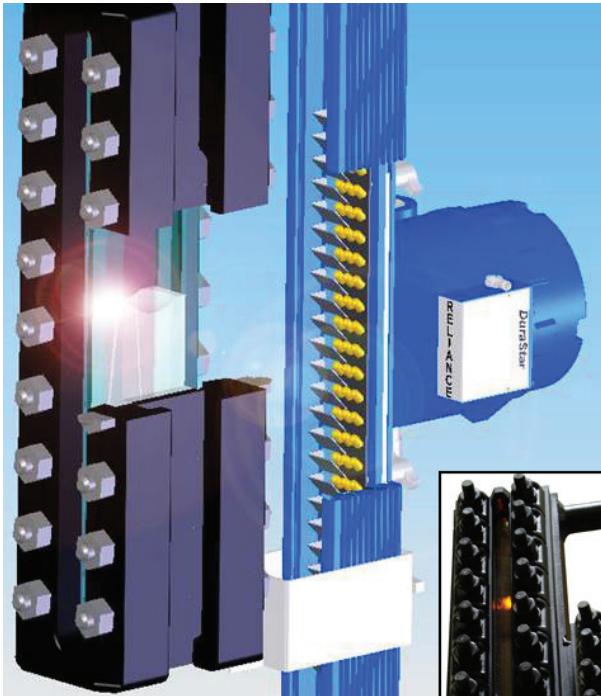
Spring Washers

The longer studs with spring washers are provided on both sides of the gage on the 4 corner studs because the corner studs thread into the gage body to aid with assembly. Spring washers are needed only on one side of the middle studs, since these studs slide through the gage body.

Specify live loading by adding a “P” suffix to the gage model number.

# DuraStar

## Flat Glass Gage LED Illuminator



The DuraStar Illuminator uses three columns of “directed” amber color LED’s pointed upward toward the water level line to create a brilliant star-like image at the water level. The DuraStar easily attaches to new or existing Reliance Flat Glass gages without the use of tools.



Explosion Proof enclosure for Classified Area locations.

Intrinsically Safe Lighting Circuit

DuraStar™ Model No.	Fits Gage Glass	Length (Inches)	Length (mm)	Wt (lb)
DS1000-1411-1	FG404 or FG904	11.75	298	7.50
DS1000-1511-1	FG405 or FG905	13.00	330	7.75
DS1000-1611-1	FG406 or FG906	14.50	368	8.00
DS1000-1711-1	FG407 or FG907	15.75	400	8.25
DS1000-1811-1	FG408 or FG908	17.25	438	8.50
DS1000-1911-1	FG409 or FG909	18.00	457	8.75
DS1000-1411-2	FG1504 or FG2004	13.00	330	7.75
DS1000-1511-2	FG1505 or FG2005	14.50	368	8.00
DS1000-1611-2	FG1506 or FG2006	15.75	400	8.25
DS1000-1711-2	FG1507 or FG2007	16.50	419	8.50
DS1000-1811-2	FG1508	18.00	457	8.75
DS1000-1911-2	FG1509	19.00	483	9.00

### DuraStar Nema 4, 4X (All Models)

DS1 = For NON- Classified “Ordinary” Areas  
 DS5 = For Classified Areas  
 DX5 = ATEX Approved Models

Gage Window Size ( 4 thru 9)

Power Source  
 1 = 115 VAC 50/60 Hz  
 2 = 230 VAC 50/60 Hz

DS1000 - 1 9 1 1 - 1

Gage Series

1 = FG450 - FG900  
 2 = FG1500 - FG2000

Power Supply

1 = Single Illuminator with one power supply  
**(Ordinary Locations)**  
 2 = Double Illuminator for two section gages with one power supply **(Ordinary Locations)**  
 H = Single Illuminator with one power supply **(Classified Locations)**

### Notes:

- For gages with three or more sections, combine single and double illuminators to minimize power supply requirements.
- For remote mounting of power supply, specify Part No. V20602 for a 6.5' power cable extension. Other lengths on request.

# DuraStar

## Flat Glass Gage LED Illuminator

### The Most Dependable LED Illuminator for all Reliance® Flat Glass Level Gages

- High Contrast
- Superior Visibility Day or Night
- Field Upgradable
- Maintenance Free
- Long Life ~100,000 hrs.
- No Heat Generation
- Versatile  
- Continuous or "On-Demand"
- Amber LED's for high intensity "star-like" image of the water line
- Longest Field-of-View
- Pays for itself in electricity savings alone!
- No weather-proof illuminator hood used
- Models for Ordinary or Classified locations
- ATEX models available

Contact your local representative or a Reliance Applications Engineer to configure a DuraStar for your transparent glass level gages.



#### SPECIFICATIONS FOR ORDINARY LOCATION MODELS

Power Supply:	100-277 VAC @ 50/60 Hz* 100-240 VAC @50/60Hz
Power Consumption:	320 mA @ 100 VAC
Est. Life:	100,000 Hours (continuous)
Agency Approvals:	FM Ordinary Locations CFM Ordinary Locations
Recommended Wire Size:	12AWG- 18AWG
Max dist. from power supply to light:	700ft. (216m)
Ambient Temperature:	-40F (-40C) to 160F (70C)
Electrical Connection:	3/4" FNPT

\*Voltage for North America Only

#### SPECIFICATIONS FOR HAZARDOUS LOCATION MODELS

Power Supply:	115 or 230 VAC @ 50-60 Hz
Power Consumption:	< 250 mA @ 115 VAC < 125 mA @ 230 VAC
Est. Life:	100,000 Hours (continuous)
Wire Size:	Min 18AWG (.75mm <sup>2</sup> ) Max 12AWG (4mm <sup>2</sup> )
Max dist. from power supply to light:	72ft (22M)

#### Hazardous Location Approvals

US/Canada:



Class I, Division 1, Groups B – D T4  
Class I, Zone 1, AEx db [ib] IIB+H2 T4 Gb  
Class I, Zone 1, AEx ib IIB+H2 T4 Gb  
Ex db [ib] IIB+H2 T4 Gb  
Ex ib IIB+H2 T4 Gb  
-40°C ≤ Tamb ≤ +60°C

ATEX:



II 2(2) G Ex db [ib] IIB+H2 T4 Gb (Power Supply)  
II 2 G Ex ib IIB+H2 T4 Gb (Lights)  
-40°C ≤ Tamb ≤ +60°C

IECEX:

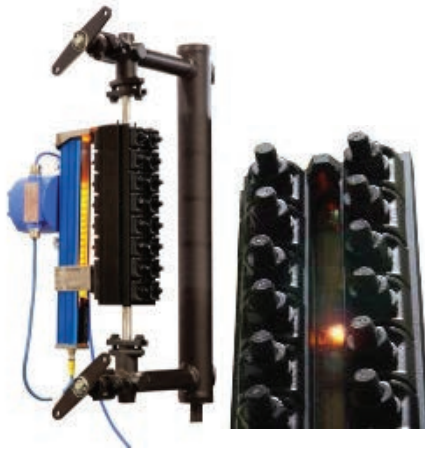


Ex db [ib] IIB+H2 T4 Gb (Power Supply)  
Ex ib IIB+H2 T4 Gb (Lights)  
-40°C ≤ Tamb ≤ +60°C

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**Eye-Hye® SmartLevel™**  
Local and Remote Indicators



**Flat Glass Gages  
and DuraStar  
Illuminators**



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Systems**



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