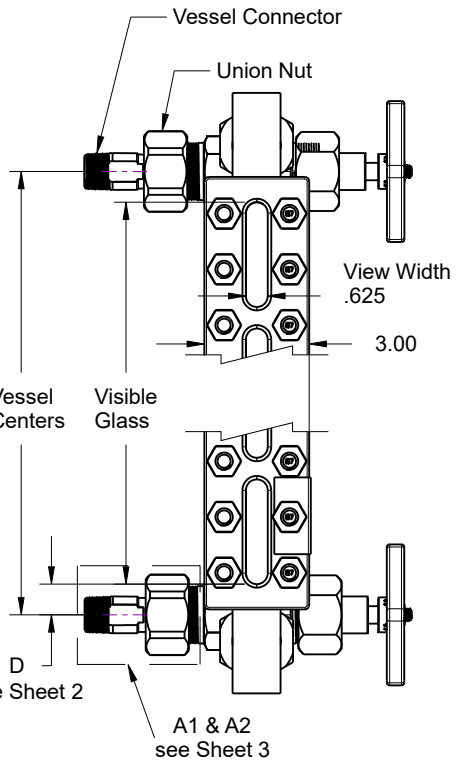
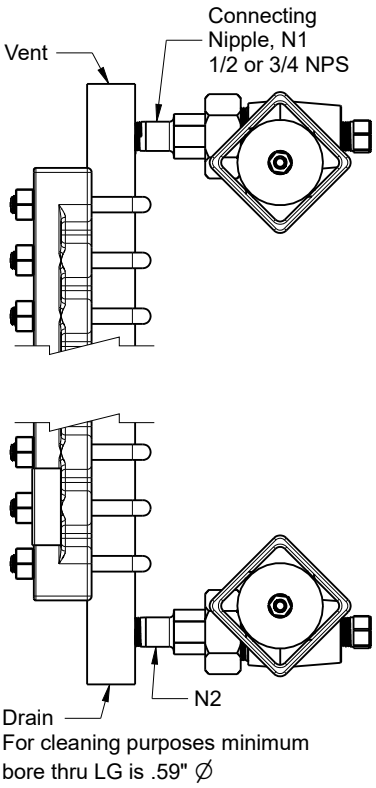
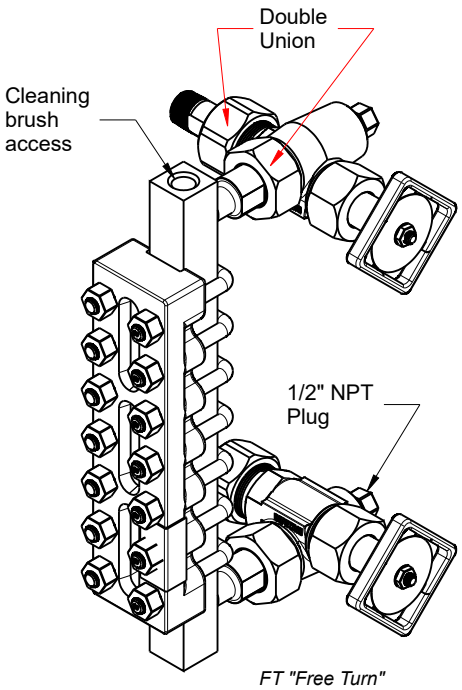
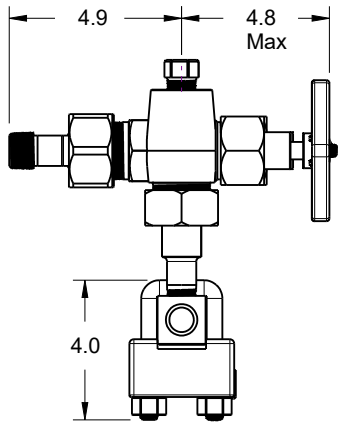




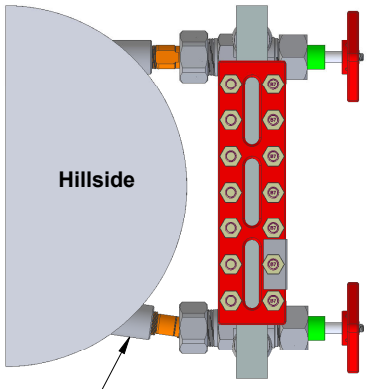


FT "Free Turn"
Patent 6,991,216



Close Hook-Up "CH" Style LG

- Close Hook-up design insures the longest possible glass length for a given vessel C-C
- LG chamber elongated to accomodate lateral ports
- Gage valves can be set closer together than a standard end connected gage, within 3/8" of the visible glass dimension, see Table
- Permits use of spherical unions



Angular misalignment often seen on horizontal vessels and field constructed piping

Corrected with use of spherical unions - as shown

Irregularities in parallelism of upper & lower vessel nozzles can cause the vessel unions to be out of square. The two point attachment of a typical sight glass requires simultaneous squareness when making up the unions - otherwise leak at the union or excessive strain of the connector and the "connecting nipples" will result

Spherical Union Advantages:
- Minimize piping strain
- Minimize leak at union
- 1.7x stronger in bending than regular Flat Floating Union vessel connector.... more suitable for long and heavy gages

Reference Documents: EN.RT-D5, Eng. Notes M991980, MOC

General Arrangement Drawing
Level Gage & Gage Valve Combo

Reflex Style: R100 / R200
Level Gage, Back Connected
Gage Valves, Double Union: FT25
Assembly Orientation: Fig. 5-4-R
Offsets Inside

All dimensions in Inches

Inferno Manufacturing Corporation
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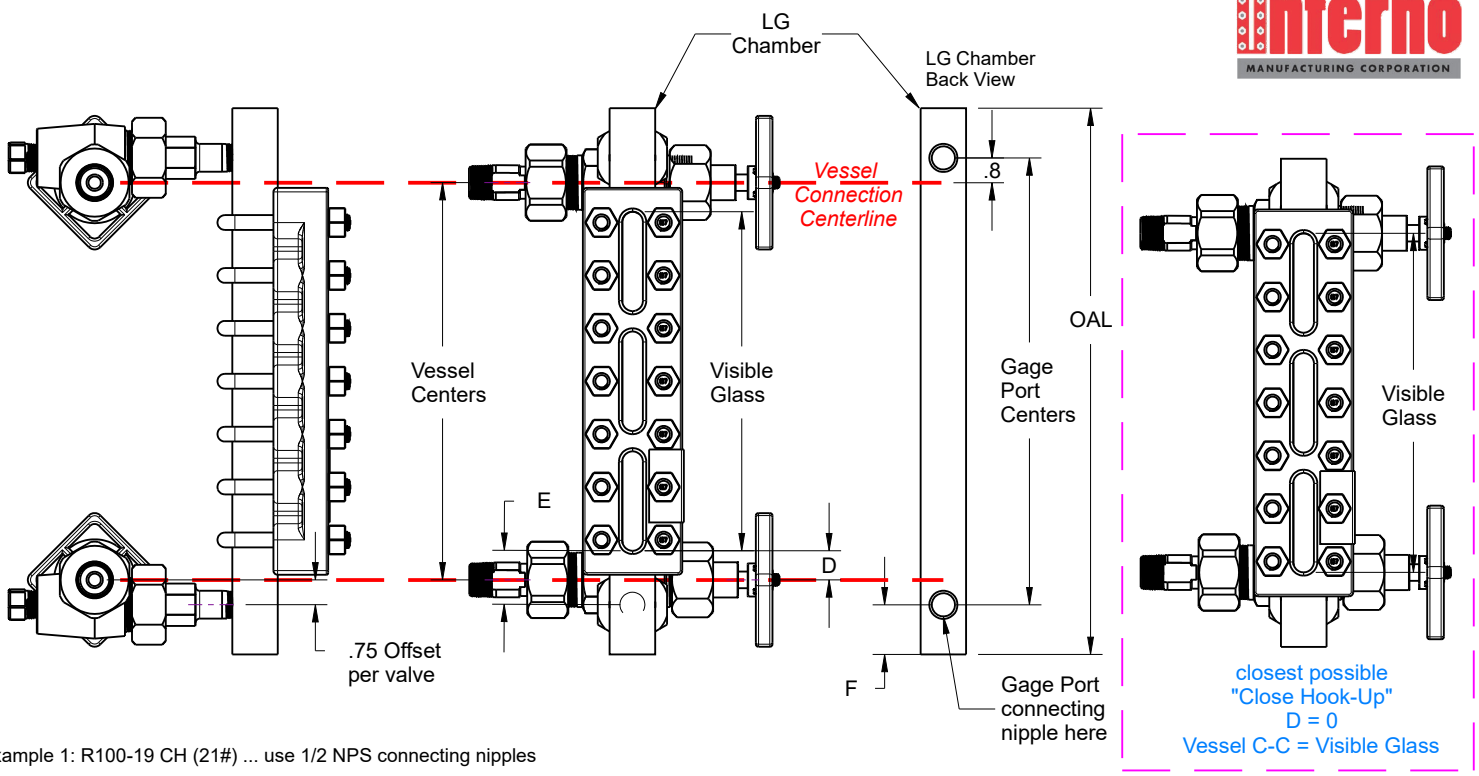
Drawing No: **GA.RD5-4-R**

Drawing Date: 2/20/2020

Revision: 0

Rev Date: N/A



Example 1: R100-19 CH (21#) ... use 1/2 NPS connecting nipples

Case A, Typical arrangement: mounted on 14" vessel centers ...
D = (14 - 12.625 vis. glass) / 2 = .687"

Case B, Factory minimum - Catalog standard: design vessel nozzles at 12.625" C-C, to match the visible glass length ...
D = 0

Example 2: R100-89 CH (163#) ... use 3/4 NPS connecting nipples

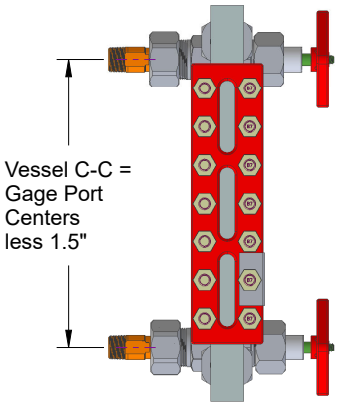
Case A, Typical arrangement: mounted on 114" vessel centers ...
D = (114 - 111.5 vis. glass) / 2 = 1.25"

Case B, Factory minimum - Catalog standard: design vessel nozzles at 111.875" C-C (111.5 +.375), to "match" the visible glass length ...
D = .187"

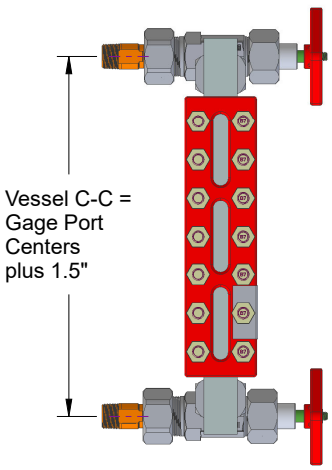
Table - Ref. Fig. 5-4

Gage Port NPS	Minimum Vessel C-C Equals	D = distance from lower glass view to lower vessel C/L	Min. D	Min. Gage Port C-C	E = distance from lower glass view to lower gage port	F
1/2	Visible Glass	(Vessel C-C minus Visible Glass / 2)...or specify asymmetry if required	0	Visible Glass + 1.5"	Min. .75"	1.5"
3/4	Visible Glass + .375"		.187"	Visible Glass + 1.875"	Min. 1.062"	2"

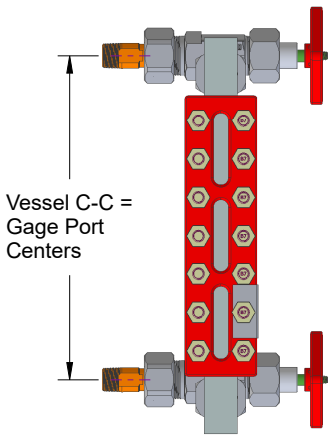
Offsets Inside



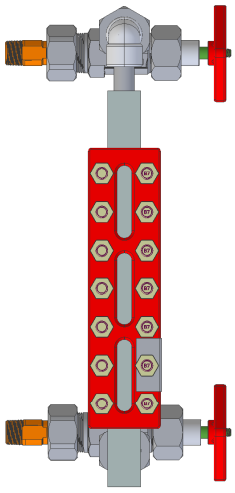
Offsets Outside



Offsets Parallel



Special Side / End Connected



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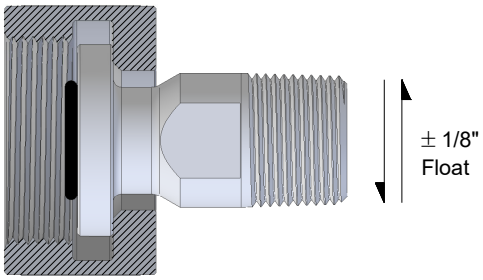
Choice of Vessel Union Connector

3/8" inside diameter flow path

FLAT / FLOATING UNION

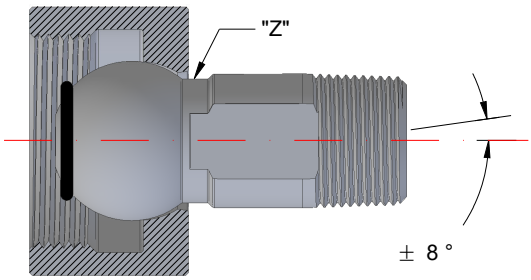
Linear Adjustment



Permits up to 1/4" on vessel centers (pair)

SPHERICAL UNION

Angular Adjustment



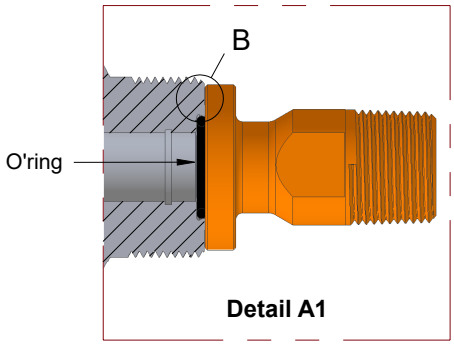
Larger section modulus "Z" than FLAT floating union connector, 1.7x stronger in bending

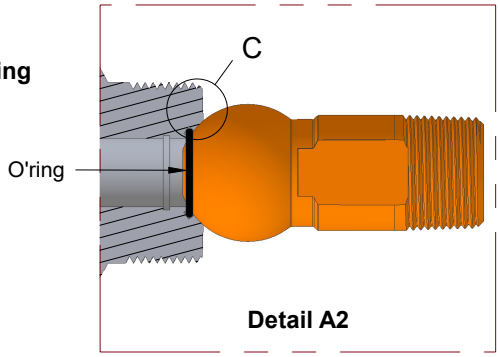
Recommended for angular misalignment due to non-jig set construction, vibration service, & long / heavy gages

---

Soft Seal: Static O'ring

Standard feature

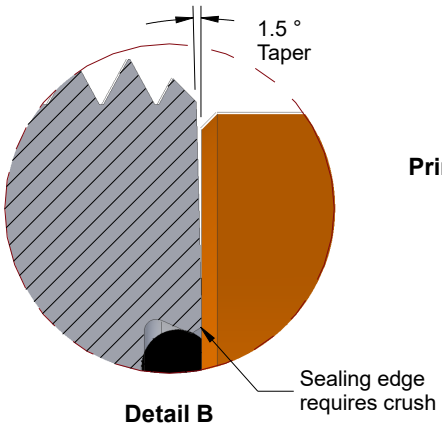


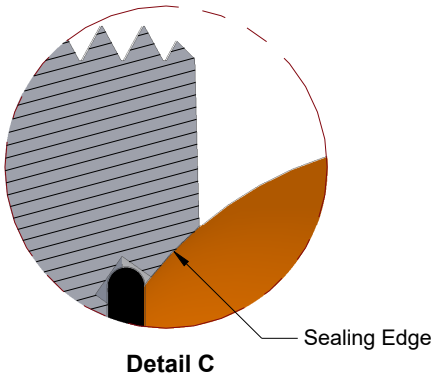


Union Nut omitted for clarity

Primary Seal: Metal to Metal

O'ring not required





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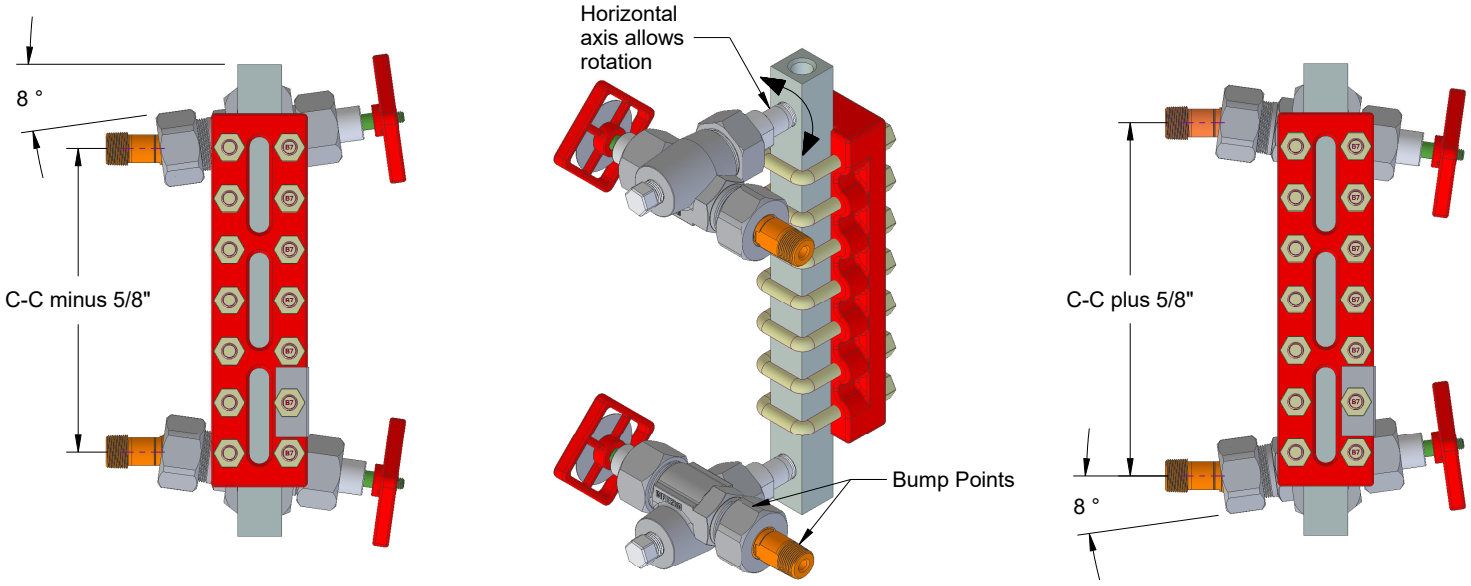
Rev Date: N/A

Center to Center Adjustment using Spherical Unions

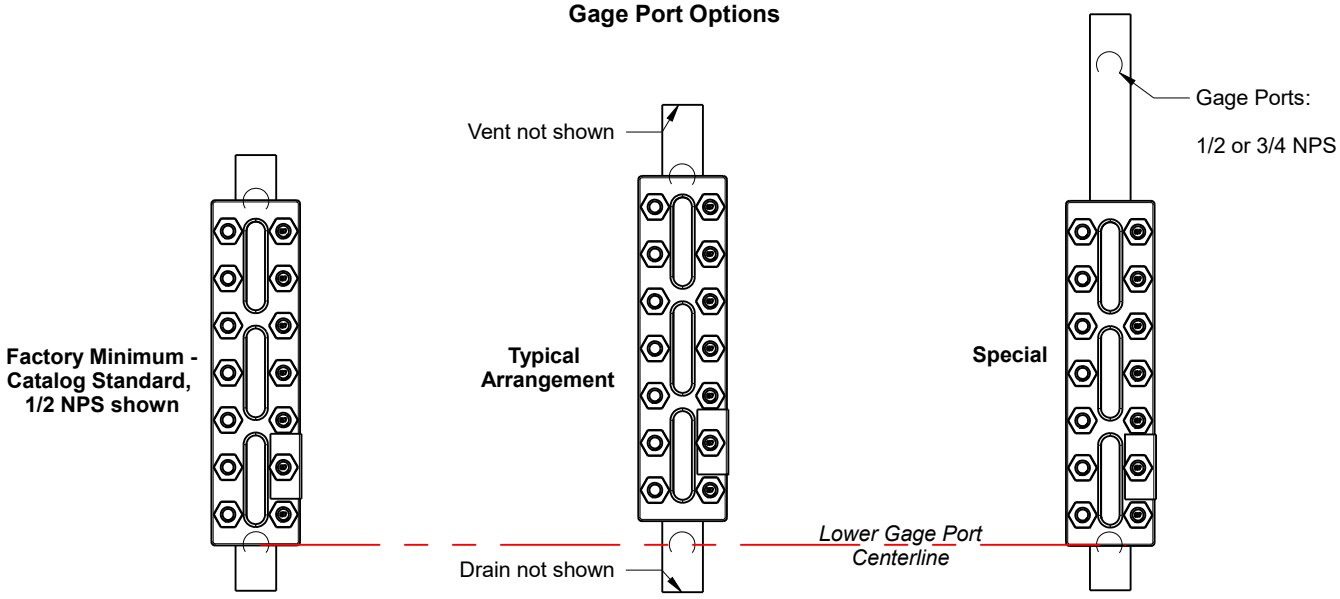
Vessel connectors remain parallel after rotation



If required, use a soft hammer to "bump" the spherical union vessel connector into "rotated" position.

Note: the horizontal connecting axis between LG and GV permits use of spherical union, which will overcome both angular AND vessel C-C misalignment at the same time.

Gage Port Options



Minimum Gage Port C-C

Design vessel C-C distance using Table 1... where
Vessel C-C = Visible Glass (1/2 NPS), or
Vessel C-C = Visible Glass + .375" (3/4 NPS)

Extended Gage Port C-C

Factory customized to match vessel centers

Asymmetrical Gage Port C-C

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