

## For Ammonia (R717) and Halocarbon Refrigerants

### Features

- Suitable for ASME Code Vessels
- 1000 PSI/69 bar Working Pressure Limit
- SA36 Steel Construction Standard
- Available in Stainless Steel
- Suitable for Low Temperature Applications (-60°F/-51°C.)
- 1100A-Canadian Registered (All Provinces)-CRN0F00829.2C



### Description

The Phillips® Level Eye® is a reliable, industrial type sight glass. The reflex lens indicates the true level of liquid present without requiring a second lens. The lens appears dark in the presence of liquid and clear when liquid is not present. Both Reflex and clear lenses are suitable for refrigerant vessels such as receivers, intercoolers, suction accumulators, oil separators, surge drums, oil pots, columns, and liquid line indicators.

The standard length frost shield allows clear vision with refrigerant temperatures down to -20°F/-29°C, and a 1" longer frost shield is available for refrigerant temperatures below -20°F/-29°C.

### STANDARD LEVEL EYE® ASSEMBLIES

Housing Style/Material	Assembly Number *	Connection Geometry	Weight (lbs.)
Weld SA36	1100	Square End	1.5
	1100A	Square End	2.0
	1100C	Saddle Milled	1.5
	1100L	Square End	3.0
	1100LC	Saddle Milled	3.0
Weld 304SS	1100S	Square End	1.5
	1100LS	Square End	3.0
Threaded SA36	1100AT	1-1/2" MPT	2.0
	1100T	1-1/2" MPT	3.0
Threaded Steel Forging	1100V	2" MPT	1.5
Threaded 304SS	1100SL	1-1/2" MPT	3.0

\*See next page for Level Eye® assemblies, parts, and instructions.

### Design Function

The 1100 Series Level Eye is machined from SA36 material, as specified in Section VIII, Division I of the ASME Boiler & Pressure Vessel Code. The housing may be welded directly into ASME Code vessels. The welding end is dimensioned to a nominal 1-1/2" IPS schedule 80 pipe. The weld neck or threaded neck is also dimensioned to a nominal 1-1/2" schedule 80 pipe. All retainers are annealed 416 stainless steel forgings. Type 304 stainless steel housings are also available.

The 1101 clear lens and 1101R reflex lens and are both made of borosilicate glass. Both are used with a standard Neoprene gasket on the inside and a fiber gasket on the outside (between the glass and the retainer). The maximum temperature differential for the glass is 477°F; the maximum temperature for the gaskets is 250°F. The maximum working pressure is 1000 PSI.

For applications below -20°F/-29°C refer to figure UCS-66.01 of the ASME Code. Rupture of the glass in tests occurred in excess of 14,000 PSI. The Phillips 1100A and 1100 Series Level Eye is in compliance with the intent of the ASME Boiler & Pressure Vessel Code, Section VIII, Division I.



## ASSEMBLY PARTS

Part Type	Part Number	Description
Housings Weld SA36	1100H	2" long housing, square end
	1100AH	3" long housing, square end
	1100CH	2" long housing, saddle milled
	1100LH	4" long housing, square end
	1100LCH	4" long housing, saddle milled
Housings Weld 304SS	1100SH	2" long housing, square end
	1100LSH	4" long housing, square end
Housings Threaded SA36	1100ATH	3" long housing, 1-1/2" MPT
	1100TH	4" long housing, 1-1/2" MPT
Housing Thd'd Steel Forging	1100VH	1-1/2" long housing, 2" MPT
Housing Thd'd 304SS	1100LSTH	4" long housing, 1-1/2" MPT
Lenses	1101	clear lens, borosilicate glass
	1101R	reflex lens, borosilicate glass
Retainer	1102SH	retainer, forged 416SS hex
Gaskets ** & O-Rings	1103 **	gasket standard, Neoprene **
	1103B **	gasket, Buna-N **
	1103T **	gasket, Teflon (PTFE) **
	1104	gasket, vulcanized fiber
	1106	O-ring, Neoprene
Frost Shields	1105	frost shield, Lucite, standard length (1-1/2")
	1105L	frost shield, Lucite, extended length (2-1/2") <i>Use for refrigerant temps. below -20°F/-29°C.</i>
Lens Replacement Kits**	K1100**	includes 1101 clear lens, 1103 Neoprene gasket** and 1104 fiber gasket
	K1100R**	includes 1101R reflex lens, 1103 Neoprene gasket** and 1104 fiber gasket

\*\* Buna-N gasket material (1103B) is recommended for use with propane (R-290) and CO<sub>2</sub> (R-744); Teflon gasket material (1103T) is recommended for use with R-22. For more information on gasket material compatibility with refrigerants and refrigerant oils please contact H.A. Phillips & Co.

### ORDERING INSTRUCTIONS

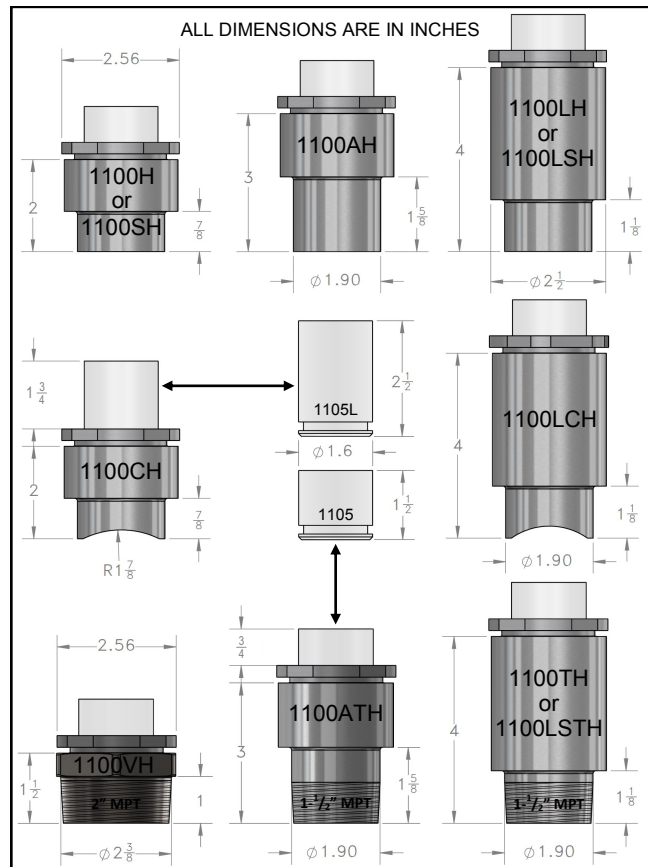
\*When ordering please specify the assembly configuration number using the assembly configuration part number Identifier table beneath:

Assembly Configuration Number Examples:  
4" stainless steel Level Eye® with reflex lens, extended frost shield and Teflon gasket is: 1100LS-RNXT

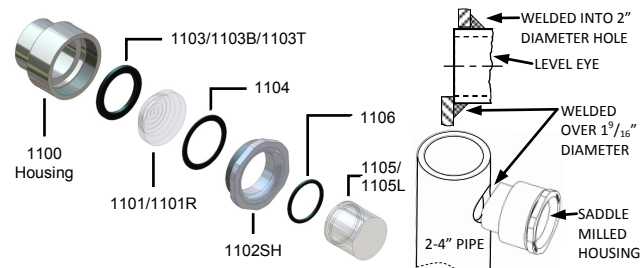
If the exploded assembly to the right had a Neoprene gasket (1103), a reflex lens (1101R, as pictured) and a standard length frost shield (1105), then its configuration part No. would be: 1100-RN.

1100	-R	NX	T
<b>Housing Style</b> See assembly parts table above			
<b>LENS</b> (Blank) = Clear Lens R = Reflex Lens			
<b>FROST SHIELD</b> (Blank) = No Frost Shield N = Standard Length (1-1/2") NX = Extended Length (2-1/2")			
<b>GASKET MATERIAL</b> (Blank) = Standard Neoprene B = Buna-N T = PTFE			

## LEVEL EYE® HOUSINGS



### INSTALLATION INSTRUCTIONS



- To weld:** Housing can be welded into a 2" opening or over a 1-9/16" opening as shown above. Remove the retainer, glass, and gaskets before welding. Anti spatter or a clean damp cloth applied/inserted over the threads will help protect the threads from weld spatter. Weld the housing into place employing good welding practices paying special attention to heat input into the work piece as an excessive amount of heat input can distort the housing.
- Once the work piece has cooled, clean the threads with a cloth or non abrasive nylon brush. Install the lens and gaskets in the order as shown above. Make sure the lens is installed flat against the gaskets and all parts are clean and free of debris. Next insert the retainer, by engaging the threads by hand, being careful to avoid crossing and mutilation of the threads. IF THE RETAINER WILL NOT THREAD IN EASILY, CONTACT H.A. PHILLIPS AT (630) 377-0050 FOR ASSISTANCE
- Tighten 1102SH retainer to 40-50 ft-lbs torque for a Neoprene (1103) or Buna-N (1103B) gasket. For a Teflon gasket (1103T), torque to 60-70 ft-lbs.
- Important:** Upon pressurizing the system (and before installation of a frost shield), and periodically thereafter, check for a proper seal by applying a dish soap/drinking water solution to the Level Eye; keeping an eye out for any bubbles that may form from a leak.
- If applicable, insert the frost shield using a light coating of Neoprene safe oil on the O-ring; push the frost shield into the 1102SH by hand. A VERY THIN WIRE (AROUND 27 GAUGE) HELD OVER THE O-RING, ALLOWING AIR TO ESCAPE WHILE INSERTING, WILL AID INSTALLATION OF A FROST SHEILD. WITHDRAW THE THIN MATERIAL AFTER INSTALLATION.

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