



## AMETEK® Model HL Tester and HLG Gauge

- ❑ **Accurate to  $\pm 0.05\%$  of Indicated Reading**
- ❑ **Optional DADT Doubles Accuracy**
- ❑ **Multiple Ranges**
  - 10 to 3000 PSIG
  - 100 to 22500 kPa
  - 1 to 225 Bar
  - 1 to 225 kg/cm<sup>2</sup>
- ❑ **Interchangeable Weights**
- ❑ **Compact Design and Portability**
  - Includes Compact Screw Pump with Ratchet Handle
- ❑ **NIST Traceable**

### PRODUCT DESCRIPTION

The AMETEK HYDRA-LITE Hydraulic Deadweight Tester is a primary standard that features a re-entrant type measuring piston and cylinder assembly that helps maintain accuracy as the test pressure increases. The HL Series tester is designed for rapid interchanging between high and low pistons and is NIST traceable and accurate to  $\pm 0.05\%$  using non-magnetic die-cast alloy or aluminum weights calibrated to international standard gravity at 980.665cm/sec<sup>2</sup>. A compact screw pump with ratchet handle is easy-to-use.

The HL tester is self-regulating with accuracy independent of the operator. The tester's suspended weights feature a low center of gravity which reduces side thrust on the measuring piston and cylinder assembly.

TEFLON® seals on the pump piston reduce friction between the piston and bore and reduce maintenance requirements.

#### Notes:

Guaranteed accuracy of any standard hydraulic deadweight pressure tester or deadweight gauge is  $\pm 0.1\%$  of output pressure traceable to NIST for gravity of 980.665cm/sec<sup>2</sup>. Limitations due to decreasing sensitivity resulting primarily from friction make it difficult to reproduce accuracy at the low end of the tester range. Generally, deadweight testers are used only in the upper 90% of the range.

### FUNCTIONAL SPECIFICATIONS

#### Accuracy

$\pm 0.1\%$ ,  $\pm 0.05\%$  of indicated pressure traceable to US National Institute of Standards & Technology (NIST)

#### Test Fluid

AAA Tester Oil

#### Maximum Operating Pressure

22,500 kPa (3,000 PSIG)

#### Wetted Parts

Stainless steel, Brass and Aluminum  
BUNA N O-rings and TEFLON backup rings

### PHYSICAL SPECIFICATIONS

#### Connections

0.25 and 0.5-inch NPT

#### Weight

25 - 45 lbs (11 - 20kg)

#### Shipping Dimensions (L x W x H)

9.0 x 9.0 x 10.0-inches  
(23.0 x 23.0 x 25.4cm)

### OPTIONAL EQUIPMENT

- ❑ DADT Digital Converter

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## ORDERING INFORMATION

### MODEL HL HYDRAULIC DEADWEIGHT TESTER

Order Number	Description
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Range, Accuracy and Weight Set Number (See Chart for Details on Weight Sets)

**0.1 PSI Minimum Increment, 0.05 Inch<sup>2</sup> Piston Area**

HL-2	10 - 200 PSI, $\pm 0.1\%$ accuracy, Weight Set No. 1
HL-2-1	10 - 200 PSI, +0.05% accuracy, Weight Set No. 1
HL-4	10 - 400 PSI, $\pm 0.1\%$ accuracy, Weight Set No. 2
HL-4-1	10 - 400 PSI, +0.05% accuracy, Weight Set No. 2
HL-6	10 - 600 PSI, $\pm 0.1\%$ accuracy, Weight Set No. 3
HL-6-1	10 - 600 PSI, +0.05% accuracy, Weight Set No. 3

**0.5 PSI Minimum Increment, 0.01 Inch<sup>2</sup> Piston Area**

HL-10	50 - 1000 PSI, $\pm 0.1\%$ accuracy, Weight Set No. 1
HL-10-1	50 - 1000 PSI, +0.05% accuracy, Weight Set No. 1
HL-20	50 - 2000 PSI, $\pm 0.1\%$ accuracy, Weight Set No. 2
HL-20-1	50 - 2000 PSI, +0.05% accuracy, Weight Set No. 2
HL-30	50 - 3000 PSI, $\pm 0.1\%$ accuracy, Weight Set No. 3
HL-30-1	50 - 3000 PSI, +0.05% accuracy, Weight Set No. 3

**NIST Certification Data**

/C Add suffix "/C" for optional NIST Traceable Calibration Data

**Sample Order Number**

**HL-10-1/C** HL Deadweight Tester with a 50 - 1000 PSI range (0.5 PSI Minimum increment, 0.01inch<sup>2</sup> piston area) supplied with NIST Data and protective carrying case

**Notes:**

For low pressure applications (inches or cm H<sub>2</sub>O), the pneumatic tester is calibrated to give noted accuracies referenced to 20°C per ISA recommended practices. Calibration to 60°F per AGA standards is available on special order.



### AMETEK® DADT Deadweight Tester Digital Converter

The Model DADT Converter is a pre-programmed digital accessory which corrects for ambient conditions and inherent errors associated with any hydraulic or pneumatic deadweight tester applications- specific gravity of your location, masses of the weights, weight set buoyancy in the air which is effected by relative humidity and temperature effects. The instrument eliminates most measurement errors by calculating the NIST formula provided on Test III data. The Model DADT converter can automatically correct for these errors so that your hydraulic or pneumatic deadweight tester delivers an accuracy of  $\pm 0.0125\%$  or better.

**Notes:**

For low pressure applications (inches or cm H<sub>2</sub>O), the pneumatic tester is calibrated to give noted accuracies referenced to 20°C per ISA recommended practices. Calibration to 60°F per AGA standards is available on special order.

# AMETEK®

## Model HLG

### Deadweight Gauge

- ❑ *Accurate to  $\pm 0.05\%$  of Indicated Reading*
- ❑ *Optional DADT Doubles Accuracy*
- ❑ *Multiple Ranges in PSI, kPa,  $\text{kg}/\text{cm}^2$  and Bar*
- ❑ *Interchangeable Weights*
- ❑ *Compact Design and Portability*
- ❑ *Overhung Weight Carrier Improves Accuracy*
- ❑ *Positive Over-pressure Protection Prevents Piston Damage*
- ❑ *Converts Easily to a Deadweight Tester*
- ❑ *NIST Traceable*

#### PRODUCT DESCRIPTION

The AMETEK HYDRA-LITE HLG Gauge is a precision, portable instrument used to accurately measure pressure in field conditions. Standard accuracy is  $\pm 0.1\%$  of indicated pressure traceable to the U.S. National Institute of Standards and Technology (NIST). The instrument may also be specified with  $\pm 0.05\%$  accuracy. Accuracies can further be improved with the use of an optional DADT digital converter.

The HLG gauge is extremely portable with all components supplied in a protective carrying case. The entire unit, including case, is only 9.0 x 9.0 x 10-inches (22.9 x 22.9 x 25.4cm).

#### FUNCTIONAL SPECIFICATIONS

##### Accuracy

$\pm 0.1\%$ ,  $\pm 0.05\%$  of indicated pressure traceable to US National Institute of Standards & Technology (NIST)

##### Test Fluid

AAA Tester Oil

##### Maximum Operating Pressure

3,000 PSIG (22,500 kPa)

##### Wetted Parts

Stainless steel, Brass and Aluminum  
BUNA N O-rings and TEFLON backup rings



The instrument comes with interchangeable weights of hard, non-magnetic cast alloy, aluminum or stainless steel. Weights are suspended using an overhung weight carrier which lowers the center of gravity of the weights and reduces side thrust and friction on the measuring piston and cylinder assembly, thus improving measurement accuracy. The measuring piston assembly features positive over-pressure protection so that the vertical movement of the measuring piston assembly is restricted by a piston cap. This positive stop will prevent the piston from damage due to accidental removal of the weights when pressurized.

#### PHYSICAL SPECIFICATIONS

##### Connections

0.25 and 0.5-inch NPT

##### Weight

25 - 45 lbs (11 - 20kg)

##### Shipping Dimensions (L x W x H)

9.0 x 9.0 x 10.0-inches  
(23.0 x 23.0 x 25.4cm)

#### OPTIONAL EQUIPMENT

- ❑ DADT Digital Converter

# ORDERING INFORMATION

## HYDRA-LITE HLG DEADWEIGHT GAUGE (PSI)

### Order Number Description

Single Range, Accuracy and Weight Set Number (See Chart for Details on Weight Sets)

**0.1 PSI Minimum Increment, 0.05 Inch<sup>2</sup> Piston Area**

HLG-2	10 - 200 PSI, ±0.1% accuracy, Weight Set No. 1
HLG-2-1	10 - 200 PSI, +0.05% accuracy, Weight Set No. 1
HLG-4	10 - 400 PSI, ±0.1% accuracy, Weight Set No. 2
HLG-4-1	10 - 400 PSI, +0.05% accuracy, Weight Set No. 2
HLG-6	10 - 600 PSI, ±0.1% accuracy, Weight Set No. 3
HLG-6-1	10 - 600 PSI, +0.05% accuracy, Weight Set No. 3

**0.5 PSI Minimum Increment, 0.01 Inch<sup>2</sup> Piston Area**

HLG-10	50 - 1000 PSI, ±0.1% accuracy, Weight Set No. 1
HLG-10-1	50 - 1000 PSI, +0.05% accuracy, Weight Set No. 1
HLG-20	50 - 2000 PSI, ±0.1% accuracy, Weight Set No. 2
HLG-20-1	50 - 2000 PSI, +0.05% accuracy, Weight Set No. 2
HLG-30	50 - 3000 PSI, ±0.1% accuracy, Weight Set No. 3
HLG-30-1	50 - 3000 PSI, +0.05% accuracy, Weight Set No. 3

**NIST Certification Data**

/C Add suffix "/C" for optional NIST Traceable Calibration Data

**HLG-20-1/C**

**Sample Order Number**

HLG Deadweight Gauge, 50 - 2000 PSI range (minimum 0.5 PSI increment), Alloy Weights, ±0.05% accuracy with NIST data

### Order Number Description

Dual Range, Accuracy and Weight Set Number (See Chart for Details on Weight Sets)

**0.1 and 0.5 PSI Minimum Increment, 0.01 and 0.05 Inch<sup>2</sup> Piston Area**

HLG-12	10 - 200 and 50 - 1000 PSI, ±0.1% accuracy, Weight Set No. 1
HLG-12-1	10 - 200 and 50 - 1000 PSI, +0.05% accuracy, Weight Set No. 1
HLG-24	10 - 400 and 50 - 2000 PSI, ±0.1% accuracy, Weight Set No. 2
HLG-24-1	10 - 400 and 50 - 2000 PSI, +0.05% accuracy, Weight Set No. 2
HLG-36	10 - 600 and 50 - 3000 PSI, ±0.1% accuracy, Weight Set No. 3
HLG-36-1	10 - 600 and 50 - 3000 PSI, +0.05% accuracy, Weight Set No. 3

**NIST Certification Data**

/C Add suffix "/C" for optional NIST Traceable Calibration Data

**HLG-12**

**Sample Order Number**

HLG Deadweight Gauge, 10 - 200 and 50 - 1000 PSI range (minimum 0.01 and 0.5 PSI increment), Alloy Weights, +0.1% accuracy

### Weight Sets for Model HLG Gauge (PSI)

Weight Set Number	PSI per 0.1-inch <sup>2</sup> Piston Area							PSI
	.5	1	5	10	50	200	500	
1	1	4	1	5	3	4	0	1
2	1	4	1	5	3	4	2	2
3	1	4	1	5	3	4	4	3

Number of weights in set.

Weight Set Number	PSI per 0.1-inch <sup>2</sup> Piston Area							PSI
	.1	.2	1	2	10	40	100	
1	1	4	1	5	3	4	0	1
2	1	4	1	5	3	4	2	2
3	1	4	1	5	3	4	4	3

Number of weights in set.

Note: Weight sets for PSI ranges are of hard, non-magnetic, zinc alloy.

# ORDERING INFORMATION

## HYDRA-LITE HLG DEADWEIGHT GAUGE (kg/cm<sup>2</sup>)

### Order Number Description

Single Range, Accuracy and Weight Set Number (See Chart for Details on Weight Sets)

**0.005 kg/cm<sup>2</sup> Minimum Increment, 0.05 Inch<sup>2</sup> Piston Area**

HLG-15M	1 - 15 kg/cm <sup>2</sup> , ±0.1% accuracy, Weight Set No. 1M
HLG-15M-1	1 - 15 kg/cm <sup>2</sup> , +0.05% accuracy, Weight Set No. 1M
HLG-30M	1 - 30 kg/cm <sup>2</sup> , ±0.1% accuracy, Weight Set No. 2M
HLG-30M-1	1 - 30 kg/cm <sup>2</sup> , +0.05% accuracy, Weight Set No. 2M
HLG-45M	1 - 45 kg/cm <sup>2</sup> , ±0.1% accuracy, Weight Set No. 3M
HLG-45M-1	1 - 45 kg/cm <sup>2</sup> , +0.05% accuracy, Weight Set No. 3M

**0.025 kg/cm<sup>2</sup> Minimum Increment, 0.01 Inch<sup>2</sup> Piston Area**

HLG-75M	5 - 75 kg/cm <sup>2</sup> , ±0.1% accuracy, Weight Set No. 1M
HLG-75M-1	5 - 75 kg/cm <sup>2</sup> , +0.05% accuracy, Weight Set No. 1M
HLG-150M	5 - 150 kg/cm <sup>2</sup> , ±0.1% accuracy, Weight Set No. 2M
HLG-150M-1	5 - 150 kg/cm <sup>2</sup> , +0.05% accuracy, Weight Set No. 2M
HLG-225M	5 - 225 kg/cm <sup>2</sup> , ±0.1% accuracy, Weight Set No. 3M
HLG-225M-1	5 - 225 kg/cm <sup>2</sup> , +0.05% accuracy, Weight Set No. 3M

**NIST Certification Data**

/C Add suffix "/C" for optional NIST Traceable Calibration Data

**HLG-150M-1/C**

**Sample Order Number**

HLG Deadweight Gauge, 5 - 150 kg/cm<sup>2</sup> range (minimum 0.025 kg/cm<sup>2</sup> increment), Stainless Steel Weights, ±0.05% accuracy with NIST data

### Order Number Description

Dual Range, Accuracy and Weight Set Number (See Chart for Details on Weight Sets)

**0.005 and 0.025 kg/cm<sup>2</sup> Minimum Increment, 0.01 and 0.05 Inch<sup>2</sup> Piston Area**

HLG-90M	1 - 15 and 5 - 75 kg/cm <sup>2</sup> , ±0.1% accuracy, Weight Set No. 1M
HLG-90M-1	1 - 15 and 5 - 75 kg/cm <sup>2</sup> , +0.05% accuracy, Weight Set No. 1M
HLG-180M	1 - 30 and 50 - 150 kg/cm <sup>2</sup> , ±0.1% accuracy, Weight Set No. 2M
HLG-180M-1	1 - 30 and 50 - 150 kg/cm <sup>2</sup> , +0.05% accuracy, Weight Set No. 2M
HLG-270M	1 - 45 and 5 - 225 kg/cm <sup>2</sup> , ±0.1% accuracy, Weight Set No. 3M
HLG-270M-1	1 - 45 and 5 - 225 kg/cm <sup>2</sup> , +0.05% accuracy, Weight Set No. 3M

**NIST Certification Data**

/C Add suffix "/C" for optional NIST Traceable Calibration Data

**HLG-90M**

**Sample Order Number**

HLG Deadweight Gauge, 1 - 15 and 5 - 75 kg/cm<sup>2</sup> range (minimum 0.005 and 0.025 kg/cm<sup>2</sup> increment), Stainless Steel Weights, ±0.1% accuracy

### Weight Sets for Model HLG Gauge (kg/cm<sup>2</sup>)

Weight Set Number	kg/cm <sup>2</sup> per 0.1-inch <sup>2</sup> Piston Area								kg/cm <sup>2</sup>	kg/cm <sup>2</sup> per 0.1-inch <sup>2</sup> Piston Area								kg/cm <sup>2</sup>
	.025	.05	.25	.5	1	5	25	50		.005	.01	.05	.1	.2	1	5	10	
1M	1	5	1	1	4	4	2	1	1M	1	5	1	1	4	4	2	1	
2M	1	5	1	1	4	4	5	1	2M	1	5	1	1	4	4	5	1	
3M	1	5	1	1	4	4	8	1	3M	1	5	1	1	4	4	8	1	

Number of weights in set.

Number of weights in set.

Note: Weight sets for kg/cm<sup>2</sup> ranges are stainless steel.

## ORDERING INFORMATION

### HYDRA-LITE HLG DEADWEIGHT GAUGE (kPa)

#### Order Number Description

Single Range, Accuracy and Weight Set Number (See Chart for Details on Weight Sets)

**0.5 kPa Minimum Increment, 0.05 Inch<sup>2</sup> Piston Area**

HLG-1500N	100 - 1500 kPa, ±0.1% accuracy, Weight Set No. 1N
HLG-1500N-1	100 - 1500 kPa, +0.05% accuracy, Weight Set No. 1N
HLG-3000N	100 - 300 kPa, ±0.1% accuracy, Weight Set No. 2N
HLG-3000N-1	100 - 3000 kPa, +0.05% accuracy, Weight Set No. 2N
HLG-4500N	100 - 4500 kPa, ±0.1% accuracy, Weight Set No. 3N
HLG-4500N-1	100 - 4500 kPa, +0.05% accuracy, Weight Set No. 3N

**2.5 kPa Minimum Increment, 0.01 Inch<sup>2</sup> Piston Area**

HLG-7500N	500 - 7500 kPa, ±0.1% accuracy, Weight Set No. 1N
HLG-7500N-1	500 - 7500 kPa, +0.05% accuracy, Weight Set No. 1N
HLG-15000N	500 - 15000 kPa, ±0.1% accuracy, Weight Set No. 2N
HLG-15000N-1	500 - 15000 kPa, +0.05% accuracy, Weight Set No. 2N
HLG-22500N	500 - 22500 kPa, ±0.1% accuracy, Weight Set No. 3N
HLG-22500N-1	500 - 22500 kPa, +0.05% accuracy, Weight Set No. 3N

**NIST Certification Data**

/C Add suffix "/C" for optional NIST Traceable Calibration Data

**HLG-7500N-1/C**

**Sample Order Number**

HLG Deadweight Gauge, 500 - 7500 kPa range (minimum 2.5 kPa increment), Stainless Steel Weights, ±0.05% accuracy with NIST data

#### Order Number Description

Dual Range, Accuracy and Weight Set Number (See Chart for Details on Weight Sets)

**0.5 and 2.5 kPa Minimum Increment, 0.01 Inch<sup>2</sup> Piston Area**

HLG-9000N	100 - 1500 and 500 - 7500 kPa, ±0.1% accuracy, Weight Set No. 1N
HLG-9000N-1	100 - 1500 and 500 - 7500 kPa, +0.05% accuracy, Weight Set No. 1N
HLG-18000N	100 - 3000 and 500 - 15000 kPa, ±0.1% accuracy, Weight Set No. 2N
HLG-18000N-1	100 - 3000 and 500 - 15000 kPa, +0.05% accuracy, Weight Set No. 2N
HLG-27000N	100 - 4500 and 500 - 22500 kPa, ±0.1% accuracy, Weight Set No. 3N
HLG-27000N-1	100 - 4500 and 500 - 22500 kPa, +0.05% accuracy, Weight Set No. 3N

**NIST Certification Data**

/C Add suffix "/C" for optional NIST Traceable Calibration Data

**HLG-27000N/C**

**Sample Order Number**

HLG Deadweight Gauge, 100 - 4500 and 500 - 22500 kPa range (minimum 0.5 and 2.5 kPa increment), Stainless Steel Weights, ±0.1% accuracy with NIST data

### Weight Sets for Model HLG Gauge (kPa)

Weight Set Number	kPa per 0.5-inch <sup>2</sup> Piston Area								kPa
	2.5	5	25	50	100	500	2500	5000	
1N	1	5	1	1	4	4	2	1	1N
2N	1	5	1	1	4	4	5	1	2N
3N	1	5	1	1	4	4	8	1	3N

Number of weights in set.

Weight Set Number	kPa per 0.5-inch <sup>2</sup> Piston Area								kPa
	0.5	1	5	10	20	100	500	1000	
1N	1	5	1	1	4	4	2	1	1N
2N	1	5	1	1	4	4	5	1	2N
3N	1	5	1	1	4	4	8	1	3N

Number of weights in set.

Note: Weight sets for kPa ranges are stainless steel.

