ORTEC®

AMETEK®

HPLBS Series

High-Performance, Low-Background Shields and Accessories for HPGe Detectors



HPLBS Series

High-Performance, Low-Background Shields and Accessories for HPGe Detectors

ORTEC's high-performance, low-background Ge radiation detector shields feature the highest quality workmanship and the best materials available. They include features which have evolved over years of experience in lead shield design. Options that make the shield easier to us also ensure continued smooth operation.

All ORTEC high-performance, low-background lead shields feature an 11-inch diameter x 16-inch deep cavity, suitable for accommodating up to 4-liter Marinelli beakers. A graded liner of copper and tin layers is provided for the suppression of lead x-rays. The bulk shielding material is reprocessed lead (4-inches thick). The support stand and shield jacket are made from low-carbon steel. All external surfaces are finished in durable textured polyurethane. All shields are adjusted at the factory and movable doors and lids are positioned with packing material to prevent opening during shipment. All shields require professional installation by qualified Riggers that are competent with heavy weight installations. Once installed, the lids (and doors when applicable) should require only minimal adjustment to remove any packing material and assure proper operation. Initial adjustment instructions, warnings, and wrenches are provided with each shield. Touch-up paint can be supplied under separate order with the Material Safety Data Sheet (MSDS) and may require special shipping.

The following are supplied with each ORTEC shield:

1. Rigid support stand
2. Hinge adjustment instructions
3. Wrenches for assembly
4. Lifting eyes and lid restraint brackets
5. Two heavy-duty, wood pallet/crate sets suitable for overseas shipping

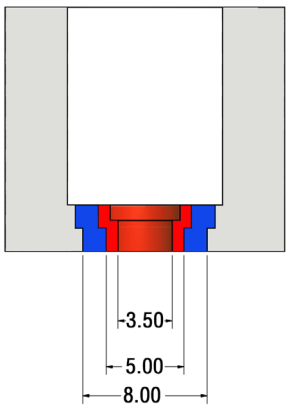
HPLBS1 Top Loading Shield

The bottom port on the shield includes two nested inserts that allow multiple fit options. The bottom through-hole is 3.5-inches. This can be increased to a 5-inch through-hole by removing the center insert. A second insert makes up almost the entire bottom of the lead shield, providing a 8-inch through-hole when removed. The model LFT1 can be used to remove the larger bottom insert from the shield should this be required. The LFT1 is not part of the HPLBS1 and must be ordered separately.

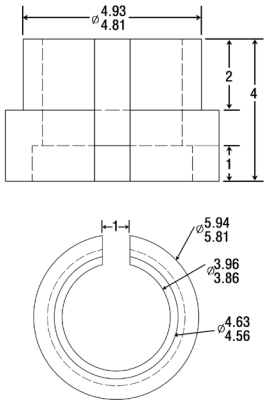
The larger insert is provided for possible changes that may be required for the customer's specifications. This 42-lb. insert can be removed and machined locally or shipped back to ORTEC for replacement and/or modification if needed without having the entire shield machined on-site or replaced.

The cutaway sketch shows the two nested ports that are supplied with the model HPLBS1.

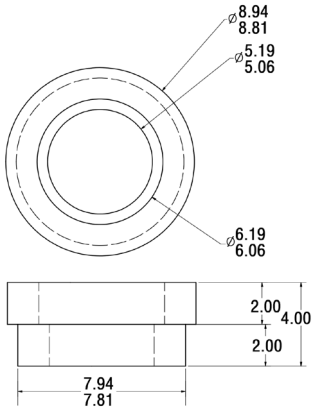
The HPLBS1 shield is designed to accommodate ORTEC vertical dipstick cryostat models CFG-PV4, CFG-SV, CFG-LP-SV, MOBIUS-x, and CFG-ICS-x.



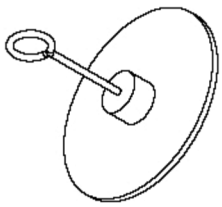
Nested Ports



3.5-inch Center Ring Plug



5-inch Port Plug

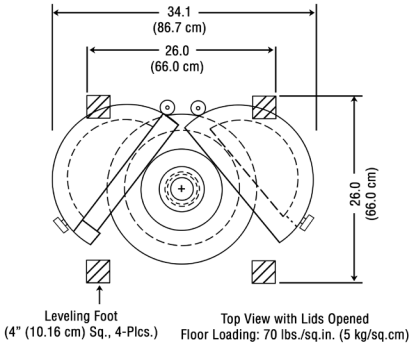


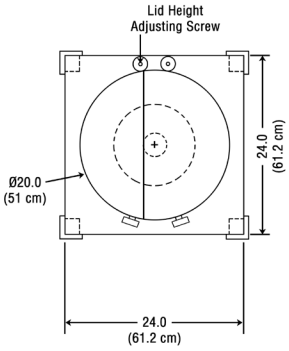
LFT1

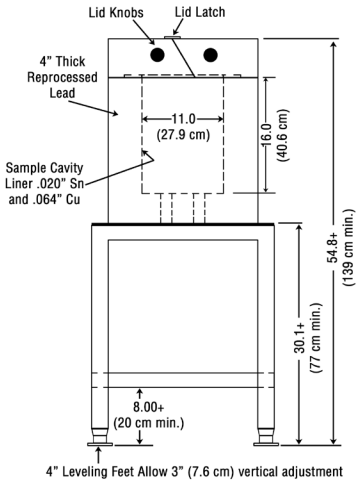
Note: All Plugs have 0.02" nominal Sn, 0.06" nominal Cu.

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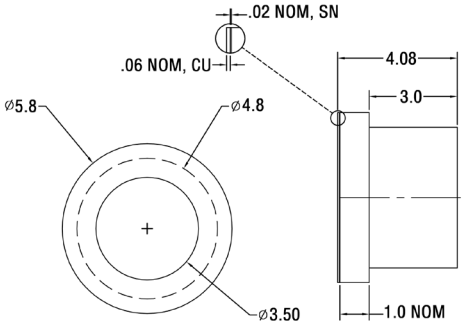


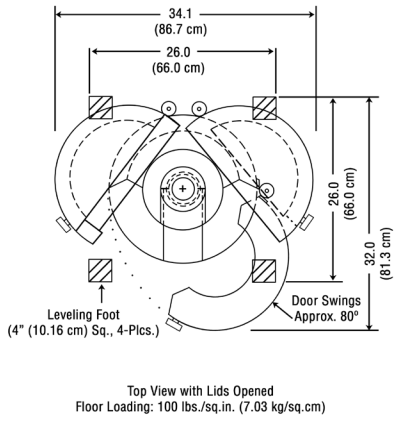


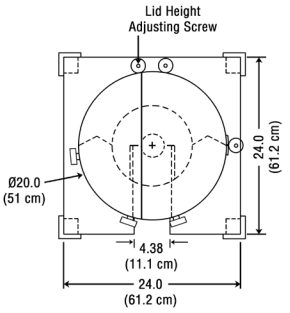
HPLBS1F Front-Loading Shield

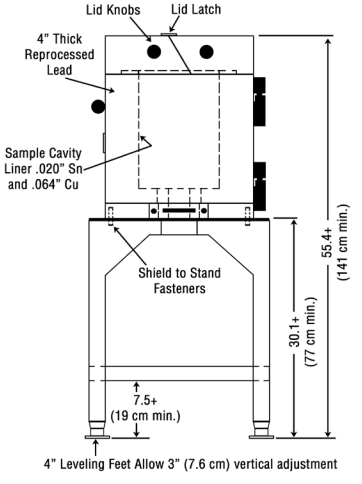
The HPLBS1F Shield is similar to the HPLBS1 Shield in function, materials and appearance, with the additional benefit of a hinged front door to allow easy access to the sample chamber.

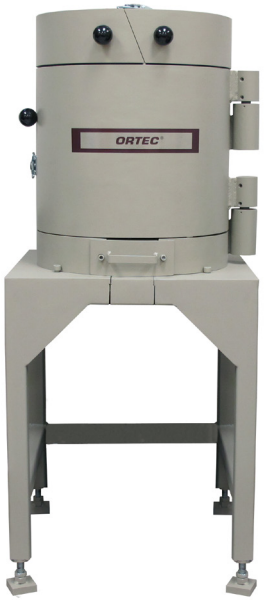
The cutaway sketch shows the port that is supplied with the model HPLBS1F. Alternate sized bottom ports or plugs require a special order.











HPLBS Series

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Specifications of Models HPLBS1 and HPLBS1F

Shielded Cavity Dimensions 28-cm i.d. x 40-cm high (11-in. i.d. x 16-in. high).

Shielding Type Solid-cast reprocessed lead with steel casing and graded-Z liner.

Shielding Specifications

12.7 mm (0.5 in.) low-carbon steel casing

101 mm (4 in.) reprocessed lead

0.5 mm (0.02 in.) tin sheet liner

1.6 mm (0.064 in.) soft-copper sheet liner

Support Stand Material Low-carbon steel square tubing and plate.

Weight

Total Assembled 1,134 kg (2,500 lb).

Shipping 1,270 kg (2,800 lb).

External Dimensions

Shield 51-cm diameter x 63-cm high (20-in. diameter x 24-5/8-in. high).

Stand 61-cm square x 77-cm high (minimum) [24-in. square x 30-1/8-in. high (minimum)].

Assembled Height 139 cm (minimum) to 154 cm (maximum) [54-3/4 in. (minimum) to 60-3/4 in. (maximum)].

HPLBS2F

The HPLBS2F Shield is similar to the HPLBS1F, in that it combines front loading with the split-top shield. It differs, however, in that it is designed for use with an ORTEC "J" Type cryostat Model CFG-SJ or CFG-HJ. A compact design results in the need for only 2-ft x 4-ft of floor space [61-cm x 117-cm], plus clearance for opening of the lids and front door.

Specifications of HPLBS2F

Shielded Cavity Dimensions 28-cm i.d. x 40-cm high (11-in. i.d. x 16-in. high).

Shielding Type Solid-cast reprocessed lead with steel casing and graded-Z liner.

Shielding Specifications

12.7 mm (0.5 in.) low-carbon steel casing

101 mm (4 in.) reprocessed lead

0.5 mm (0.02 in.) tin sheet liner

1.6 mm (0.064 in.) soft-copper sheet liner

Support Stand Material Low-carbon steel square tubing and plate.

Detector Access Slot Width 4.5 cm (1-3/4 in.).

Weight

Total Assembled 1,134 kg (2,500 lb).

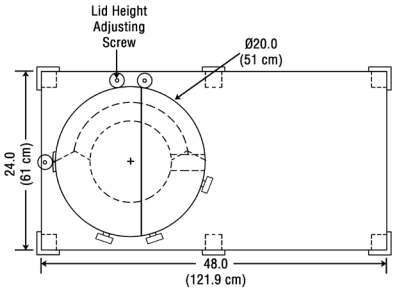
Shipping Weight 1,270 kg (2,800 lb).

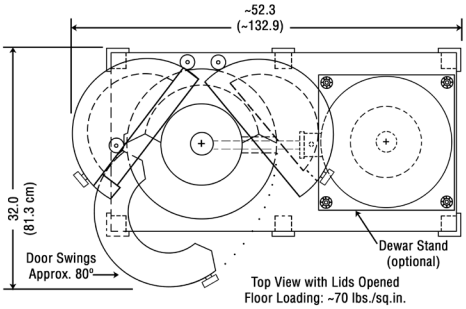
External Dimensions

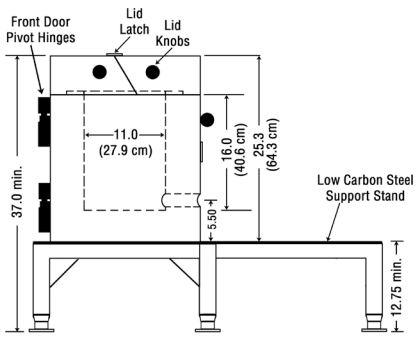
Shield 51-cm diameter x 63-cm high (20-in. diameter x 24-5/8-in. high).

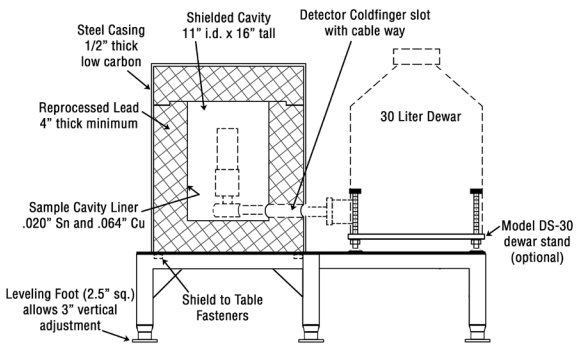
Stand 61 cm x 117 cm x 77-cm high (minimum) [24 in. x 46 in. x 12-in. high (minimum)].

Assembled Height 94 cm (minimum) to 109 cm (maximum) [37 in. (minimum) to 43 in. (maximum)].









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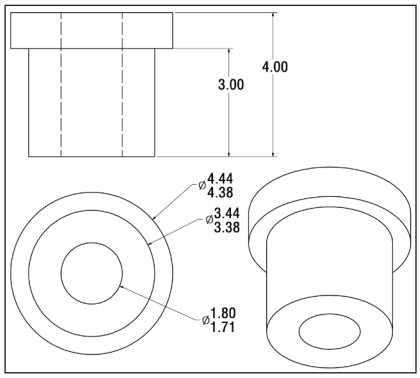
Options and Accessories

Close Fitting Plugs for HPLBS1

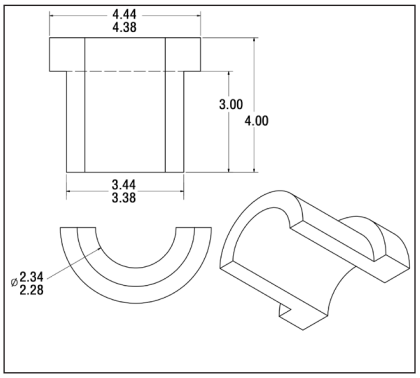
Close fitting plugs for the 3.5-inch through-hole may be ordered with the HPLBS1. Two standard models are available, PLG1 and PLG2.

PLG1 fits inside the 3.5-inch bottom port and fits closely around the vertical dipstick cryostat.

PLG2 is a split plug that fits inside the 3.5-inch bottom port and closely around the X-COOLER cold head. The X-COOLER systems require a split plug in order to fit between the larger diameter capsule and the cold head diameter. The two piece design allows this plug to be installed around the smaller diameter portion of the cold head.



PLG1

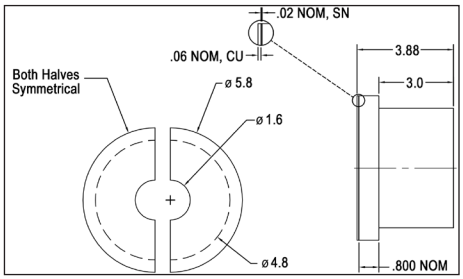


PLG2

Close Fitting Plug for HPLBS1F

PLG1F is a close fitting split plug that fits inside the HPLBS1F replacing the standard bottom port plug.

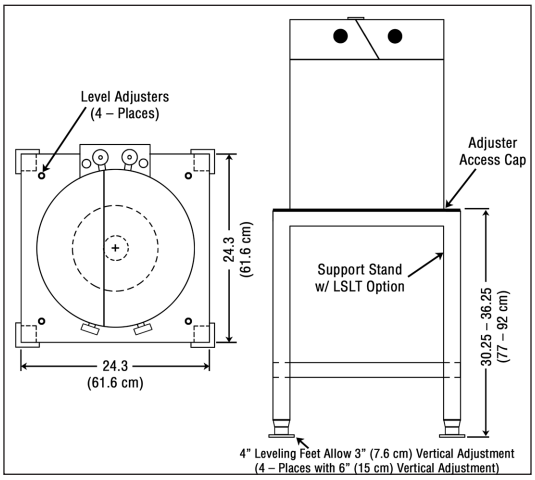
Note: All Plugs have 0.02” nominal Sn, 0.06” nominal Cu.



PLG1F

LSLT Table-Top Leveling Option for HPLBS1 and HPLBS1F

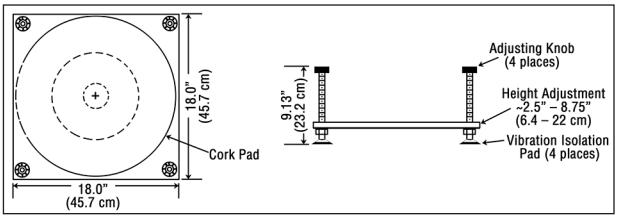
LSLT allows extremely precise adjustment of the leveling of the shield. Leveling is performed at table top height using a single hex-key wrench. It can compensate for floor deviations as great as 16 mm in a 61-cm square (5/8-in. in a 24-in. square). When correctly adjusted, the Model LSLT allows the biparting lids of the shield (when unlatched) to swing slowly and gently to the fully open position, and stay there allowing full, SAFE access to the counting chamber.



LSLT Table-Top Leveling Option

DS30 Dewar Leveling Stand

Provides up to 15 cm (6 in.) of vertical height adjustment and features vibration isolation pads to minimize detector microphonics



DS30 Dewar Leveling Stand

Ordering Information

Model	Description
HPLBS1	Top Loading Lead Shield for CFG-PV4, CFG-SV, CFG-LP-SV, MOBIUS-x and CFG-ICS-x cryostats, or the X-COOLER-III. Includes stand.
HPLBS1F	Front Loading Lead Shield for CFG-PV4, CFG-SV, CFG-LP-SV, MOBIUS-x and CFG-ICS-x cryostats, or the X-COOLER-III. Includes stand.
HPLBS2	Top Loading Lead Shield for CFG-SJ, CFG-LP-SJ and CFG-HJ cryostats. Includes stand.
HPLBS2F	Front Loading Lead Shield for CFG-SJ, CFG-LP-SJ and CFG-HJ cryostats. Includes stand.
LFT1	Lifting tool for removing the 9” bottom plate from the HPLBS1 Lead Shield.
PLG1	Single piece, close fit plug for vertical dipstick cryostat in HPLBS1 Lead Shield.
PLG2	Two piece, close fit plug for X-COOLER cold head in HPLBS1 Lead Shield.
PLG1F	Two piece, close fit plug for X-COOLER cold head in HPLBS1F Lead Shield.
LSLT	Table-Top Leveling option. HPLBS1 and HPLBS1F only.
DS30	Dewar Leveling Stand.

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Specifications subject to change
25-0728