HSC HERMETIC SEAL™

AMETEK®
ENGINEERED INTERCONNECT AND PACKAGING



HIGH TEMPERATURE HIGH PRESSURE (HTHP) BULKHEADS



Double O-ring design 25,000 psi @ 400°F (204°C).

DESIGN AND MANUFACTURE EXPERTISE

Hermetic Seal Corporation (HSC) is an expert in the design and manufacture of high pressure glass-to-metal sealed electrical bulkheads for the down hole oil and gas logging instrument market. HSC's products are used in Wire-line, MWD and LWD tools and completions by the world's leading Oil Field Services companies.

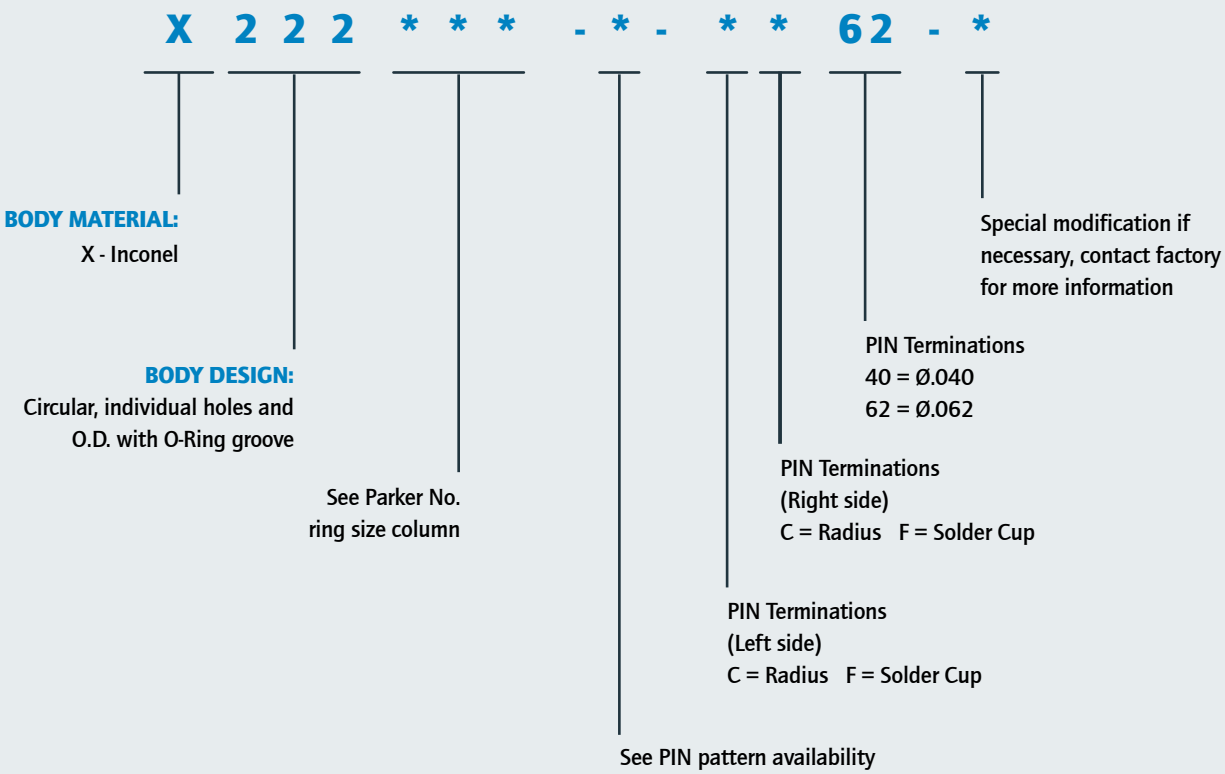
HSC's double O-ring high temperature high pressure bulkheads are designed to function in the most severe of operating conditions and have been exposed to a combination of pressures and temperatures in excess of 25,000 PSI at 400°F (204°C). They are rugged enough to withstand the worst handling conditions in the field, whether they are on land or at sea, in the uncompromising conditions of the arctic or in the equatorial regions of the world.

HSC is also proficient in the business of customizing the design of high pressure bulkheads specifically to meet your project needs. Whether a minor modification, such as pin length or pin termination method, or a new, custom-made, design to meet even higher pressures and temperatures up to 30,000 PSI at 500°F (260°C), we have the experience to design, manufacture and test your product.

HERMETIC SEAL CORPORATION CAPABILITIES

- Design expertise and modeling capabilities
  - ✔ Mechanical and electrical
- Experienced design and process engineers
- Responsive sales and customer service representatives
- High temperature brazing and glass-sealing furnaces
  - ✔ High volume continuous belt furnaces
  - ✔ Low volume batch furnaces
- Low temperature braze integration furnace
- Chemical cleaning facility
- On-site plating shop
- Inspection and testing facilities
  - ✔ Pressures to 40,000 PSI
  - ✔ Pressure at temperature to 30,000 PSI @ 500°F (260°C)
- Quality system registered to ISO 9001:2000 and AS9100:2004
- 37,000 sq. ft. facility
- Adjacent to AMETEK HCC machining and component manufacturing facility (90,000 sq. ft.)
  - ✔ In-house machining of connector shells, bodies for headers and bulkheads, and PEEK inserts
  - ✔ In-house glass preform manufacturing

PART NUMBERING SYSTEM



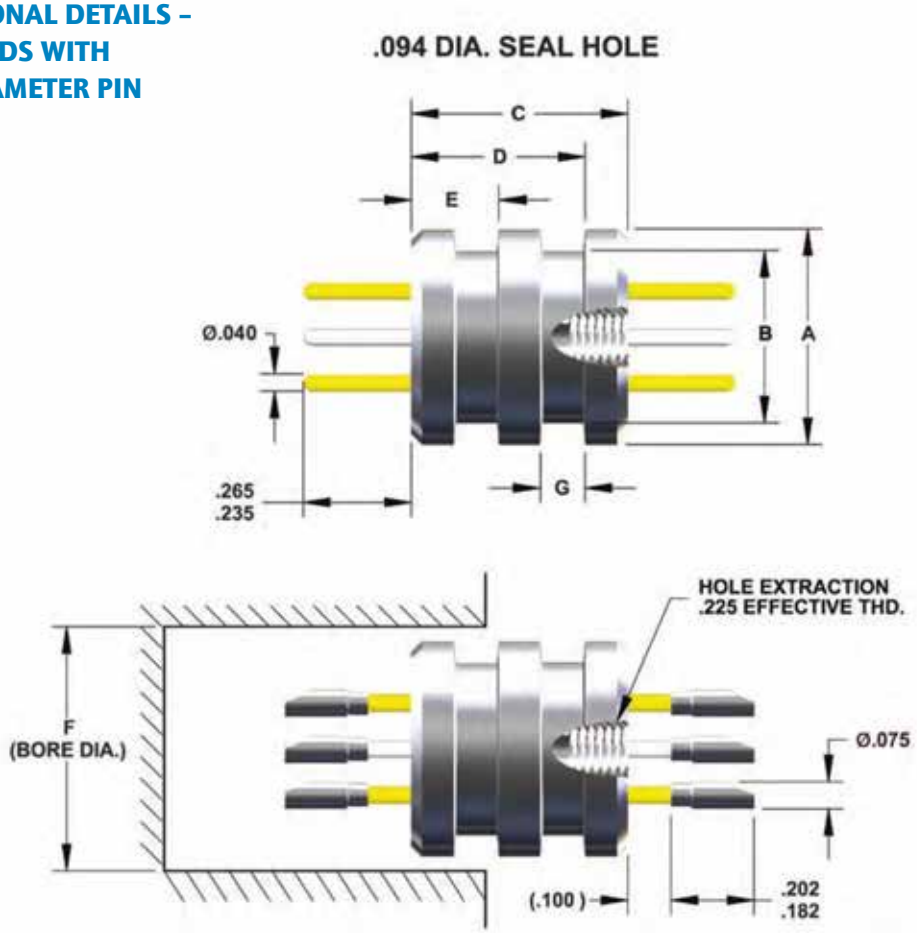
MATERIALS, FINISHES AND GENERAL SPECIFICATIONS

Materials:
Body – Inconel X-750 per AMS5667 or equivalent
Pins – Inconel X-750 per AMS 5698, 5699 or equivalent
Insulators – Glass, Hermetic Seal Corporation proprietary formula

Finishes:
Body – None
Pins – Gold per MIL-G-45204 Type II or equivalent, over Nickel per QQ-N-290 Class 2 or equivalent

Finishes:
Insulators – Glass, Hermetic Seal Corporation proprietary formula
Pressure and Temperature: 25,000 PSI @ 400ºF (204ºC), bi-directional
Insulation resistance: 500 MegOhms @ 500 VDC, Ambient temperature
Dielectric withstanding voltage: 850 VAC / 1250 VDC
Leak rate: 1 x 10-8 cc He/sec at 1 atmosphere
O-ring grooves designed for use without back-up rings

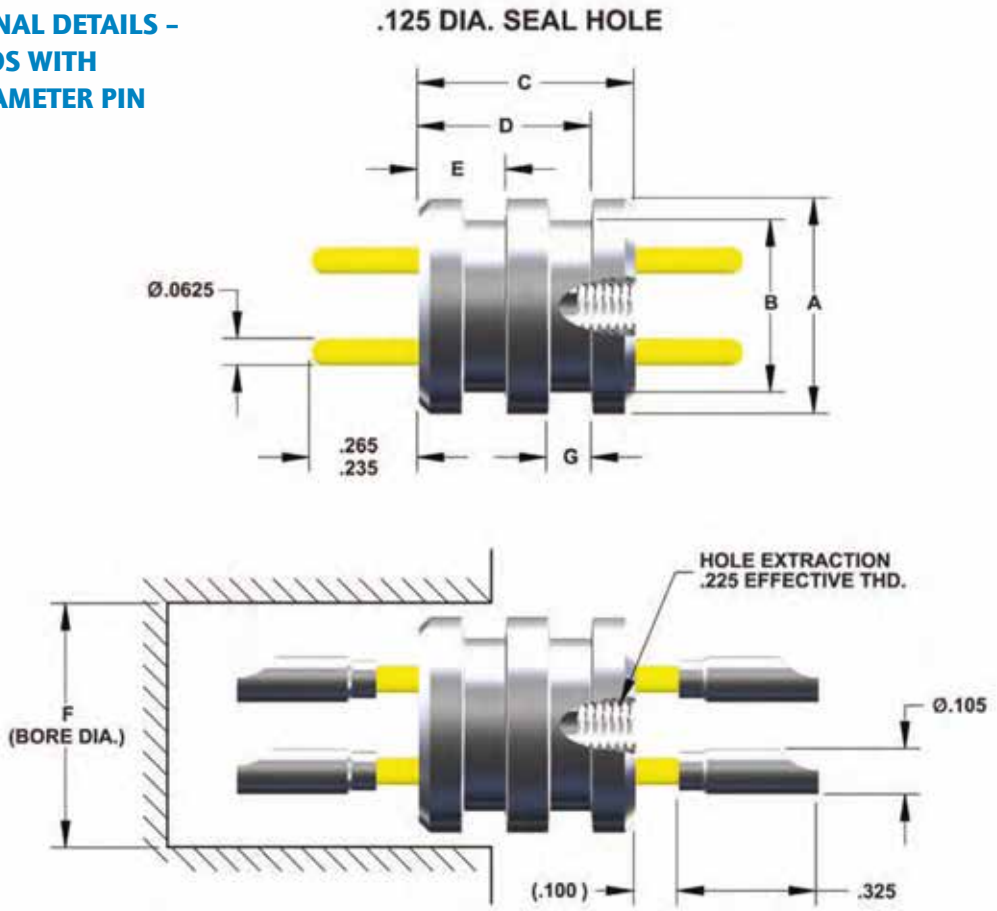
DIMENSIONAL DETAILS – BULKHEADS WITH 0.040 DIAMETER PIN



Parker No. Ring-Size	Pin Pattern Available	Thread Size-UNC	A ± 0.001	B ± 0.001	C ± 0.003	D ± 0.005	E ± 0.005	F Recommended Bore DIA.	G ± 0.003 - 0.002
2-012	1-6	4-40	0.500	0.400	0.500	0.401	0.203	0.502 - 0.504	0.095
2-014	1-8	6-32	0.625	0.525	0.500	0.401	0.203	0.627 - 0.629	
2-016	1-10	6-32	0.750	0.650	0.500	0.401	0.203	0.752 - 0.754	
2-018	1-10	6-32	0.875	0.775	0.500	0.401	0.203	0.877 - 0.879	
2-020	1-10	6-32	1.000	0.900	0.750	0.568	0.286	1.002 - 1.004	
2-024	11*	6-32	1.250	1.150	0.750	0.568	0.286	1.252 - 1.154	
2-111	1-7	6-32	0.625	0.463	0.750	0.602	0.304	0.627 - 0.629	0.142
2-113	1-9	6-32	0.750	0.588	0.750	0.602	0.304	0.752 - 0.754	
2-115	1-10	6-32	0.875	0.713	0.750	0.602	0.304	0.877 - 0.879	
2-117	1-10	6-32	1.000	0.838	0.750	0.602	0.304	1.002 - 1.004	
2-121	11*	6-32	1.250	1.088	1.000	0.768	0.304	1.252 - 1.154	
2-125	11* & 37"	8-32	1.500	1.338	1.000	0.768	0.388	1.502 - 1.504	
2-210	1-10	6-32	1.000	0.778	1.000	0.803	0.406	1.002 - 1.004	0.189
2-214	11*	6-32	1.250	1.028	1.500	1.136	0.573	1.252 - 1.154	
2-218	11* & 37"	8-32	1.500	1.278	1.500	1.136	0.573	1.502 - 1.504	

** REPRESENT PIN PATTERN ACCORDING TO MIL-STD-1669* *** REPRESENT PIN PATTERN ACCORDING TO MIL-STD-1651*

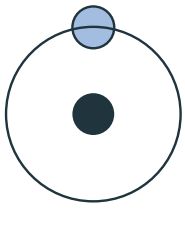
DIMENSIONAL DETAILS – BULKHEADS WITH 0.0625 DIAMETER PIN



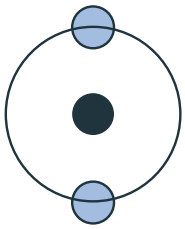
Parker No. Ring-Size	Pin Pattern Available	Thread Size-UNC	A ± 0.001	B ± 0.001	C ± 0.003	D ± 0.005	E ± 0.005	F Recommended Bore DIA.	G ± 0.003 - 0.002
2-012	1-4	None	0.500	0.400	0.500	0.401	0.203	0.502 - 0.504	0.095
2-014	1-6	6-32	0.625	0.525	0.500	0.401	0.203	0.627 - 0.629	
2-016	1-7	6-32	0.750	0.650	0.500	0.401	0.203	0.752 - 0.754	
2-018	1-9	6-32	0.875	0.775	0.500	0.401	0.203	0.877 - 0.879	
2-020	17**	6-32	1.000	0.900	0.750	0.568	0.286	1.002 - 1.004	
2-024	11 & 17**	6-32	1.250	1.150	0.750	0.568	0.286	1.252 - 1.154	
2-111	1-5	6-32	0.625	0.463	0.750	0.602	0.304	0.627 - 0.629	0.142
2-113	1-6	6-32	0.750	0.588	0.750	0.602	0.304	0.752 - 0.754	
2-115	1-8	6-32	0.875	0.713	0.750	0.602	0.304	0.877 - 0.879	
2-117	1-10	6-32	1.000	0.838	0.750	0.602	0.304	1.002 - 1.004	
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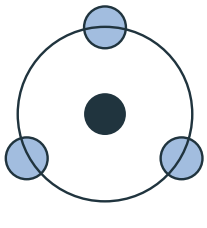
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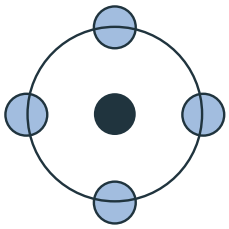
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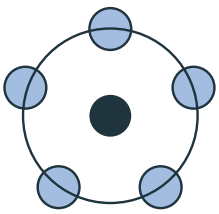
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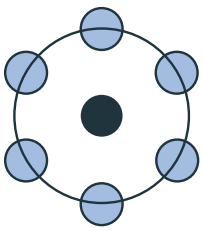
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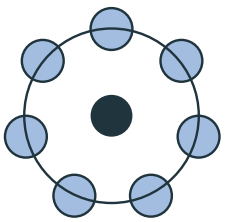
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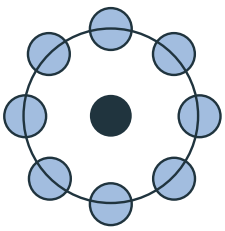
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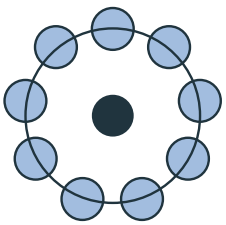
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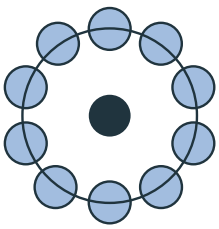
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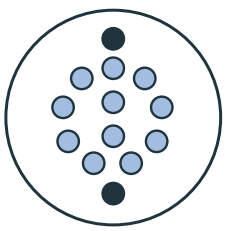
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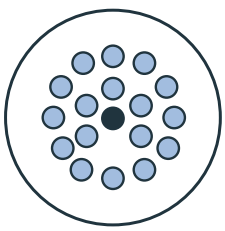
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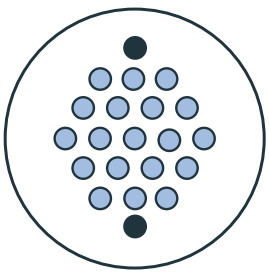
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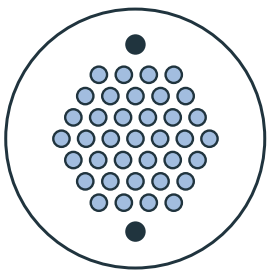
11
MIL-STD-1669
(26482: 18-11)



17
MIL-STD-1651
(5015: 20-29)



19
MIL-STD-1651
(5015: 22-14)



37
MIL-STD-1669
(81703: 37-50P)

All non-MIL spec pin pattern layouts are equally spaced

- Represent PIN pattern hole
- Represent extraction hole, 0.225 effective thread
  - Thread size: 6-32 UNC for bulkhead under 1.500 diameter
  - Thread size: 8-32 UNC for bulkhead 1.500 diameter and over

CUSTOM DESIGN OPTIONS

HSC is an expert in the business of customizing the design of high pressure bulkheads specifically to meet your project needs. Customization may take the form of, but is not limited to:

- Alternate body diameters and lengths
- Alternate pin diameters, lengths and termination types
- Alternate materials and finishes
- Alternate insert arrangements
  - ✔ We can design an insert arrangement with any combination of pin diameters to meet your needs for both power and signal throughput
- Socket contacts to facilitate mating to a plug
- Higher Dielectric Withstanding Voltage rating
- O-ring grooves suitable for use with back-up rings
- No extraction holes, or extraction holes of different diameters and threads
- Guide pins for blind mating applications
- Threads on housings to allow the combination of a threaded and welded connection to the next level assembly
- Alternate glass materials to withstand special circumstances, such as:
  - ✔ Stable insulation resistance values at high temperatures
  - ✔ Temperatures up to 800°F (426°C) at lower pressures
  - ✔ Extreme levels of thermal cycling (-85°F to +800°F or -65°C to +426°C) at lower pressures
- Precious metal plated surfaces on the housing to improve ground connection from the housing to next level assembly to reduce the impact of EMI conditions



ABOUT HERMETIC SEAL

Founded in 1945, Hermetic Seal (HSC) is the oldest manufacturer of hermetically sealed electrical interconnection products in the world and the founder of glass-to-metal-sealing technology. As a business unit of AMETEK HCC Industries, HSC has a broad portfolio of connectors, headers, feed thrus, high pressure bulkheads and cable assemblies. We manufacture both standard MIL Spec products and complex customized designs to your drawings and exacting technical requirements.

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