

# HTC<sup>®</sup>

## HI-TECH COMPONENTS



ORBITAL WELD AND METAL GASKET FACE SEAL FITTINGS



## TECHNICAL INFORMATION

**HAM-LET/HTC®** specializes in the design and production of high-quality, specially manufactured valves and fittings for High Purity and Ultra-High Purity applications.

A joint effort of **HTC®**'s expert engineers and technicians resulted in the development a complete line that reflects the company's deep understanding of the critical requirements of the semiconductor, biotech, and pharmaceutical industries.

**HAM-LET/HTC®** is a leader in the manufacturing of fittings and valves for clean industries and has consistently spearheaded significant new developments in this field. **HTC®** has broken new ground in surface-finishing techniques by implementing improved electro-polishing processes.

### PLATING

Female threads are silver plated in order to reduce the risk of galling and to improve the remakeability of the fitting. This high-quality plating also reduces the torque required for the fitting assembly. Reference Spec: Meeting and exceeding - Mil Spec: QQ-S-365.

**Note:** Do not apply any type of cleaning acid and/or electropolishing solutions to any female threads. These solutions damage the silver plating and invalidate any expressed or implied warranty.

### WELDING

Options: butt weld, shoulder weld, socket weld. Reference Specs: All welded products are manufactured and welded according to SEMI F75,F81.

### TESTING

HAM-LET follows the relevant ASTM, ANSI, ASME, ISO, SEMI & SEMASPEC standards for testing and for qualifying processes and results.

### JAPANESE STANDARDS

HAM-LET, upon request, manufactures the **HTC®** product line to meet Japanese standards:

- Low Manganese Material Specifications (JIS)
- Wall thickness
- Hardness

### TEMPERATURE RATING

PRODUCTS	MATERIAL	F	C
<b>HTC®Face Seal Fittings</b>	SS316L	1000	538
	SS316L Var or Vim / Var <sup>(1)</sup>	1000	538
<b>HTC® Welding Fittings</b>	SS316L	1000	538
	SS316L Var or Vim / Var <sup>(1)</sup>	1000	538
<b>HTC® Gaskets</b>	SS316	1000	538
	NICKEL	1000	538

### HELIUM LEAK

All HAM-LET Face Seal products are tested and qualified to a helium leak rate of less than 3x10<sup>-10</sup> std cm<sup>3</sup>/sec. Reference Spec: SEMI F1.

### SURFACE FINISH

Reference Spec: ANSI B46.1 and ISO 4288.

### SURFACE ANALYSIS

SEM/EDX/AES analysis is used to monitor surface defects per ASTM F1372 and ASTM F1375.

### MOISTURE ANALYSIS

Based on ASTM F1397.

### PARTICLE CONTRIBUTION TEST

Based on Semaspec 90120390 B.

### SURFACE CHEMISTRY

All UHP products are electropolished with a proprietary process for achieving and exceeding the Sematec Standards of surface cleanliness and anticorrosion requirements. Parameters are measured by SEM, AUGER, ESCA.

Reference Spec: SEMI F19; E49.9; SEMASPEC 91060573A-STD.

### CLEANING SPECIFICATIONS

According to # H9800.

Reference Spec: SEMI E49.3.

### MATERIAL TRACEABILITY

All **HTC®** components are Heat Coded for full traceability.

### ASSEMBLY

According to SEMI E49.6.

### ACCESSORIES

Grip Kit, Plastic Bead Protector.

**PACKAGING:** Each "E" finished component is double bagged to ensure component cleanliness and to protect it from environmental contamination. The inner bag is Nylon 6 and vacuum sealed. The outer bag is polyethylene. Reference Spec: SEMI E49.1

### INTERNATIONAL CERTIFICATIONS

ISO 9001, Certified by S.I.I.

### HTC® FITTINGS PRESSURE RATING

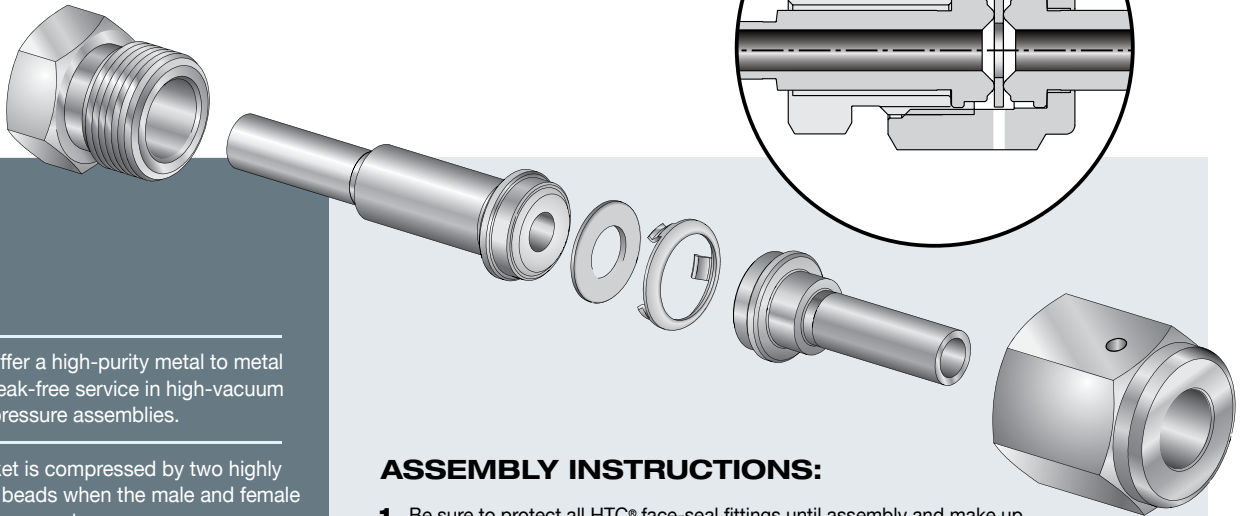
Products	Material	Size	Wall Thickness	Pressure Rating	
				psig	bar
<b>HTC® Fittings</b>	<b>316L or 316LV</b>	1/8	0.028	8550	590
		1/4	0.035	5200	359
		3/8	0.035	3350	231
		1/2	0.049	3750	259
		3/4*	0.065	3350	231
		3/4*	0.049	2400	165
		1*	0.065	2400	165

\* 3/4" & 1" sizes are not standard, but can be manufactured on request

Pressure ratings are calculated in accordance with ANSI Code for Pressure Piping ANSI B-31, for stainless steel fittings. All working pressures are at 4:1 safety factor. Pressure indicated in the catalogue is at room temp.

<sup>(1)</sup> Per SEMI F20-0305

## MAKE UP OF GLANDS



Glands offer a high-purity metal to metal seal for leak-free service in high-vacuum or high-pressure assemblies.

The gasket is compressed by two highly polished beads when the male and female nuts are engaged.

The gland bead-to-bead assembly compresses a soft-metal gasket-to-seal. This assembly can be locked by the HAM-LET Grip-Kit (see A below).

Visual test and leak testing are performed through two test ports in opposite locations from the female nut.

### ASSEMBLY INSTRUCTIONS:

1. Be sure to protect all HTC® face-seal fittings until assembly and make up. Exercise great care so that the sealing surfaces are not scratched, damaged or contaminated in any way during handling and assembly.
2. Always use a clean environment, and always employ proper cleanroom protocol for the make up and assembly of high-purity fittings and applications.
3. Make up instructions:  
Tighten the female nut to the male nut/body the finger tight.  
Tighten the female nut 1/8 turn past the finger tight point.  
Always torque the female nut while keeping the male nut/body stationary.  
Face seal connections are remakable - please use a new gasket for each remake.



GRIPKIT Ordering Information  
See page 186

## MATERIAL

PRODUCTS	LEVEL "E"			LEVEL "H"		
	TREATMENT	Ra (Microinch)		TREATMENT	Ra (Microinch)	
		MAX	AVERAGE		MAX	AVERAGE
GLANDS	ELECTROPOLISHED	10	5	NON- ELECTROPOLISHED	15	10
MINI BUTTWELD	ELECTROPOLISHED	10	5	NON- ELECTROPOLISHED	15	10
SHAPED UNIONS	ELECTROPOLISHED	10	5	NON- ELECTROPOLISHED	20	15
LONG WELD SHAPED CONNECTORS	ELECTROPOLISHED	10	5	NON- ELECTROPOLISHED	15	10
THREADED STRAIGHT CONNECTORS	ELECTROPOLISHED	10	5	NON- ELECTROPOLISHED	20	15

\* "E" level - Electropolished \*\* "H" level - Not Electropolished