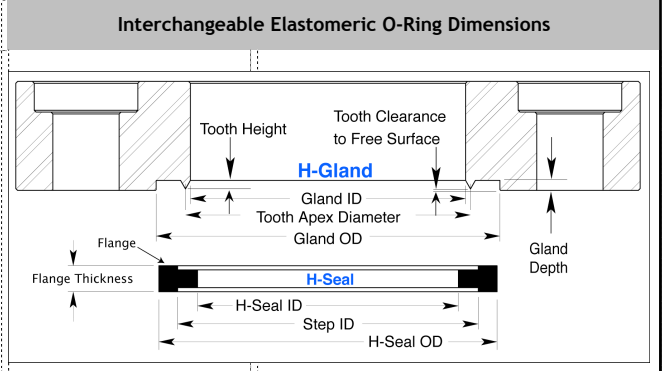


# H-Seal and H-Gland Dimensions / Reduced for Web / Metric - 2018 / 2019

**SI (metric)  
Engineering  
Units**

**Zero Clearance H-Seals**  
Zero Clearance H-Seals allow the mating glands to bottom against each other. This means finished-assembly stack-up dimensions are the same whether an H-Seal or an elastomeric o-ring is used in the gland. Check the Assembly & Compression columns to the right for tooth penetration values.

**Gap H-Seals**  
Gap H-Seals provide a positive compression stop for the mating glands. The glands bottom against the H-Seal and leave a gap between parts that can be used for leak checking. Note the Assembly & Compression columns to the right for gap dimensions.



**This is an abbreviated spreadsheet showing only H-Seal dimensions. Call or email Bostec for the full spreadsheet showing Assmely & Compression values for H-Seals and H-Glands. We will also send you machining guidelines.**

H-Seal OD, Step ID and ID Basic Dimensions				Zero Clearance H-Seals			Gap H-Seals			Interchangeable Elastomeric O-Ring Dimensions											
OD ±.03	Step ID ±.03	H-Seal ID ±.03	Flange Cross Section Width	Zero Clearance H-Seal Part Number	H-Seal Flange Thickness +.00 / -.03	seating surface: recess depth per side +.03 / -.00	Web Thickness ±.03	Gap H-Seal Part Number	H-Seal Flange Thickness +.00 / -.03	seating surface: recess depth per side +.03 / -.00	Web Thickness ±.03	Parker Hannifin Part Number	ID	OD	Cross Section	ID (Mean ID of O-Ring, Ref)	ID max (ID min + 1% of Mean ID)	Gland (through) Width for Vacuum & Gasses	Gland (through) Depth - from Parker Hannifin (English units)	OD min (calculated from tolerance range)	OD max (calculated from tolerance range)
7.97	4.70	1.77	1.63	HZ-007	1.37	0.30	0.76	H-007	1.73	0.30	1.12	2-007	3.68	7.24	1.78	3.68	3.72	2.20	.050 - .054	8.08	8.11
8.76	5.49	2.56	1.64	HZ-008	1.37	0.30	0.76	H-008	1.73	0.30	1.12	2-008	4.47	8.03	1.78	4.47	4.52	2.20	.050 - .054	8.86	8.91
9.58	6.30	3.37	1.64	HZ-009	1.37	0.30	0.76	H-009	1.73	0.30	1.12	2-009	5.28	8.84	1.78	5.28	5.34	2.20	.050 - .054	9.68	9.73
10.37	7.09	4.17	1.64	HZ-010	1.37	0.30	0.76	H-010	1.73	0.30	1.12	2-010	6.07	9.63	1.78	6.07	6.13	2.20	.050 - .054	10.46	10.53
11.95	8.66	5.75	1.64	HZ-011	1.37	0.30	0.76	H-011	1.73	0.30	1.12	2-011	7.65	11.20	1.78	7.65	7.72	2.20	.050 - .054	12.04	12.12
13.56	10.26	7.36	1.65	HZ-012	1.37	0.30	0.76	H-012	1.73	0.30	1.12	2-012	9.25	12.80	1.78	9.25	9.34	2.20	.050 - .054	13.64	13.73
15.01	11.84	8.29	1.59	HZ-013	1.37	0.30	0.76	H-013	1.73	0.30	1.12	2-013	10.82	14.38	1.78	10.82	10.93	2.20	.050 - .054	15.21	15.32
16.62	13.44	9.90	1.59	HZ-014	1.37	0.30	0.76	H-014	1.73	0.30	1.12	2-014	12.42	15.98	1.78	12.42	12.54	2.20	.050 - .054	16.81	16.94
18.21	15.01	11.48	1.60	HZ-015	1.37	0.30	0.76	H-015	1.73	0.30	1.12	2-015	14.00	17.55	1.78	14.00	14.14	2.20	.050 - .054	18.39	18.53
19.81	16.61	13.09	1.60	HZ-016	1.37	0.30	0.76	H-016	1.73	0.30	1.12	2-016	15.60	19.15	1.78	15.60	15.75	2.20	.050 - .054	19.99	20.15
21.40	18.19	14.68	1.61	HZ-017	1.37	0.30	0.76	H-017	1.73	0.30	1.12	2-017	17.17	20.73	1.78	17.17	17.34	2.20	.050 - .054	21.56	21.74
23.00	19.79	16.28	1.61	HZ-018	1.37	0.30	0.76	H-018	1.73	0.30	1.12	2-018	18.77	22.33	1.78	18.77	18.96	2.20	.050 - .054	23.16	23.35
24.59	21.36	17.87	1.61	HZ-019	1.37	0.30	0.76	H-019	1.73	0.30	1.12	2-019	20.35	23.90	1.78	20.35	20.55	2.20	.050 - .054	24.74	24.94
26.07	22.96	18.83	1.55	HZ-020	1.37	0.30	0.76	H-020	1.73	0.30	1.12	2-020	21.95	25.50	1.78	21.95	22.17	2.20	.050 - .054	26.34	26.56
27.65	24.54	20.41	1.56	HZ-021	1.37	0.30	0.76	H-021	1.73	0.30	1.12	2-021	23.52	27.08	1.78	23.52	23.76	2.20	.050 - .054	27.91	28.15
29.26	26.14	22.02	1.56	HZ-022	1.37	0.30	0.76	H-022	1.73	0.30	1.12	2-022	25.12	28.68	1.78	25.12	25.37	2.20	.050 - .054	29.51	29.77
30.84	27.71	23.60	1.57	HZ-023	1.37	0.30	0.76	H-023	1.73	0.30	1.12	2-023	26.70	30.25	1.78	26.70	26.96	2.20	.050 - .054	31.09	31.36
32.45	29.31	25.21	1.57	HZ-024	1.37	0.30	0.76	H-024	1.73	0.30	1.12	2-024	28.30	31.85	1.78	28.30	28.58	2.20	.050 - .054	32.69	32.97
34.03	30.89	26.79	1.57	HZ-025	1.37	0.30	0.76	H-025	1.73	0.30	1.12	2-025	29.87	33.43	1.78	29.87	30.17	2.20	.050 - .054	34.26	34.56
35.64	32.49	28.40	1.58	HZ-026	1.37	0.30	0.76	H-026	1.73	0.30	1.12	2-026	31.47	35.03	1.78	31.47	31.79	2.20	.050 - .054	35.86	36.18
37.22	34.06	29.98	1.58	HZ-027	1.37	0.30	0.76	H-027	1.73	0.30	1.12	2-027	33.05	36.60	1.78	33.05	33.38	2.20	.050 - .054	37.44	37.77
38.83	35.66	31.59	1.59	HZ-028	1.37	0.30	0.76	H-028	1.73	0.30	1.12	2-028	34.65	38.20	1.78	34.65	34.99	2.20	.050 - .054	39.04	39.39
42.02	38.84	34.78	1.59	HZ-029	1.37	0.30	0.76	H-029	1.73	0.30	1.12	2-029	37.82	41.38	1.78	37.82	38.20	2.20	.050 - .054	42.21	42.59
45.21	42.01	37.97	1.60	HZ-030	1.37	0.30	0.76	H-030	1.73	0.30	1.12	2-030	41.00	44.55	1.78	41.00	41.41	2.20	.050 - .054	45.39	45.80
48.40	45.19	41.17	1.61	HZ-031	1.37	0.30	0.76	H-031	1.73	0.30	1.12	2-031	44.17	47.73	1.78	44.17	44.61	2.20	.050 - .054	48.56	49.01
51.60	48.36	44.36	1.62	HZ-032	1.37	0.30	0.76	H-032	1.73	0.30	1.12	2-032	47.35	50.90	1.78	47.35	47.82	2.20	.050 - .054	51.74	52.21
54.79	51.54	47.55	1.62	HZ-033	1.37	0.30	0.76	H-033	1.73	0.30	1.12	2-033	50.52	54.08	1.78	50.52	51.03	2.20	.050 - .054	54.91	55.42
57.98	54.71	50.74	1.63	HZ-034	1.37	0.30	0.76	H-034	1.73	0.30	1.12	2-034	53.70	57.25	1.78	53.70	54.23	2.20	.050 - .054	58.09	58.63
61.17	57.89	53.93	1.64	HZ-035	1.37	0.30	0.76	H-035	1.73	0.30	1.12	2-035	56.87	60.43	1.78	56.87	57.44	2.20	.050 - .054	61.26	61.83
64.36	61.06	57.12	1.65	HZ-036	1.37	0.30	0.76	H-036	1.73	0.30	1.12	2-036	60.05	63.60	1.78	60.05	60.65	2.20	.050 - .054	64.44	65.04
67.55	64.24	60.31	1.66	HZ-037	1.37	0.30	0.76	H-037	1.73	0.30	1.12	2-037	63.22	66.78	1.78	63.22	63.85	2.20	.050 - .054	67.61	68.25
70.74	67.41	63.50	1.66	HZ-038	1.37	0.30	0.76	H-038	1.73	0.30	1.12	2-038	66.40	69.95	1.78	66.40	67.06	2.20	.050 - .054	70.79	71.45
73.93	70.59	66.69	1.67	HZ-039	1.37	0.30	0.76	H-039	1.73	0.30	1.12	2-039	69.57	73.13	1.78	69.57	70.27	2.20	.050 - .054	73.96	74.66
77.12	73.76	69.88	1.68	HZ-040	1.37	0.30	0.76	H-040	1.73	0.30	1.12	2-040	72.75	76.30	1.78	72.75	73.47	2.20	.050 - .054	77.14	77.87
80.31	76.94	73.07	1.69	HZ-041	1.37	0.30	0.76	H-041	1.73	0.30	1.12	2-041	75.92	79.48	1.78	75.92	76.68	2.20	.050 - .054	80.31	81.07
86.70	83.29	79.46	1.70	HZ-041	1.37	0.30	0.76	H-042	1.73	0.30	1.12	2-041	82.27	85.83	1.78	82.27	83.09	2.20	.050 - .054	86.66	87.49
10.56	5.56	0.48	2.50	HZ-106	1.93	0.43	1.07	H-106	2.34	0.43	1.47	2-106	4.42	9.65	2.62	4.42	4.46	3.12	.074-.080	10.67	10.71
11.38	6.38	1.30	2.50	HZ-107	1.93	0.43	1.07	H-107	2.34	0.43	1.47	2-107	5.23	10.46	2.62	5.23	5.28	3.12	.074-.080	11.48	11.53
12.17	7.16	2.09	2.50	HZ-108	1.93	0.43	1.07	H-108	2.34	0.43	1.47	2-108	6.02	11.25	2.62	6.02	6.08	3.12	.074-.080	12.27	12.33
13.75	8.74	3.67	2.51	HZ-109	1.93	0.43	1.07	H-109	2.34	0.43	1.47	2-109	7.59	12.83	2.62	7.59	7.67	3.12	.074-.080	13.84	13.92
15.36	10.34	5.28	2.51	HZ-110	1.93	0.43	1.07	H-110	2.34	0.43	1.47	2-110	9.19	14.43	2.62	9.19	9.29	3.12	.074-.080	15.44	15.54
16.82	11.91	6.86	2.45	HZ-111	1.93	0.43	1.07	H-111	2.34	0.43	1.47	2-111	10.77	16.00	2.62	10.77	10.88	3.12	.074-.080	17.02	17.13
18.43	13.51	8.47	2.46	HZ-112	1.93	0.43	1.07	H-112	2.34	0.43	1.47	2-112	12.37	17.60	2.62	12.37	12.49	3.12	.074-.080	18.62	18.74
20.01	15.09	10.05	2.46	HZ-113	1.93	0.43	1.07	H-113	2.34	0.43	1.47	2-113	13.94	19.18	2.62	13.94	14.08	3.12	.074-.080	20.19	20.33
21.62	16.69	11.66	2.46	HZ-114	1.93	0.43	1.07	H-114	2.34	0.43	1.47	2-114	15.54	20.78	2.62	15.54	15.70	3.12	.074-.080	21.79	21.95
23.20	18.26	13.25	2.47	HZ-115	1.93	0.43	1.07	H-115	2.34	0.43	1.47	2-115	17.12	22.35	2.62	17.12	17.29	3.12	.074-.080	23.37	23.54
24.81	19.86	14.85	2.47	HZ-116	1.93	0.43	1.07	H-116	2.34	0.43	1.47	2-116	18.72	23.95	2.62	18.72	18.91	3.12	.074-.080	24.97	25.16
26.39	21.44	16.44	2.48	HZ-117	1.93	0.43	1.07	H-117	2.34	0.43	1.47	2-117	20.29	25.53	2.62	20.29	20.50	3.12	.074-.080	26.54	26.75
27.74	23.04	18.04	2.35	HZ-118	1.93	0.43	1.07	H-118	2.34	0.43	1.47	2-118	21.89	27.13	2.62	21.89	22.11	3.12	.074-.080	28.14	28.36
29.33	24.61	19.63	2.36	HZ-119	1.93	0.43	1.07	H-119	2.34	0.43	1.47	2-119	23.47	28.70	2.62	23.47	23.70	3.12	.074-.080	29.72	29.95
30.94	26.21	21.24	2.36	HZ-120	1.93	0.43	1.07	H-120	2.34	0.43	1.47	2-120	25.07	30.30	2.62	25.07	25.32	3.12	.074-.080	31.32	31.57
32.52	27.79	22.82	2.37	HZ-121	1.93	0.43	1.07	H-121	2.34	0.43	1.47	2-121	26.64	31.88	2.62	26.64	26.91	3.12	.074-.080	32.89	33.16

# H-Seal and H-Gland Dimensions / Reduced for Web / Metric - 2018 / 2019

**H-Seal OD, Step ID and ID Basic Dimensions**

**Zero Clearance H-Seals**

Zero Clearance H-Seals allow the mating glands to bottom against each other. This means finished-assembly stack-up dimensions are the same whether an H-Seal or an elastomeric o-ring is used in the gland. Check the Assembly & Compression columns to the right for tooth penetration values.

**Gap H-Seals**

Gap H-Seals provide a positive compression stop for the mating glands. The glands bottom against the H-Seal and leave a gap between parts that can be used for leak checking. Note the Assembly & Compression columns to the right for gap dimensions.

**Interchangeable Elastomeric O-Ring Dimensions**

This is an abbreviated spreadsheet showing only H-Seal dimensions. Call or email Bostec for the full spreadsheet showing Assmely & Compression values for H-Seals and H-Glands. We will also send you machining guidelines.

H-Seal OD, Step ID and ID Basic Dimensions				Zero Clearance H-Seals			Gap H-Seals			Interchangeable Elastomeric O-Ring Dimensions											
OD ±.03	Step ID ±.03	H-Seal ID ±.03	Flange Cross Section Width	Zero Clearance H-Seal Part Number	H-Seal Flange Thickness +0.0 / -.03	Seating surface: recess depth per side +.03 / -.00	Web Thickness ±.03	Gap H-Seal Part Number	H-Seal Flange Thickness +0.0 / -.03	Seating surface: recess depth per side +.03 / -.00	Web Thickness ±.03	Parker Hannifin Part Number	ID	OD	Cross Section	ID (Mean ID of O-Ring, Ref)	ID max (ID min + 1% of Mean ID)	Gland (through) Width for Vacuum & Gasses	Gland (through) Depth - from Parker Hannifin (English units)	OD min (calculated from tolerance range)	OD max (calculated from tolerance range)
34.13	29.39	24.43	2.37	HZ-122	1.93	0.43	1.07	H-122	2.34	0.43	1.47	2-122	28.24	33.48	2.62	28.24	28.53	3.12	.074-.080	34.49	34.78
35.71	30.96	26.01	2.37	HZ-123	1.93	0.43	1.07	H-123	2.34	0.43	1.47	2-123	29.82	35.05	2.62	29.82	30.12	3.12	.074-.080	36.07	36.37
37.32	32.56	27.62	2.38	HZ-124	1.93	0.43	1.07	H-124	2.34	0.43	1.47	2-124	31.42	36.65	2.62	31.42	31.73	3.12	.074-.080	37.67	37.98
38.90	34.14	29.20	2.38	HZ-125	1.93	0.43	1.07	H-125	2.34	0.43	1.47	2-125	32.99	38.23	2.62	32.99	33.32	3.12	.074-.080	39.24	39.57
40.51	35.74	30.81	2.39	HZ-126	1.93	0.43	1.07	H-126	2.34	0.43	1.47	2-126	34.59	39.83	2.62	34.59	34.94	3.12	.074-.080	40.84	41.19
42.09	37.31	32.39	2.39	HZ-127	1.93	0.43	1.07	H-127	2.34	0.43	1.47	2-127	36.17	41.40	2.62	36.17	36.53	3.12	.074-.080	42.42	42.78
43.70	38.91	34.00	2.39	HZ-128	1.93	0.43	1.07	H-128	2.34	0.43	1.47	2-128	37.77	43.00	2.62	37.77	38.15	3.12	.074-.080	44.02	44.40
45.28	40.49	35.58	2.40	HZ-129	1.93	0.43	1.07	H-129	2.34	0.43	1.47	2-129	39.34	44.58	2.62	39.34	39.74	3.12	.074-.080	45.59	45.99
46.89	42.09	37.19	2.40	HZ-130	1.93	0.43	1.07	H-130	2.34	0.43	1.47	2-130	40.94	46.18	2.62	40.94	41.35	3.12	.074-.080	47.19	47.60
48.47	43.66	38.77	2.40	HZ-131	1.93	0.43	1.07	H-131	2.34	0.43	1.47	2-131	42.52	47.75	2.62	42.52	42.94	3.12	.074-.080	48.77	49.19
50.08	45.26	40.38	2.41	HZ-132	1.93	0.43	1.07	H-132	2.34	0.43	1.47	2-132	44.12	49.35	2.62	44.12	44.56	3.12	.074-.080	50.37	50.81
51.66	46.84	41.96	2.41	HZ-133	1.93	0.43	1.07	H-133	2.34	0.43	1.47	2-133	45.69	50.93	2.62	45.69	46.15	3.12	.074-.080	51.94	52.40
53.27	48.44	43.57	2.42	HZ-134	1.93	0.43	1.07	H-134	2.34	0.43	1.47	2-134	47.29	52.53	2.62	47.29	47.77	3.12	.074-.080	53.54	54.02
54.88	50.04	45.18	2.42	HZ-135	1.93	0.43	1.07	H-135	2.34	0.43	1.47	2-135	48.90	54.13	2.62	48.90	49.38	3.12	.074-.080	55.14	55.63
56.46	51.61	46.76	2.42	HZ-136	1.93	0.43	1.07	H-136	2.34	0.43	1.47	2-136	50.47	55.70	2.62	50.47	50.97	3.12	.074-.080	56.72	57.22
58.07	53.21	48.37	2.43	HZ-137	1.93	0.43	1.07	H-137	2.34	0.43	1.47	2-137	52.07	57.30	2.62	52.07	52.59	3.12	.074-.080	58.32	58.84
59.65	54.79	49.95	2.43	HZ-138	1.93	0.43	1.07	H-138	2.34	0.43	1.47	2-138	53.64	58.88	2.62	53.64	54.18	3.12	.074-.080	59.89	60.43
61.26	56.39	51.56	2.44	HZ-139	1.93	0.43	1.07	H-139	2.34	0.43	1.47	2-139	55.25	60.48	2.62	55.25	55.80	3.12	.074-.080	61.49	62.05
62.84	57.96	53.14	2.44	HZ-140	1.93	0.43	1.07	H-140	2.34	0.43	1.47	2-140	56.82	62.05	2.62	56.82	57.39	3.12	.074-.080	63.07	63.64
64.45	59.56	54.75	2.44	HZ-141	1.93	0.43	1.07	H-141	2.34	0.43	1.47	2-141	58.42	63.65	2.62	58.42	59.00	3.12	.074-.080	64.67	65.25
66.04	61.14	56.33	2.45	HZ-142	1.93	0.43	1.07	H-142	2.34	0.43	1.47	2-142	59.99	65.23	2.62	59.99	60.59	3.12	.074-.080	66.24	66.84
67.64	62.74	57.94	2.45	HZ-143	1.93	0.43	1.07	H-143	2.34	0.43	1.47	2-143	61.60	66.83	2.62	61.60	62.21	3.12	.074-.080	67.84	68.46
69.23	64.31	59.53	2.46	HZ-144	1.93	0.43	1.07	H-144	2.34	0.43	1.47	2-144	63.17	68.40	2.62	63.17	63.80	3.12	.074-.080	69.42	70.05
70.83	65.91	61.13	2.46	HZ-145	1.93	0.43	1.07	H-145	2.34	0.43	1.47	2-145	64.77	70.00	2.62	64.77	65.42	3.12	.074-.080	71.02	71.67
72.42	67.49	62.72	2.46	HZ-146	1.93	0.43	1.07	H-146	2.34	0.43	1.47	2-146	66.34	71.58	2.62	66.34	67.01	3.12	.074-.080	72.59	73.26
74.03	69.09	64.32	2.47	HZ-147	1.93	0.43	1.07	H-147	2.34	0.43	1.47	2-147	67.95	73.18	2.62	67.95	68.62	3.12	.074-.080	74.19	74.87
75.61	70.66	65.91	2.47	HZ-148	1.93	0.43	1.07	H-148	2.34	0.43	1.47	2-148	69.52	74.75	2.62	69.52	70.21	3.12	.074-.080	75.77	76.46
77.22	72.26	67.52	2.48	HZ-149	1.93	0.43	1.07	H-149	2.34	0.43	1.47	2-149	71.12	76.35	2.62	71.12	71.83	3.12	.074-.080	77.37	78.08
78.80	73.84	69.10	2.48	HZ-150	1.93	0.43	1.07	H-150	2.34	0.43	1.47	2-150	72.69	77.93	2.62	72.69	73.42	3.12	.074-.080	78.94	79.67
81.99	77.01	72.29	2.49	HZ-151	1.93	0.43	1.07	H-151	2.34	0.43	1.47	2-151	75.87	81.10	2.62	75.87	76.63	3.12	.074-.080	82.12	82.88
88.37	83.36	78.67	2.50	HZ-152	1.93	0.43	1.07	H-152	2.34	0.43	1.47	2-152	82.22	87.45	2.62	82.22	83.04	3.12	.074-.080	88.47	89.29
94.75	89.71	85.05	2.52	HZ-153	1.93	0.43	1.07	H-153	2.34	0.43	1.47	2-153	88.57	93.80	2.62	88.57	89.46	3.12	.074-.080	94.82	95.70
101.13	96.06	91.43	2.54	HZ-154	1.93	0.43	1.07	H-154	2.34	0.43	1.47	2-154	94.92	100.15	2.62	94.92	95.87	3.12	.074-.080	101.17	102.12
107.52	102.41	97.82	2.55	HZ-155	1.93	0.43	1.07	H-155	2.34	0.43	1.47	2-155	101.27	106.50	2.62	101.27	102.28	3.12	.074-.080	107.52	108.53
113.90	109.52	104.20	2.19	HZ-156	1.93	0.43	1.07	H-156	2.34	0.43	1.47	2-156	107.62	112.85	2.62	107.62	108.70	3.12	.074-.080	113.87	114.94
120.28	115.87	110.58	2.20	HZ-157	1.93	0.43	1.07	H-157	2.34	0.43	1.47	2-157	113.97	119.20	2.62	113.97	115.11	3.12	.074-.080	120.22	121.36
126.66	122.22	116.96	2.22	HZ-158	1.93	0.43	1.07	H-158	2.34	0.43	1.47	2-158	120.32	125.55	2.62	120.32	121.52	3.12	.074-.080	126.57	127.77
133.04	128.57	123.34	2.23	HZ-159	1.93	0.43	1.07	H-159	2.34	0.43	1.47	2-159	126.67	131.90	2.62	126.67	127.94	3.12	.074-.080	132.92	134.18
139.43	134.92	129.73	2.25	HZ-160	1.93	0.43	1.07	H-160	2.34	0.43	1.47	2-160	133.02	138.25	2.62	133.02	134.35	3.12	.074-.080	139.27	140.60
145.81	141.27	136.11	2.27	HZ-161	1.93	0.43	1.07	H-161	2.34	0.43	1.47	2-161	139.37	144.60	2.62	139.37	140.76	3.12	.074-.080	145.62	147.01
152.19	147.62	142.49	2.28	HZ-162	1.93	0.43	1.07	H-162	2.34	0.43	1.47	2-162	145.72	150.95	2.62	145.72	147.18	3.12	.074-.080	151.97	153.43
158.57	153.97	148.87	2.30	HZ-163	1.93	0.43	1.07	H-163	2.34	0.43	1.47	2-163	152.07	157.30	2.62	152.07	153.59	3.12	.074-.080	158.32	159.84
164.95	160.32	155.25	2.31	HZ-164	1.93	0.43	1.07	H-164	2.34	0.43	1.47	2-164	158.42	163.65	2.62	158.42	160.00	3.12	.074-.080	164.67	166.25
171.33	166.67	161.63	2.33	HZ-165	1.93	0.43	1.07	H-165	2.34	0.43	1.47	2-165	164.77	170.00	2.62	164.77	166.42	3.12	.074-.080	171.02	172.67
177.72	173.02	168.02	2.35	HZ-166	1.93	0.43	1.07	H-166	2.34	0.43	1.47	2-166	171.12	176.35	2.62	171.12	172.83	3.12	.074-.080	177.37	179.08
184.10	179.37	174.40	2.36	HZ-167	1.93	0.43	1.07	H-167	2.34	0.43	1.47	2-167	177.47	182.70	2.62	177.47	179.24	3.12	.074-.080	183.72	185.49
190.48	185.72	180.78	2.38	HZ-168	1.93	0.43	1.07	H-168	2.34	0.43	1.47	2-168	183.82	189.05	2.62	183.82	185.66	3.12	.074-.080	190.07	191.91
196.86	192.07	187.16	2.39	HZ-169	1.93	0.43	1.07	H-169	2.34	0.43	1.47	2-169	190.17	195.40	2.62	190.17	192.07	3.12	.074-.080	196.42	198.32
203.24	198.42	193.54	2.41	HZ-170	1.93	0.43	1.07	H-170	2.34	0.43	1.47	2-170	196.52	201.75	2.62	196.52	198.48	3.12	.074-.080	202.77	204.73
209.62	204.77	199.92	2.42	HZ-171	1.93	0.43	1.07	H-171	2.34	0.43	1.47	2-171	202.87	208.10	2.62	202.87	204.90	3.12	.074-.080	209.12	211.15
216.01	211.12	206.31	2.44	HZ-172	1.93	0.43	1.07	H-172	2.34	0.43	1.47	2-172	209.22	214.45	2.62	209.22	211.31	3.12	.074-.080	215.47	217.56
222.39	217.47	212.69	2.46	HZ-173	1.93	0.43	1.07	H-173	2.34	0.											

# H-Seal and H-Gland Dimensions / Reduced for Web / Metric - 2018 / 2019

SI (metric)  
Engineering  
Units

**Zero Clearance H-Seals**

Zero Clearance H-Seals allow the mating glands to bottom against each other. This means finished-assembly stack-up dimensions are the same whether an H-Seal or an elastomeric o-ring is used in the gland. Check the Assembly & Compression columns to the right for tooth penetration values.

**Gap H-Seals**

Gap H-Seals provide a positive compression stop for the mating glands. The glands bottom against the H-Seal and leave a gap between parts that can be used for leak checking. Note the Assembly & Compression columns to the right for gap dimensions.

**Interchangeable Elastomeric O-Ring Dimensions**

This is an abbreviated spreadsheet showing only H-Seal dimensions. Call or email Bostec for the full spreadsheet showing Assembly & Compression values for H-Seals and H-Glands. We will also send you machining guidelines.

H-Seal OD, Step ID and ID Basic Dimensions				Zero Clearance H-Seals			Gap H-Seals			Interchangeable Elastomeric O-Ring Dimensions											
OD ±.03	Step ID ±.03	H-Seal ID ±.03	Flange Cross Section Width	Zero Clearance H-Seal Part Number	H-Seal Flange Thickness +.00 / -.03	seating surface: recess depth per side +.03 / -.00	Web Thickness ±.03	Gap H-Seal Part Number	H-Seal Flange Thickness +.00 / -.03	seating surface: recess depth per side +.03 / -.00	Web Thickness ±.03	Parker Hannifin Part Number	ID	OD	Cross Section	ID (Mean ID of O-Ring, Ref)	ID max (ID min + 1% of Mean ID)	Gland (through) Width for Vacuum & Gases	Gland (through) Depth - from Parker Hannifin (English units)	OD min (calculated from tolerance range)	OD max (calculated from tolerance range)
235.15	230.17	225.45	2.49	HZ-175	1.93	0.43	1.07	H-175	2.34	0.43	1.47	2-175	228.27	233.50	2.62	228.27	230.55	3.12	.074-.080	234.52	236.80
241.53	236.52	231.83	2.50	HZ-176	1.93	0.43	1.07	H-176	2.34	0.43	1.47	2-176	234.62	239.85	2.62	234.62	236.97	3.12	.074-.080	240.87	243.21
247.92	242.87	238.21	2.52	HZ-177	1.93	0.43	1.07	H-177	2.34	0.43	1.47	2-177	240.97	246.20	2.62	240.97	243.38	3.12	.074-.080	247.22	249.63
254.30	249.22	244.60	2.54	HZ-178	1.93	0.43	1.07	H-178	2.34	0.43	1.47	2-178	247.32	252.55	2.62	247.32	249.79	3.12	.074-.080	253.57	256.04
34.17	28.47	21.71	2.85	HZ-215	2.57	0.61	1.35	H-215	3.10	0.61	1.88	2-215	26.57	33.63	3.53	26.57	26.83	4.09	.101-.107	34.75	35.01
35.78	30.07	23.32	2.85	HZ-216	2.57	0.61	1.35	H-216	3.10	0.61	1.88	2-216	28.17	35.23	3.53	28.17	28.45	4.09	.101-.107	36.35	36.63
37.36	31.65	24.90	2.86	HZ-217	2.57	0.61	1.35	H-217	3.10	0.61	1.88	2-217	29.74	36.80	3.53	29.74	30.04	4.09	.101-.107	37.92	38.22
38.97	33.25	26.51	2.86	HZ-218	2.57	0.61	1.35	H-218	3.10	0.61	1.88	2-218	31.34	38.40	3.53	31.34	31.66	4.09	.101-.107	39.52	39.84
40.55	34.82	28.09	2.86	HZ-219	2.57	0.61	1.35	H-219	3.10	0.61	1.88	2-219	32.92	39.98	3.53	32.92	33.25	4.09	.101-.107	41.10	41.43
42.16	36.42	29.70	2.87	HZ-220	2.57	0.61	1.35	H-220	3.10	0.61	1.88	2-220	34.52	41.58	3.53	34.52	34.86	4.09	.101-.107	42.70	43.04
43.74	38.00	31.28	2.87	HZ-221	2.57	0.61	1.35	H-221	3.10	0.61	1.88	2-221	36.09	43.15	3.53	36.09	36.45	4.09	.101-.107	44.27	44.63
45.35	39.60	32.89	2.88	HZ-222	2.57	0.61	1.35	H-222	3.10	0.61	1.88	2-222	37.69	44.75	3.53	37.69	38.07	4.09	.101-.107	45.87	46.25
48.54	42.77	36.08	2.88	HZ-223	2.57	0.61	1.35	H-223	3.10	0.61	1.88	2-223	40.87	47.93	3.53	40.87	41.28	4.09	.101-.107	49.05	49.46
51.73	45.95	39.27	2.89	HZ-224	2.57	0.61	1.35	H-224	3.10	0.61	1.88	2-224	44.04	51.10	3.53	44.04	44.48	4.09	.101-.107	52.22	52.66
54.92	49.12	42.46	2.90	HZ-225	2.57	0.61	1.35	H-225	3.10	0.61	1.88	2-225	47.22	54.28	3.53	47.22	47.69	4.09	.101-.107	55.40	55.87
58.11	52.30	45.65	2.91	HZ-226	2.57	0.61	1.35	H-226	3.10	0.61	1.88	2-226	50.39	57.45	3.53	50.39	50.90	4.09	.101-.107	58.57	59.08
61.30	55.47	48.85	2.92	HZ-227	2.57	0.61	1.35	H-227	3.10	0.61	1.88	2-227	53.57	60.63	3.53	53.57	54.10	4.09	.101-.107	61.75	62.28
64.49	58.65	52.04	2.92	HZ-228	2.57	0.61	1.35	H-228	3.10	0.61	1.88	2-228	56.74	63.80	3.53	56.74	57.31	4.09	.101-.107	64.92	65.49
67.69	61.82	55.23	2.93	HZ-229	2.57	0.61	1.35	H-229	3.10	0.61	1.88	2-229	59.92	66.98	3.53	59.92	60.52	4.09	.101-.107	68.10	68.70
70.88	65.00	58.42	2.94	HZ-230	2.57	0.61	1.35	H-230	3.10	0.61	1.88	2-230	63.09	70.15	3.53	63.09	63.72	4.09	.101-.107	71.27	71.90
74.07	68.17	61.61	2.95	HZ-231	2.57	0.61	1.35	H-231	3.10	0.61	1.88	2-231	66.27	73.33	3.53	66.27	66.93	4.09	.101-.107	74.45	75.11
77.26	71.35	64.80	2.95	HZ-232	2.57	0.61	1.35	H-232	3.10	0.61	1.88	2-232	69.44	76.50	3.53	69.44	70.14	4.09	.101-.107	77.62	78.32
80.45	74.52	67.99	2.96	HZ-233	2.57	0.61	1.35	H-233	3.10	0.61	1.88	2-233	72.62	79.68	3.53	72.62	73.34	4.09	.101-.107	80.80	81.52
83.64	77.70	71.18	2.97	HZ-234	2.57	0.61	1.35	H-234	3.10	0.61	1.88	2-234	75.79	82.85	3.53	75.79	76.55	4.09	.101-.107	83.97	84.73
86.83	80.87	74.37	2.98	HZ-235	2.57	0.61	1.35	H-235	3.10	0.61	1.88	2-235	78.97	86.03	3.53	78.97	79.76	4.09	.101-.107	87.15	87.94
90.02	84.05	77.56	2.99	HZ-236	2.57	0.61	1.35	H-236	3.10	0.61	1.88	2-236	82.14	89.20	3.53	82.14	82.97	4.09	.101-.107	90.32	91.14
93.21	87.22	80.75	2.99	HZ-237	2.57	0.61	1.35	H-237	3.10	0.61	1.88	2-237	85.32	92.38	3.53	85.32	86.17	4.09	.101-.107	93.50	94.35
96.40	90.40	83.94	3.00	HZ-238	2.57	0.61	1.35	H-238	3.10	0.61	1.88	2-238	88.49	95.55	3.53	88.49	89.38	4.09	.101-.107	96.67	97.56
99.59	93.57	87.14	3.01	HZ-239	2.57	0.61	1.35	H-239	3.10	0.61	1.88	2-239	91.67	98.73	3.53	91.67	92.59	4.09	.101-.107	99.85	100.76
102.79	96.75	90.33	3.02	HZ-240	2.57	0.61	1.35	H-240	3.10	0.61	1.88	2-240	94.84	101.90	3.53	94.84	95.79	4.09	.101-.107	103.02	103.97
105.98	99.92	93.52	3.03	HZ-241	2.57	0.61	1.35	H-241	3.10	0.61	1.88	2-241	98.02	105.08	3.53	98.02	99.00	4.09	.101-.107	106.20	107.18
109.17	103.10	96.71	3.03	HZ-242	2.57	0.61	1.35	H-242	3.10	0.61	1.88	2-242	101.19	108.25	3.53	101.19	102.21	4.09	.101-.107	109.37	110.38
112.36	106.27	99.90	3.04	HZ-243	2.57	0.61	1.35	H-243	3.10	0.61	1.88	2-243	104.37	111.43	3.53	104.37	105.41	4.09	.101-.107	112.55	113.59
115.55	109.45	103.09	3.05	HZ-244	2.57	0.61	1.35	H-244	3.10	0.61	1.88	2-244	107.54	114.60	3.53	107.54	108.62	4.09	.101-.107	115.72	116.80
118.74	112.62	106.28	3.06	HZ-245	2.57	0.61	1.35	H-245	3.10	0.61	1.88	2-245	110.72	117.78	3.53	110.72	111.83	4.09	.101-.107	118.90	120.00
121.93	115.80	109.47	3.07	HZ-246	2.57	0.61	1.35	H-246	3.10	0.61	1.88	2-246	113.89	120.95	3.53	113.89	115.03	4.09	.101-.107	122.07	123.21
125.12	118.97	112.66	3.07	HZ-247	2.57	0.61	1.35	H-247	3.10	0.61	1.88	2-247	117.07	124.13	3.53	117.07	118.24	4.09	.101-.107	125.25	126.42
128.31	122.15	115.85	3.08	HZ-248	2.57	0.61	1.35	H-248	3.10	0.61	1.88	2-248	120.24	127.30	3.53	120.24	121.45	4.09	.101-.107	128.42	129.62
131.50	125.32	119.04	3.09	HZ-249	2.57	0.61	1.35	H-249	3.10	0.61	1.88	2-249	123.42	130.48	3.53	123.42	124.65	4.09	.101-.107	131.60	132.83
134.69	128.50	122.24	3.10	HZ-250	2.57	0.61	1.35	H-250	3.10	0.61	1.88	2-250	126.59	133.65	3.53	126.59	127.86	4.09	.101-.107	134.77	136.04
137.89	131.67	125.43	3.11	HZ-251	2.57	0.61	1.35	H-251	3.10	0.61	1.88	2-251	129.77	136.83	3.53	129.77	131.07	4.09	.101-.107	137.95	139.25
141.08	134.85	128.62	3.11	HZ-252	2.57	0.61	1.35	H-252	3.10	0.61	1.88	2-252	132.94	140.00	3.53	132.94	134.27	4.09	.101-.107	141.12	142.45
144.27	138.02	131.81	3.12	HZ-253	2.57	0.61	1.35	H-253	3.10	0.61	1.88	2-253	136.12	143.18	3.53	136.12	137.48	4.09	.101-.107	144.30	145.66
147.46	141.20	135.00	3.13	HZ-254	2.57	0.61	1.35	H-254	3.10	0.61	1.88	2-254	139.29	146.35	3.53	139.29	140.69	4.09	.101-.107	147.47	148.87
150.65	144.37	138.19	3.14	HZ-255	2.57	0.61	1.35	H-255	3.10	0.61	1.88	2-255	142.47	149.53	3.53	142.47	143.89	4.09	.101-.107	150.65	152.07
153.84	147.55	141.38	3.15	HZ-256	2.57	0.61	1.35	H-256	3.10	0.61	1.88	2-256	145.64	152.70	3.53	145.64	147.10	4.09	.101-.107	153.82	155.28
157.03	150.72	144.57	3.15	HZ-257	2.57	0.61	1.35	H-257	3.10	0.61	1.88	2-257	148.82	155.88	3.53	148.82	150.31	4.09	.101-.107	157.00	158.49
160.22	153.90	147.76	3.16	HZ-258	2.57	0.61	1.35	H-258	3.10	0.61	1.88	2-258	151.99	159.05	3.53	151.99	153.51	4.09	.101-.107	160.17	161.69
166.60	160.76	154.14	2.92	HZ-259	2.57	0.61	1.35	H-259	3.10	0.61	1.88	2-259	158.34	165.40	3.53	158.34	159.93	4.09	.101-.107	166.52	168.11
172.98	167.11	160.53	2.94	HZ-260	2.57	0.61	1.35	H-260	3.10	0.61	1.88	2-260	164.69	171.75	3.5						

# H-Seal and H-Gland Dimensions / Reduced for Web / Metric - 2018 / 2019

H-Seal OD, Step ID and ID Basic Dimensions				Zero Clearance H-Seals			Gap H-Seals				Interchangeable Elastomeric O-Ring Dimensions										
<h2 style="margin: 0;">SI (metric) Engineering Units</h2>				Zero Clearance H-Seals allow the mating glands to bottom against each other. This means finished-assembly stack-up dimensions are the same whether an H-Seal or an elastomeric o-ring is used in the gland. Check the Assembly & Compression columns to the right for tooth penetration values.			Gap H-Seals provide a positive compression stop for the mating glands. The glands bottom against the H-Seal and leave a gap between parts that can be used for leak checking. Note the Assembly & Compression columns to the right for gap dimensions.														
											<b style="color: red;">This is an abbreviated spreadsheet showing only H-Seal dimensions. Call or email Bostec for the full spreadsheet showing Assmeby &amp; Compression values for H-Seals and H-Glands. We will also send you machining guidelines.</b>										
OD ±.03	Step ID ±.03	H-Seal ID ±.03	Flange Cross Section Width	Zero Clearance H-Seal Part Number			Gap H-Seal Part Number				O-Ring			O-Ring Face Seal Gland Dimensions							
				H-Seal Flange Thickness +.00 / -.03	Seating surface: recess depth per side +.03 / -.00	Web Thickness ±.03	H-Seal Flange Thickness +.00 / -.03	Seating surface: recess depth per side +.03 / -.00	Web Thickness ±.03	Parker Hannifin Part Number	ID	OD	Cross Section	ID (Mean ID of O-Ring, Ref)	ID max (ID min + 1% of Mean ID)	Gland (through) Width for Vacuum & Gasses	Gland (through) Depth - from Parker Hannifin (English units)	OD min (calculated from tolerance range)	OD max (calculated from tolerance range)		
192.13	186.16	179.67	2.99	HZ-263	2.57	0.61	1.35	H-263	3.10	0.61	1.88	2-263	183.74	190.80	3.53	183.74	185.58	4.09	.101-.107	191.92	193.76
198.51	192.51	186.05	3.00	HZ-264	2.57	0.61	1.35	H-264	3.10	0.61	1.88	2-264	190.09	197.15	3.53	190.09	191.99	4.09	.101-.107	198.27	200.17
204.89	198.86	192.43	3.02	HZ-265	2.57	0.61	1.35	H-265	3.10	0.61	1.88	2-265	196.44	203.50	3.53	196.44	198.41	4.09	.101-.107	204.62	206.59
211.28	205.21	198.82	3.03	HZ-266	2.57	0.61	1.35	H-266	3.10	0.61	1.88	2-266	202.79	209.85	3.53	202.79	204.82	4.09	.101-.107	210.97	213.00
217.66	211.56	205.20	3.05	HZ-267	2.57	0.61	1.35	H-267	3.10	0.61	1.88	2-267	209.14	216.20	3.53	209.14	211.24	4.09	.101-.107	217.32	219.41
224.04	217.91	211.58	3.07	HZ-268	2.57	0.61	1.35	H-268	3.10	0.61	1.88	2-268	215.49	222.55	3.53	215.49	217.65	4.09	.101-.107	223.67	225.83
230.42	224.26	217.96	3.08	HZ-269	2.57	0.61	1.35	H-269	3.10	0.61	1.88	2-269	221.84	228.90	3.53	221.84	224.06	4.09	.101-.107	230.02	232.24
236.80	230.61	224.34	3.10	HZ-270	2.57	0.61	1.35	H-270	3.10	0.61	1.88	2-270	228.19	235.25	3.53	228.19	230.48	4.09	.101-.107	236.37	238.65
243.18	236.96	230.73	3.11	HZ-271	2.57	0.61	1.35	H-271	3.10	0.61	1.88	2-271	234.54	241.60	3.53	234.54	236.89	4.09	.101-.107	242.72	245.07
249.57	243.31	237.11	3.13	HZ-272	2.57	0.61	1.35	H-272	3.10	0.61	1.88	2-272	240.89	247.95	3.53	240.89	243.30	4.09	.101-.107	249.07	251.48
160.69	151.13	140.53	4.78	HZ-360	3.91	1.27	1.37	H-360	4.70	1.27	2.16	2-360	148.59	159.26	5.33	148.59	150.08	6.12	.152-.162	160.83	162.32
163.88	154.31	143.73	4.79	HZ-361	3.91	1.27	1.37	H-361	4.70	1.27	2.16	2-361	151.77	162.43	5.33	151.77	153.28	6.12	.152-.162	164.01	165.53
170.26	160.66	150.11	4.80	HZ-362	3.91	1.27	1.37	H-362	4.70	1.27	2.16	2-362	158.12	168.78	5.33	158.12	159.70	6.12	.152-.162	170.36	171.94
176.64	167.01	156.49	4.82	HZ-363	3.91	1.27	1.37	H-363	4.70	1.27	2.16	2-363	164.47	175.13	5.33	164.47	166.11	6.12	.152-.162	176.71	178.35
183.02	173.36	162.87	4.83	HZ-364	3.91	1.27	1.37	H-364	4.70	1.27	2.16	2-364	170.82	181.48	5.33	170.82	172.52	6.12	.152-.162	183.06	184.77
189.40	179.71	169.25	4.85	HZ-365	3.91	1.27	1.37	H-365	4.70	1.27	2.16	2-365	177.17	187.83	5.33	177.17	178.94	6.12	.152-.162	189.41	191.18
195.79	186.06	175.63	4.87	HZ-366	3.91	1.27	1.37	H-366	4.70	1.27	2.16	2-366	183.52	194.18	5.33	183.52	185.35	6.12	.152-.162	195.76	197.59
202.17	192.41	182.02	4.88	HZ-367	3.91	1.27	1.37	H-367	4.70	1.27	2.16	2-367	189.87	200.53	5.33	189.87	191.76	6.12	.152-.162	202.11	204.01
208.55	198.76	188.40	4.90	HZ-368	3.91	1.27	1.37	H-368	4.70	1.27	2.16	2-368	196.22	206.88	5.33	196.22	198.18	6.12	.152-.162	208.46	210.42
214.93	205.11	194.78	4.91	HZ-369	3.91	1.27	1.37	H-369	4.70	1.27	2.16	2-369	202.57	213.23	5.33	202.57	204.59	6.12	.152-.162	214.81	216.83
221.31	211.46	201.16	4.93	HZ-370	3.91	1.27	1.37	H-370	4.70	1.27	2.16	2-370	208.92	219.58	5.33	208.92	211.00	6.12	.152-.162	221.16	223.25
227.70	217.81	207.54	4.95	HZ-371	3.91	1.27	1.37	H-371	4.70	1.27	2.16	2-371	215.27	225.93	5.33	215.27	217.42	6.12	.152-.162	227.51	229.66
234.08	224.16	213.92	4.96	HZ-372	3.91	1.27	1.37	H-372	4.70	1.27	2.16	2-372	221.62	232.28	5.33	221.62	223.83	6.12	.152-.162	233.86	236.07
240.46	230.51	220.31	4.98	HZ-373	3.91	1.27	1.37	H-373	4.70	1.27	2.16	2-373	227.97	238.63	5.33	227.97	230.24	6.12	.152-.162	240.21	242.49
246.84	236.86	226.69	4.99	HZ-374	3.91	1.27	1.37	H-374	4.70	1.27	2.16	2-374	234.32	244.98	5.33	234.32	236.66	6.12	.152-.162	246.56	248.90
253.22	243.21	233.07	5.01	HZ-375	3.91	1.27	1.37	H-375	4.70	1.27	2.16	2-375	240.67	251.33	5.33	240.67	243.07	6.12	.152-.162	252.91	255.31
259.60	249.56	239.45	5.02	HZ-376	3.91	1.27	1.37	H-376	4.70	1.27	2.16	2-376	247.02	257.68	5.33	247.02	249.49	6.12	.152-.162	259.26	261.73
265.99	258.45	245.83	5.03	HZ-377	3.91	1.27	1.37	H-377	4.70	1.27	2.16	2-377	253.37	264.03	5.33	253.37	255.90	6.12	.152-.162	265.61	268.14
272.37	271.15	258.60	5.04	HZ-378	3.91	1.27	1.37	H-378	4.70	1.27	2.16	2-378	266.07	276.73	5.33	266.07	268.73	6.12	.152-.162	278.31	280.97
278.75	277.53	265.04	5.05	HZ-379	3.91	1.27	1.37	H-379	4.70	1.27	2.16	2-379	278.77	289.43	5.33	278.77	281.55	6.12	.152-.162	291.01	293.80
285.13	283.91	271.42	5.06	HZ-380	3.91	1.27	1.37	H-380	4.70	1.27	2.16	2-380	291.47	302.13	5.33	291.47	294.38	6.12	.152-.162	303.71	306.62
291.51	290.29	277.80	5.07	HZ-381	3.91	1.27	1.37	H-381	4.70	1.27	2.16	2-381	304.17	314.83	5.33	304.17	307.21	6.12	.152-.162	316.41	319.45
297.89	296.67	284.18	5.08	HZ-382	3.91	1.27	1.37	H-382	4.70	1.27	2.16	2-382	329.57	340.23	5.33	329.57	332.86	6.12	.152-.162	341.81	345.10
304.27	303.05	290.56	5.09	HZ-383	3.91	1.27	1.37	H-383	4.70	1.27	2.16	2-383	354.97	365.63	5.33	354.97	358.51	6.12	.152-.162	367.21	370.76
310.65	309.43	296.94	5.10	HZ-384	3.91	1.27	1.37	H-384	4.70	1.27	2.16	2-384	380.37	391.03	5.33	380.37	384.17	6.12	.152-.162	392.61	396.41
317.03	315.81	303.32	5.11	HZ-385	3.91	1.27	1.37	H-385	4.70	1.27	2.16	2-385	405.26	415.93	5.33	405.26	409.31	6.12	.152-.162	417.50	421.55
323.41	322.19	309.70	5.12	HZ-386	3.91	1.27	1.37	H-386	4.70	1.27	2.16	2-386	430.66	441.33	5.33	430.66	434.96	6.12	.152-.162	442.90	447.21
329.79	328.57	316.08	5.13	HZ-387	3.91	1.27	1.37	H-387	4.70	1.27	2.16	2-387	456.06	466.73	5.33	456.06	460.62	6.12	.152-.162	468.30	472.86
336.17	334.95	322.46	5.14	HZ-388	3.91	1.27	1.37	H-388	4.70	1.27	2.16	2-388	481.46	492.13	5.33	481.46	486.27	6.12	.152-.162	493.70	498.51
342.55	341.33	329.24	5.15	HZ-389	3.91	1.27	1.37	H-389	4.70	1.27	2.16	2-389	506.86	517.53	5.33	506.86	511.93	6.12	.152-.162	519.10	524.17
348.93	347.71	335.62	5.16	HZ-390	3.91	1.27	1.37	H-390	4.70	1.27	2.16	2-390	532.26	542.93	5.33	532.26	537.58	6.12	.152-.162	544.50	549.82
355.31	354.09	341.93	5.17	HZ-391	3.91	1.27	1.37	H-391	4.70	1.27	2.16	2-391	557.66	568.33	5.33	557.66	563.23	6.12	.152-.162	569.90	575.48
361.69	360.47	348.32	5.18	HZ-392	3.91	1.27	1.37	H-392	4.70	1.27	2.16	2-392	582.68	593.34	5.33	582.68	588.50	6.12	.152-.162	594.92	600.75
368.07	366.85	354.74	5.19	HZ-393	3.91	1.27	1.37	H-393	4.70	1.27	2.16	2-393	608.08	618.74	5.33	608.08	614.16	6.12	.152-.162	620.32	626.40
374.45	373.23	360.03	5.20	HZ-394	3.91	1.27	1.37	H-394	4.70	1.27	2.16	2-394	633.48	644.14	5.33	633.48	639.81	6.12	.152-.162	645.72	652.05
380.83	379.61	365.92	5.21	HZ-395	3.91	1.27	1.37	H-395	4.70	1.27	2.16	2-395	658.88	669.54	5.33	658.88	665.46	6.12	.152-.162	671.12	677.71