



## High-Performance DING ZING DZ<sup>®</sup> Seals

Advanced Thermoplastic Polyurethane Solutions

**Dingzing**



DingZing Advanced Materials Inc. is one of the world's leading providers of thermoplastic polyurethane (TPU) products and solutions.

For more than forty-plus years, DingZing has been producing high-performance TPU seals. Using only the finest raw materials and following the strictest quality control measures from production to packaging, we at DingZing continue to produce seals with excellent tensile strength, outstanding compression deformation rates, and reliable resistance to both temperature and pressure. Today, our 5,000-plus seals carry the DING ZING DZ® trademark name, which has become one of the most trusted product brands in the industry. As a clear testament to our commitment to quality, all of our seals are proudly embossed with the DING ZING DZ® brand name.

# Content

## Piston/Rod Seals

	UN type	Material : TPU / 8L953 Hardness : 93 Shore A	P05 - P23
	D-4 type	Material : TPU / 8L953 Hardness : 93 Shore A	P24 - P26
	D-6 type	Material : TPU / 8L953 + NBR Hardness : 93 Shore A	P27 - P30
	D-7 type	Material : TPU / 8L953 Hardness : 93 Shore A	P31 - P32

## Piston Seals

	D-1 type	Material : TPU / 8L95 Hardness : 95 Shore A	P34 - P37
	D-8 type	Material : TPU / 8L95 + PA Hardness : 95 Shore A	P38 - P39

## Rod Seals

	D-2 type	Material : TPU / 8L95 Hardness : 95 Shore A	P41 - P45
	D-3 type	Material : TPU / 8L95 Hardness : 95 Shore A	P46 - P50

## Buffer Rings

	D-10 type	Material : TPU / 8L95 + PA Hardness : 95 Shore A	P52 - P54
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## Rotary Seals

	D-14 type	Material : TPU / 8L95 Hardness : 95 Shore A	P56 - P57
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## Dust Wipers

	D-9 type	Material : TPU / 8L95 Hardness : 95 Shore A	P59 - P60
	DH type	Material : TPU / 8L953 Hardness : 93 Shore A	P61 - P64
	DH-03 type	Material : TPU / 8L953 Hardness : 93 Shore A	P65 - P67
	DH-04 type	Material : TPU / 8L953 Hardness : 93 Shore A	P68 - P69
	DH-05 type	Material : TPU / 8L953 Hardness : 93 Shore A	P70 - P72
	DH-07 type	Material : TPU / 8L953 Hardness : 93 Shore A	P73 - P74

## Metal Clad Wipers

	ME-1 type	Material : TPU / 8L95+ SPCC Hardness : 95 Shore A	P76 - P77
	ME-1N type	Material : TPU / 8L95+ SPCC Hardness : 95 Shore A	P78 - P79
	ME-2 type	Material : TPU / 8L95+ SPCC Hardness : 95 Shore A	P80 - P84
	ME-3 type	Material : TPU / 8L95+ SPCC Hardness : 95 Shore A	P85 - P86
	ME-4 type	Material : TPU / 8L95+ SPCC Hardness : 95 Shore A	P87 - P88
	ME-5 type	Material : TPU / 8L95+ SPCC Hardness : 95 Shore A	P89 - P90
	ME-8 type	Material : TPU / 8L95+ SPCC Hardness : 95 Shore A	P91 - P92



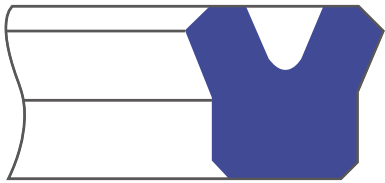


# DING ZING DZ® Piston/Rod Seals

DingZing offers 4 types of DING ZING DZ® piston/rod seals: UN, D-4, D-6, and D-7. These inherently tough seals are suitable for both the piston and rod of a cylinder. Select sizes are also available in inches.

## Piston/Rod Seals

# UN



### Mechanical Properties

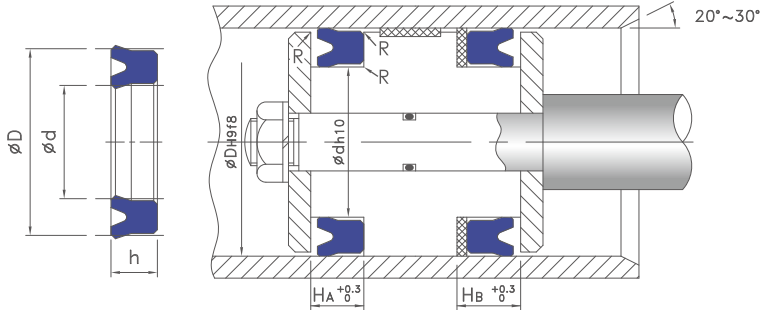
- Material: TPU / 8L953
- Specific Gravity (ASTM D792): 1.20
- Hardness (ASTM D2240): 93
- Tensile Strength (ASTM D412): 276
- 100% Modulus (ASTM D412): 100
- 300% Modulus (ASTM D412): 191
- Compression Set 70h/70°C (ASTM D395B): 42
- Compression Set 70h/100°C (ASTM D395B): 56

### Working Conditions

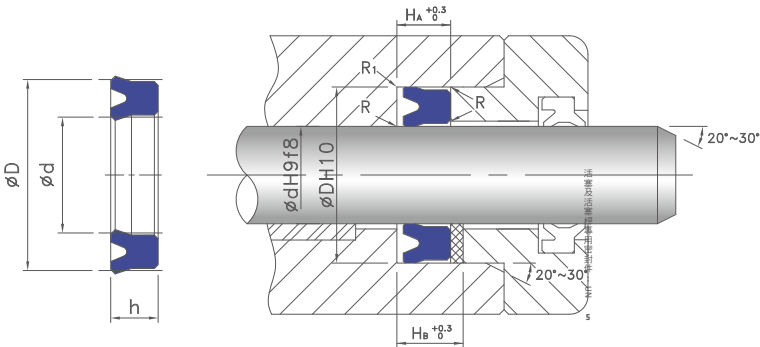
- Max. Working Pressure: 30 Mpa
- Working Speed: 0.03 ~ 0.5 m/sec
- Working Temperature: -20°C ~ 100°C

### Oil Resistance

- Testing Oil: Hydraulic Oil 46#
- Testing Temperature (°C): 100
- Testing Time (Hour): 100
- Hardness Variation (Shore A): 0
- Tensile Strength Variation (%): -5
- Volume Variation (%): +0.12

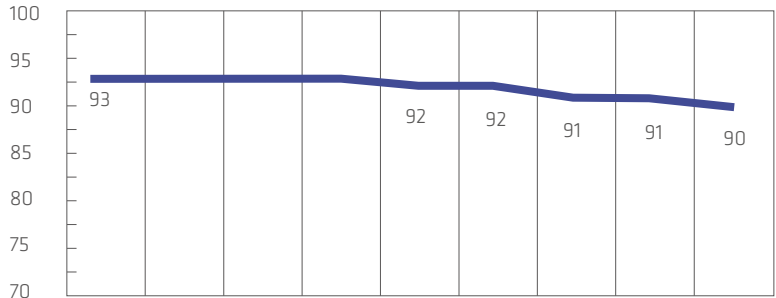


$R \leq 0.3$   
Piston  $\varnothing D$  Surface Roughness: 0.4~3.2  $\mu$  mRmax (0.1~0.8  $\mu$  mRa)

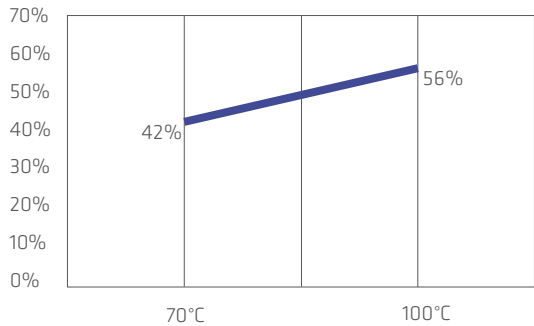


$R \leq 0.3, R1 \leq 0.5$   
Rod  $\varnothing d$  Surface Roughness: 0.8~1.6  $\mu$  mRmax (0.2~0.4  $\mu$  mRa)

### Influence of Temperature on Hardness (Shore A)



### Compression Set



Type	Ø d	Ø D	h	HA
UN	4	10	4	4.5
	4	10	6	7
	4	11	5	6
	4	12	4	4.5
	4	12	5	6
	4	14	4	4.5
	4.5	9.5	4	4.5
	4.5	11	4.5	5
	4.5	11	5	5.5
	5	11	8	9
	5	12	4	4.5
	5	12	5	6
	5	12	5.5	6.5
	5	12	6	7
	5	12	8	9
	5	14	4.5	5.5
	5	14	6	7
	5	14	8	9
	5	16	6	7
	5	16	8	9
	6	10	4.2	4.5
	6	12	4	4.5
	6	12	5	6
	6	12	5.5	6.5
	6	12	6	7
	6	12	8	9
	6	13	5	6
	6	13	8	9
	6	13.5	5	6
	6	14	5	6
	6	14	6	7
	6	14	8	9
	6	15	6	7
	6	16	6	7
	6	16	8	9
	6.3	16.3	8	9
	7	15	6	7
	7.1	17.1	8	9
	8	12	5	6
	8	14	4	5
	8	14	6	7

Type	Ø d	Ø D	h	HA
UN	8	14	8	9
	8	15	5	6
	8	15	6	7
	8	15	8	9
	8	16	4	5
	8	16	5	6
	8	16	5.7	6.3
	8	16	6	7
	8	16	8	9
	8	18	5	6
	8	18	7	8
	8	18	8	9
	8	19	8	9
	8	22	10	11
	9	16	6	7
	9	19	6	7
	9	19	8	9
	10	14	2.5	3
	10	14	3	3.5
	10	14	4	5
	10	15	3	4
	10	15	4	5
	10	16	4	5
	10	16	4.5	5.5
	10	16	5	6
	10	16	5.5	6.5
	10	16	6	7
	10	16	8	9
	10	16	10	11
	10	18	5	6
	10	18	5.5	6.5
	10	18	6	7
	10	18	8	9
	10	19	6	7
	10	19	8	9
	10	20	5	6
	10	20	6	7
	10	20	7	8
	10	20	8	9
	10	22	6	7
	10	22	8	9

Type	Ø d	Ø D	h	HA
UN	11	16	4	4.5
	11	17	4	5
	11	17	4.5	5.5
	11.2	19.2	5	6
	11.2	21.2	8	9
	12	16	4	5
	12	16	5	6
	12	16	6	7
	12	17	4	4.5
	12	18	4	5
	12	18	4.5	5.5
	12	18	5	6
	12	18	6	7
	12	18	8	9
	12	19	5	6
	12	20	4	5
	12	20	5	6
	12	20	5.5	6.5
	12	20	6	7
	12	20	7	8
	12	20	8	9
	12	22	5	6
	12	22	6	7
	12	22	7	8
	12	22	8	9
	12	24	6	7
	12	24	8	9
	12	25	8	9
	12	25	10	11
	12	26	4	5
	12	26	10	11
	12.5	22.5	8	9
	13	20	5	6
	13	21	5	6
	13	24	6	7
	14	20	4	5
	14	20	5	6
	14	20	6	7
	14	20	8	9
	14	21	5	6
	14	22	4	5

Type	Ø d	Ø D	h	HA
UN	14	22	5	6
	14	22	6	7
	14	22	8	9
	14	24	5	6
	14	24	8	9
	14	25	5	6
	14	25	5.5	6.5
	14	25	8	9
	14	26	5	6
	14	28	10	11
	14	30	5	6
	15	21	4	5
	15	22	5	6
	15	22	5.5	6.5
	15	22	6	7
	15	22	8	9
	15	23	5	6
	15	25	5	6
	15	25	6	7
	15	25	7	8
	15	25	8	9
	15	25	10	11
	15	26	5	6
	15	27	7	8
	15	30	8	9
	15	30	10	11
	15.4	25.5	6.5	7.5
	15.8	20	3	4
	16	20	6	7
	16	22	4	4.5
	16	22	4.5	5.5
	16	22	5	6
	16	22	6	7
	16	22	7	8
	16	22	8	9
	16	24	4	5
	16	24	5	6
	16	24	6	7
	16	24	8	9
	16	24	9	10
	16	25	5	6

Type	Ø d	Ø D	h	HA
UN	16	25	6	7
	16	26	5	6
	16	26	6	7
	16	26	7	8
	16	26	8	9
	16	26	10	11
	16	28	6	7
	16	30	5	6
	16	30	6	7
	16	31	7	8
	16	32	8	9
	16	36	5	6
	17	25	5	6
	17	25	5.5	6.5
	17	26	6	7
	17	27	5	6
	17	27	6	7
	17	30	6	7
	17	30	7	8
	17	32	7	8
	18	22	8	9
	18	24	5	6
	18	24	6	7
	18	24	8	9
	18	25	5	6
	18	25	6	7
	18	25.5	5	6
	18	26	5	6
	18	26	6	7
	18	26	7	8
	18	26	8	9
	18	28	5	6
	18	28	6	7
	18	28	7	8
	18	28	8	9
	18	30	5	6
	18	30	6	7
	18	30	8	9
	18	30	10	11
	18	31	8	9
	18	32	6	7
	18	32	7	8
	18	32	8	9
	18	33	5	6
	18	33	8	9
	18	33	10	11
	18	34.5	12	13
	18	35	7	8
	18	35	8	9
	18	35	10	11
	18	36	8	9
	18	37	12	13

Type	Ø d	Ø D	h	HA
UN	18	34	8	9
	18	38	6	7
	19	25	5	6
	19	25	6	7
	19	25	7	8
	19	26	5	6
	19	26	7	8
	19	34	8	9
	20	25	5	6
	20	26	3	4
	20	26	3.2	4
	20	26	3.3	4
	20	26	5	6
	20	26	6	7
	20	26	7	8
	20	27	6	7
	20	28	4	5
	20	28	4.5	5.5
	20	28	5	6
	20	28	5.5	6.5
	20	28	6	7
	20	28	7	8
	20	28	8	9
	20	30	5	6
	20	30	6	7
	20	30	7	8
	20	30	8	9
	20	30	10	11
	20	31	8	9
	20	32	6	7
	20	32	7	8
	20	32	8	9
	20	33	5	6
	20	33	8	9
	20	33	10	11
	20	34.5	12	13
	20	35	7	8
	20	35	8	9
	20	35	10	11
	20	36	8	9
	20	37	12	13

Type	Ø d	Ø D	h	HA
UN	20	38	10	11
	20	40	8	9
	20	40	10	11
	20	40	12	13
	22	26	2.8	3.5
	22	28	4	5
	22	28	4.5	5.5
	22	28	6	7
	22	28	8	9
	22	29	5	6
	22	30	4	5
	22	30	4.5	5.5
	22	30	5	6
	22	30	6	7
	22	30	7	8
	22	30	8	9
	22	32	5	6
	22	32	6	7
	22	32	7.2	8
	22	32	8	9
	22	32	10	11
	22	33	10	11
	22	34	7	8
	22	34	10	11
	22	35	6	7
	22	35	7	8
	22	35	8	9
	22	35	10	11
	22	36	9	10
	22	38	8	9
	22	40	10	11
	22	40	12	13
	22.4	30	5	6
	22.4	32.4	8	9
	22.5	31.5	5	6
	22.7	33	5.3	6
	23	35	6	7
	23.5	31.5	5	6
	24	30	6	7
	24	32	4	5
	24	32	5	6

Type	Ø d	Ø D	h	HA
UN	24	32	6	7
	24	32	7	8
	24	34	5	6
	24	34	6	7
	24	34	7	8
	24	36	6	7
	24	36	8	9
	24	40	9	10
	25	30	6	7
	25	31	6	7
	25	32	4	5
	25	32	5	6
	25	32	7	8
	25	32	8	9
	25	33	5	6
	25	33	5.5	6.5
	25	33	6	7
	25	33	7	8
	25	33	8	9
	25	33	10	11
	25	34	5	6
	25	34	6	7
	25	35	5	6
	25	35	6	7
	25	35	7	8
	25	35	7.3	8
	25	35	8	9
	25	35	10	11
	25	36	6	7
	25	37	7	8
	25	38	7	8
	25	38	8	9
	25	38	10	11
	25	40	6	7
	25	40	6.5	7.5
	25	40	7	8
	25	40	8	9
	25	40	10	11
	25	41	7	8
	25	42	8	9
	25	42	9	10

Type	Ø d	Ø D	h	HA
UN	25	43	7	8
	25	43	8	9
	25	45	7	8
	25	45	8	9
	25	45	10	11
	25	50	10	11
	25.4	30.2	6	7
	26	32	4.7	5.5
	26	32	6	7
	26	34	6	7
	26	36	6	7
	26	36	8	9
	26	36	10	11
	26	38	8	9
	26	47	12	13
	27	35	5	6
	27	35	10	11
	27	36	6	7
	27	37	7	8
	27	38	7	8
	28	35	5	6
	28	35	6	7
	28	35.5	5	6
	28	36	4	5
	28	36	5	6
	28	36	6	7
	28	36	7	8
	28	36	8	9
	28	36	10	11
	28	38	5	6
	28	38	6	7
	28	38	7	8
	28	38	7.3	8
	28	38	8	9
	28	38	10	11
	28	40	8	9
	28	40	10	11
	28	42	7	8
	28	42	10	11
	28	43	10	11
28	44	8	9	

Type	Ø d	Ø D	h	HA
UN	28	45	8	9
	28	50	13	14
	30	36	6	7
	30	36	8	9
	30	37	6	7
	30	37	8	9
	30	38	5	6
	30	38	5.7	6.3
	30	38	6	7
	30	38	7	8
	30	38	8	9
	30	39	5	6
	30	40	5	6
	30	40	5.5	6.5
	30	40	6	7
	30	40	6.5	7.5
	30	40	7	8
	30	40	7.3	8
	30	40	8	9
	30	40	10	11
	30	42	5	6
	30	42	6	7
	30	42	7	8
	30	42	8	9
	30	42	9	10
	30	42	10	11
	30	43	6.5	7.5
	30	43	10	11
	30	43.6	9.5	10.5
	30	44	5.5	6.5
	30	45	6	7
	30	45	8	9
	30	45	9	10
	30	45	10	11
	30	46	10	11
	30	47	10	11
	30	48	8	9
	30	48	10	11
	30	50	9	10
	30	50	10	11
30	50	11	12	

Type	Ø d	Ø D	h	HA
UN	30	50	12	13
	30	52	10	11
	31	47	10	11
	31.5	41.5	6	7
	31.5	44.3	9.5	10.5
	31.5	46.5	10	11
	31.8	41.3	6.3	7
	32	39	8	9
	32	40	4	5
	32	40	5	6
	32	40	5.5	6.5
	32	40	5.7	6.5
	32	40	6	7
	32	40	6.3	7
	32	40	7	8
	32	40	8	9
	32	40	10	11
	32	42	6	7
	32	42	7	8
	32	42	7.3	8
	32	42	8	9
	32	42	8.2	9
	32	42	10	11
	32	44	6.3	7.3
	32	45	6	7
	32	45	8	9
	32	45	10	11
	32	46	10	11
	32	47	10	11
	32	48	8	9
	32	48	10	11
	32	50	10	11
	32	52	10	11
	32.5	38	8	9
	33	39	8	9
	33	40	8	9
	33	42	8	9
	34	40	4	5
	34	40	6	7
	34	45	8	9
34	50	12	13	

Type	Ø d	Ø D	h	HA
UN	35	41	5	6
	35	42	7	8
	35	42	10	11
	35	43	5	6
	35	43	6	7
	35	43	6.3	7
	35	43	7	8
	35	43	8	9
	35	43	10	11
	35	44	7	8
	35	45	5	6
	35	45	6	7
	35	45	7	8
	35	45	8	9
	35	45	10	11
	35	46	6	7
	35	46	8	9
	35	46	9	10
	35	46	10	11
	35	47	6	7
	35	47	7	8
	35	48	6	7
	35	48	8	9
	35	48	10	11
	35	50	8	9
	35	50	9	10
	35	50	10	11
	35	51	10	11
	35	55	10	11
	35	55	12	13
	35.5	45	6	7
	35.5	50.5	10	11
	36	43	8	9
	36	44	4	5
	36	44	5.3	6
	36	44	6	7
	36	44	8	9
	36	45	6.5	7.5
	36	46	6	7
	36	46	7	8
36	46	9	10	

Type	Ø d	Ø D	h	HA
UN	36	46	10	11
	36	48	4	5
	36	48	8	9
	36	48	10	11
	37	47	8	9
	37	47	10	11
	38	45	4.8	5.5
	38	45	5	6
	38	45	6	7
	38	45	6.5	7.5
	38	45.5	6	7
	38	46	6	7
	38	46	8	9
	38	48	6	7
	38	48	7	8
	38	48	8	9
	38	48	10	11
	38	50	6	7
	38	50	8	9
	38	50	9	10
	38	50	10	11
	38	51	10	11
	38	52	10	11
	38	54	10	11
	38	55	10	11
	38	58	9.7	10.7
	38	58	10	11
	38	60	10	11
	38	62	12	13
	39	48	6.5	7.5
	39	54	10	11
	39	58	13	14
	40	48	5	6
	40	48	6	7
	40	48	8	9
	40	48	10	11
	40	48	11	12
	40	50	5	6
	40	50	6	7
	40	50	6.5	7.5
	40	50	7	8

Type	Ø d	Ø D	h	HA
UN	40	50	7.3	8
	40	50	8	9
	40	50	9	10
	40	50	10	11
	40	50	12	13
	40	52	7	8
	40	52	8	9
	40	52	10	11
	40	52	12	13
	40	53	8	9
	40	53	8.5	9.5
	40	55	7	8
	40	55	8	9
	40	55	9	10
	40	55	10	11
	40	55	10.2	11
	40	56	6	7
	40	57	7.5	8.5
	40	60	8	9
	40	60	10	11
	40	60	12	13
	40	62	6	7
	40	63	13	14
	40	65	7	8
	40	65	10	11
	40	65	12	13
	41	51	7	8
	41	57	10	11
	41	61	10	11
	42	50	5	6
	42	50	6	7
	42	50	8	9
	42	52	6	7
	42	52	7	8
	42	52	8	9
	42	52	10	11
	42	52	12	13
	42	53	9	10
	42	55	7	8
	42	55	8	9
	42	62	12	13

Type	Ø d	Ø D	h	HA
UN	43	53	7.5	8.5
	43	55	6	7
	43	55	10	11
	44	50	8.5	9.5
	44.5	54.5	6	7
	45	52	8	9
	45	52	10	11
	45	53	5.3	6
	45	53	6	7
	45	53	8	9
	45	53	10	11
	45	54	6	7
	45	55	5	6
	45	55	6	7
	45	55	6.5	7.5
	45	55	7	8
	45	55	7.5	8.5
	45	55	8	9
	45	55	9	10
	45	55	10	11
	45	55	12	13
	45	56	7	8
	45	56	10	11
	45	57.7	9.5	10.5
	45	58	7	8
	45	58	8	9
	45	58	10	11
	45	58	12	13
	45	60	9	10
	45	60	10	11
	45	60	12	13
	45	61	10	11
	45	62	10	11
	45	63	8	9
	45	63	10	11
	45	63	12	13
	45	65	6	7
	45	65	8	9
	45	65	10	11
	45	65	12	13
	45	66	10	11

Type	Ø d	Ø D	h	HA
UN	45	70	12	13
	45	70	15.5	17.5
	45	70	16	18
	46	56	6	7
	46	56	8	9
	46	62	10	11
	47	55	10	11
	47	57	7	8
	47	57	10	11
	48	57	10	11
	48	58	6	7
	48	58	8	9
	48	58	10	11
	48	60	6	7
	48	60	7.9	9
	48	60	10	11
	48	60	12	13
	48	62	12	13
	48	63	10	11
	49	60	8	9
	49.5	57	5	6
	50	57	10	11
	50	58	5.3	6
	50	58	6	7
	50	58	8	9
	50	58	10	11
	50	58	12	13
	50	60	5	6
	50	60	6	7
	50	60	6.5	7.5
	50	60	7	8
	50	60	8	9
	50	60	10	11
	50	60	12	13
	50	62	8.5	9.5
	50	62	9	10
	50	62	9.5	10.5
	50	62	10	11
	50	62	12	13
	50	63	6	7
	50	63	6.5	7.5



Type	Ø d	Ø D	h	HA
UN	50	63	8	9
	50	63	9	10
	50	63	10	11
	50	65	6	7
	50	65	7	8
	50	65	7.5	8.5
	50	65	8	9
	50	65	9	10
	50	65	10	11
	50	65	12	13
	50	66	12	13
	50	68	10	11
	50	70	8	9
	50	70	9	10
	50	70	10	11
	50	70	12	13
	50	70	18	20
	50	72	10	11
	50	75	12.5	13.5
	50.9	70	13	14
	51	63	14	15
	51	66	14	15
	51	70	12	13
	52	62	6	7
	52	62	7	8
	52	62	12	13
	52	64	6	7
	52	65	6	7
	52	65	8	9
	52	70	12	13
	52	72	10	11
	53	63	6	7
	53	63	6.5	7.5
	53	63	8	9
	53	63	10	11
	53	65	8	9
	53	73	12	13
	54	64	6	7
	54	70	12	13
	55	63	8	9
	55	63	10	11

Type	Ø d	Ø D	h	HA
UN	55	65	5	6
	55	65	6	7
	55	65	7	8
	55	65	8	9
	55	65	10	11
	55	65	12	13
	55	66	10	11
	55	68	10	11
	55	70	7	8
	55	70	7.5	8.5
	55	70	8	9
	55	70	9	10
	55	70	10	11
	55	70	12	13
	55	71	12	13
	55	72	10	11
	55	72	12	13
	55	75	8	9
	55	75	9	10
	55	75	10	11
	55	75	12	13
	55	76	10	11
	56	66	6	7
	56	66	6.5	7.5
	56	66	8.5	9.5
	56	66	10	11
	56	71	9	10
	56	71	11.5	12.5
	56	72	12	13
	56	76	12	13
	57	63	8	9
	57	63	10	11
	58	68	6	7
	58	68	7	8
	58	68	8	9
	58	68	14	15
	58	70	8	9
	58	78	12	13
	60	68	6	7
	60	68	8	9
	60	68	11.5	12.5

Type	Ø d	Ø D	h	HA
UN	60	68	14	15
	60	70	5	6
	60	70	6	7
	60	70	7	8
	60	70	9	10
	60	70	10	11
	60	70	12	13
	60	71	7	8
	60	72	10	11
	60	73	8	9
	60	75	8	9
	60	75	9	10
	60	75	10	11
	60	75	12	13
	60	75	13	14
	60	76	12	13
	60	80	6	7
	60	80	10	11
	60	80	12	13
	60	80	18	20
	60	85	10	11
	60	85	12	13
	60	85	12.5	13.5
	60	90	15	17
	60	90	16	18
	61	67	5	6
	61	71	6	7
	61	71	6.5	7.5
	61	76	6	7
	61	78	15.5	17.5
	62	70	10	11
	62	72	10	11
	62	75	10	11
	62	78	10	11
	62	80	10	11
	62	82	10	11
	62	82	12	13
	63	71	8	9
	63	73	6	7
	63	73	12	13
	63	75	6	7

Type	Ø d	Ø D	h	HA
UN	63	75	10	11
	63	75	11.5	12.5
	63	75	12	13
	63	75	14	15
	63	78	10	11
	63	78	12	13
	63	80	9	10
	63	80	10	11
	63	80	12	13
	63	80	16	18
	63	83	12	13
	64	76	9.5	10.5
	64	80	8	9
	64	80	12	13
	65	72	10	11
	65	73	8	9
	65	73	11.5	12.5
	65	75	6	7
	65	75	8	9
	65	75	9	10
	65	75	10	11
	65	75	12	13
	65	76	10	11
	65	78	10	11
	65	79	10	11
	65	80	7.5	8.5
	65	80	8	9
	65	80	8.4	9.5
	65	80	9	10
	65	80	10	11
	65	80	11	12
	65	80	12	13
	65	85	10	11
	65	85	12	13
	65	86	10	11
	65	95	15	17
	66	76	8	9
	67	77	6	7
	67	77	9.5	10.5
	67	77	12	13
	67	87	12	13

Type	Ø d	Ø D	h	HA
UN	67	95	11.5	12.5
	68	78	12	13
	68	80	9	10
	68	80	10	11
	68	80	14	15
	69	83	8	9
	70	78	8	9
	70	78	10	11
	70	80	5	6
	70	80	6	7
	70	80	6.5	7.5
	70	80	7	8
	70	80	8	9
	70	80	10	11
	70	80	12	13
	70	81	10	11
	70	82	9	10
	70	82	10	11
	70	82	12	13
	70	83	10	11
	70	83	12	13
	70	84	10	11
	70	85	7	8
	70	85	8	9
	70	85	9	10
	70	85	10	11
	70	85	10.5	11.5
	70	85	11.4	12.5
	70	85	12	13
	70	90	10	11
	70	90	12	13
	70	90	13	14
	70	90	13.5	14.5
	70	90	15	17
	70	90	18	20
	70	91	10	11
	70	92	12	13
	70	95	12	13
	71	80	6	7
	71	81	6	7
	71	91	12	13

Type	Ø d	Ø D	h	HA
UN	73	85	10	11
	75	83	11	12
	75	85	6	7
	75	85	7	8
	75	85	8	9
	75	85	10	11
	75	85	12	13
	75	86	10	11
	75	88	10	11
	75	90	9	10
	75	90	10	11
	75	90	12	13
	75	95	10	11
	75	95	12	13
	75	95	13	14
	75	95	13.5	14.5
	75	95	14	15
	75	100	15	17
	76	82	5	6
	76	86	14	15
	76	91	14	15
	76	92	12	13
	76.5	90.5	10	11
	78	86	14	15
	78	95	11.5	12.5
	80	88	8	9
	80	90	5	6
	80	90	6	7
	80	90	8	9
	80	90	10	11
	80	90	11	12
	80	90	12	13
	80	91	10	11
	80	92	8.7	9.7
	80	92	14	15
	80	93	8	9
	80	94	10	11
	80	95	8	9
	80	95	9	10
	80	95	10	11
	80	95	11	12

Type	Ø d	Ø D	h	HA
UN	80	95	12	13
	80	96	12	13
	80	100	9.5	10.5
	80	100	10	11
	80	100	12	13
	80	100	13	14
	80	100	13.5	14.5
	80	100	15	17
	80	105	12	13
	80	110	12	13
	80	110	15	17
	81	100	16	18
	82	97	10	11
	83	94	6.2	7
	85	93	8	9
	85	93	11.5	12.5
	85	95	5	6
	85	95	6	7
	85	95	8.5	9.5
	85	95	9	10
	85	95	12	13
	85	95.5	6	7
	85	96	10	11
	85	97	9	10
	85	99	8	9
	85	100	8	9
	85	100	9	10
	85	100	10	11
	85	100	12	13
	85	105	10	11
	85	105	12	13
	85	105	15	17
	85	105	18	20
	85	110	12	13
	86	96	11.5	12.5
	87	95	11.5	12.5
	88	100	9	10
	88	100	14	15
	90	98	8	9
	90	98	12	13
	90	100	5	6

Type	Ø d	Ø D	h	HA
UN	90	100	6	7
	90	100	6.5	7.5
	90	100	6.8	7.5
	90	100	7	8
	90	100	8	9
	90	100	9	10
	90	100	10	11
	90	100	11.5	12.5
	90	100	12	13
	90	102	9	10
	90	102	10	11
	90	102	14	15
	90	105	9	10
	90	105	10	11
	90	105	11.5	12.5
	90	105	12	13
	90	110	9	10
	90	110	10	11
	90	110	12	13
	90	110	13	14
	90	110	15	17
	90	115	12	13
	90	115	15	17
	90	120	12	13
	90	125	15	17
	91	97	5	6
	93	105	9	10
	95	105	7	8
	95	105	10	11
	95	105	11.5	12.5
	95	105	12	13
	95	105	14	15
	95	110	9	10
	95	110	10	11
	95	110	12	13
	95	115	12	13
	95	115	13.5	14.5
	95	115	15	17
	95	115	18	20
	95	120	12	13
	95	120	13	14

Type	Ø d	Ø D	h	HA
UN	97	105	14	15
	98	112	9	10
	100	110	5	6
	100	110	6	7
	100	110	8	9
	100	110	10	11
	100	110	11	12
	100	110	12	13
	100	110	14	15
	100	110	15	17
	100	112	9	10
	100	112	14	15
	100	115	9	10
	100	115	10	11
	100	115	12	13
	100	115	15	17
	100	120	10	11
	100	120	12	13
	100	120	13.5	14.5
	100	120	15	17
	100	125	10	11
	100	125	12	13
	100	125	15	17
	100	130	15	17
	100.4	115	9	10
	104	117	5.3	6
	104.5	117	5.3	6
	105	112	12	13
	105	113	11	12
	105	115	9	10
	105	115	12	13
	105	115	13.5	14.5
	105	120	8	9
	105	120	9	10
	105	120	11	12
	105	120	12	13
	105	120	13	14
	105	120	15	17
	105	125	10	11
	105	125	11	12
	105	125	12	13

Type	Ø d	Ø D	h	HA
UN	105	125	13	14
	105	125	15	17
	105	125	16	18
	105	130	12	13
	105	130	13	14
	106	120	9	10
	106	121	9	10
	106	126	16	18
	107	113	5	6
	107	130	15	17
	110	120	10.5	11.5
	110	120	12	13
	110	124	9.5	10.5
	110	125	9	10
	110	125	10	11
	110	125	11	12
	110	125	12	13
	110	125	15	17
	110	130	9	10
	110	130	12	13
	110	130	15	17
	110	130	16	18
	110	135	15	17
	110	140	15	17
	110	140	18	20
	110	145	15	17
	112	125	9	10
	112	127	12	13
	112	132	15	17
	112	132	16	18
	113	125	14	15
	115	125	10	11
	115	125	12	13
	115	130	9	10
	115	130	10	11
	115	130	12	13
	115	130	13.5	14.5
	115	130	14.5	15.5
	115	130	15	17
	115	135	12	13
	115	135	15	17

Type	Ø d	Ø D	h	HA
UN	115	140	12	13
	115	140	15	17
	117	130	10	11
	117	130	12	13
	118	126	14	15
	118	130	10	11
	118	130	12	13
	120	128	6	7
	120	128	11.5	12.5
	120	128	12	13
	120	130	5	6
	120	130	12	13
	120	130	13	14
	120	130	14	15
	120	132	12	13
	120	135	9	10
	120	135	12	13
	120	140	10	11
	120	140	12	13
	120	140	13	14
	120	140	15	17
	120	140	16	18
	120	145	12	13
	120	145	15	17
	120	145	18	20
	120	150	15	17
	124	145	15	17
	125	133	11.5	12.5
	125	135	12	13
	125	140	9	10
	125	140	10	11
	125	140	11	12
	125	140	12	13
	125	140	13	14
	125	140	15	17
	125	145	12	13
	125	145	15	17
	125	145	16	18
	125	150	15	17
	125	150	19	20
	125	155	15	17

Type	Ø d	Ø D	h	HA
UN	126	132	5	6
	130	140	6	7
	130	140	10.5	11.5
	130	140	12	13
	130	145	9	10
	130	145	10	11
	130	145	12	13
	130	145	15	17
	130	150	10	11
	130	150	12	13
	130	150	15	17
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	132	145	9	10
	132	152	15	17
	135	143	12	13
	135	145	12	13
	135	145	13	14
	135	150	9	10
	135	150	10	11
	135	150	11	12
	135	150	12	13
	135	150	15	17
	135	155	12	13
	135	155	15	17
	135	160	15	17
	135	160	19	21
	135	165	15	17
	136	150	9	10
	140	148	7	8
	140	148	11.5	12.5
	140	150	5	6
	140	150	6	7
	140	150	11	12
	140	150	12	13
	140	150	13.5	14.5
	140	150	15	17
	140	152	10	11

Type	Ø d	Ø D	h	HA
UN	140	152	14	15
	140	155	9	10
	140	155	10	11
	140	155	12	13
	140	155	15	17
	140	157	6	7
	140	160	9	10
	140	160	10	11
	140	160	12	13
	140	160	14	15
	140	160	15	17
	140	160	16	18
	140	165	15	17
	140	170	15	17
	141	151	14	15
	143	151	14	15
	144	160	18	20
	145	160	9	10
	145	160	12	13
	145	165	12	13
	145	165	15	17
	145	170	15	17
	145	175	15	17
	148	160	14	15
	150	160	10.5	11.5
	150	165	9	10
	150	165	15	17
	150	170	10	11
	150	170	12	13
	150	170	15	17
	150	170	16	18
	150	175	15	17
	150	175	16	18
	150	180	15	17
	150	180	18	20
	155	165	12.5	13.5
	155	170	9	10
	155	175	12	13
	155	180	15	17
	155	180	16	18
	155	180	19	21

Type	Ø d	Ø D	h	HA
UN	160	170	7.5	8.5
	160	170	12	13
	160	175	7.5	8.5
	160	175	9	10
	160	175	10	11
	160	175	12	13
	160	175	12.5	13.5
	160	175	15	17
	160	175	16	18
	160	180	10	11
	160	180	12	13
	160	180	15	17
	160	180	16	18
	160	185	12	13
	160	185	15	17
	160	185	16	18
	160	185	18	20
	160	185	19	21
	160	190	15	17
	160	190	18	20
	160	195	17	19
	162	172	14	15
	164	180	18	20
	165	177	9	10
	165	180	9	10
	165	180	9.5	10.5
	165	180	15	17
	165	185	15	17
	165	190	15	17
	165	190	16	18
	165	190	19	21
	170	180	12	13
	170	185	9	10
	170	190	12	13
	170	190	15	17
	170	195	12	13
	170	195	15	17
	170	195	16	18
	170	195	19	21
	170	200	15	17
	170	200	18	20

Type	Ø d	Ø D	h	HA
UN	170	215	20	22
	171	179	14	15
	175	190	10	11
	175	190	16	18
	175	200	15	17
	175	200	16	18
	175	200	19	21
	175	205	15	17
	180	188	11.5	12.5
	180	190	10	11
	180	200	10	11
	180	200	12	13
	180	200	12.5	13.5
	180	200	15	17
	180	200	16	18
	180	205	12	13
	180	205	15	17
	180	205	16	18
	180	205	18	20
	180	210	15	17
	180	210	22	24
	180	215	15	17
	183	193	14	15
	184	200	18	20
	185	195	12	13
	185	195	12.5	13.5
	185	200	7.5	8.5
	185	200	9	10
	185	200	12	13
	185	200	15	17
	185	205	15	17
	185	210	15	17
	185	210	16	18
	185	215	15	17
	190	200	12.5	13.5
	190	205	15	17
	190	205	16	18
	190	210	12	13
	190	210	15	17
	190	215	15	17
	190	215	16	18

Type	Ø d	Ø D	h	HA
UN	190	220	15	17
	190	220	16	18
	190	220	18	20
	190	220	22	24
	190	225	15	17
	195	220	15	17
	197	208	12	13
	200	215	12	13
	200	216	18	20
	200	220	12	13
	200	220	15	17
	200	220	18	20
	200	225	15	17
	200	225	16	18
	200	225	18	20
	200	225	20	22
	200	230	15	17
	200	230	18	20
	200	230	22	24
	200	235	20	22
	200	240	12	13
	205	230	10	11
	205	230	16	18
	205	230	20	22
	207	217	14	15
	210	225	15	17
	210	230	12	13
	210	230	14	15
	210	230	15	17
	210	235	15	17
	210	235	18	20
	210	240	15	17
	210	240	18	20
	212	237	18	20
	215	225	12.5	13.5
	215	235	15	17
	215	240	15	17
	215	240	16	18
	215	240	18	20
	215	240	19	21
	220	236	18	20

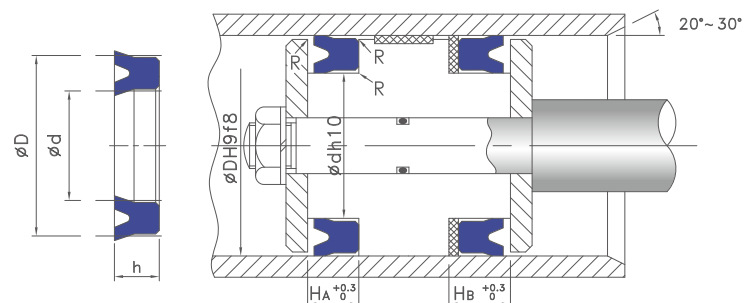
Type	Ø d	Ø D	h	HA
UN	220	240	12	13
	220	240	15	17
	220	245	18	20
	220	250	15	17
	220	250	18	20
	220	250	22	24
	222	234	12	13
	225	240	12	13
	225	250	16	18
	225	250	19	21
	225	255	26	28
	230	250	12	13
	230	250	12.5	13.5
	230	250	15	17
	230	250	18	20
	230	255	18	20
	230	260	18	20
	230	260	22	24
	235	255	12	13
	235	260	16	18
	235	260	19	21
	240	260	16	18
	240	265	16	18
	240	270	18	20
	245	270	19	21
	250	266	18	20
	250	270	12	13
	250	270	15	17
	250	270	18	20
	250	275	18	20
	250	275	19	21
	250	280	18	20
	250	280	19	21
	250	280	25	27
	255	280	16	18
	255	280	19	21
	260	280	12	13
	260	280	14	15
	260	280	18	20
	260	290	18	20
264	280	18	20	

[illegible]

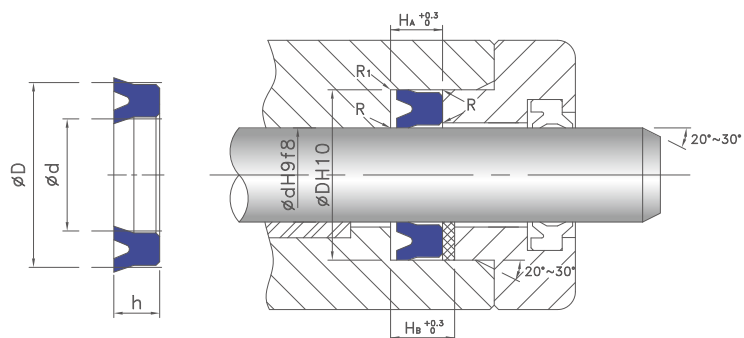
Type	Ø d	Ø D	h	HA
UN”	1/2	3/4	1/8	0.138
	1/2	7/8	3/16	0.207
	1/4	1/2	1/4	0.275
	1/4	1/2	1/8	0.138
	1/4	5/8	3/16	0.207
	1/4	5/8	5/16	0.344
	3/16	1/2	1/4	0.275
	3/16	7/16	1/4	0.275
	3/4	1	1/8	0.138
	3/4	1	3/16	0.207
	3/4	1 1/8	1/4	0.275
	3/4	1 3/16	1/4	0.275
	3/4	1 5/16	5/16	0.344
	3/8	5/8	1/8	0.138
	5/16	9/16	1/8	0.138
	5/16	1/2	3/16	0.207
	5/16	5/8	1/4	0.275
	5/16	11/16	3/16	0.207
	7/16	3/4	3/16	0.207
	7/16	13/16	1/4	0.275
	7/8	1 1/4	1/4	0.275
	7/8	1 1/8	1/4	0.275
	7/8	1 1/8	1/8	0.138
	13/16	1 3/16	11/32	0.375
	15/16	1 5/8	3/8	0.413
	15/16	1 9/16	5/16	0.344
	23/32	1 1/4	1/4	0.275
	1	1 1/4	1/4	0.275
	1	1 1/4	1/8	0.138
	1	1 1/4	5/32	0.172
	1	1 3/8	3/16	0.207
	1 1/2	1 3/4	1/4	0.275
	1 1/2	2	1/4	0.275
	1 1/2	2	3/8	0.413
	1 1/4	1 1/2	5/32	0.172
	1 3/4	2 1/4	1/4	0.275
	1 3/4	2 1/4	3/8	0.413
	1 3/4	2 3/8	3/8	0.413
	1 3/8	1 3/4	5/16	0.344
	1 3/8	1 5/8	5/32	0.172
1 3/8	1 7/8	3/8	0.413	

[illegible]





Piston Ø D Surface Roughness: 0.4~3.2  $\mu$  mRmax (0.1~0.8  $\mu$  mRa)

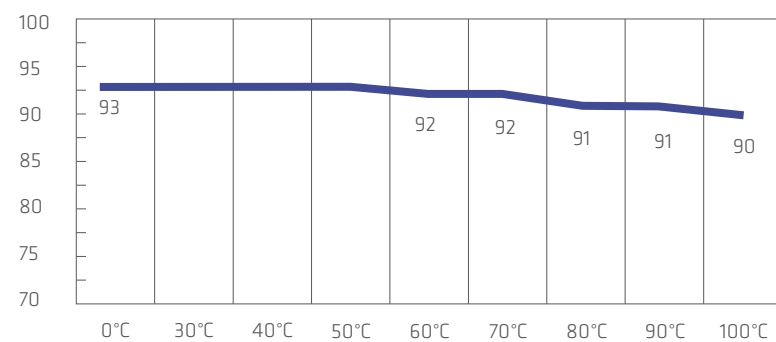


Rod Ø d Surface Roughness: 0.8~1.6  $\mu$  mRmax (0.2~0.4  $\mu$  mRa)

Compression Set 70h/100°C (ASTM D395B): 56

Working Temperature: -20°C ~ 100°C

Volume Variation (%): +0.12



Age (°C)	Percentage (%)
70	42
100	56

[illegible][illegible]



Type	Ø d	Ø D	h	HA
D-6	8	16	6	6.6
	9.53	19.05	5	5.5
	12	21	5	5.5
	13	19	4	4.4
	18	30	6	6.6
	22	30	5.7	6.3
	22	32	8	8.8
	22.23	28.58	6.35	6.98
	25.4	33.4	5.68	6.12
	25.4	34.93	7.95	8.73
	28	38	7.3	8
	30	40	7	7.7
	30	42	7	7.7
	31.75	41.28	6.76	7.92
	31.75	41.28	7.95	8.73
	34.92	44.45	7.95	8.73
	38.1	50.8	6.35	6.98
	40	48	5.7	6.3
	40	50	7.3	8
	40	50	10	11
	41.3	50.8	9.52	10.49
	44.45	53.97	9.52	10.49
	47.62	57.15	9.52	10.49
	50	65	11.4	12.5
	50.8	63.5	6.35	6.98
	53.97	63.5	6.35	6.98
	55	65	10	11
	56	64	8	8.8
	57.15	66.68	9.52	10.49
	57.15	69.85	9.52	10.49
	60	70	6	6.6
	60	75	12	13.2
	63.5	73.03	9.52	10.49
	63.5	76.2	9.52	10.49
	63.5	82.55	15.75	17.47
	69.85	82.55	9.52	10.49
	75	88	13	14.5
	75	90	9	9.9
	76.2	88.9	9.52	10.49
	76.2	95.25	15.75	17.47
	80	95	11.4	12.5

Type	Ø d	Ø D	h	HA
D-6	88.9	101.6	9.52	10.49
	90	100	8	8.8
	100	115	11	12
	101.6	114.3	9.52	10.49
	133.35	152.4	15.75	17.47
	158.75	177.8	15.75	17.47
	165	177	9	9.9
	236	261	19	21

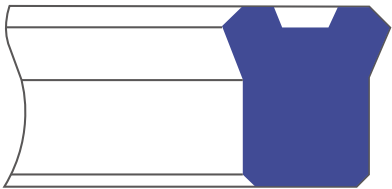
Type	Ø d	Ø D	h	HA
D-6”	1/2	3/4	1/4	0.275
	1/2	3/4	1/8	0.138
	1/2	3/4	3/16	0.207
	1/2	1	3/4	0.825
	1/4	1/2	1/4	0.275
	1/4	1/2	1/8	0.138
	3/4	1	1/4	0.275
	3/4	1	1/8	0.138
	3/4	1	3/16	0.207
	3/4	1 1/4	3/8	0.413
	3/8	3/4	1/4	0.275
	3/8	5/8	1/4	0.275
	5/8	7/8	1/4	0.275
	5/8	7/8	1/8	0.138
	5/8	7/8	3/16	0.207
	5/8	1	1/4	0.275
	5/8	1	3/16	0.207
	7/8	1 1/4	1/4	0.275
	7/8	1 1/8	1/8	0.138
	7/8	1 3/8	3/8	0.413
	9/16	1 3/16	1/8	0.138
	11/16	1 3/16	3/8	0.413
	13/16	1 1/16	1/8	0.138
	1	1 1/2	1/4	0.275
	1	1 1/2	3/8	0.413
	1	1 1/4	1/4	0.275
	1	1 1/4	1/8	0.138
	1	1 1/4	3/16	0.207
	1	1 3/8	1/4	0.275
	1	1 3/8	3/16	0.207
	1	1 3/8	7/16	0.481
	1	1 3/8	7/32	0.241
	1	1 5/16	1/4	0.275
	1 1/16	1 5/16	1/4	0.275
	1 1/2	1 3/4	1/4	0.275
	1 1/2	1 7/8	1/4	0.275
	1 1/2	1 7/8	3/8	0.413
	1 1/2	1 7/8	5/16	0.344
	1 1/2	2	1/4	0.275
	1 1/2	2	3/8	0.413
	1 1/2	2 1/8	7/16	0.481

Type	Ø d	Ø D	h	HA
D-6”	1 1/4	1 1/2	1/4	0.275
	1 1/4	1 1/2	5/8	0.688
	1 1/4	1 3/4	1/4	0.275
	1 1/4	1 3/4	3/8	0.413
	1 1/4	1 5/8	1/4	0.275
	1 1/4	1 5/8	3/16	0.207
	1 1/4	1 5/8	3/8	0.413
	1 1/4	1 7/8	5/16	0.344
	1 1/4	1 7/8	7/16	0.481
	1 1/4	1 11/16	3/8	0.413
	1 1/4	2	1/4	0.275
	1 1/8	1 1/2	5/16	0.344
	1 1/8	1 3/8	3/16	0.207
	1 3/16	1 1/2	5/32	0.172
	1 3/16	1 9/16	3/16	0.207
	1 3/16	1 11/16	1/4	0.275
	1 3/4	2	1/4	0.275
	1 3/4	2 1/4	1/4	0.275
	1 3/4	2 1/4	3/8	0.413
	1 3/4	2 1/8	1/4	0.275
	1 3/4	2 3/8	7/16	0.481
	1 3/8	1 3/4	3/8	0.413
	1 3/8	1 3/4	3/16	0.207
	1 3/8	1 5/8	1/8	0.138
	1 3/8	1 7/8	3/8	0.413
	1 3/8	1 11/16	5/32	0.172
	1 3/8	2	7/16	0.481
	1 5/16	1 9/16	5/32	0.172
	1 5/8	1 7/8	3/8	0.413
	1 5/8	1 7/8	5/32	0.172
	1 5/8	2	3/16	0.207
	1 5/8	2	5/16	0.344
	2	2 1/2	1/4	0.275
	2	2 1/2	3/8	0.413
	2	2 3/8	3/8	0.413
	2	2 3/8	3/16	0.207
	2	2 3/8	5/16	0.344
	2	2 5/8	9/16	0.619
	2	2 9/16	3/8	0.413
	2 1/2	2 3/4	3/8	0.413
	2 1/2	3	1/4	0.275

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## Piston/Rod Seals

## D-7



## Mechanical Properties

Material: TPU / 8L953

Specific Gravity (ASTM D792): 1.20

Hardness (ASTM D2240): 93

Tensile Strength (ASTM D412): 276

100% Modulus (ASTM D412): 100

300% Modulus (ASTM D412): 191

Compression Set 70h/70°C (ASTM D395B): 42

Compression Set 70h/100°C (ASTM D395B): 56

## Working Conditions

Max. Working Pressure: 30 Mpa

Working Speed: 0.03 ~ 0.5 m/sec

Working Temperature: -20°C ~ 100°C

## Oil Resistance

## Testing Oil: Hydraulic Oil 46#

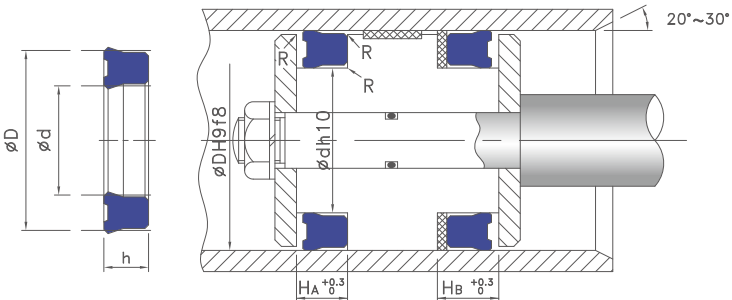
Testing Temperature (°C): 100

Testing Time (Hour): 100

Hardness Variation (Shore A): 0

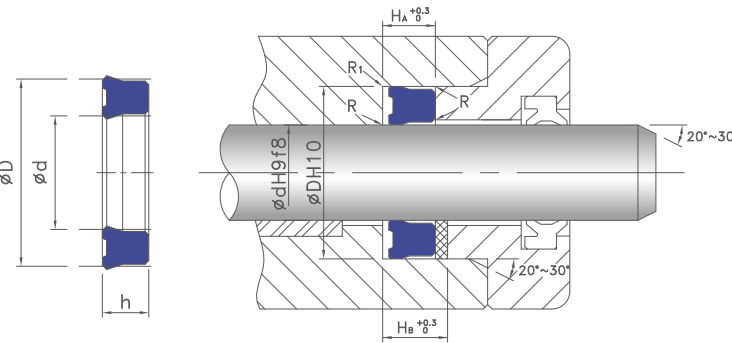
Tensile Strength Variation (%): -5

Volume Variation (%): +0.12



$$R \leq 0.3$$

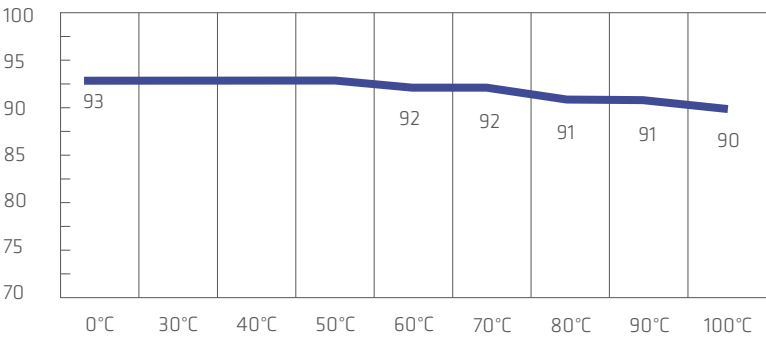
Piston Ø D Surface Roughness: 0.4~3.2  $\mu$  mRmax (0.1~0.8  $\mu$  mRa)



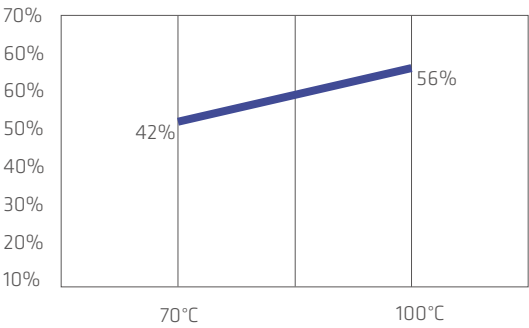
$$R \leq 0.3, R1 \leq 0.5$$

Rod Ø d Surface Roughness: 0.8~1.6 µ mRmax (0.2~0.4 µ mRa)

## Influence of Temperature on Hardness (Shore A)



## Compression Set

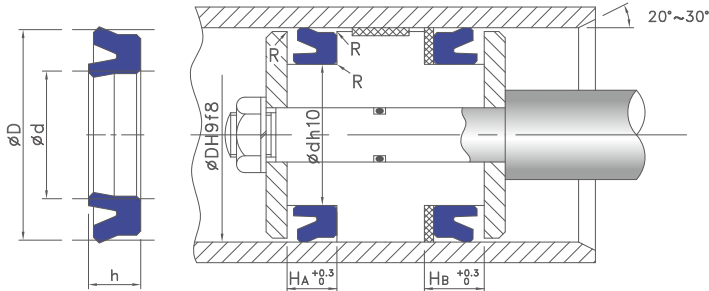
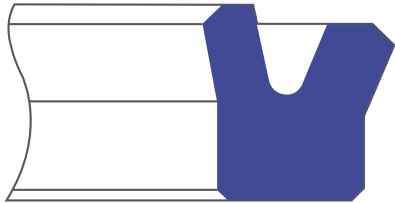






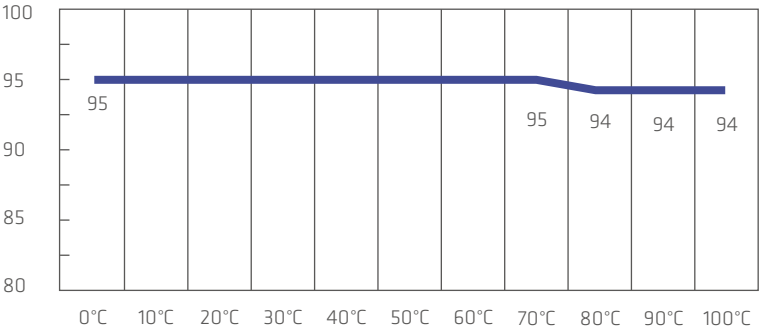
Piston Seals

D-1

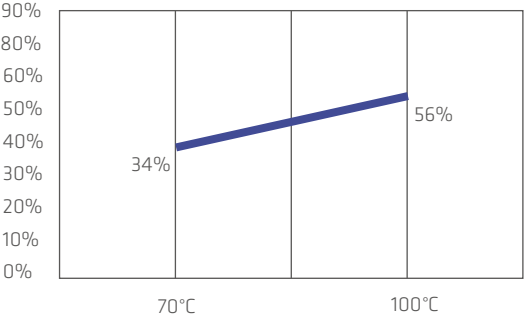


$R \leq 0.3$   
Piston Ø D Surface Roughness: 0.4~3.2 μ mRmax (0.1~0.8 μ mRa)

Influence of Temperature on Hardness (Shore A)



Compression Set



Working Conditions

Max. Working Pressure: 40 Mpa  
Working Speed: 0.03 ~ 0.5 m/sec  
Working Temperature: -20°C ~ 100°C

Oil Resistance

Testing Oil: Hydraulic Oil 46#  
Testing Temperature (°C): 100  
Testing Time (Hour): 100  
Hardness Variation (Shore A): -1  
Tensile Strength Variation (%): -4  
Volume Variation (%): +0.08

Type	Ø d	Ø D	h	HA
D-1	5	15	8	9
	6	15	8	9
	8	14	4	5
	10	16	4.5	5.5
	11.2	19.2	5	6
	14	22	5	6
	17	25	4	5
	17	25	10	11
	19	34	8	9
	20	30	5	6
	23	31	5	6
	25	32	5.8	6.5
	25	40	12	13
	26	32	5	6
	27	35	5	6
	29	37	5.5	6.5
	30	40	6	7
	30	40	6.5	7.5
	30	40	8	9
	30	45	6	7
	30	45	12	13
	33	45	9	10
	35	45	6	7
	35	45	8	9
	35	48	10	11
	35	50	9	10
	35	50	12	13
	35	55	12	13
	36	46	7	8
	37	45	6	7
	40	50	6	7
	40	50	6.5	7.5
	40	50	8	9
	40	50	9	10
	40.8	50.8	7	8
	45	55	6	7
	45	56	7	8
	45	60	10	11
	45	65	12	13
	46	56	6	7
	48	63	9	10

Type	Ø d	Ø D	h	HA
D-1	48	63	10	11
	48	63	11.5	12.5
	50	60	5	6
	50	60	6	7
	50	60	7	8
	50	60	8	9
	50	63	14	15
	50	65	9	10
	50	70	9	10
	50	70	12	13
	53	63	6	7
	53	63	6.5	7.5
	53	63	8	9
	53	65	14	15
	55	70	9	10
	55	70	10	11
	55	70	12	13
	55	75	12	13
	58	72	12	13
	60	70	6	7
	60	70	8	9
	60	70	12	13
	60	75	13	14
	61	71	6	7
	64	80	12	13
	65	75	6	7
	65	80	10	11
	70	80	6	7
	70	80	8	9
	70	86	12	13
	71	80	6.5	7.5
	73	85	14	15
	75	88	9.5	10.5
	75	90	9	10
	75	90	10	11
	75	100	18	19
	78	90	14	15
	80	90	6	7
	80	95	9	10
	80	100	14.5	15.5
	83	95	14	15

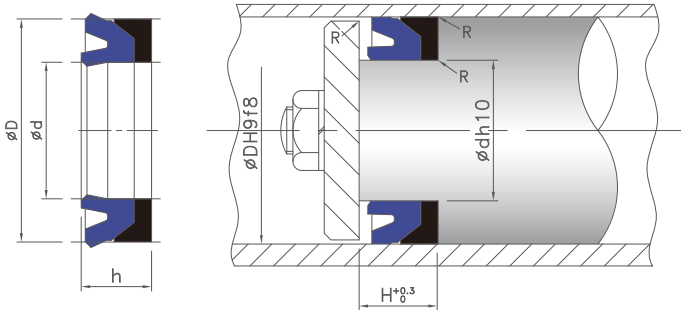
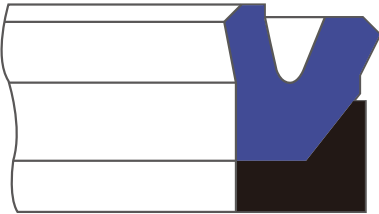
Type	Ø d	Ø D	h	HA
D-1	85	100	9	10
	85	100	9.5	10.5
	89	105	18	19
	90	105	9	10
	94	110	18	19
	95	110	9	10
	98	110	14	15
	100	115	9	10
	100	120	12	13
	100	120	13	14
	100	130	12	13
	104	120	18	19
	105	120	9	10
	106	120	8.5	9.5
	108	120	14	15
	109	125	18	19
	110	120	6	7
	110	125	9	10
	110	125	10	11
	110	130	12	13
	112	125	9	10
	115	130	9	10
	118	133	9	10
	120	130	13.5	14.5
	120	140	13	14
	124	140	18	19
	125	140	9	10
	128	140	14	15
	130	150	15	16
	135	150	9	10
	135	160	19	20
	140	150	7	8
	140	160	13	14
	145	160	9	10
	148	160	15.5	16.5
	150	160	12.5	13.5
	150	170	15	16
	154	170	18	19
	155	170	9	10
	165	180	9	10
	174	190	18	19

Type	Ø d	Ø D	h	HA
D-1	175	190	9	10
	175	200	18.2	19.2
	190	210	12	13
	195	220	16	17
	200	220	12	13
	204	220	18	19
	215	240	16	17
	220	240	12	13
	225	250	19	20
	230	250	12	13
	230	250	12.5	13.5
	230	255	22	23
	234	250	18	19
	270	300	19	20
	270	300	24	25
	284	300	18	19
	290	320	19	20
	300	330	19	20
	370	400	22	23

Type	Ø d	Ø D	h	HA
D-1”	5/8	7/8	1/8	0.138
	1 1/2	1 7/8	17/64	0.312
	1 1/2	2	3/8	0.413
	1 1/2	2 1/8	3/8	0.413
	1 1/4	1 3/4	3/8	0.413
	1 1/8	1 3/4	1/2	0.55
	1 5/16	1 3/4	3/8	0.413
	2	2 1/2	3/8	0.413
	2 1/2	3	3/8	0.413
	2 1/2	3 1/4	1/2	0.55
	2 3/8	3	1/2	0.55
	2 3/8	3	3/8	0.413
	3 1/2	4	3/8	0.413
	3 3/4	4 1/2	1/2	0.55
	4	4 1/2	3/8	0.413
	4 1/2	5	3/8	0.413
	10 3/8	10 7/8	17/32	0.6
	11 3/8	11 7/8	17/32	0.6
	12 3/8	12 7/8	17/32	0.6
	13 3/8	13 7/8	17/32	0.6
	15 3/8	15 7/8	17/32	0.6

Type	Ø d	Ø D	h	HA

D-8



Piston Ø D Surface Roughness: 0.4~3.2  $\mu$  mRmax (0.1~0.8  $\mu$  mRa)

Material: TPU / 8L95 + PA

Specific Gravity (ASTM D792): 1.20

Hardness (ASTM D2240): 95

Tensile Strength (ASTM D412): 317

100% Modulus (ASTM D412): 110

300% Modulus (ASTM D412): 170

Compression Set 70h/70°C (ASTM D395B): 34

Compression Set 70h/100°C (ASTM D395B): 56

Max. Working Pressure: 40 Mpa  
Working Speed: 0.03 ~ 0.5 m/sec  
Working Temperature: -20°C ~ 100°C

Testing Oil: Hydraulic Oil 46#  
Testing Temperature (°C): 100  
Testing Time (Hour): 100  
Hardness Variation (Shore A): -1  
Tensile Strength Variation (%): -4  
Volume Variation (%): +0.08

Temperature (°C)	Storage Modulus E' (MPa)
0	95
10	95
20	95
30	95
40	95
50	95
60	95
70	95
80	94
90	94
100	94

Temperature (°C)	Percentage of people who do not want to be vaccinated (%)
70	34%
100	56%

Type	Ø d	Ø D	h	H
D-8	25	40	12	13
	30	45	12	13
	35	50	12	13
	45	60	12	13
	55	70	12	13
	60	75	12	13
	70	85	12	13
	80	95	12	13

[illegible]

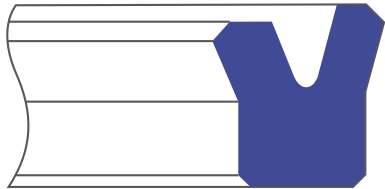


# DING ZING DZ<sup>®</sup> Rod Seals

DingZing offers 2 types of DING ZING DZ<sup>®</sup> rod seals: D-2 and D-3. These seals are used only for rods, and select sizes are available in inches.

Rod Seals

## D-2



Mechanical Properties

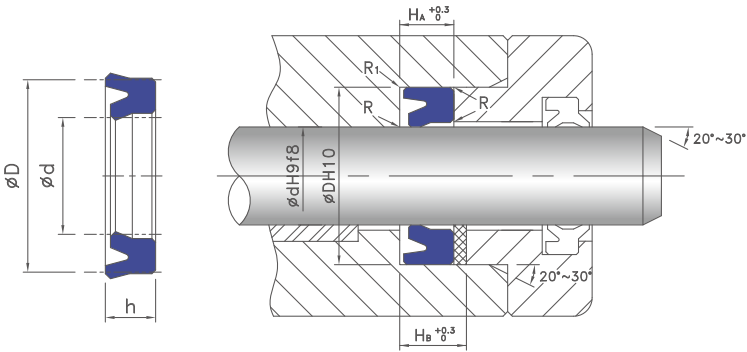
- Material: TPU / 8L95
- Specific Gravity (ASTM D792): 1.20
- Hardness (ASTM D2240): 95
- Tensile Strength (ASTM D412): 317
- 100% Modulus (ASTM D412): 110
- 300% Modulus (ASTM D412): 170
- Compression Set 70h/70°C (ASTM D395B): 34
- Compression Set 70h/100°C (ASTM D395B): 56

Working Conditions

- Max. Working Pressure: 40 Mpa
- Working Speed: 0.03 ~ 0.5 m/sec
- Working Temperature: -20°C ~ 100°C

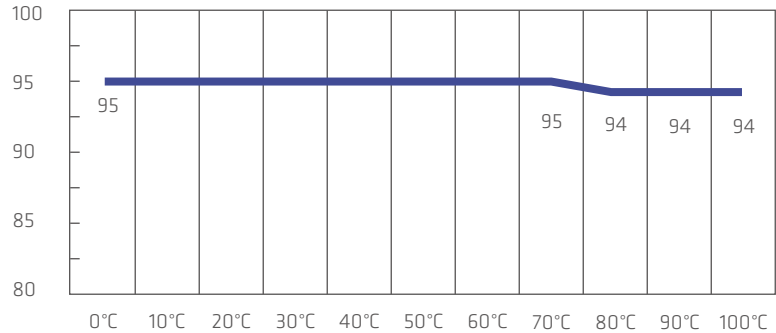
Oil Resistance

- Testing Oil: Hydraulic Oil 46#
- Testing Temperature (°C): 100
- Testing Time (Hour): 100
- Hardness Variation (Shore A): -1
- Tensile Strength Variation (%): -4
- Volume Variation (%): +0.08

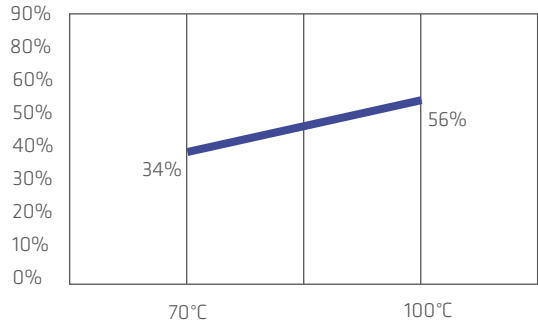


$R \leq 0.3, R1 \leq 0.5$   
Rod Ø D Surface Roughness: 0.8~1.6 µ mRmax (0.2~0.4 µ mRa)

Influence of Temperature on Hardness (Shore A)



Compression Set



Type	Ø d	Ø D	h	HA
D-2	6	12	5	5.6
	9	14	4	4.5
	10	16	4.5	5.2
	10	20	8	9
	11.2	16.2	4	4.5
	11.3	16	3.5	4.5
	12	20	5.8	6.3
	12	22	8	9
	14	22	5	5.7
	14	22	5.7	6.3
	14	24	6	7
	15	21	5	5.7
	15	23	5	5.7
	16	22	5	5.7
	16	24	5	5.7
	16	24	5.7	6.3
	17	25	10	11
	18	26	5	5.7
	18	26	6	7
	18	26	8	9
	18	28	8.2	9.2
	19	27	6	7
	20	25	5	5.7
	20	26	5	5.7
	20	27	6	7
	20	28	5	5.7
	20	28	7.2	8
	20	30	6	7
	20	30	8	9
	20	33	10	11
	21	29.5	5	5.7
	22	30	5	5.7
	22	30	8	9
	22.4	30	5.2	5.7
	22.7	33	5.3	6
	23	35	6	7
	25	32	5	5.7
	25	33	5	5.7
	25	33	5.8	6.3
	25	33	10	11
	28	35.5	5	5.7

Type	Ø d	Ø D	h	HA
D-2	28	36	8	9
	28	38	10	11
	30	38	5.7	6.3
	30	38	7	8
	30	40	6	7
	30	40	7	8
	30	42	12	13
	30	43	10	11
	30	45	9	10
	30	47	7	8
	30	48	7	8
	32	40	5.7	6.3
	32	40	6	7
	32	40	8	9
	32	42	6	7
	32	45	6	7
	32	45	10	11
	32	47	10	11
	32	48	10	11
	33	43	10	11
	35	42	7	8
	35	43	6.3	7
	35	45	6	7
	35	45	7	8
	35	45	8	9
	35	45	10	11
	35	46	8	9
	35	46	10	11
	35	50	9	10
	35.5	45	6.5	7.5
	36	44	5.7	6.3
	36	46	10	11
	37	47	6	7
	38	48	6	7
	38.08	57.15	12.7	13.9
	39	58	10	11
	40	47	6	7
	40	50	5	5.7
	40	50	6	7
	40	50	7	8
	40	55	9	10

Type	Ø d	Ø D	h	HA
D-2	40	55	10	11
	42	52	7.3	8
	42	58	13	14
	45	53	10	11
	45	55	5.7	6.3
	45	55	6	7
	45	55	6.5	7.5
	45	55	7	8
	45	55	8	9
	45	58	10	11
	45	60	9	10
	45	60	10	11
	45	60	12	13
	48	58	10	11
	48	63	9	10
	50	60	6	7
	50	60	7	8
	50	60	8	9
	50	63	8	9
	50	63	10	11
	50	65	9	10
	50	65.5	6	7
	52	62	10	11
	53	70	9	10
	55	63	12	13
	55	65	6	7
	55	65	7	8
	55	68	10	11
	55	70	9	10
	55	75	12	13
	56	70	11.5	12.5
	57	84	16	17
	57.15	73.03	9.7	10.5
	60	68	6.3	7
	60	70	6	7
	60	70	7.5	8.5
	60	70	10	11
	60	70	12	13
	60	73	10	11
	60	75	9	10
	60	76	10	11

Type	Ø d	Ø D	h	HA
D-2	60	80	12	13
	63	73	12	13
	63	78	12	13
	63.45	76.25	9.5	10.5
	65	75	6	7
	65	75	8	9
	65	78	10	11
	65	80	9	10
	65	80	12	13
	65	85	12	13
	67	84	16	17
	70	80	6	7
	70	82	8.7	9.6
	70	83	10	11
	70	83	13	14
	70	85	9	10
	70	90	10	11
	70	90	12	13
	72	87	9	10
	75	85	6	7
	75	85	7	8
	75	88	10	11
	75	90	9	10
	75	95	10	11
	75	95	12	13
	75	95	13	14
	76.5	90.5	10	11
	77	87	12	13
	80	90	8	9
	80	93	10	11
	80	93	13	14
	80	95	9	10
	80	95	10	11
	80	100	12	13
	85	93	11	12
	85	100	9	10
	85	100	10	11
	85	100	13	14
	85	105	12	13
	85	105	13	14
	86	102	16	17

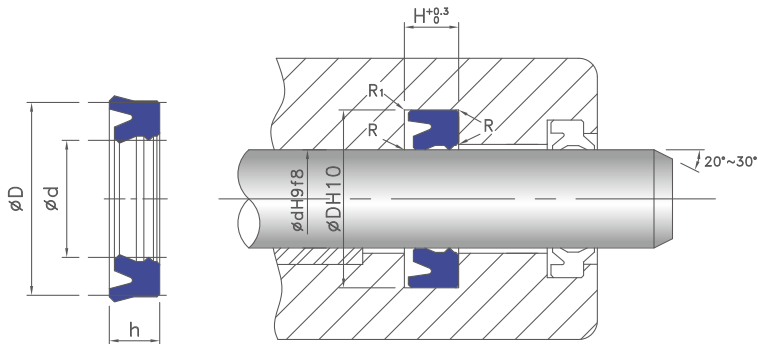
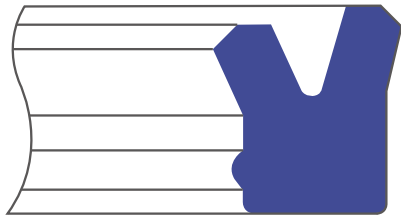


Type	Ø d	Ø D	h	HA
D-2	90	98	6.3	7
	90	100	13	14
	90	102	8.7	9.6
	90	105	9	10
	90	105	10	11
	90	110	12	13
	90	110	13	14
	95	110	9	10
	95	110	10	11
	95	110	12	13
	95	110	13.5	14.5
	95	115	12	13
	95	115	13.5	14.5
	97	105	13	14
	98	113	9	10
	99	109	12	13
	100	113	12.5	13.5
	100	115	9	10
	100	115	10	11
	100	115	13.5	14.5
	100	120	12	13
	105	113	11	12
	105	120	9	10
	105	125	12	13
	110	120	6	7
	110	125	9	10
	110	125	10	11
	110	130	10	11
	110	130	12	13
	110	130	13	14
	112	125	9	10
	115	127	14	15
	115	130	9	10
	115	135	12	13
	115	135	16	17
	118	133	9	10
	118	134	16	17
	120	135	9	10
	120	140	12	13
	125	140	9	10
130	145	9	10	

[illegible][illegible][illegible]

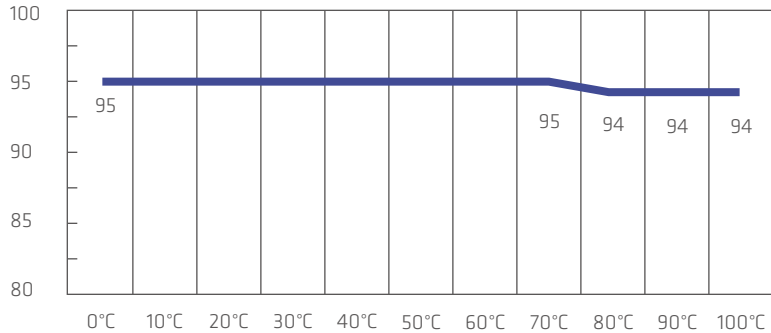
Rod Seals

D-3

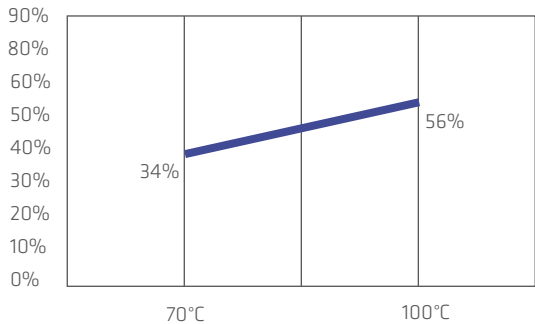


$R \leq 0.3, R_1 \leq 0.5$   
Rod  $\phi D$  Surface Roughness: 0.8~1.6  $\mu mR_{max}$  (0.2~0.4  $\mu mRa$ )

Influence of Temperature on Hardness (Shore A)



Compression Set



Working Condition

Max. Working Pressure: 40 Mpa  
Working Speed: 0.03 ~ 0.5 m/sec  
Working Temperature: -20°C ~ 100°C

Oil Resistance

Testing Oil: Hydraulic Oil 46#  
Testing Temperature (°C): 100  
Testing Time (Hour): 100  
Hardness Variation (Shore A): -1  
Tensile Strength Variation (%): -4  
Volume Variation (%): +0.08

Type	Ø d	Ø D	h	H
D-3	8	20	8	9
	13	20	5	6
	15	25	9	10
	16	22	4	4.5
	16	22	5	6
	18	24	8	9
	18	25	5	6
	18	26	8	9
	18	28	8	9
	20	28	5.7	6.3
	20	30	8	9
	22	28	4.5	6.3
	22	30	5.7	6.3
	22	32	7	8
	25	33	6.3	7
	25	33	6.8	7.5
	25	35	7	8
	25	35	7.3	8
	25	35	8	9
	25	35	10	11
	25.4	31.75	5.69	6.35
	26	36	10	11
	28	34	3.4	4
	28	36	5.6	6.3
	28	38	7.3	8
	28	40	6	7
	30	36	6.3	7
	30	37	5	6
	30	38	5.7	6.3
	30	38	6.3	7
	30	38	8	9
	30	40	6	7
	30	40	7.3	8
	30	40	8	9
	30	40	9	10
	30	40	10	11
	30	50	11	12
	32	40	6	7
	32	40	7.7	9
	32	42	5.7	6.3
	32	47	10	11

Type	Ø d	Ø D	h	H
D-3	35	43	8.3	9
	35	45	6	7
	35	45	7	8
	35	45	10	11
	35	51	9	10
	35.5	45	6	7
	36	44	5.7	6.3
	36	46	7.3	8
	37	47	8	9
	37	47	10	11
	38	48	8	9
	38	48	10	11
	38	58	10	11
	40	48	5.7	6.3
	40	50	7.3	8
	40	50	8	9
	40	50	10	11
	40	52.75	8	9
	40	55	9	10
	40	55	10	11
	40	60	12	13
	42	50	5.7	6.3
	45	53	7	8
	45	55	7	8
	45	55	7.3	8
	45	55	10	11
	45	60	10	11
	45	60	11.4	12.5
	50	58	8	9
	50	60	7.3	8
	50	60	8	9
	50	60	9	10
	50	60	10	11
	50	65	9	10
	50	65	10.9	12
	50	65	11.4	12.5
	52	62	10	11
	55	63	12	13
	55	65	6	7
	55	65	10	11
	55	65	12	13

Type	Ø d	Ø D	h	H
D-3	55	70	10	11
	55	70	11.4	12.5
	56	66	7.3	8
	56	71	12.5	13.5
	57	63	8	9
	57	67	8	9
	60	68	8	9
	60	68	13.5	14.5
	60	68	14.5	15.5
	60	70	7.3	8
	60	70	10	11
	60	70	12	13
	60	72	9	10
	60	75	8	9
	60	78	10	11
	63	73	12	13
	63	73	13	14
	63	75	11.4	12.5
	63	78	10	11
	63	78	11.4	12.5
	63	78	12.5	13.5
	65	75	7	8
	65	75	11.5	12.5
	65	77	9	10
	70	80	12	13
	70	85	9	10
	70	85	11.4	12.5
	75	83	12	13
	75	90	10	11
	75	95	12.5	13.5
	78	86	13.5	14.5
	78	86	14.5	15.5
	78	88	14	15
	80	88	8	9
	80	88	11.5	12.5
	80	90	12	13
	80	95	11.4	12.5
	80	95	11.8	13
	85	93	11.5	12.5
	90	98	8.5	9.5
	90	98	11.5	12.5

Type	Ø d	Ø D	h	H
D-3	90	100	10.5	11.5
	90	105	11.4	12.5
	92	102	7.3	8
	95	103	11.5	12.5
	97	105	11.5	12.5
	97	105	13.5	14.5
	97	105	14.5	15.5
	99	109	8	9
	100	108	11.5	12.5
	100	110	15	16
	100	115	11.8	13
	100	118	6.3	7
	100	120	15	16
	100	120	16	17
	105	113	11	12
	110	118	11.5	12.5
	110	120	11.5	12.5
	110	130	15	16
	118	126	13.5	14.5
	120	128	6.3	7
	120	128	8	9
	120	130	8	9
	120	130	11.5	12.5
	120	130	15	16
	125	145	12	13
	125	145	13	14
	130	140	11.5	12.5
	130	145	12	13
	135	143	11.5	12.5
	135	145	11.5	12.5
	140	150	11.5	12.5
	140	150	15	16
	141	150	8	9
	143	151	13.5	14.5
	150	160	11.5	12.5
	150	160	14.5	15.5
	152	160	11.5	12.5
	160	168	11.5	12.5
	160	170	11.5	12.5
	160	170	15	16
	162	172	8	9

Type	Ø d	Ø D	h	H
D-3	170	180	11.5	12.5
	171	179	11.5	12.5
	171	179	13.5	14.5
	172	180	11.5	12.5
	180	190	14	15
	205	215	15	16
	210	225	14	15
	220	250	18	19
	222	234	12	13

Type	Ø d	Ø D	h	H
D-3"	1/2	3/4	3/16	0.207
	1/2	7/8	1/4	0.275
	3/4	1	1/4	0.275
	3/4	1	1/8	0.138
	5/8	7/8	1/4	0.275
	5/8	7/8	3/16	0.207
	5/8	1 1/8	1/4	0.275
	7/8	1 1/8	1/4	0.275
	1	1 1/2	1/4	0.275
	1	1 1/2	3/8	0.413
	1	1 1/4	1/4	0.275
	1	1 3/8	1/4	0.275
	1	1 3/8	5/16	0.344
	1 1/2	1 3/4	1/4	0.275
	1 1/2	1 7/8	1/4	0.275
	1 1/2	1 7/8	3/16	0.207
	1 1/2	1 7/8	3/8	0.413
	1 1/2	1 7/8	5/16	0.344
	1 1/2	2	1/4	0.275
	1 1/2	2	3/8	0.413
	1 1/2	2	5/16	0.344
	1 1/2	2 1/8	3/8	0.413
	1 1/4	1 1/2	1/4	0.275
	1 1/4	1 1/2	3/16	0.207
	1 1/4	1 1/2	5/16	0.344
	1 1/4	1 3/4	3/8	0.413
	1 1/4	1 5/8	1/4	0.275
	1 1/4	1 5/8	3/16	0.207
	1 1/4	1 5/8	5/16	0.344
	1 1/4	2	1/4	0.275
	1 1/8	1 1/2	5/16	0.344
	1 1/8	1 3/8	3/16	0.207
	1 3/4	2	1/4	0.275
	1 3/4	2 1/2	7/16	0.481
	1 3/4	2 1/4	1/4	0.275
	1 3/4	2 1/4	3/8	0.413
	1 3/4	2 1/8	1/4	0.275
	1 3/4	2 1/8	3/16	0.207
	1 3/4	2 1/8	3/8	0.413
	1 3/4	2 1/8	5/16	0.344
	1 3/4	2 1/8	25/64	0.430

Type	Ø d	Ø D	h	H
D-3"	1 3/8	1 3/4	5/16	0.344
	1 3/8	1 5/8	1/4	0.275
	1 3/8	1 7/8	3/8	0.413
	1 3/8	2	3/8	0.413
	1 5/8	1 7/8	1/4	0.275
	1 5/8	2	5/16	0.344
	1 7/8	2 1/4	3/8	0.413
	2	2 1/2	3/8	0.413
	2	2 1/2	5/16	0.344
	2	2 1/4	1/4	0.275
	2	2 3/8	3/8	0.413
	2	2 3/8	3/16	0.207
	2	2 3/8	5/16	0.344
	2	2 5/8	1/2	0.550
	2	2 5/8	5/16	0.344
	2 1/2	2 7/8	3/8	0.413
	2 1/2	3	3/8	0.413
	2 1/2	3 1/4	5/8	0.688
	2 1/2	3 1/4	9/16	0.619
	2 1/4	2 3/4	3/8	0.413
	2 1/4	2 11/16	3/8	0.413
	2 1/4	3	1/2	0.550
	2 3/4	3 1/2	5/8	0.688
	2 3/4	3 1/4	3/8	0.413
	2 3/4	3 1/8	3/8	0.413
	2 5/8	3	3/8	0.413
	2 7/8	3 1/4	5/16	0.344
	3	3 1/2	3/8	0.413
	3	3 5/8	1/2	0.550
	3 1/2	4	3/8	0.413
	3 1/4	3 3/4	3/8	0.413
	3 1/4	3 5/8	3/8	0.413
	3 1/4	4	5/8	0.688
	3 3/8	3 3/4	5/16	0.344
	3 7/8	4 1/4	5/16	0.344
	4	4 1/2	3/8	0.413
	4	4 3/4	9/16	0.619
	4	4 3/8	3/8	0.413
	4	4 5/8	9/16	0.619
	4 1/2	5	1/2	0.550
	4 1/2	5	3/8	0.413

Type	Ø d	Ø D	h	H
D-3"	4 1/2	5	9/16	0.619
	4 1/2	5 1/8	1/2	0.55
	4 1/4	4 3/4	9/16	0.619
	4 1/4	5	1/2	0.55
	4 1/4	5	9/16	0.619
	4 3/4	5 1/8	3/8	0.413
	5	5 1/2	1/2	0.55
	5 1/2	6	3/8	0.413
	5 1/2	6 1/4	5/8	0.688
	5 1/4	6	5/8	0.688
	6 1/2	7	3/8	0.413
	6 3/4	7 1/4	3/8	0.413
	6 3/4	7 1/4	5/8	0.688
	7 1/2	8	3/8	0.413

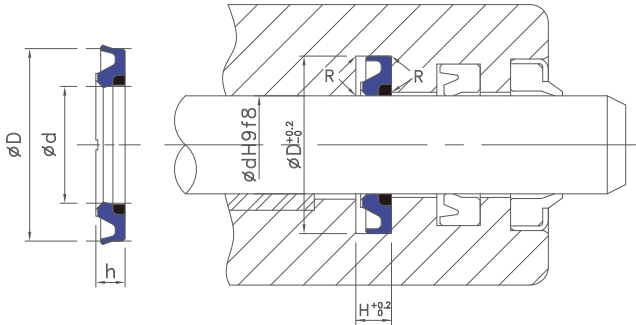
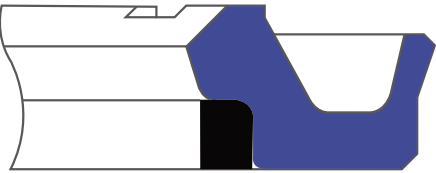


DING ZING DZ®  
Buffer Rings

DING ZING DZ® buffer rings help to reduce pressure spikes and are designed to be used in conjunction with rod seals.

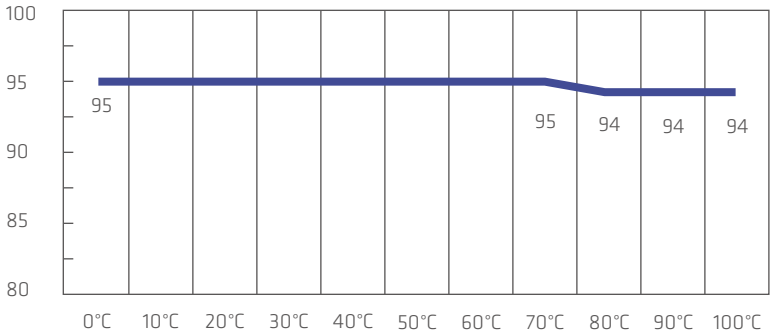
Buffer Rings

D-10

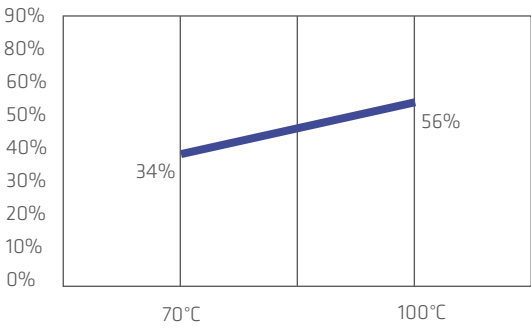


$R \leq 0.3$   
Rod Ø d Surface Roughness: 0.8~1.6 µ mRmax (0.2~0.4 µ mRa)

Influence of Temperature on Hardness (Shore A)



Compression Set



Working Conditions

- Max. Working Pressure: 40 Mpa
- Working Speed: 0.03 ~ 0.5 m/sec
- Working Temperature: -20°C ~ 100°C

Oil Resistance

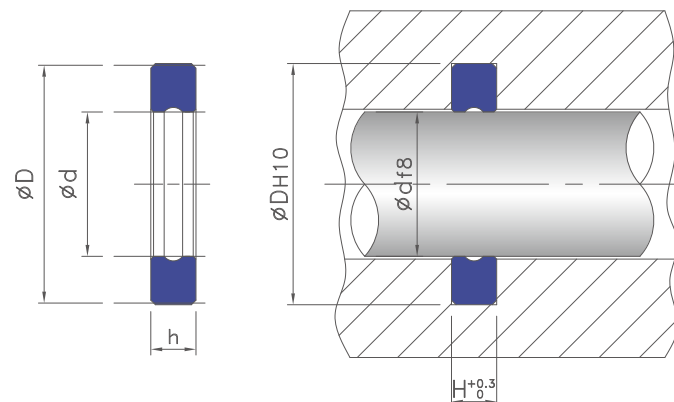
- Testing Oil: Hydraulic Oil 46#
- Testing Temperature (°C): 100
- Testing Time (Hour): 100
- Hardness Variation (Shore A): -1
- Tensile Strength Variation (%): -4
- Volume Variation (%): +0.08

Type	Ø d	Ø D	h	H
D-10	22	32.7	4	4.3
	28	38.7	4	4.3
	40	55.5	6	6.3
	45	55.7	3.9	4.2
	45	60.5	6	6.3
	50	65.5	6	6.3
	55	70.5	6	6.3
	56	71.5	6	6.3
	60	75.5	6	6.3
	63	78.5	6	6.3
	65	80.5	6	6.3
	70	85.5	6	6.3
	75	90.5	6	6.3
	80	95.5	6	6.3
	85	100.5	6	6.3
	90	105.5	6	6.3
	95	110.5	6	6.3
	100	115.5	6	6.3
	105	120.5	6	6.3
	110	125.5	6	6.3
	115	130.5	6	6.3
	120	135.5	6	6.3
	124	139.5	6	6.3
	125	140.5	6	6.3
	130	145.5	6	6.3
	135	150.5	6	6.3
	140	155.5	6	6.3
	150	165.5	6	6.3
	155	170.5	6	6.3
	160	175.5	6	6.3
	170	185.5	6	6.3
	180	195.5	6	6.3

Type	Ø d	Ø D	h	H



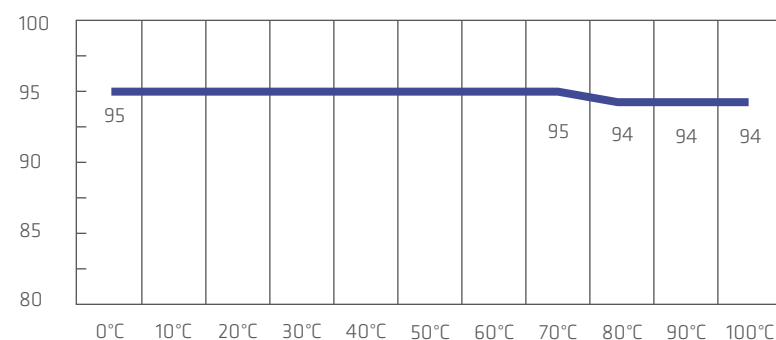




Compression Set 70h/100°C (ASTM D395B): 56

Working Temperature: -20°C ~ 100°C

Volume Variation (%): +0.08



Temperature (°C)	Percentage of people who do not want to be vaccinated (%)
70	34
100	56

Type	Ø d	Ø D	h	H
D-14	60	70	4.9	5.0
	70	80	4.9	5.0
	75	85	4.9	5.0
	80	90	4.9	5.0
	90	100	4.9	5.0
	95	105	4.9	5.0
	100	110	4.9	5.0
	105	115	4.9	5.0
	110	120	4.9	5.0
	115	125	4.9	5.0
	120	130	4.9	5.0
	125	135	4.9	5.0
	130	140	4.9	5.0
	150	160	4.9	5.0

[illegible]

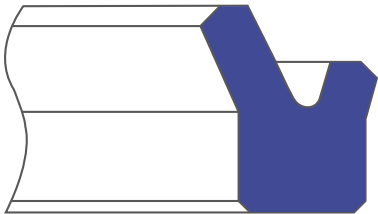


DING ZING DZ<sup>®</sup>  
Dust Wipers

DingZing offers 6 types of DING ZING DZ<sup>®</sup> dust wipers: D-9, DH, DH-03, DH-04, DH-05, and DH-07. Our dust wipers are effective at keeping dirt and dust away.

Dust Wipers

D-9



Mechanical Properties

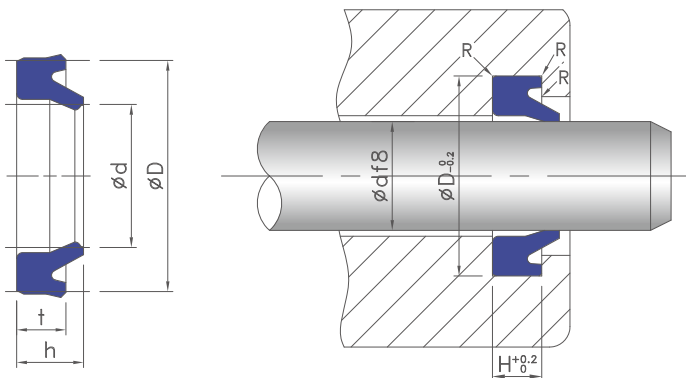
- Material: TPU / 8L95
- Specific Gravity (ASTM D792): 1.20
- Hardness (ASTM D2240): 95
- Tensile Strength (ASTM D412): 317
- 100% Modulus (ASTM D412): 110
- 300% Modulus (ASTM D412): 170
- Compression Set 70h/70°C (ASTM D395B): 34
- Compression Set 70h/100°C (ASTM D395B): 56

Working Conditions

- Working Speed: 0.03 ~ 0.5 m/sec
- Working Temperature: -20°C ~ 100°C

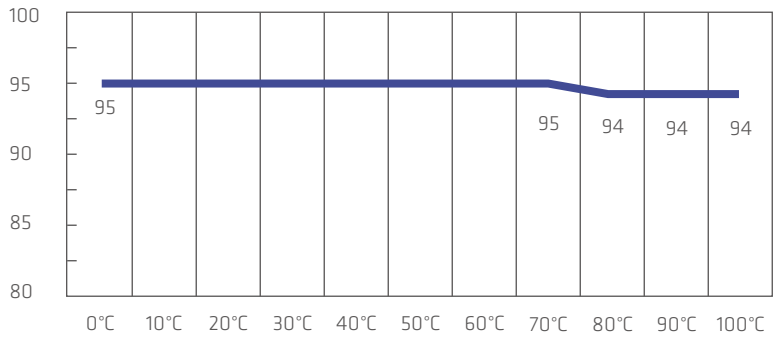
Oil Resistance

- Testing Oil: Hydraulic Oil 46#
- Testing Temperature (°C): 100
- Testing Time (Hour): 100
- Hardness Variation (Shore A): -1
- Tensile Strength Variation (%): -4
- Volume Variation (%): +0.08

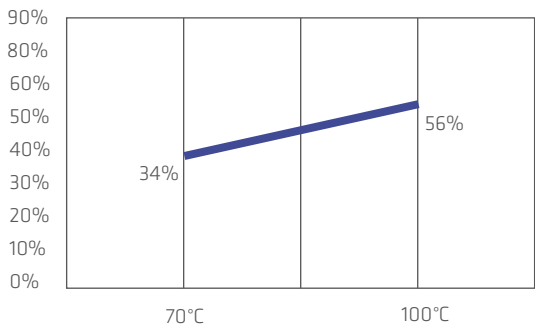


$R \leq 0.3$   
Rod Ø d Surface Roughness: 0.8~1.6  $\mu$  mRmax (0.2~0.4  $\mu$  mRa)

Influence of Temperature on Hardness (Shore A)



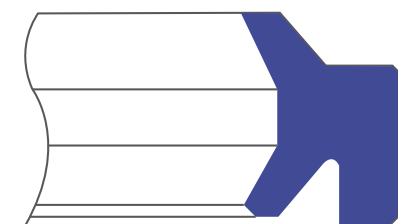
Compression Set



[illegible][illegible]

## Dust Wipers

## DH



## Mechanical Properties

Material: TPU / 8L953

Specific Gravity (ASTM D792): 1.20

Hardness (ASTM D2240): 93

Tensile Strength (ASTM D412): 276

100% Modulus (ASTM D412): 100

300% Modulus (ASTM D412): 191

Compression Set 70h/70°C (ASTM D395B): 42

Compression Set 70h/100°C (ASTM D395B): 56

## Working Conditions

Working Speed: 0.03 ~ 0.5 m/sec

Working Temperature: -20°C ~ 100°C

### Oil Resistance

Testing Oil: Hydraulic Oil 46#

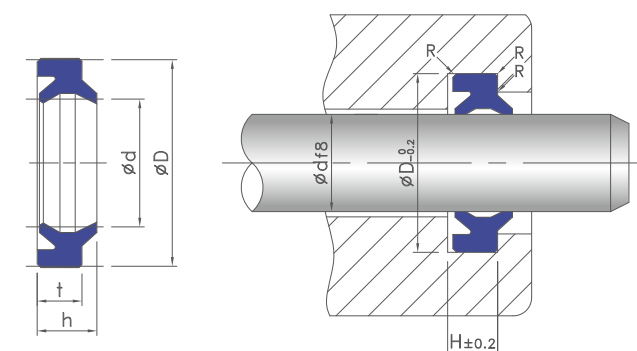
Testing Temperature (°C): 100

Testing Time (Hour): 100

Hardness Variation (Shore A): 0

Tensile Strength Variation (%): -5

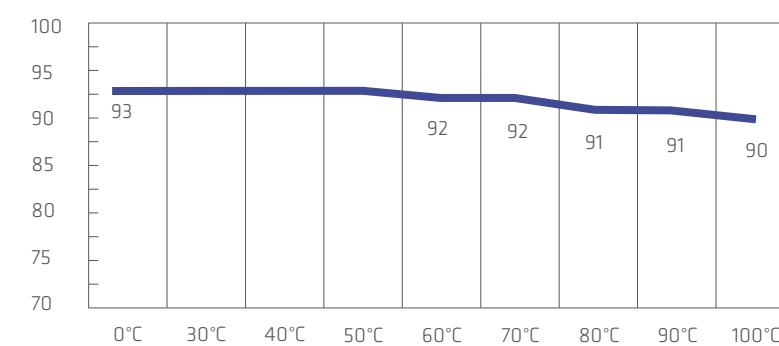
Volume Variation (%): +0.12



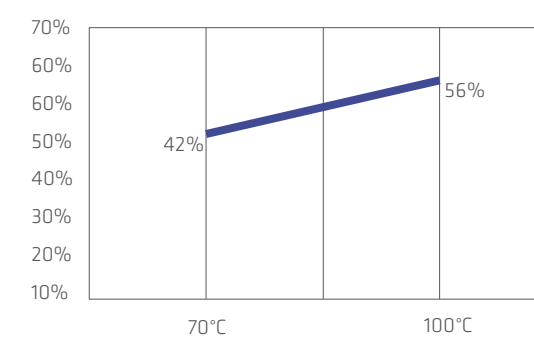
$$R \leq 0.3$$

Rod Ø d Surface Roughness: 0.8~1.6 µ mRmax (0.2~0.4 µ mRa)

### Influence of Temperature on Hardness (Shore A)



### Compression Set



Type	Ø d	Ø D	t	h	H
DH	11.2	19.2	4.5	6	5
	12	20	4.5	6	5
	14	22	4.5	6	5
	16	24	4.5	6	5
	18	26	4	7	4.5
	18	26	4.5	6	5
	20	27	4	5	4.5
	20	28	4	7	4.5
	20	28	4.5	6	5
	22	30	4.5	6	5
	22	31	3.7	7.6	4.2
	22.4	30.4	4.5	6	5
	23.5	31.5	4.5	6	5
	25	33	4	7	4.5
	25	33	4.5	6	5
	25	33	5	7	6
	25	35	5	7	6
	26	32	2.5	4.2	3
	28	36	4.5	6	5
	30	38	5	6.5	6
	31.5	39.5	5	6.5	6
	32	40	4	7	4.5
	32	40	5	6.5	6
	32	40.5	5	6.5	6
	33	45	5	7	6
	35	43	4	8	4.5
	35	43	5	6.5	6
	35	43	5	7	6
	35	43.5	5	6.5	6
	35	44	4	6	4.5
	35.5	43.5	5	6.5	6
	36	44	5	6.5	6
	38	46	5	6.5	6
	40	48	5	6.5	6
	40	50	7	9	8
	42	50	4	7	4.5
	44.5	52.5	5.5	7.5	6.5
	45	53	4	7	4.5
	45	53	5	6.5	6
	45	55	5	7	6
45	55	7	10	8	

Type	Ø d	Ø D	t	h	H
DH	50	58	4	7	4.5
	50	58	5	6.5	6
	50	60	5	7	6
	53	61	5	6.5	6
	55	63	4	7	4.5
	55	63	5	6.5	6
	55	65	5	7	6
	56	64	5	6.5	6
	60	68	5	6.5	6
	60	70	5	7	6
	60	70	6.3	7.8	7
	61	69	5	7	6
	63	71	5	6.5	6
	65	73	4	7	4.5
	65	73	5	6.5	6
	65	75	5	7	6
	67	75	5	6.5	6
	69	83	5	7	6
	70	80	5	7	6
	70	80	6	8	7
	71	81	6	8	7
	75	85	6	8	7
	80	88	4	7	4.5
	80	90	5.3	6.8	6
	80	90	6	8	7
	80	92	7	12	8
	85	95	6	8	7
	85	97	5	7	6
	90	99	5	7	6
	90	100	6	8	7
	90	102	7	12	8
	95	103	4	7	4.5
	95	105	6	8	7
	98	108	6	8	7
	100	110	6	8	7
	104.5	117	5	8.5	6
	105	113	5	7	6
	105	115	6	8	7
	106	116	6	8	7
	107	117	5	8.5	6
110	120	6	8	7	

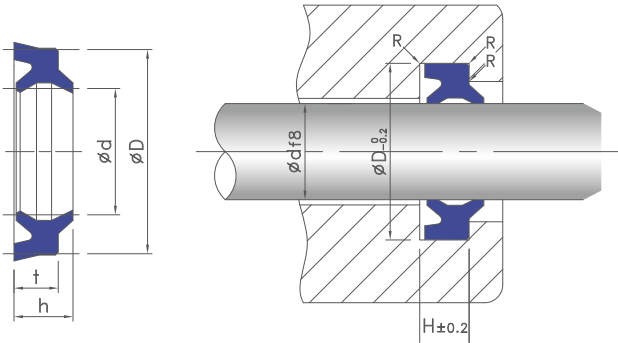
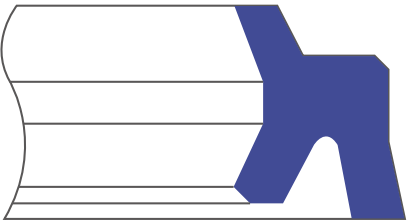
[illegible][illegible]

Type	Ø d	Ø D	t	h	H
DH''	3 7/8	4 1/4		1/4	0.198
	4 11/16	5 1/16		5/16	0.234
	5 7/16	5 13/16		5/16	0.234
	6 3/16	6 9/16		5/16	0.234

Type	Ø d	Ø D	t	h	H

Dust Wipers

DH-03



R ≤ 0.3  
Rod Ø d Surface Roughness: 0.8~1.6 µ mRmax (0.2~0.4 µ mRa)

Mechanical Properties

- Material: TPU / 8L953
- Specific Gravity (ASTM D792): 1.20
- Hardness (ASTM D2240): 93
- Tensile Strength (ASTM D412): 276
- 100% Modulus (ASTM D412): 100
- 300% Modulus (ASTM D412): 191
- Compression Set 70h/70°C (ASTM D395B): 42
- Compression Set 70h/100°C (ASTM D395B): 56

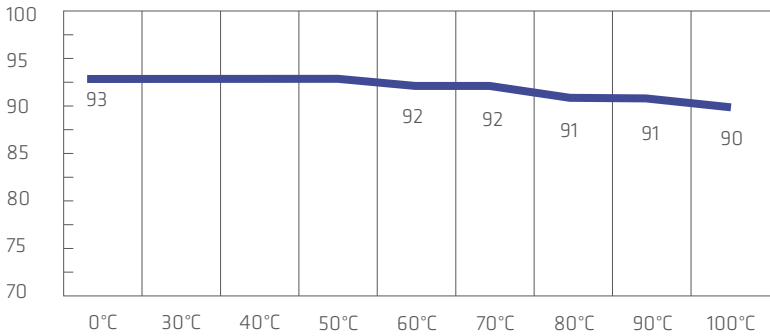
Working Conditions

- Working Speed: 0.03 ~ 0.5 m/sec
- Working Temperature: -20°C ~ 100°C

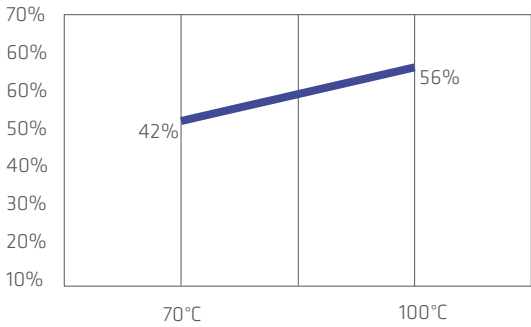
Oil Resistance

- Testing Oil: Hydraulic Oil 46#
- Testing Temperature (°C): 100
- Testing Time (Hour): 100
- Hardness Variation (Shore A): 0
- Tensile Strength Variation (%): -5
- Volume Variation (%): +0.12

Influence of Temperature on Hardness (Shore A)



Compression Set

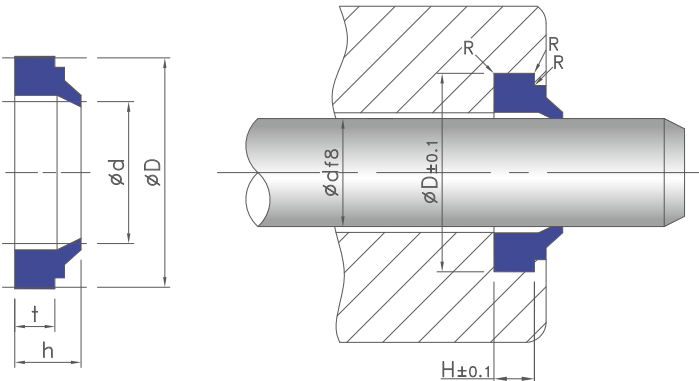




Type	Ø d	Ø D	t	h	H
DH-03	8	16	4.7	5.9	5.2
	10	16	3.6	4.8	4
	12	18	3.6	4.8	4
	12.5	20.5	4.5	6	5
	13	20	3.6	4.8	4
	13	20	5	6.5	6
	14	20	3.6	4.8	4
	16	22	3.6	4.8	4
	16	24	4.5	6	5
	18	26	4.5	6	5
	20	26	3.6	4.8	4
	20	28	4.5	6	5
	22	30	4.5	6	5
	22.4	30.4	4.5	6	5
	25	31	3.6	4.8	4
	25	33	4.5	6	5
	26	34	4.5	5.8	5
	28	36	4.5	5.8	5
	28	36	4.5	6	5
	30	38	5	6.5	6
	30	40	7	10	8
	32	40	4.5	5.8	5
	35	43	5	6.5	6
	35	45	4.6	8	5
	35.5	43.5	5	6.5	6
	36	44	4.5	5.8	5
	40	48	4.5	5.8	5
	40	48	5	6.5	6
	40	50	4.5	6	5
	40	50	6	7.5	7
	45	53	4.5	6.2	5
	45	53	5	6.5	6
	50	58	3.6	5	4
	50	58	5	6.5	6
	50	63	5	6.5	6
	55	63	5	6.5	6
	56	66	5.3	6.8	6
	60	68	5	6.5	6
	60	70	5.3	6.8	6
	63	71	5	6.5	6
65	73	5	6.5	6	

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# DH-04



68

## 68

68

## 68

68

## 68

68

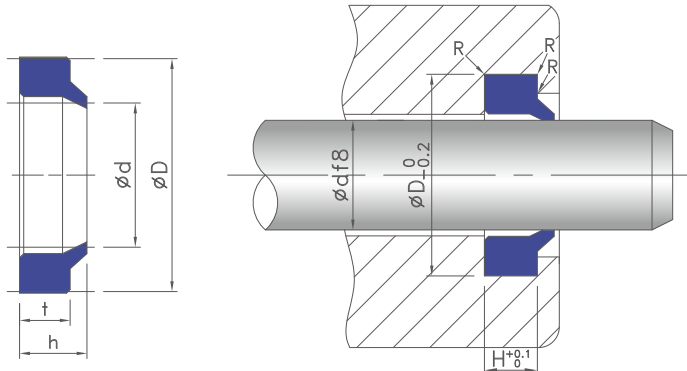


## 68

68Dust Wipers: DH-04 **69**

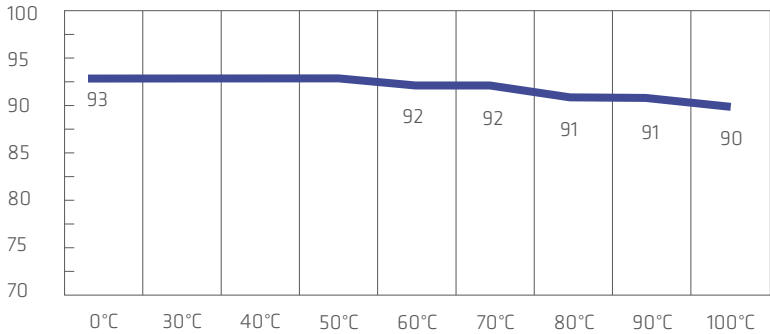
Dust Wipers

DH-05

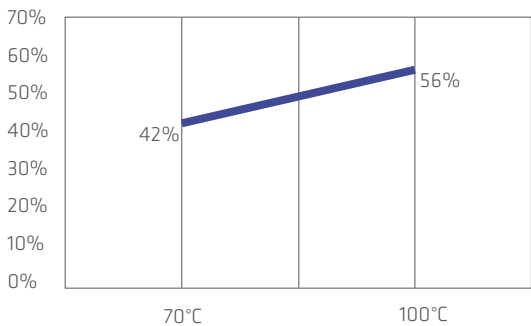


$R \leq 0.3$   
Rod  $\varnothing d$  Surface Roughness: 0.8~1.6  $\mu$  mRmax (0.2~0.4  $\mu$  mRa)

Influence of Temperature on Hardness (Shore A)



Compression Set



Working Conditions

Working Speed: 0.03 ~ 0.5 m/sec  
Working Temperature: -20°C ~ 100°C

Oil Resistance

Testing Oil: Hydraulic Oil 46#  
Testing Temperature (°C): 100  
Testing Time (Hour): 100  
Hardness Variation (Shore A): 0  
Tensile Strength Variation (%): -5  
Volume Variation (%): +0.12

Type	Ø d	Ø D	t	h	H
DH-05	18	25	3.8	5.2	4
	18	26	4	7	4.3
	18	28	4	7	4.3
	18	28.5	6	8.4	6.3
	18	30	6	6.5	6.3
	19	26	2.5	4	2.8
	20	28	5	7	5.3
	25	33	3	5	3.3
	25	33	5	7	4.5
	28	36	5	7	5.3
	30	38	5	7	5.3
	30	38.6	4.5	6.5	4.8
	32	40	3.7	6.5	4
	33	40.6	1.6	3	2
	35	43	5	7	5.3
	35	43.6	4.5	6.5	4.8
	36	44	5	7	5.3
	37	45	5	6.5	5.3
	38	46	2.5	4	2.8
	40	48.6	4.5	6.5	4.8
	40	50	5	7	5.3
	42	50	5	7	5.3
	45	53	5	7	2.3
	50	58	5	6.5	5.3
	50	58	5	7	5.3
	50	60	5	7	5.3
	50	60.6	4.5	6.5	4.8
	50.8	63.5	4.5	7.7	4.8
	50.8	63.5	6.35	9.52	6.5
	55	65	5	7	5.3
	60	68	5	7	5.3
	63	71	5	6.5	5.3
	75	85	5	7	5.3
	76.2	88.9	6.4	10	6.5
	78	86	5	7	5.3
	80	88.6	5	7	5.3
	86.5	101.5	6.5	10.3	6.5
	97	105	5	7	5.3
	100	110	5	7	5.3
	100	112	7	12	7.1
	105	118	7	12	7.1

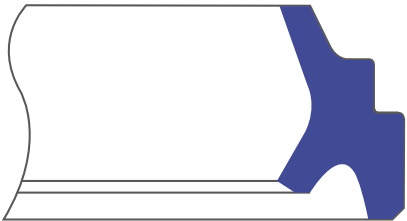
Type	Ø d	Ø D	t	h	H
DH-05	110	126	6.5	12	6.8
	111	126	6.5	10.3	6.8
	115	126	5.2	8	5.5
	118	126	5	7	5.3
	120	130	5	7	5.3
	124	139	6.5	10.3	6.8
	125	141	6.5	12	6.8
	135	147	7	12	7.1
	141	151	5	7	5.3
	143	151	5	7	5.3
	150	169	7	11	7.1
	160	180	6.5	12	6.8
	162	172	5	7	5.3
	163	175.2	7	10	7.1
	171	179	5	7	5.3
	180	200	6.5	12	6.8
	183	193	5	7	5.3
	200	215	10	16	10.2
	200	220	6.5	12	6.8
	240	260	12	17	12.1
	260	275.2	9.8	15	10
	266.3	307.2	10.4	24.6	10.5

Type	Ø d	Ø D	t	h	H
DH-05"	3 1/2	4 1/8		5/16	0.198
	4 3/8	5		5/16	0.198
	5 1/4	5 7/8		5/16	0.198
	6 3/8	7		5/16	0.198

Type	Ø d	Ø D	t	h	H

Dust Wipers

DH-07



Mechanical Properties

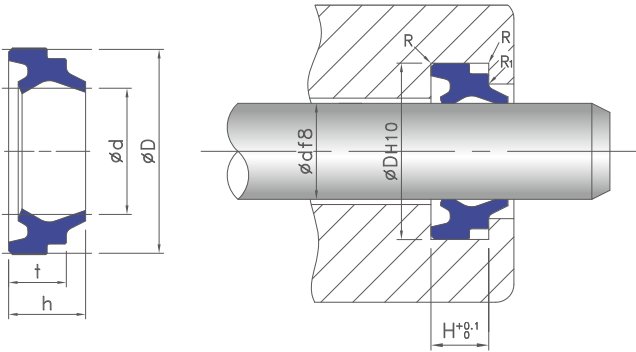
- Material: TPU / 8L953
- Specific Gravity (ASTM D792): 1.20
- Hardness (ASTM D2240): 93
- Tensile Strength (ASTM D412): 276
- 100% Modulus (ASTM D412): 100
- 300% Modulus (ASTM D412): 191
- Compression Set 70h/70°C (ASTM D395B): 42
- Compression Set 70h/100°C (ASTM D395B): 56

Working Conditions

- Working Speed: 0.03 ~ 0.5 m/sec
- Working Temperature: -20°C ~ 100°C

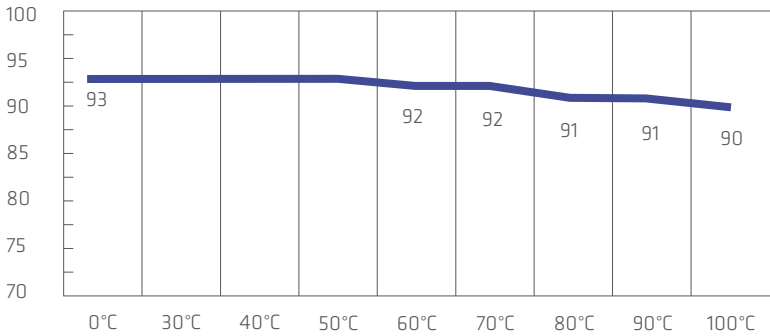
Oil Resistance

- Testing Oil: Hydraulic Oil 46#
- Testing Temperature (°C): 100
- Testing Time (Hour): 100
- Hardness Variation (Shore A): 0
- Tensile Strength Variation (%): -5
- Volume Variation (%): +0.12

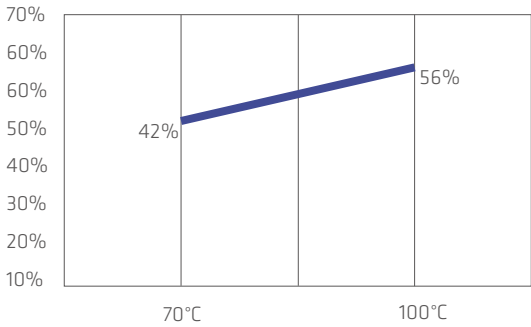


R ≤ 0.3, R1=0.5  
Rod Ø d Surface Roughness: 0.8~1.6 µ mRmax (0.2~0.4 µ mRa)

Influence of Temperature on Hardness (Shore A)



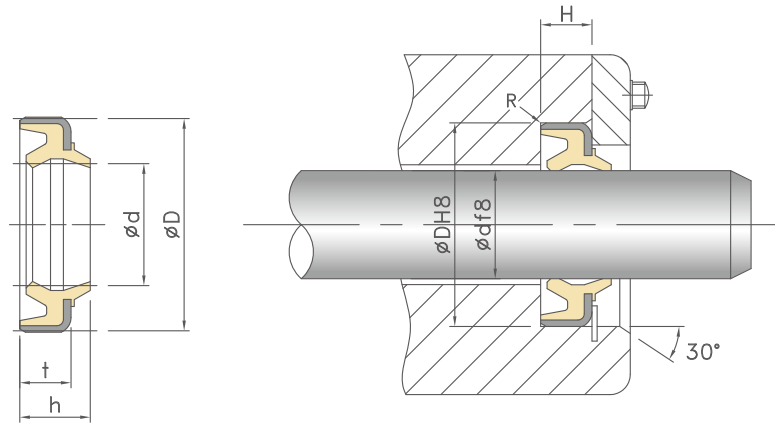
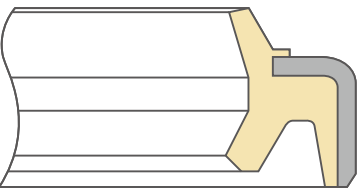
Compression Set





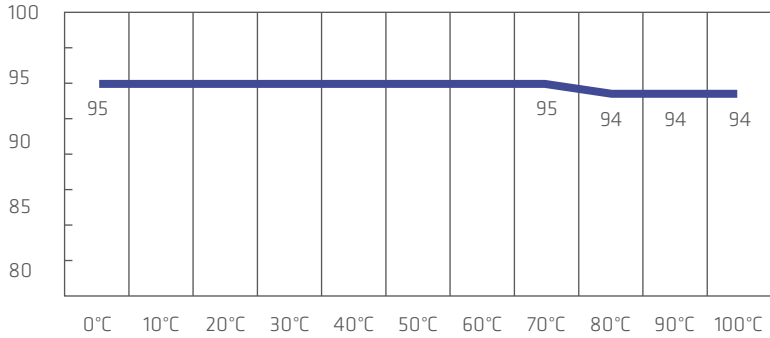
Metal Clad Wipers

ME-1

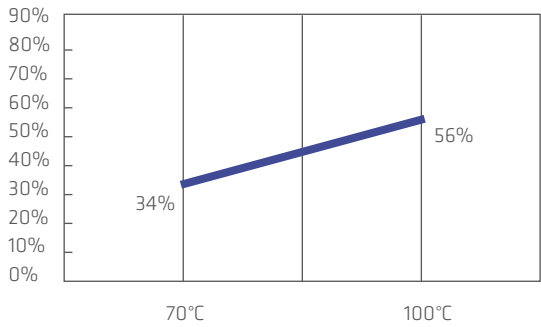


$R \leq 0.3$   
Rod  $\varnothing d$  Surface Roughness: 0.8~1.6  $\mu$  mRmax (0.2~0.4  $\mu$  mRa)

Influence of Temperature on Hardness (Shore A)



Compression Set



Working Conditions

Working Speed: 0.03 ~ 0.5 m/sec  
Working Temperature: -20°C ~ 100°C

Oil Resistance

Testing Oil: Hydraulic Oil 46#  
Testing Temperature (°C): 100  
Testing Time (Hour): 100  
Hardness Variation (Shore A): -1  
Tensile Strength Variation (%): -4  
Volume Variation (%): +0.08

Type	Ø d	Ø D	t	h	H
ME-1	10	20	5	7	5
	16	26	5	7	5
	18	30	6	9	6
	19	26	5	7	5
	20	32	6	9	6
	22	32	6	9	6
	22	34	6	9	6
	25	37	6	9	6
	30	42	6	9	6
	32	45	7	10	7
	32	52	8	11	8
	34	46	7	10	7
	35	47	7	10	7
	35	55	7	10	7
	40	50	7	10	7
	40	52	7	10	7
	40	60	7	10	7
	45	55	7	10	7
	45	57	7	10	7
	45	65	7	10	7
	50	60	7	10	7
	50	62	7	10	7
	50	65	7	10	7
	52	62	7	10	7
	55	65	7	10	7
	55	69	8	11	8
	55	75	7	10	7
	60	70	5	7	5
	60	70	7	10	7
	60	74	8	11	8
	63	73	7	11	7
	65	79	8	11	8
	65	85	7	10	7
	70	80	7	10	7
	70	82	7	10	7
	70	84	8	11	8
	70	85	7	10	7
	75	89	8	11	8
	75	95	7	10	7
	80	90	7	10	7
	80	94	8	11	8

Type	Ø d	Ø D	t	h	H
ME-1	85	95	7	10	7
	85	99	8	11	8
	90	104	8	11	8
	95	109	8	11	8
	100	114	8	11	8
	105	121	9	12	9
	110	126	9	12	9
	115	131	9	12	9
	120	136	9	12	9
	120	140	9	12	9
	125	141	9	12	9
	130	146	9	12	9
	140	160	10	14	10
	150	170	10	14	10
	160	180	10	14	10
	170	190	10	14	10
	180	200	10	14	10
	190	205	9	12	9
	200	216	8	11	8
	200	225	12	17	12
	200	235	12	17	12
	220	245	12	17	12
	230	255	12	17	12
	236	261	12	17	12
	240	260	10	14	10
	240	265	12	17	12
	250	275	12	17	12
	260	285	12	17	12
	300	330	16	22	16



# ME-1N



Rod Ø d Surface Roughness: 0.8~1.6  $\mu$  mRmax (0.2~0.4  $\mu$  mRa)

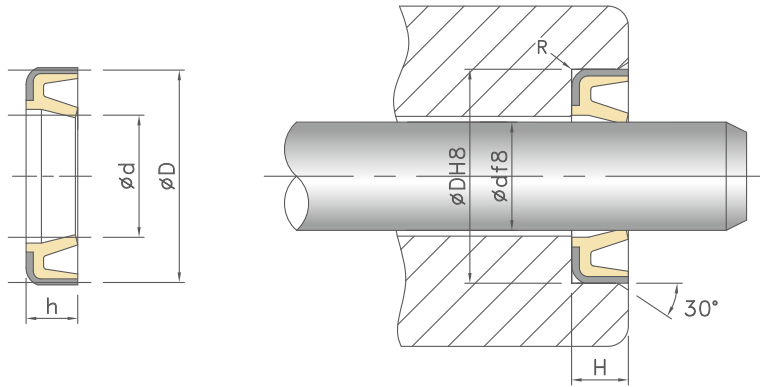
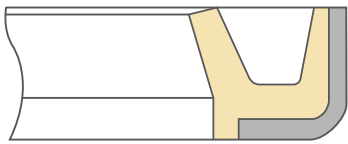
Temperature (°C)	T <sub>g</sub> (°C)
0	95
10	95
20	95
30	95
40	95
50	95
60	95
70	95
80	94
90	94
100	94

Age (°C)	Percentage (%)
70	34
100	56

Metal Clad Wipers ME-1N79

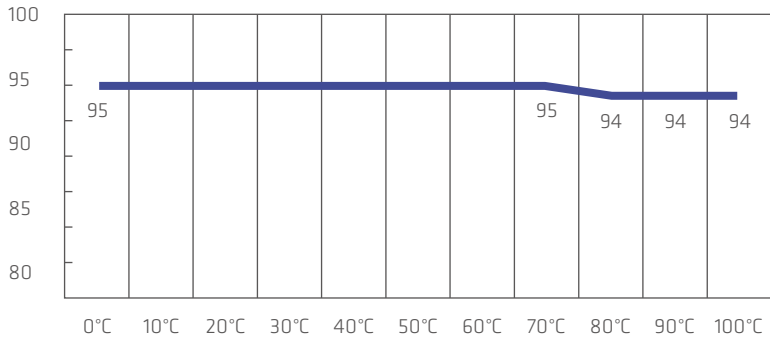
Metal Clad Wipers

ME-2

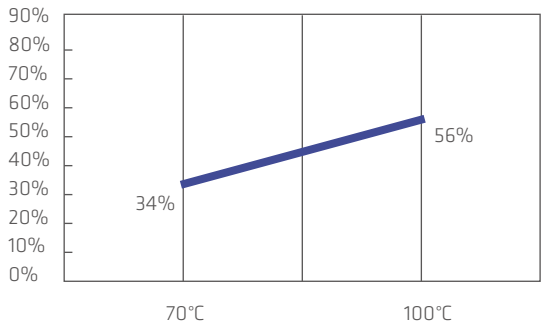


$R \leq 0.3$   
Rod  $\varnothing d$  Surface Roughness: 0.8~1.6  $\mu$  mRmax (0.2~0.4  $\mu$  mRa)

Influence of Temperature on Hardness (Shore A)



Compression Set



Working Conditions

Working Speed: 0.03 ~ 0.5 m/sec  
Working Temperature: -20°C ~ 100°C

Oil Resistance

Testing Oil: Hydraulic Oil 46#  
Testing Temperature (°C): 100  
Testing Time (Hour): 100  
Hardness Variation (Shore A): -1  
Tensile Strength Variation (%): -4  
Volume Variation (%): +0.08

Type	Ø d	Ø D	h	H
ME-2	19	27	4.5	4.5
	20	28	5	5
	25	32	5	5
	25	32	7	7
	25	38	7.5	7.5
	28	42	7	7
	30	40	3.2	3.2
	30	40	4	4
	30	42	7	7
	30	43	7.5	7.5
	35	45	3.2	3.2
	35	47	7	7
	36	46	7	7
	38	57	9.5	9.5
	40	50	3.2	3.2
	40	50	4	4
	40	50	5	5
	40	52	7	7
	45	55	3.2	3.2
	45	57	7	7
	45	60	9	9
	50	58	5	5
	50	60	3.2	3.2
	50	60	5	5
	50	60	7	7
	50	62	7	7
	50	64	8	8
	50	65	7	7
	55	65	3.2	3.2
	55	65	5	5
	55	68	6	6
	55	69	8	8
	55	70	7	7
	56	68	7	7
	60	70	5	5
	60	70	7	7
	60	70	8	8
	60	73	8	8
	60	74	8	8
	60	75	7	7
	60	75	8	8

Type	Ø d	Ø D	h	H
ME-2	63	78	9	9
	65	75	5	5
	65	75	6	6
	65	75	7	7
	65	79	8	8
	65	80	7	7
	70	80	4	4
	70	80	7	7
	70	84	8	8
	70	85	7	7
	75	89	8	8
	80	90	7	7
	80	93	8	8
	80	94	8	8
	80	95	7	7
	80	100	7	7
	80	100	10	10
	85	99	8	8
	90	100	5	5
	90	100	7	7
	90	104	8	8
	90	110	4	4
	90	110	7	7
	95	109	8	8
	95	110	4	4
	95	110	7	7
	100	110	7	7
	100	114	8	8
	100	115	7	7
	100	115	9	9
	105	115	7	7
	105	120	8	8
	110	125	4	4
	110	125	9	9
	110	126	9	9
	120	130	7	7
	120	135	7	7
	120	135	8	8
	120	136	9	9
	120	140	10	10
	120	148	8	8

[illegible][illegible]

Type	Ø d	Ø D	h	H
ME-2"	3/4	1	1/8	0.125
	3/4	1 1/4	1/4	0.25
	5/8	1 1/8	5/16	0.313
	7/8	1 1/8	5/32	0.156
	7/8	1 3/8	5/16	0.313
	1	1 1/2	5/16	0.313
	1	1 1/4	5/16	0.313
	1	1 3/8	3/16	0.187
	1 1/2	1 7/8	1/4	0.25
	1 1/2	1 7/8	3/16	0.187
	1 1/2	2	1/4	0.25
	1 1/2	2	3/8	0.375
	1 1/2	2	5/16	0.313
	1 1/2	2 1/4	3/8	0.375
	1 1/2	2 1/4	5/16	0.313
	1 1/2	2 1/8	1/4	0.25
	1 1/2	2 1/8	5/16	0.313
	1 1/4	1 3/4	1/4	0.25
	1 1/4	1 3/4	5/16	0.313
	1 1/4	1 5/8	1/8	0.125
	1 1/4	1 5/8	3/16	0.187
	1 1/8	1 1/2	3/16	0.187
	1 1/8	1 5/8	5/16	0.313
	1 3/4	2 1/2	3/8	0.375
	1 3/4	2 1/4	1/4	0.25
	1 3/4	2 1/4	3/16	0.187
	1 3/4	2 1/4	5/16	0.313
	1 3/4	2 1/8	1/8	0.125
	1 3/4	2 3/4	3/8	0.375
	1 3/4	2 7/16	3/8	0.375
	1 3/8	1 7/8	5/16	0.313
	1 5/8	2 1/8	1/4	0.25
	1 7/8	2 1/2	3/8	0.375
	1 7/8	2 3/8	5/16	0.313
	1 7/8	2 9/16	3/8	0.375
	2	2 1/2	1/4	0.25
	2	2 1/2	3/16	0.187
	2	2 1/2	5/16	0.313
	2	2 3/4	1/4	0.25
	2	2 3/4	3/8	0.375
2	2 3/8	1/4	0.25	

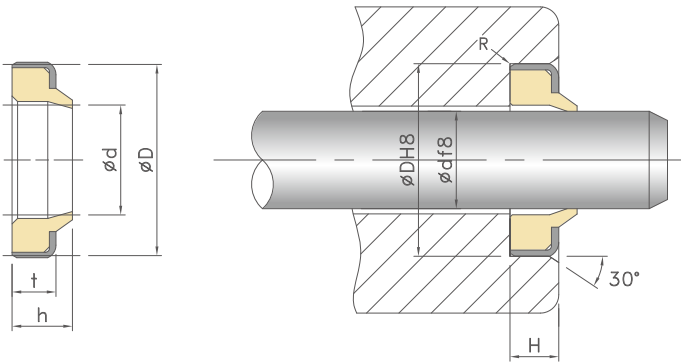
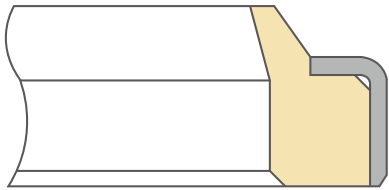
Type	Ø d	Ø D	h	H
ME-2''	2	2 3/8	3/16	0.187
	2	2 5/8	1/4	0.25
	2	2 11/16	3/8	0.375
	2 1/2	2 7/8	3/16	0.187
	2 1/2	3	1/4	0.25
	2 1/2	3	3/16	0.187
	2 1/2	3	5/16	0.313
	2 1/2	3 1/4	1/4	0.25
	2 1/2	3 1/4	3/8	0.375
	2 1/2	3 1/4	5/16	0.313
	2 1/2	3 1/8	1/4	0.25
	2 1/2	3 9/16	5/16	0.313
	2 1/4	2 3/4	1/4	0.25
	2 1/4	2 3/4	3/16	0.187
	2 1/4	2 3/4	5/16	0.313
	2 1/4	2 7/8	1/4	0.25
	2 1/4	3	1/4	0.25
	2 1/4	3	3/8	0.375
	2 1/4	3	5/16	0.313
	2 1/4	3 1/4	1/2	0.5
	2 1/8	2 1/2	1/8	0.125
	2 1/8	2 1/2	3/16	0.187
	2 1/8	2 3/4	5/16	0.313
	2 1/8	2 5/8	5/16	0.313
	2 1/8	2 7/8	3/8	0.375
	2 1/8	2 7/8	7/16	0.438
	2 3/4	3 1/2	3/8	0.375
	2 3/4	3 1/4	3/8	0.375
	2 3/4	3 1/4	5/16	0.313
	2 3/4	3 1/8	3/16	0.187
	2 3/4	3 3/4	1/2	0.5
	2 3/8	2 7/8	1/4	0.25
	2 3/8	2 7/8	5/16	0.313
	2 3/8	3 1/8	3/8	0.375
	2 5/16	3 1/8	3/8	0.375
	2 5/8	3 1/4	3/8	0.375
	2 5/8	3 1/8	1/4	0.25
	2 7/8	3 1/2	1/4	0.25
	3	3 1/2	5/16	0.313
	3	3 3/4	1/2	0.5
	3	3 3/4	1/4	0.25

Type	Ø d	Ø D	h	H
ME-2"	3	3 3/4	3/8	0.375
	3	3 3/4	5/16	0.313
	3	3 3/8	3/16	0.187
	3	4	1/2	0.5
	3 1/2	3 3/4	5/16	0.313
	3 1/2	4	1/2	0.5
	3 1/2	4	5/16	0.313
	3 1/2	4 1/2	1/2	0.5
	3 1/2	4 1/4	1/4	0.25
	3 1/2	4 1/4	5/16	0.313
	3 1/2	4 1/8	1/4	0.25
	3 1/2	4 1/8	5/16	0.313
	3 1/4	3 3/4	1/4	0.25
	3 1/4	3 3/4	3/8	0.375
	3 1/4	3 3/4	5/16	0.313
	3 1/4	3 7/8	5/16	0.313
	3 1/4	4	1/4	0.25
	3 1/4	4 1/4	1/2	0.5
	3 1/8	3 3/4	3/8	0.375
	3 1/8	3 3/4	5/16	0.313
	3 1/8	3 5/8	3/16	0.187
	3 3/4	4 1/2	5/16	0.313
	3 3/4	4 3/4	1/2	0.5
	3 3/4	4 3/8	5/16	0.313
	3 3/8	3 3/4	3/8	0.375
	3 3/8	4	5/16	0.313
	3 3/8	4 3/8	3/8	0.375
	3 5/8	4 1/2	1/2	0.5
	4	4 1/2	1/4	0.25
	4	4 3/4	5/16	0.313
	4	4 5/8	5/16	0.313
	4	5	1/2	0.5
	4 1/2	5	1/4	0.25
	4 1/2	5 1/2	1/2	0.5
	4 1/2	5 1/4	5/16	0.313
	4 1/2	5 1/8	5/16	0.313
	4 1/4	4 7/8	5/16	0.313
	4 1/4	5	1/2	0.5
	4 1/4	5 1/4	1/2	0.5
	4 1/8	4 3/4	5/16	0.313
	4 3/4	5 3/4	1/2	0.5

Type	Ø d	Ø D	h	H
ME-2"	4 3/4	5 3/4	3/8	0.375
	4 3/4	5 3/8	5/16	0.313
	4 3/8	5	5/16	0.313
	4 3/8	5 3/8	3/8	0.375
	5	5 3/4	5/16	0.313
	5	5 5/8	5/16	0.313
	5 1/2	6 1/4	5/16	0.313
	5 1/2	6 1/8	3/8	0.375
	5 1/2	7 3/8	7/16	0.438
	5 1/4	6	5/16	0.313
	5 3/4	6 3/4	1/2	0.5
	5 3/4	6 3/8	3/8	0.375
	6 1/2	7 1/4	5/16	0.313
	6	6 5/8	3/8	0.375
	6 3/4	7 3/8	3/8	0.375
	7	7 3/4	5/16	0.313
	9	9 3/4	9/16	0.563

Metal Clad Wipers

ME-3



$R \leq 0.3$   
Rod Ø d Surface Roughness: 0.8~1.6 µ mRmax (0.2~0.4 µ mRa)

Mechanical Properties

- Material: TPU / 8L95 + SPCC
- Specific Gravity (ASTM D792): 1.20
- Hardness (ASTM D2240): 95
- Tensile Strength (ASTM D412): 317
- 100% Modulus (ASTM D412): 110
- 300% Modulus (ASTM D412): 170
- Compression Set 70h/70°C (ASTM D395B): 34
- Compression Set 70h/100°C (ASTM D395B): 56

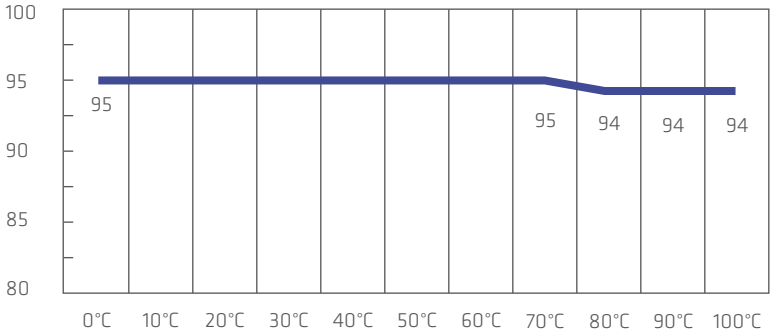
Working Conditions

- Working Speed: 0.03 ~ 0.5 m/sec
- Working Temperature: -20°C ~ 100°C

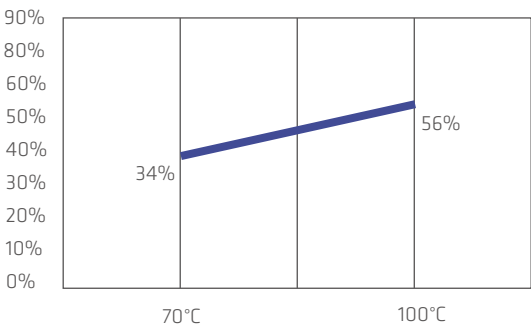
Oil Resistance

- Testing Oil: Hydraulic Oil 46#
- Testing Temperature (°C): 100
- Testing Time (Hour): 100
- Hardness Variation (Shore A): -1
- Tensile Strength Variation (%): -4
- Volume Variation (%): +0.08

Influence of Temperature on Hardness (Shore A)



Compression Set

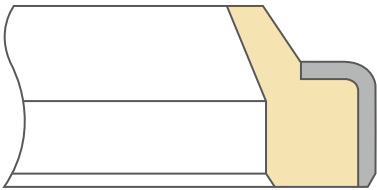


Type	Ø d	Ø D	t	h	H
ME-3	6.3	16	5	7	5
	10	20	5	7	5
	11.2	21	5	7	5
	12	18	3.5	5	3.5
	12.5	23	5	7	5
	14	24	5	7	5
	15	25	5	7	5
	16	26	5	7	5
	18	28	5	7	5
	18	28	7	10	7
	18	30	6	9	6
	20	30	5	7	5
	20	32	6	9	6
	22.4	34.4	6	9	6
	25	35	5	7	5
	25	35	6	7	6
	25	37	6	9	6
	27	39	6	9	6
	28	40	6	9	6
	30	40	5	7	5
	30	42	6	9	6
	30	45	7	10	7
	31.5	44	7	10	7
	31.75	41.28	4.75	7.14	4.75
	32	44	7	10	7
	35	47	7	10	7
	35.5	47.5	7	10	7
	38	50	7	10	7
	38.1	47.63	4.75	7.14	4.75
	40	52	7	10	7
	42	52	5	7	5
	45	57	7	10	7
	50	60	7	10	7
	50	62	7	10	7
	53	67	8	11	8
	55	69	8	11	8
	56	70	8	11	8
	57.15	66.67	4.75	7.14	4.75
	60	74	8	11	8
	63	75	7	10	7
63	77	8	11	8	

[illegible]

## Metal Clad Wipers

# ME-4



## Mechanical Properties

Material: TPU / 8L95+ SPCO

Specific Gravity (ASTM D792): 1.20

Hardness (ASTM D2240): 95

Tensile Strength (ASTM D412): 317

100% Modulus (ASTM D412): 110

300% Modulus (ASTM D412): 170

Compression Set 70h/70°C (ASTM D395B): 34

Compression Set 70h/100°C (ASTM D395B): 56

## Working Conditions

Working Speed: 0.03 ~ 0.5 m/sec

Working Temperature: -20°C ~ 100°C

## Oil Resistance

### Testing Oil: Hydraulic Oil 46#

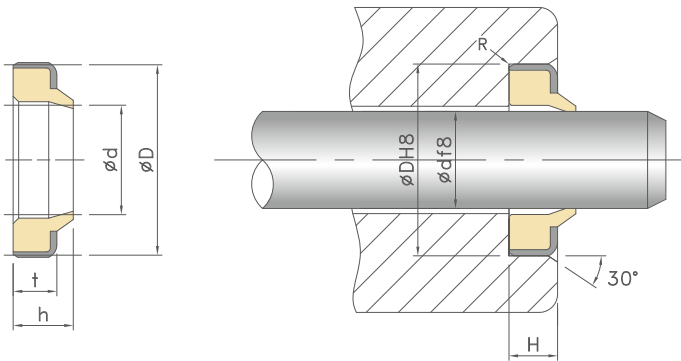
Testing Temperature (°C): 100

Testing Time (Hour): 100

Hardness Variation (Shore A): -1

Tensile Strength Variation (%): -4

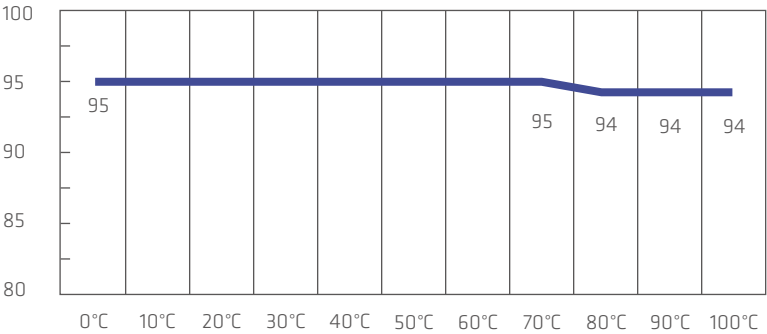
Volume Variation (%): +0.08



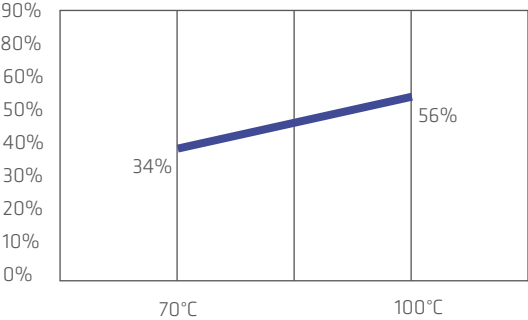
$R \leq 0.3$

Rod Ø d Surface Roughness: 0.8~1.6 µ mRmax (0.2~0.4 µ mRa)

### Influence of Temperature on Hardness (Shore A)



## Compression Set

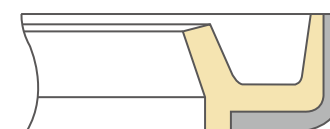






Metal Clad Wipers: ME-5 26

## ME-8



Material: TPU / 8L95 + SPCC

Specific Gravity (ASTM D792): 1.20

Hardness (ASTM D2240): 95

Tensile Strength (ASTM D412): 317

100% Modulus (ASTM D412): 110

300% Modulus (ASTM D412): 170

Compression Set 70h/70°C (ASTM D395B): 34

Compression Set 70h/100°C (ASTM D395B): 56

Working Speed: 0.03 ~ 0.5 m/sec

Working Speed: 0.03 ~ 0.5 m/sec

Working Temperature: -20°C ~ 100°C

Testing Oil: Hydraulic Oil 46#

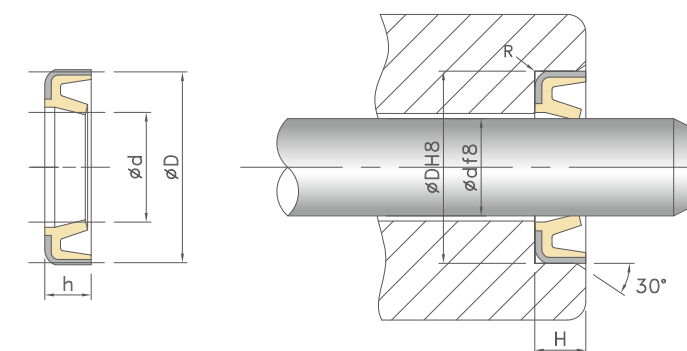
Testing Temperature (°C): 100

Testing Time (Hour): 100

Hardness Variation (Shore A): -1

Tensile Strength Variation (%): -4

Volume Variation (%): +0.08



$$R \leq 0.3$$

Rod Ø d Surface Roughness: 0.8~1.6 µ mRmax (0.2~0.4 µ mRa)

Temperature (°C)	Storage Modulus E' (MPa)
0	95
10	95
20	95
30	95
40	95
50	95
60	95
70	95
80	94
90	94
100	94

Age (°C)	Percentage (%)
70	34
100	56

Type	Ø d	Ø D	h	H
ME-8	50	65	5	5
	50	72	8	8
	55	70	5	5
	60	75	5	5
	60	75	6	6
	60	75	8	8
	65	80	5	5
	65	80	6	6
	65	80	8	8
	70	80	4.5	4.5
	70	85	5	5
	70	85	6	6
	70	85	8	8
	70	90	5	5
	71	86	5	5
	75	85	5	5
	75	90	5	5
	75	90	8	8
	80	90	4.5	4.5
	80	95	4	4
	80	95	5	5
	80	95	6	6
	80	95	8	8
	85	95	5	5
	85	100	5	5
	85	100	6	6
	85	100	8	8
	90	105	5	5
	90	105	6	6
	90	105	8	8
	90	105	10	10
	90	106	6	6
	90	106	8	8
	90	110	5	5
	90	110	8	8
	95	110	6	6
	95	110	8	8
	100	110	4.5	4.5
	100	115	5	5
	100	115	6	6
	100	115	7	7

Type	Ø d	Ø D	h	H
ME-8	100	115	8	8
	100	116	6	6
	100	116	8	8
	100	120	8	8
	100	125	6	6
	100	125	8	8
	105	120	5	5
	105	120	7	7
	110	125	5	5
	110	125	6	6
	110	125	7	7
	110	125	8	8
	110	130	8	8
	110	130	10	10
	110	135	8	8
	115	130	5	5
	115	130	8	8
	115	135	8	8
	120	135	5	5
	120	140	8	8
	125	140	8	8
	125	145	10	10
	130	145	7	7
	130	150	7	7
	130	150	9	9
	130	155	7	7
	130	155	8	8
	130	155	10	10
	130	160	6	6
	130	160	8	8
	135	160	8	8
	140	155	8	8
	140	160	6	6
	140	160	8	8
	140	170	8	8
	150	170	8	8
	160	180	8	8
	170	190	9	9
	180	200	8	8

# Dingzing

Science. Innovation. Collaboration.

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