

HP



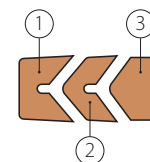
The seal type Aston Seals HP is designed for sealing rods, pistons and plungers in hydraulic cylinders and hydraulic presses. Extremely suitable for medium to heavy duty applications, it is composed of:

- a "U" Base Ring which supports the center rings from getting extruded. Sometimes an anti-extrusion ring can be incorporated to increase the maximum working pressure
- The center "V" rings are the main sealing elements being sensitive to fluid pressure variations assuring good sealing performances in all conditions
- The pressure ring helps in retaining the center ring profile and distributing pressure equally

(*) In low pressure conditions, it is recommended that at least one unreinforced nitrile elastomer "V" ring is incorporated in the packing seal.

- Extended service life
- Simple groove design
- Good sealing performance as well as at low pressure (*)
- Can be optimally adjusted to the application
- Good mechanical stability at high temperature
- Excellent wear-resistance

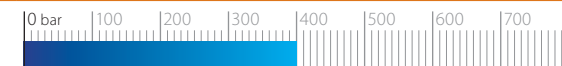
MATERIAL



- ① Reinforced cotton fabric impregnated with nitrile rubber
- ② Reinforced cotton fabric impregnated with nitrile rubber and/or nitrile elastomer
- ③ Reinforced cotton fabric impregnated with nitrile rubber

FIELD OF APPLICATION

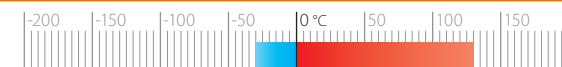
Pressure
≤ 400 bar



Speed
≤ 0.5 m/s



Temperature
-30°C ÷ +130°C



Fluids

Hydraulic oils (mineral oil based)
For other fluids contact our technical department

SURFACE ROUGHNESS

Dynamic surface
Static surface

Ra ≤ 0.2 μm Rt ≤ 2.5 μm
Ra ≤ 0.8 μm Rt ≤ 6.3 μm

GAP DIMENSION "g"

The largest gap dimension appearing in operation on the non-pressurised side:

0.30 mm

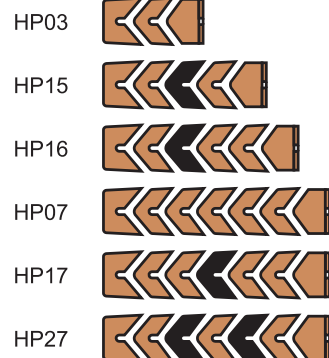
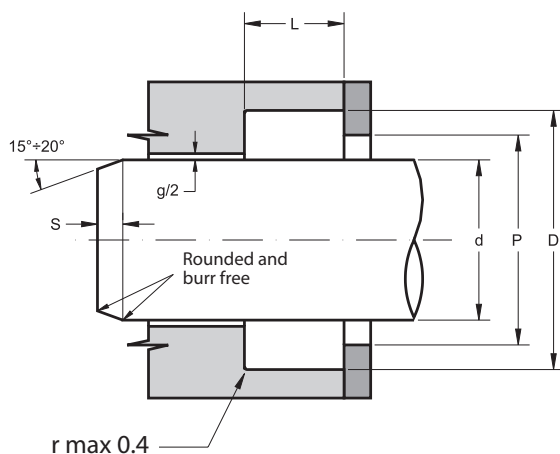
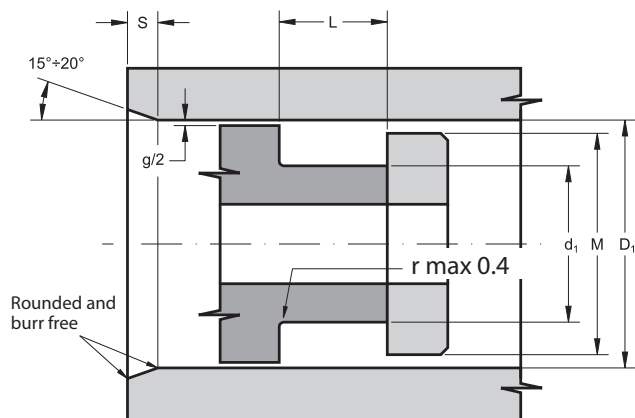
LEAD-IN CHAMFERS

d	Smin
less 100	5 mm
100÷200	7 mm
over 200	10 mm

To avoid damaging the sealing lips during installation, housing must have rounded chamfers. Sharp edges and burrs within the installation area of the seal must be removed.

The above data are maximum values, they may be maintained for short periods and can not be used at the same time simultaneously.

HP

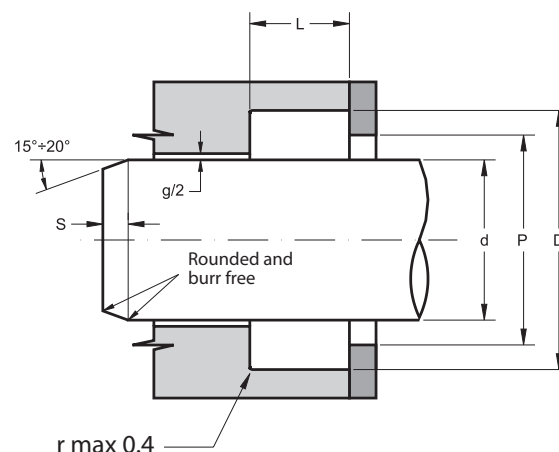
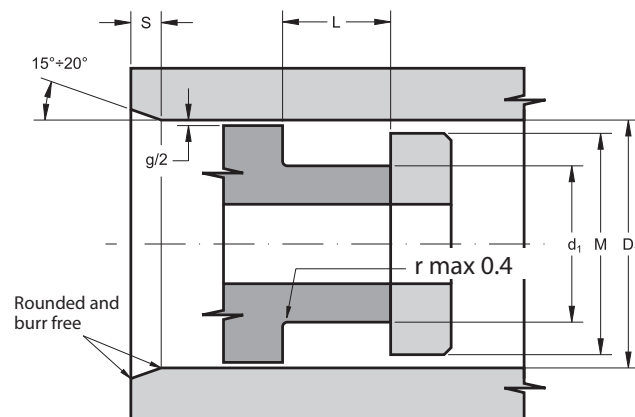


Part.	d ^{1 f8} d ^{f7}	D ^{1 H10} D ^{H10}	L ^{+0.25}	M	P
HP15 8 18 13.5	8	18	14	17	9
HP27 8 18 18.5	8	18	19.5	17	9
HP15 10 18 14.7	10	18	15.2	17	11
HP27 10 18 19.7	10	18	20.7	17	11
HP03 10 20 8.9	10	20	9.3	19	11
HP15 10 20 13.5	10	20	14	19	11
HP27 10 20 18.5	10	20	19.5	19	11
HP15 10 22 18.4	10	22	18.9	21	11
HP27 10 22 22	10	22	23	21	11
HP03 12 22 8.9	12	22	9.3	21	13
HP15 12 22 13.5	12	22	14	21	13
HP27 12 22 18.5	12	22	19.5	21	13
HP05 12 24 21	12	24	21.5	23	13
HP07 12 24 27	12	24	28	23	13
HP15 12 25 14	12	25	14.5	24	13
HP27 12 25 19	12	25	20	24	13
HP05 12.7 25.4 18	12.7	25.4	18.5	24.4	13.7
HP07 12.7 25.4 24	12.7	25.4	25	24.4	13.7
HP15 14 24 13.5	14	24	14	23	15
HP27 14 24 18.5	14	24	19.5	23	15
HP05 14 26 15.2	14	26	15.7	25	15
HP07 14 26 20.2	14	26	21.2	25	15
HP03 15 25 8.9	15	25	9.3	24	16
HP15 15 25 13.5	15	25	14	24	16

Part.	d ^{1 f8} d ^{f7}	D ^{1 H10} D ^{H10}	L ^{+0.25}	M	P
HP27 15 25 18.5	15	25	19.5	24	16
HP05 15 27 16	15	27	16.5	26	16
HP07 15 27 22	15	27	23	26	16
HP15 16 26 13.5	16	26	14	25	17
HP27 16 26 18.5	16	26	19.5	25	17
HP05 16 28 17	16	28	17.8	27	17
HP07 16 28 23.7	16	28	24.7	27	17
HP05 16 32 28.5	16	32	29.2	31	17
HP07 16 32 37.5	16	32	38.5	31	17
HP03 18 28 8.9	18	28	9.3	27	19
HP15 18 28 13.5	18	28	14	27	19
HP27 18 28 18.5	18	28	19.5	27	19
HP05 18 30 18.5	18	30	19	29	19
HP07 18 30 25.5	18	30	26.5	29	19
HP05 18 32 21	18	32	21.5	31	19
HP07 18 32 29	18	32	30	31	19
HP05 18.2 28.5 15.5	18.2	28.5	16	27.5	19.2
HP07 18.2 28.5 20.5	18.2	28.5	21.5	27.5	19.2
HP03 20 30 8.9	20	30	9.3	29	21
HP27 20 30 18.5	20	30	19.5	29	21
HP15 20 30 21	20	30	21.5	29	21
HP03 20 32 10.4	20	32	10.9	31	21
HP15 20 32 16.5	20	32	17	31	21
HP27 20 32 22.5	20	32	23.5	31	21

Part.	d ^{1 f8} d ^{f7}	D ^{1 H10} D ^{H10}	L ^{+0.25}	M	P
HP05 20 35 19.5	20	35	20.2	34	21
HP07 20 35 26.5	20	35	27.5	34	21
HP05 20 36 23	20	36	23.7	35	21
HP07 20 36 30	20	36	31	35	21
HP05 20 40 30	20	40	31.7	39	21
HP07 20 40 40	20	40	41	39	21
HP15 22 32 18	22	32	18.5	31	23
HP27 22 32 18.5	22	32	19.5	31	23
HP15 22 34 16.5	22	34	17	33	23
HP27 22 34 22.5	22	34	23.5	33	23
HP05 22 36 21.5	22	36	22	35	23
HP07 22 36 28.5	22	36	29.5	35	23
HP05 22 42 26	22	42	26.7	41	23
HP07 22 42 36	22	42	37	41	23
HP05 22.1 38.1 24	22.1	38.1	24.7	37.1	23.1
HP07 22.1 38.1 32	22.1	38.1	33	37.1	23.1
HP03 24 36 10.4	24	36	10.9	35	25
HP05 24 36 16.5	24	36	17	35	25
HP07 24 36 22.5	24	36	23.5	35	25
HP05 24 40 29	24	40	29.7	39	25
HP07 24 40 38	24	40	39	39	25
HP05 25 35 17	25	35	18	34	26
HP07 25 35 23	25	35	24	34	26
HP05 25 37 16.5	25	37	17	36	26

HP



HP03



HP15



HP16



HP07



HP17



HP27

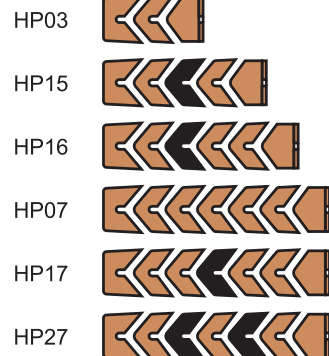
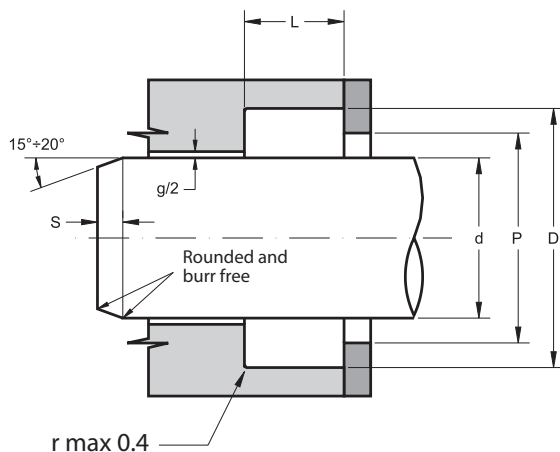
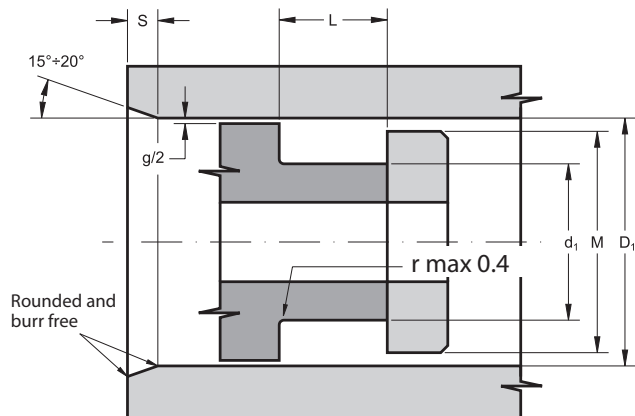


Part.	d ^{1 f8} d ^{1 f7}	D ^{1 H10} D ^{H10}	L ^{+0.25}	M	P
HP15 25 37 16.5	25	37	17	36	26
HP27 25 37 22.5	25	37	23.5	36	26
HP05 25 38 20.5	25	38	21	37	26
HP07 25 38 27.5	25	38	28.5	37	26
HP03 25 40 11	25	40	11.5	39	26
HP15 25 40 19	25	40	19.7	39	26
HP27 25 40 22.5	25	40	23.5	39	26
HP15 25 42 24	25	42	25.2	41	26
HP27 25 42 32	25	42	33	41	26
HP05 25 45 25	25	45	26	44	26
HP07 25 45 35	25	45	36.2	44	26
HP15 28 40 16.5	28	40	17.5	39	29
HP27 28 40 22.5	28	40	23.5	39	29
HP15 28 43 16.5	28	43	17.5	42	29
HP27 28 43 22.5	28	43	23.5	42	29
HP05 28 44 17	28	44	17.7	43	29
HP07 28 44 23	28	44	24	43	29
HP05 30 40 20.8	30	40	21.8	39	31
HP07 30 40 28	30	40	29	39	31
HP15 30 42 16.5	30	42	17	41	31
HP27 30 42 22.5	30	42	23.5	41	31
HP03 30 45 11	30	45	11.5	44	31
HP15 30 45 16.5	30	45	17.5	44	31
HP27 30 45 22.5	30	45	23.7	44	31

Part.	d ^{1 f8} d ^{1 f7}	D ^{1 H10} D ^{H10}	L ^{+0.25}	M	P
HP05 30 46 29	30	46	29.7	45	31
HP07 30 46 37	30	46	38	45	31
HP05 30 50 28	30	50	29	49	31
HP07 30 50 38	30	50	39.2	49	31
HP05 32 42 17	32	42	17.5	41	33
HP07 32 42 23	32	42	24	41	33
HP15 32 44 16.5	32	44	17	43	33
HP27 32 44 22.5	32	44	23.5	43	33
HP05 32 45 20.5	32	45	21	44	33
HP07 32 45 27.5	32	45	28.5	44	33
HP15 32 47 16.5	32	47	17.5	46	33
HP27 32 47 22.5	32	47	23.7	46	33
HP05 32 48 17	32	48	18	47	33
HP07 32 48 23	32	48	24.2	47	33
HP05 32 52 31	32	52	31.7	51	33
HP07 32 52 41	32	52	42	51	33
HP05 35 45 21	35	45	22	44	36
HP07 35 45 28	35	45	29	44	36
HP15 35 47 16.5	35	47	17.5	46	36
HP27 35 47 22.5	35	47	23.7	46	36
HP05 35 48 19.5	35	48	20.2	47	36
HP07 35 48 26.5	35	48	27.5	47	36
HP03 35 50 11	35	50	11.5	49	36
HP05 35 50 22	35	50	23	49	36

Part.	d ^{1 f8} d ^{1 f7}	D ^{1 H10} D ^{H10}	L ^{+0.25}	M	P
HP27 35 50 22.5	35	50	23.7	49	36
HP05 35 55 35.5	35	55	36.5	54	36
HP07 35 55 46.5	35	55	47.7	54	36
HP15 36 48 16.5	36	48	17.5	47	37
HP27 36 48 22.5	36	48	23.7	47	37
HP15 36 51 16.5	36	51	17.2	50	37
HP27 36 51 22.5	36	51	23.7	50	37
HP05 36 52 17	36	52	17.7	51	37
HP07 36 52 23	36	52	24.2	51	37
HP05 38 55 27	38	55	28	54	39
HP07 38 55 37	38	55	38.2	54	39
HP15 40 50 17	40	50	17.5	49	41
HP07 40 50 33	40	50	34	49	41
HP15 40 52 16.5	40	52	17.5	51	41
HP27 40 52 22.5	40	52	23.5	51	41
HP03 40 55 11	40	55	11.5	54	41
HP05 40 55 22	40	55	22.7	54	41
HP27 40 55 22.5	40	55	23.7	54	41
HP15 40 60 30	40	60	30.7	59	41
HP27 40 60 40	40	60	41.2	59	41
HP05 40 65 34	40	65	35.2	64	41
HP07 40 65 46	40	65	47.4	64	41
HP15 42 54 16.5	42	54	17.5	53	43
HP27 42 54 22.5	42	54	23.5	53	43

HP

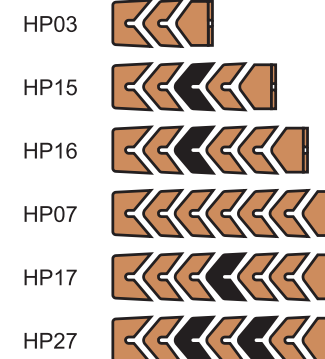
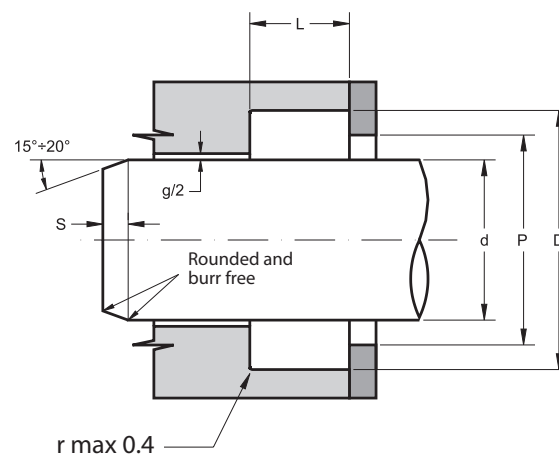
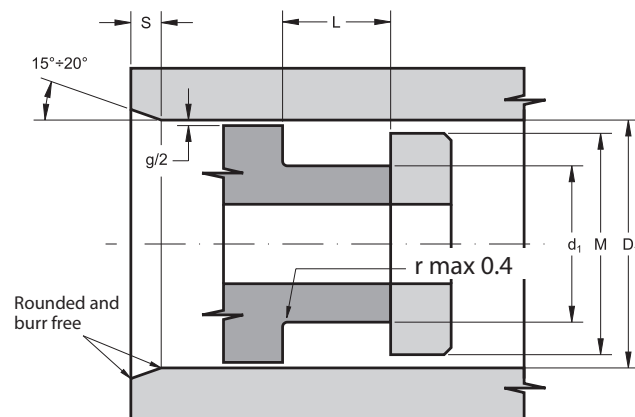


Part.	d ^{1 f8} d ^{f7}	D ^{1 H10} D ^{H10}	L ^{+0.25}	M	P
HP15 42 57 16.5	42	57	17.5	56	43
HP27 42 57 22.5	42	57	23.7	56	43
HP05 42 58 29	42	58	30	57	43
HP07 42 58 38	42	58	39.2	57	43
HP05 45 55 17	45	55	18	54	46
HP07 45 55 22.6	45	55	23.6	54	46
HP03 45 60 11	45	60	11.5	59	46
HP15 45 60 22	45	60	22.7	59	46
HP27 45 60 22.5	45	60	23.7	59	46
HP05 45 61 29	45	61	30	60	46
HP07 45 61 37	45	61	38.2	60	46
HP15 45 65 27	45	65	28	64	46
HP27 45 65 27.5	45	65	28.7	64	46
HP05 48 60 24	48	60	25	59	49
HP07 48 60 32	48	60	33.2	59	49
HP05 48 62 21	48	62	22	61	49
HP07 48 62 29	48	62	30.2	61	49
HP03 48 63 12.5	48	63	13	62	49
HP05 48 63 22.5	48	63	23.2	62	49
HP07 48 63 30.5	48	63	31.5	62	49
HP27 50 65 22.5	50	65	23.7	64	51
HP15 50 65 23.6	50	65	24.6	64	51
HP05 50 66 29	50	66	30	65	51
HP07 50 66 37	50	66	38.2	65	51

Part.	d ^{1 f8} d ^{f7}	D ^{1 H10} D ^{H10}	L ^{+0.25}	M	P
HP03 50 70 14.6	50	70	15.2	69	51
HP05 50 70 29	50	70	30	69	51
HP27 50 70 30	50	70	31.2	69	51
HP05 50 75 32	50	75	33	74	51
HP07 50 75 44	50	75	45.2	74	51
HP15 50.8 63.5 19	50.8	63.5	19.7	62.5	51.8
HP27 50.8 63.5 25	50.8	63.5	26	62.5	51.8
HP05 50.8 66.7 23	50.8	66.7	23.7	65.7	51.8
HP07 50.8 66.7 31	50.8	66.7	32	65.7	51.8
HP05 52 72 36	52	72	37	71	53
HP07 52 72 40	52	72	41.2	71	53
HP05 55 67 25	55	67	25.5	66	56
HP07 55 67 34	55	67	35	66	56
HP27 55 70 22.5	55	70	23.7	69	56
HP05 55 70 26	55	70	26.7	69	56
HP15 55 75 29	55	75	30	74	56
HP27 55 75 30	55	75	31.2	74	56
HP15 56 71 16.5	56	71	17.2	70	57
HP27 56 71 22.5	56	71	23.7	70	57
HP05 56 76 21.5	56	76	22.2	75	57
HP05 56 76 32.5	56	76	33.5	75	57
HP05 56 76 35	56	76	36	75	57
HP07 56 76 37	56	76	38.2	75	57
HP05 57.2 76.2 31	57.2	76.2	32	75.2	58.2

Part.	d ^{1 f8} d ^{f7}	D ^{1 H10} D ^{H10}	L ^{+0.25}	M	P
HP07 57.2 76.2 41	57.2	76.2	42.2	75.2	58.2
HP15 60 75 18.5	60	75	19.2	74	61
HP27 60 75 22.5	60	75	23.7	74	61
HP05 60 76 28	60	76	29	75	61
HP07 60 76 37	60	76	38.2	75	61
HP03 60 80 14.6	60	80	15.2	79	61
HP15 60 80 31	60	80	32	79	61
HP27 60 80 37	60	80	38.2	79	61
HP15 63 78 16.5	63	78	17.5	77	64
HP27 63 78 22.5	63	78	23.7	77	64
HP15 63 80 26.5	63	80	27.2	79	64
HP05 63 83 21.5	63	83	22.5	82	64
HP27 63 83 37	63	83	38.2	82	64
HP05 63 85 31	63	85	32	84	64
HP07 63 85 41	63	85	42.2	84	64
HP05 63.5 79.3 24	63.5	79.3	25	78.3	64.5
HP07 63.5 79.3 32	63.5	79.3	33.2	78.3	64.5
HP15 63.5 82.6 25.5	63.5	82.6	26.5	81.6	64.5
HP27 63.5 82.6 34.5	63.5	82.6	35.7	81.6	64.5
HP15 65 80 16.5	65	80	17.5	79	66
HP27 65 80 22.5	65	80	23.7	79	66
HP15 65 85 28	65	85	29	84	66
HP27 65 85 40	65	85	41.2	84	66
HP27 70 85 22.5	70	85	23.7	84	71

HP

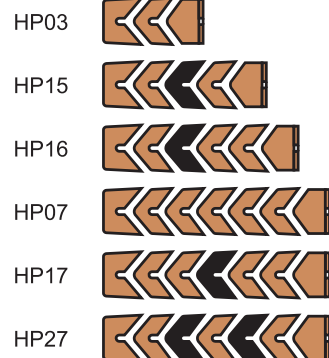
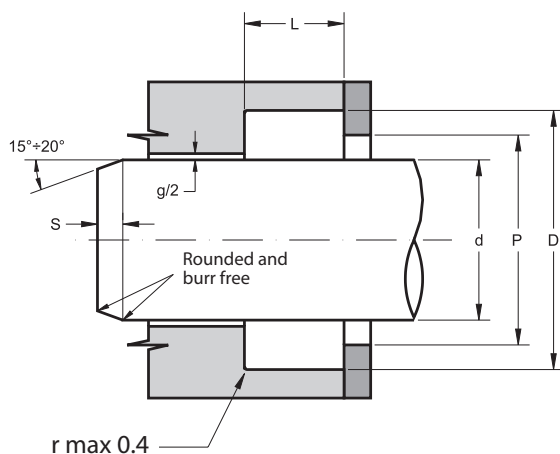
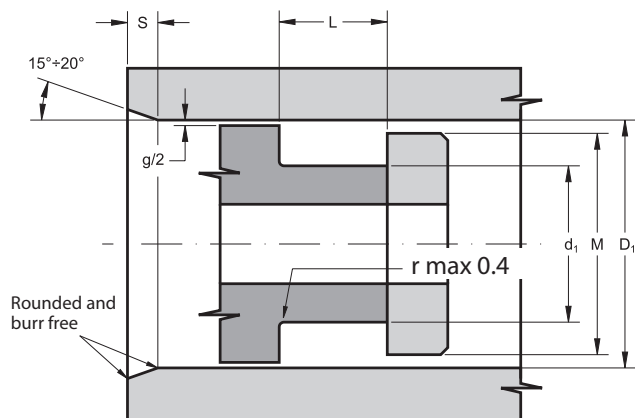


Part.	$d_{1\text{ f8}}$ $d_{1\text{ f7}}$	$D_{1\text{ H10}}$ D_{H10}	$L_{+0.25}$	M	P
HP05 70 85 27	70	85	28	84	71
HP15 70 89 23	70	89	23.7	88	71
HP27 70 89 31	70	89	32	88	71
HP03 70 90 20.6	70	90	21.2	89	71
HP15 70 90 21.5	70	90	22.5	89	71
HP15 70 90 29	70	90	30	89	71
HP27 70 90 40	70	90	41.2	89	71
HP05 75 90 22	75	90	23	89	76
HP27 75 90 22.5	75	90	23.7	89	76
HP15 75 95 30	75	95	31	94	76
HP27 75 95 40	75	95	41.2	94	76
HP05 75 100 29	75	100	30	99	76
HP07 75 100 50	75	100	51.4	99	76
HP05 75 105 40	75	105	41	104	76
HP07 75 105 54	75	105	55.4	104	76
HP15 76.2 95.2 29	76.2	95.2	30	94.2	77.2
HP27 76.2 95.2 39	76.2	95.2	40.2	94.2	77.2
HP05 76.2 101.6 38	76.2	101.6	39	100.6	77.2
HP07 76.2 101.6 50	76.2	101.6	51.4	100.6	77.2
HP15 80 95 16.5	80	95	17.5	94	81
HP27 80 95 22.5	80	95	23.7	94	81
HP03 80 100 20.6	80	100	21.2	99	81
HP15 80 100 29	80	100	30	99	81
HP27 80 100 40	80	100	41.2	99	81

Part.	$d_{1\text{ f8}}$ $d_{1\text{ f7}}$	$D_{1\text{ H10}}$ D_{H10}	$L_{+0.25}$	M	P
HP05 80 105 26.5	80	105	27.5	104	81
HP07 80 105 50.5	80	105	51.9	104	81
HP05 82.5 101.6 28	82.5	101.6	29	100.6	83.5
HP07 82.5 101.6 38	82.5	101.6	39.2	100.6	83.5
HP15 85 100 16.5	85	100	17.3	99	86
HP27 85 100 22.5	85	100	23.7	99	86
HP15 85 105 30	85	105	31	104	86
HP27 85 105 40	85	105	41.2	104	86
HP05 85 110 33	85	110	34	109	86
HP07 85 110 45	85	110	46.2	109	86
HP05 88.9 114.3 39.1	88.9	114.3	40	113.3	89.9
HP07 88.9 114.3 50.5	88.9	114.3	52	113.3	89.9
HP05 89 105 25	89	105	26	104	90
HP07 89 105 33	89	105	34.2	104	90
HP27 90 105 22.5	90	105	23.7	104	91
HP05 90 105 31	90	105	32	104	91
HP03 90 110 20.6	90	110	21.2	109	91
HP05 90 110 26	90	110	27	109	91
HP17 90 110 40	90	110	41.2	109	91
HP15 90 115 27	90	115	28	114	91
HP27 90 115 45.5	90	115	46.9	114	91
HP05 90 120 40.5	90	120	41.5	119	91
HP07 90 120 55.5	90	120	56.9	119	91
HP15 95 110 23	95	110	24	109	96

Part.	$d_{1\text{ f8}}$ $d_{1\text{ f7}}$	$D_{1\text{ H10}}$ D_{H10}	$L_{+0.25}$	M	P
HP07 95 110 36.5	95	110	37.9	109	96
HP03 95 115 20.6	95	115	21.2	114	96
HP05 95 115 30	95	115	31	114	96
HP07 95 115 40	95	115	41.2	114	96
HP05 95 120 38	95	120	39	119	96
HP07 95 120 50	95	120	51	119	96
HP05 95.3 114.3 25	95.3	114.3	26	113.3	96.3
HP07 95.3 114.3 33	95.3	114.3	34.2	113.3	96.3
HP15 100 115 24	100	115	25	114	101
HP27 100 115 30	100	115	31.2	114	101
HP15 100 120 27	100	120	28	119	101
HP17 100 120 40	100	120	41.2	119	101
HP03 100 125 25	100	125	25.8	124	101
HP05 100 125 27	100	125	28	124	101
HP17 100 125 49	100	125	50.4	124	101
HP05 100 130 43.5	100	130	44.5	129	101
HP07 100 130 58.5	100	130	60	129	101
HP05 101.6 120.7 26	101.6	120.7	26.7	119.7	102.6
HP05 101.6 120.7 35	101.6	120.7	36	119.7	102.6
HP15 105 120 24	105	120	25	119	106
HP27 105 120 32	105	120	33.2	119	106
HP15 105 125 29	105	125	30	124	106
HP27 105 125 39.5	105	125	40.9	124	106
HP05 105 130 33	105	130	34	129	106

HP

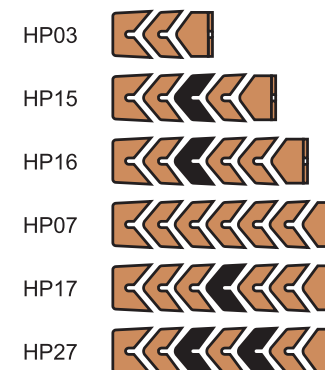
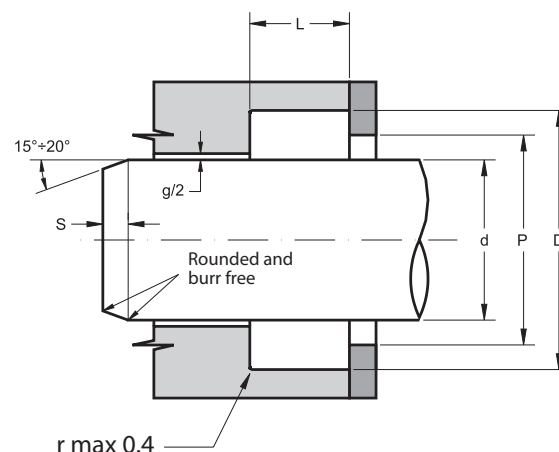
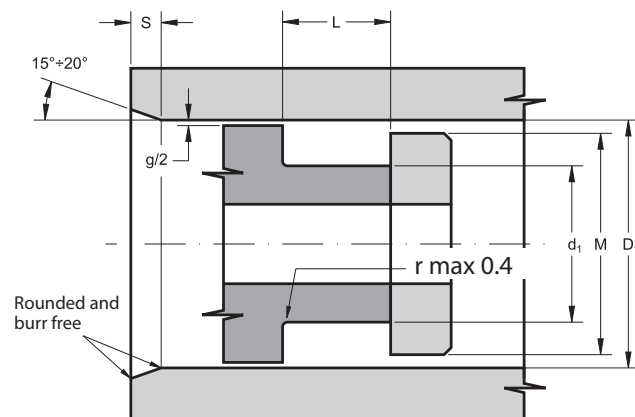


Part.	d ^{1 f8} d ^{f7}	D ^{1 H10} D ^{H10}	L ^{+0.25}	M	P
HP07 105 130 45	105	130	46.4	129	106
HP05 105 135 34	105	135	35	134	106
HP07 105 135 54	105	135	55.4	134	106
HP15 110 125 22	110	125	23	124	111
HP27 110 125 30	110	125	31.2	124	111
HP15 110 130 30	110	130	31	129	111
HP17 110 130 40	110	130	41.2	129	111
HP15 110 132 36	110	132	37	131	111
HP27 110 132 48	110	132	49.2	131	111
HP05 110 135 42.5	110	135	43.5	134	111
HP07 110 135 45	110	135	46.4	134	111
HP05 114 130 25	114	130	26	129	115
HP07 114 130 33	114	130	34	129	115
HP15 115 130 22	115	130	23	129	116
HP27 115 130 30	115	130	31.2	129	116
HP03 115 140 25	115	140	25.8	139	116
HP15 115 140 37	115	140	38	139	116
HP17 115 140 46	115	140	47.4	139	116
HP05 115 145 43	115	145	44	144	116
HP07 115 145 57	115	145	58.4	144	116
HP15 120 140 30	120	140	31	139	121
HP27 120 140 40	120	140	41.2	139	121
HP05 120 145 33.5	120	145	34.5	144	121
HP07 120 145 45.5	120	145	46.9	144	121

Part.	d ^{1 f8} d ^{f7}	D ^{1 H10} D ^{H10}	L ^{+0.25}	M	P
HP03 120 150 28	120	150	29	149	121
HP05 120 150 40	120	150	41	149	121
HP07 120 150 52.5	120	150	54	149	121
HP15 125 140 26	125	140	27	139	126
HP27 125 140 34	125	140	35.2	139	126
HP05 125 145 30	125	145	31	144	126
HP07 125 145 40	125	145	41.2	144	126
HP15 125 150 27	125	150	28	149	126
HP17 125 150 46	125	150	47.4	149	126
HP05 125 155 40	125	155	41	154	126
HP07 125 155 54	125	155	55.4	154	126
HP05 130 145 25.5	130	145	26.2	144	131
HP07 130 145 33.5	130	145	34.5	144	131
HP15 130 150 29.5	130	150	30.5	149	131
HP27 130 150 39.5	130	150	40.9	149	131
HP05 130 155 36	130	155	37	154	131
HP07 130 155 48	130	155	49.4	154	131
HP03 130 160 28	130	160	29	159	131
HP05 130 160 40	130	160	41	159	131
HP07 130 160 60	130	160	61.4	159	131
HP05 135 155 30	135	155	31	154	136
HP07 135 155 40	135	155	41.2	154	136
HP05 135 160 37.5	135	160	38.5	159	136
HP07 135 160 49.5	135	160	50.9	159	136

Part.	d ^{1 f8} d ^{f7}	D ^{1 H10} D ^{H10}	L ^{+0.25}	M	P
HP15 140 155 26	140	155	27	154	141
HP27 140 155 34	140	155	35.2	154	141
HP15 140 160 28	140	160	29	159	141
HP27 140 160 38	140	160	39.2	159	141
HP05 140 165 41	140	165	42	164	141
HP17 140 165 46	140	165	47.4	164	141
HP05 140 170 38	140	170	39	169	141
HP07 140 170 60	140	170	61.4	169	141
HP15 145 165 30	145	165	31	164	146
HP27 145 165 40	145	165	41.4	164	146
HP05 145 170 35.5	145	170	36.5	169	146
HP07 145 170 48.5	145	170	49.9	169	146
HP15 150 170 30	150	170	31	169	151
HP27 150 170 40	150	170	41.2	169	151
HP05 150 175 38.5	150	175	39.5	174	151
HP07 150 175 51.5	150	175	52.9	174	151
HP03 150 180 30.5	150	180	31.5	179	151
HP05 150 180 39	150	180	40	179	151
HP07 150 180 60	150	180	61.4	179	151
HP15 160 180 30	160	180	31	179	161
HP27 160 180 40	160	180	41.2	179	161
HP05 160 190 32	160	190	33	189	161
HP07 160 190 60	160	190	61.4	189	161
HP15 170 190 30	170	190	31	189	171

HP

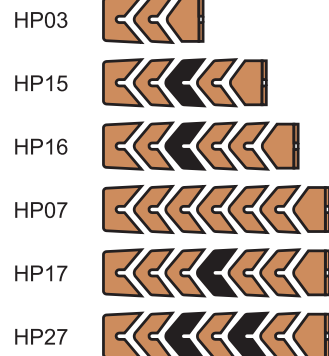
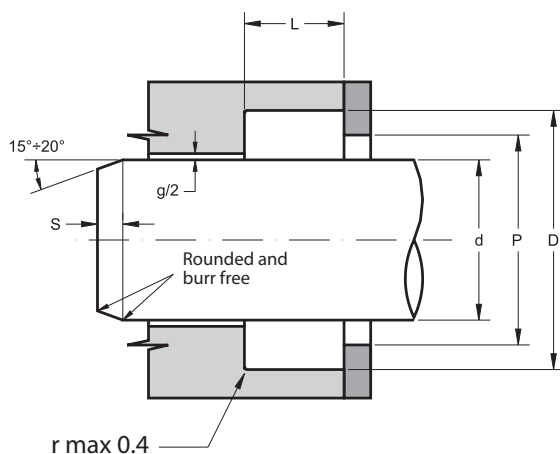
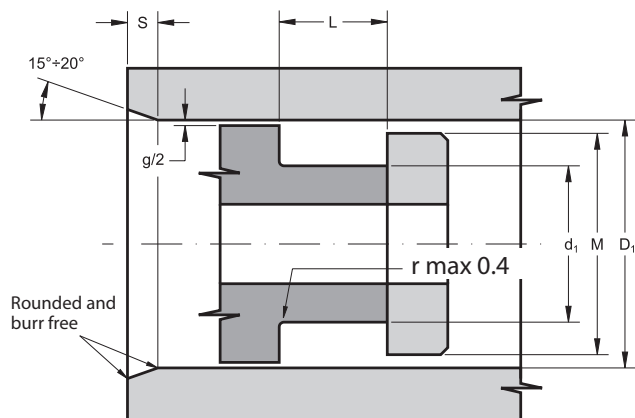


Part.	d ^{1 f8} d ^{1 f7}	D ^{1 H10} D ^{H10}	L ^{+0.25}	M	P
HP27 170 190 40	170	190	41.2	189	171
HP05 170 195 35	170	195	36	194	171
HP07 170 195 46	170	195	47.4	194	171
HP03 170 200 32.5	170	200	33.5	199	171
HP05 170 200 40	170	200	41	199	171
HP07 170 200 60	170	200	61.4	199	171
HP05 175 200 42	175	200	43	199	176
HP07 175 200 55	175	200	56.4	199	176
HP15 180 200 30	180	200	31	199	181
HP27 180 200 40	180	200	41.2	199	181
HP05 180 210 40	180	210	41	209	181
HP07 180 210 60	180	210	61.4	209	181
HP05 180 220 60	180	220	61	219	181
HP07 180 220 80	180	220	81.5	219	181
HP05 185 215 41.5	185	215	42.5	214	186
HP07 185 215 56.5	185	215	57.9	214	186
HP05 187.3 200 21	187.3	200	22	199	188.3
HP07 187.3 200 28	187.3	200	29.2	199	188.3
HP05 190 220 41.5	190	220	42.5	219	191
HP07 190 220 56.5	190	220	58	219	191
HP15 195 215 35	195	215	36	214	196
HP27 195 215 45	195	215	46.2	214	196
HP03 195 225 32.5	195	225	33.5	224	196
HP05 195 225 40	195	225	41	224	196

Part.	d ^{1 f8} d ^{1 f7}	D ^{1 H10} D ^{H10}	L ^{+0.25}	M	P
HP07 195 225 54	195	225	55.4	224	196
HP15 200 220 30	200	220	31	219	201
HP27 200 220 40	200	220	41.2	219	201
HP15 200 225 35	200	225	36	224	201
HP27 200 225 47	200	225	48.4	224	201
HP05 200 230 45	200	230	46	229	201
HP07 200 230 60	200	230	61.4	229	201
HP05 210 240 41.5	210	240	42.5	239	211
HP07 210 240 56.5	210	240	58	239	211
HP05 215 245 50.5	215	245	51.5	244	216
HP07 215 245 65.5	215	245	67	244	216
HP05 220 240 30	220	240	31	239	221
HP07 220 240 40	220	240	41.2	239	221
HP03 220 250 32.5	220	250	33.5	249	221
HP05 220 250 51	220	250	52	249	221
HP07 220 250 62.5	220	250	64	249	221
HP05 220 260 50	220	260	51	259	221
HP07 220 260 66	220	260	67.5	259	221
HP05 228.6 254 38	228.6	254	39	253	229.6
HP07 228.6 254 50	228.6	254	51.4	253	229.6
HP05 230 260 43.5	230	260	44.5	259	231
HP07 230 260 58.5	230	260	60	259	231
HP05 230 270 51	230	270	52	269	231
HP07 230 270 69	230	270	70.5	269	231

Part.	d ^{1 f8} d ^{1 f7}	D ^{1 H10} D ^{H10}	L ^{+0.25}	M	P
HP05 240 260 30	240	260	31	259	241
HP07 240 260 40	240	260	41.2	259	241
HP05 240 270 40	240	270	41	269	241
HP07 240 270 54	240	270	55.5	269	241
HP05 240 280 51	240	280	52	279	241
HP07 240 280 69	240	280	70.5	279	241
HP15 250 270 30	250	270	31	269	251
HP27 250 270 40	250	270	41.2	269	251
HP05 250 280 32.5	250	280	33.5	279	251
HP07 250 280 59.5	250	280	61	279	251
HP05 250 290 51.5	250	290	52.5	289	251
HP07 250 290 68.5	250	290	70	289	251
HP05 260 280 30	260	280	31	279	261
HP07 260 280 40	260	280	41.2	279	261
HP05 260 290 45	260	290	46	289	261
HP07 260 290 60	260	290	61.5	289	261
HP05 260 300 48	260	300	49	299	261
HP07 260 300 64	260	300	65.5	299	261
HP05 270 300 45	270	300	46	299	271
HP07 270 300 60	270	300	61.5	299	271
HP05 270 310 49	270	310	50	309	271
HP07 270 310 67	270	310	68.5	309	271
HP05 275 305 49.5	275	305	50.5	304	276
HP07 275 305 65.5	275	305	67	304	276

HP

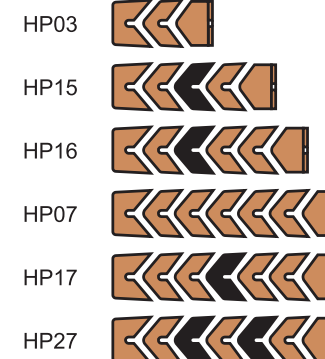
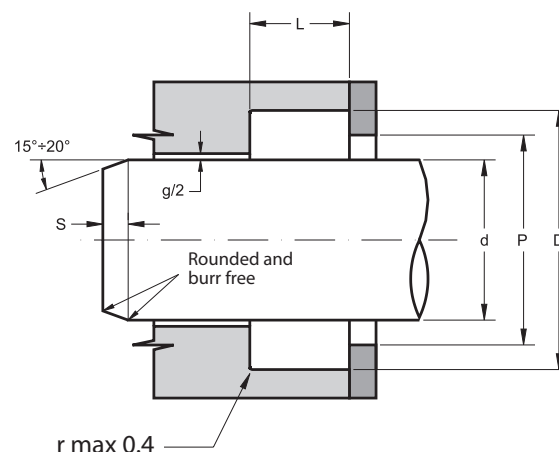
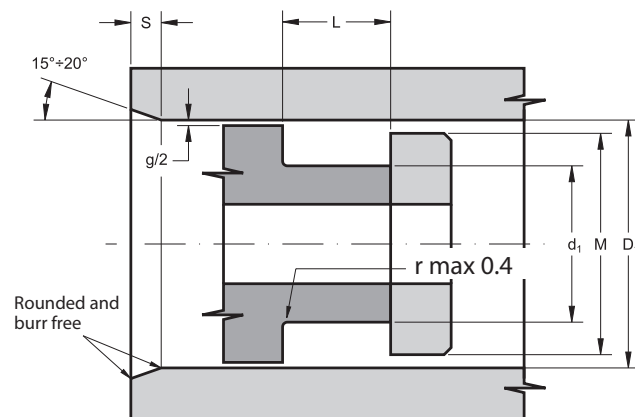


Part.	d ^{1 f8} d ^{f7}	D ^{1 H10} D ^{H10}	L ^{+0.25}	M	P
HP05 280 310 42	280	310	43	309	281
HP07 280 310 56	280	310	57.5	309	281
HP05 280 320 49.5	280	320	50.5	319	281
HP07 280 320 66.5	280	320	68	319	281
HP05 290 320 50.5	290	320	51.5	319	291
HP07 290 320 55.5	290	320	57	319	291
HP05 300 320 32	300	320	33	319	301
HP07 300 320 42	300	320	43.2	319	301
HP05 300 330 45	300	330	46	329	301
HP07 300 330 60	300	330	61.5	329	301
HP05 300 340 53	300	340	54	339	301
HP07 300 340 72	300	340	73.5	339	301
HP15 310 330 32	310	330	33	329	311
HP27 310 330 43	310	330	44.2	329	311
HP05 310 340 43.5	310	340	44.5	339	311
HP07 310 340 58.5	310	340	60	339	311
HP05 310 350 50	310	350	51	349	311
HP07 310 350 68	310	350	69.5	349	311
HP05 315 345 45	315	345	46	344	316
HP07 315 345 60	315	345	61.5	344	316
HP05 320 350 41	320	350	42	349	321
HP07 320 350 55	320	350	56.5	349	321
HP05 320 360 53.5	320	360	54.5	359	321
HP07 320 360 71.5	320	360	73	359	321

Part.	d ^{1 f8} d ^{f7}	D ^{1 H10} D ^{H10}	L ^{+0.25}	M	P
HP05 320 370 68	320	370	69.5	369	321
HP07 320 370 92	320	370	94	369	321
HP05 330 360 50.5	330	360	51.5	359	331
HP07 330 360 65.5	330	360	67	359	331
HP05 330 370 57	330	370	58.5	369	331
HP07 330 370 75	330	370	77	369	331
HP05 340 370 46	340	370	47	369	341
HP07 340 370 61	340	370	62.5	369	341
HP05 340 375 52	340	375	53	374	341
HP07 340 375 70	340	375	71.5	374	341
HP05 340 380 49.5	340	380	50.5	379	341
HP07 340 380 66.5	340	380	68	379	341
HP05 350 380 40	350	380	41	379	351
HP07 350 380 52.5	350	380	53.5	379	351
HP05 350 390 54	350	390	55	389	351
HP07 350 390 74	350	390	75.5	389	351
HP05 360 390 40.5	360	390	41.5	389	361
HP07 360 390 55.5	360	390	57	389	361
HP05 360 400 52	360	400	53	399	361
HP07 360 400 70	360	400	71.5	399	361
HP05 370 390 33	370	390	34	389	371
HP07 370 390 45	370	390	46.2	389	371
HP05 370 400 41	370	400	42	399	371
HP07 370 400 55	370	400	56.5	399	371

Part.	d ^{1 f8} d ^{f7}	D ^{1 H10} D ^{H10}	L ^{+0.25}	M	P
HP05 380 410 42	380	410	43	409	381
HP07 380 410 58	380	410	59.5	409	381
HP05 380 420 60	380	420	61	419	381
HP07 380 420 80	380	420	81.5	419	381
HP05 390 420 50.5	390	420	51.5	419	391
HP07 390 420 65.5	390	420	67	419	391
HP05 390 430 55	390	430	56	429	391
HP07 390 430 73	390	430	74.5	429	391
HP05 400 440 50.5	400	440	51.5	439	401
HP07 400 440 67.5	400	440	69	439	401
HP05 410 450 59	410	450	60	449	411
HP07 410 450 79	410	450	80.5	449	411
HP05 415 460 65	415	460	66.5	459	416
HP07 415 460 87	415	460	89	459	416
HP05 420 450 44	420	450	45	449	421
HP07 420 450 58	420	450	59.5	449	421
HP05 420 460 53	420	460	54	459	421
HP07 420 460 71	420	460	72.5	459	421
HP05 430 470 56	430	470	57	469	431
HP07 430 470 76	430	470	77.5	469	431
HP15 440 470 50.5	440	470	51.5	469	441
HP27 440 470 65.5	440	470	67	469	441
HP05 440 480 52	440	480	53	479	441
HP07 440 480 70	440	480	71.5	479	441

HP

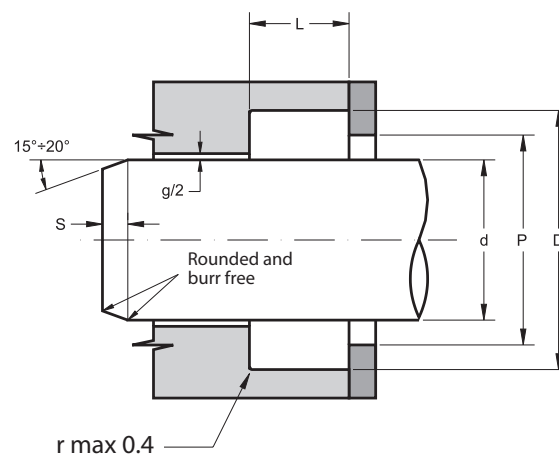
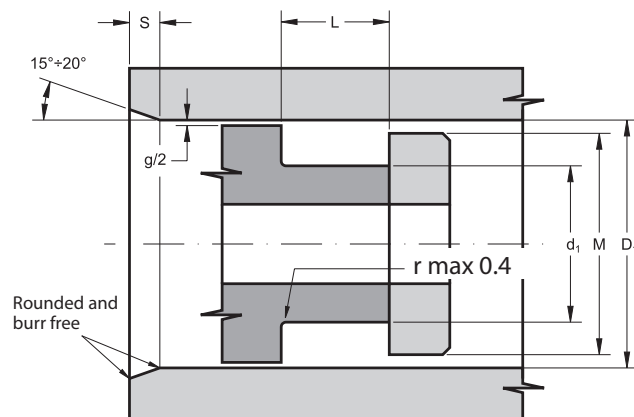


Part.	$d_{1\text{ f8}}$ $d_{1\text{ f7}}$	$D_{1\text{ H10}}$ D_{H10}	$L_{+0.25}$	M	P
HP05 450 490 52	450	490	53	489	451
HP07 450 490 70	450	490	71.5	489	451
HP05 450 500 75	450	500	76.5	499	451
HP07 450 500 101	450	500	103	499	451
HP05 460 500 55	460	500	56	499	461
HP07 460 500 73	460	500	74.5	499	461
HP05 470 500 45	470	500	46	499	471
HP07 470 500 60	470	500	61.5	499	471
HP05 470 510 49	470	510	50	509	471
HP07 470 510 65	470	510	66.5	509	471
HP05 480 520 61.5	480	520	62.5	519	481
HP07 480 520 80.5	480	520	82	519	481
HP05 490 530 56	490	530	57	529	491
HP07 490 530 74	490	530	75.5	529	491
HP05 500 530 50.5	500	530	51.5	529	501
HP07 500 530 65.5	500	530	67	529	501
HP05 500 540 57	500	540	58	539	501
HP07 500 540 77	500	540	78.5	539	501
HP05 500 550 72.5	500	550	74	549	501
HP07 500 550 98	500	550	100	549	501
HP05 505 545 49	505	545	50	544	506
HP07 505 545 67	505	545	68.5	544	506
HP05 510 560 71	510	560	72.5	559	511
HP07 510 560 95	510	560	97	559	511

Part.	$d_{1\text{ f8}}$ $d_{1\text{ f7}}$	$D_{1\text{ H10}}$ D_{H10}	$L_{+0.25}$	M	P
HP05 520 550 45	520	550	46	549	521
HP07 520 550 60	520	550	61.5	549	521
HP05 520 570 75	520	570	76.5	569	521
HP07 520 570 100	520	570	102	569	521
HP05 530 560 42.5	530	560	43.5	559	531
HP07 530 560 57.5	530	560	59	559	531
HP05 540 575 50.5	540	575	51.5	574	541
HP07 540 575 67.5	540	575	69	574	541
HP05 540 580 55	540	580	56	579	541
HP07 540 580 73	540	580	74.5	579	541
HP05 550 590 68.5	550	590	70	589	551
HP05 550 590 51.5	550	590	52.5	589	551
HP05 550 600 75	550	600	76.5	599	551
HP07 550 600 100	550	600	102	599	551
HP05 560 600 50	560	600	51	599	561
HP07 560 600 68	560	600	69.5	599	561
HP05 560 610 64	560	610	65.5	609	561
HP07 560 610 88	560	610	90	609	561
HP05 580 620 48	580	620	49	619	581
HP07 580 620 66	580	620	67.5	619	581
HP05 580 630 68	580	630	69.5	629	581
HP07 580 630 92	580	630	94	629	581
HP05 590 630 51	590	630	52	629	591
HP07 590 630 69	590	630	70.5	629	591

Part.	$d_{1\text{ f8}}$ $d_{1\text{ f7}}$	$D_{1\text{ H10}}$ D_{H10}	$L_{+0.25}$	M	P
HP05 600 630 40	600	630	41	629	601
HP07 600 630 54	600	630	55.5	629	601
HP05 600 640 60	600	640	61	639	601
HP07 600 640 80	600	640	81.5	639	601
HP05 600 650 75	600	650	76.5	649	601
HP07 600 650 100	600	650	102	649	601
HP05 610 650 53	610	650	54	649	611
HP07 610 650 71	610	650	72.5	649	611
HP05 630 680 76	630	680	77.5	679	631
HP07 630 680 102	630	680	104	679	631
HP05 640 670 47	640	670	48	669	641
HP07 640 670 63	640	670	64.5	669	641
HP05 650 690 60	650	690	61	689	651
HP07 650 690 80	650	690	81.5	689	651
HP05 660 700 54	660	700	55	699	661
HP07 660 700 72	660	700	73.5	699	661
HP05 670 710 57.5	670	710	58.5	709	671
HP07 670 710 76.5	670	710	78	709	671
HP05 700 740 60	700	740	61	739	701
HP07 700 740 80	700	740	81.5	739	701
HP05 720 760 61	720	760	62	759	721
HP07 720 760 81	720	760	82.5	759	721
HP05 750 790 48.5	750	790	49.5	789	751
HP07 750 790 65.5	750	790	67	789	751

HP



HP03



HP15



HP16



HP07



HP17



HP27



Part.	d ^{1 f8} d ^{f7}	D ^{1 H10} D ^{H10}	L ^{+0.25}	M	P
HP05 750 800 75	750	800	76.5	799	751
HP07 750 800 100	750	800	102	799	751
HP05 790 820 44	790	820	45	819	791
HP07 790 820 60	790	820	61.5	819	791
HP05 800 840 56	800	840	57	839	801
HP07 800 840 74	800	840	75.5	839	801
HP05 810 850 59	810	850	60	849	811
HP07 810 850 79	810	850	80.5	849	811
HP05 820 870 75	820	870	76.5	869	821
HP07 820 870 100	820	870	102	869	821
HP05 915 965 66.5	915	965	68	964	916
HP07 915 965 89.5	915	965	91.5	964	916
HP05 1025 1065 56	1025	1065	57	1064	1026
HP07 1025 1065 76	1025	1065	77.5	1064	1026
HP05 1100 1150 80	1100	1150	81.5	1149	1101
HP07 1100 1150 105	1100	1150	107	1149	1101