

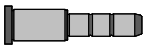




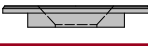





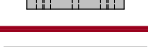

















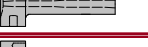


















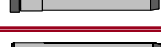






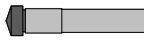















# GUIDING ELEMENTS, SPRUE BUSH ELEMENTY PROWADZĄCE TULEJE WTRYSKOWE



## STANDARD PARTS FOR TOOL MAKING AND MOULD CONSTRUCTION

Description	Group	Description	Group	Description	Group
N 01	1	N 091	6	N 20	9
N 011	1	N 10	6	N 21	9
N 02	1	N 101	6	N 22	9
N 021	1	N 102	6	N 23	9
N 03	2	N 11	6	N 24	9
N 035	Bronze 2	N 12	6	N 25	9
N 04	2	N 121	6	N 26	9
N 045	Bronze 2	N 13	7	N 30R	10
N 03W	2	N 130	7	N 30	10
N 04W	2	N 131	7	N 31	R 15,5 t = 1,5 10
N 046	Bronze 3	N 1310	7	N 32	R 40 t = 1,5 10
N 047	Bronze 3	N 14	7	N 33	R 15,5 t = 3 10
N 048	Bronze 3	N 140	7	N 34	R 40 t = 3 10
N 0481	3	N 15	7	N 40	10
N 05	4	N 135	7	N 41	10
N 051	4	N 1305	7		
N 06	4	N 1315	7		
N 065	4	N 1320	7		
N 61	4	N 145	7		
N 62	4	N 155	7		
N 63	4	N 165	7		
N 07	5	N 166	7		
N 071	5	N 167	7		
N 072	5	N 16	8		
N 074	5	N 161	8		
N 08	5	N 17	8		
N 081	5	N 18	8		
N 09	6	N 19	9		

## STANDARD PARTS FOR TOOL MAKING AND MOULD CONSTRUCTION

Description	Group	Description	Group	Description	Group
N 01 	1	N 091 	6	N 20 	9
N 011 	1	N 10 	6	N 21 	9
N 02 	1	N 101 	6	N 22 	9
N 021 	1	N 102 	6	N 23 	9
N 03 	2	N 11 	6	N 24 	9
N 035 	Bronze 2	N 12 	6	N 25 	9
N 04 	2	N 121 	6	N 26 	9
N 045 	Bronze 2	N 13 	7	N 30R 	10
N 03W 	2	N 130 	7	N 30 	10
N 04W 	2	N 131 	7	N 31 	10
N 046 	Bronze 3	N 1310 	7	N 32 	10
N 047 	Bronze 3	N 14 	7	N 33 	10
N 048 	Bronze 3	N 140 	7	N 34 	10
N 0481 	3	N 15 	7	N 40 	10
N 05 	4	N 135 	7	N 41 	10
N 051 	4	N 1305 	7		
N 06 	4	N 1315 	7		
N 065 	4	N 1320 	7		
N 61 	4	N 145 	7		
N 62 	4	N 155 	7		
N 63 	4	N 165 	7		
N 07 	5	N 166 	7		
N 071 	5	N 167 	7		
N 072 	5	N 16 	8		
N 074 	5	N 161 	8		
N 08 	5	N 17 	8		
N 081 	5	N 18 	8		
N 09 	6	N 19 	9		

# N 01

## Guide Pillar

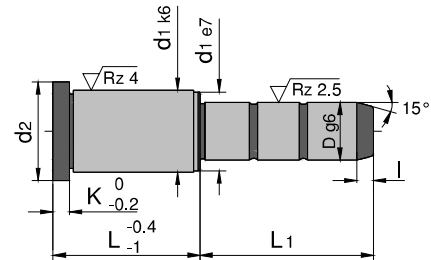
Ordering-Example:

1 Piece N01 Ø 9/12/45

3 Pieces N01 Ø10/12/45

Special Sizes Available On Request

Material: 1.7139 ca. 700HV

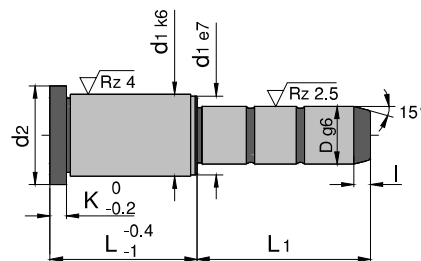


K	d1	d2	I	D	L	L1	€
3	14	16	4	9/10	12	45	
3	14	16	4	9/10	17	20	
						30	
						35	
3	14	16	4	9/10	22	25	
						35	
						55	
3	14	16	4	9/10	27	25	
						30	
						35	
						45	
						50	
3	14	16	4	9/10	36	25	
						35	
						45	
3	14	16	4	9/10	46	30	
						45	
						55	
						75	
6	20	25	5	14/15	17	35	
						55	
						75	
						95	
6	20	25	5	14/15	22	20	
						35	
						40	
						45	
						50	
						55	
						65	
						70	
						90	
						110	

K	d1	d2	I	D	L	L1	€
6	20	25	5	14/15	27	20	
						35	
						40	
						45	
						55	
						65	
						85	
						105	
6	20	25	5	14/15	36	20	
						35	
						40	
						45	
						55	
						65	
						75	
						95	
6	20	25	5	14/15	46	20	
						35	
						45	
						65	
						85	
						105	
6	20	25	5	14/15	56	20	
						35	
						55	
						75	
						95	
6	20	25	5	14/15	66	55	
						65	
						95	
6	20	25	5	14/15	76	55	
						95	
6	20	25	5	14/15	86	55	
						95	
6	20	25	5	14/15	96	55	
						95	

# N 01

## Guide Pillar



Ordering-Example:

1 Piece N01 Ø18/22/20

3 Pieces N01 Ø20/22/20

Special Sizes Available On Request

Material: 1.7139 ca. 700HV

K	d1	d2	I	D	L	L1	€
6	26	31	7	18/20	22	20	
						35	
						40	
						45	
						50	
						55	
						60	
						65	
						70	
						80	
						85	
						115	
6	26	31	7	18/20	27	20	
						35	
						40	
						45	
						50	
						55	
						60	
						65	
						70	
						80	
						85	
						105	
						125	
6	26	31	7	18/20	36	20	
						35	
						40	
						45	
						50	
						55	
						60	
						65	
						70	
						75	
						80	
						95	
						115	
						135	

K	d1	d2	I	D	L	L1	€
6	26	31	7	18/20	46	20	
						45	
						65	
						85	
						105	
						135	
						165	
6	26	31	7	18/20	56	20	
						35	
						55	
						75	
						95	
6	26	31	7	18/20	66	55	
						75	
						95	
6	26	31	7	18/20	76	55	
						75	
						95	
6	26	31	7	18/20	86	55	
						75	
						95	
6	26	31	7	18/20	96	55	
						95	
6	26	31	7	18/20	116	115	
6	30	35	7	22/24	27	25	
						45	
						50	
						60	
						65	
						70	
						80	
						85	
						105	
						125	
						165	

# N 01

## Guide Pillar

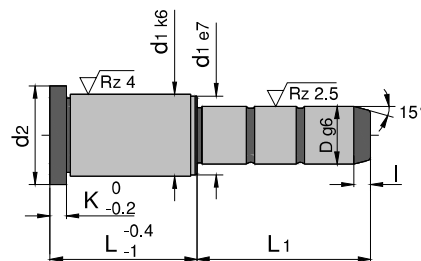
Ordering-Example:

1 Piece N01 Ø22/36/25

3 Pieces N01 Ø24/36/25

Special Sizes Available On Request

Material: 1.7139 ca. 700HV



K	d1	d2	I	D	L	L1	€
6	30	35	7	22/24	36	25	
						45	
						50	
						55	
						60	
						70	
						75	
						80	
						95	
						115	
						135	
						165	
6	30	35	7	22/24	46	25	
						45	
						50	
						60	
						65	
						70	
						80	
						85	
						105	
						125	
						165	
6	30	35	7	22/24	56	25	
						45	
						55	
						75	
						95	
						115	
						165	
6	30	35	7	22/24	66	55	
						75	
						95	

K	d1	d2	I	D	L	L1	€
6	30	35	7	22/24	76	25	
						45	
						55	
						75	
						95	
						115	
6	30	35	7	22/24	86	55	
						75	
						95	
6	30	35	7	22/24	96	55	
						75	
						95	
6	30	35	7	22/24	116	75	
						115	
						155	
6	30	35	7	22/24	136	135	
6	42	47	7	30/32	27	45	
						65	
						105	
						165	
6	42	47	7	30/32	36	55	
						75	
						95	
						115	
						155	
6	42	47	7	30/32	46	45	
						65	
						85	
						105	
						125	
						165	

# N 01

## Guide Pillar

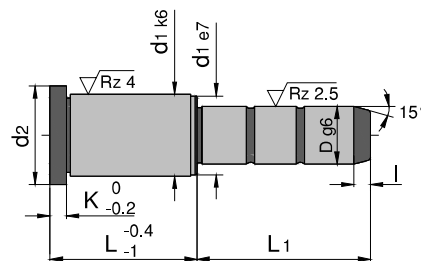
Ordering-Example:

1 Piece N01 Ø30/56/55

3 Pieces N01 Ø32/56/55

Special Sizes Available On Request

Material: 1.7139 ca. 700HV

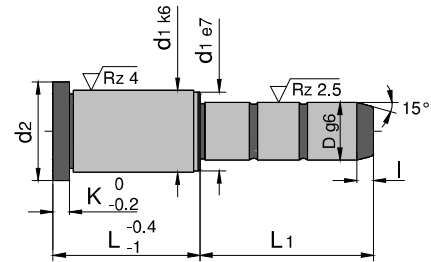


K	d1	d2	I	D	L	L1	€
6	42	47	7	30/32	56	55	
						75	
						95	
						115	
						135	
						175	
6	42	47	7	30/32	66	55	
						75	
						95	
						115	
						135	
						175	
6	42	47	7	30/32	76	55	
						75	
						95	
						115	
						155	
6	42	47	7	30/32	86	55	
						75	
						95	
						115	
						155	
6	42	47	7	30/32	96	55	
						75	
						95	
						115	
						155	
6	42	47	7	30/32	116	75	
						115	
						155	
6	42	47	7	30/32	136	95	
						115	
						155	
6	42	47	7	30/32	156	115	
						155	

K	d1	d2	I	D	L	L1	€
6	42	47	7	30/32	176	135	
						175	
6	42	47	7	30/32	196	155	
						195	
10	54	59	10	40/42	56	75	
						115	
						155	
						195	
10	54	59	10	40/42	66	75	
						135	
10	54	59	10	40/42	76	75	
						115	
						175	
10	54	59	10	40/42	86	75	
						135	
10	54	59	10	40/42	96	75	
						115	
						155	
10	54	59	10	40/42	116	95	
						135	
						195	
10	54	59	10	40/42	136	95	
						135	
						215	
10	54	59	10	40/42	156	115	
						155	
						215	
10	54	59	10	40/42	176	135	
						155	
						175	

# N 01

## Guide Pillar



Ordering-Example:

1 Piece N01 Ø40/196/155

3 Pieces N01 Ø42/196/155

Special Sizes Available On Request

Material: 1.7139 ca. 700HV

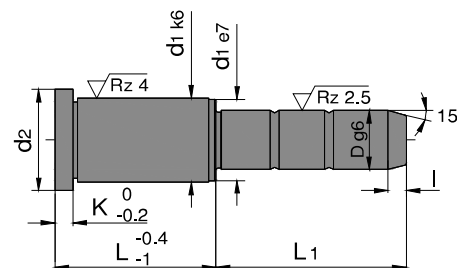
K	d1	d2	l	D	L	L1	€
10	54	59	10	40/42	196	155	
						195	
						235	
10	54	59	10	40/42	246	165	
						245	
10	66	71	10	50/52	96	115	
						155	
						195	
10	66	71	10	50/52	116	135	
						155	
						195	
10	66	71	10	50/52	136	135	
						155	
						195	
10	66	71	10	50/52	156	155	
						195	
						235	
10	66	71	10	50/52	196	175	
						195	
						235	
20	80	86	10	60/62	96	115	
						155	
						195	
20	80	86	10	60/62	116	135	
						155	
						195	
20	80	86	10	60/62	136	135	
						155	
						195	

K	d1	d2	l	D	L	L1	€
20	80	86	10	60/62	156	155	
						195	
						235	
20	80	86	10	60/62	196	175	
						195	
						235	
20	80	86	10	60/62	246	195	
						235	
						275	
						315	



# N 011

**Guide Pillar With DLC Coating**  
**Delivery Time: 10 - 12 Working Days**



Ordering-Example:

1 Piece N011 Ø 9/12/45

3 Pieces N011 Ø10/12/45

**New**

Special Sizes Available On Request

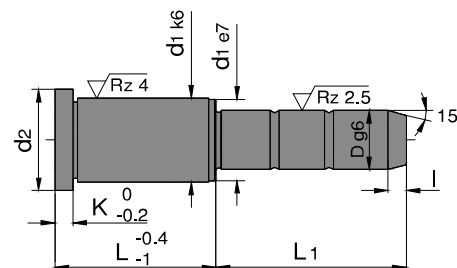
Material: 1.7139 ca. 700HV

K	d1	d2	I	D	L	L1	€
3	14	16	4	9/10	12	45	
3	14	16	4	9/10	17	20	
						30	
						35	
3	14	16	4	9/10	22	25	
						35	
						55	
3	14	16	4	9/10	27	25	
						30	
						35	
						45	
						50	
3	14	16	4	9/10	36	25	
						35	
						45	
3	14	16	4	9/10	46	30	
						45	
						55	
						75	
6	20	25	5	14/15	17	35	
						55	
						75	
						95	
6	20	25	5	14/15	22	20	
						35	
						40	
						45	
						50	
						55	
						65	
						70	
						90	
						110	

K	d1	d2	I	D	L	L1	€
6	20	25	5	14/15	27	20	
						35	
						40	
						45	
						55	
						65	
						85	
						105	
6	20	25	5	14/15	36	20	
						35	
						40	
						45	
						55	
						65	
						75	
						95	
6	20	25	5	14/15	46	20	
						35	
						45	
						65	
						85	
						105	
6	20	25	5	14/15	56	20	
						35	
						55	
						75	
						95	
6	20	25	5	14/15	66	55	
						65	
						95	
6	20	25	5	14/15	76	55	
						95	
6	20	25	5	14/15	86	55	
						95	
6	20	25	5	14/15	96	55	
						95	

# N 011

**Guide Pillar With DLC Coating**  
**Delivery Time: 10 - 12 Working Days**



Ordering-Example:

1 Piece N011 Ø18/22/20

3 Pieces N011 Ø20/22/20

**New**

Special Sizes Available On Request

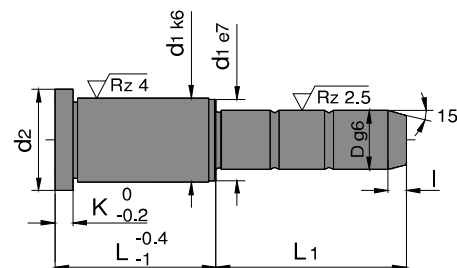
Material: 1.7139 ca. 700HV

K	d1	d2	I	D	L	L1	€
6	26	31	7	18/20	22	20	
						35	
						40	
						45	
						50	
						55	
						60	
						65	
						70	
						80	
						85	
						115	
6	26	31	7	18/20	27	20	
						35	
						40	
						45	
						50	
						55	
						60	
						65	
						70	
						80	
						85	
						105	
						125	
6	26	31	7	18/20	36	20	
						35	
						40	
						45	
						50	
						55	
						60	
						65	
						70	
						75	
						80	
						95	
						115	
						135	

K	d1	d2	I	D	L	L1	€
6	26	31	7	18/20	46	20	
						45	
						65	
						85	
						105	
						135	
						165	
6	26	31	7	18/20	56	20	
						35	
						55	
						75	
						95	
6	26	31	7	18/20	66	55	
						75	
						95	
6	26	31	7	18/20	76	55	
						75	
						95	
6	26	31	7	18/20	86	55	
						75	
						95	
6	26	31	7	18/20	96	55	
						95	
6	26	31	7	18/20	116	115	
6	30	35	7	22/24	27	25	
						45	
						50	
						60	
						65	
						70	
						80	
						85	
						105	
						125	
						165	

# N 011

**Guide Pillar With DLC Coating**  
**Delivery Time: 10 - 12 Working Days**



Ordering-Example:

1 Piece N011 Ø22/36/25

3 Pieces N011 Ø24/36/25

**New**

Special Sizes Available On Request

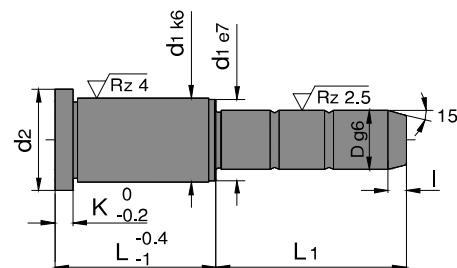
Material: 1.7139 ca. 700HV

K	d1	d2	I	D	L	L1	€
6	30	35	7	22/24	36	25	
						45	
						50	
						55	
						60	
						70	
						75	
						80	
						95	
						115	
						135	
						165	
6	30	35	7	22/24	46	25	
						45	
						50	
						60	
						65	
						70	
						80	
						85	
						105	
						125	
						165	
6	30	35	7	22/24	56	25	
						45	
						55	
						75	
						95	
						115	
						165	
6	30	35	7	22/24	66	55	
						75	
						95	

K	d1	d2	I	D	L	L1	€
6	30	35	7	22/24	76	25	
						45	
						55	
						75	
						95	
6	30	35	7	22/24	86	55	
						75	
						95	
6	30	35	7	22/24	96	55	
						75	
						95	
6	30	35	7	22/24	116	75	
						115	
						155	
6	30	35	7	22/24	136	135	
6	42	47	7	30/32	27	45	
						65	
						105	
						165	
6	42	47	7	30/32	36	55	
						75	
						95	
						115	
						155	
6	42	47	7	30/32	46	45	
						65	
						85	
						105	
						125	
						165	

# N 011

**Guide Pillar With DLC Coating**  
**Delivery Time: 10 - 12 Working Days**



Ordering-Example:

1 Piece N011 Ø30/56/55

3 Pieces N011 Ø32/56/55

**New**

Special Sizes Available On Request

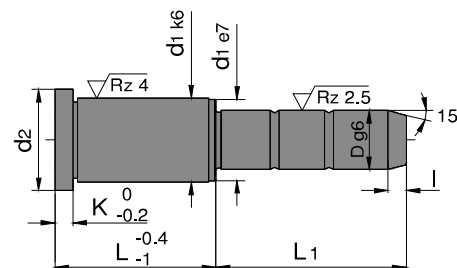
Material: 1.7139 ca. 700HV

K	d1	d2	I	D	L	L1	€
6	42	47	7	30/32	56	55	
						75	
						95	
						115	
						135	
						175	
6	42	47	7	30/32	66	55	
						75	
						95	
						115	
						135	
						175	
6	42	47	7	30/32	76	55	
						75	
						95	
						115	
						155	
6	42	47	7	30/32	86	55	
						75	
						95	
						115	
						155	
6	42	47	7	30/32	96	55	
						75	
						95	
						115	
						155	
6	42	47	7	30/32	116	75	
						115	
						155	
6	42	47	7	30/32	136	95	
						115	
						155	
6	42	47	7	30/32	156	115	
						155	

K	d1	d2	I	D	L	L1	€
6	42	47	7	30/32	176	135	
						175	
6	42	47	7	30/32	196	155	
						195	
10	54	59	10	40/42	56	75	
						115	
						155	
						195	
10	54	59	10	40/42	66	75	
						135	
10	54	59	10	40/42	76	75	
						115	
						175	
10	54	59	10	40/42	86	75	
						135	
10	54	59	10	40/42	96	75	
						115	
						155	
10	54	59	10	40/42	116	95	
						135	
						195	
10	54	59	10	40/42	136	95	
						135	
						215	
10	54	59	10	40/42	156	115	
						155	
						215	
10	54	59	10	40/42	176	135	
						155	
						175	

# N 011

**Guide Pillar With DLC Coating**  
**Delivery Time: 10 - 12 Working Days**



Ordering-Example:

1 Piece N011 Ø40/196/155

3 Pieces N011 Ø42/196/155

**New**

Special Sizes Available On Request

Material: 1.7139 ca. 700HV

K	d1	d2	I	D	L	L1	€
10	54	59	10	40/42	196	155	
						195	
						235	
10	54	59	10	40/42	246	165	
						245	
10	66	71	10	50/52	96	115	
						155	
						195	
10	66	71	10	50/52	116	135	
						155	
						195	
10	66	71	10	50/52	136	135	
						155	
						195	
10	66	71	10	50/52	156	155	
						195	
						235	
10	66	71	10	50/52	196	175	
						195	
						235	
20	80	86	10	60/62	96	115	
						155	
						195	
20	80	86	10	60/62	116	135	
						155	
						195	
20	80	86	10	60/62	136	135	
						155	
						195	

K	d1	d2	I	D	L	L1	€
20	80	86	10	60/62	156	155	
						195	
						235	
20	80	86	10	60/62	196	175	
						195	
						235	
20	80	86	10	60/62	246	195	
						235	
						275	
						315	

# N 02

## Guide Pillar With Centring Collar

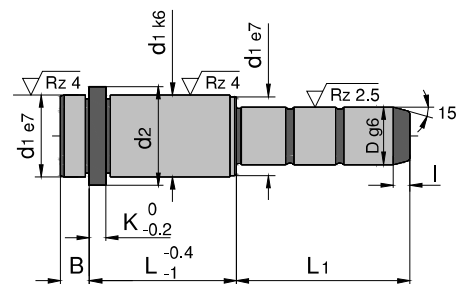
Ordering-Example:

1 Piece N02 Ø 9/12/25

3 Pieces N02 Ø10/12/25

Special Sizes Available On Request

Material: 1.7139 ca. 700HV



B	K	d1	d2	l	D	L	L1	€
3	3	14	16	4	9/10	12	25	
							45	
							65	
3	3	14	16	4	9/10	17	20	
							25	
							30	
							35	
							50	
							55	
							70	
							75	
3	3	14	16	4	9/10	22	25	
							35	
							55	
							75	
							95	
3	3	14	16	4	9/10	27	20	
							25	
							30	
							35	
							45	
							50	
							70	
							90	
3	3	14	16	4	9/10	36	25	
							35	
							45	
							55	
							65	
							85	

B	K	d1	d2	l	D	L	L1	€
3	3	14	16	4	9/10	46	30	
							35	
							45	
							55	
							70	
3	3	14	16	4	9/10	56	35	
							60	
9	6	20	25	5	14/15	17	35	
							55	
							75	
							95	
9	6	20	25	5	14/15	22	25	
							30	
							35	
							50	
							70	
							90	
							110	
							125	
							150	
9	6	20	25	5	14/15	27	25	
							30	
							45	
							65	
							85	
							95	
							105	
							115	
							125	
							145	
							165	

# N 02

## Guide Pillar With Centring Collar

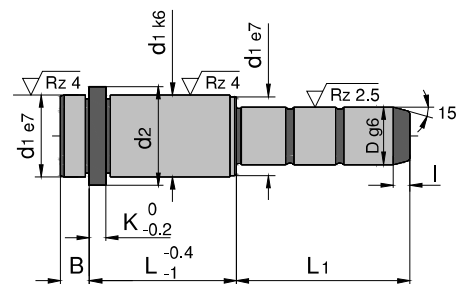
Ordering-Example:

1 Piece N02 Ø14/36/35

3 Pieces N02 Ø15/36/35

Special Sizes Available On Request

Material: 1.7139 ca. 700HV



B	K	d1	d2	l	D	L	L1	€
9	6	20	25	5	14/15	36	35	
							55	
							75	
							95	
							115	
							125	
							155	
9	6	20	25	5	14/15	46	35	
							45	
							65	
							85	
							105	
							125	
							145	
9	6	20	25	5	14/15	56	35	
							55	
							75	
							95	
							115	
							135	
9	6	20	25	5	14/15	66	55	
							65	
							95	
							125	
9	6	20	25	5	14/15	76	55	
							95	
9	6	20	25	5	14/15	86	55	
							75	
							95	
9	6	20	25	5	14/15	96	55	
							95	

B	K	d1	d2	l	D	L	L1	€
9	6	20	25	5	14/15	116	75	
9	6	26	31	7	18/20	17	35	
							55	
							75	
							120	
9	6	26	31	7	18/20	22	35	
							45	
							65	
							85	
							115	
9	6	26	31	7	18/20	27	35	
							45	
							65	
							85	
							105	
							125	
							165	
							225	
							245	
9	6	26	31	7	18/20	36	35	
							55	
							75	
							95	
							115	
							135	
							165	
							225	
							255	

# N 02

## Guide Pillar With Centring Collar

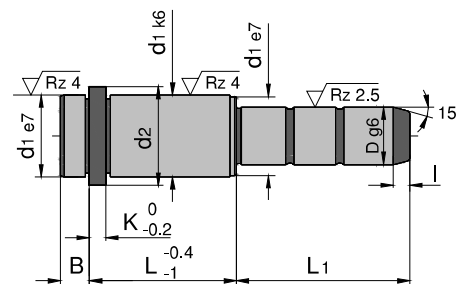
Ordering-Example:

1 Piece N02 Ø18/46/35

3 Pieces N02 Ø20/46/35

Special Sizes Available On Request

Material: 1.7139 ca. 700HV



B	K	d1	d2	l	D	L	L1	€
9	6	26	31	7	18/20	46	35	
							45	
							65	
							85	
							105	
							115	
							135	
							165	
							245	
9	6	26	31	7	18/20	56	35	
							55	
							75	
							95	
							155	
9	6	26	31	7	18/20	66	35	
							55	
							75	
							95	
							145	
9	6	26	31	7	18/20	76	55	
							75	
							95	
							135	
9	6	26	31	7	18/20	86	55	
							75	
							95	
							125	
9	6	26	31	7	18/20	96	55	
							95	
9	6	26	31	7	18/20	116	75	
							115	
9	6	26	31	7	18/20	136	135	

B	K	d1	d2	l	D	L	L1	€
9	6	30	35	7	22/24	17	35	
							55	
							75	
9	6	30	35	7	22/24	22	35	
							55	
							75	
							105	
							130	
9	6	30	35	7	22/24	27	35	
							45	
							55	
							65	
							75	
							85	
							95	
							105	
							115	
							125	
							155	
							165	
							205	
							245	
							285	
9	6	30	35	7	22/24	36	35	
							55	
							75	
							95	
							115	
							135	
							155	
							165	
							205	
							245	
							285	



# N 02

## Guide Pillar With Centring Collar

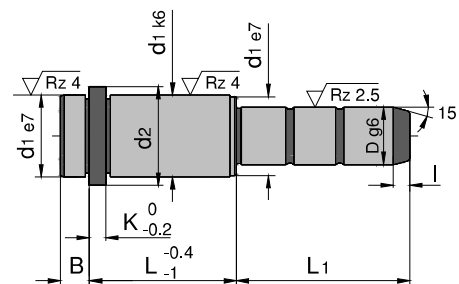
Ordering-Example:

1 Piece N02 Ø22/46/35

3 Pieces N02 Ø24/46/35

Special Sizes Available On Request

Material: 1.7139 ca. 700HV



B	K	d1	d2	l	D	L	L1	€
9	6	30	35	7	22/24	46	35	
							45	
							65	
							85	
							105	
							125	
							155	
							165	
							205	
9	6	30	35	7	22/24	56	35	
							55	
							75	
							95	
							115	
							165	
							205	
9	6	30	35	7	22/24	66	35	
							55	
							75	
							95	
							155	
9	6	30	35	7	22/24	76	55	
							75	
							95	
							115	
							135	
							145	
							155	
9	6	30	35	7	22/24	86	55	
							75	
							95	
							135	
							155	
							195	

B	K	d1	d2	l	D	L	L1	€
9	6	30	35	7	22/24	96	55	
							75	
							95	
							125	
9	6	30	35	7	22/24	116	75	
							115	
							135	
							155	
9	6	30	35	7	22/24	136	95	
							135	
9	6	30	35	7	22/24	156	155	
9	6	42	47	7	30/32	27	45	
							65	
							105	
							165	
							185	
							245	
							285	
9	6	42	47	7	30/32	36	55	
							75	
							95	
							115	
							155	
							245	
							285	

# N 02

## Guide Pillar With Centring Collar

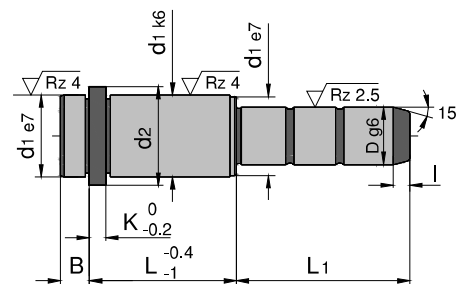
Ordering-Example:

1 Piece N02 Ø30/46/45

3 Pieces N02 Ø32/46/45

Special Sizes Available On Request

Material: 1.7139 ca. 700HV



B	K	d1	d2	l	D	L	L1	€
9	6	42	47	7	30/32	46	45	
							65	
							75	
							85	
							95	
							105	
							125	
							165	
							245	
							285	
9	6	42	47	7	30/32	56	55	
							75	
							95	
							115	
							135	
							155	
							175	
							245	
							295	
9	6	42	47	7	30/32	66	55	
							75	
							95	
							115	
							135	
							155	
							175	
							245	
							275	
							295	
9	6	42	47	7	30/32	76	55	
							75	
							95	
							115	
							155	
							225	
							235	

B	K	d1	d2	l	D	L	L1	€
9	6	42	47	7	30/32	86	55	
							75	
							95	
							115	
							155	
							225	
9	6	42	47	7	30/32	96	55	
							75	
							95	
							115	
							155	
9	6	42	47	7	30/32	116	75	
							115	
							155	
9	6	42	47	7	30/32	136	95	
							115	
							155	
9	6	42	47	7	30/32	156	115	
							155	
9	6	42	47	7	30/32	176	115	
							135	
							155	
							175	
							195	
9	6	42	47	7	30/32	196	155	
							195	

# N 02

## Guide Pillar With Centring Collar

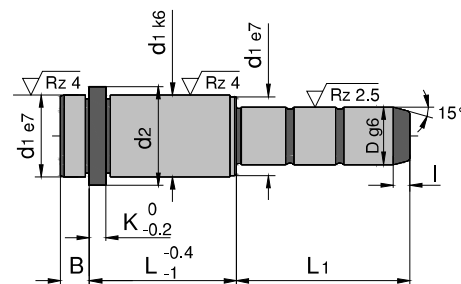
Ordering-Example:

1 Piece N02 Ø40/36/75

3 Pieces N02 Ø42/36/75

Special Sizes Available On Request

Material: 1.7139 ca. 700HV



B	K	d1	d2	l	D	L	L1	€
12	10	54	59	10	40/42	36	75	
							115	
12	10	54	59	10	40/42	46	95	
							165	
12	10	54	59	10	40/42	56	75	
							95	
							115	
							155	
							195	
12	10	54	59	10	40/42	66	75	
							135	
12	10	54	59	10	40/42	76	75	
							95	
							115	
							155	
							175	
12	10	54	59	10	40/42	86	75	
							135	
12	10	54	59	10	40/42	96	75	
							95	
							115	
							155	
							195	

B	K	d1	d2	l	D	L	L1	€
12	10	54	59	10	40/42	116	95	
							115	
							135	
							155	
							195	
12	10	54	59	10	40/42	136	95	
							115	
							135	
							155	
							195	
							215	
12	10	54	59	10	40/42	156	115	
							155	
							195	
							215	
12	10	54	59	10	40/42	176	135	
							155	
							175	
							195	
12	10	54	59	10	40/42	196	115	
							155	
							195	
							235	
12	10	54	59	10	40/42	246	165	
							245	

# N 021

Guide Pillar With Centring Collar  
With DLC Coating

Delivery Time: 10 - 12 Working Days

Ordering-Example:

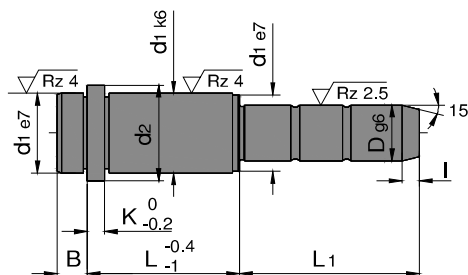
1 Piece N021 Ø 9/12/25

3 Pieces N021 Ø10/12/25

**New**

Special Sizes Available On Request

Material: 1.7139 ca. 700HV



B	K	d1	d2	l	D	L	L1	€
3	3	14	16	4	9/10	12	25	
							45	
							65	
3	3	14	16	4	9/10	17	20	
							25	
							30	
							35	
							50	
							55	
							70	
							75	
3	3	14	16	4	9/10	22	25	
							35	
							55	
							75	
							95	
3	3	14	16	4	9/10	27	20	
							25	
							30	
							35	
							45	
							50	
							70	
							90	
3	3	14	16	4	9/10	36	25	
							35	
							45	
							55	
							65	
							85	

B	K	d1	d2	l	D	L	L1	€
3	3	14	16	4	9/10	46	30	
							35	
							45	
							55	
							70	
3	3	14	16	4	9/10	56	35	
							60	
9	6	20	25	5	14/15	17	35	
							55	
							75	
							95	
9	6	20	25	5	14/15	22	25	
							30	
							35	
							50	
							70	
							90	
							110	
							125	
							150	
9	6	20	25	5	14/15	27	25	
							30	
							45	
							65	
							85	
							95	
							105	
							115	
							125	
							145	
							165	

# N 021

## Guide Pillar With Centring Collar With DLC Coating

Delivery Time: 10 - 12 Working Days

Ordering-Example:

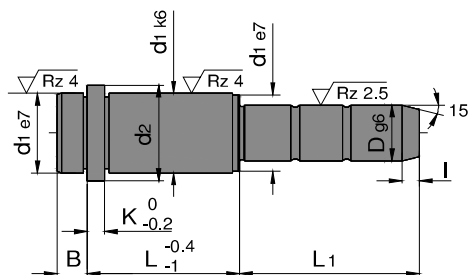
1 Piece N021 Ø14/36/35

3 Pieces N021 Ø15/36/35

**New**

Special Sizes Available On Request

Material: 1.7139 ca. 700HV



B	K	d1	d2	l	D	L	L1	€
9	6	20	25	5	14/15	36	35	
							55	
							75	
							95	
							115	
							125	
							155	
9	6	20	25	5	14/15	46	35	
							45	
							65	
							85	
							105	
							125	
							145	
9	6	20	25	5	14/15	56	35	
							55	
							75	
							95	
							115	
							135	
9	6	20	25	5	14/15	66	55	
							65	
							95	
							125	
9	6	20	25	5	14/15	76	55	
							95	
9	6	20	25	5	14/15	86	55	
							75	
							95	
9	6	20	25	5	14/15	96	55	
							95	

B	K	d1	d2	l	D	L	L1	€
9	6	20	25	5	14/15	116	75	
9	6	26	31	7	18/20	17	35	
							55	
							75	
							120	
9	6	26	31	7	18/20	22	35	
							45	
							65	
							85	
							115	
9	6	26	31	7	18/20	27	35	
							45	
							65	
							85	
							105	
							125	
							165	
							225	
							245	
9	6	26	31	7	18/20	36	35	
							55	
							75	
							95	
							115	
							135	
							165	
							225	
							255	

# N 021

Guide Pillar With Centring Collar  
With DLC Coating

Delivery Time: 10 - 12 Working Days

Ordering-Example:

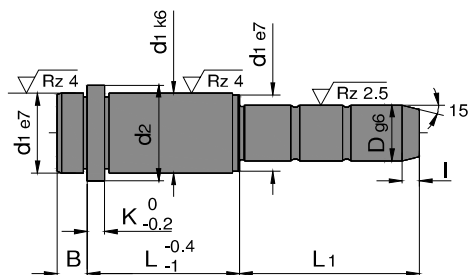
1 Piece N021 Ø18/46/35

3 Pieces N021 Ø20/46/35

**New**

Special Sizes Available On Request

Material: 1.7139 ca. 700HV



B	K	d1	d2	I	D	L	L1	€
9	6	26	31	7	18/20	46	35	
							45	
							65	
							85	
							105	
							115	
							135	
							165	
							245	
9	6	26	31	7	18/20	56	35	
							55	
							75	
							95	
							155	
9	6	26	31	7	18/20	66	35	
							55	
							75	
							95	
							145	
9	6	26	31	7	18/20	76	55	
							75	
							95	
							135	
9	6	26	31	7	18/20	86	55	
							75	
							95	
							125	
9	6	26	31	7	18/20	96	55	
							95	
9	6	26	31	7	18/20	116	75	
							115	
9	6	26	31	7	18/20	136	135	

B	K	d1	d2	I	D	L	L1	€
9	6	30	35	7	22/24	17	35	
							55	
							75	
9	6	30	35	7	22/24	22	35	
							55	
							75	
							105	
							130	
9	6	30	35	7	22/24	27	35	
							45	
							55	
							65	
							75	
							85	
							95	
							105	
							115	
							125	
							155	
							165	
							205	
							245	
							285	
9	6	30	35	7	22/24	36	35	
							55	
							75	
							95	
							115	
							135	
							155	
							165	
							205	
							245	
							285	

# N 021

## Guide Pillar With Centring Collar With DLC Coating

Delivery Time: 10 - 12 Working Days

Ordering-Example:

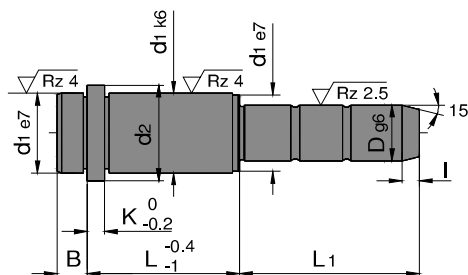
1 Piece N021 Ø22/46/35

3 Pieces N021 Ø24/46/35

**New**

Special Sizes Available On Request

Material: 1.7139 ca. 700HV



B	K	d1	d2	l	D	L	L1	€
9	6	30	35	7	22/24	46	35	
							45	
							65	
							85	
							105	
							125	
							155	
							165	
							205	
9	6	30	35	7	22/24	56	35	
							55	
							75	
							95	
							115	
							165	
							205	
9	6	30	35	7	22/24	66	35	
							55	
							75	
							95	
							155	
9	6	30	35	7	22/24	76	55	
							75	
							95	
							115	
							135	
							145	
							155	
9	6	30	35	7	22/24	86	55	
							75	
							95	
							135	
							155	
							195	

B	K	d1	d2	l	D	L	L1	€
9	6	30	35	7	22/24	96	55	
							75	
							95	
							125	
9	6	30	35	7	22/24	116	75	
							115	
							135	
							155	
9	6	30	35	7	22/24	156	155	
9	6	42	47	7	30/32	27	45	
							65	
							105	
							165	
							185	
							245	
							285	
9	6	42	47	7	30/32	36	55	
							75	
							95	
							115	
							155	
							245	
							285	

# N 021

## Guide Pillar With Centring Collar With DLC Coating

Delivery Time: 10 - 12 Working Days

Ordering-Example:

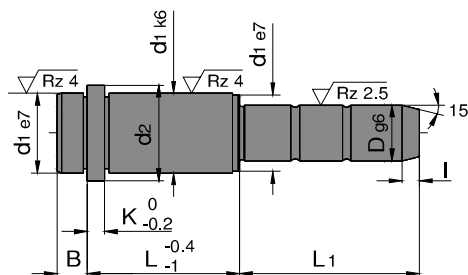
1 Piece N021 Ø30/46/45

3 Pieces N021 Ø32/46/45

**New**

Special Sizes Available On Request

Material: 1.7139 ca. 700HV



B	K	d1	d2	I	D	L	L1	€
9	6	42	47	7	30/32	46	45	
							65	
							75	
							85	
							95	
							105	
							125	
							165	
							245	
							285	
9	6	42	47	7	30/32	56	55	
							75	
							95	
							115	
							135	
							155	
							175	
							245	
							295	
9	6	42	47	7	30/32	66	55	
							75	
							95	
							115	
							135	
							155	
							175	
							245	
							275	
							295	
9	6	42	47	7	30/32	76	55	
							75	
							95	
							115	
							155	
							225	
							235	

B	K	d1	d2	I	D	L	L1	€
9	6	42	47	7	30/32	86	55	
							75	
							95	
							115	
							155	
							225	
9	6	42	47	7	30/32	96	55	
							75	
							95	
							115	
							155	
9	6	42	47	7	30/32	116	75	
							115	
							155	
9	6	42	47	7	30/32	136	95	
							115	
							155	
9	6	42	47	7	30/32	156	115	
							155	
9	6	42	47	7	30/32	176	115	
							135	
							155	
							175	
							195	
9	6	42	47	7	30/32	196	155	
							195	



# N 021

## Guide Pillar With Centring Collar With DLC Coating

Delivery Time: 10 - 12 Working Days

Ordering-Example:

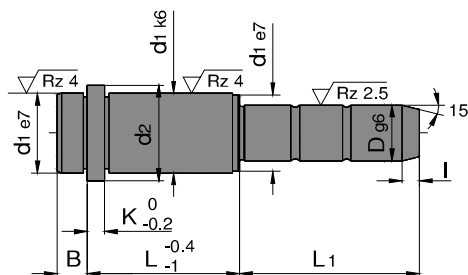
1 Piece N021 Ø40/36/75

3 Pieces N021 Ø42/36/75

**New**

Special Sizes Available On Request

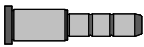




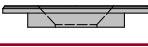





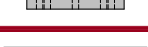

















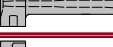

























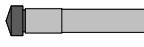















Material: 1.7139 ca. 700HV



B	K	d1	d2	I	D	L	L1	€
12	10	54	59	10	40/42	36	75	
							115	
12	10	54	59	10	40/42	46	95	
							165	
12	10	54	59	10	40/42	56	75	
							95	
							115	
							155	
							195	
12	10	54	59	10	40/42	66	75	
							135	
12	10	54	59	10	40/42	76	75	
							95	
							115	
							155	
							175	
12	10	54	59	10	40/42	86	75	
							135	
12	10	54	59	10	40/42	96	75	
							95	
							115	
							155	
							195	

B	K	d1	d2	I	D	L	L1	€
12	10	54	59	10	40/42	116	95	
							115	
							135	
							155	
							195	
12	10	54	59	10	40/42	136	95	
							115	
							135	
							155	
							195	
							215	
12	10	54	59	10	40/42	156	115	
							155	
							195	
							215	
12	10	54	59	10	40/42	176	135	
							155	
							175	
							195	
12	10	54	59	10	40/42	196	115	
							155	
							195	
							235	
12	10	54	59	10	40/42	246	165	
							245	

## STANDARD PARTS FOR TOOL MAKING AND MOULD CONSTRUCTION

Description	Group	Description	Group	Description	Group
N 01 	1	N 091 	6	N 20 	9
N 011 	1	N 10 	6	N 21 	9
N 02 	1	N 101 	6	N 22 	9
N 021 	1	N 102 	6	N 23 	9
N 03 	2	N 11 	6	N 24 	9
N 035 	Bronze 2	N 12 	6	N 25 	9
N 04 	2	N 121 	6	N 26 	9
N 045 	Bronze 2	N 13 	7	N 30R 	10
N 03W 	2	N 130 	7	N 30 	10
N 04W 	2	N 131 	7	N 31 	R 15,5 t = 1,5 10
N 046 	Bronze 3	N 1310 	7	N 32 	R 40 t = 1,5 10
N 047 	Bronze 3	N 14 	7	N 33 	R 15,5 t = 3 10
N 048 	Bronze 3	N 140 	7	N 34 	R 40 t = 3 10
N 0481 	3	N 15 	7	N 40 	10
N 05 	4	N 135 	7	N 41 	10
N 051 	4	N 1305 	7		
N 06 	4	N 1315 	7		
N 065 	4	N 1320 	7		
N 61 	4	N 145 	7		
N 62 	4	N 155 	7		
N 63 	4	N 165 	7		
N 07 	5	N 166 	7		
N 071 	5	N 167 	7		
N 072 	5	N 16 	8		
N 074 	5	N 161 	8		
N 08 	5	N 17 	8		
N 081 	5	N 18 	8		
N 09 	6	N 19 	9		

# N 03

## Guide Bushes

Ordering-Example:

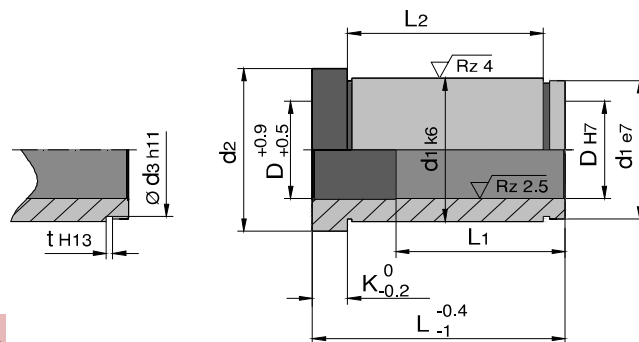
1 Piece N03 Ø 9/9

3 Pieces N03 Ø10/9

**New**

Special Sizes Available On Request

Material: 1.7139 ca. 700HV



K	d1	d2	d3	t	L1	L2	D	L	€
3	14	16	13,4	1,1	-	-	9/10	9	
						5,5		12	
						10,5		17	
						15,5		22	
						20,5		27	
				27		29,5		36	
						39,5		46	
						49,5		56	
						59,5		66	
6	18	23	17	1,3	-	7	12	17	
						12		22	
						17		27	
						26		36	
				36		36		46	
						46		56	
6	20	25	19	1,3	-	-	14/15	12	
						7		17	
						12		22	
						17		27	
						26		36	
						36		46	
				46		46		56	
						56		66	
						66		76	
						76		86	
						86		96	

K	d1	d2	d3	t	L1	L2	D	L	€
6	22	27	21	1,3	-	7	16	17	
						12		22	
						17		27	
						26		36	
						36		46	
					56	66		56	
								76	
6	26	31	24,9	1,3	-	7	18/20	17	
						12		22	
						17		27	
						26		36	
						36		46	
					56	56		66	
						66		76	
						76		86	
						86		96	
						106		116	
6	30	35	28,6	1,6	-	-	22/24	17	
						11		22	
						16		27	
						25		36	
						35		46	
						45		56	
						55		66	
						65		76	
					76	75		86	
						85		96	
						105		116	
						125		136	
						145		156	

# N 03

## Guide Bushes

Ordering-Example:

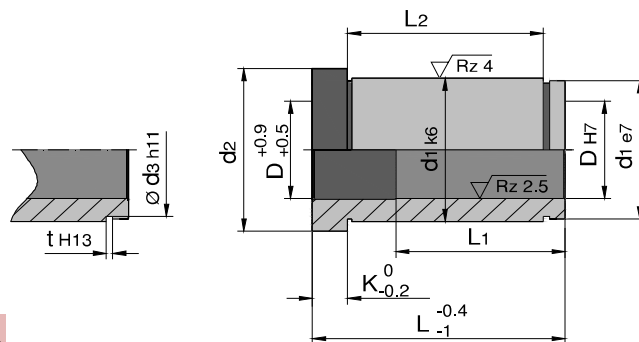
1 Piece N03 Ø30/22

3 Pieces N03 Ø32/22

**New**

Special Sizes Available On Request

Material: 1.7139 ca. 700HV



K	d1	d2	d3	t	L1	L2	D	L	€
6	42	47	39,5	1,85	-	-	30/32	22	
								14	
								27	
								36	
								46	
								56	
								66	
								76	
								86	
								96	
					96			103	
								123	
								143	
								163	
								173	
								183	
								223	
10	54	59	51	2,15	-	18	40/42	36	
								28	
								38	
								48	
								58	
								68	
								78	
								88	
								98	
					116			118	
								138	
								158	
								178	
								198	
								228	

K	d1	d2	d3	t	L1	L2	D	L	€
10	66	71	62	2,65	-	38	50/52	56	
								76	
								96	
								116	
						116		136	
								156	
								176	
								196	
20	80	86	76,5	-	-	28	60/62	56	
								76	
								96	
								116	
								136	
								156	
								176	
								196	
								216	
								246	
20	104	112	-	-	-	-	80	96	
								116	
								136	
								156	
						156		176	
								196	
								216	
								246	

# N 035

## Guide Bushes

### Made Of Bronze

Alternative To Solid Lubricant Bushings

Ordering-Example:

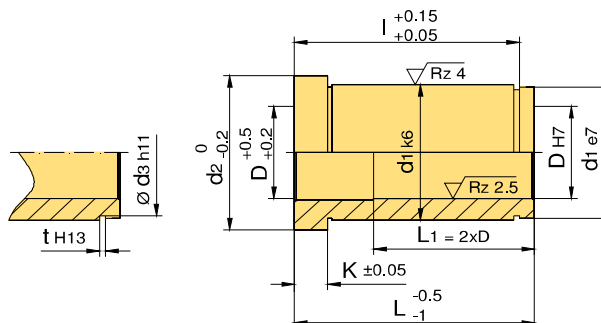
1 Piece N035 Ø 9/12

3 Pieces N035 Ø10/12

Special Sizes Available On Request

t max = 200°C

Material: Bronze

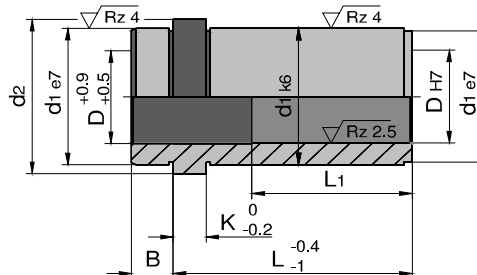


K	d1	d2	d3	t	l	D	L	€
3	14	16	13,4	1,10	9,6	9/10	12	
					14,6		17	
					19,6		22	
					24,6		27	
					33,6		36	
					43,6		46	
					53,6		56	
6	18	23	17,0	1,30	14,3	12	17	
					19,3		22	
					24,3		27	
					33,3		36	
					43,3		46	
					53,3		56	
6	20	25	19,0	1,30	14,3	14/15	17	
					19,3		22	
					24,3		27	
					33,3		36	
					43,3		46	
					53,3		56	
6	22	27	21,0	1,30	19,3	16	22	
					24,3		27	
					33,3		36	
					43,3		46	
					53,3		56	
6	26	31	24,9	1,30	14,3	18/20	17	
					19,3		22	
					24,3		27	
					33,3		36	
					43,3		46	
					53,3		56	
					63,3		66	
					73,3		76	

K	d1	d2	d3	t	l	D	L	€
6	30	35	28,6	1,60	18,6	22/24	22	
					23,6		27	
					32,6		36	
					42,6		46	
					52,6		56	
					62,6		66	
					72,6		76	
					82,6		86	
					92,6		96	
6	42	47	39,5	1,85	21,9	30/32	27	
					30,9		36	
					40,9		46	
					50,9		56	
					60,9		66	
					70,9		76	
					80,9		86	
					90,9		96	
					110,9		116	
10	54	60	51,0	2,15	40,2	40/42	46	
					50,2		56	
					60,2		66	
					70,2		76	
					80,2		86	
					90,2		96	
					110,2		116	
					130,2		136	

# N 04

## Guide Bushes With Centring Collar



Ordering-Example:

1 Piece N04 Ø 9/12

3 Pieces N04 Ø10/12

Special Sizes Available On Request

Material: 1.7139 ca. 700HV

B	K	d1	d2	L1	D	L	€
3	3	14	16	-	9/10	12	
						17	
						22	
						27	
				27		36	
						46	
						56	
						66	
9	6	20	25	-	14/15	17	
						22	
						27	
						36	
						46	
				46		56	
						66	
						76	
						86	
						96	
						116	
9	6	26	31	-	18/20	17	
						22	
						27	
						36	
						46	
				56		56	
						66	
						76	
						86	
						96	
						116	
						136	
9	6	30	35	-	22/24	17	
						22	
						27	
						36	
						46	

B	K	d1	d2	L1	D	L	€
9	6	30	35	-	22/24	56	
						66	
						76	
				76		86	
						96	
						116	
						136	
						156	
9	6	42	47	-	30/32	22	
						27	
						36	
						46	
						56	
						66	
						76	
						86	
						96	
				96		116	
						136	
						156	
						176	
						196	
12	10	54	59	-	40/42	36	
						46	
						56	
						66	
						76	
						86	
						96	
						116	
				116		136	
						156	
						176	
						196	
						216	
						246	

# N 045

## Guide Bushes

### With Centring Collar Made Of Bronze

Alternative To Solid Lubricant Bushings

Ordering-Example:

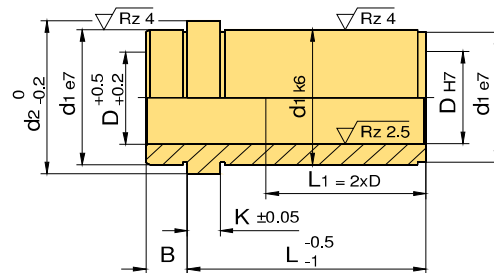
1 Piece N045 Ø 9/12

3 Pieces N045 Ø10/12

Special Sizes Available On Request

t max = 200°C

Material: Bronze

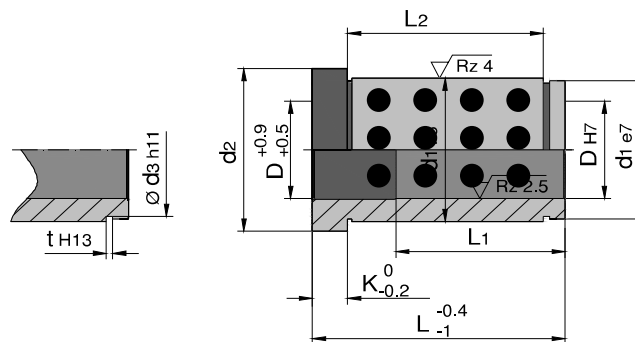


B	K	d1	d2	D	L	€
5	3	14	16	9/10	12	
					17	
					22	
					27	
					36	
					46	
					56	
6	6	20	25	14/15	17	
					22	
					27	
					36	
					46	
					56	
					66	
					76	
8	6	26	31	18/20	17	
					22	
					27	
					36	
					46	
					56	
					66	
					76	
8	6	30	35	22/24	22	
					27	
					36	
					46	
					56	
					66	
					76	
					86	
					96	
					116	

B	K	d1	d2	D	L	€
8	6	42	47	30/32	27	
					36	
					46	
					56	
					66	
					76	
					86	
					96	
					116	
					136	
10	10	54	60	40/42	46	
					56	
					66	
					76	
					86	
					96	
					116	
					136	
					156	
					196	

# N 03W

## Guide Bushes



Ordering-Example:

1 Piece N03 Ø 9/9

3 Pieces N03 Ø10/9

Special Sizes Available On Request

Material: 1.7139 ca. 700HV

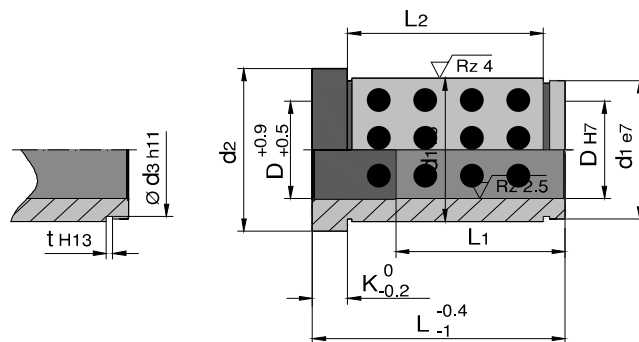
K	d1	d2	d3	t	L1	L2	D	L	€
3	14	16	13,4	1,1	-	-	9/10	9	
						5,5		12	
						10,5		17	
						15,5		22	
						20,5		27	
					27	29,5		36	
						39,5		46	
						49,5		56	
						59,5		66	
6	18	23	17	1,3	-	7	12	17	
						12		22	
						17		27	
						26		36	
					36	36		46	
						46		56	
6	20	25	19	1,3	-	-	14/15	12	
						7		17	
						12		22	
						17		27	
						26		36	
						36		46	
					46	46		56	
						56		66	
						66		76	
						76		86	
						86		96	

K	d1	d2	d3	t	L1	L2	D	L	€
6	22	27	21	1,3	-	7	16	17	
						12		22	
						17		27	
						26		36	
						36		46	
					56	46		56	
						66		76	
6	26	31	24,9	1,3	-	7	18/20	17	
						12		22	
						17		27	
						26		36	
						36		46	
					56	46		56	
						56		66	
						66		76	
						76		86	
						86		96	
						106		116	
6	30	35	28,6	1,6	-	-	22/24	17	
						11		22	
						16		27	
						25		36	
						35		46	
						45		56	
						55		66	
						65		76	
					76	75		86	
						85		96	
						105		116	
						125		136	
						145		156	



# N 03W

## Guide Bushes



Ordering-Example:

1 Piece N03 Ø30/22

3 Pieces N03 Ø32/22

Special Sizes Available On Request

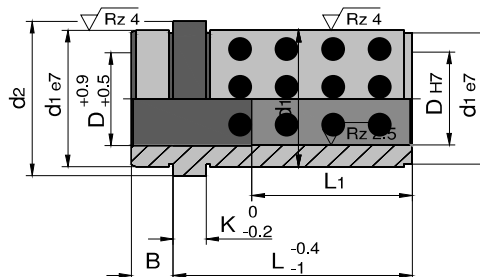
Material: 1.7139 ca. 700HV

K	d1	d2	d3	t	L1	L2	D	L	€
6	42	47	39,5	1,85	-	-	30/32	22	
								14	
								23	
								33	
								43	
								53	
								63	
								73	
								83	
					96	103		116	
						123		136	
						143		156	
						163		176	
						173		186	
						183		196	
						223		236	
10	54	59	51	2,15	-	18	40/42	36	
								28	
								38	
								48	
								58	
								68	
								78	
								88	
								98	
					116	118		116	
						138		136	
						158		156	
						178		176	
						198		196	
						228		246	

K	d1	d2	d3	t	L1	L2	D	L	€
10	66	71	62	2,65	-	38	50/52	56	
								76	
								96	
								116	
								136	
								156	
								176	
								196	
20	80	86	76,5	-	-	28	60/62	56	
								76	
								96	
								116	
								136	
								156	
								176	
								196	
								216	
								246	
20	104	112	-	-	-	-	80	96	
								116	
								136	
								156	
								176	
								196	
								216	
								246	

# N 04W

## Guide Bushes With Centring Collar



Ordering-Example:

1 Piece N04 Ø 9/12

3 Pieces N04 Ø10/12

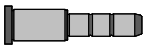




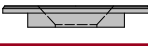
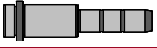


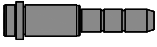












































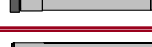
















Special Sizes Available On Request

Material: 1.7139 ca. 700HV

B	K	d1	d2	L1	D	L	€
3	3	14	16	-	9/10	12	
						17	
						22	
						27	
				27		36	
						46	
						56	
						66	
9	6	20	25	-	14/15	17	
						22	
						27	
						36	
						46	
				46		56	
						66	
						76	
						86	
						96	
						116	
9	6	26	31	-	18/20	17	
						22	
						27	
						36	
						46	
				56		56	
						66	
						76	
						86	
						96	
						116	
						136	
9	6	30	35	-	22/24	17	
						22	
						27	
						36	
						46	

B	K	d1	d2	L1	D	L	€
9	6	30	35	-	22/24	56	
						66	
						76	
				76		86	
						96	
						116	
						136	
						156	
9	6	42	47	-	30/32	22	
						27	
						36	
						46	
						56	
						66	
						76	
						86	
						96	
				96		116	
						136	
						156	
						176	
						196	
12	10	54	59	-	40/42	36	
						46	
						56	
						66	
						76	
						86	
						96	
						116	
				116		136	
						156	
						176	
						196	
						216	
						246	

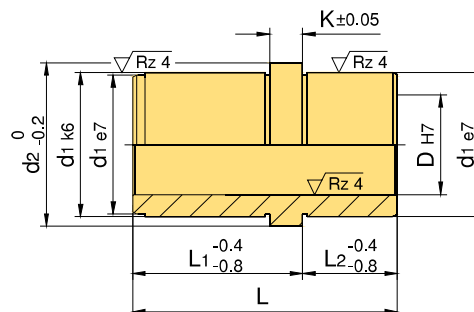
## STANDARD PARTS FOR TOOL MAKING AND MOULD CONSTRUCTION

Description	Group	Description	Group	Description	Group
<b>N 01</b> 	1	<b>N 091</b> 	6	<b>N 20</b> 	9
<b>N 011</b> 	1	<b>N 10</b> 	6	<b>N 21</b> 	9
<b>N 02</b> 	1	<b>N 101</b> 	6	<b>N 22</b> 	9
<b>N 021</b> 	1	<b>N 102</b> 	6	<b>N 23</b> 	9
<b>N 03</b> 	2	<b>N 11</b> 	6	<b>N 24</b> 	9
<b>N 035</b> 	Bronze 2	<b>N 12</b> 	6	<b>N 25</b> 	9
<b>N 04</b> 	2	<b>N 121</b> 	6	<b>N 26</b> 	9
<b>N 045</b> 	Bronze 2	<b>N 13</b> 	7	<b>N 30R</b> 	10
<b>N 03W</b> 	2	<b>N 130</b> 	7	<b>N 30</b> 	10
<b>N 04W</b> 	2	<b>N 131</b> 	7	<b>N 31</b> 	R 15,5 t = 1,5 10
<b>N 046</b> 	Bronze 3	<b>N 1310</b> 	7	<b>N 32</b> 	R 40 t = 1,5 10
<b>N 047</b> 	Bronze 3	<b>N 14</b> 	7	<b>N 33</b> 	R 15,5 t = 3 10
<b>N 048</b> 	Bronze 3	<b>N 140</b> 	7	<b>N 34</b> 	R 40 t = 3 10
<b>N 0481</b> 	3	<b>N 15</b> 	7	<b>N 40</b> 	10
<b>N 05</b> 	4	<b>N 135</b> 	7	<b>N 41</b> 	10
<b>N 051</b> 	4	<b>N 1305</b> 	7		
<b>N 06</b> 	4	<b>N 1315</b> 	7		
<b>N 065</b> 	4	<b>N 1320</b> 	7		
<b>N 61</b> 	4	<b>N 145</b> 	7		
<b>N 62</b> 	4	<b>N 155</b> 	7		
<b>N 63</b> 	4	<b>N 165</b> 	7		
<b>N 07</b> 	5	<b>N 166</b> 	7		
<b>N 071</b> 	5	<b>N 167</b> 	7		
<b>N 072</b> 	5	<b>N 16</b> 	8		
<b>N 074</b> 	5	<b>N 161</b> 	8		
<b>N 08</b> 	5	<b>N 17</b> 	8		
<b>N 081</b> 	5	<b>N 18</b> 	8		
<b>N 09</b> 	6	<b>N 19</b> 	9		

# N 046

## Guide Bushes Made Of Bronze

Ejector For Run



Ordering-Example:

1 Piece N046 Ø14/17

1 Piece N046 Ø15/17

Special Sizes Available On Request

t max = 200°C

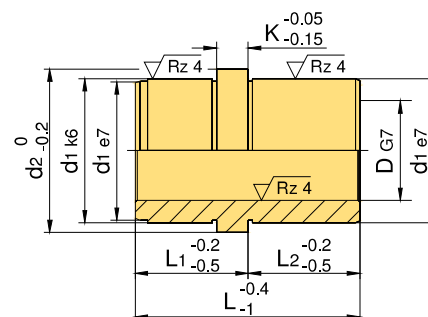
Material: Bronze

K	d1	d2	L	L2	D	L1	€
6	20	25	24,3	8,5	14/15	17	
6	26	31	37,3	16,5	18/20	22	
6	30	35	47,3	21,5	22/24	27	
6	42	46	61,3	26,5	30/32	36	

# N 047

## Guide Bushes Made Of Bronze

Ejector For Run



Ordering-Example:

1 Piece N047 Ø12/6

Special Sizes Available On Request

t max = 200°C

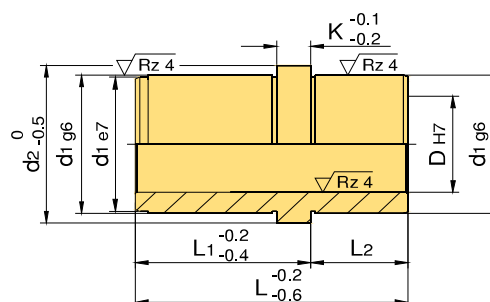
Material: Bronze

K	d1	d2	L	L2	D	L1	€
3	16	19	15	9	12	6	
3	16	19	21	12	12	9	
3	16	19	29	17	12	12	
6	25	29	29	17	18	12	
6	25	29	39	22	18	17	
6	25	29	49	27	18	22	
6	42	46	39	22	30	17	
6	42	46	49	27	30	22	
6	42	46	63	36	30	27	

# N 048

## Guide Bushes Made Of Bronze

Ejector For Run



Ordering-Example:

1 Piece N048 Ø10/5/10

**New**

Special Sizes Available On Request

t max = 200°C

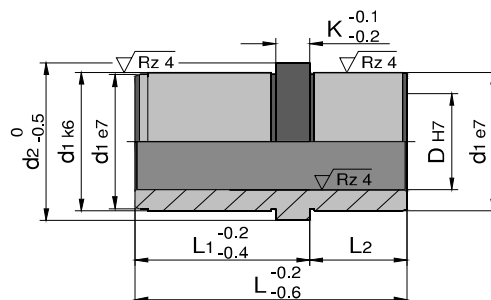
Material: Bronze

K	d1	d2	L	D	L2	L1	€
3	14	16	15	10	5	10	
6	14	17	21	10	9	12	
6	14	17	26	10	9	17	
3	14	16	20	10	10	10	
6	16	19	26	12	9	17	
6	16	19	29	12	12	17	
6	18	21	29	14	12	17	
6	18	21	34	14	12	22	
6	18	21	29	14	17	22	
6	24	27	29	18	12	17	
6	24	27	34	18	12	22	
6	24	27	39	18	17	22	
6	24	27	44	18	17	27	
6	24	27	49	18	22	27	
6	26	29	39	20	17	22	
6	26	29	49	20	22	27	
6	28	31	39	22	17	22	
6	28	31	49	22	22	27	
6	30	33	39	24	17	22	
6	30	33	44	24	17	27	
6	30	33	49	24	22	27	
6	30	33	63	24	27	36	
6	38	41	49	30	22	27	
6	38	41	63	30	27	36	
6	38	41	73	30	27	46	
6	38	41	82	30	36	46	
6	48	51	82	40	36	46	

# N 0481

## Guide Bushes

Ejector For Run



Ordering-Example:

**New**

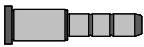




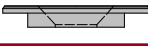
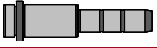


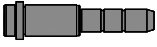












































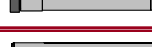
















1 Piece N0481 Ø10/9/12

Special Sizes Available On Request

Material: 1.7139 ca. 700HV

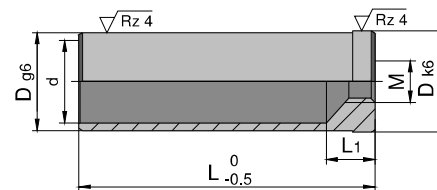
K	d1	d2	L	D	L2	L1	€
6	14	17	21	10	9	12	
6	14	17	26	10	9	17	
6	16	19	26	12	9	17	
6	16	19	29	12	12	17	
6	18	21	29	14	12	17	
6	18	21	34	14	12	22	
6	18	21	29	14	17	22	
6	24	27	29	18	12	17	
6	24	27	34	18	12	22	
6	24	27	39	18	17	22	
6	24	27	44	18	17	27	
6	24	27	49	18	22	27	
6	26	29	39	20	17	22	
6	26	29	49	20	22	27	
6	28	31	39	22	17	22	
6	28	31	49	22	22	27	
6	30	33	39	24	17	22	
6	30	33	44	24	17	27	
6	30	33	49	24	22	27	
6	30	33	63	24	27	36	
6	38	41	49	30	22	27	
6	38	41	63	30	27	36	
6	38	41	73	30	27	46	
6	38	41	82	30	36	46	
6	48	51	82	40	36	46	

## STANDARD PARTS FOR TOOL MAKING AND MOULD CONSTRUCTION

Description	Group	Description	Group	Description	Group
N 01 	1	N 091 	6	N 20 	9
N 011 	1	N 10 	6	N 21 	9
N 02 	1	N 101 	6	N 22 	9
N 021 	1	N 102 	6	N 23 	9
N 03 	2	N 11 	6	N 24 	9
N 035 	Bronze 2	N 12 	6	N 25 	9
N 04 	2	N 121 	6	N 26 	9
N 045 	Bronze 2	N 13 	7	N 30R 	10
N 03W 	2	N 130 	7	N 30 	10
N 04W 	2	N 131 	7	N 31 	R 15,5 t = 1,5 10
N 046 	Bronze 3	N 1310 	7	N 32 	R 40 t = 1,5 10
N 047 	Bronze 3	N 14 	7	N 33 	R 15,5 t = 3 10
N 048 	Bronze 3	N 140 	7	N 34 	R 40 t = 3 10
N 0481 	3	N 15 	7	N 40 	10
N 05 	4	N 135 	7	N 41 	10
N 051 	4	N 1305 	7		
N 06 	4	N 1315 	7		
N 065 	4	N 1320 	7		
N 61 	4	N 145 	7		
N 62 	4	N 155 	7		
N 63 	4	N 165 	7		
N 07 	5	N 166 	7		
N 071 	5	N 167 	7		
N 072 	5	N 16 	8		
N 074 	5	N 161 	8		
N 08 	5	N 17 	8		
N 081 	5	N 18 	8		
N 09 	6	N 19 	9		

# N 05

## Centring Sleeves



Ordering-Example:

1 Piece N05 Ø14/20

Special Sizes Available On Request

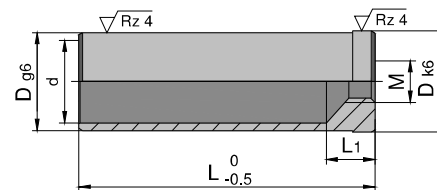
Material: 1.7139 ca. 700HV

L1	M	d	D	L	€
8	8	11	14	20	
				30	
				40	
				50	
				60	
				70	
				80	
				100	
12	12	16	20	30	
				40	
				50	
				60	
				70	
				80	
				100	
				120	
				140	
				160	
12	12	21	26	30	
				40	
				50	
				60	
				70	
				80	
				100	
				120	
				140	
				160	
				180	
12	12	25	30	40	
				50	
				60	
				80	
				100	
				120	
				140	
				160	
				180	
				200	
				220	
				240	



# N 05

## Centring Sleeves



Ordering-Example:

**New**

1 Piece N05 Ø42/40

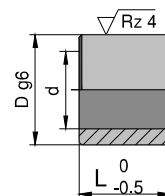
Special Sizes Available On Request

Material: 1.7139 ca. 700HV

L1	M	d	D	L	€
12	12	33	42	40	
				60	
				80	
				100	
				120	
				140	
				160	
				180	
				200	
				220	
				240	
				260	
				280	
				300	
12	12	43	54	60	
				80	
				100	
				120	
				140	
				160	
				200	
				240	
				280	
				320	
18	12	54	66	80	
				100	
				120	
				140	
				160	
				180	
				200	
				240	
				280	
				320	
18	20	64	80	100	
				120	
				140	
				160	
				200	
				240	
				280	
				320	

# N 051

## Centring Sleeves



Ordering-Example:

1 Piece N051 Ø14

Special Sizes Available On Request

Material: 1.7139 ca. 700HV

d	D	L	€
9	14	11,5	
11	16	13,5	
13	20	15,5	
16	26	17,5	
18	30	19,5	
22	36	19,5	
26	42	19,5	
32	54	19,5	

# N 06

## Centring Elements As Set

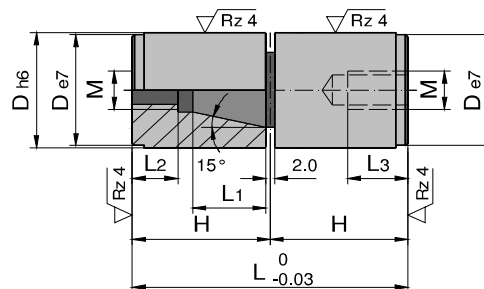
Interchangeable

Ordering-Example:

1 Piece N06 Ø12

Special Sizes Available On Request,  
Also Available In Stainless Steel

Material: 1.7139 ca. 700HV



L1	L2	M	L3	H	L	D	€
4	9	4	10	17	34	12	
6	9	5	10	17	34	14	
6	9	5	10	17	34	16	
9	11	8	16	27	54	20	
10	11	8	16	27	54	25	

L1	L2	M	L3	H	L	D	€
10	11	8	16	27	54	26	
14	13	10	20	36	72	30	
14	13	10	20	36	72	32	
18	13	10	20	46	92	42	

# N 06 M

## Centring Elements Separately

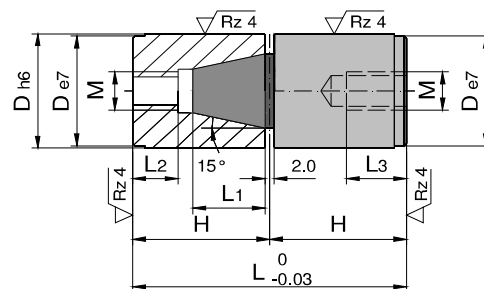
Interchangeable

Ordering-Example:

1 Piece N06 Ø12 M

Special Sizes Available On Request,  
Also Available In Stainless Steel

Material: 1.7139 ca. 700HV



L1	L2	M	L3	H	L	D	€
4	9	4	10	17	34	12	
6	9	5	10	17	34	14	
6	9	5	10	17	34	16	
9	11	8	16	27	54	20	
10	11	8	16	27	54	25	

L1	L2	M	L3	H	L	D	€
10	11	8	16	27	54	26	
14	13	10	20	36	72	30	
14	13	10	20	36	72	32	
18	13	10	20	46	92	42	

# N 06 W

## Centring Elements Separately

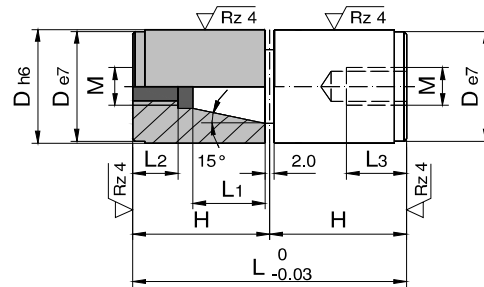
Interchangeable

Ordering-Example:

1 Piece N06 Ø12 W

Special Sizes Available On Request,  
Also Available In Stainless Steel

Material: 1.7139 ca. 700HV



L1	L2	M	L3	H	L	D	€
4	9	4	10	17	34	12	
6	9	5	10	17	34	14	
6	9	5	10	17	34	16	
9	11	8	16	27	54	20	
10	11	8	16	27	54	25	

L1	L2	M	L3	H	L	D	€
10	11	8	16	27	54	26	
14	13	10	20	36	72	30	
14	13	10	20	36	72	32	
18	13	10	20	46	92	42	

## N 065

### Centring Elements As Set

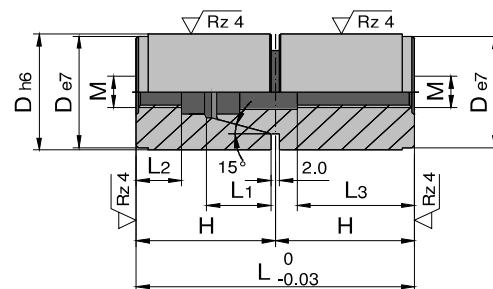
Interchangeable

Ordering-Example:

1 Piece N065 Ø10

Special Sizes Available On Request,  
Also Available In Stainless Steel

Material: 1.7139 ca. 700HV



L1	L2	M	L3	H	L	D	€
3,7	5	4	11,5	12	24	10	
5	8,5	4	9,6	17	34	12	
7	6	5	12,4	17	34	14	
7	6	5	12,4	17	34	16	
10	10,5	8	19,7	27	54	20	

L1	L2	M	L3	H	L	D	€
11	9	8	19,7	27	54	25	
11	9	8	19,7	27	54	26	
16	12,2	10	25	36	72	30	
16	12,2	10	25	36	72	32	
20	16,5	10	27	46	92	42	

## N 065 M

### Centring Elements Separately

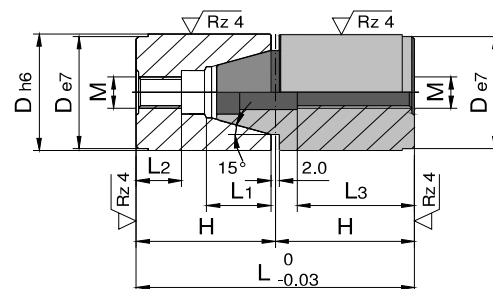
Interchangeable

Ordering-Example:

1 Piece N065 Ø10 M

Special Sizes Available On Request,  
Also Available In Stainless Steel

Material: 1.7139 ca. 700HV



L1	L2	M	L3	H	L	D	€
3,7	5	4	12	12	24	10	
5	8,5	4	9,6	17	34	12	
7	6	5	12,4	17	34	14	
7	6,0	5	12,4	17	34	16	
10	11	8	19,7	27	54	20	

L1	L2	M	L3	H	L	D	€
11	9	8	19,7	27	54	25	
11	9,0	8	20	27	54	26	
16	12,2	10	25	36	72	30	
16	12,2	10	25	36	72	32	
20	17	10	27	46	92	42	

## N 065 W

### Centring Elements Separately

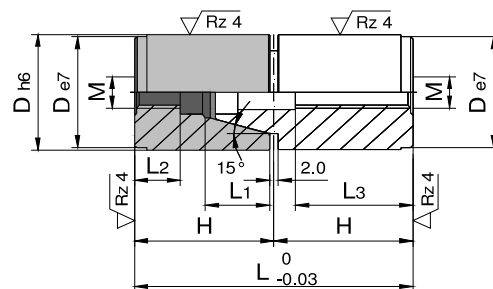
Interchangeable

Ordering-Example:

1 Piece N065 Ø10 W

Special Sizes Available On Request,  
Also Available In Stainless Steel

Material: 1.7139 ca. 700HV



L1	L2	M	L3	H	L	D	€
3,7	5	4	12	12	24	10	
5	8,5	4	9,6	17	34	12	
7	6	5	12,4	17	34	14	
7	6,0	5	12,4	17	34	16	
10	11	8	19,7	27	54	20	

L1	L2	M	L3	H	L	D	€
11	9	8	19,7	27	54	25	
11	9,0	8	20	27	54	26	
16	12,2	10	25	36	72	30	
16	12,2	10	25	36	72	32	
20	17	10	27	46	92	42	

# N 61

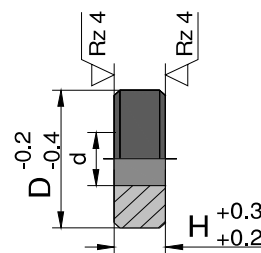
## Spacer Piece

Ordering-Example:

1 Piece N61 Ø12/3

Special Sizes Available On Request

Material: 1.7139 ca. 700HV



d	D	H	€
4,5	12	3	
4,5	12	9	
4,5	12	10	
5,5	14	3	
5,5	14	5	
5,5	14	9	
5,5	14	10	
5,5	14	14	
5,5	14	19	
5,5	16	3	
5,5	16	5	
5,5	16	9	
5,5	16	10	
5,5	16	19	
8,5	20	3	
8,5	20	9	
8,5	20	10	
8,5	20	20	
8,5	25	9	
8,5	25	10	
8,5	25	20	

d	D	H	€
8,5	26	3	
8,5	26	9	
8,5	26	10	
8,5	26	20	
8,5	26	30	
11,0	30	4	
11,0	30	10	
11,0	30	20	
11,0	30	30	
11,0	32	10	
11,0	32	20	
11,0	42	4	
11,0	42	10	
11,0	42	20	
11,0	42	30	
13,5	54	20	
13,5	54	40	
17,5	80	20	
17,5	80	40	

# N 62

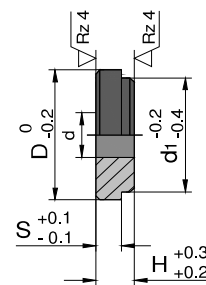
## Retaining Disc

Ordering-Example:

1 Piece N62 Ø14

Special Sizes Available On Request

Material: 1.7139 ca. 700HV



H	S	d	D	d1	€
5	3,2	5,5	16,0	14	
9	6,3	8,5	25,5	20	
9	6,3	8,5	31,5	26	
10	6,3	11,0	35,5	30	
10	6,3	11,0	47,5	42	

# N 63

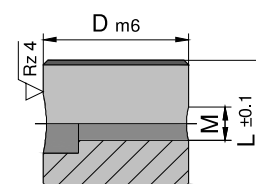
## Centring Piece

Ordering-Example:

1 Piece N63 Ø20

Special Sizes Available On Request

Material: 1.7139 ca. 700HV



M	L	D	€
6	20	20	
6	25	26	
8	30	30	
8	40	42	

## STANDARD PARTS FOR TOOL MAKING AND MOULD CONSTRUCTION

Description	Group	Description	Group	Description	Group
N 01	1	N 091	6	N 20	9
N 011	1	N 10	6	N 21	9
N 02	1	N 101	6	N 22	9
N 021	1	N 102	6	N 23	9
N 03	2	N 11	6	N 24	9
N 035	Bronze 2	N 12	6	N 25	9
N 04	2	N 121	6	N 26	9
N 045	Bronze 2	N 13	7	N 30R	10
N 03W	2	N 130	7	N 30	10
N 04W	2	N 131	7	N 31	R 15,5 t = 1,5 10
N 046	Bronze 3	N 1310	7	N 32	R 40 t = 1,5 10
N 047	Bronze 3	N 14	7	N 33	R 15,5 t = 3 10
N 048	Bronze 3	N 140	7	N 34	R 40 t = 3 10
N 0481	3	N 15	7	N 40	10
N 05	4	N 135	7	N 41	10
N 051	4	N 1305	7		
N 06	4	N 1315	7		
N 065	4	N 1320	7		
N 61	4	N 145	7		
N 62	4	N 155	7		
N 63	4	N 165	7		
N 07	5	N 166	7		
N 071	5	N 167	7		
N 072	5	N 16	8		
N 074	5	N 161	8		
N 08	5	N 17	8		
N 081	5	N 18	8		
N 09	6	N 19	9		

# N 07

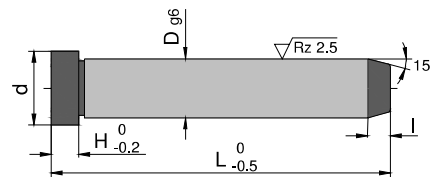
## Guide Pin

Ordering-Example:

1 Piece N07 Ø8/40

Special Sizes Available On Request

Material: 1.7139 ca. 700HV



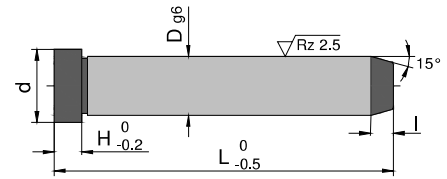
d	l	H	D	L	€
10	4	3	8	40	
				50	
				60	
				80	
				100	
12	4	3	9	40	
				60	
				80	
				100	
				120	
12	4	3	10	40	
				60	
				80	
				100	
				120	
				140	
				160	
16	5	6	12	40	
				60	
				80	
				100	
				120	
				140	
				160	
				180	
200					
18	5	8	14	60	
				80	
				100	
				120	
				140	
				160	
				180	
				200	
				220	
				240	

d	l	H	D	L	€
18	5	8	15	60	
				80	
				100	
				120	
				140	
				160	
				180	
				200	
20	5	8	16	40	
				60	
				80	
				100	
				120	
				140	
				160	
				180	
200					
22	7	8	18	60	
				80	
				100	
				120	
				140	
				160	
				180	
				200	
24	7	8	20	60	
				80	
				100	



# N 07

## Guide Pin



Ordering-Example:

1 Piece N07 Ø20/120

Special Sizes Available On Request

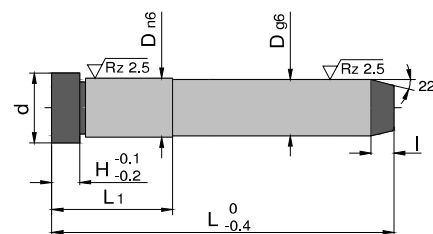
Material: 1.7139 ca. 700HV

d	l	H	D	L	€
24	7	8	20	120	
				140	
				160	
				180	
				200	
				220	
				240	
				260	
				280	
				300	
				320	
				26	7
100					
120					
140					
160					
180					
200					
220					
240					
260					
280					
300					
320					
340					
360					
28	7	15	24	80	
				100	
				120	
				140	
				160	
				180	
				200	
				220	
				240	
				260	
				280	
				300	
320					
340					
360					

d	l	H	D	L	€
36	7	15	30	100	
				120	
				140	
				160	
				180	
				200	
				240	
				300	
				360	
				400	
36	7	15	32	100	
				120	
				140	
				160	
				180	
				200	
				300	
				400	
48	10	15	40	160	
				200	
				240	
				300	
				360	
				400	
				420	
				500	
58	15	15	50	160	
				200	
				240	
				300	
				360	
				400	
				500	
68	20	20	60	280	
				300	
				340	
				360	
				400	
				400	
				500	

# N 071

## Guide Pin With Press Fit



Ordering-Example:

1 Piece N071 Ø9/40

**New**

Special Sizes Available On Request

Material: 1.7139 ca. 700HV

d	H	I	L1	D	L	€
11	3	4	11	9	40	
					60	
					70	
					80	
					90	
					100	
					120	
12	3	4	11	10	40	
					50	
					60	
					70	
					80	
					90	
					100	
					120	
15	6	5	16	12	60	
					70	
					80	
					90	
					100	
					110	
					120	
					140	
17	8	5	21	14	60	
					70	
					80	
					90	
					100	
					110	
					120	
					140	
160						
180						

d	H	I	L1	D	L	€
19	8	5	21	16	60	
					70	
					80	
					90	
					100	
					110	
					120	
					140	
21	8	7	21	18	60	
					70	
					80	
					90	
					100	
					110	
					120	
					140	
23	8	7	21	20	80	
					90	
					100	
					110	
					120	
					140	
					160	
					180	
200						
220						
240						
260						
280						

# N 071

## Guide Pin With Press Fit

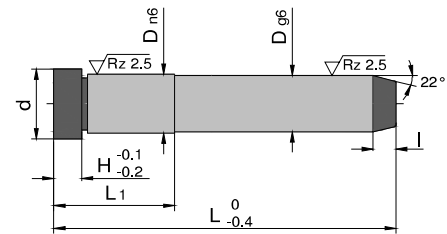
Ordering-Example:

1 Piece N071 Ø22/80

**New**

Special Sizes Available On Request

Material: 1.7139 ca. 700HV



d	H	I	L1	D	L	€
25	10	7	26	22	80	
					100	
					120	
					140	
					160	
					180	
					200	
					220	
					240	
					280	
27	10	7	26	24	80	
					100	
					120	
					140	
					160	
					180	
					200	
					220	
					240	
					280	
35	10	7	35	30	100	
					120	
					140	
					160	
					180	
					200	
					220	
					240	
					280	
					320	
					360	
				400		

d	H	I	L1	D	L	€
35	10	7	35	32	100	
					120	
					140	
					160	
					180	
					200	
					220	
					240	
					280	
					320	
					360	
45	10	7	35	40	140	
					160	
					180	
					200	
					250	
					280	
					320	
					360	
					400	

# N 072

## Inclined Pin With Collar

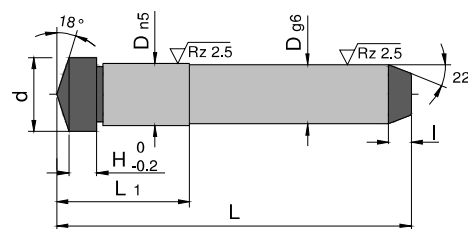
Ordering-Example:

1 Piece N072 Ø10/40

Neu

Special Sizes Available On Request

Material: 1.7139 ca. 700HV



d	H	I	L1	D	L	€
12	2	4	13	10	40	
					50	
					60	
					70	
					80	
					90	
					100	
					120	
					140	
15	3	5	17	12	60	
					70	
					80	
					90	
					100	
					110	
					120	
					140	
					160	
					180	
17	3	5	17	14	60	
					70	
					80	
					90	
					100	
					110	
					120	
					140	
					160	
					180	
				200		

d	H	I	L1	D	L	€
19	3	5	22	16	60	
					70	
					80	
					90	
					100	
					110	
					120	
					140	
					160	
					180	
21	3	7	22	18	60	
					70	
					80	
					90	
					100	
					110	
					120	
					140	
					160	
					180	
				200		
				220		
				240		

# N 072

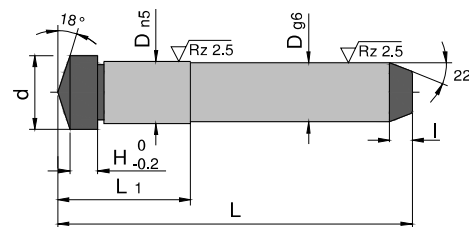
## Inclined Pin With Collar

Ordering-Example:

1 Piece N072 Ø20/80

Special Sizes Available On Request

Material: 1.7139 ca. 700HV



d	H	I	L1	D	L	€
23	4	7	22	20	80	
					90	
					100	
					110	
					120	
					140	
					160	
					180	
					200	
					220	
					240	
25	4	7	27	22	60	
					80	
					100	
					120	
					140	
					160	
					180	
					200	
					220	
					240	

d	H	I	L1	D	L	€
27	4	7	27	24	80	
					100	
					120	
					140	
					160	
					180	
					200	
					220	
					240	
					280	
35	5	7	36		30	100
				120		
				140		
				160		
				180		
				200		
				220		
				240		
				280		
				320		
				360		

# N 074

## Inclined Pin

See Data Sheet Tightening Torques Group 19

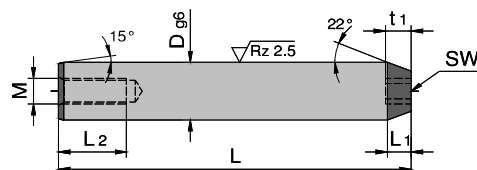
Ordering-Example:

1 Piece N074 Ø8/40

**New**

Special Sizes Available On Request

Material: 1.7139 ca. 700HV



M	L2	L1	SW	t1	D	L	€
5	10	2,3	4	4	8	40	
						60	
						80	
						100	
6	10	4	4	4	10	40	
						60	
						70	
						80	
						100	
						120	
6	10	5	5	5	12	50	
						60	
						80	
						100	
						120	
						140	
6	10	5	5	5	14	50	
						60	
						70	
						75	
						80	
						90	
						100	
						120	
						140	
						160	
8	17	5	5	5	15	50	
						60	
						70	
						80	
						90	

M	L2	L1	SW	t1	D	L	€
8	17	5	6	6	16	60	
						80	
						90	
						100	
						110	
						120	
						130	
						140	
8	17	7	6	6	18	60	
						70	
						80	
						90	
						100	
						110	
						120	
						220	
10	17	7	6	6	18	60	
						70	
						80	
						90	
						100	
						170	

# N 074

## Inclined Pin

See Data Sheet Tightening Torques Group 19

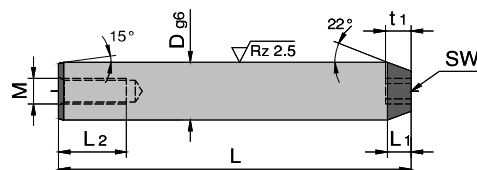
Ordering-Example:

1 Piece N074 Ø20/60

**New**

Special Sizes Available On Request

Material: 1.7139 ca. 700HV



M	L2	L1	SW	t1	D	L	€
10	20	7	8	8	20	60	
						70	
						80	
						90	
						100	
						110	
						120	
						125	
						140	
						150	
						160	
						165	
						170	
						180	
						190	
						200	
						210	
					220		
					240		
					260		
10	20	7	8	8	22	60	
						70	
						80	
						90	
						100	
						120	
						140	
						160	
					180		
					200		
					220		
					240		

M	L2	L1	SW	t1	D	L	€
12	25	7	8	8	24	60	
						70	
						80	
						90	
						100	
						120	
						140	
						145	
						160	
						180	
						190	
					200		
					220		
					240		
16	30	7	10	10	30	80	
						90	
						100	
						120	
						140	
						180	
					220		
16	30	7	10	10	32	80	
						90	
						100	
						120	
						140	
						180	
					220		

# N 08

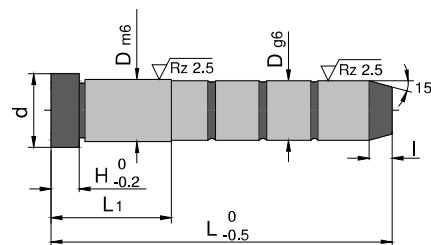
## Guide Pin With Press Fit

Ordering-Example:

1 Piece N08 Ø10/40

Special Sizes Available On Request

Material: 1.7139 ca. 700HV



d	H	I	L1	D	L	€
12	3	5	17	10	40	
			17		60	
			22		80	
			27		100	
16	6	5	17	12	60	
			22		80	
			27		100	
			27		120	
18	8	5	17	14	60	
			22		80	
			27		100	
			27		120	
			36		140	
			36		160	
			36		180	
20	8	5	17	16	60	
			22		80	
			27		100	
			27		120	
			36		140	
			36		160	
			36		180	
			36		200	
			46		240	

d	H	I	L1	D	L	€
22	8	7	22	18	80	
			27		100	
			27		120	
			36		140	
			36		160	
			36		180	
24	8	7	22	20	80	
			27		100	
			27		120	
			36		140	
			36		160	
			56		180	
			56		200	
			56		240	
			56		280	



# N 08

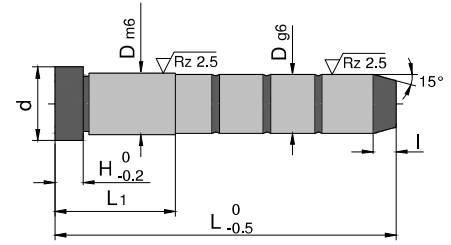
## Guide Pin With Press Fit

Ordering-Example:

1 Piece N08 Ø22/100

Special Sizes Available On Request

Material: 1.7139 ca. 700HV



d	H	I	L1	D	L	€				
26	15	7	27	22	100					
			27		120					
			36		140					
			36		160					
			46		180					
			56		200					
			56		220					
			56		240					
			56		280					
			56		300					
			56		320					
			56		360					
			28		15	7	27	24	100	
							27		120	
36	140									
36	160									
46	180									
56	200									
56	220									
56	240									
56	280									
56	300									
56	320									
56	360									
36	15	7		36			30		160	
				56					200	
			56	240						
			56	280						
			56	300						
			56	360						

d	H	I	L1	D	L	€				
36	15	7	36	32	160					
			56		200					
			56		240					
			56		280					
			56		300					
			56		360					
			48		15	10	56	40	200	
							56		240	
56	300									
76	360									
76	400									
96	500									
58	15	15	46	50	200					
			56		240					
			56		300					
			76		360					
			76		400					
			96		500					
68	20	20	56	60	240					
			56		300					
			76		360					
			76		400					
			96		500					

# N 081

## Guide Pin With Press Fit

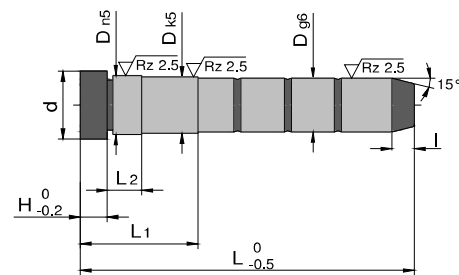
Ordering-Example:

1 Piece N081 Ø9/40

**New**

Special Sizes Available On Request

Material: 1.7139 ca. 700HV



d	H	I	L1	L2	D	L	€
12	3	4	17	6	9	40	
			22			60	
			27	10		80	
						100	
12	3	4	17	6	10	40	
			22			60	
			27	10		80	
						100	
15	6	5	22	6	12	60	
						80	
						100	
						120	
			27	10		140	
						160	
17	6	5	22	6	14	60	
						80	
						100	
						120	
			27	10		140	
						160	
18	6	5	22	6	15	60	
						80	
						100	
						120	
			27	10		140	
						160	
19	6	5	22	6	16	80	
						100	
						120	
			27	10		140	
						160	

d	H	I	L1	L2	D	L	€
21	6	7	22	6	18	80	
						100	
						120	
			27	10		140	
						160	
						180	
					200		
					220		
23	6	7	22	6	20	80	
						100	
						120	
			27	10		140	
						160	
						180	
					200		
					220		
25	6	7	27	10	22	100	
						120	
						140	
						160	
						180	
						200	
					220		
					250		
					280		
27	6	7	27	10	24	100	
						120	
						140	
						160	
						180	
						200	
					220		
					250		
					280		

# N 081

## Guide Pin With Press Fit

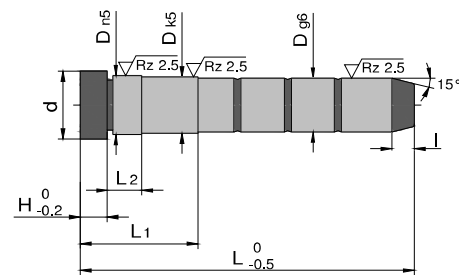
Ordering-Example:

1 Piece N081 Ø30/120

**New**

Special Sizes Available On Request

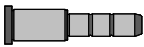




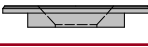





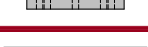

















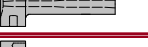


















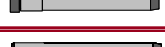






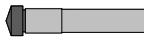















Material: 1.7139 ca. 700HV



d	H	I	L1	L2	D	L	€
35	6	7	36	10	30	120	
						140	
						160	
						180	
						200	
						220	
						250	
						280	
						320	
						360	
		56					
37	6	7	36	10	32	120	
						140	
						160	
						180	
						200	
						220	
						250	
						280	
						320	
						360	
		56					
45	10	10	46	15	40	160	
						180	
						200	
						220	
						250	
						280	
						320	
						360	
						400	
						450	
		66					

d	H	I	L1	L2	D	L	€		
47	10	10	46	15	42	160			
						180			
						200			
						220			
						250			
						280			
						320			
						360			
						400			
						450			
								56	
		66							
55	10	10	56	15	50	200			
						250			
						280			
						320			
						360			
						400			
						450			
						500			
								66	
								76	
						57	10	10	56
250									
280									
320									
360									
400									
450									
500									
		66							
		76							

## STANDARD PARTS FOR TOOL MAKING AND MOULD CONSTRUCTION

Description	Group	Description	Group	Description	Group
<b>N 01</b> 	1	<b>N 091</b> 	6	<b>N 20</b> 	9
<b>N 011</b> 	1	<b>N 10</b> 	6	<b>N 21</b> 	9
<b>N 02</b> 	1	<b>N 101</b> 	6	<b>N 22</b> 	9
<b>N 021</b> 	1	<b>N 102</b> 	6	<b>N 23</b> 	9
<b>N 03</b> 	2	<b>N 11</b> 	6	<b>N 24</b> 	9
<b>N 035</b> 	Bronze 2	<b>N 12</b> 	6	<b>N 25</b> 	9
<b>N 04</b> 	2	<b>N 121</b> 	6	<b>N 26</b> 	9
<b>N 045</b> 	Bronze 2	<b>N 13</b> 	7	<b>N 30R</b> 	10
<b>N 03W</b> 	2	<b>N 130</b> 	7	<b>N 30</b> 	10
<b>N 04W</b> 	2	<b>N 131</b> 	7	<b>N 31</b> 	R 15,5 t = 1,5 10
<b>N 046</b> 	Bronze 3	<b>N 1310</b> 	7	<b>N 32</b> 	R 40 t = 1,5 10
<b>N 047</b> 	Bronze 3	<b>N 14</b> 	7	<b>N 33</b> 	R 15,5 t = 3 10
<b>N 048</b> 	Bronze 3	<b>N 140</b> 	7	<b>N 34</b> 	R 40 t = 3 10
<b>N 0481</b> 	3	<b>N 15</b> 	7	<b>N 40</b> 	10
<b>N 05</b> 	4	<b>N 135</b> 	7	<b>N 41</b> 	10
<b>N 051</b> 	4	<b>N 1305</b> 	7		
<b>N 06</b> 	4	<b>N 1315</b> 	7		
<b>N 065</b> 	4	<b>N 1320</b> 	7		
<b>N 61</b> 	4	<b>N 145</b> 	7		
<b>N 62</b> 	4	<b>N 155</b> 	7		
<b>N 63</b> 	4	<b>N 165</b> 	7		
<b>N 07</b> 	5	<b>N 166</b> 	7		
<b>N 071</b> 	5	<b>N 167</b> 	7		
<b>N 072</b> 	5	<b>N 16</b> 	8		
<b>N 074</b> 	5	<b>N 161</b> 	8		
<b>N 08</b> 	5	<b>N 17</b> 	8		
<b>N 081</b> 	5	<b>N 18</b> 	8		
<b>N 09</b> 	6	<b>N 19</b> 	9		

# N 09

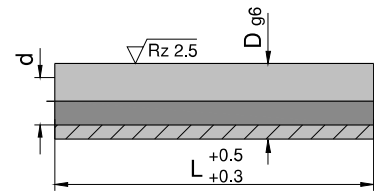
## Guide Tube

Ordering-Example:

1 Piece N09 Ø10/20

Special Sizes Available On Request

Material: 1.7139 ca. 700HV



d	D	L	€
6,2	10	20	
		30	
		40	
		50	
		60	
		70	
		80	
		100	
		120	
		140	
8,5	14	30	
		40	
		50	
		60	
		70	
		80	
		100	
		120	
		140	
		160	
180			
10,5	18	40	
		60	
		80	
		100	
		120	
		140	
		160	
		180	
		200	
		220	
240			

d	D	L	€
13,0	24	60	
		80	
		100	
		120	
		140	
		160	
		180	
		200	
		240	
		17,0	30
100			
120			
140			
160			
180			
200			
220			
240			
260			
280			
300			

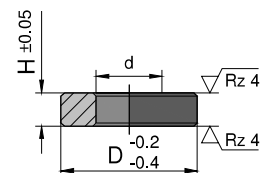
# N 091

## Disc For N 09

Ordering-Example:

1 Piece N091 Ø14

Material: 1.7139 ca. 700HV



d	H	D	€
6,2	3	14	
8,5	4	18	
10,5	5	24	
13,0	6	30	
17,0	8	40	

# N 10

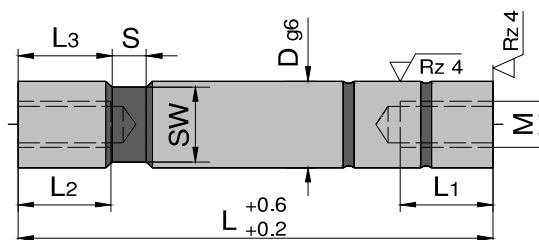
## Ejection Pin

Ordering-Example:

1 Piece N10 Ø10/60

Special Sizes Available On Request

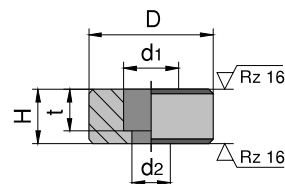
Material: 1.7139 ca. 700HV



L1	L2	L3	M	S	SW	D	L	€
10	16	14	6	8	8	10	60	
							70	
							80	
							100	
							120	
							140	
							160	
17	25	14	8	8	12	14	60	
							70	
							80	
							100	
							120	
							140	
							160	
							180	
							200	
20	30	16	10	8	14	18	70	
							80	
							100	
							120	
							140	
							160	
							180	
							200	
							220	
							240	
20	30	16	12	8	14	18	70	
							80	
							100	
							120	
							140	
							160	
							180	
							200	
							220	
							240	

L1	L2	L3	M	S	SW	D	L	€
20	30	16	12	10	17	20	70	
							80	
							100	
							120	
							140	
							160	
							180	
							200	
							220	
							240	
25	35	22	12	12	19	24	70	
							80	
							100	
							120	
							140	
							160	
							180	
							200	
							220	
							240	
30	45	28	16	16	24	30	100	
							120	
							140	
							160	
							180	
							200	
							220	
							240	
							260	
							280	
35	55	36	20	20	36	40	160	
							180	
							200	
							220	
							240	
							260	
							280	
							300	
							320	
							340	
							360	
							380	

## N 101 Thrust Piece



Ordering-Example:

1 Piece N101 Ø15

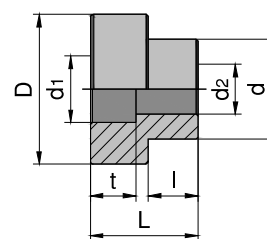
Special Sizes Available On Request

Material: 1.7139

d1	d2	t	H	D	€
11,0	6,6	8,4	10	15	
14,5	9,0	11,0	14	22	
17,5	11,0	13,5	20	36	

d1	d2	t	H	D	€
20,0	14,0	15,5	25	46	
26,0	18,0	21,0	32	56	

## N 102 Thrust Piece



Ordering-Example:

1 Piece N102 Ø40/7

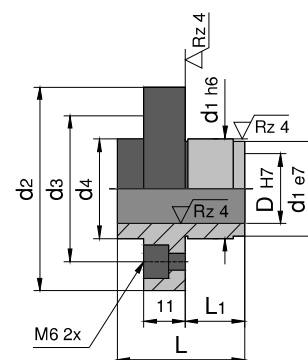
Special Sizes Available On Request

Material: 1.7139

t	d	d1	d2	L	D	I	€
11	25	18	10,5	27	40	7	
11	25	18	10,5	27	40	12	
13	31	20	13,0	32	48	8	
13	31	20	13,0	32	48	17	

t	d	d1	d2	L	D	I	€
17,5	39	26	17	34	58	9	
17,5	39	26	17	34	58	19	

## N 11 Ejection Bush



Ordering-Example:

1 Piece N11 Ø14

Special Sizes Available On Request

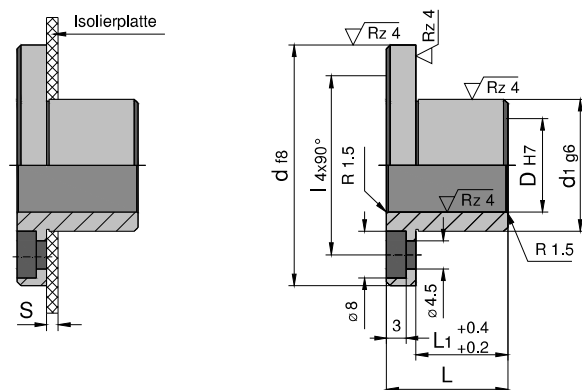
Material: 1.7139 ca. 700HV

L1	L	d4	d3	d2	d1	D	€
12	29	19	32	46	18	14	
16	34	25	38	52	24	18	

L1	L	d4	d3	d2	d1	D	€
21	40	31	44	58	30	24	
26	46	39	52	68	38	30	

# N 12

## Ejection Bush



Ordering-Example:

1 Piece N12 Ø10/17/40

Special Sizes Available On Request

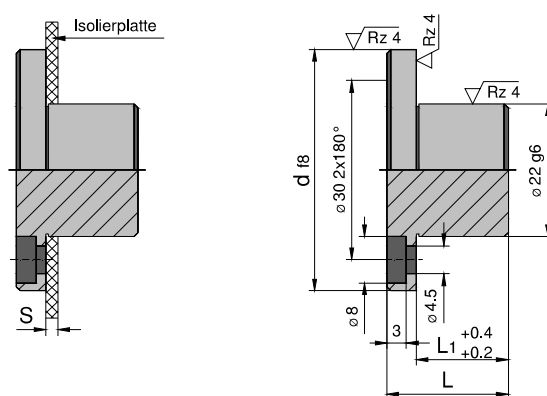
Material: 1.7139 ca. 700HV

I	d1	S	L1	D	L	d	€
30	22	-	11,9	10	17	40	
30	22	-	11,9	14	17	40	
30	22	-	16,9	10	22	40	
30	22	-	16,9	14	22	40	
30	22	-	11,9	14	17	60	
30	22	-	16,9	14	22	60	
50	32	-	22,0	18	27	100	
50	32	-	31,0	20	36	100	
50	32	-	31,0	24	36	100	
50	32	-	22,0	18	27	110	
50	32	-	31,0	20	36	110	
50	32	-	31,0	24	36	110	
50	32	-	22,0	18	27	125	
50	32	-	31,0	20	36	125	
50	32	-	31,0	24	36	125	

I	d1	S	L1	D	L	d	€
30	22	3	14,9	10	20	40	
30	22	3	14,9	14	20	40	
30	22	3	14,9	14	20	60	
30	22	3	19,9	14	25	60	
30	22	3	21,9	14	27	60	

# N 121

## Ejection Bush



Ordering-Example:

1 Piece N121 17/40

Special Sizes Available On Request




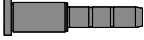




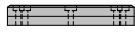






























































Material: 1.7139

S	L1	L	d	€
-	12	17	40	
-	12	17	60	

S	L1	L	d	€
3	15	20	40	
5	17	22	40	
3	15	20	60	
5	17	22	60	
3	20	25	60	
5	22	27	60	



## STANDARD PARTS FOR TOOL MAKING AND MOULD CONSTRUCTION

Description	Group	Description	Group	Description	Group
N 01 	1	N 091 	6	N 20 	9
N 011 	1	N 10 	6	N 21 	9
N 02 	1	N 101 	6	N 22 	9
N 021 	1	N 102 	6	N 23 	9
N 03 	2	N 11 	6	N 24 	9
N 035 	Bronze 2	N 12 	6	N 25 	9
N 04 	2	N 121 	6	N 26 	9
N 045 	Bronze 2	N 13 	7	N 30R 	10
N 03W 	2	N 130 	7	N 30 	10
N 04W 	2	N 131 	7	N 31 	R 15,5 t = 1,5 10
N 046 	Bronze 3	N 1310 	7	N 32 	R 40 t = 1,5 10
N 047 	Bronze 3	N 14 	7	N 33 	R 15,5 t = 3 10
N 048 	Bronze 3	N 140 	7	N 34 	R 40 t = 3 10
N 0481 	3	N 15 	7	N 40 	10
N 05 	4	N 135 	7	N 41 	10
N 051 	4	N 1305 	7		
N 06 	4	N 1315 	7		
N 065 	4	N 1320 	7		
N 61 	4	N 145 	7		
N 62 	4	N 155 	7		
N 63 	4	N 165 	7		
N 07 	5	N 166 	7		
N 071 	5	N 167 	7		
N 072 	5	N 16 	8		
N 074 	5	N 161 	8		
N 08 	5	N 17 	8		
N 081 	5	N 18 	8		
N 09 	6	N 19 	9		

# N 13

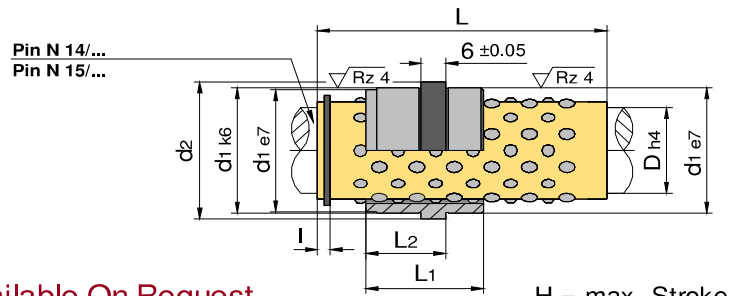
## Ball Guiding Complete

Without Pin

Ordering-Example:

1 Piece N13 Ø12/40

Special Sizes Available On Request



l	d1	d2	L1	L2	H	D	L	€
2,5	22	26	24	18	50	12	40	
					82		56	
2,8	30	35	34	23	44	18	45	
					66		56	
					96		71	
4,8	46	52	54	33	32	30	56	
					70		75	
					110		95	

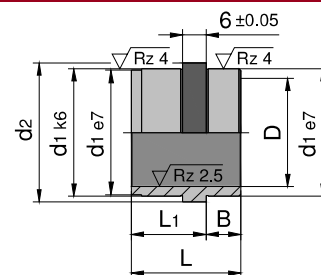
# N 130

## Bush

Ordering-Example:

1 Piece N130 Ø16

Special Sizes Available On Request



Material: 1.7139 ca. 700HV

d1	d2	B	L1	L	D	€
22	26	6	18	24	16	
30	35	11	23	34	24	
46	52	21	33	54	38	

# N 131

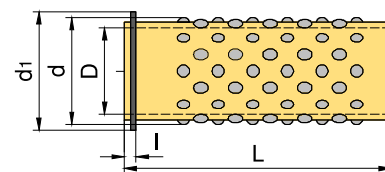
## Ball Cage

Ordering-Example:

1 Piece N131 Ø12/40

Special Sizes Available On Request

Material: Brass



l	d	d1	D	L	€
2,5	16	20,5	12	40	
				56	
2,8	24	28,6	18	45	
				56	
				71	
4,8	38	43,5	30	56	
				75	
				95	

# N 1310

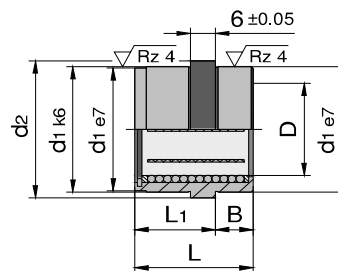
## Recirculating Ball Bushing

With Unlimited Stroke Length For N14, N140 And N15

Ordering-Example:

1 Piece N1310 Ø12/17/9

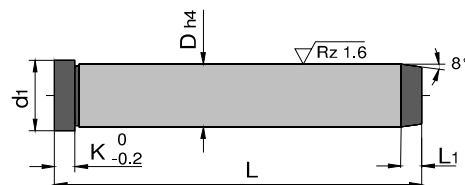
Special Sizes Available On Request



d1	d2	L	D	L1	B	€
24	28	26	12	17	9	
32	36	39	18	22	17	
39	43	29	24	17	12	
50	54	39	30	22	17	

# N 14

## Ball Guiding Pin With Collar



Ordering-Example:

1 Piece N14 Ø12/80

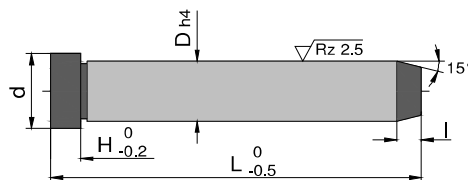
Special Sizes Available On Request

Material: 1.7139 ca. 700HV

K	L1	d1	D	L	€
4	4	16	12	80	
				100	
				120	
				140	
6	7	22	18	80	
				100	
				120	
				140	
				160	
				180	
			200		
			240		
6	7	35	30	160	
				200	
				240	
				280	
				300	

# N 140

## Ball Guiding Pin With Collar



Ordering-Example:

1 Piece N140 Ø9/60

Neu

Special Sizes Available On Request

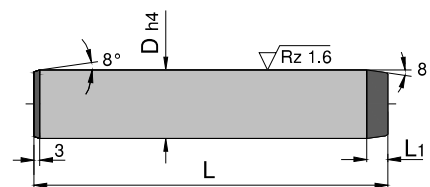
Material: 1.7139 ca. 700HV

d	l	H	D	L	€
12	4	3	9	60	
				80	
				100	
				120	
16	5	6	12	60	
				80	
				100	
				120	
				140	
				160	
18	5	8	14	60	
				80	
				100	
				120	
				140	
				160	
				180	
22	7	8	18	80	
				100	
				120	
				140	
				160	
				180	
				200	
				240	

d	l	H	D	L	€
28	7	15	24	100	
				120	
				140	
				160	
				180	
				200	
36	7	15	30	100	
				120	
				160	
				240	
				300	
36	7	15	32	100	
				120	
				160	
				240	
				300	

# N 15

## Ball Guiding Pin Without Collar



Ordering-Example:

1 Piece N15 Ø12/80

Special Sizes Available On Request

Material: 1.7139 ca. 700HV

L1	D	L	
4	12	80	
		100	
		125	
7	18	100	
		125	
		140	
		160	
		180	
		200	
7	30	160	
		240	

# N 135

## Ball Guiding Complete

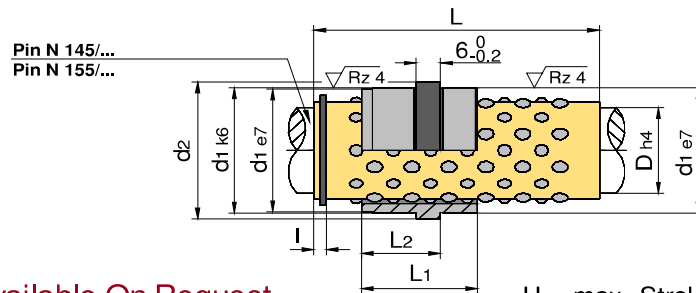
Without Pin

Ordering-Example:

1 Piece N135 Ø12/35

Special Sizes Available On Request

H = max. Stroke



l	d1	d2	L1	L2	H	D	L	€
2,5	22	25	26	17	35	12	35	
					55		48	
					80		56	
2,8	30	33	34	22	45	18	45	
					65		56	
					90		71	

l	d1	d2	L1	L2	H	D	L	€
2,8	38	41	44	27	45	24	50	
					75		70	
					105		84	
4,8	46	49	54	32	32	30	56	
					55		70	
					95		95	
					135		110	

# N 1305

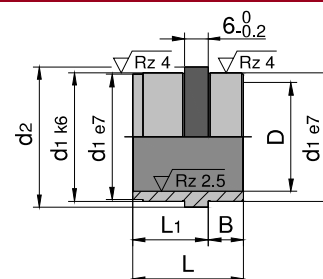
## Bush

Ordering-Example:

1 Piece N1305 Ø17

Special Sizes Available On Request

Material: 1.7139 ca. 700HV



d1	d2	B	L1	L	D	€
22	25	9	17	26	17	
30	33	12	22	34	24	
38	41	17	27	44	30	
46	49	22	32	54	38	

# N 1315

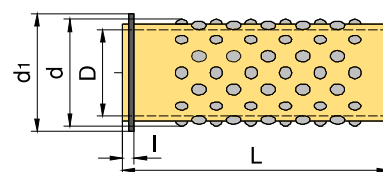
## Ball Cage

Ordering-Example:

1 Piece N1315 Ø12/35

Special Sizes Available On Request

Material: Brass



l	d	d1	D	L	€
2,5	17	20,5	12	35	
				48	
				56	
2,8	24	28,6	18	45	
				56	
				71	

l	d	d1	D	L	€
2,8	30	35,7	24	50	
				70	
				84	
4,8	38	43,5	30	56	
				70	
				95	
				110	

# N 1320

## Recirculating Ball Bushing

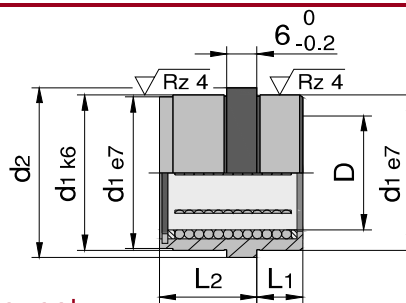
With Unlimited Stroke Length For N145 And N155

Ordering-Example:

1 Piece N1320 Ø10/9/12

**New**

Special Sizes Available On Request

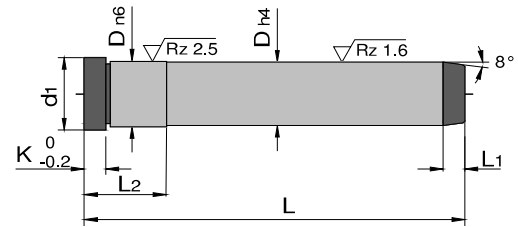


d1	d2	D	L1	L2	€
17	20	10	9	12	
17	20	10	9	17	
22	25	12	9	17	
22	25	12	12	17	
30	33	18	12	22	
30	33	18	17	22	
38	41	24	17	27	
38	41	24	22	27	
46	49	30	22	32	
46	49	30	27	36	



# N 145

## Ball Guiding Pin With Collar And Press Fit



Ordering-Example:

**New**

1 Piece N145 Ø10/60

Special Sizes Available On Request

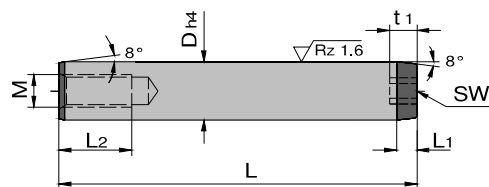
Material: 1.7139 ca. 700HV

K	L1	L2	d1	D	L	€
3	4	12	12	10	60	
					80	
					100	
					120	
					140	
4	4	17	15	12	80	
					100	
					120	
					140	
					160	
6	5	22	21	18	80	
					100	
					120	
					140	
					160	
					180	
6	6	27	27	24	100	
					120	
					140	
					160	
					180	
					200	
6	7	36	35	30	140	
					160	
					180	
					200	
					250	

# N 155

## Ball Guiding Pin Without Collar Screwable

See Data Sheet Tightening Torques Group 19



Ordering-Example:

1 Piece N155 Ø10/60

**New**

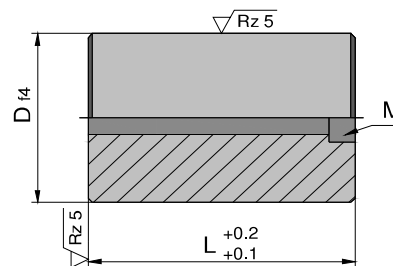
Special Sizes Available On Request

Material: 1.7139 ca. 700HV

M	L1	L2	SW	T1	D	L
6	4	16	4	4	10	60
						80
						100
						120
						140
8	4	17	5	5	12	80
						100
						120
						140
						160
10	5	20	6	6	18	80
						100
						120
						140
						160
						180
12	6	25	8	8	24	100
						120
						140
						160
						180
						200
16	7	30	8	8	30	140
						160
						180
						200
						250

# N 165

## Support Pillar With Guiding Diameter



Ordering-Example:

1 Piece N165 Ø24/50

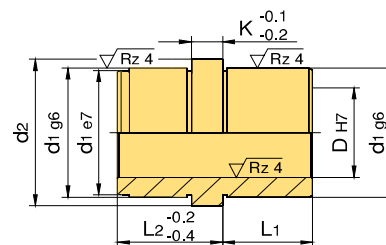
Special Sizes Available On Request

Material: 1.7139 ca. 700HV

M	D	L	€
M8	24	50	
		60	
		70	
		80	
		90	
		100	
		120	
		140	
		160	
		180	
M10	36	50	
		60	
		70	
		80	
		90	
		100	
		120	
		140	
		160	
		180	
M12	48	60	
		70	
		80	
		90	
		100	
		120	
		140	
		160	
		180	

# N 166

## Guide Bushes Made Of Bronze For Support Pillar N165



Ordering-Example:

1 Piece N166 Ø24/9/17

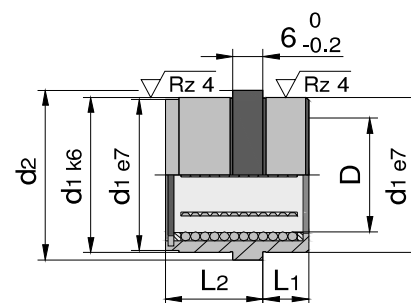
Special Sizes Available On Request

t max = 200°C  
Material: Bronze

K	d1	d2	D	L1	L2	€
5	32	36	24	9	17	
5	32	36	24	12	17	
5	32	36	24	6	20	
5	44	48	36	12	17	
5	44	48	36	12	22	
5	44	48	36	17	22	
5	44	48	36	6	24	
6	58	62	48	17	22	
6	58	62	48	17	27	
6	58	62	48	10	30	

# N 167

## Recirculating Ball Bushing For Support Pillar N165



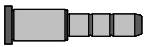




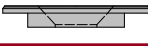





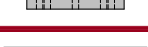

















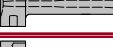

























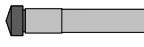















Ordering-Example:

1 Piece N167 Ø24/12/17

Special Sizes Available On Request

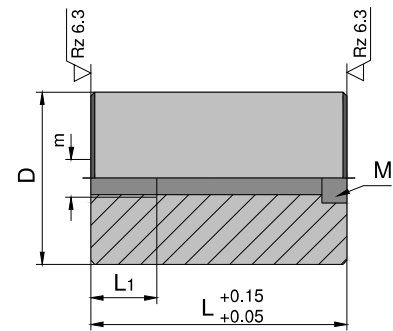
d1	d2	D	L1	L2	€
38	41	24	12	17	
38	41	24	17	22	
54	58	36	17	22	
54	58	36	22	27	
68	73	48	22	27	
68	73	48	27	36	

## STANDARD PARTS FOR TOOL MAKING AND MOULD CONSTRUCTION

Description	Group	Description	Group	Description	Group
N 01 	1	N 091 	6	N 20 	9
N 011 	1	N 10 	6	N 21 	9
N 02 	1	N 101 	6	N 22 	9
N 021 	1	N 102 	6	N 23 	9
N 03 	2	N 11 	6	N 24 	9
N 035 	Bronze 2	N 12 	6	N 25 	9
N 04 	2	N 121 	6	N 26 	9
N 045 	Bronze 2	N 13 	7	N 30R 	10
N 03W 	2	N 130 	7	N 30 	10
N 04W 	2	N 131 	7	N 31 	R 15,5 t = 1,5 10
N 046 	Bronze 3	N 1310 	7	N 32 	R 40 t = 1,5 10
N 047 	Bronze 3	N 14 	7	N 33 	R 15,5 t = 3 10
N 048 	Bronze 3	N 140 	7	N 34 	R 40 t = 3 10
N 0481 	3	N 15 	7	N 40 	10
N 05 	4	N 135 	7	N 41 	10
N 051 	4	N 1305 	7		
N 06 	4	N 1315 	7		
N 065 	4	N 1320 	7		
N 61 	4	N 145 	7		
N 62 	4	N 155 	7		
N 63 	4	N 165 	7		
N 07 	5	N 166 	7		
N 071 	5	N 167 	7		
N 072 	5	N 16 	8		
N 074 	5	N 161 	8		
N 08 	5	N 17 	8		
N 081 	5	N 18 	8		
N 09 	6	N 19 	9		

# N 16

## Support Pillar



Ordering-Example:

1 Piece N16 Ø32/46

**New**

Special Sizes Available On Request

Material: 1.7139

M	m	L1	D	L	€
M6	M8	15	32	46	
				56	
				66	
				76	
				86	
				96	
				116	
				136	
M8	M10	20	40	46	
				56	
				66	
				76	
				86	
				96	
				116	
				136	
				156	
M8	M10	20	50	46	
				56	
				66	
				76	
				86	
				96	
				116	
				136	
				156	
M8	M10	20	60	56	
				66	
				76	
				86	
				96	
				116	
				136	
				156	
				176	

M	m	L1	D	L	€
M8	M10	20	63	56	
				66	
				76	
				86	
				96	
				116	
				136	
				156	
				176	
M10	M12	25	70	66	
				76	
				86	
				96	
				116	
				136	
				156	
				176	
				196	
M10	M12	25	80	66	
				76	
				86	
				96	
				116	
				136	
				156	
				176	
				196	
M10	M12	25	100	96	
				116	
				136	
				156	
				176	
				196	
				236	
				276	

# N 161

## Support Pillar With Guiding Diameter Offset

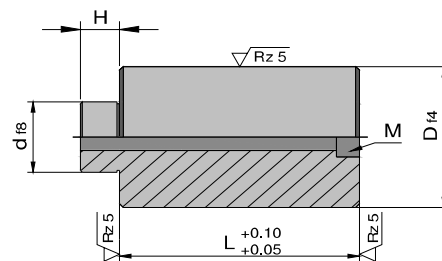
Ordering-Example:

1 Piece N161 Ø24/36

**New**

Special Sizes Available On Request

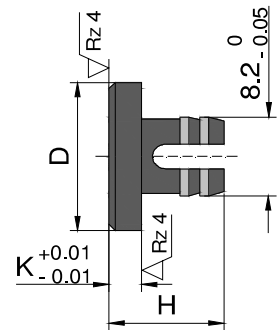
Material: 1.7139 ca. 700HV



M	H	d	D	L	€
M8	7	14	24	36	
				46	
				56	
				66	
				76	
				86	
				96	
				116	
M10	9	18	36	46	
				56	
				66	
				76	
				86	
				96	
				116	
				136	
M12	10	20	48	46	
				56	
				66	
				76	
				86	
				96	
				116	
				136	
				156	

# N 17

## Elastic Washer



Ordering-Example:

1 Piece N17 Ø16

Special Sizes Available On Request

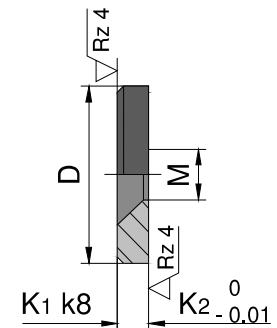
Material: 1.7139 ca. 980 N/mm<sup>2</sup>

H	K	D	€
11	3	16	
12	4	20	

H	K	D	€
11	3	25	
12	4	30	

# N 18

## Disc



Ordering-Example:

1 Piece N18 Ø18

Special Sizes Available On Request

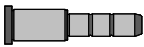




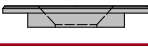





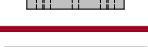

















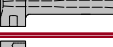

























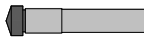















Material: 1.7139 ca. 980 N/mm<sup>2</sup>

M	K1	D	€
M4	3	18	
		28	

M	K2	D	€
M5	4	20	
		30	

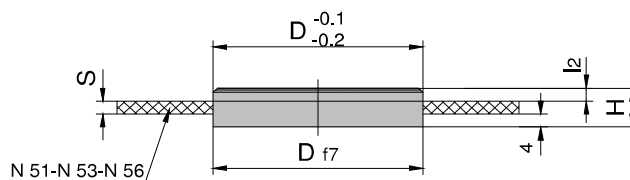


## STANDARD PARTS FOR TOOL MAKING AND MOULD CONSTRUCTION

Description	Group	Description	Group	Description	Group
N 01 	1	N 091 	6	N 20 	9
N 011 	1	N 10 	6	N 21 	9
N 02 	1	N 101 	6	N 22 	9
N 021 	1	N 102 	6	N 23 	9
N 03 	2	N 11 	6	N 24 	9
N 035 	Bronze 2	N 12 	6	N 25 	9
N 04 	2	N 121 	6	N 26 	9
N 045 	Bronze 2	N 13 	7	N 30R 	10
N 03W 	2	N 130 	7	N 30 	10
N 04W 	2	N 131 	7	N 31 	R 15,5 t = 1,5 10
N 046 	Bronze 3	N 1310 	7	N 32 	R 40 t = 1,5 10
N 047 	Bronze 3	N 14 	7	N 33 	R 15,5 t = 3 10
N 048 	Bronze 3	N 140 	7	N 34 	R 40 t = 3 10
N 0481 	3	N 15 	7	N 40 	10
N 05 	4	N 135 	7	N 41 	10
N 051 	4	N 1305 	7		
N 06 	4	N 1315 	7		
N 065 	4	N 1320 	7		
N 61 	4	N 145 	7		
N 62 	4	N 155 	7		
N 63 	4	N 165 	7		
N 07 	5	N 166 	7		
N 071 	5	N 167 	7		
N 072 	5	N 16 	8		
N 074 	5	N 161 	8		
N 08 	5	N 17 	8		
N 081 	5	N 18 	8		
N 09 	6	N 19 	9		

# N 19

## Locating Ring



Ordering-Example:

1 Piece N19 Ø40/6

Special Sizes Available On Request

Material: 1.1191

S	l <sub>2</sub>	D	H	€
-	-	40	6	
3			9	
-	4	60	8	
3			11	
5			13	
-	4	80	8	
3	8		15	
5			17	
-	8	90	12	
3			15	
5			17	
6			18	
7			19	
8,5	8,5		21	
-	4	100	8	
-	8		12	
6			18	
8,5	8,5		21	
-	8	110	12	
6			18	
8,5	8,5		21	
-	8	120	12	
8,5	8,5		21	

S	l <sub>2</sub>	D	H	€
-	4	125	8	
-	8		12	
6			18	
8			20	
8,5	8,5		21	
-	8	130	12	
-	8	140	12	
-	8	150	12	
8,5	8,5		21	
-	4	160	8	
-	8		12	
6	10		20	
8			22	
8,5	10,5		23	
-	8	175	12	
8,5	8,5		21	
-	8	200	12	
5	11		20	
8	10		22	
8,5	10,5		23	
-	8	250	12	
8	10		22	
8,5	10,5		23	

# N 20

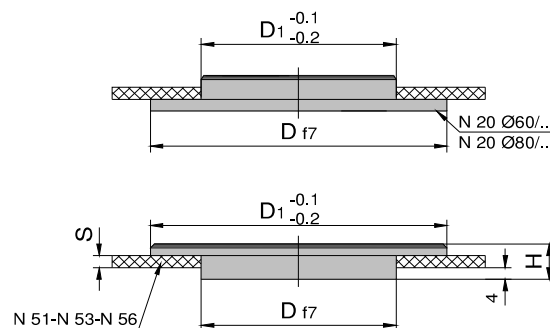
## Locating Ring

Ordering-Example:

1 Piece N20 Ø60/8

Special Sizes Available On Request

Material: 1.1191

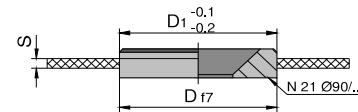
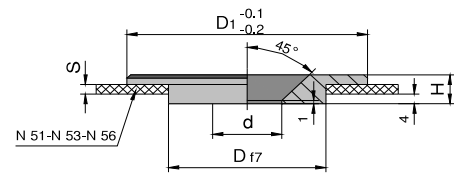
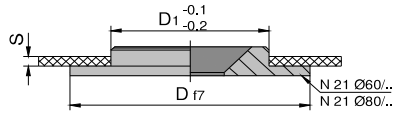


S	D	D1	H	€
-	90	60	8	
3			11	
5			13	
6			14	
-	90	80	12	
3			15	
5			17	
-	90	100	8	
-			12	
3			15	
5			17	
6			18	
7			19	
8,5			21	
-	90	110	12	
3			15	
5			17	
6			18	
7			19	
8			20	
8,5			21	
-	90	120	12	
3			15	
5			17	
6			18	
7			19	
8			20	
8,5			21	

S	D	D1	H	€
-	90	125	12	
3			15	
5			17	
6			18	
7			19	
8			20	
8,5			21	
-	90	140	12	
-	90	150	12	
-	90	160	12	
3			15	
5			17	
6			18	
7			19	
8			20	
8,5			21	
-	90	175	12	
3			15	
5			17	
6			18	
7			19	
8			20	
8,5			21	
-	90	200	12	
8	160		22	
-	90	250	12	
8	160		22	

# N 21

## Locating Ring



Ordering-Example:

1 Piece N21 Ø60/8

Special Sizes Available On Request

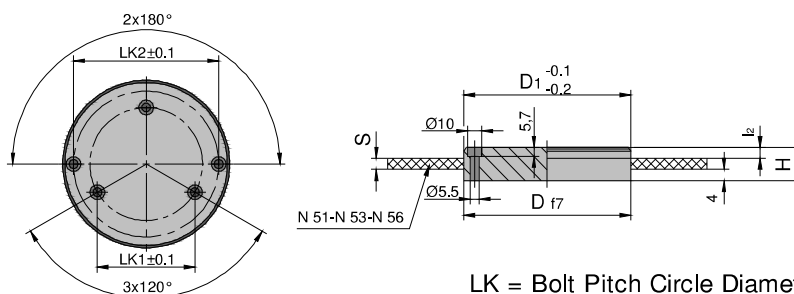
Material: 1.1191

S	d	D	D1	H	€
-	36	90	60	8	
3	26			11	
5	26			13	
6	26			14	
-	36	90	80	12	
3	26			15	
5	26			17	
-	36	90	90	12	
3				15	
5				17	
6				18	
7				19	
8,5				21	
-	36	90	100	8	
-				12	
3				15	
5				17	
6				18	
7				19	
8,5				21	
-	36	90	110	12	
3				15	
5				17	
6				18	
7				19	
8				20	
8,5				21	
-	36	90	120	12	
3				15	
5				17	
6				18	
7				19	
8				20	
8,5				21	

S	d	D	D1	H	€
-	36	90	125	12	
3				15	
5				17	
6				18	
7				19	
8				20	
8,5				21	
-	36	90	130	12	
-	36	90	140	12	
-	36	90	150	12	
-	36	90	160	12	
3				15	
5				17	
6				18	
7				19	
8				20	
8,5				21	
-	36	90	175	12	
3				15	
5				17	
6				18	
7				19	
8				20	
8,5				21	
-	36	90	180	12	
-	36	90	200	12	
-	36	90	250	12	

# N 22

## Locating Ring With Screw Holes



Ordering-Example:

1 Piece N22 Ø60/8

Special Sizes Available On Request

LK = Bolt Pitch Circle Diameter

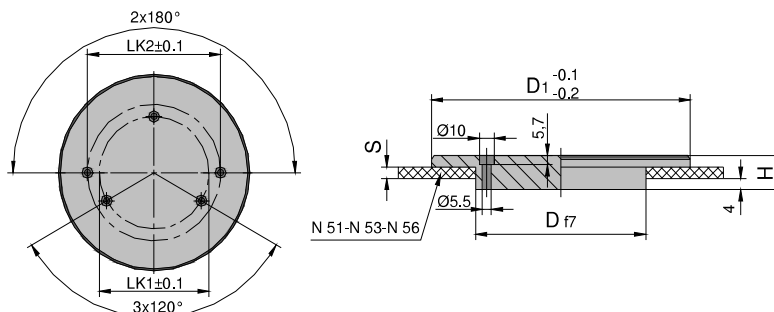
Material: 1.1191

S	l2	LK1	LK2	D	H	€
-	4	48	48	60	8	
3			11			
5			13			
-	4	68	-	80	8	
3	8		15			
5			17			
-	8	78	76	90	12	
3			15			
5			17			
6			18			
7			19			
8,5	8,5		21			
-	4	82	82	100	8	
-	8		12			
6			18			
8,5	8,5		21			
-	8	90	90	110	12	
6			18			
8,5	8,5		21			
-	8	104	104	120	12	
8,5	8,5		21			

S	l2	LK1	LK2	D	H	€
-	4	104	104	125	8	
-	8				12	
6					18	
8					20	
8,5	8,5				21	
-	8	109	-	130	12	
-	8	119	-	140	12	
-	4	144	144	160	8	
-	8				12	
6	10				20	
8					22	
8,5	10,5				23	
-	8	144	-	175	12	
8,5	8,5				21	
-	8	144	144	200	12	
5	11				20	
8	10				22	
8,5	10,5				23	
-	8	194	194	250	12	
8	10				22	
8,5	10,5				23	

# N 23

## Locating Ring With Screw Holes



Ordering-Example:

LK = Bolt Pitch Circle Diameter

1 Piece N23 Ø100/8

Special Sizes Available On Request

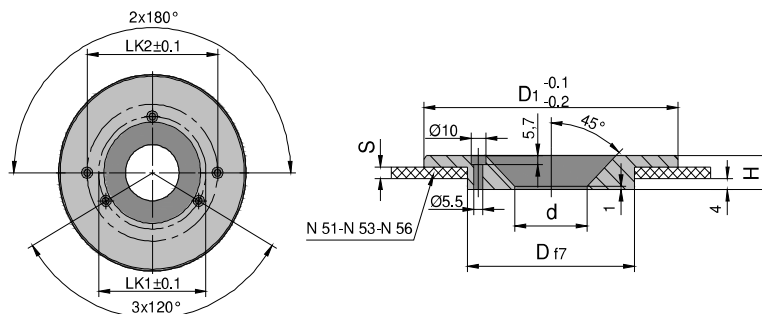
Material: 1.1191

S	LK1	LK2	D	D1	H	€
-	78	-	90	100	8	
-		82			12	
3					15	
5					17	
6					18	
7					19	
8,5					21	
-	78	98	90	110	12	
3					15	
5					17	
6					18	
7					19	
8					20	
8,5					21	
-	78	104	90	120	12	
3					15	
5					17	
6					18	
7					19	
8					20	
8,5					21	
-	78	104	90	125	12	
3					15	
5					17	
6					18	
7					19	
8					20	
8,5					21	

S	LK1	LK2	D	D1	H	€
-	78	-	90	140	12	
-	78	-	90	150	12	
-	78	128	90	160	12	
3					15	
5					17	
6					18	
7					19	
8					20	
8,5					21	
-	78	128	90	175	12	
3					15	
5					17	
6					18	
7					19	
8					20	
8,5					21	
-	78	144	90	200	12	
-	78	144	90	250	12	

# N 24

## Locating Ring With Screw Holes



Ordering-Example:

1 Piece N24 Ø90/12

LK = Bolt Pitch Circle Diameter

Special Sizes Available On Request

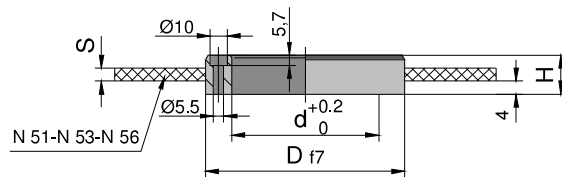
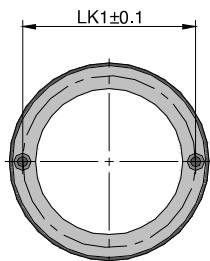
Material: 1.1191

S	LK1	LK2	d	D	D1	H	€
-	78	76	36	90	90	12	
3						15	
5						17	
6						18	
7						19	
8,5						21	
-	78	-	36	90	100	8	
-	78	82	36	90	100	12	
3						15	
5						17	
6						18	
7						19	
8,5						21	
-	78	98	36	90	110	12	
3						15	
5						17	
6						18	
7						19	
8						20	
8,5						21	
-	78	104	36	90	120	12	
3						15	
5						17	
6						18	
7						19	
8						20	
8,5						21	

S	LK1	LK2	d	D	D1	H	€
-	78	104	36	90	125	12	
3						15	
5						17	
6						18	
7						19	
8						20	
8,5						21	
-	78	-	36	90	130	12	
-	78	-	36	90	140	12	
-	78	-	36	90	150	12	
-	78	128	36	90	160	12	
3						15	
5						17	
6						18	
7						19	
8						20	
8,5						21	
-	78	128	36	90	175	12	
3						15	
5						17	
6						18	
7						19	
8						20	
8,5						21	
-	78	-	36	90	180	12	
-	78	-	36	90	200	12	
-	78	-	36	90	250	12	

# N 25

## Locating Ring With Screw Holes



Ordering-Example:

1 Piece N25 Ø125/12

Special Sizes Available On Request

LK = Bolt Pitch Circle Diameter

Material: 1.1191

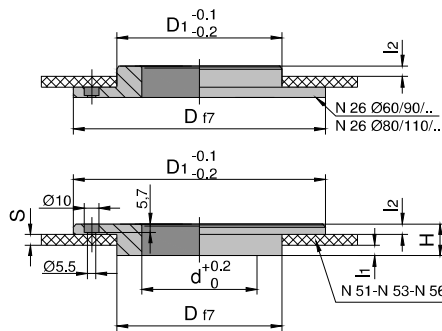
S	LK1	d	D	H	€
-	104	82	125	12	
6				18	
8				20	
-	144	120	160	14	
6				20	
8				22	

S	LK1	d	D	H	€
-	144	120	200	14	
8				22	
-	144	120	250	14	
8				22	



# N 26

## Locating Ring With Screw Holes



LK = Bolt Pitch Circle Diameter

Ordering-Example:

1 Piece N26 Ø60/90/18

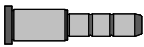




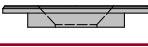
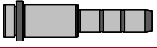


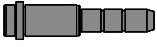












































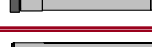
















Special Sizes Available On Request

Material: 1.1191

l1	l2	S	LK1	d	D1	D	H	€
8	10	-	75	50	60	90	18	
		6					24	
		8					26	
4	8	-	98	82	110	90	12	
		6					18	
		8					20	
4	8	-	104	82	120	90	12	
		6					18	
		8					20	
4	8	-	104	82	125	90	12	
		6					18	
		8					20	
4	8	-	104	82	160	90	12	
		6					18	
		8					20	

l1	l2	S	LK1	d	D1	D	H	€
4	8	-	104	82	175	90	12	
		6					18	
		8					20	
8	10	-	95	70	80	110	18	
		6					24	
		8					26	
4	10	-	144	120	175	160	14	
		6					20	
		8					22	
4	10	-	144	120	200	160	14	
		8					22	
4	10	-	144	120	250	160	14	
		8					22	

## STANDARD PARTS FOR TOOL MAKING AND MOULD CONSTRUCTION

Description	Group	Description	Group	Description	Group
<b>N 01</b> 	1	<b>N 091</b> 	6	<b>N 20</b> 	9
<b>N 011</b> 	1	<b>N 10</b> 	6	<b>N 21</b> 	9
<b>N 02</b> 	1	<b>N 101</b> 	6	<b>N 22</b> 	9
<b>N 021</b> 	1	<b>N 102</b> 	6	<b>N 23</b> 	9
<b>N 03</b> 	2	<b>N 11</b> 	6	<b>N 24</b> 	9
<b>N 035</b>  Bronze	2	<b>N 12</b> 	6	<b>N 25</b> 	9
<b>N 04</b> 	2	<b>N 121</b> 	6	<b>N 26</b> 	9
<b>N 045</b>  Bronze	2	<b>N 13</b> 	7	<b>N 30R</b> 	10
<b>N 03W</b> 	2	<b>N 130</b> 	7	<b>N 30</b> 	10
<b>N 04W</b> 	2	<b>N 131</b> 	7	<b>N 31</b>  R 15,5 t = 1,5	10
<b>N 046</b>  Bronze	3	<b>N 1310</b> 	7	<b>N 32</b>  R 40 t = 1,5	10
<b>N 047</b>  Bronze	3	<b>N 14</b> 	7	<b>N 33</b>  R 15,5 t = 3	10
<b>N 048</b>  Bronze	3	<b>N 140</b> 	7	<b>N 34</b>  R 40 t = 3	10
<b>N 0481</b> 	3	<b>N 15</b> 	7	<b>N 40</b> 	10
<b>N 05</b> 	4	<b>N 135</b> 	7	<b>N 41</b> 	10
<b>N 051</b> 	4	<b>N 1305</b> 	7		
<b>N 06</b> 	4	<b>N 1315</b> 	7		
<b>N 065</b> 	4	<b>N 1320</b> 	7		
<b>N 61</b> 	4	<b>N 145</b> 	7		
<b>N 62</b> 	4	<b>N 155</b> 	7		
<b>N 63</b> 	4	<b>N 165</b> 	7		
<b>N 07</b> 	5	<b>N 166</b> 	7		
<b>N 071</b> 	5	<b>N 167</b> 	7		
<b>N 072</b> 	5	<b>N 16</b> 	8		
<b>N 074</b> 	5	<b>N 161</b> 	8		
<b>N 08</b> 	5	<b>N 17</b> 	8		
<b>N 081</b> 	5	<b>N 18</b> 	8		
<b>N 09</b> 	6	<b>N 19</b> 	9		

# N 30R

## Sprue Bush Blank Without Radius With Machining Allowance And Pilot Hole Drilling

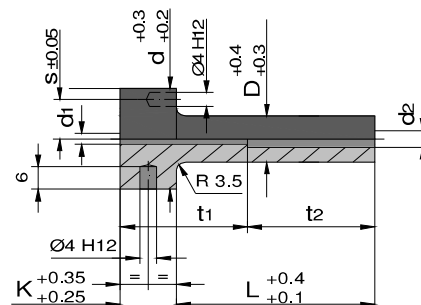
Ordering-Example:

**New**

1 Piece N30 Ø12/22/R

Special Sizes Available On Request

Material: 1.2826 ca. 580HV



s	K	d	d1	t1	d2	t2	D	L	€
11	13	28	2,0	35	-	-	12	22	
				40				27	
				49				36	
			2,0		2,5	10		46	
						20		56	
						30		66	
						40		76	
15	18	38	2,0	45	-	-	18	27	
				54				36	
			2,0	49	2,5	15		46	
						25		56	
						35		66	
						45		76	
						55		86	
						65		96	
						85		116	
20	23	48	3,5	69	-	-	24	46	
				79				56	
				89				66	
				99				76	
				109				86	
				119				96	
				139				116	
				159				136	

# N 30

## Sprue Bush Without Radius

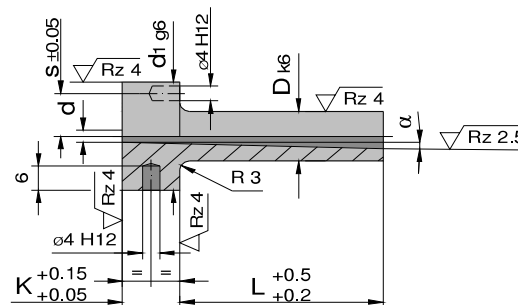
$\alpha = 0,5^\circ / 1,0^\circ / 1,5^\circ$

Ordering-Example:

1 Piece N30 Ø12/22/2.5/0,5°

Special Sizes Available On Request

Material: 1.2826 ca. 580HV



$\alpha$	s	K	d1	D	L	d	€
0,5°	11	13	28	12	22	2,5	
					27		
					36		
					46		
					56		
0,5°	11	13	28	12	27	3,5	
					36		
					46		
					56		
					66		
0,5°	15	18	38	18	46	3	
					56		
					66		
					76		
					86		
0,5°	15	18	38	18	46	4	
					56		
					66		
					76		
					86		

$\alpha$	s	K	d1	D	L	d	€
1°	15	18	38	18	27	3	
					36		
					46		
					56		
					66		
1°	15	18	38	18	76	3	
					86		
					96		
					116		
1°	15	18	38	18	27	4	
					36		
					46		
					56		
					66		
1°	15	18	38	18	76	4	
					86		
					96		
					116		
1°	20	23	48	24	46	5	
					56		
					66		
					76		
					86		
1°	20	23	48	24	46	5	
					56		
					66		
					76		
					86		

$\alpha$	s	K	d1	D	L	d	€
1°	11	13	28	12	22	2,5	
					27		
					36		
					46		
					56		
1°	11	13	28	12	22	3	
					27		
					36		
					46		
					56		
1°	11	13	28	12	22	3,5	
					27		
					36		
					46		
					56		

$\alpha$	s	K	d1	D	L	d	€
1,5°	15	18	38	18	27	3,5	
					36		
					46		
					56		
					66		
1,5°	15	18	38	18	27	4,5	
					36		
					46		
					56		
					66		
1,5°	20	23	48	24	46	4,5	
					56		
					66		
					76		
					86		
1,5°	20	23	48	24	46	6,5	
					56		
					66		
					76		
					86		

# N 31

## Sprue Bush With Radius 15,5

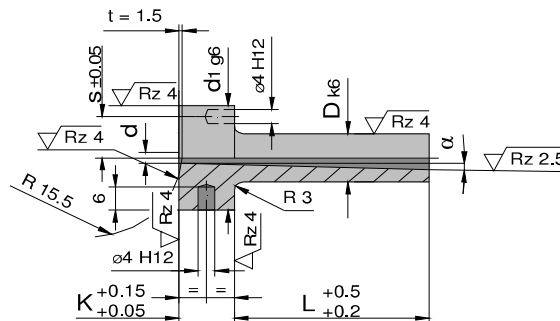
$\alpha = 0,5^\circ / 1,0^\circ / 1,5^\circ$

Ordering-Example:

1 Piece N31 Ø12/27/2,5/0,5°

Special Sizes Available On Request

Material: 1.2826 ca. 580HV



$\alpha$	s	K	d1	D	L	d	€
0,5°	11	13	28	12	27	2,5	
					36		
					46		
					56		
0,5°	11	13	28	12	27	3,5	
					36		
					46		
					56		
					66		
					76		
0,5°	15	18	38	18	46	3	
					56		
					66		
					76		
					86		
					96		
					116		
0,5°	15	18	38	18	46	4	
					56		
					66		
					76		
					86		
					96		
					116		

$\alpha$	s	K	d1	D	L	d	€
1°	15	18	38	18	27	3	
					36		
					46		
					56		
					66		
					76		
					86		
					96		
					116		
1°	15	18	38	18	27	4	
					36		
					46		
					56		
					66		
					76		
					86		
					96		
					116		
1°	20	23	48	24	46	5	
					56		
					66		
					76		
					86		
					96		
					116		
					136		

$\alpha$	s	K	d1	D	L	d	€
1°	11	13	28	12	22	2,5	
					27		
					36		
					46		
					56		
1°	11	13	28	12	22	3	
					27		
					36		
					46		
					56		
					66		
1°	11	13	28	12	22	3,5	
					27		
					36		
					46		
					56		

$\alpha$	s	K	d1	D	L	d	€
1,5°	15	18	38	18	27	3,5	
					36		
					46		
					56		
1,5°	15	18	38	18	27	4,5	
					36		
					46		
					56		
					76		
1,5°	20	23	48	24	46	4,5	
					56		
					76		
1,5°	20	23	48	24	56	6,5	
					76		

# N 32

## Sprue Bush With Radius 40

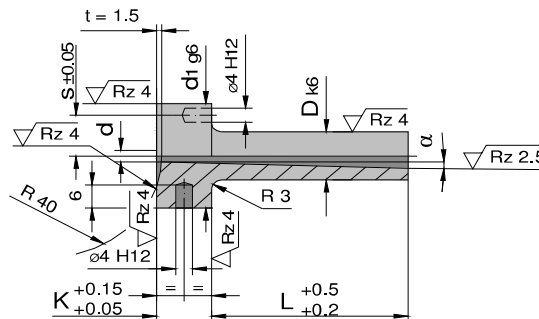
$\alpha = 0,5^\circ / 1,0^\circ / 1,5^\circ$

Ordering-Example:

1 Piece N32 Ø12/27/2,5/0,5°

Special Sizes Available On Request

Material: 1.2826 ca. 580HV



$\alpha$	s	K	d1	D	L	d	€
0,5°	11	13	28	12	27	2,5	
					36		
					46		
					56		
0,5°	11	13	28	12	27	3,5	
					36		
					46		
					56		
					66		
					76		
0,5°	15	18	38	18	46	3	
					56		
					66		
					76		
					86		
					96		
					116		
0,5°	15	18	38	18	46	4	
					56		
					66		
					76		
					86		
					96		
					116		

$\alpha$	s	K	d1	D	L	d	€
1°	15	18	38	18	27	3	
					36		
					46		
					56		
					66		
					76		
					86		
					96		
					116		
1°	15	18	38	18	27	4	
					36		
					46		
					56		
					66		
					76		
					86		
					96		
					116		
1°	20	23	48	24	46	5	
					56		
					66		
					76		
					86		
					96		
					116		
					136		

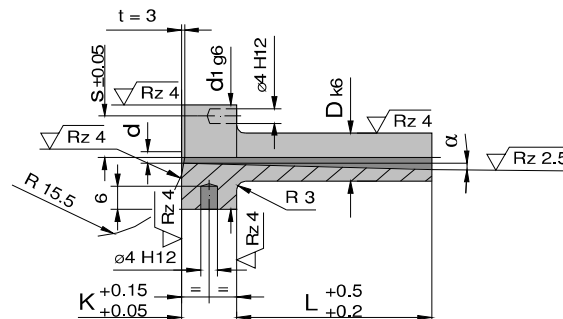
$\alpha$	s	K	d1	D	L	d	€
1°	11	13	28	12	22	2,5	
					27		
					36		
					46		
					56		
1°	11	13	28	12	22	3	
					27		
					36		
					46		
					56		
					66		
1°	11	13	28	12	22	3,5	
					27		
					36		
					46		
					56		

$\alpha$	s	K	d1	D	L	d	€
1,5°	15	18	38	18	27	3,5	
					36		
					46		
					56		
1,5°	15	18	38	18	27	4,5	
					36		
					46		
					56		
					76		
1,5°	20	23	48	24	46	4,5	
					56		
					76		
1,5°	20	23	48	24	56	6,5	
					76		

# N 33

## Sprue Bush With Radius 15,5

$\alpha = 0,5^\circ / 1,0^\circ / 1,5^\circ$



Ordering-Example:

1 Piece N33 Ø18/46/3/0,5°

Special Sizes Available On Request

Material: 1.2826 ca. 580HV

$\alpha$	s	K	d1	D	L	d	€
0,5°	15	18	38	18	46	3	
					56		
					66		
					76		
					86		
					96		
0,5°	15	18	38	18	46	4	
					56		
					66		
					76		
					86		
					96		
0,5°	15	18	38	18	46	4	
					56		
					66		
					76		
					86		
					96		

$\alpha$	s	K	d1	D	L	d	€
1°	20	23	48	24	46	5	
					56		
					66		
					76		
					86		
					96		
1°	20	23	48	24	116	5	
					136		

$\alpha$	s	K	d1	D	L	d	€
1°	15	18	38	18	27	3	
					36		
					46		
					56		
					66		
					76		
					86		
					96		
					116		
					1°		15
36							
46							
56							
66							
76							
86							
96							
116							

$\alpha$	s	K	d1	D	L	d	€
1,5°	15	18	38	18	27	3,5	
					36		
					46		
					56		
1,5°	15	18	38	18	27	4,5	
					36		
					46		
					76		
1,5°	20	23	48	24	46	4,5	
					56		
1,5°	20	23	48	24	56	6,5	
					76		

# N 34

## Sprue Bush With Radius 40

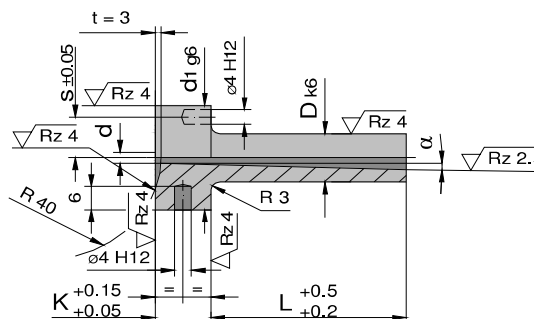
$\alpha = 0,5^\circ / 1,0^\circ / 1,5^\circ$

Ordering-Example:

1 Piece N34 Ø18/46/3/0,5°

Special Sizes Available On Request

Material: 1.2826 ca. 580HV



$\alpha$	s	K	d1	D	L	d	€
0,5°	15	18	38	18	46	3	
					56		
					66		
					76		
					86		
					96		
					116		
0,5°	15	18	38	18	46	4	
					56		
					66		
					76		
					86		
					96		
					116		

$\alpha$	s	K	d1	D	L	d	€
1°	20	23	48	24	46	5	
					56		
					66		
					76		
					86		
					96		
					116		
					136		

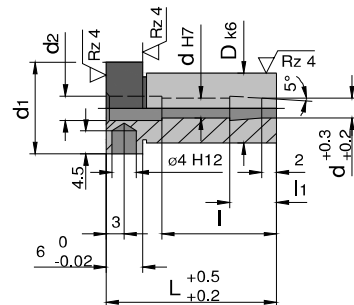
$\alpha$	s	K	d1	D	L	d	€
1°	15	18	38	18	27	3	
					36		
					46		
					56		
					66		
					76		
					86		
					96		
					116		
1°	15	18	38	18	27	4	
					36		
					46		
					56		
					66		
					76		
					86		
					96		
					116		

$\alpha$	s	K	d1	D	L	d	€
1,5°	15	18	38	18	27	3,5	
					36		
					46		
					56		
1,5°	15	18	38	18	27	4,5	
					36		
					46		
					56		
1,5°	20	23	48	24	46	4,5	
					56		
					76		
1,5°	20	23	48	24	56	6,5	
					76		



# N 40

## Sprue Puller Insert



Ordering-Example:

**New**

1 Piece N40 Ø12/22

Special Sizes Available On Request

Material: 1.2826 ca. 580HV

l <sub>1</sub>	l	d <sub>2</sub>	d <sub>1</sub>	d	D	L	€
7	18	4,5	16	4	12	22	
						27	
						36	
						46	
						56	
						66	
7	27	6,5	22	6	18	22	
						27	
						36	
						46	
						56	
						66	
					76		
9,5	28	8,5	28	8	24	36	
						46	
						56	
						66	
						76	
						86	
					96		

# N 41

## Sprue Puller Insert Without Undercut With Long Guiding

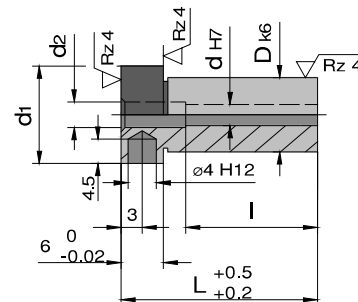
Ordering-Example:

1 Piece N41 Ø12/22

**New**

Special Sizes Available On Request

Material: 1.2826 ca. 580HV



I	d2	d1	d	D	L	€
22	-	16	4	12	22	
27					27	
36					36	
46					46	
	4,5				56	
					66	
22	-	22	6	18	22	
27					27	
36					36	
46					46	
56					56	
	6,5				66	
				76		
36	-	28	8	24	36	
46					46	
56					56	
66					66	
	8,5				76	
					86	
				96		