

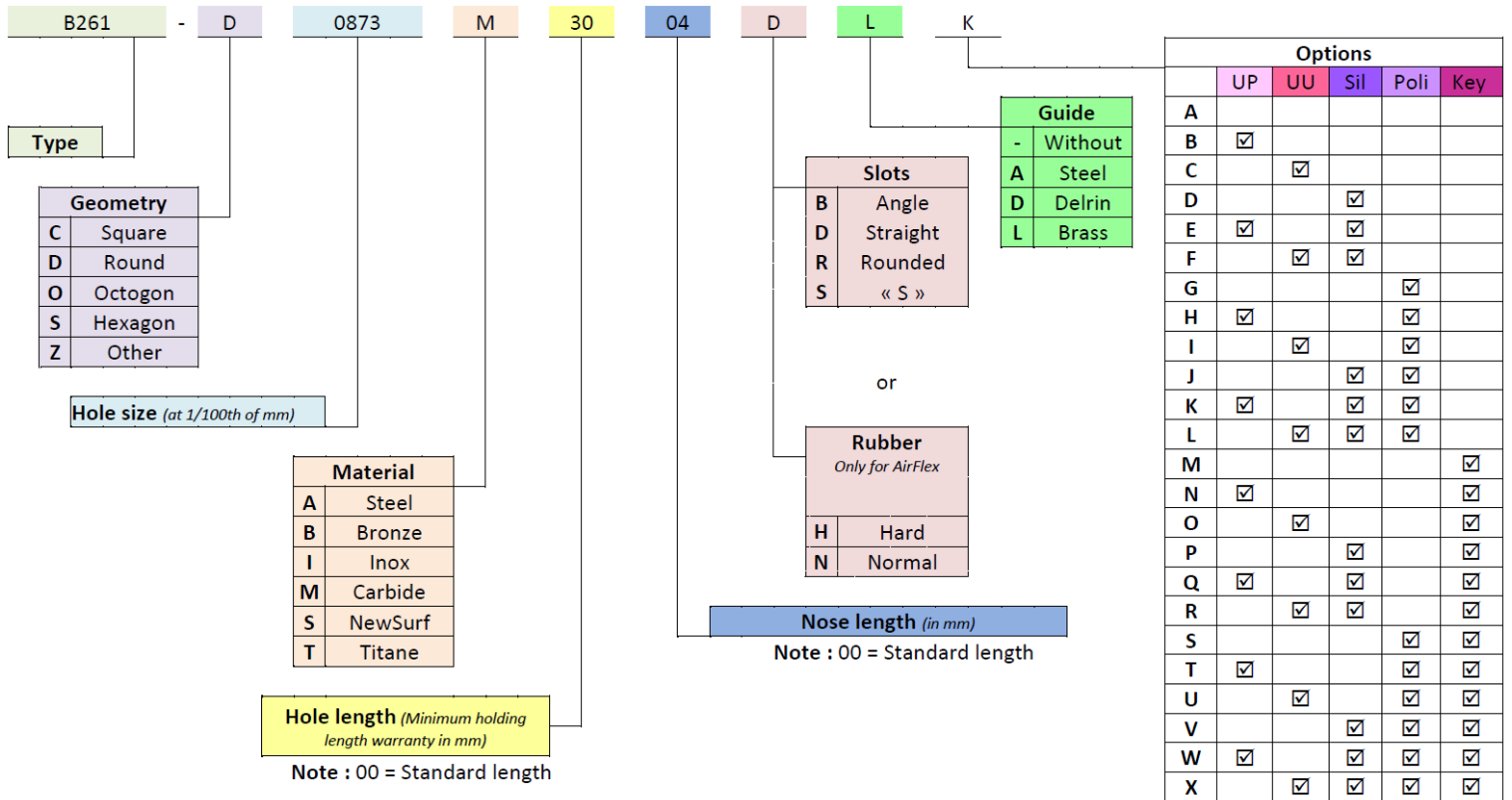
Product overview 2019

I. Content

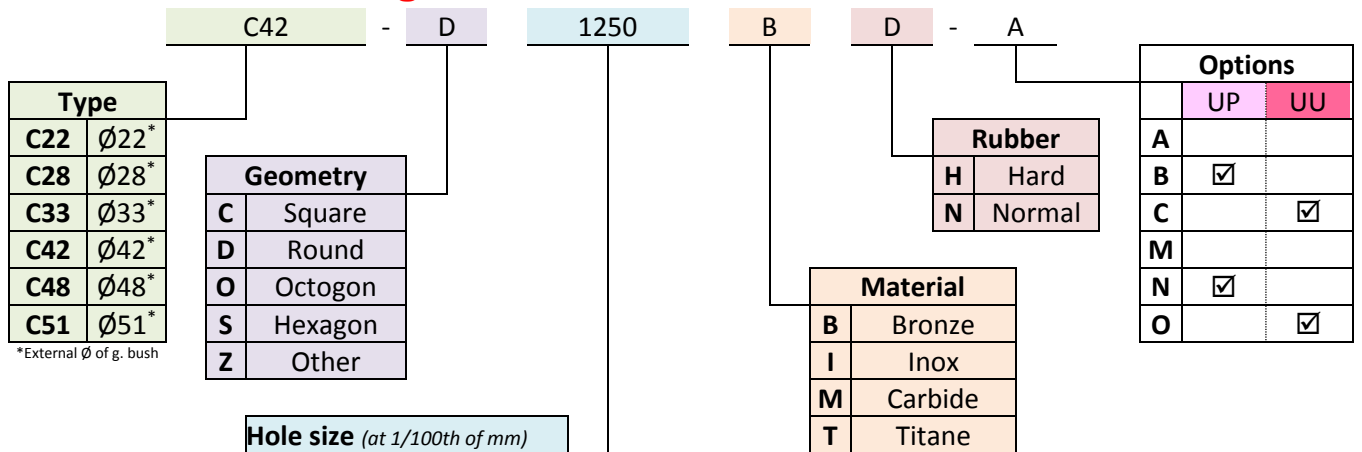
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1. Order nomenclature

1.1. Guide bush



1.2. AirFlex guide bush



1.3. Collet

F1076 - D 0873 M 30 Q 04 D D X

Type

Geometry	
C	Square
D	Round
O	Octogon
S	Hexagon
Z	Other

Hole size (at 1/100th of mm)

Material	
A	Steel
B	Bronze
M	Carbide
T	Titane

Hole length (Minimum holding length warranty in mm)
Note : 00 = Standard length

Slots	
B	Angle
D	Straight
R	Rounded
S	« S »

Nose length (in mm)
Note : 00 = Standard length

Hole finishing	
L	Smooth
R	Grooved
Q	Serrated

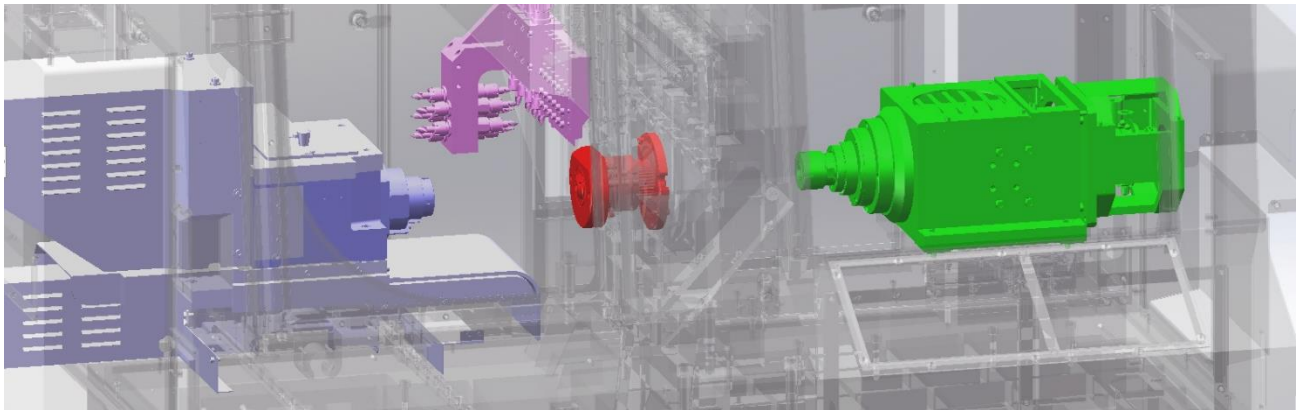
Guide	
-	Without
A	Steel
D	Delrin
L	Brass

Options					
	UP	UU	Sil	Poli	Key
A					
B	<input checked="" type="checkbox"/>				
C		<input checked="" type="checkbox"/>			
D			<input checked="" type="checkbox"/>		
E	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		
F		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
G				<input checked="" type="checkbox"/>	
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I		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
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X		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

2. Type

2.1. Use

The type of product depends on where you intent to use it.



1 : Illustration of a Swiss machine cinematic

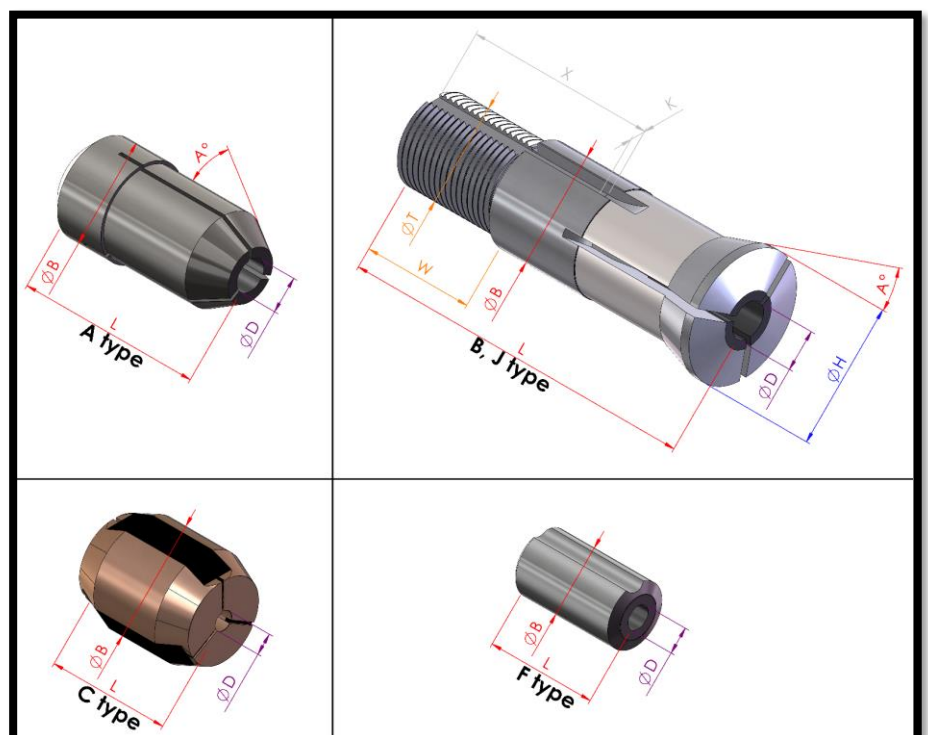
COLOR	LOCATION NAME	TYPE USED
NOT VISIBLE	Barloader	Barloader collet, revolving end-piece, ...
	Main spindle	Collet
	Guide bush holder (revolving or fix)	Guide bush
	Sub spindle (if available)	Collet (called "pickup collet")
	Tools holders	Tool holder, tool holder collet, ...

2.2. Dimension

The type of product is also defined by his external dimension

- Body diameter ($\varnothing B$)
- Total length (L)
- Thread ($\varnothing T$)
- Head diameter ($\varnothing H$)
- Head angle (A°)

Or you can find a manufacturer reference into the machine technical documentation. If you are not sure, give the maximum information to DUNNER sales team and they will help you to find the right type.



2 : Examples of guide bushes types

2.2.1. Guide bush B type

TYPE	Ø BODY	Ø HEAD	LENGTH	ANGLE	THREAD	MAX ROUND	MAX SQUARE	MAX HEX
B201	9	13	52	30	M9x0.70	5	3	4
B211	12	15	52	30	M12x1	8	5	6
B211H	12	15	52	30	M10x0.50	8	5.5	7
B300	13	16	41	15	M12.5x0.75	9	6	8
B305	14	18	64	16	M13x0.75	8	5.5	7
B203	16	20	55	30	M16x1	10		
B212	18	22	60	30	M18x1	13	8	10
B212A	18	22	60	30	M16x1	13	8	10
B208	20	25	55	30	M20x1	13		
B301	21	24	57	12	M18x1	16	10	14
B301T	21	24	66	12	M18x1	12	8	10
B238	24	30	61	30	M24x1	16	11	14
B213	25	30	71	30	M25x1	16	11	13
B215	26	29	77	16	M25x1			
B302	27	30	57	13	M24x1	18	11	14
B304	27	30	67	12	M24x1	16	11	14
B304T	27	30	68	12	M24x1	16	11	14
B260	28	38	82	30	M25x1	20	14	17
B261	28	34	82	16	M25x1	20	14	17
B261R	28	34	82	16	M27x1	23	16	19
B230	30	35	59	16	M30x1	22	15	19
B230N	30	35	68	16	M30x1	22	15	19
B230T	30	36	70	16	M28x1	22	15	19
B214	32	40	71	30	M32x1	21	15	19
B227	34	41	87	10	M34x1	26	18	22
B226	36	44	90	13	M36x1	26	18	22
B207	40	48	72	30	M40x1	26	18	22
B207A	40	48	72	30	M36x1	26	18	22
B207G	40	48	72	30	M36x1	26	18	22
B209	40	48	65	30	M40x1	28	20	24
B303	40	45	65	12	M38x1	22		
B232	41	46	54	10	M38x1	32	22	27
B306	43	48	65	12	M42x1	32	20	26
B250	45	52	82	16	M42x1	35	24	29
B246	46	53	92	16	M45x1	38	25	32
B234	48	58	73	19	M48x1.25	33	24	29
B236	48	56	81	30	M48x1.25	42	30	36
B240	48	54	81	10	M46x1	38	32	33
B248	48	54	82	16	M46x1			
B252	52	60	99	10	M42x1			

NOTE: Product with grey color (EXAMPLE) are not produced anymore

2.2.2. Guide bush C type

TYPE	Ø BODY	Ø HEAD	LENGTH	ANGLE	THREAD	MAX ROUND	MAX SQUARE	MAX HEX
C242	9		25	30	M6x0.50	4		
C22	22		30	22		12		
C28	28		40	22		16		
C33	33	12	40	22		26		
C42	42		50	22		32	22	27
C42L	42		100	22		32	22	27
C48	48		50	22		38		
C51	51		60	22		42		

NOTE: Product with grey color (EXAMPLE) are not produced anymore

2.2.3. Guide bush J type

TYPE	Ø BODY	Ø HEAD	LENGTH	ANGLE	THREAD	MAX ROUND	MAX SQUARE	MAX HEX
J2	7	10	30	16	M6x0.50	4		
J3	9	13	44	16	M8X0.75	4	2.50	3
J3C	9	13	38	16	M8x0.75	4		
J4	11	15	53	16	M10x0.75	7	4.50	6
J5	12	16	50	16	M10x0.75	7		
J6	16	20	58	16	M14x1	10.50	7	9
J6C	16	20	50	16	M14x1	10.50	6	8
J6N	16	20	63	16	M14x1	10.50	6	8
J6R	16	22	59	16	M14x1	11	7	11
J6X	16	22	59	16	M16x1	13		
J7A	22	29	68	16	M19x1	16	12	14
J7AN	22	26	70	16	M20x1	16	12	14
J7AR	22	29	68	16	M22x1	17	12	14
J8	23	28	72	16	M22x1	16	12	14
J9	42	49	81	16	M40x1	32	22	27
J9C	42	49	81	20	M40x1	32	22	27
J10	44	53	87	20	M40x1	32	22	27

NOTE: Product with grey color (EXAMPLE) are not produced anymore

2.2.4. Guide bush M type

TYPE	Ø BODY	Ø HEAD	LENGTH	ANGLE	THREAD	MAX ROUND	MAX SQUARE	MAX HEX
M1302	10		57	36	M10x1	4.50		
M1300	13		68	36	M13x1	7		
M1074	18	22	100	20	M18X1	12	8	11
M1301	18		69	36	M18x1	10		
M1304	30		73	19	M22x1	20		
M1262	34		150	20	M32x1	26	18	22

NOTE: Product with grey color (EXAMPLE) are not produced anymore

2.2.5. Collets F type

TYPE	Ø BODY	Ø HEAD	LENGTH	ANGLE	THREAD	MAX ROUND	MAX SQUARE	MAX HEX
F4.5/76	4.50	6.75	17.25	15		4		
F6/599	6	10	30	15		4.50		
F7/66	7	10.7	26	15		5		
F7/206	7	10.5	26	15		5.50		
F8/577	8	12	42	16		6.35		
F8/1844	8	11	19	15		6.50		
F8/2024(F577LN10.5)	8	12	47.5	16	M6x0.50	4.50		
F10/86	10	15.50	47.50	20		8	5	6.50
F10/1178	10	16	46	20		7		
F10/2021(F86LN10)	10	15.50	52	20	M8x0.50	7	5	6
F12/78	12	18.10	44.50	15		10	7	8.50
F12/578	12	18	64	16		10		
F13/357	13	19	64	16		10	7	8
F13/93019(F357LN8)	13	19	66	16				
F13/2014(F357LN12)	13	19	70	16	M11x0.75	8	5.70	7
F14/98	14	18	46	13		11.20	8	7
F15/358	15	22	47	20		11.11	7.54	9.52
F15/01	15	20	45	15		10	7	8
F15/580	15	21	64	16		12.70	9	11
F15/2022(F580LN13)	15	21	71	16		11.11	7.80	9.60
F16/104	16	22	55	15		13	9.20	11.30
F16/1076	16	21	64	16		13	9.20	11.30
F16/830	16	21	66	16	M14x0.75	13	9.20	11.30
F16/2015(F1076LN13)	16	21	71	16	M14x0.75	12	8.50	10.40
F16/2090	16	21	66	16	M14x0.75	15		

NOTE: Product with grey color (EXAMPLE) are not produced anymore

2.2.6. Collets F type (continued)

TYPE	Ø BODY	Ø HEAD	LENGTH	ANGLE	THREAD	MAX ROUND	MAX SQUARE	MAX HEX
F20/87	20	28	67	16		17	11.50	14
F20/201	20	26	54	15		16.50	12	14
F20/2016(F201LN13)	20	26	62	15	M18x1	15	10.60	13
F20/2017(F87LN15)	20	28	75	16		16	11.30	13.90
F20/2027(F87LN20)	20	28	80	16		16	11.30	13.90
F22/71	22	30	55	15		17	12	14.50
F24/17	24	32	67	16.7		18	12	15
F25/64	25	35	77	16		21	15	18
F25/2018(F64LN18)	25	35	85	16	M22x1	20	14	17
F26/18	26	36	67	16		20	14	17.50
F26/90	26	32	67	13		20		
F27/22	27	38	72.70	15		23	16	20
F27/2040(F22LN18.30)	27	38	83	15		23	15.50	19.05
F28/93	28	38	70	15		23	16	20
F30/63	30	42	80	16		26	18	22.22
F30/101	30	38	65	15		26	18	22.50
F30/2019(F101LN20)	30	38	79	15		25.4	18	22
F32/221	32	45	75	15		27	19	23
F35/94	35	45	80	15		30	21	26
F35/2010(F35/67)	35	43	70	15		30		
F35/2013(F2010LN27)	35	43	90	15		27.70		
F37/740	37	47	92	16		32	22.60	27.70
F37/2020(F740LN)	37	47	107	16		32	22.60	27.70
F38/72	38.08	49	107.50	16		32	22.60	27
F38/2004(F72LN)	38.08	49	123	15		32	22.60	27.70
F42/99	42	55	94	15		36	25	31
F43/37	43	53	92	16		39	25	33
F48/38	48	54	101	16		42	29	36
F48/81	48	60	94	15		42	29.50	36
F48/2006(F81LN28)	48	60	113	15		42	29.50	36
F66/359	66	84	110	15		60	42	52

NOTE: Product with grey color (EXAMPLE) are available only made on steel.

2.2.7. Collets W type

TYPE	Ø BODY	Ø HEAD	LENGTH	ANGLE	THREAD	MAX ROUND	MAX SQUARE	MAX HEX
W10/1	10	14	43.60	15	W9.83x0.833	10		
W12/2	12	16	46	15	W11.75x1.25	12.50		
W12/93108	12	16	52	15	W11.75x1.25	10		
W15/3	15	20.20	58.30	15	W14.75x1.25	16		
W15/93285	15	20.20	67	15	W14.75x1.25	12.70		
W20/4	20	26.30	73	15	W19.70x1.666	23		
W20/107	20	26.30	73	15	W19.70x1.666	20		
W20/92744	20	26.30	84.50	15	W19.70x1.666	16		
W20/93286	20	26.30	84.50	15	W19.70x1.666	20		
W25/5	25	33.70	97.60	15	W24.70x1.693	29		
W25/700	25	33.70	97.60	15	W27.40x1.693	25.40		
W25/1923	25	35	94	16	M25X1	17		
W25/92872	25	33.70	112.20	15	W27.40x1.693	21		
W25/2006	25	33.70	112.20	15	W24.70x1.693	25.40		
W31.75/842	31.75	37.40	87	10°3'	W31.40x1.27	31		
W31.75/2007	31.75	37.40	108.70	10°3'	W31.40x1.27	28		

NOTE: Product with grey color (EXAMPLE) are available only made on steel.

2.2.8. Collets B type

TYPE	Ø BODY	Ø HEAD	LENGTH	ANGLE	THREAD	MAX ROUND	MAX SQUARE	MAX HEX
B6/128	6	10.50	31.30	20	B5x0.706	6		
B8/137	8	13	35.50	20	B6.82x0.625	10		
B8/95	8	13	40.50	20	B6.82x0.625	6.50		
B15/139	15	21	55	20	M13x1	15		
B23/2008	23	26.3	75	15	M20x1	14		
B32/65	32	40	106	15	B29.70x1.693	32		
B32/2003	32	40	124	15	B29.70x1.693	28		
B32/2005	32	53	148.50	15	B29.70x1.693	40		
B45/2005	32	53	148.50	15	B29.70x1.693	40		
B34/1820	34	42	90	16	M30x1	25		
B45/199	45	53	115	15	M42x1.50	45		
B46/2007	46	60.30	120	15	M40x1.50	33		

NOTE: Product with grey color (EXAMPLE) are available only made on steel.

3. Hole geometry

Every product must fit the material. According to the material you intend to machine, you can choose different kind of hole geometry:

- C - For square material
- D- For round material
- O - For octagon material
- S - For hexagon material
- Z - For profiled material. In this case, it will be necessary to send a drawing of the material profile and a sample of 30cm to DUNNER sales team.

4. Hole size

The hole size is given in 1/100 mm in the article code.

But for quotation and other commercial discussion, you can use:

- Millimeters (for example 16.50)
- Inches (for example .357")
- Imperial (for example 1/16 ")

Standards sizes progression are:

For small guide bush and collet up to hole size \varnothing 5mm F8, F10, B201, B211, B211H, J3, J3c, J4	Every 0.10 mm and 1/32"
For all other guide bush and collet	Every 0.50 mm and 1/16"

5. Material

Guide bushes are available in several materials to meet the needs of users.

5.1. A - Steel

Available for collets and guide bushes. This is the most standard material for collets.

- ✓ Medium wear resistance
- ✓ Medium friction coefficient
Note : Use for guide bush only on soft materials like brass, bronze or plastics and where marking is not a problem
- ✓ Good relation – price performance

5.2. B - Bronze

Available for collets and guide bushes. This is the standard AirFlex guide bushes material. Attention, medical implants production could refuse this material.

- ✓ Good wear resistance
- ✓ Low friction coefficient
(Medium friction coefficient on materials like brass, bronze or copper)
- ✓ Avoid marking surfaces when guiding or clamping

5.3. I - Inox (hardened)

Available for AirFlex guide bushes

- ✓ Very good wear resistance
- ✓ Good relation – price performance
- ✓ Medium friction coefficient
(Low friction coefficient for brass bronze and copper)
Note : Use where marking is not a problem
- ✓ Allowed for implants production

5.4. M - Carbide

Available for collets and guide bushes. This is the standard material for guide bushes.

- ✓ Best wear resistance
- ✓ Low friction coefficient
- ✓ Allowed for implants production

5.5. S - NewSurf (ceramic)

Available only for guide bushes. This special ceramic has been developed to improve the machining of stainless steel and other difficult materials. Thanks to the low friction coefficient, this material allows to tight more and reduces at the minimum the play between the bar and the guide bush.

Be sure to always adjust the guide bush without oil when using fix. For safety the inserts are released at 300 ° C to avoid any risk of fire.

- ✓ Best wear resistance
- ✓ The lowest friction coefficient
- ✓ Avoid marking surfaces when guiding
- ✓ Allowed for implants production

5.6. T - Titane

Available for collets and guide bushes.

Made to avoid the use of bronze for medical implants production.

- ✓ Good wear resistance
- ✓ Low friction coefficient
- ✓ Avoid marking surfaces when guiding or clamping
- ✓ Allowed for implants production

6. Hole length

The hole length (in millimeter) is 00 for standard length but it could be specified for:

- Pick-up collet (counter spindle)
The need of a longer hold is usually due to a long piece to be picked-up. It could be use also to reduce the surface forces when you clamp a piece on a thread.
- Guide bush except AirFlex
A longer hole length means a longer guiding. If you need to come back into the guide bush longer than the standard length, you can ask a longer hole.

The usual longer holes are 30,50 and 70 mm.

6.1. Guide bush standard hole length

6.1.1. Carbide guide bush

Ø HOLE SIZE	STANDARD MINIMAL LENGTH
>1.00	10
1.00-1.95	11
2.00-2.95	13
3.00-7.95	14
8.00-11.95	15
12.00-13.45	17
13.50-21.95	19
22.00-32.95	20
33.00-37.95	23
38.00-42.00	25

6.1.2. NewSurf guide bush

Ø HOLE SIZE	STANDARD MINIMAL LENGTH
>1.00	10
1.00-2.95	10
3.00-4.95	13
5.00-6.95	14
7.00-16.95	15
17.00-22.00	17

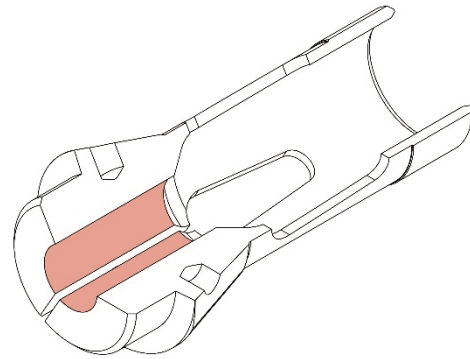
7. Hole finishing

The hole is only available for collets

7.1. L - Smooth

The smooth finishing is standard for all collets produced by DUNNER.

- ✓ Medium axial holding force
- ✓ Medium torque transmission
- ✓ Avoid marking

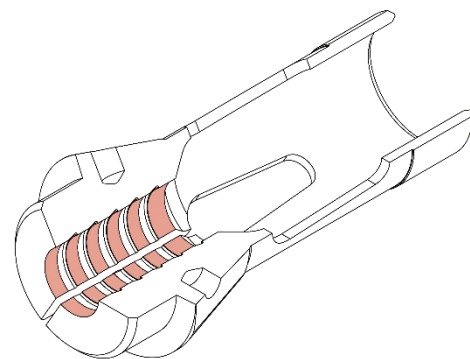


3 : Smooth

7.2. R - Grooved

This finishing is mostly dedicated to the main spindle collet.

- ✓ High axial holding force
- ✓ Medium torque transmission
- ✓ Could leave mark on the surface

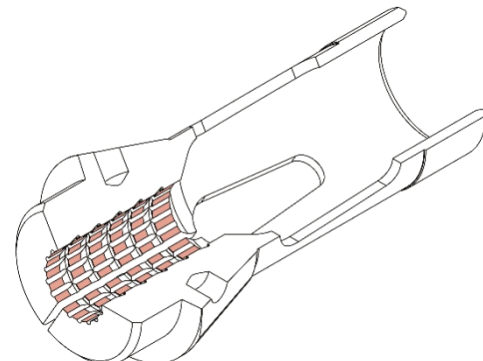


4 : Grooved

7.3. Q - Serrated

This finishing is dedicated to the main spindle collet to solve problems of ripping material.

- ✓ High axial holding force
- ✓ High torque transmission
- ✓ Leaves mark on the surface



5 : Serrated

8. Nose length

The nose length is 00 for standard length but it could be specified for:

- Pick-up collet (counter spindle) value in millimeter
The need of a longer nose is usually due to the need of space between the counter spindle and the tools. Or if you have a very short part to pick-up in the guide bush.
- Guide bush except AirFlex value in 1/10 of a millimeter
A longer nose length is very unusual. But for some special needs it helps to come nearer the tools with the material.

9. Slots

9.1. B - Slanted

Available for guide bushes except AirFlex.

Made for using round hole with square or hexagon material. This avoids the angle of the material to enter the slot of the guide bush.

- ✓ For machining profile material with round guide bush
- ✓ Compatible with fix guide bush
- ✓ High lubrication due to large steel slots

9.2. D - Straight

Standard slots for collets and for guide bushes used in revolving mode

- ✓ Low chips income near the material
- ✓ Good lubrication

9.3. R - Rounded

Standard slots for guide bushes used in fix mode

- ✓ Medium chips income near the material
- ✓ Best lubrication

9.4. S - "S"

Specials slots for pickup collets and for guide bushes used in revolving mode

- ✓ Lower chips income near the material
- ✓ Good lubrication
- ✓ Allows to clamp on threads without marking (for pickup collets)

9.5. H & N - Rubber type

Those letters are exclusively used for AirFlex guide bushes to indicate the rubber type used:

- H - Hard
- N - Normal

10.Guides

The guides are optional for guide bushes and collets. But for NewSurf material, they are mandatory to keep the product integrity and to warranty a long-term use.

- “-“ – No guide
- A – Steel guide
This material is mostly used for collets guides and special needs.
- D – Delrin guide
The Delrin guide is a new standard for our product due to the medical compliance.
- L – Brass guide

11.Options

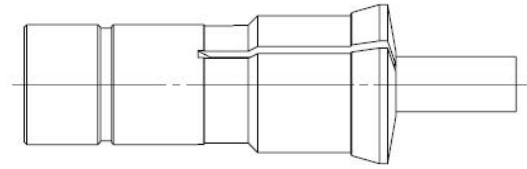
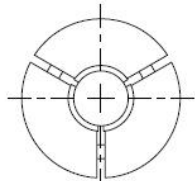
11.1. UP & UU

The options UP for “ultra-precision” and UU for “ultimate ultra-precision” are made for very high accuracy product. Each piece is controlled mounted into a precision sleeve and tight to nominal diameter. Then we make the measurement of the deviation between an ideal piece and this piece.

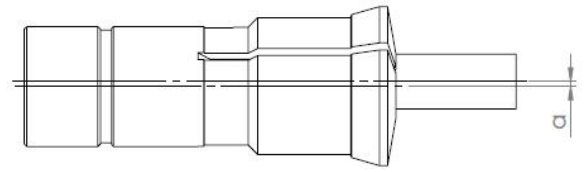
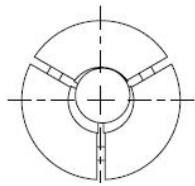
There is two type of deviation:

- Position runout
- Angular runout

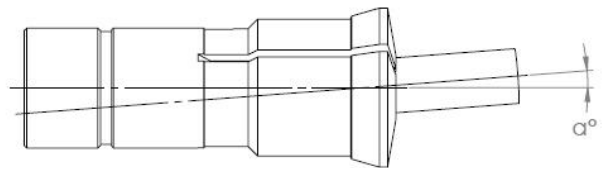
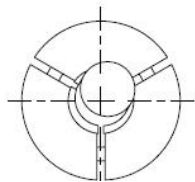
Both values of runout should be less than the values listed hereunder.



2 : Ideal piece

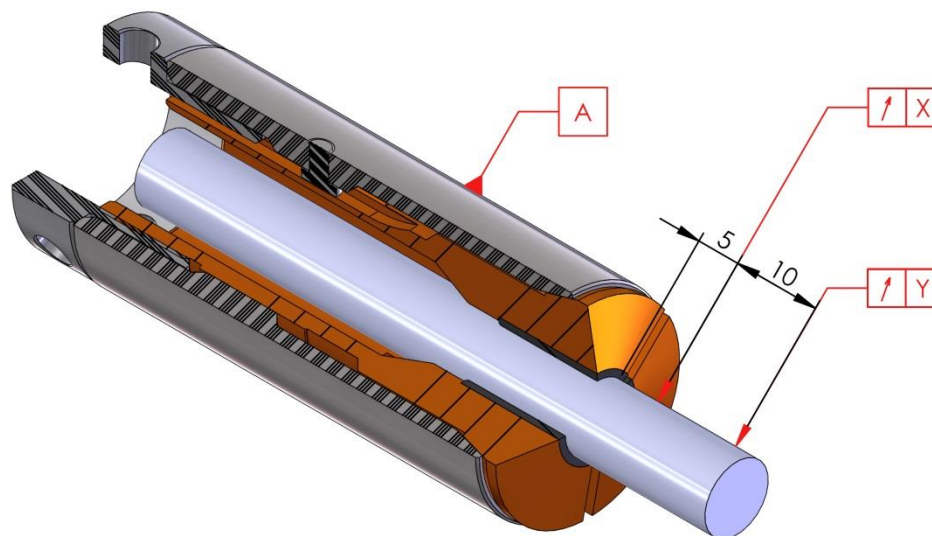


1 : Position runout



3 : Angular runout

	X_{max}	Y_{max}
Standard	15 μm	15 μm
UP	5 μm	5 μm
UU	2 μm	n.c.



4 : Measurements locations

11.2. Silicone

Guide bushes could be requested with the "Silicone" option.

This option is usually requested when small chips enter through the slots of the guide bush. These chips could generate marks or seizure.

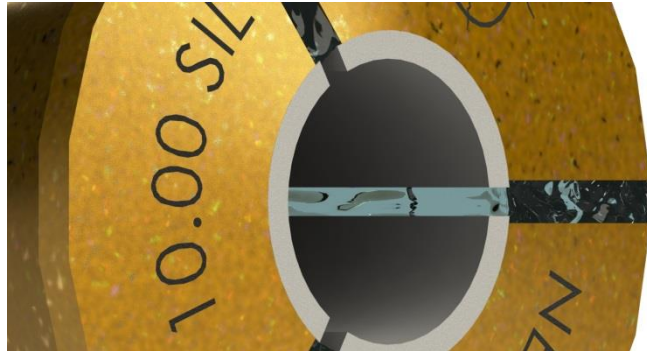
The "Silicone" option can be combined with all other options available.

The coating used to make this protective layer is very resistant to oils and wear, and does not alter the adjustment properties of the guide bush.

The material bar is protected from chips until it comes out of the guide bush thanks to the coating that completely sealed the slots.



5 : Standard



6 : Silicone

11.3. Polish

The polish option is requested to upgrade:

- Hole polish : Improvement of the tribology of the material
- Slots polish : Reducing the risk of marking the material

11.4. Key

This option is used if there is the need of a key into the piece for maintaining a position.

