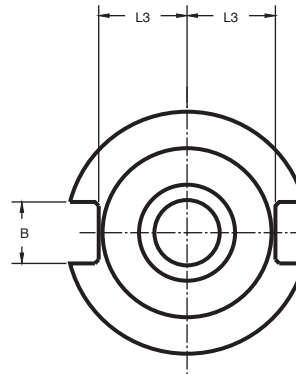
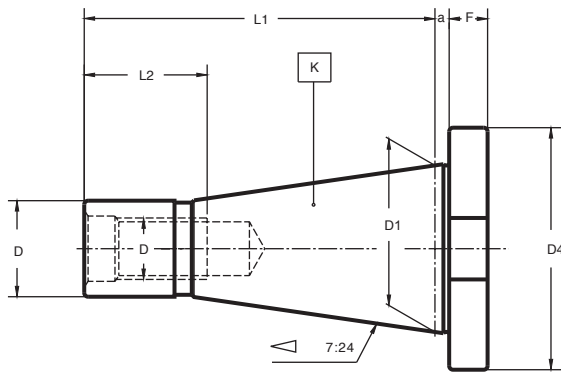




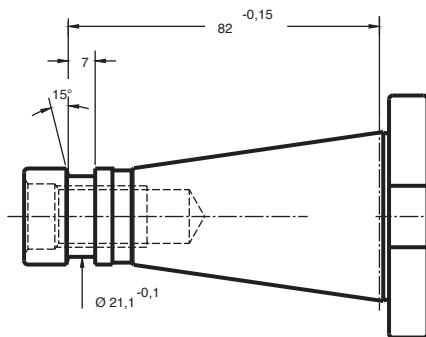
DIN 2080

000 05 00 00 00



(*) See page 273

(*) DIN 2080 - 40
(WITH MAHO-OTT RING)



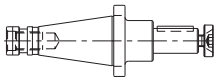
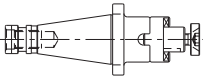
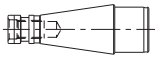
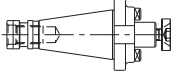

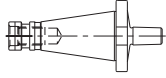
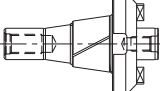
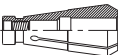
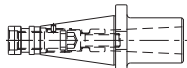
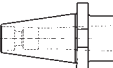

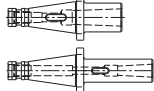
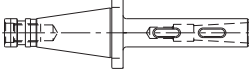
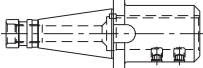
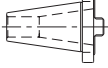
Material: Case-hardening alloy steel.
Case-hardened and tempered.
Minimum strength in core 880 N/mm².
Surface hardness Rc 57 ÷ 60

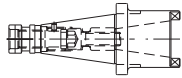
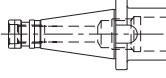
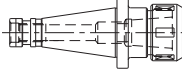
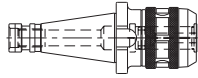
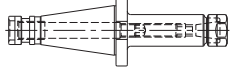
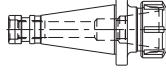
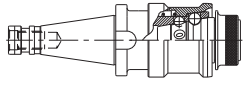
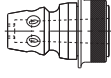
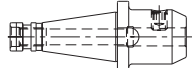
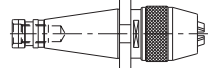
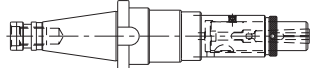
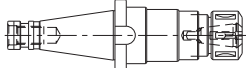
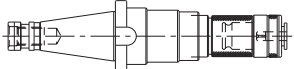
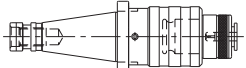
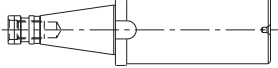
Taper tolerance: Grade AT3.

K	B H12	D ₁	D ₂	D ₃	D ₄ ^{+0,4 -0,4}	L ₁	L ₂	L ₃ máx	a ±0,2	F ±0,15
30	16,1	31,75	M-12	17,11	50	68,4	24	16,2	1,6	8
(*) 40	16,1	44,45	M-16	25	63	93,4	32	22,5	1,6	10
45	19,3	57,15	M-20	32,09	80	106,8	40	29	3,2	12
50	25,7	69,85	M-24	39,29	97,5	126,8	47	35,3	3,2	12

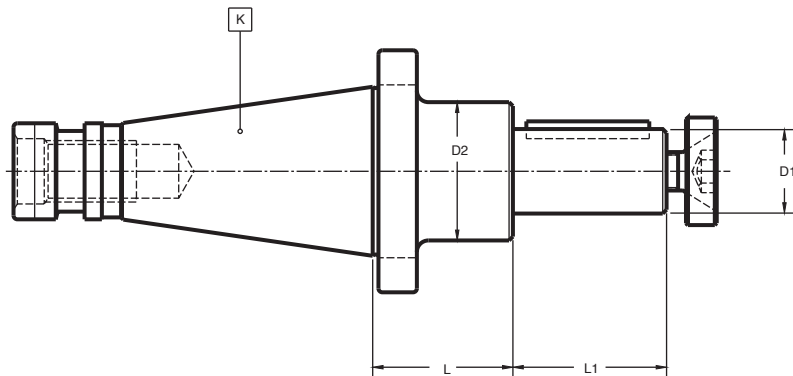
DYNAMIC BALANCING

- WE HAVE THE LATEST METHODS FOR DYNAMIC BALANCING OF OUR TOOLHOLDERS (see page 303)
- PLEASE CONTACT US FOR FURTHER INFORMATION











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EXTENSIONS AND REDUCING ADAPTERS For tapered Morse taper tools DIN 228-B or Morse taper tools with thread DIN 228-A		42
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QUICK-CHANGE TAPPING CHUCKS Self feed and compression system		57.3
QUICK-CHANGE TAPPING CHUCKS For BILZ system tap adapter		57
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DIN 6360





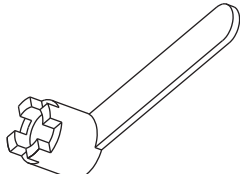


Maximum circular deviation between K and $D_1 \leq 0,008$

K	D ₁ h6	L	L ₁	D ₂	COD.
30	10	35	16	20	001 05 01 01 10 
30	13	35	25	23	001 05 01 01 20 
30	16	35	30	28	001 05 01 01 30 
30	27	35	60	43	001 05 01 01 50 
40	16	37	30	28	001 05 01 02 30 
40	27	37	60	43	001 05 01 02 50 
50	16	40	30	28	001 05 01 04 30 
50	22	40	40	36	001 05 01 04 40 
50	27	40	60	48	001 05 01 04 50 
50	40	40	60	56	001 05 01 04 70 

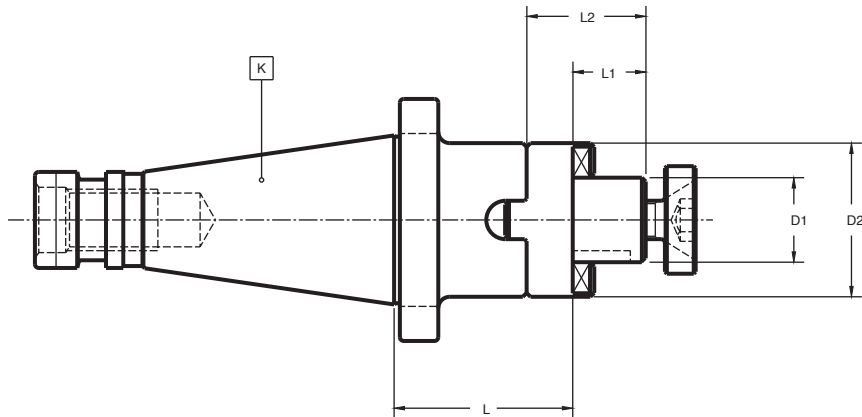
 Product outside of our present production program. Price subject to availability.

Accessories, see pages 267-293

D ₁					
10	—	001 99 01 01 10	001 99 03 01 10	OPCIONALES	
13	001 99 01 22 20	001 99 01 12 20	001 99 03 01 20	001 99 01 01 20	001 99 04 01 20
16	001 99 01 22 30	001 99 01 12 30	001 99 03 01 30	001 99 01 01 30	001 99 04 01 30
22	001 99 01 22 40	001 99 01 12 40	001 99 03 01 40	001 99 01 01 40	001 99 04 01 40
27	001 99 01 22 50	001 99 01 12 50	001 99 03 01 50	001 99 01 01 50	001 99 04 01 50
32	001 99 01 22 60	001 99 01 12 60	001 99 03 01 60	001 99 01 01 60	001 99 04 01 60
40	001 99 01 22 70	001 99 01 12 70	001 99 03 01 70	001 99 01 01 70	001 99 04 01 70
50	001 99 01 22 80	001 99 01 12 80	001 99 03 01 80	001 99 01 01 80	001 99 04 01 80

ALTERNATIVE SOLUTIONS 003 05 54 + 001 54 0₅³ pages 47 and 233

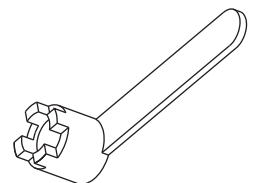
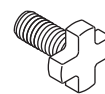
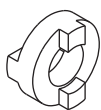
DIN 6358



Maximum circular deviation between K and D₁ ≤ 0,008

K	D ₁ h6	L	L ₁	L ₂	D ₂	COD.
30	16	35	17	27	32	001 05 02 01 30
30	22	35	19	31	40	001 05 02 01 40
30	27	35	21	33	48	001 05 02 01 50
30	32	50	24	38	58	001 05 02 01 60
40	16	52	17	27	32	001 05 02 02 30
40	22	52	19	31	40	001 05 02 02 40
40	27	52	21	33	48	001 05 02 02 50
40	32	52	24	38	58	001 05 02 02 60
40	40	52	27	41	70	001 05 02 02 70
50	16	55	17	27	32	001 05 02 04 30
50	22	55	19	31	40	001 05 02 04 40
50	27	55	21	33	48	001 05 02 04 50
50	32	55	24	38	58	001 05 02 04 60
50	40	55	27	41	70	001 05 02 04 70
50	50	55	30	46	90	001 05 02 04 80

Accessories, see pages 267-293



D ₁	OPCIONALES					
16	001 99 02 01 30	001 99 01 22 30	001 99 01 12 30	001 99 03 02 30	001 99 01 01 30	001 99 04 01 30
22	001 99 02 01 40	001 99 01 22 40	001 99 01 12 40	001 99 03 02 40	001 99 01 01 40	001 99 04 01 40
27	001 99 02 01 50	001 99 01 22 50	001 99 01 12 50	001 99 03 02 50	001 99 01 01 50	001 99 04 01 50
32	001 99 02 01 60	001 99 01 22 60	001 99 01 12 60	001 99 03 02 60	001 99 01 01 60	001 99 04 01 60
40	001 99 02 01 70	001 99 01 22 70	001 99 01 12 70	001 99 03 02 70	001 99 01 01 70	001 99 04 01 70
50	001 99 02 01 80	001 99 01 22 80	001 99 01 12 80	001 99 03 02 80	001 99 01 01 80	001 99 04 01 80

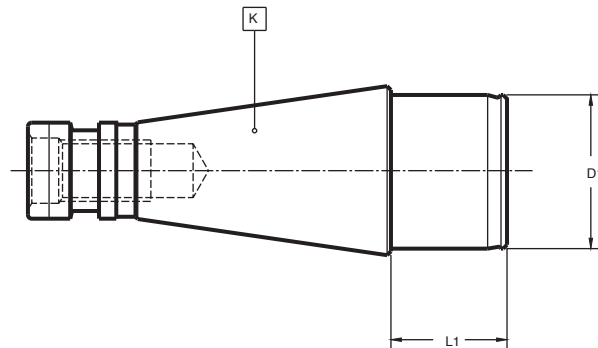
001 05 04

CENTERING PLUG ARBORS

For face milling cutters with four holes



DIN 6356

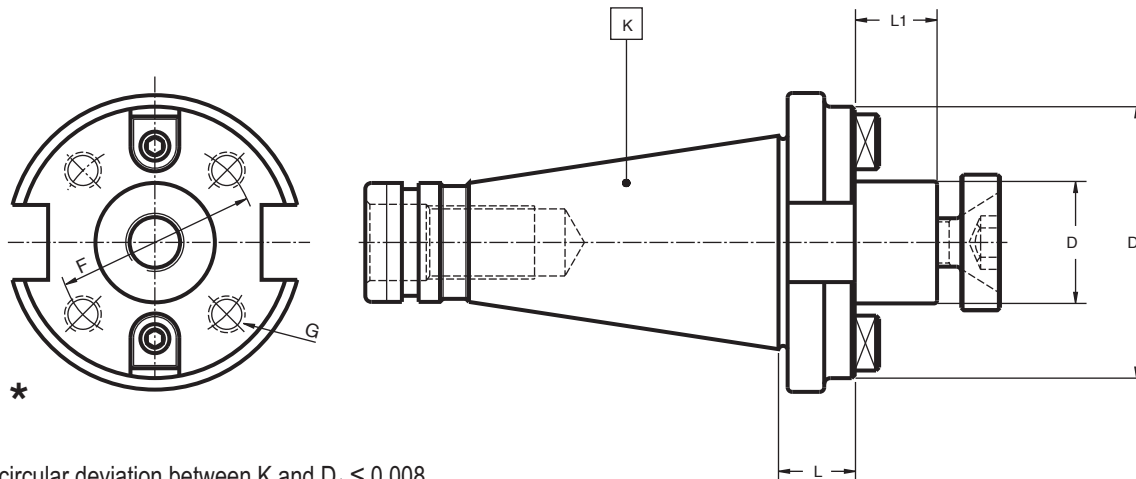


Maximum circular deviation between K and $D_1 \leq 0,008$

K	D_1 g5	L_1	COD.
40	40	30	001 05 04 02 70
50	40	30	001 05 04 04 70
50	50	30	001 05 04 04 80
50	60	40	001 05 04 04 90
60	50	30	001 05 04 06 80

Product outside of our present production program. Price subject to availability.

ALTERNATIVE SOLUTIONS 001 05 02 page 33
 001 08 0₅³ page 37
 003 05 54 + 001 54 0₅³ pages 47 and 233

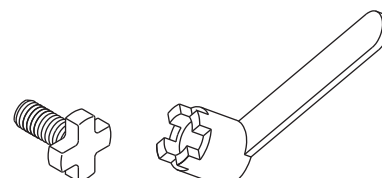


Maximum circular deviation between K and D₁ ≤ 0,008

K	D ₁ h6	L	L ₁	G	D ₂	F	COD.
40	16	20	17	—	38/40	—	001 05 05 02 30
40	22	20	19	—	48/50	—	001 05 05 02 40
40	27	20	21	—	63	—	001 05 05 02 50
40	32	20	24	—	70	—	001 05 05 02 60
* 40	40	20	27	M-12	89	66,7	001 05 03 02 70
50	22	25	19	—	48/50	—	001 05 05 04 40
50	27	25	21	—	60	—	001 05 05 04 50
50	32	25	24	—	70	—	001 05 05 04 60
* 50	40	33	27	M-12	89	66,7	001 05 03 04 70
50	50	25	30	—	98	—	001 05 05 04 80
* 50	60	29	40	M-16	129	101,6	001 05 03 04 90

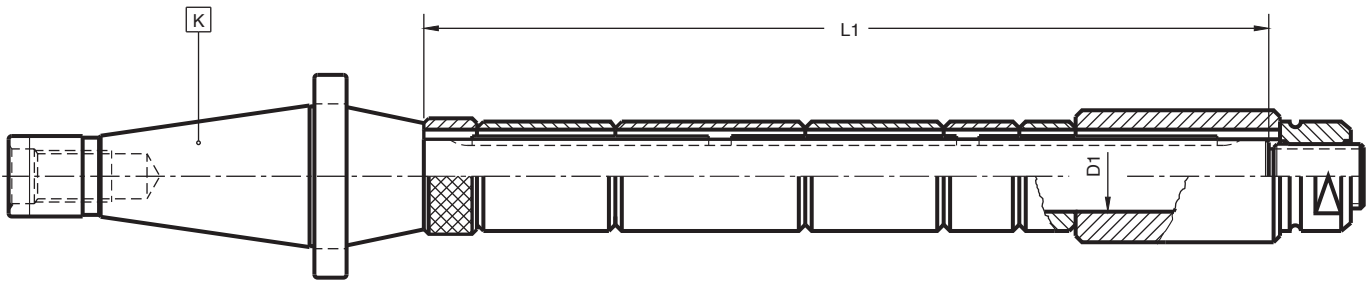
* With additional 4 tapped holes for front clamping according to DIN 2079






Accessories, see pages 267-293



D ₁	OPCIONALES					
16	303 05 05 00 30	301 01 00 03 15	001 99 01 22 30	001 99 01 12 30	001 99 01 01 30	001 99 04 01 30
22	303 05 05 00 40	301 01 01 04 12	001 99 01 22 40	001 99 01 12 40	001 99 01 01 40	001 99 04 01 40
27	303 05 05 00 50	301 01 01 05 12	001 99 01 22 50	001 99 01 12 50	001 99 01 01 50	001 99 04 01 50
32	303 05 05 00 60	301 01 01 05 16	001 99 01 22 60	001 99 01 12 60	001 99 01 01 60	001 99 04 01 60
40	003 99 01 01 01	301 01 01 06 16	001 99 01 22 70	001 99 01 12 70	001 99 01 01 70	001 99 04 01 70
50	303 05 05 00 80	301 01 01 06 20	001 99 01 22 80	001 99 01 12 80	001 99 01 01 80	001 99 04 01 80
60	303 05 04 00 02	301 01 01 12 25	—	—	—	—

DIN 6354 - 55

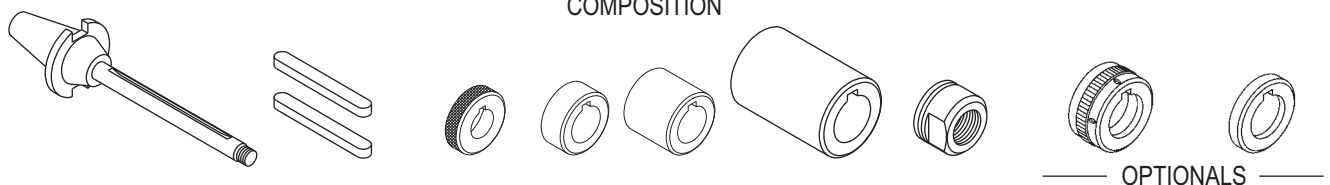


K	D ₁ h6	L ₁	COD.	K	D ₁	L ₁	COD.
30	16	200	001 05 25 01 30	40	32	315	001 05 25 02 62
30	16	250	001 05 25 01 31	40	32	400	001 05 25 02 63
30	16	315	001 05 25 01 32	40	32	500	001 05 25 02 64
				40	32	630	001 05 25 02 65
30	22	200	001 05 25 01 40	40	40	315	001 05 25 02 72
30	22	250	001 05 25 01 41	40	40	400	001 05 25 02 73
30	22	315	001 05 25 01 42	40	40	500	001 05 25 02 74
30	22	400	001 05 25 01 43	40	40	630	001 05 25 02 75
30	27	200	001 05 25 01 50				
30	27	250	001 05 25 01 51	50	22	400	001 05 25 04 43 
30	27	315	001 05 25 01 52	50	22	500	001 05 25 04 44
30	27	400	001 05 25 01 53				
30	32	200	001 05 25 01 60	50	27	400	001 05 25 04 53 
30	32	250	001 05 25 01 61	50	27	500	001 05 25 04 54
30	32	315	001 05 25 01 62	50	27	630	001 05 25 04 55
30	32	400	001 05 25 01 63				
40	16	250	001 05 25 02 31	50	32	400	001 05 25 04 63 
40	16	315	001 05 25 02 32	50	32	500	001 05 25 04 64
				50	32	630	001 05 25 04 65
				50	32	800	001 05 25 04 66
40	22	250	001 05 25 02 41				
40	22	315	001 05 25 02 42	50	40	400	001 05 25 04 73 
40	22	400	001 05 25 02 43	50	40	500	001 05 25 04 74
40	22	500	001 05 25 02 44	50	40	630	001 05 25 04 75
				50	40	800	001 05 25 04 76
40	27	250	001 05 25 02 51				
40	27	315	001 05 25 02 52	50	50	400	001 05 25 04 83 
40	27	400	001 05 25 02 53	50	50	500	001 05 25 04 84
40	27	500	001 05 25 02 54	50	50	630	001 05 25 04 85
				50	50	800	001 05 25 04 86

 Product outside of our present production program. Price subject to availability.

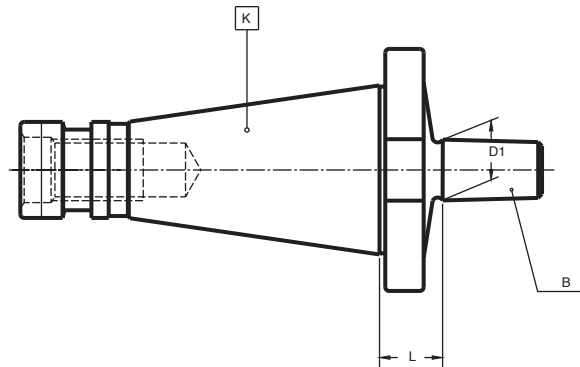
Accessories, see pages 267-293

COMPOSITION



FORM	001 05 25 ...	001 99 06 ...	001 99 05 ...	001 99 09 ...	001 99 08 ...	001 99 07 ...	001 99 10 ...	001 99 19 ...
A	x	x	x	-	-	x	-	-
B	x	x	x	x	-	x	-	-
C	x	x	x	x	x	x	-	-
D	x	x	x	x	(2) x	x	-	-

ALTERNATIVE SOLUTIONS 003 05 54 + 001 54 50 pages 47 and 234



Maximum circular deviation between K and $D_1 \leq 0,008$

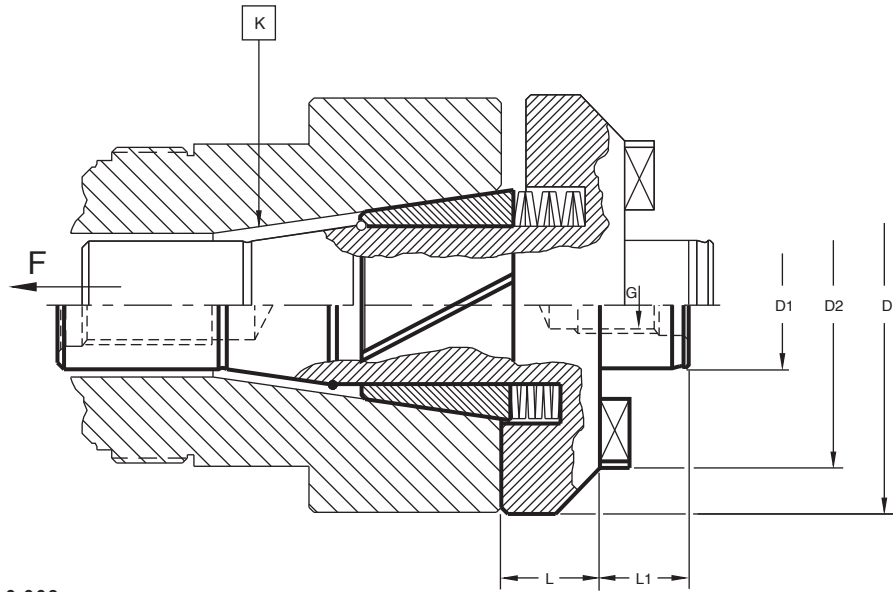
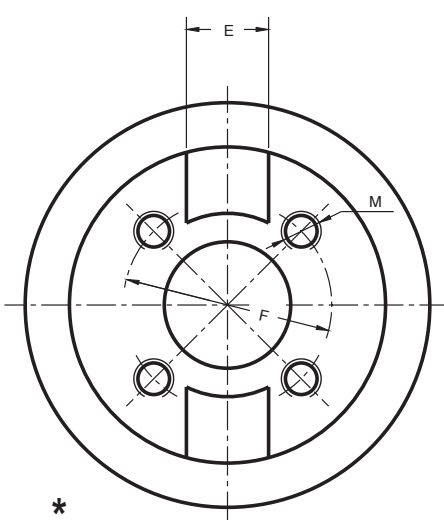
K	B - J	L	D ₁	COD.
30	B.12	15	12,06	001 05 50 01 01
30	B.16	15	15,73	001 05 50 01 02
40	B.12	17	12,06	001 05 50 02 01
40	B.16	17	15,73	001 05 50 02 02
40	B.18	17	17,78	001 05 50 02 03
50	B.16	20	15,73	001 05 50 04 02
50	B.18	20	17,78	001 05 50 04 03
30	J. 2	15	14,199	001 05 50 01 13 ⚠
30	J. 3	17	20,59	001 05 50 01 15 ⚠
30	J. 6	15	17,17	001 05 50 01 18 ⚠
40	J. 1	22	9,75	001 05 50 02 12 ⚠
40	J.33	17	15,85	001 05 50 02 19 ⚠
50	J. 2	24	14,199	001 05 50 04 13 ⚠
50	J. 3	25	20,59	001 05 50 04 15 ⚠
50	J. 6	20	17,17	001 05 50 04 18 ⚠

⚠ Product outside of our present production program. Price subject to availability.

001 08 03
05 ...

DOUBLE CONTACT SHELL END MILL ARBORS

Patent 305.318
For shell end milling cutters with tenon drive DIN 138



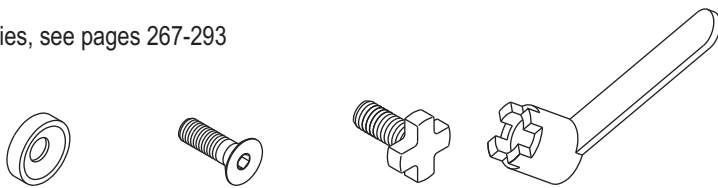
Maximum circular deviation between K and D₁ ≤ 0,008

K	D ₁ h5	L	L ₁	D ₂	D	F	M	E	G	COD.
40	22	20	19	68	88	-	-	10	M-10	001 08 05 02 40
40	32	20	24	68	88	-	-	14	M-16	001 08 05 02 60
50	27	25	21	68	98	-	-	12	M-12	001 08 05 04 50
50	32	25	24	84	98	-	-	14	M-16	001 08 05 04 60
50	50	30	30	100	128	-	-	18	-	001 08 05 04 80
*50	40	38	27	89	128	66,70	M-12	16	M-20	001 08 03 04 70
*50	60	30	40	128	128	101,60	M-16	25,4	-	001 08 03 04 90

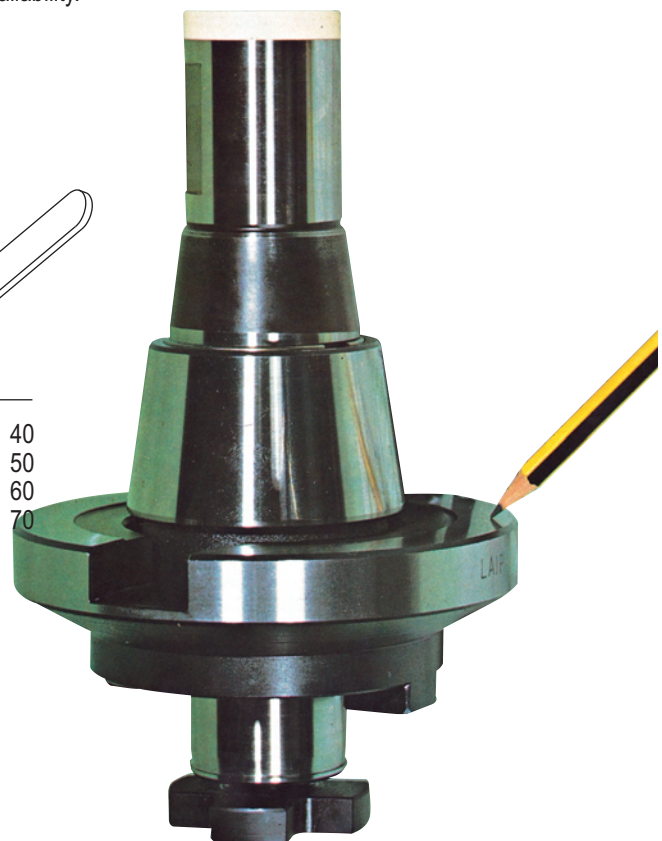
Product outside of our present production program. Price subject to availability.

* With 4 tapped holes for front clamping according to DIN 2079

Accessories, see pages 267-293



D ₁	OPTIONALS			
22	001 99 01 22 40	001 99 01 12 40	001 99 01 01 40	001 99 04 01 40
27	001 99 01 22 50	001 99 01 12 50	001 99 01 01 50	001 99 04 01 50
32	001 99 01 22 60	001 99 01 12 60	001 99 01 01 60	001 99 04 01 60
40	001 99 01 22 70	001 99 01 12 70	001 99 01 01 70	001 99 04 01 70

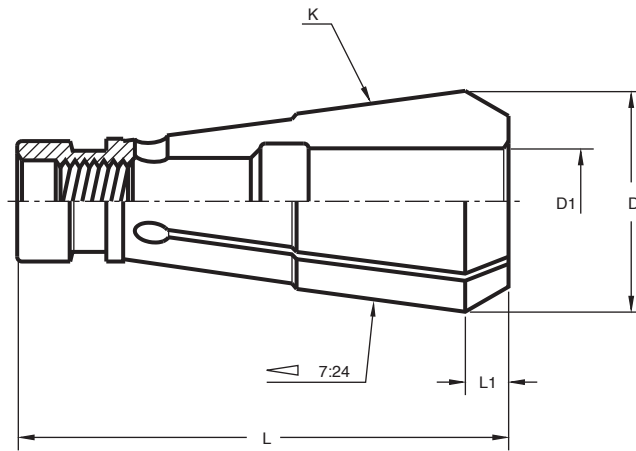


K	OPTIONALS		
40	305 01 29 50 20	351 01 08 02 00	305 08 27 46 15
50	305 01 45 00 20	351 01 08 04 00	305 08 48 69 20

002 54

DIRECT COUPLING COLLETS

ISO DIN 2080 Taper



K	D	L	L ₁	D ₁	COD.
				2	002 54 01 02 00 ⚠
				3	002 54 01 03 00 ⚠
				5	002 54 01 05 00 ⚠
30	31,75	76	7	↓	↓
				15	002 54 01 15 00 ⚠
				16	002 54 01 16 00 ⚠
				17	002 54 01 17 00 ⚠
				18	002 54 01 18 00 ⚠
				19	002 54 01 19 00 ⚠
				20	002 54 01 20 00 ⚠
				4	002 54 02 04 00 ⚠
				5	002 54 02 05 00 ⚠
				7	002 54 02 07 00 ⚠
				↓	↓
				27	002 54 02 27 00 ⚠
				28	002 54 02 28 00 ⚠

⚠ Product outside of our present production program. Price subject to availability.

Material: Spring steel
Tempered
Rc 57 ÷ 60

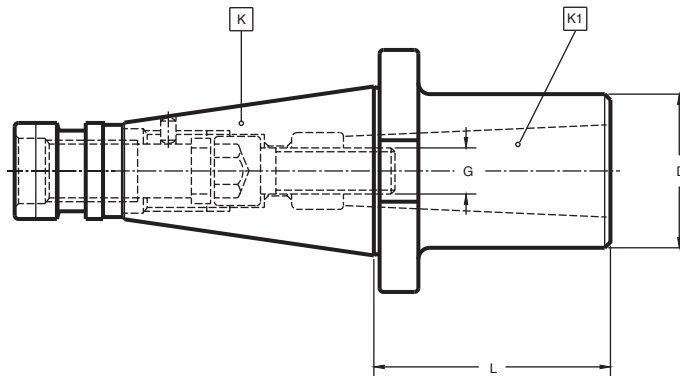
003 05 02

REDUCING ADAPTERS

With double effect pull stud
For Morse taper tools with thread DIN 228-A



DIN 6364 (*)

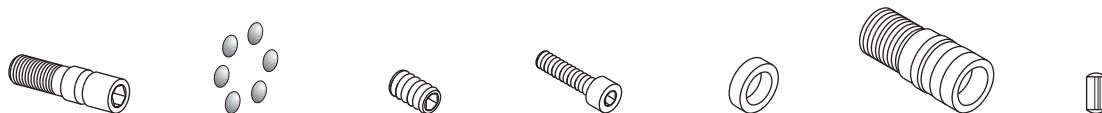


Maximum circular deviation between K and K₁ ≤ 0,008

K	K ₁	L	D	G	COD.
30	1	50	25	M-6	003 05 02 01 20
30	2	50	32	M-10	003 05 02 01 30
40	1	52	25	M-6	003 05 02 02 20
40	2	52	32	M-10	003 05 02 02 30
40	3	62	40	M-12	003 05 02 02 40
*40	4	97	48	M-16	003 05 02 02 50
40	4	with driving slot DIN 2201 see page 41 COD. 003 05 04 02 50			
50	2	60	32	M-10	003 05 02 04 30
50	3	65	40	M-12	003 05 02 04 40
*50	4	65	48	M-16	003 05 02 04 50
50	4	with driving slot DIN 2201 see page 41 COD. 003 05 04 04 50			
*50	5	100	63	M-20	003 05 02 04 60
50	5	with driving slot DIN 2201 see page 41 COD. 003 05 04 04 60			

Product outside of our present production program. Price subject to availability.

* These positions are not according to DIN 6364 (No driving slot DIN 2201)

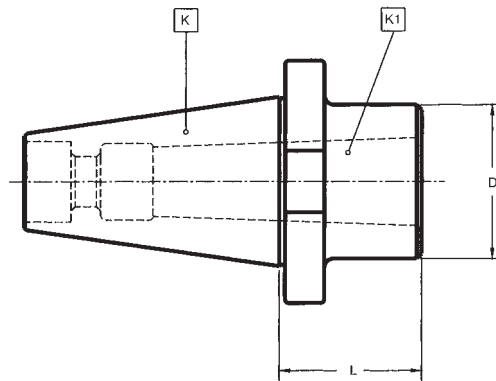










COD.							
003 05 02 01 20	003 99 08 01 20	304 01 00 03 00	301 01 07 04 05	-	-	-	-
003 05 02 01 30	003 99 08 01 30	304 01 00 03 00	301 01 07 04 05	-	-	-	-
003 05 02 01 40	003 99 08 01 40	304 01 00 03 00	301 01 07 04 05	-	-	-	-
003 05 02 02 20	-	-	-	301 01 01 06 35	351 03 05 02 04	351 03 05 02 02	301 04 04 00 50
003 05 02 02 30	-	-	-	301 01 01 10 35	351 03 05 02 05	351 03 05 02 02	301 04 04 00 50
003 05 02 02 40	-	-	-	301 01 01 12 35	351 03 05 02 06	351 03 05 02 02	301 04 04 00 50
003 05 02 02 50	-	-	-	003 99 07 09 15	351 03 05 02 07	351 03 05 02 02	301 04 04 00 50
003 05 02 04 30	-	-	-	301 01 01 10 70	351 03 05 02 09	351 03 05 02 03	301 04 04 01 00
003 05 02 04 40	-	-	-	301 01 01 12 60	351 03 05 02 10	351 03 05 02 03	301 04 04 01 00
003 05 02 04 50	-	-	-	301 01 01 16 45	351 03 05 02 11	351 03 05 02 03	301 04 04 01 00
003 05 02 04 60	-	-	-	301 01 01 20 55	351 03 05 02 12	351 03 05 02 03	301 04 04 01 00

003 05 03

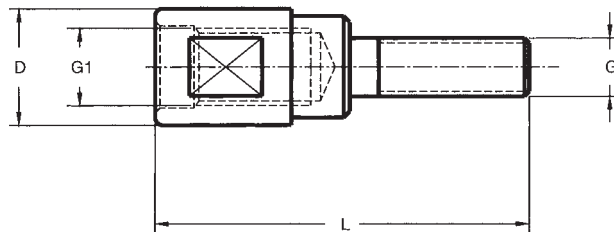
REDUCING ADAPTERS












For Morse taper tools with thread DIN 228-A



K	K ₁	L	D	COD.	OPTIONAL (*) 
30	1	35	25	003 05 03 01 20 	003 99 03 01 20
30	2	46	32	003 05 03 01 30 	003 99 03 01 30
30	3	72	36	003 05 03 01 40 	003 99 03 01 40
40	1	22	25	003 05 03 02 20 	003 99 03 02 20
40	2	22	32	003 05 03 02 30 	003 99 03 02 30
50	2	24	32	003 05 03 04 30 	003 99 03 04 30
50	3	24	40	003 05 03 04 40 	003 99 03 04 40

 Product outside of our present production program. Price subject to availability.



COD.	D ₁	G ₁	G	L	COD. (*)
003 05 03 01 20	17	M-12	M-6	65	003 99 03 01 20 
003 05 03 01 30	17	M-12	M-10	73	003 99 03 01 30 
003 05 03 01 40	17	M-12	M-12	85	003 99 03 01 40 
003 05 03 02 20	25	M-16	M-6	78	003 99 03 02 20 
003 05 03 02 30	25	M-16	M-10	75	003 99 03 02 30 
003 05 03 02 40	25	M-16	M-12	77	003 99 03 02 40 
003 05 03 02 50	25	M-16	M-16	95	003 99 03 02 50 
003 05 03 04 30	39	M-24	M-10	111	003 99 03 04 30 
003 05 03 04 40	39	M-24	M-12	98	003 99 03 04 40 
003 05 03 04 50	39	M-24	M-16	102	003 99 03 04 50 
003 05 03 04 60	39	M-24	M-20	112	003 99 03 04 60 

 Product outside of our present production program. Price subject to availability.

(*) Pull studs supplied only under request.

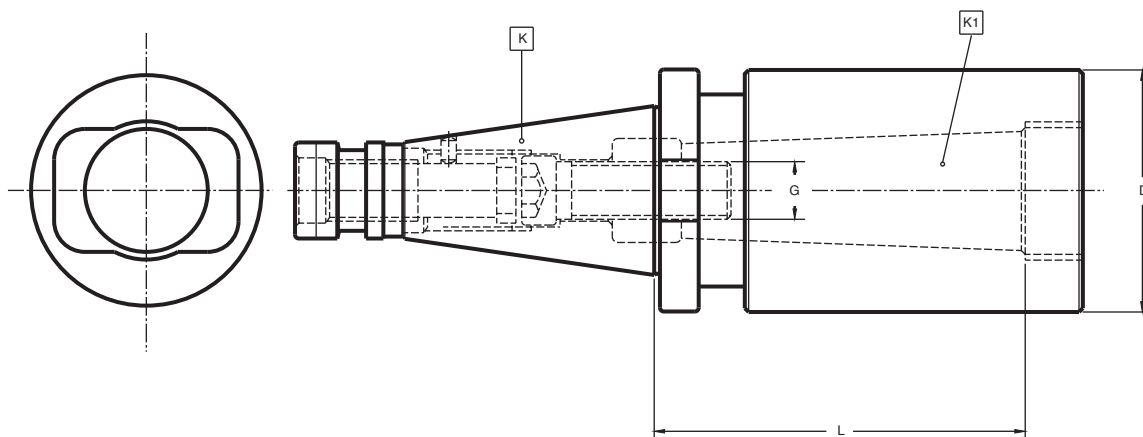
003 05 04 ...

REDUCING ADAPTERS

With double effect pull stud
For Morse taper tools with thread DIN 228-A



DIN 6364 (DIN 2201)



Maximum circular deviation between K and K₁ ≤ 0,008

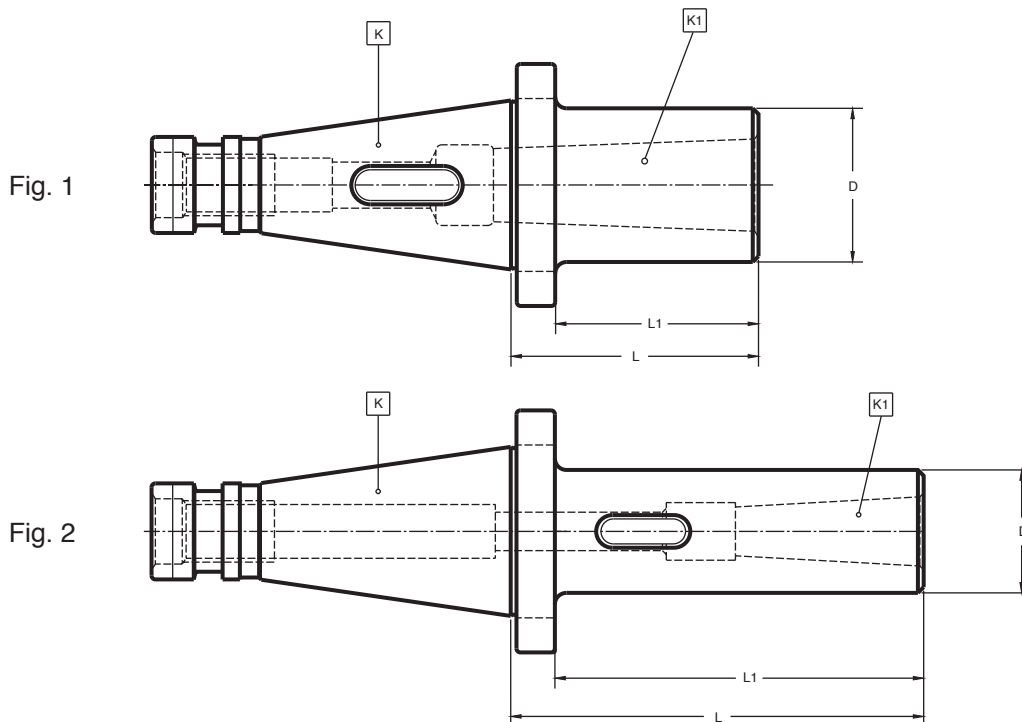
K	K ₁	L	D	G	COD.
40	4	97	63	M-16	003 05 04 02 50
40	4	without driving slot DIN 2201 see page 39			COD. 003 05 02 02 50
50	4	65	63	M-16	003 05 04 04 50
50	4	without driving slot DIN 2201 see page 39			COD. 003 05 02 04 50
50	5	100	78	M-20	003 05 04 04 60
50	5	without driving slot DIN 2201 see page 39			COD. 003 05 02 04 60

Product outside of our present production program. Price subject to availability.


COD.				
003 05 04 02 50	003 99 07 09 15	351 03 05 02 07	351 03 05 02 02	301 04 04 00 50
003 05 04 04 50	301 01 01 16 45	351 03 05 02 11	351 03 05 02 03	301 04 04 01 00
003 05 04 04 60	301 01 01 20 55	351 03 05 02 12	351 03 05 02 03	301 04 04 01 00

ALTERNATIVE SOLUTIONS 003 05 54 + 003 54 12 pages 47 and 236

DIN 6383



Maximum circular deviation between K and K₁ ≤ 0,008

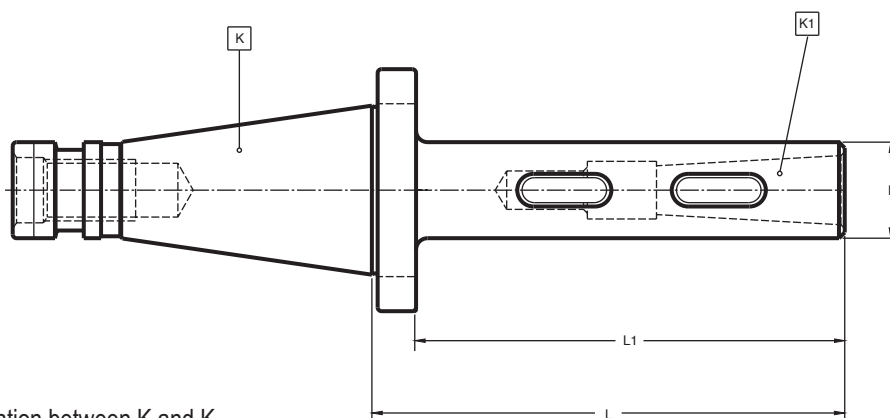
FIG.	K	K ₁	L	L ₁	D	COD.	 (1)
1	30	1	50	40	25	003 05 12 01 20	301 01 01 06 35
2	30	1	92	82	25	003 05 12 01 21 ▼	301 01 01 06 60
1	*30	2	50	40	32	003 05 11 01 30	–
2	*30	2	102	92	32	003 05 11 01 31 ▼	–
1	*30	3	72	62	40	003 05 11 01 40	–
1	40	1	50	38	25	003 05 12 02 20	301 01 01 06 40
2	40	1	92	80	25	003 05 12 02 21 ▼	301 01 01 06 80
1	40	2	50	38	32	003 05 12 02 30	003 99 07 06 15
2	40	2	109	97	32	003 05 12 02 31 ▼	003 99 07 06 20
1	*40	3	65	53	40	003 05 11 02 40	–
1	*40	4	95	83	48	003 05 11 02 50	–
2	*40	4	152	140	48	003 05 11 02 51 ▼	–
1	45	1	50	35	25	003 05 12 03 20 ▼	301 01 01 06 45
1	45	2	50	35	32	003 05 12 03 30 ▼	301 01 01 10 55
1	45	3	65	50	40	003 05 12 03 40 ▼	003 99 06 07 17
1	50	1	50	35	25	003 05 12 04 20	301 01 01 06 10
1	50	2	60	45	32	003 05 12 04 30	301 01 01 10 12
1	50	3	65	50	40	003 05 12 04 40	301 01 01 12 55
2	50	3	133	118	40	003 05 12 04 41 ▼	301 01 01 12 12
1	50	4	70	55	48	003 05 12 04 50	003 99 07 09 22
1	*50	5	105	90	63	003 05 11 04 60	–
2	*50	5	193	178	63	003 05 11 04 61 ▼	–

▼ Product outside of our present production program. Price subject to availability.

(1) Pull stud for tools with tightening thread.

(*) These adapters cannot be used for tools with Morse taper shank with tightening thread DIN 228-A.

ALTERNATIVE SOLUTIONS 003 05 54 + 003 54 12 pages 47 and 236











Maximum circular deviation between K and K₁

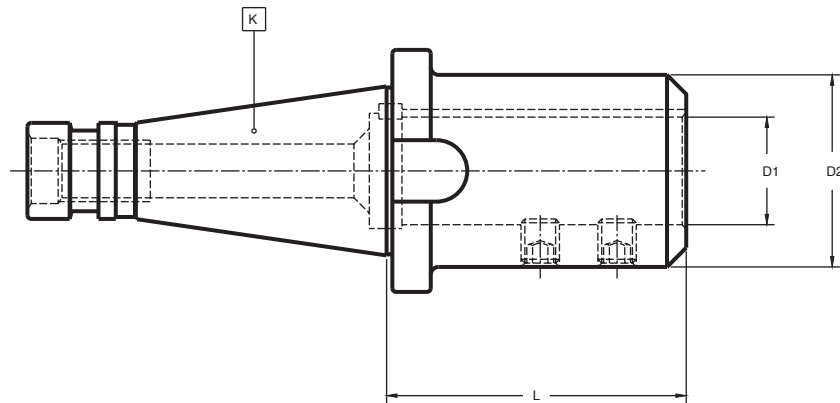
0,015 → L₁ = 200, 250 and 315

0,020 → L₁ = 400










0,025 → L₁ = 500

K	K ₁	L ₁	L	D	COD.
30	3	250	260	32	003 05 13 01 41 
30	3	315	325	32	003 05 13 01 42 
40	3	250	262	32	003 05 13 02 41 
40	3	400	412	32	003 05 13 02 43 
40	3	500	512	32	003 05 13 02 44 
40	5	400	412	56	003 05 13 02 63 
40	5	500	512	56	003 05 13 02 64 
50	5	315	330	56	003 05 13 04 62 

 Product outside of our present production program. Price subject to availability.



Maximum circular deviation between K and D₁ ≤ 0,008

K	D ₁ H6	L	D ₂	COD.	
40	28	75	50	003 05 21 02 61 	301 01 03 10 12
40	36	120	63	003 05 21 02 83 	301 01 03 12 14
50	20	75	45	003 05 21 04 41 	301 01 03 08 12
50	28	100	55	003 05 21 04 62 	301 01 03 12 14
50	28	150	55	003 05 21 04 64 	301 01 03 12 14
50	36	100	63	003 05 21 04 82 	301 01 03 12 14
50	36	150	63	003 05 21 04 84 	301 01 03 12 14
50	48	150	78	003 05 21 04 94 	301 01 03 12 16

 Product outside of our present production program. Price subject to availability.



004 51 ..



003 51 ..



019 51 ..

See pages 221-225

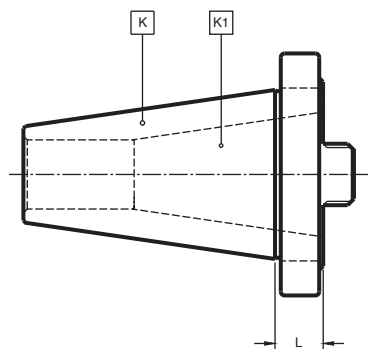
003 05 31

REDUCING ADAPTERS

For tools with DIN 2080, DIN 69871 or MAS-BT taper



DIN 6363



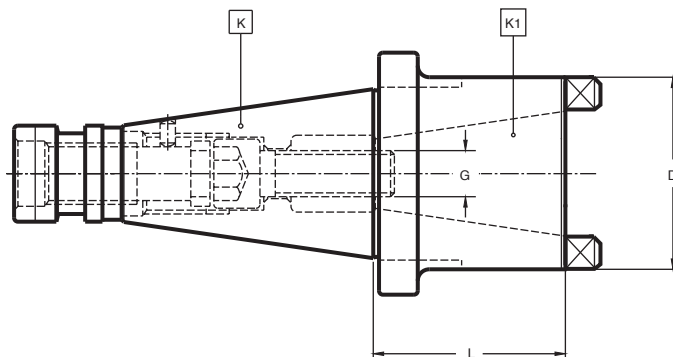
Maximum circular deviation between K and $K_1 \leq 0,008$

K	K_1	L	COD.
40	30	12	003 05 31 02 01
50	40	16	003 05 31 04 02

003 05 32 . . .

REDUCING ADAPTERS

With double effect pull stud
For tools with taper DIN 2080

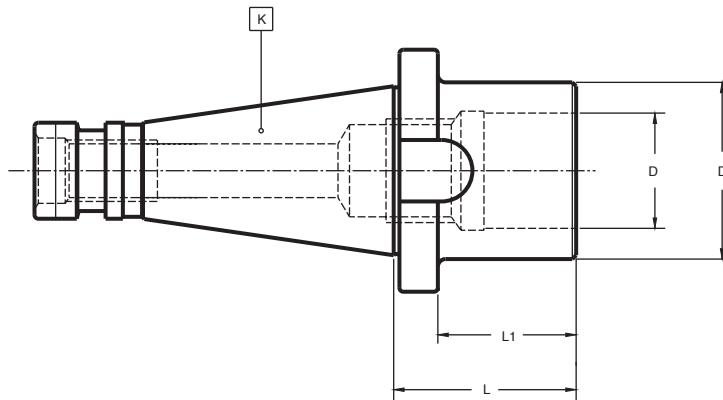


Maximum circular deviation between K and K₁ ≤ 0,008



K	K ₁	L	D	G	COD.
40	30	50	52	M-12	003 05 32 02 01
50	40	58	70	M-16	003 05 32 04 02
60	40	40	88	M-16	003 05 32 06 02

Product outside of our present production program. Price subject to availability.

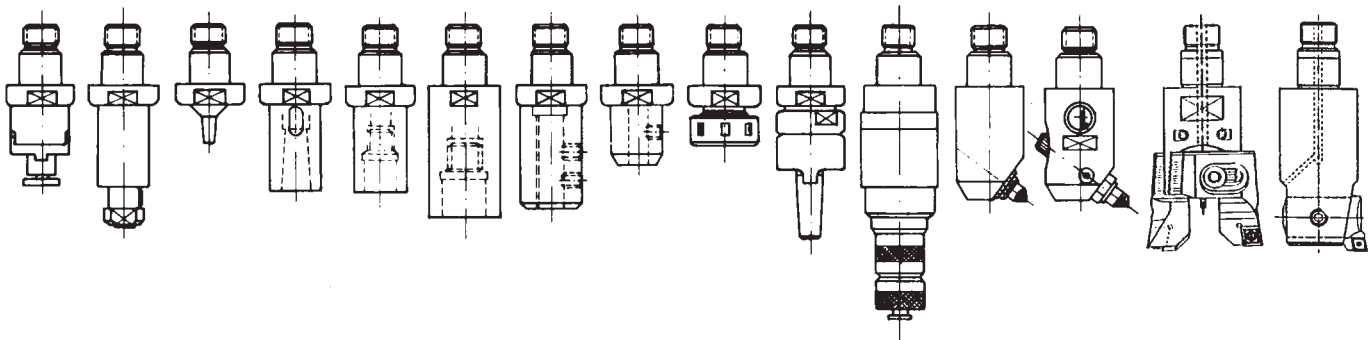
COD.							
003 05 32 02 01	-	-	-	301 01 01 12 35	351 03 05 02 06	351 03 05 02 02	301 04 04 00 50
003 05 32 03 02	003 99 08 03 50	304 01 00 04 00	301 01 03 05 12	-	-	-	-
003 05 32 04 01	-	-	-	301 01 01 12 35	351 03 05 02 10	351 03 05 02 03	301 04 04 01 00
003 05 32 04 02	-	-	-	301 01 01 16 45	351 03 05 02 11	351 03 05 02 03	301 04 04 01 00



Maximum circular deviation between K and D₁ ≤ 0,005

K	D ₁ H5	D	L	L ₁	COD.
30	30	46	60	50	003 05 54 01 06
40	30	46	40	28	003 05 54 02 06
40	46	63	85	75	003 05 54 02 07
45	30	46	40	25	003 05 54 03 06 
45	46	63	75	60	003 05 54 03 07 
50	30	46	50	35	003 05 54 04 06
50	46	63	50	35	003 05 54 04 07
50	46	90	50	35	003 05 54 04 08

 Product outside of our present production program. Price subject to availability.



See pages 231-251

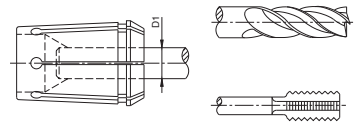
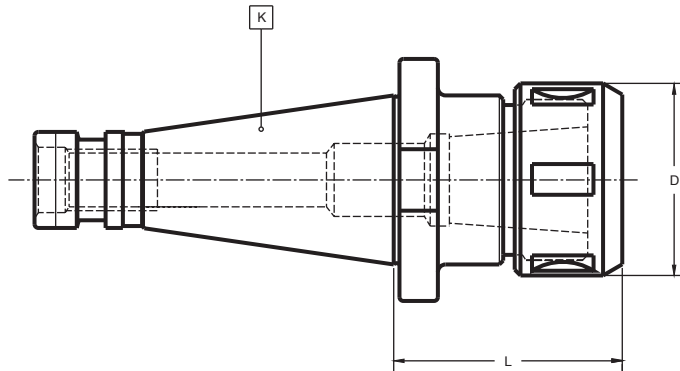
004 05 01

COLLET CHUCKS FOR DIN 6388 COLLETS

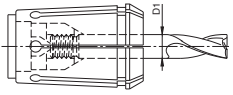
For tools with cylindrical straight shank DIN 1835-A or threaded cylindrical shank DIN 1835-D



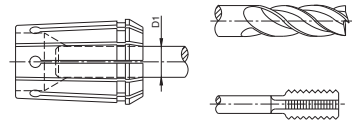
ALTERNATIVE SOLUTIONS 004 05 05 page 49
 004 05 06 pages 51 and 52
 003 05 54 + 004 54 06 pages 51 and 240



002 01



002 03



002 04

Maximum circular deviation between outer taper and collet housing $\leq 0,003$

COLLETS see pages 255-256

K	D ₁ máx	L	D	COD.
30	25	70	50	004 05 01 01 05
40	25	63	60	004 05 01 02 05
40	32	86	72	004 05 01 02 06
50	25	67	60	004 05 01 04 05
50	32	68	72	004 05 01 04 06
50	40	76	85	004 05 01 04 07

Product outside of our present production program. Price subject to availability.

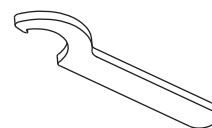
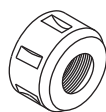
For boxes and composition of different sets see pages 265-266

Accessories, see pages 267-293

BALANCED NUT

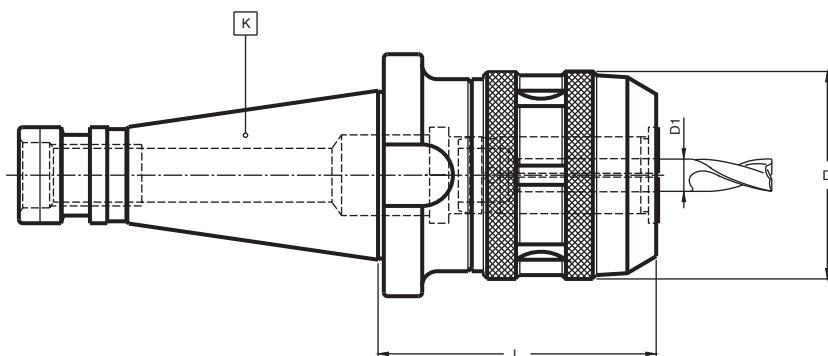
BEARING NUT

WRENCH (OPTIONAL)






D₁ max.

20	004 99 01 01 04	004 99 01 02 04	004 99 04 09 09
25	004 99 01 01 05	004 99 01 02 05	004 99 04 09 11
32	004 99 01 01 06	004 99 01 02 06	004 99 04 09 12
40	-	004 99 01 02 07	004 99 04 09 13



Maximum circular deviation between outer taper and collet housing $\leq 0,003$

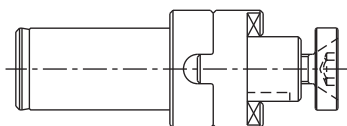
K	D ₁ máx.	L	D	COD.		 OPTIONAL
40	20	60	54	004 05 05 02 04 	004 99 04 02 06	004 99 04 09 10
40	32	82	72	004 05 05 02 06 	004 99 04 02 06	004 99 04 09 12

 Product outside of our present production program. Price subject to availability.

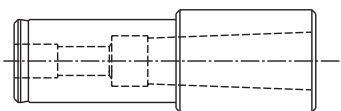
In order to achieve best results we recommend to use cylindrical tools with h6 tolerance. When tool shank diameter is 'D₁ max.', there is no need of any collet.

For boxes and composition of different sets see pages 265-266

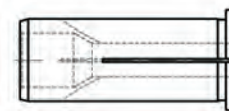
Accesories, see pages...



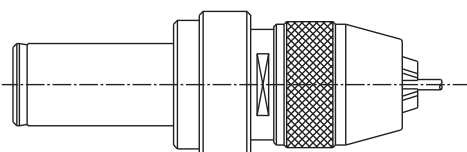
001 50 02 06 ..
See page 214



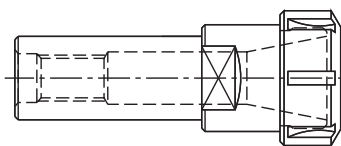
003 50 12 06 ..
See page 214



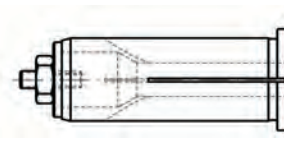
002 05 ..
See page 262



012 50 09 ...
See page 216



004 50 06 ...
See page 215

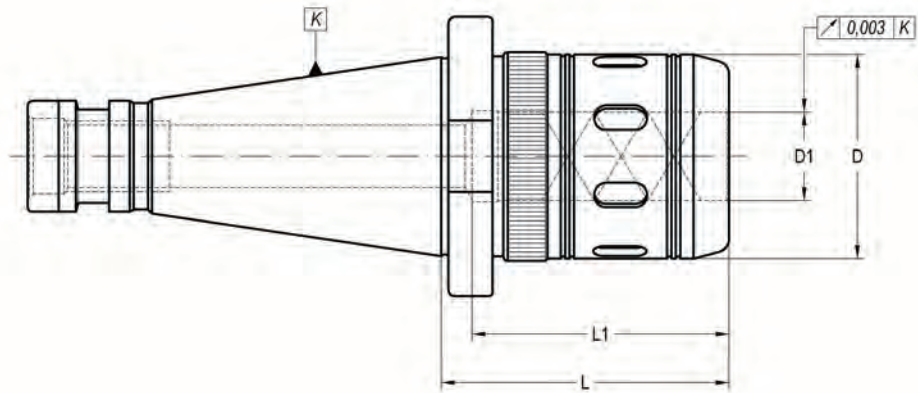




002 09 ...
See page 262

004 05 15 ...

GREAT POWER COLLET CHUCKS

For tools with plain cylindrical straight shank

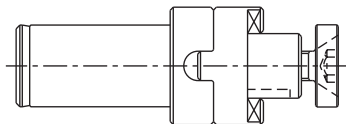


K	D ₁	L	D	L ₁	COD.		 OPTIONAL
40	20	65	46	60	004 05 15 02 04	004 99 04 02 06	004 99 04 09 09
40	32	80	62	75	004 05 15 02 06	004 99 04 02 06	004 99 04 09 11
50	20	70	46	60	004 05 15 04 04	004 99 04 02 06	004 99 04 09 09
50	32	75	62	80	004 05 15 04 06	004 99 04 02 06	004 99 04 09 11
50	40	105	85	90	004 05 15 04 07	004 99 04 02 06	004 99 04 09 13
50	50	105	99	90	004 05 15 04 09	004 99 04 02 06	004 99 04 09 14

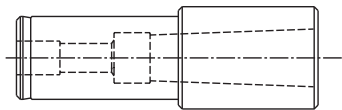
For tools with cylindrical straight shanks
 For an optimum performance of the chuck it is highly recommended to use h6 cylindrical tools
 For tools with nominal diameter collet there is no need.

K40 balanced according to ISO 1940-1 up to 15.000 r.p.m.
 K50 balanced according to ISO 1940-1 up to 10.000 r.p.m.
 We have latest methods for dynamic balancing up to 50.000 r.p.m.

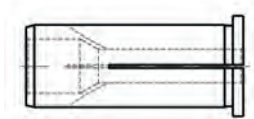
Accessories, see pages...



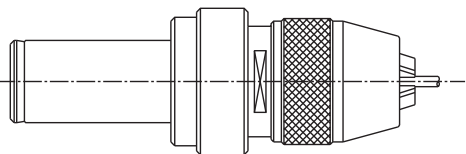
001 50 02 06 ..
See page 214



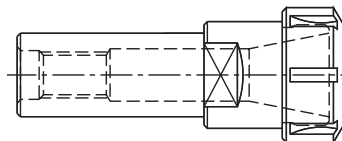
003 50 12 06 ..
See page 214



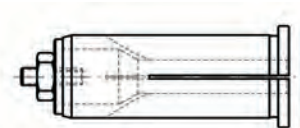
002 05 ..
See page 262



012 50 09 ...
See page 216



004 50 06 ...
See page 215



002 09 ...
See page 262

004 05 06

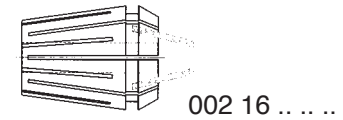
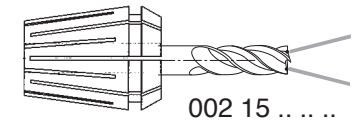
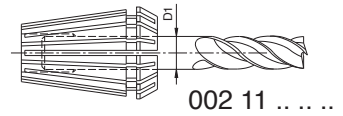
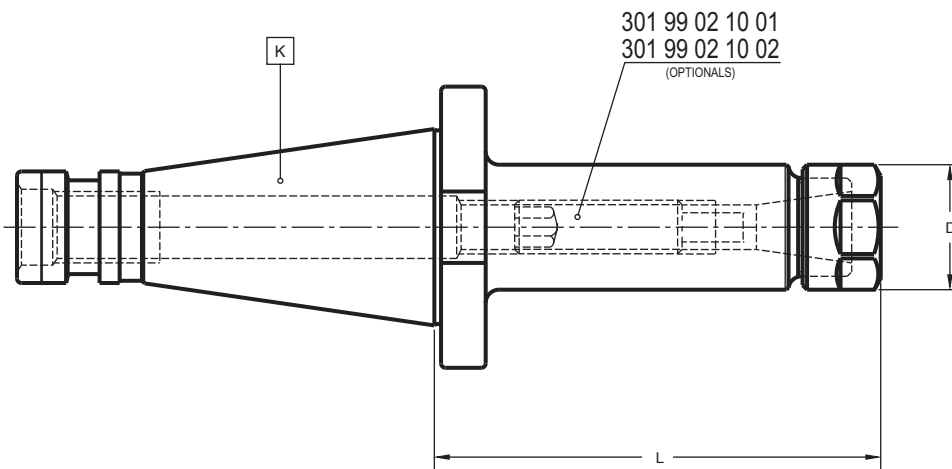
1/2

COLLET CHUCKS ER TYPE (DIN 6499)

For tools with cylindrical straight shank DIN 1835-A



ALTERNATIVE SOLUTIONS 003 05 54 + 004 54 06 pages 51 and 240



Maximum circular deviation between outer taper and collet housing $\leq 0,003$

COLLETS see pages 257-258

K	SIZE	D ₁	L	D	COD.
30	(ER16)	0,5 - 10	42	28	004 05 06 01 03
40	(ER16)	0,5 - 10	60	28	004 05 06 02 03
40	(ER16)	0,5 - 10	100	28	004 05 06 02 13
50	(ER16)	0,5 - 10	100	28	004 05 06 04 13

Accessories, see pages 267-293

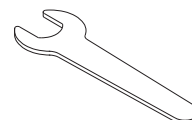
BALANCED
NUT
(STANDARD)



BEARING
NUT
(OPTIONAL)



WRENCH
(OPTIONAL)



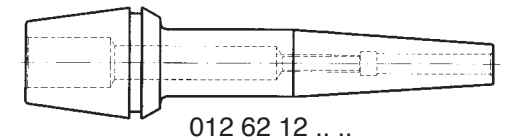
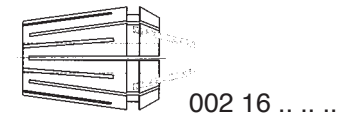
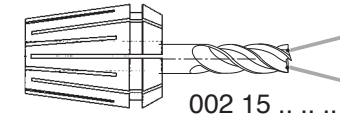
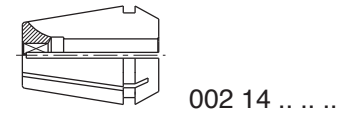
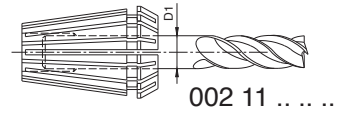
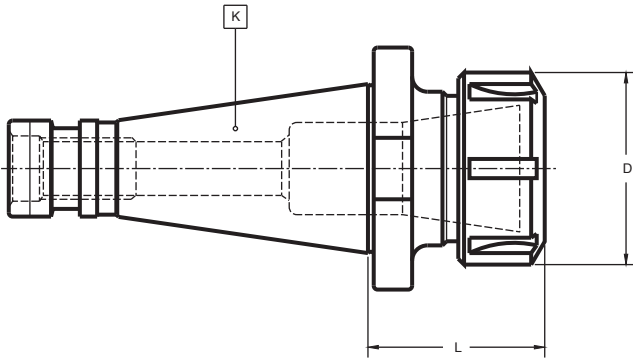
SIZE
ER 16

004 99 01 08 03

004 99 01 04 03

004 99 04 06 25

ALTERNATIVE SOLUTIONS 004 05 01 page 48
 004 05 05 page 49
 003 05 54 + 004 54 06 pages 51 and 240



Maximum circular deviation between outer taper and collet housing $\leq 0,003$

COLLETS see pages 257-259

K	SIZE	D ₁ máx.	L	D	COD.
30	(ER25)	16	45	42	004 05 06 01 05
30	(ER32)	20	56	50	004 05 06 01 06
40	(ER25)	16	45	42	004 05 06 02 05
40	(ER32)	20	52	50	004 05 06 02 06
40	(ER40)	26	53	63	004 05 06 02 07
40	(ER50)	34	80	78	004 05 06 02 08
50	(ER32)	20	70	50	004 05 06 04 06
50	(ER40)	26	70	63	004 05 06 04 07
50	(ER50)	34	70	78	004 05 06 04 08

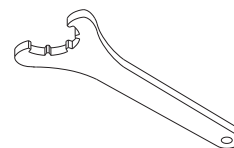
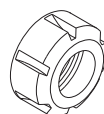
For boxes and composition of different sets see pages 265-266

Accessories, see pages 267-293

BALANCED NUT (STANDARD)

BEARING NUT (OPTIONAL)

WRENCH (OPTIONAL)



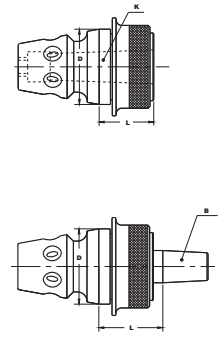
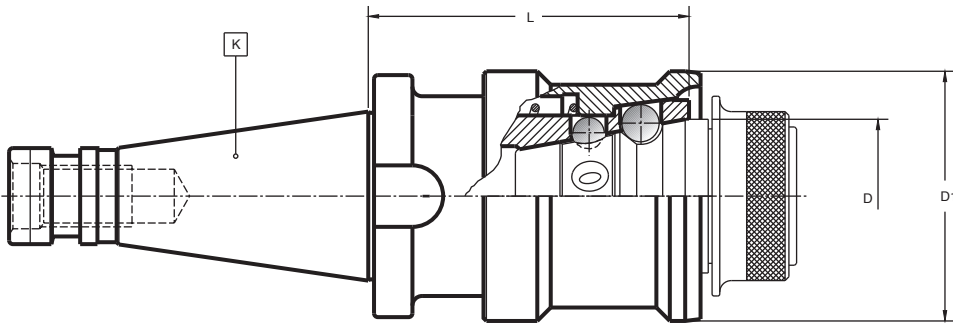
SIZE

ER 25	004 99 01 03 05	004 99 01 04 05	004 99 04 03 05
ER 32	004 99 01 03 06	004 99 01 04 06	004 99 04 03 06
ER 40	004 99 01 03 07	004 99 01 04 07	004 99 04 03 07
ER 50	004 99 01 03 08	004 99 01 04 08	004 99 04 03 08

006 05 01

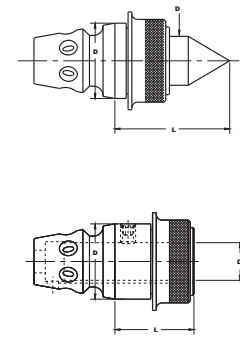
QUICK-CHANGE HOLDER

Without stopping the machine



Maximum circular deviation between tapers $\leq 0,008$

K	D	L	D ₁	COD.
30	40	78	63	006 05 01 01 02
40	40	86	63	006 05 01 02 02
40	51,5	102	83	006 05 01 02 03
50	51,5	100	83	006 05 01 04 03
50	68,7	133	100	006 05 01 04 04



WITHOUT STOPPING THE MACHINE

MAXIMUM ROTATION SPEED

2000 r.p.m.

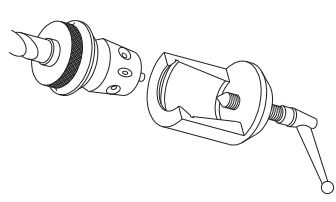
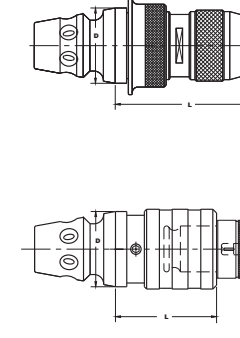
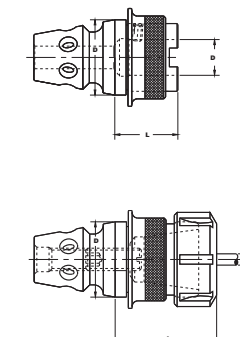
MAXIMUM CONCENTRICITY ACHIEVED BY TAPER COUPLING



JUST 10 MM CLEARANCE BETWEEN WORKPIECE AND TOOL IS ENOUGH

ROTATION IN EITHER DIRECTION

EQUALLY EFFECTIVE IN VERTICAL OR HORIZONTAL PLAIN



COD.

006 05 01 01 02	304 01 00 08 73	304 01 00 10 31	305 01 40 00 20	305 09 06 01 02	351 06 00 01 21	351 06 00 01 22
006 05 01 01 03	304 01 00 11 11	304 01 00 12 70	305 01 51 00 20	305 09 06 01 03	351 06 00 01 31	351 06 00 01 32
006 05 01 02 03	304 01 00 11 11	304 01 00 12 70	305 01 51 00 20	305 09 06 01 03	351 06 00 01 31	-
006 05 01 02 04	304 01 00 12 70	304 01 00 14 28	305 01 66 00 30	305 09 06 01 04	351 06 00 01 41	351 06 00 01 42
006 05 01 04 04	304 01 00 12 70	304 01 00 14 28	305 01 66 00 30	305 09 06 01 04	351 06 00 01 41	-

QUICK-CHANGE ADAPTERS

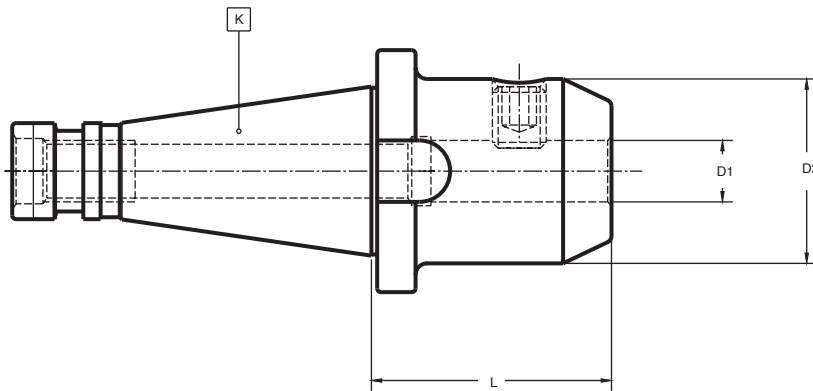
For more details see pages 22 to 27




	D	27,1	40			51,5				68,7				
MORSE TAPER ADAPTERS For tapered Morse taper tools DIN 228-B FLOATING ADAPTERS	K ₁ Morse N°	1	1	2	3	1	2	3	4	1	2	3	4	5
	L	25	29	29	44	34	34	34	55	34	34	34	43	70
	COD. 006 99 01 □□□□	0102	0202	0203	0204	0302	0303	0304	0305	0402	0403	0404	0405	0406
	COD. 006 99 08 □□□□	-	-	-	0204	-	-	0304	-	-	-	0404	-	-
DRILL CHUCK ADAPTERS For DIN 238 or JACOBS	B	B. 12	B. 12	B. 16	B. 16				B. 16		B. 18			
	L	28	32	34	39				39		39			
	COD. 006 99 02 □□□□	0101	0201	0202	0302				0402		0403			
60° CENTERING POINT ADAPTERS	L	49	61		66				66					
	D ₁	16	26		26				26					
	COD. 006 99 03 □□□□	0101	0201		0301				0401					
AUTOMOTIVE ADAPTERS For tools with shank DIN 6327	D ₁	-	20		28				36					
	L	-	42		45				45					
	COD. 006 99 04 □□□□	-	0204		0306				0408					
TAPPING ADAPTERS For "BILZ" tap adapters	D ₁	-	13	19	19	31		31		48				
	CAP.	-	M1-M10	M3-M12	M3-M12	M8-M20		M8-M20		M14-M33				
	L	-	29	29	41	41		41		54				
	COD. 006 99 05 □□□□	-	0201	0202	0302	0303		0403		0404				
COLLET ADAPTERS For DIN 6499 (ER) collets	D ₁	0,5 - 10	0,5 - 16		0,5 - 16				0,5 - 16					
	L	50	60		63				63					
	COD. 006 99 06 06 □□	13	25		35				45					
SHORT DRILL CHUCK ADAPTERS	D ₁	-	0 - 8		1 - 13				1 - 13		3 - 16			
	L	-	82		98				98		95			
	COD. 006 99 07 □□□□	-	2008		3113				4113		4316			
TAPPING ADAPTERS To use with "BILZ" adapters	D ₁	19	19	31	19	31		31		48				
	CAP.	M3-M12	M3-M12	M8-M20	M3-M12	M8-M20		M8-M20		M14-M33				
	L	45	45	69	45	69		69		110				
	COD. 006 99 19 52 □□	12	22	23	32	33		43		44				
EJECTOR DEVICE For tools set up on 006 99 01 and 006 99 08	COD. 006 99 09 01 □□	01	02		03				04					

ALTERNATIVE SOLUTIONS 003 05 54 + 012 54 04 pages 51 and 248

DIN 6359 / 1835



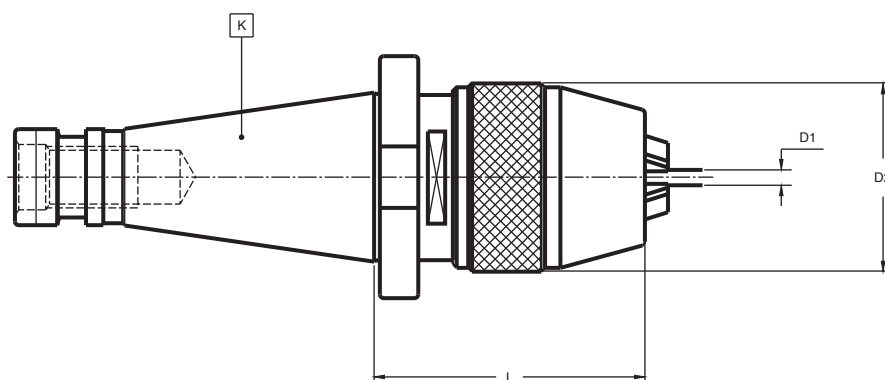
*Maximum circular deviation between K and $D_1 \leq 0,003$

K	D ₁	* tol.	L	D ₂	COD.	
30	6		40	25	012 05 01 11 06	301 01 05 06 10
30	8		40	28	012 05 01 11 08	301 01 05 08 10
30	10		40	35	012 05 01 11 10	301 01 05 10 12
30	12	+0,005 0	40	42	012 05 01 11 12	301 01 05 12 16
30	14		50	44	012 05 01 11 14	301 01 05 12 16
30	16		50	48	012 05 01 11 16	301 01 05 14 16
30	18		63	50	012 05 01 11 18	301 01 05 14 16
30	20	+0,007 0	63	52	012 05 01 11 20	301 01 05 16 16
40	6		50	25	012 05 01 12 06	301 01 05 06 10
40	8		50	28	012 05 01 12 08	301 01 05 08 10
40	10		50	35	012 05 01 12 10	301 01 05 10 12
40	12	+0,005 0	50	42	012 05 01 12 12	301 01 05 12 16
40	14		50	44	012 05 01 12 14	301 01 05 12 16
40	16		63	48	012 05 01 12 16	301 01 05 14 16
40	18		63	50	012 05 01 12 18	301 01 05 14 16
40	20		63	52	012 05 01 12 20	301 01 05 16 16
40	25	+0,007 0	80	65	012 05 01 12 25	301 01 05 18 20
40	32		80	72	012 05 01 12 32	301 01 05 20 20
50	6		63	25	012 05 01 14 06	301 01 05 06 10
50	8		63	28	012 05 01 14 08	301 01 05 08 10
50	10		63	35	012 05 01 14 10	301 01 05 10 12
50	12	+0,005 0	63	42	012 05 01 14 12	301 01 05 12 16
50	14		63	44	012 05 01 14 14	301 01 05 12 16
50	16		63	48	012 05 01 14 16	301 01 05 14 16
50	18		63	50	012 05 01 14 18	301 01 05 14 16
50	20		63	52	012 05 01 14 20	301 01 05 16 16
50	25	+0,007 0	80	65	012 05 01 14 25	301 01 05 18 20
50	32		80	72	012 05 01 14 32	301 01 05 20 20
50	40	+0,009 0	90	90	012 05 01 14 40	301 01 05 20 25
50	50		100	98	012 05 01 14 50	301 01 05 24 25

* The hole diameter and circular deviation tolerances have been significantly tightened up compared with DIN 1835 in order to achieve the highest levels of machining precision.

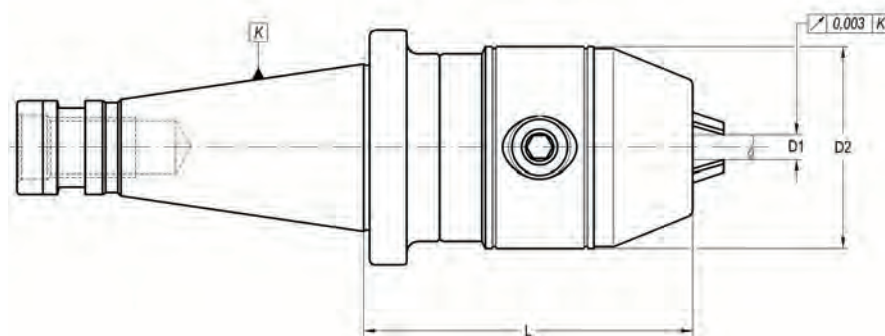
D₁ = > 25 mm: two clamping holes.

012 05 09 ... SHORT DRILL CHUCKS



K	D ₁	L	D ₂	COD.			
30	0-8	75	36	012 05 09 11 08	351 02 60 00 08	351 02 61 00 08	020 99 03 00 08
40	1-13	81	48	012 05 09 12 13	351 02 60 01 13	351 02 61 01 13	020 99 03 01 13
40	3-16	97	54	012 05 09 12 16	351 02 60 03 16	351 02 61 03 16	020 99 03 03 16
50	3-16	72	54	012 05 09 14 16	351 02 60 03 16	351 02 61 03 16	020 99 03 03 16

012 05 19 ... SHORT DRILL CHUCKS – HIGH PRECISION –



K	D ₁	D ₂	L	COD.
40	1-13	53	82	012 05 19 12 13
40	3-16	53	85	012 05 19 12 16
50	1-13	57	85	012 05 19 14 13
50	3-16	57	88	012 05 19 14 16

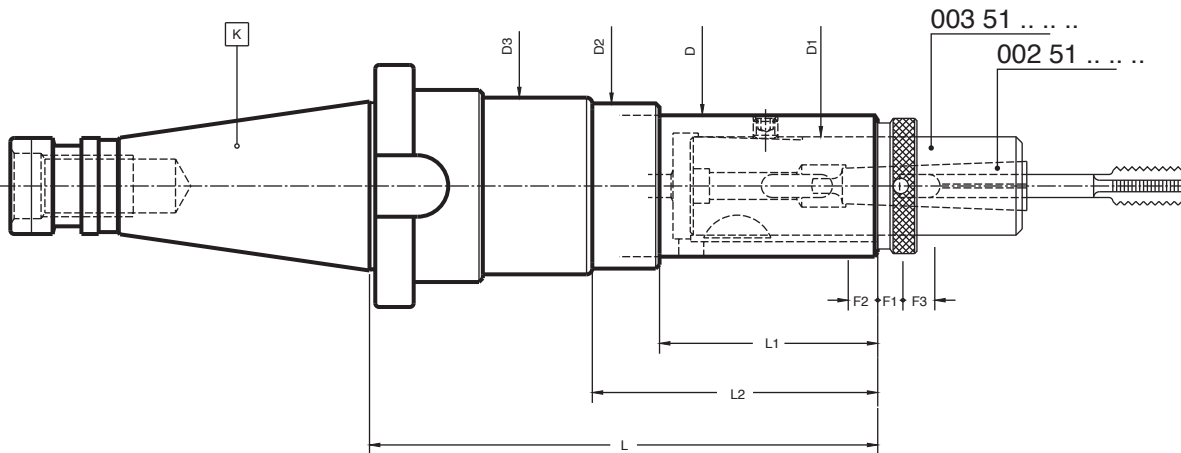
019 05 51 ... 1.

TAPPING CHUCKS

Self feed and compression system. Releasing drive system.
For axial adjustable adapter DIN 6327



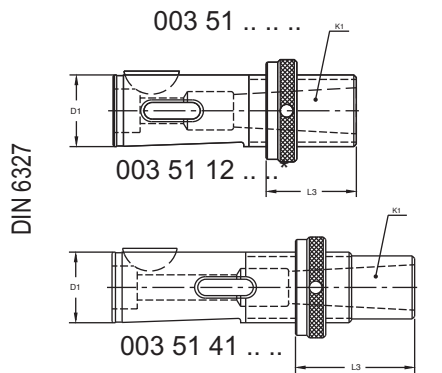
ALTERNATIVE SOLUTIONS 003 05 54 page 47



K	CAP.	D ₁	L	D	L ₁	D ₂	L ₂	D ₃	F ₁	F ₂	F ₃	COD.
30	M3-M16	25	148	37	61	44	80	49	5	10	10	019 05 51 01 02 12
40	M3-M16	25	148	37	61	44	80	49	5	10	10	019 05 51 02 02 12
40	M8-M24	32	179	51	59	60	85	66	6	10	12	019 05 51 02 03 13
50	M3-M16	25	148	37	61	44	80	49	5	10	10	019 05 51 04 02 12
50	M8-M24	32	179	51	59	60	85	66	6	10	12	019 05 51 04 03 13

Product outside of our present production program. Price subject to availability.

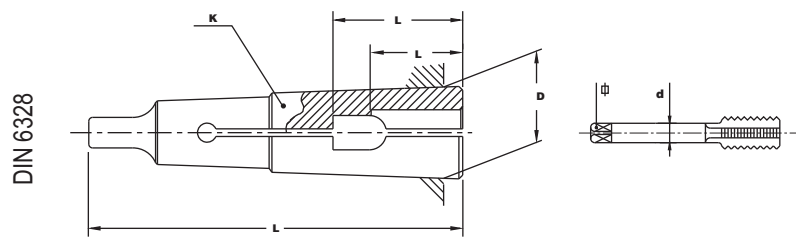
Axial compensation (compression and extensions) values are F₁ and F₂. F₃ is the release value (the tap receives only reversing rotation). The release system allows to easily and accurately set up tapping depth, specially adapt for blind holes.



Complete program, see pages 221-225

D ₁	K ₁	L ₃	COD.
25	MORSE 1	12- 42	003 51 12 05 20*
		37- 67	003 51 41 05 21
		62- 92	003 51 41 05 22
	MORSE 2	87-117	003 51 41 05 23
		112-142	003 51 41 05 24
		12- 42	003 51 12 05 30*
32	MORSE 1	37- 67	003 51 41 05 31
		62- 92	003 51 41 05 32
		87-117	003 51 41 05 33
	MORSE 2	112-142	003 51 41 05 34
		12- 50	003 51 12 07 30*
		42- 80	003 51 41 07 31
	MORSE 3	72-110	003 51 41 07 32
		102-140	003 51 41 07 33
		132-170	003 51 41 07 34
		12- 50	003 51 12 07 40*
		42- 80	003 51 41 07 41
		72-110	003 51 41 07 42
102-140	003 51 41 07 43		
132-170	003 51 41 07 44		

002 51 ... (see page 264)



To order: CODE + Diameter **d** x Φ • Example: 002 51 02 - 4 x 3

D	L	d	2,5	2,8	3,15	3,5	3,55	4	4,5	5	5,5	5,6	6	6,3	7	7,1	8		
		Φ	2,1	2,1	2,5	2,7	2,8	3	3,4	4	4,3	4,5	4,9	5	5,5	5,6	6,2	7	7,1
L ₁	19	22	21	22	21	22	21	25	24	25	26	28	26	28	26	28	27	27	27
L ₂	15	18	16	18	16	16	19	18	19	18	19	19,5	22	19,5	22	19,5	22	19,5	22

D	L	d	4,5	5	5,5	5,6	6	6,3	7	7,1	8	9	9,5	10	11	11,2	12	12,5		
		Φ	3,4	4	4,3	4,5	4,9	5	5,5	5,6	6,2	7	8	8	8	9	9	9	9	9
L ₁	21	25	24	25	26	28	26	28	27	30	32	32	34	36	36	36	36	36	36	36
L ₂	16	19	18	19	19,5	22	19,5	22	19,5	22	19,5	22	23	24	26	25	26	26	26	26

D	L	d	8	9	9,5	10	11	11,2	12	12,5	14	16	18
		Φ	6,2	7	8	8	9	9	9	9	10	10	11
L ₁	27	30	32	34	34	36	36	36	36	36	38	44	48
L ₂	19,5	22	23	24	24	26	25	25	25	25	2	30	33

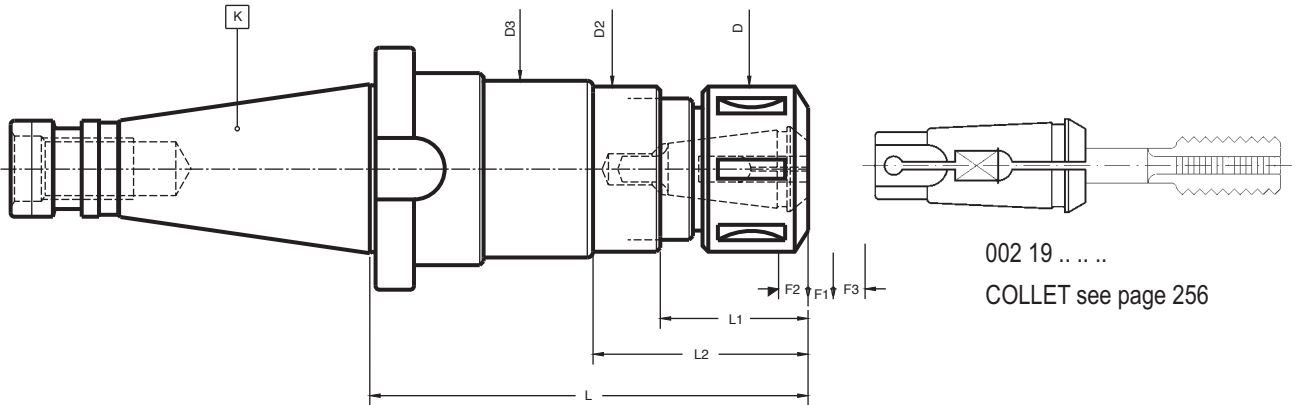
019 05 51 ... 2.

TAPPING CHUCKS

Self feed and compression system. Releasing drive system.
For LAIP 0219 collet



ALTERNATIVE SOLUTIONS 003 05 54 + 019 54 51 ... 2 pages 47 and 249



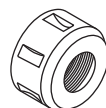
K	CAP.	L	D	L ₁	D ₂	L ₂	D ₃	F ₁	F ₂	F ₃	COD.
30	M3-M16	126	43	39	44	58	49	5	10	10	019 05 51 01 02 22
40	M3-M16	126	43	39	44	58	49	5	10	10	019 05 51 02 02 22
40	M8-M28	162	50	42	60	68	66	6	10	12	019 05 51 02 03 23
50	M3-M16	126	43	39	44	58	49	5	10	10	019 05 51 04 02 22
50	M8-M28	162	50	42	60	68	66	6	10	12	019 05 51 04 03 23

Product outside of our present production program. Price subject to availability.

Axial compensation (compression and extensions) values are F₁ and F₂. F₃ is the release value (the tap receives only reversing rotation). The release system allows to easily and accurately set up tapping depth, specially adapt for blind holes.

Accessories, see pages 267-293

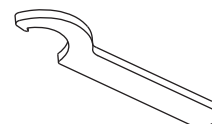
BALANCED NUT
(STANDARD)



BEARING NUT
(OPTIONAL)



WRENCH
(OPTIONAL)



CAP.

M3-M16
M8-M28

-
004 99 01 01 04

004 99 01 02 03
004 99 01 02 04

004 99 04 09 08
004 99 04 09 09

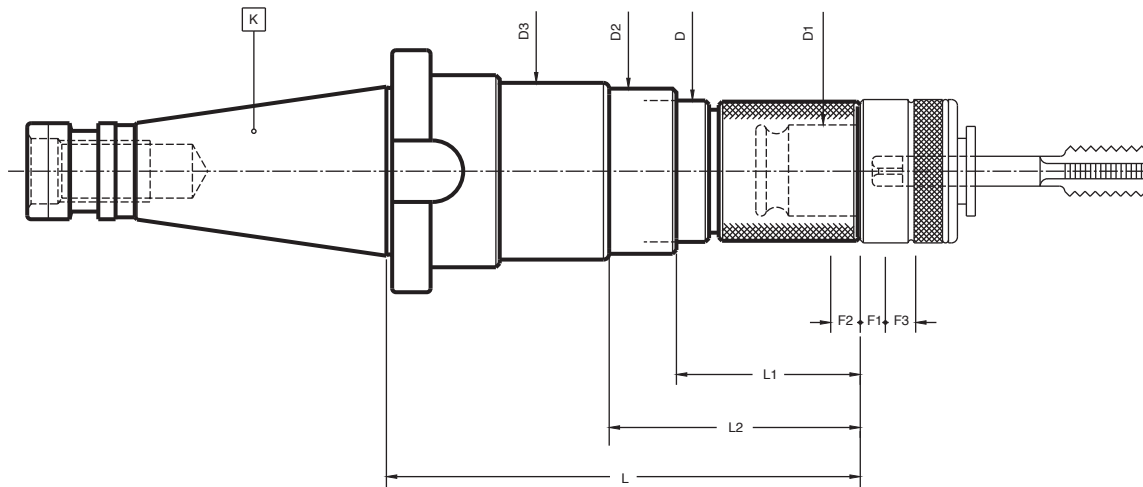
019 05 51 ... 3.

QUICK-CHANGE TAPPING CHUCKS

Self feed and compression system. Releasing drive system.
For BILZ system tap adapter



ALTERNATIVE SOLUTIONS 003 05 54 + 019 54 51 ... 3 pages 47 and 250



BILZ Adapter
↓

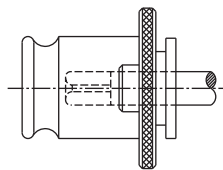
K	CAP.	D ₁	L	D	L ₁	D ₂	L ₂	D ₃	F ₁	F ₂	F ₃	COD.
30	M3-M12 (M16)*	19	131	37	44	44	63	49	5	10	10	019 05 51 01 02 32 ⚠
40	M3-M12 (M16)*	19	131	37	44	44	63	49	5	10	10	019 05 51 02 02 32 ⚠
40	M8-M20 (M30)*	31	183	51	63	60	89	66	6	10	12	019 05 51 02 03 33 ⚠
50	M3-M12 (M16)*	19	131	37	44	44	63	49	5	10	10	019 05 51 04 02 32 ⚠
50	M8-M20 (M30)*	31	183	51	63	60	89	66	6	10	12	019 05 51 04 03 33 ⚠

⚠ Product outside of our present production program. Price subject to availability.

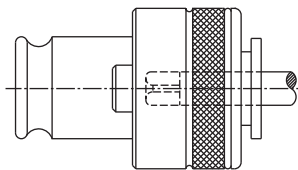
Axial compensation (compression and extensions) values are F₁ and F₂. F₃ is the release value (the tap receives only reversing rotation). The release system allows to easily and accurately set up tapping depth, specially adapt for blind holes.

* With 002 22 ... and 002 24 ... adapters

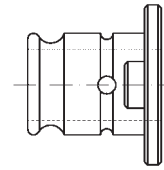
See page 263



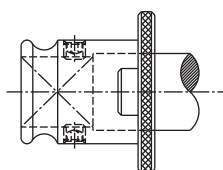
002 21 ..



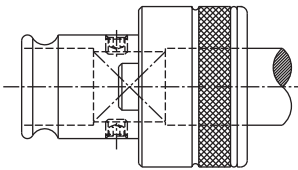
002 23 ..



002 20 ..



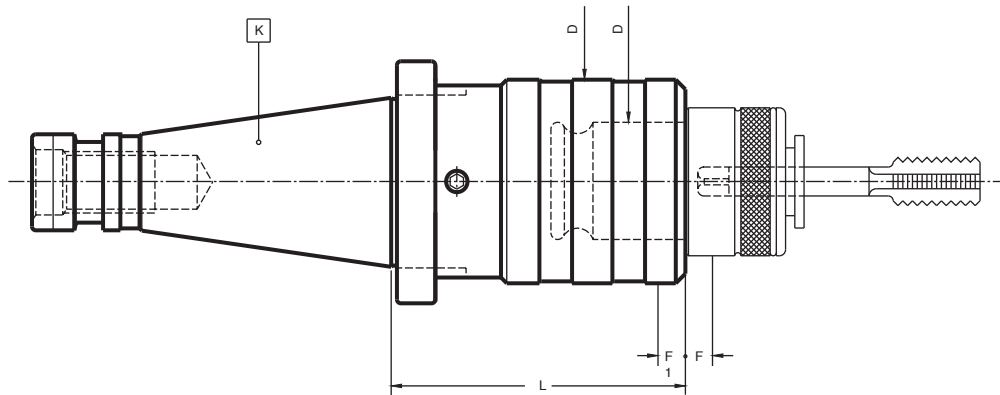
002 22 ..



002 24 ..

D ₁	19	002 21 02	002 22 02	002 23 02	002 24 02
	31	002 21 03	002 22 03	002 23 03	002 24 03

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BILZ Adapter

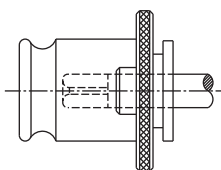
K	CAP.	D ₁	L	D ₂	F ₁	F ₂	COD.
30	M3-M12 (M16)*	19	60	36	7,5	7,5	019 05 52 01 02
40	M3-M12 (M16)*	19	50	36	7,5	7,5	019 05 52 02 02
40	M8-M20 (M30)*	31	78	53	12,5	12,5	019 05 52 02 03
40	M14-M33 (M48)*	48	130	78	20	20	019 05 52 02 04
50	M3-M12 (M16)*	19	75	36	7,5	7,5	019 05 52 04 02
50	M8-M20 (M30)*	31	80	53	12,5	12,5	019 05 52 04 03
50	M14-M33 (M48)*	48	130	78	20	20	019 05 52 04 04

F₁ Compression run

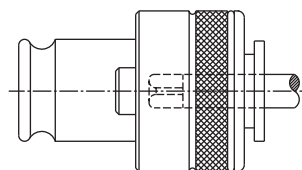
F₂ Extension run

* With 002 22 and 002 24 adapters

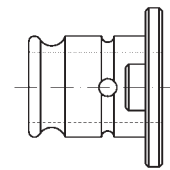
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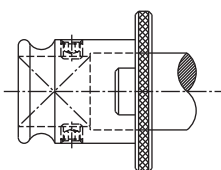
002 21 ..



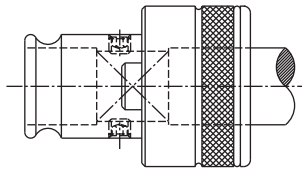
002 23 ..



002 20 ..



002 22 ..

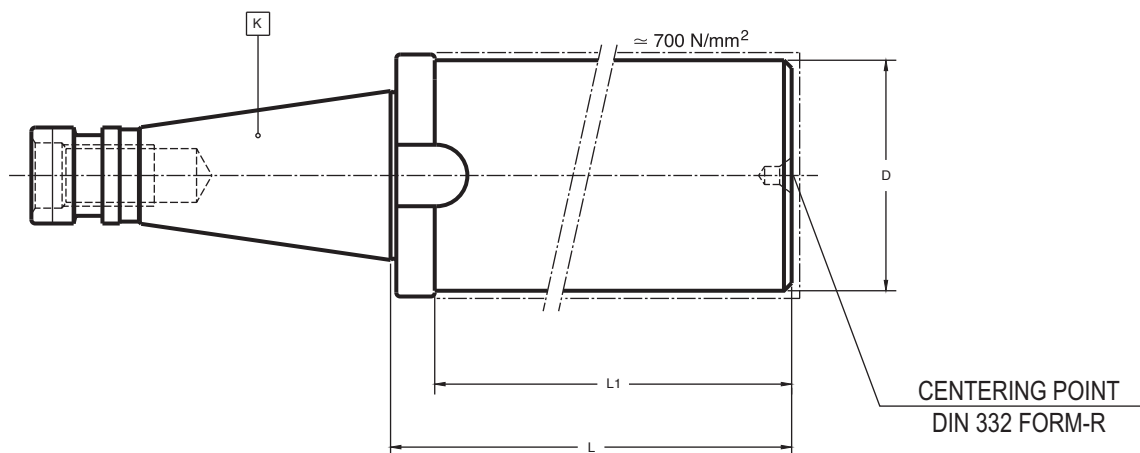


002 24 ..

D₁

19	002 21 02	002 22 02	002 23 02	002 24 02
31	002 21 03	002 22 03	002 23 03	002 24 03
48	002 21 04	002 22 04	002 23 04	002 24 04

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K	D	L	L ₁	COD.
40	40	260	248	020 05 02 02 55
40	63	260	248	020 05 02 02 75
50	63	330	315	020 05 02 04 76
50	95	330	315	020 05 02 04 96

- The area of diameter D and length L_1 has 700 N/mm^2 .
- Rest is hardened to $57 \div 60 \text{ Rc}$.