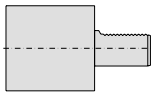
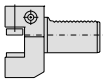
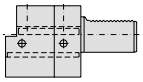
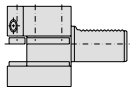
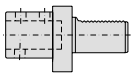
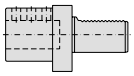
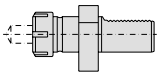
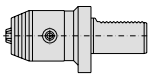
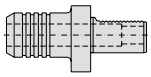
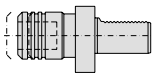
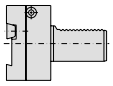
Werkzeughalter nach DIN 69880

WTO
Angetriebene Präzisions-Werkzeuge

ISO 9001

Höhere Produktivität zahlt sich aus.

Hohe Präzision und Festigkeit

	**48-A...**	Rohlinge für Sonderausführungen	A1-A2	**Seite 5**
	**48-B...**	Vierkant-Queraufnahme	B1-B8	**Seite 6 - 9**
	**48-C...**	Vierkant-Längsaufnahme	C1-C4	**Seite 10 - 11**
	**48-D...**	Vierkant-Mehrfachaufnahme	D1-D2	**Seite 12**
	**48-E1...**	Wendeplattenbohreraufnahme	E1	**Seite 13**
	**48-E2...**	Bohrstangenaufnahme	E2	**Seite 14**
	**48-E4...**	Spannzangenaufnahme	E4	**Seite 15**
	48-F...	Morsekegelaufnahme	F	**Seite 16**
	**48-BE...** **48-BI...**	Präzisions-Kurzbohrfutter		**Seite 17**
	**48-HS...**	Hydro-Dehnspannfutter		**Seite 18**
	**48-GS...**	Gewindeschneid-Schnellwechselfutter		**Seite 19**
	**48-AR...** **48-AL...**	Abstechhalter, höhenverstellbar		**Seite 20 - 21**

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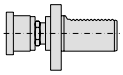
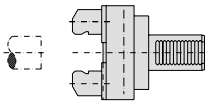
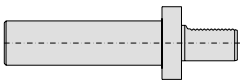
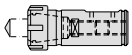
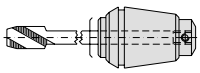
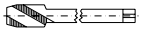
	**48-WA…**	Werkstoffanschlag, mitlaufend	**Seite 22**
	**48-ST…**	Stangengreifer	**Seite 22**
	48-Z2…	Verschlussstopfen Z2	**Seite 23**
	**48-PD…**	Prüfdorn	**Seite 23**
	2400… **2401…**	Reduzierhülsen	**Seite 24 - 25**
	**2410…**	Spannzangenaufnahme mit zyl. Schaft	**Seite 26**
	1075…	Spannschlüssel	**Seite 26**
	2000…	Spannmuttern	**Seite 27**
	2101…	Dichtscheiben	**Seite 27**
	**1800…** **1810…**	Gewindebohrzangen	**Seite 28**
	1900… **1901…**	Spannzangen	**Seite 29**
		Gewindebohrermaße	**Seite 30**

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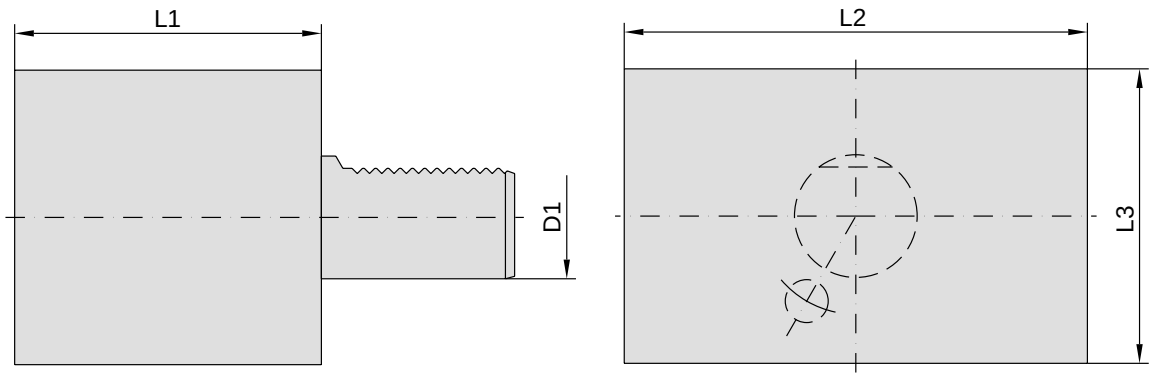
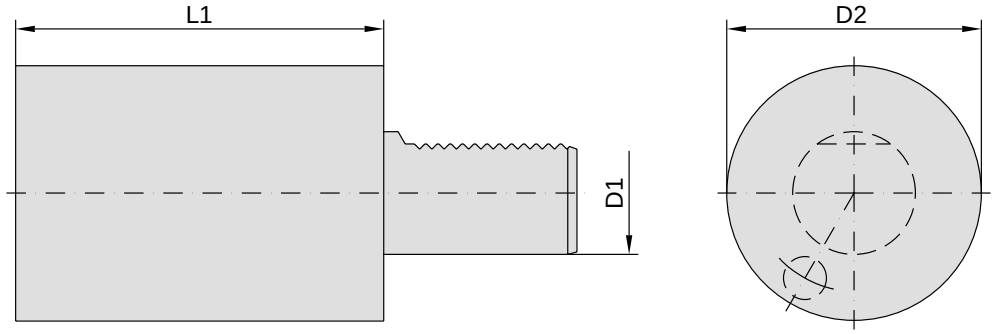
Rechteck-Rohling für Sonderausführungen, **Form A1**



48-A1-...

Bestell-Nr.	D1	L1	L2	L3
48-A1-16x44	16	44	78	44
48-A1-20x65	20	65	100	60
48-A1-25x75	25	75	100	60
48-A1-30x85	30	85	130	76
48-A1-40x100	40	100	151	96
48-A1-50x125	50	125	160	120
48-A1-60x160	60	160	165	125

Zylinder-Rohling für Sonderausführungen, **Form A2**



48-A2-...

Bestell-Nr.	D1	D2	L1
48-A2-16x60	16	40	60
48-A2-20x70	20	50	70
48-A2-25x80	25	58	80
48-A2-25x200	25	58	200
48-A2-30x100	30	68	100
48-A2-30x240	30	68	240
48-A2-40x120	40	83	120
48-A2-40x320	40	83	320
48-A2-50x135	50	98	135
48-A2-50x400	50	98	400
48-A2-60x150	60	123	150
48-A2-60x480	60	123	480

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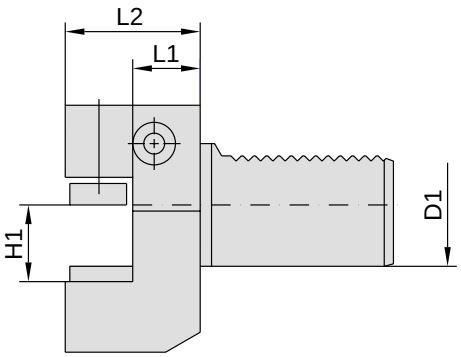
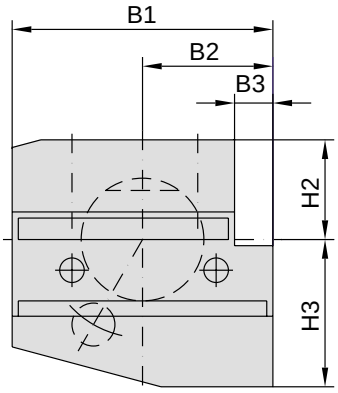
Vierkant-Queraufnahme, rechts, kurz, **Form B1**

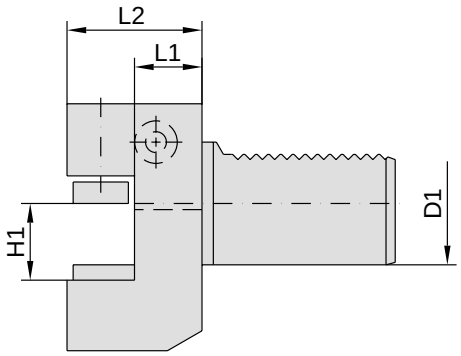


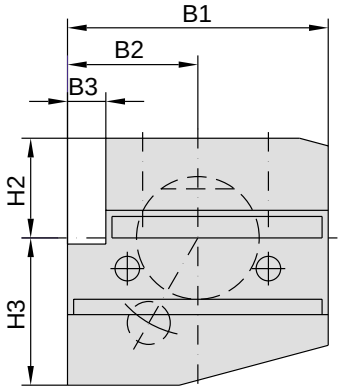


48-B1-...

Bestell-Nr.	D1	H1	B1	B2	B3	H2	H3	L1	L2
48-B1-16x12	16	12	42	23	5	20	22	13	24
48-B1-16x12x34	16	12	42	23	5	20	22	23	34
48-B1-20x16	20	16/12	55	30	7	25	30	16	30
48-B1-20x16x40	20	16/12	55	30	7	25	30	26	40
48-B1-25x16	25	16/12	55	30	7	25	30	16	30
48-B1-25x16x40	25	16/12	55	30	7	25	30	26	40
48-B1-30x20	30	20/16	70	35	10	28	38	22	40
48-B1-30x20x60	30	20/16	70	35	10	28	38	42	60
48-B1-40x25	40	25/20	85	42.5	12.5	32.5	48	22	44
48-B1-50x32	50	32/25	100	50	16	35	60	30	55
48-B1-60x32	60	32/25	125	62.5	16	42.5	62.5	30	60

Vierkant-Queraufnahme, links, kurz, **Form B2**





48-B2-...

Bestell-Nr.	D1	H1	B1	B2	B3	H2	H3	L1	L2
48-B2-16x12	16	12	42	23	5	20	22	13	24
48-B2-16x12x34	16	12	42	23	5	20	22	23	34
48-B2-20x16	20	16/12	55	30	7	25	30	16	30
48-B2-20x16x40	20	16/12	55	30	7	25	30	26	40
48-B2-25x16	25	16/12	55	30	7	25	30	16	30
48-B2-25x16x40	25	16/12	55	30	7	25	30	26	40
48-B2-30x20	30	20/16	70	35	10	28	38	22	40
48-B2-30x20x60	30	20/16	70	35	10	28	38	42	60
48-B2-40x25	40	25/20	85	42.5	12.5	32.5	48	22	44
48-B2-50x32	50	32/25	100	50	16	35	60	30	55
48-B2-60x32	60	32/25	125	62.5	16	42.5	62.5	30	60

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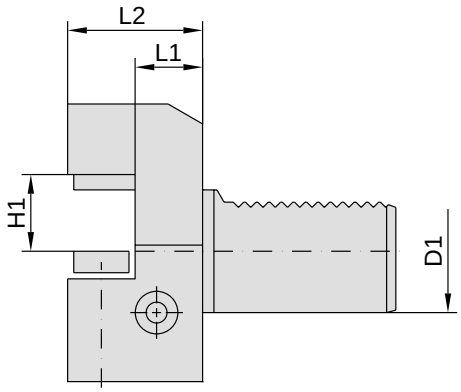
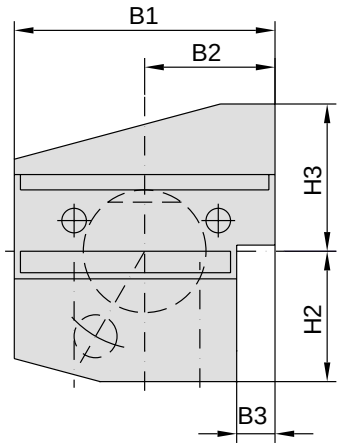
Vierkant-Queraufnahme, Überkopf rechts, kurz, **Form B3**

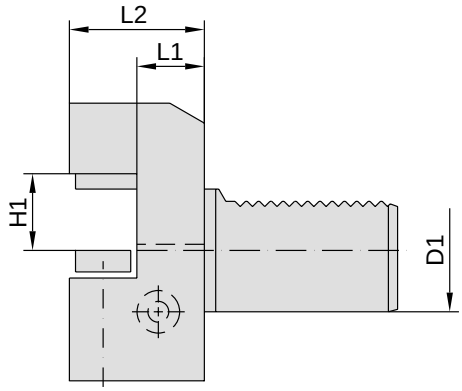


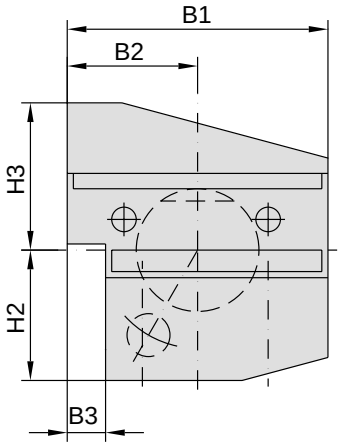


48-B3-...

Bestell-Nr.	D1	H1	B1	B2	B3	H2	H3	L1	L2
48-B3-16x12	16	12	42	23	5	20	22	13	24
48-B3-16x12x34	16	12	42	23	5	20	22	23	34
48-B3-20x16	20	16/12	55	30	7	25	30	16	30
48-B3-20x16x40	20	16/12	55	30	7	25	30	26	40
48-B3-25x16	25	16/12	55	30	7	25	30	16	30
48-B3-25x16x40	25	16/12	55	30	7	25	30	26	40
48-B3-30x20	30	20/16	70	35	10	35	38	22	40
48-B3-30x20x60	30	20/16	70	35	10	35	38	42	60
48-B3-40x25	40	25/20	85	42.5	12.5	42.5	48	22	44
48-B3-50x32	50	32/25	100	50	16	50	60	30	55
48-B3-60x32	60	32/25	125	62.5	16	62.5	62.5	30	60

Vierkant-Queraufnahme, Überkopf links, kurz, **Form B4**





48-B4-...

Bestell-Nr.	D1	H1	B1	B2	B3	H2	H3	L1	L2
48-B4-16x12	16	12	42	23	5	20	22	13	24
48-B4-16x12x34	16	12	42	23	5	20	22	23	34
48-B4-20x16	20	16/12	55	30	7	25	30	16	30
48-B4-20x16x40	20	16/12	55	30	7	25	30	26	40
48-B4-25x16	25	16/12	55	30	7	25	30	16	30
48-B4-25x16x40	25	16/12	55	30	7	25	30	26	40
48-B4-30x20	30	20/16	70	35	10	35	38	22	40
48-B4-30x20x60	30	20/16	70	35	10	35	38	42	60
48-B4-40x25	40	25/20	85	42.5	12.5	42.5	48	22	44
48-B4-50x32	50	32/25	100	50	16	50	60	30	55
48-B4-60x32	60	32/25	125	62.5	16	62.5	62.5	30	60

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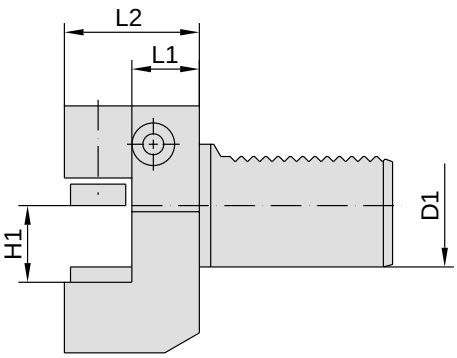
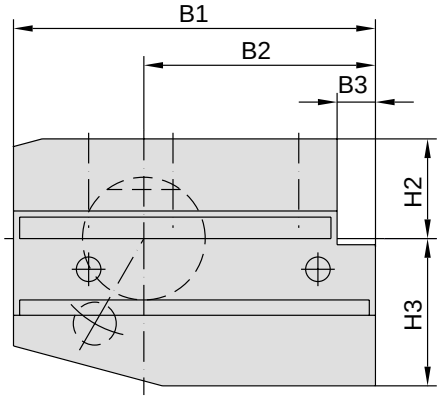
Vierkant-Queraufnahme, rechts, lang, **Form B5**

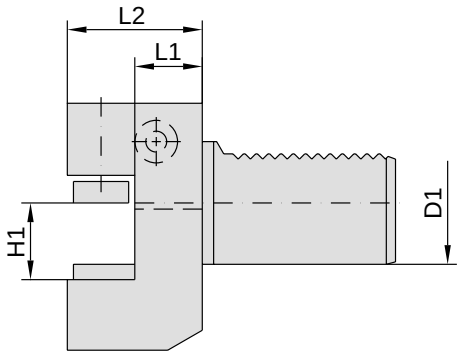


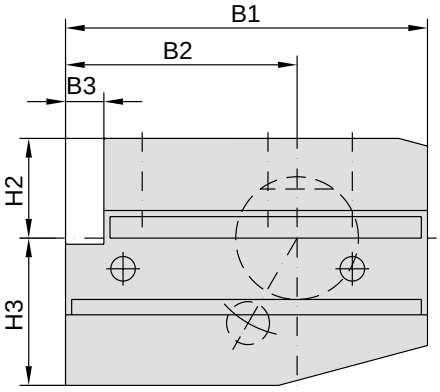


48-B5-...

Bestell-Nr.	D1	H1	B1	B2	B3	H2	H3	L1	L2
48-B5-16x12	16	12	58	39	5	20	22	13	24
48-B5-16x12x34	16	12	58	39	5	20	22	23	34
48-B5-20x16	20	16/12	75	50	7	25	30	16	30
48-B5-20x16x40	20	16/12	75	50	7	25	30	26	40
48-B5-25x16	25	16/12	75	50	7	25	30	16	30
48-B5-25x16x40	25	16/12	75	50	7	25	30	26	40
48-B5-30x20	30	20/16	100	65	10	28	38	22	40
48-B5-30x20x60	30	20/16	100	65	10	28	38	42	60
48-B5-40x25	40	25/20	118	75.5	12.5	32.5	48	22	44
48-B5-50x32	50	32/25	130	80	16	35	60	30	55
48-B5-60x32	60	32/25	145	82.5	16	42.5	62.5	30	60

Vierkant-Queraufnahme, links, lang, **Form B6**





48-B6-...

Bestell-Nr.	D1	H1	B1	B2	B3	H2	H3	L1	L2
48-B6-16x12	16	12	58	39	5	20	22	13	24
48-B6-16x12x34	16	12	58	39	5	20	22	23	34
48-B6-20x16	20	16/12	75	50	7	25	30	16	30
48-B6-20x16x40	20	16/12	75	50	7	25	30	26	40
48-B6-25x16	25	16/12	75	50	7	25	30	16	30
48-B6-25x16x40	25	16/12	75	50	7	25	30	26	40
48-B6-30x20	30	20/16	100	65	10	28	38	22	40
48-B6-30x20x60	30	20/16	100	65	10	28	38	42	60
48-B6-40x25	40	25/20	118	75.5	12.5	32.5	48	22	44
48-B6-50x32	50	32/25	130	80	16	35	60	30	55
48-B6-60x32	60	32/25	145	82.5	16	42.5	62.5	30	60

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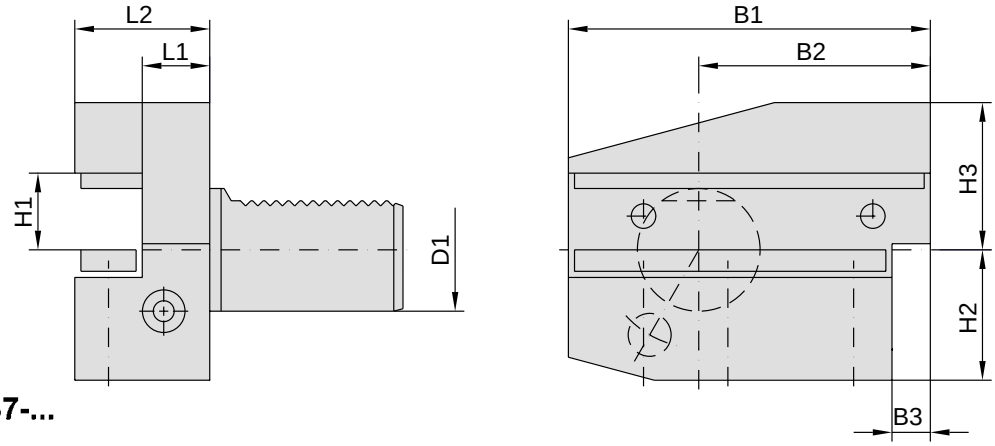
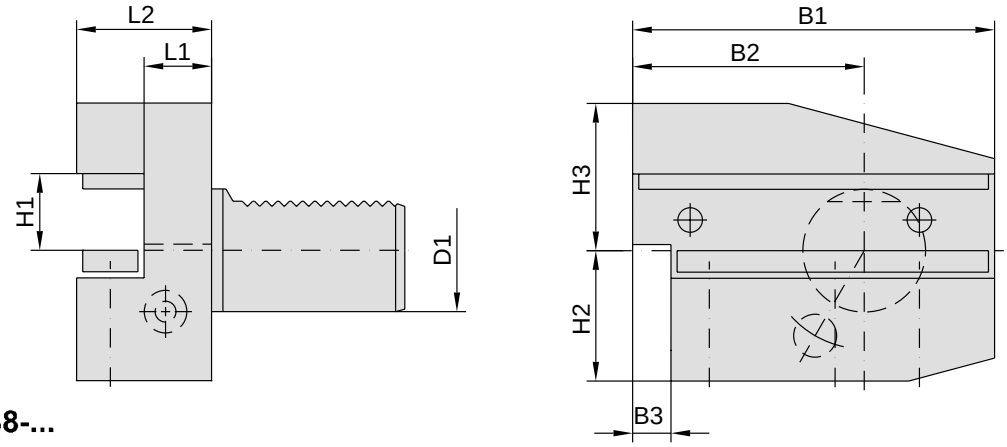
Vierkant-Queraufnahme, Überkopf rechts, lang, **Form B7**



48-B7-...

Bestell-Nr.	D1	H1	B1	B2	B3	H2	H3	L1	L2
48-B7-16x12	16	12	58	39	5	20	22	13	24
48-B7-16x12x34	16	12	58	39	5	20	22	23	34
48-B7-20x16	20	16/12	75	50	7	25	30	16	30
48-B7-20x16x40	20	16/12	75	50	7	25	30	26	40
48-B7-25x16	25	16/12	75	50	7	25	30	16	30
48-B7-25x16x40	25	16/12	75	50	7	25	30	26	40
48-B7-30x20	30	20/16	100	65	10	35	38	22	40
48-B7-30x20x60	30	20/16	100	65	10	35	38	42	60
48-B7-40x25	40	25/20	118	75.5	12.5	42.5	48	22	44
48-B7-50x32	50	32/25	130	80	16	50	60	30	55
48-B7-60x32	60	32/25	145	82.5	16	62.5	62.5	30	60

Vierkant-Queraufnahme, Überkopf links, lang, **Form B8**



48-B8-...

Bestell-Nr.	D1	H1	B1	B2	B3	H2	H3	L1	L2
48-B8-16x12	16	12	58	39	5	20	22	13	24
48-B8-16x12x34	16	12	58	39	5	20	22	23	34
48-B8-20x16	20	16/12	75	50	7	25	30	16	30
48-B8-20x16x40	20	16/12	75	50	7	25	30	26	40
48-B8-25x16	25	16/12	75	50	7	25	30	16	30
48-B8-25x16x40	25	16/12	75	50	7	25	30	26	40
48-B8-30x20	30	20/16	100	65	10	35	38	22	40
48-B8-30x20x60	30	20/16	100	65	10	35	38	42	60
48-B8-40x25	40	25/20	118	75.5	12.5	42.5	48	22	44
48-B8-50x32	50	32/25	130	80	16	50	60	30	55
48-B8-60x32	60	32/25	145	82.5	16	62.5	62.5	30	60

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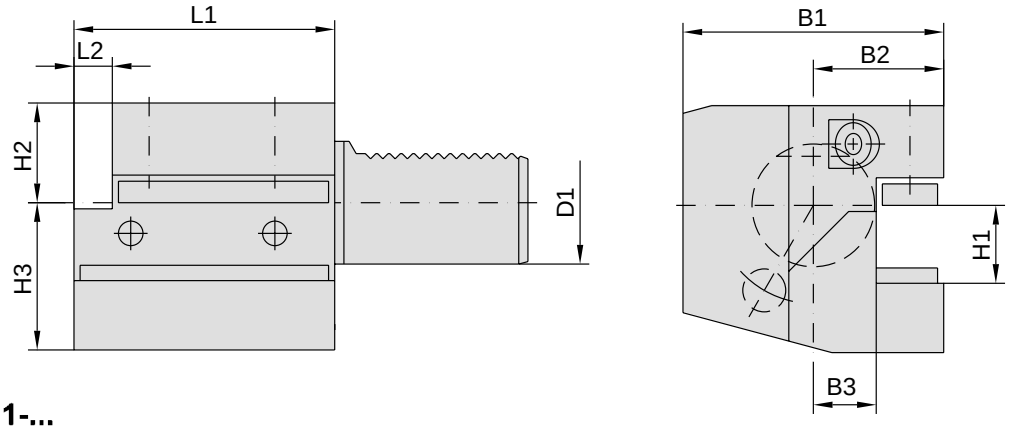
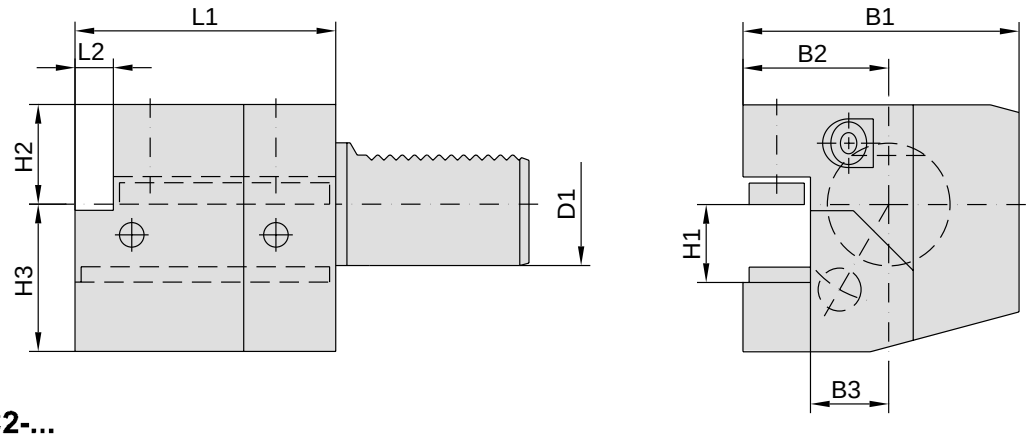
Vierkant-Längsaufnahme, rechts, **Form C1**



48-C1-...

Bestell-Nr.	D1	H1	B1	B2	B3	H2	H3	L1	L2
48-C1-16x12	16	12	43	24	13	20	22	44	5
48-C1-20x16	20	16/12	65	40	26	25	30	50	-
48-C1-25x16	25	16/12	58	33	19	25	30	55	7
48-C1-30x20	30	20/16	70	35	17	28	38	70	10
48-C1-40x25	40	25/20	85	42.5	21	32.5	48	85	12.5
48-C1-50x32	50	32/25	100	50	26	35	60	100	16
48-C1-60x32	60	32/25	125	62.5	33	42.5	62.5	125	16

Vierkant-Längsaufnahme, links, **Form C2**



48-C2-...

Bestell-Nr.	D1	H1	B1	B2	B3	H2	H3	L1	L2
48-C2-16x12	16	12	43	24	13	20	22	44	5
48-C2-20x16	20	16/12	65	40	26	25	30	50	-
48-C2-25x16	25	16/12	58	33	19	25	30	55	7
48-C2-30x20	30	20/16	76	41	23	28	38	70	10
48-C2-40x25	40	25/20	90	47.5	25.5	32.5	48	85	12.5
48-C2-50x32	50	32/25	105	55	30.5	35	60	100	16
48-C2-60x32	60	32/25	125	62.5	33	42.5	62.5	125	16

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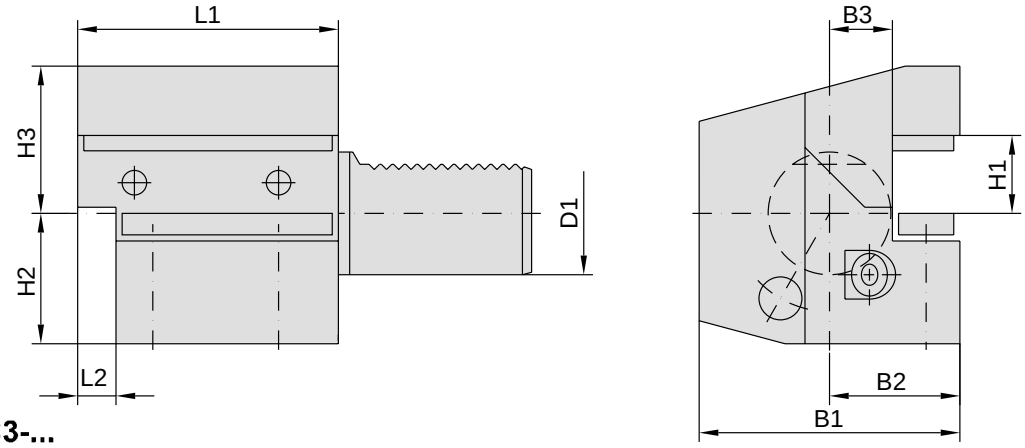
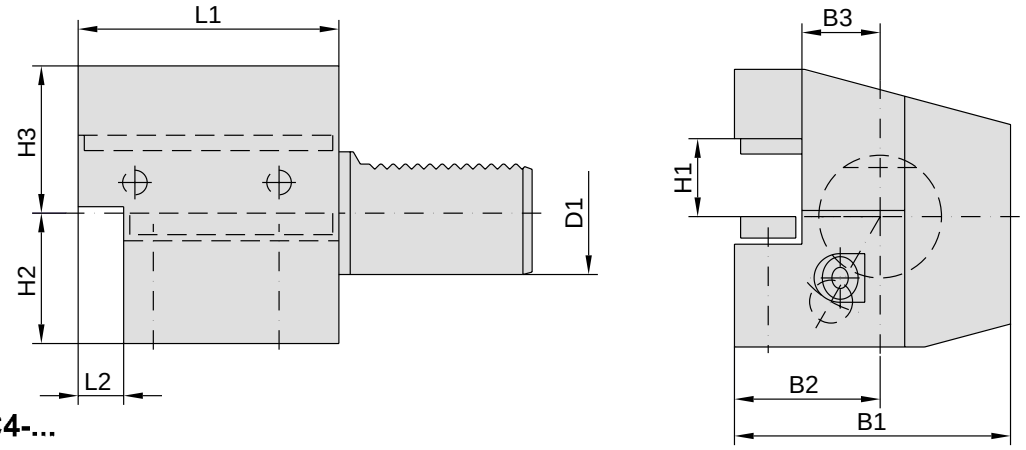
Vierkant-Längsaufnahme, Überkopf rechts, **Form C3**



48-C3-...

Bestell-Nr.	D1	H1	B1	B2	B3	H2	H3	L1	L2
48-C3-16x12	16	12	43	24	13	20	22	44	5
48-C3-20x16	20	16/12	65	40	26	25	30	50	-
48-C3-25x16	25	16/12	58	33	19	25	30	55	7
48-C3-30x20	30	20/16	70	35	17	35	38	70	10
48-C3-40x25	40	25/20	85	42.5	21	42.5	48	85	12.5
48-C3-50x32	50	32/25	100	50	26	50	60	100	16
48-C3-60x32	60	32/25	125	62.5	33	62.5	62.5	125	16

Vierkant-Längsaufnahme, Überkopf links, **Form C4**



48-C4-...

Bestell-Nr.	D1	H1	B1	B2	B3	H2	H3	L1	L2
48-C4-16x12	16	12	43	24	13	20	22	44	5
48-C4-20x16	20	16/12	65	40	26	25	30	50	-
48-C4-25x16	25	16/12	58	33	19	25	30	55	7
48-C4-30x20	30	20/16	76	41	23	35	38	70	10
48-C4-40x25	40	25/20	90	47.5	25.5	42.5	48	85	12.5
48-C4-50x32	50	32/25	105	55	30.5	50	60	100	16
48-C4-60x32	60	32/25	125	62.5	33	62.5	62.5	125	16

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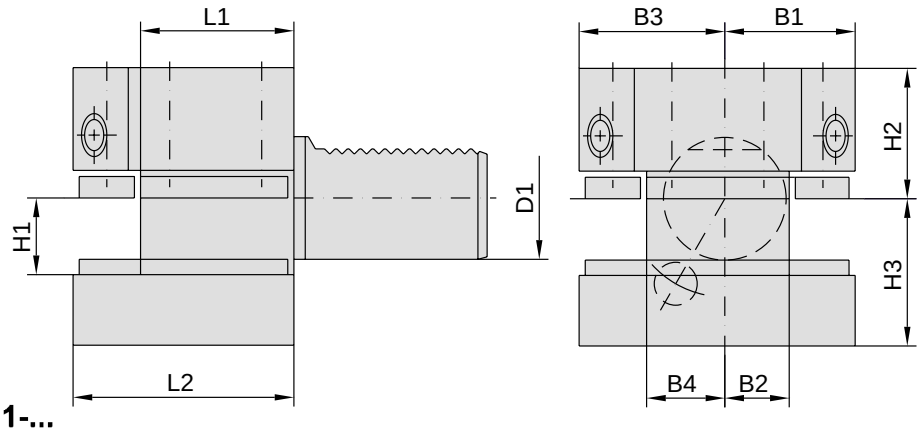
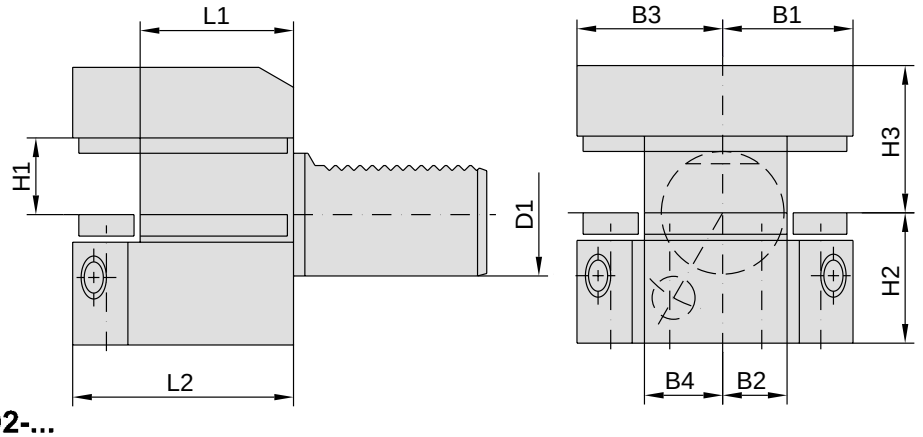
Vierkant-Mehrfachaufnahme, **Form D1**



48-D1-...

Bestell-Nr.	D1	H1	B1	B2	B3	B4	H2	H3	L1	L2
48-D1-25x16	25	16/12	33	19	33	19	25	30	34	48
48-D1-30x20	30	20/16	35	17	41	23	28	38	42	60
48-D1-40x25	40	25/20	42.5	21	47.5	25.5	32.5	48	50	72
48-D1-50x32	50	32/25	50	26	55	30.5	35	60	60	85
48-D1-60x32	60	32/25	57.5	33	57.5	33	42.5	62.5	85	110

Vierkant-Mehrfachaufnahme, Überkopf, **Form D2**



48-D2-...

Bestell-Nr.	D1	H1	B1	B2	B3	B4	H2	H3	L1	L2
48-D2-25x16	25	16/12	33	19	33	19	25	30	34	48
48-D2-30x20	30	20/16	35	17	41	23	35	38	42	60
48-D2-40x25	40	25/20	42.5	21	47.5	25.5	42.5	48	50	72
48-D2-50x32	50	32/25	50	26	55	30.5	50	60	60	85
48-D2-60x32	60	32/25	57.5	33	57.5	33	62.5	62.5	85	110

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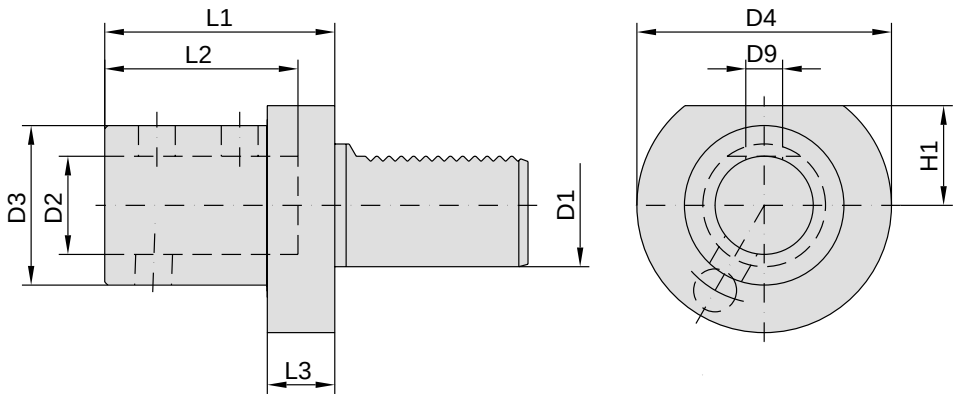
Wendeplattenbohreraufnahme mit interner Kühlmittelzufuhr, **Form E1**



48-E1-...

Bestell-Nr.	D1	D2	D3	D4	H1	L1	L2	L3	D9
48-E1-20x16	20	16	36	50	-	67	54	18	M10x1x11
48-E1-20x20	20	20	40	50	-	67	54	18	M10x1x11
48-E1-20x25	20	25	45	50	-	71	59	18	M12x1x12
48-E1-25x16	25	16	36	58	25	67	54	18	M10x1x11
48-E1-25x20	25	20	40	58	25	67	54	18	M10x1x11
48-E1-25x25	25	25	45	58	25	71	59	18	M12x1x12
48-E1-25x32	25	32	52	58	25	75	63	18	M12x1x12
48-E1-30x16	30	16	36	68	28	67	54	22	M10x1x11
48-E1-30x20	30	20	40	68	28	67	54	22	M10x1x11
48-E1-30x25	30	25	45	68	28	71	59	22	M12x1x12
48-E1-30x32	30	32	52	68	28	75	63	22	M12x1x12
48-E1-40x16	40	16	36	83	32.5	67	54	22	M10x1x11
48-E1-40x20	40	20	40	83	32.5	67	54	22	M10x1x11
48-E1-40x25	40	25	45	83	32.5	75	59	22	M12x1x12
48-E1-40x32	40	32	52	83	32.5	75	63	22	M12x1x12
48-E1-40x40	40	40	65	83	32.5	90	73	22	M16x1x13
48-E1-50x16	50	16	36	98	35	80	54	30	M10x1x11
48-E1-50x20	50	20	40	98	35	80	54	30	M10x1x11
48-E1-50x25	50	25	45	98	35	80	59	30	M12x1x12
48-E1-50x32	50	32	52	98	35	80	63	30	M12x1x12
48-E1-50x40	50	40	65	98	35	90	73	30	M16x1x13
48-E1-50x50	50	50	75	98	35	100	83	30	M16x1x13
48-E1-60x16	60	16	36	123	42.5	80	54	30	M10x1x11
48-E1-60x20	60	20	40	123	42.5	80	54	30	M10x1x11
48-E1-60x25	60	25	45	123	42.5	80	59	30	M12x1x12
48-E1-60x32	60	32	52	123	42.5	80	63	30	M12x1x12
48-E1-60x40	60	40	65	123	42.5	90	73	30	M16x1x13
48-E1-60x50	60	50	75	123	42.5	100	83	30	M16x1x13

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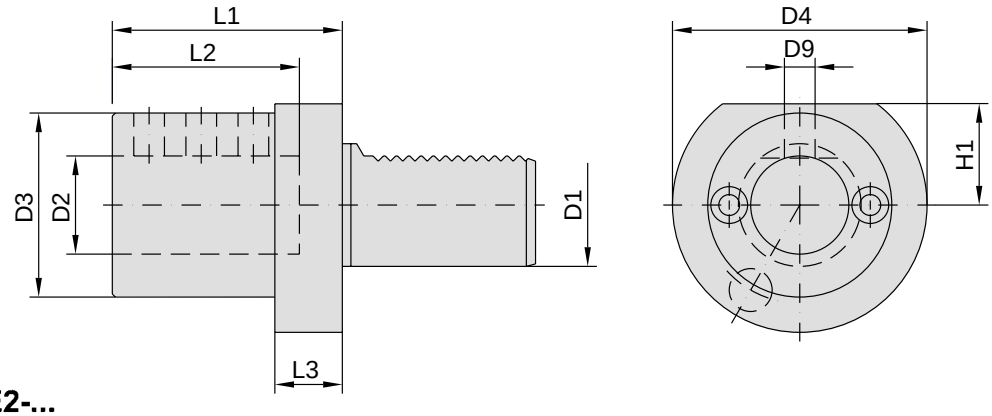
Bohrstangenaufnahme mit interner und externer Kühlmittelzufuhr, **Form E2**



48-E2-...

Bestell-Nr.	D1	D2	D3	D4	H1	L1	L2	L3	D9
48-E2-16x6	16	6	32	40	18	44	34	13	M6x16
48-E2-16x8	16	8	32	40	18	44	34	13	M6x12
48-E2-16x10	16	10	32	40	18	44	34	13	M6x12
48-E2-16x12	16	12	40	40	18	44	34	13	M8x12
48-E2-16x16	16	16	40	40	18	44	34	13	M8x12
48-E2-20x8	20	8	40	50	23	50	42	18	M6x16
48-E2-20x10	20	10	40	50	23	50	42	18	M8x16
48-E2-20x12	20	12	40	50	23	50	42	18	M8x16
48-E2-20x16	20	16	40	50	23	50	42	18	M8x12
48-E2-20x20	20	20	49	50	23	50	42	18	M8x12
48-E2-20x25	20	25	49	50	23	60	52	18	M8x10
48-E2-25x8	25	8	40	58	25	50	41	18	M6x25
48-E2-25x10	25	10	40	58	25	50	41	18	M6x25
48-E2-25x12	25	12	40	58	25	50	41	18	M8x16
48-E2-25x16	25	16	40	58	25	50	41	18	M8x16
48-E2-25x20	25	20	58	58	25	50	41	18	M8x16
48-E2-25x25	25	25	58	58	25	60	51	18	M8x16
48-E2-30x8	30	8	55	68	28	60	43	22	M6x25
48-E2-30x10	30	10	55	68	28	60	43	22	M6x25
48-E2-30x12	30	12	55	68	28	60	43	22	M8x20
48-E2-30x16	30	16	55	68	28	60	54	22	M8x20
48-E2-30x20	30	20	55	68	28	60	54	22	M8x20
48-E2-30x25	30	25	55	68	28	60	54	22	M8x16
48-E2-30x30	30	30	67	68	28	75	61	22	M8x16
48-E2-30x32	30	32	67	68	28	75	61	22	M8x16
48-E2-40x8	40	8	55	83	32.5	75	43	22	M8x25
48-E2-40x10	40	10	55	83	32.5	75	43	22	M8x25
48-E2-40x12	40	12	55	83	32.5	75	58	22	M8x25
48-E2-40x16	40	16	55	83	32.5	75	61	22	M10x25
48-E2-40x20	40	20	55	83	32.5	75	61	22	M10x20
48-E2-40x25	40	25	55	83	32.5	75	61	22	M10x20
48-E2-40x30	40	30	82	83	32.5	75	61	22	M10x20
48-E2-40x32	40	32	82	83	32.5	75	61	22	M10x20
48-E2-40x40	40	40	82	83	32.5	90	76	22	M10x16
48-E2-50x12	50	12	68	98	35	90	71	30	M8x30
48-E2-50x16	50	16	68	98	35	90	76	30	M10x30
48-E2-50x20	50	20	68	98	35	90	76	30	M12x25
48-E2-50x25	50	25	68	98	35	90	76	30	M12x25
48-E2-50x30	50	30	68	98	35	90	76	30	M12x20
48-E2-50x32	50	32	68	98	35	90	76	30	M12x20
48-E2-50x40	50	40	98	98	35	90	76	30	M12x16
48-E2-50x50	50	50	98	98	35	100	86	30	M12x12
48-E2-60x16	60	16	68	123	42.5	90	76	30	M10x30
48-E2-60x20	60	20	68	123	42.5	90	76	30	M12x25
48-E2-60x25	60	25	68	123	42.5	90	76	30	M12x25
48-E2-60x32	60	32	68	123	42.5	90	76	30	M12x20
48-E2-60x40	60	40	98	123	42.5	90	76	30	M12x20
48-E2-60x50	60	50	98	123	42.5	100	86	30	M12x16

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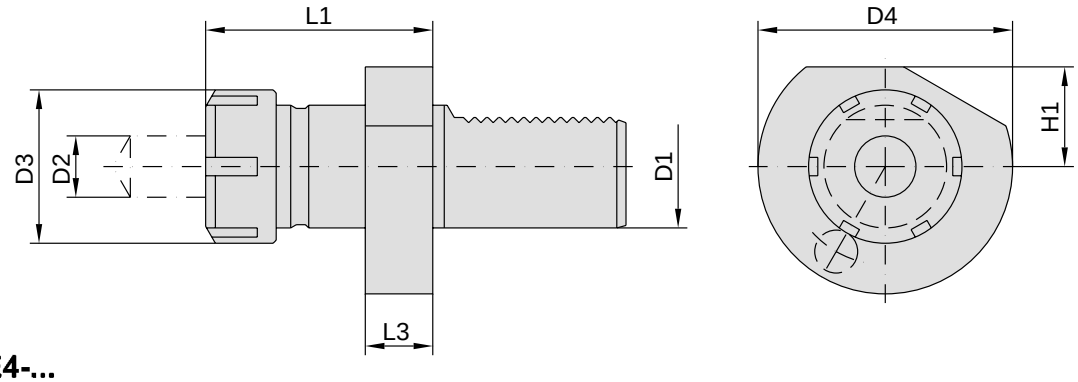
Spannzangenaufnahme, DIN 6499B, **Form E4**



48-E4-...

Bestell-Nr.	D1	Größe Spannzangen	D2 (Spannbereich)	D3	D4	H1	L1	L3
48-E4-16x16	16	ER-16	0.5-10	32	40	18	44	13
48-E4-16x20	16	ER-20	1-13	35	40	18	44	13
48-E4-20x25	20	ER-25	1-16	42	50	-	65	18
48-E4-20x32	20	ER-32	2-20	50	50	-	67	18
48-E4-25x25	25	ER-25	1-16	42	58	25	58	18
48-E4-25x32	25	ER-32	2-20	50	58	25	63	18
48-E4-30x25	30	ER-25	1-16	42	68	28	57	22
48-E4-30x32	30	ER-32	2-20	50	68	28	78	22
48-E4-30x40	30	ER-40	3-26	63	68	28	80	22
48-E4-40x25	40	ER-25	1-16	42	83	32.5	57	22
48-E4-40x32	40	ER-32	2-20	50	83	32.5	78	22
48-E4-40x40	40	ER-40	3-26	63	83	32.5	80	22
48-E4-50x32	50	ER-32	2-20	50	98	35	93	30
48-E4-50x40	50	ER-40	3-26	63	98	35	80	30
48-E4-60x32	60	ER-32	2-20	50	123	42.5	78	30
48-E4-60x40	60	ER-40	3-26	63	123	42.5	80	30

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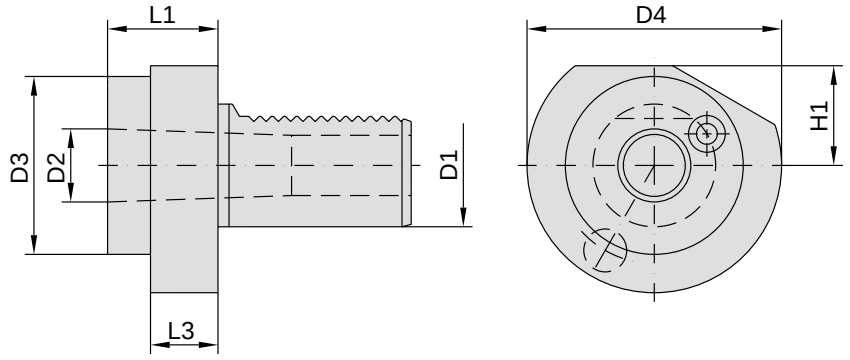
Morsekegelaufnahme, **Form F**



48-F-...

Bestell-Nr.	D1	D2 (MK)	D3	D4	H1	L1	L3
48-F-16xMK1	16	1	-	40	-	61	-
48-F-16xMK2	16	2	-	42	-	72	-
48-F-20xMK1	20	1	-	50	-	23	-
48-F-20xMK2	20	2	45	50	-	41	22
48-F-25xMK1	25	1	45	58	25	23	18
48-F-25xMK2	25	2	45	58	25	34	18
48-F-25xMK3	25	3	49	58	25	91	18
48-F-30xMK1	30	1	-	68	28	27	-
48-F-30xMK2	30	2	55	68	28	36	27
48-F-30xMK3	30	3	55	68	28	66	41
48-F-40xMK2	40	2	55	83	32.5	36	22
48-F-40xMK3	40	3	58	83	32.5	36	22
48-F-40xMK4	40	4	68	83	32.5	80	22
48-F-50xMK2	50	2	55	98	35	36	30
48-F-50xMK3	50	3	58	98	35	45	30
48-F-50xMK4	50	4	68	98	35	55	30
48-F-50xMK5	50	5	75	98	35	72	30
48-F-60xMK2	60	2	55	123	42.5	35	30
48-F-60xMK3	60	3	58	123	42.5	45	30
48-F-60xMK4	60	4	68	123	42.5	55	30
48-F-60xMK5	60	5	88	123	42.5	63	30

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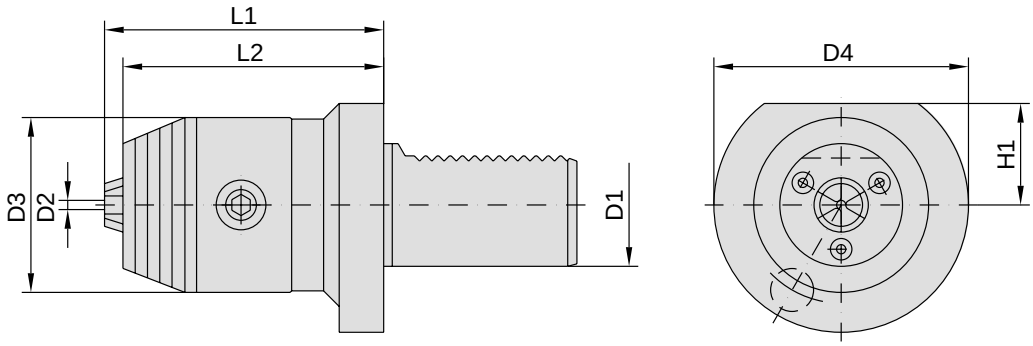
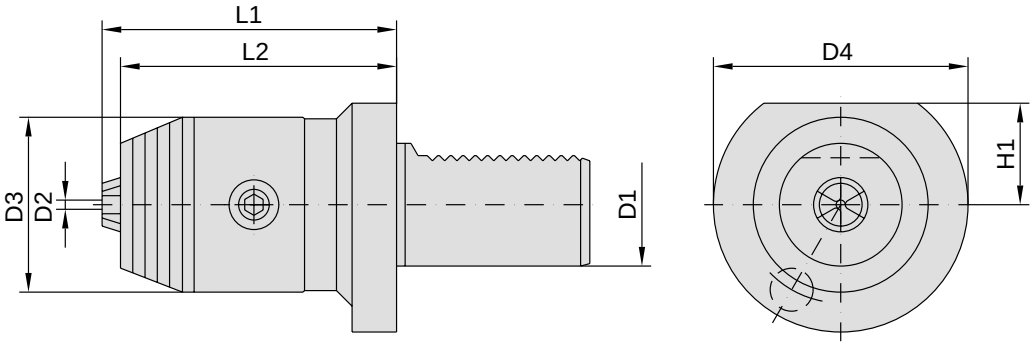
Präzisions-Kurzbohrfutter mit externer Kühlmittelzufuhr



48-BE-...

Bestell-Nr.	D1	D2 (Spannbereich)	D3	D4	H1	L1	L2
48-BE-16x8	16	0.5-8	40	40	18	63	60
48-BE-20x8	20	0.5-8	40	50	23	63	60
48-BE-20x13	20	1-13	57	57	-	88	82
48-BE-25x8	25	0.5-8	40	58	25	63	60
48-BE-30x8	30	0.5-8	40	68	28	63	60
48-BE-30x13	30	1-13	57	68	-	88	82
48-BE-30x16	30	3-16	57	68	-	93	82
48-BE-40x8	40	0.5-8	40	83	32.5	68	65
48-BE-40x13	40	1-13	57	83	32.5	91	85
48-BE-40x16	40	3-16	57	83	32.5	96	85
48-BE-50x13	50	1-13	57	98	35	91	85
48-BE-50x16	50	3-16	57	98	35	96	85
48-BE-60x16	60	3-16	57	123	42.5	103	92.5

Präzisions-Kurzbohrfutter mit interner Kühlmittelzufuhr



48-BI-...

Bestell-Nr.	D1	D2 (Spannbereich)	D3	D4	H1	L1	L2
48-BI-16x8	16	0.5-8	36	40	18	71	68
48-BI-20x8	20	0.5-8	36	50	23	71	68
48-BI-20x13	20	1-13	50	57	-	96	90
48-BI-25x8	25	0.5-8	36	58	25	71	68
48-BI-30x8	30	0.5-8	36	68	28	71	68
48-BI-30x13	30	1-13	50	68	28	96	90
48-BI-30x16	30	3-16	57	68	-	101	90
48-BI-40x8	40	0.5-8	36	83	32.5	71	68
48-BI-40x13	40	1-13	50	83	32.5	96	90
48-BI-40x16	40	3-16	57	83	32.5	101	90
48-BI-50x13	50	1-13	50	98	35	96	90
48-BI-50x16	50	3-16	57	98	35	101	90
48-BI-60x16	60	3-16	57	123	42.5	101	90

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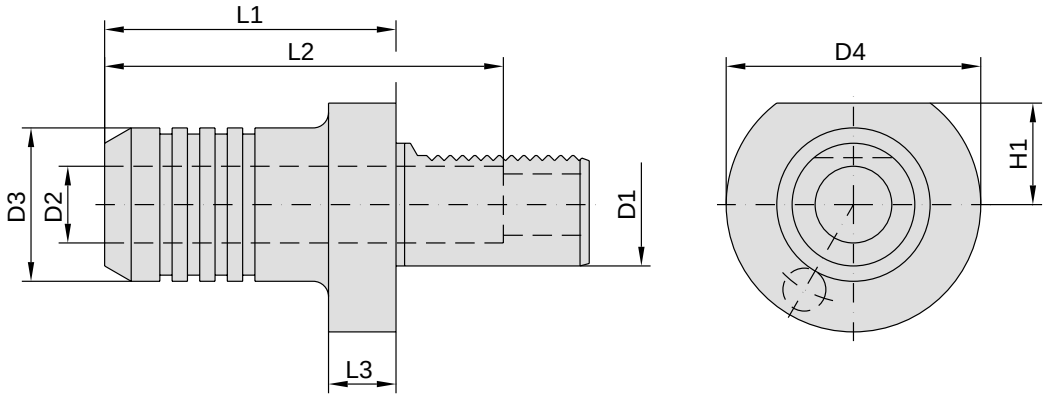
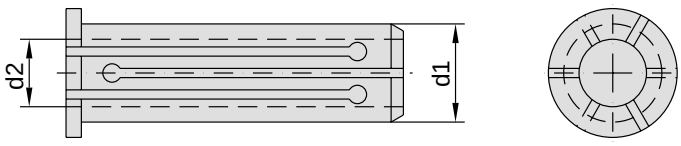
Hydro-Dehnspannfutter



48-HS-...

Bestell-Nr.	D1	D2	D3	D4	H1	L1	L2	L3
48-HS-30x20	30	20	42	68	28	89	130	16
48-HS-30x25	30	25	50	68	28	94	95	16
48-HS-30x32	30	32	60	68	28	94	95	16
48-HS-40x20	40	20	42	83	32.5	95	130	22
48-HS-40x25	40	25	50	83	32.5	95	130	22
48-HS-40x32	40	32	60	83	32.5	95	95	17

Reduzierhülsen für Hydro-Dehnspannfutter



2440...

Bestell-Nr.	d1	d2
244020003	20	3
244020004	20	4
244020005	20	5
244020006	20	6
244020008	20	8
244020010	20	10
244020012	20	12
244020014	20	14
244020016	20	16
244032006	32	6
244032008	32	8
244032010	32	10
244032012	32	12
244032014	32	14
244032016	32	16
244032020	32	20
244032025	32	25

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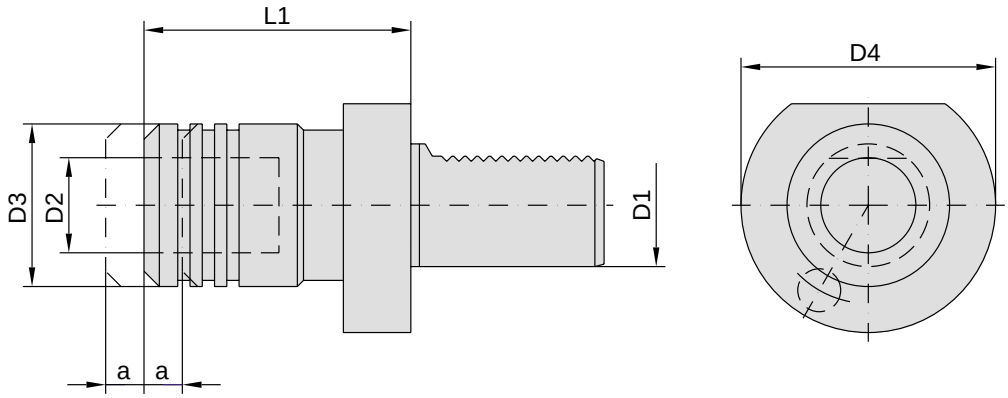
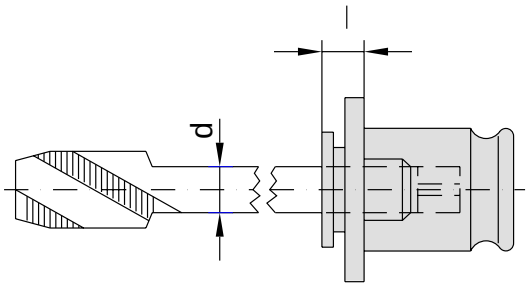
Gewindeschneid-Schnellwechselfutter



48-GS-... mit Längenausgleich auf Zug und Druck

Bestell-Nr.	D1	D2 Spannbereich	D3	D4	L1	a	passende Einsätze
48-GS-16x1	16	M3-M12	36	40	52	7.5	WE-1 (170012...)
48-GS-20x1	20	M3-M12	36	50	58	7.5	WE-1 (170012...)
48-GS-25x1	25	M3-M12	36	58	50	7.5	WE-1 (170012...)
48-GS-30x1	30	M3-M12	36	68	62.5	7.5	WE-1 (170012...)
48-GS-30x2	30	M8-M20	53	68	87	12.5	WE-2 (170020...)
48-GS-40x1	40	M3-M12	36	83	62.5	7.5	WE-1 (170012...)
48-GS-40x2	40	M6-M20	53	83	87	12.5	WE-2 (170020...)
48-GS-40x3	40	M14-M33	78	83	122	20	WE-3 (170033...)
48-GS-50x1	50	M3-M12	36	98	70.5	7.5	WE-1 (170012...)
48-GS-50x2	50	M6-M20	53	98	104	12.5	WE-2 (170020...)
48-GS-50x3	50	M14-M33	78	98	108	20	WE-3 (170033...)
48-GS-50x4	50	M22-M48	96	98	122	22.5	WE-4 (170048...)
48-GS-60x2	60	M6-M20	53	123	104	12.5	WE-2 (170020...)
48-GS-60x3	60	M14-M33	78	123	108	20	WE-3 (170033...)
48-GS-60x4	60	M22-M48	96	123	119	22.5	WE-4 (170048...)

Einsätze für Gewindeschneid-Schnellwechselfutter



1700...

Bestell-Nr.	Größe	Bereich	Schaft-d ∅	l
170010...[d*10]	WE-0	M1-M10	2.5/2.8/3.5/4/4.5/5.5/6/7/8	7
170012...[d*10]	WE-1	M3-M12	2.8/3.5/4/4.5/5.5/6/7/8/9/10/11	7
170020...[d*10]	WE-2	M8-M20	7/8/9/10/11/12/14/16	11
170033...[d*10]	WE-3	M14-M33	11/12/14/16/18/20/22/25	14
170048...[d*10]	WE-4	M22-M48	18/20/22/25/28/32/36	42

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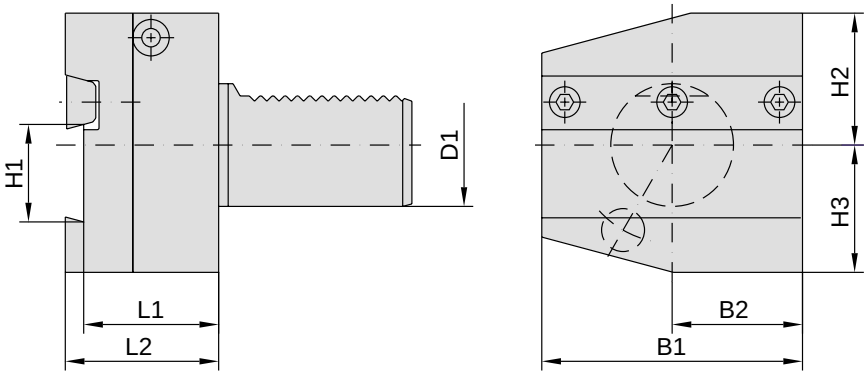
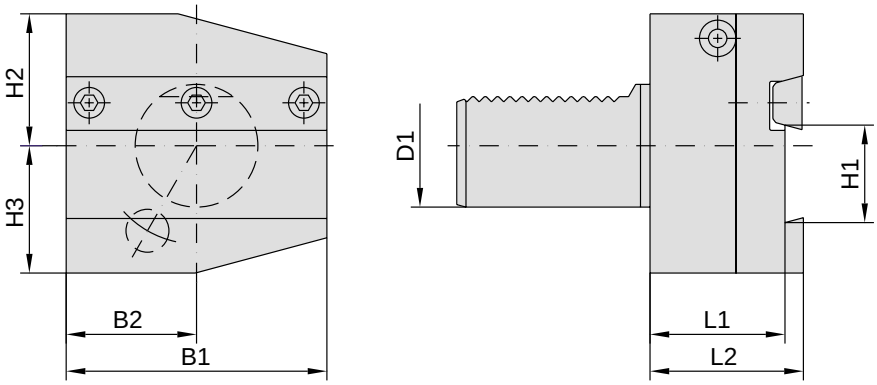
Abstechhalter, höhenverstellbar, rechts



48-AR-...

Bestell-Nr.	D1	H1	B1	B2	H2	H3	L1	L2
48-AR-25x26	25	26	60	30	28	36	44	50
48-AR-30x26	30	26	70	35	32	39	44	50
48-AR-40x26	40	26	85	42.5	43	41.5	44	50
48-AR-40x32	40	32	85	42.5	43	41.5	44	50
48-AR-50x26	50	26	100	50	43	45	44	50
48-AR-50x32	50	32	100	50	43	45	44	50
48-AR-60x32	60	32	125	62.5	48	55	44	50

Abstechhalter, höhenverstellbar, links



48-AL-...

Bestell-Nr.	D1	H1	B1	B2	H2	H3	L1	L2
48-AL-25x26	25	26	60	30	28	36	44	50
48-AL-30x26	30	26	70	35	32	39	44	50
48-AL-40x26	40	26	85	42.5	43	41.5	44	50
48-AL-40x32	40	32	85	42.5	43	41.5	44	50
48-AL-50x26	50	26	100	50	43	45	44	50
48-AL-50x32	50	32	100	50	43	45	44	50
48-AL-60x32	60	32	125	62.5	48	55	44	50

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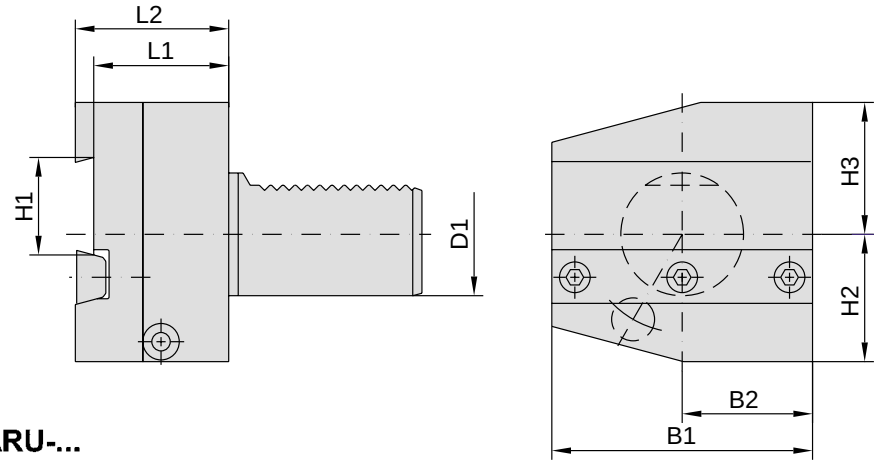
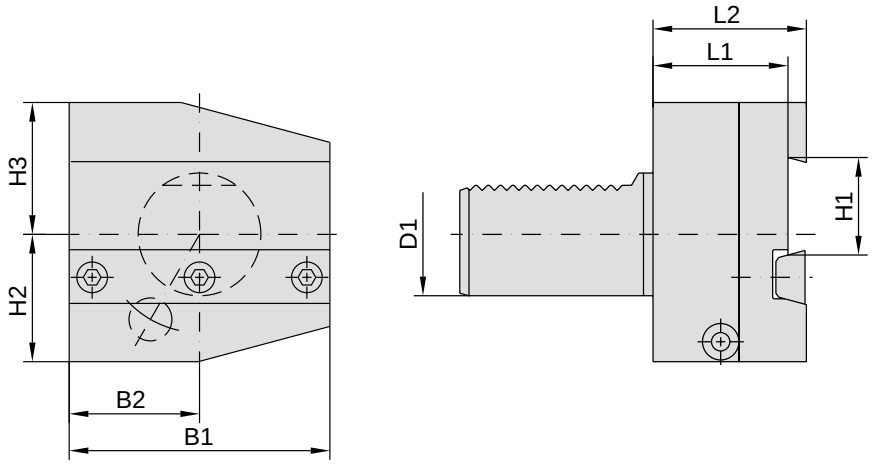
Abstechhalter, höhenverstellbar, Überkopf rechts



48-ARU-...

Bestell-Nr.	D1	H1	B1	B2	H2	H3	L1	L2
48-ARU-25x26	25	26	60	30	28	36	44	50
48-ARU-30x26	30	26	70	35	35	38	44	50
48-ARU-40x26	40	26	85	42.5	41.5	43	44	50
48-ARU-40x32	40	32	85	42.5	41.5	43	44	50
48-ARU-50x26	50	26	100	50	45	43	44	50
48-ARU-50x32	50	32	100	50	45	43	44	50
48-ARU-60x32	60	32	125	62.5	55	48	44	50

Abstechhalter, höhenverstellbar, Überkopf links



48-ALU-...

Bestell-Nr.	D1	H1	B1	B2	H2	H3	L1	L2
48-ALU-25x26	25	26	60	30	28	36	44	50
48-ALU-30x26	30	26	70	35	32	38	44	50
48-ALU-40x26	40	26	85	42.5	43	41.5	44	50
48-ALU-40x32	40	32	85	42.5	43.5	41.5	44	50
48-ALU-50x26	50	26	100	50	45	43	44	50
48-ALU-50x32	50	32	100	50	45	43	44	50
48-ALU-60x32	60	32	125	62.5	55	48	44	50

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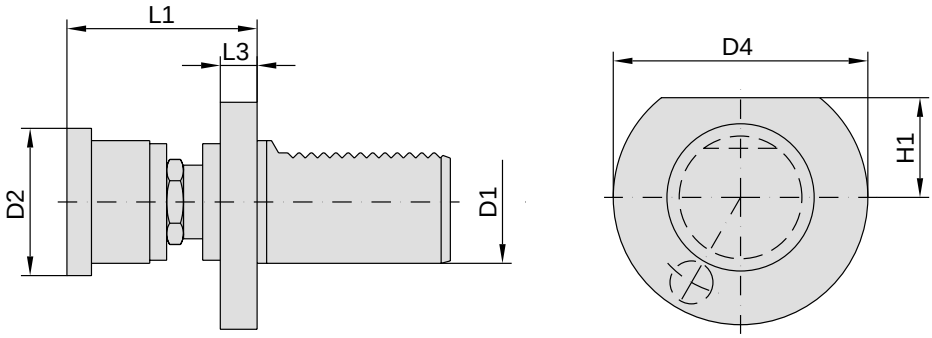
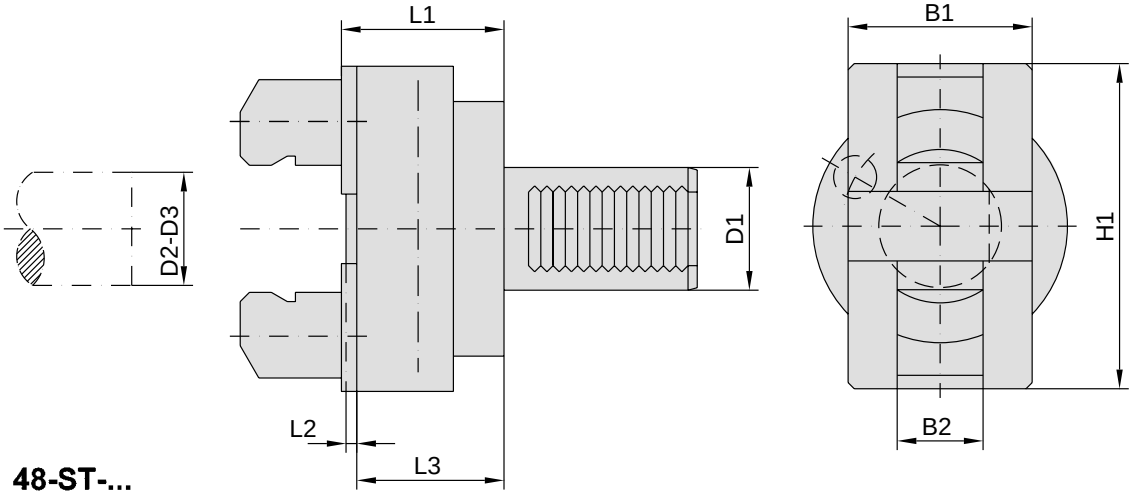
Werkstoffanschlag, mitlaufend



48-WA-...

Bestell-Nr.	D1	D2	D4	H1	L1	L3
48-WA-20x26	20	26	50	23	60-85	18
48-WA-20x32	20	32	50	23	60-85	18
48-WA-20x42	20	42	50	23	60-85	18
48-WA-30x32	30	32	68	28	84-102	22
48-WA-30x42	30	42	68	28	84-102	22
48-WA-30x58	30	58	68	28	84-102	22
48-WA-40x32	40	32	83	32.5	84-102	22
48-WA-40x42	40	42	83	32.5	84-102	22
48-WA-40x58	40	58	83	32.5	84-102	22

Stangengreifer



48-ST-...

Bestell-Nr.	D1	D2	D3	B1	B2	H1	L1	L2	L3
48-ST-20x56	20	6-56	54-110	50	28	72	51	4	46
48-ST-25x56	25	6-56	54-110	50	28	72	51	4	46
48-ST-30x56	30	6-56	54-110	50	28	72	51	4	46
48-ST-40x60	40	10-60	54-110	60	28	110	53	4	48
48-ST-50x75	50	10-75	62-125	65	28	130	73	5	67
48-ST-60x75	60	10-75	62-125	65	28	130	73	5	67

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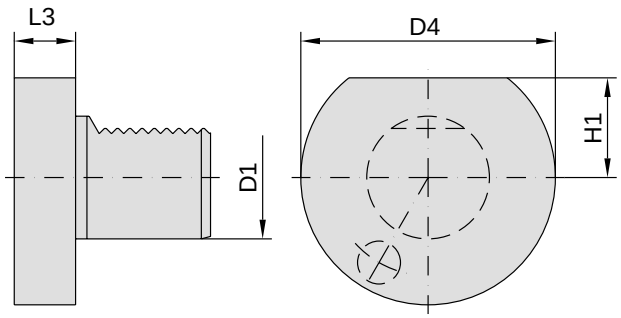
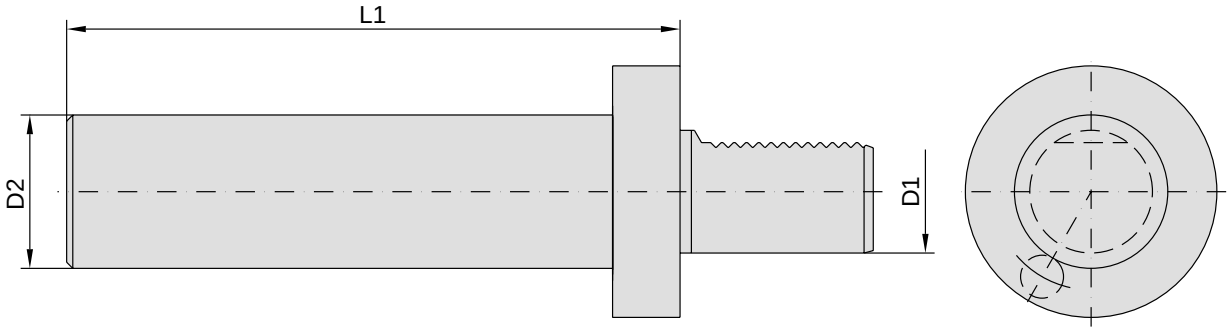
Verschlußstopfen, **Form Z2**



48-Z2-...

Bestell-Nr.	D1	D4	H1	L3	Material
48-Z2-16-S/P	16	40	18	16	S=Stahl / P=Plastik
48-Z2-20-S/P	20	50	23	16	S=Stahl / P=Plastik
48-Z2-25-S	25	58	25	16	S=Stahl
48-Z2-30-S/P	30	68	28	16	S=Stahl / P=Plastik
48-Z2-40-S/P	40	83	32.5	20	S=Stahl / P=Plastik
48-Z2-50-S/P	50	98	35	20	S=Stahl / P=Plastik
48-Z2-60-S/P	60	123	42.5	20	S=Stahl / P=Plastik

Prüfdorn



48-PD-...

Bestell-Nr.	D1	D2	L1
48-PD-16x25	16	25	200
48-PD-20x30	20	30	220
48-PD-25x30	25	30	220
48-PD-30x40	30	40	230
48-PD-40x50	40	50	300
48-PD-50x50	50	50	300
48-PD-60x60	60	60	300

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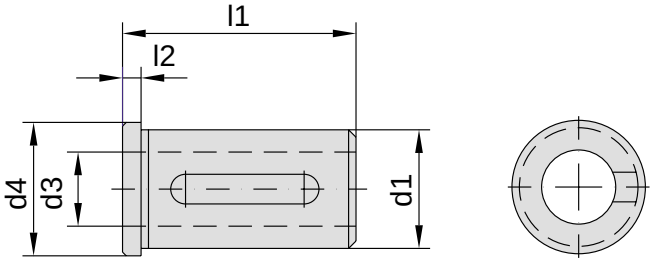
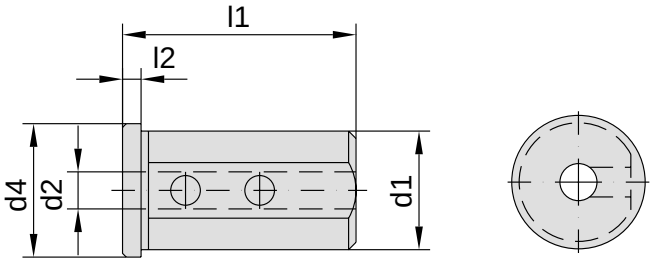
Reduzierhülsen für Bohrstangenhalter mit interner Kühlmittelzufuhr





2400...

Bestell-Nr.	d1	d2	d3	d4	l1	l2
240025006	25	6	-	29	50	4
240025008	25	8	-	29	50	4
240025010	25	10	-	29	50	4
240025012	25	12	-	29	50	4
240025016	25	-	16	29	50	4
240025020	25	-	20	29	50	4
240032006	32	6	-	36	63	5
240032008	32	8	-	36	63	5
240032010	32	10	-	36	63	5
240032012	32	12	-	36	63	5
240032016	32	-	16	36	63	5
240032020	32	-	20	36	63	5
240032025	32	-	25	36	63	5
240040008	40	8	-	44	58	5
240040010	40	10	-	44	58	5
240040012	40	12	-	44	58	5
240040016	40	-	16	44	58	5
240040020	40	-	20	44	58	5
240040025	40	-	25	44	58	5
240040032	40	-	32	44	58	5
240050012	50	12	-	54	75	5
240050016	50	-	16	54	75	5
240050020	50	-	20	54	75	5
240050025	50	-	25	54	75	5
240050032	50	-	32	54	75	5
240050010	50	-	40	54	75	5

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ISO 9001

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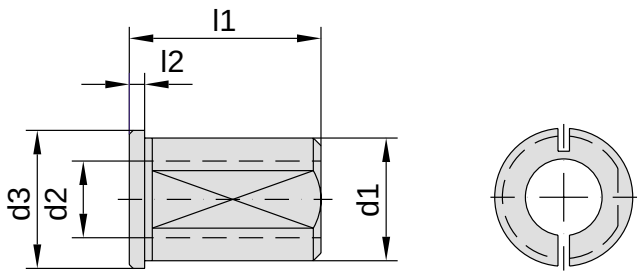
Reduzierhülsen für Bohrstangenhalter mit geschlitzter Klemmung



2401...

Bestell-Nr.	d1	d2	d3	l1	L2
240120006	20	6	24	30	4
240120008	20	8	24	30	4
240120010	20	10	24	30	4
240120012	20	12	24	30	4
240120015	20	15	24	30	4
240120016	20	16	24	30	4
240125006	25	6	29	40	4
240125008	25	8	29	40	4
240125010	25	10	29	40	4
240125012	25	12	29	40	4
240125015	25	15	29	40	4
240125016	25	16	29	40	4
240125020	25	20	29	40	4
240130008	30	8	34	50	4
240130010	30	10	34	50	4
240130012	30	12	34	50	4
240130015	30	15	34	50	4
240130016	30	16	34	50	4
240130020	30	20	34	50	4
240130025	30	25	34	50	4
240132008	32	8	36	50	4
240132010	32	10	36	50	4
240132012	32	12	36	50	4
240132015	32	15	36	50	4
240132016	32	16	36	50	4
240132020	32	20	36	50	4
240132025	32	25	36	50	4
240140010	40	10	44	78	4
240140012	40	12	44	78	4
240140015	40	15	44	78	4
240140016	40	16	44	78	4
240140020	40	20	44	78	4
240140025	40	25	44	78	4
240140032	40	32	44	78	4
240150020	50	20	64	88	4
240150025	50	25	64	88	4
240150032	50	32	64	88	4
240150040	50	40	64	88	4

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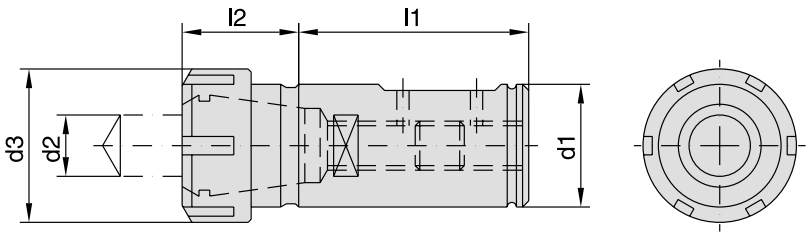
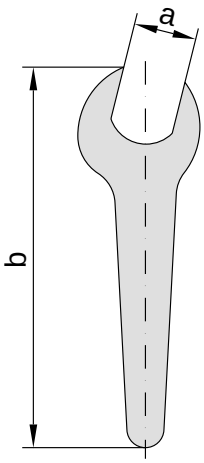
Spannzangenaufnahme mit zyl. Schaft für Spannzangen nach DIN 6499B

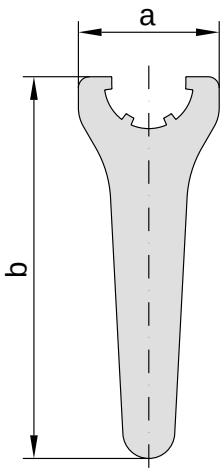


2410...

Bestell-Nr.	d1	d2 (Spannbereich)	d3	l1	l2	passende Spannzangen
241025016	25	1-16	42	40	31	ER-25 (190025...)
241032016	32	1-16	42	60	32	ER-25 (190025...)
241032020	32	2-20	50	60	38	ER-32 (190032...)
241040020	40	2-20	50	75	38	ER-32 (190032...)
241040026	40	3-26	63	75	55	ER-40 (190040...)

Spannschlüssel für Spannzangenaufnahmen





1075...

Bestell-Nr.	Größe	a	b
107511000	ER-11	17	95
107516000	ER-16	25	144
107520000	ER-20	30	172

Bestell-Nr.	Größe	a	b
107525000	ER-25	65	210
107532000	ER-32	75	250
107540000	ER-40	90	290
107550000	ER-50	110	350

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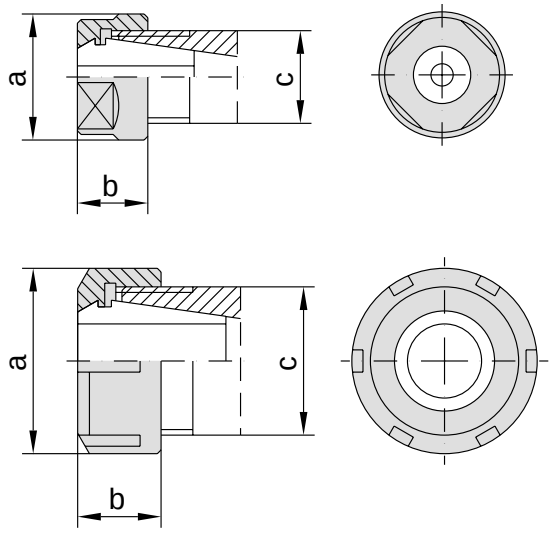
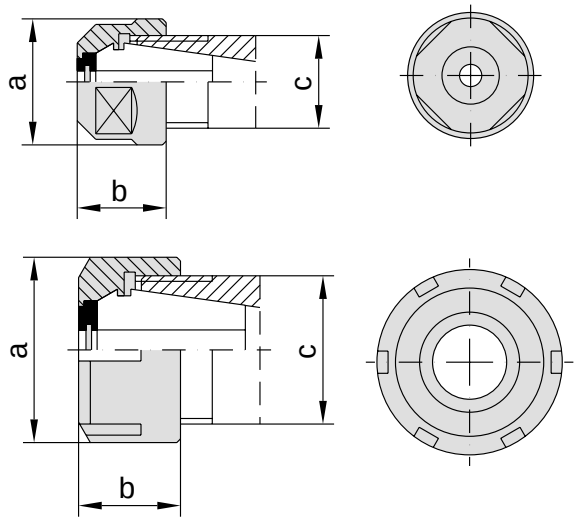
Spannmuttern für Spannzangen nach DIN 6499B





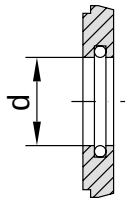
2000... für externe Kühlmittelzufuhr

Bestell-Nr.	Größe	a	b	c
200011000	ER-11	19	11.3	M14x0.75
200016000	ER-16	28	17.5	M22x1.5
200020000	ER-20	34	19	M25x1.5
200025000	ER-25	42	20	M32x1.5
200032000	ER-32	50	22.5	M40x1.5
200040000	ER-40	63	25.5	M50x1.5
200050000	ER-50	78	35.3	M64x2.0

2050... für interne Kühlmittelzufuhr

Bestell-Nr.	Größe	a	b	c
205016000	ER-16	28	22.5	M22x1.5
205020000	ER-20	34	24	M25x1.5
205025000	ER-25	42	25	M32x1.5
205032000	ER-32	50	27.5	M40x1.5
205040000	ER-40	63	30.5	M50x1.5

Dichtscheiben für Spannmuttern mit interner Kühlmittelzufuhr



2101...

Bestell-Nr. Einzelne	Bestell-Nr. Kompletter Satz	Größe	d	Dichtbereich pro Scheibe		Bestellbeispiel
210116...[d*10]	**210116000**	ER-16	3.5-10	0.5		210116040 ist passend für Schaft-d = 4-3.5
210120...[d*10]	**210120000**	ER-20	3.5-13	0.5		210120120 ist passend für Schaft-d = 12-11.5
210125...[d*10]	**210125000**	ER-25	3.5-16	0.5		
210132...[d*10]	**210132000**	ER-32	3.5-20	0.5		
210140...[d*10]	**210140000**	ER-40	3.5-26	0.5		

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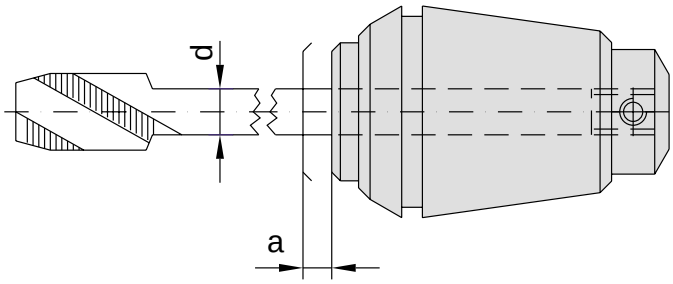
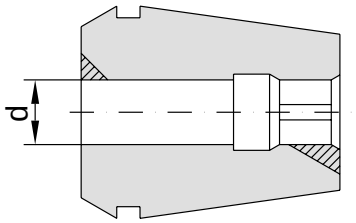
Gewindebohrzangen ET-1 mit Längenausgleich



1800...

Bestell-Nr.	Typ	Größe	Bereich	d Schaft	a
180012...[d*10]	ET-1-12	ER-11	M1-M5	1.4/1.6/1.8/2.0/2.2/2.24/2.5/2.8/3/3.15/3.5/3.55	5.5
180016...[d*10]	ET-1-16	ER-16	M1-M8	1.4/1.6/1.8/2.0/2.2/2.24/2.5/2.8/3/3.15/3/3.5/3.55/4/4.5/5/5.5/6/6.2	7
180020...[d*10]	ET-1-20	ER-20	M1-M10	2.2/2.24/2.5/2.8/3/3.15/3/3.5/3.55/4/4.5/5/5.5/6/6.2/6.3/7	7
180025...[d*10]	ET-1-25	ER-25	M1-M10	2.5/2.8/3/3.15/3/3.5/3.55/4/4.5/5/5.5/6/6.2/6.3/7/7.10/8/8.5/9/10	8
180032...[d*10]	ET-1-32	ER-32	M4.5-M16	4.5/5/5.5/6/6.2/6.3/7/7.10/8/8.5/9/10/10.5/11/11.2/12/12.5	10
180040...[d*10]	ET-1-40	ER-40	M4.5-M22	6/6.2/6.3/7/7.10/8/8.5/9/10/10.5/11/11.2/12/12.5/14/15/16	13

Gewindebohrzangen ER-GB ohne Längenausgleich



1810...

Bestell-Nr.	Typ	Größe	Bereich	d Schaft
181016...[d*10]	ER-16-GB	ER-16	M3.5-M9	4/4.5/5/5.5/6/6.2/6.3/7/7.1/8/8.5/9
181020...[d*10]	ER-20-GB	ER-20	M3.5-M14	4/4.5/5/5.5/6/6.2/6.3/7/7.1/8/8.5/9/10/10.5/11/11.2
181025...[d*10]	ER-25-GB	ER-25	M3.5-M22	4/4.5/5/5.5/6/6.2/6.3/7/7.1/8/8.5/9/10/10.5/11/11.2/12/12.5/14/15/16
181032...[d*10]	ER-32-GB	ER-32	M3.5-M27	4/4.5/5/5.5/6/6.2/6.3/7/7.1/8/8.5/9/10/10.5/11/11.2/12/12.5/14/15/16/17/18/20
181040...[d*10]	ER-40-GB	ER-40	M4.5-M30	6/6.2/6.3/7/7.1/8/8.5/9/10/10.5/11/11.2/12/12.5/14/15/16/17/18/20/22

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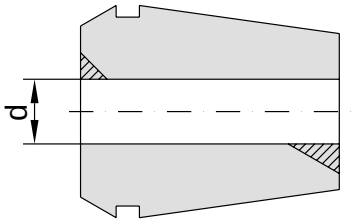
Spannzangen DIN 6499B (ER/ESX), hohe Präzision

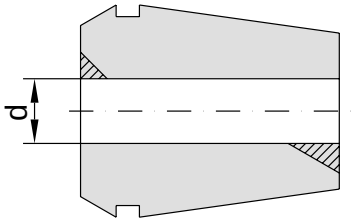


1900...

Bestell-Nr. Einzeln	Bestell-Nr. Kompletter Satz	Größe	d	Spannbereich Spannzange	Rundlauf-toleranz*	Bestellbeispiel
190011...[d*10]	**190011000**	ER-11	7-0.5	0.5	0.01	190011010 für Schaft-d = 1-0.5
190016010		ER-16	1-0.5	0.5	0.01	
190016...[d*10]		ER-16	10-1	1	0.01	190016020 für Schaft-d = 2-1
	190016000	ER-16	10-0.5	-	0.01	
190020...[d*10]	**190020000**	ER-20	13-1	1	0.01	190020020 für Schaft-d = 2-1
190025...[d*10]	**190025000**	ER-25	16-1	1	0.01	190025020 für Schaft-d = 2-1
190032...[d*10]	**190032000**	ER-32	20-2	1	0.01	190032030 für Schaft-d = 3-2
190040...[d*10]	**190040000**	ER-40	26-3	1	0.01	190040040 für Schaft-d = 4-3
190050...[d*10]	**190050000**	ER-50	34-10	2	0.015	190050120 für Schaft-d = 12-10

*mit Messdorn gemäß DIN 6499

Spannzangen DIN 6499B (ER-UP), Ultra-Präzision



1901...

Bestell-Nr. Einzeln	Bestell-Nr. Kompletter Satz	Größe	d	Spannbereich Spannzange	Rundlauf-toleranz*	Bestellbeispiel
190111...[d*10]	**190111000**	ER-11	7-0.5	0.5	0.005	190111010 für Schaft-d = 1-0.5
190116010		ER-16	1-0.5	0.5	0.005	
190116...[d*10]		ER-16	10-1	1	0.005	190116020 für Schaft-d = 2-1
	190116000	ER-16	10-0.5	-	0.005	
190120...[d*10]	**190120000**	ER-20	13-1	1	0.005	190120020 für Schaft-d = 2-1
190125...[d*10]	**190125000**	ER-25	16-1	1	0.005	190125020 für Schaft-d = 2-1
190132...[d*10]	**190132000**	ER-32	20-2	1	0.005	190132030 für Schaft-d = 3-2
190140...[d*10]	**190140000**	ER-40	26-3	1	0.005	190140040 für Schaft-d = 4-3
190150...[d*10]	**190150000**	ER-50	34-10	2	0.01	190150120 für Schaft-d = 12-10

*mit Messdorn gemäß DIN 6499

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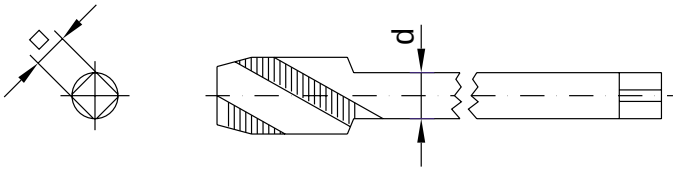
Schaftdurchmesser der Gewindebohrer



Gewinde		ISO 529		ISO 2283		DIN 371		DIN 357 / 376		DIN 352		Japan JIS		US Standard	
[mm]	[inch]	[d∅]	[□]	[d∅]	[□]	[d∅]	[□]	[d∅]	[□]	[d∅]	[□]	[d∅]	[□]	[d∅]"	[□]"
M 1.0		2.50	2.10	-	-	2.50	2.10	-	-	2.50	2.10	3.00	2.50	-	-
M 1.1		2.50	2.10	-	-	2.50	2.10	-	-	2.50	2.10	3.00	2.50	-	-
M 1.2		2.50	2.10	-	-	2.50	2.10	-	-	2.50	2.10	3.00	2.50	-	-
M 1.4		2.50	2.10	-	-	2.50	2.10	-	-	2.50	2.10	3.00	2.50	-	-
M 1.6	1/16	2.50	2.10	-	-	2.50	2.10	-	-	2.50	2.10	3.00	2.50	0.141	0.110
M 1.7		2.50	2.10	-	-	2.50	2.10	-	-	2.50	2.10	3.00	2.50	-	-
M 1.8		2.50	2.10	-	-	2.50	2.10	-	-	2.50	2.10	3.00	2.50	0.141	0.110
M 2.0		2.80	2.10	2.50	2.00	2.50	2.10	-	-	2.80	2.10	3.00	2.50	0.141	0.110
M 2.2		2.80	2.10	2.80	2.24	2.50	2.10	-	-	2.80	2.10	3.00	2.50	0.141	0.110
M 2.3		2.80	2.10	2.80	2.24	2.50	2.10	-	-	2.80	2.10	3.00	2.50	-	-
M 2.5	3/32	2.80	2.10	2.80	2.24	2.50	2.10	-	-	2.80	2.10	3.00	2.50	0.141	0.110
M 2.6		2.80	2.10	2.80	2.24	2.50	2.10	-	-	2.80	2.10	3.00	2.50	-	-
M 3.0	1/18	3.15	2.50	3.15	2.50	3.50	2.70	3.00	-	3.50	2.70	4.00	3.00	0.141	0.110
M 3.5		3.55	2.80	3.55	2.80	4.00	3.00	2.50	2.10	4.00	3.00	4.00	3.00	0.141	0.110
M 4.0	5/32	4.00	3.15	-	-	4.50	3.40	2.80	2.10	4.50	3.40	5.00	4.00	0.168	0.131
M 4.5	3/16	4.50	3.55	-	-	6.00	4.90	3.50	2.70	6.00	4.90	5.00	4.00	0.194	0.152
M 5.0		5.00	4.00	-	-	6.00	4.90	3.50	2.70	6.00	4.90	5.50	4.50	0.194	0.152
M 6.0	1/4	6.30	5.00	-	-	6.00	4.90	4.50	3.40	6.00	4.90	6.00	4.50	0.255	0.191
M 7.0	5/16	7.10	5.60	-	-	7.00	5.50	5.50	4.30	6.00	4.90	6.20	5.00	0.318	0.238
M 8.0		8.00	6.30	-	-	8.00	6.20	6.00	4.90	6.00	4.90	6.20	5.00	0.318	0.238
M 9.0		9.00	7.10	-	-	9.00	7.00	7.00	5.50	7.00	5.50	7.00	5.50	0.381	0.286
M 10.0	3/8	10.00	8.00	-	-	10.00	8.00	7.00	5.50	7.00	5.50	7.00	5.50	0.381	0.286
M 11.0		8.00	6.30	-	-	-	-	8.00	6.20	8.00	6.20	8.00	6.20	0.381	0.286
M 12.0	1/2	9.00	7.10	9.00	-	-	-	9.00	7.00	9.00	7.00	8.50	6.50	0.367	0.275
M 14.0	9/16	11.20	9.00	11.20	-	-	-	11.00	9.00	11.00	9.00	10.50	8.00	0.429	0.322
M 16.0	5/8	12.50	10.00	12.50	-	-	-	12.00	9.00	12.00	9.00	12.50	10.00	0.480	0.360
M 18.0	11/16	14.00	11.20	14.00	-	-	-	14.00	11.00	14.00	11.00	14.00	11.00	0.542	0.406
M 20.0	13/16	14.00	11.20	14.00	-	-	-	16.00	12.00	16.00	12.00	15.00	12.00	0.652	0.489
M 22.0	7/8	16.00	12.50	16.00	-	-	-	18.00	14.50	18.00	14.50	17.00	13.00	0.697	0.523
M 24.0	15/16	18.00	14.00	18.00	-	-	-	18.00	14.50	18.00	14.50	19.00	15.00	0.760	0.570
M 27.0	1 1/16	20.00	16.00	20.00	-	-	-	20.00	16.00	20.00	16.00	20.00	15.00	0.896	0.672
M 30.0	1 3/16	20.00	16.00	20.00	-	-	-	22.00	18.00	22.00	18.00	23.00	23.17	1.021	0.766

Alle Angaben in mm (ausser US Standard in Zoll)

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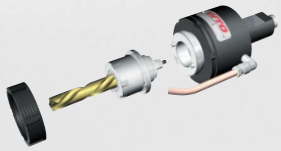

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www.wto.de

USA

WTO Inc.
9123 Monroe Rd. Suite 100
Charlotte, NC 28270

Telefon: +1-704 841-44 65
Telefax: +1-704 841-44 67

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