ISCAR TOOLING SYSTEMS

ENGLISH • FRANCAIS • DEUTSCH

Aide

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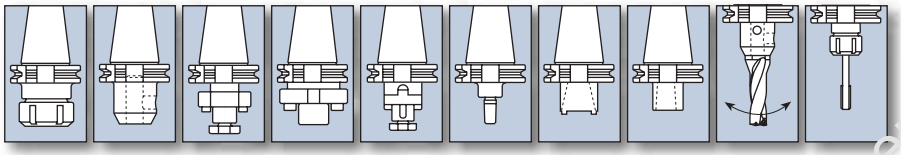
ITS
☞ 5-134

ITS BORE
☞ 135-222

DIN 69871 - A/B

5-21



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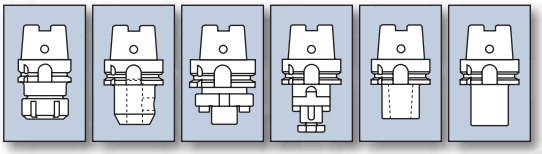
DIN 69893 HSK - A

22-34



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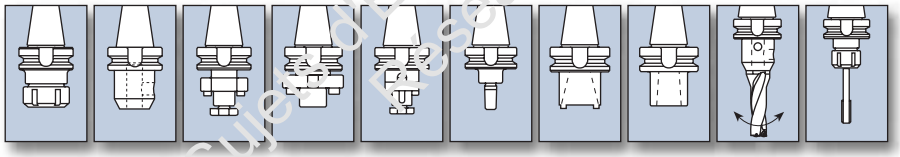

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DIN 2080

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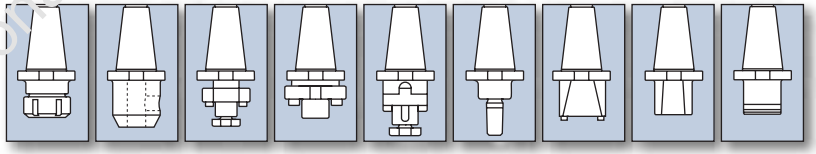

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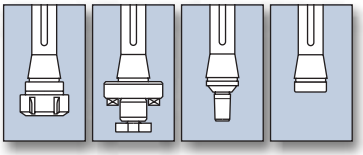
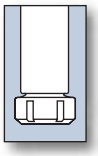
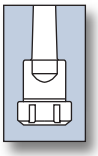
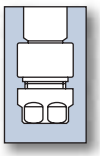
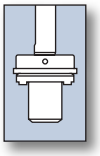
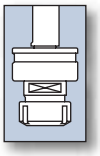


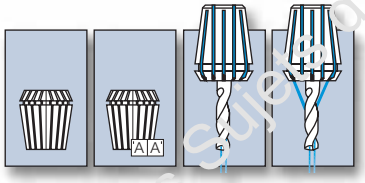


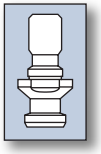


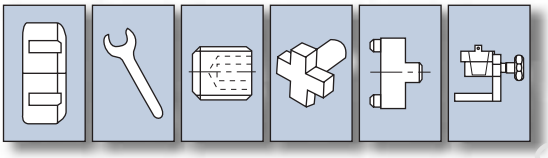






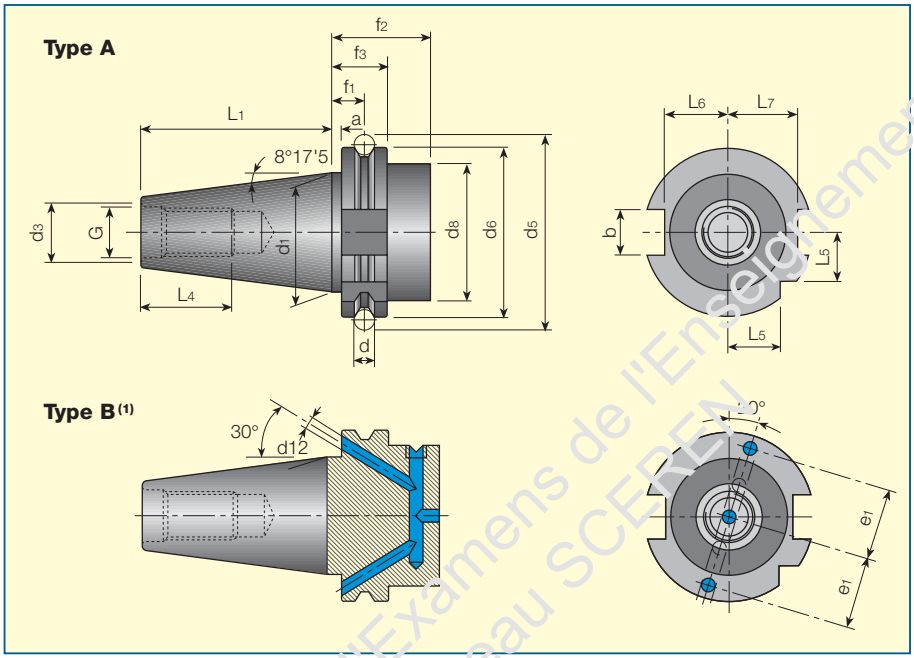






DIN 69871 - A/B

- **Toolholders Norm**
- **Norme des Attachements**
- **Norm der Steilkegelaufnahmen**



DIN 69871 Form A/B

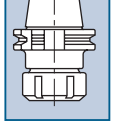
Shank Taille Aufnahme	a ±0.1	b (H12)	d	d1	G	d3 (H7)	d5 ±0.05	d6	d8 max	f1 ±0.1
SK 30	3.2	18.1	7	31.75	M12	13	59.30	50	45	11.1
SK 40	3.2	18.1	7	44.45	M16	17	72.30	63.55	50	11.1
SK 50	3.2	25.7	7	69.85	M24	25	107.25	97.50	80	11.1

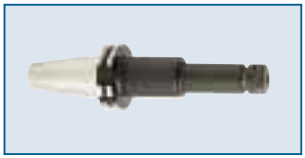
Shank Taille Aufnahme	f2 min.	f3 -0.1	L1 -0.3	L4 min.	L5 -0.3	L6 -0.4	L7 -0.4	e1 ±0.1	d12	TAPER AT3 CÔNE Konus AT3
SK 30	35	19.1	47.80	24	15.0	16.4	19.0	21	4	0.002
SK 40	35	19.1	68.40	32	18.5	22.8	25.0	27	4	0.003
SK 50	35	19.1	101.75	47	30.0	35.5	37.7	42	6	0.004

(1) ● Coolant through flange

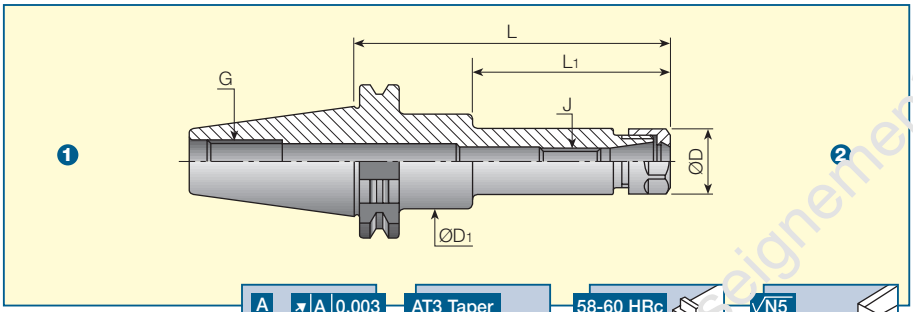
(1) ● Forme B avec Lubrification par la collerette

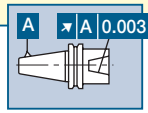
(1) ● Kühlmittelzufuhr durch Bund

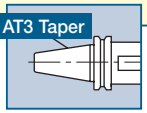


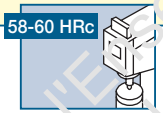


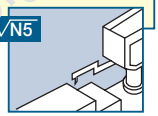
- **Collet Chuck ER Type 16, 20**
- **Mandrins à Pinces Type ER 16, 20**
- **Spannzangenfutter Typ ER 16, 20**











1. **DIN 69871 Form A/B**
2. **DIN 6499**

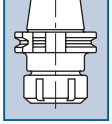
Designation Désignation Bezeichnung	Range Gamme Bereich	L	L1	D	D1	G	J
DIN69871 30 ER 16X63(1)	0.5-10	63	28	28		M12	M10
DIN69871 40 ER 16X63(1)	0.5-10	63		28		M16	M10
DIN69871 40 ER 16X100(1)	0.5-10	100		28		M16	M10
DIN69871 40 ER 16X160(1)	0.5-10	160	85	28	40	M16	M10
DIN69871 40 ER 20X63(1)	1-13	63		34		M16	M12
DIN69871 40 ER 20X100(1)	1-13	100		34		M16	M12
DIN69871 40 ER 20X160(1)	1-13	160	85	34	45	M16	M12
DIN69871 50 ER 16X100(1)	0.5-10	100		28		M24	M10
DIN69871 50 ER 16X160(1)	0.5-10	160	85	28	40	M24	M10
DIN69871 50 ER 16X200(1)	0.5-10	200	85	28	40	M24	M10
DIN69871 50 ER 20X100(1)	1-13	100		34		M24	M12
DIN69871 50 ER 20X160(1)	1-13	160	85	34	45	M24	M12

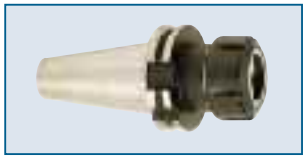
(1) Add B for coolant through flange

(1) Ajouter B pour lubrification par la collerette

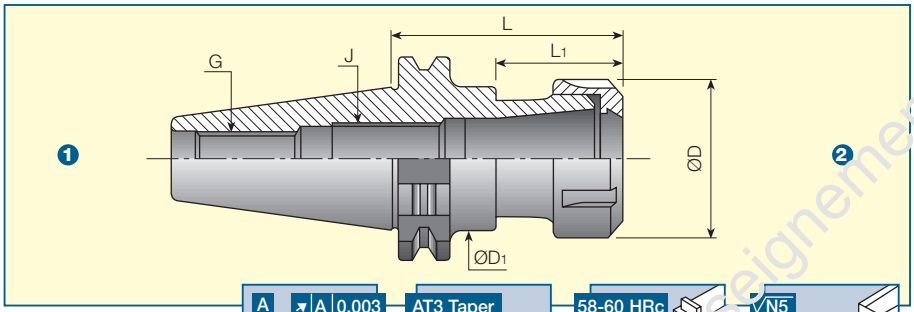
(1) Zusatz für Kühlmittelzufuhr durch den Bund

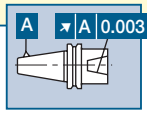
112 114 90-95 115

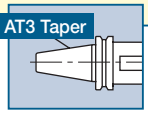


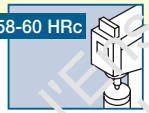


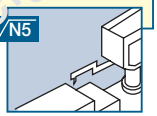
- **Collet Chuck ER Type 25, 32, 40, 50**
- **Mandrins à Pinces Type ER 25, 32, 40, 50**
- **Spannzangenfutter Typ ER**











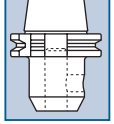
1. **DIN 69871 Form A/B**
2. **DIN 6499**

Designation Désignation Bezeichnung	Range Gamme Bereich	L	L1	D	D1	G	J
DIN69871 30 ER 32X65 (1)	2-20	65		50		M12	M16x1.5
DIN69871 40 ER 25X65 (1)	1-16	65		42		M16	M16x1.5
DIN69871 40 ER 25X100 (1)	1-16	100		42		M16	M16x1.5
DIN69871 40 ER 25X150 (1)	1-16	150		42		M16	M16x1.5
DIN69871 40 ER 32X65 (1)	2-20	65		50		M16	M22x1.5
DIN69871 40 ER 32X100 (1)	2-20	100		50		M16	M22x1.5
DIN69871 40 ER 32x150 (1)	2-20	150		50		M16	M22x1.5
DIN69871 40 ER 40X70 (1)	3-26	70		63		M16	M28x1.5
DIN69871 40 ER 40X100 (1)	3-26	100		63		M16	M28x1.5
DIN69871 50 ER 25X100 (1)	1-16	100		42		M24	M16x1.5
DIN69871 50 ER 25X150 (1)	1-16	150		42		M24	M16x1.5
DIN69871 50 ER 25X200 (1)	1-16	200	85	42	63	M24	M16x1.5
DIN69871 50 ER 32X100 (1)	2-20	100		50		M24	M22x1.5
DIN69871 50 ER 32X150 (1)	2-20	150		50		M24	M22x1.5
DIN69871 50 ER 32X200 (1)	2-20	200		50		M24	M22x1.5
DIN69871 50 ER 40X100 (1)	3-26	100		63		M24	M28x1.5
DIN69871 50 ER 40X150 (1)	3-26	150		63		M24	M28x1.5
DIN69871 50 ER 40X200 (1)	3-26	200		63		M24	M28x1.5
DIN69871 50 ER 50X100 (1)	10-34	100		78		M24	M36x1.5
DIN69871 50 ER 50X150 (1)	10-34	150		78		M24	M36x1.5

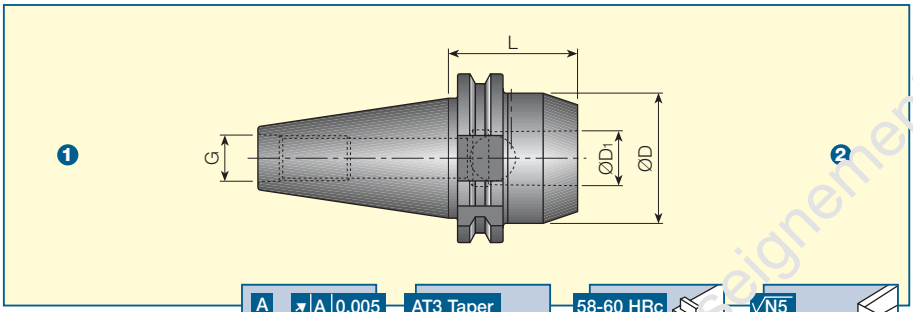
(1) Add B for coolant through flange
(1) Ajouter B pour Lubrification par la collerette
(1) Zusatz für Kühlmittelzufuhr durch den Bund




112 114 90-95 115



- **End Mill Holder Short Length Weldon DIN 1835 Form B**
- **Mandrins Porte-Fraises à queue weldon DIN 1835 - B**
- **Kurze Aufnahmen mit Steilkegel für Zylinderschäfte mit seitlicher Mitnahmefläche**



❶ **DIN 69871 Form A**
❷ **DIN 6359**

Designation Désignation Bezeichnung	D_1	L	D	G
DIN69871 40 EM 10X45(1)	10	45	35	M16
DIN69871 40 EM 12X45(1)	12	45	42	M16
DIN69871 40 EM 14X45(1)	14	45	44	M16
DIN69871 40 EM 16X45(1)	16	45	48	M16
DIN69871 40 EM 18X45(1)	18	45	50	M16
DIN69871 40 EM 20X45(1)	20	45	52	M16
DIN69871 40 EM 25X45(1)	25	45	63	M16

(1) Add B for coolant through flange
(1) Ajouter B pour Lubrification par la collerette
(1) Zusatz für Kühlmittelzufuhr durch den Bund

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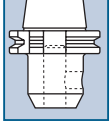
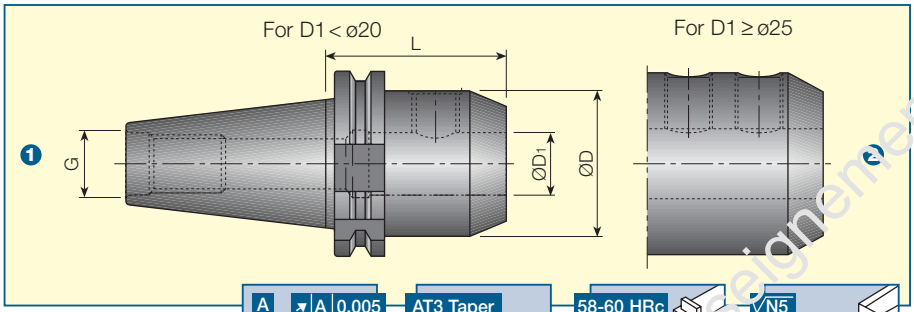
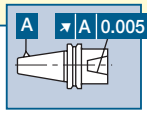
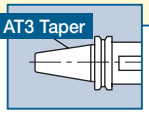
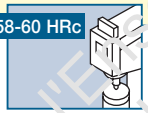


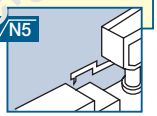
- **End Mill Holder Weldon - DIN 1835 Form B**
- **Mandrins Porte-Fraises á queue Weldon - DIN1835-B**
- **Aufnahmen mit Steilkegel für Zylinderschäfte mit seitlicher Mitnahmefläche**









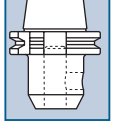


1. **DIN 69871 Form A/B**
2. **DIN 6359**

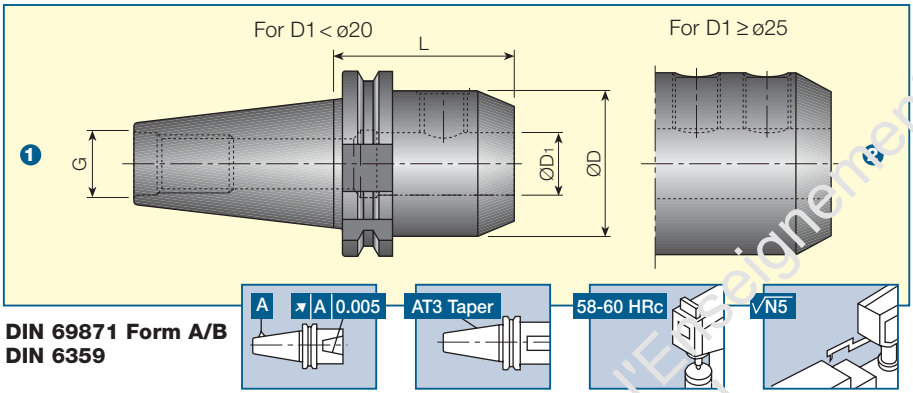
Designation Désignation Bezeichnung	D_1	L	D	G
DIN69871 30 EM 6	6	50	25	M12
DIN69871 30 EM 8	8	50	28	M12
DIN69871 30 EM 10	10	50	35	M12
DIN69871 30 EM 12	12	50	42	M12
DIN69871 30 EM 14	14	63	44	M12
DIN69871 30 EM 16	16	63	48	M12
DIN69871 30 EM 18	18	63	50	M12
DIN69871 30 EM 20	20	72	52	M12
DIN69871 40 EM 6 (1)	6	50	25	M16
DIN69871 40 EM 8 (1)	8	50	28	M16
DIN69871 40 EM 10 (1)	10	50	35	M16
DIN69871 40 EM 12 (1)	12	50	42	M16
DIN69871 40 EM 14 (1)	14	63	44	M16
DIN69871 40 EM 16 (1)	16	63	48	M16
DIN69871 40 EM 18 (1)	18	63	50	M16
DIN69871 40 EM 20 (1)	20	63	52	M16
DIN69871 40 EM 25 (1)	25	100	65	M16
DIN69871 40 EM 32 (1)	32	100	72	M16

(1) ● Add B for coolant through flange
(1) ● Ajouter B pour Lubrification par la collerette
(1) ● Zusatz für Kühlmittelzufuhr durch den Bund

115



- **End Mill Holder Weldon - DIN 1835 Form B**
- **Mandrins Porte-Fraises à queue Weldon -DIN 1835-B**
- **Aufnahmen mit Steilkegel für Zylinderschäfte mit seitlicher Mitnahmefläche**

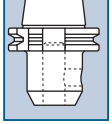


1. **DIN 69871 Form A/B**
2. **DIN 6359**

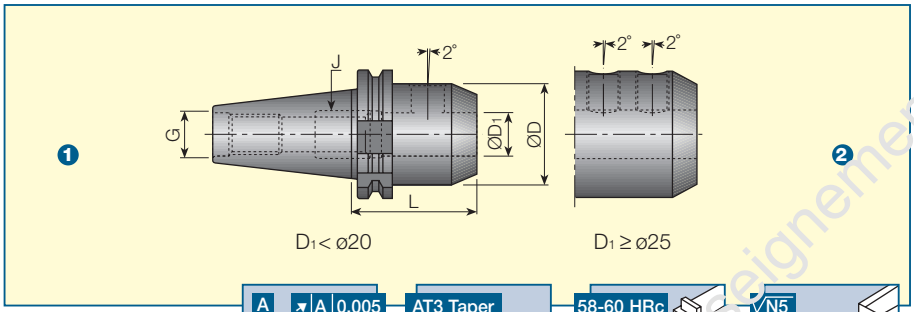
Designation Désignation Bezeichnung	D_1	L	D	G
DIN69871 50 EM 6 (1)	6	63	25	M24
DIN69871 50 EM 8 (1)	8	63	28	M24
DIN69871 50 EM 10 (1)	10	63	35	M24
DIN69871 50 EM 12 (1)	12	63	42	M24
DIN69871 50 EM 14 (1)	14	63	44	M24
DIN69871 50 EM 16 (1)	16	63	48	M24
DIN69871 50 EM 18 (1)	18	63	50	M24
DIN69871 50 EM 20 (1)	20	63	52	M24
DIN69871 50 EM 25 (1)	25	80	65	M24
DIN69871 50 EM 32 (1)	32	100	72	M24
DIN69871 50 EM 40 (1)	40	100	90	M24
DIN69871 50 EM 50 (1)	50	125	100	M24

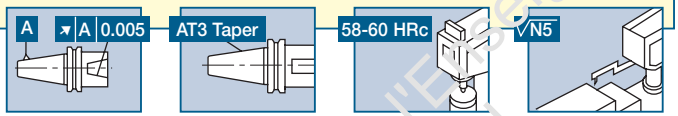
(1) ● Add B for coolant through flange
(1) ● Ajouter B pour Lubrification par la collerette
(1) ● Zusatz für Kühlmittelzufuhr durch den Bund

115



- **End Mill Holder Whistle Notch - DIN 1835 Form E**
- **Mandrins Porte-Fraises à queue avec méplat en pente - DIN 1835-E**
- **Aufnahmen mit Steilkegel für Zylinderschäfte mit Whistle Notch Spannfläche DIN 1835 Form E**



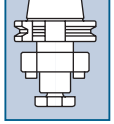


1 **DIN 69871 Form A/B**
2 **DIN 6359**

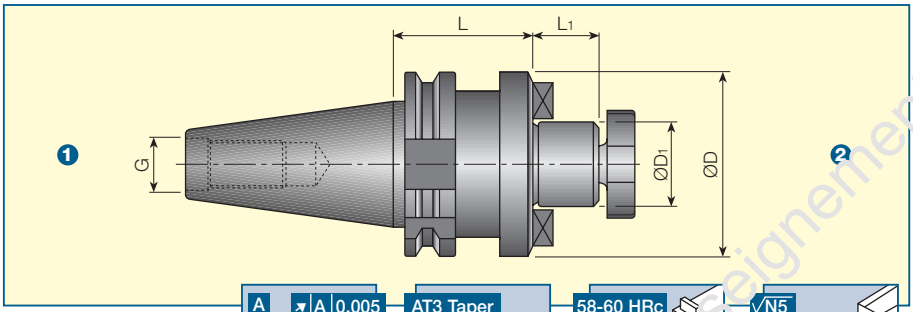
Designation Désignation Bezeichnung	D_1	L	D	G	J
DIN69871 40 EM 6 E(1)	6	50	25	M16	M8
DIN69871 40 EM 8 E(1)	8	50	28	M16	M10
DIN69871 40 EM 10 E(1)	10	50	35	M16	M8
DIN69871 40 EM 12 E(1)	12	50	42	M16	M10
DIN69871 40 EM 14 E(1)	14	63	44	M16	M10
DIN69871 40 EM 16 E(1)	16	63	48	M16	M12
DIN69871 40 EM 18 E(1)	18	63	50	M16	M12
DIN69871 40 EM 20 E(1)	20	63	52	M16	M16
DIN69871 40 EM 25 E(1)	25	100	65	M16	M20
DIN69871 40 EM 32 E(1)	32	100	72	M16	M20
DIN69871 50 EM 6 E(1)	6	63	25	M24	M8
DIN69871 50 EM 8 E(1)	8	63	28	M24	M10
DIN69871 50 EM 10 E(1)	10	63	35	M24	M8
DIN69871 50 EM 12 E(1)	12	63	42	M24	M10
DIN69871 50 EM 14 E(1)	14	63	44	M24	M10
DIN69871 50 EM 16 E(1)	16	63	48	M24	M12
DIN69871 50 EM 18 E(1)	18	63	50	M24	M12
DIN69871 50 EM 20 E(1)	20	63	52	M24	M16
DIN69871 50 EM 25 E(1)	25	80	65	M24	M20
DIN69871 50 EM 32 E(1)	32	100	72	M24	M20
DIN69871 50 EM 40 E(1)	40	100	90	M24	M22
DIN69871 50 EM 50 E(1)	50	125	100	M24	M20

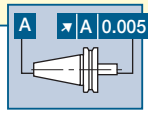
(1) Add B for coolant through flange
(1) Ajouter B pour Lubrification par la collerette
(1) Zusatz für Kühlmittelzufuhr durch den Bund

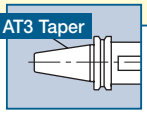

115 115

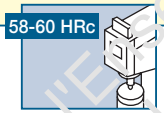


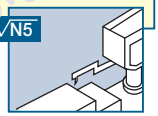
- **Shell End Mill Holder**
- **Mandrins Porte-Fraises à alésage**
- **Aufsteckfräserdorne für Fräser mit Quernut**







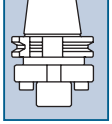




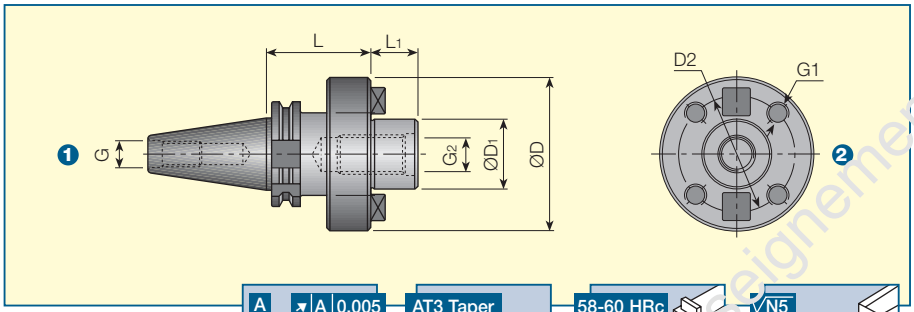
1 **DIN 69871 Form A**
2 **ISO 3937**

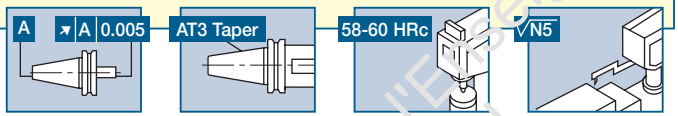
Designation Désignation Bezeichnung	D_1	L	L_1	G	D
DIN69871 30 SEM 16	16	35	17	M12	38
DIN69871 30 SEM 22	22	50	19	M12	47
DIN69871 30 SEM 27	27	50	21	M12	58
DIN69871 40 SEM 16	16	35	17	M16	38
DIN69871 40 SEM 22	22	35	19	M16	47
DIN69871 40 SEM 27	27	50	21	M16	58
DIN69871 40 SEM 32	32	50	24	M16	66
DIN69871 40 SEM 40	40	60	27	M16	82
DIN69871 50 SEM 16	16	35	17	M24	38
DIN69871 50 SEM 22	22	35	19	M24	47
DIN69871 50 SEM 27	27	35	21	M24	58
DIN69871 50 SEM 32	32	35	24	M24	66
DIN69871 50 SEM 40	40	50	27	M24	82
DIN69871 50 SEM 50	50	60	30	M24	95

116 114



- **Face Mill Holder**
- **Mandrins Porte-Fraises à alésage**
- **Aufnahmedorne für Fräser mit Innenzentrierung**

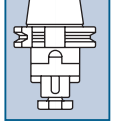




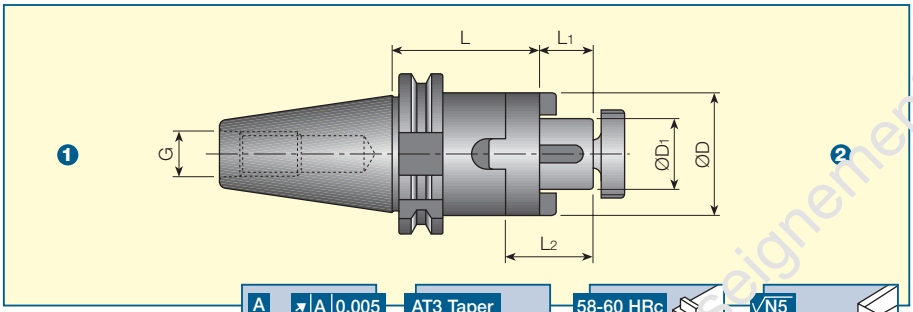
1. **DIN 69871 Form A**
2. **DIN 6357**

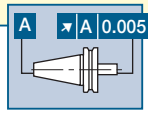
Designation Désignation Bezeichnung	D_1	L	L_1	D	G	G_1	G_2	D_2
DIN69871 40 FM 40	40	60	30	88	M16	M12	M20	66.7
DIN69871 50 FM 40	40	70	30	88	M24	M12	M20	66.7
DIN69871 50 FM 60	60	70	40	128	M24	M16		101.6

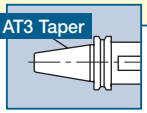
116 114

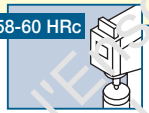


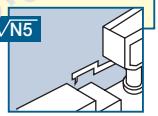
- **COMBI - Shell End Mill Holder**
- **COMBI - Mandrins Porte-Fraises Combinés**
- **COMBI - Aufsteckfräserdorne**







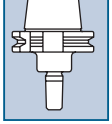


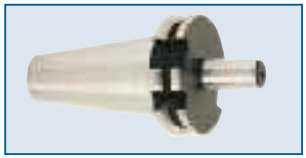


1. **DIN 69871 Form A**
2. **DIN 6358**

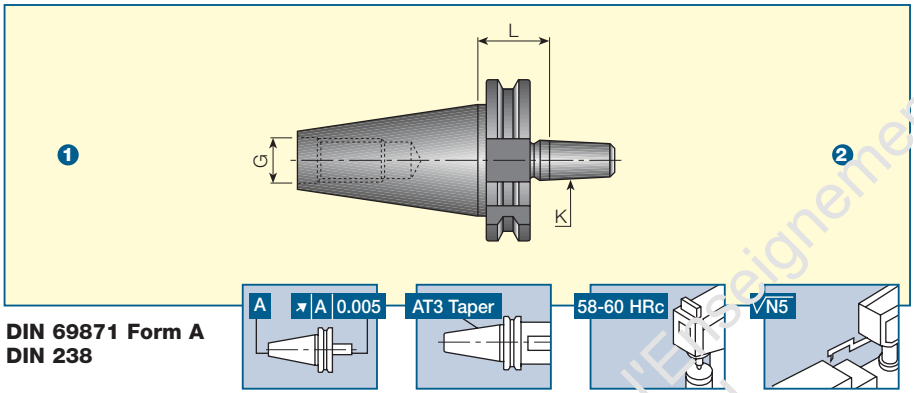
Designation Désignation Bezeichnung	D_1	L	L_1	L_2	D	G
DIN69871 30 SMC 16X50	16	50	17	27	32	M12
DIN69871 30 SMC 22X50	22	50	19	31	40	M12
DIN69871 30 SMC 27X55	27	55	21	33	48	M12
DIN69871 30 SMC 32X60	32	60	24	38	58	M12
DIN69871 40 SMC 16X55	16	55	17	27	32	M16
DIN69871 40 SMC 16X100	16	100	17	27	32	M16
DIN69871 40 SMC 22X55	22	55	19	31	40	M16
DIN69871 40 SMC 22X100	22	100	19	31	40	M16
DIN69871 40 SMC 27X55	27	55	21	33	48	M16
DIN69871 40 SMC 27X100	27	100	21	33	48	M16
DIN69871 40 SMC 32X60	32	60	24	38	58	M16
DIN69871 40 SMC 32X100	32	100	24	38	58	M16
DIN69871 40 SMC 40X60	40	60	27	41	70	M16
DIN69871 50 SMC 16X55	16	55	17	27	32	M24
DIN69871 50 SMC 16X100	16	100	17	27	32	M24
DIN69871 50 SMC 22X55	22	55	19	31	40	M24
DIN69871 50 SMC 22X100	22	100	19	31	40	M24
DIN69871 50 SMC 27X55	27	55	21	33	48	M24
DIN69871 50 SMC 27X100	27	100	21	33	48	M24
DIN69871 50 SMC 32X55	32	55	24	38	58	M24
DIN69871 50 SMC 32X100	32	100	24	38	58	M24
DIN69871 50 SMC 40X55	40	55	27	41	70	M24
DIN69871 50 SMC 40X100	40	100	27	41	70	M24
DIN69871 50 SMC 50X70	50	70	30	46	90	M24

114 116 117



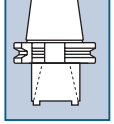


- **Drill Chuck Arbor**
- **Attachements pour Mandrins de Perceuses**
- **Bohrfutter-Aufnahme**

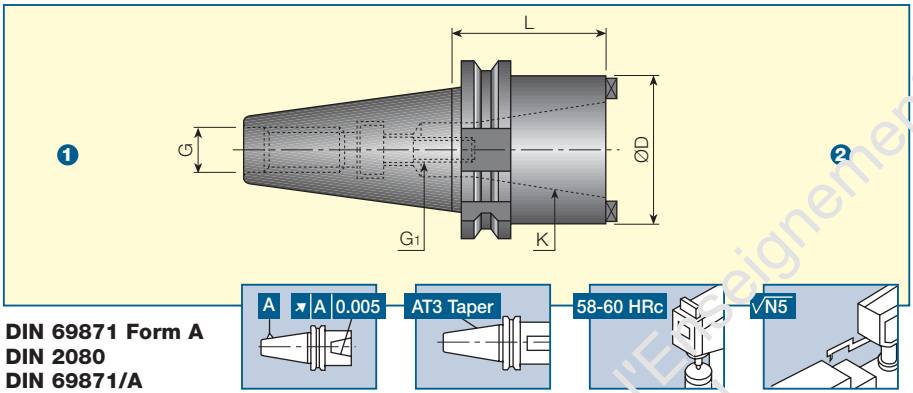


1 DIN 69871 Form A
2 DIN 238

Designation Désignation Bezeichnung	K	L	G
DIN69871 30 D.CHK B12	B12	26	M12
DIN69871 30 D.CHK B16	B16	26	M12
DIN69871 40 D.CHK B12	B12	26	M16
DIN69871 40 D.CHK B16	B16	26	M16
DIN69871 40 D.CHK B18	B18	26	M16
DIN69871 50 D.CHK B12	B12	26	M24
DIN69871 50 D.CHK B16	B16	26	M24
DIN69871 50 D.CHK B18	B18	26	M24

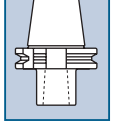


- **Adapters**
- **Réductions Din 69871 / cône SA**
- **Reduzierhülsen**

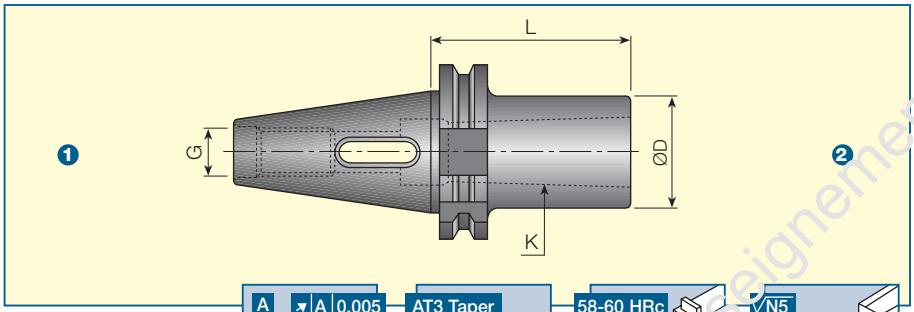


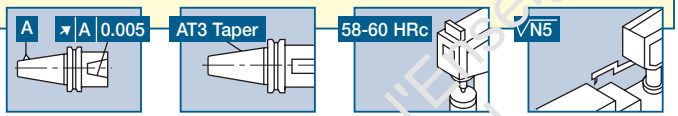
1 DIN 69871 Form A
2 DIN 2080
DIN 69871/A
BT MAS – 403

Designation Désignation Bezeichnung	K	L	D	G1	G
DIN69871 40 AD 30 DIN2080 DIN69871 40 AD BT 30	DIN 2080 DIN 69871/A BT MAS	50 50	50 50	M12 M12	M16 M16
DIN69871 50 AD 40 DIN2080 DIN69871 50 AD BT 40	DIN 2080 DIN 69871/A BT MAS	70 70	63 63	M16 M16	M24 M24



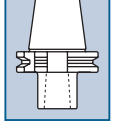
- **Morse Taper Adapter Tang DIN 228-2 Form D**
- **Réductions DIN69871/Cône Morse avec chasse cône DIN 228-2-D**
- **Zwischenhülsen für Morsekegel mit Austreiblappen**



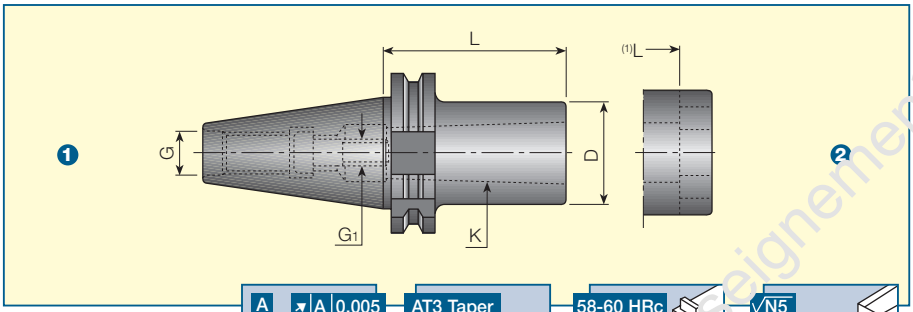


1 DIN 69871 Form A
2 DIN 6383

Designation Désignation Bezeichnung	K	L	D	G
DIN69871 30 MT1X50	MT1	50	25	M12
DIN69871 30 MT2X60	MT2	60	32	M12
DIN69871 30 MT3X75	MT3	75	40	M12
DIN69871 40 MT1X50	MT1	50	25	M16
DIN69871 40 MT2X50	MT2	60	32	M16
DIN69871 40 MT3X70	MT3	70	40	M16
DIN69871 40 MT4X95	MT4	95	48	M16
DIN69871 50 MT1X45	MT1	45	25	M24
DIN69871 50 MT2X60	MT2	60	32	M24
DIN69871 50 MT3X65	MT3	65	40	M24
DIN69871 50 MT4X95	MT4	95	48	M24
DIN69871 50 MT5X105	MT5	105	63	M24



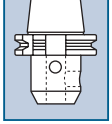
- **Morse Taper Adapter Draw Bar DIN 228-2 Form B**
- **Réductions DIN 69871/Cône Morse fileté DIN 228-2-B**
- **Zwischenhülsen für Morsekegel mit Anzugsgewinde**



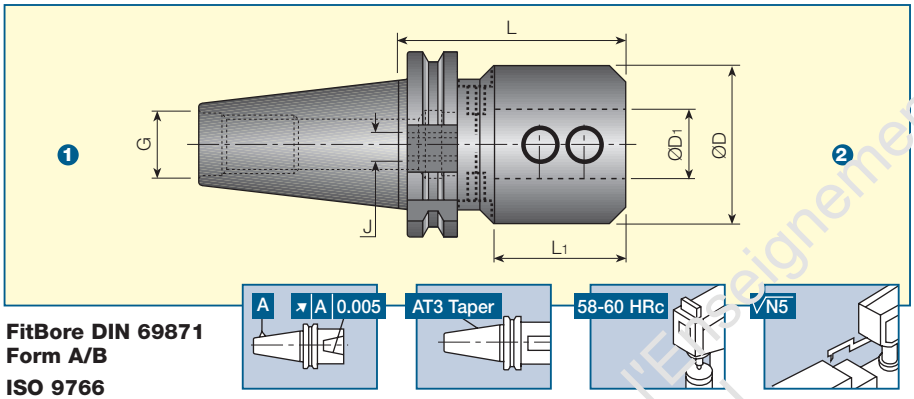
❶ **DIN 69871 Form A**
❷ **DIN 6364**

Designation Désignation Bezeichnung	K	L	D	G_1	G
DIN69871 30 MT1 DRW	MT1	50	25	M6	M12
DIN69871 30 MT2 DRW	MT2	70	32	M10	M12
DIN69871 30 MT3 DRW	MT3	100	40	M12	M12
DIN69871 40 MT1 DRW	MT1	50	25	M6	M16
DIN69871 40 MT2 DRW	MT2	50	32	M10	M16
DIN69871 40 MT3 DRW	MT3	70	40	M12	M16
DIN69871 40 MT4 DRW	MT4	95	60	M16	M16
DIN69871 50 MT1 DRW	MT1	45	25	M6	M24
DIN69871 50 MT2 DRW	MT2	60	32	M10	M24
DIN69871 50 MT3 DRW	MT3	65	40	M12	M24
DIN69871 50 MT4 DRW	MT4	70	63	M16	M24
DIN69871 50 MT5 DRW	MT5	100	78	M20	M24

(1) ● MT4 & MT5 with DIN 2201
(1) ● MT4 & MT5 avec DIN 2201
(1) ● MT4 & MT5 mit DIN 2201



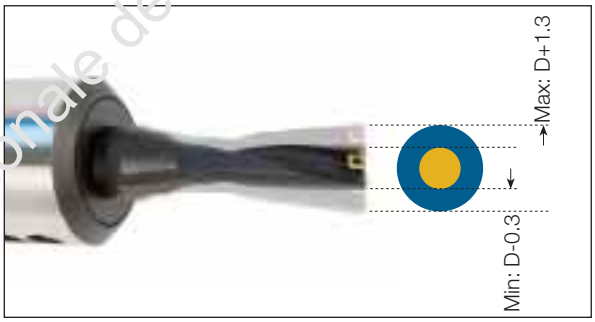
- **FITBORE - Holder for Adjustable Drilling Diameter**
- **FITBORE - Attachements Réglables pour Forets à Plaquettes**
- **FITBORE - Aufnahmen für Bohrwerkzeuge, radial justierbar**



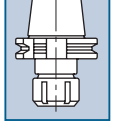
1 FitBore DIN 69871
2 Form A/B
ISO 9766

Designation Désignation Bezeichnung	D_1	L	D	G	L_1	J
FITBORE 69871 40 EM16 (1)	16	135	72	M16	70	M10
FITBORE 69871 40 EM20 (1)	20	135	72	M16	70	M10
FITBORE 69871 40 EM25 (1)	25	135	72	M16	70	M10
FITBORE 69871 40 EM32 (1)	32	135	72	M16	70	M10
FITBORE 69871 40 EM40 (1)	40	135	72	M16	70	M10
FITBORE 69871 50 EM16 (1)	16	131	72	M24	70	M10
FITBORE 69871 50 EM20 (1)	20	131	72	M24	70	M10
FITBORE 69871 50 EM25 (1)	25	131	72	M24	70	M10
FITBORE 69871 50 EM32 (1)	32	131	72	M24	70	M10
FITBORE 69871 50 EM40 (1)	40	131	72	M24	70	M10

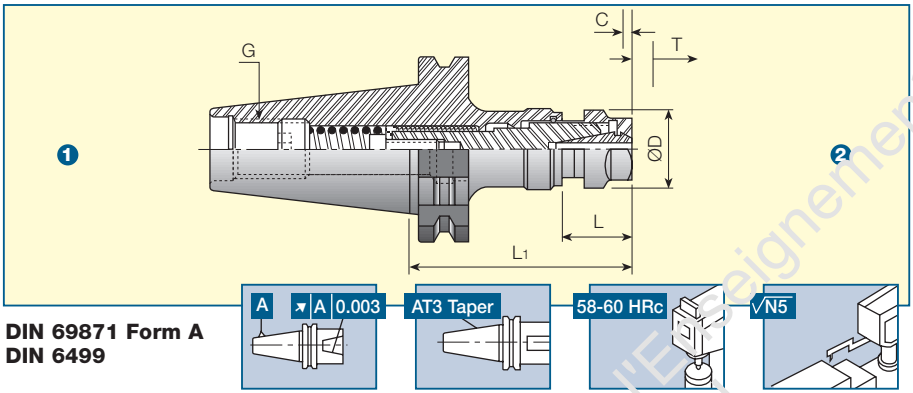
(1) Add B for coolant through flange
(1) Ajouter B pour Lubrification par la collerette
(1) Zusatz für Kühlflüssigkeit durch den Bund



126 115



- **GTI ER Tapping Attachment**
- **GTI Appareils à Tarauder ER avec Compensations Axiale et Radiale**
- **GTI ER Gewindeschneidfutter für Spannzangen**



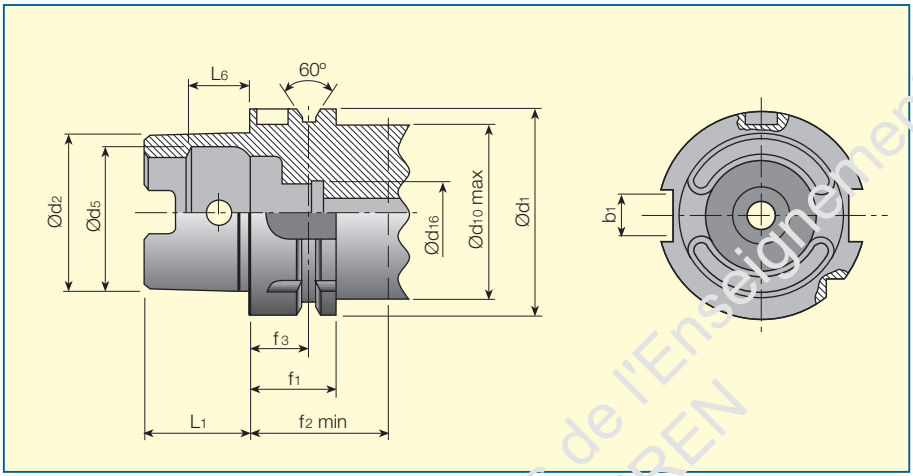
1 **DIN 69871 Form A**
2 **DIN 6499**

Designation Désignation Bezeichnung	Tap Capacity Capacité Taraud Abgreifbereich	G	L_1	L	D	T	C
GTI DIN69871 40 ER16	M3-M10	M16	85	24	28	8	3
GTI DIN69871 40 ER32	M6-M20	M16	107	30	50	9	4
GTI DIN69871 40 ER40	M6-M28	M16	123	46	63	9	4
GTI DIN69871 50 ER16	M3-M10	M24	116	24	28	8	3
GTI DIN69871 50 ER32	M6-M20	M24	116	30	50	9	4
GTI DIN69871 50 ER40	M6-M28	M24	132	46	63	9	4

124 112 114 90-95

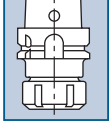
DIN 69893 HSK - A

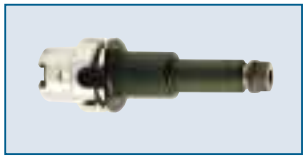
- **Toolholder Norm**
- **Norme des Attachements**
- **Norm der Hohlschaftkegel**



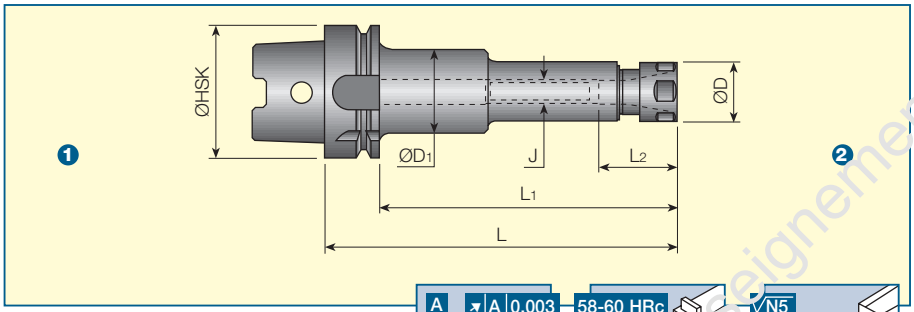
HSK DIN 69839 Form A

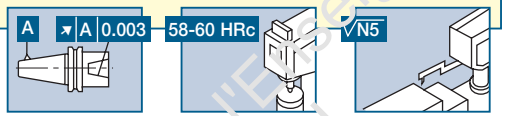
HSK-A	d_1	d_2	d_5	d_{10}	d_{16}	L_1	L_6	b_1	f_1	f_2	f_3
50	50	38	32	42	M16x1	25	14.13	10.54	26	42	18
63	63	48	40	52	M18x1	32	18.13	12.54	26	42	18
100	100	75	63	85	M24x1.5	50	28.56	20.02	29	45	20





- **Collet Chuck ER Type 16, 20**
- **Mandrins à Pinces Type ER 16, 20**
- **Spannzangenfutter ER Typ 16, 20**

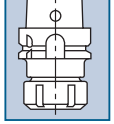




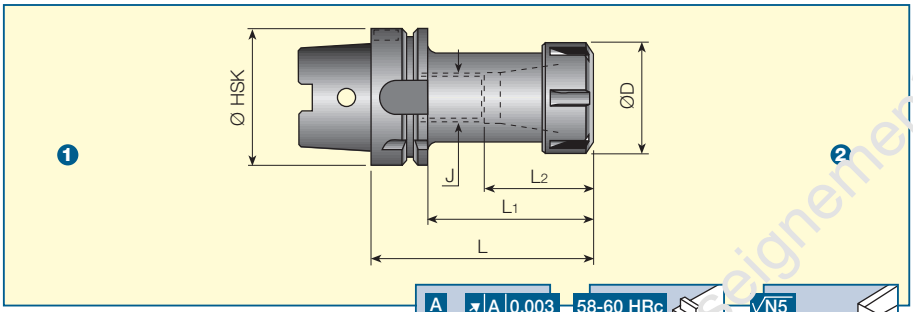
1. **HSK DIN 69893 Form A**
2. **DIN 6499**

Designation Désignation Bezeichnung	HSK-A	Range Gamme Bereich	D	D1	L	L1	L2	J
HSK A 50 ER 16X100	50	0.5-10	23		100		27	M10
HSK A 50 ER 16X120	50	0.5-10	28		120		27	M10
HSK A 50 ER 20X100	50	1-13	34		100		31	M12
HSK A 50 ER 20X120	50	1-13	34		120		31	M12
HSK A 63 ER 16X100	63	0.5-10	28		100		27	M10
HSK A 63 ER 16X120	63	0.5-10	28		120		27	M10
HSK A 63 ER 16X160	63	0.5-10	28	40	160	85	27	M10
HSK A 63 ER 20X100	63	1-13	34		100		31	M12
HSK A 63 ER 20X120	63	1-13	34		120		31	M12
HSK A 63 ER 20X160	63	1-13	34	45	160	85	31	M12
HSK A 100 ER 16X100	100	0.5-10	28		100		27	M10
HSK A 100 ER 16X160	100	0.5-10	28	40	160	85	27	M10
HSK A 100 ER 20X100	100	1-13	34		100		31	M12
HSK A 100 ER 20X160	100	1-13	34	50	160	85	31	M12

118 112 114 90-95 115



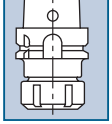
- **Collet Chuck ER Type 25, 32, 40**
- **Mandrins à Pinces Type ER 25, 32, 40**
- **Spannzangenfutter ER Typ 25, 32 40**

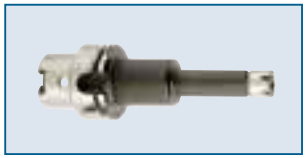


1. **HSK DIN 69893 Form A**
2. **DIN 6499**

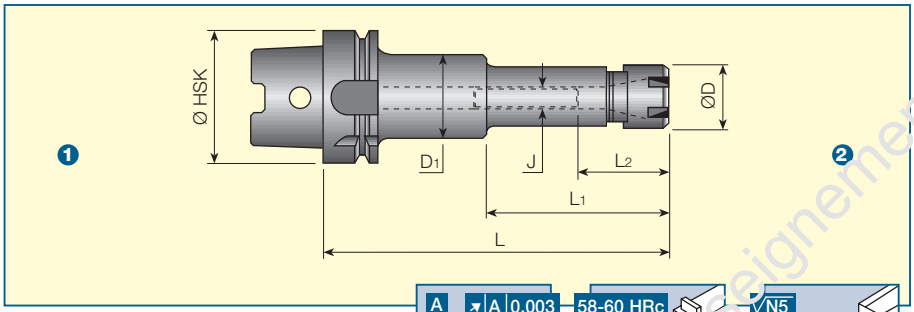
Designation Désignation Bezeichnung	HSK-A	Range Gamme Bereich	øD	L	L1	L2	J
HSK A 50 ER 25X80	50	1-16	42	80	54	36	M16
HSK A 50 ER 25X100	50	1-16	42	100	74	36	M16
HSK A 50 ER 32X100	50	2-20	50	100	74	40	M22
HSK A 50 ER 32X120	50	2-20	50	120	94	40	M22
HSK A 63 ER 25X80	63	1-16	42	80	54	36	M16
HSK A 63 ER 25X100	63	1-16	42	100	74	36	M16
HSK A 63 ER 25X120	63	1-16	42	120	94	36	M16
HSK A 63 ER 32X80	63	2-20	50	80	54	40	M22
HSK A 63 ER 32X100	63	2-20	50	100	74	40	M22
HSK A 63 ER 32X120	63	2-20	50	120	94	40	M22
HSK A 63 ER 40X80	63	3-26	63	80	54	58	M28
HSK A 63 ER 40X100	63	3-26	63	100	74	58	M28
HSK A 63 ER 40X120	63	3-26	63	120	94	58	M28
HSK A 100 ER 25X100	100	1-16	42	100	71	36	M16
HSK A 100 ER 25X120	100	1-16	42	120	91	36	M16
HSK A 100 ER 32X100	100	2-20	50	100	71	40	M22
HSK A 100 ER 32X120	100	2-20	50	120	91	40	M22
HSK A 100 ER 40X100	100	3-26	63	100	71	58	M28
HSK A 100 ER 40X120	100	3-26	63	120	91	58	M28

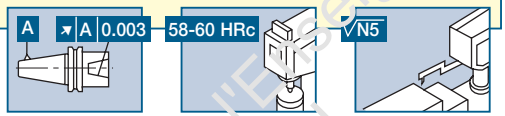
118 112 114 90-95 115





- **Collet Chuck ER Type 16, 20 Mini**
- **Mandrins à Pinces Type ER 16, 20 Mini**
- **Spannzangenfutter ER Typ 16, 20 Mini**

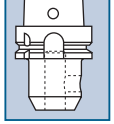




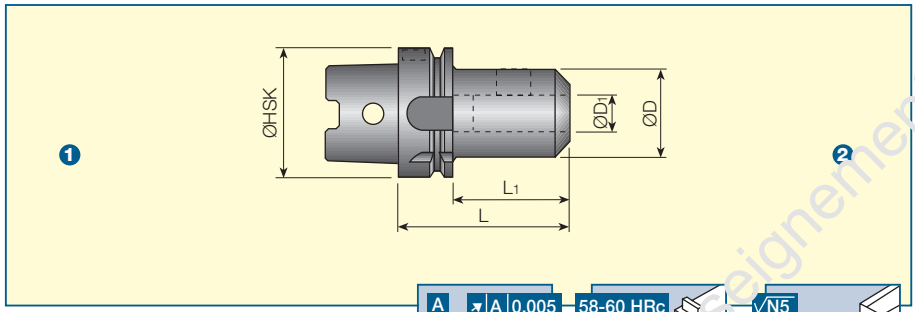
1 HSK DIN 69893 Form A
2 DIN 6499

Designation Désignation Bezeichnung	HSK-A	Range Gamme Bereich	D	D1	L	L1	L2	J
HSK A 50 ER 16X100 M	50	0.5-10	22		100		27	M10
HSK A 50 ER 16X120 M	50	0.5-10	22		120		27	M10
HSK A 50 ER 20X100 M	50	1-13	28		100		31	M12
HSK A 50 ER 20X120 M	50	1-13	28		120		31	M12
HSK A 63 ER 16X100 M	63	0.5-10	22		100		27	M10
HSK A 63 ER 16X120 M	63	0.5-10	22	40	120	78	27	M10
HSK A 63 ER 16X160 M	63	0.5-10	22	40	160	85	27	M10
HSK A 63 ER 20X100 M	63	1-13	28		100		31	M12
HSK A 63 ER 20X120 M	63	1-13	28		120		31	M12
HSK A 63 ER 20X160 M	63	1-13	28	45	160	85	31	M12
HSK A 100 ER 16X100 M	100	0.5-10	22		100		27	M10
HSK A 100 ER 16X160 M	100	0.5-10	22	40	160	85	27	M10
HSK A 100 ER 20X100 M	100	1-13	28		100		31	M12
HSK A 100 ER 20X160 M	100	1-13	28	50	160	85	31	M12

118 112 114 90-95 115



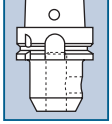
- **End Mill Holder Weldon - DIN 1835 Form B**
- **Mandrins Porte-Fraises à queue Weldon DIN 1835-B**
- **Aufnahmen mit Steilkegel für Zylinderschäfte mit seitlicher Mitnahmefläche**



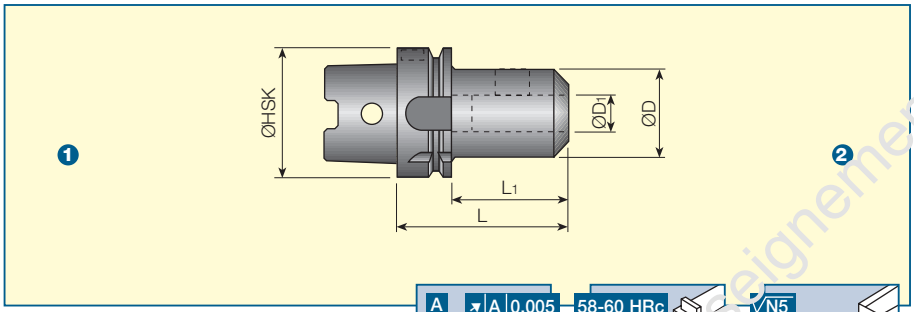
1. **HSK DIN 69893 Form A**
2. **DIN 6359**

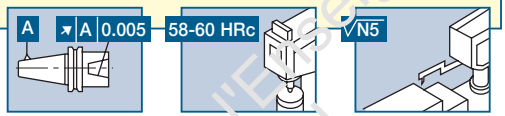
Designation Désignation Bezeichnung	HSK-A	D_1	L	D	L_1
HSK A 50 EM 6	50	6	65	25	39
HSK A 50 EM 8	50	8	65	28	39
HSK A 50 EM 10	50	10	65	35	39
HSK A 50 EM 12	50	12	80	42	54
HSK A 50 EM 14	50	14	80	44	54
HSK A 50 EM 16	50	16	80	48	54
HSK A 50 EM 18	50	18	80	50	54
HSK A 50 EM 20	50	20	80	52	54
HSK A 63 EM 6	63	6	65	25	39
HSK A 63 EM 8	63	8	65	28	39
HSK A 63 EM 10	63	10	65	35	39
HSK A 63 EM 12	63	12	80	42	54
HSK A 63 EM 14	63	14	80	44	54
HSK A 63 EM 16	63	16	80	48	54
HSK A 63 EM 18	63	18	80	50	54
HSK A 63 EM 20	63	20	80	52	54
HSK A 63 EM 25	63	25	110	65	84
HSK A 63 EM 32	63	32	110	72	84

118 118 115



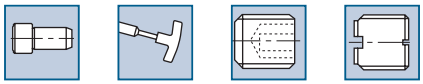
- **End Mill Holder Weldon - DIN 1835 Form B**
- **Mandrins Porte-Fraises à queue Weldon DIN 1835-B**
- **Aufnahmen mit Steilkegel für Zylinderschäfte mit seitlicher Mitnahmefläche**





1. **HSK DIN 69893 Form A**
2. **DIN 6359**

Designation Désignation Bezeichnung	HSK-A	D1	L	D	L1
HSK A 100 EM 6	100	6	80	28	51
HSK A 100 EM 8	100	8	80	28	51
HSK A 100 EM 10	100	10	80	35	51
HSK A 100 EM 12	100	12	80	42	51
HSK A 100 EM 14	100	14	80	44	51
HSK A 100 EM 16	100	16	100	48	71
HSK A 100 EM 18	100	18	100	50	71
HSK A 100 EM 20	100	20	100	52	71
HSK A 100 EM 25	100	25	100	65	71
HSK A 100 EM 32	100	32	100	72	71



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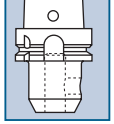
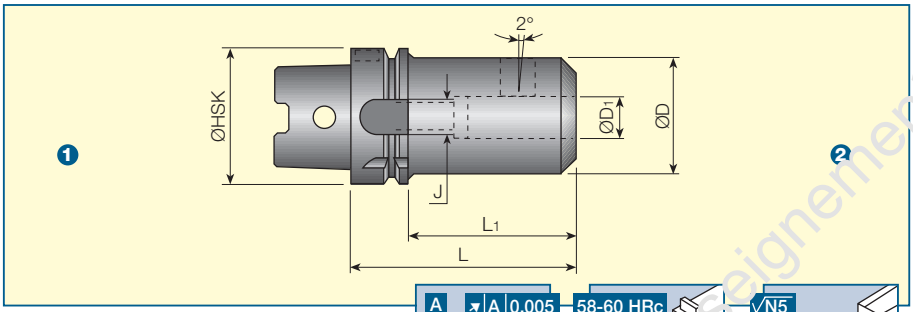
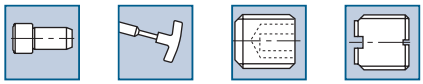


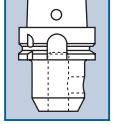
- **End Mill Holder Whistle Notch - DIN 1835 Form E**
- **Mandrins Porte-Fraises avec méplat en pente DIN 1835-E**
- **Aufnahmen für Zylinderschäfte mit Whistle Notch Fläche DIN 1835 Form E**



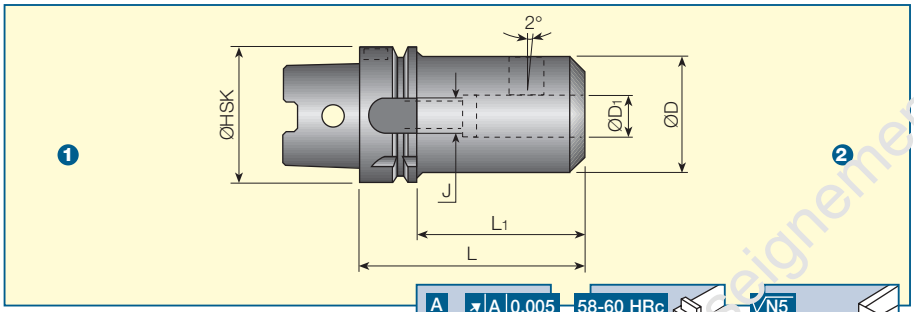
1. **HSK DIN 69893 Form A**
2. **DIN 6355**

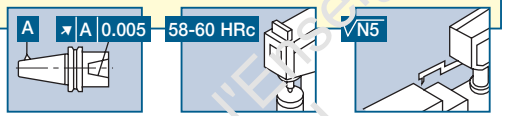
Designation Désignation Bezeichnung	HSK-A	D_1	L	D	L_1	J
HSK A 50 EM 6 E	50	6	80	25	54	M8
HSK A 50 EM 8 E	50	8	80	28	54	M10
HSK A 50 EM 10 E	50	10	80	35	54	M8
HSK A 50 EM 12 E	50	12	90	42	64	M10
HSK A 50 EM 14 E	50	14	90	44	64	M10
HSK A 50 EM 16 E	50	16	90	48	64	M12
HSK A 50 EM 18 E	50	18	90	50	64	M12
HSK A 50 EM 20 E	50	20	100	52	74	M16
HSK A 63 EM 6 E	63	6	80	25	54	M8
HSK A 63 EM 8 E	63	8	80	28	54	M10
HSK A 63 EM 10 E	63	10	80	35	54	M8
HSK A 63 EM 12 E	63	12	90	42	64	M10
HSK A 63 EM 14 E	63	14	90	44	64	M10
HSK A 63 EM 16 E	63	16	100	48	74	M12
HSK A 63 EM 18 E	63	18	100	50	74	M12
HSK A 63 EM 20 E	63	20	100	52	74	M16
HSK A 63 EM 25 E	63	25	110	65	84	M20
HSK A 63 EM 32 E	63	32	110	72	84	M20


118 118 115 115



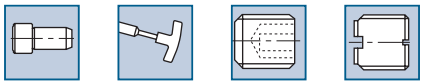
- **End Mill Holder Whistle Notch - DIN 1835 Form E**
- **Mandrins Porte-Fraises avec méplat en pente DIN 1835-E**
- **Aufnahmen für Zylinderschäfte mit Whistle Notch Fläche DIN 1835 Form E**



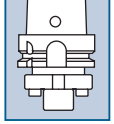


1. **HSK DIN 69893 Form A**
2. **DIN 6355**

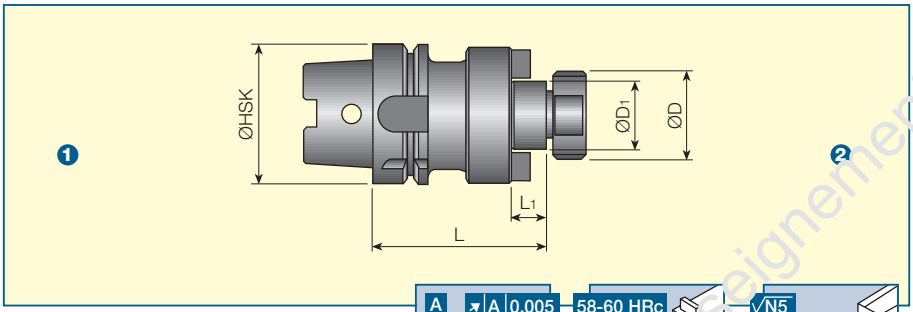
Designation Désignation Bezeichnung	HSK-A	D_1	L	D	L_1	J
HSK A 100 EM 6 E	100	6	90	25	61	M8
HSK A 100 EM 8 E	100	8	90	28	61	M10
HSK A 100 EM 10 E	100	10	90	35	61	M8
HSK A 100 EM 12 E	100	12	100	42	71	M10
HSK A 100 EM 14 E	100	14	100	44	71	M10
HSK A 100 EM 16 E	100	16	100	48	71	M12
HSK A 100 EM 18 E	100	18	100	50	71	M12
HSK A 100 EM 20 E	100	20	110	52	81	M16
HSK A 100 EM 25 E	100	25	120	65	91	M20
HSK A 100 EM 32 E	100	32	120	72	91	M20



118 118 115 115



- **Shell End Mill Holder**
- **Mandrins Porte-Fraises à Alésage**
- **Aufsteckfräserdorne für Fräser mit Quernut**

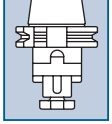


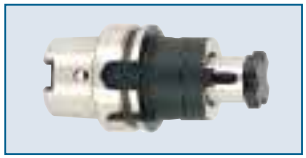
1. **HSK DIN 69893 Form A**
2. **ISO 3937**

Designation Désignation Bezeichnung	HSK-A	D_1	L	D	L_1
HSK A 50 SEM 16	50	16	50	38	17
HSK A 50 SEM 22	50	22	50	47	19
HSK A 50 SEM 27	50	27	50	58	21
HSK A 63 SEM 16	63	16	50	38	17
HSK A 63 SEM 22	63	22	50	47	19
HSK A 63 SEM 27	63	27	60	58	21
HSK A 63 SEM 32	63	32	60	66	24
HSK A 63 SEM 40	63	40	60	82	27
HSK A 100 SEM 22	100	22	50	47	19
HSK A 100 SEM 27	100	27	50	58	21
HSK A 100 SEM 32	100	32	50	66	24
HSK A 100 SEM 40	100	40	60	82	27
HSK A 100 SEM 50	100	50	70	95	30
HSK A 100 SEM 60 (1)	100	60	70	128	40

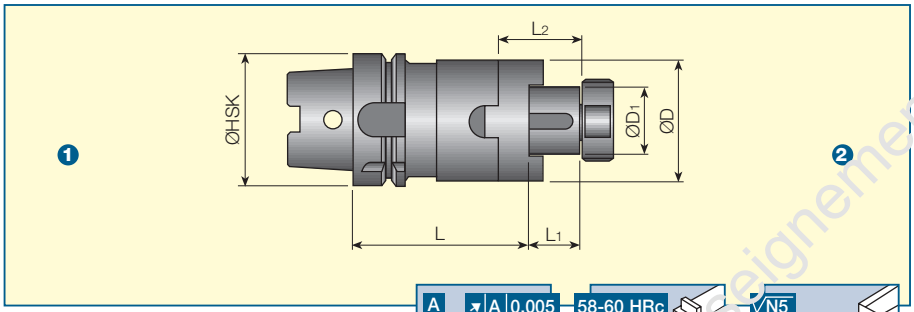
(1) ● Face Mill DIN 6357
(1) ● Fraise à Alésage DIN 6357
(1) ● Planfräser DIN 6357

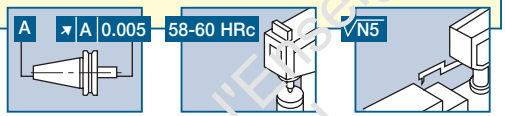
118 118 116





- **COMBI - Shell End Mill Holder**
- **COMBI - Mandrins Porte-Fraises Combinés**
- **COMBI - Aufsteckfräserdorne**

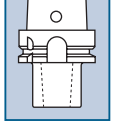


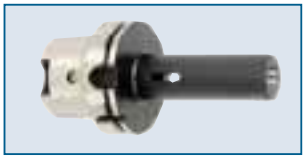


1 HSK DIN 69893 Form A
2 DIN 6358

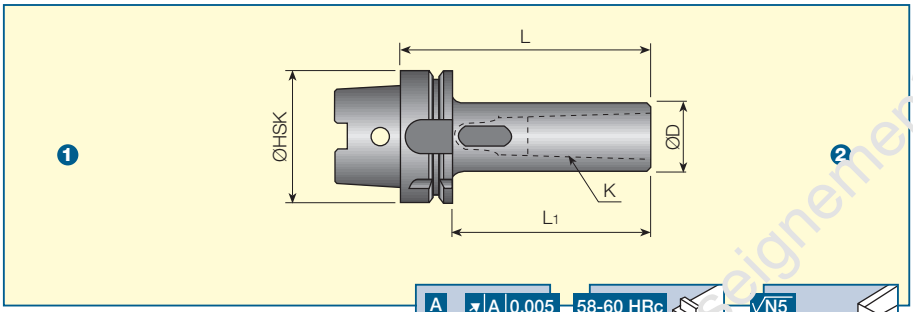
Designation Désignation Bezeichnung	HSK-A	D_1	L	D	L_1	L_2
HSK A 50 SMC 16X50	50	16	50	32	17	27
HSK A 50 SMC 22X50	50	22	50	40	19	31
HSK A 50 SMC 27X65	50	27	65	48	21	33
HSK A 50 SMC 32X65	50	32	65	58	24	38
HSK A 63 SMC 16X60	63	16	60	32	17	21
HSK A 63 SMC 22X60	63	22	60	40	19	31
HSK A 63 SMC 27X60	63	27	60	48	21	33
HSK A 63 SMC 32X60	63	32	60	58	24	38
HSK A 63 SMC 40X70	63	40	70	70	27	41
HSK A 100 SMC 16X60	100	16	60	32	17	27
HSK A 100 SMC 22X60	100	22	60	40	19	31
HSK A 100 SMC 27X60	100	27	60	48	21	33
HSK A 100 SMC 32X60	100	32	60	58	24	38
HSK A 100 SMC 40X70	100	40	70	70	27	41
HSK A 100 SMC 50X80	100	50	80	90	30	46

118 118 116 117





- **Morse Taper Adapter Tang DIN 228-2 Form D**
- **Réductions HSK / Cône Morse avec tenon DIN 228-2- D**
- **Zwischenhülen für Morsekegel mit Austreiblappen**



1. **HSK DIN 69893 Form A**
2. **DIN 6383**

Designation Désignation Bezeichnung	HSK-A	K	D	L	L_1
HSK A 50 MT1X100	50	1	25	100	74
HSK A 50 MT2X120	50	2	32	120	94
HSK A 50 MT3X140	50	3	40	140	114
HSK A 63 MT1X110	63	1	25	110	84
HSK A 63 MT2X120	63	2	32	120	94
HSK A 63 MT3X140	63	3	40	140	114
HSK A 63 MT4X160	63	4	48	160	134
HSK A 100 MT1X110	100	1	25	110	81
HSK A 100 MT2X120	100	2	32	120	91
HSK A 100 MT3X150	100	3	40	150	121
HSK A 100 MT4X170	100	4	48	170	141
HSK A 100 MT5X200	100	5	63	200	171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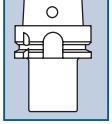
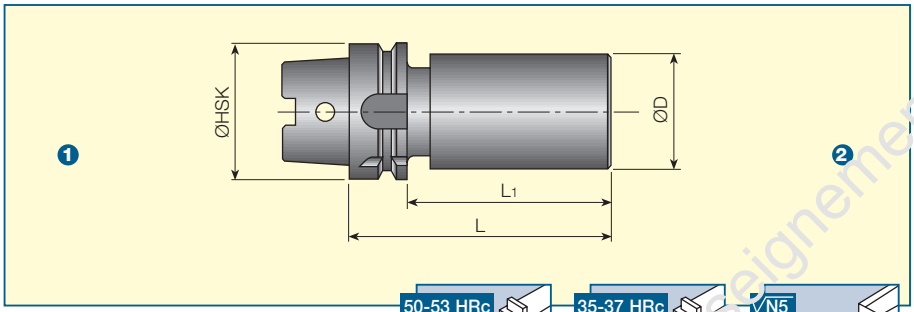
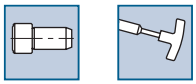


- **Semi-Finished Boring Bars**
- **Ebauches**
- **Werkzeugrohlinge**



1 HSK DIN 69893 Form A
2 DIN 6383

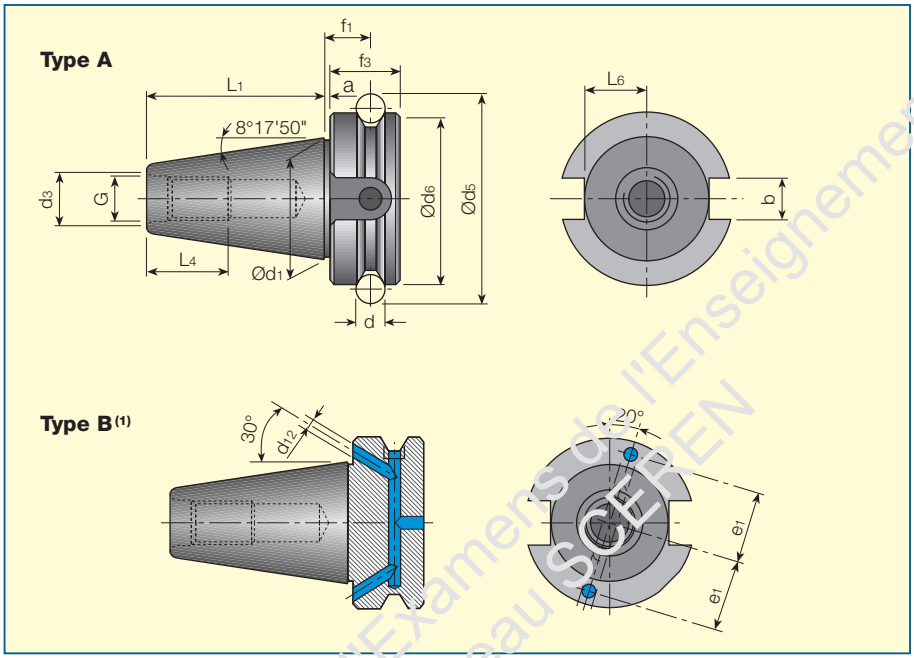
Designation Désignation Bezeichnung	HSK-A	D	L	L_1
HSK A 50 BL 53X74	50	53	100	74
HSK A 50 BL 53X174	50	53	200	174
HSK A 63 BL 63X74	63	63	100	74
HSK A 63 BL 63X174	63	63	200	174
HSK A 100 BL 102X71	100	102	100	71
HSK A 100 BL 102X171	100	102	200	171



118 118

BT MAS - 403

- **Toolholder Norms**
- **Norme des Attachements**
- **Norm der Steikegelschäfte**



BT MAS – 403

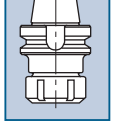
Shank Taille Aufnahme	a	b (H_{12})	d	d_1	G	d_3 (H_8)	d_5	d_6 (H_8)	f_1 ±0.1
BT30	2	16.1	8	31.75	M12	1.5	56.144	46	13.6
BT40	2	19.1	10	44.45	M16	17	75.679	63	16.6
BT50	3	25.7	15	69.85	M24	25	119.020	100	23.2

Shank Taille Aufnahme	F_3	L_1 ±0.2	L_4 MIN	L_6 -0.2	e1 ±0.1	d_{12}	TAPER AT3 CÔNE AT3 Konus AT3
BT30	20	48.4	24	16.3	21	4	0.002
BT40	25	65.4	30	22.6	35	4	0.003
BT50	35	101.8	45	35.4	42	6	0.004

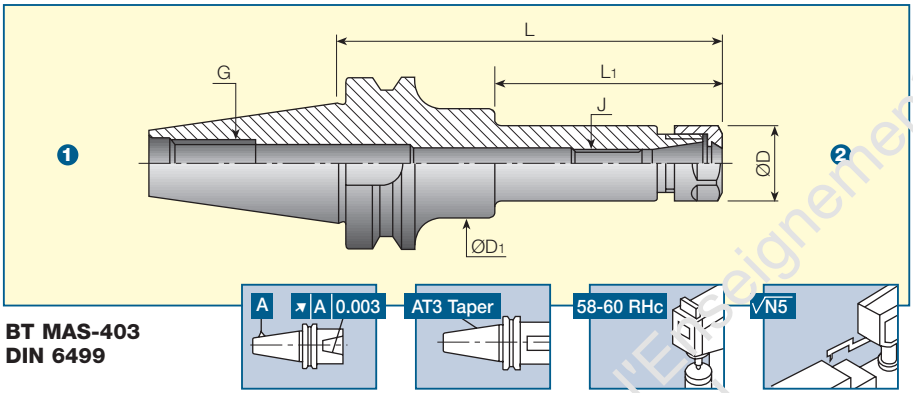
(1) ● Coolant through flange

(1) ● Forme B avec Lubrification par la collerette

(1) ● Kühlmittelzufuhr durch Bund



- **Collet Chuck ER Type 16, 20**
- **Mandrins à Pinces Type ER 16, 20**
- **Spannzangenfutter Typ ER 16, 20**

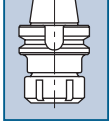


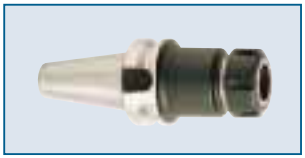
1. **BT MAS-403**
2. **DIN 6499**

Designation Désignation Bezeichnung	Range Gamme Bereich	L	J	D	D1	G	J
BT30 C.CHK ER 16X70(1)	0.5-10	70		28		M12	M10
BT30 C.CHK ER 20X70(1)	1-13	70		34		M12	M12
BT40 C.CHK ER 16X70(1)	0.5-10	70		28		M16	M10
BT40 C.CHK ER 16X100(1)	0.5-10	100		28		M16	M10
BT40 C.CHK ER 16X150(1)	0.5-10	150	85	28	40	M16	M10
BT40 C.CHK ER 16X200(1)	0.5-10	200	85	28	40	M12	M10
BT40 C.CHK ER 20X70(1)	1-13	70		34		M16	M12
BT40 C.CHK ER 20X100(1)	1-13	100		34		M16	M12
BT40 C.CHK ER 20X150(1)	1-13	150		34		M16	M12
BT50 C.CHK ER 16X100(1)	0.5-10	100		28		M24	M12
BT50 C.CHK ER 16X150(1)	0.5-10	150		28		M24	M10
BT50 C.CHK ER 16X200(1)	0.5-10	200	85	28	40	M24	M10
BT50 C.CHK ER 20X100(1)	1-13	100		34		M24	M12
BT50 C.CHK ER 20X150(1)	1-13	150		34		M24	M12

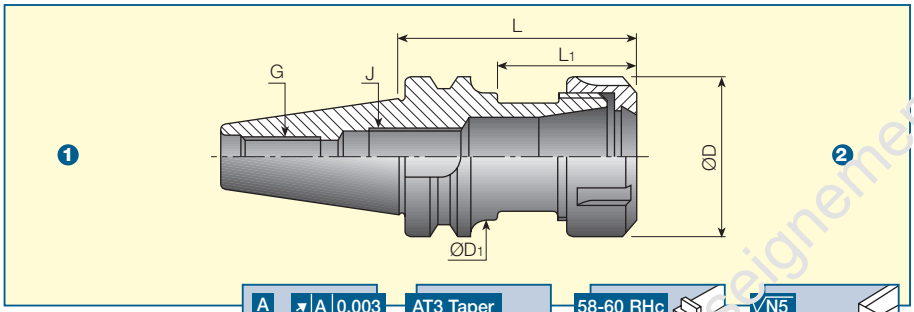
(1) ● Add B for coolant through flange
(1) ● Ajouter B pour Lubrification par la collerette
(1) ● Zusatz B für Kühlmittelzufuhr durch Bund

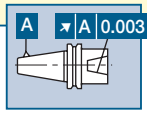
112 114 90-95 115

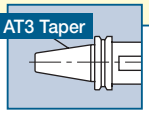


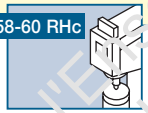


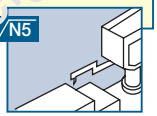
- **Collet Chuck ER Type 25, 32, 40, 50**
- **Mandrins à Pinces Type ER 25, 32, 40, 50**
- **Spannzangenfutter Typ ER 25, 32, 40, 50**









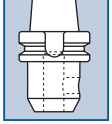


1. **BT MAS – 403**
2. **DIN 6499**

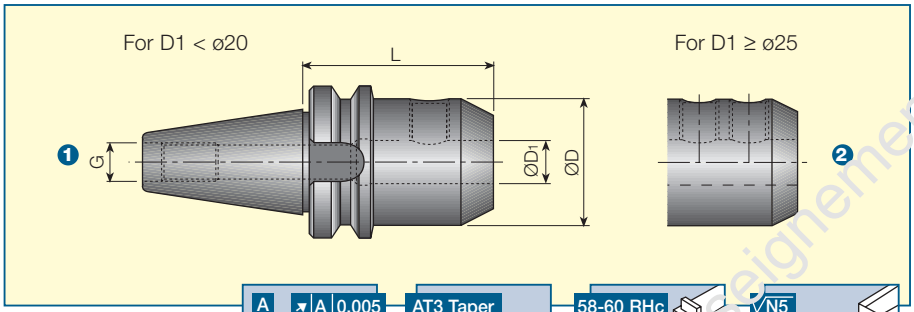
Designation Désignation Bezeichnung	Range Gamme Bereich	L	L1	D	D1	G	J
BT30 C.CHK ER 32X60 (1)	2-20	60		50		M12	M18x1.5
BT30 C.CHK ER 25X60 (1)	1-16	60		42		M12	M12x2
BT40 C.CHK ER 25X60 (1)	1-16	60		42		M16	M12x2
BT40 C.CHK ER 25X100 (1)	1-16	100		42		M16	M12x2
BT40 C.CHK ER 25X150 (1)	1-16	150		42		M16	M12x2
BT40 C.CHK ER 32X60 (1)	2-20	60		50		M16	M22x1.5
BT40 C.CHK ER 32X100 (1)	2-20	100		50		M16	M22x1.5
BT40 C.CHK ER 32X150 (1)	2-20	150		50		M16	M22x1.5
BT40 C.CHK ER 40X80 (1)	3-26	80		63		M16	M28x1.5
BT40 C.CHK ER 40X100 (1)	3-26	100		63		M16	M28x1.5
BT40 C.CHK ER 40X150 (1)	3-26	150		63		M16	M28x1.5
BT40 C.CHK ER 50X90 (1)	10-34	90		78		M16	M28x1.5
BT50 C.CHK ER 25X100 (1)	1-16	100		42		M24	M12x2
BT50 C.CHK ER 25X150 (1)	1-16	150		42		M24	M12x2
BT50 C.CHK ER 25X200 (1)	1-16	200	85	42	63	M24	M12x2
BT50 C.CHK ER 32X100 (1)	2-20	100		50		M24	M22x1.5
BT50 C.CHK ER 32X150 (1)	2-20	150		50		M24	M22x1.5
BT50 C.CHK ER 32X200 (1)	2-20	200	85	50	63	M24	M22x1.5
BT50 C.CHK ER 40X100 (1)	3-26	100		63		M24	M28x1.5
BT50 C.CHK ER 40X150 (1)	3-26	150		63		M24	M28x1.5
BT50 C.CHK ER 40X200 (1)	3-26	200		63		M24	M28x1.5
BT50 C.CHK ER 50X100 (1)	10-34	100		78		M24	M36x1.5
BT50 C.CHK ER 50X150 (1)	10-34	150		78		M24	M36x1.5

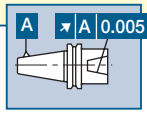
(1) Add B for coolant through flange
(1) Ajouter B pour Lubrification par la collerette
(1) Zusatz für Kühlmittelzufuhr durch Bund

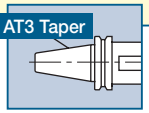
112 114 90-95 115

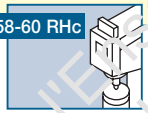


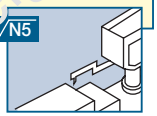
- **End Mill Holder Weldon - DIN 1835 Form B**
- **Mandrins Porte-Fraises à queue weldon - DIN 1835-B**
- **Aufnahmen mit Steilkegel für Zylinderschäfte mit seitlicher Mitnahmefläche**











1. **BT MAS – 403**
2. **DIN 6359**

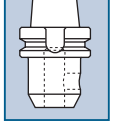
Designation Désignation Bezeichnung	D_1	L	D	G
BT30 EM 6X50	6	50	25	M12
BT30 EM 8X60	8	60	28	M12
BT30 EM 10X60	10	60	35	M12
BT30 EM 12X60	12	60	42	M12
BT30 EM 14X60	14	60	44	M12
BT30 EM 16X60	16	60	48	M12
BT30 EM 18X60	18	60	50	M12
BT30 EM 20X80	20	80	52	M12
BT40 EM 6X50 (1)	6	50	25	M16
BT40 EM 8X50 (1)	8	50	28	M16
BT40 EM 10X65 (1)	10	65	35	M16
BT40 EM 12X65 (1)	12	65	42	M16
BT40 EM 14X65 (1)	14	65	44	M16
BT40 EM 16X65 (1)	16	65	48	M16
BT40 EM 18X65 (1)	18	65	50	M16
BT40 EM 20X75 (1)	20	75	52	M16
BT40 EM 25X105 (1)	25	105	65	M16
BT40 EM 32X110 (1)	32	110	72	M16

(1) Add B for coolant through flange

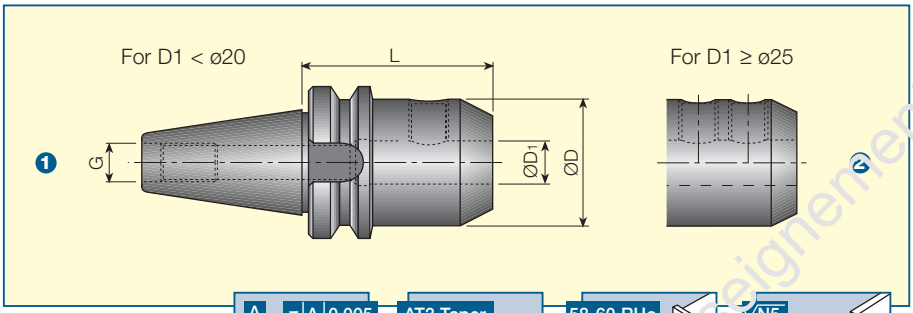
(1) Ajouter B pour Lubrification par la collerette

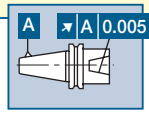
(1) Zusatz für Kühlmittelzufuhr durch Bund

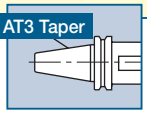
115

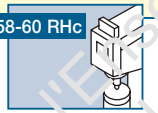


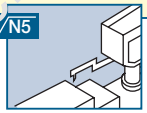
- **End Mill Holder Weldon - DIN 1835 Form B**
- **Mandrins Porte-Fraises à queue weldon - DIN 1835-B**
- **Aufnahme mit Steilkegel für Zylinderschäfte mit seitlicher Mitnahmefläche**









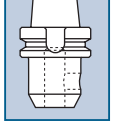


1 **BT MAS – 403**
2 **DIN 6359**

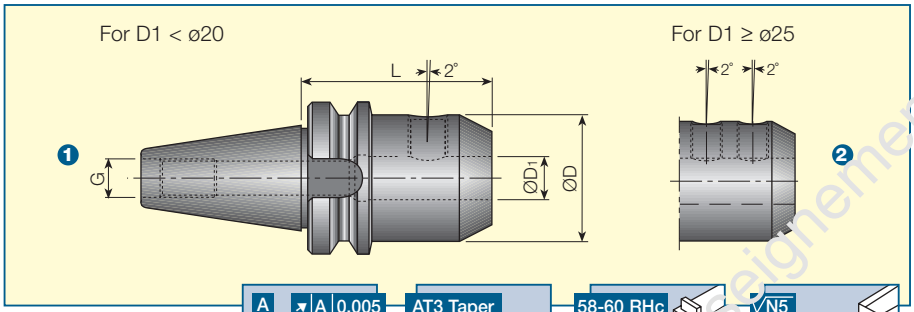
Designation Désignation Bezeichnung	D_1	L	D	G
BT50 EM 6X70 (1)	6	70	25	M24
BT50 EM 8X70 (1)	8	70	28	M24
BT50 EM 10X70 (1)	10	70	35	M24
BT50 EM 12X100 (1)	12	100	42	M24
BT50 EM 14X100 (1)	14	100	44	M24
BT50 EM 16X100 (1)	16	100	48	M24
BT50 EM 18X100 (1)	18	100	50	M24
BT50 EM 20X100 (1)	20	100	52	M24
BT50 EM 25X115 (1)	25	115	65	M24
BT50 EM 32X115 (1)	32	115	72	M24
BT50 EM 40X115 (1)	40	115	90	M24
BT50 EM 50X125 (1)	50	125	100	M24

(1) Add B for coolant through flange
(1) Ajouter B pour Lubrification par la collerette
(1) Zusatz für Kühlmittelzufuhr durch Bund

115



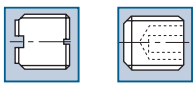
- **End Mill Holder Whistle Notch - DIN 1835 Form E**
- **Mandrins Porte-Fraises avec méplat en pente DIN 1835-E**
- **Aufnahmen für Zylinderschäfte mit Whistle Notch Fläche DIN 1835 Form E**



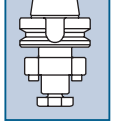
1. **BT MAS – 403**
2. **DIN 6359**

Designation Désignation Bezeichnung	D1	L	D	G	J
BT40 EM 6X50 E(1)	6	50	25	M16	M8
BT40 EM 8X50 E(1)	8	50	28	M16	M10
BT40 EM 10X65 E(1)	10	65	35	M16	M10
BT40 EM 12X65 E(1)	12	65	42	M16	M12
BT40 EM 14X65 E(1)	14	65	44	M16	M12
BT40 EM 16X65 E(1)	16	65	48	M16	M14
BT40 EM 18X65 E(1)	18	65	50	M16	M14
BT40 EM 20X75 E(1)	20	75	52	M16	M16
BT40 EM 25X105 E(1)	25	105	65	M16	M18
BT40 EM 32X110 E(1)	32	110	72	M16	M20
BT50 EM 6X70 E(1)	6	70	25	M24	M8
BT50 EM 8X70 E(1)	8	70	28	M24	M10
BT50 EM 10X70 E(1)	10	70	35	M24	M10
BT50 EM 12X100 E(1)	12	100	42	M24	M12
BT50 EM 14X100 E(1)	14	100	44	M24	M12
BT50 EM 16X100 E(1)	16	100	48	M24	M14
BT50 EM 18X100 E(1)	18	100	50	M24	M14
BT50 EM 20X100 E(1)	20	100	52	M24	M16
BT50 EM 25X115 E(1)	25	115	65	M24	M18
BT50 EM 32X115 E(1)	32	115	72	M24	M20
BT50 EM 40X115 E(1)	40	115	90	M24	M20
BT50 EM 50X125 E(1)	50	125	100	M24	M24

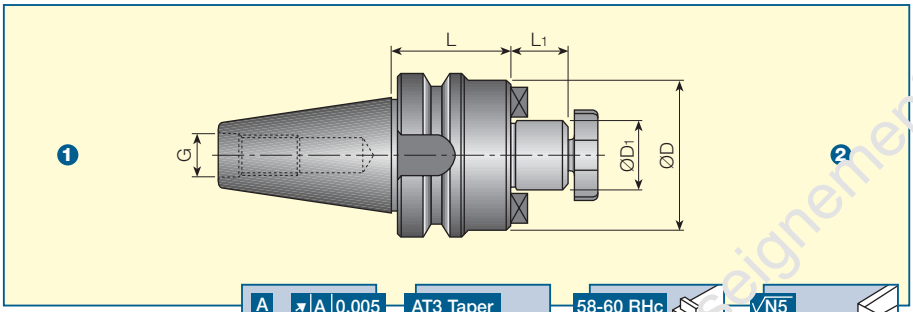
(1) ● Add B for coolant through flange
(1) ● Ajouter B pour Lubrification par la collerette
(1) ● Zusatz für Kühlmittelzufuhr durch Bund

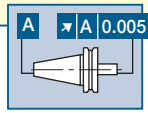


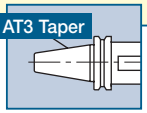
115 115

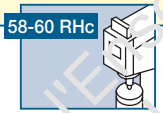


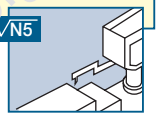
- **Shell End Mill Holder**
- **Mandrins Porte-Fraises à Alésage**
- **Aufsteckfräserdorne für Fräser mit Quernut**







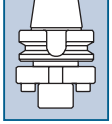




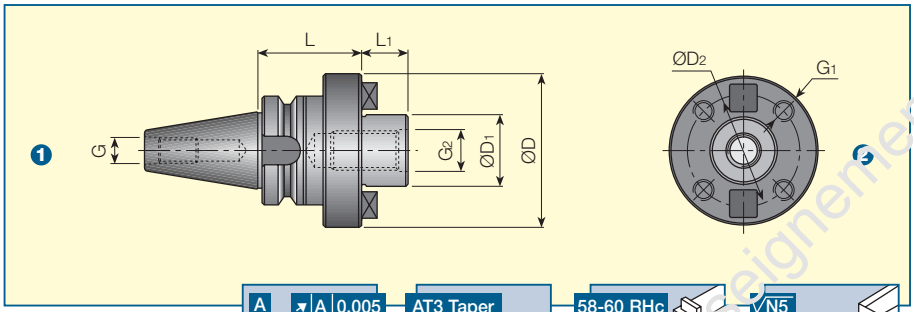
1 **BT MAS – 403**
2 **ISO 3937**

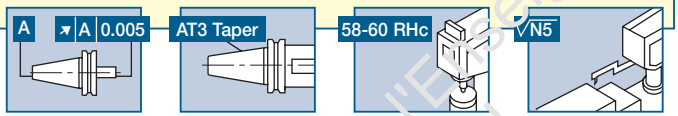
Designation Désignation Bezeichnung	D_1	D	L_1	L	G
BT30 SEM 16X50	16	38	17	50	M12
BT30 SEM 22X50	22	47	19	50	M12
BT30 SEM 27X50	27	58	21	50	M12
BT40 SEM 16X60	16	38	17	60	M16
BT40 SEM 16X120	16	38	17	120	M16
BT40 SEM 22X60	22	47	19	60	M16
BT40 SEM 22X120	22	47	19	120	M16
BT40 SEM 27X45	27	58	21	45	M16
BT40 SEM 27X105	27	58	21	105	M16
BT40 SEM 32X60	32	66	24	60	M16
BT40 SEM 32X75	32	66	24	75	M16
BT40 SEM 40X60	40	82	27	60	M16
BT40 SEM 40X75	40	82	27	75	M16
BT50 SEM 16X75	16	38	17	75	M24
BT50 SEM 16X120	16	38	17	120	M24
BT50 SEM 22X75	22	47	19	75	M24
BT50 SEM 22X120	22	47	19	120	M24
BT50 SEM 27X60	27	58	21	60	M24
BT50 SEM 27X105	27	58	21	105	M24
BT50 SEM 32X48	32	66	24	48	M24
BT50 SEM 32X75	32	66	24	75	M24
BT50 SEM 40X48	40	82	27	48	M24
BT50 SEM 40X75	40	82	27	75	M24
BT50 SEM 50X60	50	95	30	60	M24

116 114



- **Face Mill Holder**
- **Mandrins Porte-Fraises à Alésage**
- **Aufnahmedorne für Fräser mit Innenzentrierung**

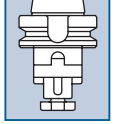




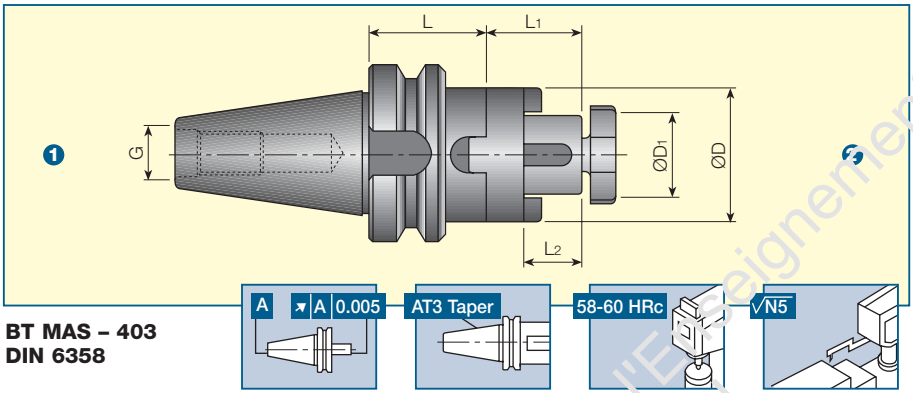
1. **BT MAS – 403**
2. **DIN 6357**

Designation Désignation Bezeichnung	D_1	L	L_1	D	D_2	G	G_1	G_2
BT40 FM 40	40	50	27	88	66.7	M16	M12	M20
BT50 FM 40	40	50	27	88	66.7	M24	M12	M20
BT50 FM 60	60	88	38	128	101.6	M24	M16	

116 114



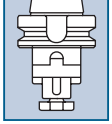
- **COMBI - Shell End Mill Holder**
- **COMBI - Mandrins Porte-Fraises Combinés**
- **COMBI - Aufsteckfräserdorne**



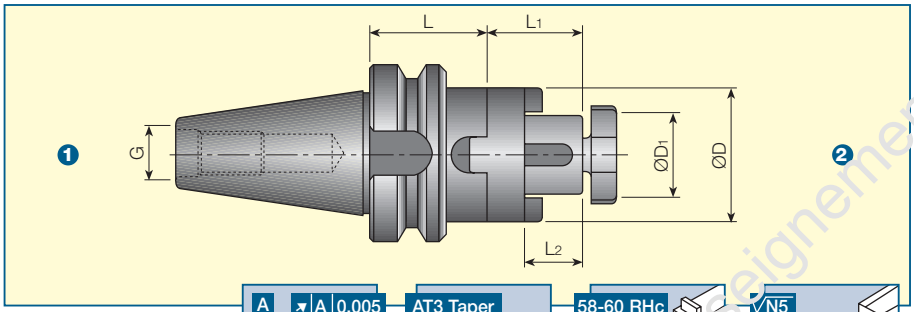
1. **BT MAS – 403**
2. **DIN 6358**

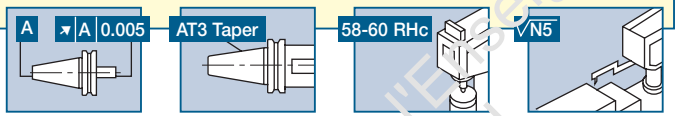
Designation Désignation Bezeichnung	D_1	L	L_1	L_2	D	G
BT40 SMC 16X50	16	50	27	17	32	M16
BT40 SMC 16X100	16	100	27	17	32	M16
BT40 SMC 22X53	22	53	31	19	40	M16
BT40 SMC 22X100	22	100	31	19	40	M16
BT40 SMC 27X55	27	55	38	21	48	M16
BT40 SMC 27X100	27	100	38	21	48	M16
BT40 SMC 32X60	32	60	38	24	58	M16
BT40 SMC 32X100	32	100	38	24	58	M16
BT40 SMC 40X80	40	80	41	27	70	M16

114 116 117



- **COMBI - Shell End Mill Holder**
- **COMBI - Mandrins Porte-Fraises Combinés**
- **COMBI - Aufsteckfräserdorne**

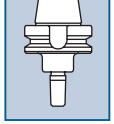




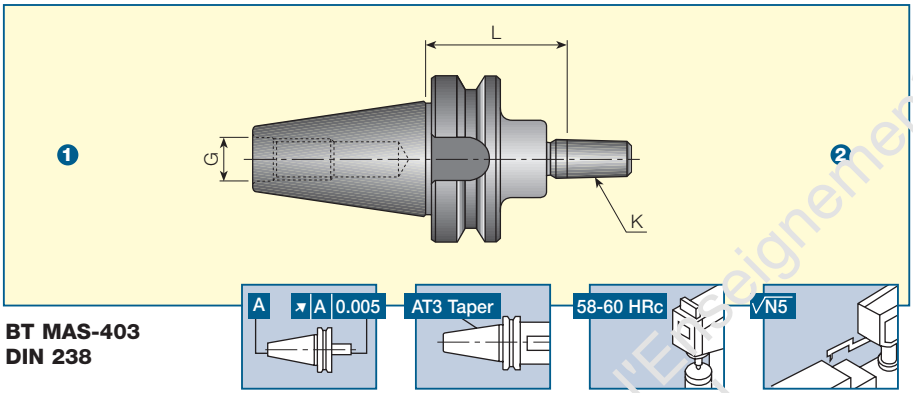
1. **BT MAS – 403**
2. **DIN 6358**

Designation Désignation Bezeichnung	D_1	L	L_1	L_2	D	G
BT50 SMC 16X65	16	65	27	17	32	M24
BT50 SMC 16X100	16	100	27	17	32	M24
BT50 SMC 16X150	16	150	27	17	32	M24
BT50 SMC 22X68	22	68	31	19	40	M24
BT50 SMC 22X100	22	100	31	19	40	M24
BT50 SMC 22X150	22	150	31	19	40	M24
BT50 SMC 27X78	27	78	33	21	48	M24
BT50 SMC 27X100	27	100	33	21	48	M24
BT50 SMC 27X150	27	150	33	21	48	M24
BT50 SMC 32X78	32	78	38	24	58	M24
BT50 SMC 32X100	32	100	38	24	58	M24
BT50 SMC 32X150	32	150	38	24	58	M24
BT50 SMC 40X78	40	78	41	27	70	M24
BT50 SMC 40X100	40	100	41	27	70	M24
BT50 SMC 40X150	40	150	41	27	70	M24
BT50 SMC 50X79	50	79	46	30	90	M24
BT50 SMC 50X100	50	100	46	30	90	M24
BT50 SMC 50X150	50	150	46	30	90	M24

114 116 117

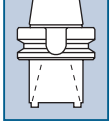


- **Drill Chuck Arbor**
- **Attachements pour Mandrins de Perceuses**
- **Bohrfutter-Aufnahme**

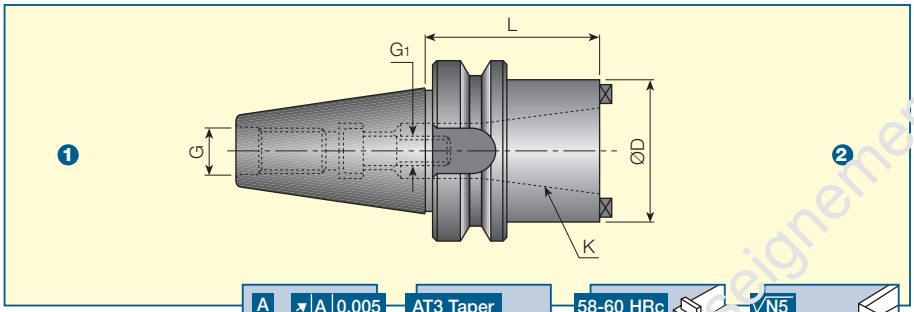


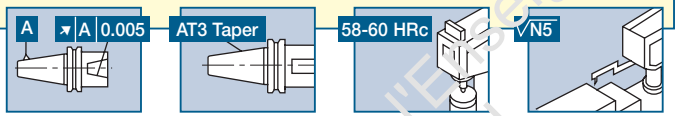
❶ **BT MAS-403**
❷ **DIN 238**

Designation Désignation Bezeichnung	K	L	G
BT30 D.CHK B12X30	B12	30	M12
BT30 D.CHK B16X30	B16	30	M12
BT40 D.CHK B12X45	B12	45	M16
BT40 D.CHK B12X90	B12	90	M16
BT40 D.CHK B16X45	B16	45	M16
BT40 D.CHK B16X90	B16	90	M16
BT40 D.CHK B18X45	B18	45	M16
BT40 D.CHK B18X90	B18	90	M16
BT50 D.CHK B12X45	B12	45	M24
BT50 D.CHK B12X105	B12	105	M24
BT50 D.CHK B16X45	B16	45	M24
BT50 D.CHK B16X105	B16	105	M24
BT50 D.CHK B18X45	B18	45	M24
BT50 D.CHK B18X105	B18	105	M24



- **Adapters**
- **Réductions BT / Cône SA**
- **Reduzierhülsen**

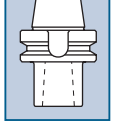




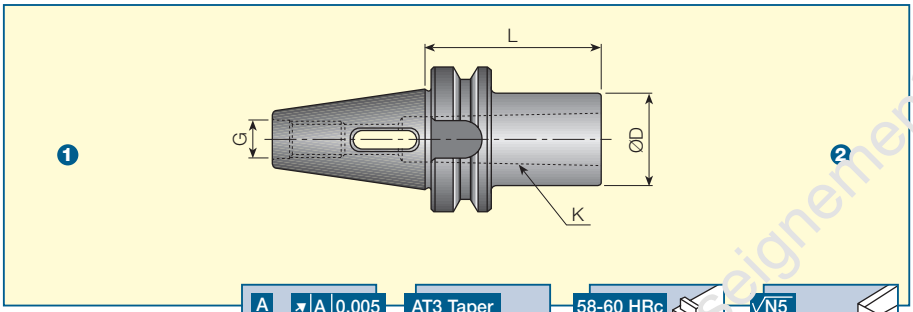
1 **BT MAS – 403**

2 **DIN 2080 –**
DIN 69871/A
BT MAS – 403

Designation Désignation Bezeichnung	K	L	D	G1	G
BT40 AD 30 DIN1080 **BT40 AD BT30**	DIN 2080 DIN 69871/A, BT MAS	60 60	50 50	M12 M12	M16 M16
BT50 AD 40 DIN2080 **BT50 AD BT 40**	DIN 2080 DIN 69871/A, BT MAS	75 75	70 70	M16 M16	M24 M24

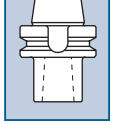


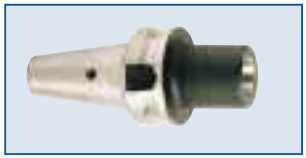
- **Morse Taper Adapter Tang DIN 228-2 Form D**
- **Réductions BT / Cône Morse avec chasse cône DIN 228-2-D**
- **Zwischenhülsen für Morsekegel mit Austreiblappen**



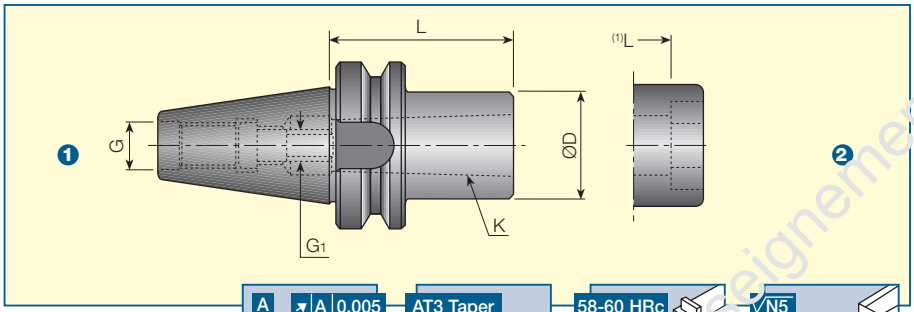
1 **BT MAS – 403**
2 **DIN 6383**

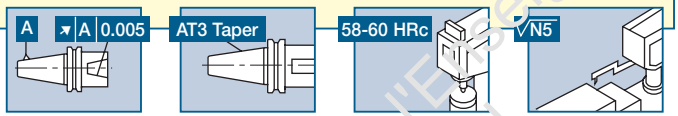
Designation Désignation Bezeichnung	K	L	D	G
BT30 MT1X45	MT1	45	25	M12
BT30 MT2X60	MT2	60	32	M12
BT40 MT1X45	MT1	45	25	M16
BT40 MT1X120	MT1	120	25	M16
BT40 MT2X60	MT2	60	32	M16
BT40 MT2X120	MT2	120	32	M16
BT40 MT3X75	MT3	75	40	M16
BT40 MT3X139	MT3	139	40	M16
BT40 MT4X95	MT4	95	50	M16
BT50 MT1X45	MT1	45	25	M24
BT50 MT1X120	MT1	120	25	M24
BT50 MT1X180	MT1	180	25	M24
BT50 MT2X45	MT2	45	32	M24
BT50 MT2X135	MT2	135	32	M24
BT50 MT2X180	MT2	180	32	M24
BT50 MT3X45	MT3	45	40	M24
BT50 MT3X150	MT3	150	40	M24
BT50 MT3X180	MT3	180	40	M24
BT50 MT4X75	MT4	75	50	M24
BT50 MT4X180	MT4	180	50	M24
BT50 MT5X105	MT5	105	70	M24





- **Morse Taper Adapter Draw Bar DIN 228-2 Form B**
- **Réductions BT / Cône Morse fileté DIN 228-2-B**
- **Zwischenhülsen für Morsekegel mit Anzugsgewinde**

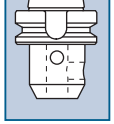




1 BT MAS – 403
2 DIN 6364

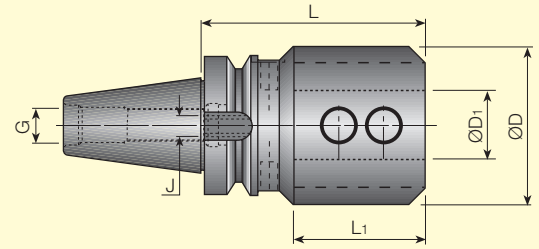
Designation Désignation Bezeichnung	K	L	D	G1	G
BT40 MT1 DRW	MT1	50	25	M6	M16
BT40 MT2 DRW	MT2	50	32	M10	M16
BT40 MT3 DRW	MT3	70	40	M12	M16
BT40 MT4 DRW	MT4	95	63	M16	M16
BT50 MT1 DRW	MT1	45	25	M6	M24
BT50 MT2 DRW	MT2	60	32	M10	M24
BT50 MT3 DRW	MT3	65	40	M12	M24
BT50 MT4 DRW	MT4	70	63	M16	M24
BT50 MT5 DRW	MT5	100	78	M20	M24

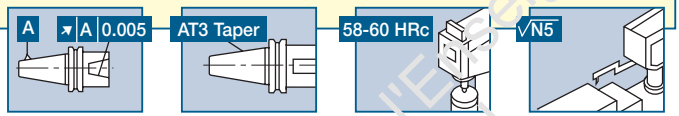
(1) ● MT4 & MT5 with DIN 2201
(1) ● MT4 & MT5 avec DIN 2201
(1) ● MT4 & MT5 mit DIN 2201



- **Adjustable Tool Holder for Indexable Insert Drills**
- **FITBORE - Attachements Réglables pour Forets à Plaquettes**
- **FITBORE - Aufnahmen für Bohrwerkzeuge, radial justierbar**

FITBORE





1. **Fitbore BT MAS – 403**
2. **Form A/B**

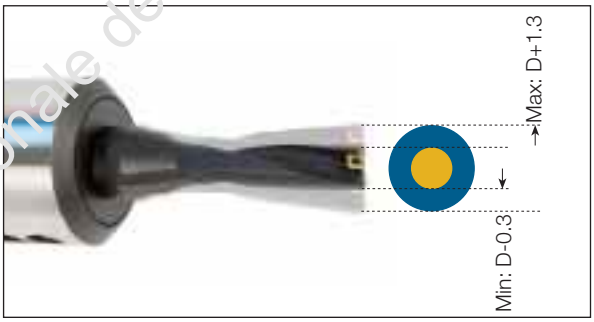
ISO 9766

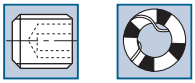
Designation Désignation Bezeichnung	D_1	L	D	G	L_1	J
FITBORE BT40 EM16 (1)	16	123	72	M16	70	M10
FITBORE BT40 EM20 (1)	20	123	72	M16	70	M10
FITBORE BT40 EM25 (1)	25	123	72	M16	70	M10
FITBORE BT40 EM32 (1)	32	123	72	M16	70	M10
FITBORE BT40 EM40 (1)	40	123	72	M16	70	M10
FITBORE BT50 EM16 (1)	16	134	72	M24	70	M10
FITBORE BT50 EM20 (1)	20	134	72	M24	70	M10
FITBORE BT50 EM25 (1)	25	134	72	M24	70	M10
FITBORE BT50 EM32 (1)	32	134	72	M24	70	M10
FITBORE BT50 EM40 (1)	40	134	72	M24	70	M10

(1) Add B for coolant through flange

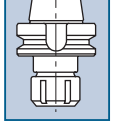
(1) Ajouter B pour Lubrification par la collerette

(1) Zusatz für Kühlmittelzufuhr durch Bund

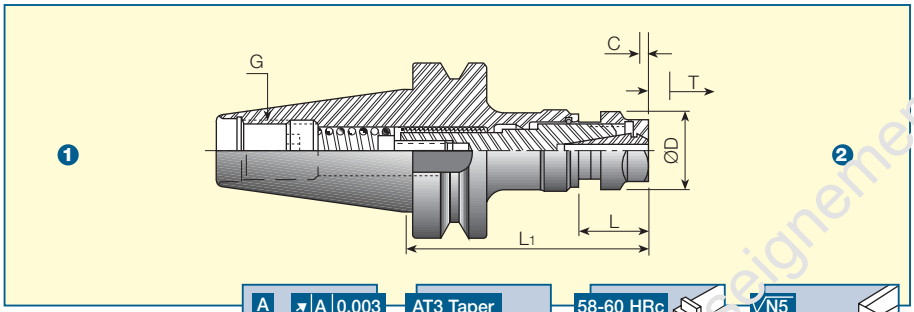


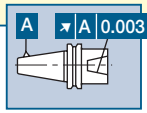


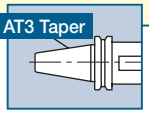
115 126

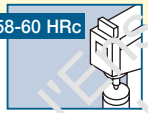


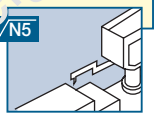
- **GTI ER Tapping Attachment**
- **GTI Appareils à Tarauder ER avec Compensations Axiale et Radiale**
- **GTI ER Gewindeschneidfutter für Spannzangen**











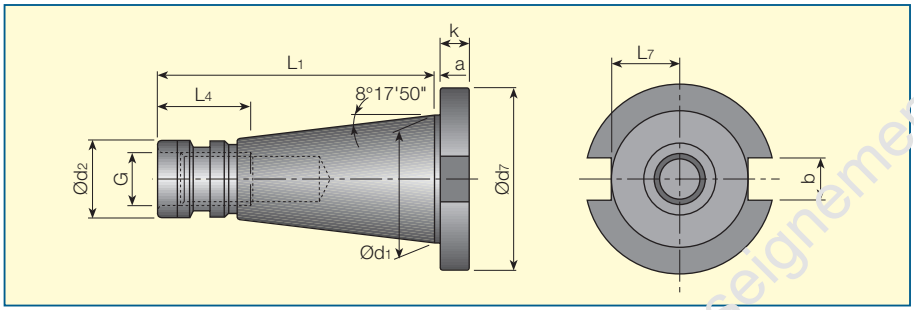
1. **BT MAS - 403**
2. **DIN 6499**

Designation Désignation Bezeichnung	Range Gamme Bereich	G	L_1	l	D	T	C
GTI BT40 ER16	M3-M10	M16	93	24	28	8	3
GTI BT40 ER32	M6-M20	M16	107	30	50	9	4
GTI BT40 ER40	M6-M28	M16	123	46	63	9	4
GTI BT50 ER16	M3-M10	M24	116	24	28	8	3
GTI BT50 ER32	M6-M20	M24	116	30	50	9	4
GTI BT50 ER40	M6-M28	M24	132	46	63	9	4

112 114 90-95 124

DIN 2080

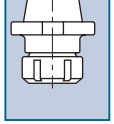
- **Toolholder Norm**
- **Norme des Attachements**
- **Norm der Steilkegelaufnahmen**

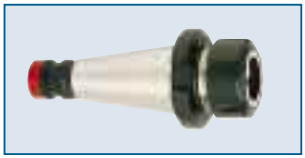


DIN 2080

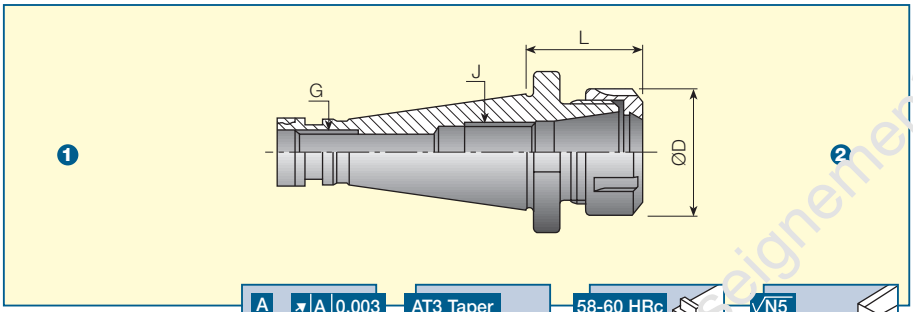
Shank Taille Aufnahme	a ±0.2	b (H_{12})	d_1	d_2	G	d_7	K ±0.15
SK 30	1.6	16.1	31.75	17.4	M12	50	8
SK 40	1.6	16.1	44.45	25.3	M16	63	10
SK 50	3.2	25.7	69.85	39.6	M24	97.5	12

Shank Taille Aufnahme	L_1	L_4	L_7 MAX	TAPER AT3 CÔNE AT3 Konus AT3
SK 30	68.4	24	16.2	0.002
SK 40	93.4	32	22.5	0.003
SK 50	126.8	47	35.3	0.004





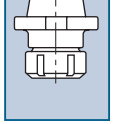
- **Collet Chuck ER type 25, 32, 40, 50**
- **Mandrins à Pinces Type ER 25, 32, 40, 50**
- **Spannzangenfutter Typ ER 25, 32, 40, 50**

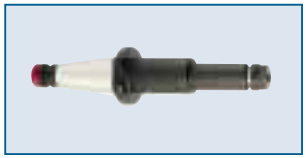


1 **DIN 2080**
2 **DIN 6499**

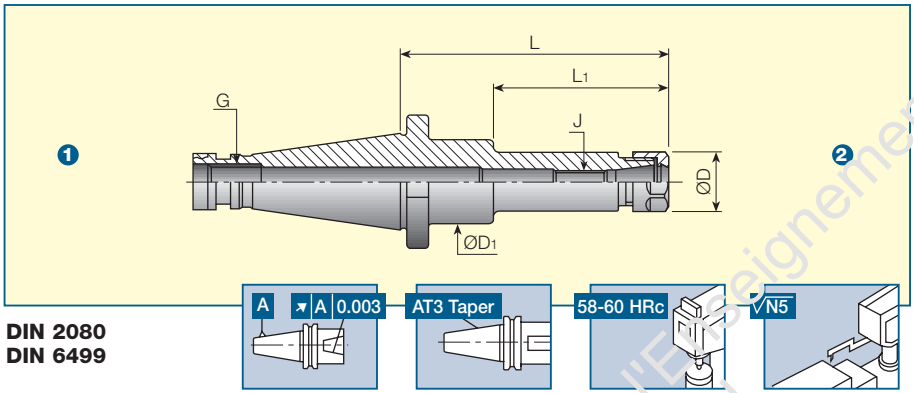
Designation Désignation Bezeichnung	Range Gamme Bereich	L	J	D	G
DIN2080 30 ER 32X55	2-20	55	M18x1.5	50	M12
DIN2080 30 ER 40X83	3-26	83	M22x1.5	63	M12
DIN2080 40 ER 25X50	1-16	50	M16x1.5	42	M16
DIN2080 40 ER 32X50	2-20	50	M22x1.5	50	M16
DIN2080 40 ER 40X55	3-26	55	M22x1.5	63	M16
DIN2080 40 ER 50X80	10-34	80	M22x1.5	78	M24
DIN2080 50 ER 40X58	3-26	58	M28x1.5	63	M24
DIN2080 50 ER 50X63	10-34	63	M36x1.5	78	M24

112 114 90-95 115





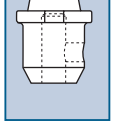
- **Collet Chuck ER type 16, 20**
- **Mandrins à Pinces Type ER 16,20**
- **Spannzangenfutter Typ ER**



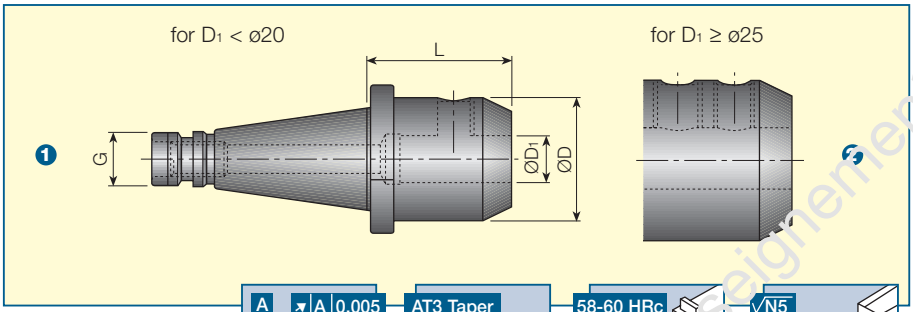
1 **DIN 2080**
2 **DIN 6499**

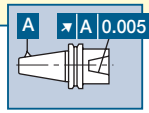
Designation Désignation Bezeichnung	Range Gamme Bereich	L	L1	J	D	D1	G
DIN2080 30 ER 16X75	0.5-10	75		M10	28		M12
DIN2080 40 ER 16X63	0.5-10	63		M12	28		M16
DIN2080 40 ER 16X100	0.5-10	100		M12	28		M16
DIN2080 40 ER 16X160	0.5-10	160	85	M12	28	40	M16
DIN2080 40 ER 20X63	1-12	63		M12	34		M16
DIN2080 40 ER 20X100	1-12	100		M12	34		M16
DIN2080 50 ER 16X100	0.5-10	100		M12	28		M24
DIN2080 50 ER 16X150	0.5-10	150	85	M12	28	40	M24
DIN2080 50 ER 20X100	1-12	100		M16	34		M24
DIN2080 50 ER 20X160	1-12	160	85	M12	34	45	M24

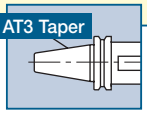
112 114 90-95 115

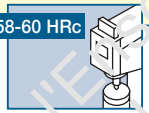


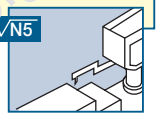
- **End Mill Holder Weldon - DIN 1835 Form B**
- **Mandrins Porte-Fraises à queue weldon - DIN 1835-B**
- **Aufnahmen mit Steilkegel für Zylinderschäfte mit seitlicher Mitnahmefläche**







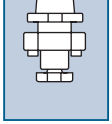




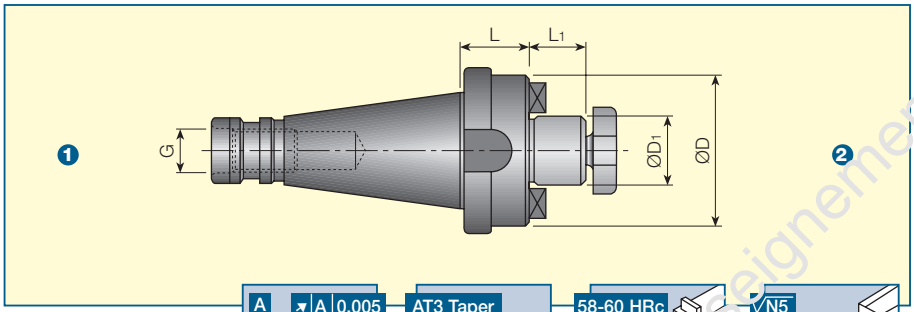
1 **DIN 2080**
2 **DIN 6359**

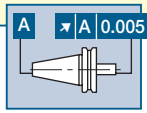
Designation Désignation Bezeichnung	D1	L	D	G
DIN2080 30 EM 6	6	40	25	M12
DIN2080 30 EM 8	8	40	28	M12
DIN2080 30 EM 10	10	40	35	M12
DIN2080 30 EM 12	12	40	42	M12
DIN2080 30 EM 16	16	50	48	M12
DIN2080 30 EM 20	20	63	52	M12
DIN2080 40 EM 6	6	50	25	M16
DIN2080 40 EM 8	8	50	28	M16
DIN2080 40 EM 10	10	50	35	M16
DIN2080 40 EM 12	12	50	42	M16
DIN2080 40 EM 16	16	63	48	M16
DIN2080 40 EM 20	20	63	52	M16
DIN2080 40 EM 25	25	80	65	M16
DIN2080 40 EM 32	32	80	72	M16
DIN2080 50 EM 6	6	63	25	M24
DIN2080 50 EM 8	8	63	28	M24
DIN2080 50 EM 10	10	63	35	M24
DIN2080 50 EM 12	12	63	42	M24
DIN2080 50 EM 16	16	63	48	M24
DIN2080 50 EM 20	20	63	52	M24
DIN2080 50 EM 25	25	80	65	M24
DIN2080 50 EM 32	32	80	72	M24
DIN2080 50 EM 40	40	90	90	M24
DIN2080 50 EM 50	50	100	100	M24

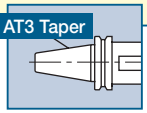
115

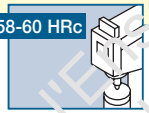


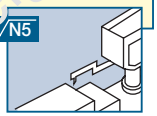
- **Shell End Mill Holder**
- **Mandrins Porte-Fraises à Alésage**
- **Aufsteckfräserdorne für Fräser mit Quernut**







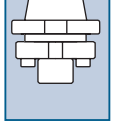




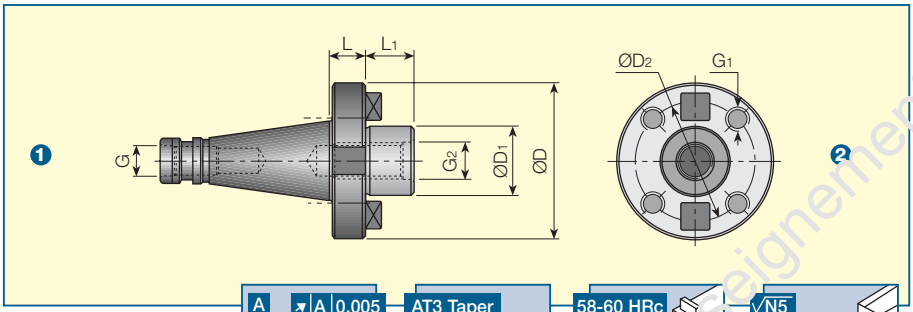
1 **DIN 2080**
2 **DIN 3937**

Designation Désignation Bezeichnung	D_1	L	L_1	L_2	G
DIN2080 30 SEM 16	16	28	17	38	M12
DIN2080 30 SEM 22	22	28	19	47	M12
DIN2080 30 SEM 27	27	32	21	58	M12
DIN2080 30 SEM 32	32	32	24	66	M12
DIN2080 40 SEM 16	16	28	17	38	M16
DIN2080 40 SEM 22	22	27	19	47	M16
DIN2080 40 SEM 27	27	26	21	58	M16
DIN2080 40 SEM 32	32	28	24	66	M16
DIN2080 40 SEM 40	40	34	27	82	M16
DIN2080 50 SEM 16	16	38	17	38	M24
DIN2080 50 SEM 22	22	38	19	47	M24
DIN2080 50 SEM 27	27	38	21	58	M24
DIN2080 50 SEM 32	32	36	24	66	M24
DIN2080 50 SEM 40	40	40	27	82	M24

116 114



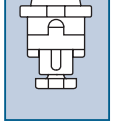
- **Face Mill Holder**
- **Mandrins Porte-Fraises à Alésage**
- **Aufnahmedorne für Fräser mit Innenzentrierung**

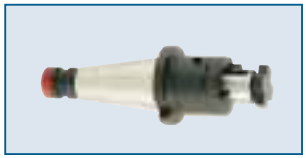


1 **DIN 2080**
2 **DIN 6357**

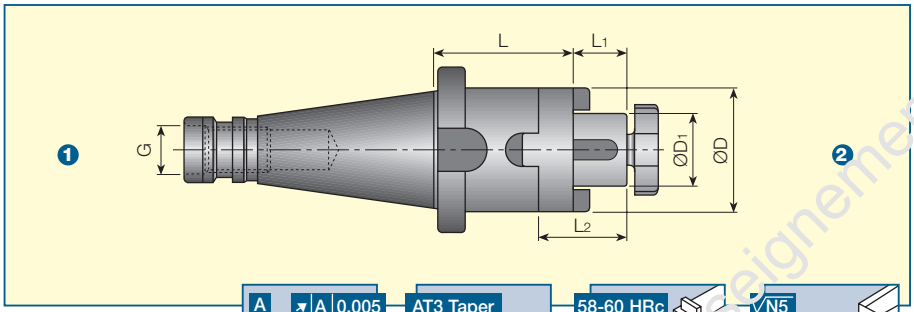
Designation Désignation Bezeichnung	D_1	L	L_1	D	D_2	G	G_1	G_2
DIN2080 40 FM 40	40	20	30	38	66.7	M16	M12	M20
DIN2080 50 FM 40	40	36	30	88	66.7	M24	M12	M20
DIN2080 50 FM 60	60	36	30	128	101.6	M24	M16	

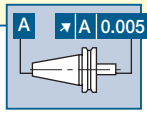
116 114

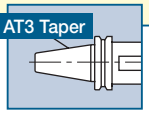


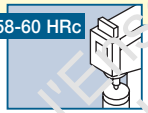


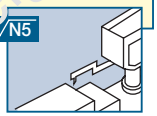
- **COMBI - Shell End Mill Holder**
- **COMBI - Mandrins Porte-Fraises Combinés**
- **COMBI - Aufsteckfräserdorne**







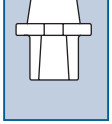




1 **DIN 2080**
2 **DIN 6358**

Designation Désignation Bezeichnung	D_1	L	L_1	L_2	D	G
DIN2080 30 SMC 16	16	35	17	27	32	M12
DIN2080 30 SMC 22	22	35	19	31	40	M12
DIN2080 30 SMC 27	27	35	21	33	48	M12
DIN2080 30 SMC 32	32	50	24	38	58	M12
DIN2080 40 SMC 16	16	52	17	27	32	M16
DIN2080 40 SMC 22	22	52	19	31	40	M16
DIN2080 40 SMC 27	27	52	21	33	48	M16
DIN2080 40 SMC 32	32	52	24	38	58	M16
DIN2080 40 SMC 40	40	52	27	41	70	M16
DIN2080 50 SMC 16	16	55	17	27	32	M24
DIN2080 50 SMC 22	22	55	19	31	40	M24
DIN2080 50 SMC 27	27	55	21	33	48	M24
DIN2080 50 SMC 32	32	55	24	38	58	M24
DIN2080 50 SMC 40	40	55	27	41	70	M24
DIN2080 50 SMC 50	50	55	30	46	90	M24

117 116 114



- **Adapters**
- **Réductions DIN 2080 / Cône SA**
- **Reduzieradapter**

Fig. 1

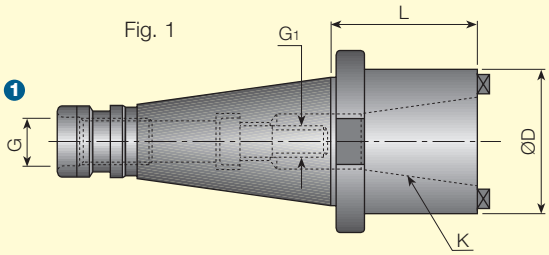
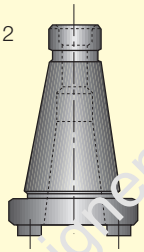
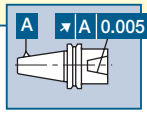
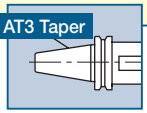
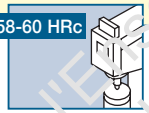


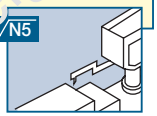
Fig. 2





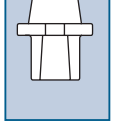


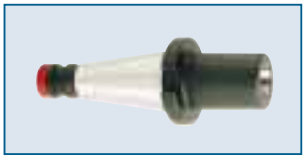




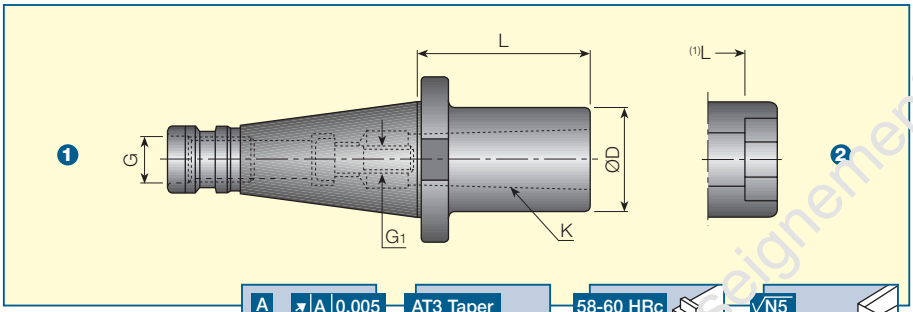
1. **DIN 2080**
2. **DIN 2080 – DIN 69871/A BT MAS – 403**

Designation Désignation Bezeichnung	K	L	D	G1	G	Fig. Fig. Abb.
DIN2080 40 AD 30 DIN2080	DIN 2080	50	50	M12	M16	1
DIN2080 40 ADO 30 DIN2080	DIN 2080	50	50			2
DIN2080 50 AD 30 DIN2080	DIN 2080	50	50	M12	M24	1
DIN2080 50 ADO 30 DIN2080	DIN 2080	50	50			2
DIN2080 50 AD 40 DIN2080	DIN 2080	50	63	M16	M24	1
DIN2080 50 ADO 40 DIN2080	DIN 2080	70	97.5			2
DIN2080 40 AD R-8	R-8	41.5	54			2
DIN2080 50 AD R-8	R-8	20.7	50			2





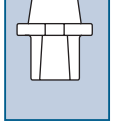
- **Morse Taper Adapter Draw Bar DIN 228-2 Form B**
- **Réductions DIN 2080 / Cône Morse fileté DIN 228-2-B**
- **Zwischenhülsen für Morsekegel mit Anzugsgewinde**

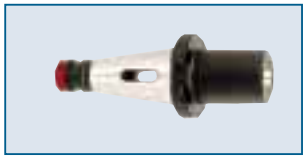


1 **DIN 2080**
2 **DIN 6364**

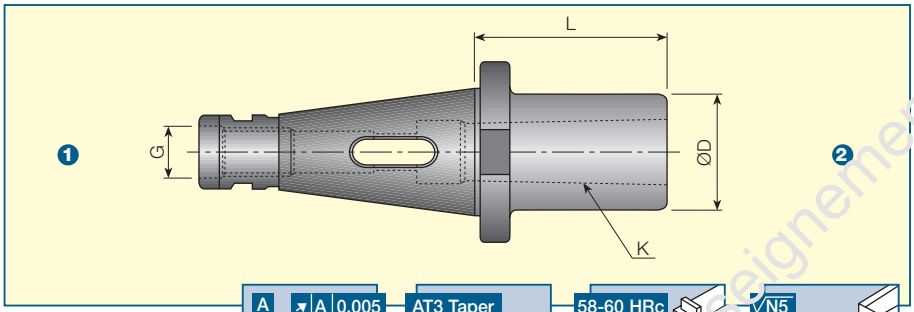
Designation Désignation Bezeichnung	K	L	D	G_1	G
DIN2080 40 MT1 DRW	MT1	50	25	M6	M16
DIN2080 40 MT2 DRW	MT2	50	32	M10	M16
DIN2080 40 MT3 DRW	MT3	85	40	M12	M16
DIN2080 40 MT4 DRW	MT4	85	63	M16	M16
DIN2080 50 MT1 DRW	MT1	60	25	M6	M24
DIN2080 50 MT2 DRW	MT2	60	32	M10	M24
DIN2080 50 MT3 DRW	MT3	85	40	M12	M24
DIN2080 50 MT4 DRW	MT4	85	63	M16	M24
DIN2080 50 MT5 DRW	MT5	100	78	M20	M24

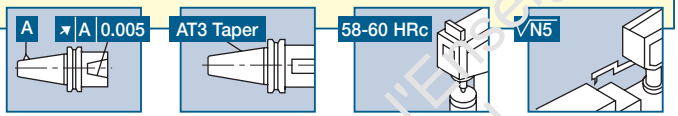
(1) ● MT4 & MT5 with DIN 2201
(1) ● MT4 & MT5 avec DIN 2201
(1) ● MT4 & MT5 mit DIN 2201





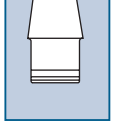
- **Morse Taper Adapter Tang DIN 228-2 Form D**
- **Réductions DIN 2080 / Cône Morse avec chasse cône DIN 228-2-D**
- **Zwischenhülsen für Morsekegel mit Austreiblappen**



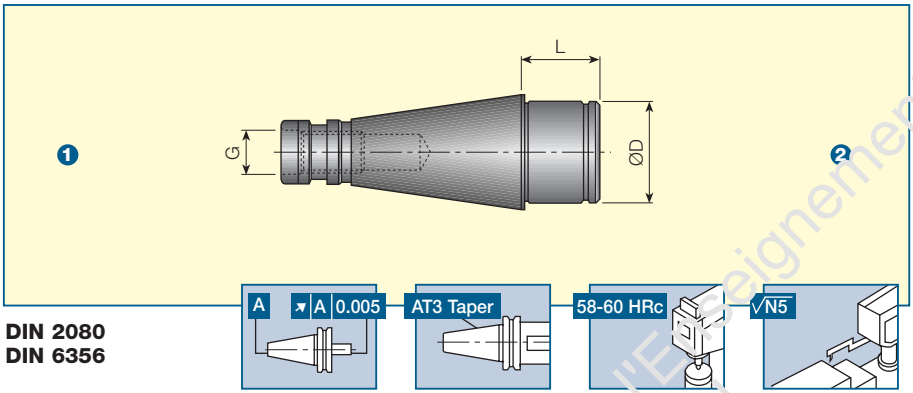


1 **DIN 2080**
2 **DIN 6383**

Designation Désignation Bezeichnung	K	L	D	G
DIN2080 30 MT1	MT1	50	25	M12
DIN2080 30 MT2	MT2	50	32	M12
DIN2080 30 MT3	MT3	70	40	M12
DIN2080 40 MT1	MT1	50	25	M16
DIN2080 40 MT2	MT2	50	32	M16
DIN2080 40 MT3	MT3	65	40	M16
DIN2080 40 MT4	MT4	95	48	M16
DIN2080 50 MT1	MT1	45	25	M24
DIN2080 50 MT2	MT2	50	32	M24
DIN2080 50 MT3	MT3	65	40	M24
DIN2080 50 MT4	MT4	70	48	M24
DIN2080 50 MT5	MT5	105	63	M24



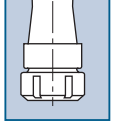
- **Centering Plug**
- **Centreur**
- **Zentrierkegel-Schaft**

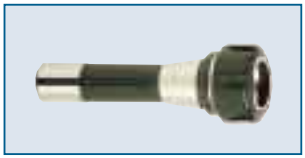


❶ **DIN 2080**
❷ **DIN 6356**

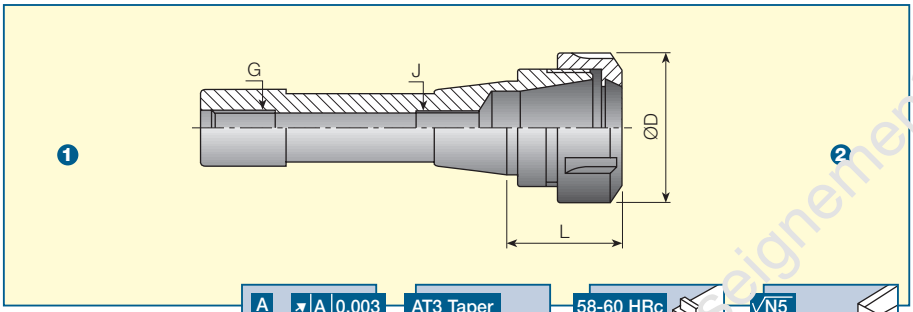
Designation Désignation Bezeichnung	L	D	G
DIN2080 40 CP 40	30	40	M16
DIN2080 50 CP 40	30	40	M24
DIN2080 50 CP 50	30	50	M24
DIN2080 50 CP 60	40	50	M24

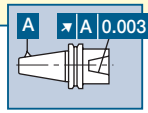
R8 - Bridgeport

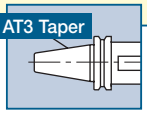


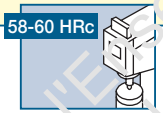


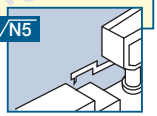
- **Collet Chuck ER Type 16, 32, 40**
- **Mandrins à Pinces Type ER 16,32,40**
- **Spannzangenfutter Typ ER**







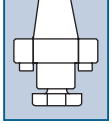


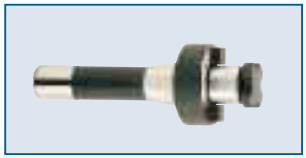


1 **R-8 - BRIDGEPORT**
2 **DIN 6499**

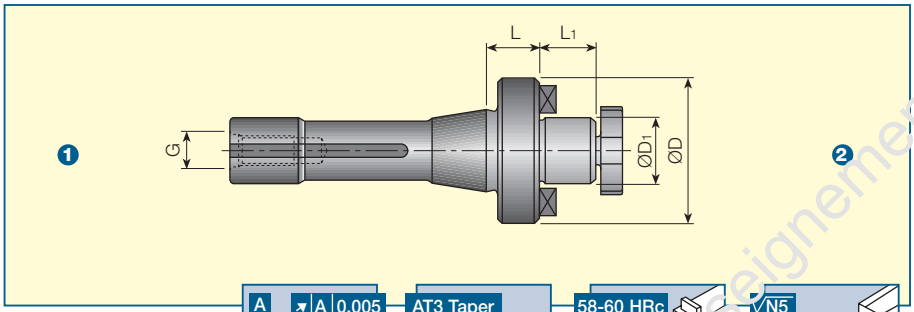
Designation Désignation Bezeichnung	Range Gamme Bereich	L	D	G	J
R-8 C.CHK ER16	0.5-10	38	23	7/16-20 UNF-2B	M10
R-8 C.CHK ER32	2-20	40	50	7/16-20 UNF-2B	M12
R-8 C.CHK ER40	3-26	72	63	7/16-20 UNF-2B	M12

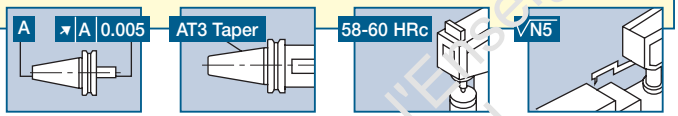
112 114 90-95





- **Shell End Mill Holder**
- **Mandrins Porte-Fraises à Alésage**
- **Aufsteckfräserdorne für Fräser mit Quernut**

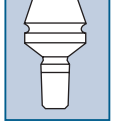




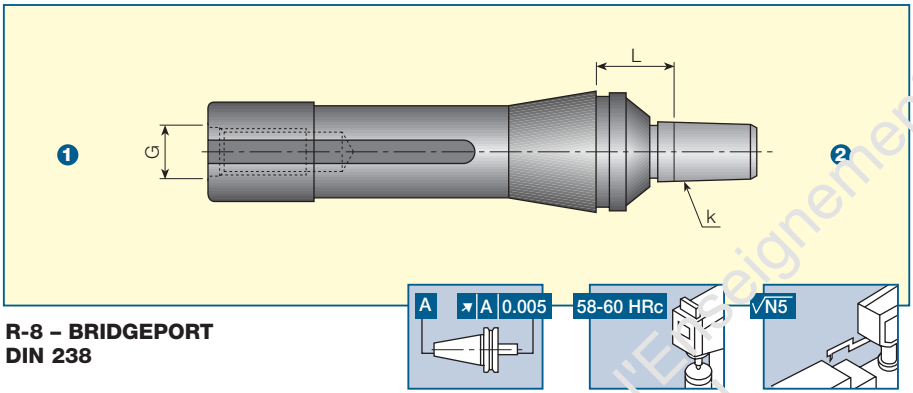
1 R-8 - BRIDGEPORT
2 ISO 3937

Designation Désignation Bezeichnung	D_1	L	L_1	D	G
R-8 SEM 16	16	26	17	38	7/16-20 UNF-2B
R-8 SEM 22	22	26	19	47	7/16-20 UNF-2B
R-8 SEM 27	27	22	21	58	7/16-20 UNF-2B
R-8 SEM 32	32	25	24	66	7/16-20 UNF-2B

116 114

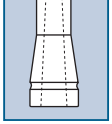


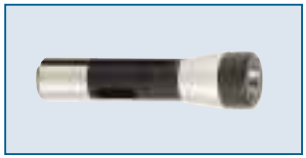
- **Drill Chuck Arbor**
- **Attachements pour Mandrins de Perceuses**
- **Bohrfutter-Aufnahme**



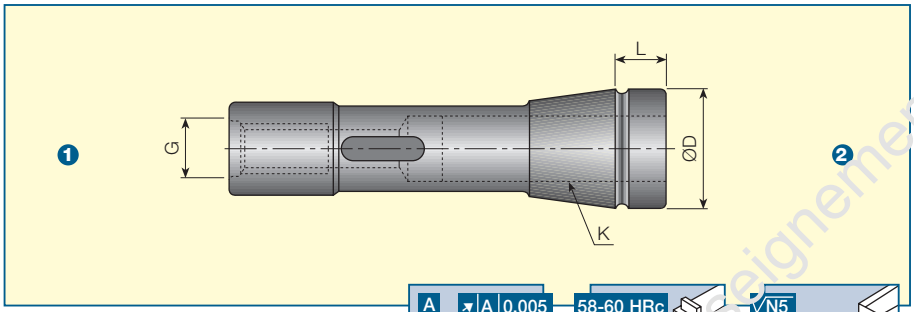
❶ **R-8 – BRIDGEPORT**
❷ **DIN 238**

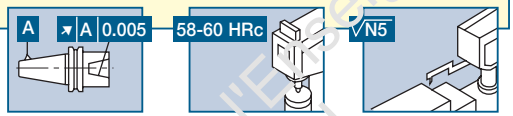
Designation Désignation Bezeichnung	K	L	G
R-8 D.CHK B12	12	21	7/16-20 UNF-2B
R-8 D.CHK B16	16	21	7/16-20 UNF-2B





- **Morse Taper Adapter Tang DIN 228-2 Form D**
- **Réductions R-8 / Cône Morse avec chasse cône DIN 228-2-D**
- **Zwischenhülsen für Morsekegel mit Austreiblappen**

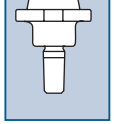


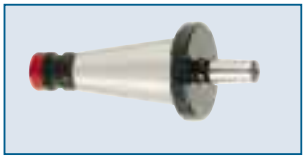


1 R-8 BRIDGEPORT
2 DIN 6383

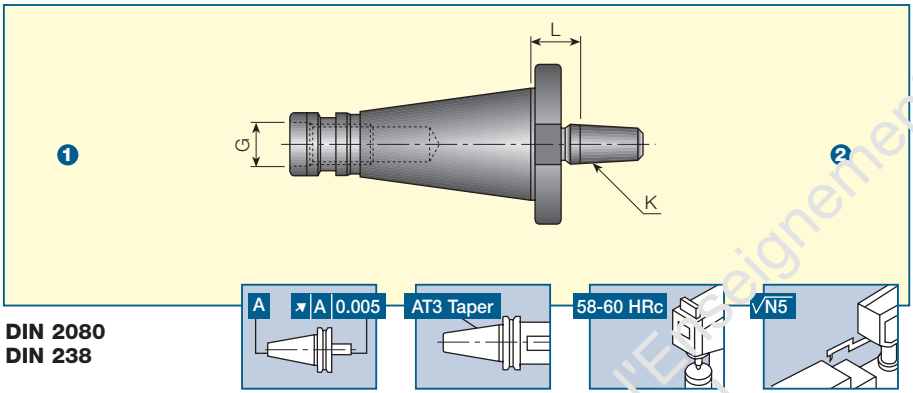
Designation Désignation Bezeichnung	K	L	D	G
R-8 MT2	2	13	31.75	7/16-20 UNF-2B
R-8 MT3	3	51	31.75	7/16-20 UNF-2B

Straight Shank
Queue cylindrique
Zylinderschaft



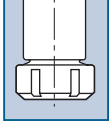


- **Drill Chuck Arbor**
- **Attachements pour Mandrins de Perceuses**
- **Bohrfutter-Aufnahme**

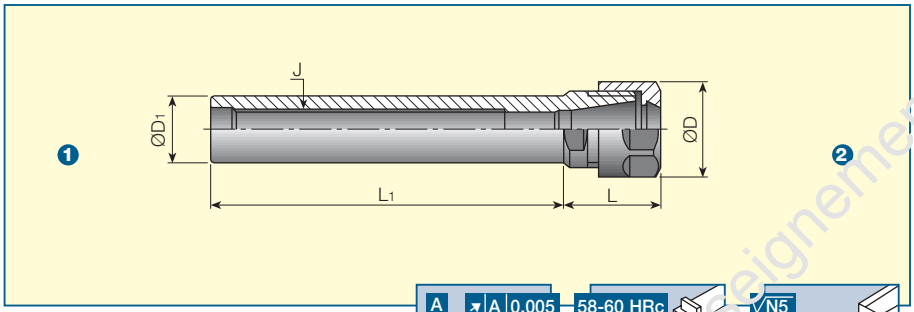


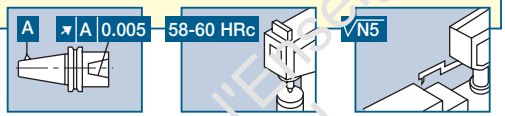
1 **DIN 2080**
2 **DIN 238**

Designation Désignation Bezeichnung	K	L	G
DIN2080 30 D.CHK B16	B16	18	M12
DIN2080 40 D.CHK B16	B16	22	M16
DIN2080 40 D.CHK B18	B18	22	M16
DIN2080 50 D.CHK B16	B16	25	M24
DIN2080 50 D.CHK B18	B18	25	M24



- **Collet Chuck ER Type 11, 16, 20**
- **Mandrins à Pinces Type ER 11, 16, 20**
- **Spannzangenfutter Typ ER 11, 16, 20**

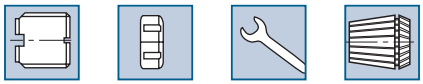




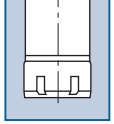
1. **Straight Shank**
2. **DIN 6499**

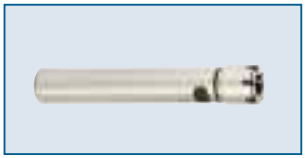
Designation Désignation Bezeichnung	Range Gamme Bereich	L	l	D	D_1	L_1
ST16X50 ER 11	0.5-7	18.5	M8	19	16	50
ST20X50 ER 11	0.5-7	18.5	M10	19	20	50
ST20X100 ER 11	0.5-7	18.5	M10	19	20	100
ST20X150 ER 11	0.5-7	18.5	M10	19	20	150
ST20X50 ER 16	0.5-10	30	M12	28	20	50
ST20X100 ER 16	0.5-10	30	M12	28	20	100
ST20X150 ER 16	0.5-10	30	M12	28	20	150
ST20X50 ER 20	1-13	36	M12	34	20	50
ST25X100 ER 20	1-13	36	M12	34	25	100
ST25X150 ER 20	1-13	36	M12	34	25	150

- Flat shank tools with L1=50 mm
- Outils avec L1=50 mm queue avec méplat
- Werkzeuge mit L1=50 mm.

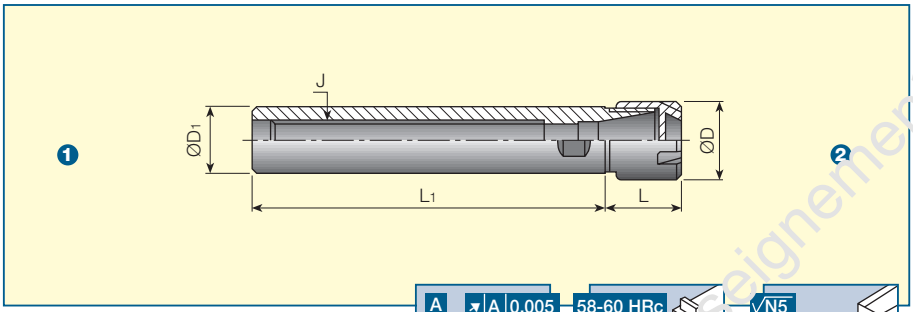


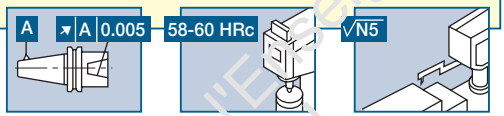
115 112 114 90-95





- **Collet Chuck ER Type 11, 16, 20 Mini**
- **Mandrins à Pinces Type ER 11, 16, 20 Mini**
- **Spannzangenfutter Typ ER Mini 11, 16, 20**



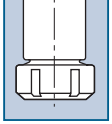


1. **Straight Shank**
2. **DIN 6499**

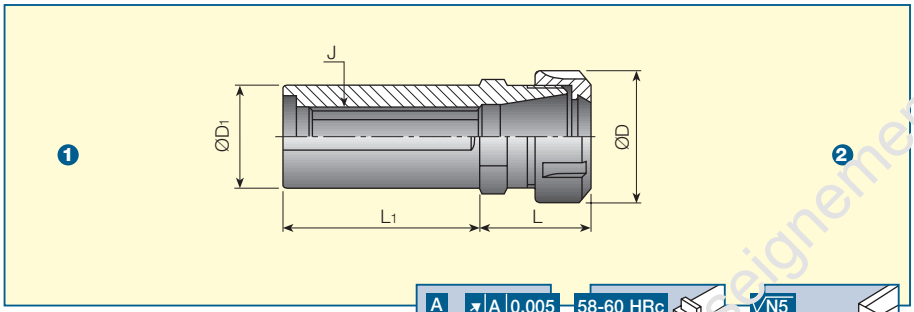
Designation Désignation Bezeichnung	Range Gamme Bereich	L	J	L1	D1	L1
ST16X50 ER 11 MINI	0.5-7	18.5	M8	16	16	50
ST12X80 ER 11 MINI	0.5-7	26.5		16	12	80
ST16X100 ER 11 MINI	0.5-7	18.5	M8	16	16	100
ST16X150 ER 11 MINI	0.5-7	18.5	M8	16	16	150
ST12X80 ER 16 MINI	0.5-10	37		22	12	80
ST20X100 ER 16 MINI	0.5-10	25	M12	22	20	100
ST20X150 ER 16 MINI	0.5-10	25	M12	22	20	150
ST20X100 ER 20 MINI	1-13	40	M12	28	20	100
ST20X150 ER 20 MINI	1-13	40	M12	28	20	150

- Flat shank tools with L1=50 mm
- Outils avec L1=50 mm queue avec méplat
- Werkzeuge mit L1=50 mm.

115 112 114 90-95

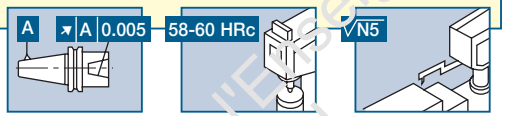


- **Collet Chuck ER Type 25, 32, 40, 50**
- **Mandrins à Pinces Type ER 25, 32, 40, 50**
- **Spannzangenfutter Typ ER 23, 32, 40, 50**



1

2

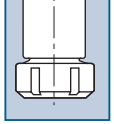


1 **Straight Shank**
2 **DIN 6499**

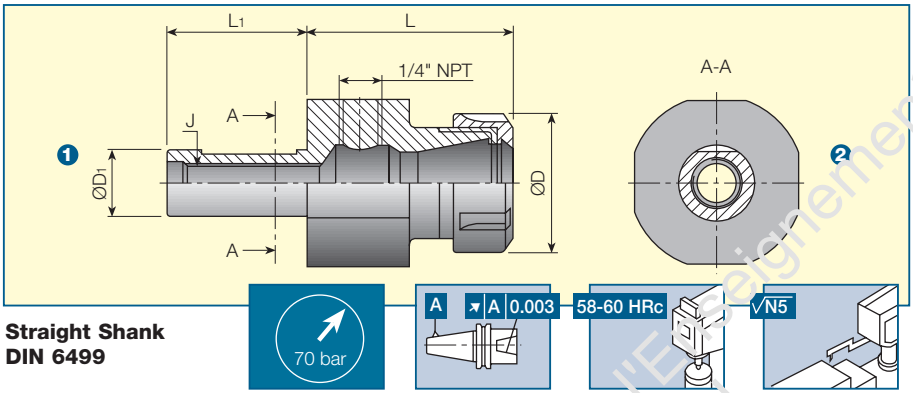
Designation Désignation Bezeichnung	Range Gamme Bereich	L	J	D	D1	L1
ST20X50 ER 25	1-16	46	M12	42	20	50
ST20X100 ER 25	1-16	46	M12	42	20	100
ST20X50 ER 32	2-20	54	M12	50	20	50
ST20X100 ER 32	2-20	54	M12	50	20	100
ST25X50 ER 25	1-16	46	M16	42	25	50
ST25X100 ER 25	1-16	46	M16	42	25	100
ST25X50 ER 32	2-20	52	M16x2	50	25	50
ST25X50 ER 40	3-26	60	M16x2	63	25	50
ST30X50 ER 32	2-20	52	M18x1.5	50	30	50
ST30X50 ER 40	3-26	60	M18x1.5	63	30	50
ST32X150 ER 32	2-20	52	M18x1.5	50	32	150
ST32X50 ER 32	2-20	52	M18x1.5	50	32	50
ST32X50 ER 40	3-26	60	M18x1.5	63	32	50
ST40X75 ER 32	2-20	46	M22x1.5	50	40	75
ST40X75 ER 40	3-26	55	M22x1.5	63	40	75
ST50X80 ER 40	3-26	60	M28x1.5	63	50	80
ST50X80 ER 50	10-34	77	M36x1.5	78	50	80

- Flat shank tools with L1=50 mm
- Outils avec L1=50-80 mm queue avec méplat
- Werkzeuge mit L1=50-80 mm.

115 112 114 90-95



- **Collet Chuck Oil Hole ER Type 16, 20, 25, 32**
- **Mandrins à Pinces pour Outils à Trous d'huile Type ER 16, 20, 25, 32**
- **Spannzangenfutter Typ ER mit Anschluß für Kühlmittelzufuhr**



1 **Straight Shank**
2 **DIN 6499**

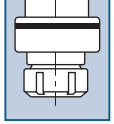
Designation Désignation Bezeichnung	Range Gamme Bereich	L		D	D_1	L_1
ST20X65 ER 16S	3-10	53	M12	28	20	65
ST20X65 ER 20S	3-13	63	M12	34	20	65
ST20X65 ER 25S	3-16	72	M12	42	20	65
ST20X65 ER 25S	3-16	72	M12	42	25	65
ST25X65 ER 32S	3-20	77	M12	50	20	65
ST25X65 ER 32S	3-20	77	M16	50	25	65
ST32X65 ER 32S	3-20	77	M18x1.5	50	32	65
ST40X75 ER 32S	3-20	77	M22x1.5	50	40	75

115 112 114 90-95

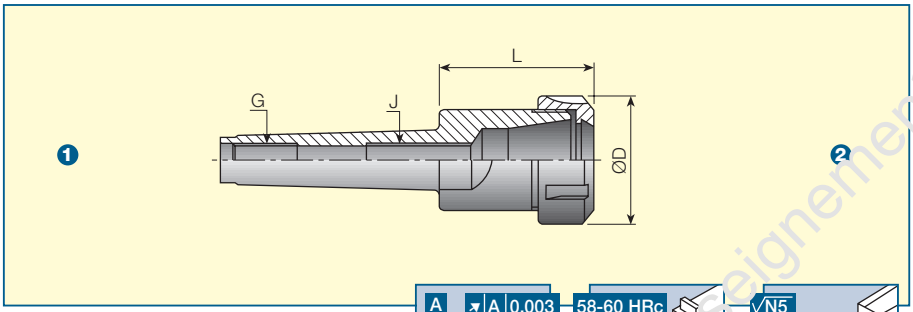
Morse Taper

Cône morse

Morsekegel



- **Morse Taper Collet Chuck ER 20, 25, 32, 40, 50**
- **Mandrins Cône Morse à Pinces - ER 20,25,32,40,50**
- **Spannzangenfutter ER mit Morsekegel**



1 MT DIN 228-2
2 DIN 6499

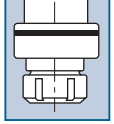
Designation Désignation Bezeichnung	Range Gamme Bereich	L	G	J	D
MT 2 C.CHK ER20	1-13	43	M10	M10	34
MT 2 C.CHK ER25	1-16	47	M10	M10	42
MT 3 C.CHK ER32	2-20	69	M12	M12	50
MT 3 C.CHK ER40	3-26	79	M12	M12	63
MT 4 C.CHK ER32	2-20	61	M16	M16	50
MT 4 C.CHK ER40	3-26	82	M16	M16	63
MT 4 C.CHK ER50	10-34	85	M16	M16	78
MT 5 C.CHK ER40	3-26	62	M20	M28x1.5	63
MT 5 C.CHK ER50	10-34	35	M20	M28x1.5	78

115 112 114 90-95

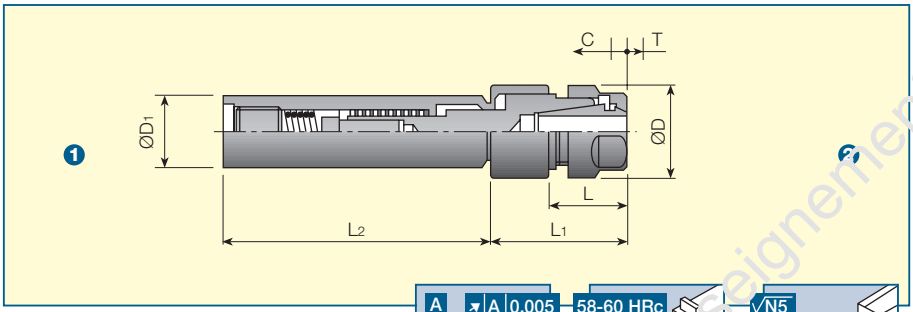
GTI - Tapping Attachment

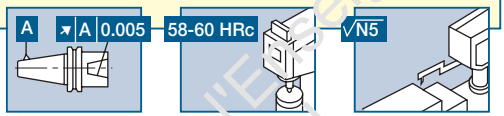
GTI - Mandrins de taraudage

GTI - Gewindeschneidfutter



- **GTI Tapping Attachment ER11, 16, 20, 25, 32, 40**
- **GTI Appareils à Tarauder ER 11,16,20,25,32,40 avec Compensations Axiale et Radiale**
- **GTI Gewindeschneidfutter für Spannzangen ER**

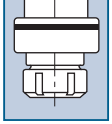




1 GTI Straight Shank
2 DIN 6499

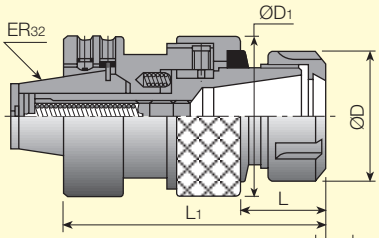
Designation Désignation Bezeichnung	TAP Capacity TARAUD Capacité Abgreifbereich	D	D1	L	L1	L2	T	C
GTI ER 11 ST16 MINI	M2-M7	16	16	19		150	6	3
GTI ER 16 ST20X80	M3-M10	28	20	24	41	80	8	3
GTI ER 20 ST20X80	M4-M14	34	20	27	48	80	8	3
GTI ER 25 ST25X80	M5-M16	42	25	30	51	80	9	4
GTI ER 32 ST25X80	M6-M20	50	25	30	74	80	9	4
GTI ER 40 ST32X80	M6-M27	63	32	46	90	80	9	4

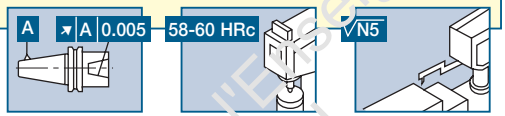
112 114 90-95 124



- **Tapping Attachment ER32, ER40 with ER32 Shank**
- **GTI Appareils à Tarauder avec Pinces ER32, ER40 sur Attachement ER32**
- **GTI Gewindeschneidfutter für Spannzangen ER mit Anschlußkegel ER 32**

GTI

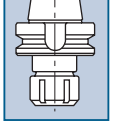




1. **GTI Shank ER 32**
2. **DIN 6499**

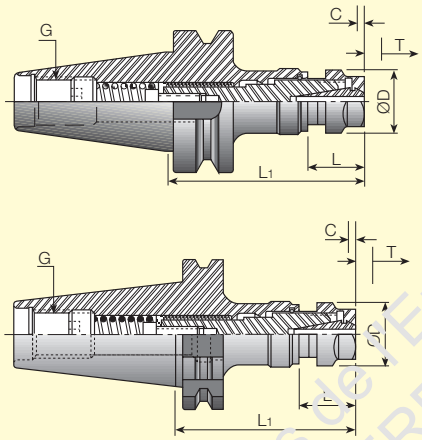
Designation Désignation Bezeichnung	TAP Capacity TARAUD Capacité Abgreifbereich	D	D1	L	L1	T	C
GTI ER 32 TAP ATT	M6-M20	50	60	35	100	10	3
GTI ER 40 TAP ATT	M6-M27	63	80	51	116	10	3

112 114 90-95 124

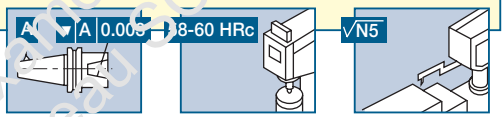


- **Tapping Attachment Integral Shank ER 16, 32, 40**
- **GTI Appareils à Tarauder Monoblocs ER 16, 32, 40 avec Compensations Axiale et Radiale**
- **Gewindeschneidfutter**

GTI



GTI BT MAS – 403
DIN 69871 Form A
DIN 6499



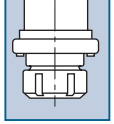
Designation Désignation Bezeichnung	Range Gamme Bereich	G	L_1	L	D	T	C
GTI BT40 ER 16	M3-M10	M16	85	24	28	8	3
GTI BT40 ER 32	M6-M20	M16	107	30	50	9	4
GTI BT40 ER 40	M6-M28	M16	123	46	63	9	4
GTI BT50 ER 16	M3-M10	M24	116	24	28	8	3
GTI BT50 ER 32	M6-M20	M24	116	30	50	9	4
GTI BT50 ER 40	M6-M28	M24	132	46	63	9	4
GTI DIN69871 40 ER 16	M3-M10	M16	85	24	28	8	3
GTI DIN69871 40 ER 32	M6-M20	M16	107	30	50	9	4
GTI DIN69871 40 ER 40	M6-M28	M16	123	46	63	9	4
GTI DIN69871 50 ER 16	M3-M10	M24	116	24	28	8	3
GTI DIN69871 50 ER 32	M6-M20	M24	116	30	50	9	4
GTI DIN69871 50 ER 40	M6-M28	M24	132	46	63	9	4

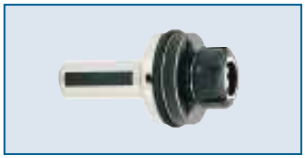
112 114 90-95 124

GYRO - Center Alignment Holder

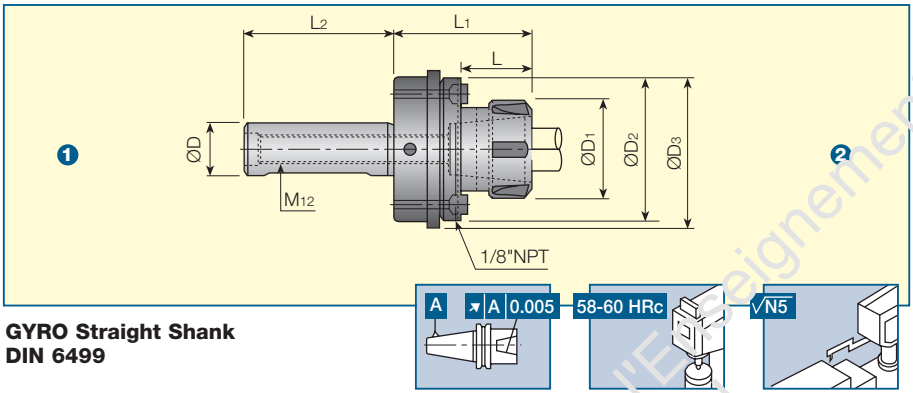
GYRO - Porte-outil d'alignement des axes

GYRO - Einstellbare Werkzeughalter



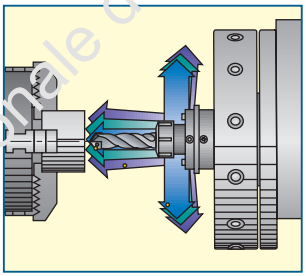


- **GYRO ER Center Alignment Holder ER 20, 25, 32**
- **GYRO Porte-Pinces ER 20, 25, 32 à Alignement Total des Axes**
- **GYRO Einstellbarer Werkzeughalter für Spannzangen**

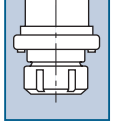


1 **GYRO Straight Shank**
2 **DIN 6499**

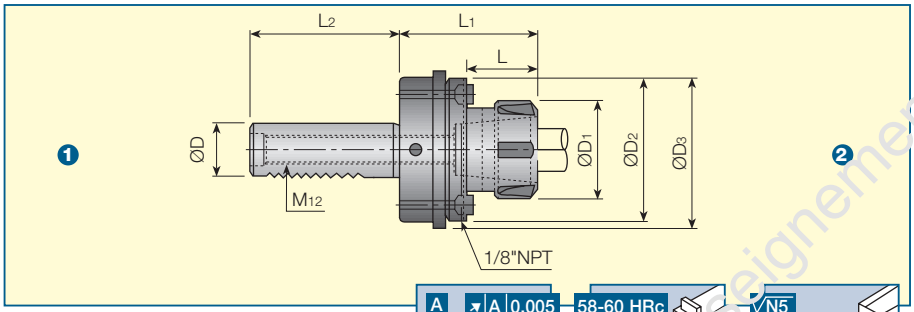
Designation Désignation Bezeichnung	D	D_1	D_2	D_3	L	L_1	L_2
GYRO ST20 ER 20	20	34	57	67	28	58	80
GYRO ST25 ER 25	25	42	74	84	35	65	80
GYRO ST25 ER 32	25	50	74	84	36	66	80
GYRO ST32 ER 32	32	50	74	84	36	66	80
GYRO ST40 ER 32	32	50	74	84	36	66	80

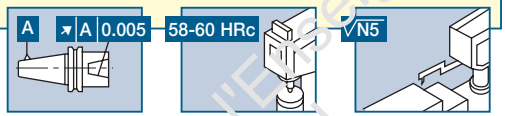


102 112 114 90-95 127



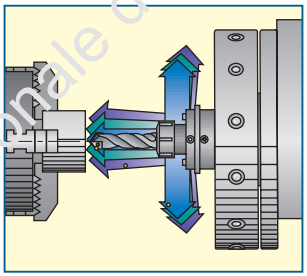
- **GYRO ER Center Alignment Holder ER 20, 25, 32**
- **GYRO Porte-Pinces ER 20, 25, 32 à Alignement Total des Axes**
- **GYRO Einstellbarer Werkzeughalter für Spannzangen**



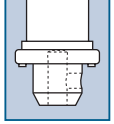


1 GYRO VDI DIN 69880
2 DIN 6499

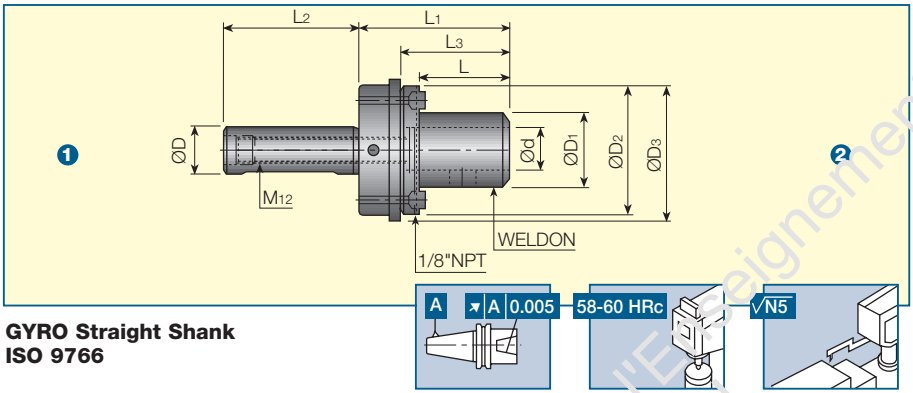
Designation Désignation Bezeichnung	D	D1	D2	D3	L	L1	L2
GYRO 69880 30 ER 25	30	42	74	75	35	80	55
GYRO 69880 30 ER 32	30	50	74	84	36	81	55
GYRO 69880 40 ER 32	40	50	74	84	36	81	63
GYRO 69880 50 ER 32	50	50	74	84	36	81	78



104 112 114 90-95 127

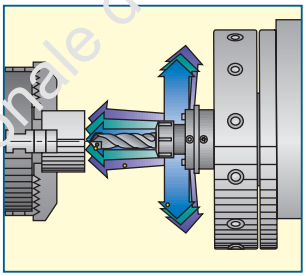


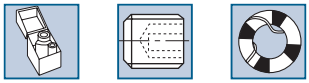
- **GYRO Weldon Center Alignment Holder**
- **GYRO Attachements Type Weldon à Alignement Total des Axes**
- **GYRO Einstellbarer Werkzeughalter für Weldonschaft**



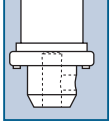
1 **GYRO Straight Shank**
2 **ISO 9766**

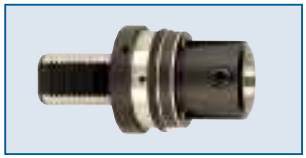
Designation Désignation Bezeichnung	d	D	D_1	D_2	D_3	L	L_1	L_2	L_3
GYRO ST32 EM16	16	32	28	74	84	50	80	80	52
GYRO ST32 EM20	20	32	51	74	84	50	80	80	52
GYRO ST32 EM25	25	32	51	74	84	56	86	80	58
GYRO ST32 EM32	32	32	60	74	84	60	90	80	62
GYRO ST32 EM40	40	32	60	74	84	70	100	80	72



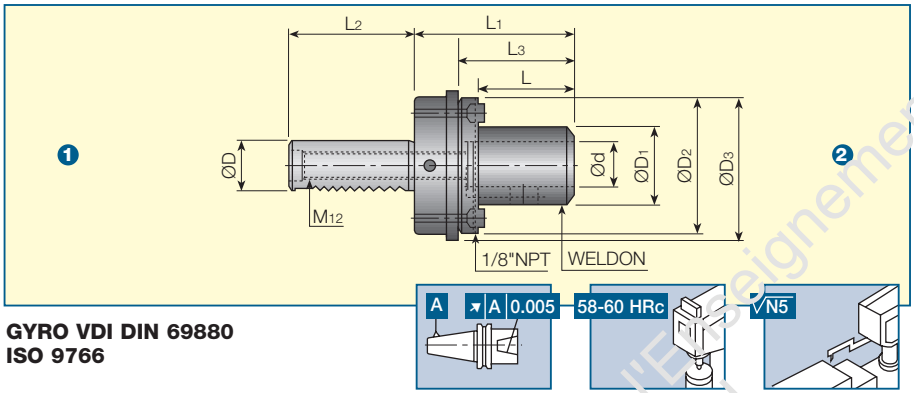


103 115 127



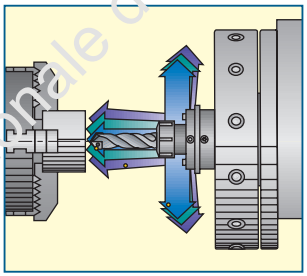


- **GYRO Weldon Center Alignment Holder**
- **GYRO Attachements Type Weldon à Alignement Total des Axes**
- **GYRO Einstellbarer Werkzeughalter für Weldonschaft**



1 GYRO VDI DIN 69880
2 ISO 9766

Designation Désignation Bezeichnung	d	D	D_1	D_2	D_3	L	L_1	L_2	L_3
GYRO 69880 30 EM16	16	30	44	74	84	50	95	55	52
GYRO 69880 30 EM20	20	30	51	74	84	50	95	55	52
GYRO 69880 30 EM25	25	30	51	74	84	56	101	55	58
GYRO 69880 30 EM32	32	30	60	74	84	60	105	55	62
GYRO 69880 40 EM16	16	40	44	74	84	50	95	63	52
GYRO 69880 40 EM20	20	40	51	74	84	50	95	63	52
GYRO 69880 40 EM25	25	40	51	74	84	56	101	63	58
GYRO 69880 40 EM32	32	40	60	74	84	60	105	63	62
GYRO 69880 40 EM40	40	40	60	74	84	70	115	63	70
GYRO 69880 50 EM16	16	50	44	74	84	50	95	78	52
GYRO 69880 50 EM20	20	50	51	74	84	50	95	78	52
GYRO 69880 50 EM25	25	50	51	74	84	56	101	78	58
GYRO 69880 50 EM32	32	50	60	74	84	60	105	78	62
GYRO 69880 50 EM40	40	50	60	74	84	70	115	78	72



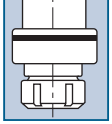


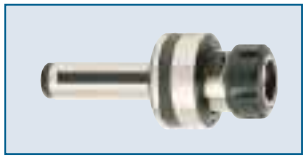
105 115 127

GFI - Floating Chuck

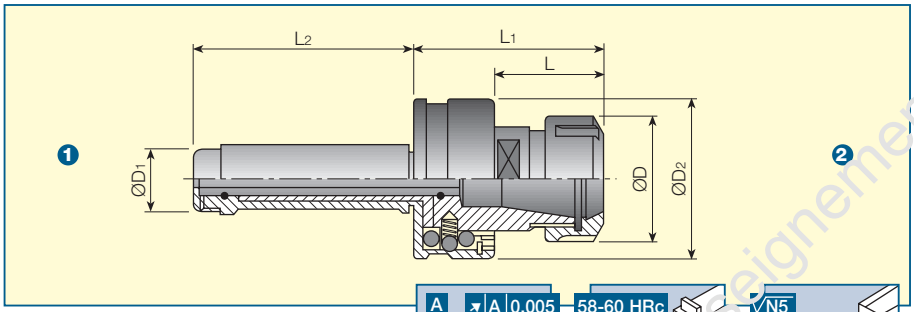
GFI - Mandrin flottant

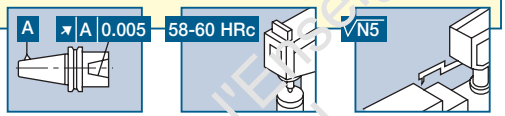
GFI - Pendelaufnahmen





- **GFI Floating Reamer Toolholder**
- **GFI Mandrins d'Alésage Flottants à Pinces ER 20, 32**
- **GFI Pendel-Aufnahme (schwimmend gelagert)**

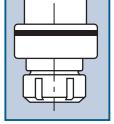




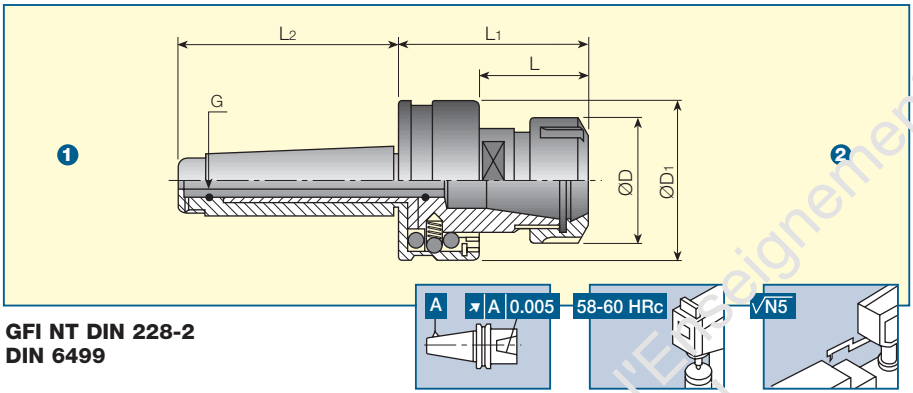
1. **GFI Straight Shank**
2. **DIN 6499**

Designation Désignation Bezeichnung	L_2	L_1	L	D_2	D	Radial Float Flottement radial Radiales Spiel
GFI ST 20 ER 20	65	69	43	50	34	1mm
GFI ST 25 ER 32	80	77	47	55	50	1.6mm

112 114 90-95 129



- **GFI Floating Reamer Toolholder**
- **GFI Mandrins d'Alésage Flottants à Pinces ER**
- **GFI Pendel-Aufnahme (schwimmend gelagert)**



1 GFI NT DIN 228-2
2 DIN 6499

Designation Désignation Bezeichnung	L_2	L_1	L	D_1	D	G	Radial Float Flottement radial Radiales Spiel
GFI MT 2 ER 20	69	69	43	52	34	M10	1mm
GFI MT 3 ER 32	86	77	47	65	50	M12	1.6mm

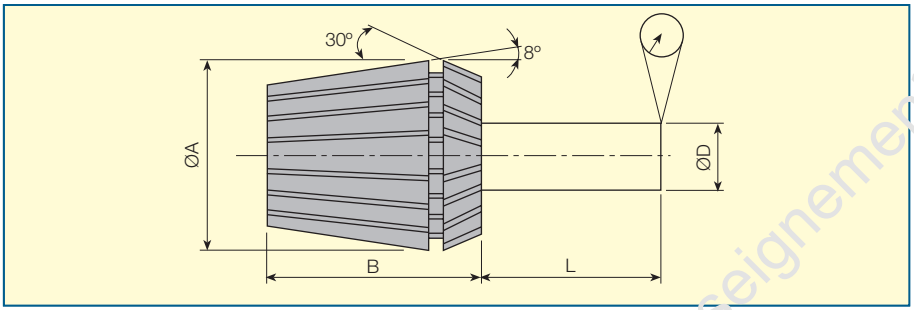
112 114 90-95 129

ER Collets

ER Pinces

ER Spannzangen

- **ER Collet Norm**
- **Norme des Pinces ER**
- **Norm Spannzangen ER**

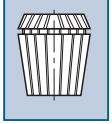


ER Collet Type
DIN 6499

L mm	D mm	ITS Standard Precision ITS Précision standard ITS Standard Präzision	ITS Ultra Precision ITS Super précision ITS Höchste Präzision	DIN 6499
6	1.0-1.6	0.01	0.005	
10	1.6-3.0	0.01	0.005	0.015
16	3.0-6.0	0.01	0.005	0.015
25	6.0-10.0	0.01	0.005	0.015
40	10.0-18.0	0.01	0.005	0.020
50	18.0-26.0	0.01	0.005	0.020
60	26.0-34.0			0.025

Type Taille Type	A	B
ER-11	11.5	18
ER-16	17	27
ER-20	21	31
ER-25	26	35
ER-32	33	40
ER-40	41	46
ER-50*	52	60

* ER 50 DIN 6499

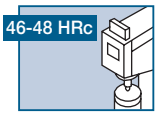


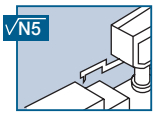
- ER Collet Norm
- Pinces ER - Précision Standard ITS
- Norm Spannzangen ER

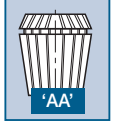
ER□□ COLLET □-□

Range Gamme Bereich	ER11	ER16	ER20	ER25	ER32	ER40	ER50
0.5-1	●	●					
1-2	●	●	●	●			
2-3	●	●	●	●	●		
3-4	●	●	●	●	●	●	
4-5	●	●	●	●	●	●	
5-6	●	●	●	●	●	●	
6-7	●	●	●	●	●	●	
7-8		●	●	●	●	●	
8-9		●	●	●	●	●	
9-10		●	●	●	●	●	
10-11			●	●	●	●	
11-12			●	●	●	●	●
12-13			●	●	●	●	
13-14				●	●	●	●
14-15				●	●	●	
15-16				●	●	●	
16-17					●	●	
17-18					●	●	●
18-19					●	●	
19-20					●	●	
20-21						●	
21-22						●	●
22-23						●	
23-24						●	
24-25						●	
25-26						●	●
26-28							●
28-30							●
30-32							●
32-34							●

Ordering example: ER 20 COLLET 11-12
Exemple de commande: ER 20 COLLET 11-12
Bestellbeispiel: ER 20 COLLET 11-12





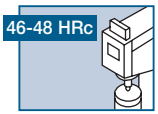


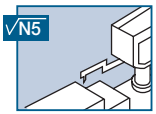
- **ER Collet ITS Ultra Precision 'AA'**
- **Pinces ER - Super Précision ITS 'AA'**
- **Spannzangen ER für höchste Präzision 'AA'**

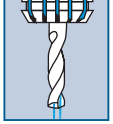
ER □□ COLLET □-□AA

Range Gamme Bereich	ER11	ER16	ER20	ER25	ER32	ER40
0.5-1	●	●				
1-2	●	●	●	●		
2-3	●	●	●	●	●	
3-4	●	●	●	●	●	●
4-5	●	●	●	●	●	●
5-6	●	●	●	●	●	●
6-7	●	●	●	●	●	●
7-8		●	●	●	●	●
8-9		●	●	●	●	●
9-10		●	●	●	●	●
10-11			●	●	●	●
11-12			●	●	●	●
12-13			●	●	●	●
13-14				●	●	●
14-15				●	●	●
15-16				●	●	●
16-17					●	●
17-18					●	●
18-19					●	●
19-20					●	●
20-21						●
21-22						●
22-23						●
23-24						●
24-25						●
25-26						●

Ordering example: ER 20 COLLET 11-12 AA
Exemple de commande: ER 20 COLLET 11-12 AA
Bestellbeispiel: ER 20 COLLET 11-12 AA







- **ER Coolit™ - Sealed Jet Collet ITS Standard Precision**
- **Pinces étanches ER Coolit™-JET Précision Standard ITS**
- **ER Coolit™ - Jet Spannzangen**

ER □□ JET CO. □-□

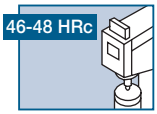
Range Gamme Bereich	ER16	ER20	ER25	ER32	ER40
3-4	●	●	●	●	●
4-5	●	●	●	●	●
5-6	●	●	●	●	●
6-7	●	●	●	●	●
7-8	●	●	●	●	●
8-9	●	●	●	●	●
9-10	●	●	●	●	●
10-11		●	●	●	●
11-12		●	●	●	●
12-13		●	●	●	●
13-14			●	●	●
14-15			●	●	●
15-16			●	●	●
16-17				●	●
17-18				●	●
18-19				●	●
19-20				●	●
20-21					●
21-22					●
22-23					●
23-24					●
24-25					●
25-26					●

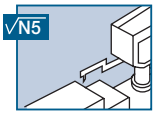
Ordering example: ER 20 JET CO. 11-12

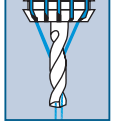
Exemple de commande: ER 20 JET CO. 11-12

Bestellbeispiel: ER 20 JET CO. 11-12

130







- **ER Coolit™ - Sealed Jet 2 Collet ITS Standard Precision**
- **Pinces étanches ER Coolit™ - Jet 2 Précision Standard ITS**
- **ER Coolit™ - Jet 2 Spannzangen**

ER□□ JET2 CO. □-□

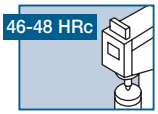
Range Gamme Bereich	ER16	ER20	ER25	ER32	ER40
3-4	●	●	●	●	●
4-5	●	●	●	●	●
5-6	●	●	●	●	●
6-7	●	●	●	●	●
7-8	●	●	●	●	●
8-9	●	●	●	●	●
9-10	●	●	●	●	●
10-11		●	●	●	●
11-12		●	●	●	●
12-13		●	●	●	●
13-14			●	●	●
14-15			●	●	●
15-16			●	●	●
16-17				●	●
17-18				●	●
18-19				●	●
19-20				●	●
20-21					●
21-22					●
22-23					●
23-24					●
24-25					●
25-26					●

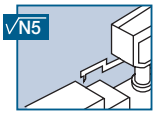
Ordering example: ER 20 JET2 CO. 11-12

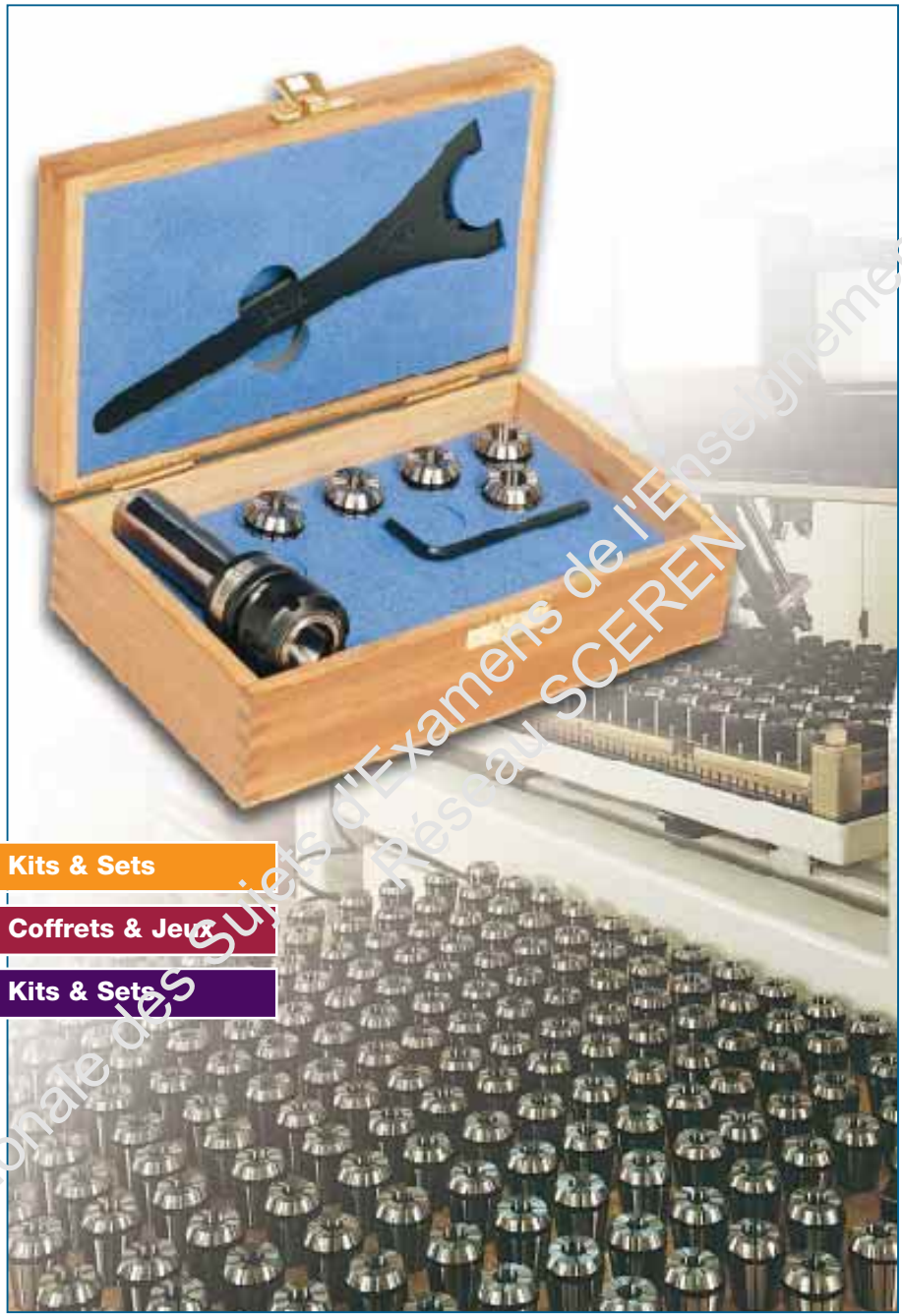
Exemple de commande: ER 20 JET2 CO. 11-12

Bestellbeispiel: ER 20 JET2 CO. 11-12

130



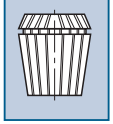




Kits & Sets

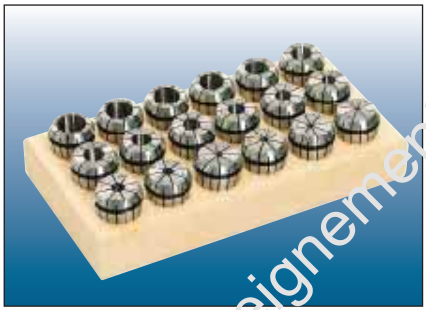
Coffrets & Jeux

Kits & Sets



- **ER Type Collet Set ITS Standard Precision**
- **Jeux de Pinces ER Précision Standard ITS**
- **Spannzangen-Set ER**

Designation Désignation Bezeichnung	Set Pcs. Nb. Pcs Set Stück	Range Gamme Bereich
SET ER 11 CO. 7	7	0.5-7
SET ER 16 CO. 10	10	0.5-10
SET ER 20 CO. 12	12	1-13
SET ER 25 CO. 15	15	1-16
SET ER 32 CO. 18	18	2-20
SET ER 40 CO. 23	23	3-26
SET ER 50 CO. 12	12	10-34

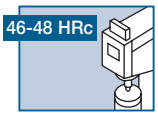


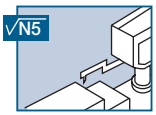
DIN 6499

- **ER Type Collet Set ITS Ultra Precision 'AA'**
- **Jeux de Pinces ER Super Présision ITS 'AA'**
- **Spannzangen-Set ER für höchste Präzision 'AA'**

Designation Désignation Bezeichnung	Set Pcs. Nb. Pcs Set Stück	Range Gamme Bereich
SET ER 11AA CO. 7	7	0.5-7
SET ER 16AA CO. 10	10	0.5-10
SET ER 20AA CO. 12	12	1-13
SET ER 25AA CO. 15	15	1-16
SET ER 32AA CO. 18	18	2-20

DIN 6499





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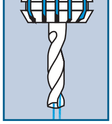
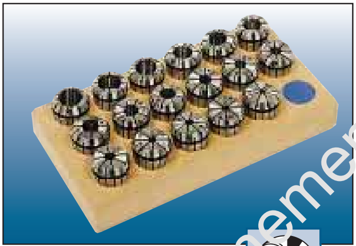


- **ER Coolit™ - Sealed Jet Collet Set ITS Standard Precision**
- **Jeux de Pinces étanches ER Coolit™- Jet Précision standard ITS**
- **ER Coolit™ - Jet Spannzangen-Set**

Designation Désignation Bezeichnung	Set Pcs. Nb. Pcs Set Stück	Range Gamme Bereich
SET ER 16 Jet CO. 7	7	3-10
SET ER 20 Jet CO. 10	10	3-13
SET ER 25 Jet CO. 13	13	3-16
SET ER 32 Jet CO. 17	17	3-20
SET ER 40 Jet CO. 23	23	3-26

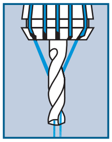
DIN 6499

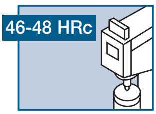


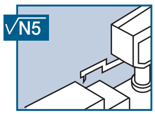
- **ER Coolit™ - Sealed Jet 2 Collet Set ITS Standard Precision**
- **Jeux de Pinces étanches ER Coolit TM - Jet 2 Précision Standard ITS**
- **ER Coolit™ - Jet Spannzangen-Set ER**

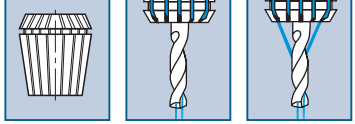
Designation Désignation Bezeichnung	Set Pcs. Nb. Pcs Set Stück	Range Gamme Bereich
SET ER 16 Jet2 7	7	3-10
SET ER 20 Jet2 10	10	3-13
SET ER 25 Jet2 13	13	3-16
SET ER 32 Jet2 17	17	3-20
SET ER 40 Jet2 23	23	3-26

DIN 6499





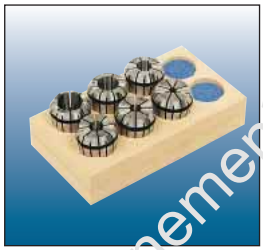




- **ER Type Collet Start Set ETM Standard Precision**
- **Jeux de Pinces ER pour premier équipement Précision Standard ITS**
- **Start Spannzangen-Set ER**

Designation Désignation Bezeichnung	Set Pcs. Nb. Pcs Set Stück	Range Gamme Bereich
SET ER 16 8 CO. 8	8	3, 4, 5, 6, 7, 8, 9, 10
SET ER 20 5 CO. 5	5	4, 6, 8, 10, 12
SET ER 25 6 CO. 6	6	4, 6, 8, 10, 12, 16
SET ER 32 6 CO. 6	6	6, 8, 10, 12, 16, 20
SET ER 40 7 CO. 7	7	6, 8, 10, 12, 16, 20, 25

DIN 6499



- **ER Type Coolit™ Sealed Jet Collet Set**
- **Jeux de Pinces étanches Type ER Jet Coolit™**
- **ER Type Coolit™ Abgedichtetes Jet Spannzangen-Set**

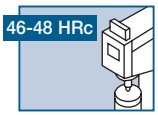
Designation Désignation Bezeichnung	Set Pcs. Nb. Pcs Set Stück	Range Gamme Bereich
SET ER 16 JET CO. 5	5	4, 5, 6, 8, 10
SET ER 20 JET CO. 5	5	4, 6, 8, 10, 12
SET ER 25 JET CO. 6	6	4, 6, 8, 10, 12, 16
SET ER 32 JET CO. 6	6	6, 8, 10, 12, 16, 20
SET ER 40 JET CO. 7	7	6, 8, 10, 12, 16, 20, 25

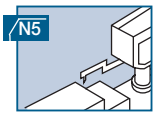
DIN 6499

- **ER Type Coolit™ Sealed Jet2 Collet Set**
- **Jeux de Pinces étanches Type ER Jet 2 Coolit™**
- **ER Type Coolit™ Abgedichtetes Jet2 Spannzangen-Set**

Designation Désignation Bezeichnung	Set Pcs. Nb. Pcs Set Stück	Range Gamme Bereich
SET ER 16 JET 2 CO. 5	5	4, 5, 6, 8, 10
SET ER 20 JET 2 CO. 5	5	4, 6, 8, 10, 12
SET ER 25 JET 2 CO. 6	6	4, 6, 8, 10, 12, 16
SET ER 32 JET 2 CO. 6	6	6, 8, 10, 12, 16, 20
SET ER 40 JET 2 CO. 7	7	6, 8, 10, 12, 16, 20, 25

DIN 6499

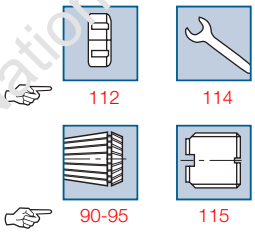


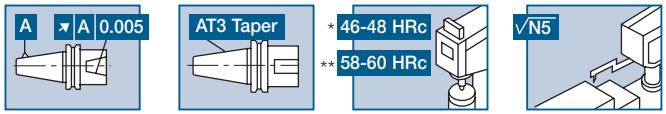


- **ER Type Collet Chuck ER 16, 32, 40, 50 Kit**
- **Coffrets de Porte-Pinces Type ER 16, 20, 32, 40, 50**
- **ER Spannzangen-Set mit Steilkegel-Futter und Spannschlüssel**

Designation Désignation Bezeichnung	Set Pcs. Nb. Pcs Set Stück	Range Gamme Bereich
KIT R-8 ER16 CO. 10	10	0.5-10
KIT R-8 ER32 CO. 18	18	2-20
KIT R-8 ER40 CO. 23	23	3-26
KIT DIN2080 30 ER32	18	2-20
KIT DIN2080 40 ER32	18	2-20
KIT DIN2080 30 ER40	23	3-26
KIT DIN2080 40 ER40	23	3-26
KIT DIN2080 50 ER40	23	3-26
KIT ISO40 ER50	12	10-34
KIT ISO50 ER50	12	10-34
KIT MT 3 ER32 CO. 18	18	2-20
KIT MT 4 ER32 CO. 18	18	2-20
KIT MT 4 ER40 CO. 23	23	3-26

ISO R-8, DIN 2080 & DIN 228-2
DIN 6499

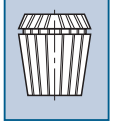




* Collet
** Toolholder

* Pince
** Porte-pince

* Spannzange
** Werkzeughalter



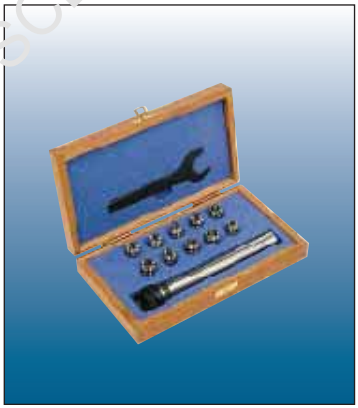
- **ER Type Collet Chuck ER 11, 16, 20, Mini-Kit**
- **Coffrets de Mini Porte-Pinces Type ER 11, 16, 20**
- **Spannzangen-Set ER mit Mini-Spannfutter und Spannschlüssel**

Designation Désignation Bezeichnung	Set Pcs. Nb. Pcs Set Stück	Range Gamme Bereich
KIT ST 12X80 ER 11 M	7	0.5-7
KIT ST 12X80 ER16 M	10	0.5-10
KIT ST 16X50 ER 11M	7	0.5-7
KIT ST 16X100 ER 11M	7	0.5-7
KIT ST 16X150 ER 11 M	7	0.5-7
KIT ST 20X100 ER 16 M	10	0.5-10
KIT ST 20X150 ER 16 M	10	0.5-10
KIT ST 20X100 ER 20 M	12	1-12
KIT ST 20X150 ER 20 M	12	1-12

Straight Shank
DIN 6499

- **Collet Chuck ER Type 11, 16, 20 - Kit**
- **Coffrets de Porte-Pinces Type ER 11, 16, 20**
- **Spannzangen-Set ER mit Zylinderschaft-Spannfutter**

Designation Désignation Bezeichnung	Set Pcs. Nb. Pcs Set Stück	Range Gamme Bereich
KIT ST 16X50 ER11	7	0.5-7
KIT ST 20X50 ER11	7	0.5-7
KIT ST 20X100 ER11	7	0.5-7
KIT ST 20X150 ER11	7	0.5-7
KIT ST 20X50 ER16	10	0.5-10
KIT ST 20X100 ER16	10	0.5-10
KIT ST 20X150 ER16	10	0.5-10
KIT ST 20X50 ER20	12	1-12
KIT ST 25X100 ER20	12	1-12
KIT ST 25X100 ER20	12	1-12

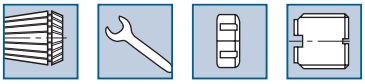


Straight Shank
DIN 6499

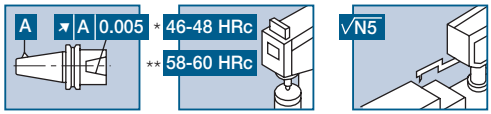
* Collet
** Toolholder

* Pince
** Porte-pince

* Spannzange
** Werkzeughalter



90-95 114 112 115



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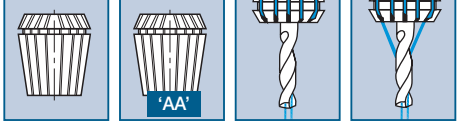
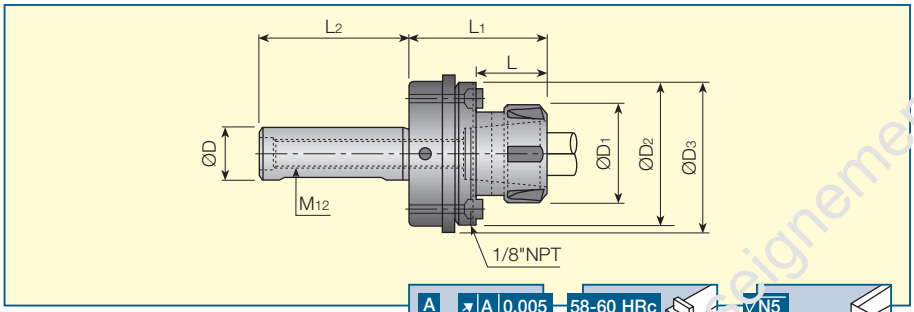
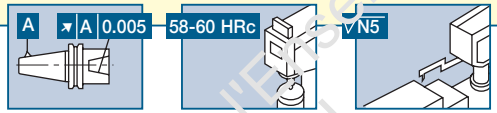


- **GYRO ER Type Adjustable Toolholder ER 20, 25, 32 - Kit**
- **Coffrets GYRO de Porte-Pinces à Alignement Total des Axes Type ER 20, 25, 32**
- **GYRO Einstellbare Werkzeugaufnahme für Spannzangen**

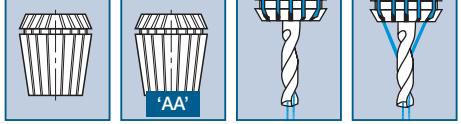




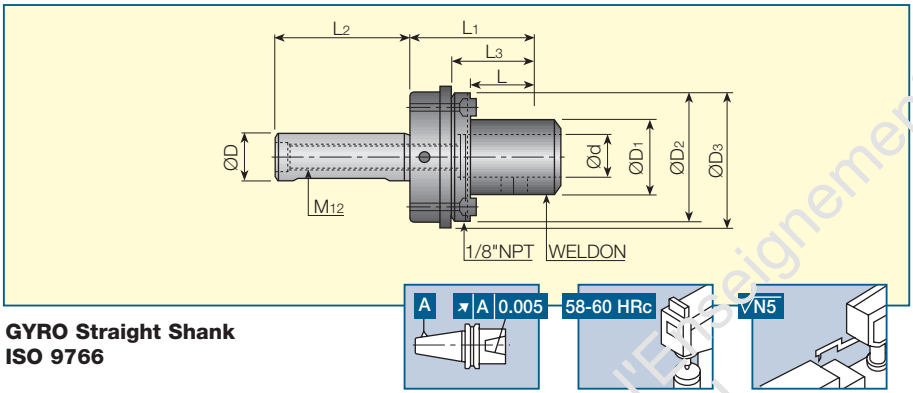
GYRO Straight Shank
DIN 6499

Designation Désignation Bezeichnung	D	D1	D2	D3	L	L1	L2
KIT GYRO ST20 ER20	20	34	57	67	28	80	59
KIT GYRO ST25 ER25	25	42	74	84	35	80	63
KIT GYRO ST25 ER32	25	50	74	84	36	80	63
KIT GYRO ST32 ER32	32	50	74	84	36	80	63
KIT GYRO ST40 ER32	40	50	74	84	36	80	63

112 114 90-95 115 127-128



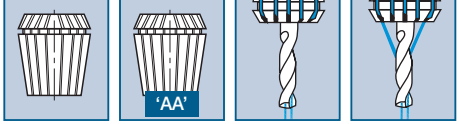
- **GYRO Weldon Type Adjustable Toolholder**
- **Coffrets GYRO d'Attachements Type Weldon à Alignement Total des Axes**
- **GYRO Einstellbare Werkzeugaufnahmen für Weldonschaft**



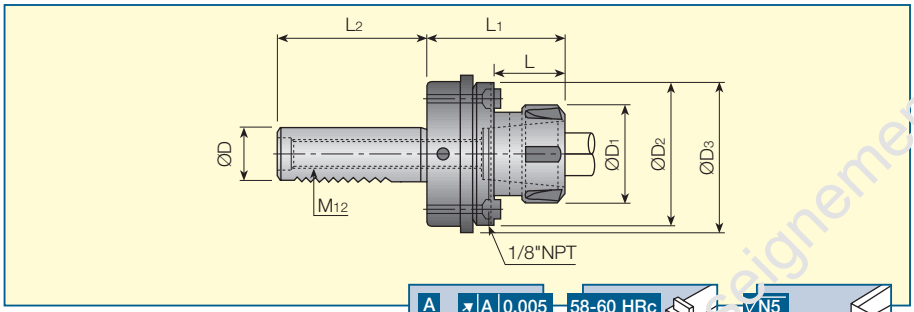
GYRO Straight Shank
ISO 9766

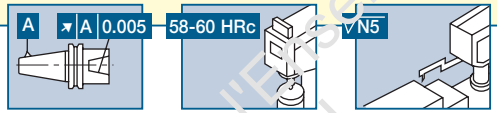
Designation Désignation Bezeichnung	D	d	D_1	D_2	D_3	L	L_1	L_2	L_3
KIT GYRO ST32 16	32	16	28	74	8	50	83	80	52
KIT GYRO ST32 20	32	20	51	74	34	50	85	80	52
KIT GYRO ST32 25	32	25	51	74	84	56	89	80	58
KIT GYRO ST32 32	32	32	60	74	84	60	89	80	62
KIT GYRO ST32 40	32	40	60	74	84	70	93	80	70

115 127



- **GYRO ER Type Adjustable Toolholder ER 25, 32 - Kit**
- **Coffrets GYRO de Porte-Pinces Type ER 25, 32 à Alignement Total des Axes**
- **GYRO Einstellbare Werkzeugaufnahme für Spannzangen**

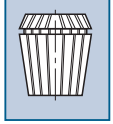




GYRO VDI DIN 69880
DIN 6499

Designation Désignation Bezeichnung	D	D_1	D_2	D_3	L	L_1	L_2
K. GYRO 30 69880 ER 25	30	42	74	75	35	55	74
K. GYRO 30 69880 ER 32	30	50	74	84	36	55	75
K. GYRO 40 69880 ER 32	40	50	74	84	36	63	75
K. GYRO 50 69880 ER 32	50	50	74	84	36	78	75

112 114 90-95 127



- **GTI ST ER11 - ER40 Tapping Attachment Kit**
- **Coffrets GTI d'Appareils à Tarauder ER11 à ER40 avec Compensations Axiale et Radiale**
- **GTI Gewindeschneidfutter für Spannzangen ER11 - ER40**

Designation Désignation Bezeichnung	Set Pcs. Nb. Pcs Set Stück	Range Gamme Bereich
KIT GTI ST16 ER 11M	4	3, 4, 5, 6
KIT GTI ST20 ER 16 **KIT GTI ST20 ER 20**	4 4	4, 5, 6, 7 5, 6, 8, 9
KIT GTI ST25 ER 25 **KIT GTI ST25 ER 32**	6 6	6, 7, 9, 11, 12 6, 7, 9, 11, 12, 16
KIT GTI ST32 ER 40	6	9, 11, 14, 16, 18, 20

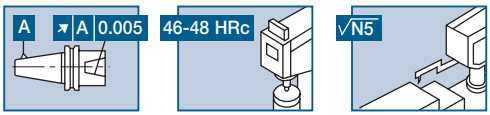
GTI Straight Shank
DIN 6499

- **GTI Tapping Attachment ER32, ER40 with ER32 Shank Kit**
- **Coffrets GTI d'appareil à tarauder ER32, ER40 avec Attachement ER32**
- **GTI Gewindeschneidfutter für Spannzangen ER mit Anschlußkegel ER 32**

Designation Désignation Bezeichnung	Set Pcs Nb. Pcs Set Stück	Collet Size Pinces Taille Spannzangen-Größe
KIT GTI ER 32 TAP ATT	9	6, 7, 8, 9, 11, 12, 13, 14, 15
KIT GTI ER 40 TAP ATT	9	6, 7, 9, 11, 12, 13, 16, 18, 20

GTI Straight Shank
DIN 6499

112 114 90-95 124

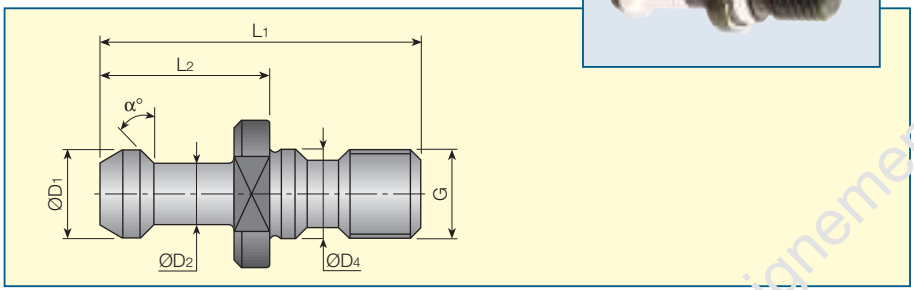


Pull Stud

Tirettes

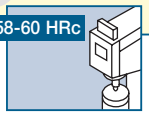
Anzugsbolzen

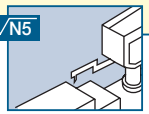
- **Retention Knob**
- **Tirette de Préhension**
- **Anzugsbolzen**



Pull Stud BT MAS – 403

Pull Stud Ott System

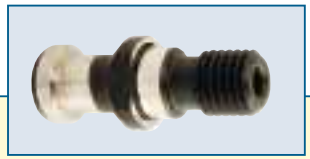


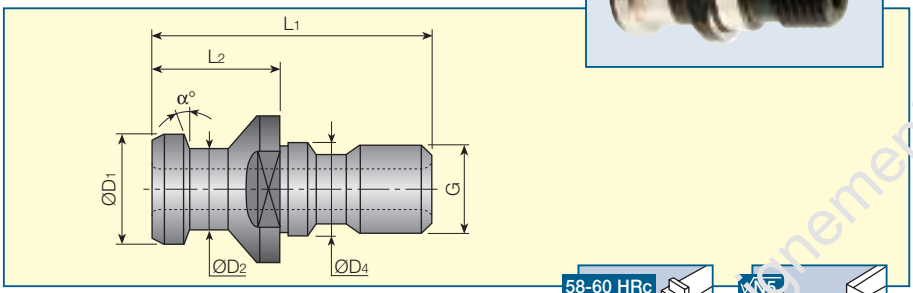


Designation Désignation Bezeichnung	G	D_1	D_2	D_4	L_1	L_2	α°
PULL S BT30-1 45-M12	M12	11	7	12.5	43	23	45
PULL S BT30-2 30-M12	M12	11	7	12.5	43	23	30
PULL S BT40-1 45-M16	M16	15	10	17	60	35	45
PULL S BT40-2 30-M16	M16	15	10	17	60	35	30
PULL S BT40-3 90-M16	M16	15	10	17	60	35	0
PULL S BT50-1 45-M24	M24	23	17	25	85	45	45
PULL S BT50-2 60-M24	M24	23	17	25	85	45	60
PULL S BT50-3 90-M24	M24	23	17	25	85	45	0
PULL S OTT BT40(1)	M16	25.3	21.1	17	55.59	27.95	15

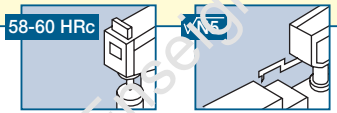
(1) ● For BT 40 Shank only
(1) ● Pour BT 40 Uniquement
(1) ● Nur für Aufnahme BT 40

- **Retention Knob**
- **Tirette de Préhension**
- **Anzugsbolzen**





Pull Stud DIN 69872 JIS 63398



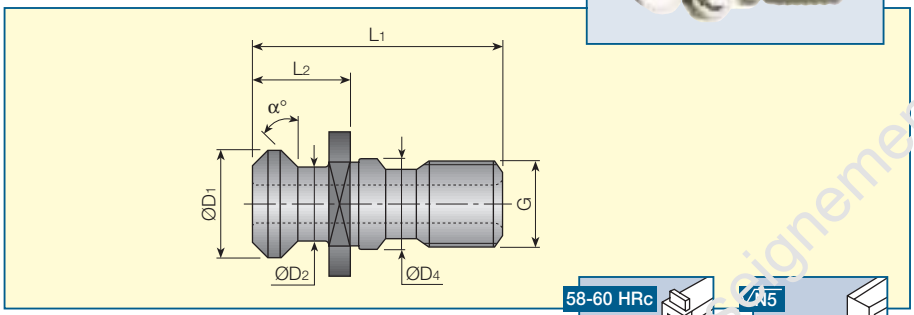
Designation Désignation Bezeichnung	G	D_1	D_2	D_4	L_1	L_2	α°
PULL S T.C 30 M12	M12	13	9	13	44	24	15
PULL S T.C 40 M16	M16	19	14	17	54	26	15
PULL S T.C 40 M16 N.H (1)	M16	19	14	17	54	26	15
PULL S T.C 50 M24	M24	28	21	25	74	34	15
PULL S T.C 50 M24 N.H (1)	M24	28	21	25	74	34	15
PULL S CAT30 7388/B	M12	13.35	9.3	13	34	11.8	45
PULL S CAT40 7388/B	M16	18.95	12.95	17	44.5	16.4	45
PULL S CAT50 7388/B	M24	29.1	19.6	25	65.5	25.55	45
PULL S BT30 JIS6339B	M12	13	8	13	43	23.4	15
PULL S BT40 JIS6339B	M16	19	14	17	54	29	15
PULL S BT50 JIS6339B	M24	28	21	25	74	34	15

(1) ● Without oil hole

(1) ● Sans Lubrification Intégrée

(1) ● Ohne Bohrung für Kühlmittelzufuhr

- **Retention Knob**
- **Tirette de Préhension**
- **Anzugsbolzen**

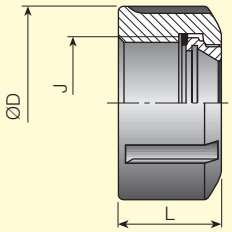


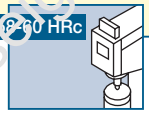
Pull Stud ISO 7388/B Mazak

Designation Désignation Bezeichnung	G	D_1	D_2	D_4	L_1	L_2	α°
PULL BT40 MAZAK M16	M16	18.79	12.44	17	44.1	19.1	45
PULL BT50 MAZAK M24	M24	28.95	20.82	25	65.2	25.2	45

Accessories
Accessoires
Zubehör

- **ER-TOP™ Clamping Nut**
- **Ecrous de Serrage ER-TOP™**
- **Zubehör: ER-TOP™ Spannmutter**



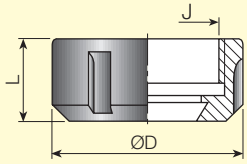


ER-TOP Nut - DIN 6499

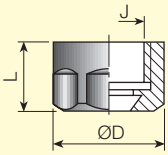
Designation Désignation Bezeichnung	D	L	J
NUT ER11 TOP MINI	16	10.8	M1[illegible]0.75
NUT ER11 TOP	19	11.3	M14[illegible]0.75
NUT ER16 TOP MINI	22	18	M19x1.0
NUT ER16 TOP	28	17	M22x1.5
NUT ER20 TOP MINI	28	19	M24x1.0
NUT ER20 TOP	34	19	M25x1.5
NUT ER25 TOP	42	20	M32x1.5
NUT ER32 TOP	50	22	M40x1.5
NUT ER40 TOP	63	25	M50x1.5
NUT ER50 TOP	78	55	M64x2.0

132-133

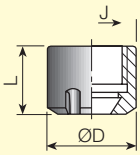
- **ER Clamping Nut**
- **Ecrous de Serrage - ER**
- **Zubehör: ER Spannmutter**



UM ER 25, 32, 40, 50



UM ER 16, 20

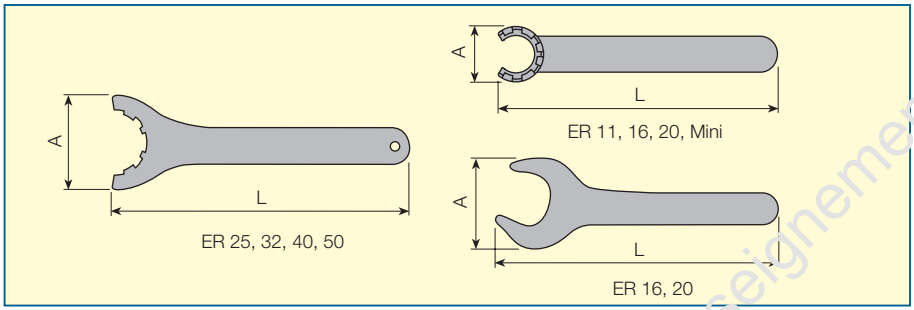


ER 11, 16, 20 Mini

DIN 6499

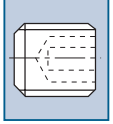
Designation Désignation Bezeichnung	D	L	J
NUT MINI ER11	16	10.8	M13x0.75
NUT UM ER11	19	11.8	M14x0.75
MUT MINI ER16	22	13	M19x1.0
NUT UM ER16	28	17	M22x1.5
NUT MINI ER20	28	19	M24x1.0
NUT UM ER20	34	19	M25x1.5
NUT UM ER25	42	20	M32x1.5
NUT UM ER32	50	22	M40x1.5
NUT UM ER40	63	25	M50x1.5
NUT UM ER50	78	55	M64x2.0

- **ER Wrench**
- **Clés Pour Mandrins à Pince ER**
- **Spannschlüssel**



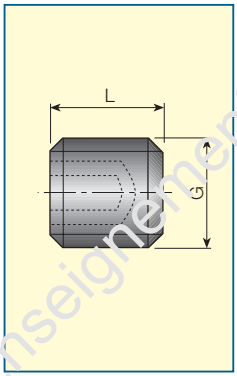
DIN 6499

Designation Désignation Bezeichnung	A	L
WRENCH ER11 MINI	16.8	90
WRENCH ER11	32	95
WRENCH ER16 MINI	22.5	110
WRENCH ER16	42	140
WRENCH ER20 MINI	29	120
WRENCH ER20	60	135
WRENCH ER25	65	210
WRENCH ER32	75	250
WRENCH ER40	90	290
WRENCH ER50	110	350



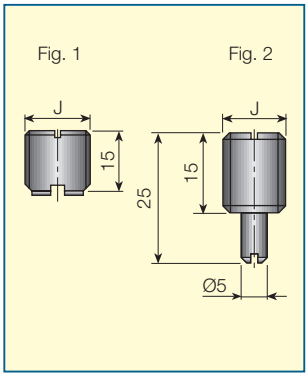
- **Lock Screw DIN 1835 B/E for End Mill Holder**
- **Vis de Blocage à six pans creux DIN 1835 B/E**
- **Verschlußschraube DIN 1835 B/E für Werkzeugaufnahmen**

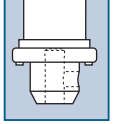
Designation Désignation Bezeichnung	G	L	For Shank Pour Atttachement Für Schaft
M6X10 EM SCREW	M6	10	6
M8X10 EM SCREW	M8	10	8
M10X12 EM SCREW	M10	12	10
M12X16 EM SCREW	M12	16	12
M14X16 EM SCREW	M14	16	16
M16X16 EM SCREW	M16	16	20
M18X20 EM SCREW	M18X2	20	25, 32
M20X20 EM SCREW	M20X2	20	40
M25X25 EM SCREW	M25X2	25	50



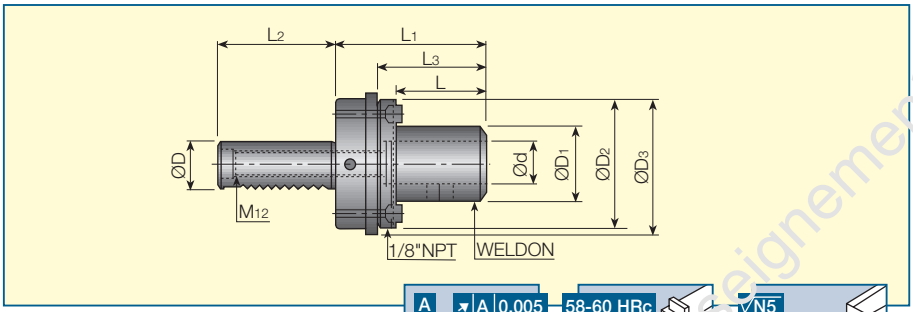
- **Preset Screw Standard**
- **Vis de Préréglage Standard**
- **Standard-Einstellschraube**

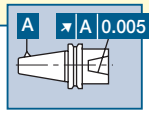
Designation Désignation Bezeichnung	J	Fig. Fig. Abb.
PRESET SCREW 08X1.25	M8X1.25	1
PRESET SCREW 10X1.5	M10X1.5	1
PRESET SCREW 12X1.75	M12X1.75	1
PRESET SCREW 12X1.75B	M12X1.75	2
PRESET SCREW 16X2.0	M16X2	1
PRESET SCREW 18X1.5	M18X1.5	1
PRESET SCREW 22X1.5	M22X1.5	1
PRESET SCREW 28X1.5	M28X1.5	1
PRESET SCREW 36X1.5	M36X1.5	1

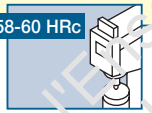


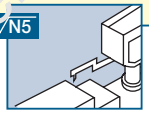


- **GYRO Weldon Type Adjustable Tool Holder**
- **Coffrets GYRO d'Attachements Type Weldon à Alignement Total des Axes**
- **GYRO Einstellbare Werkzeugaufnahme für Weldonschaft**







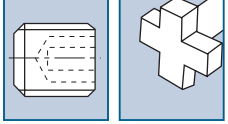


GYRO VDI DIN 69880
ISO 9766

Designation Désignation Bezeichnung	D	d	D1	D2	D3	L	L1	L2	L3
K. GYRO 30 69880 EM16	30	16	44	74	84	50	85	55	52
K. GYRO 30 69880 EM20	30	20	51	74	84	50	85	55	52
K. GYRO 30 69880 EM25	30	25	51	74	84	56	89	55	58
K. GYRO 30 69880 EM32	30	32	60	74	84	60	89	55	62
K. GYRO 40 69880 EM16	40	16	44	74	84	50	85	63	52
K. GYRO 40 69880 EM20	40	20	51	74	84	50	85	63	52
K. GYRO 40 69880 EM25	40	25	51	74	84	56	89	63	58
K. GYRO 40 69880 EM32	40	32	60	74	84	60	89	63	62
K. GYRO 40 69880 EM40	40	40	60	74	84	70	93	63	70
K. GYRO 50 69880 EM16	50	16	44	74	84	50	85	78	52
K. GYRO 50 69880 EM20	50	20	51	74	84	50	85	78	52
K. GYRO 50 69880 EM25	50	25	51	74	84	56	89	78	58
K. GYRO 50 69880 EM32	50	32	60	74	84	60	89	78	62
K. GYRO 50 69880 EM40	50	40	60	74	84	70	93	78	72

115

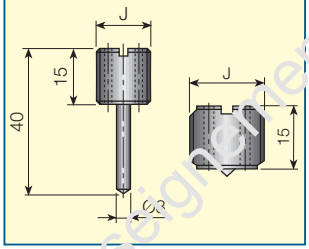
127



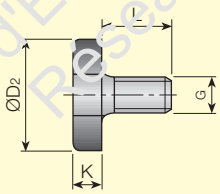
- **Preset Screw with Oil Hole for ER Coolit™ Collet**
- **Vis de Préréglage à arrosage intégré - pour pinces ER Coolit™**
- **Einstellschraube mit Durchgangsbohrung für ER Coolit™**

Designation Désignation Bezeichnung	J	Fig. Fig. Abb.
PRESET ER-J 8X1.25	M8X1.25	3
PRESET ER-J 10X1.5	M10X1.5	3
PRESET ER-J 12X1.75L	M12X1.75	4
PRESET ER-J 12X1.75	M12X1.75	3
PRESET ER-J 16X2	M16X2	3
PRESET ER-J 16X2L	M16X2	4
PRESET ER-J 18X1.5	M18X1.5	3
PRESET ER-J 18X1.5L	M18X1.5	4
PRESET ER-J 22X1.5	M22X1.5	3
PRESET ER-J 22X1.5L	M22X1.5	4
PRESET ER-J 28X1.5	M28X1.5	3

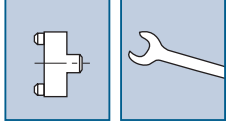
Fig. 4 Fig. 3



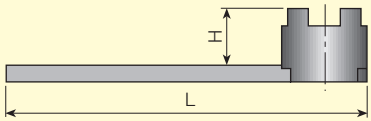
- **Lock Screw DIN6367 for COMBI Shell and Mill Holder**
- **Vis de Blocage Cruciformes DIN 6367 pour Fraises à Alésage**
- **Fräseranzugschrauben DIN 6367 für Aufsteckfräsdorne**



Designation Désignation Bezeichnung	S.M.C.	D_1	D_2	K	L
M8 CLAMP SCREW 16	16	M8	20	6	16
M10 CLAMP SCREW 22	22	M10	28	7	18
M12 CLAMP SCREW 27	27	M12	35	8	22
M16 CLAMP SCREW 32	32	M16	42	9	26
M20 CLAMP SCREW 40	40	M20	52	10	30
M24 CLAMP SCREW 50	50	M24	63	12	36

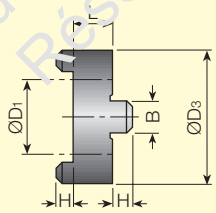


- **Wrench DIN 6368 for COMBI Shell End Mill Holder**
- **Clés DIN 6368 pour Attachements Combinés pour Fraises à Alésage**
- **Schlüssel für Aufsteckfräserdorne**

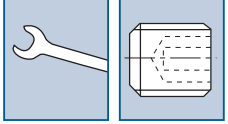


Designation Désignation Bezeichnung	SMC	For Screw Pour Vis Für Schraube	H	L
WRENCH M8 SMC 16	16	M8	20	180
WRENCH M10 SMC 22	22	M10	25	200
WRENCH M12 SMC 27	27	M12	32	225
WRENCH M16 SMC 32	32	M18	36	250
WRENCH M20 SMC 40	40	M20	40	280
WRENCH M24 SMC 50	50	M24	50	315

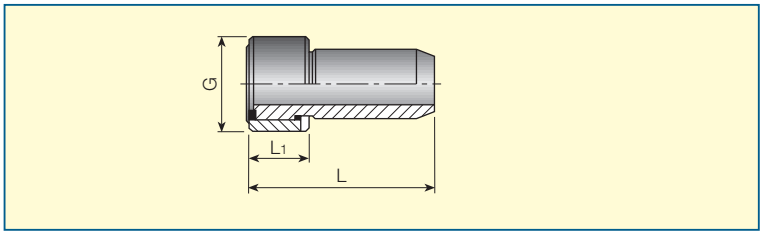
- **Driving Ring DIN 6366/1 for COMBI Shell and Mill Holder**
- **Bagues d'Entraînement DIN 6366/1 pour Attachements Combinés**
- **Mitnehmerringe für Aufsteckfräserdorne**



Designation Désignation Bezeichnung	D_1	D_3	L	B	H
16 D.RING SMC	16	32	10	8	5.0
22 D.RING SMC	22	40	12	10	6.0
27 D.RING SMC	27	48	12	12	6.3
32 D.RING SMC	32	58	14	14	7.0
40 D.RING SMC	40	70	14	16	8.0
50 D.RING SMC	50	90	16	18	9.0

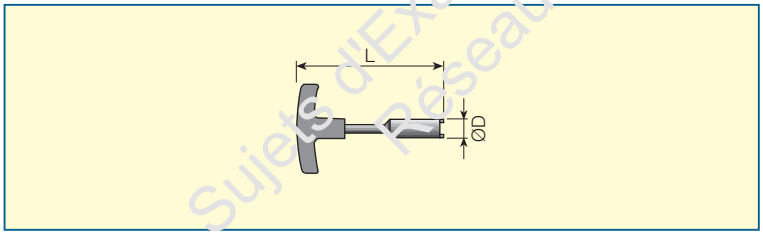


- **HSK-A Cooling Tube**
- **Raccord de Lubrification pour HSK-A**
- **Kühlmittel-Zufuhrrohr für HSK-A**

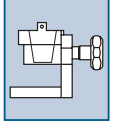


Designation Désignation Bezeichnung	HSK-A	L	L1	G
COOLING TUB HSK-A50	50	32.7	9.5	M13X1
COOLING TUB HSK-A63	63	36.0	11.5	M18X1
COOLING TUB HSK-A100	100	43.6	15.5	M24X1.5

- **HSK-A Cooling Tube Wrench**
- **Clés pour - HSK-A**
- **Schlüssel zur Befestigung für HSK-A Kühlmittel-Zufuhrrohr**



Designation Désignation Bezeichnung	HSK-A	D	L
WRENCH C. TUBE HSK50	50	15.0	120
WRENCH C. TUBE HSK63	63	17.0	122
WRENCH C. TUBE HSK100	100	22.0	141



- **Tool Clamp Fixture for Tool Shank ISO, DIN 69871 and BT MAS-403**
- **Supports d'Assemblage pour Attachements ISO, DIN 69871 et BT MAS-403**
- **Montageblock für Werkzeughalter**

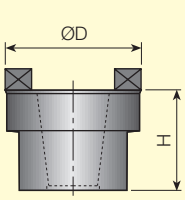


Fig. 1

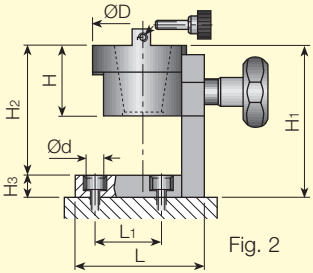
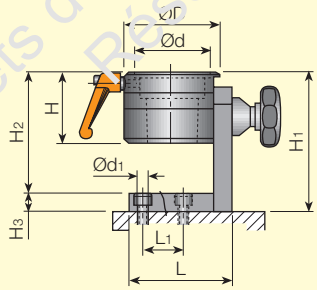


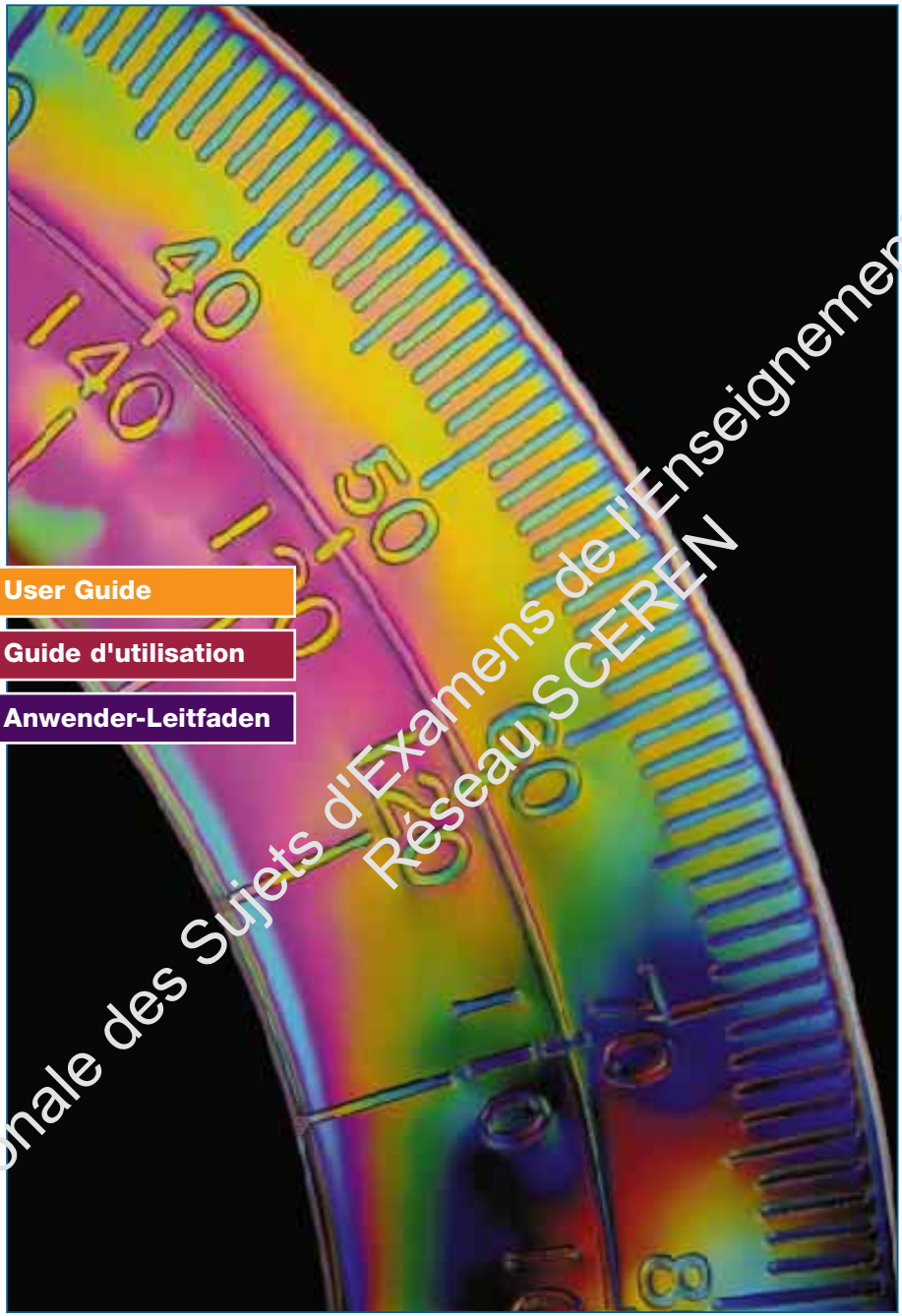
Fig. 2

Designation Désignation Bezeichnung	D	H	H_1	H_2	H_3	L	L_1	d	Fig. Fig. Abb.
TOOL CLAMP 40 ROTARY	82	60	127	108	19	104	55	12.5	2
TOOL CLAMP 50 ROTARY	110	70	173	154	19	44	95	12.5	2
TOOL CLAMP 40 FIX	82	60							1
TOOL CLAMP 50 FIX	110	70							1

- **Multi-Clamp Rotary Fixture for HSK-Shanks**
- **Supports d'Assemblage Rotatifs pour Attachements HSK**
- **Montageblock für Werkzeughalter HSK**



Designation Désignation Bezeichnung	HSK-A	D	d	d_1	L	L_1	H	H_1	H_2	H_3
MULTI CLAMP 50	50	95	50	12.5	104	40	72	142	123	19
MULTI CLAMP 63	63	95	63	12.5	104	40	72	142	123	19
MULTI CLAMP 100	100	135	100	12.5	144	85	90	199	180	19



User Guide

Guide d'utilisation

Anwender-Leitfaden

Balancing Elements

Introduction:
Balancing is the process of controlling the mass distribution of a body so that it rotates in its bearings without imbalanced centrifugal forces.

Balancing induces a reduction of vibration risks, lower spindle strains, higher cutting parameters and better machining qualities.

The measuring equipment available today enables imbalance to be reduced to low limits. However, a compromise between the quality and economy requirements must be reached with regard to reducing imbalance.

Definitions
G - Balance quality (mm/s)
e - Specific imbalance (gxmm/Kg)
Ω - Speed (rad/s)
N - Speed (rpm)
M - Mass of body (Kg)
m - Mass of imbalance (g)
r - Radius of imbalance (mm)
U - Residual imbalance (gxmm)

Operations

$$e = \frac{U}{M} => U = M x e$$

$$\Omega = \frac{2\pi N}{60} = \frac{\pi N}{30}$$

Residual imbalance equals the tool mass (M) times its eccentricity (e).
Eccentricity measures the extent to which the tool weight is off-center. It is defined as the distance from the tool's center of the rotation to its true center of mass.

If eccentricity is measured in microns and tool mass is measured in kilograms, these units yield residual imbalance in gram-millimeters.

Informations sur l'Equilibrage

Introduction:
L'équilibrage est le procédé de recherche de la distribution des masses sur un corps afin qu'il puisse tourner sur son axe sans forces centrifuges inégalement réparties.

L'équilibrage implique une réduction des risques de vibrations, moins de contraintes sur la broche, et de meilleures qualités d'usinages.

Les appareils de mesure disponibles aujourd'hui sont capables de réduire les défauts d'équilibrage jusqu'aux limites mimimum.Cependant,il serait coûteux d'exagérer le niveau de qualité à demander.Il devient toutefoi nécessaire de déterminer jusqu'à quelle valeur mimimum, le niveau d'équilibrage doit être réduit, et de voir à quels niveaux l'aspect économique et le compromis technique de la précision nécessaire de l'équilibrage doivent se situer.

Définitions:
G - Qualité de l'équilibrage (mm/s)
e - Défaut d'équilibrage spécifique (gxmm/Kg)
Ω - Vitesse (rad/s)
N - Rotation (t/m)
M - Masse du corps (Kg)
m - Masse du défaut d'équilibrage (g)
r - Rayon du défaut d'équilibrage (mm)
U - Défaut d'équilibrage résiduel (gxmm)

Formules

$$e = \frac{U}{M} => U = M x e$$

$$\Omega = \frac{2\pi N}{60} = \frac{\pi N}{30}$$

Le défaut d'équilibrage résiduel est égal à la masse de l'outil (M) multipliée par son excentricité (e).

L'exentricité mesure le déport du poids de l'outil qui est en dehors de son centre. Elle est définie telle la distance entre l'axe du centre de rotation de l'outil et l'axe central réel de son poids.

Si l'excentricité est mesurée en microns et la masse de l'outil en Kilogrammes, ces unités produisent un défaut d'équilibrage en grammes par millimètres.

Auswuchtelemente

Auswuchtelemente:
Auswuchten heißt, die Masse eines Körpers so zu verteilen, daß während der Rotation keine freien Zentrifugalkräfte entstehen.

Durch das Auswuchten erreicht man eine Reduzierung der Schwingungen, geringere Spindelbeanspruchungen, bessere Schnittbedingungen und bessere Werkstück-Qualitäten.

Die heute zur Verfügung stehende Meßtechnik erlaubt die Reduzierung von Unwuchten auf extrem kleine Werte. Trotzdem ist es unwirtschaftlich, die Auswuchtanforderung zu übertreiben. Daher ist es notwendig festzulegen, bis auf welches Niveau gewuchtet werden sollte und wo ein sinnvoller Kompromiß zwischen technischem Nutzen und wirtschaftlichem Aufwand liegt.

Definitionen:
G - Wuchtgüte (mm/s)
e - Exzentrizität (gxmm/kg)
Ω - Winkelgeschwindigkeit (rad/s)
N - Drehzahl (U/min)
M - Masse (Kg)
m - Unausgeglichene Masse (g)
r - Radius der Unwucht (mm)
U - Spezifische Unwucht (gxmm)

Berechnung:

$$e = \frac{U}{M} => U = M x e$$

$$\Omega = \frac{2\pi N}{60} = \frac{\pi N}{30}$$

Die verbleibende Unwucht berechnet sich aus der Werkzeugmasse (M) multipliziert mit der Exzentrizität (e).

Die Exzentrizität ist ein Maß für den radialen Abstand, um den der Mittelpunkt der Werkzeugmasse von der Rotationsachse verschoben ist.

Setzt man die Exzentrizität in µm und die Werkzeugmasse in kg an, so ergibt sich die Unwucht in gmm.

Balancing

Any two sets of mass and eccentricity that yield the same imbalance value will have the same effect on the tool, so long as the residual imbalance is in the same plane perpendicular to the rotation axis.

U = r x m

The residual imbalance is independent of the speed. This value reflects the imbalance mass and its distance from the true center of mass. The residual imbalance value is measured on balanced machines.

Example 1:
U = 2 g x mm can be treated as an imbalance mass of m = 2 g in radial distance of r = 1 mm or as a mass of m = 0.1 g in radial distance of r = 20 mm etc.

Example 2:
In order to balance a residual imbalance of U = 4 g x mm in a toolholder with outside radius of r = 20 mm, we have to reduce a mass of 0.2 g.

$$U = m \times r => m = \frac{U}{r} = \frac{4}{20} = 0.2g.$$

G value reflecting the balancing quality of a toolholder according to its rotational speed (N).

$$G = \Omega \times e = \frac{\pi N}{30} \times \frac{U}{M} = \frac{UN \times \pi}{M \times 30}$$

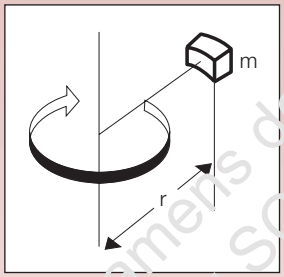
$$e = \frac{G \times 30}{\pi \times N}$$

Informations sur l'Equilibrage

Chaques deux mesures de masse et d' excentricité qui engendrent la même valeur de défaut d'équilibrage auront le même effet sur l'outil,aussi longtemps que le défaut d'équilibrage résiduel est dans le même plan perpendiculaire à l'axe de rotation.

U = r x m

Le défaut d'équilibrage résiduel est indépendant de la vitesse. Cette valeur reflète le défaut d'équilibrage du poids et sa distance par rapport au centre réel de la masse. La valeur du défaut d'équilibrage résiduel est mesuré sur une machine à équilibrer.



Exemple 1:
U = 2g x mm peut être traité tel un défaut d'équilibrage de m=2g pour une distance radiale de r = 1mm ou une masse m = 0,1g pour une distance radiale de r = 20mm etc.

Exemple 2:
De manière à équilibrer un défaut d'équilibrage de U = 4g x mm sur un porte-outil ayant un rayon extérieur de r = 20mm, nous avons à réduire une masse de 0,2g.

$$U = m \times r => m = \frac{U}{r} = \frac{4}{20} = 0.2g.$$

G est la valeur reflétant la qualité d'équilibrage d'un porte-outil en accord avec sa vitesse de rotation (N).

$$G = \Omega \times e = \frac{\pi N}{30} \times \frac{U}{M} = \frac{UN \times \pi}{M \times 30}$$

$$e = \frac{G \times 30}{\pi \times N}$$

Auswuchtelemente

Jede Kombination aus Masse und Exzentrizität, die die gleiche Unwucht ergeben, haben den gleichen Einfluß auf das Werkzeug, solange die Unwuchten in der gleichen Ebene senkrecht zur Rotationsachse liegen.

U = r x m

Die Unwucht ist unabhängig von der Rotationsgeschwindigkeit; sie ist nur eine Funktion der nicht ausgeglichenen Masse und deren Abstand vom Drehzentrum. Die Unwucht wird auf Wuchtmaschinen gemessen.

Beispiel 1:
Die Unwucht U = 2 gmm kann aus einer nicht ausgeglichenen Masse m = 2 g im Abstand von r = 1 mm entstehen oder aus m = 0.1 g und einem Abstand r = 20 mm.

Beispiel 2:
Zum Auswuchten einer Unwucht von U = 4 gmm kann man am Außendurchmesser (r = 20 mm) einer Werkzeugaufnahme eine Masse von 0.2 g abnehmen.

$$U = m \times r => m = \frac{U}{r} = \frac{4}{20} = 0.2g.$$

Die Wuchtgüte G gibt die Auswucht-Qualität einer Werkzeugaufnahme unter Berücksichtigung der Drehzahl (N) an.

$$G = \Omega \times e = \frac{\pi N}{30} \times \frac{U}{M} = \frac{UN \times \pi}{M \times 30}$$

$$e = \frac{G \times 30}{\pi \times N}$$

Balancing Elements

Example 3:
A toolholder with a mass of M=2,000 g, rotating at a speed of N=15,000 rpm, with a residual imbalance U=8 g x mm will have a G value of:

$$G = \frac{\pi}{30} \times N \times \frac{U}{M} =$$

$$\frac{\pi}{30} \times 15{,}000 \times \frac{8}{2{,}000} = 6.3 (mm/S)$$

$$e = \frac{U}{M} = e = \frac{8}{2} = 4 \ (gxmm/Kg)$$

The G value will change to G = 2.5 mm/s when using the same toolholder at a rotational speed N = 6,000 rpm and to G ≈1.0 mm/s at N = 2,500 rpm.

Informations sur l'Equilibrage

Exemple 3:
Un porte-outil avec une masse de M = 2000 g, tournant à une vitesse de N = 15000 t/mn, avec un défaut d'équilibrage résiduel de
U = 8 gxmm aura une valeur G de:

$$G = \frac{\pi}{30} \times N \times \frac{U}{M} =$$

$$\frac{\pi}{30} \times 15000 \times \frac{8}{2000} = 6{,}3 (mm/S)$$

$$e = \frac{U}{M} = e = \frac{8}{2} = 4 \ (gxmm/Kg)$$

La valeur G changera à G ≈2,5 mm/s lors de l'utilisation du même outil sous une vitesse de rotation de N = 6000 t/mn et à G ≈1,0 mm/s sous
N = 2500t /mn

Auswuchtelemente

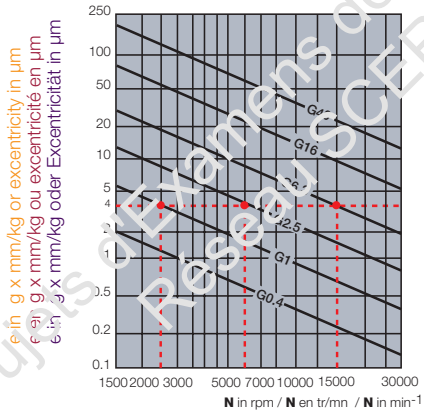
Beispiel 3:
Eine Werkzeugaufnahme mit einer Masse von M = 2,000 g, einer Drehzahl von n = 15,000 U/min und einer Unwucht U = 8 gxmm erreicht eine Gütestufe von:

$$G = \frac{\pi}{30} \times N \times \frac{U}{M} =$$

$$\frac{\pi}{30} \times 15{,}000 \times \frac{8}{2{,}000} = 6.3 (mm/S)$$

$$e = \frac{U}{M} = e = \frac{8}{2} = 4 \ (gxmm/Kg)$$

Die Gütestufe G wird sich auf G ≈ 2.5 mm s ändern, wenn die gleiche Werkzeugaufnahme mit n = 6,000 U/min gedreht wird; G ≈ 1.0 stellt sich bei einer Drehzahl von N = 2,500 U/min ein.



Balance quality grades for various groups of representative rotors:

- General machine-tool parts- **G6.3**
- General toolholders & machine drivers - **G2.5**
- Grinding machine drivers - **G1.0**
- Spindles of precision grinders- **G0.4**

Variété de qualité d'équilibrage pour quelques groupes représentatifs de rotors rigides:

- Equipements de machine-outils classiques - **G 6,3**
- Attachements classiques et équipements de sortie de broche - **G 2,5**
- Equipements de sortie de broche pour rectifieuses - **G 1,0**
- Broches de rectifieuses de précision - **G 0,4**

Empfohlene Wucht-Gütestufen für verschiedene, repräsentative Rotoren:

- Allgemeine Teile von Werkzeugmaschinen: **G 6.3**
- Allgemeine Werkzeugaufnahmen und Werkzeuge: **G 2.5**
- Schleifwerkzeuge: **G 1.0**
- Präzisionsspindeln und -Präzisionswerkzeuge: **G 0.4**

ITS GTI Tapping Attachment

Description:
Short tap chucks for ER collets.

Application:
Tension/compression type for CNC milling machines and lathes with reversing motors and rigid tapping.

Features:
- Compensates for machine feed and tap pitch variance.
- Floating mechanism compensates for misalignment between tap and workpiece.
- Right- and left-hand tapping

Advantages:
- Practical and efficient tap holding by the ER spring collet without using jaw drive.
- Compact design for minimal clearance application.
- Heavy-duty design for high torque drive insures the same accuracy as the tap itself.

Operation:
For through- and blind-hole tapping:

1 Enter feed rate according to thread pitch (or 1-2 % lower). Set spindle to starting point with 0.08 clearance.
2 Start spindle forward with right hand rotation until reaching desired depth.
3 Stop feed and rotation and reverse to starting point.

ITS Porte-tarauds GTI

Description:
Mandrin de taraudage court pour pinces ER.

Application:
Du type tension/compression, pour centre d'usinage et tour C.N.C. avec inverseur de rotation et taraudage rigide.

Caractéristiques:
- Compense l'avance machine et la variation du pas du taraud.
- Mécanisme flottant compensant le défaut d'alignement entre le taraud et la pièce.
- Taraudage à droite et à gauche.

Avantages:
- Supporte efficacement et simplement le taraud grâce à la pince ER et évite l'utilisation d'un mandrin classique.
- Conception compacte limitant le porte à faux.
- Conception robuste permettant des couples importants et garantissant la même précision que celle du taraud.

Utilisation:
Pour trous borgnes ou débouchants.

1 Programmer la vitesse d'avance en accord avec le pas du taraud (ou plus faible de 1 à 2%) et régler la broche au point de départ avec un jeu de 0,08mm.
2 Démarrer le mouvement de la broche au point de départ avec une rotation à droite jusqu'à la profondeur désirée.
3 Arrêter l'avance et la rotation de la broche et revenir au point de départ en inversant la rotation.

ITS GTI Gewindeschneidfutter

Beschreibung:
Kurze Gewindeschneidfutter für ER-Aufnahmen

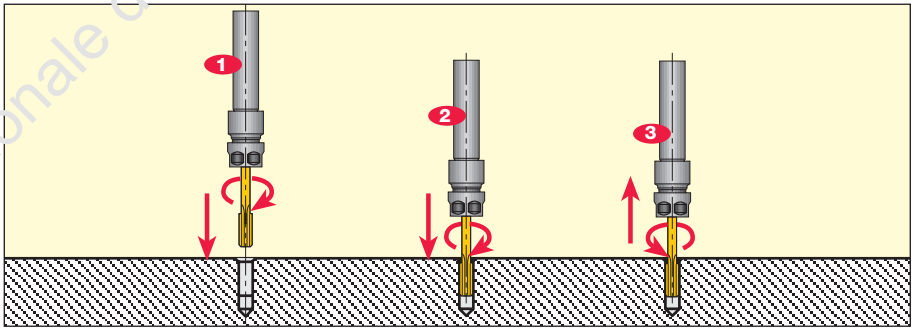
Anwendung:
Zug/Druck Typ für CNC Fräs- und Drehmaschinen mit reversierenden Motoren und Gewindeschneidfunktion

Eigenschaften:
- Kompensation von Maschinenvorschub und Gewindesteigungs-Unterschieden
- Ausgleich von Positionsfehlern zwischen Werkstück und Schneidwerkzeug
- Rechts- und Linksschneiden möglich

Vorteile:
Praktische und effiziente Spannung in einer ER-Spannzange ohne Backenspannung.
Kompaktes Design erlaubt Anwendung auf kleinstem Raum.
Die stabile Ausführung für große Drehmomente ermöglicht eine sehr hohe Genauigkeit im Gewinde.

Gewindeherstellung:
Für Durchgangs- und Sackgewinde:

1 Stellen Sie den Vorschub entsprechend der Gewindesteigung (oder 1-2% kleiner) ein und fahren Sie die Spindel an die Ausgangsposition mit 0.08 mm Abstand
2 Verfahren Sie die Spindel unter Rechtsdrehung, bis die gewünschte Endposition erreicht ist.
3 Stoppen Sie Vorschub und Drehbewegung und fahren Sie linksdrehend zum Anfangspunkt zurück.



ITS GTI Tapping Attachment

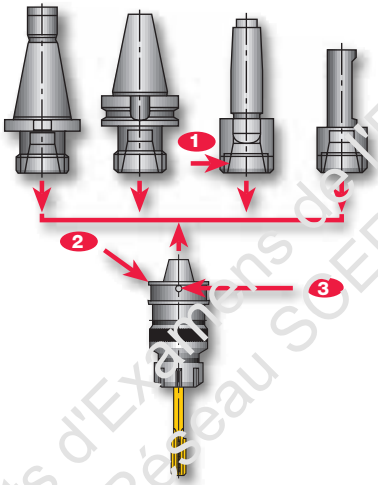
For GTI ER-32 and ER-40 tapping attachment:
These 2 units have an integral ER-32 modular mounting shank which enables assembly on any type of collet chuck shank with ER-32 nose.
1 Remove ER-32 nut from required collet chuck shank.
2 Insert GTI attachment into the shank and screw tightly in place.
3 Tighten lock screw.

ITS Porte-tarauds GTI

Pour les Porte-tarauds GTI ER-32 et GTI ER-40:
Ces deux unités possèdent un attachement modulaire ER-32, ce qui rend le montage possible sur tous les types de porte-pinces dotés d'une sortie ER-32.
1 Retirer la pince ER-32 du porte-pince qui doit être utilisé.
2 Insérer l'attachement GTI dans le porte-pince et visser fermement.
3 Bloquer la vis d'arrêt.

ITS GTI Gewindeschneidfutter

Für GTI ER und ER-40 Gewindeschneidfutter:
Diese zwei Einheiten verfügen über einen integrierten ER-32 Kegel, der es erlaubt, sie in jede beliebige ER-32 Aufnahme zu montieren.
1 Entfernen Sie die ER-32 Mutter von der gewünschten Aufnahme
2 Setzen Sie die GTI-Schneideinrichtung in den Aufnahmekegel und ziehen Sie die Schraube leicht an
3 Ziehen Sie die Schraube fest.



Technical information:
Collet Size for Tap Shank DIN Standard.

Informations techniques:
Taille de pince pour queue de taraud suivant la norme DIN.

Technische Informationen:
Gewinde nach DIN-Standard Größe der Spannzangen.

DIN Tap Size Taille de Filetage DIN Gewinde nach DIN-Standard	M2	M3	M4	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24	M27
Collet Size Taille de Pince Große der Spannzangen	2-3	3-4	4-5	5-6	5-6	6-7	8-9	10-11	11-12	13-14	15-16	17-18	17-18	19-20

ITS FitBore

Description:
Adjustable rotary toolholder for indexable insert drills.

Application:
For machining on center milling and drilling machines.

Features:
- Eliminates use of expensive special diameter drills.
- Diameter adjustment range of - **0.3** mm to +**1.3** mm.
- Insures bore tolerance of ± 0.02 mm.
- Coolant through the shank or "Type B" with coolant through the flange.
- Coolant pressure up to 70 bar.

Advantages:
- Easy adjustment to accurate bore diameter 0.01 mm.
- Designed for maximum rigidity.
- Maximum 5,000 RPM.

Operation:
Adjusting the offset:
- Loosen clamp screw A.
- Adjust with screw B. Preset should be made on a pre-setter to -0.2 mm on required diameter.
- Tighten clamp screw A.
- On the machine, make test cut and than measure the bore diameter and adjust to required diameter.
- Final adjustment to the desired diameter can be made on the machine with dial indicator or on the pre-setter.

ITS FitBore

Description:
Porte-outil rotatif réglable pour forets à plaquettes.

Application:
Pour fraiseuses, centres d'usinages et perceuses.

Caractéristiques:
- Elimine le besoin de forets de diamètres spéciaux coûteux.
- Plage de réglages au diamètre de - **0,3** mm à + **1,3** mm
- Garantit une précision d'alésage de **±0,02** mm.
- Arrosage intégré à travers l'attachement ou par la collerette "Type B"
- Pression possible du fluide jusqu'à 70 bars.

Avantages:
- Réglage facile pour une précision d'alésage au 0,01mm.
- Conçu pour un maximum de rigidité.
- Rotation maximum de 5000t/mn.

Utilisation:
Réglage:
- Desserrer la vis A.
- Régler à l'aide de la vis B. Le pré réglage doit être effectue sur un banc de contrôle à 0,2mm sous la cote finale.
- Serrer la vis A.
- Sur la machine, faire un essai de coupe et mesurer le diamètre du perçage puis régler jusqu'au diamètre souhaité.
- Le réglage final jusqu'au diamètre désiré peut être effectué sur la machine à l'aide d'un comparateur ou d'un montage de réglage.

Radial einstellbares Bohrfutter ITS FitBore

Beschreibung:
Einstellbares Bohrfutter für Bohrer mit Wendeschneidplatten.

Anwendung:
Auf Fräs- und Bohrmaschinen.

Eigenschaften:
- Ersetzt teure Spezialbohrer
- Einstellbarer Durchmesser in einem Bereich zwischen - **0.3** mm und + **1.3** mm
- Ermöglicht Bohrungstoleranzen von +/- 0.02 mm
- Kühlmittelzufuhr durch den Werkzeugschaft oder per "Typ B" durch den Aufnahmeflansch
- Kühlmitteldruck bis 70 bar.

Vorteile:
- Einfaches Einstellen des Bohrungsdurchmessers in einer Genauigkeit von 0.01 mm
- Sehr große Steifigkeit
- Maximale Drehzahl 5,000 U/min.

Handhabung:
Einstellen der Abweichung:
- Lösen der Spannschraube A
- Einstellen mit Schraube B. Die Voreinstellung sollte an einem Werkzeugvoreinstellgerät durchgeführt werden auf den gewünschten Durchmesser - 0.2 mm
- Anziehen der Spannschraube A
- Machen Sie eine Probebohrung auf der Maschine. Danach muß der Bohrungsdurchmesser geprüft werden und das Bohrfutter entsprechend nachgestellt werden
- Die endgültige Einstellung kann an der Maschine mittels Meßtaster oder auf einem Voreinstellgerät durchgeführt werden.

ITS GYRO -Total Alignment Toolholder

Description:
Adjustable toolholder for easy adjustment of radial and angular misalignment.

Application:
Gyro is a rugged, adjustable toolholder developed by ITS to solve drilling, tapping and reaming problems encountered on CNC and turret lathes. Its unique design allows smooth and easy adjustment of radial and angular misalignment between chuck and turret.

Gyro reduces total machining time by making it possible to complete machining of holes in one drilling step, achieving tolerances as high as H6, thereby eliminating subsequent boring or reaming operations.

- A breakthrough in drilling technology for CNC lathes.
- Dramatic increase in tool performance at reduced cost.

ITS Porte-outil réglable pour un Alignement Total des Axes, GYRO

Description:
Porte-outil réglable pour un ajustement facile des défauts d'alignements, radial et angulaire.

Application:
Le Gyro est un porte -outil réglable et robuste développé par ITS pour régler les problèmes de perçage,taraudage et alésage recontrés sur les tours à tourelle et CNC.Sa conception unique allie réglage facile et fiable des défauts d'alignements radial et angulaire entre la broche et la tourelle.
Le Gyro réduit le temps total de l'usinage en rendant possible l'obtention, en une seule opérations de perçage, de trous de tolérance aussi précise que H6, sans opérations supplémentaires d'alésages à l'outil ou à l'alésoir.

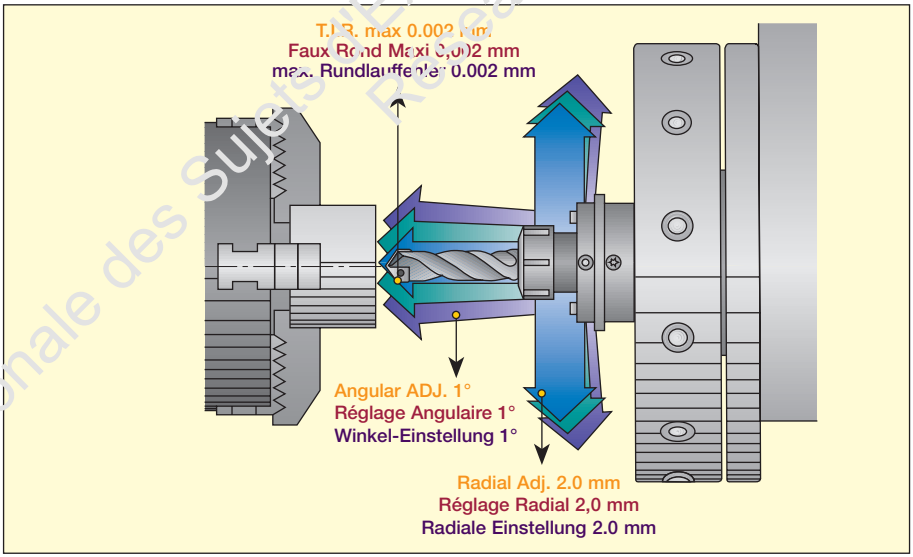
- Une technologie qui permet d'améliorer les opérations de perçage sur les tours à tourelle ou CNC.
- Des performances considérablement supérieures à coût réduit.

Einstellbare Werkzeugaunahme ITS GYRO

Beschreibung:
Einstellbare Werkzeugaufnahme, die von ITS entwickelt wurde zur Lösung von Bohr-, Fräs- und Reibproblemen an CNC-Drehmaschinen. Die einzigartige Konstruktion ermöglicht einfache und stufenlose Korrektur von radialen und winkeligen Abweichungen zwischen Werkzeug und Spannzange.

Gyro reduziert die komplette Bearbeitungszeit, durch die Möglichkeit, Bohrungen in einem Schritt herzustellen. Dabei können Toleranzen von H6 erreicht werden, so daß sich anschließende Bohr- oder Reiboperationen erübrigen.

- Ein Durchbruch für die Bohrbearbeitung auf CNC-Drehmaschinen.
- Deutliche Verbesserung der Bearbeitungsergebnisse bei reduzierten Kosten.



ITS GYRO -Total Alignment Toolholder

Features:
Enables high precision drilling to a high tolerance of H6, to be performed as a final boring operation on CNC lathes.
Reduces machining time by completing the bore in one drilling step, eliminating secondary turning operations.
Prolongs cutting tool life tenfold and more, especially for solid and brazed carbide drills, center drills, taps and reamers.
Dramatic increase in speed and feed by up to 300 %.
Coolant supply through the shank center or tool shoulder for oil hole cutting tools.

Advantages:
Easy adjustment for correcting misalignment between chuck and turret axis (drill and workpiece).
Precise and efficient tool clamping with ER collets and ER sealed Coolit Jet Collets.
Quick functional adjustment is made on machine by using ITS plug and ring gauge kit.

Operation:
For operation instructions see the brochure attached to the tool.

Note:
Coolant supply should be minimum 10 bar and maximum 80 bar for small diameter oil hole drills - ranging from 3-20 mm. (The normal machine pressure of 4 bar is insufficient).
Coolant filtration is most important to eliminate chip blocking of the drill oil hole.
To ensure maximum performance of the GYRO, the backlash of the turret indexing and support axis mechanism should be checked and readjusted according to the machine standard.

ITS Porte-outil réglable pour un Alignement Total des Axes, GYRO

Caractéristiques:
Rend possible les perçages de hautes précisions jusqu'à une qualité H6, équivaut à une opération d'alésage de finition sur les tours CNC.
Réduit les temps d'usinages en terminant les opérations d'alésage en un seul perçage, en éliminant les opérations supplémentaires de tournage.
Prolonge la durée de vie des outils par dix et d'avantage, particulièrement pour les outils en carbure monobloc ou brasé, forets et forets à centrer, tarauds et alésoirs.
Augmentation considérable de la vitesse et de l'avance, jusqu'à 300%.
Lubrification intégré à travers l'outil ou par la collerette pour les outils à trous d'huile.

Avantages:
Réglage facile pour la correction des défauts d'alignement entre l'axe du mandrin et la tourelle (foret et pièce).
Serrage efficace et précis de l'outil avec les pinces ER, et les pinces étanches Coolit Jet.
Le réglage, rapide et fonctionnel, est réalisé sur la machine à l'aide de la pige et du gabarit ITS.

Utilisation:
Pour l'utilisation de ce matériel, vous reporter au manuel joint à l'outil.

Remarques:
La lubrification doit être au minimum de 10 bars et au maximum de 80 bars pour les petits forets à trous d'huile de plage de diamètres de 3 à 20 mm (la pression des machines conventionnelles, égale à 4 bars, est insuffisante).
L'utilisation d'un filtre pour le lubrifiant est très important pour éviter que des copeaux ne viennent boucher les trous d'huile du foret.
Pour garantir une performance maximum du GYRO, l'indexage de la tourelle et le mécanisme de support des axes doivent être vérifiés et réglés en fonction des données du constructeur.

Einstellbare Werkzeugaunahme ITS GYRO

Eigenschaften:
Zum höchst präzisen Bohren mit enger Toleranz von H6 bei Fertig-Ausdrehoperationen auf CNC-Drehmaschinen.
Reduziert die Bearbeitungszeit durch die Möglichkeit, Bohrungen in einem Schritt herzustellen. Nachträgliche Drehoperation entfällt.
Verlängert die Standzeit des Schneidwerkzeugs um das Zehnfache und mehr, speziell bei Vollhartmetall- und gelöteten Bohrern, Zentrierbohrern, Gewindebohrern und Reibahlen.
Enorme Steigerung von Schnittgeschwindigkeit und Vorschub um 300 %. Kühlmittelzufuhr durch den Werkzeugschaft oder durch den Bund bei Werkzeugen mit Schmierloch.

Vorteile:
Einfache Justage zur Korrektur von Fluchtungsfehlern zwischen Spannmutter und Revolverkopfachse (Bohrer und Werkstück).
Präzise und wirksame Klemmung des Werkzeugs mit Spannzangen ER und abgedichteten Spannzangen ER Coolit Jet.
Schnelle Justage erfolgt auf der Maschine mit ETM-Montageblock.

Anwendung:
Anwendungshinweise sind der Broschüre zu entnehmen, die jedem Werkzeug beigefügt ist.

Hinweise:
Für Bohrer mit Durchmessern von 3 bis 20 mm und Schmierloch sollte der Kühlmitteldruck minimal 10 und maximal 80 bar betragen (der normale Druck von 4 bar reicht nicht aus).
Das Kühlmittel muß unbedingt gefiltert werden, damit das Schmierloch nicht mit Spänen verstopft wird.
Um die maximale Leistung von GYRO zu gewährleisten, sollte das Spiel der Revolverschaltung und des Vorschubmechanismus überprüft und entsprechend dem Standard der Maschine justiert werden.

ITS GFI ER - Floating Reamer Collet Chuck

Description:
Floating chuck adjusts the misalignment between reamer and workpiece hole to ensure the same accuracy as the reamer itself.

Application:
The GFI floating chuck is a unique holder to compensate for the radial misalignment existing in the reaming operations carried out on vertical and horizontal machine tools.

Features:
- Radial self-floating mechanism compensates misalignment between reamer and workpiece to insure the same tolerance as the reamer itself.
- The special self-centering mechanism eliminates tapered and oversized holes.

Advantages:
- Unique ball-bearing and axle drive shaft structure enables vertical and horizontal machining.
- Precise and efficient clamping with ER spring collets or ER Coolit collets.

ITS Mandrin d'Alésage Flottant à Pince GFI ER

Description:
Mandrin flottant - compense le défaut d'alignement entre l'alésoir et le trou de la pièce pour garantir la même précision que celle de l'outil.

Application:
La mandrin flottant GFI est un outil unique pour la compensation du défaut d'alignement radial existant lors des opérations d'alésages rencontrées sur les machine-outils verticales ou horizontales.

Caractéristiques:
- Le mécanisme radial flottant compense le défaut d'alignement entre l'alésoir et la pièce pour garantir la même tolérance que celle de l'outil.
- Le mécanisme auto-centrant élimine les rayures et les alésages hors tolérances.

Avantages:
- Le système de roulement à bille unique ainsi que la structure de l'arbre d'entraînement peuvent assurer des usinages verticaux ou horizontaux.
- Serrage précis et efficace avec les pinces ER ou les pinces étanches ER Coolit™.

Werkzeugaufnahme ITS GFI ER für Pendelreibahle

Beschreibung:
Mit der GFI ER Pendelaufnahme können Fluchtungsfehler zwischen Reibahle und Werkstückbohrung ausgeglichen werden. Dadurch wird höchste Qualität der Bohrung sichergestellt.

Anwendung:
Die GFI ER Pendelaufnahmen können sowohl in horizontalen als auch in vertikalen Werkzeugmaschinen eingesetzt werden. Das einzigartige Design ermöglicht in jeder Lage einen Ausgleich der Fluchtungsfehler.

Eigenschaften:
- Aufgrund der in radialer Richtung schwimmend gelagerten Aufnahme können Fluchtungsfehler zwischen Werkstückbohrung und Reibahle ausgeglichen werden, so daß die erzielten Toleranzen der Bohrung direkt denen der Reibahle entsprechen
- Aufgrund der besonderen Selbstzentrierungsfunktion werden konische oder zu große Bohrungen verhindert.

Vorteile:
- Der einzigartige Aufbau mit Wälzlagerung und axial beweglicher Welle erlaubt die Bearbeitung in vertikaler und horizontaler Lage
- Genaue und effiziente Werkzeugspannung mittels ER Spannzangen oder ER Coolit Spannzangen

ITS ER Coolit Sealed Collet

Description:
Sealed ER Collet.

Application:
For oil hole and standard cutting tools such as: drills , boring bars, end mills, reamers, taps and special tools.

The effective solution for accurate jet coolant flow - front sealing collets, developed for advanced high-speed machines, with coolant through spindle/turret, for maximum performance, cutting speed, tool life, and surface finish.

Designed in two types:
1 **Sealed collet jet** - for straight shank cutting tools with internal coolant-fed oil hole.

2 **Sealed collet jet 2** - angular, double nozzle. Coolant flow direct to the cutting edge, for use with standard straight-shank cutting tools (without oil hole).

ITS Pinces Etanches ER

Description:
Pince étanche ER

Application:
Pour outils à trous d'huile et standards tels que: forets, barres d'alésages, fraises à rainurer, alésoirs, tarauds et outils spéciaux.

La solution performante pour améliorer l'orientation du jet de lubrifiant - pinces à jet frontal, développées pour les machines à hautes vitesses, avec arrosage à travers la broche ou la tourelle, pour un maximum d'efficacité-en vitesse de coupe, durée de vie et état de surface.

Conçues suivant deux types:
1 **Pinces étanches, jet** - pour les outils de coupe à attachements cylindriques avec arrosage par le centre.

2 **Pinces étanches, jet 2** - double jets dirigés angulairement. Les jets de lubrifiant vont directement sur l'arête de coupe, pour l'utilisation d'outils à attachements cylindriques, sans trous d'huile.

Abgedichtete Spann-zangen ITS ER Coolit

Beschreibung:
Abgedichtete ER Spannzangen.

Anwendung:
Für Werkzeuge mit Kühlmittelbohrung und für Standard-Schneidwerkzeuge, wie bspw.: Bohrer, Bohrstangen, Fingerfräser, Reibahlen, Gewindeschneider und Spezialwerkzeuge.

Diese speziellen Spannzangen wurden vorwiegend für Hochgeschwindigkeits-Maschinen mit einer Kühlmittelzufuhr durch Spindel und Spannsystem entwickelt. Sie gewährleisten beste Ergebnisse bezüglich Schnittgeschwindigkeit, Werkzeug-Standzeit und Oberflächenqualität.

Es gibt zwei unterschiedliche Ausführungen:
1 **Abgedichtete Spannzange ER Coolit Jet** - für zylindrische Werkzeuge mit integrierter Kühlmittelbohrung

2 **Abgedichtete Spannzange ER Coolit Jet 2** - mit abgewinkelter doppelter Düse für zylindrische Werkzeuge ohne integrierte Bohrung. Das Kühlmittel wird direkt auf die Schneide gespritzt.

ITS ER Coolit Sealed Collet

Features:
- A revolutionary high-precision front-sealing collet with 1mm collapsibility that turns any collet chuck into a coolant-fed tool.
- Increases machining efficiency by more than 300%.
- Prolongs tool life ten fold and more.
- Wide holding range of 1.0 mm collapse.
- Powerful gripping and parallel clamping.
- Front sealing prevents entry of chips.
- Fast chip removal from work-piece.

Advantages:
- High-pressure coolant supply up to 80 bar.
- Eliminates interference in coolant flow.

Notes:
- For higher pressure than 80 bar up tp 120 bar, a special collet with increments of 0.5 mm is required. (Shank 10.0 mm collet range 9.5 - 10.5 mm.)
- For maximum accuracy and clamping power, the cutting tool shank must be inserted into collet at minimum of 2 x shank dia.
- In Sealed collet jet 2 the nozzle must be adjusted directly to the flute of the cutting tool.
- Suitable for all shank standards.

ITS Pinces Etanches ER

Caractéristiques:
- Pince étanche révolutionnaire de haute précision avec une capacité de 1 mm qui transforme tout porte-pince en outil à arrosage intégré.
- Améliore l'efficacité d'usinage de plus de 300%.
- Prolonge la durée de vie par dix et plus.
- Plage de capacité d'outil de 1,0mm.
- Serrage puissant et parallèle.
- Joints frontaux contre l'insertion de copeaux.
- Grands taux d'enlèvement de copeaux sur la pièce usinée.

Avantages:
- Arrosage haute pression possible jusqu'à 80 bars.
- Double angles réels pour une concentricité précise.
- Elimine les appareils annexes de lubrification.

Remarques:
- Pour une pression plus haute que 80 bars et jusqu'à 120 bars, une pince spéciale avec une incrémentation de 0,5 mm est nécessaire. (Queue de 10.0mm., plage de la pince 9,5 à 10,5 mm).
- Pour un maximum de précision et d'effort de serrage, la taille de la pince doit être au minimum égale à 2 x la queue de l'outil.
- Pour les pinces étanches jet 2, les jets doivent être réglés directement sur l'hélice de l'outil de coupe.
- Utilisable sur tous types d'attachements standards.

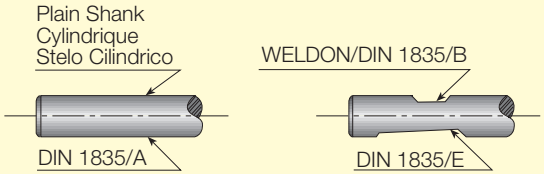
Abgedichtete Spann-zangen ITS ER Coolit

Eigenschaften:
- Eine revolutionäre Hochpräzisions-Spannzange mit 1 mm Spannbereich, die jedes Spannfutter in ein Werkzeug mit innerer Kühlung verwandelt.
- Erhöhung der Maschinen-Effizienz um mehr als 300 %
- Erhöhung der Werkzeug-Standzeit um den Faktor 10 und mehr
- Großer Spannbereich von 1 mm
- Kräftige und parallele Spannung
- Die vordere Dichtung verhindert das Eindringen von Spänen
- Die Späne auf dem Werkstück werden schnell und sicher beseitigt.

Vorteile:
- Kühlmitteldruck bis 80 bar möglich
- Macht spezielle Anschlüsse für Kühlmittelzufuhr überflüssig.

Anmerkungen:
- Für höhere Drücke zwischen 80 und 120 bar, wird eine spezielle Spannzange mit Schrittweiten von 0.5 mm empfohlen (für einen Schaftdurchmesser 10 mm benötigt man eine Spannzange im Bereich 9.5 bis 10.5 mm)
- Für höchste Genauigkeit und Spannkraft, sollte das Werkzeug auf einer Spannlänge von mindestens 2 x Schaftdurchmesser gespannt werden.
- Bei der abgedichteten Spannzange Coolit Jet 2 müssen die Düsen auf die Schneidkanten ausgerichtet werden.
- Die Spannzangen können für alle Standard-Zylinderschäfte verwendet werden.

Shank Standards
Attachements Standards
Schaft-Standard



ITS ER
Top Clamping Nut
DIN 6499

Description:
Exclusive clamping nut for collet chuck systems.

Property:
A nut with unique two-piece anti-friction mechanism, combining radial and angular self-centering movement.

Features:
- Improved concentricity and repeatability of ER collet, with special radial and angular movement system.
- Powerful gripping force, 50 - 100% higher than the standard ER nut. Achieved by the anti-friction mechanism.
- Perfect balance for super high-speed spindle due to a new design of double extractor teeth replacing the standard eccentric ring.
- Prolongs durability of ER collet, with unique two-piece nut mechanism.

Advantages:
Easy insertion and release of collet from nut.
Compact design - general dimensions and wrench size remain the same as the standard ER nut.

ITS Ecrou de Serrage
ER-Top DIN 6499

Description:
Ecrou de serrage exclusif pour les systèmes de porte-pinces.

Application:
Un écrou avec un mécanisme unique de deux pièces anti-friction, combinant un mouvement radial et angulaire auto centrant.

Caractéristiques:
- Concentricité et répétabilité améliorées de la pince ER, avec un système spécial de mouvements axial et angulaire.
- Efforts de serrage très puissant, de 50 à 100% supérieur aux écrous standards ER. Obtenus par le mécanisme anti friction.
- Parfait équilibrage pour les très hautes vitesses de broches grâce à la nouvelle conception de l'extracteur à double ergots mis place de l'anneau excentrique standard.
- Prolonge la durabilité de la pince ER, avec le mécanisme unique à deux pièces

Avantages:
Insertion et extraction facile de la pince dans l'écrou.
Conception compacte- dimensions générales et taille identiques aux écrous standards ER.
Conçu pour être utilisé avec les pinces ER - Précision obtenue par une zone de contact maximum avec l'écrou.

ITS ER-Top Spannmutter
DIN 6499

Beschreibung:
Spezielle Spannmutter für Spannzangen-Futter.

Anwendung:
Eine Spannmutter mit einmaliger Anti-Reib-Funktion, bei gleichzeitiger Kombination von radialer und winkeliger Selbstzentrierung.

Eigenschaften:
- Verbessert die Konzentrizität und Wiederholgenauigkeit von ER-Spannzangen, durch spezielle radiale und winkelige Selbstzentrierung.
- Hohe Haltekraft, 50 - 100 % höher als bei Standard ER Spannmuttern. Dieser Effekt basiert auf der speziellen Anti-Reib-Funktion.
- Perfekter Wuchtzustand für Hochgeschwindigkeitsanwendungen aufgrund des neuen Zwei-Zähne Designs, welches den Exzenterring der Standardlösungen ersetzt.
- Verlängert die Standzeit der ER-Spannzangen aufgrund des zweigeteilten Aufbaus.

Vorteile:
Einfaches Einsetzen und Herausnehmen der Spannzangen aus der Spannmutter
Kompakter Aufbau: Alle Haupt- und Anschlußmaße bleiben gegenüber der Standard ER-Mutter unverändert
Vollständiger Kontakt zwischen Spannzange und -mutter.

ITS ER Top Clamping Nut DIN 6499

Operation:
To insert Collet:

1 First align the ITS mark on the nut and insert the collet into the nut, insuring the collet groove snaps into the extractor teeth.

When unclamping the nut, the collet will self-release from the chuck by means of extractor teeth.

ITS Ecrou de Serrage ER-Top DIN 6499

Utilisation:
Pour insérer la pince:

1 Aligner premièrement le sigle ITS à celui de l'écrou et insérer la pince dans l'écrou, cela pour garantir que les ergots de l'extracteur ce trouve dans la gorge de la pince.

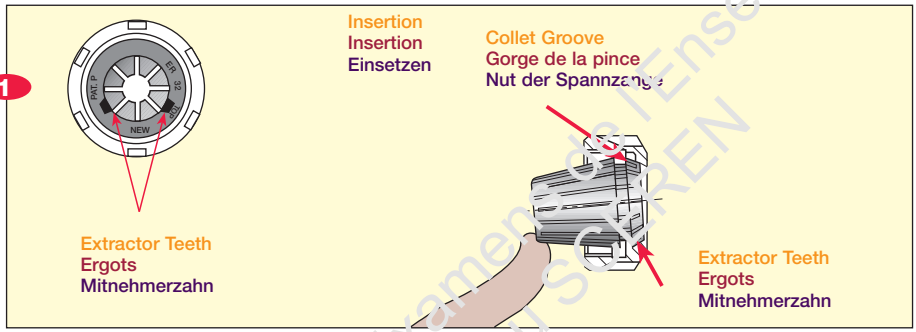
Lors du desserrage de l'écrou, la pince sortira d'elle même du porte-pince à l'aide des ergots

ITS ER-Top Spannmutter DIN 6499

Handhabung:
Einsetzen der Spannzange:

1 Richten Sie die Spannzange und -mutter entsprechend der ITS-Markierung aus und setzen Sie die Spannzange dann in die Mutter ein, wobei Sie sicherstellen müssen, daß der Zahn der Spannmutter in die Nut der Spannzange einrastet.

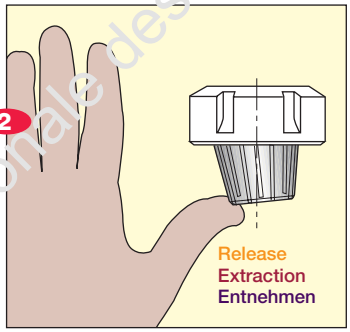
Beim Öffnen der Spannmutter aus der Aufnahme wird die Spannzange automatisch über die Mitnahmezähne aus dem Futter gezogen.



2 To release Collet:
Hold nut vertically and align at ITS mark - then press downward untill collet is released.

2 Pour extraire la pince:
Tenir l'écrou verticalement et aligner les sigles ITS - puis pousser sur la base jusqu'à l'extraction de la pince.

2 Entnehmen der Spannzange:
Halten Sie die Spannmutter vertikal und richten Sie sie entsprechend der ITS-Markierung aus. Anschließend pressen Sie die Mutter in radialer Richtung, bis die Spannzange frei ist.



ITS ER Top Clamping Nut DIN 6499

3 Note:
The collet must be inserted into the nut before mounting onto collet chuck, as shown in drawings.

For maximum performance the clamping nut thread and collet taper must be cleaned and oiled before use.

ITS Ecrou de Serrage ER-Top DIN 6499

3 Remarques:
La pince doit être insérer dans l'écrou avant le montage dans le porte-pince, tel que cela est indiqué sur le schéma.

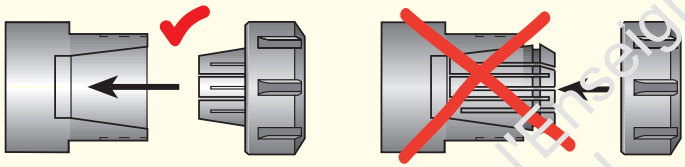
Pour des performances maximum l'écrou de serrage et la pince doivent être nettoyés et graissés avant toute nouvelle utilisation.

ITS ER-Top Spannmutter DIN 6499

3 Anmerkung:
Die Spannzange muß in die Spannmutter eingesetzt werden, bevor sie in das Spannfutter eingesetzt wird (vgl. Skizzen).

Um die besten Ergebnisse zu erzielen, sollte das Gewinde der Spannmutter sowie der Kegel der Spannzange immer sauber und leicht geölt sein.

3



Recommended Clamping Torque for Standard ER & ER-Top Clamping Nut
Mode de montage recommandé pour les écrous ER Top & les pinces standards ER
Vorgeschlagenes Spannmoment für Standard ER & ER-Top Spannmuttern

Nut type Type d'écrou Mutter-Ausführung	KgxM
E-11	5
ER-11M	3
ER-16	7
ER-16M	4
ER-20	12
ER-20M	8
ER-25	20
ER-32	22
ER-40	25
ER-50	35

Important:
This torque is calculated with the maximum diameter capacity per collet which should be reduced gradually when used with a smaller shank size.

Important:
Ce couple est calculé avec la capacité de diamètre maximum par pince et devra être graduellement réduit lors de l'utilisation de diamètres inférieurs.

Wichtig:
Dieses Drehmoment wurde für den jeweils maximalen Spannzangendurchmesser berechnet. Bei der Verwendung kleinerer Spannzangen sollte auch das Drehmoment entsprechend angepaßt werden.

ITS-BORE

A modular toolholder system for boring, milling, drilling and tapping.
A rigid, high-precision system conceived and manufactured with the most advanced design and production facilities.
A system of extreme flexibility and simplicity suitable for machine tools, machining centers and flexible manufacturing systems.
A system for machining to strict tolerances with a high degree of surface finish.
A system with a patented cylindrical-conical coupling and radial-expanding pin insuring maximum rigidity and concentricity in boring and milling.
A system with internal coolant supply in all components.

ITS-BORE

Un système de porte-outils modulaires pour l'alésage, le fraisage, le perçage et le taraudage.
Un système de haute précision très rigide conçu et fabriqué avec les moyens de conception et de réalisation les plus modernes.
Un système d'une extrême flexibilité et simplicité, utilisable sur tous types de machine-outils, tels que centres d'usinage et lignes de productions flexibles.
Un système pour usiner sous les tolérances les plus serrées avec un très haut niveau d'état de surface.
Un système d'attachement cylindre-cône breveté et un mécanisme d'axe expansible garantissent un maximum de rigidité et de concentricité en alésage et en fraisage. Un système à arrosage intégré à tous les composants.

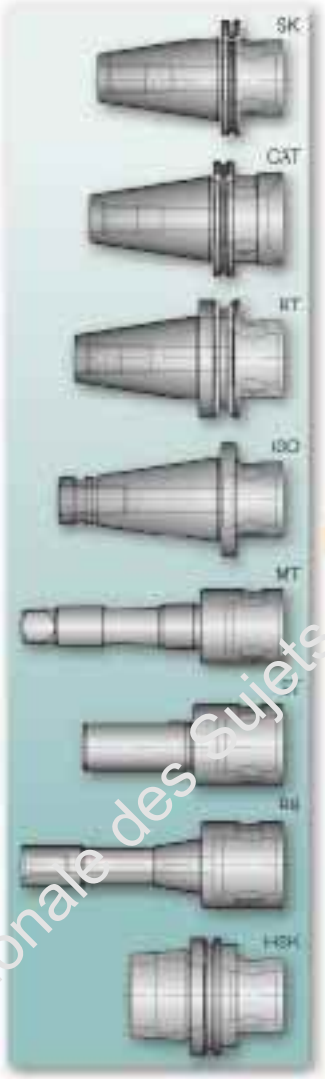
ITS-BORE

Modulares Werkzeugsystem zum Ausdrehen, Fräsen, Bohren und Gewindefräsen.
Stabiles, höchst präzises System, mit fortschrittlichsten Design- und Produktionseinrichtungen konzipiert und gefertigt.
Extrem vielseitiges System mit einfacher Handhabung für Werkzeugmaschinen, Bearbeitungszentren und flexible Fertigungssysteme.
Ein System, das engste Toleranzen und höchste Oberflächengüte erlaubt.
Das System mit patentierter zylindrisch-konischer Kupplung und radial veränderbarem Stift für maximale Steifigkeit und Rundlaufgenauigkeit beim Ausdrehen und Fräsen.
Alle Komponenten sind mit innerer Kühlmittelzufuhr ausgestattet.

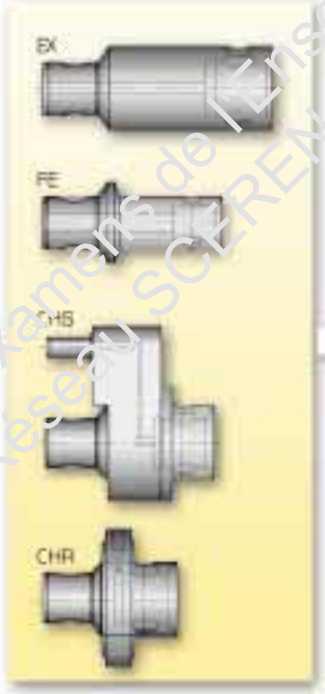
iTS-BORE

- The ITS Bore System
- Le Système ITS Bore
- Das ITS Bore System

Shanks
Attachements
Aufnahmen

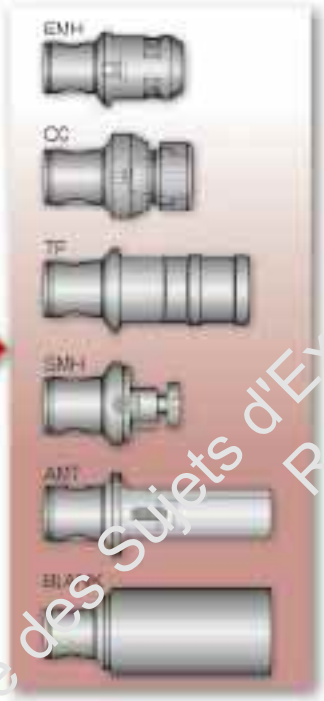


Extensions & Reductions
Prolongateurs et Réducteurs
Verlängerungen & Reduzierungen

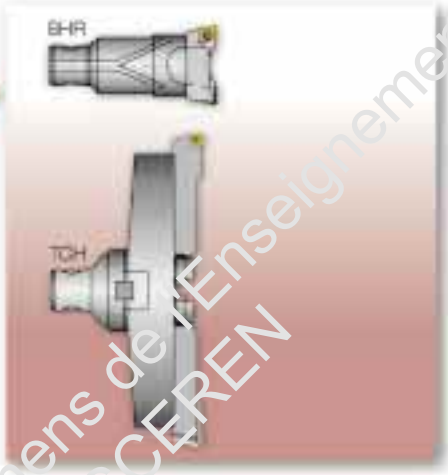


- The ITS Bore System
- Le Système ITS Bore
- Das ITS Bore System

Toolholders
Porte-outils
Werkzeug-Aufnahmen

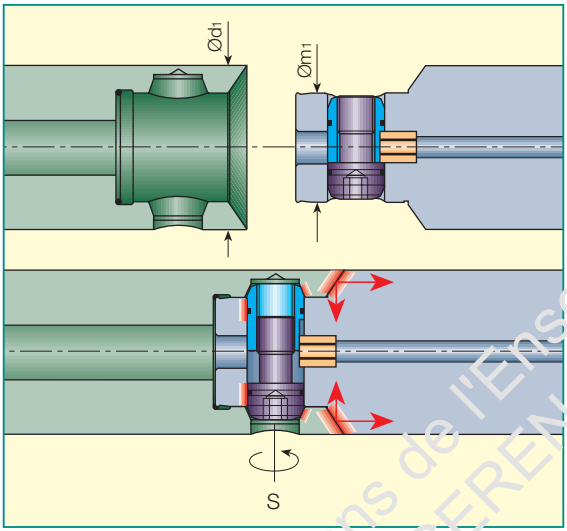


Rough Boring Heads
Têtes d'Alésage d'Ebauche
Schrupp-Bohrköpfe



Fine Boring Heads
Têtes d'Alésage de Finition
Schlicht-Bohrköpfe

- **MB Connection**
- **Entraînement MB**
- **MB Kupplung**

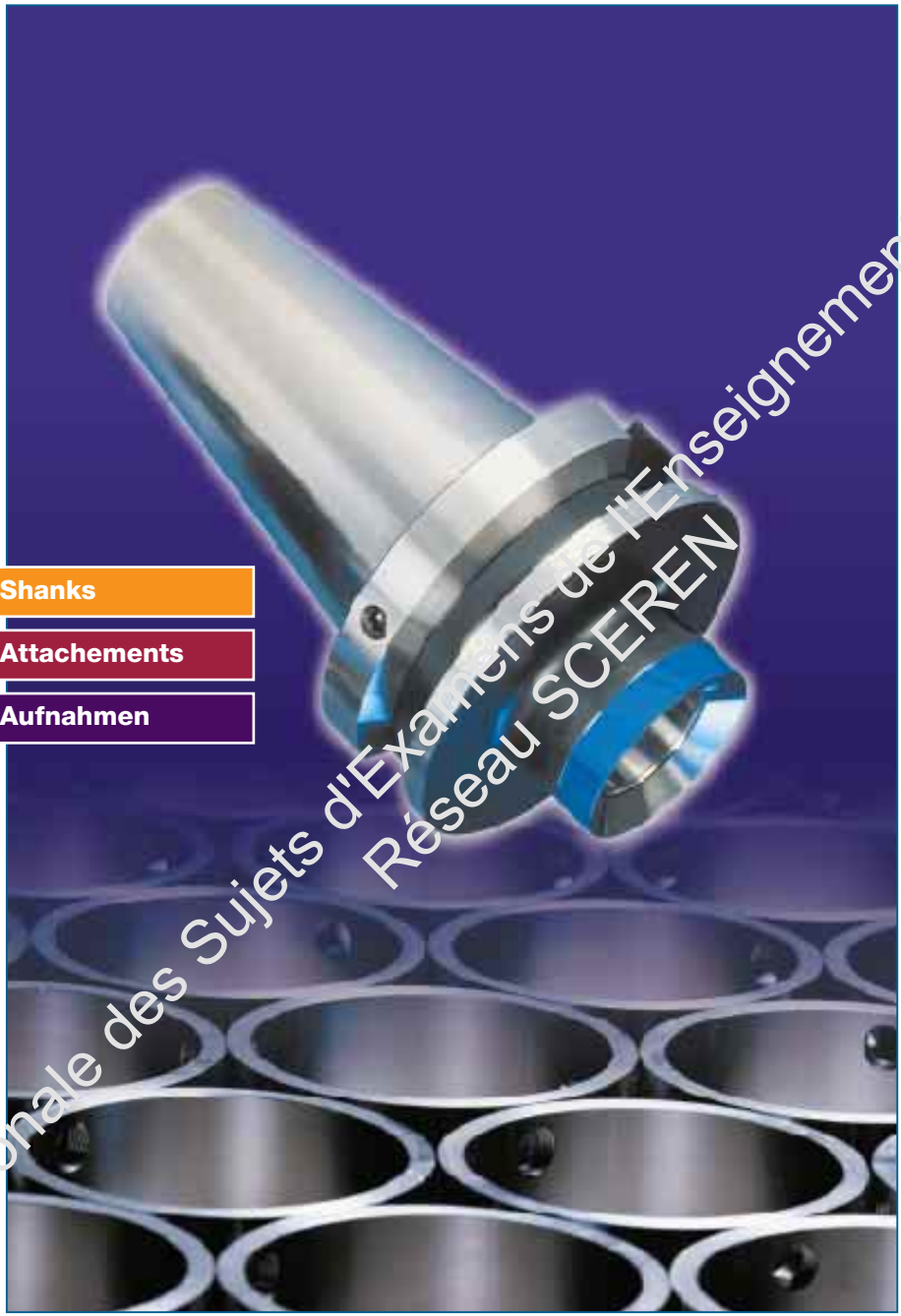


Designation Désignation Bezeichnung	ød1	øm1	Allen Key (mm) Clé Hex. (mm) Allen Key (mm)	Tightening Torque (Nm) Couple de serrage (Nm) Anzugsmoment
MB 16	16	10	2.5	2-2.5
MB 20	20	13	3	4-4.5
MB 25	25	16	4	6.5-7.5
MB 32	32	20	4	7-8
MB 40	40	25	5	16-18
MB 50	50	32	6	30-35
MB 63	63	42	8	80-90
MB 80	80	42	8	80-90

MB Coupling
The heart of the system, it insures maximum rigidity and concentricity during milling and boring operations. This is achieved by the cylindrical-conical fit and by a radial-expanding bolt for clamping and driving.

Entraînement MB
Le coeur du système, il garantit un maximum de rigidité et de concentricité durant les opérations de fraisage et d'alésage. Cela est rendu possible par la fixation cylindre-cône ainsi que par l'axe expansible servant au serrage et à l'entraînement.

MB Kupplung
Sie ist das Herz des Systems und garantiert maximale Steifigkeit und Rundlaufgenauigkeit bei Fräs- und Ausdrehoperationen. Dies wird erreicht durch den zylindrisch-konischen Sitz und einen radial veränderbaren Bolzen für Klemmung und Antrieb.

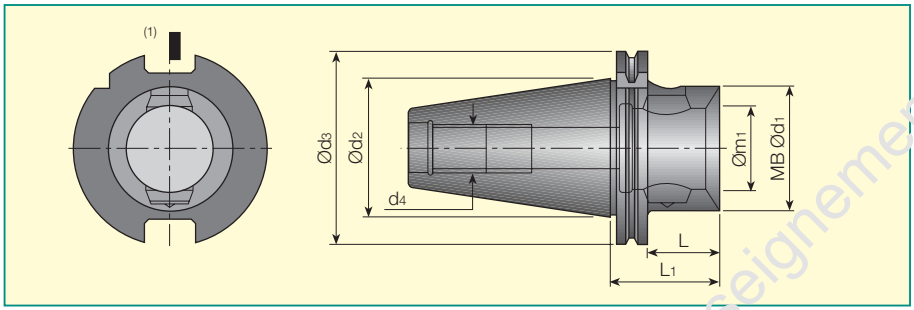


Shanks

Attachements

Aufnahmen

- **Shank**
- **Attachement**
- **Aufnahmen**

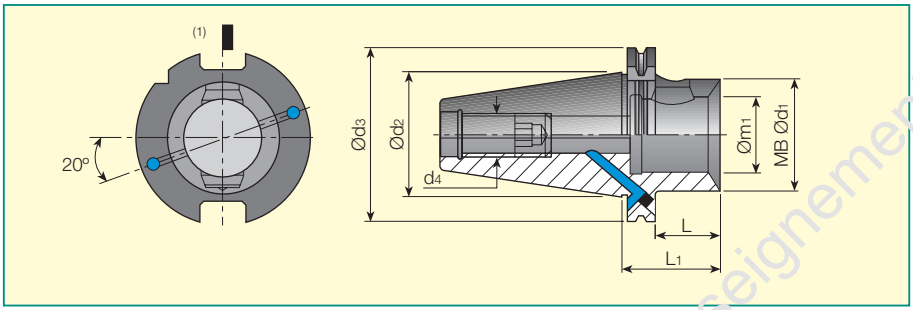


DIN 69871 A / ISO 7388/1

(1) Cutting edge position
(1) Position de l'arête de coupe
(1) Position der Schneidkante

Designation Désignation Bezeichnung	MB d_1	m_1	L	L_1	d_2	d_3	d_4	kg
SKA 30-MB50	50	32	-	60	31.75	50	M12	0.8
SKA 40-MB50	50	32	29	48	44.45	63.55	M16	1
SKA 40-MB63	63	42	-	80				1.3
SKA 45-MB50	50	32	29	48				1.3
SKA 45-MB63	63	42	41	60	57.15	82.55	M20	2.1
SKA 45-MB80	80	42	-	66				2.4
SKA 50-MB50	50	32	29	48				2.7
SKA 50-MB63	63	42	37	56	69.85	97,5	M24	2.8
SKA 50-MB80	80	42	43	62				3.4

- **Shank**
- **Attachement**
- **Aufnahmen**

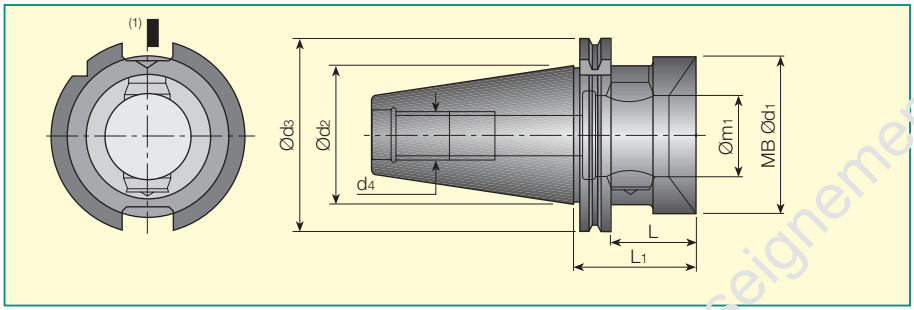


DIN 69871-B

(1) Cutting edge position
(1) Position de l'arête de coupe
(1) Position der Schneidkante

Designation Désignation Bezeichnung	MB d_1	m_1	L	l_1	d_2	d_3	d_4	kg
SKB 40-MB50	50	32	29	48	44.45	63.55	M16	1
SKB 40-MB63	63	42	-	80				1.3
SKB 45-MB50	50	32	29	48				1.3
SKB 45-MB63	63	42	41	60	57.15	82.55	M20	2.1
SKB 45-MB80	80	42	-	66				2.4
SKB 50-MB50	50	32	29	48				2.7
SKB 50-MB63	63	42	37	56	69.85	97.5	M24	2.8
SKB 50-MB80	80	42	43	62				3.4

- Shanks
- Attachement
- Aufnahmen

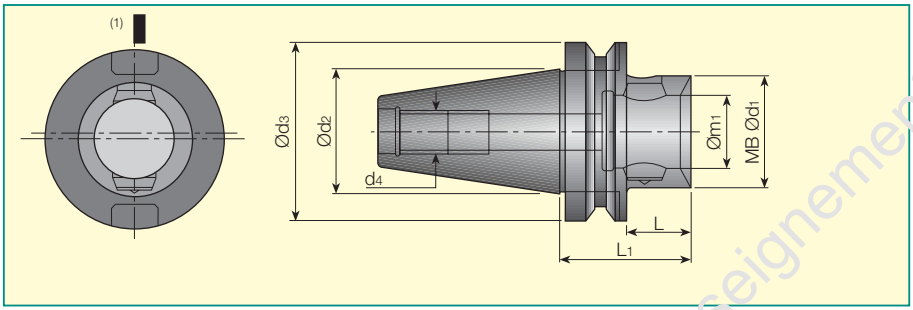


ANSI

(1) Cutting edge position
(1) Position de l'arête de coupe
(1) Position der Schneidkante

Designation Désignation Bezeichnung	MB d_1	m_1	L	L_1	d_2	d_3	d_4	kg
CATM 40-MB50	50	32	47	63	44.45	63.55	M16	1
CATM 40-MB63	63	42	-	100				1.3
CATM 45-MB50	50	32	29	48				1.3
CATM 45-MB63	63	42	56	75	57.15	82.55	M20	2.1
CATM 45-MB80	80	42	-	80				2.4
CATM 50-MB50	50	32	29	48				2.7
CATM 50-MB63	63	42	37	56	69.85	98.4	M24	2.8
CATM 50-MB80	80	42	43	62				3.4

- **Shanks**
- **Attachement**
- **Aufnahmen**

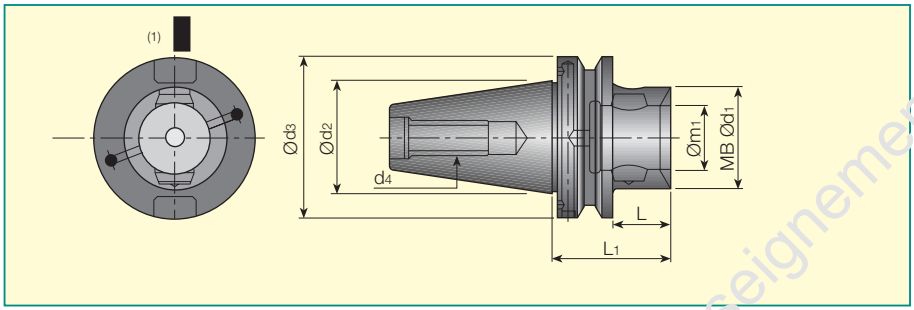


BT MAS 403

(1) Cutting edge position
(1) Position de l'arête de coupe
(1) Position der Schneidkante

Designation Désignation Bezeichnung	MB d_1	m_1	L	L_1	d_2	d_3	d_4	kg
BT 30-MB50	50	32	-	60	31.75	46	M12	0.7
BT 35-MB50	50	32	33	60	38.1	53	M12	0.8
BT 40-MB50	50	32	21	45	44.45	63	M16	1
BT 40-MB63	63	42	-	65				1.3
BT 45-MB50	50	32	29	62				2
BT 45-MB63	63	42	37	70	57.15	85	M20	2.3
BT 45-MB80	80	42	37	70				2.8
BT 50-MB50	50	32	28	66				3.7
BT 50-MB63	63	42	37	75	69.85	100	M24	3.8
BT 50-MB80	80	42	37	75				4.4

- Shanks
- Attachement
- Aufnahmen

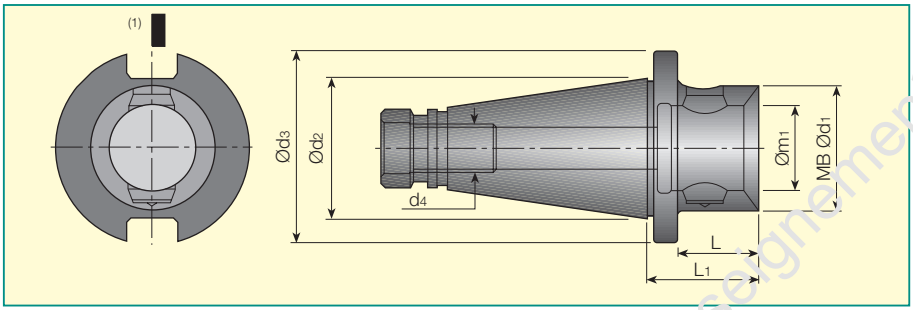


BT - MAS 403 TYPE B

(1) Cutting edge position
(1) Position de l'arête de coupe
(1) Position der Schneidkante

Designation Désignation Bezeichnung	MB d_1	m_1	L	d_2	d_3	d_4	kg
BTB 40-MB50	50	32	21	48	63	M16	1
BTB 40-MB63	63	42	-	66			1.3
BTB 50-MB50	50	32	20	60	100	M24	3.7
BTB 50-MB63	63	42	37	70			3.8
BTB 50-MB80	80	42	37	75			4.4

- **Shanks**
- **Attachement**
- **Aufnahmen**

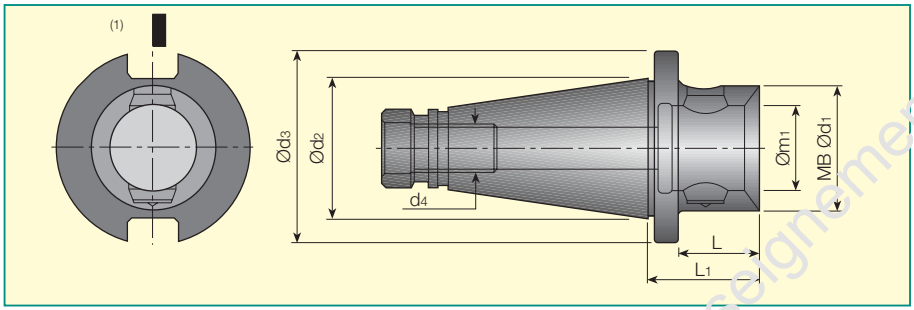


DIN 2080-A

(1) Cutting edge position
(1) Position de l'arête de coupe
(1) Position der Schneidkante

Designation Désignation Bezeichnung	MB d_1	m_1	L	L_1	d_2	d_3	d_4	kg
ISOM 30-MB50	50	32	-	58	31.75	50	M12	0.6
ISOM 40-MB50	50	32	33.5	48	44.45	63	M16	1
ISOM 40-MB63	63	42		60				1.3
ISOM 45-MB50	50	32	33	48				1.3
ISOM 45-MB63	63	42	45	60	57.15	80	M20	2.1
ISOM 45-MB80	80	42	-	66				2.4
ISOM 50-MB50	50	32	33	48				2.7
ISOM 50-MB63	63	42	41	56	69.85	97.5	M24	2.8
ISOM 50-MB80	80	42	45	60				3.4

- Shanks
- Attachement
- Aufnahmen

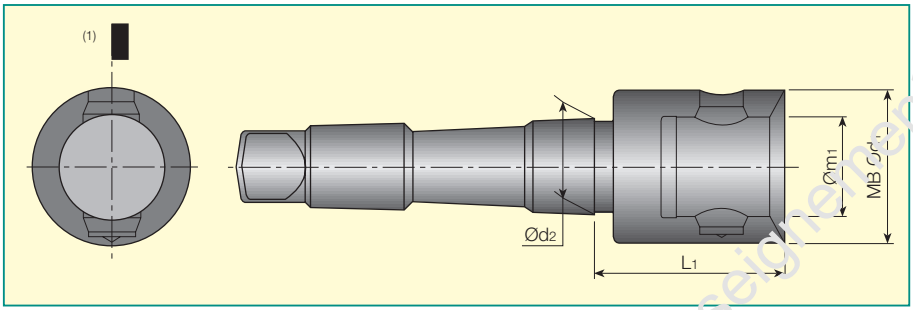


ISO 297

(1) Cutting edge position
(1) Position de l'arête de coupe
(1) Position der Schneidkante

Designation Désignation Bezeichnung	MB d_1	m_1	L	L_1	d_2	d_3	d_4 (inch)	kg
ISO 40-MB50	50	32	36.5	48	44.45	63	UNC 5/8"-11	1
ISO 40-MB63	63	42	-	60				1.3
ISO 50-MB50	50	32	33	48				2.7
ISO 50-MB63	63	42	41	56	69.85	97.5	UNC 1"-8	2.8
ISO 50-MB80	80	42	45	60				3.4

- Shanks
- Attachement
- Aufnahmen

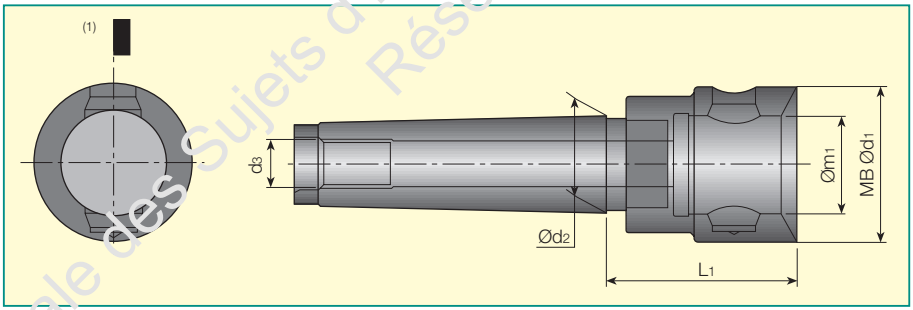


DIN 228/B 1806

(1) Cutting edge position
(1) Position de l'arête de coupe
(1) Position der Schneidkante

Designation Désignation Bezeichnung	MB d_1	m_1	L_1	d_2	kg
MTT 5-MB63	63	42	85	44.399	2

- Shanks
- Attachement
- Aufnahmen

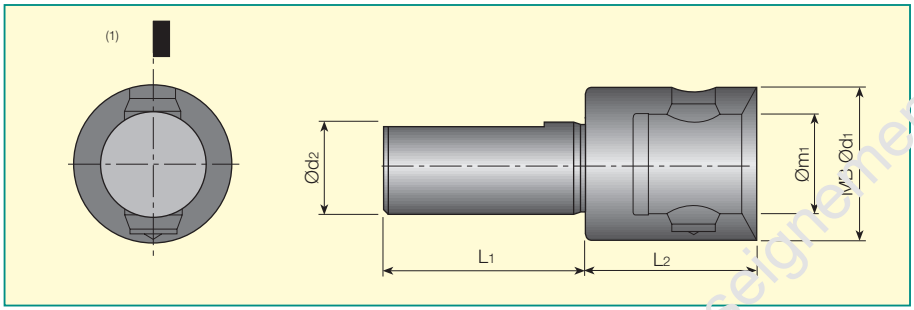


DIN 228/A 220

(1) Cutting edge position
(1) Position de l'arête de coupe
(1) Position der Schneidkante

Designation Désignation Bezeichnung	MB d_1	m_1	L_1	d_2	d_3	kg
MTD 4-MB50	50	32	63	31.267	M16	1.5

- **Shanks**
- **Attachement**
- **Aufnahmen**

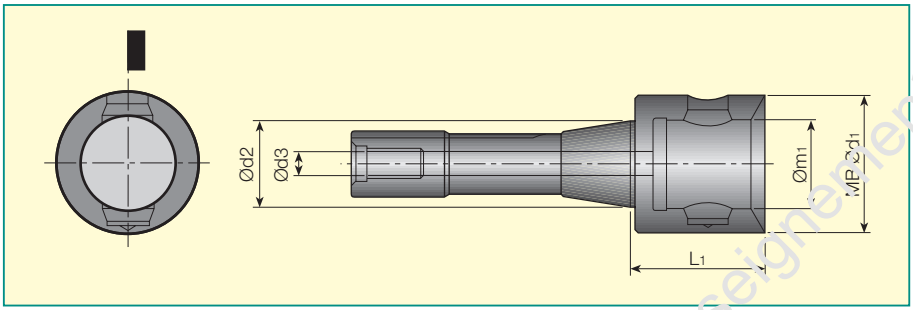


ST

(1) Cutting edge position
(1) Position de l'arête de coupe
(1) Position der Schneidkante

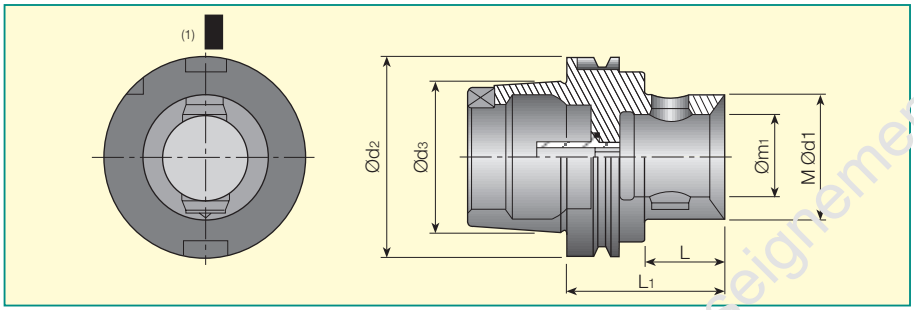
Designation Désignation Bezeichnung	MB d_1	m_1	L_1	L_2	d_2	kg
ST 25-MB32	32	20	63	36	25	1.2
ST 32-MB50	50	32	80	60	32	1.5

- Shanks
- Attachement
- Aufnahmen



Designation Désignation Bezeichnung	MB d_1	m_1	L_1	d_2	d_3 inch	kg
R8-MB50	50	32	50	31.75	UNF 7/16-20	1.5

- **Shanks**
- **Attachement**
- **Aufnahmen**



HSK DIN 69893-A

(1) Cutting edge position
(1) Position de l'arête de coupe
(1) Position der Schneidkante

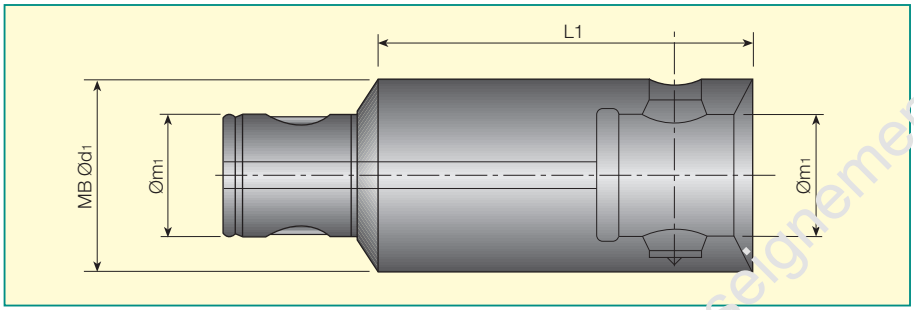
Designation Désignation Bezeichnung	MB d_1	m_1	L	L_1	d_2	d_3	kg
HSK-A 50-MB50	50	32	-	66	50	38	0.6
HSK-A 63-MB50	50	32	40	66	63	48	0.9
HSK-A 63-MB63	63	42	-	75			1.5
HSK-A 80-MB50	50	32	44	70			1.7
HSK-A 80-MB63	63	42	54	80	80	60	1.9
HSK-A 80-MB80	80	42	-	86			2.1
HSK-A 100-MB50	50	32	43	72			2
HSK-A 100-MB63	63	42	53	82	100	75	2.1
HSK-A 100-MB80	80	42	59	88			2.5

Extensions & Reductions

Prolongateurs & Réducteurs

Verlängerungen & Reduzierungen

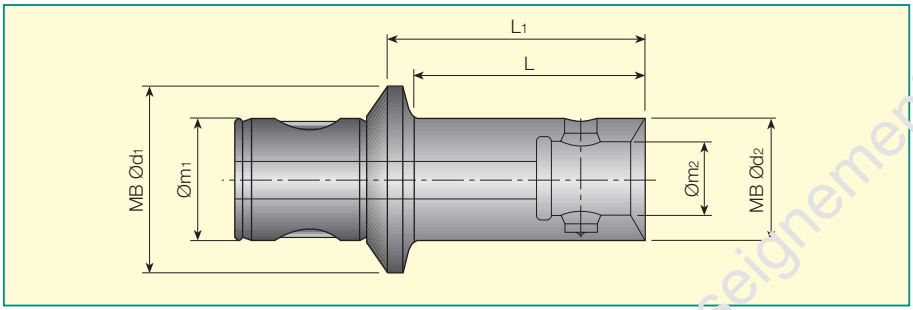
- **Extensions**
- **Prolongateurs**
- **Verlängerungen**



EX

Designation Désignation Bezeichnung	MB d_1	m_1	L_1	kg
EX 16X25-MB16	16	10	25	0.09
EX 20X32-MB20	20	13	32	0.12
EX 25X25-MB25	25	16	25	0.2
EX 25X40-MB25			40	0.25
EX 32X32-MB32	32	20	32	0.4
EX 32X50-MB32			50	0.5
EX 40X40-MB40	40	25	40	0.6
EX 40X63-MB40			63	0.7
EX 50X50-MB50	50	32	50	0.7
EX 50X80-MB50			80	1.1
EX 50X100-MB50			100	1.5
EX 63X63-MB63	63	42	63	1.4
EX 63X100-MB63			100	2.2
EX 63X125-MB63			125	2.9
EX 80X80-MB80	80	42	80	3
EX 80X125-MB80			125	4.6
EX 80X160-MB80			160	6.1

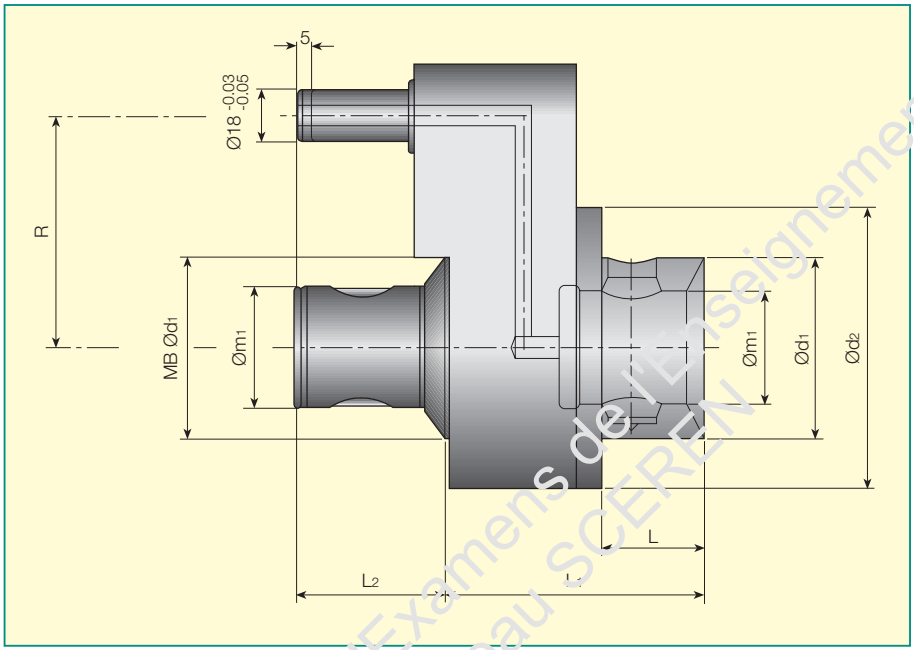
- **Reductions**
- **Réducteurs**
- **Reduzierungen**



RE

Designation Désignation Bezeichnung	MB d_1	m_1	MB d_2	m_2	L	L_1	kg
RE MB20-MB16X20	20	13	16	10	16	20	0.05
RE MB25-MB16X20	25	16	16	10	15	20	0.07
RE MB25-MB20X25			20	13	20	25	0.09
RE MB32-MB16X24	32	20	16	10	18	24	0.15
RE MB32-MB20X25			20	13	20	25	0.18
RE MB32-MB25X28			25	16	23	28	0.2
RE MB40-MB16X24	40	25	16	10	17	24	0.2
RE MB40-MB20X26			20	13	20	26	0.3
RE MB40-MB25X28			25	16	22	28	0.35
RE MB40-MB32X32			32	20	27	32	0.4
RE MB50-MB16X24	50	32	16	10	15	24	0.4
RE MB50-MB16X40			16	10	31	40	0.5
RE MB50-MB16X74			16	10	65	74	0.25
RE MB50-MB20X26			20	13	18	26	0.5
RE MB50-MB20X70			20	13	62	70	0.6
RE MB50-MB20X93			20	13	85	93	0.35
RE MB50-MB25X28			25	16	21	28	0.6
RE MB50-MB25X87			25	16	80	87	0.4
RE MB50-MB25X117			25	16	110	117	0.5
RE MB50-MB32X32			32	20	25	32	0.7
RE MB50-MB32X87			32	20	80	87	0.7
RE MB50-MB32X144			32	20	137	144	1
RE MB50-MB40X36			40	25	30	36	0.8
RE MB50-MB40X87			40	25	80	87	1
RE MB50-MB40X176			40	25	170	176	1.8
RE MB63-MB50X40	63	42	50	32	34	40	0.9
RE MB80-MB63X60	80	42	63	42	52	60	1.1

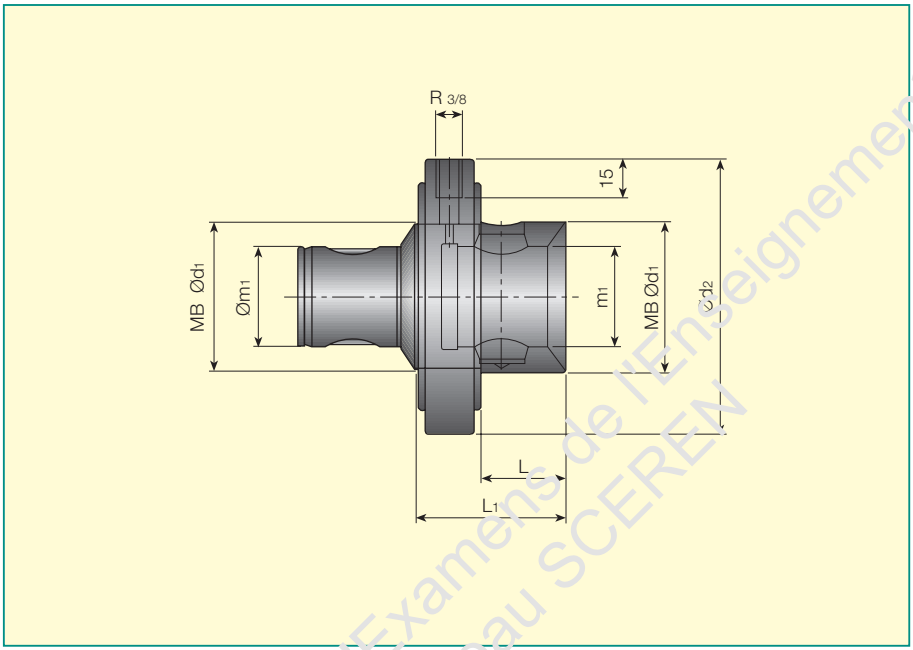
- **Coolant Extension (for Stop Block)**
- **Adaptateurs pour Lubrification Externe (Statique)**
- **Verlängerung für Kühlmittelzufuhr**



CHS

Designation Désignation Bezeichnung	MB d_1	m_1	R	d_2	L	L_1	L_2	RPM max tr-mn min^{-1} max	BAR	kg
CHS MB50-R65	50	32	65	80	28.5	72	43	7000	5-10	2.5
CHS MB50-R80	50	32	80	80	28.5	72	43	7000	5-10	3
CHS MB63-R80	63	42	80	100	37	88	51	5600	5-10	4

- **Coolant Extension**
- **Adaptateurs pour Lubrification Externe**
- **Verlängerung für Kühlmittelzufuhr**



CHR

Designation Désignation Bezeichnung	MB Ød1	m1	d2	L	L1	Rpm max tr-mn min-1 max	BARmax	kg
CHR MB63	63	42	115	35	63	3500	5	2.5

Toolholders

Porte-outils

Aufnahmen

- **End Mill Holder**
- **Porte-outils pour Fraises en Bout**
- **Aufnahmen für Schaftfräser**

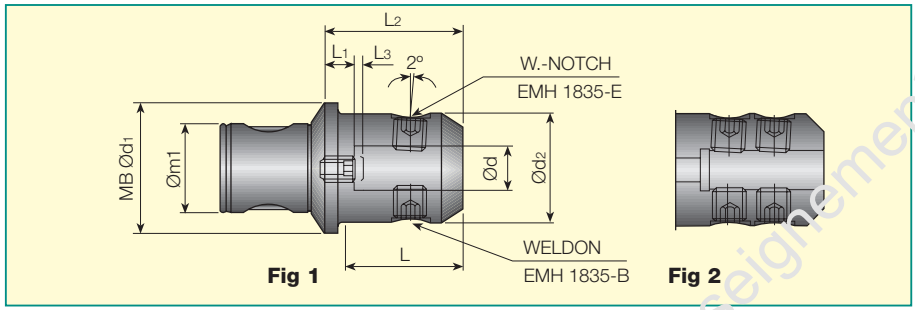
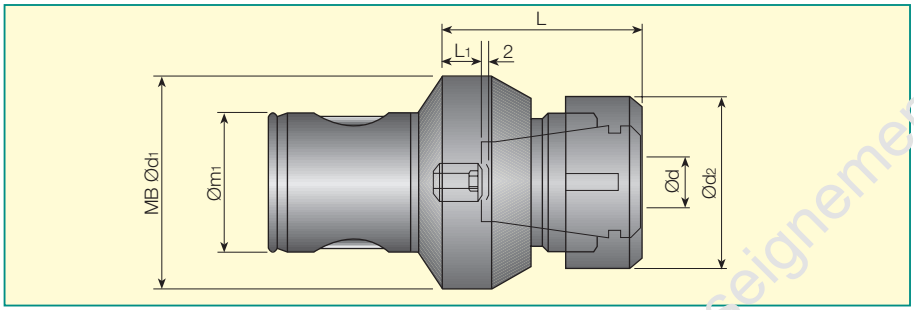


Fig 1 **Fig 2**

Weldon - DIN 1835 B/E

Designation Désignation Bezeichnung	MB d_1	m_1	d (H5)	d_2	L	L_1	L_2	L_3	Fig.	kg
EMH MB 50-6			6	25	32.5	7	41	2	1	0.7
EMH MB 50-8			8	28	33	7	44	2	1	0.7
EMH MB 50-10			10	35	42	11	52	3	1	0.9
EMH MB 50-12	50	32	12	42	48	11	57	3	1	1
EMH MB 50-14			14	42	48	11	57	3	1	1
EMH MB 50-16			16	48	61	17	67	4	1	1.2
EMH MB 50-20			20	51		16	67	4	1	1.3
EMH MB 63-16			16	48	53	14	64	4	1	1.5
EMH MB 63-20	63	42	20	52	56	14	66	4	1	1.7
EMH MB 63-25			25	64	-	16	74	4	2	2.2
EMH MB 63-32			32	72	-	14	76	4	2	2.5
EMH MB 80-40	80	42	40	80	-	12	83	4	2	3.2

- **Collet Chuck ER Type**
- **Porte-pinces Type ER**
- **Spannzangenfutter Typ ER**

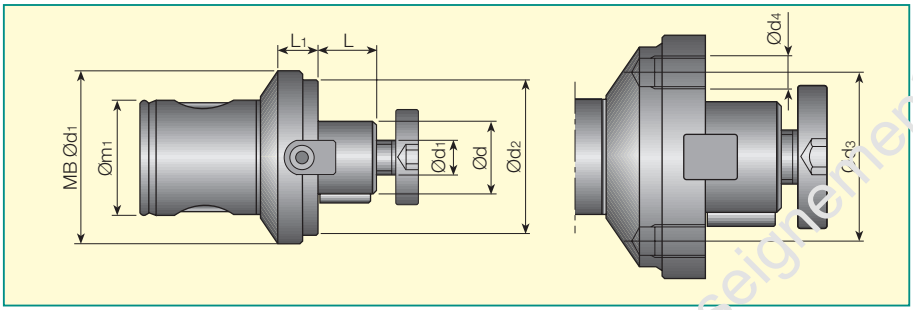


DIN 6499

Designation Désignation Bezeichnung	MB d_1	m_1	d	d_2	L	L_1	kg
CC MB16-ER11M	16	10	0.5 - 7	1[illegible]	25	2.5	0.1
CC MB20-ER16M	20	13	0.5 - 10	22	3[illegible]	1	0.2
CC MB25-ER20M	25	16	1 - 1[illegible]	28	40	2.5	0.3
CC MB40-ER25	40	25	1 - [illegible]6	42	45	5	0.6
CC MB50-ER25 **CC MB50-ER32**	50	32	1 - 16 2-20	42 50	48 59	7	0.7 1.2
CC MB63-ER32 **CC MB63-ER40**	63	42	2 - 20 3 - 26	50 63	59 64	12	1.3 1.6

For Spring COLLET, see page 90.
Pour les PINCES élastiques, voir page 90.
Spannschlüssel ER, Spannmutter ER, siehe Katalog ITS.

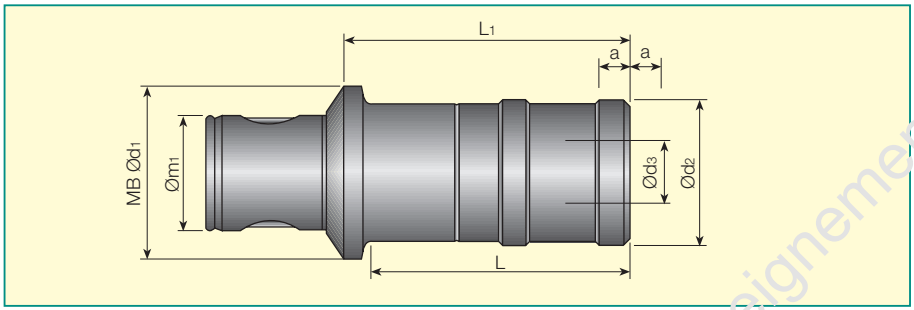
- **Shell Mill Holders**
- **Porte-outils pour Fraises à Alésage**
- **Aufnahmen für Aufsteckfräser**



SMH

Designation Désignation Bezeichnung	MB D_1	m_1	d	d_2	d_3	d_4	a_1	L	L_1	kg
SMH MB50-16	50	32	16	32	-	-	M 8	17	15	0.5
SMH MB50-22			22	40	-	-	M 10	19		0.5
SMH MB50-27			27	50	-	-	M 12	21		0.6
SMH MB50-32			32	70	-	-	M 16	24		1
SMH MB63-27	63	42	27	60	-	-	M 12	21	15	1.1
SMH MB63-32			32	70	-	-	M 16	24		1.2
SMH MB80-32	80	42	32	70	66.7	M 12	M 16	24	15	1.3
SMH MB80-40			40	80			M 20	27	24	2.1

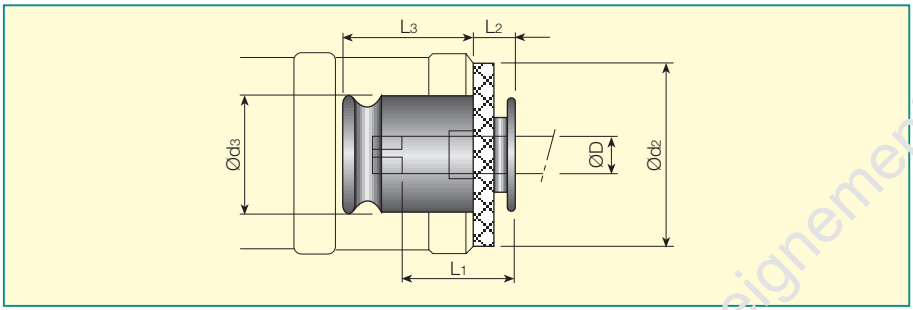
- **Tapping Chuck Holders (Bilz Type)**
- **Supports de Porte-tarauds (Système Bilz)**
- **Gewindeschneidfutter**



TP

Designation Désignation Bezeichnung	MB d_1	m_1	Capacity Capacité Bereich	L	l_1	d_2	d_3	a	kg
TP MB50-M 3-12	50	32	M 3~12	60	72	36	19	7.5	0.9
TP MB50-M 8-20			M 8~20	-	106	53	31	12.5	1.2
TP MB63-M 3-12	63	42	M 3~12	58	70	36	19	7.5	1
TP MB63-M 8-20			M 8~20	93	104	53	31	12.5	1.3

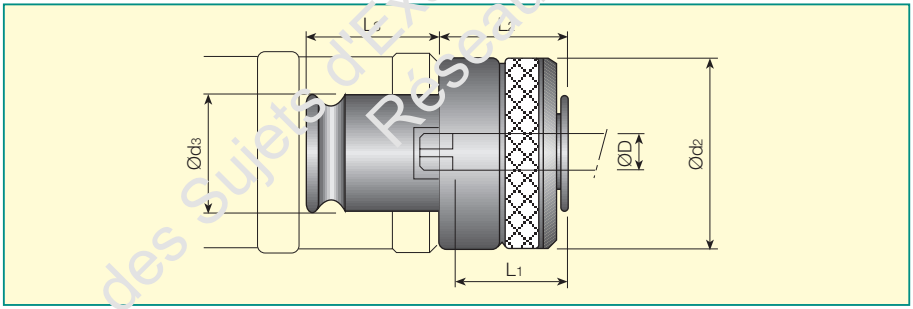
- **Tap Holder without Torque Clutch (Bilz Type)**
- **Porte-tarauds sans déclanchement (système Bilz)**
- **Gewindeschneidfutter ohne Rutschkupplung**



Designation Désignation Bezeichnung	Capacity Capacité Bereich	Drange	d_2	d_3	l_1	l_2	l_3
TAP HOLDER 3-12	M 3~12	3.5~11.3	30	19	17	7	21.5
TAP HOLDER 8-20	M 8~20	7~18	48	31	30	11	35

On request
Sur demande
Auf Anfrage

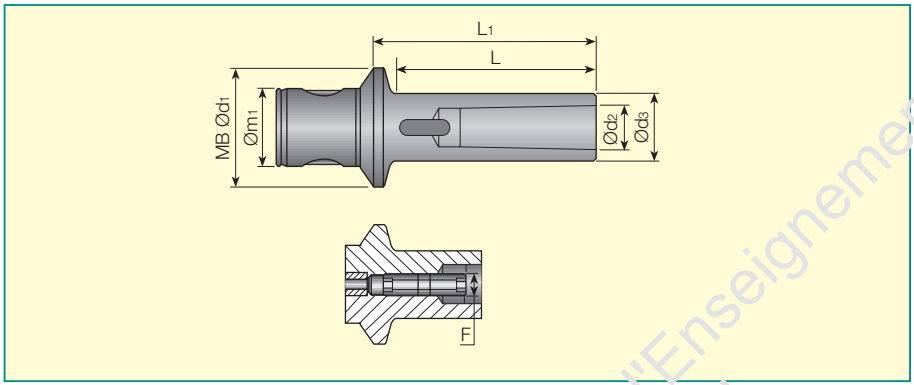
- **Tap Holder with Torque Clutch (Bilz Type)**
- **Porte-tarauds avec couple de déclanchement (système Bilz)**
- **Gewindeschneidfutter mit Rutschkupplung**



Designation Désignation Bezeichnung	Capacity Capacité Bereich	Drange	d_2	d_3	l_1	l_2	l_3
TAP HOLDER CLUTCH 3-12	M 3~12	3.5~11.3	32	19	17	25	21.5
TAP HOLDER CLUTCH 8-20	M 8~20	7~18	50	31	30	34	35

On request
Sur demande
Auf Anfrage

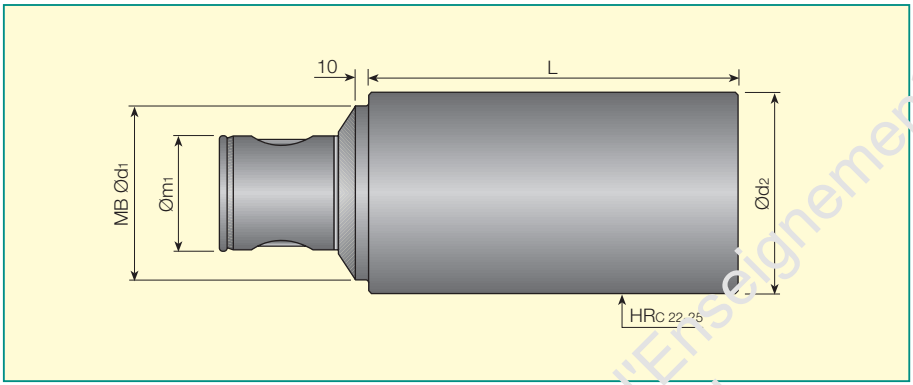
- **Morse Taper Tang**
- **Cône Morse**
- **Morsekegel**



DIN 228 A/B

Designation Désignation Bezeichnung	MB D_1	m_1	Morse	d_2	d_1	F	L	L_1	kg
AMT MB50-MT2	50	32	2	17.780	30	M10	86	100	0.7
AMT MB50-MT3	50	32	3	23.825	36	M12	110	120	1
AMT MB63-MT3	63	42	3	23.825	36	M12	108	120	1.3
AMT MB63-MT4	63	42	4	31.267	48	M16	133	150	2

- **Blanks**
- **Ebauches**
- **Rohling**



Designation Désignation Bezeichnung	MB D_1	m_1	d_2	L	kg
BLANK MB50-63X160	50	32	63	160	4.2
BLANK MB63-80X200	63	42	80	200	8.2
BLANK MB80-100X250	80	42	100	250	16

Rough Boring Heads

Têtes d'alésage ébauche

Verlängerungen & Reduzierungen

- **Rough Boring Options**
- **Possibilités en alésage ébauche**
- **Schrupp-Bohrköpfe**

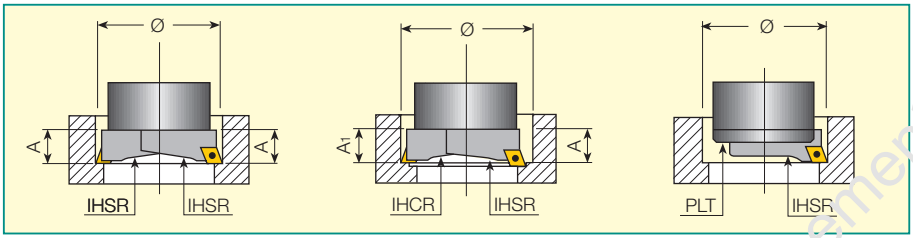


Fig a / Fig a / Abb a | Fig b / Fig b / Abb b | Fig c / Fig c / Abb c

1. Radial setting of the cutting edges should be carried out with tool presetting equipment.

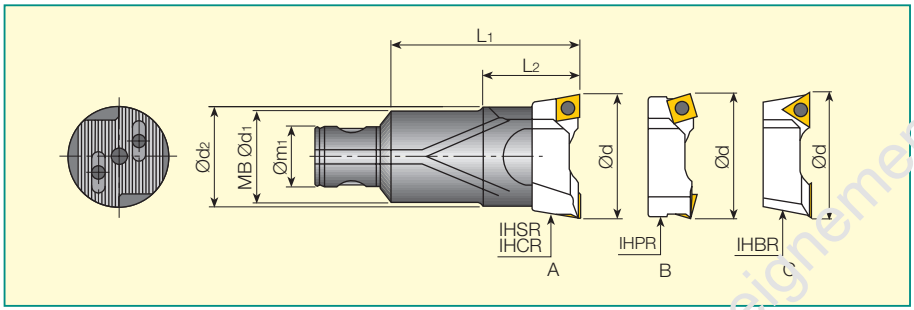
2. Boring bars fitted with two insert pockets are for roughing operations involving heavy chip removal.
The double-insert boring bars may include:
- Two IHSR insert holders on the same plane, with the two cutting edges set at identical radial distance for high-feed-rate roughing operations (Fig. a).
- An IHSR insert holder and an IHSR insert holder not on the same plane, with the two cutting edges set at different radial distances for high-depth roughing operations (Fig. b).

3. Boring bars fitted with a single insert holder are for roughing and finishing operations involving normal chip removal. The serrated-surface protection plate PLT should always be used (Fig. c).

1. Le réglage radial des arêtes de coupe doit être assurer sur un banc de réglage.
2. Les barres d'alésage possédant deux porte-plaquettes sont destinées aux opérations d'ébauche sous de forts taux d'enlèvement de matière. Les barres d'alésage avec deux plaquettes doivent comprendre: Deux porte-plaquettes IHSR sur le même plan, avec les deux arêtes de coupe réglées à une même distance radiale pour les opérations d'ébauches sous de hautes avances (Fig. a).
Un porte-plaquette IHCR et un porte-plaquette IHSR ne se situant pas sur le même plan, avec les arêtes de coupe réglées à des distances radiales différentes pour les opérations d'ébauches avec des profondeurs de passes importantes (Fig. b).
3. Les barres d'alésage équipées d'un seul porte-plaquette sont destinées au opérations d'ébauches et de finitions avec un taux d'enlèvement de matière normal. La semelle protectrice striée PLT devra toujours être utilisée dans ce cas (Fig c).

1. Die radiale Positionierung der Schneidkanten sollte mit einer Werkzeug-Voreinstellvorrichtung erfolgen.
2. Die mit zwei Klemmhaltern ausgestatteten Bohrköpfe kommen bei Schruppoperationen mit großem Zeitspanvolumen zum Einsatz.
Die zweifach bestückten Bohrköpfe bestehen z. B. aus:
- zwei Klemmhaltern IHSR auf einer Ebene, wobei die zwei Schneidkanten den gleichen radialen Abstand haben für Schruppoperationen mit hohen Vorschubwerten (Abb. a).
– zwei Klemmhaltern IHSR auf verschiedenen Ebenen, wobei die zwei Schneidkanten unterschiedliche radiale Abstände aufweisen für Schruppoperationen mit großer Schnittiefe (Abb. b).
3. Die mit nur einem Klemmhalter bestückten Bohrköpfe eignen sich für Schrupp- und Schlichtoperationen bei einfacher Anwendung. Die Schutzabdeckung der stufigen. Spannflächen PLT ist permanent einzusetzen.

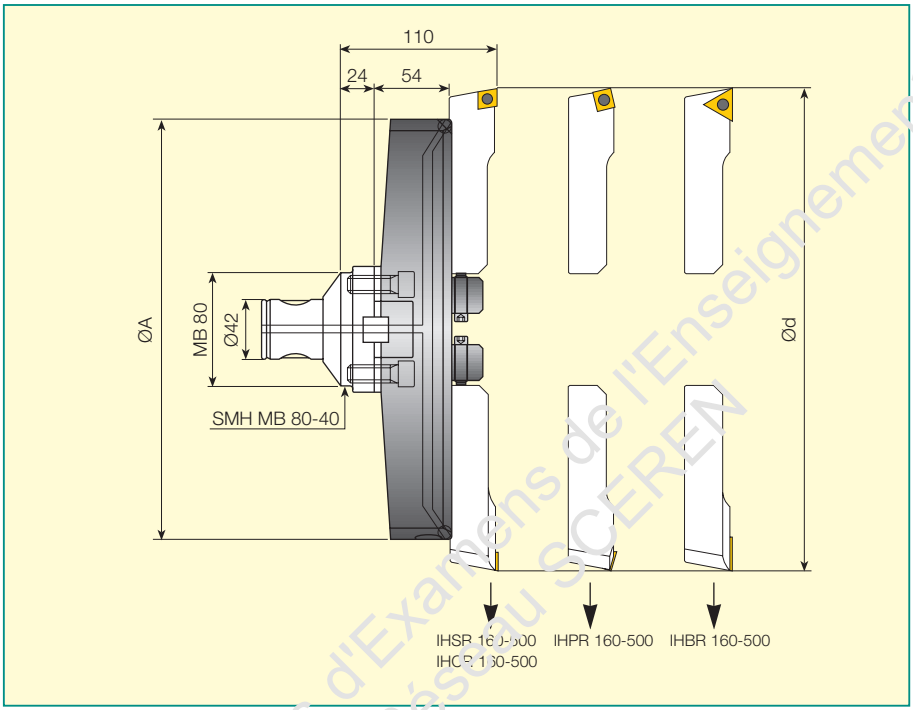
- **Rough Boring Heads**
- **Têtes d'alésage ébauche**
- **Schrupp-Bohrköpfe**



BHR
Ø18-200

Designation Désignation Bezeichnung	ød	MB	d1	m1	d2	L1	L2	IH...	A	B	C	kg
BHR MB16-16X34	18-22	16	10	16	34	—	IH...18-22		●			0.2
BHR MB20-20X40	22-28	20	13	20	40	—	IH...22-28		●			0.3
BHR MB25-25X50	28-38	25	16	25	50	—	IH...28-38		●			0.4
BHR MB32-32X63	36-50	32	20	32	63	—	IH...36-50		●	●		0.6
BHR MB40-40X80	50-68	40	25	40	80	—	IH...50-68		●	●		0.8
BHR MB50-50X100	68-90	50	32	55	100	50	IH...68-90		●	●		1.5
BHR MB63-63X125	90-120	63	42	72	125	63	IH...90-120		●	●	●	3
BHR MB80-80X140	120-160	80	42	95	140	75	IH...120-160		●	●	●	3
	160-200	80	42	95	140	75	IH...160-500		●	●	●	6

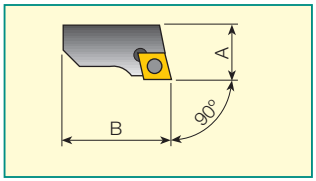
- **Rough Boring Heads**
- **Têtes d'alésage ébauche**
- **Schrupp-Bohrköpfe**



TCH
ø200-500

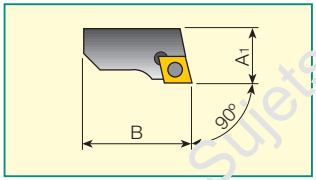
Designation Désignation Bezeichnung	ød	A	IH...160-500	kg
TCH 200	200-300	198	IHSR 160-500 IHCR 160-500 IHPR 160-500 IHBR 160-500	4
TCH 300	300-400	298		6
TCH 400	400-500	398		8

- **Rough Boring-Insert Holders**
- **Cartouches pour plaquettes d'ébauche**
- **Halter für Schrupp-Bohrwendeschneidplatten**



IHSR

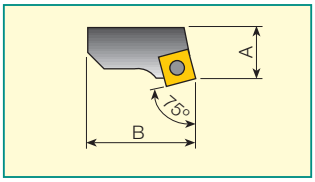
Designation Désignation Bezeichnung	ød	A	B	Insert Plaquette WSP	Screw Vis Schraube	Key Clé Schlüssel
IHSR 18-22	18-22	8	15	CCMT 0602..	SR 14-548	T 7/5
IHSR 22-28	22-28	9.5	19			
IHSR 28-38	28-38	12.5	23			
IHSR 38-50	38-50	15	32			
IHSR 50-68	50-68	19	40	CCMT 09T3...	SR 16-236	T 15/5
IHSR 68-90	68-90	22	54	CCMT 1204...	SR 16-212	T 20/61
IHSR 90-120	90-120	27	70.5			
IHSR 120-160	120-160	32	94.5			
IHSR 160-500	160-500	32	130			



IHCR

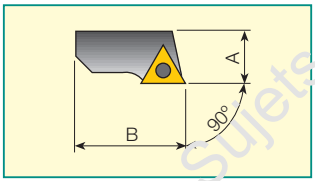
Designation Désignation Bezeichnung	ød	A_1	B	Insert Plaquette WSP	Screw Vis Schraube	Key Clé Schlüssel
IHCR 28-38	28-38	12.3	23	CCMT 0602..	SR 14-548	T7/5
IHCR 36-50	38-50	14.8	32			
IHCR 50-68	50-68	18.7	40	CCMT 09T3..	SR 16-236	T15/5
IHCR 68-90	68-90	21.7	54	CCMT 1204..	SR 16-212	T20/61
IHCR 90-120	90-120	26.7	70.5			
IHCR 120-160	120-160	31.7	94.5			
IHCR 160-500	160-500	31.7	130			

- **Rough Boring Holders**
- **Cartouches pour plaquettes d'ébauche**
- **Halter für Schrupp-Bohrwendeschneidplatten**



IHPR

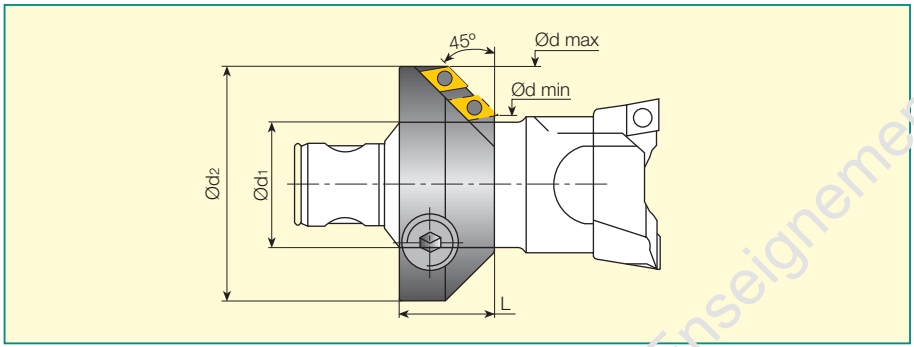
Designation Désignation Bezeichnung	ød	A	B	Insert Plaquette WSP	Screw Vis Schraube	Key Clé Schlüssel
IHPR 36-50	36-50	15	32	SCMT 09T3..	SR 16-236	T15/5
IHPR 50-68	50-68	19	40			
IHPR 68-90	68-90	22	54	SCMT 1204..	SR 16-212	T20/61
IHPR 90-120	90-120	27	70.5			
IHPR 120-160	120-160	32	94.5			
IHPR 160-500	160-500	32	130			



IHBR

Designation Désignation Bezeichnung	ød	A	B	Insert Plaquette WSP	Screw Vis Schraube	Key Clé Schlüssel
IHBR 90-120	90-120	27	70.5	TCMT 2205..	SR 16-212	T20/61
IHBR 120-160	120-160	32	94.5			
IHBR 160-500	160-500	32	130			

- **Chamfering Tool**
- **Têtes de chanfreinage**
- **Fas-Werkzeug**



CHA.. 45°

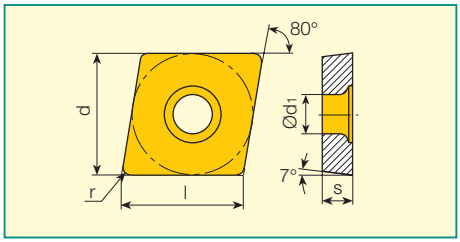
Designation Désignation Bezeichnung	ød	d_1	d_2	L	Insert Plaquette Wende	Screw Vis Schraube	Key Clé Schlüssel	kg kg kg
CHA 16-45	18-28	16	28	13	DCMT 070202..	SR 14-548	T7/5	0.05
CHA 20-45	22-32	20	32	15				0.08
CHA 25-45	28-43	25	43	18				0.2
CHA 32-45	35-54	32	54	22				0.3
CHA 40-45	46-72	40	72	30	DCMT 11T3..	SR 16-236P	T15/5	0.8
CHA 45-50	56-95	50	95	36				1.4

Rough Boring Inserts

Plaquettes d'alésage ébauche

Wendeschneidplatten-Übersicht

- **Positive 7° Clearance**
- **Positives à 7° de dépouille**
- **Positiv 7° Freiwinkel**



CCMT

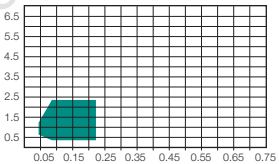
Designation Désignation Bezeichnung	l	d	s	r	d1	IC8048	IC9015	IC520N	IC20N	IC9025
						← Tougher / Plus tenace / Zäher				
CCMT 060202	6.3	6.35	2.38	0.2	2.8				● ●	
CCMT 060202-14	6.3	6.35	2.38	0.2	2.8		● ●			● ●
CCMT 060204	6.3	6.35	2.38	0.4	2.8			● ●	● ●	
CCMT 060204-14	6.3	6.35	2.38	0.4	2.8	● ●	● ●			● ●

- ● Alloy Steel, Carbon Steel
- ● Stainless Steel
- ● Cast Iron

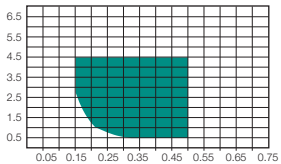
- ● Aciers alliés, aciers au carbone
- ● Aciers inoxydables
- ● Fontes

- ● Legierter Stahl, Kohlenstoffstahl
- ● Rostbeständiger Stahl
- ● Eisenguß

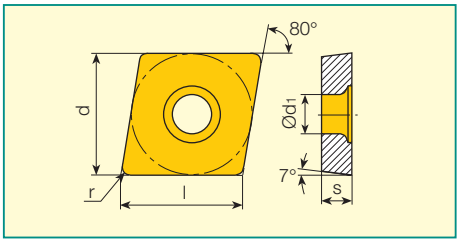
CCMT 060204



CCMT 060204-14



- **Positive 7° Clearance**
- **Positives à 7° de dépouille**
- **Positiv 7° Freiwinkel**



CCMT

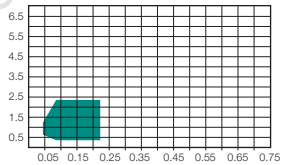
Designation Désignation Bezeichnung	l	d	s	r	ød1	IC9025	IC8048	IC9015	IC520N	IC20N	IC3028
						← Tougher / Plus tenace / Zäher					
CCMT 09T302	9.5	9.52	3.97	0.2	4.4				● ●	● ●	
CCMT 09T304	9.5	9.52	3.97	0.4	4.4				● ●	● ●	
CCMT 09T304-SM	9.5	9.52	3.97	0.4	4.4	● ●	● ●				● ●
CCMT 09T308	9.5	9.52	3.97	0.8	4.4				● ●	● ●	
CCMT 09T308-14	9.5	9.52	3.97	0.8	4.4	●	● ●	● ●			● ●
CCMT 120408-14	12.7	12.7	4.76	0.8	5.5	●	● ●	● ●			

- Alloy Steel, Carbon Steel
- Stainless Steel
- Cast Iron

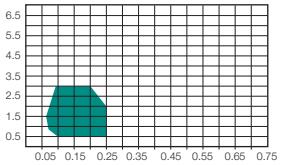
- Aciers alliés, aciers au carbone
- Aciers inoxydables
- Fontes

- Legierter Stahl, Kohlenstoffstahl
- Rostbeständiger Stahl
- Eisenguß

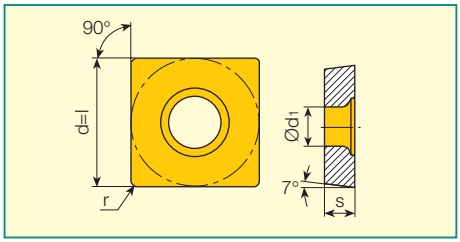
CCMT 09T304



CCMT 09T304-SM



- **Positive 7° Clearance**
- **Positives à 7° de dépouille**
- **Positiv 7° Freiwinkel**



SCMT

Designation Désignation Bezeichnung	l	d	s	r	ød1	IC635	IC8044	IC9015	IC9025
SCMT 09T304-14	9.52	9.52	3.97	0.4	4.4	● ●	● ●	● ●	
SCMT 09T308-17	9.52	9.52	3.97	0.8	4.4	● ●	● ●		
SCMT 120404-14	12.7	12.7	4.76	0.4	5.5		● ●		● ●
SCMT 120408-19	12.7	12.7	4.76	0.8	5.5	● ●	● ●	● ●	● ●

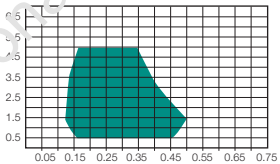
Tougher / Plus tenace / Zäher

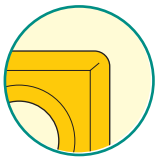
- Alloy Steel, Carbon Steel
- Stainless Steel
- Cast Iron

- Aciers alliés, aciers au carbone
- Aciers inoxydables
- Fontes

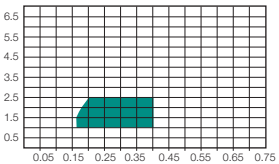
- Legierter Stahl, Kohlenstoffstahl
- Rostbeständiger Stahl
- Eisenguß

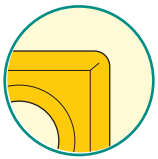
SCMT 09T304-14



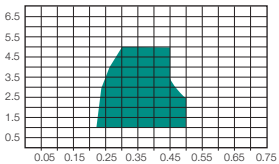


SCMT 09T308-17

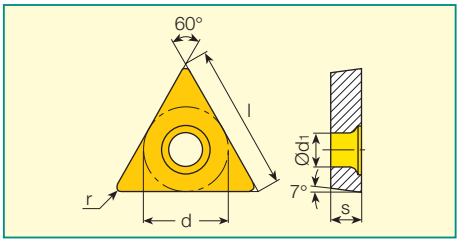




SCMT 120408-19



- **Positive 7° Clearance**
- **Positives à 7° de dépouille**
- **Positiv 7° Freiwinkel**

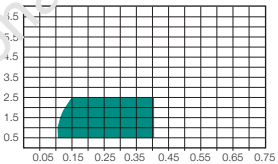


TCMT

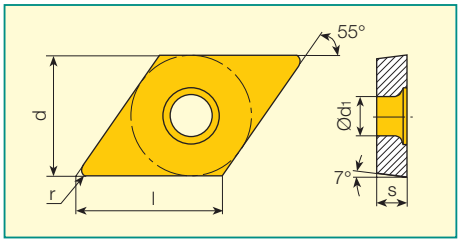
Designation Désignation Bezeichnung	l	d	s	r	ød1	Tougher / Plus tenace / Zäher IC808	IC9025
TCMT 220508-19	2.2	12.7	5.0	0.8	5.5	● ●	● ●

● Alloy Steel, Carbon Steel ● Aciers alliés, aciers au carbone ● Legierter Stahl, Kohlenstoffstahl
● Stainless Steel ● Aciers inoxydables ● Rostbeständiger Stahl
● Cast Iron ● Fontes ● Eisenguß

TCMT 110204-19



- **Positive 7° Clearance**
- **Positives à 7° de dépouille**
- **Positiv 7° Freiwinkel**

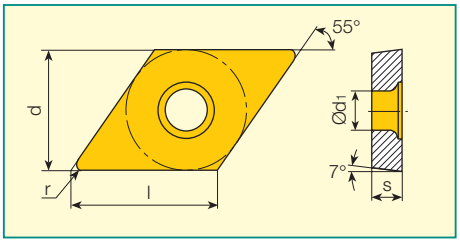


DCMT

Designation Désignation Bezeichnung	l	d	s	r	ød1	Tougher / Plus tenace / Zäher IC9015	IC520N	IC9025
DCMT 070202	7.7	6.35	2.38	0.2	2.8	● ●	● ●	● ●
DCMT 070204	7.7	6.35	2.38	0.4	2.8	● ●	● ●	● ●
DCMT 11T302	11.6	9.52	3.97	0.2	4.4		● ●	● ●

● Alloy Steel, Carbon Steel ● Aciers alliés, aciers au carbone ● Legierter Stahl, Kohlenstoffstahl
● Stainless Steel ● Aciers inoxydables ● Rostbeständiger Stahl
● Cast Iron ● Fontes ● Eisenguß

- **Positive 7° Clearance**
- **Positives à 7° de dépouille**
- **Positiv 7° Freiwinkel**



DCMT

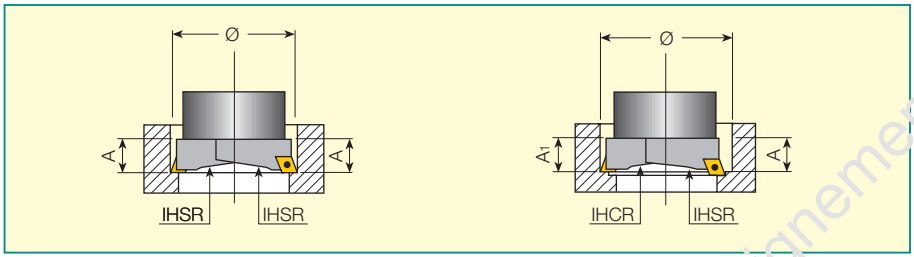
Designation Désignation Bezeichnung	l	d	s	r	ød1	IC8048	IC9012	IC520N	IC30N	IC9025
						← Tougher / Plus tenace / Zäher				
DCMT 11T304	11.6	9.52	3.97	0.4	4.4	● ●	● ●	● ●	●	
DCMT 11T304-14	11.6	9.52	3.97	0.4	4.4	● ●	● ●			● ●
DCMT 11T308	11.6	9.52	3.97	0.8	4.4			● ●	●	
DCMT 11T308-14	11.6	9.52	3.97	0.8	4.4	● ●	● ●			● ●

- Alloy Steel, Carbon Steel
- Stainless Steel
- Cast Iron

- Aciers alliés, aciers au carbone
- Aciers inoxydables
- Fontes

- Legierter Stahl, Kohlenstoffstahl
- Rostbeständiger Stahl
- Eisenguß

- **Cutting Conditions**
- **Conditions d'usinage**
- **Schnittwerte**



Twin boring cutter
At the same cutting diameter

Alésage à deux outils
au même diamètre de coupe

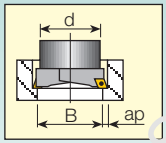
Ausspindeln mit doppeltem Fräser
Bei gleichem Bearbeitungs-ø

Twin boring cutter
At different cutting diameters

Alésage à deux outils
à différents diamètres de coupe

Ausspindeln mit doppeltem Fräser
Bei verschiedenen Bearbeitungs-ø

- **Cutting Depth ap=mm**
- **Prof. de passe ap=mm**
- **Schnittiefe ap=mm**



Working Range ø=mm Plage de diam. ø=mm Bearbeitungsbereich ø=mm	Steel Acier Stahl	Cast Iron Aluminum Fonte et Aluminium Gußeisen, Aluminium
18- 20	1.5-2	2-2.5
20- 50	2-3	2.5-3.5
50- 68	3-4	3.5-5
68-200	4-5	5-7
200-500	5-6	6-8

- It's advisable to start with B hole≥boring bar diameter d
- Il est recommandé de commencer l'alésage avec B inférieur ou égal au diamètre de la barre d
- Bei Bohrung B mit ≥Bohr-stangen-ø d beginnen

- **Rough Boring - Cutting Conditions**
- **Alésage ébauche - Conditions d'usinage**
- **Schnittwerte Schrupp-Ausspindeln**

Material Matière Werkstückstoff	L/D L/D L/D	Stability Stabilité Stabilität	V=m/min D<38	V=m/min D=38-120	V=m/min D>120	f=mm/rev R=0.2	f=mm/rev R=0.4	f=mm/rev R=0.8
Carbon Steel Acier au carbone Kohlenstoffstahl HB≤200	L/D=2.5 L/D=4 L/D=6.3	●●● ●● ●	120-180 100-160 70-100	140-200 120-180 70-100	160-250 140-200 70-100	— — 0.15-0.15	0.2-0.4 0.2-0.4 0.2-0.4	0.3-0.5 0.3-0.5
Carbon Steel Acier au carbone Kohlenstoffstahl HB>200	L/D=2.5 L/D=4 L/D=6.3	●●● ●● ●	100-160 80-140 60-90	120-180 100-160 70-100	140-200 120-180 70-100	— — 0.15-0.3	0.2-0.4 0.2-0.4 0.2-0.4	0.3-0.5 0.3-0.5 —
Stainless Steel Acier inoxydable Rostbest. Stahl AISI 304-316	L/D=2.5 L/D=4 L/D=6.3	●●● ●● ●	80-110 70-100 60-90	90-120 80-110 60-90	100-140 90-120 60-90	— — 0.15-0.3	0.2-0.4 0.2-0.4 0.2-0.4	0.3-0.5 0.3-0.5
Cast Iron Fonte Eisenguß	L/D=2.5 L/D=4 L/D=6.3	●●● ●● ●	90-120 70-100 60-90	100-140 90-120 60-90	120-160 100-140 80-90	— — 0.15-0.3	0.2-0.4 0.2-0.4 0.2-0.4	0.3-0.5 0.3-0.5 —
Aluminum Aluminium Aluminium	L/D=2.5 L/D=4 L/D=6.3	●●● ●● ●	160-250 140-200 100-150	200-300 160-200 100-150	250-300 160-250 100-150	— — 0.2-0.4	0.3-0.5 0.3-0.5 0.3-0.5	0.4-0.6 0.4-0.6 —

V – Cutting Speed
f – Feed
R – Insert Radius
●●● – Good
●● – Normal
● – Poor

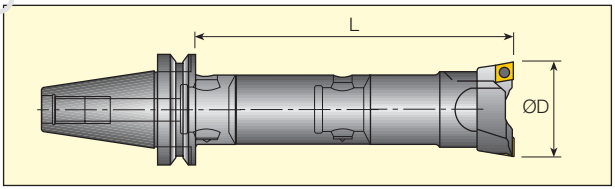
V – Vitesse de coupe
f – Avance
R – Rayon de plaquette
●●● – Bon
●● – Normal
● – Mauvais

V – Schnittgeschwindigkeit
f – Vorschub
R – Radius der WSP
●●● – Gut
●● – Normal
● – Schlecht

Attention:
For boring operations at different cutting diameters, reduce to half the feed indicated on the above table.

Attention:
Pour les opérations d'alésage sous différents diamètres de coupe, réduire de moitié l'avance indiquée sur le tableau ci dessus.

Achtung:
Beim Ausspindeln in verschiedenen Durchmessern sind die oben genannten Vorschubwerte zu halbieren.



Fine Boring Heads

Têtes d'alésage finition

Schlicht-Aufspindelköpfe

Fine Boring Heads

High precision machining to IT6 tolerance and with excellent surface finish is archieved using BHF boring heads and micrometric boring bars. These are very sensitive and a radial correction of 1 micron can be effected directly on the machine.

Têtes d'alésage, Finition

Usinages de hautes précisions jusqu'à une tolérance de qualité 6, avec un excellent état de surface à l'aide des têtes d'alésage BHF et micrométrique. Elles sont très précises et une correction radiale de 1 micron peut-être directement effectuée sur la machine et lue facilement sur la vis graduée.

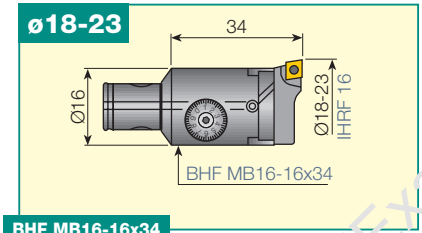
Schlicht-Ausspindelköpfe

Die Ausspindelköpfe BHF erzielen höchst präzise Bearbeitungsresultate mit Toleranzwerten IT6 und hervorragender Oberflächengüte durch mikrometrisch verstellbare Bohrstangen. Diese sind sehr präzise und ermöglichen radiale Korrekturen von 1 Mikron über eine gut ablesbare Skala im eingespannten Zustand.

- **Fine Boring Head Range**
- **Plage des têtes d'alésage de finition**
- **Bereich der Schlicht-Ausspindelköpfe**

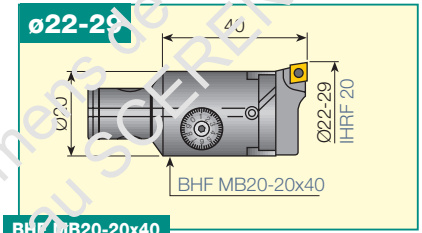
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360	370	380	390	400	410	420	430	440	450	460	470	480	490	500
BHF MB16-16x34				18-23																																														
BHF MB20-20x40					22-29																																													
BHF MB25-25x50						28-38																																											
BHF MB32-32x63								36-50																																								
BHF MB40-40x80									48-63																																							
BHF MB50-50x60										4-84																																						
BHF MB50-63x87																	4-160																																
BHF MB63-63x87																	4-160																																
BHF MB50-80x94																																																
BHF MB80-80x94																																																
BHF MB80-125x114																																																

ø18-23



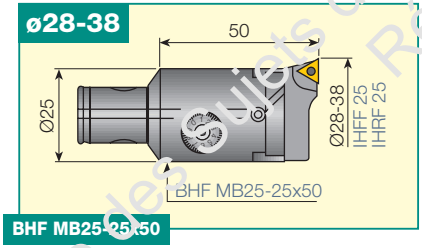
BHF MB16-16x34

ø22-29



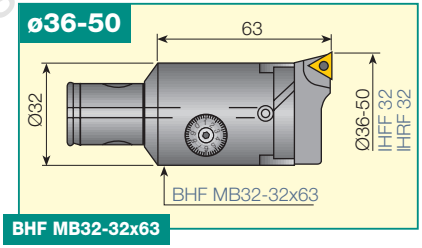
BHF MB20-20x40

ø28-38



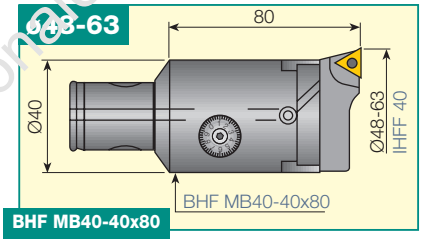
BHF MB25-25x50

ø36-50



BHF MB32-32x63

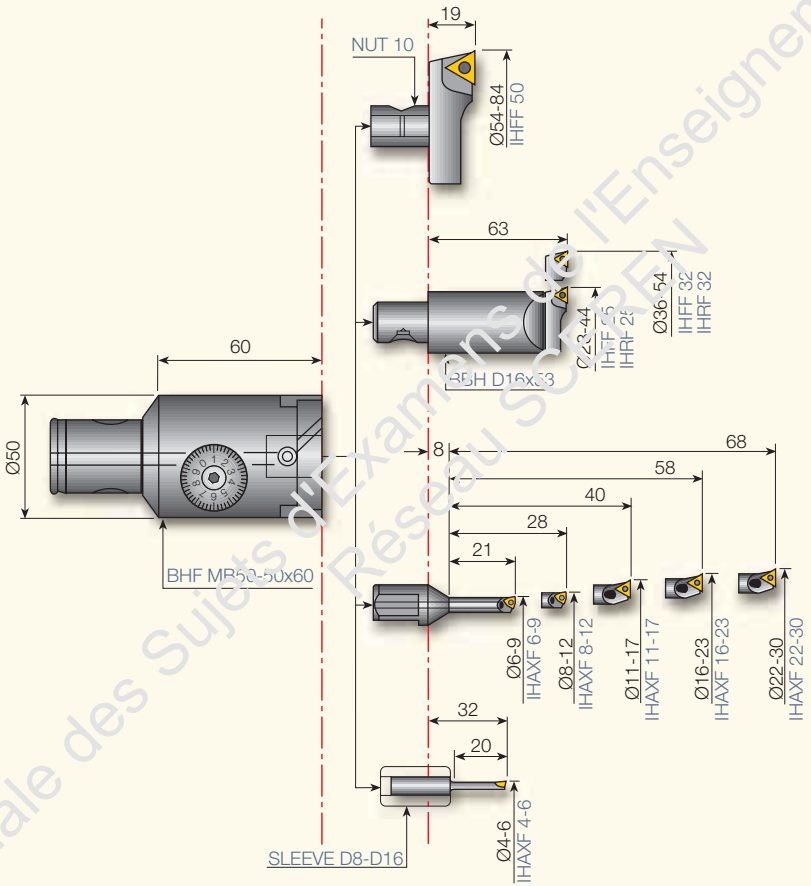
ø48-63



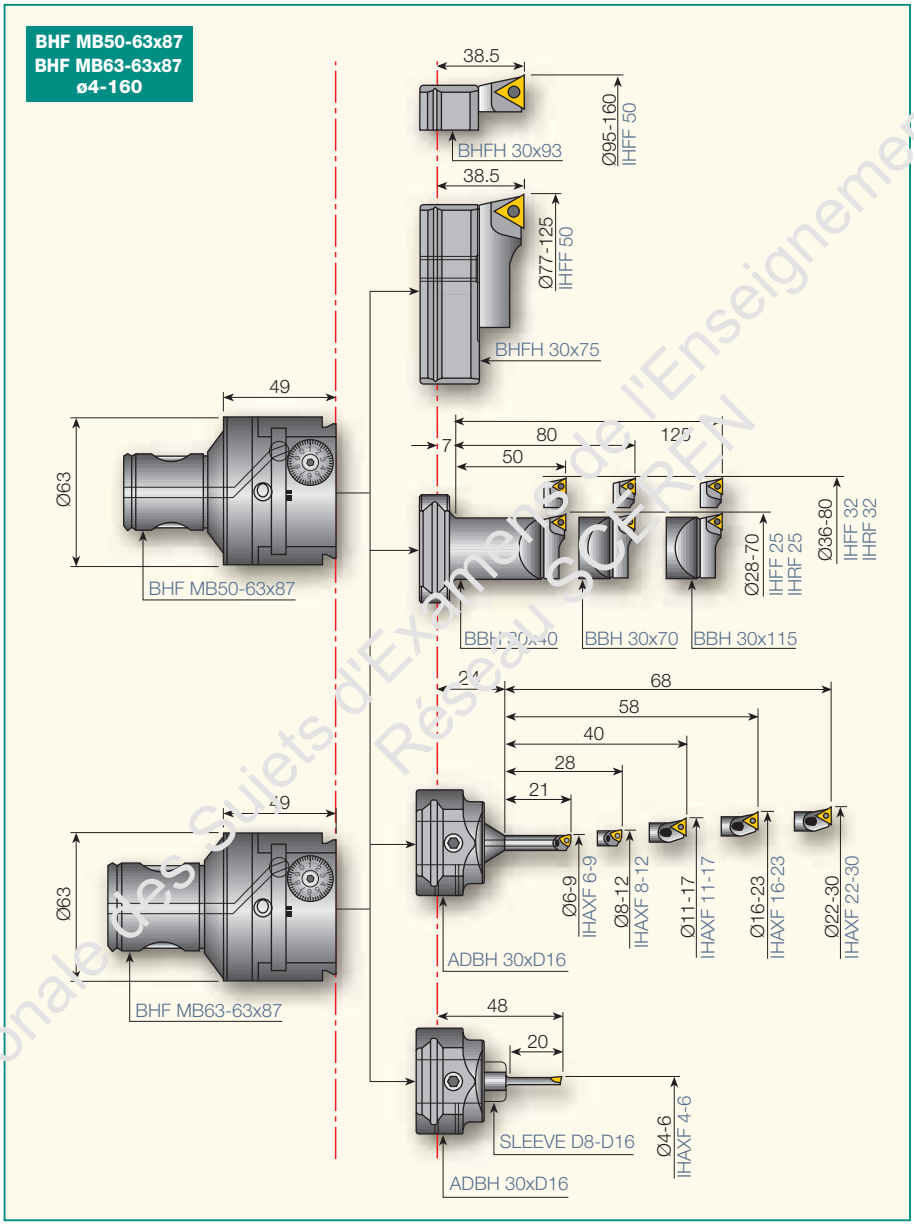
BHF MB40-40x80

- **Fine Boring Head Range**
- **Plage des têtes d'alésage de finition**
- **Bereich der Schlicht-Ausspindelköpfe**

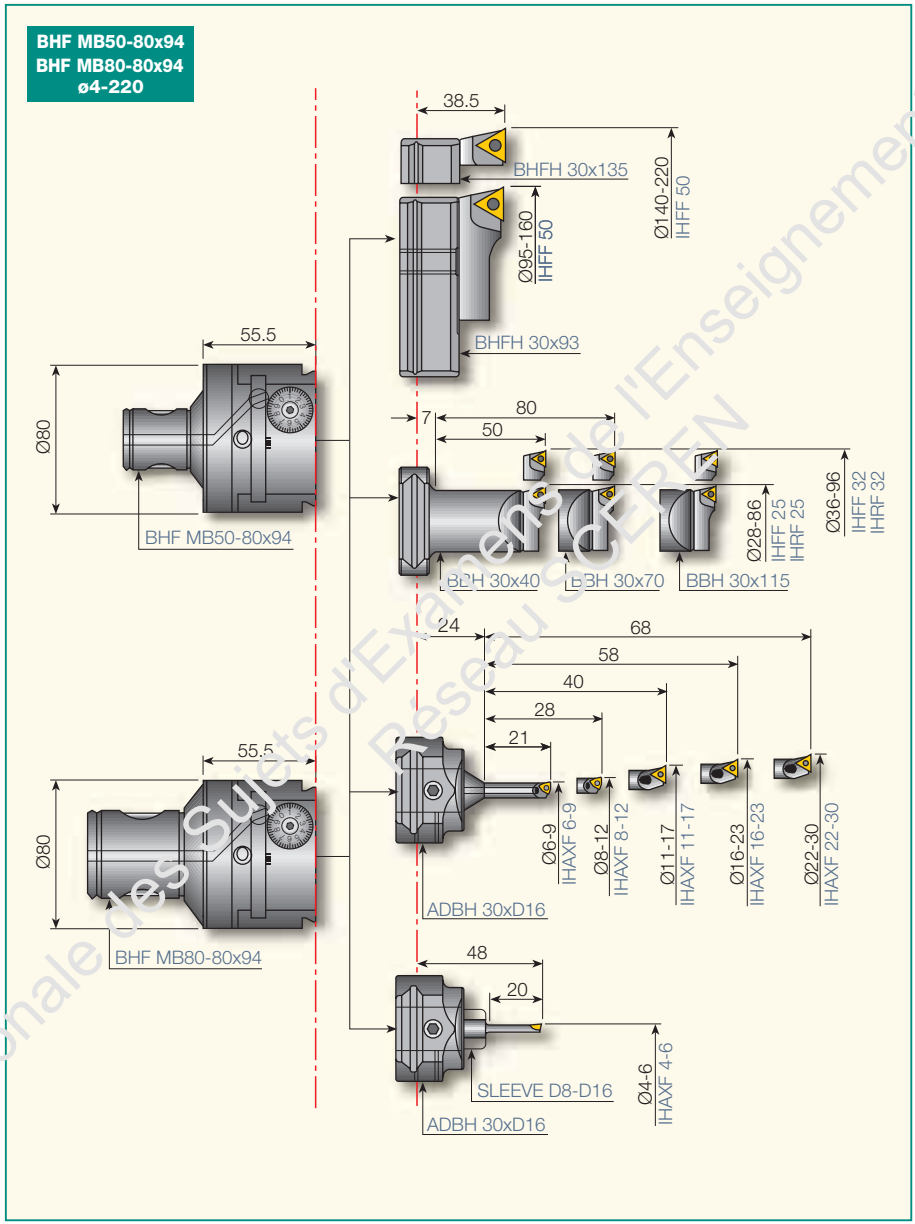
BHF MB50-50x60
ø4-84



- **Fine Boring Head Range**
- **Plage des têtes d'alésage de finition**
- **Bereich der Schlicht-Ausspindelköpfe**

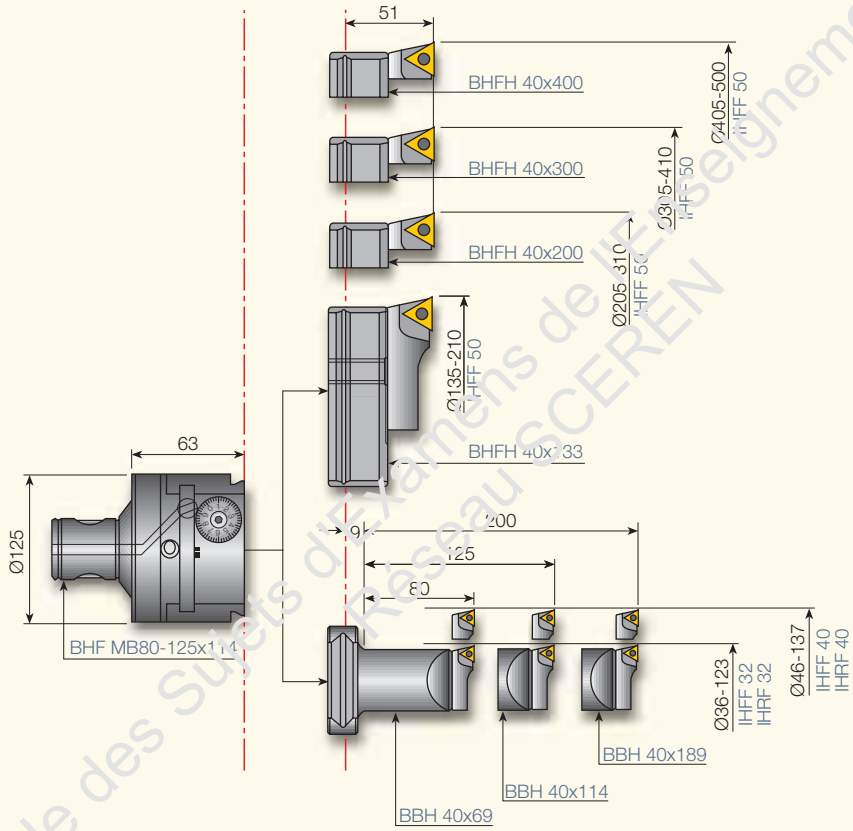


- **Fine Boring Head Range**
- **Plage des têtes d'alésage de finition**
- **Bereich der Schlicht-Ausspindelköpfe**

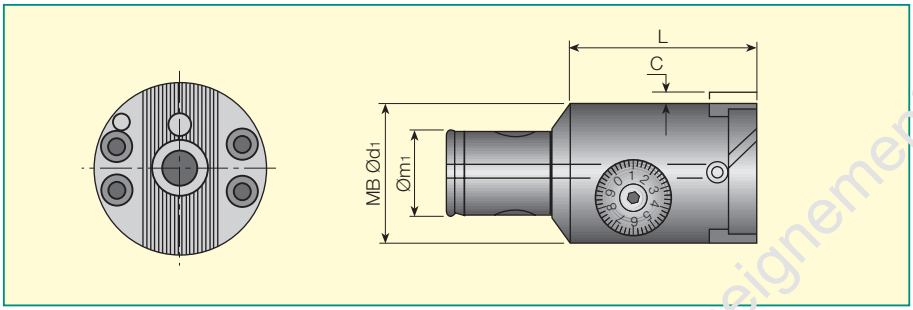


- **Fine Boring Head Range**
- **Plage des têtes d'alésage de finition**
- **Bereich der Schlicht-Ausspindelköpfe**

BHF MB80-125x114
ø36-500



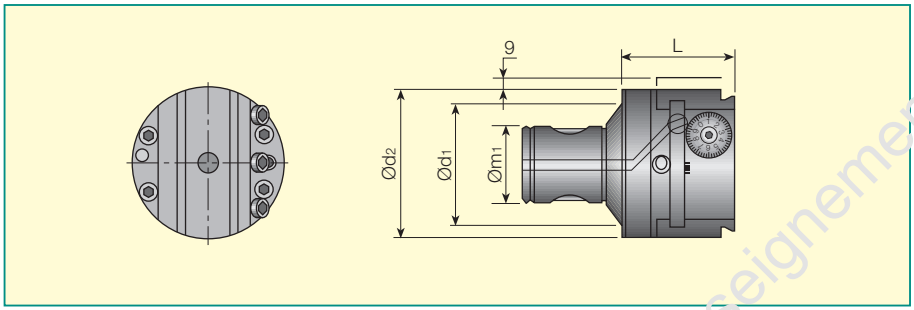
- **Fine Boring Head**
- **Têtes d'alésage de finition**
- **Schlicht-Ausspindelköpfe**



BHF ø4-84

Designation Désignation Bezeichnung	ø Range ø Plage ø-Bereich	MB d_1	m_1	L	C	Insert Holder Cartouche Klemmhalter WSP	kg
BHF MB16-16X34	18-23	16	10	32	1	IH..16	0.2
BHF MB20-20X40	22-29	20	13	32.5	2	IH..20	0.3
BHF MB25-25X50	28-38	25	16	40	2	IH..25	0.4
BHF MB32-32X63	36-50	32	20	51.5	3	IH..32	0.6
BHF MB40-40X80	48-63	40	25	50	4	IH..40	0.8
BHF MB50-50X60	4-84	50	32	60	4	IH..50	1

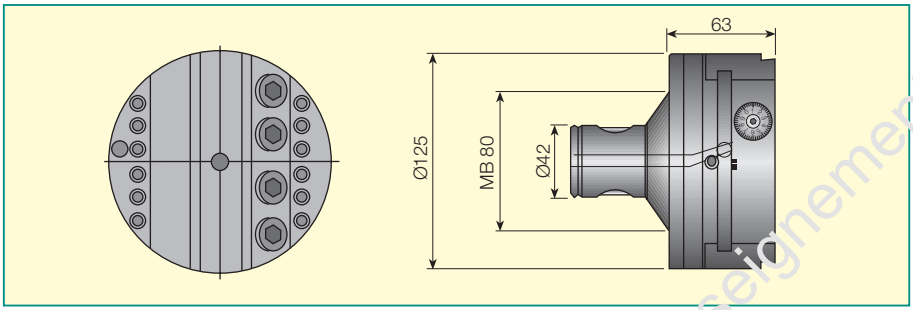
- **Fine Boring Head**
- **Têtes d'alésage de finition**
- **Schlicht-Ausspindelköpfe**



BHF ø6-220

Designation Désignation Bezeichnung	ø Range ø Plage ø-Bereich	MB d_1	m_1	d_2	L	Slide Semelle Führung	kg
BHF MB50-63X87	77-100	50	32	63	49	BHFH 30X75	1.3
	95-125	50	32	63	49	BHFH 30X93	1.4
BHF MB63-63X87	95-160	63	42	63	49	BHFH 30X75	1.6
	140-220	63	42	63	49	BHFH 30X93	1.7
BHF MB50-80X94	77-100	50	32	80	55.5	BHFH 30X93	2.3
	95-125	50	32	80	55.5	BHFH 30X135	3.3
BHF MB80-80X94	95-160	80	42	80	55.5	BHFH 30X93	2.5
	140-220	80	42	80	55.5	BHFH 30X135	3.5

- **Fine Boring Head**
- **Têtes d'alésage de finition**
- **Schlicht-Ausspindelköpfe**

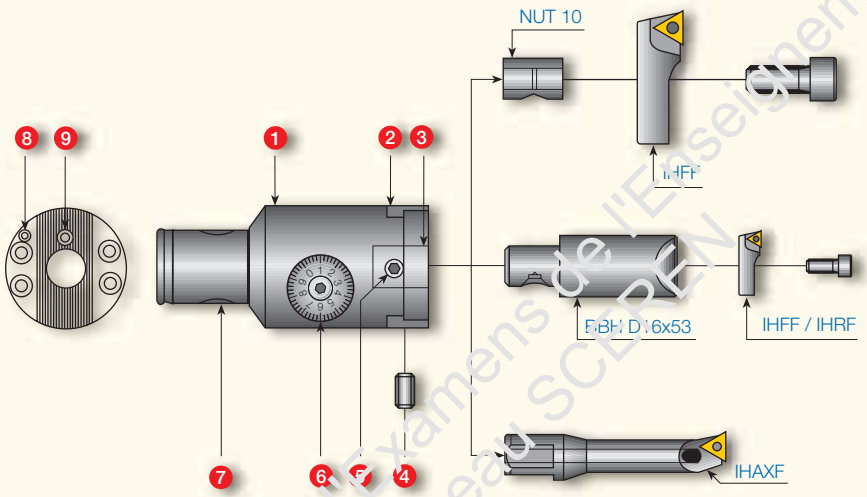


BHF ø135-500

Designation Désignation Bezeichnung	ø Range ø Plage ø-Bereich	MB	Slide Semelle Führung	kg
BHF MB80-125X114	135-210	80	BHFH 40X133	4
	205-310	80	BHFH 40X200	4.9
	305-410	80	BHFH 40X300	6
	405-500	80	BHFH 40X400	7

- **Assembly**
- **Assemblage**
- **Montage**

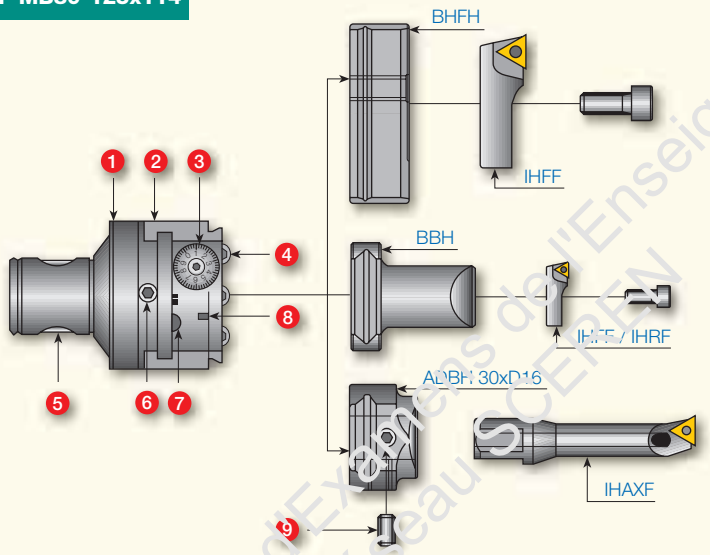
BHF MB50-50x60



1. Body
   Corps
   Körper
2. Tool Slide
   Glissière de l'oubil
   Werkzeugführung
3. Nut 10 Hole
   Logement de la douille 10
   Mutter 10
4. Nut 10 Locking Screw
   Vis de la douille 10
   Mutter 10 Klemmschraube
5. Slide Locking Screw
   Vis de blocage de la glissière
   Klemmschraube der Führung
6. Graduated Dial
   Vis de réglage graduée
   Skalenscheibe
7. Expanding Pin
   Axe expansible
   Ausdehnungsstift
8. Coolant Nozzle
   Buse d'arrosage
   Kühlmitteldüse
9. Oiling Nipple
   Bouchon de graissage
   Schmiernippel

- **Assembly**
- **Assemblage**
- **Montage**

BHF MB50-63x87
BHF MB63-63x87
BHF MB50-80x94
BHF MB80-80x94
BHF MB80-125x114



Body
1 Corps
Körper

Tool Slide
2 Glissière de l'oubil
Werkzeugführung

Graduated Dial
3 Vis de réglage graduée
Skalenscheibe

Toolholder Locking Screw
4 Vis de blocage du porte-outil
Klemmschraube Werkzeughalter

Expanding Pin
5 Axe expansible
Ausdehnungsstift

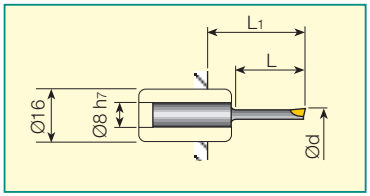
Slide Locking Screw
6 Vis de blocage de la glissière
Klemmschraube Führung

Coolant Nozzle
7 Buse d'arrosage
Kühlmitteldüse

Oiling Nipple
8 Bouchon de graissage
Schmiernippel

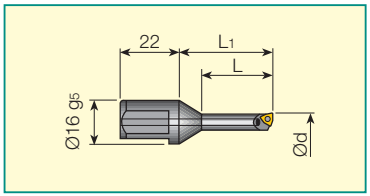
Toolholder Locking Screw
9 Vis de blocage du porte-outil
Klemmschraube Werkzeughalter

- **Boring bar**
- **Barres d'alésage**
- **Bohrstange**



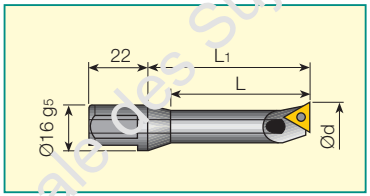
IHAXF

Designation Désignation Bezeichnung	ød	L	L1
IHAXF 4-6	4-6	20	32



IHAXF

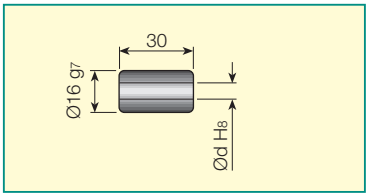
Designation Désignation Bezeichnung	ød	L	L1	Insert Plaquette WSP	Screw Vis Schraube	Key Clé Schlüssel
IHAXF 6-9	6-9	21	29	WCGT 0201...	SR 14-299	T 6/5
IHAXF 8-12	8-12	28	36			



IHAXF

Designation Désignation Bezeichnung	ød	L	L1	Insert Plaquette WSP	Screw Vis Schraube	Key Clé Schlüssel
IHAXF 11-17	11-7	40	48	TPGX 0902...	SR 14-298	T8/5
IHAXF 16-23	16-23	50	58			
IHAXF 22-30	22-30	68	68			

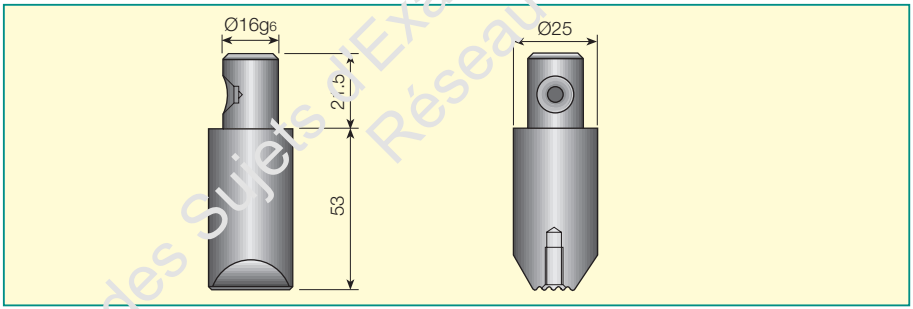
- **Sleeve**
- **Bague**
- **Buchse**



SLEEVE

Designation Désignation Bezeichnung	ød
SLEEVE D4-D16	4
SLEEVE D8-D16	8
SLEEVE D10-D16	10
SLEEVE D12-D16	12

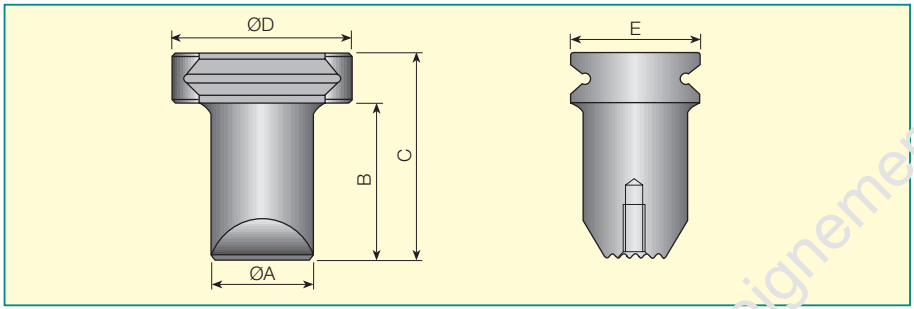
- **Insert Adaptor**
- **Porte grain**
- **Adapter für IH... Klemmhalter**



BBH

Designation Désignation Bezeichnung	kg
BBH D16X53	0.3

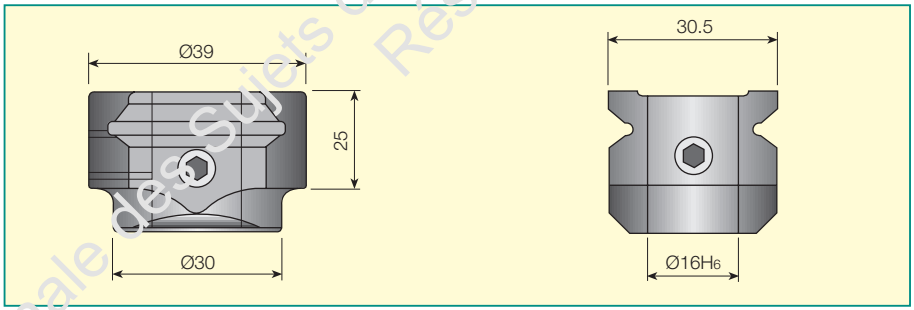
- **Insert Adaptor**
- **Porte grain**
- **Adapter für Klemmhalter**



BBH

Designation Désignation Bezeichnung	A	B	C	D	E	kg
BBH 30X40	25	40	52.5	43	30.5	0.3
BBH 30X70	25	70	82.5	43	30.5	0.4
BBH 30X115	27	115	127.5	43	30.5	0.7
BBH 40X69	32	69	86	56	40	0.7
BBH 40X114	32	114	131	56	40	1
BBH 40X189	38	189	206	56	40	2

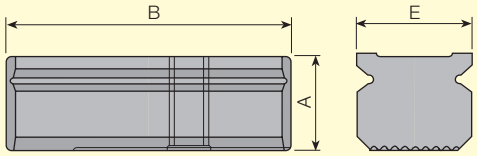
- **Sleeve Holder**
- **Support de bague**
- **Adapter für Bohrstangen**



ADBH

Designation Désignation Bezeichnung	kg
ADBH 30XD16	0.2

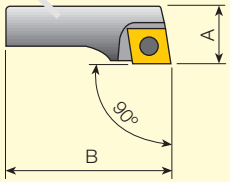
- Slide
- Semelle
- Führung



BHFH

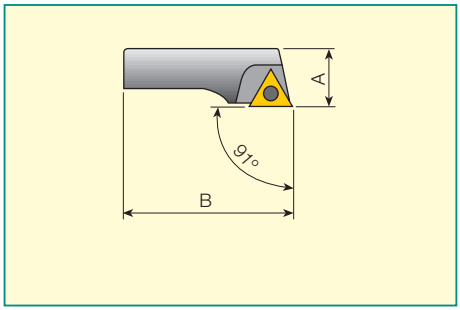
Designation Désignation Bezeichnung	A	B	E	kg
BHFH 30X75	25	75	30.5	0.4
BHFH 30X93	25	93	30.5	0.5
BHFH 30X135	25	135	30.5	1
BHFH 40X133	40	133	40	1.5
BHFH 40X200	40	200	40	2.4
BHFH 40X300	40	300	40	3.5
BHFH 40X400	40	400	40	4.6

- Insert Holders
- Cartouches
- Klemmhalter



IHRF

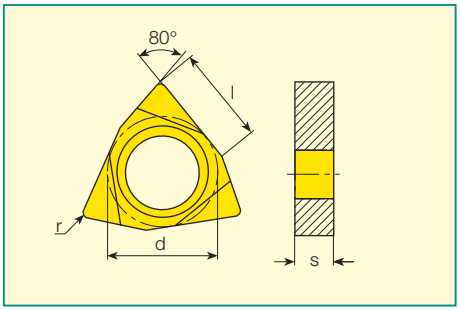
Designation Désignation Bezeichnung	A	B	Insert Plaquette WSP	Screw Vis Schraube	Key Clé Schlüssel
IHRF 16	8	17	CCGT 0602..	SR 14-297	T 8/5
IHRF 20	8.5	21			
IHRF 25	10.0	26.5			
IHRF 32	11.5	34.5			



IHRF

Designation Désignation Bezeichnung	A	B	Insert Plaquette WSP	Screw Vis Schraube	Key Clé Schlüssel
IHFF 25 **IHFF 32**	10 11.5	26.5 34.5	TPGX 0902...	SR 14-298	T 8/5
IHFF 40 **IHFF 50**	14 19	44 52	TPGX 1103...	SR 14-300	T 8/5

- **Inserts for Fine Boring**
- **Plaquettes pour alésages de finition**
- **Wendeschneidplatten zum Schlicht-Ausspindeln**



WCGT

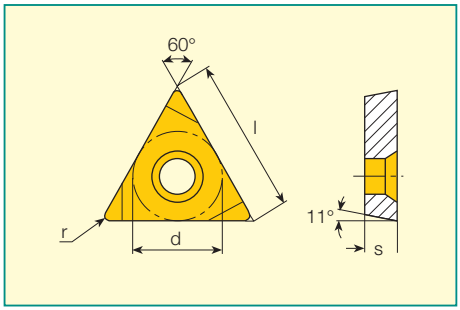
Designation Désignation Bezeichnung	d	s	r	IC30N
WCGT 020102L	3.97	1.59	0.2	● ● ●
WCGT 020104L	3.97	1.59	0.4	● ● ●

● Alloy Steel, Carbon Steel
● Stainless Steel
● Cast Iron

● Aciers alliés, aciers au carbone
● Aciers inoxydables
● Fontes

● Legierter Stahl, Kohlenstoffstahl
● Rostbeständiger Stahl
● Eisenguß

- **Inserts for Fine Boring**
- **Plaquettes pour alésages de finition**
- **Wendeschneidplatten ...**

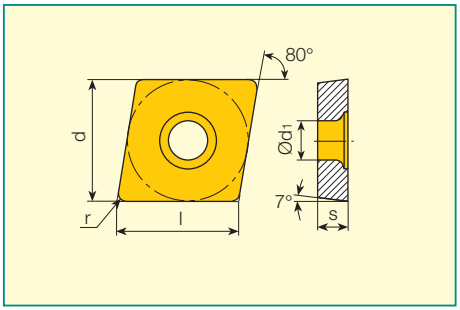


TPGX

Designation Désignation Bezeichnung	d	s	r	IC04	IC20	IC20N
				Tougher / Plus tenace / Zäher		
TPGX 090202L	5.56	2.38	0.2			● ● ●
TPGX 090204L	5.56	2.58	0.4	● ● ●	● ●	● ● ●
TPGX 110302L	6.35	3.18	0.2	● ● ●	● ● ●	● ● ●
TPGX 110304L	6.35	3.18	0.4			● ● ●

- ● Alloy Steel, Carbon Steel
- ● Stainless Steel
- ● Cast Iron
- ● Aciers alliés, aciers au carbone
- ● Aciers inoxydables
- ● Fontes
- ● Legierter Stahl, Kohlenstoffstahl
- ● Rostbeständiger Stahl
- ● Eisenguß

- **Inserts for Fine Boring**
- **Plaquettes pour alésages de finition**
- **Wendeschneidplatten zum Schlicht-Ausspindeln**



CCGT

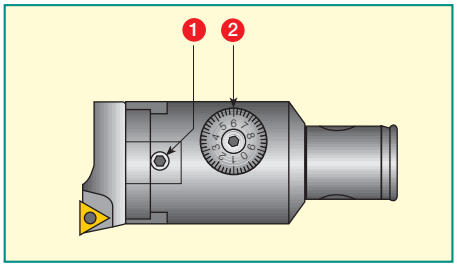
Designation Désignation Bezeichnung	l	d	s	r	Tougher / Plus ténace / Zäher IC20	IC30N
CCGT 060202L	9.6	6.35	2.38	0.2	● ●	● ● ●
CCGT 060204L	11	6.35	2.38	0.4	● ●	● ● ●

- Alloy Steel, Carbon Steel
- Stainless Steel
- Cast Iron

- Aciers alliés, aciers au carbone
- Aciers inoxydables
- Fontes

- Legierter Stahl, Kohlenstoffstahl
- Rostbeständiger Stahl
- Eisenguß

- **The Fine-Boring-Head Line Adjustment Instructions**
- **Instructions de réglage pour la gamme des têtes d'alésage de précision**
- **Schlicht-Ausspindelköpfe - Justage-Hinweise**



Follow the directions below to adjust the position of the insert holder on the Fine Boring Head:
1. Release the “Slide locking” screw (1).
2. Turn the “adjustment dial” in the correct direction (2).
3. Lock the “slide locking” screw (1).

Please Note
1. We recommend that the radial setting of the cutting edge be carried out with tool presetting equipment.
2. For optimal precision, it is recommended to make any further adjustments by turning the dial in one direction only until the desired setting is reached. However, due to the backlash phenomenon, if you pass the required value, reverse direction at least one rotation and then readjust in the original direction.
3. Do not touch the red-tipped screws. Moving them will change the precision of the entire instrument.

Suivre ces recommandations pour régler la position du porte-plaquette sur la tête d'alésage de finition.
1. Desserrer la vis de blocage de la douille (1).
2. Tourner la vis micrométrique dans le sens souhaité (2).
3. Serrer la vis de blocage de la douille (1).

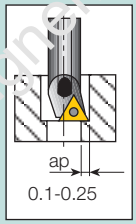
Remarques:
1. Nous recommandons que le réglage radial de l'arête de coupe s'effectue à l'aide d'un banc de préréglage.
2. Pour une précision optimale, il est recommandé de réaliser les réglages ultérieurs en tournant la vis graduée dans une seule direction jusqu'à la dimension recherchée.
Toutefois, à cause du phénomène de jeu, si vous dépassez la valeur desirée, vous pourrez en inversant la rotation d'au moins un tour, le rattraper et retrouver la bonne côte.
3. Ne pas agir sur la vis marquée de rouge.La manoeuvrer modifierait la précision de l'ensemble de la tête.

Beachten Sie bitte die nachfolgenden Hinweise bei der Positionierung des Wendeschneidplatten-Klemmhalters auf dem Schlicht-Ausspindelkopf:
1. "Führungs-Klemmschraube" lösen (1).
2. "Skalenscheibe" in die korrekte Richtung drehen (2).
3. "Führungs-Klemmschraube" (1) anziehen.

Bitte beachten Sie:
1. Die radiale Positionierung der Schneidkante sollte mit einem Werkzeug-Voreinstellgerät durchgeführt werden.
2. Um optimale Präzision zu erzielen ist es ratsam, die Skalenscheibe für alle weiteren Justierungen in eine Richtung zu drehen, bis die gewünschte Position erreicht ist. Falls die erforderliche Position überschritten wird - um "Spiel" zu vermeiden -, sollte die Skalenscheibe eine Umdrehung zurückgedreht und danach in Gegenrichtung neu einjustiert werden.
3. Die rot markierten Schrauben dürfen nicht berührt werden. Jede Veränderung würde die Präzision des gesamten Systems beeinflussen.

- **Cutting Conditions Fine Boring Heads**
- **Conditions d'usinage pour l'alésage en finition**
- **Schnittwerte Schlicht-Ausspindeln**

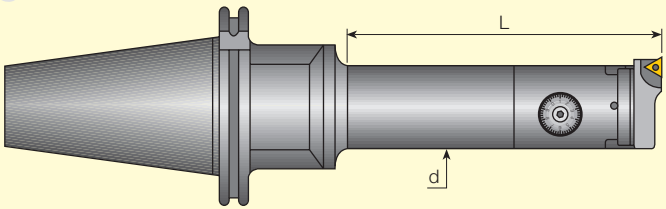
Material Matière Werkstückstoff	L/D L/D L/D	Stability Stabilité Stabilität	V=m/min	f=mm/rev f=mm/rev f=mm R=0.2	R=0.4	Insert Grade Nuance plaq. HM-Sorte
Carbon Steel **Acier au carbone** **Kohlenstoffstahl** **HB≤200**	L/D=2.5 L/D=4 L/D=6.3	●●● ●● ●	200-300 160-250 70-100	0.05-0.08 0.05-0.08 0.05-0.08	0.07-0.1 0.07-0.1 —	IC20N IC30N IC54
Carbon Steel **Acier au carbone** **Kohlenstoffstahl** **HB>200**	L/D=2.5 L/D=4 L/D=6.3	●●● ●● ●	160-250 150-200 70-100	0.05-0.08 0.05-0.08 0.05-0.08	0.07-0.1 0.07-0.1 —	IC20N IC30N
Stainless Steel **Acier inoxydable** **Rostbest. Stahl** **AISI 304-316**	L/D=2.5 L/D=4 L/D=6.3	●●● ●● ●	120-160 100-140 70-100	0.05-0.08 0.05-0.08 0.05-0.08	0.07-0.1 0.07-0.1 —	IC54
Cast Iron **Fonte** **Eisenguß**	L/D=2.5 L/D=4 L/D=6.3	●●● ●● ●	120-160 100-140 70-100	0.05-0.08 0.05-0.08 0.05-0.08	0.07-0.1 0.07-0.1 —	IC20
Aluminum **Aluminium** **Aluminium**	L/D=2.5 L/D=4 L/D=6.3	●●● ●● ●	300-400 250-350 100-150	0.05-0.08 0.05-0.08 0.05-0.08	0.07-0.1 0.07-0.1 —	IC20



V – Cutting Speed
f – Feed
R – Insert Radius
●●● – Good
●● – Normal
● – Poor

V – Vitesse de coupe
f – Avance
R – Rayon de plaquette
●●● – Bon
●● – Normal
● – Mauvais

V – Schnittgeschwindigkeit
f – Vorschub
R – Radius der WSP
●●● – Gut
●● – Normal
● – Schlecht



Kits

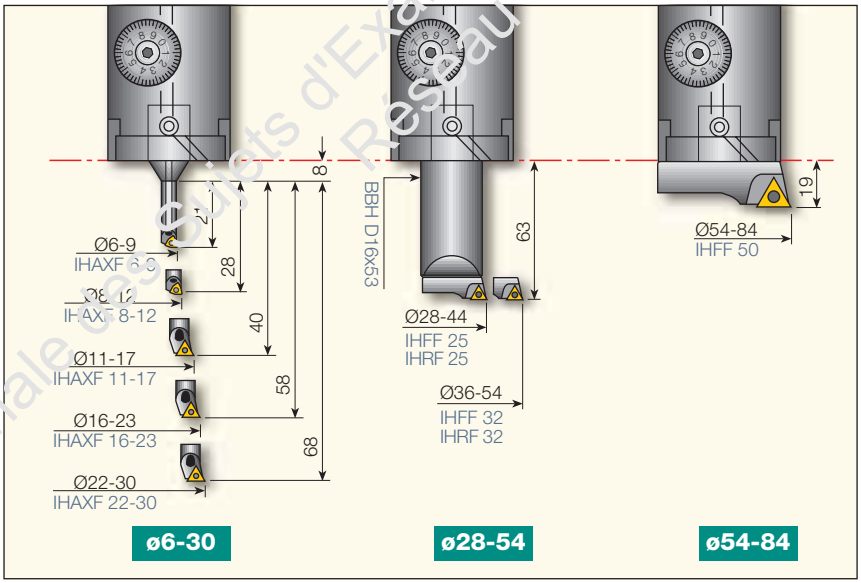
Coffrets

Kits

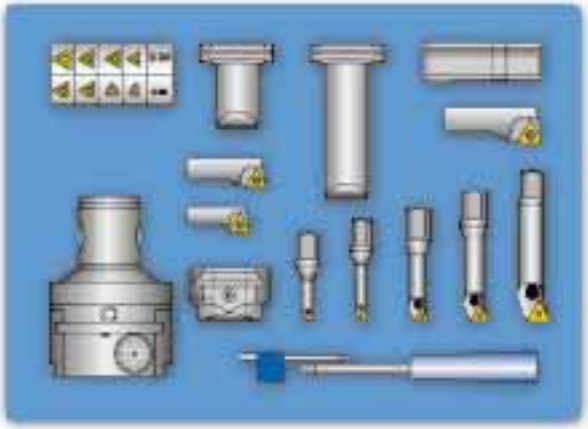
KIT BHF MB50-50
ø6-84

1 BHF MB50-50x60
1 IHAXF 6-9
1 IHAXF 8-12
1 IHAXF 11-17
1 IHAXF 16-23
1 IHAXF 22-30
1 BBH D16x53
1 IHFF 25
1 IHFF 32
1 IHFF 50
5 TPGX 090202L
1 TPGX 110302L
2 WCGT 020102L

Designation Désignation Bezeichnung	MB d_1	Ø
KIT BHF MB50-50	50	6-84

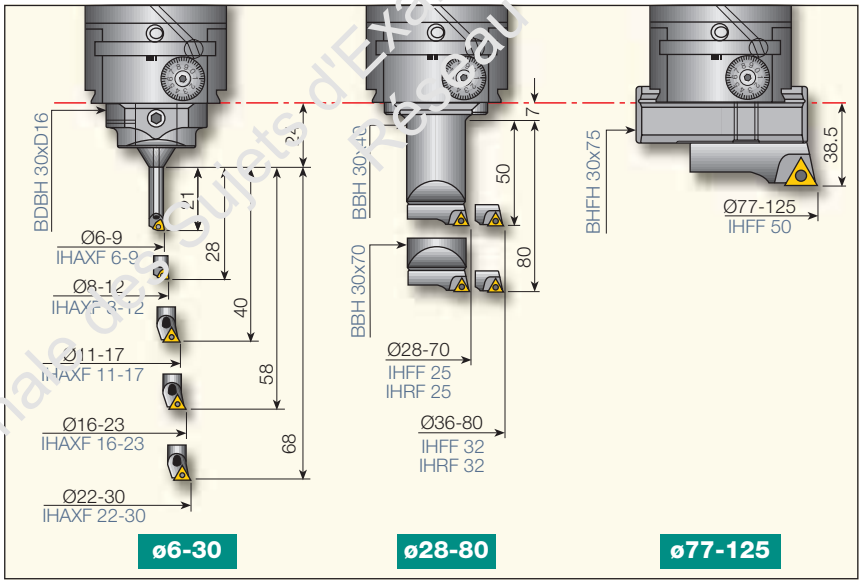


KIT BHF MB50-63 / KIT BHF MB63-63
ø6-125



1 BHF MB...-63x87
1 IHAXF 6-9
1 IHAXF 8-12
1 IHAXF 11-17
1 IHAXF 16-23
1 IHAXF 22-30
1 ADBH 30xD16
1 BBH 30x40
1 BBH 30x70
1 BHFH 30x75
1 IHFF 25
1 IHFF 32
1 IHFH 50
5 TPGX 090202L
1 TPGX 110302L
2 WCGT 020102L

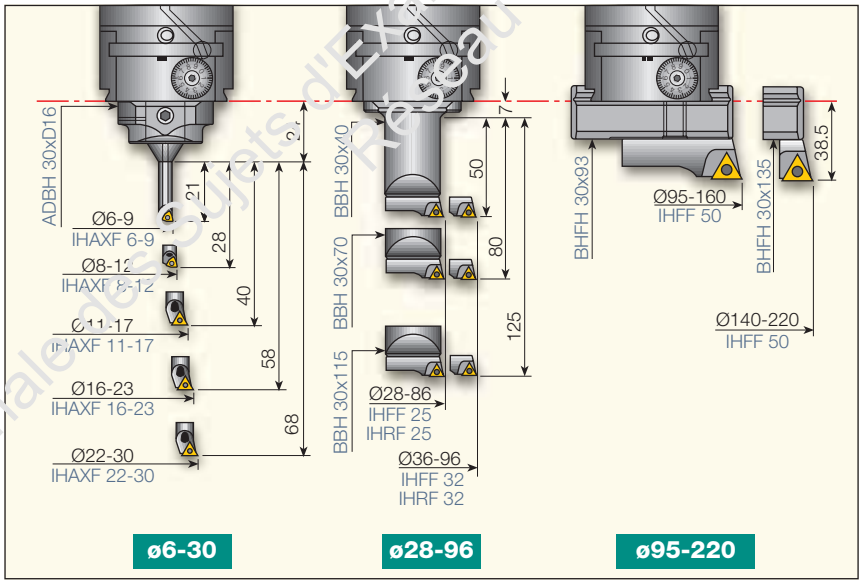
Designation Désignation Bezeichnung	MB d_1	Ø
KIT BHF MB50-63	50	6-125
KIT BHF MB63-63	63	6-125



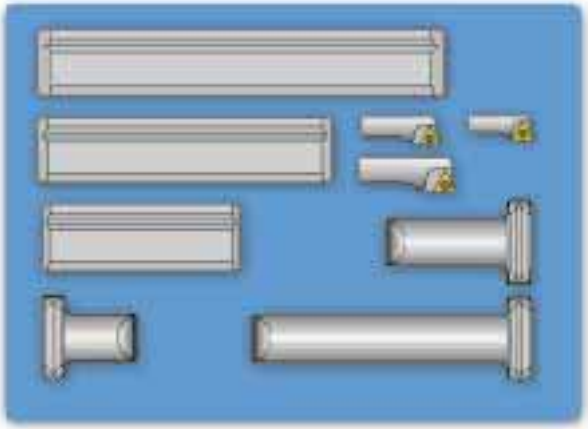
KIT BHF MB50-80 / KIT BHF MB80-80
ø6-220

1 BHF MB..-80x94
1 IHAXF 6-9
1 IHAXF 8-12
1 IHAXF 11-17
1 IHAXF 16-23
1 IHAXF 22-30
1 ADBH 30xD16
1 BBH 30x40
1 BBH 30x70
1 BBH 30x115
1 BHFH 30x93
1 BHFH 30x135
1 IHFF 25
1 IHFF 32
1 IHFF 50
5 TPGX 090202L
1 TPGX 110302L
2 WCGT 020102L

Designation Désignation Bezeichnung	MB d_1	Ø
KIT BHF MB50-80	50	6-220
KIT BHF MB80-80	80	6-220

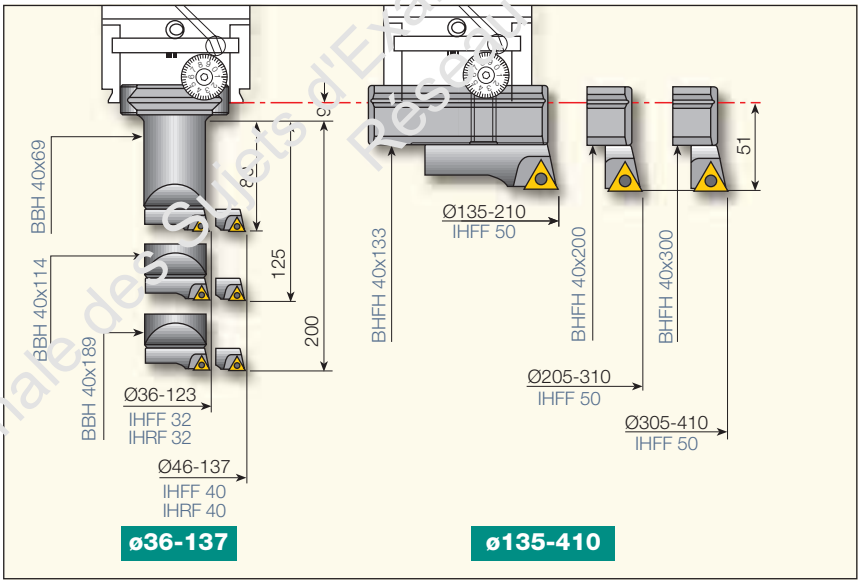


KIT BHFH MB80-125 Holder for BHF MB80-125x114
ø36-410



1 BBH 40x69
1 BBH 40x114
1 BBH 40x189
1 BHFH 40x133
1 BHFH 40x200
1 BHFH 40x300
1 IHFF 25
1 IHFF 40
1 IHFF 50

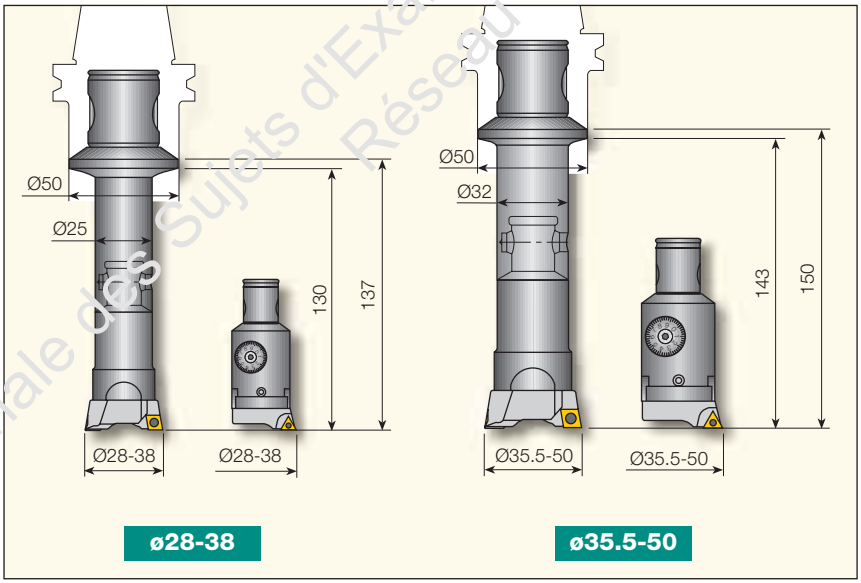
Designation Désignation Bezeichnung	MB d_1	Ø
KIT BHFH MB80-125	80	36-410



KIT MOLD MB25-32
ø28-50

1 RE MB50-MB25X87
1 RE MB50-MB32x87
1 BHF MB25-25x50
1 BHF MB32-32x63
1 IHFF 25
1 IHFF 32
1 BHR MB25-25x50
1 BHR MB32-32x63
2 IHSR 28-38
2 IHSR 36-50
10 Inserts
10 Plaquettes
10 Wendeschneidplatten
TPGX 090202L

Designation Désignation Bezeichnung	MB d_1	Ø
MOLD KIT MB25-32	25-32	28-50



ø28-38 **ø35.5-50**

KIT IHAXF 6-30
ø6-30

1 IHAXF 6-9
1 IHAXF 8-12
1 IHAXF 11-17
1 IHAXF 16-23
1 IHAXF 22-30
5 TPGX 090202L
3 WCGT 020102L

Designation Désignation Bezeichnung	Ød
KIT IHAXF 6-30	6-30

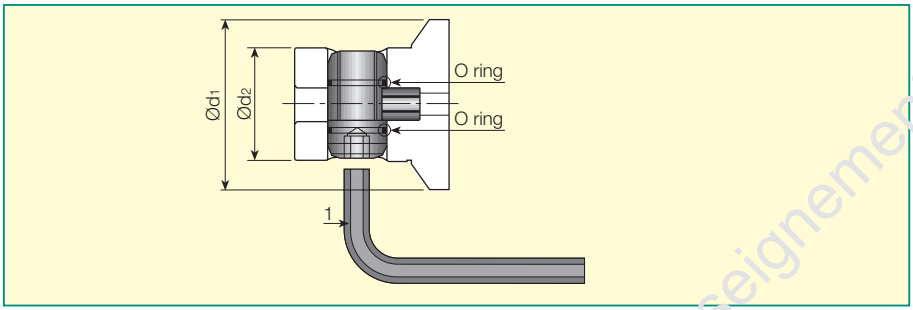
Maintenance	Maintenance	Wartung
The conical and cylindrical surfaces of each component should be cleaned and lubricated at periodic intervals. The expanding radial pin should be treated regularly with and anti-rust lubricant. The slide guideway of the micrometric boring bars should be cleaned and lubricated at periodic intervals.	Les surfaces côniques et cylindriques de chaque composant doivent être nettoyées et lubrifiées à intervalles réguliers. Le piont de serrage excentrique doit être périodiquement traité avec un anti rouille. La douille de guidage des têtes micrométriques d'alésage doit être nettoyée et lubrifiée à intervalles réguliers.	Die konischen und zylindrischen Oberflächen aller Komponenten, der radiale Ausdehnungsstift und die Führungen der Mini-Bohrstangen sollten in regelmäßigen Abständen gereinigt und geschmiert werden.

Accessories / Spare Parts

Accessoires / Pièces détachées

Zubehör / Ersatzteile

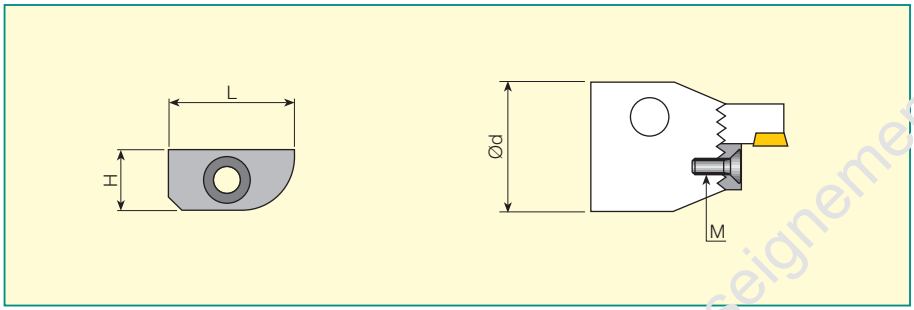
- **Spare Parts MB SYSTEM Clamp**
- **Pièces détachées du système de serrage MB**
- **Ersatzteile MB Klemmsystem**



MB CLAMP

Designation Désignation Bezeichnung	D_1	d_2	Allen Key Clé Hex Allen Key	O ring Joint torique O Ring
MB CLAMP 16	16	10	2.5 mm	—
MB CLAMP 20	20	13	3 mm	—
MB CLAMP 25	25	16	3 mm	—
MB CLAMP 32	32	20	4 mm	—
MB CLAMP 40	40	25	5 mm	ORM 0100-10
MB CLAMP 50	50	32	6 mm	ORM 0130-10
MB CLAMP 50	50	32	6 mm	ORM 0140-10
MB CLAMP 63-80	63-80	42	8 mm	OR 2075

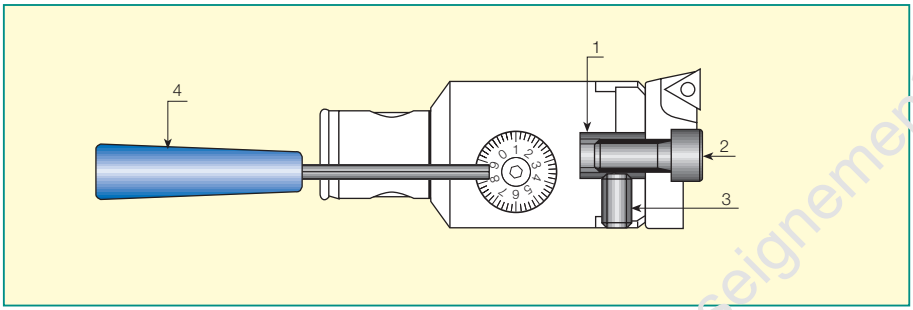
- Plate
- Cale
- Platte



PLT

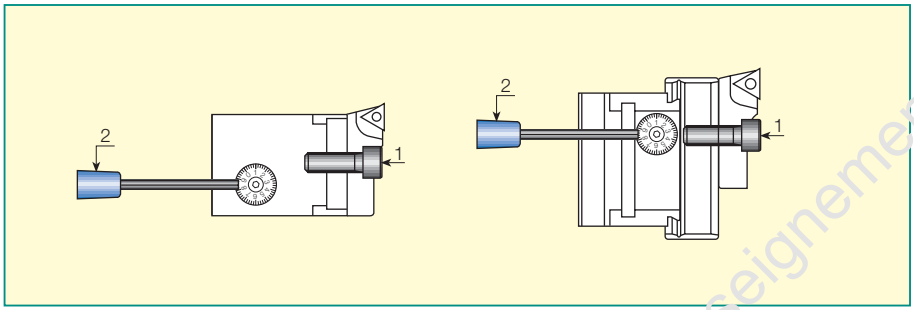
Designation Désignation Bezeichnung	d	H	L	M
PLT 16	16	7	14	M 3X8
PLT 20	20	8.5	17	M 4X10
PLT 25	25	10.2	21	M 4X16
PLT 32	32	13.9	28	M 5X20
PLT 40	40	17.4	35	M 6X25
PLT 50	50	21.4	47.5	M 8X25
PLT 63	63	26.4	62	M 10X30
PLT 80	80	33.9	82.5	M 12X35

- **Components for BHF MB50**
- **Composants des BHF MB50**
- **Zubehör für BHF MB50**



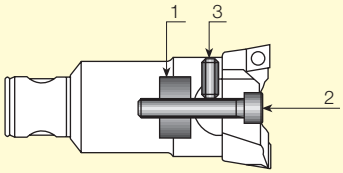
Designation Désignation Bezeichnung	1	2	3	4
BHF MB50-50	BHF NUT 10	M10x25	UNI 5931-[illegible]	HW 2.5 HANDLE

- **Screws for BHF**
- **Vis pour BHF**
- **Schrauben für BHF**



REF	1	2
BHF MB16	M3X6 UNI 5931-12.9	HW 1.5 HANDLE
BHF MB20	M4x8 UNI 5931-12.9	HW 1.5 HANDLE
BHF MB25	M5x10 UNI 5931-12.9	HW 2 HANDLE
BHF MB32	M6x12 UNI 5931-12.9	HW 2 HANDLE
BHF MB40	M8x14 UNI 5931-12.9	HW 2.5 HANDLE
BHF MB63-80-125	M10x25 UNI 5931-12.9	HW 3 HANDLE

- **Screws for BHR**
- **Vis pour BHR**
- **Schrauben für BHR**



REF	1	2	3
BHR MB16...	NUT-BHR MB16	M3x14 UNI 5931-12.9	M3x4 UNI 5923-12.9
BHR MB20...	NUT-BHR MB20	M4x15 UNI 5931-12.9	M3x5 UNI 5923-12.9
BHR MB25...	NUT-BHR MB25	M4x20 UNI 5931-12.9	M3x8 UNI 5923-12.9
BHR MB32...	NUT-BHR MB32	M5x25 UNI 5931-12.9	M4x12 UNI 5923-12.9
BHR MB40...	NUT-BHR MB40	M6x30 UNI 5931-12.9	M5x12 UNI 5923-12.9
BHR MB50...	NUT-BHR MB50	M8x35 UNI 5931-12.9	M5x15 UNI 5923-12.9
BHR MB63...	NUT-BHR MB63	M10x35 UNI 5931-12.9	M6x16 UNI 5923-12.9
BHR MB80...	NUT-BHR MB80	M12x45 UNI 5931-12.9	M8x25 UNI 5923-12.9

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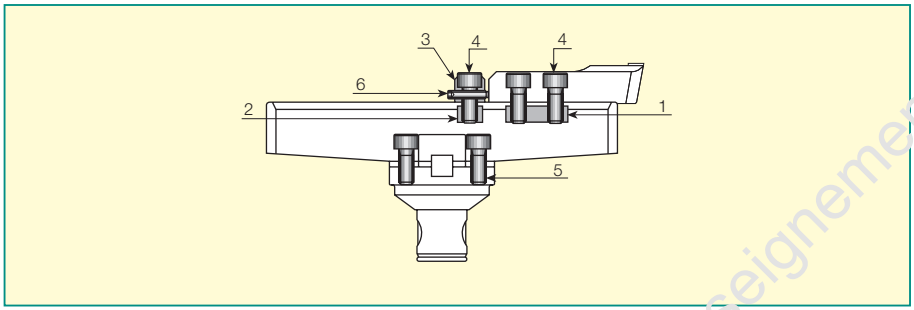
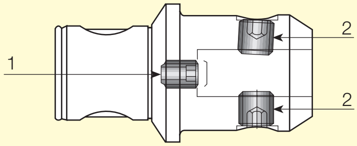
- **Screws for TCH**
- **Vis pour TCH**
- **Schrauben für TCH**



Designation Désignation Bezeichnung	1	2	3
TCH 200-300-400	TCH NUT-A	TCH NUT-B	TCH NUT-C

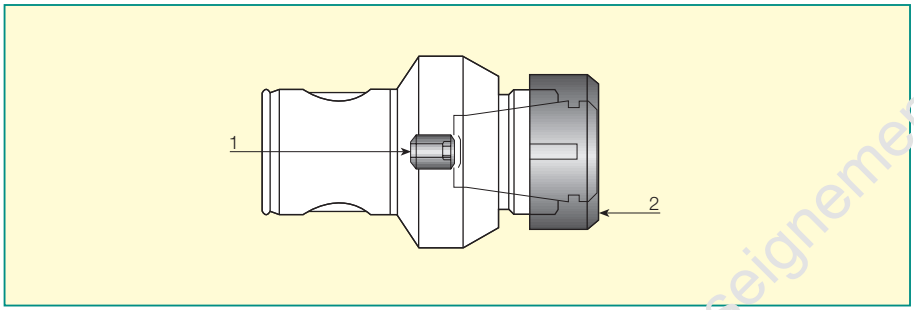
Designation Désignation Bezeichnung	4	5	6
TCH 200-300-400	M12x40 UNI 5931-12.9	M12x35 UNI 5931-12.9	M8x40 UNI 5925-12.9

- **Screws for EMH**
- **Vis pour EMH**
- **Schrauben für EMH**



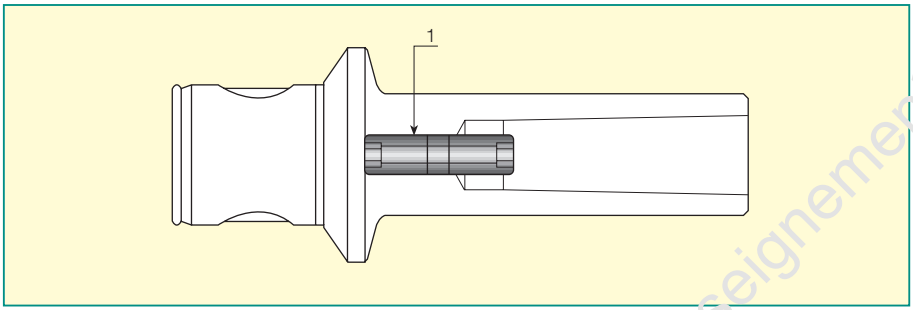
REF	1	2
EMH MB 50-6	EMH 50-6 SCREW	M6x10 EM SCREW
EMH MB 50-8	EMH 50-8 SCREW	M8x10 EM SCREW
EMH MB 50-10	EMH 50-10 SCREW	M10x12 EM SCREW
EMH MB 50-12	EMH 50-12 SCREW	M12x16 EM SCREW
EMH MB 50-14	EMH 50-14 SCREW	M14x16 EM SCREW
EMH MB 50-16	EMH 50-16 SCREW	M14x16 EM SCREW
EMH MB 50-20	EMH 50-20 SCREW	M16x16 EM SCREW
EMH MB 63-16	EMH 63-16 SCREW	M14x16 EM SCREW
EMH MB 63-20	EMH 63-20 SCREW	M16x16 EM SCREW
EMH MB 63-25	EMH 63-25 SCREW	M18x20 EM SCREW
EMH MB 63-32	EME 63-32 SCREW	M18x20 EM SCREW
EMH MB 80-40	EMH 80-40 SCREW	M20x20 EM SCREW

- **Components for CC**
- **Composants pour CC**
- **Zubehör für CC**



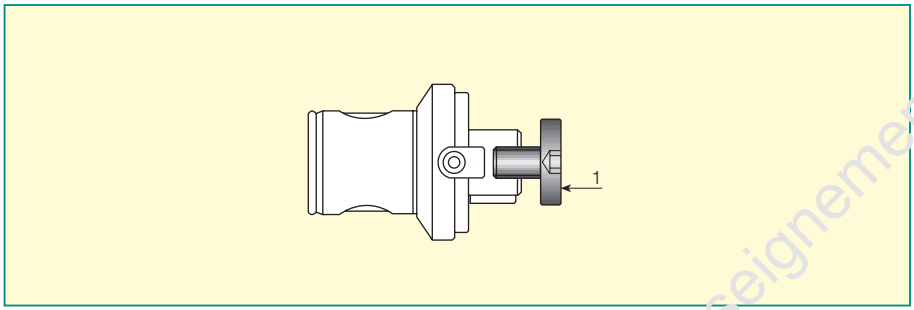
REF	1	2	WRENCH CLE Schlüssel
CC MB16-ER11M	CC MB16 SCREW	NUT ER11 TOP MINI	WRENCH ER11 MINI
CC MB20-ER16M	CC MB20 SCREW	NUT ER16 TOP MINI	WRENCH ER16 MINI
CC MB25-ER20M	CC MB25 SCREW	NUT ER20 TOP MINI	WRENCH ER20 MINI
CC MB40-ER25	CC MB40 SCREW	NUT ER25 TOP	WRENCH ER25
CC MB50-ER25	CC MB50 SCREW	NUT ER25 TOP	WRENCH ER25
CC MB50-ER32	CC MB50 SCREW	NUT ER32 TOP	WRENCH ER32
CC MB63-ER32	CC MB63 SCREW	NUT ER32 TOP	WRENCH ER32
CC MB63-ER40	CC MB63 SCREW	NUT ER40 TOP	WRENCH ER40

- **Screw for AMT**
- **Vis pour AMT**
- **Schrauben für AMT**



REF	1
AMT MB50-MT2	AMT MT2-SCREW
AMT MB50-MT3	AMT MT3-SCREW
AMT MB63-MT3	AMT MT3-SCREW
AMT MB63-MT4	AMT MT4-SCREW

- **Screw for SMH**
- **Vis pour SMH**
- **Schrauben für SMH**



REF	1
SMH MB50-16	M8 CLAMP SCREW SEM
SMH MB50-22	M10 CLAMP SCREW SEM
SMH MB50-27	M12 CLAMP SCREW SEM
SMH MB63-27	M12 CLAMP SCREW SEM
SMH MB63-32	M16 CLAMP SCREW SEM
SMH MB80-40	M20 CLAMP SCREW SEM

ITS BORE
Modular toolholder system for boring, milling, drilling and tapping. High-precision adjusting for machining to strict tolerances with excellent surface finish. High rigidity and concentricity in boring and milling.

ITS BORE
Système modulaire pour alésage, perçage et taraudage. Réglage de haute précision, pour usiner sous des tolérances les plus serrées et à un très haut niveau d'état de surface. Rigidité et concentricité parfaites en alésage et fraisage.

ITS BORE
Modulares Werkzeugsystem zum Ausspindeln, Fräsen, Bohren und Feinspindeln. Stabiles, höchst präzises System, das engste Toleranzen und höchste Oberflächengüte erzielt. Maximale Steifigkeit und Rundlaufgenauigkeit bei allen Anwendungen.

ITS TOOLING
Offering DIN 2080, DIN 69871/1, BT-MAS-403 and many other standards. A variety of toolholders to carry all types of milling cutters, drills, taps and boring bars.

Wide holding range of 1mm collapse; unique taper design for highest gripping; powerful parallel clamping. Unique self-releasing system.

ATTACHEMENTS ITS
Gamme couvrant la norme DIN 2080, DIN 69871/ 1, BT-MAS-403 et beaucoup d'autres standards.Un choix d'attachements qui accueille différents diamètres de fraises, forets et barres d'alésage.

Vaste choix de pinces pour chaque mm. Un concept exclusif garantissant un haut niveau de maintien et de parallélisme de l'outil. Très grande facilité de montage et démontage.

ITS TOOLING
Aufnahmen nach DIN 2080, DIN 69871/1, BT-MAS-403 und vielen andern Standards. Zahlreiche Aufnahmen für alle Fräsertypen, Bohrer, Gewinde-bohrer und Bohrstangen.

Großer Spannbereich in Stufen von 1 mm; kegelförmiges Design für kraftvolle parallele Selbstklemmung.