

RUNDSCHAFT-WERKZEUGE  
ROUND SHANK TOOLS  
OUTILS AVEC QUEUE CYLINDRIQUE



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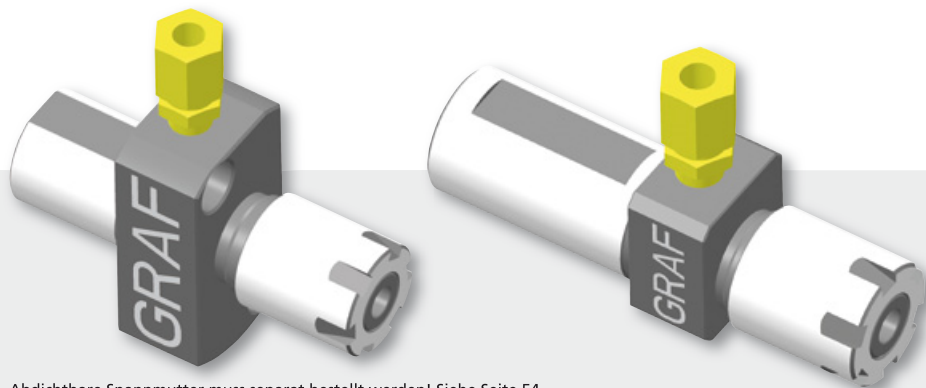
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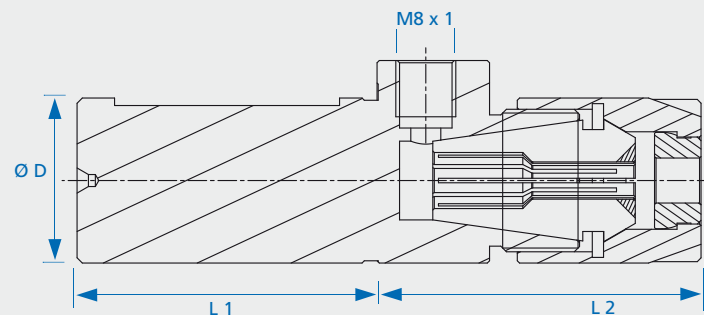
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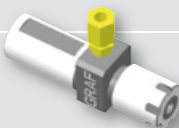
**GRAF Spannzangenhalter  
mit Innenkühlung inklusiv ER-M Spannmutter**  
GRAF chuck holder inclusive chucking nut ER-M  
with coolant supply  
GRAF porte pinces avec raccord baque de serrage ER-M inclus  
pour canal d'arrosage

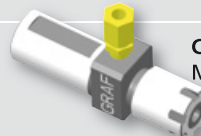
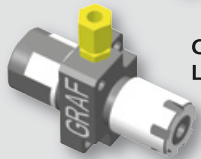
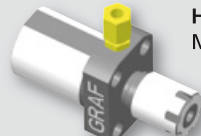
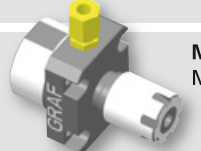
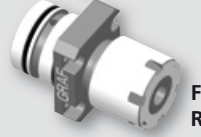
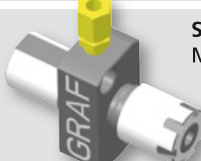
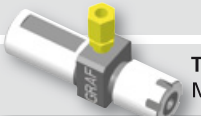


Abdichtbare Spannmutter muss separat bestellt werden! Siehe Seite 54  
Sealed chucking nut must be ordered separately! See page 54  
Bague de serrage étanche doit être commandée séparément, voir pages 54

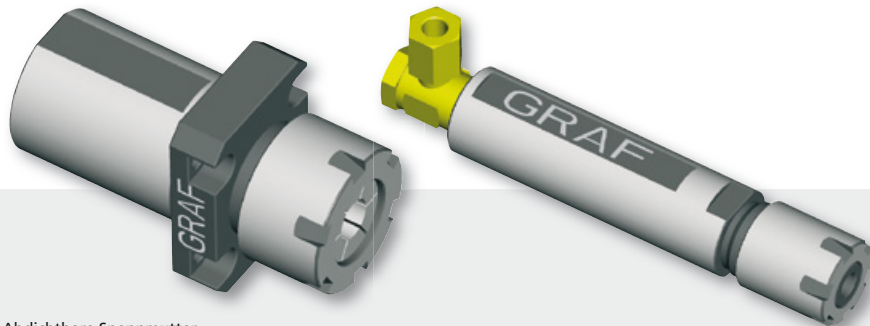


**Beispiel:**  
mit abdichtbarer  
Spannmutter ER-MA  
**Example:** with sealed  
chucking nut ER-MA  
**Exemple:** avec bague  
de serrage étanche  
ER-MA

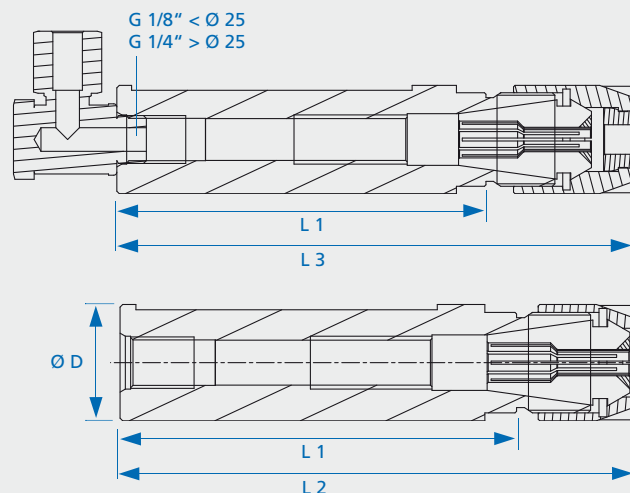
	Bestell-Nr.	Ø D	Zange	L1	L2	
	<b>TSUGAMI-</b> Maschinen	GZ 65.2040.16	20	ER 16	40	44
		GZ 65.3260.20	32	ER 20	60	57
		GZ 65.3260.25	32	ER 25	60	62

	Bestell-Nr.	Ø D	Zange	L1	L2	
	<b>CITIZEN-</b> Maschinen	GZ 65.3440.16	3/4"	ER 16	40	44
		GZ 65.2040.16	20	ER 16	40	44
		GZ 65.1060.16	1"	ER 16	60	44
	<b>CITIZEN-</b> L20X	GZ 65.1080.20	1"	ER 20	80	54
		GZ 65.1080.25	1"	ER 25	80	55,5
		GZ 65.10100.16	1"	ER 16	100	44
		GZ 65.10100.20	1"	ER 20	100	55,5
	GZ 65.2525.16	25	ER 16	25	44	
	<b>HANWHA-</b> Maschinen	GZ 65.2806.20	28	ER 20	6	61
		GZ 65.2806.25	28	ER 25	6	63
		GZ 65.3225.16	32	ER 16	25	47
		GZ 65.3340.16	33	ER 16	40	46
		GZ 65.3340.20	33	ER 20	40	53
		GZ 65.3340.25	33	ER 25	40	55
	<b>MAIER-</b> Maschinen	GZ 65.3035.16	30	ER 16	35	50
		GZ 65.3420.16	34	ER 16	20	49
		GZ 65.3420.20	34	ER 20	20	53
		GZ 65.3420.25	34	ER 25	20	58
		GZ 65.3485.25	34	ER 25	44	87
	<b>Für Revolver</b>	GZ 65.3425.16 für Revolver	34	ER 16	25	38
		GZ 65.3425.20 für Revolver	34	ER 20	25	44
		GZ 65.3425.25 für Revolver	34	ER 25	25	46
	<b>STAR-</b> Maschinen	GZ 65.1621.16 - SR16/20R	16	ER 16	21	49
		GZ 65.1640.16	16	ER 16	40	39
		GZ 65.2230.16 - SR32	22	ER 16	30	49
		GZ 65.2230.20 - SR32	22	ER 20	30	54,5
		GZ 65.2230.25 - SR32	22	ER 25	30	57
		GZ 65.2240.16	22	ER 16	40	44
		GZ 65.2225.16 - SR16/20R	22	ER 16	25	49
		GZ 65.2225.20 - SR16/20R	22	ER 20	25	53
		GZ 65.2225.25 - SR16/20R	22	ER 25	25	56
		GZ 65.3260.20	32	ER 20	60	56
	<b>TORNOS-</b> Maschinen	GZ 65.022024.16	22	ER 16	24	55
		GZ 65.2040.16	20	ER 16	40	44
	GZ 65.2080.16	20	ER 16	80	44	

**GRAF Spannzangenhalter  
mit Innenkühlung inklusiv ER-M Spannmutter**  
**GRAF chuck holder inclusive chucking nut ER-M**  
**with coolant supply**  
**GRAF porte pinces avec raccord baque de serrage ER-M inclus**  
**pour canal d'arrosage**



Abdichtbare Spannmutter  
muss separat bestellt werden! Siehe Seite 54  
 Sealed chucking nut  
must be ordered separately! See page 54  
 Bague de serrage étanche doit être commandée séparément,  
voir pages 54



**Beispiel:** mit abdichtbarer Spann-  
mutter ER-MA + Dichtscheibe

**Example:** with sealed chucking  
nut ER-MA + seal disc

**Exemple:** avec bague de serrage  
ER-MA + rondelle d'étanchéité



**Beispiel:** mit ER-M Spannmutter  
(nicht abdichtbar)




**Example:** with chucking nut ER-M  
(not sealt)

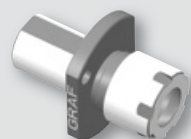
**Exemple:** avec bague de serrage  
ER-M (non étanche)

	Bestell-Nr.	Ø D	Zange	L1	L2	L3
 <b>CITIZEN- Maschinen</b>	GZ 66.3440.11	3/4"	ER 11	40	58	-
	GZ 66.3440.16	3/4"	ER 16	40	62	70
	GZ 66.3450.11	3/4"	ER 11	50	68	-
	GZ 66.3450.16	3/4"	ER 16	50	72	80
	GZ 66.3460.11	3/4"	ER 11	60	78	-
	GZ 66.3470.16	3/4"	ER 16	70	92	100
	GZ 66.3470.20	3/4"	ER 20	70	102	105
	GZ 66.34120.16	3/4"	ER 16	120	144	152
	GZ 66.34120.20	3/4"	ER 20	120	152	158
	GZ 66.1050.11	1"	ER 11	50	68	-
	GZ 66.1050.16	1"	ER 16	50	72	80
	GZ 66.1050.20	1"	ER 20	50	82	88
	GZ 66.1060.16	1"	ER 16	60	82	90
	GZ 66.1060.20	1"	ER 20	60	92	98
	GZ 66.10100.11	1"	ER 11	100	118	-
	GZ 66.10100.16	1"	ER 16	100	122	130
GZ 66.10100.20	1"	ER 20	100	132	138	
 <b>HANWHA- Maschinen</b>	GZ 66.20100.20	20	ER 20	100	132	138
	GZ 66.20100.16	20	ER 16	100	122	130
	GZ 66.20100.11	20	ER 11	100	118	-
	GZ 66.2560.16	25	ER 16	60	82	90
	GZ 66.2560.20	25	ER 20	60	90	98
	GZ 66.3225.16	32	ER 16	25	35	-
	GZ 66.3225.20	32	ER 20	25	37	-
	GZ 66.3340.16	33	ER 16	40	71	-
GZ 66.3340.20	33	ER 20	40	72	-	
 <b>MAIER- Maschinen</b>	GZ 66.3444.25	34	ER 25	44	83	90
	GZ 66.3444.20	34	ER 20	44	82	88
	GZ 66.3444.16	34	ER 16	44	81	89
	GZ 66.3045.20	30	ER 20	45	74	80
	GZ 66.3045.16	30	ER 16	45	72	80
	GZ 66.3045.11	30	ER 11	45	69	-
	GZ 66.3419.16	34	ER 16	19,5	33	-

**GRAF Spannzangenhalter  
mit Innenkühlung inklusiv ER-M Spannmutter**  
**GRAF chuck holder inclusive chucking nut ER-M**  
**with coolant supply**  
**GRAF porte pinces avec raccord baque de serrage ER-M inclus**  
**pour canal d'arrosage**

	Bestell-Nr.	Ø D	Zange	L1	L2	L3
 <b>MANURHIN- Maschinen</b>	GZ 66.2560.16	25	ER 16	60	82	90
	GZ 66.2560.20	25	ER 20	60	90	98
	GZ 66.25100.16	25	ER 20	100	132	130
	GZ 66.25100.20	25	ER 20	100	132	138
	GZ 66.25150.20	25	ER 20	150	195	188
	GZ 66.25150.25	25	ER 25	150	188	195
 <b>STAR- Maschinen</b>	GZ 66.3260.20	32	ER 20	60	82	90
	GZ 66.32120.25	32	ER 25	120	158	165
	GZ 66.2238.16	22	ER 16	38	60	68
	GZ 66.2250.16	22	ER 16	50	72	80
	GZ 66.2270.11	22	ER 11	70	88	-
	GZ 66.2270.16	22	ER 16	70	92	100
	GZ 66.2270.20	22	ER 20	70	102	108
	GZ 66.2274.25	22	ER 25	74	123	130
	GZ 66.22120.16	22	ER 16	120	142	150
	GZ 66.22120.20	22	ER 20	120	152	160
	GZ 66.22120.25	22	ER 25	120	158	166
	GZ 66.1620.11	16	ER 11	20	38	-
	GZ 66.1621.16	16	ER 16	21	59	67
	GZ 66.1626.16	16	ER 16	26	48	56
	GZ 66.1630.11	16	ER 11	30	48	-
	GZ 66.1660.16	16	ER 16	60	98	104
	GZ 66.1660.11	16	ER 11	60	78	-
	GZ 66.16100.11	16	ER 11	100	118	-
	GZ 66.2230.16-SR32	22	ER 16	30	62	-
	GZ 66.2230.20-SR32	22	ER 20	30	62	-

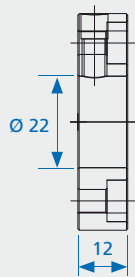
	Bestell-Nr.	Ø D	Zange	L1	L2	L3
 <b>TORNOS- Maschinen</b>	GZ 66.2040.11	20	ER 11	40	58	-
	GZ 66.2040.16	20	ER 16	40	62	70
	GZ 66.2045.20	20	ER 20	45	77	83
	GZ 66.2060.11	20	ER 11	60	78	-
	GZ 66.2060.16	20	ER 16	60	82	90
	GZ 66.20100.11	20	ER 11	100	118	-
	GZ 66.20100.16	20	ER 16	100	122	130
	GZ 66.20100.20	20	ER 20	100	132	138
 <b>TRAUB- Maschinen</b>	GZ 66.2880.16	28	ER 16	80	102	110
	GZ 66.2880.20	28	ER 20	80	106	112
	GZ 66.2880.25	28	ER 25	80	106	113
	GZ 66.2040.11	20	ER 11	40	58	-
	GZ 66.2040.16	20	ER 16	40	62	72
	GZ 66.2045.20	20	ER 20	45	69	75
 <b>TSUGAMI- Maschinen</b>	GZ 66.2060.11	20	ER 11	60	78	-
	GZ 66.2060.16	20	ER 16	60	82	92
	GZ 66.2090.11	20	ER 11	90	108	120
	GZ 66.2080.16	20	ER 16	80	102	113
	GZ 66.2070.20	20	ER 20	70	94	100
	GZ 66.2270.16	22	ER 16	70	92	100
	GZ 66.22100.11	22	ER 11	100	118	-
	GZ 66.2290.16	22	ER 16	90	112	120
	GZ 66.2274.25	22	ER 25	74	123	130
	GZ 66.3290.16	32	ER 16	90	108	120
GZ 66.3280.20	32	ER 20	80	104	110	
GZ 66.3270.25	32	ER 25	70	105	110	



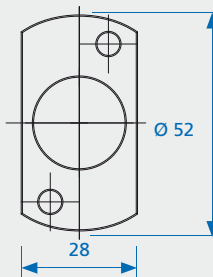
**GRAF Klemmring für Rundschaftwerkzeuge**  
**GRAF clamping ring for round shank tools**  
**GRAF bague de serrage pour outils avec queue cylindrique**

**GRAF Spannzangen**  
**GRAF Collect chuck**  
**GRAF Pincers de serrage**

Für STAR

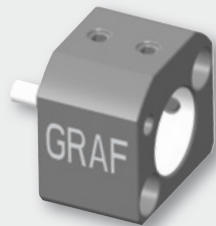


Bestell-Nr. 4.130

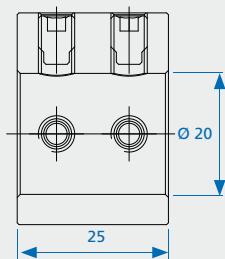


auch verwendbar für GZ 65.22..,  
 GZ 66.22.., BHE 72.22..  
 und IR 105.22..  
 siehe Seite 7, 10, 43 und 47  
 also applicable for GZ 65.22..,  
 GZ 66.22.., BHE 72.22..  
 and IR 105.22..  
 see page 7, 10, 43 and 47  
 aussi utilisable pour GZ 65.22..,  
 GZ 66.22.., BHE 72.22..  
 et IR 105.22..  
 regardez à la page 7, 10, 43 et 47

Für TSUGAMI



Bestell-Nr. 4.201

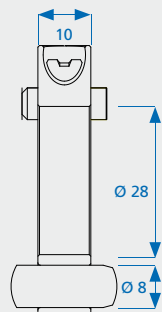


auch verwendbar für GZ 65.20..,  
 GZ 66.20.., BHE 72.20..  
 und IR 105.20..  
 siehe Seite 7, 11, 43 und 47  
 also applicable for GZ 65.20..,  
 GZ 66.20.., BHE 72.20..  
 and IR 105.20..  
 see page 7, 11, 43 and 47  
 aussi utilisable pour GZ 65.20..,  
 GZ 66.20.., BHE 72.20..  
 et IR 105.20..  
 regardez à la page 7, 11, 43 et 47

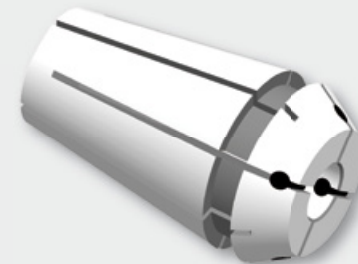
Für TRAUB



Bestell-Nr. 4.220



auch verwendbar für GZ 65.22..,  
 GZ 66.28.. und BHE 72.28..  
 siehe Seite 11 und 43  
 also applicable for GZ 65.28..,  
 GZ 66.28.. and BHE 72.28..  
 see page 11 and 43  
 aussi utilisable pour GZ 65.28..,  
 GZ 66.28.. et BHE 72.28..  
 regardez à la page 11 et 43



erhältlich als Standard und abgedichtet  
 für Werkzeuge  
 mit Innenkühlung  
 applicable as standard and  
 sealed for tools with coolant supply  
 utilisable en standard et étanche pour  
 porte outil avec canal d'arrosage

Pmax = 70bar

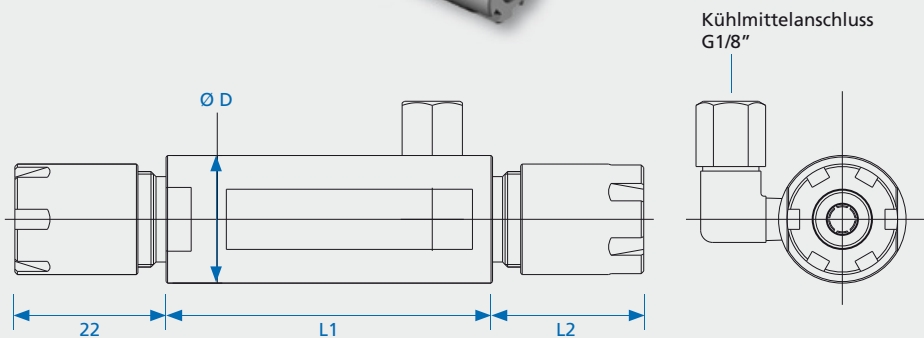
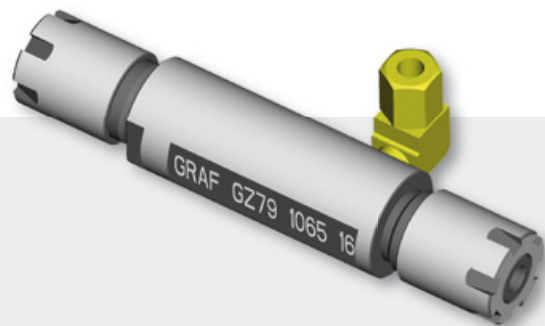
lieferbar für Zangen available for pincer livrable pour pince	lieferbar für Bohrungs-Ø available for bore diameter livrable pour alésage diameter	Steigung in mm pitch mm inclinaison mm
ER11	3-7	0,5
ER16	3-10	0,5
ER20	3-13	0,5
ER25	3-16	0,5
ER32	3-20	0,5
ER40	4-26	0,5
ER50	12-34	0,5






Bei Bestellung bitte Durchmesser angeben  
 By order please specify the diameter  
 En commande s'il vous plaît le diamètre

**GRAF Doppelspannzangenhalter mit Innenkühlung  
inklusive ER-M Spannmutter**

GRAF double chuck holder with coolant supply inclusive chucking nut

GRAF porte pinces double avec raccord baque de serrage ER-M  
inclus pour canal d'arrosage



	Bestell-Nr.	Ø D	Zange	L1	L2
 CITIZEN- Maschinen	GZ 79.3470.16	3/4"	ER16	70	32
	GZ 79.1065.16	1"	ER16	65	32
	GZ 79.1075.20	1"	ER20	75	38
 STAR- Maschinen	GZ 79.2262.16	22	ER16	62	32
	GZ 79.22100.16	22	ER16	100	32
 TORNOS- Maschinen	GZ 79.2065.16	20	ER16	65	32
 HANWHA- Maschinen	GZ 79.2065.16	20	ER16	65	32
	GZ 79.2090.16	20	ER16	90	32
	GZ 79.22100.16	22	ER16	100	32
 TSUGAMI- Maschinen	GZ 79.2580.16	25	ER16	80	32
	GZ 79.2595.20	25	ER 20	95	30
	GZ 79.32097.20	32	ER 20	97	30
	GZ 79.32095.25	32	ER 25	95	32



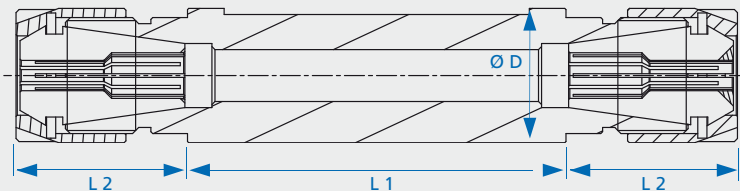
**GRAF Doppel-Spannzangenhalter  
inklusive ER-M Spannmutter**

GRAF double chuck holder  
inclusive chucking nut ER-M





GRAF porte pinces double bague  
de serrage ER-M inclus



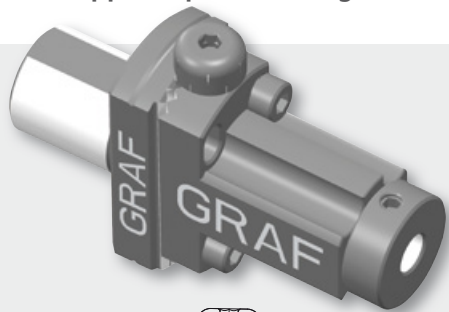
Beispiel:  
Example:  
Exemple:



	Bestell-Nr.	Ø D	Zange	L1	L2
 <b>TSUGAMI-Maschinen</b>	GZ 67.2055.16	20	ER 16	55	22
	GZ 67.2065.11	20	ER 11	65	18
	GZ 67.2065.16	20	ER 16	65	22
	GZ 67.2080.16	20	ER 16	80	22
	GZ 67.3285.20	32	ER 20	85	30
	GZ 67.3280.25	32	ER 25	80	32

	Bestell-Nr.	Ø D	Zange	L 1	L 2
 <b>CITIZEN-Maschinen</b>	GZ 67.3430.11	3/4"	ER 11	30	18
	GZ 67.3440.11	3/4"	ER 11	40	18
	GZ 67.3440.16	3/4"	ER 16	40	22
	GZ 67.3450.11	3/4"	ER 11	50	18
	GZ 67.3455.16	3/4"	ER 16	55	22
	GZ 67.3465.11	3/4"	ER 11	65	18
	GZ 67.3470.16	3/4"	ER 16	70	22
	GZ 67.2030.11	20	ER 11	30	18
	GZ 67.2030.16	20	ER 16	30	22
	GZ 67.2080.16	20	ER16	80	22
	GZ 67.2040.11	20	ER11	40	18
	GZ 67.2040.16	20	ER 16	40	22
	GZ 67.2055.11	20	ER 11	55	18
	GZ 67.2055.16	20	ER 16	55	22
	GZ 67.2065.11	20	ER 11	65	18
	GZ 67.2065.16	20	ER 16	65	22
	GZ 67.1045.20	1"	ER 20	45	30
	GZ 67.1065.16	1"	ER 16	65	22
GZ 67.1075.20	1"	ER 20	75	30	
 <b>HANWHA-Maschinen</b>	GZ 67.2080.16	20	ER16	80	22
	GZ 67.2580.16	25	ER16	80	22
	GZ 67.2580.20	25	ER 20	80	30
 <b>STAR-Maschinen</b>	GZ 67.1632.11	16	ER 11	32	18
	GZ 67.1650.11	16	ER 11	50	18
	GZ 67.2262.16	22	ER 16	62	22
	GZ 67.22100.11	22	ER 11	100	18
	GZ 67.22100.16	22	ER 16	100	22
	GZ 67.22120.16	22	ER 16	120	22
	GZ 67.3255.20	32	ER 20	55	30
GZ 67.3285.20	32	ER 20	85	30	
 <b>Tornos-Maschinen</b>	GZ 67.2040.11	20	ER 11	40	18
	GZ 67.2050.11	20	ER 11	50	18

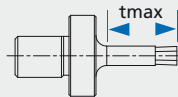
**GRAF Mehrkant-Drückgerät zum Innendrücker**  
**GRAF multi-sided hitting equipment for interior pressing**  
**GRAF appareil pour brochage tournant intérieur**



Mehrkant-Stößel zum Innendrücker ASP

Multi-sided rams for interior pressing ASP

Poinçon multipans pour brochage intérieur ASP

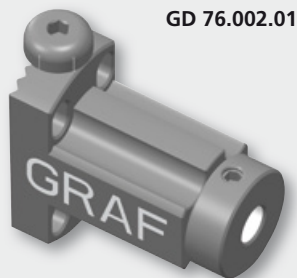
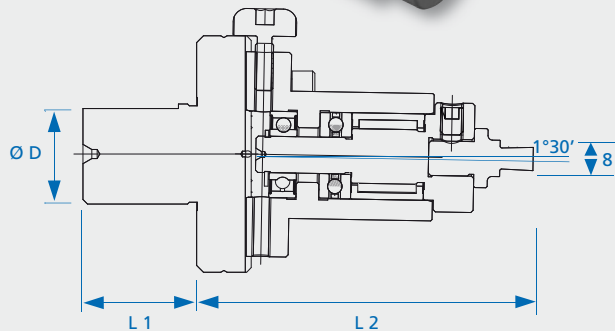


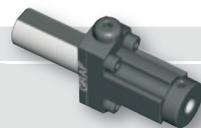
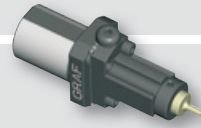




Bestell-Nr.	SW
GM 77.008.02	SK/SW 2
GM 77.008.03	SK/SW 3
GM 77.008.04	SK/SW 4
GM 77.008.05	SK/SW 5
GM 77.008.06	SK/SW 6
GM 77.008.08	SK/SW 8
GM 77.008.10	SK/SW 10

Abmasse und Stosstiefe (t<sub>max</sub> = 15) nach Kundenwunsch

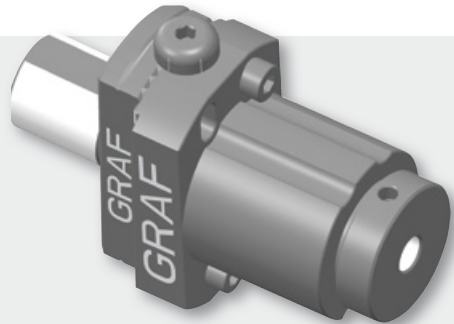
Dimensions (t<sub>max</sub> = 15) according to customer drawing

Dimensions (t<sub>max</sub> = 15) selon dessins fournis par le client



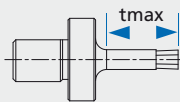
	Bestell-Nr.	Ø D	L 1	L 2
	CITIZEN-Maschinen			
	GD 76.3440.10	3/4"	40	58
	GD 76.3450.10	3/4"	50	58
	GD 76.2030.10	20	30	58
	HANWHA-Maschinen			
	GD 76.1060.10	1"	60	58
	GD 76.2540.10	25	40	58
	GD 76.2560.10	25	60	58
	MAIER-Maschinen			
	GD 76.3225.10	32	25	64
	GD 76.3340.10	33	40	64
	MANURHIN-Maschinen			
	GD 76.3045.10	30	45	69
	STAR-Maschinen			
	GD 76.3444.10	34	44	64
	TORNOS-Maschinen			
	GD 76.25150.10	25	150	58
	GD 76.1621.10	16	21	58
	GD 76.22120.10	22	120	58
	GD 76.2225.10 - SR16/20R	22	25	64
	GD 76.2230.10 - SR32	22	30	64
	GD 76.2238.10	22	38	58
	GD 76.2250.10	22	50	58
GD 76.2270.10	22	70	58	
	TRAUB-Maschinen			
	GD 76.20100.10	20	100	58
	GD 76.20145.10	20	145	58
	GD 76.20185.10	20	185	58
	GD 76.2880.10	28	80	64

**GRAF Mehrkant-Drückgerät zum Innendrücken**  
**GRAF multi-sided hitting equipment for interior pressing**  
**GRAF appareil pour brochage tournant intérieur**



Bestell-Nr.	SW
GM 77.008.02	SK/SW 2
GM 77.008.03	SK/SW 3
GM 77.008.04	SK/SW 4
GM 77.008.05	SK/SW 5
GM 77.008.06	SK/SW 6
GM 77.008.08	SK/SW 8
GM 77.008.10	SK/SW 10

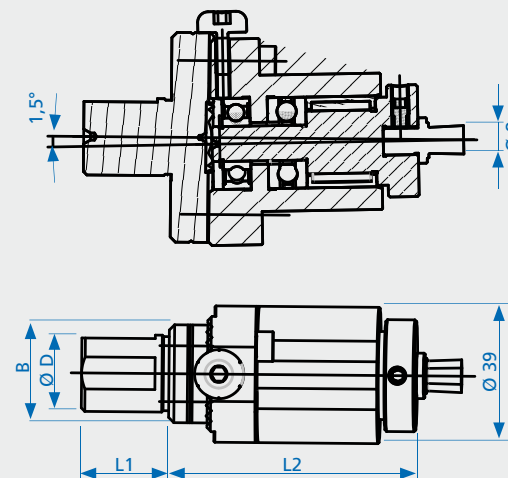
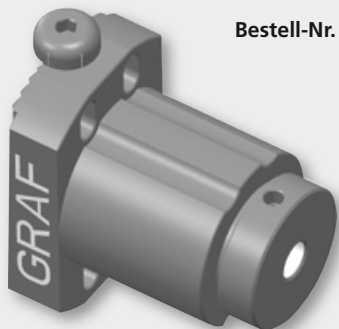
Mehrkant-Stößel zum Innendrücken ASP  
Multi-sided rams for interior pressing ASP  
Poinçon multipans pour brochage intérieur ASP



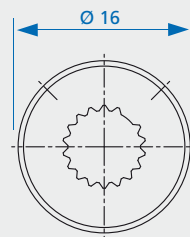
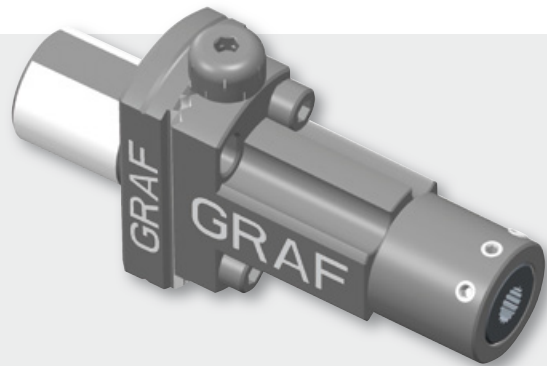
Abmasse und Stosstiefe (tmax = 15) nach Kundenwunsch  
Dimensions (tmax = 15) according to customer drawing  
Dimensions (tmax = 15) selon dessins fournis par le client

	<b>STAR-Maschinen</b>	Bestell-Nr. GD 78.2225-SR16/20R	D 22	L1 25	L2 72	B 28
	<b>TORNOS-Maschinen</b>	GD 78.2040	20	40	72	28
	<b>HANWA-Maschinen</b>	GD 78.2040	20	40	72	28
		GD 78.2570	25	70	72	28
	<b>TRAUB-Maschinen</b>	GD 78.1640	16	40	72	28
	<b>Kurzdreher Revoler VDI 30</b>	GD 78.VDI30	VDI 30	55	100	46

Bestell-Nr. GD 78.001.00

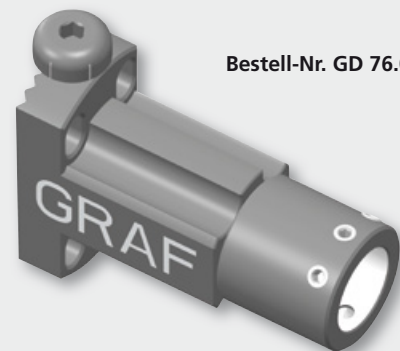
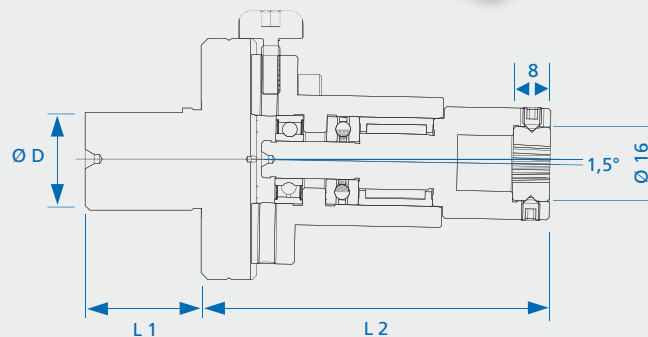


**GRAF Mehrkant-Drückgerät zum Aussendrücken**  
**GRAF multi-sided hitting equipment for external (surface) broaching**  
**GRAF appareil pour brochage tournant extérieur**

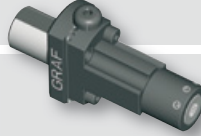



Mehrkant-Büchse zum  
Außendrücken  
Multi-edged pot broach for  
external surface broaching  
Bague profilée pour brochage  
extérieur

**Bestell-Nr. GMA 77.016.A**  
Abmessungen nach  
Kundenzeichnung  
Dimensions according to  
customer drawing  
Dimensions selon dessins  
fournis par le client



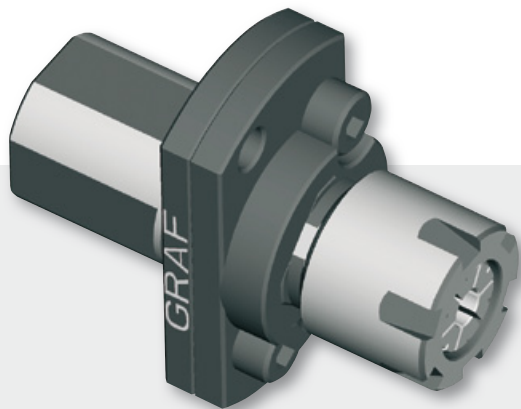
**Bestell-Nr. GD 76.002.02**

	Bestell-Nr.	Ø D	L 1	L 2
	GDA 76.3440.16	3/4"	40	70
	GDA 76.3450.16	3/4"	50	70
	GDA 76.2030.16	20	30	70
	GDA 76.1060.16	1"	60	70
	GDA 76.2540.16	25	40	70
	GDA 76.2560.16	25	60	76
	GDA 76.3225.16	32	25	76
	GDA 76.3340.16	33	40	76
	GDA 76.3045.16	30	45	82
	GDA 76.3444.16	34	44	76
	GDA 76.25150.16	25	150	70
	GDA 76.1621.16	16	21	70
	GDA 76.22120.16	22	120	70
	GDA 76.2225.16 - SR16/20R	22	25	76
	GDA 76.2230.16 - SR32	22	30	76
	GDA 76.2238.16	22	38	70
	GDA 76.2250.16	22	50	70
	GDA 76.2270.16	22	70	70
	GDA 76.20100.16	20	100	70
	GDA 76.20145.16	20	145	70
	GDA 76.20185.16	20	185	70
	GDA 76.2880.16	28	80	76
				

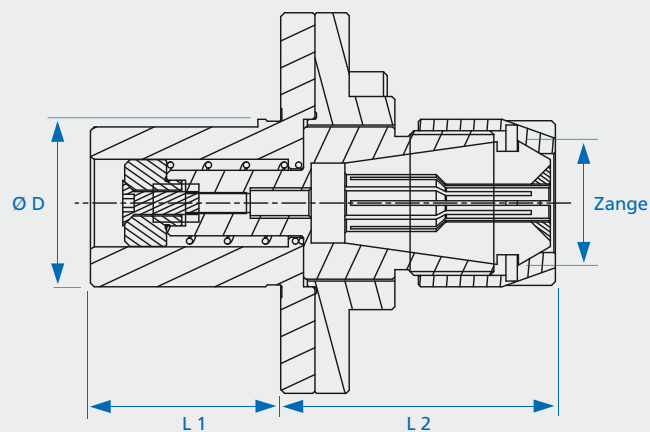
**GRAF Gewindebohrerhalter vierkantgeführt mit Längenausgleich inklusiv ER-M Spannmutter**

GRAF square leaded tap holder with length compensation inclusive chucking nut ER-M

GRAF mandrin de taraudage avec compensation de longueur bague de serrage ER-M inclus



Beispiel:  
Example:  
Exemple:



max. Auszug 7 mm

	Bestell-Nr.	Ø D	Zange	L 1	L 2
<p><b>CITIZEN-Maschinen</b></p>	GB 68.2030.11	20	ER 11	30	30
	GB 68.2030.16	20	ER 16	30	36
	GB 68.2030.20	20	ER 20	30	48
	GB 68.3440.11	3/4"	ER 11	40	30
	GB 68.3440.16	3/4"	ER 16	40	36
	GB 68.3440.20	3/4"	ER 20	40	48
	GB 68.3470.11	3/4"	ER 11	70	30
	GB 68.3470.16	3/4"	ER 16	70	36
	GB 68.3470.20	3/4"	ER 20	70	48
	GB 68.1070.11	1"	ER 11	70	30
	GB 68.1070.16	1"	ER 16	70	36
	GB 68.1070.20	1"	ER 20	70	48
<p><b>HANWHA-Maschinen</b></p>	GB 68.10100.11	1"	ER 11	100	30
	GB 68.10100.16	1"	ER 16	100	36
	GB 68.10100.20	1"	ER 20	100	48
	GB 68.3225.16	32	ER 16	25	40
	GB 68.3225.20	32	ER 20	25	48
	GB 68.3340.16	33	ER 16	40	40
<p><b>MAIER-Maschinen</b></p>	GB 68.3340.20	33	ER 20	40	48
	GB 68.3444.16	34	ER 16	44	36
	GB 68.3444.20	34	ER 20	44	48
	GB 68.3045.11	30	ER 11	45	30
	GB 68.3045.16	30	ER 16	45	36
	GB 68.3045.20	30	ER 20	45	48

**GRAF Gewindebohrerhalter vierkantgeführt  
mit Längenausgleich inklusiv ER-M Spannmutter**

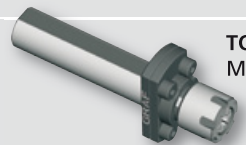
GRAF square leaded tap holder

with length compensation inclusive chucking nut ER-M

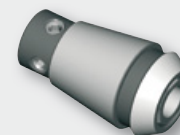
GRAF mandrin de taraudage avec

compensation de longueur bague de serrage ER-M inclus

	Bestell-Nr.	Ø D	Zange	L 1	L 2
 <b>MANURHIN-</b> Maschinen	GB 68.2570.11	25	ER 11	70	30
	GB 68.2570.16	25	ER 16	70	36
	GB 68.2570.20	25	ER 20	70	48
	GB 68.25150.11	25	ER 11	150	30
	GB 68.25150.16	25	ER 16	150	36
	GB 68.25150.20	25	ER 20	150	48
 <b>STAR-</b> Maschinen	GB 68.1621.11	16	ER 11	21	30
	GB 68.1621.16	16	Er 16	21	36
	GB 68.1621.20	16	Er 20	21	48
	GB 68.2230.11	22	Er 11	30	30
	GB 68.2230.16	22	ER 16	30	36
	GB 68.2230.20	22	ER 20	30	48
	GB 68.2270.11	22	ER 11	70	30
	GB 68.2270.16	22	ER 16	70	36
	GB 68.2270.20	22	ER 20	70	48
	GB 68.2225.11-SR16/20R	22	ER 11	25	30
	GB 68.2225.16-SR16/20R	22	ER 16	25	36
	GB 68.2225.20-SR16/20R	22	ER 20	25	48
	GB 68.2230.11-SR32	22	ER 11	30	30
	GB 68.2230.16-SR32	22	ER 16	30	36
	GB 68.2230.20-SR32	22	ER 20	30	48

	Bestell-Nr.	Ø D	Zange	L 1	L 2
 <b>TORNOS-</b> Maschinen	GB 68.18185.11	18	ER 11	185	30
	GB 68.18185.16	18	ER 16	185	36
	GB 68.18185.20	18	ER 20	185	48
	GB 68.20100.11	20	ER 11	100	30
	GB 68.20100.16	20	ER 16	100	36
	GB 68.20100.20	20	ER 20	100	48
	GB 68.25150.11	25	ER 11	150	30
	GB 68.25150.16	25	ER 16	150	36
	GB 68.25150.20	25	ER 20	150	48
 <b>TRAUB-</b> Maschinen	GB 68.1670.11	16	ER 11	70	30
	GB 68.1670.16	16	ER 16	70	36
	GB 68.1670.20	16	ER 20	70	48
	GB 68.2880.11	28	ER 11	80	36
	GB 68.2880.16	28	ER 16	80	42
	GB 68.2880.20	28	ER 20	80	54

**Gewindebohrzange ER 16**  
 collet for ER 16 tap  
 pince pour taraud ER 16

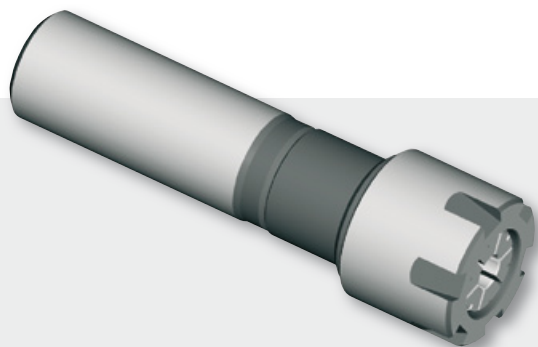


max. Auszug 7 mm

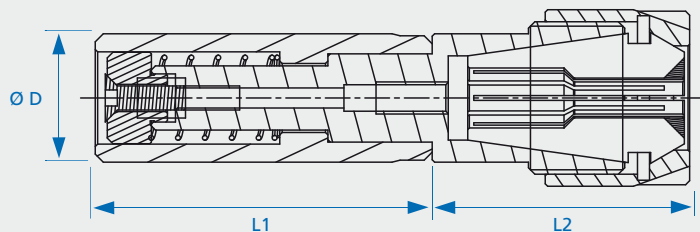
Bestell-Nr.	d	für Gewinde-Bohrer
GF 66.001-2,8	2,8	M 2 - M 2,6
GF 66.001.3,5	3,5	M 3
GF 66.001-4,0	4	M 3,5
GF 66.001-4,5	4,5	M 4
GF 66.001-6,0	6	M 5 - M 8



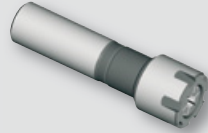
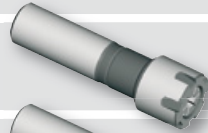
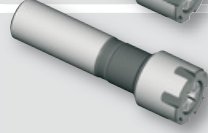
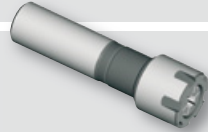
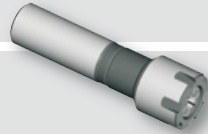
**GRAF Gewindebohrerhalter vierkantgeführt  
mit Längenausgleich inklusiv ER-M Spannmutter**  
**GRAF square leaded tap holder  
with length compensation inclusive chucking nut ER-M**  
**GRAF mandrin de taraudage avec  
compensation de longueur bague de serrage ER-M inclus**



Beispiel:  
Example:  
Exemple:



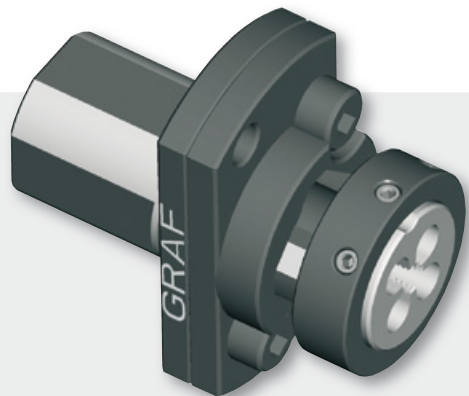
max. Auszug 7 mm

	Bestell-Nr.	Ø D	Zange	L 1	L 2	
	<b>CITIZEN-</b> Maschinen	GB 68.2030.11-CI	20	ER 11	30	22
	GB 68.2030.16-CI	20	ER 16	30	32	
	GB 68.3440.11-CI	3/4"	ER 11	40	22	
	GB 68.3440.16-CI	3/4"	ER 16	40	32	
	GB 68.3470.11-CI	3/4"	ER 11	70	22	
	GB 68.3470.16-CI	3/4"	ER 16	70	32	
	GB 68.1060.11-CI	1"	ER 11	60	32	
	GB 68.1060.16-CI	1"	ER 16	60	32	
	GB 68.1060.20-CI	1"	ER 20	60	42	
	GB 68.10100.11-CI	1"	ER 11	100	22	
GB 68.10100.16-CI	1"	ER 16	100	32		
GB 68.10100.20-CI	1"	ER 20	100	42		
	<b>GILDEMEISTER-</b> Maschinen	GB68 2050 -11 GI	20	ER 11	50	22
	GB68 2050 -16 GI	20	ER 16	50	32	
	GB68 2050 -20 GI	20	ER 20	50	40	
	<b>MANURHIN-</b> Maschinen	GB68.20185-11 MAN	20	ER 11	185	22
	GB68.20185-16 MAN	20	ER 16	185	32	
	GB68.20185-20 MAN	20	ER 20	185	40	
	GB68.25150-11 MAN	25	ER 11	150	22	
	GB68.25150-16 MAN	25	ER 16	150	32	
GB68.25150-20 MAN	25	ER 20	150	40		
	<b>STAR-</b> Maschinen	GB 68.1642.11-ST	16	ER 11	42	22
	GB 68.1642.16-ST	16	ER 16	42	32	
	GB 68.2225.11-ST	22	ER 11	25	22	
	GB 68.2225.16-ST	22	ER 16	25	32	
	GB 68.2270.11-ST	22	ER 11	70	22	
	GB 68.2270.16-ST	22	ER 16	70	32	
	GB 68.2270.20-ST	22	ER 20	70	42	
	GB 68.22120.11-ST	22	ER 11	120	22	
	GB 68.22120.16-ST	22	ER 16	120	32	
	GB 68.22120.20-ST	22	ER 20	120	42	
	<b>TORNOS-</b> Maschinen	GB 68.18185.11-TO	18	ER 11	185	22
	GB 68.18185.16-TO	18	ER 16	185	32	
	GB 68.18185.20-TO	18	ER 20	185	42	
	GB 68.20145.11-TO	20	ER 11	145	22	
	GB 68.20145.16-TO	20	ER 16	145	32	
	GB 68.20145.20-TO	20	ER 20	145	42	
	GB 68.25150.11-TO	25	ER 11	150	22	
	GB 68.25150.16-TO	25	ER 16	150	32	
	GB 68.25150.20-TO	25	ER 20	150	42	

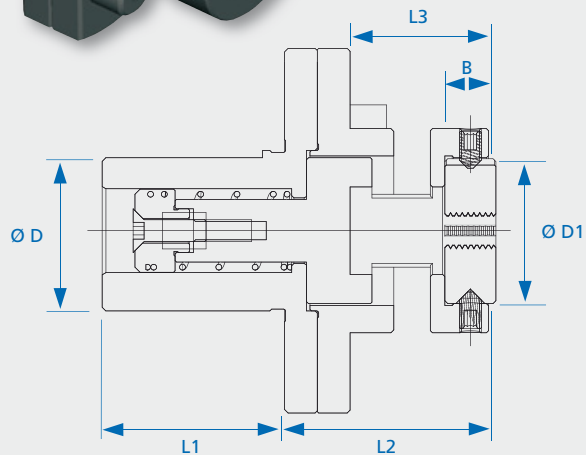
**GRAF Gewindeschneideisenhalter  
mit Längenausgleich**

**GRAF screw threading holder  
with length compensation**

**GRAF porte-filière  
avec compensation de longueur**



Beispiel:  
Example:  
Exemple:



max. Auszug 8 mm

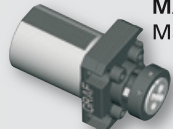



**CITIZEN-  
Maschinen**

Bestell-Nr.	D	D1	L1	L2	L3	B
GS 69.2030.1620	20	16	30	28	20	5
GS 69.2030.1630	20	16	30	38	30	5
GS 69.2030.2020	20	20	30	28	20	6
GS 69.2030.2030	20	20	30	38	30	6
GS 69.2030.2520	20	25	30	28	20	8
GS 69.2030.2530	20	25	30	38	30	8
GS 69.2030.3020	20	30	30	28	20	10
GS 69.2030.3030	20	30	30	38	30	10
GS 69.3440.1620	3/4"	16	40	28	20	5
GS 69.3440.1630	3/4"	16	40	38	30	5
GS 69.3440.2020	3/4"	20	40	28	20	6
GS 69.3440.2030	3/4"	20	40	38	30	6
GS 69.3440.2520	3/4"	25	40	28	20	8
GS 69.3440.2530	3/4"	25	40	38	30	8
GS 69.3440.3020	3/4"	30	40	28	20	10
GS 69.3440.3030	3/4"	30	40	38	30	10
GS 69.3470.1620	3/4"	16	70	28	20	5
GS 69.3470.1630	3/4"	16	70	38	30	5
GS 69.3470.2020	3/4"	20	70	28	20	6
GS 69.3470.2030	3/4"	20	70	38	30	6
GS 69.3470.2520	3/4"	25	70	28	20	8
GS 69.3470.2530	3/4"	25	70	38	30	8
GS 69.3470.3020	3/4"	30	70	28	20	10
GS 69.3470.3030	3/4"	30	70	38	30	10
GS 69.1070.1620	1"	16	70	28	20	5
GS 69.1070.1630	1"	16	70	38	30	5
GS 69.1070.2020	1"	20	70	28	20	6
GS 69.1070.2030	1"	20	70	38	30	6
GS 69.1070.2520	1"	25	70	28	20	8
GS 69.1070.2530	1"	25	70	38	30	8
GS 69.1070.3020	1"	30	70	28	20	10
GS 69.1070.3030	1"	30	70	38	30	10
GS 69.10100.1620	1"	16	100	28	20	5
GS 69.10100.1630	1"	16	100	38	30	5
GS 69.10100.2020	1"	20	100	28	20	6
GS 69.10100.2030	1"	20	100	38	30	6
GS 69.10100.2520	1"	25	100	28	20	8
GS 69.10100.2530	1"	25	100	38	30	8
GS 69.10100.3020	1"	30	100	28	20	10
GS 69.10100.3030	1"	30	100	38	30	10



**GRAF Gewindeschneideisenhalter mit  
Längenausgleich**
**GRAF screw threading holder with  
length compensation**
**GRAF porte-filière  
avec compensation de longueur**

	Bestell-Nr.	D	D1	L1	L2	L3	B
 <b>MAIER- Maschinen</b>	GS 69.3444.1620	34	16	44	34	20	5
	GS 69.3444.1630	34	16	44	44	30	5
	GS 69.3444.2020	34	20	44	34	20	6
	GS 69.3444.2030	34	20	44	44	30	6
	GS 69.3444.2520	34	25	44	34	20	8
	GS 69.3444.2530	34	25	44	44	30	8
	GS 69.3444.3020	34	30	44	34	20	10
	GS 69.3444.3030	34	30	44	44	30	10
	GS 69.3045.1620	30	16	45	34	20	5
	GS 69.3045.1630	30	16	45	44	30	5
	GS 69.3045.2020	30	20	45	34	20	6
	GS 69.3045.2030	30	20	45	44	30	6
	GS 69.3045.2520	30	25	45	34	20	8
	GS 69.3045.2530	30	25	45	44	30	8
	GS 69.3045.3020	30	30	45	34	20	10
	GS 69.3045.3030	30	30	45	44	30	10
 <b>MANURHIN- Maschinen</b>	GS 69.2570.1620	25	16	70	28	20	5
	GS 69.2570.1630	25	16	70	38	30	5
	GS 69.2570.2020	25	20	70	28	20	6
	GS 69.2570.2030	25	20	70	38	30	6
	GS 69.2570.2520	25	25	70	28	20	8
	GS 69.2570.2530	25	25	70	38	30	8
	GS 69.2570.3020	25	30	70	28	20	10
	GS 69.2570.3030	25	30	70	38	30	10
	GS 69.25150.1620	25	16	150	28	20	5
	GS 69.25150.1630	25	16	150	38	30	5
	GS 69.25150.2020	25	20	150	28	20	6
	GS 69.25150.2030	25	20	150	38	30	6
	GS 69.25150.2520	25	25	150	28	20	8
	GS 69.25150.2530	25	25	150	38	30	8
	GS 69.25150.3020	25	30	150	28	20	10
	GS 69.25150.3030	25	30	150	38	30	10



**STAR-  
Maschinen**

Bestell-Nr.	D	D1	L1	L2	L3	B
GS 69.1621.1620	16	16	21	28	20	5
GS 69.1621.1630	16	16	21	38	30	5
GS 69.1621.2020	16	20	21	28	20	6
GS 69.1621.2030	16	20	21	38	30	6
GS 69.1621.2520	16	25	21	28	20	8
GS 69.1621.2530	16	25	21	38	30	8
GS 69.1621.3020	16	30	21	28	20	10
GS 69.1621.3030	16	30	21	38	30	10
GS 69.2230.1620	22	16	30	28	20	5
GS 69.2230.1630	22	16	30	38	30	5
GS 69.2230.2020	22	20	30	28	20	6
GS 69.2230.2030	22	20	30	38	30	6
GS 69.2230.2520	22	25	30	28	20	8
GS 69.2230.2530	22	25	30	38	30	8
GS 69.2230.3020	22	30	30	28	20	10
GS 69.2230.3030	22	30	30	38	30	10
GS 69.2270.1620	22	16	70	28	20	5
GS 69.2270.1630	22	16	70	38	30	5
GS 69.2270.2020	22	20	70	28	20	6
GS 69.2270.2030	22	20	70	38	30	6
GS 69.2270.2520	22	25	70	28	20	8
GS 69.2270.2530	22	25	70	38	30	8
GS 69.2270.3020	22	30	70	28	20	10
GS 69.2270.3030	22	30	70	38	30	10
GS 69.2225.1620-SR16/20R	22	16	25	28	20	5
GS 69.2225.1630-SR16/20R	22	16	25	38	30	5
GS 69.2225.2020-SR16/20R	22	20	25	28	20	6
GS 69.2225.2030-SR16/20R	22	20	25	38	30	6
GS 69.2225.2520-SR16/20R	22	25	25	28	20	8
GS 69.2225.2530-SR16/20R	22	25	25	38	30	8
GS 69.2225.3020-SR16/20R	22	30	25	28	20	10
GS 69.2225.3030-SR16/20R	22	30	25	38	30	10
GS 69.2230.1620-SR32	22	16	30	28	20	5
GS 69.2230.1630-SR32	22	16	30	38	30	5
GS 69.2230.2020-SR32	22	20	30	28	20	6
GS 69.2230.2030-SR32	22	20	30	38	30	6
GS 69.2230.2520-SR32	22	25	30	28	20	8
GS 69.2230.2530-SR32	22	25	30	38	30	8
GS 69.2230.3020-SR32	22	30	30	28	20	10
GS 69.2230.3030-SR32	22	30	30	38	30	10

### GRAF Gewindeschneideisenhalter mit Längenausgleich

GRAF screw threading holder with  
length compensation

GRAF porte-filière  
avec compensation de longueur

	Bestell-Nr.	D	D1	L1	L2	L3	B	
	TORNOS-Maschinen	GS 69.18185.1620	18	16	185	28	20	5
		GS 69.18185.1630	18	16	185	38	30	5
		GS 69.18185.2020	18	20	185	28	20	6
		GS 69.18185.2030	18	20	185	38	30	6
		GS 69.18185.2520	18	25	185	28	20	8
		GS 69.18185.2530	18	25	185	38	30	8
		GS 69.18185.3020	18	30	185	28	20	10
		GS 69.18185.3030	18	30	185	38	30	10
		GS 69.20100.1620	20	16	100	28	20	5
		GS 69.20100.1630	20	16	100	38	30	5
		GS 69.20100.2020	20	20	100	28	20	6
		GS 69.20100.2030	20	20	100	38	30	6
		GS 69.20100.2520	20	25	100	28	20	8
		GS 69.20100.2530	20	25	100	38	30	8
		GS 69.20100.3020	20	30	100	28	20	10
		GS 69.20100.3030	20	30	100	38	30	10
		GS 69.25150.1620	25	16	150	28	20	5
		GS 69.25150.1630	25	16	150	38	30	5
		GS 69.25150.2020	25	20	150	28	20	6
		GS 69.25150.2030	25	20	150	38	30	6
	GS 69.25150.2520	25	25	150	28	20	8	
	GS 69.25150.2530	25	25	150	38	30	8	
	GS 69.25150.3020	25	30	150	28	20	10	
	GS 69.25150.3030	25	30	150	38	30	10	



TRAUB-  
Maschinen



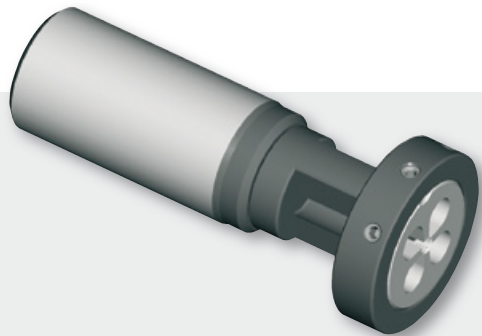
HANWHA-  
Maschinen

Bestell-Nr.	D	D1	L1	L2	L3	B
GS 69.1670.1620	16	16	70	28	20	5
GS 69.1670.1630	16	16	70	38	30	5
GS 69.1670.2020	16	20	70	28	20	6
GS 69.1670.2030	16	20	70	38	30	6
GS 69.1670.2520	16	25	70	28	20	8
GS 69.1670.2530	16	25	70	38	30	8
GS 69.1670.3020	16	30	70	28	20	10
GS 69.1670.3030	16	30	70	38	30	10
GS 69.2880.1620	28	16	80	28	20	5
GS 69.2880.1630	28	16	80	38	30	5
GS 69.2880.2020	28	20	80	28	20	6
GS 69.2880.2030	28	20	80	38	30	6
GS 69.2880.2520	28	25	80	28	20	8
GS 69.2880.2530	28	25	80	38	30	8
GS 69.2880.3020	28	30	80	28	20	10
GS 69.2880.3030	28	30	80	38	30	10
GS 69.3225.1620	32	16	25	34	20	5
GS 69.3225.1630	32	16	25	44	30	5
GS 69.3225.2020	32	20	25	34	20	6
GS 69.3225.2030	32	20	25	44	30	6
GS 69.3225.2520	32	25	25	34	20	8
GS 69.3225.2530	32	25	25	44	30	8
GS 69.3225.3020	32	30	25	34	20	10
GS 69.3225.3030	32	30	25	44	30	10
GS 69.3340.1620	33	16	40	34	20	5
GS 69.3340.1630	32	16	40	44	30	5
GS 69.3340.2020	32	20	40	34	20	6
GS 69.3340.2030	32	20	40	44	30	6
GS 69.3340.2520	32	25	40	34	20	8
GS 69.3340.2530	32	25	40	44	30	8
GS 69.3340.3020	32	30	40	34	20	10
GS 69.3340.3030	32	30	40	44	30	10

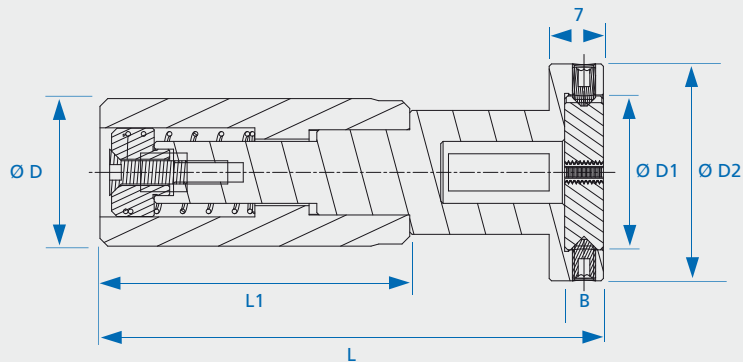
**GRAF Gewindeschneideisenhalter mit Längenausgleich**

GRAF screw threading holder with length compensation






GRAF porte-filière avec compensation de longueur



Beispiel:  
Example:  
Exemple:



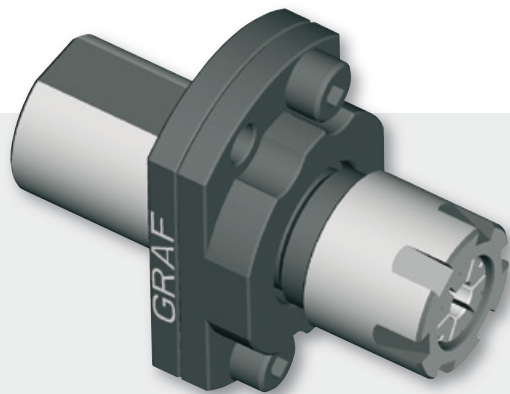
max. Auszug 7 mm

	Bestell-Nr.	Ø D	D 1	D 2	L 1	L	L 3 max. Schneidlänge	B	
	<b>CITIZEN-Maschinen</b>	GS 69.2030.1620-CI	20	16	24	30	55	20	5
	GS 69.2030.2020-CI	20	20	28	30	55	20	6	
	GS 69.2030.2030-CI	20	20	28	30	65	30	6	
	GS 69.3440.1620-CI	3/4"	16	24	40	65	20	5	
	GS 69.3440.2020-CI	3/4"	20	28	40	65	20	6	
	GS 69.3440.2030-CI	3/4"	20	28	40	75	30	6	
	GS 69.3470.1620-CI	3/4"	16	24	50	75	20	5	
	GS 69.3470.2020-CI	3/4"	20	28	70	85	20	6	
	GS 69.3470.2030-CI	3/4"	20	28	50	95	30	6	
	GS 69.1060.1620-CI	1"	16	24	60	85	20	5	
GS 69.1060.2020-CI	1"	20	28	60	85	20	6		
GS 69.1060.2030-CI	1"	20	28	60	95	30	6		
	<b>GILDEMEISTER-Maschinen</b>	GS 69.2050.1620-GI	20	16	24	50	75	20	5
	GS 69.2050.2020-GI	20	20	28	50	75	20	6	
	GS 69.2050.2030-GI	20	20	28	50	85	30	6	
	<b>MANURHIN-Maschinen</b>	GS 69.20185.1620-MAN	20	16	24	185	210	20	5
	GS 69.20185.2020-MAN	20	20	28	185	210	20	6	
	GS 69.20185.2030-MAN	20	20	28	185	220	30	6	
	GS 69.1642.1620-MAN	16	16	24	42	67	20	5	
	GS 69.1642.2020-MAN	16	20	28	42	67	20	6	
	GS 69.1642.2030-MAN	16	20	28	42	77	30	6	
	<b>STAR-Maschinen</b>	GS 69.1642.1620-ST	16	16	24	42	67	20	5
	GS 69.1642.2020-ST	16	20	28	42	67	20	6	
	GS 69.1642.2030-ST	16	20	28	42	77	30	6	
	GS 69.2270.1620-ST	22	16	24	70	95	20	5	
	GS 69.2270.2020-ST	22	20	28	70	95	20	6	
	GS 69.2270.2030-ST	22	20	28	70	105	30	6	
	<b>TORNOS-Maschinen</b>	GS 69.18185.1620-TO	18	16	24	185	210	20	5
	GS 69.18185.2020-TO	18	20	28	185	210	20	6	
	GS 69.18185.2030-TO	18	20	28	185	220	30	6	
	GS 69.20145.1620-TO	20	16	24	145	170	20	5	
	GS 69.20145.2020-TO	20	20	28	145	170	20	6	
	GS 69.20145.2030-TO	20	20	28	145	180	30	6	
	GS 69.25150.1620-TO	25	16	24	150	175	20	5	
	GS 69.25150.2020-TO	25	20	28	150	175	20	6	
	GS 69.25150.2030-TO	25	20	28	150	185	30	6	

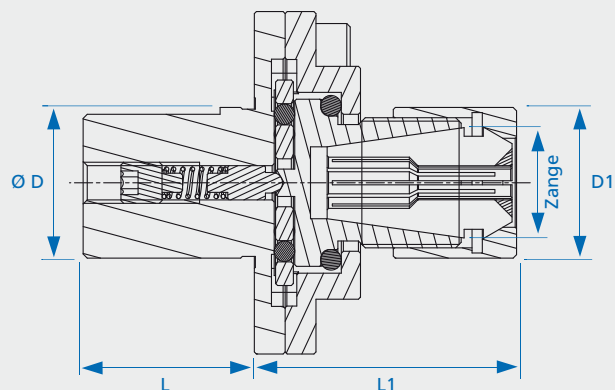
**GRAF-Pendelhalter für Reibahlen  
mit zylindrischem Schaft  
inklusive ER-M Spannmutter**






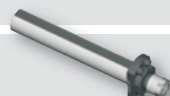
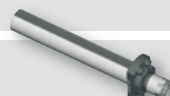
**GRAF floating holder for reamers  
with cylindrical shaft  
inclusive chucking nut ER-M**

**GRAF mandrin flottant pour alésoir  
bague de serrage ER-M inclus**

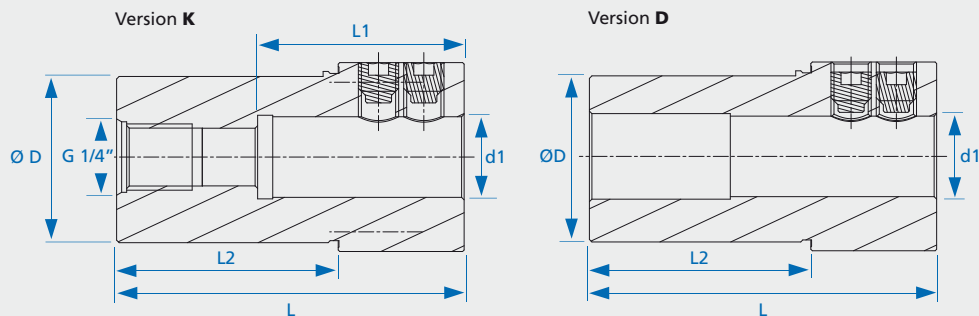
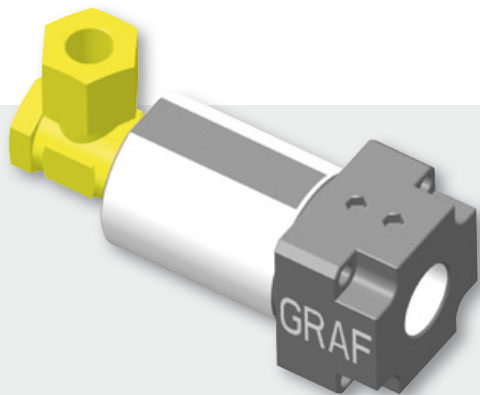


Beispiel:  
Example:  
Exemple:

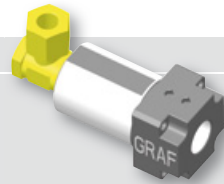
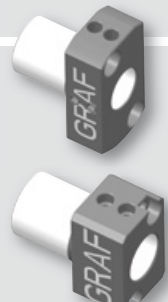


	Bestell-Nr.	Ø D	D 1	L	L 1	Zange	
	CITIZEN-Maschinen	GP 70.3440.11	3/4"	16	40	33	ER 11
		GP 70.3470.11	3/4"	16	70	33	ER 11
		GP 70.2030.11	20	16	30	33	ER 11
		GP 70.1060.11	1"	16	60	33	ER 11
		GP 70.1060.16	1"	22	60	36	ER 16
		GP 70.10100.11	1"	16	100	33	ER 11
	GP 70.10100.16	1"	22	100	36	ER 16	
	HANWHA-Maschinen	GP 70.3225.16	32	22	25	41	ER 16
		GP 70.3340.16	33	22	40	41	ER 16
	MAIER-Maschinen	GP 70.3444.16	34	22	44	41	ER 16
		GP 70.3045.16	30	22	45	41	ER 16
		GP 70.3425.16	34	22	25	41	ER 16
	MANURHIN-Maschinen	GP 70.25150.11	25	16	150	33	ER 11
		GP 70.25150.16	25	22	150	36	ER 16
	STAR-Maschinen	GP 70.1621.11	16	16	21	33	ER 11
		GP 70.2238.11	22	16	38	33	ER 11
		GP 70.2250.11	22	16	50	33	ER 11
		GP 70.2270.11	22	16	70	33	ER 11
		GP 70.22120.11	22	16	120	33	ER 11
		GP 70.2225.11-SR16/20R	22	16	25	33	ER 11
		GP 70.2225.16-SR16/20R	22	22	25	36	ER 16
		GP 70.2230.11-SR32	22	16	30	33	ER 11
		GP 70.2230.16-SR32	22	22	30	36	ER 16
		GP 70.2270.16	22	22	70	36	ER 16
		GP 70.1650.11	16	16	50	33	ER 11
	GP 70.1630.16	16	22	30	36	ER 16	
	TORNOS-Maschinen	GP 70.2570.11	25	16	70	33	ER 11
		GP 70.20100.11	20	16	100	33	ER 11
		GP 70.20185.11	20	16	185	33	ER 11
		GP 70.20185.16	20	22	185	36	ER 16
	TRAUB-Maschinen	GP 70.2880.16	28	22	80	36	ER 16

**GRAF Bohrstangen-Halter mit Innenkühlung**  
**GRAF boring bar holder with coolant supply**  
**GRAF porte-barres d'alésage avec raccord pour canal d'arrosage**



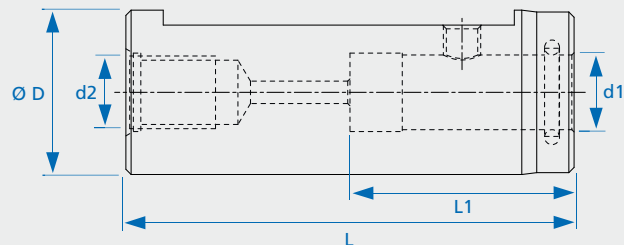
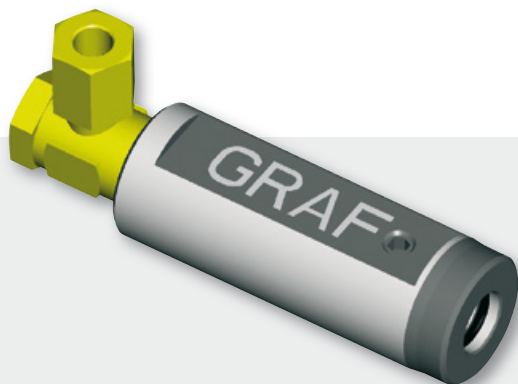
Reduzierhülsen müssen separat bestellt werden! Siehe Seite 52  
 Adapter sleeve must be ordered separately! See page 52  
 Vous trouverez les douilles de réduction commandée séparément, voir pages 52

	Bestell-Nr.	Ø D	L 1	L 2	d 1	L
 <b>MAIER-</b> <b>Maschinen</b>	BS 71.3444.16-K	34	41	44	16	69
	BS 71.3444.20-K	34	41	44	20	69
	BS 71.3444.25-K	34	41	44	25	69
	BS 71.3420.16-K	34	41	20	25	45
	BS 71.3420.20-K	34	41	20	20	45
	BS 71.3420.25-K	34	41	20	25	45
	BS 71.3444.16-D	34	41	44	16	69
	BS 71.3444.20-D	34	41	44	20	69
BS 71.3444.25-D	34	41	44	25	69	
 <b>STAR-</b> <b>Maschinen</b>	BS 71.2225.12	22	41	25	12	41
	BS 71.2225.14	22	41	25	14	41
	BS 71.2225.16	22	41	25	16	41
	BS 71.022.024.10	22	44	24	10	44
	BS 71.022.024.16	22	44	24	16	44

## GRAF Bohrerhalter für Einlippenbohrer mit Innenkühlung

GRAF drill holder for single-flute drills with coolant supply

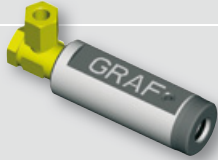
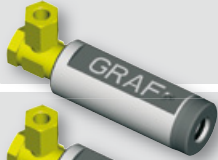
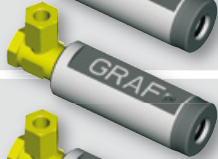

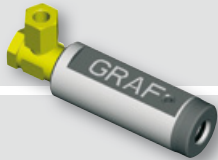
GRAF mandrin pour mèche à canon avec raccord pour canal d'arrosage



Reduzierhülsen müssen separat bestellt werden! Siehe Seite 52

Adapter sleeve must be ordered separately! See page 52

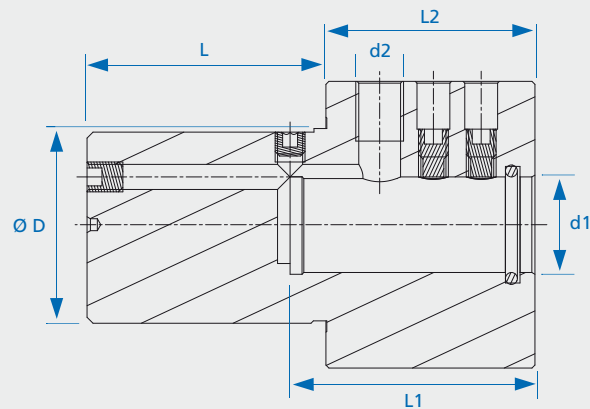
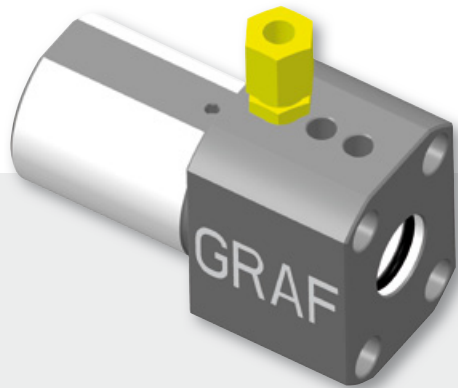
Vous trouverez les douilles de réduction commandée séparément, voir pages 52

	Bestell-Nr.	Ø D	L	L1	d 1	d 2
 <b>CITIZEN-</b> <b>Maschinen</b>	BHE 72.3450.06	3/4"	50	30	6	G 1/8"
	BHE 72.3450.08	3/4"	50	30	8	G 1/8"
	BHE 72.3460.10	3/4"	60	30	10	G 1/8"
	BHE 72.34100.10	3/4"	100	30	10	G 1/8"
	BHE 72.2050.10	20	50	30	10	G 1/8"
	BHE 72.2060.10	20	60	30	10	G 1/8"
	BHE 72.1060.10	1"	60	30	10	G 1/8"
	BHE 72.1060.12	1"	60	41	12	G 1/8"
	BHE 72.1060.14	1"	60	41	14	G 1/8"
	BHE 72.1060.16	1"	60	42	16	G 1/8"
 <b>HANWHA-</b> <b>Maschinen</b>	BHE 72.2560.16	25	60	42	16	G 1/8"
	BHE 72.32150.16	32	150	45	16	G 1/4"
 <b>MANURHIN-</b> <b>Maschinen</b>	BHE 72.2560.16	25	60	42	16	G 1/8"
	BHE 72.25150.16	25	150	45	16	G 1/4"
 <b>STAR-</b> <b>Maschinen</b>	BHE 72.1660.10	16	60	30	10	G 1/8"
	BHE 72.22100.10	22	100	30	10	G 1/8"
	BHE 72.2260.06	22	60	30	6	G 1/8"
	BHE 72.2260.08	22	60	30	8	G 1/8"
	BHE 72.2260.10	22	60	30	10	G 1/8"
	BHE 72.2260.12	22	60	30	12	G 1/8"
	BHE 72.2275.16	22	75	42	16	G 1/8"
	BHE 72.2295.16	22	95	45	16	G 1/8"
	BHE 72.32100.16	32	100	45	16	G 1/8"
	BHE 72.32100.18	32	100	45	18	G 1/8"
	BHE 72.32100.20	32	100	45	20	G 1/8"
	 <b>TRAUB-</b> <b>Maschinen</b>	BHE 72.28100.8	28	100	30	8
BHE 72.28100.12		28	100	42	12	M12 x 1.5
BHE 72.28100.16		28	100	42	16	M12 x 1.5

**GRAF Bohrerhalter für Einlippenbohrer mit Innenkühlung**

**GRAF drill holder for single-flute drills with coolant supply**

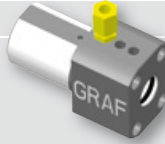
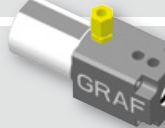
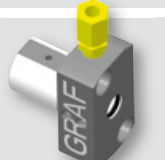
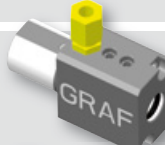
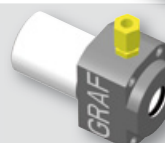
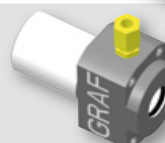
**GRAF mandrin pour mèche à canon avec raccord pour canal d'arrosage**



Reduzierhülsen müssen separat bestellt werden! Siehe Seite 52

Adapter sleeve must be ordered separately! See page 52

Vous trouverez les douilles de réduction commandée séparément, voir pages 52

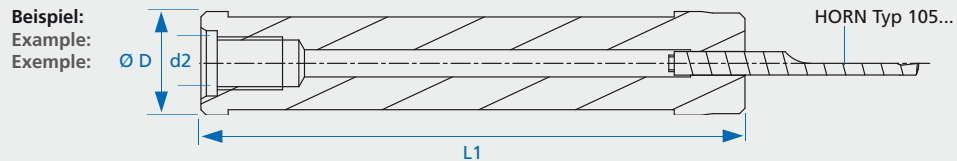
	Bestell-Nr.	Ø D	L	L 1	L 2	d 1	d 2
	HANWHA-Maschinen BHE 73.3225.16	32	25	41	35	16	M8 x 1
	BHE 73.3225.20	32	25	41	35	20	M8 x 1
	BHE 73.3340.16	33	40	41	35	16	M8 x 1
	BHE 73.3340.20	33	40	41	35	20	M8 x 1
	MAIER-Maschinen BHE 73.3444.16	34	44	41	52	16	M8 x 1
	BHE 73.3444.20	34	44	41	52	20	M8 x 1
	BHE 73.3444.25	34	44	41	52	25	M8 x 1
	BHE 73.3444.254	34	44	41	52	1"	M8 x 1
	STAR-Maschinen BHE 73.2225.06	22	25	30	17	6	M8 x 1
	BHE 73.2225.08	22	25	30	17	8	M8 x 1
	BHE 73.2225.10	22	25	30	17	10	M8 x 1
	BHE 73.2225.12	22	25	41	17	12	M8 x 1
	BHE 73.2225.16	22	25	41	44	16	M8 x 1
	BHE 73.2230.16-SR32	22	30	41	50	16	M8 x 1
	BHE 73.1621.12	16	21	31	33	12	G 1/8"
	BHE 73.1621.10	16	21	31	33	10	G 1/8"
	MANURHIN-Maschinen BHE 73.022.024.08	22	24	42	38	8	M8 x 1
	BHE 73.022.024.10	22	24	42	38	10	M8 x 1
	BHE 73.022.024.12	22	24	42	38	12	M8 x 1
	CITIZEN-Maschinen BHE 73.25150.16	25	150	41	-	16	G 1/8"
	BHE 73.25120.08	25	120	31	-	8	G 1/8"
	CITIZEN-Maschinen BHE 73 1040.16	1"	40	68	34.5	16	G1/8"
	BHE 73 1040.20	1"	40	68	34.5	20	G1/8"
	BHE 73 1040.25	1"	40	68	34.5	25	G1/8"
	BHE 73 1060.16	1"	60	42	20	16	M8x1
	BHE 73 2530.06	25	30	30	17	6	M8x1
	BHE 73 2530.16	25	30	42	17	16	M8x1






**GRAF Innendreh-Rundschafthalter  
für HORN-Schneidplatten Typ 105 mit Innenkühlung**

GRAF boring-round shank holder  
for HORN-inserts type 105 with coolant supply

GRAF porte-outil pour alésage  
pour insert HORN type 105 avec raccord pour canal d'arrosage



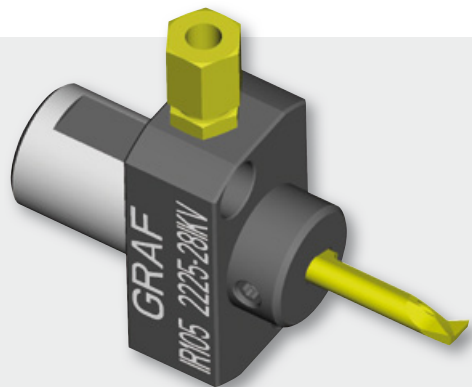
	Bestell-Nr.	Ø D	L 1	Ø d2
 <p><b>CITIZEN-</b> Maschinen</p>	IR 105.34.40	3/4"	40	G 1/8"
	IR 105.34.50	3/4"	50	G 1/8"
	IR 105.34.70	3/4"	70	G 1/8"
	IR 105.34.100	3/4"	100	G 1/8"
	IR 105.20.30	20	30	G 1/8"
	IR 105.20.50	20	50	G 1/8"
	IR 105.10.60	1"	60	G 1/4"
	IR 105.10.100	1"	100	G 1/4"
 <p><b>STAR-</b> Maschinen</p>	IR 105.16.30	16	30	G 1/8"
	IR 105.16.50	16	50	G 1/8"
	IR 105.16.70	16	70	G 1/8"
	IR 105.22.100	22	100	G 1/8"
	IR 105.22.120	22	120	G 1/8"
	IR 105.22.38	22	38	G 1/8"
	IR 105.22.50	22	50	G 1/8"
	IR 105.22.70	22	70	G 1/8"
 <p><b>TORNOS-</b> Maschinen</p>	IR 105.18.310	18	310	G 1/8"
	IR 105.20.170	20	170	G 1/8"
	IR 105.20.185	20	185	G 1/8"
	IR 105.25.100	25	100	G 1/4"
	IR 105.25.150	25	150	G 1/4"
	IR 105.28.80	28	80	G 1/4"



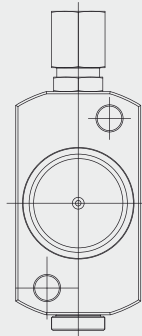
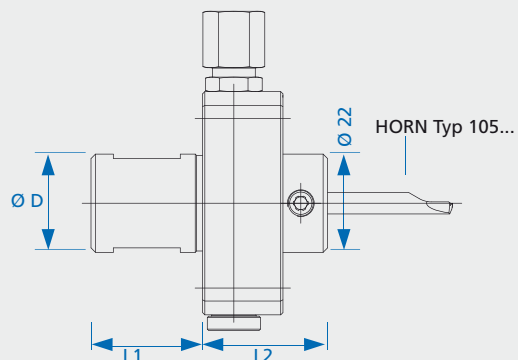
**GRAF Innendreh-Halter  
für HORN-Schneidplatten Typ 105 mit Innenkühlung**

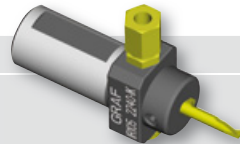
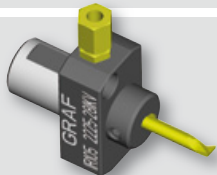
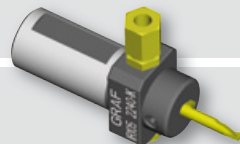
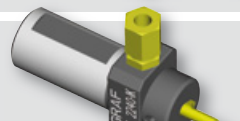
GRAF boring shank holder  
for HORN inserts type 105 with coolant supply

GRAF porte-outil pour alésage  
pour insert HORN type 105 avec raccord pour canal d'arrosage



Kühlmittelanschluss  
M 8x1

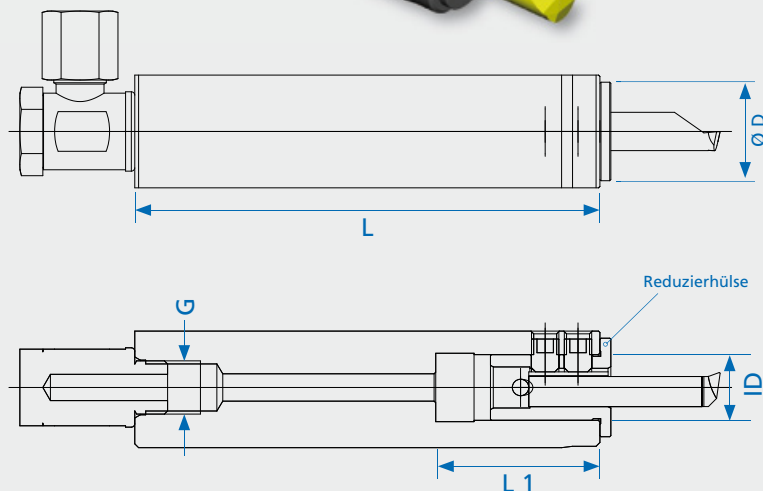


	Bestell-Nr.	Ø D	L 1	L 2
 CITIZEN- Maschinen	IR 105.3440.IKV	3/4"	40	23
	IR 105.1060.IKV	1"	60	23
 STAR- Maschinen	IR 105.1640.IKV	16	40	23
	IR 105.2240.IKV	22	40	23
	IR 105.2225-28.IKV	22	25	28
	IR 105.2225-40.IKV	22	25	40
 TORNOS- Maschinen	IR 105.2040.IKV	20	40	23
	IR 105.2560.IKV	25	60	23
 HANWA- Maschinen	IR 105.2040.IKV	20	40	23
	IR 105.2560.IKV	25	60	23

**GRAF Bohrstangenhalter für ISCAR Schneidplatten  
Typ Picco mit Innenkühlung**

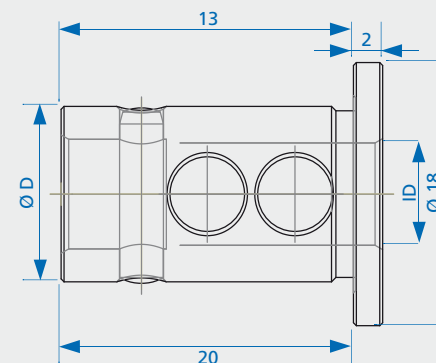
GRAF boring bar holder for ISCAR inserts  
type Picco with coolant supply

GRAF... pour insert ISCAR type Picco  
avec pour canal d'arrosage



	Bestell-Nr.	Ø D	L	L1	ID	G
CITIZEN- Maschinen	BS 75.34100.12	3/4"	100	30	12	G1/8"
	BS 75.10100.12	1"	100	30	12	G1/4"
STAR- Maschinen	BS 75.2285.12	22	85	30	12	G1/8"
	BS 75.22130.12	22	130	30	12	G1/8"
TORNOS- Maschinen	BS 75.2080.12	20	80	30	12	G1/8"
HANWA- Maschinen	BS 75.2080.12	20	80	30	12	G1/8"
	BS 75.25100.12	25	100	30	12	G1/8"

**Reduzierhülsen für Bohrstangenhalter Typ Picco**  
Adapter sleeve for boring bar holder type Picco  
Douille de Réduction pour porte outil type Picco



Bestell-Nr.	D	ID
RH 12 0420	12	4
RH 12 0520	12	5
RH 12 0620	12	6
RH 12 0720	12	7
RH 12 0820	12	8

## Zubehör und Ersatzteile

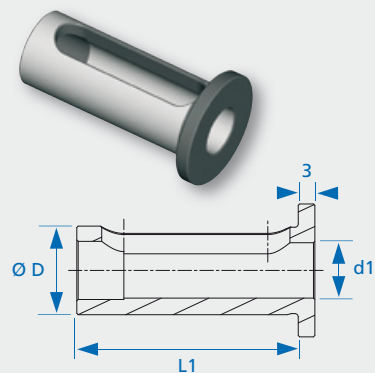
Accessories and spare parts

Accessoires et pièces de rechange

### Reduzierhülsen

Adapter sleeve

Douille de réduction

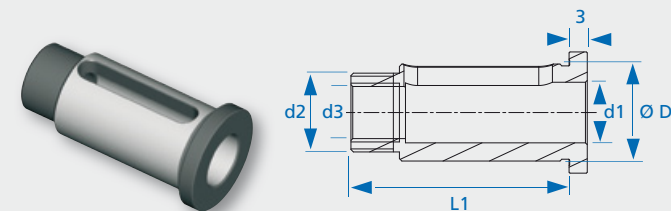


Bestell-Nr.	Ø D	Ø d1	L 1
RH 10 0315 24	10	3,15	30
RH 10 04 24	10	4	30
RH 10 05 24	10	5	30
RH 10 06 24	10	6	30
RH 10 063 24	10	6,3	30
RH 10 08 24	10	8	30
RH 10 105 24	10	Horn Typ 105...	30
RH 16 06 40	16	6	40
RH 16 08 40	16	8	40
RH 16 10 40	16	10	40
RH 16 12 40	16	12	40
RH 16 14 40	16	14	40
RH 034 0840	3/4"	8	40
RH 034 1040	3/4"	10	40
RH 034 1240	3/4"	12	40
RH 034 1640	3/4"	16	40
RH 20 0840	20	8	40
RH 20 1040	20	10	40
RH 20 1140	20	11	40
RH 20 1240	20	12	40
RH 20 1640	20	16	40
RH 20 1840	20	18	40
RH 16 22 30-SR32	22	16	40
RH 010 0850	1"	8	50
RH 010 1050	1"	10	50
RH 010 1250	1"	12	50
RH 010 1650	1"	16	50
RH 010 2050	1"	20	50

### Reduzierhülsen mit Innenkühlung

Adapter sleeve with inner cooling

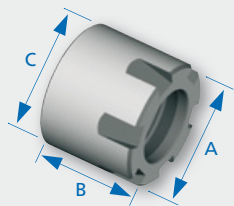
Douille de réduction pour canal d'arrosage



Bestell-Nr.	Ø D	d1	d2	d3	L 1
RH 10 0315 24-IK	10	3,15	M10 x 1	M7 x 1	30
RH 10 03 24-IK	10	3	M10 x 1	M7 x 1	30
RH 10 04 24-IK	10	4	M10 x 1	M7 x 1	30
RH 10 05 24-IK	10	5	M10 x 1	M7 x 1	30
RH 10 06 24-IK	10	6	M10 x 1	M7 x 1	30
RH 10 063 24-IK	10	6,3	M10 x 1	M7 x 1	30
RH 10 08 24-IK	10	8	M10 x 1	M7 x 1	30
RH 10 105 24-IK	10	Horn Typ 105...	M10 x 1	M7 x 1	30
RH 16 0315 30-IK	16	3,15	M13 x 0,75	G 1/8"	40
RH 16 03 30-IK	16	3	M13 x 0,75	G 1/8"	40
RH 16 04 30-IK	16	4	M13 x 0,75	G 1/8"	40
RH 16 05 30-IK	16	5	M13 x 0,75	G 1/8"	40
RH 16 06 30-IK	16	6	M13 x 0,75	G 1/8"	40
RH 16 063 30-IK	16	6,3	M13 x 0,75	G 1/8"	40
RH 16 0105 30-IK	16	Horn Typ 105...	M13 x 0,75	G 1/8"	40
RH 16 08 30-IK	16	8	M13 x 0,75	G 1/8"	40
RH 16 10 30-IK	16	10	M13 x 0,75	G 1/8"	40
RH 16 12 30-IK	16	12	M13 x 0,75	G 1/8"	40

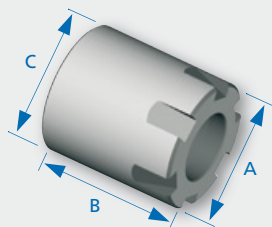
**Zubehör und Ersatzteile**  
Accessories and spare parts  
Accessoires et pièces de rechange

**ER-M Spannmutter / ER-M**  
chucking nut / ER-M  
Bague de serrage



Bestell-Nr.	A	B	C
62 000 08-ER 8	12	10,8	M 10 x 0,75
62 000 11-ER 11	16	12	M 13 x 0,75
62 000 16-ER 16	22	18	M 19 x 1
62 000 20-ER 20	28	19	M 24 x 1
62 000 25-ER 25	35	20	M 30 x 1

**ER-MA Spannmutter abdichtbar**  
ER-MA Chucking nut sealed  
ER-MA Bague de serrage

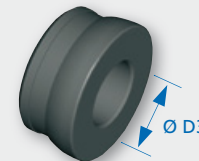


Bestell-Nr.	A	B	C
62 600 16-ER 16	22	24,5	M 19 x 1
62 600 20-ER 20	28	26,5	M 24 x 1
62 600 25-ER 25	35	27,5	M 30 x 1

**Dichtscheiben für abdichtbare**  
Spannmutter ER-MA ...

Sealing ring for chucking nut  
ER-MA ...

Rondelle d'étanchéité pour  
bague de serrage ER-MA ...



Bestell-Nr.	Ø D3	
64 600 16-ER 16	3 - 10 kompletter Satz	0,5 mm steigend
64 600 20-ER 20	3 - 13 kompletter Satz	0,5 mm steigend
64 600 25-ER 25	3 - 16 kompletter Satz	0,5 mm steigend

Die Dichtscheiben können auch einzeln bestellt werden,  
Beispiel:

Sealing disk can be ordered separately, Example:

Les rondelles d'étanchéité peuvent être commandées  
séparément, Exemple:

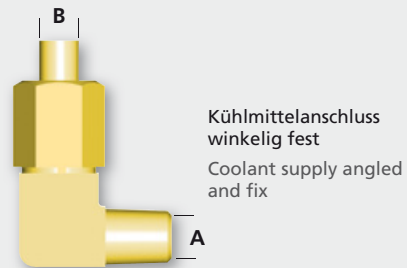
Bestell-Nr.	Ø von - bis
ER 16 64 600 16 6-5,5	6 - 5,5

**Zubehör und Ersatzteile**  
Accessories and spare parts  
Accessoires et pièces de rechange

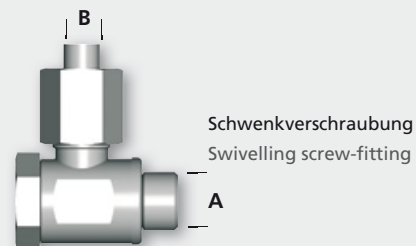
**Kühlmittelanschluss Standard**  
Coolant supply  
Raccord pour canal d'arrosage



Bestell-Nr.	A	B
004.00.19	M 8 x 1	GE 6 LL
004.00.14	1/8"	GE 6 LR
004.00.15	1/4"	GE 10 LR

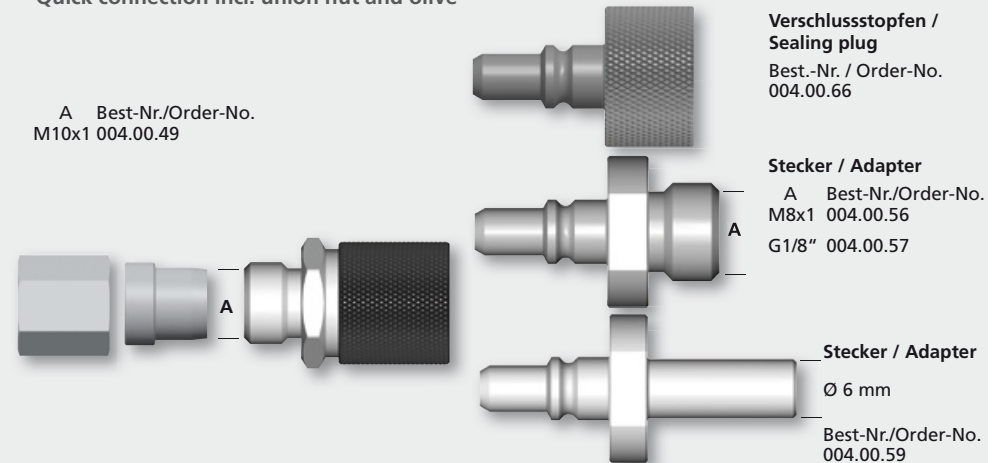


Bestell-Nr.	A	B
004.00.22	M 8 x 1	WE 6 LL
004.00.33	1/8"	WE 6 LR
004.00.34	1/4"	WE 10 LR



Bestell-Nr.	A	B
004.00.16	1/8"	SBD 6 LR
004.00.18	1/4"	SBD 10 LR

**Schnellkupplung inkl. Überwurfmutter und Schneidring**  
Quick connection incl. union nut and olive

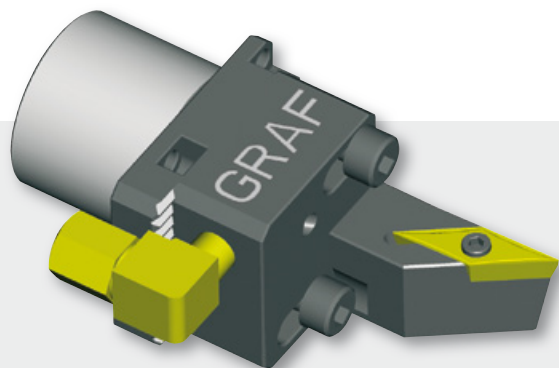


**Flex-Leitungen**  
Flexible tubes

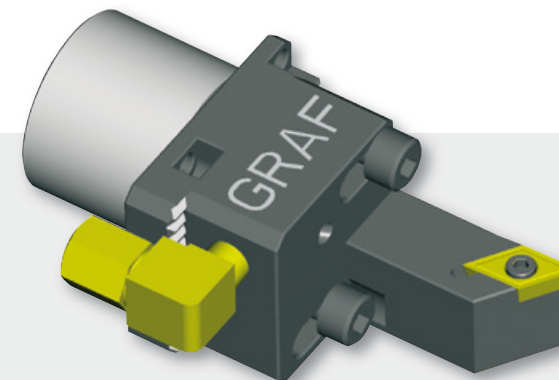


Best-Nr.	Bezeichnung	Ø	Länge
21-1109	SMS-A DN 2x100 bds. HE-S 06-ACF	6	100
21-1111	SMS-A DN 2x150 bds. HE-S 06-ACF	6	150
21-1112	SMS-A DN 2x200 bds. HE-S 06-ACF	6	200
21-1113	SMS-A DN 2x250 bds. HE-S 06-ACF	6	250
21-1114	SMS-A DN 2x300 bds. HE-S 06-ACF	6	300
21-1115	SMS-A DN 2x400 bds. HE-S 06-ACF	6	400
21-1116	SMS-A DN 2x500 bds. HE-S 06-ACF	6	500

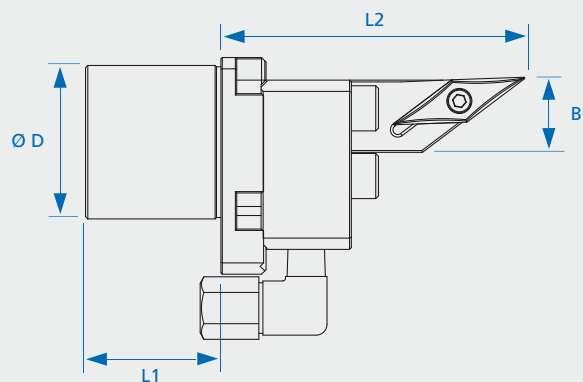
**GRAF Drehhalter für die Querbearbeitung mit Innenkühlung**  
**GRAF holder for cross-machining with coolant supply**  
**GRAF porte-outil pour usinage transversal avec raccord pour canal d'arrosage**



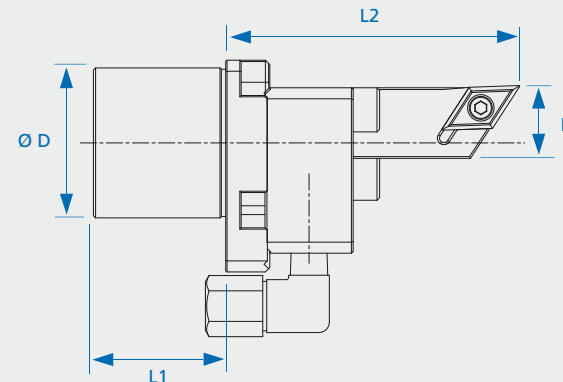
für Wendeplatte VC...16 04...  
 indexable insert VC...16 04...  
 plaquette réversible VC...16 04...



für Wendeplatte DC...11 T3...  
 indexable insert DC...11 T3...  
 plaquette réversible DC...11 T3...



Verstellbereich  
24 mm

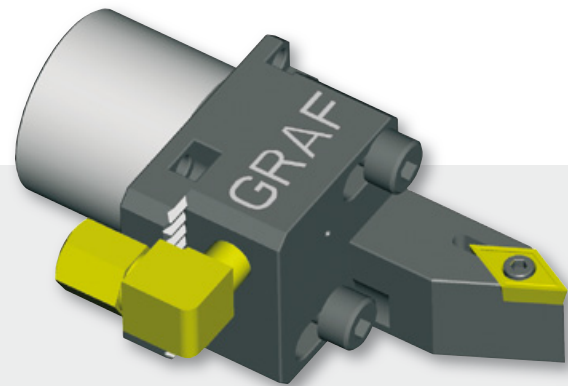


Verstellbereich  
24 mm

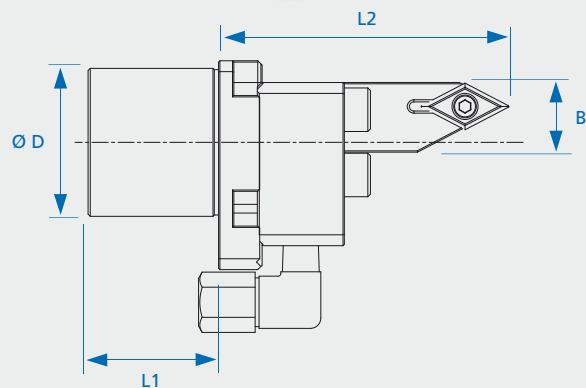
Bestell-Nr.	Ø D	L1	L2	B
Q R01 034 030	34	30	67	16,5

Bestell-Nr.	Ø D	L1	L2	B
Q R02 034 030	34	30	67	16,5

**GRAF Drehhalter für die Querbearbeitung mit Innenkühlung**  
**GRAF holder for cross-machining with coolant supply**  
**GRAF porte-outil pour usinage transversal avec raccord pour canal d'arrosage**



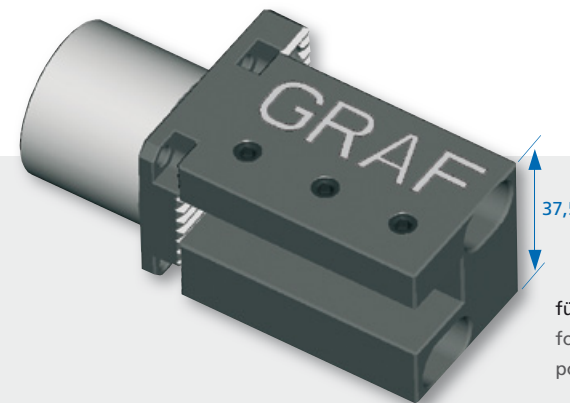
für Wendeplatte DC...11 T3...  
 indexable insert DC...11 T3...  
 plaquette réversible DC...11 T3...



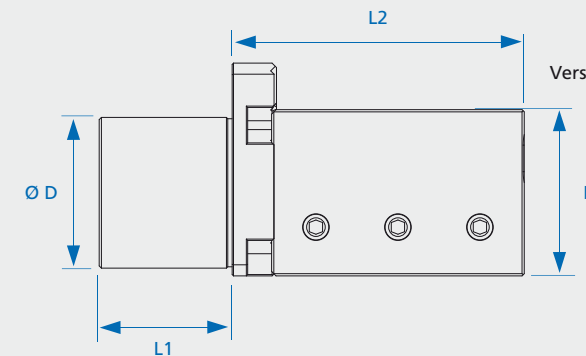
Verstellbereich  
24 mm

Bestell-Nr.	Ø D	L1	L2	B
Q R04 034 030	34	30	67	16

**GRAF Drehhalter für die Querbearbeitung**  
**GRAF holder for cross-machining**  
**GRAF porte-outil pour usinage transversal**



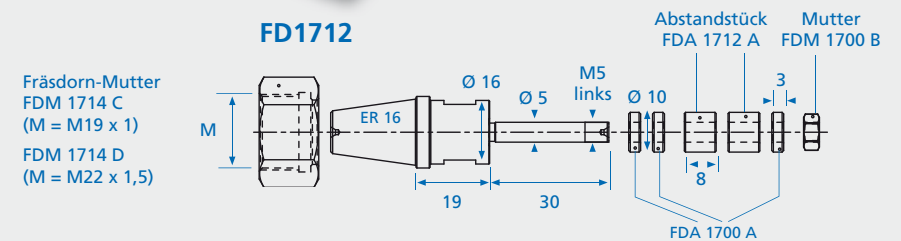
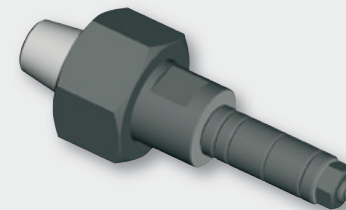
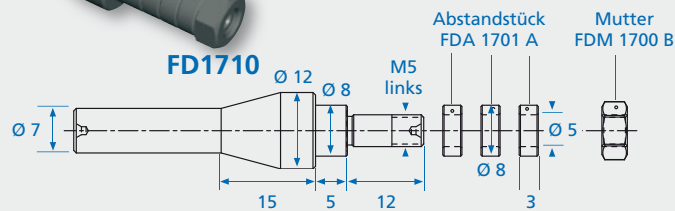
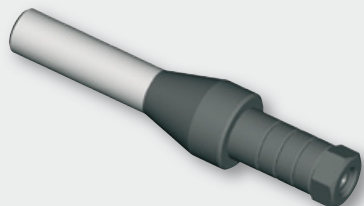
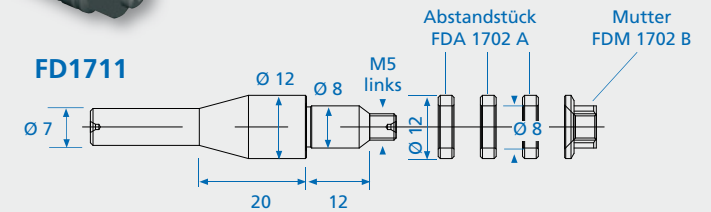
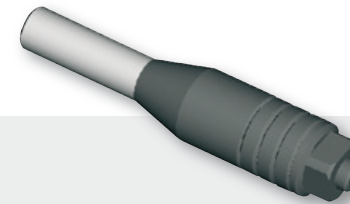
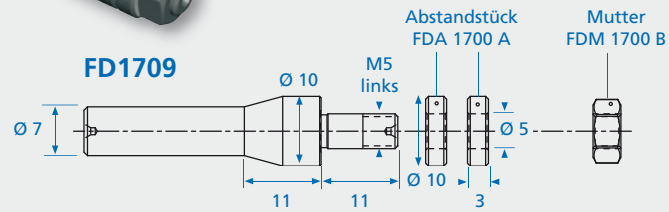
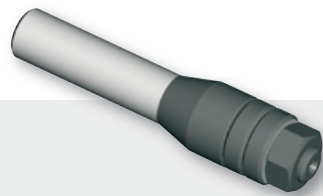
für Halter 12 x 12  
 for holder 12 x 12  
 pour porte-outil 12 x 12



Verstellbereich 24 mm

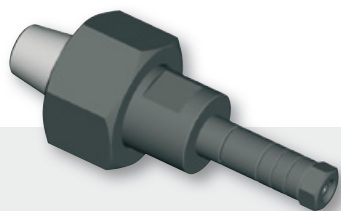
Bestell-Nr.	Ø D	L1	L2	B
Q N05 034 030	34	30	66	37,5

**GRAF Fräsdorne**  
**GRAF milling arbors**  
**GRAF arbres porte fraise**



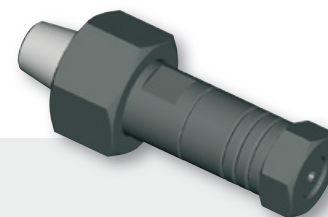
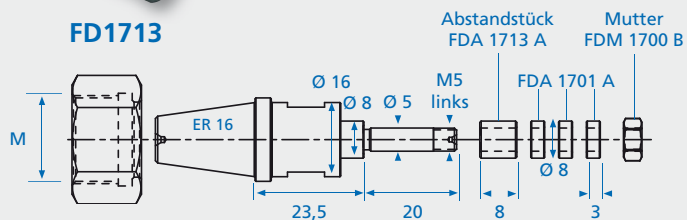


**GRAF Fräsdorne**  
**GRAF milling arbors**  
**GRAF arbres porte fraise**



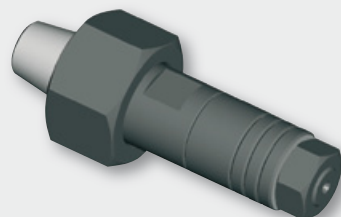
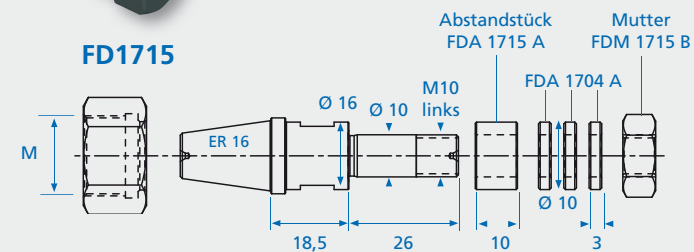
**FD1713**

Fräsdorn-Mutter  
FDM 1714 C  
(M = M19 x 1)  
FDM 1714 D  
(M = M22 x 1,5)



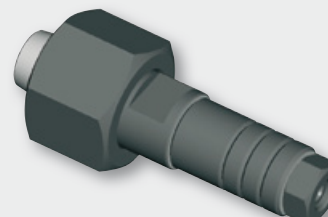
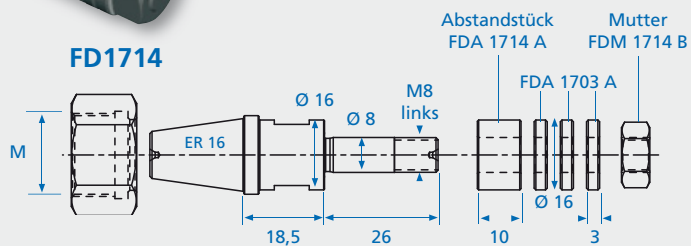
**FD1715**

Fräsdorn-Mutter  
FDM 1714 C  
(M = M19 x 1)  
FDM 1714 D  
(M = M22 x 1,5)



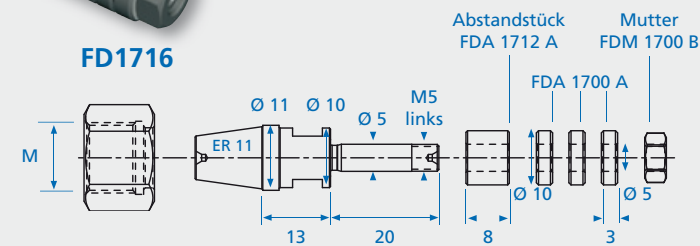
**FD1714**

Fräsdorn-Mutter  
FDM 1714 C  
(M = M19 x 1)  
FDM 1714 D  
(M = M22 x 1,5)

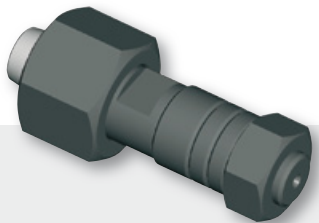


**FD1716**

Fräsdorn-Mutter  
FDM 1716 C  
(M = M13 x 0,75)  
FDM 1716 D  
(M = M14 x 0,75)

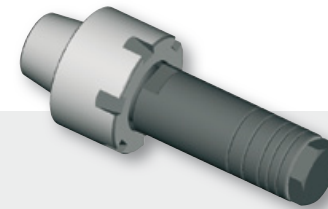
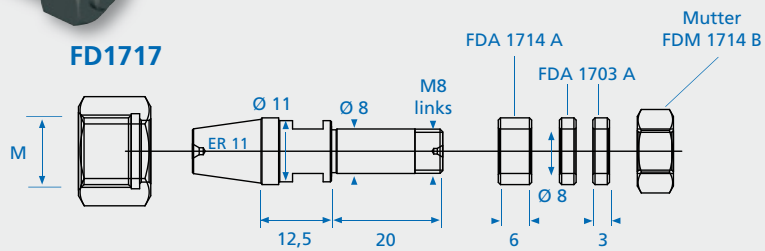


**GRAF Fräsdorne**  
**GRAF milling arbors**  
**GRAF arbres porte fraise**

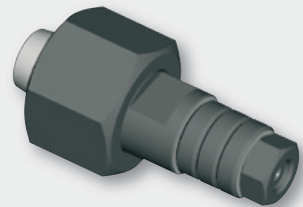
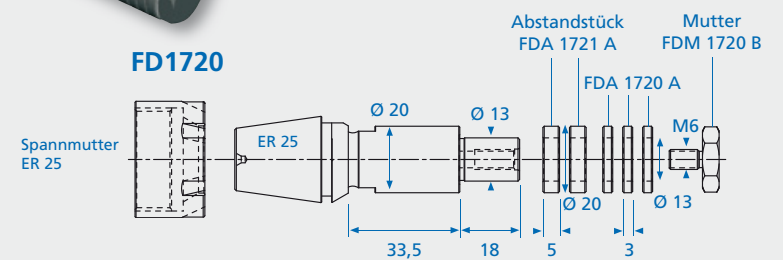


**FD1717**

Fräsdorn-Mutter  
FDM 1716 C  
(M = M13 x 0,75)  
FDM 1716 D  
(M = M14 x 0,75)

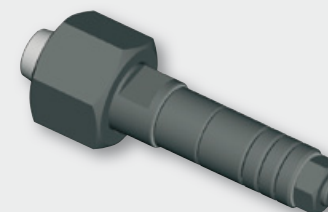
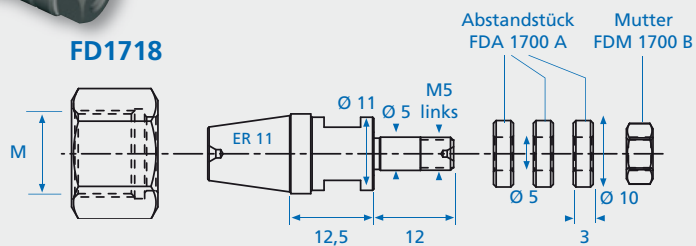


**FD1720**



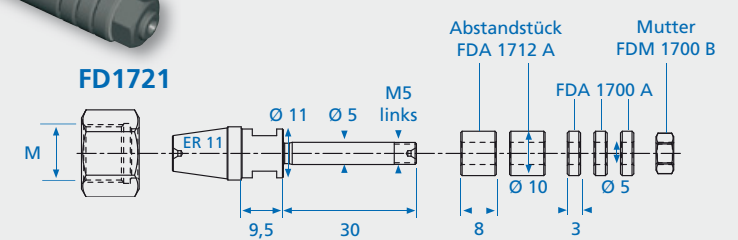
**FD1718**

Fräsdorn-Mutter  
FDM 1716 C  
(M = M13 x 0,75)  
FDM 1716 D  
(M = M14 x 0,75)

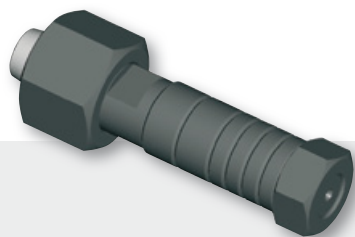


**FD1721**

Fräsdorn-Mutter  
FDM 1716 C  
(M = M13 x 0,75)  
FDM 1716 D  
(M = M14 x 0,75)

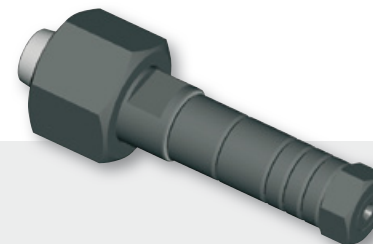
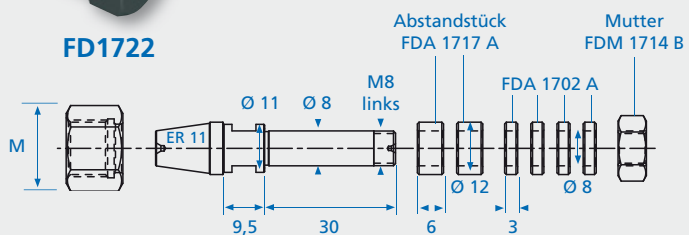


**GRAF Fräsdorne**  
**GRAF milling arbors**  
**GRAF arbres porte fraise**



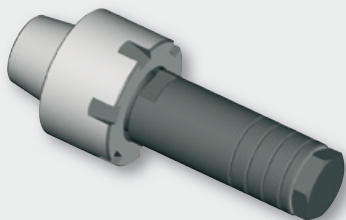
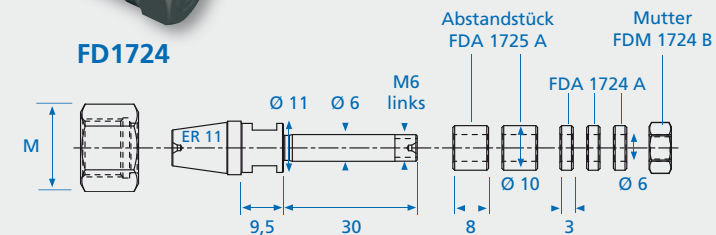
**FD1722**

Fräsdorn-Mutter  
FDM 1716 C  
(M = M13 x 0,75)  
FDM 1716 D  
(M = M14 x 0,75)



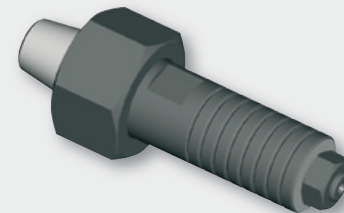
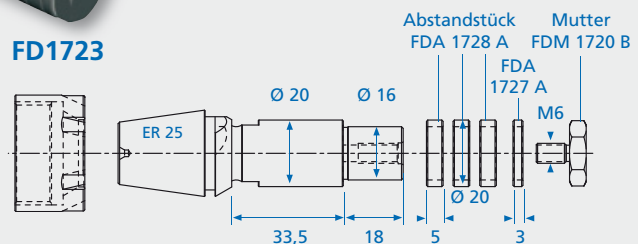
**FD1724**

Fräsdorn-Mutter  
FDM 1716 C  
(M = M13 x 0,75)  
FDM 1716 D  
(M = M14 x 0,75)



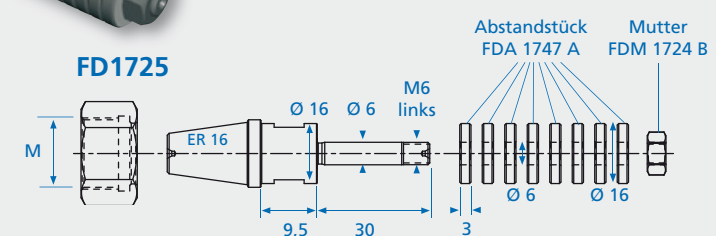
**FD1723**

Spannmutter  
ER 25

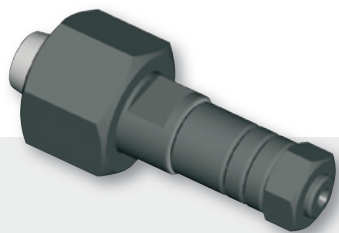


**FD1725**

Fräsdorn-Mutter  
FDM 1714 C  
(M = M19 x 1)  
FDM 1714 D  
(M = M22 x 1,5)

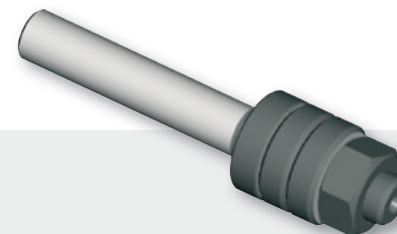
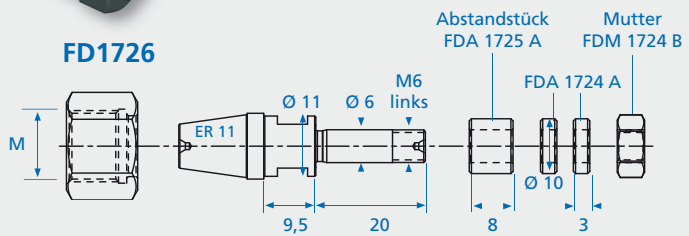


**GRAF Fräsdorne**  
**GRAF milling arbors**  
**GRAF arbres porte fraise**

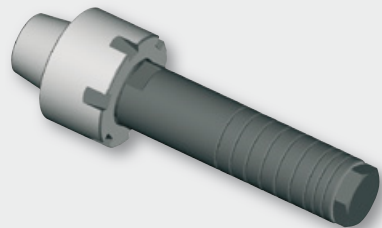
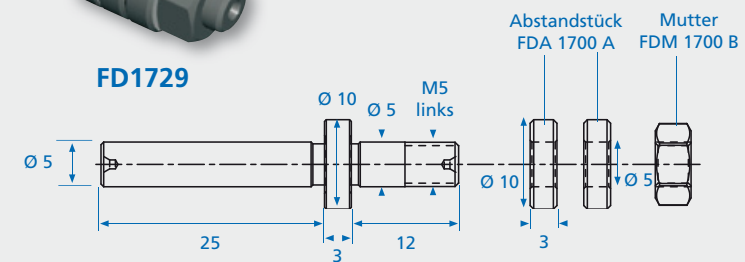


**FD1726**

Fräsdorn-Mutter  
FDM 1716 C  
(M = M13 x 0,75)  
FDM 1716 D  
(M = M14 x 0,75)

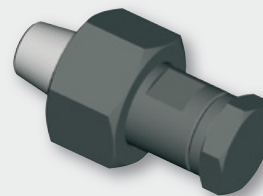
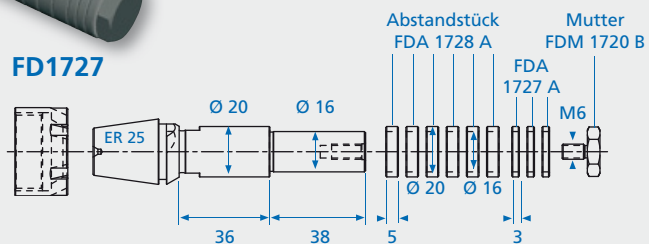


**FD1729**



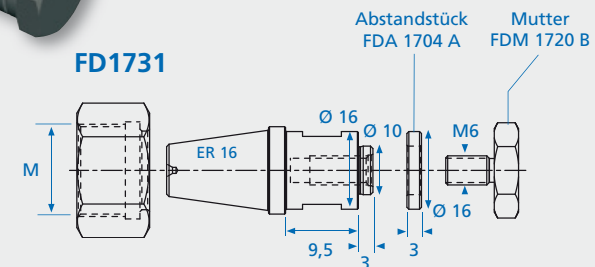
**FD1727**

Spannmutter  
ER 25

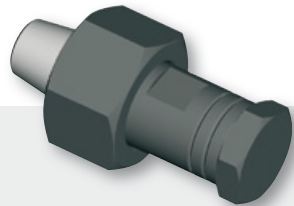


**FD1731**

Fräsdorn-Mutter  
FDM 1714 C  
(M = M19 x 1)  
FDM 1714 D  
(M = M22 x 1,5)

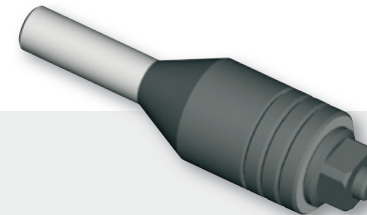
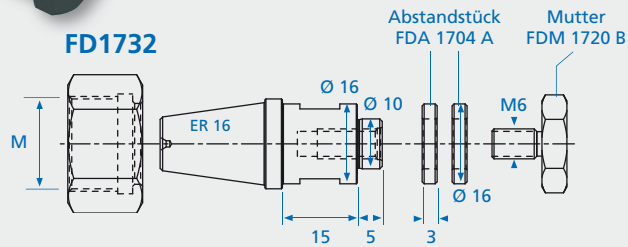


**GRAF Fräsdorne**  
**GRAF milling arbors**  
**GRAF arbres porte fraise**

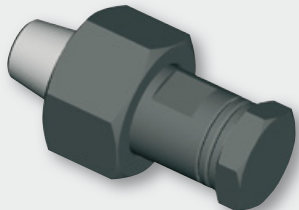
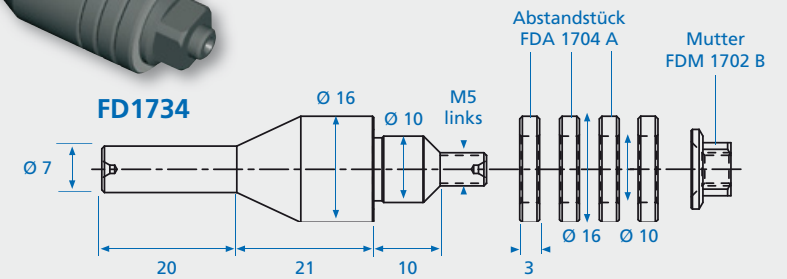


**FD1732**

Fräsdorn-Mutter  
FDM 1714 C  
(M = M19 x 1)  
FDM 1714 D  
(M = M22 x 1,5)

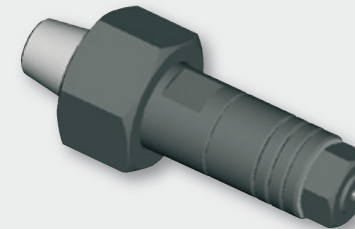
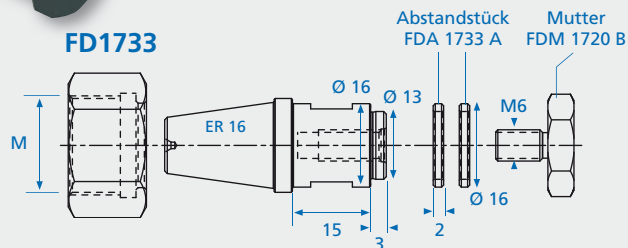


**FD1734**



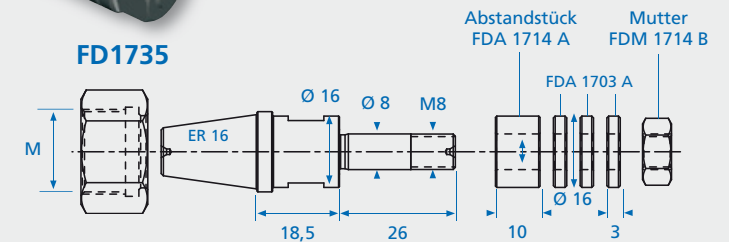
**FD1733**

Fräsdorn-Mutter  
FDM 1714 C  
(M = M19 x 1)  
FDM 1714 D  
(M = M22 x 1,5)

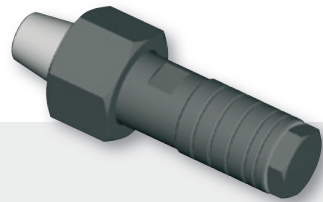


**FD1735**

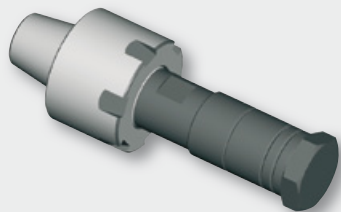
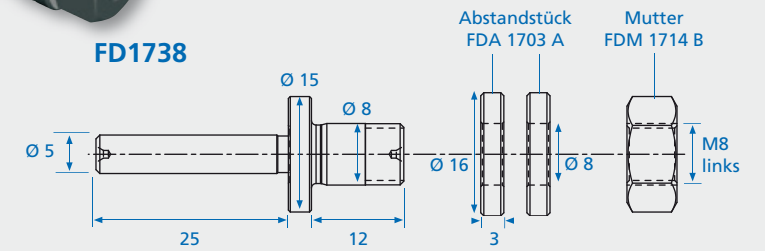
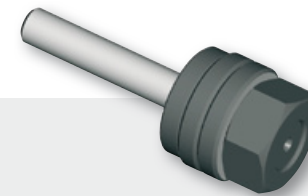
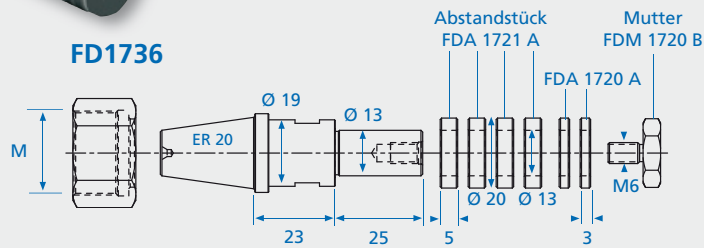
Fräsdorn-Mutter  
FDM 1714 C  
(M = M19 x 1)  
FDM 1714 D  
(M = M22 x 1,5)



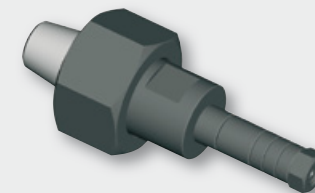
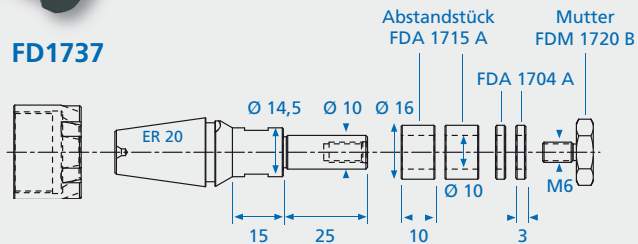
**GRAF Fräsdorne**  
**GRAF milling arbors**  
**GRAF arbres porte fraise**



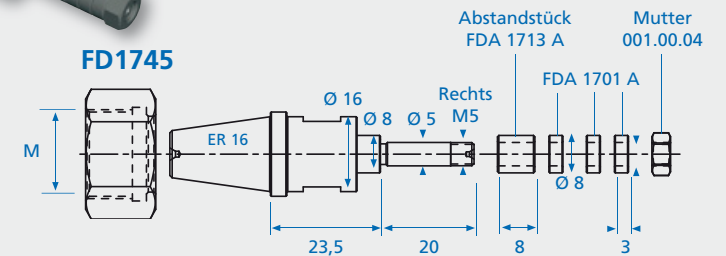
Fräsdorn-Mutter  
FDM 1736 B  
(M = M24 x 1)  
FDM 1736 C  
(M = M25 x 1,5)



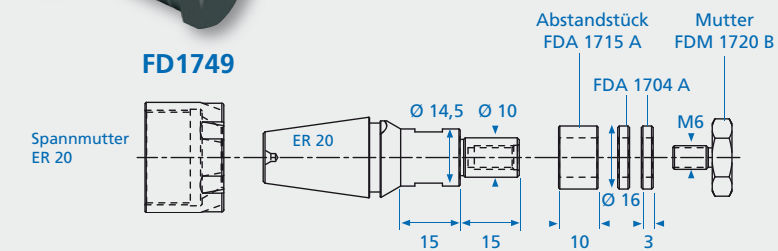
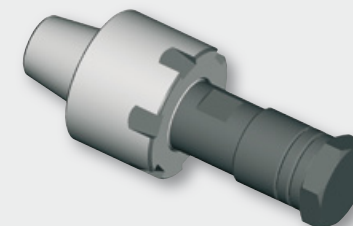
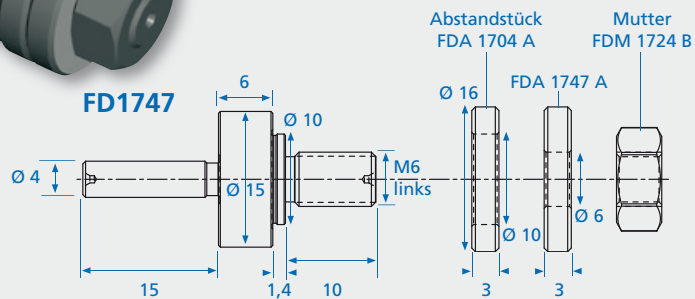
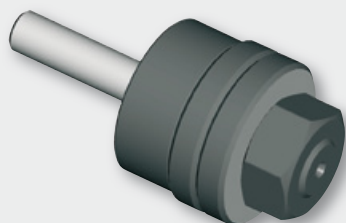
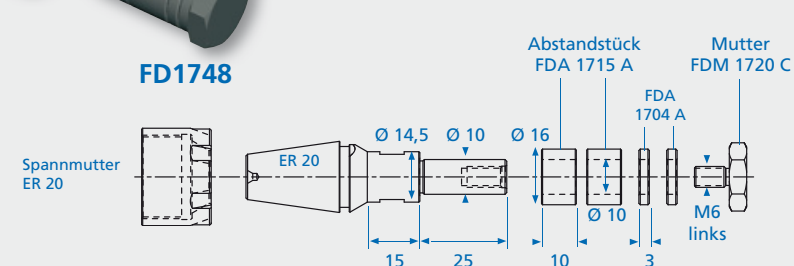
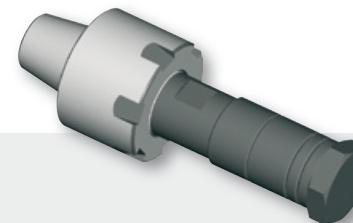
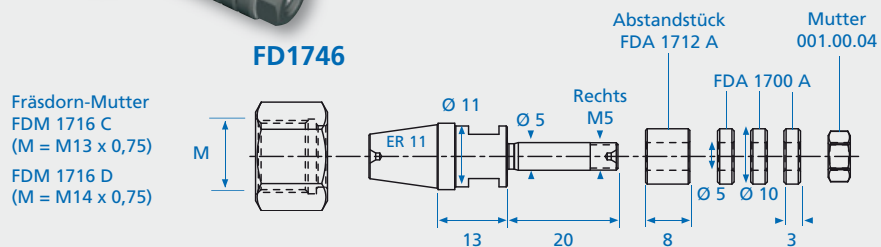
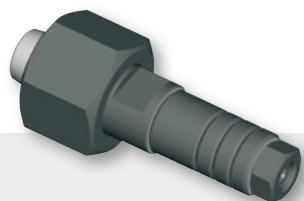
Spannmutter  
ER 20



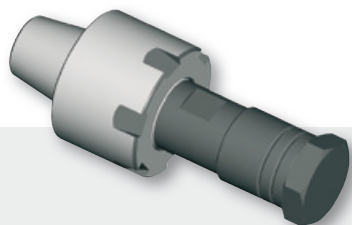
Fräsdorn-Mutter  
FDM 1714 C  
(M = M19 x 1)  
FDM 1714 D  
(M = M22 x 1,5)



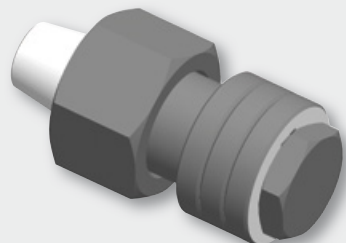
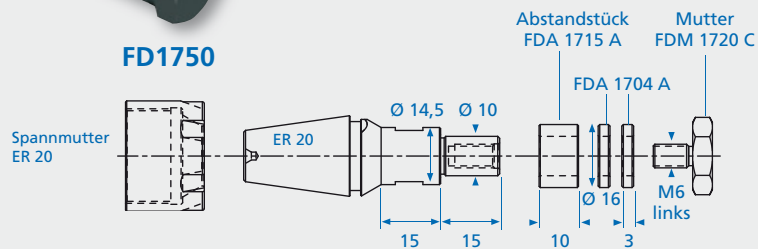
**GRAF Fräsdorne**  
**GRAF milling arbors**  
**GRAF arbres porte fraise**



**GRAF Fräsdorne**  
**GRAF milling arbors**  
**GRAF arbres porte fraise**

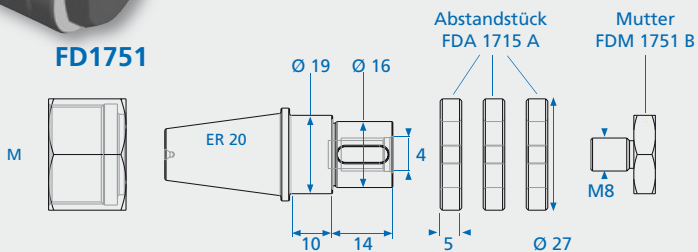


**FD1750**

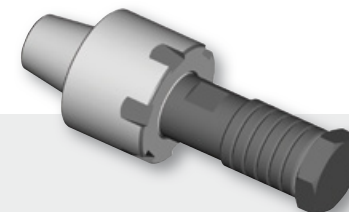


**FD1751**

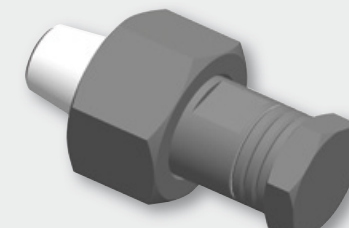
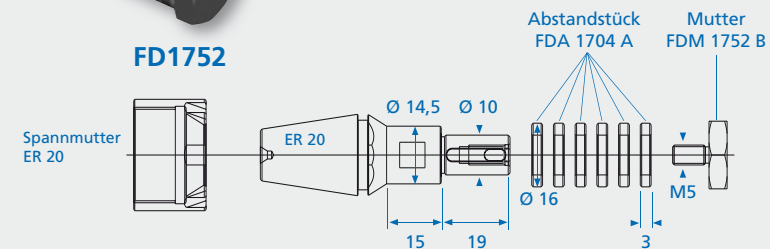
Fräsdorn-Mutter  
FDM 1736 B  
(M = M24 x 1)  
FDM 1736 C  
(M = M25 x 1,5)



**GRAF Fräsdorne**  
**GRAF milling arbors**  
**GRAF arbres porte fraise**

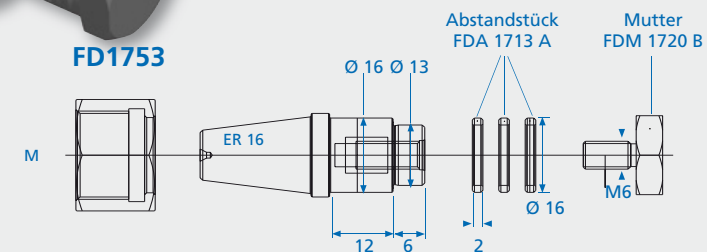


**FD1752**



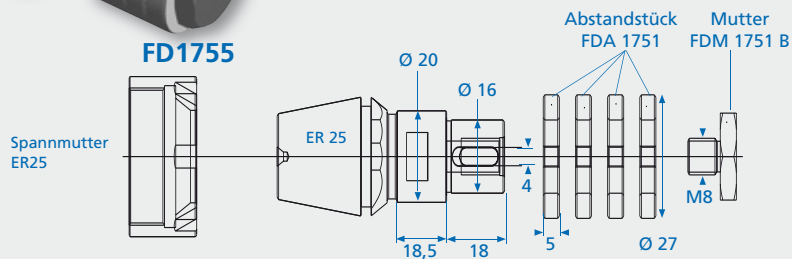
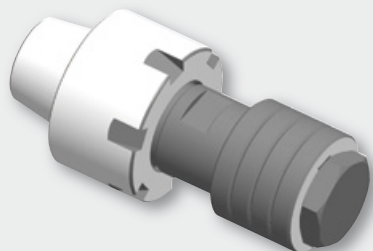
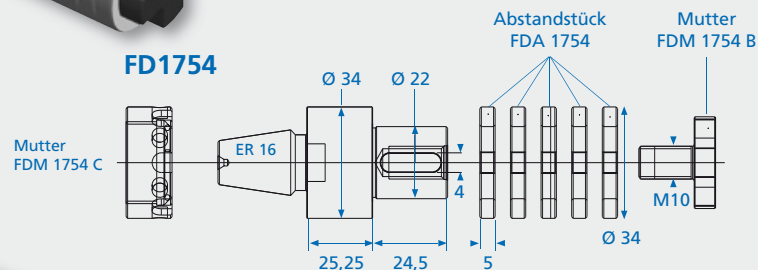
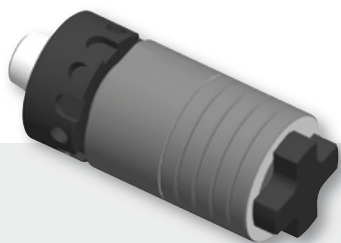
**FD1753**

Fräsdorn-Mutter  
FDM 1714 C  
(M = M19 x 1)  
FDM 1714 D  
(M = M22 x 1,5)

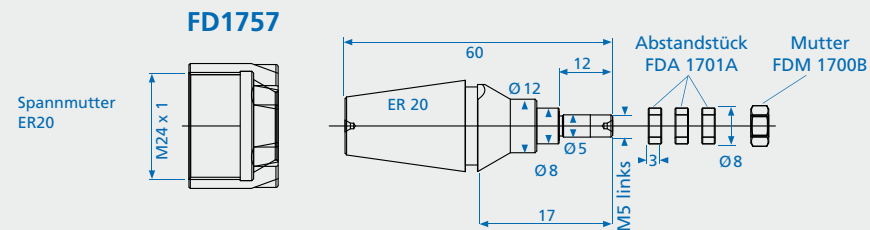
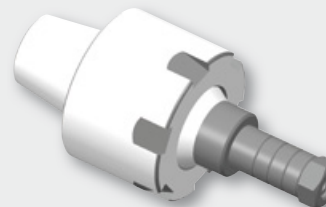
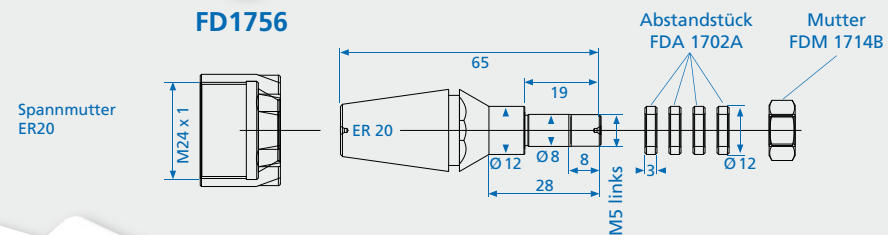
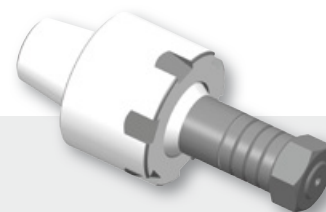




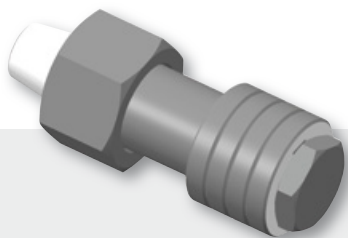
**GRAF Fräsdorne**  
**GRAF milling arbors**  
**GRAF arbres porte fraise**



**GRAF Fräsdorne**  
**GRAF milling arbors**  
**GRAF arbres porte fraise**

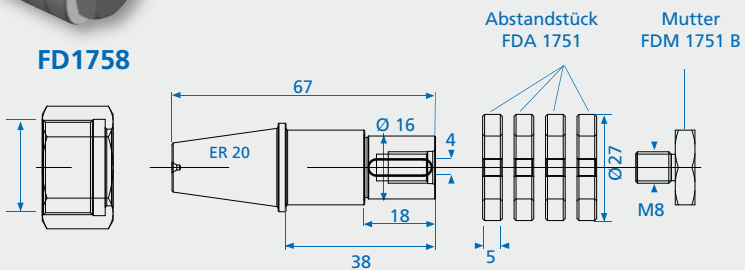


**GRAF Fräsdorne**  
GRAF milling arbors  
GRAF arbres porte fraise

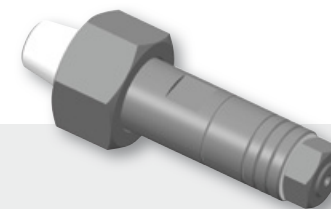


**FD1758**

Fräsdorn-Mutter  
FDM 1736 B  
(M = M24 x 1)  
FDM 1736 C  
(M = M25 x 1,5)

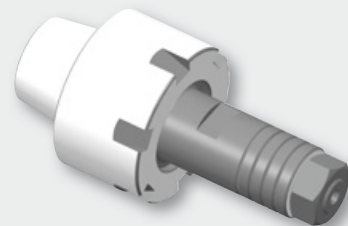
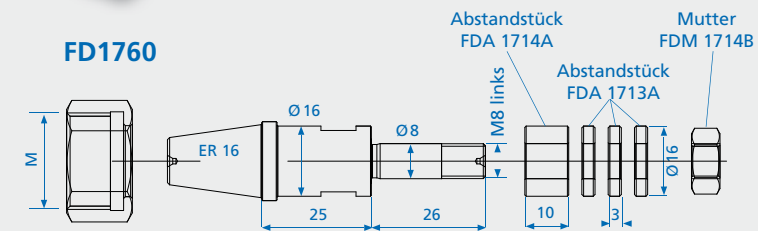


**GRAF Fräsdorne**  
GRAF milling arbors  
GRAF arbres porte fraise



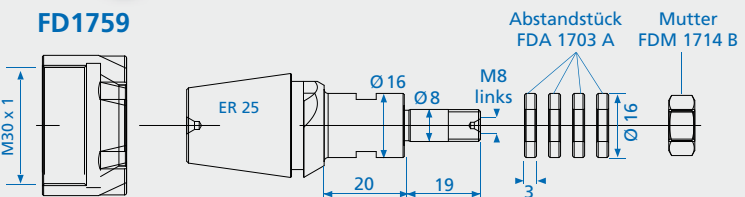
**FD1760**

Fräsdorn-Mutter  
FDM 1714 C  
(M=M22 x 1,5)  
FDM 1714 D  
(M=M22 x 1,5)



**FD1759**

Spannmutter  
ER25



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