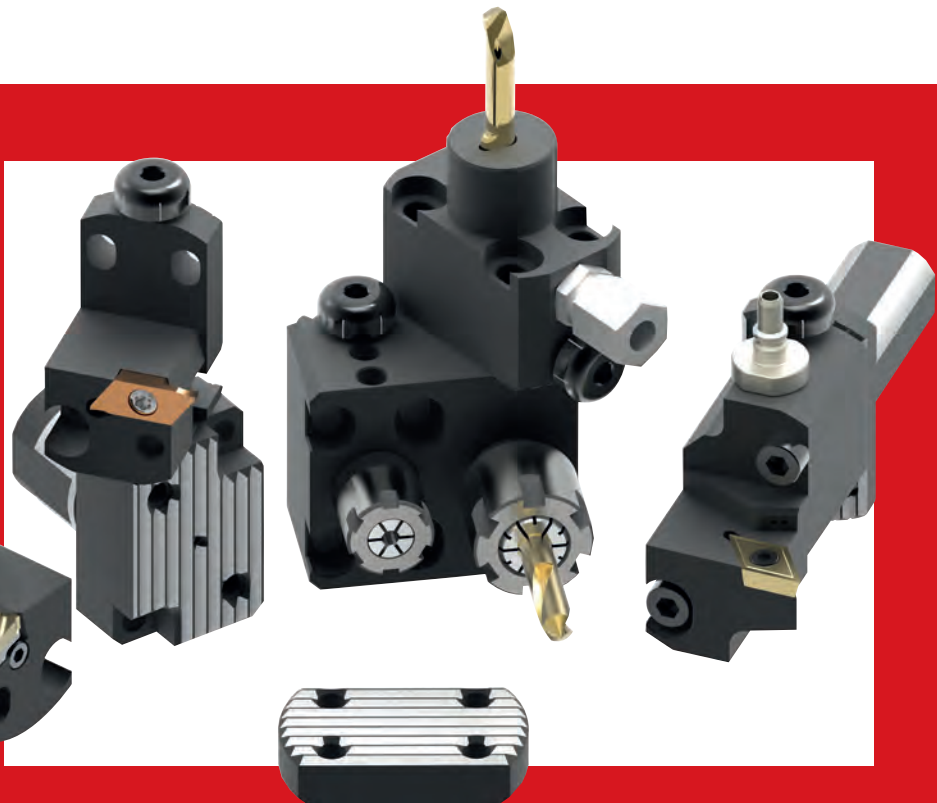


HÖHENVERSTELLBARE RÜCKSEITENBEARBEITUNGS-WERKZEUGE

HIGH ADJUSTABLE
BACK WORKING TOOLS



GRAF-2018-02

GRAF production training

History and Facts about the GRAF Company

GRAF was established 1983 in Dietingen-Böhringen. It's close to Rottweil in the Black Forest and about 60 km away from HORN in Tübingen.



GRAF was worldwide one of the first company, which specialized in the development and production of turret plate holder, back working- and round shank tools for CNC swiss type machine and modular tooling system for multi spindle machine.

In the meantime GRAF had several patented tool-systems and a lot of new tool systems for swiss type and multi spindle machine. The focus for the development and production for the GRAF tools are holder with inner cooling system.



In the year 2000 GRAF moved into the building. And in the year 2008 GRAF need additional production area and built a new hall with more than 400 qm² for the production. GRAF produce the complete tool program in the house. Only the surface finishing goes outside (tempering and black finishing). GRAF have Hermle milling machine and DMG and Mori Seiki CNC machine centre.



Since more as 10 years GRAF works close together with HORN. Together we had developed tools for the INDEX multi spindle machine or other circular part off tools for multispindle machine or tools for swiss type machine.



GRAF
INDUSTRIETECHNIK

Schieberventil-
Weiche für
schweröl- und
schmierölbearbeitung mit
Körnerkühlschicht
Körnerkühlschicht
Körnerkühlschicht

*Order now! only for
customers with
machines and high
volume requirements
only as direct supply*

Für HORN-Druckventile und HORN-Druckventile Typ 3 100
Für HORN-Druckventile Typ 3 100 und HORN-Druckventile Typ 3 100

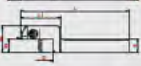
SYNTEC
Effiziente system
benefits of Syntec

HORN
INDUSTRIETECHNIK

GRAF
INDUSTRIETECHNIK

Außen- / Inneneintrichterker Typ HORN Typ 105 und 5274
External- / Internal turning holder type HORN type 105 and 5274

Anwendungsbereich: Inneneintrichterker
Range of application: internal turning tools

Teil-Nummer Part Number	Bezeichnung Description	L	B	H	W	W ₁	W ₂	W ₃	Ein- / Ausgehende Bohrung
14.080	AS-20-1 105-48	63	12	18	6,3	9,5	16	18	48
14.081	AS-20-10 105-60	105	16	18	10	16	20	20	60
14.082	AS-20-15 105-90	150	20	20	15	20	25	25	90

Umsatz: Typ 80
 mm / 1/4"

Klassische Spezifikationen

4120 00722.9

*Bitte wählen Sie die Länge
 Please select the length*

More as 2.000 different tools in the delivery program

The production and delivery programme of GRAF Product range CNC Swiss type machine High adjustable back working tools



HÖHENVERSTELLBARE
RÜCKSEITENBEARBEITUNGS-WERKZEUGE
HIGH ADJUSTABLE
BACK WORKING TOOLS



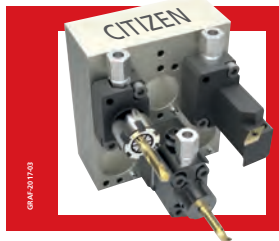
Back working tools fixed



RÜCKSEITENWERKZEUGE FÜR
STAR LANGDREHAUTOMATEN
BACKWORKING TOOLS FOR
STAR AUTOMATIC LATHE



RÜCKSEITENWERKZEUGE FÜR
CITIZEN LANGDREHAUTOMATEN
BACKWORKING TOOLS FOR
CITIZEN AUTOMATIC LATHE



RÜCKSEITENWERKZEUGE FÜR
HANWHA LANGDREHAUTOMATEN
BACKWORKING TOOLS FOR
HANWHA AUTOMATIC LATHE



High performance tooling (Turret plate holder and insert)



HOCHLEISTUNGS-WERKZEUGE
FÜR DREHAUTOMATEN
HIGH PERFORMANCE TOOLING
FOR AUTOMATIC LATHES



Round shank tools



RUNDSCHAFT-WERKZEUGE
ROUND SHANK TOOLS
OUTILS AVEC QUEUE CYLINDRIQUE



Coolant routing



PRODUKTINFORMATION
KÜHLMITTELFÜHRUNG
PRODUCT INFORMATION
COOLANT ROUTING



Milling weldon



Produktneuheit Fräsweldon
Product news Milling weldon



Product range Multi spindle machine



WERKZEUGE FÜR
INDEX MEHRSPINDEL-DREHAUTOMATEN
TOOLS FOR
INDEX MULTI-SPINDLE MACHINE



Schwenkbohr-
spindelgehäuse für
Mehrschneid- und
Konturbohrmaschinen mit
eigener Kühlmittelzufuhr
Großer get-on box for
multipole tools with
coolant inlet and high
pressure coolant supply

Für GRAF Schwenkbohrmaschinen und HORN Schwenkspindel Typ 5 100
For GRAF also rotating off tools and HORN turret type 5 100

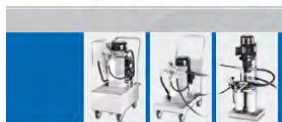


Springe-Effekte nutzen
Benefits of Springy



Product range High Pressure Pumps

MOBILE HOCHDRUCKSTATIONEN
MOBILE HIGH PRESSURE UNITS



Ihr zuverlässiger Partner für hochwertige Werkzeugsysteme!
Your partner for high quality tools!



Stand 2018-02

INHALTSVERZEICHNIS/SUMMARY

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Holder for Holler inserts	3.34
Halter für Picco Schneidplatten	
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Platte / insert VB..11 03..	3.64
Platte / insert VC..11 03..	3.65
Platte / insert VC..13 03..	3.77
Platte / insert VC..16 04..	3.84
Platte / Insert VP..10 03..	3.85

INHALTSVERZEICHNIS/SUMMARY

Lang- und Axialdrehen /Turning and Face grooving

Halter für / holder for

Platte / insert Applitec Typ 300	3.86
Platte / insert CC..06 02..	3.89
Platte / insert CC..09 T3..	3.94
Platte / insert SC..07 03..	3.98
Platte / insert TC..	3.99
Platte / insert TP..	3.101
Platte / insert TN..	3.102

Formstechen / Gewindedrehen / Einstecken-Langdrehen

Forming /grooving / turning / threading

Halter für / holder for

Platte / insert ER 16../EL 16	3.103
Platte / insert HORN Typ 274	3.107
Einsatz für QER-12 (Quad-Cut)	3.109
Platte / insert HORN Typ 312	3.111
Platte / insert SCD/CSX/CS/VP CS/TP CS	3.117
Platte / insert GTMH 32	3.119
Platte / insert GRAF Typ G 02/ G 03/ G 04/ TPG/ VPG ...	3.120
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Calculating the Helix Angle	3.126
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Kühlmittelsysteme

Coolant system	3.128
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INHALTSVERZEICHNIS/SUMMARY

Rückseitenwerkzeug / Back working tool	Art.Nr. / Art.no.	Halter für / holder for	Seite/ Page
L01 / R01	12-0023 / 12-0022	DC.. 07 02..	3.50
L01IK / R01IK	12-0161 / 12-0160	DC.. 07 02..	3.51
L02 / R02	12-0025 / 12-0024	VC.. 11 03..	3.66
L02IK/R02IK	12-1310 / 12-0309	VC..11 09	3.65
L02XL/R02XL	12-1312 / 12-1311	VC..11 03	3.67
L03 / R03	12-0027 / 12-0026	TP.. 11 03..	3.101
L04 / R04	12-0029 7 12-0028	SC.. 07 03..	3.98
L05 / R05	12-0031 / 12-0030	SCD/CSX/CS/VP CS/TP CS	3.117
N06 10 x 10 und 12 x 12	12-0032 / 12-1080		3.123
N07	12-0033	ER16	3.22
N07IK	12-0055	ER16	3.23
N09	12-0155	HORN 105	3.28
N09IK	12-0154	HORN 105	3.29
N10	12-0037		3.42
N11	12-0038		3.44
N11SR16/20R	12-0053		3.45
N12	12-0509		3.46
N12 SR16/20R	12-0510		3.47
L13IK/R13IK	12-1213 / 12-1212	DC..11T3	3.59
L13 / R13	12-0040 / 12-0039	DC..11 T3..	3.60
L13XL/R13XL	12-1308/12-1307	DC11T3	3.61
L14 / R14	12-0042 / 12-0041	DC..11 T3..	3.56
L14IK / R14IK	12-0143 / 12-0142	DC..11 T3..	3.54
L15 / R15	12-0044 / 12-0043	VC..11 03..	3.68
L16 / R 16	12-0046 / 12-0045	ER 16../EL 16..	3.103
L16IK / R16IK	12-0148 / 12-0147	ER 16../EL 16..	3.105
L17 / R17	12-0378 / 12-0377	VC..13 03..	3.77
L17IK / R17IK	12-0146 / 12-0145	VC..13 03..	3.79
L18 / R18	12-0048 / 12-0047	GTMH 32	3.119
N19	12-0049	DC..11 T3..	3.62
N19IK	12-0052	DC..11 T3..	3.63
L20 / R20	12-0821 / 12-0820	SCD, CSX, CS, VP CS, TP CS	3.118
L29 / R 29	12-0262 / 12-0261	VC..13 03..	3.82
N30	12-ff	ød4 - ød16	3.26
N30IK	12-ff	ød6 - ød12	3.27

INHALTSVERZEICHNIS/SUMMARY

Rückseitenwerkzeug / Back working tool	Art.Nr. / Art.no.	Halter für / holder for	Seite/ Page
N31	12-0798	3-Fach	3.43
L34 / R34	12-1017 / 12-1016	DC..11 T3..	3.53
L35 / R35	12-0344 / 12-0330	VC..13 03..	3.81
L36 / R 36	12-0407 / 12-0359	CC..09 T3..	3.94
L37 / R37	12-0452 / 12-0449	VC..16 04..	3.84
N38	12-0478	VC..11 03..	3.75
N38IK	12-0480	VC..11 03..	3.76
L39 / R39	12-0479 / 12-0451	TC..02..	3.99
N41	12-0450	ER20	3.24
N41IK	12-0469	ER20	3.25
L42 / R42	12-0466 / 12-0461	G/TPG/PG	3.120
L43 / R43	12-0465 / 12-0453	CC..09 T3..	3.95
L43IK / R43IK	12-0503 / 12-0490	CC..09 T3..	3.96
L44 / R44	12-0512 / 12-0454	QER-12..	3.110
L48 / R48	12-0483 / 12-0467	CC..06 02..	3.89
L48IK / R48IK	12-1152 / 12-0549	CC..06 02..	3.91
L49 / R49	12-1158 / 12-0468	QER-12..	3.109
L50 / R50	12-0516 / 12-0499	CC..06 02..	3.93
L50IK /R50IK	12-1154 / 12-1153	CC..06 02..	3.92
L53 / R 53	12-0335 / 12-0333	VC..13 03..	3.80
N56-30IK	12-0470	Holler ød 3.0	3.34
N56-45IK	12-0471	Holler ød 4.5	3.35
N56-55IK	12-0472	Holler ød 5.5	3.36
N56-70IK	12-0473	Holler ød 7.0	3.37
L59 / R59	12-0477 / 12-0476	DC.. 07 02..	3.49
L60 / R60	12-1149 / 12-0482	VC..11 03..	3.73
L62 / R62	12-0500 / 12-0484	VC..11 03..	3.70
L62IK / R62IK	12-0530 / 12-0529	VC..11 03..	3.72
L63 / R63	12-0086 / 12-0485	VC..11 03..	3.74
L64 / R64	12-0496 / 12-0486	Horn Typ 312	3.111
L64IK / R64IK	12-0504 / 12-0501	Horn Typ 312	3.112
L65 / R65	12-0497 / 12-0487	Horn Typ 312	3.113
L65IK / R65IK	12-0505 / 12-502	Horn Typ 312	3.114
N67	12-1061	Horn 105	3.115
N68	12-0498	Horn 312	3.116

INHALTSVERZEICHNIS/SUMMARY

Rückseitenwerkzeug / Back working tool	Art.Nr. / Art.no.	Halter für / holder for	Seite/ Page
L69 / R69	12-1063 / 12-0513	Applitec 300	3.88
L70 / R70	12-1043 / 12-0514	Applitec 300	3.86
L70IK / R70IK	12-0520 / 12-0515	Applitec 300	3.87
L71 / R71	12-0061 / 12-0060	VB..11 03..	3.64
L72 / R72	12-0064 / 12-0063	DC..11 T3..	3.57
L72IK / R72IK	12-1167 / 12-1166	DC..11 T3..	3.55
N73	12-0156	Horn 105	3.30
N73IK	12-0158	Horn 105	3.31
L74 / R 74	12-0466 / 12-0461	ApplitecL730/R740	3.121
L75 / R75	12-0067 / 12-0066	DC.. 07 02..	3.52
L76 / R76	12-1104 / 12-0096	Horn Typ S274	3.107
L76IK / R76IK	12-1075 / 12-0072	Horn Typ S274	3.108
L77 / R77	12-0070 / 12-0071	ER 16../EL 16..	3.104
N79	12-1071	Horn 110	3.32
N79IK	12-0157	Horn 110	3.33
N82-06IK	12-0524	Picco ød 6.0	3.38
N83-05IK	12-0525	Picco ød 5.0	3.39
R84	12-0074	TN.. 16 04..	3.102
L85 / R85	12-0075 / 12-0073	TC..03..	3.100
L86 / R86	12-0522 / 12-0521	ApplitecL730/R740	3.122
N91-04IK	12-0526	Picco ød 4.0	3.40
N92-07IK	12-0527	Picco ød 7.0	3.41
N93IK	12-0528		3.48
L94 / R94	12-1151 / 12-0532	VP..11 03..	3.85
L96 / R96	12-0092 / 12-0082	VC..11 03..	3.69
L97 / R97	12-1070 / 12-0083	VC..13 03..	3.83
N105	12-1144	ER11	3.20
N105IK	12-1051	ER11	3.21
L123 / R123	12-1147 / 12-1146	ER 16. EL 16..	3.106
L136 / R136	12-1159 / 12-1074	VC..13 03..	3.79
L137 / R137	12-1161 / 12-1160	DC..11 T3..	3.58
L138 / R138	12-1163 / 12-1162	CC..06 02..	3.90
L139 / R 139	12-1165 / 12-1164	VC..11 03..	3.71
L190 / R 190	12-1285 / 12-1284	CN.. 12 04..	3.97

Advantages over the competitors (Bimu CH; Dieterle; etc.):

Compatibility:

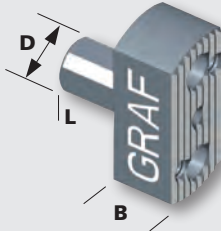
- You can assembly all back working tools on all basic holders
- You can assembly all HORN back working tools on the GRAF basic holders and vice versa; all GRAF back working tools are suitable to the HORN basic holder

Quality:

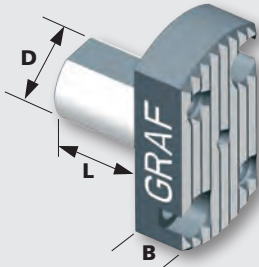
- With the tooth forming you have much more stability in the machine
- Perfect guiding
- Easy adjustment of height (adjusting range is (+/-) 1mm with the screw

Grundhalter G Basic holder G

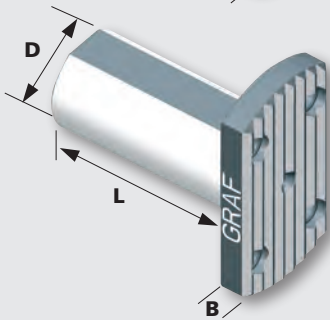
STAR- Maschinen



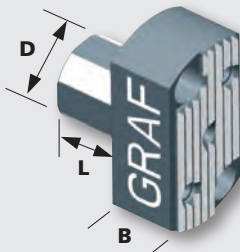
D	L	B	Bezeichnung	Best.-Nr.
16	21	20	G016 021 SR10	12-1082
Lochbild/hole pattern			X=0	Y=32



D	L	B	Bezeichnung	Best.-Nr.
16	21	12	G016 021 SR16/20R	12-0011
Lochbild/hole pattern			X=16	Y=26



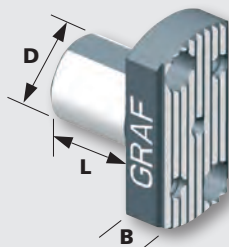
D	L	B	Bezeichnung	Best.-Nr.
16	21	6	G016 021	12-0006
22	30	6	G022 030	12-0010
22	70	6	G022 070	12-0007
22	23	6	G022 023	12-0008



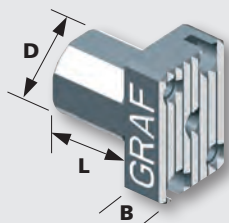
D	L	B	Bezeichnung	Best.-Nr.
22	20	20	G022 020 SR10	12-1083
Lochbild/hole pattern			X=14	Y=38

Lochbild X und Y Bemaßung symmetrisch zur Mittelachse · Hole pattern X and Y dimension symmetrically to the central axis

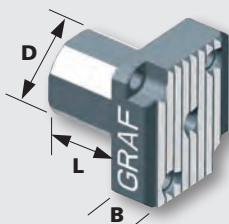
STAR-
Maschinen



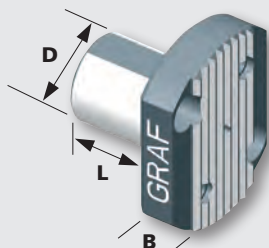
D	L	B	Bezeichnung	Best.-Nr.
22	25	12	G022 025 S3 (SR16/20R)	12-0005
Lochbild/hole pattern			X=14	Y=38



D	L	B	Bezeichnung	Best.-Nr.
22	24	12	G022 024-S1 (SR20 R IV/SW20)	12-1094
Lochbild/hole pattern			X=12	Y=30



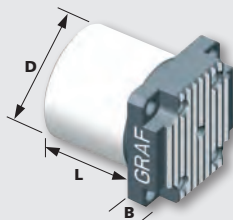
D	L	B	Bezeichnung	Best.-Nr.
22	24	12	G022 024-S2 (SR20 R IV/SW20)	12-1095
Lochbild/hole pattern			X=25	Y=30



D	L	B	Bezeichnung	Best.-Nr.
22	25	12	G022 025 SR32	12-0009
Lochbild/hole pattern			X=27,5	Y=26

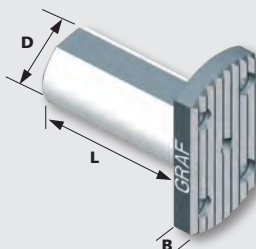
Grundhalter G Basic holder G

STAR- Maschinen

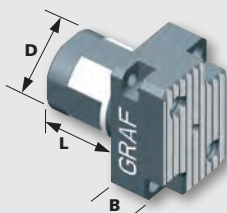


D	L	B	Bezeichnung	Best.-Nr.
34	30	12	G034 030 S4 (ECAS 32)	12-1035
Lochbild/hole pattern			X=29,7	Y=29,7

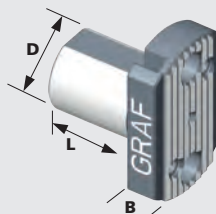
CITIZEN- Maschinen



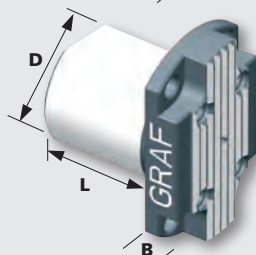
D	L	B	Bezeichnung	Best.-Nr.
3/4"	40	6	G034 040	12-0540
3/4"	50	6	G034 050	12-0541
3/4"	120	6	G034 120	12-0893
20	30	6	G020 030	12-0539
1"	30	6	G010 030	12-0013
1"	60	6	G010 060	12-0542
1"	100	6	G010 100	12-1018



D	L	B	Bezeichnung	Best.-Nr.
25	25	19	G025 025 C2	12-1042
Lochbild/hole pattern			X=19	Y=33



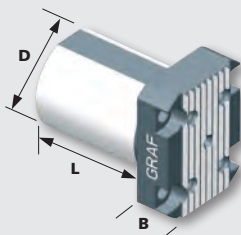
D	L	B	Bezeichnung	Best.-Nr.
25	30	12	G025 030 C1	12-0554
Lochbild/hole pattern			X=0	Y=36



D	L	B	Bezeichnung	Best.-Nr.
31	32	12	G031 032 C4	12-1049
Lochbild/hole pattern			X=23,5	Y=40,7

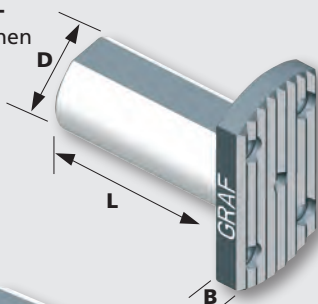
Lochbild X und Y Bemaßung symmetrisch zur Mittelachse · Hole pattern X and Y dimension symmetrically to the central axis

MAIER- Maschinen

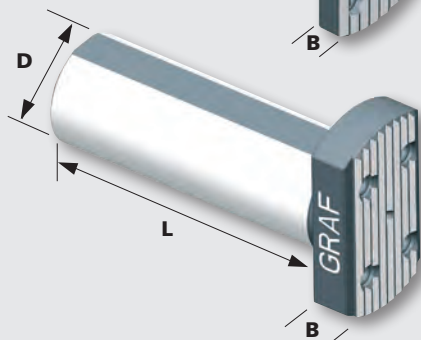


D	L	B	Bezeichnung	Best.-Nr.
34	20	15	G034 020	12-1029
Lochbild/hole pattern			X=29,7	Y=29,7
34	44	12	G034 044	12-0805
Lochbild/hole pattern			X=29,7	Y=29,7

TRAUB- Maschinen

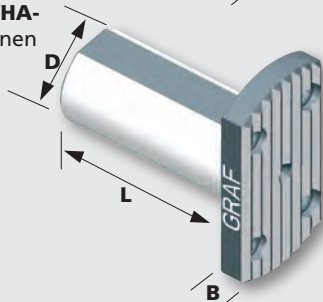


D	L	B	Bezeichnung	Best.-Nr.
16	40	6	G016 040	12-0095
16	100	6	G016 100	12-0087



D	L	B	Bezeichnung	Best.-Nr.
28	80	12	G028 080	12-0014

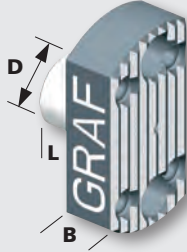
HANWHA- Maschinen



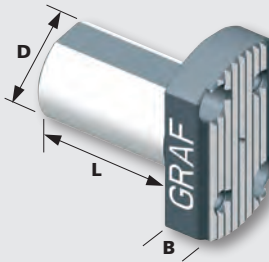
D	L	B	Bezeichnung	Best.-Nr.
20	40	6	G020 040	12-0056

Grundhalter G Basic holder G

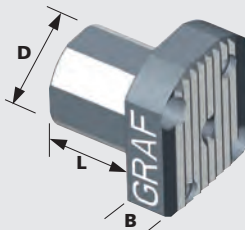
HANWHA- Maschinen



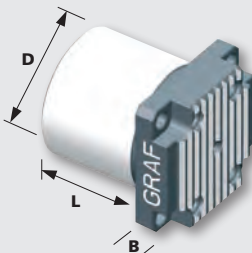
D	L	B	Bezeichnung	Best.-Nr.
15	12	12,5	G015 012 H1	12-0081
Lochbild/hole pattern			X=0	Y=32



D	L	B	Bezeichnung	Best.-Nr.
25	40	12	G025 040	12-0036
Lochbild/hole pattern			X=20,5	Y=35,5
25	60	12	G025 060	12-0807
Lochbild/hole pattern			X=19	Y=33
28	6	12	G028 006	12-0054
Lochbild/hole pattern			X=20,5	Y=35,5
32	25	12	G032 025 H5	12-0808
Lochbild/hole pattern			X=28,3	Y=28,3
32	40	12	G032 040 H5	12-1044
Lochbild/hole pattern			X=28,3	Y=28,3
33	35	12	G033 035 H3	12-0806
Lochbild/hole pattern			X=23	Y=33



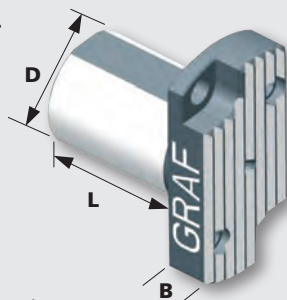
D	L	B	Bezeichnung	Best.-Nr.
25	25	12	G025 025 H6	12-1186
Lochbild/hole pattern			X=25,5	Y=25,5



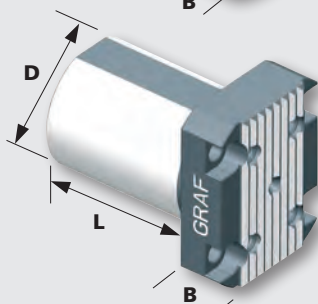
D	L	B	Bezeichnung	Best.-Nr.
35	40	13	G035 040	12-0815
Lochbild/hole pattern			X=30	Y=30
36	37	13	G036 037	12-0814
Lochbild/hole pattern			X=32	Y=32

Lochbild X und Y Bemaßung symmetrisch zur Mittelachse · Hole pattern X and Y dimension symmetrically to the central axis

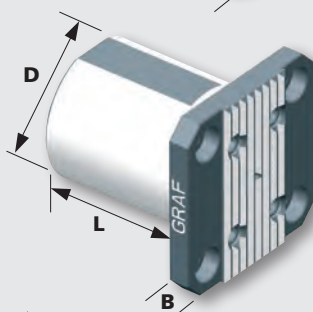
**HANWHA-
Maschinen**



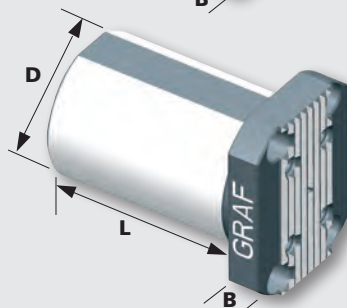
D	L	B	Bezeichnung	Best.-Nr.
23	30	10	G023 030 H2	12-0091
Lochbild/hole pattern			X=13,7	Y=37,6



D	L	B	Bezeichnung	Best.-Nr.
34	44	12	G034 044	12-0805
Lochbild/hole pattern			X=29,7	Y=29,7



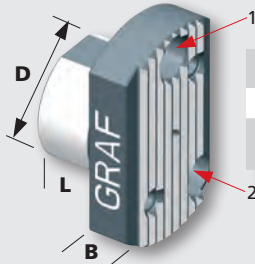
D	L	B	Bezeichnung	Best.-Nr.
37	44	8	G037 044	12-0809
Lochbild/hole pattern			X=34,6	Y=34,6



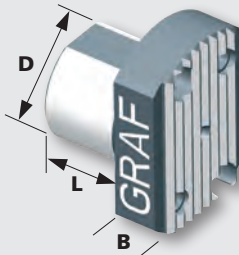
D	L	B	Bezeichnung	Best.-Nr.
42	60	12	G042 060	12-0810
Lochbild/hole pattern			X=25,5	Y=44,1

Grundhalter G Basic holder G

HANWHA- Maschinen

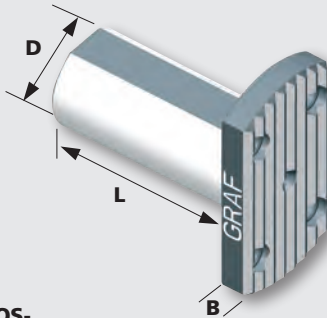


D	L	B	Bezeichnung	Best.-Nr.
28	15	12	G028 015	12-0076
Lochbild/hole pattern			X ₁ =0 X ₂ =10,5	Y ₁ =19,5 Y ₂ =16,5



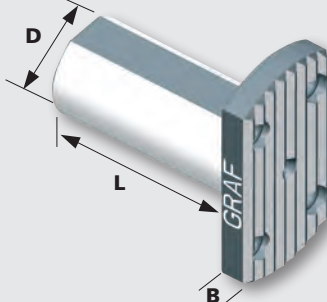
D	L	B	Bezeichnung	Best.-Nr.
25	20	12	G025 020 H4	12-1072
Lochbild/hole pattern			X=13,7	Y=32,2

MANURHIN- Maschinen



D	L	B	Bezeichnung	Best.-Nr.
16	40	6	G016 040	12-0095
20	150	6	G020 150	12-0531
25	30	6	G025 030	12-0159
25	70	6	G025 070	12-0019
25	100	6	G025 100	12-0020
25	160	6	G025 160	12-0799

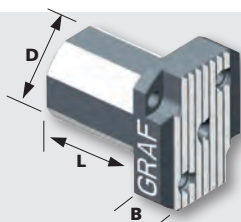
TORNOS- Maschinen



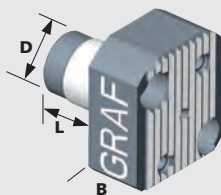
D	L	B	Bezeichnung	Best.-Nr.
20	100	6	G020 100	12-0015
20	150	6	G020 150	12-0531
25	70	6	G025 070	12-0019
25	100	6	G025 100	12-0020
25	160	6	G025 160	12-0799

Lochbild X und Y Bemaßung symmetrisch zur Mittelachse · Hole pattern X and Y dimension symmetrically to the central axis

TORNOS- Maschinen

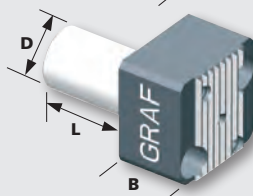


D	L	B	Bezeichnung	Best.-Nr.
28	36	12	G028 036	12-1150
Lochbild/hole pattern			X=27	Y=27

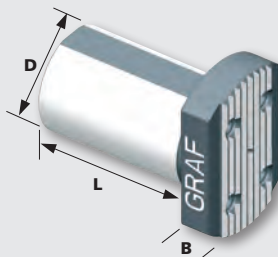


D	L	B	Bezeichnung	Best.-Nr.
20	25	20	G020 025	12-1209
Lochbild/hole pattern			X=24	Y=25,6

TSUGAMI- Maschinen

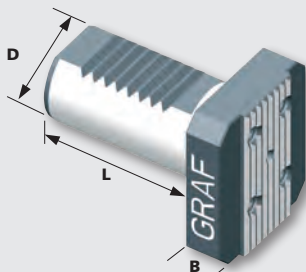


D	L	B	Bezeichnung	Best.-Nr.
20	35	25	G020 035	12-0897
Lochbild/hole pattern			X=26	Y=18



D	L	B	Bezeichnung	Best.-Nr.
32	50	12	G032 050	12-0896

VDI-AUFNAHMEN



D	L	H	B	Bezeichnung	Best.-Nr.
16	32	45	24	GV016 032	12-0113
20	40	45	24	GV020 040	12-0088
25	48	50	35	GV025 048	12-1185
30	50	52,5	44,5	GV030 055	12-0085

With the plate between you can adjust the outside length with the different back working tools.

Zwischenstücke

Plate between



B	Bezeichnung	Art.-Nr.
5	Z5	12-0004
10	Z10	12-0001
15	Z15	12-0002
20	Z20	12-0003
25	Z25	12-0800
30	Z30	12-0801



B	Bezeichnung	Art.-Nr.
5	Z5 SR16/20R	12-0533
10	Z10 SR16/20R	12-0534
15	Z15 SR16/20R	12-0535
20	Z20 SR16/20R	12-0536
25	Z25 SR16/20R	12-0537
30	Z30 SR16/20R	12-0538

Für Grundhalter

For basic holder

G 022 025 S3
G 022 025 SR32
G 025 060
G 028 006
G 032 25 H5
G 033 035 H3
G 025 040
G 032 030
G 032 040 H5
G 023 030 H2

Komplettes Programm
siehe Seite 3.128
complete program
see page 3.128

Kühlmittelanschluss Standard connection for inner cooling



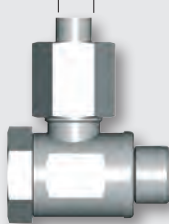
Kühlmittelanschluss
004.00.19 M8 X 1
004.00.14 G1/8"

für Rohr Ø 6 mm



Kühlmittelanschluss

für Rohr Ø 6 mm

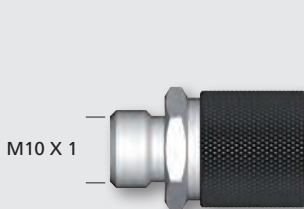


Schwenkverschraubung

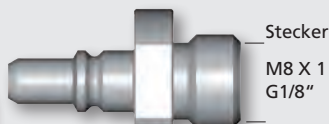
M8 X 1 - 004.00.61
G1/8" - 004.00.16

M8 X 1 - 004.00.20
G1/8" - 004.00.33

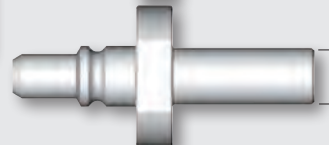
Kühlmittelanschluss Schnellkupplung Clip connection for inner cooling



Schnellkupplung 004.00.49
inkl. Überwurfmutter
und Schneidring



M8 X 1 - 004.00.56
G1/8" - 004.00.57



Ø 6 mm - 004.00.59

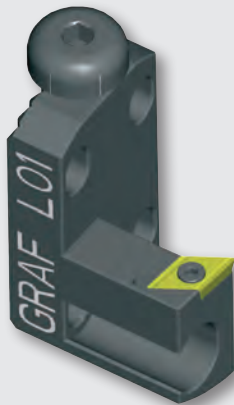
Höheneinstellbare Einsätze

High adjustable insert



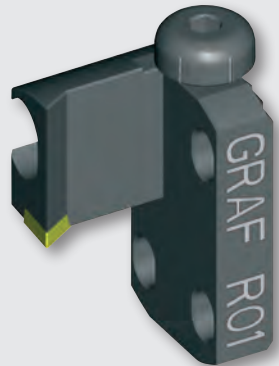
GRAF-Einsätze jetzt auch „Überkopf“ höhenjustierbar.

All GRAF insert cassettes can be mounted with the insert facing up or down and you can still adjust the center height.



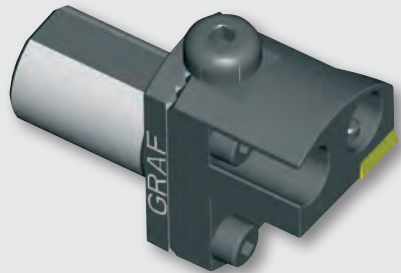
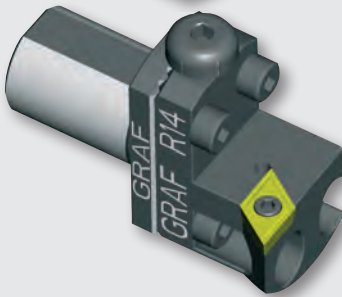
Ausführung
"Standard"

Execution
"Standard"



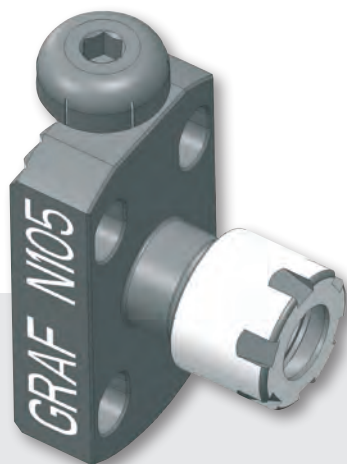
Ausführung
"Überkopf"

Execution
"Upside Down"



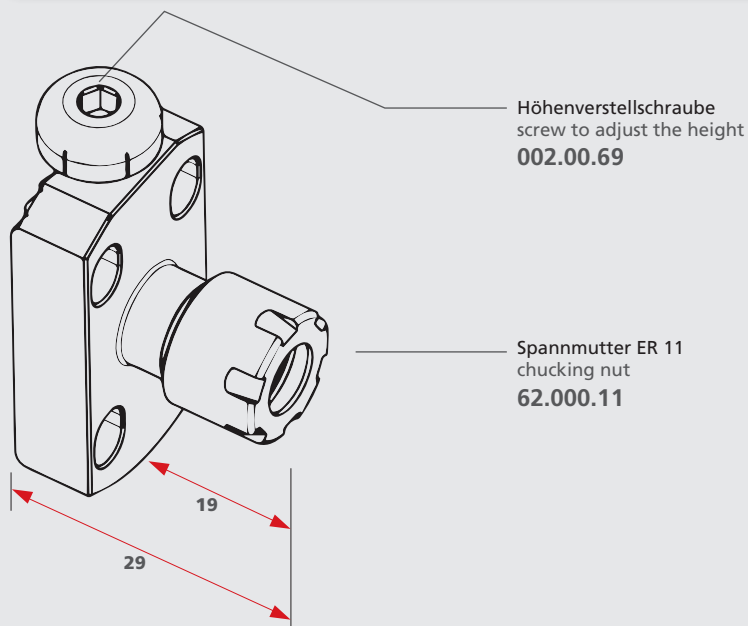
Feineinstellung kann auch „Überkopf“ vorgenommen werden.
Bessere Späneabfuhr bei grobspanigem Material, z.B. bei langspanenden Werkstoffen wie Kunststoffe usw.

Fine adjustment is possible with the insert facing upside down for better chip evacuation. Especially for long stringy materials such as plastic.



N105 Art. Nr. 12-1144

Anwendungsbereich **Innenbearbeitung**
Range of application **internal processing**

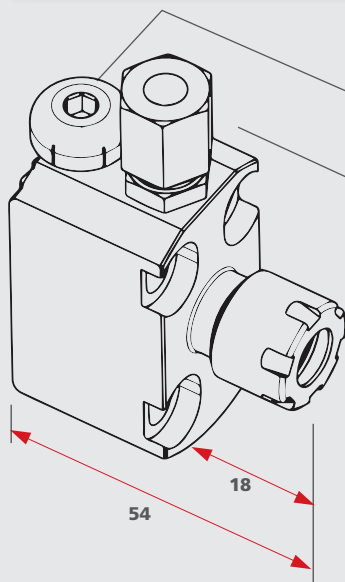




N105IK

Art. Nr. 12-1051

Anwendungsbereich **Innenbearbeitung**
Range of application **internal processing**

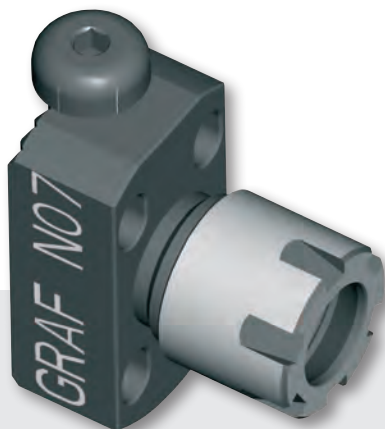


Höhenverstelle schraube
screw to adjust the height
002.00.69

Kühlmittelanschluss
Coolant supply
004.00.19

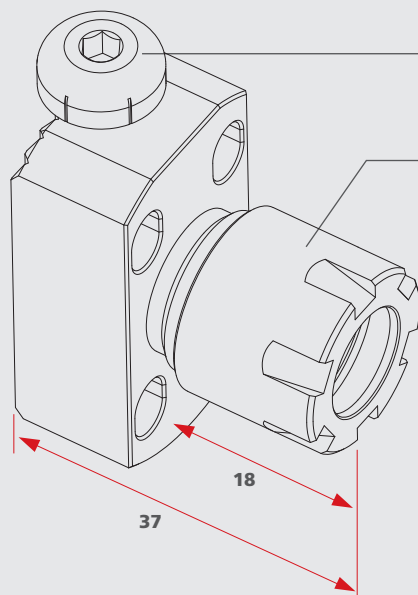
Spannmutter ER 11
chucking nut
62.000.11

(Abgedichtete Spannmutter muss
separat bestellt werden
sealed chucking nut must be ordered
separatly)



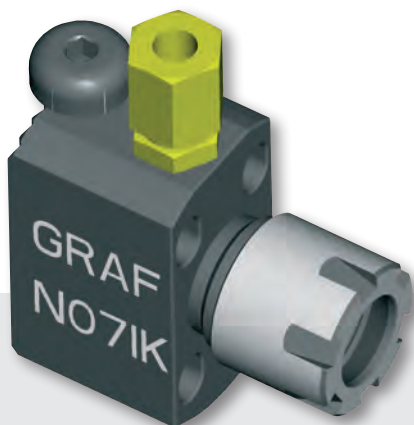
N07
Art. Nr. 12-0033

Anwendungsbereich **Innenbearbeitung**
Range of application **internal processing**



Höhenverstelle schraube
screw to adjust the height
002.00.69

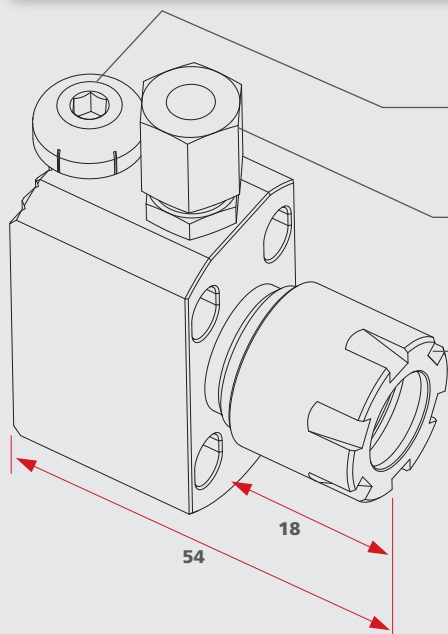
Spannmutter ER 16
chucking nut
62.000.16



N07IK

Art. Nr. 12-0055

Anwendungsbereich **Innenbearbeitung**
Range of application **internal processing**

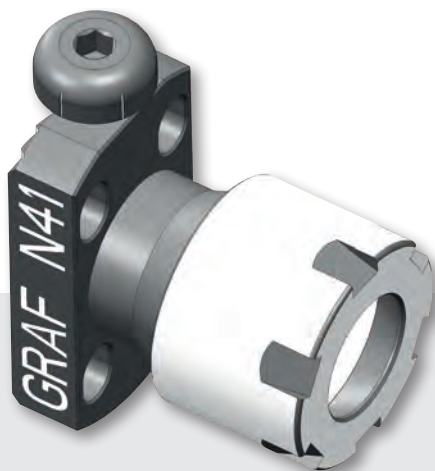


Höhenverstellungsschraube
screw to adjust the height
002.00.69

Kühlmittelanschluss
Coolant supply
004.00.19

Spannmutter ER 16
chucking nut
62.000.16

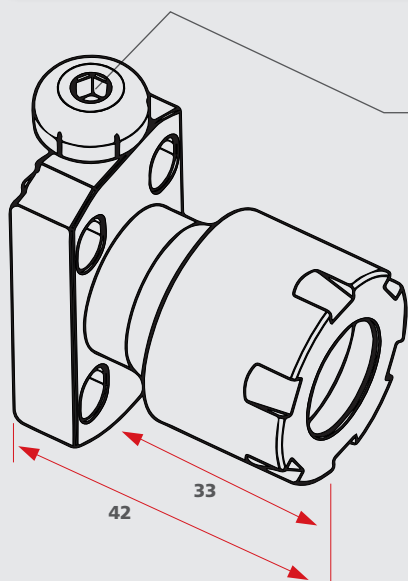
(Abgedichtete Spannmutter muss
separat bestellt werden
sealed chucking nut must be ordered
separatly)



N41

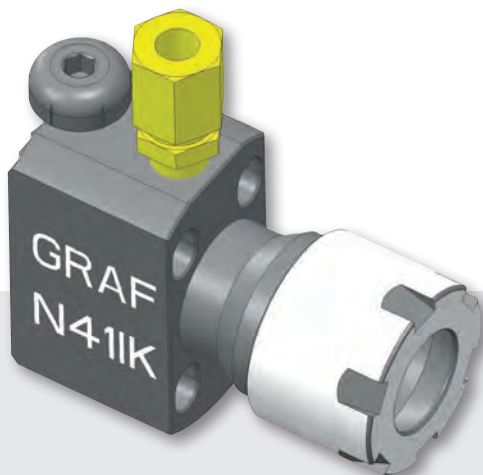
Art. Nr. 12-0450

Anwendungsbereich **Innenbearbeitung**
Range of application **internal processing**



Höhenverstellungsschraube
screw to adjust the height
002.00.69

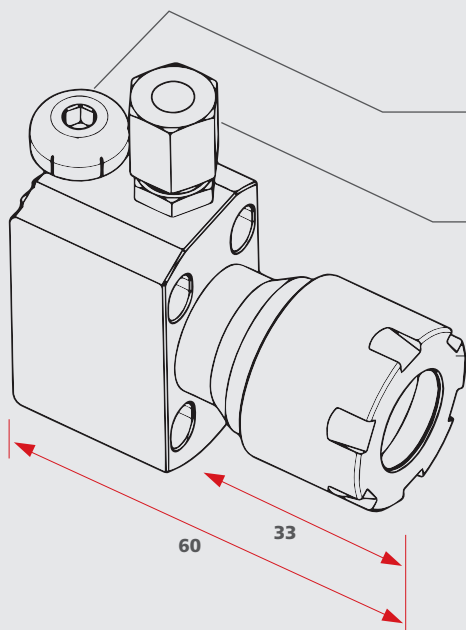
Spannmutter ER 20
chucking nut - seal
62.000.20



N41K

Art. Nr. 12-0469

Anwendungsbereich **Innenbearbeitung**
Range of application **internal processing**



Höhenverstellungsschraube
screw to adjust the height
002.00.69

Kühlmittelanschluss
Coolant supply
004.00.19

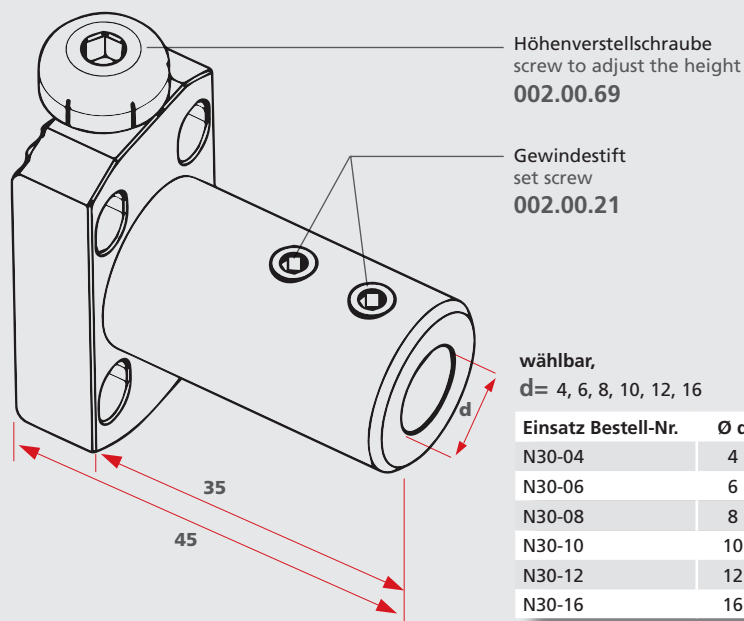
Spannmutter ER 20
chucking nut
62.000.20

(Abgedichtete Spannmutter muss
separat bestellt werden
sealed chucking nut must be ordered
separatly)

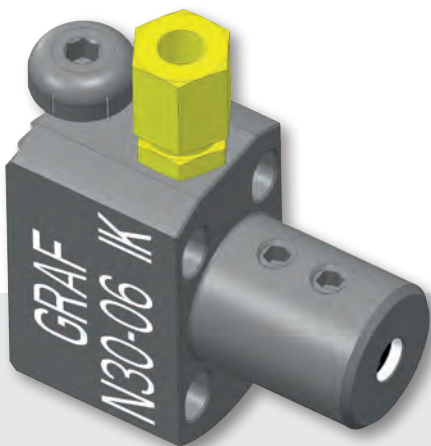


N30

Anwendungsbereich **Innenbearbeitung**
Range of application **internal processing**

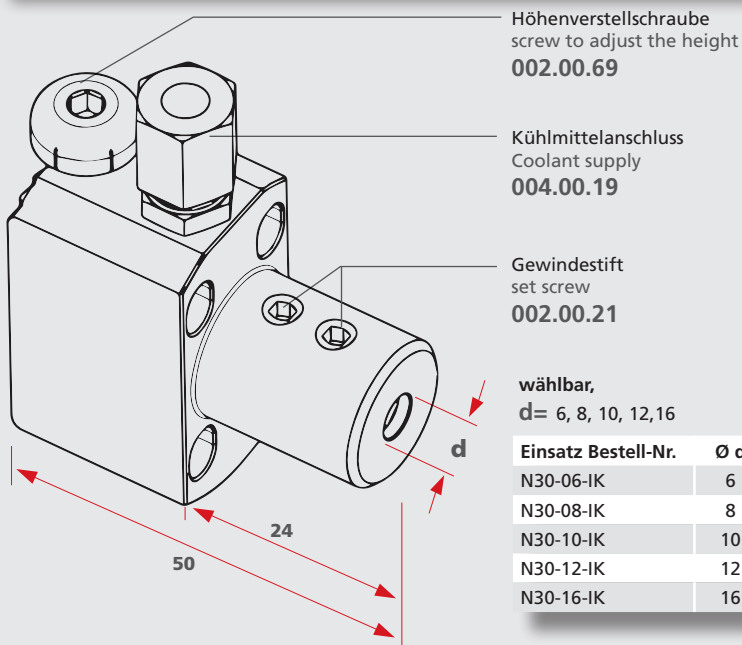


Einsatz Bestell-Nr.	Ø d	Art. Nr.
N30-04	4	12-0379
N30-06	6	12-0371
N30-08	8	12-0372
N30-10	10	12-0373
N30-12	12	12-0374
N30-16	16	12-0381

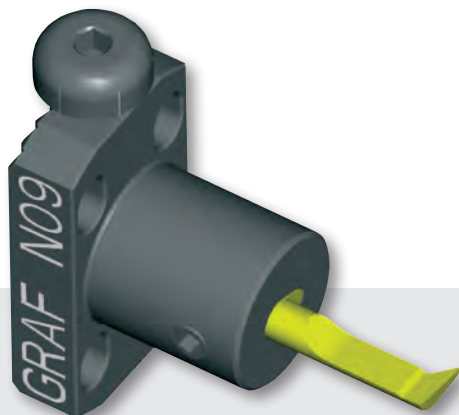


N30-IK

Anwendungsbereich **Innenbearbeitung**
Range of application **internal processing**



Einsatz Bestell-Nr.	Ø d	Art. Nr.
N30-06-IK	6	12-1053
N30-08-IK	8	12-1054
N30-10-IK	10	12-1055
N30-12-IK	12	12-1052
N30-16-IK	16	12-1214

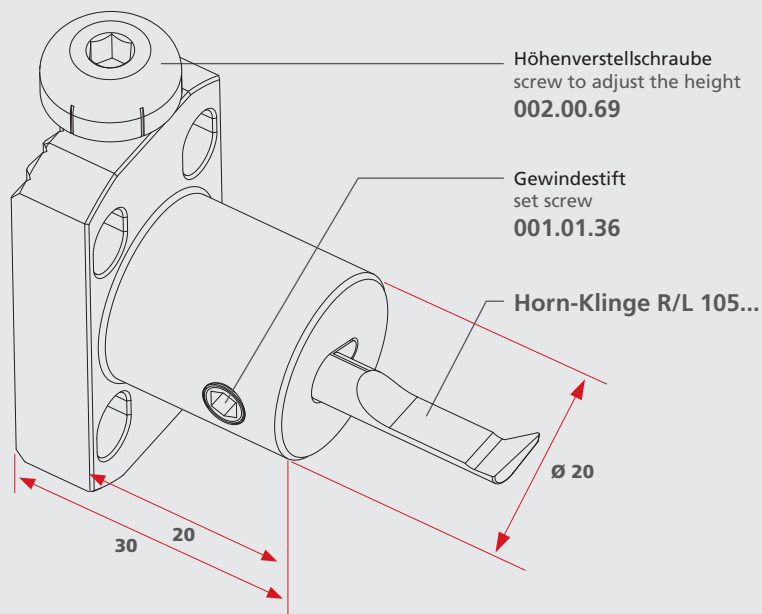


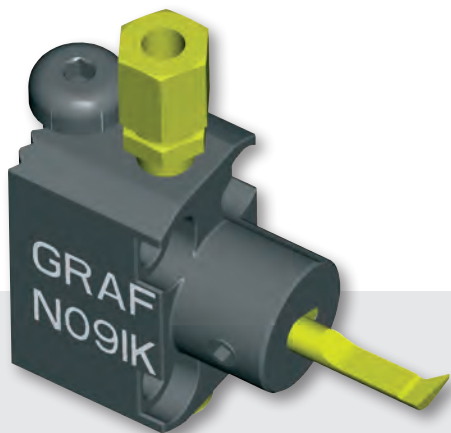
N09

Art. Nr. 12-0155

Anwendungsbereich **Innenbearbeitung**

Range of application **internal processing**

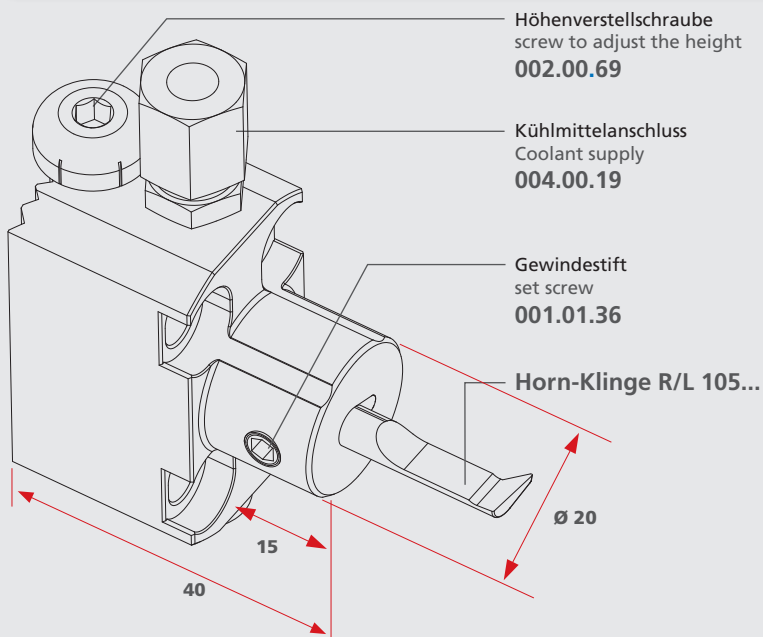


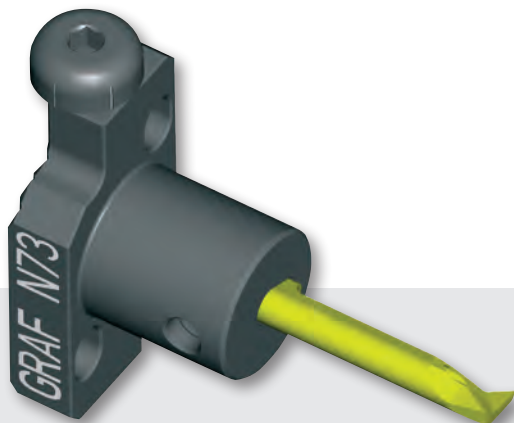


N09IK

Art. Nr. 12-0154

Anwendungsbereich **Innenbearbeitung**
 Range of application **internal processing**



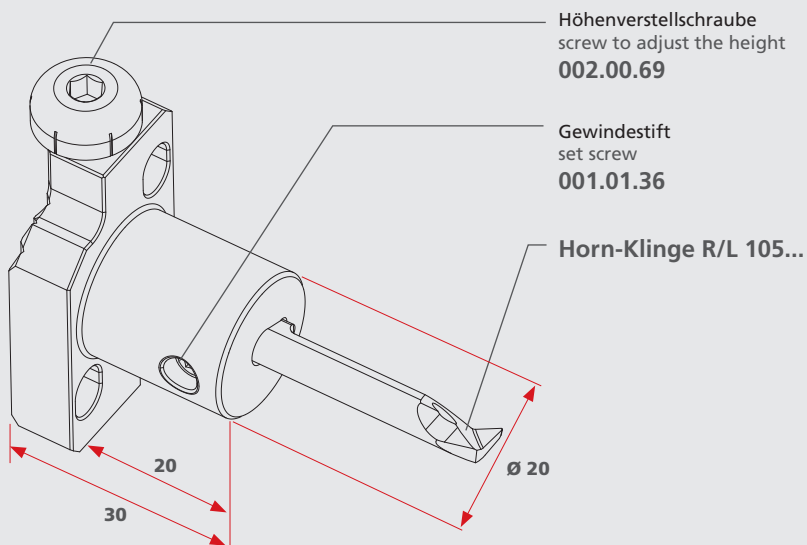


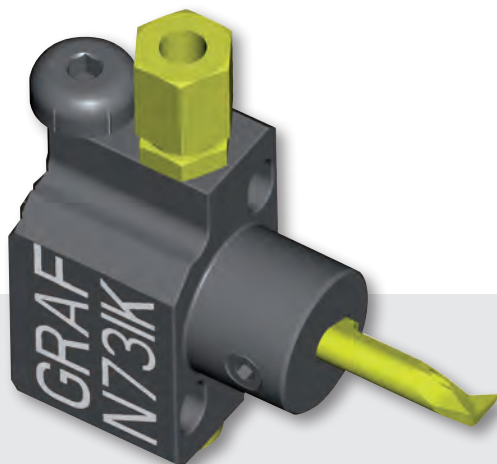
N73

Art. Nr. 12-0156

Anwendungsbereich **Innenbearbeitung**

Range of application **internal processing**

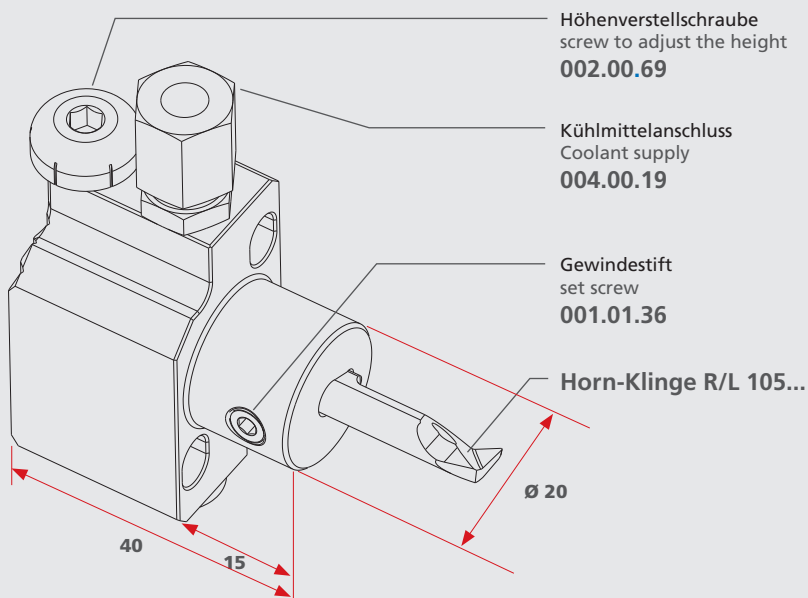


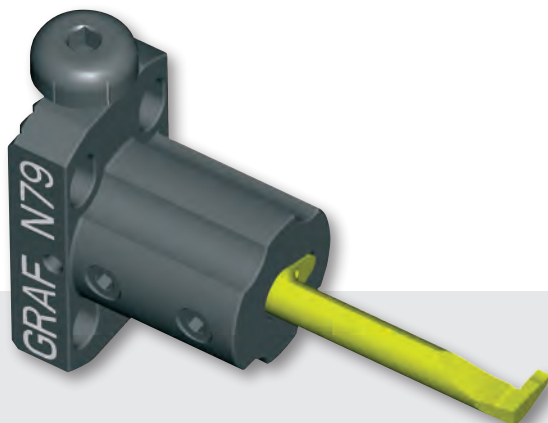


N73IK

Art. Nr. 12-0158

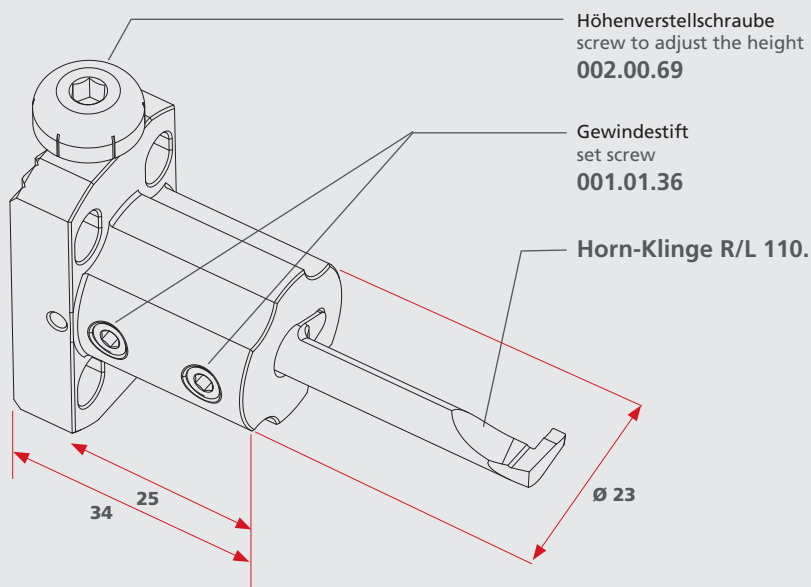
Anwendungsbereich **Innenbearbeitung**
Range of application **internal processing**

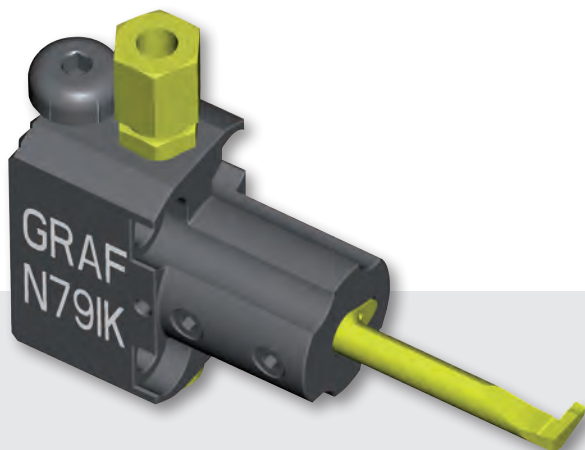




N79 Art. Nr. 12-1071

Anwendungsbereich **Innenbearbeitung**
Range of application **internal processing**

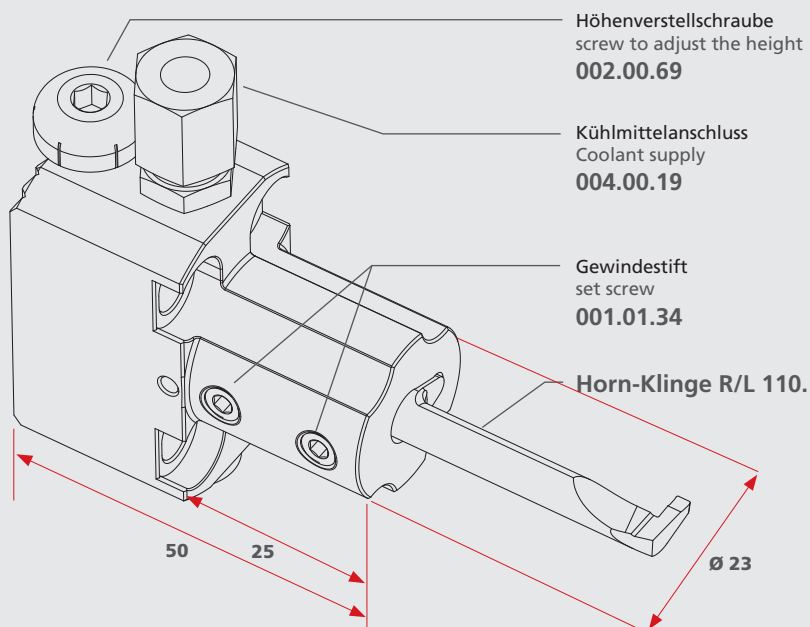




N79IK

Art. Nr. 12-0157

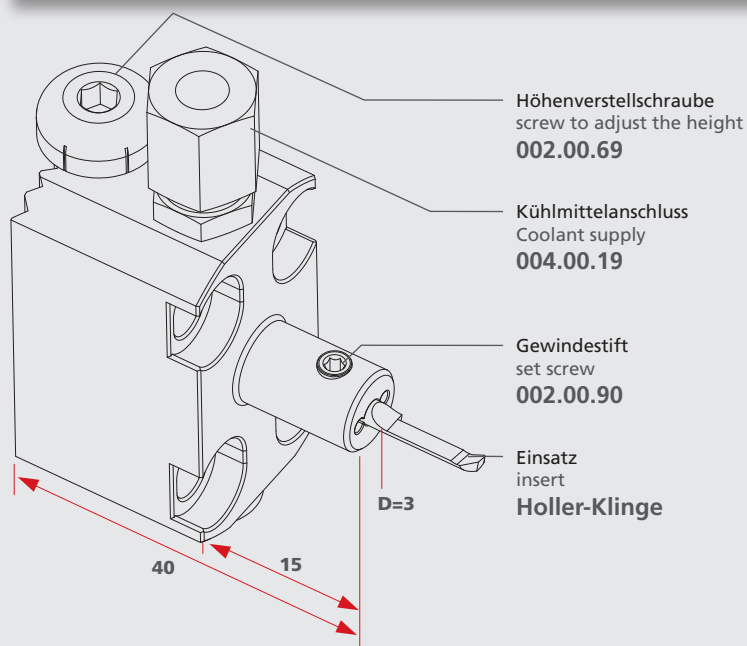
Anwendungsbereich **Innenbearbeitung**
 Range of application **internal processing**

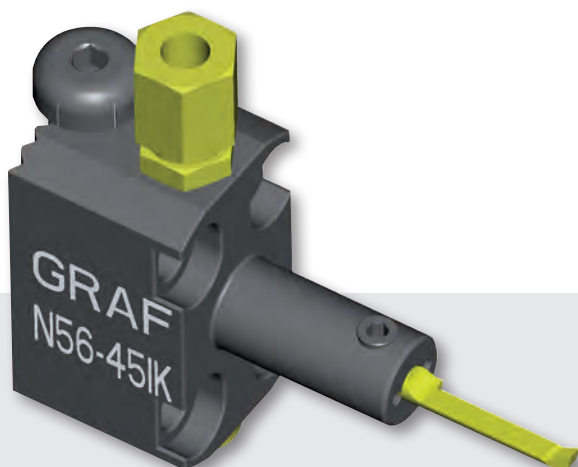




N56-30IK
Art. Nr. 12-0470

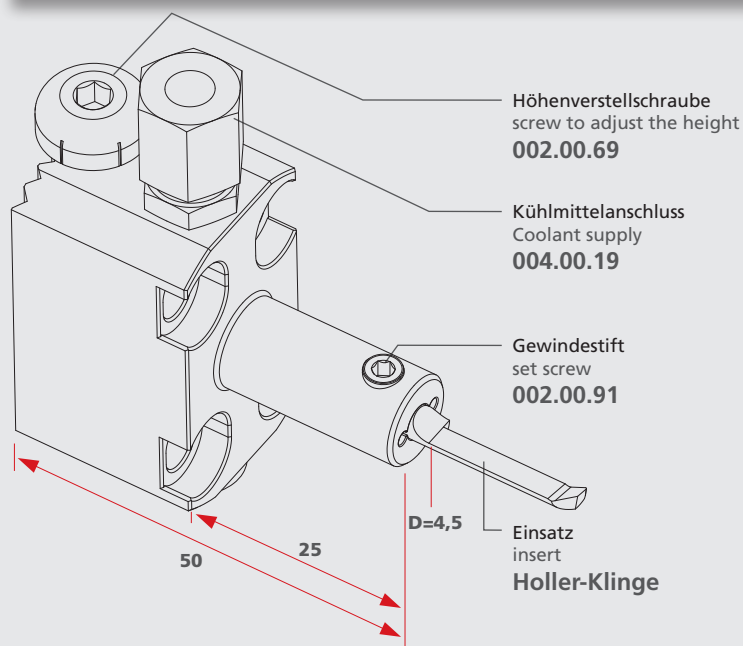
Anwendungsbereich **Innenbearbeitung**
Range of application **internal processing**

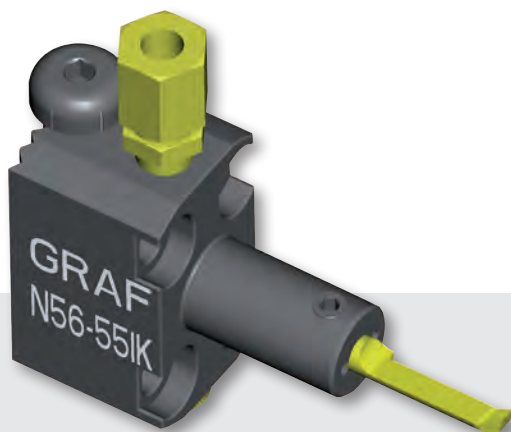




N56-45IK
Art. Nr. 12-0471

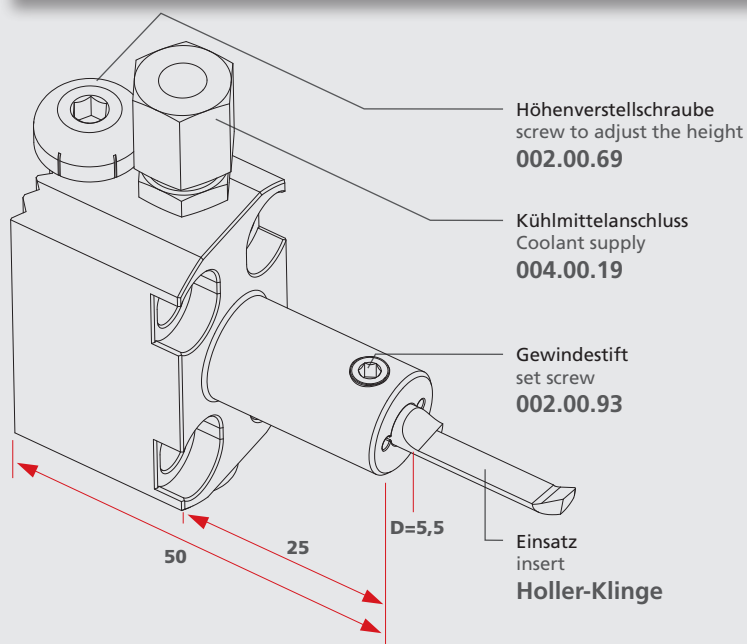
Anwendungsbereich **Innenbearbeitung**
 Range of application **internal processing**

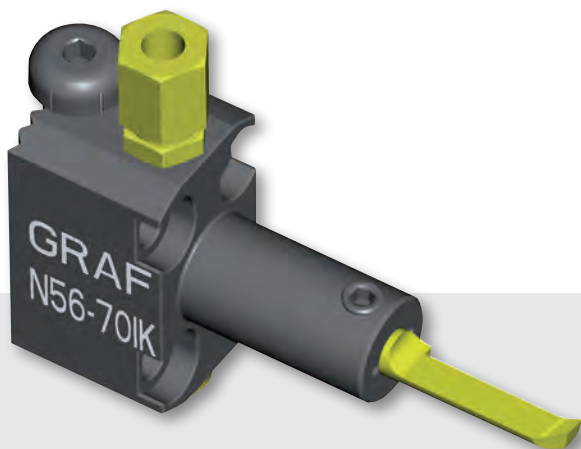




N56-55IK Art. Nr. 12-0472

Anwendungsbereich **Innenbearbeitung**
Range of application **internal processing**

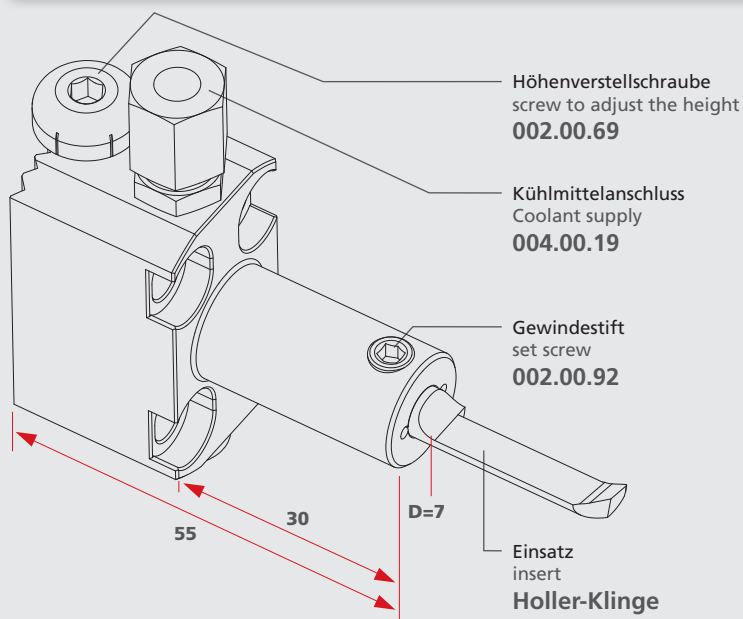


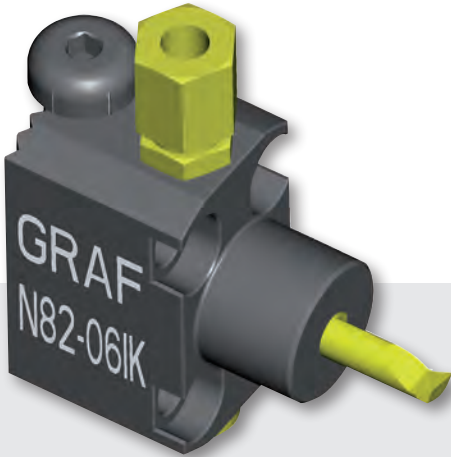


N56-70IK

Art. Nr. 12-0473

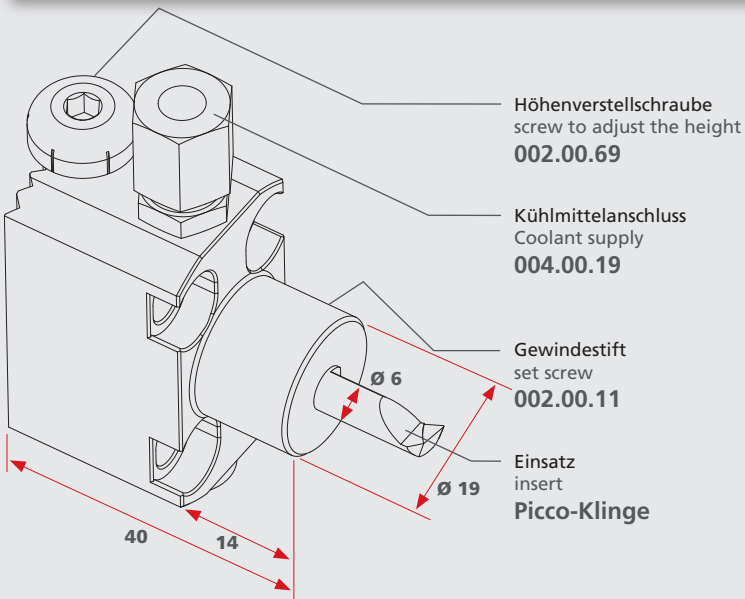
Anwendungsbereich **Innenbearbeitung**
Range of application **internal processing**

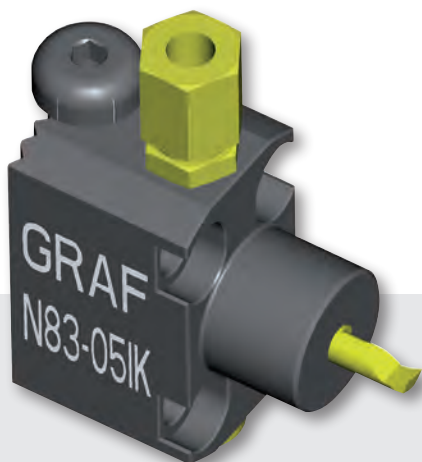




N82-06IK
Art. Nr. 12-0524

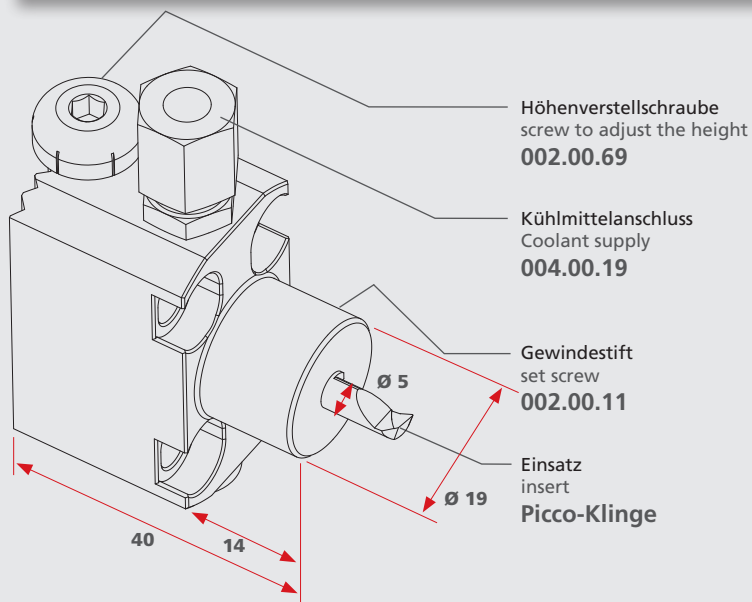
Anwendungsbereich **Innenbearbeitung**
Range of application **internal processing**

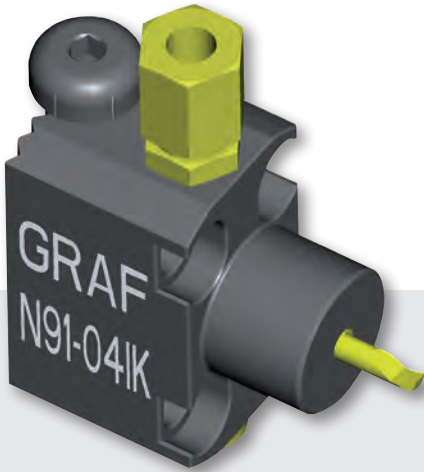




N83-05IK
Art. Nr. 12-0525

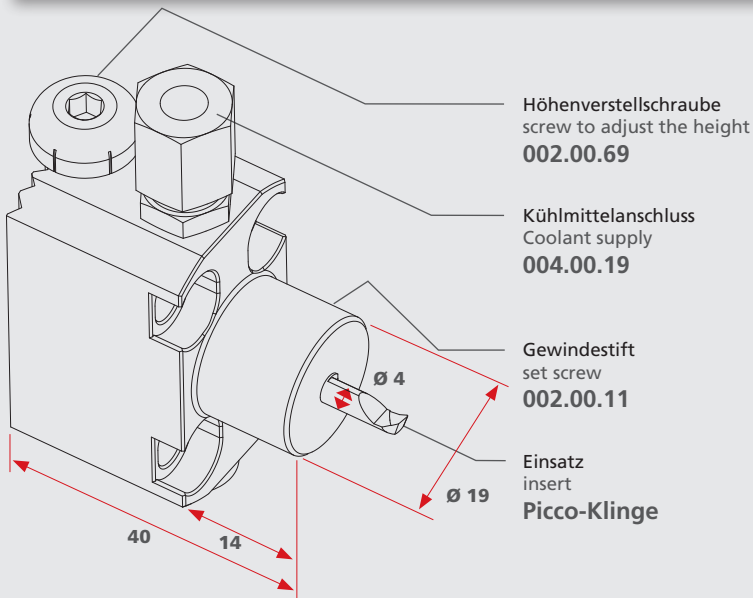
Anwendungsbereich **Innenbearbeitung**
 Range of application **internal processing**

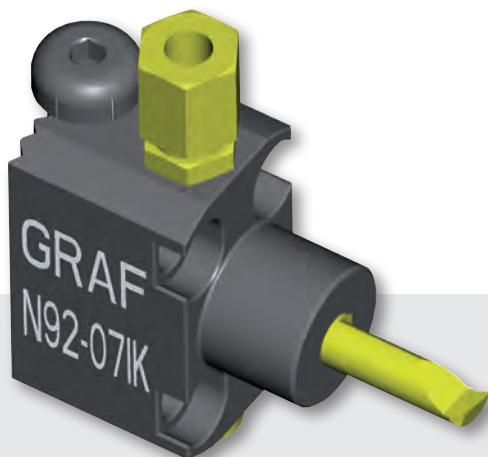




N91-04IK
Art. Nr. 12-0526

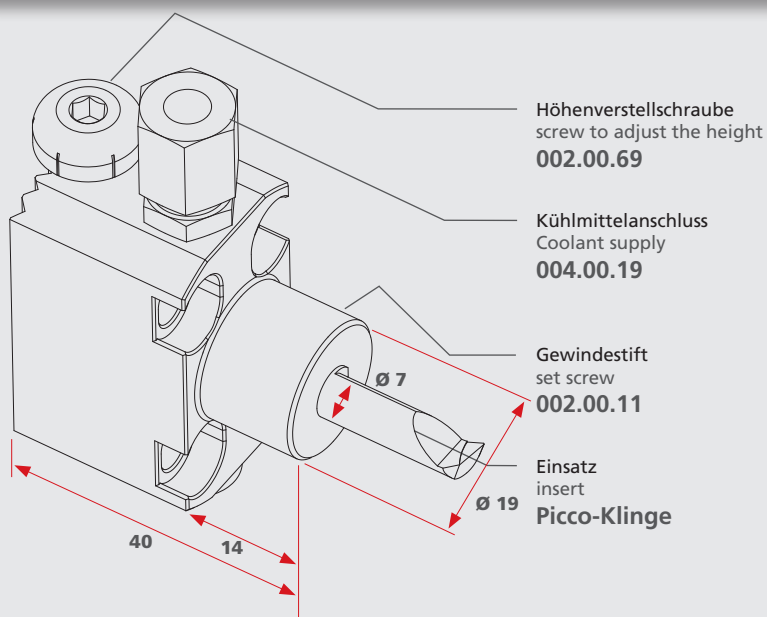
Anwendungsbereich **Innenbearbeitung**
Range of application **internal processing**

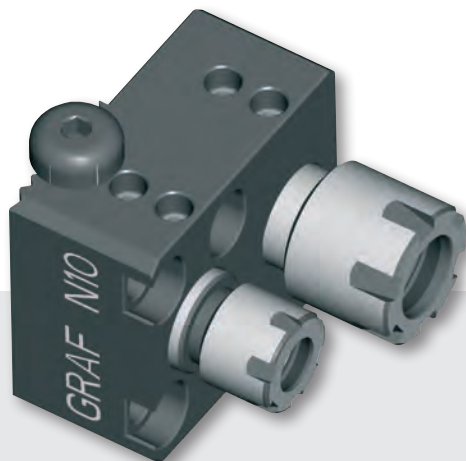




N92-07IK
Art. Nr. 12-0527

Anwendungsbereich **Innenbearbeitung**
 Range of application **internal processing**

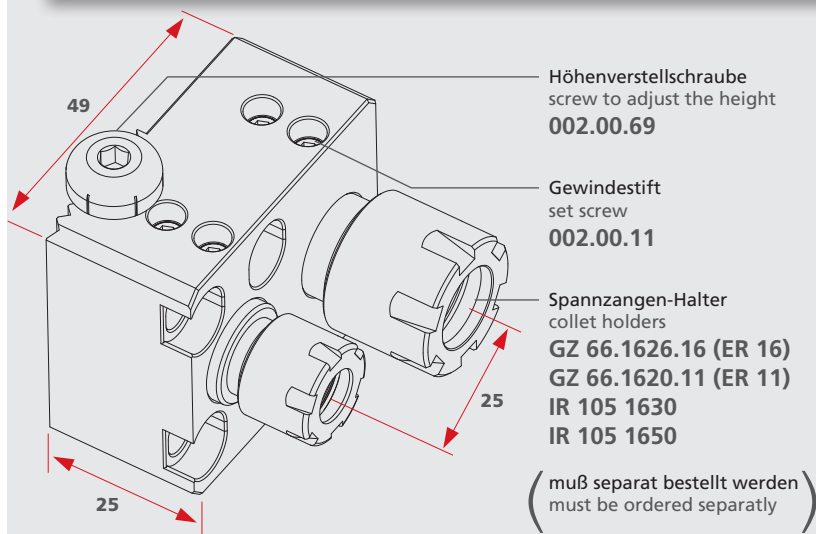


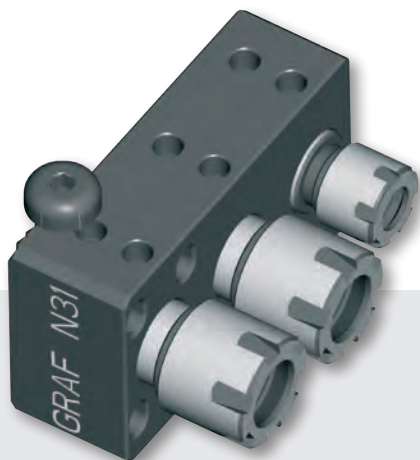


N10

Art. Nr. 12-0037

Anwendungsbereich **Rückseitenbearbeitung**
Application **back working**



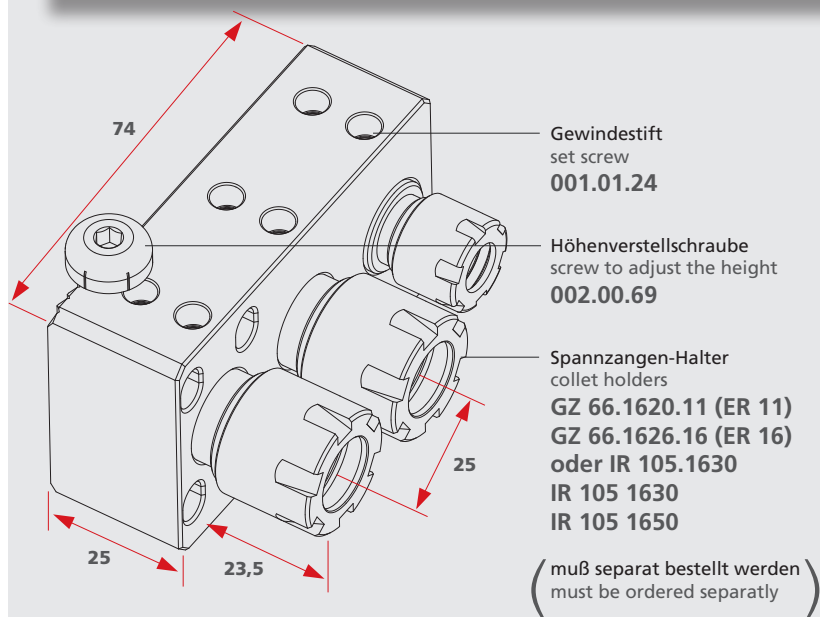


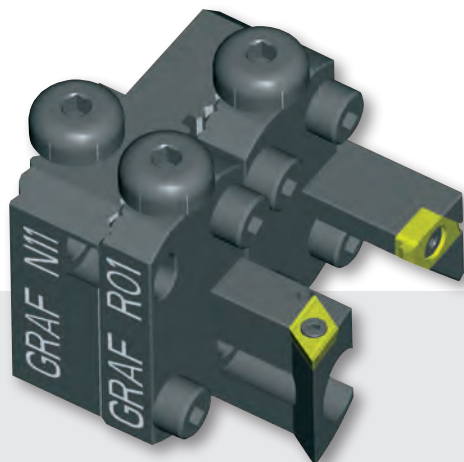
N31

Art. Nr. 12-0798

Anwendungsbereich **Rückseitenbearbeitung**

Application **back working**



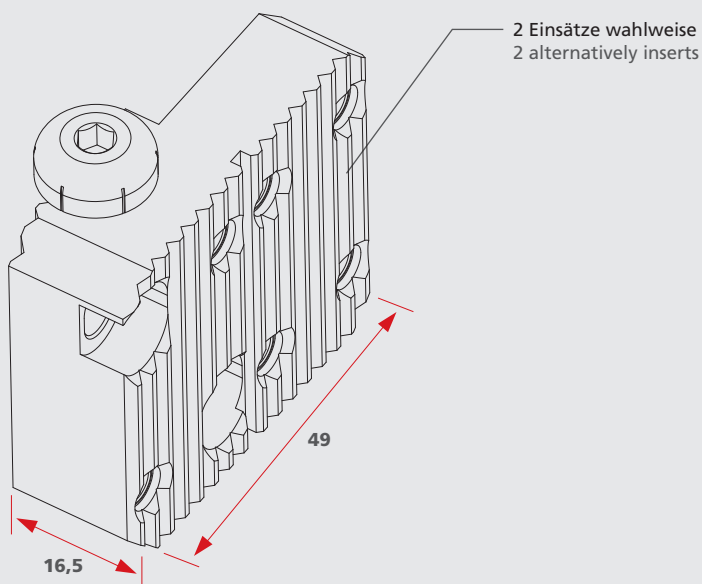


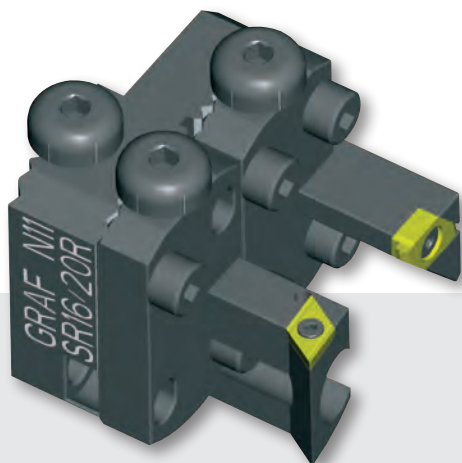
N11

Art. Nr. 12-0038

Anwendungsbereich **Rückseitenbearbeitung**

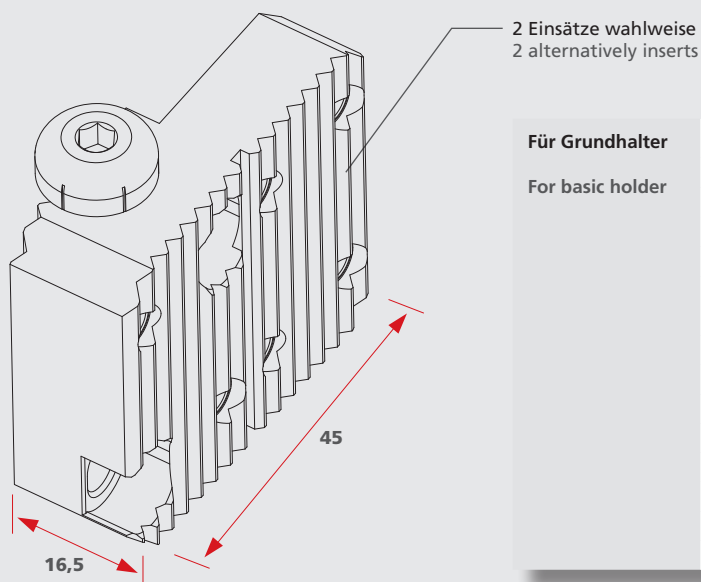
Application **back working**





N11SR16/20R Art. Nr. 12-0053

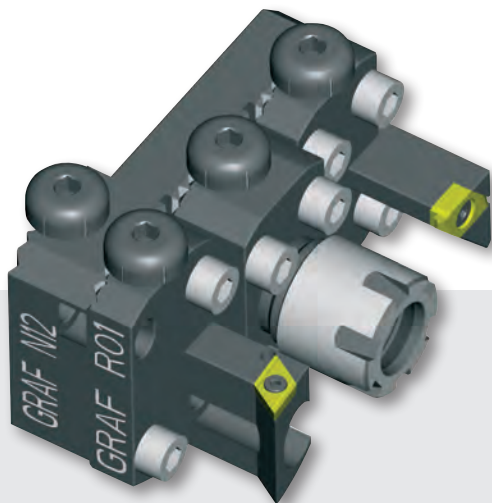
Anwendungsbereich **Rückseitenbearbeitung**
Application **back working**



Für Grundhalter

For basic holder

G 022 025 S3
G 022 025 SR32
G 025 060
G 028 006
G 032 25 H5
G 033 035 H3
G 016 021 SR10
G 025 040
G 032 040 H5
G 032 030
G 022 020 SR10
G 022 024-S2
G 023 030 H2
G 028 015
G 025 020

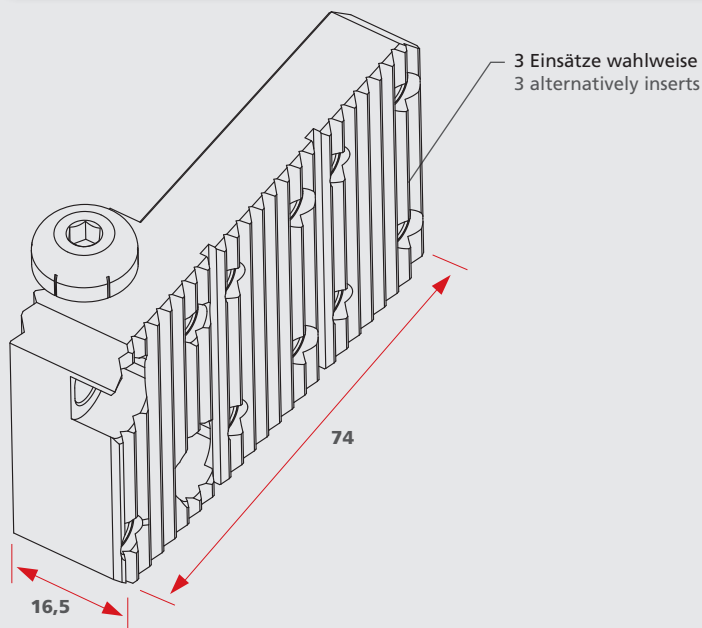


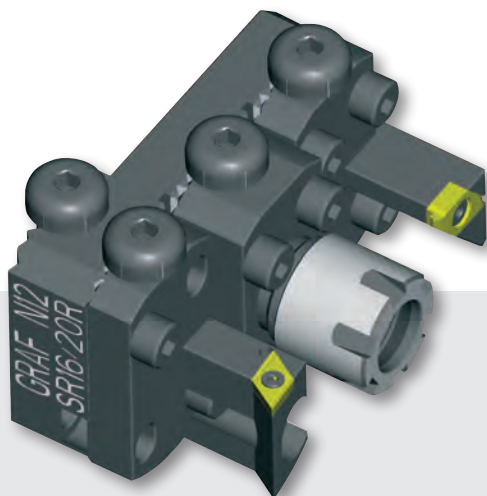
N12

Art. Nr. 12-0509

Anwendungsbereich **Rückseitenbearbeitung**

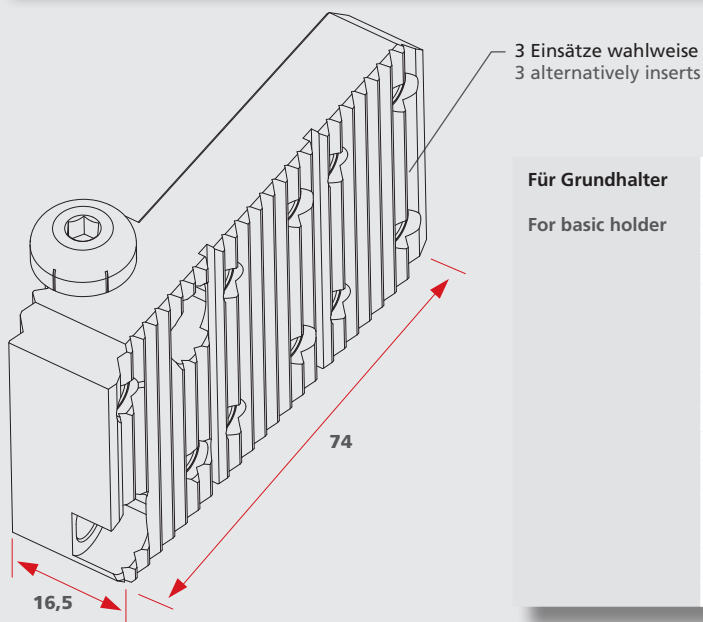
Application **back working**





N12 SR16/20 R Art. Nr. 12-0510

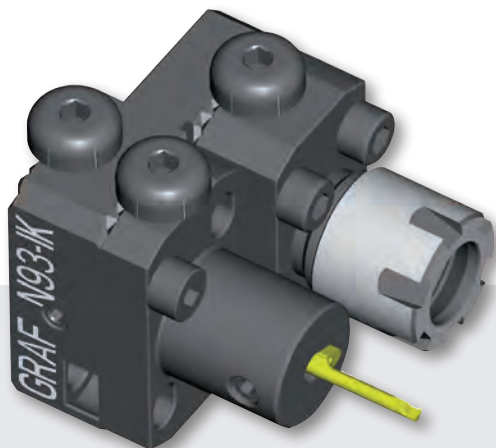
Anwendungsbereich **Rückseitenbearbeitung**
Application **back working**



Für Grundhalter

For basic holder

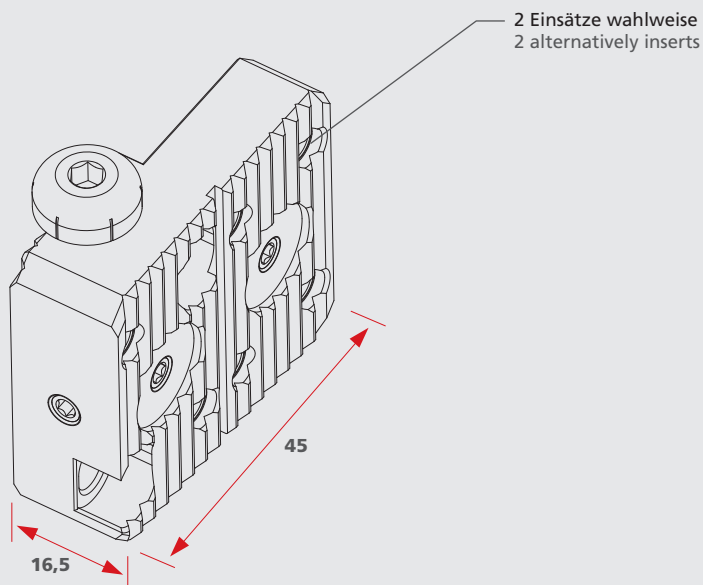
G 022 025 S3
G 022 025 SR32
G 025 060
G 028 006
G 032 25 H5
G 033 35 H3
G 016 021 SR10
G 025 040
G 032 040 H5
G 032 030
G 022 020 SR10
G 022 024-S2
G 023 030 H2
G 028 015
G 025 020

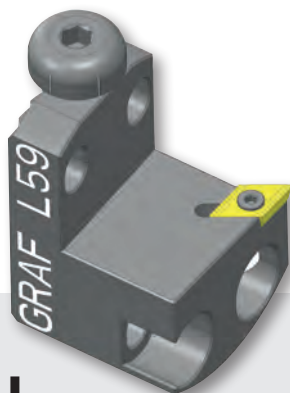


N93IK

Art. Nr. 12-0528

Anwendungsbereich **Rückseitenbearbeitung**
Application **back working**





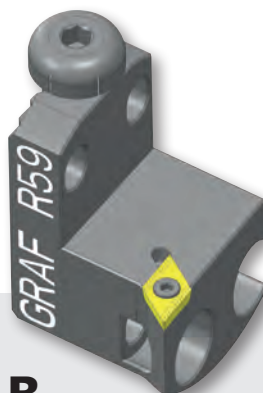
L

linksschneidend
cutting left

L59

Art. Nr. 12-0477

Anwendungsbereich **Kopierdrehen**
Application **copy turning**



R

rechtsschneidend
cutting right

R59

Art. Nr. 12-0476

Höhenverstelle schraube
screw to adjust the height

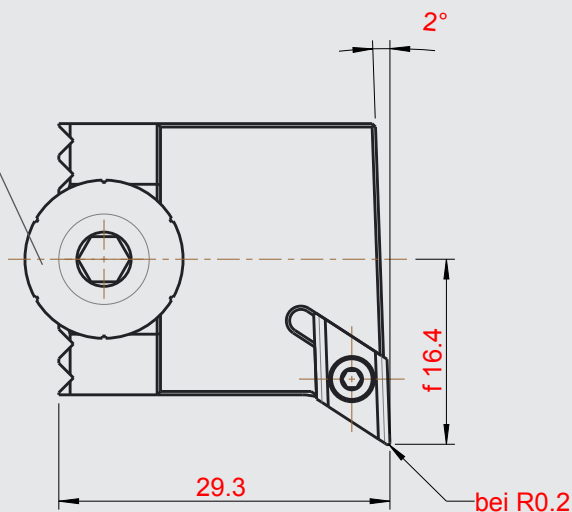
002.00.69

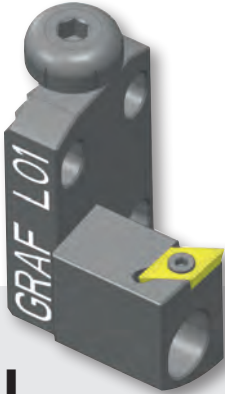
Wendeplatte
indexable insert

DC 07.02..

Senkschraube
counter sunk-head screw

001.01.01





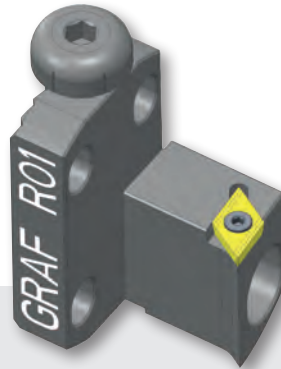
L

linksschneidend
cutting left

L01

Art. Nr. 12-0023

Anwendungsbereich **Kopierdrehen**
Application **copy turning**



R

rechtsschneidend
cutting right

R01

Art. Nr. 12-0022

Höhenverstellungsschraube
screw to adjust the height

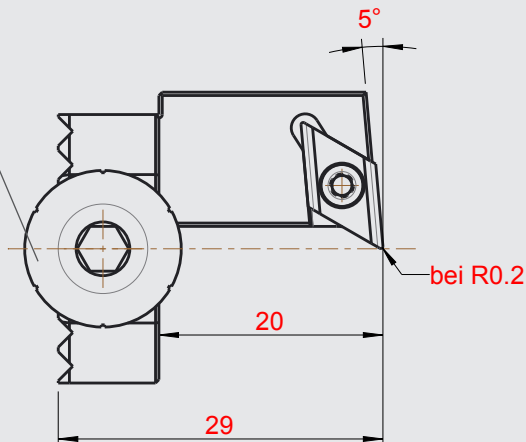
002.00.69

Wendeplatte
indexable insert

DC.. 07 02..

Senkschraube
counter sunk-head screw

001.01.01





L

linksschneidend
cutting left

L01IK

Art. Nr. 12-0161

Anwendungsbereich **Kopierdrehen**
Application **copy turning**



R

rechtsschneidend
cutting right

R01IK

Art. Nr. 12-0160

Höhenverstellungsschraube
screw to adjust the height

002.00.69

Kühlmittelsanschluss
Coolant supply

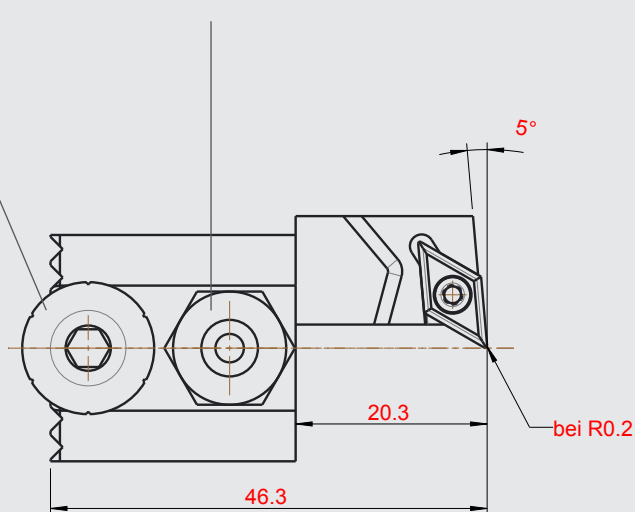
004.00.19

Wendeplatte
indexable insert

DC.. 07 02 ..

Senkschraube
counter sunk-head screw

001.01.01





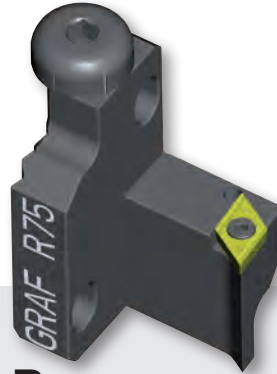
L

linksschneidend
cutting left

L75

Art. Nr. 12-0067

Anwendungsbereich **Kopierdrehen**
Application **copy turning**



R

rechtsschneidend
cutting right

R75

Art. Nr. 12-0066

Höhenverstellungsschraube
screw to adjust the height

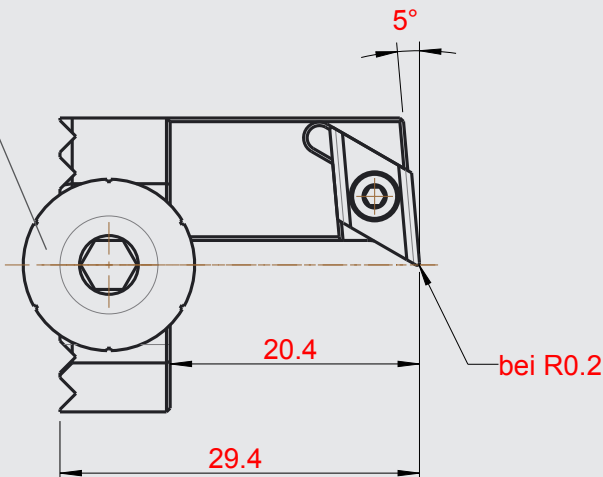
002.00.69

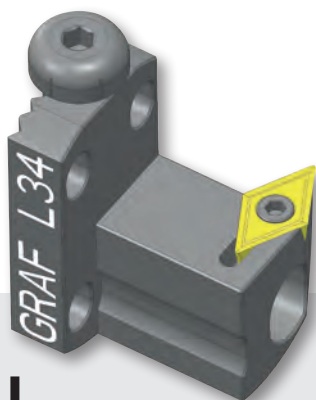
Wendeplatte
indexable insert

DC.. 07 02 ..

Senkschraube
counter sunk-head screw

001.01.01





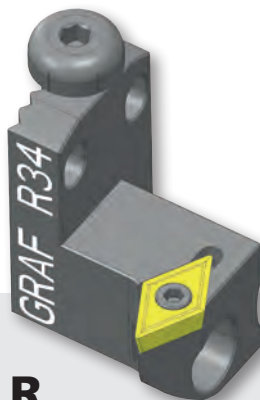
L

linksschneidend
cutting left

L34

Art. Nr. 12-1017

Anwendungsbereich **Kopierdrehen**
Application **copy turning**



R

rechtsschneidend
cutting right

R34

Art. Nr. 12-1016

Höhenverstellungsschraube
screw to adjust the height

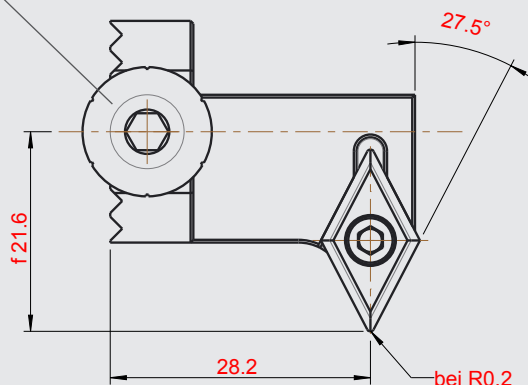
002.00.69

Wendeplatte
indexable insert

DC.. 11 T3 ..

Senkschraube
counter sunk-head screw

001.01.15





L

linksschneidend
cutting left

L14IK

Art. Nr. 12-0143

Anwendungsbereich **Kopierdrehen**
Application **copy turning**



R

rechtsschneidend
cutting right

R14IK

Art. Nr. 12-0142

Höhenverstellungsschraube
screw to adjust the height

002.00.69

Kühlmittelanschluss
Coolant supply

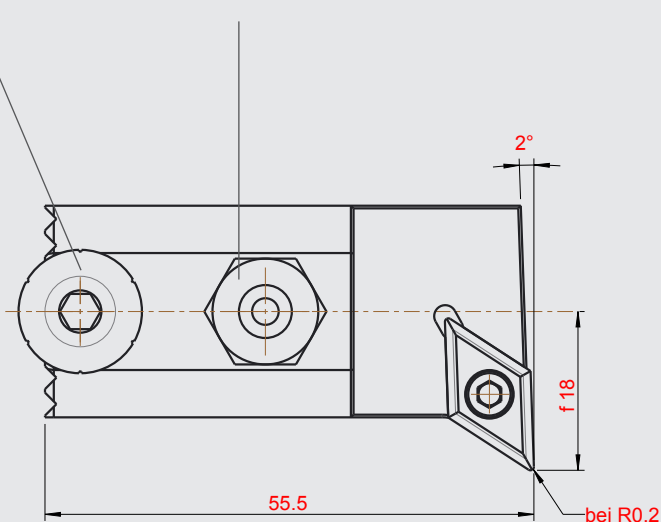
004.00.19

Wendeplatte
indexable insert

DC.. 11 T3 ..

Senkschraube
counter sunk-head screw

001.01.13





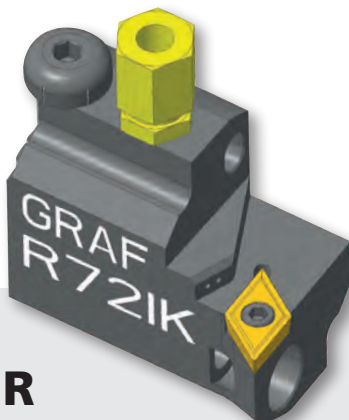
L

linksschneidend
cutting left

L72IK

Art. Nr. 12-1167

Anwendungsbereich **Kopierdrehen**
Application **copy turning**



R

rechtsschneidend
cutting right

R72IK

Art. Nr. 12-1166

Höhenverstellungsschraube
screw to adjust the height

002.00.69

Kühlmittelanschluss
Coolant supply

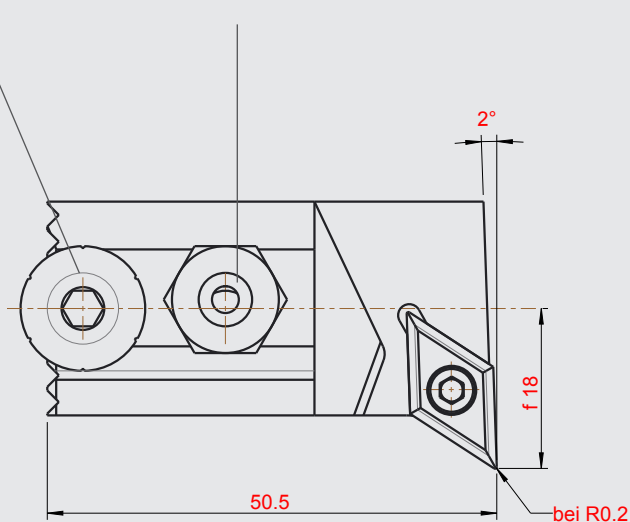
004.00.19

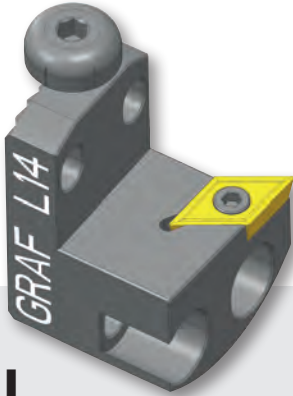
Wendeplatte
indexable insert

DC.. 11 T3 ..

Senkschraube
counter sunk-head screw

001.01.13





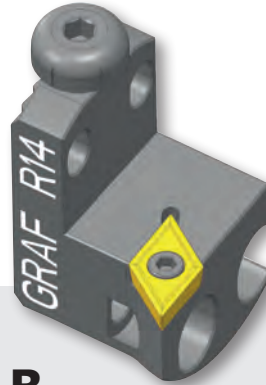
L

linksschneidend
cutting left

L14

Art. Nr. 12-0042

Anwendungsbereich **Kopierdrehen**
Application **copy turning**



R

rechtsschneidend
cutting right

R14

Art. Nr. 12-0041

Höhenverstellungsschraube
screw to adjust the height

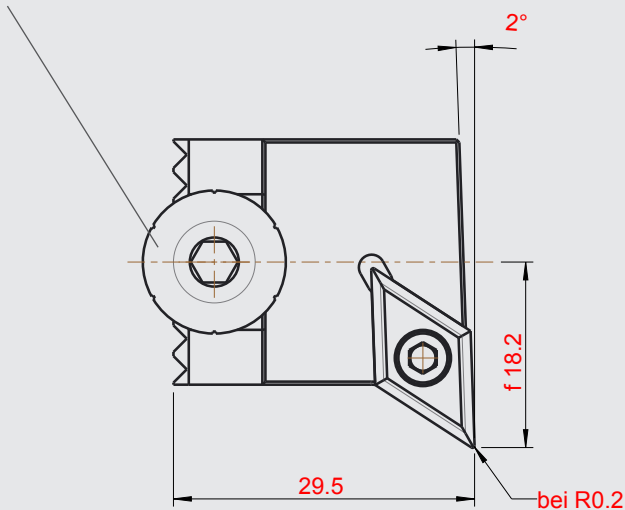
002.00.69

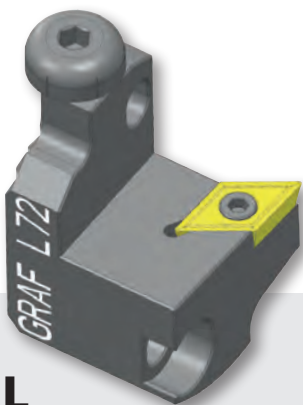
Wendeplatte
indexable insert

DC.. 11 T3 ..

Senkschraube
counter sunk-head screw

001.01.13





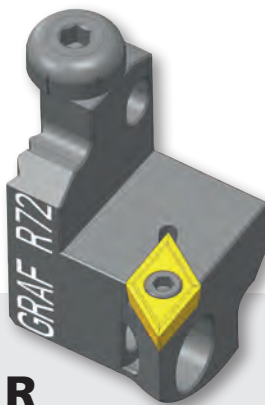
L

linksschneidend
cutting left

L72

Art. Nr. 12-0064

Anwendungsbereich **Kopierdrehen**
Application **copy turning**



R

rechtsschneidend
cutting right

R72

Art. Nr. 12-0063

Höhenverstellungsschraube
screw to adjust the height

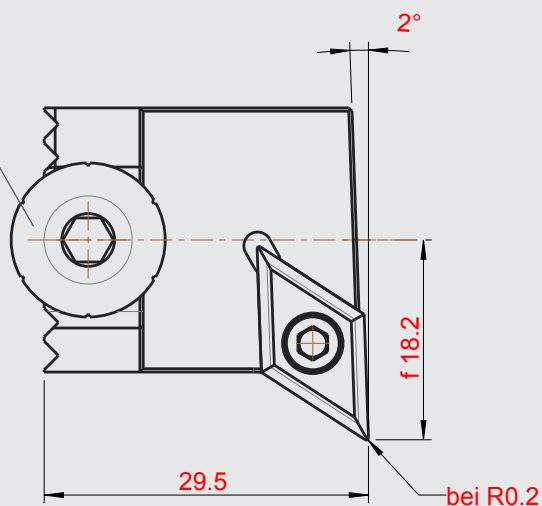
002.00.69

Wendeplatte
indexable insert

DC.. 11 T3 ..

Senkschraube
counter sunk-head screw

001.01.13





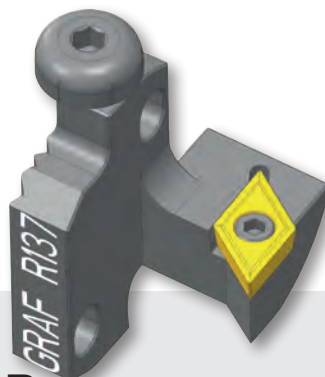
L

linksschneidend
cutting left

L137

Art. Nr. 12-1161

Anwendungsbereich **Kopierdrehen**
Application **copy turning**



R

rechtsschneidend
cutting right

R137

Art. Nr. 12-1160

Höhenverstellungsschraube
screw to adjust the height

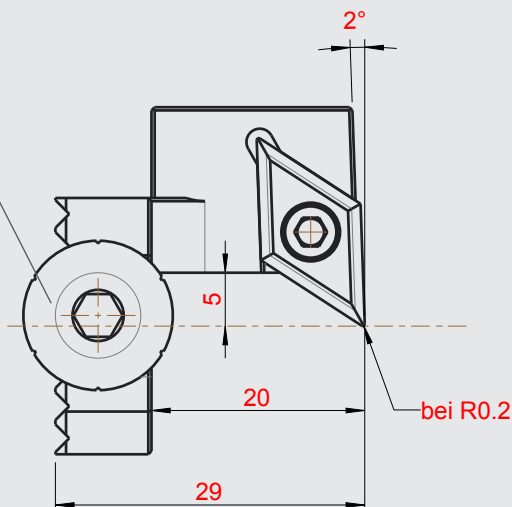
002.00.69

Wendeplatte
indexable insert

DC 11 T3..

Senkschraube
counter sunk-head screw

001.01.13





L

linksschneidend
cutting left

L13IK

Art. Nr. 12-1213

Anwendungsbereich **Kopierdrehen**
Application **copy turning**



R

rechtsschneidend
cutting right

R13IK

Art. Nr. 12-1212

Höhenverstellungsschraube
screw to adjust the height

002.00.69

Kühlmittelanschluss
Coolant supply

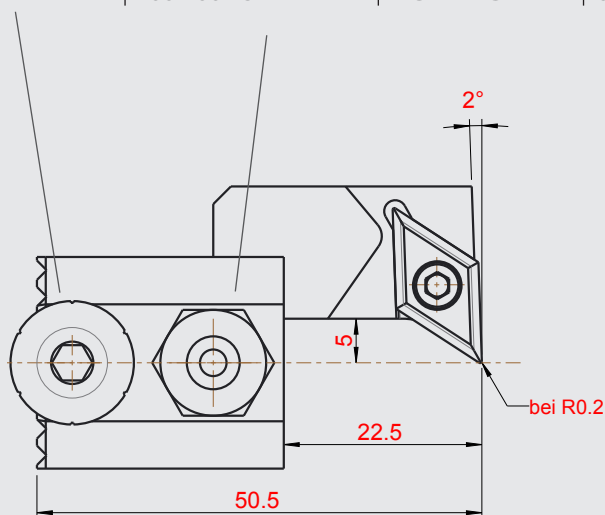
004.00.19

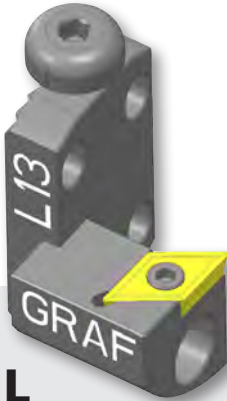
Wendeplatte
indexable insert

DC.. 11 T3 ..

Senkschraube
counter sunk-head screw

001.01.13





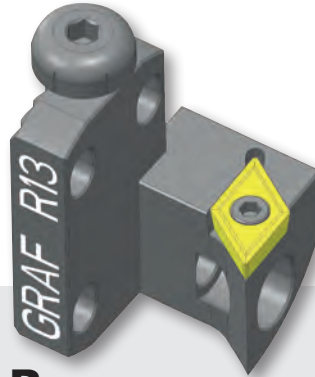
L

linksschneidend
cutting left

L13

Art. Nr. 12-0040

Anwendungsbereich **Kopierdrehen**
Application **copy turning**



R

rechtsschneidend
cutting right

R13

Art. Nr. 12-0039

Höhenverstellungsschraube
screw to adjust the height

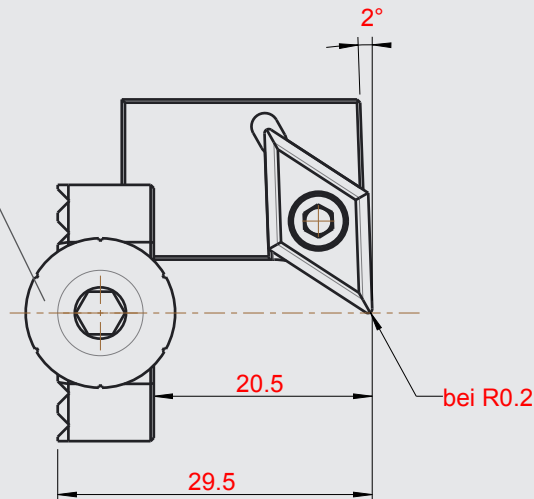
002.00.69

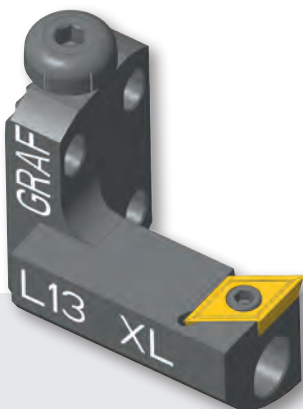
Wendeplatte
indexable insert

DC.. 11 T3 ..

Senkschraube
counter sunk-head screw

001.01.13





L

linksschneidend
cutting left

L13XL

Art. Nr. 12-1308

Anwendungsbereich **Kopierdrehen**
Application **copy turning**



R

rechtsschneidend
cutting right

R13XL

Art. Nr. 12-1307

Höhenverstellungsschraube
screw to adjust the height

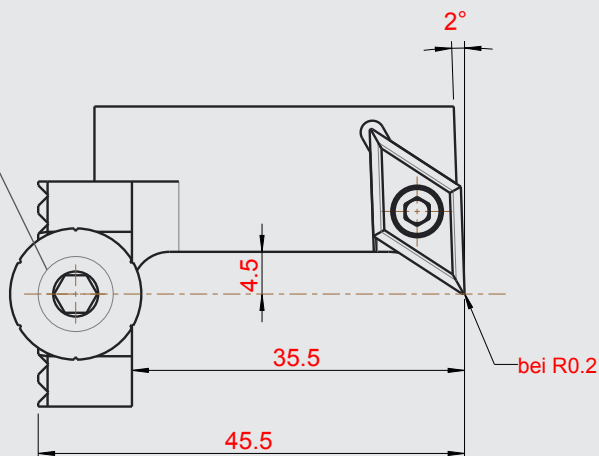
002.00.69

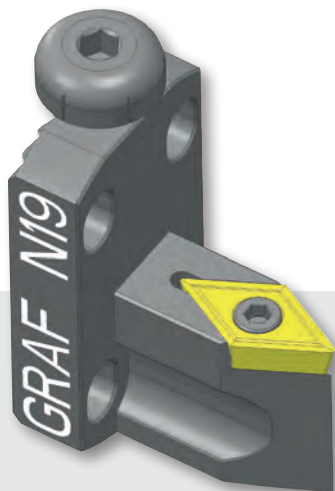
Wendeplatte
indexable insert

DC.. 11 T3 ..

Senkschraube
counter sunk-head screw

001.01.13





N19
Art. Nr. 12-0049

Anwendungsbereich **Axialdrehen**
Application **face grooving**

Höhenverstellungsschraube
screw to adjust the height

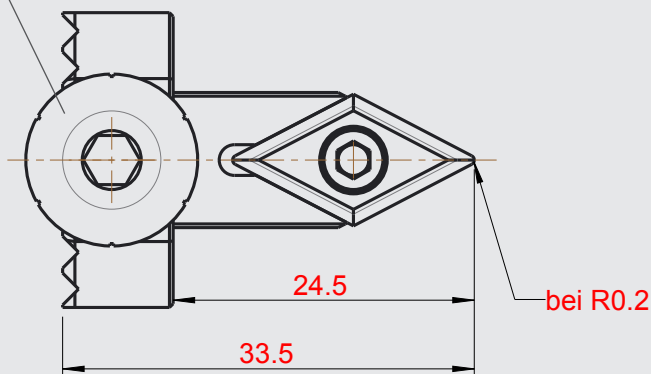
002.00.69

Wendeplatte
indexable insert

DC.. 11 T3 ..

Senkschraube
counter sunk-head screw

001.01.15





N19IK

Art. Nr. 12-0052

Anwendungsbereich **Axialdrehen**
Application **face grooving**

Höhenverstellungsschraube
screw to adjust the height

002.00.69

Kühlmittelanschluss
Coolant supply

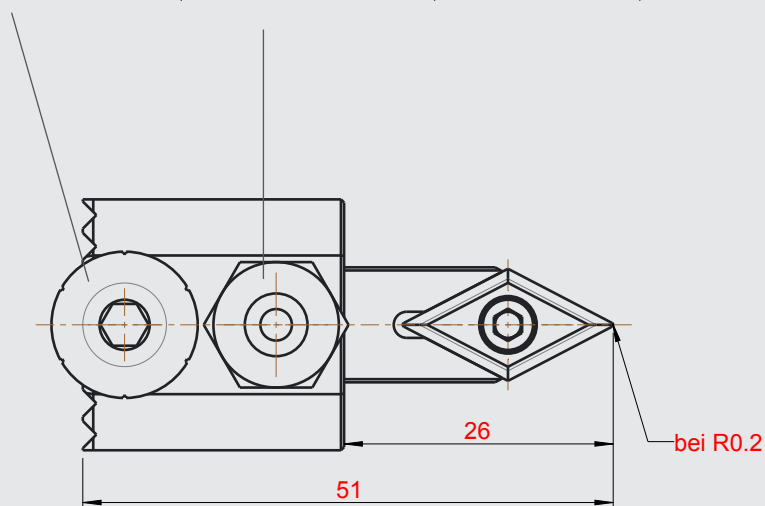
004.00.19

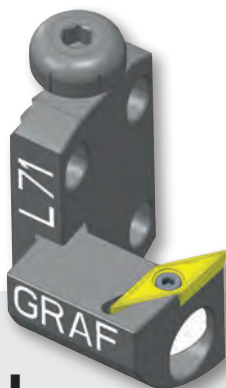
Wendeplatte
indexable insert

DC.. 11 T3 ..

Senkschraube
counter sunk-head screw

001.01.15





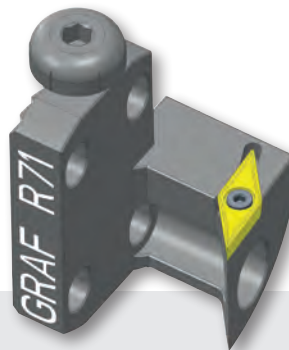
L

linksschneidend
cutting left

L71

Art. Nr. 12-0061

Anwendungsbereich **Kopierdrehen**
Application **copy turning**



R

linksschneidend
cutting left

R71

Art. Nr. 12-0060

Höhenverstellungsschraube
screw to adjust the height

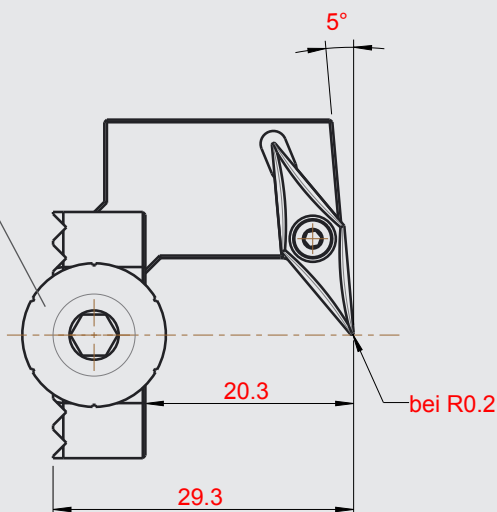
002.00.69

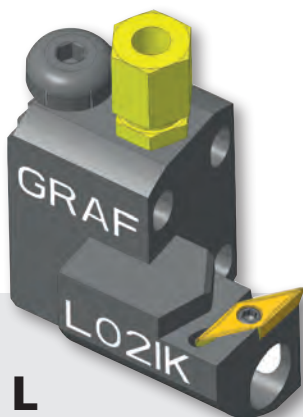
Wendeplatte
indexable insert

VB.. 11.03 ..

Senkschraube
counter sunk-head screw

001.01.08





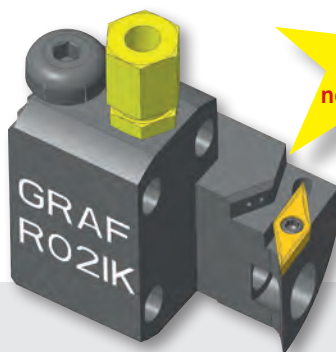
L

linksschneidend
cutting left

L02IK

Art. Nr. 12-1310

Anwendungsbereich **Kopierdrehen**
Application **copy turning**



R

rechtsschneidend
cutting right

R02IK

Art. Nr. 12-1309

Höhenverstellungsschraube
screw to adjust the height

002.00.69

Kühlmittelanschluss
Coolant supply

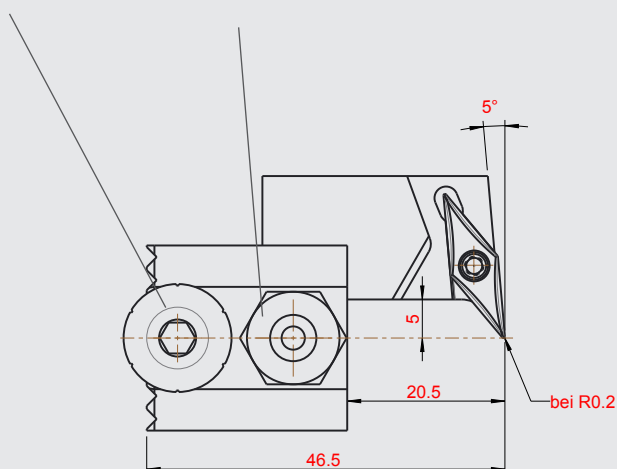
004.00.19

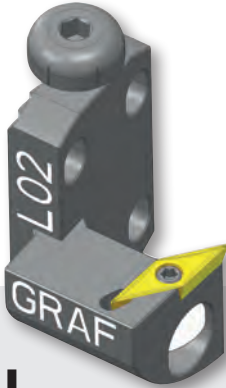
Wendeplatte
indexable insert

VC 11 03..

Senkschraube
counter sunk-head screw

001.01.08





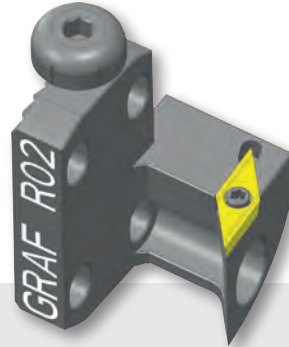
L

linksschneidend
cutting left

L02

Art. Nr. 12-0025

Anwendungsbereich **Kopierdrehen**
Application **copy turning**



R

rechtsschneidend
cutting right

R02

Art. Nr. 12-0024

Höhenverstellungsschraube
screw to adjust the height

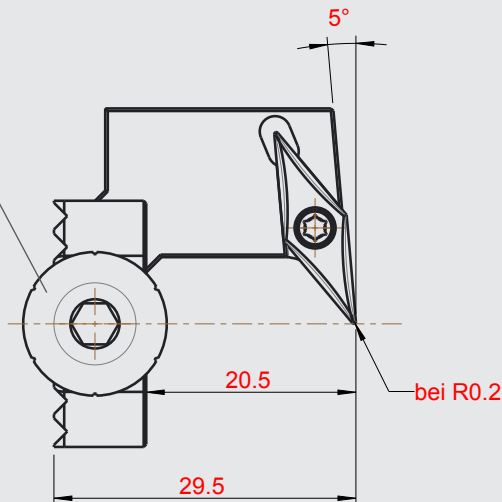
002.00.69

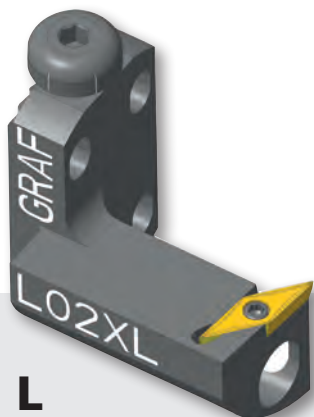
Wendeplatte
indexable insert

VC 11 03..

Senkschraube
counter sunk-head screw

001.01.08





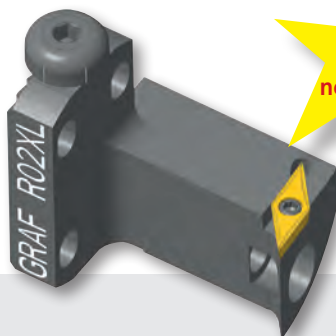
L

linksschneidend
cutting left

L02XL

Art. Nr. 12-1312

Anwendungsbereich **Kopierdrehen**
Application **copy turning**



R

rechtsschneidend
cutting right

R02XL

Art. Nr. 12-1311

Höhenverstellungsschraube
screw to adjust the height

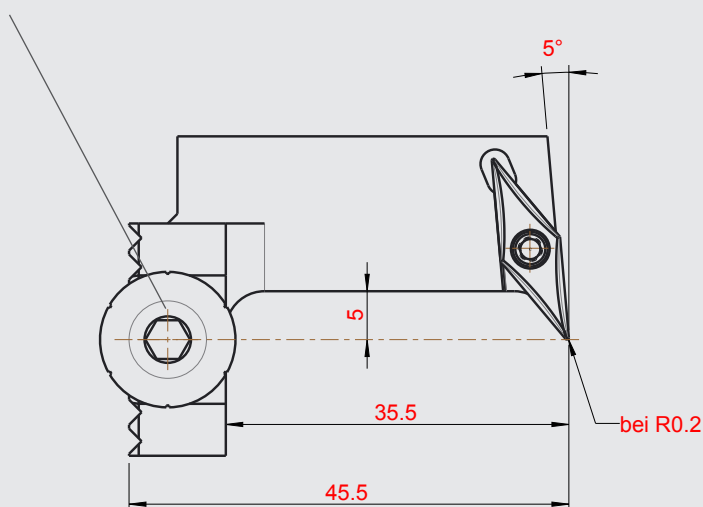
002.00.69

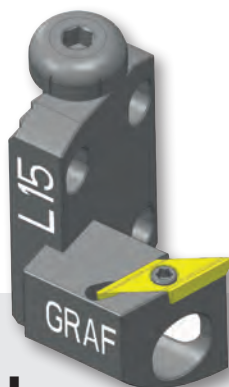
Wendeplatte
indexable insert

VC 11 03..

Senkschraube
counter sunk-head screw

001.01.08





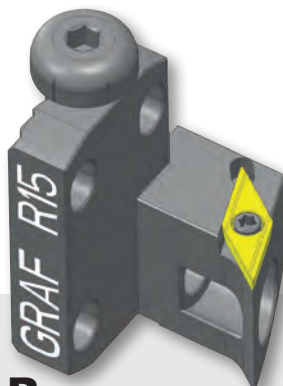
L

linksschneidend
cutting left

L15

Art. Nr. 12-0044

Anwendungsbereich **Kopierdrehen**
Application **copy turning**



R

rechtsschneidend
cutting right

R15

Art. Nr. 12-0043

Höhenverstellungsschraube
screw to adjust the height

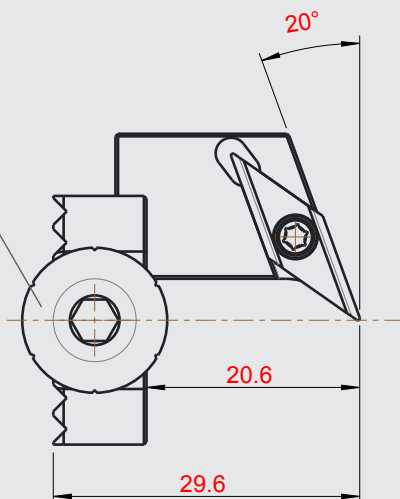
002.00.69

Wendeplatte
indexable insert

VC 11 03..

Senkschraube
counter sunk-head screw

001.01.08





L

linksschneidend
cutting left

L96

Art. Nr. 12-0092

Anwendungsbereich **Kopierdrehen**
Application **copy turning**



R

rechtsschneidend
cutting right

R96

Art. Nr. 12-0082

Höhenverstellungsschraube
screw to adjust the height

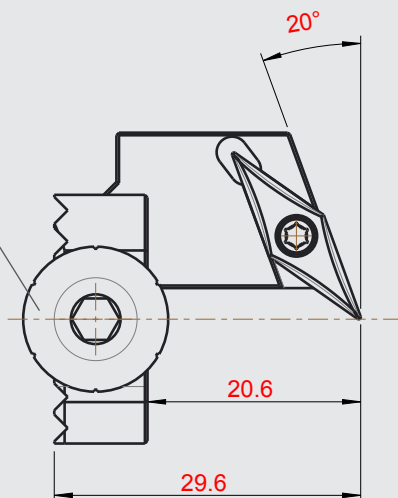
002.00.69

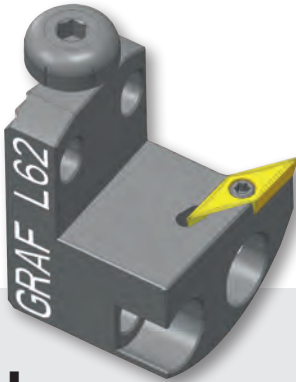
Wendeplatte
indexable insert

VC 11.03..

Senkschraube
counter sunk-head screw

001.01.08





L

linksschneidend
cutting left

L62

Art. Nr. 12-0500

Anwendungsbereich **Kopierdrehen**
Application **copy turning**



R

rechtsschneidend
cutting right

R62

Art. Nr. 12-0484

Höhenverstellungsschraube
screw to adjust the height

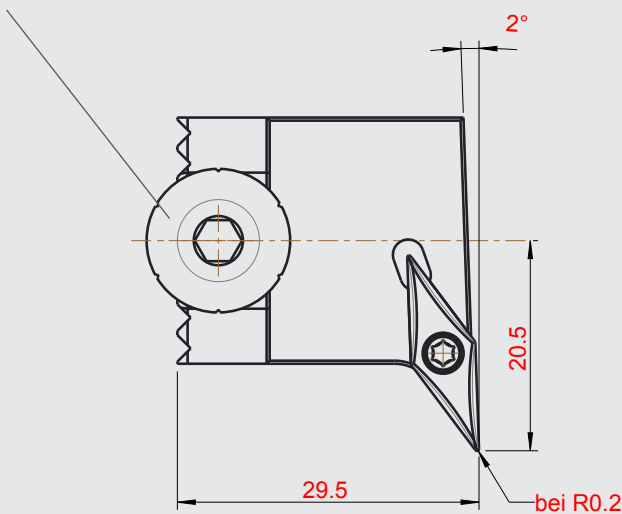
002.00.69

Wendeplatte
indexable insert

VC 11.03..

Senkschraube
counter sunk-head screw

001.01.08





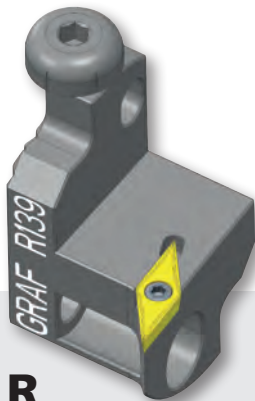
L

linksschneidend
cutting left

L139

Art. Nr. 12-1165

Anwendungsbereich **Kopierdrehen**
Application **copy turning**



R

rechtsschneidend
cutting right

R139

Art. Nr. 12-1164

Höhenverstellungsschraube
screw to adjust the height

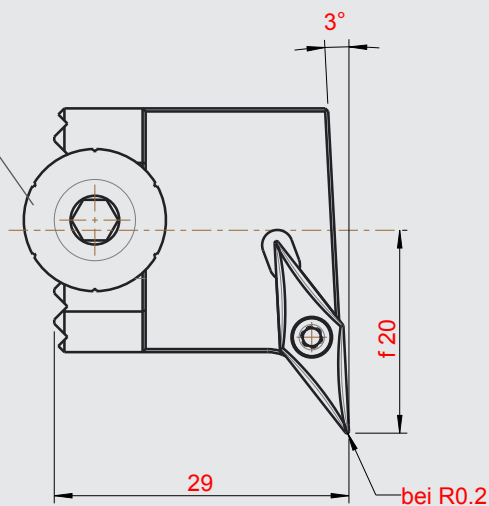
002.00.69

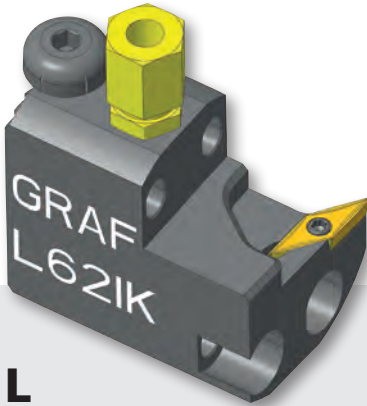
Wendeplatte
indexable insert

VC 11.03..

Senkschraube
counter sunk-head screw

001.01.08





L

linksschneidend
cutting left

L62IK

Art. Nr. 12-0530

Anwendungsbereich **Kopierdrehen**
Application **copy turning**



R

rechtsschneidend
cutting right

R62IK

Art. Nr. 12-0529

Höhenverstellungsschraube
screw to adjust the height

002.00.69

Kühlmittelanschluss
Coolant supply

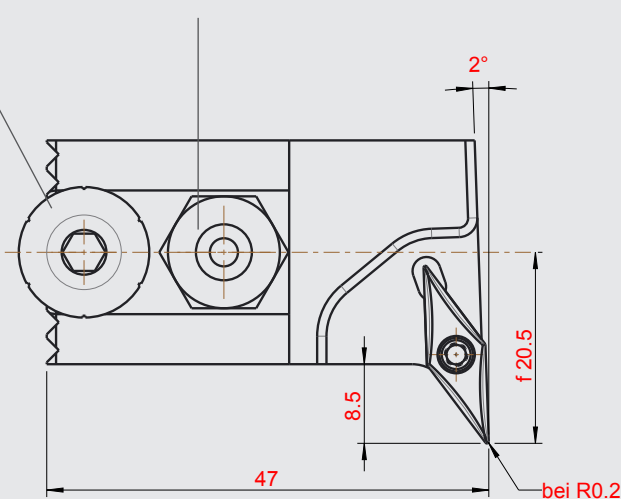
004.00.19

Wendeplatte
indexable insert

VC.. 11.03 ..

Senkschraube
counter sunk-head screw

001.01.08





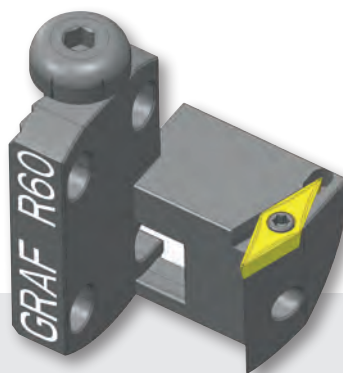
L

linksschneidend
cutting left

L60

Art. Nr. 12-1149

Anwendungsbereich **Kopierdrehen**
Application **copy turning**



R

rechtsschneidend
cutting right

R60

Art. Nr. 12-0482

Höhenverstellungsschraube
screw to adjust the height

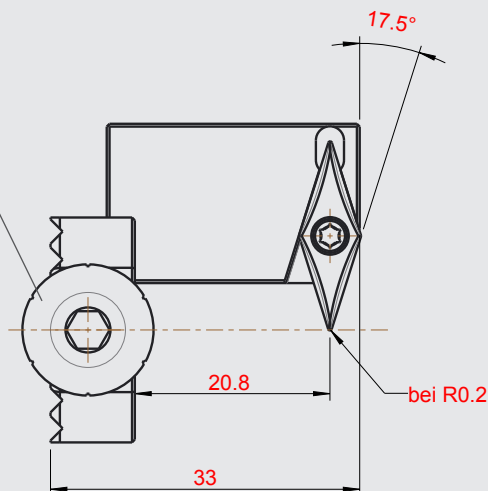
002.00.69

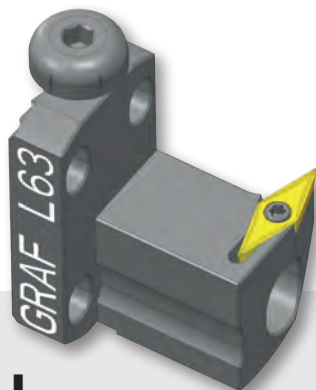
Wendeplatte
indexable insert

VC 11.03 ..

Senkschraube
counter sunk-head screw

001.01.08





L

linksschneidend
cutting left

L63

Art. Nr. 12-0086

Anwendungsbereich **Kopierdrehen**
Application **copy turning**



R

rechtsschneidend
cutting right

R63

Art. Nr. 12-0485

Höhenverstelle
screw to adjust the height

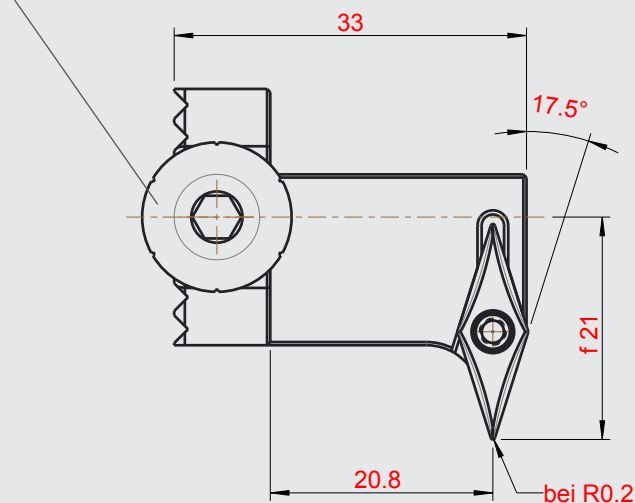
002.00.69

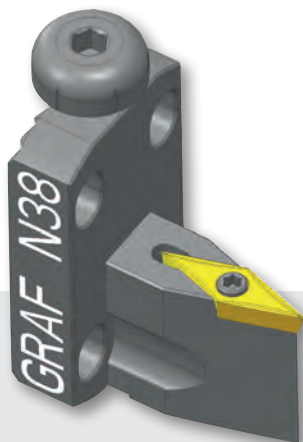
Wendeplatte
indexable insert

VC 11.03 ..

Senkschraube
counter sunk-head screw

001.01.08





N38

Art. Nr. 12-0478

Anwendungsbereich **Axialdrehen**

Application **face grooving**

Höhenverstelle
screw to adjust the height

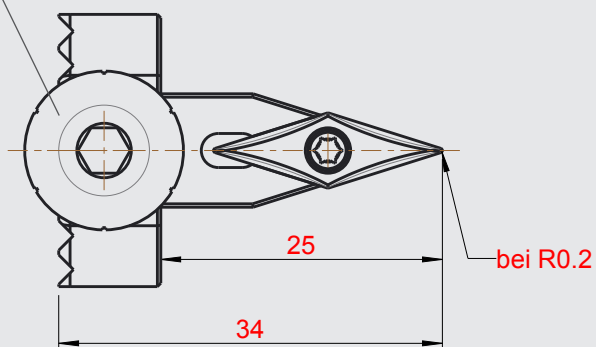
002.00.69

Wendeplatte
indexable insert

VC..11 03...

Senkschraube
counter sunk-head screw

001.01.08





N38IK

Art. Nr. 12-0480

Anwendungsbereich **Axialdrehen**
Application **face grooving**

Höhenverstellungsschraube
screw to adjust the height

002.00.69

Kühlmittelanschluss
Coolant supply

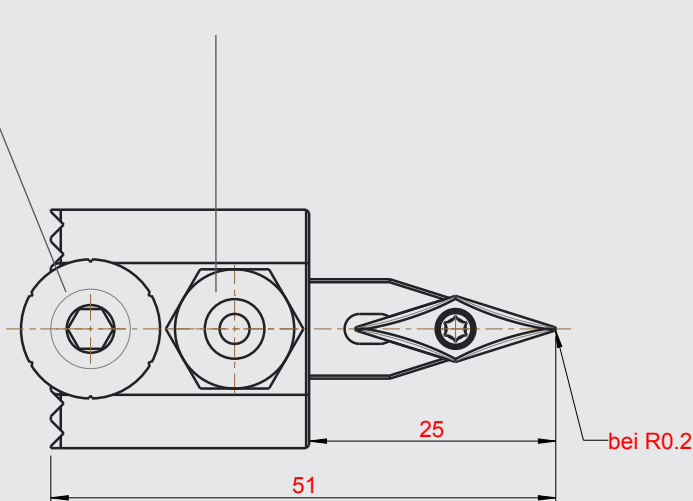
004.00.19

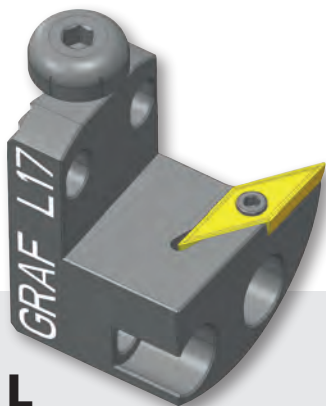
Wendeplatte
indexable insert

VC.. 11 03 ..

Senkschraube
counter sunk-head screw

001.01.15





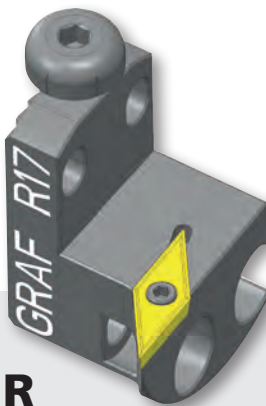
L

linksschneidend
cutting left

L17

Art. Nr. 12-0378

Anwendungsbereich **Kopierdrehen**
Application **copy turning**



R

rechtsschneidend
cutting right

R17

Art. Nr. 12-0377

Höhenverstellungsschraube
screw to adjust the height

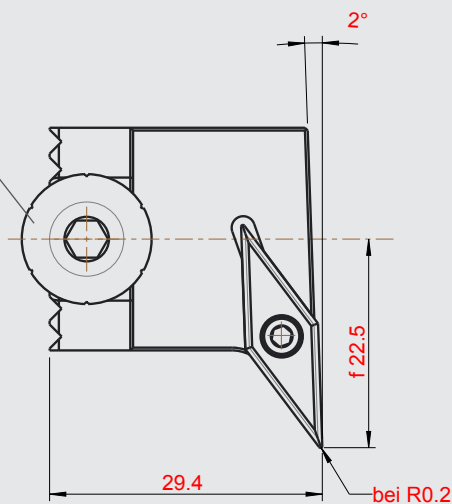
002.00.69

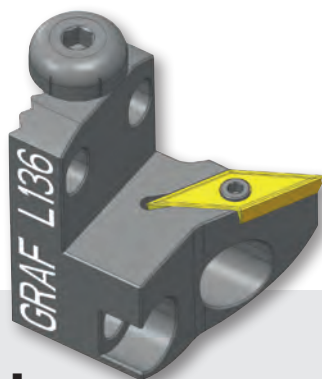
Wendeplatte
indexable insert

VC.. 13 03 ..

Senkschraube
counter sunk-head screw

001.01.07





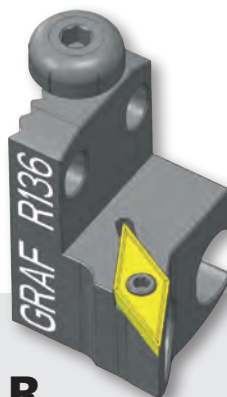
L

linksschneidend
cutting left

L136

Art. Nr. 12-1159

Anwendungsbereich **Kopierdrehen**
Application **copy turning**



R

rechtsschneidend
cutting right

R136

Art. Nr. 12-1074

Höhenverstellungsschraube
screw to adjust the height

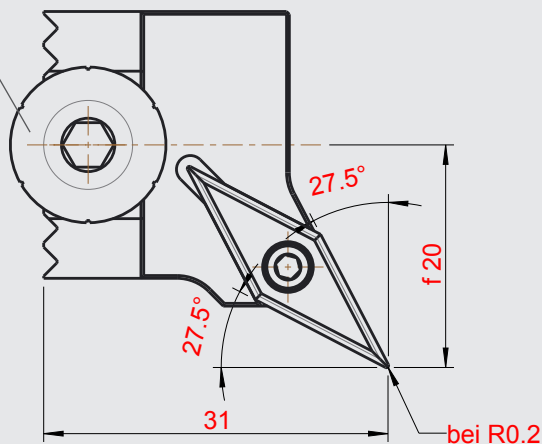
002.00.69

Wendeplatte
indexable insert

VC.. 13 03

Senkschraube
counter sunk-head screw

001.01.07





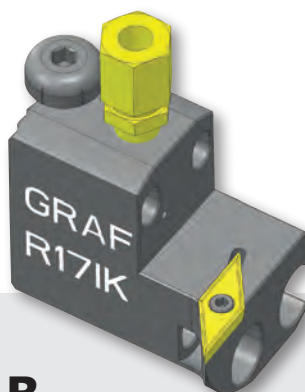
L

linksschneidend
cutting left

L17IK

Art. Nr. 12-0146

Anwendungsbereich **Kopierdrehen**
Application **copy turning**



R

rechtsschneidend
cutting right

R17IK

Art. Nr. 12-0145

Höhenverstellungsschraube
screw to adjust the height

002.00.69

Kühlmittelanschluss
Coolant supply

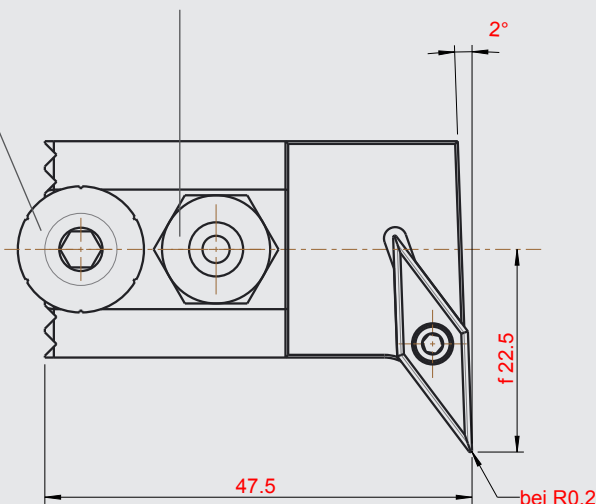
004.00.19

Wendeplatte
indexable insert

VC.. 13 03..

Senkschraube
counter sunk-head screw

001.01.07





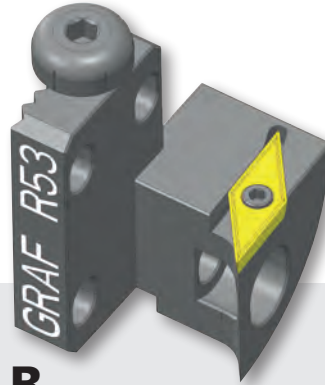
L

linksschneidend
cutting left

L53

Art. Nr. 12-0335

Anwendungsbereich **Kopierdrehen**
Application **copy turning**



R

rechtsschneidend
cutting right

R53

Art. Nr. 12-0333

Höhenverstellungsschraube
screw to adjust the height

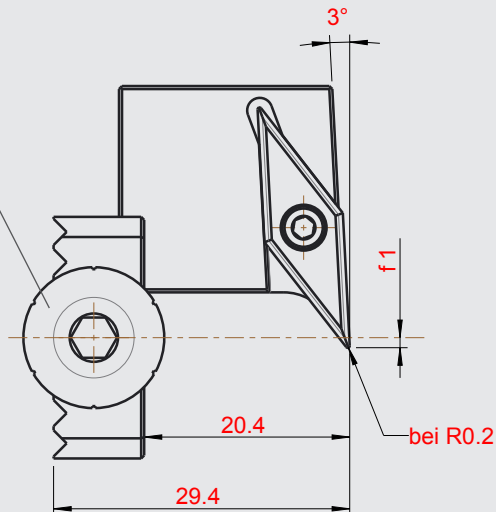
002.00.69

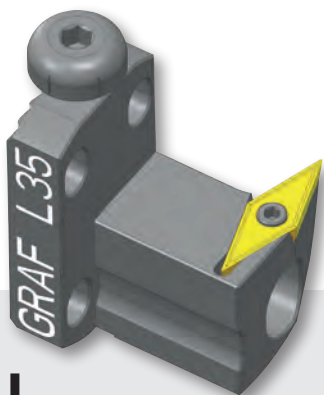
Wendeplatte
indexable insert

VC.. 13 03..

Senkschraube
counter sunk-head screw

001.01.07





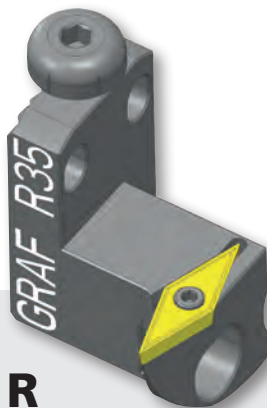
L

linksschneidend
cutting left

L35

Art. Nr. 12-0344

Anwendungsbereich **Kopierdrehen**
Application **copy turning**



R

rechtsschneidend
cutting right

R35

Art. Nr. 12-0330

Höhenverstelle
screw to adjust the height

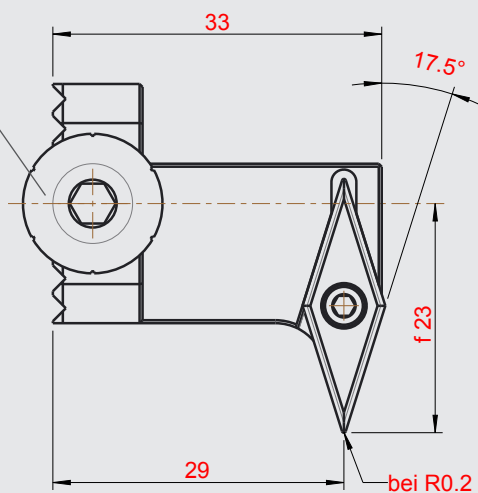
002.00.69

Wendeplatte
indexable insert

VC.. 13 03 ..

Senkschraube
counter sunk-head screw

001.01.07





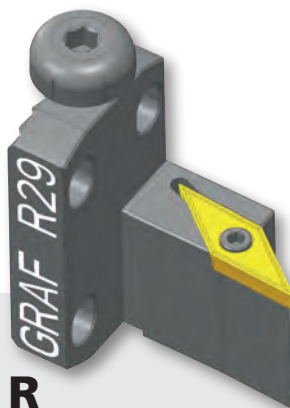
L

linksschneidend
cutting left

L29

Art. Nr. 12-0262

Anwendungsbereich **Axialdrehen**
Application **face grooving**



R

rechtsschneidend
cutting right

R29

Art. Nr. 12-0261

Höhenverstelle schraube
screw to adjust the height

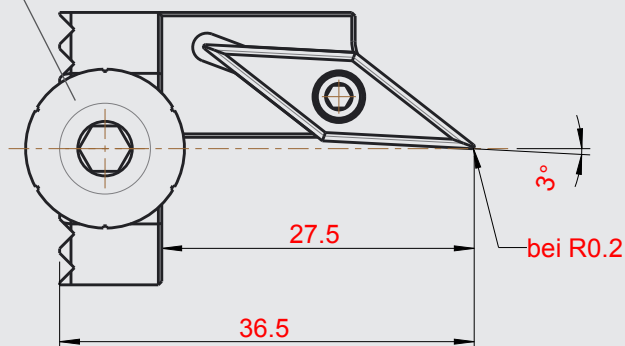
002.00.69

Wendeplatte
indexable insert

VC.. 13 03 ..

Senkschraube
counter sunk-head screw

001.01.07





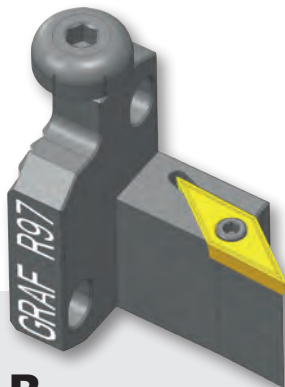
L

linksschneidend
cutting left

L97

Art. Nr. 12-1070

Anwendungsbereich **Axialdrehen**
Application **face grooving**



R

rechtsschneidend
cutting right

R97

Art. Nr. 12-0083

Höhenverstellungsschraube
screw to adjust the height

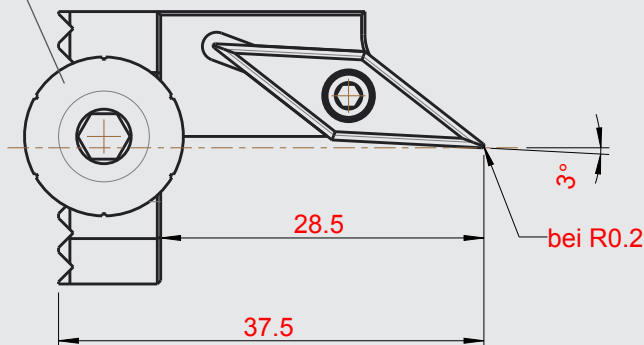
002.00.69

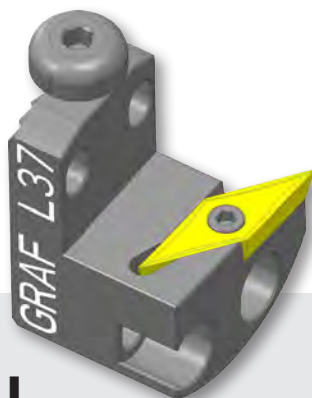
Wendeplatte
indexable insert

VC.. 13 03 ..

Senkschraube
counter sunk-head screw

001.01.07





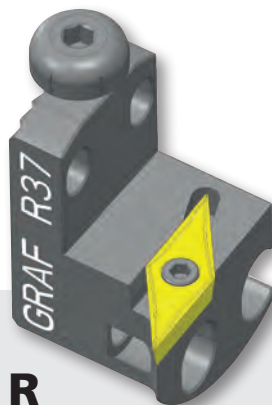
L

linksschneidend
cutting left

L37

Art. Nr. 12-0452

Anwendungsbereich **Kopierdrehen**
Application **copy turning**



R

rechtsschneidend
cutting right

R37

Art. Nr. 12-0449

Höhenverstellungsschraube
screw to adjust the height

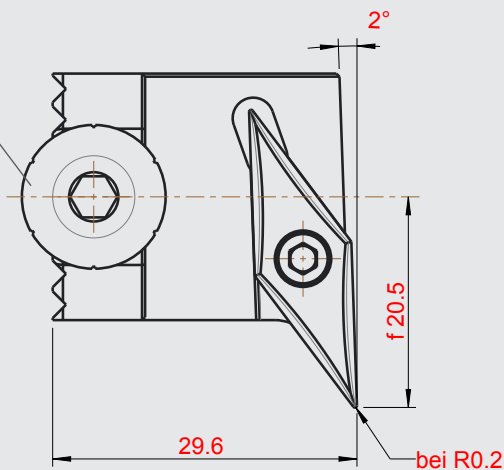
002.00.69

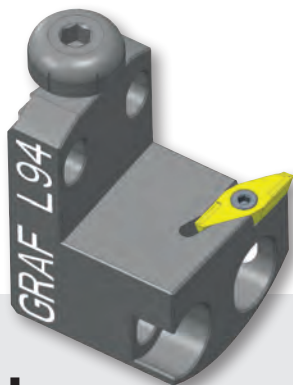
Wendeplatte
indexable insert

VC.. 16 04 ..

Senkschraube
counter sunk-head screw

001.01.15





L

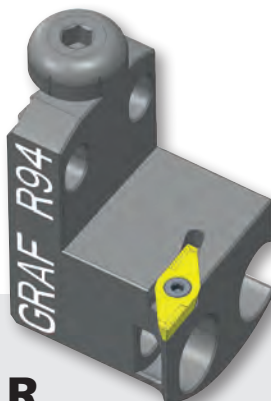
linksschneidend
cutting left

L94

Art. Nr. 12-1151

Anwendungsbereich **Langdrehen**

Application **turning**



R

rechtsschneidend
cutting right

R94

Art. Nr. 12-0532

Höhenverstellungsschraube
screw to adjust the height

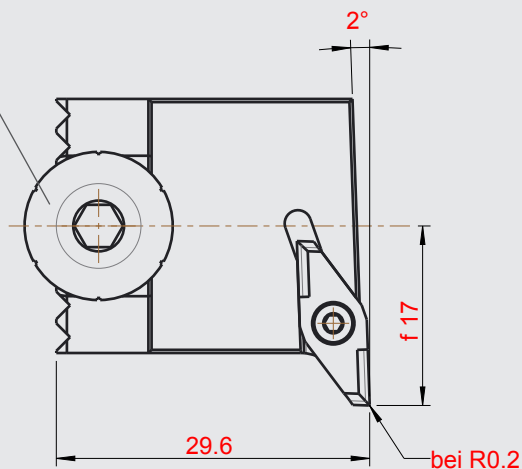
002.00.69

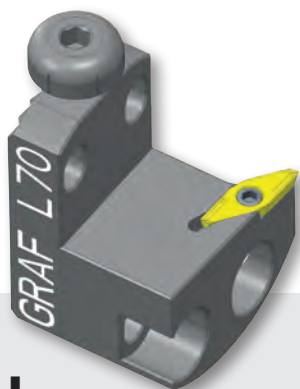
Wendeplatte
indexable insert

VP. 10 03 .. UTILIS

Senkschraube
counter sunk-head screw

001.01.33





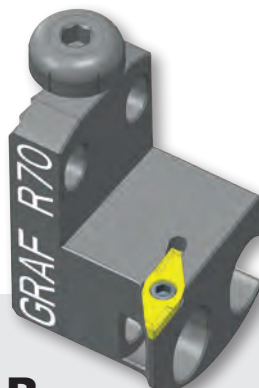
L

linksschneidend
cutting left

L70

Art. Nr. 12-1043

Anwendungsbereich **Langdrehen**
Application **turning**



R

rechtsschneidend
cutting right

R70

Art. Nr. 12-0514

Höhenverstellungsschraube
screw to adjust the height

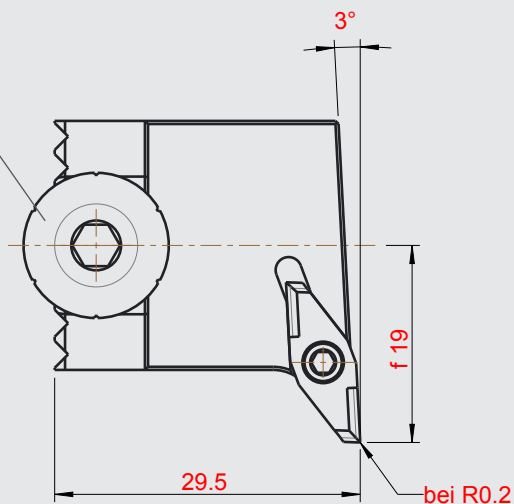
002.00.69

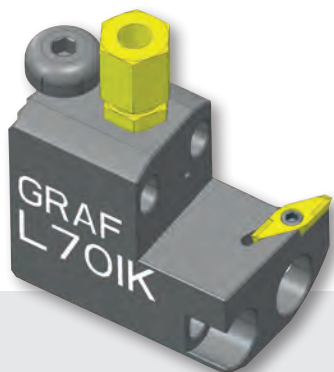
Wendeplatte
indexable insert

Applitec Typ 300

Senkschraube
counter sunk-head screw

001.01.33





L

linksschneidend
cutting left

L70IK

Art. Nr. 12-0520

Anwendungsbereich **Langdrehen**

Application **turning**



R

rechtsschneidend
cutting right

R70IK

Art. Nr. 12-0515

Höhenverstellungsschraube
screw to adjust the height

002.00.69

Kühlmittelanschluss
Coolant supply

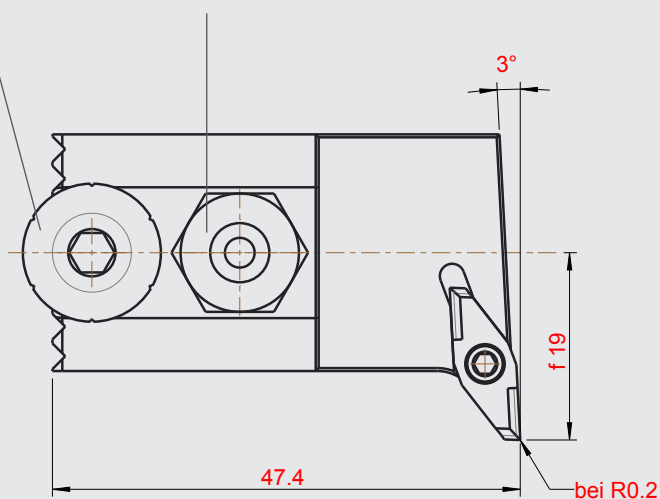
004.00.19

Wendeplatte
indexable insert

Applitec Typ 300

Senkschraube
counter sunk-head screw

001.01.33





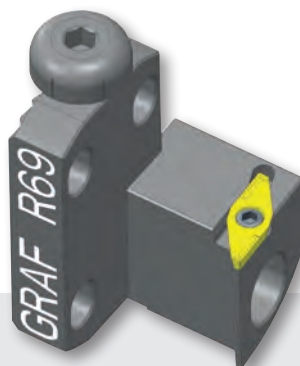
L

linksschneidend
cutting left

L69

Art. Nr. 12-1036

Anwendungsbereich **Langdrehen**
Application **turning**



R

rechtsschneidend
cutting right

R69

Art. Nr. 12-0513

Höhenverstelle schraube
screw to adjust the height

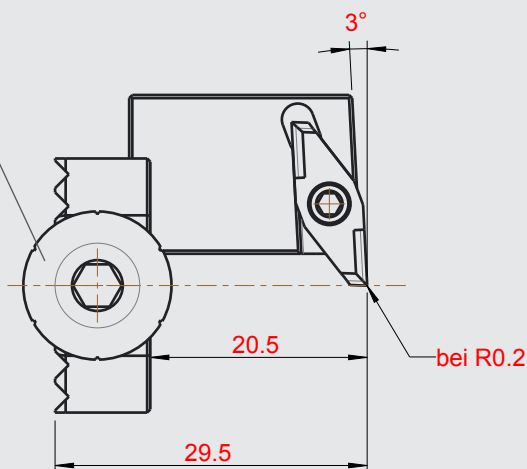
002.00.69

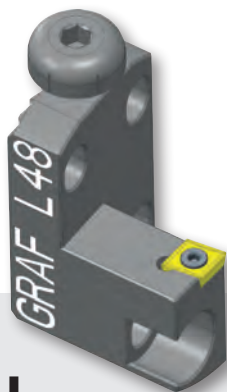
Wendeplatte
indexable insert

Applitec Typ 300

Senkschraube
counter sunk-head screw

001.01.33





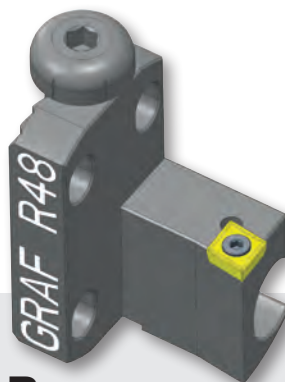
L

linksschneidend
cutting left

L48

Art. Nr. 12-0483

Anwendungsbereich **Langdrehen**
Application **turning**



R

rechtsschneidend
cutting right

R48

Art. Nr. 12-0467

Höhenverstellungsschraube
screw to adjust the height

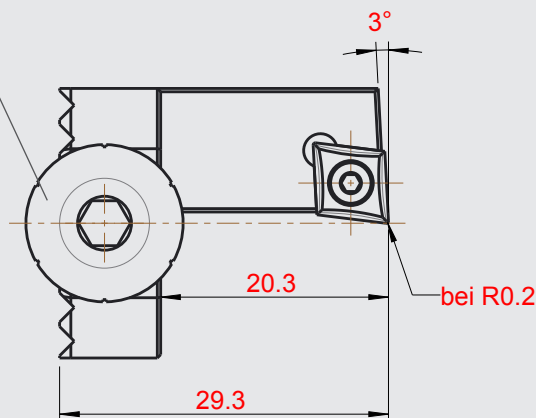
002.00.69

Wendeplatte
indexable insert

CC.. 06 02 ..

Senkschraube
counter sunk-head screw

001.01.01





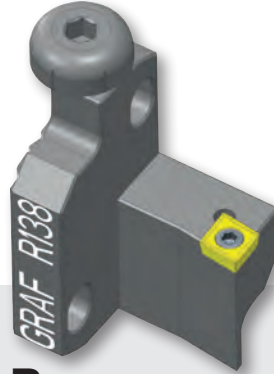
L

linksschneidend
cutting left

L138

Art. Nr. 12-1163

Anwendungsbereich **Langdrehen**
Application **turning**



R

rechtsschneidend
cutting right

R138

Art. Nr. 12-1162

Höhenverstellungsschraube
screw to adjust the height

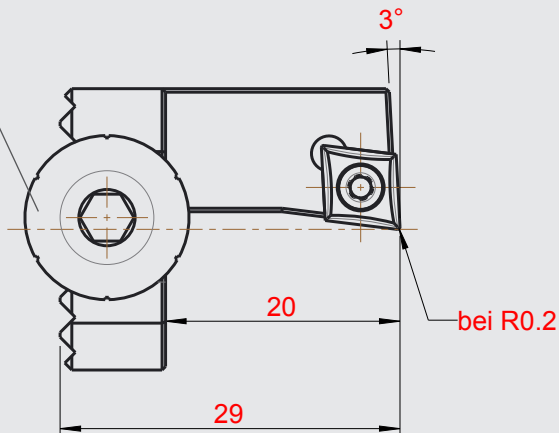
002.00.69

Wendeplatte
indexable insert

CC.. 06 02..

Senkschraube
counter sunk-head screw

001.01.01





L

linksschneidend
cutting left

L48IK

Art. Nr. 12-1152

Anwendungsbereich **Langdrehen**
Application **turning**



R

rechtsschneidend
cutting right

R48IK

Art. Nr. 12-0549

Höhenverstellungsschraube
screw to adjust the height

002.00.69

Kühlmittelanschluss
Coolant supply

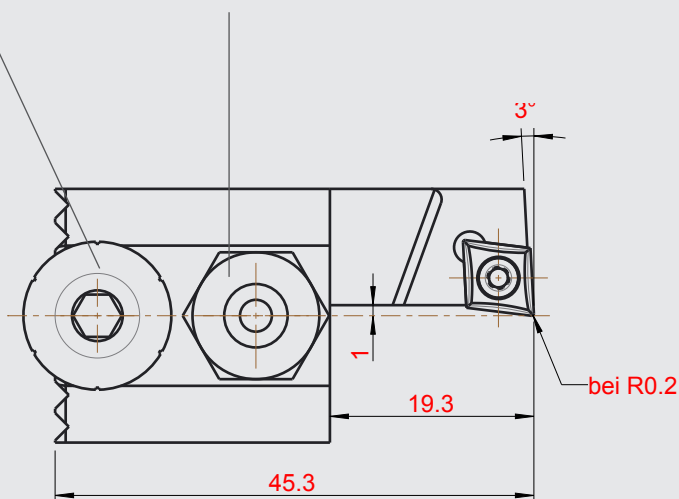
004.00.19

Wendeplatte
indexable insert

CC.. 06 02..

Senkschraube
counter sunk-head screw

001.01.01





L

linksschneidend
cutting left

L50IK

Art. Nr. 12-1154

Anwendungsbereich **Langdrehen**
Application **turning**



R

rechtsschneidend
cutting right

R50IK

Art. Nr. 12-1153

Höhenverstellungsschraube
screw to adjust the height

002.00.69

Kühlmittelanschluss
Coolant supply

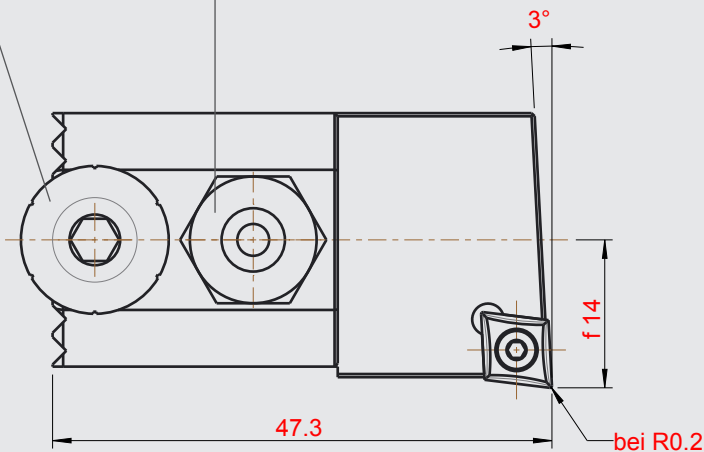
004.00.19

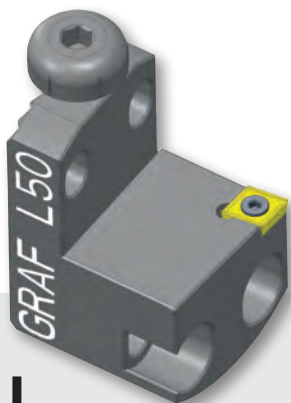
Wendeplatte
indexable insert

CC.. 06 02..

Senkschraube
counter sunk-head screw

001.01.01





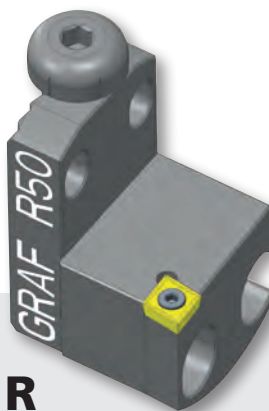
L

linksschneidend
cutting left

L50

Art. Nr. 12-0516

Anwendungsbereich **Langdrehen**
Application **turning**



R

rechtsschneidend
cutting right

R50

Art. Nr. 12-0499

Höhenverstellungsschraube
screw to adjust the height

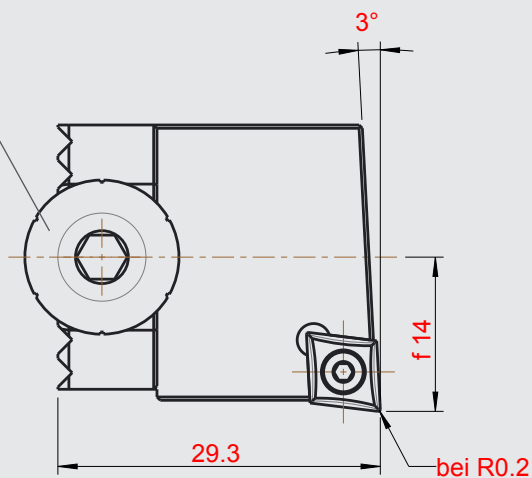
002.00.69

Wendeplatte
indexable insert

CC.. 06 02

Senkschraube
counter sunk-head screw

001.01.01





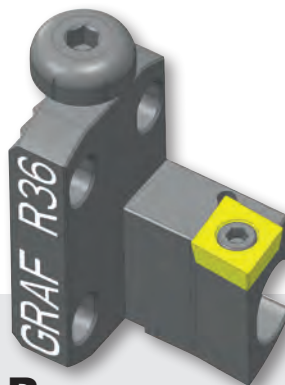
L

linksschneidend
cutting left

L36

Art. Nr. 12-0407

Anwendungsbereich **Langdrehen**
Application **turning**



R

rechtsschneidend
cutting right

R36

Art. Nr. 12-0359

Höhenverstellungsschraube
screw to adjust the height

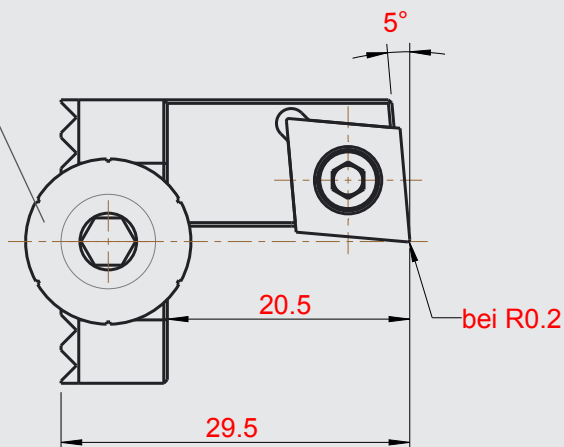
002.00.69

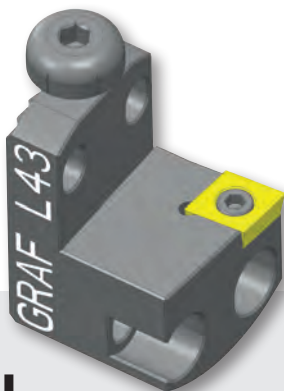
Wendeplatte
indexable insert

CC.. 09 T3..

Senkschraube
counter sunk-head screw

001.01.15





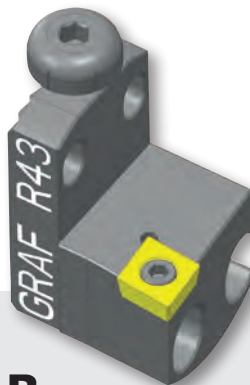
L

linksschneidend
cutting left

L43

Art. Nr. 12-0465

Anwendungsbereich **Langdrehen**
Application **turning**



R

rechtsschneidend
cutting right

R43

Art. Nr. 12-0453

Höhenverstellungsschraube
screw to adjust the height

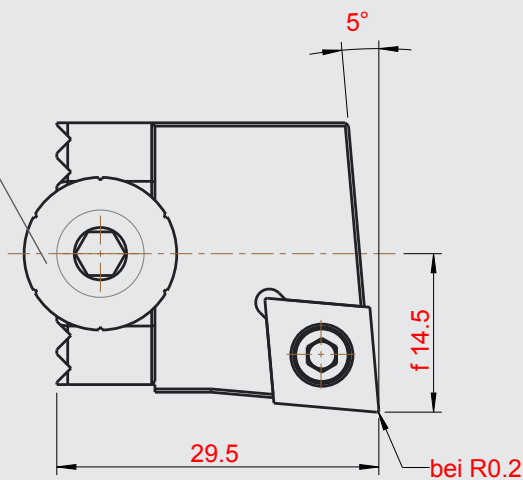
002.00.69

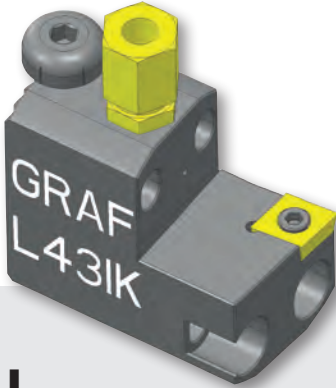
Wendeplatte
indexable insert

CC.. 09 T3..

Senkschraube
counter sunk-head screw

001.01.15





L

linksschneidend
cutting left

L43IK

Art. Nr. 12-0503

Anwendungsbereich **Langdrehen**
Application **turning**



R

rechtsschneidend
cutting right

R43IK

Art. Nr. 12-0490

Höhenverstellungsschraube
screw to adjust the height

002.00.69

Kühlmittelanschluss
Coolant supply

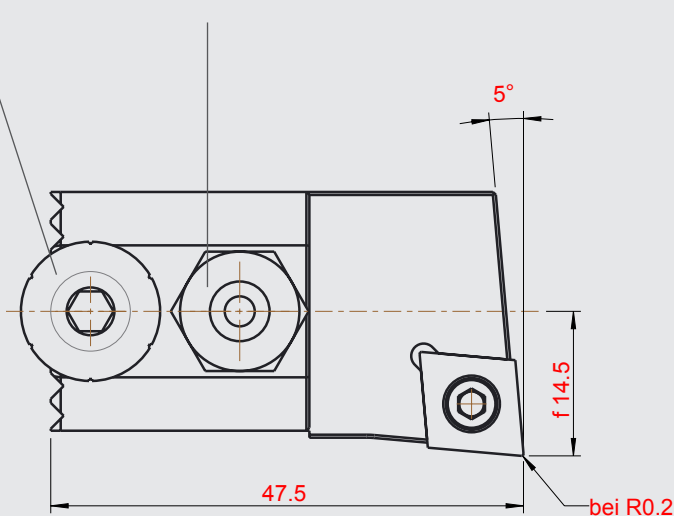
004.00.19

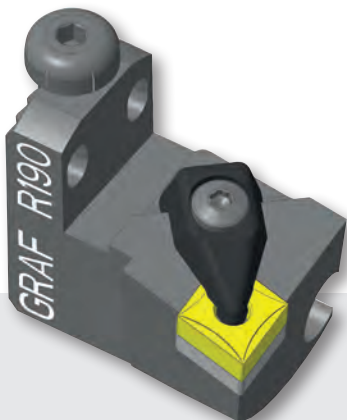
Wendeplatte
indexable insert

CC.. 09 T3

Senkschraube
counter sunk-head screw

001.01.15





R190

Art. Nr. 12-1284

Anwendungsbereich **Langdrehen**
Application **turning**

L190

Art. Nr. 12-1285

Höhenverstellungsschraube
screw to adjust the height

002.00.69

Wendeplatte
indexable insert

CN.. 12 04..

Spannelement
clamping element

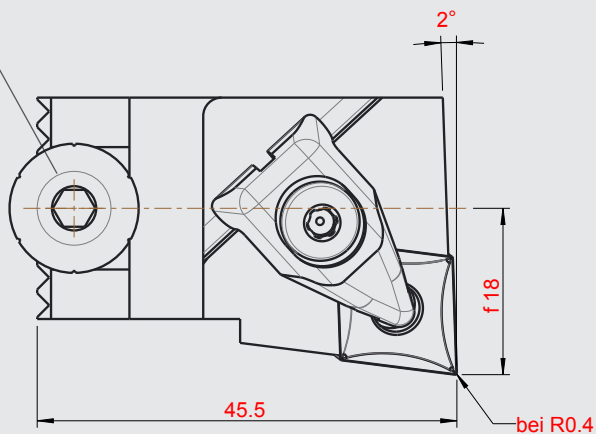
001.01.597

Gewindestift
set screw

001.01.599

Unterlegplatte
base plate

001.01.598





L

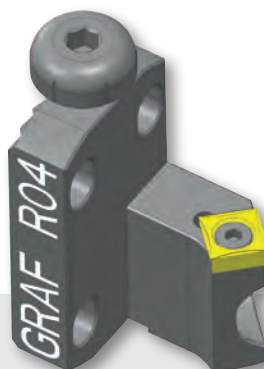
linksschneidend
cutting left

L04

Art. Nr. 12-0029

Anwendungsbereich **Axialdrehen**

Application **face grooving**



R

rechtsschneidend
cutting right

R04

Art. Nr. 12-0028

Höhenverstellungsschraube
screw to adjust the height

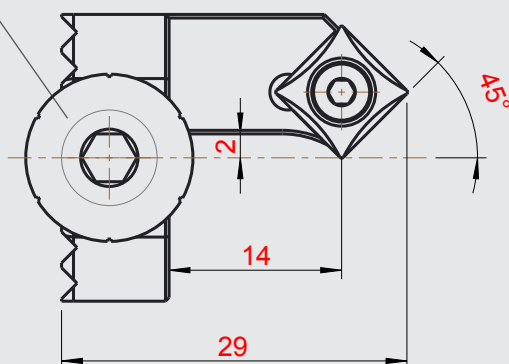
002.00.69

Wendeplatte
indexable insert

SC.. 07 03..

Senkschraube
counter sunk-head screw

001.01.04





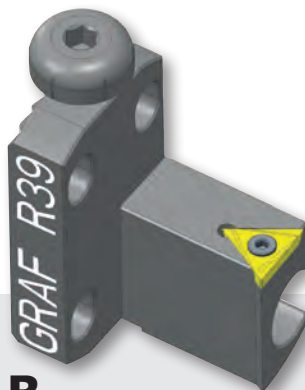
L

linksschneidend
cutting left

L39

Art. Nr. 12-0479

Anwendungsbereich **Langdrehen**
Application **turning**



R

rechtsschneidend
cutting right

R39

Art. Nr. 12-0451

Höhenverstellungsschraube
screw to adjust the height

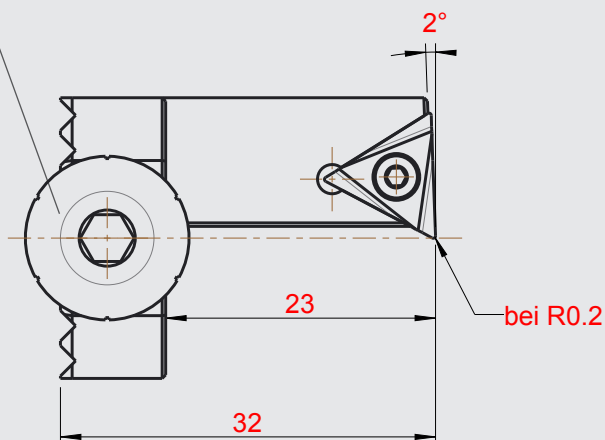
002.00.69

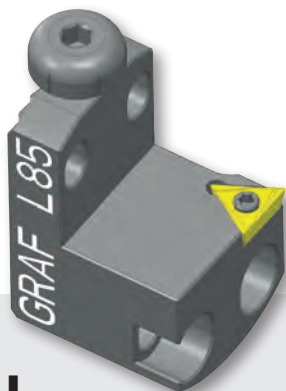
Wendeplatte
indexable insert

TC.. 11 02..

Senkschraube
counter sunk-head screw

001.01.01





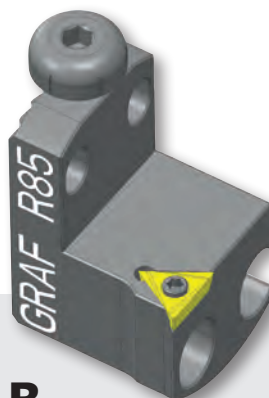
L

linksschneidend
cutting left

L85

Art. Nr. 12-0075

Anwendungsbereich **Langdrehen**
Application **turning**



R

rechtsschneidend
cutting right

R85

Art. Nr. 12-0073

Höhenverstellungsschraube
screw to adjust the height

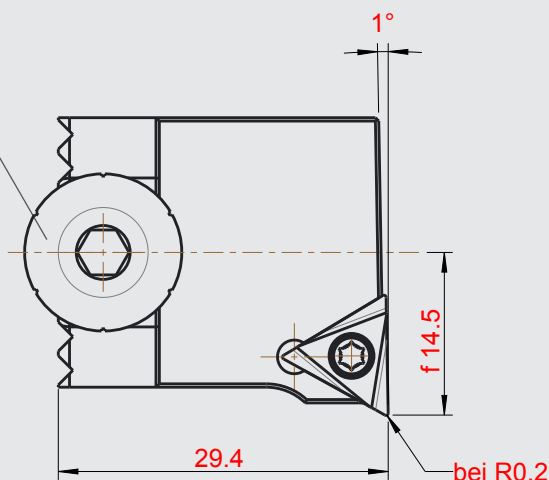
002.00.69

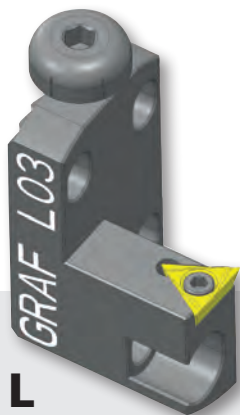
Wendeplatte
indexable insert

TC.. 11 03..

Senkschraube
counter sunk-head screw

001.01.01





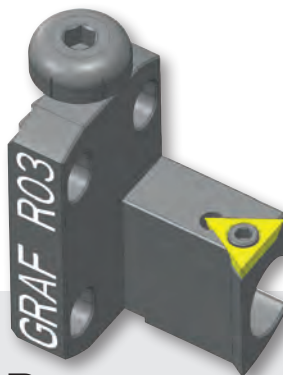
L

linksschneidend
cutting left

L03

Art. Nr. 12-0027

Anwendungsbereich **Langdrehen**
Application **turning**



R

rechtsschneidend
cutting right

R03

Art. Nr. 12-0026

Höhenverstelle schraube
screw to adjust the height

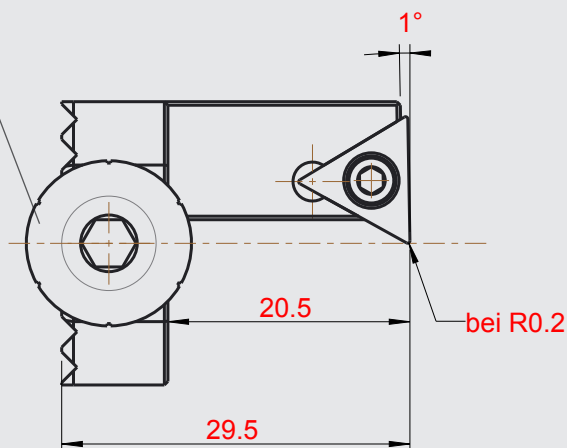
002.00.69

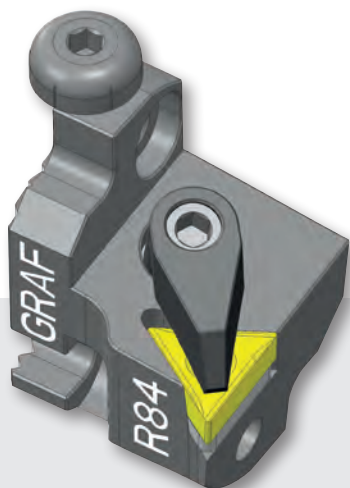
Wendeplatte
indexable insert

TP.. 11 03..

Senkschraube
counter sunk-head screw

001.01.07





R84 Art. Nr. 12-0074

Anwendungsbereich **Langdrehen**
Application **turning**

Höhenverstellungsschraube
screw to adjust the height

002.00.69

Wendeplatte
indexable insert

TN.. 16 04..

Spannelement
clamping element

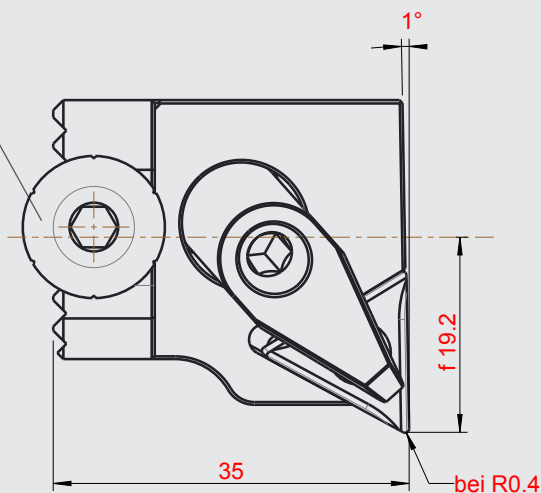
001.01.41

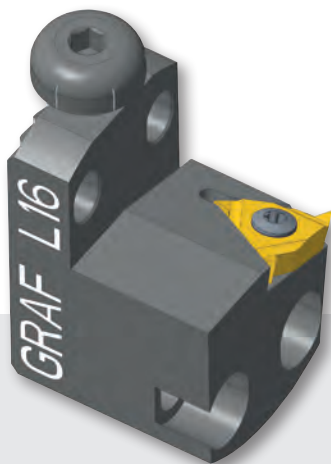
Gewindestift
set screw

001.01.42

Unterlegplatte
base plate

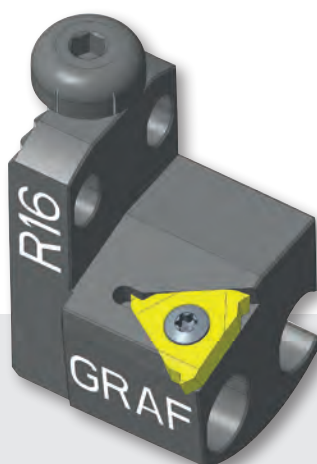
001.01.43





L16
Art. Nr. 12-0046

Anwendungsbereich **Gewindedrehen**
Application **threading**



R16
Art. Nr. 12-0045

Höhenverstellungsschraube
screw to adjust the height

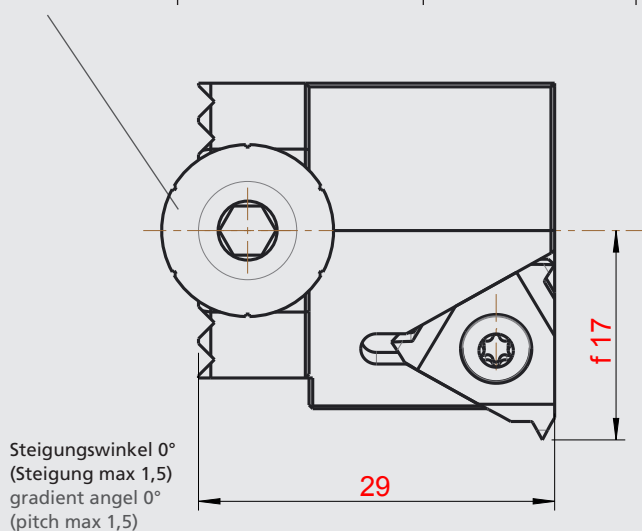
002.00.69

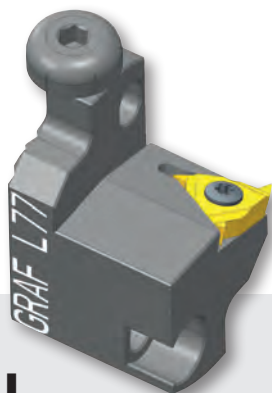
Wendeplatte
indexable insert

ER 16.. /EL 16..

Senkschraube
counter sunk-head screw

001.01.65





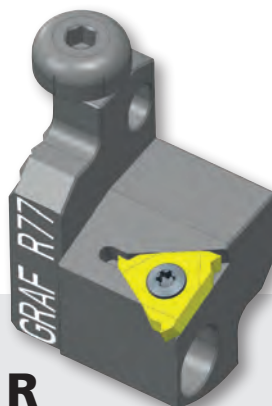
L

linksschneidend
cutting left

L77

Art. Nr. 12-0070

Anwendungsbereich **Gewindedrehen**
Range of application **threading**



R

rechtsschneidend
cutting right

R77

Art. Nr. 12-0071

Höhenverstellungsschraube
screw to adjust the height

002.00.69

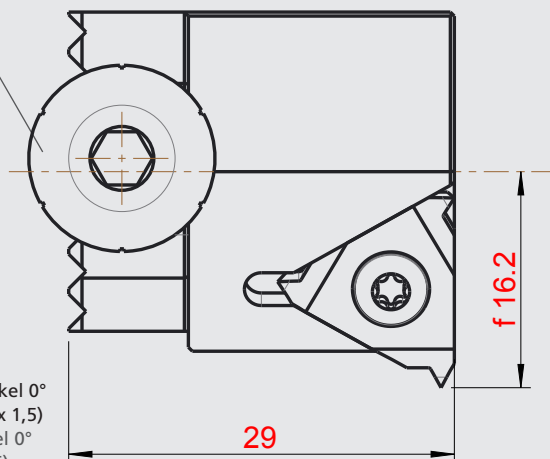
Wendeplatte
indexable insert

ER 16.. /EL 16..

Senkschraube
counter sunk-head screw

001.01.65

Steigungswinkel 0°
(Steigung max 1,5)
gradient angel 0°
(pitch max 1,5)





L

linksschneidend
cutting left

L16IK

Art. Nr. 12-0148

Anwendungsbereich **Gewindedrehen**

Application **threading**



R

rechtsschneidend
cutting right

R16IK

Art. Nr. 12-0147

Höhenverstellungsschraube
screw to adjust the height

002.00.69

Kühlmittelanschluss
Coolant supply

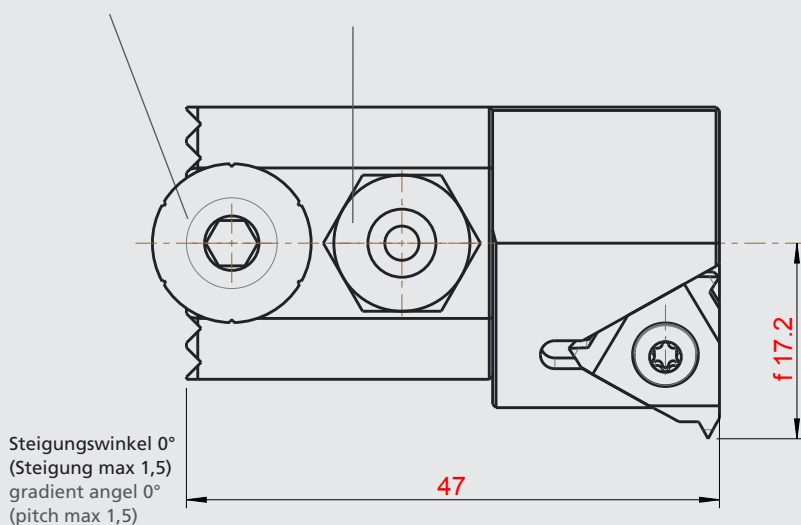
004.00.19

Wendeplatte
indexable insert

ER 16.. /EL 16..

Senkschraube
counter sunk-head screw

001.01.65



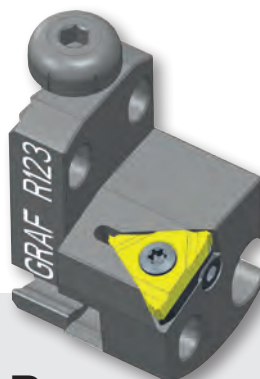


L

linksschneidend
cutting left

L123

Art. Nr. 12-1147



R

rechtsschneidend
cutting right

R123

Art. Nr. 12-1146

Anwendungsbereich **Gewindedrehen**
Range of application **threading**

Höhenverstellungsschraube
screw to adjust the height

002.00.69

Wendeplatte
indexable insert

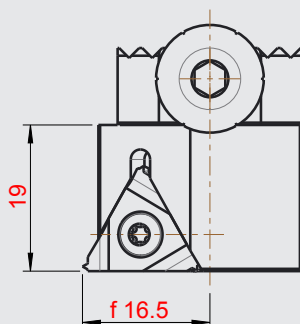
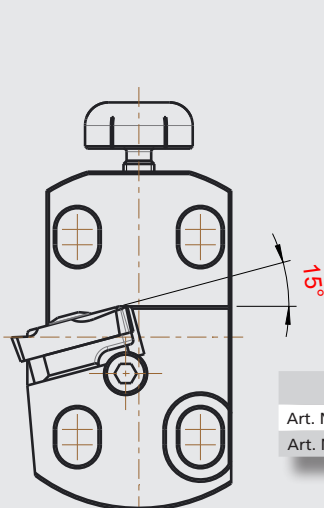
ER 16.. /EL 16..

Senkschraube
counter sunk-head screw

001.01.65

Zylinderschraube
screw

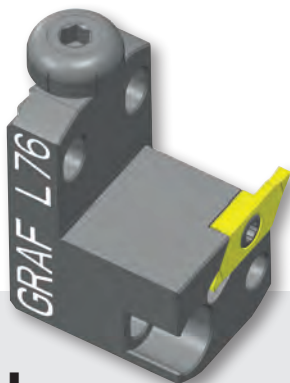
001.01.75



Unterlegplatte / Shim

	3° N	2° N	1° N	0°	1° P	2° P
Art. Nr. R	00200185	00200184	00200183	00200180	00200182	00200181
Art. Nr. L	00200195	00200194	00200193	00200190	00200192	00200191

Berechnung Steigungswinkel auf Seite 3.126.
calculation gradient angle see page 3.126.

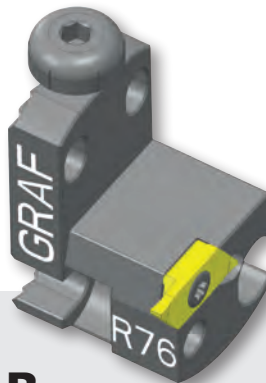


L

linksschneidend
cutting left

L76

Art. Nr. 12-1104



R

rechtsschneidend
cutting right

R76

Art. Nr. 12-0096

Anwendungsbereich **Formstechen, Gewindestrehlen, Einstech-Langdrehen**
Application **forming, grooving, turning, threading**

Höhenverstelle schraube
screw to adjust the height

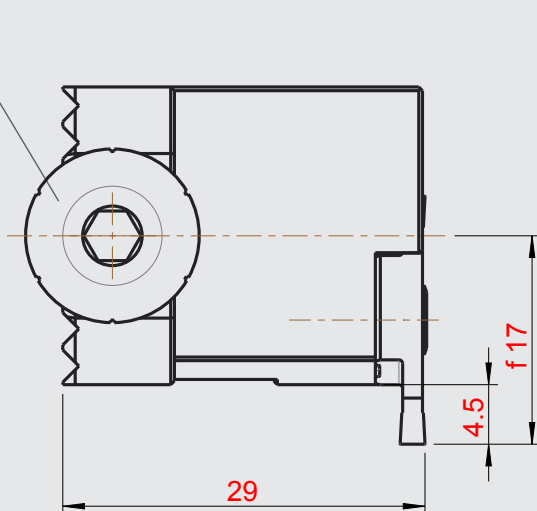
002.00.69

Wendeplatte
indexable insert

Horn Typ S274..

Senkschraube
counter sunk-head screw

001.01.39





L

linksschneidend
cutting left

L76IK

Art. Nr. 12-1075



R

rechtsschneidend
cutting right

R76IK

Art. Nr. 12-0072

Anwendungsbereich **Formstechen, Gewindestrehlen, Einstech-Langdrehen**
Application **forming, grooving, turning, threading**

Höhenverstellungsschraube
screw to adjust the height

002.00.69

Kühlmittelanschluss
Coolant supply

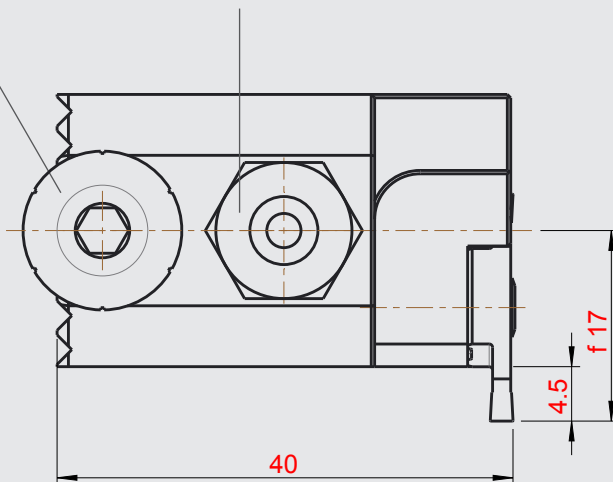
004.00.19

Wendeplatte
indexable insert

Horn Typ S274..

Senkschraube
counter sunk-head screw

001.01.39





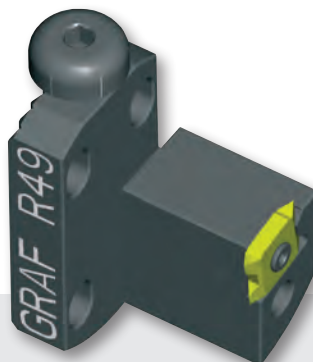
L

linksschneidend
cutting left

L49

Art. Nr. 12-1158

Anwendungsbereich **Gewindedrehen**
Application **threading**



R

rechtsschneidend
cutting right

R49

Art. Nr. 12-0468

Höhenverstellungsschraube
screw to adjust the height

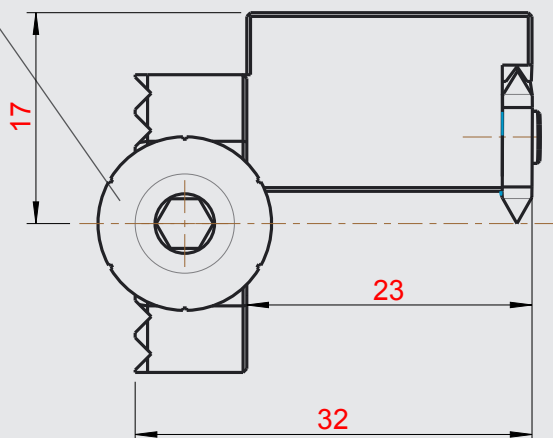
002.00.69

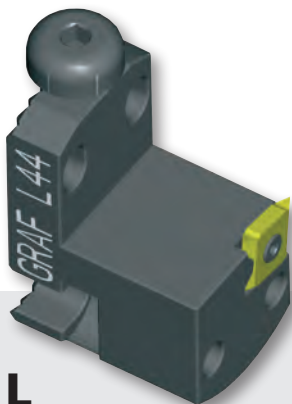
Wendeplatte
indexable insert

**QER-12.. (Quad-
Cut)**

Senkschraube
counter sunk-head screw

001.01.07





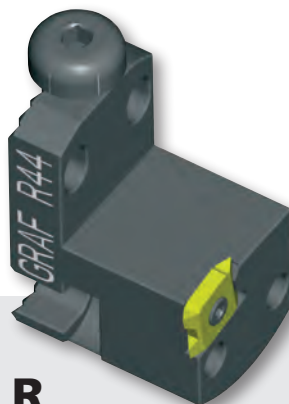
L

linksschneidend
cutting left

L44

Art. Nr. 12-0512

Anwendungsbereich **Gewindedrehen**
Application **threading**



R

rechtsschneidend
cutting right

R44

Art. Nr. 12-0454

Höhenverstellungsschraube
screw to adjust the height

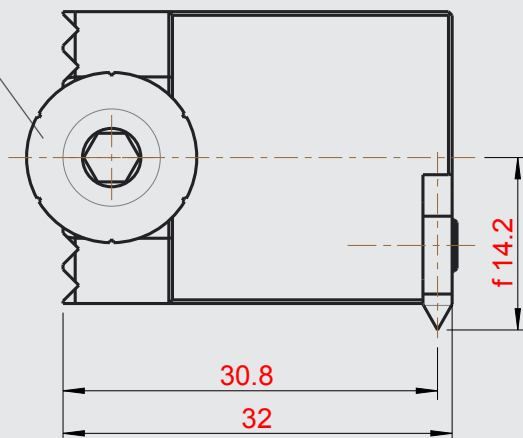
002.00.69

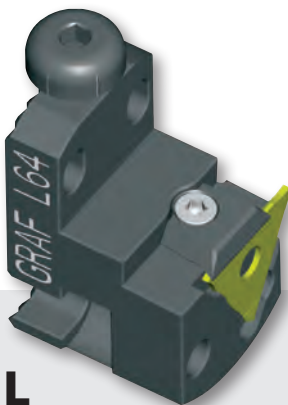
Wendeplatte
indexable insert

**QER-12.. (Quad-
Cut)**

Senkschraube
counter sunk-head screw

001.01.07



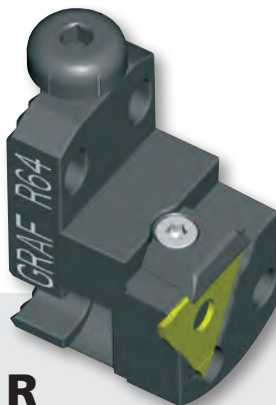


L

linksschneidend
cutting left

L64

Art. Nr. 12-0496



R

rechtsschneidend
cutting right

R64

Art. Nr. 12-0486

Anwendungsbereich **Formstechen, Gewindestrehlen, Einstech-Langdrehen**
Application **forming, grooving, turning, threading**

Höhenverstellungsschraube
screw to adjust the height

002.00.69

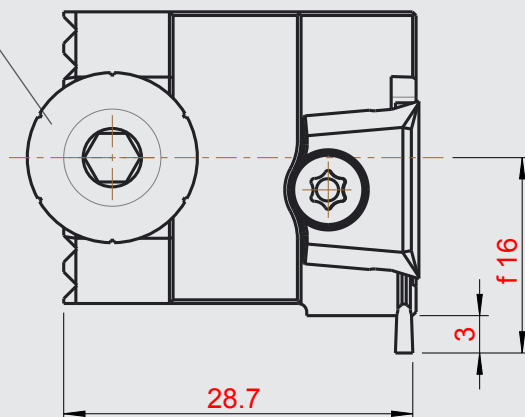
Wendeplatte
indexable insert

Horn Typ 312

Spannelement
clamping element

4.078

für Breite 0,5 bis 1,9
for width 0,5 - 1,9





L

linksschneidend
cutting left

L64IK

Art. Nr. 12-0504



R

rechtsschneidend
cutting right

R64IK

Art. Nr. 12-0501

Anwendungsbereich **Formstechen, Gewindestrehlen, Einstech-Longdrehen**
Application **forming, grooving, turning, threading**

Höhenverstellungsschraube
screw to adjust the height

002.00.69

Kühlmittelanschluss
Coolant supply

004.00.19

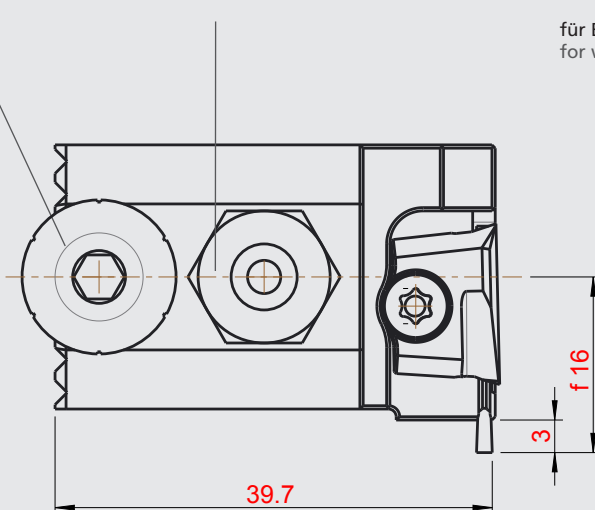
Wendeplatte
indexable insert

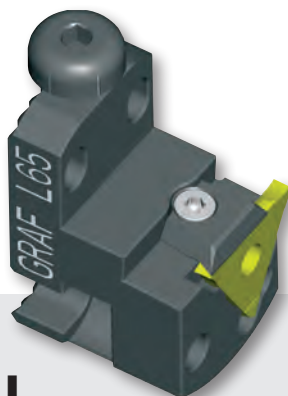
Horn Typ 312..

Spannelement
clamping element

4.081 (R) / 4.082 (L)

für Breite 0,5 bis 1,9
for width 0,5 - 1,9





L

linksschneidend
cutting left

L65

Art. Nr. 12-0497



R

rechtsschneidend
cutting right

R65

Art. Nr. 12-0487

Anwendungsbereich **Formstechen, Gewindestrehlen, Einstech-Langdrehen**
Application **forming, grooving, turning, threading**

Höhenverstellungsschraube
screw to adjust the height

002.00.69

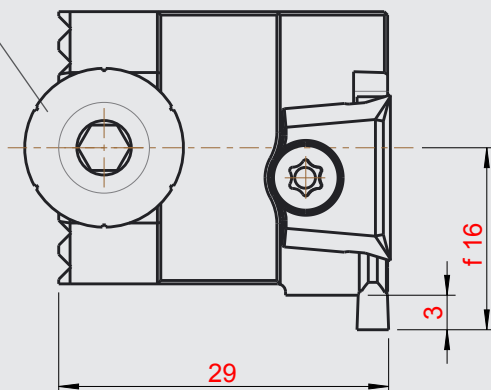
Wendeplatte
indexable insert

Horn Typ 312

Spannelement
clamping element

4.078

für Breite 1,9 bis 2,9
for width 1,9 - 2,9





L

linksschneidend
cutting left

L65IK

Art. Nr. 12-0505



R

rechtsschneidend
cutting right

R65IK

Art. Nr. 12-0502

Anwendungsbereich **Formstechen, Gewindestrehlen, Einstech-Langdrehen**
Application **forming, grooving, turning, threading**

Höhenverstellungsschraube
screw to adjust the height

002.00.69

Kühlmittelanschluss
Coolant supply

004.00.19

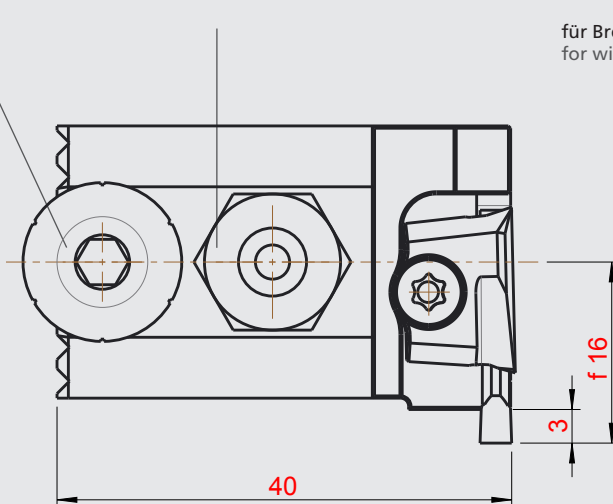
Wendeplatte
indexable insert

Horn Typ 312..

Spannelement
clamping element

4.081 (R) / 4.082 (L)

für Breite 1,9 bis 2,9
for width 1,9 - 2,9





N67

Art. Nr. 12-1061

Anwendungsbereich **Formstechen, Einstech-Langdrehen**

Application **forming, turning**

Höhenverstellungsschraube
screw to adjust the height

002.00.69

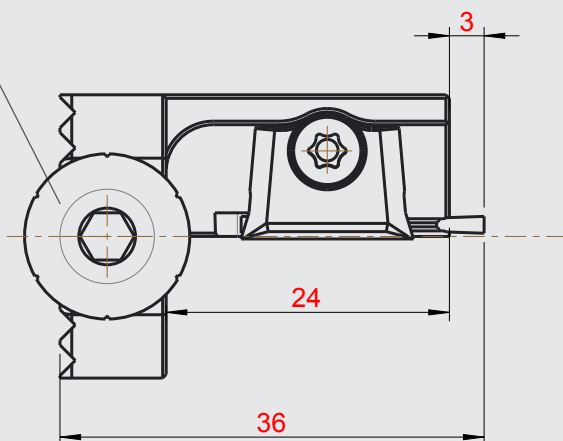
Wendeplatte
indexable insert

Horn Typ 312

Spannelement
clamping element

4.078

für Breite 0,5 bis 1,9
for width 0,5 - 1,9





N68

Art. Nr. 12-0498

Anwendungsbereich **Formstechen, Gewindestrehlen, Einstech-Langdrehen**
Application **forming, grooving, turning**

Höhenverstellungsschraube
screw to adjust the height

002.00.69

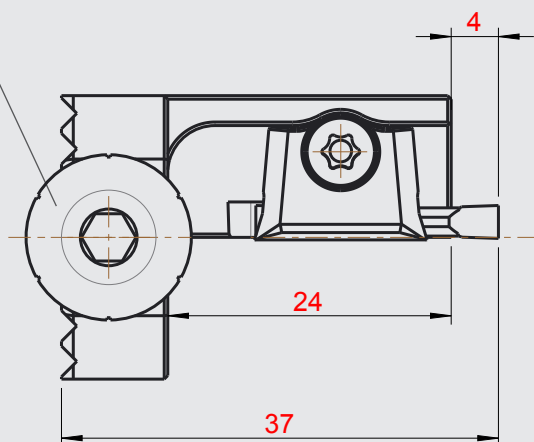
Wendeplatte
indexable insert

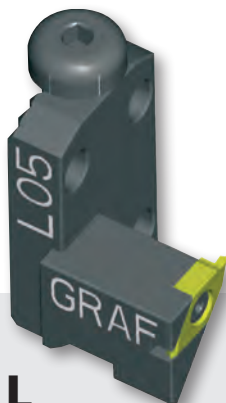
Horn Typ 312..

Spannelement
clamping element

4.078

für Breite 1,9 bis 2,9
for width 1,9 - 2,9



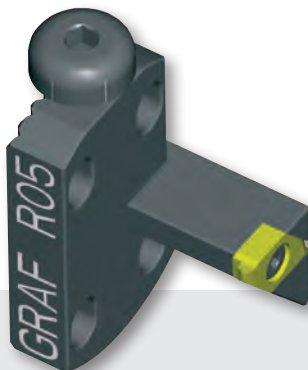


L

linksschneidend
cutting left

L05

Art. Nr. 12-0031



R

rechtsschneidend
cutting right

R05

Art. Nr. 12-0030

Anwendungsbereich **Formstechen, Gewindestrehlen, Einstech-Langdrehen**
Range of application **profiling, threading, grooving**

Höhenverstellungsschraube
screw to adjust the height

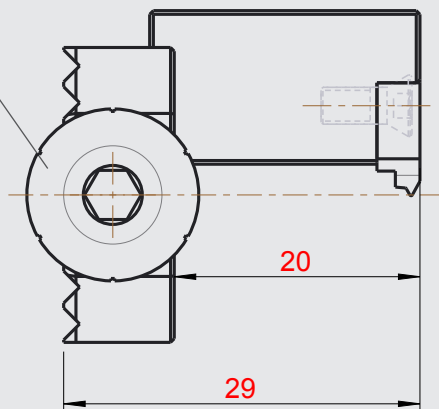
002.00.69

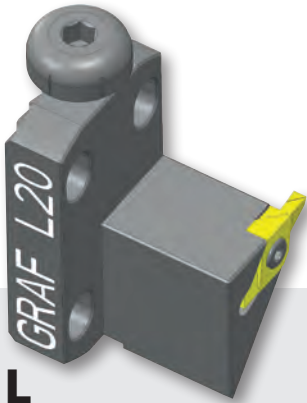
Wendeplatte
indexable insert

SCD 08.., CSX 08.., CS 08.., VP CS 08..,
TP CS 08..

Senkschraube
counter sunk-head screw

001.01.07



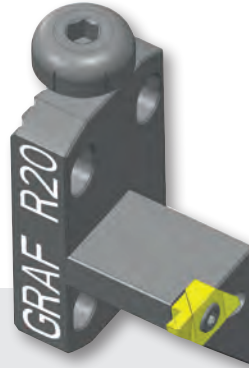


L

linksschneidend
cutting left

L20

Art. Nr. 12-0821



R

rechtsschneidend
cutting right

R20

Art. Nr. 12-0820

Anwendungsbereich **Formstechen, Gewindestrehlen, Einstech-Langdrehen**
Application **forming, grooving, turning, threading**

Höhenverstellungsschraube
screw to adjust the height

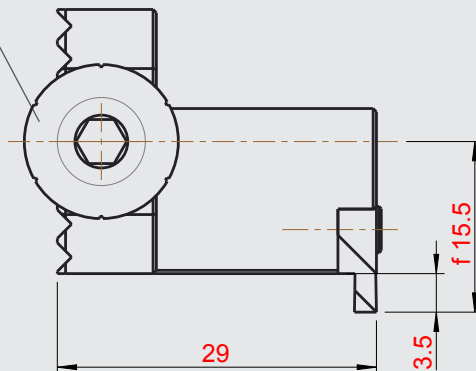
002.00.69

Wendeplatte
indexable insert

SCD 08.., CSX 08.., CS 08.., VP CS 08..,
TP CS 08..

Senkschraube
counter sunk-head screw

001.01.04



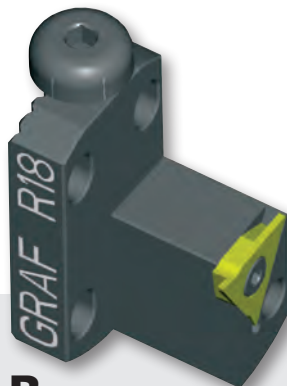


L

linksschneidend
cutting left

L18

Art. Nr. 12-0048



R

rechtsschneidend
cutting right

R18

Art. Nr. 12-0047

Anwendungsbereich

Formstechen, Gewindestrehlen, Einstech-Langdrehen, Kopierdrehen

Range of application **profiling, threading, grooving, copy turning**

Höhenverstellungsschraube
screw to adjust the height

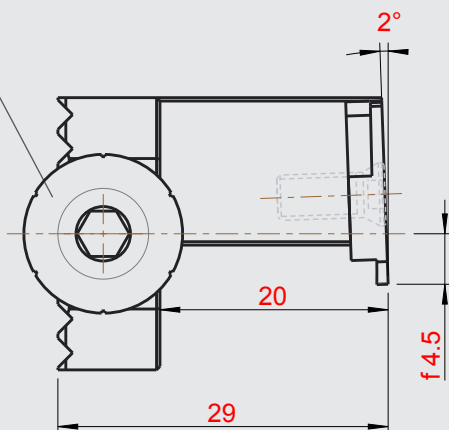
002.00.69

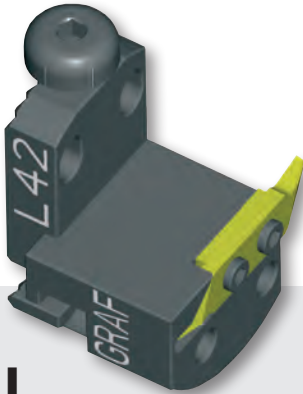
Wendeplatte
indexable insert

GTMH 32

Senkschraube
counter sunk-head screw

001.01.27



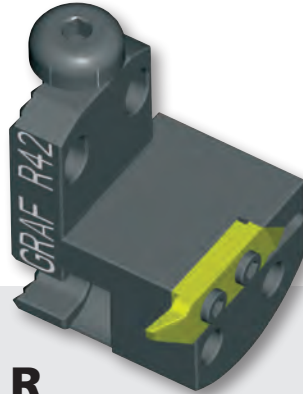


L

linksschneidend
cutting left

L42

Art. Nr. 12-0466



R

rechtsschneidend
cutting right

R42

Art. Nr. 12-0461

Anwendungsbereich

Formstechen, Gewindestrehlen, Einstech-Langdrehen, Kopierdrehen

Range of application **profiling, threading, grooving, copy turning**

Höhenverstellungsschraube
screw to adjust the height

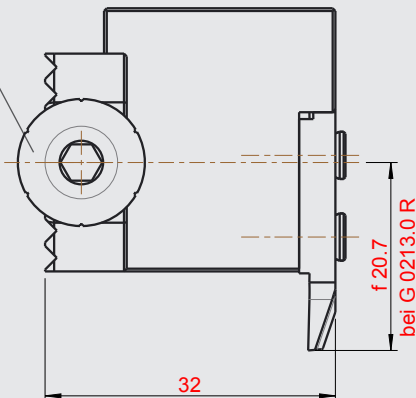
002.00.69

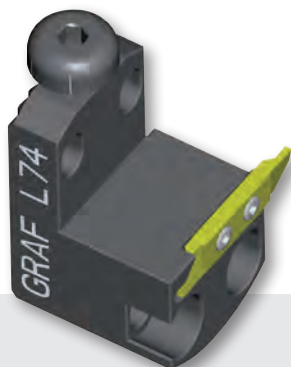
GRAF Wendepatte
GRAF indexable insert

G 02.., G 03.., G 04.., TP G 05/VP G 05

Senkschraube
counter sunk-head screw

001.01.15





L

linksschneidend
cutting left

L74

Art. Nr. 12-0519



R

rechtsschneidend
cutting right

R74

Art. Nr. 12-0518

Anwendungsbereich **Formstechen, Gewindestrehlen, Einstech-Langdrehen**
Range of application **profiling, threading, grooving**

Höhenverstelle
screw to adjust the height

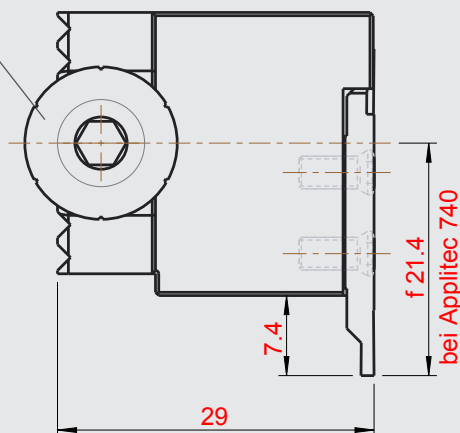
002.00.69

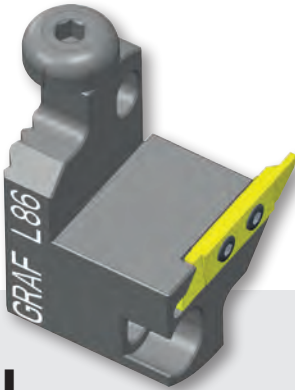
Applitec Wendeplatte
Applitec indexable insert

**Für L Applitec Serie 730
Für R Applitec Serie 740**

Senkschraube
counter sunk-head screw

001.01.45





L

linksschneidend
cutting left

L86

Art. Nr. 12-0522



R

rechtsschneidend
cutting right

R86

Art. Nr. 12-0521

Anwendungsbereich **Formstechen, Gewindestrehlen, Einstech-Langdrehen**
Application **forming, grooving, turning, threading**

Höhenverstellungsschraube
screw to adjust the height

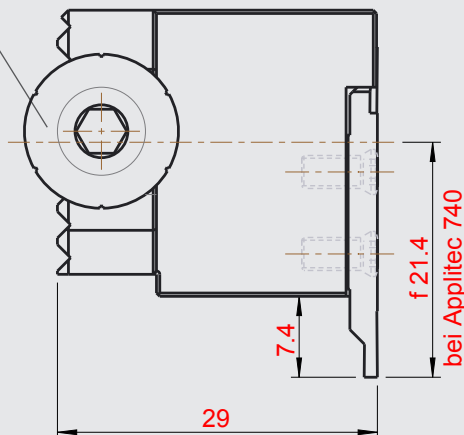
Applitec Wendeplatte
Applitec indexable insert

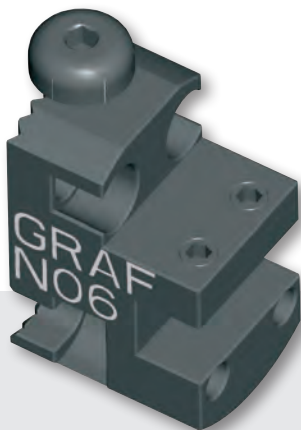
Senkschraube
counter sunk-head screw

002.00.69

Für L Applitec Serie 730
Für R Applitec Serie 740

001.01.45





N06

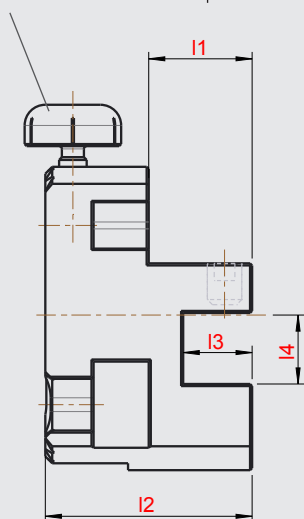
Anwendungsbereich **Rückseitenbearbeitung für Vierkantschaft**
 Application **back working for square shank**

Höhenverstellungsschraube
 screw to adjust the height

002.00.69

Gewindestift
 set screw

002.00.11



	Art. Nr.	I1	I2	I3	I4
N06 10x10	12-0032	15	30	10	10
N06 12x12	12-1080	15	30	12	12

With this device, you can outside of the machine fast and exactly all back working tools adjusting the center height.

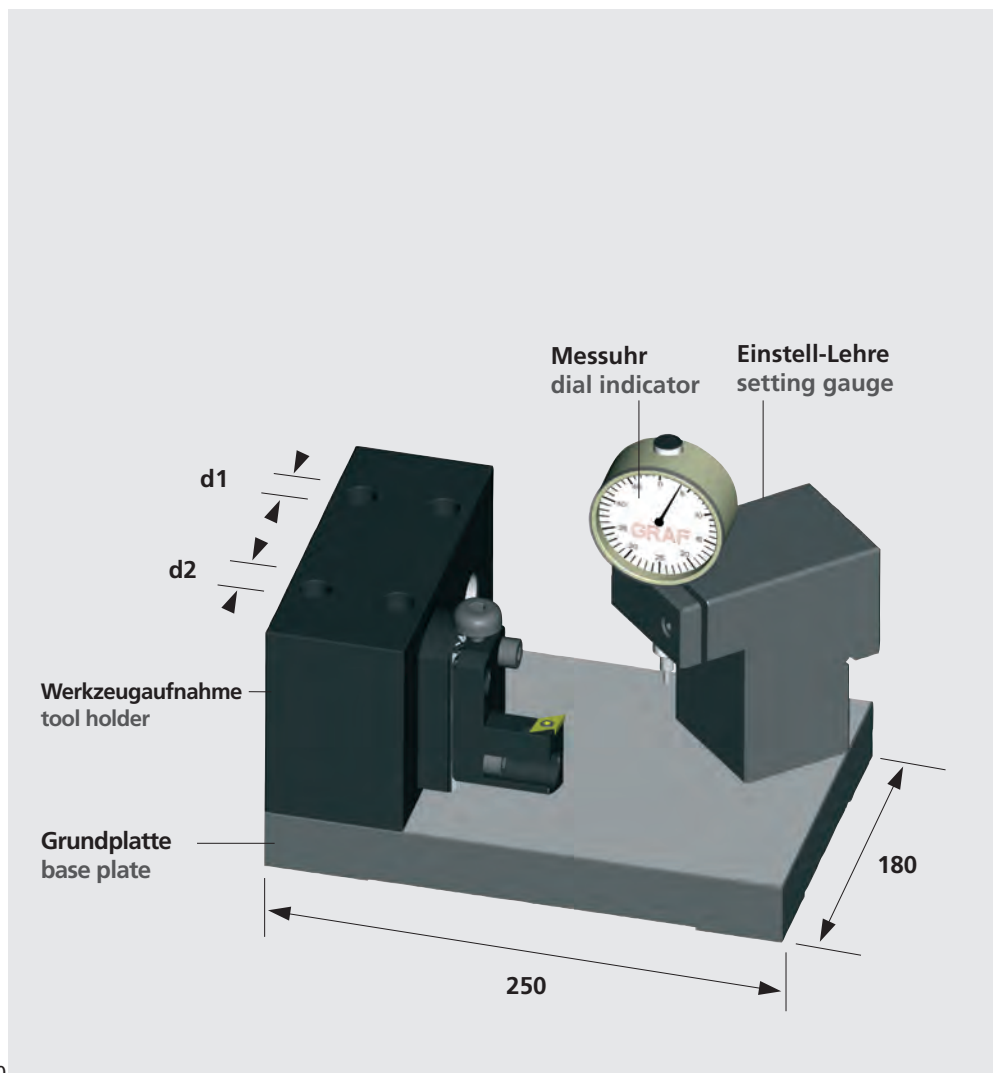
The basic plate and the setting gauge is standard and the tool fitting is machine-specific.

Höheneinstell-Vorrichtung für Rückseitenbearbeitungs Drehhalter HVR 40

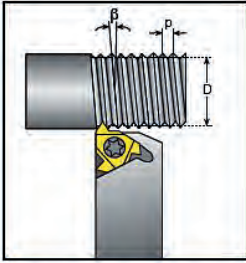
Device for height adjusting
for back working holder HVR 40

	d1	d2	Art.Nr.
STAR	16	22	12-0506
	20	22	12-1106
CITIZEN	3/4"	1"	12-0507
HANWHA	20	28	12-0523
	25	33	12-0511
	25	28	12-0548
	25	34	12-0546
MAIER	30	34	12-1218

weitere Abmessungen auf Anfrage
Please ask us for other dimensions



Berechnung des Steigungswinkel β



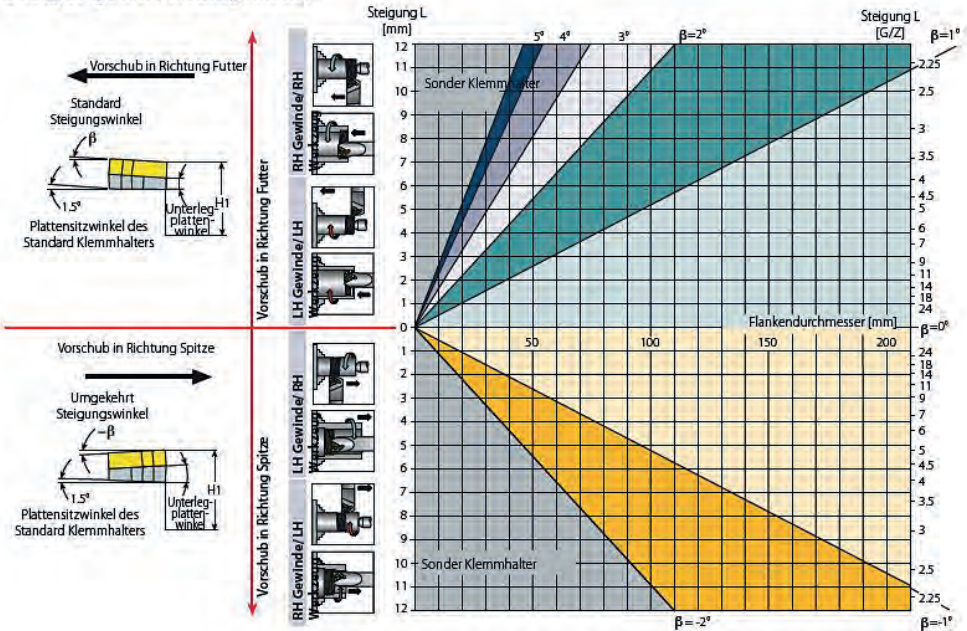
Der Steigungswinkel wird mit folgender Formel berechnet:

$$\beta = \arctan \frac{P \times N}{\pi \times D}$$

β - Steigungswinkel [°]
 P - Teilung [mm]
 N - Anzahl der Gänge
 D - Flankendurchmesser [mm]
 Steigung $L = P \times N$

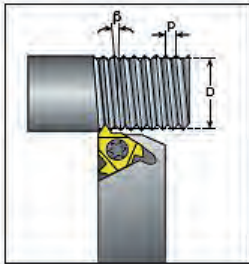
Der Steigungswinkel kann ebenfalls aus dem untenstehenden Diagramm abgelesen werden.

Steigungswinkeldiagramm



Resultierender Steigungswinkel		4,5°	3,5°	2,5°	1,5°	0,5°	0°	-0,5°	-1,5°
Plattengröße 16 mm	Plattenwinkel	3°P	2°P	1°P	0°	1°N	1,5°N	2°N	3°N
	Artikelnummer R	002.00.186	002.00.181	002.00.182	002.00.180	002.00.183	002.00.187	002.00.184	002.00.185
	Artikelnummer L	002.00.196	002.00.191	002.00.192	002.00.190	002.00.193	002.00.197	002.00.194	002.00.195

Calculating the Helix Angle β



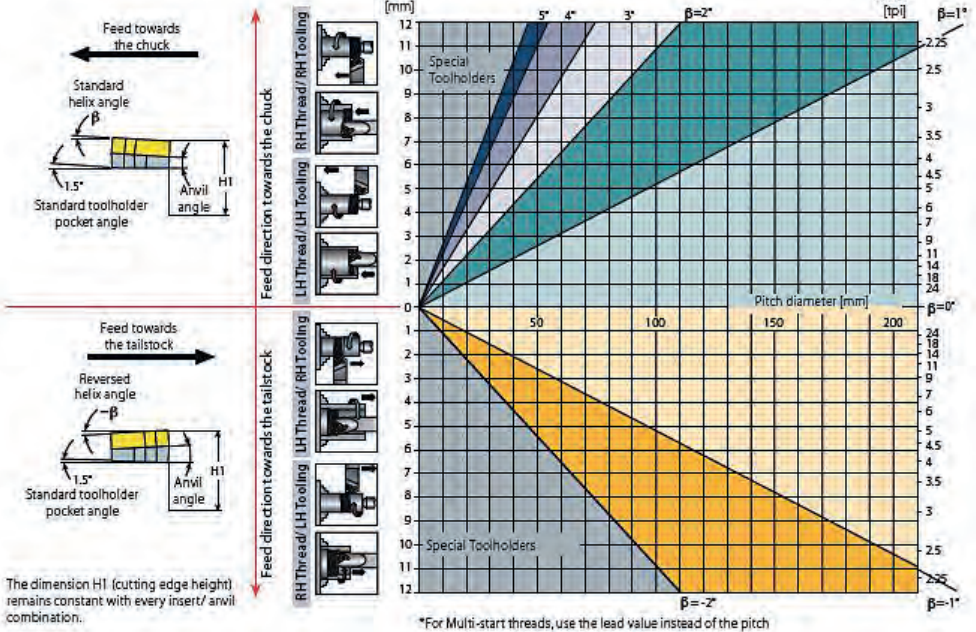
The helix angle is calculated by the following formula:

$$\beta = \arctan \frac{P \times N}{\pi \times D}$$

β - Helix angle [°]
 P - Pitch [mm]
 N - No. of starts
 D - Pitch diameter [mm]
 Lead = P x N

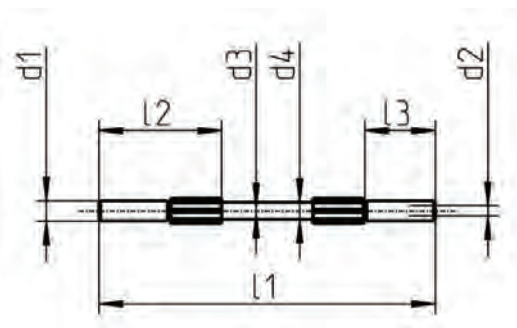
The helix angle can also be found from the diagram below.

Helix Angle Diagram



resultant pitch angle		4,5°	3,5°	2,5°	1,5°	0,5°	0°	-0,5°	-1,5°
Insert size 16 mm	shim angle	3°P	2°P	1°P	0°	1°N	1,5°N	2°N	3°N
	article number R	002.00.186	002.00.181	002.00.182	002.00.180	002.00.183	002.00.187	002.00.184	002.00.185
	article number L	002.00.196	002.00.191	002.00.192	002.00.190	002.00.193	002.00.197	002.00.194	002.00.195

Flex-Leitungen Flexible tubes



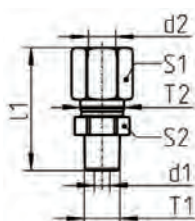
Bestellnummer Part number	l1	l2	l3	d1	d2	d3	d4	max. Druck [bar] max. pressure [bar]
21-1109	100	36,5	21	6	3	2	5	400
21-1111	150	36,5	21	6	3	2	5	400
21-1112	200	36,5	21	6	3	2	5	400
21-1113	250	36,5	21	6	3	2	5	400
21-1114	300	36,5	21	6	3	2	5	400
21-1115	400	36,5	21	6	3	2	5	400
21-1116	500	36,5	21	6	3	2	5	400
21-1159	200	57	20	6	3	4	8,5	340
21-1160	250	57	20	6	3	4	8,5	340
21-1161	300	57	20	6	3	4	8,5	340
21-1162	400	57	20	6	3	4	8,5	340
21-1163	500	57	20	6	3	4	8,5	340

Abmessungen in mm
Dimensions in mm

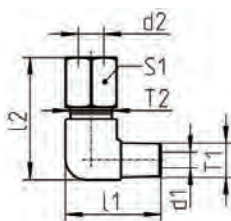
Hinweis / Note:

Weitere Längen auf Anfrage
d3 = Innendurchmesser der Leitung
other lengths on request
d3 = internal diameter of the tube

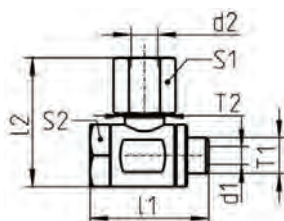
Kühlmittelanschlüsse Coolant connections



A: Gerade /
straight



B: 90° Winkel /
90° angle



C: 360° schwenkbar /
360° swiveling



Ausführung Design	Bestellnummer Part number	l1	l2	d1	d2	T1	T2	S1	S2
A	004.00.14	33,7	-	4	6	G1/8" keg.	M12x1,5	SW14	SW14
A	004.00.19	28	-	3,5	6	M8x1 keg.	M10x1	SW12	SW11
A	004.00.36	27,5	-	2	4	M6x1 keg.	M8x1	SW10	SW9
A	004.00.15	41,5	-	7	10	G1/4" keg.	M16	SW19	SW17
B	004.00.22	22,4	28,2	3,6	6	M8x1 keg.	M10x1	SW12	-
B	004.00.33	26,6	35,6	4,5	6	G1/8" keg.	M12x1,5	SW14	-
B	004.00.34	38,9	33,6	7	10	G1/4" keg.	M16	SW19	-
B	004.00.37	22,3	27,6	2	4	M6x1 keg.	M8x1	SW10	-
C	004.00.61	26,5	29	4	6	M8x1	M12x1,5	SW12	SW14
C	004.00.16	26,5	29	4	6	G1/8"	M12x1,5	SW12	SW14
C	004.00.47	36,7	43,2	6,5	6	G1/4"	M14	SW17	SW19
C	004.00.18	36,7	43,2	6,5	10	G1/4"	M16	SW19	SW19

Abmessungen in mm
Dimensions in mm

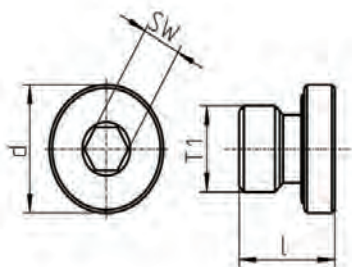
Hinweis / Note:

Druckbeständig bis 100bar - weitere Größen und Ausführungen auf Anfrage

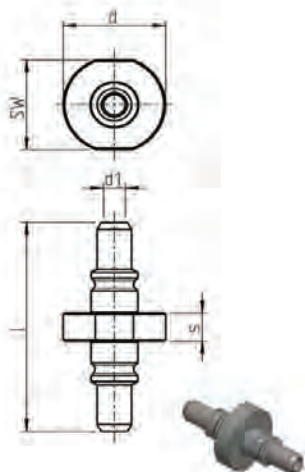
d2 = Klemmdurchmesser für Flex-Leitungen // T1 = keg. = Kegелgewinde
pressure up to 100 bar - other sizes and designs on request

d2 = clamp diameter for flexible tubes // T1 = keg. = tapered thread

Verschlussstopfen Sealing plug



A



B

Produkt Product	Bestellnummer Part number	l	s	d	d1	T1	SW
A	004.00.21	10	-	12	-	M8x1	4
A	004.00.26	12	-	14	-	G1/8"	5
A	004.00.27	12	-	20	-	G1/4"	6
A	004.00.28	17	-	22	-	G3/8"	8
B	Doppelstecker / double plug						
B	004.00.74	30	4	14	3	-	13

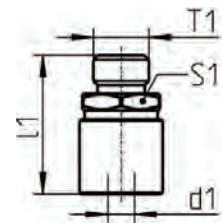
Abmessungen in mm
Dimensions in mm

Hinweis / Note:

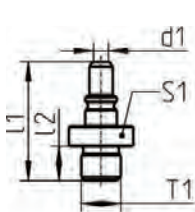
Weitere Größen und Ausführungen auf Anfrage
other sizes and designs on request

Schnellkupplungen

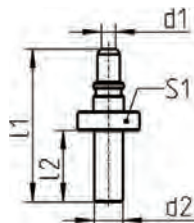
Quick couplings



A Kupplung, weiblich / coupling, female



B



C



D



Kupplung, männlich / couplings, male

Ausführung Design	Bestellnummer Part number	l1	l2	d1	d2	T1	S1
A	Kupplung / couplings						
A *1 *2	004.00.49	25	-	4,9	-	M10x1	SW14
A	004.00.71	25	-	4,9	-	G1/8"	SW14
A	004.00.73	25	-	4,9	-	M8x1	SW14
B	Schraubanschluss / screw connection						
B	004.00.56	24,25	7	3	-	M8x1	SW13
B	004.00.57	24,25	7	3	-	G1/8"	SW13
B	004.00.58	24,25	7	3	-	G1/4"	SW17
B *1	004.00.63	24,25	7	3	-	M10x1	SW13
B *1 *2	004.00.63-1	24,25	7	3	-	M10x1	SW13
C	Klemmverbindung / clamp connection						
C	004.00.59	32	15	3	6	-	SW13
D	Verschlussstopfen / Sealing plug						
D	004.00.66	22	-	-	-	-	-

Dimensions in mm
Abmessungen in mm

Hinweis / Note:

Druckbeständig bis 100bar - weitere Größen und Ausführungen der männlichen Kupplungen auf Anfrage

*1 = Klemmmöglichkeit für Flex-Leitungen gegeben

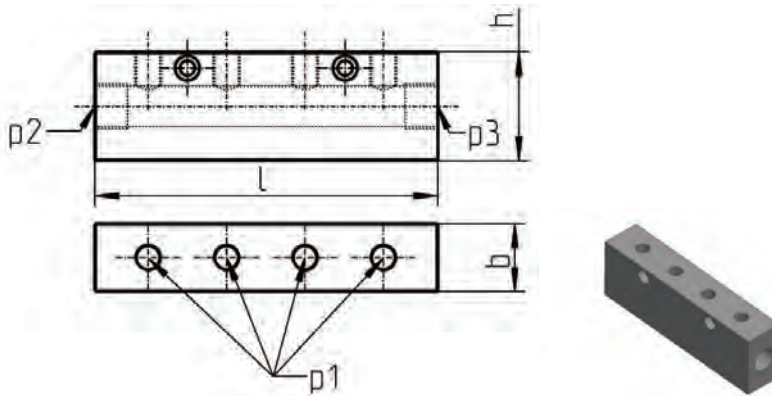
*2 = inkl. Überwurfmutter und Schneidring

pressure up to 100 bar - other sizes and designs of the male couplings on request

*1 = terminal opportunity for flex lines given

*2 = incl. union nut and olive

Verteilerleisten Distributor blocks



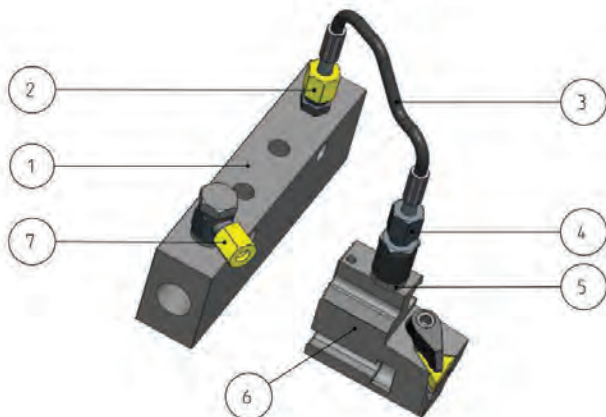
Bestellnummer Part number	l	b	h	p1		p2	p3
				Anzahl numbers	Art type		
21-4207	66	25	40	2	M8x1	G3/8"	G3/8"
21-4208	66	25	40	2	G1/8"	G3/8"	G3/8"
21-4209	96	25	40	3	M8x1	G3/8"	G3/8"
21-4210	96	25	40	3	G1/8"	G3/8"	G3/8"
21-4211	126	25	40	4	M8x1	G3/8"	G3/8"
21-4212	126	25	40	4	G1/8"	G3/8"	G3/8"
21-4213	186	25	40	6	M8x1	G3/8"	G3/8"
21-4214	186	25	40	6	G1/8"	G3/8"	G3/8"

Abmessungen in mm
Dimensions in mm

Hinweis / Note:

Weitere Größen und Ausführungen auf Anfrage
other sizes and designs on request

Verbindungsbeispiel Connection example



Pos.	Bauteil part	Bestellnummer Part number	Broschürenseite booklets page
1	Verteilerleiste distributor block	21-4211	5
2	Kühlmittelanschluss coolant connection	004.00.19	2
3	Flex-Leitung flexible tube	21-1114	1
4	Schnellkupplung, weiblich quick coupling, female	004.00.49	4
5	Kupplung, männlich coupling, male	004.00.63	4
6	Rückseitenhalter, höhenverstellbar back holder, adjustable	R84.TN16.IK	-
7	Kühlmittelanschluss coolant connection	004.00.61	2

Hinweis / Note:

Bei Fragen und Verbindungsproblemen, beraten wir Sie gerne
For questions and connectivity problems, we advise you

[illegible]

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