URMA

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Innovation Is Our Tool

SWISS QUALITY

URMA Boring System

Gamma – Our Basic Line

Inch Version

BRAND-NEW

Advantages of Using URMA Boring System Gamma

URMA Gamma – Our Basic Line

- The economical system
- Large range (Ø .008 inch – Ø 11.693 inch)
- System-independent
- Multifunctional usability thanks to cylindrical shank
- Ideal for lathes
- Greater stability due to optimized axial support
- Proven URMA Boring System technology

URMA Boring System
MicroMax

Ø .008 - 1.575 inch

MicroMax

Standard Holders Page 8

Ø .008 - 1.575 inch

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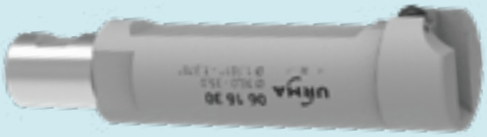

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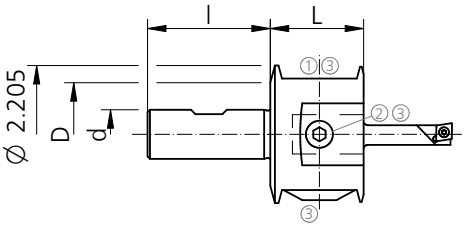
Ø .008 - 1.575 inch

Fine Boring Head .0004 inch/ø

Non Balanceable Fine Boring Head



Gamma	Order Number	L	l	D	lb	d	MCC	Index
¾	G05 56 19 038	1.496	2 1/32	1.654	1.543	¾	Z16	●

d = ANSI/ASME B94.19-1997

● On stock ▲ Short-term availability ○ Availability on request All dimensions in inch

SPARE PARTS

Gamma	①	②	③	④
¾	Z00 05 01	Z00 23 01	G00 02 06	G00 02 03

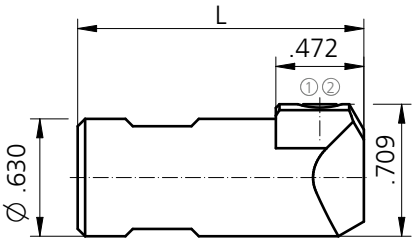
Ø .008 - .236 inch

Boring Bars

Reducer for Mini-Boring Bars

Ø .008 - .236 inch

Order Number	L	MCM	MCC	Index
B105.0016.U1.01	1.535	Z16	B105	●

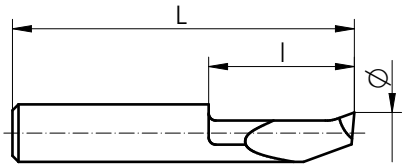


Attention: **Note the direction of cutting!**

Carbide Mini-Boring Bars

Ø .008 - .236 inch

Order Number	Ø-Range	L	l	MCM	Index
L105.1802..02MG12	.008 - .031	.906	.039	B105	●
L105.1802..03MG12	.012 - .035	.906	.039	B105	●
L105.1803..07MG12	.028 - .091	.906	.079	B105	●
R105.1805.1.1TN35	.039 - .134	.984	.236	B105	●
R105.1809.1.2TN35	.079 - .236	.984	.354	B105	●



SPARE PARTS

	①	②
B105..		
	6.075T15	G00 20 03

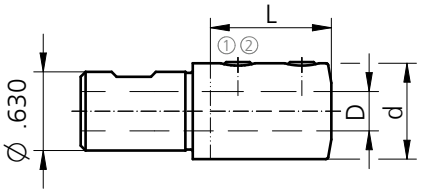
Ø .228 - .886 inch

Boring Bars With Carbide Shank for Boring Depths up to 8xD

Reducers

Ø .228 - .886 inch

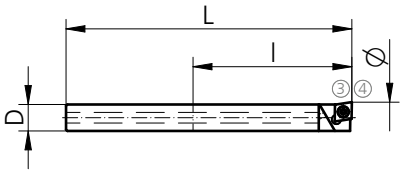
Order Number	L	D	d	MCM	MCC	Index
07 00 05	.669	.197	.630	Z16	ZS5	●
07 00 06	.669	.236	.630	Z16	ZS6	●
07 00 08	.866	.315	.748	Z16	ZS8	●
07 00 10	.984	.394	.866	Z16	ZS10	●
07 00 12	1.220	.472	.866	Z16	ZS12	●



Boring Bars With Carbide Shanks

Ø .228 - .886 inch

Order Number	Ø-Range	L	l	D	Inserts	MCM	MCC	Index
H06 05 06	.228 - .394	2.559	.787 - 1.575	.197	WC.. 1.21	ZS5	WC02	●
H06 06 07	.287 - .433	2.756	.945 - 1.890	.236	WC.. 1.21	ZS6	WC02	●
HW/C06 08 09	.346 - .512	3.543	1.575 - 2.520	.315	CC../CP.. 21.5	ZS8	CP06	●
HW/C06 10 12	.465 - .630	4.134	1.969 - 3.150	.394	CC../CP.. 21.5	ZS10	CP06	●
HW/C06 12 14	.543 - .709	4.724	2.362 - 3.780	.472	CC../CP.. 21.5	ZS12	CP06	●
HW/C06 16 16	.622 - .787	5.118	3.937	.630	CC../CP.. 21.5	ZS16	CP06	●
HW/C06 16 18	.720 - .886	5.709	4.528	.630	CC../CP.. 21.5	ZS16	CP06	●



Description see page 12 for Insert holder with combined insert pocket.

● On stock ▲ Short-term availability ○ Availability on request All dimensions in inch

SPARE PARTS

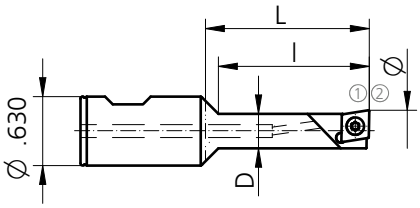
D	①	②	③	④
.197-.236	C00 07 01	G00 02 03	C00 20 10	G00 20 01
.315-.394	C00 25 03	G00 02 04	C00 20 04	G00 20 05
.472	C00 07 02	G00 02 04	C00 20 01	G00 20 05
.630			C00 20 01	G00 20 05

Ø .394 - 1.575 inch

Boring Bars With Steel Shank for Boring Depths up to 4xD

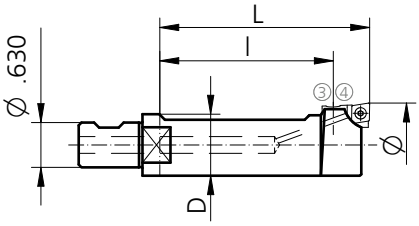
Boring Bars Ø .394 - .787 inch

Order Number	Ø-Range	L	l	D	Inserts	MCM	MCC	Index
W/C06 16 10	.394 - .591	1.496	1.378	.315	CC../CP.. 21.5..	Z16	CP06	●
W/C06 16 15	.591 - .787	1.890	1.772	.492	CC../CP.. 21.5..	Z16	CP06	●
W06 16 10	.394 - .591	1.496	1.378	.315	CC.. 21.5..	Z16	CC06	●
W06 16 15	.591 - .787	1.890	1.772	.492	CC.. 21.5..	Z16	CC06	●



Boring Bars Ø .787 - 1.575 inch

Order Number	Ø-Range	L	l	D	MCM	MCC	Index
06 16 20	.787 - .984	2.362	1.850	.669	Z16	2002	●
06 16 25	.984 - 1.181	2.953	2.441	.866	Z16	2002	●
06 16 30	1.181 - 1.378	2.953	2.441	1.063	Z16	2002	●
06 16 35	1.378 - 1.575	2.953	2.441	1.260	Z16	2002	●



*** Cassette is not included with holder. See page 12 for options.**

SPARE PARTS

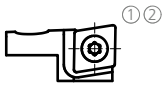
①	②	③	④
			
C00 20 01	G00 20 05	C00 25 11	G00 20 07

Ø .394 - 1.575 inch

Insert Holders

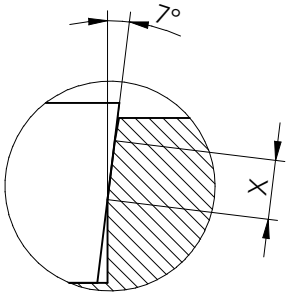
Insert Holders **Ø .787 - 1.575 inch**

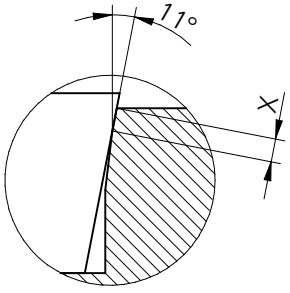
Order Number	L	Inserts	MCM	MCC	Index
W/C20 02 06	.512	CC../CP.. 21.5..	2002	CP06	●
W20 02 06	.512	CC.. 21.5..	2002	CC06	●
WW20 02 06	.512	Wiper CC.. 21.5..	2002	CC06	●



Insert Holder With Combined Insert Pocket

Insert holders type W/C... and boring bars HW/C06... are designed to hold inserts with 7° (CCGT...) as well as 11° (CPGT...) relief angle. We highly recommend to use only precision (ground) inserts (CCG... or CPG...) on such holders to guarantee a precise fit.





● On stock ▲ Short-term availability ○ Availability on request All dimensions in inch

SPARE PARTS

①	②
	
C00 20 04	G00 20 05

URMA Boring System
VersaMax – Type 14

Ø .768 - 3.465 inch

VersaMax - Type 14

Double Roughing

Standard Holders

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Offset Roughing

Ø .768 - 3.465 inch

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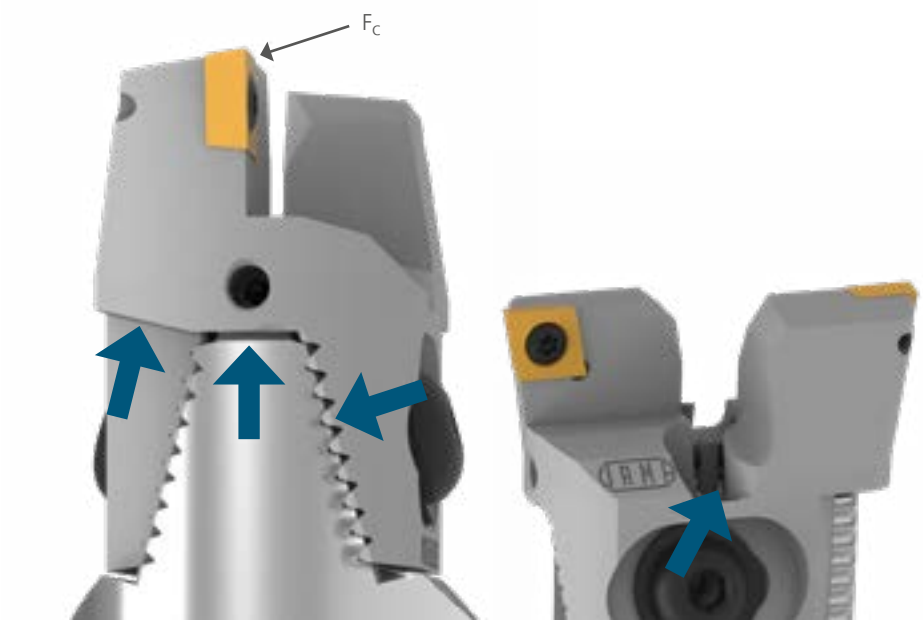
Page 18

Ø .768 - 3.465 inch

Advantages of the Patented URMA Double Cutter Head



Patented design to direct cutting forces (F_c) directly into the body and guarantee highest stability, versatility and allows:

- double cutter roughing
- offset roughing
- individual radial adjustment
- ANSI-Standard inserts
- coolant through
- high reliability
- simple handling
- optimized stability

Offset Roughing

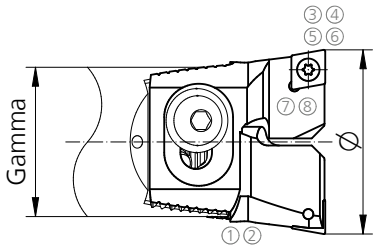
Axial and radial offset roughing for larger cutting depth
(single edge effective for the feed rate per minute calculation, see page 18 for details)

Ø .768 - 3.465 inch

Insert Holders

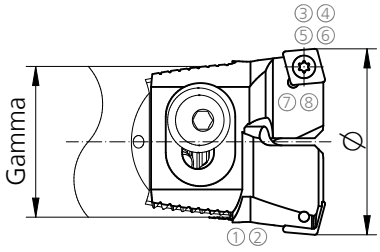
Insert Holders 90°

Gamma	Order Number	Ø-Range	lb	Inserts	MCM	MCC	Index
18	W16 01 06	.768 - .984	.220	CC.. 21.5..	1418	CC06	●
18	W16 02 06	.886 - 1.181	.220	CC.. 21.5..	1418	CC06	●
25	W16 04 06	1.142 - 1.535	.220	CC.. 21.5..	1424	CC06	●
32	W16 06 09	1.496 - 2.008	.220	CC.. 32.5..	1432	CC09	●
42	W16 08 09	1.969 - 2.638	.220	CC.. 32.5..	1442	CC09	●
55	W16 10 13	2.598 - 3.465	.440	CC.. 43..	1455	CC12	●
55	W16 10 12P	2.598 - 3.465	.440	CN.. 43...	1455	CN12	●



Insert Holders 75°

Gamma	Order Number	Ø-Range	lb	Inserts	MCM	MCC	Index
18	W18 02 06	.886 - 1.181	.220	CC.. 21.5..	1418	CC06	●
25	W18 04 06	1.142 - 1.535	.220	CC.. 21.5..	1424	CC06	●
32	W18 06 09	1.496 - 2.008	.220	CC.. 32.5..	1432	CC09	●
42	W18 08 09	1.969 - 2.638	.220	CC.. 32.5..	1442	CC09	●
55	W18 10 12P	2.598 - 3.465	.440	CN.. 43..	1455	CN12	●



⑦⑧ **Not included in the delivery**

SPARE PARTS

Gamma	①	②	③	④	⑤	⑥	⑦	⑧
18	G00 02 01	C00 02 10	C00 20 01	G00 20 05				
25	G00 02 01	C00 02 11	C00 20 01	G00 20 05				
32	G00 02 02	C00 02 12	C00 20 02	G00 20 03				
42	G00 02 03	C00 02 13	C00 20 02	G00 20 03				
55/CC43	G00 02 03	C00 02 14	C00 20 05	G00 20 03				
55/CN43	G00 02 03	C00 02 14		G00 20 03	A00 12 11	Z00 12 02	A00 02 17	A00 32 07

Ø .886 - 3.465 inch

Insert Holders for Offset Roughing

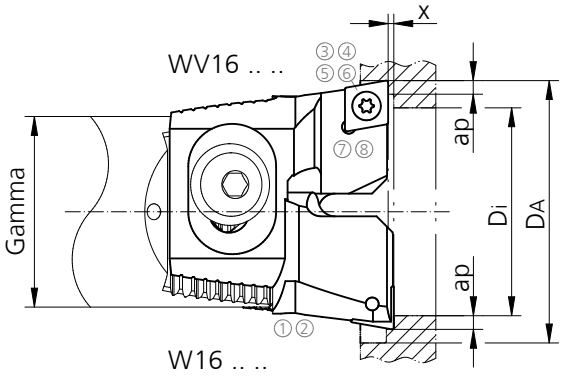
Inserts offset in diameter and height
Double cutting depth

Insert Holders 90°

Gamma	Order Number	Order Number	Ø-Range	lb	Inserts	$a_{p\,max}$	x	MCM	MCC	Index
18	WV16 02 06	W16 02 06	.886 - 1.181	.220	CC.. 21.5..	.079 - .118	.008	1418	CC06	●
25	WV16 04 06	W16 04 06	1.142 - 1.535	.220	CC.. 21.5..	.079 - .118	.008	1424	CC06	●
32	WV16 06 09	W16 06 09	1.496 - 2.008	.220	CC.. 32.5..	.118 - .157	.008	1432	CC09	●
42	WV16 08 09	W16 08 09	1.969 - 2.638	.440	CC.. 32.5..	.118 - .157	.010	1442	CC09	●
55	WV16 10 12P	W16 10 12P	2.598 - 3.465	1.102	CN.. 43..	.157 - .236	.012	1455	CN12	●

Formula $a_p = \frac{D_A - D_i}{4}$

⑦⑧ **Not included in the delivery**



● **On stock** ▲ **Short-term availability** ○ **Availability on request** **All dimensions in inch**

SPARE PARTS

Gamma	①	②	③	④	⑤	⑥	⑦	⑧
18	G00 02 01	C00 02 10	C00 20 01	G00 20 05				
25	G00 02 01	C00 02 11	C00 20 01	G00 20 05				
32	G00 02 02	C00 02 12	C00 20 02	G00 20 03				
42	G00 02 03	C00 02 13	C00 20 02	G00 20 03				
55	G00 02 03	C00 02 14		G00 20 03	A00 12 11	Z00 12 02	A00 02 17	A00 32 07

Ø .768 - 3.465 inch

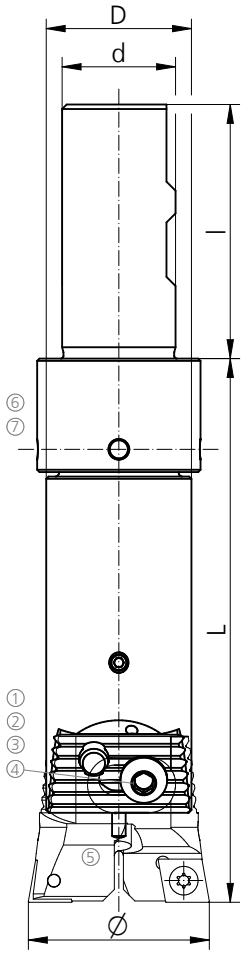
Double Cutter Heads

Double Cutter Heads

Gamma	Order Number	Ø-Range	L	l	D	lb	d	MCC	Index
18	G14 18 19 100	.768 - 1.181*	3.937	2.031	.787	.661	.750	1418	●
25	G14 25 26 110	1.142 - 1.535	4.331	2.281	.984	1.102	1	1424	●
32	G14 32 26 120	1.469 - 2.008	4.724	2.281	1.260	1.763	1	1432	●
40	G14 40 26 130	1.969 - 2.638	5.118	2.281	1.654	2.425	1	1442	●
55	G14 55 31 150	2.598 - 3.465	5.906	2.281	2.165	4.850	1.250	1455	●

d = ANSI/ASME B94.19 - 1997

*** Attention: Ø .768 – .807 max 1.969 inch machining length**



SPARE PARTS

Gamma	①	②	③	④	⑤	⑥	⑦
18	B00 22 01		C00 12 01	K00 02 01	G00 20 23		
25	B00 22 02		C00 12 01	K00 02 02	G00 20 24		
32	B00 22 03	G00 02 05	C00 12 08	K00 02 03		C00 14 00	G00 25 034
42	B00 22 04	G00 02 06	C00 12 04	K00 02 04		C00 14 01	G00 25 040
55	B00 22 05	G00 02 07	C00 12 05	K00 02 05		C00 14 02	G00 25 052

URMA Boring System
VersaMax – Type 25

Ø .787 - 3.465 inch

VersaMax – Type 25

Standard Holders Page 24

Ø .787 - 3.465 inch

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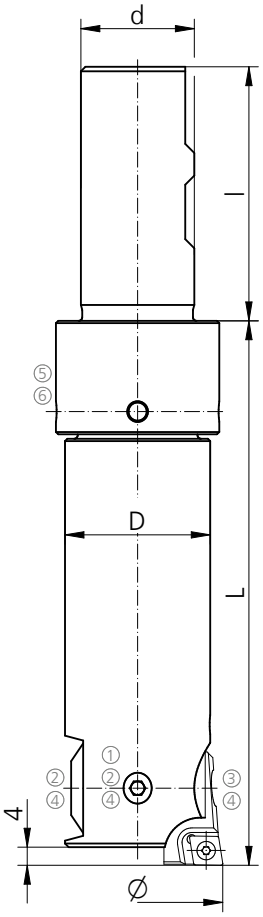
Ø .787 - 3.465 inch

Fine Boring Heads .0004 inch/Ø

Fine Boring Heads

Gamma	Order Number	Ø-Range	L	l	D	lb	d	MCC	Index
18	G25 18 19 080	.787 - .984	3.150	1.906	.709	.970	.625	2002	●
20	G25 20 19 110	.875 - 1.181	3.937	2.031	.787	1.457	.750	2002	●
25	G25 25 26 110	1.142 - 1.535	4.331	2.281	.984	2.915	1	2002	●
32	G25 32 26 120	1.496 - 2.008	4.724	2.281	1.260	4.374	1	2004	●
40	G25 40 26 130	1.969 - 2.638	5.118	2.281	1.654	7.288	1	2004	●
55	G25 55 31 150	2.598 - 3.465	5.906	2.281	2.165	14.579	1.250	2006	●

d = ANSI/ASME B94.19 - 1997



● On stock ▲ Short-term availability ○ Availability on request All dimensions in inch

SPARE PARTS

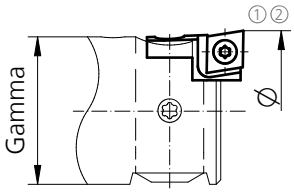
Gamma	Ø-Range	①	②	③	④	⑤	⑥
18	.787 - .984	C00 25 18		C00 25 19	G00 20 02		
20	.875 - 1.181	C00 25 01		C00 25 11	G00 20 07		
25	1.142 - 1.535	C00 25 02		C00 25 11	G00 20 07		
32	1.496 - 2.008	C00 25 03	G00 02 04	C00 25 12	G00 20 03	C00 14 00	G00 25 034
40	1.969 - 2.638	C00 25 04	G00 02 04	C00 25 12	G00 20 03	C00 14 01	G00 25 040
55	2.598 - 3.465	C00 25 05	G00 02 06	C00 25 13		C00 14 02	G00 25 052

Ø .787 - 3.465 inch

Fine Boring Insert Holders

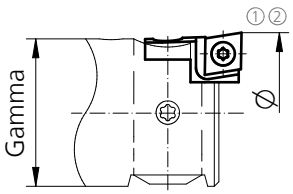
Combination Insert Holders for ANSI Inserts With 7° and 11° Relief Angle

Gamma	Order Number	Ø-Range	Inserts	MCM	MCC	Index
18	W/C20 02 06	.787 - .984	CC../CP.. 21.5..	2016	CP06	●
20	W/C20 02 06	.886 - 1.181	CC../CP.. 21.5..	2002	CP06	●
25	W/C20 02 06	1.142 - 1.535	CC../CP.. 21.5..	2002	CP06	●
32	W/C20 04 06	1.496 - 2.008	CC../CP.. 21.5..	2004	CP06	●
42	W/C20 04 06	1.969 - 2.638	CC../CP.. 21.5..	2004	CP06	●
55	W/C20 06 06	2.598 - 3.465	CC../CP.. 21.5..	2006	CP06	●



Insert Holders for ANSI Inserts With 7° Relief Angle

Gamma	Order Number	Ø-Range	Inserts	MCM	MCC	Index
18	W/C20 02 06	.787 - .984	CC../CP.. 21.5..	2016	CP06	●
20	W20 02 06	.875 - 1.181	CC.. 21.5..	2002	CC06	●
25	W20 02 06	1.142 - 1.535	CC.. 21.5..	2002	CC06	●
32	W20 04 06	1.496 - 2.008	CC.. 21.5..	2004	CC06	●
42	W20 04 06	1.969 - 2.638	CC.. 21.5..	2004	CC06	●
55	W20 06 09	2.598 - 3.465	CC.. 32.5..	2006	CC09	●



SPARE PARTS

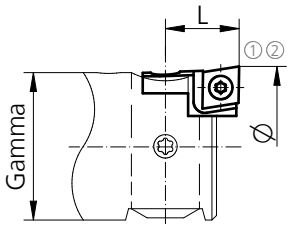
Order Number	①	②
W/C20 16 00 06	C00 20 04	G00 20 05
W/C20 16 01 06	C00 20 04	G00 20 05
W/C20 06 06	C00 20 01	G00 20 05
W20 02 06	C00 20 04	G00 20 05
W20 04 06	C00 20 01	G00 20 05
W20 06 09	C00 20 37	G00 20 03

Ø .787 - 3.465 inch

Fine Boring Insert Holders

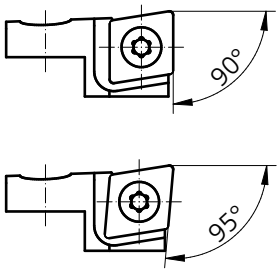
Insert Holders 95° for Wiper Inserts With 7° Clearance Angle

Gamma	Order Number	Ø-Range	L	Inserts	MCM	MCC	Index
18	WW20 02 06	.787 - .984	.512	Wiper CC.. 21.5..	2002	CC06	●
20	WW20 02 06	.886 - 1.181	.512	Wiper CC.. 21.5..	2002	CC06	●
25	WW20 02 06	1.142 - 1.535	.512	Wiper CC.. 21.5..	2002	CC06	●
32	WW20 04 06	1.496 - 2.008	.669	Wiper CC.. 21.5..	2004	CC06	●
42	WW20 04 06	1.969 - 2.638	.669	Wiper CC.. 21.5...	2004	CC06	●
55	WW20 06 09	2.598 - 3.465	.866	Wiper CC.. 32.5..	2006	CC09	●



Wiper Inserts

Wiper inserts offer the advantage of double feed rate at equal surface quality or improved surface quality at equal feed rate. Wiper inserts can only be used in insert holders with 95° setting angle.



● On stock ▲ Short-term availability ○ Availability on request All dimensions in inch

SPARE PARTS

Order Number	①	②
WW20 02 06	C00 20 04	G00 20 05
WW20 04 06	C00 20 01	G00 20 05
WW20 06 09	C00 20 37	G00 20 03

URMA Boring System
IntraMax

Ø 1.929 - 11.693 inch

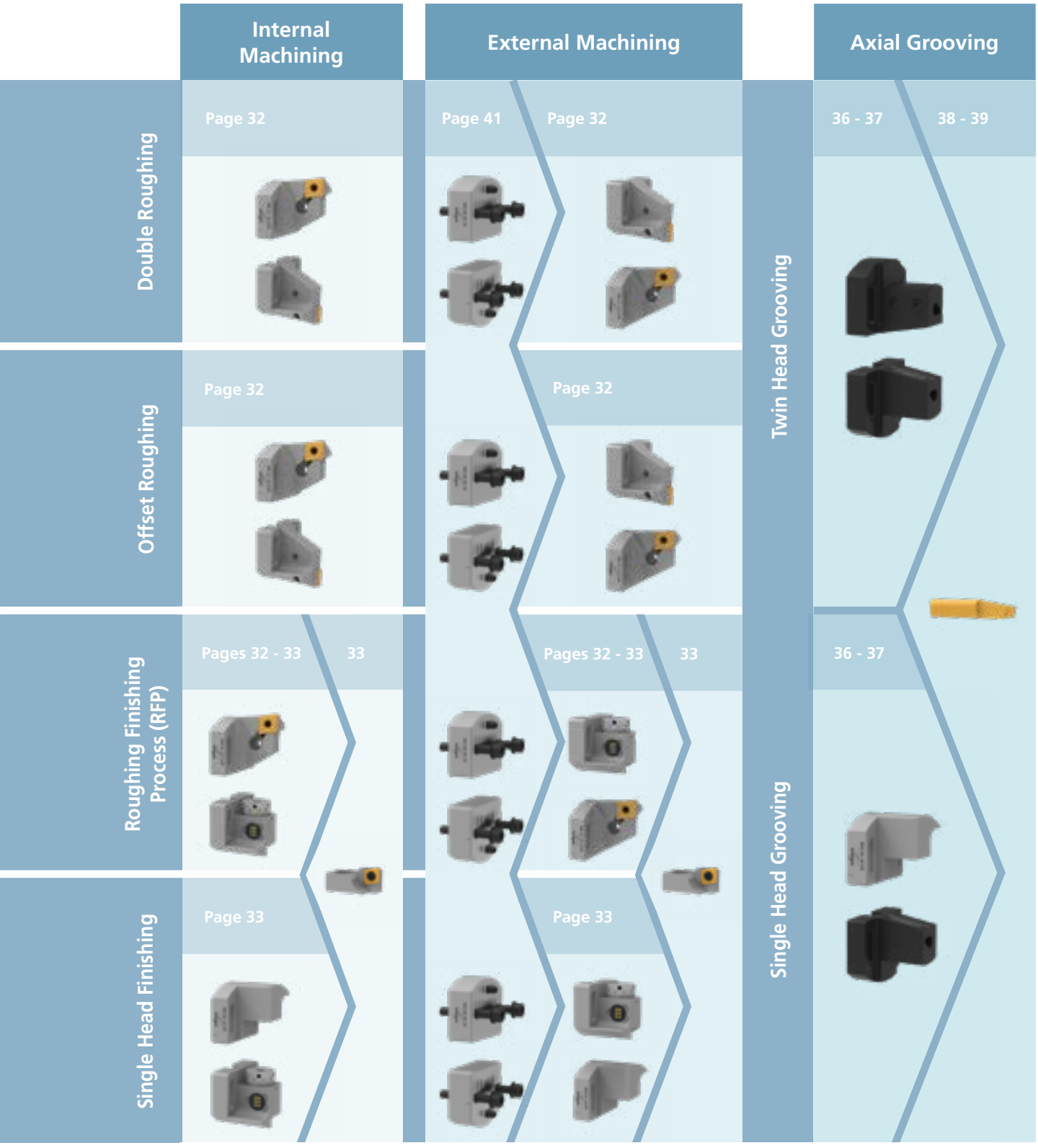
IntraMax

Standard Holders Page 42

Page 40

Standard Holders Page 42

Ø 1.929 - 11.693 inch



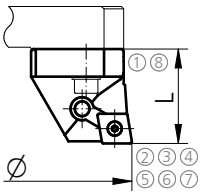
Ø 1.929 - 11.693 inch

Insert Holders Roughing

For Internal and External Machining

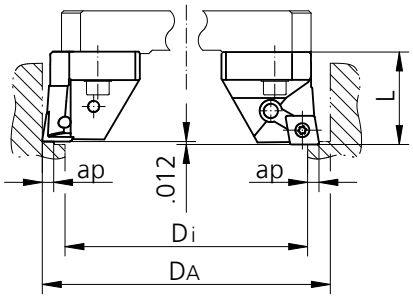
Insert Holders

Order Number	Ø-Range	L	lb	Inserts	MCM	MCC	Index
W17 02 09 028	1.929 - 3.465	1.102	.220	CC.. 32.5..	DK2203	CC09	●
W17 01 12 040	3.425 - 11.693	1.575	.661	CN.. 43..	DK2201	CN12	●



Insert Holder for Offset Roughing

Order Number	Ø-Range	L	lb	Inserts	a_p	MCM	MCC	Index
WV17 01 12 040	3.425 - 11.693	1.563	.661	CN.. 43..	.157 - .236	DK2201	CN12	●
W17 01 12 040	3.425 - 11.693	1.575	.661	CN.. 43..	.157 - .236	DK2201	CN12	●



Formula $a_p = \frac{D_A - D_i}{4}$

● On stock ▲ Short-term availability ○ Availability on request All dimensions in inch

⑥⑦ Not included in the delivery

SPARE PARTS

	①	②	③	④	⑤	⑥	⑦	⑧
W17 02..	C00 02 86		C00 20 02	G00 20 03				G00 02 01
W17 01 (WV)	C00 02 79	Z00 12 02		G00 20 03	A00 12 11	A00 02 17	A00 32 07	G00 02 02

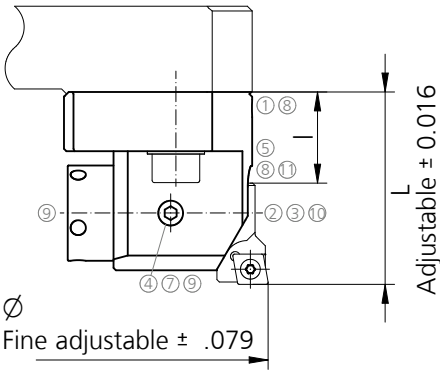
Ø 1.929 - 11.693 inch

Fine Boring Heads

For Internal and External Machining

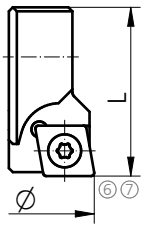
Fine Boring Heads .0002 inch/ø

Order Number	Ø-Range	L	l	lb	MCM	MCC	Index
23 02 11 028	1.929 - 3.465	1.102	.394	.330	DK2203	2012	●
23 01 31 040	3.425 - 11.693	1.575	.709	.881	DK2201	2010	●



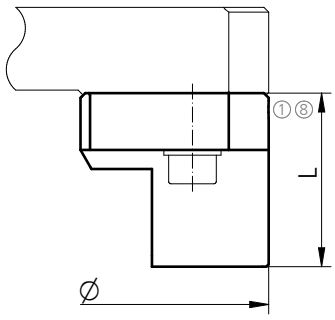
Fine Boring Insert Holders

Order Number	Ø-Range	L	Inserts	MCM	MCC	Index
W/C20 12 06 000	1.929 - 3.465	.709	CP..21.5../CC..21.5..	2012	CP06	●
W/C20 10 06 000	3.425 - 11.693	.866	CP..21.5../CC..21.5..	2010	CP06	●
W20 12 06 000	1.929 - 3.465	.709	CC..21.5..	2012	CC06	●
W20 10 06 000	3.425 - 11.693	.866	CC..21.5..	2010	CC06	●
WW20 12 06 000	1.929 - 3.465	.709	Wiper CC..21.5..	2012	CC06	●
WW20 10 06 000	3.425 - 11.693	.866	Wiper CC..21.5..	2010	CC06	●



Counter Weights

Order Number	Ø-Range	L	lb	MCM	Index
23 02 10 024	1.929 - 3.465	1.102	.220	DK2203	●
23 01 10 036	3.425 - 11.693	1.575	.661	DK2201	●

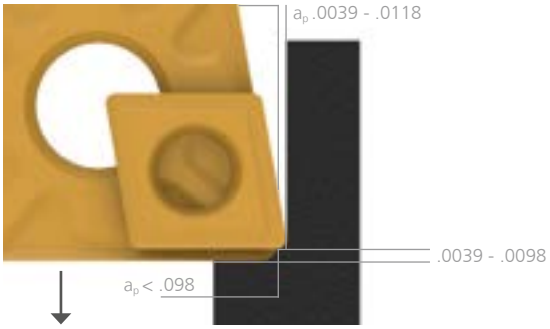


SPARE PARTS

Ø-Range	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪
1.929 - 3.465	C00 02 86	C00 22 56	K00 02 44	C00 25 01	Z00 23 02		G00 20 07	G00 02 01	G00 02 03		
3.425 - 11.693	C00 02 79	C00 22 11	K00 02 01	C00 07 01	Z00 23 02			G00 02 02	G00 02 03	G00 02 04	G00 02 01
W..20						C00 20 01	G00 20 05				

Ø 1.929 - 11.693 inch IntraMax

Simultaneous Single-Pass Roughing and Finishing (RFP)



Presetting of roughing and finishing cutting edge

IntraMax RFP combination

Simultaneous single-pass roughing and finishing requires radial and axial boring head offsets. Cutting time can be dramatically reduced using RFP.
(RFP = Roughing-Finishing-Process)

Using IntraMax and RFP the entire diameter range from 1.929 to 11.693 inch can be covered.
Recommended cutting depth on the roughing insert is a_p .098 inch for steel.

Further advantages:
- Reduced tooling investment
- Shorter cutting time
- Better surface quality
- IT7 tolerances in one pass

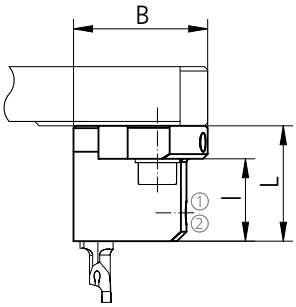
Ø .197 - 1.772 inch

Face Grooving

Insert Holder

Outer Groove

Order Number	L	l	B	Type	Index
BKT105.U90K.01	.965	.689	1.122	R105	●



From Ø D_{amin} = 2x (.236 inch + f_{insert}) two insert holders can be used simultaneously (pages 38 and 39 for f dimension). For smaller D_{amin} only one insert holder plus counter weight can be used together.

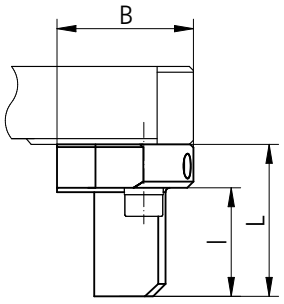
Diameter Extender

Order Number	Ø-Range	Page	Index
1)	.197 - .709	37	●
22 03 06 012	.709 - 1.220	35	●
22 03 07 012	1.220 - 1.772	35	●

1) Directly via basic holder or intermediate adaptor (see page 42)

Counter Weight

Order Number	L	l	B	Index
02.U00K.2040	.965	.689	.866	●



● On stock ▲ Short-term availability ○ Availability on request All dimensions in inch

SPARE PARTS

	①	②
BKT105. ...	6.075T15	G00 20 035

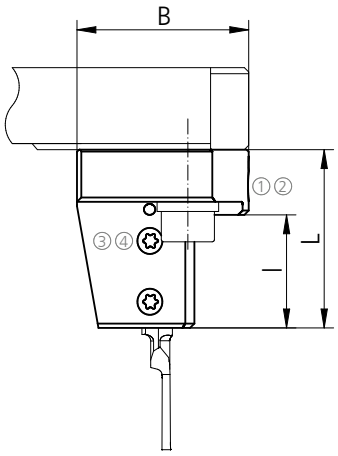
Ø 1.220 - 9.528 inch

Insert Holder

Outer Groove

Order Number	L	l	B	Type	Index
BKT105.U90G.01 1)	1.433	.961	1.555	R105	●
BKT11.U17G.02 1)	1.614	1.024	1.555	RA110	●

1) From Ø D_{amin} = 2x (.531 inch f_{insert}) two insert holders can be used simultaneously (page 39 for f dimension). For smaller D_{amin} only one insert holder plus counter weight can be used together.



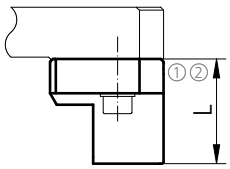
Diameter Extender

Order Number	Ø-Range	Page	Index
1)	1.220 - 2.402	40	●
22 01 11 018	2.402 - 3.583	40	●
22 01 14 018	3.583 - 4.803	40	●
22 01 17 018	4.803 - 5.984	40	●
22 01 20 023	5.984 - 7.165	40	●
22 01 23 023	7.165 - 8.346	40	●
22 01 26 028	8.346 - 9.528	40	●

1) Directly via basic holder or intermediate adaptor (see page 42)

Counter Weight

Order Number	Ø-Range	L	lb	MCM	Index
23 01 10 036	1.220 - 9.528	1.575	.661	DK2201	●



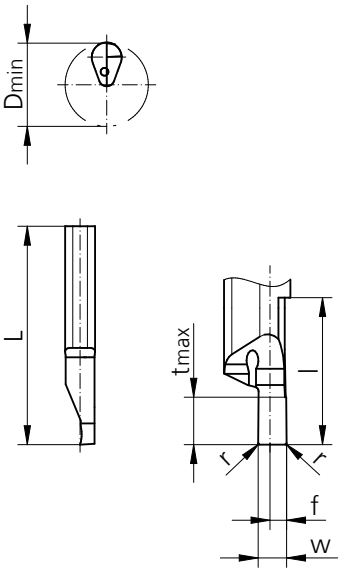
SPARE PARTS

Ø-Range	①	②	③	④
1.220 - 9.528	C00 02 79	G00 02 02	6.075T15	G00 20 030

Face Grooving (System HORN-URMA)

Inserts Type 105...8

Order Number	W$^{+.002}$	f	r	L	l	t_{max}	D_{min}	Type	Carbide grades MG12	Carbide grades TI25	Index
R105.051.1.8	.039	.079	.002	.984	.394	.079	.197	BKT105...	●	●	●
R105.0515.1.8	.059	.079	.002	.984	.394	.118	.197	BKT105...	●	●	●
R105.052.1.8	.079	.079	.002	.984	.394	.197	.197	BKT105...	●	●	●
R105.051.2.8	.039	.079	.002	1.378	.591	.079	.197	BKT105...	●	●	●
R105.0515.2.8	.059	.079	.002	1.378	.591	.118	.197	BKT105...	●	●	●
R105.052.2.8	.079	.079	.002	1.378	.591	.197	.197	BKT105...	●	●	●
R105.061.1.8	.039	.079	.002	.984	.394	.079	.236	BKT105...	●	●	●
R105.0615.1.8	.059	.079	.002	.984	.394	.118	.236	BKT105...	●	●	●
R105.062.1.8	.079	.079	.002	.984	.394	.197	.236	BKT105...	●	●	●
R105.061.2.8	.039	.079	.002	1.378	.591	.079	.236	BKT105...	●	●	●
R105.0615.2.8	.059	.079	.002	1.378	.591	.118	.236	BKT105...	●	●	●
R105.062.2.8	.079	.079	.002	1.378	.591	.197	.236	BKT105...	●	●	●
R105.081.1.8	.039	.079	.006	.984	.394	.197	.315	BKT105...		●	●
R105.0815.1.8	.059	.079	.006	.984	.394	.079	.315	BKT105...		●	●
R105.082.1.8	.079	.079	.006	.984	.394	.118	.315	BKT105...		●	●
R105.0825.1.8	.098	.079	.006	.984	.394	.157	.315	BKT105...		●	●
R105.083.1.8	.118	.079	.006	.984	.394	.197	.315	BKT105...		●	●
R105.081.2.8	.039	.079	.006	1.378	.591	.079	.315	BKT105...		●	●
R105.0815.2.8	.059	.079	.006	1.378	.591	.118	.315	BKT105...		●	●
R105.082.2.8	.079	.079	.006	1.378	.591	.157	.315	BKT105...		●	●
R105.0825.2.8	.098	.079	.006	1.378	.591	.197	.315	BKT105...		●	●
R105.083.2.8	.118	.079	.006	1.378	.591	.236	.315	BKT105...		●	●



MG12
Uncoated carbide for low cutting speed in steel, cast iron and non-ferrous metals

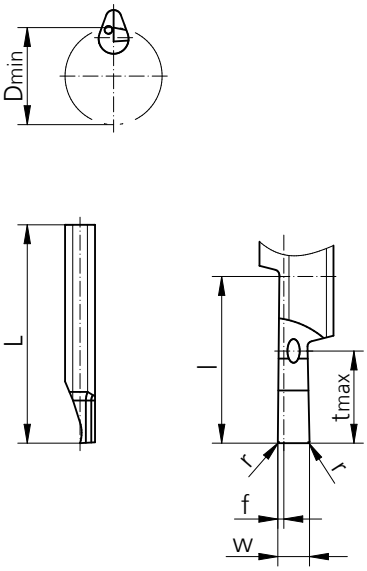
TI25
TiCN coated carbide for medium cutting speed in steel and non-ferrous metals

Further dimensions and insert profiles upon request

● On stock ▲ Short-term availability ○ Availability on request All dimensions in inch

Inserts Type 105...9

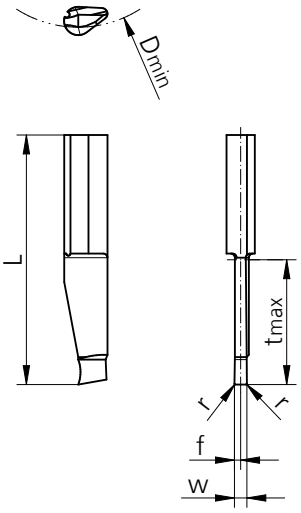
Order Number	W$^{+.002}$	f	r	L	l	t_{max}	D_{min}	Type	HM-Sorten Carbide grades TI25	Index
R105.081.1.9	.039	.016	.006	.984	.394	.079	.315	BKT105...	●	●
R105.0815.1.9	.059	.016	.006	.984	.394	.118	.315	BKT105...	●	●
R105.082.1.9	.079	.016	.006	.984	.394	.157	.315	BKT105...	●	●
R105.0825.1.9	.098	.016	.006	.984	.394	.197	.315	BKT105...	●	●
R105.083.1.9	.118	.016	.006	.984	.394	.236	.315	BKT105...	●	●



Inserts Type A110

Order Number	W$^{+.002}$	f	r	L	t_{max}	D_{min}	Type	HM-Sorten Carbide grades TI25	Index
RA11.203.3.0	.118	.059	.008	1.969	.787	.787 - 1.969*	BKT11...	●	●
RA11.203.5.0	.118	.059	.008	2.362	1.181	.787 - 1.969*	BKT11...	●	●
RA11.503.3.0	.118	.059	.008	1.969	.787	>1.969	BKT11...	●	●
RA11.503.5.0	.118	.059	.008	2.362	1.181	>1.969	BKT11...	●	●

*** Face grooving with full width to the full depth only possible between D_a = .787 – 1.969 inch**

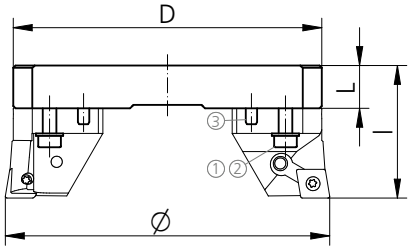


Ø 1.929 - 11.693 inch

Diameter Extenders

Diameter Extenders — Ø 1.929 - 3.465 inch

Order Number	Ø-Range	L	l	D	lb	MCM	MCC	Index
G21 46 19 036*	1.929 - 2.441							●
22 03 06 012	2.441 - 2.953	.472	1.575	2.323	.440	Z2203	DK2203	●
22 03 07 012	2.953 - 3.465	.472	1.575	2.835	.661	Z2203	DK2203	●



Diameter Extender — Ø 3.425 - 11.693 inch

Order Number	Ø-Range	L	l	D	lb	MCM	MCC	Index
G21 80 31 052*	3.425 - 4.606						DK2201	●
22 01 11 018	4.606 - 5.787	.709	2.283	4.331	1.763	Z2201	DK2201	●
22 01 14 018	5.787 - 6.969	.709	2.283	5.512	2.204	Z2201	DK2201	●
22 01 17 018	6.969 - 8.150	.709	2.283	6.693	2.645	Z2201	DK2201	●
22 01 20 023	8.150 - 9.331	.709	2.283	7.874	3.527	Z2201	DK2201	●
22 01 23 023	9.331 - 1.512	.709	2.283	9.055	4.188	Z2201	DK2201	●
22 01 26 028	1.512 - 11.693	.709	2.283	1.236	5.732	Z2201	DK2201	●

***Directly mounted to basic holder shown on page 42**

● On stock ▲ Short-term availability ○ Availability on request All dimensions in inch

SPARE PARTS

Ø-Range	①	②	③
1.929 - 3.465	C00 22 05	K00 02 01	C00 12 08
3.425 - 11.693	C00 22 02	K00 02 20	C00 12 61

Ø .354 - 9.803 inch

Intermediate Adaptors for External Machining*

Intermediate Adaptors

Ø .354 - 1.378 inch

Order Number	Ø-Range	D	dz	ds	L	lz	lk	lb	Diameter extender	MCM	MCC	Index
22 04 00 012	.354 - .866	2.323	2.913	Ø + 2.205	1.102	.472	.472	.220	22 03 06 012	DK2203	DK2203	●
22 04 00 012	.866 - 1.378	2.835	3.425	Ø + 2.205	1.102	.472	.472	.220	22 03 07 012	DK2203	DK2203	●

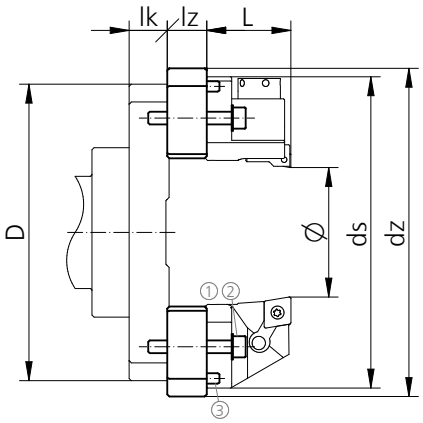
*** Diameter extender required to achieve Ø range shown**

Intermediate Adaptors

Ø .354 - 9.803 inch

Order Number	Ø-Range	D	dz	ds	L	lz	lk	lb	Diameter extender	MCM	MCC	Index
22 02 00 018	.354 - 1.535	4.331	4.921	Ø + 3.937	1.575	.709	.709	.551	22 01 11 018	DK2201	DK2201	●
22 02 00 018	1.535 - 2.717	5.512	6.102	Ø + 3.937	1.575	.709	.709	.551	22 01 14 018	DK2201	DK2201	●
22 02 00 018	2.717 - 3.898	6.693	7.283	Ø + 3.937	1.575	.709	.709	.551	22 01 17 018	DK2201	DK2201	●
22 02 00 018	3.898 - 5.079	7.874	8.465	Ø + 3.937	1.575	.709	.906	.551	22 01 20 023	DK2201	DK2201	●
22 02 00 018	5.079 - 6.260	9.055	9.646	Ø + 3.937	1.575	.709	.906	.551	22 01 23 023	DK2201	DK2201	●
22 02 00 018	6.260 - 7.441	1.236	1.827	Ø + 3.937	1.575	.709	1.102	.551	22 01 26 028	DK2201	DK2201	●
22 02 00 018	7.441 - 8.622	11.417	12.008	Ø + 3.937	1.575	.709	1.102	.551	22 01 29 028	DK2201	DK2201	●
22 02 00 018	8.622 - 9.803	12.598	13.189	Ø + 3.937	1.575	.709	1.102	.551	22 01 32 028	DK2201	DK2201	●

*** Diameter extender required to achieve Ø range shown**



SPARE PARTS

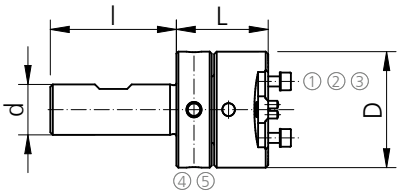
Ø-Range	①	②	③
.354 - 1.378	C00 22 05	K00 02 01	C00 12 08
.354 - 9.803	C00 22 74	K00 02 20	C00 12 61

Ø 1.929 - 11.693 inch

Adaptors

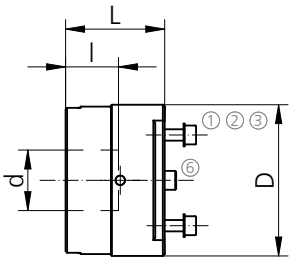
Adaptor With Cylindrical Shank

Gamma	Order Number	Ø-Range	L	l	D	d	lb	MCC	Index
20	G21 46 19 036	1.929 - 3.465	1.417	2 1/32	1.811	.750	1.322	Z2203	●



Adaptor for Shell Mill Mount

Gamma	Order Number	Ø-Range	L	D	d	lb	MCC	Index
80	G21 80 31 052	3.425 - 11.693	2.047	3.150	1.250	3.968	Z2201	●



● On stock ▲ Short-term availability ○ Availability on request All dimensions in inch

SPARE PARTS

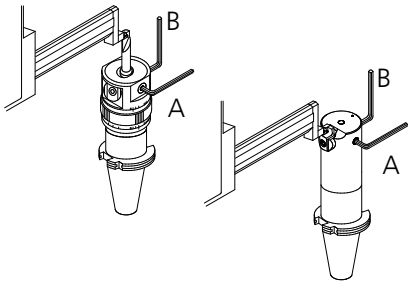
Ø-Range	①	②	③	④	⑤	⑥
1.929 - 3.465	C00 22 05	K00 02 01	C00 12 08	C00 14 03	G00 25 045	
3.425 - 11.693	C00 22 02	K00 02 20				Z00 21 20

Pre-Setting Fine Boring Heads

Ø .0078 - 3.465 inch

MicroMax, VersaMax - Type 25

1. Loosen locking screw A
2. Set the boring diameter at the micrometer screw B
3. Re-tighten locking screw A to labeled torque

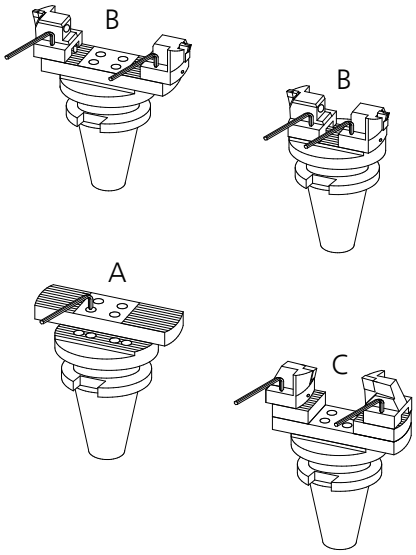


Assembly of System IntraMax

Ø 1.929 - 11.693 inch

IntraMax

1. Mount the diameter adaptor (if needed) onto the adaptor or intermediate adaptor with four screws A
2. For external machining, the intermediate adaptor must be mounted
3. Mount the roughing or finishing insert holders with two screws B each (typical configuraiton is two heads mounted at the same time)
4. Align the insert holders using the coarse graduations on the head and the adaptor

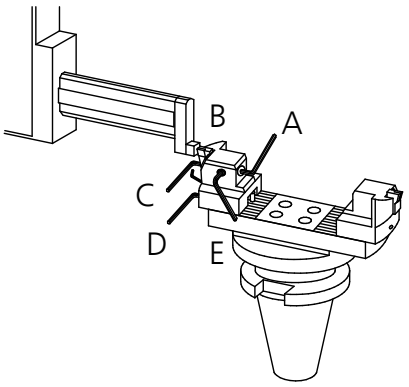


Pre-Setting the System

Ø 1.929 - 11.693 inch

IntraMax

1. Set the boring diameter to the pre-set position using setting dial A or adjusting screw D respectively
2. Re-tighten locking screw E to labeled torque
3. If two fine boring heads are to be used simultaneously, loosen the fine boring insert using key C, set the blade with key B, and reclamp with the key C

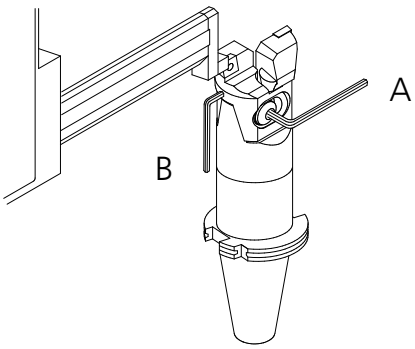


Setting the Bore Diameter on a Double Cutter

Ø .768 - 3.465 inch

VersaMax - Type 14

1. Gently tighten clamping screws A (spring washer must be fitted)
2. Set the cutter to the exact diameter with the adjusting screw B
3. Firmly tighten clamping screw A



Axial Support Nut Gamma

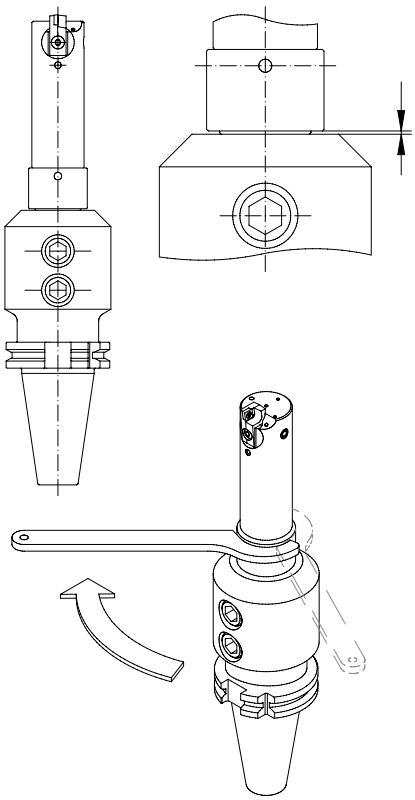
Ø .786 - 3.465 inch

VersaMax Type 25, VersaMax Type 14, IntraMax

1. Screw the axial support nut by hand against the stop towards the insert

2. Clamp Gamma-system tool in Weldon adaptor DIN 1835-B, collet or hydro chuck. Note the gap between holder and axial support nut

3. Tighten axial support nut with hook spanner DIN 1810-B holder with a moderate force (maximum 1/8 turn after contact)



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