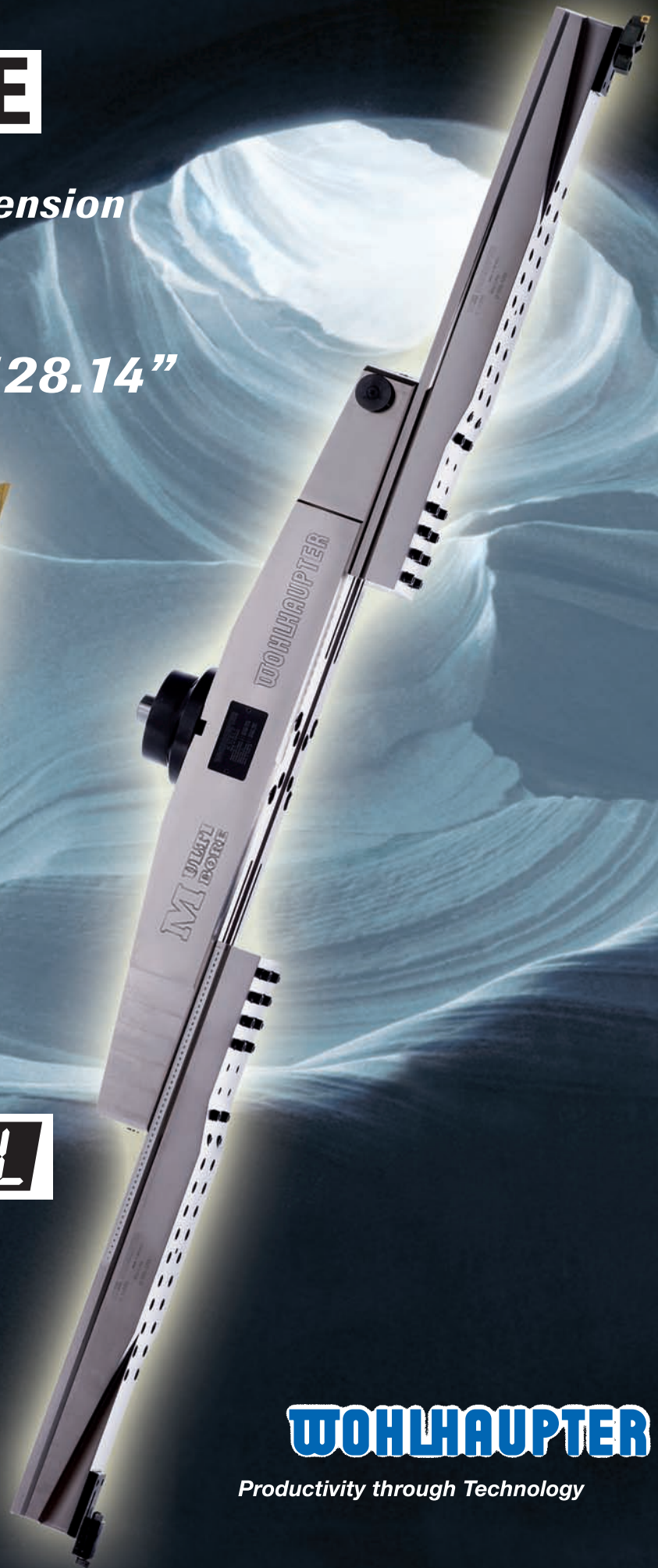


ALU LINE

*A new digital dimension
in precision:
Boring operations
from \emptyset 7.87" – 128.14"*



DIGITAL



WOHLHAUPTER

Productivity through Technology

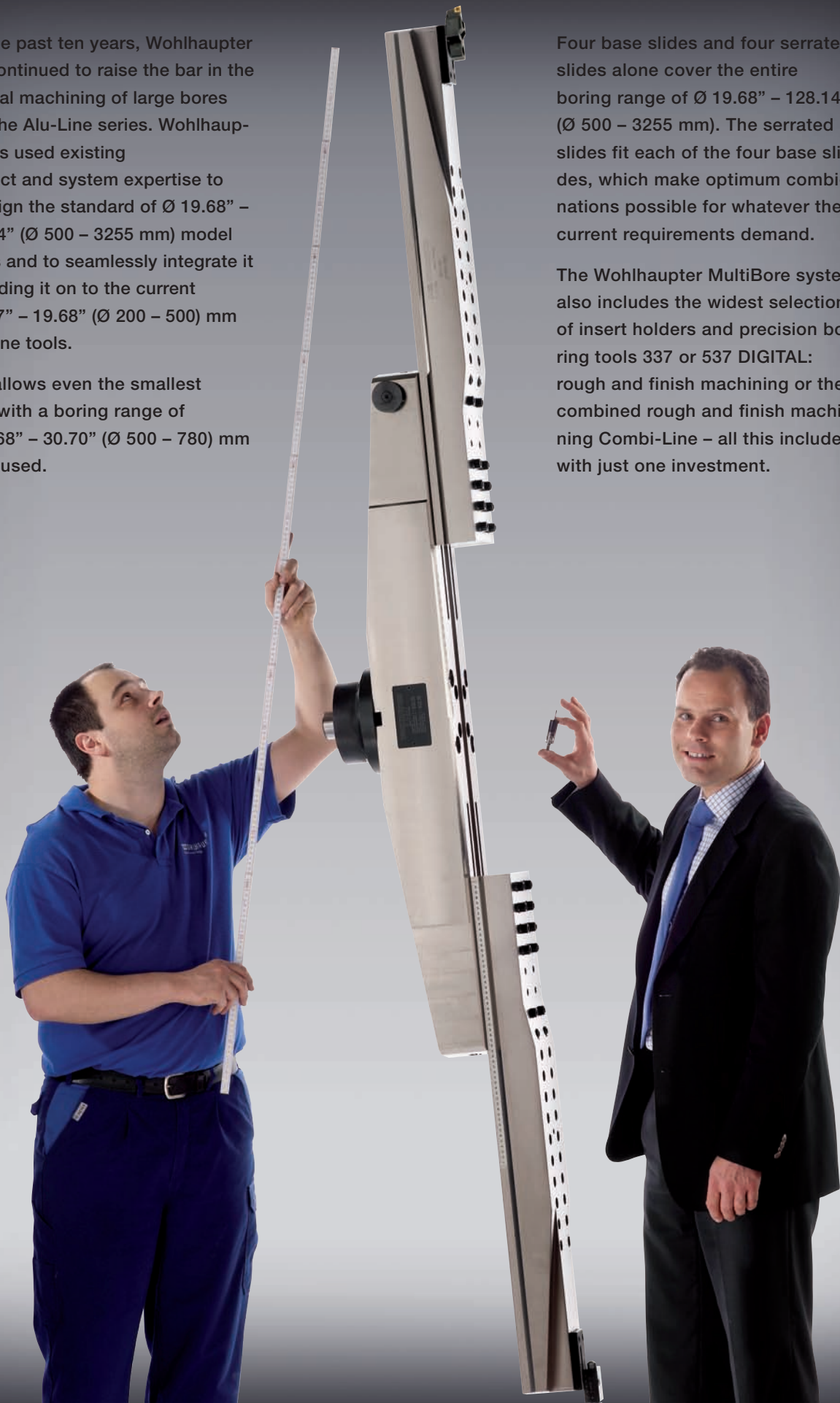
Cost-effective boring operations up to \varnothing 128.14" (\varnothing 3255 mm)...

For the past ten years, Wohlhaupter has continued to raise the bar in the internal machining of large bores with the Alu-Line series. Wohlhaupter has used existing product and system expertise to redesign the standard of \varnothing 19.68" – 128.14" (\varnothing 500 – 3255 mm) model series and to seamlessly integrate it by adding it on to the current \varnothing 7.87" – 19.68" (\varnothing 200 – 500) mm Alu-Line tools.

This allows even the smallest slide with a boring range of \varnothing 19.68" – 30.70" (\varnothing 500 – 780) mm to be used.

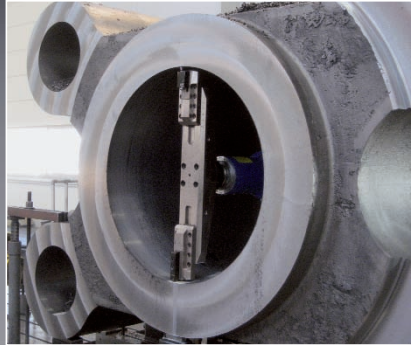
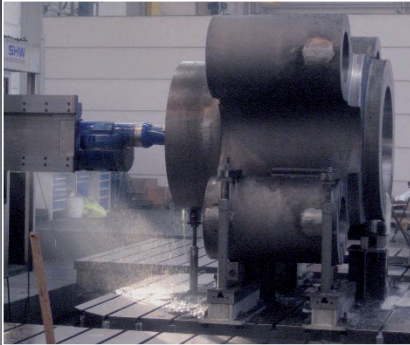
Four base slides and four serrated slides alone cover the entire boring range of \varnothing 19.68" – 128.14" (\varnothing 500 – 3255 mm). The serrated slides fit each of the four base slides, which make optimum combinations possible for whatever the current requirements demand.

The Wohlhaupter MultiBore system also includes the widest selection of insert holders and precision boring tools 337 or 537 DIGITAL: rough and finish machining or the combined rough and finish machining Combi-Line – all this included with just one investment.

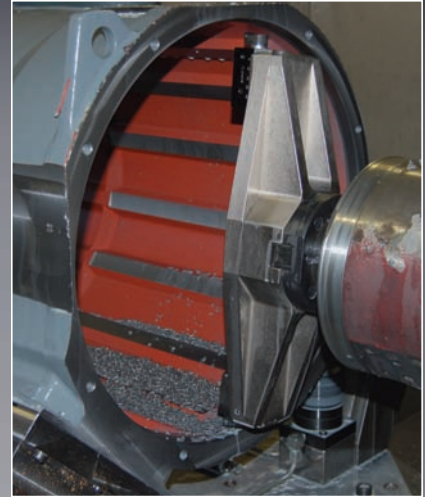


...with Wohlhaupter precision

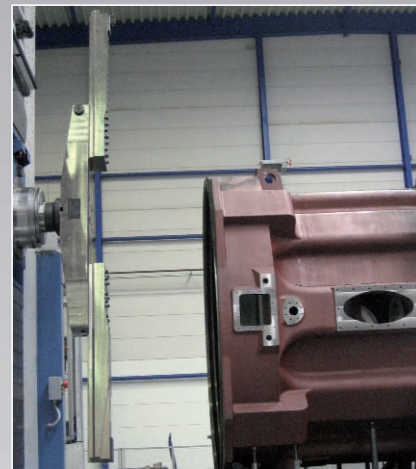
ALU LINE



Finish machining on a cast-iron casing EN-GJL-250: $\varnothing 870^{H7}$, V_c 400 m/min., machining length: 1700 mm, cutting material: WBN 300, machining time: 103 min.



Stator housing EN-GJS-500-7: rough/finish machining, $\varnothing 409,5^{P7}$, bore depth: 500 mm, highly noncontinuous cut



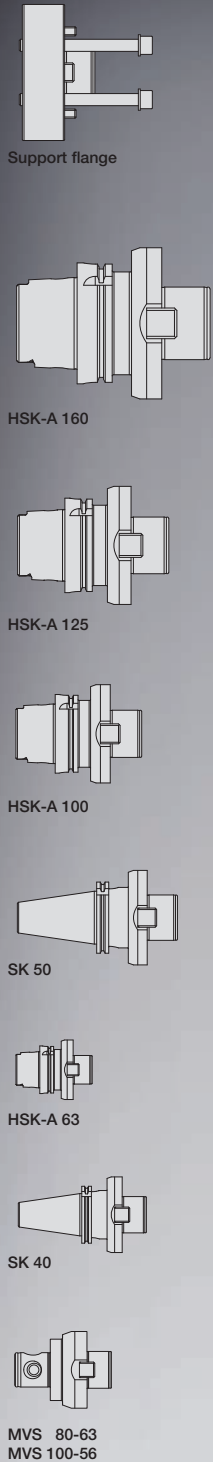
Transmission housing EN-GJS-500-7, finish machining $\varnothing 2164$ mm and $\varnothing 2335$ mm, V_c : 170 m/min, cutting depth: 0.5 mm, f_z : 0,10 - 0,12 mm

WOHLHAUPTER

Productivity through Technology

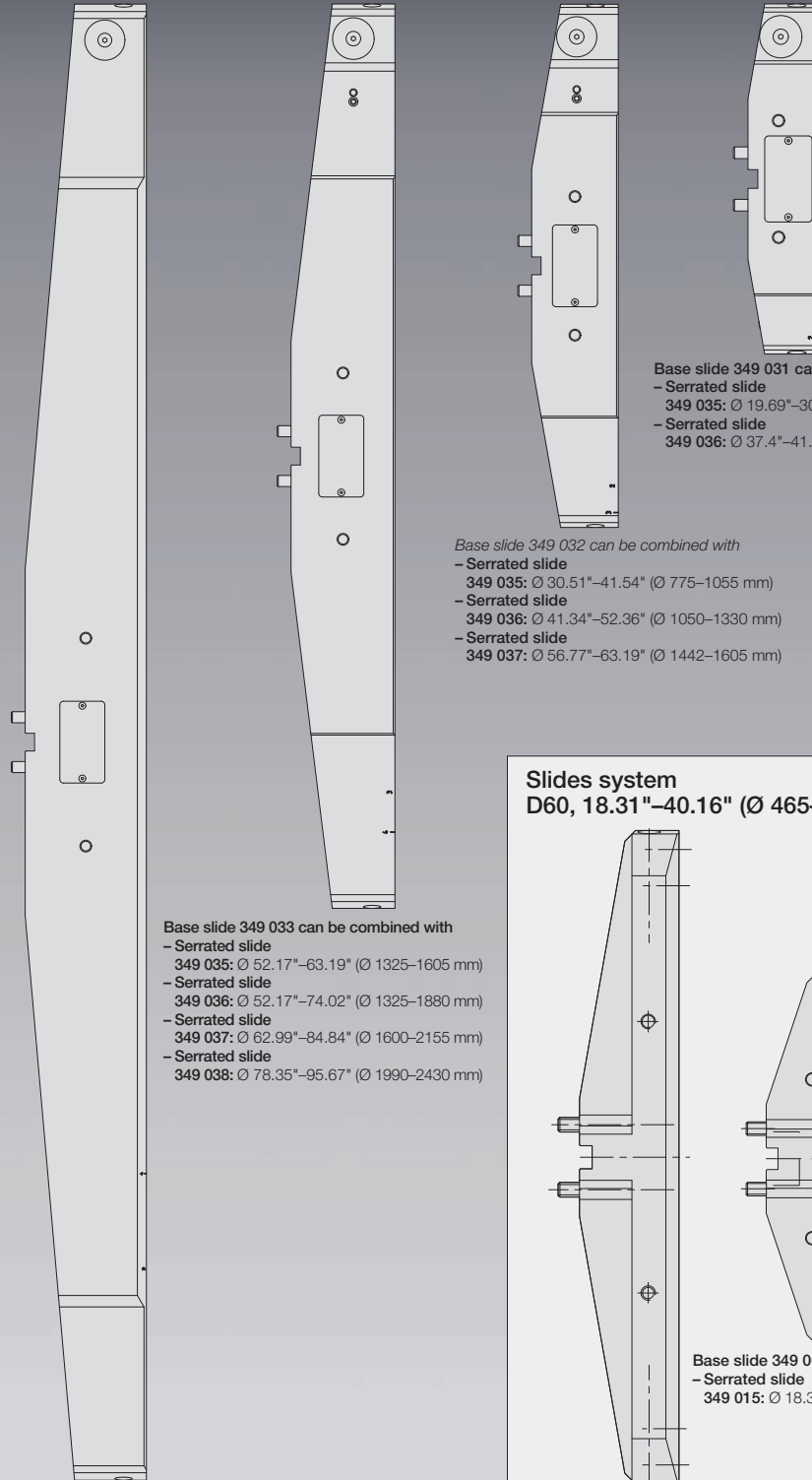
Boring $\varnothing 7.87''$ – $128.15''$ ($\varnothing 200$ – 3255 mm) in the blink of an eye

Master shanks

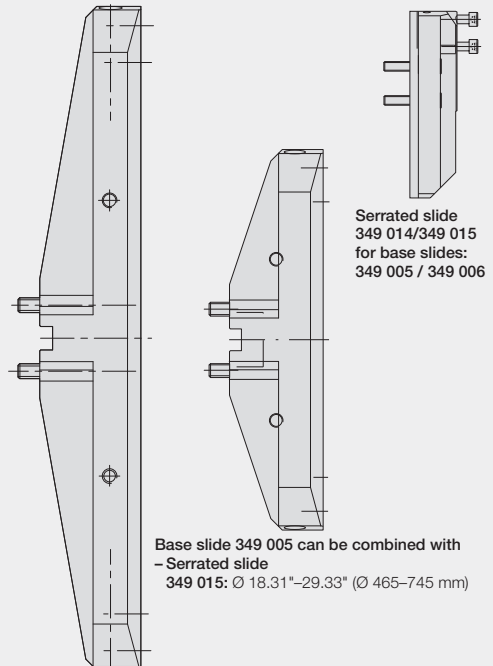


Additional master shanks on request

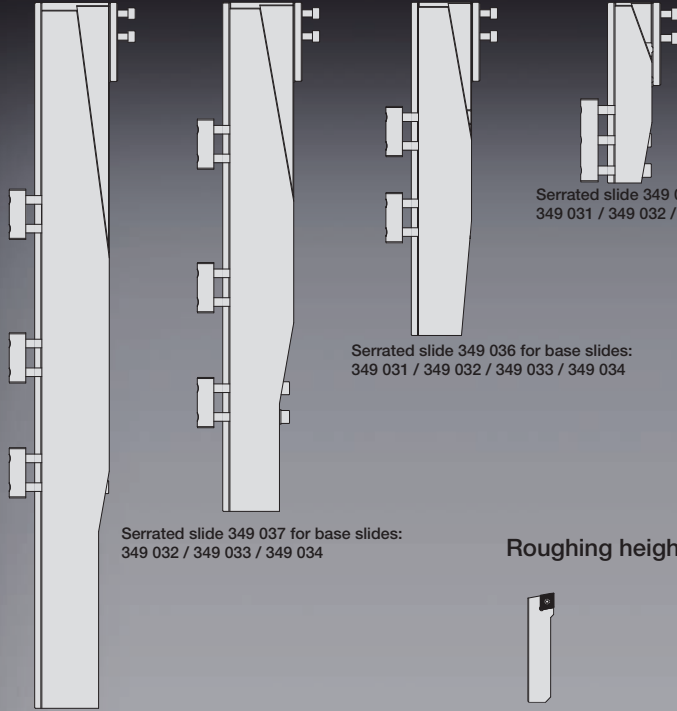
Basic slides: $19.69''$ – $128.15''$ (500 – 3255 mm)



Slides system D60, $18.31''$ – $40.16''$ ($\varnothing 465$ – 1020 mm)



Serrated slides: 19.69"-128.15" (500-3255 mm)



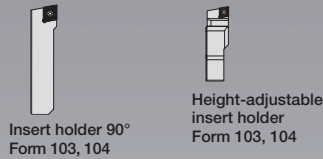
Serrated slide 349 035 for base slides:
349 031 / 349 032 / 349 033 / 349 034

Serrated slide 349 036 for base slides:
349 031 / 349 032 / 349 033 / 349 034

Serrated slide 349 037 for base slides:
349 032 / 349 033 / 349 034

Serrated slide 349 038 for base slides:
349 033 / 349 034

Roughing height adjustable



Insert holder 90°
Form 103, 104

Height-adjustable
insert holder
Form 103, 104

Finish machining



Precision boring tool 538/338
Form 20, 21, 101, 103, 161

Counter weight
Ø 200 - 500 mm

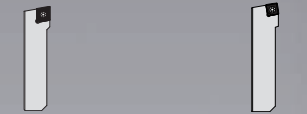
Rough and finish machining



Precision boring tool 538/338
Form 103

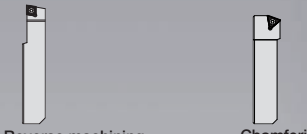
Height-adjustable
insert holder
Form 103

Insert holders rough machining



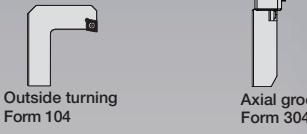
90°
Form 103, 104, 105, 123, 124

80°
Form 113, 114, 134



Reverse machining
Form 104

Chamfering
Form 114, 163

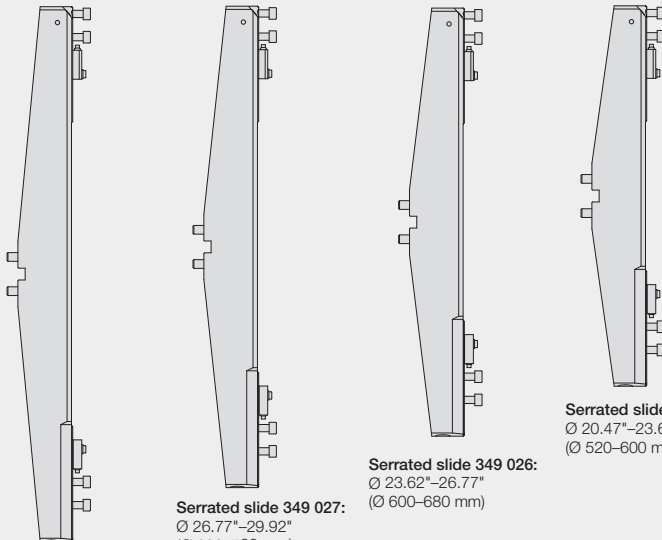


Outside turning
Form 104

Axial grooving
Form 304

Other insert holders on request

Serrated slides: D40, 7.87"-33.07" (Ø 200-840 mm)

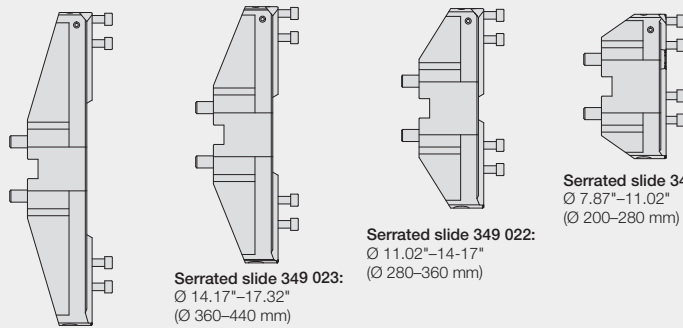


Serrated slide 349 025:
Ø 20.47"-23.62"
(Ø 520-600 mm)

Serrated slide 349 026:
Ø 23.62"-26.77"
(Ø 600-680 mm)

Serrated slide 349 027:
Ø 26.77"-29.92"
(Ø 680-760 mm)

Serrated slide 349 028:
Ø 29.92"-33.07"
(Ø 760-840 mm)



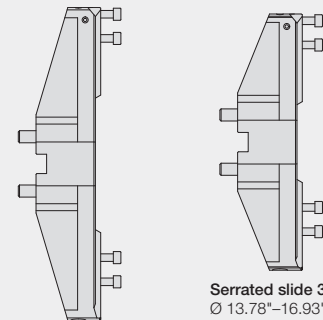
Serrated slide 349 021:
Ø 7.87"-11.02"
(Ø 200-280 mm)

Serrated slide 349 022:
Ø 11.02"-14.17"
(Ø 280-360 mm)

Serrated slide 349 023:
Ø 14.17"-17.32"
(Ø 360-440 mm)

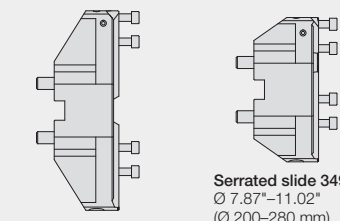
Serrated slide 349 024:
Ø 17.32"-20.47"
(Ø 440-520 mm)

Serrated slides
D60, 7.87"-19.88" (Ø 200-505 mm)



Serrated slide 349 003:
Ø 13.78"-16.93"
(Ø 350-430 mm)

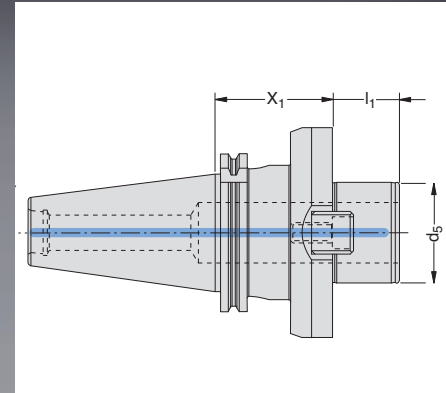
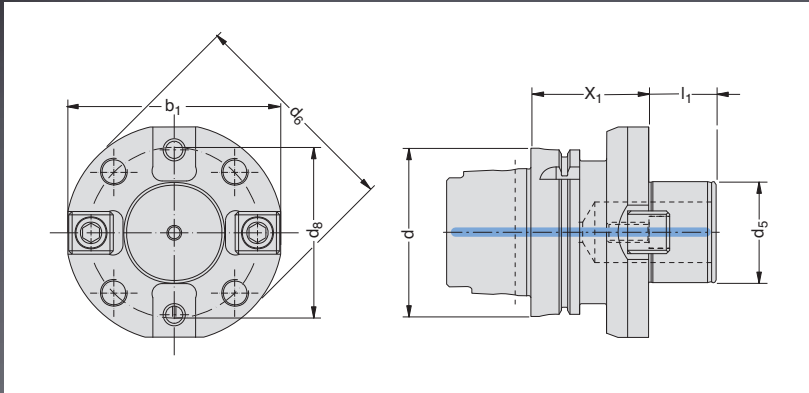
Serrated slide 349 004:
Ø 16.73"-19.88"
(Ø 425-505 mm)



Serrated slide 349 001:
Ø 7.87"-11.02"
(Ø 200-280 mm)

Serrated slide 349 002:
Ø 10.83"-13.98"
(Ø 275-355 mm)

Master shanks



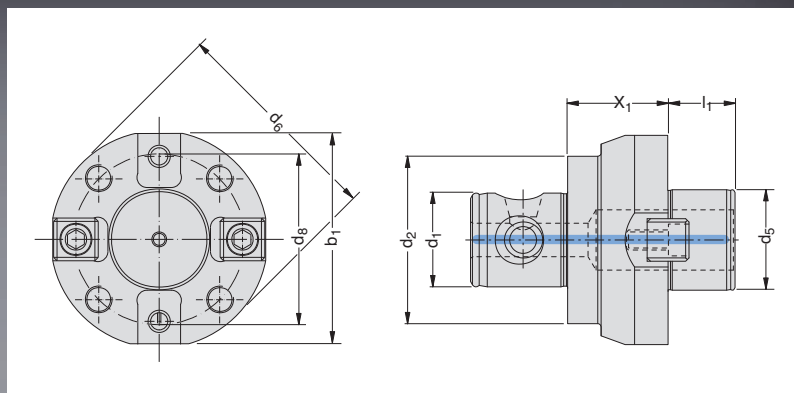
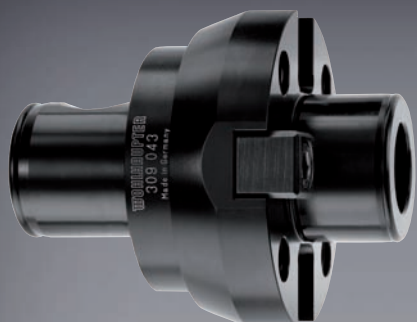
| Taper size | Connection | | | | | | | | | | | | | | | Order No. |
|----------------------------------|------------|---------|----|---------|----|---------|----|---------|-------|---------|-------|---------|-----|--------|-----|---|
| | | \$X_1\$ | | \$l_1\$ | | \$d_5\$ | | \$d_6\$ | | \$d_8\$ | | \$b_1\$ | | weight | | |
| | | in | mm | in | mm | in | mm | in | mm | in | mm | in | mm | lbs | kg | |
| HSK-A (DIN 69 893): | | | | | | | | | | | | | | | | |
| 63 | D 40 | 2.362 | 60 | 1.181 | 30 | 1.570 | 40 | 3.504 | 89,0 | 2.626 | 66,7 | 3.150 | 80 | 4.2 | 1,9 | 358 015 |
| 100 | D 60 | 2.756 | 70 | 1.570 | 40 | 2.362 | 60 | 5.083 | 129,1 | 4.000 | 101,6 | 4.921 | 125 | 11.5 | 5,2 | 258 061 |
| 100 | D 60 | 2.756 | 70 | 1.570 | 40 | 2.362 | 60 | 5.083 | 129,1 | 4.000 | 101,6 | 4.331 | 110 | 11.0 | 5,0 | 258 098 |
| SK (DIN 69 871-AD): | | | | | | | | | | | | | | | | |
| 40 | D 40 | 1.970 | 50 | 1.181 | 30 | 1.570 | 40 | 3.504 | 89,0 | 2.626 | 66,7 | 3.150 | 80 | 4.2 | 1,9 | 198 082 T 013 815¹⁾ |
| 40 | D 60 | 2.756 | 70 | 1.570 | 40 | 2.362 | 60 | 5.083 | 129,1 | 4.000 | 101,6 | 4.921 | 125 | 8.4 | 3,8 | 198 054 T 013 815¹⁾ |
| 40 | D 60 | 2.756 | 70 | 1.570 | 40 | 2.362 | 60 | 5.083 | 129,1 | 4.000 | 101,6 | 4.331 | 110 | 7.9 | 3,6 | 198 081 T 013 815¹⁾ |
| 50 | D 60 | 2.756 | 70 | 1.570 | 40 | 2.362 | 60 | 5.083 | 129,1 | 4.000 | 101,6 | 4.921 | 125 | 12.8 | 5,8 | 198 054 T 019 539 |
| 50 | D 60 | 2.756 | 70 | 1.570 | 40 | 2.362 | 60 | 5.083 | 129,1 | 4.000 | 101,6 | 4.331 | 110 | 12.1 | 5,5 | 198 081 T 019 539 |
| SK (DIN 69 871-B): | | | | | | | | | | | | | | | | |
| 50 | D 60 | 2.756 | 70 | 1.570 | 40 | 2.362 | 60 | 5.083 | 129,1 | 4.000 | 101,6 | | | 16.5 | 7,5 | 198 054 T 019 539-0²⁾ |
| SK (MAS BT / JIS B 6339): | | | | | | | | | | | | | | | | |
| 50 | D 60 | 3.150 | 80 | 1.570 | 40 | 2.362 | 60 | 5.083 | 129,1 | 4.000 | 101,6 | | | 18.1 | 8,2 | 198 055 T 008 296-0° |
| SK (DIN 2080): | | | | | | | | | | | | | | | | |
| 50 | D 60 | 1.142 | 29 | 1.570 | 40 | 2.362 | 60 | 5.083 | 129,1 | 4.000 | 101,6 | | | 12.1 | 5,5 | 198 051 T 010 048-0° |
| SK (ISO 7388 ANSI/CAT): | | | | | | | | | | | | | | | | |
| 50 | D 60 | 2.756 | 70 | 1.570 | 40 | 2.362 | 60 | 5.083 | 129,1 | 4.000 | 101,6 | | | 16.3 | 7,4 | 198 054 T 016 962-0° |
| SK (DIN 6357): | | | | | | | | | | | | | | | | |
| 50 | D 60 | 2.756 | 70 | 1.570 | 40 | 2.362 | 60 | 5.083 | 129,1 | | | | | 16.3 | 7,4 | 198 054 T 011 624 |

¹⁾ For light machining only

²⁾ The master shank is supplied as DIN 69 871-AD, see page A 2.1.
When using as DIN 69 871-B remove the thread pin near the collar and use the pull stud DIN 69 872-B.

Additional master shanks and support flanges are available on request.

Holding arbors for boring tools and milling cutters

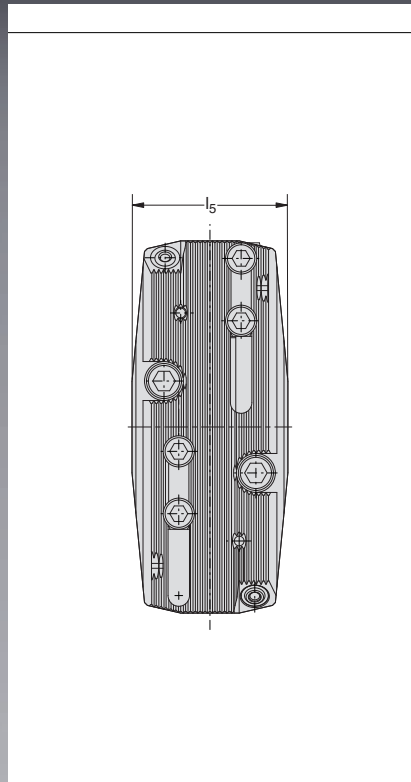
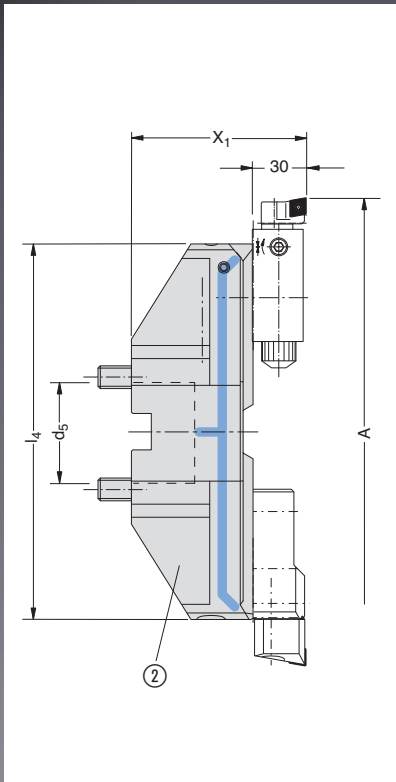


| MVS connection | Holding arbor connection | Dimensions | | | | | | | | | | | | | | Order No. |
|---------------------------------|--------------------------|----------------|----|----------------|----|----------------|----|----------------|-------|----------------|-------|----------------|-----|--------|-----|------------------------------------|
| | | X ₁ | | l ₁ | | d ₅ | | d ₆ | | d ₈ | | b ₁ | | weight | | |
| | | in | mm | in | mm | in | mm | in | mm | in | mm | in | mm | lbs | kg | |
| d ₂ d ₁ | | | | | | | | | | | | | | | | |
| 80 - 36 | D 40 ALU LINE | .748 | 19 | 1.18 | 30 | 1.575 | 40 | 3.50 | 89.0 | 2.63 | 66.7 | 3.150 | 80 | 1.10 | 0,5 | 309 001 ¹⁾²⁾ NEW |
| 80 - 36 | D 60 | 2.362 | 60 | 1.58 | 40 | 2.362 | 60 | 5.08 | 129.1 | 4.00 | 101.6 | 4.921 | 125 | 9.04 | 4,1 | 209 060 ¹⁾ |
| 80 - 36 | D 60 | 2.362 | 60 | 1.58 | 40 | 2.362 | 60 | 5.08 | 129.1 | 4.00 | 101.6 | 4.331 | 110 | 8.38 | 3,8 | 209 093 ¹⁾ |
| 100 - 56 | D 60 | 2.362 | 60 | 1.58 | 40 | 2.362 | 60 | 5.08 | 129.1 | 4.00 | 101.6 | 4.921 | 125 | 13.89 | 6,3 | 209 043 ³⁾ |
| 100 - 56 | D 60 ALU LINE | 2.362 | 60 | 1.58 | 40 | 2.362 | 60 | 5.08 | 129.1 | 4.00 | 101.6 | 4.921 | 125 | 4.85 | 2,2 | 309 043 ²⁾ |
| 100 - 56 | D 60 ALU LINE | 2.362 | 60 | 1.58 | 40 | 2.362 | 60 | 5.08 | 129.1 | 4.00 | 101.6 | 4.331 | 110 | 4.63 | 2,1 | 309 044 ²⁾ |

¹⁾ For light machining only

²⁾ Light-weight aluminium construction only in connection with our serrated slides
 Ø 200 – 505 mm (D 60),
 Ø 200 – 840 mm (D 40) (page G 3.1)

³⁾ With 4 cap screws M 16 x 55 (Order No. 215 189)



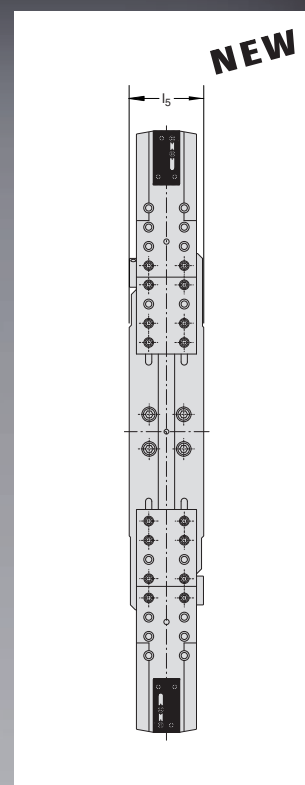
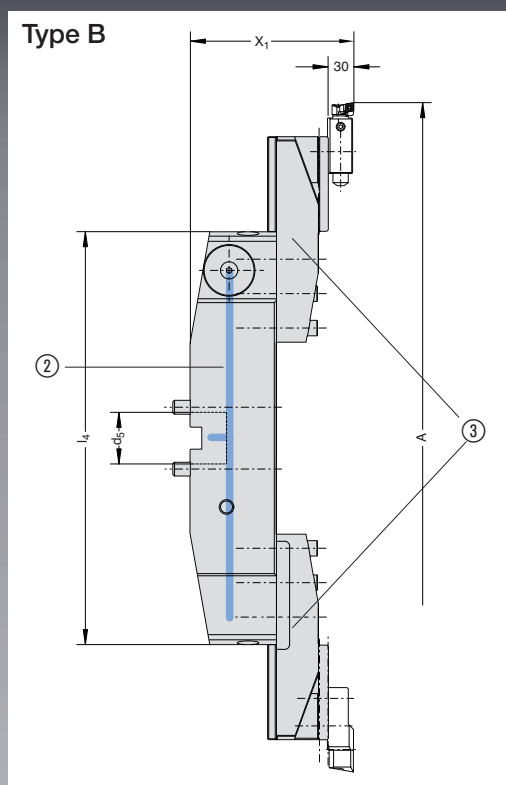
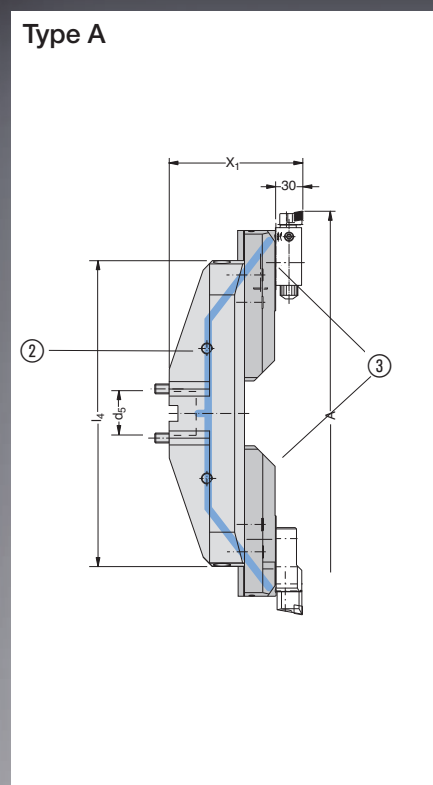
| Connection | Boring range | | | | | | | | | | Serrated slide | |
|------------|----------------|-----------|----------------|----------------|----------------|--------|------|-----------|------|------|----------------|----------|
| | d ₅ | A | X ₁ | l ₄ | l ₅ | weight | | Order No. | | | | |
| | in | mm | in | mm | in | mm | in | mm | lbs | kg | in | mm |
| D 40 | 7.87 - 11.02 | 200 - 280 | 4.13 | 105 | 7.48 | 190 | 3.15 | 80 | 6.2 | 2,8 | 350 021 | 349 021 |
| D 40 | 11.02 - 14.17 | 280 - 360 | 4.13 | 105 | 10.63 | 270 | 3.15 | 80 | 8.4 | 3,8 | 350 022 | 349 022 |
| D 40 | 14.17 - 17.32 | 360 - 440 | 4.13 | 105 | 13.78 | 350 | 3.15 | 80 | 10.8 | 4,9 | 350 023* | 349 023* |
| D 40 | 17.32 - 20.47 | 440 - 520 | 4.13 | 105 | 16.93 | 430 | 3.15 | 80 | 13.0 | 5,9 | 350 024* | 349 024* |
| D 40 | 20.47 - 23.62 | 520 - 600 | 4.13 | 105 | 20.08 | 510 | 3.15 | 80 | 15.7 | 7,1 | 350 025* | 349 025* |
| D 40 | 23.62 - 26.77 | 600 - 680 | 4.13 | 105 | 23.23 | 590 | 3.15 | 80 | 18.1 | 8,2 | 350 026* | 349 026* |
| D 40 | 26.77 - 29.92 | 680 - 760 | 4.72 | 120 | 26.38 | 670 | 3.15 | 80 | 24.5 | 11,1 | 350 027* | 349 027* |
| D 40 | 29.92 - 33.07 | 760 - 840 | 4.72 | 120 | 29.53 | 750 | 3.15 | 80 | 27.6 | 12,5 | 350 028* | 349 028* |
| D 60 | 7.87 - 11.02 | 200 - 280 | 4.53 | 115 | 7.52 | 191 | 4.33 | 110 | 7.7 | 3,5 | 350 001 | 349 001 |
| D 60 | 10.83 - 13.98 | 275 - 355 | 4.53 | 115 | 10.39 | 264 | 4.33 | 110 | 9.5 | 4,3 | 350 002 | 349 002 |
| D 60 | 13.78 - 16.93 | 350 - 430 | 4.53 | 115 | 13.35 | 339 | 5.08 | 129 | 12.3 | 5,6 | 350 003 | 349 003 |
| D 60 | 16.73 - 19.88 | 425 - 505 | 4.53 | 115 | 16.30 | 414 | 5.08 | 129 | 14.1 | 6,4 | 350 004 | 349 004 |

NEW

* available from 09/2010

Height-offset rough machining:
 Height-adjustable insert holder G 5.1.
 Rough and finish machining Combi-Line:
 Height-adjustable insert holder G 5.1.
 Rough machining:
 Insert holder, see page G 6.1
 Finish machining:
 Precision boring tools G 7.1

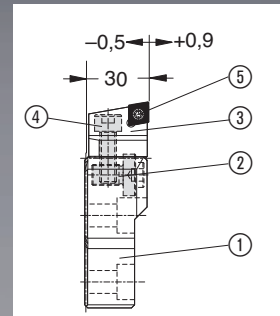
Basic slides and serrated slides
 Ø 18.31 – 128.15" (Ø 465 – 3255 mm)



| Connection | Boring range | | | | | | | | | | Base slide ② | | Serrated slide ③ | |
|----------------|----------------|-------------|----------------|-----|----------------|------|----------------|-----|----------------|-------|--------------|---------|------------------|---------|
| | d ₅ | A | X ₁ | | l ₄ | | l ₅ | | weight (② + ③) | | Order No. | | Order No. | |
| | in | mm | in | mm | in | mm | in | mm | lbs | kg | in | mm | in | mm |
| Type A: | | | | | | | | | | | | | | |
| D 60 | 18.31 - 29.33 | 465 - 745 | 7.28 | 185 | 17.60 | 447 | 5.08 | 129 | 30.9 | 14,0 | 350 005 | 349 005 | 350 015 | 349 015 |
| D 60 | 29.13 - 40.16 | 740 - 1020 | 7.28 | 185 | 28.43 | 722 | 5.08 | 129 | 44.5 | 20,2 | 350 006 | 349 006 | 350 015 | 349 015 |
| Type B: | | | | | | | | | | | | | | |
| D 60 | 19.69 - 30.71 | 500 - 780 | 7.48 | 190 | 18.90 | 480 | 5.12 | 130 | 53.6 | 24,3 | 350 031 | 349 031 | 350 035 | 349 035 |
| D 60 | 37.40 - 41.54 | 950 - 1055 | 8.46 | 215 | 18.90 | 480 | 5.12 | 130 | 91.1 | 41,3 | 350 031 | 349 031 | 350 036 | 349 036 |
| D 60 | 30.51 - 41.54 | 775 - 1055 | 8.46 | 215 | 29.72 | 755 | 6.10 | 155 | 93.7 | 42,5 | 350 032 | 349 032 | 350 035 | 349 035 |
| D 60 | 41.34 - 52.36 | 1050 - 1330 | 9.45 | 240 | 29.72 | 755 | 6.10 | 155 | 131.4 | 59,6 | 350 032 | 349 032 | 350 036 | 349 036 |
| D 60 | 56.77 - 63.19 | 1442 - 1605 | 10.04 | 255 | 29.72 | 755 | 6.10 | 155 | 190.3 | 86,3 | 350 032 | 349 032 | 350 037 | 349 037 |
| D 60 | 52.17 - 63.19 | 1325 - 1605 | 9.45 | 240 | 51.38 | 1305 | 7.28 | 185 | 194.5 | 88,2 | 350 033 | 349 033 | 350 035 | 349 035 |
| D 60 | 52.17 - 74.02 | 1325 - 1880 | 10.43 | 265 | 51.38 | 1305 | 7.28 | 185 | 232.2 | 105,3 | 350 033 | 349 033 | 350 036 | 349 036 |
| D 60 | 62.99 - 84.84 | 1600 - 2155 | 11.02 | 280 | 51.38 | 1305 | 7.28 | 185 | 291.0 | 132,0 | 350 033 | 349 033 | 350 037 | 349 037 |
| D 60 | 78.35 - 95.67 | 1990 - 2430 | 11.22 | 285 | 51.38 | 1305 | 7.28 | 185 | 374.4 | 169,8 | 350 033 | 349 033 | 350 038 | 349 038 |
| D 60 | 84.65 - 95.67 | 2150 - 2430 | 10.43 | 265 | 83.86 | 2130 | 8.86 | 225 | 422.0 | 191,4 | 350 034 | 349 034 | 350 035 | 349 035 |
| D 60 | 84.65-106.50 | 2150 - 2705 | 11.42 | 290 | 83.86 | 2130 | 8.86 | 225 | 459.7 | 208,5 | 350 034 | 349 034 | 350 036 | 349 036 |
| D 60 | 84.65-117.32 | 2150 - 2980 | 12.01 | 305 | 83.86 | 2130 | 8.86 | 225 | 518.5 | 235,2 | 350 034 | 349 034 | 350 037 | 349 037 |
| D 60 | 84.65-128.15 | 2150 - 3255 | 12.20 | 310 | 83.86 | 2130 | 8.86 | 225 | 601.9 | 273,0 | 350 034 | 349 034 | 350 038 | 349 038 |

Height-adjustable insert holder

| Boring range | Support* ^① | | Adjuster screw ^② | | Insert holder ^③ | | Fixing screw ^④ | | Insert holder, adjustable |
|--------------|-----------------------|-----------|-----------------------------|-----------|----------------------------|-----------|---------------------------|-----------|---------------------------|
| | Order No. | Order No. | Key | Order No. | Form | Order No. | Key | Order No. | |
| A | | | | | | | | | |
| 7.87-128.15" | 149 055 | 315 355 | s6 / B | 149 058 | 103 | 070 369 | s6 / B | 149 059 | |
| 7.87-128.15" | 149 055 | 315 355 | s6 / B | 149 056 | 104 | 070 369 | s6 / B | 149 057 | |



* including fixings ^② and ^④ ^⑤ Countersunk screw

Height-displacement rough machining Ø 7.87" – 128.15" (Ø 200 – 3255 mm)

With two-edge roughing (> Ø 200 mm), chip removal can be evenly distributed radially over both cutting edges. Particularly when machining grey cast iron, the chip-removal rate can be doubled. Axial adjustment of the height-adjustable insert holder ensures an ideal cut distribution to the respective cutting edge (max. height displacement = < feed rate/revolution [fz]).

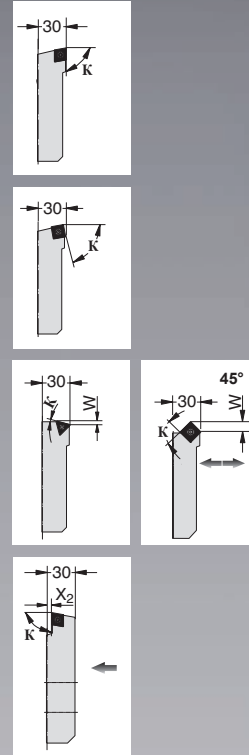
COMBI LINE Rough machining and finish machining in a single operation Ø 7.87" – 128.15" (Ø 200 – 3255 mm)

In a combined boring operation, i.e. roughing/finishing in a single operation, the division of tasks is defined by a radially adjustable and axially fixed cutting-edge offset. With the radially and axially offset adjustment, the cutting edge on the height-adjustable insert holder performs rough machining and the opposite precision boring tool performs finish machining. The twin-edge boring tool thus reduces the machining time and ultimately the machining costs.

Tool holder rough machining

| Insert form | ISO-Code | Approach angle | Approach angle | | | | | | Order No. | |
|-------------|------------|----------------|----------------|----------------|------|-----|------|--------|-----------|----|
| | | | K | X ₂ | | W | | weight | | |
| | | | | in | mm | in | mm | lbs | | kg |
| 104 | CC..1204.. | 90° | | | | | 1.32 | 0,6 | 149 099 | |
| 105 | CC..1605.. | 90° | | | | | 1.32 | 0,6 | 149 093 | |
| 123 | CN..1204.. | 90° | | | | | 1.32 | 0,6 | 149 097 | |
| 124 | CN..1606.. | 90° | | | | | 1.32 | 0,6 | 149 095 | |
| | | | | | | | | | | |
| 113 | SC..1204.. | 80° | | | | | 1.32 | 0,6 | 149 089 | |
| 114 | SC..1505.. | 80° | | | | | 1.32 | 0,6 | 149 094 | |
| 134 | SN..1506.. | 80° | | | | | 1.32 | 0,6 | 149 096 | |
| | | | | | | | | | | |
| 163 | TC..16T3.. | 15° | | | 0.16 | 4,0 | 1.32 | 0,6 | 201 065 | |
| 163 | TC..16T3.. | 20° | | | 0.21 | 5,3 | 1.32 | 0,6 | 201 025 | |
| 163 | TC..16T3.. | 30° | | | 0.30 | 7,7 | 1.32 | 0,6 | 201 075 | |
| 114 | SC..1505.. | 45° | | | 0.39 | 9,9 | 1.32 | 0,6 | 201 015 | |
| | | | | | | | | | | |
| 104 | CC..1204.. | 90° | 0.20 | 5,0 | | | 1.76 | 0,8 | 251 010 | |
| 104 | CC..1204.. | 90° | 0.20 | 5,0 | | | 1.98 | 0,9 | 251 011 | |

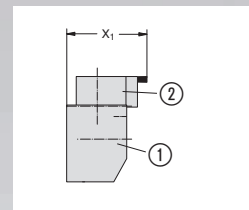
Other insert holders on request



Tool holder axial grooving

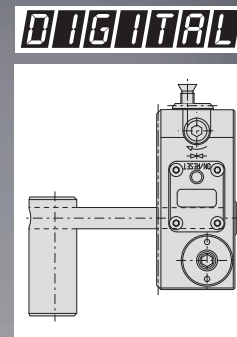
| Insert form | Support | Insert holder | | | | |
|-------------|-----------|---------------|----------------|----|--------|-----|
| | Order No. | Order No. | X ₁ | | weight | |
| | ① | ② | in | mm | lbs | kg |
| 304 | 226 014 | 226 010 | 1.60 | 40 | 0.66 | 0,3 |

Preferred use as a twin cutter



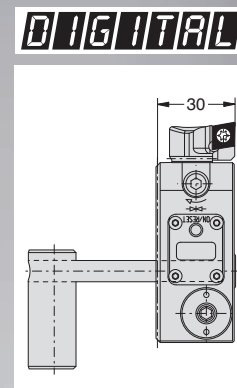
Precision boring tools 538 (537)digital with clamping pieces

| Boring range | | | Clamping pieces | Precision boring tool without clamping pieces | |
|---------------|------------|--|-----------------|---|---------|
| A | | | Order No. | Order No. | |
| in | mm | | | in | mm |
| 3.937- 8.071 | 100 - 205 | | 137 026* | 538 001 | 537 001 |
| 7.874-40.157 | 200 - 1020 | | 137 027 | 538 001 | 537 001 |
| 19.685-128.15 | 500 - 3255 | | 137 019 | 538 001 | 537 001 |



Precision boring tools 538 (537)digital with insert holders and clamping pieces

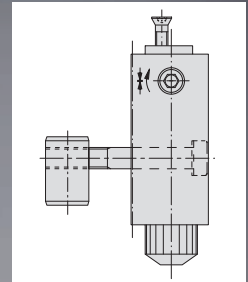
| Boring range with clamping pieces | | | Tool holder | Insert form | Precision boring tool | |
|-----------------------------------|------------|--|-------------|-------------|-----------------------|----------|
| A | | | Order No. | Order No. | Order No. | |
| in | mm | | | | in | mm |
| 3.937 - 8.071 | 100 - 205 | | 210 020 | 20 | 538 003* | 537 003* |
| 3.937 - 8.071 | 100 - 205 | | 210 054 | 21 | 538 003* | 537 003* |
| 3.937 - 8.071 | 100 - 205 | | 210 063 | 101 | 538 003* | 537 003* |
| 3.937 - 8.071 | 100 - 205 | | 210 064 | 103 | 538 003* | 537 003* |
| 3.937 - 8.071 | 100 - 205 | | 210 044 | 161 | 538 003* | 537 003* |
| 7.874 - 40.157 | 200 - 1020 | | 210 020 | 20 | 538 004 | 537 004 |
| 7.874 - 40.157 | 200 - 1020 | | 210 054 | 21 | 538 004 | 537 004 |
| 7.874 - 40.157 | 200 - 1020 | | 210 063 | 101 | 538 004 | 537 004 |
| 7.874 - 40.157 | 200 - 1020 | | 210 064 | 103 | 538 004 | 537 004 |
| 7.874 - 40.157 | 200 - 1020 | | 210 044 | 161 | 538 004 | 537 004 |
| 19.685-128.15 | 500 - 3255 | | 210 020 | 20 | 538 005 | 537 005 |
| 19.685-128.15 | 500 - 3255 | | 210 054 | 21 | 538 005 | 537 005 |
| 19.685-128.15 | 500 - 3255 | | 210 063 | 101 | 538 005 | 537 005 |
| 19.685-128.15 | 500 - 3255 | | 210 064 | 103 | 538 005 | 537 005 |
| 19.685-128.15 | 500 - 3255 | | 210 044 | 161 | 538 005 | 537 005 |



* Ø 3.937" – 8.071" (Ø 100 – 205 mm) usable on serrated tool bodies 148 007 and 148 009 or **ALU LINE** 348 007 and 348 009. See Chapter F.

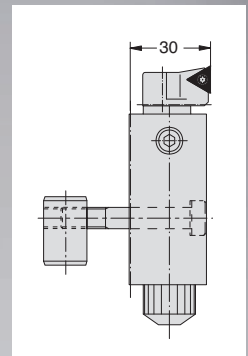
Precision boring tools 338 (337) with clamping pieces

| Boring range | | Clamping pieces | Precision boring tool with- out clamping pieces | |
|---------------|------------|-----------------|--|-----------|
| A | | | Order No. | Order No. |
| in | mm | | in | mm |
| 3.937 - 8.071 | 100 - 205 | 137 026* | 338 037 | 337 017 |
| 7.874-40.157 | 200 - 1020 | 137 027 | 338 037 | 337 017 |
| 19.685-128.15 | 500 - 3255 | 137 019 | 338 037 | 337 017 |



Precision boring tools 338 (337) with insert holders and clamping pieces

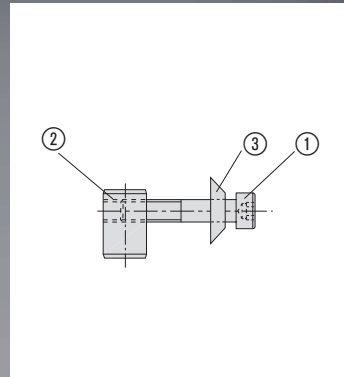
| Boring range with clamping pieces | | Tool holder | Insert form | Precision boring tool | |
|--------------------------------------|------------|-------------|-------------|-----------------------|-----------|
| A | | | | Order No. | Order No. |
| in | mm | | | in | mm |
| 3.937 - 8.071 | 100 - 205 | 210 020 | 20 | 338 038* | 337 056* |
| 3.937 - 8.071 | 100 - 205 | 210 054 | 21 | 338 038* | 337 056* |
| 3.937 - 8.071 | 100 - 205 | 210 063 | 101 | 338 038* | 337 056* |
| 3.937 - 8.071 | 100 - 205 | 210 064 | 103 | 338 038* | 337 056* |
| 3.937 - 8.071 | 100 - 205 | 210 044 | 161 | 338 038* | 337 056* |
| 7.874 - 40.157 | 200 - 1020 | 210 020 | 20 | 338 040 | 337 058 |
| 7.874 - 40.157 | 200 - 1020 | 210 054 | 21 | 338 040 | 337 058 |
| 7.874 - 40.157 | 200 - 1020 | 210 063 | 101 | 338 040 | 337 058 |
| 7.874 - 40.157 | 200 - 1020 | 210 064 | 103 | 338 040 | 337 058 |
| 7.874 - 40.157 | 200 - 1020 | 210 044 | 161 | 338 040 | 337 058 |
| 19.685-128.15 | 500 - 3255 | 210 020 | 20 | 338 070 | 337 070 |
| 19.685-128.15 | 500 - 3255 | 210 054 | 21 | 338 070 | 337 070 |
| 19.685-128.15 | 500 - 3255 | 210 063 | 101 | 338 070 | 337 070 |
| 19.685-128.15 | 500 - 3255 | 210 064 | 103 | 338 070 | 337 070 |
| 19.685-128.15 | 500 - 3255 | 210 044 | 161 | 338 070 | 337 070 |



* Ø 3.937" – 8.071" (Ø 100 – 205 mm) usable on serrated tool bodies 148 007 and 148 009 or **ALU LINE** 348 007 and 348 009. See Chapter F.

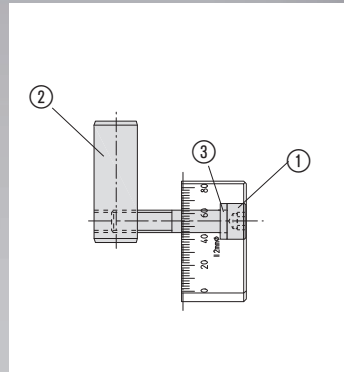
Clamping pieces

| Boring range | | Cap screw ① | | Clamping bolt ② | Disc spring ③ | Complete Number |
|----------------|------------|-------------|--------|-----------------|---------------|-----------------|
| in | A | Order No. | Key | Order No. | Order No. | |
| | mm | | mm | | | |
| 3.937 - 8.071 | 100 - 205 | 215 101 | s6 / B | 140 118 | 337 105 | 137 026 |
| 7.874 - 40.157 | 200 - 1020 | 215 102 | s6 / B | 215 105 | 337 105 | 137 027 |
| 19.685-128.15 | 500 - 3255 | 415 900 | s6 / B | 215 105 | 337 105 | 137 019 |

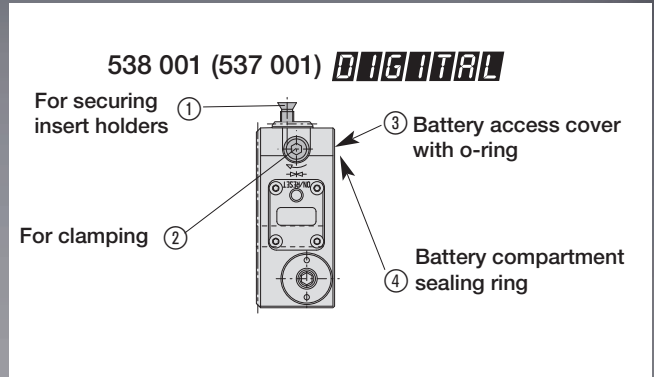
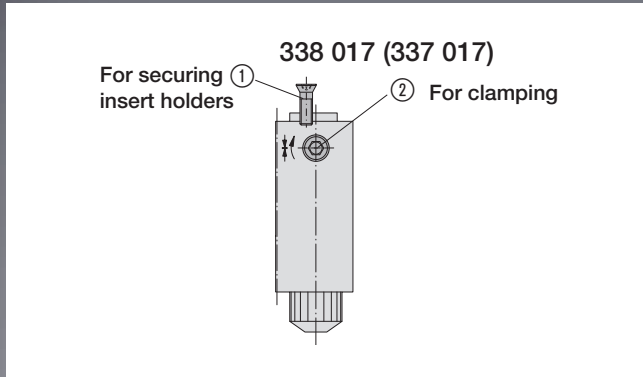


Counter weight

| Boring range | | Counter weight | | | Cap ① screw | | Clamping bolt ② | Disc spring ③ | Complete Number | |
|----------------|----------|----------------|------|-----------|-------------|-----------|-----------------|---------------|-----------------|---------|
| in | A | Order No. | | Order No. | Key | Order No. | Order No. | Order No. | in | mm |
| | mm | weight | lbs | | | | | | | |
| 7.874 - 40.157 | 200-1020 | 337 104 | .992 | 0,45 | 115 163 | s6 / B | 215 105 | 337 105 | 338 011 | 337 011 |
| 19.685-128.15 | 500-3255 | 337 104 | .992 | 0,45 | 115 172 | s6 / B | 215 105 | 337 105 | 338 076 | 337 076 |



Precision boring tool



| Precision boring tool | | Countersunk screw ① | | Cap screw ② | | Battery access cover ③ | | Sealing ring ④ | Battery* |
|-----------------------|-----------|---------------------|-----------|-------------|--------|------------------------|-----------|----------------|-----------|
| Order No. | Order No. | Order No. | Key | Order No. | Key | Order No. | Key | Order No. | Order No. |
| in | mm | | | | | | | | |
| 338 037 | 337 017 | 215 462 | Tx 20 / H | 136 193 | s4 / B | — | — | — | |
| 538 001 | 537 001 | 415 985 | Tx 20 / H | 136 193 | s4 / B | 501 016 | Tx 20 / H | 415 895 | 415 896 |

* Replace the batteries as a complete set:
VARTA V392 SR41 Silver oxide / Zinc / KOH-Electrolyte

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| Czech Republic | Italy | Slovenia |
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| England | Norway | Turkey |
| Finland | Poland | |

Latin America

Argentina
Brazil
Mexico

Other

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|-----------|--------------|
| Australia | Korea |
| China | Malaysia |
| India | Philippines |
| Indonesia | Singapore |
| Iran | South Africa |
| Israel | Taiwan |
| Japan | Thailand |