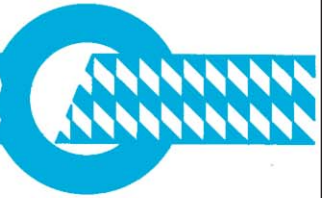


HUNGER



Catalog K10

Adjustable Expanding Reamers



The Company

HUNGER



Experience

Performance

Quality

HUNGER - a company with experience - specializing in the manufacture of precision tools for over 75 years - and with the most comprehensive range of expanding reamers.

Years ago, **HUNGER** pioneered precision expanding reamers which have been further developed and refined until we have the present high performance tools.

The qualities of **HUNGER** tools are derived from close control of the materials and the manufacturing processes and the experience gained by **HUNGER** in over 75 years of precision tool manufacture.

HUNGER expanding reamers have been tested and approved by leading companies and are being used for high performance work throughout the world. Today's exacting tolerances and finishes call for **HUNGER** tools.

You can rely on **HUNGER**.

HUNGER manufactures also a comprehensive range of valve and valve seat refacing tools and machines for servicing the valves and valve seats of automotive engines and of large marine and stationary diesel engines.

Please feel free to ask for further information.

Expanding Reamers
Type D
for simple reaming jobs



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Expanding Reamers
Type E
with extra long blades



Pages
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Expanding Reamers
Type K
with single pilot



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Expanding Reamers
Type U
with double pilots



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Expanding Reamers
Type V
for valve guides



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Expanding Reamers
Type H
for bearing holes



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Reaming Practice

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Type D

Description:

Righthand cutting reamer with expanding blades.

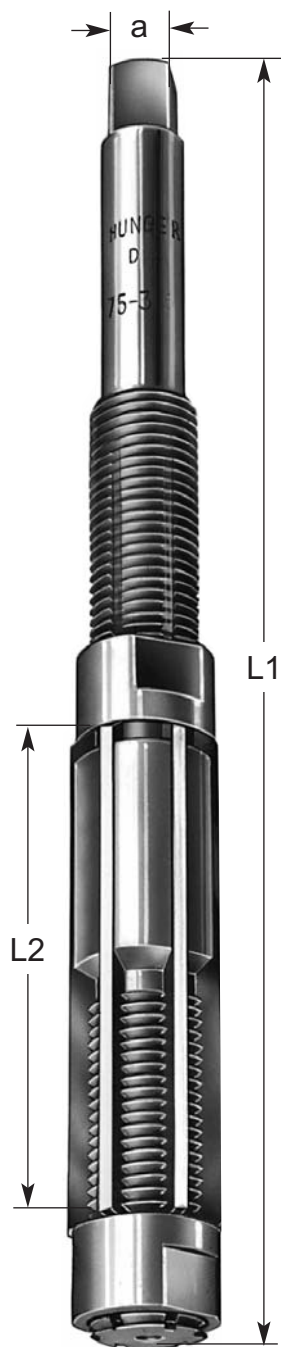
Due to the unique Hunger relief grinding operation the blades have a progressively increasing clearance angle giving a softer cutting action.

Starting with size D 12 the adjusting nut is marked with a circular scale.

One graduation of the scale corresponds to an alteration of the reamer diameter by 0,01 mm.

Application:

The standard reamer for repair and assembly jobs.



| Size | Size Range | | Length Overall L1 mm | Length Blades L2 mm | Size of Square a mm | No. of Blades | Weight kg |
|--------|-------------|-------------------|-------------------------|------------------------|------------------------|------------------|--------------|
| | mm | Inches | | | | | |
| D 6,4 | 6,4 - 7,2 | 1/4 - 9/32 | 111 | 32 | 3 | 4 | 0,015 |
| D 7,2 | 7,2 - 8 | 9/32 - 5/16 | 111 | 32 | 3,5 | 4 | 0,015 |
| D 8 | 8 - 9 | 5/16 - 23/64 | 111 | 32 | 4,3 | 5 | 0,025 |
| D 9 | 9 - 10 | 23/64 - 25/64 | 115 | 32 | 4,3 | 5 | 0,035 |
| D 10 | 10 - 11 | 25/64 - 7/16 | 120 | 35 | 4,9 | 5 | 0,040 |
| D 11 | 11 - 12 | 7/16 - 15/32 | 125 | 35 | 6,2 | 5 | 0,045 |
| D 12 | 12 - 13,5 | 15/32 - 17/32 | 130 | 42 | 6,2 | 5 | 0,075 |
| D 13,5 | 13,5 - 15,5 | 17/32 - 39/64 | 145 | 50 | 7 | 5 | 0,100 |
| D 15,5 | 15,5 - 18 | 39/64 - 45/64 | 165 | 60 | 8 | 5 | 0,155 |
| D 18 | 18 - 21 | 45/64 - 53/64 | 180 | 65 | 9 | 5 | 0,225 |
| D 21 | 21 - 24 | 53/64 - 15/16 | 190 | 70 | 10 | 5 | 0,320 |
| D 24 | 24 - 27,5 | 15/16 - 1 5/64 | 205 | 75 | 11 | 5 | 0,430 |
| D 27,5 | 27,5 - 31,5 | 1 5/64 - 1 15/64 | 225 | 80 | 12 | 6 | 0,600 |
| D 31,5 | 31,5 - 37 | 1 15/64 - 1 29/64 | 240 | 90 | 14,5 | 6 | 0,870 |
| D 37 | 37 - 45 | 1 29/64 - 1 49/64 | 285 | 100 | 16 | 6 | 1,410 |
| D 45 | 45 - 55 | 1 49/64 - 2 5/32 | 320 | 109 | 20 | 6 | 2,320 |
| D 55 | 55 - 65 | 2 5/32 - 2 9/16 | 350 | 120 | 24 | 8 | 3,830 |
| D 65 | 65 - 80 | 2 9/16 - 3 5/32 | 460 | 145 | 29 | 10 | 6,800 |
| D 80 | 80 - 95 | 3 5/32 - 3 47/64 | 490 | 150 | 32 | 10 | 10,250 |
| D 95 | 95 - 110 | 3 47/64 - 4 21/64 | 490 | 150 | 36 | 10 | 13,700 |

Packing of the reamers:

From size D 6,4 to D 45 individually in clear plastic tube containers.

Size D 55 in a plastic net.

From size D 65 to D 95 individually in wooden boxes.

Sets of Reamers Type D in Wooden Cases

| Symbol | Size Range | | No. of Reamers | Weight kg |
|--------|------------|-----------------|-------------------|--------------|
| | mm | Inches | | |
| DAN | 8 - 31,5 | 21/64 - 1 15/64 | 11 | 3,100 |
| DEN | 8 - 45 | 21/64 - 1 49/64 | 13 | 5,700 |

Order Information:

The reamers are available with standard blades made from high quality special steel to ensure superior cutting efficiency.

The reamers are also available with hard chromium coated blades.

The hard chromium coating has superior hardness in combination with a low friction coefficient. Thus reamers of the „hard chromium“ series are particularly suitable for reaming abrasive materials and materials with a tendency to adhere to and to build-up the cutting edge.

| Size | Size Range mm | Reamers | | Replacement Blades* | | Nuts Part No. |
|---------------|---------------|------------------------|------------------------|------------------------|------------------------|---------------|
| | | Special Steel Part No. | Hard Chromium Part No. | Special Steel Part No. | Hard Chromium Part No. | |
| D 6,4 | 6,4 - 7,2 | 100 06 000 | 101 06 000 | 100 06 400 | 101 06 400 | 140 02 510 |
| D 7,2 | 7,2 - 8 | 100 07 000 | 101 07 000 | 100 06 400 | 101 06 400 | 140 04 510 |
| D 8 | 8 - 9 | 100 08 000 | 101 08 000 | 100 08 400 | 101 08 400 | 100 08 510 |
| D 9 | 9 - 10 | 100 09 000 | 101 09 000 | 100 09 400 | 101 09 400 | 100 09 510 |
| D 10 | 10 - 11 | 100 10 000 | 101 10 000 | 100 10 400 | 101 10 400 | 100 10 510 |
| D 11 | 11 - 12 | 100 11 000 | 101 11 000 | 100 11 400 | 101 11 400 | 100 11 510 |
| D 12 | 12 - 13,5 | 100 12 000 | 101 12 000 | 100 12 400 | 101 12 400 | 100 12 520 |
| D 13,5 | 13,5 - 15,5 | 100 13 000 | 101 13 000 | 100 13 400 | 101 13 400 | 100 13 520 |
| D 15,5 | 15,5 - 18 | 100 15 000 | 101 15 000 | 100 15 400 | 101 15 400 | 100 15 520 |
| D 18 | 18 - 21 | 100 18 000 | 101 18 000 | 100 18 400 | 101 18 400 | 100 18 520 |
| D 21 | 21 - 24 | 100 21 000 | 101 21 000 | 100 21 400 | 101 21 400 | 100 21 520 |
| D 24 | 24 - 27,5 | 100 24 000 | 101 24 000 | 100 24 400 | 101 24 400 | 100 24 520 |
| D 27,5 | 27,5 - 31,5 | 100 27 000 | 101 27 000 | 100 27 400 | 101 27 400 | 100 27 520 |
| D 31,5 | 31,5 - 37 | 100 31 000 | 101 31 000 | 100 31 400 | 101 31 400 | 100 31 520 |
| D 37 | 37 - 45 | 100 37 000 | 101 37 000 | 100 37 400 | 101 37 400 | 100 37 520 |
| D 45 | 45 - 55 | 100 45 000 | 101 45 000 | 100 45 400 | 101 45 400 | 100 45 520 |
| D 55 | 55 - 65 | 100 55 000 | 101 55 000 | 100 55 400 | 101 55 400 | 100 55 520 |
| D 65 | 65 - 80 | 100 65 000 | 101 65 000 | 100 65 400 | 101 65 400 | 100 65 520 |
| D 80 | 80 - 95 | 100 80 000 | 101 80 000 | 100 80 400 | 101 80 400 | 100 80 520 |
| D 95 | 95 - 110 | 100 95 000 | 101 95 000 | 100 95 400 | 101 95 400 | 100 95 520 |

* Replacement blades are furnished in sets.

The blades are finish-ground and, therefore, no grinding is needed after the blades have been inserted in the reamer body.

Sets of Reamers Type D in Wooden Cases

| Symbol | Size Range mm | Special Steel Part No. | Hard Chromium Part No. |
|------------|---------------|------------------------|------------------------|
| DAN | 8 - 31,5 | 100 00 100 | 101 00 100 |
| DEN | 8 - 45 | 100 00 200 | 101 00 200 |



Type E

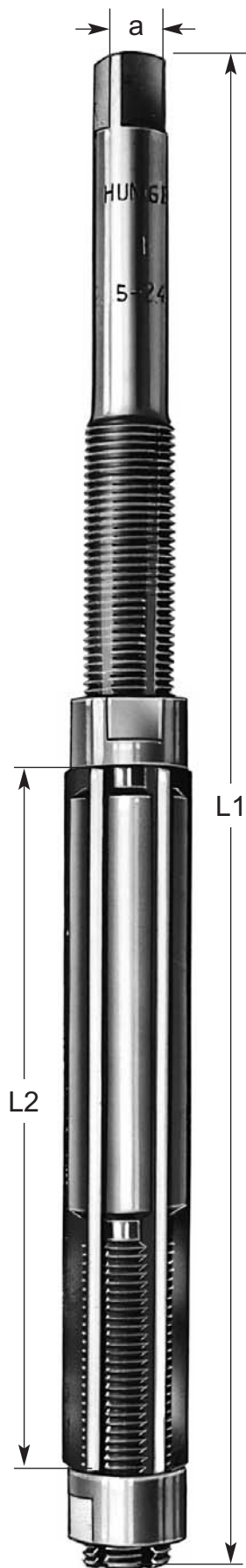
Description:

Righthand cutting reamer with expanding blades.
Extra long blades!

The blades are approximately 2/3 longer than the blades of reamer type D.
Due to the unique Hunger relief grinding operation the blades have a progressively increasing clearance angle giving a softer cutting action.

Application:

The reamer for reaming longer holes and adjacent inline holes.



| Size | Size Range | | Length Overall | Length Blades L1 mm | Size of Square L2 mm | No. of Blades a mm | Weight kg |
|--------|-------------|---------------------|----------------|---------------------|----------------------|--------------------|-----------|
| | mm | Inches | | | | | |
| E 10,5 | 10,5 - 12 | $27/64 - 15/32$ | 160 | 65 | 5,5 | 5 | 0,070 |
| E 12 | 12 - 13,5 | $15/32 - 17/32$ | 170 | 70 | 6,2 | 5 | 0,100 |
| E 13,5 | 13,5 - 15,5 | $17/32 - 39/64$ | 195 | 80 | 7 | 5 | 0,140 |
| E 15,5 | 15,5 - 17,5 | $39/64 - 11/16$ | 215 | 90 | 8 | 5 | 0,210 |
| E 17,5 | 17,5 - 19,5 | $11/16 - 49/64$ | 230 | 100 | 9 | 5 | 0,280 |
| E 19,5 | 19,5 - 21,5 | $49/64 - 27/32$ | 240 | 110 | 10 | 5 | 0,370 |
| E 21,5 | 21,5 - 24,5 | $27/32 - 31/32$ | 260 | 120 | 10 | 5 | 0,470 |
| E 24,5 | 24,5 - 27,5 | $31/32 - 1 5/64$ | 280 | 130 | 11 | 5 | 0,640 |
| E 27,5 | 27,5 - 31,5 | $1 5/64 - 1 15/64$ | 310 | 140 | 12 | 6 | 0,880 |
| E 31,5 | 31,5 - 37 | $1 15/64 - 1 29/64$ | 320 | 150 | 14,5 | 6 | 1,240 |
| E 37 | 37 - 45 | $1 29/64 - 1 49/64$ | 370 | 165 | 16 | 6 | 1,970 |
| E 45 | 45 - 55 | $1 49/64 - 2 5/32$ | 425 | 180 | 20 | 6 | 3,240 |

Packing of the reamers:

Individually in clear plastic tube containers.

Sets of Reamers Type E in Wooden Cases

| Symbol | Size Range | | No. of Reamers | Weight kg |
|--------|-------------|-------------------|----------------|-----------|
| | mm | Inches | | |
| EA | 10,5 - 31,5 | $27/64 - 1 15/64$ | 9 | 3,100 |
| ESO | 10,5 - 45 | $27/64 - 1 49/64$ | 11 | 5,700 |

Order Information:

The reamers are available with standard blades made from high quality special steel to ensure superior cutting efficiency.

The reamers are also available with hard chromium coated blades.

The hard chromium coating has superior hardness in combination with a low friction coefficient. Thus reamers of the „hard chromium“ series are particularly suitable for reaming abrasive materials and materials with a tendency to adhere to and to build-up the cutting edge.

| Size | Size Range mm | Reamers | | Replacement Blades* | | Nuts Part No. |
|---------------|---------------|------------------------|------------------------|------------------------|------------------------|---------------|
| | | Special Steel Part No. | Hard Chromium Part No. | Special Steel Part No. | Hard Chromium Part No. | |
| E 10,5 | 10,5 - 12 | 110 10 000 | 111 10 000 | 110 10 400 | 111 10 400 | 140 10 510 |
| E 12 | 12 - 13,5 | 110 12 000 | 111 12 000 | 110 12 400 | 111 12 400 | 100 12 510 |
| E 13,5 | 13,5 - 15,5 | 110 13 000 | 111 13 000 | 110 13 400 | 111 13 400 | 100 13 510 |
| E 15,5 | 15,5 - 17,5 | 110 15 000 | 111 15 000 | 110 15 400 | 111 15 400 | 100 15 510 |
| E 17,5 | 17,5 - 19,5 | 110 17 000 | 111 17 000 | 110 17 400 | 111 17 400 | 110 17 510 |
| E 19,5 | 19,5 - 21,5 | 110 19 000 | 111 19 000 | 110 19 400 | 111 19 400 | 110 19 510 |
| E 21,5 | 21,5 - 24,5 | 110 21 000 | 111 21 000 | 110 21 400 | 111 21 400 | 100 21 510 |
| E 24,5 | 24,5 - 27,5 | 110 24 000 | 111 24 000 | 110 24 400 | 111 24 400 | 100 24 510 |
| E 27,5 | 27,5 - 31,5 | 110 27 000 | 111 27 000 | 110 27 400 | 111 27 400 | 100 27 510 |
| E 31,5 | 31,5 - 37 | 110 31 000 | 111 31 000 | 110 31 400 | 111 31 400 | 100 31 510 |
| E 37 | 37 - 45 | 110 37 000 | 111 37 000 | 110 37 400 | 111 37 400 | 100 37 510 |
| E 45 | 45 - 55 | 110 45 000 | 111 45 000 | 110 45 400 | 111 45 400 | 100 45 510 |

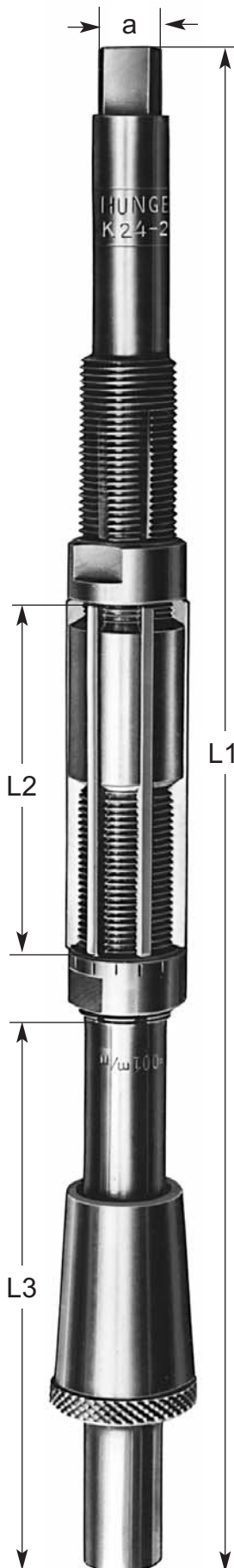
* Replacement blades are furnished in sets.
The blades are finish-ground and, therefore, no grinding is needed after the blades have been inserted in the reamer body.

Sets of Reamers Type E in Wooden Cases

| Symbol | Size Range mm | Special Steel Part No. | Hard Chromium Part No. |
|------------|---------------|------------------------|------------------------|
| EA | 10,5 - 31,5 | 110 00 100 | 111 00 100 |
| ESO | 10,5 - 45 | 110 00 200 | 111 00 200 |



Type K

**Description:**

Righthand cutting reamer with expanding blades.

Parallel shank with square at the back and integral pilot with sliding cone bush at the front of the reamer.

Due to the unique Hunger relief grinding operation the blades have a progressively increasing clearance angle giving a softer cutting action.

Starting with size K 12 the adjusting nut is marked with a circular scale.

One graduation of the scale corresponds to an alteration of the reamer diameter by 0,01 mm.

Application:

The precision reamer for inline reaming of holes.

The cone bush holds the reamer in exact alignment when reaming two holes.

| Size | Size Range | | Length Overall L1 mm | Length Blades L2 mm | Length Pilot L3 mm | Size of Square a mm | No. of Blades | Weight kg |
|--------|-------------|---------------------|-------------------------|------------------------|-----------------------|------------------------|---------------|--------------|
| | mm | Inches | | | | | | |
| K 7 | 7 - 8 | $9/32 - 5/16$ | 175 | 32 | 65 | 3,5 | 4 | 0,030 |
| K 8 | 8 - 9 | $5/16 - 23/64$ | 175 | 32 | 65 | 4,3 | 5 | 0,055 |
| K 9 | 9 - 10 | $23/64 - 25/64$ | 175 | 32 | 65 | 4,3 | 5 | 0,065 |
| K 10 | 10 - 11 | $25/64 - 7/16$ | 185 | 35 | 68 | 4,9 | 5 | 0,085 |
| K 11 | 11 - 12 | $7/16 - 15/32$ | 195 | 35 | 72 | 6,2 | 5 | 0,100 |
| K 12 | 12 - 13,5 | $15/32 - 17/32$ | 215 | 42 | 84 | 6,2 | 5 | 0,130 |
| K 13,5 | 13,5 - 15,5 | $17/32 - 39/64$ | 235 | 50 | 89 | 7 | 5 | 0,180 |
| K 15,5 | 15,5 - 18 | $39/64 - 45/64$ | 265 | 60 | 98 | 8 | 5 | 0,280 |
| K 18 | 18 - 21 | $45/64 - 53/64$ | 290 | 65 | 109 | 9 | 5 | 0,410 |
| K 21 | 21 - 24 | $53/64 - 15/16$ | 310 | 70 | 119 | 10 | 5 | 0,570 |
| K 24 | 24 - 27,5 | $15/16 - 1 5/64$ | 335 | 75 | 129 | 11 | 5 | 0,770 |
| K 27,5 | 27,5 - 31,5 | $1 5/64 - 1 15/64$ | 365 | 80 | 137 | 12 | 6 | 1,040 |
| K 31,5 | 31,5 - 37 | $1 15/64 - 1 29/64$ | 400 | 90 | 159 | 14,5 | 6 | 1,550 |
| K 37 | 37 - 45 | $1 29/64 - 1 49/64$ | 465 | 100 | 180 | 16 | 6 | 2,550 |
| K 45 | 45 - 55 | $1 49/64 - 2 5/32$ | 530 | 109 | 198 | 20 | 6 | 5,000 |
| K 55 | 55 - 65 | $2 5/32 - 2 9/16$ | 570 | 120 | 213 | 24 | 8 | 6,450 |
| K 65 | 65 - 80 | $2 9/16 - 3 5/32$ | 670 | 145 | 250 | 29 | 10 | 11,900 |
| K 80 | 80 - 95 | $3 5/32 - 3 47/64$ | 700 | 150 | 250 | 32 | 10 | 13,700 |
| K 95 | 95 - 110 | $3 47/64 - 4 21/64$ | 700 | 150 | 250 | 36 | 10 | 23,900 |

Packing of the reamers:

From size K 7 to K 37 individually in clear plastic tube containers.

From size K 45 to K 55 individually in plastic nets.

From size K 65 to K 95 individually in wooden boxes.

Sets of Reamers Type K in Wooden Cases

| Symbol | Size Range | | No. of Reamers | Weight kg |
|--------|------------|-------------------|----------------|--------------|
| | mm | Inches | | |
| KAN | 8 - 31,5 | $21/64 - 1 15/64$ | 11 | 5,200 |
| KEN | 8 - 45 | $21/64 - 1 49/64$ | 13 | 10,700 |

Type K
Order Information:

The reamers are available with standard blades made from high quality special steel to ensure superior cutting efficiency.

The reamers are also available with hard chromium coated blades.

The hard chromium coating has superior hardness in combination with a low friction coefficient.

Thus reamers of the „hard chromium“ series are particularly suitable for reaming abrasive materials and materials with a tendency to adhere to and to build-up the cutting edge.

| Size | Size Range mm | Reamers | | Replacement Blades* | | Nuts Part No. | Cone Bushes Part No. |
|---------------|---------------|------------------------|------------------------|------------------------|------------------------|---------------|----------------------|
| | | Special Steel Part No. | Hard Chromium Part No. | Special Steel Part No. | Hard Chromium Part No. | | |
| K 7 | 7 - 8 | 120 07 000 | 121 07 000 | 100 06 400 | 101 06 400 | 140 04 510 | 120 07 600 |
| K 8 | 8 - 9 | 120 08 000 | 121 08 000 | 120 08 400 | 121 08 400 | 100 08 510 | 120 08 600 |
| K 9 | 9 - 10 | 120 09 000 | 121 09 000 | 120 09 400 | 121 09 400 | 100 09 510 | 120 09 600 |
| K 10 | 10 - 11 | 120 10 000 | 121 10 000 | 120 10 400 | 121 10 400 | 100 10 510 | 120 10 600 |
| K 11 | 11 - 12 | 120 11 000 | 121 11 000 | 120 11 400 | 121 11 400 | 100 11 510 | 120 11 600 |
| K 12 | 12 - 13,5 | 120 12 000 | 121 12 000 | 120 12 400 | 121 12 400 | 100 12 520 | 120 12 600 |
| K 13,5 | 13,5 - 15,5 | 120 13 000 | 121 13 000 | 120 13 400 | 121 13 400 | 100 13 520 | 120 13 600 |
| K 15,5 | 15,5 - 18 | 120 15 000 | 121 15 000 | 120 15 400 | 121 15 400 | 100 15 520 | 120 15 600 |
| K 18 | 18 - 21 | 120 18 000 | 121 18 000 | 120 18 400 | 121 18 400 | 100 18 520 | 120 18 600 |
| K 21 | 21 - 24 | 120 21 000 | 121 21 000 | 120 21 400 | 121 21 400 | 100 21 520 | 120 21 600 |
| K 24 | 24 - 27,5 | 120 24 000 | 121 24 000 | 120 24 400 | 121 24 400 | 100 24 520 | 120 24 600 |
| K 27,5 | 27,5 - 31,5 | 120 27 000 | 121 27 000 | 120 27 400 | 121 27 400 | 100 27 520 | 120 27 600 |
| K 31,5 | 31,5 - 37 | 120 31 000 | 121 31 000 | 120 31 400 | 121 31 400 | 100 31 520 | 120 31 600 |
| K 37 | 37 - 45 | 120 37 000 | 121 37 000 | 120 37 400 | 121 37 400 | 100 37 520 | 120 37 600 |
| K 45 | 45 - 55 | 120 45 000 | 121 45 000 | 120 45 400 | 121 45 400 | 100 45 520 | 120 45 600 |
| K 55 | 55 - 65 | 120 55 000 | 121 55 000 | 120 55 400 | 121 55 400 | 100 55 520 | 120 55 600 |
| K 65 | 65 - 80 | 120 65 000 | 121 65 000 | 100 65 400 | 101 65 400 | 100 65 520 | 120 65 600 |
| K 80 | 80 - 95 | 120 80 000 | 121 80 000 | 100 80 400 | 101 80 400 | 100 80 520 | 120 80 600 |
| K 95 | 95 - 110 | 120 95 000 | 121 95 000 | 100 95 400 | 101 95 400 | 100 95 520 | 120 95 600 |

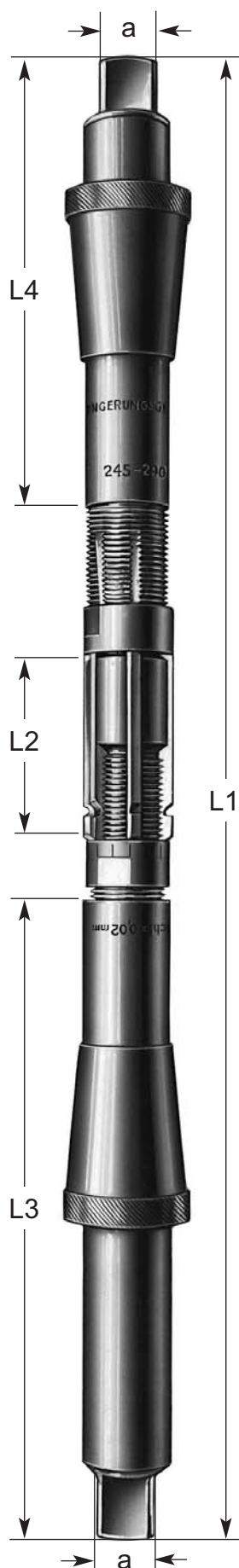
* Replacement blades are furnished in sets.
The blades are finish-ground and, therefore, no grinding is needed after the blades have been inserted in the reamer body.

Sets of Reamers Type K in Wooden Cases

| Symbol | Size Range mm | Special Steel Part No. | Hard Chromium Part No. |
|------------|---------------|------------------------|------------------------|
| KAN | 8 - 31,5 | 120 00 100 | 121 00 100 |
| KEN | 8 - 45 | 120 00 200 | 121 00 200 |



Type U

**Description:**

Righthand cutting reamer with expanding blades.
 Exchangeable pilots at the front as well as at the back of the reamer.
 Each pilot is provided with square and sliding cone bush.
 A special bayonet coupling with mating cones between each pilot and the reamer body ensures correct alignment. For extension pilots see page 9.
 The blades are ground for taking a rough cut followed by finish reaming.
 Due to the unique Hunger relief grinding operation the blades have a progressively increasing clearance angle giving a softer cutting action.
 The adjusting nut is marked with a circular scale.
 One graduation of the scale corresponds to an alteration of the reamer diameter by 0,02 mm.

Application:

The universal reamer for all types of holes, particularly for inline reaming of two or more holes.
 The cone bushes provide for exact alignment between the hole being reamed and the other mating holes.

| Size | Size Range mm | Length Overall L1 mm | Length Blades L2 mm | Length Pilot L 3 mm | Length Pilot L 4 mm | Size of Square a mm | No. of Blades | Weight kg |
|--------|---------------|----------------------|---------------------|---------------------|---------------------|---------------------|---------------|-----------|
| U 12 | 12 - 13,5 | 250 | 30 | 110 | 82 | 8 | 5 | 0,170 |
| U 13,5 | 13,5 - 15,5 | 270 | 33 | 116 | 84 | 9 | 5 | 0,245 |
| U 15,5 | 15,5 - 18 | 295 | 36 | 127 | 88 | 10 | 5 | 0,360 |
| U 18 | 18 - 21 | 330 | 40 | 140 | 100 | 12 | 5 | 0,545 |
| U 19,5 | 19,5 - 22,5 | 352 | 44 | 150 | 110 | 13 | 5 | 0,700 |
| U 21 | 21 - 24,5 | 352 | 44 | 150 | 110 | 13 | 5 | 0,800 |
| U 24,5 | 24,5 - 29 | 385 | 48 | 157 | 118 | 13 | 6 | 1,140 |
| U 29 | 29 - 34 | 418 | 52 | 170 | 130 | 16 | 6 | 1,670 |
| U 34 | 34 - 39 | 440 | 54 | 180 | 140 | 18 | 6 | 2,430 |
| U 39 | 39 - 45 | 475 | 60 | 190 | 150 | 18 | 6 | 3,310 |
| U 45 | 45 - 52 | 500 | 60 | 200 | 162 | 18 | 6 | 4,700 |
| U 52 | 52 - 59 | 500 | 60 | 200 | 162 | 18 | 6 | 5,700 |
| U 59 | 59 - 66 | 500 | 60 | 200 | 162 | 18 | 6 | 6,700 |

Packing of the reamers:

From Size U 12 to U 39 individually in clear plastic tube containers.

From Size U 45 to U 59 individually in plastic nets.

Sets of Reamers Type U in Wooden Cases

| Symbol | Size Range | | No. of Reamers | Weight kg |
|--------|------------|---------------------------|----------------|-----------|
| | mm | Inches | | |
| USI | 12 - 34 | $15/32 - 1 \frac{11}{32}$ | 7 | 6,700 |
| USE | 12 - 45 | $15/32 - 1 \frac{49}{64}$ | 9 | 13,100 |

Type U

Order Information:

The reamers are available with standard blades made from high quality special steel to ensure superior cutting efficiency.

The reamers are also available with hard chromium coated blades.

The hard chromium coating has superior hardness in combination with a low friction coefficient.

Thus reamers of the „hard chromium“ series are particularly suitable for reaming abrasive materials and materials with a tendency to adhere to and to build-up the cutting edge.

| Size | Reamers | | Replacement Blades* | | Front Nut with Scale Part No. | Back Nut Part No. | Cone Bush Part No. |
|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|-------------------------------------|----------------------|-----------------------|
| | Special Steel Part No. | Hard Chromium Part No. | Special Steel Part No. | Hard Chromium Part No. | | | |
| U 12 | 130 12 000 | 131 12 000 | 130 12 400 | 131 12 400 | 130 12 520 | 100 12 510 | 130 12 600 |
| U 13,5 | 130 13 000 | 131 13 000 | 130 13 400 | 131 13 400 | 100 12 520 | 100 13 510 | 130 13 600 |
| K 15,5 | 130 15 000 | 131 15 000 | 130 15 400 | 131 15 400 | 130 15 520 | 100 15 510 | 130 15 600 |
| U 18 | 130 18 000 | 131 18 000 | 130 18 400 | 131 18 400 | 130 18 520 | 100 18 510 | 130 18 600 |
| U 19,5⁺ | 130 19 000 | 131 19 000 | 130 19 400 | 131 19 400 | 100 18 520 | 130 19 510 | 130 19 600 |
| U 21 | 130 21 000 | 131 21 000 | 130 21 400 | 131 21 400 | 130 21 520 | 100 21 510 | 130 21 600 |
| U 24,5 | 130 24 000 | 131 24 000 | 130 24 400 | 131 24 400 | 130 24 520 | 130 24 510 | 130 24 600 |
| U 29 | 130 29 000 | 131 29 000 | 130 29 400 | 131 29 400 | 130 29 520 | 130 29 510 | 130 29 600 |
| U 34 | 130 34 000 | 131 34 000 | 130 34 400 | 131 34 400 | 130 34 520 | 130 34 510 | 130 34 600 |
| U 39 | 130 39 000 | 131 39 000 | 130 39 400 | 131 39 400 | 130 39 520 | 130 39 510 | 130 39 600 |
| U 45 | 130 45 000 | 131 45 000 | 130 45 400 | 131 45 400 | 130 45 520 | 100 45 510 | 130 45 600 |
| U 52 | 130 52 000 | 131 52 000 | 130 45 400 | 131 45 400 | 130 52 520 | 130 52 510 | 130 52 600 |
| U 59 | 130 59 000 | 131 59 000 | 130 45 400 | 131 45 400 | 130 52 520 | 130 52 510 | 130 59 600 |

* Replacement blades are furnished in sets.

The blades are finish-ground and, therefore, no grinding is needed after the blades have been inserted in the reamer body.

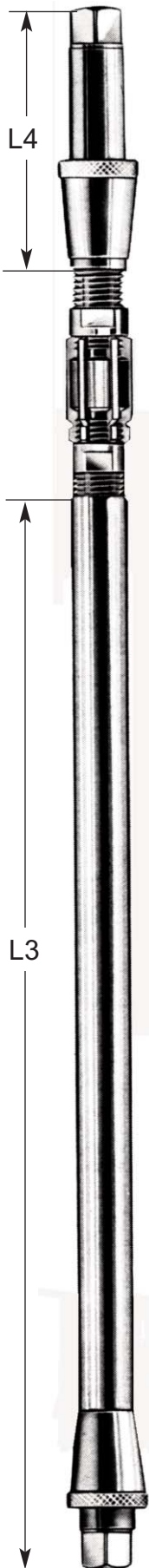
⁺ The intermediate size U 19,5 is not included in the sets.

Sets of Reamers Type U in Wooden Cases

| Symbol | Size Range mm | Special Steel Part No. | Hard Chromium Part No. |
|------------|------------------|---------------------------|---------------------------|
| USI | 12 - 34 | 130 00 100 | 131 00 100 |
| USE | 12 - 45 | 130 00 200 | 131 00 200 |



Type U Pilots

**Description:**

Each pilot has a square at the one end and a female cone at the other end. The female cone in the pilot is designed to receive the mating male cone at the reamer body.

Pilot and reamer body are interlocked by a bayonet type coupling.

As the mating cones usually stick firmly together, the use of a plastic hammer is recommended to loosen the firm contact before removing the pilot from the reamer body. Apply light taps onto the pilot around the female cone. With the contact thus loosened, turn the pilot clockwise with respect to the reamer body until the triangular projection provided at the male cone is in the middle of the recess provided in the female cone. Then withdraw pilot from reamer body.

| Size of Reamer | Standard Front Pilots | | Standard Back Pilots | | Extension Pilots Size I | |
|----------------|-----------------------|------------|----------------------|------------|-------------------------|------------|
| | Length L3 mm | Part No. | Length L4 mm | Part No. | Length mm | Part No. |
| U 12 | 110 | 130 12 701 | 82 | 130 12 702 | 210 | 132 12 711 |
| U 13,5 | 116 | 130 13 701 | 84 | 130 13 702 | 220 | 132 13 712 |
| U 15,5 | 127 | 130 15 701 | 88 | 130 15 702 | 230 | 132 15 713 |
| U 18 | 140 | 130 18 701 | 100 | 130 18 702 | 240 | 132 18 714 |
| U 19,5 | 150 | 130 19 701 | 110 | 130 19 702 | 250 | 132 19 715 |
| U 21 | 150 | 130 21 701 | 110 | 130 21 702 | 250 | 132 21 715 |
| U 24,5 | 157 | 130 24 701 | 118 | 130 24 702 | 260 | 132 24 716 |
| U 29 | 170 | 130 29 701 | 130 | 130 29 702 | 270 | 132 29 717 |
| U 34 | 180 | 130 34 701 | 140 | 130 34 702 | 280 | 132 34 718 |
| U 39 | 190 | 130 39 701 | 150 | 130 39 702 | 290 | 132 39 719 |
| U 45 | 200 | 130 45 701 | 162 | 130 45 702 | 400 | 132 45 730 |
| U 52 | 200 | 130 52 701 | 162 | 130 52 702 | 400 | 132 52 730 |
| U 59 | 200 | 130 52 701 | 162 | 130 59 702 | 400 | 132 52 730 |

| Size of Reamer | Extension Pilots Size II | | Extension Pilots Size III | | Extension Pilots Size IV | |
|----------------|--------------------------|------------|---------------------------|------------|--------------------------|------------|
| | Length mm | Part No. | Length mm | Part No. | Length mm | Part No. |
| U 12 | 410 | 132 12 731 | 610 | 132 12 751 | 810 | 132 12 771 |
| U 13,5 | 420 | 132 13 732 | 620 | 132 13 752 | 820 | 132 13 772 |
| U 15,5 | 430 | 132 15 733 | 630 | 132 15 753 | 830 | 132 15 773 |
| U 18 | 440 | 132 18 734 | 640 | 132 18 754 | 840 | 132 18 774 |
| U 19,5 | 450 | 132 19 735 | 650 | 132 19 755 | - | - |
| U 21 | 450 | 132 21 735 | 650 | 132 21 755 | 850 | 132 21 775 |
| U 24,5 | 460 | 132 24 736 | 660 | 132 24 756 | 860 | 132 24 776 |
| U 29 | 470 | 132 29 737 | 670 | 132 29 757 | 870 | 132 29 777 |
| U 34 | 480 | 132 34 738 | 680 | 132 34 758 | 880 | 132 34 778 |
| U 39 | 490 | 132 39 739 | 690 | 132 39 759 | 890 | 132 39 779 |
| U 45 | 600 | 132 45 750 | 800 | 132 45 770 | 900 | 132 45 780 |
| U 52 | 600 | 132 52 750 | 800 | 132 52 770 | 900 | 132 52 780 |
| U 59 | 600 | 132 52 750 | 800 | 132 59 770 | 900 | 132 52 780 |

Special length extension pilots available on request.



Description:

Righth-hand cutting reamer with expanding blades.
 Extra long shank with square and an optional sliding seat bush.
 Due to the unique Hunger relief grinding operation the blades have a progressively increasing clearance angle giving a softer cutting action.
 The reamers are also available with hard chromium coated blades.

Application:

The special reamer for reaming the valve guide of engines.
 The optional seat bush centers firmly in the valve seat so that the reamer aligns perfectly in the valve guide.

| Size | Reamers | | | | | | Seat Bush | | |
|--------------|------------|---------------|-------------------------|-------------------------|------------------------|---------------|---------------|----------------|--------------|
| | Size Range | | Length Overall L1 mm | Length Blades L 2 mm | Size of Square a mm | No. of Blades | Weighth kg | Conicity mm | Weight kg |
| | mm | Inches | | | | | | | |
| V 5,4 | 5,4 - 6 | 7/32 - 15/64 | 160 | 28 | 4 | 3 | 0,025 | 14-21 | 0,030 |
| V 5,9 | 5,9 - 6,5 | 15/64 - 1/4 | 160 | 28 | 4,3 | 3 | 0,030 | 17-28 | 0,050 |
| V 6,4 | 6,4 - 7 | 1/4 - 17/64 | 160 | 28 | 4,9 | 3 | 0,035 | 16-28 | 0,050 |
| V 6,9 | 6,9 - 7,5 | 17/64 - 19/64 | 160 | 28 | 5,5 | 3 | 0,040 | 21-38 | 0,070 |
| V 7,4 | 7,4 - 8 | 19/64 - 5/16 | 165 | 28 | 5,5 | 3 | 0,045 | 22-36 | 0,065 |
| V 7,9 | 7,9 - 8,5 | 5/16 - 21/64 | 170 | 28 | 6,2 | 3 | 0,055 | 23-47 | 0,150 |
| V 8,4 | 8,4 - 9 | 21/64 - 23/64 | 175 | 28 | 6,2 | 3 | 0,065 | 28-44 | 0,155 |
| V 8,9 | 8,9 - 9,5 | 23/64 - 3/8 | 180 | 32 | 7 | 4 | 0,075 | 25-53 | 0,190 |
| V 9,4 | 9,4 - 10 | 3/8 - 25/64 | 190 | 32 | 7 | 4 | 0,085 | 26-52 | 0,180 |
| V 9,9 | 9,9 - 11 | 25/64 - 7/16 | 200 | 36 | 8 | 5 | 0,100 | 25-53 | 0,190 |
| V10,9 | 10,9 - 12 | 7/16 - 15/32 | 220 | 36 | 8 | 5 | 0,130 | 33-61 | 0,270 |

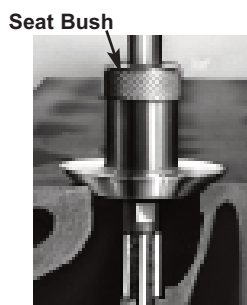
Order Information

| Size | Reamers | | Seat Bushes Part No. | Replacement Blades | | Nuts Part No. |
|--------------|---------------------------|---------------------------|-------------------------|---------------------------|---------------------------|------------------|
| | Special Steel Part No. | Hard Chromium Part No. | | Special Steel Part No. | Hard Chromium Part No. | |
| V 5,4 | 140 01 000 | 141 01 000 | 140 01 600 | 140 01 400 | 141 01 400 | 140 01 510 |
| V 5,9 | 140 02 000 | 141 02 000 | 140 02 600 | 140 02 400 | 141 02 400 | 140 02 510 |
| V 6,4 | 140 03 000 | 141 03 000 | 140 03 600 | 140 03 400 | 141 03 400 | 140 03 510 |
| V 6,9 | 140 04 000 | 141 04 000 | 140 04 600 | 140 04 400 | 141 04 400 | 140 04 510 |
| V 7,4 | 140 05 000 | 141 05 000 | 140 05 600 | 140 05 400 | 141 05 400 | 140 05 510 |
| V 7,9 | 140 06 000 | 141 06 000 | 140 06 600 | 140 06 400 | 141 06 400 | 140 06 510 |
| V 8,4 | 140 07 000 | 141 07 000 | 140 07 600 | 140 07 400 | 141 07 400 | 100 08 510 |
| V 8,9 | 140 08 000 | 141 08 000 | 140 08 600 | 140 08 400 | 141 08 400 | 140 08 510 |
| V 9,4 | 140 09 000 | 141 09 000 | 140 09 600 | 140 09 400 | 141 09 400 | 140 09 510 |
| V 9,9 | 140 10 000 | 141 10 000 | 140 10 600 | 140 10 400 | 141 10 400 | 140 10 510 |
| V10,9 | 140 11 000 | 141 11 000 | 140 11 600 | 140 11 400 | 141 11 400 | 140 11 510 |

Packing of the reamers: Individually in clear plastic tube containers.

Sets of Reamers Type V in Wooden Cases

| Symbol | Size Range | | No. of Reamers | No. of Bushes | Special Steel Part No. | Hard Chromium Part No. | Weight kg |
|------------|------------|---------------|----------------|---------------|---------------------------|---------------------------|--------------|
| | mm | Inches | | | | | |
| VR | 5,9 - 12 | 15/64 - 15/32 | 10 | - | 140 00 100 | 141 00 100 | 1,140 |
| VRB | 5,9 - 12 | 15/64 - 15/32 | 10 | 10 | 140 00 200 | 141 00 200 | 3,500 |



Type H

Description:

Right-hand cutting shell reamer with expanding blades.

The reamer fits on a tool bar and may be positioned along the tool bar at any desired position.

The reamer is automatically locked in place on the tool bar by an expanding spring coupling as soon as the reamer blades are brought into engagement with the bore.

Expanding tool bar guides and supporting fixtures for the tool bar are available to ensure exact alignment of the tool bar when reaming a series of aligned holes.

The adjusting nut is marked with a circular scale. One graduation of the scale corresponds to an alteration of the reamer diameter by 0,02 mm.

Application:

The reamer for inline reaming of a series of holes, particularly the holes of crankshaft and camshaft bearings.



| Size | Size Range mm | Takes Tool Bar d mm | Length Overall L1 mm | Length Blades L2 mm | Nut SW mm | No. of Blades | Weight kg |
|-------|---------------|---------------------|----------------------|---------------------|-----------|---------------|-----------|
| H 36 | 36 - 38 | 20 | 96 | 44 | 32 | 6 | 0,370 |
| H 38 | 38 - 41 | 20 | 99 | 44 | 34 | 6 | 0,450 |
| H 41 | 41 - 44 | 20 | 104 | 48 | 38 | 6 | 0,590 |
| H 44 | 44 - 47 | 25 | 104 | 48 | 40 | 6 | 0,590 |
| H 47 | 47 - 51 | 25 | 108 | 48 | 43 | 6 | 0,760 |
| H 51 | 51 - 54 | 30 | 108 | 52 | 47 | 5 | 0,830 |
| H 54 | 54 - 58 | 30 | 113 | 52 | 47 | 6 | 0,930 |
| H 58 | 58 - 62 | 30 | 113 | 52 | 53 | 6 | 1,180 |
| H 62 | 62 - 65 | 35 | 114 | 52 | 58 | 8 | 1,290 |
| H 65 | 65 - 69 | 35 | 118 | 57 | 58 | 8 | 1,490 |
| H 69 | 69 - 73 | 40 | 118 | 57 | 64 | 8 | 1,790 |
| H 73 | 73 - 78 | 40 | 123 | 57 | 68 | 8 | 1,990 |
| H 78 | 78 - 83 | 45 | 124 | 57 | 70 | 8 | 2,110 |
| H 83 | 83 - 88 | 45 | 124 | 60 | 78 | 8 | 2,750 |
| H 88 | 88 - 93 | 50 | 124 | 60 | 83 | 8 | 3,000 |
| H 93 | 93 - 99 | 50 | 127 | 60 | 83 | 10 | 3,490 |
| H 99 | 99 - 105 | 50 | 127 | 60 | * | 10 | 4,200 |
| H 105 | 105 - 111 | 50 | 127 | 60 | * | 10 | 5,040 |

Reamers type H with size range over 111 mm on application.

* Adjustment of the nut with hook wrench.

Order Information:

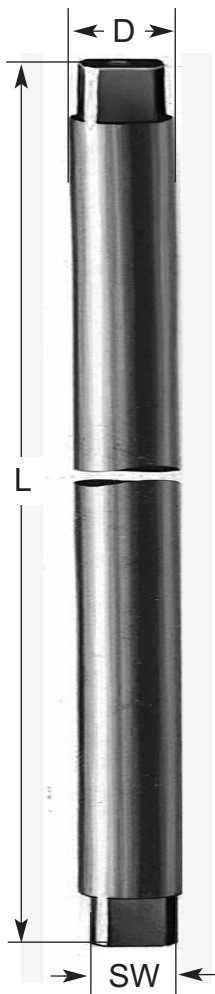
The reamers are available with standard blades made from high quality special steel to ensure superior cutting efficiency.

The reamers are also available with hard chromium coated blades.

The hard chromium coating has superior hardness in combination with a low friction coefficient. Thus reamers of the „hard chromium“ series are particularly suitable for reaming abrasive materials and materials with a tendency to adhere to and to build-up the cutting edge.

| Size | Reamers | | Replacement Blades* | | Front Nuts with Scale Part No. | Back Nuts Part No. | Replacement Springs Part No. |
|--------------|---------------------------|---------------------------|---------------------------|----------------------------|--------------------------------------|-----------------------|------------------------------------|
| | Special Steel Part No. | Hard Chromium Part No. | Special Steel Part No. | Hard Chromium Part No.. | | | |
| H 36 | 150 36 000 | 151 36 000 | 150 36 400 | 151 36 400 | 150 36 520 | 150 36 510 | 150 20 600 |
| H 38 | 150 38 000 | 151 38 000 | 150 38 400 | 151 38 400 | 150 38 520 | 150 38 510 | 150 20 600 |
| H 41 | 150 41 000 | 151 41 000 | 150 41 400 | 151 41 400 | 150 41 520 | 150 41 510 | 150 20 600 |
| H 44 | 150 44 000 | 151 44 000 | 150 44 400 | 151 44 400 | 150 44 520 | 150 44 510 | 150 25 600 |
| H 47 | 150 47 000 | 151 47 000 | 150 47 400 | 151 47 400 | 150 47 520 | 150 47 510 | 150 25 600 |
| H 51 | 150 51 000 | 151 51 000 | 150 51 400 | 151 51 400 | 150 51 520 | 150 51 510 | 150 30 600 |
| H 54 | 150 54 000 | 151 54 000 | 150 54 400 | 151 54 400 | 150 54 520 | 150 54 510 | 150 30 600 |
| H 58 | 150 58 000 | 151 58 000 | 150 58 400 | 151 58 400 | 150 58 520 | 150 58 510 | 150 30 600 |
| H 62 | 150 62 000 | 151 62 000 | 150 62 400 | 151 62 400 | 150 62 520 | 150 62 510 | 150 35 600 |
| H 65 | 150 65 000 | 151 65 000 | 150 65 400 | 151 65 400 | 150 65 520 | 150 65 510 | 150 35 600 |
| H 69 | 150 69 000 | 151 69 000 | 150 69 400 | 151 69 400 | 150 69 520 | 150 69 510 | 150 40 600 |
| H 73 | 150 73 000 | 151 73 000 | 150 73 400 | 151 73 400 | 150 73 520 | 150 73 510 | 150 40 600 |
| H 78 | 150 78 000 | 151 78 000 | 150 78 400 | 151 78 400 | 150 78 520 | 150 78 510 | 150 45 600 |
| H 83 | 150 81 000 | 151 81 000 | 150 81 400 | 151 81 400 | 150 81 520 | 150 81 510 | 150 45 600 |
| H 88 | 150 82 000 | 151 82 000 | 150 82 400 | 151 82 400 | 150 82 520 | 150 82 510 | 150 50 600 |
| H 93 | - | 151 83 000 | - | 151 83 400 | 150 83 520 | 150 83 510 | 150 50 600 |
| H 99 | - | 151 84 000 | - | 151 84 400 | 150 84 520 | 150 84 510 | 150 50 600 |
| H 105 | - | 151 85 000 | - | 151 85 400 | 150 85 520 | 150 85 510 | 150 50 600 |

* Replacement blades are furnished in sets.
The blades are finish-ground and, therefore, no grinding is needed after the blades have been inserted in the reamer body.



Tool Bars for Shell Reamers Type H

Description:

Precision ground bars with squares at both ends.
Standard types are listed below.
Special length guide bars on application.

Order Information:

| Tool Bar | | Diameter D mm | Length L mm | Square SW mm | Weight kg |
|------------|--------------------|------------------|----------------|-----------------|--------------|
| Part No. | for Reamer Size | | | | |
| 152 20 101 | H 36 - H 41 | 20 | 1000 | 13 | 2,420 |
| 152 25 101 | H 44 - H 47 | 25 | 1000 | 13 | 3,740 |
| 152 30 121 | H 51 - H 58 | 30 | 1200 | 16 | 6,540 |
| 152 30 151 | H 51 - H 58 | 30 | 1500 | 16 | 12,000 |
| 152 35 121 | H 62 - H 65 | 35 | 1200 | 18 | 8,750 |
| 152 40 151 | H 69 - H 73 | 40 | 1500 | 18 | 14,400 |
| 152 45 151 | H 78 - H 83 | 45 | 1500 | 22 | 18,110 |
| 152 50 171 | H 88 - H 105 | 50 | 1700 | 22 | 25,200 |

Expanding Tool Bar Guides

Description:

The tool bar guides are provided with wedges which can be forced outward against the hole to lock the tool bar guide in the hole.
The wedges are actuated by an adjusting nut.



Order Information:

| Tool Bar Guides | | Bore d mm | Expansion Range mm | Weight kg |
|-----------------|--------------------|--------------|-----------------------|--------------|
| Part No. | for Reamer Size | | | |
| 153 20 000 | H 36 - H 41 | 20 | 35,5 - 54 | 0,200 |
| 153 25 000 | H 44 - H 47 | 25 | 43,5 - 62 | 0,300 |
| 153 30 000 | H 51 - H 58 | 30 | 49,5 - 74 | 0,410 |
| 153 35 000 | H 62 - H 65 | 35 | 61,5 - 83 | 0,620 |
| 153 40 000 | H 69 - H 73 | 40 | 68,5 - 93 | 0,800 |
| 153 45 000 | H 78 - H 83 | 45 | 77,5 - 105 | 1,100 |
| 153 50 000 | H 88 - H 105 | 50 | 87,5 - 127 | 1,550 |

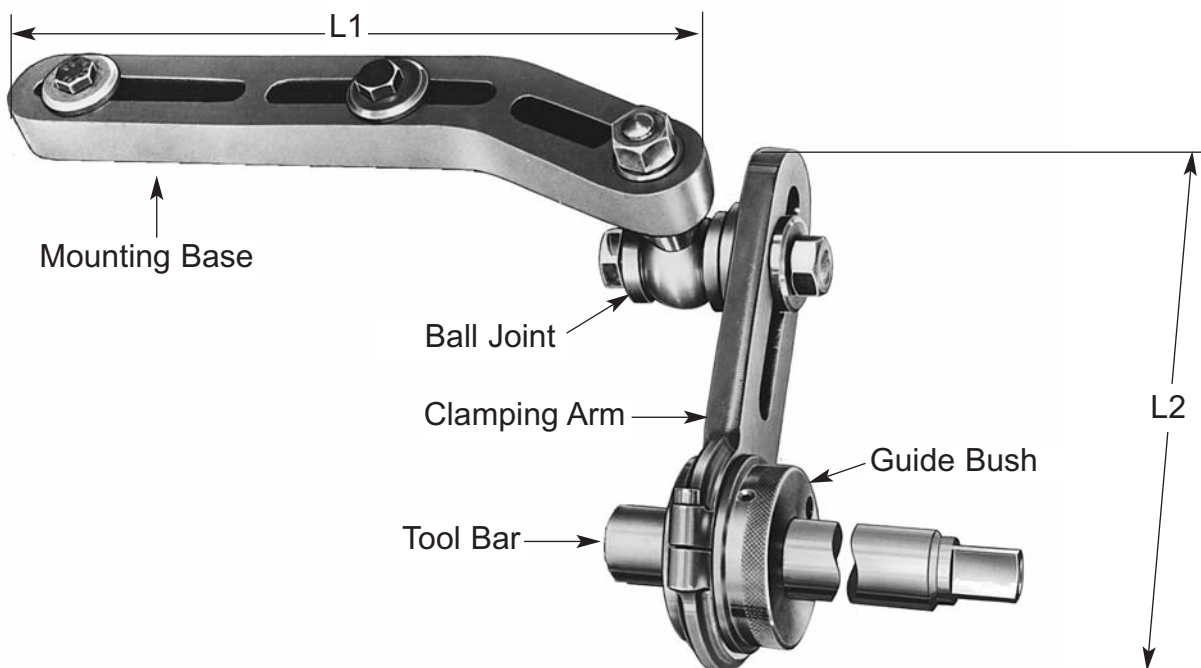
Supporting Fixture for Tool Bars

Description:

The universal supporting fixture is designed to locate a tool bar guide bush in front of an end bearing hole for perfect alignment of the tool bar in centerline with the hole.

The guide bush is locked in a clamping arm which is connected by a ball joint to a mounting base which is attached to the cylinder block or cylinder head.

Both the clamping arm and the ball joint are adjustable to ensure proper alignment.



Order Information:

| Size | Supportin Fixture | | Individual Components of the Supporting Fixture | | | | | | |
|------|-------------------|-----------|---|------------|-------|--------------|------------|------------|------------|
| | Part No. | Weight kg | Mounting Base | | | Clamping Arm | | Ball Joint | |
| | | | Size | Part No. | L1 mm | Size | Part No. | L2 mm | Part No. |
| IA | 156 11 100 | 3,140 | IA | 156 11 110 | 330 | IA | 156 11 120 | 210 | 156 11 130 |
| IIA | 156 12 100 | 5,100 | IIA | 156 12 110 | 400 | IIA | 156 12 120 | 270 | 156 11 130 |
| IIA1 | 156 12 102 | 5,100 | IIA | 156 12 110 | 400 | IA | 156 11 120 | 210 | 156 11 130 |

| Size | Part No. | Bore Dia. for Bar | Weight kg |
|-------|------------|-------------------|-----------|
| IA/20 | 156 21 200 | 20 mm | 0,920 |
| IA/25 | 156 21 250 | 25 mm | 0,880 |
| IA/30 | 156 21 300 | 30 mm | 0,820 |
| IA/35 | 156 21 350 | 35 mm | 0,750 |
| IA/40 | 156 21 400 | 40 mm | 0,650 |
| IA/45 | 156 21 450 | 45 mm | 0,600 |
| IA/50 | 156 21 500 | 50 mm | 0,550 |

| Size | Part No. | Bore Dia. for Bar | Weight kg |
|--------|------------|-------------------|-----------|
| IIA/40 | 156 22 400 | 40 mm | 1,940 |
| IIA/45 | 156 22 450 | 45 mm | 1,890 |
| IIA/50 | 156 22 500 | 50 mm | 1,800 |



Application.

Expanding reamers are designed to finish holes to an exact size or a precise fit where size is determined during assembly.

The blades cut away small amounts of material leaving an exactly round, precisely finished hole. The amount of material to be removed by the reamers depends on the size of the hole and the material being reamed..

A common cutting allowance is 0,03 to 0,1mm per cut. In case of reamer type U the cutting allowance can be up to 0,3mm per cut.

Usually the more difficult the material being reamed the smaller the cutting allowance.

Removing too little stock, however, will tend to dull the blades because they will press the hole open rather than cut.

A rough cut followed by finish reaming will produce a better surface finish than reaming holes in a single operation.

How To Adjust Expanding Reamers.

The precision ground reamer blades are retained by nuts in slots milled with a taper.

Adjustment is a simple operation carried out by loosening of one nut while tightening the other, thus allowing the blades to progress along the tapered bottom slots resulting in an increase or decrease of the reamer diameter according to the direction of adjustment.

Reamers with an even number of blades can be checked for size with a micrometer.

Reamers with an odd number of blades can be set to size by first adjusting the reamer to a known size bushing or ring and then using the scale of the adjusting nut to set the reamer to the final size.

Using Reamers.

To set up for reaming, select the correct size reamer and adjust the blades to the required diameter.

Place reamer in the hole to be reamed and apply moderate axial pressure so that the blades have cutting contact with the hole from the beginning.

Attach the tap holder to the square shank.

The tap holder must precisely fit onto the square to ensure that the reamer shank is securely held. Check alignment of the reamer. Alignment should be 90° to the surface. Verify alignment with a square.

Using tap holder, turn reamer clockwise (in direction of cutting) while applying even pressure to advance the reamer through the hole.

Important.

The Reamers must always be turned clockwise (in the direction of cutting) even when removing from the hole.

Never turn a reamer counter-clockwise!

Turning the reamer counter-clockwise in the hole dulls the blades.

When reaming deep holes withdraw the reamer from time to time to clear the chips.

While withdrawing the reamer always turn the reamer clockwise.

When reaming through the back end of the hole reduce pressure to make sure the reamer is not pushed through the hole but rather the back end of the hole is being reamed with the same feed and speed as the main portion.

When removing the reamer from the hole turn the reamer clockwise to avoid damage of the reamed hole and dulling of the reamer blades.

Lubrication.

Use of a cutting fluid will improve the finish and prolong the life of the reamer in many cases.

When reaming iron and steel always lubricate with cutting oil or emulsion.

Use kerosene for reaming brass, bronze, aluminum and other soft metals.

Cast iron and malleable iron may be reamed perfectly dry.

Using Reamers with Aligning Bushes.

The aligning bush sliding on the reamer acts as a guide when aligning reaming two holes, very deep holes or valve guides.

The aligning bush provides for exact alignment between the hole being reamed and its mating hole or in case of valve guide reamers between the valve seat and the valve guide bore.

As the blades ream the hole, the aligning bush placed in the second hole or in the back end of the deep hole or placed on the valve seat holds the reamer in exact alignment.

Maintenance of the Reamers.

Carefully clean reamers after use.

Store reamers in the clear plastic tube containers or in the wooden cases.

A light coating of oil will prevent corrosion and prolong the life.

If required, clean the blade slots from time to time to ensure correct adjustment of the cutting diameter. Remove each blade and slide the corner of the blade along the bottom of the slot to remove chips and dirt.



Notes

| | | |
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Ludwig Hunger GmbH

Mailing Address:

Postfach 70 09 60
D-81309 München
Germany

Office Address:

Gräfelinger Str. 146
D-81375 München
Germany

Tel.: + 49 89 7091 0

Fax: + 49 89 7091 26