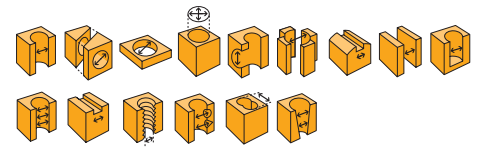


Indicating Plug Gauge OD

FOR MEASURING INTERNAL DIAMETERS,
APPLICATION RANGE 2,0 - 800 MM

SERIES 300-326



Assembly complete set:

Measuring sleeve with two radially movable contact pins, offset by 180° +
OD holder (see page 24) + indication unit of choice. Standard measuring range s:
0,2 mm for $\varnothing \geq 6$ mm. Standard design of the measuring sleeve: hardened steel,
alternatively hard chromed, measuring contacts tungsten carbide.

Please let us know the exact bore tolerance with your order:

Example: measuring sleeve OD No. 304 00000 35 H7
measuring sleeve OD No. 304 00000 35 + 0,15/-0,01
measuring sleeve OD No. 304 00000 34,990/35,005

* nominal \varnothing 6,1 - 9 mm: h = 6 mm; nominal \varnothing 9,1 - 12 mm: h = 10 mm

OD MEASURING SLEEVES - IN HARDENED STEEL DESIGN

| nominal- \varnothing [mm] | H = STANDARD | | | | | DESIGN OF THE MEASURING CONTACTS IN | | | |
|--------------------------------|--------------|-----------------|---------------------|--------------|-----------------|-------------------------------------|-----------------|---------------------|--|
| | | | | | | FOR THROUGH BORES | | | |
| | h [mm] | carbide Code | hardchromed Code | ruby Code | diamond Code | h [mm] | carbide Code | hardchromed Code | |
| 2,0 - 2,5 | 1 | 300 00015 | | | | - | | | |
| 2,6 - 6,0 | 1,5 | 300 00000 | | 300 00003 | | 6 | 300 00002 | | |
| 6,1 - 12,0 | 2,5 | 301 00000 | 301 00010 | 301 00003 | 301 00025 | 6/10* | 301 00002 | 301 00026 | |
| 12,1 - 20,0 | 2,5 | 302 00000 | 302 00007 | 302 00003 | 302 00017 | 10 | 302 00002 | 302 00018 | |
| 20,1 - 30,0 | 3,5 | 303 00000 | 303 00007 | 303 00003 | 303 00022 | 10 | 303 00002 | 303 00023 | |
| 30,1 - 40,0 | 3,5 | 304 00000 | 304 00006 | 304 00003 | 304 00029 | 10 | 304 00002 | 304 00030 | |
| 40,1 - 60,0 | 3,5 | 305 00000 | 305 00006 | 305 00003 | 305 00020 | 10 | 305 00002 | 305 00021 | |
| 60,1 - 80,0 | 4,0 | 306 00000 | 306 00006 | 306 00003 | 306 00022 | 10 | 306 00002 | 306 00023 | |
| 80,1 - 100,0 | 4,0 | 307 00000 | 307 00006 | 307 00003 | 307 00016 | 10 | 307 00002 | 307 00017 | |
| 100,1 - 110,0 | 4,0 | 308 00000 | 308 00021 | 308 00022 | 308 00023 | 10 | 308 00002 | 308 00024 | |
| 110,1 - 120,0 | 4,0 | 309 00010 | 309 00006 | 309 00007 | 309 00008 | 10 | 309 00012 | 309 00009 | |
| 120,1 - 130,0 | 4,0 | 310 00010 | 310 00006 | 310 00007 | 310 00008 | 10 | 310 00012 | 310 00009 | |
| 130,1 - 140,0 | 4,0 | 311 00500 | 311 00503 | 311 00504 | 311 00505 | 10 | 311 00502 | 311 00506 | |
| 140,1 - 150,0 | 4,0 | 312 00500 | 312 00503 | 312 00504 | 312 00505 | 10 | 312 00502 | 312 00506 | |
| 150,1 - 160,0 | 4,0 | 313 00500 | 313 00503 | 313 00504 | 313 00505 | 10 | 313 00502 | 313 00506 | |
| 160,1 - 170,0 | 4,0 | 314 00500 | 314 00503 | 314 00504 | 314 00505 | 10 | 314 00502 | 314 00506 | |
| 170,1 - 180,0 | 4,0 | 315 00500 | 315 00503 | 315 00504 | 315 00505 | 10 | 315 00502 | 315 00506 | |
| 180,1 - 190,0 | 4,0 | 316 00500 | 316 00503 | 316 00504 | 316 00505 | 10 | 316 00502 | 316 00506 | |
| 190,1 - 200,0 | 4,0 | 317 00500 | 317 00503 | 317 00504 | 317 00505 | 10 | 317 00502 | 317 00506 | |

OD MEASURING SLEEVES - HARDCHROMED

| nominal- \varnothing [mm] | H = STANDARD | | | | | DESIGN OF THE MEASURING CONTACTS IN | | | |
|--------------------------------|--------------|-----------------|---------------------|--------------|-----------------|-------------------------------------|-----------------|---------------------|--|
| | | | | | | FOR THROUGH BORES | | | |
| | h [mm] | carbide Code | hardchromed Code | ruby Code | diamond Code | h [mm] | carbide Code | hardchromed Code | |
| 2,0 - 2,5 | 1 | 300 00019 | - | | - | - | | - | |
| 2,6 - 6,0 | 1,5 | 300 00004 | | 300 00034 | | 6 | 300 00009 | | |
| 6,1 - 12,0 | 2,5 | 301 00004 | 301 00032 | 301 00033 | 301 00034 | 6/10* | 301 00009 | 301 00035 | |
| 12,1 - 20,0 | 2,5 | 302 00004 | 302 00024 | 302 00025 | 302 00026 | 10 | 302 00009 | 302 00027 | |
| 20,1 - 30,0 | 3,5 | 303 00004 | 303 00029 | 303 00030 | 303 00031 | 10 | 303 00009 | 303 00032 | |
| 30,1 - 40,0 | 3,5 | 304 00004 | 304 00036 | 304 00037 | 304 00038 | 10 | 304 00009 | 304 00039 | |
| 40,1 - 60,0 | 3,5 | 305 00004 | 305 00027 | 305 00028 | 305 00029 | 10 | 305 00010 | 305 00030 | |
| 60,1 - 80,0 | 4,0 | 306 00004 | 306 00029 | 306 00030 | 306 00031 | 10 | 306 00015 | 306 00032 | |
| 80,1 - 100,0 | 4,0 | 307 00004 | 307 00023 | 307 00024 | 307 00025 | 10 | 307 00011 | 307 00026 | |
| 100,1 - 110,0 | 4,0 | 308 00004 | 308 00030 | 308 00031 | 308 00032 | 10 | 308 00016 | 308 00033 | |
| 110,1 - 120,0 | 4,0 | 309 00004 | 309 00022 | 309 00023 | 309 00024 | 10 | 309 00016 | 309 00025 | |
| 120,1 - 130,0 | 4,0 | 310 00004 | 310 00022 | 310 00023 | 310 00024 | 10 | 310 00025 | 310 00026 | |
| 130,1 - 140,0 | 4,0 | 311 00512 | 311 00513 | 311 00514 | 311 00515 | 10 | 311 00516 | 311 00517 | |
| 140,1 - 150,0 | 4,0 | 312 00512 | 312 00513 | 312 00514 | 312 00515 | 10 | 312 00516 | 312 00517 | |
| 150,1 - 160,0 | 4,0 | 313 00512 | 313 00513 | 313 00514 | 313 00515 | 10 | 313 00516 | 313 00517 | |
| 160,1 - 170,0 | 4,0 | 314 00512 | 314 00513 | 314 00514 | 314 00515 | 10 | 314 00516 | 314 00517 | |
| 170,1 - 180,0 | 4,0 | 315 00512 | 315 00513 | 315 00514 | 315 00515 | 10 | 315 00516 | 315 00517 | |
| 180,1 - 190,0 | 4,0 | 316 00512 | 316 00513 | 316 00514 | 316 00515 | 10 | 316 00516 | 316 00517 | |
| 190,1 - 200,0 | 4,0 | 317 00512 | 317 00513 | 317 00514 | 317 00515 | 10 | 317 00516 | 317 00517 | |

SURCHARGE

| design | Ø-range | Code |
|------------------------------------------------------------------|----------------|-----------|
| surcharge 3-point-design | 4,0 - 8,0 | 319 00509 |
| | 8,1 - 40,1 | 319 00502 |
| | 40,1 - 60,0 | 319 00538 |
| | 60,1 - 100,0 | 319 00510 |
| surcharge extended measuring travel 0,4 mm | 2,5 - 6,0 | 319 00512 |
| surcharge extended measuring travel 0,6 mm | 6,1 - 20,0 | 319 00539 |
| surcharge extended measuring travel 0,6 mm | > 20,1 | 319 00540 |
| surcharge reduced undersize for tolerance <10 µ | 2,5 - 20,0 | 319 00506 |
| surcharge reduced undersize for tolerance <10 µ | > 20,0 - 100,0 | 319 00504 |
| surcharge protection cover (not available for blind bore design) | > 4,0 - 20,0 | 319 00507 |
| | > 20,1 | 319 00508 |

Note: These special versions are not available in every combination!
 measuring contacts hard chromed and diamond are available from Ø 8 mm;
 ruby measuring contacts from Ø 3 mm



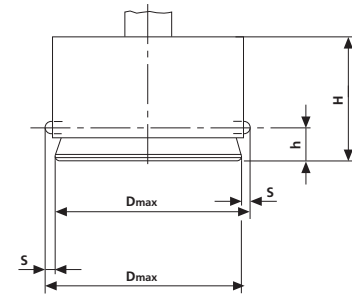
plug gauges OD for various bore diameters

| FOR BLIND BORES | | | | | |
|-----------------|--------------|--------|--------------|------------------|-----------|
| ruby Code | diamond Code | h [mm] | carbide Code | hardchromed Code | ruby Code |
| | | 0,7 | 300 00016 | | |
| 300 00026 | | 1 | 300 00001 | | 300 00028 |
| 301 00027 | 301 00028 | 1 | 301 00001 | 301 00029 | 301 00030 |
| 302 00019 | 302 00020 | 1 | 302 00001 | 302 00021 | 302 00022 |
| 303 00024 | 303 00025 | 1,2 | 303 00001 | 303 00026 | 303 00027 |
| 304 00031 | 304 00032 | 1,2 | 304 00001 | 304 00033 | 304 00034 |
| 305 00022 | 305 00023 | 1,2 | 305 00001 | 305 00024 | 305 00025 |
| 306 00024 | 306 00025 | 1,2 | 306 00001 | 306 00026 | 306 00027 |
| 307 00018 | 307 00019 | 1,2 | 307 00001 | 307 00020 | 307 00021 |
| 308 00025 | 308 00026 | 1,2 | 308 00001 | 308 00027 | 308 00028 |
| 309 00017 | 309 00018 | 1,2 | 309 00011 | 309 00019 | 309 00020 |
| 310 00017 | 310 00018 | 1,2 | 310 00011 | 310 00019 | 310 00020 |
| 311 00507 | 311 00508 | 1,2 | 311 00501 | 311 00509 | 311 00510 |
| 312 00507 | 312 00508 | 1,2 | 312 00501 | 312 00509 | 312 00510 |
| 313 00507 | 313 00508 | 1,2 | 312 00501 | 313 00509 | 313 00510 |
| 314 00507 | 314 00508 | 1,2 | 314 00501 | 314 00509 | 314 00510 |
| 315 00507 | 315 00508 | 1,2 | 315 00501 | 315 00509 | 315 00510 |
| 316 00507 | 316 00508 | 1,2 | 316 00501 | 316 00509 | 316 00510 |
| 317 00507 | 317 00508 | 1,2 | 317 00501 | 317 00509 | 317 00510 |

| FOR BLIND BORES | | | | | |
|-----------------|--------------|--------|--------------|------------------|-----------|
| ruby Code | diamond Code | h [mm] | carbide Code | hardchromed Code | ruby Code |
| | - | 0,7 | 300 00020 | - | |
| 300 00032 | | 1 | 300 00008 | | 300 00037 |
| 301 00036 | 301 00037 | 1 | 301 00008 | 301 00038 | 301 00039 |
| 302 00028 | 302 00029 | 1 | 302 00008 | 302 00030 | 302 00013 |
| 303 00033 | 303 00034 | 1,2 | 303 00008 | 303 00035 | 303 00036 |
| 304 00040 | 304 00041 | 1,2 | 304 00008 | 304 00042 | 304 00043 |
| 305 00031 | 305 00032 | 1,2 | 305 00009 | 305 00033 | 305 00034 |
| 306 00033 | 306 00034 | 1,2 | 306 00009 | 306 00035 | 306 00037 |
| 307 00027 | 307 00028 | 1,2 | 307 00010 | 307 00029 | 307 00030 |
| 308 00034 | 308 00035 | 1,2 | 308 00005 | 308 00036 | 308 00037 |
| 309 00026 | 309 00027 | 1,2 | 309 00005 | 309 00028 | 309 00029 |
| 310 00027 | 310 00028 | 1,2 | 310 00005 | 310 00029 | 310 00030 |
| 311 00518 | 311 00519 | 1,2 | 311 00520 | 311 00521 | 311 00522 |
| 312 00518 | 312 00519 | 1,2 | 312 00520 | 312 00521 | 312 00522 |
| 313 00518 | 313 00519 | 1,2 | 313 00520 | 313 00521 | 313 00522 |
| 314 00518 | 314 00519 | 1,2 | 314 00520 | 314 00521 | 314 00522 |
| 315 00518 | 315 00519 | 1,2 | 315 00520 | 315 00521 | 315 00522 |
| 316 00518 | 316 00519 | 1,2 | 316 00520 | 316 00521 | 316 00522 |
| 317 00518 | 317 00519 | 1,2 | 317 00520 | 317 00521 | 317 00522 |

Floating contacting principle:

- H: sleeve length
- h: front distance, distance of measuring axis to bottom of the bore
- D_{max}: maximum Ø to be measured
- s: measuring range = 0,2 mm



OD dimensions



OD measuring sleeve Ø 60 mm



OD measuring sleeves in special design

Indicating Plug Gauge OD

SERIES 300-326

OD CROSS SLEEVE [WITH RUNNERS]

| nominal-Ø [mm] | h [mm] | cross sleeve with runners Code | h [mm] | cross sleeve with runners Code | h [mm] | cross sleeve Code |
|----------------|--------|--------------------------------|--------|--------------------------------|--------|-------------------|
| 130,1 - 150 | 7 | 311 00001 | 18 | 311 00000 | 6 | 311 00002 |
| 150,1 - 200 | 7 | 312 00001 | 18 | 312 00000 | 6 | 312 00002 |
| 200,1 - 250 | 7 | 313 00001 | 18 | 313 00000 | 6 | 313 00002 |
| 250,1 - 300 | 7 | 314 00001 | 18 | 314 00000 | 6 | 314 00002 |
| 300,1 - 350 | 10 | 315 00001 | 25 | 315 00000 | 9 | 315 00002 |
| 350,1 - 400 | 10 | 316 00001 | 25 | 316 00000 | 9 | 316 00002 |
| 400,1 - 450 | 10 | 317 00001 | 25 | 317 00000 | 9 | 317 00002 |
| 450,1 - 500 | 10 | 318 00001 | 25 | 318 00000 | 9 | 318 00002 |

ESU setting master therefore see page 15



cross sleeve with runners from Ø 130 mm for through and deep bores

SPECIAL DESIGN ON INQUIRY

- with integrated inductive measuring probes from Ø 25 mm
- measuring contact and/or sleeve out of delrin for scratch-sensitive surfaces or polished workpieces
- front distance „h“ non standard
- measuring sleeve for automatic measuring
- multiple measuring axes
- OD measuring sleeve for parallel distances
- special profiles for extruders or for housing of toothed wheel pumps
- measuring contacts in wedge-design
- taper measurement

OD HOLDER

with thread connection M11 x 0,75 for direct connection to all OD measuring sleeves

OD HOLDER

| length [mm] | Code |
|-----------------------------------------------------------------------------------------------|-----------|
| 50 | 320 00000 |
| 105 | 320 00001 |
| 235 | 320 00002 |
| greater length on inquiry | |
| holder F, especially for electronic length measuring probes with fine adjustment, 110 mm long | 320 00004 |
| strengthened holder with tube Ø 18 mm, recommended for sleeve Ø > 60 mm | |
| 145 | 320 00038 |
| 235 | 320 00039 |
| holder with retraction, 70 mm long, recommended for blind bore sleeves | 320 00042 |

different threads on inquiry



OD holders

MEASURING DEPTH EXTENSION

for measuring also in large depth, interchangeable, therefore very flexible for different measuring depth

MEASURING DEPTH EXTENSION

| length [mm] | Ø 4,0 mm for OD Ø 4,0-6,5 mm | Ø 6,5 mm for OD Ø 6,5-12 mm | Ø 12 mm for OD ab Ø 12 mm | Ø 18 mm for OD ab Ø 60 mm |
|-------------|------------------------------|-----------------------------|---------------------------|---------------------------|
| 50 | 323 00100 | 323 00110 | 323 00008 | - |
| 100 | 323 00101 | 323 00111 | 323 00000 | 323 00004 |
| 250 | 323 00103 | 323 00113 | 323 00001 | 323 00005 |
| 500 | - | - | 323 00002 | 323 00006 |
| 1000 | - | - | - | 323 00007 |

Please let us know the diameter of the corresponded OD sleeve with your order. Extensions for measuring sleeves < 4 mm: on inquiry.



OD measuring depth extensions

Accessories for Plug Gauge OD

SERIES 300-326

FLOATING HOLDER

for the use in measuring devices with automatic measuring gauge feeding

FLOATING HOLDER

| | Code |
|-------------------|----------|
| for OD holder 105 | 629 0003 |

ANGLE PIECE

| | Code |
|----------------------------------------------|-----------|
| 90° with thread M11 x 0,75 | 324 00000 |
| 90° for strengthened OD holder, tube Ø 18 mm | 324 00002 |
| 90° in short design | 324 00001 |

DEPTH STOP

for measuring in reproducible measuring depths and for eliminating the tilting error. Please indicate with your order: minimum/maximum measuring depth.

SET COLLAR [CLAMPED ON SLEEVE]

| diameter measuring sleeve [mm] | Code |
|--------------------------------|-----------|
| 3,0 - 40 | 322 00000 |
| 40,1 - 60 | 322 00001 |

(due to the weight only up to max. Ø 60 mm)

3-POINT DEPTH STOP [CLAMPED ON SHAFT]

| diameter measuring sleeve [mm] | Code |
|--------------------------------|-----------|
| 30 - 50 | 322 00019 |
| 50,1 - 80 | 322 00020 |
| 80,1 - 100 | 322 00021 |
| 100,1 - 150 | 322 00022 |

BRIDGE DEPTH STOP FOR DEEP BORES [CLAMPED ON SHAFT]

| diameter measuring sleeve [mm] | Code |
|--------------------------------|------------|
| 3 - 50 | 322 00007 |
| 50,1 - 80 | 322 00008 |
| 80,1 - 100 | 322 00009 |
| > 100 | on inquiry |

STAND

| | Code |
|------------------------------------------------------|-----------|
| with clamping-Ø 12 mm for holder OD 105 | 325 00000 |
| with clamping-Ø 18 mm for strengthened holder OD 145 | 325 00004 |



stand for OD with angle piece, plug gauge OD, depth stop, holder and precision indicator



depth stops for OD plug gauge



OD plug gauge with two measuring axes