

Ú&@ ^ã^|^ { ^} c^

Ú!ê: ã ã } •• &@ ^ãc^ ã^

Ausführungen / Types

Schneidstempel ähnlich DIN 9861 und ISO 8020 Piercing punches similar DIN 9861 and ISO 8020

Gehärtet, angelassen, Schaft geschliffen, Kopf warm angestaucht.
Hardened, tempered, shaft grinded, Head hot forged.

Härteangaben / Hardness details

Schneidstempel ähnlich DIN 9861 Piercing Punches similar DIN 9861

| Werkstoff / Material | Schaft / Shaft | Kopf / Head |
|----------------------|----------------|-------------|
| WS | HRC 62 +/-2 | HRC 45 +/-2 |
| HWS | HRC 62 +/-2 | HRC 50 +/-2 |
| HSS | HRC 64 +/-2 | HRC 50 +/-2 |
| Vanadis 23 | HRC 64 +/-2 | HRC 50 +/-2 |
| CPM 10 V | HRC 64 +/-2 | HRC 50 +/-2 |

Schneidstempel ähnlich ISO 8020 Piercing Punches similar ISO 8020

| Werkstoff / Material | Schaft / Shaft | Kopf / Head |
|----------------------|----------------|-------------|
| HWS | HRC 60 +/-2 | HRC 45 +/-2 |
| HSS | HRC 62 +/-2 | HRC 52 +/-2 |
| Vanadis 23 | HRC 62 +/-2 | HRC 52 +/-2 |
| CPM 10 V | HRC 62 +/-2 | HRC 52 +/-2 |

Werkstoffangaben zu den Bestellbeispielen

Material details for the ordering examples

| Werkstoff / Material | Bezeichnung / description | Nummer / number |
|--|---------------------------|-----------------|
| Legierter Kaltarbeitsstahl / Tool steel | WS | 1 |
| Chromlegierter Kaltarbeitsstahl / High carbon high chrome steel | HWS | 2 |
| Hochleistungsschnellschnittstahl / High speed steel | HSS | 3 |
| Pulvermetallurgisch hergestellter Hochleistungsschnellschnittstahl / High performance powdered high speed steel | Vanadis 23 | 4 |
| Warmarbeitsstahl / Hotworking tool steel | WAS | 5 |
| Pulvermetallurgisch hergestellter Hochleistungsschnellschnittstahl / High performance powdered high speed steel | CPM 10 V | 6 |

Artikelnummer mit
der Kennziffer ergänzen!

Q P O Š V Û X Ò Ü Z Ò Ö P Ò

Pā ^ā^ÁY ^\·d ~ā * ā^
 U&@^ā·c{]^|ÁÖÁÍÍ FÁÍ |{ Ö
 Ø |{ ·&@^ā·c{]^|Á~ |&@^@} áÁ | [-ā |c
 U|·æ } ^ } @·c{] ^ |
 Zā ^ } · ^ } \ ^ | Á > | Á U [· æ } ^ } @·c{] ^ |

U^ā^ÁG
 U^ā^ÁĚ
 U^ā^Á
 U^ā^Á
 U^ā^Á

U&@^ā·c{]^|ÁÜUÁ ÉGEÁÍ |{ ÁE
 U&@^ā·c{]^|ÁÜUÁ ÉGEÁÍ |{ ÁÖ
 Ø |{ ·&@^ā·c{]^|ÁÜUÁ ÉGE
 U&@^ā·c{]^|Á āÜāá > & · cā ÜUÁ ÉGEÁÍ |{ ÁÖ
 U&@^ā·c{]^|Á āÜāá > & · cā ÜUÁ ÉGEÁÍ |{ ÁÖ
 Ø |{ ·&@^ā·c{]^|Á āÜāá > & · cā ÜUÁ ÉGE
 U&@^ā·c{]^|Á @^Á S [] -ÖÁÍÍ FÁÍ |{ ÁÖ
 U&@^ā·c{]^|Á āÁE>Á S [] ~

U^ā^ÁJ
 U^ā^ÁE
 U^ā^ÁF
 U^ā^ÁFG
 U^ā^ÁFH
 U^ā^ÁFI
 U^ā^ÁFI
 U^ā^ÁFI

U&@^ā~ &@^} ÖÁÍÍ ÁÍ |{ ÖÉÁÖ
 U&@^ā~ &@^} ÜUÁ JÍ Í ÁÍ |{ ÖÉÁÖ
 U&@^ā~ &@^} Á āÜced [&@ÜUÁ JÍ Í
 Ø |{ ·&@^ā~ &@^} ÜUÁ JÍ Í
 U·c{] ^ | > @ } * · á ~ &@^} ÖÁÍÍ ÁÍ |{ ÁÖ
 U·c{] ^ | > @ } * · á ~ &@^} ÜUÁ JÍ Í

U^ā^ÁFI
 U^ā^ÁFJ
 U^ā^ÁGE
 U^ā^ÁGF
 U^ā^ÁGG
 U^ā^ÁGH

Ö· ^ | · ^ | · cā ÖÁÍÍ HEÁP ÁÜUÁ Í Í F
 Ö· ^ | · ^ | · cā ÖÁÍÍ HEÁP ÁÜUÁ Í Í Fā·Á ÜÜ
 Ö· ^ | · ^ | · cā ÖÁÍÍ HEÁÍ |{ Ö
 Ö· ^ | · ^ | · cā Á āÁ ^ | ÉS [] -E^&@& ā Áā * ^ · ^ c c
 Óā] ā ^ Á U [} á ^ | c ā
 Ö· ^ | · ^ | @ | · ^ }

U^ā^ÁG Ě
 U^ā^ÁG
 U^ā^ÁG ĚJ
 U^ā^ÁHE
 U^ā^ÁF
 U^ā^ÁGEH

Z | ā á ^ | · cā ÖÁÍÍ GÍ ÁÜUÁ Í H
 Z | ā á ^ | · cā Á ā Q } ^ } * ^ , ā á ^ ÖÁÍÍ J ÁÜUÁ Í H

U^ā^ÁH
 U^ā^ÁH

Ó | @ā ~ &@^} ÖÁÍÍ J ÁÜUÁ G Í
 Ó } āā [@ā ~ &@^} ÖÁÍÍ G ÁÜUÁ G Í

U^ā^ÁÍ
 U^ā^ÁÍ

X | : · cā &@ | ĚE · ^ | · ^ | · cā Á @ | ÖÁÍÍ FÁÖ
 Q } ^ } · ^ &@ \ ā } c {] ^ | Á ^] Á S
 Q } ^ } · ^ &@ \ ā } c {] ^ | Á ^] Á S
 Q } ^ } · ^ &@ \ ā } c {] ^ | Á > | Á ^ } \ · &@ā à ^ }
 Ø | ā |] | ^ · · · c {] ^ |

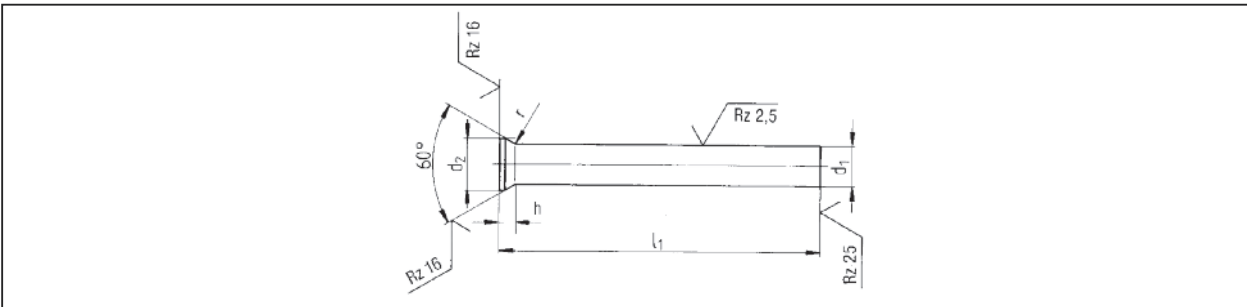
U^ā^ÁÍ
 U^ā^ÁJ
 U^ā^ÁE
 U^ā^ÁF
 U^ā^ÁG

V ^ &@ ā &@ Á Q | | { āā } ^ }

U^ā^ÁHĚÍ

Schneidstempel mit kegeligem Kopf Punch with countersunk head

nach DIN 9861 Teil 1, Form D, ähnlich ISO 6752
acc. to DIN 9861 standard part 1, type D, similar to ISO 6752



Artikel-Nr.: 115 .
Die 4. Stelle der Art. Nr.
bezeichnet den Werkstoff siehe Seite 2

Item no.: 115 .
The 4th digit of the item no.
indicates the material, see page 2

Werkstoffe: HWS, HSS, Vanadis 23, CPM 10V
Weitere Werkstoffe auf Anfrage erhältlich.

Materials: HWS, HSS, Vanadis 23, CPM 10V
For other materials see page 2

| d ₁ | l ₁ | | d ₂ | h | r | d ₁ | l ₁ | | d ₂ | h | r | d ₁ | l ₁ | | d ₂ | h | r | |
|----------------|----------------|----|----------------|------------|----------------------------------|----------------|----------------|-----|----------------|------------|----------------------------------|----------------|----------------|-----|----------------|------------|----------------------------------|------|
| h6 | + 0,5 0 | | ± 0,05 | + 0,2 0 | | h6 | + 0,5 0 | | ± 0,05 | + 0,2 0 | | h6 | + 0,5 0 | | ± 0,05 | + 0,2 0 | | |
| 0,30 | - | - | 0,9 | 0,72 | 0,2 ^{+0,2} ₀ | 1,00 | 80 | 100 | 1,8 | 1,19 | 0,4 ^{+0,3} ₀ | 1,70 | 80 | 100 | 2,5 | 1,19 | 0,4 ^{+0,3} ₀ | |
| 0,35 | 71 | - | 0,9 | 0,68 | | 1,05 | - | - | 1,8 | 1,15 | | 1,75 | - | - | 2,5 | 1,15 | | |
| 0,40 | - | - | 0,9 | 0,63 | | 1,10 | 80 | 100 | 1,8 | 1,11 | | 1,80 | 71 | 80 | 100 | 2,8 | | 1,37 |
| 0,45 | - | - | 0,9 | 0,59 | | 1,15 | - | 100 | 1,8 | 1,06 | | 1,85 | - | - | 2,8 | 1,32 | | |
| 0,50 | 80 | - | 0,9 | 0,55 | | 1,20 | 80 | 100 | 2,0 | 1,19 | | 1,90 | 80 | 100 | 2,8 | 1,28 | | |
| 0,55 | - | - | 1,0 | 0,59 | | 1,25 | - | - | 2,0 | 1,15 | | 1,95 | - | - | 2,8 | 1,24 | | |
| 0,60 | 80 | - | 1,1 | 0,63 | | 1,30 | 80 | 100 | 2,0 | 1,11 | | | | | | | | |
| 0,65 | - | - | 1,2 | 0,68 | | 1,35 | 71 | - | 100 | 2,0 | | 1,06 | | | | | | |
| 0,70 | 71 | 80 | 100 | 1,3 | | 0,72 | 1,40 | 80 | 100 | 2,2 | | 1,19 | | | | | | |
| 0,75 | 80 | - | - | 1,3 | | 0,68 | 1,45 | - | - | 2,2 | | 1,15 | | | | | | |
| 0,80 | 80 | - | - | 1,4 | | 0,92 | 1,50 | 80 | 100 | 2,2 | | 1,11 | | | | | | |
| 0,85 | - | - | - | 1,4 | | 0,88 | 1,55 | - | - | 2,2 | | 1,06 | | | | | | |
| 0,90 | 80 | - | - | 1,6 | | 1,01 | 1,60 | 80 | 100 | 2,5 | | 1,28 | | | | | | |
| 0,95 | - | - | - | 1,6 | | 0,96 | 1,65 | - | - | 2,5 | | 1,24 | | | | | | |

CE & © ...

Ca * ^ . ^ c c ^ U & @ ^ a ~ c {] ^ | A q a A ~ ! : - a c A a - l i a e s A g a @ A ~ c ^ | a ^ a] a | A U a A F i D

Längen: In begrenztem Umfang sind auch die Längen
60 und 90 mm ab Lager lieferbar.

Lengths: The lengths 60 and 90 mm are also available
in limited numbers from stock.

Schneidstempel mit kegeligem Kopf Punch with countersunk head

nach DIN 9861 Teil 1, Form D, ähnlich ISO 6752
acc. to DIN 9861 standard part 1, type D, similar to ISO 6752

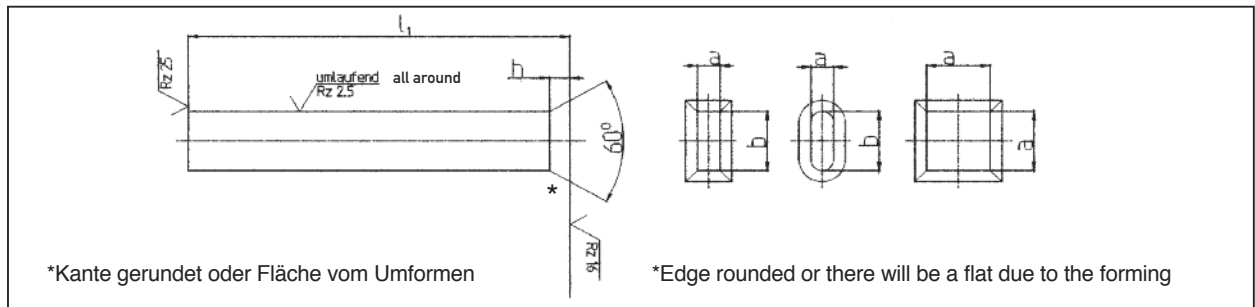
| d ₁ | l ₁ | | d ₂ | h | r | d ₁ | l ₁ | | d ₂ | h | r | d ₁ | l ₁ | | d ₂ | h | r | |
|----------------|----------------|-----------|----------------|------|----------------------------------|----------------|----------------|-----------|----------------|-------|----------------------------------|----------------|----------------|------|----------------|----------------------------------|---|---|
| h6 | +0,5 | 0 | ±0,1 | +0,2 | 0 | h6 | +0,5 | 0 | ±0,1 | +0,2 | 0 | h6 | +0,5 | 0 | ±0,2 | +0,2 | 0 | r |
| 2,00 | 80 | 100 u.120 | 3,0 | 1,37 | 0,4 ^{+0,3} ₀ | 5,10 | 80 | 100 | 6,5 | 1,71 | 0,6 ^{+0,4} ₀ | 10,00 | 100 | 12,0 | 2,73 | 1,0 ^{+0,5} ₀ | | |
| 2,05 | — | 100 | 3,0 | 1,32 | | 5,15 | — | — | 6,5 | 1,67 | | 10,10 | 100 | 12,0 | 2,65 | | | |
| 2,10 | 80 | 100 | 3,2 | 1,45 | | 5,20 | 80 | 100 | 6,5 | 1,63 | | 10,20 | 100 | 12,0 | 2,56 | | | |
| 2,15 | — | — | 3,2 | 1,41 | | 5,30 | 80 | 100 | 6,5 | 1,54 | | 10,30 | 100 | 12,0 | 2,47 | | | |
| 2,20 | 80 | 100 | 3,2 | 1,37 | | 5,40 | 80 | 100 | 6,5 | 1,45 | | 10,40 | 100 | 12,0 | 2,39 | | | |
| 2,25 | — | — | 3,2 | 1,32 | | 5,45 | — | — | 6,5 | 1,41 | | 10,50 | 100 | 13,0 | 3,17 | | | |
| 2,30 | 80 | 100 | 3,5 | 1,54 | | 5,50 | 80 | 100 u.120 | 7,0 | 1,80 | | 10,60 | 100 | 13,0 | 3,08 | | | |
| 2,35 | — | — | 3,5 | 1,50 | | 5,60 | — | — | 7,0 | 1,71 | | 10,70 | 100 | 13,0 | 2,99 | | | |
| 2,40 | 80 | 100 | 3,5 | 1,45 | | 5,70 | 80 | 100 | 7,0 | 1,63 | | 10,80 | 100 | 13,0 | 2,91 | | | |
| 2,45 | — | — | 3,5 | 1,41 | | 5,75 | — | — | 7,0 | 1,58 | | 10,90 | 100 | 13,0 | 2,82 | | | |
| 2,50 | 80 | 100 | 3,5 | 1,37 | | 5,80 | 80 | 100 | 7,0 | 1,54 | | 11,00 | 100 u.120 | 13,0 | 2,73 | | | |
| 2,55 | — | 100 | 3,5 | 1,32 | | 5,90 | 80 | 100 | 7,0 | 1,45 | | 11,10 | 100 | 13,0 | 2,65 | | | |
| 2,60 | 80 | 100 | 4,0 | 1,71 | | | | | | | 11,20 | 100 | 13,0 | 2,56 | | | | |
| 2,65 | — | — | 4,0 | 1,67 | | | | | | | 11,30 | 100 | 13,0 | 2,47 | | | | |
| 2,70 | 80 | 100 | 4,0 | 1,63 | | | | | | | 11,40 | 100 | 13,0 | 2,39 | | | | |
| 2,75 | — | 100 | 4,0 | 1,58 | | | | | | | 11,50 | 100 | 14,0 | 3,17 | | | | |
| 2,80 | 80 | 100 | 4,0 | 1,54 | | | | | | | 11,60 | 100 | 14,0 | 3,08 | | | | |
| 2,85 | — | — | 4,0 | 1,50 | | | | | | | 11,70 | 100 | 14,0 | 2,99 | | | | |
| 2,90 | 80 | 100 | 4,0 | 1,45 | | | | | | | 11,80 | 100 | 14,0 | 2,91 | | | | |
| 2,95 | — | — | 4,0 | 1,41 | | | | | | | 11,90 | 100 | 14,0 | 2,82 | | | | |
| 3,00 | 80 | 100 u.120 | 4,5 | 1,80 | | | | | | | 12,00 | 100 | 14,0 | 2,73 | | | | |
| 3,05 | — | 100 | 4,5 | 1,76 | | | | | | | 12,10 | 100 | 14,0 | 2,65 | | | | |
| 3,10 | 80 | 100 | 4,5 | 1,71 | | | | | | | 12,20 | 71 80 100 | 14,0 | 2,56 | | | | |
| 3,15 | — | — | 4,5 | 1,67 | | | | | | | 12,30 | 100 | 14,0 | 2,47 | | | | |
| 3,20 | 80 | 100 | 4,5 | 1,63 | | | | | | | 12,40 | 100 | 14,0 | 2,39 | | | | |
| 3,25 | — | 100 | 4,5 | 1,58 | | | | | | | 12,50 | 100 | 15,0 | 3,17 | | | | |
| 3,30 | 80 | 100 | 4,5 | 1,54 | | | | | | | 12,60 | 100 | 15,0 | 3,08 | | | | |
| 3,35 | — | — | 4,5 | 1,50 | | | | | | | 12,70 | 100 | 15,0 | 2,99 | | | | |
| 3,40 | 80 | 100 | 4,5 | 1,45 | | | | | | 12,80 | 100 | 15,0 | 2,91 | | | | | |
| 3,45 | — | 100 | 4,5 | 1,41 | | | | | | 12,90 | 100 | 15,0 | 2,82 | | | | | |
| 3,50 | 71 80 | 100 u.120 | 5,0 | 1,80 | | | | | | 13,00 | 100 | 15,0 | 2,73 | | | | | |
| 3,55 | — | 100 | 5,0 | 1,76 | | | | | | 13,50 | 100 | 16,0 | 3,67 | | | | | |
| 3,60 | 80 | 100 | 5,0 | 1,71 | | | | | | 14,00 | 100 u.120 | 16,0 | 3,23 | | | | | |
| 3,65 | — | — | 5,0 | 1,67 | | | | | | 14,50 | 100 | 17,0 | 3,67 | | | | | |
| 3,70 | 80 | 100 | 5,0 | 1,63 | | | | | | 15,00 | 100 | 17,0 | 3,23 | | | | | |
| 3,75 | — | 100 | 5,0 | 1,58 | | | | | | 15,50 | 100 | 18,0 | 3,67 | | | | | |
| 3,80 | 80 | 100 | 5,0 | 1,54 | | | | | | 16,00 | 100 | 18,0 | 3,23 | | | | | |
| 3,85 | — | — | 5,0 | 1,50 | | | | | | 16,50 | 100 | 19,0 | 3,67 | | | | | |
| 3,90 | 80 | 100 | 5,0 | 1,45 | | | | | | 17,00 | 100 | 19,0 | 3,23 | | | | | |
| 3,95 | — | — | 5,0 | 1,41 | | | | | | 17,50 | 100 | 20,0 | 3,67 | | | | | |
| 4,00 | 80 | 100 u.120 | 5,5 | 1,80 | 0,6 ^{+0,4} ₀ | | | | | 18,00 | 100 | 20,0 | 3,23 | | | | | |
| 4,05 | — | 100 | 5,5 | 1,76 | | | | | | 18,50 | 100 | 21,0 | 3,67 | | | | | |
| 4,10 | 80 | 100 | 5,5 | 1,71 | | | | | | 19,00 | 100 | 21,0 | 3,23 | | | | | |
| 4,15 | — | 100 | 5,5 | 1,67 | | | | | | 19,50 | 100 | 22,0 | 3,67 | | | | | |
| 4,20 | 80 | 100 | 5,5 | 1,63 | | | | | | 20,00 | 100 u.120 | 22,0 | 3,23 | | | | | |
| 4,25 | — | 100 | 5,5 | 1,58 | | | | | | | | | | | | | | |
| 4,30 | 80 | 100 | 5,5 | 1,54 | | | | | | | | | | | | | | |
| 4,35 | — | — | 5,5 | 1,50 | | | | | | | | | | | | | | |
| 4,40 | 80 | 100 | 5,5 | 1,45 | | | | | | | | | | | | | | |
| 4,45 | — | 100 | 5,5 | 1,41 | | | | | | | | | | | | | | |
| 4,50 | 80 | 100 | 6,0 | 1,80 | | | | | | | | | | | | | | |
| 4,55 | — | 100 | 6,0 | 1,76 | | | | | | | | | | | | | | |
| 4,60 | 80 | 100 | 6,0 | 1,71 | | | | | | | | | | | | | | |
| 4,65 | — | 100 | 6,0 | 1,67 | | | | | | | | | | | | | | |
| 4,70 | 80 | 100 | 6,0 | 1,63 | | | | | | | | | | | | | | |
| 4,75 | — | — | 6,0 | 1,58 | | | | | | | | | | | | | | |
| 4,80 | 80 | 100 | 6,0 | 1,54 | | | | | | | | | | | | | | |
| 4,85 | — | — | 6,0 | 1,50 | | | | | | | | | | | | | | |
| 4,90 | 80 | 100 | 6,0 | 1,45 | | | | | | | | | | | | | | |
| 4,95 | — | — | 6,0 | 1,41 | | | | | | | | | | | | | | |
| 5,00 | 80 | 100 u.120 | 6,5 | 1,80 | | | | | | | | | | | | | | |
| 5,05 | — | — | 6,5 | 1,76 | | | | | | | | | | | | | | |

CE & @ ä Å å ã } å ã { Å
 Ö å ã ã > & • ö Å Å ã ã Å
 Ö å * ^ ^ c c Å Ü & @ ^ ã • c {] ^
 • ä å Å ã !: ã ä Å Å ã ã ã
 Ö å @ Å ^ c || å ^ ä] ä | Å Ü ã Í D

Formstempel mit gestauchtem Kopf

Forming punch with forged head

Form DA
type DA



Werkstoff: HSS

Material: HSS

Wir fertigen auch Quadratlochstempel mit rundem Kopf.

We also manufacture square hole punches with round head.

| a ±0.01 | b ±0.01 | h +0.2 | l ₁ +0.5 |
|------------|------------|-----------|------------------------|
| 2 | | 1.37 | |
| 2.1 | | 1.45 | |
| 2.2 | | 1.37 | |
| 2.3 | | 1.54 | |
| 2.4 | | 1.45 | |
| 2.5 | | 1.37 | |
| 2.6 | | 1.71 | |
| 2.7 | | 1.63 | |
| 2.8 | | 1.54 | |
| 2.9 | | 1.45 | |
| 3 | | 1.80 | |
| 3.1 | | 1.71 | |
| 3.2 | | 1.63 | |
| 3.3 | | 1.54 | |
| 3.4 | | 1.45 | |
| 3.5 | | 1.80 | |
| 3.6 | | 1.71 | |
| 3.7 | | 1.63 | |
| 3.8 | | 1.54 | |
| 3.9 | | 1.45 | |
| 4 | | 1.80 | |
| 4.1 | | 1.71 | |
| 4.2 | | 1.63 | |
| 4.3 | | 1.54 | |
| 4.4 | | 1.45 | |

| a ±0.01 | b ±0.01 | h +0.2 | l ₁ +0.5 |
|------------|------------|-----------|------------------------|
| 4.5 | | 1.80 | |
| 4.6 | | 1.71 | |
| 4.7 | | 1.63 | |
| 4.8 | | 1.54 | |
| 4.9 | | 1.45 | |
| 5 | | 1.80 | |
| 5.1 | | 1.71 | |
| 5.2 | | 1.63 | |
| 5.3 | | 1.54 | |
| 5.4 | | 1.45 | |
| 5.5 | | 1.80 | |
| 5.6 | | 1.71 | |
| 5.7 | | 1.63 | |
| 5.8 | | 1.54 | |
| 5.9 | | 1.45 | |
| 6 | | 2.23 | |
| 6.5 | | 3.17 | |
| 7 | | 2.73 | |
| 7.5 | | 3.17 | |
| 8 | | 2.73 | |
| 8.5 | | 3.17 | |
| 9 | | 2.73 | |
| 10 | | 2.73 | |
| 11 | | 2.73 | |
| 12 | | 2.73 | |

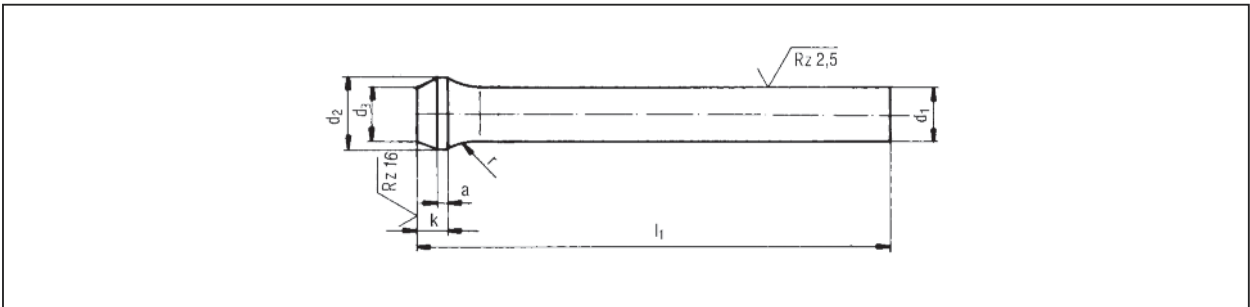
Formschneidstempel werden nicht lagermäßig geführt, können jedoch kurzfristig hergestellt werden.

Forming punches are not ex-stock; they can be produced at short notice.

Schneidstempel mit Posaunenmundstück

Bottle-neck punch

Form D
type D



Artikel-Nr.: 275 .
Die 4. Stelle der Art. Nr. bezeichnet den Werkstoff siehe Seite 2

Item no.: 275 .
The 4th digit of the item no. indicates the material, see page 2

Werkstoffe: HSS
Weitere Werkstoffe auf Anfrage erhältlich.

Materials: HSS
For other materials see page 2

Härte: Schaft: HRC 64 ± 2
Kopf: HRC 50 ± 5

Hardness: Shaft: HRC 64 ± 2
Head: HRC 50 ± 5

| d ₁ h6 | Stufung Gradation d ₁ | l ₁ + 0,5 0 | d ₂ 0 - 0,2 | k + | a | d ₃ | r 0 - 0,2 |
|----------------------|--|-----------------------------------|------------------------------|--------|-----|----------------------|-----------------|
| 2,0 | 0,1 | 71/ 80/ 100/ 110/ 120 | 3,0 | 3,0 | 1,0 | d ₁ ± 0,1 | 3,5 |
| ≥ 2,1 | | | 3,2 | | | | 5,0 |
| ≥ 2,3 | | | 3,5 | | | | 6,5 |
| ≥ 2,6 | | | 4,0 | | | | 8,0 |
| ≥ 3,0 | | | 4,5 | | | | 10,0 |
| ≥ 3,5 | | | 5,0 | | | | |
| ≥ 4,0 | | | 5,5 | | | | |
| ≥ 4,5 | | | 6,0 | | | | |
| ≥ 5,0 | | | 7,0 | | | | |
| ≥ 5,5 | | | 8,0 | 4,0 | 1,5 | | |
| 6,0 | 0,5 | | 9,0 | | | | 12,0 |
| ≥ 6,5 | | | 10,0 | | | | |
| ≥ 7,5 | | | 11,0 | | | | |

| d ₁ h6 | Stufung Gradation d ₁ | l ₁ + 0,5 0 | d ₂ 0 - 0,2 | k + | a | d ₃ | r 0 - 0,2 | | | | | |
|----------------------|--|------------------------------|-----------------------------------|--------|-----|----------------------|-----------------|------|------|--|--|--|
| ≥ 8,5 | 0,5 | | 13,0 | 4,0 | 1,5 | d ₁ ± 0,2 | 15,0 | | | | | |
| 9,5 | | | 14,0 | | | | | | | | | |
| 10,0 | | | 15,0 | | | | | | | | | |
| 10,5 | | | 71/ 80/ 100/ 110/ 120 | | | | | 16,0 | | | | |
| 11,0 | | | | | | | | 17,0 | | | | |
| 11,5 | | | | | | | | 18,0 | | | | |
| 12,0 | | | | | | | | 19,0 | | | | |
| 13,0 | | | | | | | | 20,0 | | | | |
| 14,0 | | | 1,0 | | | | | | 21,0 | | | |
| 14,5 | | | | | | | | | 19,0 | | | |
| 15,0 | 20,0 | | | | | | | | | | | |
| 16,0 | 21,0 | | | | | | | | | | | |
| 17,0 | 22,0 | | | | | | | | | | | |
| 18,0 | 23,0 | | | | | | | | | | | |
| 19,0 | 25,0 | | | | | | | | | | | |
| 20,0 | 27,0 | | | | | | | | | | | |
| 22,0 | 30,0 | | | | | | | | | | | |
| 25,0 | | | | | | | | | | | | |

Die angegebenen Längen l₁ sind nicht in allen Durchmessern verfügbar.

The lengths are not available in all diameters.

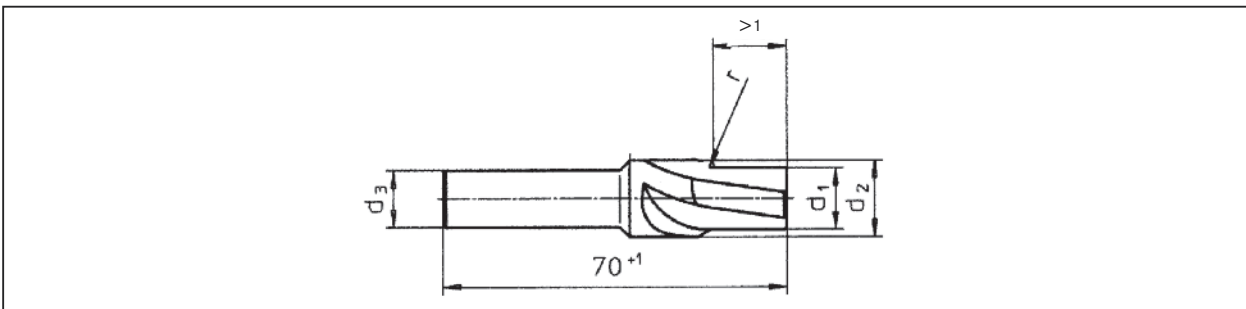
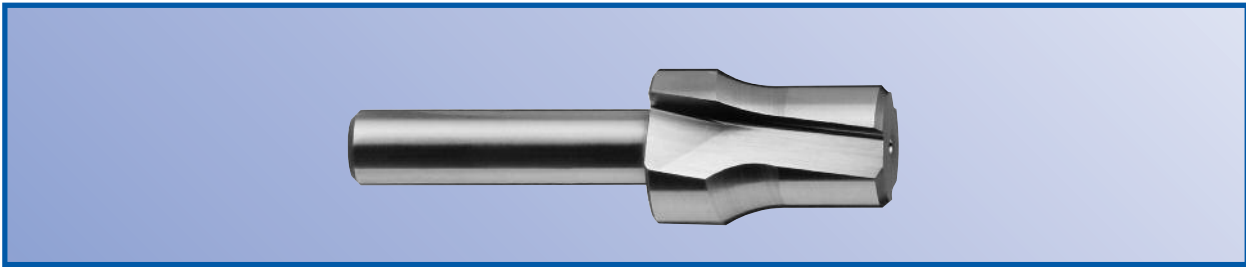
© SEITZ NORMTEILE

Alle Rechte vorbehalten. Nachdruck, Vervielfältigung und Verbreitung, auch auszugsweise, ist ohne schriftliche Genehmigung der SEITZ NORMTEILE GmbH.

Zapfensenker mit drei Schneiden

Countersink tool with three side-trimmer

für Schneidstempel mit Posaunenhals
for bottle-neck punch



Artikel-Nr.: 2793 . . D

Ausführung: Gehärtet, angelassen,
und geschliffen

Werkstoff: HSS

Item no.: 2793 . . D

Version: Hardened, tempered,
and ground finished

Material: HSS

| d ₁ | d ₂ | d ₃ | r | l ₃ |
|----------------|----------------|------------------|------|----------------|
| f7 | h8 | h11 | +0,2 | |
| ≥ 2,0 | 3,3 | = d ₂ | 3,5 | 5,0 |
| ≥ 2,1 | 3,5 | | 5,0 | |
| ≥ 2,3 | 3,8 | | 6,5 | |
| ≥ 2,6 | 4,3 | | 7,0 | 8,0 |
| ≥ 3,0 | 4,9 | | | |
| ≥ 3,5 | 5,4 | | 10,0 | 12,0 |
| ≥ 4,0 | 5,9 | | | |
| ≥ 4,5 | 6,4 | | | |
| ≥ 5,0 | 7,4 | | | |
| ≥ 5,5 | 8,5 | | | |
| ≥ 6,0 | 9,5 | 10 | 12,0 | |
| ≥ 6,5 | 10,5 | | | |
| ≥ 7,5 | 11,5 | | | |

| d ₁ | d ₂ | d ₃ | r | l ₃ |
|----------------|----------------|----------------|------|----------------|
| f7 | h8 | h11 | +0,2 | |
| ≥ 8,5 | 13,5 | 10 | 15,0 | 12,0 |
| ≥ 9,5 | 14,5 | | | |
| ≥ 10,5 | 15,5 | | | |
| ≥ 11,5 | 16,5 | | | 15,0 |
| ≥ 12,5 | 17,5 | | | |
| ≥ 13,5 | 18,5 | | | |
| ≥ 14,5 | 19,5 | | | |
| ≥ 15,5 | 20,5 | | | |
| ≥ 16,5 | 21,5 | | | |
| ≥ 17,5 | 22,5 | | | |
| ≥ 18,5 | 23,5 | 16 | 15,0 | |
| ≥ 19,5...20,0 | 25,5 | | | |

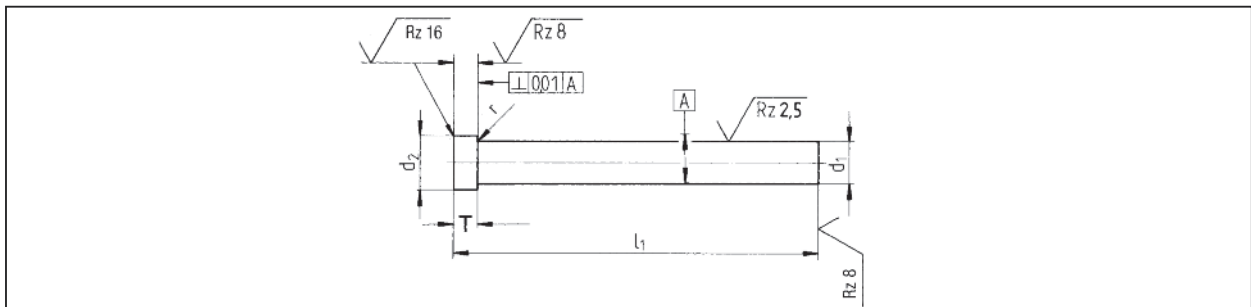
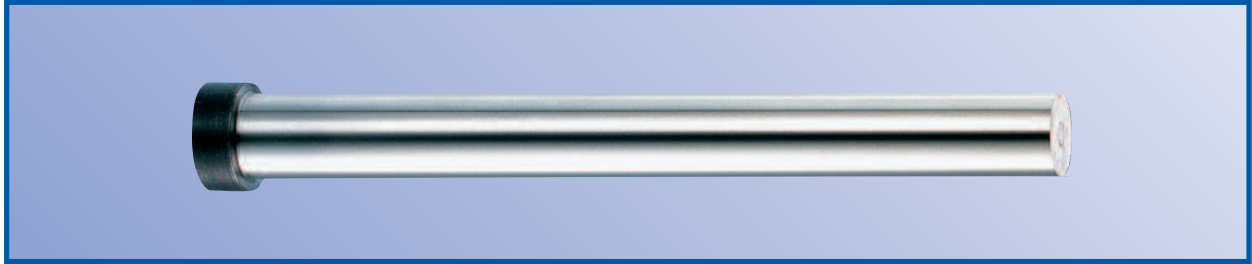
In begrenztem Umfang sind auch Zapfensenker mit einer Schneide
ab Lager lieferbar.

One-side-trimmer are also available in limited numbers from stock.

Aufnahmeringe für Posaunenhalsstempel
sind auf Anfrage lieferbar.

Schneidstempel mit zylindrischem Kopf Punch with cylindrical head

ähnlich DIN ISO 8020 Form A
similar to DIN ISO 8020 standard type A



Artikel-Nr.: 211 .
Die 4. Stelle der Art. Nr.
bezeichnet den Werkstoff siehe Seite 2

Item no.: 211 .
The 4th digit of the item no.
indicates the material, see page 2

Werkstoffe: HWS, HSS, Vanadis 23, CPM 10V
Weitere Werkstoffe auf Anfrage erhältlich.

Materials: HWS, HSS, Vanadis 23, CPM 10V
For other materials see page 2

| d ₁ | d ₂ | T | r | l ₁ ^{+0,5} / _{+0,2} | | | | | | | |
|----------------|----------------|--------------|-----------|--|----|----|----|-----|-----|-----|---|
| | | | | 63 | 71 | 80 | 90 | 100 | 120 | 130 | |
| m 5 | 0 -0,15 | +0,2 +0,1 | +0,1 0 | | | | | | | | |
| 3* | 5 | 3 | 0,2 | ●* | ●* | ●* | ● | ● | | | |
| 4* | 6 | | | ●* | ●* | ●* | ● | ● | ● | | |
| 5 | 8 | 5 | 0,3 | ● | ● | ● | ● | ● | ● | | |
| 6 | 9 | | | ● | ● | ● | ● | ● | ● | | |
| 8 | 11 | | | ● | ● | ● | ● | ● | ● | ● | |
| 10 | 13 | | | ● | ● | ● | ● | ● | ● | ● | ● |
| 13 | 16 | | | ● | ● | ● | ● | ● | ● | ● | |
| 16 | 19 | | | ● | ● | ● | ● | ● | ● | ● | |
| 20 | 23 | | 0,4 | | ● | ● | ● | ● | ● | | |
| 25 | 28 | | | | ● | ● | ● | ● | ● | | |
| 32 | 35 | | | | | ● | ● | ● | ● | | |
| | | | | | | | ● | ● | ● | ● | |

● = Vorzugsgrößen

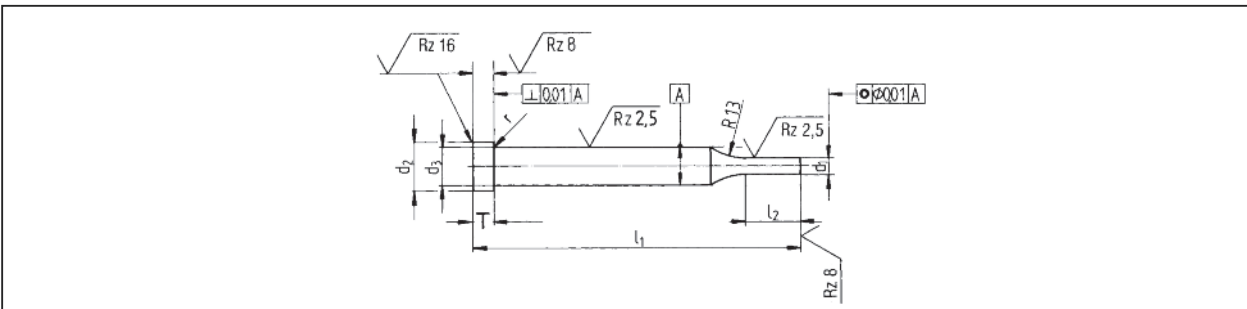
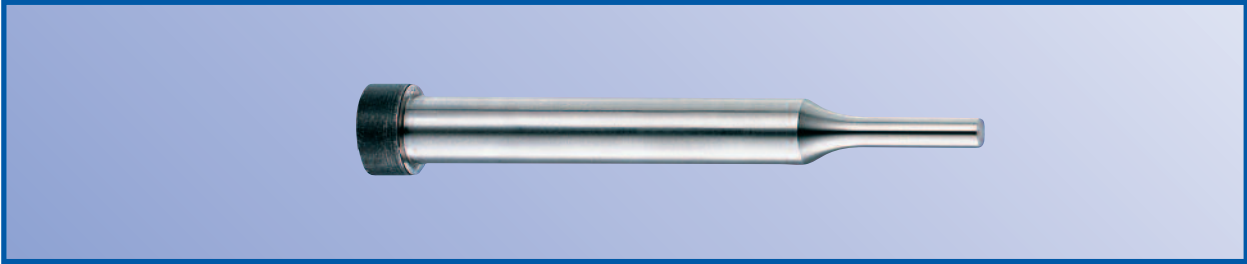
* Auf Wunsch in HSS mit Kopfhöhe 5 mm lieferbar.

● = Preferred dimensions

* If desired available in HSS with headroom T = 5 mm.

Schneidstempel mit zylindrischem Kopf Punch with cylindrical head

mit rund abgesetztem Schaft ähnlich DIN ISO 8020, Form B
with round stepped point similar to DIN ISO 8020 standard type B



Artikel-Nr.: 215... Ansatzlänge $l_2 = 10$ mm
213... Ansatzlänge $l_2 = 13$ mm
214... Ansatzlänge $l_2 = 17$ mm
Die 4. Stelle der Art. Nr. bezeichnet den Werkstoff siehe Seite 2

Item no.: 215... base length $l_2 = 10$ mm
213... base length $l_2 = 13$ mm
214... base length $l_2 = 17$ mm
The 4th digit of the item no. indicates the material, see page 1.01

Werkstoffe: HWS, HSS, Vanadis 23,
Weitere Werkstoffe auf Anfrage erhältlich.

Materials: HWS, HSS, Vanadis 23
For other materials see page 2

| d ₁ j6 | Stufung Gradation d ₁ | d ₂ 0 -0,15 | d ₃ m 5 | T +0,2 +0,1 | r +0,1 0 | l ₂ +0,5 0 | l ₁ +0,5 +0,2 | | | |
|----------------------|--|------------------------------|-----------------------|-------------------|----------------|-----------------------------|--------------------------------|----|----|-----|
| | | | | | | | 71 | 80 | 90 | 100 |
| 0,8– 2,9 | 0,1 | 5 | 3 | 3 | 0,2 | 10 | ● | ● | | |
| 1,0– 3,9 | | 6 | 4 | | | | ● | ● | | |
| 1,2– 4,9 | | 8 | 5 | | | | ● | ● | | |
| 1,6– 5,9 | | 9 | 6 | 5 | 0,3 | 13 | ● | ● | ● | ● |
| 2,5– 7,9 | | 11 | 8 | | | | ● | ● | ● | ● |
| 4,0– 9,9 | | 13 | 10 | | | | ● | ● | ● | ● |
| 5,0– 12,9 | | 16 | 13 | | | | ● | ● | ● | ● |
| 8,0– 15,9 | 19 | 16 | 0,4 | 17 | ● | ● | ● | ● | | |
| 12,0– 19,5 | 23 | 20 | | | | ● | ● | ● | | |
| 16,5– 24,5 | 28 | 25 | | | | ● | ● | ● | | |

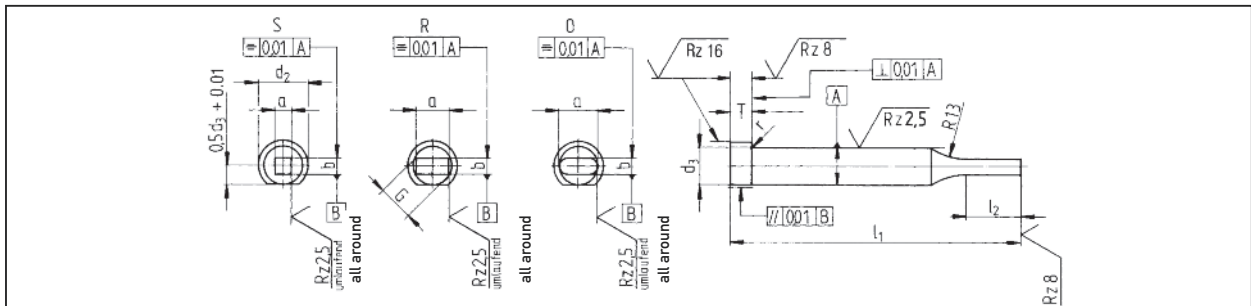
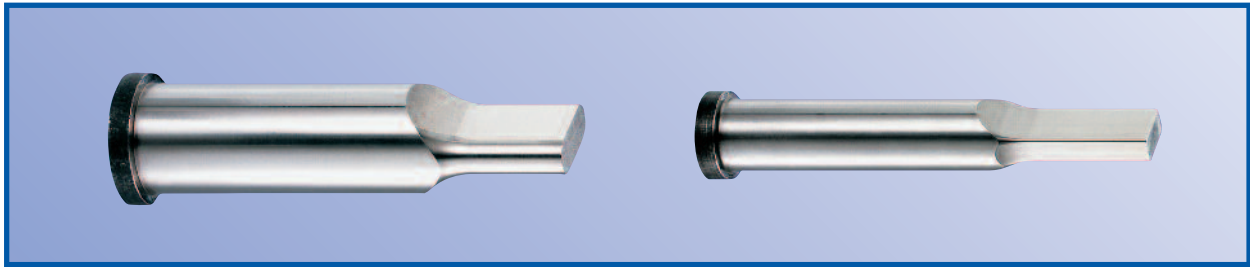
● = Vorzugsgrößen

● = Preferred dimensions

© SEITZ NORMTEILE

Schneidstempel mit zylindrischem Kopf Punch with cylindrical head

mit abgesetztem Schaft, quadratisch, rechteckig und langrund ähnlich DIN ISO 8020, Form C
with stepped square, rectangular and round elongated point similar to DIN ISO 8020 standard type C



Form CS quadratisch abgesetzter Schneidschaft

Form CR rechteckig abgesetzter Schneidschaft

Form CO langrund abgesetzter Schneidschaft

Type CS square stepped shaft

Type CR rectangular stepped shaft

Type CO round elongated stepped shaft

Werkstoffe: HWS, HSS, Vanadis 23,
Weitere Werkstoffe auf Anfrage erhältlich.
Siehe Seite 2

Materials: HWS, HSS, Vanadis 23
For other materials see page 2

Ausführung und Härte: Die Sicherungsfläche befindet sich immer an der längsten Formseite.
Auf Wunsch fertigen wir die Sicherungsfläche an der kurzen Formseite.

Version and hardness: The locating flat can always be found on the longest side.
If desired, we can modify the tool so that the locating flat is on the shortest side.

| a | b | d ₂ | d ₃ | T | r | l ₂ | l ₁ | | | |
|--|--------|----------------|----------------|---|------------|--|----------------|----|----|-----|
| | | | | | | | 71 | 80 | 90 | 100 |
| ± 0,01 | ± 0,01 | 0 - 0,15 | m5 | + 0,2 + 0,1 | + 0,1 0 | + 0,5 0 | + 0,5 + 0,2 | | | |
| Nach Wahl des Bestellers, G = max d ₃ At customers request, G = max d ₃ | | 6 | 4 | 3 | 0,2 | Vorzugsmaße = 10,13, 17; Andere Längen möglich | ● | ● | | |
| | | 8 | 5 | | | | ● | ● | | |
| | | 9 | 6 | | | | ● | ● | ● | ● |
| | | 11 | 8 | | | | ● | ● | ● | ● |
| | | 13 | 10 | 5 | 0,3 | ● | ● | ● | ● | |
| | | 16 | 13 | | | ● | ● | ● | ● | |
| | | 19 | 16 | | | ● | ● | ● | ● | |
| | | 23 | 20 | | | ● | ● | ● | ● | |
| 28 | 25 | | 0,4 | Preferred sizes = 10,13, 17; Other lengths possible | | ● | ● | ● | | |

● = Vorzugsgrößen

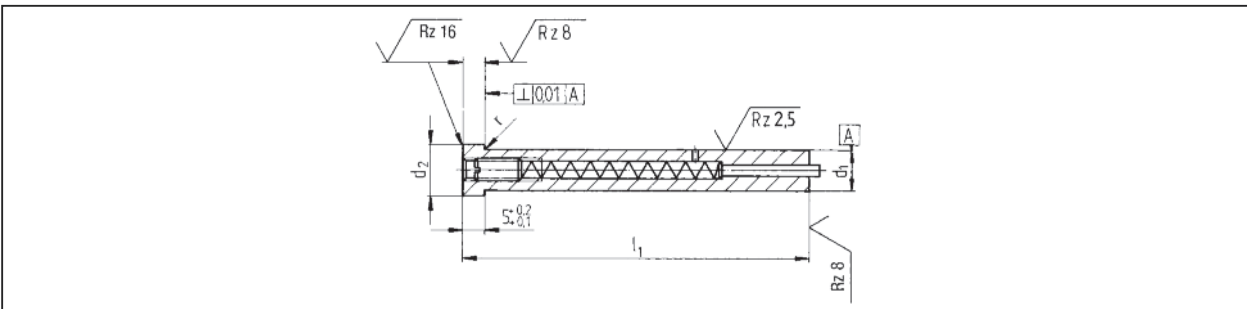
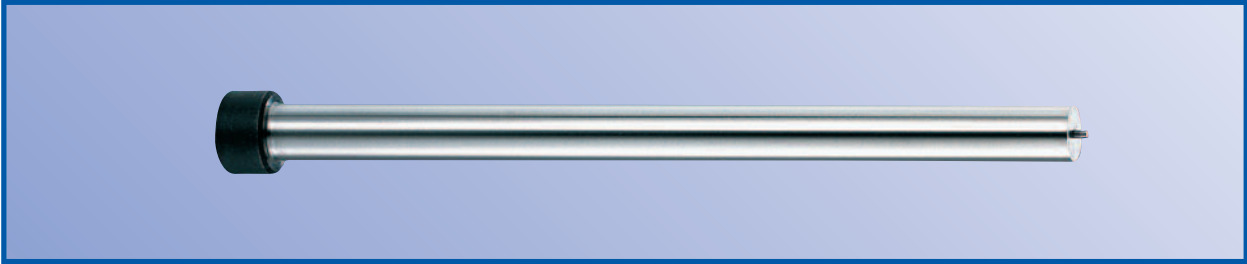
● = Preferred dimensions

Für die jeweiligen Formstempel führen wir ebenfalls die passenden Schneidbuchs in unserem Fertigungsprogramm.
Weitere Ansatzformen s. nächste Seite.

We also have the respective dies for each of the punches in our product range.
For further base types, see next page.

Schneidstempel mit zylindrischem Kopf Punch with cylindrical head

mit federndem Abdrückstift ähnlich DIN ISO 8020, Form E
and spring loaded ejector pin similar to DIN ISO 8020 standard type E



Artikel-Nr.: 235 .
Die 4. Stelle der Art. Nr.
bezeichnet den Werkstoff siehe Seite 2

Item no.: 235 .
The 4th digit of the item no.
indicates the material, see page 2

Werkstoffe: HSS und CPM 10 V
Weitere Werkstoffe auf Anfrage erhältlich.

Materials: HSS and CPM 10 V
For other materials see page 2

Durchmesser 6-16 auch ohne Querbohrung verfügbar.

Diameter 6-16 also available without cross borehole.

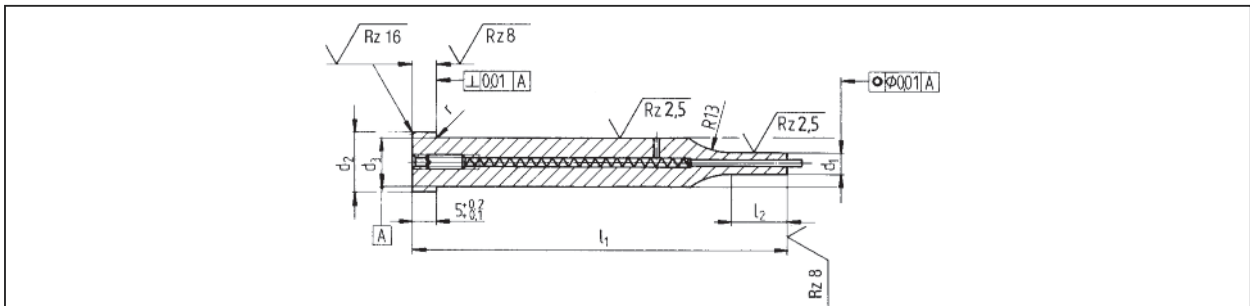
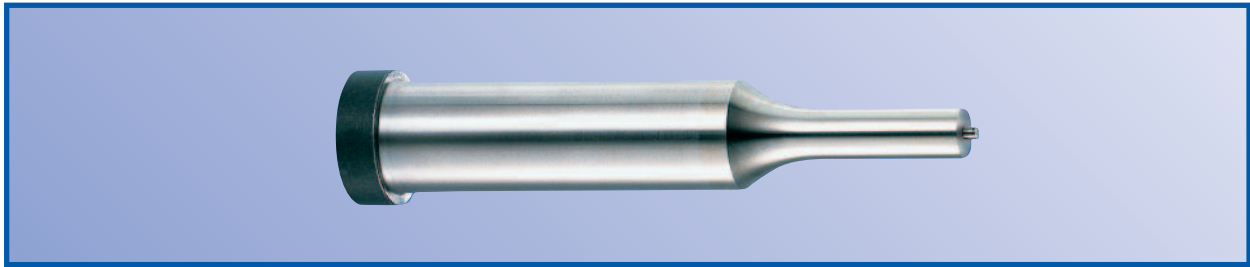
| d ₁ | d ₂ | r | l ₁ | | | | |
|----------------|----------------|-----------|----------------|----|--------------|-----|-----|
| | | | 63/71 | 80 | 90 | 100 | 120 |
| m5 | 0 -0,15 | +0,1 0 | | | +0,5 +0,2 | | |
| 5 | 8 | 0,3 | ● | ● | ● | ● | |
| 6 | 9 | | ● | ● | ● | ● | ● |
| 8 | 11 | | ● | ● | ● | ● | ● |
| 10 | 13 | | ● | ● | ● | ● | ● |
| 13 | 16 | 0,4 | ● | ● | ● | ● | ● |
| 16 | 19 | | ● | ● | ● | ● | |
| 20 | 23 | | ● | ● | ● | ● | |
| 25 | 28 | | ● | ● | ● | ● | |

● = Vorzugsgrößen

● = Preferred dimensions

Schneidstempel mit zylindrischem Kopf Punch with cylindrical head

mit abgesetztem Schaft und mit federndem Abdrückstift ähnlich DIN ISO 8020, Form F
with stepped shaft and spring loaded ejector pin similar to DIN ISO 8020 standard type F



Artikel-Nr.: 217 ... Ansatzlänge $l_2 = 10$ mm
218 ... Ansatzlänge $l_2 = 13$ mm
219 ... Ansatzlänge $l_2 = 17$ mm
Die 4. Stelle der Art. Nr. bezeichnet den Werkstoff siehe Seite 2

Item no.: 217 ... base length $l_2 = 10$ mm
218 ... base length $l_2 = 13$ mm
219 ... base length $l_2 = 17$ mm
The 4th digit of the item no. indicates the material, see page 2

Werkstoffe: HSS und CPM 10 V
Weitere Werkstoffe auf Anfrage erhältlich.
Siehe Seite 5.09–5.10

Materials: HSS and CPM 10 V
For other materials see page 5.09–5.10

Durchmesser 6-16 auch ohne Querbohrung verfügbar.

Diameter 6-16 also available without cross borehole.

| d ₁ j 6 | Stufung Gradation d ₁ | d ₂ 0 - 0,15 | d ₃ m 5 | r + 0,1 0 | l ₂ + 0,5 0 | l ₁ + 0,5 + 0,2 | | | |
|-----------------------|--|-------------------------------|-----------------------|-----------------|------------------------------|----------------------------------|----|----|-----|
| | | | | | | 71 | 80 | 90 | 100 |
| 1,6 – 5,9 | 0,1 | 9 | 6 | 0,3 | 10 | ● | ● | ● | ● |
| 2,5 – 7,9 | | 11 | 8 | | 13 | ● | ● | ● | ● |
| 4,0 – 9,9 | | 13 | 10 | | 17 | ● | ● | ● | ● |
| 5,0 – 12,9 | | 16 | 13 | ● | | ● | ● | ● | |
| 8,0 – 15,9 | | 0,5 | 19 | 16 | 0,4 | ● | ● | ● | ● |
| 12,0 – 19,5 | 23 | | 20 | ● | ● | ● | ● | | |
| 16,5 – 24,5 | 28 | | 25 | ● | ● | ● | ● | | |

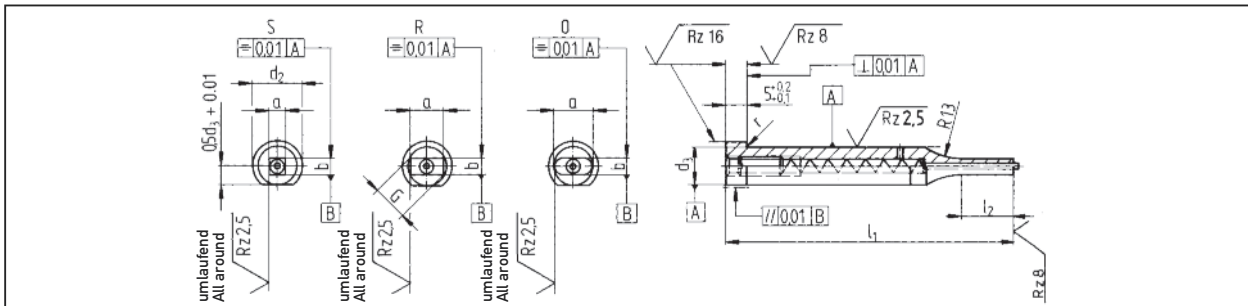
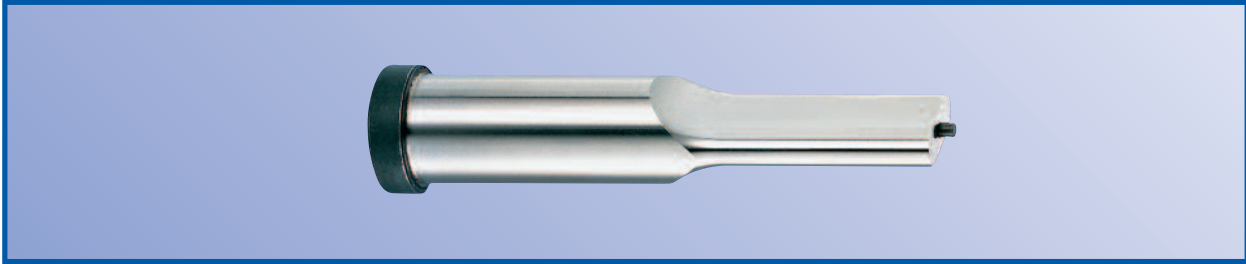
● = Vorzugsgrößen

● = Preferred dimensions

© SEITZ NORMTEILE

Schneidstempel mit zylindrischem Kopf Punch with cylindrical head

mit abgesetztem Schaft, quadratisch, rechteckig, langrund mit federndem Abdrückstift ähnlich DIN ISO 8020, Form G
with stepped square, rectangular, round elongated point with spring loaded ejector similar to DIN ISO 8020 standard type G



Form GS quadratisch abgesetzter Schneidschaft, mit Abdrückstift

Type GS square stepped point with ejector pin

Form GR rechteckig abgesetzter Schneidschaft, mit Abdrückstift

Type GR rectangular stepped point with ejector pin

Form GO langrund abgesetzter Schneidschaft, mit Abdrückstift

Type GO round elongated stepped point with ejector pin

Werkstoffe: HSS und CPM 10 V
Weitere Werkstoffe auf Anfrage erhältlich.

Materials: HSS and CPM 10 V
For other materials see page 2

| a | b | d ₂ | d ₃ | r | l ₂ | l ₁ | | |
|---|--------|----------------|----------------|--|----------------|----------------|----|----|
| ± 0,01 | ± 0,01 | 0 - 0,15 | m 5 | + 0,1 0 | + 0,5 0 | + 0,5 + 0,2 | | |
| | | | | | | 71 | 80 | 90 |
| Nach Wahl des Bestellers, G = max d ₃ At customer's request, G = max d ₃ | 9 | 6 | 0,3 | Vorzugs- maße = 10,13, 17; Andere Längen möglich Preferred sizes = 10,13, 17; Other lengths possible | ● | ● | ● | |
| | 11 | 8 | | | ● | ● | ● | |
| | 13 | 10 | | | ● | ● | ● | |
| | 16 | 13 | 0,4 | | ● | ● | ● | |
| | 19 | 16 | | | ● | ● | ● | |
| | 23 | 20 | | | | ● | ● | |
| | 28 | 25 | | | | ● | ● | |

● = Vorzugsgrößen

● = Preferred dimensions

Für die jeweiligen Formstempel führen wir ebenfalls die passenden Schneidbuchsen in unserem Fertigungsprogramm

We also have the respective dies for each of the punches in our product range

ÓĒ*^•^c ĉ^ÁŮ&@^ã•ĉ{]^|ÄÖ^•ĉ||à^ã] ã|^

Ů^ÁŮ&@^ã•ĉ{]^|Äĕ•Á}•^|^ { Äŝa~|^| |[*!æ { Á!@æĉ} ÁŮaÄĕ &@
 \^! : ~ãĉ^Á ã^Á }ã^ { ÄŮ•&@ã-Äæ&@Y~ }•&@

Óäc^Á^à^} ÁŮaÄ^ã^!Á^•ĉ||^} * Á ã Á |* cæ K

V^] ^} à^: ^æ@~ } * ÄÄ
 Ů•æ ã^!&@ ^••^! ÁŮ&@æã^!&@ ^••^! ÄÖ^•æ dè} *^ ÁŮ•æ |è} *^

Óäc^Á^! { •&@^ã•ĉ{]^|} Ääc^ÁŮ\ã: ^Á@: ~>*^} Ä

Ù[] ã^!|è} *^}

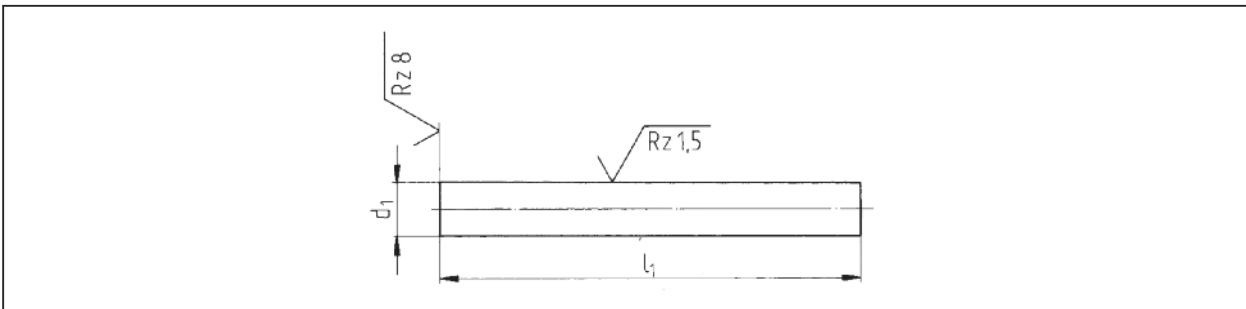
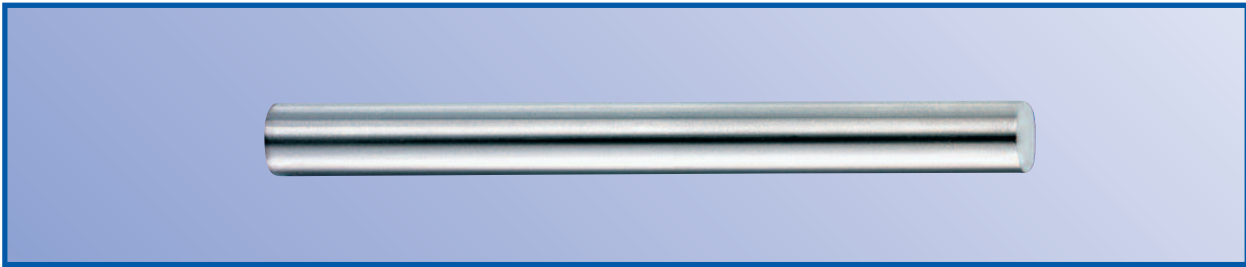
Y äÁ>|^} Á^! : ~ãĉ^ÁŮcæ ãæã|è} *^} Äĕ-@^Á~ }•&@è} *^Ä



Schneidstempel ohne Kopf

Punch without head

nach der bisherigen DIN 9861, Form B
to previous DIN 9861 standard, type B



Artikel-Nr.: 112 .
Die 4. Stelle der Art. Nr.
bezeichnet den Werkstoff siehe Seite 2

Item no.: 112 .
The 4th digit of the item no.
indicates the material, see page 2

Werkstoffe: HSS, HWS*
Weitere Werkstoffe auf Anfrage erhältlich.
Siehe Seite 2

Materials: HSS, HWS*
For other materials see page 2

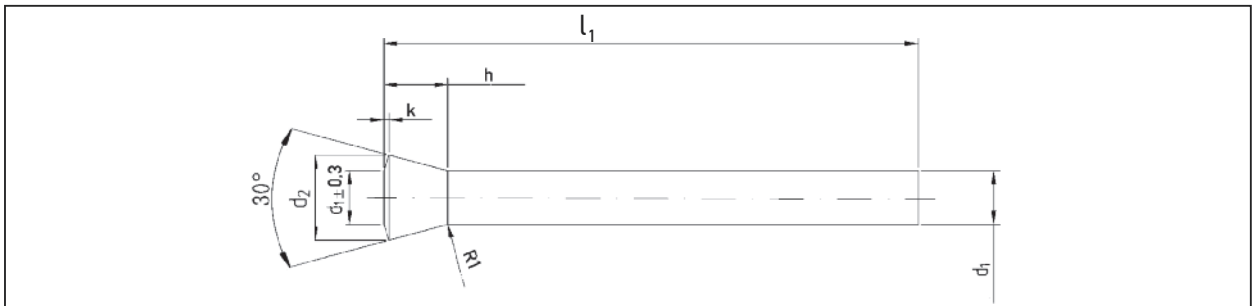
* In begrenztem Umfang in B-HWS ab Lager lieferbar.

* Available in B-HWS only while stocks last.

| d_1 h6 | Stufung Gradation mm | l_1 + 2,5 0 |
|-------------|----------------------------|--|
| 0,5 – 0,95 | 0,05 | Vorzugslänge $l_1 = 71$ In begrenztem Umfang sind auch die Längen $l_1 = 60, 80, 90$ und 100 ab Lager lieferbar. |
| 1,0 – 6,0 | 0,1 | |
| 6,0 – 10,0 | 0,5 | Preferred length $l_1 = 71$ The following lengths are also available in limited numbers from stock $l_1 = 60, 80, 90$ and 100. |

Schneidstempel mit 30°-Kopf Punch with 30°-head

From D
Type D



Artikel-Nr.: 1353 .

Item no.: 1353 .

Werkstoff: HSS
Weitere Werkstoffe auf Anfrage erhältlich.
Siehe Seite 2

Material: HSS
For other materials see page 2

Härte: Schaft: Werkstoff HSS HRC 58 + 2
Kopf: Werkstoff HSS HRC 52 ± 5

Hardness: Shaft: Material HSS HRC 58 + 2
Head: Material HSS HRC 52 ± 5

| d ₁ h6 | d ₂ | h + 0,2 | k | l ₁ + 1 | |
|----------------------|----------------|------------|-----|-----------------------|-----|
| | | | | 100 | 120 |
| 5 | 8,48 | 7,5 | 1 | ● | ● |
| 5,5 | 8,98 | 7,5 | 1 | ● | ● |
| 6 | 9,75 | 8 | 1 | ● | ● |
| 8 | 12,8 | 10 | 1 | ● | ● |
| 9 | 14,4 | 11 | 1 | ● | ● |
| 10 | 15,9 | 12 | 1 | ● | ● |
| 12 | 18,7 | 14 | 1,5 | | ● |

● = Vorzugsgrößen

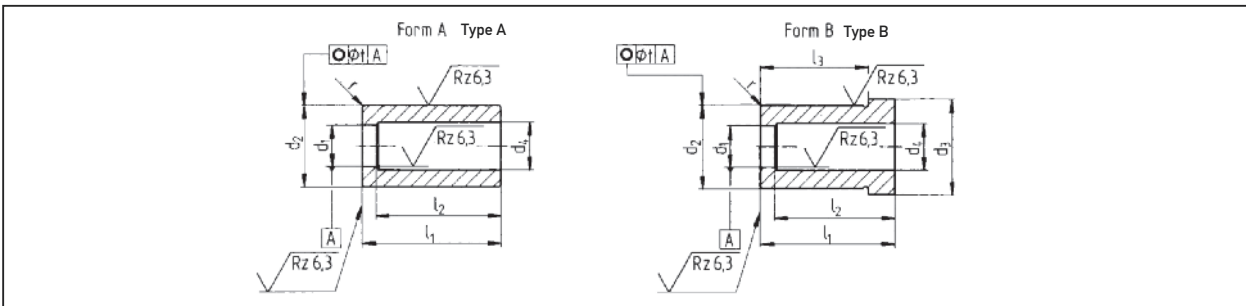
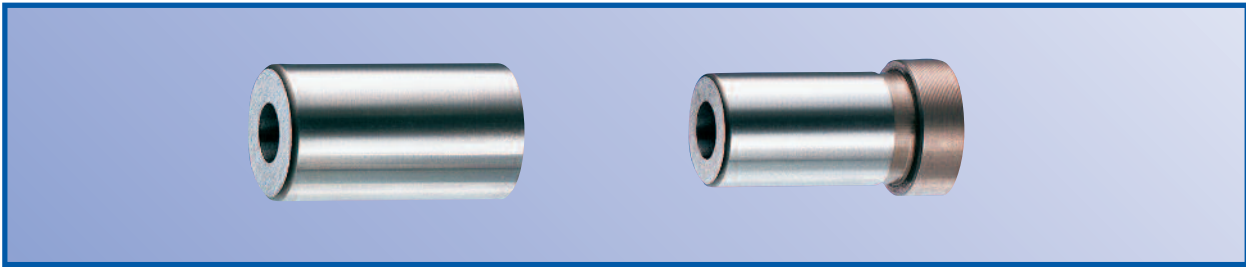
● = Preferred dimensions

CE A ~ } • & @ ß & @ ß ã Á ã ! } ã { Á ã ! > & • ã Á ã ! ã ã Á

CE A ~ } • & @ ß & @ ß ã Á ã ! } ã { Á ã ! > & • ã Á ã ! ã ã Á

Schneidbuchsen Die

nach DIN 9845, Form A – ohne Bund · Form B – mit Bund
acc. to DIN 9845, type A – headless · type B – with head



Artikel-Nr.: Form A: 5113 .
Form B: 5123 .

Item no.: Type A: 5113 .
Type B: 5123 .

Ausführung: **Form A:** mit zylindrischem Außendurchmesser, gehärtet, angelassen und geschliffen

Version: **Type A:** with cylindrical external diameter, hardened, tempered and ground finished

Form B: mit Bundansatz gehärtet, angelassen und geschliffen.

Type B: with head, hardened, tempered and ground finished.

Bohrung d_1 ist in Richtung d_4 kegelig 30' hinterschleifen.

Borehole dia. d_1 will be produced with a cone of 30' to dia. d_4 .

Werkstoff: HSS

Material: HSS

Hinweis: Bei Zuordnung von Schneidstempeln und Schneidbuchsen Schneidspalt beachten.

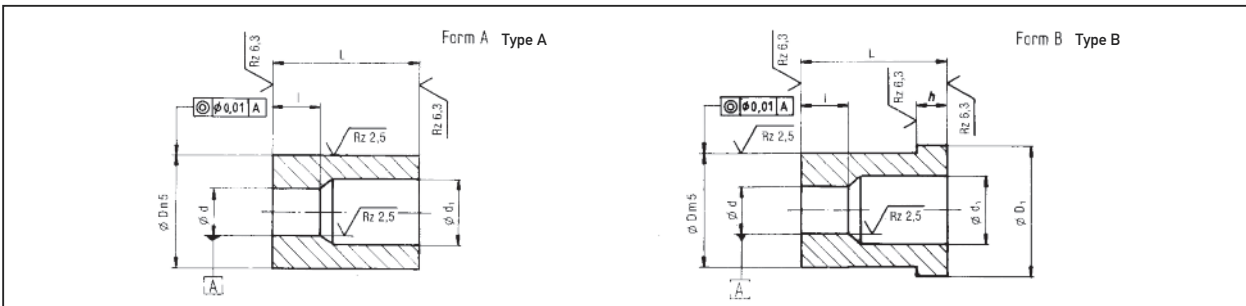
Note: Consider die clearance for the assignment of piercing punches and die bushes.

| d_1 H 8 | Stufung Gradation | d_2 Type A: n6 Type B: k6 | d_3 | d_4 $\pm 0,1$ | Kurze Ausführung Short version | | | Lange Ausführung Long version | | | r | t |
|--------------|----------------------|-----------------------------------|-------|--------------------|-----------------------------------|-------|-------|----------------------------------|-------|-------|------|------|
| | | | | | l_1 + 0,5 0 | l_2 | l_3 | l_1 + 0,5 0 | l_2 | l_3 | | |
| 1,0 | 0,1 | 5 | 7 | $d_1 + 0,3$ | 20 | 18 | 16 | - | - | - | 0,3 | 0,01 |
| 1,1–2,0 | | 6 | 8 | $d_1 + 0,3$ | | | | 17 | 0,3 | | | |
| 2,1–3,0 | | 7 | 9 | $d_1 + 0,5$ | | | | 17 | 25 | 0,4 | | |
| 3,1–4,0 | | 8 | 10 | $d_1 + 0,5$ | | | | 17 | 0,4 | | | |
| 4,1–5,0 | | 10 | 12 | $d_1 + 0,7$ | | | | 16 | 0,4 | | | |
| 5,1–6,0 | | 12 | 14 | $d_1 + 0,7$ | | | | 16 | 28 | 24 | 24 | 0,6 |
| 6,1–8,0 | | 15 | 17 | $d_1 + 0,7$ | | | | 16 | | | | 0,8 |
| 8,1–10,0 | | 18 | 20 | $d_1 + 1$ | | | | 16 | 23 | 0,8 | 0,02 | |
| 10,1–12,0 | | 22 | 24 | $d_1 + 1$ | | | | 15 | | | | |
| 12,1–15,0 | | 26 | 28 | $d_1 + 1$ | | | | 15 | | | | |
| 15,5–18,0 | 0,5 | 30 | 32 | $d_1 + 1$ | - | - | - | - | - | 1 | | |

© 2011 SEITZ NORMTEILE

Schneidbuchsen Die

nach ISO 8977, Form A – ohne Bund · Form B – mit Bund
acc. to ISO 8977 standard type A – headless · type B – with head



Artikel-Nr.: Form A: 5213 .
Form B: 5223 .

Item no.: Type A: 5213 .
Type B: 5223 .

Ausführung: **Form A:** mit zylindrischem Außendurchmesser, gehärtet, angelassen und geschliffen
Form B: mit Bundansatz gehärtet, angelassen und geschliffen.

Version: **Type A:** with cylindrical external diameter, hardened, tempered and ground finished
Type B: with head, hardened, tempered and ground finished.

Werkstoff: HSS

Material: HSS

Hinweis: Bei Zuordnung von Schneidstempeln und Schneidbuchsen Schneidspalt beachten.

Note: Consider die clearance for the assignment of piercing punches and die bushes.

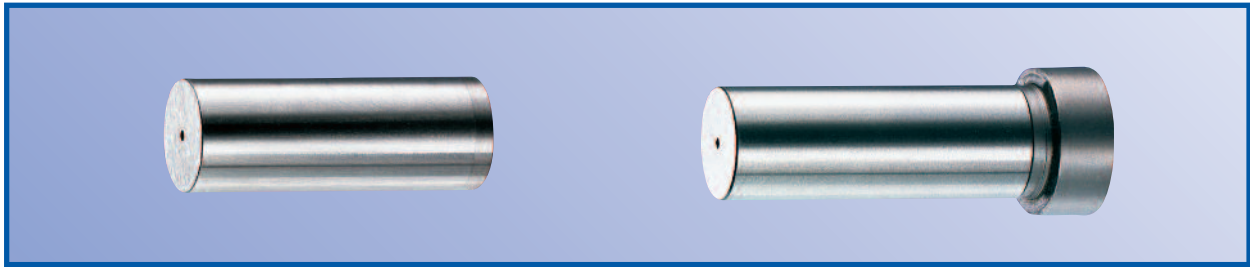
| d | Stufung Gradation | D | D ₁ | d ₁ | L | | | l | h |
|-----------|-------------------|----------------------------|----------------|----------------|------------|----|----|-----|-------------|
| + 0,02 | | Type A: n 5 Type B: m 5 | 0 - 0,25 | max | + 0,5 0 | | | | + 0,25 0 |
| 1,0–2,4 | 0,1 | 5 | 8 | 2,8 | 16 | 20 | 25 | – | 2 |
| 1,6–3,0 | | 6 | 9 | 3,5 | | | | – | 3 |
| 2,0–3,5 | | 8 | 11 | 4,0 | | | | 4 | |
| 3,0–5,0 | | 10 | 13 | 5,8 | | | | 4–8 | |
| 4,0–7,2 | | 13 | 16 | 8,0 | | | | 5–8 | |
| 6,0–8,8 | | 16 | 19 | 9,5 | | | | 32 | 8–20 |
| 7,5–11,3 | | 20 | 23 | 12,0 | | | | | |
| 11,0–16,6 | | 25 | 28 | 17,3 | | | | | |
| 15,0–20,0 | 32 | 35 | 20,7 | | | | | | |
| 18,0–27,0 | 0,5 | 40 | 43 | 27,7 | – | – | – | – | |
| 26,0–36,0 | | 50 | 53 | 37,0 | | | | | |

03 a^Aa{ ^••~*^} Á4}}^} Á^! : +ã cã @!^•c||c^!á^} Æ

Schneidbuchsen mit Startloch

Die with starter hole

ähnlich ISO 8977
similar to ISO 8977 standard type A – headless · type B – with head



Artikel-Nr.: Form A: 5283 .
Form B: 5293 .

Item no.: Type A: 5283 .
Type B: 5293 .

Ausführung: **Form A:** mit zylindrischem Außendurchmesser, gehärtet, angelassen und geschliffen
Form B: mit Bundansatz gehärtet, angelassen und geschliffen.

Version: **Type A:** with cylindrical external diameter, hardened, tempered and ground finished
Type B: with head, hardened, tempered and ground finished.

Werkstoff: HSS

Material: HSS

| d | D | D ₁ | d ₁ | L | | | | | + 0,25 0 |
|-----|--------------------------|----------------|----------------|------|------------|----|----|------|-------------|
| | Type A n 5 Type B m 5 | 0 -0,25 | max | | + 0,5 0 | | | | |
| 1,0 | 8 | 11 | 4 | 16 | | | | 4 | 5 |
| 1,0 | 10 | 13 | 5,8 | | | | | 4-8 | |
| 1,2 | 13 | 16 | 8 | - | 20 | 25 | 32 | 5-8 | |
| 1,2 | 16 | 19 | 9,5 | | | | | 5-8 | |
| 1,5 | 20 | 23 | 12 | | | | | 8-20 | |
| 1,5 | 25 | 28 | 17,3 | | | | | 8-20 | |
| 1,5 | 32 | 35 | 20,7 | | | | | 8-20 | |
| 1,5 | 40 | 43 | 27,7 | | | | | 8-20 | |
| 1,5 | 50 | 53 | 37 | 8-20 | | | | | |

Achtung: Bei Schneidbuchsen für Quadrat und Rechteckschneidformen sollte die Diagonale der Form nicht größer sein als d₁ max.

Warning: The diagonal profile should not be larger than max. d₁ on dies for square and rectangular forming.

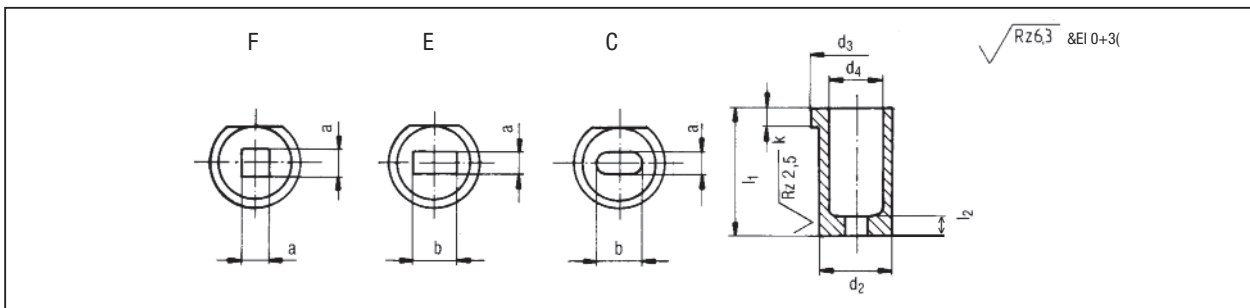
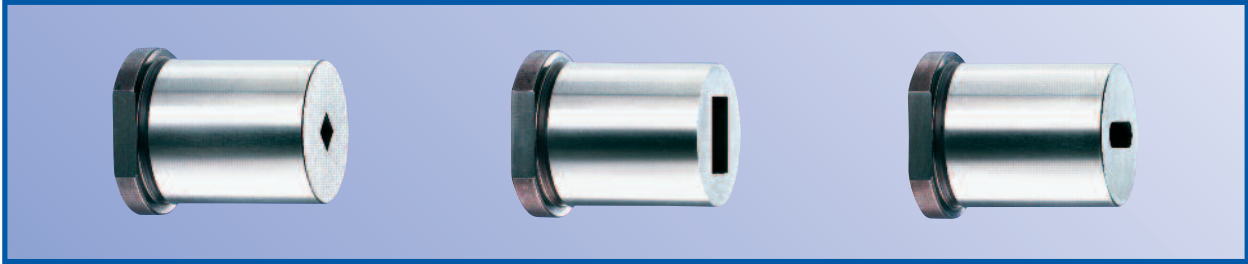
© 2011 SEITZ NORMTEILE

© 2011 SEITZ NORMTEILE

Formschneidbuchsen mit Bund

Forming die with head

quadratisch - rechteckig - langrund mit Verdrehsicherung ähnl. ISO 8977
square - rectangular - round elongated with anti-slip feature similar to ISO 8977 standard



Form S: quadratische Schneidform
Artikel-Nr.: 5533 .

Type S: square type
Item no.: 5533 .

Form R: rechteckige Schneidform
Artikel-Nr.: 5543 .

Type R: rechteckige type
Item no.: 5543 .

Form O: langrunde Schneidform
Artikel-Nr.: 5553 .

Type O: long elongated type
Item no.: 5553 .

Werkstoff: HSS

Material: HSS

Hinweis: Bei Zuordnung von Schneidstempeln und Schneidbuchsen Schneidspalt beachten.

Note: Consider die clearance for the assignment of piercing punches and die bushes.

| a H8 | b H8 | Stufung Gradation | d ₂ m5 | d ₃ | d ₄ max. | k + 0,25 0 | l ₁ + 0,5 0 | l ₂ |
|----------|----------|----------------------|----------------------|----------------|------------------------|------------------|------------------------------|----------------|
| 1,6– 5,4 | 2,0– 5,5 | 0,1 | 10 | 13 | 5,8 | 5,0 | 16 20 25 32 | 4–8 |
| 2,0– 7,4 | 2,5– 7,5 | | 13 | 16 | 8,0 | | | 5–8 |
| 2,0– 9,9 | 2,5–10,0 | | 16 | 19 | 9,5 | | | 5–8 |
| 2,5–12,9 | 3,2–13,0 | | 20 | 23 | 12,0 | | | 8–20 |
| 3,2–15,9 | 4,0–16,0 | | 25 | 28 | 17,3 | | | 8–20 |
| 4,0–20,9 | 5,0–21,0 | | 32 | 35 | 20,7 | | | 8–20 |
| 5,0–26,9 | 6,3–27,0 | | 40 | 43 | 27,7 | | | 8–20 |

Achtung: Bei Quadrat- und Rechteck-Schneidformen sollte die Diagonale der Form nicht größer als d₄ max. sein.

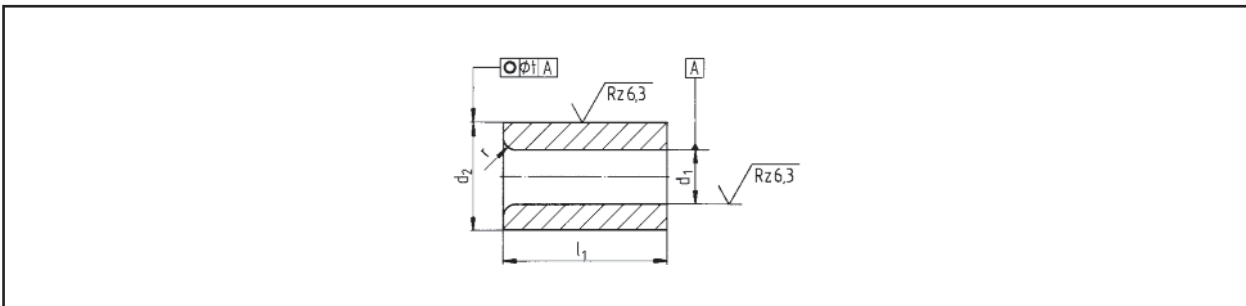
Warning: The diagonal profile should not be larger than max. d₄ on dies for square and rectangular forming.

GF

Stempelführungsbuchsen

Punch guide bush

nach DIN 9845, Form C
acc. to DIN 9845, type C



Artikel-Nr.: 5411 .

Item no.: 5411 .

Werkstoff: Einsatzstahl nach Wahl des Herstellers

Material: Steel as elected by manufacturer

Härte: 740 ± 40 HV 10

Hardness: 740 ± 40 HV 10

| d ₁ H7 | Stufung Gradation | d ₂ n6 | l ₁ | r | t |
|----------------------|----------------------|----------------------|----------------|-----|------|
| 1,0 | 0,1 | 5 | 9 | 1 | 0,01 |
| 1,1–2,0 | | 6 | 12 | | |
| 2,1–3,0 | | 7 | 12 | | |
| 3,1–4,0 | | 8 | 12 | | |
| 4,1–5,0 | | 10 | 16 | | |
| 5,1–6,0 | 0,1 | 12 | 16 | 1,5 | 0,02 |
| 6,1–8,0 | | 15 | 20 | | |
| 8,1–10,0 | | 18 | 20 | | |
| 10,1–12,0 | | 22 | 28 | | |
| 12,1–15,0 | | 26 | 28 | | |
| 15,5–18,0 | 0,5 | 30 | 36 | 2 | |

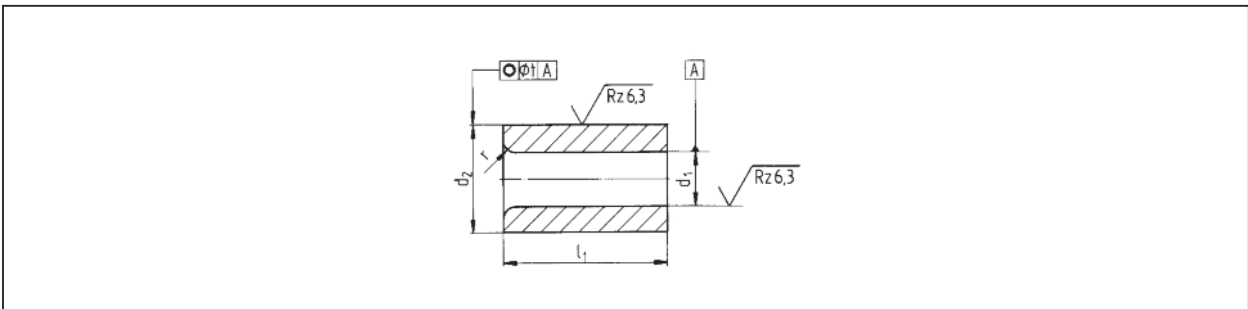
Bitte beachten Sie, dass beim Einsatz von Schneidstempel nach ISO 8020/8021 keine Spielpassung gewährleistet werden kann.

Please consider for the using of punches according ISO 8020/8021 that no clearance fit can be assured.

Stempelführungsbuchsen

Punch guide bush

nach ISO 8978
acc. to ISO 8978 standard



Artikel-Nr.: 5312 .

Item no.: 5312 .

Werkstoff: Einsatzstahl nach Wahl des Herstellers

Material: Steel as elected by manufacturer

Härte: 740 ± 40 HV 10

Hardness: 740 ± 40 HV 10

| d ₁ H 6 | Stufung Gradation | d ₂ n 6 | l ₁ | | |
|-----------------------|----------------------|-----------------------|----------------|-----|------|
| 1,0–2,4 | 0,1 | 5 | 8,0 | 1,0 | 0,01 |
| 1,6–3,0 | | 6 | 12,5 | 1,0 | |
| 2,0–3,5 | | 8 | 12,5 | 1,5 | |
| 3,0–5,0 | | 10 | 16,0 | 2,0 | |
| 4,0–7,2 | | 13 | 16,0 | 2,0 | |
| 6,0–8,8 | | 16 | 20,0 | 2,0 | |
| 7,5–11,3 | | 20 | 20,0 | 2,5 | |
| 11,0–16,6 | | 25 | 25,0 | 2,5 | |
| 15,0–20,0 | 0,5 | 32 | 25,0 | 4,0 | |
| 18,0–27,0 | | 40 | 32,0 | 4,0 | |
| 26,0–36,0 | | 50 | 40,0 | 4,0 | |

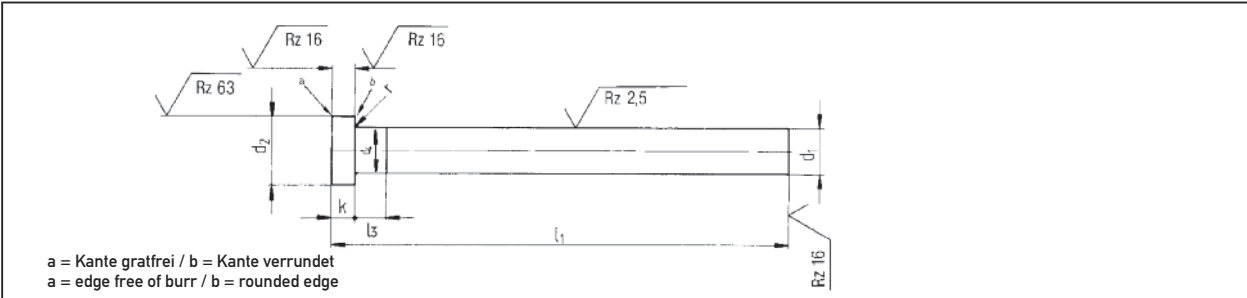
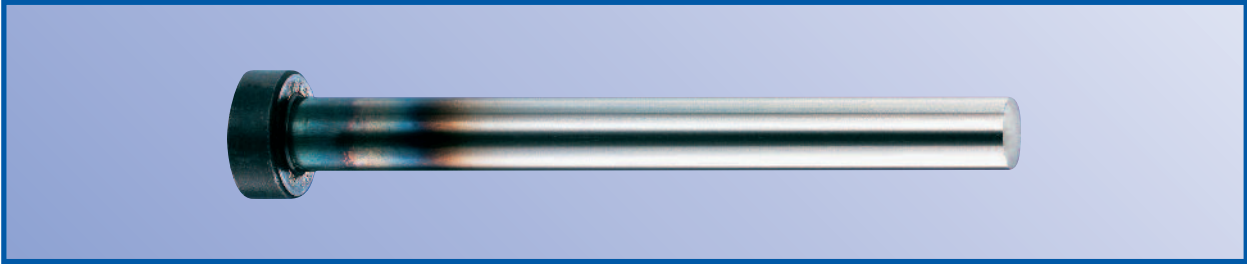
Bitte beachten Sie, dass beim Einsatz von Schneidstempel nach ISO 8020/8021 keine Spielpassung gewährleistet werden kann. Die Norm ist in Überarbeitung.

Please consider for the using of punches according ISO 8020/8021 that no clearance fit can be assured. The standard is going to be revised.

Auswerferstifte mit zylindrischem Kopf

Ejector pin with cylindrical head

nach DIN ISO 6751 (DIN 1530 Teil 1, Form AH, gehärtet)
acc. to DIN ISO 6751 (DIN 1530 standard part 1, type AH, hardened)



Artikel-Nr.: 6121 .

Item no.: 6121 .

Werkstoff: WS
Weitere Werkstoffe auf Anfrage erhältlich.
Siehe Seite 2

Material: WS
For other materials see page 2

Härte: Schaft: HRC 60 + 4 / - 2
Kopf: HRC 45 + 10 / - 5

Hardness: Schaft: HRC 60 + 4 / - 2
Head: HRC 45 + 10 / - 5

| d ₁ | d ₂ | d ₄ | k | r | l ₁ | | | | | | | | | | l ₃ | | | | | | | | | | | |
|----------------|----------------|----------------------|------------|-----------|----------------|-----|----|----------------------|-----|-----|-----|-----|-----|-----|----------------|-----|---|---|---|---|---|---|---|---|---|--|
| | | | | | +2 0 | | | | | | | | | | | | | | | | | | | | | |
| g 6 | 0 -0,2 | | 0 -0,05 | +0,2 0 | 40 | 50 | 63 | 80 | 100 | 125 | 160 | 200 | 250 | 315 | 400 | 500 | | | | | | | | | | |
| 0,8 | 2,5 | d ₁ +0,03 | 1,2 | 0,2 | 0,2 | ● | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | |
| 0,9 | | | | | | ● | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | |
| 1,0 | | | | | | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | | | | | | |
| 1,1 | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | | | | | |
| 1,2 | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | | | |
| 1,3 | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | | |
| 1,4 | 3 | d ₁ +0,03 | 1,5 | | 0,2 | 0,2 | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | | | |
| 1,5 | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | | |
| 1,6 | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | |
| 1,7 | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | |
| 1,8 | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | |
| 1,9 | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | |
| 2,0 | 4 | d ₁ +0,03 | 2 | 0,2 | | 0,2 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | |
| 2,1 | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | |
| 2,2 | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | |
| 2,3 | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | |
| 2,4 | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | |
| 2,5 | | | | | | | 5 | d ₁ +0,03 | 2 | 0,3 | 0,3 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | |
| 2,6 | | | | | ● | ● | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | |
| 2,7 | | | | | | ● | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | |
| 2,8 | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | |
| 2,9 | | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| | | | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |

● = Ab Lager lieferbar. Übrige Abmessungen auf Anfrage.

● = Available from stock. Other dimensions on request.

Auswerferstifte mit zylindrischem Kopf

Ejector pin with cylindrical head

nach DIN ISO 6751 (DIN 1530 Teil 1, Form AH, gehärtet)
 acc. to DIN ISO 6751 (DIN 1530 standard part 1, type AH, hardened)

| d ₁ | d ₂ | d ₄ | k | r | l ₁ + 2 0 | | | | | | | | | | | | l ₃ | | | | |
|----------------|----------------|----------------------|------------|-----------|----------------------------|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|----------------|-----|-----|--|--|
| | | | | | 40 | 50 | 63 | 80 | 100 | 125 | 160 | 200 | 250 | 315 | 400 | 500 | | 630 | 800 | | |
| g 6 | 0 -0,2 | | 0 -0,05 | +0,2 0 | | | | | | | | | | | | | | | | | |
| 3,0 | 6 | d ₁ +0,03 | 3 | 0,3 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | |
| 3,1 | | | | | | | | | | | | | | | | | | | | | |
| 3,2 | | | | | | | | | | | | | | | | | | | | | |
| 3,3 | | | | | | | | | | | | | | | | | | | | | |
| 3,4 | | | | | | | | | | | | | | | | | | | | | |
| 3,5 | | | | | | | | | | | | | | | | | | | | | |
| 3,6 | 7 | | | | | | | | | | | | | | | | | | | | |
| 3,7 | | | | | | | | | | | | | | | | | | | | | |
| 3,8 | | | | | | | | | | | | | | | | | | | | | |
| 3,9 | | | | | | | | | | | | | | | | | | | | | |
| 4,0 | | | | | | | | | | | | | | | | | | | | | |
| 4,1 | | | | | | | | | | | | | | | | | | | | | |
| 4,2 | 8 | | | | | | | | | | | | | | | | | | | | |
| 4,3 | | | | | | | | | | | | | | | | | | | | | |
| 4,4 | | | | | | | | | | | | | | | | | | | | | |
| 4,5 | | | | | | | | | | | | | | | | | | | | | |
| 4,6 | | | | | | | | | | | | | | | | | | | | | |
| 4,7 | | | | | | | | | | | | | | | | | | | | | |
| 4,8 | 10 | | | | | | | | | | | | | | | | | | | | |
| 4,9 | | | | | | | | | | | | | | | | | | | | | |
| 5,0 | | | | | | | | | | | | | | | | | | | | | |
| 5,1 | | | | | | | | | | | | | | | | | | | | | |
| 5,2 | | | | | | | | | | | | | | | | | | | | | |
| 5,3 | | | | | | | | | | | | | | | | | | | | | |
| 5,4 | 12 | | | | | | | | | | | | | | | | | | | | |
| 5,5 | | | | | | | | | | | | | | | | | | | | | |
| 5,6 | | | | | | | | | | | | | | | | | | | | | |
| 5,7 | | | | | | | | | | | | | | | | | | | | | |
| 5,8 | | | | | | | | | | | | | | | | | | | | | |
| 5,9 | | | | | | | | | | | | | | | | | | | | | |
| 6,0 | 14 | | | | | | | | | | | | | | | | | | | | |
| 6,1 | | | | | | | | | | | | | | | | | | | | | |
| 6,2 | | | | | | | | | | | | | | | | | | | | | |
| 6,3 | | | | | | | | | | | | | | | | | | | | | |
| 6,4 | | | | | | | | | | | | | | | | | | | | | |
| 6,5 | | | | | | | | | | | | | | | | | | | | | |
| 6,6 | 6 | | | | | | | | | | | | | | | | | | | | |
| 6,7 | | | | | | | | | | | | | | | | | | | | | |
| 6,8 | | | | | | | | | | | | | | | | | | | | | |
| 6,9 | | | | | | | | | | | | | | | | | | | | | |
| 7,0 | | | | | | | | | | | | | | | | | | | | | |
| 7,2 | | | | | | | | | | | | | | | | | | | | | |
| 7,5 | 8 | | | | | | | | | | | | | | | | | | | | |
| 8,0 | | | | | | | | | | | | | | | | | | | | | |
| 8,1 | | | | | | | | | | | | | | | | | | | | | |
| 8,2 | | | | | | | | | | | | | | | | | | | | | |
| 8,5 | | | | | | | | | | | | | | | | | | | | | |
| 9,0 | | | | | | | | | | | | | | | | | | | | | |

● = Ab Lager lieferbar. Übrige Abmessungen auf Anfrage.

● = Available from stock. Other dimensions on request.

Auswerferstifte mit zylindrischem Kopf

Ejector pin with cylindrical head

nach DIN ISO 6751 (DIN 1530 Teil 1, Form AH, gehärtet)
acc. to DIN ISO 6751 (DIN 1530 standard part 1, type AH, hardened)

| d ₁ | d ₂ | d ₄ | k | r | l ₁ +2 0 | | | | | | | | | | | l ₃ | | | | |
|----------------|----------------|----------------------|------------|-----------|---------------------------|----------------------|----|-----|-----|-----|-----|-----|-----|-----|-----|----------------|-----|-----|---|---|
| | | | | | 40 | 63 | 80 | 100 | 125 | 160 | 200 | 250 | 315 | 400 | 500 | | 630 | 800 | | |
| g 6 | 0 -0,2 | | 0 -0,05 | +0,2 0 | | | | | | | | | | | | | | | | |
| 9,5 | 14 | d ₁ +0,03 | 5 | 0,5 | | | | ● | ● | ● | ● | ● | ● | ● | ● | | | | | |
| 10,0 | 16 | d ₁ +0,04 | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| 10,1 | | | | | | | | ● | ● | ● | ● | ● | | | | | | | | |
| 10,2 | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | |
| 10,5 | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | |
| 10,7 | | | | | | | ● | ● | ● | | | | | | | | | | | |
| 11,0 | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| 12,0 | 18 | d ₁ +0,04 | 7 | 0,8 | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | |
| 12,1 | | | | | | | | | | ● | | | | | | | | | | |
| 12,2 | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | | | |
| 12,5 | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | | |
| 13,0 | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | | | | |
| 14,0 | | | | | 22 | d ₁ +0,07 | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 14,5 | | | | | | | | | | ● | ● | ● | ● | ● | ● | | | | | |
| 15,0 | | | | | | | | | | ● | ● | ● | ● | ● | | | | | | |
| 16,0 | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 16,5 | | | | | | | | | | | | ● | ● | ● | ● | ● | | | | |
| 18,0 | 24 | d ₁ +0,1 | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 20,0 | 26 | | | | 8 | 1,1 | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| 20,5 | | | | | | | | | | | | ● | ● | ● | ● | ● | | | | |
| 25,0 | | | | | | | 32 | 10 | | | | | ● | ● | ● | ● | ● | ● | | |

● = Ab Lager lieferbar. Übrige Abmessungen auf Anfrage.

● = Available from stock. Other dimensions on request.

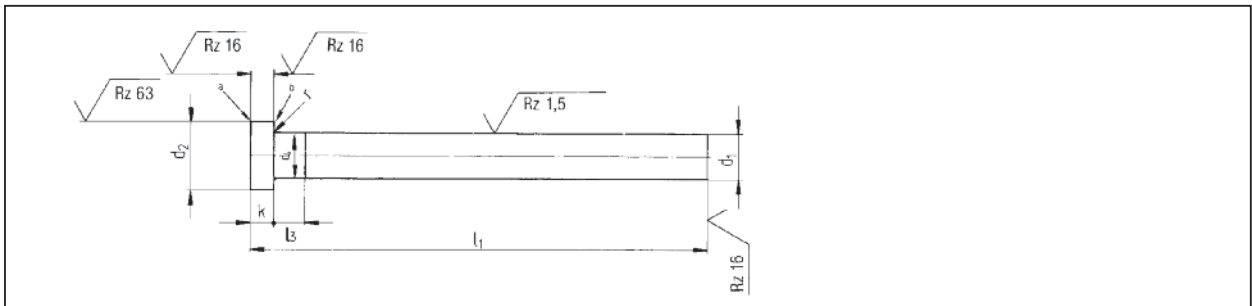
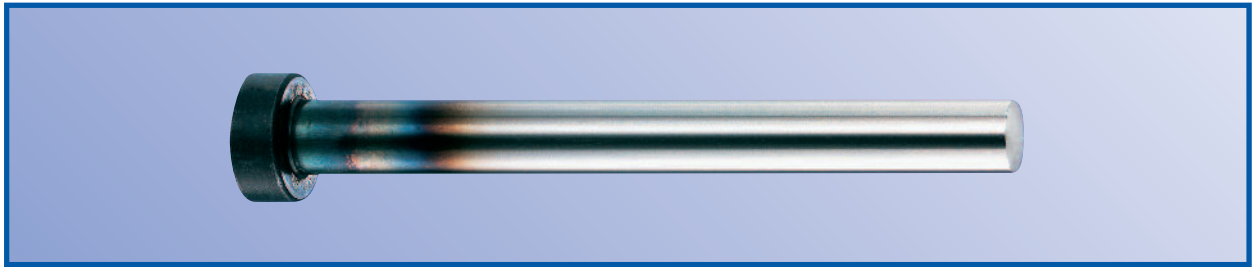
© SEITZ NORMTEILE

Auswerferstifte mit zylindrischem Kopf

Ejector pins with cylindrical head

...aus HSS
...made from HSS/M2

ähnlich DIN ISO 6751
similar to DIN ISO 6751



Artikel-Nr.: 6123 .

Item no.: 6123 .

Werkstoff: HSS
teilweise ASP 23 und in CPM 10V
ab Lager lieferbar

Material: HSS
partly available in material ASP 23 / CPM 10V
from stock

Härte: Schaft: HRC 62 ± 2
Kopf: HRC 50 ± 5

Hardness: Shaft: HRC 62 ± 2
Head: HRC 50 ± 5

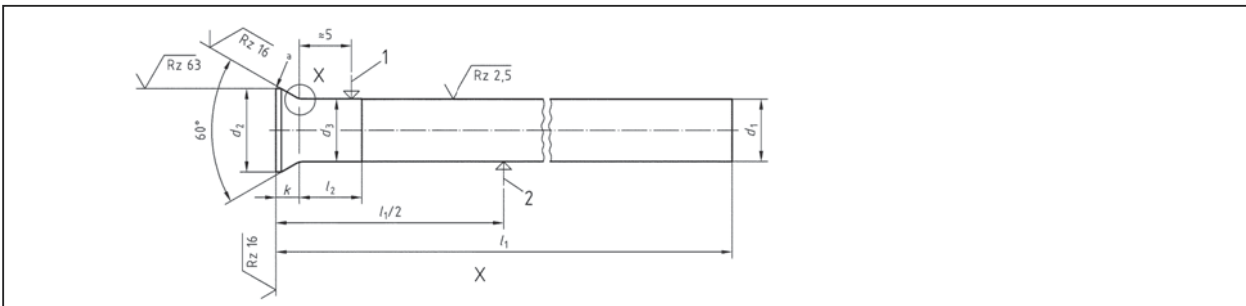
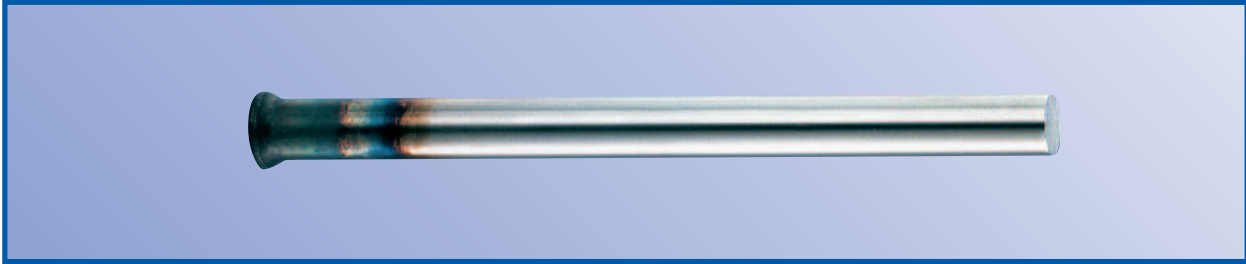
| d ₁ | d ₂ | d ₄ | k | r | l ₁ | | | | | | | l ₃ | | | | |
|----------------|----------------|----------------------|------------|-----------|----------------|-----|-----|-----|-----|-----|-----|----------------|-----|-----|---|--|
| | | | | | 100 | 125 | 160 | 200 | 250 | 315 | 400 | | 500 | 630 | | |
| g 6 | 0 -0,2 | | 0 -0,05 | +0,2 0 | | | | | | | | | | | | |
| 1,2 | 2,5 | d ₁ +0,03 | 1,2 | 0,2 | | | ● | | | | | | | | | |
| 1,5 | 3 | | 1,5 | | ● | ● | ● | ● | ● | ● | | | | | | |
| 2 | 4 | | 2,0 | | ● | ● | ● | ● | ● | ● | | | | | | |
| 2,2 | 5 | | 3 | 0,3 | ● | ● | ● | ● | ● | ● | | ● | | | | |
| 2,5 | | | | | ● | ● | ● | ● | ● | ● | ● | | | | | |
| 3 | | | | | ● | ● | ● | ● | ● | ● | ● | | | | | |
| 3,2 | | | | 6 | ● | ● | ● | ● | ● | ● | ● | ● | | | | |
| 3,5 | 7 | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | |
| 4 | 8 | | | 5 | 0,5 | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| 4,2 | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| 4,5 | | ● | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| 5 | | ● | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| 5,2 | 10 | 7 | | | 0,8 | ● | | | | | | | | | | |
| 5,5 | | | ● | | | | | | | | | | | | | |
| 5,6 | | | ● | | | | | | | | | | | | | |
| 6 | | | ● | | | | | | | | | | | | | |
| 6,5 | 12 | | ● | | | | | | | | | | | | | |
| 7 | 14 | | 7 | | 0,8 | ● | | | | | | | | | | |
| 8 | | | | ● | | | | | | | | | | | | |
| 8,5 | | | | ● | | | | | | | | | | | | |
| 9 | | | | ● | | | | | | | | | | | | |
| 9,5 | 16 | | | 7 | 0,8 | ● | | | | | | | | | | |
| 10 | | ● | | | | | | | | | | | | | | |
| 11 | | ● | | | | | | | | | | | | | | |
| 12 | | ● | | | | | | | | | | | | | | |
| 14 | 18 | 7 | | | 0,8 | ● | | | | | | | | | | |
| 15 | | | | | | ● | | | | | | | | | | |
| 16 | | | ● | | | | | | | | | | | | | |
| 17 | | | ● | | | | | | | | | | | | | |

● = Ab Lager lieferbar. Übrige Abmessungen auf Anfrage. ● = Available from stock. Other dimensions on request.

Auswerferstifte mit kegeligem Kopf Ejector pin with countersunk head

SEITZ
NORMTEILE

nach DIN 1530 Teil 3, Form D
acc. to DIN 1530 standard part 3, type D



Artikel-Nr.: 6151 .

Werkstoff: WS

Weitere Werkstoffe auf Anfrage erhältlich.
Siehe Seite 2

Härte: Schaft: HRC 60 + 4 / - 2
Kopf: HRC 45 ± 5

Item no.: 6151 .

Material: WS

For other materials
see page 2

Hardness: Shaft: HRC 60 + 4 / - 2
Head: HRC 45 ± 5

Auswerferstifte mit kegeligem Kopf Ejector pin with countersunk head

nach DIN 1530 Teil 3, Form D
acc. to DIN 1530 standard part 3, type D

| d ₁ | d ₂ Grenzabmaße Limit values | d ₃ | k +0,2 0 | r 0,2 + 0,2 | l ₁ +2 0 | | | | | | l ₂ |
|----------------|---|----------------------|----------------|----------------|---------------------------|-----|-----|-----|-----|-----|----------------|
| | | | | | 100 | 125 | 160 | 200 | 250 | 315 | |
| | | | | | | | | | | | |
| 0,7 | 1,3 | d ₁ +0,02 | 0,72 | ● | | | | | | | |
| 0,8 | 1,4 | | 0,92 | ● | ● | ● | ● | | | | |
| 0,9 | 1,6 | | 1,01 | ● | ● | ● | ● | | | | |
| 1,0 | 1,8 | ± 0,05 | 1,19 | ● | ● | ● | ● | | | | |
| 1,1 | | | 1,11 | ● | ● | ● | ● | | | | |
| 1,2 | 2,0 | | 1,19 | ● | ● | ● | ● | | | | |
| 1,25 | | 1,15 | ● | ● | ● | ● | | | | | |
| 1,3 | 2,2 | 1,11 | ● | ● | ● | ● | | | | | |
| 1,4 | | 1,19 | ● | ● | ● | ● | | | | | |
| 1,5 | | 1,11 | ● | ● | ● | ● | | | | | |
| 1,6 | 2,5 | 1,28 | ● | ● | ● | ● | | | | | |
| 1,7 | | 1,19 | ● | ● | ● | ● | | | | | |
| 1,75 | 2,8 | 1,15 | ● | ● | ● | ● | | | | | |
| 1,8 | | 1,37 | ● | ● | ● | ● | | | | | |
| 1,9 | | 1,28 | ● | ● | ● | ● | | | | | |
| 2,0 | 3,0 | 1,37 | ● | ● | ● | ● | ● | | | | |
| 2,1 | 3,2 | 1,45 | ● | ● | ● | ● | | | | | |
| 2,2 | | 1,37 | ● | ● | ● | ● | | | | | |
| 2,25 | 3,5 | 1,32 | ● | ● | ● | ● | | | | | |
| 2,3 | | 1,54 | ● | ● | ● | ● | | | | | |
| 2,4 | | 1,45 | ● | ● | ● | ● | | | | | |
| 2,5 | 4,0 | 1,37 | ● | ● | ● | ● | ● | | | | |
| 2,6 | | 1,71 | ● | ● | ● | ● | | | | | |
| 2,7 | 4,5 | 1,63 | ● | ● | ● | ● | ● | | | | |
| 2,75 | | 1,58 | ● | ● | ● | ● | | | | | |
| 2,8 | | 1,54 | ● | ● | ● | ● | ● | | | | |
| 2,9 | 5,0 | 1,45 | ● | ● | ● | ● | | | | | |
| 3,0 | | 1,80 | ● | ● | ● | ● | ● | | | | |
| 3,1 | 5,5 | 1,71 | ● | ● | ● | ● | ● | | | | |
| 3,2 | | 1,63 | ● | ● | ● | ● | ● | | | | |
| 3,25 | | 1,58 | ● | ● | ● | ● | | | | | |
| 3,3 | 6,0 | 1,54 | ● | ● | ● | ● | | | | | |
| 3,35 | | 1,50 | | ● | ● | ● | | | | | |
| 3,4 | 7,0 | 1,45 | ● | ● | ● | ● | ● | | | | |
| 3,5 | | 1,80 | ● | ● | ● | ● | ● | | | | |
| 3,6 | | 1,71 | ● | ● | ● | ● | | | | | |
| 3,7 | 8,0 | 1,63 | ● | ● | ● | ● | | | | | |
| 3,75 | | 1,58 | ● | ● | ● | ● | | | | | |
| 3,8 | 9,0 | 1,54 | ● | ● | ● | ● | | | | | |
| 3,9 | | 1,45 | ● | ● | ● | ● | | | | | |
| 4,0 | | 1,80 | ● | ● | ● | ● | ● | ● | | | |
| 4,1 | 10,0 | 1,71 | ● | ● | ● | ● | | | | | |
| 4,2 | | 1,63 | ● | ● | ● | ● | | | | | |

● = Ab Lager lieferbar.
Hier nicht aufgeführte Durchmesser in den Längen bis einschließlich 100 mm sind teilweise als Schneidstempel DA-WS als Lagerabmessungen aufgeführt.

| d ₁ | d ₂ Grenzabmaße Limit values | d ₃ | k +0,2 0 | r 0,2 + 0,2 | l ₁ +2 0 | | | | | | l ₂ |
|----------------|---|----------------------|----------------|----------------|---------------------------|-----|-----|-----|-----|-----|----------------|
| | | | | | 100 | 125 | 160 | 200 | 250 | 315 | |
| | | | | | | | | | | | |
| 4,25 | 5,5 | ± 0,1 | 1,58 | ● | ● | ● | ● | | | | |
| 4,3 | | | 1,54 | ● | ● | ● | ● | | | | |
| 4,4 | | | 1,45 | ● | ● | ● | ● | | | | |
| 4,5 | 6,0 | d ₁ +0,03 | 1,80 | ● | ● | ● | ● | ● | | 5 | |
| 4,6 | | | 1,71 | ● | ● | ● | ● | | | | |
| 4,7 | 1,63 | | ● | ● | ● | ● | | | | | |
| 4,75 | 6,5 | ± 0,1 | 1,58 | ● | | | | | | | |
| 4,8 | | | 1,54 | ● | ● | ● | ● | | | | |
| 4,9 | | | 1,45 | ● | ● | ● | ● | | | | |
| 5,0 | 7,0 | d ₁ +0,03 | 1,80 | ● | ● | ● | ● | ● | ● | | |
| 5,1 | | | 1,71 | ● | ● | ● | ● | | | | |
| 5,2 | 1,63 | | ● | ● | ● | ● | | | | | |
| 5,25 | 7,5 | ± 0,1 | 1,58 | ● | ● | ● | ● | | | | |
| 5,3 | | | 1,54 | ● | ● | ● | | | | | |
| 5,4 | | | 1,45 | ● | ● | ● | ● | | | | |
| 5,5 | 8,0 | d ₁ +0,04 | 1,80 | ● | ● | ● | ● | | | | |
| 5,6 | | | 1,71 | ● | ● | ● | ● | | | | |
| 5,7 | 1,63 | | ● | ● | ● | ● | | | | | |
| 5,8 | 8,5 | ± 0,2 | 1,54 | ● | ● | ● | ● | | | | |
| 5,9 | | | 1,45 | ● | ● | ● | ● | | | | |
| 6,0 | | | 2,23 | ● | ● | ● | ● | ● | ● | | |
| 6,1 | 9,0 | 1,0*0,05 | 2,15 | ● | | | | | | | |
| 6,2 | | | 2,06 | ● | ● | ● | ● | | | | |
| 6,3 | 1,97 | | ● | ● | ● | ● | | | | | |
| 6,5 | 10,0 | ± 0,2 | 3,17 | ● | ● | ● | ● | ● | | | |
| 6,7 | | | 2,99 | ● | ● | ● | ● | | | | |
| 7,0 | 2,73 | | ● | ● | ● | ● | | | | | |
| 7,5 | 11,0 | 1,0*0,05 | 3,17 | ● | ● | ● | ● | | | | |
| 7,9 | | | 2,82 | ● | | | | | | | |
| 8,0 | 2,73 | | ● | ● | ● | ● | ● | ● | | | |
| 8,1 | 12,0 | ± 0,2 | 2,65 | ● | ● | ● | ● | | | | |
| 8,2 | | | 2,56 | ● | ● | ● | ● | | | | |
| 8,3 | 2,47 | | ● | ● | ● | ● | | | | | |
| 8,4 | 13,0 | 1,0*0,05 | 2,39 | ● | ● | ● | ● | | | | |
| 8,5 | | | 3,17 | ● | ● | ● | ● | | | | |
| 9,0 | 2,73 | | ● | ● | ● | ● | | | | | |
| 9,5 | 14,0 | ± 0,2 | 3,17 | | ● | | | | | | |
| 10,0 | | | 2,73 | ● | ● | ● | ● | ● | ● | | |
| 11,0 | 2,73 | | ● | ● | ● | ● | | | | | |
| 11,5 | 15,0 | 1,0*0,05 | 3,17 | | ● | | | | | | |
| 12,0 | | | 2,73 | ● | ● | ● | ● | ● | ● | | |
| 13,0 | 2,73 | | ● | ● | ● | ● | | | | | |
| 14,0 | 16,0 | ± 0,2 | 3,23 | ● | ● | ● | ● | ● | ● | | |
| 14,0 | | | 3,23 | ● | ● | ● | ● | ● | ● | | |
| 16,0 | 18,0 | | 3,23 | ● | ● | ● | ● | ● | ● | | |

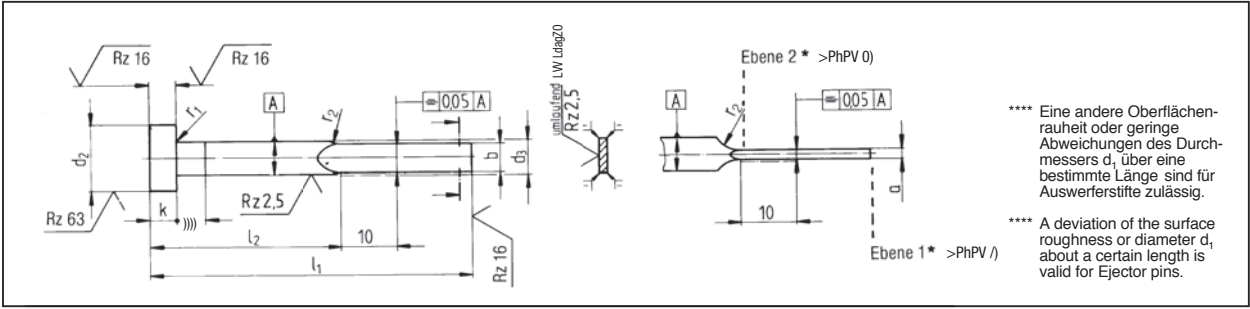
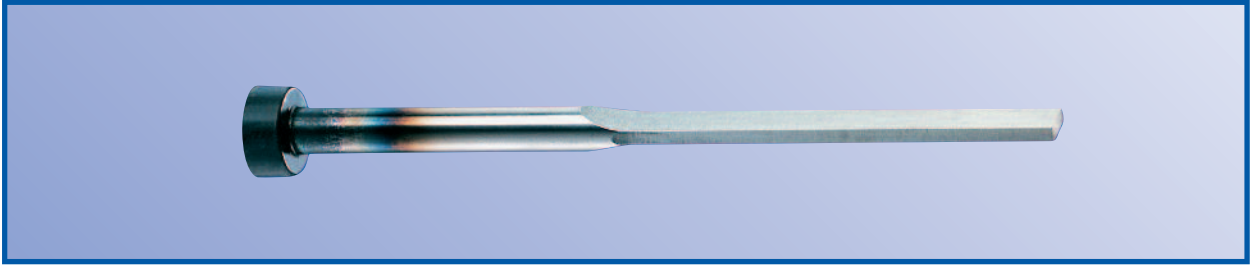
● = Available from stock.
Diameters which are not listed for lengths through 100 mm can be partially found as punch DA-WS.

Auswerferstifte mit zylindrischem Kopf

Ejector pin with cylindrical head

Mit Eckenradien ab Lager
With corner radius on stock

Schaft rechteckig abgesetzt - Flachauswerfer DIN ISO 8693 (DIN 1530 Teil 4, Form FAH, gehärtet)
rectangular stepped shaft - flat ejector acc. to DIN ISO 8693 (DIN 1530 standard part 4, type FAH, hardened)



Artikel-Nr.: 6321 .

Item no.: 6321 .

Werkstoff: WS
Weitere Werkstoffe auf Anfrage erhältlich.
Siehe Seite 5.09–5.10

Material: WS
For other materials
see page 5.09–5.10

Härte: Schaft: HRC 60 ± 2
Kopf: HRC 45 ± 5

Hardness: Shaft: HRC 60 ± 2
Head: HRC 45 ± 5

| a | b | d ₃ | d ₂ | k | r ₁ | r ₂ | l ₁ + 2/0 | | | | | | | | | | | | | | | | | | |
|------------------|------------------|----------------|----------------|------------|----------------|----------------|------------------------|-----|-----|--------|-----|-----|-----|-----|-----|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | 63 | 80 | 100 | 125*** | 160 | 200 | 250 | 315 | 400 | | | | | | | | | | |
| 0 -0,015 * | 0 -0,015 * | h11 | 0 -0,2 | 0 -0,05 | +0,2 0 | min | l ₂ - 1/- 2 | | | | | | | | | | | | | | | | | | |
| | | | | | | | 30 | 40 | 50 | 60 | 80 | 100 | 125 | 160 | 200 | | | | | | | | | | |
| 0,8 | 2,8 | 3 | 6 | 3 | 0,3 | 10 | | | ● | ● | ● | ● | | | | | | | | | | | | | |
| 1,0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0,8 | | | | | | | 3,5 | 4 | 8 | | | | | | | | | | | | | | | | |
| 1,0** | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,2 | 3,8 | 4,2 | 8 | | | | | | | | | | | | | | | | | | | | | | |
| 1,0** | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0,8 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,2 | 4,5 | 5 | 10 | | | | | | | | | | | | | | | | | | | | | | |
| 1,0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,2 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,5 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,0 | 5,5 | 6 | 12 | 5 | 0,5 | 10 | | | | | | | | | | | | | | | | | | | |
| 1,2 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,5 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2,0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,2 | 7,5 | 8 | 14 | | | | | | | | | | | | | | | | | | | | | | |
| 1,5 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2,0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,5 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2,0 | 9,5 | 10 | 16 | | | | 7 | 0,8 | 10 | | | | | | | | | | | | | | | | |
| 1,5 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2,0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2,5 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2,0 | 11,5 | 12 | 18 | | | | | | | | | | | | | | | | | | | | | | |
| 2,5 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2,0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2,5 | 15,5 | 16 | 22 | | | | | | | | | | | | | | | | | | | | | | |
| 2,5 | | | | | | | | | | | | | | | | | | | | | | | | | |

● = Ab Lager lieferbar. Übrige Abmessungen auf Anfrage.

● = Available from stock. Other dimensions on request.

* Diese Grenzabmaße gelten für 100 mm Länge (l₂). Für Längen (l₂) > 100, sind die Grenzabmaße mit (l₂-100) 10⁻² zu multiplizieren. Die Maßtoleranz erreicht in der Ebene 2 ihren Höchstwert.

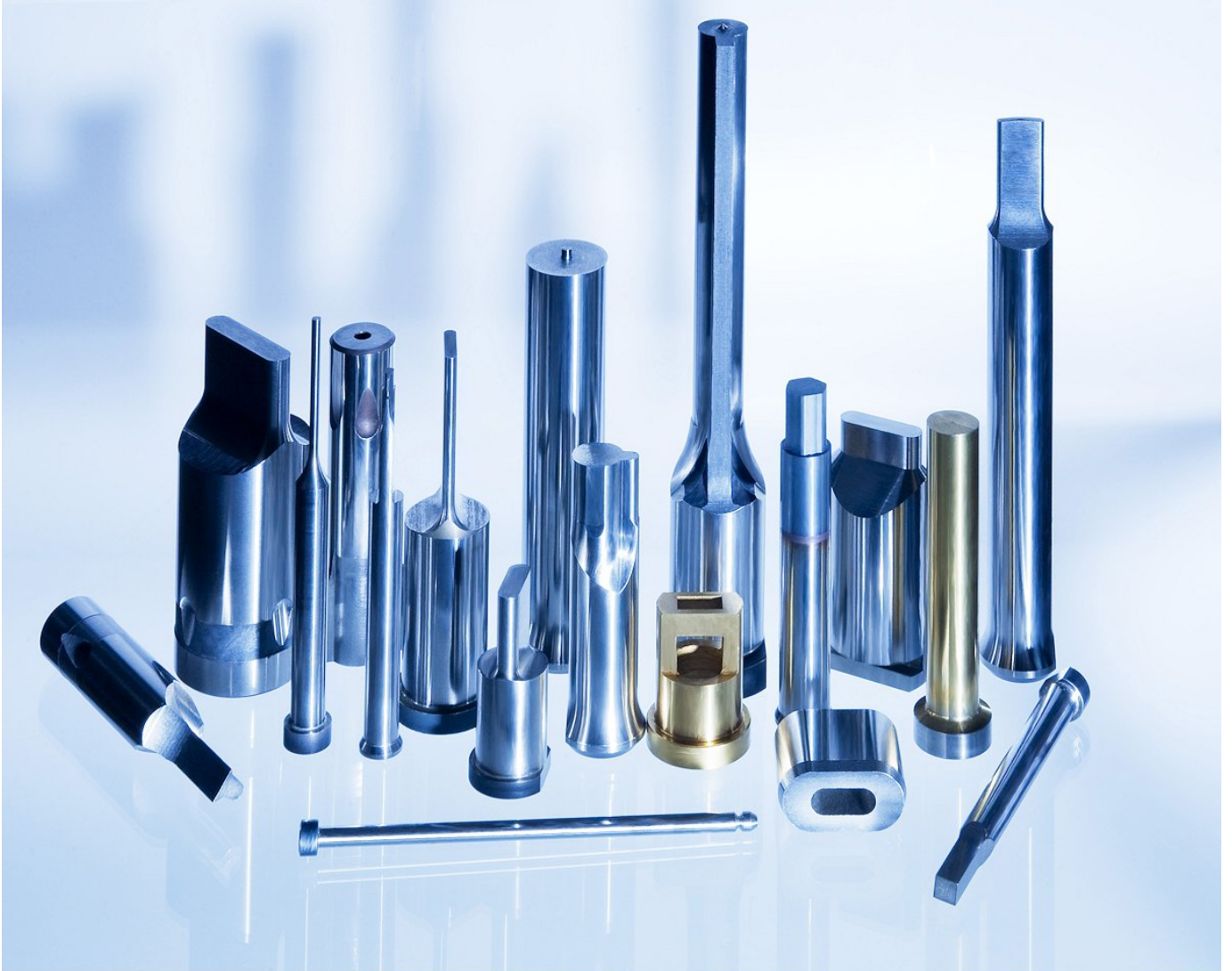
* These limit values apply for 100 mm lengths (l₂). For lengths (l₂) > 100 the limit values are to be multiplied by (l₂-100) 10⁻². The tolerance value reaches its maximum at the second level.

** Bei Bestellung bitte d₃ mit angeben.

** Please state with order d₃.



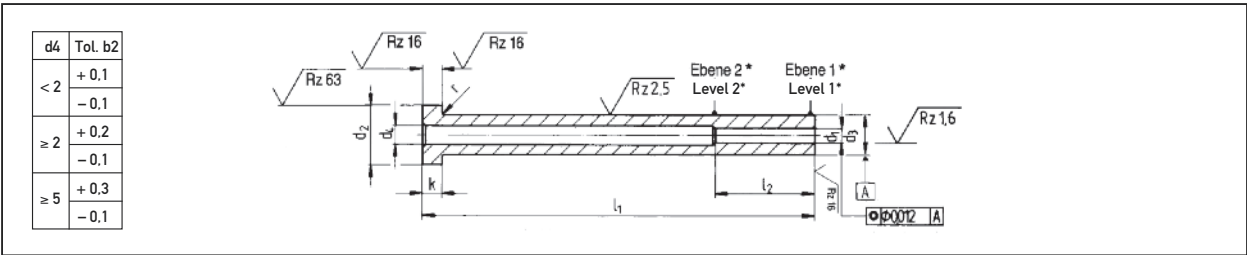
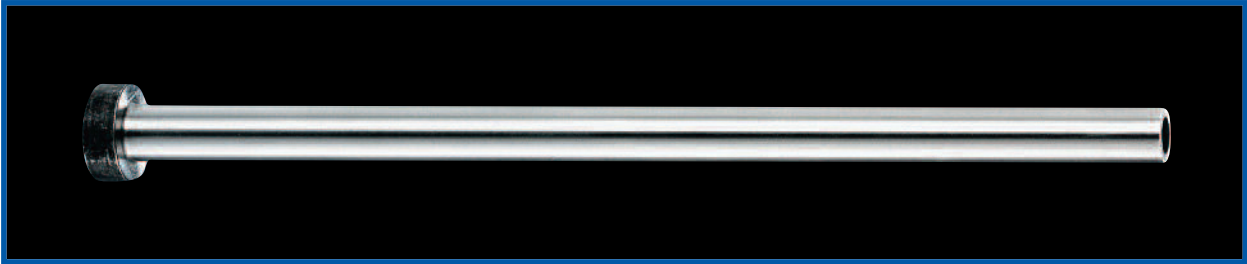
Óã] ã|^Á>|À[} ã^!cã^



Auswerferhülsen mit zylindrischem Kopf Ejector sleeve with cylindrical head

Auch Sonderabmessungen kurzfristig lieferbar.
We are able to deliver special dimensions at short notice.

nach DIN ISO 8405 (DIN 16756, gehärtet)
acc. to DIN ISO 8405 (DIN 16756, hardened)



* In der Ebene 1 ist die Koaxialitätstoleranz zu A max. 0,012 mm. In der Ebene 2 ist dieser Wert max. 0,012 ($l_2 \cdot 10^{-1}$)
* At level 1 the coaxiality tolerance to A is max. 0.012 mm. At level 2 this value is max. 0.012 ($l_2 \cdot 10^{-1}$)

Artikel-Nr.: 6621 .

Item no.: 6621 .

Werkstoff: WS
Weitere Werkstoffe auf Anfrage erhältlich.
Siehe Seite 2

Material: WS
For other materials see page 2

Härte: Schaft: HRC 60 ± 2
Kopf: HRC 45 + 10 / - 5

Hardness: Shaft: HRC 60 ± 2
Head: HRC 45 + 10 / - 5

| d ₁ H5 | d ₃ g 6 | d ₄ 0 - 0,1 | d ₂ 0 - 0,2 | k 0 - 0,05 | r + 0,2 0 | l ₂ + 2 0 | l ₁ + 1 0 | | | | | | | | | | |
|----------------------|-----------------------|------------------------------|------------------------------|------------------|-----------------|----------------------------|-------------------------|----|----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | | | | | | 50 | 60 | 75 | 100 | 125 | 150 | 175 | 200 | 225 | 250 | 275 |
| 2,50 | 4,00 | 2,8 | 8 | 3 | 0,3 | 35 | | | | ● | ● | ● | ● | ● | ● | | |
| 3,50 | 5,00 | 3,8 | 10 | 3 | 0,3 | 45 | | | | ● | ● | ● | | | | | |
| 3,00 | 6,00 | 3,5 | 12 | 5 | 0,5 | 45 | | | | ● | ● | ● | ● | ● | ● | ● | ● |
| 4,50 | 6,00 | 4,8 | 12 | 5 | 0,5 | 45 | | | | ● | ● | ● | ● | ● | ● | | |
| 4,00 | 8,00 | 4,5 | 14 | 5 | 0,5 | 45 | | | ● | ● | ● | | | | | | |

● = Ab Lager lieferbar. Übrige Abmessungen auf Anfrage.

● = Available from stock. Other dimensions on request.

Bei Bestellung bitte unbedingt den Schaftdurchmesser d₃ angeben.

Please note shaft diameter d₃ on order.

Auswerferhülsen mit zylindrischem Kopf

Ejector sleeve with cylindrical head

Auch Sonderabmessungen kurzfristig lieferbar.
We are able to deliver special dimensions at short notice.

nach DIN ISO 8405 (DIN 16756, gehärtet)
acc. to DIN ISO 8405 (DIN 16756, hardened)

| d ₁ H5 | d ₃ g 6 | d ₄ 0 -0,1 | d ₂ 0 -0,2 | k 0 -0,05 | r +0,2 0 | l ₂ +2 0 | l ₁ + 1 | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------|-----------------------|-----------------------------|-----------------------------|-----------------|----------------|---------------------------|--------------------|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|---|---|---|---|---|---|---|---|---|
| | | | | | | | 0 | 50 | 60 | 75 | 100 | 125 | 150 | 175 | 200 | 225 | 250 | 275 | 300 | 325 | 400* | | | | | | | | | |
| 1,5 | 3 | 1,8 | 6 | 3 | 0,3 | 35 | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | |
| 1,6 | | 2 | | | | | ● | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | |
| 1,8 | | 2,1 | | | | | | | ● | ● | | | | | | | | | | | | | | | | | | | | |
| 1,9 | | 2,2 | | | | | | | ● | ● | | | | | | | | | | | | | | | | | | | | |
| 2 | 4 | 2,5 | 8 | 3 | 0,3 | | 35 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | | | | | |
| 2,2 | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | | | |
| 2,5 | 5 | 3 | 10 | 5 | 0,5 | | | 45 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | | |
| 2,7 | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | |
| 3 | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | |
| 3,2 | 6 | 3,5 | 12 | 5 | 0,5 | | | | 45 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | |
| 3,5 | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| 3,7 | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| 4 | | | | | | ● | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 4,2 | 8 | 4,5 | 14 | 5 | 0,5 | 45 | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| 4,5 | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 5 | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 5,2 | 10 | 5,5 | 16 | 7 | 0,8 | | 45 | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| 5,5 | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 6 | | | | | | | | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 6,2 | | | | | | | | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 6,5 | 12 | 7 | 20 | 7 | 0,8 | | | 45 | | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| 8 | 14 | 7,5 | 22 | 7 | 0,8 | | | | 45 | | | | | | | | | | | | | | | | | | | | | |
| 8,2 | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 8,5 | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 9 | 16 | 9,3 | 26 | 7 | 0,8 | 45 | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 10,5 | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 11 | | | | | | | ● | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 12 | 20 | 11,5 | 30 | 7 | 0,8 | | 45 | | | | | | | | | | | | | | | | | | | | | | | |
| 12,5 | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 16 | 22 | 13 | 36 | 7 | 0,8 | | | | | 45 | | | | | | | | | | | | | | | | | | | | |
| 16,5 | | | | | | | | ● | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 17 | | | | | | | | ● | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |

● = Ab Lager oder kurzfristig lieferbar.
Übrige Abmessungen auf Anfrage.

● = Available from stock or on short notice.
Other dimensions on request.

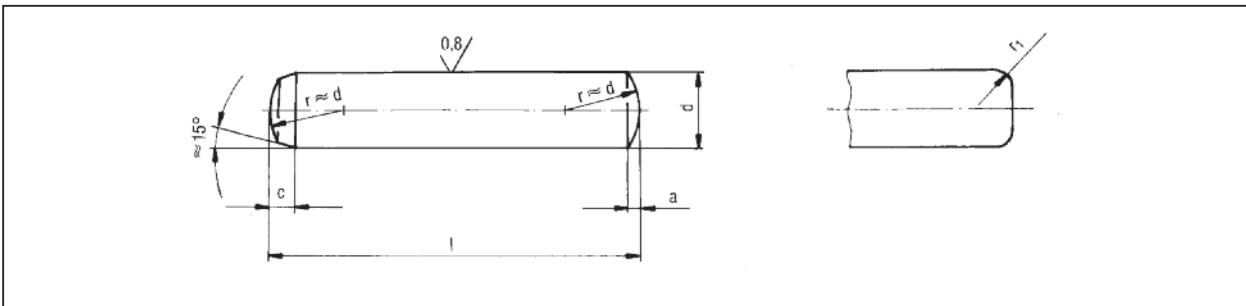
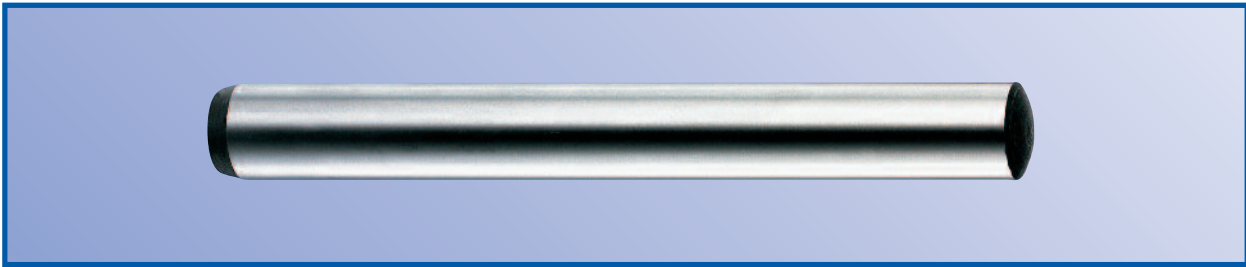
Bei Bestellung bitte unbedingt den Schaftdurchmesser d₃ angeben.

Please note shaft diameter d₃ on order.

Zylinderstifte

Dowel pin

ähnlich DIN EN ISO 8734, Typ A, bisher DIN 6325
similar DIN EN ISO 8734, Typ A, previously DIN 6325



Zulässiges Stiftenende nach Wahl des Herstellers.

Permissible pin end at manufacturer's choice.

Artikel-Nr.: 7126 .

Item no.: 7126 .

Werkstoff: Nach Wahl des Herstellers

Material: As chosen by manufacturer

Härte: 60 ± 2 HRC

Hardness: 60 ± 2 HRC

| d | m6 | 1 | 1,5 | 2 | 2,5 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | 13 | 14 | 16 | 20 |
|------------------------------------|--------|--------|------|------|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|
| a | ~ | 0,12 | 0,20 | 0,25 | 0,3 | 0,4 | 0,5 | 0,63 | 0,8 | 1 | 1,2 | 1,6 | 2 | 2 | 2 | 2,5 |
| c | | 0,5 | 0,6 | 0,8 | 1 | 1,2 | 1,4 | 1,7 | 2,1 | 2,6 | 3 | 3,8 | 3,8 | 3,8 | 4,6 | 6 |
| r ₁ | min. | – | 0,2 | 0,2 | 0,3 | 0,3 | 0,4 | 0,4 | 0,4 | 0,5 | 0,6 | 0,6 | 0,7 | 0,7 | 0,8 | 0,8 |
| | max. | – | 0,6 | 0,6 | 0,7 | 0,8 | 0,9 | 1 | 1,1 | 1,3 | 1,4 | 1,6 | 1,7 | 1,7 | 1,8 | 2 |
| Nenn- Nominal maß value min max | | | | | | | | | | | | | | | | |
| 4 | 3,75 | 4,25 | ● | ● | ● | | | | | | | | | | | |
| 5 | 4,75 | 5,25 | ● | ● | ● | ● | ● | | | | | | | | | |
| 6 | 5,75 | 6,25 | ● | ● | ● | ● | ● | ● | ● | | | | | | | |
| 8 | 7,75 | 8,25 | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | |
| 10 | 9,75 | 10,25 | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | |
| 12 | 11,50 | 12,50 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | |
| 14 | 13,50 | 14,50 | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | |
| 16 | 15,50 | 16,50 | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| 18 | 17,50 | 18,50 | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| 20 | 19,50 | 20,50 | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 24 | 23,50 | 24,50 | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 28 | 27,50 | 28,50 | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 32 | 31,50 | 32,50 | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 36 | 34,50 | 35,50 | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 40 | 39,50 | 40,50 | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 45 | 44,50 | 45,50 | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 50 | 49,50 | 50,50 | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 55 | 54,25 | 55,75 | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 60 | 59,25 | 60,75 | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 70 | 69,25 | 70,75 | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 80 | 79,25 | 80,75 | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 90 | 89,25 | 90,75 | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● |
| 100 | 99,25 | 100,75 | | | | | | | | ● | ● | ● | ● | ● | ● | ● |
| 120 | 119,25 | 120,75 | | | | | | | | | ● | ● | ● | ● | ● | ● |

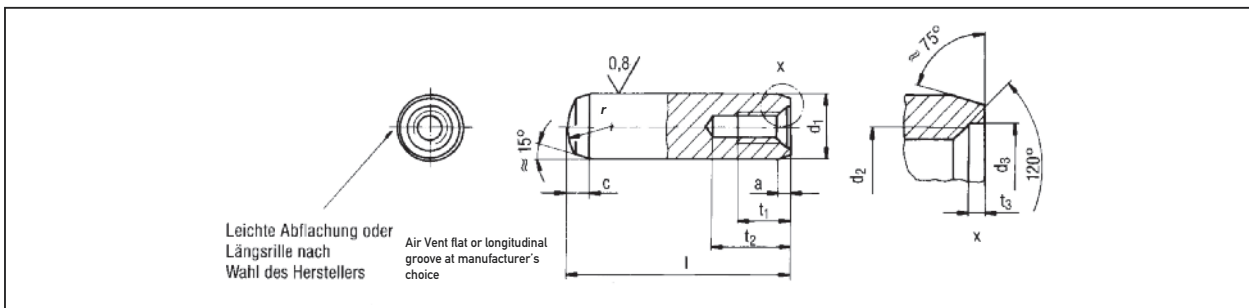
● = Ab Lager oder kurzfristig lieferbar. Sondermaße auf Anfrage

● = Available from stock. Other dimensions on request.

Zylinderstifte

Dowel pin

ähnlich DIN EN ISO 8735, Typ A, bisher DIN 7979
similar DIN EN ISO 8735, Typ A, previously DIN 7979



Artikel-Nr.: 7227 .

Item no.: 7227 .

Werkstoff: Nach Wahl des Herstellers

Material: As chosen by manufacturer

Härte: 60 ± 2 HRC

Hardness: 60 ± 2 HRC

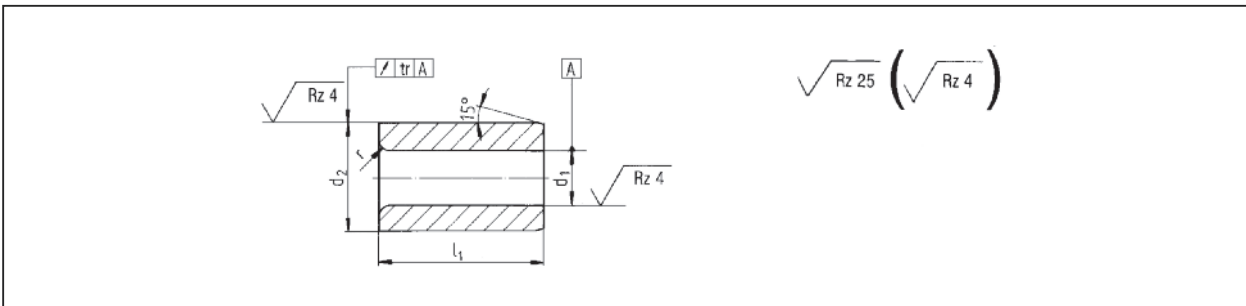
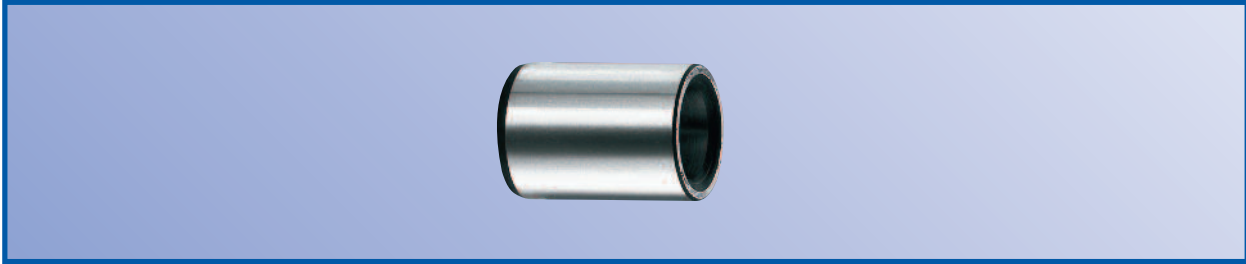
| d ₁ m6 | 4 | 5 | 6 | 8 | 10 | 12 | 13 | 14 | 16 | 20 |
|----------------------------|-------|-------|-----|-----|-----|-----|-----|-----|-----|------|
| r | 4 | 5 | 6 | 8 | 10 | 12 | 13 | 14 | 16 | 20 |
| d ₂ | M 3 | M 3 | M 4 | M 5 | M 6 | M 6 | M 6 | M 8 | M 8 | M 10 |
| d ₃ | 3,3 | 3,3 | 4,3 | 5,3 | 6,4 | 6,4 | 6,4 | 8,4 | 8,4 | 10,5 |
| t ₁ | 4,5-6 | 4,5-6 | 6 | 8 | 10 | 10 | 12 | 12 | 12 | 16 |
| t ₂ min. | 7-10 | 7-10 | 10 | 12 | 16 | 16 | 18 | 20 | 20 | 25 |
| t ₃ | 0,8 | 0,8 | 1 | 1,2 | 1,2 | 1,2 | 1,2 | 1,2 | 1,5 | 1,5 |
| a | 0,4 | 0,5 | 0,8 | 1,0 | 1,2 | 1,6 | 1,8 | 1,8 | 2,0 | 2,5 |
| C | 1,3 | 1,7 | 2,1 | 2,6 | 3,0 | 3,8 | 3,8 | 4,0 | 4,6 | 6,0 |
| Länge l ₁ js 15 | | | | | | | | | | |
| 8 | | ● | | | | | | | | |
| 10 | ● | ● | | | | | | | | |
| 12 | ● | ● | ● | | | | | | | |
| 14 | ● | ● | ● | | | | | | | |
| 16 | ● | ● | ● | ● | | | | | | |
| 18 | ● | ● | ● | ● | ● | | | | | |
| 20 | ● | ● | ● | ● | ● | ● | | | | |
| 24 | ● | ● | ● | ● | ● | ● | | | | |
| 28 | ● | ● | ● | ● | ● | ● | | ● | ● | |
| 32 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 36 | ● | ● | ● | ● | ● | ● | | ● | ● | ● |
| 40 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 45 | | ● | ● | ● | ● | ● | | ● | ● | ● |
| 50 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 55 | | ● | ● | ● | ● | ● | | ● | ● | ● |
| 60 | | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 70 | | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 80 | | | ● | ● | ● | ● | ● | ● | ● | ● |
| 90 | | | ● | ● | ● | ● | ● | ● | ● | ● |
| 100 | | | ● | ● | ● | ● | ● | ● | ● | ● |
| 120 | | | | ● | ● | ● | ● | ● | ● | ● |

● = Ab Lager oder kurzfristig lieferbar. Sondermaße auf Anfrage

● = Available from stock. Other dimensions on request.

Bohrbuchsen Headless Drill Bush

nach DIN 179, ähnlich ISO 4247
acc. to DIN 179 standard, similar to ISO 4247



Artikel-Nr.: Form A: 7819 .
Bohrung an einem Ende gerundet
Form B: 7829 .
Bohrung an beiden Enden gerundet

Item no.: Type A: 7819 .
Bore radiused at one end
Type B: 7829 .
Bore radiused at both ends

Werkstoff: Einsatzstahl nach Wahl des Herstellers.

Material: Steel as chosen by manufacturer.

Härte: 740 + 80 HV 10

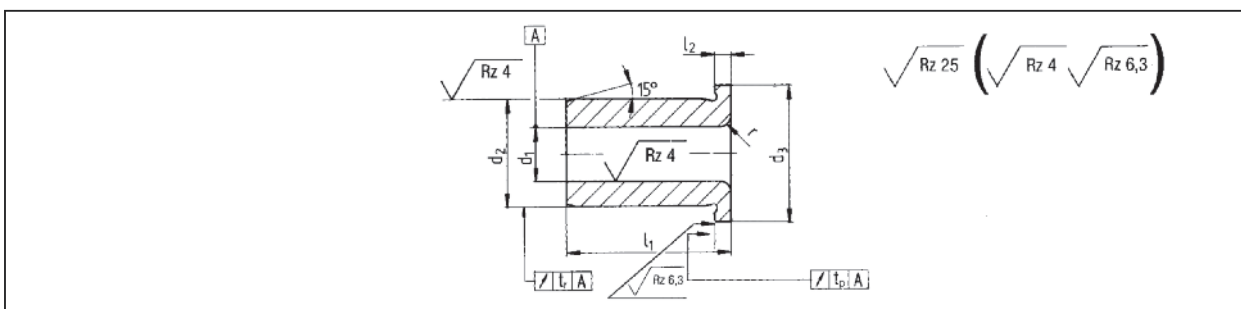
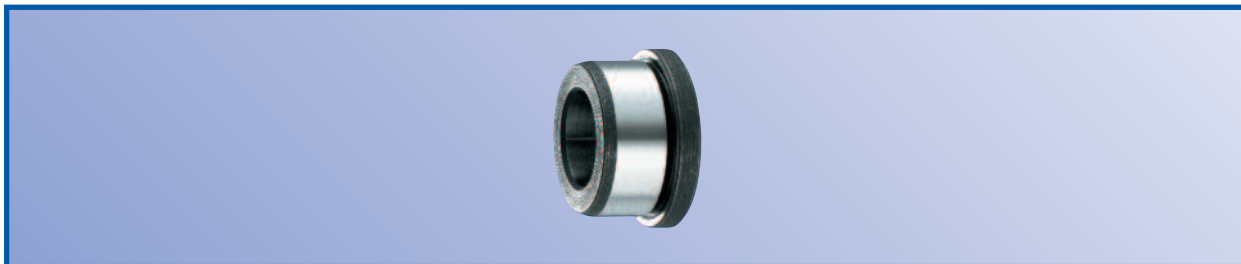
Hardness: 740 + 80 HV 10

| d ₁ F 7 | | l ₁ | | | d ₂ ¹⁾ n 6 | r | t _r |
|-----------------------|---|----------------|------------------|--------------|-------------------------------------|------|----------------|
| | | kurz short | mittel medium | lang long | | | |
| 0,4– 0,8 | Bohrung d ₁ gestuft < 15 µm 0,1 > 15 vorzugsweise 0,5 mm Graded bores d ₁ < 15 in increments of 0.1 > 15 preferably 0.5 mm | 6 | – | – | 3 | 1 | 0,01 |
| 0,9– 1,0 | | 6 | 9 | – | 3 | | |
| 1,1– 1,8 | | | | | 4 | | |
| 1,9– 2,6 | | 8 | 12 | 16 | 5 | 1 | |
| 2,7– 3,3 | | | | | 6 | | |
| 3,4– 4,0 | | 10 | 16 | 20 | 7 | 1,5 | |
| 4,1– 5,0 | | | | | 8 | | |
| 5,1– 6,0 | | 12 | 20 | 25 | 10 | | 2 |
| 6,1– 8,0 | | | | | 12 | | |
| 8,1– 10,0 | | 16 | 28 | 36 | 15 | 3 | |
| 10,1– 12,0 | | | | | 18 | | |
| 12,1– 15,0 | | 20 | 36 | 45 | 22 | | 3,5 |
| 15,5– 18,0 | | | | | 26 | | |
| 18,5– 22,0 | | 25 | 45 | 56 | 30 | 4 | |
| 22,5– 26,0 | | | | | 35 | | |
| 26,5– 30,0 | | 30 | 56 | 67 | 42 | | 0,02 |
| 30,5– 35,0 | | | | | 48 | | |
| 35,5– 42,0 | | 35 | 67 | 78 | 55 | 0,04 | |
| 42,5– 48,0 | | | | | 62 | | |
| 48,5– 55,0 | | 35 | 67 | 78 | 70 | | 4 |
| 55,5– 63,0 | 78 | | | | | | |

¹⁾ Für eine Bohrung mit Toleranzfeld H 6 oder H 7 in der Vorrichtung. ¹⁾ For drilling with tolerance range H 6 or H 7 in jig/fixture.

Bundbohrbuchsen Headed Drill Bush

nach DIN 172, ähnlich ISO 4247
acc. to DIN 172 standard, similar to ISO 4247



Artikel-Nr.: Form A: 7619 .
Bohrung an einem Ende gerundet
Form B: 7629 .
Bohrung an beiden Enden gerundet

Item no.: Type A: 7619 .
Bore radiused at one end
Type B: 7629 .
Bore radiused at both ends

Werkstoff: Einsatzstahl nach Wahl des Herstellers.

Material: Steel as chosen by manufacturer.

Härte: 740 + 80 HV 10

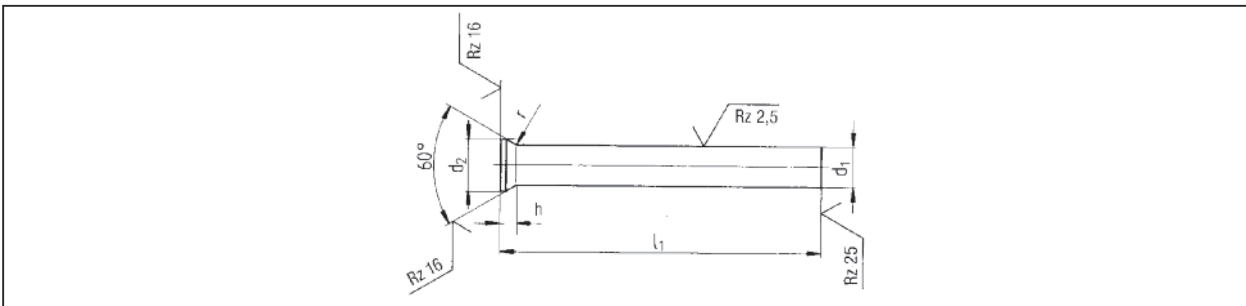
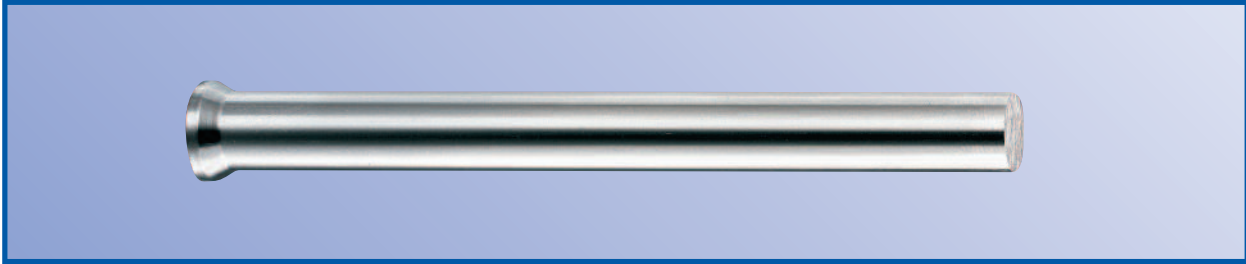
Hardness: 740 + 80 HV 10

| d ₁ F 7 | Bohrung d ₁ gestuft < 15 um 0,1 > 15 vorzugsweise 0,5 mm Graded bores d ₁ < 15 in increments of 0.1 > 15 preferably 0.5 mm | l ₁ | | | d ₂ ¹⁾ n 6 | d ₃ | l ₂ | r | t _r | t _p |
|-----------------------|---|----------------|------------------|--------------|-------------------------------------|----------------|----------------|-----|----------------|----------------|
| | | kurz Short | mittel medium | lang long | | | | | | |
| 0,4– 0,8 | | 6 | – | – | 3 | 6 | 2 | 1 | 0,01 | 0,03 |
| 0,9– 1,0 | | 6 | 9 | – | 3 | 6 | | | | |
| 1,1– 1,8 | | | | | 4 | 7 | | | | |
| 1,9– 2,6 | | 8 | 12 | 16 | 5 | 8 | | | | |
| 2,7– 3,3 | | | | | 6 | 9 | | | | |
| 3,4– 4,0 | | | | | 7 | 10 | | | | |
| 4,1– 5,0 | | 10 | 16 | 20 | 8 | 11 | 2,5 | 1 | 0,02 | |
| 5,1– 6,0 | | | | | 10 | 13 | | | | |
| 6,1– 8,0 | | 12 | 20 | 25 | 12 | 15 | 3 | 1,5 | | |
| 8,1–10,0 | | | | | 15 | 18 | | 2 | | |
| 10,1–12,0 | | 16 | 28 | 36 | 18 | 22 | 4 | 2 | | |
| 12,1–15,0 | | | | | 22 | 26 | | | | |
| 15,5–18,0 | | 20 | 36 | 45 | 26 | 30 | 5 | 3 | | |
| 18,5–22,0 | | | | | 30 | 34 | | | | |
| 22,5–26,0 | | 25 | 45 | 56 | 35 | 39 | 5 | 3 | | |
| 26,5–30,0 | | | | | 42 | 46 | | | | |
| 30,5–35,0 | | 30 | 56 | 67 | 48 | 52 | 5 | 3 | | |
| 35,5–42,0 | | | | | 55 | 59 | | | | |
| 42,5–48,0 | | 35 | 67 | 78 | 62 | 66 | 6 | 3,5 | | |
| 48,5–55,0 | | | | | 70 | 74 | | | | |
| 55,5–63,0 | | | | 78 | 82 | | 4 | | | |

¹⁾ Für eine Bohrung mit Toleranzfeld H 6 oder H 7 in der Vorrichtung. ¹⁾ For drilling with tolerance range H 6 or H 7 in jig/fixture.

Vorstaucher-Auswerferstifte/ Preforming ejector pin

mit kegeligem Kopf ähnl. DIN 9861 Teil 1, Form D, HSS durchgehend gehärtet (Schaft und Kopf gleiche Härte) für die Schraubenherstellung
with countersunk head similar to DIN 9861 standard part 1, type D, HSS fully hardened (shaft and head equal hardness) for bolt manufacture



Artikel-Nr.: 6753 .

Werkstoff: HSS

Härte: 64 + 2

Item no.: 6753 .

Material: HSS

Hardness: 64 + 2

Größere Durchmesser und Längen auf Anfrage.

Larger diameters and lengths on request.

| d_1 | Stufung Gradation d_1 | d_2 | h $+0,2$ 0 | r | l_1 $+2$ 0 |
|-----------|-------------------------------|-------|--|----------------|--|
| $h\ 6$ | | | | | |
| 1,0 + 1,1 | 0,1 | 1,8 | Kopfhöhen siehe Tabellen Seite 1.04 bis 1.05 Schneidstempel DIN 9861 Form D $h =$ Please look at page 1.04 to 1.05 Punches DIN 9861 Type D | $0,4^{+0,3}_0$ | 60/ 70/ 80/ 90/ 100/ 120/ |
| 1,2 + 1,3 | | 2,0 | | | |
| 1,4 + 1,5 | | 2,2 | | | |
| 1,6 + 1,7 | | 2,5 | | | |
| 1,8 + 1,9 | | 2,8 | | | |
| 2,0 | | 3,0 | | | |
| 2,1 + 2,2 | | 3,2 | | | |
| 2,3–2,55 | 0,05 | 3,5 | | $0,6^{+0,4}_0$ | |
| 2,6–2,95 | | 4,0 | | | |
| 3,0–3,45 | | 4,5 | | | |
| 3,5–3,95 | | 5,0 | | | |
| 4,0–4,45 | | 5,5 | | | |
| 4,5–4,95 | | 6,0 | | | |
| 5,0–5,45 | | 6,5 | | | |
| 5,5–5,95 | 0,1 | 7,0 | $1,0^{+0,5}_0$ | | |
| 6,0–6,4 | | 8,0 | | | |
| 6,5–7,4 | | 9,0 | | | |
| 7,5–8,4 | | 10,0 | | | |
| 8,5–9,4 | | 11,0 | | | |
| 9,5–10,0 | | 12,0 | | | |

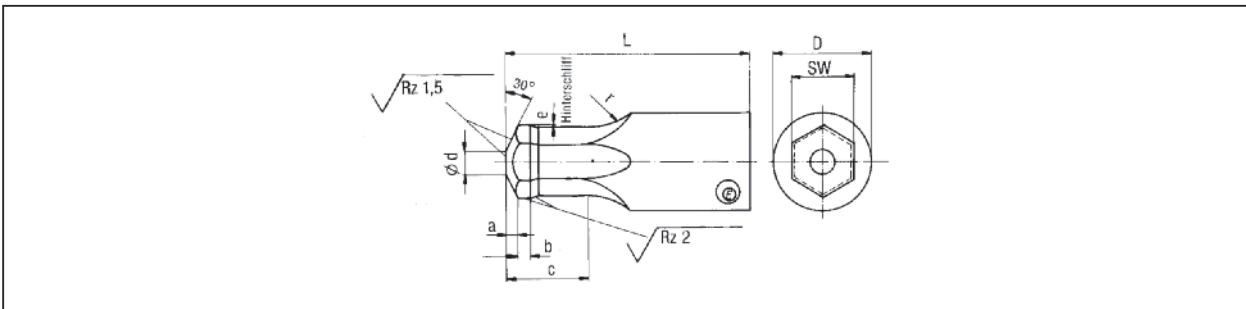
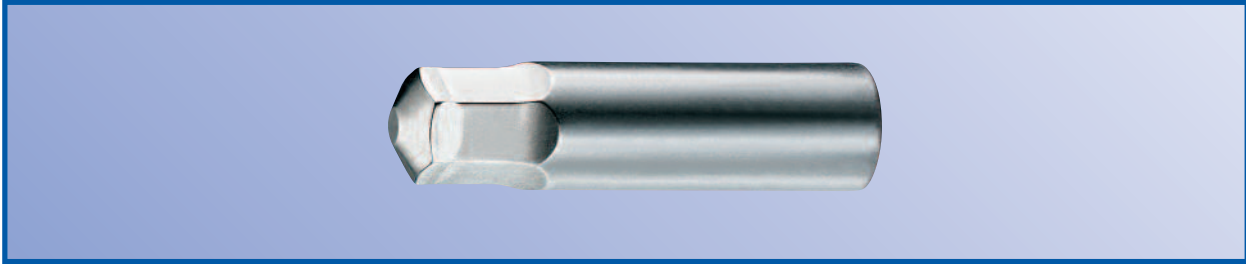
Hinweis: Teilweise bis 200 mm Länge ab Lager lieferbar.
Preis auf Anfrage.

Note: Partly until length 200 mm on stock.
Price on request.

Innensechskantstempel Typ K, poliert

Hexagon socket head punch type K, polished

für Zylinderschrauben nach DIN EN ISO 4762, bisher DIN 912
for cylinder head bolts to DIN EN ISO 4762, previously DIN 912



Artikel-Nr.: 322 . . .
Die 4. Stelle der Art. Nr.
bezeichnet den Werkstoff siehe Seite 2

Item no.: 322 . . .
The 4th digit of the item no.
indicates the material, see page 2

Werkstoffe: HSS, Vanadis 30

Materials: HSS, Vanadis 30

Härte: HRC 64 + 2

Hardness: HRC 64 + 2

| Größe Size | D | SW | L | a | b | c | d | r |
|---------------|------|------------|--------|--------|--------|--------|--------|---|
| | f7 | 0 -0,02 | ± 0,10 | ± 0,10 | + 0,20 | + 0,50 | ± 0,35 | |
| M3 | 4,0 | 2,58 | 36,0 | X | X | 2,3 | X | 5 |
| M4 | 5,0 | 3,08 | 36,0 | X | X | 3,0 | X | |
| M5 | 6,0 | 4,09 | 36,0 | X | X | 4,0 | X | |
| M6 | 7,0 | 5,14 | 36,0 | X | X | 5,0 | X | |
| M8 | 7,5 | 6,14 | 36,0 | X | X | 6,5 | X | 6 |
| M10 | 10,0 | 8,17 | 36,0 | X | X | 7,5 | X | |
| M12 | 12,0 | 10,17 | 36,0 | X | X | 8,4 | X | 8 |
| M14 | 14,5 | 12,21 | 47,0 | X | X | 10,0 | X | |
| M16 | 17,0 | 14,21 | 47,0 | X | X | 13,5 | X | |
| M18 | 18,0 | 14,21 | 52,0 | X | X | 13,5 | X | |
| M20 | 20,0 | 17,23 | 55,0 | X | X | 15,0 | X | |

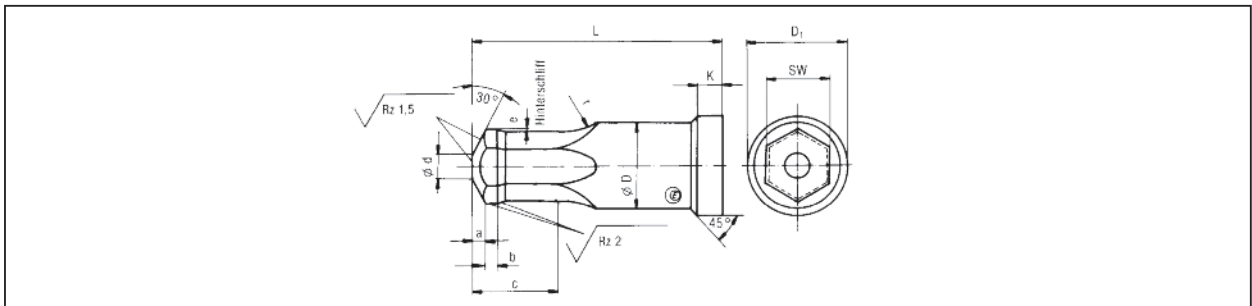
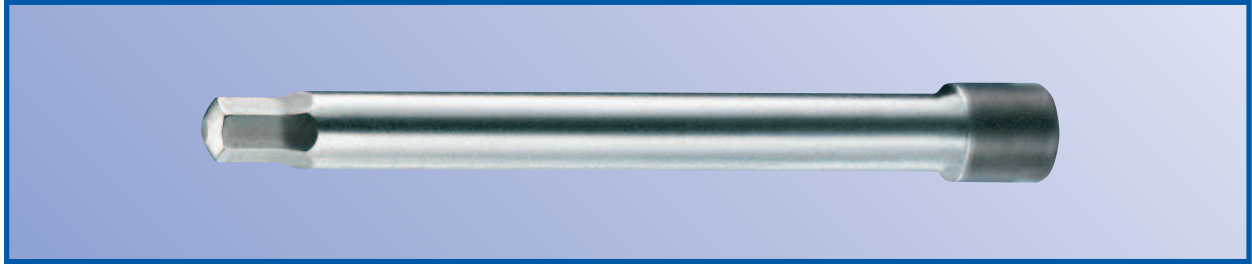
X = Nach Wahl des Herstellers
e = Hinterschliff ≤ M 8 = 0,03 + 0,02
≥ M 10 = 0,05 + 0,02

X = As elected by manufacturer
e = Final grind ≤ M 8 = 0.03 + 0.02
≥ M 10 = 0.05 + 0.02

Innensechskantstempel Typ L, poliert

Hexagon socket head punch type L, polished

für Zylinderschrauben nach DIN EN ISO 4762, bisher DIN 912
for cylinder head bolts to DIN EN ISO 4762, previously DIN 912



Artikel-Nr.: 324 . . .
Die 4. Stelle der Art. Nr.
bezeichnet den Werkstoff siehe Seite 2

Item no.: 324 . . .
The 4th digit of the item no.
indicates the material, see page 2

Werkstoffe: HSS, Vanadis 30

Materials: HSS, Vanadis 30

Härte: HRC 64 + 2

Hardness: HRC 64 + 2

| Größe Size | D f7 | D ₁ 0 - 0,10 | SW 0 - 0,02 | L ± 0,10 | a ± 0,10 | b + 0,20 | c + 0,50 | d ± 0,35 | | ± 0,10 |
|---------------|---------|-------------------------------|-------------------|-------------|-------------|-------------|-------------|-------------|----|--------|
| M3 | 3,5 | 5,0 | 2,58 | 44,2 | X | X | 2,3 | X | 5 | 6,5 |
| M4 | 5,0 | 7,0 | 3,08 | 44,2 | X | X | 3,0 | X | | 6,5 |
| M5 | 5,5 | 7,0 | 4,09 | 58,0 | X | X | 4,0 | X | | 6,5 |
| M6 | 6,6 | 8,2 | 5,14 | 58,0 | X | X | 5,0 | X | | 6,5 |
| M8 | 8,0 | 9,5 | 6,14 | 58,0 | X | X | 6,5 | X | | 6,5 |
| M10 | 10,0 | 11,5 | 8,17 | 80,0 | X | X | 7,5 | X | 6 | 8,8 |
| M12 | 12,5 | 14,5 | 10,17 | 80,0 | X | X | 8,4 | X | | 9,0 |
| M14 | 15,0 | 17,0 | 12,21 | 90,0 | X | X | 10,0 | X | 8 | 10,0 |
| M16 | 17,0 | 19,0 | 14,21 | 90,0 | X | X | 13,5 | X | | 10,0 |
| M18 | 17,0 | 19,0 | 14,21 | 90,0 | X | X | 13,5 | X | | 10,0 |
| M20 | 21,0 | 23,5 | 17,23 | 100,0 | X | X | 15,0 | X | | 12,0 |
| M24 | 23,0 | 24,0 | 19,27 | 152,9 | X | X | 18,0 | X | 10 | 12,0 |

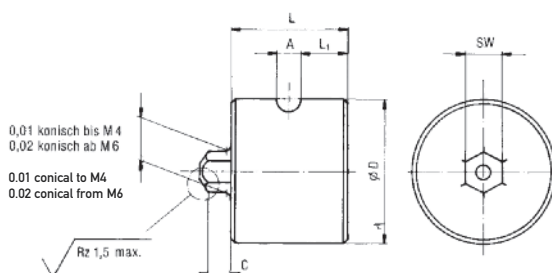
X = Nach Wahl des Herstellers
e = Hinterschliff ≤ M 8 = 0,03 + 0,02
≥ M 10 = 0,05 + 0,02

X = As elected by manufacturer
e = Final grind ≤ M 8 = 0.03 + 0.02
≥ M 10 = 0.05 + 0.02

Innensechskantstempel, poliert

Hexagon socket head punch, polished

für Senkschrauben nach DIN EN ISO 10642, bisher DIN 7991
for countersunk bolts to DIN EN ISO 10642, previously DIN 7991



Artikel-Nr.: 3324 .

Item no.: 3324 .

Ausführung: Gehärtet, angelassen und allseitig feinstgeschliffen, entspannt und anschließend Sechskant Form poliert.

Version: Hardened, tempered and fully fine ground finished, stress relieved polished hexagon shape.

Werkstoff: Vanadis 30

Material: Vanadis 30

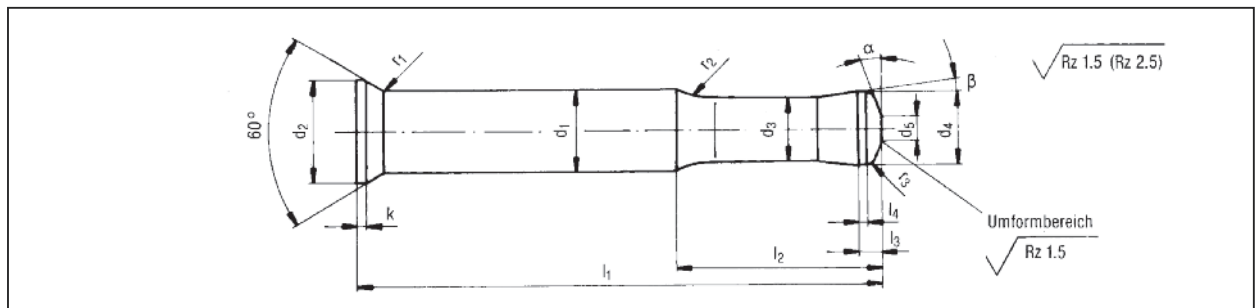
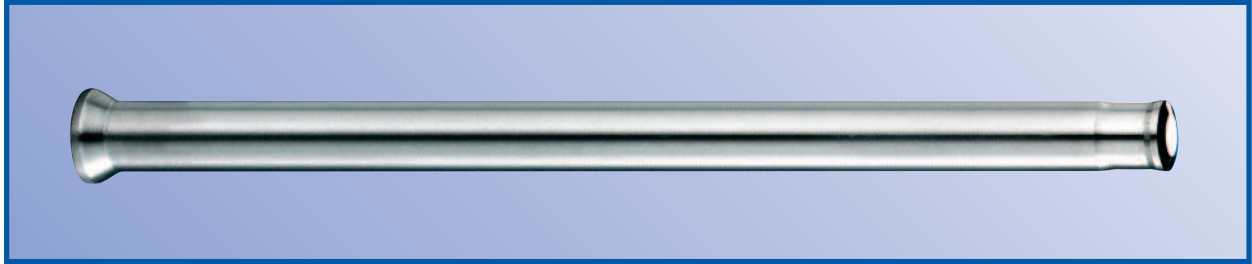
Härte: HRC 64 + 2

Hardness: HRC 64 + 2

| Größe Size | SW | D | L | L ₁ | A | C |
|---------------|-------------|----|------------|----------------|---|-----------|
| | 0 -0,015 | g6 | 0 -0,10 | | | 0 -0,1 |
| M3 | 2,10 | 13 | 25 | 10,5 | 3 | 1,2 |
| M4 | 2,60 | 13 | 25 | 10,5 | | 1,8 |
| M5 | 3,10 | 17 | 25 | 9,5 | 5 | 2,3 |
| M6 | 4,12 | 17 | 25 | 9,5 | | 2,5 |
| M8 | 5,14 | 20 | 25 | 9,5 | | 3,5 |
| M10 | 6,14 | 25 | 25 | 9,5 | | 4,4 |
| M12 | 8,175 | 30 | 25 | 9,5 | | 4,5 |

Fließpressstempel Extrusion pin

mit 60° Senkkopf
with 60° countersunk head



Werkstoffe: HSS, Vanadis 30

Material: HSS, Vanadis 30

Härte: Werkstoff HSS HRC 64 ± 2
Werkstoff Vanadis 30 HRC 66 ± 2

Hardness: Material HSS HRC 64 ± 2
Material Vanadis 30 HRC 66 ± 2

| d ₁ | d ₂ | d ₃ | d ₄ | d ₅ | l ₁ | l ₂ | l ₃ | l ₄ | k | r ₁ | r ₂ | r ₃ | | |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|---|----------------|----------------|----------------|--|--|
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

Maße nach Wahl des Bestellers.

Dimensions at customers choice.

Auf Wunsch liefern wir andere Werkstoffe bzw. in anderer Ausführung oder Härte.

On request we supply other materials or custom designs and hardness variations.

ISO-Grenzabmaße ISO-Tolerances



nach DIN EN ISO 286 Teil 2 (Auszug)
DIN EN ISO 286 part 2 (extract)

Außenmaße (Wellen): Abmaße in $\mu\text{m} = 0,001 \text{ mm}$

Outside diameters (shafts): Dimensions in $\mu\text{m} = 0,001 \text{ mm}$

| Nennmaß- bereich in mm Range in mm | Toleranzklasse | | | | | | | | | Tolerance class | | | | | | | | |
|---|----------------|-----|-----|------|-----|-----|-----|-----|-----|-----------------|-------|-------|------|------|-----|-----|-----|------|
| | f6 | f7 | g6 | h3 | h4 | h5 | h6 | h8 | h9 | j6 | js6 | js9 | js14 | js15 | k6 | m5 | m6 | n6 |
| von from 0 | - 6 | - 6 | - 2 | 0 | 0 | 0 | 0 | 0 | 0 | + 4 | + 3 | +12,5 | +125 | +200 | + 6 | + 6 | + 8 | + 10 |
| bis to 3 | -12 | -16 | - 8 | - 2 | - 3 | - 4 | - 6 | -14 | -25 | - 2 | - 3 | -12,5 | -125 | -200 | 0 | + 2 | + 2 | + 4 |
| über over 3 | -10 | -10 | - 4 | 0 | 0 | 0 | 0 | 0 | 0 | + 6 | + 4 | +15 | +150 | +240 | + 9 | + 9 | +12 | +16 |
| bis to 6 | -18 | -22 | -12 | -2,5 | - 4 | - 5 | - 8 | -18 | -30 | - 2 | - 4 | -15 | -150 | -240 | + 1 | + 4 | + 4 | + 8 |
| über over 6 | -13 | -13 | - 5 | 0 | 0 | 0 | 0 | 0 | 0 | + 7 | + 4,5 | +18 | +180 | +290 | +10 | +12 | +15 | +19 |
| bis to 10 | -22 | -28 | -14 | -2,5 | - 4 | - 6 | - 9 | -22 | -36 | - 2 | - 4,5 | -18 | -180 | -290 | + 1 | + 6 | + 6 | +10 |
| über over 10 | -16 | -16 | - 6 | 0 | 0 | 0 | 0 | 0 | 0 | + 8 | + 5,5 | +21,5 | +215 | +350 | +12 | +15 | +18 | +23 |
| bis to 18 | -27 | -34 | -17 | - 3 | - 5 | - 8 | -11 | -27 | -43 | - 3 | - 5,5 | -21,5 | -215 | -350 | + 1 | + 7 | + 7 | +12 |
| über over 18 | -20 | -20 | - 7 | 0 | 0 | 0 | 0 | 0 | 0 | + 9 | + 6,5 | +26 | +260 | +420 | +15 | +17 | +21 | +28 |
| bis to 30 | -33 | -41 | -20 | - 4 | - 6 | - 9 | -13 | -33 | -52 | - 4 | - 6,5 | -26 | -260 | -420 | + 1 | + 8 | + 8 | +15 |
| über over 30 | -25 | -25 | - 9 | 0 | 0 | 0 | 0 | 0 | 0 | +11 | + 8 | +31 | +310 | +500 | +18 | +20 | +25 | +33 |
| bis to 50 | -41 | -50 | -25 | - 4 | - 7 | -11 | -16 | -39 | -62 | - 5 | - 8 | -31 | -310 | -500 | + 2 | + 9 | + 9 | +17 |
| über over 50 | -30 | -30 | -10 | 0 | 0 | 0 | 0 | 0 | 0 | +12 | + 9,5 | +37 | +370 | +600 | +21 | +24 | +30 | +39 |
| bis to 80 | -49 | -60 | -29 | - 5 | - 8 | -13 | -19 | -46 | -74 | - 7 | - 9,5 | -37 | -370 | -600 | + 2 | +11 | +11 | +20 |
| über over 80 | -36 | -36 | -12 | 0 | 0 | 0 | 0 | 0 | 0 | +13 | +11 | +43,5 | +435 | +700 | +25 | +28 | +35 | +45 |
| bis to 120 | -58 | -71 | -34 | - 6 | -10 | -15 | -22 | -54 | -87 | - 9 | -11 | -43,5 | -435 | -700 | + 3 | +13 | +13 | +23 |

Innenmaße (Bohrungen): Abmaße in $\mu\text{m} = 0,001 \text{ mm}$

Inside diameters (bores): Dimensions in $\mu\text{m} = 0,001 \text{ mm}$

| Nennmaß- bereich in mm Range in mm | Toleranzklasse | | | | | | | | | | Tolerance class | | | | | | | |
|---|----------------|-----|-----|-----|-----|-----|-----|-----|------|------|-----------------|------|-----|-----|-----|-----|-----|-----|
| | E8 | F7 | G7 | H5 | H6 | H7 | H8 | H9 | H10 | H11 | J7 | JS5 | K6 | K7 | M6 | M7 | P6 | P7 |
| von from 0 | + 28 | +16 | +12 | + 4 | + 6 | +10 | +14 | +25 | + 40 | + 60 | + 4 | + 2 | 0 | 0 | - 2 | - 2 | - 6 | - 6 |
| bis to 3 | + 14 | + 6 | + 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - 6 | -2 | - 6 | -10 | - 8 | -12 | -12 | -16 |
| über over 3 | + 38 | +22 | +16 | + 5 | + 8 | +12 | +18 | +30 | + 48 | + 75 | + 6 | +2,5 | + 2 | + 3 | - 1 | 0 | - 9 | - 8 |
| bis to 6 | + 20 | +10 | + 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - 6 | -2,5 | - 6 | - 9 | - 9 | -12 | -17 | -20 |
| über over 6 | + 47 | +28 | +20 | + 6 | + 9 | +15 | +22 | +36 | + 58 | + 90 | + 8 | + 3 | + 2 | + 5 | - 3 | 0 | -12 | - 9 |
| bis to 10 | + 25 | +13 | + 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - 7 | -3 | - 7 | -10 | -12 | -15 | -21 | -24 |
| über over 10 | + 59 | +34 | +24 | + 8 | +11 | +18 | +27 | +43 | + 70 | +110 | +10 | + 4 | + 2 | + 6 | - 4 | 0 | -15 | -11 |
| bis to 18 | + 32 | +16 | + 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - 8 | -4 | - 9 | -12 | -15 | -18 | -26 | -29 |
| über over 18 | + 73 | +41 | +28 | + 9 | +13 | +21 | +33 | +52 | + 84 | +130 | +12 | +4,5 | + 2 | + 6 | - 4 | 0 | -18 | -14 |
| bis to 30 | + 40 | +20 | + 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - 9 | -4,5 | -11 | -15 | -17 | -21 | -31 | -35 |
| über over 30 | + 89 | +50 | +34 | +11 | +16 | +25 | +39 | +62 | +100 | +160 | +14 | +5,5 | + 3 | + 7 | - 4 | 0 | -21 | -17 |
| bis to 50 | + 50 | +25 | + 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -11 | -5,5 | -13 | -18 | -20 | -25 | -37 | -42 |
| über over 50 | +106 | +60 | +40 | +13 | +19 | +30 | +46 | +74 | +120 | +190 | +18 | +6,5 | + 4 | + 9 | - 5 | 0 | -26 | -21 |
| bis to 80 | + 60 | +30 | +10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -12 | -6,5 | -15 | -21 | -24 | -30 | -45 | -51 |
| über over 80 | +125 | +71 | +47 | +15 | +22 | +35 | +54 | +87 | +140 | +220 | +22 | +7,5 | + 4 | +10 | - 6 | 0 | -30 | -24 |
| bis to 120 | + 72 | +36 | +12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -13 | -7,5 | -18 | -25 | -28 | -35 | -52 | -59 |

Umwandlungstabelle Surface Finish

für R_a -, R_z - und R_t -Werte (angenäherte Werte)
for R_a -, R_z - and R_t -Values (Approximations)

**Umwandlungstabelle für R_a -, R_z - und R_t -Werte
(angenäherte Werte)**

**Conversion Table for R_a -, R_z - and R_t -values
(approximations)**

| | N1 | N2 | N3 | N4 | N5 | N6 | N7 | N8 | N9 | N10 | N11 | N12 |
|--|-----------------------------|-----------------------------|-----------------------------|----------------------------|----------------------------|------------------------------|------------------------------|------------------------------|------------------------------|--------------------------------|--------------------------------|--------------------------------|
| $R_a \mu\text{m}$ | 0,025 | 0,05 | 0,1 | 0,2 | 0,4 | 0,8 | 1,6 | 3,2 | 6,3 | 12,5 | 25,0 | 50,0 |
| CLA μ'' | 1 | 2 | 4 | 8 | 16 | 32 | 63 | 125 | 250 | 500 | 1000 | 2000 |
| $R_z \mu\text{m}$ (angenähert) (appr.) | 0,22 bis / to 0,30 | 0,45 bis / to 0,60 | 0,8 bis / to 1,1 | 1,0 bis / to 1,8 | 1,6 bis / to 2,8 | 3,0 bis / to 4,8 | 5,9 bis / to 8,0 | 12 bis / to 16 | 23 bis / to 32 | 46 bis / to 57 | 90 bis / to 110 | 180 bis / to 220 |
| $R_t \mu\text{m}$ (angenähert) (appr.) | 0,24 bis / to 0,40 | 0,49 bis / to 0,80 | 0,85 bis / to 1,45 | 1,10 bis / to 2,40 | 1,75 bis / to 3,60 | 3,2 bis / to 6,0 | 6,3 bis / to 10,0 | 13,0 bis / to 19,5 | 25 bis / to 38 | 48 bis / to 68 | 95 bis / to 130 | 190 bis / to 250 |
| Verhältnis Ratio R_z zu R_a | 9 : 1 bis / to 12 : 1 | 9 : 1 bis / to 12 : 1 | 8 : 1 bis / to 11 : 1 | 5 : 1 bis / to 9 : 1 | 4 : 1 bis / to 7 : 1 | 3,8 : 1 bis / to 6 : 1 | 3,7 : 1 bis / to 5 : 1 | 3,7 : 1 bis / to 5 : 1 | 3,7 : 1 bis / to 5 : 1 | 3,7 : 1 bis / to 4,6 : 1 | 3,6 : 1 bis / to 4,4 : 1 | 3,6 : 1 bis / to 4,4 : 1 |

**Grenzabmaße für Maße ohne Toleranzangabe
nach DIN ISO 2768 Teil 1**

**Permissible deviations for dimensions without tolerances
DIN ISO 2768 part 1**

Grenzabmaße für Längenmaße: (Werte in mm)

Permissible deviations for lengths (Values in mm)

| Toleranzklasse Grade of tolerance | | Symbol | Nennmaßbereich Range of Nominal Dimensions | | | | | |
|--------------------------------------|-------------|--------|---|-----------------------------|-------------------------------|-----------------------------------|-------------------------------------|---------------------------------------|
| | | | 0,5 bis 3 0,5 to 3 | über 3 bis 6 over 3 to 6 | über 6 bis 30 over 6 to 30 | über 30 bis 120 over 30 to 120 | über 120 bis 400 over 120 to 400 | über 400 bis 1000 over 400 to 1000 |
| fein | fine | f | ± 0,05 | ± 0,05 | ± 0,1 | ± 0,15 | ± 0,2 | ± 0,3 |
| mittel | medium | m | ± 0,1 | ± 0,1 | ± 0,2 | ± 0,3 | ± 0,5 | ± 0,8 |
| grob | coarse | c | ± 0,2 | ± 0,3 | ± 0,5 | ± 0,8 | ± 1,2 | ± 2 |
| sehr grob | very coarse | v | – | ± 0,5 | ± 1 | ± 1,5 | ± 2,5 | ± 4 |

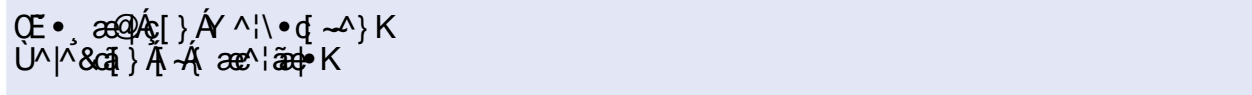
Grenzabmaße für Winkelmaße: (Werte in Grad und Minuten)

Permissible deviations for angles (Values in degrees and minutes)

| Toleranzklasse Grade of tolerance | | Symbol | Nennmaßbereich in Winkleinheiten (Länge des kürzeren Schenkels) Range of Nominal Dimensions (Length of the shorter Leg) | | | |
|--------------------------------------|-------------|--------|--|---------------------------------------|---|---------------------------------|
| | | | bis 10 mm to 10 mm | über 10 bis 50 mm over 10 to 50 mm | über 50 bis 120 mm over 50 to 120 mm | 120 bis 400 mm 120 to 400 mm |
| fein | fine | f | ± 1° | ± 30' | ± 20' | ± 10' |
| mittel | medium | m | | | | |
| grob | coarse | c | ± 1° 30' | ± 1° | ± 30' | ± 15' |
| sehr grob | very coarse | v | ± 3° | ± 2° | ± 1° | ± 30' |

Werkstofftabelle

Material Table



| Werkstoff-Nr. material no. | Bezeichnung name | Chemische Zusammensetzung – Richtanalyse chemical composition analysis in % | | | | | | | | | |
|---|---------------------|--|--------|--------|-------|-------|------|------|------|-------|------|
| | | C | Si | Mn | P+S | Cr | Mo | V | W | Co | Ni |
| Einsatzstahl Case hardened steel 1.7131 | 16MnCr5 | 0,16 | ≤ 0,40 | 1,15 | 0,035 | 0,95 | – | – | – | – | – |
| Werkzeugstahl für Kaltarbeit Tool steel for coldworking | | | | | | | | | | | |
| WS | | | | | | | | | | | |
| 1.2067 | 100Cr6 | 1,00 | 0,25 | 0,35 | 0,030 | 1,50 | – | – | – | – | – |
| 1.2210 | 115CrV3 | 1,20 | 0,20 | 0,30 | 0,030 | 0,70 | – | 1,10 | – | – | – |
| 1.2516 | 120WV4 | 1,20 | 0,20 | 0,30 | 0,035 | 0,20 | – | 0,10 | 1,00 | – | – |
| 1.2550 | 60WCrV7 | 0,60 | 0,60 | 0,30 | 0,030 | 1,10 | – | 0,20 | 2,00 | – | – |
| 1.2842 | 90MnCrV8 | 0,90 | 0,30 | 2,00 | 0,030 | 0,40 | – | 0,10 | – | – | – |
| HWS | | | | | | | | | | | |
| 1.2080 | X210Cr12 | 2,00 | 0,25 | 0,35 | 0,030 | 12,00 | – | – | – | – | – |
| 1.2379 | X155CrVMo12-1 | 1,55 | 0,30 | 0,30 | 0,030 | 12,00 | 0,70 | 1,00 | – | – | – |
| 1.2436 | X210CrW12 | 2,10 | 0,30 | 0,30 | 0,030 | 12,00 | – | – | 0,70 | – | – |
| 1.2767 | X45NiCrMo4 | 0,50 | 0,30 | 0,30 | 0,030 | 1,40 | 0,25 | – | – | – | 4,00 |
| Werkzeugstahl für Warmarbeit Tool steel for hot working | | | | | | | | | | | |
| 1.2343 | X38CrMoV5-1 | 0,38 | 1,00 | 0,40 | 0,030 | 5,30 | 1,30 | 0,40 | – | – | – |
| 1.2344 | X40CrMoV5-1 | 0,40 | 1,00 | 0,40 | 0,030 | 5,30 | 1,40 | 1,00 | – | – | – |
| Schnell-arbeitsstähle High speed steels | | | | | | | | | | | |
| 1.3207 | S 10-4-3-10 | 1,30 | ≤ 0,45 | ≤ 0,40 | 0,030 | 4,10 | 3,50 | 3,30 | 9,50 | 10,00 | – |
| 1.3247 | S 2-10-1-8 | 1,08 | ≤ 0,45 | ≤ 0,40 | 0,030 | 4,10 | 9,50 | 1,20 | 1,50 | 8,00 | – |
| 1.3343 | S 6-5-2 | 0,90 | ≤ 0,45 | ≤ 0,40 | 0,030 | 4,10 | 5,00 | 1,80 | 6,40 | – | – |
| 1.3344 | S 6-5-3 | 1,22 | ≤ 0,45 | ≤ 0,40 | 0,030 | 4,10 | 5,00 | 2,80 | 6,40 | – | – |
| Rost- & säurebeständige Stähle Stainless and acid resistant steels | | | | | | | | | | | |
| 1.4021 | X20Cr13 | 0,20 | 1,00 | 1,50 | 0,035 | 13,00 | – | – | – | – | – |
| 1.4034 | X46Cr13 | 0,45 | 1,00 | 1,00 | 0,030 | 13,50 | – | – | – | – | – |
| 1.4112 | X90CrMoV18 | 0,90 | 1,00 | 1,00 | 0,035 | 18,00 | 1,10 | 0,10 | – | – | – |
| 1.4125 | X105CrMo17 | 1,00 | 1,00 | 1,00 | 0,035 | 17,00 | 0,60 | – | – | – | – |
| 1.4301 | X5CrNi18-10 | ≤ 0,07 | 1,00 | 2,00 | 0,030 | 18,00 | – | – | – | – | 9,50 |
| 1.4305 | X8CrNiS18-9 | ≤ 0,10 | 1,00 | 2,00 | 0,040 | 18,00 | – | – | – | – | 9,00 |

Werkstofftabelle

Material Table

Auswahl der verwendeten Werkstoffe.
Selection of materials

| Werkstoff-Nr. material no. | Bezeichnung name | Chemische Zusammensetzung – Richtanalyse chemical composition analysis in % | | | | | | | | | |
|--|---------------------------------|--|------|-------|-------|-------|----------|-------|-------|-------|------|
| | | C | Si | Mn | P+S | Cr | Mo | V | W | Co | Ni |
| Pulver- metallurgische Stähle und Sonderstähle Powdered steels and special steels | Vanadis 4 ^{Superclean} | 1,50 | 1,00 | 0,40 | – | 8,00 | 1,50 | 4,00 | – | – | – |
| | Vanadis 4 Extra | 1,40 | 0,40 | 0,40 | – | 4,70 | 3,50 | 3,70 | – | – | – |
| | Vanadis 10 | 2,90 | 0,50 | 0,50 | – | 8,00 | 1,50 | 9,80 | – | – | – |
| | Vanadis 23 | 1,28 | – | – | – | 4,20 | 5,00 | 3,10 | 6,40 | – | – |
| | Vanadis 30 | 1,28 | – | – | – | 4,20 | 5,00 | 3,10 | 6,40 | 8,50 | – |
| | Vanadis 60 | 2,30 | – | – | – | 4,00 | 7,00 | 6,50 | 6,50 | 10,50 | – |
| | ELMAX ^{Superclean} | 1,70 | 0,80 | 0,30 | – | 18,0 | 1,00 | 3,00 | – | – | – |
| | UHB CALMAX | 0,60 | 0,35 | 0,80 | – | 4,50 | 0,50 | 0,20 | – | – | – |
| | ASP 2005 | 1,50 | – | – | – | 4,00 | 2,50 | 4,00 | 2,50 | – | – |
| | ASP 2053 | 2,45 | – | – | – | 4,20 | 3,10 | 8,00 | 4,20 | – | – |
| | CPM 3 V | 0,80 | – | – | – | 7,50 | 1,30 | 2,75 | – | – | – |
| | CPM 9 V | 1,90 | 0,90 | 0,50 | – | 5,25 | 1,30 | 9,00 | – | – | – |
| | CPM 10 V | 2,45 | 0,90 | 0,50 | – | 5,25 | 1,30 | 9,75 | – | – | – |
| | CPM 15 V | 3,40 | 0,90 | 0,50 | – | 5,25 | 1,30 | 14,50 | – | – | – |
| | CPM 420 V | 2,30 | 0,50 | 0,50 | – | 14,00 | 1,30 | 9,00 | – | – | – |
| | CPM REX M4 | 1,35 | 0,30 | 0,30 | – | 4,25 | 4,50 | 4,00 | 5,75 | – | – |
| | CPM REX T15 | 1,60 | 0,30 | 0,30 | – | 4,00 | max 1,00 | 5,00 | 12,25 | 5,00 | – |
| | CPM REX 76 | 1,50 | 0,30 | 0,30 | – | 3,75 | 5,25 | 3,10 | 10,0 | 9,00 | – |
| | CPM REX 121 | 3,40 | – | – | – | 4,00 | 5,00 | 9,50 | 10,0 | 9,00 | – |
| | CPM S 30 V | 1,45 | 0,50 | 0,50 | – | 14,00 | 2,00 | 4,00 | – | – | – |
| | LC 200 N | 0,30 | – | 1,00 | – | 15,00 | 0,95 | – | – | – | 0,50 |
| | K 110 | 1,55 | 0,25 | 0,35 | – | 11,80 | 0,80 | 0,95 | – | – | – |
| | K 340 | 1,10 | 0,90 | 0,40 | – | 8,30 | 2,10 | 0,50 | – | – | – |
| | K 390 | 2,45 | 0,55 | – | – | 4,15 | 3,75 | 9,00 | 1,00 | 2,00 | – |
| | M 333 | 0,28 | 0,30 | 0,30 | – | 13,50 | – | – | – | – | – |
| | M 340 | 0,54 | 0,45 | 0,40 | – | 17,30 | 1,10 | 0,10 | – | – | – |
| | M 390 | 1,90 | 0,70 | 0,30 | – | 20,00 | 1,00 | 4,00 | 0,60 | – | – |
| | S 390 | 1,60 | – | – | – | 4,80 | 2,00 | 5,00 | 10,50 | 8,00 | – |
| | S 590 | 1,30 | 0,50 | 0,30 | – | 4,20 | 5,00 | 3,00 | 6,30 | 8,40 | – |
| | S 690 | 1,33 | 0,35 | 0,30 | – | 4,30 | 4,90 | 4,10 | 5,90 | – | – |
| S 790 | 1,30 | 0,50 | 0,30 | – | 4,20 | 5,00 | 3,00 | 6,30 | – | – | |
| W 400 | 0,37 | 0,20 | 0,30 | – | 5,00 | 1,30 | 0,50 | – | – | – | |
| X 235 HTM | 2,30 | – | – | 0,040 | 20,00 | 1,00 | 4,20 | – | – | – | |

| Hartstoffe other steels | Bezeichnung name | Hartstoffphase Hardening Agent TiC | Bindephase Bonding Agent | | | | | | |
|-------------------------------|---------------------------|--|-----------------------------|-------|------|------|------|------|------|
| | | | C | Cr | Mo | Cu | Fe | Al | Ni |
| | Ferrotitanit C Spezial | 33,00 | 0,65 | 3,00 | 3,00 | 1,50 | Rest | – | – |
| | Ferrotitanit WFN | 33,00 | 0,75 | 13,50 | 3,00 | 0,80 | Rest | 1,00 | 0,40 |



SEITZ NORMTEILE

Ù^ã ÁP[|{ çã^ÁÈÈÈ
Q ÁJ&@&^} ÁG
ÖÈ Ì Ì È Áã@ã
V^|ÈI JÁÈDÁ Ì Ì ÁÌ È J€
Qæ^ÈI JÁÈDÁ Ì Ì ÁÌ È F€
ÖÈ ããKã |O•^ã È [|{ çã^È^
س د د È^ã È [|{ çã^È^

