

*SWIATY COMET*



# Industrijska brusna orodja

DIAMANTNA PORAVNALA



SWATY COMET

Pri poravnavanju in profiliranju je potrebno vedno hladiti diamantno konico, da ne pride do trajne poškodbe diamanta.

Ko se ostri robovi na rezni površini brusa obrabijo (poraste normalna sila  $F_n$ , brus ne reže, brus postane glasnejši) ga je potrebno obnoviti - poravnati.

Za poravnavanje brusnih plošč so na voljo različna poravnala in sicer:

## Ročno poravnavanje:

Odvisno od zahtevane natančnosti lahko poravnate:

- s keramično vezanimi poravnali;
- s kovinskimi kolesčki.
- enoznatimi diamantnimi poravnali;
- večzrnatimi diamantnimi poravnali.



## Strojno poravnavanje:

Z enoznatimi diamantnimi poravnali



Z večzrnatimi diamantnimi poravnali.



Z dialetami (pritrjene na držala različnih oblik).

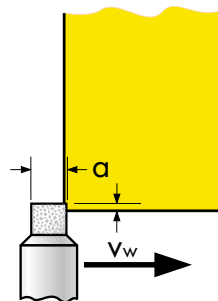


Z diamantnimi rolami (pritrjene na držala različnih oblik).



Po montaži brusa na vreteno stroja je potrebno poravnati tako dolgo, da je poravnana celotna brusna površina. Pri poravnavanju med brušenjem je potrebno pravilno izbrati parametre poravnavanja.

Globina poravnavanja  $a$  je odvisna od velikosti zrna v brusni plošči in je enaka za vse vrste poravnal.



Velikost zrna po FEPA	globina poravnavanja $a$ (mm)
46	0.35
60	0.30
80	0.25
120	0.10
150	0.08
220	0.06
320	0.03
400	0.02

Ostale parametre določimo glede na vrsto poravnala!

Izbira velikosti diamantnega zrna:

Velikost zrna v enozrnatem poravnalu je odvisna od velikosti brusne plošče in jo določimo po enačbi ali po diagramu.

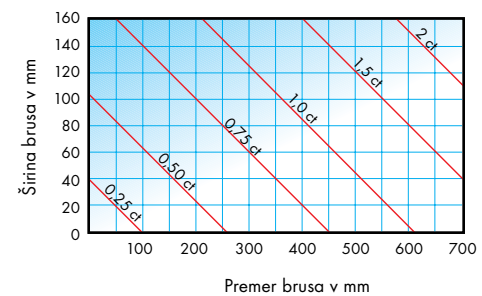
$$Ct = \frac{D + 2W}{400}$$

Ct - velikost diamantnega zrna

D - premer brusa

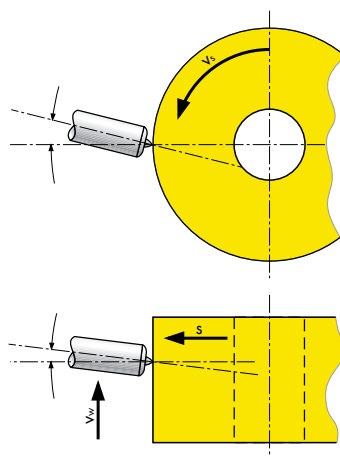
Š - širina brusa

400 - konstanta

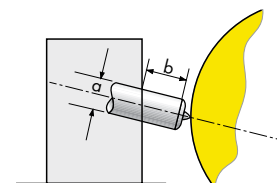


Glede na obliko so diamantna zrna za poravnala razvrščena v štiri osnovne vrste.

Število konic	Vrsta
1 to 2	STANDARD
2 to 3	EXTRA



$$b = \max(2 \cdot a)$$



### Prečni pomik poravnala:

Prečni pomik pri poravnavanju (mm/min) z enozrnatimi poravnali je odvisen od vrste brušenja in zunanega premera brusa. Priporočila so naslednja:

Pri delovni hitrosti 35 m/s

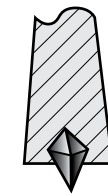
Vrsta brušenja	D (mm)				
	Ø200	Ø300	Ø400	Ø500	Ø600
Grobo brušenje	780	520	400	300	260
Brušenje	380	260	200	150	130
Fino brušenje	280	150	120	100	80

Pri delovni hitrosti 50 m/s

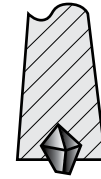
Vrsta brušenja	D (mm)				
	Ø200	Ø300	Ø400	Ø500	Ø600
Grobo brušenje	1000	730	560	420	360
Brušenje	530	360	280	210	180
Fino brušenje	390	210	170	140	110

### Obnove enozrnatih poravnal

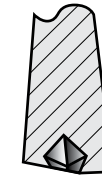
Ko se konica poravnala obrabi (stična površina nad 1mm<sup>2</sup>) je potrebno poravnalo obnoviti. Pri obnovi se diamantno zrno obrne ali zbrusi in obrne.



Novo poravnalo

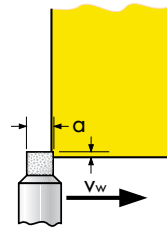


Obrabljeno

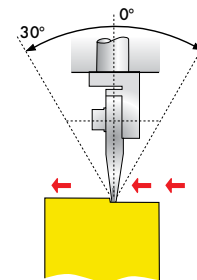


Uničeno poravnalo

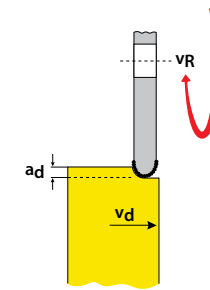
### PORAVNAVANJE Z VEČZRATIMI PORAVNALI



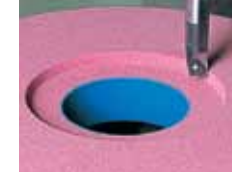
Večzrnatna poravnala



Dialete



Diamantne rolne

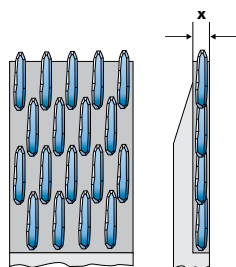


## Enozrnata poravnala

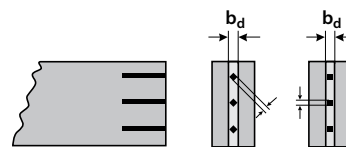
Za profiliranje keramičnih brusov se uporabljajo enozrnata profilna poravnala, ki jih poimenujemo po profilirni napravi ali stroju.

## Ploščata poravnala Dialete

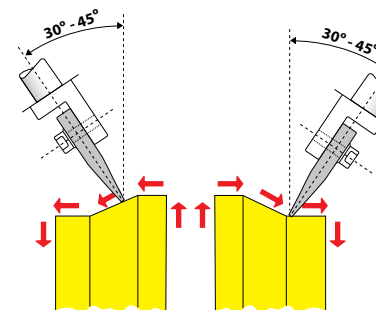
Ločimo glede na obliko in kvaliteto vgrajenih diamantnih zrn.



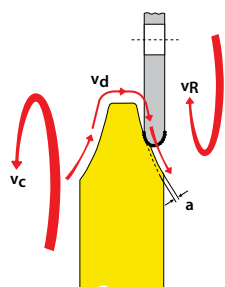
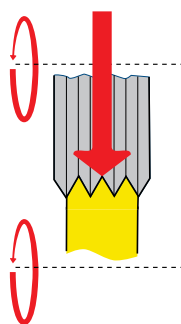
Izvedba dialete z iglicami



Izvedba dialete z MKD  
(monokristalnim diamantom) iglicami:



Položaj dialete proti  
brusu med poravnavanjem.



## Vrtljiva poravnala:

Vrtljiva diamantna poravnala so glede na način poravnavanja izdelana:

- s celotno obliko profila (brez prečnega pomika):
- z enakim profilom kot je tipalo (s prečnim pomikom):

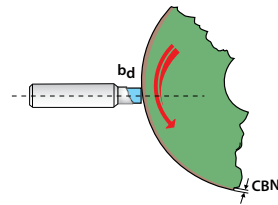
Glede na vrsto vezi so vrtljiva poravnala lahko izdelana v:

- galvanski vezi
- kovinski vezi

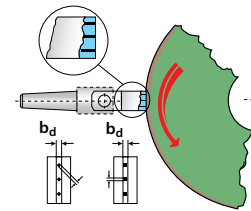
Pri profiliranju po šabloni (programu) mora biti profil poravnalnega kolesa enak profilu tipala. Poravnalno kolo se giblje po šabloni in na obodu plošče izdela enak profil.



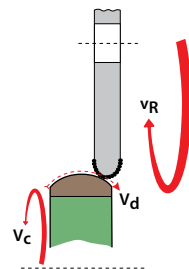
Bruse v keramični vezi lahko poravnamo z:



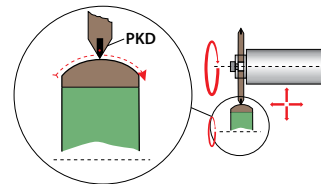
- Večzrnatimi sintranimi poravnali



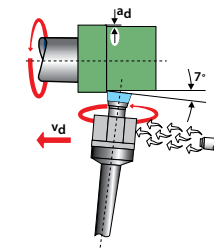
- Dioletami z MK zrnji



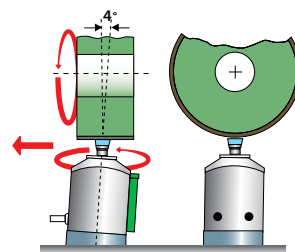
- Diamantnimi koloti



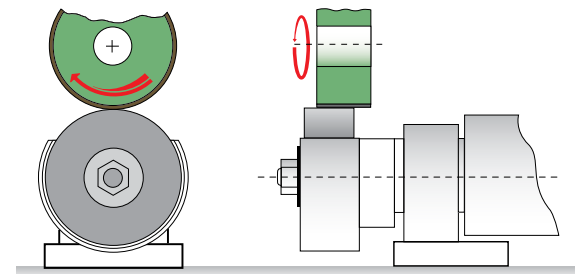
- PKD profilirnimi bruski



- Vrtiljivimi krilnimi poravnali

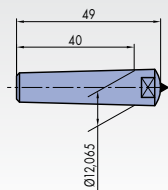


- Univerzalnim vrtečim poravnalom

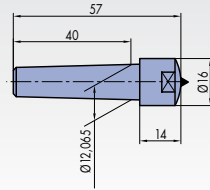


- Poravnalom s centrifugalno zavoro

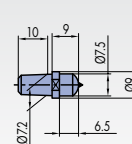
**K101 MK1**



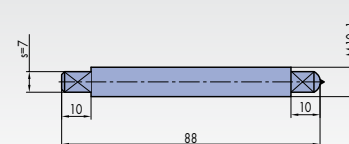
**K102 MK1-G**



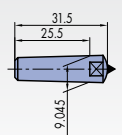
**K111 YUNG**



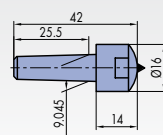
**K115 NILES**



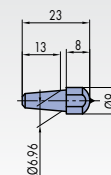
**K103 MK0**



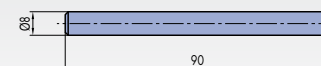
**K104 MK0-G**



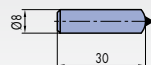
**K113 KOLB**



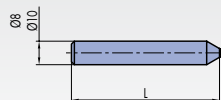
**K117 DECKEL**



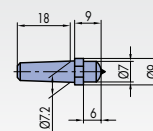
**K105 DECKEL**



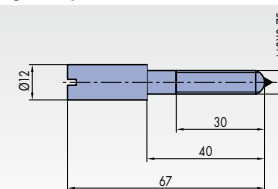
**K106 ZYLINDER**



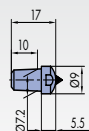
**K112 YUNG**



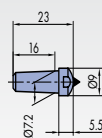
**K116 NILES**



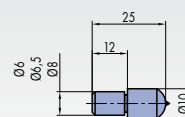
**K107 YUNG**



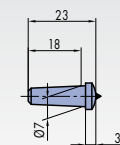
**K108 YUNG**



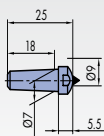
**K114 LANDIS**



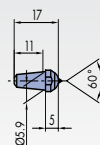
**K119**



**K109 YUNG**



**K110 YUNG**



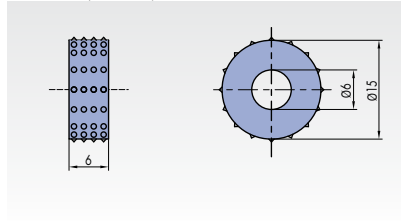
Primer za izpis naročila:  
K101 MK1-2,5 kt - standard



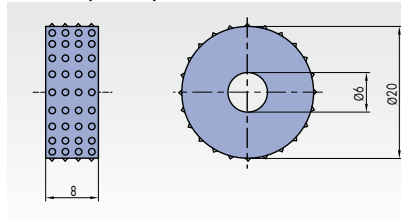


## DIAMANTNE ROLETE

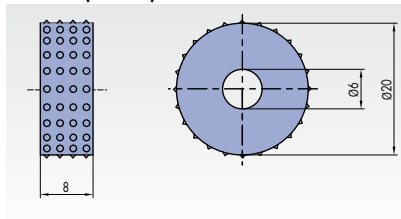
**K301 (∅15x6)**



**K303 (∅20x8)**

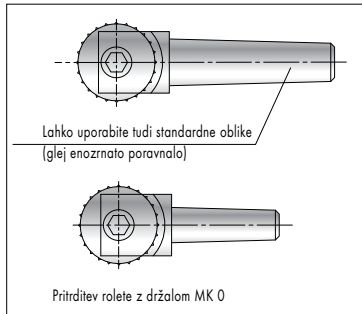


**K302 (∅20x8)**



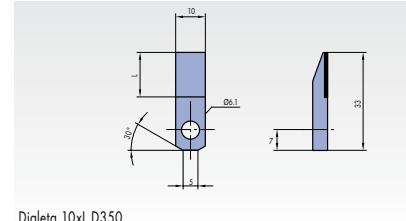
### Vpetje rolete

**DRŽALO MK1, MK0, ...**



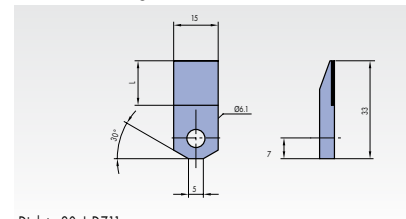
## DIAMANTNE DIALETE

**DIALETTE 10xL**



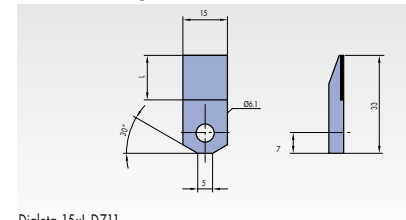
Dialeta 10xL D350

**DIALETTE 20xL**



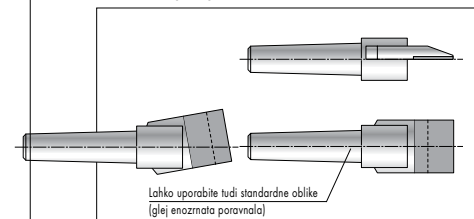
Dialeta 20xL D711

**DIALETTE 15xL**

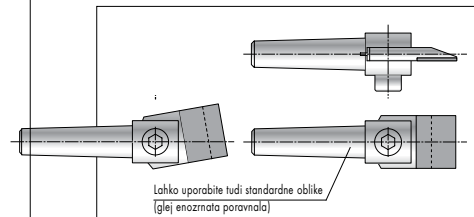


Dialeta 15xL D711

### Fiksno vpetje dialete v nosilec

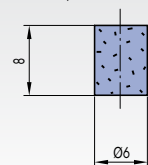


### Vpetje dialete v nosilec z vijakom

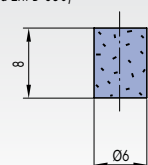


## DIAMANTNI VLOŽKI ZA VEČRZNATA PORAVNALA

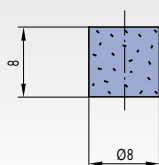
**K401 6x8**  
(Velikost dia zrn D 711)



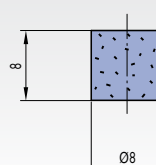
**K402 6x8**  
(Velikost dia zrn D 350)



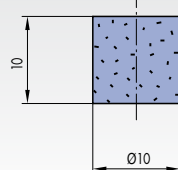
**K403 8x8**  
(Velikost dia zrn D 711)



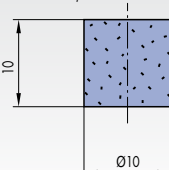
**K404 8x8**  
(Velikost dia zrn D 350)



**K405 10x10**  
(Velikost dia zrn D 711)

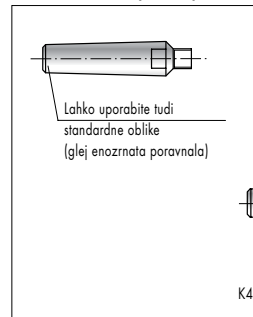


**K406 10x10**  
(Velikost dia zrn D 350)

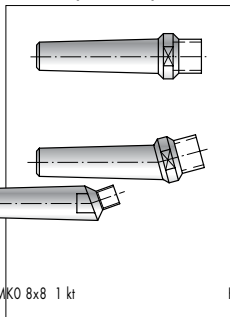


### Izvedbe večrznatih poravnal

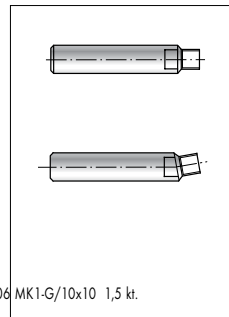
**DRŽALO: MK0, MK1, ...**



**MK0-G, MK1-G, ...**



**CILINDRIČNO DRŽALO**



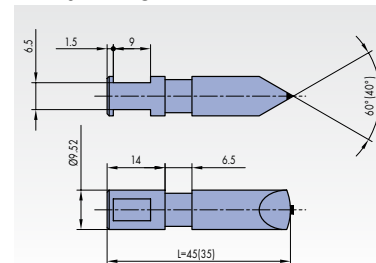
K404 MK0 8x8 1 kt

K406 MK1-G/10x10 1,5 kt.

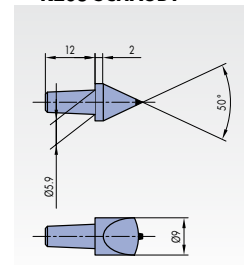
K401 8x80/6x8 0,75 kt.

## PROFILNA DIAMANTNA PORAVNALA

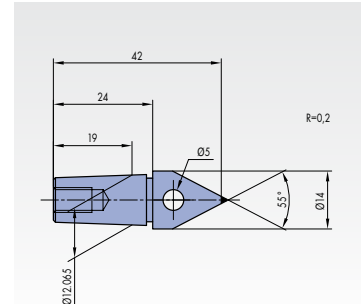
**K201 DIAFORM**



**K203 SCHAUDT**



**K202 FORTUNA**





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