

## *Sistema GFS di allargatori cilindrici ZS*



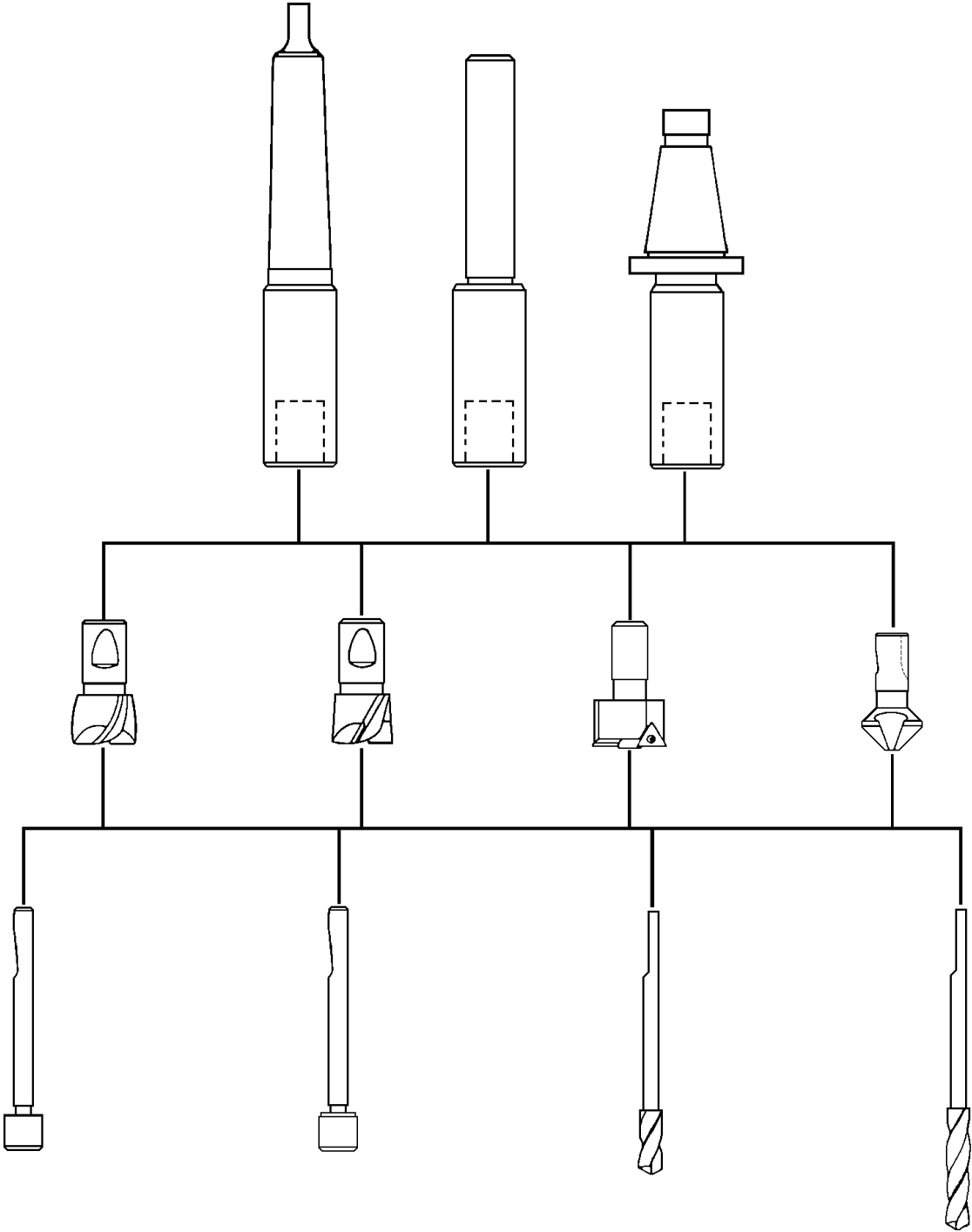
Per le svariate possibilità di intercambiare i supporti con gli allargatori e i perni di guida nell'ambito di una misura il sistema di allargatori cilindrici GFS offre una vasta gamma di combinazioni per forature ed allargamenti. A partire da 8,5 mm tutte le misure prevedono la circolazione interna di liquido di raffreddamento, per cui si possono impiegare su tutte le macchine utensili moderne.

### Vantaggi

- 1) Per la gamma di allargatura da 5 mm a 85 mm sono richieste solo quattro misure di supporti
- 2) Il perno di guida rotante „R“ o „RK“ è raffreddato e disponibile per le misure 1 e 2 da 8,5 mm.
- 3) Sono disponibili allargatori cilindrici HSS (tipo „U“), HSS-TIN e con taglienti HM saldobrasati.
- 4) Da un diametro di 32 mm è disponibile su richiesta anche la versione con piastra ribaltabile HM.
- 5) Svariate possibilità di combinare i singoli elementi nell'ambito di una misura.
- 6) Possibilità di sostituire il perno di guida senza togliere l'allargatore.

Zapfensenker Kombinationssystem ZS  
Sistema di allargatori cilindrici ZS

Counterbore Combination Tool System ZS  
Mèche-fraise système combiné ZS



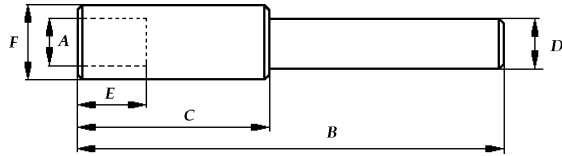
**Zapfensenker Kombinationssystem ZS**  
**Sistema di allargatori cilindrici ZS**

**Counterbore Combination Tool System ZS**  
**Mèche-fraise système combiné ZS**

*Größe 01 - Size 01 - Misura 01 - Dimension 01*

**ZS Halter - ZS Counterbore holder - Supporto ZS - Porte-outil**

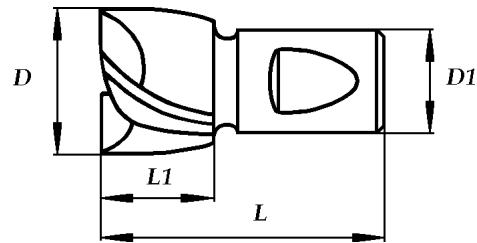
| Größe - Size | A | B  | C  | D  | E  | F  | Art. No. |
|--------------|---|----|----|----|----|----|----------|
| 01 / Ø 10 mm | 7 | 86 | 45 | 10 | 12 | 14 | 801001   |



**Zapfensenker - Counterbore - Allargatore - Mèche-fraise**

| Ø mm | Type U HSS Art.No. | Type TIN Art.No. |
|------|--------------------|------------------|
| 5,0  | 844050             | 846050           |
| 5,5  | 844055             | 846055           |
| 6,0  | 844060             | 846060           |
| 6,5  | 844065             | 846065           |
| 7,0  | 844070             | 846070           |
| 7,5  | 844075             | 846075           |
| 8,0  | 844080             | 846080           |
| 8,5  | 844085             | 846085           |
| 9,0  | 844090             | 846090           |
| 9,5  | 844095             | 846095           |

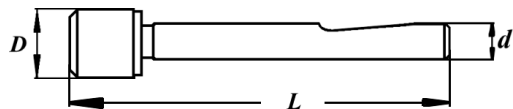
**Zweischneidig - Two fluted**



Type U D1 = Ø 7 L = 28 L1 = 12

**Führungzapfen F (fest) - Pilot guide F (fixed) - Perno di guida F - Tourillon de guidage F**

| Ø mm | Art.No. | Ø mm | Art.No. | Ø mm | Art.No. | Ø mm | Art.No. |
|------|---------|------|---------|------|---------|------|---------|
| 2,4  | 541024  | 3,0  | 541030  | 3,5  | 541035  | 4,1  | 541041  |
| 2,5  | 541025  | 3,1  | 541031  | 3,6  | 541036  | 4,2  | 541042  |
| 2,6  | 541026  | 3,2  | 541032  | 3,7  | 541037  | 4,3  | 541043  |
| 2,7  | 541027  | 3,3  | 541033  | 3,8  | 541038  | 4,4  | 541044  |
| 2,8  | 541028  | 3,4  | 541034  | 3,9  | 541039  | 4,5  | 541045  |
| 2,9  | 541029  |      |         | 4,0  | 541040  |      |         |



d = Ø 2,4

L = 40

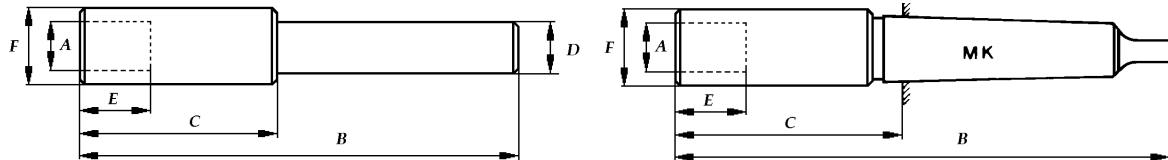
**Zapfensenker Kombinationssystem ZS**  
**Sistema di allargatori cilindrici ZS**

**Counterbore Combination Tool System ZS**  
**Mèche-fraise système combiné ZS**

Größe 0 - Size 0 - Misura 0 - Dimension 0

ZS Halter - ZS Counterbore holder - Supporto ZS - Porte-outil ZS

| Größe - Size  | A  | B     | C    | D   | E  | F  | Art. No. |
|---------------|----|-------|------|-----|----|----|----------|
| 0 / Ø 10 mm   | 10 | 92    | 42   | 10  | 18 | 18 | 800001   |
| 0 / MK1 (MT1) | 10 | 111,5 | 49,5 | --- | 18 | 18 | 803100   |

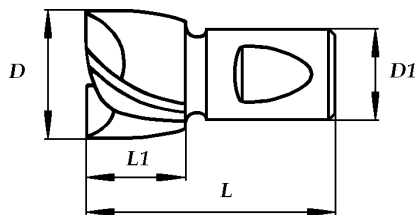


Zapfensenker - Counterbore - Allargatore - Mèche-fraise

| Ø<br>mm | Type U HSS<br>Art.No. | Type TIN<br>Art.No. | Type HM<br>Art.No. |
|---------|-----------------------|---------------------|--------------------|
| 8,0     | 801080                | 806080              | --                 |
| 8,5     | 801085                | 806085              | --                 |
| 9,0     | 801090                | 806090              | --                 |
| 9,5     | 801095                | 806095              | --                 |
| 10,0    | 801100                | 806100              | 802100             |
| 10,5    | 801105                | 806105              | 802105             |
| 11,0    | 801110                | 806110              | 802110             |
| 11,5    | 801115                | 806115              | 802115             |
| 12,0    | 801120                | 806120              | 802120             |
| 12,5    | 801125                | 806125              | 802125             |
| 13,0    | 801130                | 806130              | 802130             |
| 13,5    | 801135                | 806135              | 802135             |
| 14,0    | 801140                | 806140              | 802140             |
| 14,5    | 801145                | 806145              | 802145             |
| 15,0    | 801150                | 806150              | 802150             |
| 15,5    | 801155                | 806155              | 802155             |
| 16,0    | 801160                | 806160              | 802160             |
| 16,5    | 801165                | 806165              | 802165             |

Ø 8 - Ø 9,5 Zweischneidig - Two fluted

Ø 10 - Ø 16,5 Dreischneidig - Three fluted



Type U D1 = Ø 10 L = 40 L1 = 19

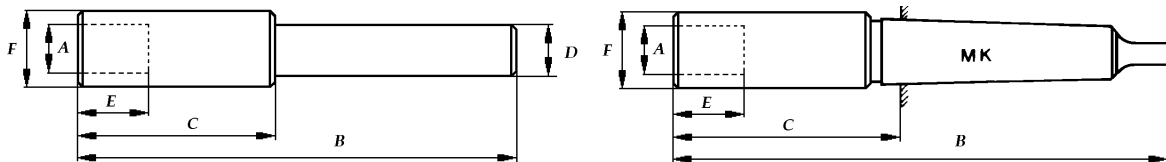
**Zapfensenker Kombinationssystem ZS**  
**Sistema di allargatori cilindrici ZS**

**Counterbore Combination Tool System ZS**  
**Mèche-fraise système combiné ZS**

**Größe 1 - Size 1 - Misura 1 - Dimension 1**

**ZS Halter - ZS Counterbore holder - Supporto ZS - Porte-outil ZS**

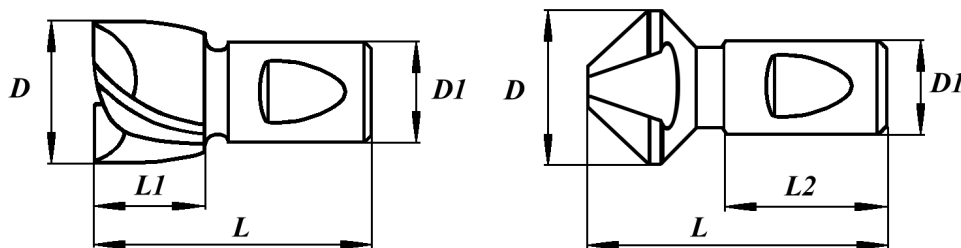
| Größe - Size    | A  | B   | C  | D   | E  | F  | Art. No. |
|-----------------|----|-----|----|-----|----|----|----------|
| 1 / Ø 12 mm     | 14 | 120 | 55 | 12  | 20 | 24 | 810001   |
| 1 / MK2 (MT2)   | 14 | 135 | 61 | --- | 20 | 24 | 813200   |
| 1 / Weldon Ø 20 | 14 | 105 | 55 | 20  | 20 | 24 | 814203   |



**Zapfensenker - Counterbore - Allargatore - Mèche-fraise**

| Ø mm | Type U HSS Art.No. | Type U TIN Art.No. | Type U HM Art.No. | Type Z HSS 90° Art.No. | Type Z TIN 90° Art.No. |
|------|--------------------|--------------------|-------------------|------------------------|------------------------|
| 14,0 | 811140             | 816140             | 812140            |                        |                        |
| 14,5 | 811145             | 816145             | 812145            |                        |                        |
| 15,0 | 811150             | 816150             | 812150            |                        |                        |
| 15,5 | 811155             | 816155             | 812155            |                        |                        |
| 16,0 | 811160             | 816160             | 812160            |                        |                        |
| 16,5 | 811165             | 816165             | 812165            | 971165                 | 972165                 |
| 17,0 | 811170             | 816170             | 812170            |                        |                        |
| 17,5 | 811175             | 816175             | 812175            |                        |                        |
| 18,0 | 811180             | 816180             | 812180            |                        |                        |
| 18,5 | 811185             | 816185             | 812185            |                        |                        |
| 19,0 | 811190             | 816190             | 812190            | 971190                 | 972190                 |
| 19,5 | 811195             | 816195             | 812195            |                        |                        |
| 20,0 | 811200             | 816200             | 812200            |                        |                        |
| 20,5 | 811205             | 816205             | 812205            | 971205                 | 972205                 |
| 21,0 | 811210             | 816210             | 812210            |                        |                        |
| 21,5 | 811215             | 816215             | 812215            |                        |                        |
| 22,0 | 811220             | 816220             | 812220            |                        |                        |
| 22,5 | 811225             | 816225             | 812225            |                        |                        |
| 23,0 | 811230             | 816230             | 812230            |                        |                        |
| 23,5 | 811235             | 816235             | 812235            |                        |                        |
| 24,0 | 811240             | 816240             | 812240            |                        |                        |
| 24,5 | 811245             | 816245             | 812245            |                        |                        |
| 25,0 | 811250             | 816250             | 812250            | 971250                 | 972250                 |
| 25,5 | 811255             | 816255             | 812255            |                        |                        |
| 26,0 | 811260             | 816260             | 812260            |                        |                        |
| 26,5 | 811265             | 816265             | 812265            |                        |                        |
| 27,0 | 811270             | 816270             | 812270            |                        |                        |
| 27,5 | 811275             | 816275             | 812275            |                        |                        |

**Dreischneidig - Three fluted**



Type U D1 = Ø 14 L = 50 L1 = 22

Type Z D = Ø 14 L2 = 22

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**Counterbore Combination Tool System ZS**  
**Mèche-fraise système combiné ZS**

**Größe 1 - Size 1 - Misura 1 - Dimension 1**

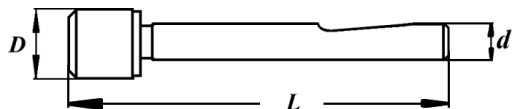
**Führungszapfen F (fest) - Pilot roller F (fixed) - Perno di guida F - Tourillon de guidage F**

| Ø mm | Art.No. | Ø mm | Art.No. | Ø mm | Art.No. |
|------|---------|------|---------|------|---------|
| 6,6  | 511066  | 7,3  | 511073  | 8,0  | 511080  |
| 6,7  | 511067  | 7,4  | 511074  | 8,1  | 511081  |
| 6,8  | 511068  | 7,5  | 511075  | 8,2  | 511082  |
| 6,9  | 511069  | 7,6  | 511076  | 8,3  | 511083  |
| 7,0  | 511070  | 7,7  | 511077  | 8,4  | 511084  |
| 7,1  | 511071  | 7,8  | 511078  |      |         |
| 7,2  | 511072  | 7,9  | 511079  |      |         |

**Führungszapfen RK - Pilot roller RK - Perno di guida RK - Tourillon de guidage RK**

| Ø mm | Art.No. | Ø mm | Art.No. | Ø mm | Art.No. |
|------|---------|------|---------|------|---------|
| 8,5  | 614085  | 11,5 | 614115  | 15,5 | 614155  |
| 9,0  | 614090  | 12,0 | 614120  | 16,0 | 614160  |
| 9,5  | 614095  | 12,5 | 614125  | 16,5 | 614165  |
| 9,9  | 614099  | 13,0 | 614130  | 17,0 | 614170  |
| 10,0 | 614100  | 13,5 | 614135  | 17,5 | 614175  |
| 10,2 | 614102  | 14,0 | 614140  | 18,0 | 614180  |
| 10,5 | 614105  | 14,5 | 614145  |      |         |
| 11,0 | 614110  | 15,0 | 614150  |      |         |

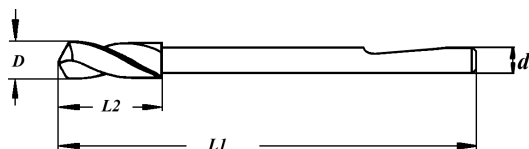
RK = Rotierend und gekühlt -- Rotating and cooled -- Rotante e raffreddato -- Rotatifs et refroidis



$$d = 6 \quad L = 79$$

**Führungsbohrer - Pilot drill - Punta da guida - Foret de guidage**

| Ø mm | Form N : Art.No. | Form L : Art.No. | Ø mm | Form N : Art.No. | Form L : Art.No. |
|------|------------------|------------------|------|------------------|------------------|
| 6,5  | 551065           | 561065           | 9,0  | 551090           | 561090           |
| 6,6  | 551066           | 561066           | 9,5  | 551095           | 561095           |
| 6,8  | 551068           | 561068           | 10,0 | 551100           | 561100           |
| 7,0  | 551070           | 561070           | 10,2 | 551102           | 561102           |
| 7,5  | 551075           | 561075           | 10,5 | 551105           | 561105           |
| 8,0  | 551080           | 561080           | 11,0 | 551110           | 561110           |
| 8,4  | 551084           | 561084           | 11,5 | 551115           | 561115           |
| 8,5  | 551085           | 561085           | 12,0 | 551120           | 561120           |



Form N kurz - short      L1 = 90    L2 = 25

Form L lang - long      L1 = 105    L2 = 40

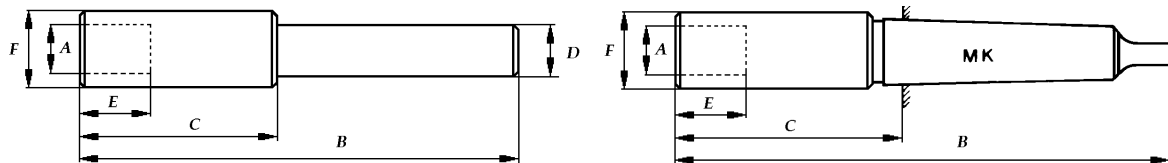
**Zapfensenker Kombinationssystem ZS**  
**Sistema di allargatori cilindrici ZS**

**Counterbore Combination Tool System ZS**  
**Mèche-fraise système combiné ZS**

**Größe 2 - Size 2 - Misura 2 - Dimension 2**

**ZS Halter - ZS Counterbore holder - Supporto ZS - Porte-outil ZS**

| Größe - Size    | A  | B   | C  | D   | E  | F    | Art. No. |
|-----------------|----|-----|----|-----|----|------|----------|
| 2 / MK2 (MT2)   | 22 | 155 | 81 | --- | 28 | 34,5 | 823200   |
| 2 / MK3 (MT3)   | 22 | 174 | 81 | --- | 28 | 34,5 | 823300   |
| 2 / Weldon Ø 25 | 22 | 137 | 75 | 25  | 28 | 34,5 | 824204   |



**Zapfensenker - Counterbore - Allargatore - Mèche-fraise**

| Ø<br>mm | Type U HSS<br>Art.No. | Type U TIN<br>Art.No. | Type U HM<br>Art.No. | Type U WP<br>Art.No. | Type Z HSS 90°<br>Art.No. | Type Z TIN 90°<br>Art.No. |
|---------|-----------------------|-----------------------|----------------------|----------------------|---------------------------|---------------------------|
| 24,0    | 821240                | 826240                | 822240               | ---                  |                           |                           |
| 24,5    | 821245                | 826245                | 822245               | ---                  |                           |                           |
| 25,0    | 821250                | 826250                | 822250               | ---                  |                           |                           |
| 25,5    | 821255                | 826255                | 822255               | ---                  |                           |                           |
| 26,0    | 821260                | 826260                | 822260               | ---                  |                           |                           |
| 26,5    | 821265                | 826265                | 822265               | ---                  |                           |                           |
| 27,0    | 821270                | 826270                | 822270               | ---                  |                           |                           |
| 27,5    | 821275                | 826275                | 822275               | ---                  |                           |                           |
| 28,0    | 821280                | 826280                | 822280               | ---                  | 971280                    | 972280                    |
| 28,5    | 821285                | 826285                | 822285               | ---                  |                           |                           |
| 29,0    | 821290                | 826290                | 822290               | ---                  |                           |                           |
| 29,5    | 821295                | 826295                | 822295               | ---                  |                           |                           |
| 30,0    | 821300                | 826300                | 822300               | ---                  |                           |                           |
| 30,5    | 821305                | 826305                | 822305               | ---                  |                           |                           |
| 31,0    | 821310                | 826310                | 822310               | ---                  | 971310                    | 972310                    |
| 32,0    | 821320                | 826320                | 822320               | 825320               |                           |                           |
| 33,0    | 821330                | 826330                | 822330               | 825330               |                           |                           |
| 34,0    | 821340                | 826340                | 822340               | 825340               | 971340                    | 972340                    |
| 35,0    | 821350                | 826350                | 822350               | 825350               |                           |                           |
| 36,0    | 821360                | 826360                | 822360               | 825360               |                           |                           |
| 37,0    | 821370                | 826370                | 822370               | 825370               | 971370                    | 972370                    |
| 38,0    | 821380                | 826380                | 822380               | 825380               |                           |                           |
| 39,0    | 821390                | 826390                | 822390               | 825390               |                           |                           |
| 40,0    | 821400                | 826400                | 822400               | 825400               |                           |                           |
| 41,0    | 821410                | 826410                | 822410               | 825410               |                           |                           |
| 42,0    | 821420                | 826420                | 822420               | 825420               |                           |                           |
| 43,0    | 821430                | 826430                | 822430               | 825430               |                           |                           |
| 44,0    | 821440                | 826440                | 822440               | 825440               |                           |                           |
| 45,0    | 821450                | 826450                | 822450               | 825450               | 971450                    | 972450                    |
| 46,0    | 821460                | 826460                | 822460               | 825460               |                           |                           |
| 47,0    | 821470                | 826470                | 822470               | 825470               |                           |                           |
| 48,0    | 821480                | 826480                | 822480               | 825480               |                           |                           |
| 49,0    | 821490                | 826490                | 822490               | 825490               |                           |                           |
| 50,0    | 821500                | 826500                | 822500               | 825500               |                           |                           |

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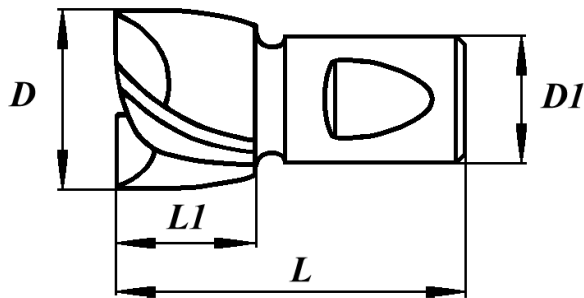
*Größe 2 - Size 2 - Misura 2 - Dimension 2*

**Zapfensenker - Counterbore - Allargatore - Mèche-fraise**

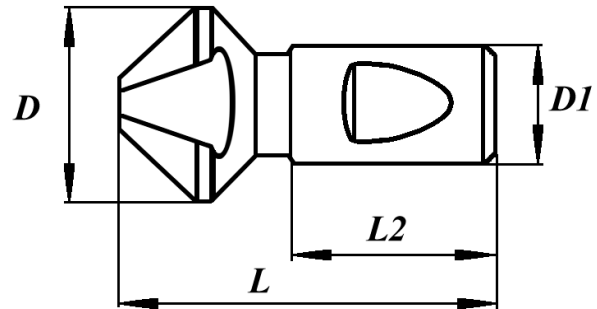
| Ø<br>mm | Type U HSS<br>Art.No. | Type U TIN<br>Art.No. | Type U HM<br>Art.No. | Type U WP<br>Art.No. | Type Z HSS 90°<br>Art.No. | Type Z TIN 90°<br>Art.No. |
|---------|-----------------------|-----------------------|----------------------|----------------------|---------------------------|---------------------------|
| 51,0    | 821510                | 826510                | 822510               | 825510               |                           |                           |
| 52,0    | 821520                | 826520                | 822520               | 825520               |                           |                           |
| 53,0    | 821530                | 826530                | 822530               | 825530               |                           |                           |
| 54,0    | 821540                | 826540                | 822540               | 825540               |                           |                           |
| 55,0    | 821550                | 826550                | 822550               | 825550               |                           |                           |
| 56,0    | 821560                | 826560                | 822560               | 825560               |                           |                           |
| 58,0    | 821580                | 826580                | 822580               | 825580               |                           |                           |
| 60,0    | 821600                | 826600                | 822600               | 825600               |                           |                           |
| 62,0    | 821620                | 826620                | 822620               | 825620               |                           |                           |
| 64,0    | 821640                | 826640                | 822640               | 825640               |                           |                           |
| 65,0    | 821650                | 826650                | 822650               | 825650               |                           |                           |
| 66,0    | 821660                | 826660                | 822660               | 825660               |                           |                           |

< Ø33 (< Ø 36 HM) Dreischneidig - Three fluted

> Ø33 (> Ø 36 HM) Vierschneidig - Four fluted



Type U  
 $D1 = \text{Ø } 22$     $L = 60$     $L1 = 27$



Type Z  
 $D1 = \text{Ø } 22$     $L2 = 28$



**Zapfensenker Kombinationssystem ZS**  
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**Counterbore Combination Tool System ZS**  
**Mèche-fraise système combiné ZS**

**Größe 2 - Size 2 - Misura 2 - Dimension 2**

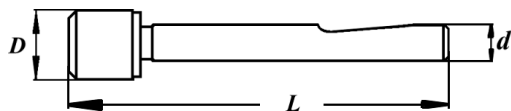
**Führungszapfen F (fest) - Pilot roller F (fixed) - Perno di guida F - Tourillon de guidage F**

| Ø mm | Art.No. |
|------|---------|
| 11,5 | 521115  |
| 12,0 | 521120  |
| 12,5 | 521125  |
| 13,0 | 521130  |
| 13,5 | 521135  |

**Führungszapfen RK - Pilot roller RK - Perno di guida RK - Tourillon de guidage RK**

| Ø mm | Art.No. | Ø mm | Art.No. | Ø mm | Art.No. |
|------|---------|------|---------|------|---------|
| 14,0 | 624140  | 20,5 | 624205  | 29,0 | 624290  |
| 14,5 | 624145  | 21,0 | 624210  | 30,0 | 624300  |
| 15,0 | 624150  | 21,5 | 624215  | 31,0 | 624310  |
| 15,5 | 624155  | 22,0 | 624220  | 32,0 | 624320  |
| 16,0 | 624160  | 22,5 | 624225  | 33,0 | 624330  |
| 16,5 | 624165  | 23,0 | 624230  | 34,0 | 624340  |
| 17,0 | 624170  | 23,5 | 624235  | 35,0 | 624350  |
| 17,5 | 624175  | 24,0 | 624240  | 36,0 | 624360  |
| 18,0 | 624180  | 24,5 | 624245  | 37,0 | 624370  |
| 18,5 | 624185  | 25,0 | 624250  | 38,0 | 624380  |
| 19,0 | 624190  | 26,0 | 624260  | 39,0 | 624390  |
| 19,5 | 624195  | 27,0 | 624270  | 40,0 | 624400  |
| 20,0 | 624200  | 28,0 | 624280  |      |         |

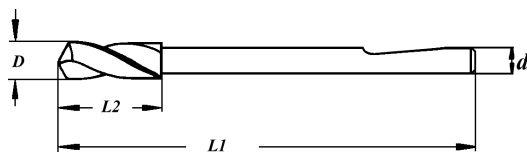
RK = Rotierend und gekühlt -- Rotating and cooled -- Rotante e raffreddato -- Rotatifs et refroidis



d = 10 L = 105

**Führungsbohrer - Pilot drill - Punta da guida - Foret de guidage**

| Ø mm | Form N : Art.No. | Form L : Art.No. | Ø mm | Form N : Art.No. | Form L : Art.No. |
|------|------------------|------------------|------|------------------|------------------|
| 11,0 | 552110           | 562110           | 17,0 | 552170           | 562170           |
| 11,5 | 552115           | 562115           | 17,5 | 552175           | 562175           |
| 12,0 | 552120           | 562120           | 18,0 | 552180           | 562180           |
| 12,5 | 552125           | 562125           | 18,5 | 552185           | 562185           |
| 13,0 | 552130           | 562130           | 19,0 | 552190           | 562190           |
| 13,5 | 552135           | 562135           | 19,5 | 552195           | 562195           |
| 14,0 | 552140           | 562140           | 20,0 | 552200           | 562200           |
| 14,5 | 552145           | 562145           | 21,0 | 552210           | 562210           |
| 15,0 | 552150           | 562150           | 22,0 | 552220           | 562220           |
| 15,5 | 552155           | 562155           | 23,0 | 552230           | 562230           |
| 16,0 | 552160           | 562160           | 24,0 | 552240           | 562240           |
| 16,5 | 552165           | 562165           | 25,0 | 552250           | 562250           |



Form N kurz - short L1 = 115 L2 = 30

Form L lang - long L1 = 135 L2 = 50

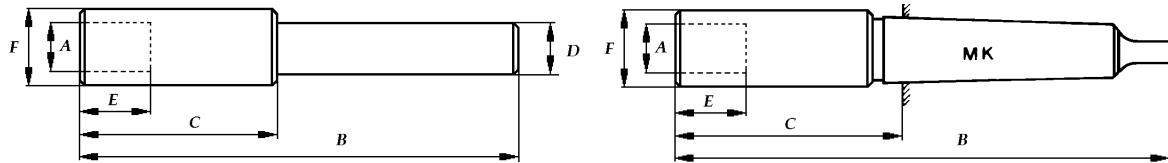
**Zapfensenker Kombinationssystem ZS**  
**Sistema di allargatori cilindrici ZS**

**Counterbore Combination Tool System ZS**  
**Mèche-fraise système combiné ZS**

*Größe 2M - Size 2M - Misura 2M - Dimension 2M*

**ZS Halter - ZS Counterbore holder - Supporto ZS - Porte-outil ZS**

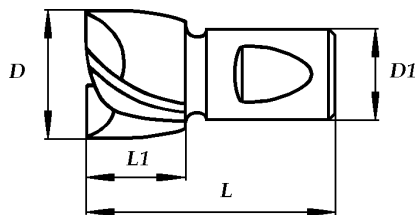
| Größe - Size    | A  | B   | C    | D   | E  | F  | Art. No. |
|-----------------|----|-----|------|-----|----|----|----------|
| 2 / MK4 (MT4)   | 22 | 204 | 86,5 | --- | 33 | 43 | 823400   |
| 2 / MK5 (MT5)   | 22 | 236 | 86,5 | --- | 33 | 43 | 823500   |
| 2 / Weldon Ø 32 | 22 | 142 | 80   | 32  | 33 | 43 | 824205   |



**Zapfensenker - Counterbore - Allargatore - Mèche-fraise**

| Ø<br>mm | Type U HSS<br>Art.No. | Type U TIN<br>Art.No. | Type U HM<br>Art.No. | Type U WP<br>Art.No. |
|---------|-----------------------|-----------------------|----------------------|----------------------|
| 60,0    | 821600                | 826600                | 822600               | 825600               |
| 62,0    | 821620                | 826620                | 822620               | 825620               |
| 64,0    | 821640                | 826640                | 822640               | 825640               |
| 65,0    | 821650                | 826650                | 822650               | 825650               |
| 66,0    | 821660                | 826660                | 822660               | 825660               |
| 68,0    | 821680                | 826680                | 822680               | 825680               |
| 70,0    | 821700                | 826700                | 822700               | 825700               |
| 72,0    | 821720                | 826720                | 822720               | 825720               |
| 74,0    | 821740                | 826740                | 822740               | 825740               |
| 76,0    | 821760                | 826760                | 822760               | 825760               |
| 78,0    | 821780                | 826780                | 822780               | 825780               |
| 80,0    | 821800                | 826800                | 822800               | 825800               |
| 82,0    | 821820                | 826820                | 822820               | 825820               |
| 84,0    | 821840                | 826840                | 822840               | 825840               |
| 85,0    | 821850                | 826850                | 822850               | 825850               |

**Vierschneidig - Four fluted**



Type U D1 = Ø 22 L = 60 L1 = 27

**Zapfensenker Kombinationssystem ZS**  
**Sistema di allargatori cilindrici ZS**

**Counterbore Combination Tool System ZS**  
**Mèche-fraise système combiné ZS**

*Größe 2M - Size 2M - Misura 2M - Dimension 2M*

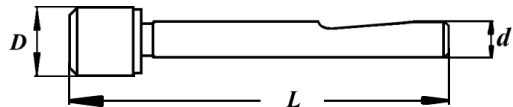
**Führungzapfen F (fest) - Pilot roller F (fixed) - Perno di guida F - Tourillon de guidage F**

| Ø mm | Art.No. |
|------|---------|
| 11,5 | 521115  |
| 12,0 | 521120  |
| 12,5 | 521125  |
| 13,0 | 521130  |
| 13,5 | 521135  |

**Führungzapfen RK - Pilot roller RK - Perno di guida RK - Tourillon de guidage RK**

| Ø mm | Art.No. | Ø mm | Art.No. | Ø mm | Art.No. | Ø mm | Art.No. |
|------|---------|------|---------|------|---------|------|---------|
| 14,0 | 624140  | 19,0 | 624190  | 24,0 | 624240  | 33,0 | 624330  |
| 14,5 | 624145  | 19,5 | 624195  | 24,5 | 624245  | 34,0 | 624340  |
| 15,0 | 624150  | 20,0 | 624200  | 25,0 | 624250  | 35,0 | 624350  |
| 15,5 | 624155  | 20,5 | 624205  | 26,0 | 624260  | 36,0 | 624360  |
| 16,0 | 624160  | 21,0 | 624210  | 27,0 | 624270  | 37,0 | 624370  |
| 16,5 | 624165  | 21,5 | 624215  | 28,0 | 624280  | 38,0 | 624380  |
| 17,0 | 624170  | 22,0 | 624220  | 29,0 | 624290  | 39,0 | 624390  |
| 17,5 | 624175  | 22,5 | 624225  | 30,0 | 624300  | 40,0 | 624400  |
| 18,0 | 624180  | 23,0 | 624230  | 31,0 | 624310  |      |         |
| 18,5 | 624185  | 23,5 | 624235  | 32,0 | 624320  |      |         |

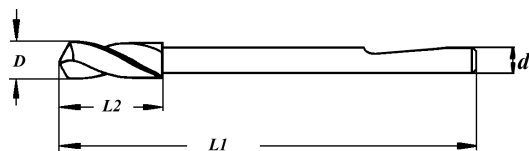
RK = Rotierend und gekühlt -- Rotating and cooled -- Rotante e raffreddato -- Rotatifs et refroidis



d = 10 L = 105

**Führungsbohrer - Pilot drill - Punta da guida - Foret de guidage**

| Ø mm | Form N : Art.No. | Form L : Art.No. | Ø mm | Form N : Art.No. | Form L : Art.No. |
|------|------------------|------------------|------|------------------|------------------|
| 11,0 | 552110           | 562110           | 17,0 | 552170           | 562170           |
| 11,5 | 552115           | 562115           | 17,5 | 552175           | 562175           |
| 12,0 | 552120           | 562120           | 18,0 | 552180           | 562180           |
| 12,5 | 552125           | 562125           | 18,5 | 552185           | 562185           |
| 13,0 | 552130           | 562130           | 19,0 | 552190           | 562190           |
| 13,5 | 552135           | 562135           | 19,5 | 552195           | 562195           |
| 14,0 | 552140           | 562140           | 20,0 | 552200           | 562200           |
| 14,5 | 552145           | 562145           | 21,0 | 552210           | 562210           |
| 15,0 | 552150           | 562150           | 22,0 | 552220           | 562220           |
| 15,5 | 552155           | 562155           | 23,0 | 552230           | 562230           |
| 16,0 | 552160           | 562160           | 24,0 | 552240           | 562240           |
| 16,5 | 552165           | 562165           | 25,0 | 552250           | 562250           |



Form N kurz - short L1 = 115 L2 = 30

Form L lang - long L1 = 135 L2 = 50

**Zapfensenker Kombinationssystem ZS**  
**Sistema di allargatori cilindrici ZS**

**Counterbore Combination Tool System ZS**  
**Mèche-fraise système combiné ZS**

**Sätze -- Sets**

**Inhalt - Content - Contenuto - Content**

| Größe<br>Size<br>Misura<br>Dimension | Art. No. | Halter<br>Holder<br>Supporto<br>Porte-outil | Ø Senker Type U HSS<br>Ø Counterbore<br>Ø Allargatore<br>Ø Fraisage | Ø Führungzapfen<br>Ø Pilot guide<br>Ø Perno di guida                      |
|--------------------------------------|----------|---------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------------|
| <b>01 / 10</b>                       | 800222   | 01 Ø 10                                     | 5 - 5,5 - 6 - 6,5<br>7 - 8 - 9                                      | 2,4 - 2,5 - 2,7 - 3<br>3,3 - 3,5 - 4 - 4,5                                |
| <b>0 / 10</b>                        | 805222   | 0 Ø 10                                      | 8,5 - 9,5 - 10,5<br>11,5 - 13,5 - 16,5                              | 4 - 4,5 - 5 - 5,5 - 6<br>6,5 - 7 - 7,5 - 8 - 8,5<br>9 - 9,5 - 10 - 10,5   |
| <b>0 / MK 1</b>                      | 804222   | 0 Ø MK 1                                    | 8,5 - 9,5 - 10,5<br>11,5 - 13,5 - 16,5                              | 4 - 4,5 - 5 - 5,5 - 6<br>6,5 - 7 - 7,5 - 8 - 8,5<br>9 - 9,5 - 10 - 10,5   |
| <b>1 / 12</b>                        | 815222   | 1 Ø 12                                      | 14,5 - 16,5 - 18,5<br>20,5 - 22,5 - 24,5                            | 7 - 7,5 - 8 - 8,5 - 9<br>9,5 - 10 - 10,5 - 11<br>11,5 - 12 - 13 - 14 - 15 |
| <b>1 / MK 2</b>                      | 814222   | 1 Ø MK 2                                    | 14,5 - 16,5 - 18,5<br>20,5 - 22,5 - 24,5                            | 7 - 7,5 - 8 - 8,5 - 9<br>9,5 - 10 - 10,5 - 11<br>11,5 - 12 - 13 - 14 - 15 |
| <b>2 / MK 2</b>                      | 824222   | 2 MK 2                                      | 26 - 28 - 30 - 32<br>33 - 34 - 36                                   | 12 - 13 - 14 - 15 - 16<br>17 - 18 - 19 - 20 - 21<br>22 - 23 - 24 - 25     |
| <b>2 / MK 3</b>                      | 825222   | 2 MK 3                                      | 26 - 28 - 30 - 32<br>33 - 34 - 36                                   | 12 - 13 - 14 - 15 - 16<br>17 - 18 - 19 - 20 - 21<br>22 - 23 - 24 - 25     |

**Sätze für Senkungen nach DIN 74 / Bl.2 Form H,J,K**

**Inhalt - Content - Contenuto - Content**

| Größe<br>Size<br>Misura<br>Dimension | Art. No. | Halter<br>Holder<br>Supporto<br>Porte-outil | Ø Senker Type U HSS<br>Ø Counterbore<br>Ø Allargatore<br>Ø Fraisage | Ø Führungzapfen<br>Ø Pilot guide<br>Ø Perno di guida |
|--------------------------------------|----------|---------------------------------------------|---------------------------------------------------------------------|------------------------------------------------------|
| <b>M3-M4</b>                         | 830222   | 01 Ø 10                                     | 6 - 8                                                               | 2,5 - 3,3 - 3,4 - 4,5                                |
| <b>M5-M6-M8</b>                      | 831222   | 0 Ø 10                                      | 10 - 11 - 15                                                        | 4,2 - 5 - 5,5 - 6,6 - 6,8 - 9                        |
| <b>M5-M6-M8</b>                      | 832222   | 0 Ø MK 1                                    | 10 - 11 - 15                                                        | 4,2 - 5 - 5,5 - 6,6 - 6,8 - 9                        |
| <b>M10-M12<br/>M14-M16</b>           | 833222   | 1 Ø 12                                      | 18 - 20 - 24 - 26                                                   | 8,5 - 10,2 - 11 - 12<br>13,5 - 14 - 15,5 - 17,5      |
| <b>M10-M12<br/>M14-M16</b>           | 834222   | 1 Ø MK 2                                    | 18 - 20 - 24 - 26                                                   | 8,5 - 10,2 - 11 - 12<br>13,5 - 14 - 15,5 - 17,5      |