



2

2

FREZY TRZPIENIOWE

END MILLS

ФРЕЗЫ КОНЦЕВЫЕ

DOLFAMEX

FREZY TRZPIENIOWE

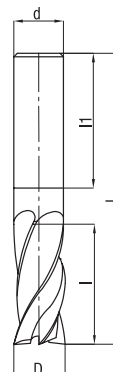
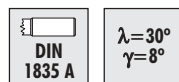
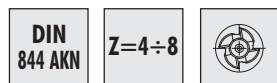
WALCOWO-CZOŁOWE, WIELOOSTRZOWE, Z CHWYTEM WALCOWYM, KRÓTKIE

END MILLS

MULTIFLUTE, WITH PLAIN SHANK, STANDARD SERIES

ФРЕЗЫ КОНЦЕВЫЕ

МНОГОПЕРЬЕВЫЕ, С ЦИЛИНДРИЧЕСКИМ ХВОСТОВИКОМ, СТАНДАРТНЫЕ



2

| D (js14) | d (h8) | L | l | ll | z | HSS | | HSS-E | |
|----------|--------|-----|----|----|---|-------------------|---|-------------------|---|
| | | | | | | Code No 0641-551- | | Code No 0641-551- | |
| 2 | 6 | 51 | 7 | 36 | 4 | 037105 | ● | 200007 | ○ |
| 2.5 | 6 | 52 | 8 | 36 | 4 | 037207 | ● | 200010 | ○ |
| 3 | 6 | 52 | 8 | 36 | 4 | 037309 | ● | 200022 | ○ |
| 3.5 | 6 | 54 | 10 | 36 | 4 | 037400 | ● | 200034 | ○ |
| 4 | 6 | 55 | 11 | 36 | 4 | 037502 | ● | 200109 | ○ |
| 4.5 | 6 | 55 | 11 | 36 | 4 | 037604 | ● | 200200 | ○ |
| 5 | 6 | 57 | 13 | 36 | 4 | 037706 | ● | 200302 | ○ |
| 5.5 | 6 | 57 | 13 | 36 | 4 | 037808 | ● | 200404 | ○ |
| 6 | 6 | 57 | 13 | 36 | 4 | 037900 | ● | 200506 | ○ |
| 6.5 | 10 | 66 | 16 | 40 | 4 | 038004 | ● | 200608 | ○ |
| 7 | 10 | 66 | 16 | 40 | 4 | 038106 | ● | 200700 | ○ |
| 7.5 | 10 | 66 | 16 | 40 | 4 | 038208 | ○ | 200801 | ○ |
| 8 | 10 | 69 | 19 | 40 | 4 | 038300 | ● | 200903 | ○ |
| 8.5 | 10 | 69 | 19 | 40 | 4 | 038401 | ● | 201008 | ○ |
| 9 | 10 | 69 | 19 | 40 | 4 | 038503 | ● | 201100 | ○ |
| 9.5 | 10 | 69 | 19 | 40 | 4 | 038605 | ● | 201153 | ○ |
| 10 | 10 | 72 | 22 | 40 | 4 | 038707 | ● | 201201 | ○ |
| 11 | 12 | 79 | 22 | 45 | 4 | 038900 | ● | 201303 | ○ |
| 12 | 12 | 83 | 26 | 45 | 4 | 039005 | ● | 201405 | ○ |
| 13 | 12 | 83 | 26 | 45 | 4 | 039107 | ● | 201507 | ○ |
| 14 | 12 | 83 | 26 | 45 | 4 | 039209 | ● | 201609 | ○ |
| 15 | 12 | 83 | 26 | 45 | 4 | 039300 | ● | 201700 | ○ |
| 16 | 16 | 92 | 32 | 48 | 4 | 039408 | ● | 201802 | ○ |
| 17 | 16 | 92 | 32 | 48 | 4 | 039504 | ● | 201904 | ○ |
| 18 | 16 | 92 | 32 | 48 | 4 | 039606 | ● | 202009 | ○ |
| 19 | 16 | 92 | 32 | 48 | 4 | 039708 | ● | 202100 | ○ |
| 20 | 20 | 104 | 38 | 50 | 4 | 039800 | ● | 202202 | ○ |
| 21 | 20 | 104 | 38 | 50 | 4 | 039901 | ○ | 202304 | ○ |
| 22 | 20 | 104 | 38 | 50 | 6 | 040005 | ● | 202406 | ○ |
| 23 | 20 | 104 | 38 | 50 | 6 | 040107 | ○ | 202419 | ○ |
| 24 | 25 | 121 | 45 | 56 | 6 | 040209 | ● | 202508 | ○ |
| 25 | 25 | 121 | 45 | 56 | 6 | 040300 | ● | 202600 | ○ |
| 26 | 25 | 121 | 45 | 56 | 6 | 040402 | ● | 202701 | ○ |
| 28 | 25 | 121 | 45 | 56 | 6 | 040606 | ● | 202803 | ○ |
| 30 | 25 | 121 | 45 | 56 | 6 | 040800 | ● | 202905 | ○ |
| 32 | 32 | 133 | 53 | 60 | 6 | 040901 | ● | 203000 | ○ |
| 35 | 32 | 133 | 53 | 60 | 6 | 041108 | ○ | 203037 | ○ |
| 36 | 32 | 133 | 53 | 60 | 6 | 041200 | ● | 203101 | ○ |
| 40 | 40 | 155 | 63 | 70 | 8 | 041403 | ● | 203203 | ○ |
| 44 | 40 | 155 | 63 | 70 | 8 | 041416 | ○ | 203252 | ○ |
| 45 | 40 | 155 | 63 | 70 | 8 | 041505 | ○ | 203305 | ○ |
| 50 | 50 | 177 | 75 | 80 | 8 | 041607 | ○ | 203407 | ○ |
| 56 | 50 | 177 | 75 | 80 | 8 | 041709 | ○ | 203509 | ○ |
| 63 | 50 | 192 | 90 | 80 | 8 | 041800 | ○ | 203600 | ○ |

FREZY TRZPIENIOWE

WALCOWO-CZOŁOWE, WIELOOSTRZOWE, Z CHWYTEM WALCOWYM, DŁUGIE

END MILLS

MULTIFLUTE, WITH PLAIN SHANK, LONG SERIES

ФРЕЗЫ КОНЦЕВЫЕ

МНОГОПЕРЬЕВЫЕ, С ЦИЛИНДРИЧЕСКИМ ХВОСТОВИКОМ, УДЛИНЁННЫЕ

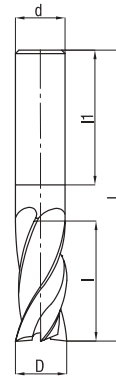
DIN
844 ALN

Z=4÷8



DIN
1835 A

$\lambda=30^\circ$
 $\gamma=8^\circ$



| D (js14) | d (h8) | L | I | II | z | HSS | | HSS-E | |
|----------|--------|-----|-----|----|---|-------------------|---|-------------------|---|
| | | | | | | Code No 0641-551- | | Code No 0641-551- | |
| 2 | 6 | 54 | 10 | 36 | 4 | 042109 | ● | 203702 | ○ |
| 2.5 | 6 | 56 | 12 | 36 | 4 | 042200 | ○ | 203715 | ○ |
| 3 | 6 | 56 | 12 | 36 | 4 | 042302 | ● | 203804 | ○ |
| 3.5 | 6 | 59 | 15 | 36 | 4 | 042315 | ○ | 203817 | ○ |
| 4 | 6 | 63 | 19 | 36 | 4 | 042404 | ● | 203906 | ○ |
| 4.5 | 6 | 63 | 19 | 36 | 4 | 042417 | ○ | 203919 | ○ |
| 5 | 6 | 68 | 24 | 36 | 4 | 042506 | ● | 204000 | ○ |
| 5.5 | 6 | 68 | 24 | 36 | 4 | 042519 | ○ | 204012 | ○ |
| 6 | 6 | 68 | 24 | 36 | 4 | 042608 | ● | 204102 | ○ |
| 6.5 | 10 | 80 | 30 | 40 | 4 | 042610 | ○ | 204115 | ○ |
| 7 | 10 | 80 | 30 | 40 | 4 | 042700 | ○ | 204127 | ○ |
| 7.5 | 10 | 80 | 30 | 40 | 4 | 042712 | ○ | 204139 | ○ |
| 8 | 10 | 88 | 38 | 40 | 4 | 042801 | ● | 204204 | ○ |
| 8.5 | 10 | 88 | 38 | 40 | 4 | 042814 | ○ | 204217 | ○ |
| 9 | 10 | 88 | 38 | 40 | 4 | 042827 | ● | 204229 | ○ |
| 9.5 | 10 | 88 | 38 | 40 | 4 | 042830 | ○ | 204231 | ○ |
| 10 | 10 | 95 | 45 | 40 | 4 | 042903 | ● | 204306 | ○ |
| 11 | 12 | 102 | 45 | 45 | 4 | 042929 | ● | 204408 | ○ |
| 12 | 12 | 110 | 53 | 45 | 4 | 043008 | ● | 204500 | ○ |
| 13 | 12 | 110 | 53 | 45 | 4 | 043023 | ○ | 204524 | ○ |
| 14 | 12 | 110 | 53 | 45 | 4 | 043100 | ● | 204601 | ○ |
| 15 | 12 | 110 | 53 | 45 | 4 | 043112 | ○ | 204613 | ○ |
| 16 | 16 | 123 | 63 | 48 | 4 | 043201 | ● | 204703 | ○ |
| 17 | 16 | 123 | 63 | 48 | 4 | 043214 | ○ | 204716 | ○ |
| 18 | 16 | 123 | 63 | 48 | 4 | 043303 | ● | 204805 | ○ |
| 19 | 16 | 123 | 63 | 48 | 4 | 043316 | ○ | 204818 | ○ |
| 20 | 20 | 141 | 75 | 50 | 4 | 043405 | ● | 204907 | ○ |
| 21 | 20 | 141 | 75 | 50 | 4 | 043418 | ○ | 204910 | ○ |
| 22 | 20 | 141 | 75 | 50 | 6 | 043507 | ● | 205001 | ○ |
| 23 | 20 | 141 | 75 | 50 | 6 | 043510 | ○ | 205013 | ○ |
| 24 | 25 | 166 | 90 | 56 | 6 | 043522 | ● | 205103 | ○ |
| 25 | 25 | 166 | 90 | 56 | 6 | 043609 | ● | 205116 | ○ |
| 26 | 25 | 166 | 90 | 56 | 6 | 043611 | ○ | 205205 | ○ |
| 28 | 25 | 166 | 90 | 56 | 6 | 043700 | ○ | 205307 | ○ |
| 30 | 25 | 166 | 90 | 56 | 6 | 043726 | ● | 205409 | ○ |
| 32 | 32 | 186 | 106 | 60 | 6 | 043802 | ● | 205411 | ○ |
| 35 | 32 | 186 | 106 | 60 | 6 | 043828 | ○ | 205512 | ○ |
| 36 | 32 | 186 | 106 | 60 | 6 | 043904 | ● | 205602 | ○ |
| 40 | 40 | 217 | 125 | 70 | 8 | 044009 | ● | 205704 | ○ |
| 44 | 40 | 217 | 125 | 70 | 8 | 044011 | ○ | 205769 | ○ |
| 45 | 40 | 217 | 125 | 70 | 8 | 044100 | ○ | 205787 | ○ |
| 50 | 50 | 252 | 150 | 80 | 8 | 044202 | ○ | 205806 | ○ |
| 56 | 50 | 252 | 150 | 80 | 8 | 044304 | ○ | 205819 | ○ |
| 63 | 50 | 282 | 180 | 80 | 8 | 044406 | ○ | 205908 | ○ |

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FREZY TRZPIENIOWE

WALCOWO-CZOŁOWE, WIELOOSTRZOWE, Z CHWYTEM WALCOWYM Z PŁASKĄ, KRÓTKIE

END MILLS

MULTIFLUTE, WITH FLATTED SHANK, STANDARD SERIES

ФРЕЗЫ КОНЦЕВЫЕ

МНОГОПЕРЬЕВЫЕ, ХВОСТОВИК С ЛЫСКОЙ, СТАНДАРТНЫЕ

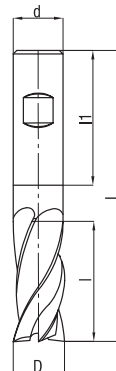
DIN
844 BKN

Z=4÷8



DIN
1835 B

$\lambda=30^\circ$
 $\gamma=8^\circ$



2

| D (js14) | d (h6) | L | I | II | z | HSS | | HSS-E | |
|----------|--------|-----|----|----|---|-------------------|---|-------------------|---|
| | | | | | | Code No 0641-551- | | Code No 0641-551- | |
| 2 | 6 | 51 | 7 | 36 | 4 | 090100 | ○ | 206002 | ○ |
| 2.5 | 6 | 52 | 8 | 36 | 4 | 090201 | ○ | 206015 | ○ |
| 3 | 6 | 52 | 8 | 36 | 4 | 090303 | ○ | 206056 | ○ |
| 3.5 | 6 | 54 | 10 | 36 | 4 | 090405 | ○ | 206068 | ○ |
| 4 | 6 | 55 | 11 | 36 | 4 | 090507 | ○ | 206104 | ○ |
| 4.5 | 6 | 55 | 11 | 36 | 4 | 090609 | ○ | 206158 | ○ |
| 5 | 6 | 57 | 13 | 36 | 4 | 090700 | ○ | 206206 | ○ |
| 5.5 | 6 | 57 | 13 | 36 | 4 | 090802 | ○ | 206250 | ○ |
| 6 | 6 | 57 | 13 | 36 | 4 | 090904 | ○ | 206308 | ○ |
| 6.5 | 10 | 66 | 16 | 40 | 4 | 091009 | ○ | 206351 | ○ |
| 7 | 10 | 66 | 16 | 40 | 4 | 091100 | ○ | 206400 | ○ |
| 7.5 | 10 | 66 | 16 | 40 | 4 | 091112 | ○ | 206453 | ○ |
| 8 | 10 | 69 | 19 | 40 | 4 | 091202 | ○ | 206501 | ○ |
| 8.5 | 10 | 69 | 19 | 40 | 4 | 091304 | ○ | 206555 | ○ |
| 9 | 10 | 69 | 19 | 40 | 4 | 091406 | ○ | 206603 | ○ |
| 9.5 | 10 | 69 | 19 | 40 | 4 | 091508 | ○ | 206657 | ○ |
| 10 | 10 | 72 | 22 | 40 | 4 | 091600 | ○ | 206705 | ○ |
| 11 | 12 | 79 | 22 | 45 | 4 | 091803 | ○ | 206759 | ○ |
| 12 | 12 | 83 | 26 | 45 | 4 | 092000 | ○ | 206807 | ○ |
| 13 | 12 | 83 | 26 | 45 | 4 | 092203 | ○ | 206850 | ○ |
| 14 | 12 | 83 | 26 | 45 | 4 | 092305 | ○ | 206909 | ○ |
| 15 | 12 | 83 | 26 | 45 | 4 | 092407 | ○ | 206952 | ○ |
| 16 | 16 | 92 | 32 | 48 | 4 | 092509 | ○ | 207003 | ○ |
| 17 | 16 | 92 | 32 | 48 | 4 | 092600 | ○ | 207053 | ○ |
| 18 | 16 | 92 | 32 | 48 | 4 | 092702 | ○ | 207105 | ○ |
| 19 | 16 | 92 | 32 | 48 | 4 | 092804 | ○ | 207159 | ○ |
| 20 | 20 | 104 | 38 | 50 | 4 | 092906 | ○ | 207207 | ○ |
| 21 | 20 | 104 | 38 | 50 | 4 | 093000 | ○ | 207250 | ○ |
| 22 | 20 | 104 | 38 | 50 | 6 | 093102 | ○ | 207309 | ○ |
| 23 | 20 | 104 | 38 | 50 | 6 | 093204 | ○ | 207311 | ○ |
| 24 | 25 | 121 | 45 | 56 | 6 | 093306 | ○ | 207352 | ○ |
| 25 | 25 | 121 | 45 | 56 | 6 | 093408 | ○ | 207400 | ○ |
| 26 | 25 | 121 | 45 | 56 | 6 | 093500 | ○ | 207454 | ○ |
| 28 | 25 | 121 | 45 | 56 | 6 | 093703 | ○ | 207502 | ○ |
| 30 | 25 | 121 | 45 | 56 | 6 | 093907 | ○ | 207556 | ○ |
| 32 | 32 | 133 | 53 | 60 | 6 | 094001 | ○ | 207604 | ○ |
| 35 | 32 | 133 | 53 | 60 | 6 | 094207 | ○ | 207643 | ○ |
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| 40 | 40 | 155 | 63 | 70 | 8 | 094500 | ○ | 207706 | ○ |
| 44 | 40 | 155 | 63 | 70 | 8 | 094587 | ○ | 207737 | ○ |
| 45 | 40 | 155 | 63 | 70 | 8 | 094602 | ○ | 207750 | ○ |
| 50 | 50 | 177 | 75 | 80 | 8 | 094704 | ○ | 207808 | ○ |
| 56 | 50 | 177 | 75 | 80 | 8 | 094806 | ○ | 207851 | ○ |
| 63 | 50 | 192 | 90 | 80 | 8 | 094908 | ○ | 207900 | ○ |

FREZY TRZPIENIOWE

WALCOWO-CZOŁOWE, WIELOOSTRZOWE, Z CHWYTEM WALCOWYM Z PŁASKĄ, DŁUGIE

END MILLS

MULTIFLUTE, WITH FLATTED SHANK, LONG SERIES

ФРЕЗЫ КОНЦЕВЫЕ

МНОГОПЕРЬЕВЫЕ, ХВОСТОВИК С ЛЫСКОЙ, УДЛИНЁННЫЕ

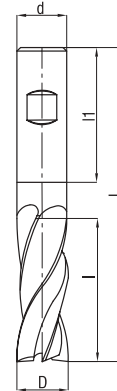
DIN
844 BLN

Z=4÷8



DIN
1835 B

$\lambda = 30^\circ$
 $\gamma = 8^\circ$



| D (js14) | d (h6) | L | l | l1 | z | HSS | | HSS-E | |
|----------|--------|-----|-----|----|---|-------------------|---|-------------------|---|
| | | | | | | Code No 0641-551- | | Code No 0641-551- | |
| 2 | 6 | 54 | 10 | 36 | 4 | 095101 | ○ | 208004 | ○ |
| 2.5 | 6 | 56 | 12 | 36 | 4 | 095203 | ○ | 208017 | ○ |
| 3 | 6 | 56 | 12 | 36 | 4 | 095305 | ○ | 208029 | ○ |
| 3.5 | 6 | 59 | 15 | 36 | 4 | 095407 | ○ | 208041 | ○ |
| 4 | 6 | 63 | 19 | 36 | 4 | 095509 | ○ | 208106 | ○ |
| 4.5 | 6 | 63 | 24 | 36 | 4 | 095600 | ○ | 208150 | ○ |
| 5 | 6 | 68 | 24 | 36 | 4 | 095702 | ○ | 208208 | ○ |
| 5.5 | 6 | 68 | 24 | 36 | 4 | 095804 | ○ | 208251 | ○ |
| 6 | 6 | 68 | 24 | 36 | 4 | 095906 | ○ | 208300 | ○ |
| 6.5 | 10 | 80 | 30 | 40 | 4 | 096000 | ○ | 208353 | ○ |
| 7 | 10 | 80 | 30 | 40 | 4 | 096102 | ○ | 208401 | ○ |
| 7.5 | 10 | 80 | 30 | 40 | 4 | 096115 | ○ | 208455 | ○ |
| 8 | 10 | 80 | 38 | 40 | 4 | 096204 | ○ | 208503 | ○ |
| 8.5 | 10 | 88 | 38 | 40 | 4 | 096306 | ○ | 208557 | ○ |
| 9 | 10 | 88 | 38 | 40 | 4 | 096408 | ○ | 208605 | ○ |
| 9.5 | 10 | 88 | 38 | 40 | 4 | 096500 | ○ | 208659 | ○ |
| 10 | 10 | 95 | 45 | 40 | 4 | 096601 | ○ | 208707 | ○ |
| 11 | 12 | 102 | 45 | 45 | 4 | 096805 | ○ | 208750 | ○ |
| 12 | 12 | 110 | 53 | 45 | 4 | 097001 | ○ | 208809 | ○ |
| 13 | 12 | 110 | 53 | 45 | 4 | 097205 | ○ | 208852 | ○ |
| 14 | 12 | 110 | 53 | 45 | 4 | 097307 | ○ | 208900 | ○ |
| 15 | 12 | 110 | 53 | 45 | 4 | 097409 | ○ | 208954 | ○ |
| 16 | 16 | 123 | 63 | 48 | 4 | 097500 | ○ | 209005 | ○ |
| 17 | 16 | 123 | 63 | 48 | 4 | 097602 | ○ | 209059 | ○ |
| 18 | 16 | 123 | 63 | 48 | 4 | 097704 | ○ | 209107 | ○ |
| 19 | 16 | 123 | 63 | 48 | 4 | 097806 | ○ | 209150 | ○ |
| 20 | 20 | 141 | 75 | 50 | 4 | 097908 | ○ | 209209 | ○ |
| 21 | 20 | 141 | 75 | 50 | 4 | 098002 | ○ | 209252 | ○ |
| 22 | 20 | 141 | 75 | 50 | 6 | 098104 | ○ | 209300 | ○ |
| 23 | 20 | 141 | 75 | 50 | 6 | 098206 | ○ | 209327 | ○ |
| 24 | 25 | 166 | 90 | 56 | 6 | 098308 | ○ | 209354 | ○ |
| 25 | 25 | 166 | 90 | 56 | 6 | 098400 | ○ | 209402 | ○ |
| 26 | 25 | 166 | 90 | 56 | 6 | 098501 | ○ | 209456 | ○ |
| 28 | 25 | 166 | 90 | 56 | 6 | 098705 | ○ | 209504 | ○ |
| 30 | 25 | 166 | 90 | 56 | 6 | 098909 | ○ | 209558 | ○ |
| 32 | 32 | 186 | 106 | 60 | 6 | 099003 | ○ | 209606 | ○ |
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| 36 | 32 | 186 | 106 | 60 | 6 | 099309 | ○ | 209650 | ○ |
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| 50 | 50 | 252 | 150 | 80 | 8 | 099706 | ○ | 209800 | ○ |
| 56 | 50 | 252 | 150 | 80 | 8 | 099808 | ○ | 209853 | ○ |
| 63 | 50 | 282 | 180 | 80 | 8 | 099900 | ○ | 20990 | ○ |

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FREZY TRZPIENIOWE

WALCOWO-CZOŁOWE, Z OSTRZAMI CENTRALNYMI, WIELOOSTRZOWE, Z CHWYTEM WALCOWYM Z PŁASKĄ, KRÓTKIE

END MILLS

CENTRE CUTTING, MULTIFLUTE, WITH FLATTED SHANK, STANDARD SERIES

ФРЕЗЫ КОНЦЕВЫЕ

С ЦЕНТРАЛЬНЫМ ЗУБОМ, МНОГОПЕРЬЕВЫЕ, ХВОСТОВИК С ЛЫСКОЙ, СТАНДАРТНЫЕ

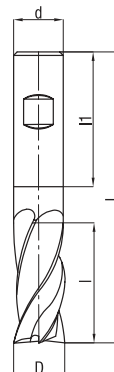
DIN
844
BKMN

Z=4÷8



DIN
1835 B

$\lambda=30^\circ$
 $\gamma=8^\circ$



2

| D (js14) | d (h6) | L | I | II | z | HSS | | HSS-E | |
|----------|--------|-----|----|----|---|-------------------|---|-------------------|---|
| | | | | | | Code No 0641-551- | | Code No 0641-551- | |
| 2 | 6 | 51 | 7 | 36 | 4 | 720105 | ● | 725103 | ● |
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| 4.5 | 6 | 55 | 11 | 36 | 4 | 720400 | ○ | 725409 | ○ |
| 5 | 6 | 57 | 13 | 36 | 4 | 720502 | ● | 725500 | ● |
| 5.5 | 6 | 57 | 13 | 36 | 4 | 720515 | ○ | 725513 | ○ |
| 6 | 6 | 57 | 13 | 36 | 4 | 720604 | ● | 725602 | ● |
| 6.5 | 10 | 66 | 16 | 40 | 4 | 720617 | ○ | 725615 | ○ |
| 7 | 10 | 66 | 16 | 40 | 4 | 720629 | ● | 725704 | ○ |
| 7.5 | 10 | 66 | 16 | 40 | 4 | 720641 | ○ | 725717 | ○ |
| 8 | 10 | 69 | 19 | 40 | 4 | 720706 | ● | 725806 | ● |
| 8.5 | 10 | 69 | 19 | 40 | 4 | 720719 | ○ | 725819 | ○ |
| 9 | 10 | 69 | 19 | 40 | 4 | 720808 | ● | 725908 | ○ |
| 9.5 | 10 | 69 | 19 | 40 | 4 | 720810 | ○ | 725910 | ○ |
| 10 | 10 | 72 | 22 | 40 | 4 | 720900 | ● | 726002 | ● |
| 11 | 12 | 79 | 22 | 45 | 4 | 721005 | ○ | 726104 | ○ |
| 12 | 12 | 83 | 26 | 45 | 4 | 721107 | ● | 726206 | ● |
| 13 | 12 | 83 | 26 | 45 | 4 | 721209 | ○ | 726308 | ○ |
| 14 | 12 | 83 | 26 | 45 | 4 | 721300 | ● | 726400 | ● |
| 15 | 12 | 83 | 26 | 45 | 4 | 721402 | ○ | 726501 | ○ |
| 16 | 16 | 92 | 32 | 48 | 4 | 721504 | ● | 726603 | ● |
| 17 | 16 | 92 | 32 | 48 | 4 | 721606 | ○ | 726705 | ○ |
| 18 | 16 | 92 | 32 | 48 | 4 | 721708 | ● | 726807 | ○ |
| 19 | 16 | 92 | 32 | 48 | 4 | 721710 | ○ | 726810 | ○ |
| 20 | 20 | 104 | 38 | 50 | 4 | 721800 | ● | 726909 | ● |
| 21 | 20 | 104 | 38 | 50 | 4 | 721901 | ○ | 727003 | ○ |
| 22 | 20 | 104 | 38 | 50 | 6 | 722007 | ○ | 727105 | ○ |
| 23 | 20 | 104 | 38 | 50 | 6 | 722109 | ○ | 727207 | ○ |
| 24 | 25 | 121 | 45 | 56 | 6 | 722200 | ○ | 727309 | ○ |
| 25 | 25 | 121 | 45 | 56 | 6 | 722302 | ● | 727400 | ● |
| 26 | 25 | 121 | 45 | 56 | 6 | 722404 | ○ | 727502 | ○ |
| 28 | 25 | 121 | 45 | 56 | 6 | 722506 | ○ | 727604 | ○ |
| 30 | 25 | 121 | 45 | 56 | 6 | 722608 | ○ | 727706 | ○ |
| 2 | 32 | 133 | 53 | 60 | 6 | 722700 | ○ | 727808 | ○ |
| 35 | 32 | 133 | 53 | 60 | 6 | 722802 | ○ | 727900 | ○ |
| 36 | 32 | 133 | 53 | 60 | 6 | 722904 | ○ | 728004 | ○ |
| 40 | 40 | 155 | 63 | 70 | 8 | 723009 | ○ | 728106 | ○ |
| 44 | 40 | 155 | 63 | 70 | 8 | 723100 | ○ | 728208 | ○ |
| 45 | 40 | 155 | 63 | 70 | 8 | 723202 | ○ | 728300 | ○ |
| 50 | 50 | 177 | 75 | 80 | 8 | 723304 | ○ | 728401 | ○ |
| 56 | 50 | 177 | 75 | 80 | 8 | 723406 | ○ | 728505 | ○ |
| 63 | 50 | 192 | 90 | 80 | 8 | 723508 | ○ | 728607 | ○ |

FREZY TRZPIENIOWE

WALCOWO-CZOŁOWE, Z OSTRZAMI CENTRALNYMI, WIELOOSTRZOWE, Z CHWYTEM WALCOWYM Z PŁASKĄ, DŁUGIE

END MILLS

CENTRE CUTTING, MULTIFLUTE, WITH FLATTED SHANK, LONG SERIES

ФРЕЗЫ КОНЦЕВЫЕ

С ЦЕНТРАЛЬНЫМ ЗУБОМ, МНОГОПЕРЬЕВЫЕ, ХВОСТОВИК С ЛЫСКОЙ, УДЛИНЁННЫЕ

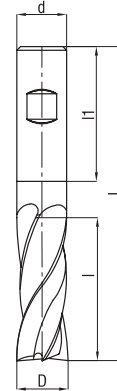
DIN
844
BLMN

Z=4÷8



DIN
1835 B

$\lambda=30^\circ$
 $\gamma=8^\circ$



| D (js14) | d (h6) | L | l | l1 | z | HSS | | HSS-E | |
|----------|--------|-----|-----|----|---|-------------------|---|-------------------|---|
| | | | | | | Code No 0641-551- | | Code No 0641-551- | |
| 2 | 6 | 54 | 10 | 36 | 4 | 730106 | ○ | 735104 | ○ |
| 2.5 | 6 | 56 | 12 | 36 | 4 | 730119 | ○ | 735117 | ○ |
| 3 | 6 | 56 | 12 | 36 | 4 | 730208 | ○ | 735206 | ○ |
| 3.5 | 6 | 59 | 15 | 36 | 4 | 730210 | ○ | 735219 | ○ |
| 4 | 6 | 63 | 19 | 36 | 4 | 730300 | ○ | 735308 | ○ |
| 4.5 | 6 | 63 | 19 | 36 | 4 | 730401 | ○ | 735400 | ○ |
| 5 | 6 | 68 | 24 | 36 | 4 | 730503 | ○ | 735501 | ○ |
| 5.5 | 6 | 68 | 24 | 36 | 4 | 730516 | ○ | 735512 | ○ |
| 6 | 6 | 68 | 24 | 36 | 4 | 730605 | ○ | 735603 | ○ |
| 6.5 | 10 | 80 | 30 | 40 | 4 | 730618 | ○ | 735616 | ○ |
| 7 | 10 | 80 | 30 | 40 | 4 | 730630 | ○ | 735705 | ○ |
| 7.5 | 10 | 80 | 30 | 40 | 4 | 730642 | ○ | 735718 | ○ |
| 8 | 10 | 88 | 38 | 40 | 4 | 730707 | ○ | 735807 | ○ |
| 8.5 | 10 | 88 | 38 | 40 | 4 | 730710 | ○ | 735810 | ○ |
| 9 | 10 | 88 | 38 | 40 | 4 | 730809 | ○ | 735909 | ○ |
| 9.5 | 10 | 88 | 38 | 40 | 4 | 730811 | ○ | 735911 | ○ |
| 10 | 10 | 95 | 45 | 40 | 4 | 730900 | ○ | 736003 | ○ |
| 11 | 12 | 102 | 45 | 45 | 4 | 731006 | ○ | 736105 | ○ |
| 12 | 12 | 110 | 53 | 45 | 4 | 731108 | ○ | 736207 | ○ |
| 13 | 12 | 110 | 53 | 45 | 4 | 731200 | ○ | 736309 | ○ |
| 14 | 12 | 110 | 53 | 45 | 4 | 731301 | ○ | 736400 | ○ |
| 15 | 12 | 110 | 53 | 45 | 4 | 731403 | ○ | 736502 | ○ |
| 16 | 16 | 123 | 63 | 48 | 4 | 731505 | ○ | 736604 | ○ |
| 17 | 16 | 123 | 63 | 48 | 4 | 731607 | ○ | 736706 | ○ |
| 18 | 16 | 123 | 63 | 48 | 4 | 731709 | ○ | 736808 | ○ |
| 19 | 16 | 123 | 63 | 48 | 4 | 731711 | ○ | 736810 | ○ |
| 20 | 20 | 141 | 75 | 50 | 4 | 731800 | ○ | 736900 | ○ |
| 21 | 20 | 141 | 75 | 50 | 4 | 731813 | ○ | 736912 | ○ |
| 22 | 20 | 141 | 75 | 50 | 6 | 731902 | ○ | 737004 | ○ |
| 23 | 20 | 141 | 75 | 50 | 6 | 732007 | ○ | 737106 | ○ |
| 24 | 25 | 166 | 90 | 56 | 6 | 732109 | ○ | 737208 | ○ |
| 25 | 25 | 166 | 90 | 56 | 6 | 732200 | ○ | 737300 | ○ |
| 26 | 25 | 166 | 90 | 56 | 6 | 732302 | ○ | 737503 | ○ |
| 30 | 25 | 166 | 90 | 56 | 6 | 732506 | ○ | 737605 | ○ |
| 32 | 32 | 186 | 106 | 60 | 6 | 732608 | ○ | 737707 | ○ |
| 35 | 32 | 186 | 106 | 60 | 6 | 732700 | ○ | 737809 | ○ |
| 36 | 32 | 186 | 106 | 60 | 6 | 732802 | ○ | 737900 | ○ |
| 40 | 40 | 217 | 125 | 70 | 8 | 732904 | ○ | 738005 | ○ |
| 44 | 40 | 217 | 125 | 70 | 8 | 733009 | ○ | 738107 | ○ |
| 45 | 40 | 217 | 125 | 70 | 8 | 733100 | ○ | 738209 | ○ |
| 50 | 50 | 252 | 150 | 80 | 8 | 733202 | ○ | 738300 | ○ |
| 56 | 50 | 252 | 150 | 80 | 8 | 733304 | ○ | 738402 | ○ |
| 63 | 50 | 282 | 180 | 80 | 8 | 733406 | ○ | 738504 | ○ |

2

FREZY TRZPIENIOWE

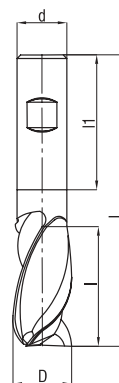
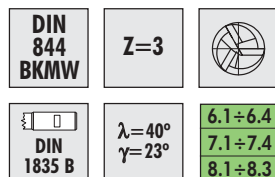
WALCOWO-CZOŁOWE Z OSTRZAMI CENTRALNYMI, 3-OSTRZOWE, Z CHWYTEM WALCOWYM Z PŁASKĄ, KRÓTKIE

END MILLS

CENTRE CUTTING, 3-FLUTE, WITH FLATTED SHANK, STANDARD SERIES

ФРЕЗЫ КОНЦЕВЫЕ

С ЦЕНТРАЛЬНЫМ ЗУБОМ, 3-Х ПЕРЬЕВЫЕ, ХВОСТОВИК С ЛЫСКОЙ, СТАНДАРТНЫЕ



2

| D (k10) | d (h6) | L | l | l1 | z | HSS | | HSS-E | |
|---------|--------|-----|----|----|---|-------------------|---|-------------------|---|
| | | | | | | Code No 0641-551- | | Code No 0641-551- | |
| 5 | 6 | 57 | 13 | 36 | 3 | 820107 | ○ | 825108 | ○ |
| 5.5 | 6 | 57 | 13 | 36 | 3 | 820110 | ○ | 825110 | ○ |
| 6 | 6 | 57 | 13 | 36 | 3 | 820209 | ○ | 825200 | ○ |
| 6.5 | 10 | 66 | 16 | 40 | 3 | 820211 | ○ | 825212 | ○ |
| 7 | 10 | 66 | 16 | 40 | 3 | 820300 | ○ | 825301 | ○ |
| 7.5 | 10 | 66 | 16 | 40 | 3 | 820313 | ○ | 825314 | ○ |
| 8 | 10 | 69 | 19 | 40 | 3 | 820402 | ○ | 825403 | ○ |
| 8.5 | 10 | 69 | 19 | 40 | 3 | 820415 | ○ | 825416 | ○ |
| 9 | 10 | 69 | 19 | 40 | 3 | 820504 | ○ | 825505 | ○ |
| 9.5 | 10 | 69 | 19 | 40 | 3 | 820517 | ○ | 825518 | ○ |
| 10 | 10 | 72 | 22 | 40 | 3 | 820606 | ○ | 825607 | ○ |
| 11 | 12 | 79 | 22 | 45 | 3 | 820708 | ○ | 825709 | ○ |
| 12 | 12 | 83 | 26 | 45 | 3 | 820800 | ○ | 825800 | ○ |
| 13 | 12 | 83 | 26 | 45 | 3 | 820901 | ○ | 825902 | ○ |
| 14 | 12 | 83 | 26 | 45 | 3 | 821006 | ○ | 826007 | ○ |
| 15 | 12 | 83 | 26 | 45 | 3 | 821108 | ○ | 826108 | ○ |
| 16 | 16 | 92 | 32 | 48 | 3 | 821200 | ○ | 826200 | ○ |
| 17 | 16 | 92 | 32 | 48 | 3 | 821301 | ○ | 826302 | ○ |
| 18 | 16 | 92 | 32 | 48 | 3 | 821403 | ○ | 826404 | ○ |
| 19 | 16 | 92 | 32 | 48 | 3 | 821505 | ○ | 826506 | ○ |
| 20 | 20 | 104 | 38 | 50 | 3 | 821607 | ○ | 826608 | ○ |
| 21 | 20 | 104 | 38 | 50 | 3 | 821709 | ○ | 826700 | ○ |
| 22 | 20 | 104 | 38 | 50 | 3 | 821800 | ○ | 826801 | ○ |
| 23 | 20 | 104 | 38 | 50 | 3 | 821902 | ○ | 826903 | ○ |
| 24 | 25 | 121 | 45 | 56 | 3 | 822007 | ○ | 827008 | ○ |
| 25 | 25 | 121 | 45 | 56 | 3 | 822109 | ○ | 827100 | ○ |
| 26 | 25 | 121 | 45 | 56 | 3 | 822200 | ○ | 827201 | ○ |
| 28 | 25 | 121 | 45 | 56 | 3 | 822302 | ○ | 827303 | ○ |
| 30 | 25 | 121 | 45 | 56 | 3 | 822404 | ○ | 827405 | ○ |
| 32 | 32 | 133 | 53 | 60 | 3 | 822506 | ○ | 827507 | ○ |
| 35 | 32 | 133 | 53 | 60 | 3 | 822608 | ○ | 827609 | ○ |
| 36 | 32 | 133 | 53 | 60 | 3 | 822700 | ○ | 827700 | ○ |
| 40 | 40 | 155 | 63 | 70 | 3 | 822801 | ○ | 827802 | ○ |
| 44 | 40 | 155 | 63 | 70 | 3 | 822903 | ○ | 827904 | ○ |
| 45 | 40 | 155 | 63 | 70 | 3 | 823008 | ○ | 828009 | ○ |
| 50 | 50 | 177 | 75 | 80 | 3 | 823100 | ○ | 828100 | ○ |
| 56 | 50 | 177 | 75 | 80 | 3 | 823201 | ○ | 828202 | ○ |
| 63 | 50 | 192 | 90 | 80 | 3 | 823303 | ○ | 828304 | ○ |

FREZY TRZPIENIOWE

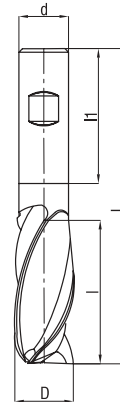
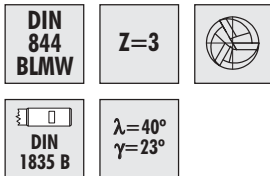
WALCOWO-CZOŁOWE Z OSTRZAMI CENTRALNYMI, 3-OSTRZOWE, Z CHWYTEM WALCOWYM Z PŁASKĄ, DŁUGIE

END MILLS

CENTRE CUTTING, 3-FLUTE, WITH FLATTED SHANK, LONG SERIES

ФРЕЗЫ КОНЦЕВЫЕ

С ЦЕНТРАЛЬНЫМ ЗУБОМ, 3-Х ПЕРЬЕВЫЕ, ХВОСТОВИК С ЛЫСКОЙ, УДЛИНЁННЫЕ



| D (k10) | d (h6) | L | l | l1 | z | HSS | | HSS-E | |
|---------|--------|-----|-----|----|---|-------------------|---|-------------------|---|
| | | | | | | Code No 0641-551- | | Code No 0641-551- | |
| 5 | 6 | 68 | 24 | 36 | 3 | 830109 | ○ | 835100 | ○ |
| 5.5 | 6 | 68 | 24 | 36 | 3 | 830111 | ○ | 835113 | ○ |
| 6 | 6 | 68 | 24 | 36 | 3 | 830200 | ○ | 835201 | ○ |
| 6.5 | 10 | 80 | 30 | 40 | 3 | 830213 | ○ | 835214 | ○ |
| 7 | 10 | 80 | 30 | 40 | 3 | 830302 | ○ | 835303 | ○ |
| 7.5 | 10 | 80 | 30 | 40 | 3 | 830315 | ○ | 835316 | ○ |
| 8 | 10 | 88 | 38 | 40 | 3 | 830404 | ○ | 835405 | ○ |
| 8.5 | 10 | 88 | 38 | 40 | 3 | 830417 | ○ | 835418 | ○ |
| 9 | 10 | 88 | 38 | 40 | 3 | 830506 | ○ | 835507 | ○ |
| 9.5 | 10 | 88 | 38 | 40 | 3 | 830519 | ○ | 835510 | ○ |
| 10 | 10 | 95 | 45 | 40 | 3 | 830608 | ○ | 835609 | ○ |
| 11 | 12 | 102 | 45 | 45 | 3 | 830700 | ○ | 835700 | ○ |
| 12 | 12 | 110 | 53 | 45 | 3 | 830903 | ○ | 835802 | ○ |
| 13 | 12 | 110 | 53 | 45 | 3 | 831008 | ○ | 835904 | ○ |
| 14 | 12 | 110 | 53 | 45 | 3 | 831100 | ○ | 836009 | ○ |
| 15 | 12 | 110 | 53 | 45 | 3 | 831201 | ○ | 836100 | ○ |
| 16 | 16 | 123 | 63 | 48 | 3 | 831303 | ○ | 836200 | ○ |
| 17 | 16 | 123 | 63 | 48 | 3 | 831405 | ○ | 836304 | ○ |
| 18 | 16 | 123 | 63 | 48 | 3 | 831507 | ○ | 836406 | ○ |
| 19 | 16 | 123 | 63 | 48 | 3 | 831609 | ○ | 836508 | ○ |
| 20 | 20 | 141 | 75 | 50 | 3 | 831700 | ○ | 836600 | ○ |
| 21 | 20 | 141 | 75 | 50 | 3 | 831802 | ○ | 836701 | ○ |
| 22 | 20 | 141 | 75 | 50 | 3 | 831904 | ○ | 836803 | ○ |
| 23 | 20 | 141 | 75 | 50 | 3 | 832009 | ○ | 836905 | ○ |
| 24 | 25 | 166 | 90 | 56 | 3 | 832100 | ○ | 837000 | ○ |
| 25 | 25 | 166 | 90 | 56 | 3 | 832202 | ○ | 837101 | ○ |
| 26 | 25 | 166 | 90 | 56 | 3 | 832304 | ○ | 837203 | ○ |
| 28 | 25 | 166 | 90 | 56 | 3 | 832406 | ○ | 837305 | ○ |
| 30 | 25 | 166 | 90 | 56 | 3 | 832508 | ○ | 837407 | ○ |
| 32 | 32 | 186 | 106 | 60 | 3 | 832600 | ○ | 837509 | ○ |
| 35 | 32 | 186 | 106 | 60 | 3 | 832701 | ○ | 837600 | ○ |
| 36 | 32 | 186 | 106 | 60 | 3 | 832803 | ○ | 837702 | ○ |
| 40 | 40 | 217 | 125 | 70 | 3 | 832905 | ○ | 837804 | ○ |
| 44 | 40 | 217 | 125 | 70 | 3 | 833000 | ○ | 837906 | ○ |
| 45 | 40 | 217 | 125 | 70 | 3 | 833101 | ○ | 838000 | ○ |
| 50 | 50 | 252 | 150 | 80 | 3 | 833203 | ○ | 838102 | ○ |
| 56 | 50 | 252 | 150 | 80 | 3 | 833305 | ○ | 838204 | ○ |
| 63 | 50 | 282 | 180 | 80 | 3 | 833407 | ○ | 838306 | ○ |

2

FREZY TRZPIENIOWE SN 50°

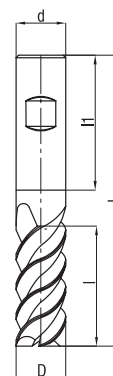
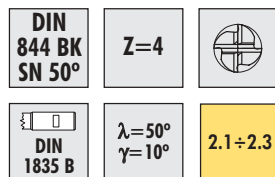
WALCOWO-CZOŁOWE Z OSTRZAMI CENTRALNYMI, 4-OSTRZOWE, Z CHWYTEM WALCOWYM Z PŁASKĄ, KRÓTKIE

END MILLS SN 50°

CENTRE CUTTING, 4-FLUTE, WITH FLATTED SHANK, STANDARD SERIES

ФРЕЗЫ КОНЦЕВЫЕ SN 50°

С ЦЕНТРАЛЬНЫМ ЗУБОМ, 4-Х ПЕРЬЕВЫЕ, ХВОСТОВИК С ЛЫСКОЙ, СТАНДАРТНЫЕ



2

| D (js14) | d (h6) | L | l | l1 | z | HSS-E | |
|----------|--------|-----|----|----|---|-------------------|---|
| | | | | | | Code No 0641-551- | |
| 6 | 6 | 57 | 13 | 36 | 4 | 865105 | ○ |
| 7 | 10 | 66 | 16 | 40 | 4 | 865207 | ○ |
| 8 | 10 | 69 | 19 | 40 | 4 | 865309 | ○ |
| 10 | 10 | 72 | 22 | 40 | 4 | 865400 | ○ |
| 12 | 12 | 83 | 26 | 45 | 4 | 865501 | ○ |
| 14 | 12 | 83 | 26 | 45 | 4 | 865603 | ○ |
| 16 | 16 | 92 | 32 | 48 | 4 | 865705 | ○ |
| 18 | 16 | 92 | 32 | 48 | 4 | 865807 | ○ |
| 20 | 20 | 104 | 38 | 50 | 4 | 865909 | ○ |
| 22 | 20 | 104 | 38 | 50 | 4 | 866004 | ○ |
| 25 | 25 | 121 | 45 | 56 | 4 | 866106 | ○ |

FREZY TRZPIENIOWE SN 50°

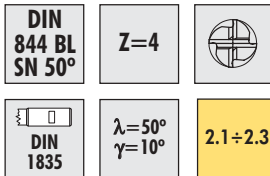
WALCOWO-CZOŁOWE Z OSTRZAMI CENTRALNYMI, 4-OSTRZOWE, Z CHWYTEM WALCOWYM Z PŁASKĄ, DŁUGIE

END MILLS SN 50°

CENTRE CUTTING, 4-FLUTE, WITH FLATTED SHANK, LONG SERIES

ФРЕЗЫ КОНЦЕВЫЕ SN 50°

С ЦЕНТРАЛЬНЫМ ЗУБОМ, 4-Х ПЕРЬЕВЫЕ, ХВОСТОВИК С ЛЫСКОЙ, УДЛИНЁННЫЕ



2

| D (js14) | d (h6) | L | l | l1 | z | HSS-E | |
|----------|--------|-----|----|----|---|-------------------|---|
| | | | | | | Code No 0641-551- | |
| 6 | 6 | 68 | 24 | 36 | 4 | 875104 | ○ |
| 7 | 10 | 80 | 30 | 40 | 4 | 875206 | ○ |
| 8 | 10 | 88 | 38 | 40 | 4 | 875308 | ○ |
| 10 | 10 | 95 | 45 | 40 | 4 | 875400 | ○ |
| 12 | 12 | 110 | 53 | 45 | 4 | 875501 | ○ |
| 14 | 12 | 110 | 53 | 45 | 4 | 875603 | ○ |
| 16 | 16 | 123 | 63 | 48 | 4 | 875705 | ○ |
| 18 | 16 | 123 | 63 | 48 | 4 | 875807 | ○ |
| 20 | 20 | 141 | 75 | 50 | 4 | 875909 | ○ |
| 22 | 20 | 141 | 75 | 50 | 4 | 876003 | ○ |
| 25 | 25 | 166 | 90 | 56 | 4 | 876105 | ○ |

FREZY TRZPIENIOWE SN 60°

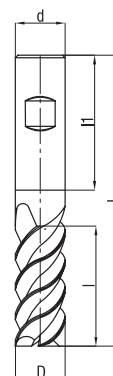
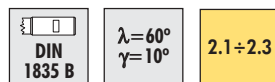
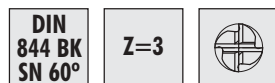
WALCOWO-CZOŁOWE Z OSTRZAMI CENTRALNYMI, 3-OSTRZOWE, Z CHWYTEM WALCOWYM Z PŁASKĄ, KRÓTKIE

END MILLS SN 60°

CENTRE CUTTING, 3-FLUTE, WITH FLATTED SHANK, STANDARD SERIES

ФРЕЗЫ КОНЦЕВЫЕ SN 60°

С ЦЕНТРАЛЬНЫМ ЗУБОМ, 3-Х ПЕРЬЕВЫЕ, ХВОСТОВИК С ЛЫСКОЙ, СТАНДАРТНЫЕ



2

| D (js14) | d (h6) | L | I | I1 | z | HSS-E | |
|----------|--------|-----|----|----|---|-------------------|---|
| | | | | | | Code No 0641-551- | |
| 6 | 6 | 57 | 13 | 36 | 3 | 867107 | ○ |
| 7 | 10 | 66 | 16 | 40 | 3 | 867209 | ○ |
| 8 | 10 | 69 | 19 | 40 | 3 | 867300 | ○ |
| 10 | 10 | 72 | 22 | 40 | 3 | 867402 | ○ |
| 12 | 12 | 83 | 26 | 45 | 3 | 867504 | ○ |
| 14 | 12 | 83 | 26 | 45 | 3 | 867606 | ○ |
| 16 | 16 | 92 | 32 | 48 | 3 | 867708 | ○ |
| 18 | 16 | 92 | 32 | 48 | 3 | 867800 | ○ |
| 20 | 20 | 104 | 38 | 50 | 3 | 867901 | ○ |
| 22 | 20 | 104 | 38 | 50 | 3 | 868006 | ○ |
| 25 | 25 | 121 | 45 | 56 | 3 | 868108 | ○ |

FREZY TRZPIENIOWE SN 60°

WALCOWO-CZOŁOWE Z OSTRZAMI CENTRALNYMI, 3-OSTRZOWE, Z CHWYTEM WALCOWYM Z PŁASKĄ, DŁUGIE

END MILLS SN 60°

CENTRE CUTTING, 3-FLUTE, WITH FLATTED SHANK, LONG SERIES

ФРЕЗЫ КОНЦЕВЫЕ SN 60°

С ЦЕНТРАЛЬНЫМ ЗУБОМ, 3-Х ПЕРЬЕВЫЕ, ХВОСТОВИК С ЛЫСКОЙ, УДЛИНЁННЫЕ

DIN
844 BL
SN 60°

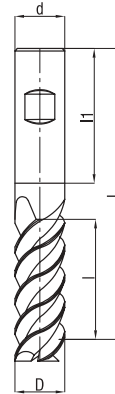
Z=3



DIN
1835 B

$\lambda=60^\circ$
 $\gamma=10^\circ$

2.1 ÷ 2.3



2

| D (js14) | d (h6) | L | l | l1 | z | HSS-E | |
|----------|--------|-----|----|----|---|-------------------|---|
| | | | | | | Code No 0641-551- | |
| 6 | 6 | 68 | 24 | 36 | 3 | 877106 | ○ |
| 7 | 10 | 80 | 30 | 40 | 3 | 877208 | ○ |
| 8 | 10 | 88 | 38 | 40 | 3 | 877300 | ○ |
| 10 | 10 | 95 | 45 | 40 | 3 | 877401 | ○ |
| 12 | 12 | 110 | 53 | 45 | 3 | 877503 | ○ |
| 14 | 12 | 110 | 53 | 45 | 3 | 877605 | ○ |
| 16 | 16 | 123 | 63 | 48 | 3 | 877707 | ○ |
| 18 | 16 | 123 | 63 | 48 | 3 | 877809 | ○ |
| 20 | 20 | 141 | 75 | 50 | 3 | 877900 | ○ |
| 22 | 20 | 141 | 75 | 50 | 3 | 878005 | ○ |
| 25 | 25 | 166 | 90 | 56 | 3 | 878107 | ○ |

FREZY TRZPIENIOWE

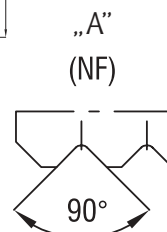
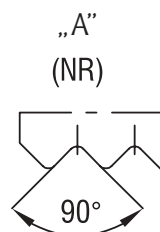
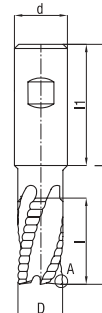
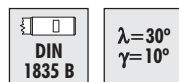
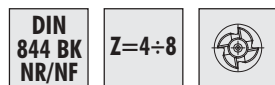
WALCOWO-CZOŁOWE Z ŁAMACZEM WIÓRA, WIELOOSTRZOWE, Z CHWYTEM WALCOWYM Z PŁASKĄ, KRÓTKIE

END MILLS

ROUGHING, MULTIFLUTE, WITH FLATTED SHANK, STANDARD SERIES

ФРЕЗЫ КОНЦЕВЫЕ

С СТРУЖКОЛОМАТЕЛЕМ, МНОГОПЕРЬЕВЫЕ, ХВОСТОВИК С ПЫСКОЙ, СТАНДАРТНЫЕ



2

| D (js14) | d (h6) | L | l | l1 | z | HSS-E | | HSS-E | |
|----------|--------|-----|----|----|---|-------------------|---|-------------------|---|
| | | | | | | NR | | NF | |
| | | | | | | Code No 0641-551- | | Code No 0641-551- | |
| 6 | 6 | 57 | 13 | 36 | 4 | 230010 | ● | 233004 | ○ |
| 7 | 10 | 66 | 16 | 40 | 4 | 230022 | ○ | 233016 | ○ |
| 8 | 10 | 69 | 19 | 40 | 4 | 230034 | ● | 233028 | ○ |
| 9 | 10 | 69 | 19 | 40 | 4 | 230046 | ○ | 233041 | ○ |
| 10 | 10 | 72 | 22 | 40 | 4 | 230103 | ● | 233106 | ○ |
| 11 | 12 | 79 | 22 | 45 | 4 | 230116 | ○ | 233150 | ○ |
| 12 | 12 | 83 | 26 | 45 | 4 | 230205 | ● | 233208 | ○ |
| 13 | 12 | 83 | 26 | 45 | 4 | 230218 | ○ | 233210 | ○ |
| 14 | 12 | 83 | 26 | 45 | 4 | 230307 | ● | 233251 | ○ |
| 15 | 12 | 83 | 26 | 45 | 4 | 230409 | ○ | 233300 | ○ |
| 16 | 16 | 92 | 32 | 48 | 4 | 230500 | ● | 233353 | ○ |
| 17 | 16 | 92 | 32 | 48 | 4 | 230512 | ○ | 233365 | ○ |
| 18 | 16 | 92 | 32 | 48 | 4 | 230602 | ● | 233401 | ○ |
| 20 | 20 | 104 | 38 | 50 | 4 | 230704 | ● | 233455 | ○ |
| 22 | 20 | 104 | 38 | 50 | 4 | 230806 | ○ | 233503 | ○ |
| 23 | 20 | 104 | 38 | 50 | 4 | 230819 | ○ | 233507 | ○ |
| 24 | 25 | 121 | 45 | 56 | 4 | 230908 | ○ | 233557 | ○ |
| 25 | 25 | 121 | 45 | 56 | 4 | 231002 | ● | 233605 | ○ |
| 26 | 25 | 121 | 45 | 56 | 6 | 231104 | ○ | 233659 | ○ |
| 28 | 25 | 121 | 45 | 56 | 6 | 231206 | ○ | 233707 | ○ |
| 30 | 25 | 121 | 45 | 56 | 6 | 231308 | ● | 233750 | ○ |
| 32 | 32 | 138 | 53 | 60 | 6 | 231400 | ○ | 233809 | ○ |
| 35 | 32 | 138 | 53 | 60 | 6 | 231412 | ○ | 233835 | ○ |
| 36 | 32 | 138 | 53 | 60 | 6 | 231501 | ○ | 233852 | ○ |
| 40 | 40 | 155 | 63 | 70 | 6 | 231603 | ○ | 233900 | ○ |
| 44 | 40 | 155 | 63 | 70 | 6 | 231616 | ○ | 233913 | ○ |
| 45 | 40 | 155 | 63 | 70 | 6 | 231705 | ○ | 233954 | ○ |
| 50 | 50 | 177 | 75 | 80 | 8 | 231807 | ○ | 234005 | ○ |
| 56 | 50 | 177 | 75 | 80 | 8 | 231909 | ○ | 234059 | ○ |
| 63 | 50 | 192 | 90 | 80 | 8 | 232003 | ○ | 234107 | ○ |

FREZY TRZPIENIOWE

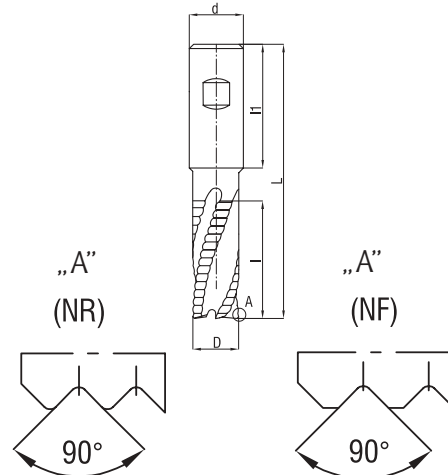
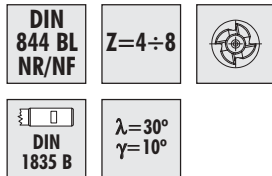
WALCOWO-CZOŁOWE Z ŁAMACZEM WIÓRA, WIELOOSTRZOWE, Z CHWYTEM WALCOWYM Z PŁASKĄ, DŁUGIE

END MILLS

ROUGHING, MULTIFLUTE, WITH FLATTED SHANK, LONG SERIES

ФРЕЗЫ КОНЦЕВЫЕ

С СТРУЖКОЛОМАТЕЛЕМ, МНОГОПЕРЬЕВЫЕ, ХВОСТОВИК С ЛЫСКОЙ, УДЛИНЁННЫЕ



| D (js14) | d (h6) | L | l | l1 | z | HSS-E | | HSS-E | |
|----------|--------|-----|-----|----|---|-------------------|---|-------------------|---|
| | | | | | | NR | | NF | |
| | | | | | | Code No 0641-551- | | Code No 0641-551- | |
| 6 | 6 | 68 | 24 | 36 | 4 | 255002 | ○ | 258005 | ○ |
| 7 | 10 | 80 | 30 | 40 | 4 | 255015 | ○ | 258018 | ○ |
| 8 | 10 | 88 | 38 | 40 | 4 | 255038 | ○ | 258030 | ○ |
| 9 | 10 | 88 | 38 | 40 | 4 | 255053 | ○ | 258042 | ○ |
| 10 | 10 | 95 | 45 | 40 | 4 | 255104 | ○ | 258107 | ○ |
| 11 | 12 | 102 | 45 | 45 | 4 | 255117 | ○ | 258110 | ○ |
| 12 | 12 | 110 | 53 | 45 | 4 | 255206 | ○ | 258150 | ○ |
| 13 | 12 | 110 | 53 | 45 | 4 | 255219 | ○ | 258162 | ○ |
| 14 | 12 | 110 | 53 | 45 | 4 | 255308 | ○ | 258209 | ○ |
| 15 | 12 | 110 | 53 | 45 | 4 | 255400 | ○ | 258252 | ○ |
| 16 | 16 | 123 | 63 | 48 | 4 | 255501 | ○ | 258300 | ○ |
| 17 | 16 | 123 | 63 | 48 | 4 | 255513 | ○ | 258312 | ○ |
| 18 | 16 | 123 | 63 | 48 | 4 | 255603 | ○ | 258354 | ○ |
| 20 | 20 | 141 | 75 | 50 | 4 | 255705 | ○ | 258402 | ○ |
| 22 | 20 | 141 | 75 | 50 | 4 | 255807 | ○ | 258456 | ○ |
| 23 | 20 | 141 | 75 | 50 | 4 | 255810 | ○ | 258468 | ○ |
| 24 | 25 | 166 | 90 | 56 | 4 | 255909 | ○ | 258504 | ○ |
| 25 | 25 | 166 | 90 | 56 | 4 | 256003 | ○ | 258558 | ○ |
| 26 | 25 | 166 | 90 | 56 | 6 | 256105 | ○ | 258606 | ○ |
| 28 | 25 | 166 | 90 | 56 | 6 | 256207 | ○ | 258650 | ○ |
| 30 | 25 | 166 | 90 | 56 | 6 | 256309 | ○ | 258708 | ○ |
| 32 | 32 | 186 | 106 | 60 | 6 | 256400 | ○ | 258751 | ○ |
| 35 | 32 | 186 | 106 | 60 | 6 | 256447 | ○ | 258787 | ○ |
| 36 | 32 | 186 | 106 | 60 | 6 | 256502 | ○ | 258800 | ○ |
| 40 | 40 | 217 | 125 | 70 | 6 | 256604 | ○ | 258853 | ○ |
| 44 | 40 | 217 | 125 | 70 | 6 | 256617 | ○ | 258897 | ○ |
| 45 | 40 | 217 | 125 | 70 | 6 | 256706 | ○ | 258901 | ○ |
| 50 | 50 | 252 | 150 | 80 | 8 | 256808 | ○ | 258955 | ○ |
| 56 | 50 | 252 | 150 | 80 | 8 | 256900 | ○ | 259006 | ○ |
| 63 | 50 | 282 | 180 | 80 | 8 | 257004 | ○ | 259050 | ○ |

2

FREZY TRZPIENIOWE

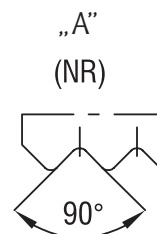
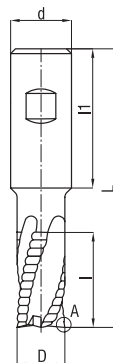
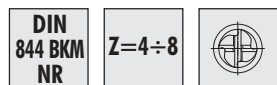
WALCOWO-CZOŁOWE Z ŁAMACZEM WIÓRA, Z OSTRZAMI CENTRALNYMI, WIELOOSTRZOWE, Z CHWYTEM WALCOWYM Z PŁASKĄ, KRÓTKIE

END MILLS

ROUGHING, CENTRE CUTTING, MULTIFLUTE, WITH FLATTED SHANK, STANDARD SERIES

ФРЕЗЫ КОНЦЕВЫЕ

С СТРУЖКОПОМАТЕЛЕМ, С ЦЕНТРАЛЬНЫМ ЗУБОМ, МНОГОПЕРЬЕВЫЕ, ХВОСТОВИК С ПЫСКОЙ, СТАНДАРТНЫЕ



2

| D (js14) | d (h6) | L | I | I1 | z | HSS-E | |
|----------|--------|-----|----|----|---|-------------------|---|
| | | | | | | NR | |
| | | | | | | Code No 0641-551- | |
| 6 | 6 | 57 | 13 | 36 | 4 | 235006 | ○ |
| 7 | 10 | 66 | 16 | 40 | 4 | 235108 | ○ |
| 8 | 10 | 69 | 19 | 40 | 4 | 235200 | ○ |
| 9 | 10 | 69 | 19 | 40 | 4 | 235301 | ○ |
| 10 | 10 | 72 | 22 | 40 | 4 | 235403 | ○ |
| 12 | 12 | 83 | 26 | 45 | 4 | 235505 | ○ |
| 14 | 12 | 83 | 26 | 45 | 4 | 235607 | ○ |
| 15 | 12 | 83 | 26 | 45 | 4 | 235709 | ○ |
| 16 | 16 | 92 | 32 | 48 | 4 | 235800 | ○ |
| 18 | 16 | 92 | 32 | 48 | 4 | 235902 | ○ |
| 20 | 20 | 104 | 38 | 50 | 4 | 236007 | ○ |
| 22 | 20 | 104 | 38 | 50 | 4 | 236109 | ○ |
| 24 | 25 | 121 | 45 | 56 | 4 | 236200 | ○ |
| 25 | 25 | 121 | 45 | 56 | 4 | 236302 | ○ |
| 26 | 25 | 121 | 45 | 56 | 6 | 236404 | ○ |
| 28 | 25 | 121 | 45 | 56 | 6 | 236506 | ○ |
| 30 | 25 | 121 | 45 | 56 | 6 | 236608 | ○ |
| 32 | 32 | 138 | 53 | 60 | 6 | 236700 | ○ |
| 35 | 32 | 138 | 53 | 60 | 6 | 236903 | ○ |
| 36 | 32 | 138 | 53 | 60 | 6 | 237008 | ○ |
| 40 | 40 | 155 | 63 | 70 | 6 | 237201 | ○ |
| 45 | 40 | 155 | 63 | 70 | 6 | 237405 | ○ |
| 50 | 50 | 177 | 75 | 80 | 8 | 237507 | ○ |
| 56 | 50 | 177 | 75 | 80 | 8 | 237609 | ○ |
| 63 | 50 | 192 | 90 | 80 | 8 | 237700 | ○ |

FREZY TRZPIENIOWE

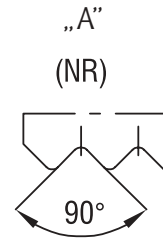
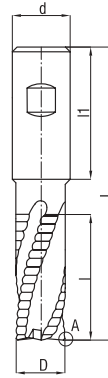
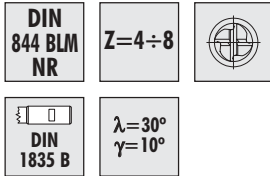
WALCOWO-CZOŁOWE Z ŁAMACZEM WIÓRA, Z OSTRZAMI CENTRALNYMI, WIELOOSTRZOWE, Z CHWYTEM WALCOWYM Z PŁASKĄ, DŁUGIE

END MILLS

ROUGHING, CENTRE CUTTING, MULTIFLUTE, WITH FLATTED SHANK, LONG SERIES

ФРЕЗЫ КОНЦЕВЫЕ

С СТРУЖКОЛОМАТЕЛЕМ, С ЦЕНТРАЛЬНЫМ ЗУБОМ, МНОГОПЕРЬЕВЫЕ, ХВОСТОВИК С ЛЫСКОЙ, УДЛИНЁННЫЕ



| D (js14) | d (h6) | L | l | l1 | z | HSS-E | |
|----------|--------|-----|-----|----|---|-------------------|---|
| | | | | | | NR | |
| | | | | | | Code No 0641-551- | |
| 6 | 6 | 68 | 24 | 36 | 4 | 238009 | ○ |
| 7 | 10 | 80 | 30 | 40 | 4 | 238100 | ○ |
| 8 | 10 | 88 | 38 | 40 | 4 | 238202 | ○ |
| 9 | 10 | 88 | 38 | 40 | 4 | 238304 | ○ |
| 10 | 10 | 95 | 45 | 40 | 4 | 238406 | ○ |
| 12 | 12 | 110 | 53 | 45 | 4 | 238508 | ○ |
| 14 | 12 | 110 | 53 | 45 | 4 | 238523 | ○ |
| 15 | 12 | 110 | 53 | 45 | 4 | 238535 | ○ |
| 16 | 16 | 123 | 63 | 48 | 4 | 238600 | ○ |
| 18 | 16 | 123 | 63 | 48 | 4 | 238701 | ○ |
| 20 | 20 | 141 | 75 | 50 | 4 | 238803 | ○ |
| 22 | 20 | 141 | 75 | 50 | 4 | 238905 | ○ |
| 23 | 20 | 141 | 75 | 50 | 4 | 239000 | ○ |
| 24 | 25 | 166 | 90 | 56 | 4 | 239102 | ○ |
| 25 | 25 | 166 | 90 | 56 | 4 | 239204 | ○ |
| 26 | 25 | 166 | 90 | 56 | 6 | 239306 | ○ |
| 28 | 25 | 166 | 90 | 56 | 6 | 239408 | ○ |
| 30 | 25 | 166 | 90 | 56 | 6 | 239510 | ○ |
| 32 | 32 | 186 | 106 | 60 | 6 | 239612 | ○ |
| 35 | 32 | 186 | 106 | 60 | 6 | 239714 | ○ |
| 36 | 32 | 186 | 106 | 60 | 6 | 239816 | ○ |
| 40 | 40 | 217 | 125 | 70 | 6 | 239918 | ○ |
| 44 | 40 | 217 | 125 | 70 | 6 | 240001 | ○ |
| 45 | 40 | 217 | 125 | 70 | 6 | 240103 | ○ |
| 50 | 50 | 252 | 150 | 80 | 8 | 240205 | ○ |
| 56 | 50 | 252 | 150 | 80 | 8 | 240307 | ○ |
| 63 | 50 | 282 | 180 | 80 | 8 | 240409 | ○ |

2

FREZY TRZPIENIOWE

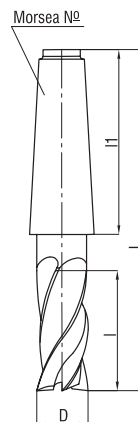
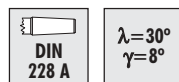
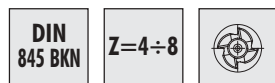
WALCOWO-CZOŁOWE, WIELOOSTRZOWE, Z CHWYTEM MORSE'A, KRÓTKIE

END MILLS

MULTIFLUTE, WITH MORSE TAPER SHANK, STANDARD SERIES

ФРЕЗЫ КОНЦЕВЫЕ

МНОГОПЕРЬЕВЫЕ, С ХВОСТОВИКОМ ТИПА „КОНУС МОРЗЕ”, СТАНДАРТНЫЕ



2

| D (js14) | L | l | l1 | Morse taper No | z | HSS | | HSS-E | |
|----------|-----|----|-----|----------------|---|-------------------|---|-------------------|---|
| | | | | | | Code No 0641-552- | | Code No 0641-552- | |
| 10 | 92 | 22 | 57 | 1 | 4 | 025101 | ● | 055300 | ○ |
| 12 | 96 | 26 | 57 | 1 | 4 | 025203 | ● | 055401 | ○ |
| 13 | 96 | 26 | 57 | 1 | 4 | 025305 | ● | 055503 | ○ |
| 14 | 111 | 26 | 69 | 2 | 4 | 025407 | ● | 055605 | ○ |
| 15 | 111 | 26 | 69 | 2 | 4 | 025509 | ○ | 055707 | ○ |
| 16 | 117 | 32 | 69 | 2 | 4 | 025600 | ● | 055809 | ○ |
| 17 | 117 | 32 | 69 | 2 | 4 | 025702 | ○ | 055900 | ○ |
| 18 | 117 | 32 | 69 | 2 | 4 | 025804 | ● | 056005 | ○ |
| 19 | 117 | 32 | 69 | 2 | 4 | 025906 | ○ | 056107 | ○ |
| 20 | 123 | 38 | 69 | 2 | 4 | 026000 | ● | 056209 | ○ |
| 21 | 123 | 38 | 69 | 2 | 4 | 026102 | ● | 056300 | ○ |
| 22 | 123 | 38 | 69 | 2 | 6 | 026204 | ● | 056402 | ○ |
| 23 | 123 | 38 | 69 | 2 | 6 | 026306 | ● | 056504 | ○ |
| 24 | 147 | 45 | 86 | 3 | 6 | 026408 | ● | 056606 | ○ |
| 25 | 147 | 45 | 86 | 3 | 6 | 026500 | ● | 056708 | ○ |
| 26 | 147 | 45 | 86 | 3 | 6 | 026601 | ● | 056800 | ○ |
| 27 | 147 | 45 | 86 | 3 | 6 | 026703 | ● | 056901 | ○ |
| 28 | 147 | 45 | 86 | 3 | 6 | 026805 | ● | 057006 | ○ |
| 29 | 147 | 45 | 86 | 3 | 6 | 026907 | ● | 057108 | ○ |
| 30 | 147 | 45 | 86 | 3 | 6 | 027001 | ● | 057200 | ○ |
| 32 | 178 | 53 | 109 | 4 | 6 | 027103 | ● | 057301 | ○ |
| 35 | 178 | 53 | 109 | 4 | 6 | 027205 | ● | 057505 | ○ |
| 36 | 178 | 53 | 109 | 4 | 6 | 027307 | ● | 057607 | ○ |
| 38 | 188 | 63 | 109 | 4 | 6 | 027310 | ● | 057709 | ○ |
| 40 | 188 | 63 | 109 | 4 | 8 | 027409 | ● | 057800 | ○ |
| 45 | 188 | 63 | 109 | 4 | 8 | 027500 | ● | 057902 | ○ |
| 50 | 233 | 75 | 136 | 5 | 8 | 027602 | ● | 058007 | ○ |
| 56 | 233 | 75 | 136 | 5 | 8 | 027704 | ● | 058109 | ○ |
| 63 | 248 | 90 | 136 | 5 | 8 | 027806 | ● | 058200 | ○ |

FREZY TRZPIENIOWE

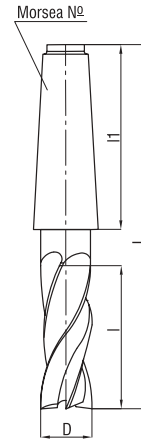
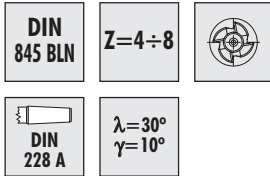
WALCOWO-CZOŁOWE, WIELOOSTRZOWE, Z CHWYTEM MORSE'A, DŁUGIE

END MILLS

MULTIFLUTE, WITH MORSE TAPER SHANK, LONG SERIES

ФРЕЗЫ КОНЦЕВЫЕ

МНОГОПЕРЬЕВЫЕ, С ХВОСТОВИКОМ ТИПА „КОНУС МОРЗЕ”, УДЛИНЁННЫЕ



| D (js14) | L | I | I1 | Morse taper No | z | HSS | | HSS-E | |
|----------|-----|-----|-----|----------------|---|-------------------|---|-------------------|---|
| | | | | | | Code No 0641-552- | | Code No 0641-552- | |
| 10 | 115 | 45 | 57 | 1 | 4 | 028104 | ● | 060303 | ○ |
| 12 | 123 | 53 | 57 | 1 | 4 | 028206 | ● | 060507 | ○ |
| 13 | 123 | 53 | 57 | 1 | 4 | 028308 | ○ | 060609 | ○ |
| 14 | 138 | 53 | 69 | 2 | 4 | 028400 | ● | 060700 | ○ |
| 15 | 138 | 53 | 69 | 2 | 4 | 028501 | ○ | 060802 | ○ |
| 16 | 148 | 63 | 69 | 2 | 4 | 028603 | ● | 060904 | ○ |
| 17 | 148 | 63 | 69 | 2 | 4 | 028705 | ○ | 061009 | ○ |
| 18 | 148 | 63 | 69 | 2 | 4 | 028807 | ● | 061100 | ○ |
| 19 | 148 | 63 | 69 | 2 | 4 | 028909 | ○ | 061201 | ○ |
| 20 | 160 | 75 | 69 | 2 | 4 | 029003 | ● | 061304 | ○ |
| 21 | 160 | 75 | 69 | 2 | 4 | 029105 | ○ | 061406 | ○ |
| 22 | 160 | 75 | 69 | 2 | 6 | 029207 | ● | 061508 | ○ |
| 23 | 160 | 75 | 69 | 2 | 6 | 029309 | ○ | 061600 | ○ |
| 24 | 192 | 90 | 86 | 3 | 6 | 029400 | ● | 061701 | ○ |
| 25 | 192 | 90 | 86 | 3 | 6 | 029502 | ● | 061803 | ○ |
| 26 | 192 | 90 | 86 | 3 | 6 | 029604 | ● | 061904 | ○ |
| 27 | 192 | 90 | 86 | 3 | 6 | 029706 | ○ | 062000 | ○ |
| 28 | 192 | 90 | 86 | 3 | 6 | 029808 | ● | 062101 | ○ |
| 29 | 192 | 90 | 86 | 3 | 6 | 029900 | ○ | 062203 | ○ |
| 30 | 192 | 90 | 86 | 3 | 6 | 030003 | ● | 062305 | ○ |
| 32 | 231 | 106 | 109 | 4 | 6 | 030105 | ● | 062407 | ○ |
| 35 | 231 | 106 | 109 | 4 | 6 | 030133 | ● | 062702 | ○ |
| 36 | 231 | 106 | 109 | 4 | 6 | 030207 | ● | 062804 | ○ |
| 40 | 250 | 125 | 109 | 4 | 8 | 030309 | ● | 063000 | ○ |
| 45 | 250 | 125 | 109 | 4 | 8 | 030400 | ● | 063102 | ○ |
| 50 | 308 | 150 | 136 | 5 | 8 | 030502 | ● | 063204 | ○ |
| 56 | 308 | 150 | 136 | 5 | 8 | 030604 | ● | 063306 | ○ |
| 63 | 338 | 180 | 136 | 5 | 8 | 030706 | ● | 063408 | ○ |

2

FREZY TRZPIENIOWE

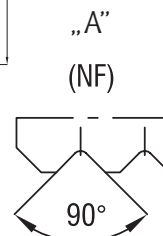
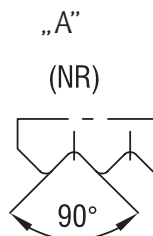
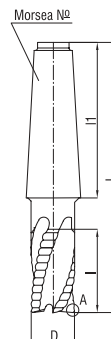
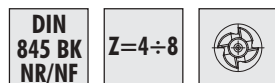
WALCOWO-CZOŁOWE Z ŁAMACZEM WIÓRA, WIELOOSTRZOWE, Z CHWYTEM MORSE'A, KRÓTKIE

END MILLS

ROUGHING, MULTIFLUTE, WITH MORSE TAPER SHANK, STANDARD SERIES

ФРЕЗЫ КОНЦЕВЫЕ

С СТРУЖКОПОМАТЕЛЕМ, МНОГОПЕРЬЕВЫЕ, С ХВОСТОВИКОМ ТИПА „КОНУС МОРЗЕ”, СТАНДАРТНЫЕ



| D (js14) | L | I | l1 | Morse taper No | z | HSS-E | | HSS-E | |
|----------|-----|----|-----|----------------|---|-------------------|---|-------------------|---|
| | | | | | | NR | | NF | |
| | | | | | | Code No 0641-552- | | Code No 0641-552- | |
| 6 | 83 | 13 | 57 | 1 | 4 | 065002 | ○ | 075007 | ○ |
| 7 | 86 | 16 | 57 | 1 | 4 | 065022 | ○ | 075010 | ○ |
| 8 | 89 | 19 | 57 | 1 | 4 | 065034 | ○ | 075022 | ○ |
| 9 | 89 | 19 | 57 | 1 | 4 | 065046 | ○ | 075034 | ○ |
| 10 | 92 | 22 | 57 | 1 | 4 | 065104 | ○ | 075109 | ○ |
| 12 | 96 | 26 | 57 | 1 | 4 | 065206 | ○ | 075200 | ○ |
| 13 | 96 | 26 | 57 | 1 | 4 | 065308 | ○ | 075302 | ○ |
| 14 | 111 | 26 | 69 | 2 | 4 | 065400 | ○ | 075404 | ○ |
| 15 | 111 | 26 | 69 | 2 | 4 | 065501 | ○ | 075506 | ○ |
| 16 | 117 | 32 | 69 | 2 | 4 | 065603 | ○ | 075608 | ○ |
| 18 | 117 | 32 | 69 | 2 | 4 | 065705 | ○ | 075700 | ○ |
| 20 | 123 | 38 | 69 | 2 | 4 | 065807 | ○ | 075801 | ○ |
| 22 | 123 | 38 | 69 | 2 | 4 | 065909 | ○ | 075903 | ○ |
| 24 | 147 | 45 | 86 | 3 | 4 | 066003 | ○ | 076008 | ○ |
| 25 | 147 | 45 | 86 | 3 | 4 | 066105 | ○ | 076100 | ○ |
| 26 | 147 | 45 | 86 | 3 | 6 | 066207 | ○ | 076201 | ○ |
| 28 | 147 | 45 | 86 | 3 | 6 | 066309 | ○ | 076303 | ○ |
| 30 | 147 | 45 | 86 | 3 | 6 | 066400 | ○ | 076405 | ○ |
| 32 | 178 | 53 | 109 | 4 | 6 | 066502 | ○ | 076507 | ○ |
| 34 | 178 | 53 | 109 | 4 | 6 | 066515 | ○ | 076609 | ○ |
| 35 | 178 | 53 | 109 | 4 | 6 | 066527 | ○ | 076700 | ○ |
| 36 | 178 | 53 | 109 | 4 | 6 | 066604 | ○ | 076802 | ○ |
| 38 | 188 | 63 | 109 | 4 | 6 | 066617 | ○ | 076904 | ○ |
| 40 | 188 | 63 | 109 | 4 | 6 | 066708 | ○ | 077009 | ○ |
| 42 | 188 | 63 | 109 | 4 | 6 | 066719 | ○ | 077100 | ○ |
| 44 | 188 | 63 | 109 | 4 | 6 | 066731 | ○ | 077202 | ○ |
| 45 | 188 | 63 | 109 | 4 | 6 | 066808 | ○ | 077304 | ○ |
| 48 | 233 | 75 | 136 | 5 | 8 | 066810 | ○ | 077406 | ○ |
| 50 | 233 | 75 | 136 | 5 | 8 | 066900 | ○ | 077508 | ○ |
| 56 | 233 | 75 | 136 | 5 | 8 | 067004 | ○ | 077600 | ○ |
| 60 | 233 | 75 | 136 | 5 | 8 | 067016 | ○ | 077701 | ○ |
| 63 | 248 | 90 | 136 | 5 | 8 | 067106 | ○ | 077803 | ○ |

2

FREZY TRZPIENIOWE

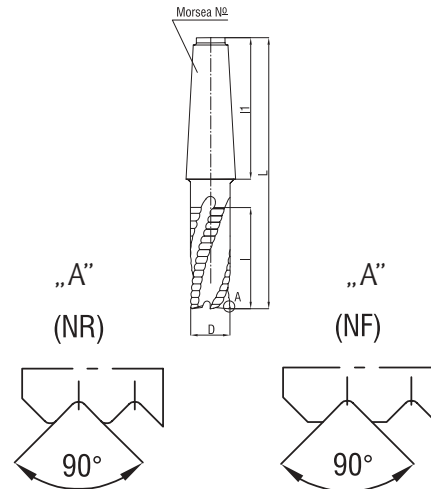
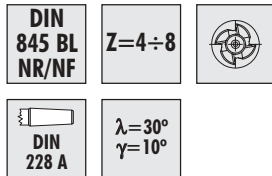
WALCOWO-CZOŁOWE Z ŁAMACZEM WIÓRA, WIELOOSTRZOWE, Z CHWYTEM MORSE'A, DŁUGIE

END MILLS

ROUGHING, MULTIFLUTE, WITH MORSE TAPER SHANK, LONG SERIES

ФРЕЗЫ КОНЦЕВЫЕ

С СТРУЖКОЛОМАТЕЛЕМ, МНОГОПЕРЬЕВЫЕ, С ХВОСТОВИКОМ ТИПА „КОНУС МОРЗЕ”, УДЛИНЁННЫЕ



| D (js14) | L | I | I1 | Morse taper No | z | HSS-E | |
|----------|-----|-----|-----|----------------|---|-------------------|-------------------|
| | | | | | | NR | NF |
| | | | | | | Code No 0641-552- | Code No 0641-552- |
| 10 | 115 | 45 | 57 | 1 | 4 | 070108 | 080100 |
| 12 | 123 | 53 | 57 | 1 | 4 | 070200 | 080201 |
| 13 | 123 | 53 | 57 | 1 | 4 | 070301 | 080303 |
| 14 | 138 | 53 | 69 | 2 | 4 | 070403 | 080405 |
| 15 | 138 | 53 | 69 | 2 | 4 | 070505 | 080507 |
| 16 | 148 | 63 | 69 | 2 | 4 | 070607 | 080609 |
| 18 | 148 | 63 | 69 | 2 | 4 | 070709 | 080700 |
| 19 | 148 | 63 | 69 | 2 | 4 | 070711 | 080802 |
| 20 | 160 | 75 | 69 | 2 | 4 | 070800 | 080904 |
| 22 | 160 | 75 | 69 | 2 | 4 | 070902 | 081009 |
| 24 | 192 | 90 | 86 | 3 | 4 | 071007 | 081100 |
| 25 | 192 | 90 | 86 | 3 | 4 | 071109 | 081202 |
| 26 | 192 | 90 | 86 | 3 | 6 | 071111 | 081304 |
| 28 | 192 | 90 | 86 | 3 | 6 | 071200 | 081406 |
| 30 | 192 | 90 | 86 | 3 | 6 | 071302 | 081508 |
| 32 | 231 | 106 | 109 | 4 | 6 | 071404 | 081600 |
| 34 | 231 | 106 | 109 | 4 | 6 | 071417 | 081701 |
| 35 | 231 | 106 | 109 | 4 | 6 | 071429 | 081803 |
| 36 | 231 | 106 | 109 | 4 | 6 | 071506 | 081905 |
| 38 | 250 | 125 | 109 | 4 | 6 | 071519 | 082000 |
| 40 | 250 | 125 | 109 | 4 | 6 | 071608 | 082101 |
| 42 | 250 | 125 | 109 | 4 | 6 | 071610 | 082203 |
| 44 | 250 | 125 | 109 | 4 | 6 | 071622 | 082305 |
| 45 | 250 | 125 | 109 | 4 | 6 | 071700 | 082407 |
| 48 | 308 | 150 | 136 | 5 | 8 | 071712 | 082509 |
| 50 | 308 | 150 | 136 | 5 | 8 | 071801 | 082600 |
| 56 | 308 | 150 | 136 | 5 | 8 | 071903 | 082702 |
| 60 | 308 | 150 | 136 | 5 | 8 | 071916 | 082804 |
| 63 | 338 | 180 | 136 | 5 | 8 | 072008 | 082906 |

2

FREZY TRZPIENIOWE

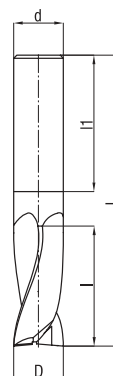
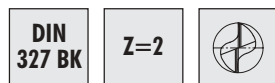
2-OSTRZOWE, Z CHWYTEM WALCOWYM, DO ROWKÓW NA WPUSTY

SLOT DRILLS

2-FLUTE, WITH PLAIN SHANK

ФРЕЗЫ КОНЦЕВЫЕ

ШПОНОЧНЫЕ, 2-Х ПЕРЬЕВЫЕ, С ЦИЛИНДРИЧЕСКИМ ХВОСТОВИКОМ



2

| D (e8) | d (h8) | L | l | l1 | z | HSS | | HSS-E | |
|--------|--------|-----|----|----|---|-------------------|---|-------------------|---|
| | | | | | | Code No 0641-554- | | Code No 0641-554- | |
| 2 | 6 | 48 | 4 | 36 | 2 | 006108 | ● | 119800 | ○ |
| 2.5 | 6 | 49 | 5 | 36 | 2 | 006200 | ● | 119902 | ○ |
| 3 | 6 | 49 | 5 | 36 | 2 | 006302 | ● | 120005 | ○ |
| 4 | 6 | 51 | 7 | 36 | 2 | 006404 | ● | 120107 | ○ |
| 4.5 | 6 | 51 | 7 | 36 | 2 | 006506 | ● | 120209 | ○ |
| 5 | 6 | 52 | 8 | 36 | 2 | 006608 | ● | 120300 | ○ |
| 6 | 6 | 52 | 8 | 36 | 2 | 006700 | ● | 120504 | ○ |
| 6.5 | 10 | 60 | 10 | 40 | 2 | 006712 | ● | 120606 | ○ |
| 7 | 10 | 60 | 10 | 40 | 2 | 006801 | ● | 120708 | ○ |
| 8 | 10 | 61 | 11 | 40 | 2 | 006903 | ● | 120901 | ○ |
| 9 | 10 | 61 | 11 | 40 | 2 | 007008 | ● | 121108 | ○ |
| 10 | 10 | 63 | 13 | 40 | 2 | 007100 | ● | 121200 | ○ |
| 11 | 12 | 70 | 13 | 45 | 2 | 007201 | ● | 121403 | ○ |
| 12 | 12 | 73 | 16 | 45 | 2 | 007303 | ● | 121505 | ○ |
| 13 | 12 | 73 | 16 | 45 | 2 | 007409 | ● | 121607 | ○ |
| 14 | 12 | 73 | 16 | 45 | 2 | 007507 | ● | 121709 | ○ |
| 16 | 16 | 79 | 19 | 48 | 2 | 007700 | ● | 121902 | ○ |
| 18 | 16 | 79 | 19 | 48 | 2 | 007904 | ● | 122109 | ○ |
| 20 | 20 | 88 | 22 | 50 | 2 | 008100 | ● | 122302 | ○ |
| 22 | 20 | 88 | 22 | 50 | 2 | 008304 | ● | 122506 | ○ |
| 23 | 20 | 88 | 22 | 50 | 2 | 008406 | ○ | 122608 | ○ |
| 24 | 25 | 102 | 26 | 56 | 2 | 008508 | ● | 122700 | ○ |
| 25 | 25 | 102 | 26 | 56 | 2 | 008600 | ● | 122801 | ○ |
| 28 | 25 | 102 | 26 | 56 | 2 | 008905 | ● | 123100 | ○ |
| 32 | 32 | 112 | 32 | 60 | 2 | 009101 | ○ | 123507 | ○ |
| 36 | 32 | 112 | 32 | 60 | 2 | 009305 | ○ | 123802 | ○ |
| 40 | 40 | 130 | 38 | 70 | 2 | 009509 | ○ | 124009 | ○ |
| 45 | 40 | 130 | 38 | 70 | 2 | 009600 | ○ | 124100 | ○ |
| 50 | 50 | 147 | 45 | 80 | 2 | 009702 | ○ | 124202 | ○ |
| 56 | 50 | 147 | 45 | 80 | 2 | 009804 | ○ | 124304 | ○ |
| 63 | 50 | 155 | 53 | 80 | 2 | 009906 | ○ | 124406 | ○ |

FREZY TRZPIENIOWE
 2-OSTRZOWE, Z CHWYTEM WALCOWYM Z PŁASKĄ, DO ROWKÓW NA WPUSTY

SLOT DRILLS
 2-FLUTE, WITH FLATTED SHANK

ФРЕЗЫ КОНЦЕВЫЕ
 ШПОНОЧНЫЕ, 2-Х ПЕРЬЕВЫЕ, ХВОСТОВИК С ЛЫСКОЙ

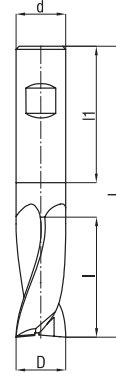
DIN
327 DK

Z=2



DIN
1835 B

$\lambda=30^\circ$
 $\gamma=10^\circ$



| D (e8) | d (h6) | L | l | l1 | z | HSS | | HSS-E | |
|--------|--------|-----|----|----|---|-------------------|---|-------------------|---|
| | | | | | | Code No 0641-554- | | Code No 0641-554- | |
| 2 | 6 | 48 | 4 | 36 | 2 | 025000 | ○ | 145104 | ○ |
| 2.5 | 6 | 49 | 5 | 36 | 2 | 025037 | ○ | 145206 | ○ |
| 3 | 6 | 49 | 5 | 36 | 2 | 025057 | ○ | 145308 | ○ |
| 4 | 6 | 51 | 7 | 36 | 2 | 025102 | ○ | 145501 | ○ |
| 5 | 6 | 52 | 8 | 36 | 2 | 025204 | ○ | 145705 | ○ |
| 6 | 6 | 52 | 8 | 36 | 2 | 025306 | ○ | 145909 | ○ |
| 7 | 10 | 60 | 10 | 40 | 2 | 025408 | ○ | 146105 | ○ |
| 8 | 10 | 61 | 11 | 40 | 2 | 025500 | ○ | 146309 | ○ |
| 10 | 10 | 63 | 13 | 40 | 2 | 025703 | ○ | 146706 | ○ |
| 12 | 12 | 73 | 16 | 45 | 2 | 025907 | ○ | 147106 | ○ |
| 14 | 12 | 73 | 16 | 45 | 2 | 026103 | ○ | 147300 | ○ |
| 16 | 16 | 79 | 19 | 48 | 2 | 026307 | ○ | 147503 | ○ |
| 18 | 16 | 79 | 19 | 48 | 2 | 026500 | ○ | 147605 | ○ |
| 20 | 20 | 88 | 22 | 50 | 2 | 026704 | ○ | 147707 | ○ |
| 22 | 20 | 88 | 22 | 50 | 2 | 026908 | ○ | 147809 | ○ |
| 24 | 25 | 102 | 26 | 56 | 2 | 027104 | ○ | 148005 | ○ |
| 25 | 25 | 102 | 26 | 56 | 2 | 027206 | ○ | 148107 | ○ |
| 28 | 25 | 102 | 26 | 56 | 2 | 027501 | ○ | 148300 | ○ |
| 32 | 32 | 112 | 32 | 60 | 2 | 027705 | ○ | 148504 | ○ |
| 36 | 32 | 112 | 32 | 60 | 2 | 028105 | ○ | 148606 | ○ |
| 40 | 40 | 130 | 38 | 70 | 2 | 028309 | ○ | 148708 | ○ |
| 45 | 40 | 130 | 38 | 70 | 2 | 028400 | ○ | 148800 | ○ |
| 50 | 50 | 147 | 45 | 80 | 2 | 028502 | ○ | 148901 | ○ |
| 56 | 50 | 147 | 45 | 80 | 2 | 028604 | ○ | 149006 | ○ |
| 63 | 50 | 155 | 53 | 80 | 2 | 028706 | ○ | 149108 | ○ |

2

FREZY TRZPIENIOWE

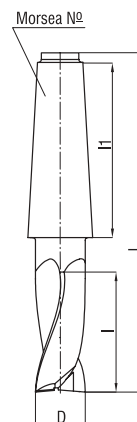
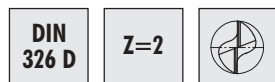
2-OSTRZOWE, Z CHWYTEM STOŻKOWYM MORSE'A, DO ROWKÓW NA WPUSTY

SLOT DRILLS

2-FLUTE, MORSE TAPER SHANK

ФРЕЗЫ КОНЦЕВЫЕ

ШПОНОЧНЫЕ, 2-Х ПЕРЬЕВЫЕ, С ХВОСТОВИКОМ ТИПА „КОНУС МОРЗЕ”



2

| D (e8) | L | I | I1 | Morse taper No | z | HSS | | HSS-E | |
|--------|-----|----|-------|----------------|---|-------------------|---|-------------------|---|
| | | | | | | Code No 0641-555- | | Code No 0641-555- | |
| 10 | 83 | 13 | 57 | 1 | 2 | 010101 | ○ | 015106 | ○ |
| 11 | 83 | 13 | 57 | 1 | 2 | 010203 | ○ | 015208 | ○ |
| 12 | 86 | 16 | 57 | 1 | 2 | 010305 | ○ | 015300 | ○ |
| 13 | 86 | 16 | 57 | 1 | 2 | 010407 | ○ | 015401 | ○ |
| 14 | 101 | 16 | 69 | 2 | 2 | 010509 | ○ | 015503 | ○ |
| 15 | 101 | 16 | 69 | 2 | 2 | 010600 | ○ | 015605 | ○ |
| 16 | 104 | 19 | 69 | 2 | 2 | 010702 | ○ | 015707 | ○ |
| 18 | 104 | 19 | 69 | 2 | 2 | 010804 | ○ | 015809 | ○ |
| 20 | 107 | 22 | 69 | 2 | 2 | 010906 | ○ | 015900 | ○ |
| 22 | 107 | 22 | 69 | 2 | 2 | 011000 | ○ | 016005 | ○ |
| 23 | 107 | 22 | 69 | 2 | 2 | 011102 | ○ | 016107 | ○ |
| 24 | 128 | 26 | 86 | 3 | 2 | 011204 | ○ | 016209 | ○ |
| 25 | 128 | 26 | 86 | 3 | 2 | 011306 | ○ | 016300 | ○ |
| 28 | 128 | 26 | 86 | 3 | 2 | 011408 | ○ | 016402 | ○ |
| 32 | 157 | 32 | 109 | 4 | 2 | 011500 | ○ | 016504 | ○ |
| 36 | 157 | 32 | 109 | 4 | 2 | 011601 | ○ | 016606 | ○ |
| 40 | 163 | 38 | 109 | 4 | 2 | 011703 | ○ | 016708 | ○ |
| 45 | 163 | 38 | 110.5 | 4 | 2 | 011805 | ○ | 016800 | ○ |
| 50 | 203 | 45 | 136 | 5 | 2 | 011907 | ○ | 016901 | ○ |
| 56 | 203 | 45 | 136.5 | 5 | 2 | 012001 | ○ | 017006 | ○ |
| 63 | 211 | 53 | 136.5 | 5 | 2 | 012103 | ○ | 017108 | ○ |

FREZY TRZPIENIOWE

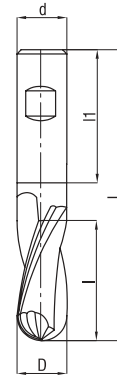
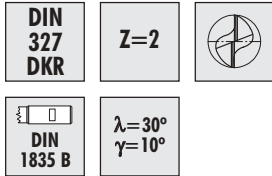
Z CZOŁEM KULISTYM, 2-OSTRZOWE, Z CHWYTEM WALCOWYM Z PŁASKĄ

SLOT DRILLS

BALL NOSED, 2-FLUTE, FLATTED SHANK

ФРЕЗЫ КОНЦЕВЫЕ

СО СФЕРИЧЕСКИМ ТОРЦОМ С ЛЫСКОЙ, 2-Х ПЕРЬЕВЫЕ



| D (h10) | d (h6) | L | I | II | z | HSS | | HSS-E | |
|---------|--------|-----|----|----|---|-------------------|---|-------------------|---|
| | | | | | | Code No 0641-559- | | Code No 0641-559- | |
| 2 | 6 | 48 | 4 | 36 | 2 | 450102 | ● | 470109 | ○ |
| 2.5 | 6 | 49 | 5 | 36 | 2 | 450204 | ○ | 470200 | ○ |
| 3 | 6 | 49 | 5 | 36 | 2 | 450306 | ● | 470302 | ○ |
| 3.5 | 6 | 50 | 6 | 36 | 2 | 450319 | ○ | 470315 | ○ |
| 4 | 6 | 51 | 7 | 36 | 2 | 450408 | ● | 470404 | ○ |
| 4.5 | 6 | 51 | 7 | 36 | 2 | 450500 | ○ | 470506 | ○ |
| 5 | 6 | 52 | 8 | 36 | 2 | 450601 | ● | 470608 | ○ |
| 6 | 6 | 52 | 8 | 36 | 2 | 450703 | ● | 470700 | ○ |
| 6.5 | 10 | 60 | 10 | 40 | 2 | 450805 | ○ | 470801 | ○ |
| 7 | 10 | 60 | 10 | 40 | 2 | 450907 | ○ | 470903 | ○ |
| 8 | 10 | 61 | 11 | 40 | 2 | 451001 | ● | 471008 | ○ |
| 9 | 10 | 61 | 11 | 40 | 2 | 451103 | ○ | 471100 | ○ |
| 10 | 10 | 63 | 13 | 40 | 2 | 451205 | ● | 471201 | ○ |
| 11 | 12 | 70 | 13 | 45 | 2 | 451307 | ○ | 471303 | ○ |
| 12 | 12 | 73 | 16 | 45 | 2 | 451409 | ● | 471405 | ○ |
| 13 | 12 | 73 | 16 | 45 | 2 | 451500 | ○ | 471507 | ○ |
| 14 | 12 | 73 | 16 | 45 | 2 | 451602 | ○ | 471609 | ○ |
| 16 | 16 | 79 | 19 | 48 | 2 | 451704 | ● | 471700 | ○ |
| 18 | 16 | 79 | 19 | 48 | 2 | 451806 | ○ | 471802 | ○ |
| 20 | 20 | 88 | 22 | 50 | 2 | 451908 | ● | 471904 | ○ |
| 22 | 20 | 88 | 22 | 50 | 2 | 452002 | ○ | 472009 | ○ |
| 23 | 20 | 88 | 22 | 50 | 2 | 452104 | ○ | 472100 | ○ |
| 24 | 25 | 102 | 26 | 56 | 2 | 452206 | ○ | 472202 | ○ |
| 25 | 25 | 102 | 26 | 56 | 2 | 452308 | ○ | 472304 | ○ |
| 28 | 25 | 102 | 26 | 56 | 2 | 452400 | ○ | 472406 | ○ |
| 32 | 32 | 112 | 32 | 60 | 2 | 452501 | ○ | 472508 | ○ |
| 36 | 32 | 112 | 32 | 60 | 2 | 452603 | ○ | 472600 | ○ |
| 40 | 40 | 130 | 38 | 70 | 2 | 452705 | ○ | 472701 | ○ |
| 45 | 40 | 130 | 38 | 70 | 2 | 452807 | ○ | 472803 | ○ |
| 50 | 50 | 147 | 45 | 80 | 2 | 452909 | ○ | 472905 | ○ |
| 56 | 50 | 147 | 45 | 80 | 2 | 453004 | ○ | 473000 | ○ |
| 63 | 50 | 155 | 53 | 80 | 2 | 453106 | ○ | 473101 | ○ |

2

FREZY TRZIENIOWE

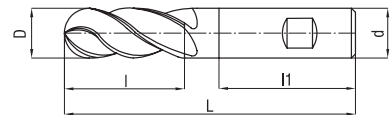
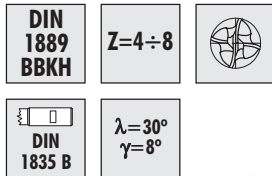
Z CZOŁEM KULISTYM, WIELOOSTRZOWE,
Z CHWYTEM WALCOWYM Z PŁASKĄ,
KRÓTKIE

END MILLS

BALL NOSED, MULTIFLUTE, WITH
FLATTED SHANK, STANDARD
SERIES

ФРЕЗЫ КОНЦЕВЫЕ

СО СФЕРИЧЕСКИМ ТОРЦОМ,
МНОГОПЕРЬЕВЫЕ, ХВОСТОВИК
С ЛЫСКОЙ, СТАНДАРТНЫЕ



| D (k12) | d (h6) | L | l | l1 | z | HSS | | HSS-E | |
|---------|--------|-----|----|----|---|-------------------|---|-------------------|---|
| | | | | | | Code No 0641-559- | | Code No 0641-559- | |
| 6 | 6 | 57 | 13 | 36 | 4 | 220108 | ○ | 225109 | ○ |
| 8 | 10 | 69 | 19 | 40 | 4 | 220200 | ○ | 225200 | ○ |
| 10 | 10 | 72 | 22 | 40 | 4 | 220301 | ○ | 225302 | ○ |
| 12 | 12 | 83 | 26 | 45 | 4 | 220403 | ○ | 225404 | ○ |
| 16 | 16 | 92 | 32 | 48 | 4 | 220505 | ○ | 225506 | ○ |
| 20 | 20 | 104 | 38 | 50 | 4 | 220607 | ○ | 225608 | ○ |
| 25 | 25 | 121 | 45 | 56 | 6 | 220709 | ○ | 225700 | ○ |
| 32 | 32 | 133 | 53 | 60 | 6 | 220800 | ○ | 225801 | ○ |
| 40 | 40 | 155 | 63 | 70 | 8 | 220902 | ○ | 225903 | ○ |
| 50 | 50 | 177 | 75 | 80 | 8 | 221007 | ○ | 226008 | ○ |

FREZY TRZIENIOWE

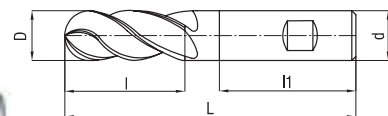
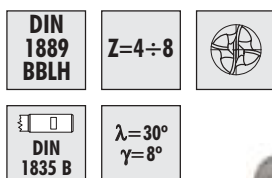
Z CZOŁEM KULISTYM, WIELOOSTRZOWE,
Z CHWYTEM WALCOWYM Z PŁASKĄ,
DŁUGIE

END MILLS

BALL NOSED, MULTIFLUTE, WITH
FLATTED SHANK, LONG SERIES

ФРЕЗЫ КОНЦЕВЫЕ

СО СФЕРИЧЕСКИМ ТОРЦОМ,
МНОГОПЕРЬЕВЫЕ, ХВОСТОВИК
С ЛЫСКОЙ, УДЛИНЁННЫЕ



| D (k12) | d (h6) | L | l | l1 | z | HSS | | HSS-E | |
|---------|--------|-----|-----|----|---|-------------------|---|-------------------|---|
| | | | | | | Code No 0641-559- | | Code No 0641-559- | |
| 6 | 6 | 68 | 24 | 36 | 4 | 233100 | ○ | 235101 | ○ |
| 8 | 10 | 88 | 38 | 40 | 4 | 233201 | ○ | 235203 | ○ |
| 10 | 10 | 95 | 45 | 40 | 4 | 233303 | ○ | 235305 | ○ |
| 12 | 12 | 110 | 53 | 45 | 4 | 233405 | ○ | 235407 | ○ |
| 16 | 16 | 123 | 63 | 48 | 4 | 233507 | ○ | 235509 | ○ |
| 20 | 20 | 141 | 75 | 50 | 4 | 233609 | ○ | 235600 | ○ |
| 25 | 25 | 166 | 90 | 56 | 6 | 233700 | ○ | 235702 | ○ |
| 32 | 32 | 186 | 106 | 60 | 6 | 233802 | ○ | 235804 | ○ |
| 40 | 40 | 217 | 125 | 70 | 8 | 233904 | ○ | 235906 | ○ |
| 50 | 50 | 252 | 150 | 80 | 8 | 234009 | ○ | 236000 | ○ |

FREZY TRZIENIOWE

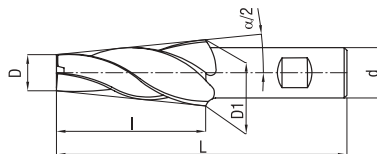
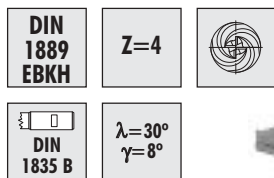
ZBIEŻNE, Z OSTRZAMI CENTRALNYMI NA CZOLE, 4-OSTRZOWE, KRÓTKIE

END MILLS

TAPERED, CENTRE CUTTING, 4-FLUTE, STANDARD SERIES

ФРЕЗЫ КОНЦЕВЫЕ

КОНИЧЕСКИЕ, С ЦЕНТРАЛЬНЫМ ЗУБОМ, 4-Х ПЕРЬЕВЫЕ, СТАНДАРТНЫЕ



| Pochylenie convergence сходимость | D (k12) | D1 | d (h6) | L | l | z | α/2 | HSS | | HSS-E | |
|---|------------|------|-----------|-----|------|---|-------|-------------------|---|-------------------|---|
| | | | | | | | | Code No 0641-559- | | Code No 0641-559- | |
| 1 : 6 | 2.5 | 13 | 12 | 85 | 31.5 | 4 | 9°28' | 270109 | ○ | 275100 | ○ |
| 1 : 6 | 4 | 16 | 16 | 93 | 36 | 4 | 9°28' | 270200 | ○ | 275201 | ○ |
| 1 : 6 | 6 | 20 | 20 | 106 | 42 | 4 | 9°28' | 270302 | ○ | 275303 | ○ |
| 1 : 6 | 8 | 25 | 25 | 120 | 50 | 4 | 9°28' | 270404 | ○ | 275405 | ○ |
| 1 : 6 | 12 | 33 | 32 | 135 | 63 | 4 | 9°28' | 270506 | ○ | 275507 | ○ |
| 1 : 10 | 2.5 | 10 | 10 | 85 | 37.5 | 4 | 5°43' | 270608 | ○ | 275609 | ○ |
| 1 : 10 | 4 | 12 | 10 | 90 | 40 | 4 | 5°43' | 270700 | ○ | 275700 | ○ |
| 1 : 10 | 6 | 14 | 12 | 95 | 40 | 4 | 5°43' | 270801 | ○ | 275802 | ○ |
| 1 : 10 | 8 | 17 | 16 | 103 | 45 | 4 | 5°43' | 270903 | ○ | 275904 | ○ |
| 1 : 10 | 12 | 21 | 20 | 106 | 45 | 4 | 5°43' | 271008 | ○ | 276009 | ○ |
| 1 : 10 | 16 | 26 | 25 | 120 | 50 | 4 | 5°43' | 271100 | ○ | 276100 | ○ |
| 1 : 20 | 4 | 8 | 8 | 90 | 40 | 4 | 2°52' | 271201 | ○ | 276202 | ○ |
| 1 : 20 | 6 | 10 | 10 | 95 | 40 | 4 | 2°52' | 271303 | ○ | 276304 | ○ |
| 1 : 20 | 8 | 12.5 | 12 | 105 | 45 | 4 | 2°52' | 271405 | ○ | 276406 | ○ |
| 1 : 20 | 12 | 17 | 16 | 109 | 50 | 4 | 2°52' | 271507 | ○ | 276508 | ○ |
| 1 : 20 | 16 | 21.6 | 20 | 120 | 56 | 4 | 2°52' | 271609 | ○ | 276600 | ○ |
| 1 : 20 | 20 | 26.3 | 25 | 135 | 63 | 4 | 2°52' | 271700 | ○ | 276701 | ○ |

FREZY TRZIENIOWE

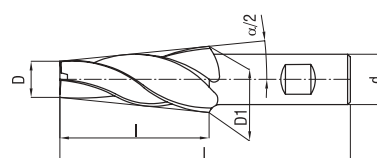
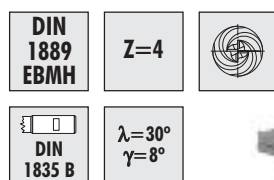
ZBIEŻNE, Z OSTRZAMI CENTRALNYMI NA CZOLE, 4-OSTRZOWE, DŁUGIE

END MILLS

TAPERED, CENTRE CUTTING, 4-FLUTE, LONG SERIES

ФРЕЗЫ КОНЦЕВЫЕ

КОНИЧЕСКИЕ, С ЦЕНТРАЛЬНЫМ ЗУБОМ, 4-Х ПЕРЬЕВЫЕ, УДЛИНЁННЫЕ



| Pochylenie convergence сходимость | D (k12) | D1 | d (h6) | L | l | z | α/2 | HSS | | HSS-E | |
|---|------------|------|-----------|-----|-----|---|-------|-------------------|---|-------------------|---|
| | | | | | | | | Code No 0641-559- | | Code No 0641-559- | |
| 1 : 6 | 4 | 22.7 | 20 | 120 | 56 | 4 | 9°28' | 280203 | ○ | 285204 | ○ |
| 1 : 6 | 6 | 27 | 25 | 135 | 63 | 4 | 9°28' | 280305 | ○ | 285306 | ○ |
| 1 : 6 | 8 | 31.7 | 32 | 145 | 71 | 4 | 9°28' | 280407 | ○ | 285408 | ○ |
| 1 : 10 | 4 | 16.6 | 16 | 125 | 63 | 4 | 5°43' | 280702 | ○ | 285703 | ○ |
| 1 : 10 | 6 | 18.6 | 16 | 125 | 63 | 4 | 5°43' | 280804 | ○ | 285805 | ○ |
| 1 : 10 | 8 | 22.2 | 20 | 135 | 71 | 4 | 5°43' | 280906 | ○ | 285907 | ○ |
| 1 : 10 | 12 | 26.2 | 25 | 140 | 71 | 4 | 5°43' | 281000 | ○ | 286001 | ○ |
| 1 : 20 | 4 | 10.3 | 10 | 115 | 63 | 4 | 2°52' | 281204 | ○ | 286205 | ○ |
| 1 : 20 | 6 | 12.3 | 10 | 115 | 63 | 4 | 2°52' | 281306 | ○ | 286307 | ○ |
| 1 : 20 | 8 | 16 | 16 | 138 | 80 | 4 | 2°52' | 281408 | ○ | 286409 | ○ |
| 1 : 20 | 12 | 20 | 20 | 140 | 80 | 4 | 2°52' | 281500 | ○ | 286500 | ○ |
| 1 : 20 | 16 | 25 | 25 | 160 | 90 | 4 | 2°52' | 281601 | ○ | 286602 | ○ |
| 1 : 20 | 20 | 30 | 25 | 170 | 100 | 4 | 2°52' | 281703 | ○ | 286704 | ○ |

FREZY TRZPIENIOWE

ZBIEŻNE, Z CZOŁEM KULISTYM, 4-OSTRZOWE, Z CHWYTEM WALCOWYM Z PŁASKĄ, KRÓTKIE

END MILLS

TAPERED, BALL NOSED, 4-FLUTE, FLATTED SHANK, STANDARD SERIES

ФРЕЗЫ КОНЦЕВЫЕ

КОНИЧЕСКИЕ, СО СФЕРИЧЕСКИМ ТОРЦОМ, 4-Х ПЕРЬЕВЫЕ, ХВОСТОВИК С ЛЫСКОЙ, СТАНДАРТНЫЕ

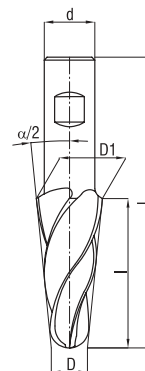
DIN
1889/3
FBKH

Z=4



DIN
1835 B

$\lambda=30^\circ$
 $\gamma=8^\circ$



2

| Pochylenie convergence сходимость | D (k12) | D1 | d (h6) | L | l | z | $\alpha/2$ | HSS | | HSS-E | |
|---|------------|------|-----------|-----|------|---|------------|-------------------|---|-------------------|---|
| | | | | | | | | Code No 0641-559- | | Code No 0641-559- | |
| 1 : 6 | 2.5 | 13 | 12 | 85 | 31.5 | 4 | 9°28' | 320105 | ○ | 325106 | ○ |
| 1 : 6 | 4 | 16 | 16 | 93 | 36 | 4 | 9°28' | 320207 | ○ | 325208 | ○ |
| 1 : 6 | 6 | 20 | 20 | 106 | 42 | 4 | 9°28' | 320309 | ○ | 325300 | ○ |
| 1 : 6 | 8 | 25 | 25 | 120 | 50 | 4 | 9°28' | 320400 | ○ | 325401 | ○ |
| 1 : 6 | 12 | 33 | 32 | 135 | 63 | 4 | 9°28' | 320502 | ○ | 325503 | ○ |
| 1 : 10 | 2.5 | 10 | 10 | 85 | 37.5 | 4 | 5°43' | 320604 | ○ | 325605 | ○ |
| 1 : 10 | 4 | 12 | 10 | 90 | 40 | 4 | 5°43' | 320706 | ○ | 325707 | ○ |
| 1 : 10 | 6 | 14 | 12 | 95 | 40 | 4 | 5°43' | 320808 | ○ | 325809 | ○ |
| 1 : 10 | 8 | 17 | 16 | 103 | 45 | 4 | 5°43' | 320900 | ○ | 325900 | ○ |
| 1 : 10 | 12 | 21 | 20 | 106 | 45 | 4 | 5°43' | 321004 | ○ | 326005 | ○ |
| 1 : 10 | 16 | 26 | 25 | 120 | 50 | 4 | 5°43' | 321106 | ○ | 326107 | ○ |
| 1 : 20 | 4 | 8 | 8 | 90 | 40 | 4 | 2°52' | 321208 | ○ | 326209 | ○ |
| 1 : 20 | 6 | 10 | 10 | 95 | 40 | 4 | 2°52' | 321300 | ○ | 326300 | ○ |
| 1 : 20 | 8 | 12.5 | 12 | 105 | 45 | 4 | 2°52' | 321401 | ○ | 326402 | ○ |
| 1 : 20 | 12 | 17 | 16 | 109 | 50 | 4 | 2°52' | 321503 | ○ | 326504 | ○ |
| 1 : 20 | 16 | 21.6 | 20 | 120 | 56 | 4 | 2°52' | 321605 | ○ | 326606 | ○ |
| 1 : 20 | 20 | 26.3 | 25 | 135 | 63 | 4 | 2°52' | 321707 | ○ | 326708 | ○ |

FREZY TRZPIENIOWE

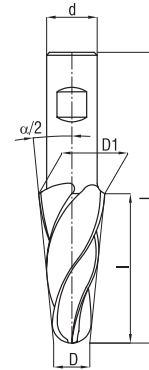
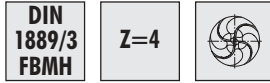
ZBIĘŻNE, Z CZOLEM KULISTYM, 4-OSTRZOWE, Z CHWYTEM WALCOWYM Z PŁASKĄ, DŁUGIE

END MILLS

TAPERED, BALL NOSED, 4-FLUTE, FLATTED SHANK, LONG SERIES

ФРЕЗЫ КОНЦЕВЫЕ

КОНИЧЕСКИЕ, СО СФЕРИЧЕСКИМ ТОРЦОМ, 4-Х ПЕРЬЕВЫЕ, ХВОСТОВИК С ЛЫСКОЙ, УДЛИНЁННЫЕ



2

| Pochylenie convergence сходимость | D (k12) | D1 | d (h6) | L | l | z | $\alpha/2$ | HSS | | HSS-E | |
|---|------------|------|-----------|-----|-----|---|------------|-------------------|---|-------------------|---|
| | | | | | | | | Code No 0641-559- | | Code No 0641-559- | |
| 1 : 6 | 4 | 22.7 | 20 | 120 | 56 | 4 | 9°28' | 330209 | ○ | 335200 | ○ |
| 1 : 6 | 6 | 27 | 25 | 135 | 63 | 4 | 9°28' | 330300 | ○ | 335301 | ○ |
| 1 : 6 | 8 | 31.7 | 32 | 145 | 71 | 4 | 9°28' | 330402 | ○ | 335403 | ○ |
| 1 : 10 | 4 | 16.6 | 16 | 125 | 63 | 4 | 5°43' | 330708 | ○ | 335709 | ○ |
| 1 : 10 | 6 | 18.6 | 16 | 125 | 63 | 4 | 5°43' | 330800 | ○ | 335800 | ○ |
| 1 : 10 | 8 | 22.2 | 20 | 135 | 71 | 4 | 5°43' | 330901 | ○ | 335902 | ○ |
| 1 : 10 | 12 | 26.2 | 25 | 140 | 71 | 4 | 5°43' | 331006 | ○ | 336007 | ○ |
| 1 : 20 | 4 | 10.3 | 10 | 115 | 63 | 4 | 2°52' | 331200 | ○ | 336200 | ○ |
| 1 : 20 | 6 | 12.3 | 10 | 115 | 63 | 4 | 2°52' | 331301 | ○ | 336302 | ○ |
| 1 : 20 | 8 | 16 | 16 | 138 | 80 | 4 | 2°52' | 331403 | ○ | 336404 | ○ |
| 1 : 20 | 12 | 20 | 20 | 140 | 80 | 4 | 2°52' | 331505 | ○ | 336506 | ○ |
| 1 : 20 | 16 | 25 | 25 | 160 | 90 | 4 | 2°52' | 331607 | ○ | 336608 | ○ |
| 1 : 20 | 20 | 30 | 25 | 170 | 100 | 4 | 2°52' | 331709 | ○ | 336700 | ○ |

FREZY TRZIENIOWE

ZBIEŻNE, Z OSTRZAMI CENTRALNYMI NA CZOLE, 4-OSTRZOWE, Z CHWYTEM WALCOWYM Z PŁASKA, DŁUGIE

END MILLS

TAPERED, CENTRE CUTTING, 4-FLUTE, FLATTED SHANK, LONG SERIES

ФРЕЗЫ КОНЦЕВЫЕ

КОНИЧЕСКИЕ, С ЦЕНТРАЛЬНЫМ ЗУБОМ, 4-Х ПЕРЬЕВЫЕ, ХВОСТОВИК С ЛЫСКОЙ, УДЛИНЁННЫЕ

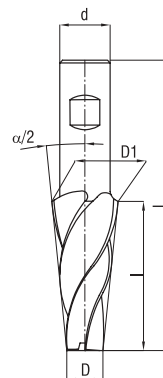
DIN
1889/3
EBMH

Z=4



DIN
1835 B

$\lambda=30^\circ$
 $\gamma=8^\circ$



2

| Pochylenie convergence сходимость | D (k12) | D1 | d (h6) | L | l | $\alpha/2$ | HSS | | HSS-E | |
|---|------------|------|-----------|-----|-----|------------|-------------------|---|-------------------|---|
| | | | | | | | Code No 0641-559- | | Code No 0641-559- | |
| 1 : 6 | 4 | 22.7 | 20 | 56 | 120 | 9°28' | 280203 | ○ | 285204 | ○ |
| 1 : 6 | 6 | 27 | 25 | 63 | 135 | 9°28' | 280305 | ○ | 285306 | ○ |
| 1 : 6 | 8 | 31.7 | 32 | 71 | 145 | 9°28' | 280407 | ○ | 285408 | ○ |
| 1 : 10 | 4 | 16.6 | 16 | 63 | 125 | 5°43' | 280702 | ○ | 285703 | ○ |
| 1 : 10 | 6 | 18.6 | 16 | 63 | 125 | 5°43' | 280804 | ○ | 285805 | ○ |
| 1 : 10 | 8 | 22.2 | 20 | 71 | 135 | 5°43' | 280906 | ○ | 285907 | ○ |
| 1 : 10 | 12 | 26.2 | 25 | 71 | 140 | 5°43' | 281000 | ○ | 286001 | ○ |
| 1 : 20 | 4 | 10.3 | 10 | 63 | 115 | 2°52' | 281204 | ○ | 286205 | ○ |
| 1 : 20 | 6 | 12.3 | 10 | 63 | 115 | 2°52' | 281306 | ○ | 286307 | ○ |
| 1 : 20 | 8 | 16 | 16 | 80 | 138 | 2°52' | 281408 | ○ | 286409 | ○ |
| 1 : 20 | 12 | 20 | 20 | 80 | 140 | 2°52' | 281500 | ○ | 286500 | ○ |
| 1 : 20 | 16 | 25 | 25 | 90 | 160 | 2°52' | 281601 | ○ | 286602 | ○ |
| 1 : 20 | 20 | 30 | 25 | 100 | 170 | 2°52' | 281703 | ○ | 286704 | ○ |

FREZY TRZPIENIOWE

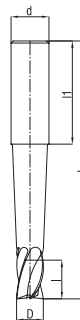
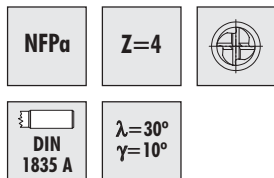
4-OSTRZOWE, BARDZO DŁUGIE,
DO OBRÓBKI FORM

END MILLS

4-FLUTE, VERY LONG,
FOR MOULDS

ФРЕЗЫ КОНЦЕВЫЕ

4-Х ПЕРЬЕВЫЕ, ОЧЕНЬ ДЛИННЫЕ,
ДЛЯ ОБРАБОТКИ ФОРМ



| D (h10) | d (h8) | L | l | l1 | z | HSS | | HSS-E | |
|---------|--------|-----|----|----|---|-------------------|---|-------------------|---|
| | | | | | | Code No 0641-551- | | Code No 0641-551- | |
| 3 | 6 | 75 | 4 | 36 | 4 | 955105 | ○ | 957107 | ○ |
| 3 | 6 | 100 | 4 | 36 | 4 | 955207 | ○ | 957209 | ○ |
| 4 | 6 | 75 | 5 | 36 | 4 | 955309 | ○ | 957300 | ○ |
| 4 | 6 | 100 | 5 | 36 | 4 | 955400 | ○ | 957402 | ○ |
| 5 | 6 | 75 | 6 | 36 | 4 | 955502 | ○ | 957504 | ○ |
| 5 | 8 | 100 | 6 | 36 | 4 | 955604 | ○ | 957606 | ○ |
| 6 | 8 | 75 | 8 | 36 | 4 | 955706 | ○ | 957708 | ○ |
| 6 | 10 | 100 | 8 | 36 | 4 | 955808 | ○ | 957800 | ○ |
| 8 | 10 | 100 | 12 | 40 | 4 | 955900 | ○ | 957901 | ○ |
| 8 | 12 | 150 | 12 | 40 | 4 | 956004 | ○ | 958108 | ○ |
| 10 | 12 | 100 | 15 | 45 | 4 | 956106 | ○ | 958200 | ○ |
| 10 | 12 | 150 | 15 | 45 | 4 | 956208 | ○ | 958301 | ○ |

FREZY TRZPIENIOWE

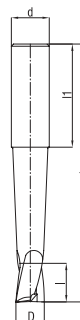
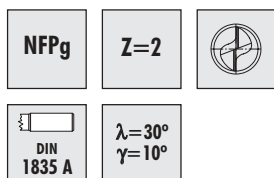
2-OSTRZOWE, BARDZO DŁUGIE,
DO OBRÓBKI FORM

END MILLS

2-FLUTE, VERY LONG,
FOR MOULDS

ФРЕЗЫ КОНЦЕВЫЕ

2-Х ПЕРЬЕВЫЕ, ОЧЕНЬ ДЛИННЫЕ,
ДЛЯ ОБРАБОТКИ ФОРМ



| D (h10) | d (h8) | L | l | l1 | z | HSS | | HSS-E | |
|---------|--------|-----|----|----|---|-------------------|---|-------------------|---|
| | | | | | | Code No 0641-554- | | Code No 0641-554- | |
| 3 | 6 | 75 | 4 | 36 | 2 | 900101 | ○ | 903103 | ○ |
| 3 | 6 | 100 | 4 | 36 | 2 | 900203 | ○ | 903205 | ○ |
| 4 | 6 | 75 | 5 | 36 | 2 | 900305 | ○ | 903307 | ○ |
| 4 | 6 | 100 | 5 | 36 | 2 | 900407 | ○ | 903409 | ○ |
| 5 | 6 | 75 | 6 | 36 | 2 | 900509 | ○ | 903500 | ○ |
| 5 | 8 | 100 | 6 | 36 | 2 | 900600 | ○ | 903602 | ○ |
| 6 | 8 | 75 | 8 | 36 | 2 | 900702 | ○ | 903704 | ○ |
| 6 | 10 | 100 | 8 | 36 | 2 | 900804 | ○ | 903806 | ○ |
| 8 | 10 | 100 | 12 | 40 | 2 | 900906 | ○ | 903908 | ○ |
| 8 | 12 | 150 | 12 | 40 | 2 | 901000 | ○ | 904002 | ○ |
| 10 | 12 | 100 | 15 | 45 | 2 | 901102 | ○ | 904104 | ○ |
| 10 | 12 | 150 | 15 | 45 | 2 | 901204 | ○ | 904206 | ○ |

FREZY TRZPIENIOWE

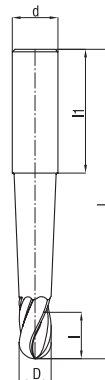
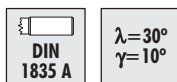
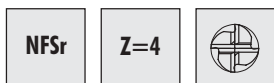
Z CZOŁEM KULISTYM, 4-OSTRZOWE, BARDZO DŁUGIE, DO OBRÓBKI FORM

END MILLS

BALL NOSED, 4-FLUTE, VERY LONG, FOR MOULDS

ФРЕЗЫ КОНЦЕВЫЕ

СО СФЕРИЧЕСКИМ ТОРЦОМ, 4-Х ПЕРЬЕВЫЕ, ОЧЕНЬ ДЛИННЫЕ, ДЛЯ ОБРАБОТКИ ФОРМ



2

| D (h10) | d (h8) | L | l | ll | z | HSS | | HSS-E | |
|---------|--------|-----|----|----|---|-------------------|---|-------------------|---|
| | | | | | | Code No 0641-559- | | Code No 0641-559- | |
| 3 | 6 | 75 | 4 | 36 | 4 | 916106 | ○ | 918108 | ○ |
| 3 | 6 | 100 | 4 | 36 | 4 | 916208 | ○ | 918200 | ○ |
| 4 | 6 | 75 | 5 | 36 | 4 | 916300 | ○ | 918301 | ○ |
| 4 | 6 | 100 | 5 | 36 | 4 | 916401 | ○ | 918403 | ○ |
| 5 | 6 | 75 | 6 | 36 | 4 | 916503 | ○ | 918505 | ○ |
| 5 | 8 | 100 | 6 | 36 | 4 | 916605 | ○ | 918607 | ○ |
| 6 | 8 | 75 | 8 | 36 | 4 | 916707 | ○ | 918709 | ○ |
| 6 | 10 | 100 | 8 | 36 | 4 | 916809 | ○ | 918800 | ○ |
| 8 | 10 | 100 | 12 | 40 | 4 | 916900 | ○ | 918909 | ○ |
| 8 | 12 | 150 | 12 | 40 | 4 | 917005 | ○ | 919102 | ○ |
| 10 | 12 | 100 | 15 | 45 | 4 | 917107 | ○ | 919200 | ○ |
| 10 | 12 | 150 | 15 | 45 | 4 | 917209 | ○ | 919302 | ○ |

FREZY TRZPIENIOWE

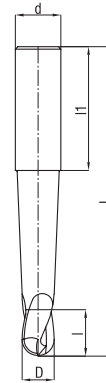
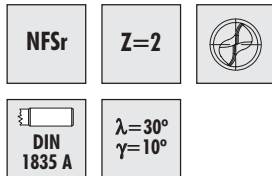
Z CZOŁEM KULISTYM, 2-OSTRZOWE, BARDZO DŁUGIE, DO OBRÓBKI FORM

END MILLS

BALL NOSED, 2-FLUTE, VERY LONG, FOR MOULDS

ФРЕЗЫ КОНЦЕВЫЕ

СО СФЕРИЧЕСКИМ ТОРЦОМ, 2-Х ПЕРЬЕВЫЕ, ОЧЕНЬ ДЛИННЫЕ, ДЛЯ ОБРАБОТКИ ФОРМ



2

| D (h10) | d (h8) | L | l | l1 | z | HSS | | HSS-E | |
|---------|--------|-----|----|----|---|-------------------|---|-------------------|---|
| | | | | | | Code No 0641-551- | | Code No 0641-551- | |
| 3 | 6 | 75 | 4 | 36 | 2 | 910100 | ○ | 912102 | ○ |
| 3 | 6 | 100 | 4 | 36 | 2 | 910202 | ○ | 912204 | ○ |
| 4 | 6 | 75 | 5 | 36 | 2 | 910304 | ○ | 912306 | ○ |
| 4 | 6 | 100 | 5 | 36 | 2 | 910406 | ○ | 912408 | ○ |
| 5 | 6 | 75 | 6 | 36 | 2 | 910508 | ○ | 912500 | ○ |
| 5 | 8 | 100 | 6 | 36 | 2 | 910600 | ○ | 912601 | ○ |
| 6 | 8 | 75 | 8 | 36 | 2 | 910701 | ○ | 912703 | ○ |
| 6 | 10 | 100 | 8 | 36 | 2 | 910803 | ○ | 912805 | ○ |
| 8 | 10 | 100 | 12 | 40 | 2 | 910905 | ○ | 912907 | ○ |
| 8 | 12 | 150 | 12 | 40 | 2 | 911000 | ○ | 913001 | ○ |
| 10 | 12 | 100 | 15 | 45 | 2 | 911101 | ○ | 913103 | ○ |
| 10 | 12 | 150 | 15 | 45 | 2 | 911203 | ○ | 913205 | ○ |

INFORMACJE TECHNICZNE

PARAMETRY SKRAWANIA FREZÓW TRZPIENIOWYCH

TECHNICAL DATA

CUTTING DATA FOR SHANK CUTTERS

ТЕХНИЧЕСКИЕ ИНФОРМАЦИИ

ПАРАМЕТРЫ РЕЗАНИЯ КОНЦЕВЫХ ФРЕЗ

UWAGA: Dla frezów wykonanych ze stali HSS parametry należy zmniejszyć o 25%
Dla frezów długich parametry należy zmniejszyć o 50%

ATTENTION: For cutters made of HSS use 25% less of recommended parameters.
For long series cutters use 50% of recommended parameters.

ВНИМАНИЕ: Для фрез изготовленных из стали HSS следует
уменьшить параметры на 25% .
Для длинных фрез параметры следует уменьшить на 50%

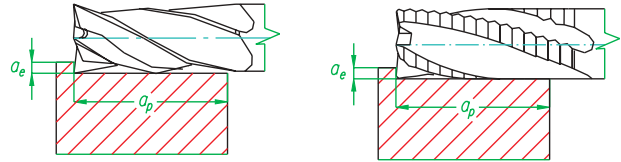
| grupa mat. material group группа применения | HSS-E Vc m/min | dla średnicy For diameter Для диаметра | | | | | | Typ freza end mills type Тип фрезы | | |
|---|----------------------|--|-------|------|------|------|------|--|----------------|----------------|
| | | fz mm | 3 | 8 | 12 | 20 | 32 | >50 | N (NR) (NF) | H (HR) (HF) |
| 1.1 | 35 | 0.016 | 0.05 | 0.06 | 0.08 | 0.09 | 0.1 | X | | X |
| 1.2 | 35 | 0.016 | 0.05 | 0.06 | 0.08 | 0.09 | 0.1 | X | | |
| 1.3 | 28 | 0.014 | 0.045 | 0.06 | 0.08 | 0.09 | 0.1 | X | | |
| 1.4 | 35 | 0.016 | 0.05 | 0.06 | 0.08 | 0.09 | 0.1 | X | | |
| 1.5 | 20 | 0.012 | 0.04 | 0.05 | 0.08 | 0.09 | 0.1 | | X | |
| 1.6 | 20 | 0.012 | 0.04 | 0.05 | 0.08 | 0.09 | 0.1 | | X | |
| 1.7 | 20 | 0.012 | 0.04 | 0.05 | 0.08 | 0.09 | 0.1 | | X | |
| 1.8 | 20 | 0.012 | 0.04 | 0.05 | 0.08 | 0.09 | 0.1 | X | | |
| 1.9 | | | | | | | | | | |
| 1.10 | | | | | | | | | | |
| 1.11 | | | | | | | | | | |
| 2.1 | 22 | 0.014 | 0.05 | 0.06 | 0.07 | 0.08 | 0.09 | X | | |
| 2.2 | 22 | 0.014 | 0.05 | 0.06 | 0.07 | 0.08 | 0.09 | X | | |
| 2.3 | 15 | 0.012 | 0.04 | 0.05 | 0.06 | 0.07 | 0.09 | X | | |
| 3.1 | 28 | 0.022 | 0.08 | 0.1 | 0.16 | 0.2 | 0.25 | X | X | |
| 3.2 | 22 | 0.014 | 0.05 | 0.06 | 0.08 | 0.09 | 0.1 | | X | |
| 3.3 | 35 | 0.016 | 0.05 | 0.06 | 0.1 | 0.12 | 0.15 | | X | |
| 3.4 | 42 | 0.016 | 0.05 | 0.06 | 0.1 | 0.12 | 0.15 | X | X | |
| 3.5 | 12 | 0.012 | 0.04 | 0.05 | 0.08 | 0.09 | 0.1 | | X | |
| 4.1 | 28 | 0.02 | 0.048 | 0.09 | 0.09 | 0.09 | 0.1 | X | | |
| 4.2 | 22 | 0.014 | 0.024 | 0.05 | 0.08 | 0.08 | 0.1 | X | | |
| 4.3 | 12 | 0.008 | 0.018 | 0.04 | 0.06 | 0.07 | 0.08 | | X | |
| 5.1 | 22 | 0.02 | 0.048 | 0.09 | 0.09 | 0.09 | 0.1 | X | | |
| 5.2 | 20 | 0.02 | 0.048 | 0.09 | 0.09 | 0.09 | 0.1 | X | | |
| 5.3 | 10 | 0.01 | 0.028 | 0.06 | 0.07 | 0.08 | 0.09 | | X | |
| 6.1 | 22 | 0.009 | 0.015 | 0.03 | 0.05 | 0.07 | 0.09 | | | X |
| 6.2 | 35 | 0.009 | 0.015 | 0.03 | 0.05 | 0.07 | 0.09 | | | X |
| 6.3 | 42 | 0.01 | 0.014 | 0.03 | 0.04 | 0.06 | 0.09 | | X | |
| 6.4 | 10 | 0.01 | 0.028 | 0.06 | 0.07 | 0.08 | 0.09 | | X | |
| 7.1 | 100 | 0.008 | 0.012 | 0.03 | 0.04 | 0.06 | 0.1 | | | X |
| 7.2 | 250 | 0.006 | 0.014 | 0.03 | 0.05 | 0.08 | 0.09 | | | X |
| 7.3 | 70 | 0.008 | 0.012 | 0.03 | 0.04 | 0.06 | 0.1 | | X | |
| 7.4 | 250 | 0.007 | 0.013 | 0.03 | 0.04 | 0.04 | 0.1 | X | | X |
| 8.1 | 120 | 0.008 | 0.012 | 0.03 | 0.04 | 0.06 | 0.1 | | | X |
| 8.2 | 70 | 0.008 | 0.012 | 0.03 | 0.04 | 0.06 | 0.1 | | X | |
| 8.3 | 70 | 0.008 | 0.012 | 0.03 | 0.04 | 0.06 | 0.1 | | X | |

grupa materiałowa, patrz str. 25
material group, see page 26
группа применения, смотри стр. 27

a) Frezowanie krawędzi i konturów
Edge and contour milling
Фрезерование краи и контуров

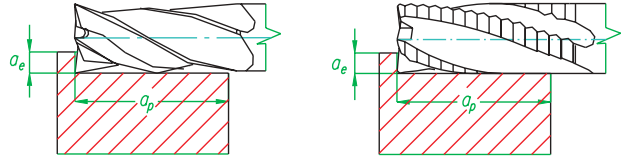
Frezowanie wykańczające dla
 Finishing end mill $a_e = 0,10 \cdot d_1$
 Чистовое фрезерование } $1 \cdot f_z$

Frezowanie zgrubne dla
 Roughing end mill $a_e = 0,25 \cdot d_1$
 Получистовое фрезерование }



Frezowanie wykańczające dla
 Finishing end mill $a_e = 0,25 \cdot d_1$
 Чистовое фрезерование } $0,8 \cdot f_z$

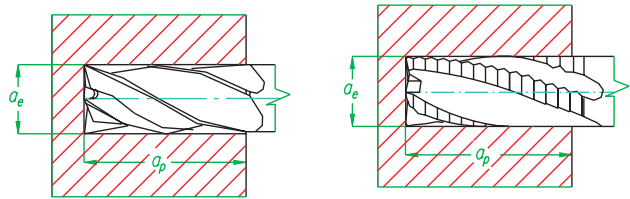
Frezowanie zgrubne dla
 Roughing end mill $a_e = 0,50 \cdot d_1$
 Получистовое фрезерование }



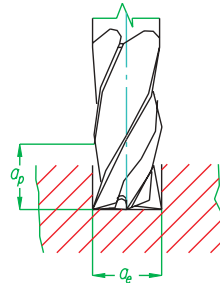
b) Frezowanie w pełnym materiale
Full size slot milling
Фрезерование в полном материале

Frezowanie wykańczające dla
 Finishing end mill $a_e = 1,00 \cdot d_1$
 Чистовое фрезерование } $0,4 \cdot f_z$

Frezowanie zgrubne dla
 Roughing end mill $a_e = 1,00 \cdot d_1$
 Получистовое фрезерование }



c) Frezowanie wpustów
Slot milling finishing
Фрезерование пазов



$a_p = 0,5 \cdot d_1$
 $0,6 \cdot f_z$
 (2-ostrza/ 2-flute/ 2- перьевые)
 $= 0,7 \cdot f_z$
 (3- ostrza/ 3-flute/ 3- перьевые)

Wzory obliczeniowe/ Calculating formulas / Исчислительные формулы

| | |
|---|--|
| Szybkość skrawania Cutting speed v_c (m/min) $f_c = \frac{d_1 \cdot \pi \cdot n}{1000}$ Скорость резания | Posuw na ząb Feed per tooth f_z (mm) $f_z = \frac{v_1}{n \cdot z}$ Подача на зуб |
| Posuw minutowy Feed rate v_1 (mm/min) $v_1 = f_z \cdot z \cdot n$ Минутная подача | Objętość wióra Q (cm ³ /min) Chip volume Объем стружки $Q = \frac{a_e \cdot a_p \cdot v_f}{1000}$ |
| Prędkość obrotowa R.P.M. (speed) n (min ⁻¹) $n = \frac{v_c \cdot 1000}{\pi \cdot d_1}$ Оборотная скорость | Moc napędowa Drive power P_e (kW) $P_e = \frac{Q}{LF}$ Движущая мощность |

d1 Ø w mm
z ilość zębów
 Number of teeth
 Число режущих кромок
ae szerokość warstwy skrawanej
 Engagement value in mm
 Радиальная глубина резания
ap głębokość warstwy skrawanej
 Cutting depth in mm
 Осевая глубина резания
LF współczynnik mocy $\frac{cm^3}{min \cdot kW}$
 Efficiency factor
 Коэффициент мощности

