

## MACHINING CONDITIONS - SOLID END MILLS - DEPTH OF CUT AND FEED

### E90° 4 FLUTE WITH RADIUS 0.5 | LT 4000 - Ø 3 - 6, 8, 10, 12

| Material Group           | Lamina Gr. N° | Material Examples                       | Hardness | Profiling |       | Slotting |       | fz [mm/tooth] |       |       |       |       |       |
|--------------------------|---------------|-----------------------------------------|----------|-----------|-------|----------|-------|---------------|-------|-------|-------|-------|-------|
|                          |               |                                         |          | ap        | ae    | ap       | Ø 3   | Ø 4           | Ø 5   | Ø 6   | Ø 8   | Ø 10  | Ø 12  |
| P Non Alloyed            | 1             | C35, Ck45, 1020, 1045, 1060, 28Mn6      | 125 HB   | 1.5xØ     | 0.5xØ | 1.0xØ    | 0.017 | 0.024         | 0.030 | 0.040 | 0.055 | 0.065 | 0.077 |
|                          |               |                                         | 190 HB   |           |       |          |       |               |       |       |       |       |       |
|                          |               |                                         | 250 HB   |           |       |          |       |               |       |       |       |       |       |
| P Low Alloyed            | 2             | 42CrMo4, S150, Ck60, 4140, 4340, 100Cr6 | 180 HB   | 1.5xØ     | 0.5xØ | 1.0xØ    | 0.160 | 0.025         | 0.030 | 0.039 | 0.053 | 0.063 | 0.074 |
|                          |               |                                         | 230 HB   |           |       |          |       |               |       |       |       |       |       |
|                          |               |                                         | 280 HB   |           |       |          |       |               |       |       |       |       |       |
|                          |               |                                         | 350 HB   |           |       |          |       |               |       |       |       |       |       |
| P High Alloyed           | 3             | X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19 | 220 HB   | 1.5xØ     | 0.5xØ | 1.0xØ    | 0.015 | 0.021         | 0.026 | 0.033 | 0.046 | 0.055 | 0.064 |
|                          |               |                                         | 280 HB   |           |       |          |       |               |       |       |       |       |       |
|                          |               |                                         | 320 HB   |           |       |          |       |               |       |       |       |       |       |
|                          |               |                                         | 350 HB   |           |       |          |       |               |       |       |       |       |       |
| M Austenitic             | 4             | 304, 316, X5CrNi18-9                    | 180 HB   | 1.5xØ     | 0.5xØ | 1.0xØ    | 0.012 | 0.017         | 0.022 | 0.028 | 0.038 | 0.045 | 0.053 |
|                          |               |                                         | 240 HB   |           |       |          |       |               |       |       |       |       |       |
|                          |               |                                         | 290 HB   |           |       |          |       |               |       |       |       |       |       |
| M Duplex                 | 5             | X2CrNiN23-4, S31500                     | 290 HB   | 1.5xØ     | 0.5xØ | 1.0xØ    | 0.009 | 0.013         | 0.017 | 0.021 | 0.029 | 0.035 | 0.040 |
|                          |               |                                         | 310 HB   |           |       |          |       |               |       |       |       |       |       |
| M Ferritic & Martensitic | 6             | 410, X6Cr17, 17-4PH, 430                | 200 HB   | 1.5xØ     | 0.5xØ | 1.0xØ    | 0.009 | 0.013         | 0.017 | 0.021 | 0.029 | 0.035 | 0.040 |
|                          |               |                                         | 42 HRC   |           |       |          |       |               |       |       |       |       |       |
| K Grey                   | 7             | GG20, GG40, EN-GJL-250, N030B           | 150 HB   | 1.5xØ     | 0.5xØ | 1.0xØ    | 0.020 | 0.029         | 0.036 | 0.047 | 0.064 | 0.076 | 0.089 |
|                          |               |                                         | 200 HB   |           |       |          |       |               |       |       |       |       |       |
|                          |               |                                         | 250 HB   |           |       |          |       |               |       |       |       |       |       |
| K Malleable & Nodular    | 8             | GG20, GG70, 50005                       | 150 HB   | 1.5xØ     | 0.5xØ | 1.0xØ    | 0.017 | 0.025         | 0.031 | 0.040 | 0.055 | 0.066 | 0.077 |
|                          |               |                                         | 200 HB   |           |       |          |       |               |       |       |       |       |       |
|                          |               |                                         | 250 HB   |           |       |          |       |               |       |       |       |       |       |
| S Fe, Ni & Co based      | 9             | Incoloy 800, Inconel 700, Stellite 21   | 240 HB   | 1.5xØ     | 0.3xØ | 1.0xØ    | 0.010 | 0.014         | 0.018 | 0.023 | 0.031 | 0.037 | 0.044 |
|                          |               |                                         | 250 HB   |           |       |          |       |               |       |       |       |       |       |
|                          |               |                                         | 350 HB   |           |       |          |       |               |       |       |       |       |       |
| S Ti based               | 10            | TiAl6V4, T40                            | -        | 1.5xØ     | 0.5xØ | 1.0xØ    | 0.010 | 0.015         | 0.018 | 0.023 | 0.032 | 0.038 | 0.045 |
|                          |               |                                         | -        |           |       |          |       |               |       |       |       |       |       |
| H Steel                  | 11            | X100CrMo13, 440C, G-X260NiCr42          | 45 HRC   | 1.5xØ     | 0.3xØ | 0.2xØ    | 0.007 | 0.011         | 0.013 | 0.017 | 0.023 | 0.028 | 0.032 |
|                          |               |                                         | 50 HRC   |           |       |          |       |               |       |       |       |       |       |
|                          |               |                                         | 55 HRC   |           |       |          |       |               |       |       |       |       |       |
| H Chilled Cast Iron      | 12            | Ni-Hard 2                               | 400 HB   | 1.5xØ     | 0.2xØ | 0.1xØ    | 0.005 | 0.008         | 0.010 | 0.013 | 0.017 | 0.021 | 0.024 |
|                          |               |                                         | 55 HRC   |           |       |          |       |               |       |       |       |       |       |
| H White Cast Iron        | 13            | G-X300CrMo15                            | 55 HRC   | 1.5xØ     | 0.2xØ | 0.1xØ    | 0.005 | 0.008         | 0.010 | 0.013 | 0.017 | 0.021 | 0.024 |
| NF Aluminium             | 14            | AlSi12                                  | 130 HB   | 1.5xØ     | 0.5xØ | 1.0xØ    | 0.018 | 0.027         | 0.033 | 0.042 | 0.058 | 0.069 | 0.081 |

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|--------------------------|---------------|-----------------------------------------|----------|-----------|-------|----------|-------|---------------|-------|-------|-------|-------|-------|
|                          |               |                                         |          | ap        | ae    | ap       | Ø 3   | Ø 4           | Ø 5   | Ø 6   | Ø 8   | Ø 10  | Ø 12  |
| P Non Alloyed            | 1             | C35, Ck45, 1020, 1045, 1060, 28Mn6      | 125 HB   | 1.5xØ     | 0.5xØ | 1.0xØ    | 0.017 | 0.024         | 0.030 | 0.040 | 0.055 | 0.065 | 0.077 |
|                          |               |                                         | 190 HB   |           |       |          |       |               |       |       |       |       |       |
|                          |               |                                         | 250 HB   |           |       |          |       |               |       |       |       |       |       |
| P Low Alloyed            | 2             | 42CrMo4, S150, Ck60, 4140, 4340, 100Cr6 | 180 HB   | 1.5xØ     | 0.5xØ | 1.0xØ    | 0.160 | 0.025         | 0.030 | 0.039 | 0.053 | 0.063 | 0.074 |
|                          |               |                                         | 230 HB   |           |       |          |       |               |       |       |       |       |       |
|                          |               |                                         | 280 HB   |           |       |          |       |               |       |       |       |       |       |
|                          |               |                                         | 350 HB   |           |       |          |       |               |       |       |       |       |       |
| P High Alloyed           | 3             | X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19 | 220 HB   | 1.5xØ     | 0.5xØ | 1.0xØ    | 0.015 | 0.021         | 0.026 | 0.033 | 0.046 | 0.055 | 0.064 |
|                          |               |                                         | 280 HB   |           |       |          |       |               |       |       |       |       |       |
|                          |               |                                         | 320 HB   |           |       |          |       |               |       |       |       |       |       |
|                          |               |                                         | 350 HB   |           |       |          |       |               |       |       |       |       |       |
| M Austenitic             | 4             | 304, 316, X5CrNi18-9                    | 180 HB   | 1.5xØ     | 0.5xØ | 1.0xØ    | 0.012 | 0.017         | 0.022 | 0.028 | 0.038 | 0.045 | 0.053 |
|                          |               |                                         | 240 HB   |           |       |          |       |               |       |       |       |       |       |
|                          |               |                                         | 290 HB   |           |       |          |       |               |       |       |       |       |       |
| M Duplex                 | 5             | X2CrNiN23-4, S31500                     | 290 HB   | 1.5xØ     | 0.5xØ | 1.0xØ    | 0.009 | 0.013         | 0.017 | 0.021 | 0.029 | 0.035 | 0.040 |
|                          |               |                                         | 310 HB   |           |       |          |       |               |       |       |       |       |       |
| M Ferritic & Martensitic | 6             | 410, X6Cr17, 17-4PH, 430                | 200 HB   | 1.5xØ     | 0.5xØ | 1.0xØ    | 0.009 | 0.013         | 0.017 | 0.021 | 0.029 | 0.035 | 0.040 |
|                          |               |                                         | 42 HRC   |           |       |          |       |               |       |       |       |       |       |
| K Grey                   | 7             | GG20, GG40, EN-GJL-250, N030B           | 150 HB   | 1.5xØ     | 0.5xØ | 1.0xØ    | 0.020 | 0.029         | 0.036 | 0.047 | 0.064 | 0.076 | 0.089 |
|                          |               |                                         | 200 HB   |           |       |          |       |               |       |       |       |       |       |
|                          |               |                                         | 250 HB   |           |       |          |       |               |       |       |       |       |       |
| K Malleable & Nodular    | 8             | GGG40, GGG70, 50005                     | 150 HB   | 1.5xØ     | 0.5xØ | 1.0xØ    | 0.017 | 0.025         | 0.031 | 0.040 | 0.055 | 0.066 | 0.077 |
|                          |               |                                         | 200 HB   |           |       |          |       |               |       |       |       |       |       |
|                          |               |                                         | 250 HB   |           |       |          |       |               |       |       |       |       |       |
| S Fe, Ni & Co based      | 9             | Incoloy 800, Inconel 700, Stellite 21   | 240 HB   | 1.5xØ     | 0.3xØ | 1.0xØ    | 0.010 | 0.014         | 0.018 | 0.023 | 0.031 | 0.037 | 0.044 |
|                          |               |                                         | 250 HB   |           |       |          |       |               |       |       |       |       |       |
|                          |               |                                         | 350 HB   |           |       |          |       |               |       |       |       |       |       |
| S Ti based               | 10            | T40, TiAl6V4                            | -        | 1.5xØ     | 0.5xØ | 1.0xØ    | 0.010 | 0.015         | 0.018 | 0.023 | 0.032 | 0.038 | 0.045 |
|                          |               |                                         | -        |           |       |          |       |               |       |       |       |       |       |
| H Steel                  | 11            | X100CrMo13, 440C, G-X260NiCr42          | 45 HRC   | 1.5xØ     | 0.3xØ | 0.2xØ    | 0.007 | 0.011         | 0.013 | 0.017 | 0.023 | 0.028 | 0.032 |
|                          |               |                                         | 50 HRC   |           |       |          |       |               |       |       |       |       |       |
|                          |               |                                         | 55 HRC   |           |       |          |       |               |       |       |       |       |       |
| H Chilled Cast Iron      | 12            | Ni-Hard 2                               | 400 HB   | 1.5xØ     | 0.2xØ | 0.1xØ    | 0.005 | 0.008         | 0.010 | 0.013 | 0.017 | 0.021 | 0.024 |
|                          |               |                                         | 55 HRC   |           |       |          |       |               |       |       |       |       |       |
| H White Cast Iron        | 13            | G-X300CrMo15                            | 55 HRC   | 1.5xØ     | 0.2xØ | 0.1xØ    | 0.005 | 0.008         | 0.010 | 0.013 | 0.017 | 0.021 | 0.024 |
| NF Aluminium             | 14            | AlSi12                                  | 130 HB   | 1.5xØ     | 0.5xØ | 1.0xØ    | 0.018 | 0.027         | 0.033 | 0.042 | 0.058 | 0.069 | 0.081 |