

# Technical Information

## Recommended Cutting Conditions for Slotting (3)

| Workpiece Materials |          | Depth of Cut (ap) (mm) | Outside Dia. (mm)                       | ø2 | ø3 | ø4    | ø5    | ø6    | ø8    | ø10   | ø12   | ø16   | ø20   | ø25   |
|---------------------|----------|------------------------|-----------------------------------------|----|----|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <b>4PGRM (L27)</b>  |          |                        |                                         |    |    |       |       |       |       |       |       |       |       |       |
| Steel               | < 30HRC  | 0.5Dc                  | Spindle Revolution (min <sup>-1</sup> ) | -  | -  | 8,500 | 6,400 | 5,100 | 4,200 | 3,200 | 2,500 | 2,100 | 1,600 | 1,300 |
|                     |          |                        | Feed Rate (mm/min)                      |    |    | 900   | 900   | 900   | 900   | 900   | 920   | 930   | 960   | 920   |
|                     | 30~40HRC | 0.5Dc                  | Spindle Revolution (min <sup>-1</sup> ) |    |    | 7,600 | 5,700 | 4,500 | 3,800 | 2,900 | 2,300 | 1,900 | 1,400 | 1,100 |
|                     |          |                        | Feed Rate (mm/min)                      |    |    | 770   | 770   | 770   | 770   | 770   | 780   | 780   | 800   | 780   |
|                     | 40~45HRC | 0.5Dc                  | Spindle Revolution (min <sup>-1</sup> ) |    |    | 6,800 | 5,100 | 4,100 | 3,400 | 2,500 | 2,000 | 1,700 | 1,300 | 1,000 |
|                     |          |                        | Feed Rate (mm/min)                      |    |    | 570   | 570   | 570   | 570   | 570   | 570   | 560   | 560   | 530   |
|                     | 45~50HRC | 0.5Dc                  | Spindle Revolution (min <sup>-1</sup> ) |    |    | 5,100 | 3,800 | 3,100 | 2,500 | 1,900 | 1,500 | 1,300 | 1,000 | 800   |
|                     |          |                        | Feed Rate (mm/min)                      |    |    | 320   | 320   | 320   | 320   | 340   | 340   | 360   | 340   | 340   |
|                     | 50~55HRC | 0.5Dc                  | Spindle Revolution (min <sup>-1</sup> ) |    |    | 3,400 | 2,500 | 2,000 | 1,700 | 1,300 | 1,000 | 800   | 600   | 500   |
|                     |          |                        | Feed Rate (mm/min)                      |    |    | 150   | 150   | 150   | 150   | 150   | 160   | 150   | 150   | 150   |
|                     | > 55HRC  | 0.25Dc                 | Spindle Revolution (min <sup>-1</sup> ) |    |    | 3,000 | 2,200 | 1,800 | 1,500 | 1,100 | 900   | 700   | 600   | 400   |
|                     |          |                        | Feed Rate (mm/min)                      |    |    | 100   | 100   | 100   | 100   | 100   | 110   | 110   | 110   | 110   |

|                          |           |        |                                         |   |   |        |       |       |       |       |       |   |   |   |
|--------------------------|-----------|--------|-----------------------------------------|---|---|--------|-------|-------|-------|-------|-------|---|---|---|
| <b>3RFRS 4RFRS (L34)</b> |           |        |                                         |   |   |        |       |       |       |       |       |   |   |   |
| Steel                    | < 30HRC   | 0.8Dc  | Spindle Revolution (min <sup>-1</sup> ) | - | - | 11,500 | 9,200 | 7,600 | 5,700 | 4,600 | 3,800 | - | - | - |
|                          |           |        | Feed Rate (mm/min)                      |   |   | 690    | 690   | 920   | 920   | 920   | 920   |   |   |   |
|                          | 30~40HRC  | 0.8Dc  | Spindle Revolution (min <sup>-1</sup> ) |   |   | 7,600  | 6,100 | 5,100 | 3,800 | 3,100 | 2,500 |   |   |   |
|                          |           |        | Feed Rate (mm/min)                      |   |   | 340    | 370   | 490   | 490   | 490   | 460   |   |   |   |
|                          | 40~50 HRC | 0.5Dc  | Spindle Revolution (min <sup>-1</sup> ) |   |   | 5,100  | 4,100 | 3,400 | 2,500 | 2,000 | 1,700 |   |   |   |
|                          |           |        | Feed Rate (mm/min)                      |   |   | 150    | 180   | 260   | 260   | 260   | 270   |   |   |   |
|                          | 50~60HRC  | 0.3Dc  | Spindle Revolution (min <sup>-1</sup> ) |   |   | 3,800  | 3,100 | 2,500 | 1,900 | 1,500 | 1,300 |   |   |   |
|                          |           |        | Feed Rate (mm/min)                      |   |   | 80     | 80    | 100   | 120   | 120   | 130   |   |   |   |
|                          | 60~70HRC  | 0.25Dc | Spindle Revolution (min <sup>-1</sup> ) |   |   | 2,500  | 2,000 | 1,700 | 1,300 | 1,000 | 800   |   |   |   |
|                          |           |        | Feed Rate (mm/min)                      |   |   | 50     | 50    | 60    | 60    | 60    | 70    |   |   |   |

| Workpiece Materials |          | Depth of Cut (ap) (mm) | Outside Dia. (mm)                       | ø6    | ø8    | ø10   | ø12   | ø16     |         | ø20     |         | ø25   |
|---------------------|----------|------------------------|-----------------------------------------|-------|-------|-------|-------|---------|---------|---------|---------|-------|
|                     |          |                        |                                         |       |       |       |       | 4 Flute | 6 Flute | 4 Flute | 6 Flute |       |
| 4RFSM 6RFSM (L33)   |          |                        |                                         |       |       |       |       |         |         |         |         |       |
| Steel               | 35~45HRC | 0.5Dc                  | Spindle Revolution (min <sup>-1</sup> ) | 6,400 | 4,800 | 3,800 | 3,200 | 2,400   | 2,400   | 1,900   | 1,900   | 1,500 |
|                     |          |                        | Feed Rate (mm/min)                      | 480   | 480   | 490   | 500   | 500     | 720     | 500     | 750     | 640   |
|                     | 45~55HRC | 0.5Dc                  | Spindle Revolution (min <sup>-1</sup> ) | 4,700 | 3,500 | 2,800 | 2,300 | 1,800   | 1,800   | 1,400   | 1,400   | 1,100 |
|                     |          |                        | Feed Rate (mm/min)                      | 280   | 280   | 280   | 280   | 280     | 420     | 280     | 420     | 370   |
|                     | 55~60HRC | 0.3Dc                  | Spindle Revolution (min <sup>-1</sup> ) | 3,800 | 2,900 | 2,300 | 1,900 | 1,400   | 1,400   | 1,100   | 1,100   | 900   |
|                     |          |                        | Feed Rate (mm/min)                      | 150   | 170   | 180   | 180   | 180     | 260     | 180     | 280     | 250   |
| Titanium Alloy      | < 40HRC  | 0.5Dc                  | Spindle Revolution (min <sup>-1</sup> ) | 3,000 | 2,200 | 1,800 | 1,500 | 1,100   | 1,100   | 900     | 900     | 700   |
|                     |          |                        | Feed Rate (mm/min)                      | 310   | 310   | 310   | 310   | 310     | 470     | 310     | 430     | 360   |
|                     | > 40HRC  | 0.3Dc                  | Spindle Revolution (min <sup>-1</sup> ) | 2,500 | 1,900 | 1,500 | 1,300 | 1,000   | 1,000   | 800     | 800     | 600   |
|                     |          |                        | Feed Rate (mm/min)                      | 230   | 230   | 230   | 230   | 230     | 340     | 230     | 340     | 290   |
| Inconel             |          | 0.25Dc                 | Spindle Revolution (min <sup>-1</sup> ) | 1,300 | 1,000 | 800   | 600   | 500     | 500     | 400     | 400     | 300   |
|                     |          |                        | Feed Rate (mm/min)                      | 80    | 80    | 80    | 80    | 80      | 120     | 80      | 120     | 100   |

| Workpiece Materials   | Depth of Cut (ap) (mm) | Outside Dia. (mm)                       | ø3     | ø6     | ø8     | ø10    | ø12    | ø16   | ø20   | ø25   |
|-----------------------|------------------------|-----------------------------------------|--------|--------|--------|--------|--------|-------|-------|-------|
| 3NESM (L39)           |                        |                                         |        |        |        |        |        |       |       |       |
| Aluminum Alloy        | 1Dc                    | Spindle Revolution (min <sup>-1</sup> ) | 26,500 | 13,000 | 9,800  | 8,000  | 6,600  | 5,000 | 4,000 | -     |
|                       |                        | Feed Rate (mm/min)                      | 1,900  | 1,900  | 1,900  | 1,900  | 1,900  | 1,900 | 1,900 |       |
| 2NFSM (L40)           |                        |                                         |        |        |        |        |        |       |       |       |
| Aluminum Alloy        | 1Dc                    | Spindle Revolution (min <sup>-1</sup> ) | 21,200 | 10,600 | 8,000  | 6,400  | 5,300  | 4,000 | 3,200 | 2,500 |
|                       |                        | Feed Rate (mm/min)                      | 550    | 750    | 750    | 900    | 1,010  | 800   | 700   | 660   |
| High-silicon Aluminum | 1Dc                    | Spindle Revolution (min <sup>-1</sup> ) | 15,900 | 7,900  | 5,900  | 4,800  | 4,000  | 3,000 | 2,400 | 1,900 |
|                       |                        | Feed Rate (mm/min)                      | 350    | 420    | 420    | 500    | 560    | 640   | 480   | 420   |
| 3NFSM (L40)           |                        |                                         |        |        |        |        |        |       |       |       |
| Aluminum Alloy        | 1Dc                    | Spindle Revolution (min <sup>-1</sup> ) | 21,200 | 10,600 | 8,000  | 6,400  | 5,300  | 4,000 | 3,200 | 2,500 |
|                       |                        | Feed Rate (mm/min)                      | 830    | 1,100  | 1,100  | 1,360  | 1,510  | 1,290 | 1,050 | 920   |
| High-silicon Aluminum | 1Dc                    | Spindle Revolution (min <sup>-1</sup> ) | 15,900 | 7,900  | 5,900  | 4,800  | 4,000  | 3,000 | 2,400 | 1,900 |
|                       |                        | Feed Rate (mm/min)                      | 520    | 630    | 630    | 740    | 830    | 960   | 710   | 630   |
| 3AESM (L42)           |                        |                                         |        |        |        |        |        |       |       |       |
| Aluminum Alloy        | 1Dc                    | Spindle Revolution (min <sup>-1</sup> ) | 39,800 | 19,900 | 14,900 | 11,900 | 10,000 | 7,500 | 6,000 | 4,800 |
|                       |                        | Feed Rate (mm/min)                      | 3,700  | 3,230  | 3,090  | 3,050  | 2,990  | 2,930 | 2,900 | 2,870 |
| High-silicon Aluminum | 1Dc                    | Spindle Revolution (min <sup>-1</sup> ) | 12,700 | 6,400  | 4,800  | 3,800  | 3,200  | 2,400 | 1,900 | 1,500 |
|                       |                        | Feed Rate (mm/min)                      | 920    | 860    | 830    | 810    | 790    | 780   | 770   | 770   |

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