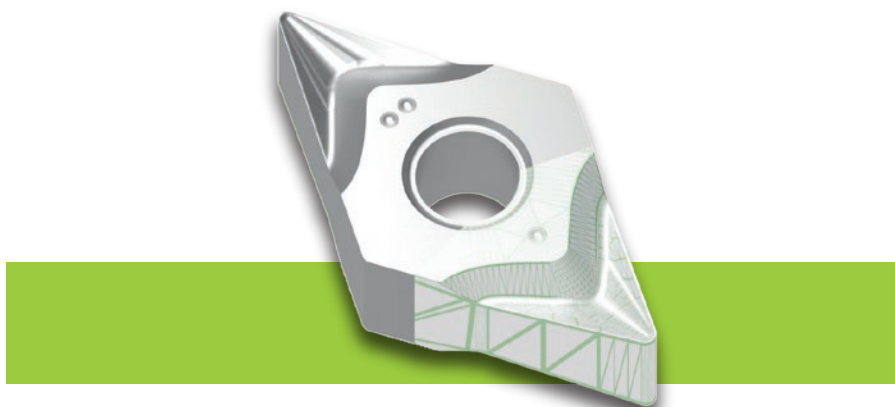
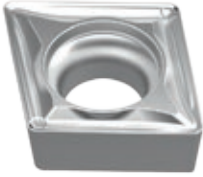


# ALU-TURNING

LT 05



**LAMINA**  
TECHNOLOGIES



C

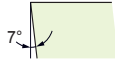
C

G

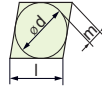
T



Shape

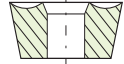


Clearance Angle



Tolerance

d ± 0.025  
m ± 0.025  
s ± 0.130



Fixing,  
Chipbreaker

| LT 05                 |   |      |      |             | Application Guide |   |   |
|-----------------------|---|------|------|-------------|-------------------|---|---|
| Insert Designation    | l | s    | r    | Catalog Nr. | F                 | M | R |
| CCGT 060204 ALU LT 05 | 6 | 2.38 | 0.40 | T0004162    | ●                 | ● | ● |
| CCGT 09T304 ALU LT 05 | 9 | 3.97 | 0.40 | T0004163    | ●                 | ● | ● |

ISO standard with extreme and unique positive chipbreaker geometry for aluminium turning operations. Suitable mostly for external operations but good also for internal operations, roughing and finishing.

Machining Recommendations

Details on page 14

Application Guide

Finishing: (F)

d.o.c. = 0.30 - 1.50 mm  
fn = 0.08 - 0.20 mm/rev

Medium: (M)

d.o.c. = 0.70 - 4.50 mm  
fn = 0.15 - 0.45 mm/rev

Roughing: (R)

d.o.c. = 3.00 - 7.00 mm  
fn = 0.35 - 0.70 mm/rev

● = Good

● = Acceptable

● = Not recommended

## CCGT 060204 ALU – LT 05

| Material Group                                    | Gr. N° | VDI Group     | Material Exemples | Hardness    | D.O.C [mm] |     | Feed [mm/rev] |      | Amax [mm <sup>2</sup> ] | V <sub>c</sub> [m/min] |      | Suggested Starting Parameters |             |                |
|---|--------|---------------|-------------------|-------------|------------|-----|---------------|------|-------------------------|------------------------|------|-------------------------------|-------------|----------------|
|   |        |               |                   |             | min        | max | min           | max  |                         | min                    | max  | D.O.C                         | Feed        | V <sub>c</sub> |
| NF<br>Al (<8%Si)<br>Copper Alloys<br>Non-Metallic | 13     | 21, 22 23, 24 | Si < 4 %          | 60 HB       | 0.3        | 2.5 | 0.12          | 0.33 | 1.28                    | 400                    | 1200 | <b>1.5</b>                    | <b>0.23</b> | <b>400</b>     |
|   |        |               | 4% < Si < 8 %     | 100 HB      | 0.3        | 2.5 | 0.10          | 0.29 | 1.02                    | 250                    | 600  | <b>1.5</b>                    | <b>0.23</b> | <b>300</b>     |
|   | 14     | 26,27,28      | CuZn30            | 100 HB      | 0.3        | 2.5 | 0.10          | 0.29 | 1.02                    | 150                    | 800  | <b>1.5</b>                    | <b>0.23</b> | <b>250</b>     |
|   |        |               | Fiber Plastics    | -           | 0.3        | 2.5 | 0.10          | 0.19 | 1.02                    | 70                     | 500  | <b>1.2</b>                    | <b>0.15</b> | <b>150</b>     |
|   | 15     | 30            | -                 | Hard Rubber | -          | 0.3 | 2.5           | 0.10 | 0.19                    | 1.02                   | 80   | 300                           | <b>1.2</b>  | <b>0.15</b>    |
| Graphite  |        |               |                   | -           | 0.3        | 2.5 | 0.10          | 0.19 | 1.02                    | 100                    | 200  | <b>1.2</b>                    | <b>0.15</b> | <b>150</b>     |
| H.T.A<br>Ti Based Alloys                          | 10     | 36            | Ti 1              | -           | 0.3        | 1.0 | 0.09          | 0.15 | 0.24                    | 35                     | 60   | <b>0.9</b>                    | <b>0.13</b> | <b>45</b>      |
|   |        |               | TiAl 6 V4         | -           | 0.3        | 1.0 | 0.12          | 0.19 | 0.20                    | 28                     | 40   | <b>0.9</b>                    | <b>0.12</b> | <b>35</b>      |

## CCGT 09T304 ALU – LT 05

| Material Group                                    | Gr. N° | VDI Group     | Material Exemples | Hardness    | D.O.C [mm] |     | Feed [mm/rev] |      | Amax [mm <sup>2</sup> ] | V <sub>c</sub> [m/min] |      | Suggested Starting Parameters |             |                |
|---|--------|---------------|-------------------|-------------|------------|-----|---------------|------|-------------------------|------------------------|------|-------------------------------|-------------|----------------|
|   |        |               |                   |             | min        | max | min           | max  |                         | min                    | max  | D.O.C                         | Feed        | V <sub>c</sub> |
| NF<br>Al (<8%Si)<br>Copper Alloys<br>Non-Metallic | 13     | 21, 22 23, 24 | Si < 4 %          | 60 HB       | 0.3        | 4.5 | 0.12          | 0.35 | 1.50                    | 400                    | 1200 | <b>2.5</b>                    | <b>0.23</b> | <b>400</b>     |
|   |        |               | 4% < Si < 8 %     | 100 HB      | 0.3        | 4.5 | 0.10          | 0.30 | 1.20                    | 250                    | 600  | <b>2.5</b>                    | <b>0.23</b> | <b>300</b>     |
|   | 14     | 26,27,28      | CuZn30            | 100 HB      | 0.3        | 4.5 | 0.10          | 0.30 | 1.20                    | 150                    | 800  | <b>2.5</b>                    | <b>0.23</b> | <b>250</b>     |
|   |        |               | Fiber Plastics    | -           | 0.3        | 4.5 | 0.10          | 0.20 | 1.20                    | 70                     | 500  | <b>2.0</b>                    | <b>0.15</b> | <b>150</b>     |
|   | 15     | 30            | -                 | Hard Rubber | -          | 0.3 | 4.5           | 0.10 | 0.20                    | 1.20                   | 80   | 300                           | <b>2.0</b>  | <b>0.15</b>    |
| Graphite  |        |               |                   | -           | 0.3        | 4.5 | 0.10          | 0.20 | 1.20                    | 100                    | 200  | <b>2.0</b>                    | <b>0.15</b> | <b>150</b>     |
| H.T.A<br>Ti Based Alloys                          | 10     | 36            | Ti 1              | -           | 0.3        | 1.8 | 0.09          | 0.16 | 0.28                    | 35                     | 60   | <b>1.5</b>                    | <b>0.13</b> | <b>45</b>      |
|   |        |               | TiAl 6 V4         | -           | 0.3        | 1.8 | 0.12          | 0.20 | 0.24                    | 28                     | 40   | <b>1.5</b>                    | <b>0.12</b> | <b>35</b>      |



C N G G



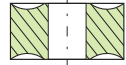
Shape



Clearance Angle



Tolerance  
 $d \pm 0.025$   
 $m \pm 0.025$   
 $s \pm 0.13$



Fixing,  
Chipbreaker

| LT 05                 |    |      |      |             | Application Guide |   |   |
|-----------------------|----|------|------|-------------|-------------------|---|---|
| Insert Designation    | l  | s    | r    | Catalog Nr. | F                 | M | R |
| CNGG 09T304 ALU LT 05 | 9  | 3.97 | 0.40 | T0003298    | ●                 | ● | ● |
| CNGG 120404 ALU LT 05 | 12 | 4.76 | 0.40 | T0001025    | ●                 | ● | ● |
| CNGG 120408 ALU LT 05 | 12 | 4.76 | 0.80 | T0001019    | ●                 | ● | ● |

ISO standard with extreme and unique positive chipbreaker geometry for aluminium turning operations. Suitable mostly for external operations but good also for internal operations, roughing and finishing.

Machining Recommendations

Details on page 14

Application Guide

Finishing: (F)  
 d.o.c. = 0.30 - 1.50 mm  
 fn = 0.08 - 0.20 mm/rev

Medium: (M)  
 d.o.c. = 0.70 - 4.50 mm  
 fn = 0.15 - 0.45 mm/rev

Roughing: (R)  
 d.o.c. = 3.00 - 7.00 mm  
 fn = 0.35 - 0.70 mm/rev

● = Good

● = Acceptable

● = Not recommended

## CNGG 09T304 ALU – LT 05

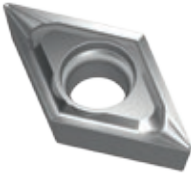
| Material Group                                    | Gr. N°    | VDI Group     | Material Exemples | Hardness       | D.O.C [mm] |     | Feed [mm/rev] |      | Amax [mm <sup>2</sup> ] | V <sub>c</sub> [m/min] |      | Suggested Starting Parameters |             |                |             |
|---|-----------|---------------|-------------------|----------------|------------|-----|---------------|------|-------------------------|------------------------|------|-------------------------------|-------------|----------------|-------------|
|   |           |               |                   |                | min        | max | min           | max  |                         | min                    | max  | D.O.C                         | Feed        | V <sub>c</sub> |             |
| NF<br>Al (<8%Si)<br>Copper Alloys<br>Non-Metallic | 13        | 21, 22 23, 24 | Si < 4 %          | 60 HB          | 0.3        | 5.0 | 0.12          | 0.35 | 1.50                    | 400                    | 1200 | <b>2.5</b>                    | <b>0.23</b> | <b>400</b>     |             |
|   |           |               | 4% < Si < 8 %     | 100 HB         | 0.3        | 5.0 | 0.10          | 0.30 | 1.20                    | 250                    | 600  | <b>2.5</b>                    | <b>0.23</b> | <b>300</b>     |             |
|   | 14        | 26,27,28      | CuZn30            | 100 HB         | 0.3        | 5.0 | 0.10          | 0.30 | 1.20                    | 150                    | 800  | <b>2.5</b>                    | <b>0.23</b> | <b>250</b>     |             |
|   |           |               | 29                | Fiber Plastics | -          | 0.3 | 5.0           | 0.10 | 0.20                    | 1.20                   | 70   | 500                           | <b>2.0</b>  | <b>0.15</b>    | <b>150</b>  |
| H.T.A<br>Ti Based Alloys                          | 15        | 30            | Hard Rubber       | -              | 0.3        | 5.0 | 0.10          | 0.20 | 1.20                    | 80                     | 300  | <b>2.0</b>                    | <b>0.15</b> | <b>150</b>     |             |
|   |           |               | -                 | Graphite       | -          | 0.3 | 5.0           | 0.10 | 0.20                    | 1.20                   | 100  | 200                           | <b>2.0</b>  | <b>0.15</b>    | <b>150</b>  |
|   |           |               | 10                | 36             | Ti 1       | -   | 0.3           | 2.0  | 0.09                    | 0.16                   | 0.28 | 35                            | 60          | <b>1.5</b>     | <b>0.13</b> |
| 37  | TiAl 6 V4 | -             |                   |                | 0.3        | 2.0 | 0.12          | 0.20 | 0.24                    | 28                     | 40   | <b>1.5</b>                    | <b>0.12</b> | <b>35</b>      |             |

## CNGG 120404 ALU – LT 05

| Material Group                                    | Gr. N°    | VDI Group     | Material Exemples | Hardness       | D.O.C [mm] |     | Feed [mm/rev] |      | Amax [mm <sup>2</sup> ] | V <sub>c</sub> [m/min] |      | Suggested Starting Parameters |             |                |             |
|---|-----------|---------------|-------------------|----------------|------------|-----|---------------|------|-------------------------|------------------------|------|-------------------------------|-------------|----------------|-------------|
|   |           |               |                   |                | min        | max | min           | max  |                         | min                    | max  | D.O.C                         | Feed        | V <sub>c</sub> |             |
| NF<br>Al (<8%Si)<br>Copper Alloys<br>Non-Metallic | 13        | 21, 22 23, 24 | Si < 4 %          | 60 HB          | 0.3        | 5.0 | 0.12          | 0.35 | 1.50                    | 400                    | 1200 | <b>2.5</b>                    | <b>0.23</b> | <b>400</b>     |             |
|   |           |               | 4% < Si < 8 %     | 100 HB         | 0.3        | 5.0 | 0.10          | 0.30 | 1.20                    | 250                    | 600  | <b>2.5</b>                    | <b>0.23</b> | <b>300</b>     |             |
|   | 14        | 26,27,28      | CuZn30            | 100 HB         | 0.3        | 5.0 | 0.10          | 0.30 | 1.20                    | 150                    | 800  | <b>2.5</b>                    | <b>0.23</b> | <b>250</b>     |             |
|   |           |               | 29                | Fiber Plastics | -          | 0.3 | 5.0           | 0.10 | 0.20                    | 1.20                   | 70   | 500                           | <b>2.0</b>  | <b>0.15</b>    | <b>150</b>  |
| H.T.A<br>Ti Based Alloys                          | 15        | 30            | Hard Rubber       | -              | 0.3        | 5.0 | 0.10          | 0.20 | 1.20                    | 80                     | 300  | <b>2.0</b>                    | <b>0.15</b> | <b>150</b>     |             |
|   |           |               | -                 | Graphite       | -          | 0.3 | 5.0           | 0.10 | 0.20                    | 1.20                   | 100  | 200                           | <b>2.0</b>  | <b>0.15</b>    | <b>150</b>  |
|   |           |               | 10                | 36             | Ti 1       | -   | 0.3           | 2.0  | 0.09                    | 0.16                   | 0.28 | 35                            | 60          | <b>1.5</b>     | <b>0.13</b> |
| 37  | TiAl 6 V4 | -             |                   |                | 0.3        | 2.0 | 0.12          | 0.20 | 0.24                    | 28                     | 40   | <b>1.5</b>                    | <b>0.12</b> | <b>35</b>      |             |

## CNGG 120408 ALU – LT 05

| Material Group                                    | Gr. N°    | VDI Group     | Material Exemples | Hardness       | D.O.C [mm] |     | Feed [mm/rev] |      | Amax [mm <sup>2</sup> ] | V <sub>c</sub> [m/min] |      | Suggested Starting Parameters |             |                |             |
|---|-----------|---------------|-------------------|----------------|------------|-----|---------------|------|-------------------------|------------------------|------|-------------------------------|-------------|----------------|-------------|
|   |           |               |                   |                | min        | max | min           | max  |                         | min                    | max  | D.O.C                         | Feed        | V <sub>c</sub> |             |
| NF<br>Al (<8%Si)<br>Copper Alloys<br>Non-Metallic | 13        | 21, 22 23, 24 | Si < 4 %          | 60 HB          | 0.3        | 5.0 | 0.18          | 0.60 | 1.50                    | 400                    | 1200 | <b>3.0</b>                    | <b>0.32</b> | <b>400</b>     |             |
|   |           |               | 4% < Si < 8 %     | 100 HB         | 0.3        | 5.0 | 0.18          | 0.50 | 1.20                    | 250                    | 600  | <b>3.0</b>                    | <b>0.32</b> | <b>300</b>     |             |
|   | 14        | 26,27,28      | CuZn30            | 100 HB         | 0.3        | 5.0 | 0.15          | 0.40 | 1.20                    | 150                    | 800  | <b>3.0</b>                    | <b>0.25</b> | <b>250</b>     |             |
|   |           |               | 29                | Fiber Plastics | -          | 0.3 | 5.0           | 0.15 | 0.40                    | 1.20                   | 70   | 500                           | <b>3.0</b>  | <b>0.25</b>    | <b>150</b>  |
| H.T.A<br>Ti Based Alloys                          | 15        | 30            | Hard Rubber       | -              | 0.3        | 5.0 | 0.15          | 0.40 | 1.20                    | 80                     | 300  | <b>3.0</b>                    | <b>0.25</b> | <b>150</b>     |             |
|   |           |               | -                 | Graphite       | -          | 0.3 | 5.0           | 0.15 | 0.40                    | 1.20                   | 100  | 200                           | <b>3.0</b>  | <b>0.25</b>    | <b>150</b>  |
|   |           |               | 10                | 36             | Ti 1       | -   | 0.3           | 4.0  | 0.15                    | 0.28                   | 0.28 | 35                            | 60          | <b>2.5</b>     | <b>0.20</b> |
| 37  | TiAl 6 V4 | -             |                   |                | 0.3        | 4.0 | 0.15          | 0.26 | 0.24                    | 28                     | 40   | <b>2.5</b>                    | <b>0.18</b> | <b>35</b>      |             |

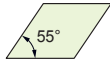


D

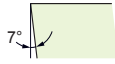
C

G

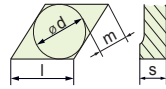
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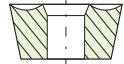
Shape



Clearance Angle



**Tolerance**  
 $d \pm 0.025$   
 $m \pm 0.025$   
 $s \pm 0.130$



**Fixing,  
Chipbreaker**

|                       |    |      |      |             |   |                   |   |  |
|-----------------------|----|------|------|-------------|---|-------------------|---|--|
| LT 05                 |    |      |      |             |   | Application Guide |   |  |
| Insert Designation    | l  | s    | r    | Catalog Nr. | F | M                 | R |  |
| DCGT 11T304 ALU LT 05 | 11 | 3.97 | 0.40 | T0004164    | ● | ●                 | ● |  |

ISO standard with extreme and unique positive chipbreaker geometry for aluminium turning operations. Suitable mostly for external operations but good also for internal operations, roughing and finishing.

Machining Recommendations

Details on page 14

Application Guide

**Finishing: (F)**  
 d.o.c. = 0.30 - 1.50 mm  
 $f_n = 0.08 - 0.20$  mm/rev

**Medium: (M)**  
 d.o.c. = 0.70 - 4.50 mm  
 $f_n = 0.15 - 0.45$  mm/rev

**Roughing: (R)**  
 d.o.c. = 3.00 - 7.00 mm  
 $f_n = 0.35 - 0.70$  mm/rev

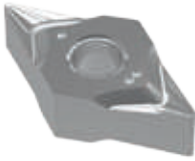
● = Good

● = Acceptable

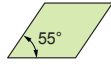
● = Not recommended

## DCGT 11T304 ALU – LT 05

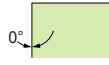
| Material Group                                    | Gr. N° | VDI Group     | Material Exemples | Hardness | D.O.C [mm] |      | Feed [mm/rev] |      | Amax [mm <sup>2</sup> ] | V <sub>c</sub> [m/min] |            | Suggested Starting Parameters |             |                |
|---|--------|---------------|-------------------|----------|------------|------|---------------|------|-------------------------|------------------------|------------|-------------------------------|-------------|----------------|
|   |        |               |                   |          | min        | max  | min           | max  |                         | min                    | max        | D.O.C                         | Feed        | V <sub>c</sub> |
| NF<br>Al (<8%Si)<br>Copper Alloys<br>Non-Metallic | 13     | 21, 22 23, 24 | Si < 4 %          | 60 HB    | 0.3        | 4.5  | 0.12          | 0.35 | 1.50                    | 400                    | 1200       | <b>2.3</b>                    | <b>0.23</b> | <b>400</b>     |
|   |        |               | 4% < Si < 8 %     | 100 HB   | 0.3        | 4.5  | 0.10          | 0.30 | 1.20                    | 250                    | 600        | <b>2.3</b>                    | <b>0.23</b> | <b>300</b>     |
|   | 14     | 26,27,28      | CuZn30            | 100 HB   | 0.3        | 4.5  | 0.10          | 0.30 | 1.20                    | 150                    | 800        | <b>2.3</b>                    | <b>0.23</b> | <b>250</b>     |
|   |        |               | Fiber Plastics    | -        | 0.3        | 4.5  | 0.10          | 0.20 | 1.20                    | 70                     | 500        | <b>1.8</b>                    | <b>0.15</b> | <b>150</b>     |
|   | 15     | -             | Hard Rubber       | -        | 0.3        | 4.5  | 0.10          | 0.20 | 1.20                    | 80                     | 300        | <b>1.8</b>                    | <b>0.15</b> | <b>150</b>     |
| Graphite  |        |               | -                 | 0.3      | 4.5        | 0.10 | 0.20          | 1.20 | 100                     | 200                    | <b>1.8</b> | <b>0.15</b>                   | <b>150</b>  |                |
| H.T.A<br>Ti Based Alloys                          | 10     | -             | Ti 1              | -        | 0.3        | 1.8  | 0.09          | 0.16 | 0.28                    | 35                     | 60         | <b>1.4</b>                    | <b>0.13</b> | <b>45</b>      |
|   |        |               | TiAl 6 V4         | -        | 0.3        | 1.8  | 0.12          | 0.20 | 0.24                    | 28                     | 40         | <b>1.4</b>                    | <b>0.12</b> | <b>35</b>      |



**D N G G**



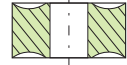
**Shape**



**Clearance Angle**



**Tolerance**  
 $d \pm 0.025$   
 $m \pm 0.025$   
 $s \pm 0.13$



**Fixing,  
Chipbreaker**

| LT 05                 |    |      |      |             | Application Guide |   |   |
|-----------------------|----|------|------|-------------|-------------------|---|---|
| Insert Designation    | l  | s    | r    | Catalog Nr. | F                 | M | R |
| DNGG 110404 ALU LT 05 | 11 | 4.76 | 0.40 | T0001026    | ●                 | ● | ● |
| DNGG 110408 ALU LT 05 | 11 | 4.76 | 0.80 | T0001010    | ●                 | ● | ● |

ISO standard with extreme and unique positive chipbreaker geometry for aluminium turning operations. Suitable mostly for external operations but good also for internal operations, roughing and finishing.

**Machining Recommendations**

Details on page 14

**Application Guide**

**Finishing: (F)**  
 d.o.c. = 0.30 - 1.50 mm  
 fn = 0.08 - 0.20 mm/rev

**Medium: (M)**  
 d.o.c. = 0.70 - 4.50 mm  
 fn = 0.15 - 0.45 mm/rev

**Roughing: (R)**  
 d.o.c. = 3.00 - 7.00 mm  
 fn = 0.35 - 0.70 mm/rev

● = Good

● = Acceptable

● = Not recommended

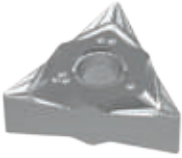


## DNGG 110404 ALU – LT 05

| Material Group                                    | Gr. N° | VDI Group | Material Exemples | Hardness | D.O.C [mm] |      | Feed [mm/rev] |      | Amax [mm <sup>2</sup> ] | V <sub>c</sub> [m/min] |            | Suggested Starting Parameters |             |                |
|---|--------|-----------|-------------------|----------|------------|------|---------------|------|-------------------------|------------------------|------------|-------------------------------|-------------|----------------|
|   |        |           |                   |          | min        | max  | min           | max  |                         | min                    | max        | D.O.C                         | Feed        | V <sub>c</sub> |
| NF<br>Al (<8%Si)<br>Copper Alloys<br>Non-Metallic | 13     | 21, 22    | Si < 4 %          | 60 HB    | 0.3        | 4.0  | 0.12          | 0.35 | 1.50                    | 400                    | 1200       | <b>2.5</b>                    | <b>0.23</b> | <b>400</b>     |
|   |        | 23, 24    | 4% < Si < 8 %     | 100 HB   | 0.3        | 4.0  | 0.10          | 0.30 | 1.20                    | 250                    | 600        | <b>2.5</b>                    | <b>0.23</b> | <b>300</b>     |
|   | 14     | 26,27,28  | CuZn30            | 100 HB   | 0.3        | 4.0  | 0.10          | 0.30 | 1.20                    | 150                    | 800        | <b>2.5</b>                    | <b>0.23</b> | <b>250</b>     |
|   |        | 29        | Fiber Plastics    | -        | 0.3        | 4.0  | 0.10          | 0.20 | 1.20                    | 70                     | 500        | <b>2.0</b>                    | <b>0.15</b> | <b>150</b>     |
|   | 15     | 30        | Hard Rubber       | -        | 0.3        | 4.0  | 0.10          | 0.20 | 1.20                    | 80                     | 300        | <b>2.0</b>                    | <b>0.15</b> | <b>150</b>     |
| -   |        | Graphite  | -                 | 0.3      | 4.0        | 0.10 | 0.20          | 1.20 | 100                     | 200                    | <b>2.0</b> | <b>0.15</b>                   | <b>150</b>  |                |
| H.T.A<br>Ti Based Alloys                          | 10     | 36        | Ti 1              | -        | 0.3        | 2.0  | 0.09          | 0.16 | 0.28                    | 35                     | 60         | <b>1.5</b>                    | <b>0.13</b> | <b>45</b>      |
| 37  |        | TiAl 6 V4 | -                 | 0.3      | 2.0        | 0.12 | 0.20          | 0.24 | 28                      | 40                     | <b>1.5</b> | <b>0.12</b>                   | <b>35</b>   |                |

## DNGG 110408 ALU – LT 05

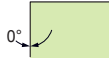
| Material Group                                    | Gr. N° | VDI Group | Material Exemples | Hardness | D.O.C [mm] |      | Feed [mm/rev] |      | Amax [mm <sup>2</sup> ] | V <sub>c</sub> [m/min] |            | Suggested Starting Parameters |             |                |
|---|--------|-----------|-------------------|----------|------------|------|---------------|------|-------------------------|------------------------|------------|-------------------------------|-------------|----------------|
|   |        |           |                   |          | min        | max  | min           | max  |                         | min                    | max        | D.O.C                         | Feed        | V <sub>c</sub> |
| NF<br>Al (<8%Si)<br>Copper Alloys<br>Non-Metallic | 13     | 21, 22    | Si < 4 %          | 60 HB    | 0.3        | 4.0  | 0.18          | 0.60 | 1.50                    | 400                    | 1200       | <b>2.0</b>                    | <b>0.25</b> | <b>400</b>     |
|   |        | 23, 24    | 4% < Si < 8 %     | 100 HB   | 0.3        | 4.0  | 0.18          | 0.50 | 1.20                    | 250                    | 600        | <b>2.0</b>                    | <b>0.25</b> | <b>300</b>     |
|   | 14     | 26,27,28  | CuZn30            | 100 HB   | 0.3        | 4.0  | 0.15          | 0.40 | 1.20                    | 150                    | 800        | <b>2.0</b>                    | <b>0.25</b> | <b>250</b>     |
|   |        | 29        | Fiber Plastics    | -        | 0.3        | 4.0  | 0.15          | 0.40 | 1.20                    | 70                     | 500        | <b>2.0</b>                    | <b>0.25</b> | <b>150</b>     |
|   | 15     | 30        | Hard Rubber       | -        | 0.3        | 4.0  | 0.15          | 0.40 | 1.20                    | 80                     | 300        | <b>2.0</b>                    | <b>0.25</b> | <b>150</b>     |
| -   |        | Graphite  | -                 | 0.3      | 4.0        | 0.15 | 0.40          | 1.20 | 100                     | 200                    | <b>2.0</b> | <b>0.25</b>                   | <b>150</b>  |                |
| H.T.A<br>Ti Based Alloys                          | 10     | 36        | Ti 1              | -        | 0.3        | 3.0  | 0.15          | 0.28 | 0.28                    | 35                     | 60         | <b>2.0</b>                    | <b>0.20</b> | <b>45</b>      |
| 37  |        | TiAl 6 V4 | -                 | 0.3      | 3.0        | 0.15 | 0.26          | 0.24 | 28                      | 40                     | <b>2.0</b> | <b>0.18</b>                   | <b>35</b>   |                |



T N G G



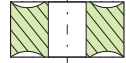
Shape



Clearance Angle



Tolerance  
 $d \pm 0.025$   
 $m \pm 0.025$   
 $s \pm 0.13$



Fixing,  
Chipbreaker

|                       |    |      |      |             |                   |   |   |
|-----------------------|----|------|------|-------------|-------------------|---|---|
| LT 05                 |    |      |      |             | Application Guide |   |   |
| Insert Designation    | l  | s    | r    | Catalog Nr. | F                 | M | R |
| TNGG 160404 ALU LT 05 | 16 | 4.76 | 0.40 | T0001105    | ●                 | ● | ● |

ISO standard with extreme and unique positive chipbreaker geometry for aluminium turning operations. Suitable mostly for external operations but good also for internal operations, roughing and finishing.

Machining Recommendations

Details on page 14

Application Guide

Finishing: **(F)**  
 d.o.c. = 0.30 - 1.50 mm  
 fn = 0.08 - 0.20 mm/rev

Medium: **(M)**  
 d.o.c. = 0.70 - 4.50 mm  
 fn = 0.15 - 0.45 mm/rev

Roughing: **(R)**  
 d.o.c. = 3.00 - 7.00 mm  
 fn = 0.35 - 0.70 mm/rev

● = Good

● = Acceptable

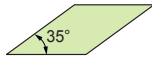
● = Not recommended

## TNGG 160404 ALU – LT 05

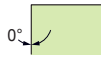
| Material Group                                    | Gr. N° | VDI Group  | Material Examples | Hardness | D.O.C [mm] |      | Feed [mm/rev] |      | Amax [mm <sup>2</sup> ] | V <sub>c</sub> [m/min] |            | Suggested Starting Parameters |             |                |
|---|--------|------------|-------------------|----------|------------|------|---------------|------|-------------------------|------------------------|------------|-------------------------------|-------------|----------------|
|   |        |            |                   |          | min        | max  | min           | max  |                         | min                    | max        | D.O.C                         | Feed        | V <sub>c</sub> |
| NF<br>Al (<8%Si)<br>Copper Alloys<br>Non-Metallic | 13     | 21, 22 23, | Si < 4 %          | 60 HB    | 0.3        | 4.0  | 0.12          | 0.35 | 1.50                    | 400                    | 1200       | <b>2.5</b>                    | <b>0.23</b> | <b>400</b>     |
|   |        | 24         | 4% < Si < 8 %     | 100 HB   | 0.3        | 4.0  | 0.10          | 0.30 | 1.20                    | 250                    | 600        | <b>2.5</b>                    | <b>0.23</b> | <b>300</b>     |
|   | 14     | 26,27,28   | CuZn30            | 100 HB   | 0.3        | 4.0  | 0.10          | 0.30 | 1.20                    | 150                    | 800        | <b>2.5</b>                    | <b>0.23</b> | <b>250</b>     |
|   |        | 29         | Fiber Plastics    | -        | 0.3        | 4.0  | 0.10          | 0.20 | 1.20                    | 70                     | 500        | <b>2.0</b>                    | <b>0.15</b> | <b>150</b>     |
|   | 15     | 30         | Hard Rubber       | -        | 0.3        | 4.0  | 0.10          | 0.20 | 1.20                    | 80                     | 300        | <b>2.0</b>                    | <b>0.15</b> | <b>150</b>     |
| -   |        | Graphite   | -                 | 0.3      | 4.0        | 0.10 | 0.20          | 1.20 | 100                     | 200                    | <b>2.0</b> | <b>0.15</b>                   | <b>150</b>  |                |
| H.T.A<br>Ti Based Alloys                          | 10     | 36         | Ti 1              | -        | 0.3        | 2.0  | 0.09          | 0.16 | 0.28                    | 35                     | 60         | <b>1.5</b>                    | <b>0.13</b> | <b>45</b>      |
|   |        | 37         | TiAl 6 V4         | -        | 0.3        | 2.0  | 0.12          | 0.20 | 0.24                    | 28                     | 40         | <b>1.5</b>                    | <b>0.12</b> | <b>35</b>      |



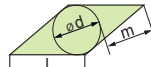
V N G G



Shape



Clearance Angle



Tolerance  
 $d \pm 0.025$   
 $m \pm 0.025$   
 $s \pm 0.13$



Fixing,  
Chipbreaker

| LT 05                 |    |      |      |             | Application Guide |   |   |
|-----------------------|----|------|------|-------------|-------------------|---|---|
| Insert Designation    | l  | s    | r    | Catalog Nr. | F                 | M | R |
| VNGG 160404 ALU LT 05 | 16 | 4.76 | 0.40 | T0001006    | ●                 | ● | ● |
| VNGG 160408 ALU LT 05 | 16 | 4.76 | 0.80 | T0001032    | ●                 | ● | ● |

ISO standard with extreme and unique positive chipbreaker geometry for aluminium turning operations. Suitable mostly for external operations but good also for internal operations, roughing and finishing.

Machining Recommendations

Details on page 14

Application Guide

Finishing: (F)

d.o.c. = 0.30 - 1.50 mm  
 $f_n = 0.08 - 0.20$  mm/rev

Medium: (M)

d.o.c. = 0.70 - 4.50 mm  
 $f_n = 0.15 - 0.45$  mm/rev

Roughing: (R)

d.o.c. = 3.00 - 7.00 mm  
 $f_n = 0.35 - 0.70$  mm/rev

● = Good

● = Acceptable

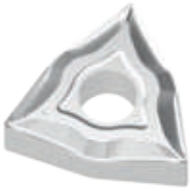
● = Not recommended

## VNGG 160404 ALU – LT 05

| Material Group                                    | Gr. N°    | VDI Group                | Material Exemples | Hardness       | D.O.C [mm] |      | Feed [mm/rev] |      | Amax [mm <sup>2</sup> ] | V <sub>c</sub> [m/min] |            | Suggested Starting Parameters |             |                |             |
|---|-----------|--------------------------|-------------------|----------------|------------|------|---------------|------|-------------------------|------------------------|------------|-------------------------------|-------------|----------------|-------------|
|   |           |                          |                   |                | min        | max  | min           | max  |                         | min                    | max        | D.O.C                         | Feed        | V <sub>c</sub> |             |
| NF<br>Al (<8%Si)<br>Copper Alloys<br>Non-Metallic | 13        | 21, 22 23, 24            | Si < 4 %          | 60 HB          | 0.3        | 4.0  | 0.12          | 0.35 | 1.20                    | 400                    | 1200       | <b>2.3</b>                    | <b>0.23</b> | <b>400</b>     |             |
|   |           |                          | 4% < Si < 8 %     | 100 HB         | 0.3        | 4.0  | 0.10          | 0.30 | 0.96                    | 250                    | 600        | <b>2.3</b>                    | <b>0.23</b> | <b>300</b>     |             |
|   | 14        | 26,27,28                 | CuZn30            | 100 HB         | 0.3        | 4.0  | 0.10          | 0.30 | 0.96                    | 150                    | 800        | <b>2.3</b>                    | <b>0.23</b> | <b>250</b>     |             |
|   |           |                          | 29                | Fiber Plastics | -          | 0.3  | 4.0           | 0.10 | 0.20                    | 0.96                   | 70         | 500                           | <b>1.8</b>  | <b>0.15</b>    | <b>150</b>  |
|   |           |                          | 30                | Hard Rubber    | -          | 0.3  | 4.0           | 0.10 | 0.20                    | 0.96                   | 80         | 300                           | <b>1.8</b>  | <b>0.15</b>    | <b>150</b>  |
| 15  | -         | Graphite                 | -                 | 0.3            | 4.0        | 0.10 | 0.20          | 0.96 | 100                     | 200                    | <b>1.8</b> | <b>0.15</b>                   | <b>150</b>  |                |             |
|   |           | H.T.A<br>Ti Based Alloys | 10                | 36             | Ti 1       | -    | 0.3           | 2.0  | 0.09                    | 0.16                   | 0.22       | 35                            | 60          | <b>1.4</b>     | <b>0.13</b> |
| 37  | TiAl 6 V4 |                          |                   | -              | 0.3        | 2.0  | 0.12          | 0.20 | 0.19                    | 28                     | 40         | <b>1.4</b>                    | <b>0.12</b> | <b>35</b>      |             |

## VNGG 160408 ALU – LT 05

| Material Group                                    | Gr. N°    | VDI Group                | Material Exemples | Hardness       | D.O.C [mm] |      | Feed [mm/rev] |      | Amax [mm <sup>2</sup> ] | V <sub>c</sub> [m/min] |            | Suggested Starting Parameters |             |                |             |
|---|-----------|--------------------------|-------------------|----------------|------------|------|---------------|------|-------------------------|------------------------|------------|-------------------------------|-------------|----------------|-------------|
|   |           |                          |                   |                | min        | max  | min           | max  |                         | min                    | max        | D.O.C                         | Feed        | V <sub>c</sub> |             |
| NF<br>Al (<8%Si)<br>Copper Alloys<br>Non-Metallic | 13        | 21, 22 23, 24            | Si < 4 %          | 60 HB          | 0.5        | 6.0  | 0.18          | 0.60 | 1.50                    | 400                    | 1200       | <b>3.0</b>                    | <b>0.32</b> | <b>400</b>     |             |
|   |           |                          | 4% < Si < 8 %     | 100 HB         | 0.5        | 6.0  | 0.18          | 0.50 | 1.20                    | 250                    | 600        | <b>3.0</b>                    | <b>0.32</b> | <b>300</b>     |             |
|   | 14        | 26,27,28                 | CuZn30            | 100 HB         | 0.5        | 6.0  | 0.15          | 0.40 | 1.20                    | 150                    | 800        | <b>3.0</b>                    | <b>0.25</b> | <b>250</b>     |             |
|   |           |                          | 29                | Fiber Plastics | -          | 0.5  | 6.0           | 0.15 | 0.40                    | 1.20                   | 70         | 500                           | <b>3.0</b>  | <b>0.25</b>    | <b>150</b>  |
|   |           |                          | 30                | Hard Rubber    | -          | 0.5  | 6.0           | 0.15 | 0.40                    | 1.20                   | 80         | 300                           | <b>3.0</b>  | <b>0.25</b>    | <b>150</b>  |
| 15  | -         | Graphite                 | -                 | 0.5            | 6.0        | 0.15 | 0.40          | 1.20 | 100                     | 200                    | <b>3.0</b> | <b>0.25</b>                   | <b>150</b>  |                |             |
|   |           | H.T.A<br>Ti Based Alloys | 10                | 36             | Ti 1       | -    | 0.5           | 3.0  | 0.15                    | 0.28                   | 0.28       | 35                            | 60          | <b>1.5</b>     | <b>0.18</b> |
| 37  | TiAl 6 V4 |                          |                   | -              | 0.5        | 3.0  | 0.15          | 0.26 | 0.24                    | 28                     | 40         | <b>1.2</b>                    | <b>0.16</b> | <b>35</b>      |             |



W

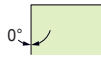
N

G

G



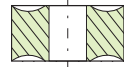
Shape



Clearance Angle



Tolerance



Fixing,  
Chipbreaker

s ± 0.13  
For l = 06, d ± 0.05 m ± 0.08  
For l = 08, d ± 0.08 m ± 0.13

| LT 05                 |   |      |      |             | Application Guide |   |   |
|-----------------------|---|------|------|-------------|-------------------|---|---|
| Insert Designation    | l | s    | r    | Catalog Nr. | F                 | M | R |
| WNGG 060404 ALU LT 05 | 6 | 4.76 | 0.40 | T0003299    | ●                 | ● | ● |
| WNGG 080404 ALU LT 05 | 8 | 4.76 | 0.40 | T0003300    | ●                 | ● | ● |

ISO standard with extreme and unique positive chipbreaker geometry for aluminium turning operations. Suitable mostly for external operations but good also for internal operations, roughing and finishing.

Machining Recommendations

Details on page 14

Application Guide

Finishing: **(F)**  
d.o.c. = 0.30 - 1.50 mm  
fn = 0.08 - 0.20 mm/rev

Medium: **(M)**  
d.o.c. = 0.70 - 4.50 mm  
fn = 0.15 - 0.45 mm/rev

Roughing: **(R)**  
d.o.c. = 3.00 - 7.00 mm  
fn = 0.35 - 0.70 mm/rev

● = Good

● = Acceptable

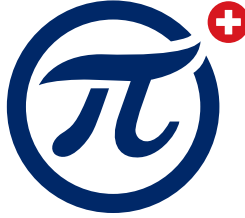
● = Not recommended

## WNGG 060404 ALU – LT 05

| Material Group                                    | Gr. N° | VDI Group     | Material Exemples | Hardness | D.O.C [mm] |      | Feed [mm/rev] |      | Amax [mm <sup>2</sup> ] | V <sub>c</sub> [m/min] |            | Suggested Starting Parameters |             |                |
|---|--------|---------------|-------------------|----------|------------|------|---------------|------|-------------------------|------------------------|------------|-------------------------------|-------------|----------------|
|   |        |               |                   |          | min        | max  | min           | max  |                         | min                    | max        | D.O.C                         | Feed        | V <sub>c</sub> |
| NF<br>Al (<8%Si)<br>Copper Alloys<br>Non-Metallic | 13     | 21, 22 23, 24 | Si < 4 %          | 60 HB    | 0.3        | 4.0  | 0.12          | 0.35 | 1.20                    | 400                    | 1200       | <b>2.3</b>                    | <b>0.23</b> | <b>400</b>     |
|   |        |               | 4% < Si < 8 %     | 100 HB   | 0.3        | 4.0  | 0.10          | 0.30 | 0.96                    | 250                    | 600        | <b>2.3</b>                    | <b>0.23</b> | <b>300</b>     |
|   | 14     | 26,27,28      | CuZn30            | 100 HB   | 0.3        | 4.0  | 0.10          | 0.30 | 0.96                    | 150                    | 800        | <b>2.3</b>                    | <b>0.23</b> | <b>250</b>     |
|   | 15     | 29            | Fiber Plastics    | -        | 0.3        | 4.0  | 0.10          | 0.20 | 0.96                    | 70                     | 500        | <b>1.8</b>                    | <b>0.15</b> | <b>150</b>     |
|   |        | 30            | Hard Rubber       | -        | 0.3        | 4.0  | 0.10          | 0.20 | 0.96                    | 80                     | 300        | <b>1.8</b>                    | <b>0.15</b> | <b>150</b>     |
| -   |        | Graphite      | -                 | 0.3      | 4.0        | 0.10 | 0.20          | 0.96 | 100                     | 200                    | <b>1.8</b> | <b>0.15</b>                   | <b>150</b>  |                |
| H.T.A<br>Ti Based Alloys                          | 10     | 36            | Ti 1              | -        | 0.3        | 2.0  | 0.09          | 0.16 | 0.22                    | 35                     | 60         | <b>1.4</b>                    | <b>0.13</b> | <b>45</b>      |
|   |        | 37            | TiAl 6 V4         | -        | 0.3        | 2.0  | 0.12          | 0.20 | 0.19                    | 28                     | 40         | <b>1.4</b>                    | <b>0.12</b> | <b>35</b>      |

## WNGG 080404 ALU – LT 05

| Material Group                                    | Gr. N° | VDI Group     | Material Exemples | Hardness | D.O.C [mm] |      | Feed [mm/rev] |      | Amax [mm <sup>2</sup> ] | V <sub>c</sub> [m/min] |            | Suggested Starting Parameters |             |                |
|---|--------|---------------|-------------------|----------|------------|------|---------------|------|-------------------------|------------------------|------------|-------------------------------|-------------|----------------|
|   |        |               |                   |          | min        | max  | min           | max  |                         | min                    | max        | D.O.C                         | Feed        | V <sub>c</sub> |
| NF<br>Al (<8%Si)<br>Copper Alloys<br>Non-Metallic | 13     | 21, 22 23, 24 | Si < 4 %          | 60 HB    | 0.3        | 4.0  | 0.12          | 0.35 | 1.20                    | 400                    | 1200       | <b>2.3</b>                    | <b>0.23</b> | <b>400</b>     |
|   |        |               | 4% < Si < 8 %     | 100 HB   | 0.3        | 4.0  | 0.10          | 0.30 | 0.96                    | 250                    | 600        | <b>2.3</b>                    | <b>0.23</b> | <b>300</b>     |
|   | 14     | 26,27,28      | CuZn30            | 100 HB   | 0.3        | 4.0  | 0.10          | 0.30 | 0.96                    | 150                    | 800        | <b>2.3</b>                    | <b>0.23</b> | <b>250</b>     |
|   | 15     | 29            | Fiber Plastics    | -        | 0.3        | 4.0  | 0.10          | 0.20 | 0.96                    | 70                     | 500        | <b>1.8</b>                    | <b>0.15</b> | <b>150</b>     |
|   |        | 30            | Hard Rubber       | -        | 0.3        | 4.0  | 0.10          | 0.20 | 0.96                    | 80                     | 300        | <b>1.8</b>                    | <b>0.15</b> | <b>150</b>     |
| -   |        | Graphite      | -                 | 0.3      | 4.0        | 0.10 | 0.20          | 0.96 | 100                     | 200                    | <b>1.8</b> | <b>0.15</b>                   | <b>150</b>  |                |
| H.T.A<br>Ti Based Alloys                          | 10     | 36            | Ti 1              | -        | 0.3        | 2.0  | 0.09          | 0.16 | 0.22                    | 35                     | 60         | <b>1.4</b>                    | <b>0.13</b> | <b>45</b>      |
|   |        | 37            | TiAl 6 V4         | -        | 0.3        | 2.0  | 0.12          | 0.20 | 0.19                    | 28                     | 40         | <b>1.4</b>                    | <b>0.12</b> | <b>35</b>      |



# LAMINA TECHNOLOGIES

## HEADQUARTERS

**Lamina Technologies SA  
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