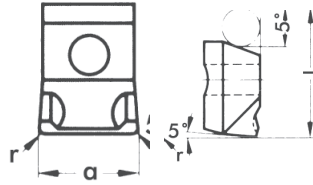
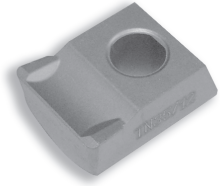
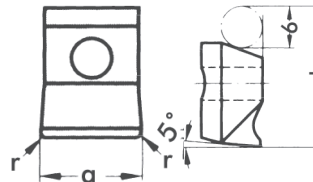
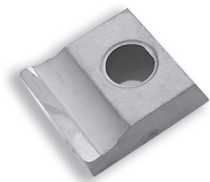


# WIDIA WIDE GROOVING INSERTS



## 235.68.\_0

| DESIGNATION | a <sub>mm</sub> | a <sub>inch</sub> | h    | l    | r    | COATED |       |      |        |        |       | UNCOATED |        |     | CERMET |     |       |     |
|-------------|-----------------|-------------------|------|------|------|--------|-------|------|--------|--------|-------|----------|--------|-----|--------|-----|-------|-----|
|             |                 |                   |      |      |      | TK15   | TN200 | TN35 | TN7525 | TN7535 | TPC25 | TPC35    | TN8025 | TTX | TTM    | TTR | THM-F | THM |
| 235.68.080  | 8.1             | .319              | .343 | .752 | .031 | ●      |       | ●    | ●      | ●      |       |          |        | ●   |        |     |       |     |
| 235.68.100  | 10.1            | .398              | .354 | .772 | .031 | ●      |       | ●    | ●      | ●      |       |          |        | ●   |        |     |       |     |
| 235.68.120  | 12.1            | .476              | .354 | .866 | .031 | ●      |       | ●    | ●      | ●      |       |          |        | ●   |        |     |       |     |
| 235.68.140  | 14.1            | .555              | .354 | .866 | .031 |        |       | ●    | ●      | ●      |       |          |        | ●   |        |     |       |     |
| 235.68.160  | 16.1            | .634              | .394 | .960 | .031 | ●      |       | ●    | ●      | ●      |       |          |        | ●   |        |     |       |     |

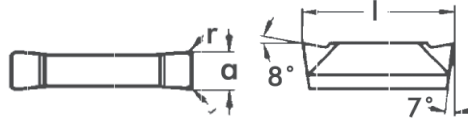


## 235.68.\_1

| DESIGNATION | a <sub>mm</sub> | a <sub>inch</sub> | h    | l    | r    | COATED |       |      |        |        |       | UNCOATED |        |     | CERMET |     |       |     |
|-------------|-----------------|-------------------|------|------|------|--------|-------|------|--------|--------|-------|----------|--------|-----|--------|-----|-------|-----|
|             |                 |                   |      |      |      | TK15   | TN200 | TN35 | TN7525 | TN7535 | TPC25 | TPC35    | TN8025 | TTX | TTM    | TTR | THM-F | THM |
| 235.68.081  | 8.1             | .319              | .343 | .752 | .031 |        |       |      |        |        |       |          |        |     |        |     |       | ●   |
| 235.68.101  | 10.1            | .398              | .354 | .772 | .031 |        |       |      |        |        |       |          |        |     |        |     |       | ●   |
| 235.68.121  | 12.1            | .476              | .354 | .866 | .031 |        |       |      |        |        |       |          |        |     |        |     |       | ●   |
| 235.68.141  | 14.1            | .555              | .354 | .866 | .031 |        |       |      |        |        |       |          |        |     |        |     |       | ●   |
| 235.68.161  | 16.1            | .634              | .394 | .960 | .031 |        |       |      |        |        |       |          |        |     |        |     |       | ●   |

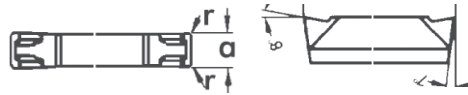
- 235.68. ...** Inserts offer a chip control geometry with a wide range of uses. All inserts are precision sintered and matched in geometry and grade to specific requirements of grooving.
- 235.68.\_0** Inserts with a wide range of uses in grooving and deep grooving; additional chip control element for good chip control even with varying widths of cut.
- 235.68.\_1** Inserts with a wide range of uses in grooving of short chipping materials.

# WIDIA GROOVING INSERTS



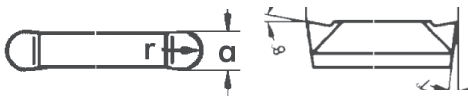
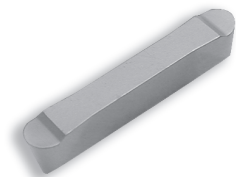
## 235.69.0 ...

| DESIGNATION | a <sub>mm</sub> | a <sub>inch</sub> | h    | l     | r    | COATED |       |      |        |        |       | UNCOATED |        |     | CERMET |     |       |     |
|-------------|-----------------|-------------------|------|-------|------|--------|-------|------|--------|--------|-------|----------|--------|-----|--------|-----|-------|-----|
|             |                 |                   |      |       |      | TK15   | TN200 | TN35 | TN7525 | TN7535 | TPC25 | TPC35    | TN8025 | TTX | TTM    | TTR | THM-F | THM |
| 235.69.030  | 3.1             | .122              | .236 | .787  | .012 | ●      |       |      |        |        |       |          | ●      | ●   |        | ●   |       |     |
| 235.69.040  | 4.1             | .161              | .236 | .787  | .016 | ●      |       |      |        |        |       |          | ●      | ●   | ●      | ●   |       |     |
| 235.69.050  | 5.1             | .201              | .276 | 1.181 | .020 | ●      |       |      |        |        |       |          | ●      | ●   |        | ●   |       |     |
| 235.69.060  | 6.1             | .240              | .276 | 1.181 | .024 | ●      |       |      |        |        |       |          | ●      | ●   |        | ●   |       |     |
| 235.69.080  | 8.1             | .319              | .315 | 1.378 | .024 | ●      |       |      |        |        |       |          | ●      | ●   |        | ●   |       |     |



## 235.69.1 ...

| DESIGNATION | a <sub>mm</sub> | a <sub>inch</sub> | h    | l     | r    | COATED |       |      |        |        |       | UNCOATED |        |     | CERMET |     |       |     |
|-------------|-----------------|-------------------|------|-------|------|--------|-------|------|--------|--------|-------|----------|--------|-----|--------|-----|-------|-----|
|             |                 |                   |      |       |      | TK15   | TN200 | TN35 | TN7525 | TN7535 | TPC25 | TPC35    | TN8025 | TTX | TTM    | TTR | THM-F | THM |
| 235.69.130  | 3.1             | .122              | .236 | .787  | .008 | ●      |       | ●    |        |        |       |          | ●      | ●   |        |     |       |     |
| 235.69.140  | 4.1             | .161              | .236 | .787  | .012 | ●      |       | ●    |        |        |       |          | ●      | ●   | ●      | ●   |       |     |
| 235.69.150  | 5.1             | .201              | .276 | 1.181 | .012 | ●      |       | ●    |        |        |       |          | ●      | ●   |        | ●   |       |     |
| 235.69.160  | 6.1             | .240              | .276 | 1.181 | .016 | ●      |       | ●    |        |        |       |          | ●      | ●   |        | ●   |       |     |
| 235.69.180  | 8.1             | .319              | .315 | 1.378 | .024 | ●      |       | ●    |        |        |       |          | ●      | ●   |        | ●   |       |     |



## 235.69.3 ...

| DESIGNATION | a <sub>mm</sub> | a <sub>inch</sub> | h    | l     | r    | COATED |       |      |        |        |       | UNCOATED |        |     | CERMET |     |       |     |
|-------------|-----------------|-------------------|------|-------|------|--------|-------|------|--------|--------|-------|----------|--------|-----|--------|-----|-------|-----|
|             |                 |                   |      |       |      | TK15   | TN200 | TN35 | TN7525 | TN7535 | TPC25 | TPC35    | TN8025 | TTX | TTM    | TTR | THM-F | THM |
| 235.69.330  | 3.0             | .118              | .236 | .787  | .059 |        |       |      |        |        |       |          | ●      | ●   |        | ●   |       |     |
| 235.69.340  | 4.0             | .157              | .236 | .787  | .079 |        |       |      |        |        |       |          | ●      | ●   |        | ●   |       |     |
| 235.69.350  | 5.0             | .197              | .276 | 1.181 | .098 |        |       |      |        |        |       |          | ●      | ●   |        | ●   |       |     |
| 235.69.360  | 6.0             | .236              | .276 | 1.181 | .118 |        |       |      |        |        |       |          | ●      | ●   |        | ●   |       |     |

**235.69. ...** Inserts offer a chip control geometry with a wide range of uses. Accurate, reproducible cutting edge positioning. Unhindered chip removal.

**235.69.0. ...** Can be used for grooving operations and varying widths of cut; good chip control even with difficult-to-machine materials.

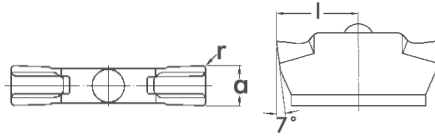
**235.69.1. ...** Can be used for grooving and parting operations; universal use.

**235.69.3. ...** Fully rounded insert for profiling, grooving and copy turning.

# WIDIA TWINGROOVE GROOVING INSERTS



-U



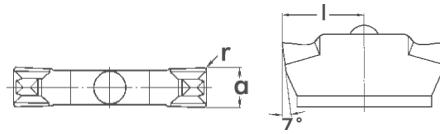
## 235.69.7 ...

| DESIGNATION | a <sub>mm</sub> | a <sub>inch</sub> | a <sub>tolerance</sub> | l *  | r    | COATED |       |      |        |        |       | UNCOATED |        |     |     |     | CERMET |     |        |
|-------------|-----------------|-------------------|------------------------|------|------|--------|-------|------|--------|--------|-------|----------|--------|-----|-----|-----|--------|-----|--------|
|             |                 |                   |                        |      |      | TK15   | TN200 | TN35 | TN7525 | TN7535 | TPC25 | TPC35    | TN8025 | TTX | TTM | TTR | THM-F  | THM | TTI-15 |
| 235.69.730  | 3.0             | .118              | +0.006/+0.002          | .315 | .012 | ●      | ●     | ●    | ●      | ●      | ●     | ●        |        |     |     |     | ●      |     |        |
| 235.69.740  | 4.0             | .157              | +0.006/+0.002          | .394 | .012 | ●      | ●     | ●    | ●      | ●      | ●     | ●        |        |     |     |     | ●      |     |        |
| 235.69.750  | 5.0             | .197              | +0.006/+0.002          | .394 | .012 | ●      | ●     | ●    | ●      | ●      | ●     | ●        |        |     |     |     | ●      |     |        |
| 235.69.760  | 6.0             | .236              | +0.006/+0.002          | .591 | .016 | ●      | ●     | ●    | ●      | ●      | ●     | ●        |        |     |     |     | ●      |     |        |
| 235.69.780  | 8.0             | .315              | +0.008/+0.004          | .591 | .024 | ●      | ●     | ●    | ●      | ●      | ●     | ●        |        |     |     |     | ●      |     |        |

\*Overall length of insert is 2 x l



-M



## 235.69.8 ...

| DESIGNATION | a <sub>mm</sub> | a <sub>inch</sub> | a <sub>tolerance</sub> | l *  | r    | COATED |       |      |        |        |       | UNCOATED |        |     |     |     | CERMET |     |        |
|-------------|-----------------|-------------------|------------------------|------|------|--------|-------|------|--------|--------|-------|----------|--------|-----|-----|-----|--------|-----|--------|
|             |                 |                   |                        |      |      | TK15   | TN200 | TN35 | TN7525 | TN7535 | TPC25 | TPC35    | TN8025 | TTX | TTM | TTR | THM-F  | THM | TTI-15 |
| 235.69.830  | 3.0             | .118              | +0.006+0.002           | .315 | .012 | ●      | ●     | ●    | ●      | ●      | ●     | ●        |        |     |     |     |        |     |        |
| 235.69.840  | 4.0             | .157              | +0.006+0.002           | .394 | .012 | ●      | ●     | ●    | ●      | ●      | ●     | ●        |        |     |     |     |        |     |        |
| 235.69.850  | 5.0             | .197              | +0.006+0.002           | .394 | .012 | ●      | ●     | ●    | ●      | ●      | ●     | ●        |        |     |     |     |        |     |        |
| 235.69.860  | 6.0             | .236              | +0.006+0.002           | .591 | .016 | ●      | ●     | ●    | ●      | ●      | ●     | ●        |        |     |     |     |        |     |        |
| 235.69.880  | 8.0             | .315              | +0.008/+0.004          | .591 | .024 | ●      | ●     | ●    | ●      | ●      | ●     | ●        |        |     |     |     |        |     |        |

\*Overall length of insert is 2 x l

## TwinGroove Insert Geometries

Modern grooving inserts with two cutting edges for wide range of uses. All grooving inserts are precision sintered and matched in geometry and grade to the specific requirements of grooving.

### -U

For general use in grooving and parting. Broad positive middle groove with strengthened cutting points and stabilizing side walls.

### -M

For grooving and parting, but particularly for profiles, straight turning, recessing and chamfering.

## Properties:

- Tongue and groove system for high rigidity
- Indexable inserts clamped in the proven TwinGroove system:
  - Indexable inserts secured in a auto-centering 90° V-support.
  - Indexable inserts secured lengthways and clamped via a universal ball joint clamp.
  - The clamping bridge integrated in the cartridge clamps the indexable inserts positively via the universal ball joint mechanism.
- Advantages of clamping in the middle of the insert:
  - Halves the length tolerance of the indexable insert and provides excellent indexing accuracy of the cutting edges.
  - The second cutting edge can be used on its own if the first cutting edge is worn or broken.