

**LAMINA**  
TECHNOLOGIES

# MULTI FUNCTION MILLING

For 90° Shoulder and  
High Feed Milling

**MAGIA**



# THREE INSERTS TWO APPLICATIONS ONE POCKET

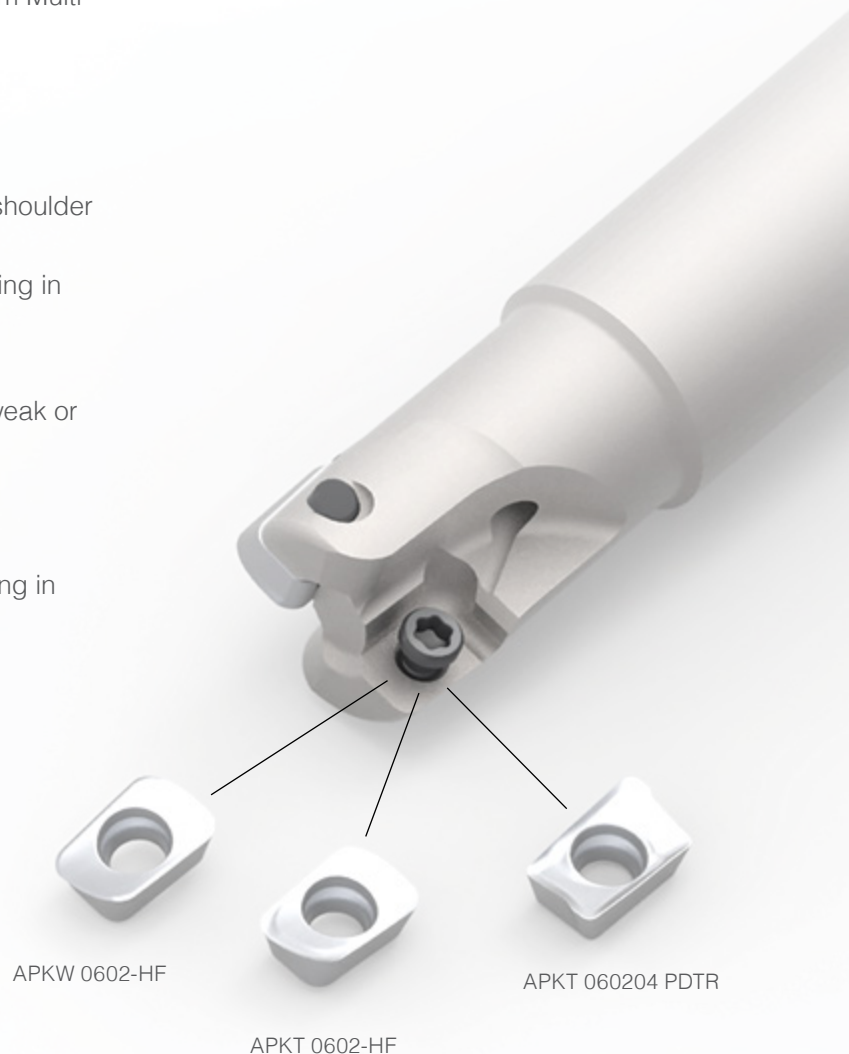
Lamina Technologies introduces our new multi-function milling line.

The LT 752\* range of milling bodies are designed for both 90° shoulder and high feed milling. Simply change the APKT 060204 PDTR insert to APKT 0602-HF or our reinforced APKW 0602-HF inserts to change application.

All three inserts are only available in our premium Multi-Mat™ LT 3000 milling grade.

## MULTI-FUNCTION MILLING LINE

- 1 milling body for 2 milling operations, 90° shoulder and high feed milling
- Helical cutting edge design for smooth cutting in both methods
- Smaller inventory and reduced costs
- Extremely high chip removal rates, also in weak or under powered machines
- Precise perpendicular 90° shoulder milling
- Differential pitch to reduce risk of vibration
- Highly suitable for small dimension slot milling in roughing and finishing



- Please note that our LT 751 milling cutters are not multi-functional. Although it is possible to assemble our APKT 060204 PDTR inserts on both LT 751 and LT 752, the APKT 0602-HF and APKW 0604-HF inserts can only be assembled on our LT 752 line.

# SMALL INSERTS GREATER EFFICIENCY INCREASED PRODUCTIVITY



∅16 END MILL  
APKT 0602-HF / 4 TEETH



∅16 END MILL  
APKT 1003 PDTR / 2 TEETH

## COMPARED WITH LARGER INSERTS

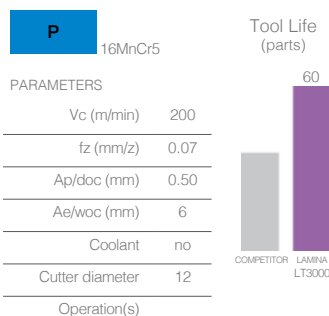
- More teeth per diameter increase the effective feed rate
- Lower feed per tooth for smoother cut with less cutting forces, an advantage for weak or under powered machines
- Minimum of 2 teeth, even in the smallest cutter diameter (10mm), provides greater stability

## COMPARED WITH SOLID END MILLS

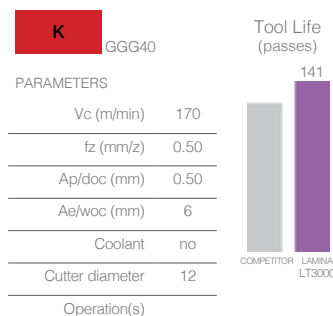
- Replaces solid end mills in roughing to semi-finishing with substantial cost savings
- No regrinding necessary. Simply exchange the insert cutting edge.
- Minimal carbide used per insert which means lower cost both financially and environmentally
- Steel cutter body improves resistance to shock and instability

## Test Reports

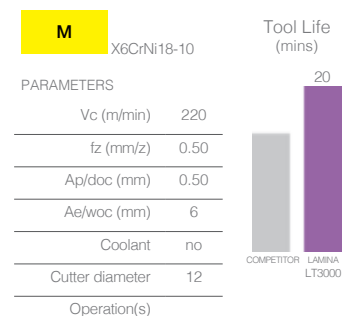
### APKT 060204 PDTR



### APKW 0602-HF






### APKT 0602-HF






# THREE INSERTS TWO GRADES

## APKT / APKW

### MAGIA PRO

| DESIGNATION      | GRADE   | RADIUS (mm) | R <sub>PROG</sub> | CUTTING EDGES | CUTTER LINE | MATERIAL RECOMMENDATION   | CATALOG # |
|------------------|---------|-------------|-------------------|---------------|-------------|---|-----------|
| APKT 060204 PDTR | LT 3130 | 0.40        |                   | 2             | LT 752      |  | M0004468  |
| APKT 0602-HF     | LT 3130 |             | 1.20              | 2             | LT 752      |  | M0004469  |
| APKW 0602-HF     | LT 3130 |             | 1.20              | 2             | LT 752      |  | M0004472  |

### MAGIA

| DESIGNATION      | GRADE   | RADIUS (mm) | R <sub>PROG</sub> | CUTTING EDGES | CUTTER LINE | MATERIAL RECOMMENDATION   | CATALOG # |
|------------------|---------|-------------|-------------------|---------------|-------------|---|-----------|
| APKT 060204 PDTR | LT 3000 | 0.40        |                   | 2             | LT 752      |  | M0004026  |
| APKT 0602-HF     | LT 3000 |             | 1.20              | 2             | LT 752      |  | M0004296  |
| APKW 0602-HF     | LT 3000 |             | 1.20              | 2             | LT 752      |  | M0004297  |

## MAGIA GRADES

### CHOOSE THE RIGHT PREMIUM MILLING GRADE

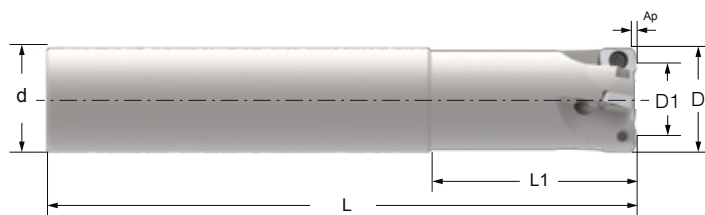
#### LT 3000 - RECOMMENDED FOR GENERAL USE

- Progressive and predictable wear. The silver top layer of our Multi-Mat™ LT 3000 shows higher contrast on worn edges making it easy to identify which edges have been used and the level of wear development.
- More flexibility and extended application range. With a more tolerant coating, LT 3000 permits added flexibility and a wider application range as it can be applied at higher and lower cutting speeds than LT 30.

#### LT 3130 - RECOMMENDED FOR STEELS & STAINLESS STEELS

- Magia Pro LT 3130 has been specifically designed for remarkable performance in steels and stainless steels
- Low friction coefficient reduces heat generation and provides excellent thermal stability for milling at high speeds
- Higher hardness delivers substantial improvement in tool life and exceptional wear resistance leading to fewer production stops

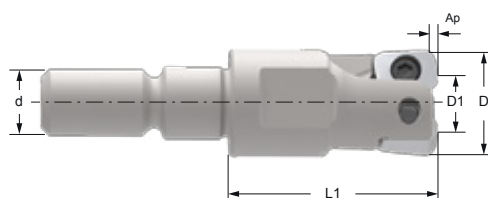
# CUTTER RANGE



## END MILL - APKT 060204 / APKT 0602-HF / APKW 0602-HF

| DESIGNATION        | D  | D1 HF | d  | L   | L1   | Ap HF | Ap 90° | Z | α HF | α 90° | CATALOG # |
|--------------------|----|-------|----|-----|------|-------|--------|---|------|-------|-----------|
| LT 752 C-W-D010/2  | 10 | 4.7   | 10 | 72  | 16   | 0.5   | 5.2    | 2 | 3.25 | 3.0   | M2003098  |
| LT 752 C-W-D012/3  | 12 | 6.7   | 12 | 80  | 26   | 0.5   | 5.2    | 3 | 2.5  | 2.2   | M2003099  |
| LT 752 CL-W-D012/3 | 12 | 6.7   | 10 | 120 | 13.5 | 0.5   | 5.2    | 3 | 2.5  | 2.2   | M2003078  |
| LT 752 C-W-D016/4  | 16 | 10.7  | 16 | 90  | 32   | 0.5   | 5.2    | 4 | 2.0  | 1.5   | M2003100  |
| LT 752 CL-W-D016/3 | 16 | 10.7  | 14 | 160 | 13.5 | 0.5   | 5.2    | 3 | 2.0  | 1.5   | M2003105  |
| LT 752 C-W-D020/5  | 20 | 14.7  | 20 | 100 | 40   | 0.5   | 5.2    | 5 | 1.25 | 1.15  | M2003101  |
| LT 752 CL-W-D020/4 | 20 | 14.7  | 18 | 200 | 13.5 | 0.5   | 5.2    | 4 | 1.25 | 1.15  | M2003080  |
| LT 752 C-W-D025/7  | 25 | 19.7  | 20 | 120 | 40   | 0.5   | 5.2    | 7 | 1.0  | 0.9   | M2003102  |
| LT 752 CL-W-D025/6 | 25 | 19.7  | 20 | 220 | 15   | 0.5   | 5.2    | 6 | 1.0  | 0.9   | M2003081  |

SCREW M2001640  
 SCREW DRIVER HANDLE M2002922  
 PRESET ADAPTER 0.4NM M2002923  
 TORX PLUS BIT M2003064



## SCREW COUPLING - APKT 060204 / APKT 0602-HF / APKW 0602-HF

| DESIGNATION       | D  | D1 HF | d   | L1 | Ap HF | Ap 90° | Z | α HF | α 90° | CATALOG # |
|-------------------|----|-------|-----|----|-------|--------|---|------|-------|-----------|
| LT 752 S-W-D010/2 | 10 | 4.7   | M6  | 19 | 0.5   | 5.2    | 2 | 3.25 | 3.0   | M2003087  |
| LT 752 S-W-D012/3 | 12 | 6.7   | M6  | 19 | 0.5   | 5.2    | 3 | 2.5  | 2.2   | M2003088  |
| LT 752 S-W-D016/4 | 16 | 10.7  | M8  | 22 | 0.5   | 5.2    | 4 | 2.0  | 1.5   | M2003089  |
| LT 752 S-W-D020/5 | 20 | 14.7  | M10 | 25 | 0.5   | 5.2    | 5 | 1.25 | 1.15  | M2003090  |
| LT 752 S-W-D025/7 | 25 | 19.7  | M12 | 25 | 0.5   | 5.2    | 7 | 1.0  | 0.9   | M2003091  |
| LT 752 S-W-D032/8 | 32 | 26.7  | M16 | 30 | 0.5   | 5.2    | 8 | 0.7  | 0.7   | M2003094  |

SCREW M2001640  
 SCREW DRIVER HANDLE M2002922  
 PRESET ADAPTER 0.4NM M2002923  
 TORX PLUS BIT M2003064

Due to the small size of these inserts, using a pre-set torque screw driver (0.4Nm) at all times is recommended. It is also recommended that during mounting, the insert should be held in place with a finger.

# NEW MULTI PACK END MILL KIT



Lamina Technologies is pleased to introduce the multi-function milling kit.

Included in the kit are three of the most popular cutter diameters (ø10 mm, 12 mm, 16 mm) as well as a preset torque screw driver specifically indicated for use with these small inserts and screws.

Also included are ten pieces each APKT 060204 PDTR and our NEW APKT 0602-HF and APKW 0602-HF, only available in Lamina's premium LT 3000 Multi-Mat™ grade.

**KIT# K0003696**

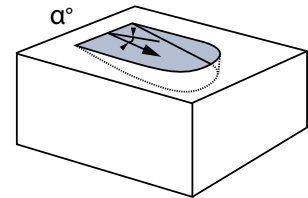
| DESIGNATION              | CATALOG # | QTY |
|--------------------------|-----------|-----|
| APKT 060204 PDTR LT 3000 | M0004026  | 10  |
| APKT 0602-HF LT 3000     | M0004296  | 10  |
| APKW 0602-HF LT 3000     | M0004297  | 10  |
| LT 752 C-W-D010/2        | M2003098  | 1   |
| LT 752 C-W-D012/3        | M2003099  | 1   |
| LT 752 C-W-D016/4        | M2003171  | 1   |
| Screw Driver Handle      | M2002922  | 1   |
| Preset Adapter 0.4NM     | M2002923  | 1   |
| Torx Plus Bit            | M2003064  | 1   |

# PROGRAMMING INFORMATION

## Application Parameters

SHOULDER MILLING - APKT 060204-PDTR

| D  | $\alpha^\circ$ max. for linear ramping | Ap max. for linear ramping | Ae max. for linear plunging | Helical Milling |        |        |        |
|----|--|----------------------------|-----------------------------|-----------------|--------|--------|--------|
|    |  |                            |                             | C min.          | P max. | C max. | P max. |
| 10 | 7                                      | 5.2                        | 0.6                         | 14              | 0.9    | 19     | 3.0    |
| 12 | 5                                      | 5.2                        | 0.6                         | 18              | 0.9    | 23     | 2.5    |
| 16 | 2.4                                    | 5.2                        | 0.6                         | 26              | 0.9    | 31     | 2.0    |

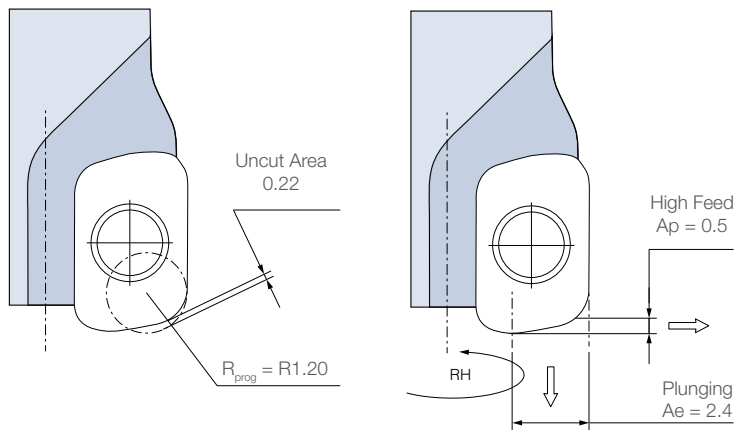


HIGH FEED MILLING - APKT & APKW 0602-HF

| D  | D1   | $\alpha^\circ$ max. for linear ramping | Ap max. for linear ramping | Ae max. for linear plunging | Helical Milling |        |        |        |
|----|------|--|----------------------------|-----------------------------|-----------------|--------|--------|--------|
|    |      |  |                            |                             | C min.          | P max. | C max. | P max. |
| 10 | 4.7  | 7                                      | 0.5                        | 2.2                         | 14.7            | 0.5    | 18     | 0.5    |
| 12 | 6.7  | 5                                      | 0.5                        | 2.2                         | 18.7            | 0.5    | 22     | 0.5    |
| 16 | 10.7 | 2.4                                    | 0.5                        | 2.2                         | 26.7            | 0.5    | 30     | 0.5    |

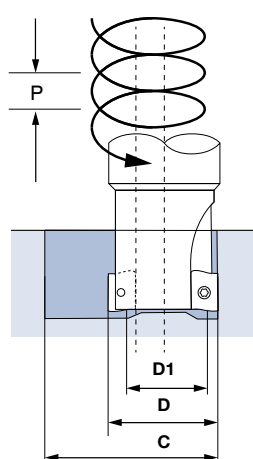
## Programming Radius

Uncut Area = Uncut thickness, maximum mismatch between programmed corner radii ( $R_{prog}$ ) and generated machined profile.

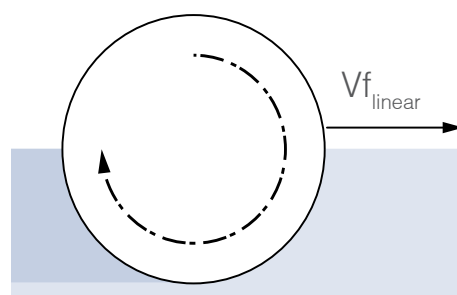


## Helical Milling

For circular movements like helical milling, the table feed must be slower and can be compensated by the factor like shown.

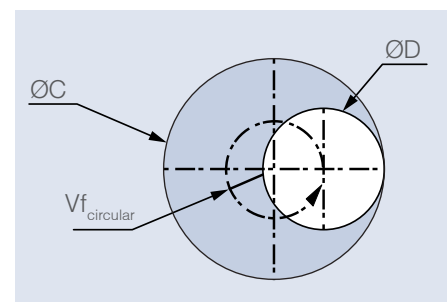


LINEAR MILLING



$$Vf_{linear} = fz \times RPM \times Z$$

CIRCULAR MILLING



$$Vf_{circular} = ((C-D)/C) \times Vf_{linear}$$



**LAMINA**  
TECHNOLOGIES

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