

Made in ITALY

12



UTENSILI
PER FRESATURA
MILLING TOOLS



12

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INSERTI
per FRESATURA

MILLING
INSERTS



LEGENDA / KEY

| CODE | Forma Form |
|------|---------------|
|------|---------------|

| | |
|----------|--|
| S | A spigolo Square  |
| A | Parallelogramma 85° Parallelogramm 85°  |
| R | Rotondo Round  |

1 Forma inserto
Insert form

| CODE | Tolleranza altezza punta M Tolerance M - class (mm) | Tolleranza del cerchio inscritto IC Tolerance incircle IC (mm) | Tolleranza S Tolerance S (mm) |
|------|---|--|-------------------------------------|
|------|---|--|-------------------------------------|




| | | | |
|----------|---------|-----------------|---------|
| K | ± 0.013 | ± 0.05 – ± 0.15 | ± 0.025 |
|----------|---------|-----------------|---------|

3 Classe di tolleranza / Tolerances



A P K T

2 Angolo di spoglia
Clearance angle

| CODE | Angolo Angle |
|------|-----------------|
|------|-----------------|

| | |
|----------|---|
| D | 15°  |
| E | 20°  |
| P | 11°  |

4 Tipo di inserto / Insert type

| Metrico / Metric | | | | |
|------------------|-----------------------|---|--------------------------------|---|
| CODE | Foro Hole | Configurazione foro Hole configuration | Rompi trucioli Chip breaker | Figura Insert shape |
| W | con foro with hole | cilindrica + svasatura (40–60°) cylindrical hole + reduction single side (40–60°) | NO |  |
| T | con foro with hole | cilindrica + svasatura (40–60°) cylindrical hole + reduction single side (40–60°) | unilaterale single side |  |

PANORAMICA OVERVIEW

| Geometria Grade | ISO | Intervallo di elaborazione Application range | | | | | | | | | Gruppi di materiale Material group | | | | | | | |
|--------------------|--------|---|----|----|----|----|----|----|----|----|---------------------------------------|----|-----------------------------|--|--|--|---|---|
| | | 01 | 05 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | P Acciaio / Steel | | | | | |
| P25M | HC-P25 | | | | | | | | | | | | | | | | • | |
| P35M | HC-P35 | | | | | | | | | | | | | | | | | • |

Picco di applicazione
Application peak



Gamma completa per ISO 513
Full range to ISO 513

LEGENDA / KEY

| Simbolo / Insert shape | | | Ø del cerchio inserito Incircle diameter (mm) |
|------------------------|----|----|---|
| | | | 07 7.00 |
| | 10 | 10 | 10.00 |
| | | 12 | 12.00 |
| 12 | | | 12.70 |
| | 16 | 16 | 16.00 |

| CODE | Spessore Thickness (mm) |
|------|-------------------------------|
| 02 | 2.38 |
| 03 | 3.18 |
| T3 | 3.97 |
| 04 | 4.76 |

5 Lunghezza di taglio / Cutting edge length

6 Spessore dell'inserto / Insert thickness

5 **10** **6** **03** **7** **PD**

| 7 Codice rompitruciolo / Chipbreaker code | |
|--|---|
| Direzione di taglio / Cutting direction | |
| Code | Direzione di taglio Cutting direction |
| R | Destra / Right |
| L | Sinistra / Left |
| N | Neutro / Neutral |
| Condizioni di taglio / Cutting edge | |
| Code | Forma / Shape |
| S | Spigolo arrotondato e smussato Chamfered and rounded |

RIVESTIMENTO - RACCOMANDAZIONI D'USO GRADES OVERVIEW - APPLICATION RECOMMENDATION

P25M

Rivestito in PVD (carburo rivestito) particolarmente adatto per elevate velocità di taglio su lavorazioni a secco e a umido in condizioni stabili.

Grado multiuso per la fresatura di acciaio legati ed inossidabili.

Multi purpose grade for milling unalloyed, low alloyed, high alloyed and stainless steel. The PVD coated grade is especially suitable for high cutting speeds on dry / wet machining under stable conditions.

P35M

Rivestito in PVD (carburo rivestito) per fresatura universale dell'acciaio in combinazione con un angolo di avvicinamento di 90°. Particolarmente adatto per la fresatura a secco a velocità di taglio medio-basse in condizioni difficili.

Universal steel milling grade in combination with 90° approach angle. A PVD layer and a tough carbide grade for milling of the most usual steel qualities. Especially good suitable for dry milling at low to medium cutting speeds under difficult conditions.

AVANZAMENTI (FORMULE) / FEED (FORMULAS)

| | | |
|---|---|---|
| N° giri mandrino Spindle speed | Velocità di taglio Cutting speed | v_c Velocità di taglio Cutting speed |
| n (min^{-1}): $n = \frac{v_c \cdot 1000}{\pi \cdot d_1}$ | v_c (m/min): $v_c = \frac{n \cdot \pi \cdot d_1}{1000}$ | n N° giri mandrino Spindle speed |
| Velocità di avanzamento Feed rate | Avanzamento per dente Feed per tooth | d_1 Ø di taglio cutter Ø |
| V_f (mm/min): $V_f = f_z \cdot z \cdot n$ | f_z (mm): $f_z = \frac{V_f}{z \cdot n}$ | v_f Velocità di avanzamento Feed rate |
| | | f_z Avanzamento per dente Feed per tooth |
| | | z N° di denti Number of teeth |

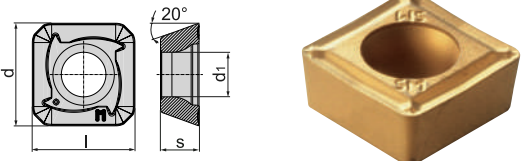
INSERTI PER FRESATURA 45° / 45° MILLING INSERTS

SE.. 12..

| Geometria inserto Insert geometry | Profondità di taglio Cutting depth (mm) a_p max | Avanzamenti Feed (mm) f_z |
|--------------------------------------|---|-----------------------------------|
| LP | 1 4 6 | 0,16 0,25 0,35 |

RACCOMANDAZIONI SULLA VELOCITÀ DI TAGLIO PER FRESATURA A 45° CUTTING SPEED RECOMMENDATIONS FOR MILLING CUTTER 45°

| Materiale Material | Lavorazione a secco Dry machining | Vc m/min | |
|--|--------------------------------------|----------|---------|
| | | P25M | P35M |
| P Acciaio strutturale Structural steel | • | 190-290 | 150-230 |
| Acciaio trattato termicamente Heat treated steel | • | 160-230 | 130-180 |
| Acciaio per utensili Tool steel | • | 145-210 | 110-160 |
| Acciaio trattato termicamente (alta resistenza) Heat treated steel (high strength) | • | 110-170 | |

| ART. | l | d | s | d_1 | Rivestimento Coated | |
|---|-------|-------|------|-------|------------------------|------|
|  | | | | | P | |
| | | | | | P25M | P35M |
| SEKT1204AFSN-LP-P25M | 12,70 | 12,70 | 4,76 | 5,5 | • | |

AVANZAMENTI (FORMULE) / FEED (FORMULAS)

| | | |
|--|---|---|
| N° giri mandrino Spindle speed | Velocità di taglio Cutting speed | V_c Velocità di taglio Cutting speed |
| n (min ⁻¹): $n = \frac{V_c \cdot 1000}{\pi \cdot d_1}$ | v_c (m/min): $v_c = \frac{n \cdot \pi \cdot d_1}{1000}$ | n N° giri mandrino Spindle speed |
| Velocità di avanzamento Feed rate | Avanzamento per dente Feed per tooth | d_1 Ø di taglio cutter Ø |
| V_f (mm/min): $V_f = f_z \cdot z \cdot n$ | f_z (mm): $f_z = \frac{V_f}{z \cdot n}$ | V_f Velocità di avanzamento Feed rate |
| | | f_z Avanzamento per dente Feed per tooth |
| | | z N° di denti Number of teeth |

INSERTI PER FRESATURA 90° / 90° MILLING INSERTS

APT 10..

| Geometria inserto Insert geometry | Profondità di taglio Cutting depth (mm) a_p max | Avanzamenti Feed (mm) f_z |
|--------------------------------------|---|-----------------------------------|
| LP2 | 0,5 3 9 | 0,1 0,15 0,2 |

APT 16..

| Geometria inserto Insert geometry | Profondità di taglio Cutting depth (mm) a_p max | Avanzamenti Feed (mm) f_z |
|--------------------------------------|---|-----------------------------------|
| LP2 | 1 8 15 | 0,1 0,15 0,2 |

RACCOMANDAZIONI SULLA VELOCITÀ DI TAGLIO PER FRESATURA A 90° CUTTING SPEED RECOMMENDATIONS FOR MILLING CUTTER 90°

| | Materiale Material | Lavorazione a secco Dry machining | V_c m/min | |
|----------|--|--------------------------------------|-------------|---------|
| | | | P25M | P35M |
| P | Acciaio strutturale Structural steel | • | 190-290 | 150-230 |
| | Acciaio trattato termicamente Heat treated steel | • | 160-230 | 130-180 |
| | Acciaio per utensili Tool steel | • | 145-210 | 110-160 |
| | Acciaio trattato termicamente (alta resistenza) Heat treated steel (high strength) | • | 110-170 | |

| ART. | l | d | s | d_1 | r | Rivestimento Coated | |
|----------------------|----|------|------|-------|-----|------------------------|------|
| | | | | | | P | |
| | | | | | | P25M | P35M |
| APKT1003PDSR-LP-P35M | 10 | 6,7 | 3,5 | 2,8 | 0,5 | | • |
| APKT1604PDSR-LP-P35M | 16 | 9,52 | 5,26 | 4,5 | 0,8 | | • |



AVANZAMENTI (FORMULE) / FEED (FORMULAS)

| | | |
|--|---|---|
| N° giri mandrino Spindle speed | Velocità di taglio Cutting speed | v_c Velocità di taglio Cutting speed |
| n (min ⁻¹): $n = \frac{v_c \cdot 1000}{\pi \cdot d_1}$ | v_c (m/min): $v_c = \frac{n \cdot \pi \cdot d_1}{1000}$ | n N° giri mandrino Spindle speed |
| Velocità di avanzamento Feed rate | Avanzamento per dente Feed per tooth | d_1 Ø di taglio cutter Ø |
| V_f (mm/min): $V_f = f_z \cdot z \cdot n$ | f_z (mm): $f_z = \frac{V_f}{z \cdot n}$ | v_f Velocità di avanzamento Feed rate |
| | | f_z Avanzamento per dente Feed per tooth |
| | | z N° di denti Number of teeth |

INSERTI PER FRESATURA 3D / 3D MILLING INSERTS

RD.. 0702..

| Geometria inserto Insert geometry | Profondità di taglio Cutting depth (mm) a_p max | Avanzamenti Feed (mm) f_z |
|--------------------------------------|---|-----------------------------------|
| LP | 0,25 1 1,7 | 0,14 0,27 0,6 |

RD.. 1003..

| Geometria inserto Insert geometry | Profondità di taglio Cutting depth (mm) a_p max | Avanzamenti Feed (mm) f_z |
|--------------------------------------|---|-----------------------------------|
| LP | 0,28 1,5 2,5 | 0,15 0,28 0,64 |

RD.. 12T3..

| Geometria inserto Insert geometry | Profondità di taglio Cutting depth (mm) a_p max | Avanzamenti Feed (mm) f_z |
|--------------------------------------|---|-----------------------------------|
| LP | 0,3 1,8 3 | 0,16 0,29 0,7 |

RD.. 1604..

| Geometria inserto Insert geometry | Profondità di taglio Cutting depth (mm) a_p max | Avanzamenti Feed (mm) f_z |
|--------------------------------------|---|-----------------------------------|
| LP | 0,3 2,4 4 | 0,18 0,3 0,75 |

RACCOMANDAZIONI SULLA VELOCITÀ DI TAGLIO PER FRESATURA 3D CUTTING SPEED RECOMMENDATIONS FOR 3D MILLING CUTTER

| | Materiale Material | Lavorazione a secco Dry machining | Vc m/min | |
|----------|--|--------------------------------------|----------|---------|
| | | | P25M | P35M |
| P | Acciaio strutturale Structural steel | • | 200-300 | 170-260 |
| | Acciaio trattato termicamente Heat treated steel | • | 180-280 | 150-240 |
| | Acciaio per utensili Tool steel | • | 160-250 | 140-220 |
| | Acciaio trattato termicamente (alta resistenza) Heat treated steel (high strength) | • | 130-180 | |

| ART. | d | s | d ₁ | Rivestimento Coated | | |
|------|----------------------------|----|----------------|------------------------|------|--|
| | | | | P | | |
| | | | | P25M | P35M | |
| | RDKW0702MOS-LP-P25M | 7 | 2,38 | 2,7 | • | |
| | RDKW1003MOS-LP-P25M | 10 | 3,18 | 3,9 | • | |
| | RDKW12T3MOS-LP-P25M | 12 | 3,97 | 3,9 | • | |
| | RDKW1604MOS-LP-P25M | 16 | 4,76 | 5,2 | • | |



UTENSILI
per FRESATURA

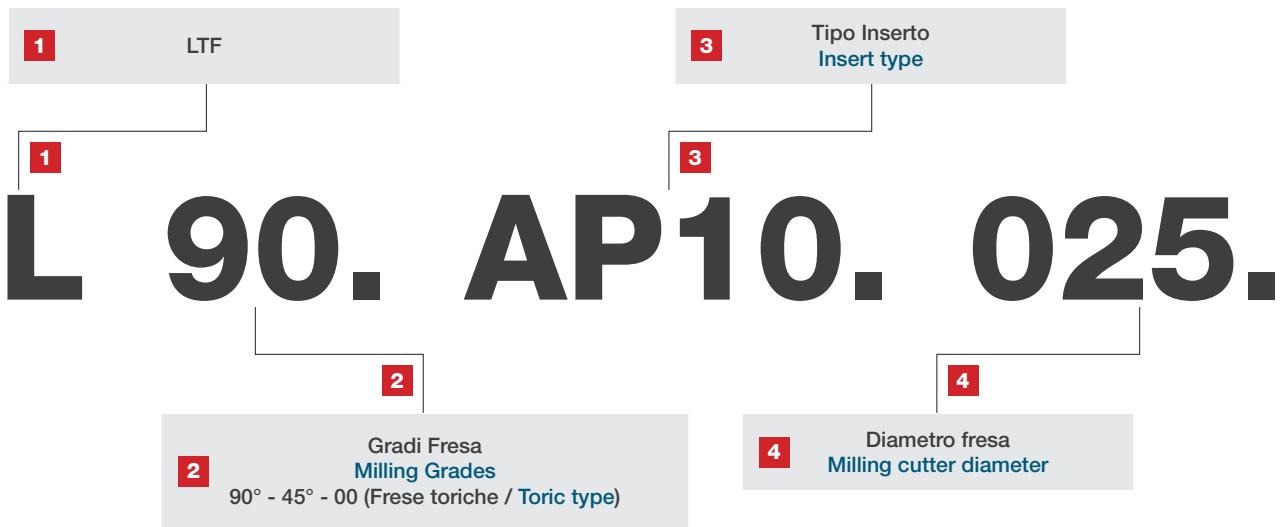
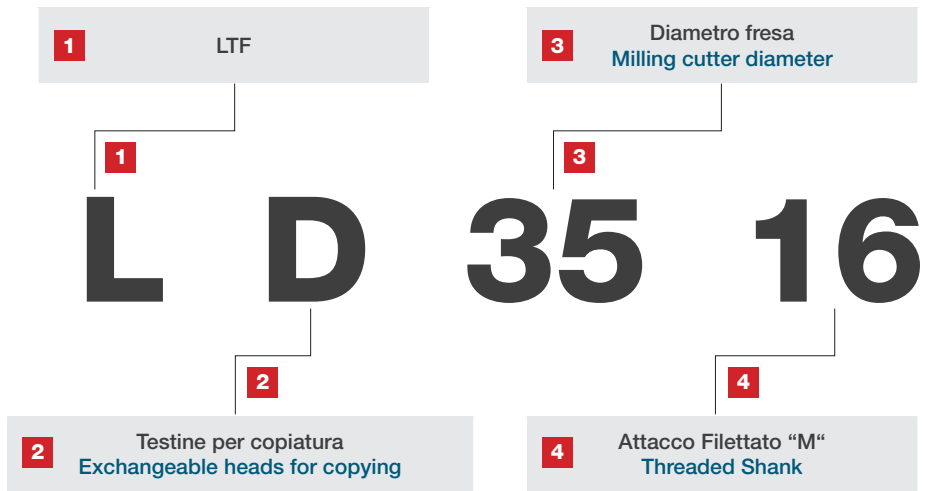
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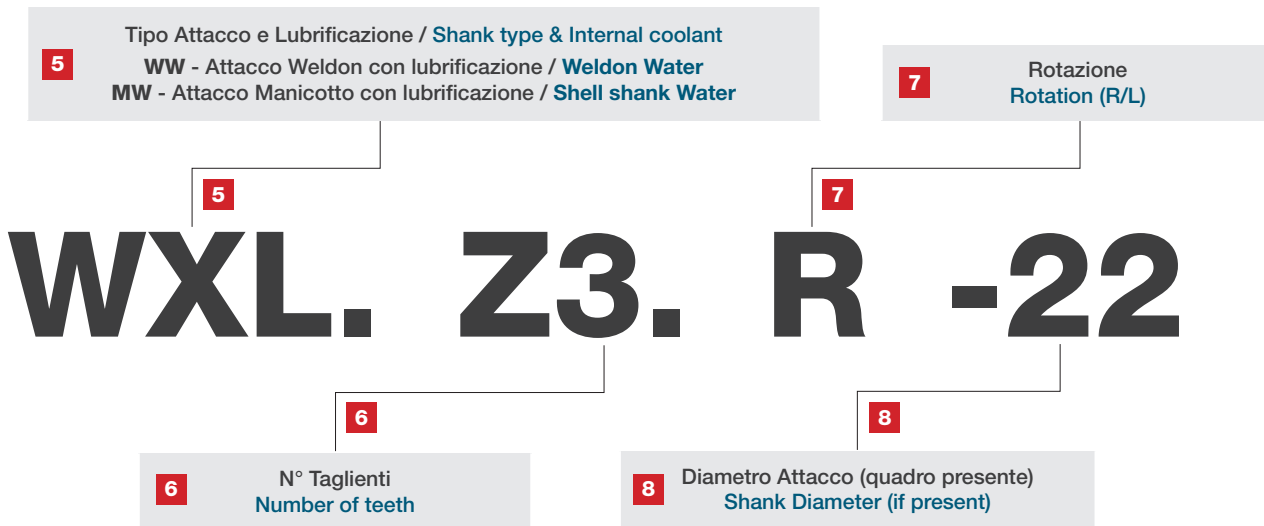
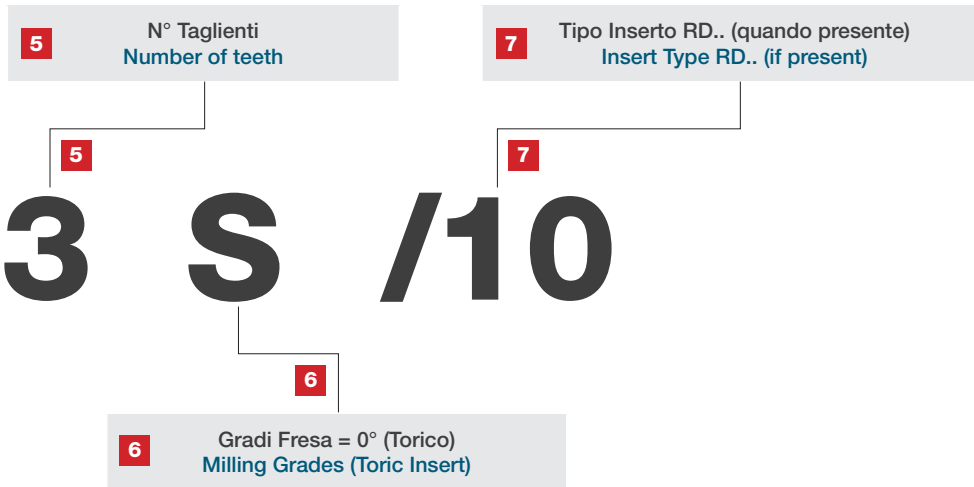


LEGENDA / KEY

**SISTEMA DI CODIFICA FRESE STANDARD
STANDARD MILLING CUTTERS CODIFICATION SYSTEM**

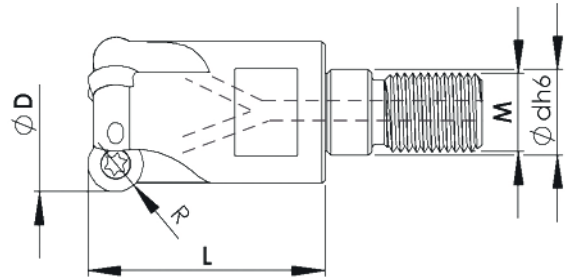




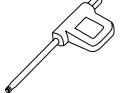


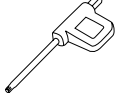


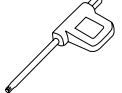


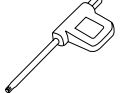


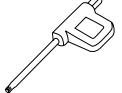
LEGENDA / KEY



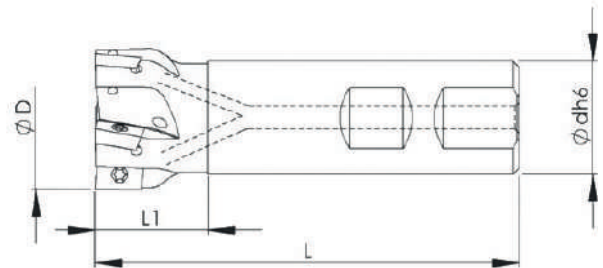
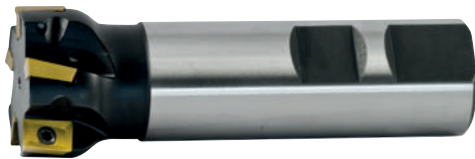
UTENSILI PER FRESATURA / MILLING TOOLS

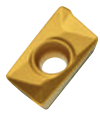


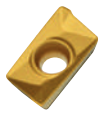


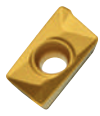


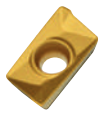


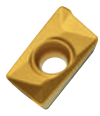


TESTINE PER FRESATURE EXCHANGEABLE HEADS FOR MILLING



| ART. | Attacco filettato / Threaded Shank | | | | | | Inserti (non inclusi) Insert (not included) | Vite di fissaggio Fixing screw | Torx Key |
|--------------------|------------------------------------|----|----|-------|---|-----|---|---|---|
| | Ø D | L | M | Ø dh6 | Z | R | | | |
| LD1683S | 16 | 23 | 8 | 8,5 | 3 | 3,5 |  |  |  |
| LD20104S | 20 | 30 | 10 | 10,5 | 4 | 3,5 |  |  |  |
| LD20102S | 20 | 30 | 10 | 10,5 | 2 | 5 |  |  |  |
| LD25123S | 25 | 35 | 12 | 12,5 | 3 | 5 |  |  |  |
| LD35163S/10 | 35 | 43 | 16 | 17 | 3 | 5 |  |  |  |

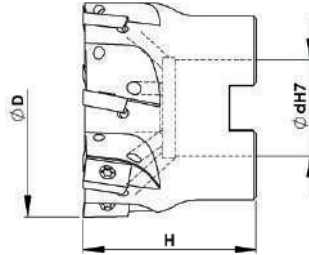
FRESE PER SPALLAMENTI 90° SHOULDER MILLING CUTTERS 90°

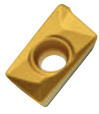

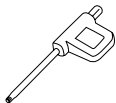


| ART. | Serie normale attacco Weldon Standard Series Weldon Shank | | | | | Inserti (non inclusi) Insert (not included) | Vite Screw | Torx Key |
|------------------------|--|----|----|-------|---|---|---|---|
| | Ø D | L1 | L | Ø dh6 | Z | | | |
| L90AP10012WWZ1R | 12 | 24 | 80 | 16 | 1 |  |  |  |
| L90AP10016WWZ2R | 16 | 25 | 85 | 16 | 2 |  |  |  |
| L90AP10020WWZ3R | 20 | 25 | 90 | 20 | 3 |  |  |  |
| L90AP10025WWZ4R | 25 | 25 | 95 | 25 | 4 |  |  |  |
| L90AP10032WWZ5R | 32 | 26 | 95 | 25 | 5 |  |  |  |

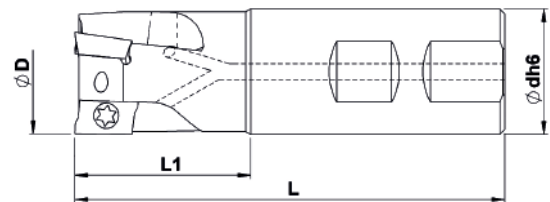
UTENSILI PER FRESATURA / MILLING TOOLS

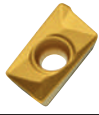


FRESE PER SPALLAMENTI 90° SHOULDER MILLING CUTTERS 90°



| ART. | Attacco a manicotto Shell Shank | | | | Inserti (non inclusi) Insert (not included) | Vite Screw | Torx Key |
|--------------------|------------------------------------|----|-------|---|---|---|---|
| | Ø D | H | Ø dh7 | Z | | | |
| L90AP10040MWZ6R-22 | 40 | 40 | 22 | 6 |  |  |  |
| L90AP10050MWZ5R | 50 | 40 | 22 | 5 | AP..1003 | LVM2506 | T08 |
| L90AP10063MWZ6R | 63 | 40 | 22 | 6 | AP..1003 | LVM2506 | T08 |

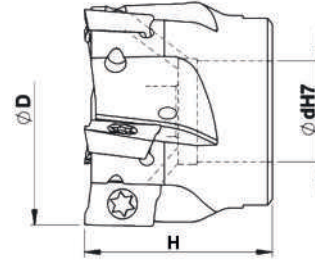
FRESE PER SPALLAMENTI 90° SHOULDER MILLING CUTTERS 90°



| ART. | Serie normale attacco Weldon Standard Series Weldon Shank | | | | | Inserti (non inclusi) Insert (not included) | Vite Screw | Torx Key |
|-----------------|--|----|-----|-------|---|--|---|---|
| | Ø D | L1 | L | Ø dh6 | Z | | | |
| L90AP16025WWZ2R | 25 | 44 | 100 | 25 | 2 |  |  |  |
| L90AP16032WWZ3R | 32 | 50 | 110 | 32 | 3 | AP..1604 | LVM4010 | T15 |

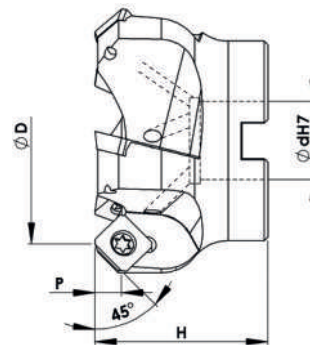
UTENSILI PER FRESATURA / MILLING TOOLS

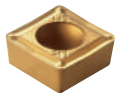


FRESE PER SPALLAMENTI 90° SHOULDER MILLING CUTTERS 90°



| ART. | Attacco a manicotto Shell Shank | | | | Inserti (non inclusi) Insert (not included) | Vite Screw | Torx Key |
|-----------------|------------------------------------|----|-------|---|--|---|---|
| | Ø D | H | Ø dh7 | Z | | | |
| L90AP16040MWZ4R | 40 | 40 | 16 | 4 |  |  |  |
| L90AP16050MWZ5R | 50 | 40 | 22 | 5 | AP..1604 | LVM4010 | T15 |
| L90AP16063MWZ5R | 63 | 40 | 22 | 5 | AP..1604 | LVM4010 | T15 |
| L90AP16080MWZ6R | 80 | 50 | 27 | 6 | AP..1604 | LVM4010 | T15 |

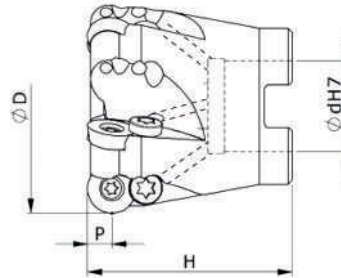
FRESE PER SPIANATURE 45° FACE MILLING CUTTERS 45°



| ART. | Attacco a manicotto Shell Shank | | | | | Inserti (non inclusi) Insert (not included) | Vite Screw | Torx Key |
|-----------------|------------------------------------|----|-------|---|---|---|---|---|
| | Ø D | H | Ø dh7 | P | Z | | | |
| L45SE12050MWZ4R | 50 | 48 | 22 | 6 | 4 |  |  |  |
| L45SE12063MWZ5R | 63 | 48 | 22 | 6 | 5 | SE..1204 | LVM5010 | T20 |
| L45SE12080MWZ6R | 80 | 50 | 27 | 6 | 6 | SE..1204 | LVM5010 | T20 |

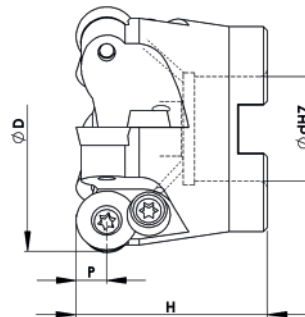
UTENSILI PER FRESATURA / MILLING TOOLS

FRESE TORICHE PER SPIANATURE E COPIATURE TORIC MILLING CUTTERS FOR FACING AND COPYING



| ART. | Attacco a manicotto Shell Shank | | | | | Inserti (non inclusi) Insert (not included) | Vite Screw | Vite di fissaggio Fixing screw | Torx Key |
|-------------------|------------------------------------|----|----------|---|---|--|---------------|---|-------------|
| | Ø D | H | Ø dh7 | P | Z | | | | |
| L00RD12T3040MWZ4R | 40 | 40 | 16 | 6 | 4 | | | | |
| L00RD12T3050MWZ5R | 50 | 50 | 22 | 6 | 5 | | | | |
| L00RD12T3063MWZ6R | 63 | 50 | 22 | 6 | 6 | | | | |
| L00RD12T3080MWZ7R | 80 | 50 | 27 | 6 | 7 | | | | |

FRESE TORICHE PER SPIANATURE E COPIATURE TORIC MILLING CUTTERS FOR FACING AND COPYING



| ART. | Attacco a manicotto Shell Shank | | | | | Inserti (non inclusi) Insert (not included) | Vite per inserto Screw for Insert | Rondella Lock Washer | Vite per rondella Screw Lock Washer | Torx Key |
|-----------------|------------------------------------|----|----------|---|---|--|--|----------------------------|--|-------------|
| | Ø D | H | Ø dh7 | P | Z | | | | | |
| L00RD16052MWZ4R | 52 | 50 | 22 | 8 | 4 | | | | | |
| L00RD16063MWZ5R | 63 | 50 | 27 | 8 | 5 | | | | | |
| L00RD16066MWZ5R | 66 | 50 | 27 | 8 | 5 | | | | | |
| L00RD16080MWZ6R | 80 | 50 | 27 | 8 | 6 | | | | | |

