

FRESE POWER:

- Ridurre il numero di utensili necessari
- Offrire un'eccellente evacuazione dei trucioli
- Ottenere la massima produttività
- Aumentare i volumi di trucioli asportati
- Aumentare la velocità di taglio
- Garantire precisione
- Ridurre i costi di produzione
- Fornire una lunga durata dell'utensile

POWER END MILLS:

- Reducing the number of necessary tools
- Offering an excellent chip evacuation
- Obtaining maximum productivity
- Increasing the volumes of eliminated chips
- Increasing cutting speed
- Guaranteeing precision
- Reducing production costs
- Allowing a long tool life

POWER FRÄSER:

- Reduziert die Anzahl der benötigten Werkzeuge
- Bietet eine ausgezeichnete Spababfuhr
- Erhalten Sie die maximale Produktivität
- Erhöhung die Volumens der Spababfuhr
- Erhöhung der Schnittgeschwindigkeit
- Gewährleistung der Genauigkeit
- Reduzierung der Produktionskosten
- Ermöglichen eine lange Lebensdauer

FRAISES POWER:

- Réduire le numéro des outils pas nécessaires
- Offrir une très bonne évacuation du copeau
- Obtenir la meilleure productivité
- Augmenter les volumes du copeau évacué
- Augmenter la vitesse de coupe

- Assurer précision
- Réduire le coût de production
- Permettre une longue durée de vie l'outil

FRESAS POWER:

- Reducir el número de herramientas innecesarias
- Ofrecer una excelente evacuación de virutas
- Obtener la máxima productividad
- Incrementar el volumen de evacuación de virutas
- Incrementar (aumentando) la velocidad de corte
- Asegurar precisión
- Reducir los costes de producción
- Permitir una larga vida de herramienta

Frese Power



2015



FRESE A CANDELA POWER con testa Piana e Toriche



POWER END MILLS WITH FLAT HEAD OR TORIC



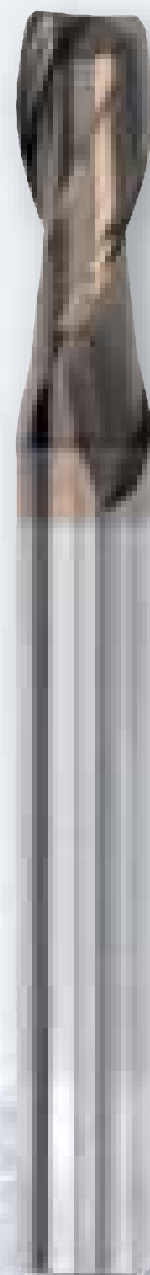
POWER FRÄSER MIT FLACHER STIRNSCHNEIDE ODER TORUS



FRAISES POWER À BOUT PLAT OU TORIQUES



FRESAS POWER DE CABEZA LLANA O TÓRICAS



FRESE POWER A CANDELA

A 2 TAGLI IN MICROGRANA ULTRAFINE

POWER END MILLS - 2 FLUTES - SUB-MICROGRAIN
 POWER FRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN
 FRAISES POWER - 2 DENTS - MICRO-GRAIN ULTRAFIN
 FRESAS POWER - 2 LABIOS - SUB-MICROGRANO

SERIE NORMALE

NORMAL SERIES
 NORMAL AUSFÜHRUNG
 SÉRIE NORMALE
 SERIE NORMAL



1417XT

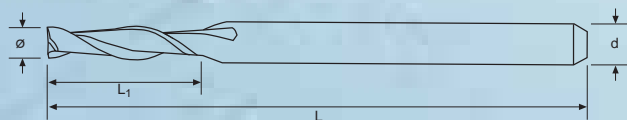
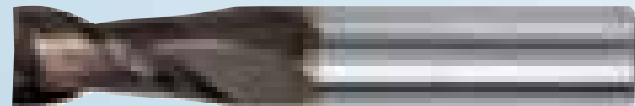


Ø mm	L mm	L ₁ mm	d mm	Z	1417XT €
0.3	38	1	3	2	23,65
0.4	38	2.5	3	2	23,65
0.5	38	2.5	3	2	23,65
0.6	38	3	3	2	23,65
0.8	38	4	3	2	23,65
1	38	5	3	2	23,65
1.2	38	5	3	2	23,65
1.5	38	5	3	2	23,65
1.6	38	6	3	2	23,65
1.8	38	6	3	2	23,65
2	38	9	3	2	23,65
2.4	38	10	3	2	23,65
2.5	38	10	3	2	23,65
2.8	38	10	3	2	23,65
3	38	12	3	2	23,65

1412XT



Ø mm	L mm	L ₁ mm	d mm	Z	1412XT €
1	39	3	3	2	18,85
1.5	39	5	3	2	17,40
2	39	7	3	2	17,40
2.5	39	8	3	2	17,40
3	39	10	3	2	17,40
4	51	14	6	2	23,20
5	51	16	6	2	25,60
6	64	19	6	2	33,45
7	64	19	8	2	43,10
8	64	21	8	2	47,20
9	70	22	10	2	64,70
10	70	25	10	2	64,70
12	76	25	12	2	89,40
14	89	30	14	2	121,50
16	89	32	16	2	140,00
18	102	35	18	2	198,00
20	102	38	20	2	238,50
22	102	38	22	2	301,00
25	102	38	25	2	347,00



Rivestimento X-Treme
 X-Treme coating
 X-Treme-Beschichtung
 Revêtement X-Treme
 Recubrimiento X-Treme

TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

Diametri Diameters	Tolleranza del diametro Diameter tolerance	Tolleranza del gambo Shank tolerance
da 1 mm a 3 mm	+0.000 mm -0.025 mm	+0.000 mm -0.013 mm
da 4 mm a 25 mm	+0.000 mm -0.038 mm	+0.000 mm -0.013 mm



SERIE NORMALE

NORMAL SERIES
NORMAL AUSFÜHRUNG
SÉRIE NORMALE
SERIE NORMAL

FRESE POWER TORICHE

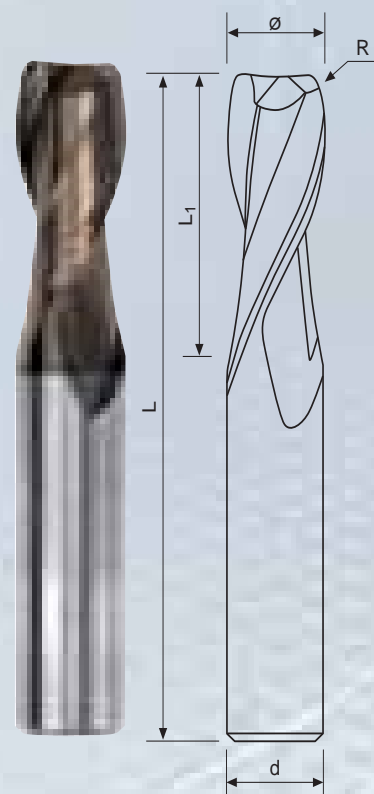
A 2 TAGLI IN MICROGRANA ULTRAFINE

POWER TORIC END MILLS - 2 FLUTES - SUB-MICROGRAIN
POWER TORUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN
FRAISES POWER TORIQUE À 2 DENTS - MICRO-GRAIN ULTRAFIN
FRESAS POWER TÓRICAS - 2 LABIOS - SUB-MICROGRANO

1432XT



Ø mm	R	L mm	L ₁ mm	d mm	Z	1432XT €
3	0.2	39	10	3	2	23,25
3	0.5	39	10	3	2	23,25
4	0.2	51	14	6	2	30,95
4	0.5	51	14	6	2	30,95
4	1	51	14	6	2	30,95
5	0.2	51	16	6	2	34,15
5	0.5	51	16	6	2	34,15
5	1	51	16	6	2	34,15
6	0.2	64	19	6	2	44,50
6	0.5	64	19	6	2	44,50
6	1	64	19	6	2	44,50
6	1.5	64	19	6	2	44,50
6	2	64	19	6	2	44,50
8	0.5	64	21	8	2	62,90
8	1	64	21	8	2	62,90
8	1.5	64	21	8	2	62,90
8	2	64	21	8	2	62,90
10	0.5	70	25	10	2	86,20
10	1	70	25	10	2	86,20
10	1.5	70	25	10	2	86,20
10	2	70	25	10	2	86,20
10	3	70	25	10	2	86,20
12	0.5	76	25	12	2	119,50
12	1	76	25	12	2	119,50
12	1.5	76	25	12	2	119,50
12	2	76	25	12	2	119,50



→1-2



Rivestimento X-Treme
X-Treme coating
X-Treme-Beschichtung
Revêtement X-Treme
Recubrimiento X-Treme

TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

Diametri Diameters	Tolleranza del diametro Diameter tolerance	Tolleranza del gambo Shank tolerance
da 3 mm a 25 mm	+0.000 mm -0.038 mm	+0.000 mm -0.013 mm

FRESE POWER TORICHE

A 2 TAGLI IN MICROGRANA ULTRAFINE

POWER TORIC END MILLS - 2 FLUTES - SUB-MICROGRAIN
 POWER TORUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN
 FRAISES POWER TORIQUE À 2 DENTS - MICRO-GRAIN ULTRAFIN
 FRESAS POWER TÓRICAS - 2 LABIOS - SUB-MICROGRANO

SERIE NORMALE

NORMAL SERIES
 NORMAL AUSFÜHRUNG
 SÉRIE NORMALE
 SERIE NORMAL

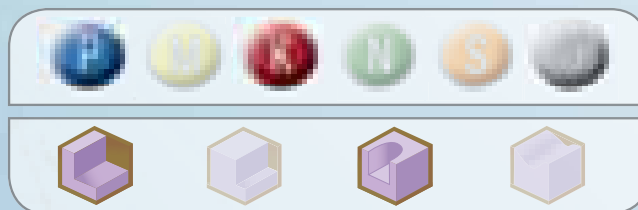
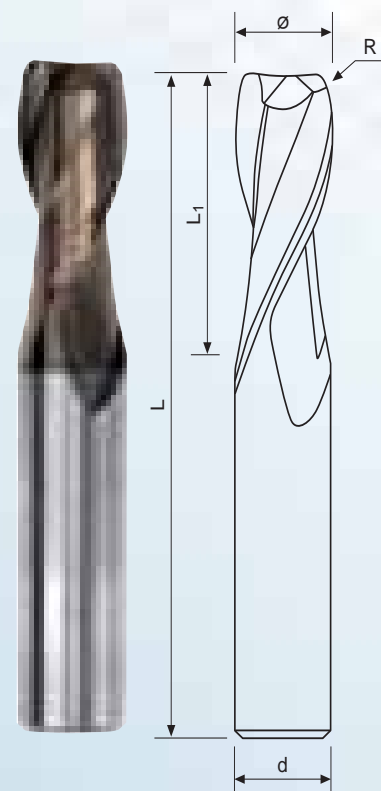


1432XT



Ø mm	R	L mm	L ₁ mm	d mm	Z	1432XT €
12	3	76	25	12	2	119,50
14	0.5	89	30	14	2	162,00
14	1	89	30	14	2	162,00
14	1.5	89	30	14	2	162,00
14	2	89	30	14	2	162,00
16	0.5	89	32	16	2	186,50
16	1	89	32	16	2	186,50
16	1.5	89	32	16	2	186,50
16	2	89	32	16	2	186,50
18	0.5	102	35	18	2	264,00
18	1	102	35	18	2	264,00
18	1.5	102	35	18	2	264,00
18	2	102	35	18	2	264,00
20	0.5	102	38	20	2	318,00
20	1	102	38	20	2	318,00
20	1.5	102	38	20	2	318,00
20	2	102	38	20	2	318,00
22	0.5	102	38	22	2	400,00
22	1	102	38	22	2	400,00
22	1.5	102	38	22	2	400,00
22	2	102	38	22	2	400,00
25	0.5	102	38	25	2	463,00
25	1	102	38	25	2	463,00
25	1.5	102	38	25	2	463,00
25	2	102	38	25	2	463,00

→2-2



Rivestimento X-Treme

X-Treme coating
 X-Treme-Beschichtung
 Revêtement X-Treme
 Recubrimiento X-Treme



TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

Diametri Diameters	Tolleranza del diametro Diameter tolerance	Tolleranza del gambo Shank tolerance
da 3 mm a 25 mm	+0.000 mm -0.038 mm	+0.000 mm -0.013 mm



SERIE LUNGA

LONG SERIES
LANGE AUSFÜHRUNG
SÉRIE LONGUE
SERIE LARGA

FRESE POWER TORICHE

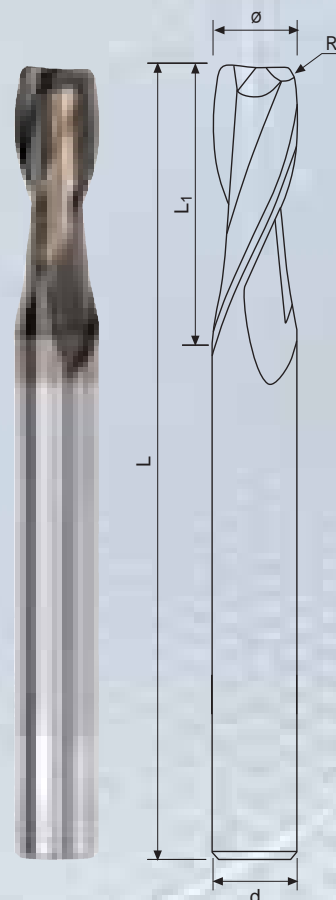
A 2 TAGLI IN MICROGRANA ULTRAFINE

POWER TORIC END MILLS - 2 FLUTES - SUB-MICROGRAIN
POWER TORUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN
FRAISES POWER TORIQUE À 2 DENTS - MICRO-GRAIN ULTRAFIN
FRESAS POWER TÓRICAS - 2 LABIOS - SUB-MICROGRANO

1422XT



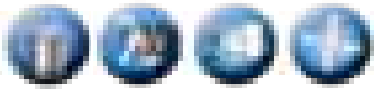
Ø mm	R	L mm	L ₁ mm	d mm	Z	1422XT €
3	0.2	60	8	6	2	26,25
3	0.5	60	8	6	2	26,25
4	0.2	70	11	6	2	33,95
4	0.5	70	11	6	2	33,95
4	1	70	11	6	2	33,95
5	0.2	80	13	6	2	37,80
5	0.5	80	13	6	2	37,80
5	1	80	13	6	2	37,80
6	0.2	90	20	6	2	48,20
6	0.5	90	20	6	2	48,20
6	1	90	20	6	2	48,20
6	1.5	90	20	6	2	48,20
6	2	90	20	6	2	48,20
8	0.5	100	28	8	2	68,80
8	1	100	28	8	2	68,80
8	1.5	100	28	8	2	68,80
8	2	100	28	8	2	68,80
10	0.5	100	34	10	2	94,00
10	1	100	34	10	2	94,00
10	1.5	100	34	10	2	94,00
10	2	100	34	10	2	94,00
12	0.5	110	40	12	2	128,00
12	1	110	40	12	2	128,00
12	1.5	110	40	12	2	128,00
12	2	110	40	12	2	128,00
12	3	110	40	12	2	128,00



Rivestimento X-Treme
X-Treme coating
X-Treme-Beschichtung
Revêtement X-Treme
Recubrimiento X-Treme

TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

Diametri Diameters	Tolleranza del diametro Diameter tolerance	Tolleranza del gambo Shank tolerance
da 3 mm a 12 mm	+0.000 mm -0.038 mm	+0.000 mm -0.013 mm



SERIE NORMALE

NORMAL SERIES
NORMAL AUSFÜHRUNG
SÉRIE NORMALE
SERIE NORMAL

FRESE POWER TORICHE

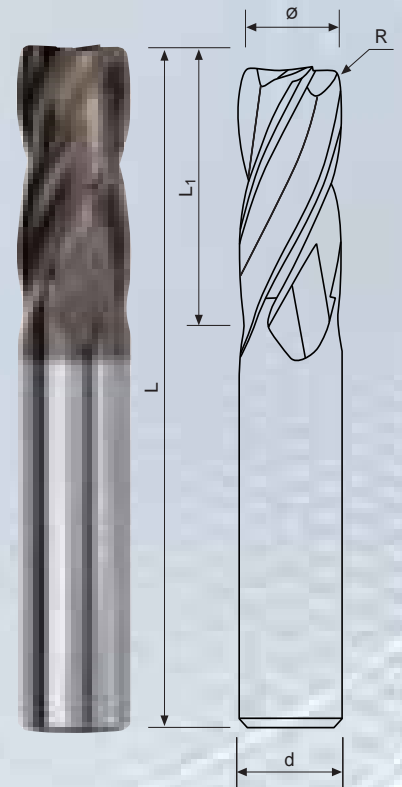
A 4 TAGLI IN MICROGRANA ULTRAFINE

POWER TORIC END MILLS - 4 FLUTES - SUB-MICROGRAIN
POWER TORUSFRÄSER - 4 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN
FRAISES POWER TORIQUE À 4 DENTS - MICRO-GRAIN ULTRAFIN
FRESAS POWER TÓRICAS - 4 LABIOS - SUB-MICROGRANO

1434XT



Ø mm	R	L mm	L ₁ mm	d mm	Z	1434XT €
3	0.2	39	10	3	4	23,25
3	0.5	39	10	3	4	23,25
4	0.2	51	14	6	4	30,95
4	0.5	51	14	6	4	30,95
4	1	51	14	6	4	30,95
5	0.2	51	16	6	4	34,15
5	0.5	51	16	6	4	34,15
5	1	51	16	6	4	34,15
6	0.2	64	19	6	4	44,50
6	0.5	64	19	6	4	44,50
6	1	64	19	6	4	44,50
6	1.5	64	19	6	4	44,50
6	2	64	19	6	4	44,50
8	0.5	64	21	8	4	62,90
8	1	64	21	8	4	62,90
8	1.5	64	21	8	4	62,90
8	2	64	21	8	4	62,90
10	0.5	70	25	10	4	86,20
10	1	70	25	10	4	86,20
10	1.5	70	25	10	4	86,20
10	2	70	25	10	4	86,20
10	3	70	25	10	4	86,20
12	0.5	76	25	12	4	119,50
12	1	76	25	12	4	119,50
12	1.5	76	25	12	4	119,50
12	2	76	25	12	4	119,50



→1-2



Rivestimento X-Treme
X-Treme coating
X-Treme-Beschichtung
Revêtement X-Treme
Recubrimiento X-Treme

TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

Diametri Diameters	Tolleranza del diametro Diameter tolerance	Tolleranza del gambo Shank tolerance
da 3 mm a 25 mm	+0.000 mm -0.038 mm	+0.000 mm -0.013 mm



SERIE LUNGA

EXTENDED LENGTH
SÉRIE LONGUE
ÜBERLÄNGE
SERIE LARGA

FRESE POWER TORICHE

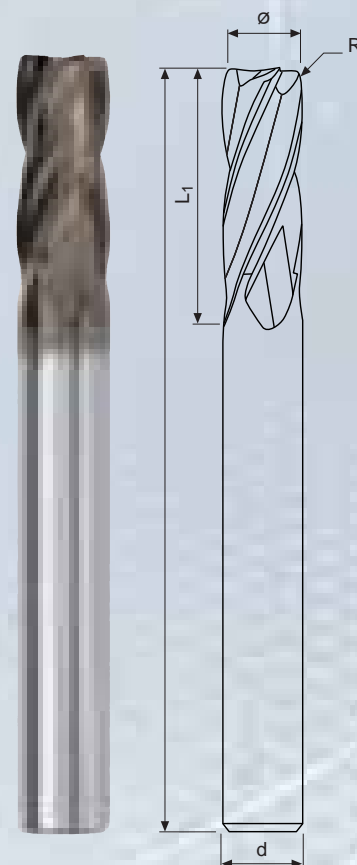
A 4 TAGLI IN MICROGRANA ULTRAFINE

POWER TORIC END MILLS - 4 FLUTES - SUB-MICROGRAIN
POWER TORUSFRÄSER - 4 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN
FRAISES POWER TORIQUE À 4 DENTS - MICRO-GRAIN ULTRAFIN
FRESAS POWER TÓRICAS - 4 LABIOS - SUB-MICROGRANO

1424XT



Ø mm	R	L mm	L ₁ mm	d mm	Z	1424XT €
3	0.2	60	8	6	4	26,25
3	0.5	60	8	6	4	26,25
4	0.2	70	11	6	4	33,95
4	0.5	70	11	6	4	33,95
4	1	70	11	6	4	33,95
5	0.2	80	13	6	4	37,80
5	0.5	80	13	6	4	37,80
5	1	80	13	6	4	37,80
6	0.2	90	20	6	4	47,50
6	0.5	90	20	6	4	47,50
6	1	90	20	6	4	47,50
6	1.5	90	20	6	4	47,50
6	2	90	20	6	4	47,50
8	0.5	100	28	8	4	68,80
8	1	100	28	8	4	68,80
8	1.5	100	28	8	4	68,80
8	2	100	28	8	4	68,80
10	0.5	100	34	10	4	94,00
10	1	100	34	10	4	94,00
10	1.5	100	34	10	4	94,00
10	2	100	34	10	4	94,00
10	3	100	34	10	4	94,00
12	0.5	110	40	12	4	128,00
12	1	110	40	12	4	122,00
12	1.5	110	40	12	4	128,00
12	2	110	40	12	4	128,00
12	3	110	40	12	4	128,00



Rivestimento X-Treme
X-Treme coating
X-Treme-Beschichtung
Revêtement X-Treme
Recubrimiento X-Treme

TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

Diametri Diameters	Tolleranza del diametro Diameter tolerance	Tolleranza del gambo Shank tolerance
da 3 mm a 12 mm	+0.000 mm -0.038 mm	+0.000 mm -0.013 mm

FRESE POWER TORICHE

A 4 TAGLI IN MICROGRANA ULTRAFINE

POWER TORIC END MILLS - 4 FLUTES - SUB-MICROGRAIN
 POWER TORUSFRÄSER - 4 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN
 FRAISES POWER TORIQUE À 4 DENTS - MICRO-GRAIN ULTRAFIN
 FRESAS POWER TÓRICAS - 4 LABIOS - SUB-MICROGRANO

SERIE LUNGA

LONG SERIES
 LANGE AUSFÜHRUNG
 SÉRIE LONGUE
 SERIE LARGA

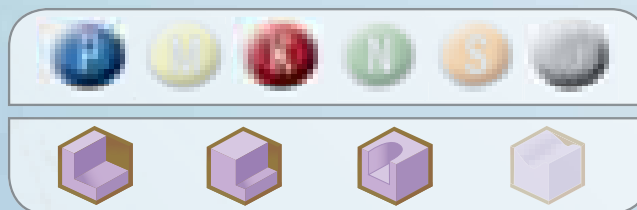
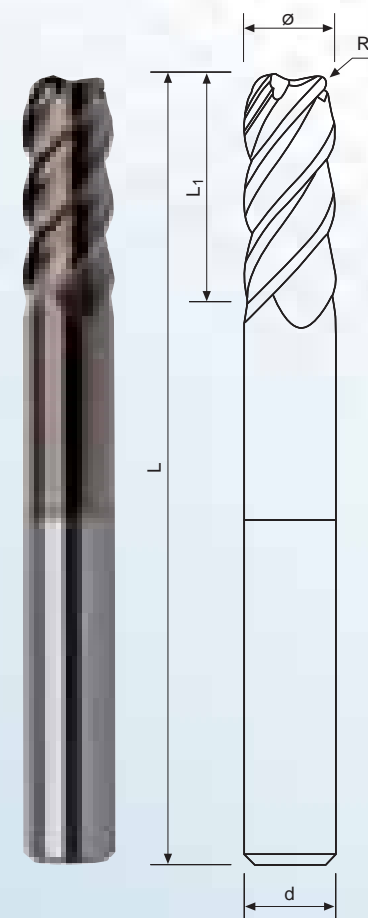


1452XT



Ø mm	R	L mm	L ₁ mm	d mm	Z	1452XT €
3	0.2	60	8	6	4	77,70
3	0.5	60	8	6	4	77,70
4	0.2	60	11	6	4	77,40
4	0.5	60	11	6	4	77,70
4	1	60	11	6	4	77,70
5	0.2	60	13	6	4	77,70
5	0.5	60	13	6	4	77,70
5	1	60	13	6	4	77,70
6	0.3	60	13	6	4	77,70
6	0.5	60	13	6	4	77,40
6	1	60	13	6	4	77,70
8	0.3	80	19	8	4	105,00
8	0.5	80	19	8	4	105,00
8	1	80	19	8	4	105,00
8	1.5	80	19	8	4	105,00
8	2	80	19	8	4	105,00
10	0.3	80	22	10	4	143,00
10	0.5	80	22	10	4	143,00
10	1	80	22	10	4	143,00
10	1.5	80	22	10	4	143,00
10	2	80	22	10	4	143,00
10	3	80	22	10	4	143,00
12	0.5	100	26	12	4	190,00
12	1	100	26	12	4	190,00
12	1.5	100	26	12	4	190,00

→1-2



Rivestimento X-Treme

X-Treme coating
 X-Treme-Beschichtung
 Revêtement X-Treme
 Recubrimiento X-Treme



TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

Diametri Diameters	Tolleranza del diametro Diameter tolerance	Tolleranza del gambo Shank tolerance
da 3 mm a 20 mm	+ .000 mm - .038 mm	+ .000 mm - .013 mm

FRESE POWER A CANDELA

A 4 TAGLI IN MICROGRANA ULTRAFINE

POWER END MILLS - 4 FLUTES - SUB-MICROGRAIN
 POWER FRÄSER - 4 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN
 FRAISES POWER À 4 DENTS - MICRO-GRAIN ULTRAFIN
 FRESAS POWER - 4 LABIOS - SUB-MICROGRANO

SERIE LUNGA

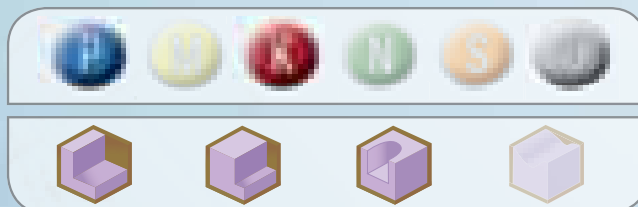
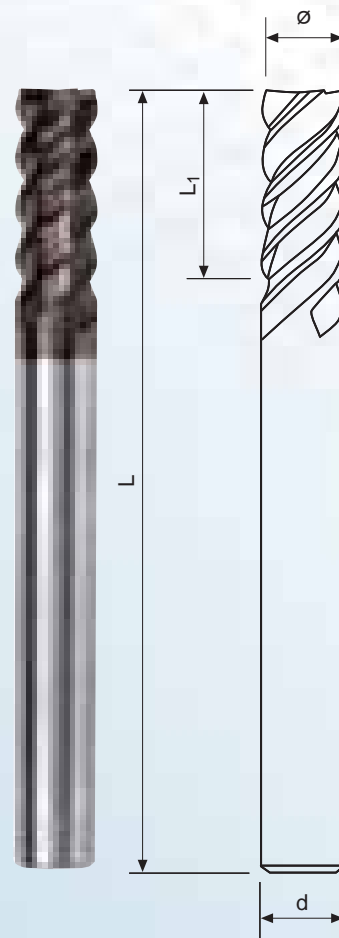
EXTENDED LENGTH
 SÉRIE LONGUE
 ÜBERLÄNGE
 SERIE LARGA



1451XT



Ø mm	L mm	L ₁ mm	d mm	Z	1451XT €
4	60	12	6	4	59,70
6	60	15	6	4	62,70
8	75	20	8	4	72,50
10	80	25	10	4	123,50
12	102	30	12	4	168,00
16	110	40	16	4	314,00
20	125	45	20	4	464,00



Rivestimento X-Treme

X-Treme coating
 X-Treme-Beschichtung
 Revêtement X-Treme
 Recubrimiento X-Treme

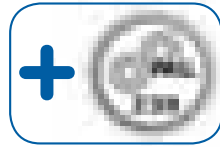


TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

Diametri Diameters	Tolleranza del diametro Diameter tolerance	Tolleranza del gambo Shank tolerance
da 4 mm a 20 mm	+0.00 mm -0.038 mm	+0.00 mm -0.13 mm

PARAMETRI DI TAGLIO

CUTTING PARAMETERS
SCHNITTDATEN
PARAMÈTRES DE COUPE
PARAMETROS DE CORTE



FRESE POWER A CANDELA CON TESTA PIANA E TORICHE: 2/4 TAGLI

Power end mills with flat head or toric - Power fräser mit flacher stirnschneide oder torus - Fraises power à bout plat ou toriques - Fresas power de cabeza llana o tóricas: 2/4 Flutes - Schneiden - Dents - Labios

CAVA DAL PIENO: Vc e Fz: - 20%

Slotting: Vc e Fz: - 20%

Bohrnuten: Vc e Fz: - 20%

Rainurage: Vc e Fz: - 20%

Ranura: Vc e Fz: - 20%

GRUPPO MATERIALI Material Groups Material-Beispiele Groupes de Matériaux Grupos de Materiales				VC m/min	 Fz [mm] AVANZAMENTO AL DENTE Tooth Feed - Zahnvorschub - Avancement au dent - Avance al labio													
	ap	ae	ap		1	2	4	6	8	10	12	14	16	18	20	22	25	
	P < 800 N/mm ²	1xØ	0,5xØ		0,5xØ	100 - 130	0,003 0,005	0,005 0,010	0,02 0,04	0,04 0,06	0,06 0,08	0,08 0,10	0,10 0,12	0,12 0,14	0,14 0,16	0,16 0,18	0,18 0,20	0,20 0,22
P < 1100 N/mm ²	1xØ	0,5xØ	0,5xØ	100 - 130	0,003 0,005	0,005 0,010	0,02 0,04	0,04 0,06	0,06 0,08	0,08 0,10	0,10 0,12	0,12 0,14	0,14 0,16	0,16 0,18	0,18 0,20	0,20 0,22	0,22 0,25	
P < 1300 N/mm ²	1xØ	0,5xØ	0,5xØ	80 - 100	0,0015 0,0030	0,003 0,005	0,005 0,020	0,02 0,04	0,04 0,06	0,06 0,08	0,08 0,10	0,10 0,12	0,12 0,14	0,14 0,16	0,16 0,18	0,18 0,20	0,20 0,22	
M > 800 N/mm ²	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
K GG	1xØ	0,5xØ	0,5xØ	120 - 150	-	0,03 0,05	0,05 0,07	0,07 0,09	0,09 0,11	0,11 0,13	0,13 0,15	0,17 0,19	0,19 0,21	0,21 0,23	0,23 0,25	0,25 0,27	0,27 0,3	
K GGG	1xØ	0,5xØ	0,5xØ	100 - 130	-	0,005 0,010	0,02 0,04	0,04 0,06	0,06 0,08	0,08 0,10	0,10 0,12	0,12 0,14	0,14 0,16	0,16 0,18	0,18 0,20	0,20 0,22	0,22 0,25	
N Alluminio	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
N Non metalli	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
S Titanio	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
S Leghe speciali a base Ni	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
H Temprati 38 / 48 HRC	1xØ	0,2 X Ø	-	40 - 60	0,0015 0,0030	0,003 0,005	0,005 0,02	0,02 0,04	0,04 0,06	0,06 0,08	0,08 0,10	0,10 0,12	0,12 0,14	0,14 0,16	0,16 0,18	0,18 0,20	0,20 0,22	
H Temprati 48 / 58 HRC	1xØ	0,2xØ	-	25 - 40	0,0015 0,0030	0,003 0,005	0,005 0,020	0,02 0,04	0,04 0,06	0,06 0,08	0,08 0,10	0,10 0,12	0,12 0,14	0,14 0,16	0,16 0,18	0,18 0,20	0,20 0,22	
H Temprati 58 / 68 HRC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	



FRESE POWER SEMISFERICHE



POWER BALL NOSE END MILLS



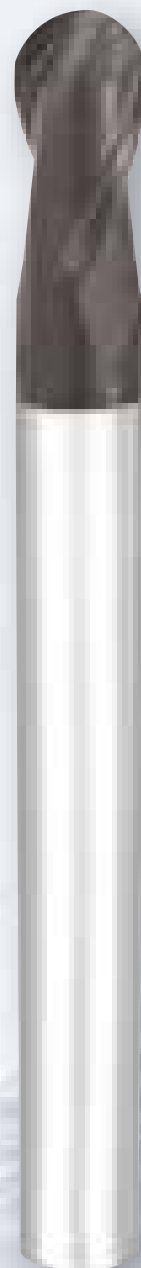
POWER RADIUSFRÄSER



FRAISES POWER HÉMISPHERIQUES



FRESAS POWER ESFÉRICAS



FRESE POWER SEMISFERICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

BALL NOSE POWER END MILLS - 2 FLUTES - SUB-MICROGRAIN
POWER RADIUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN
FRAISES POWER HÉMISPHERIQUES À 2 DENTS - MICRO-GRAIN ULTRAFIN
FRESAS POWER ESFÉRICAS - 2 LABIOS - SUB-MICROGRANO

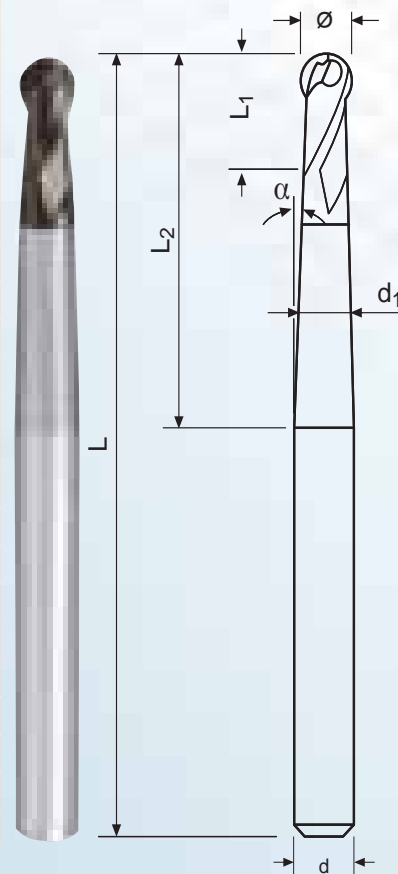
SERIE LUNGA & EXTRA LUNGA

LONG/EXTRALONG SERIES
LANGE/EXTRALANGE AUSFÜHRUNG
SÉRIE LONGUE/EXTRALONGUE
SERIE LARGA/EXTRALARGA



402RXT

Ø mm	d ₁ mm	L mm	L ₁ mm	L ₂ mm	α	d mm	Z	402RXT €
1	3.8	60	2.5	20	5°	6	2	51,10
1	4.8	80	2.5	40	3°	6	2	54,40
2	4.3	60	5	20	5°	6	2	51,10
2	5.5	80	5	40	3°	6	2	54,40
3	5	70	8	30	3°	6	2	52,70
3	5.1	90	8	50	1°30'	6	2	55,90
4	6	70	8	28	3°	6	2	52,50
4	6	90	8	48	1°30'	6	2	55,80
5	8	90	10	40	3°	8	2	67,20
5	7.5	110	10	60	1°30'	8	2	71,00
6	8	90	12	33.5	3°	8	2	70,30
6	8	110	12	52	1°30'	8	2	74,20
8	10	100	14	35.5	3°	10	2	91,20
8	10	120	14	54.5	1°30'	10	2	97,20
10	12	110	18	39.5	3°	12	2	113,00
10	12	130	18	58.5	1°30'	12	2	119,00
12	16	140	22	60	3°	16	2	169,00
12	14.9	160	22	80	1°30'	16	2	184,50



Rivestimento X-Treme

X-Treme coating
X-Treme-Beschichtung
Revêtement X-Treme
Recubrimiento X-Treme



TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

Diametri Diameters	Tolleranza del diametro Diameter tolerance	Tolleranza del gambo Shank tolerance
da 1 mm a 3 mm	+0.000 mm -0.025 mm	+0.000 mm -0.013 mm
da 4 mm a 12 mm	+0.000 mm -0.038 mm	+0.000 mm -0.013 mm

FRESE POWER SEMISFERICHE

A 2 TAGLI IN MICROGRANA ULTRAFINE

BALL NOSE POWER END MILLS - 2 FLUTES - SUB-MICROGRAIN
 POWER RADIUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN
 FRAISES POWER HÉMISPHERIQUES À 2 DENTS - MICRO-GRAIN ULTRAFIN
 FRESAS POWER ESFÉRICAS - 2 LABIOS - SUB-MICROGRANO

SERIE LUNGA

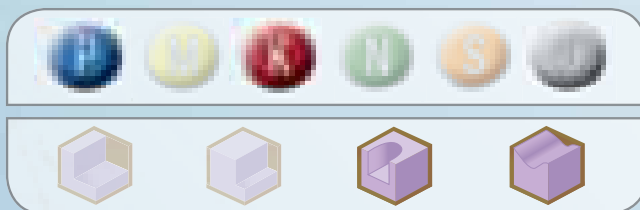
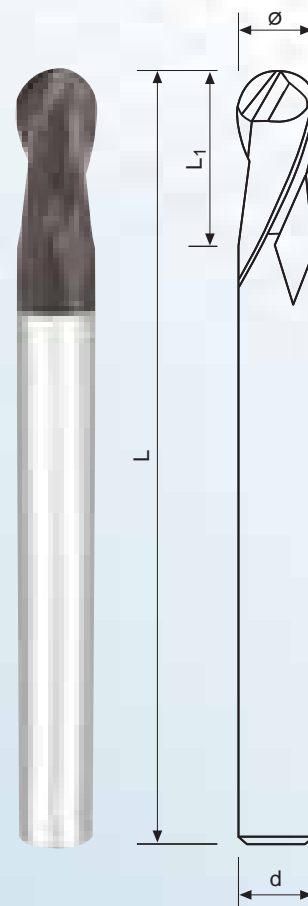
LONG SERIES
 LANGE AUSFÜHRUNG
 SÉRIE LONGUE
 SERIE LARGA



416RXT



Ø mm	L mm	L ₁ mm	d mm	Z	416RXT €
1	50	2.5	4	2	46,00
1.2	50	3	4	2	48,90
1.4	50	3.5	4	2	48,90
1.5	50	4	4	2	48,90
1.6	50	4	4	2	48,90
1.8	50	4.5	4	2	48,90
2	50	5	6	2	43,90
2.5	60	6	6	2	53,50
3	60	8	6	2	44,80
4	60	8	4	2	44,50
4	70	8	6	2	44,80
5	80	10	6	2	52,30
6	90	12	6	2	50,60
7	90	14	6	2	67,40
8	100	14	8	2	66,20
9	100	18	10	2	96,10
10	100	18	10	2	83,80
12	110	22	12	2	109,00
13	110	26	12	2	133,50
14	110	26	12	2	186,50
15	110	30	12	2	190,50
16	140	30	16	2	243,00
18	140	34	16	2	304,00
20	160	38	20	2	380,00
25	180	50	25	2	705,00



Rivestimento X-Treme
 X-Treme coating
 X-Treme-Beschichtung
 Revêtement X-Treme
 Recubrimiento X-Treme

TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

Diametri Diameters	Tolleranza del diametro Diameter tolerance	Tolleranza del gambo Shank tolerance
da 1 mm a 3 mm	+0.00 mm -0.025 mm	+0.00 mm -0.013 mm
da 4 mm a 25 mm	+0.00 mm -0.038 mm	+0.00 mm -0.013 mm



SERIE NORMALE

NORMAL SERIES
NORMAL AUSFÜHRUNG
SÉRIE NORMALE
SERIE NORMAL

FRESE POWER SEMISFERICHE

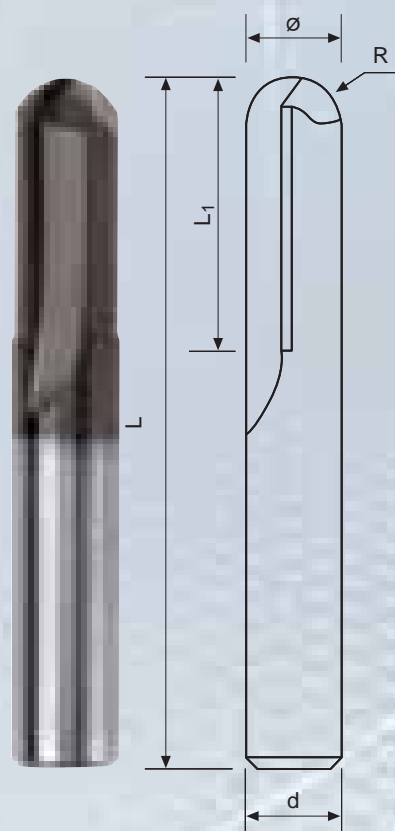
A 2 TAGLI PER COPIATURA IN MICROGRANA ULTRAFINE

POWER BALL NOSE COPY END MILLS - 2 FLUTES - SUB-MICROGRAIN
POWER RADIUSKOPIERFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN
FRAISES POWER HÉMISPHERIQUES À 2 DENTS POUR COPIAGE - MICRO-GRAIN ULTRAFIN
FRESAS POWER ESFÉRICAS DE COPIADO - 2 LABIOS - SUB-MICROGRANO

130RXT



∅ mm	R	L mm	L ₁ mm	d mm	Z	130RXT €
3	1.5	50	8	6	2	66,90
4	2	50	10	6	2	66,90
5	2.5	50	12	6	2	66,90
6	3	50	18	6	2	58,30
8	4	60	22	8	2	71,00
10	5	60	26	10	2	86,90
12	6	70	30	12	2	123,50



Rivestimento X-Treme

X-Treme coating
X-Treme-Beschichtung
Revêtement X-Treme
Recubrimiento X-Treme

TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

Diametri Diameters	Tolleranza del diametro Diameter tolerance	Tolleranza del gambo Shank tolerance
da 3 mm a 6 mm	+0.010 mm -0.028 mm	+0.000 mm -0.008 mm
da 6 mm a 12 mm	+0.013 mm -0.035 mm	+0.000 mm -0.009 mm

FRESE POWER SEMISFERICHE

A 4 TAGLI IN MICROGRANA ULTRAFINE

POWER BALL NOSE END MILLS - 4 FLUTES - SUB-MICROGRAIN
 POWER RADIUSFRÄSER - 4 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN
 FRAISES POWER HÉMISPHERIQUES À 4 DENTS - MICRO-GRAIN ULTRAFIN
 FRESAS POWER ESFÉRICAS - 4 LABIOS - SUB-MICROGRANO

SERIE NORMALE

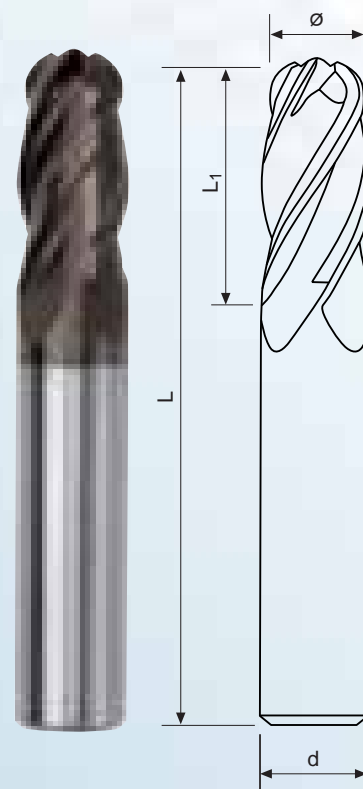
NORMAL SERIES
 NORMAL AUSFÜHRUNG
 SÉRIE NORMALE
 SERIE NORMAL



414RXT



Ø mm	L mm	L ₁ mm	d mm	Z	414RXT €
1	39	3	3	4	24,05
2	39	7	3	4	22,20
3	39	10	3	4	22,20
4	51	14	6	4	29,60
5	51	16	6	4	32,80
6	64	19	6	4	42,80
7	64	19	8	4	55,10
8	64	21	8	4	60,30
9	70	22	10	4	82,70
10	70	25	10	4	82,70
12	76	25	12	4	114,50
14	89	30	14	4	155,50
16	89	32	16	4	179,00
18	102	35	18	4	252,50
20	102	38	20	4	305,00
22	102	38	22	4	394,00
25	102	38	25	4	455,00



Rivestimento X-Treme

X-Treme coating
 X-Treme-Beschichtung
 Revêtement X-Treme
 Recubrimiento X-Treme



TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

Diametri Diameters	Tolleranza del diametro Diameter tolerance	Tolleranza del gambo Shank tolerance
da 1 mm a 3 mm	+ .000 mm - .025 mm	+ .000 mm - .013 mm
da 4 mm a 25 mm	+ .000 mm - .038 mm	+ .000 mm - .013 mm

PARAMETRI DI TAGLIO

CUTTING PARAMETERS
SCHNITTDATEN
PARAMÈTRES DE COUPE
PARAMETROS DE CORTE



FRESE POWER SEMISFERICHE: 2/3/4 TAGLI

Power ball nose end mills - Power radiusfräser - Fraises power hémisphériques -
Fresas power esféricas: 2/3/4 Flutes - Schneiden - Dents - Labios

CAVA DAL PIENO: Vc e Fz: - 20%

Slotting: Vc e Fz: - 20%

Bohrnuten: Vc e Fz: - 20%

Rainurage: Vc e Fz: - 20%

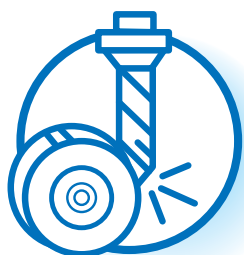
Ranura: Vc e Fz: - 20%

GRUPPO MATERIALI Material Groups Material-Beispiele Groupes de Matériaux Grupos de Materiales				VC m/min													
	Fz [mm] AVANZAMENTO AL DENTE Tooth Feed - Zahnvorschub - Avancement au dent - Avance al labio																
	ap	ae	ap		1	2	4	6	8	10	12	14	16	18	20	22	25
P < 800 N/mm ²	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P < 1100 N/mm ²	0,03xd	0,2xd	0,2xd	100 - 140	0,02 0,03	0,05 0,06	0,07 0,08	0,08 0,09	0,09 0,10	0,11 0,12	0,13 0,14	0,15 0,17	0,17 0,18	0,18 0,19	0,20 0,21	0,21 0,22	0,22 0,25
P < 1300 N/mm ²	-	-	-	80 - 120	0,02 0,03	0,05 0,06	0,07 0,08	0,08 0,09	0,09 0,10	0,11 0,12	0,13 0,14	0,15 0,17	0,17 0,18	0,18 0,19	0,20 0,21	-	-
M > 800 N/mm ²	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
K GG	0,03xd	0,2xd	0,2xd	120 - 160	0,03 0,04	0,06 0,08	0,10 0,12	0,14 0,16	0,18 0,19	0,20 0,21	0,22 0,23	0,23 0,24	0,24 0,25	0,26 0,27	0,27 0,28	0,29 0,30	0,31 0,32
K GGG	0,03xd	0,2xd	0,2xd	80 - 120	0,02 0,03	0,05 0,06	0,07 0,08	0,08 0,09	0,09 0,10	0,11 0,12	0,13 0,14	0,15 0,17	0,17 0,18	0,18 0,19	0,20 0,21	0,22 0,23	0,24 0,25
N Alluminio	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N Non metalli	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S Titanio	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S Leghe speciali a base Ni	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
H Temprati 38 / 48 HRC	0,03xd	0,2 X d	0,2xd	60 - 100	0,01 0,02	0,02 0,03	0,03 0,04	0,04 0,05	0,05 0,06	0,06 0,07	0,07 0,08	0,09 0,10	0,11 0,12	0,12 0,13	0,14 0,15	0,16 0,17	0,18 0,19
H Temprati 48 / 58 HRC	1xØ	0,2xØ	-	25 - 40	0,0015 0,0030	0,003 0,005	0,005 0,020	0,02 0,04	0,04 0,06	0,06 0,08	0,08 0,10	0,10 0,12	0,12 0,14	0,14 0,16	0,16 0,18	0,18 0,20	0,20 0,22
H Temprati 58 / 68 HRC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



SERVIZIO DI RIAFFILATURA E RIVESTIMENTO

Re-sharpening and coating service
Nachschleif - und beschichtungservice
Service de affûtage à nouveau et revêtement
Servicio de afilado y recubrimiento



UTENSILI SPECIALI





Special tools department
Abteilung für Sonderwerkzeuge
Outils spéciaux
Herramientas especiales

I NOSTRI SERVIZI SEMPRE A DISPOSIZIONE

Our prompt services always ready for you
Unser prompter Service ist immer für Sie da
Nos services toujours à votre Disposition
Nuestro rápido servicio siempre listo para usted



FRESE POWER TORICHE

-  POWER TORIC MULTI-FLUTES END MILLS
-  POWER TORUSFRÄSER MEHRSCHEIDEN
-  FRAISES POWER TORIQUES MULTICOUPES
-  FRESAS POWER TÓRICAS MULTILABIO

Multitagli



FRESE POWER TORICHE

MULTITAGLI IN MICROGRANA ULTRAFINE

POWER MULTI-FLUTES TORIC END MILLS - SUB-MICROGRAIN
 POWER MEHRNUTIGE TORUSFRÄSER - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN
 FRAISES POWER TORIQUES MULTICOUPEES - MICRO-GRAIN ULTRAFIN
 FRESAS POWER TÓRICAS MULTILABIOS - SUB-MICROGRANO

SERIE NORMALE

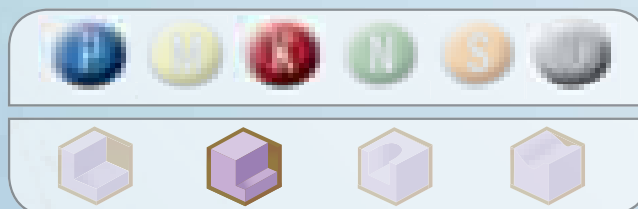
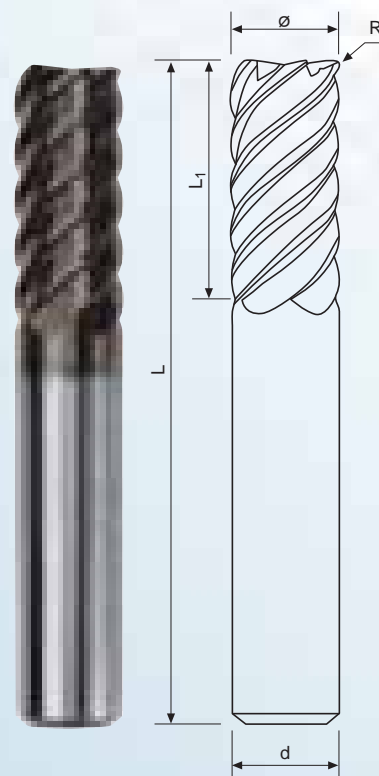
NORMAL SERIES
 NORMAL AUSFÜHRUNG
 SÉRIE NORMALE
 SERIE NORMAL



1450XT



Ø mm	R	L mm	L ₁ mm	d mm	Z	1450XT €
6	0.5	57	13	6	6	51,50
6	1	57	13	6	6	51,50
8	0.5	63	19	8	6	71,40
8	1	63	19	8	6	71,40
10	0.5	72	22	10	6	108,50
10	1	72	22	10	6	108,50
10	1.5	72	22	10	6	108,50
12	0.5	83	26	12	6	137,50
12	1	83	26	12	6	137,50
12	1.5	83	26	12	6	137,50
14	1	83	26	14	6	179,00
14	2	83	26	14	6	179,00
16	1	92	32	16	6	239,00
16	2	92	32	16	6	239,00
20	1	104	38	20	6	349,00
20	2	104	38	20	6	349,00



Rivestimento X-Treme

X-Treme coating
 X-Treme-Beschichtung
 Revêtement X-Treme
 Recubrimiento X-Treme

TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

Diametri Diameters	Tolleranza del diametro Diameter tolerance	Tolleranza del gambo Shank tolerance
da 6 mm a 10 mm	+0.000 mm -0.022 mm	+0.000 mm -0.009 mm
da 10 mm a 18 mm	+0.000 mm -0.027 mm	+0.000 mm -0.011 mm
da 18 mm a 20 mm	+0.000 mm -0.033 mm	+0.000 mm -0.013 mm

PARAMETRI DI TAGLIO

CUTTING PARAMETERS
SCHNITTDATEN
PARAMÈTRES DE COUPE
PARAMETROS DE CORTE



FRESE POWER CON TESTA TORICHE: MULTITAGLI

Power end mills multi flutes with flat head and toric - Power mehrnutige fräser mit flacher stirnschneide oder torus - Fraises power multicoupees à bout plat ou toriques - Fresas power multilabios de cabeza llana o tóricas: Multi flutes - Mehrnutige - Multicoupees - Multilabios

GRUPPO MATERIALI Material Groups Material-Beispiele Groupes de Matériaux Grupos de Materiales			VC m/min														
	ap	ae		ap	Fz [mm] AVANZAMENTO AL DENTE Tooth Feed - Zahnvorschub - Avancement au dent - Avance al labio												
					3	4	6	8	10	12	14	16	18	20	22	24	26
< 800 N/mm ²	1xØ	0,5xØ	0,5xØ	100 - 130	-	-	-	-	-	-	-	-	-	-	-	-	-
< 1100 N/mm ²	1xØ	0,5xØ	0,5xØ	100 - 130	-	-	-	-	-	-	-	-	-	-	-	-	-
< 1300 N/mm ²	0,03xd	0,2xd	-	90 - 100	-	-	0,05 0,06	0,07 0,08	0,09 0,10	0,10 0,11	0,12 0,13	0,14 0,15	0,12 0,14	0,14 0,16	-	-	-
> 800 N/mm ²	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GG	0,03xd	0,2xd	-	120 - 180	-	-	0,05 0,06	0,06 0,07	0,08 0,09	0,09 0,10	0,11 0,12	0,12 0,13	0,19 0,21	0,21 0,23	-	-	-
GGG	0,03xd	0,2xd	-	90 - 110	-	-	0,05 0,06	0,07 0,08	0,09 0,10	0,10 0,11	0,12 0,13	0,14 0,15	0,14 0,16	0,16 0,18	-	-	-
Alluminio	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Non metalli	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Titanio	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Leghe speciali a base Ni	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Temprati 38 / 48 HRC	0,03xd	0,2 X d	-	60 - 100	-	-	0,05 0,06	0,07 0,08	0,09 0,10	0,10 0,11	0,12 0,13	0,14 0,15	0,12 0,14	0,14 0,16	-	-	-
Temprati 48 / 58 HRC	0,03xd	0,2xd	-	60 - 100	-	-	0,05 0,06	0,07 0,08	0,09 0,10	0,10 0,11	0,12 0,13	0,14 0,15	0,12 0,14	0,14 0,16	-	-	-
Temprati 58 / 68 HRC	0,02xd	0,2xd	-	30 - 60	-	-	0,007 0,009	0,009 0,010	0,010 0,012	0,012 0,014	0,014 0,016	0,016 0,018	0,018 0,020	0,020 0,022	-	-	-



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Frese Power



FRESE POWER:

- Ridurre il numero di utensili necessari
- Offrire un'eccellente evacuazione dei trucioli
- Ottenere la massima produttività
- Aumentare i volumi di trucioli asportati
- Aumentare la velocità di taglio
- Garantire precisione
- Ridurre i costi di produzione
- Fornire una lunga durata dell'utensile

POWER END MILLS:

- Reducing the number of necessary tools
- Offering an excellent chip evacuation
- Obtaining maximum productivity
- Increasing the volumes of eliminated chips
- Increasing cutting speed
- Guaranteeing precision
- Reducing production costs
- Allowing a long tool life

POWER FRÄSER:

- Reduziert die Anzahl der benötigten Werkzeuge
- Bietet eine ausgezeichnete Spabfuhr
- Erhalten Sie die maximale Produktivität
- Erhöhung die Volumens der Spabfuhr
- Erhöhung der Schnittgeschwindigkeit
- Gewährleistung der Genauigkeit
- Reduzierung der Produktionskosten
- Ermöglichen eine lange Lebensdauer

FRAISES POWER:

- Réduire le numéro des outils pas nécessaires
- Offrir une très bonne évacuation du copeau
- Obtenir la meilleure productivité
- Augmenter les volumes du copeau évacué
- Augmenter la vitesse de coupe

- Assurer précision
- Réduire le coût de production
- Permettre une longue durée de vie l'outil

FRESAS POWER:

- Reducir el numero de herramientas innecesarias
- Ofrecer una excelente evacuación de viruta
- Obtener la máxima productividad
- Incrementar el volumen de evacuación de virutas
- Incrementar (aumentando) la velocidad de corte
- Asegurar precisión
- Reducir los costes de producción
- Permitir una larga vida de herramienta



SERVIZIO TECNICO

Technical Help
Technische Hilfe
Service technique
Ayuda técnica



E-COMMERCE

www.angeloghezzi.it

I NOSTRI SERVIZI SEMPRE A DISPOSIZIONE

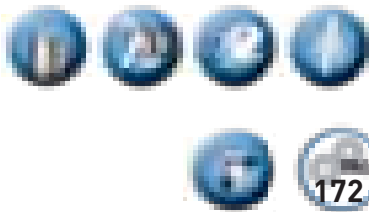
Our prompt services always ready for you
Unser prompter Service ist immer für Sie da
Nos services toujours à votre Disposition
Nuestro rápido servicio siempre listo para usted



MICRO POWER HPM-HCM

-  MICRO POWER HPM-HCM
-  MICRO POWER HPM-HCM
-  FRAISES MICRO POWER HPM-HCM
-  FRESAS POWER MICRO HPM-HCM





SERIE NORMALE & LUNGA

NORMAL/EXTENDED SERIES
 NORMAL/ÜBERLÄNGE AUSFÜHRUNG
 SÉRIE NORMALE/LONGUE
 SERIE NORMAL/LARGA

FRESE MICRO POWER A CANDELA A 2 TAGLI IN MICROGRANA ULTRAFINE

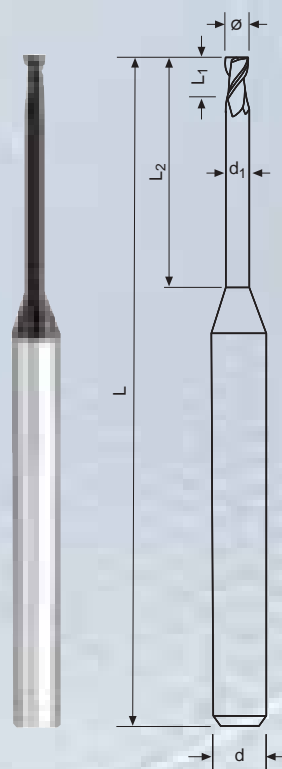
MICRO POWER END MILLS - 2 FLUTES - SUB-MICROGRAIN
 MICRO POWER FRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN
 FRAISES MICRO POWER - 2 DENTS - MICRO-GRAIN ULTRAFIN
 FRESAS POWER MICRO - 2 LABIOS - SUB-MICROGRANO

1430XT



Ø mm	d ₁ mm	L mm	L ₁ mm	L ₂ mm	d mm	Z	1430XT €
0.4	0.36	35	0.6	4	3	2	48,30
0.5	0.45	35	0.7	6	3	2	45,20
0.6	0.55	35	0.9	6	3	2	45,20
0.7	0.65	45	1	6	4	2	45,20
0.8	0.75	45	1.2	8	4	2	45,20
0.9	0.85	45	1.35	10	4	2	45,20
1	0.97	45	1.5	6	4	2	45,20
1	0.95	45	1.5	8	4	2	45,20
1	0.93	45	1.5	12	4	2	45,20
1.2	1.15	45	1.8	8	4	2	45,20
1.2	1.13	45	1.8	12	4	2	45,20
1.4	1.33	45	2.1	12	4	2	45,20
1.4	1.31	50	2.1	16	4	2	45,20
1.5	1.45	45	2.3	8	4	2	45,20
1.5	1.45	45	2.3	10	4	2	45,20
1.5	1.43	45	2.3	12	4	2	45,20
1.5	1.41	50	2.3	16	4	2	45,20
1.5	1.39	55	2.3	20	4	2	45,20
1.6	1.53	45	2.4	12	4	2	45,20
1.6	1.49	55	2.4	20	4	2	45,20
1.7	1.64	45	2.6	8	4	2	45,20
1.7	1.63	45	2.6	12	4	2	45,20
1.7	1.59	55	2.6	20	4	2	45,20
1.8	1.73	45	2.7	12	4	2	45,20
1.8	1.69	55	2.7	20	4	2	45,20
1.9	1.85	45	2.8	8	4	2	45,20

→1-2



Rivestimento X-Treme

X-Treme coating
 X-Treme-Beschichtung
 Revêtement X-Treme
 Recubrimiento X-Treme

TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

Diametri Diameters	Tolleranza del diametro Diameter tolerance	Tolleranza del gambo Shank tolerance
da 0.4 mm a 3 mm	+0.000 mm -0.025 mm	+0.000 mm -0.013 mm



SERIE NORMALE

NORMAL SERIES
NORMAL AUSFÜHRUNG
SÉRIE NORMALE
SERIE NORMAL



FRESE MICRO POWER TORICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

MICRO POWER TORIC END MILLS - 2 FLUTES - SUB-MICROGRAIN
MICRO POWER TORUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN
FRAISES MICRO POWER TORIQUES - 2 DENTS - MICRO-GRAIN ULTRAFIN
FRESAS POWER MICRO TÓRICAS - 2 LABIOS - SUB-MICROGRANO

1431XT

NEW Ø



Ø/R mm	d ₁ mm	L mm	L ₁ mm	L ₂ mm	d mm	Z	1431XT €
0.2/0.05	0.18	45	0.3	0.5	4	2	70,70
0.2/0.05	0.18	45	0.3	1	4	2	70,70 ■
0.2/0.05	0.18	45	0.3	1.5	4	2	70,70
0.3/0.05	0.28	45	0.45	1	4	2	70,70
0.3/0.05	0.28	45	0.45	2	4	2	70,70 ■
0.3/0.05	0.28	45	0.45	3	4	2	70,70
0.4/0.05	0.37	45	0.6	2	4	2	70,70 ■
0.4/0.1	0.37	45	0.6	2	4	2	70,70
0.4/0.1	0.37	45	0.6	3	4	2	70,70

>>1-6

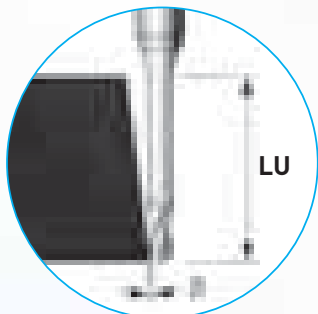
Ø/R mm	L ₂ mm	β					
		0.5°	1°	1° 30'	2°	2° 30'	3°
LU							
0.2/0.05	0.5	1.09	1.27	1.45	1.62	1.8	1.97
0.2/0.05	1	1.52	1.79	2.02	2.24	2.45	2.65
0.2/0.05	1.5	1.93	2.3	2.59	2.84	3.07	3.30
0.3/0.05	1	1.58	1.83	2.06	2.27	2.48	2.68
0.3/0.05	2	2.42	2.86	3.18	3.46	3.71	3.95
0.3/0.05	3	2.72	3.88	4.29	4.62	4.91	5.18
0.4/0.05	2	2.57	2.94	3.24	3.51	3.76	3.99
0.4/0.1	2	2.60	2.96	3.25	3.51	3.76	3.99
0.4/0.1	3	3.44	3.98	4.35	4.67	4.95	5.22

→1-6

INFORMAZIONI TECNICHE

ANGOLO DI COLLISIONE β

TECHNICAL DATA - INCLINED ANGLE β
TECHNISCHE HILFE - NEIGUNGSWINKEL β
SERVICE TECHNIQUE - ANGLE DE COLLISION β
INFORMACIÓN TÉCNICA - ANGULO INCLINADO β



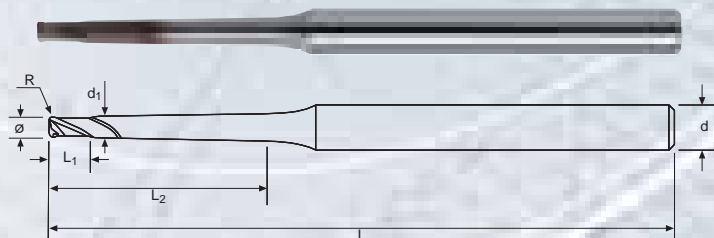
Effettiva lunghezza utile di lavoro legata all'inclinazione β del pezzo da lavorare

Effective machining depth depending on inclined angle β of workpiece
Die effektive Arbeitstiefe hängt vom Neigungswinkel β des Werkstückes ab
Longueur utile effective d'usinage liée à l'inclinaison β de la pièce à usiner
Largo útil de trabajo depende del ángulo de inclinación de la pieza



■ **Ad esaurimento scorte** - Subject to availability until sold out - Solange der vorrat reicht - Jusqu'à Épuisement de stock - Hasta agotamiento del stock

GAMBO RASTREMATO
TAPERED SHANK
VERJÜNGTER SCHAFT
QUEUE FUSELÉE
MANGO REBAJADO



L2 = LUNGHEZZA UTILE DI LAVORO
L2 = MACHINING DEPTH
L2 = ARBEITSTIEFE
L2 = LONGUEUR UTILE
L2 = LARGO ÚTIL DE TRABAJO



Rivestimento X-Treme
X-Treme coating
X-Treme-Beschichtung
Revêtement X-Treme
Recubrimiento X-Treme

TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

Diametri Diameters	Tolleranza del diametro Diameter tolerance	Tolleranza del gambo Shank tolerance
da 0.2 mm a 6 mm	+0.000 mm -0.001 mm	h6

FRESE MICRO POWER TORICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

MICRO POWER TORIC END MILLS - 2 FLUTES - SUB-MICROGRAIN
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SERIE NORMALE

NORMAL SERIES
 NORMAL AUSFÜHRUNG
 SÉRIE NORMALE
 SERIE NORMAL



1431XT

NEW Ø



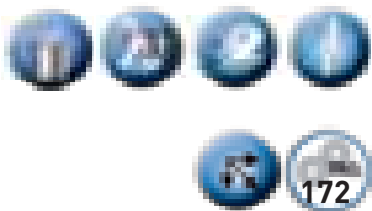
Ø/R mm	d ₁ mm	L mm	L ₁ mm	L ₂ mm	d mm	Z	1431XT €
0.4/0.1	0.37	45	0.6	4	4	2	70,70
0.5/0.05	0.45	45	0.7	2	4	2	70,70 ■
0.5/0.1	0.45	45	0.7	2	4	2	70,70
0.5/0.1	0.45	45	0.7	4	4	2	70,70
0.5/0.1	0.45	45	0.7	6	4	2	70,70
0.5/0.1	0.45	45	0.7	8	4	2	70,70
0.6/0.06	0.55	45	0.9	2	4	2	70,70 ■
0.6/0.1	0.55	45	0.9	2	4	2	70,70
0.6/0.1	0.55	45	0.9	4	4	2	70,70
0.6/0.1	0.55	45	0.9	6	4	2	70,70
0.6/0.1	0.55	45	0.9	8	4	2	70,70
0.6/0.1	0.55	45	0.9	10	4	2	70,70
0.7/0.07	0.65	45	1	2	4	2	70,70 ■
0.7/0.1	0.65	45	1	2	4	2	70,70
0.7/0.1	0.65	45	1	4	4	2	70,70
0.7/0.1	0.65	45	1	6	4	2	70,70
0.7/0.1	0.65	45	1	8	4	2	70,70
0.7/0.1	0.65	45	1	10	4	2	70,70
0.8/0.08	0.75	45	1.2	4	4	2	70,70 ■
0.8/0.1	0.75	45	1.2	4	4	2	70,70
0.8/0.1	0.75	45	1.2	6	4	2	70,70
0.8/0.1	0.75	45	1.2	8	4	2	70,70
0.8/0.1	0.75	45	1.2	10	4	2	70,70
0.8/0.1	0.75	45	1.2	12	4	2	70,70
0.9/0.2	0.85	45	1.35	6	4	2	70,70
0.9/0.2	0.85	45	1.35	8	4	2	70,70
0.9/0.2	0.85	45	1.35	10	4	2	70,70
0.9/0.2	0.85	50	1.35	15	4	2	70,70
1.0/0.2	0.95	45	1.5	6	4	2	65,00
1.0/0.1	0.95	45	1.5	8	4	2	65,00 ■
1.0/0.1	0.95	45	1.5	10	4	2	65,00 ■
1.0/0.2	0.95	45	1.5	8	4	2	65,00
1.0/0.2	0.95	45	1.5	10	4	2	65,00
1.0/0.2	0.95	45	1.5	12	4	2	65,00
1.0/0.2	0.95	50	1.5	14	4	2	65,00
1.0/0.1	0.95	50	1.5	16	4	2	65,00 ■

→2-6

Ø/R mm	L ₂ mm	β					
		0.5°	1°	1° 30'	2°	2° 30'	3°
LU							
0.4/0.1	4	3.82	5	5.44	5.8	6.12	6.41
0.5/0.05	2	2.79	3.1	3.37	3.62	3.86	4.08
0.5/0.1	2	2.81	3.11	3.38	3.62	3.85	4.07
0.5/0.1	4	4.58	5.15	5.55	5.89	6.2	6.48
0.5/0.1	6	5.71	7.18	7.7	8.12	8.48	8.81
0.5/0.1	8	5.71	9.22	9.84	10.32	10.73	11.1
0.6/0.06	2	2.84	3.14	3.4	3.64	3.88	4.1
0.6/0.1	2	2.85	3.14	3.4	3.64	3.87	4.09
0.6/0.1	4	4.64	5.18	5.57	5.91	6.21	6.49
0.6/0.1	6	6.26	7.21	7.72	8.13	8.49	8.82
0.6/0.1	8	6.16	9.24	9.86	10.33	10.74	11.11
0.6/0.1	10	6.16	11.28	11.98	12.51	12.96	13.36
0.7/0.07	2	2.88	3.17	3.43	3.67	3.9	4.12
0.7/0.1	2	2.89	3.17	3.43	3.67	3.9	4.11
0.7/0.1	4	4.7	5.21	5.6	5.93	6.23	6.51
0.7/0.1	6	6.39	7.24	7.74	8.15	8.51	8.84
0.7/0.1	8	6.61	9.27	9.87	10.35	10.75	11.12
0.7/0.1	10	6.61	11.3	12	12.52	12.97	13.37
0.8/0.08	4	4.68	5.2	5.2	5.93	6.23	6.51
0.8/0.1	4	4.73	5.22	5.6	5.93	6.22	6.5
0.8/0.1	6	6.46	7.25	7.75	8.15	8.5	8.83
0.8/0.1	8	6.93	9.29	9.88	10.34	10.75	11.11
0.8/0.1	10	6.93	11.32	12	12.52	12.97	13.36
0.8/0.1	12	6.93	13.35	14.11	14.69	15.17	15.59
0.9/0.2	6	6.53	7.28	7.77	8.16	8.52	8.84
0.9/0.2	8	7.38	9.31	9.9	10.36	10.76	11.12
0.9/0.2	10	7.38	11.34	12.02	12.54	12.98	13.37
0.9/0.2	15	7.38	16.42	17.29	17.92	18.45	18.92
1.0/0.2	6	6.6	7.31	7.79	8.18	8.53	8.85
1.1/0.1	8	6.76	9.26	9.26	10.34	10.75	11.12
1.1/0.1	10	6.76	11.26	11.26	12.5	12.96	13.36
1.0/0.2	8	7.83	9.34	9.92	10.37	10.77	11.13
1.0/0.2	10	7.83	11.37	12.03	12.55	12.99	13.38
1.0/0.2	12	7.83	13.4	14.15	14.71	15.19	15.61
1.0/0.2	14	7.83	15.43	16.25	16.86	17.37	17.82
1.1/0.1	16	6.76	17.26	18.25	18.93	19.49	19.97

→2-6

■ **Ad esaurimento scorte** - Subject to availability until sold out - Solange der vorrat reicht - Jusqu'à Épuisement de stock - Hasta agotamiento del stock



SERIE NORMALE

NORMAL SERIES
NORMAL AUSFÜHRUNG
SÉRIE NORMALE
SERIE NORMAL

FRESE MICRO POWER TORICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

MICRO POWER TORIC END MILLS - 2 FLUTES - SUB-MICROGRAIN
MICRO POWER TORUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN
FRAISES MICRO POWER TORIQUES - 2 DENTS - MICRO-GRAIN ULTRAFIN
FRESAS POWER MICRO TÓRICAS - 2 LABIOS - SUB-MICROGRANO

1431XT

NEW Ø



Ø/R mm	d ₁ mm	L mm	L ₁ mm	L ₂ mm	d mm	Z	1431XT €
1.0/0.2	0.95	50	1.5	16	4	2	65,00
1.2/0.2	1.15	45	1.8	6	4	2	65,00
1.2/0.2	1.15	45	1.8	8	4	2	65,00
1.2/0.2	1.15	45	1.8	10	4	2	65,00
1.2/0.2	1.15	45	1.8	12	4	2	65,00
1.4/0.14	1.35	45	2.1	6	4	2	65,00 ■
1.4/0.2	1.35	45	2.1	6	4	2	65,00
1.4/0.2	1.35	45	2.1	8	4	2	65,00
1.4/0.2	1.35	45	2.1	10	4	2	65,00
1.4/0.2	1.35	45	2.1	12	4	2	65,00
1.4/0.2	1.35	50	2.1	14	4	2	65,00
1.4/0.2	1.35	50	2.1	16	4	2	65,00
1.5/0.2	1.45	45	2.3	6	4	2	65,00
1.5/0.2	1.45	45	2.3	8	4	2	65,00
1.5/0.15	1.45	45	2.3	10	4	2	65,00 ■
1.5/0.15	1.45	45	2.3	12	4	2	65,00 ■
1.5/0.2	1.45	45	2.3	10	4	2	65,00
1.5/0.2	1.45	45	2.3	12	4	2	65,00
1.5/0.2	1.45	50	2.3	14	4	2	65,00
1.5/0.15	1.45	50	2.3	16	4	2	65,00 ■
1.5/0.2	1.45	50	2.3	16	4	2	65,00
1.5/0.2	1.45	55	2.3	18	4	2	65,00
1.5/0.15	1.45	55	2.3	20	4	2	65,00 ■
1.6/0.15	1.55	45	2.4	6	4	2	65,00 ■
1.5/0.2	1.45	55	2.3	20	4	2	65,00
1.6/0.2	1.55	45	2.4	6	4	2	65,00
1.6/0.2	1.55	45	2.4	8	4	2	65,00
1.6/0.2	1.55	45	2.4	10	4	2	65,00
1.6/0.2	1.55	45	2.4	12	4	2	65,00
1.6/0.2	1.55	50	2.4	14	4	2	65,00
1.6/0.2	1.55	50	2.4	16	4	2	65,00
1.6/0.2	1.55	55	2.4	18	4	2	65,00
1.6/0.2	1.55	55	2.4	20	4	2	65,00
1.6/0.18	1.75	45	2.7	6	4	2	65,00 ■
1.8/0.2	1.75	45	2.7	6	4	2	65,00
1.8/0.2	1.75	45	2.7	8	4	2	65,00

→3-6

Ø/R mm	L ₂ mm	R					
		0.5°	1°	1° 30'	2°	2° 30'	3°
LU							
1.0/0.2	16	7.83	17.45	18.35	19	19.55	20.02
1.2/0.2	6	6.71	7.36	7.83	8.31	8.56	8.88
1.2/0.2	8	8.42	9.39	9.95	10.4	10.8	11.16
1.2/0.2	10	8.73	11.42	12.07	12.58	13.01	13.38
1.2/0.2	12	8.73	13.45	14.18	14.74	15.21	15.63
1.4/0.14	6	6.73	7.38	7.84	8.23	8.58	8.89
1.4/0.2	6	6.8	7.42	7.86	8.25	8.59	8.9
1.4/0.2	8	8.57	9.44	9.99	10.43	10.82	11.18
1.4/0.2	10	9.63	11.47	12.1	12.6	13.04	13.43
1.4/0.2	12	9.63	13.5	14.21	14.76	15.23	15.65
1.4/0.2	14	9.63	15.52	16.31	16.91	17.41	17.86
1.4/0.2	16	9.63	17.55	18.41	19.05	19.58	20.05
1.5/0.2	6	6.85	7.44	7.88	8.26	8.6	8.92
1.5/0.2	8	8.63	9.47	10.01	10.45	10.84	11.19
1.5/0.15	10	8.71	11.41	12.06	12.57	13.01	13.4
1.5/0.15	12	8.71	13.41	14.15	14.72	15.2	15.62
1.5/0.2	10	10.22	11.49	12.12	12.62	13.05	13.44
1.5/0.2	12	10.08	13.52	14.23	14.77	15.24	15.66
1.5/0.2	14	10.08	15.54	16.33	16.92	17.42	17.87
1.5/0.15	16	8.71	17.41	18.32	18.98	19.53	20.01
1.5/0.2	16	10.08	17.57	18.42	19.06	19.59	20.06
1.5/0.2	18	10.08	19.59	20.51	21.19	21.75	22.24
1.5/0.15	20	8.71	21.41	22.48	23.22	23.83	-
1.6/0.16	6	6.83	7.43	7.88	8.26	8.6	8.92
1.5/0.2	20	10.08	21.62	22.6	23.31	23.9	-
1.6/0.2	6	6.89	7.46	7.9	8.28	8.62	8.93
1.6/0.2	8	8.69	9.49	10.02	10.46	10.85	11.2
1.6/0.2	10	10.37	11.52	12.14	12.63	13.06	13.45
1.6/0.2	12	10.53	13.54	14.24	14.79	15.25	15.67
1.6/0.2	14	10.53	15.57	16.34	16.93	17.43	17.88
1.6/0.2	16	10.53	17.59	18.44	19.07	19.6	20.07
1.6/0.2	18	10.53	19.62	20.53	21.2	21.76	22.25
1.6/0.2	20	10.53	21.64	22.62	23.32	23.91	-
1.8/0.18	6	6.91	7.48	7.92	8.29	8.63	8.94
1.8/0.2	6	6.96	7.51	7.94	8.31	8.64	8.95
1.8/0.2	8	8.78	9.54	10.06	10.49	10.87	11.22

→3-6

■ Ad esaurimento scorte - Subject to availability until sold out - Solange der vorrat reicht - Jusqu'à Épuisement de stock - Hasta agotamiento del stock

FRESE MICRO POWER TORICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

MICRO POWER TORIC END MILLS - 2 FLUTES - SUB-MICROGRAIN
 MICRO POWER TORUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN
 FRAISES MICRO POWER TORIQUES - 2 DENTS - MICRO-GRAIN ULTRAFIN
 FRESAS POWER MICRO TÓRICAS - 2 LABIOS - SUB-MICROGRANO

SERIE NORMALE

NORMAL SERIES
 NORMAL AUSFÜHRUNG
 SÉRIE NORMALE
 SERIE NORMAL



1431XT

NEW Ø



Ø/R mm	d ₁ mm	L mm	L ₁ mm	L ₂ mm	d mm	Z	1431XT €
1.8/0.2	1.75	45	2.7	10	4	2	65,00
1.8/0.2	1.75	45	2.7	12	4	2	65,00
1.8/0.2	1.75	50	2.7	14	4	2	65,00
1.8/0.2	1.75	50	2.7	16	4	2	65,00
1.8/0.2	1.75	55	2.7	18	4	2	65,00
1.8/0.2	1.75	55	2.7	20	4	2	65,00
2.0/0.2	1.95	45	3	6	4	2	60,50 ■
2.0/0.2	1.95	45	3	8	4	2	60,50 ■
2.0/0.2	1.95	45	3	10	4	2	60,50 ■
2.0/0.2	1.95	45	3	12	4	2	60,50 ■
2.0/0.2	1.95	50	3	14	4	2	60,50 ■
2.0/0.2	1.95	50	3	16	4	2	60,50
2.0/0.2	1.95	55	3	18	4	2	60,50
2.0/0.2	1.95	55	3	20	4	2	60,50 ■
2.0/0.2	1.95	60	3	25	4	2	60,50
2.0/0.2	1.95	70	3	30	4	2	60,50 ■
2.0/0.5	1.95	45	3	6	4	2	60,50
2.0/0.5	1.95	45	3	8	4	2	60,50
2.0/0.5	1.95	45	3	10	4	2	60,50
2.0/0.5	1.95	45	3	12	4	2	60,50
2.0/0.5	1.95	50	3	14	4	2	60,50
2.0/0.5	1.95	50	3	16	4	2	60,50
2.0/0.5	1.95	55	3	18	4	2	60,50
2.0/0.5	1.95	55	3	20	4	2	60,50
2.0/0.5	1.95	60	3	25	4	2	60,50
2.0/0.5	1.95	70	3	30	4	2	60,50
2.5/0.25	2.4	45	3.7	8	4	2	60,50 ■
2.5/0.25	2.4	45	1.2	10	4	2	60,50
2.5/0.25	2.4	45	1.2	12	4	2	60,50
2.5/0.25	2.4	50	1.2	14	4	2	60,50
2.5/0.25	2.4	55	1.35	16	4	2	60,50
2.5/0.25	2.4	55	1.35	18	4	2	60,50
2.5/0.25	2.4	60	1.35	20	4	2	60,50
2.5/0.25	2.4	70	1.35	25	4	2	60,50
2.5/0.25	2.4	80	1.5	30	4	2	60,50
3.0/0.2	2.85	45	4.5	8	6	2	60,50

→4-6

Ø/R mm	L ₂ mm	β					
		0.5°	1°	1° 30'	2°	2° 30'	3°
LU							
1.8/0.2	10	10.54	11.56	12.17	12.66	13.08	13.47
1.8/0.2	12	11.43	13.59	14.27	14.81	15.27	15.69
1.8/0.2	14	11.43	15.61	16.37	16.96	17.45	17.89
1.8/0.2	16	11.43	17.63	18.46	19.09	19.62	20.08
1.8/0.2	18	11.43	19.66	20.55	21.22	21.78	-
1.8/0.2	20	11.43	21.68	22.64	23.4	23.93	-
2.0/0.2	6	7.03	7.56	7.98	8.34	8.67	8.98
2.0/0.2	8	8.87	9.58	10.09	10.52	10.9	11.24
2.0/0.2	10	10.66	11.61	12.2	12.68	13.1	13.49
2.0/0.2	12	12.32	13.63	14.3	14.84	15.29	15.71
2.0/0.2	14	12.33	15.65	16.4	16.98	17.47	17.91
2.0/0.2	16	12.33	17.68	18.49	19.11	19.64	-
2.0/0.2	18	12.33	19.7	20.58	21.24	21.79	-
2.0/0.2	20	12.33	21.72	22.67	23.36	-	-
2.0/0.2	25	12.33	26.78	27.87	28.65	-	-
2.0/0.2	30	12.33	31.83	33.05	-	-	-
2.0/0.5	6	7	7.52	7.93	8.29	8.61	8.92
2.0/0.5	8	8.83	9.54	10.05	10.47	10.85	11.19
2.0/0.5	10	10.62	11.57	12.16	12.64	13.06	13.44
2.0/0.5	12	12.12	13.59	14.26	14.79	15.25	15.66
2.0/0.5	14	11.95	15.62	16.36	16.94	17.43	17.87
2.0/0.5	16	11.95	17.64	18.46	19.08	19.6	-
2.0/0.5	18	11.95	19.67	20.55	21.21	21.76	-
2.0/0.5	20	11.95	21.69	22.63	23.33	-	-
2.0/0.5	25	12.33	26.78	27.87	28.65	-	-
2.0/0.5	30	12.33	31.83	33.05	-	-	-
2.5/0.25	8	9.28	9.84	10.29	10.69	11.04	11.37
2.5/0.25	10	11.15	11.86	12.39	12.84	13.24	13.6
2.5/0.25	12	13.01	13.88	14.48	14.98	15.42	-
2.5/0.25	14	14.85	15.9	16.57	17.12	-	-
2.5/0.25	16	16.64	17.92	18.66	19.24	-	-
2.5/0.25	18	18.23	19.94	20.74	21.36	-	-
2.5/0.25	20	18.1	21.96	22.82	-	-	-
2.5/0.25	25	18.1	27	28.01	-	-	-
2.5/0.25	30	18.1	32.05	-	-	-	-
3.0/0.2	8	9.58	10.07	10.48	10.85	11.19	11.51

→4-6

■ **Ad esaurimento scorte** - Subject to availability until sold out - Solange der vorrat reicht - Jusqu'à Épuisement de stock - Hasta agotamiento del stock



SERIE NORMALE

NORMAL SERIES
NORMAL AUSFÜHRUNG
SÉRIE NORMALE
SERIE NORMAL

FRESE MICRO POWER TORICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

MICRO POWER TORIC END MILLS - 2 FLUTES - SUB-MICROGRAIN
MICRO POWER TORUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN
FRAISES MICRO POWER TORIQUES - 2 DENTS - MICRO-GRAIN ULTRAFIN
FRESAS POWER MICRO TÓRICAS - 2 LABIOS - SUB-MICROGRANO

1431XT

NEW Ø



Ø/R mm	d ₁ mm	L mm	L ₁ mm	L ₂ mm	d mm	Z	1431XT €
3.0/0.2	2.85	45	4.5	10	6	2	60,50
3.0/0.2	2.85	45	4.5	12	6	2	60,50
3.0/0.2	2.85	50	4.5	14	6	2	60,50
3.0/0.3	2.85	55	4.5	16	6	2	60,50 ■
3.0/0.2	2.85	55	4.5	16	6	2	60,50
3.0/0.2	2.85	55	4.5	18	6	2	60,50
3.0/0.3	2.85	60	4.5	20	6	2	60,50 ■
3.0/0.2	2.85	60	4.5	20	6	2	60,50
3.0/0.2	2.85	65	4.5	25	6	2	60,50
3.0/0.2	2.85	80	4.5	30	6	2	60,50
3.0/0.2	2.85	90	4.5	35	6	2	60,50
3.0/0.2	2.85	90	4.5	40	6	2	60,50
3.0/0.5	2.85	45	4.5	8	6	2	60,50
3.0/0.5	2.85	45	4.5	10	6	2	60,50
3.0/0.5	2.85	45	4.5	12	6	2	60,50
3.0/0.5	2.85	45	4.5	14	6	2	60,50
3.0/0.5	2.85	50	4.5	16	6	2	60,50
3.0/0.5	2.85	55	4.5	18	6	2	60,50
3.0/0.5	2.85	55	4.5	20	6	2	60,50
3.0/0.5	2.85	60	4.5	25	6	2	60,50
3.0/0.5	2.85	65	4.5	30	6	2	60,50
3.0/0.5	2.85	80	4.5	35	6	2	60,50
3.0/0.5	2.85	90	4.5	40	6	2	60,50
4.0/0.5	3.85	50	6	12	6	2	65,00
4.0/0.5	3.85	60	6	16	6	2	65,00
4.0/0.5	3.85	60	6	20	6	2	65,00
4.0/0.5	3.85	70	6	25	6	2	65,00
4.0/0.5	3.85	80	6	30	6	2	65,00
4.0/0.5	3.85	90	6	35	6	2	65,00
4.0/0.5	3.85	90	6	40	6	2	65,00
4.0/0.5	3.85	100	6	45	6	2	65,00
4.0/0.5	3.85	100	6	50	6	2	65,00
5.0/0.5	4.85	60	7,5	16	6	2	65,00
5.0/0.5	4.85	70	7,5	25	6	2	65,00 ■
5.0/0.5	4.85	90	7,5	35	6	2	65,00 ■
5.0/0.5	4.85	110	7,5	50	6	2	65,00

→5-6

Ø/R mm	L ₂ mm	R					
		0.5°	1°	1° 30'	2°	2° 30'	3°
LU							
3.0/0.2	10	11.48	12.08	12.57	12.99	13.38	13.73
3.0/0.2	12	13.38	14.1	14.66	15.13	15.55	15.93
3.0/0.2	14	15.27	16.12	16.74	17.26	17.71	18.12
3.0/0.3	16	16.94	18.02	18.72	19.29	19.78	20.22
3.0/0.2	16	17.15	18.14	18.82	19.38	19.86	20.3
3.0/0.2	18	19	20.15	20.9	21.49	22.01	22.47
3.0/0.3	20	20.24	22.02	22.85	23.5	24.06	24.54
3.0/0.2	20	20.84	22.17	22.97	23.6	24.15	24.63
3.0/0.2	25	23.99	27.21	28.15	28.87	29.47	-
3.0/0.2	30	23.99	32.25	33.31	34.11	-	-
3.0/0.2	35	23.99	37.3	38.47	39.33	-	-
3.0/0.2	40	23.99	42.33	43.62	-	-	-
3.0/0.5	8	9.56	10.04	10.45	10.81	11.15	11.46
3.0/0.5	10	11.46	12.06	12.54	12.96	13.34	13.64
3.0/0.5	12	13.36	14.08	14.62	15.09	15.51	15.89
3.0/0.5	14	15.25	16.09	16.71	17.22	17.67	18.08
3.0/0.5	16	17.12	18.11	18.79	19.34	19.83	20.26
3.0/0.5	18	18.95	20.13	20.87	21.46	21.98	22.43
3.0/0.5	20	20.08	22.15	22.94	23.57	24.12	24.59
3.0/0.5	25	23.62	27.19	28.12	28.84	29.44	-
3.0/0.5	30	23.62	32.23	33.29	34.08	34.74	-
3.0/0.5	35	23.62	37.27	38.45	39.31	-	-
3.0/0.5	40	23.62	42.31	43.6	-	-	-
4.0/0.5	12	13.58	14.23	14.75	15.2	15.6	15.97
4.0/0.5	16	17.39	18.26	18.91	19.44	19.91	-
4.0/0.5	20	21.15	22.3	23.05	23.66	-	-
4.0/0.5	25	25.75	27.33	28.22	22.92	-	-
4.0/0.5	30	28.12	32.37	33.39	-	-	-
4.0/0.5	35	28.12	37.41	38.54	-	-	-
4.0/0.5	40	28.12	42.45	-	-	-	-
4.0/0.5	45	28.12	47.49	-	-	-	-
4.0/0.5	50	28.12	52.52	-	-	-	-
5.0/0.5	16	17.61	18.4	19.02	-	-	-
5.0/0.5	25	26.12	27.47	-	-	-	-
5.0/0.5	35	32.61	-	-	-	-	-
5.0/0.5	50	32.61	-	-	-	-	-

→5-6

■ Ad esaurimento scorte - Subject to availability until sold out - Solange der vorrat reicht - Jusqu'à Épuisement de stock - Hasta agotamiento del stock

FRESE MICRO POWER TORICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

MICRO POWER TORIC END MILLS - 2 FLUTES - SUB-MICROGRAIN
 MICRO POWER TORUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN
 FRAISES MICRO POWER TORIQUES - 2 DENTS - MICRO-GRAIN ULTRAFIN
 FRESAS POWER MICRO TÓRICAS - 2 LABIOS - SUB-MICROGRANO

SERIE NORMALE

NORMAL SERIES
 NORMAL AUSFÜHRUNG
 SÉRIE NORMALE
 SERIE NORMAL



1431XT

NEW Ø



Ø/R mm	d ₁ mm	L mm	L ₁ mm	L ₂ mm	d mm	Z	1431XT €
6.0/0.5	5,9	65	8,5	10	6	2	65,00
6.0/0.5	5,9	65	8,5	20	6	2	65,00
6.0/0.5	5,9	75	8,5	30	6	2	65,00
6.0/0.5	5,9	90	8,5	40	6	2	65,00
6.0/0.5	5,9	110	8,5	50	6	2	65,00

Ø/R mm	L ₂ mm	β					
		0.5°	1°	1° 30'	2°	2° 30'	3°
LU							
6.0/0.5	10	-	-	-	-	-	-
6.0/0.5	20	-	-	-	-	-	-
6.0/0.5	30	-	-	-	-	-	-
6.0/0.5	40	-	-	-	-	-	-
6.0/0.5	50	-	-	-	-	-	-

→6-6

→6-6



SERIE NORMALE & LUNGA

NORMAL/EXTENDED SERIES
 NORMAL/ÜBERLÄNGE AUSFÜHRUNG
 SÉRIE NORMALE/LONGUE
 SERIE NORMAL/LARGA



FRESE MICRO POWER TORICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

MICRO POWER TORIC END MILLS - 2 FLUTES - SUB-MICROGRAIN
 MICRO POWER TORUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN
 FRAISES MICRO POWER TORIQUES - 2 DENTS - MICRO-GRAIN ULTRAFIN
 FRESAS POWER MICRO TÓRICAS - 2 LABIOS - SUB-MICROGRANO

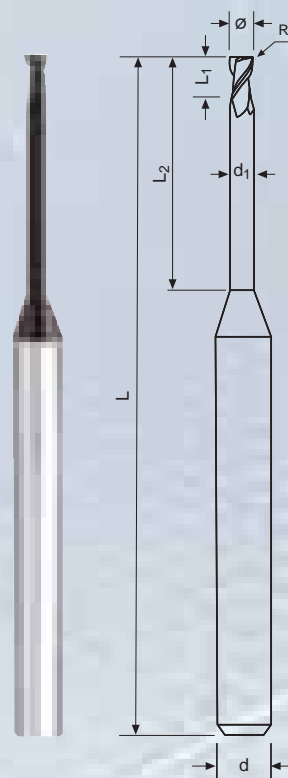


1433XT



∅/R mm	d ₁ mm	L mm	L ₁ mm	L ₂ mm	d mm	Z	1433XT €
0.5/0.1	0.45	50	0.4	2	4	2	37,50
0.5/0.1	0.45	50	0.4	4	4	2	37,50
0.5/0.1	0.45	50	0.4	6	4	2	37,50
0.6/0.1	0.55	50	0.5	2	4	2	37,50
0.6/0.1	0.55	50	0.5	4	4	2	37,50
0.6/0.1	0.55	50	0.5	6	4	2	37,50
0.8/0.1	0.75	50	0.65	4	4	2	37,50
0.8/0.1	0.75	50	0.65	6	4	2	37,50
0.8/0.1	0.75	50	0.65	8	4	2	29,15
1.0/0.2	0.95	50	0.8	4	4	2	29,15
1.0/0.2	0.95	50	0.8	6	4	2	29,15
1.0/0.2	0.95	50	0.8	8	4	2	29,15
1.0/0.2	0.95	50	0.8	10	4	2	29,15
1.0/0.2	0.95	50	0.8	12	4	2	29,15
1.2/0.2	1.15	50	1	6	4	2	29,15
1.2/0.2	1.15	50	1	10	4	2	29,15
1.5/0.2	1.45	50	1.2	4	4	2	29,15
1.5/0.2	1.45	50	1.2	6	4	2	29,15
1.5/0.2	1.45	50	1.2	8	4	2	29,15
1.5/0.2	1.45	50	1.2	10	4	2	29,15
1.5/0.2	1.45	50	1.2	12	4	2	29,15
1.5/0.2	1.45	50	1.2	16	4	2	29,15
2.0/0.2	1.95	50	1.6	6	4	2	29,15
2.0/0.2	1.95	50	1.6	8	4	2	29,15
2.0/0.2	1.95	50	1.6	10	4	2	29,15
2.0/0.2	1.95	50	1.6	12	4	2	29,15

→1-3



Rivestimento X-Treme

X-Treme coating
 X-Treme-Beschichtung
 Revêtement X-Treme
 Recubrimiento X-Treme

TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

Diametri Diameters	Tolleranza del diametro Diameter tolerance	Tolleranza del gambo Shank tolerance
da 0.4 mm a 4 mm	+0.000 mm -0.025 mm	+0.000 mm -0.013 mm

FRESE MICRO POWER TORICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

MICRO POWER TORIC END MILLS - 2 FLUTES - SUB-MICROGRAIN
 MICRO POWER TORUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN
 FRAISES MICRO POWER TORIQUES - 2 DENTS - MICRO-GRAIN ULTRAFIN
 FRESAS POWER MICRO TÓRICAS - 2 LABIOS - SUB-MICROGRANO

SERIE NORMALE & LUNGA

NORMAL/EXTENDED SERIES
 NORMAL/ÜBERLÄNGE AUSFÜHRUNG
 SÉRIE NORMALE/LONGUE
 SERIE NORMAL/ LARGA

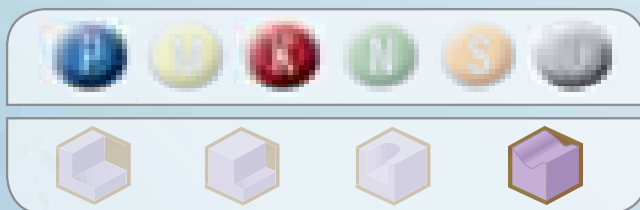
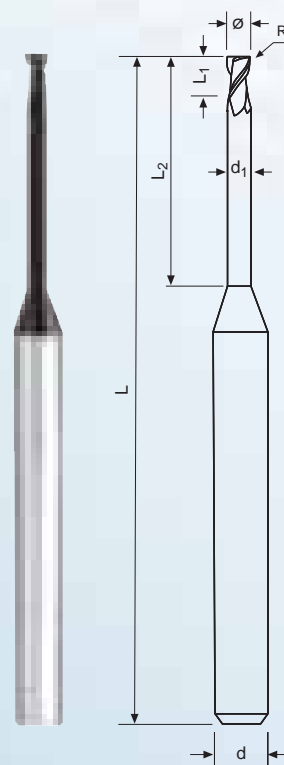


1433XT



Ø mm	d ₁ mm	L mm	L ₁ mm	L ₂ mm	d mm	Z	1433XT €
2.0/0.2	1.95	50	1.6	16	4	2	29,15
2.0/0.2	1.95	60	1.6	20	4	2	33,35
2.0/0.5	1.95	50	1.6	6	4	2	29,15
2.0/0.5	1.95	50	1.6	8	4	2	29,15
2.0/0.5	1.95	50	1.6	10	4	2	29,15
2.0/0.5	1.95	50	1.6	12	4	2	29,15
2.0/0.5	1.95	50	1.6	16	4	2	29,15
2.0/0.5	2.85	60	1.6	20	4	2	33,35
3.0/0.2	2.85	50	2.5	8	6	2	37,50
3.0/0.2	2.85	50	2.5	12	6	2	37,50
3.0/0.2	2.85	60	2.5	16	6	2	39,60
3.0/0.2	2.85	60	2.5	20	6	2	39,60
3.0/0.2	2.85	70	2.5	25	6	2	43,80
3.0/0.2	2.85	70	2.5	30	6	2	43,80
3.0/0.5	2.85	50	2.5	8	6	2	37,50
3.0/0.5	2.85	50	2.5	12	6	2	37,50
3.0/0.5	2.85	60	2.5	16	6	2	39,60
3.0/0.5	2.85	60	2.5	20	6	2	39,60
3.0/0.5	2.85	70	2.5	25	6	2	43,80
3.0/0.5	2.85	70	2.5	30	6	2	43,80
4.0/0.2	3.85	60	4	12	6	2	39,60
4.0/0.2	3.85	60	4	16	6	2	39,60
4.0/0.2	3.85	70	4	20	6	2	43,80
4.0/0.2	3.85	70	4	25	6	2	43,80
4.0/0.2	3.85	80	4	30	6	2	47,90
4.0/0.2	3.85	90	4	40	6	2	56,30

→2-3



Rivestimento X-Treme

X-Treme coating
 X-Treme-Beschichtung
 Revêtement X-Treme
 Recubrimiento X-Treme



TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

Diametri Diameters	Tolleranza del diametro Diameter tolerance	Tolleranza del gambo Shank tolerance
da 0.4 mm a 4 mm	+0.00 mm -0.025 mm	+0.00 mm -0.013 mm

FRESE POWER A CANDELA E TORICHE A 4 TAGLI IN MICROGRANA ULTRAFINE

POWER TWIST AND TORIC END MILLS - 4 FLUTES - SUB-MICROGRAIN
POWER DRALLNUTIGE UND TORUS-FRÄSER - 4 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN
FRAISES POWER HÉLICOÏDALES ET TORIQUES À 4 DENTS - MICRO-GRAIN ULTRAFIN
FRESAS POWER HELICOIDALES Y TÓRICAS - 4 LABIOS - SUB-MICROGRANO

SERIE NORMALE

NORMAL SERIES
NORMAL AUSFÜHRUNG
SÉRIE NORMALE
SERIE NORMAL



1411XT



Ø mm	d ₁ mm	L mm	L ₁ mm	L ₂ mm	d mm	Z	1411XT €
3	2.85	70	4.5	15	6	4	39,45
3.5	3.35	70	5.3	17.5	6	4	41,60
4	3.85	70	6	20	6	4	40,80
5	4.85	80	7.5	25	6	4	43,90
6	5.85	90	9	30	6	4	45,80



1411XT



Rivestimento X-Treme
X-Treme coating
X-Treme-Beschichtung
Revêtement X-Treme
Recubrimiento X-Treme

TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

Diametri Diameters	Tolleranza del diametro Diameter tolerance	Tolleranza del gambo Shank tolerance
da 3 mm a 6 mm	+0.000 mm -0.025 mm	+0.000 mm -0.013 mm

1415XT

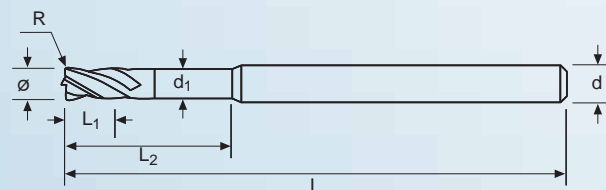
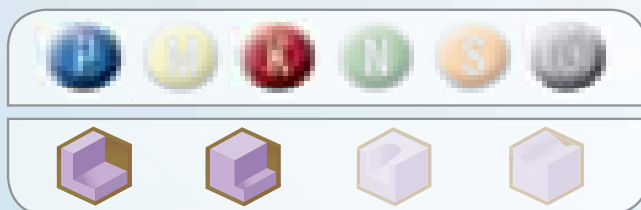


Rivestimento X-Treme
X-Treme coating
X-Treme-Beschichtung
Revêtement X-Treme
Recubrimiento X-Treme

1415XT



Ø mm	R	d ₁ mm	L mm	L ₁ mm	L ₂ mm	d mm	Z	1415XT €
3	0.5	2.85	70	4.5	15	6	4	42,60
3.5	0.5	3.35	70	5.3	17.5	6	4	45,00
4	0.5	3.85	70	6	20	6	4	44,10
5	0.5	4.85	80	7.5	25	6	4	47,40
6	0.5	5.85	90	9	30	6	4	49,40



TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

Diametri Diameters	Tolleranza del diametro Diameter tolerance	Tolleranza del gambo Shank tolerance
da 3 mm a 6 mm	+0.000 mm -0.025 mm	+0.000 mm -0.013 mm

FRESE MICRO POWER SEMISFERICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

MICRO POWER BALL NOSE END MILLS - 2 FLUTES - SUB-MICROGRAIN
 MICRO POWER RADIUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN
 FRAISES MICRO POWER HÉMISPHERIQUES À 2 DENTS - MICRO-GRAIN ULTRAFIN
 FRESAS MICRO POWER ESFÉRICAS - 2 LABIOS - SUB-MICROGRANO

SERIE NORMALE LUNGA & EXTRA L.

NORMAL/LONG/EXTRALONG SERIES
 NORMAL/LANGE/EXTRALANGE AUSFÜHRUNG
 SÉRIE NORMALE/LONGUE/EXTRALONGUE
 SERIE NORMAL/LARGA/EXTRALARGA



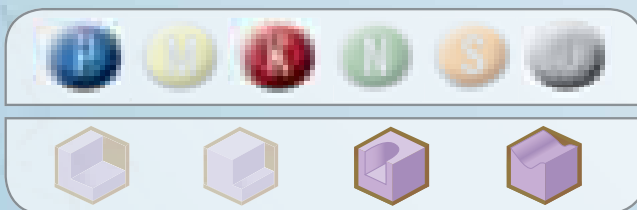
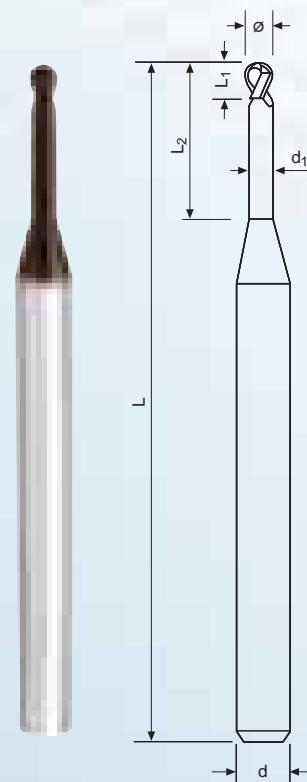
431RXT

NEW Ø



Ø mm	d ₁ mm	L mm	L ₁ mm	L ₂ mm	d mm	Z	431RXT €
0.3	0.27	50	0.24	1	4	2	71,00
0.3	0.27	50	0.24	2	4	2	71,00
0.3	0.27	50	0.24	3	4	2	71,00
0.4	0.37	50	0.3	1	4	2	62,10
0.4	0.37	50	0.3	2	4	2	62,10
0.4	0.37	50	0.3	3	4	2	62,10
0.4	0.37	50	0.3	4	4	2	62,10
0.4	0.37	50	0.3	5	4	2	73,90
0.5	0.45	50	0.4	2	4	2	50,30
0.5	0.45	50	0.4	3	4	2	50,30
0.5	0.45	50	0.4	4	4	2	50,30
0.5	0.45	50	0.4	5	4	2	50,30
0.5	0.45	50	0.4	6	4	2	50,30
0.5	0.45	50	0.4	8	4	2	62,10
0.6	0.55	50	0.5	2	4	2	50,30
0.6	0.55	50	0.5	3	4	2	50,30
0.6	0.55	50	0.5	4	4	2	50,30
0.6	0.55	50	0.5	5	4	2	50,30
0.6	0.55	50	0.5	6	4	2	50,30
0.6	0.55	50	0.5	8	4	2	62,10
0.8	0.75	50	0.6	2	4	2	50,30
0.8	0.75	50	0.6	3	4	2	50,30
0.8	0.75	50	0.6	4	4	2	50,30
0.8	0.75	50	0.6	5	4	2	50,30
0.8	0.75	50	0.6	6	4	2	50,30
0.8	0.75	50	0.6	8	4	2	50,30

→1-3



Rivestimento X-Treme

X-Treme coating
 X-Treme-Beschichtung
 Revêtement X-Treme
 Recubrimiento X-Treme



TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

Diametri Diameters	Tolleranza del diametro Diameter tolerance	Tolleranza del gambo Shank tolerance
da 0.3 mm a 3 mm	+ .000 mm - .025 mm	+ .000 mm - .013 mm
da 3.5 mm a 6 mm	+ .000 mm - .038 mm	+ .000 mm - .013 mm



SERIE NORMALE LUNGA & EXTRA L.

NORMAL/LONG/EXTRALONG SERIES
NORMAL/LANGE/ EXTRALANGE AUSFÜHRUNG
SÉRIE NORMALE/LONGUE/EXTRALONGUE
SERIE NORMAL/LARGA/EXTRALARGA

FRESE MICRO POWER SEMISFERICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

MICRO POWER BALL NOSE END MILLS - 2 FLUTES - SUB-MICROGRAIN
MICRO POWER RADIUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN
FRAISES MICRO POWER HÉMISPHERIQUES À 2 DENTS - MICRO-GRAIN ULTRAFIN
FRESAS MICRO POWER ESFÉRICAS - 2 LABIOS - SUB-MICROGRANO

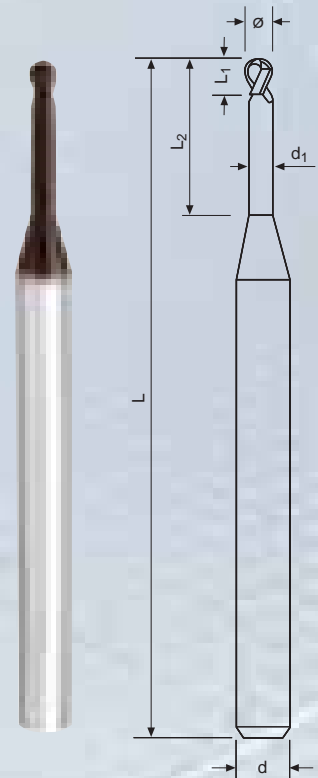
431RXT

NEW Ø



Ø mm	d ₁ mm	L mm	L ₁ mm	L ₂ mm	d mm	Z	431RXT €
0.8	0.75	50	0.6	10	4	2	62,10
1.0	0.95	50	0.8	3	4	2	50,30
1.0	0.95	50	0.8	4	4	2	50,30
1.0	0.95	50	0.8	5	4	2	50,30
1.0	0.95	50	0.8	6	4	2	50,30
1.0	0.95	50	0.8	8	4	2	50,30
1.0	0.95	50	0.8	10	4	2	50,30
1.0	0.95	50	0.8	12	4	2	50,30
1.0	0.95	50	0.8	16	4	2	62,80
1.0	0.95	60	0.8	20	4	2	83,70
1.2	1.15	50	1.0	4	4	2	50,30
1.2	1.15	50	1.0	6	4	2	50,30
1.2	1.15	50	1.0	8	4	2	50,30
1.2	1.15	50	1.0	10	4	2	50,30
1.2	1.15	50	1.0	12	4	2	50,30
1.4	1.33	45	2.1	12	4	2	50,30
1.5	1.45	50	1.2	4	4	2	50,30
1.5	1.45	50	1.2	6	4	2	50,30
1.5	1.45	50	1.2	8	4	2	50,30
1.5	1.45	50	1.2	10	4	2	50,30
1.5	1.45	50	1.2	12	4	2	50,30
1.5	1.45	50	1.2	16	4	2	50,30
1.5	1.45	60	1.2	20	4	2	50,30
1.6	1.51	50	2.4	16	4	2	63,90
1.8	2.71	50	2.7	16	4	2	73,50
2.0	1.95	50	1.6	4	4	2	62,80

→2-3



Rivestimento X-Treme
X-Treme coating
X-Treme-Beschichtung
Revêtement X-Treme
Recubrimiento X-Treme

TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

Diametri Diameters	Tolleranza del diametro Diameter tolerance	Tolleranza del gambo Shank tolerance
da 0.3 mm a 3 mm	+0.000 mm -0.025 mm	+0.000 mm -0.013 mm
da 3.5 mm a 6 mm	+0.000 mm -0.038 mm	+0.000 mm -0.013 mm

FRESE MICRO POWER SEMISFERICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

MICRO POWER BALL NOSE END MILLS - 2 FLUTES - SUB-MICROGRAIN
 MICRO POWER RADIUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN
 FRAISES MICRO POWER HÉMISPHERIQUES À 2 DENTS - MICRO-GRAIN ULTRAFIN
 FRESAS MICRO POWER ESFÉRICAS - 2 LABIOS - SUB-MICROGRANO

SERIE NORMALE LUNGA & EXTRA L.

NORMAL/LONG/EXTRALONG SERIES
 NORMAL/LANGE/EXTRALANGE AUSFÜHRUNG
 SÉRIE NORMALE/LONGUE/EXTRALONGUE
 SERIE NORMAL/LARGA/EXTRALARGA



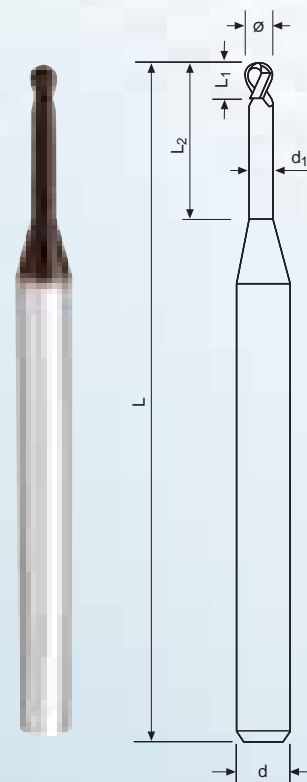
431RXT

NEW Ø



Ø mm	d ₁ mm	L mm	L ₁ mm	L ₂ mm	d mm	Z	431RXT €
2.0	1.95	50	1.6	6	4	2	50,30
2.0	1.95	50	1.6	8	4	2	50,30
2.0	1.95	50	1.6	10	4	2	50,30
2.0	1.95	50	1.6	12	4	2	50,30
2.0	1.95	50	1.6	16	4	2	50,30
2.0	1.95	60	1.6	20	4	2	50,30
2.0	1.95	60	1.6	25	4	2	50,30
2.0	1.95	70	1.6	30	4	2	50,30
3.0	2.85	50	2.4	6	6	2	48,00
3.0	2.85	50	2.4	8	6	2	51,20
3.0	2.85	50	2.4	10	6	2	54,40
3.0	2.85	50	2.4	12	6	2	54,40
3.0	2.85	60	2.4	16	6	2	54,40
3.0	2.85	60	2.4	20	6	2	54,40
3.0	2.85	70	2.4	25	6	2	57,60
3.0	2.85	70	2.4	30	6	2	57,60
3.0	2.85	80	2.4	35	6	2	63,90
4.0	3.85	60	3.2	8	6	2	57,60
4.0	3.85	60	3.2	10	6	2	57,60
4.0	3.85	60	3.2	12	6	2	57,60
4.0	3.85	60	3.2	16	6	2	57,60
4.0	3.85	70	3.2	20	6	2	57,60
4.0	3.85	70	3.2	25	6	2	57,60
4.0	3.85	80	3.2	30	6	2	73,50
4.0	3.85	80	3.2	35	6	2	73,50
4.0	3.85	90	3.2	40	6	2	83,10
4.0	3.85	100	3.2	45	6	2	99,10
4.0	3.85	100	3.2	50	6	2	99,10
5.0	4.85	70	5	25	6	2	137,00

→3-3



Rivestimento X-Treme

X-Treme coating
 X-Treme-Beschichtung
 Revêtement X-Treme
 Recubrimiento X-Treme



TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

Diametri Diameters	Tolleranza del diametro Diameter tolerance	Tolleranza del gambo Shank tolerance
da 0.3 mm a 3 mm	+0.000 mm -0.025 mm	+0.000 mm -0.013 mm
da 3.5 mm a 6 mm	+0.000 mm -0.038 mm	+0.000 mm -0.013 mm



SERIE CORTA NORMALE & LUNGA

SHORT /NORMAL/LONG SERIES
KURZE /NORMAL/LANGE AUSFÜHRUNG
SÉRIE COURTE /NORMALE/LONGUE
SERIE CORTA /NORMAL/LARGA

FRESE MICRO POWER SEMISFERICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

MICRO POWER BALL NOSE END MILLS - 2 FLUTES - SUB-MICROGRAIN
MICRO POWER RADIUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN
FRAISES MICRO POWER HÉMISPHERIQUES À 2 DENTS - MICRO-GRAIN ULTRAFIN
FRESAS MICRO POWER ESFÉRICAS - 2 LABIOS - SUB-MICROGRANO

433RXT



Ø/R mm	d ₁ mm	L mm	L ₁ mm	L ₂ mm	d mm	Z	433RXT €
0.2	0.18	45	0.16	0.5	4	2	62,60
0.2	0.18	45	0.16	1	4	2	62,60
0.2	0.18	45	0.16	1.5	4	2	62,60
0.3	0.28	45	0.24	1	4	2	62,60
0.3	0.28	45	0.24	1.5	4	2	62,60
0.3	0.28	45	0.24	2	4	2	62,60
0.4	0.37	45	0.3	1	4	2	62,60
0.4	0.37	45	0.3	1.5	4	2	62,60
0.4	0.37	45	0.3	2	4	2	62,60

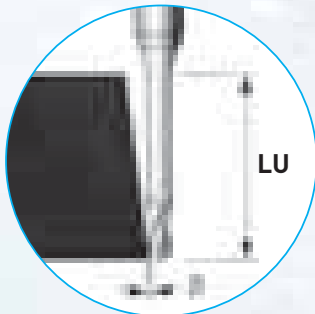
→1-4

Ø/R mm	L ₂ mm	β					
		0.5°	1°	1°30'	2°	2°30'	3°
LU							
0.2	0.5	1.08	1.25	1.43	1.6	1.77	1.94
0.2	1	1.48	1.75	1.99	2.21	2.41	2.62
0.2	1.5	1.85	2.25	2.55	2.8	3.04	3.26
0.3	1	1.55	1.8	2.02	2.23	2.43	2.62
0.3	1.5	1.95	2.3	2.57	2.82	3.05	3.27
0.3	2	2.29	2.8	3.12	3.41	3.66	3.9
0.4	1	1.70	1.91	2.11	2.30	2.49	2.67
0.4	1.5	2.13	2.41	2.66	2.89	3.10	3.31
0.4	2	2.54	2.91	3.2	3.47	3.71	3.94

→1-4

INFORMAZIONI TECNICHE ANGOLO DI COLLISIONE β

TECHNICAL DATA - INCLINED ANGLE β
TECHNISCHE HILFE - NEIGUNGSWINKEL β
SERVICE TECHNIQUE - ANGLE DE COLLISION β
INFORMACIÓN TÉCNICA - ANGULO INCLINADO β

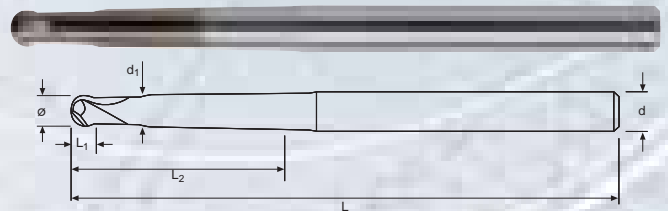


Effettiva lunghezza utile di lavoro legata all'inclinazione β del pezzo da lavorare

Effective machining depth depending on inclined angle β of workpiece
Die effektive Arbeitstiefe hängt vom Neigungswinkel β des Werkstückes ab
Longueur utile effective d'usinage liée à l'inclinaison β de la pièce à usiner
Largo útil de trabajo depende del ángulo de inclinación de la pieza



GAMBO RASTREMATO
TAPERED SHANK
VERJÜNGTER SCHAFT
QUEUE FUSELÉE
MANGO REBAJADO



L2 = LUNGHEZZA UTILE DI LAVORO
L2 = MACHINING DEPTH
L2 = ARBEITSTIEFE
L2 = LONGUEUR UTILE
L2 = LARGO ÚTIL DE TRABAJO



Rivestimento X-Treme
X-Treme coating
X-Treme-Beschichtung
Revêtement X-Treme
Recubrimiento X-Treme

TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

Diametri Diameters	Tolleranza del diametro Diameter tolerance	Tolleranza del gambo Shank tolerance
da 0.2 mm a 6 mm	+0.000 mm -0.001 mm	h6

FRESE MICRO POWER SEMISFERICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

MICRO POWER BALL NOSE END MILLS - 2 FLUTES - SUB-MICROGRAIN
 MICRO POWER RADIUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINKORN
 FRAISES MICRO POWER HÉMISPHERIQUES À 2 DENTS - MICRO-GRAIN ULTRAFIN
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SERIE CORTA NORMALE & LUNGA

SHORT /NORMAL/LONG SERIES
 KURZE /NORMAL/LANGE AUSFÜHRUNG
 SÉRIE COURTE /NORMALE/LONGUE
 SERIE CORTA /NORMAL/LARGA



433RXT



Ø/R mm	d ₁ mm	L mm	L ₁ mm	L ₂ mm	d mm	Z	433RXT €
0.4	0.37	45	0.3	2.5	4	2	62,60
0.4	0.37	45	0.3	3	4	2	62,60
0.5	0.45	45	0.4	2	4	2	62,60
0.5	0.45	45	0.4	3	4	2	62,60
0.5	0.45	45	0.4	4	4	2	62,60
0.5	0.45	45	0.4	5	4	2	62,60
0.5	0.45	45	0.4	6	4	2	62,60
0.5	0.45	45	0.4	8	4	2	62,60
0.6	0.55	45	0.5	2	4	2	62,60
0.6	0.55	45	0.5	3	4	2	62,60
0.6	0.55	45	0.5	4	4	2	62,60
0.6	0.55	45	0.5	5	4	2	62,60
0.6	0.55	45	0.5	6	4	2	62,60
0.6	0.55	45	0.5	8	4	2	62,60
0.8	0.75	45	0.6	2	4	2	62,60
0.8	0.75	45	0.6	4	4	2	62,60
0.8	0.75	45	0.6	5	4	2	62,60
0.8	0.75	45	0.6	6	4	2	62,60
0.8	0.75	45	0.6	7	4	2	62,60
0.8	0.75	45	0.6	8	4	2	62,60
0.8	0.75	45	0.6	10	4	2	62,60
1	0.95	45	0.8	3	4	2	57,80
1	0.85	45	0.8	4	4	2	57,80
1	0.95	45	0.8	5	4	2	57,80
1	0.95	45	0.8	6	4	2	57,80
1	0.95	45	0.8	7	4	2	57,80
1	0.95	45	0.8	8	4	2	57,80
1	0.95	45	0.8	9	4	2	57,80
1	0.95	45	0.8	10	4	2	57,80
1	0.95	45	0.8	12	4	2	57,80
1	0.95	50	0.8	14	4	2	57,80
1	0.95	50	0.8	16	4	2	57,80
1	0.95	55	0.8	20	4	2	57,80
1.2	1.15	45	1	6	4	2	57,80
1.2	1.15	45	1	8	4	2	57,80
1.2	1.15	45	1	10	4	2	57,80

→2-4

Ø/R mm	L ₂ mm	β					
		0.5°	1°	1°30'	2°	2°30'	3°
LU							
0.4	2.5	2.93	3.41	3.75	4.04	4.31	4.56
0.4	3	3.26	3.91	4.29	4.61	4.9	5.16
0.5	2	2.77	3.06	3.32	3.57	3.79	4.01
0.5	3	3.62	4.06	4.4	4.7	4.97	5.23
0.5	4	4.43	5.06	5.48	5.82	6.13	6.51
0.5	5	4.61	6.06	6.54	6.93	7.27	7.75
0.5	6	4.61	7.06	7.61	8.04	8.41	8.99
0.5	8	4.61	9.06	9.73	10.23	10.65	11.12
0.6	2	2.81	3.09	3.34	3.58	3.8	4.02
0.6	3	3.68	4.09	4.42	4.71	4.98	5.23
0.6	4	4.51	5.09	5.49	5.83	6.14	6.42
0.6	5	5.12	6.09	6.56	6.94	7.28	7.59
0.6	6	4.96	7.09	7.63	8.05	8.41	8.74
0.6	8	4.96	9.09	9.75	10.24	10.65	11.02
0.8	2	2.89	3.15	3.38	3.61	3.82	4.03
0.8	4	4.63	5.15	5.53	5.86	6.15	6.43
0.8	5	5.44	6.15	6.59	6.96	7.29	7.6
0.8	6	5.66	7.15	7.66	8.07	8.43	8.75
0.8	7	5.66	8.15	8.72	9.16	9.55	9.9
0.8	8	5.66	9.15	9.77	10.25	10.66	11.03
0.8	10	5.66	11.15	11.88	12.42	12.88	13.28
1	3	3.86	4.2	4.49	4.76	5.01	5.25
1	4	4.74	5.2	5.56	5.88	6.17	6.44
1	5	5.58	6.2	6.63	6.93	7.21	7.46
1	6	6.35	7.2	7.69	8.01	8.3	8.56
1	7	6.36	8.2	8.75	9.16	9.56	9.9
1	8	6.36	9.2	9.8	10.2	10.68	11.04
1	9	6.36	10.2	10.86	11.36	11.84	12.2
1	10	6.36	11.2	11.91	12.42	12.89	13.29
1	12	6.36	13.2	14.01	14.61	15.08	15.51
1	14	6.36	15.2	16.11	16.61	17.08	17.51
1	16	6.36	17.2	18.2	18.6	19.08	19.51
1	20	6.36	21.2	22.36	22.76	23.16	23.56
1.2	6	6.53	7.25	7.72	8.01	8.29	8.57
1.2	8	7.06	8.25	8.83	9.12	9.4	9.68
1.2	10	7.06	11.25	11.94	12.42	12.89	13.29

→2-4



SERIE CORTA NORMALE & LUNGA

SHORT /NORMAL/LONG SERIES
KURZE /NORMAL/LANGE AUSFÜHRUNG
SÉRIE COURTE /NORMALE/LONGUE
SERIE CORTA /NORMAL/LARGA

FRESE MICRO POWER SEMISFERICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

MICRO POWER BALL NOSE END MILLS - 2 FLUTES - SUB-MICROGRAIN
MICRO POWER RADIUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN
FRAISES MICRO POWER HÉMISPÉRIQUES À 2 DENTS - MICRO-GRAIN ULTRAFIN
FRESAS MICRO POWER ESFÉRICAS - 2 LABIOS - SUB-MICROGRANO

433RXT

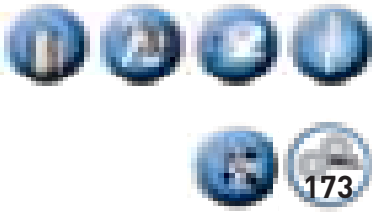


Ø/R mm	d ₁ mm	L mm	L ₁ mm	L ₂ mm	d mm	Z	433RXT €
1.2	1.15	45	1	12	4	2	57,80
1.4	1.35	45	1.1	8	4	2	57,80
1.4	1.35	45	1.1	12	4	2	57,80
1.4	1.35	50	1.1	16	4	2	57,80
1.5	1.45	45	1.2	8	4	2	57,80
1.5	1.45	45	1.2	12	4	2	57,80
1.5	1.45	50	1.2	16	4	2	57,80
1.5	1.45	55	1.2	20	4	2	57,80
1.6	1.55	45	1.3	8	4	2	57,80
1.6	1.55	45	1.3	12	4	2	57,80
1.6	1.55	50	1.3	16	4	2	57,80
1.6	1.55	55	1.3	20	4	2	57,80
1.8	1.75	45	1.4	8	4	2	57,80
1.8	1.75	45	1.4	12	4	2	57,80
1.8	1.75	50	1.4	16	4	2	57,80
1.8	1.95	55	1.4	20	4	2	57,80
2	1.95	45	1.6	6	4	2	55,40
2	1.95	45	1.6	8	4	2	55,40
2	1.95	45	1.6	10	4	2	55,40
2	1.95	45	1.6	12	4	2	55,40
2	1.95	50	1.6	14	4	2	55,40
2	1.95	50	1.6	16	4	2	55,40
2	1.95	55	1.6	18	4	2	55,40
2	1.95	55	1.6	20	4	2	55,40
2	1.95	60	1.6	22	4	2	55,40
2	1.95	65	1.6	25	4	2	55,40
2	1.95	70	1.6	30	4	2	55,40
3	2.85	50	2.4	8	6	2	55,40
3	2.85	50	2.4	10	6	2	55,40
3	2.85	55	2.4	16	6	2	55,40
3	2.85	60	2.4	20	6	2	55,40
3	2.85	65	2.4	25	6	2	55,40
3	2.85	70	2.4	30	6	2	55,40
3	2.85	80	2.4	35	6	2	55,40
4	3.85	60	3.2	10	6	2	57,80
4	3.85	60	3.2	16	6	2	57,80

→3-4

Ø/R mm	L ₂ mm	R					
		0.5°	1°	1°30'	2°	2°30'	3°
LU							
1.2	12	7.06	13.25	14.03	14.61	15.09	15.52
1.4	8	7.76	9.3	9.86	10.31	10.7	11.05
1.4	12	7.76	13.3	14.06	14.63	15.1	15.52
1.4	16	7.76	17.3	18.24	18.9	19.45	19.92
1.5	8	8.25	9.32	9.87	10.32	10.7	11.05
1.5	12	8.11	13.32	14.07	14.63	15.11	15.53
1.5	16	8.11	17.32	18.25	18.91	19.45	19.93
1.5	20	8.11	21.32	22.41	23.15	23.76	24.38
1.6	8	8.38	9.34	9.88	10.32	10.71	11.06
1.6	12	8.46	13.34	14.08	14.64	15.11	15.53
1.6	16	8.46	17.34	18.26	18.91	19.46	19.93
1.6	20	8.46	21.34	22.42	23.16	23.76	-
1.8	8	8.55	9.38	9.91	10.34	10.72	11.06
1.8	12	9.16	13.38	14.11	14.65	15.12	15.53
1.8	16	9.16	17.38	18.28	18.93	19.46	19.93
1.8	20	9.16	21.38	22.44	23.17	23.77	-
2	6	6.91	7.43	7.83	8.18	8.5	8.8
2	8	8.66	9.43	9.94	10.36	10.73	11.07
2	10	9.86	11.43	12.03	12.52	12.94	13.32
2	12	9.86	13.43	14.13	14.67	15.13	15.54
2	14	9.86	15.43	16.22	16.81	17.31	17.75
2	16	9.86	17.43	18.3	18.94	19.47	19.94
2	18	9.86	19.43	20.38	21.07	21.63	-
2	20	9.86	21.43	22.46	23.18	23.78	-
2	22	9.86	23.43	24.54	25.3	-	-
2	25	9.86	26.43	27.65	28.46	-	-
2	30	9.86	31.43	32.81	-	-	-
3	8	9.48	9.93	10.31	10.66	10.98	11.28
3	10	11.35	11.93	12.39	12.8	13.17	13.5
3	16	16.83	17.93	18.62	19.18	19.66	20.09
3	20	19.09	21.93	22.76	23.4	23.94	24.42
3	25	19.09	26.93	27.92	28.65	29.27	29.8
3	30	19.09	31.93	33.07	33.89	34.56	-
3	35	19.09	36.93	38.21	39.11	-	-
4	10	11.57	12.07	12.49	12.87	13.21	13.53
4	16	17.16	18.07	18.7	19.23	19.7	20.11

→3-4



SERIE NORMALE

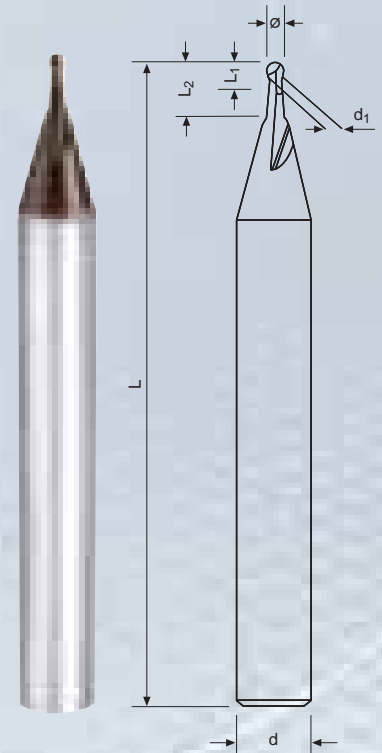
NORMAL SERIES
NORMAL AUSFÜHRUNG
SÉRIE NORMALE
SERIE NORMAL

FRESE MICRO POWER SEMISFERICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

MICRO POWER BALL NOSE END MILLS - 2 FLUTES - SUB-MICROGRAIN
MICRO POWER RADIUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN
FRAISES MICRO POWER HÉMISPÉRIQUES À 2 DENTS - MICRO-GRAIN ULTRAFIN
FRESAS MICRO POWER ESFÉRICAS - 2 LABIOS - SUB-MICROGRANO

413RXT

Ø mm	d ₁ mm	L mm	L ₁ mm	L ₂ mm	d mm	Z	413RXT €
0.3	~ 0.1	50	0.3	0.6	6	2	51,40
0.4	~ 0.1	50	0.4	0.8	6	2	51,40
0.6	~ 0.1	50	0.6	1.2	6	2	51,40
0.8	~ 0.1	50	0.8	1.6	6	2	51,40
1	0.95	50	1	2.5	6	2	42,00
1.2	1.15	50	1.2	3	6	2	42,00
1.4	1.35	50	1.4	7	6	2	49,10
1.5	1.45	50	1.6	3.8	6	2	43,90
1.6	1.55	50	1.8	4	6	2	49,10
1.8	1.75	50	2	4.5	6	2	49,10
2	1.95	50	2.5	5	6	2	43,90
2.5	2.4	50	3	5	6	2	46,90
3	2.85	50	4	6	6	2	46,90
3.5	3.35	50	5	6	6	2	51,80
4	3.85	50	6	6	6	2	46,80
5	4.85	50	5	7.5	6	2	50,00
6	5.85	50	6	9	6	2	53,00



Rivestimento X-Treme

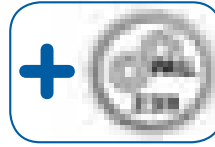
X-Treme coating
X-Treme-Beschichtung
Revêtement X-Treme
Recubrimiento X-Treme

TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

Diametri Diameters	Tolleranza del diametro Diameter tolerance	Tolleranza del gambo Shank tolerance
da 0.3 mm a 3 mm	+0.000 mm -0.025 mm	+0.000 mm -0.013 mm
da 3.5 mm a 6 mm	+0.000 mm -0.038 mm	+0.000 mm -0.013 mm

PARAMETRI DI TAGLIO

CUTTING PARAMETERS
SCHNITTDATEN
PARAMÈTRES DE COUPE
PARAMETROS DE CORTE



FRESE MICRO POWER A CANDELA: 2/4 TAGLI

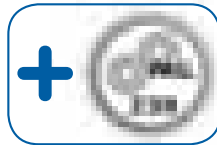
Micro power end mills, Micro power Fräser, Fraises micro power, Fresas power micro: 2/4 Flutes - Schneiden - Dents - Labios

CAVA DAL PIENO: Vc e Fz: - 20%
Slotting: Vc e Fz: - 20%
Bohrnuten: Vc e Fz: - 20%
Rainurage: Vc e Fz: - 20%
Ranura: Vc e Fz: - 20%

GRUPPO MATERIALI Material Groups Material-Beispiele Groupes de Matériaux Grupos de Materiales	ap		ae	VC m/min	Fz [mm] AVANZAMENTO AL DENTE Tooth Feed - Zahnvorschub - Avancement au dent - Avance al labio												
	ap	ae	ap		0.5	1	1.5	2	2.5	3	3.5	4	5	6			
	P < 800 N/mm ²	1xD	0,5xD	0,2	60 - 80	0,005 0,007	0,007 0,009	0,009 0,011	0,011 0,013	0,013 0,014	0,014 0,016	0,016 0,018	0,018 0,020	0,20 0,22	0,22 0,24	-	-
P < 1100 N/mm ²	1xD	0,5xD	0,2	60-80	0,003 0,005	0,005 0,007	0,007 0,009	0,009 0,010	0,010 0,012	0,012 0,014	0,014 0,016	0,016 0,018	0,18 0,20	0,20 0,22	-	-	-
P < 1300 N/mm ²	1xD	0,5xD	0,2	50- 60	0,003 0,005	0,005 0,007	0,007 0,009	0,009 0,010	0,010 0,012	0,012 0,014	0,014 0,016	0,016 0,018	0,18 0,20	0,20 0,22	-	-	-
M > 800 N/mm ²	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
K GG	1xD	0,5xD	0,2	-	0,005 0,007	0,007 0,009	0,009 0,011	0,011 0,013	0,013 0,014	0,014 0,016	0,016 0,018	0,018 0,02	0,020 0,022	0,022 0,024	-	-	-
K GGG	1xD	0,5xD	0,2	80 - 100	0,003 0,005	0,005 0,007	0,007 0,009	0,009 0,010	0,010 0,012	0,012 0,014	0,014 0,016	0,016 0,018	0,018 0,020	0,020 0,024	-	-	-
N Alluminio	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N Non metalli	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S Titanio	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S Leghe speciali a base Ni	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
H Temprati 38 / 48 HRC	0,5xD	0,2 X d	0,2	40 - 50	0,005 0,007	0,007 0,009	0,009 0,011	0,011 0,013	0,013 0,014	0,014 0,016	0,016 0,018	0,018 0,020	0,020 0,022	0,022 0,024	-	-	-
H Temprati 48 / 58 HRC	0,5xD	0,2xD	0,2	30 - 50	0,003 0,005	0,005 0,007	0,007 0,009	0,009 0,010	0,010 0,012	0,012 0,014	0,014 0,016	0,016 0,018	0,018 0,020	0,020 0,022	-	-	-
H Temprati 58 / 68 HRC	0,5xD	0,2xD	0,2	30 - 40	0,003 0,005	0,005 0,007	0,007 0,009	0,009 0,010	0,010 0,012	0,012 0,014	0,014 0,016	0,016 0,018	0,018 0,020	0,020 0,022	-	-	-

PARAMETRI DI TAGLIO

CUTTING PARAMETERS
SCHNITTDATEN
PARAMÈTRES DE COUPE
PARAMETROS DE CORTE



FRESE MICRO POWER SEMISFERICHE: 2/4 TAGLI

Micro power ball nose end mills, Micro power Radiusfräser, Fraises micro power HÉMISPHERIQUES, Fresas micro power esféricas: 2/4 Flutes - Schneiden - Dents - Labios

CAVA DAL PIENO: Vc e Fz: - 20%

Slotting: Vc e Fz: - 20%

Bohrnuten: Vc e Fz: - 20%

Rainurage: Vc e Fz: - 20%

Ranura: Vc e Fz: - 20%

GRUPPO MATERIALI Material Groups Material-Beispiele Groupes de Matériaux Grupos de Materiales				VC m/min	 Fz [mm] AVANZAMENTO AL DENTE Tooth Feed - Zahnvorschub - Avancement au dent - Avance al labio													
	ap	ae	ap		0.5	1	1.5	2	2.5	3	3.5	4	5	6				
	P < 800 N/mm ²	0,03xd	0,2xd		0,2xd	50 - 60	0,005 0,007	0,007 0,009	0,009 0,011	0,011 0,013	0,013 0,014	0,014 0,016	0,016 0,018	0,018 0,020	0,20 0,22	0,22 0,24	-	-
P < 1100 N/mm ²	0,03xd	0,2xd	0,2xd	50 - 60	0,003 0,005	0,005 0,007	0,007 0,009	0,009 0,010	0,010 0,012	0,012 0,014	0,014 0,016	0,016 0,018	0,18 0,20	0,20 0,22	-	-	-	
P < 1300 N/mm ²	0,03xd	0,2xd	0,2xd	40 - 60	0,003 0,005	0,005 0,007	0,007 0,009	0,009 0,010	0,010 0,012	0,012 0,014	0,014 0,016	0,016 0,018	0,18 0,20	0,20 0,22	-	-	-	
M > 800 N/mm ²	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
K GG	0,03xd	0,2xd	0,2xd	50 - 60	0,005 0,007	0,007 0,009	0,009 0,011	0,011 0,013	0,013 0,014	0,014 0,016	0,016 0,018	0,018 0,02	0,020 0,022	0,022 0,024	-	-	-	
K GGG	0,03xd	0,2xd	0,2xd	40 - 60	0,003 0,005	0,005 0,007	0,007 0,009	0,009 0,01	0,01 0,012	0,012 0,014	0,014 0,016	0,016 0,018	0,018 0,020	0,020 0,022	-	-	-	
N Alluminio	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
N Non metalli	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
S Titanio	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
S Leghe speciali a base Ni	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
H Temprati 38 / 48 HRC	0,03xd	0,2 X d	0,2xd	40 - 50	0,005 0,007	0,007 0,009	0,009 0,011	0,011 0,013	0,013 0,014	0,014 0,016	0,016 0,018	0,018 0,020	0,020 0,022	0,022 0,024	-	-	-	
H Temprati 48 / 58 HRC	0,03xd	0,2xd	0,2xd	30 - 50	0,003 0,005	0,005 0,007	0,007 0,009	0,009 0,01	0,01 0,012	0,012 0,014	0,014 0,016	0,016 0,018	0,018 0,020	0,020 0,022	-	-	-	
H Temprati 58 / 68 HRC	0,02xd	0,2xd	0,2xd	30 - 40	0,003 0,005	0,005 0,007	0,007 0,009	0,009 0,01	0,01 0,012	0,012 0,014	0,014 0,016	0,016 0,018	0,018 0,020	0,020 0,022	-	-	-	



FRESE POWER GRAPHITE

 POWER GRAPHITE END MILLS

 POWER GRAPHIT FRÄSER

 FRAISES POWER GRAPHITE

 FRESAS POWER GRAFITO



FRESE POWER GRAPHITE TORICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

POWER GRAPHITE TORIC END MILLS - 2 FLUTES - SUB-MICROGRAIN
 POWER GRAPHIT TORUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN
 FRAISES POWER GRAPHITE TORIQUES À 2 DENTS - MICRO-GRAIN ULTRAFIN
 FRESAS POWER GRAFITO TÓRICAS - 2 LABIOS - SUB-MICROGRANO

SERIE NORMALE LUNGA & EXTRA L.

NORMAL/LONG/EXTRALONG SERIES
 NORMAL/LANGE/EXTRALANGE AUSFÜHRUNG
 SÉRIE NORMALE/LONGUE/EXTRALONGUE
 SERIE NORMAL/LARGA/EXTRALARGA



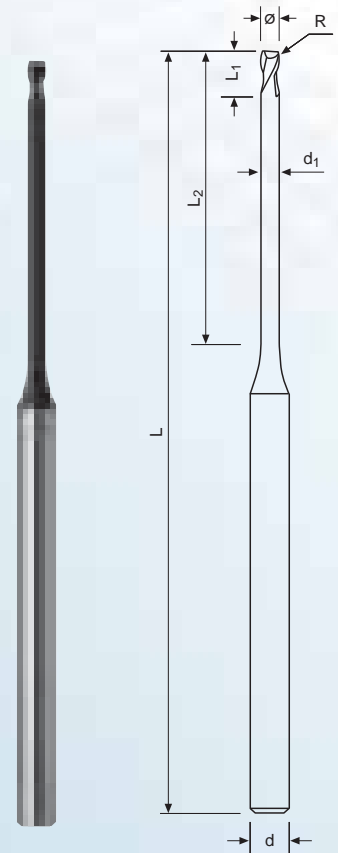
1437D

NEW Ø



Ø/R mm	d ₁ mm	L mm	L ₁ mm	L ₂ mm	d mm	Z	1437D €
0.2/0.05	0.18	55	0.3	0.5	4	2	101,00
0.2/0.05	0.18	55	0.3	1	4	2	101,00
0.2/0.05	0.18	55	0.3	1.5	4	2	101,00
0.3/0.05	0.28	55	0.45	1	4	2	101,00
0.3/0.05	0.28	55	0.45	2	4	2	101,00
0.3/0.05	0.28	55	0.45	2	4	2	101,00
0.4/0.1	0.37	55	0.6	2	4	2	101,00
0.4/0.1	0.37	55	0.6	3	4	2	101,00
0.4/0.1	0.37	55	0.6	4	4	2	101,00
0.5/0.1	0.47	55	0.7	3	4	2	101,00
0.5/0.1	0.47	55	0.7	5	4	2	101,00
0.5/0.1	0.47	55	0.7	8	4	2	101,00
0.6/0.1	0.57	55	0.9	3	4	2	101,00
0.6/0.1	0.57	55	0.9	5	4	2	101,00
0.6/0.1	0.57	55	0.9	8	4	2	101,00
0.8/0.2	0.76	55	1.1	4	4	2	101,00
0.8/0.2	0.76	55	1.1	6	4	2	101,00
0.8/0.2	0.76	55	1.1	8	4	2	101,00
0.8/0.2	0.76	55	1.1	10	4	2	101,00
1/0.1	0.95	55	1.5	18	4	2	101,00
1/0.2	0.95	55	1.5	6	4	2	101,00
1/0.2	0.95	55	1.5	10	4	2	101,00
1/0.2	0.95	55	1.5	14	4	2	101,00
1/0.2	0.95	55	1.5	18	4	2	101,00
1/0.2	0.95	60	1.5	24	4	2	101,00
1.2/0.2	1.15	55	1.6	6	4	2	101,00

→1-3



Rivestimento Diamond

Diamond coating
 Beschichtung Diamond
 Revêtement Diamond
 Recubrimiento Diamante

TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

Diametri Diameters	Tolleranza del diametro Diameter tolerance	Tolleranza del gambo Shank tolerance
da 0.2 mm a 6.0 mm	+0.000 mm -0.01 mm	h6



SERIE NORMALE LUNGA & EXTRA L.

NORMAL/LONG/EXTRALONG SERIES
NORMAL/LANGE/EXTRALANGE AUSFÜHRUNG
SÉRIE NORMALE/LONGUE/EXTRALONGUE
SERIE NORMAL/LARGA/EXTRALARGA

FRESE POWER GRAPHITE TORICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

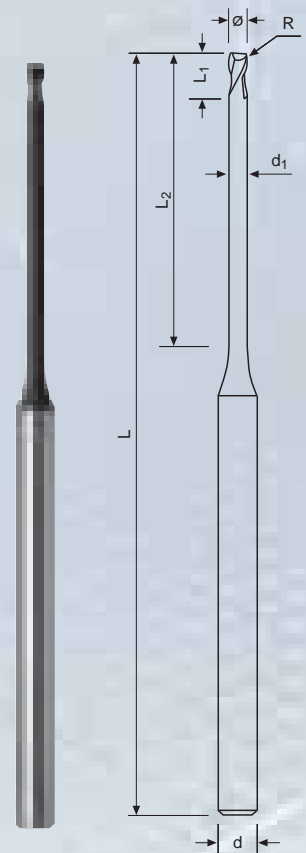
POWER GRAPHITE TORIC END MILLS - 2 FLUTES - SUB-MICROGRAIN
POWER GRAPHIT TORUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN
FRAISES POWER GRAPHITE TORIQUES À 2 DENTS - MICRO-GRAIN ULTRAFIN
FRESAS POWER GRAFITO TÓRICAS - 2 LABIOS - SUB-MICROGRANO

1437D

NEW Ø



Ø/R mm	d ₁ mm	L mm	L ₁ mm	L ₂ mm	d mm	Z	1437D €
1.2/0.2	1.15	55	1.6	10	4	2	101,00
1.2/0.2	1.15	55	1.6	14	4	2	101,00
1.2/0.2	1.15	55	1.6	18	4	2	101,00
1.2/0.2	1.15	60	1.6	24	4	2	101,00
1.2/0.2	1.44	55	2	6	4	2	101,00
1.5/0.2	1.44	55	2	10	4	2	101,00
1.5/0.2	1.44	55	2	14	4	2	101,00
1.5/0.2	1.44	55	2	18	4	2	101,00
1.5/0.2	1.44	60	2	24	4	2	101,00
2/0.2	1.92	65	2.5	6	4	2	101,00
2/0.2	1.92	65	2.5	10	4	2	101,00
2/0.2	1.92	65	2.5	14	4	2	101,00
2/0.2	1.92	65	2.5	18	4	2	101,00
2/0.2	1.92	75	2.5	24	4	2	101,00
2/0.2	1.92	75	2.5	30	4	2	101,00
2/0.5	1.92	65	2.5	6	4	2	101,00
2/0.5	1.92	65	2.5	10	4	2	101,00
2/0.5	1.92	65	2.5	14	4	2	101,00
2/0.5	1.92	65	2.5	18	4	2	101,00
2/0.5	1.92	75	2.5	24	4	2	101,00
2/0.5	1.92	75	2.5	30	4	2	101,00
2.5/0.25	2.4	65	3.5	10	4	2	101,00
2.5/0.25	2.4	65	3.5	20	4	2	101,00
2.5/0.25	2.4	75	3.5	30	4	2	101,00
3/0.2	2.9	65	5	6	4	2	101,00
3/0.2	2.9	65	5	10	4	2	101,00
3/0.2	2.9	65	5	14	4	2	101,00
3/0.2	2.9	65	5	18	4	2	101,00
3/0.2	2.9	75	5	24	4	2	101,00
3/0.2	2.9	75	5	30	4	2	101,00
3.0/0.5	2.9	65	5	6	4	2	101,00
3.0/0.5	2.9	65	5	10	4	2	101,00
3.0/0.5	2.9	65	5	14	4	2	101,00
3.0/0.5	2.9	65	5	18	4	2	101,00
3.0/0.5	2.9	75	5	24	4	2	101,00
3.0/0.5	2.9	75	5	30	4	2	101,00
4/0.5	3.9	65	6	10	4	2	108,50



→2-3



angeloghezzi.it

FRESE POWER GRAPHITE SEMISFERICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

POWER GRAPHITE BALL NOSE END MILLS - 2 FLUTES - SUB-MICROGRAIN
 POWER GRAPHIT RADIUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN
 FRAISES POWER GRAPHITE HÉMISPÉRIQUES À 2 DENTS - MICRO-GRAIN ULTRAFIN
 FRESAS POWER GRAFITO ESFÉRICA 2 LABIOS - SUB-MICROGRANO

SERIE NORMALE LUNGA & EXTRA L.

NORMAL/LONG/EXTRALONG SERIES
 NORMAL/LANGE/EXTRALANGE AUSFÜHRUNG
 SÉRIE NORMALE/LONGUE/EXTRALONGUE
 SERIE NORMAL/LARGA/EXTRALARGA

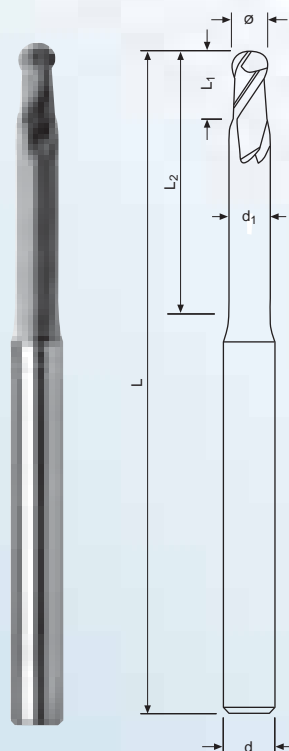


1434RD



Ø mm	d ₁ mm	L mm	L ₁ mm	L ₂ mm	d mm	Z	1434RD €
0.2	0.18	55	0.3	0.5	4	2	121,50
0.2	0.18	55	0.3	1	4	2	121,50
0.2	0.18	55	0.3	1.5	4	2	121,50
0.3	0.28	55	0.45	1	4	2	121,50
0.3	0.28	55	0.45	2	4	2	121,50
0.3	0.28	55	0.45	3	4	2	121,50
0.4	0.37	55	0.6	2	4	2	121,50
0.4	0.37	55	0.6	3	4	2	121,50
0.4	0.37	55	0.6	4	4	2	121,50
0.5	0.47	55	0.7	3	4	2	121,50
0.5	0.47	55	0.7	5	4	2	121,50
0.5	0.47	55	0.7	8	4	2	121,50
0.6	0.57	55	0.9	3	4	2	121,50
0.6	0.57	55	0.9	5	4	2	121,50
0.6	0.57	55	0.9	8	4	2	121,50
0.8	0.76	55	1.1	4	4	2	121,50
0.8	0.76	55	1.1	6	4	2	121,50
0.8	0.76	55	1.1	8	4	2	121,50
0.8	0.76	55	1.1	10	4	2	121,50
1	0.95	55	1.5	6	4	2	121,50
1	0.95	55	1.5	10	4	2	121,50
1	0.95	55	1.5	14	4	2	121,50
1	0.95	55	1.5	18	4	2	121,50
1	0.95	60	1.5	24	4	2	121,50
1.2	1.15	55	1.6	6	4	2	121,50
1.2	1.15	55	1.6	10	4	2	121,50

→1-2



Rivestimento Diamond
 Diamond coating
 Beschichtung Diamond
 Revêtement Diamond
 Recubrimiento Diamante

TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

Diametri Diameters	Tolleranza del diametro Diameter tolerance	Tolleranza del gambo Shank tolerance
da 0.2 mm a 6.0 mm	+0.000 mm -0.010 mm	h6



SERIE NORMALE LUNGA & EXTRA L.

NORMAL/LONG/EXTRALONG SERIES
NORMAL/LANGE/EXTRALANGE AUSFÜHRUNG
SÉRIE NORMALE/LONGUE/EXTRALONGUE
SERIE NORMAL/LARGA/EXTRALARGA

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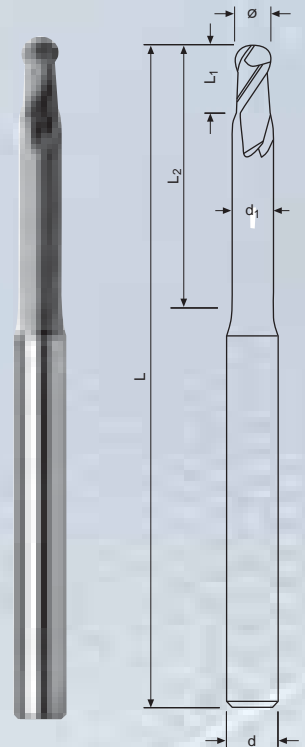
FRESE POWER GRAPHITE SEMISFERICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

POWER GRAPHITE BALL NOSE END MILLS - 2 FLUTES - SUB-MICROGRAIN
POWER GRAPHIT RADIUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN
FRAISES POWER GRAPHITE HÉMISPHERIQUES À 2 DENTS - MICRO-GRAIN ULTRAFIN
FRESAS POWER GRAFITO ESFÉRICA 2 LABIOS - SUB-MICROGRANO

1434RD



Ø mm	d ₁ mm	L mm	L ₁ mm	L ₂ mm	d mm	Z	1434RD €
1.2	1.15	55	1.6	14	4	2	121,50
1.2	1.15	55	1.6	18	4	2	121,50
1.2	1.15	60	1.6	24	4	2	121,50
1.5	1.44	55	2	6	4	2	121,50
1.5	1.44	55	2	10	4	2	121,50
1.5	1.44	55	2	14	4	2	121,50
1.5	1.44	55	2	18	4	2	121,50
1.5	1.44	60	2	24	4	2	121,50
2	1.92	65	2.5	6	4	2	121,50
2	1.92	65	2.5	10	4	2	121,50
2	1.92	65	2.5	14	4	2	121,50
2	1.92	65	2.5	18	4	2	121,50
2	1.92	75	2.5	24	4	2	121,50
2	1.92	75	2.5	30	4	2	121,50
2.5	2.4	65	3.5	10	4	2	121,50
2.5	2.4	65	3.5	20	4	2	121,50
2.5	2.4	75	3.5	30	4	2	121,50
3	2.9	65	5	6	4	2	121,50
3	2.9	65	5	10	4	2	121,50
3	2.9	65	5	14	4	2	121,50
3	2.9	65	5	18	4	2	121,50
3	2.9	75	5	24	4	2	121,50
3	2.9	75	5	30	4	2	121,50
4	3.9	65	6	10	6	2	130,50
4	3.9	65	6	14	6	2	130,50
4	3.9	65	6	18	6	2	130,50
4	3.9	75	6	24	6	2	130,50
4	3.9	75	6	30	6	2	130,50
5	4.9	65	7.5	10	6	2	143,00
5	4.9	65	7.5	20	6	2	143,00
5	4.9	75	7.5	30	6	2	143,00
5	4.9	90	7.5	40	6	2	143,00
6	5.9	65	10	10	6	2	148,00
6	5.9	65	10	20	6	2	148,00
6	5.9	75	10	30	6	2	148,00
6	5.9	90	10	40	6	2	148,00
6	5.9	90	10	50	6	2	148,00



→2-2

PARAMETRI DI TAGLIO

CUTTING PARAMETERS
SCHNITTDATEN
PARAMÈTRES DE COUPE
PARAMETROS DE CORTE



FRESE POWER GRAPHITE: 2/4 TAGLI

Power graphite end mills - Power graphit fräser - Fraises power graphite - Fresas power grafito:
2/4 Flutes - Schneiden - Dents - Labios

CAVA DAL PIENO: Vc e Fz: - 20%
Slotting: Vc e Fz: - 20%
Bohrnuten: Vc e Fz: - 20%
Rainurage: Vc e Fz: - 20%
Ranura: Vc e Fz: - 20%

GRUPPO MATERIALI Material Groups Material-Beispiele Groupes de Matériaux Grupos de Materiales	ap		ae	VC m/min	Fz [mm] AVANZAMENTO AL DENTE Tooth Feed - Zahnvorschub - Avancement au dent - Avance al labio													
	ap	ae	ap		1	2	3	4	6	8	10	12						
	< 800 N/mm ²	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
< 1100 N/mm ²	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
< 1300 N/mm ²	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
> 800 N/mm ²	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
GG	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
GGG	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Si >12%	1,2xØ	0,5 X Ø	1 X Ø	400-750	0,010	0,013	0,015	0,020	0,029	0,039	0,049	0,059	-	-	-	-		
Si >14%	1,2xØ	0,5 X Ø	1 X Ø	750-1200	0,015	0,018	0,021	0,028	0,042	0,056	0,070	0,084	-	-	-	-		
Titanio	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Leghe speciali a base NI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Temprati 38 / 48 HRC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Temprati 48 / 58 HRC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Temprati 58 / 68 HRC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		



SERVIZIO TECNICO

Technical Help
Technische Hilfe
Service technique
Ayuda técnica

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For more information please contact us
Für weitere Informationen bitten wir um Kontaktaufnahme
Pour tout renseignement contactez-nous
Para más informaciones llámenos



FRESE POWER BRASATE in PCD



PCD BRAZED POWER END MILLS



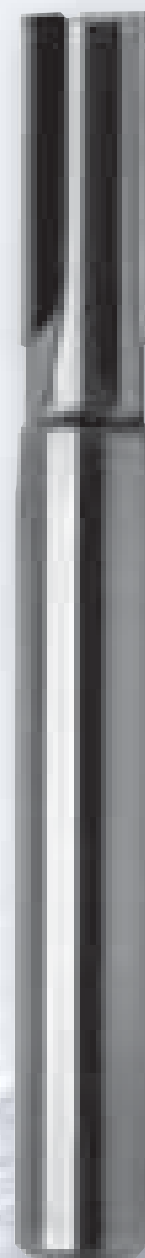
PKD BESTÜCKTE POWER FRÄSER



FRAISES POWER PCD BRASÉES



FRESAS POWER DE PCD SOLDADO





CON RIPORTO IN POLICRISTALLINO

SOLID CARBIDE WITH POLYCRYSTALLINE DIAMOND
VOLLHARTMETALL PKD
AVEC RECHARGEMENT EN POLYCRISTALLIN
METAL DURO PCD

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FRESE POWER PCD

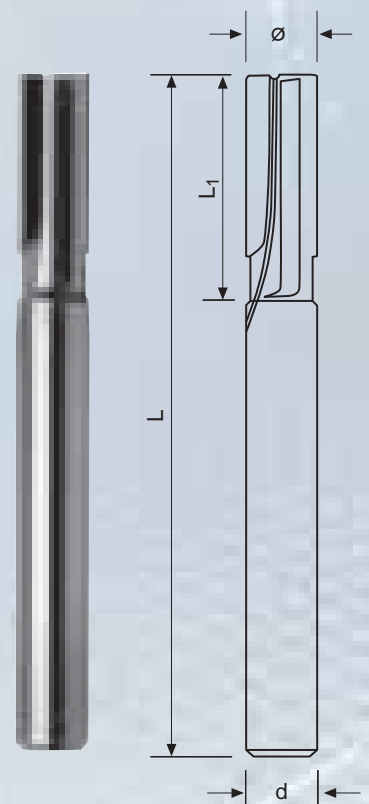
A 2 TAGLI

POWER PCD END MILLS - 2 FLUTES
POWER PCD FRÄSER - 2 NUTEN
FRAISES POWER PKD - 2 DENTS
FRESAS POWER PCD - 2 LABIOS

1602DT



Ø mm	L mm	L ₁ mm	d mm	Z	1602DT €
6	54	7	6	2	424,00
6	54	15	6	2	584,00
6	54	20	6	2	684,00
8	58	7	8	2	440,00
8	58	15	8	2	601,00
8	58	20	8	2	708,00
10	66	7	10	2	481,00
10	66	15	10	2	652,00
10	66	20	10	2	765,00
12	73	7	12	2	506,00
12	73	15	12	2	673,00
12	73	20	12	2	796,00
14	75	15	14	2	730,00
14	75	20	14	2	864,00
16	82	15	16	2	757,00
16	82	20	16	2	897,00
18	88	15	18	2	818,00
18	88	20	18	2	956,00
20	92	15	20	2	845,00
20	92	20	20	2	995,00



CORPO IN MICROGRANA ULTRAFINE
SUB-MICROGRAIN BODY
ULTRA FEINSTKORN KÖRPER
CORPS EN MICRO-GRAIN ULTRAFIN
CUERPO DE SUB-MICROGRANO

TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

Diametri Diameters	Tolleranza del diametro Diameter tolerance	Tolleranza del gambo Shank tolerance
da 4 mm a 20 mm	h10	h6

FRESE POWER PCD TORICHE A 2 TAGLI

POWER TORIC PCD END MILLS 2 FLUTES
POWER PCD TORUSFRÄSER - 2 NUTEN
FRAISES POWER PDK TORIQUES À 2 DENTS
FRESAS POWER TÓRICAS PCD - 2 LABIOS

CON RIPORTO IN
POLICRISTALLINO

SOLID CARBIDE WITH POLYCRYSTALLINE DIAMOND
AVEC RECHARGEMENT EN POLYCRISTALLIN
VOLLHARTMETALL PCD
METAL DURO PCD

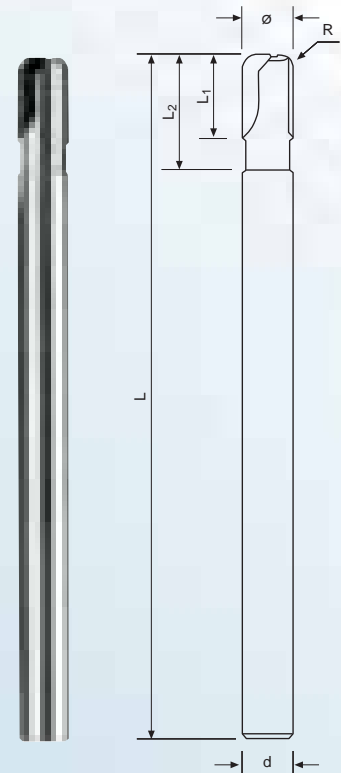


602RDT



Ø / R mm	L mm	L ₁ mm	L ₂ mm	d mm	Z	602RDT €
4/0.3	75	2.5	12	6	2	431,00
4/0.3	75	2.5	20	6	2	431,00
4/0.3	75	2.5	28	6	2	431,00
4/0.3	75	2.5	35	6	2	431,00
4/0.5	75	2.5	20	6	2	431,00
5/0.3	75	3	15	6	2	431,00
5/0.3	75	3	25	6	2	431,00
5/0.3	75	3	35	6	2	431,00
5/0.5	75	3	25	6	2	431,00
6/0.5	100	6	18	6	2	431,00
6/0.5	100	6	30	6	2	431,00
6/0.5	100	6	42	6	2	431,00
6/1	100	6	18	6	2	431,00
8/0.5	100	7	24	8	2	481,00
8/0.5	100	7	40	8	2	481,00
8/1	100	7	24	8	2	481,00
8/1	100	7	40	8	2	481,00
8/2	100	7	40	8	2	481,00
10/0.5	100	8	30	10	2	541,00
10/0.5	100	8	50	10	2	541,00
10/1	100	8	30	10	2	541,00
10/1	100	8	50	10	2	541,00
10/1.5	100	8	30	10	2	541,00
10/1.5	100	8	50	10	2	541,00
10/2	100	8	30	10	2	541,00

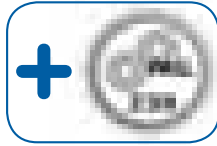
→1-2



CORPO IN MICROGRANA ULTRAFINE
SUB-MICROGRAIN BODY
ULTRA FEINSTKORN KÖRPER
CORPS EN MICRO-GRAIN ULTRAFIN
CUERPO DE SUB-MICROGRANO

TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

Diametri Diameters	Tolleranza del diametro Diameter tolerance	Tolleranza del gambo Shank tolerance
da 4 mm a 20 mm	f8	h6



PARAMETRI DI TAGLIO

CUTTING PARAMETERS
SCHNITTDATEN
PARAMÈTRES DE COUPE
PARAMETROS DE CORTE

FRESE POWER PKD: 1/2 TAGLI

Pcd brazed power end mills - Pkd bestückte power fräser - Fraises power pcd brasées - Fresas power de pcd soldado: 1/2 Flutes - Schneiden - Dents - Labios

CAVA DAL PIENO: Vc e Fz: - 20%

Slotting: Vc e Fz: - 20%
Bohrnuten: Vc e Fz: - 20%
Rainurage: Vc e Fz: - 20%
Ranura: Vc e Fz: - 20%

GRUPPO MATERIALI Material Groups Material-Beispiele Groupes de Matériaux Grupos de Materiales			VC m/min														
	Fz [mm] AVANZAMENTO AL DENTE Tooth Feed - Zahnvorschub - Avancement au dent - Avance al labio			3	4	6	8	10	12	16	20						
	ap	ae														ap	
P < 800 N/mm ²	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
P < 1100 N/mm ²	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
P < 1300 N/mm ²	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
M > 800 N/mm ²	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
K GG	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
K GGG	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
N Si >12%	1xØ	0,5 X Ø	0,7 X Ø	500-3000	0,055	0,075	0,095	0,100	0,130	0,150	0,180	0,200	-	-	-	-	
N Si >14%	1xØ	0,5 X Ø	0,7 X Ø	400-800	0,055	0,075	0,095	0,100	0,130	0,150	0,180	0,200	-	-	-	-	
S Titanio	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
S Leghe speciali a base NI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
H Temprati 38 / 48 HRC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
H Temprati 48 / 58 HRC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
H Temprati 58 / 68 HRC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	