



HARTNER

Precision Cutting Tools



MULTIPLEX



HARTNER

Precision Cutting Tools

Edizione 1601

Misure e dati tecnici possono variare a seguito di sviluppo tecnico e modifica delle normative.

Sono valide le nostre condizioni generali di vendita.

Errori di stampa di qualsiasi tipo, anche in dati tecnici, non costituiscono motivo di reclamo.

Sono vietate riproduzioni, anche parziali.





HARTNER

Precision Cutting Tools

MULTIPLEX MULTIPLEX HPC

Punte elicoidali con inserti intercambiabili con refrigerazione
Inserti intercambiabili in HSS-E, HSS-E PM, metallo duro
ricoperte



Multiplex
Multiplex HPC

P	M	K	N	S	H	Norma	Tipo	Materiale tagliente	Superficie	Direzione di taglio	Refrigerazione interna	Profondità di foro	d1/mm	Articolo nr.	Pagina
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Corpo portaplacchette con attacco cilindrico



Norma di fab.



destra

con

<3xD

86612

349



Norma di fab.



destra

con

<5xD

86622

350



Norma di fab.



destra

con

<7xD

86624

351

Corpo portaplacchette con attacco cono morse



Norma di fab.



destra

con

86630

352



Norma di fab.



destra

con

86650

354



Norma di fab.



destra

con

86670

353



Norma di fab.



destra

con

86680

355

P	M	K	N	S	H	Norma	Tipo	Materiale tagliente	Superficie	Direzione di taglio	Refrigerazione interna	Profondità di foro	d1/mm	Articolo nr.	Pagina
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Corpo portaplacchette speciale con attacco cilindrico



						Norma di fab.		Ni		destra	con			86628	356
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Corpo portaplacchette speciale con attacco con morse



						Norma di fab.		Ni		destra	con			86678	358
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Inserti intercambiabili



●	○	●	○			Norma di fab.	HSS-E-PM	T		destra				86602	361
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●	○	●	○			Norma di fab.	HSS-E-PM	F		destra				86608	362
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●	○	●	○			Norma di fab.	HSS-E-PM	A		destra				86609	363
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●	○	●	○			Norma di fab.	Metallo duro	F		destra				86701	367
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●	○	●	○			Norma di fab.	Metallo duro	F		destra				86702	365
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P	M	K	N	S	H	Norma	Tipo	Materiale tagliente	Superficie	Direzione di taglio	Refrigerazione interna	Profondità di foro	d1/mm	Articolo nr.	Pagina
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Inserti intercambiabili



•	○	•	○	○	○	Norma di fab.		Metallo duro		destra				86708	364
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•	○	•	○	○	○	Norma di fab.		Metallo duro		destra				86709	366
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Alimentatori per punte con fori di refrigerazione



						Norma di fab.								86690	368
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Tubi di adduzione



						Norma di fab.								82571	369
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Attacco rapido



						Norma di fab.								82578	370
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Giravite Torx



						Norma di fab.								86842	371
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P	M	K	N	S	H	Norma	Tipo	Materiale tagliente	Superficie	Direzione di taglio	Refrigerazione interna	Profondità di foro	d1/mm	Articolo nr.	Pagina
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Mandrino di alimentazione del refrigerante per Multiplex



Norma di fab.

ⓑ

86691

372



Norma di fab.

ⓑ

86692

373



Norma di fab.

ⓑ

86693

374



Norma di fab.

ⓑ

86694

375

Bussole di riduzione per attacchi cilindrici



Norma di fab.







ⓑ

86699

376

P	M	K	N	S	H	Norma	Tipo	Materiale tagliente	Superficie	Direzione di taglio	Refrigerazione interna	Profondità di foro	d1/mm	Articolo nr.	Pagina
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Corpo portaplacchette Multiplex-HPC

						Norma di fab.	HPC		Ni	destra	con	1xD		86681	378
						Norma di fab.	HPC		Ni	destra	con	1,5xD		86682	379
						Norma di fab.	HPC		Ni	destra	con	3xD		86683	381
						Norma di fab.	HPC		Ni	destra	con	5xD		86684	383
						Norma di fab.	HPC		Ni	destra	con	7xD		86685	385
						Norma di fab.	HPC		Ni	destra	con	10xD		86686	387

Inserti intercambiabili per Multiplex HPC

		Norma di fab.	HPC	Metallo duro		destra		11,000 - 40,000	86721	389
		Norma di fab.	HPC	Metallo duro		destra		11,000 - 40,000	86722	392

P	M	K	N	S	H	Norma	Tipo	Materiale tagliente	Superficie	Direzione di taglio	Refrigerazione interna	Profondità di foro	d1/mm	Articolo nr.	Pagina
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Inserti intercambiabili per Multiplex HPC



○	■	●	■	■	■	Norma di fab.	HPC	Metallo duro	Ⓡ	destra		11,000 - 40,000	86723	395
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■	■	■	●	■	■	Norma di fab.	HPC	Metallo duro	○	destra		11,000 - 40,000	86724	398
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○	●	■	■	○	○	Norma di fab.	HPC	Metallo duro	Ⓢ	destra		11,000 - 40,000	86725	401
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Inserti a svasare Multiplex HPC



○	■	●	■	■	■	Norma di fab.		Metallo duro	Ⓡ	neutrale			86726	404
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■	■	■	●	■	■	Norma di fab.		Metallo duro	○	destra			86727	404
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●	○	○	■	○	○	Norma di fab.		Metallo duro	Ⓢ	destra			86728	405
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Viti di serraggio per placchette 1.5-10xD



						Norma di fab.								86843	406
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P	M	K	N	S	H	Norma	Tipo	Materiale tagliente	Superficie	Direzione di taglio	Refrigerazione interna	Profondità di foro	d1/mm	Articolo nr.	Pagina
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Chiavi dinamometriche



Norma di fab.

86844

407

Inserti Torx



Norma di fab.

86845

408

Viti di serraggio per svasatori Multiplex HPC



Norma di fab.

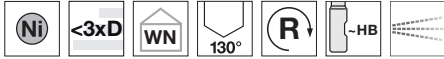
86846

409

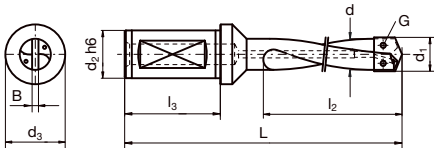


Corpo portaplacchette con attacco cilindrico

Articolo nr. 86612



nichelato • Corpo per placchette. Il corpo con codolo cilindrico ha un'alimentazione di refrigerante interna. Larghe scanalature garantiscono una evacuazione del truciolo ottimale. Sostituzione degli inserti semplice grazie alle viti di arresto. Non è necessario alcun aggiustamento delle placchette. La punta con gli inserti può essere utilizzata nel materiale pieno. Questo utensile non è adatto per finire forature ricavate da fusione oppure per allargare fori preesistenti.i. Compresa viti di serraggio Art.Nr. 86807.



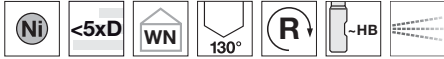
d1 mm	d mm	d2 h6 mm	d3 mm	L mm	l2 mm	l3 mm	B mm	G	Codice
10,00-11,7	9,500	20,000	25,000	108,000	50,000	40,000	2,500	86807 2.000	9,500
11,71-13,4	11,500	20,000	25,000	109,000	53,000	40,000	2,500	86807 2.000	11,500
13,41-16,4	13,000	20,000	25,000	116,000	60,000	40,000	3,500	86807 2.500	13,000
16,41-18,9	16,000	20,000	25,000	118,000	65,000	40,000	3,500	86807 2.501	16,000
18,91-22,4	18,500	20,000	25,000	124,000	73,000	40,000	4,000	86807 3.000	18,500
22,41-25,4	22,000	20,000	25,000	127,000	78,000	40,000	4,000	86807 3.001	22,000
25,41-29,0	24,000	32,000	40,000	178,000	105,000	60,000	5,000	86807 3.500	24,000
29,01-35,0	28,000	32,000	40,000	178,000	108,000	60,000	5,000	86807 3.500	28,000
35,01-45,0	34,000	32,000	40,000	223,000	152,000	60,000	7,000	86807 4.001	34,000
45,01-55,0	44,000	40,000	50,000	233,000	152,000	70,000	7,000	86807 4.001	44,000
55,01-65,0	54,000	40,000	50,000	233,000	152,000	70,000	7,000	86807 4.001	54,000



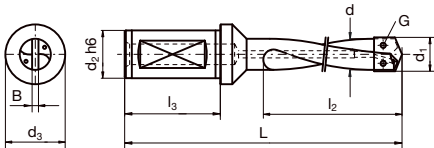
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Corpo portaplacchette con attacco cilindrico

Articolo nr. 86622



nichelato • Corpo per placchette. Il corpo con codolo cilindrico ha un'alimentazione di refrigerante interna. Larghe scanalature garantiscono una evacuazione del truciolo ottimale. Sostituzione degli inserti semplice grazie alle viti di arresto. Non è necessario alcun aggiustamento delle placchette. La punta con gli inserti può essere utilizzata nel materiale pieno. Questo utensile non è adatto per finire forature ricavate da fusione oppure per allargare fori preesistenti.i. Compresa viti di serraggio Art.Nr. 86807.

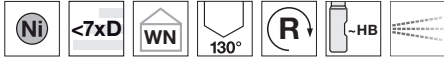


d1 mm	d mm	d2 h6 mm	d3 mm	L mm	l2 mm	l3 mm	B mm	G	Codice
10,00-11,7	9,500	20,000	25,000	140,000	83,000	40,000	2,500	86807 2.000	9,500
11,71-13,4	11,500	20,000	25,000	150,000	94,000	40,000	2,500	86807 2.000	11,500
13,41-16,4	13,000	20,000	25,000	160,000	104,000	40,000	3,500	86807 2.500	13,000
16,41-18,9	16,000	20,000	25,000	170,000	117,000	40,000	3,500	86807 2.501	16,000
18,91-22,4	18,500	20,000	25,000	180,000	129,000	40,000	4,000	86807 3.000	18,500
22,41-25,4	22,000	20,000	25,000	180,000	131,000	40,000	4,000	86807 3.001	22,000
25,41-29,0	24,000	32,000	40,000	240,000	166,000	60,000	5,000	86807 3.500	24,000
29,01-35,0	28,000	32,000	40,000	240,000	170,000	60,000	5,000	86807 3.500	28,000
35,01-45,0	34,000	32,000	40,000	280,000	210,000	60,000	7,000	86807 4.001	34,000
45,01-55,0	44,000	40,000	50,000	290,000	210,000	70,000	7,000	86807 4.001	44,000
55,01-65,0	54,000	40,000	50,000	290,000	210,000	70,000	7,000	86807 4.001	54,000

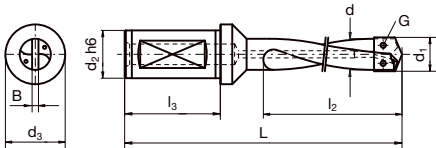


Corpo portaplacchette con attacco cilindrico

Articolo nr. 86624



nichelato • Corpo per placchette. Il corpo con codolo cilindrico ha un'alimentazione di refrigerante interna. Larghe scanalature garantiscono una evacuazione del truciolo ottimale. Sostituzione degli inserti semplice grazie alle viti di arresto. Non è necessario alcun aggiustamento delle placchette. La punta con gli inserti può essere utilizzata nel materiale pieno. Questo utensile non è adatto per finire forature ricavate da fusione oppure per allargare fori preesistenti.i. Compresa viti di serraggio Art.Nr. 86807.



d1 mm	d mm	d2 h6 mm	d3 mm	L mm	l2 mm	l3 mm	B mm	G	Codice
10,00-11,7	9,500	20,000	25,000	180,000	123,000	40,000	2,500	86807 2.000	9,500
11,71-13,4	11,500	20,000	25,000	190,000	134,000	40,000	2,500	86807 2.000	11,500
13,41-16,4	13,000	20,000	25,000	210,000	155,000	40,000	3,500	86807 2.500	13,000
16,41-18,9	16,000	20,000	25,000	220,000	168,000	40,000	3,500	86807 2.501	16,000
18,91-22,4	18,500	20,000	25,000	250,000	199,000	40,000	4,000	86807 3.000	18,500
22,41-25,4	22,000	20,000	25,000	250,000	201,000	40,000	4,000	86807 3.001	22,000
25,41-29,0	24,000	32,000	40,000	320,000	246,000	60,000	5,000	86807 3.500	24,000
29,01-35,0	28,000	32,000	40,000	320,000	250,000	60,000	5,000	86807 3.500	28,000
35,01-45,0	34,000	32,000	40,000	380,000	310,000	60,000	7,000	86807 4.001	34,000
45,01-55,0	44,000	40,000	50,000	390,000	310,000	70,000	7,000	86807 4.001	44,000
55,01-65,0	54,000	40,000	50,000	390,000	310,000	70,000	7,000	86807 4.001	54,000

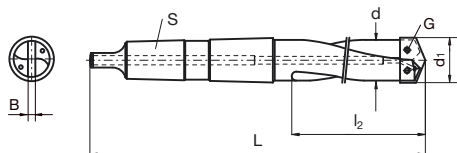


Corpo portaplacchette con attacco cono morse

Articolo nr. 86630



nichelato • Supporto per placchette in esecuzione corta. Il supporto con codolo conico ha un'alimentazione di refrigerante interna. Larghe scanalature garantiscono un trasporto del truciolo ottimale. Sostituzione degli inserti semplice grazie alle viti di arresto. Non è necessario alcun aggiustamento delle placchette. La punta con gli inserti può essere utilizzata in materiale solido. Questo utensile non è adatto per foratura di fori pre-fusi o pre-forati. Alimentazione refrigerante: assiale (radiale su richiesta). Compresa viti di serraggio Art.Nr. 86807.



d1 mm	d mm	S	L mm	l2 mm	B mm	G	Codice
10,00-11,7	9,500	MK-2	139,000	56,000	2,500	86807 2.000	9,500
11,71-13,4	11,500	MK-2	141,000	58,000	2,500	86807 2.000	11,500
13,41-16,4	13,000	MK-2	148,000	63,000	3,500	86807 2.500	13,000
16,41-18,9	16,000	MK-2	150,000	67,000	3,500	86807 2.501	16,000
18,91-22,4	18,500	MK-3	178,000	76,000	4,000	86807 3.000	18,500
22,41-25,4	22,000	MK-3	181,000	80,000	4,000	86807 3.001	22,000



Corpo portaplacchette con attacco cono morse

Articolo nr. 86670



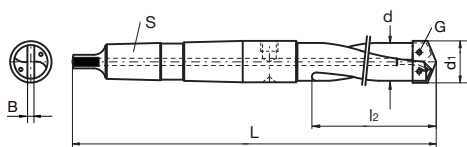
≤ Ø 28 mm: nichelato; Ø 28 mm: brunito • Corpo per placchette in esecuzione corta con sede per anello di alimentazione refrigerante. Il corpo con codolo conico ha un'alimentazione del refrigerante interna. Larghe scanalature garantiscono una evacuazione del truciolo ottimale. Sostituzione degli inserti semplice grazie alle viti di arresto. Non è necessario alcun aggiustamento delle placchette. La punta con gli inserti può essere utilizzata nel materiale pieno. Questo utensile non è adatto per finire forature ricavate da fusione oppure per allargare fori preesistenti.

Alimentazione refrigerante: radiale (assiale su richiesta).

Da Ø corpo 63,0 mm: esecuzione dritta.

Dimensione codolo CM 5: con trascinatore.

Comprese viti di serraggio Art.Nr. 86807.



d1 mm	d mm	S	L mm	l2 mm	B mm	G	Codice
25,01-29,0	24,000	MK-4	279,000	108,000	5,000	86807 3.500	24,000
29,01-35,0	28,000	MK-4	279,000	108,000	5,000	86807 3.500	28,000
35,01-45,0	34,000	MK-4	324,000	152,000	7,000	86807 4.001	34,000
45,01-55,0	44,000	MK-4	324,000	152,000	7,000	86807 4.001	44,000
55,01-65,0	54,000	MK-4	324,000	152,000	7,000	86807 4.001	54,000
65,01-78,0	63,000	MK-5	436,000	216,000	9,000	86807 5.000	63,000
78,01-90,0	77,000	MK-5	436,000	216,000	9,000	86807 5.000	77,000
90,01-102,0	89,000	MK-5	436,000	216,000	9,000	86807 5.000	89,000



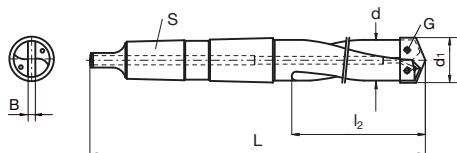
Corpo portaplacchette con attacco cono morse

Articolo nr. 86650



nichelato • Supporto per placchette in esecuzione lunga. Il supporto con codolo conico ha un'alimentazione di refrigerante interna. Larghe scanalature garantiscono un trasporto del truciolo ottimale. Sostituzione degli inserti semplice grazie alle viti di arresto. Non è necessario alcun aggiustamento delle placchette. La punta con gli inserti può essere utilizzata in materiale solido. Questo utensile non è adatto per foratura di fori pre-fusi o pre-forati.

Alimentazione refrigerante: assiale (radiale su richiesta).
Comprese viti di serraggio Art.Nr. 86807.



d1 mm	d mm	S	L mm	l2 mm	B mm	G	Codice
10,00-11,7	9,500	MK-2	186,000	103,000	2,500	86807 2.000	9,500
11,71-13,4	11,500	MK-2	191,000	108,000	2,500	86807 2.000	11,500
13,41-16,4	13,000	MK-2	210,000	125,000	3,500	86807 2.500	13,000
16,41-18,9	16,000	MK-2	218,000	135,000	3,500	86807 2.501	16,000
18,91-22,4	18,500	MK-3	258,000	156,000	4,000	86807 3.000	18,500
22,41-25,4	22,000	MK-3	266,000	166,000	4,000	86807 3.001	22,000



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Corpo portaplacchette con attacco cono morse

Articolo nr. 86680



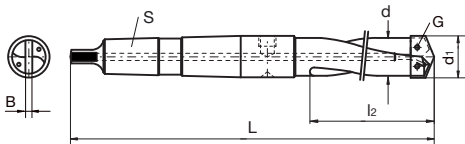
≤ Ø 28 mm: nichelato; Ø 28 mm: brunito • Supporto per placchette in esecuzione lunga con superficie circolare per anello con alimentazione refrigerante. Il supporto con codolo conico ha un'alimentazione di refrigerante interna. Larghe scanalature garantiscono un trasporto del truciolo ottimale. Sostituzione degli inserti semplice grazie alle viti di arresto. Non è necessario alcun aggiustamento delle placchette. La punta con gli inserti può essere utilizzata in materiale solido. Questo utensile non è adatto per foratura di fori pre-fusi o pre-forati.

Alimentazione refrigerante: radiale (assiale su richiesta).

Da supporto Ø 63,0 mm: dritto.

Dimensione codolo CM 5: con chiavetta trasversale.

Comprese viti di serraggio Art.Nr. 86807.



d1 mm	d mm	S	L mm	l2 mm	B mm	G	Codice
25,01-29,0	24,000	MK-4	379,000	208,000	5,000	86807 3.500	24,000
29,01-35,0	28,000	MK-4	379,000	208,000	5,000	86807 3.500	28,000
35,01-45,0	34,000	MK-4	429,000	257,000	7,000	86807 4.001	34,000
45,01-55,0	44,000	MK-4	429,000	257,000	7,000	86807 4.001	44,000
55,01-65,0	54,000	MK-4	429,000	257,000	7,000	86807 4.001	54,000
65,01-78,0	63,000	MK-5	536,000	316,000	9,000	86807 5.000	63,000
78,01-90,0	77,000	MK-5	536,000	316,000	9,000	86807 5.000	77,000
90,01-102,0	89,000	MK-5	536,000	316,000	9,000	86807 5.000	89,000

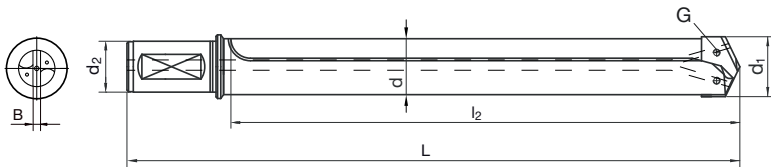


Corpo portaplacchette speciale con attacco cilindrico

Articolo nr. 86628



nichelato • Supporto per placchette. Il supporto extra lungo con codolo cilindrico ha un'alimentazione di refrigerante interna. Larghe scanalature garantiscono un trasporto del truciolo ottimale. Sostituzione degli inserti semplice grazie alle viti di arresto. Non è necessario alcun aggiustamento delle placchette. La punta con gli inserti può essere utilizzata in materiale solido. Questo utensile non è adatto per foratura di fori pre-fusi o pre-forati. Compresa viti di serraggio Art.Nr. 86807.



d1 mm	d mm	d2 h6 mm	L mm	l2 mm	B mm	G	Codice
13,41-16,4	13,000	20,000	198,500	156,500	3,500	86807 2.500	13,157
13,41-16,4	13,000	20,000	238,500	196,500	3,500	86807 2.500	13,197
13,41-16,4	13,000	20,000	318,500	276,500	3,500	86807 2.500	13,277
15,00-16,4	14,500	20,000	95,000	52,000	3,500	86807 2.500	14,052
15,00-16,4	14,500	20,000	125,000	82,000	3,500	86807 2.500	14,082
15,00-16,4	14,500	20,000	178,500	136,500	3,500	86807 2.500	14,137
15,00-16,4	14,500	20,000	198,500	156,500	3,500	86807 2.500	14,157
15,00-16,4	14,500	20,000	238,500	196,500	3,500	86807 2.500	14,197
15,00-16,4	14,500	20,000	268,500	226,500	3,500	86807 2.500	14,227
15,00-16,4	14,500	20,000	398,500	356,500	3,500	86807 2.500	14,357
16,41-18,9	16,000	20,000	260,500	218,500	3,500	86807 2.500	16,219
16,41-18,9	16,000	20,000	295,500	253,500	3,500	86807 2.500	16,254
16,41-18,9	16,000	20,000	410,500	368,500	3,500	86807 2.501	16,369
18,91-22,4	18,500	20,000	304,000	262,000	4,000	86807 3.000	18,262
18,91-22,4	18,500	20,000	344,000	302,000	4,000	86807 3.000	18,302
18,91-22,4	18,500	20,000	464,000	422,000	4,000	86807 3.000	18,422
22,41-25,4	22,000	20,000	285,000	243,000	4,000	86807 3.001	22,243
22,41-25,4	22,000	20,000	345,000	303,000	4,000	86807 3.001	22,303
22,41-25,4	22,000	20,000	385,000	343,000	4,000	86807 3.001	22,343
22,41-25,4	22,000	20,000	535,000	493,000	4,000	86807 3.001	22,493
25,41-29,0	23,000	32,000	138,000	63,000	5,000	86807 3.001	23,063
25,41-29,0	23,000	32,000	173,000	98,000	5,000	86807 3.001	23,098
25,41-29,0	23,000	32,000	225,000	150,000	5,000	86807 3.001	23,150
25,41-29,0	23,000	32,000	273,000	198,000	5,000	86807 3.001	23,198
25,41-29,0	23,000	32,000	343,000	268,000	5,000	86807 3.001	23,268
25,41-29,0	23,000	32,000	433,000	358,000	5,000	86807 3.001	23,358
25,41-29,0	23,000	32,000	503,000	428,000	5,000	86807 3.001	23,428
25,41-29,0	23,000	32,000	683,000	608,000	5,000	86807 3.001	23,608
29,01-35,0	28,000	32,000	393,000	321,500	5,000	86807 3.500	28,322
29,01-35,0	28,000	32,000	473,000	401,500	5,000	86807 3.500	28,402
29,01-35,0	28,000	32,000	553,000	481,500	5,000	86807 3.500	28,482
29,01-35,0	28,000	32,000	763,000	691,500	5,000	86807 3.500	28,692
33,20-36,0	33,000	32,000	148,000	80,500	5,000	86807 3.500	33,081
33,20-36,0	33,000	32,000	173,000	105,500	5,000	86807 3.500	33,106
33,20-36,0	33,000	32,000	223,000	155,500	5,000	86807 3.500	33,156
33,20-36,0	33,000	32,000	273,000	205,500	5,000	86807 3.500	33,206
33,20-36,0	33,000	32,000	393,000	325,500	5,000	86807 3.500	33,326
33,20-36,0	33,000	32,000	503,000	435,500	5,000	86807 3.500	33,436
33,20-36,0	33,000	32,000	603,000	535,500	5,000	86807 3.500	33,536
33,20-36,0	33,000	32,000	823,000	755,500	5,000	86807 3.500	33,756
35,01-45,0	34,000	32,000	457,000	388,000	7,000	86807 4.001	34,388
35,01-45,0	34,000	32,000	607,000	538,000	7,000	86807 4.001	34,538



Corpo portaplacchette speciale con attacco cilindrico

d1 mm	d mm	d2 h6 mm	L mm	l2 mm	B mm	G	Codice
35,01-45,0	34,000	32,000	907,000	838,000	7,000	86807 4.001	34,838
45,01-55,0	44,000	40,000	467,000	394,000	7,000	86807 4.001	44,394
45,01-55,0	44,000	40,000	617,000	544,000	7,000	86807 4.001	44,544
45,01-55,0	44,000	40,000	917,000	844,000	7,000	86807 4.001	44,844
55,01-65,0	54,000	40,000	467,000	393,000	7,000	86807 4.001	54,393
55,01-65,0	54,000	40,000	617,000	543,000	7,000	86807 4.001	54,543
55,01-65,0	54,000	40,000	917,000	843,000	7,000	86807 4.001	54,843
65,01-78,0	63,000	40,000	230,000	155,000	9,000	86807 5.000	63,155
65,01-78,0	63,000	40,000	340,000	265,000	9,000	86807 5.000	63,265
65,01-78,0	63,000	40,000	470,000	395,000	9,000	86807 5.000	63,395
65,01-78,0	63,000	40,000	620,000	545,000	9,000	86807 5.000	63,545
65,01-78,0	63,000	40,000	920,000	845,000	9,000	86807 5.000	63,845
78,01-90,0	77,000	50,000	240,000	155,000	9,000	86807 5.000	77,155
78,01-90,0	77,000	50,000	350,000	265,000	9,000	86807 5.000	77,265
78,01-90,0	77,000	50,000	480,000	395,000	9,000	86807 5.000	77,395
78,01-90,0	77,000	50,000	630,000	545,000	9,000	86807 5.000	77,545
78,01-90,0	77,000	50,000	930,000	845,000	9,000	86807 5.000	77,845
90,01-102,0	89,000	50,000	240,000	155,000	9,000	86807 5.000	89,155
90,01-102,0	89,000	50,000	350,000	265,000	9,000	86807 5.000	89,265
90,01-102,0	89,000	50,000	480,000	395,000	9,000	86807 5.000	89,395
90,01-102,0	89,000	50,000	630,000	545,000	9,000	86807 5.000	89,545
90,01-102,0	89,000	50,000	930,000	845,000	9,000	86807 5.000	89,845

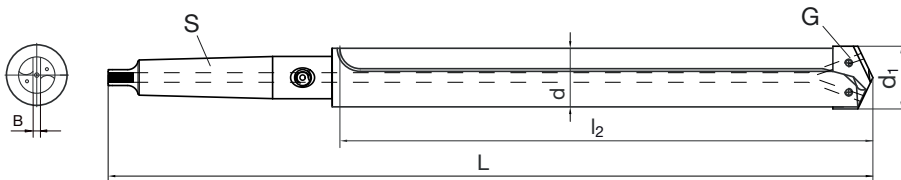


Corpo portaplacchette speciale con attacco con morse

Articolo nr. 86678



Superficie ≤ 1000 mm lunghezza totale nichelata; > 1000 mm lunghezza totale brunita • Supporto per placchette. Il supporto extra lungo con codolo cilindrico ha un'alimentazione di refrigerante interna. Larghe scanalature garantiscono un trasporto del truciolo ottimale. Sostituzione degli inserti semplice grazie alle viti di arresto. Non è necessario alcun aggiustamento delle placchette. La punta con gli inserti può essere utilizzata in materiale solido. Questo utensile non è adatto per foratura di fori pre-fusi o pre-forati. Alimentazione refrigerante: radiale (assiale su richiesta). Compresa viti di serraggio Art.Nr. 86807.



d1 mm	d mm	S	L mm	l2 mm	B mm	G	Codice
35,01-45,0	34,000	MK-4	566,000	393,000	7,000	86807 4.001	34,393
35,01-45,0	34,000	MK-4	716,000	543,000	7,000	86807 4.001	34,543
35,01-45,0	34,000	MK-4	1016,000	843,000	7,000	86807 4.001	34,843
45,01-55,0	44,000	MK-4	716,000	544,500	7,000	86807 4.001	44,545
45,01-55,0	44,000	MK-4	1016,000	844,500	7,000	86807 4.001	44,845
55,01-65,0	54,000	MK-4	560,000	387,000	7,000	86807 4.001	54,387
55,01-65,0	54,000	MK-4	716,000	543,000	7,000	86807 4.001	54,543
55,01-65,0	54,000	MK-4	1016,000	843,000	7,000	86807 4.001	54,843
65,01-78,0	63,000	MK-5	766,000	547,000	9,000	86807 5.000	63,547
65,01-78,0	63,000	MK-5	1066,000	847,000	9,000	86807 5.000	63,847
78,01-90,0	77,000	MK-5	766,000	544,000	9,000	86807 5.000	77,544
78,01-90,0	77,000	MK-5	1066,000	844,000	9,000	86807 5.000	77,844
90,01-102,0	89,000	MK-5	766,000	544,000	9,000	86807 5.000	89,544
90,01-102,0	89,000	MK-5	1066,000	844,000	9,000	86807 5.000	89,844



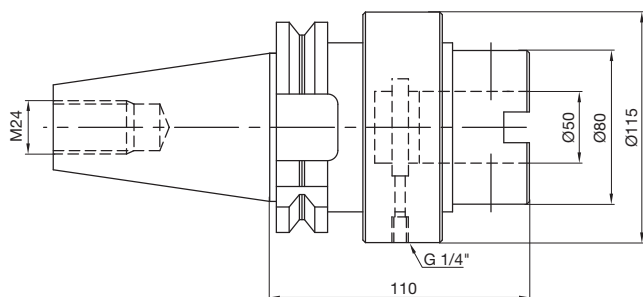
Programma speciale Multiplex sistema modulare Ø 97 mm fino 210 mm



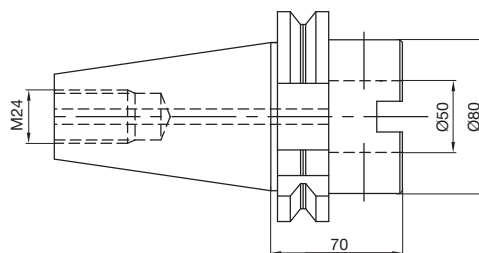
Mandrini

Sono fornibili a richiesta le seguenti esecuzioni:

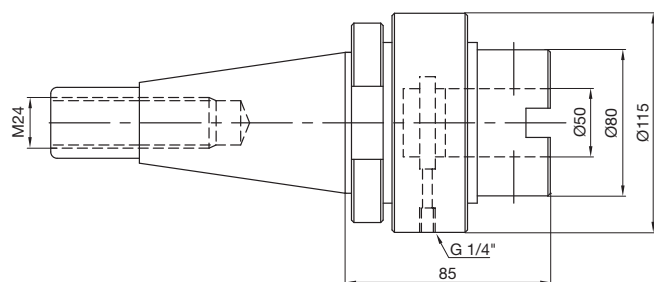
- SK50 DIN 69871 con anello adduttore



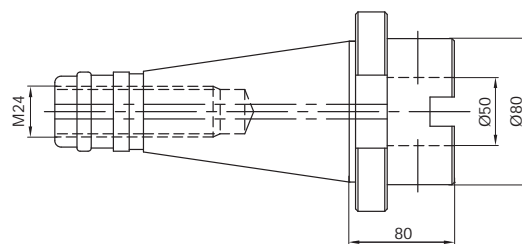
- SK50 DIN 69871 senza anello adduttore



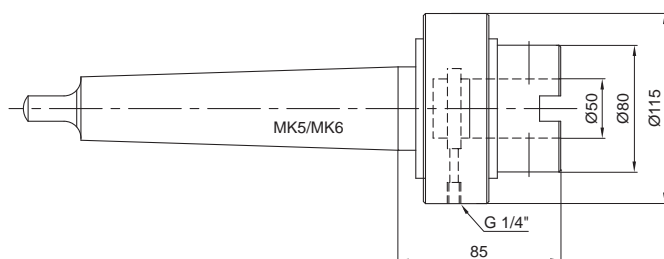
- SK50 DIN 2080 con anello adduttore



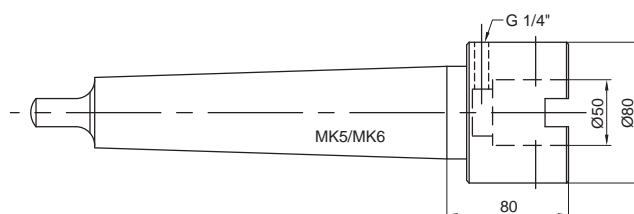
- SK50 DIN 2080 senza anello adduttore



- CM 5/CM 6 con anello adduttore



- CM 5/CM 6 senza anello adduttore



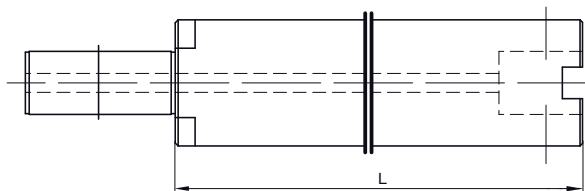


Programma speciale Multiplex sistema modulare Ø 97 mm fino 210 mm

Prolunghe per testa foratrice



Prolunghe per testa foratrice
 Ø 97 mm - Ø 130 mm
 L = 186 mm
 L = 300 mm



Prolunghe per testa foratrice
 Ø 131 mm - Ø 165 mm und Ø 164 mm - Ø 210 mm
 L = 204 mm
 L = 300 mm
 L = 500 mm

Trascinatore



piccolo, per testa foratrice
 Ø 97 mm - Ø 130 mm,
 larghezza 14 mm



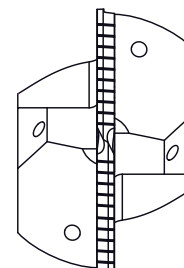
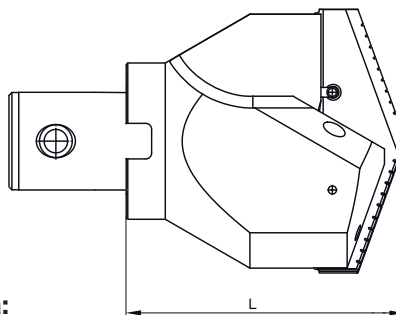
grande, per testa foratrice Ø 131 mm - Ø 165 mm
 e Ø 164 mm - Ø 210 mm, larghezza 16 mm

Teste foratrici



Le seguenti grandezze sono fornibili a richiesta:

- Ø 97 mm fino Ø 130 mm, L = 118,5 mm
- Ø 131 mm fino Ø 165 mm, L = 142,5 mm
- Ø 164 mm fino Ø 210 mm, L = 142,5 mm





Inserti intercambiabili

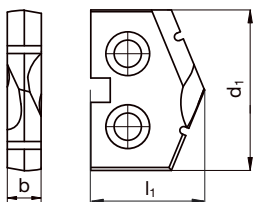
Articolo nr. 86602



P	M	K	N	S	H
•	○	•	○		



Assott. del noc. $\geq \varnothing 9,800$ • inserti con scanalature truciolo divise. Angolo di affilatura 135°. Per utilizzo universale.



d1 mm	l1 mm	b mm	Codice	d1 mm	l1 mm	b mm	Codice
10,000	8,700	2,500	10,000	18,000	11,700	3,500	18,000
10,200	8,700	2,500	10,200	18,250	11,700	3,500	18,250
10,500	8,700	2,500	10,500	18,500	11,700	3,500	18,500
11,000	8,700	2,500	11,000	18,750	11,700	3,500	18,750
11,110	8,700	2,500	11,110	19,000	13,700	4,000	19,000
11,500	8,700	2,500	11,500	19,500	13,700	4,000	19,500
11,750	8,700	2,500	11,750	19,750	13,700	4,000	19,750
12,000	8,700	2,500	12,000	20,000	13,700	4,000	20,000
12,300	8,700	2,500	12,300	20,250	13,700	4,000	20,250
12,500	8,700	2,500	12,500	20,500	13,700	4,000	20,500
12,750	8,700	2,500	12,750	21,000	13,700	4,000	21,000
13,000	8,700	2,500	13,000	21,250	13,700	4,000	21,250
13,250	8,700	2,500	13,250	21,500	13,700	4,000	21,500
13,500	11,700	3,500	13,500	21,750	13,700	4,000	21,750
13,750	11,700	3,500	13,750	22,000	13,700	4,000	22,000
14,000	11,700	3,500	14,000	22,500	13,700	4,000	22,500
14,250	11,700	3,500	14,250	23,000	13,700	4,000	23,000
14,500	11,700	3,500	14,500	23,500	13,700	4,000	23,500
14,750	11,700	3,500	14,750	24,000	13,700	4,000	24,000
15,000	11,700	3,500	15,000	24,500	13,700	4,000	24,500
15,250	11,700	3,500	15,250	24,750	13,700	4,000	24,750
15,500	11,700	3,500	15,500	25,000	13,700	4,000	25,000
15,750	11,700	3,500	15,750				
16,000	11,700	3,500	16,000				
16,500	11,700	3,500	16,500				
16,750	11,700	3,500	16,750				
17,000	11,700	3,500	17,000				
17,250	11,700	3,500	17,250				
17,500	11,700	3,500	17,500				
17,750	11,700	3,500	17,750				



Inserti intercambiabili

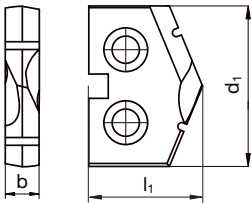
Articolo nr. 86608



P	M	K	N	S	H
•	○	•	○		



Assott. del nocc. $\geq \varnothing 10,000$ • inserti con scanalature truciolo divise. Angolo di affilatura 135°. Per utilizzo universale.



d1 mm	l1 mm	b mm	Codice	d1 mm	l1 mm	b mm	Codice
10,000	8,700	2,500	10,000	17,750	11,700	3,500	17,750
10,500	8,700	2,500	10,500	18,000	11,700	3,500	18,000
11,000	8,700	2,500	11,000	18,250	11,700	3,500	18,250
11,500	8,700	2,500	11,500	18,500	11,700	3,500	18,500
11,750	8,700	2,500	11,750	18,750	11,700	3,500	18,750
12,000	8,700	2,500	12,000	19,000	13,700	4,000	19,000
12,500	8,700	2,500	12,500	19,500	13,700	4,000	19,500
12,750	8,700	2,500	12,750	19,750	13,700	4,000	19,750
13,000	8,700	2,500	13,000	20,000	13,700	4,000	20,000
13,250	8,700	2,500	13,250	20,250	13,700	4,000	20,250
13,500	11,700	3,500	13,500	20,500	13,700	4,000	20,500
13,750	11,700	3,500	13,750	21,000	13,700	4,000	21,000
14,000	11,700	3,500	14,000	21,250	13,700	4,000	21,250
14,250	11,700	3,500	14,250	21,500	13,700	4,000	21,500
14,500	11,700	3,500	14,500	21,750	13,700	4,000	21,750
14,750	11,700	3,500	14,750	22,000	13,700	4,000	22,000
15,000	11,700	3,500	15,000	22,500	13,700	4,000	22,500
15,250	11,700	3,500	15,250	23,000	13,700	4,000	23,000
15,500	11,700	3,500	15,500	23,500	13,700	4,000	23,500
15,750	11,700	3,500	15,750	24,000	13,700	4,000	24,000
16,000	11,700	3,500	16,000	24,500	13,700	4,000	24,500
16,500	11,700	3,500	16,500	24,750	13,700	4,000	24,750
17,000	11,700	3,500	17,000	25,000	13,700	4,000	25,000
17,500	11,700	3,500	17,500				



Inserti intercambiabili

Articolo nr. 86609



P	M	K	N	S	H
•	○	•	○		



Assott. del noc. $\geq \varnothing 25,000$ • inserti con scanalature truciolo divise. Per utilizzo universale.

angolo di affilatura:

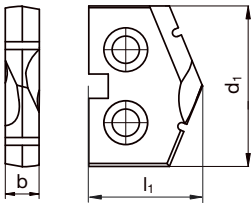
$\geq \varnothing 25,0$ mm = 132°

$> \varnothing 66,0$ mm = 140°

materiale tagliente:

$\leq \varnothing 66,0$ mm HSS-E-PM

$> \varnothing 66,0$ mm HSS-E



d1 mm	inch	l1 mm	b mm	Codice	d1 mm	inch	l1 mm	b mm	Codice
25,000		18,000	5,000	25,000	66,000		37,000	9,000	66,000
25,500		18,000	5,000	25,500	68,000		37,000	9,000	68,000
26,000		18,000	5,000	26,000	70,000		37,000	9,000	70,000
26,500		18,000	5,000	26,500	74,000		37,000	9,000	74,000
27,000		18,000	5,000	27,000	75,000		37,000	9,000	75,000
28,000		18,000	5,000	28,000	78,000		37,000	9,000	78,000
29,000		18,000	5,000	29,000	80,000		37,000	9,000	80,000
29,500		18,000	5,000	29,500	82,000		37,000	9,000	82,000
30,000		18,000	5,000	30,000	84,000		37,000	9,000	84,000
31,000		18,000	5,000	31,000	85,000		37,000	9,000	85,000
32,000		18,000	5,000	32,000	88,000		37,000	9,000	88,000
33,000		18,000	5,000	33,000	90,000		37,000	9,000	90,000
34,000		18,000	5,000	34,000	93,000		37,000	9,000	93,000
35,000		18,000	5,000	35,000	95,000		37,000	9,000	95,000
36,000		25,000	7,000	36,000	96,000		37,000	9,000	96,000
37,000		25,000	7,000	37,000	98,000		37,000	9,000	98,000
38,000		25,000	7,000	38,000	100,000		37,000	9,000	100,000
39,000		25,000	7,000	39,000	102,000		37,000	9,000	102,000
40,000		25,000	7,000	40,000	103,000		37,000	9,000	103,000
41,000		25,000	7,000	41,000	105,000		37,000	9,000	105,000
42,000		25,000	7,000	42,000	110,000		37,000	9,000	110,000
43,000		25,000	7,000	43,000	115,000		37,000	9,000	115,000
44,000		25,000	7,000	44,000	120,000		37,000	9,000	120,000
45,000		25,000	7,000	45,000	125,000		37,000	9,000	125,000
46,000		25,000	7,000	46,000	130,000		37,000	9,000	130,000
47,000		25,000	7,000	47,000	135,000		47,000	9,000	135,000
48,000		25,000	7,000	48,000	140,000		47,000	9,000	140,000
49,000		25,000	7,000	49,000	145,000		47,000	9,000	145,000
50,000		25,000	7,000	50,000	150,000		47,000	9,000	150,000
51,000		25,000	7,000	51,000	155,000		47,000	9,000	155,000
52,000		25,000	7,000	52,000	160,000		47,000	9,000	160,000
53,000		25,000	7,000	53,000	165,000		47,000	9,000	165,000
54,000		25,000	7,000	54,000	170,000		47,000	9,000	170,000
55,000		25,000	7,000	55,000	175,000		47,000	9,000	175,000
56,000		25,000	7,000	56,000	180,000		47,000	9,000	180,000
57,000		25,000	7,000	57,000	185,000		47,000	9,000	185,000
58,000		25,000	7,000	58,000	190,000		47,000	9,000	190,000
59,000		25,000	7,000	59,000	195,000		47,000	9,000	195,000
60,000		25,000	7,000	60,000	200,000		47,000	9,000	200,000
62,000		25,000	7,000	62,000	205,000		47,000	9,000	205,000
64,000		25,000	7,000	64,000	210,000		47,000	9,000	210,000
65,000		25,000	7,000	65,000					



Inserti intercambiabili

Articolo nr. 86708



P	M	K	N	S	H
•	○	•	○		



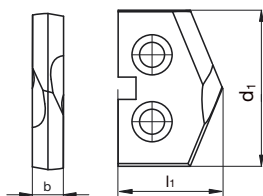
Assott. del nocc. $\geq \varnothing 9,800$ • Inserti senza scanalature truciolo divise. Per materiale fino a 600 N/mm². Per utilizzo universale.

Angolo di affilatura:

$\leq \varnothing 25,4$ mm = 135°

$> \varnothing 25,4$ mm = 132°

con smusso (vedi consigli per l'utilizzo Multiplex/parte tecnica)



d1 mm	l1 mm	b mm	Codice	d1 mm	l1 mm	b mm	Codice
10,000	8,700	2,500	10,000	19,500	13,700	4,000	19,500
10,200	8,700	2,500	10,200	19,750	13,700	4,000	19,750
10,500	8,700	2,500	10,500	20,000	13,700	4,000	20,000
11,000	8,700	2,500	11,000	20,500	13,700	4,000	20,500
11,500	8,700	2,500	11,500	21,000	13,700	4,000	21,000
12,000	8,700	2,500	12,000	21,500	13,700	4,000	21,500
12,250	8,700	2,500	12,250	22,000	13,700	4,000	22,000
12,500	8,700	2,500	12,500	22,500	13,700	4,000	22,500
12,750	8,700	2,500	12,750	22,750	13,700	4,000	22,750
13,000	8,700	2,500	13,000	23,000	13,700	4,000	23,000
13,500	11,700	3,500	13,500	23,500	13,700	4,000	23,500
13,750	11,700	3,500	13,750	24,000	13,700	4,000	24,000
14,000	11,700	3,500	14,000	24,250	13,700	4,000	24,250
14,250	11,700	3,500	14,250	24,500	13,700	4,000	24,500
14,500	11,700	3,500	14,500	25,000	13,700	4,000	25,000
14,750	11,700	3,500	14,750	26,000	17,300	5,000	26,000
15,000	11,700	3,500	15,000	27,000	17,300	5,000	27,000
15,500	11,700	3,500	15,500	28,000	17,300	5,000	28,000
15,750	11,700	3,500	15,750	29,000	17,300	5,000	29,000
16,000	11,700	3,500	16,000	30,000	17,300	5,000	30,000
16,250	11,700	3,500	16,250	31,000	17,300	5,000	31,000
16,500	11,700	3,500	16,500	32,000	17,300	5,000	32,000
16,750	11,700	3,500	16,750	34,000	17,300	5,000	34,000
17,000	11,700	3,500	17,000	35,000	17,300	5,000	35,000
17,500	11,700	3,500	17,500				
17,750	11,700	3,500	17,750				
18,000	11,700	3,500	18,000				
18,250	11,700	3,500	18,250				
18,500	11,700	3,500	18,500				
19,000	13,700	4,000	19,000				



Inserti intercambiabili

Articolo nr. 86702



P	M	K	N	S	H
●	○	●	○		



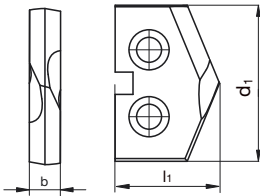
Assott. del nocc. $\geq \varnothing 10,000$ • Inserti senza scanalature truciolo divise. Per materiale fino a 600 N/mm². Per utilizzo universale.

Angolo di affilatura:

$\leq \varnothing 25,4$ mm = 135°

$> \varnothing 25,4$ mm = 132°

con smusso (vedi consigli per l'utilizzo Multiplex/parte tecnica)



d1 mm	l1 mm	b mm	Codice	d1 mm	l1 mm	b mm	Codice
10,000	8,700	2,500	10,000	20,500	13,700	4,000	20,500
10,200	8,700	2,500	10,200	21,000	13,700	4,000	21,000
10,500	8,700	2,500	10,500	21,500	13,700	4,000	21,500
11,000	8,700	2,500	11,000	22,000	13,700	4,000	22,000
12,000	8,700	2,500	12,000	22,300	13,700	4,000	22,300
12,500	8,700	2,500	12,500	22,750	13,700	4,000	22,750
12,750	8,700	2,500	12,750	23,000	13,700	4,000	23,000
13,000	8,700	2,500	13,000	24,250	13,700	4,000	24,250
13,500	11,700	3,500	13,500	24,500	13,700	4,000	24,500
13,750	11,700	3,500	13,750	25,000	13,700	4,000	25,000
14,000	11,700	3,500	14,000	26,000	17,300	5,000	26,000
14,100	11,700	3,500	14,100	26,500	17,300	5,000	26,500
14,500	11,700	3,500	14,500	27,000	17,300	5,000	27,000
14,750	11,700	3,500	14,750	28,000	17,300	5,000	28,000
15,000	11,700	3,500	15,000	29,000	17,300	5,000	29,000
15,500	11,700	3,500	15,500	29,800	17,300	5,000	29,800
16,000	11,700	3,500	16,000	30,000	17,300	5,000	30,000
16,250	11,700	3,500	16,250	32,000	17,300	5,000	32,000
16,500	11,700	3,500	16,500	33,000	17,300	5,000	33,000
16,750	11,700	3,500	16,750	34,000	17,300	5,000	34,000
17,000	11,700	3,500	17,000	35,000	17,300	5,000	35,000
17,500	11,700	3,500	17,500				
17,750	11,700	3,500	17,750				
18,000	11,700	3,500	18,000				
18,250	11,700	3,500	18,250				
18,500	11,700	3,500	18,500				
19,000	13,700	4,000	19,000				
19,500	13,700	4,000	19,500				
19,750	13,700	4,000	19,750				
20,000	13,700	4,000	20,000				



Inserti intercambiabili

Articolo nr. 86709



P	M	K	N	S	H
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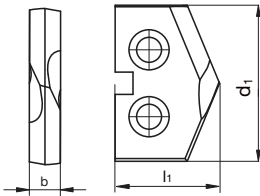
Assott. del nocch. $\geq \varnothing 9,800$ • Inserti senza scanalature truciolo divise. Per materiale fino a 600 N/mm². Per utilizzo universale.

Angolo di affilatura:

$\leq \varnothing 25,4$ mm = 135°

$> \varnothing 25,4$ mm = 132°

senza smusso (vedi consigli per l'utilizzo Multiplex/parte tecnica)



d1 mm	l1 mm	b mm	Codice	d1 mm	l1 mm	b mm	Codice
10,000	8,700	2,500	10,000	18,250	11,700	3,500	18,250
10,200	8,700	2,500	10,200	18,500	11,700	3,500	18,500
10,500	8,700	2,500	10,500	19,000	13,700	4,000	19,000
11,000	8,700	2,500	11,000	19,500	13,700	4,000	19,500
11,110	8,700	2,500	11,110	20,000	13,700	4,000	20,000
12,000	8,700	2,500	12,000	20,500	13,700	4,000	20,500
12,500	8,700	2,500	12,500	20,640	13,700	4,000	20,640
12,700	8,700	2,500	12,700	21,000	13,700	4,000	21,000
12,750	8,700	2,500	12,750	21,500	13,700	4,000	21,500
13,000	8,700	2,500	13,000	22,000	13,700	4,000	22,000
13,500	11,700	3,500	13,500	23,000	13,700	4,000	23,000
14,000	11,700	3,500	14,000	23,250	13,700	4,000	23,250
14,500	11,700	3,500	14,500	24,500	13,700	4,000	24,500
14,750	11,700	3,500	14,750	25,000	13,700	4,000	25,000
15,000	11,700	3,500	15,000	26,000	17,300	5,000	26,000
15,880	11,700	3,500	15,880	27,000	17,300	5,000	27,000
16,250	11,700	3,500	16,250	28,000	17,300	5,000	28,000
16,500	11,700	3,500	16,500	29,000	17,300	5,000	29,000
16,670	11,700	3,500	16,670	30,000	17,300	5,000	30,000
16,750	11,700	3,500	16,750	33,000	17,300	5,000	33,000
17,000	11,700	3,500	17,000	34,000	17,300	5,000	34,000
17,500	11,700	3,500	17,500	35,000	17,300	5,000	35,000
17,750	11,700	3,500	17,750				
18,000	11,700	3,500	18,000				



Inserti intercambiabili

Articolo nr. 86701



P	M	K	N	S	H
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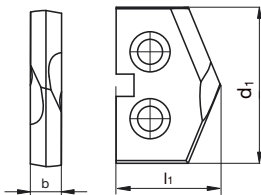
Assott. del nocc. $\geq \varnothing 10,000$ • Inserti senza scanalature truciolo divise. Per materiale fino a 600 N/mm². Per utilizzo universale.

Angolo di affilatura:

$\leq \varnothing 25,4$ mm = 135°

$> \varnothing 25,4$ mm = 132°

senza smusso (vedi consigli per l'utilizzo Multiplex/parte tecnica)



d1 mm	l1 mm	b mm	Codice	d1 mm	l1 mm	b mm	Codice
10,000	8,700	2,500	10,000	17,750	11,700	3,500	17,750
10,200	8,700	2,500	10,200	18,000	11,700	3,500	18,000
10,500	8,700	2,500	10,500	18,500	11,700	3,500	18,500
11,000	8,700	2,500	11,000	19,000	13,700	4,000	19,000
11,500	8,700	2,500	11,500	19,500	13,700	4,000	19,500
12,000	8,700	2,500	12,000	20,000	13,700	4,000	20,000
12,500	8,700	2,500	12,500	20,500	13,700	4,000	20,500
12,750	8,700	2,500	12,750	21,000	13,700	4,000	21,000
13,000	8,700	2,500	13,000	21,500	13,700	4,000	21,500
13,500	11,700	3,500	13,500	22,000	13,700	4,000	22,000
13,750	11,700	3,500	13,750	23,000	13,700	4,000	23,000
14,000	11,700	3,500	14,000	24,000	13,700	4,000	24,000
14,250	11,700	3,500	14,250	24,500	13,700	4,000	24,500
14,500	11,700	3,500	14,500	25,000	13,700	4,000	25,000
14,750	11,700	3,500	14,750	26,000	17,300	5,000	26,000
15,000	11,700	3,500	15,000	27,000	17,300	5,000	27,000
15,500	11,700	3,500	15,500	28,000	17,300	5,000	28,000
15,750	11,700	3,500	15,750	29,000	17,300	5,000	29,000
16,000	11,700	3,500	16,000	30,000	17,300	5,000	30,000
16,250	11,700	3,500	16,250	31,000	17,300	5,000	31,000
16,500	11,700	3,500	16,500	32,000	17,300	5,000	32,000
16,750	11,700	3,500	16,750	33,000	17,300	5,000	33,000
17,000	11,700	3,500	17,000	34,000	17,300	5,000	34,000
17,500	11,700	3,500	17,500	35,000	17,300	5,000	35,000

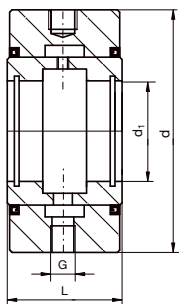


Alimentatori per punte con fori di refrigerazione

Articolo nr. 86690



Anello di alimentazione del refrigerante per per corpo con attacco CM e sede per anello art. 86670 e 86680 (senza set avvitatura).

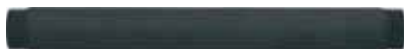


per	d1 mm	d mm	G	L mm	Codice
MK 4	31,750	80,000	G 1/4	45,000	31,750
MK 5	63,500	127,000	G 1/2	60,000	63,500



Tubi di adduzione

Articolo nr. 82571



Tubo di adduzione refrigerante per anello di alimentazione del refrigerante Art. nr. 86690



G	l1 mm	Codice	G	l1 mm	Codice
G 1/4	200,000	13,160			
G 1/2	200,000	20,960			



HARTNER

Attacco rapido

Articolo nr. 82578



G	d mm	l1 mm	Codice	G	d mm	l1 mm	Codice
G 1/4	9,000	118,000	9,000				
G 1/2	13,000	118,000	13,000				



HARTNER

Giravite Torx

Articolo nr. 86842



Torx	l1 mm	Codice	Torx	l1 mm	Codice
T6	150,000	6,001	T20	205,000	20,001
T7	150,000	7,001	T25	207,000	25,001
T8	150,000	8,001			
T9	150,000	9,001			
T10	170,000	10,001			
T15	190,000	15,001			

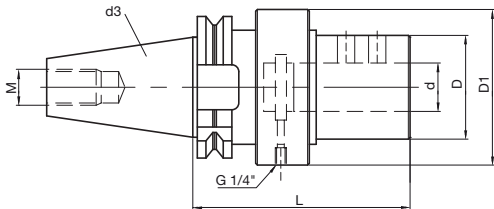


Mandrino di alimentazione del refrigerante per Multiplex

Articolo nr. 86691



Mandrino di alimentazione del refrigerante con attacco SK secondo DIN ISO 7388-1 e attacco per utensili con gambo cilindrico. Per gambi di Ø più piccoli utilizzare le bussole di riduzione.



d3	d mm	D mm	D1 mm	L mm	M	kg	Codice
SK 40	32,000	65,000	88,000	130,000	M16	0,909	32,040
SK 50	40,000	65,000	98,000	135,000	M24	1,694	40,050
SK 50	50,000	90,000	123,000	165,000	M24	2,981	50,050

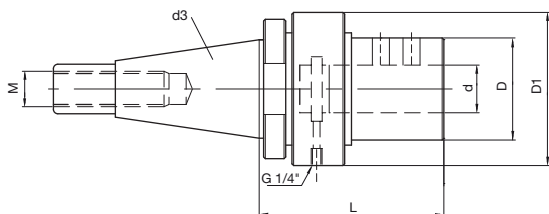


Mandrino di alimentazione del refrigerante per Multiplex

Articolo nr. 86692



Mandrino con alimentazione di refrigerante con SK a DIN 2080 e foratura cilindrica. Per codolo con differenti Ø utilizzo con bussola di riduzione.



d3	d mm	D mm	D1 mm	L mm	M	kg	Codice
SK 40	32,000	65,000	88,000	110,000	M16	0,931	32,040
SK 50	40,000	65,000	98,000	120,000	M24	5,825	40,050
SK 50	50,000	90,000	123,000	145,000	M24	3,037	50,050

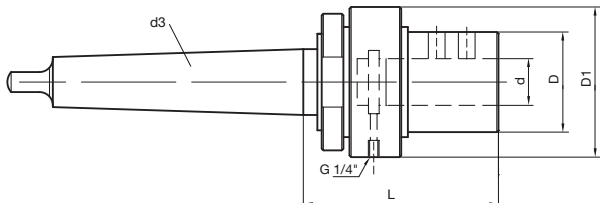


Mandrino di alimentazione del refrigerante per Multiplex

Articolo nr. 86693



Mandrino con alimentazione di refrigerante con CM a DIN 228 B e foratura cilindrica. Per codolo con differenti \varnothing utilizzo con bussola di riduzione.



d3	d mm	D mm	D1 mm	L mm	M	kg	Codice
MK-4	32,000	65,000	88,000	100,000	M14	1,019	32,400
MK-5	40,000	75,000	98,000	110,000	M16	1,899	40,500
MK-6	40,000	75,000	98,000	120,000	M16	2,427	40,600
MK-5	50,000	90,000	123,000	140,000	M20	3,293	50,500
MK-6	50,000	90,000	123,000	140,000	M20	3,997	50,600

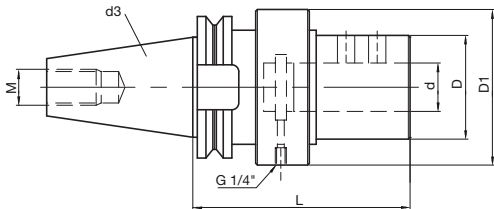


Mandrino di alimentazione del refrigerante per Multiplex

Articolo nr. 86694



Mandrino per alimentazione del refrigerante con attacco MAS BT secondo DIN ISO 7388-2 e attacco per utensili con gambo cilindrico. Per gambi di Ø più piccoli utilizzare le bussole di riduzione.



d3	d mm	D mm	D1 mm	L mm	M	kg	Codice
BT 40	32,000	65,000	88,000	125,000	M16	0,872	32,040
BT 50	40,000	65,000	98,000	145,000	M24	1,766	40,050
BT 50	50,000	90,000	123,000	170,000	M24	3,037	50,050

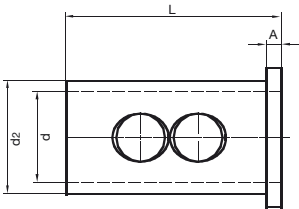


Bussole di riduzione per attacchi cilindrici

Articolo nr. 86699



Bussola di riduzione per mandrino di alimentazione del refrigerante con attacco cilindrico



d mm	d2 mm	L mm	A mm	Codice
20,000	32,000	65,000	5,000	20,032
20,000	40,000	75,000	5,000	20,040
25,000	32,000	65,000	5,000	25,032
25,000	40,000	75,000	5,000	25,040
32,000	40,000	75,000	5,000	32,040



HARTNER

Precision Cutting Tools



MULTI-PLEX HPC

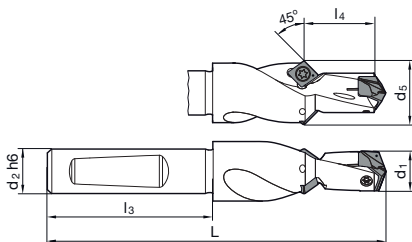


Corpo portaplacchette Multiplex-HPC

Articolo nr. 86681



specifico per elevata resistenza all'usura • taglio trasversale della scanalatura ottimizzato • uscita dei fori di lubrificazione ottimizzata
• viti Art. nr. 86843 e 86846 comprese • giravite Art. nr. 86842 compreso
per foro pilota e svasatura a 45°



Grandezza	d1 mm	d2 h6 mm	d5 mm	L mm	l3 mm	l4 mm	Codice
110	11,00-11,99	12,000	17,000	81,000	45,000	12,000	11,000
110	11,00-11,99	12,700	17,000	81,000	45,000	12,000	11,005
120	12,00-12,99	12,000	18,000	84,000	45,000	13,000	12,000
120	12,00-12,99	12,700	18,000	84,000	45,000	13,000	12,005
130	13,00-13,99	14,000	18,000	86,000	45,000	14,000	13,000
130	13,00-13,99	15,875	18,000	86,000	45,000	14,000	13,005
140	14,00-15,99	16,000	18,000	93,000	48,000	16,000	14,000
140	14,00-15,99	15,875	18,000	93,000	48,000	16,000	14,005
160	16,00-17,99	18,000	20,000	99,000	48,000	18,000	16,000
160	16,00-17,99	19,050	20,000	99,000	48,000	18,000	16,005
180	18,00-19,99	20,000	22,000	106,000	50,000	20,000	18,000
180	18,00-19,99	19,050	22,000	106,000	50,000	20,000	18,005
200	20,00-21,99	25,000	25,000	117,000	56,000	22,000	20,000
200	20,00-21,99	25,400	25,400	117,000	56,000	22,000	20,005
220	22,00-23,99	25,000	26,000	122,000	56,000	24,000	22,000
220	22,00-23,99	25,400	26,000	122,000	56,000	24,000	22,005
240	24,00-25,99	25,000	28,000	128,000	56,000	26,000	24,000
240	24,00-25,99	25,400	28,000	128,000	56,000	26,000	24,005
260	26,00-27,99	32,000	32,000	142,000	60,000	28,000	26,000
260	26,00-27,99	31,750	32,000	142,000	60,000	28,000	26,005
280	28,00-29,99	32,000	34,000	147,000	60,000	30,000	28,000
280	28,00-29,99	31,750	34,000	147,000	60,000	30,000	28,005
300	30,00-31,99	32,000	38,000	152,000	60,000	32,000	30,000
300	30,00-31,99	31,750	38,000	152,000	60,000	32,000	30,005
320	32,00-35,99	32,000	42,000	163,000	60,000	36,000	32,000
320	32,00-35,99	31,750	42,000	163,000	60,000	36,000	32,005
360	36,00-40,00	32,000	46,000	173,000	60,000	40,000	36,000
360	36,00-40,00	31,750	46,000	173,000	60,000	40,000	36,005

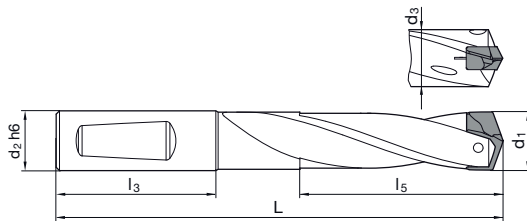


Corpo portaplacchette Multiplex-HPC

Articolo nr. 86682



specifico per elevata resistenza all'usura • taglio trasversale della scanalatura ottimizzato • uscita dei fori di lubrificazione ottimizzata
• viti Art. nr. 86843 comprese • giravite Art. nr. 86842 compreso



Grandezza	d1 mm	d2 h6 mm	d3 mm	L mm	l3 mm	l5 mm	Codice
110	11,00-11,49	12,000	10,700	84,000	45,000	19,300	11,000
110	11,00-11,49	12,700	10,700	84,000	45,000	19,300	11,005
115	11,50-11,99	12,000	11,200	85,000	45,000	20,100	11,500
115	11,50-11,99	12,700	11,200	85,000	45,000	20,100	11,505
120	12,00-12,49	12,000	11,700	87,000	45,000	21,000	12,000
120	12,00-12,49	12,700	11,700	87,000	45,000	21,000	12,005
125	12,50-12,99	14,000	12,200	89,000	45,000	21,900	12,500
125	12,50-12,99	15,875	12,200	89,000	45,000	21,900	12,505
130	13,00-13,49	14,000	12,700	90,000	45,000	22,600	13,000
130	13,00-13,49	15,875	12,700	90,000	45,000	22,600	13,005
135	13,50-13,99	14,000	13,200	92,000	45,000	23,600	13,500
135	13,50-13,99	15,875	13,200	92,000	45,000	23,600	13,505
140	14,00-14,49	14,000	13,700	93,000	45,000	24,500	14,000
140	14,00-14,49	15,875	13,700	93,000	45,000	24,500	14,005
145	14,50-14,99	16,000	14,200	98,000	48,000	25,300	14,500
145	14,50-14,99	15,875	14,200	98,000	48,000	25,300	14,505
150	15,00-15,49	16,000	14,700	100,000	48,000	26,100	15,000
150	15,00-15,49	15,875	14,700	100,000	48,000	26,100	15,005
155	15,50-15,99	16,000	15,200	101,000	48,000	27,000	15,500
155	15,50-15,99	15,875	15,200	101,000	48,000	27,000	15,505
160	16,00-16,49	16,000	15,700	102,000	48,000	27,800	16,000
160	16,00-16,49	15,875	15,700	102,000	48,000	27,800	16,005
165	16,50-16,99	18,000	16,200	105,000	48,000	28,700	16,500
165	16,50-16,99	19,050	16,200	105,000	48,000	28,700	16,505
170	17,00-17,49	18,000	16,700	106,000	48,000	29,600	17,000
170	17,00-17,49	19,050	16,700	106,000	48,000	29,600	17,005
175	17,50-17,99	18,000	17,200	107,000	48,000	30,400	17,500
175	17,50-17,99	19,050	17,200	107,000	48,000	30,400	17,505
180	18,00-18,49	18,000	17,700	109,000	48,000	31,200	18,000
180	18,00-18,49	19,050	17,700	109,000	48,000	31,200	18,005
185	18,50-18,99	20,000	18,200	113,000	50,000	32,100	18,500
185	18,50-18,99	19,050	18,200	113,000	50,000	32,100	18,505
190	19,00-19,49	20,000	18,700	114,000	50,000	32,900	19,000
190	19,00-19,49	19,050	18,700	114,000	50,000	32,900	19,005
195	19,50-19,99	20,000	19,200	116,000	50,000	33,700	19,500
195	19,50-19,99	19,050	19,200	116,000	50,000	33,700	19,505
200	20,00-20,49	20,000	19,700	117,000	50,000	34,600	20,000
200	20,00-20,49	19,050	19,700	117,000	50,000	34,600	20,005
205	20,50-20,99	25,000	20,200	128,000	56,000	35,500	20,500
205	20,50-20,99	25,400	20,200	128,000	56,000	35,500	20,505
210	21,00-21,49	25,000	20,700	129,000	56,000	36,400	21,000
210	21,00-21,49	25,400	20,700	129,000	56,000	36,400	21,005



Corpo portaplacchette Multiplex-HPC

Grandezza	d1 mm	d2 h6 mm	d3 mm	L mm	l3 mm	l5 mm	Codice
215	21,50-21,99	25,000	21,200	130,000	56,000	37,200	21,500
215	21,50-21,99	25,400	21,200	130,000	56,000	37,200	21,505
220	22,00-22,49	25,000	21,700	131,000	56,000	38,000	22,000
220	22,00-22,49	25,400	21,700	131,000	56,000	38,000	22,005
225	22,50-22,99	25,000	22,200	134,000	56,000	38,900	22,500
225	22,50-22,99	25,400	22,200	134,000	56,000	38,900	22,505
230	23,00-23,49	25,000	22,700	135,000	56,000	39,800	23,000
230	23,00-23,49	25,400	22,700	135,000	56,000	39,800	23,005
235	23,50-23,99	25,000	23,200	137,000	56,000	40,600	23,500
235	23,50-23,99	25,400	23,200	137,000	56,000	40,600	23,505
240	24,00-24,49	25,000	23,700	138,000	56,000	41,500	24,000
240	24,00-24,49	25,400	23,700	138,000	56,000	41,500	24,005
245	24,50-24,99	25,000	24,200	140,000	56,000	42,300	24,500
245	24,50-24,99	25,400	24,200	140,000	56,000	42,300	24,505
250	25,00-25,49	25,000	24,700	142,000	56,000	43,200	25,000
250	25,00-25,49	25,400	24,700	142,000	56,000	43,200	25,005
255	25,50-25,99	32,000	25,200	148,000	60,000	44,000	25,500
255	25,50-25,99	31,750	25,200	148,000	60,000	44,000	25,505
260	26,00-26,49	32,000	25,700	151,000	60,000	44,300	26,000
260	26,00-26,49	31,750	25,700	151,000	60,000	44,300	26,005
265	26,50-26,99	32,000	26,200	153,000	60,000	45,100	26,500
265	26,50-26,99	31,750	26,200	153,000	60,000	45,100	26,505
270	27,00-27,49	32,000	26,700	155,000	60,000	46,000	27,000
270	27,00-27,49	31,750	26,700	155,000	60,000	46,000	27,005
275	27,50-27,99	32,000	27,200	156,000	60,000	46,800	27,500
275	27,50-27,99	31,750	27,200	156,000	60,000	46,800	27,505
280	28,00-28,49	32,000	27,700	157,000	60,000	47,700	28,000
280	28,00-28,49	31,750	27,700	157,000	60,000	47,700	28,005
285	28,50-28,99	32,000	28,200	159,000	60,000	48,500	28,500
285	28,50-28,99	31,750	28,200	159,000	60,000	48,500	28,505
290	29,00-29,49	32,000	28,700	161,000	60,000	49,400	29,000
290	29,00-29,49	31,750	28,700	161,000	60,000	49,400	29,005
295	29,50-29,99	32,000	29,200	162,000	60,000	50,200	29,500
295	29,50-29,99	31,750	29,200	162,000	60,000	50,200	29,505
300	30,00-30,49	32,000	29,700	164,000	60,000	50,900	30,000
300	30,00-30,49	31,750	29,700	164,000	60,000	50,900	30,005
305	30,50-30,99	32,000	30,200	166,000	60,000	51,700	30,500
305	30,50-30,99	31,750	30,200	166,000	60,000	51,700	30,505
310	31,00-31,49	32,000	30,700	167,000	60,000	52,600	31,000
310	31,00-31,49	31,750	30,700	167,000	60,000	52,600	31,005
315	31,50-31,99	32,000	31,200	168,000	60,000	53,400	31,500
315	31,50-31,99	31,750	31,200	168,000	60,000	53,400	31,505
320	32,00-32,99	32,000	31,700	172,000	60,000	55,100	32,000
320	32,00-32,99	31,750	31,700	172,000	60,000	55,100	32,005
330	33,00-33,99	32,000	32,700	175,000	60,000	56,800	33,000
330	33,00-33,99	31,750	32,700	175,000	60,000	56,800	33,005
340	34,00-34,99	32,000	33,700	178,000	60,000	58,500	34,000
340	34,00-34,99	31,750	33,700	178,000	60,000	58,500	34,005
350	35,00-35,99	32,000	34,700	181,000	60,000	60,200	35,000
350	35,00-35,99	31,750	34,700	181,000	60,000	60,200	35,005
360	36,00-36,99	32,000	35,700	184,000	60,000	61,800	36,000
360	36,00-36,99	31,750	35,700	184,000	60,000	61,800	36,005
370	37,00-37,99	32,000	36,700	188,000	60,000	63,500	37,000
370	37,00-37,99	31,750	36,700	188,000	60,000	63,500	37,005
380	38,00-38,99	32,000	37,700	191,000	60,000	65,200	38,000
380	38,00-38,99	31,750	37,700	191,000	60,000	65,200	38,005
390	39,00-40,00	32,000	38,700	194,000	60,000	66,900	39,000
390	39,00-40,00	31,750	38,700	194,000	60,000	66,900	39,005

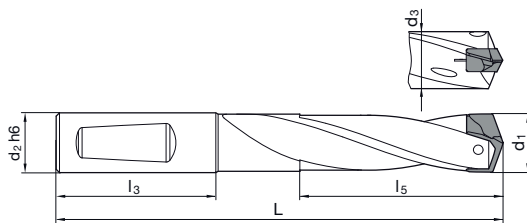


Corpo portaplacchette Multiplex-HPC

Articolo nr. 86683



specifico per elevata resistenza all'usura • taglio trasversale della scanalatura ottimizzato • stabilità elevata • viti Art. nr. 86843 comprese
• giravite Art. nr. 86842 compreso



Grandezza	d1 mm	d2 h6 mm	d3 mm	L mm	l3 mm	l5 mm	Codice
110	11,00-11,49	12,000	10,700	101,000	45,000	36,600	11,000
110	11,00-11,49	12,700	10,700	101,000	45,000	36,600	11,005
115	11,50-11,99	12,000	11,200	103,000	45,000	38,100	11,500
115	11,50-11,99	12,700	11,200	103,000	45,000	38,100	11,505
120	12,00-12,49	12,000	11,700	106,000	45,000	39,700	12,000
120	12,00-12,49	12,700	11,700	106,000	45,000	39,700	12,005
125	12,50-12,99	14,000	12,200	108,000	45,000	41,300	12,500
125	12,50-12,99	15,875	12,200	108,000	45,000	41,300	12,505
130	13,00-13,49	14,000	12,700	110,000	45,000	42,900	13,000
130	13,00-13,49	15,875	12,700	110,000	45,000	42,900	13,005
135	13,50-13,99	14,000	13,200	113,000	45,000	44,600	13,500
135	13,50-13,99	15,875	13,200	113,000	45,000	44,600	13,505
140	14,00-14,49	14,000	13,700	115,000	45,000	46,200	14,000
140	14,00-14,49	15,875	13,700	115,000	45,000	46,200	14,005
145	14,50-14,99	16,000	14,200	120,000	48,000	47,800	14,500
145	14,50-14,99	15,875	14,200	120,000	48,000	47,800	14,505
150	15,00-15,49	16,000	14,700	123,000	48,000	49,300	15,000
150	15,00-15,49	15,875	14,700	123,000	48,000	49,300	15,005
155	15,50-15,99	16,000	15,200	125,000	48,000	50,900	15,500
155	15,50-15,99	15,875	15,200	125,000	48,000	50,900	15,505
160	16,00-16,49	16,000	15,700	127,000	48,000	52,900	16,000
160	16,00-16,49	15,875	15,700	127,000	48,000	52,900	16,005
165	16,50-16,99	18,000	16,200	130,000	48,000	54,100	16,500
165	16,50-16,99	19,050	16,200	130,000	48,000	54,100	16,505
170	17,00-17,49	18,000	16,700	132,000	48,000	55,800	17,000
170	17,00-17,49	19,050	16,700	132,000	48,000	55,800	17,005
175	17,50-17,99	18,000	17,200	134,000	48,000	57,400	17,500
175	17,50-17,99	19,050	17,200	134,000	48,000	57,400	17,505
180	18,00-18,49	18,000	17,700	137,000	48,000	58,900	18,000
180	18,00-18,49	19,050	17,700	137,000	48,000	58,900	18,005
185	18,50-18,99	20,000	18,200	141,000	50,000	60,500	18,500
185	18,50-18,99	19,050	18,200	141,000	50,000	60,500	18,505
190	19,00-19,49	20,000	18,700	143,000	50,000	62,100	19,000
190	19,00-19,49	19,050	18,700	143,000	50,000	62,100	19,005
195	19,50-19,99	20,000	19,200	146,000	50,000	63,700	19,500
195	19,50-19,99	19,050	19,200	146,000	50,000	63,700	19,505
200	20,00-20,49	20,000	19,700	148,000	50,000	65,300	20,000
200	20,00-20,49	19,050	19,700	148,000	50,000	65,300	20,005
205	20,50-20,99	25,000	20,200	159,000	56,000	67,000	20,500
205	20,50-20,99	25,400	20,200	159,000	56,000	67,000	20,505
210	21,00-21,49	25,000	20,700	161,000	56,000	68,600	21,000
210	21,00-21,49	25,400	20,700	161,000	56,000	68,600	21,005



Corpo portaplacchette Multiplex-HPC

Grandezza	d1 mm	d2 h6 mm	d3 mm	L mm	l3 mm	l5 mm	Codice
215	21,50-21,99	25,000	21,200	163,000	56,000	70,100	21,500
215	21,50-21,99	25,400	21,200	163,000	56,000	70,100	21,505
220	22,00-22,49	25,000	21,700	165,000	56,000	71,700	22,000
220	22,00-22,49	25,400	21,700	165,000	56,000	71,700	22,005
225	22,50-22,99	25,000	22,200	168,000	56,000	73,300	22,500
225	22,50-22,99	25,400	22,200	168,000	56,000	73,300	22,505
230	23,00-23,49	25,000	22,700	170,000	56,000	74,900	23,000
230	23,00-23,49	25,400	22,700	170,000	56,000	74,900	23,005
235	23,50-23,99	25,000	23,200	173,000	56,000	76,500	23,500
235	23,50-23,99	25,400	23,200	173,000	56,000	76,500	23,505
240	24,00-24,49	25,000	23,700	175,000	56,000	78,100	24,000
240	24,00-24,49	25,400	23,700	175,000	56,000	78,100	24,005
245	24,50-24,99	25,000	24,200	177,000	56,000	79,700	24,500
245	24,50-24,99	25,400	24,200	177,000	56,000	79,700	24,505
250	25,00-25,49	25,000	24,700	180,000	56,000	81,300	25,000
250	25,00-25,49	25,400	24,700	180,000	56,000	81,300	25,005
255	25,50-25,99	32,000	25,200	187,000	60,000	82,900	25,500
255	25,50-25,99	31,750	25,200	187,000	60,000	82,900	25,505
260	26,00-26,49	32,000	25,700	191,000	60,000	84,000	26,000
260	26,00-26,49	31,750	25,700	191,000	60,000	84,000	26,005
265	26,50-26,99	32,000	26,200	193,000	60,000	86,100	26,500
265	26,50-26,99	31,750	26,200	193,000	60,000	86,100	26,505
270	27,00-27,49	32,000	26,700	196,000	60,000	87,200	27,000
270	27,00-27,49	31,750	26,700	196,000	60,000	87,200	27,005
275	27,50-27,99	32,000	27,200	198,000	60,000	88,900	27,500
275	27,50-27,99	31,750	27,200	198,000	60,000	88,900	27,505
280	28,00-28,49	32,000	27,700	200,000	60,000	90,400	28,000
280	28,00-28,49	31,750	27,700	200,000	60,000	90,400	28,005
285	28,50-28,99	32,000	28,200	202,000	60,000	92,500	28,500
285	28,50-28,99	31,750	28,200	202,000	60,000	92,500	28,505
290	29,00-29,49	32,000	28,700	205,000	60,000	94,600	29,000
290	29,00-29,49	31,750	28,700	205,000	60,000	94,600	29,005
295	29,50-29,99	32,000	29,200	207,000	60,000	95,100	29,500
295	29,50-29,99	31,750	29,200	207,000	60,000	95,100	29,505
300	30,00-30,49	32,000	29,700	210,000	60,000	96,700	30,000
300	30,00-30,49	31,750	29,700	210,000	60,000	96,700	30,005
305	30,50-30,99	32,000	30,200	212,000	60,000	98,300	30,500
305	30,50-30,99	31,750	30,200	212,000	60,000	98,300	30,505
310	31,00-31,49	32,000	30,700	214,000	60,000	99,800	31,000
310	31,00-31,49	31,750	30,700	214,000	60,000	99,800	31,005
315	31,50-31,99	32,000	31,200	216,000	60,000	101,400	31,500
315	31,50-31,99	31,750	31,200	216,000	60,000	101,400	31,505
320	32,00-32,99	32,000	31,700	221,000	60,000	104,600	32,000
320	32,00-32,99	31,750	31,700	221,000	60,000	104,600	32,005
330	33,00-33,99	32,000	32,700	226,000	60,000	107,800	33,000
330	33,00-33,99	31,750	32,700	226,000	60,000	107,800	33,005
340	34,00-34,99	32,000	33,700	230,000	60,000	111,000	34,000
340	34,00-34,99	31,750	33,700	230,000	60,000	111,000	34,005
350	35,00-35,99	32,000	34,700	235,000	60,000	114,200	35,000
350	35,00-35,99	31,750	34,700	235,000	60,000	114,200	35,005
360	36,00-36,99	32,000	35,700	240,000	60,000	117,300	36,000
360	36,00-36,99	31,750	35,700	240,000	60,000	117,300	36,005
370	37,00-37,99	32,000	36,700	245,000	60,000	120,500	37,000
370	37,00-37,99	31,750	36,700	245,000	60,000	120,500	37,005
380	38,00-38,99	32,000	37,700	249,000	60,000	123,700	38,000
380	38,00-38,99	31,750	37,700	249,000	60,000	123,700	38,005
390	39,00-40,00	32,000	38,700	254,000	60,000	126,900	39,000
390	39,00-40,00	31,750	38,700	254,000	60,000	126,900	39,005

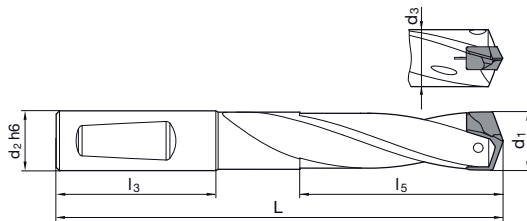


Corpo portaplacchette Multiplex-HPC

Articolo nr. 86684



specifico per elevata resistenza all'usura • taglio trasversale della scanalatura ottimizzato • stabilità elevata • viti Art. nr. 86843 comprese
• giravite Art. nr. 86842 compreso



Grandezza	d1 mm	d2 h6 mm	d3 mm	L mm	l3 mm	l5 mm	Codice
110	11,00-11,49	12,000	10,700	124,000	45,000	59,600	11,000
110	11,00-11,49	12,700	10,700	124,000	45,000	59,600	11,005
115	11,50-11,99	12,000	11,200	127,000	45,000	62,100	11,500
115	11,50-11,99	12,700	11,200	127,000	45,000	62,100	11,505
120	12,00-12,49	12,000	11,700	131,000	45,000	64,700	12,000
120	12,00-12,49	12,700	11,700	131,000	45,000	64,700	12,005
125	12,50-12,99	14,000	12,200	134,000	45,000	67,300	12,500
125	12,50-12,99	15,875	12,200	134,000	45,000	67,300	12,505
130	13,00-13,49	14,000	12,700	137,000	45,000	69,900	13,000
130	13,00-13,49	15,875	12,700	137,000	45,000	69,900	13,005
135	13,50-13,99	14,000	13,200	141,000	45,000	72,600	13,500
135	13,50-13,99	15,875	13,200	141,000	45,000	72,600	13,505
140	14,00-14,49	14,000	13,700	144,000	45,000	75,200	14,000
140	14,00-14,49	15,875	13,700	144,000	45,000	75,200	14,005
145	14,50-14,99	16,000	14,200	150,000	48,000	77,800	14,500
145	14,50-14,99	15,875	14,200	150,000	48,000	77,800	14,505
150	15,00-15,49	16,000	14,700	154,000	48,000	80,300	15,000
150	15,00-15,49	15,875	14,700	154,000	48,000	80,300	15,005
155	15,50-15,99	16,000	15,200	157,000	48,000	82,900	15,500
155	15,50-15,99	15,875	15,200	157,000	48,000	82,900	15,505
160	16,00-16,49	16,000	15,700	160,000	48,000	85,900	16,000
160	16,00-16,49	15,875	15,700	160,000	48,000	85,900	16,005
165	16,50-16,99	18,000	16,200	164,000	48,000	88,100	16,500
165	16,50-16,99	19,050	16,200	164,000	48,000	88,100	16,505
170	17,00-17,49	18,000	16,700	167,000	48,000	90,800	17,000
170	17,00-17,49	19,050	16,700	167,000	48,000	90,800	17,005
175	17,50-17,99	18,000	17,200	170,000	48,000	93,400	17,500
175	17,50-17,99	19,050	17,200	170,000	48,000	93,400	17,505
180	18,00-18,49	18,000	17,700	174,000	48,000	95,900	18,000
180	18,00-18,49	19,050	17,700	174,000	48,000	95,900	18,005
185	18,50-18,99	20,000	18,200	179,000	50,000	98,500	18,500
185	18,50-18,99	19,050	18,200	179,000	50,000	98,500	18,505
190	19,00-19,49	20,000	18,700	182,000	50,000	101,100	19,000
190	19,00-19,49	19,050	18,700	182,000	50,000	101,100	19,005
195	19,50-19,99	20,000	19,200	186,000	50,000	103,700	19,500
195	19,50-19,99	19,050	19,200	186,000	50,000	103,700	19,505
200	20,00-20,49	20,000	19,700	189,000	50,000	106,300	20,000
200	20,00-20,49	19,050	19,700	189,000	50,000	106,300	20,005
205	20,50-20,99	25,000	20,200	201,000	56,000	109,000	20,500
205	20,50-20,99	25,400	20,200	201,000	56,000	109,000	20,505
210	21,00-21,49	25,000	20,700	204,000	56,000	111,600	21,000
210	21,00-21,49	25,400	20,700	204,000	56,000	111,600	21,005



Corpo portaplacchette Multiplex-HPC

Grandezza	d1 mm	d2 h6 mm	d3 mm	L mm	l3 mm	l5 mm	Codice
215	21,50-21,99	25,000	21,200	207,000	56,000	114,100	21,500
215	21,50-21,99	25,400	21,200	207,000	56,000	114,100	21,505
220	22,00-22,49	25,000	21,700	210,000	56,000	116,700	22,000
220	22,00-22,49	25,400	21,700	210,000	56,000	116,700	22,005
225	22,50-22,99	25,000	22,200	214,000	56,000	119,300	22,500
225	22,50-22,99	25,400	22,200	214,000	56,000	119,300	22,505
230	23,00-23,49	25,000	22,700	217,000	56,000	121,900	23,000
230	23,00-23,49	25,400	22,700	217,000	56,000	121,900	23,005
235	23,50-23,99	25,000	23,200	221,000	56,000	124,500	23,500
235	23,50-23,99	25,400	23,200	221,000	56,000	124,500	23,505
240	24,00-24,49	25,000	23,700	224,000	56,000	127,100	24,000
240	24,00-24,49	25,400	23,700	224,000	56,000	127,100	24,005
245	24,50-24,99	25,000	24,200	227,000	56,000	129,700	24,500
245	24,50-24,99	25,400	24,200	227,000	56,000	129,700	24,505
250	25,00-25,49	25,000	24,700	231,000	56,000	132,300	25,000
250	25,00-25,49	25,400	24,700	231,000	56,000	132,300	25,005
255	25,50-25,99	32,000	25,200	239,000	60,000	134,900	25,500
255	25,50-25,99	31,750	25,200	239,000	60,000	134,900	25,505
260	26,00-26,49	32,000	25,700	244,000	60,000	137,000	26,000
265	26,50-26,99	32,000	26,200	247,000	60,000	140,000	26,500
270	27,00-27,49	32,000	26,700	251,000	60,000	142,200	27,000
275	27,50-27,99	32,000	27,200	254,000	60,000	144,800	27,500
280	28,00-28,49	32,000	27,700	257,000	60,000	147,400	28,000
285	28,50-28,99	32,000	28,200	260,000	60,000	150,400	28,500
290	29,00-29,49	32,000	28,700	264,000	60,000	153,500	29,000
295	29,50-29,99	32,000	29,200	267,000	60,000	155,100	29,500
300	30,00-30,49	32,000	29,700	271,000	60,000	157,600	30,000
305	30,50-30,99	32,000	30,200	274,000	60,000	160,200	30,500
310	31,00-31,49	32,000	30,700	277,000	60,000	162,800	31,000
315	31,50-31,99	32,000	31,200	280,000	60,000	165,400	31,500
320	32,00-32,99	32,000	31,700	287,000	60,000	170,600	32,000
330	33,00-33,99	32,000	32,700	294,000	60,000	175,800	33,000
340	34,00-34,99	32,000	33,700	300,000	60,000	181,000	34,000
350	35,00-35,99	32,000	34,700	307,000	60,000	186,200	35,000
360	36,00-36,99	32,000	35,700	314,000	60,000	191,300	36,000
370	37,00-37,99	32,000	36,700	321,000	60,000	196,500	37,000
380	38,00-38,99	32,000	37,700	327,000	60,000	201,700	38,000
390	39,00-40,00	32,000	38,700	334,000	60,000	206,900	39,000

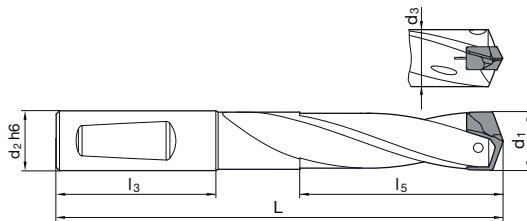


Corpo portaplacchette Multiplex-HPC

Articolo nr. 86685



specifico per elevata resistenza all'usura • taglio trasversale della scanalatura ottimizzato • stabilità elevata • viti Art. nr. 86843 comprese
• giravite Art. nr. 86842 compreso



Grandezza	d1 mm	d2 h6 mm	d3 mm	L mm	l3 mm	l5 mm	Codice
110	11,00-11,49	12,000	10,700	147,000	45,000	82,600	11,000
110	11,00-11,49	12,700	10,700	147,000	45,000	82,600	11,005
115	11,50-11,99	12,000	11,200	151,000	45,000	86,100	11,500
115	11,50-11,99	12,700	11,200	151,000	45,000	86,100	11,505
120	12,00-12,49	12,000	11,700	156,000	45,000	89,700	12,000
120	12,00-12,49	12,700	11,700	156,000	45,000	89,700	12,005
125	12,50-12,99	14,000	12,200	160,000	45,000	93,300	12,500
125	12,50-12,99	15,875	12,200	160,000	45,000	93,300	12,505
130	13,00-13,49	14,000	12,700	164,000	45,000	96,900	13,000
130	13,00-13,49	15,875	12,700	164,000	45,000	96,900	13,005
135	13,50-13,99	14,000	13,200	169,000	45,000	100,600	13,500
135	13,50-13,99	15,875	13,200	169,000	45,000	100,600	13,505
140	14,00-14,49	14,000	13,700	173,000	45,000	104,200	14,000
140	14,00-14,49	15,875	13,700	173,000	45,000	104,200	14,005
145	14,50-14,99	16,000	14,200	180,000	48,000	107,800	14,500
145	14,50-14,99	15,875	14,200	180,000	48,000	107,800	14,505
150	15,00-15,49	16,000	14,700	185,000	48,000	111,300	15,000
150	15,00-15,49	15,875	14,700	185,000	48,000	111,300	15,005
155	15,50-15,99	16,000	15,200	189,000	48,000	114,900	15,500
155	15,50-15,99	15,875	15,200	189,000	48,000	114,900	15,505
160	16,00-16,49	16,000	15,700	193,000	48,000	118,900	16,000
160	16,00-16,49	15,875	15,700	193,000	48,000	118,900	16,005
165	16,50-16,99	18,000	16,200	198,000	48,000	122,100	16,500
165	16,50-16,99	19,050	16,200	198,000	48,000	122,100	16,505
170	17,00-17,49	18,000	16,700	202,000	48,000	125,800	17,000
170	17,00-17,49	19,050	16,700	202,000	48,000	125,800	17,005
175	17,50-17,99	18,000	17,200	206,000	48,000	129,400	17,500
175	17,50-17,99	19,050	17,200	206,000	48,000	129,400	17,505
180	18,00-18,49	18,000	17,700	211,000	48,000	132,900	18,000
180	18,00-18,49	19,050	17,700	211,000	48,000	132,900	18,005
185	18,50-18,99	20,000	18,200	217,000	50,000	136,500	18,500
185	18,50-18,99	19,050	18,200	217,000	50,000	136,500	18,505
190	19,00-19,49	20,000	18,700	221,000	50,000	140,100	19,000
190	19,00-19,49	19,050	18,700	221,000	50,000	140,100	19,005
195	19,50-19,99	20,000	19,200	226,000	50,000	143,700	19,500
195	19,50-19,99	19,050	19,200	226,000	50,000	143,700	19,505
200	20,00-20,49	20,000	19,700	230,000	50,000	147,300	20,000
200	20,00-20,49	19,050	19,700	230,000	50,000	147,300	20,005
205	20,50-20,99	25,000	20,200	243,000	56,000	151,000	20,500
205	20,50-20,99	25,400	20,200	243,000	56,000	151,000	20,505
210	21,00-21,49	25,000	20,700	247,000	56,000	154,600	21,000
210	21,00-21,49	25,400	20,700	247,000	56,000	154,600	21,005



Corpo portaplacchette Multiplex-HPC

Grandezza	d1 mm	d2 h6 mm	d3 mm	L mm	l3 mm	l5 mm	Codice
215	21,50-21,99	25,000	21,200	251,000	56,000	158,100	21,500
215	21,50-21,99	25,400	21,200	251,000	56,000	158,100	21,505
220	22,00-22,49	25,000	21,700	255,000	56,000	161,700	22,000
220	22,00-22,49	25,400	21,700	255,000	56,000	161,700	22,005
225	22,50-22,99	25,000	22,200	260,000	56,000	165,300	22,500
225	22,50-22,99	25,400	22,200	260,000	56,000	165,300	22,505
230	23,00-23,49	25,000	22,700	264,000	56,000	168,900	23,000
230	23,00-23,49	25,400	22,700	264,000	56,000	168,900	23,005
235	23,50-23,99	25,000	23,200	269,000	56,000	172,500	23,500
235	23,50-23,99	25,400	23,200	269,000	56,000	172,500	23,505
240	24,00-24,49	25,000	23,700	273,000	56,000	176,100	24,000
240	24,00-24,49	25,400	23,700	273,000	56,000	176,100	24,005
245	24,50-24,99	25,000	24,200	277,000	56,000	179,700	24,500
245	24,50-24,99	25,400	24,200	277,000	56,000	179,700	24,505
250	25,00-25,49	25,000	24,700	282,000	56,000	183,300	25,000
250	25,00-25,49	25,400	24,700	282,000	56,000	183,300	25,005
255	25,50-25,99	32,000	25,200	291,000	60,000	186,900	25,500
255	25,50-25,99	31,750	25,200	291,000	60,000	186,900	25,505
260	26,00-26,49	32,000	25,700	297,000	60,000	190,000	26,000
260	26,00-26,49	31,750	25,700	297,000	60,000	190,000	26,005
265	26,50-26,99	32,000	26,200	301,000	60,000	194,000	26,500
265	26,50-26,99	31,750	26,200	301,000	60,000	194,000	26,505
270	27,00-27,49	32,000	26,700	306,000	60,000	197,200	27,000
270	27,00-27,49	31,750	26,700	306,000	60,000	197,200	27,005
275	27,50-27,99	32,000	27,200	310,000	60,000	200,800	27,500
275	27,50-27,99	31,750	27,200	310,000	60,000	200,800	27,505
280	28,00-28,49	32,000	27,700	314,000	60,000	204,400	28,000
280	28,00-28,49	31,750	27,700	314,000	60,000	204,400	28,005
285	28,50-28,99	32,000	28,200	318,000	60,000	208,400	28,500
285	28,50-28,99	31,750	28,200	318,000	60,000	208,400	28,505
290	29,00-29,49	32,000	28,700	323,000	60,000	212,500	29,000
290	29,00-29,49	31,750	28,700	323,000	60,000	212,500	29,005
295	29,50-29,99	32,000	29,200	327,000	60,000	215,100	29,500
295	29,50-29,99	31,750	29,200	327,000	60,000	215,100	29,505
300	30,00-30,49	32,000	29,700	332,000	60,000	218,600	30,000
300	30,00-30,49	31,750	29,700	332,000	60,000	218,600	30,005
305	30,50-30,99	32,000	30,200	336,000	60,000	222,200	30,500
305	30,50-30,99	31,750	30,200	336,000	60,000	222,200	30,505
310	31,00-31,49	32,000	30,700	340,000	60,000	225,800	31,000
310	31,00-31,49	31,750	30,700	340,000	60,000	225,800	31,005
315	31,50-31,99	32,000	31,200	344,000	60,000	229,400	31,500
315	31,50-31,99	31,750	31,200	344,000	60,000	229,400	31,505

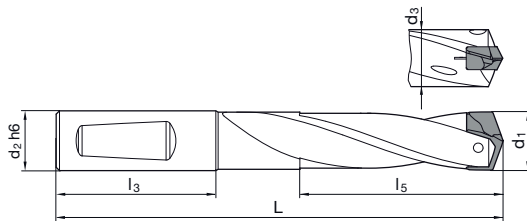


Corpo portaplacchette Multiplex-HPC

Articolo nr. 86686



specifico per elevata resistenza all'usura • taglio trasversale della scanalatura ottimizzato • stabilità elevata • viti Art. nr. 86843 comprese
• giravite Art. nr. 86842 compreso



Grandezza	d1 mm	d2 h6 mm	d3 mm	L mm	l3 mm	l5 mm	Codice
110	11,00-11,49	12,000	10,700	182,000	45,000	117,100	11,000
110	11,00-11,49	12,700	10,700	182,000	45,000	117,100	11,005
115	11,50-11,99	12,000	11,200	187,000	45,000	122,100	11,500
115	11,50-11,99	12,700	11,200	187,000	45,000	122,100	11,505
120	12,00-12,49	12,000	11,700	194,000	45,000	127,200	12,000
120	12,00-12,49	12,700	11,700	194,000	45,000	127,200	12,005
125	12,50-12,99	14,000	12,200	199,000	45,000	132,300	12,500
125	12,50-12,99	15,875	12,200	199,000	45,000	132,300	12,505
130	13,00-13,49	14,000	12,700	205,000	45,000	137,500	13,000
130	13,00-13,49	15,875	12,700	205,000	45,000	137,500	13,005
135	13,50-13,99	14,000	13,200	211,000	45,000	142,500	13,500
135	13,50-13,99	15,875	13,200	211,000	45,000	142,500	13,505
140	14,00-14,49	14,000	13,700	217,000	45,000	147,700	14,000
140	14,00-14,49	15,875	13,700	217,000	45,000	147,700	14,005
145	14,50-14,99	16,000	14,200	225,000	48,000	152,800	14,500
145	14,50-14,99	15,875	14,200	225,000	48,000	152,800	14,505
150	15,00-15,49	16,000	14,700	232,000	48,000	157,800	15,000
150	15,00-15,49	15,875	14,700	232,000	48,000	157,800	15,005
155	15,50-15,99	16,000	15,200	237,000	48,000	162,900	15,500
155	15,50-15,99	15,875	15,200	237,000	48,000	162,900	15,505
160	16,00-16,49	16,000	15,700	243,000	48,000	168,000	16,000
160	16,00-16,49	15,875	15,700	243,000	48,000	168,000	16,005
165	16,50-16,99	18,000	16,200	249,000	48,000	170,000	16,500
165	16,50-16,99	19,050	16,200	249,000	48,000	170,000	16,505
170	17,00-17,49	18,000	16,700	255,000	48,000	178,300	17,000
170	17,00-17,49	19,050	16,700	255,000	48,000	178,300	17,005
175	17,50-17,99	18,000	17,200	260,000	48,000	183,500	17,500
175	17,50-17,99	19,050	17,200	260,000	48,000	183,500	17,505
180	18,00-18,49	18,000	17,700	267,000	48,000	188,400	18,000
180	18,00-18,49	19,050	17,700	267,000	48,000	188,400	18,005
185	18,50-18,99	20,000	18,200	274,000	50,000	193,500	18,500
185	18,50-18,99	19,050	18,200	274,000	50,000	193,500	18,505
190	19,00-19,49	20,000	18,700	280,000	50,000	198,700	19,000
190	19,00-19,49	19,050	18,700	280,000	50,000	198,700	19,005
195	19,50-19,99	20,000	19,200	286,000	50,000	203,700	19,500
195	19,50-19,99	19,050	19,200	286,000	50,000	203,700	19,505
200	20,00-20,49	20,000	19,700	292,000	50,000	208,900	20,000
200	20,00-20,49	19,050	19,700	292,000	50,000	208,900	20,005
205	20,50-20,99	25,000	20,200	306,000	56,000	214,000	20,500
205	20,50-20,99	25,400	20,200	306,000	56,000	214,000	20,505
210	21,00-21,49	25,000	20,700	312,000	56,000	219,100	21,000
210	21,00-21,49	25,400	20,700	312,000	56,000	219,100	21,005



Corpo portaplacchette Multiplex-HPC

Grandezza	d1 mm	d2 h6 mm	d3 mm	L mm	l3 mm	l5 mm	Codice
215	21,50-21,99	25,000	21,200	317,000	56,000	224,200	21,500
215	21,50-21,99	25,400	21,200	317,000	56,000	224,200	21,505
220	22,00-22,49	25,000	21,700	323,000	56,000	229,300	22,000
220	22,00-22,49	25,400	21,700	323,000	56,000	229,300	22,005
225	22,50-22,99	25,000	22,200	329,000	56,000	234,400	22,500
225	22,50-22,99	25,400	22,200	329,000	56,000	234,400	22,505
230	23,00-23,49	25,000	22,700	335,000	56,000	239,500	23,000
230	23,00-23,49	25,400	22,700	335,000	56,000	239,500	23,005
235	23,50-23,99	25,000	23,200	341,000	56,000	244,600	23,500
235	23,50-23,99	25,400	23,200	341,000	56,000	244,600	23,505
240	24,00-24,49	25,000	23,700	347,000	56,000	249,700	24,000
240	24,00-24,49	25,400	23,700	347,000	56,000	249,700	24,005
245	24,50-24,99	25,000	24,200	352,000	56,000	254,800	24,500
245	24,50-24,99	25,400	24,200	352,000	56,000	254,800	24,505
250	25,00-25,49	25,000	24,700	359,000	56,000	259,900	25,000
250	25,00-25,49	25,400	24,700	359,000	56,000	259,900	25,005
255	25,50-25,99	32,000	25,200	369,000	60,000	265,000	25,500
255	25,50-25,99	31,750	25,200	369,000	60,000	265,000	25,505
260	26,00-26,49	32,000	25,700	377,000	60,000	270,000	26,000
260	26,00-26,49	31,750	25,700	377,000	60,000	270,000	26,005
265	26,50-26,99	32,000	26,200	382,000	60,000	275,000	26,500
265	26,50-26,99	31,750	26,200	382,000	60,000	275,000	26,505
270	27,00-27,49	32,000	26,700	388,000	60,000	280,100	27,000
270	27,00-27,49	31,750	26,700	388,000	60,000	280,100	27,005
275	27,50-27,99	32,000	27,200	394,000	60,000	285,200	27,500
275	27,50-27,99	31,750	27,200	394,000	60,000	285,200	27,505
280	28,00-28,49	32,000	27,700	400,000	60,000	290,300	28,000
280	28,00-28,49	31,750	27,700	400,000	60,000	290,300	28,005
285	28,50-28,99	32,000	28,200	405,000	60,000	295,400	28,500
285	28,50-28,99	31,750	28,200	405,000	60,000	295,400	28,505
290	29,00-29,49	32,000	28,700	412,000	60,000	300,500	29,000
290	29,00-29,49	31,750	28,700	412,000	60,000	300,500	29,005
295	29,50-29,99	32,000	29,200	418,000	60,000	305,600	29,500
295	29,50-29,99	31,750	29,200	418,000	60,000	305,600	29,505
300	30,00-30,49	32,000	29,700	424,000	60,000	310,600	30,000
300	30,00-30,49	31,750	29,700	424,000	60,000	310,600	30,005
305	30,50-30,99	32,000	30,200	429,000	60,000	315,700	30,500
305	30,50-30,99	31,750	30,200	429,000	60,000	315,700	30,505
310	31,00-31,49	32,000	30,700	435,000	60,000	320,800	31,000
310	31,00-31,49	31,750	30,700	435,000	60,000	320,800	31,005
315	31,50-31,99	32,000	31,200	441,000	60,000	325,900	31,500
315	31,50-31,99	31,750	31,200	441,000	60,000	325,900	31,505



Inserti intercambiabili per Multiplex HPC

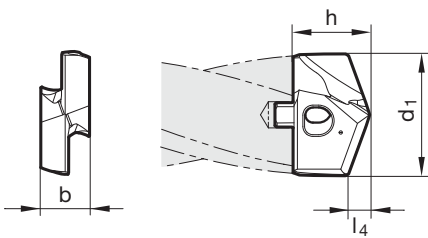
Articolo nr. 86721



P	M	K	N	S	H
○	○	○	○	○	○



Assott. del nocc. $\geq \varnothing 11,000$ • affilatura su piani • Forma del tagliante principale diritta (dopo correzione) • viti Art. nr. 86843 comprese
Per fori pilota in tutti i materiali



Grandezza	d1 mm	inch	l4 mm	b mm	h mm	Codice
110	11,000		1,800	4,500	7,200	11,000
110	11,200		1,800	4,500	7,200	11,200
110	11,500		1,900	4,500	7,200	11,500
110	11,510	29/64	1,900	4,500	7,200	11,510
110	11,700		1,900	4,500	7,200	11,700
110	11,800		1,900	4,500	7,200	11,800
110	11,910	15/32	1,900	4,500	7,200	11,910
120	12,000		1,900	5,000	7,400	12,000
120	12,100		2,000	5,000	7,400	12,100
120	12,200		2,000	5,000	7,400	12,200
120	12,300	31/64	2,000	5,000	7,400	12,300
120	12,500		2,000	5,000	7,400	12,500
120	12,600		2,000	5,000	7,400	12,600
120	12,700	1/2	2,100	5,000	7,400	12,700
120	12,800		2,100	5,000	7,400	12,800
120	12,900		2,100	5,000	7,400	12,900
130	13,000		2,100	5,500	8,200	13,000
130	13,100	33/64	2,100	5,500	8,200	13,100
130	13,490	17/32	2,200	5,500	8,200	13,490
130	13,500		2,200	5,500	8,200	13,500
130	13,600		2,200	5,500	8,200	13,600
130	13,700		2,200	5,500	8,200	13,700
130	13,800		2,200	5,500	8,200	13,800
130	13,890	35/64	2,200	5,500	8,200	13,890
140	14,000		2,300	6,000	9,400	14,000
140	14,100		2,300	6,000	9,400	14,100
140	14,290	9/16	2,300	6,000	9,400	14,290
140	14,400		2,300	6,000	9,400	14,400
140	14,500		2,300	6,000	9,400	14,500
140	14,600		2,400	6,000	9,400	14,600
140	14,680	37/64	2,400	6,000	9,400	14,680
140	14,700		2,400	6,000	9,400	14,700
140	14,800		2,400	6,000	9,400	14,800
140	15,000		2,400	6,000	9,400	15,000
140	15,080	19/32	2,400	6,000	9,400	15,080
140	15,100		2,400	6,000	9,400	15,100
140	15,200		2,400	6,000	9,400	15,200
140	15,300		2,500	6,000	9,400	15,300
140	15,480	39/64	2,500	6,000	9,400	15,480
140	15,500		2,500	6,000	9,400	15,500
140	15,600		2,500	6,000	9,400	15,600
140	15,700		2,500	6,000	9,400	15,700



Inserti intercambiabili per Multiplex HPC

Grandezza	d1 mm	inch	l4 mm	b mm	h mm	Codice
140	15,800		2,500	6,000	9,400	15,800
140	15,870	5/8	2,600	6,000	9,400	15,870
160	16,000		2,600	7,000	10,600	16,000
160	16,270	41/64	2,600	7,000	10,600	16,270
160	16,500		2,700	7,000	10,600	16,500
160	16,670	21/32	2,700	7,000	10,600	16,670
160	17,000		2,700	7,000	10,600	17,000
160	17,070	43/64	2,700	7,000	10,600	17,070
160	17,460	11/16	2,800	7,000	10,600	17,460
160	17,500		2,800	7,000	10,600	17,500
160	17,600		2,800	7,000	10,600	17,600
160	17,860	45/64	2,900	7,000	10,600	17,860
180	18,000		2,900	8,000	12,100	18,000
180	18,260	23/32	2,900	8,000	12,100	18,260
180	18,500		3,000	8,000	12,100	18,500
180	18,650	47/64	3,000	8,000	12,100	18,650
180	19,000		3,000	8,000	12,100	19,000
180	19,050	3/4	3,100	8,000	12,100	19,050
180	19,450	49/64	3,100	8,000	12,100	19,450
180	19,500		3,100	8,000	12,100	19,500
180	19,600		3,100	8,000	12,100	19,600
180	19,840	25/32	3,200	8,000	12,100	19,840
200	20,000		3,200	9,000	13,300	20,000
200	20,240	51/64	3,200	9,000	13,300	20,240
200	20,500		3,300	9,000	13,300	20,500
200	20,640	13/16	3,300	9,000	13,300	20,640
200	21,000		3,400	9,000	13,300	21,000
200	21,030	53/64	3,400	9,000	13,300	21,030
200	21,100		3,400	9,000	13,300	21,100
200	21,430	27/32	3,400	9,000	13,300	21,430
200	21,500		3,400	9,000	13,300	21,500
200	21,830	55/64	3,500	9,000	13,300	21,830
220	22,000		3,500	10,000	14,800	22,000
220	22,220	7/8	3,600	10,000	14,800	22,220
220	22,500		3,600	10,000	14,800	22,500
220	22,620	57/64	3,600	10,000	14,800	22,620
220	23,000		3,700	10,000	14,800	23,000
220	23,020	29/32	3,700	10,000	14,800	23,020
220	23,420	59/64	3,700	10,000	14,800	23,420
220	23,500		3,800	10,000	14,800	23,500
220	23,810	15/16	3,800	10,000	14,800	23,810
240	24,000		3,800	11,000	15,300	24,000
240	24,100		3,800	11,000	15,300	24,100
240	24,210	61/64	3,900	11,000	15,300	24,210
240	24,500		3,900	11,000	15,300	24,500
240	24,610	31/32	3,900	11,000	15,300	24,610
240	25,000	63/64	4,000	11,000	15,300	25,000
240	25,400	1	4,100	11,000	15,300	25,400
240	25,500		4,100	11,000	15,300	25,500
240	25,700		4,100	11,000	15,300	25,700
260	26,000		4,100	12,000	19,400	26,000
260	26,190	1 1/32	4,200	12,000	19,400	26,190
260	26,500		4,200	12,000	19,400	26,500
260	26,590	1 3/64	4,200	12,000	19,400	26,590
260	27,000		4,300	12,000	19,400	27,000
260	27,500		4,400	12,000	19,400	27,500
260	27,700		4,400	12,000	19,400	27,700
260	27,780	1 3/32	4,400	12,000	19,400	27,780
280	28,000		4,500	13,000	20,100	28,000
280	28,180	1 7/64	4,500	13,000	20,100	28,180
280	28,500		4,500	13,000	20,100	28,500
280	28,580		4,600	13,000	20,100	28,580
280	29,000		4,600	13,000	20,100	29,000
280	29,370	1 5/32	4,700	13,000	20,100	29,370
280	29,500		4,700	13,000	20,100	29,500
300	30,000		4,800	14,000	21,700	30,000
300	30,160	1 3/16	4,800	14,000	21,700	30,160
300	30,500		4,900	14,000	21,700	30,500
300	30,960	1 7/32	4,900	14,000	21,700	30,960
300	31,000		4,900	14,000	21,700	31,000
300	31,500		5,000	14,000	21,700	31,500
300	31,750	1 1/4	5,100	14,000	21,700	31,750



Inserti intercambiabili per Multiplex HPC

Grandezza	d1 mm	inch	l4 mm	b mm	h mm	Codice
320	32,000		5,100	15,000	22,400	32,000
320	32,500		5,200	15,000	22,400	32,500
320	32,540	1 9/32	5,200	15,000	22,400	32,540
320	33,000		5,300	15,000	22,400	33,000
320	33,340	1 5/16	5,300	15,000	22,400	33,340
320	33,500		5,300	15,000	22,400	33,500
320	34,000		5,400	15,000	22,400	34,000
320	34,130	1 11/32	5,400	15,000	22,400	34,130
320	34,500		5,500	15,000	22,400	34,500
320	34,930		5,600	15,000	22,400	34,930
320	35,000		5,600	15,000	22,400	35,000
320	35,500		5,600	15,000	22,400	35,500
320	35,720	1 13/32	5,700	15,000	22,400	35,720
360	36,000		5,700	16,000	23,200	36,000
360	36,500		5,800	16,000	23,200	36,500
360	36,510	1 7/16	5,800	16,000	23,200	36,510
360	37,000		5,900	16,000	23,200	37,000
360	37,310	1 15/32	5,900	16,000	23,200	37,310
360	37,500		6,000	16,000	23,200	37,500
360	38,000		6,000	16,000	23,200	38,000
360	38,100	1 1/2	6,100	16,000	23,200	38,100
360	38,500	1 33/64	6,100	16,000	23,200	38,500
360	39,000		6,200	16,000	23,200	39,000
360	39,500		6,300	16,000	23,200	39,500
360	40,000		6,400	16,000	23,200	40,000



Inserti intercambiabili per Multiplex HPC

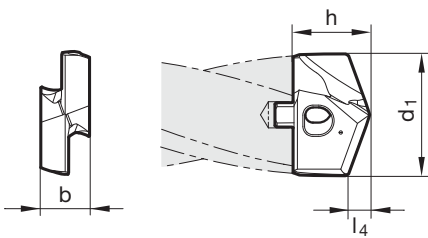
Articolo nr. 86722



P	M	K	N	S	H
●	○	○			



Assott. del nocch. $\geq \varnothing 11,000$ • affilatura su piani • Forma del tagliente principale diritta (dopo correzione) • viti Art. nr. 86843 comprese acciai da costruzione e da cementazione • acciai automatici, acciai da bonifica • acciai legati e non legati con R fino a 1200 N/mm²



Grandezza	d1 mm	inch	l4 mm	b mm	h mm	Codice
110	11,000		2,100	4,500	7,500	11,000
110	11,200		2,100	4,500	7,500	11,200
115	11,500		2,100	4,500	7,500	11,500
115	11,510	29/64	2,100	4,500	7,500	11,510
115	11,700		2,200	4,500	7,500	11,700
115	11,800		2,200	4,500	7,500	11,800
115	11,910	15/32	2,200	4,500	7,500	11,910
120	12,000		2,200	5,000	7,700	12,000
120	12,100		2,300	5,000	7,700	12,100
120	12,200		2,300	5,000	7,700	12,200
120	12,300	31/64	2,300	5,000	7,700	12,300
125	12,500		2,300	5,000	7,700	12,500
125	12,600		2,300	5,000	7,700	12,600
125	12,700	1/2	2,400	5,000	7,700	12,700
125	12,800		2,400	5,000	7,700	12,800
125	12,900		2,400	5,000	7,700	12,900
130	13,000		2,400	5,500	8,500	13,000
130	13,100	33/64	2,400	5,500	8,500	13,100
130	13,490	17/32	2,500	5,500	8,500	13,490
135	13,500		2,500	5,500	8,500	13,500
135	13,600		2,500	5,500	8,500	13,600
135	13,700		2,500	5,500	8,500	13,700
135	13,800		2,600	5,500	8,500	13,800
135	13,890	35/64	2,600	5,500	8,500	13,890
140	14,000		2,600	6,000	9,600	14,000
140	14,100		2,600	6,000	9,600	14,100
140	14,290	9/16	2,700	6,000	9,600	14,290
140	14,400		2,700	6,000	9,600	14,400
145	14,500		2,700	6,000	9,600	14,500
145	14,600		2,700	6,000	9,600	14,600
145	14,680	37/64	2,700	6,000	9,600	14,680
145	14,700		2,700	6,000	9,600	14,700
145	14,800		2,700	6,000	9,600	14,800
150	15,000		2,800	6,000	9,800	15,000
150	15,080	19/32	2,800	6,000	9,800	15,080
150	15,100		2,800	6,000	9,800	15,100
150	15,200		2,800	6,000	9,800	15,200
150	15,300		2,800	6,000	9,800	15,300
150	15,480	39/64	2,900	6,000	9,800	15,480
155	15,500		2,900	6,000	9,800	15,500
155	15,600		2,900	6,000	9,800	15,600
155	15,700		2,900	6,000	9,800	15,700



Inserti intercambiabili per Multiplex HPC

Grandezza	d1 mm	inch	l4 mm	b mm	h mm	Codice
155	15,800		2,900	6,000	9,800	15,800
155	15,870	5/8	2,900	6,000	9,800	15,870
160	16,000		3,000	7,000	11,000	16,000
160	16,270	41/64	3,000	7,000	11,000	16,270
165	16,500		3,100	7,000	11,000	16,500
165	16,670	21/32	3,100	7,000	11,000	16,670
170	17,000		3,100	7,000	11,000	17,000
170	17,070	43/64	3,200	7,000	11,000	17,070
170	17,460	11/16	3,200	7,000	11,000	17,460
175	17,500		3,200	7,000	11,000	17,500
175	17,600		3,300	7,000	11,000	17,600
175	17,860	45/64	3,300	7,000	11,000	17,860
180	18,000		3,300	8,000	12,600	18,000
180	18,260	23/32	3,400	8,000	12,600	18,260
185	18,500		3,400	8,000	12,600	18,500
185	18,650	47/64	3,400	8,000	12,600	18,650
190	19,000		3,500	8,000	12,600	19,000
190	19,050	3/4	3,500	8,000	12,600	19,050
190	19,250		3,600	8,000	12,600	19,250
190	19,450	49/64	3,600	8,000	12,600	19,450
195	19,500		3,600	8,000	12,600	19,500
195	19,600		3,600	8,000	12,600	19,600
195	19,840	25/32	3,700	8,000	12,600	19,840
200	20,000		3,700	9,000	13,900	20,000
200	20,240	51/64	3,700	9,000	13,900	20,240
205	20,500		3,800	9,000	13,900	20,500
205	20,640	13/16	3,800	9,000	13,900	20,640
210	21,000		3,900	9,000	13,900	21,000
210	21,030	53/64	3,900	9,000	13,900	21,030
210	21,100		3,900	9,000	13,900	21,100
210	21,430	27/32	3,900	9,000	13,900	21,430
215	21,500		4,000	9,000	13,900	21,500
215	21,830	55/64	4,000	9,000	13,900	21,830
220	22,000		4,100	10,000	15,300	22,000
220	22,220	7/8	4,100	10,000	15,300	22,220
225	22,500		4,100	10,000	15,300	22,500
225	22,620	57/64	4,200	10,000	15,300	22,620
230	23,000		4,200	10,000	15,300	23,000
230	23,020	29/32	4,200	10,000	15,300	23,020
230	23,420	59/64	4,300	10,000	15,300	23,420
235	23,500		4,300	10,000	15,300	23,500
235	23,810	15/16	4,400	10,000	15,300	23,810
240	24,000		4,400	11,000	15,800	24,000
240	24,100		4,400	11,000	15,800	24,100
240	24,210	61/64	4,500	11,000	15,800	24,210
245	24,500		4,500	11,000	15,800	24,500
245	24,610	31/32	4,500	11,000	15,800	24,610
250	25,000	63/64	4,600	11,000	15,800	25,000
250	25,400	1	4,700	11,000	15,800	25,400
255	25,500		4,700	11,000	15,800	25,500
255	25,670		4,700	11,000	15,800	25,670
255	25,700		4,700	11,000	15,800	25,700
255	25,810		4,700	11,000	15,800	25,810
260	26,000		4,800	12,000	20,000	26,000
260	26,190	1 1/32	4,800	12,000	20,000	26,190
265	26,500		4,900	12,000	20,000	26,500
265	26,590	1 3/64	4,900	12,000	20,000	26,590
270	27,000		5,000	12,000	20,000	27,000
275	27,500		5,100	12,000	20,000	27,500
275	27,700		5,100	12,000	20,000	27,700
275	27,780	1 3/32	5,100	12,000	20,000	27,780
280	28,000		5,100	13,000	20,700	28,000
280	28,180	1 7/64	5,200	13,000	20,700	28,180
285	28,500		5,200	13,000	20,700	28,500
285	28,580		5,300	13,000	20,700	28,580
290	29,000		5,300	13,000	20,700	29,000
290	29,370	1 5/32	5,400	13,000	20,700	29,370
295	29,500		5,400	13,000	20,700	29,500
295	29,770	1 11/64	5,500	13,000	20,700	29,770
300	30,000		5,500	14,000	22,300	30,000
300	30,160	1 3/16	5,500	14,000	22,300	30,160
305	30,500		5,600	14,000	22,300	30,500



Inserti intercambiabili per Multiplex HPC

Grandezza	d1 mm	inch	l4 mm	b mm	h mm	Codice
305	30,960	1 7/32	5,700	14,000	22,300	30,960
310	31,000		5,700	14,000	22,300	31,000
315	31,500		5,800	14,000	22,300	31,500
315	31,750	1 1/4	5,800	14,000	22,300	31,750
320	32,000		5,900	15,000	23,100	32,000
320	32,500		6,000	15,000	23,100	32,500
320	32,540	1 9/32	6,000	15,000	23,100	32,540
320	32,940	1 19/64	6,000	15,000	23,100	32,940
330	33,000		6,100	15,000	23,100	33,000
330	33,340	1 5/16	6,100	15,000	23,100	33,340
330	33,500		6,100	15,000	23,100	33,500
340	34,000		6,200	15,000	23,100	34,000
340	34,130	1 11/32	6,300	15,000	23,100	34,130
340	34,500		6,300	15,000	23,100	34,500
340	34,930		6,400	15,000	23,100	34,930
350	35,000		6,400	15,000	23,100	35,000
350	35,500		6,500	15,000	23,100	35,500
350	35,720	1 13/32	6,600	15,000	23,100	35,720
360	36,000		6,600	16,000	23,900	36,000
360	36,500		6,700	16,000	23,900	36,500
360	36,510	1 7/16	6,700	16,000	23,900	36,510
370	37,000		6,800	16,000	23,900	37,000
370	37,310	1 15/32	6,800	16,000	23,900	37,310
370	37,500		6,900	16,000	23,900	37,500
380	38,000		7,000	16,000	23,900	38,000
380	38,100	1 1/2	7,000	16,000	23,900	38,100
380	38,500	1 33/64	7,100	16,000	23,900	38,500
390	39,000		7,100	16,000	23,900	39,000
390	39,500		7,200	16,000	23,900	39,500
400	40,000		7,300	16,000	23,900	40,000



Inserti intercambiabili per Multiplex HPC

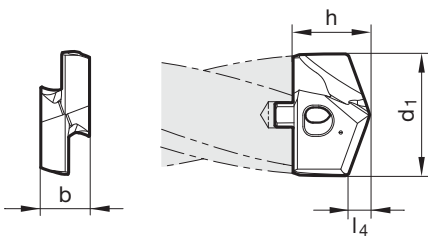
Articolo nr. 86723



P	M	K	N	S	H
○		●			



Assott. del noc. $\geq \varnothing 11,000$ • affilatura su piani • Forma del tagliente principale diritta (dopo correzione) • viti Art. nr. 86843 comprese
ghisa verimicolare GGV • ghisa grigia, ghisa malleabile, ghisa sferoidale



Grandezza	d1 mm	inch	l4 mm	b mm	h mm	Codice
110	11,000		2,700	4,500	7,500	11,000
110	11,200		2,700	4,500	7,500	11,200
115	11,500		2,800	4,500	7,500	11,500
115	11,510	29/64	2,800	4,500	7,500	11,510
115	11,700		2,800	4,500	7,500	11,700
115	11,800		2,800	4,500	7,500	11,800
115	11,910	15/32	2,800	4,500	7,500	11,910
120	12,000		2,900	5,000	7,700	12,000
120	12,100		2,900	5,000	7,700	12,100
120	12,200		2,900	5,000	7,700	12,200
120	12,300	31/64	2,900	5,000	7,700	12,300
125	12,500		3,100	5,000	7,700	12,500
125	12,600		3,100	5,000	7,700	12,600
125	12,700	1/2	3,100	5,000	7,700	12,700
125	12,800		3,100	5,000	7,700	12,800
125	12,900		3,100	5,000	7,700	12,900
130	13,000		3,200	5,500	8,500	13,000
130	13,100	33/64	3,200	5,500	8,500	13,100
130	13,490	17/32	3,200	5,500	8,500	13,490
135	13,500		3,300	5,500	8,500	13,500
135	13,600		3,300	5,500	8,500	13,600
135	13,700		3,300	5,500	8,500	13,700
135	13,800		3,300	5,500	8,500	13,800
135	13,890	35/64	3,300	5,500	8,500	13,890
140	14,000		3,400	6,000	9,600	14,000
140	14,100		3,400	6,000	9,600	14,100
140	14,290	9/16	3,400	6,000	9,600	14,290
140	14,400		3,400	6,000	9,600	14,400
145	14,500		3,600	6,000	9,600	14,500
145	14,600		3,600	6,000	9,600	14,600
145	14,680	37/64	3,600	6,000	9,600	14,680
145	14,700		3,600	6,000	9,600	14,700
145	14,800		3,600	6,000	9,600	14,800
150	15,000		3,700	6,000	9,800	15,000
150	15,080	19/32	3,700	6,000	9,800	15,080
150	15,100		3,700	6,000	9,800	15,100
150	15,200		3,700	6,000	9,800	15,200
150	15,300		3,700	6,000	9,800	15,300
150	15,480	39/64	3,700	6,000	9,800	15,480
155	15,500		3,800	6,000	9,800	15,500
155	15,600		3,800	6,000	9,800	15,600
155	15,700		3,800	6,000	9,800	15,700



Inserti intercambiabili per Multiplex HPC

Grandezza	d1 mm	inch	l4 mm	b mm	h mm	Codice
155	15,800		3,800	6,000	9,800	15,800
155	15,870	5/8	3,800	6,000	9,800	15,870
160	16,000		3,900	7,000	11,000	16,000
160	16,270	41/64	3,900	7,000	11,000	16,270
165	16,500		4,100	7,000	11,000	16,500
165	16,670	21/32	4,100	7,000	11,000	16,670
170	17,000		4,200	7,000	11,000	17,000
170	17,070	43/64	4,200	7,000	11,000	17,070
170	17,460	11/16	4,200	7,000	11,000	17,460
175	17,500		4,300	7,000	11,000	17,500
175	17,600		4,300	7,000	11,000	17,600
175	17,860	45/64	4,300	7,000	11,000	17,860
180	18,000		4,400	8,000	12,600	18,000
180	18,260	23/32	4,400	8,000	12,600	18,260
185	18,500		4,500	8,000	12,600	18,500
185	18,650	47/64	4,500	8,000	12,600	18,650
190	19,000		4,700	8,000	12,600	19,000
190	19,050	3/4	4,700	8,000	12,600	19,050
190	19,250		4,700	8,000	12,600	19,250
190	19,450	49/64	4,700	8,000	12,600	19,450
195	19,500		4,800	8,000	12,600	19,500
195	19,600		4,800	8,000	12,600	19,600
195	19,840	25/32	4,800	8,000	12,600	19,840
200	20,000		4,900	9,000	13,900	20,000
200	20,240	51/64	4,900	9,000	13,900	20,240
205	20,500		5,100	9,000	13,900	20,500
205	20,640	13/16	5,100	9,000	13,900	20,640
210	21,000		5,200	9,000	13,900	21,000
210	21,030	53/64	5,200	9,000	13,900	21,030
210	21,100		5,200	9,000	13,900	21,100
210	21,430	27/32	5,200	9,000	13,900	21,430
215	21,500		5,300	9,000	13,900	21,500
215	21,830	55/64	5,300	9,000	13,900	21,830
220	22,000		5,400	10,000	15,300	22,000
220	22,220	7/8	5,400	10,000	15,300	22,220
225	22,500		5,600	10,000	15,300	22,500
225	22,620	57/64	5,600	10,000	15,300	22,620
230	23,000		5,700	10,000	15,300	23,000
230	23,020	29/32	5,700	10,000	15,300	23,020
230	23,420	59/64	5,700	10,000	15,300	23,420
235	23,500		5,800	10,000	15,300	23,500
235	23,810	15/16	5,800	10,000	15,300	23,810
240	24,000		6,000	11,000	15,800	24,000
240	24,100		6,000	11,000	15,800	24,100
240	24,210	61/64	6,000	11,000	15,800	24,210
245	24,500		6,100	11,000	15,800	24,500
245	24,610	31/32	6,100	11,000	15,800	24,610
250	25,000	63/64	6,200	11,000	15,800	25,000
250	25,400	1	6,200	11,000	15,800	25,400
255	25,500		6,300	11,000	15,800	25,500
255	25,670		6,300	11,000	15,800	25,670
255	25,700		6,300	11,000	15,800	25,700
255	25,810		6,300	11,000	15,800	25,810
260	26,000		6,400	12,000	20,000	26,000
260	26,190	1 1/32	6,400	12,000	20,000	26,190
265	26,500		6,500	12,000	20,000	26,500
265	26,590	1 3/64	6,500	12,000	20,000	26,590
270	27,000		6,600	12,000	20,000	27,000
275	27,500		6,700	12,000	20,000	27,500
275	27,700		6,700	12,000	20,000	27,700
275	27,780	1 3/32	6,700	12,000	20,000	27,780
280	28,000		6,800	13,000	20,700	28,000
280	28,180	1 7/64	6,800	13,000	20,700	28,180
285	28,500		6,900	13,000	20,700	28,500
285	28,580		6,900	13,000	20,700	28,580
290	29,000		7,100	13,000	20,700	29,000
290	29,370	1 5/32	7,100	13,000	20,700	29,370
295	29,500		7,200	13,000	20,700	29,500
295	29,770	1 11/64	7,200	13,000	20,700	29,770
300	30,000		7,300	14,000	22,300	30,000
300	30,160	1 3/16	7,300	14,000	22,300	30,160
305	30,500		7,400	14,000	22,300	30,500



Inserti intercambiabili per Multiplex HPC

Grandezza	d1 mm	inch	l4 mm	b mm	h mm	Codice
305	30,960	1 7/32	7,400	14,000	22,300	30,960
310	31,000		7,500	14,000	22,300	31,000
315	31,500		7,600	14,000	22,300	31,500
315	31,750	1 1/4	7,600	14,000	22,300	31,750
320	32,000		7,700	15,000	23,100	32,000
320	32,500		7,800	15,000	23,100	32,500
320	32,540	1 9/32	7,800	15,000	23,100	32,540
320	32,940	1 19/64	7,800	15,000	23,100	32,940
330	33,000		7,900	15,000	23,100	33,000
330	33,340	1 5/16	7,900	15,000	23,100	33,340
330	33,500		8,100	15,000	23,100	33,500
340	34,000		8,200	15,000	23,100	34,000
340	34,130	1 11/32	8,200	15,000	23,100	34,130
340	34,500		8,400	15,000	23,100	34,500
340	34,930		8,400	15,000	23,100	34,930
350	35,000		8,500	15,000	23,100	35,000
350	35,500		8,600	15,000	23,100	35,500
350	35,720	1 13/32	8,600	15,000	23,100	35,720
360	36,000		8,700	16,000	23,900	36,000
360	36,500		8,800	16,000	23,900	36,500
360	36,510	1 7/16	8,800	16,000	23,900	36,510
370	37,000		9,000	16,000	23,900	37,000
370	37,310	1 15/32	9,000	16,000	23,900	37,310
370	37,500		9,100	16,000	23,900	37,500
380	38,000		9,200	16,000	23,900	38,000
380	38,100	1 1/2	9,200	16,000	23,900	38,100
380	38,500	1 33/64	9,400	16,000	23,900	38,500
390	39,000		9,500	16,000	23,900	39,000
390	39,500		9,700	16,000	23,900	39,500
400	40,000		9,700	16,000	23,900	40,000



Inserti intercambiabili per Multiplex HPC

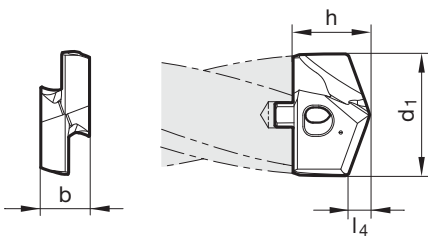
Articolo nr. 86724



P	M	K	N	S	H
			•		



Assott. del nocc. $\geq \varnothing 11,000$ • spoglia sul cono tagliente • viti Art. nr. 86843 comprese • main cutting edge form concave alluminio e leghe di alluminio • metalli non ferrosi



Grandezza	d1 mm	inch	l4 mm	b mm	h mm	Codice
110	11,000		2,100	4,500	7,500	11,000
110	11,200		2,100	4,500	7,500	11,200
115	11,500		2,100	4,500	7,500	11,500
115	11,510	29/64	2,100	4,500	7,500	11,510
115	11,700		2,200	4,500	7,500	11,700
115	11,800		2,200	4,500	7,500	11,800
115	11,910	15/32	2,200	4,500	7,500	11,910
120	12,000		2,200	5,000	7,700	12,000
120	12,100		2,300	5,000	7,700	12,100
120	12,200		2,300	5,000	7,700	12,200
120	12,300	31/64	2,300	5,000	7,700	12,300
125	12,500		2,300	5,000	7,700	12,500
125	12,600		2,300	5,000	7,700	12,600
125	12,700	1/2	2,400	5,000	7,700	12,700
125	12,800		2,400	5,000	7,700	12,800
125	12,900		2,400	5,000	7,700	12,900
130	13,000		2,400	5,500	8,500	13,000
130	13,100	33/64	2,400	5,500	8,500	13,100
130	13,490	17/32	2,500	5,500	8,500	13,490
135	13,500		2,500	5,500	8,500	13,500
135	13,600		2,500	5,500	8,500	13,600
135	13,700		2,500	5,500	8,500	13,700
135	13,800		2,600	5,500	8,500	13,800
135	13,890	35/64	2,600	5,500	8,500	13,890
140	14,000		2,600	6,000	9,600	14,000
140	14,100		2,600	6,000	9,600	14,100
140	14,290	9/16	2,700	6,000	9,600	14,290
140	14,400		2,700	6,000	9,600	14,400
145	14,500		2,700	6,000	9,600	14,500
145	14,600		2,700	6,000	9,600	14,600
145	14,680	37/64	2,700	6,000	9,600	14,680
145	14,700		2,700	6,000	9,600	14,700
145	14,800		2,700	6,000	9,600	14,800
150	15,000		2,800	6,000	9,800	15,000
150	15,080	19/32	2,800	6,000	9,800	15,080
150	15,100		2,800	6,000	9,800	15,100
150	15,200		2,800	6,000	9,800	15,200
150	15,300		2,800	6,000	9,800	15,300
150	15,480	39/64	2,900	6,000	9,800	15,480
155	15,500		2,900	6,000	9,800	15,500
155	15,600		2,900	6,000	9,800	15,600
155	15,700		2,900	6,000	9,800	15,700



Inserti intercambiabili per Multiplex HPC

Grandezza	d1 mm	inch	l4 mm	b mm	h mm	Codice
155	15,800		2,900	6,000	9,800	15,800
155	15,870	5/8	2,900	6,000	9,800	15,870
160	16,000		3,000	7,000	11,000	16,000
160	16,270	41/64	3,000	7,000	11,000	16,270
165	16,500		3,100	7,000	11,000	16,500
165	16,670	21/32	3,100	7,000	11,000	16,670
170	17,000		3,100	7,000	11,000	17,000
170	17,070	43/64	3,200	7,000	11,000	17,070
170	17,460	11/16	3,200	7,000	11,000	17,460
175	17,500		3,200	7,000	11,000	17,500
175	17,600		3,300	7,000	11,000	17,600
175	17,860	45/64	3,300	7,000	11,000	17,860
180	18,000		3,300	8,000	12,600	18,000
180	18,260	23/32	3,400	8,000	12,600	18,260
185	18,500		3,400	8,000	12,600	18,500
185	18,650	47/64	3,400	8,000	12,600	18,650
190	19,000		3,500	8,000	12,600	19,000
190	19,050	3/4	3,500	8,000	12,600	19,050
190	19,250		3,600	8,000	12,600	19,250
190	19,450	49/64	3,600	8,000	12,600	19,450
195	19,500		3,600	8,000	12,600	19,500
195	19,600		3,600	8,000	12,600	19,600
195	19,840	25/32	3,700	8,000	12,600	19,840
200	20,000		3,700	9,000	13,900	20,000
200	20,240	51/64	3,700	9,000	13,900	20,240
205	20,500		3,800	9,000	13,900	20,500
205	20,640	13/16	3,800	9,000	13,900	20,640
210	21,000		3,900	9,000	13,900	21,000
210	21,030	53/64	3,900	9,000	13,900	21,030
210	21,100		3,900	9,000	13,900	21,100
210	21,430	27/32	3,900	9,000	13,900	21,430
215	21,500		4,000	9,000	13,900	21,500
215	21,830	55/64	4,000	9,000	13,900	21,830
220	22,000		4,100	10,000	15,300	22,000
220	22,220	7/8	4,100	10,000	15,300	22,220
225	22,500		4,100	10,000	15,300	22,500
225	22,620	57/64	4,200	10,000	15,300	22,620
230	23,000		4,200	10,000	15,300	23,000
230	23,020	29/32	4,200	10,000	15,300	23,020
230	23,420	59/64	4,300	10,000	15,300	23,420
235	23,500		4,300	10,000	15,300	23,500
235	23,810	15/16	4,400	10,000	15,300	23,810
240	24,000		4,400	11,000	15,800	24,000
240	24,100		4,400	11,000	15,800	24,100
240	24,210	61/64	4,500	11,000	15,800	24,210
245	24,500		4,500	11,000	15,800	24,500
245	24,610	31/32	4,500	11,000	15,800	24,610
250	25,000	63/64	4,600	11,000	15,800	25,000
250	25,400	1	4,700	11,000	15,800	25,400
255	25,500		4,700	11,000	15,800	25,500
255	25,670		4,700	11,000	15,800	25,670
255	25,700		4,700	11,000	15,800	25,700
255	25,810		4,700	11,000	15,800	25,810
260	26,000		4,800	12,000	20,000	26,000
260	26,190	1 1/32	4,800	12,000	20,000	26,190
265	26,500		4,900	12,000	20,000	26,500
265	26,590	1 3/64	4,900	12,000	20,000	26,590
270	27,000		5,000	12,000	20,000	27,000
275	27,500		5,100	12,000	20,000	27,500
275	27,700		5,100	12,000	20,000	27,700
275	27,780	1 3/32	5,100	12,000	20,000	27,780
280	28,000		5,100	13,000	20,700	28,000
280	28,180	1 7/64	5,200	13,000	20,700	28,180
285	28,500		5,200	13,000	20,700	28,500
285	28,580		5,300	13,000	20,700	28,580
290	29,000		5,300	13,000	20,700	29,000
290	29,370	1 5/32	5,400	13,000	20,700	29,370
295	29,500		5,400	13,000	20,700	29,500
295	29,770	1 11/64	5,500	13,000	20,700	29,770
300	30,000		5,500	14,000	22,300	30,000
300	30,160	1 3/16	5,500	14,000	22,300	30,160
305	30,500		5,600	14,000	22,300	30,500



Inserti intercambiabili per Multiplex HPC

Grandezza	d1 mm	inch	l4 mm	b mm	h mm	Codice
305	30,960	1 7/32	5,700	14,000	22,300	30,960
310	31,000		5,700	14,000	22,300	31,000
315	31,500		5,800	14,000	22,300	31,500
315	31,750	1 1/4	5,800	14,000	22,300	31,750
320	32,000		5,900	15,000	23,100	32,000
320	32,500		6,000	15,000	23,100	32,500
320	32,540	1 9/32	6,000	15,000	23,100	32,540
320	32,940	1 19/64	6,000	15,000	23,100	32,940
330	33,000		6,100	15,000	23,100	33,000
330	33,340	1 5/16	6,100	15,000	23,100	33,340
330	33,500		6,100	15,000	23,100	33,500
340	34,000		6,200	15,000	23,100	34,000
340	34,130	1 11/32	6,300	15,000	23,100	34,130
340	34,500		6,300	15,000	23,100	34,500
340	34,930		6,400	15,000	23,100	34,930
350	35,000		6,400	15,000	23,100	35,000
350	35,500		6,500	15,000	23,100	35,500
350	35,720	1 13/32	6,600	15,000	23,100	35,720
360	36,000		6,600	16,000	23,900	36,000
360	36,500		6,700	16,000	23,900	36,500
360	36,510	1 7/16	6,700	16,000	23,900	36,510
370	37,000		6,800	16,000	23,900	37,000
370	37,310	1 15/32	6,800	16,000	23,900	37,310
370	37,500		6,900	16,000	23,900	37,500
380	38,000		7,000	16,000	23,900	38,000
380	38,100	1 1/2	7,000	16,000	23,900	38,100
380	38,500	1 33/64	7,100	16,000	23,900	38,500
390	39,000		7,100	16,000	23,900	39,000
390	39,500		7,200	16,000	23,900	39,500
400	40,000		7,300	16,000	23,900	40,000



Inserti intercambiabili per Multiplex HPC

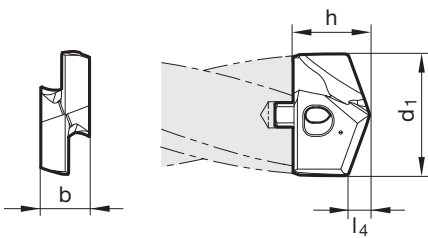
Articolo nr. 86725



P	M	K	N	S	H
○	●			○	○



Assott. del noc. $\geq \varnothing 11,000$ • spoglia sul cono tagliente • Forma del tagliente principale diritta (dopo correzione) • viti Art. nr. 86843 comprese
acciai inossidabili



Grandezza	d1 mm	inch	l4 mm	b mm	h mm	Codice
110	11,000		2,100	4,500	7,500	11,000
110	11,200		2,100	4,500	7,500	11,200
115	11,500		2,100	4,500	7,500	11,500
115	11,510	29/64	2,100	4,500	7,500	11,510
115	11,700		2,200	4,500	7,500	11,700
115	11,800		2,200	4,500	7,500	11,800
115	11,910	15/32	2,200	4,500	7,500	11,910
120	12,000		2,200	5,000	7,700	12,000
120	12,100		2,300	5,000	7,700	12,100
120	12,200		2,300	5,000	7,700	12,200
120	12,300	31/64	2,300	5,000	7,700	12,300
125	12,500		2,300	5,000	7,700	12,500
125	12,600		2,300	5,000	7,700	12,600
125	12,700	1/2	2,400	5,000	7,700	12,700
125	12,800		2,400	5,000	7,700	12,800
125	12,900		2,400	5,000	7,700	12,900
130	13,000		2,400	5,500	8,500	13,000
130	13,100	33/64	2,400	5,500	8,500	13,100
130	13,490	17/32	2,500	5,500	8,500	13,490
135	13,500		2,500	5,500	8,500	13,500
135	13,600		2,500	5,500	8,500	13,600
135	13,700		2,500	5,500	8,500	13,700
135	13,800		2,600	5,500	8,500	13,800
135	13,890	35/64	2,600	5,500	8,500	13,890
140	14,000		2,600	6,000	9,600	14,000
140	14,100		2,600	6,000	9,600	14,100
140	14,290	9/16	2,700	6,000	9,600	14,290
140	14,400		2,700	6,000	9,600	14,400
145	14,500		2,700	6,000	9,600	14,500
145	14,600		2,700	6,000	9,600	14,600
145	14,700		2,700	6,000	9,600	14,700
145	14,800		2,700	6,000	9,600	14,800
150	15,000		2,800	6,000	9,800	15,000
150	15,080	19/32	2,800	6,000	9,800	15,080
150	15,100		2,800	6,000	9,800	15,100
150	15,200		2,800	6,000	9,800	15,200
150	15,300		2,800	6,000	9,800	15,300
155	15,500		2,900	6,000	9,800	15,500
155	15,600		2,900	6,000	9,800	15,600
155	15,700		2,900	6,000	9,800	15,700
155	15,800		2,900	6,000	9,800	15,800
155	15,870	5/8	2,900	6,000	9,800	15,870



Inserti intercambiabili per Multiplex HPC

Grandezza	d1 mm	inch	l4 mm	b mm	h mm	Codice
160	16,000		3,000	7,000	11,000	16,000
160	16,270	41/64	3,000	7,000	11,000	16,270
165	16,500		3,100	7,000	11,000	16,500
165	16,670	21/32	3,100	7,000	11,000	16,670
170	17,000		3,100	7,000	11,000	17,000
170	17,070	43/64	3,200	7,000	11,000	17,070
170	17,460	11/16	3,200	7,000	11,000	17,460
175	17,500		3,200	7,000	11,000	17,500
175	17,600		3,300	7,000	11,000	17,600
175	17,860	45/64	3,300	7,000	11,000	17,860
180	18,000		3,300	8,000	12,600	18,000
180	18,260	23/32	3,400	8,000	12,600	18,260
185	18,500		3,400	8,000	12,600	18,500
185	18,650	47/64	3,400	8,000	12,600	18,650
190	19,000		3,500	8,000	12,600	19,000
190	19,050	3/4	3,500	8,000	12,600	19,050
190	19,450	49/64	3,600	8,000	12,600	19,450
195	19,500		3,600	8,000	12,600	19,500
195	19,600		3,600	8,000	12,600	19,600
195	19,840	25/32	3,700	8,000	12,600	19,840
200	20,000		3,700	9,000	13,900	20,000
200	20,240	51/64	3,700	9,000	13,900	20,240
205	20,500		3,800	9,000	13,900	20,500
205	20,640	13/16	3,800	9,000	13,900	20,640
210	21,000		3,900	9,000	13,900	21,000
210	21,030	53/64	3,900	9,000	13,900	21,030
210	21,100		3,900	9,000	13,900	21,100
210	21,430	27/32	3,900	9,000	13,900	21,430
215	21,500		4,000	9,000	13,900	21,500
215	21,830	55/64	4,000	9,000	13,900	21,830
220	22,000		4,100	10,000	15,300	22,000
220	22,220	7/8	4,100	10,000	15,300	22,220
225	22,500		4,100	10,000	15,300	22,500
225	22,620	57/64	4,200	10,000	15,300	22,620
230	23,000		4,200	10,000	15,300	23,000
230	23,020	29/32	4,200	10,000	15,300	23,020
230	23,420	59/64	4,300	10,000	15,300	23,420
235	23,500		4,300	10,000	15,300	23,500
235	23,810	15/16	4,400	10,000	15,300	23,810
240	24,000		4,400	11,000	15,800	24,000
240	24,100		4,400	11,000	15,800	24,100
240	24,210	61/64	4,500	11,000	15,800	24,210
245	24,500		4,500	11,000	15,800	24,500
245	24,610	31/32	4,500	11,000	15,800	24,610
250	25,000	63/64	4,600	11,000	15,800	25,000
250	25,400	1	4,700	11,000	15,800	25,400
255	25,500		4,700	11,000	15,800	25,500
255	25,670		4,700	11,000	15,800	25,670
255	25,700		4,700	11,000	15,800	25,700
260	26,000		4,800	12,000	20,000	26,000
260	26,190	1 1/32	4,800	12,000	20,000	26,190
265	26,500		4,900	12,000	20,000	26,500
265	26,590	1 3/64	4,900	12,000	20,000	26,590
270	27,000		5,000	12,000	20,000	27,000
275	27,500		5,100	12,000	20,000	27,500
275	27,700		5,100	12,000	20,000	27,700
275	27,780	1 3/32	5,100	12,000	20,000	27,780
280	28,000		5,100	13,000	20,700	28,000
280	28,180	1 7/64	5,200	13,000	20,700	28,180
285	28,500		5,200	13,000	20,700	28,500
285	28,580		5,300	13,000	20,700	28,580
290	29,000		5,300	13,000	20,700	29,000
290	29,370	1 5/32	5,400	13,000	20,700	29,370
295	29,500		5,400	13,000	20,700	29,500
295	29,600		5,400	13,000	20,700	29,600
295	29,770	1 11/64	5,500	13,000	20,700	29,770
300	30,000		5,500	14,000	22,300	30,000
300	30,160	1 3/16	5,500	14,000	22,300	30,160
305	30,500		5,600	14,000	22,300	30,500
305	30,960	1 7/32	5,700	14,000	22,300	30,960
310	31,000		5,700	14,000	22,300	31,000
315	31,500		5,800	14,000	22,300	31,500



Inserti intercambiabili per Multiplex HPC

Grandezza	d1 mm	inch	l4 mm	b mm	h mm	Codice
315	31,750	1 1/4	5,800	14,000	22,300	31,750
320	32,000		5,900	15,000	23,100	32,000
320	32,500		6,000	15,000	23,100	32,500
320	32,540	1 9/32	6,000	15,000	23,100	32,540
320	32,940	1 19/64	6,000	15,000	23,100	32,940
330	33,000		6,100	15,000	23,100	33,000
330	33,340	1 5/16	6,100	15,000	23,100	33,340
330	33,500		6,100	15,000	23,100	33,500
340	34,000		6,200	15,000	23,100	34,000
340	34,130	1 11/32	6,300	15,000	23,100	34,130
340	34,500		6,300	15,000	23,100	34,500
340	34,930		6,400	15,000	23,100	34,930
350	35,000		6,400	15,000	23,100	35,000
350	35,500		6,500	15,000	23,100	35,500
350	35,720	1 13/32	6,600	15,000	23,100	35,720
360	36,000		6,600	16,000	23,900	36,000
360	36,500		6,700	16,000	23,900	36,500
360	36,510	1 7/16	6,700	16,000	23,900	36,510
370	37,000		6,800	16,000	23,900	37,000
370	37,310	1 15/32	6,800	16,000	23,900	37,310
370	37,500		6,900	16,000	23,900	37,500
380	38,000		7,000	16,000	23,900	38,000
380	38,100	1 1/2	7,000	16,000	23,900	38,100
380	38,500	1 33/64	7,100	16,000	23,900	38,500
390	39,000		7,100	16,000	23,900	39,000
390	39,500		7,200	16,000	23,900	39,500
400	40,000		7,300	16,000	23,900	40,000



Inserti a svasare Multiplex HPC

Articolo nr. 86726



P	M	K	N	S	H
○		●			



ghisa grigia, ghisa malleabile, ghisa sferoidale

ISO	Grandezza supporto	Codice	ISO	Grandezza supporto	Codice
CPGW050202FN-K	110-140	52,020			
CPGW050204FN-K	110-140	52,040			
CPGW060202FN-K	160-180	62,020			
CPGW060204FN-K	160-180	62,040			
CPGW09T308FN-K	300-360	93,080			

Articolo nr. 86727



P	M	K	N	S	H
			●		



alluminio e leghe di alluminio • metalli non ferrosi

ISO	Grandezza supporto	Codice	ISO	Grandezza supporto	Codice
CPGT050202FR-AL	110-140	52,020			
CPGT050204FR-AL	110-140	52,040			
CPGT060202FR-AL	160-180	62,020			
CPGT060204FR-AL	160-180	62,040			
CPGT09T308FR-AL	300-360	93,080			



Inserti a svasare Multiplex HPC

Articolo nr. 86728



P	M	K	N	S	H
•	○	○	○	○	○



acciaio e ghisa acciaiata (legati e non legati)

ISO	Grandezza supporto	Codice	ISO	Grandezza supporto	Codice
CPGT050202FR-P	110-140	52,020			
CPGT050204FR-P	110-140	52,040			
CPGT060202FR-P	160-180	62,020			
CPGT060204FR-P	160-180	62,040			
CPGT09T308FR-P	300-360	93,080			

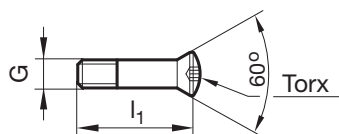


Viti di serraggio per placchette 1.5-10xD

Articolo nr. 86843



Per la corretta scelta delle viti di serraggio/corpo portaplacchetta vi invitamo a consultare "Tecnologia e vantaggi Multiplex HPC"



G	l1 mm	Torx	Codice	G	l1 mm	Torx	Codice
M 2,2	9,500	T7	2,200	M 6	28,500	T25	6,001
M 2,2	10,500	T7	2,201	M 6	32,500	T25	6,002
M 2,5	11,400	T8	2,500				
M 3	12,100	T9	3,000				
M 3	13,100	T9	3,001				
M 3,5	14,250	T10	3,500				
M 4	16,000	T15	4,000				
M 4,5	18,000	T15	4,500				
M 5	19,750	T20	5,000				
M 5	21,750	T20	5,001				
M 5	23,400	T20	5,003				
M 6	27,000	T25	6,000				



HARTNER

Chiavi dinamometriche

Articolo nr. 86844



Attacco esagonale

Esagono	Momento torcente Nm	L mm	Tipo	Codice
1/4"	0,8...2	160,000	A	2,000
1/4"	2...8	200,000	A	8,000
1/4"	0,4...14	200,000	A	14,000



Inserti Torx

Articolo nr. 86845



Esagono		Torx	L mm	Codice
1/4	esagono	T7	25,000	7,000
1/4	esagono	T8	25,000	8,000
1/4	esagono	T9	25,000	9,000
1/4	esagono	T10	25,000	10,000
1/4	esagono	T15	25,000	15,000
1/4	esagono	T20	25,000	20,000
1/4	esagono	T25	25,000	25,001

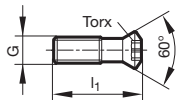


Viti di serraggio per svasatori Multiplex HPC

Articolo nr. 86846



Per la corretta scelta delle viti di serraggio/corpo portaplachetta vi invitamo a consultare "Tecnologia e vantaggi Multiplex HPC"



G	l1 mm	Torx	Codice	G	l1 mm	Torx	Codice
M 2,0X5,50	5,500	T6	2,000				
M 2,0X5,30	5,300	T7	2,500				
M 4 X9,50	9,500	T15	4,006				



Multiplex – L'alternativa versatile

Ogni corpo portaplacchetta Multiplex dispone di un canale interno di refrigerazione, che garantisce un'alimentazione ottimale del lubrorefrigerante ai taglienti nella foratura sia orizzontale che verticale e ne prolunga la durata.

Al contempo il refrigerante provvede anche a uno scarico ottimizzato dei trucioli dal foro.

La refrigerazione avviene in modo differente nelle diverse versioni di codolo:

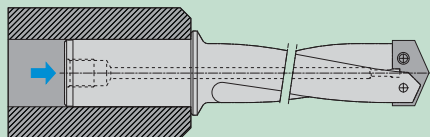
Foro di alimentazione sul lato anteriore del codolo

Per utensili **fissi** e **rotanti**:

Alimentazione assiale del refrigerante attraverso il portautensile.

Per corpi portaplacchetta con codolo cilindrico Ø foro 10 - 102 mm.

Corpo portaplacchetta Art. n. 86612/86622/86624/86730/86740/86750 e corpi extra lunghi



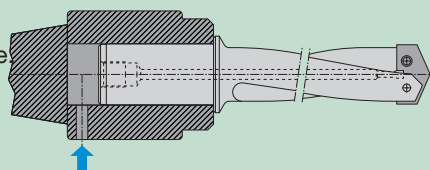
Foro di alimentazione sul lato anteriore del codolo con mandrino di alimentazione.

Per utensili **rotanti**:

Alimentazione radiale del refrigerante attraverso il mandrino di alimentazione

Per corpi portaplacchetta con codolo cilindrico e Ø foro 10 - 102 mm.

Corpo portaplacchetta Art. n. 86612/86622/86624/86730/86740/86750 e corpi extra lunghi, mandrini SK40/50 int. cil. e MK4/5/6 int. cil.



Foro di alimentazione sul dente di trascinamento

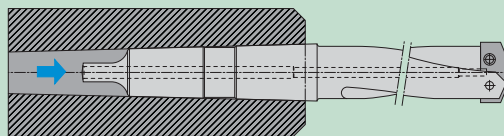
Per utensili **fissi** e **rotanti**:

Alimentazione assiale del refrigerante attraverso il portautensile.

Per corpi con codolo conico Morse e

Ø foro 10 - 25 mm.

Corpo portaplacchetta Art. n. 86630/86650



Foro di alimentazione laterale sul cono Morse

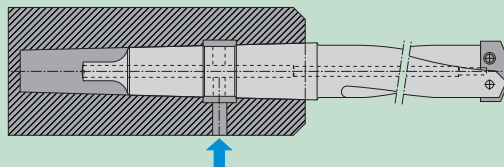
Per utensili **rotanti**:

Alimentazione radiale del refrigerante attraverso il portautensile.

Per corpi portaplacchetta con codolo conico Morse e

Ø foro 10 - 25 mm.

Corpi a richiesta



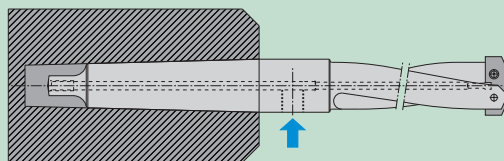
Foro di alimentazione laterale sulla sede della superficie di scorri-mento anulare.

Per utensili **rotanti**:

Alimentazione del refrigerante tramite raccordo diretto tubo flessibile/rigido con filettatura R1/4" e R1/2".

Per corpi portaplacchetta con codolo conico Morse e sede per anello alimentatore per Ø foro 25 - 102 mm.

Corpo portaplacchetta Art. n. 86670/86680 e corpi extra lunghi



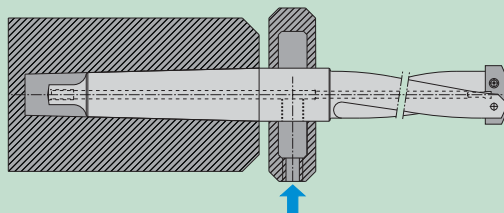
Foro di alimentazione laterale sulla sede della superficie di scorrimento anulare.

Per utensili **rotanti**:

Alimentazione radiale del refrigerante attraverso l'anello alimentatore.

Per corpi portaplacchetta con codolo conico Morse e superficie di scorrimento anulare per Ø foro da 25 mm.

Corpo portaplacchetta Art. n. 86670/86680 e corpi extra lunghi

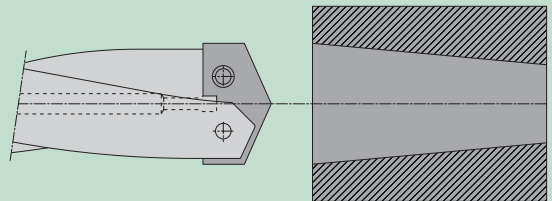




Multiplex – Consigli e trucchi

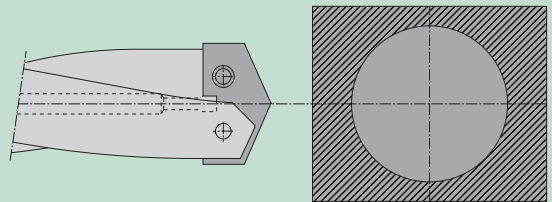
Allargatura di fori

Poiché il sistema Multiplex è guidato principalmente dal tagliente trasversale, non è idoneo per l'allargatura di fori prefusi o preforati. Se il sistema deve comunque essere utilizzato, è necessario ridurre i parametri d'impiego.



Foratura in sezione interrotta

Il sistema Multiplex non è idoneo per la foratura in sezione interrotta (per es. fori trasversali che sono più grandi del diametro del foro).

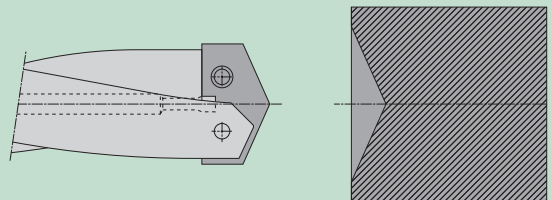


Centraggio del foro

Le placchette di foratura del sistema Multiplex sono assottigliate in punta. Il centraggio è pertanto necessario soltanto a partire da profondità maggiori del foro. Qualora il centraggio sia necessario per motivi tecnici, l'angolo al vertice del centraggio deve essere uguale o maggiore dell'angolo al vertice della placchetta di taglio. Ciò corrisponde a:

- <math>d < 25,4 \text{ mm} = 135^\circ</math>
- $d = 25,4 \text{ mm} = 132^\circ$
- $d > 25,4 \text{ mm} = 140^\circ$

Per l'alesatura può anche essere usato un corpo portaplacchetta corto (3xD).

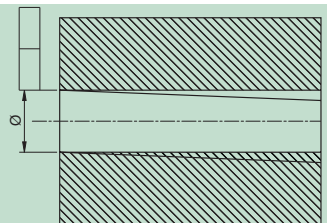


Andamento della punta

L'andamento della punta dipende da diversi fattori.

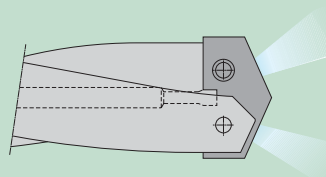
Come valore indicativo per profondità del foro fino a 7xD può essere assunto un valore di circa 0,1-0,16 mm.

Tuttavia in questo caso dovrebbe sempre essere impiegato il tipo di corpo più corto e quindi più stabile.



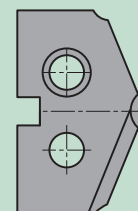
Pressione del refrigerante

Il refrigerante nel sistema Multiplex è estremamente importante per lo scarico trucioli. Può essere utilizzato a partire da una pressione di circa 5 bar. In generale vale tuttavia la seguente regola: più refrigerante c'è a disposizione, meglio è. Tramite l'impiego di anelli o mandrini alimentatori, il sistema Multiplex può essere utilizzato anche con il raffreddamento esterno impiegato sulle macchine più vecchie. L'applicazione prevista può comunque essere discussa in qualunque momento con i nostri tecnici.



Forte usura dei taglienti

Quando sugli angoli dei taglienti si è formato un gradino, significa che la velocità di taglio è troppo elevata e deve essere ridotta. Misurate il diametro che si è consumato e calcolate nuovamente la velocità di taglio sulla base di questo valore. Sottraete il 10% da questo nuovo numero di giri e immettete il valore nella macchina.

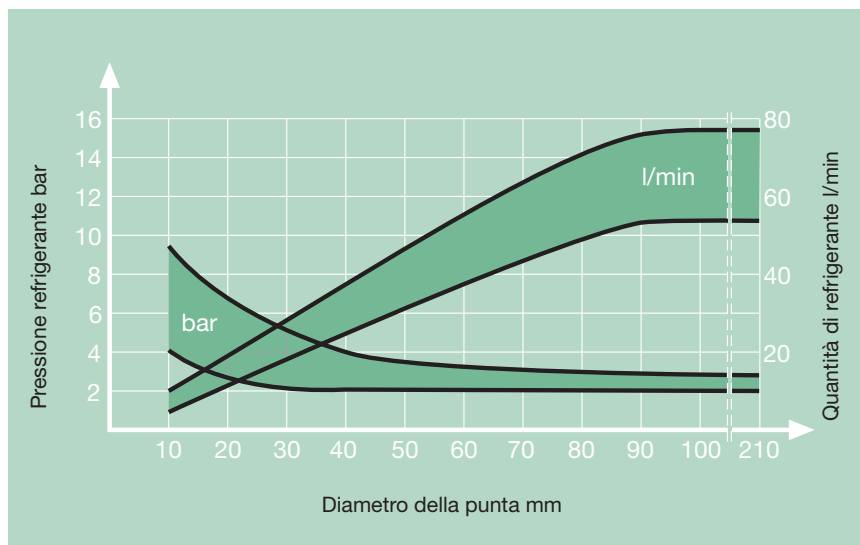




Multiplex – Il gruppo refrigerante

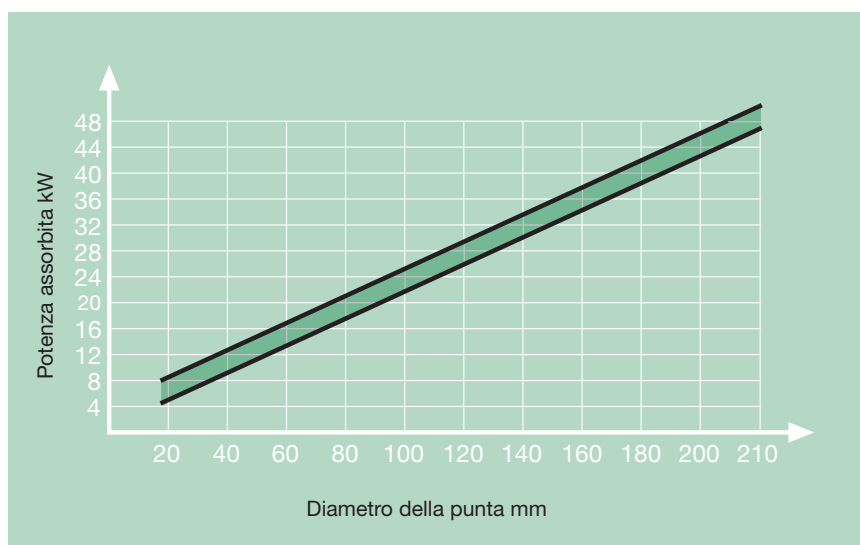
Un gruppo refrigerante efficiente ha un'importanza fondamentale. Qualora la pressione e la quantità del refrigerante non fossero sufficienti, ciò può produrre una superficie di foratura insoddisfacente oppure causare la rottura dell'utensile.

La dimensione delle particelle di solidi nel refrigerante non deve possibilmente superare 50 µm. Per l'impiego degli utensili Multiplex e per placchette intercambiabili sia in acciaio rapido che in metallo duro, raccomandiamo di utilizzare come liquido di refrigerazione un'emulsione per foratura nel rapporto di miscelazione consueto di 1 : 20. Ancora più importanti della composizione dell'emulsione sono la pressione e la quantità del liquido di refrigerazione. Un gruppo refrigerante efficiente è pertanto un presupposto essenziale per un raffreddamento e una lubrificazione soddisfacenti.



Macchina e pezzo in lavorazione

Soltanto la stabilità di macchina, mandrino, serraggio del pezzo e pezzo in lavorazione consentono di impiegare il metallo duro come materiale dei taglienti. Una rigidità insufficiente provoca delle vibrazioni oppure uno stallo della punta nei fori passanti, quando il tagliente trasversale fuoriesce dal pezzo. Le conseguenze possono essere lunghezze di taglio ridotte o rottura della placchetta.



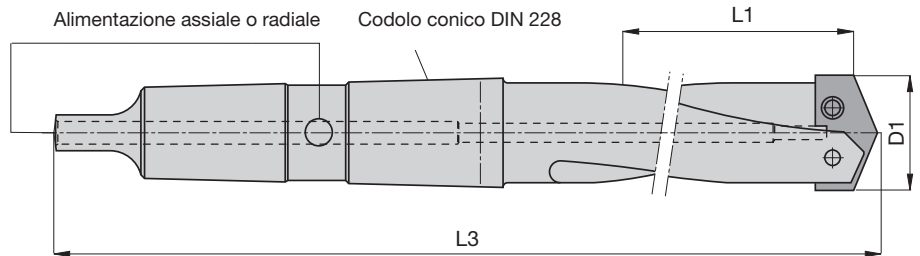


Multiplex – A richiesta forniamo soluzioni speciali

(BARRARE LE OPZIONI RICHIESTE)



Corpo con cono morse



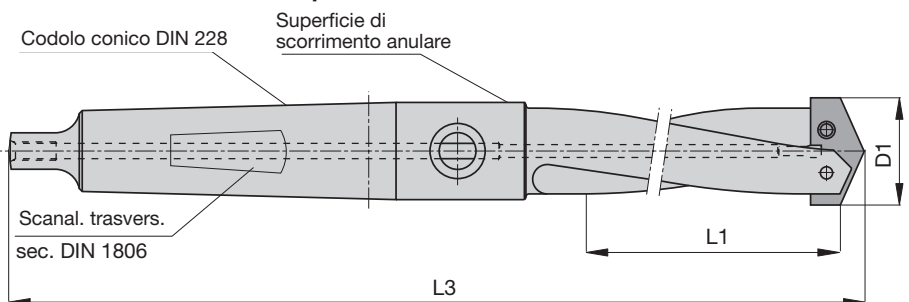
Corpo con cono morse e superficie di scorrimento anulare per anello alimentatore Art. n. 86690



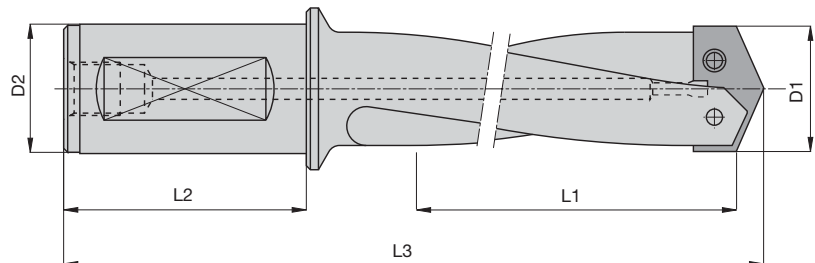
con scanalatura trasversale



senza scanalatura trasversale



Corpo con codolo cilindrico



Per formulare un'offerta abbiamo bisogno anche dei seguenti dati:

Diametro foro (dia. massimo corpo 140 mm)	<input type="text"/>	Materiale da lavorare	<input type="text"/>
Profondità foro L1	<input type="text"/>	Pressione liquido di refrigerazione	<input type="text"/>
Lunghezza scanalatura	<input type="text"/>	Quantità (min. 2 pezzi)	<input type="text"/>
Lunghezza totale (fino ca. 1000 mm)	<input type="text"/>	Scanalatura trasversale (per cono Morse)	<input type="text"/>
Diametro codolo (per codolo Weldon)	<input type="text"/>		

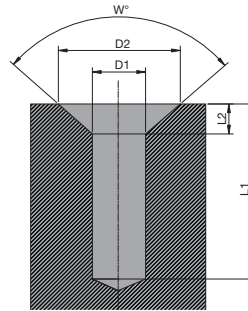
Per eventuali domande, i nostri tecnici sono a disposizione sia telefonicamente che in loco.



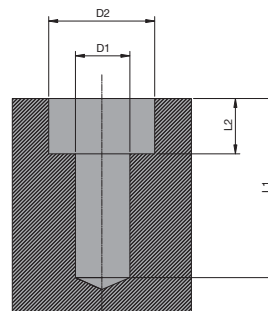
Multiplex – Per forature a gradino speciali abbiamo bisogno dei seguenti dati



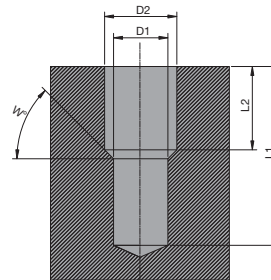
Punta a gradino per foro maschio filettato con svasatura 90°



Punta a gradino con angolo gradino 180°



Punta a gradino con ang. gradino liberamente selezionabile



Per formulare un'offerta abbiamo bisogno anche dei seguenti dati:

Forma del foro	Barrare una delle opzioni sopra	Angolo W°	<input type="checkbox"/>
Diametro D1	<input type="checkbox"/>	Materiale da lavorare I	<input type="checkbox"/>
Diametro D2	<input type="checkbox"/>		
Lunghezza L1	<input type="checkbox"/>		
Lunghezza L2	<input type="checkbox"/>		

Telefono 07431/125-0 oppure inviateci un disegno quotato.



Multiplex – Geometrie speciali



Placchetta sagomata su disegno del cliente (HSS-E/HSS-E-PM o MD).



Placchetta NC (HSS-E/HSS-E-PM o MD) con angolatura a 90° o 120° (l'angolo di 90° della punta viene deformato secondo il Ø della placchetta).



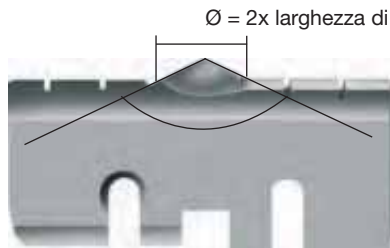
Placchetta raggata (HSS-E/HSS-E-PM o MD).



Placchetta a gradino (HSS-E/PM HSS-E oppure MD).



Geometria alluminio (MD) per la lavorazione di metalli leggeri e materie plastiche (MD).



Placchetta a gradino (HSS-E/HSS-E-PM o MD).



Geometria ottone (MD) per la lavorazione dell'ottone e di materiali simili (MD).



Placchetta foro cieco* con punta di centraggio (HSS-E o HSS-E-PM).



Superficie levigata per materie plastiche rinforzate con fibre (MD).

* Per utilizzo in fori ciechi e placche a modelli tenere presente quanto segue:

- utilizzare soltanto corpi corti
- preforare con una normale placchetta Multiplex (stesso Ø oppure Ø più piccolo)
- solo in casi limitati adatte per forature dal pieno
- inviare possibilmente disegno del foro da eseguire

Geometrie speciali fornibili a richiesta con i diversi rivestimenti della nostra gamma. Interpellateci. Tempo di consegna circa 3 settimane.



Multiplex HPC – Tecnologia e vantaggi

Con il sistema di foratura intercambiabile Multiplex HPC Hartner offre corpi portaplacchette e inserti intercambiabili ad alte prestazioni e costi contenuti per fori con Ø da mm 11 a mm 40, i quali garantiscono i seguenti vantaggi:

• **Alta resistenza all'usura**

Grazie a speciali taglienti microlavorati e applicazioni orientate alla finitura delle superfici gli inserti intercambiabili del sistema di foratura Multiplex HPC sono particolarmente resistenti all'usura. Anche il corpo portaplacchetta Multiplex HPC possiede una elevata resistenza all'usura. Ciò è possibile grazie a un'ottimizzazione del materiale del corpo, al trattamento di ricopertura al nickel e alla maggiorazione delle dimensioni del corpo nelle grandezze con passo mm 0,5 fino a Ø mm 31,99 e con passo mm 1 fino a Ø mm 32. Questo comporta una minore usura al corpo portaplacchetta.

• **Scanalature ottimizzate**

Grazie ad una ottimizzazione della sezione trasversale delle scanalature il supporto dell Multiplex HPC assicura una ottimale evacuazione del truciolo dal foro anche con grandi profondità di foratura.

• **Perfetta lubrificazione di raffreddamento**

Una perfetta lubrificazione di raffreddamento è assicurata da condotti di lubrificazione con sezione trasversale massima, in uscita nelle scanalature. In tal modo è possibile un ottimale raffreddamento dei taglienti e un supporto addizionale all'evacuazione del truciolo dal foro.

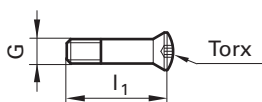
• **Alta precisione e stabilità della sede dell'inserto**

L'accurata esecuzione della sede consente il cambio inserto in pochi e semplici passaggi. Grazie all'ottimizzazione del materiale dei corpi portaplcchette del sistema di foratura Multiplex HPC, l'inserto può essere cambiato più frequentemente rispetto ai sistemi convenzionali, prima che il corpo stesso venga danneggiato dall'azione di usura sulla sede dell'inserto. Le viti di serraggio con chiusura a vite garantiscono un sicuro bloccaggio dell'inserto intercambiabile nel supporto anche con macchine soggette ad alti livelli di vibrazioni.

• **Supporti rigidi**

La ridotta differenza di diametro con la dimensione del corpo non solo diminuisce l'usura. Attraverso una migliore guida dell'utensile nel foro essi aumentano la rigidità del sistema Multiplex HPC. Conseguentemente una maggiore vita utensile così come una migliore superficie del pezzo lavorato.

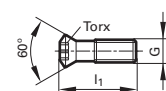
Scelta viti di serraggio per i corpi portaplacchette 1,5 - 10 x D 86843



per grandezza corpo	Torx	Codice No.
110/115	T7	2,200
120/125	T7	2,201
130/135	T8	2,500
140/145	T9	3,000
150/155	T9	3,001
160 - 175	T10	3,500
180 - 195	T15	4,000
200 - 215	T15	4,500

per grandezza corpo	Torx	Codice No.
220 - 235	T20	5,000
240 - 255	T20	5,001
260 - 295	T20	5,003
300 - 315	T25	6,000
320 - 350	T25	6,001
360 - 390	T25	6,002

per i corpi svasatori 86846



per grandezza corpo	Torx	Codice No.
110 - 140	T6	2,000
160 - 280	T7	2,500
300 - 360	T15	4,006

Quando verrà cambiato l'inserto raccomandiamo di cambiare anche la vite di bloccaggio! Ogni supporto viene fornito con una vite di bloccaggio, art. 86843 e un giravite art. 86842. Ogni inserto intercambiabile viene fornito con una vite di bloccaggio art. 86843.

Coppie di serraggio per vite di serraggio:

Gamma diametri	11,0 - 12,99	13,0 - 13,99	14,0 - 15,99	16,0 - 17,99	18,0 - 19,99	20,0 - 21,99	22,0 - 29,99	30,0 - 40,00
Filetto	M2,2	M2,5	M3	M3,5	M4	M4,5	M5	M6
Dimensioni Torx	T7	T8	T9	T10	T15	T15	T20	T25
Coppia di serraggio [Nm]	0,8	1,0	1,7	2,7	4,0	6,0	8,0	14,0



Multiplex HPC – Questionario per utensili speciali

Ordine

Nome/Nr. cliente se disponibile New customer

Indirizzo

Telefono

Data

Richiesta

Persona di riferimento

Nr. ordine

Città/cap

Fax

Firma

Quantità

corpi inserti

Materiale da lavorare

Lavorazione

**please incl. separate drawing*

Elica

a spirale parzialmente a spirale diritta

Dimensioni

Per tipo con elica a spirale e diritta

Tol. h7 m7

angolo di affilatura dell'inserto intercambiabile

d1=

d2=

d3=

d4=

profondità di foratura₁

profondità di foratura₂

lunghezza utile

lunghezza totale

lunghezza attacco

1° inserto intercambiabile

2° inserto intercambiabile

1° angolo fase

2° angolo fase

Forma attacco

HA HE HSK, forma grandezza

SK, grandezza

Refrigerazione int.

sì no

Rivestimento inserto

FIRE TiAlN SuperA TiAlN TiCN TiN lucido nano FIRE AlTiN nano



HARTNER

Precision Cutting Tools

PARTE TECNICA

Misure, Definizioni, Valori indicativi

Consigli per l'impiego di Multiplex

Articolo nr.
Ø
Materiale tagliente
Topologia MD
Categoria di MD
Tratt. di superficie
Prezzi/misure pag.

I numeri in grassetto della colonna avanzamento indicano gli utensili da preferire.

Ø utensile mm	Num. colonna avanzamento					
	1	2	3	4	5	6
	f (mm/giro)					
10,00	0,08	0,09	0,11	0,14	0,19	0,24
12,50	0,09	0,11	0,13	0,17	0,22	0,28
16,00	0,11	0,13	0,16	0,21	0,27	0,34
20,00	0,13	0,15	0,19	0,25	0,32	0,40
25,00	0,16	0,18	0,23	0,29	0,38	0,48
31,50	0,19	0,22	0,27	0,35	0,45	0,57
40,00	0,23	0,26	0,33	0,42	0,54	0,69
50,00	0,27	0,31	0,39	0,50	0,64	0,82
63,00	0,32	0,38	0,47	0,60	0,77	0,98
102,00	0,40	0,48	0,59	0,74	0,85	1,20
150,00	0,59	0,70	0,87	1,09	1,25	1,76
100,00	0,78	0,93	1,16	1,45	1,67	2,35

Refrigerante:
 Aria

 Olio

 Emulsione

Direzione di taglio:
 destre

 sinistre

Materiali	Esempi di materiale Numeri in grassetto = nr. materiale a DIN EN 10 027	Resistenza N/mm ²	Durezza	Refrigerazione
Acciai da costruzione	1.0035 S185(St33), 1.0486 P275N(StE285), 1.0345 P235GH(H1), 1.0425 P265GH(H2) 1.0050 E295 (St50-2), 1.0070 E360 (St70-2), 1.8937 P500NH (WStE500)	≤500 ≤1000		<input type="radio"/> <input type="radio"/>
Acciai automatici	1.0718 11SMnPb30 (9SMnPb28), 1.0736 11SMn37 (9SMn36) 1.0727 46S20 (45S20), 1.0728 (60S20), 1.0757 46SPb20 (45SPb20)	≤850 ≤1000		<input type="radio"/> <input type="radio"/>
Acciai da bonifica non legati	1.0402 C22, 1.1178 C30E (Ck30) 1.0503 C45, 1.1191 C45E (Ck45) 1.0601 C60, 1.1221 C60E (Ck60)	≤700 ≤850 ≤1000		<input type="radio"/> <input type="radio"/> <input type="radio"/>
Acciai da bonifica legati	1.5131 50MnSi4, 1.7003 38Cr2, 1.7030 28Cr4 1.5710 36NiCr6, 1.7035 41Cr4, 1.7225 42CrMo4	≤1000 ≤1400		<input type="radio"/> <input type="radio"/>
Acciai da cementazione non legati	1.0301 (C10), 1.1121 C10E (Ck10)	≤850		<input type="radio"/>
Acciai da cementazione legati	1.7276 10CrMo11, 1.5125 11MnSi6 1.5752 15NiCr13, 1.7131 16MnCr5, 1.7264 20CrMo5	≤1000 ≤1400		<input checked="" type="radio"/> <input checked="" type="radio"/>
Acciai nitrurati	1.8504 34CrAl6 1.8519 31CrMoV9, 1.8550 34CrAlNi7	≤1000 ≤1400		<input type="radio"/> <input checked="" type="radio"/>
Acciai utensili	1.1750 C75W, 1.2067 102Cr6, 1.2307 29CrMoV9 1.2080 X210Cr12, 1.2083 X42Cr13, 1.2419 105WCr6, 1.2767 X45NiCrMo4	≤850 ≤1400		<input type="radio"/> <input checked="" type="radio"/>
Acciai super rapidi	1.3243 S 6-5-2-5, 1.3343 S 6-5-2, 1.3344 S 6-5-3	≤1400		<input checked="" type="radio"/>
Acciai per molle	1.5026 55Si7, 1.7176 55Cr3, 1.8159 51CrV4 (51CrV4)		≤350 HB	<input checked="" type="radio"/>
Acciai temprati	-		≤48 HRC ≤66 HRC	<input checked="" type="radio"/> <input checked="" type="radio"/>
Acciai inossidabili, allo zolfo austenitici martensitici	1.4005 X12CrS13, 1.4104 X14CrMoS17, 1.4105 X6CrMoS17, 1.4305 X8CrNiS18-9 1.4301 X5CrNi18-10 (V2A), 1.4541 X6CrNiTi18-10, 1.4571 X6CrNiMoTi 17-12-2 (V4A) 1.4057 X20CrNi172 (X17CrNi16-2), 1.4122 X39CrMo17-1, 1.4521 X2CrMoTi18-2	≤900 ≤1100 ≤1500		<input checked="" type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/>
Ghise	0.6010 EN-GJL-100 (GG10), 0.6020 EN-GJL-200 (GG20) 0.6025 EN-GJL-250 (GG25), 0.6035 EN-GJL-350 (GG35)		≤240 HB ≤350 HB	<input type="radio"/> <input type="radio"/> <input type="radio"/>
Ghise sferoidali, ghise temperate	0.7050 EN-GJS-500-7 (GGG50), 0.8035 EN-GJMw-350-4 (GTW35) 0.7070 EN-GJS-700-2 (GGG70), 0.8170 EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	<input type="radio"/> <input type="radio"/>
Ghisa in conchiglia	-		≤350 HB	<input type="radio"/>
Nuove ghise GGV	EN-GJV250 (GGV25), EN-GJV350 (GGV35) EN-GJV400 (GGV40), EN-GJV500 (GGV50), SiMo 6		≤220 HB ≤300 HB	<input type="radio"/> <input type="radio"/>
Nuove ghise ADI	EN-GJS-800-8 (ADI800), EN-GJS-1000-5 (ADI1000) EN-GJS-1200-2 (ADI1200), EN-GJS-1400-1 (ADI1400)	≤1000 ≤1400		<input type="radio"/> <input type="radio"/>
Leghe speciali	Nimonic, Inconel, Monel, Hastelloy	≤2000		<input checked="" type="radio"/>
Titanio e leghe di titanio	3.7024 Ti99,5, 3.7114 TiAl5Sn2,5, 3.7124 TiCu2 3.7154 TiAl6Zr5, 3.7165 TiAl6V4, 3.7184 TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤850 ≤1400		<input checked="" type="radio"/> <input checked="" type="radio"/>
Alluminio e leghe di alu	3.0255 Al99,5, 3.2315 AlMgSi1, 3.3515 AlMg1	≤400		<input type="radio"/>
Leghe di alu per lav. plastiche	3.0615 AlMgSiPb, 3.1325 AlCuMg1, 3.3245 AlMg3Si, 3.4365 AlZnMgCu1,5	≤650		<input type="radio"/>
Leghe di alu-ghisa ≤ 10 % Si	3.2131 G-AlSi5Cu1, 3.2153 G-AlSi7Cu3, 3.2573 G-AlSi9 3.2581 G-AlSi12, 3.2583 G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		<input type="radio"/> <input type="radio"/>
Leghe di magnesio	3.5200 MgMn2, 3.5812.05 G-MgAl8Zn1, 3.5612.05 G-MgAl6Zn1	≤400		<input type="radio"/>
Rame legato in bassa %	2.0070 SE-Cu, 2.1020 CuSn6, 2.1096 G-CuSn5ZnPb	≤500		<input type="radio"/>
Ottone, a truciolo corto a truciolo lungo	2.0380 CuZn39Pb2, 2.0401 CuZn39Pb3, 2.0410 CuZn43Pb2 2.0250 CuZn20, 2.0280 CuZn33, 2.0332 CuZn37Pb0,5	≤600 ≤600		<input type="radio"/> <input type="radio"/>
Bronzi a truciolo corto	2.1090 CuSn7ZnPb, 2.1170 CuPb5Sn5, 2.1176 CuPb10Sn 2.0790 CuNi18Zn19Pb	≤600 ≤850		<input type="radio"/> <input checked="" type="radio"/>
Bronzi a truciolo lungo	2.0916 CuAl5, 2.0960 CuAl9Mn, 2.1050 CuSn10 2.0980 CuAl11Ni, 2.1247 CuBe2	≤850 ≤1000		<input checked="" type="radio"/> <input checked="" type="radio"/>
Mat. plastiche termoidurenti	Resina epossidica, Resopal, Pertinax, Moltopren	≤150		<input type="radio"/>
Materie termoplastiche	Plexiglas, Hostalen, Novodur, Makralon	≤100		<input type="radio"/>
Mat. plast. a fibre aramidiche	Kevlar	≤1000		<input type="radio"/>
a fibre di vetro/C rinforzate	GFK/CFK	≤1000		<input type="radio"/>

Consigli per l'impiego di Multiplex HPC

Articolo nr.
Norma/DIN
Materiale tagliente
Tipo di metallo duro
Prof. di foro
Tratt. di superficie
Tipo
Prezzi/misure pag.

Ø utensile mm	Num. colonna avanzamento								
	1	2	3	4	5	6	7	8	9
	f (mm/giro)								
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250

Refrigerante:
 ○ Aria
 ● Olio
 ● Emulsione

Tutti i valori sono indicativi. La velocità di taglio e l'avanzamento effettivamente realizzabili dipendono dalle reali condizioni di lavoro. Consigliamo di effettuare prove di foratura.

Materiali	Esempi di materiale Numeri in grassetto = nr. materiale a DIN EN 10 027	Resistenza N/mm ²	Durezza	Refrigeracion
Acciai da costruzione	1.0035 S185(St33), 1.0486 P275N(StE285), 1.0345 P235GH(H1), 1.0425 P265GH(H2) 1.0050 E295 (St50-2), 1.0070 E360 (St70-2), 1.8937 P500NH (WStE500)	≤500 ≤1000		○
Acciai automatici	1.0718 11SMnPb30 (9SMnPb28), 1.0736 11SMn37 (9SMn36) 1.0727 46S20 (45S20), 1.0728 (60S20), 1.0757 46SPb20 (45SPb20)	≤850 ≤1000		○
Acciai da bonifica non legati	1.0402 C22, 1.1178 C30E (Ck30) 1.0503 C45, 1.1191 C45E (Ck45) 1.0601 C60, 1.1221 C60E (Ck60)	≤700 ≤850 ≤1000		○
Acciai da bonifica legati	1.5131 50MnSi4, 1.7003 38Cr2, 1.7030 28Cr4 1.5710 36NiCr6, 1.7035 41Cr4, 1.7225 42CrMo4	≤1000 ≤1400		○
Acciai da cementazione non legati	1.0301 (C10), 1.1121 C10E (Ck10)	≤850		○
Acciai da cementazione legati	1.7276 10CrMo11, 1.5125 11MnSi6 1.5752 15NiCr13, 1.7131 16MnCr5, 1.7264 20CrMo5	≤1000 ≤1400		●
Acciai nitrurati	1.8504 34CrAl6 1.8519 31CrMoV9, 1.8550 34CrAlNi7	≤1000 ≤1400		●
Acciai utensili	1.1750 C75W, 1.2067 102Cr6, 1.2307 29CrMoV9 1.2080 X210Cr12, 1.2083 X42Cr13, 1.2419 105WCr6, 1.2767 X45NiCrMo4	≤850 ≤1400		○
Acciai super rapidi	1.3243 S 6-5-2-5, 1.3343 S 6-5-2, 1.3344 S 6-5-3	≤1400		●
Acciai per molle	1.5026 55Si7, 1.7176 55Cr3, 1.8159 51CrV4 (51CrV4)		≤350 HB	●
Acciai temprati	-		≤48 HRC ≤66 HRC	●
Acciai inossidabili, allo zolfo austenitici martensitici	1.4005 X12CrS13, 1.4104 X14CrMoS17, 1.86681 X6CrMoS17, 1.4305 X8CrNiS18-9 1.4301 X5CrNi18-10 (V2A), 1.4541 X6CrNiTi18-10, 1.4571 X6CrNiMoTi 17-12-2 (V4A) 1.4057 X20CrNi172 (X17CrNi16-2), 1.4122 X39CrMo17-1, 1.4521 X2CrMoTi18-2	≤900 ≤1100 ≤1500		●
Ghise	0.6010 EN-GJL-100 (GG10), 0.6020 EN-GJL-200 (GG20) 0.6025 EN-GJL-250 (GG25), 0.6035 EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○
Ghise sferoidali, ghise temperate	0.7050 EN-GJS-500-7 (GGG50), 0.8035 EN-GJMW-350-4 (GTW35) 0.7070 EN-GJS-700-2 (GGG70), 0.8170 EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	○
Ghisa in conchiglia	-		≤350 HB	○
Nuove ghise GGV	EN-GJV250 (GGV25), EN-GJV350 (GGV35) EN-GJV400 (GGV40), EN-GJV500 (GGV50), SiMo 6		≤220 HB ≤300 HB	○
Nuove ghise ADI	EN-GJS-800-8 (ADI800), EN-GJS-1000-5 (ADI1000) EN-GJS-1200-2 (ADI1200), EN-GJS-1400-1 (ADI1400)	≤1000 ≤1400		○
Leghe speciali	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
Titanio e leghe di titanio	3.7024 Ti99,5, 3.7114 TiAl5Sn2,5, 3.7124 TiCu2 3.7154 TiAl6Zr5, 3.7165 TiAl6V4, 3.7184 TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤850 ≤1400		●
Alluminio e leghe di alu	3.0255 Al99,5, 3.2315 AlMgSi1, 3.3515 AlMg1	≤400		○
Leghe di alu per lav. plastiche	3.0615 AlMgSiPb, 3.1325 AlCuMg1, 3.3245 AlMg3Si, 3.4365 AlZnMgCu1,5	≤650		○
Leghe di alu-ghisa ≤ 10 % Si	3.2131 G-AlSi5Cu1, 3.2153 G-AlSi7Cu3, 3.2573 G-AlSi9 3.2581 G-AlSi12, 3.2583 G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		○
Leghe di magnesio	3.5200 MgMn2, 3.5812.05 G-MgAl8Zn1, 3.5612.05 G-MgAl6Zn1	≤400		○
Rame legato in bassa %	2.0070 SE-Cu, 2.1020 CuSn6, 2.1096 G-CuSn5ZnPb	≤500		○
Ottone, a truciolo corto a truciolo lungo	2.0380 CuZn39Pb2, 2.0401 CuZn39Pb3, 2.0410 CuZn43Pb2 2.0250 CuZn20, 2.0280 CuZn33, 2.0332 CuZn37Pb0,5	≤600 ≤600		○
Bronzi a truciolo corto	2.1090 CuSn7ZnPb, 2.1170 CuPb5Sn5, 2.1176 CuPb10Sn 2.0790 CuNi18Zn19Pb	≤600 ≤850		○
Bronzi a truciolo lungo	2.0916 CuAl5, 2.0960 CuAl9Mn, 2.1050 CuSn10 2.0980 CuAl11Ni, 2.1247 CuBe2	≤850 ≤1000		○
Mat. plastiche termoidurenti	Resina epossidica, Resopal, Pertinax, Moltopren	≤150		○
Materie termoplastiche	Plexiglas, Hostalen, Novodur, Makralon	≤100		○
Mat. plast. a fibre aramidiche	Kevlar	≤1000		○
a fibre di vetro/C rinforzate	GFK/CFK	≤1000		○



HARTNER

≤1,5xD

≤3xD

86722
N. d. f.
Int. MD
K/P
1,5xD
Acciaio
392

86725
N. d. f.
Int. MD
K/P
1,5xD
Acc. inoss.
401

86723
N. d. f.
Int. MD
K/P
1,5xD
Ghisa
395

86724
N. d. f.
Int. MD
K/P
1,5xD
Alluminio
398

86722
N. d. f.
Int. MD
K/P
3xD
Acciaio
392

86725
N. d. f.
Int. MD
K/P
3xD
Acc. inoss.
401

86723
N. d. f.
Int. MD
K/P
3xD
Ghisa
395

86724
N. d. f.
Int. MD
K/P
3xD
Alluminio
398



V _c m/min	Nr. col. avanz.	V _c m/min	Nr. col. avanz.	V _c m/min	Nr. col. avanz.	V _c m/min	Nr. col. avanz.	V _c m/min	Nr. col. avanz.	V _c m/min	Nr. col. avanz.	V _c m/min	Nr. col. avanz.	V _c m/min	Nr. col. avanz.
130	6							130	6						
110	5							110	5						
130	7							130	7						
110	6							110	6						
130	6							130	6						
125	6							125	6						
110	5							110	5						
110	6							110	6						
90	5							90	5						
130	7							130	7						
110	6							110	6						
70	4							70	4						
105	5							105	5						
70	4							70	4						
60	5							60	5						
55	4							55	4						
55	3							55	3						
50	2							50	2						
		25	2							25	2				
		55	3							55	3				
		40	3							40	3				
		35	3							35	3				
				100	6					100	6				
				90	6					90	6				
				120	7					120	7				
				100	6					100	6				
		90	6							90	6				
				80	5					80	5				
				80	5					80	5				
				80	5					80	5				
				80	5					80	5				
		25	2							25	2				
		40	3							40	3				
		35	2							35	2				
						200	7					200	7		
						180	7					180	7		
						150	7					150	7		
						120	7					120	7		
						180	7					180	7		
						70	6					70	6		
						180	7					180	7		
						120	6					120	6		
						70	6					70	6		
						50	6					50	6		
						45	6					45	6		
						35	5					35	5		

Consigli per l'impiego di Multiplex HPC

Articolo nr.
Norma/DIN
Materiale tagliente
Tipo di metallo duro
Prof. di foro
Tratt. di superficie
Tipo
Prezzi/misure pag.

Ø utensile mm	Num. colonna avanzamento								
	1	2	3	4	5	6	7	8	9
	f (mm/giro)								
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250

Refrigerante:
 ○ Aria
 ● Olio
 ● Emulsione

Tutti i valori sono indicativi. La velocità di taglio e l'avanzamento effettivamente realizzabili dipendono dalle reali condizioni di lavoro. Consigliamo di effettuare prove di foratura.

Materiali	Esempi di materiale Numeri in grassetto = nr. materiale a DIN EN 10 027	Resistenza N/mm ²	Durezza	Refrigeracion
Acciai da costruzione	1.0035 S185(St33), 1.0486 P275N(StE285), 1.0345 P235GH(H1), 1.0425 P265GH(H2) 1.0050 E295 (St50-2), 1.0070 E360 (St70-2), 1.8937 P500NH (WStE500)	≤500 ≤1000		○ ○
Acciai automatici	1.0718 11SMnPb30 (9SMnPb28), 1.0736 11SMn37 (9SMn36) 1.0727 46S20 (45S20), 1.0728 (60S20), 1.0757 46SPb20 (45SPb20)	≤850 ≤1000		○ ○
Acciai da bonifica non legati	1.0402 C22, 1.1178 C30E (Ck30) 1.0503 C45, 1.1191 C45E (Ck45) 1.0601 C60, 1.1221 C60E (Ck60)	≤700 ≤850 ≤1000		○ ○ ○
Acciai da bonifica legati	1.5131 50MnSi4, 1.7003 38Cr2, 1.7030 28Cr4 1.5710 36NiCr6, 1.7035 41Cr4, 1.7225 42CrMo4	≤1000 ≤1400		○ ○
Acciai da cementazione non legati	1.0301 (C10), 1.1121 C10E (Ck10)	≤850		○
Acciai da cementazione legati	1.7276 10CrMo11, 1.5125 11MnSi6 1.5752 15NiCr13, 1.7131 16MnCr5, 1.7264 20CrMo5	≤1000 ≤1400		● ●
Acciai nitrurati	1.8504 34CrAl6 1.8519 31CrMoV9, 1.8550 34CrAlNi7	≤1000 ≤1400		○ ●
Acciai utensili	1.1750 C75W, 1.2067 102Cr6, 1.2307 29CrMoV9 1.2080 X210Cr12, 1.2083 X42Cr13, 1.2419 105WCr6, 1.2767 X45NiCrMo4	≤850 ≤1400		○ ●
Acciai super rapidi	1.3243 S 6-5-2-5, 1.3343 S 6-5-2, 1.3344 S 6-5-3	≤1400		●
Acciai per molle	1.5026 55Si7, 1.7176 55Cr3, 1.8159 51CrV4 (51CrV4)		≤350 HB	●
Acciai temprati	-		≤48 HRC ≤66 HRC	● ●
Acciai inossidabili, allo zolfo austenitici martensitici	1.4005 X12CrS13, 1.4104 X14CrMoS17, 1.86681 X6CrMoS17, 1.4305 X8CrNiS18-9 1.4301 X5CrNi18-10 (V2A), 1.4541 X6CrNiTi18-10, 1.4571 X6CrNiMoTi 17-12-2 (V4A) 1.4057 X20CrNi172 (X17CrNi16-2), 1.4122 X39CrMo17-1, 1.4521 X2CrMoTi18-2	≤900 ≤1100 ≤1500		● ● ●
Ghise	0.6010 EN-GJL-100 (GG10), 0.6020 EN-GJL-200 (GG20) 0.6025 EN-GJL-250 (GG25), 0.6035 EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○
Ghise sferoidali, ghise temperate	0.7050 EN-GJS-500-7 (GGG50), 0.8035 EN-GJMW-350-4 (GTW35) 0.7070 EN-GJS-700-2 (GGG70), 0.8170 EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	○ ○
Ghisa in conchiglia	-		≤350 HB	○
Nuove ghise GGV	EN-GJV250 (GGV25), EN-GJV350 (GGV35) EN-GJV400 (GGV40), EN-GJV500 (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○
Nuove ghise ADI	EN-GJS-800-8 (ADI800), EN-GJS-1000-5 (ADI1000) EN-GJS-1200-2 (ADI1200), EN-GJS-1400-1 (ADI1400)	≤1000 ≤1400		○ ○
Leghe speciali	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
Titanio e leghe di titanio	3.7024 Ti99,5, 3.7114 TiAl5Sn2,5, 3.7124 TiCu2 3.7154 TiAl6Zr5, 3.7165 TiAl6V4, 3.7184 TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤850 ≤1400		● ●
Alluminio e leghe di alu	3.0255 Al99,5, 3.2315 AlMgSi1, 3.3515 AlMg1	≤400		○
Leghe di alu per lav. plastiche	3.0615 AlMgSiPb, 3.1325 AlCuMg1, 3.3245 AlMg3Si, 3.4365 AlZnMgCu1,5	≤650		○
Leghe di alu-ghisa ≤ 10 % Si	3.2131 G-AlSi5Cu1, 3.2153 G-AlSi7Cu3, 3.2573 G-AlSi9 3.2581 G-AlSi12, 3.2583 G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		○ ○
Leghe di magnesio	3.5200 MgMn2, 3.5812.05 G-MgAl8Zn1, 3.5612.05 G-MgAl6Zn1	≤400		○
Rame legato in bassa %	2.0070 SE-Cu, 2.1020 CuSn6, 2.1096 G-CuSn5ZnPb	≤500		○
Ottone, a truciolo corto a truciolo lungo	2.0380 CuZn39Pb2, 2.0401 CuZn39Pb3, 2.0410 CuZn43Pb2 2.0250 CuZn20, 2.0280 CuZn33, 2.0332 CuZn37Pb0,5	≤600 ≤600		○ ○
Bronzi a truciolo corto	2.1090 CuSn7ZnPb, 2.1170 CuPb5Sn5, 2.1176 CuPb10Sn 2.0790 CuNi18Zn19Pb	≤600 ≤850		○ ●
Bronzi a truciolo lungo	2.0916 CuAl5, 2.0960 CuAl9Mn, 2.1050 CuSn10 2.0980 CuAl11Ni, 2.1247 CuBe2	≤850 ≤1000		● ●
Mat. plastiche termoidurenti	Resina epossidica, Resopal, Pertinax, Moltopren	≤150		○
Materie termoplastiche	Plexiglas, Hostalen, Novodur, Makralon	≤100		○
Mat. plast. a fibre aramidiche	Kevlar	≤1000		○
a fibre di vetro/C rinforzate	GFK/CFK	≤1000		○



HARTNER

≤5xD

≤7xD

86722
N. d. f.
Int. MD
K/P
1,5xD
Acciaio
392

86725
N. d. f.
Int. MD
K/P
1,5xD
Acc. inoss.
401

86723
N. d. f.
Int. MD
K/P
1,5xD
Ghisa
395

86724
N. d. f.
Int. MD
K/P
1,5xD
Alluminio
398

86722
N. d. f.
Int. MD
K/P
3xD
Acciaio
392

86725
N. d. f.
Int. MD
K/P
3xD
Acc. inoss.
401

86723
N. d. f.
Int. MD
K/P
3xD
Ghisa
395

86724
N. d. f.
Int. MD
K/P
3xD
Alluminio
398



V _c m/min	Nr. col. avanz.	V _c m/min	Nr. col. avanz.	V _c m/min	Nr. col. avanz.	V _c m/min	Nr. col. avanz.	V _c m/min	Nr. col. avanz.	V _c m/min	Nr. col. avanz.	V _c m/min	Nr. col. avanz.	V _c m/min	Nr. col. avanz.
125	6							120	5						
105	5							105	4						
125	7							120	6						
105	6							105	5						
125	6							120	5						
120	6							110	5						
105	5							100	4						
105	6							100	5						
85	5							85	4						
125	7							120	6						
105	6							100	5						
70	4							70	4						
105	5							105	4						
70	4							70	3						
55	5							55	4						
50	4							50	3						
55	3							55	2						
50	2							50	2						
		25	2							25	1				
		55	3							55	2				
		40	3							40	2				
		35	3							35	2				
				100	6							80	6		
				90	6							70	6		
				120	7							100	7		
				100	6							80	6		
		90	6							70	6				
				80	5							60	5		
				80	5							60	5		
				80	5							60	5		
				80	5							60	5		
		25	2							25	1				
		40	3							40	2				
		35	2							35	1				
								180	7					180	6
								180	7					180	6
								140	7					140	6
								110	7					110	6
								180	7					180	6
								70	6					70	5
								180	7					180	6
								120	6					120	5
								70	6					70	5
								50	6					50	5
								45	6					45	5
								35	5					35	4

Consigli per l'impiego di Multiplex HPC

Articolo nr.
Norma/DIN
Materiale tagliente
Tipo di metallo duro
Prof. di foro
Tratt. di superficie
Tipo
Prezzi/misure pag.

Ø utensile mm	Num. colonna avanzamento								
	1	2	3	4	5	6	7	8	9
	f (mm/giro)								
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250

Refrigerante:
 ○ Aria
 ● Olio
 ● Emulsione

Tutti i valori sono indicativi. La velocità di taglio e l'avanzamento effettivamente realizzabili dipendono dalle reali condizioni di lavoro. Consigliamo di effettuare prove di foratura.

Materiali	Esempi di materiale Numeri in grassetto = nr. materiale a DIN EN 10 027	Resistenza N/mm ²	Durezza	Refrigeracion
Acciai da costruzione	1.0035 S185(St33), 1.0486 P275N(StE285), 1.0345 P235GH(H1), 1.0425 P265GH(H2) 1.0050 E295 (St50-2), 1.0070 E360 (St70-2), 1.8937 P500NH (WStE500)	≤500 ≤1000		○ ○
Acciai automatici	1.0718 11SMnPb30 (9SMnPb28), 1.0736 11SMn37 (9SMn36) 1.0727 46S20 (45S20), 1.0728 (60S20), 1.0757 46SPb20 (45SPb20)	≤850 ≤1000		○ ○
Acciai da bonifica non legati	1.0402 C22, 1.1178 C30E (Ck30) 1.0503 C45, 1.1191 C45E (Ck45) 1.0601 C60, 1.1221 C60E (Ck60)	≤700 ≤850 ≤1000		○ ○ ○
Acciai da bonifica legati	1.5131 50MnSi4, 1.7003 38Cr2, 1.7030 28Cr4 1.5710 36NiCr6, 1.7035 41Cr4, 1.7225 42CrMo4	≤1000 ≤1400		○ ○
Acciai da cementazione non legati	1.0301 (C10), 1.1121 C10E (Ck10)	≤850		○
Acciai da cementazione legati	1.7276 10CrMo11, 1.5125 11MnSi6 1.5752 15NiCr13, 1.7131 16MnCr5, 1.7264 20CrMo5	≤1000 ≤1400		● ●
Acciai nitrurati	1.8504 34CrAl6 1.8519 31CrMoV9, 1.8550 34CrAlNi7	≤1000 ≤1400		○ ●
Acciai utensili	1.1750 C75W, 1.2067 102Cr6, 1.2307 29CrMoV9 1.2080 X210Cr12, 1.2083 X42Cr13, 1.2419 105WCr6, 1.2767 X45NiCrMo4	≤850 ≤1400		○ ●
Acciai super rapidi	1.3243 S 6-5-2-5, 1.3343 S 6-5-2, 1.3344 S 6-5-3	≤1400		●
Acciai per molle	1.5026 55Si7, 1.7176 55Cr3, 1.8159 51CrV4 (51CrV4)		≤350 HB	●
Acciai temprati	-		≤48 HRC ≤66 HRC	● ●
Acciai inossidabili, allo zolfo austenitici martensitici	1.4005 X12CrS13, 1.4104 X14CrMoS17, 1.86681 X6CrMoS17, 1.4305 X8CrNiS18-9 1.4301 X5CrNi18-10 (V2A), 1.4541 X6CrNiTi18-10, 1.4571 X6CrNiMoTi 17-12-2 (V4A) 1.4057 X20CrNi172 (X17CrNi16-2), 1.4122 X39CrMo17-1, 1.4521 X2CrMoTi18-2	≤900 ≤1100 ≤1500		● ● ●
Ghise	0.6010 EN-GJL-100 (GG10), 0.6020 EN-GJL-200 (GG20) 0.6025 EN-GJL-250 (GG25), 0.6035 EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○
Ghise sferoidali, ghise temperate	0.7050 EN-GJS-500-7 (GGG50), 0.8035 EN-GJMw-350-4 (GTW35) 0.7070 EN-GJS-700-2 (GGG70), 0.8170 EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	○ ○
Ghisa in conchiglia	-		≤350 HB	○
Nuove ghise GGV	EN-GJV250 (GGV25), EN-GJV350 (GGV35) EN-GJV400 (GGV40), EN-GJV500 (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○
Nuove ghise ADI	EN-GJS-800-8 (ADI800), EN-GJS-1000-5 (ADI1000) EN-GJS-1200-2 (ADI1200), EN-GJS-1400-1 (ADI1400)	≤1000 ≤1400		○ ○
Leghe speciali	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
Titanio e leghe di titanio	3.7024 Ti99,5, 3.7114 TiAl5Sn2,5, 3.7124 TiCu2 3.7154 TiAl6Zr5, 3.7165 TiAl6V4, 3.7184 TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤850 ≤1400		● ●
Alluminio e leghe di alu	3.0255 Al99,5, 3.2315 AlMgSi1, 3.3515 AlMg1	≤400		○
Leghe di alu per lav. plastiche	3.0615 AlMgSiPb, 3.1325 AlCuMg1, 3.3245 AlMg3Si, 3.4365 AlZnMgCu1,5	≤650		○
Leghe di alu-ghisa ≤ 10 % Si	3.2131 G-AlSi5Cu1, 3.2153 G-AlSi7Cu3, 3.2573 G-AlSi9 3.2581 G-AlSi12, 3.2583 G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		○ ○
Leghe di magnesio	3.5200 MgMn2, 3.5812.05 G-MgAl8Zn1, 3.5612.05 G-MgAl6Zn1	≤400		○
Rame legato in bassa %	2.0070 SE-Cu, 2.1020 CuSn6, 2.1096 G-CuSn5ZnPb	≤500		○
Ottone, a truciolo corto a truciolo lungo	2.0380 CuZn39Pb2, 2.0401 CuZn39Pb3, 2.0410 CuZn43Pb2 2.0250 CuZn20, 2.0280 CuZn33, 2.0332 CuZn37Pb0,5	≤600 ≤600		○ ○
Bronzi a truciolo corto	2.1090 CuSn7ZnPb, 2.1170 CuPb5Sn5, 2.1176 CuPb10Sn 2.0790 CuNi18Zn19Pb	≤600 ≤850		○ ●
Bronzi a truciolo lungo	2.0916 CuAl5, 2.0960 CuAl9Mn, 2.1050 CuSn10 2.0980 CuAl11Ni, 2.1247 CuBe2	≤850 ≤1000		● ●
Mat. plastiche termoidurenti	Resina epossidica, Resopal, Pertinax, Moltopren	≤150		○
Materie termoplastiche	Plexiglas, Hostalen, Novodur, Makralon	≤100		○
Mat. plast. a fibre aramidiche	Kevlar	≤1000		○
a fibre di vetro/C rinforzate	GFK/CFK	≤1000		○



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≤10xD

86722
N. d. f.
Int. MD
K/P
1,5xD
F
Acciaio
392

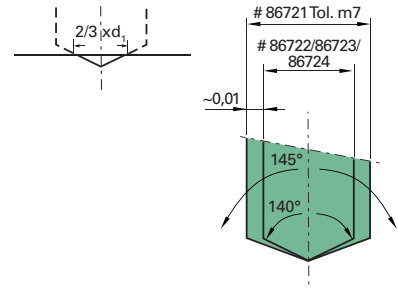
86725
N. d. f.
Int. MD
K/P
1,5xD
a
Acc. inoss.
401

86723
N. d. f.
Int. MD
K/P
1,5xD
F
Ghisa
395

86724
N. d. f.
Int. MD
K/P
1,5xD
○
Alluminio
398

≤1xD foro pilota/svasatura

86721
N. d. f.
Int. MD
K/P
1xD
a
Pil./svas.
389



- Per la realizzazione di fori passanti bisogna controllare che le fasi di guida restino in presa. Inoltre l'avanzamento va ridotto prima di effettuare il foro passante.
- In generale, per profondità di foro da 5xD, consigliamo l'uso dello stelo art. 86681 e relativo inserto art. 86721, per effettuare il foro pilota consentendo il centraggio ottimale.
- Senza foro pilota, consigliamo di ridurre l'avanzamento durante centratura.
- Non utilizzare la punta per fori interrotti (scanalature, fori trasversali) senza prove preliminari. In caso di fori interrotti (max. 0,2 x D) consigliamo, se possibile, di ridurre l'avanzamento.
- Contrariamente alle classiche punte ad inserto, la Multiplex è adatta anche per la foratura di pacchi di lamierini.
- Su torni (utensile fisso) fare attenzione che l'utensile sia esattamente nel centro
- Presupposto per una truciolatura ottimale è una buona refrigerazione con emulsione ad olio.
- L'utensile è adatto per lavorazione a secco o con nebulizzazione solo a ben determinate condizioni. Con nebulizzazione suggeriamo l'impiego di codoli conici per nebulizzazione, nonché di mandrini per nebulizzazione. Chiedete ai nostri tecnici che Vi consiglieranno.



V _c m/min	Nr. col. avanz.	V _c m/min	Nr. col. avanz.	V _c m/min	Nr. col. avanz.	V _c m/min	Nr. col. avanz.	V _c m/min	Nr. col. avanz.
100	5					130	6		
95	4					110	5		
100	6					130	7		
95	5					110	6		
100	5					130	6		
95	5					125	6		
90	4					110	5		
90	5					110	6		
85	4					90	5		
100	6					130	7		
90	5					110	6		
70	4					70	4		
95	4					105	5		
70	3					70	4		
55	4					60	5		
50	3					55	4		
55	2					55	3		
50	2					50	2		
		25	1			25	2		
		55	2			55	3		
		40	2			40	3		
		35	2			35	3		
				80	6	100	6		
				70	6	90	6		
				100	7	120	7		
				80	6	100	6		
		70	6			90	6		
				60	5	80	5		
				60	5	80	5		
				60	5	80	5		
				60	5	80	5		
		25	1			25	2		
		40	2			40	3		
		35	1			35	2		
						150	6	200	7
						150	6	180	7
						130	6	150	7
						105	6	120	7
						150	6	180	7
						70	5	70	6
						150	6	180	7
						110	5	120	6
						70	5	70	6
						50	5	50	6
						45	5	45	6
						35	4	35	5



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Precision Cutting Tools



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