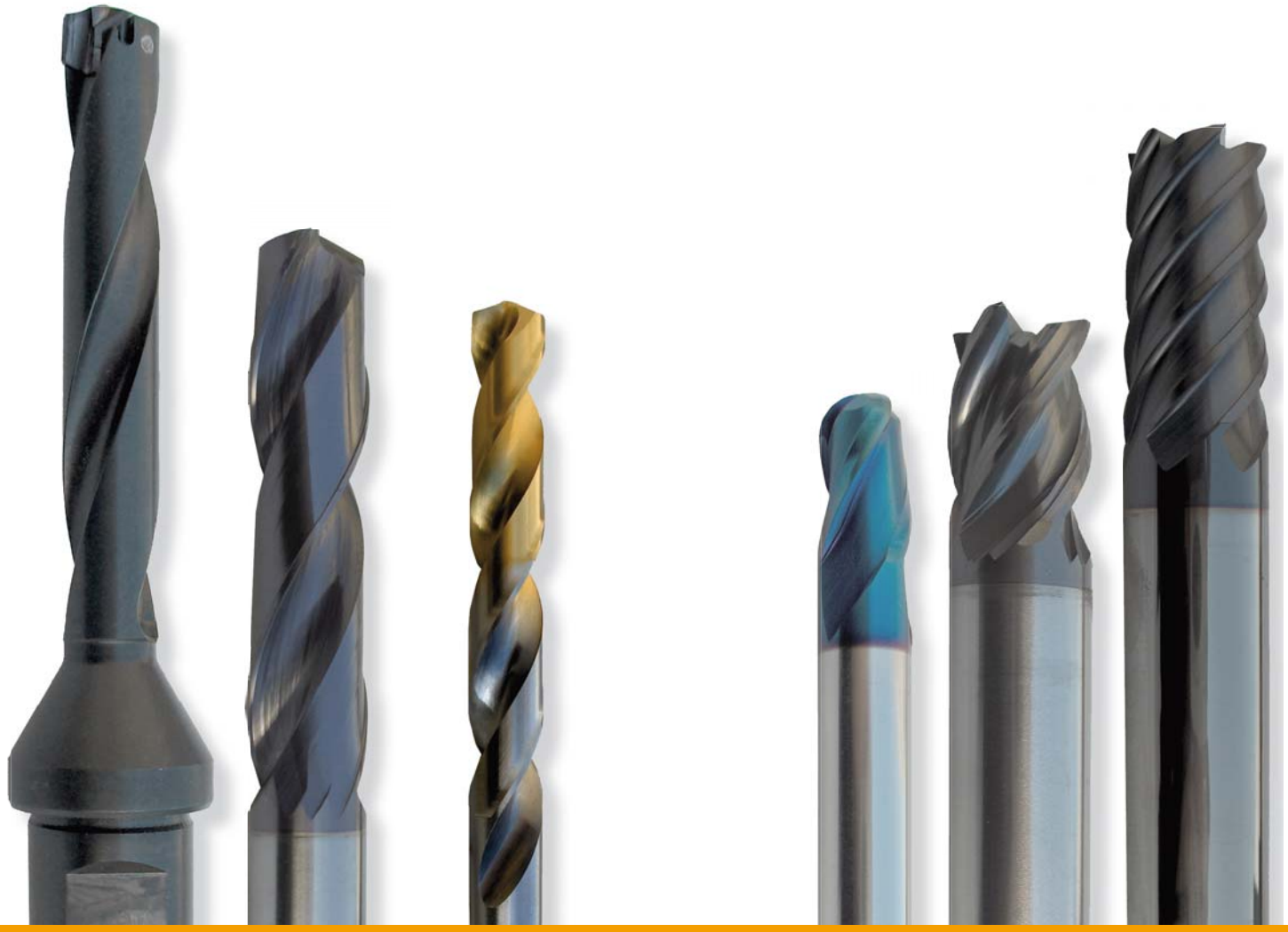
punte PM

CATALOGO / CATALOGUE 6.0

PUNTE MODULARI
MODULAR DRILLS



WT ultimate®

ALTE PRESTAZIONI & COSTI OTTMALI
HIGH PERFORMANCE & OPTIMAL COST

CARATTERISTICHE DELLE PUNTE PM
FEATURE OF PM DRILLS

* Usando questa avanzata tecnologia di punte, operazioni come la centratura e l'alesatura sono eliminate, ottenendo inoltre un diametro del foro preciso e accurato
* I più recenti rivestimenti combinati con substrati a lunga durata in metallo duro, permettono elevate velocità di penetrazione e lunga vita dell'utensile
* Il sistema di bloccaggio dell'inserto, così forte e accurato, permette con estrema facilità l'inserimento veloce e comodo dell'inserto mentre la punta è montata sulla macchina
* Il corpo punta, costruito in una forte lega di acciaio resistente all'usura, è progettato per ermettere durante la foratura un flusso ottimale del refrigerante e una evaquazione immediata del truciolo

* *By using advanced drill point technology, centering and reaming are eliminated, and accurate, consistent hole size is easily attainable*
* *The newest coatings combined with tough long lasting carbide substrates, allow high penetration rates and long tool life*
* *The strong and accurate insert locking system allows easy access and quick insert replacement while the drill is mounted in the machine*
* *The holder, made of a highly wear resistant Steel Alloy, is designed to allow maximum coolant flow and unrestricted chip removal during the drilling cycle*

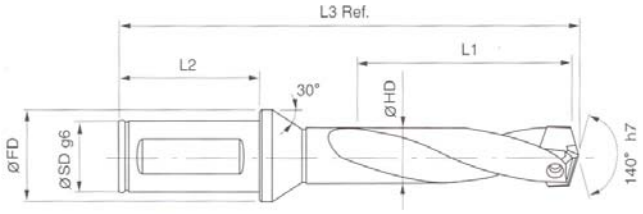
CARATTERISTICHE DELLA PUNTA PORTA INSERTI
FEATURE OF DRILL HOLDER

* Leghe speciali di acciaio che mantengono anche ad alte temperature la loro durezza e durata
* Rivestimenti innovativi che migliorano la resistenza e riducono la corrosione e l'usura
* Il design ad alta prestazione delle canaline permette una ottimale evaquazione del truciolo con minime interferenze
* *Special Alloy Steel that maintains its hardness and toughness under high temperatures*
* *Innovative surface treatment that improves wear resistance and reduces corrosion*
* *High performance flute design allowing maximum chip evacuation and minimum interference*

CARATTERISTICHE DEGLI INSERTI
FEATURE OF DRILL INSERT

* accuratezza e precisione garantiscono un fissaggio sicuro e stabile
* *secure and accurate seatng resulting in accurate repeatability and concentricity*

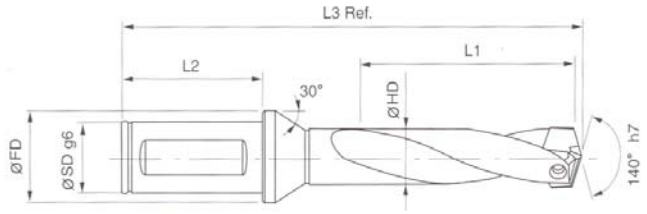
PUNTA MODULARE CON FORO REFRIGERANTE 3xD
modular drill 3xd with internal coolant hole



GRUPPO DI INSERTO *group of insert*	CODICE ARTICOLO *article no*	DIAMETRO			LUNGHEZZA			TORX No *torx no*	STOCK *stock*
		PUNTA *drill* D	GAMBO *diameter shank* SD g6	FLANGIA *flange* FD	UTILE *of cut* L1	GAMBO *length shank* L2	TOTALE *overall* L3		● / ○
1	PM03.1200	12.0	20	25	52	50	121	TX1213T08	●
2	PM03.1250	12.5	20	25	54	50	122		●
3	PM03.1300	13.0	20	25	56	50	124		●
4	PM03.1350	13.5	20	25	57	50	125		●
5	PM03.1400	14.0	20	25	59	50	126	TX1415T08	●
6	PM03.1450	14.5	20	25	61	50	128		●
7	PM03.1500	15.0	20	25	63	50	130		●
8	PM03.1550	15.5	20	25	65	50	131		●
9	PM03.1600	16.0	20	25	65	50	131	TX1617T08	●
10	PM03.1650	16.5	20	25	67	50	133		●
11	PM03.1700	17.0	20	25	69	50	134		●
12	PM03.1750	17.5	20	25	70	50	135		●
13	PM03.1800	18.0	25	32	72	56	149	TX1819T15	●
14	PM03.1850	18.5	25	32	74	56	150		●
15	PM03.1900	19.0	25	32	76	56	152		●
16	PM03.1950	19.5	25	32	77	56	153		●
17	PM03.2000	20.0	25	32	77	56	152	TX2021T20	●
18	PM03.2050	20.5	25	32	79	56	154		●
19	PM03.2100	21.0	25	32	81	56	156		●
20	PM03.2150	21.5	25	32	83	56	157		●
21	PM03.2200	22.0	25	32	85	56	159	TX2223T20	●
22	PM03.2250	22.5	25	32	86	56	159		●
23	PM03.2300	23.0	25	32	88	56	161		●
24	PM03.2350	23.5	25	32	90	56	163		●
25	PM03.2400	24.0	32	37	91	60	172	TX2425T20	●
26	PM03.2450	24.5	32	37	93	60	173		●
27	PM03.2500	25.0	32	37	95	60	175		●
28	PM03.2550	25.5	32	37	97	60	177		●
29	PM03.2600	26.0	32	37	98	60	177	TX2627T25	●
30	PM03.2650	26.5	32	37	99	60	178		●
31	PM03.2700	27.0	32	37	101	60	180		●
32	PM03.2750	27.5	32	37	103	60	181		●
33	PM03.2800	28.0	32	37	105	60	183	TX2829T25	●
34	PM03.2850	28.5	32	37	106	60	184		●
35	PM03.2900	29.0	32	37	109	60	186		●
36	PM03.2950	29.5	32	37	110	60	187		●
37	PM03.3000	30.0	32	37	112	60	189	TX3031T25	●
38	PM03.3050	30.5	32	37	114	60	190		●
39	PM03.3100	31.0	32	37	115	60	191		●
40	PM03.3150	31.5	32	37	118	60	194		●

misura / unit: mm

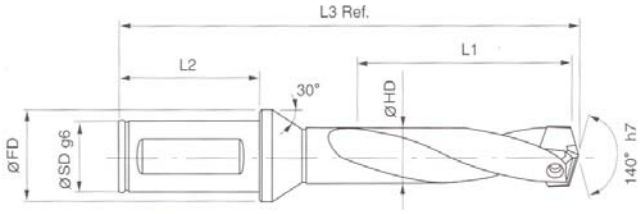
PUNTA MODULARE CON FORO REFRIGERANTE 5xD
modular drill 5xd with internal coolant hole



GRUPPO DI INSERTO *group of insert*	CODICE ARTICOLO *article no*	DIAMETRO			LUNGHEZZA			TORX No *torx no*	STOCK *stock*
		PUNTA *drill* D	GAMBO *diameter shank* SD g6	FLANGIA *flange* FD	UTILE *of cut* L1	GAMBO *length shank* L2	TOTALE *overall* L3		● / ○
1	PM05.1200	12.0	20	25	77	50	146	TX1213T08	●
2	PM05.1250	12.5	20	25	80	50	148		●
3	PM05.1300	13.0	20	25	83	50	151		●
4	PM05.1350	13.5	20	25	85	50	153		●
5	PM05.1400	14.0	20	25	88	50	155	TX1415T08	●
6	PM05.1450	14.5	20	25	91	50	158		●
7	PM05.1500	15.0	20	25	94	50	161		●
8	PM05.1550	15.5	20	25	97	50	163		●
9	PM05.1600	16.0	20	25	98	50	164	TX1617T08	●
10	PM05.1650	16.5	20	25	101	50	167		●
11	PM05.1700	17.0	20	25	104	50	169		●
12	PM05.1750	17.5	20	25	106	50	171		●
13	PM05.1800	18.0	25	32	109	56	186	TX1819T15	●
14	PM05.1850	18.5	25	32	112	56	188		●
15	PM05.1900	19.0	25	32	115	56	191		●
16	PM05.1950	19.5	25	32	117	56	193		●
17	PM05.2000	20.0	25	32	118	56	193	TX2021T20	●
18	PM05.2050	20.5	25	32	121	56	196		●
19	PM05.2100	21.0	25	32	124	56	199		●
20	PM05.2150	21.5	25	32	126	56	200		●
21	PM05.2200	22.0	25	32	129	56	203	TX2223T20	●
22	PM05.2250	22.5	25	32	132	56	205		●
23	PM05.2300	23.0	25	32	135	56	208		●
24	PM05.2350	23.5	25	32	137	56	210		●
25	PM05.2400	24.0	32	37	140	60	221	TX2425T20	●
26	PM05.2450	24.5	32	37	143	60	223		●
27	PM05.2500	25.0	32	37	146	60	226		●
28	PM05.2550	25.5	32	37	148	60	228		●
29	PM05.2600	26.0	32	37	150	60	229	TX2627T25	●
30	PM05.2650	26.5	32	37	152	60	231		●
31	PM05.2700	27.0	32	37	155	60	234		●
32	PM05.2750	27.5	32	37	159	60	237		●
33	PM05.2800	28.0	32	37	161	60	239	TX2829T25	●
34	PM05.2850	28.5	32	37	163	60	241		●
35	PM05.2900	29.0	32	37	168	60	245		●
36	PM05.2950	29.5	32	37	170	60	247		●
37	PM05.3000	30.0	32	37	172	60	249	TX3031T25	●
38	PM05.3050	30.5	32	37	176	60	252		●
39	PM05.3100	31.0	32	37	177	60	253		●
40	PM05.3150	31.5	32	37	182	60	258		●

misura / unit: mm

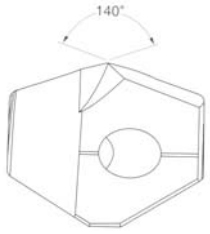
PUNTA MODULARE CON FORO REFRIGERANTE 7xD
modular drill 7xd with internal coolant hole



GRUPPO DI INSERTO *group of insert*	CODICE ARTICOLO *article no*	DIAMETRO			LUNGHEZZA			TORX No *torx no*	STOCK *stock*
		PUNTA *drill* D	GAMBO *diameter shank* SD g6	FLANGIA *flange* FD	UTILE *of cut* L1	GAMBO *length shank* L2	TOTALE *overall* L3		● / ○
1	PM07.1200	12.0	20	25	101	50	170	TX1213T08	●
2	PM07.1250	12.5	20	25	106	50	174		●
3	PM07.1300	13.0	20	25	110	50	178		●
4	PM07.1350	13.5	20	25	113	50	181		●
5	PM07.1400	14.0	20	25	117	50	184	TX1415T08	●
6	PM07.1450	14.5	20	25	121	50	188		●
7	PM07.1500	15.0	20	25	125	50	192		●
8	PM07.1550	15.5	20	25	128	50	194		●
9	PM07.1600	16.0	20	25	131	50	197	TX1617T08	●
10	PM07.1650	16.5	20	25	134	50	200		●
11	PM07.1700	17.0	20	25	139	50	204		●
12	PM07.1750	17.5	20	25	142	50	207		●
13	PM07.1800	18.0	25	32	146	56	223	TX1819T15	●
14	PM07.1850	18.5	25	32	150	56	226		●
15	PM07.1900	19.0	25	32	154	56	230		●
16	PM07.1950	19.5	25	32	157	56	233		●
17	PM07.2000	20.0	25	32	159	56	234	TX2021T20	●
18	PM07.2050	20.5	25	32	163	56	238		●
19	PM07.2100	21.0	25	32	167	56	242		●
20	PM07.2150	21.5	25	32	170	56	244		●
21	PM07.2200	22.0	25	32	174	56	248	TX2223T20	●
22	PM07.2250	22.5	25	32	178	56	251		●
23	PM07.2300	23.0	25	32	182	56	255		●
24	PM07.2350	23.5	25	32	185	56	258		●
25	PM07.2400	24.0	32	37	189	60	270	TX2425T20	●
26	PM07.2450	24.5	32	37	193	60	273		●
27	PM07.2500	25.0	32	37	197	60	277		●
28	PM07.2550	25.5	32	37	200	60	280		●
29	PM07.2600	26.0	32	37	202	60	281	TX2627T25	●
30	PM07.2650	26.5	32	37	205	60	284		●
31	PM07.2700	27.0	32	37	209	60	288		●
32	PM07.2750	27.5	32	37	214	60	292		●
33	PM07.2800	28.0	32	37	217	60	295	TX2829T25	●
34	PM07.2850	28.5	32	37	220	60	298		●
35	PM07.2900	29.0	32	37	226	60	303		●
36	PM07.2950	29.5	32	37	229	60	306		●
37	PM07.3000	30.0	32	37	232	60	309	TX3031T25	●
38	PM07.3050	30.5	32	37	238	60	314		●
39	PM07.3100	31.0	32	37	239	60	315		●
40	PM07.3150	31.5	32	37	246	60	322		●

misura / unit: mm

PMX1 INSERTI PER PUNTA MODULARE
pmx1 drill inserts



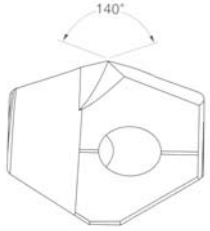
GRUPPO INSERTI *group of insert*	CODICE ARTICOLO *article no*	DIAMETRO *diameter* D	STOCK *stock* ● / ○
1	PMX1.1200A	12.00	●
	PMX1.1210A	12.10	●
	PMX1.1220A	12.20	●
	PMX1.1230A	12.30	●
2	PMX1.1250A	12.50	●
	PMX1.1260A	12.60	●
	PMX1.1270A	12.70	●
	PMX1.1280A	12.80	●
	PMX1.1290A	12.90	●
3	PMX1.1300A	13.00	●
	PMX1.1310A	13.10	●
	PMX1.1320A	13.20	●
	PMX1.1349A	13.49	●
4	PMX1.1350A	13.50	●
	PMX1.1360A	13.60	●
	PMX1.1370A	13.70	●
	PMX1.1380A	13.80	●
	PMX1.1389A	13.89	●
5	PMX1.1400A	14.00	●
	PMX1.1410A	14.10	●
	PMX1.1420A	14.20	●
	PMX1.1429A	14.29	●
	PMX1.1430A	14.30	●
	PMX1.1440A	14.40	●
6	PMX1.1450A	14.50	●
	PMX1.1460A	14.60	●
	PMX1.1468A	14.68	●
	PMX1.1480A	14.80	●
7	PMX1.1500A	15.00	●
	PMX1.1508A	15.08	●
	PMX1.1510A	15.10	●
	PMX1.1520A	15.20	●
	PMX1.1530A	15.30	●
	PMX1.1548A	15.48	●
8	PMX1.1550A	15.50	●
	PMX1.1560A	15.60	●
	PMX1.1570A	15.70	●
	PMX1.1580A	15.80	●
	PMX1.1587A	15.87	●

GRUPPO INSERTI *group of insert*	CODICE ARTICOLO *article no*	DIAMETRO *diameter* D	STOCK *stock* ● / ○
9	PMX1.1600A	16.00	●
	PMX1.1609A	16.09	●
	PMX1.1620A	16.20	●
	PMX1.1627A	16.27	●
	PMX1.1630A	16.30	●
10	PMX1.1650A	16.50	●
	PMX1.1667A	16.67	●
	PMX1.1680A	16.80	●
11	PMX1.1700A	17.00	●
	PMX1.1707A	17.07	●
	PMX1.1746A	17.46	●
12	PMX1.1750A	17.50	●
	PMX1.1780A	17.80	●
	PMX1.1786A	17.86	●
13	PMX1.1800A	18.00	●
	PMX1.1826A	18.26	●
14	PMX1.1850A	18.50	●
	PMX1.1865A	18.65	●
	PMX1.1880A	18.80	●
15	PMX1.1900A	19.00	●
	PMX1.1905A	19.05	●
	PMX1.1927A	19.27	●
	PMX1.1945A	19.45	●
16	PMX1.1950A	19.50	●
	PMX1.1980A	19.80	●
	PMX1.1984A	19.84	●
17	PMX1.2000A	20.00	●
	PMX1.2024A	20.24	●
18	PMX1.2050A	20.50	●
	PMX1.2064A	20.64	●
	PMX1.2070A	20.70	●
19	PMX1.2100A	21.00	●
	PMX1.2103A	21.03	●
	PMX1.2143A	21.43	●
20	PMX1.2150A	21.50	●
	PMX1.2170A	21.70	●
	PMX1.2183A	21.83	●
21	PMX1.2200A	22.00	●
	PMX1.2222A	22.22	●

rivestimento TiN, TiCN & Hardlube disponibili su richiesta
coating TiN, TiCN & Hardslick available on request

misura / unit: mm

PMX1 INSERTI PER PUNTA MODULARE
pmx1 drill inserts



GRUPPO INSERTI *group of insert*	CODICE ARTICOLO *article no*	DIAMETRO *diameter* D	STOCK *stock* ● / ○
22	PMX1.2250A	22.50	●
	PMX1.2262A	22.62	●
	PMX1.2270A	22.70	●
23	PMX1.2300A	23.00	●
	PMX1.2302A	23.02	●
	PMX1.2342A	23.42	●
24	PMX1.2350A	23.50	●
	PMX1.2370A	23.70	●
	PMX1.2381A	23.81	●
25	PMX1.2400A	24.00	●
	PMX1.2421A	24.21	●
26	PMX1.2450A	24.50	●
	PMX1.2461A	24.61	●
	PMX1.2470A	24.70	●
27	PMX1.2500A	25.00	●
	PMX1.2540A	25.40	●
28	PMX1.2550A	25.50	●
	PMX1.2567A	25.67	●
	PMX1.2570A	25.70	●
	PMX1.2580A	25.80	●
29	PMX1.2600A	26.00	●
	PMX1.2619A	26.19	●
30	PMX1.2650A	26.50	●
	PMX1.2659A	26.59	●
	PMX1.2699A	26.99	●
31	PMX1.2700A	27.00	●
32	PMX1.2750A	27.50	●
	PMX1.2778A	27.78	●
33	PMX1.2800A	28.00	●
	PMX1.2818A	28.18	●
34	PMX1.2850A	28.50	●
	PMX1.2858A	28.58	●
35	PMX1.2900A	29.00	●
	PMX1.2937A	29.37	●
36	PMX1.2950A	29.50	●
	PMX1.2977A	29.77	●
37	PMX1.3000A	30.00	●
	PMX1.3016A	30.16	●

GRUPPO INSERTI *group of insert*	CODICE ARTICOLO *article no*	DIAMETRO *diameter* D	STOCK *stock* ● / ○
38	PMX1.3050A	30.50	●
	PMX1.3056A	30.56	●
	PMX1.3096A	30.96	●
39	PMX1.3100A	31.00	●
40	PMX1.3150A	31.50	●
	PMX1.3175A	31.75	●

rivestimento TiN, TiCN & Hardlube disponibili su richiesta
coating TiN, TiCN & Hardslick available on request

misura / unit: mm

NOTES

VELOCITA' E AVANZAMENTO
SPEED AND FEED

* Le velocità e gli avanzamenti raccomandati nelle tabelle sono per condizioni ideali di lavorazione con un'adeguata pressione nel refrigerante
* E' raccomandato per nuove lavorazioni procedere con velocità e avanzamenti 10~20% più bassi come punti di partenza
* *The speeds and feeds recommended as shown are for ideal working conditions with adequate coolant pressure*
* *It recommended to consider n new jobs 10~20% lower speeds and feeds as a starting point*

RPM = giri al minuto (rev/min)
RPM = revolution per minute (rev/min)

M/min = velocità (M/min)
M/min = surface meter per minute (M/min)

DIA = diametro
DIA = diameter of drill

mm/rev = avanzamento (mm/rev)
mm/rev = feed rate (mm/rev)

Formule /
Formulas:

$$M/min = \frac{(RPM) * (\pi) * (DIA)}{1000}$$

$$mm/min = (RPM) * (mm/rev)$$

$$RPM = \frac{(M/min) * (1000)}{(\pi) * (DIA)}$$

AV = mm/min
G = Giri/min / G = RPM

PM03, PM05, PM07

MATERIALE *material*	RESISTENZA A TRAZIONE *tensile strength*	DUREZZA *hardness* HB	DUREZZA *hardness* HrC	VELOCITA' *speed* (M/MIN)	AVANZAMENTO *feed* (MM /REV) Ø 12 < 14.9	Ø 15 < 17.9	Ø 18 < 21.9	Ø 22 < 26.9	Ø 27 < 31.9
ACCIAIO NON-LEGATI **ACCIAIO DA FUSIONE** **ACCIAIO AUTOMATICO** ***non-alloyed steel, cast steel*** ***free machining steel*** 9SMn28, 9SMnPb28, 10SPb20 etc	< 500	100 < 150		95 < 120	0.16 < 0.28	0.21 < 0.35	0.27 < 0.40	0.34 < 0.52	0.37 < 0.55
	500 < 850	150 < 250	< 24	80 < 105	0.14 < 0.24	0.21 < 0.35	0.27 < 0.40	0.34 < 0.52	0.37 < 0.55
ACCIAIO BASSO LEGATO **ACCIAIO AL CARBONIO** **ACCIAIO DA FUSIONE** ***low-alloyed steel, carbon steel*** ***cast steel (<5%)*** C15, C22, 20Mn5, Ck45, C45 etc	< 450	85 < 125		90 < 115	0.14 < 0.25	0.20 < 0.33	0.25 < 0.39	0.31 < 0.47	0.34 < 0.50
	450 < 755	125 < 225	< 19	70 < 90	0.12 < 0.20	0.17 < 0.28	0.22 < 0.32	0.30 < 0.46	0.33 < 0.49
	755 < 900	225 < 265	19 < 27	60 < 80	0.12 < 0.20	0.17 < 0.28	0.22 < 0.32	0.30 < 0.46	0.33 < 0.49
	900 < 1200	265 < 350	27 < 37	55 < 70	0.10 < 0.16	0.15 < 0.25	0.21 < 0.30	0.25 < 0.38	0.29 < 0.43
LEGHE DI ACCIAIO ***alloyed steel*** 45CrMo4, 42CrMo4, 16MnCr5, Ck75, 35CrMo4, 16MnCr5 etc	< 600	125 < 175	< 7	80 < 100	0.14 < 0.24	0.17 < 0.28	0.22 < 0.32	0.30 < 0.46	0.34 < 0.50
	600 < 800	175 < 235	7 < 22	70 < 90	0.12 < 0.20	0.17 < 0.28	0.22 < 0.32	0.30 < 0.46	0.34 < 0.50
	800 < 950	235 < 280	22 < 29	60 < 80	0.12 < 0.20	0.15 < 0.25	0.22 < 0.32	0.30 < 0.46	0.34 < 0.50
	950 < 1110	280 < 330	29 < 35	55 < 70	0.10 < 0.16	0.13 < 0.21	0.21 < 0.30	0.25 < 0.38	0.29 < 0.43
	1110 < 1230	330 < 360	35 < 39	45 < 60	0.08 < 0.12	0.13 < 0.21	0.21 < 0.30	0.25 < 0.38	0.29 < 0.43
ACCIAIO ALTO LEGATO ***high-alloyed steel*** 36CrNiMo4, 41rAlMo7 etc	600 < 1020	225 < 300	19 < 32	45 < 60	0.12 < 0.20	0.15 < 0.25	0.21 < 0.30	0.20 < 0.31	0.24 < 0.35
	1020 < 1200	300 < 355	32 < 38	40 < 55	0.10 < 0.16	0.14 < 0.18	0.21 < 0.30	0.20 < 0.31	0.24 < 0.35
	1200 < 1330	355 < 390	38 < 42	40 < 50	0.08 < 0.12	0.09 < 0.14	0.18 < 0.26	0.19 < 0.29	0.23 < 0.34
ACCIAIO DA COSTRUZIONE ***structural steel*** St33, St37-2, St44-2, St52, St60 etc	350 < 500	100 < 150		75 < 95	0.14 < 0.24	0.21 < 0.35	0.27 < 0.39	0.29 < 0.44	0.32 < 0.47
	500 < 850	150 < 250	< 24	60 < 75	0.12 < 0.20	0.20 < 0.33	0.22 < 0.32	0.25 < 0.38	0.29 < 0.43
	850 < 1200	250 < 355	24 < 38	50 < 65	0.10 < 0.16	0.17 < 0.28	0.21 < 0.30	0.21 < 0.32	0.26 < 0.38
ACCIAIO PER UTENSILI ***tool steel*** 102Cr6, 105WCr6, C75W etc	500 < 705	150 < 210	< 16	50 < 65	0.10 < 0.16	0.13 < 0.21	0.18 < 0.26	0.20 < 0.31	0.24 < 0.35
	705 < 950	210 < 280	16 < 29	40 < 55	0.10 < 0.16	0.13 < 0.21	0.18 < 0.26	0.20 < 0.31	0.24 < 0.35
GHISA GRIGIA ***grey cast*** — perlitica, ferritica / *pearlitic, ferritic*	500 < 700	150 < 210	< 16	100 < 125	0.15 < 0.26	0.20 < 0.37	0.27 < 0.42	0.36 < 0.51	0.40 < 0.55
GHISA GRIGIA ***grey cast*** — perlitica / *pearlitic*	700 < 850	210 < 250	16 < 24	75 < 95	0.11 < 0.20	0.16 < 0.29	0.20 < 0.30	0.25 < 0.35	0.29 < 0.40
GHISA NODULARE ***cast iron nodular*** — ferritica / *ferritic*	540	165	4	95 < 120	0.13 < 0.22	0.17 < 0.31	0.21 < 0.32	0.28 < 0.40	0.32 < 0.44
GHISA NODULARE ***cast iron nodular*** — perlitica / *pearlitic*	850	250	24	75 < 95	0.11 < 0.20	0.14 < 0.26	0.19 < 0.29	0.25 < 0.35	0.29 < 0.40

* si consiglia di ridurre l'avanzamento al 85% per 5xD e al 70% per 7xD
* recommended to reduce feed rate to 85% for 5xD holders and 70% for 7xD holders

PM03, PM05, PM07

MATERIALE *material*		RESISTENZA A TRAZIONE *tensile strength*	DUREZZA *hardness* HB	DUREZZA *hardness* HrC	VELOCITA' *speed* (M/MIN)	AVANZAMENTO *feed* (MM /REV) Ø 12 < 14.9	Ø 15 < 17.9	Ø 18 < 21.9	Ø 22 < 26.9	Ø 27 < 31.9
GHISA MALLEABILE *malleable cast iron*	ferritica / *ferritic*	450	125		100 < 125	0.13 < 0.22	0.17 < 0.31	0.21 < 0.32	0.28 < 0.40	0.32 < 0.44
	perlitica / *pearlitic*	780	230	21	75 < 95	0.11 < 0.18	0.14 < 0.26	0.19 < 0.29	0.25 < 0.35	0.29 < 0.40
LEGHE DI ALLUMINIO *aluminium alloy (wrought)*	non trattato termicamente / not heat treatable	200	60		335 < 420	0.11 < 0.18	0.17 < 0.26	0.28 < 0.35	0.32 < 0.39	0.36 < 0.42
	temprati / *hardened*	335	100		230 < 290	0.13 < 0.22	0.29 < 0.45	0.38 < 0.48	0.51 < 0.61	0.56 < 0.66
LEGHE DI ALLUMINIO *aluminium alloy (cast)*	≤ 12% Si, non trattato termicamente / not heat treatable	250	75		335 < 420	0.21 < 0.37	0.31 < 0.49	0.41 < 0.52	0.47 < 0.57	0.50 < 0.59
	≤ 12% Si, temprato / hardened	300	90		285 < 360	0.21 < 0.37	0.30 < 0.47	0.41 < 0.52	0.47 < 0.57	0.50 < 0.59
	>12% Si, non trattato termicamente / not heat treatable	450	130		205 < 260	0.19 < 0.33	0.28 < 0.44	0.37 › 0.47	0.45 < 0.54	0.48 < 0.57
LEGHE DI RAME *copper alloys*	automatico / free machining (Pb>1%)	370	110		115 < 145	0.16 < 0.28	0.23 < 0.36	0.29 < 0.36	0.37 < 0.45	0.41 < 0.48
	ottone / *brass*	300	90		145 < 185	0.17 < 0.29	0.24 < 0.37	0.30 < 0.38	0.38 < 0.46	0.42 < 0.49
	rame elettrolitica / *electrolitic copper*	200	100		95 < 120	0.06 < 0.09	0.09 < 0.13	0.11 < 0.13	0.15 < 0.18	0.19 < 0.22

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* * recommended to reduce feed rate to 85% for 5xD holders and 70% for 7xD holders

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