noma®

TECHNOLOGICAL INNOVATIONS

Tecnologia 100%
Made in Italy

noma®

018

Frese ed utensili standard e prodotti di nicchia
Standard milling cutters and tools and niche products
Fraises et outils standard et prosuits de niche
Standardfäser und -werkzeuge sowie Nischenprodukte

Frese ed utensili rivestiti con Zirconio
Zirconium-coated milling cutters and tools
Fraises et outils revêtus avec zirconium
Zirkoniumbeschichtete Fräser und Werkzeuge

Patent pending

Utensili per tornitura esterna con lubrificazione interna
External turning tools with coolant hole
Outils pour tournage extérieur avec trou de lubrification
Aussendrehwerkzeuge mit Innenkühlung

Utensili standard per tornitura esterna
External turning tools - Standard Type
Outils standard pour tournage extérieur
Aussendrehwerkzeuge in Standardausführung

noma®

100% MADE IN ITALY

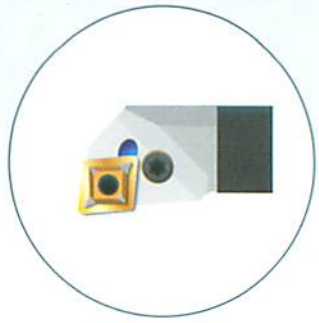
UTENSILI PER TORNITURA ESTERNA

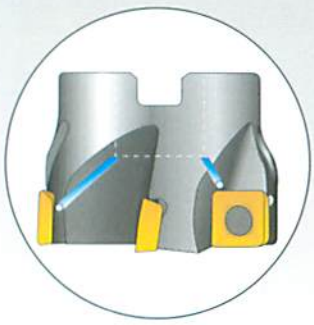
EXTERNAL TURNING TOOL

OUTILS POUR TOURNAGE EXTÉRIEUR

A USSEN DREHWERKZEUGE

DA PAG. 6 A PAG. 30





FRESE PER SPALLAMENTI RETTI 90°

SHOULDER MILLING CUTTERS 90°

FRAISES ÉPAULEMENT 90°

ECKFRAESER 90°

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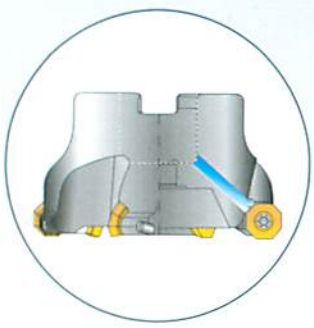

FRESE PER SPIANATURA

FACE MILLING CUTTERS

FRAISES POUR PLANAGES

PLANFRAESER

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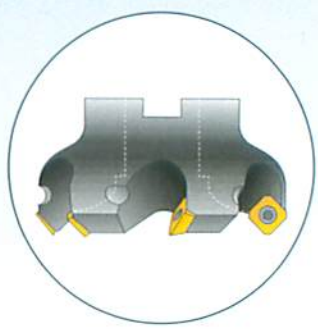

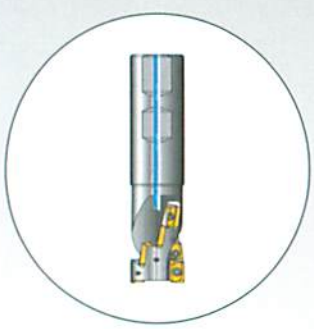

FRESE A RICCIO

HELICAL END MILLS

FRAISES EN BOUT HÉLICOIDAL

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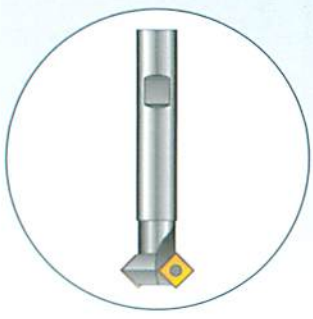

FRESE PER SMUSSI

CHAMFERING MILLING CUTTERS

FRAISES POUR CHANFREINAGES

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FRESATURA STAMPI

MOULD MILLING

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FRESE PER RAGGI CONCAVI E CONVESSI

MILLING CUTTERS FOR CONCAVE AND CONVEX RADIUS

FRAISES POUR RAYONS CONCAVES ET CONVEXES

FRAESER FUER KONKAV UND KONVEX RADIEN

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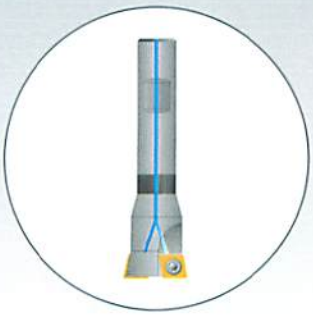

FRESE PER LAMATURA E ALESATURA

SPOT FACING MILLING CUTTERS AND BORING MILLING CUTTERS

FRAISES POUR LAMAGE ET ALÉSAGE

FRAESER FUER STIRNFLAECHEN UND AUSBOHRUNGEN

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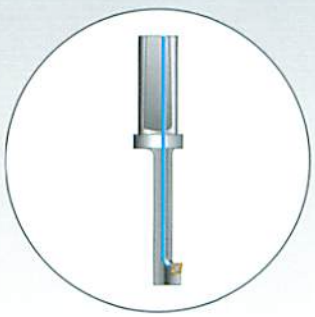

FRESE PER CAVE A "T" E CANALINI

"T" SOLT MILLING CUTTERS AND SEEGER GROOVING

FRAISES À RAINURER À "T" ET POUR CANNELURES

FRAESER FUER "T" NUTEN UND SCHLITZKANAELE

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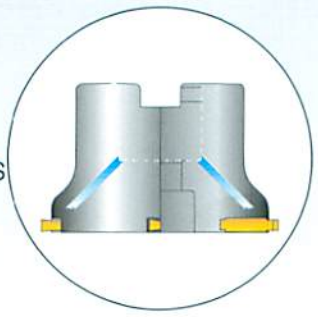

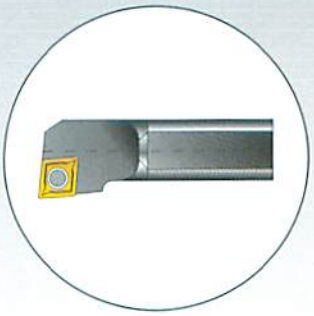

BARRE DI ALESATURA

BORING BARS

BARRES D'ALÉSAGE

BOHRSTANGEN

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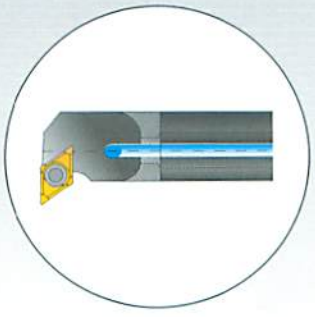

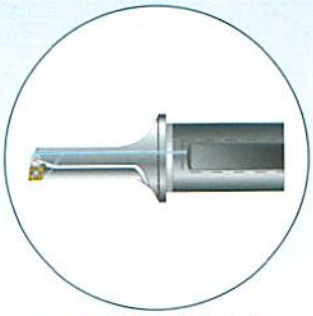

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UTENSILI PER FORATURA

INDEXABLE INSERT

OUTILS PERÇAGE

BOHRUTENSILIEN

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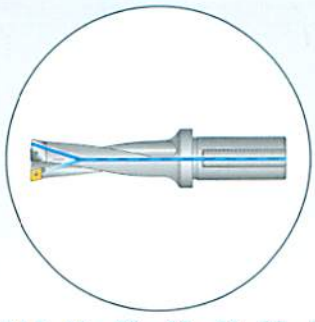

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Zirko® series ultratools

noma®

DA PAG. 112 - A PAG. 139

noma®

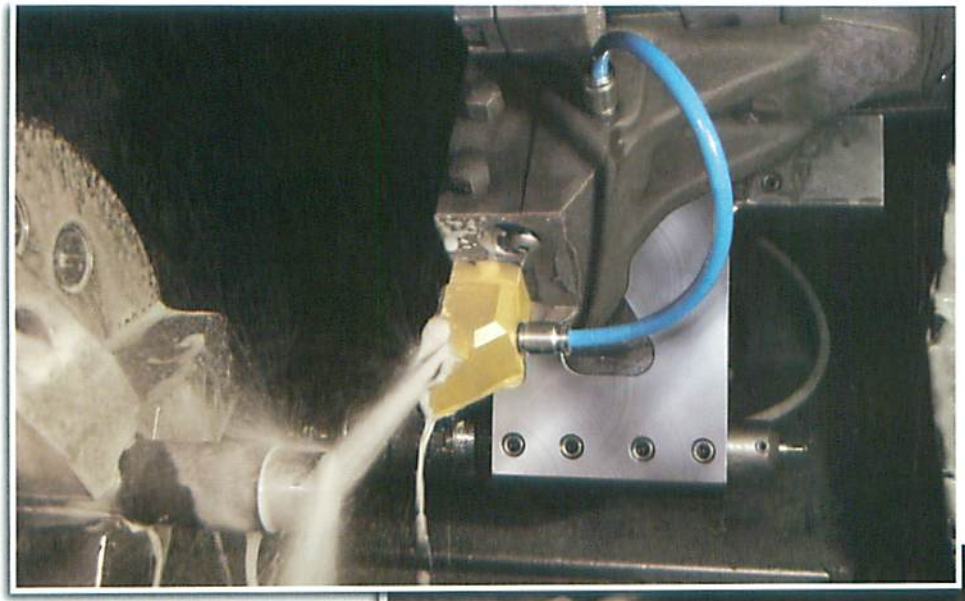
TURNING

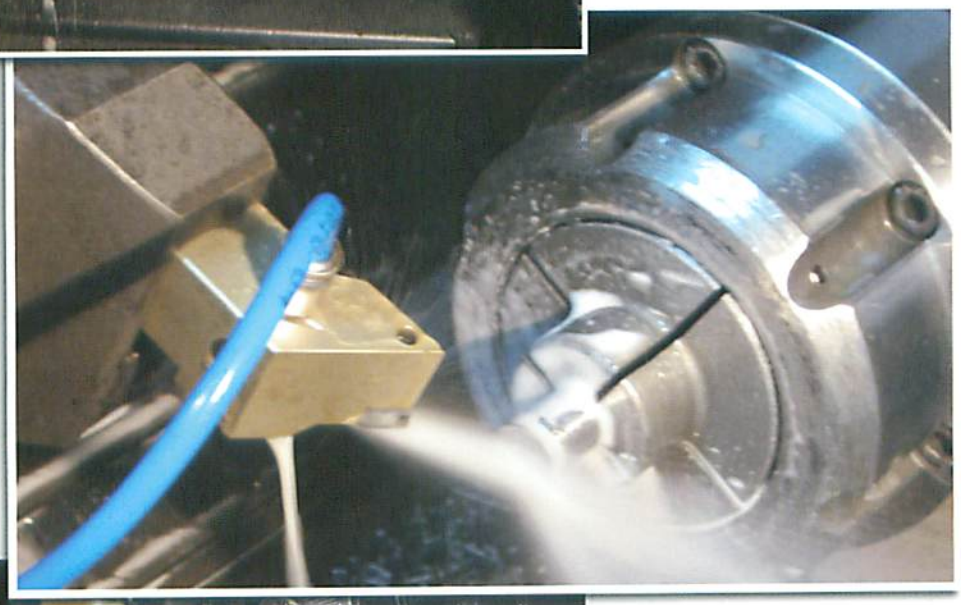
100% MADE IN ITALY

Cayman & classic

Utensili per tornitura esterna con lubrificazione interna

External turning tools with coolant hole
Outils pour tournage extérieur avec trou de lubrification
Aussendrehwerkzeuge mit Innenkühlung





PORTAUTENSILI PER TORNITURA ESTERNA *CAYMAN*

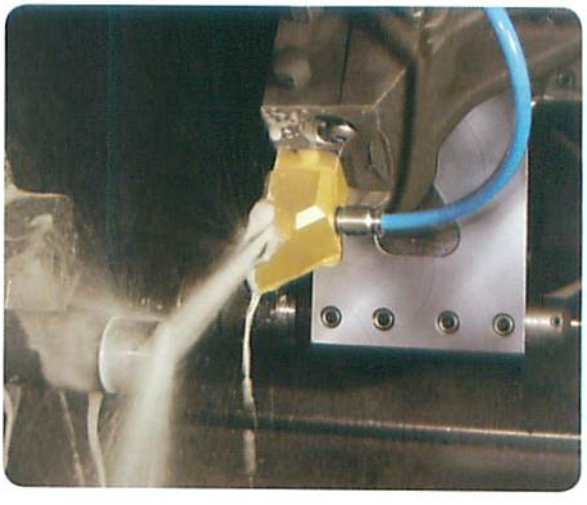
NOMA ha finalmente sviluppato e prodotto un sistema rivoluzionario ed innovativo per migliorare la efficienza degli utensili per esterni. Con i nuovi utensili ***CAYMAN*** il refrigerante (liquido o aria) viene convogliato forzatamente con precisione nella zona di taglio.

Il getto di refrigerante forzato costante e preciso non subisce nessuna deviazione causata dai trucioli o dalle vibrazioni; Solleva e allontana il truciolo dalla superficie di contatto tra il pezzo e il tagliente;
Toglie il calore esattamente nella zona di taglio;
Mantiene costante la temperatura che si sviluppa proprio in quella zona.
Questo accorgimento permette un maggiore controllo del truciolo e riduce il rischio di shock termico sugli inserti aumentando la durata del tagliente di oltre il 25%.

Il sistema ***CAYMAN*** offre la comodità di piazzare l'utensile in macchina ed avere la certezza che il refrigerante sia indirizzato sempre nel punto esatto, mantenendo in ogni e qualsiasi caso la posizione.
Garantisce un flusso costante e preciso durante le lavorazioni specialmente quelle effettuate in automatico senza presidio.
Questo sistema elimina tutte le lunghe e laboriose regolazioni di ugelli e cannucce che comunque non offrono la garanzia e la sicurezza di un flusso perfetto e costante.

Con queste caratteristiche possiamo affermare che gli utensili ***CAYMAN*** riducono i costi e aumentano la produttività.

I nuovi utensili ***CAYMAN*** possono sostituire qualsiasi utensile standard di tornitura ed essere adottati su tutte la macchine di tornitura presenti sul mercato, inoltre è compresa una serie specifica per torni automatici a fantina mobile o (SWISS TYPE).
Sono realizzati interamente in monoblocco includendo il foro di adduzione e vengono forniti completi di tubo con attacchi 1/8" necessari per i più comuni collegamenti base alle macchine.
Sono inoltre trattati superficialmente con Zirconio (il nostro sistema **Zirko ultra tools**) che ne aumenta la resistenza all'usura.



CAYMAN: THE NEW TOOLHOLDERS FOR EXTERNAL TURNING

NOMA company has finally developped and produced a revolutionary and innovative system to improve the performances of tools for external turning.
In the new ***CAYMAN*** tools coolant (fluid or air) is forced exactly to the cutting area.

The constant and precise stream of forced coolant is not subject to any deviation due to chips or vibrations;
It lifts and removes chips from the contact surface between workpiece and cutting edge;
It removes heat exactly from the cutting area;
It keeps temperature in that area constant.
These features allow a better control on chips and reduce the risk of a thermal shock on the inserts which makes the life of cutting edges more than 25% longer.

Through ***CAYMAN*** system you can arrange your tool into the machine and be sure that coolant is addressed to the exact area and always keeps its position at any condition.
It assures a constant and precise flow during machining, especially when machining takes place automatically without supervision.
This system avoids long and complex settings of nozzles and small canes that can never assure a perfect and constant flow.

Thanks to these features ***CAYMAN*** tools reduce costs and increase productivity.
The new ***CAYMAN*** tools can replace any standard turning tool and fit into any turning machine on the market; a special range for Swiss Type automatic lathes is also available.
They are made of one single piece – coolant hole included – and are supplied with tube with 1/8" couplings suited to the most popular connections according to the machine type.
Their surface is also subject to a zirconium treatment (our system Zirko ultra tools) that increases their wear resistance.

CAYMAN: LES NOUVEAUX PORTE-OUTILS POUR TOURNAGE EXTERIEUR

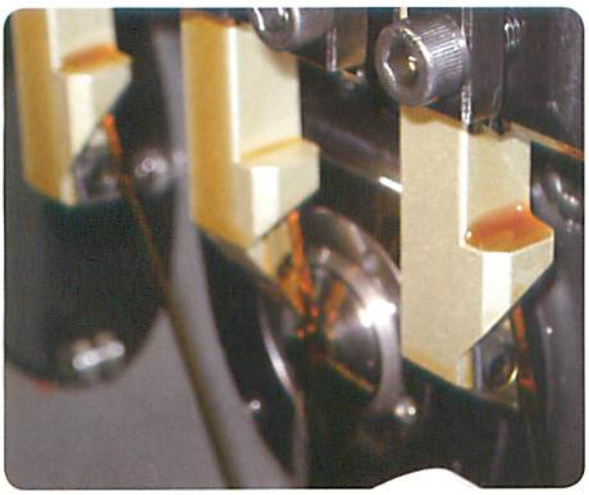
La société **NOMA** a enfin développé et produit un système rèvolutionnaire et d'innovation pour améliorer le rendement des outils pour le tournage extérieur.
Dans les outils ***CAYMAN*** le réfrigérant (liquide ou air) vient forcé exactement dans la zone de coupage.

Le jet du réfrigérant forcé constant et de haute précision n'est sujet à aucune déviation causée par les copeaux ou les vibrations;
Il soulève et enlève le copeau de la surface de contact entre la pièce et le tranchant;
Il enlève la chaleur exactement de la zone de coupage;
Il maintient constante la température qui se dégage exactement dans cette zone.
Cette propriété permet plus de contrôle sur le copeau et réduit le risque de choc thermique sur les plaquettes en tout prolongeant de plus de 25% la durée du tranchant.

Le système ***CAYMAN*** vous permet de placer votre outil dans la machine et être sûres que le réfrigérant est toujours adressé sur le point exacte en tout maintenant cette position dans tous les cas.
On assure un flux constant et de haute précision pendant l'usinage, surtout s'il vient effectué automatiquement sans surveillance.
Ce système élimine tous les réglages longs et laborieux des buses et tuyaux qui, de toute façon, ne peuvent jamais assurer un flux parfait et constant.

En considération de ces caractéristiques on peut dire que les outils ***CAYMAN*** réduisent les coûts et augmentent la productivité.

Les nouveaux outils ***CAYMAN*** peuvent remplacer n'importe quel outil standard de tournage et être utilisés dans tous les machines qui se trouvent sur le marché; de plus il y a une série spécifique pour machines à poupée mobile (SWISS TYPE).
Ils sont fabriqués entièrement en monobloc – y compris le trou d'alimentation – et la livraison comprend aussi le tuyau avec les joints 1/8" nécessaires pour les jonctions les plus courantes selon les machines.
Leur surface vient traitée avec zirconium (notre système Zirko ultra tools) qui augmente la résistance à l'usure.



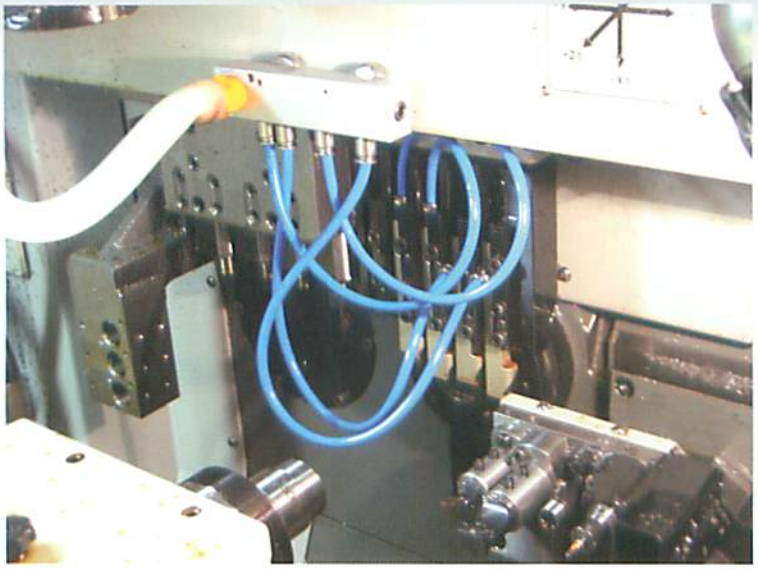
CAYMAN: DIE NEUEN WERKZEUGHALTER FÜR AUSSENDREHEN

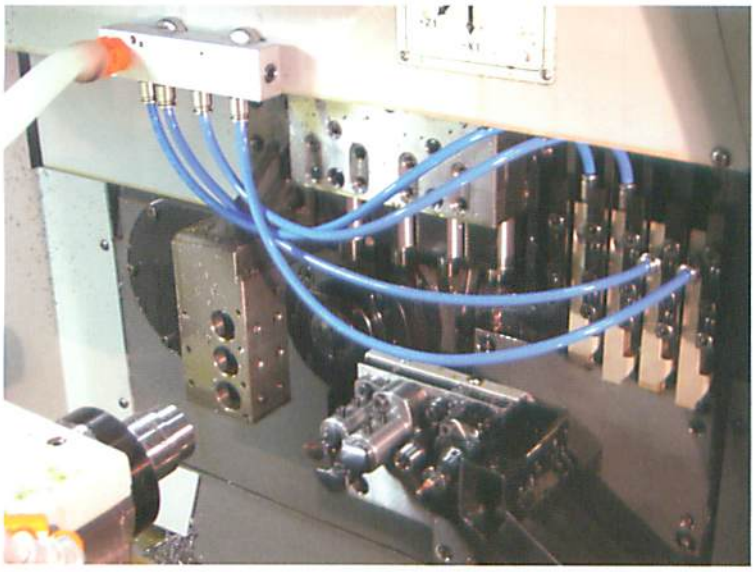
Endlich hat die Fa. **NOMA** ein bahnbrechendes und innovatives System entwickelt und hergestellt, um die Leistungsfähigkeit der Werkzeuge zum Aussendrehen zu verbessern.
Bei den neuen ***CAYMAN***-Werkzeugen wird das Kühlmittel (Flüssigkeit oder Luft) genau zur Schneidfläche zwangsweise geführt.

Der Strahl des Zwangskühlmittels, der konstant und genau ist, wird nicht von Spänen oder Schwingungen abgewiesen;
Der Span wird von der Kontaktfläche zwischen Werkstück und Schneide abgehoben und entfernt;
Der Strahl entfernt die Hitze genau vom Schnittbereich;
Die Temperatur, die gerade in diesem Bereich entsteht, wird immer gleich gehalten.
Diese Eigenschaften erlauben, die Späne besser zu kontrollieren, den Thermoschock auf den Wendeplatten zu vermeiden und dadurch die Lebensdauer der Schneide um über 25% zu verlängern.

Durch das ***CAYMAN***-System besteht die Möglichkeit, das Werkzeug in die Maschine einzubauen und gleichzeitig sicher zu sein, dass das Kühlmittel immer zum gleichen Punkt geführt wird, unabgesehen vom Fall und Bedingungen.
Ein konstanter und genauer Strahl wird während der Bearbeitung immer gewährleistet, besonders wenn die Bearbeitung automatisch und unbewacht erfolgt.
Dieses System vermeidet die langen und schwierigen Einstellungen von Düsen und Röhrchen, die jedenfalls keinen perfekten und konstanten Strahl gewährleisten.

Dank diesen Eingeschaften kann man versichern, dass die ***CAYMAN***-Werkzeuge Kosten reduzieren und Leistungen verbessern.
Die neuen ***CAYMAN***-Werkzeuge können jedes Standard-Drehwerkzeug ersetzen und bei allen Drehmaschinen auf dem Markt verwendet werden; ferner ist also eine Sonderreihe für Langdrehautomaten (SWISS TYPE) verfügbar.
Sie werden in einem Block hergestellt - inkl. die Zufuhrbohrung – und sind mit Schaluch mit 1/8"-Kupplung versehen, um für die marktüblichen Verbindungen je nach Maschinentyp geeigent zu sein.
Die Oberfläche dieser Werkzeuge unterliegt einer Behandlung mit Zirkonium (unser System Zirko ultra tools), die deren Verschleissfestigkeit erhöht.



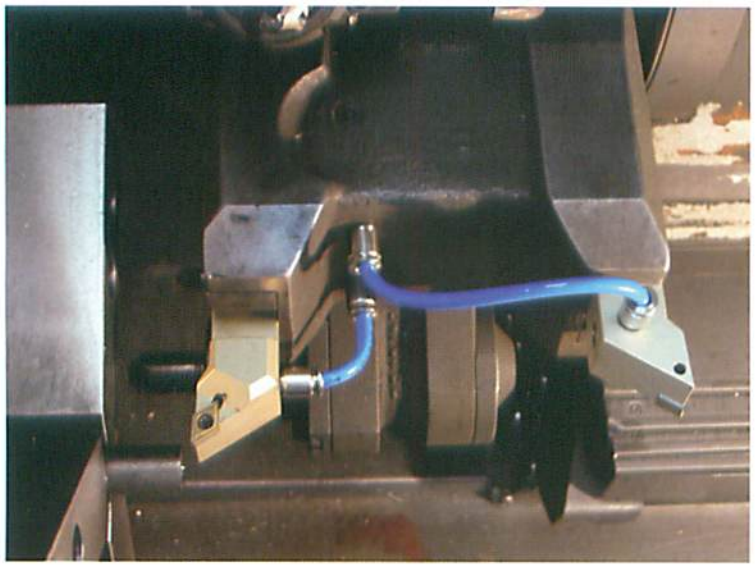


ESEMPI DI APPLICAZIONE SU MACCHINE A FANTINA MOBILE

Example of application for Swiss-Type automatic lathes

Exemple d'application pour machines à poupée mobile

Anwendungsbeispiel auf einer für langdrehautomaten



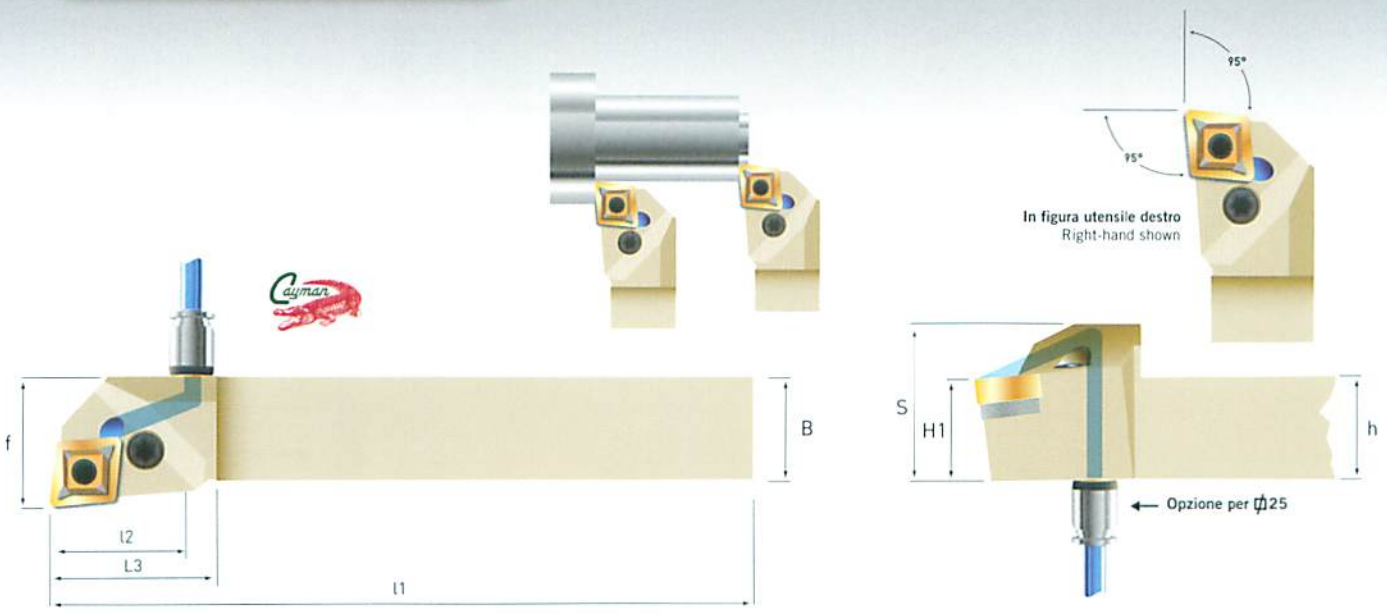
ESEMPIO DI APPLICAZIONE SU TORNIO CNC

Example of application on a CNC lathe

Exemple d'application sur un tour à CNC

Anwendungsbeispiel auf einer NC-Drehmaschine

Zr-A-PCLNR/L



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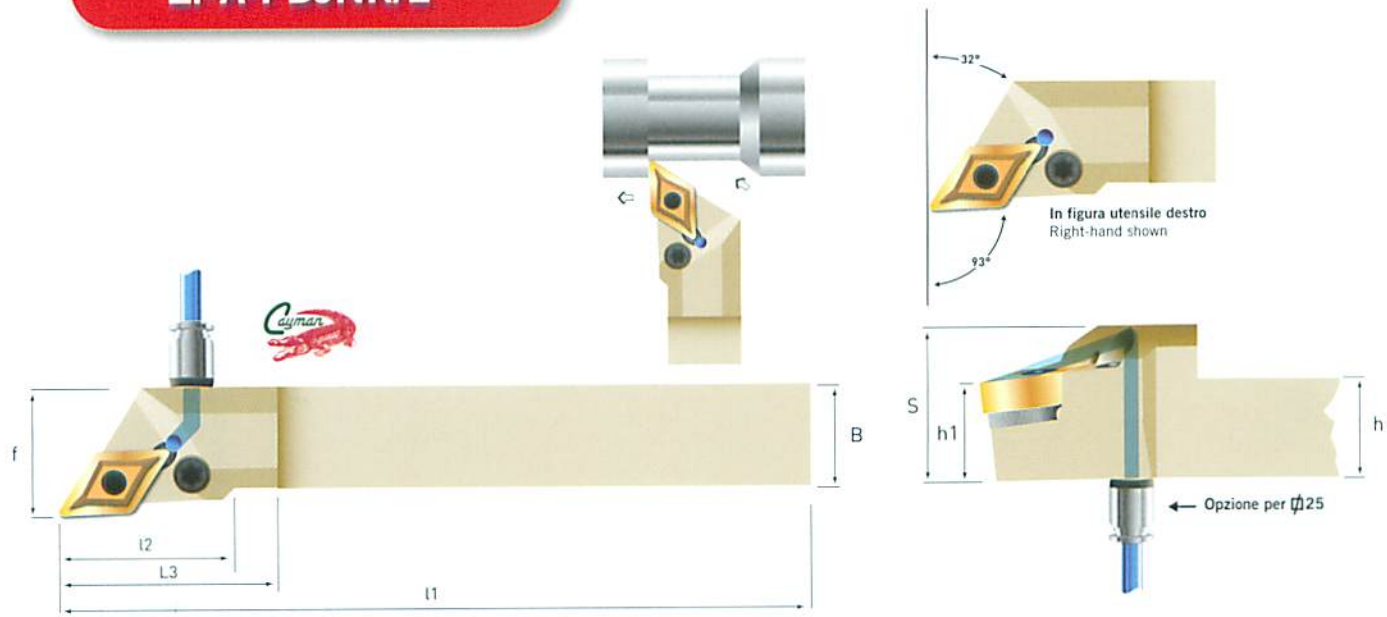
176 AR/L	Zr.A-PCLNR/L 2525M12	25	25	150	29	32	25	36	32	5001	1009	2003	3801	1002	CNM 1204

Tubo A150

Zr-A-PDJNR/L



COD.	SIGLA	h	B	l1	l2	f	H1	S	L3						Inserto
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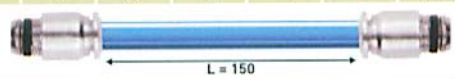
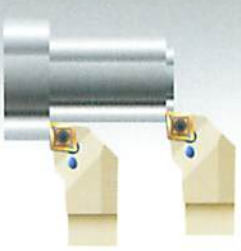
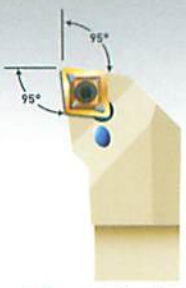
186 AR/L	Zr.A-PDJNR/L 2525M15	25	25	150	32	32	25	36	44	5002	1095	2003	3901	1002	DNM 1506

Tubo A150

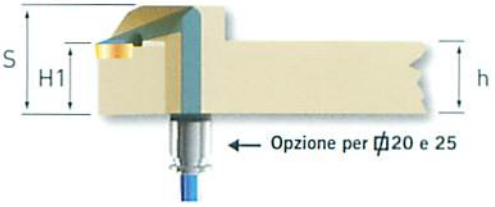


Zr-A-SCLCR/L





In figura utensile destro
Right-hand shown



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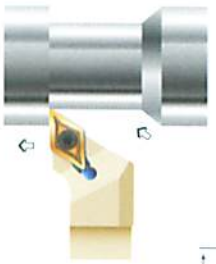
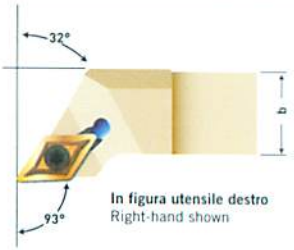
1113 AR/L	Zr.A-SCLCR/L 1616J09	16	16	110	22	20	16	22	28	2015	1003			CC. T 09T3
1114 AR/L	Zr.A-SCLCR/L 2020L09	20	20	140	23	25	20	27	28	2015	1003			CC. T 09T3
1115 AR/L	Zr.A-SCLCR/L 2020L12	20	20	140	23	25	20	27	32	2015	1047	4001	3501	CC. T 1204
1116 AR/L	Zr.A-SCLCR/L 2525M12	25	25	150	26	32	25	33	38	2015	1047	4001	3501	CC. T 1204

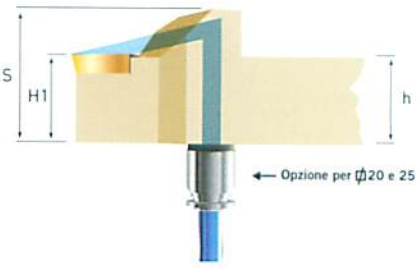
Tubo A150

Zr-A-SDJCR/L



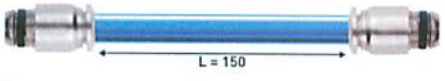


In figura utensile destro
Right-hand shown

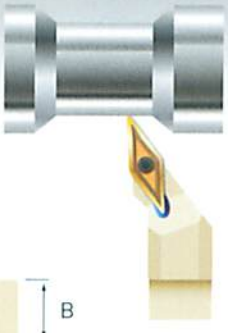


COD.	SIGLA	h	B	l1	l2	f	H1	S	L3					Inserto DCM-DCG
1211 AR/L	Zr.A-SDJCR/L 1212H07	12	12	100	14	16	12	18	21	2008	1001			DC. T 0702
1212 AR/L	Zr.A-SDJCR/L 1212H11	12	12	100	18	16	12	18	30	2015	1003			DC. T 11T3
1213 AR/L	Zr.A-SDJCR/L 1616J11	16	16	110	22	20	16	22	30	2015	1003			DC. T 11T3
1215 AR/L	Zr.A-SDJCR/L 2020L11	20	20	140	24	25	20	27	33	2015	1075	4002	3601	DC. T 11T3
1216 AR/L	Zr.A-SDJCR/L 2525M11	25	25	150	28	32	25	33	38	2015	1075	4002	3601	DC. T 11T3

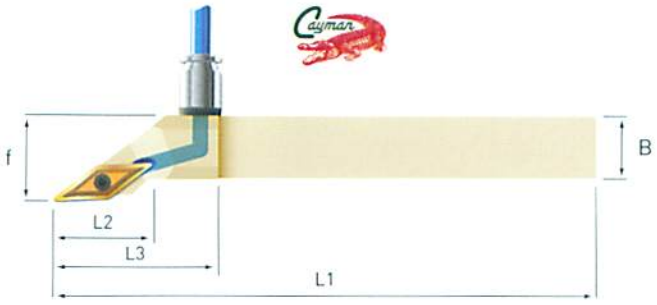
Tubo A150

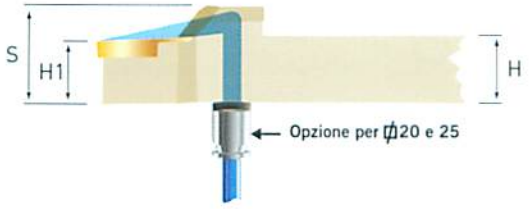


Zr-A-SVJCR/L



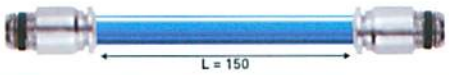
In figura utensile destro
Right-hand shown



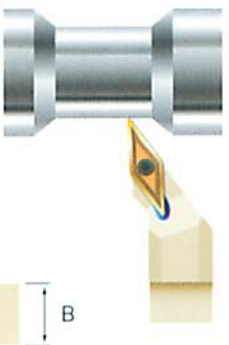


COD.	SIGLA	h	B	l1	l2	f	H1	S	L3					Inserto VCM-VCG
1311 AR/L	Zr.A-SVJCR/L 1212H11	12	12	100	18	16	12	18	30	2008	1001			VC. T 1103
1312 AR/L	Zr.A-SVJCR/L 1616J11	16	16	110	21	20	16	22	30	2008	1001			VC. T 1103
1314 AR/L ●	Zr.A-SVJCR/L 2020L11	20	20	140	21	25	20	27	33	2008	1001			VC. T 1103
1315 AR/L	Zr.A-SVJCR/L 2020L16	20	20	140	38	25	20	27	43	2015	1075	4002	3701	VC. T 1604
1316 AR/L	Zr.A-SVJCR/L 2525M16	25	25	150	40	32	25	33	44	2015	1075	4002	3701	VC. T 1604

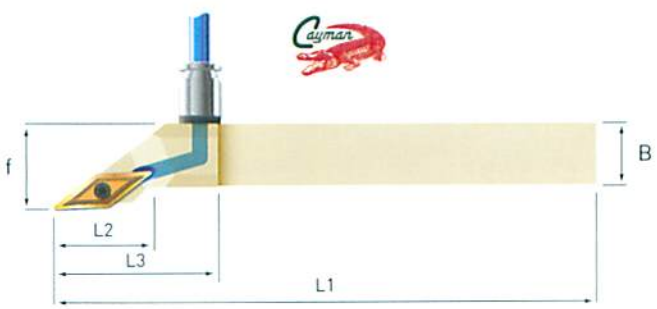
Tubo A150

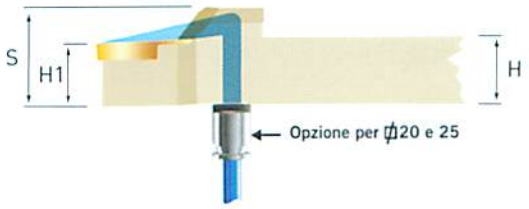


Zr-A-SVJBR/L



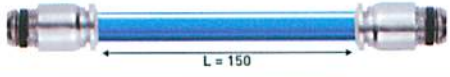
In figura utensile destro
Right-hand shown





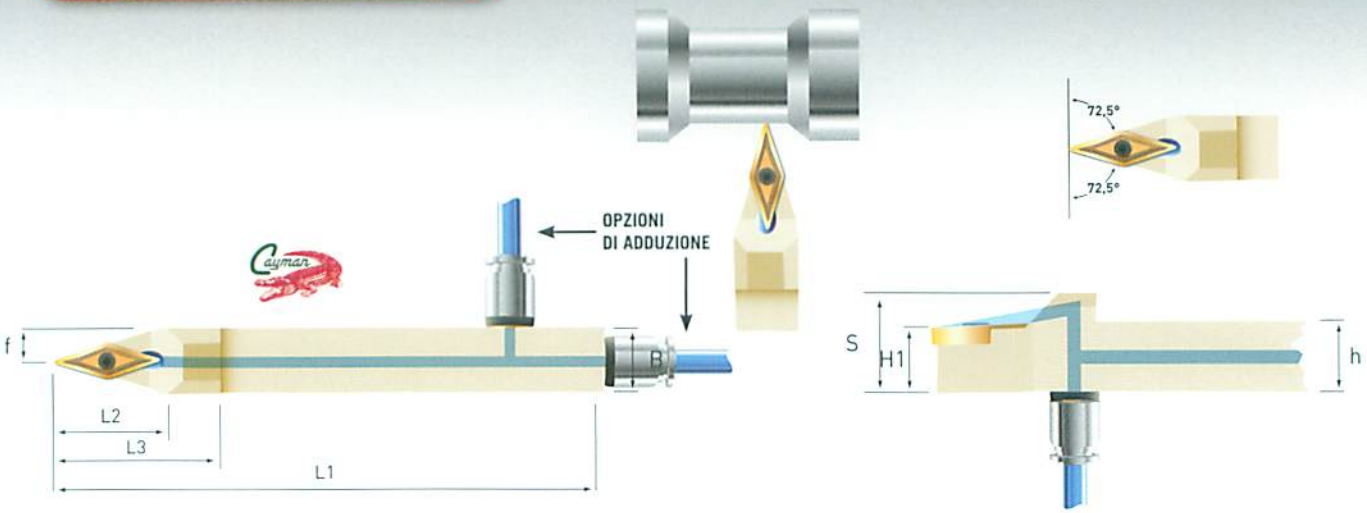
COD.	SIGLA	h	B	l1	l2	f	H1	S	L3					Inserto VBM-VBG
1411 AR/L	Zr.A-SVJBR/L 1212H11	12	12	100	18	16	12	18	31	2008	1001			VB. T 1103
1412 AR/L	Zr.A-SVJBR/L 1616J11	16	16	110	21	20	16	22	31	2008	1001			VB. T 1103
1414 AR/L ●	Zr.A-SVJBR/L 2020L11	20	20	140	21	25	20	27	33	2008	1001			VB. T 1103
1415 AR/L	Zr.A-SVJBR/L 2020L16	20	20	140	32	25	20	27	43	2015	1075	4002	3701	VB. T 1604
1416 AR/L	Zr.A-SVJBR/L 2525M16	25	25	150	40	32	25	33	44	2015	1075	4002	3701	VB. T 1604

Tubo A150



● = a esaurimento/to exhaustion/à l'épuisement/bis zur Erschöpfung

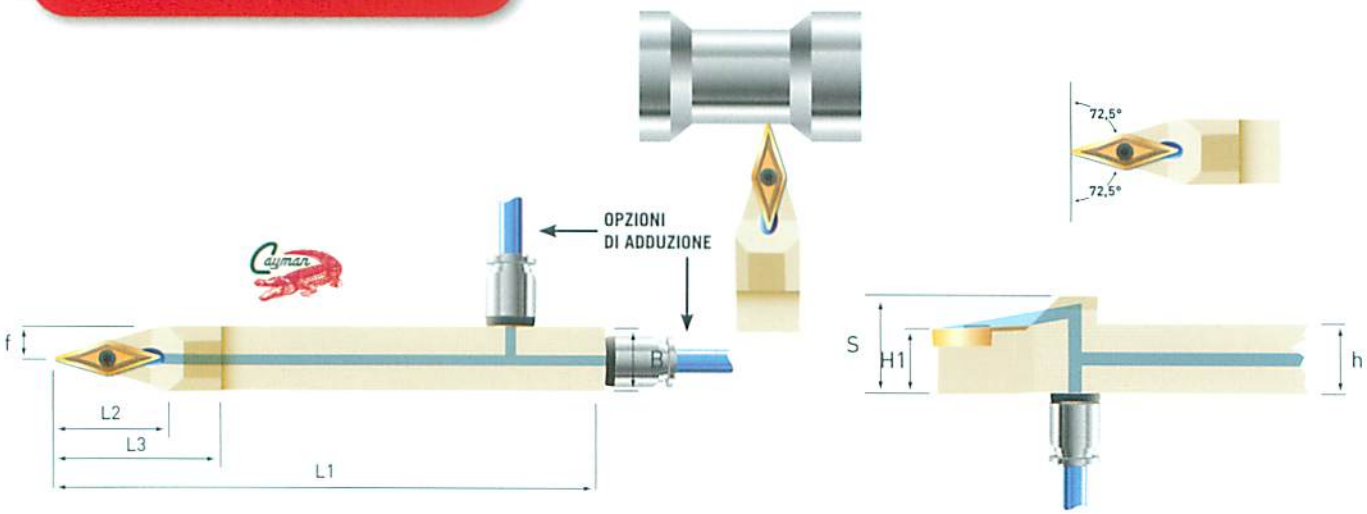
Zr-A-SVVCN



COD.	SIGLA	h	B	l1	l2	f	H1	S	L3					Inserto VCM-VCG
1711 A/N	Zr.A-SVVCN 1212H11	12	12	100	18	6	12	18	31	2008	1001			VC. T 1103
1712 A/N	Zr.A-SVVCN 1616J11	16	16	110	26	8	16	22	31	2008	1001			VC. T 1103
1713 A/N	Zr.A-SVVCN 1616K16	16	16	125	26	8	16	22	38	2105	1003			VC. T 1604
1714 A/N ●	Zr.A-SVVCN 2020L11	20	20	140	32	10	20	27	36	2008	1001			VC. T 11T3
1715 A/N	Zr.A-SVVCN 2020L16	20	20	140	34	10	20	27	38	2015	1075	4002	3701	VC. T 1604
1716 A/N	Zr.A-SVVCN 2525M16	25	25	150	42	12.5	25	33	38	2015	1075	4002	3701	VC. T 1604

Tubo A150

Zr-A-SVVBN

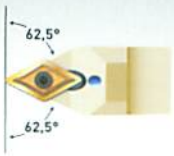


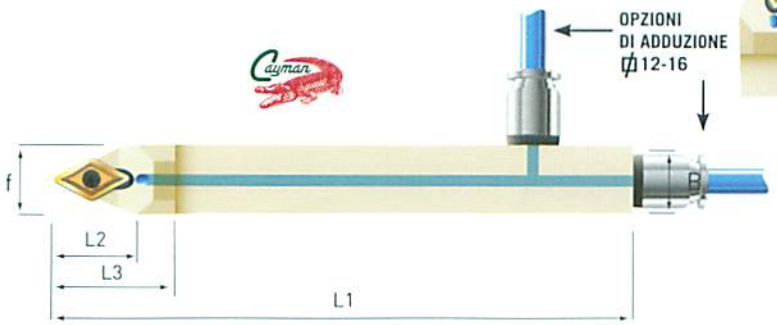
COD.	SIGLA	h	B	l1	l2	f	H1	S	L3					Inserto VBM-VBG
1811 A/N	Zr.A-SVVBN 1212H11	12	12	100	18	6	12	18	31	2008	1001			VB. T 1103
1812 A/N	Zr.A-SVVBN 1616J11	16	16	110	26	8	16	22	31	2008	1001			VB. T 1103
1813 A/N	Zr.A-SVVBN 1616K16	16	16	125	26	8	16	22	38	2105	1003			VB. T 1604
1814 A/N ●	Zr.A-SVVBN 2020L11	20	20	140	32	10	20	27	36	2008	1001			VB. T 11T3
1815 A/N	Zr.A-SVVBN 2020L16	20	20	140	34	10	20	27	38	2015	1075	4002	3701	VB. T 1604
1816 A/N	Zr.A-SVVBN 2525M16	25	25	150	42	12.5	25	33	38	2015	1075	4002	3701	VB. T 1604

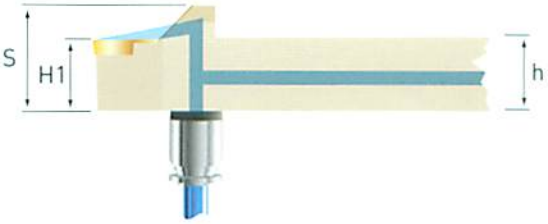
Tubo A150

● = a esaurimento/to exhaustion/à l'épuisement/bis zur Erschöpfung

Zr-A-SDNCN





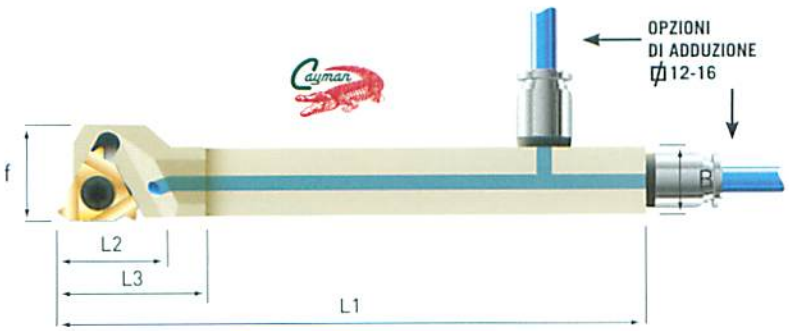


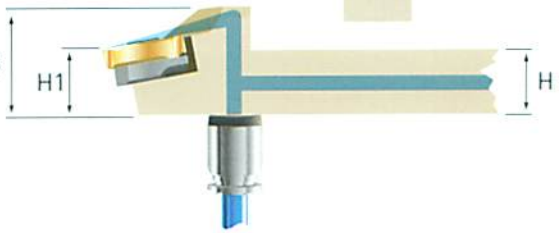
COD.	SIGLA	h	B	l1	l2	f	H1	S	L3					Inserto DCM-DCG
1611 AN	Zr.A-SDNCN 1212H07	12	12	100	12	6	12	18	22	2008	1001			DC. T 0702
1612 AN	Zr.A-SDNCN 1212H11	12	12	100	13	6	12	18	31	2015	1003			DC. T 11T3
1613 AN	Zr.A-SDNCN 1616J11	16	16	110	16	8	16	22	31	2015	1003			DC. T 11T3
1615 AN	Zr.A-SDNCN 2020L11	20	20	140	20	10	20	27	38	2015	1075	4002	3601	DC. T 11T3
1616 AN	Zr.A-SDNCN 2525M11	25	25	150	25	12.5	25	33	38	2015	1075	4002	3601	DC. T 11T3

Tubo A150

Zr-A-SER

Utensili per filettatura - *Tools for threading*
Outils pour filetage - ***Werkzeuge zum gewindedrehen***





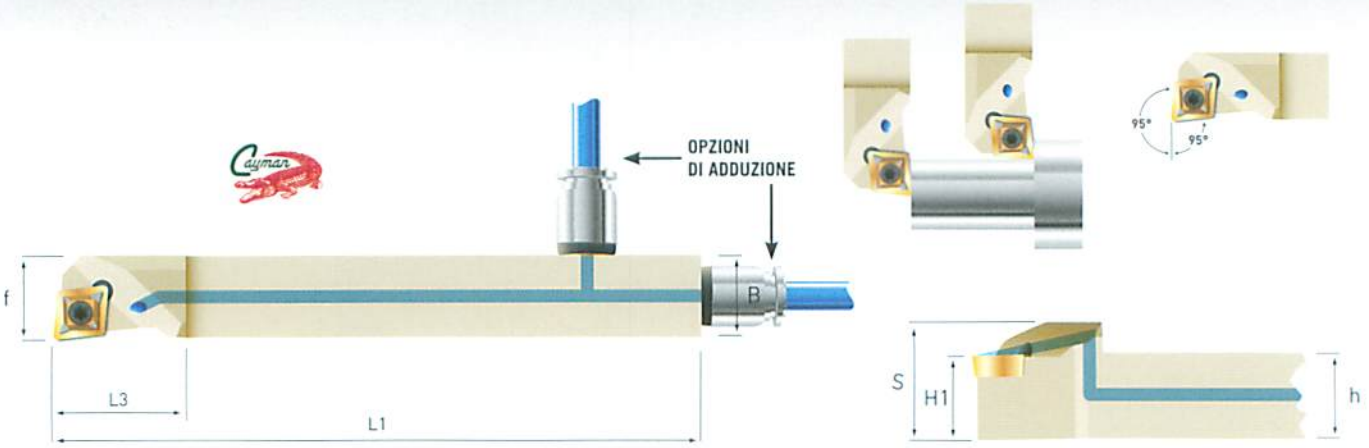
COD.	SIGLA	h	B	l1	l2	f	H1	S	L3					Inserto ER
195 AR	Zr.A-SER 1212H16	12	12	100	16	16	12	18	22	3301	1065	1032	2010	16ER
196 AR	Zr.A-SER 1616J16	16	16	110	16	16	16	22	31	3301	1065	1032	2010	16ER
197 AR	Zr.A-SER 2020L16	20	20	140	16	20	20	27	36	3301	1065	1032	2010	16ER
198 AR	Zr.A-SER 2525M16	25	25	150	16	25	25	33	38	3301	1065	1032	2010	16ER

Tubo A150

Zr-A-SCLCR/L-F

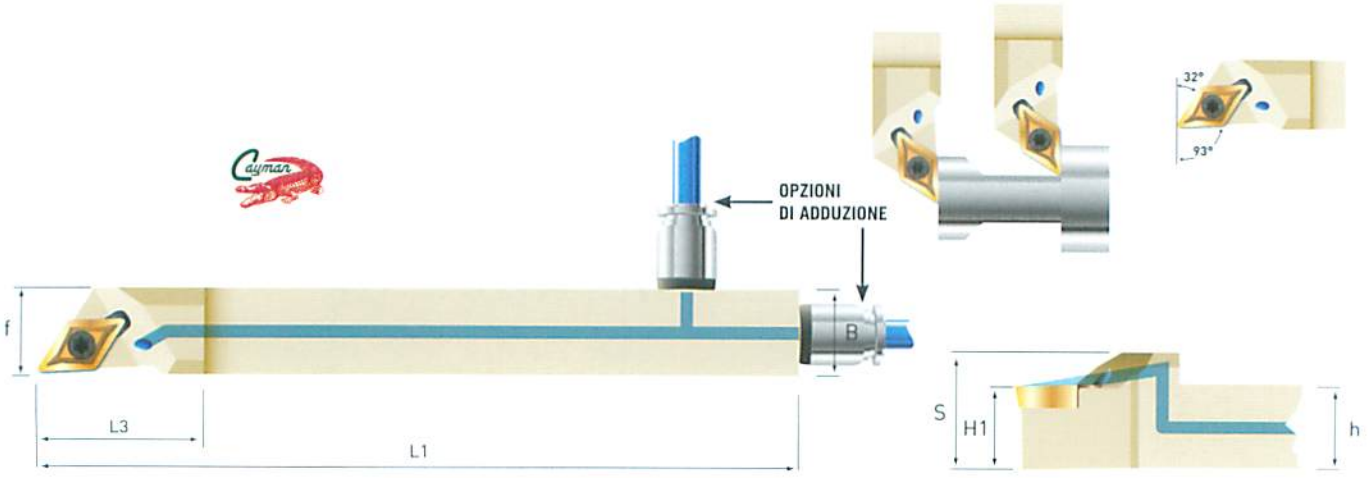
Per torni a fantina mobile - *For Swiss-Type automatic lathes*

Pour machines à poupée mobile - *Für langdrehautomaten*



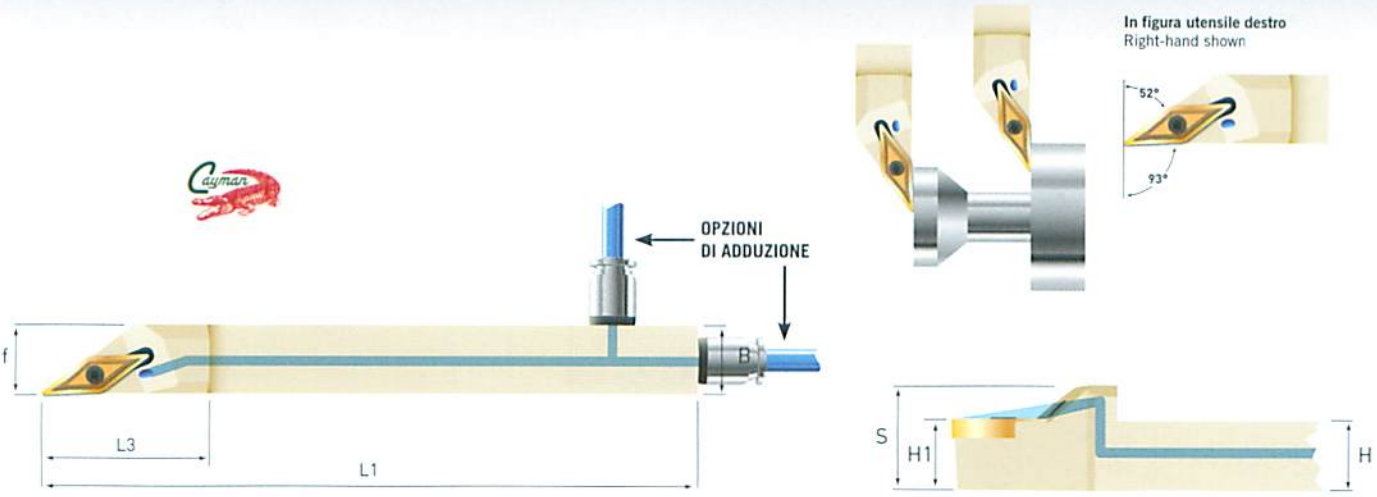
COD.	SIGLA	h	B	l1	f	H1	S	L3			Inserto CCM-CCG
2111 AR/L	Zr.A-SCLCR/L 1212J06F	12	12	110	12	12	18	21	2008	1001	CC. T 0602
2112 AR/L	Zr.A-SCLCR/L 1212J09F	12	12	110	12	12	18	25	2015	1003	CC. T 09T3
2113 AR/L	Zr.A-SCLCR/L 1616K09F	16	16	125	16	16	22	25	2015	1003	CC. T 09T3
Tubo A150			1/8"	L = 150				1/8"			

Zr-A-SDJCR/L-F



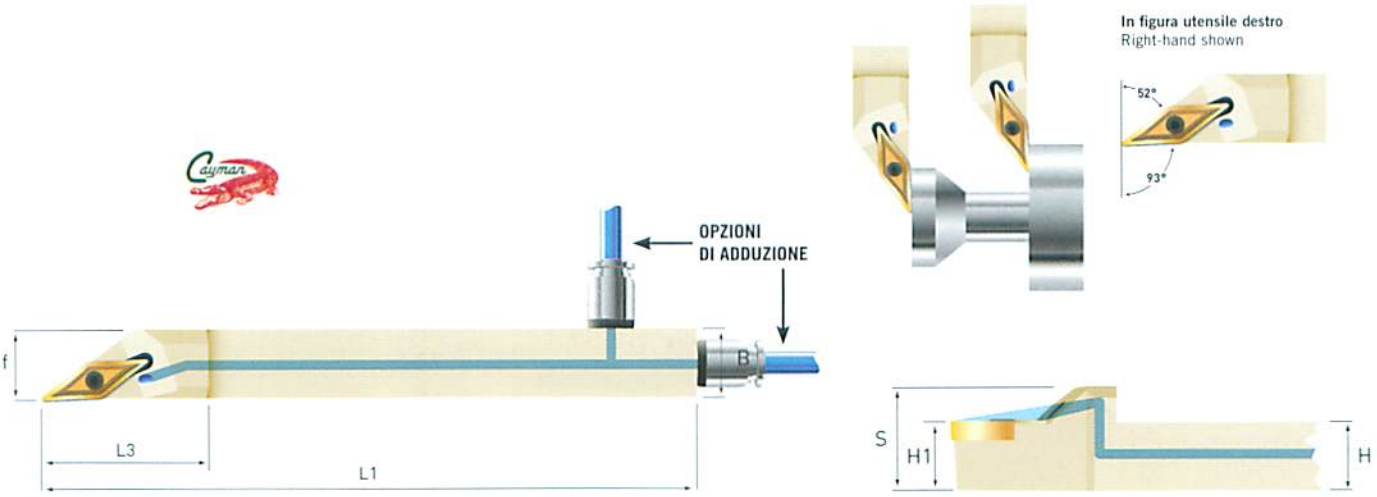
COD.	SIGLA	h	B	l1	f	H1	S	L3			Inserto DCM-DCG
2211 AR/L	Zr.A-SDJCR/L 1212J07F	12	12	110	12	12	18	23	2008	1001	DC. T 0702
2212 AR/L	Zr.A-SDJCR/L 1212J11F	12	12	110	12	12	18	30	2015	1003	DC. T 11T3
2213 AR/L	Zr.A-SDJCR/L 1616K11F	16	16	125	16	16	22	30	2015	1003	DC. T 11T3
Tubo A150			1/8"	L = 150				1/8"			

Zr-A-SVJCR/L-F



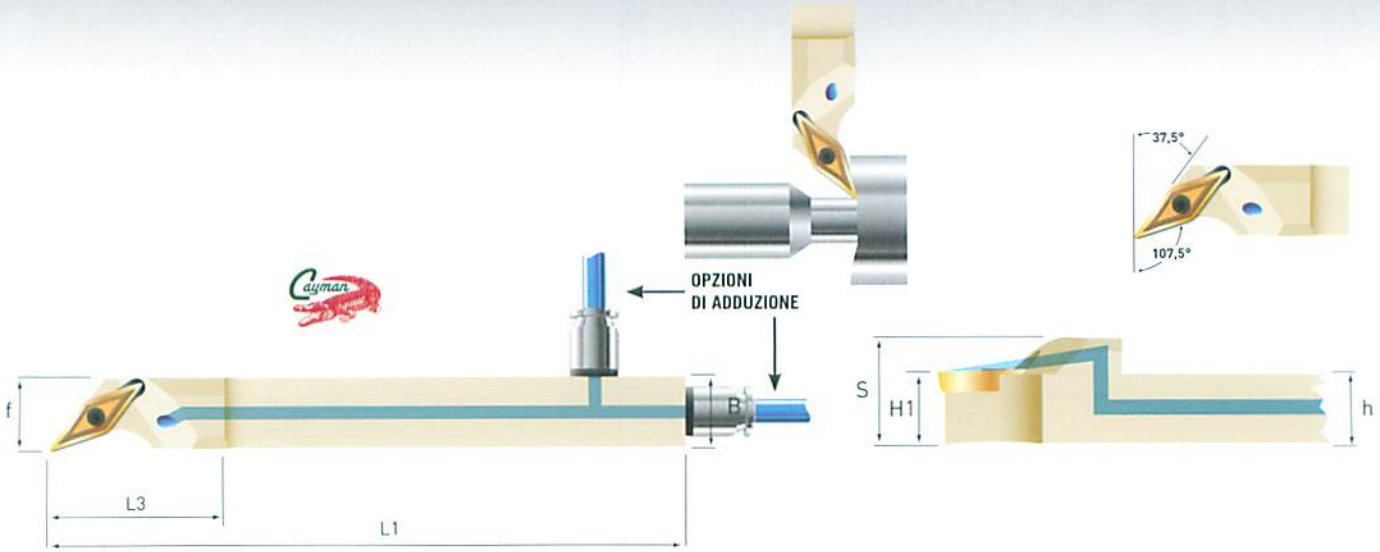
COD.	SIGLA	h	B	l1	f	H1	S	L3			Inserto VCM-VCG
2311 AR/L	Zr.A-SVJCR/L 1212J11F	12	12	110	12	12	18	28	2008	1001	VC. T 1103
2312 AR/L	Zr.A-SVJCR/L 1616K11F	16	16	125	16	16	22	29	2008	1001	VC. T 1103
2313 AR/L	Zr.A-SVJCR/L 1616K16F	16	16	125	16	16	22	38	2015	1003	VC. T 1604
Tubo A150			1/8"		L = 150			1/8"			

Zr-A-SVJBR/L-F



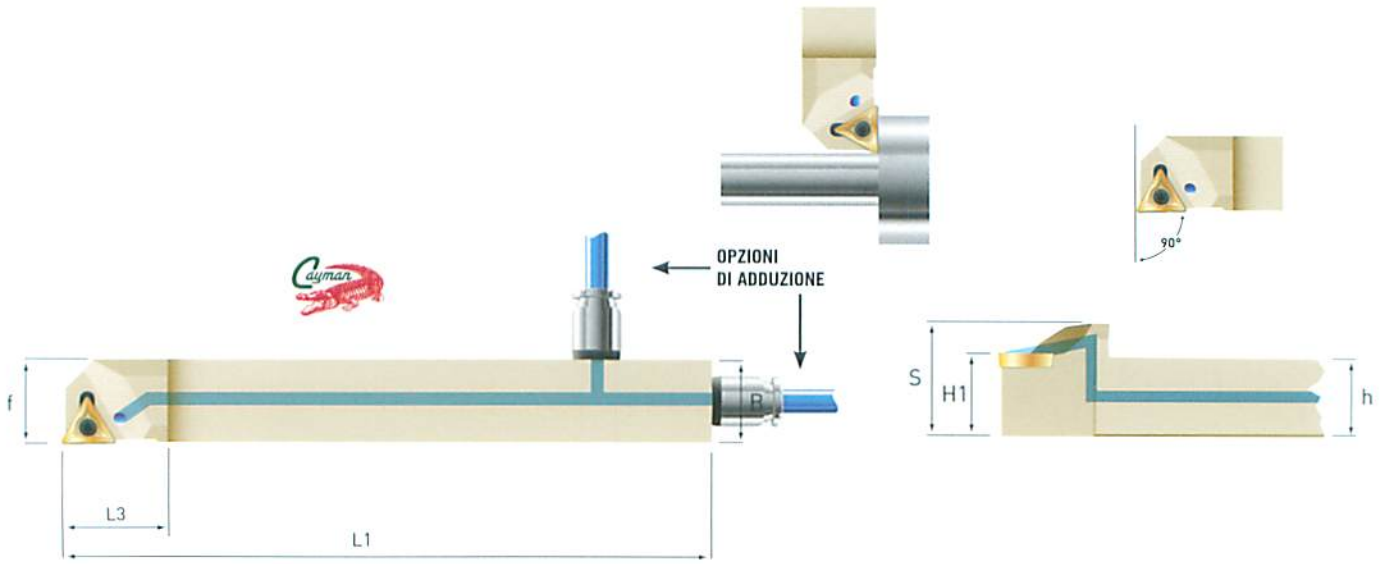
COD.	SIGLA	h	B	l1	f	H1	S	L3			Inserto VBM-VBG
2411 AR/L	Zr.A-SVJBR/L 1212J11F	12	12	110	12	12	18	28	2008	1001	VB. T 1103
2412 AR/L	Zr.A-SVJBR/L 1616K11F	16	16	125	16	16	22	29	2008	1001	VB. T 1103
2413 AR/L	Zr.A-SVJBR/L 1616K16F	16	16	125	16	16	22	38	2015	1003	VB. T 1604
Tubo A150			1/8"		L = 150			1/8"			

Zr-A-SVHCR/L-F



COD.	SIGLA	h	B	l1	f	H1	S	L3			Inserto VCM-VCG
2511 AR/L	Zr.A-SVHCR/L 1212J11F	12	12	110	12	12	18	28	2008	1001	VC. T 1103
2512 AR/L	Zr.A-SVHCR/L 1616K11F	16	16	125	16	16	22	29	2008	1001	VC. T 1103
Tubo A150			1/8"								1/8"

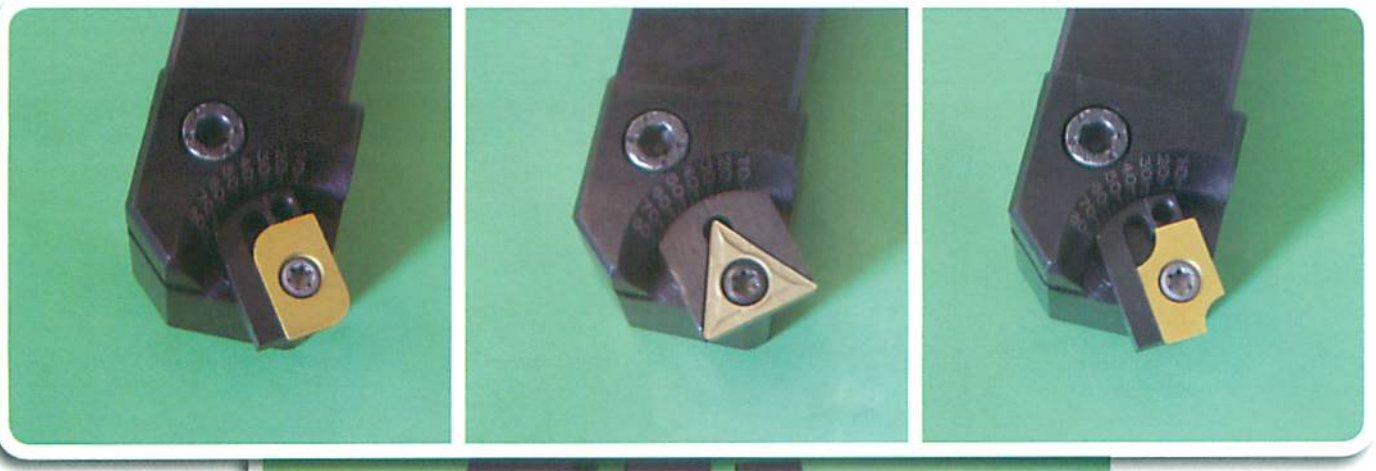
Zr-A-STGCR/L-F



COD.	SIGLA	h	B	l1	f	H1	S	L3			Inserto TCM-TCG
2911 AR/L	Zr.A-STGCR/L 1212J11F	12	12	110	12	12	18	28	2008	1001	TC.T. 1102
2912 AR/L	Zr.A-STGCR/L 1616K11F	16	16	125	16	16	22	29	2008	1001	TC.T. 1102
Tubo A150			1/8"								1/8"

100% MADE IN ITALY

Utensili standard per tornitura esterna
External turning tools - Standard Type
Outils standard pour tournage extérieur
Aussendrehwerkzeuge in Standardausführung



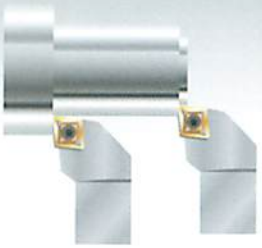
PCLNR/L

COD.	SIGLA	h	B	l1	l2	f	H1						Inserto
175 R/L	PCLNR/L 2020L12	20	20	140	26	25	20	5001	1009	2003	3801	1002	CNM 1024
176 R/L	PCLNR/L 2525M12	25	25	150	26	32	25	5001	1009	2003	3801	1002	CNM 1204

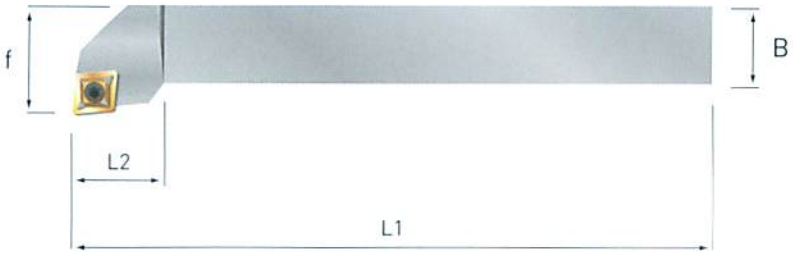
PDJNR/L

COD.	SIGLA	h	B	l1	l2	f	H1						Inserto
185 R/L	PDJNR/L 2020L15	20	20	140	30	25	20	5002	1095	2003	3901	1002	DNM 1506
186 R/L	PDJNR/L 2525M15	25	25	150	30	32	25	5002	1095	2003	3901	1002	DNM 1506

SCLCR/L

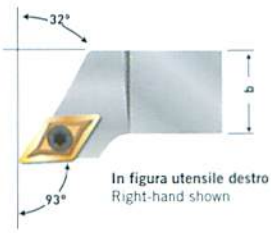


In figura utensile destro
Right-hand shown

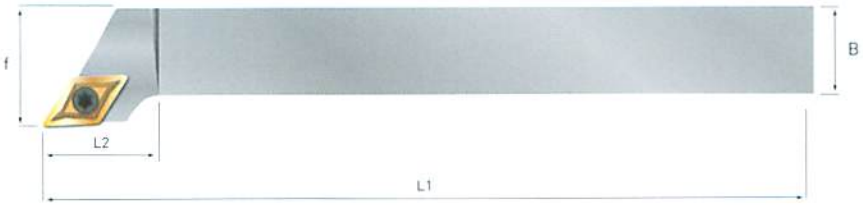


COD.	SIGLA	h	B	l1	l2	f	H1					Inserto CCM-CCG
1110 R/L	SCLCR/L 1010F06	10	10	80	14	12	10	2008	1001			CC. T 0602
1111 R/L	SCLCR/L 1212H06	12	12	100	14	16	12	2008	1001			CC. T 0602
1112 R/L	SCLCR/L 1212H09	12	12	100	14	16	12	2015	1003			CC. T 09T3
1113 R/L	SCLCR/L 1616J09	16	16	110	22	20	16	2015	1003			CC. T 09T3
1114 R/L	SCLCR/L 2020L09	20	20	140	23	25	20	2015	1003			CC. T 09T3
1115 R/L	SCLCR/L 2020L12	20	20	140	23	25	20	2015	1047	4001	3501	CC. T 1204
1116 R/L	SCLCR/L 2525M12	25	25	150	26	32	25	2015	1047	4001	3501	CC. T 1204

SDJCR/L



In figura utensile destro
Right-hand shown



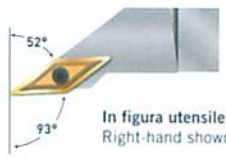
COD.	SIGLA	h	B	l1	l2	f	H1					Inserto DCM-DCG
1210 R/L	SDJCR/L 1010F07	10	10	80	14	12	10	2008	1001			DC. T 0702
1211 R/L	SDJCR/L 1212H07	12	12	100	14	16	12	2008	1001			DC. T 0702
1212 R/L	SDJCR/L 1212H11	12	12	100	16	16	12	2015	1003			DC. T 11T3
1213 R/L	SDJCR/L 1616J11	16	16	110	21	20	16	2015	1003			DC. T 11T3
1215 R/L	SDJCR/L 2020L11	20	20	140	22	25	20	2015	1075	4002	3601	DC. T 11T3
1216 R/L	SDJCR/L 2525M11	25	25	150	24	32	25	2015	1075	4002	3601	DC. T 11T3

SVJCR/L

In figura utensile destro
Right-hand shown

COD.	SIGLA	h	B	l1	l2	f	H1					Inserto VCM-VCG
1311 R/L	SVJCR/L 1212H11	12	12	100	18	16	12	2008	1001			VC. T 1103
1312 R/L	SVJCR/L 1616J11	16	16	110	21	20	16	2008	1001			VC. T 1103
1314 R/L ●	SVJCR/L 2020L11	20	20	140	21	25	20	2008	1001			VC. T 1103
1315 R/L	SVJCR/L 2020L16	20	20	140	38	25	20	2015	1075	4002	3701	VC. T 1604
1316 R/L	SVJCR/L 2525M16	25	25	150	40	32	25	2015	1075	4002	3701	VC. T 1604

SVJBR/L

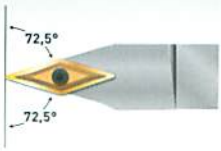


In figura utensile destro
Right-hand shown

COD.	SIGLA	h	B	l1	l2	f	H1					Inserto VCM-VCG
1411 R/L	SVJBR/L 1212H11	12	12	100	18	16	12	2008	1001			VB. T 1103
1412 R/L	SVJBR/L 1616J11	16	16	110	21	20	16	2008	1001			VB. T 1103
1414 R/L ●	SVJBR/L 2020L11	20	20	140	21	25	20	2008	1001			VB. T 1103
1415 R/L	SVJBR/L 2020L16	20	20	140	38	25	20	2015	1075	4002	3701	VB. T 1604
1416 R/L	SVJBR/L 2525M16	25	25	150	40	32	25	2015	1075	4002	3701	VB. T 1604

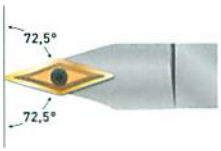
● = a esaurimento/to exhaustion/à l'épuisement/bis zur Erschöpfung

SVVCN



COD.	SIGLA	h	B	l1	l2	f	H1					Inserto VCM-VCG
1711 N	SVVCN 1212H11	12	12	100	18	6	12	2008	1001			VC. T 1103
1712 N	SVVCN 1616J11	16	16	110	26	8	16	2008	1001			VC. T 1103
1713 N	SVVCN 1616K16	16	16	125	26	8	16	2105	1003			VC. T 1604
1714 N ●	SVVCN 2020L11	20	20	140	32	10	20	2008	1001			VC. T 11T3
1715 N	SVVCN 2020L16	20	20	140	34	10	20	2015	1075	4002	3701	VC. T 1604
1716 N	SVVCN 2525M16	25	25	150	42	12.5	25	2015	1075	4002	3701	VC. T 1604

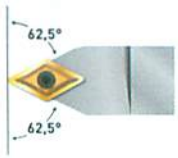
SVVBN



COD.	SIGLA	h	B	l1	l2	f	H1					Inserto VBM-VBG
1811 N	SVVBN 1212H11	12	12	100	18	6	12	2008	1001			VB. T 1103
1812 N	SVVBN 1616J11	16	16	110	26	8	16	2008	1001			VB. T 1103
1813 N	SVVBN 1616K16	16	16	125	26	8	16	2105	1003			VB. T 1604
1814 N ●	SVVBN 2020L11	20	20	140	32	10	20	2008	1001			VB. T 11T3
1815 N	SVVBN 2020L16	20	20	140	34	10	20	2015	1075	4002	3701	VB. T 1604
1816 N	SVVBN 2525M16	25	25	150	42	12.5	25	2015	1075	4002	3701	VB. T 1604

● = a esaurimento/to exhaustion/à l'épuisement/bis zur Erschöpfung

SDNCN



COD.	SIGLA	h	B	l1	l2	f	H1					Inserto DCM-DCG
1610 N	SDNCN 1010F07	10	10	80	10	5	10	2008	1001			DC. T 0702
1611 N	SDNCN 1212H07	12	12	100	12	6	12	2008	1001			DC. T 0702
1612 N	SDNCN 1212H11	12	12	100	13	6	12	2015	1003			DC. T 11T3
1613 N	SDNCN 1616J11	15	15	110	16	8	16	2015	1003			DC. T 11T3
1615 N	SDNCN 2020L11	20	20	140	20	10	20	2015	1075	4002	3601	DC. T 11T3
1616 N	SDNCN 2525M11	25	25	150	25	12.5	25	2015	1075	4002	3601	DC. T 11T3

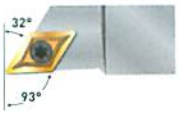
Per torni a fantina mobile - *For Swiss-Type automatic lathes*

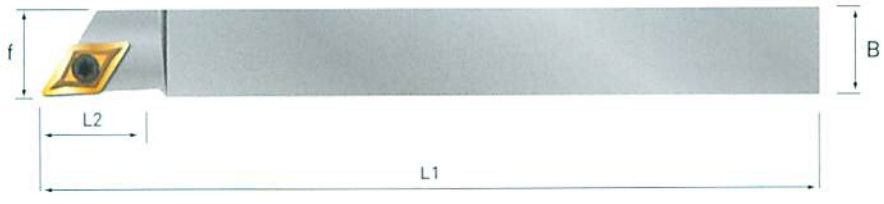
Pour machines à poupée mobile - *Für langdrehautomaten*

SCLCR/L-F

COD.	SIGLA	h	B	l1	f	H1	L2			Inserto CCM-CCG
2110 R/L	SCLCR/L 1010H06F	10	10	100	10	10	14	2008	1001	CC. T 0602
2111 R/L	SCLCR/L 1212J06F	12	12	110	12	12	16	2008	1001	CC. T 0602
2112 R/L	SCLCR/L 1212J09F	12	12	110	12	12	16	2015	1003	CC. T 09T3
2113 R/L	SCLCR/L 1616K09F	16	16	125	16	16	22	2015	1003	CC. T 09T3

SDJCR/L-F

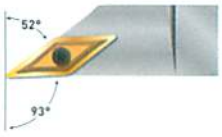




COD.	SIGLA	h	B	l1	f	H1	L2			Inserto DCM-DCG
2210 R/L	SDJCR/L 1010H07F	10	10	100	10	10	16	2008	1001	DC. T 0702
2211 R/L	SDJCR/L 1212J07F	12	12	110	12	12	16	2008	1001	DC. T 0702
2212 R/L	SDJCR/L 1212J11F	12	12	110	12	12	16	2015	1003	DC. T 11T3
2213 R/L	SDJCR/L 1616K11F	16	16	125	16	16	22	2015	1003	DC. T 11T3

SVJCR/L-F

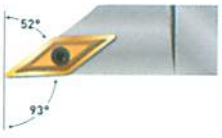
In figura utensile destro
Right-hand shown

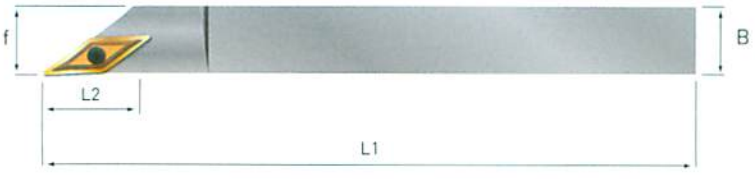


COD.	SIGLA	h	B	l1	f	H1	L2			Inserto VCM-VCG
2311 R/L	SVJCR/L 1212J11F	12	12	110	12	12	22	2008	1001	VC. T 1103
2312 R/L	SVJCR/L 1616K11F	16	16	125	16	16	22	2008	1001	VC. T 1103
2313 R/L	SVJCR/L 1616K16F	16	16	125	16	16	27	2015	1003	VC. T 1604

SVJBR/L-F

In figura utensile destro
Right-hand shown



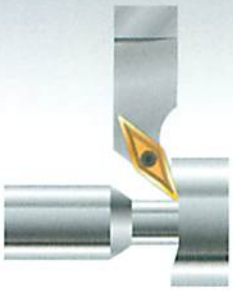


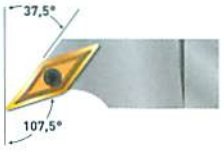
COD.	SIGLA	h	B	l1	f	H1	L2			Inserto VBM-VBG
2411 R/L	SVJBR/L 1212J11F	12	12	110	12	12	22	2008	1001	VB. T 1103
2412 R/L	SVJBR/L 1616K11F	16	16	125	16	16	22	2008	1001	VB. T 1103
2413 R/L	SVJBR/L 1616K16F	16	16	125	16	16	27	2015	1003	VB. T 1604

SVHCR/L-F

Per torni a fantina mobile - *For Swiss-Type automatic lathes*

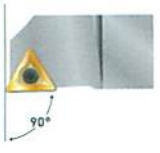
Pour machines à poupée mobile - *Für langdrehautomaten*

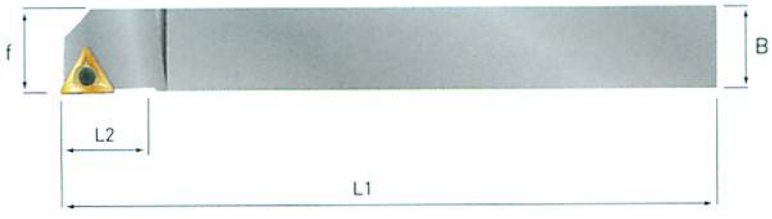




COD.	SIGLA	h	B	l1	f	H1	L2			Inserto VCM-VCG
2511 R/L	SVHCR/L 1212J11F	12	12	110	12	12	17	2008	1001	VC. T 1103
2512 R/L	SVHCR/L 1616K11F	16	16	125	16	16	20	2008	1001	VC. T 1103

STGCR/L-F





COD.	SIGLA	h	B	l1	f	H1	L2			Inserto TCM-TCG
2911 R/L	STGCR/L 1212J11F	12	12	110	12	12	17	2008	1001	TC. T 1103
2912 R/L	STGCR/L 1616K11F	16	16	125	16	16	20	2008	1001	TC. T 1103

noma®

100% MADE IN ITALY

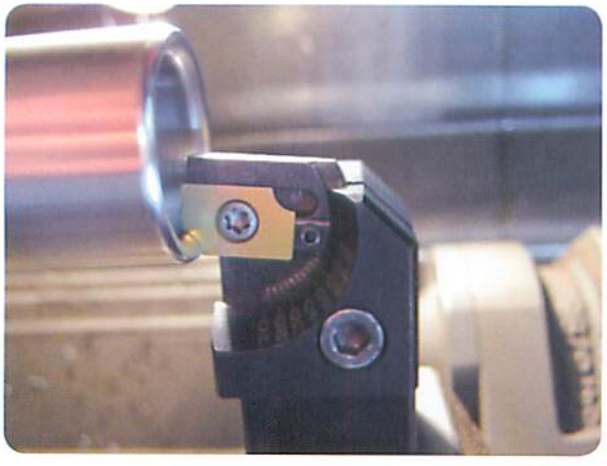
FLEXTURN

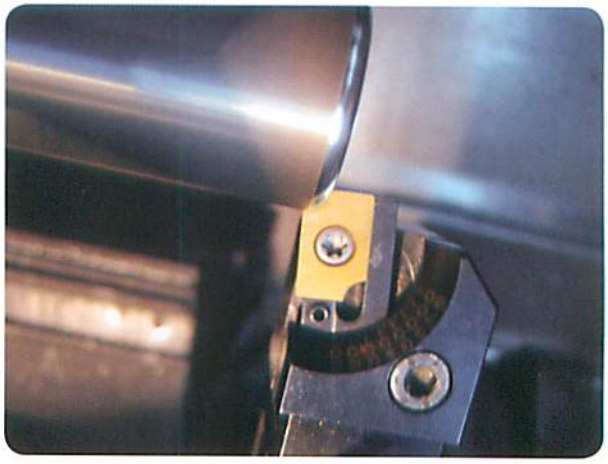
UTENSILE REGISTRABILE DA 10° A 180° PER SMUSSI E RAGGI

TOOL WITH ADJUSTIMENT FROM 10° TO 80° FOR CHAMFER AND RADIUS MACHINING

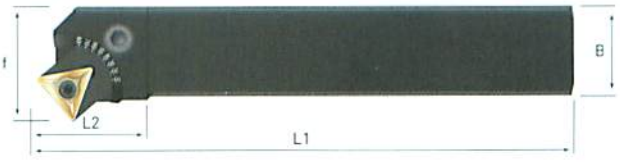
OUTIL AVEC REGLAGE DE 10° A 80° POUR BISEAUX ET RAYONS

EINSTELLBARES WERKZEUG VON 10° BIS 80° ZUM ABFASEN UND ZUR RADIENBEARBEITUNG



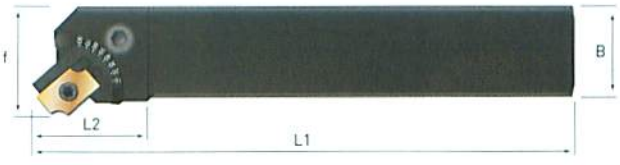


STXCR/L



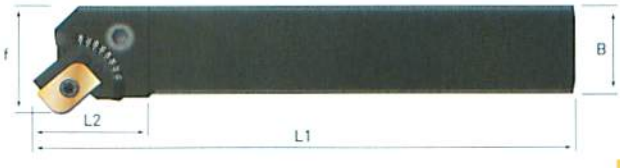
COD.	SIGLA	h	B	l1	f	H1	L2					Inserto
626 R	STXCR/L 2020L16	20	20	140	25	20	27	6020	1003	1055	2015	TC. T 16T3
627 R	STXCR/L 2525M16	25	25	150	32	25	27	6020	1003	1055	2015	TC. T 16T3

SRXDR-F



COD.	SIGLA	h	B	l1	f	H1	L2				Inserto XDCW 1503 FR
646 FR	SRXDR-F 2020L15	20	20	140	25	20	27	6040 F	1004	2015	1 - 1,5 - 2 - 2,3 - 3 - 3,5 - 4 - 5
647 FR	SRXDR-F 2525L15	25	25	150	32	25	27	6040 F	1004	2015	1 - 1,5 - 2 - 2,3 - 3 - 3,5 - 4 - 5

SRXDR-M



COD.	SIGLA	h	B	l1	f	H1	L2				Inserto XDCW 1503 MR
646 MR	SRXDR-M 2020L15	20	20	140	25	20	27	6040 M	1004	2015	1 - 1,5 - 2 - 2,5 - 3 - 3,5 - 4 - 5
647 MR	SRXDR-M 2525L15	25	25	150	32	25	27	6040 M	1004	2015	1 - 1,5 - 2 - 2,5 - 3 - 3,5 - 4 - 5

KIT A7000

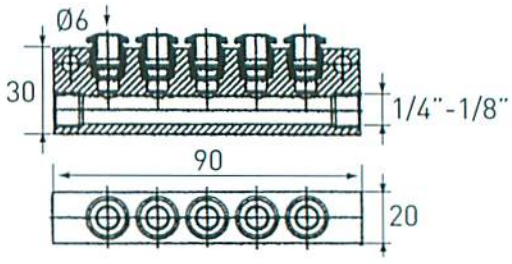
100% MADE IN ITALY

KIT A7000: Ripartitore in alluminio a 5+2 vie per applicazione su Torni a Fantina mobile completo di attacco Loc Line 1/2", tappi e 3 metri di tubo in poliuretano Ø 6x4 (Pressione Max consentita 12 Bar).

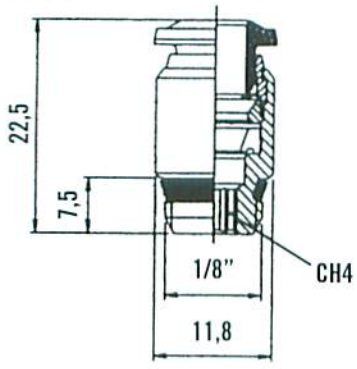
KIT A7000 for applications on Swiss Type automatic lathes: *5+2-way aluminium distribution manifold with Loc-Line 1/2" coupling +3 m polyurethan tube with plugs and release key (MAX. allowed pressure: 12 Bar).*

KIT A7000 pour applications sur machines à poupée mobile: *répartiteur en aluminium 5+2 voies avec joints Loc-Line 1/2" + 3 m tuyau en polyuréthane avec bouchons et clé de décrochage (Pression maximale permise: 12 Bar).*

KIT A7000 für Anwendungen auf Langdrehautomaten: *5+2-Weg-Verteiler aus Aluminium mit Loc-Line 1/2"-Kupplung + 3 Polyurethanschlauch mit Stöpseln und Entkupplungsschlüssel (Zulässiger Höchstdruck: 12 Bar).*



RA18



RA18: Raccordo con esagono incassato per utensili CAYMAN. (Pressione MAX consentita 12 BAR).

RA18: *Fitting with socket head for CAYMAN tools. (MAX. allowed pressure: 12 BAR).*

RA18: *Jonction à six pans creux pour outils CAYMAN. (Pression maximale permise: 12 BAR).*

RA18: *Kupplung mit Innensechskant für CAYMAN-Werkzeuge (Zulässiger Höchstdruck: 12 bar)*

T64

T64: Tubo in poliuretano DIN73378 Ø 6 esterno - Ø 4 interno. Pressione MAX consentita 12 BAR

T64: Polyurethan tube DIN 73378 external Ø: 6, internal Ø: 4 (MAX. allowed pressure: 12 BAR)

T64: Tuyau en polyurèthane DIN 73378 Ø extérieur: 6, Ø intérieur: 4 (Pression maximale permise: 12 BAR)

T64: Polyurethanschlauch DIN 73378 Aussen-Ø: 6, Innen-Ø: 4 (Zulässiger Höchstdruck:12 BAR)

FRESE PER SPALLAMENTI RETTI

SHOULDER MILLING CUTTERS

FRAISES POUR ÉPAULEMENTS À 90°

ECKFRAESER

Art. **205 - 208**

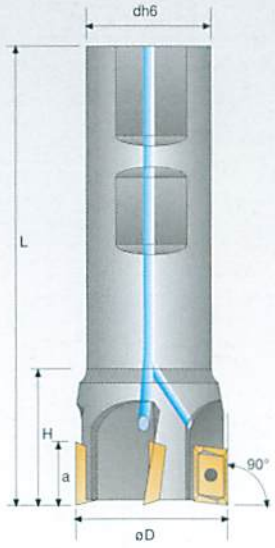
NK 205 - 208 - Frese per spallamenti retti 90°

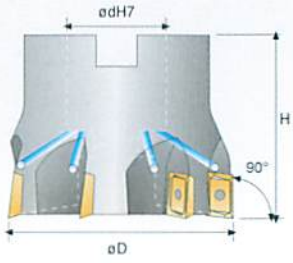
NK 205 - 208 - SHOULDER MILLING CUTTERS 90°

NK 205 - 208 - FRAISES POUR ÉPAULEMENTS À 90°

NK 205 - 208 - ECKFRAESER 90°

NK 205 - 208





rif.	dimensioni in mm								
205	**øD**	**dh6**	**a**	**L**	**H**	**Z**			
205.010 W-W	10	16	10	80	24	1	APKT 1003	1001	2008
205.012 W-W	12	16	10	80	24	1			
205.014 W-W	14	16	10	80	24	1			
205.016 W-W	16	16	10	85	24	2			
205.018 W-W	18	16	10	85	25	2			
205.020 W-W	20	20	10	90	25	3			
205.022 W-W	22	20	10	90	25	3			
205.025 W-W	25	25	10	95	25	4			
205.025 W-W/3	25	25	10	95	25	3			
205.028 W-W	28	25	10	95	25	4			
205.030 W-W	30	25	10	95	26	4			
205.032 W-W	32	25	10	95	26	5			
Serie lunga Long models / Modèles longs / Serie Lang									
206									
206.010 W-W	10	16	10	150	24	1	APKT 1003	1001	2008
206.012 W-W	12	16	10	150	24	1			
206.014 W-W	14	16	10	150	24	1			
206.016 W-W	16	16	10	150	24	2			
206.018 W-W	18	16	10	150	25	2			
206.020 W-W	20	20	10	150	25	3			
206.022 W-W	22	20	10	150	25	3			
206.025 W-W	25	20	10	150	25	4			
206.025 W-W/3	25	25	10	150	24	3			
206.025 W-W/3-20	25	20	10	150	24	3			
206.030 W-W	30	25	10	150	26	4			
206.032 W-W	32	25	10	150	26	5			
Serie manicotto Shell models / Modèles à manchon / Serie Manschette									
208	**øD**	**dH7**		**H**		**Z**			
208.040 M-W	40	22		40		6	APKT 1003	1001	2008
208.050 M-W	50	22		40		7			
208.063 M-W	63	22		40		8			

W-W = Con fori di lubrificazione - **W-W** = Coolant Bores - **W-W** = Lubrification interèure - **W-W** = Kuehlmittel Bohrung
M-W = Con fori di lubrificazione - **M-W** = Coolant Bores - **M-W** = Lubrification interèure - **M-W** = Kuehlmittel Bohrung

Contenuto del set / Set contents / Contenu du set / Inhalt pro Set

SET 205	
1	205.010 W-W
1	205.012 W-W
1	205.016 W-W
1	205.020 W-W

SET 206	
1	206.010 W-W
1	206.012 W-W
1	206.016 W-W
1	206.020 W-W

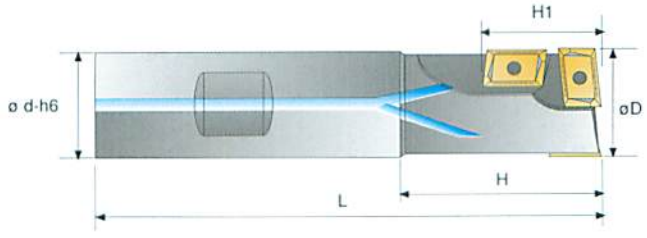
SET 207

FK 244 - FRESE FORANTI
DRILLING END MILL
FRAISES PERCEUSES
BOHRNUTENFRAESER

NK 205 - FRESE PER SPALLAMENTI
SHOULDER MILLING CUTTERS
FRAISES POUR ÉPAULEMENTS
ECKFRAESER

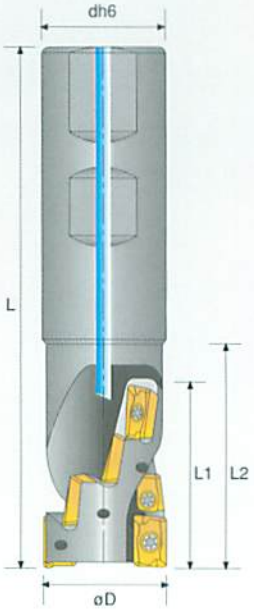
Contenuto del set / Set contents / Contenu du set / Inhalt pro Set

SET 207	
1	244.020 W-W
1	205.012 W-W
1	205.016 W-W
1	205.020 W-W



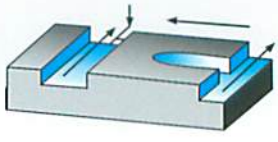
rif.	dimensioni in mm								
	øD	dh6	H1	H	L	Z			
244.020 W-W	20	20	19	35	90	3	APKT 1003	1001	2008

500 W



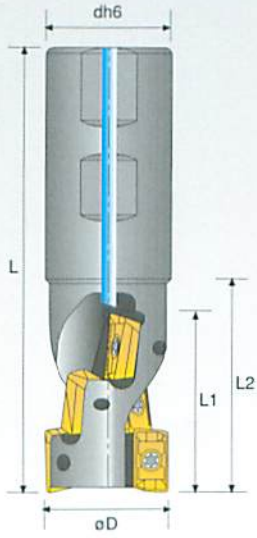
rif.	dimensioni in mm										
500 W	**øD**	**dh6**	**L**	**L1**	**L2**	**CM**	**K**	**N°**			
500.020 W-W	20	20	86	28	37		1	4	APKT	1001	2008
500.025 W-W	25	25	100	36	45		2	8	APHT		
500.032 W-W	32	32	120	45	55		3	12	APHX		
500.040 W-W	40	32	130	54	70		3	14	1003...		

K = Fattore d'avanzamento
K = Factor of feed
K = Facteur d'avance
K = Vorschubfaktor



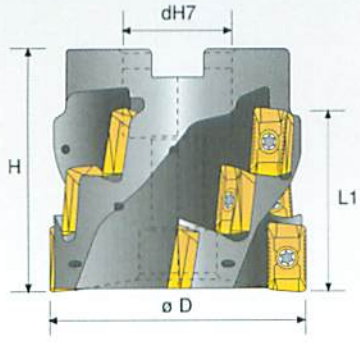
FR 550 HELICAL END MILLS
FR 550 FRAISES EN BOUT HÉLICOIDAL
FR 550 SCHAFTSCHRUPPFRAESER

550 W



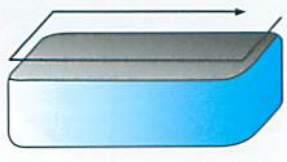
rif.	dimensioni in mm										
550 W	**øD**	**dh6**	**L**	**L1**	**L2**	**CM**	**K**	**N°**			
550.032 W-W	32	32	115	44	55		2	6	APHT	1003	2015
550.040 W-W	40	32	130	58	65		2	8	APFT APKT 1604...		

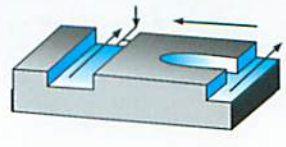
550 M



rif.	dimensioni in mm									
550 M	**øD**	**dH7**	**H**	**L1**	**K**	**N°**				
550.050 M	50	27	50	30	3	6	APKT	1003	2015	
550.063 M	63	27	60	44	4	12	APFT APHT 1604...			

K = Fattore d'avanzamento
K = Factor of feed
K = Facteur d'avance
K = Vorschubfaktor





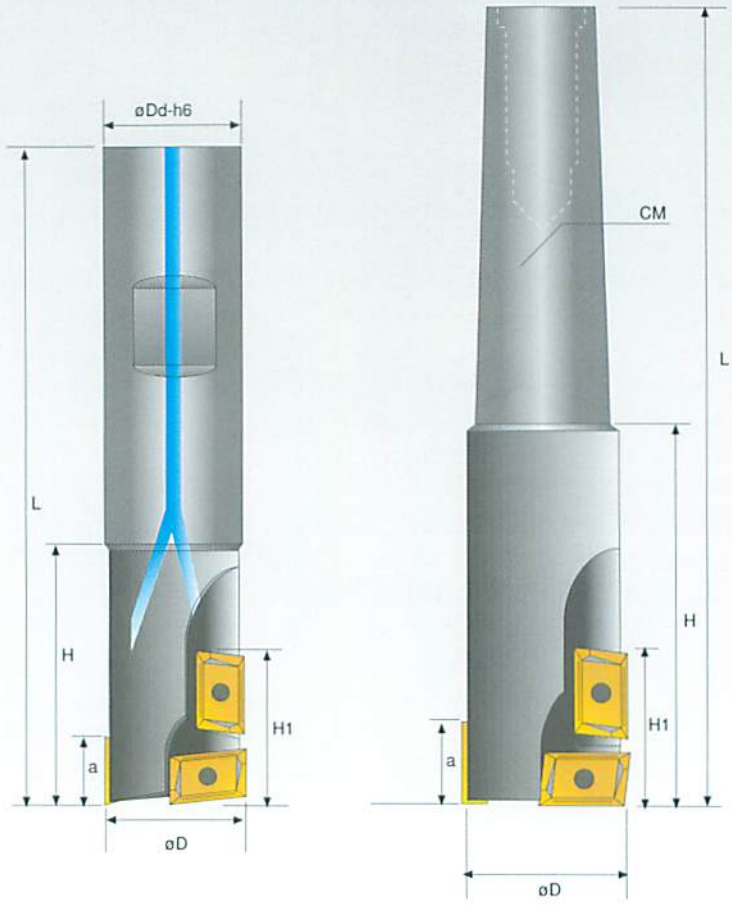
Art. **244**
FK 244 - fresa forante

FK 244 DRILLING END MILL

FK 244 FRAISE PERCEUSE

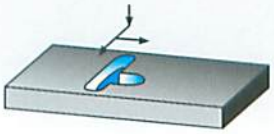
FK 244 BOHRNUTENFRAESER

FK 244



rif.	dimensioni in mm										
244	**øD**	**dh6**	**L**	**H**	**H1**	**a**	**CM**	**Z**			
244.016 W-W	16	16	85	30	7	7		2	APKT 0803	1001	2008
244.020 W-W	20	20	90	35	17	9		3	APKT 1003		
244.032 W-W	32	32	130	50	30	15		3	APKT 1604	1003	2015
Serie lunga Long models / Modèles longs / Serie Lang											
245											
245.016 W-W	16	16	150	30	7	7		2	APKT 0803	1001	2008
245.020 W-W	20	20	150	30	17	9		3	APKT 1003		
Serie extra lunga Extralong models / Modèles extra-longs / Serie Extralang											
246											
246.020 S	20	20	180	30	17	9		3	APKT 1003	1001	2008

W-W = Con fori di lubrificazione
W-W = Coolant Bores
W-W = Avec des trous pour lubrification
W-W = Mit Schmierlöchern



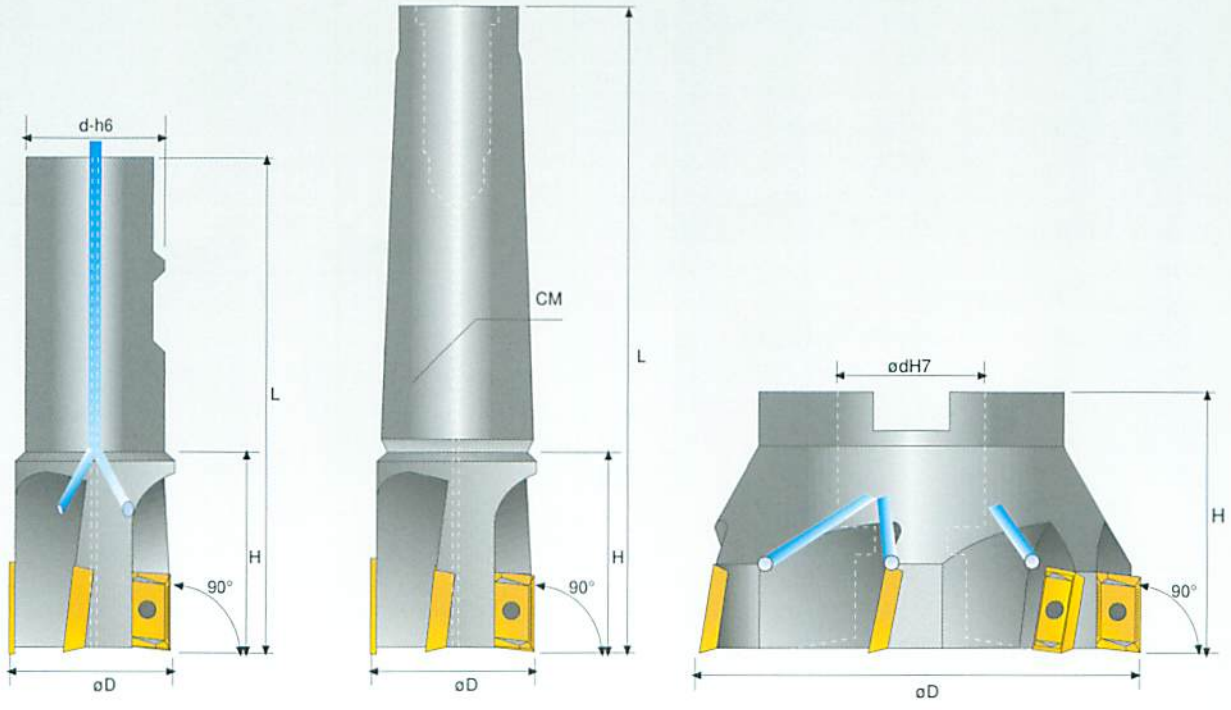
Art. **225**
NP 225 - frese per spallamenti retti (90°)

NP 225 SHOULDER MILLING CUTTERS (90°)

NP 225 FRAISES À ÉPAULEMENT À (90°)

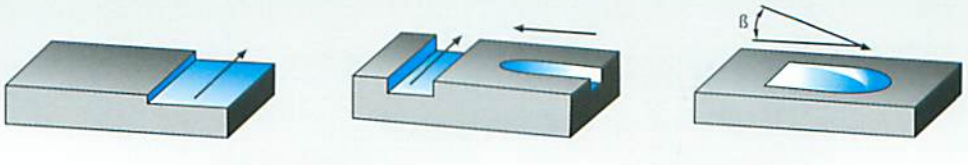
NP 225 ECKFRAESER (90°)

NP 225



rif.	dimensioni in mm									
225	**øD**	**dh6**	**H**	**L**	**dH7**	**CM**	**Z**			
225.025 W-W	25	25	40	100			2	APKT 1604... APFT 1604...	1003	2015
225.025 C	25		40	125		CM3	2			
225.032 W-W	32	32	40	110			3			
225.032 C	32		40	125		CM3	3			
225.040 W-W	40	32	50	110			4			
225.040 C	40		50	135		CM3	4			
225.025 S	25	25	40	180			2			
225.030 S	30	25	40	180			3			
225.032 S	32	25	40	180			3			
Serie manicotto Shell models / Modèles à manchon / Serie Manschette										
226										
226.040 M-W	40		40		16		4	APKT 1604... APFT 1604...	1003	2015
226.050 M-W	50		40		22		5			
226.063 M-W	63		40		22		6			
226.080 M-W	80		50		27		7			
226.100 M	100		50		32		8			

M-W = Con fori di lubrificazione - **M-W** = Coolant Bores - **M-W** = Lubrification interèure - **M-W** = Kuehlmittel Bohrung



Art. **200**

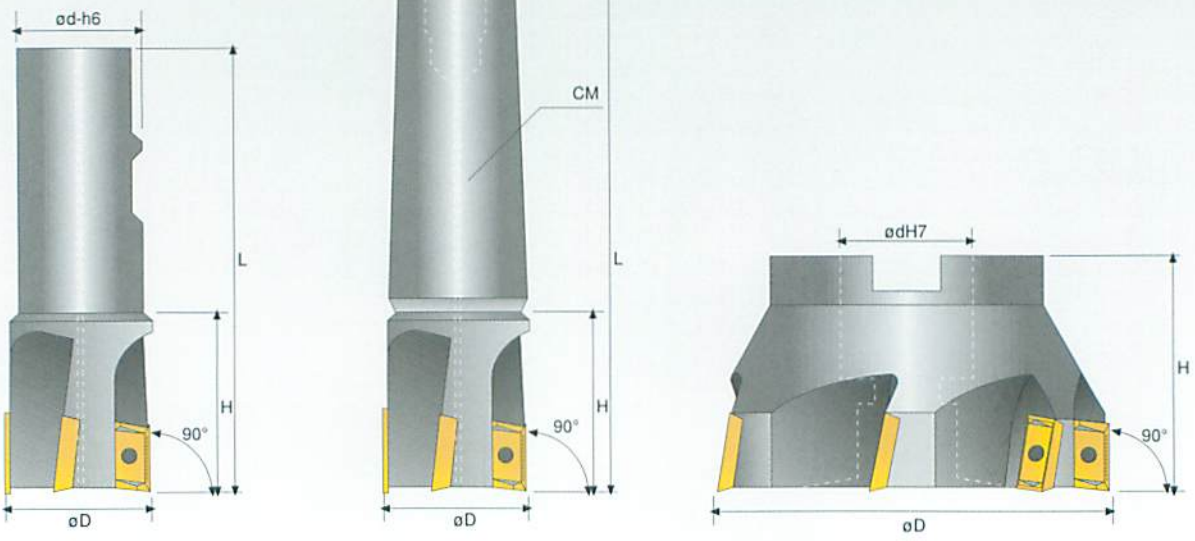
NR 200 - frese per spallamenti retti (90°)

NR 200 SHOULDER MILLING CUTTERS (90°)

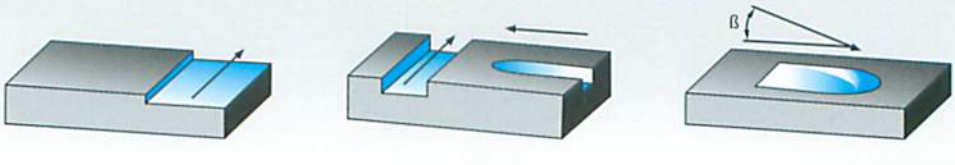
NR 200 FRAISES A SURFACER (90°)

NR 200 ECKFRAESER (90°)

NR 200



rif.	dimensioni in mm									
200	**øD**	**dh6**	**dH7**	**L**	**H**	**CM**	**Z**			
200.016 W	16	16		80	25		1	ADLX 1503	1004	2015
200.020 W	20	20		90	35		1			
200.025 W	25	20		90	35		2			
200.032 W	32	25		90	35		3			
200.025 C	25			122	35	CM3	2			
200.032 C	32			125	38	CM3	3			
200.040 C	40			135	45	CM3	4			
Serie lunga Long models / Modèles longs / Serie Lang										
201										
201.016 S	16	16		180	25		1	ADLX 1503	1004	2015
201.020 S	20	20		180	35		1			
201.022 S	22	20		180	35		2			
201.025 S	25	25		180	35		2			
201.025 S/20	25	20		180	35		2			
201.032 S	32	25		180	35		3			
Serie manicotto Shell models / Modèles à manchon / Serie Manschette										
202	**øD**		**dH7**		**H**		**Z**			
202.040 M	40		16		40		4	ADLX 1503	1004	2015
202.050 M	50		22		40		5			
202.063 M	63		22		40		6			
202.080 M	80		27		50		7			
202.100 M	100		32		50		8			



Art. **350**

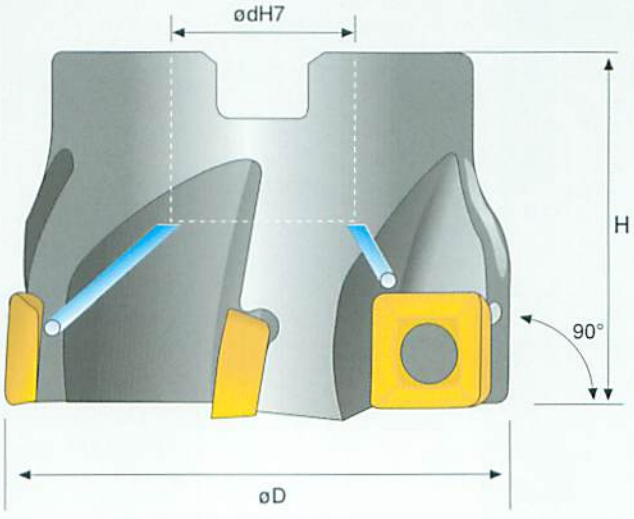
FSQ 350 - fresa per spianatura-spallamento (90°)

FSQ 350 FACE-SHOULDER MILLING CUTTER (90°)

FSQ 350 FRAISE PLANAGE-ÉPAULEMENT (90°)

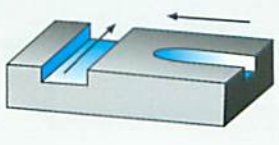
FSQ 350 PLANFRAESER-ECKFRAESER (90°)

FSQ 350

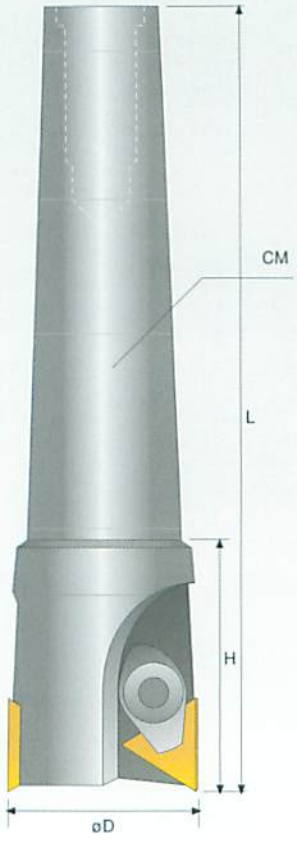


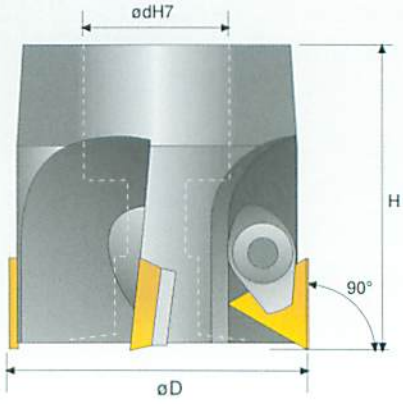
rif.	dimensioni in mm							
350	**øD**	**dH7**	**H**	**h**	**Z**			
350.050 M-W	50	22	40	10,5	5	SDMT 1205	1045	2020
350.063 M-W	63	22	40	10,5	6			
350.080 M-W	80	27	50	10,5	6			
350.100 M	100	32	50	10,5	8			

M-W = Con fori di lubrificazione - **M-W** = Coolant Bores - **M-W** = Lubrification interèure - **M-W** = Kuehlmittel Bohrung



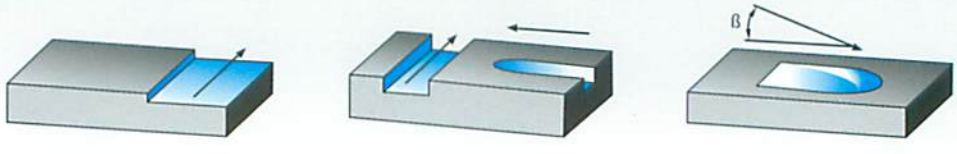
FPT 220





rif.		dimensioni in mm										
220		**øD**	**dh6**	**dH7**	**L**	**H**	**CM**	**Z**				
220.040 C	●	40			130	42	CM3	3	TPUN 1603 TPKN 1603	1006	3001	3201	1001
220.050 M	●	50		22		50		4					
220.063 M	●	63		27		50		4					

● = a esaurimento/to exhaustion/à l'épuisement/bis zur Erschöpfung



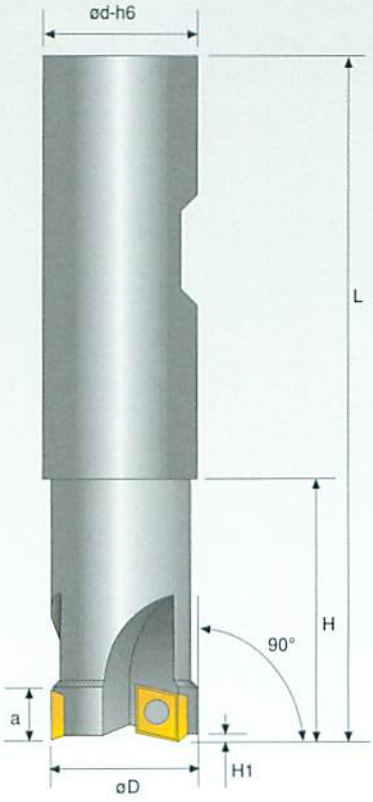
Art. **250**
KS 250 - frese per contornatura (90°)

KS 250 ROUTIN AND MILL (90°)

KS 250 FRAISES POUR CHANTOURNEMENTS À (90°)

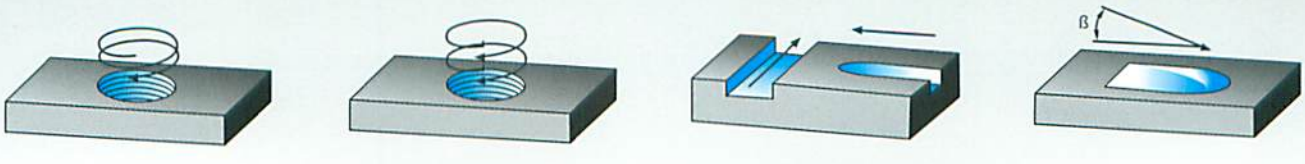
KS 250 FREASER ZUR KONTURBEARBEITUNG (90°)

KS 250



rif.	dimensioni in mm									
250	**øD**	**dh6**	**H**	**L**	**H1**	**a**	**Z**			
250.010 W ●	10	16	20	65	0,9	6	1	CCMT 0602	1001	2008
250.012 W ●	12	16	20	65	0,9	6	1			
250.016 W ●	16	16	25	75	0,9	6	2			
250.020 W ●	20	20	35	90	0,9	6	3			
250B.020 W ●	20	20	35	90	1,5	9	2	CCMT 09T3	1003	2015
Serie extra lunga Extralong models / Modèles extra-longs / Serie Extralang										
251										
251.010 S ●	10	16	55	180	0,9	6	1	CCMT 0602	1001	2008
251.012 S ●	12	16	55	180	0,9	6	1			
251.016 S ●	16	16	35	180	0,9	6	2			
251.020 S ●	20	20	35	180	0,9	6	3			
251B.020 S ●	20	20	35	180	1,5	9	2	CCMT 09T3	1003	2015
251.025 S ●	25	25	35	180	1,5	9	2			
Serie extra lunga Extralong models / Modèles extra-longs / Serie Extralang										
255										
255.010 S ●	10	9,5	20	180	0,9	6	1	CCMT 0602	1001	2008
255.012 S ●	12	11,5	20	180	0,9	6	1			
255.014 S ●	14	12	20	180	0,6	6	2			
255.016 S ●	16	15,5	25	180	0,9	6	2			
255.020 S ●	20	19,5	35	180	0,9	6	3			

● = a esaurimento/to exhaustion/à l'épuisement/bis zur Erschöpfung



Note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Art. **320-340**

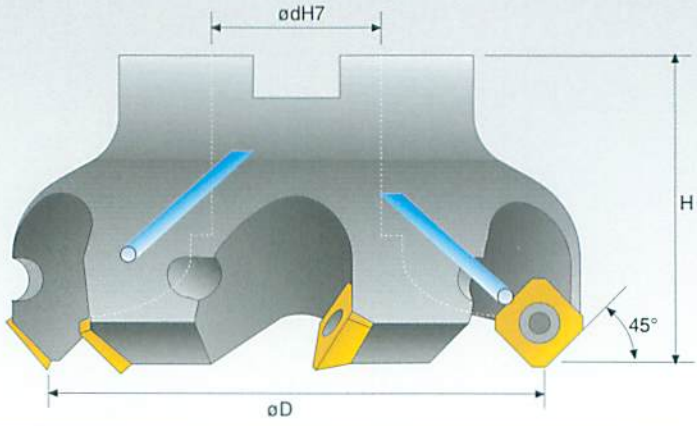
SFQ 320 frese per spianatura 45°

SFQ 320 FACE MILLING CUTTER 45°

SFQ 320 FRAISES À SURFACER 45°

SFQ 320 PLANFRAESER 45°

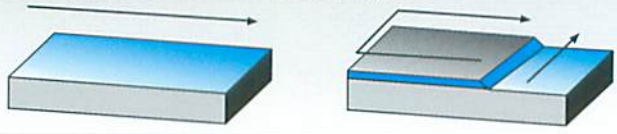
SFQ 320



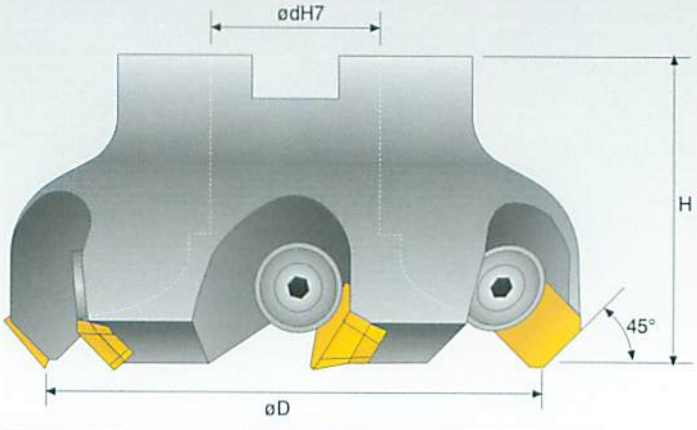
rif.	dimensioni in mm							
320	**øD**	**dH7**	**H**	**Z**			
320.040 M-W	40	16	40	3	SEHW 1204 SEHT 1204	1005	2020
320.050 M-W	50	22	45	4			
320.063 M-W	63	22	45	5			
320.080 M-W	80	27	50	6			
320.100 M	100	32	50	6			
320.125 M	125	40	60	7			
320.160 M ●	160	40	63	8			

M-W = Con fori di lubrificazione - **M-W** = Coolant Bores - **M-W** = Lubrification interèure - **M-W** = Kuehlmittel Bohrung

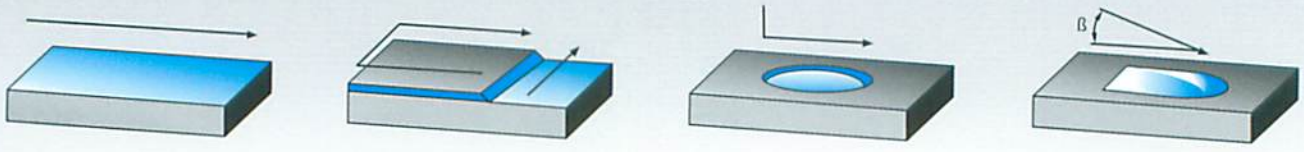
● = a esaurimento/to exhaustion/à l'épuisement/bis zur Erschöpfung



SFE 340



rif.	dimensioni in mm								
340	**øD**	**dH7**	**H**	**Z**					
340.050 M	50	22	45	4	SEKN SEKR SEAN 1203	1008	3040	3401	2004
340.063 M	63	22	45	5					
340.080 M	80	27	50	6					
340.100 M	100	32	50	6					
340.125 M	125	40	60	7					
340.160 M	160	40	63	8					



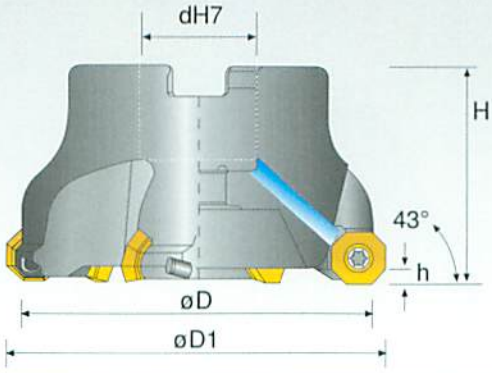
Art. **360**
SFO 360 - frese per spianatura (43°)

SFO 360 FACE MILLING CUTTERS (43°)

SFO 360 FRAISES À SURFACER (43°)

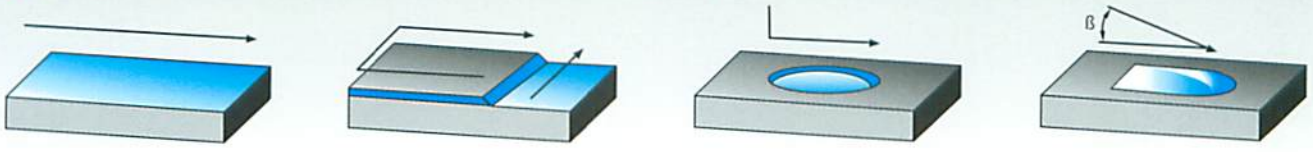
SFO 360 PLANFRAESER (43°)

SFO 360



rif.	dimensioni in mm								
360	**øD**	**dH7**	**H**	**h**	**øD1**	**Z**			
360.050 M-W●	50	22	40	3.5	57	4	OFEX 05T305	1003	2015
360.063 M-W●	63	22	40	3.5	70	5			
360.080 M-W●	80	27	50	3.5	87	6			
360.100 M-W●	100	32	50	3.5	107	7			
360.125 M-W●	125	40	63	3.5	132	8			

M-W = Con fori di lubrificazione - **M-W** = Coolant Bores - **M-W** = Lubrification interèure - **M-W** = Kuehlmittel Bohrung
● = a esaurimento/to exhaustion/à l'épuisement/bis zur Erschöpfung



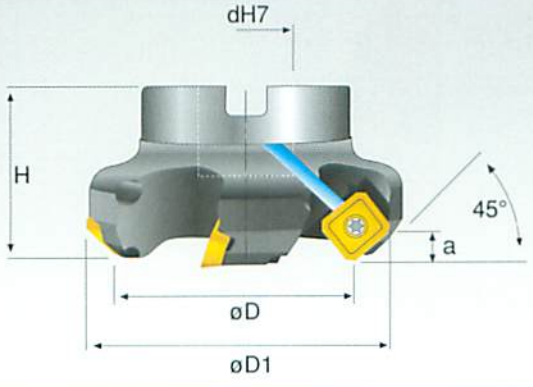
Art. **375**
SEE 375 - fresa a spianare (45°)

SEE 375 FACE MILLING CUTTER (45°)

SEE 375 FRAISES À SURFACER (45°)

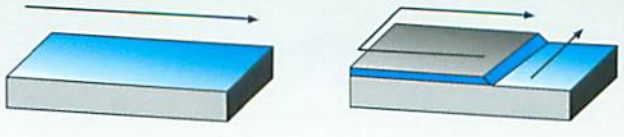
SEE 375 PLANFRAESER (45°)

SEE 375



rif.	dimensioni in mm								
375	**øD**	**D1**	**dH7**	**a**	**H**	**Z**			
375.050 M-W	50	63	22	6	40	4	SEET 13T3 SEMT 13T3 SEGT 13T3	1075	2015
375.063 M-W	63	76	22	6	40	5			
375.080 M-W	80	93	27	6	50	6			
375.100 M	100	113	32	6	50	7			
375.125 M	125	138	40	6	63	8			

M-W = Con fori di lubrificazione - **M-W** = Coolant Bores - **M-W** = Lubrification interèure - **M-W** = Kuehlmittel Bohrung



Art. **330 - 209 - 335**

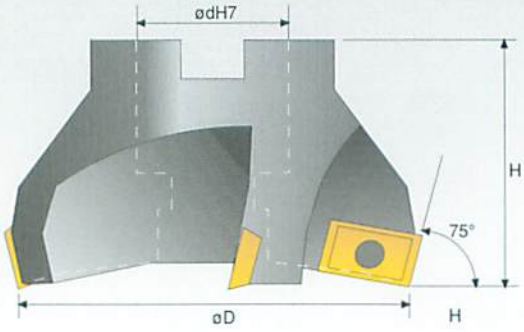
NR 330 - AK 209 - NP 335 - frese per spianatura 75°

NR 330 - AK 209 - NP 335 FACE MILLING CUTTER 75°

NR 330 - AK 209 - NP 335 FRAISES À SURFACER 75°

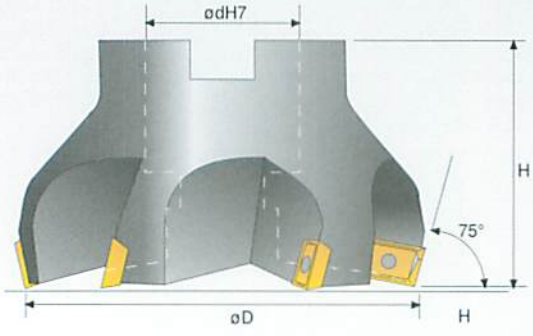
NR 330 - AK 209 - NP 335 PLANFRAESER 75°

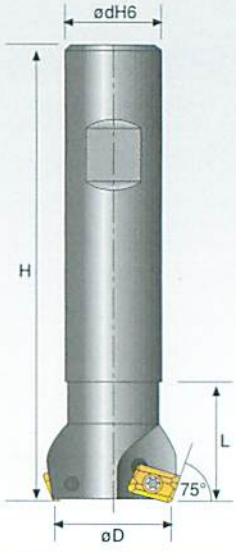
NR 330



rif.	dimensioni in mm						
330	**øD**	**dH7**	**H**	**Z**			
330.063 M	63	22	40	4	ADLX 1503	1004	2015
330.080 M	80	27	50	5			
330.100 M	100	32	50	6			

AK 209/NP 335





rif.	dimensioni in mm								
209	**øD**	**dH7**	**H**	**dh6**	**L**	**Z**			
209.050 M	50	22	40			5	APKT 1003	1001	2008
209.063 M	63	22	40			6			
209.032 W	32		95	25	25	3			

rif.							
335	**øD**	**dH7**	**H**	**Z**			
335.063 M	63	22	40	4	APFT 1604 APKT 1604	1003	2015
335.080 M	80	27	50	5			
335.100 M	100	32	50	6			


noma
FLEXMILL QUADRO
630W 1.000
295.02
300.021W
290.011W

Art. **290**

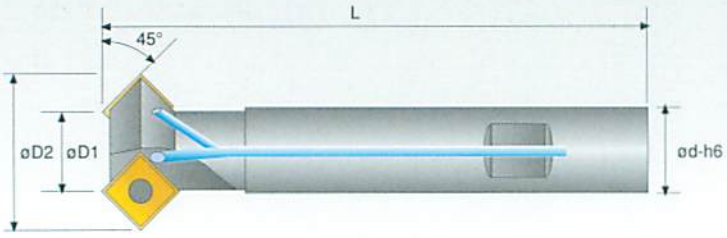
SM 290 frese per smussi e svasature

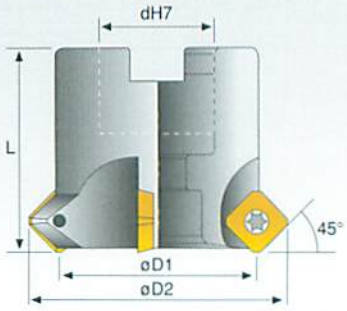
SM 290 CHAMFERING MILLING CUTTERS 45°

SM 290 FRAISES POUR CHANFREINAGE ET ÉVASEMENTS 45°

SM 290 ARRONDIERFRAESER 45°

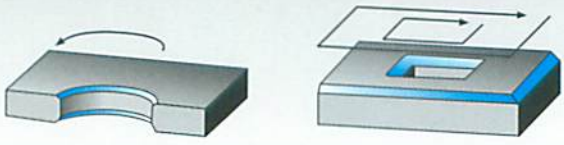
SM 290

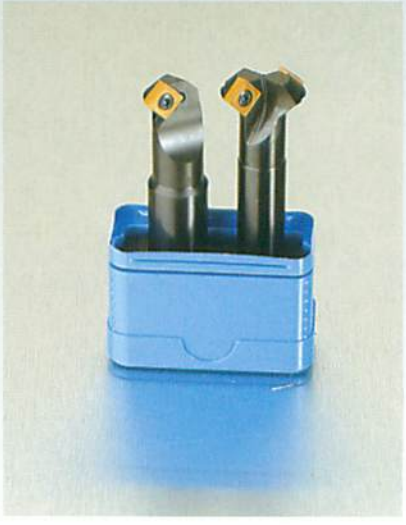




rif.	dimensioni in mm								
290	**øD1**	**øD2**	**L**	**dh6**	**dH7**	**z**			
290.004 W	4	10	80	12		1	SCMT 0602...	1001	2008
290.011 W-W	11	20	80	12		2			
290.012 W-W	12	23,7	100	20		1	SCMT 09T3	1003	2015
290.016 W-W	16	28,8	100	16		2			
290.020 W-W	20	32	100	20		3			
290.025 W-W	30	42,3	100	20		3			
290.040 M	40	50,6	38		22	4			
Serie lunga / Long models / Modèles longs / Serie Lang									
291									
291.012 S	12	23,7	200	20		1	SCMT 09T3	1003	2015
291.016 S	16	28,8	200	16		2			
NEW 291.020 S	20	32,0	200	20		3			
291.025 S	30	42,3	200	20		3			

W-W = Con fori di lubrificazione - **W-W** = Coolant Bores - **W-W** = Lubrification interèure - **W-W** = Kuehlmittel Bohrung





Contenuto del set / Set contents / Contenu du set / Inhalt pro Set

SET 292		**SET 293**		**SET 290**	
1	290.004 W	1	290.012 W-W	1	290.012 W-W
1	290.011 W-W	1	290.016 W-W	1	290.016 W-W
10	SCMT 06 0204 TIN	1	290.020 W-W		

Art. **300**

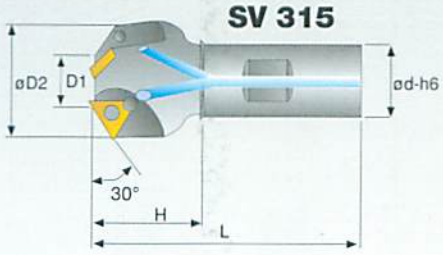
SV 300 - frese per smussi e svasature

SV 300 CHAMFERING MILLING CUTTERS 30°- 45°- 60°

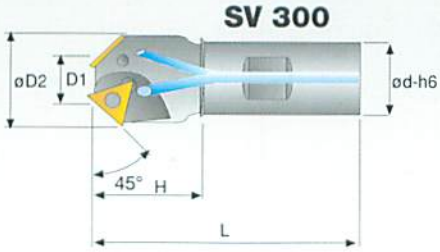
SV 300 FRAISES POUR CHANFREINAGE ET ÉVASEMENTS 30°- 45°- 60°

SV 300 ARRONDIERFRAESER 30°- 45°- 60°

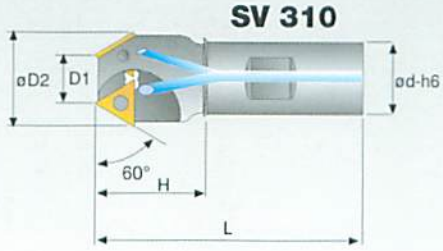
SV 315



SV 300

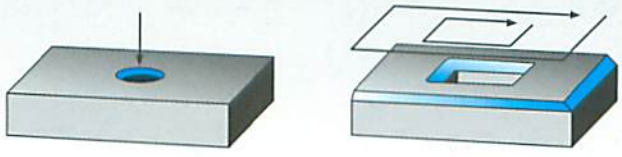


SV 310



rif.	dimensioni in mm									
300 45°	**øD1**	**øD2**	**L**	**H**	**dh6**	**K°**	**z**			
300.016 W	1,2	16	70	20	12	45°	1	TCMT 1102	1001	2008
300.021 W-W	7,2	21	90	35	20	45°	2			
NEW 300.025 W-W	11	25	90	32	20	45°	3			
300.032 W-W	10,4	32,5	100	39	25	45°	2	TCMT 16T3	1003	2015
310 60°										
310.016 W	5,4	16	70	20	12	60°	1	TCMT 1102	1001	2008
310.027 W-W	15,8	26	90	35	20	60°	2			
310.032 W-W	20	35	100	39	25	60°	2	TCMT 16T3	1003	2015
315 30°										
315.032 W-W	6	32	95	39	25	30°	2	TCMT 16T3	1003	2015

W-W = Con fori di lubrificazione - **W-W** = Coolant Bores - **W-W** = Lubrification interèure - **W-W** = Kuehlmittel Bohrung



Contenuto del set / Set contents / Contenu du set / Inhalt pro Set

SET 300		**SET 303**		**SET 302**	
1	300.016 W	1	300.016 W	1	300.016 W
1	300.021 W-W	1	300.021 W-W	1	300.021 W-W
1	310.016 W	1	300.025 W-W	**SET 310**	
1	310.027 W-W			1	310.016 W
				1	310.027 W-W

Art. **610 - 620**

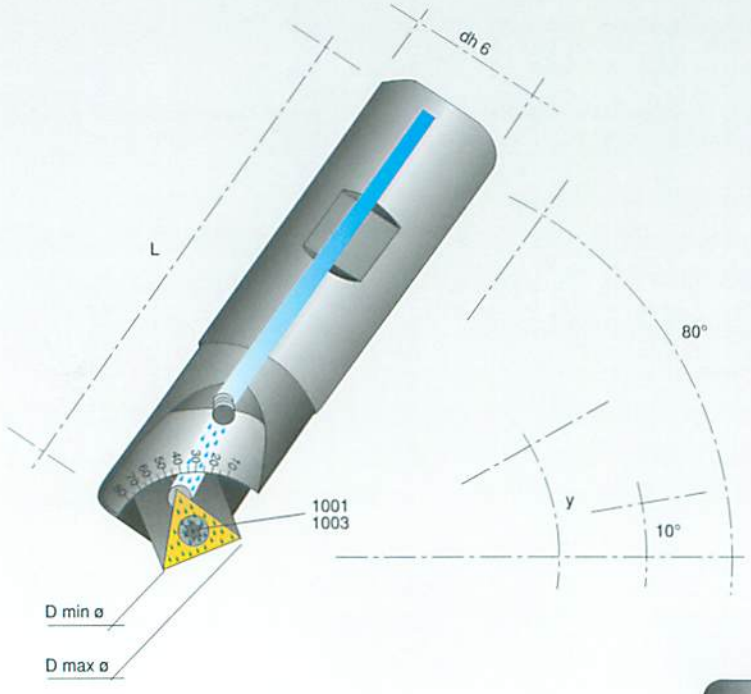
610 620 - fresa per smussi e svasature registrabili da 10° a 80°

610 - 620 MILLING CUTTER FOR CHAMFERING-FLARING 10° TO 80°

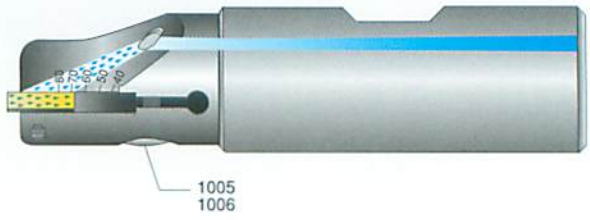
610 - 620 FRAISE POUR CHANFREINAGES ET ÉVASEMENTS ENREGISTRABLES DE 10° À 80°

610 - 620 FASENFRAESER, WINKELVERSTELLBAR VON 10° BIS 80°

FLEXIMILL

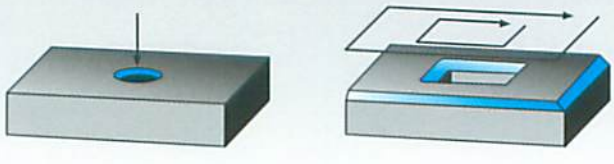


Contenuto del set / Set contents / Contenu du Set / Inhalt pro Set	
SET 600 FLEXIMILL	
1	620.020 W
1	610.016 W
SET 605 FLEXIMILL	
1	620.025 W-W
1	610.020 W-W



rif.	dimensioni in mm									
610	**dh6**	**L**	**Y°**	**Dmin ø**	**Dmax ø**					
610.020 W-W	20	100	10°-80°	ø 5	ø 27	6010	1001	1005	TCMT 1102...	2008
610.020 WL	20	150	10°-80°	ø 5	ø 27					
610.016 W	16	100	10°-80°	ø 5	ø 27					
620	**dh6**	**L**	**Y°**	**Dmin ø**	**Dmax ø**					
620.025 W-W	25	100	10°-80°	ø 5	ø 34	6020	1003	1006	TCMT 16T3...	2015
620.025 WL	25	150	10°-80°	ø 5	ø 34					
620.025 XL	25	200	10°-80°	ø 5	ø 34					
620.020 W	20	100	10°-80°	ø 5	ø 34					

W-W = Con fori di lubrificazione - **W-W** = Coolant Bores - **W-W** = Lubrification interèure - **W-W** = Kuehlmittel Bohrung



Art. **630**

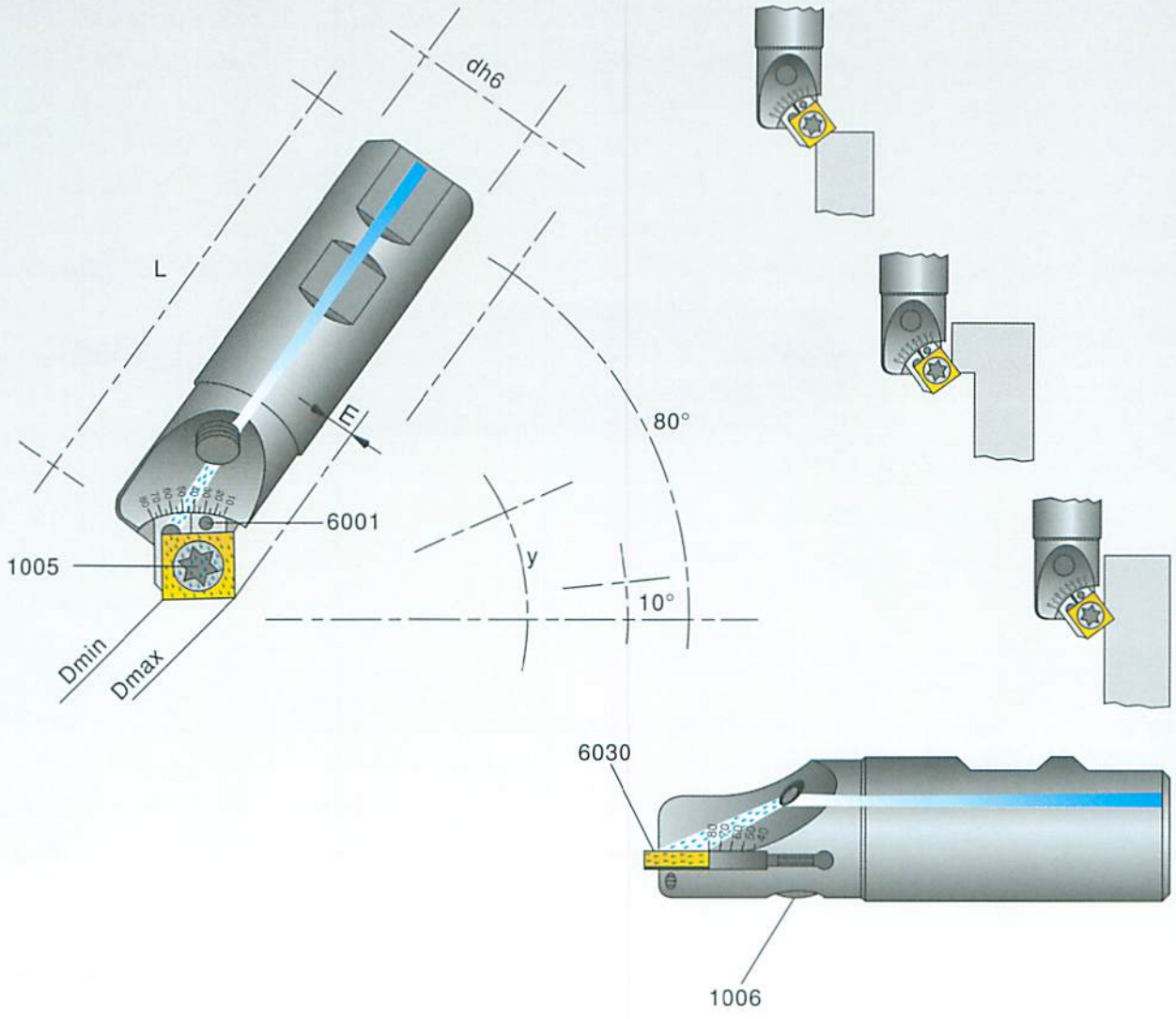
630 - fresa per smussi e svasature registrabili da 10° a 80°

630 - MILLING CUTTER FOR CHAMFERING-FLARING 10° TO 80°

630 - FRAISE POUR CHANFREINAGES ET ÉVASEMENTS ENREGISTRABLES DE 10Y À 80Y

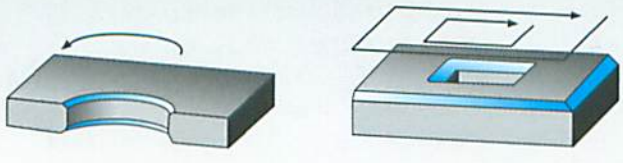
630 - ARRONDIER- UND SENKFRAESER, WINKELVERSTELLBAR VON 10Y BIS 80Y

NEW FLEXIMILL



rif.	dimensioni in mm											
630	**dh6**	**L**	**Y**	**D min**	**D max**	**E**						
630.025 W-W	25	100	10°	7,5	30	2,7	6030	1005	6001	1006	SCMT 1204..	2020
630.025 WL	25	150	20°	10	32	3,6						
630.025 XL	25	200	30°	13	32,5	4,3						
630.020 W	20	100	40°	16,5	33,5	4,5						
			50°	19	33,5	4,6						
			60°	22	33,5	4,3						
			70°	24,5	32,5	3,8						
			80°	27	31	3						

W-W = Con fori di lubrificazione - **W-W** = Coolant Bores - **W-W** = Lubrification interèure - **W-W** = Kuehlmittel Bohrung



Art. **640 M**

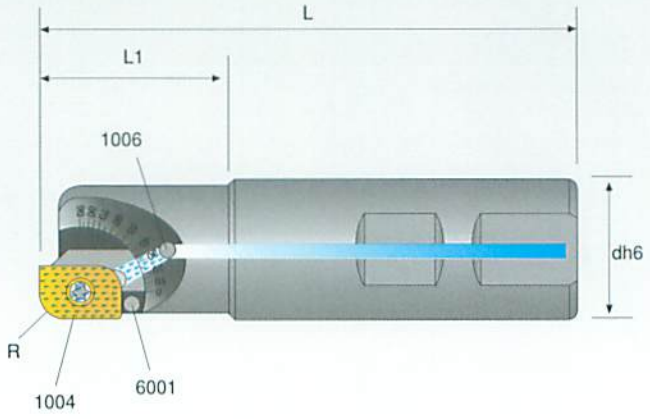
R EVOLUTION M - fresa regolabile da 0° a 90° per raggi concavi

R EVOLUTION M MILLING CUTTER ADJUSTABLE FROM 0° TO 90° FOR CONCAVE RADIUS

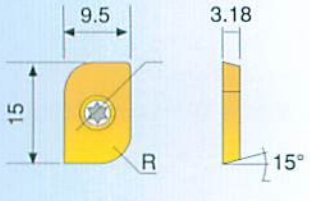
R EVOLUTION M FRAISE RÉGLABLE DE 0° À 90° POUR RAYONS CONCAVES

R EVOLUTION M FRAESER VON 0° BIS 90° FUER KONKAVRADIEN

640 M



rif.	dimensioni in mm									
640 M	**dh6**	**L**	**L1**	**Dmin**	**Dmax**	**R**				
640M.025W-W	25	100	37	26.5	34	1-1.5	XDCW 1503MR	6040M	1006 1004 6001	2015
640M.020W	20	100	37	26.5	34	2-2.5				
640M.025WL	25	150	37	26.5	34	3-3.5				
640M.025XL	25	200	37	26.5	34	4				



inserto - insert - Plaquette - Wpl	qual.
XDCW1503MR10 R=1	M20 TIN
XDCW1503MR15 R=1.5	
XDCW1503MR20 R=2	
XDCW1503MR25 R=2.5	
XDCW1503MR30 R=3	
XDCW1503MR35 R=3.5	
XDCW1503MR40 R=4	

W-W = Con fori di lubrificazione - **W-W** = Coolant Bores - **W-W** = Lubrification interèure - **W-W** = Kuehlmittel Bohrung

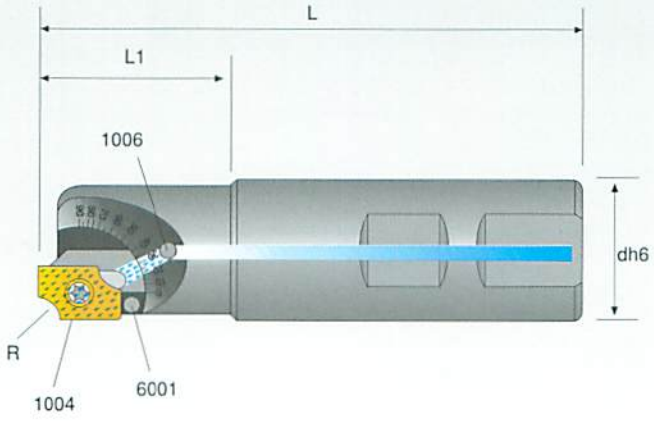
Art. **640 F**

R EVOLUTION F - fresa regolabile da 0° a 90° per raggi convessi

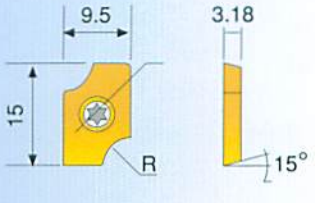
R EVOLUTION F MILLING CUTTER ADJUSTABLE FROM 0° TO 90° FOR CONVEX RADIUS

R EVOLUTION F FRAISE RÉGLABLE DE 0° À 90° POUR RAYONS CONVEXES

R EVOLUTION F FRAESER VON 0° BIS 90° FUER KONVEX RADIEN



rif.	dimensioni in mm									
640 F	**dh6**	**L**	**L1**	**Dmin**	**Dmax**	**R**				
640F.025W-W	25	100	37	26.5	33	1-1.5-2 2.5-3 3.5-4	XDCW 1503FR	6040F	1006 1004 6001	2015
640F.020W	20	100	37	26.5	33					
640F.025WL	25	150	37	26.5	33					
640F.025XL	25	200	37	26.5	33					



inserto - insert - Plaquette - Wpl	qual.
XDCW1503FR10 R=1	M20 TIN
XDCW1503FR15 R=1.5	
XDCW1503FR20 R=2	
XDCW1503FR25 R=2.5	
XDCW1503FR30 R=3	
XDCW1503FR35 R=3.5	
XDCW1503FR40 R=4	

W-W = Con fori di lubrificazione - **W-W** = Coolant Bores - **W-W** = Lubrification interèure - **W-W** = Kuehlmittel Bohrung

Art. **710 - 720** R = 1 - 1.5 - 2 - 2.5 - 3 - 3.5 - 4 - 4.5 - 5 - 5.5 - 6 - 6.5 - 7

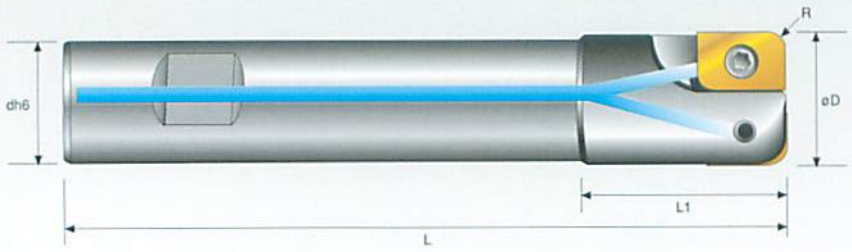
R MULTIRADIUS - FRESE PER RAGGI CONCAVI E CONVESSI

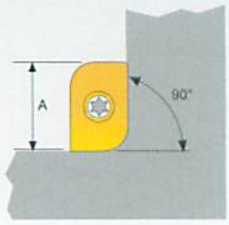
R MULTIRADIUS 710 - 720 MILLING CUTTERS FOR CONCAVE AND CONVEX RADIUS

R MULTIRADIUS 710 - 710 FRAISE RÉGLABLE DE 0° À 90° POUR RAYONS CONCAVES ET CONVEXES

R MULTIRADIUS 710 - 720 FRAESER FUER KONKAV-UND KONVEX RADIEN

710

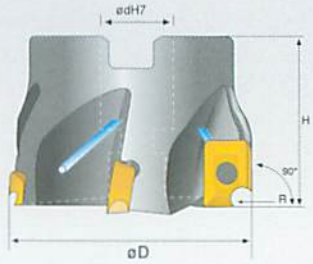


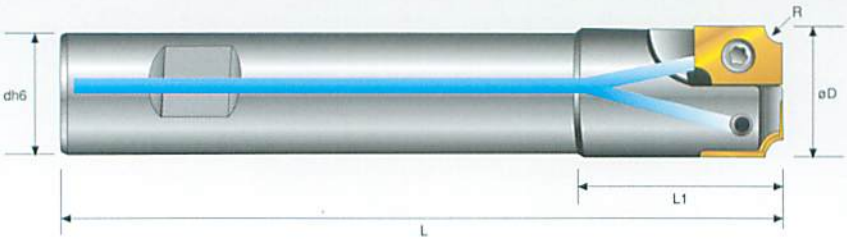


rif.	dimensioni in mm									
710	**øD**	**dh6**	**L**	**L1**	**A**	**R**	**Z**			
710.017 W-W	17	16	120	30	15	1 - 1.5 - 2 2.5 - 3 3.5 - 4	1	XDCW 1503MR....	1004	2015
710.022 W-W	22	20	120	35	15		2			
710.032 W-W	32	25	120	40	20	4.5 - 5 - 5.5 6 - 6.5 -7	2	XPCW 2004MR....	1005	2020

W-W = Con fori di lubrificazione - **W-W** = Coolant Bores - **W-W** = Lubrification interèure - **W-W** = Kuehlmittel Bohrung

720





rif.	dimensioni in mm											
720	**øD**	**dh6**	**DH7**	**L**	**L1**	**H**	**A**	**Z**	**R**			
720.017 W-W	17	16		120	30		15	1	1 - 1.5 - 2 2.5 - 3 3.5 - 4	XDCW 1503FR	1004	2015
720.022 W-W	22	20		120	35		15	2				
NEW 720.040 M-W	40		16			40	15	4				
720.032 W-W	32	25		120	40		20	2	4.5 - 5 5.5 - 6 6.5 - 7	XPCW 2004FR	1005	2020
NEW 720.050 M-W	50		22			50	20	4				

W-W = Con fori di lubrificazione - **W-W** = Coolant Bores - **W-W** = Lubrification interèure - **W-W** = Kuehlmittel Bohrung

Caratteristiche inserti a pag. 141
Technical details of inserts on page 141
Caractéristiques techniques des plaquettes à la page 141
Technische Merkmale der Wendeplatten auf Seite 141

SET

new

contenuto del set / Set contents / Contenu du set / Inhalt pro set

SET XD15 MULTIRADIUS

n°1	720.022 W-W+
n°2	XDCW 1503 FR10+
n°2	XDCW 1503 FR20+
n°2	XDCW 1503 FR30+
n°2	XDCW 1503 FR40

contenuto del set / Set contents / Contenu du set / Inhalt pro set

SET XP20 MULTIRADIUS

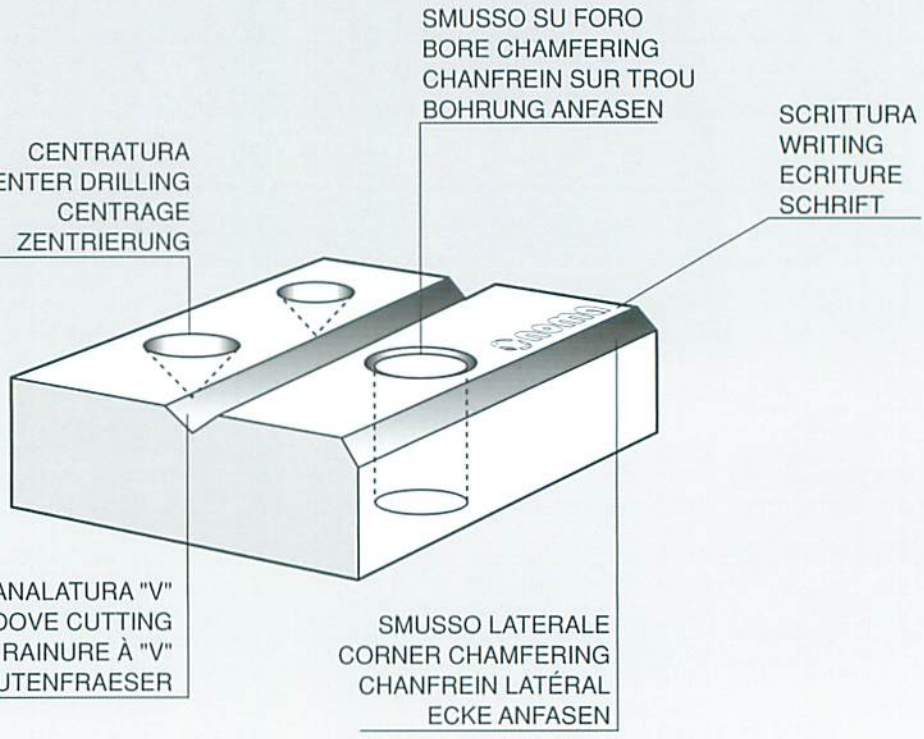
n°1	720.032 W-W+
n°2	XPCW 2004 FR50+
n°2	XDCW 2004 FR60+
n°2	XDCW 2004 FR70

new line 2000

noma® classic

PC FAST

FRESE PER SMUSSI, SCANALATURE A "V" E CENTRARE
CENTER DRILLING, CHAMFERING AND V-GROOVING
FRAISES À CHANFREINER, POUR RAINURES À "V" ET À CENTRER
ARRONDIER-, "V" – NUTEN- UND ZENTRIERFRAESER



Rif.	α°	L1 mm	L2 mm	L3 mm	dh6 mm	d mm	D min mm	D max mm		Vite Vis Screw Schraube	Chiave Clèf Key Schlüssel
PC 0845	90°	105	71	34	10	8	0, 6	7,6	CGX 0622 M20 TIN CGX 0622 HT 10	1001P	2008
PC 0845L	90°	145	111	34	10	8	0,6	7,6			
PC 1030	118°	105	97	8	10	10	0,6	8,5			
PC 1030L	118°	145	137	8	10	10	0,6	8,5			
PC 1245	90°	110	76	34	16	12,5	0,6	12	CGX 0932 M20 TIN CGX 0932 HT 10	1004P	2015
PC 1245L	90°	165	131	34	16	12,5	0,6	12			
PC 1530	118°	110	82	28	16	16,5	0,6	14			
PC 1530L	118°	165	137	28	16	16,5	0,6	14			
PC 1645	90°	135	90	45	20	16,5	0,7	16	CGX 1242 M20 TIN CGX 1242 HT 10	1005	2020
PC 1645L	90°	180	135	45	20	16,5	0,7	16			
PC 2030	118°	135	97	38	20	22	0,7	20			
PC 2030L	118°	180	142	38	20	22	0,7	20			

M 20 TIN PER ACCIAIO - FOR STEEL - POUR ACIER - FÜR STAHL
HT 10 PER ALLUMINIO - FOR ALUMINIUM - POUR ALLUMINIUM - FÜR ALLUMINIUM

noma® classic

SET PC FAST

contenuto del set / Set contents / Contenu du set / Inhalt pro set

SET PC FAST				**SET PC FAST PER ALLUMINIO /** FOR ALUMINIUM / POUR ALLUMINIUM / FÜR ALLUMINIUM			
SET PC 0845	**1**	PC0845 + **5**	CGX 0622M20TIN	SET PC 0845H	**1**	PC0845 + **5**	CGX 0622HT10
SET PC 1245	**1**	PC1245 + **5**	CGX 0932M20TIN	SET PC 1245H	**1**	PC1245 + **5**	CGX 0932HT10
SET PC 1645	**1**	PC1645 + **5**	CGX 1242M20TIN	SET PC 1645H	**1**	PC1645 + **5**	CGX 1242HT10
SET PC 1030	**1**	PC1030 + **5**	CGX 0622M20TIN	SET PC 1030H	**1**	PC1030 + **5**	CGX 0622HT10
SET PC 1530	**1**	PC1530 + **5**	CGX 0932M20TIN	SET PC 1530H	**1**	PC1530 + **5**	CGX 0932HT10
SET PC 2030	**1**	PC2030 + **5**	CGX 1242M20TIN	SET PC 2030H	**1**	PC2030 + **5**	CGX 1242HT10

Art. **305**

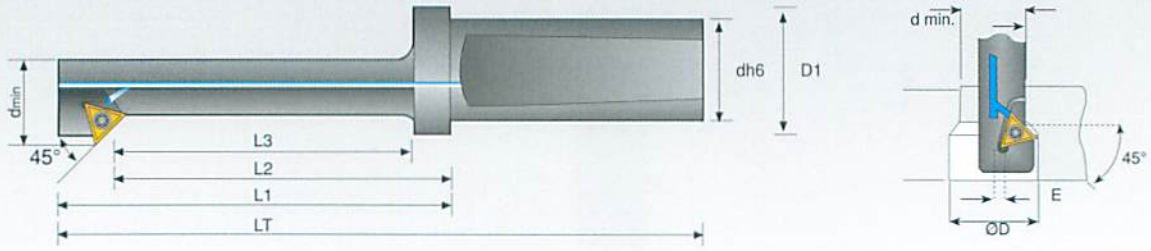
SM 305 frese per smussi a trazione 45°

SM 305 CHAMFERING MILLS WITH TRACTION 45°

SM 305 FRAISES POUR CHANFREINAGE AVEC TRACTION 45°

SM 305 ARRONDIERFRAESE MIT ZUG 45°

SM 305

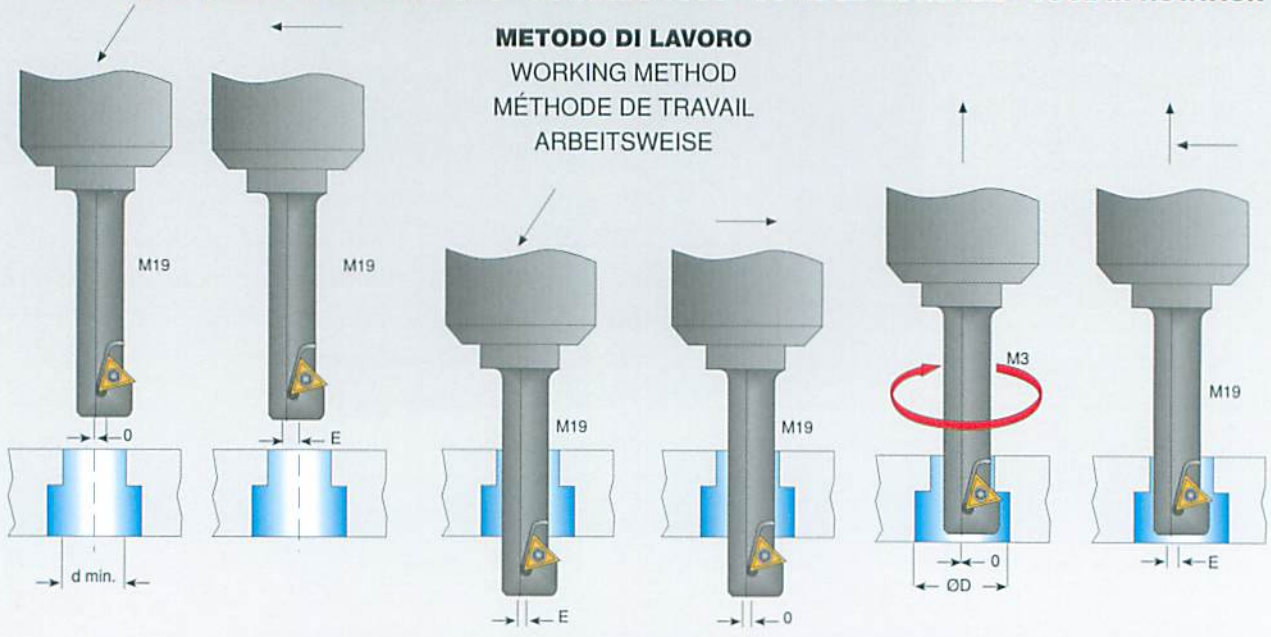


rif.	dimensioni in mm											
305	**D**	**dmin**	**dh6**	**L1**	**L2**	**L3**	**LT**	**D1**	**E**			
305.015 (*)	15	10	20	55	42	35	105	25	2.70	TCMT 0802	1022	2006
305.020 W	20	14	20	60	47	40	110	25	3.20			
305.023 W	23	17	20	70	57	50	120	25	3.20			
305.027 W	27	21	20	90	77	70	140	25	3.20	TCMT 1102	1001	2008
305.031 W	31	24	20	100	87	80	150	25	3.70			

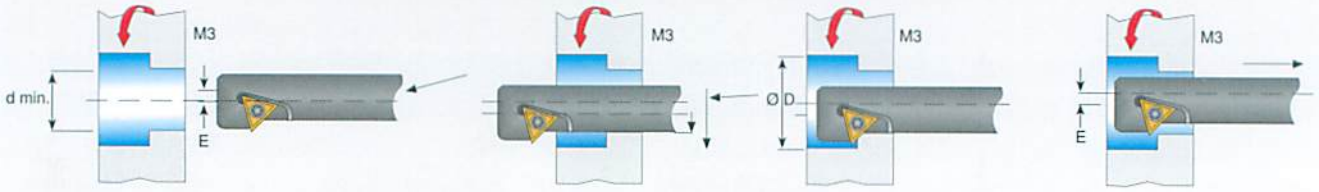
M19 = UTENSILE ORIENTATO, NON ROTANTE - NONROTATING ORIENTED TOOL
OUTIL ORIENTÉ PAS DE ROTATION - TOOL ORIENTED NICHT DREHT

M3 = UTENSILE IN ROTAZIONE - ROTATING TOOL - OUTIL EN ROTATION - TOOL IN ROTATION

METODO DI LAVORO
WORKING METHOD
MÉTHODE DE TRAVAIL
ARBEITSWEISE



M3 = PEZZO IN ROTAZIONE - ROTATING WORK PIECE



W = FORO PER LIQUIDO REFRIGERANTE - COOLANT BORE - TROU DU LIQUIDE D'ARROSAGE - KÜHLMITTELBOHRUNG

(*) = SENZA FORO REFRIGERANTE - WITHOUT COOLANT BORE - SANS TROU RÉFRIGÉRANT - OHNE KÜHLMITTELBOHRUNG

Art. **295**

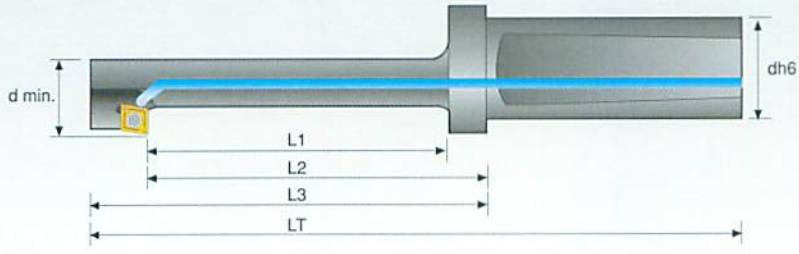
LE 295 fresa per lamare a trazione 180° - **Modello rotante per centri di lavoro C.N.**

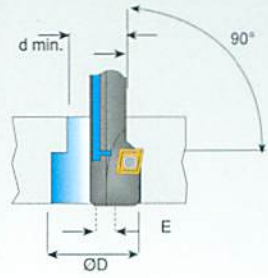
LE 295 SPOT-FACING MILL FOR TENSION 180° - ROTATING TYPE FOR N.C. MACHINING CENTRES

LE 295 FRAISE À LAMAGE AVEC TRACTION 180° - MODÈLE ROTATIF POUR CENTRES D'USINAGE C.N.

LE 295 SENKFRÄSER MIT ZUG 180° - DREHENDE AUSFÜHRUNG FÜR NC-BEARBEITUNGSZENTREN

LE 295



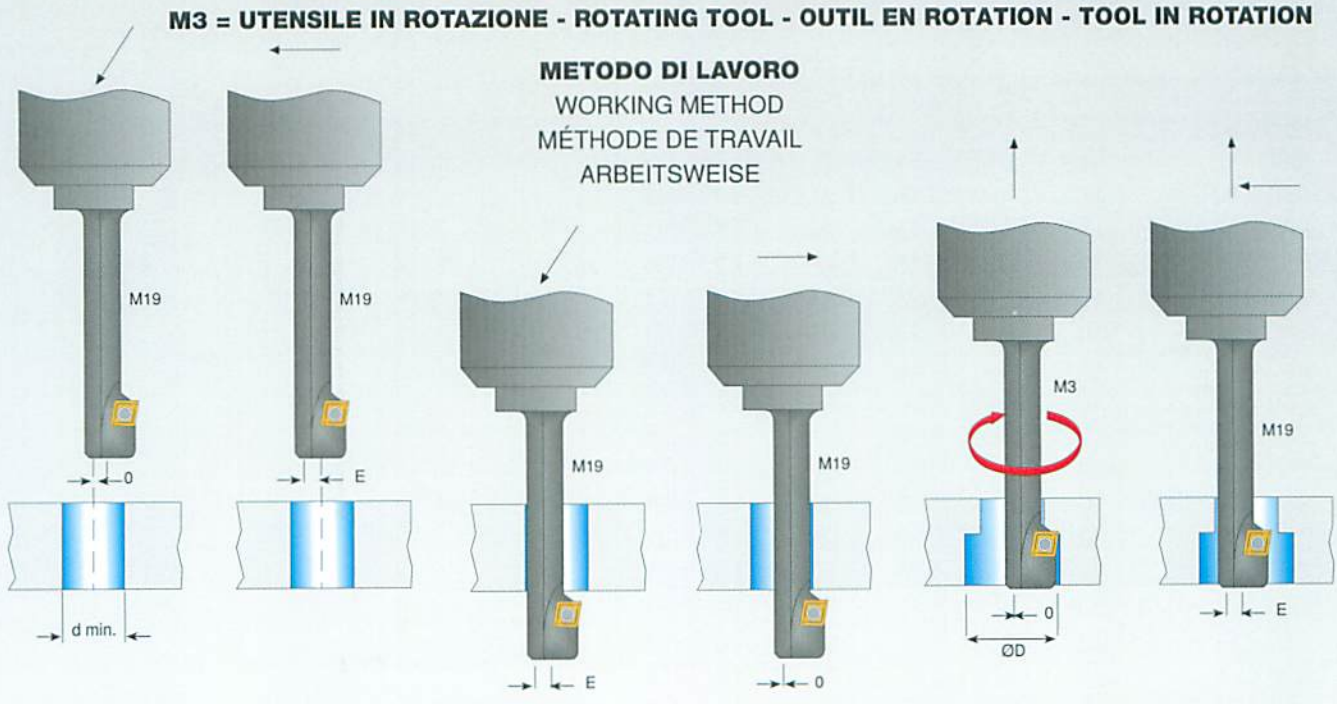


rif.	dimensioni in mm										
295	**øD**	**dmin**	**dh6**	**L1**	**L2**	**L3**	**LT**	**E**			
295.015 (*)	15	8,5	20	35	42	55	105	3,5	CPMT 0502	1022	2006
295.018 (*)	18	10,5	20	40	47	62	112	4			
295.020 W	20	13	20	45	52	67	117	3,75			
295.024 W	24	15	20	50	57	72	122	4,75	CCMT 060204	1001	2008
295.026 W	26	17	20	60	67	82	132	5			
295.030 W	30	19	20	65	77	92	142	6			
295.033 W	33	21	20	75	82	102	152	6,5	CCMT 09T304	1003	2015

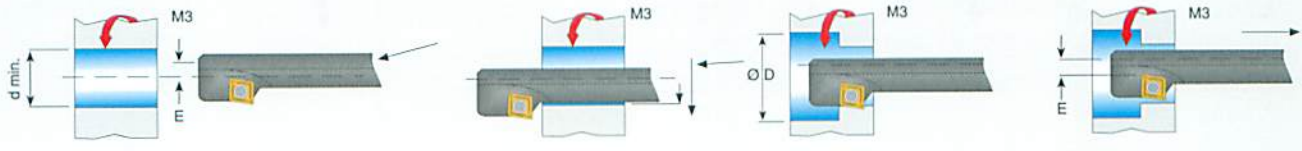
M19 = UTENSILE ORIENTATO, NON ROTANTE - NONROTATING ORIENTED TOOL
OUTIL ORIENTÉ PAS DE ROTATION - TOOL ORIENTED NICHT DREHT

M3 = UTENSILE IN ROTAZIONE - ROTATING TOOL - OUTIL EN ROTATION - TOOL IN ROTATION

METODO DI LAVORO
WORKING METHOD
MÉTHODE DE TRAVAIL
ARBEITSWEISE



M3 = PEZZO IN ROTAZIONE - ROTATING WORK PIECE



W = FORO PER LIQUIDO REFRIGERANTE - COOLANT BORE - TROU DU LIQUIDE D'ARROSAGE - KÜHLMITTELBOHRUNG

(*) = SENZA FORO REFRIGERANTE - WITHOUT COOLANT BORE - SANS TROU RÉFRIGÉRANT - OHNE KÜHLMITTELBOHRUNG

Art. **280**

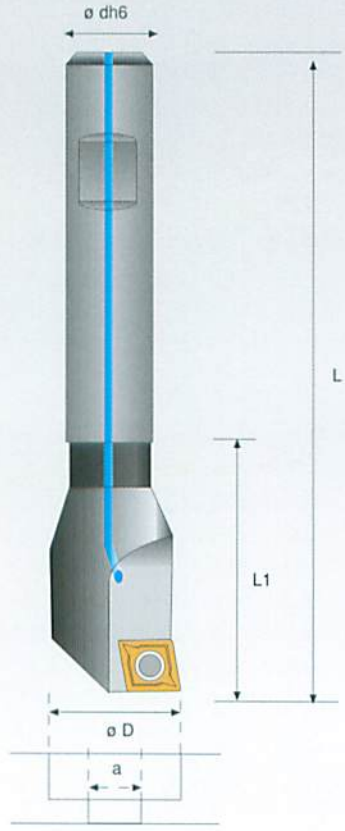
LS 280 - frese per lamature a 180°

LS 280 SPOT FACING MILLING CUTTER 180°

LS 280 FRAISE À LAMAGE À 180°

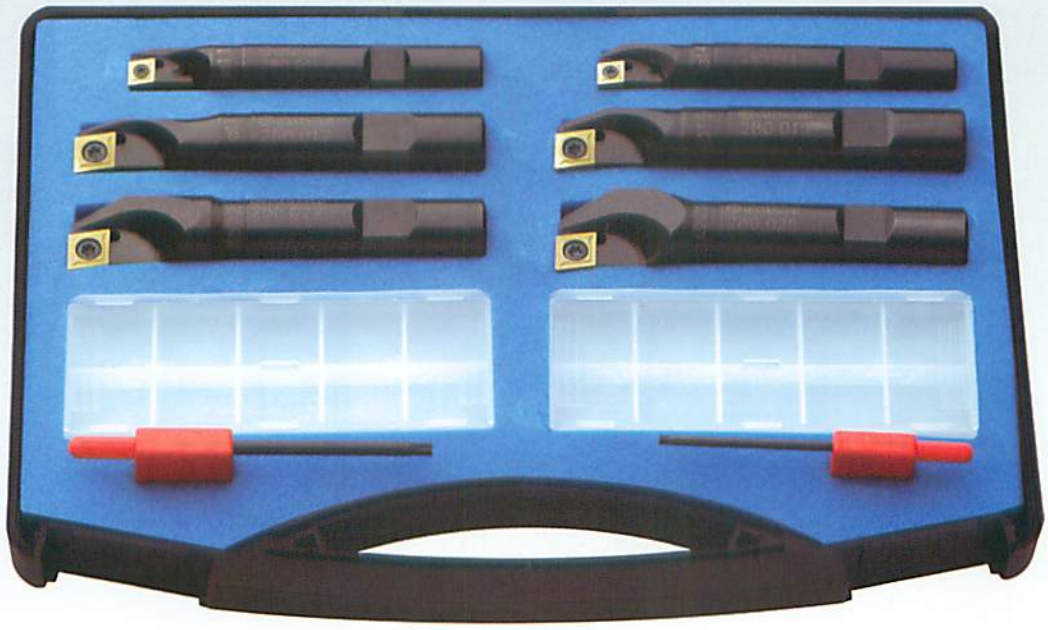
LS 280 SENKFRAESER

LS 280



rif.	dimensioni in mm								
280	**øD**	**a**	**L1**	**L**	**dh6**	**Z**			
280.010	10	4	15	85	12	1			
280.011	11	4	15	85	12	1			
280.012	12	4	18	85	12	1			
280.013	13	5	23	85	12	1	CCMT 060204	1001	2008
280.014	14	5	23	85	12	1			
280.015	15	5	30	85	12	1			
280.016	16	5	30	85	12	1			
280.017	17	5	30	95	16	1			
280.018	18	5	40	95	16	1			
280.019	19	5	40	95	16	1			
280.020	20	5	40	95	16	1			
280.021	21	5	42	95	16	1			
280.022	22	6	42	95	16	1			
280.023	23	6	42	95	16	1			
280.024	24	6	42	95	16	1			
280.025	25	8	42	95	16	1	CCMT 09T304	1003	2015
280.026	26	8	56	120	20	1			
280.027	27	8	56	120	20	1			
280.028	28	10	56	120	20	1			
280.029	29	11	56	120	20	1			
280.030	30	12	56	120	20	1			
280.031	31	14	56	120	20	1			
280.032	32	15	56	120	20	1			
280.033	33	15	56	120	20	1			

SET



Contenuto del set Set contents / Contenu du Set / Inhalt pro Set		
SET 280		
1	280.011	M 6
1	280.014	M 8
1	280.017	M 10
1	280.019	M 12
1	280.022	M 14
1	280.025	M 16

Contenuto del set Set contents / Contenu du Set / Inhalt pro Set		
SET 281		
1	280.011	M 6
1	280.014	M 8
1	280.017	M 10
1	280.019	M 12

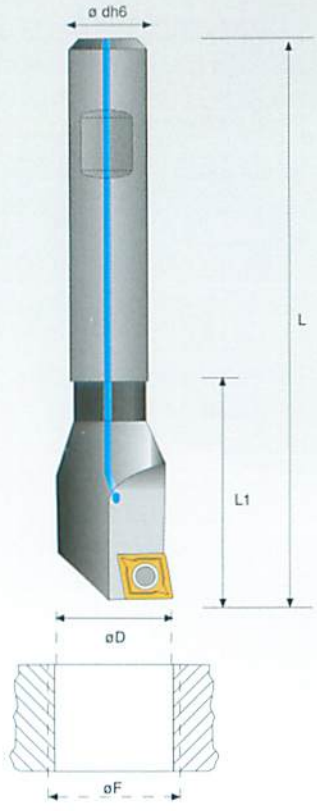
Art. **285**
LF 285 - frese per alesare

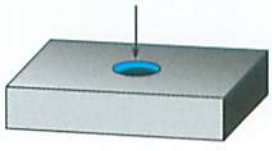
LF 285 BORING MILLING CUTTER

LF 285 FRAISES D'ALÉSAGE

LF 285 FRAESER FUER AUSBOHRUNGEN

LF 285 SET





Contenuto del set / Set contents / Contenu du Set / Inhalt pro Set

SET 285	
1	285.010
1	285.012
1	285.016
1	285.020

rif.	dimensioni in mm								
285	**øD**	**L**	**L1**	**dh6**	**øF**	**Z**			
285.010	9,8	90	23	8	10	1	CCMT 060204	1001	2008
285.011	10,8	105	24	10	11	1			
285.012	11,8	105	25	10	12	1			
285.013	12,8	105	25	10	13	1			
285.014	13,8	110	27	12	14	1			
285.015	14,8	120	28	12	15	1			
285.016	15,8	125	29	12	16	1			
285.017	16,8	140	30	16	17	1			
285.018	17,8	140	31	16	18	1			
285.019	18,8	150	31	16	19	1			
285.020	19,8	150	33	16	20	1			
285.021	20,8	160	34	20	21	1	CCMT 09T304	1003	2015
285.022	21,8	160	35	20	22	1			
285.023	22,8	165	36	20	23	1			
285.024	23,8	170	37	20	24	1			
285.025	24,8	180	38	20	25	1			
285.026	25,8	185	39	20	26	1			
285.027	26,8	190	40	20	27	1			
285.028	27,8	190	40	20	28	1			
285.029	28,8	200	43	20	29	1			
285.030	29,8	200	43	25	30	1			
285.031	30,8	200	44	25	31	1			
285.032	31,8	200	45	25	32	1			

Art. **LS 480**

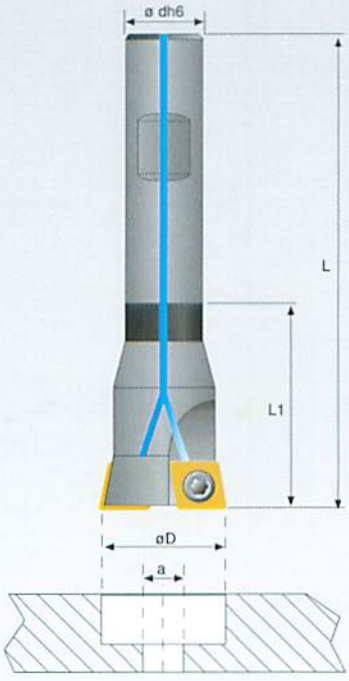
LS 480 - frese per lamatura 180° **a due taglienti**

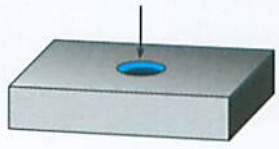
LS 480 180° SPOT-FACING END MILLS **TWO TEETH**

LS 480 FRAISES À LAMER **À DEUX TAILLES** 180°

LS 480 180°- SENKUNGSFRAESER MIT **ZWEI SCHNEIDEN**

LS 480





Contenuto del set / Set contents / Contenu du Set / Inhalt pro Set

SET 480	
1	480.017
1	480.019
1	480.022
1	480.026

rif.	dimensioni in mm								
480	**øD**	**a**	**L1**	**L**	**dh6**	**Z**			
480.016	16	5	30	92	12	2	CCMT 0602	1001	2008
480.017	17	6	32	94	16	2			
480.0175	17,5	6,5	40	96	16	2			
480.018	18	7	41	97	16	2			
480.019	19	8	41	100	16	2			
480.020	20	9	41	102	16	2			
480.021	21	10	41	105	16	2			
480.022	22	11	41	110	16	2			
480.023	23	12	41	112	16	2			
480.024	24	13	41	115	16	2			
480.025	25	8	40	120	16	2	CCMT 09T3	1003	2015
480.026	26	9	55	125	20	2			
480.027	27	10	55	128	20	2			
480.028	28	11	55	130	20	2			
480.029	29	12	55	132	20	2			
480.030	30	13	55	134	20	2			
480.031	31	14	55	136	20	2			
480.032	32	15	55	138	20	2			
480.033	33	16	55	140	20	2			
480.034	34	16	60	140	25	2			
480.035	35	17	60	140	25	2			
480.036	36	18	60	140	25	2			
480.037	37	19	60	140	25	2			
480.038	38	20	60	140	25	2			
480.039	39	21	60	140	25	2			
480.040	40	22	60	140	25	2			
480.041	41	23	60	140	25	2			
480.042	42	24	60	140	25	2			

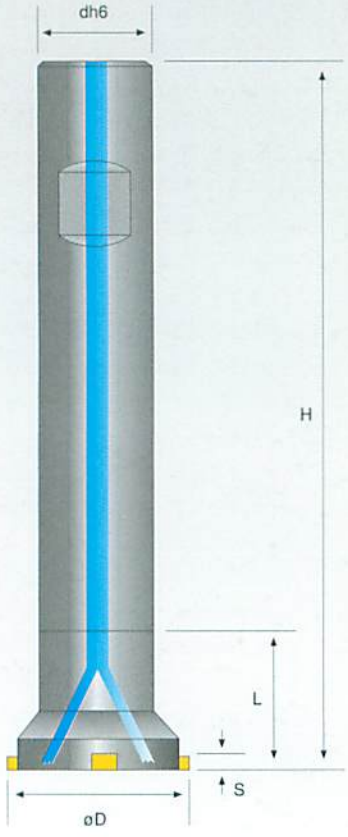
Art. **440**
FC 440 - frese per canalini

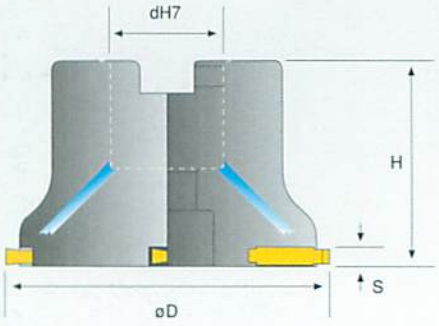
FC 440 MILLING CUTTER FOR SEEGER GROOVING

FC 440 FRAISES POUR SEEGER

FC 440 FRAESER FUER SCHLITZKANAELE

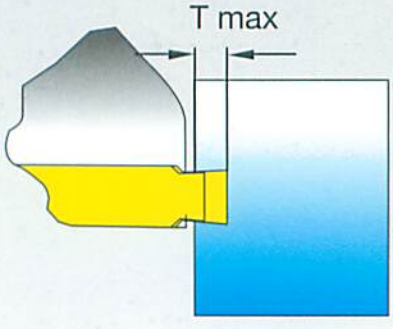
FC 440





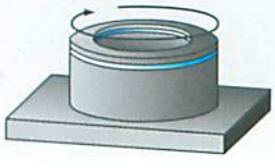
rif.	dimensioni in mm									
440	**øD**	**dh6**	**dH7**	**H**	**L**	**S**	**Z**			
440.019 W	19	16		100	20	1.1-1.3	1	154.15-16	1004 C	2015
440.034 W-W	34	20		125	25	1.6-1.85-2.15	3			
440.048 M-W	48		16	40		2.15-3.15	4			
440.063 M-W	63		22	40		2.65-4.15	5			

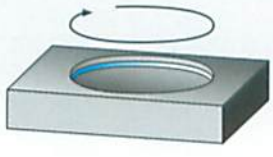
W-W = Con fori di lubrificazione - **W-W** = Coolant Bores - **W-W** = Lubrification interèure - **W-W** = Kuehlmittel Bohrung
M-W = Con fori di lubrificazione - **M-W** = Coolant Bores - **M-W** = Lubrification interèure - **M-W** = Kuehlmittel Bohrung

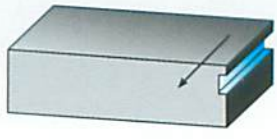


ØD	T max
19	1,8
34 - 48 - 63	2,3

T max (*) VEDI PAGINA (138) INSERTI
T max (*) SEE PAGE (138) INSERTS
T max (*) VOIR PAGE DES PLAQUETTES PAGE (138)
T max (*) SIEHE WENDESCHNEIDPLATTENSEITE (138)







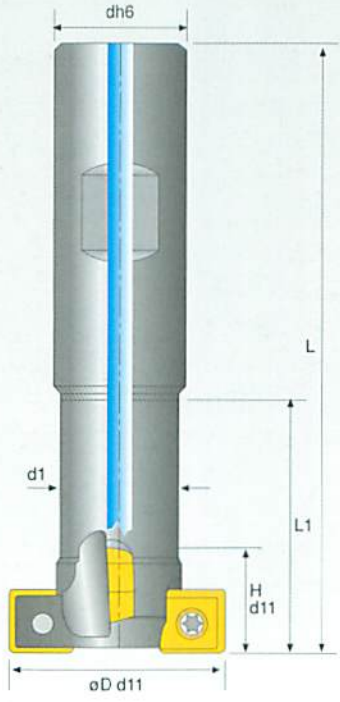
Art. **400**
FT 400 - fresa per cave a "T"

FT 400 "T" SOLT MILLING CUTTER

FT 400 FRAISE RAINURE À "T"

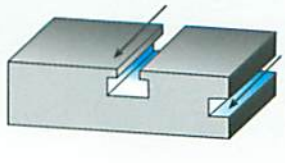
FT 400 FRAESER FUER "T" NUTEN

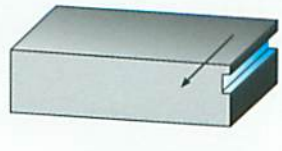
FT 400



rif.	dimensioni in mm										
400	**øD**	**dh6**	**d1**	**L**	**H**	**L1**	**CM**	**Z**			
400.021 W-W	21	16	11	76	9	25		2	SPMT 060304	1001	2008
400.025 W-W	25	16	13	82	11	31		4			
400.030 W-W	30	16	13	82	11	25		4			
400.032 W-W	32	20	17	88	14	36		4	SPMT 09T308	1035	2015
400.040 W-W	40	25	21	108	17	50		4			
400.050 W-W	50	32	27	120	22	56		4	SPMT 120408	1005	2020

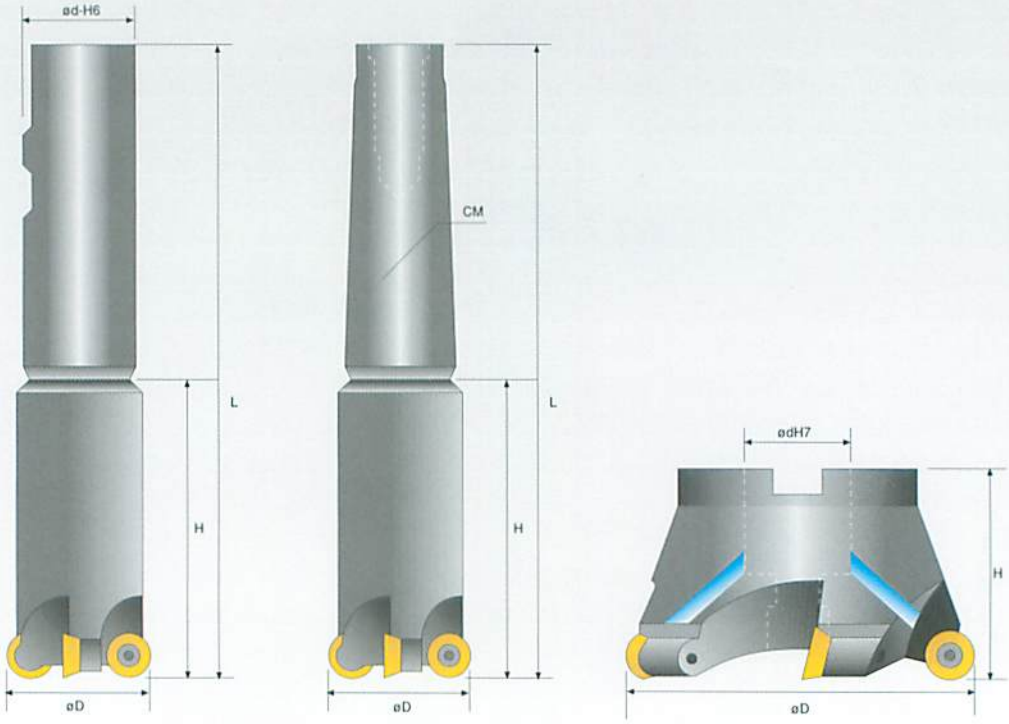
W-W = Con fori di lubrificazione - **W-W** = Coolant Bores - **W-W** = Lubrification interèure - **W-W** = Kuehlmittel Bohrung





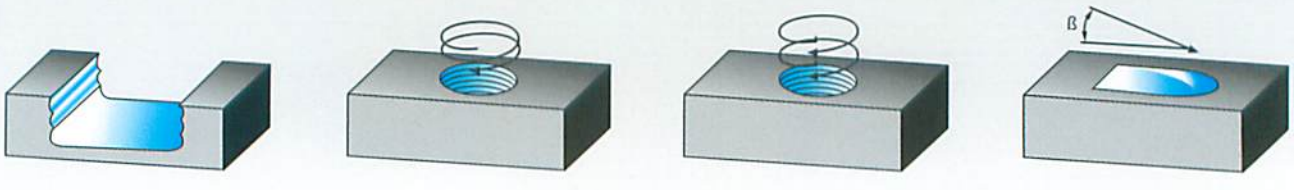
TR 270 COPING AND MILL
TR 270 FRAISES COPIAGE
TR 270 KOPIERFRAESER

TR 270



rif.	dimensioni in mm									
270	**øD**	**dh6**	**dH7**	**L**	**H**	**CM**	**Z**			
270.012 S ●	12	12		150	25		2	RCMT 0602M0	1001	2008
270.016 S ●	16	16		180	60		2			
270.020 S ●	20	20		180	80		3			
270.025 S ●	25	20		180	80		2	RDEX 10T300	1004	2015
270.032 S ●	32	25		180	80		3			
Serie a manicotto Shell models / Modèles à manchon / Serie Manschette										
271										
271.040 M-W	40		16		45		3	RPMW 1204 M0 RPMT 1204 M0	1004	2015
271.050 M-W	50		22		45		4			
271.063 M-W	63		22		50		5			
271.080 M-W	80		27		50		5			

M-W = Con fori di lubrificazione - **M-W** = Coolant Bores - **M-W** = Lubrification interèure - **M-W** = Kuehlmittel Bohrung
● = a esaurimento/to exhaustion/à l'épuisement/bis zur Erschöpfung



MOULD 800

noma classic

PROGRAMMA MODULARE PER FRESATURA STAMPI

Modular range for mould milling

Programme modulare pour fraisage de moules

Modularprogramm zum Formfraesen

Art. **MOULD 800**

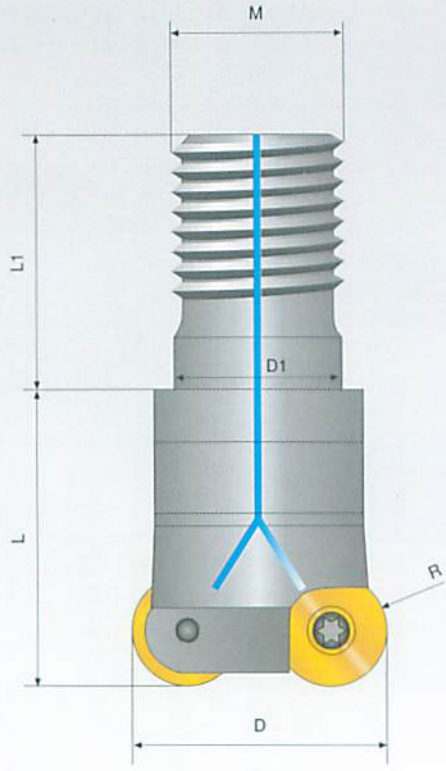
805 810 815 820 - frese filettate toriche per copiatura

805 810 815 820 SCREW-ON COPYING END MILLS

805 810 815 820 FRAISES AVEC QUEUE FILETÉ À COPIER

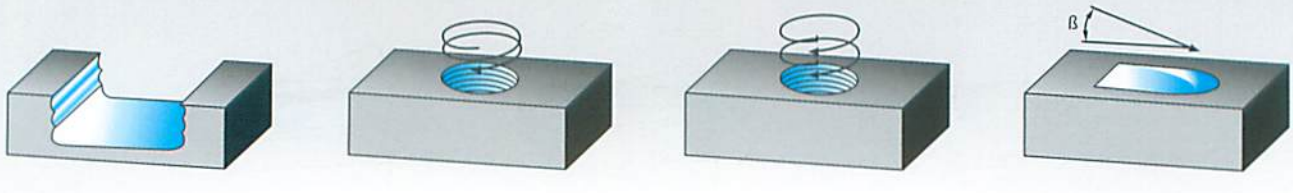
805 810 815 820 KOPIER-EINSCHRAUBFRÄSER

MOULD 800



rif.	øD	L	M	D1	L1	R	Z	Inserti - Insert Plaquettes - Wpl	Vite - Screw Vis - Schraube	Chiave - Key Clef - Schlüssel
dimensioni in mm										
805										
805.016.307	16 ●	23	8	8,5	17,5	3,5	3	RDMW RDHX 0702MOT	1001P	2008
805.020.407	20 ●	30	10	10,5	20	3,5	4			
dimensioni in mm										
810										
810.020.210	20	30	10	10,5	20	5	2	RDMW RDHX 1003MOT	1035	2015
810.025.210	25	35	12	12,5	22	5	2			
810.025.310	25	35	12	12,5	22	5	3			
810.032.410	32	43	16	17	24	5	4			
dimensioni in mm										
815										
815.025.212	25	35	12	12,5	22	6	2	RDMW RDHX 12T3MOT	1035	2015
815.032.312	32	43	16	17	24	6	3			
dimensioni in mm										
820										
820.025.212	25	35	12	12,5	22	6	2	RPMW RPMT 1204MOT	1004	2015
820.032.312	32	43	16	17	24	6	3			

● = a esaurimento/to exhaustion/à l'épuisement/bis zur Erschöpfung



Art. **MOULD 800**

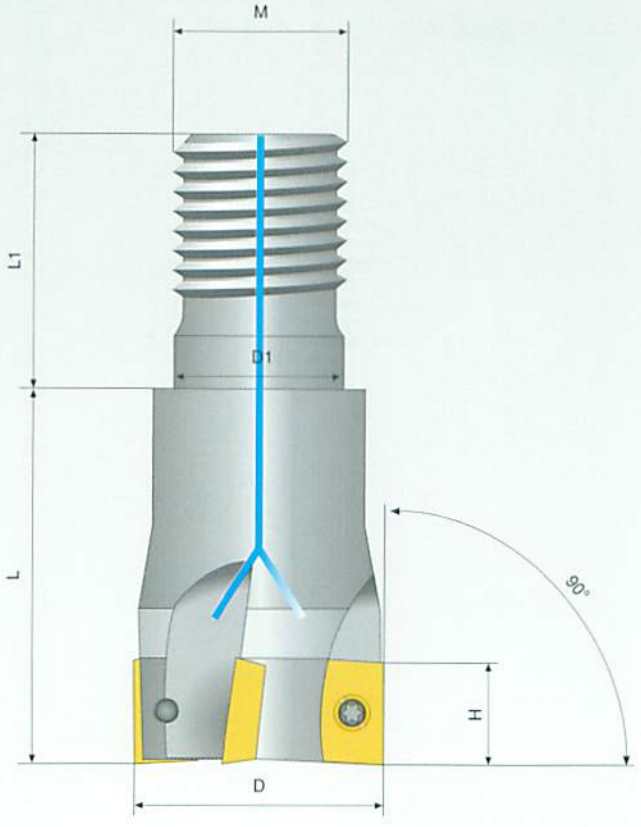
830 832 - frese filettate per spallamenti retti

830 832 SCREW-ON SHOULDER MILLING CUTTERS

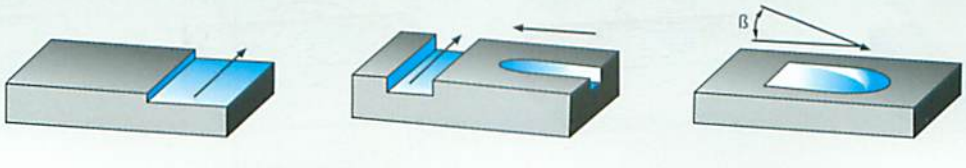
830 832 FRAISES AVEC QUEUE FILETÉ POUR ÉPAULEMENTS

830 832 ECK-EINSCHRAUBFRÄSER

MOULD 800



rif.			dimensioni in mm					Inserti - Insert Plaquettes - Wpl	Vite - Screw Vis - Schraube	Chiave - Key Clef - Schlüssel
830	**øD**	**L**	**M**	**D1**	**L1**	**H**	**Z**			
830.016.210	16	25	8	8,5	17,5	10	2	APKT 1003	1001	2008
830.020.310	20	30	10	10,5	20	10	3			
830.025.310	25	35	12	12,5	22	10	3			
830.025.410	25	35	12	12,5	22	10	4			
830.032.510	32	43	16	17	24	10	5			
rif.			dimensioni in mm							
832	**øD**	**L**	**M**	**D1**	**L1**	**H**	**Z**			
832.025.216	25	35	12	12,5	22	16	2	APKT 1604 PDR	1003	2015
832.032.316	32	43	16	17	24	16	3			



Art. **MOULD 800**

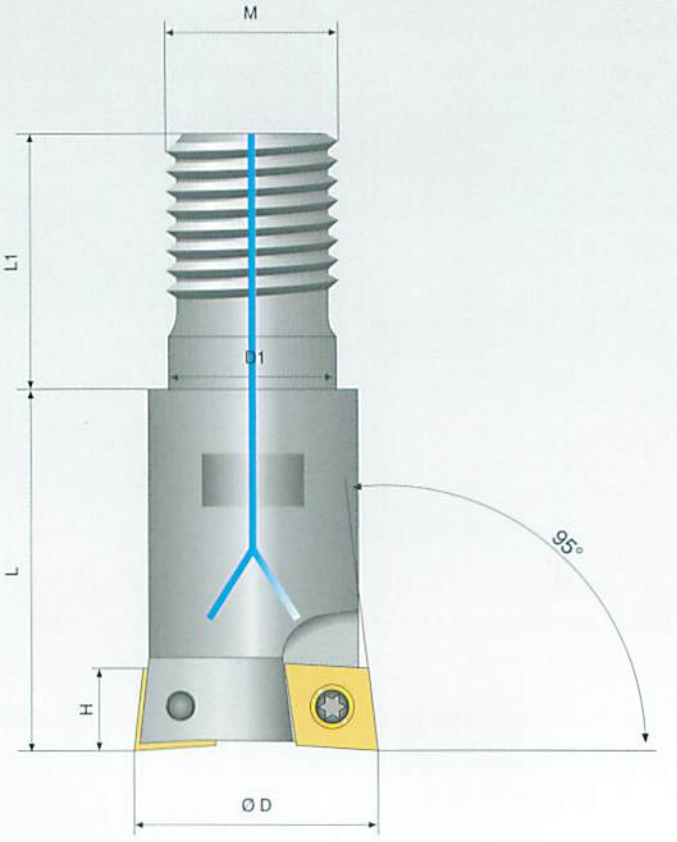
840 - frese filettate per copiatura e contornatura (95°)

840 SCREW-ON ROUTING AND COPYING END MILLS (95°)

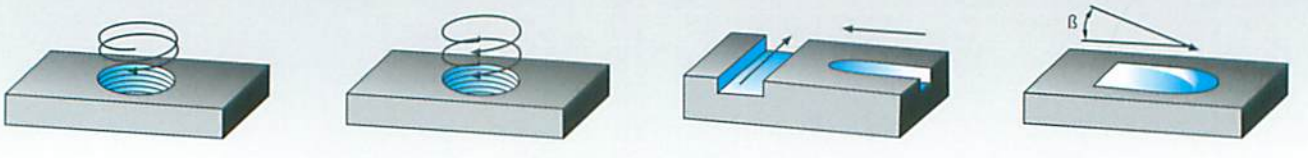
840 FRAISES AVEC QUEUE FILETÉ À COPIER ET CONTOURNER (95°)

840 KOPIER-UND KONTURBEARBEITUNGS-EINSCHRAUBFRÄSER (95°)

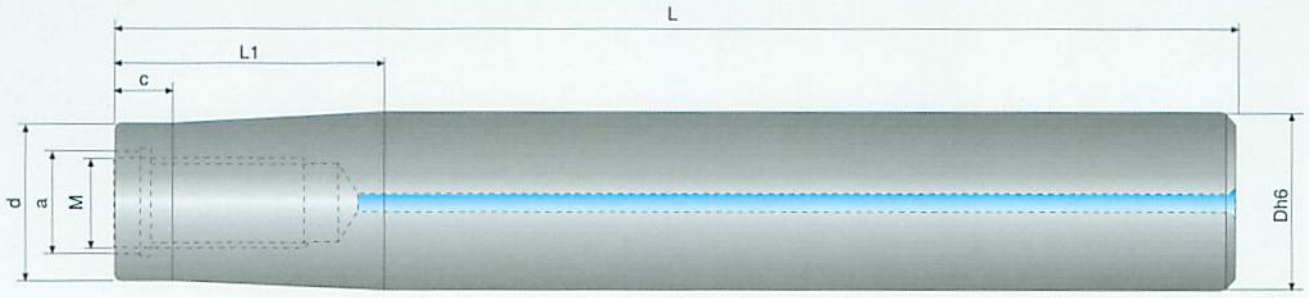
MOULD 800



rif.	dimensioni in mm							Inserti - Insert Plaquettes - Wpl	Vite - Screw Vis - Schraube	Chiave - Key Clef - Schlüssel
840	**øD**	**L**	**M**	**D1**	**L1**	**H**	**Z**			
840.016.206	16	23	8	8,5	17,5	6,5	2	XDHW 0206	1001	2008
840.020.306	20	30	10	10,5	20	6,5	3			
840.025.306	25	35	12	12,5	22	6,5	3			



ADATTATORI



rif. dimensioni in mm

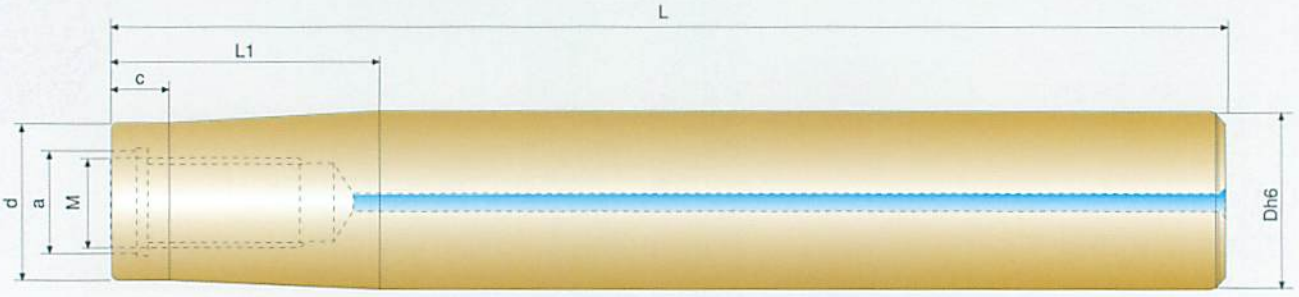
	dh6	M	a	L	L1	d	c
SPC160	16	8	8,5	110	25	14	10
SPL160	16	8	8,5	175	35	14	10
SPL155	15,5	8	8,5	175	35	14	10
SPC200	20	10	10,5	130	28	18	10
SPL200	20	10	10,5	200	40	18	10
SPL195	19,5	10	10,5	200	40	18	10
SPC250	25	12	12,5	140	30	22	12
SPL250	25	12	12,5	210	50	22	12
SPL245	24,5	12	12,5	210	50	22	12
SPC320	32	16	17	150	40	28	15
SPL320	32	16	17	220	60	28	15

EXTENSIONS - K

TUNGSTEN HEAVY ALLOY + TIN

ANTIVIBRANTI

new



rif.	dimensioni in mm						
	dh6	M	a	L	L1	d	c
KPM 150	15	8	8,5	150	22	14	10
KPL 150	15	8	8,5	200	22	14	10
KPC 160	16	8	8,5	100	22	14	10
KPM 160	16	8	8,5	150	22	14	10
KPL 160	16	8	8,5	200	22	14	10
KPM 190	19	10	10,5	150	28	18	10
KPL 190	19	10	10,5	200	28	18	10
KPC 200	20	10	10,5	110	28	18	10
KPM 200	20	10	10,5	150	28	18	10
KPL 200	20	10	10,5	200	28	18	10
KPM 240	24	12	12,5	160	32	22	10
KPL 240	24	12	12,5	230	32	22	10
KPM 250	25	12	12,5	160	32	22	10
KPL 250	25	12	12,5	230	32	22	10

noma®

new POWER TOOLS 390 F11

Foratura
Fresatura
Tornitura

Drilling
Milling
Boring

new

TECNOLOGIA 100%
MADE IN ITALY

POWER TOOLS 390 F11

POWER TOOLS 390 F11

Utensili polifunzionali che possono eseguire fino a 11 funzioni di lavorazione meccanica con ottime prestazioni; facilmente utilizzabili su centri di lavoro, torni e macchine integrate.

POWER TOOLS 390 F11

Multifunction tools able to carry out up to 11 high-performance machining functions; easy to use in machining centers, lathes and integrated machines.

POWER TOOLS 390 F11

Outils multi-fonction qui peuvent exécuter jusqu'à 11 fonctions d'usinage à haute performance; faciles à utiliser sur centres d'usinage, tours et machines integrées.

POWER TOOLS 390 F11

Multifunktions-Werkzeuge, die bis 11 Hochleistungsbearbeitungen durchführen können; auf Bearbeitungszentren, Drehmaschinen und integrierten Maschinen einfach einsetzbar.

Rif.	dimensioni in mm									
390	D	Lu	L	H	dh6	Z	a			
390.017	17	25.5	90	35	20	2	6	SCMT 060204	1001	2008
390.018	18	27	94	40	20	2	6			
390.019	19	28.5	97	42	20	2	6			
390.020	20	30	98	43	20	2	6			
390.021	21	31.5	106	43	25	2	6			
390.022	22	33	107	43	25	2	6			
390.023	23	34.5	109	43	25	2	6			
390.024	24	36	110	46	25	2	6			
390.025	25	37.5	112	47	25	2	9	SCMT 09T304	1003	2015
390.026	26	39	125	52	32	2	9			
390.027	27	40.5	126	53	32	2	9			
390.028	28	42	127	55	32	2	9			
390.029	29	43.5	129	56	32	2	9			
390.030	30	45	130	57	32	2	9			
390.031	31	46.5	132	59	32	2	9			
390.032	32	48	134	61	32	2	9			

FUNZIONI ESEGUIBILI E PARAMETRI DI TAGLIO

01. Foratura dal pieno passante o con fondo piatto a 90°: profondità massima 1,5xD: avanzamento massimo di sicurezza su acciaio **0,3 mm/giro.**
02. Fresatura ad interpolazione: avanzamento massimo di sicurezza su acciaio **0,2 mm/giro.**
03. Lamatura con fondo piatto a 90°: avanzamento massimo di sicurezza su acciaio **0,3 mm/giro.**
04. Allargatura di fori: avanzamento massimo di sicurezza su acciaio **0,3 mm/giro.**
05. Fresatura di cave passanti: avanzamento massimo di sicurezza su acciaio **0,2 mm/giro.**
06. Fresatura di cave dal pieno: avanzamento massimo di sicurezza su acciaio **0,2 mm/giro.**
07. Foratura dal pieno, semiforatura su superfici sconnesse passante o con fondo piatto a 90°: profondità massima 1,5xD, avanzamento massimo di sicurezza su acciaio **0,2 mm/giro.**
08. Contornatura: avanzamento massimo di sicurezza su acciaio **0,2 mm/giro.**
09. Fresatura inclinata in rampa: avanzamento massimo di sicurezza su acciaio **0,2 mm/giro.**
10. Foratura dal pieno su tornio 1,5xD: avanzamento massimo di sicurezza su acciaio **0,3 mm/giro.**
11. Tornitura interna: avanzamento massimo di sicurezza su acciaio **0,3 mm/giro.**

AVAILABLE FUNCTIONS AND CUTTING PARAMETERS

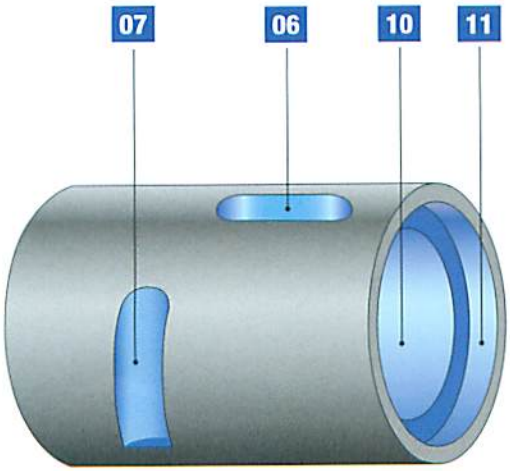
01. Through drilling in solid or in 90° flat bottom: max. depth 1,5xD: max. safety feed in steel **0,3 mm/rotation**.
02. Interpolation milling: max. safety feed in steel **0,2 mm/rotation**.
03. Spot-facing in 90° flat bottom: max. safety feed in steel **0,3 mm/rotation**.
04. Counterboring: max. safety feed in steel **0,3 mm/rotation.**
05. Through slot milling: max. safety feed in steel **0,2 mm/rotation**.
06. Slot milling in solid: max. safety feed in steel **0,2 mm/rotation.**
07. Drilling in solid, semidrilling of uneven surfaces, through or in 90° flat bottom: max. depth 1,5xD, max. safety feed in steel **0,2 mm/rotation.**
08. Routing: max. safety feed in steel **0,2 mm/rotation**.
09. Inclined plane milling: max. safety feed in steel **0,2 mm/rotation**.
10. Drilling in solid on lathe 1,5xD: max. safety feed in steel **0,3 mm/rotation**.
11. Internal turning: max. safety feed in steel **0,3 mm/rotation**.

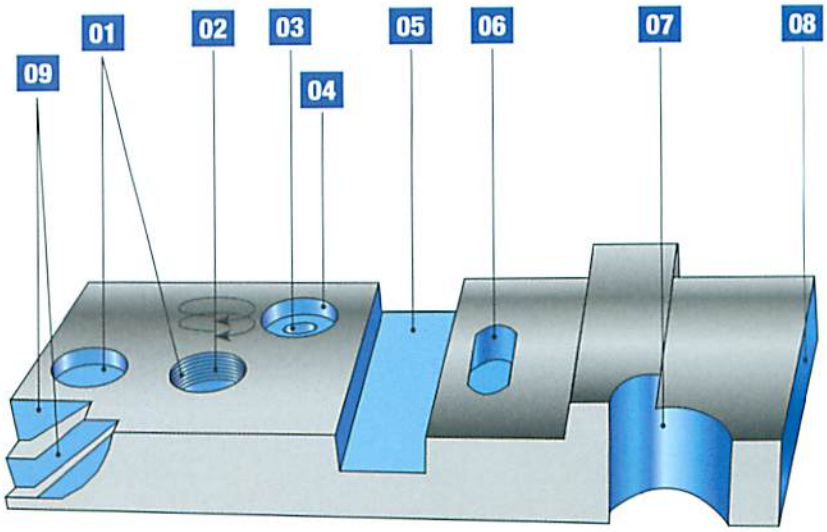
FONCTIONS EXECUTABLES ET LES PARAMTRES DE COUPE

01. Perçage passant dans la masse ou sur fond plat à 90°: max. profondeur 1,5xD: max. avancement de sûreté dans l'acier **0,3 mm/tour**.
02. Fraisage à interpolation: max. avancement de sûreté dans l'acier **0,2 mm/tour**.
03. Lamage sur fond plat à 90°: max. avancement de sûreté dans l'acier **0,3 mm/tour**.
04. Elargissement des trous: max. avancement de sûreté dans l'acier **0,3 mm/tour.**
05. Fraisage des rainures passantes: max. avancement de sûreté dans l'acier **0,2 mm/tour**.
06. Fraisage des rainures dans la masse: max. avancement dans l'acier **0,2 mm/tour**.
07. Perçage dans la masse, semi-perçage sur surfaces accidentées, passant ou sur fond plat à 90°: max. profondeur 1,5xD, max. avancement de sûreté dans l'acier **0,2 mm/tour.**
08. Contournage: max. avancement de sûreté dans l'acier **0,2 mm/tour**.
09. Fraisage sur plan incliné: max. avancement de sûreté dans l'acier **0,2 mm/tour**.
10. Perçage dans la masse sur tour 1,5xD: max. avancement de sûreté dans l'acier **0,3 mm/tour**.
11. Tournage intérieur: max. avancement de sûreté dans l'acier **0,3 mm/tour**.

MOGLICHE FUNKTIONEN UND SCHNEIDEPARAMETER

01. Durchgehendes Vollbohren oder Bohren auf 90°-Flachboden: max.Tiefe 1,5xD: max. Sicherheitsvorschub bei Stahl **0,3 mm/Umdrehung**.
02. Interpolationsfräsen: max. Sicherheitsvorschub bei Stahl **0,2 mm/Umdrehung**.
03. Ansenken auf 90°-Flachboden: max. Sicherheitsvorschub bei Stahl **0,3 mm/Umdrehung**.
04. Aufdornung: max. Sicherheitsvorschub bei Stahl **0,3 mm/Umdrehung**.
05. Fräsen von durchgehenden Nuten: max. Sicherheitsvorschub bei Stahl **0,2 mm/Umdrehung**.
06. Nuten-Vollfräsen: max. Sicherheitsvorschub bei Stahl **0,2 mm/Umdrehung**.
07. Vollbohren, Halbbohren auf unebenen Flächen, durchgehend oder auf 90°-Flachboden: max. Tiefe 1,5xD, max. Sicherheitsvorschub bei Stahl **0,2 mm/Umdrehung**.
08. Konturbearbeitung: max. Sicherheitsvorschub bei Stahl **0,2 mm/Umdrehung**.
09. Fräsen auf schiefen Ebenen: max. Sicherheitsvorschub bei Stahl **0,2 mm/Umdrehung**.
10. Vollbohren auf Drehmaschine 1,5xD: max. Sicherheitsvorschub bei Stahl **0,3 mm/Umdrehung**.
11. Innendrehen: max. Sicherheitsvorschub bei Stahl **0.3 mm/Umdrehung**.





Note

BARRE DI ALESATURA

BORING BARS

BARRES D'ALÉSAGE

BOHRSTANGEN

UNIVERSAL DRILL 900

noma® classic

UNIVERSAL DRILL BREVETTATA

Universal drill (patented)

Universal drill (breveté)

Universal drill (patentiert)

UNIVERSAL DRILL BREVETTATA noma

Tutte le punte a fissaggio meccanico fino ad ora presenti sul mercato devono usare molteplici geometrie e dimensioni di inserti per coprire tutta la gamma di diametri, con notevoli costi di utilizzo e di gestione.
UNIVERSAL DRILL UTILIZZA LO STESSO INSERTO PER TUTTI I DIAMETRI DELLA GAMMA, che oltre il ø25 sfrutta l'aggiunta di un terzo tagliente e tre scarichi di evacuazione del truciolo.
Questo sistema divide lo sforzo di taglio in tre corone circolari concentriche e spezza il truciolo in tre sezioni, favorendo la penetrazione dell'utensile e la evacuazione del truciolo stesso, ottenendo una resa superiore.

La particolare disposizione degli inserti permette di ottenere molte funzioni: foratura a fondo piatto a 90°; foratura su piani inclinati; foratura su superfici sconnesse; lamatura a 90°; allargatura di fori, semiforatura; tornitura interna.

La costruzione è eseguita per l'utilizzo di **inserti standard** reperibili sul mercato in tutte le gradazioni, quindi, **UNIVERSAL DRILL** è adattabile a tutte le tipologie di materiali da lavorare.

Le caratteristiche di questo utensile si possono definire rivoluzionarie perchè oltre alle molteplici funzioni che svolge, riduce enormemente i costi di utilizzo e di gestione.

UNIVERSAL DRILL (PATENTED) noma

All drills with inserts which have been sold in the market till now have to use inserts with different shapes and dimensions to cover the whole range of diameters; this has always caused overall high costs.
UNIVERSAL DRILL IS PROVIDED WITH THE SAME INSERT FOR ALL DIAMETERS and over Ø 25 it uses an additional cutting edge and three chip removal grooves.
This system divides the cutting stress into three circolar and concentric crowns and breaks chip into three parts: this helps the tool penetration and the chip removal and increases performances.
The particular arrangement of inserts allows different functions:
90° flat bottom drilling, inclined plane drilling, drilling of uneven surfaces, 90° spot-facing, counterboring, semidrilling, internal turning.

The construction is carried out by using some **STANDARD INSERTS** that one find on the market in all strenght-related gradations, so **UNIVERSAL DRILL** is suitable for the machining of any material.

The features of this tool are revolutionary, because it carries out a wide range of functions and assures a remarkable cost cutting.

UNIVERSAL DRILL (PATENTIERT) noma

Alle Bohrer mit Wendeplatten, die zurzeit auf dem Markt erhältlich sind, sollen Wendeplatten mit unterschiedlichen Geometrien und Grössen einsetzen, um die ganze Durchmesserreihe zu bieten und dies hat immer zu hohen Kosten geführt.
UNIVERSAL DRILL IST MIT DERSELBEN WENDEPLATTE FÜR ALLE DURCHMESSER VERSEHEN und über Ø 25 benutzt er eine dritte Schneide und drei Späneabflüsse.
Dieses System teilt die Schnittkraft in drei kreisförmigen und konzentrischen Kronen und bricht den Span in drei Teilen: das erleichtert die Eindringung vom Werkzeug und den Spanabfluss und dadurch wird die Leistung erheblich verbessert.
Die besondere Anordnung der Wendeplatten ermöglicht zahlreiche Funktionen: 90°-Bohren auf Flachboden, Bohren auf geneigte Ebenen, Bohren auf unebene Flächen, 90°-Ansenken, Aufdornung, Halbbohren, Innendrehen.

Der Aufbau ist geeignet für die Verwendung aller **Standardwendeplatten,** dem Markt in allem Härtegraden angeboten werden, **UNIVERSAL DRILL** kann also für alle Arten von Werkstücken eingesetzt werden.

Die Eigenschaften dieses Werkzeuges sind revolutionär, denn es ist vielseitig verwendbar und senkt merklich die Einsatz- und Herstellungskosten.

UNIVERSAL DRILL (BREVETÉ) noma

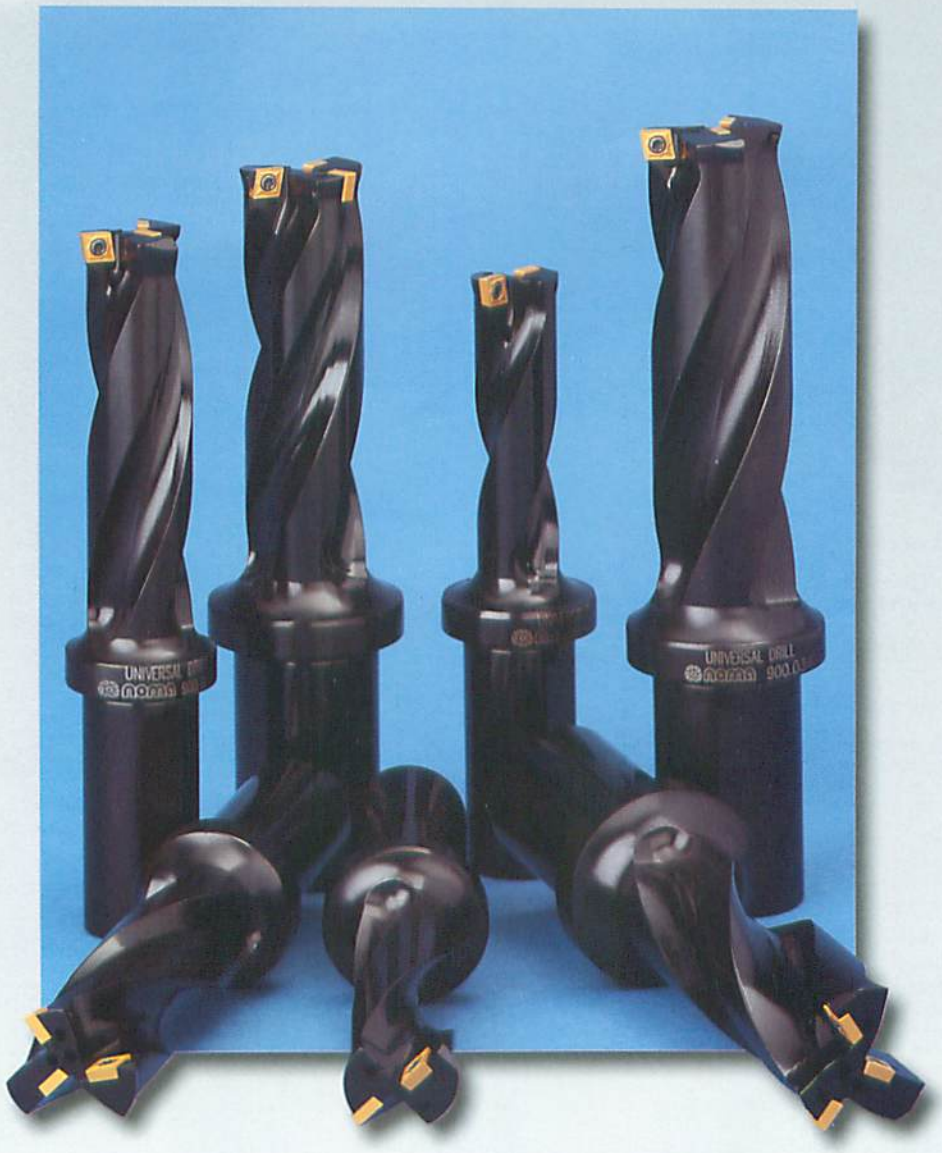
Tous les forets avec plaquettes qu'on a trouvé sur le marché jusqu'à present doivent utiliser des plaquettes avec nombreuses géometries et dimensions et ça signifie des hauts coûts d'utilisation et de gestion.
UNIVERSAL DRILL UTILISE LA MEME PLAQUETTE POUR TOUS LE DIAMÉTRES et après le Ø 25 il utilise un troisième tranchant et trois décharges pour l'évacuation des coupeaux.
Cette méthode répart l'effort de coupe entre trois couronnes circulaires et concentriques et casse le coupeau en trois parts tout facilitant la pénetration de l'outil et l'évacuation des coupeaux et en assurant une performance supérieure.

La disposition particulière des plaquettes permet de nombreuses fonctions:
perçage sur fond plat à 90°, perçage sur plans inclinés, perçage sur surfaces accidentées, lamage à 90°, élargissement des trous, tournage intérieur.

Cet outil est construit pour utiliser des **plaquettes standard** dans tous les nuances qu'on trouve habituellement sur le marché et donc **UNIVERSAL DRILL** est indiqué pour tous les types de materiaux à usiner.

On peut dire que les caractéristiques de cet outil sont révolutionnaires parce que non seulement il exerce de nombreuses fonctions mais il réduit aussi les coûts d'utilisation et de gestion remarquablement.

noma®
classic



UNIVERSAL DRILL 900

Novità assoluta brevettata

Latest news patented

Derniére nouveauté breveté

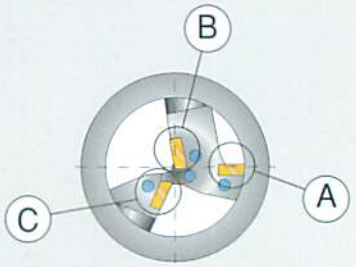
Brandneu patentiert

noma® classic

UNIVERSAL DRILL 900

PUNTA UNIVERSALE BREVETTATA - Stesso inserto per tutti i diametri
PATENTED MULTIFUNCTION DRILL - Same Insert for all diameters
FORET MULTIFONCTION BREVETÉ - Même plaquette pour tous les diamètres
PATENTIERTER MULTIFUNKTION-BOHRER - Selbe wendeplatte für alle durchmesser

POSIZIONAMENTO INSERTI
INSERTS POSITIONING
PLACEMENT DES PLAQUETTES
POSITIONIERUNG DER WENDEPLATTEN



1. Foratura su tornio
Lathe drilling
Perçage sur tour
Bohren auf Drehmaschine

2. Tornitura interna
Internal turning
Tournage intérieur
Innendrehen

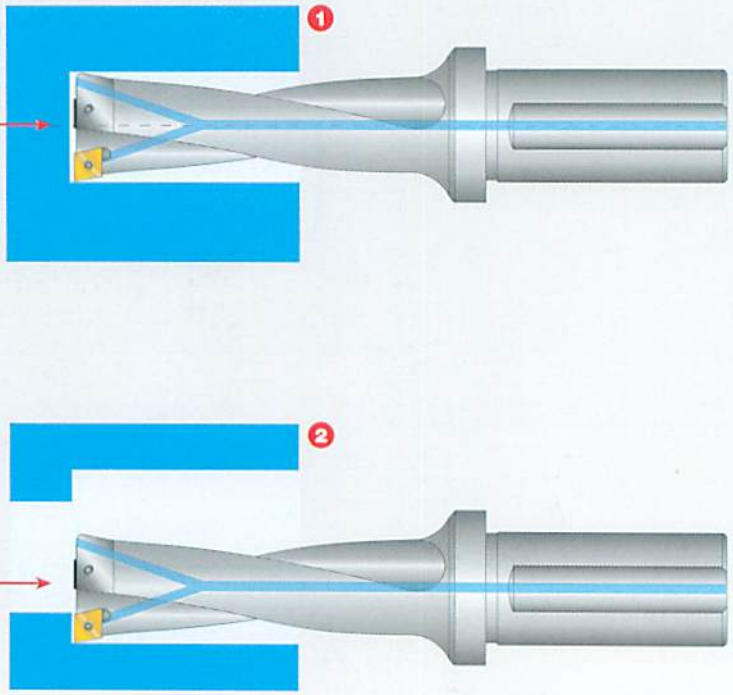
3. Foratura su centro di lavoro
Machining centre drilling
Perçage sur centre d'usinage
Bohren auf bearbeitungszentrum

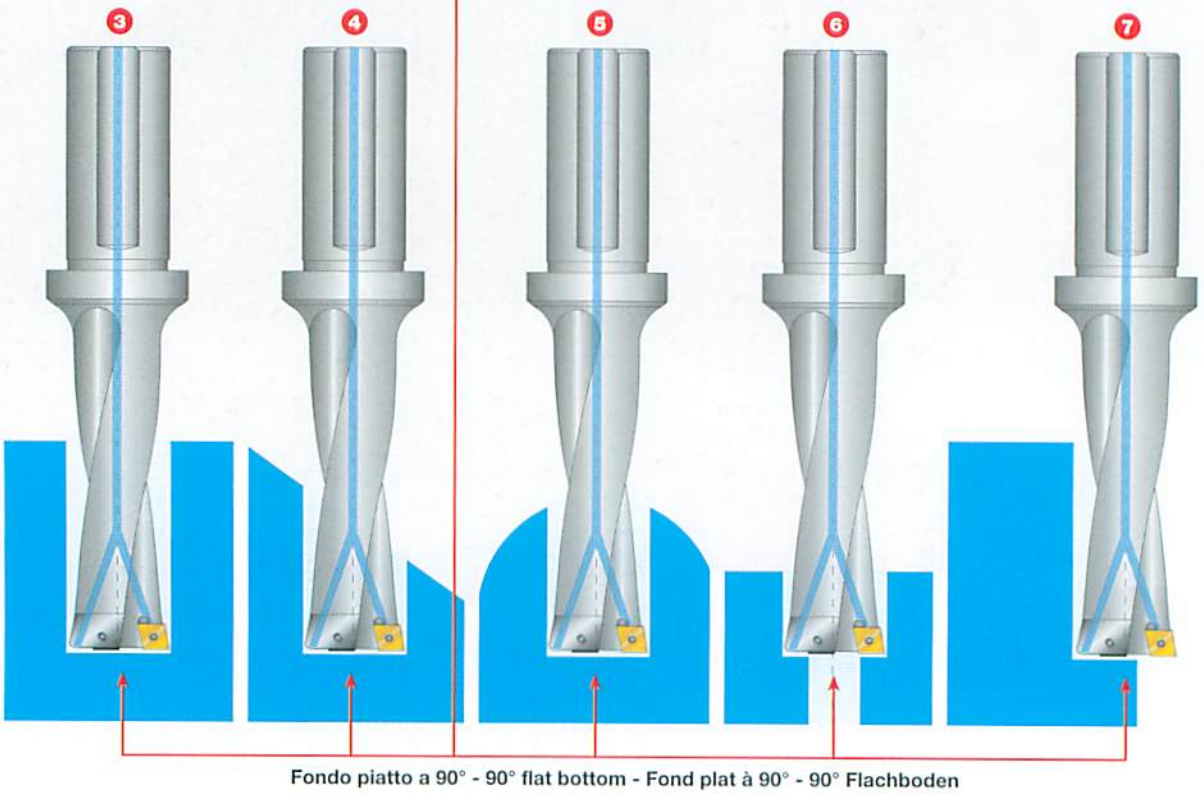
4. Foratura su piano inclinato
Inclined plane drilling
Perçage sur plan incliné
Bohren auf geneigte ebene

5. Foratura su superfici sconnesse
Drilling of uneven surfaces
Perçage sur surfaces accidentées
Bohren auf unebene flächen

6. Lamatura a 90° e allargatura di fori
90° spot-facing and counterboring
Lamage à 90° et élargissement des trous
90°-Ansenken und Aufdornung

7. Semiforatura
Semidrilling
Semi-perçage
Halbbohren





Fondo piatto a 90° - 90° flat bottom - Fond plat à 90° - 90° Flachboden

PARAMETRI DI TAGLIO PUNTE UNIVERSAL DRILL 900

CUTTING PARAMETERS FOR UNIVERSAL DRILL 900
PARAMÈTRES DE COUPE POUR UNIVERSAL DRILL 900
SCHNITTPARAMETER VON UNIVERSAL DRILL 900

Materiale Material Matériaux Werkstoff			AVANZAMENTO MM/GIRO - FEED/REV AVANCE PAR TOUR - VORSCHUB JE NACH DREHZAHL	
			PUNTA - DRILL - FORET - BOHRERN	
	Rm (N/mm)	Vt (m/min)	Ø 17-19	Ø 20-35
Acciai teneri e senza carbonio Carbon-free and mild steel Aciers doux et sans carbone Weicher stahl und ohne kohlenstoff	450	250-300	0.06	0.08
Acciai automatici Free-cutting steel Aciers au soufre-plomb Automatenstahl	400-700	140-180	0.10	0.12-0.16
Acciai medioduri Middle-hard steel Aciers mi-durs Mittelgekohlter flusstahl	450-550	140-180	0.08-0.10	0.12-0.16
Acciai legati Alloyed steel Aciers allies Legierter Stahl	700-900	130-180	0.08-0.10	0.10-0.16
Acciai ad alta resistenza Higt-resistance Steel Aciers à haute résistence Stahl mit Hochfestigkeit	900-1200	90-160	0.08-0.10	0.10-0.16
Acciai inossidabili Stainless steel Aciers inoxydables Rostfreier Stahl	-	80-130	0.06	0.08-0.10
Ghisa Cast iron Fonte Grauguss	-	140-200	0.10	0.12-0.18
Alluminio e sue leghe Alluminium and relevant alloys Alluminium et ses alliages Alluminium und alu-legierungen	-	140-300	0.12	0.15-0.18

Si raccomanda un inserto con rompitruciolo lineare con durezza media P25-P35
We recommed to use a linear middle-hard chip-breaking insert P25-P35
On recommande d'utiliser une plaquette brise-coupeaux linéaire de durté P25-P35
Der Einsatz einer mittelharten Spannbrecher-wendeplatte P25-P35 wird empfohlen

Tipo di rompitruciolo
Type of chip-breaking inserts
Sorte de brise-coupeaux
Spannbrecher-wendeplatte

Si consiglia il nostro (CCMX060204 T25) adatto per tutti i tipi di acciaio (alluminio escluso)
We suggest to user our (CCMX060204 T25) suitable for all kinds of steel (excluding Allumunium)
On conseille notre (CCMX060204 T25) qui est indiquée pour tous les sortes d'acier (sauf pour l'aluminium)
Man empfiehlt den Einsatz unserer (CCMX060204 T25) die für alle Stähle geeignet ist, (ausser Alluminium)

UTILIZZARE SEMPRE IL REFRIGERANTE ATTRAVERSO LA PUNTA QUANDO LA PROFONDITÀ DEL FORO SUPERA 1X ØD
ALWAIS USE THE COOLANT THROUGH THE DRILL WHEN THE DEPTH OF THE BORE IS MORE THEN 1X ØD
UTILISER TOUJOUR LE REFRIGERANT DANS LE FORET SI LA PROFONDEUR DU TROU DEPASSE 1X ØD
DIE INNEKUEHLUNG DES BOHRERS MUSS IMMER VERENDET WERDEN, WHENN DIE BOHRTIEFE MEHR ALS 1X ØD IST

Nelle fasi iniziali di lavoro 4-5-6-7 ridurre l'avanzamento del 20%
In the first machining steps 4-5-6-7 feed must be reduced by 20 %
Aux premières étages d'usinage 4-5-6-7 réduire l'avance de 20%
Bei den ersten Bearbeitungsstufen 4-5-6-7 soll der vorschub um 20% reduziert werden

Con le punte 2XD è possibile aumentare l'avanzamento del 15-20%
By using 2XD drills feed can be increased by 15-20%
Avec les forets 2XD on peut augmenter l'avance de 15-20%
Mit den 2XD Bohren kann der vorschub um 15-20% erhoht werden

UNIVERSAL DRILL 3XD

3 X D

rif.	dimensioni in mm									
900	**øD**	**øD1**	**L1**	**L2**	**L3**	**LT**	**Z**			
900.017	17	20	51	70	45	115	2	CCMT 060204 **CCMX 060204**	1001	2008
900.018	18	20	54	73	45	118	2			
900.019	19	20	57	76	45	121	2			
900.020	20	20	60	79	45	124	2			
900.021	21	25	63	85	54	139	2			
900.022	22	25	66	88	54	142	2			
900.023	23	25	69	91	54	145	2			
900.024	24	25	72	94	54	148	2			
900.025	25	25	75	97	54	151	2			

3 X D

rif.	dimensioni in mm									
900	**øD**	**øD1**	**L1**	**L2**	**L3**	**LT**	**Z**			
900.026	26	25	78	100	54	154	3	CCMT 060204 **CCMX 060204**	1001	2008
900.027	27	25	84	103	54	157	3			
900.028	28	25	84	106	54	160	3			
900.029	29	25	87	109	54	163	3			
900.030	30	32	90	110	54	164	3			
900.031	31	32	93	113	54	167	3			
900.032	32	32	96	116	54	170	3			
900.033	33	32	99	119	54	173	3			
900.034	34	32	102	122	54	176	3			
900.035	35	32	105	125	54	179	3			

UNIVERSAL DRILL 2XD

2 X D

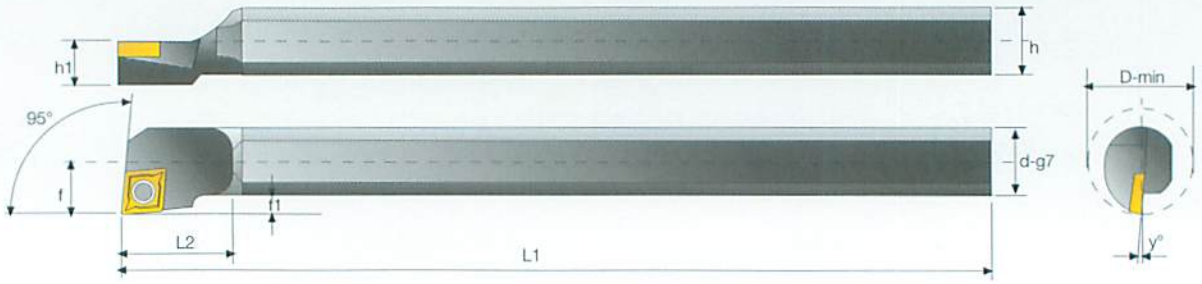
rif.	dimensioni in mm									
950	**øD**	**øD1**	**L1**	**L2**	**L3**	**LT**	**Z**			
950.017	17	20	34	53	45	98	2	CCMT 060204 **CCMX 060204**	1001	2008
950.018	18	20	36	55	45	100	2			
950.019	19	20	38	57	45	102	2			
950.020	20	20	40	59	45	104	2			
950.021	21	25	42	64	54	118	2			
950.022	22	25	44	66	54	120	2			
950.023	23	25	46	68	54	122	2			
950.024	24	25	48	70	54	124	2			
950.025	25	25	50	72	54	126	2			

2 X D

rif.	dimensioni in mm									
950	**øD**	**øD1**	**L1**	**L2**	**L3**	**LT**	**Z**			
950.026	26	25	52	72	54	126	3	CCMT 060204 **CCMX 060204**	1001	2008
950.027	27	25	54	74	54	128	3			
950.028	28	25	56	76	54	132	3			
950.029	29	25	58	78	54	134	3			
950.030	30	32	60	80	54	134	3			
950.031	31	32	62	82	54	136	3			
950.032	32	32	64	84	54	138	3			
950.033	33	32	66	86	54	140	3			
950.034	34	32	68	88	54	142	3			
950.035	35	32	70	90	54	144	3			

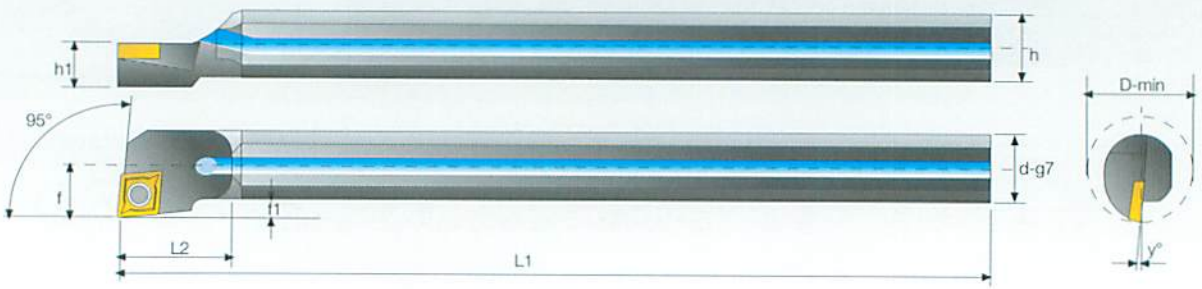
SCLCR / L BORING BARS
SCLCR / L BARRES D'ALÉSAGE
SCLCR / L BOHRSTANGEN

SCLCR / L



rif.		dimensioni in mm											
		dg7	f	L1	L2	F1	h	h1	D-Min	y°			
101 R/L	S08H-SCLCR/L-06	8	6	100	12	2	7	3,5	12	15	CCMT0602	1001	2008
102 R/L	S10K-SCLCR/L-06	10	7	125	16	2	9	4,5	14	13			
103 R/L	S12L-SCLCR/L-06	12	9	140	20	3	11	5,5	18	10			
104 R/L	S16Q-SCLCR/L-09	16	11	180	25	3	14	7	22	7	CCMT09T3	1003	2015
105 R/L	S20R-SCLCR/L-09	20	13	200	32	3	18	9	26	7			

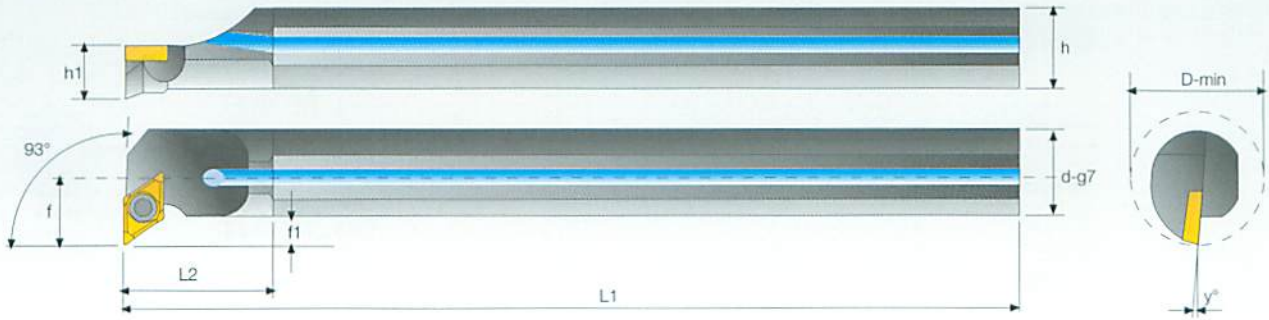
SCLCR / L



rif.		dimensioni in mm											
		dg7	f	L1	L2	F1	h	h1	D-Min	y°			
101 AR/L	A08H-SCLCR/L-06	8	6	100	12	2	7	3,5	12	15	CCMT0602	1001	2008
102 AR/L	A10K-SCLCR/L-06	10	7	125	16	2	9	4,5	14	13			
103 AR/L	A12L-SCLCR/L-06	12	9	140	20	3	11	5,5	18	10			
104 AR/L	A16Q-SCLCR/L-09	16	11	180	25	3	14	7	22	7	CCMT09T3	1003	2015
105 AR/L	A20R-SCLCR/L-09	20	13	200	32	3	18	9	26	7			
106 AR/L	A25R-SCLCR/L-12	25	17	200	40	4,5	23	11,5	34	5	CCMT1204	1005	2020

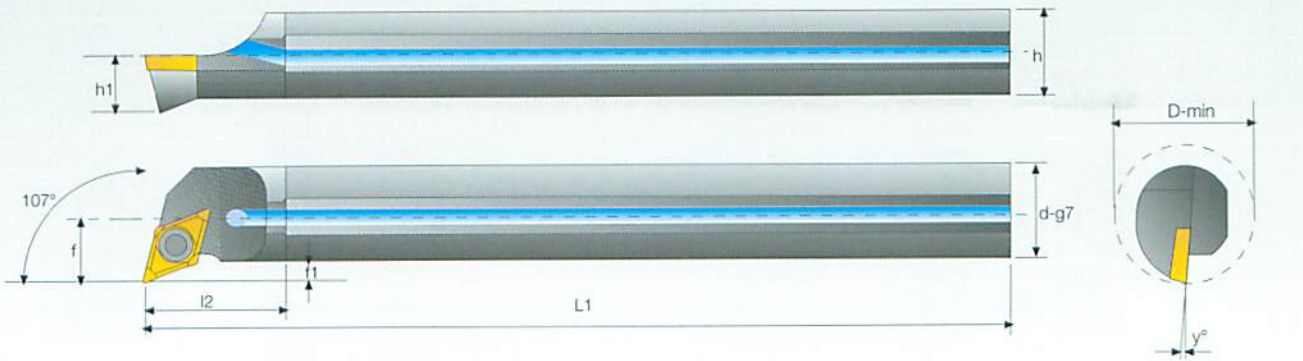
SDUCR / L - SDQCR/L BORING BARS
SDUCR / L - SDQCR/L BARRES D'ALÉSAGE
SDUCR / L - SDQCR/L BOHRSTANGEN

SDUCR / L



rif.		dimensioni in mm											
		dg7	f	L1	L2	F1	h	h1	D-Min	y°			
114 AR/L	A12K-SDUCR/L-07	12	9	140	20	3	11	5,5	18	10	DCMT0702	1001	2008
115 AR/L	A16Q-SDUCR/L-07	16	11	180	25	3	14	7	22	7			
116 AR/L	A20R-SDUCR/L-11	20	13	200	32	3	18	9	26	7	DCMT11T3	1003	2015
117 AR/L	A25R-SDUCR/L-11	25	17	200	40	4,5	23	11,5	34	5			

SDQCR / L



rif.		dimensioni in mm											
		dg7	f	L1	L2	F1	h	h1	D-Min	y°			
119 AR/L	A12L-SDQCR/L-07	12	9	140	20	3	11	5,5	18	10	DCMT0702	1001	2008
120 AR/L	A16Q-SDQCR/L-07	16	11	180	25	3	14	7	22	7			
121 AR/L	A20R-SDQCR/L-11	20	13	200	32	3	18	9	26	7	DCMT11T3	1003	2015
122 AR/L	A25R-SDQCR/L-11	25	17	200	40	4,5	23	11,5	34	5			

Art. **STFCR/L**

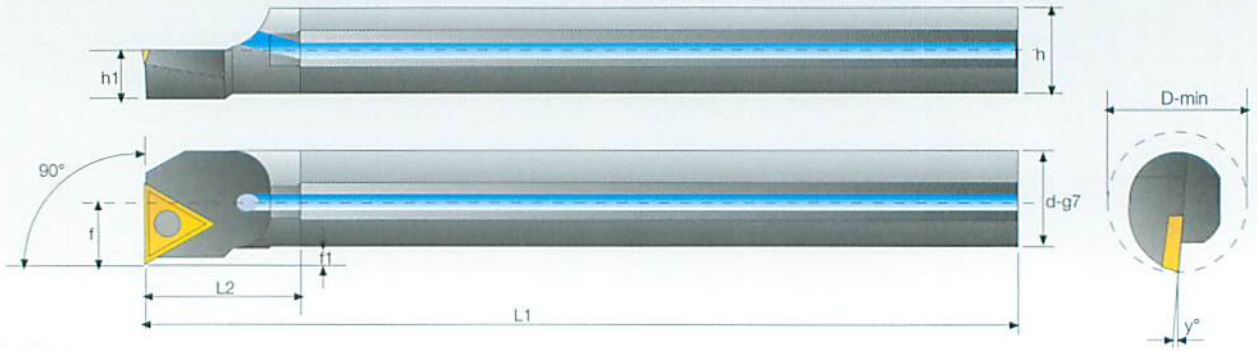
STFCR/L - Barre di alesatura

STFCR / L BORING BARS

STFCR / L BARRES D'ALÉSAGE

STFCR / L BOHRSTANGEN

STFCR / L



rif.		dimensioni in mm											
		dg7	f	L1	L2	F1	h	h1	D-Min	y°			
108 AR/L	A10K-STFCR/L-11	10	7	125	16	2	9	4,5	14	13	TCMT1102	1001	2008
109 AR/L	A12L-STFCR/L-11	12	9	140	20	3	11	5,5	18	10			
110 AR/L	A16Q-STFCR/L-11	16	11	180	25	3	14	7	22	7			
111 AR/L	A20R-STFCR/L-16	20	13	200	32	3	18	9	26	7	TCMT16T3	1003	2015
112 AR/L	A25R-STFCR/L-16	25	17	200	40	4,5	23	11,5	34	5			

Art. **SVUCR/L**

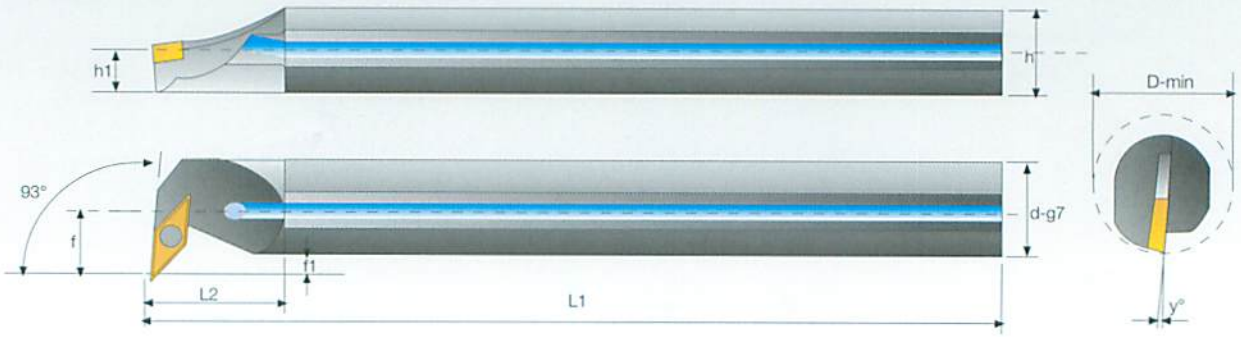
SVUCR/L - Barre di alesatura

SVUCR / L BORING BARS

SVUCR / L BARRES D'ALÉSAGE

SVUCR / L BOHRSTANGEN

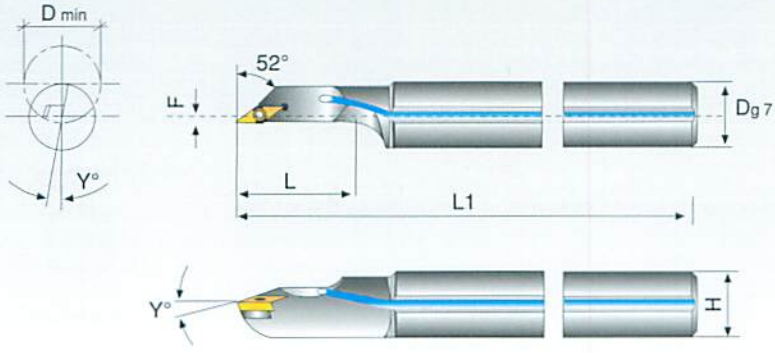
SVUCR / L

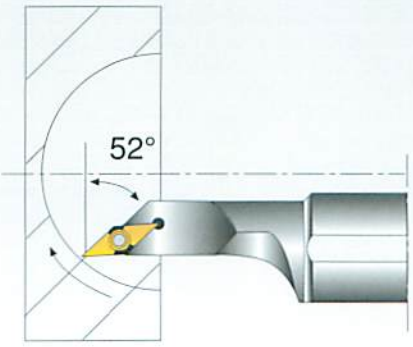


rif.		dimensioni in mm											
		dg7	f	L1	L2	F1	h	h1	D-Min	y°			
128 AR/L	A20R-SVUCR/L	20	13	200	32	3	18	9	26	7	VCMT1103 VCGT 1103	1001	2008
129 AR/L	A25R-SVUCR/L	25	17	200	40	4,5	23	11,5	34	5	VCMT1604 VCGT 1604	1003	2015

MINIBOR - SVJCR... BORING BARS
MINIBOR - SVJCR... BARRES D'ALÉSAGE
MINIBOR - SVJCR... INNENBOHRER

MINIBOR





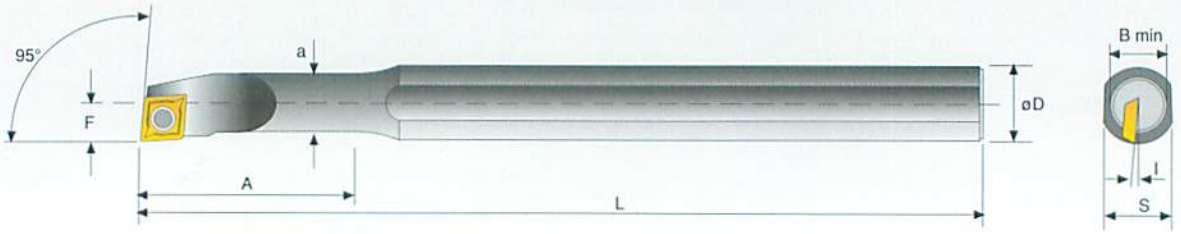
rif.		dimensioni in mm									
NEW		Dg7	L	L1	F	Dmin	Y°	H			
140 R/L	A12K-SVJCR/L - 11	12	25	125	2	18	8	11	VCMT-VCGT 1103..	1001	2008
141 R/L	A16M-SVJCR/L - 11	16	30	150	2	22	6	15	VCMT-VCGT 1103..	1001	2008
142 R/L	A20Q-SVJCR/L - 11	20	38	180	2	25	5	19	VCMT-VCGT 1103..		
143 R/L	A25R-SVJCR/L - 16	25	44	200	2	28	4	24	VCMT-VCGT 1604..	1003	2015

SET 140 R/L **SET A-SVJCR/L**

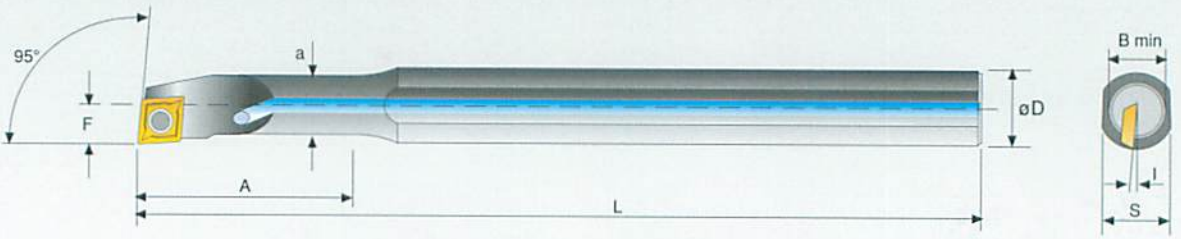
contenuto del set
Set contents / Contenu du set / Inhalt pro Set

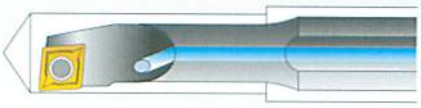
1 A16M-SVJCR/L - 11
1 A20Q-SVJCR/L - 11

MINIBOR



rif.		dimensioni in mm										
		øD	**a**	**L**	**F**	**B**	**A**	**I**	**S**			
151 R/L	S0608H-SCLCR/L-06	8	6	100	4	8	25	18°	7	CCMT 0602	1001	2008
152 R/L	S0810J-SCLCR/L-06	10	8	110	6	12	32	15°	9			
153 R/L	S1012K-SCLCR/L-06	12	10	125	7	14	38	13°	11			
154 R/L	S1216M-SCLCR/L-06	16	12	150	9	18	50	10°	15			





rif.		dimensioni in mm										
		øD	**a**	**L**	**F**	**B**	**A**	**I**	**S**			
161 R/L	A0608H-SCLCR/L-06	8	6	100	4	8	25	18°	7	CCMT 0602	1001	2008
162 R/L	A0810J-SCLCR/L-06	10	8	110	6	12	32	15°	9			
163 R/L	A1012K-SCLCR/L-06	12	10	125	7	14	38	13°	11			
164 R/L	A1216M-SCLCR/L-06	16	12	150	9	18	50	10°	15			

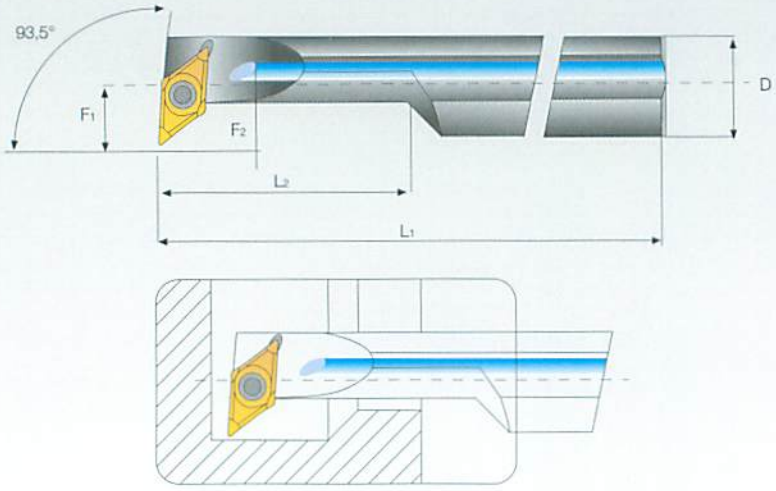
SET

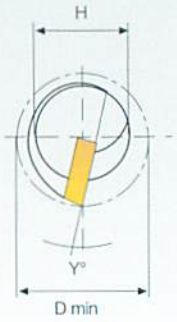
SET MINIBOR		
SET 150 R/L		**contenuto del set** Set contents / Contenu du set / Inhalt pro Set
SET S-SCLCR 06	SET S-SCLCL 06	1 S 0608H SCLCR/L 06
		1 S 0810J SCLCR/L 06
		1 S 1012K SCLCR/L 06
		1 S 1216M SCLCR/L 06

SET MINIBOR		
SET 160 R/L		**contenuto del set** Set contents / Contenu du set / Inhalt pro Set
SET A-SCLCR 06	SET A-SCLCL 06	1 A 0608H SCLCR/L 06
		1 A 0810J SCLCR/L 06
		1 A 1012K SCLCR/L 06
		1 A 1216M SCLCR/L 06

MINIBOR - SDUC... / SDQC... BORING BARS
MINIBOR - SDUC... / SDQC... BARRES D'ALÉSAGE
MINIBOR - SDUC... / SDQC... BOHRSTANGEN

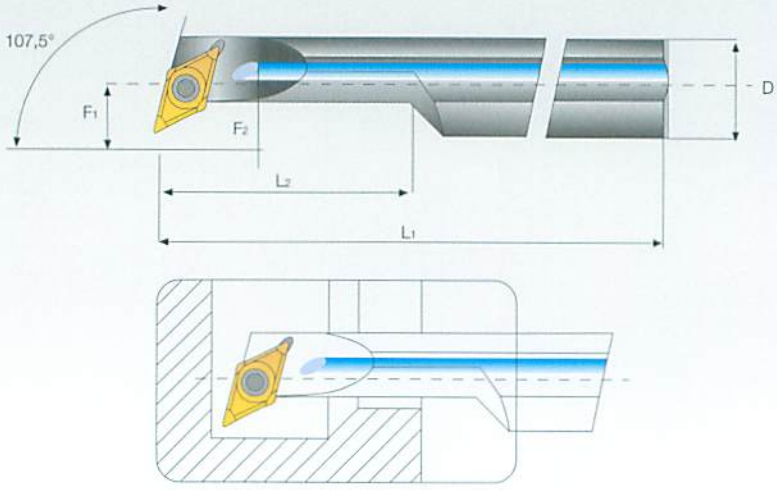
SDUC...

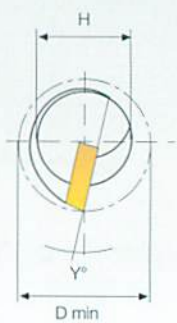




rif.		dimensioni in mm										
SDUC...		dg7	L_1	L_2	F_1	F_2	D-min	y°	H			
131 R/L	A0810H-SDUCR/L-07	10	100	22	7	5	12,5	15°	9	DCMT 0702...	1001	2008
132 R/L	A1012K-SDUCR/L-07	12	125	28	9	5	15,5	13°	11			
133 R/L	A1216M-SDUCR/L-07	16	150	36	11	5	19,5	10°	15			

SDQC...





rif.		dimensioni in mm										
SDQC...		dg7	L_1	L_2	F_1	F_2	D-min	y°	H			
136 R/L	A0810H-SDQCR/L-07	10	100	22	7	3	12,5	15°	9	DCMT 0702...	1001	2008
137 R/L	A1012K-SDQCR/L-07	12	125	28	9	3	15,5	13°	11			
138 R/L	A1216M-SDQCR/L-07	16	150	36	11	3	19,5	10°	15			

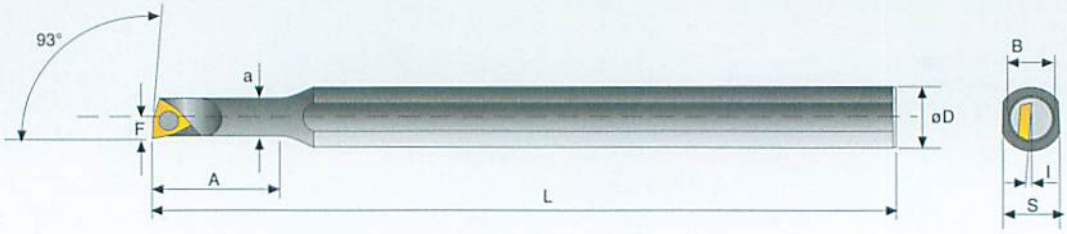
SET MINIBOR

SET 130	R/L	contenuto del set Set contents / Contenu du set / Inhalt pro Set	
SET A-SDUCR-07	SET A-SDUCL-07	1	A0810H - SDUCR/L - 07
		1	A1012K - SDUCR/L - 07
		1	A1216M - SDUCR/L - 07

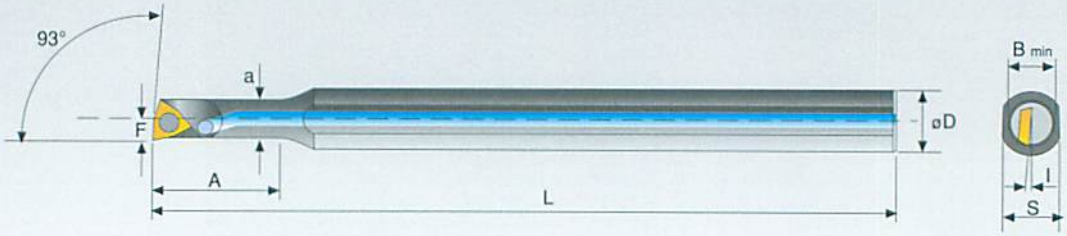
SET MINIBOR

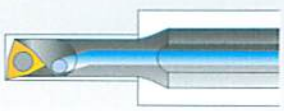
SET 135	R/L	contenuto del set Set contents / Contenu du set / Inhalt pro Set	
SET A-SDQCR-07	SET A-SDQCL-07	1	A0810H - SDQCR/L - 07
		1	A1012K - SDQCR/L - 07
		1	A1216M - SDQCR/L - 07

MINIBOR



rif.		dimensioni in mm										
		D	a	L	F	B	A	I	S			
171 R/L	S0508H-SWUCR/L-02	8	5	100	2,9	5,8	18	17°	7	WCMT-WCGT 02	1022	2006
172 R/L	S0608H-SWUCR/L-02	8	6	100	3,9	8	24	12°	7	WCMT-WCGT 02	1022	2006





rif.		dimensioni in mm										
		D	a	L	F	B	A	I	S			
181 R/L	A0508H-SWUCR/L-02	8	5	100	2,9	5,8	18	17°	7	WCMT-WCGT 02	1022	2006
182 R/L	A0608H-SWUCR/L-02	8	6	100	3,9	8	24	12°	7	WCMT-WCGT 02	1022	2006

SET

SET MINIBOR

SET 190 R/L	**contenuto del set** Set contents / Contenu du set / Inhalt pro Set
SET A+S - SWUCR/L-02	1 S0508H - SWUCR/L - 02
	1 S0608H - SWUCR/L - 02
	1 A0508H - SWUCR/L - 02
	1 A0608H - SWUCR/L - 02

SET MINIBOR

SET 180	**R/L**	**Contenuto del set** Set contents / Contenu du set / Inhalt pro Set
SET A-SWUCR-02	SET A-SWUCL-02	1 A 0508H - SWUCR/L-02
		1 A 0608H - SWUCR/L-02
		10 WCMT 02-01-02

SET MINIBOR

SET 170	**R/L**	**Contenuto del set** Set contents / Contenu du set / Inhalt pro Set
SET S-SWUCR-02	SET S-SWUCL-02	1 S 0508H - SWUCR/L-02
		1 S 0608H - SWUCR/L-02
		10 WCMT 02-01-02

Note

MINIBOR
ANTIVIBRANTI

NEW LINE 2000

CARATTERISTICHE DEL MATERIALE USATO PER LA COSTRUZIONE

Le barre sono composte al 90% di Tungsteno e percentuali di Nichel, Rame, leganti vari. La densità è di 17 g/cm², più che doppia di quella dell'acciaio, e da esperienze di laboratorio si è rilevato che il rapporto di alesatura, lunghezza, diametro è pari a 8 volte, (consigliabile 6XD). Il Rivestimento TIN indurisce esternamente l'utensile mantenendo inalterate le caratteristiche antivibranti, e favorisce lo scorrimento del truciolo.

TECHNICAL FEATURES OF RAW MATERIAL

Rod composition: 90% tungsten and 10% nickel, copper and different alloying elements. Density is 17g/cm² - more than double the steel density. According to laboratory tests the ratio of boring, length and diameter is as much as 8 times (recommended 6XD). TIN coating hardens the external surface of the tool, keeps the vibration-damping features unchanged and optimizes the chip flow.

CARACTÉRISTIQUES TECHNIQUES DES MATÉRIAUX UTILISÉS POUR LA CONSTRUCTION

Les barres sont en tungstène au 90%; en nickel, cuivre et liants différents pour le reste. La densité est de 17g/cm², plus que double que la densité de l'acier; selon des tests de laboratoire on a relevé que le rapport d'alésage, longueur et diamètre est 8 fois autant (on conseille 6 X D). Le revêtement en TIN durcit seulement la surface extérieure de l'outil maintenant inaltérées les propriétés antivibratiles en favorisant le fluage des copeaux.

TECHNISCHE MERKMALE DES EINGESETZTEN ROHMATERIALS

Die Stangen bestehen aus 90% Wolfram und 10% Nickel, Kupfer und unterschiedlichen Bindemitteln. Die Dichte beträgt 17 g/cm², mehr als das doppelte der Stahldichte: nach Labortests ergab sich, dass das Verhältnis Bohrung/Länge/Durchmesser 8mal so hoch ist (empfohlen: 6XD). Die TIN-Beschichtung härtet nur die Werkzeugoberfläche, hält die schwingungsdämpfenden Eigenschaften unverändert und erleichtert den Späneabfluss.

Art. **MINIBOR** *NEW LINE 2000*

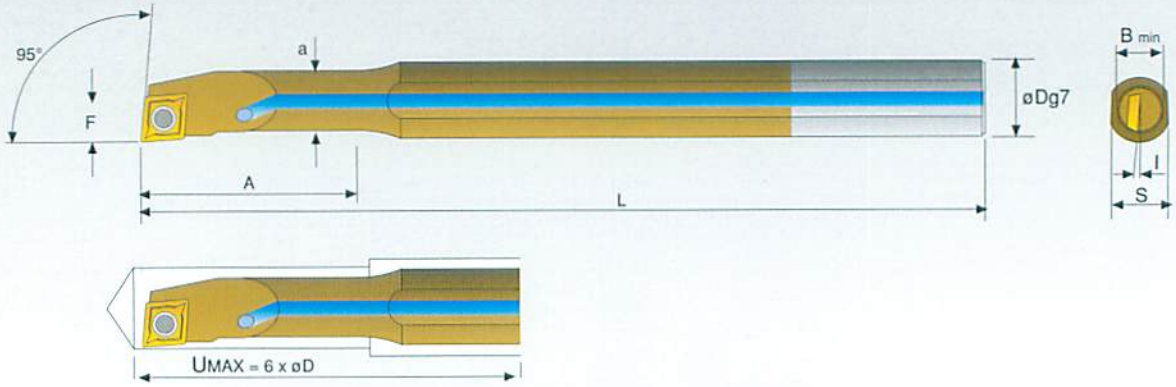
MINIBOR - In metallo antivibrante + TIN

MINIBOR - In vibration-damping metal + TIN

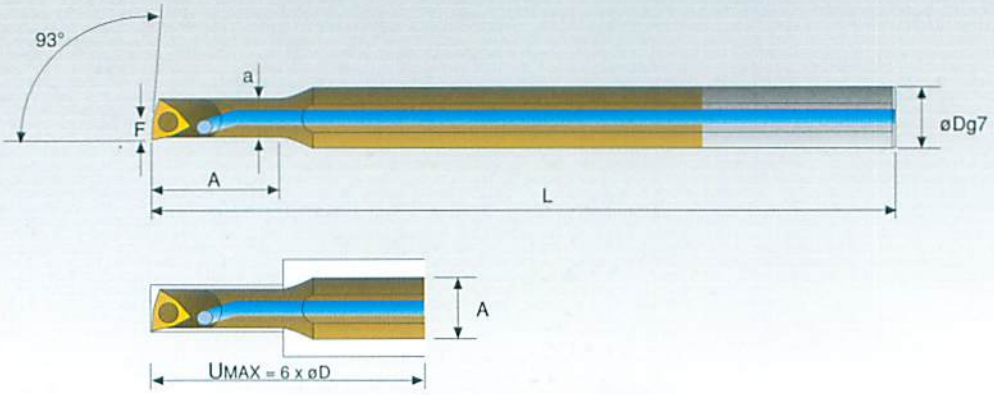
MINIBOR - En métal antivibratile + TIN

MINIBOR - Aus schwingungsdämpfendem Metall + TIN

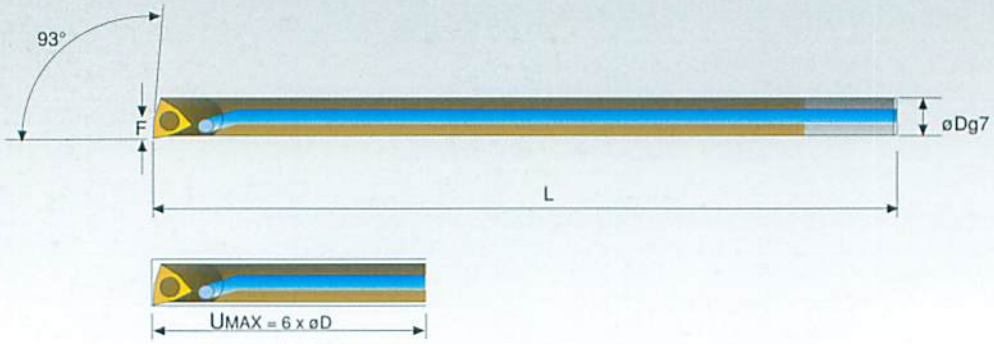
MINIBOR



rif.		dimensioni in mm										
		øDg7	a	L	F	B	A	I	S			
K61 R/L	K 0608H SCLCR/L 06	8	6	100	4	8	25	18°	7	CCMT 0602 CCGT 0602	1001	2008
K62 R/L	K 0810J SCLCR/L 06	10	8	110	6	12	32	15°	9			
K63 R/L	K 1012K SCLCR/L 06	12	10	125	7	14	38	13°	11			
K64 R/L	K 1216M SCLCR/L 06	16	12	150	9	18	50	10°	15			



rif.		dimensioni in mm										
		øDg7	a	L	F	B	A	I	S			
K81 R/L	K 0508H SWUCR/L 02	8	5	100	2,9	5,8	18	17°	7	WCMT-WCGT 02	1022	2006
K82 R/L	K 0608H SWUCR/L 02	8	6	100	3,9	8	24	12°	7			



rif.		dimensioni in mm						
		øDg7	L	F	B	I			
K91 R/L	K 06H SWUCR/L	6	100	3,1	6,2	17°	WCMT-WCGT 02	1022	2006

Art. **MINIBOR** *NEW LINE 2000*

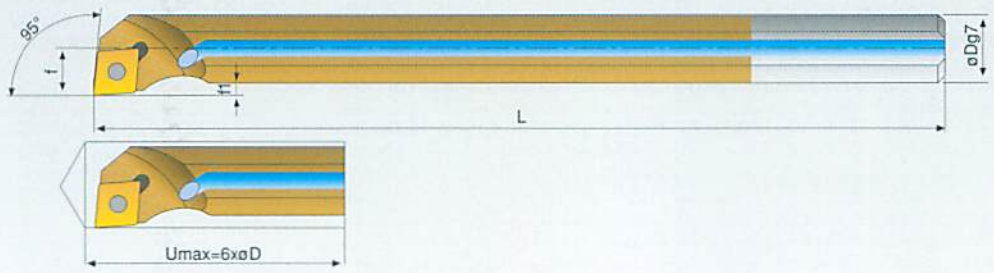
MINIBOR - In metallo antivibrante + TIN

MINIBOR - In vibration-damping metal + TIN

MINIBOR - En métal antivibratile + TIN

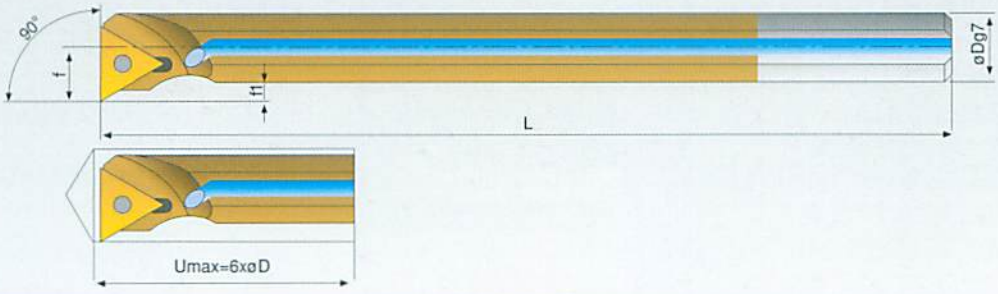
MINIBOR - Aus schwingungsdämpfendem Metall + TIN

SCLCR/L



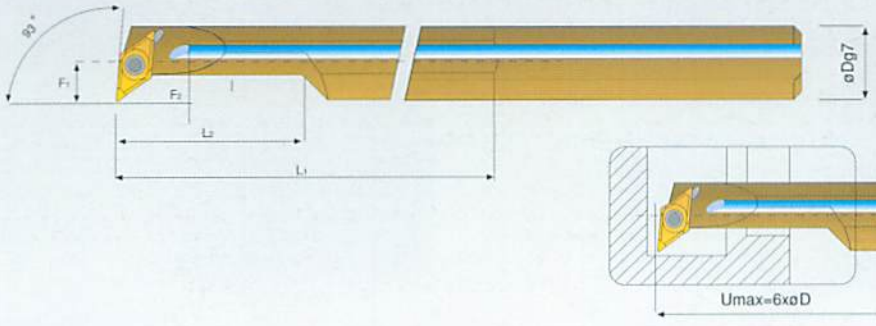
rif.		dimensioni in mm								
		øDg7	f	L	f1	Dmin	Y°			
K101 R/L	K08H-SCLCR/L-06	8	4.5	100	0.5	9	15	CCMT		
K102 R/L	K10K-SCLCR/L-06	10	5.5	125	0.5	11	13	CCGT	1001	2008
K103 R/L	K12M-SCLCR/L-06	12	6.5	150	0.5	13	10	0602...		
K104 R/L	K16R-SCLCR/L-09	16	8.5	200	0.5	17	7	CCMT	1003	2015
K105 R/L	K20S-SCLCR/L-09	20	10.5	220	0.5	21	7	CCGT 09T3...		

STFCR/L



rif.		dimensioni in mm								
		øDg7	f	L	f1	Dmin	Y°			
K107 R/L	K08H- STFCR/L-08	8	4.5	100	0.5	9	15	TCMT 0802..	1022	2006
K108 R/L	K10K- STFCR/L-11	10	5.5	125	0.5	11	13			
K109 R/L	K12M- STFCR/L-11	12	6.5	150	0.5	13	10	TCMT 1102..	1001	2008
K110 R/L	K16R- STFCR/L-11	16	8.5	200	0.5	17	7			
K111 R/L	K20S- STFCR/L-16	20	10.5	220	0.5	21	7	TCMT 16T3..	1003	2015

SDUCR/L



rif.		dimensioni in mm										
		Dg7	L1	L2	F1	F2	D-min	Y°	H			
K31 R/L	K0810K-SDUCR/L-07	10	125	22	6.5	4,5	12	15	9,0	DCMT 0702...	1001	2008
K32 R/L	K1012M-SDUCR/L-07	12	150	28	6.5	4,5	12	15	11,0			
K33 R/L	K1216R-SDUCR/L-07	16	200	36	8.5	4,5	18	10	15,0			
K34 R/L	K1620S-SDUCR/L-11	20	220	40	10.5	4,5	22	7	19,0	DCMT 11T3	1001	2015

SET

Contenuto del set / Set contents / Contenu du set / Inhalt pro set

SET KC4 R/L	
1	K0608H SCLCR/L 06
1	K0810J SCLCR/L 06
1	K1012K SCLCR/L 06
1	K1216M SCLCR/L 06

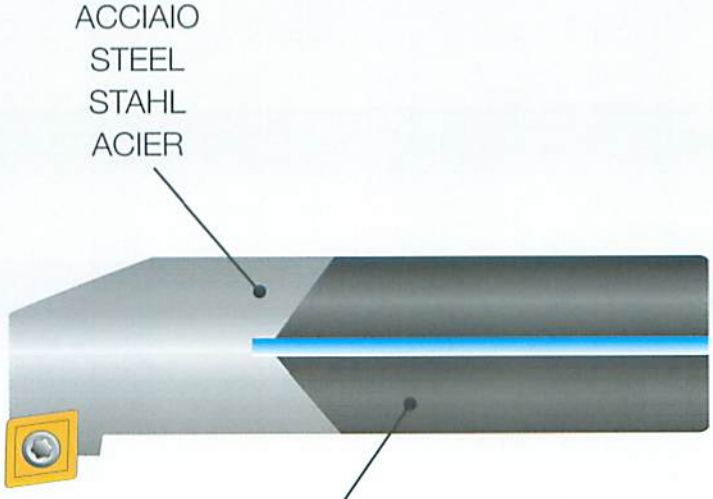
SET KC2 R/L	
1	K0608H SCLCR/L 06
1	K0810J SCLCR/L 06

Contenuto del set / Set contents / Contenu du set / Inhalt pro set

SET KW2 R/L	
1	K0508H SWUCR/L 02
1	K0608H SWUCR/L 02
10	WCMT 020102

SET KW1 R/L	
1	K06H SWUCR/L 02
10	WCMT 020102

BARRE


ACCIAIO
STEEL
STAHL
ACIER
METALLO DURO
SOLID CARBIDE
HARTMETALL
METAL DUR

Art. **E-SDUCR/L**

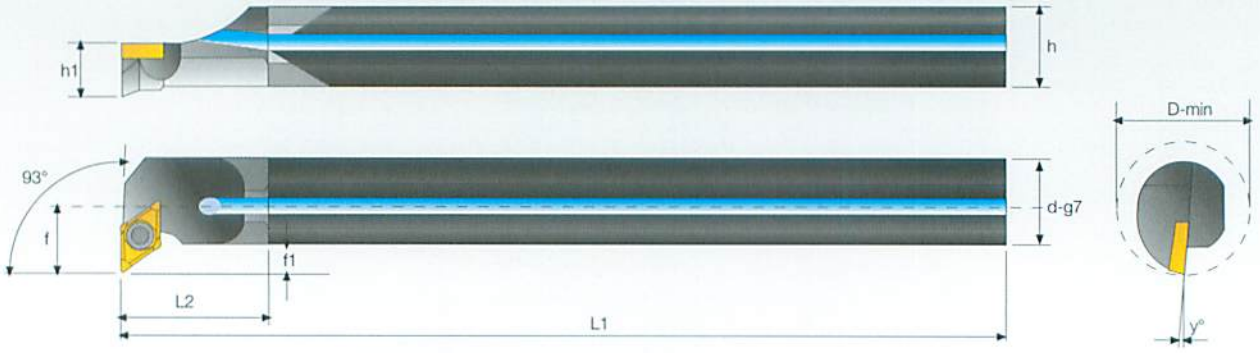
E-SDUCR/L - Barre di alesatura con stelo in metallo duro

E-SDUCR / L TOOLS WITH CARBIDE SHAFT

E-SDUCR / L BARRES D'ALESAGE AVEC QUEUE EN METAL DUR

E-SDUCR / L BOHRSTANGEN MIT HM-SCHAFT

E-SDUCR / L



rif.	dimensioni in mm											
		dg7	f	L1	F1	h	h1	D-Min	y°			
E113 R/L	E10M-SDUCR/L - 07	10	7	150	2	9,5	4,5	14	13			
E114 R/L	E12Q-SDUCR/L - 07	12	9	180	3	11,5	5,5	18	10	DCMT0702	1001	2008
E115 R/L	E16R-SDUCR/L - 07	16	11	200	3	15,5	7	22	7			
E116 R/L	E20S-SDUCR/L - 11	20	13	250	3	19,5	9	26	7	DCMT11T3	1003	2015

Art. **E-SCLCR/L**

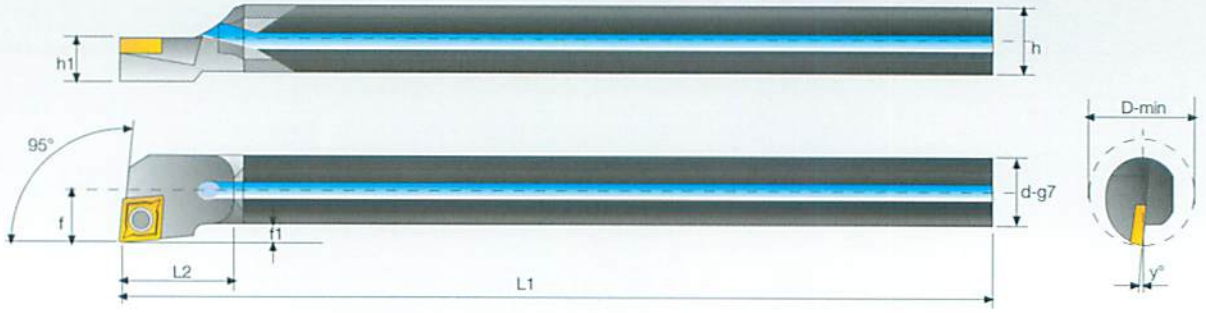
E-SCLCR/L - Barre di alesatura con stelo in metallo duro

E-SCLCR / L TOOLS WITH CARBIDE SHAFT

E-SCLCR / L BARRES D'ALESAGE AVEC QUEUE EN METAL DUR

E-SCLCR / L BOHRSTANGEN MIT HM-SCHAFT

E-SCLCR / L



rif.	dimensioni in mm											
		dg7	f	L1	F1	h	h1	D-Min	y°			
E101 R/L	E08K-SCLCR/L - 06	8	5	125	1	7,5	3,5	10	15			
E102 R/L	E10M-SCLCR/L - 06	10	6	150	1	9,5	4,5	12	13	CCMT0602	1001	2008
E103 R/L	E12Q-SCLCR/L - 06	12	8	180	2	11,5	5,5	16	10			
E104 R/L	E16R-SCLCR/L - 09	16	10	200	2	15,5	7	20	7	CCMT09T3	1003	2015
E105 R/L	E20S-SCLCR/L - 09	20	12	250	2	19,5	9	24	7			

Art. **E-STFCR/L**

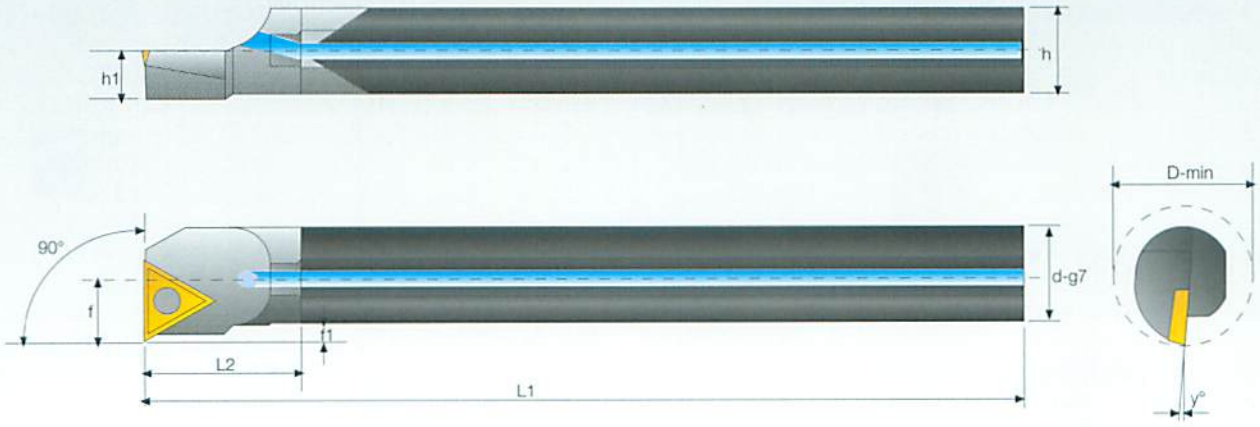
E-STFCR/L - Barre di alesatura con stelo in metallo duro

E-STFCR / L TOOLS WITH CARBIDE SHAFT

E-STFCR / L BARRES D'ALESAGE AVEC QUEUE EN METAL DUR

E-STFCR / L BOHRSTANGEN MIT HM-SCHAFT

E-STFCR / L

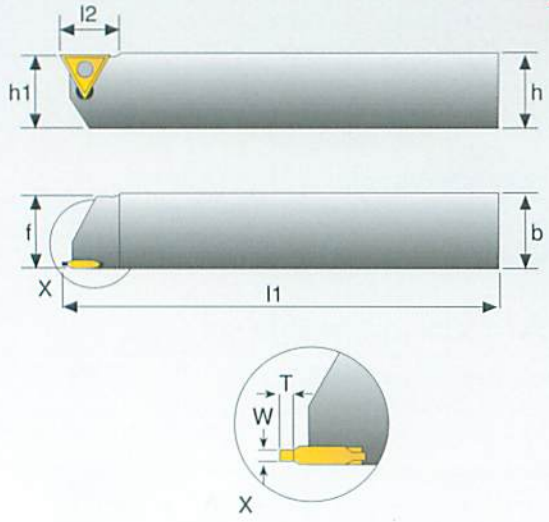


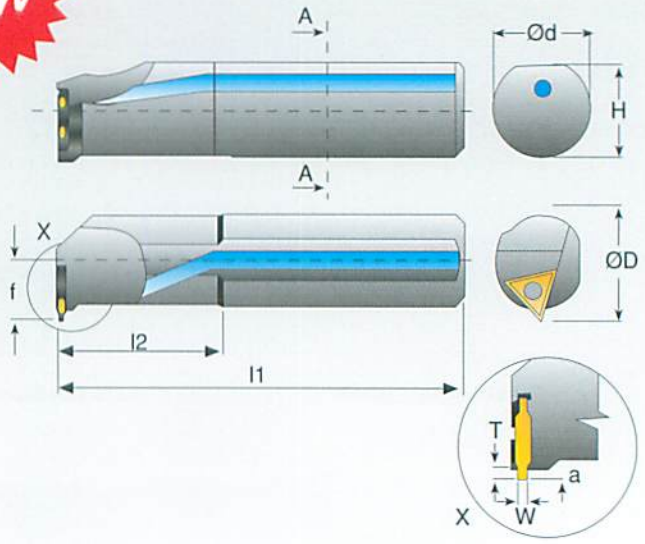
rif.		dimensioni in mm										
		dg7	f	L1	F1	h	h1	D-Min	y°			
E108 R/L	E10M-STFCR/L-11	10	6	150	1	9,5	4,5	12	13			
E109 R/L	E12Q-STFCR/L-11	12	8	180	1	11,5	5,5	16	10	TCMT1102	1001	2008
E110 R/L	E16R-STFCR/L-11	16	10	200	2	15,5	7	20	7			
E111 R/L	E20S-STFCR/L-16	20	12	250	2	19,5	9	24	7	TCMT16T3	1003	2015

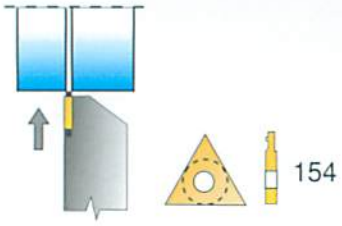
STGR/L

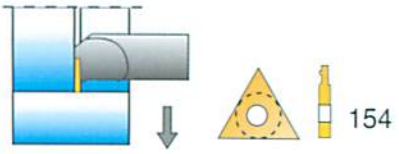
new

STIR/L









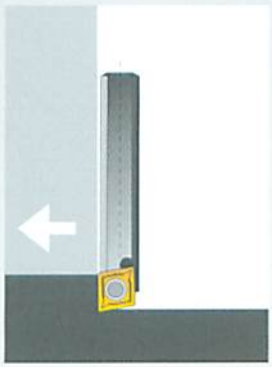
rif.		dimensioni in mm												
295		**h=h1**	**b**	**Ød**	**ØDmin**	**f**	**H**	**Tmax (*)**	**a**	**l1**	**l2**			
651 R/L	STGR/L 2020 L16-3	20	20	-	-	20	-	-	-	140	20	W 1,1 ÷ 4,15	1004	2015
652 R/L	STGR/L 2525 M16-3	25	25	-	-	25	-	-	-	150	20			
191 R/L	A16Q STIR/L 16-3	-	-	16	20	11	15,25	-	2	180	35	1,1 ÷ 4,15		
192 R/L	A20R STIR/L 16-3	-	-	20	25	13	19,00	-	2	200	40			
193 R/L	A25R STIR/L 16-3	-	-	25	23	17	24,00	-	3	200	50			

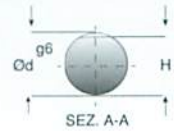
T max (*) VEDI PAGINA (141) INSERTI
T max (*) SEE PAGE (141) INSERTS
T max (*) VOIR PAGE DES PLAQUETTES PAGE (141)
T max (*) SIEHE WENDESCHNEIDPLATTENSEITE (141)

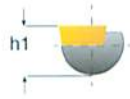
new

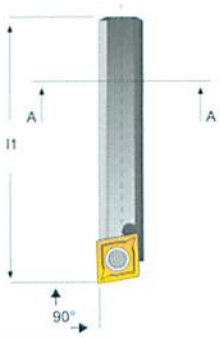
noma®

S..SCACL









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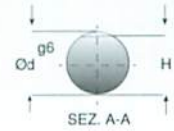
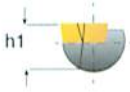
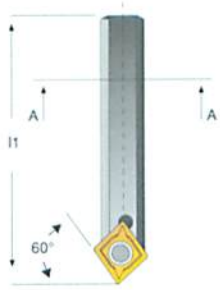
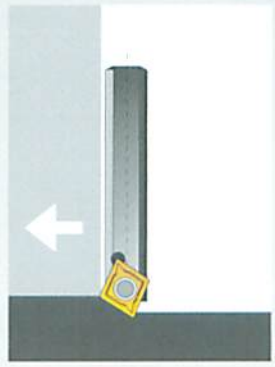
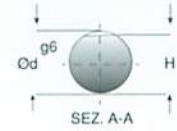


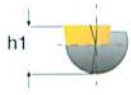


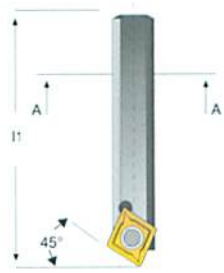


S..SCDCL

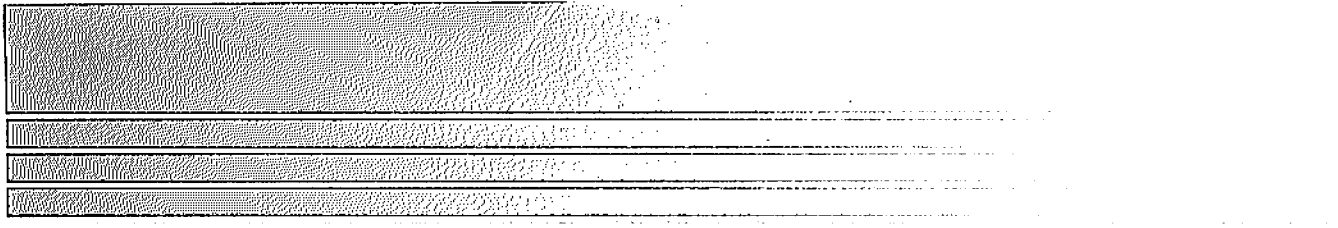






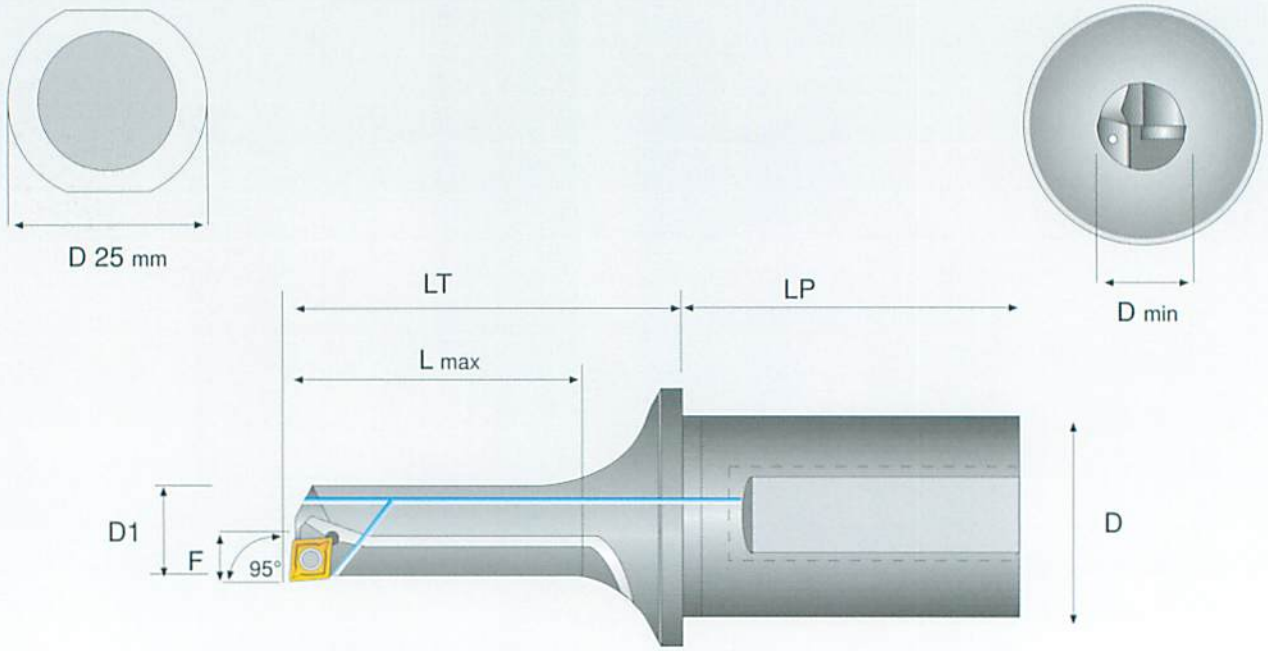


rif.	dimensioni in mm							
		Ød	h1	H	l1			
S0890	S08A - SCACL - 06	8	6,5	6,3	32	CCMT0602	1001	2008
S1090	S10C - SCACL - 06	10	8,5	8,3	50			
S1290	S12D - SCACL - 09	12	10,5	10,3	60	CCMT09T3	1003	2015
S1690	S16G - SCACL - 09	16	9,5	13,8	90			
S0860	S08A - SCECL - 06	8	6,5	6,3	32	CCMT0602	1001	2008
S1060	S10C - SCECL - 06	10	8,5	8,3	50			
S1260	S12D - SCECL - 09	12	10,5	10,3	60	CCMT09T3	1003	2015
S1660	S16G - SCECL - 09	16	9,5	13,8	90			
S0845	S08A - SCDCL - 06	8	6,5	6,3	32	CCMT0602	1001	2008
S1045	S10C - SCDCL - 06	10	8,5	8,3	50			
S1245	S12D - SCDCL - 09	12	10,5	10,3	60	CCMT09T3	1003	2015
S1645	S16G - SCDCL - 09	16	9,5	13,8	90			

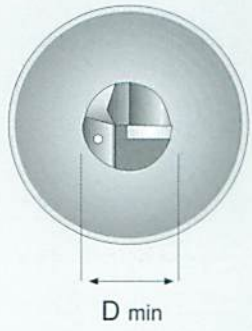


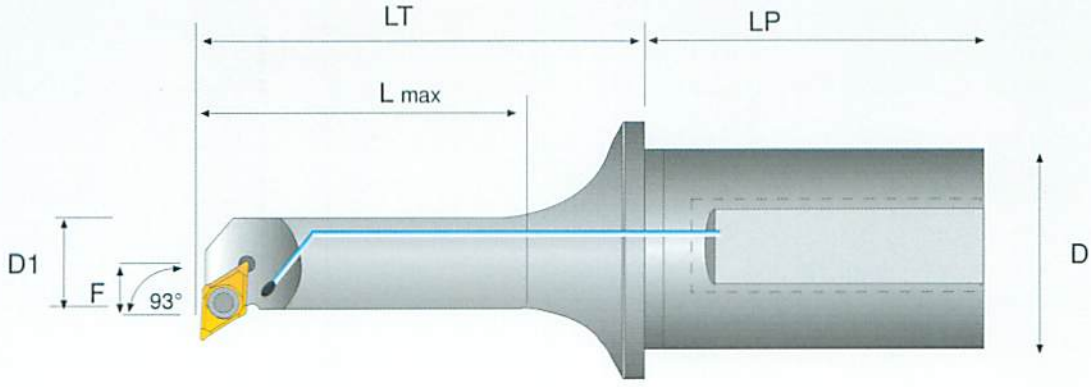
BIG TOOLS

noma classic



rif. R/L		dimensioni in mm									
		D1	F	D_{min}	D	LP	LT	L_{max}			
25.01	AS 25-SCLCR/L-0815-06	8	4,5	9	25	45	37	15	CCMT 0602... CCGT 0602...	1001	2008
25.02	AS 25-SCLCR/L-0820-06						42	20			
25.04	AS 25-SCLCR/L-1020-06	10	5,5	11			42	20			
25.05	AS 25-SCLCR/L-1025-06						47	25			
25.07	AS 25-SCLCR/L-1220-06	12	6,5	13			42	20			
25.08	AS 25-SCLCR/L-1230-06						52	30			
25.011	AS 25-SCLCR/L-1440-06	14	7,5	15			62	40			
25.012	AS 25-SCLCR/L-1625-09	16	8,5	17			47	25	CCMT 09T3... CCGT 09T3...	1003	2015
25.013	AS 25-SCLCR/L-1635-09						57	35			
25.014	AS 25-SCLCR/L-1650-09						72	50			
25.015	AS 25-SCLCR/L-2030-09	20	10,5	21			52	30			
25.016	AS 25-SCLCR/L-2040-09						62	40			





rif. R/L		dimensioni in mm									
		D1	F	Dmin	D	LP	LT	Lmax			
25.020	AS 25-SDUCR/L-1015-07	10	7	14	25	45	37	15	DCMT 0702... DCGT 0702...	1001	2008
25.021	AS 25-SDUCR/L-1020-07							20			
25.022	AS 25-SDUCR/L-1030-07						42	30			
25.023	AS 25-SDUCR/L-1215-07	12	9	18			52	15			
25.024	AS 25-SDUCR/L-1220-07						37	20			
25.025	AS 25-SDUCR/L-1230-07						42	30			

Note

MONO DRILLS

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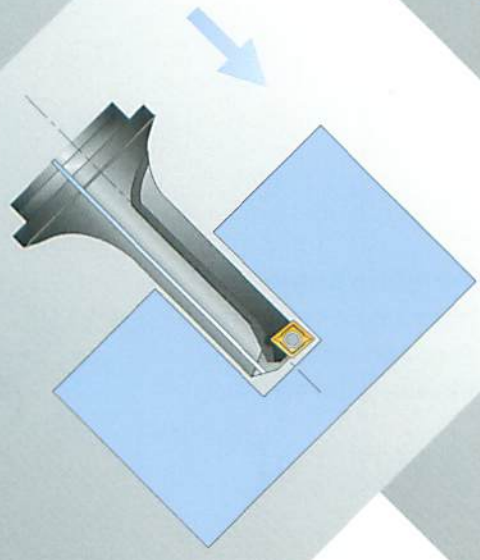
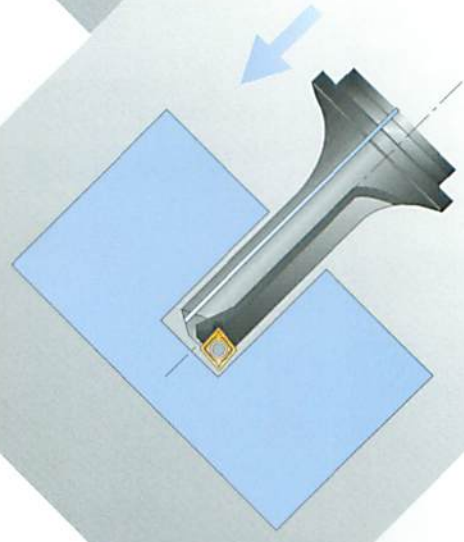
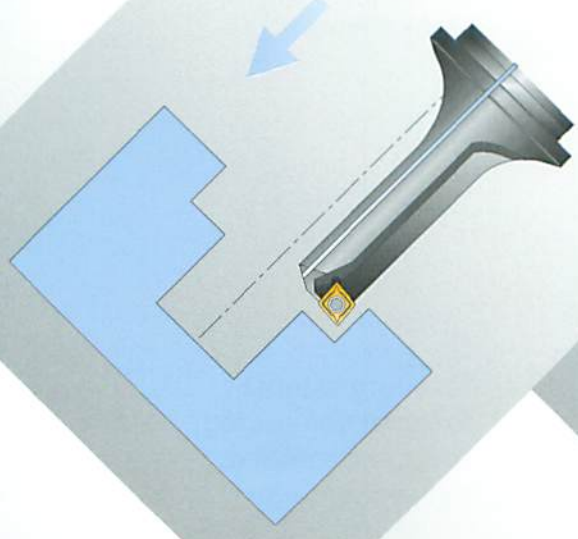
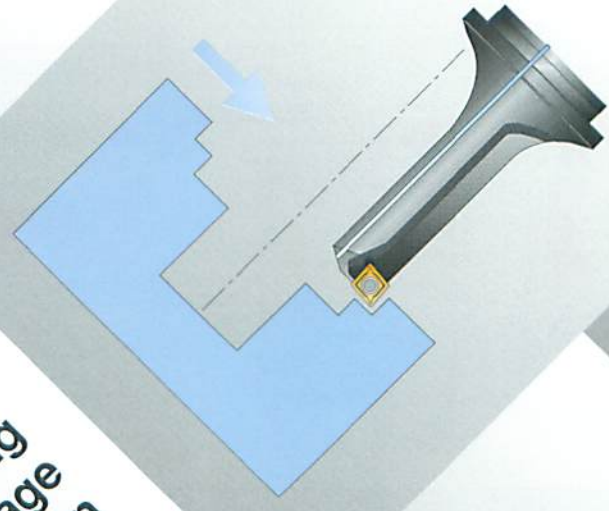
Foratura
Drilling
Pércage
Bohrung

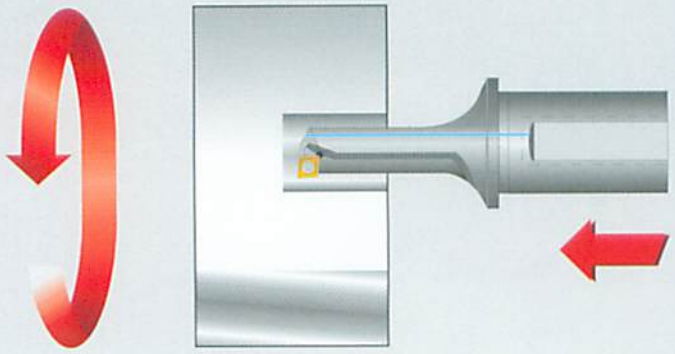






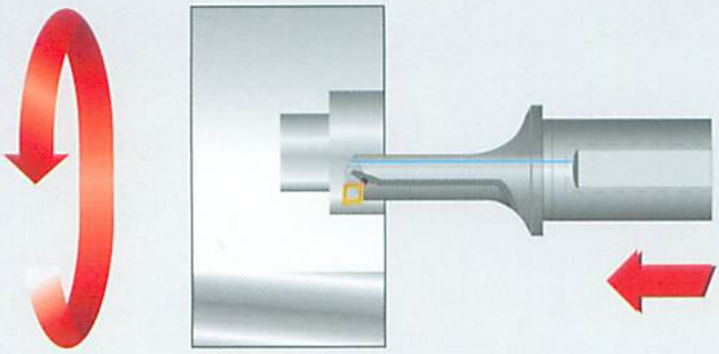


Tornitura
Boring
Tournage
Innendrehen



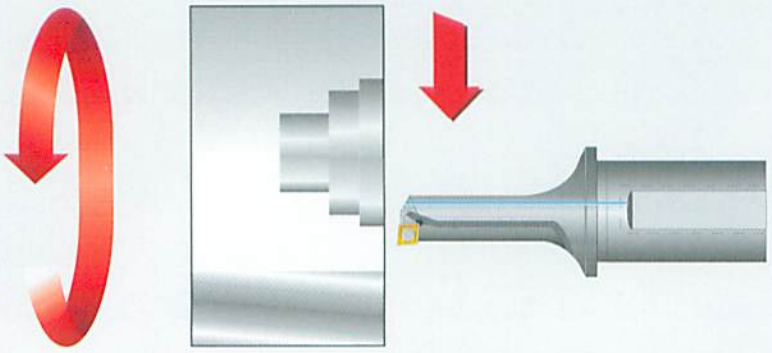
Foratura dal pieno
Drill from solid
Pércage dans la masse
Vollbohrung

1



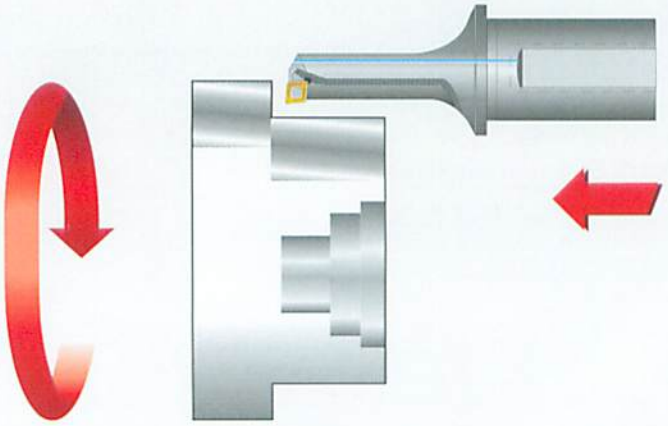
Tornitura interno
Internal contouring
Alésage intérieur
Innenkonturen

2



Tornitura facciale
Facing or turning
Dressage de face
Plankonturen

3



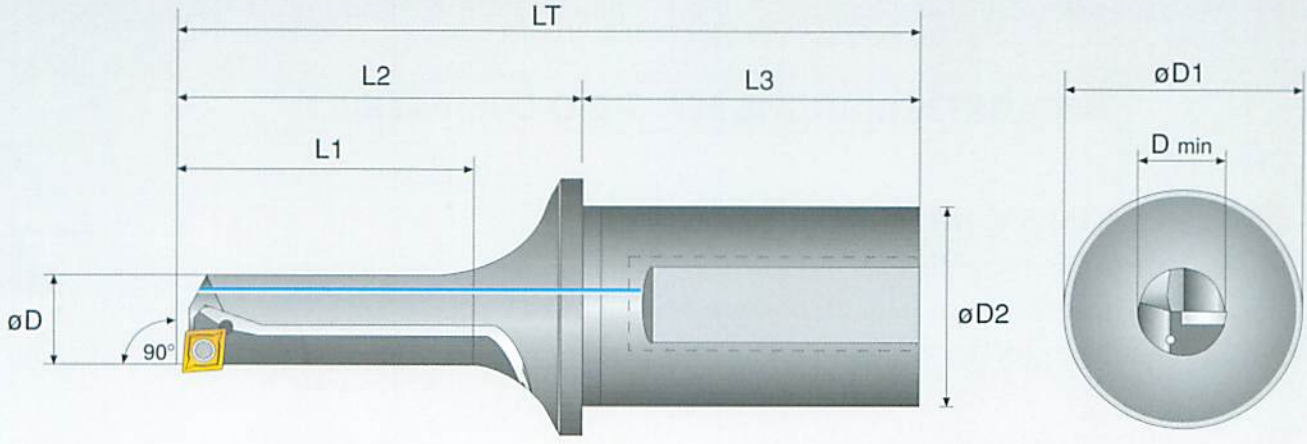
Tornitura esterna
External contouring
Tournage extérieur
Aussenkonturen

4

CARATTERISTICHE TECNICHE	
Velocità di taglio	110 ÷ 140 m / min
Asportazione sul giro	0,08 ÷ 0,2 mm
TECHNICAL SPECIFICATIONS	
Cutting speed	110 ÷ 140 m / min
Chip volume / rotation	0,08 ÷ 0,2 mm

CARACTERISTIQUES TECHNIQUES	
Vitesse de coupe	110 ÷ 140 m / min
Enlevement de coupaux / rotation	0,08 ÷ 0,2 mm
TECHNISCHE ANGABEN	
Schnittgeschwindigkeit	110 ÷ 140 m / min
Abspanvolumen / Umdrehung	0,08 ÷ 0,2 mm

MONO DRILLS



D min.

MOD.	D min
12	13,7
16	18,5
25	25,5

Codice d'ordine - Order No. Référence - Bestell-Nr	Dimensioni - Dimension Dimensions - Dimensionen							Inserti - Inserts Plaquettes - Wpl	Vite - Screw Vis - Schraube	Chiave - Key Clef - Schlüssel
	øD	D1	D2	LT	L1	L2	L3			
MOD. 12/15 - 06 - 20	12	27	20	82	15	37	45	CCMT 0602... CCGT 0602...	1001	2008
MOD. 12/20 - 06 - 20	12	27	20	87	20	42	45			
MOD. 12/30 - 06 - 20	12	27	20	97	30	52	45			
MOD. 12/15 - 06 - 25	12	35	25	82	15	37	45	CCMT 0602... CCGT 0602...	1001	2008
MOD. 12/20 - 06 - 25	12	35	25	87	20	42	45			
MOD. 12/30 - 06 - 25	12	35	25	97	30	52	45			
MOD. 16/25 - 09 - 25	16	35	25	92	25	47	45	CCMT 09T3... CCGT 09T3	1003	2015
MOD. 16/35 - 09 - 25	16	35	25	102	35	57	45			
MOD. 16/50 - 09 - 25	16	35	25	117	50	72	45			
MOD. 25/50 - 12 - 32	25	43	32	122	50	74	48	CCMT 1204... CCGT 1204...	1005	2020
MOD. 25/75 - 12 - 32	25	43	32	147	75	88	48			

Zirko® series ultratools

noma®

TRATTAMENTO DEI NOSTRI PRODOTTI CON ZIRCONIO
CARATTERISTICHE TECNICHE DELLA SUPERFICIE

Elevata durezza	2300 HV per lo spessore di 1,5 micron
Elveata scorrevolezza	Coefficiente di attrito = 0,2
Elevata resistenza al calore	800° C
Elevata resistenza alla corrosione	fino a 48 ore in soluzione 5% NaCL PH 6,7-7,2

CARATTERISTICHE ECO & BIO COMPATIBILI

- Assenza di tossicità nel prodotto
- Assenza di olio protettivo sul prodotto
- Assenza di emissioni inquinanti durante il processo di trattamento
- Compatibilità con l'ambiente e l'organismo umano

Qualità superiore e rispetto dell'ambiente

DIE ZIRKONIUMBEHANDLUNG VON UNSEREN PRODUKTEN
TECHNISCHE EIGENSCHAFTEN DER OBERFLÄCHE

Hohe Härte	2300HV bei einer Dicke von 1,5 micron
Hoher Gleitwert	Reibungszahl = 0,2
Hohe Temperaturfestigkeit	800°
Hohe Korrosionsfestigkeit	Bis 48 Stunden in Lösung 5% NaCl PH 6,7-7,2

EKO - UND BIO - EINGENSCHAFTEN

- Ungiftiges Produkt
- Kein Schutzöl auf dem Produkt
- Keine verseuchtende Abgabe während der Behandlung
- Kompatibel mit Umwelt und Körper

Höhere Qualität und umweltfreundlich

Zirko® series ultratools

noma®

LE TRAITMENT AVEC ZIRCONIUM DE NOS PRODUITS
DÉTAILS TECHNIQUES DE LA SURFACE

Haute dureté	2300HV pour un épaisseur de 1,5 micron
Très coulissant	Coéfficient de frottement = 0,2
Haute résistance à la température	800°
Haute résistance à la corrosion	Jusqu'aux 48 heures dans une solution 5% NaCL PH 6,7-7,2

ECO ET BIOCOMPATIBILITÉ

- Produit sans aucune toxicité
- Pas d'huile de protection sur le produit
- Aucune émission nuisible pendant le traitment
- Compatible avec le milieu et l'organisme

Qualité supérieure et préservation de l'environnement

ZIRCONIUM TREATMENT OF OUR PRODUCTS
TECHNICAL FEATURES OF THE SURFACE

High hardness	230HV for 1,5 micron thickness
High smoothness	Friction coefficient = 0,2
High heat resistance	800°
High corrosion resistance	Up to 48 hours in solution 5% NaCLPH 6,7-7,2

NONPOLLUTING FEATURES AND BIO-COMPATIBILITY

- Toxicity-free product
- No protection oil on the product
- No polluting emissions during the treatment process
- Compatible to environment and organism

Superior quality and eco-friendly

NUOVA TECNOLOGIA APPLICATA PRIMA ED UNICA SUL MERCATO

Zirko Ultra tools

Utensili a fissaggio meccanico trattati superficialmente con Zirconio.

Il nostro rivestimento superficiale a base di Zirconio migliora in maniera importante le caratteristiche meccaniche dei nostri utensili e conferisce ad essi una maggiore durata nel tempo rispetto ad articoli similari già presenti sul mercato.

NOTA IMPORTANTE

Questo tipo di trattamento è assolutamente compatibile con l'ambiente e con l'organismo umano. Non crea problemi allo smaltimento e non provoca allergie (a differenza del Nikel o altre sostanze che provocano in molti casi reazioni allergiche o tossiche).

CARATTERISTICHE TECNICHE

a. Notevole durezza superficiale (**2300 HV**) che aumenta la resistenza alle scalfitture provocate dai trucioli in uscita.

b. Bassa rugosità superficiale (**coefficiente 0,2**) che favorisce lo scorrimento e l'evacuazione dei trucioli.

c. Alta resistenza ai carichi termici (**temperatura di ossidazione 800°C**) che aumenta la tenuta delle sedi inserto anche in situazioni gravose.

d. Notevole resistenza alla corrosione che protegge la durata del trattamento anche in presenza di agenti chimici contenuti nei refrigeranti.

ECOLOGIA E COMPATIBILITA' BIOLOGICHE

ZIRCONIO

1) Non tende a costituire pericolo per l'ambiente 2) Non è assorbito dalle piante terrestri 3) Non crea problemi nello smaltimento 4) E' usato per comporre prodotti atossici e protesi dentarie 5) E' biologicamente compatibile con l'organismo umano 6) Non provoca allergie

NEUE ANWENDUNGSTECHNOLOGIE: EINZIGARTIG UND WELTFÜHREND

Zirko Ultra Tools

Klemmwerkzeuge mit Zirkonium enthaltender

Unsere Oberflächenbehandlung mit Zirkonium-Gehalt verbessert die mechanischen Eigenschaften unserer Werkzeuge erheblich und verlängert ihre Lebensdauer im Vergleich zu ähnlichen marktüblichen Werkzeugen.

WICHTIGER HINWEIS

Diese Behandlung ist absolut umweltfreundlich und biokompatibel zum Körper. Sie versichert eine problemlose Entsorgung und ist allergiefrei (zum Unterschied vom Nickel oder anderen Werkstoffen, die allergische oder toxische Reaktionen verursachen)

TECHNISCHE EIGENSCHAFTEN

a. Hohe Oberflächenhärte (**2300HV**), die Ritzenbefestigkeit wegen Späne erhöht.

b. Sehr niedrige Rauheit (**Reibungszahl 0,2**), die den Spänenabfluss verbessert.

c. Hohe Temperaturwechselfestigkeit (**Oxydationstemperatur: 800°**), die die Dichtigkeit der Wendeplattensitze auch unter schweren Bedingungen versichert.

d. Erhebliche Korrosionsfestigkeit, die die Lebensdauer der Behandlung auch bei Kühlmitteln mit Chemikalien versichert.

UMWELTFREUNDLICHE EIGENSCHAFTEN UND BIOLOGISCHE KOMPATIBILITÄT:

ZIRKONIUM

1) Keine Gefahr für die Umwelt 2) Keine Aufnahme durch Pflanzen 3) Kein Entsorgungsproblem 4) Einsatz zur Fertigung von ungiftigen Produkten und Zahnprothesen 5) Biokompatibel zum Körper 6) Allergiefrei

NOUVELLE TECHNOLOGIE APPLIQUEE: PREMIERE ET UNIQUE SUR LE MARCHE

Zirko Ultra Tools

Outils à fixation mécanique avec traitement de la surface avec zirconium.

Notre revêtement de la surface par zirconium améliore considérablement les propriétés mécaniques de nos outils et leur donne plus de durée par rapport aux outils pareils qui se trouvent sur le marché.

NOTE IMPORTANTE

Ce traitement est parfaitement compatible avec le milieu et l'organisme. Il n'y a pas de problèmes pour son écoulement et il ne cause pas d'allergies (contrairement au nickel ou autres substances qui causent des réactions allergiques ou toxiques)

DETAILS TECHNIQUES

a. Haute dureté de la surface (**2300HV**) qui augmente la résistance aux rayures causées par les coupeaux.

b. Rugosité très basse (**coéfficient de frottement 0,2**) qui améliore le fluage et l'évacuation des coupeaux

c. Haute résistance aux sautes de température (**température d'oxydation: 800°**) qui augmente l'étanchéité des sièges des plaquettes même aux conditions dures.

d. Considérable résistance à la corrosion qui protège la durée du traitement même en cas d'agents chimiques dans les réfrigérants.

DETAILS ECOLOGIQUES ET COMPATIBILITES BIOLOGIQUES

ZIRCONIUM

1) Pas de danger pour le milieu 2) Pas d'absorption par les plantes 3) Pas de problèmes pour son écoulement 4) Utilisé pour la fabrication des produits sans toxicité et des prothèses dentaires 5) Biocompatible avec l'organisme 6) Pas d'allergies

NEW APPLIED TECHNOLOGY: UNIQUE AND WORLD-LEADING

Zirko Ultra Tools

Tools with mechanical clamping with zirconium

Our zirconium surface treatment assures a reamrkable improvement of the mechanical features of our tools and a longer life compared with similar tools on the market.

IMPORTANT NOTICE

This treatment is totally environment-friendly and biocompatible to organism. It causes no problems to waste management and is allergy-free (unlike nickel or other materials which cause allergic or toxic reactions).

TECHNICAL FEATURES

a. High surface hardness (**2300HV**) increasing the resistance to scratches due to chips

b. Very low roughness (**friction coefficient 0,2**) enabling a smoother chip flow

c. High resistance to temperature stress (**oxidation temperature: 800°**) increasing the tightness of the insert seats even under severe conditions

d. Remarkable corrosion resistance protecting the treatment life even in case of chemicals in coolants

NONPOLLUTING FEATURES AND BIOLOGICAL COMPATIBILY: ZIRCONIUM

1) No environmental risks 2) No absorption by plant cover 3) No problems for its disposal 4) Used for the production of non-toxic items and dental prosthesis 5) Biocompatible to organism 6) Allergy-free

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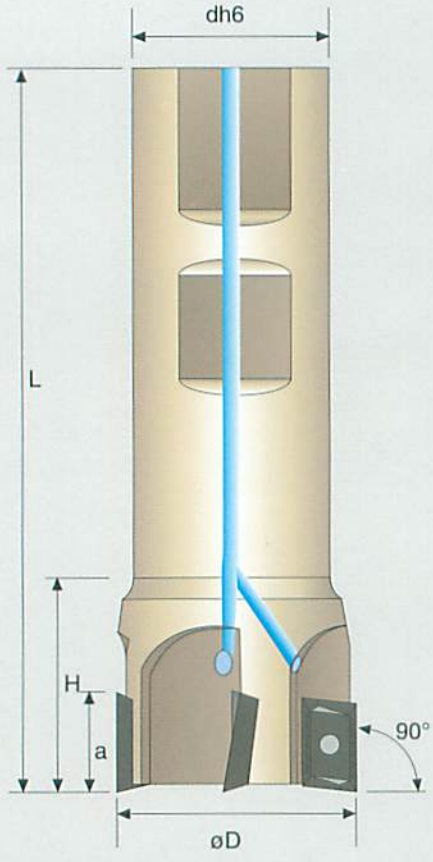
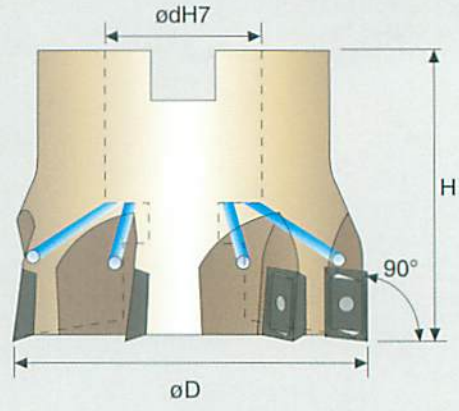
Zirko® series ultratools

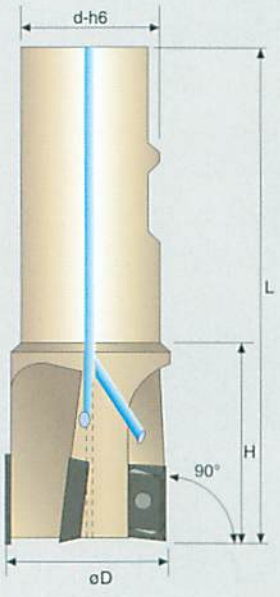


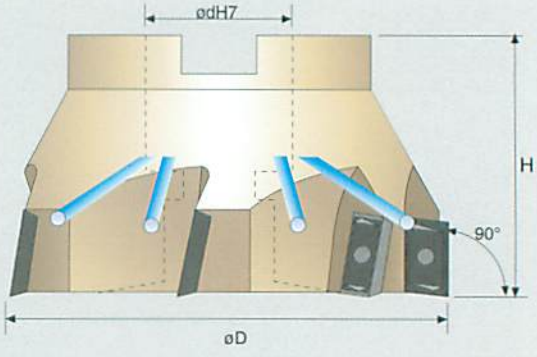


millimetres dimension									
Z-205....	**øD**	**dh6**	**a**	**L**	**H**	**Z**			
Z-205.010 W-W	10	16	10	80	24	1	APKT1003	1001	2008
Z-205.012 W-W	12	16	10	80	24	1			
Z-205.016 W-W	16	16	10	85	24	2			
Z-205.020 W-W	20	20	10	90	25	3			
Z-205.025 W-W	25	25	10	95	25	4			
Z-205.032 W-W	32	25	10	95	26	5			
Z-206....	**øD**	**dh6**	**a**	**L**	**H**	**Z**			
Serie lunga / Long models / Modèles longs / Serie Lang									
Z-206.016 W-W	16	16	10	150	24	2	APKT1003	1001	2008
Z-206.020 W-W	20	20	10	150	25	3			
Z-206.025 W-W	25	20	10	150	25	4			
Z-206.032 W-W	32	25	10	150	26	5			
Z-208....	**øD**	**dh7**	**H**	**Z**					
Serie manicotto / Shell models / Modèles à manchon / Serie Manschette									
Z-208.040 M-W	40	22	40	6			APKT1003	1001	2008
Z-208.050 M-W	50	22	40	7					
Z-208.063 M-W	63	22	40	8					

SET Z-205

Contenuto del set / Set contents / Contenu du set / Inhalt pro Set			
➤	n.1	Z-205.016 W-W	SET Z-205
➤	n.1	Z-205.020 W-W	
➤	n.1	Z-205.025 W-W	

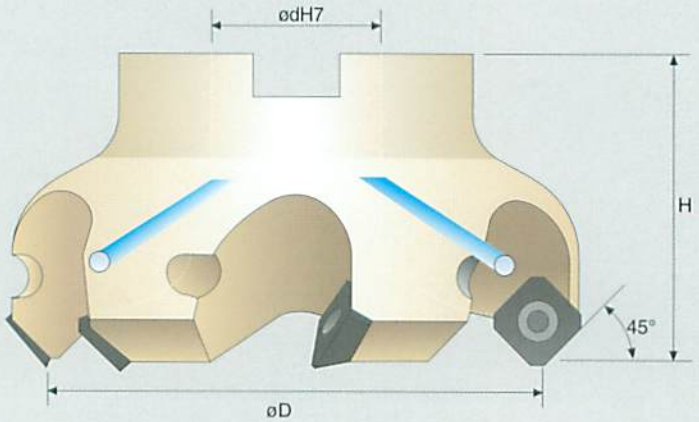




millimetres dimension										
Z-225....	øD	dh6	H	L	dH7	CM	Z			
Z-225.025 W-W	25	25	40	100			2	APKT1604... APFT1604...	1003	2015
Z-225.032 W-W	32	32	40	110			3			
Z-225.040 W-W	40	32	50	110			4			
Serie manicotto / Shell models / Modèles à manchon / Serie Manschette										
Z-226....	øD	dh6	H	L	dH7	CM	Z			
Z-226.040 M-W	40		40		16		4	APKT1604... APFT1604...	1003	2015
Z-226.050 M-W	50		40		22		5			
Z-226.063 M-W	63		40		22		6			
Z-226.080 M-W	80		50		27		7			

SET Z-225

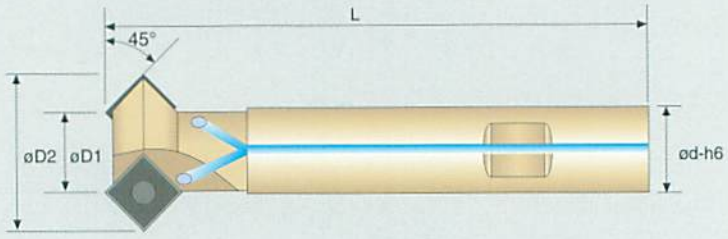
Contenuto del set / Set contents / Contenu du set / Inhalt pro Set		
n.1	Z-225.025 W-W	SET Z-225
n.1	Z-226.050 M-W	



millimetres dimension							
Z-320....	øD	dh7	H	Z			
Z-320.050 M-W	50	22	45	4	SEHW 1204 SEHT 1204	1005	2020
Z-320.063 M-W	63	22	45	5			
Z-320.080 M-W	80	27	50	6			
Z-320.100 M	100	32	50	6			
Z-320.125 M	125	40	60	7			

utilitymill

- Patent pending -

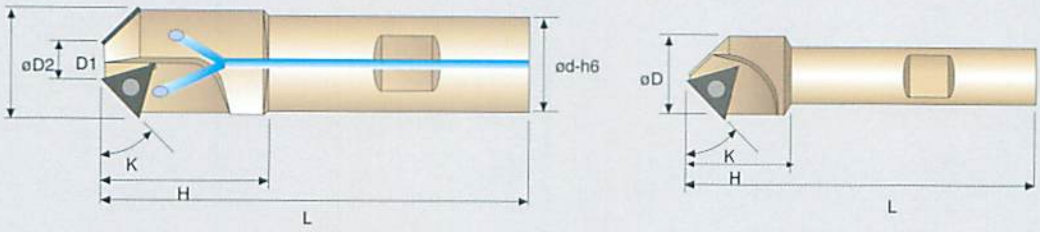


W-W = Con fori di lubrificazione - **W-W** = Coolant Bores - **W-W** = Avec des trous pour lubrification - **W-W** = Mit Schmierlöchern

millimetres dimension								
Z-290....	**øD1**	**øD2**	**L**	**dh6**	**Z**			
Z-290.004 W	4	10	80	12	1	SCMT 0602...	1001	2008
Z-290.011 W-W	11	20	80	12	2			
Z-290.012 W-W	12	23,7	100	20	1	SCMT 09T3...	1003	2015
Z-290.016 W-W	16	28,8	100	16	2			
Z-290.020 W-W	20	32	100	20	3			
Z-290.025W-W	30	42,3	100	20	3			

SET Z-290

Contenuto del set / Set contents / Contenu du set / Inhalt pro Set		
n.1	Z-290.012 W-W	**SET Z-290**
n.1	Z-290.016 W-W	
n.1	Z-290.020 W-W	



W-W = Con fori di lubrificazione - **W-W** = Coolant Bores - **W-W** = Avec des trous pour lubrification - **W-W** = Mit Schmierlöchern

millimetres dimension

Z-300....	V	øD2	L	H	dh6	K°	Z			
Z-300.016 W	1,2	16	70	20	12	45°	1	TCMT 1102...	1001	2008
Z-300.021 W-W	7,2	21	90	35	20	45°	2			
Z-300.025 W-W	11	25	90	32	20	45°	3			
Z-300.032 W-W	10,4	32,5	100	39	25	45°	2	TCMT 16T3...	1003	2015
Z-310....	**øD1**	**øD2**	**L**	**H**	**dh6**	**K°**	**Z**			
Z-310.016 W	5,4	16	70	20	12	60°	1	TCMT 1102...	1001	2008
Z-310.027 W-W	15,8	26	90	35	20	60°	2			
Z-310.032 W-W	20	35	100	39	25	60°	2	TCMT 16T3...	1003	2015
Z-315....	**øD1**	**øD2**	**L**	**H**	**dh6**	**K°**	**Z**			
Z-315.032 W-W	6	32	100	39	25	30°	2	TCMT 16T3...	1003	2015

SET Z-300

Contenuto del set / Set contents / Contenu du set / Inhalt pro Set

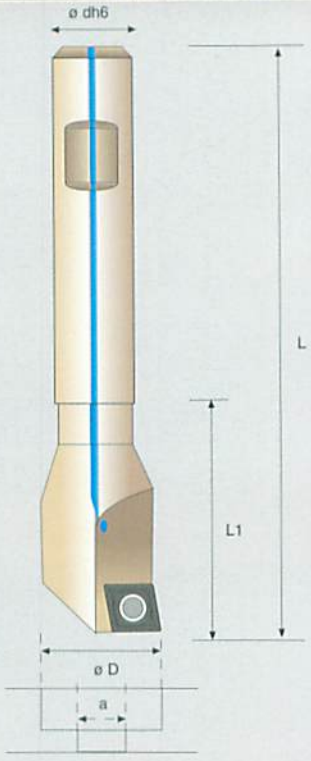
n.1	Z-300.016 W
n.1	Z-300.021 W-W
n.1	Z-300.025 W-W

SET Z-300

Z-LS 280

FRESE PER LAMATURE A 180° TRATTATE CON ZIRCONIO
SPOT FACING MILLING CUTTER 180° ZIRCONIUM-TREATED
FRAISE À LAMAGE À180° TRAITE'AVEC ZIRCONIUM
SENKFRAESER 180° MIT ZIRKONIUM BEHANDELT

noma® zirko® utilitymill



millimetres dimension

Z-280....	øD	A	L1	L	dH6	Z			
Z-280.010	10	4	15	85	12	1	CCMT 060204	1001	2008
Z-280.011	11	4	15	85	12	1			
Z-280.012	12	4	18	85	12	1			
Z-280.013	13	5	23	85	12	1			
Z-280.014	14	5	23	85	12	1			
Z-280.015	15	5	30	85	12	1			
Z-280.016	16	5	30	85	12	1			
Z-280.017	17	5	30	95	16	1	CCMT 09T304	1003	2015
Z-280.018	18	5	40	95	16	1			
Z-280.019	19	5	40	95	16	1			
Z-280.020	20	5	40	95	16	1			
Z-280.021	21	5	42	95	16	1			
Z-280.022	22	6	42	95	16	1			
Z-280.023	23	6	42	95	16	1			
Z-280.024	24	6	42	95	16	1			
Z-280.025	25	8	42	95	16	1			
Z-280.026	26	8	56	120	20	1			
Z-280.027	27	8	56	120	20	1			
Z-280.028	28	10	56	120	20	1			
Z-280.029	29	11	56	120	20	1			
Z-280.030	30	12	56	120	20	1			
Z-280.031	31	14	56	120	20	1			
Z-280.032	32	15	56	120	20	1			
Z-280.033	33	15	56	120	20	1			

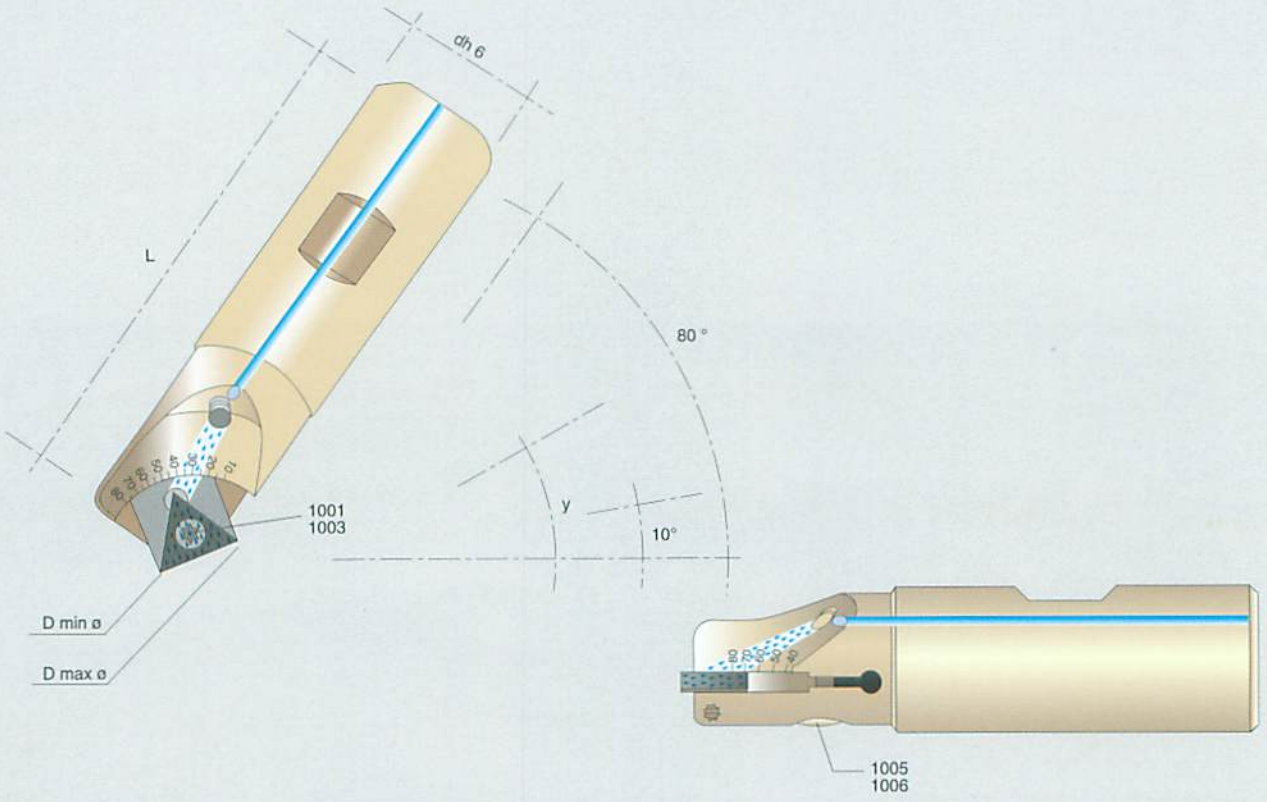
SET Z-280

	Contenuto del set / Set contents / Contenu du set / Inhalt pro Set	
n.1	Z-280.011	SET Z-280
n.1	Z-280.014	
n.1	Z-280.017	
n.1	Z-280.019	
n.1	Z-280.022	
n.1	Z-280.025	

Z-610/620...

FRESA PER SMUSSI E SVASATURE REGISTRABILI DA 10° A 80° TRATTATE CON ZIRCONIO
MILLING CUTTER FOR CHAMFERING-FLARING 10 ° TO 80 ° ZIRCONIUM-TREATED
FRAISES POUR CHANFREINAGE ET ÉVASEMENTS ENREGISTRABLES DE 10° À 80 ° TRAITE'AVEC ZIRCONIUM
FASENFRAESER, WINKELVERSTELLBAR VON 10° BIS 80° MIT ZIRKONIUM BEHANDELT

noma® Zirko® FLEXIMILL



millimetres dimension										
Z-610....	**dh6**	**L**	**Y°**	**Dmin ø**	**Dmax ø**					
Z-610.020 W-W	20	100	10°- 80°	ø 5	ø 27	6010	1001	1005	TCMT 1102...	2008
Z-620....	**dh6**	**L**	**Y°**	**Dmin ø**	**Dmax ø**					
Z-620.025 W-W	25	100	10°- 80°	ø 5	ø 34	6020	1003	1006	TCMT 16T3...	2015

SET Z-605

Contenuto del set / Set contents / Contenu du set / Inhalt pro Set

n.1	Z-620.025 W-W
n.1	Z-610.020 W-W

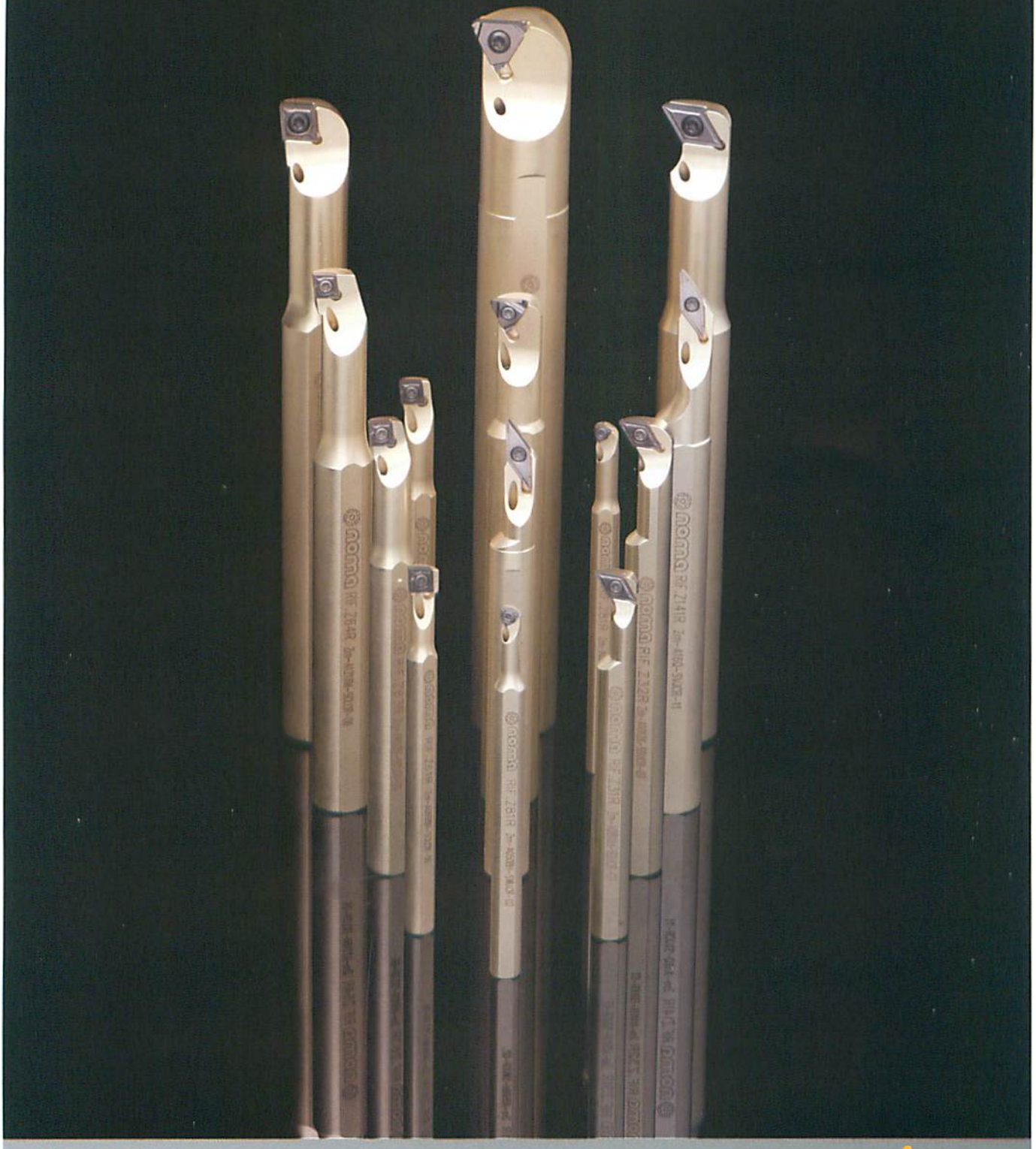
SET Z-605

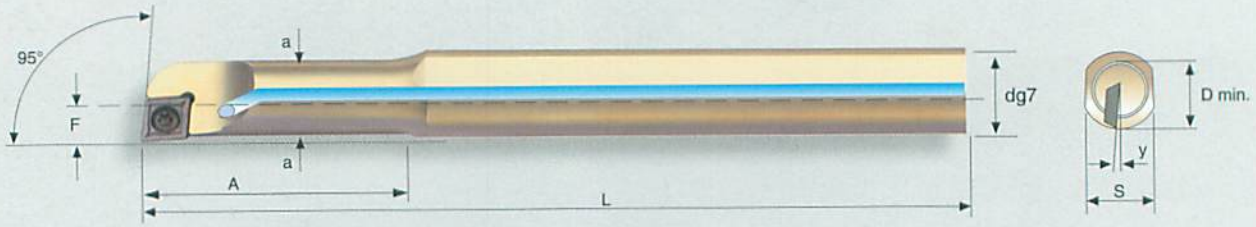
noma made in italy

Zirko series ultratools

TOOLS

- Patent pending -

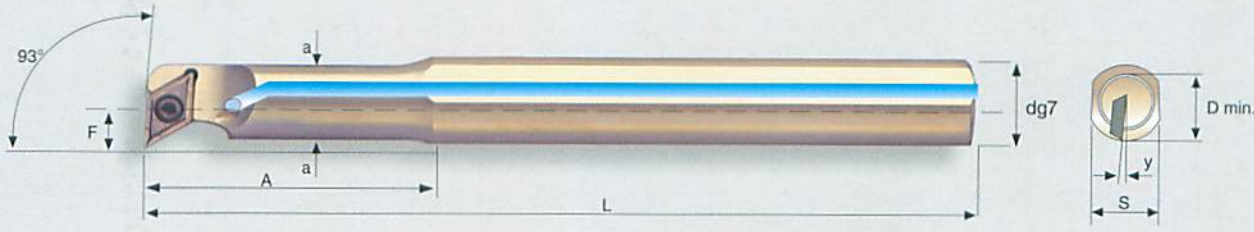


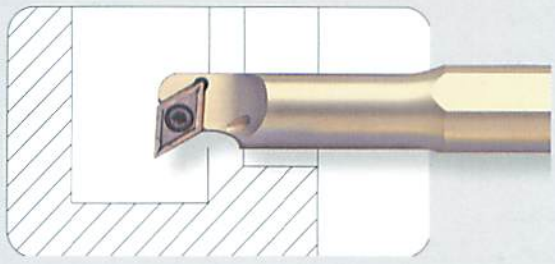


SCLC....		dg7	a	L	F	Dmin.	A	Y°	S			
Z65 R/L	Zr-A1216M-SCLCR/L-09	16	12	150	9	18	45	10°	15	CCMT09T3...	1003	2015
Z66 R/L	Zr-A1620Q-SCLCR/L-09	20	16	180	11	22	50	8°	19			
Z67 R/L	Zr-A2025R-SCLCR/L-09	25	20	200	14	28	60	7°	24			

SET Z-650R/L	SET Zr-A-SCLCR/L-09	
Contenuto del set / Set contents / Contenu du set / Inhalt pro Set		
n.1	Z65R/L	Zr-A1216M-SCLCR/L-09
n.1	Z66R/L	Zr-A1620Q-SCLCR/L-09
n.1	Z67R/L	Zr-A2025R-SCLCR/L-09

noma
SET MIDI TOOLS
Z-650R/L

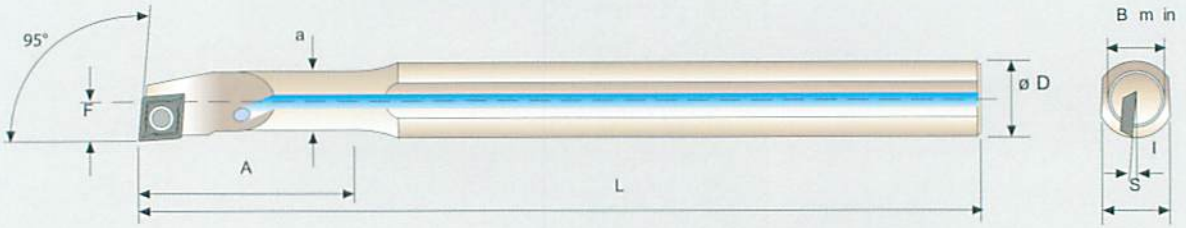




SDUC...		dg7	a	L	F	Dmin.	A	Y°	S			
Z25 R/L	Zr-A1216M-SDUCR/L-11	16	12	150	9	18	45	10°	15	DCMT11T3...	1003	2015
Z26 R/L	Zr-A1620Q-SDUCR/L-11	20	16	180	11	22	50	8°	19			
Z27 R/L	Zr-A2025R-SDUCR/L-11	25	20	200	14	28	60	7°	24			

SET Z-250R/L	SET Zr-A-SDUCR/L-11	
Contenuto del set / Set contents / Contenu du set / Inhalt pro Set		
n.1	Z25R/L	Zr-A1216M-SDUCR/L-11
n.1	Z26R/L	Zr-A1620Q-SDUCR/L-11
n.1	Z27R/L	Zr-A2025R-SDUCR/L-11

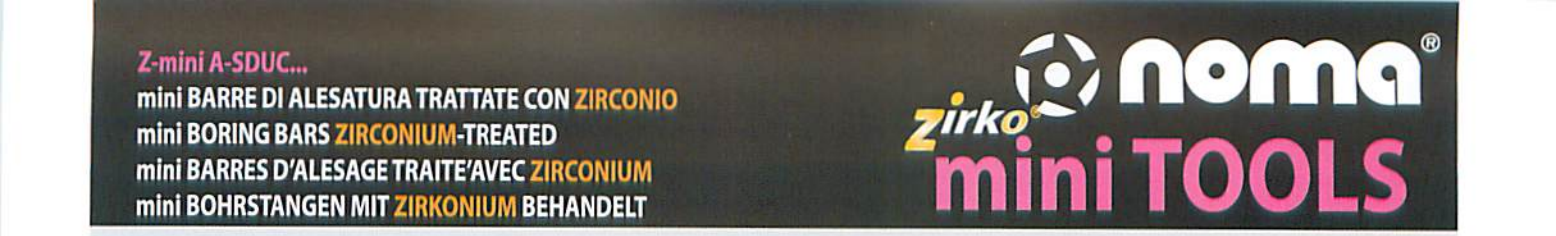
noma
SET MIDI TOOLS
Z-250R/L

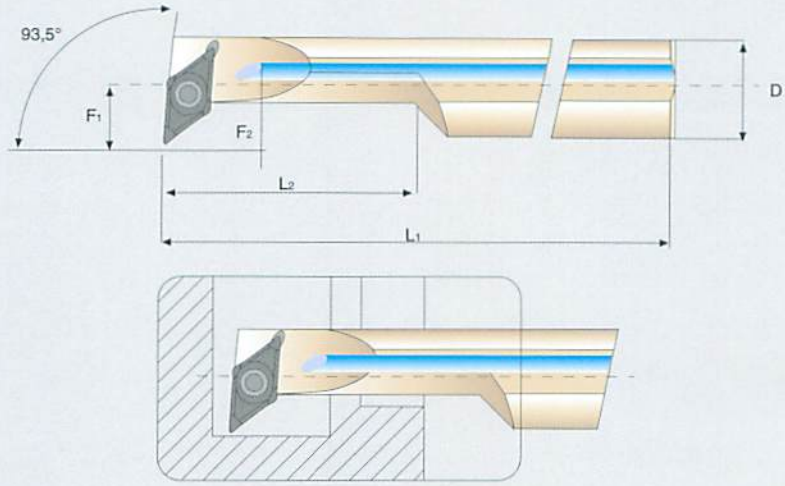


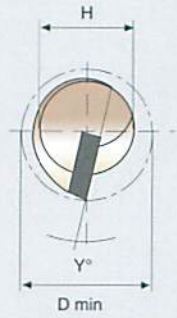
		millimetres dimension										
SCLC....		ØD	a	L	F	B	A	I	S			
Z61 R/L	Zr-A0608H-SCLCR/L-06	8	6	100	4	8	25	18°	7			
Z62 R/L	Zr-A0810J-SCLCR/L-06	10	8	110	6	12	32	15°	9			
Z63 R/L	Zr-A1012K-SCLCR/L-06	12	10	125	7	14	38	13°	11	CCMT0602...	1001	2008
Z64 R/L	Zr-A1216M-SCLCR/L-06	16	12	150	9	18	50	10°	15			

SET Z-60R/L	SET Zr-A-SCLCR/L-06	
Contenuto del set / Set contents / Contenu du set / Inhalt pro Set		
n.1	Z61R/L	Zr-A0608H-SCLCR/L-06
n.1	Z62R/L	Zr-A0810J-SCLCR/L-06
n.1	Z63R/L	Zr-A1012K-SCLCR/L-06
n.1	Z64R/L	Zr-A1216M-SCLCR/L-06

noma
SET mini TOOLS
Z-60R/L



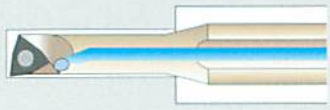




		millimetres dimension										
SDUC....		dg7	L1	L2	F1	F2	D-min	Y°	H			
Z31 R/L	Zr-A0810H-SDUCR/L-07	10	100	22	7	5	12,5	15°	9			
Z32 R/L	Zr-A1012K-SDUCR/L-07	12	125	28	9	5	15,5	13°	11	DCMT0702...	1001	2008
Z33 R/L	Zr-A1216M-SDUCR/L-07	16	150	36	11	5	19,5	10°	15			

SET Z-30R/L	SET Zr-A-SDUCR/L-07	
Contenuto del set / Set contents / Contenu du set / Inhalt pro Set		
n.1	Z31 R/L	Zr-A0810H-SDUCR/L-07
n.1	Z32 R/L	Zr-A1012K-SDUCR/L-07
n.1	Z33 R/L	Zr-A1216M-SDUCR/L-07

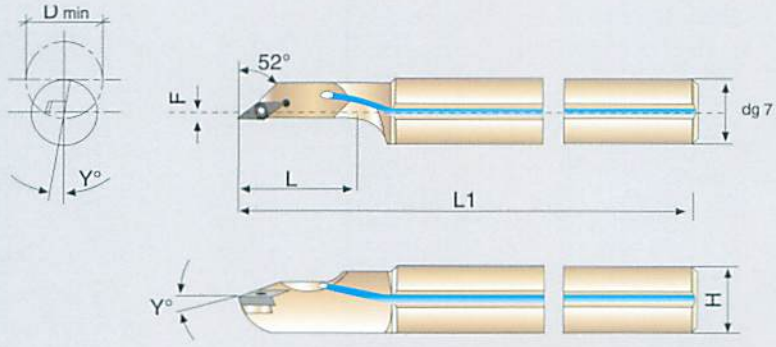
noma
SET mini TOOLS
Z-30R/L

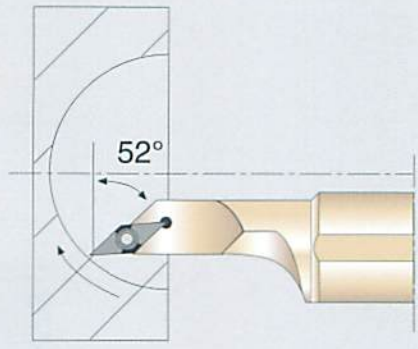


		millimetres dimension										
SWUC....			D	a	L	F	B	A	I	S		
Z81 R/L	Zr-A0508H-SWUCR/L-02		8	5	100	2,9	5,8	18	17°	7	WCMT-WCGT 02	1001	2008
Z82 R/L	Zr-A0608H-SWUCR/L-02		8	6	100	3,9	8	24	12°	7			

SET Z-80R/L	SET Zr-A-SWUCR/L-02	
Contenuto del set / Set contents / Contenu du set / Inhalt pro Set		
n.1	Z81 R/L	Zr-A0508H-SWUCR/L-02
n.1	Z82 R/L	Zr-A0608H-SWUCR/L-02
n.10	WCMT	WCMT 02-01-02

noma
SET mini TOOLS
Z-80R/L



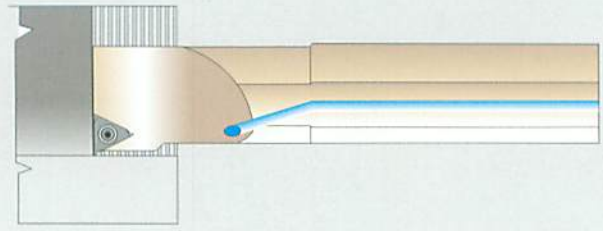


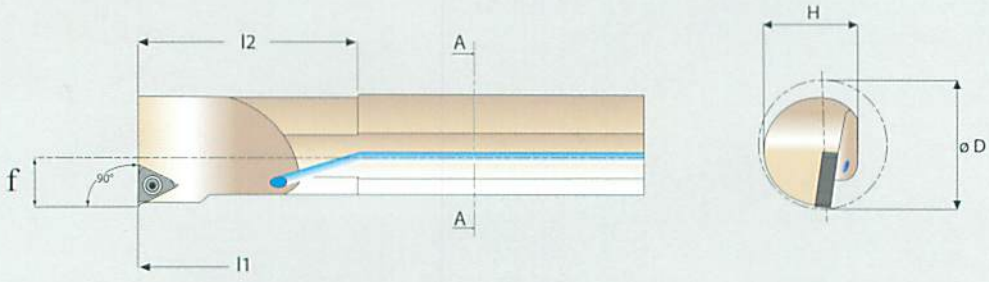
SVJC....			millimetres dimension dg7	L	L1	F	Dmin	Y°	H			
Z40 R/L	Zr-A12K-SVJCR/L-11		12	25	125	2	18	8	11	VCMT-VCGT 1103...	1001	2008
Z41 R/L	Zr-A16M-SVJCR/L-11		16	30	150	2	22	6	15	VCMT-VCGT 1103...		
Z42 R/L	Zr-A20Q-SVJCR/L-11		20	38	180	2	25	5	19	VCMT-VCGT 1103...		
Z43 R/L	Zr-A25R-SVJCR/L-16		25	44	200	2	28	4	24	VCMT-VCGT 1604...	1003	2015

SET Z-400R/L — **SET Zr-A-SVJCR/L-11**

Contenuto del set / Set contents / Contenu du set / Inhalt pro Set		
n.1	Z40 R/L	Zr-A12K-SVJCR/L-11
n.1	Z41 R/L	Zr-A16M-SVJCR/L-11
n.1	Z42 R/L	Zr-A20Q-SVJCR/L-11

SET mini TOOLS Z-400R/L





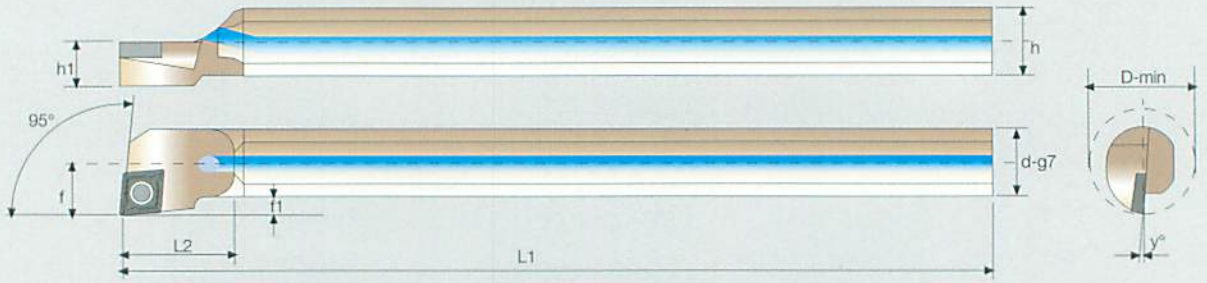
Z-ANR	millimetres dimension øD	ød	f	l1	H	l2			
Z-ANR-0010	12	16	6,6	125	15	24,65	11NL	1001	2008
Z-ANR-0013	15	16	8,2	140	15	32,00			
Z-ANR-0016	19	16	10,6	150	15	40,00	16NL	1075	2015
Z-ANR-0020	24	20	13,4	180	18	50,00			
Z-ANR-0025	29	25	16,3	200	23	55,00			

SET Z-ANR-16

Contenuto del set / Set contents / Contenu du set / Inhalt pro Set		
n.1	Z-ANR-0016	SET Z-ANR-16
n.1	Z-ANR-0020	
n.1	Z-ANR-0025	

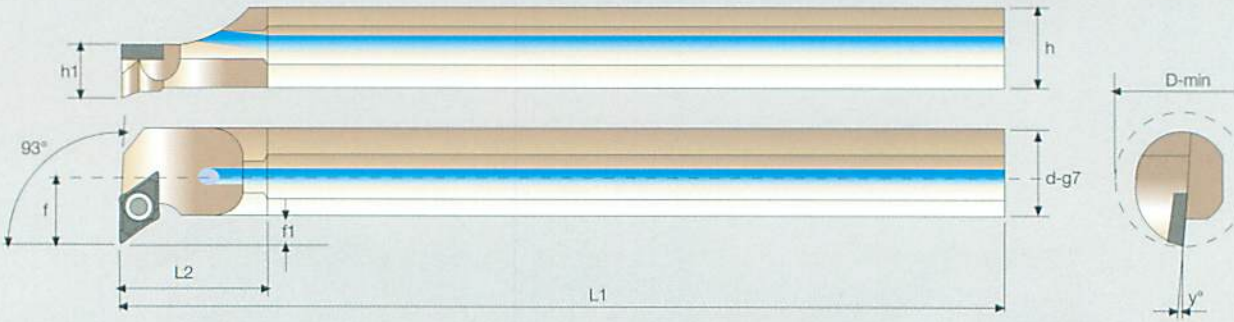
SET Z-ANR-11

Contenuto del set / Set contents / Contenu du set / Inhalt pro Set		
n.1	Z-ANR-0010	SET Z-ANR-11
n.1	Z-ANR-0013	



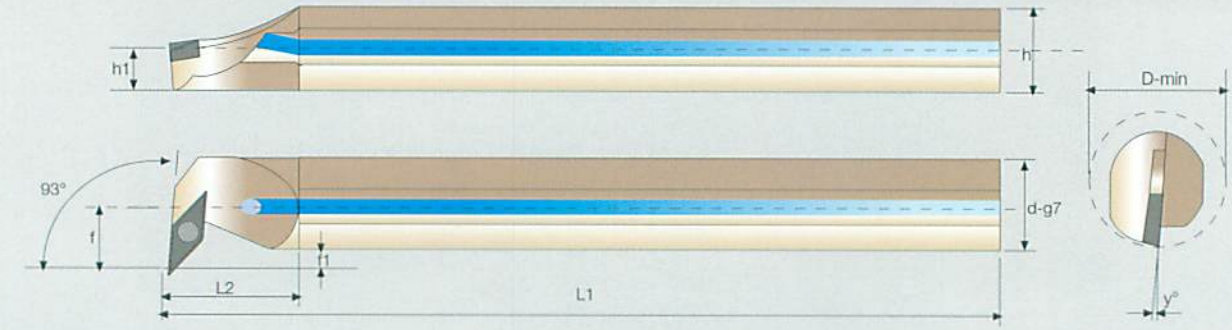
millimetres dimension

Z-SCLC....		dg7	f	L1	L2	F1	h	h1	Dmin	Y°			
Z-101 AR/L	Zr-A08H - SCLCR/L - 06	8	6	100	12	2	7	3,5	12	15	CCMT0602	1001	2008
Z-102 AR/L	Zr-A10K - SCLCR/L - 06	10	7	125	16	2	9	4,5	14	13			
Z-103 AR/L	Zr-A12L - SCLCR/L - 06	12	9	140	20	3	11	5,5	18	10			
Z-104 AR/L	Zr-A16Q - SCLCR/L - 09	16	11	180	25	3	14	7	22	7	CCMT09T3	1003	2015
Z-105 AR/L	Zr-A20R - SCLCR/L - 09	20	13	200	32	3	18	9	26	7			
Z-106 AR/L	Zr-A25R - SCLCR/L - 12	25	17	200	40	4,5	23	11,5	34	5	CCMT1204	1005	2020



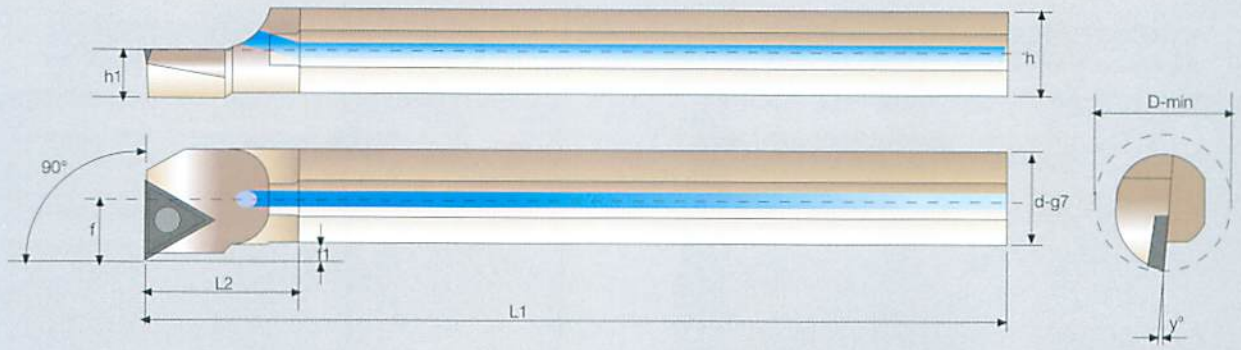
millimetres dimension

Z-SDUC....		dg7	f	L1	L2	F1	h	h1	Dmin	Y°			
Z-114 AR/L	Zr-A12K - SDUCR/L - 07	12	9	140	20	3	11	5,5	18	10	DCMT0702	1001	2008
Z-115 AR/L	Zr-A16Q - SDUCR/L - 07	16	11	180	25	3	14	7	22	7			
Z-116 AR/L	Zr-A20R - SDUCR/L - 11	20	13	200	32	3	18	9	26	7	DCMT11T3	1003	2015
Z-117 AR/L	Zr-A25R - SDUCR/L - 11	25	17	200	40	4,5	23	11,5	34	5			



millimetres dimension

Z-SVUC....		dg7	f	L1	L2	F1	h	h1	Dmin	Y°			
Z-128 AR/L	Zr-A20R - SVUCR/L	20	13	200	32	3	18	9	26	7	VCMT 1103 VCGT 1103	1001	2008
Z-129 AR/L	Zr-A25R - SVUCR/L	25	17	200	40	4,5	23	11,5	34	5	VCMT 1604 VCGT 1604	1003	2015



millimetres dimension

Z-STFC....		dg7	f	L1	L2	F1	h	h1	Dmin	Y°			
Z-108 AR/L	Zr-A10K - STFCR/L - 11	10	7	125	16	2	9	4,5	14	13	TCMT1102	1001	2008
Z-109 AR/L	Zr-A12L - STFCR/L - 11	12	9	140	20	3	11	5,5	18	10			
Z-110 AR/L	Zr-A16Q - STFCR/L - 11	16	11	180	25	3	14	7	22	7			
Z-111 AR/L	Zr-A20R- STFCR/L - 16	20	13	200	32	3	18	9	26	7	TCMT16T3	1003	2015
Z-112 AR/L	Zr-A25R - STFCR/L - 16	25	17	200	40	4,5	23	11,5	34	5			

millimetres dimension

Z-SDQC....		dg7	f	L1	L2	F1	h	h1	Dmin	Y°			
Z-119 AR/L	Zr-A12L - SDQCR/L - 07	12	9	140	20	3	11	5,5	18	10	DCMT0702	1001	2008
Z-120 AR/L	Zr-A16Q - SDQCR/L - 07	16	11	180	25	3	14	7	22	7			
Z-121 AR/L	Zr-A20R - SDQCR/L - 11	20	13	200	32	3	18	9	26	7	DCMT11T3	1003	2015
Z-122 AR/L	Zr-A25R - SDQCR/L - 11	25	17	200	40	4,5	23	11,5	34	5			

millimetres dimension

Z-SVQC....		dg7	f	L1	L2	F1	h	h1	Dmin	Y°			
Z-146 AR/L	Zr-A25R - SVQCR/L	25	17	200	40		23	11,5	34	5	VCMT 1604 VCGT 1604	1003	2015

Zirko®
boring bars standard set

noma®

SET Z-250 R/L *pag.127*

SET Z-650 R/L *pag.126*

SET Z-60 R/L *pag.128*

SET Z-30 R/L *pag.129*

SET Z-400 R/L *pag.131*

SET Z-80 R/L *pag.130*

zirko®
milling standard set

noma®

SET Z-205 *pag.115*

SET Z-225 *pag.117*

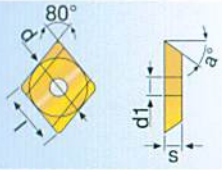
SET Z-300 *pag.121*

SET Z-290 *pag.120*

SET Z-605 *pag.124*

SET Z-280 *pag.123*

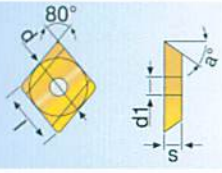
INSERTI PC FAST - PC FAST INSERTS - PLAQUETTES PC FAST - WPL PC FAST



Inserto-Insert-Plaquette-Wpl	l	d	s	d1	a°	Qual.
CGX 0622M20TIN	6.35	6.35	2.2	2.8	35	M20 TIN
CGX 0932M20TIN	9.52	9.52	3.2	4.9	35	
CGX 1242M20TIN	12.7	12.7	4.2	5.5	35	

INSERTI PC FAST PER ALLUMINIO
PLAQUETTES PC FAST POUR ALUMINIUM

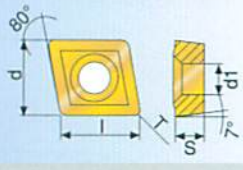
PC FAST INSERTS FOR ALUMINIUM
PC FAST WPL FÜR ALUMINIUM



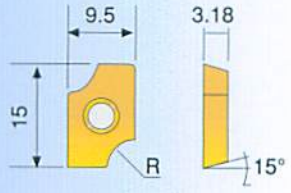
Inserto-Insert-Plaquette-Wpl	l	d	s	d1	a°	Qual.
CGX 0622HT10	6.35	6.35	2.2	2.8	35	HT10
CGX 0932HT10	9.52	9.52	3.2	4.9	35	
CGX 1242HT10	12.7	12.7	4.2	5.5	35	

INSERTI UNIVERSAL DRILL
PLAQUETTES POUR UNIVERSAL DRILL

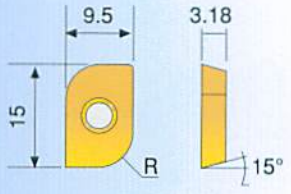
UNIVERSAL DRILL INSERTS
WPL UNIVERSAL DRILL



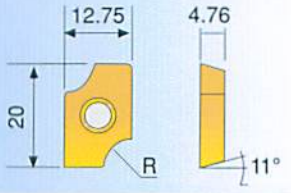
Inserto-Insert-Plaquette-Wpl	l	d	s	d1	r	Qual.
CCMX 060204T25	6.35	6.35	2.38	2.6	0.4	T25



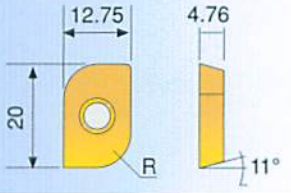
Inserto - Insert - Plaquette - Wendeplatten	Qualità
XDCW1503FR10 R=1	M20 TIN
XDCW1503FR15 R=1.5	
XDCW1503FR20 R=2	
XDCW1503FR25 R=2.5	
XDCW1503FR30 R=3	
XDCW1503FR35 R=3.5	
XDCW1503FR40 R=4	



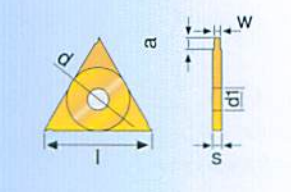
Inserto - Insert - Plaquette - Wendeplatten	Qualità
XDCW1503MR10 R=1	M20 TIN
XDCW1503MR15 R=1.5	
XDCW1503MR20 R=2	
XDCW1503MR25 R=2.5	
XDCW1503MR30 R=3	
XDCW1503MR35 R=3.5	
XDCW1503MR40 R=4	



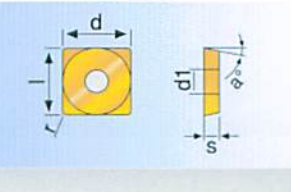
Inserto - Insert - Plaquette - Wendeplatten	Qualità
XPCW2004FR45 R=4.5	M20 TIN
XPCW2004FR50 R=5	
XPCW2004FR55 R=5.5	
XPCW2004FR60 R=6	
XPCW2004FR65 R=6.5	
XPCW2004FR70 R=7	



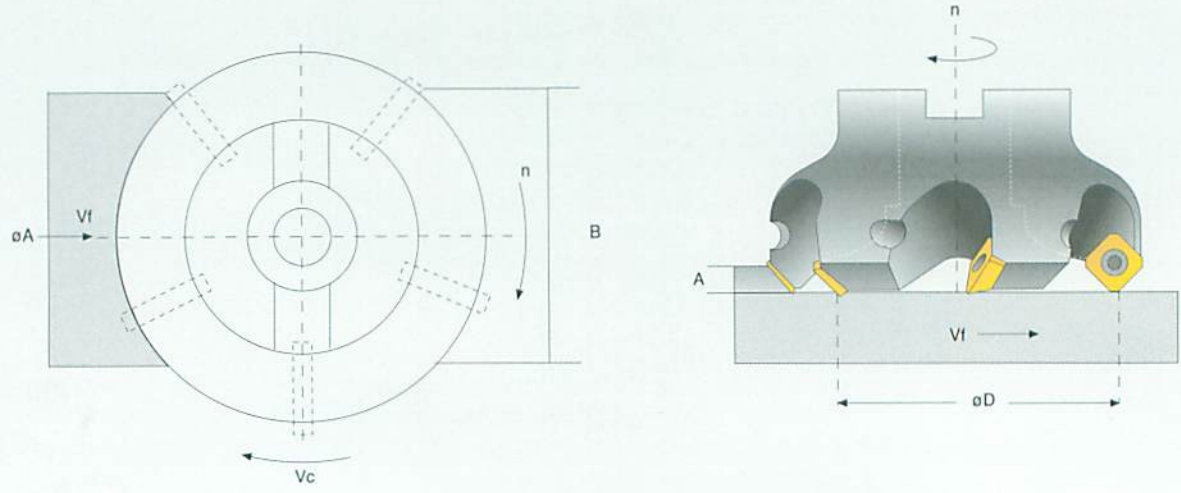
Inserto - Insert - Plaquette - Wendeplatten	Qualità
XPCW2004MR45 R=4.5	M20 TIN
XPCW2004MR50 R=5	
XPCW2004MR55 R=5.5	
XPCW2004MR60 R=6	
XPCW2004MR65 R=6.5	
XPCW2004MR70 R=7	



Inserto-Insert-Plaquette-Wpl	l	d	s	d1	w	a	Qual.
154.15 - 16.110	16.0	9.52	2.5	4.5	1.10	1.2	M20 TIN
154.15 - 16.130	16.0	9.52	2.5	4.5	1.30	1.5	
154.15 - 16.160	16.0	9.52	2.5	4.5	1.60	1.8	
154.15 - 16.185	16.0	9.52	2.5	4.5	1.85	3.0	
154.15 - 16.215	16.0	9.52	2.8	4.5	2.15	3.0	
154.15 - 16.265	16.0	9.52	3.3	4.5	2.65	3.0	
154.15 - 16.315	16.0	9.52	3.8	4.5	3.15	3.0	
154.15 - 16.415	16.0	9.52	4.5	4.5	4.15	3.0	



Inserto-Insert-Plaquette-Wpl	l	d	s	d1	w	a°	Qual.
SPMT 060304	6.35	6.35	3.18	2.8	0.4	11	M20 TIN
SPMT 09T308	9.52	9.52	3.97	4.5	0.8	11	
SPMT 120408	12.7	12.7	4.76	5.5	0.8	11	



$$Vc = \frac{3{,}14 \times øD \times n}{1000} \quad (m/min') \qquad Vf = n \times f = n \times Z \times fz \quad (mm/min')$$

$$f = \frac{Vf}{n} \quad (mm/n) \qquad fz = \frac{Vf}{n \times Z} = \frac{f}{Z} \quad (mm/Z)$$

$$p = \frac{3{,}14 \times øD}{Z} \quad (mm) \qquad V = \frac{B \times A \times Vf}{1000} \quad (cm^3/min')$$

A	**Profondità di taglio assiale** / Depth of axial cutting-parting / Profondeur de coupe axiale / Abspanvolumen
B	**Larghezza della fresatura** / Cutting-parting width / Largeur de coupe / Breite der Ausfräsung
Vc	**Velocità di taglio** / Cutting speed / Vitesse de coupe / Schnittgeschwindigkeit
øD	**Diametro fresa** / Diameter milling / Diamètre fraise / Fräserdurchmesser
n	**Numero di giri al min'** / Number of turns per min / Nombres de tours-minute / Drehzahl/Min.
fz	**Avanzamento al dente** / Tooth feed / Avancement au dent / Vorschub je nach Zähnezahl
Z	**Numero di denti** / Teeth number / Avancement des dents / Fraeser Zähneanzahl
f	**Avanzamento al giro** / Turn feed / Avancement tour / Vorschub je nach Drehzahl
Vf	**Avanzamento tavola** / Bench-table feed / Avancement table / Tischvorschub
p	**Passo della fresa** / Teeth distance / Pas de la fraise / Zahnteilung
V	**Volume del trucciolo asportato** / Volume of removed chips / Volume des copeaux enlevés / Abspanvolumen

VALORI ORIENTATIVI: FRESE PER SPIANATURA - FRESE PER SPALLAMENTO

SPECIFICATIONS: FACE MILLING CUTTERS - SHOULDER MILLING CUTTERS

DONNÉES TECHNIQUES: FRAISES PLANAGE - FRAISES ÉPAULEMENT

SCHNITTDATEN: PLANFRAESER - ECKFRAESER

Materiale Material Matériaux Werkstoff	Avanzamento fz (mm/Z) Feed fz (mm/Z) Avance fz (mm/Z) Vorschub fz (mm/Z)		Velocità di taglio - Cutting speed - Vitesse de coupe (m/min) - Schnittgeschwindigkeit							
			Cermet	Non Rivestiti - Cemented carbide grades Non revêtu - Unbeschichtete hm Sorten					Inserti - Insert Plaquette - Wendeplatte Rivestiti - Coated grades Revêtu - Beschichtete hm Sorten	
				K20	P10	P25	P30	P40	TIN	TICN
Acciaio non legato Unalloyed steel Acier non allié Unlegierter Stahl	0.10-0.40	0.10-0.30			160-200	100-180	100-180	80-150	120-200	120-250
	0.10-0.20	0.10-0.15	160-300							
Acciaio legato Alloyed steel Acier allié Legierter Stahl	0.10-0.30	0.10-0.25			100-180	100-150	100-180	60-120	100-200	120-200
	0.10-0.20	0.10-0.15	120-250							
Acciaio inossidabile Stainless steel Acier inoxydable Rostfreier Stahl	0.10-0.30	0.10-0.25				100-150	100-150	80-120	100-180	100-180
Ghisa Cast iron Fonte Grauguss	0.10-0.40	0.10-0.30		100-180	100-180				100-250	120-250
Metalli non ferrosi Nonferrous metals Métaux non ferreux Nicht eisenhaltige Metalle	0.10-0.40	0.10-0.40		150-250						
Leghe di alluminio Aluminium alloy Alliages d'aluminium Aluminium-Legierungen	0.20-0.50	0.10-0.30		300-1000						

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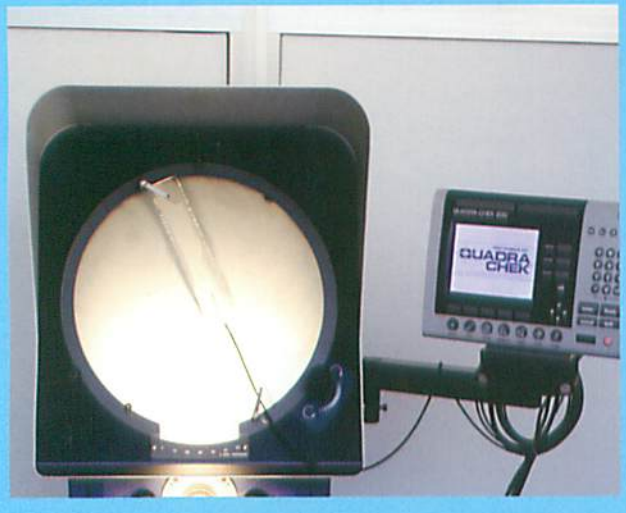

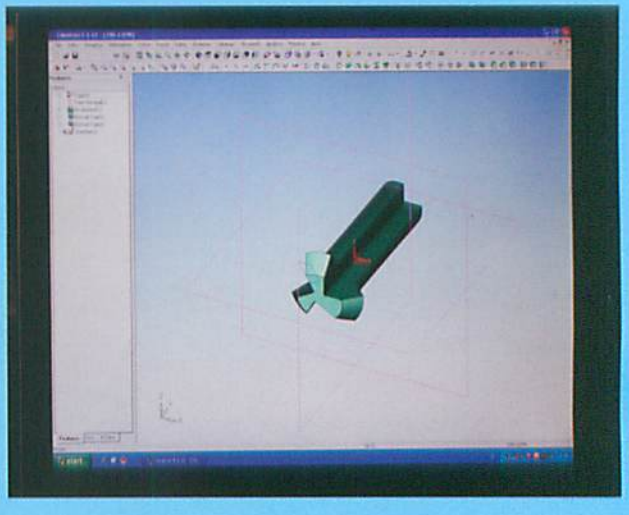

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25060 **Marcheno V.T.** - Brescia - Italy
Via Zanardelli, 99
tel. (+39) 030.86.11.77 - fax (+39) 030.86.10.053
www.noma.it - e-mail: noma@noma.it