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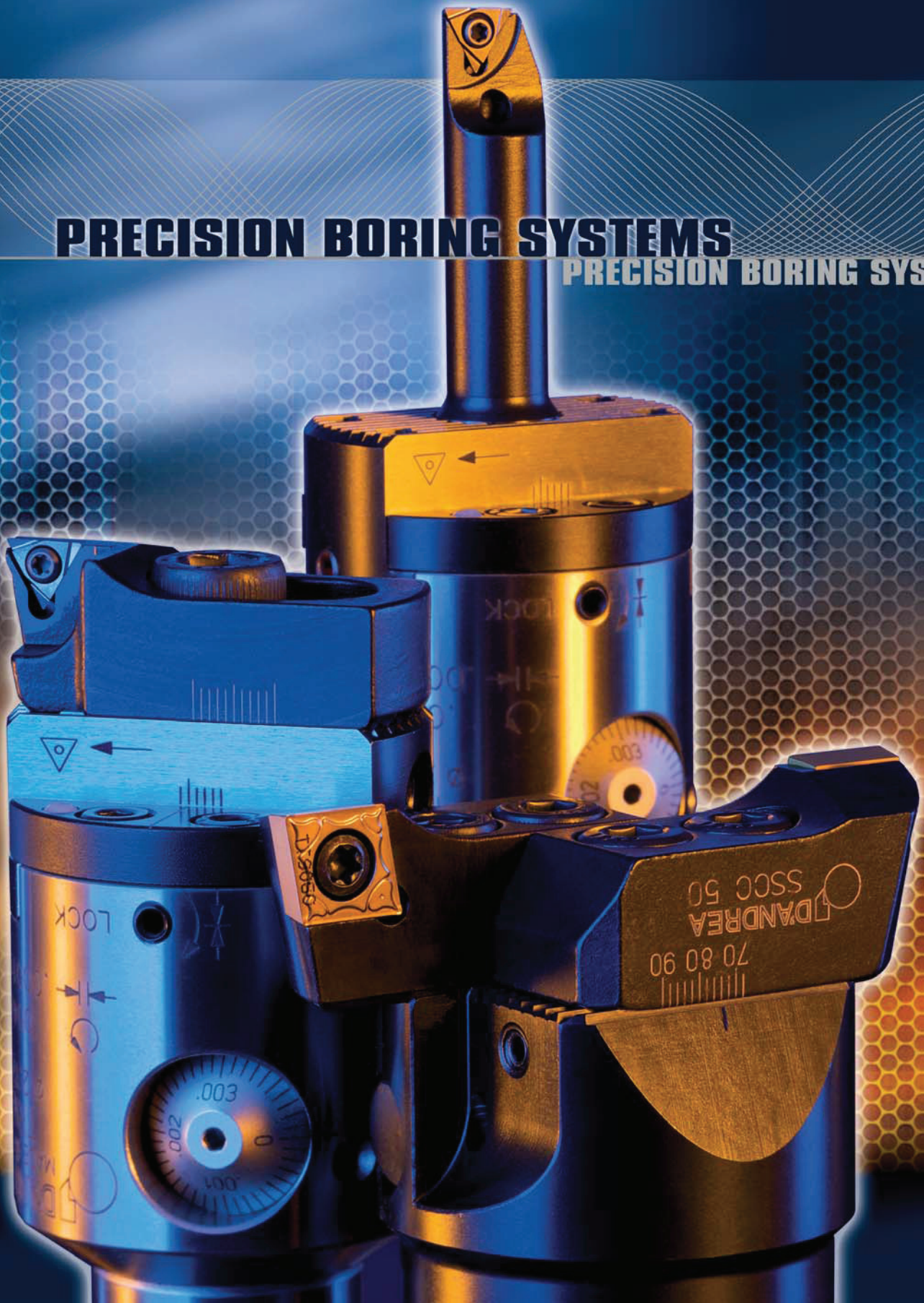
PRECISION BORING SYSTEMS

PRECISION BORING SYSTEMS



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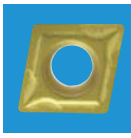
BORING SYSTEMS



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TECHNOLOGY FOR HIGH PRECISION

INGERSOLL CUTTING TOOLS – THE COMPANY

Ingersoll Cutting Tools is a world leader in the design and manufacture of standard and special indexable cutting tools that can be applied across a complete range of metal removal applications.

In addition to our innovative solutions for high-performance milling and the project-focused engineering of special cutting tools, we offer a full range of metal removal technology for all industries.

Close cooperation with our customers during the development of technically demanding solutions for machining challenges forms the basis of long and durable partnerships. Our customers have come to trust our professional qualifications and experience, and they profit from the reliability and quality of our cutting tools.


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Ingersoll is a worldwide manufacturer of milling, boring, threading and turning tools for demanding machining operations.
Our main production plants, in Rockford, Illlinois in the U.S.A. and in Haiger and Horrheim in Germany, supply customers all over the world. Experienced and well-trained representatives in over 45 countries ensure a network of on-site advice and assistance. Ingersoll's complete range of performance and service is available to our customers – all over the world.

Marketing & Technology Campus (Rockford, USA)

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Marketing & Technology Campus (Haiger, Germany)

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MODULHARD'ANDREA

What is MHD'?

A modular toolholder system for boring, milling, drilling, tapping.
A rigid high precision system, conceived and manufactured with the most advanced design and production facilities, backed by an experience over many decades in boring operations.
A system of extreme flexibility and simplicity suitable for machine tools, machining centres and flexible manufacturing systems.
A system for machining to closest tolerances with a high degree of surface finish.
A system with internal coolant supply in all its components.
A system available in 11 sizes with full interchangeability of all components.

The MHD' coupling

is the heart of the tool system as it ensures utmost rigidity and concentricity during milling and boring operations. This is achieved by the (patented) cylindrical-conical fit and by a radial expanding bolt for clamping and driving.

Was ist das MHD'?

Ein modulares Werkzeughalterssystem zum Ausdrehen, Fräsen, Bohren und Gewindeschneiden.
Ein starres Hochpräzisionssystem,das mit den modernsten Konstruktions-und Fertigungsmitteln aufgrund unserer jahrzehntelangen Erfahrung im Ausdrehen entwickelt und hergestellt worden ist.
Ein System extremer Flexibilität und Einfachheit für Werkzeugmaschinen, Bearbeitungszentren und flexible Fertigungsbetriebe.
Ein System für Bearbeitungen von engsten Toleranzen mit hoher Oberflächengüte.
Ein System mit innerer Kühlmittelzufuhr in allen Elementen.
Ein in 11 Größen lieferbares System, das die volle Austauschbarkeit gestattet.

Die MHD' Kupplung

ist das Kernstück des MODULHARD'ANDREA, da sie maximale Starrheit und Konzentrizität beim Fräsen und Bohren sichert. Das wird durch die (patentierte) zylindrisch-konische Passfläche und den radialen Spreizbolzen für Axialspannung und Mitnahme erreicht.

¿Qué es el MHD'?

Un sistema modular de portaherramientas para mandrinar, fresar, taladrar, roscar. Un sistema rígido, de alta precisión, estudiado y realizado con la contribución de los medios más avanzados de proyecto y fabricación y de una experiencia de muchos años en el campo del mandrinado.
Un sistema de extrema flexibilidad y simplicidad, adecuado para máquinas herramientas, centros de mecanizado y sistemas de producción flexibles.
Un sistema para mecanizaciones con estrechísimas tolerancias con superficies de alta calidad.
Un sistema de alimentación interior del refrigerante en todos sus elementos.
Un sistema suministrable en 11 tamaños con máxima intercambiabilidad de los elementos.

El acoplamiento MHD'

es el punto de fuerza del MODULHARD'ANDREA, porque permite fresar y mandrinar con la máxima rigidez y concentricidad, gracias al acoplamiento (patentado) cilíndrico-cónico y al perno radial expansible para el blocaje axial y el arrastre.

Qu'est-ce que le MHD'?

Un système modulaire de porte-outils pour aléser, fraiser, percer, tarauder.
Un système rigide de haute précision, réalisé en utilisant le matériel de conception et de fabrication le plus avancé et une expérience pluridécennale dans le secteur de l'alésage.
Un système d'extrême souplesse et simplicité apte aux machines-outils, aux centres d'usinage et aux ateliers flexibles.
Un système à tolèrances serrées avec surfaces de haute qualité.
Un système avec alimentation interne du liquide d'arrosage dans tous ses éléments.
Un système livrable en 11 tailles avec interchangeabilité totale des composants.

L'accouplement MHD'

est l'atout du système d'outils parce qu'il assure une extrême rigidité et concentricité dans les opérations de fraisage et d'alésage grâce au siège cylindrique-conique (breveté) et à une tige radiale expansible pour le blocage et l'entraînement.

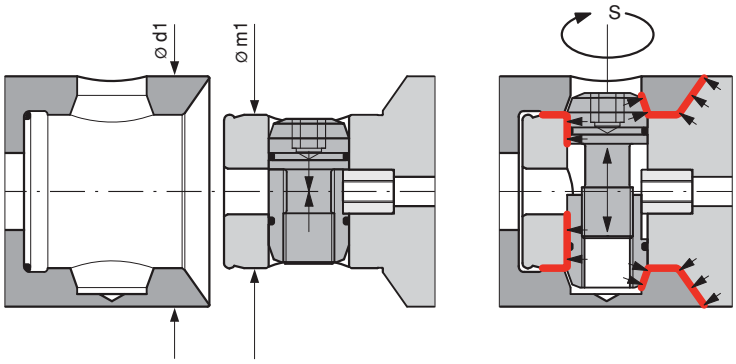
Cos'è l'MHD'?

Un sistema modulare di portautensili per alesare, fresare, forare, maschiare.
Un sistema rigido, di alta precisione, studiato e realizzato con il contributo dei mezzi più avanzati di progettazione e fabbricazione e di un'esperienza pluridecennale nel campo dell'alesatura.
Un sistema di estrema flessibilità e semplicità, adatto per macchine utensili, centri di lavoro e sistemi di produzione flessibile.
Un sistema per lavorazioni a strettissime tolleranze con superfici di alta qualità.
Un sistema con alimentazione interna del refrigerante in tutti i suoi elementi. Un sistema fornibile in 11 grandezze con massima intercambiabilità degli elementi.

L'attacco MHD'

è il punto di forza del MODULHARD'ANDREA perché consente di fresare ed alesare con massima rigidità e concentricità grazie all'accoppiamento (brevettato) cilindrico-conico e al perno radiale espandibile per il bloccaggio assiale e il trascinamento.

Sizes and driving torque	Abmessung und Anziehdrehmoment	Dimensiones y par de ajuste	Dimensions et couple de serrage	Dimensioni e coppia di serraggio



MHD'	Ø d_1	Ø m_1	S ⬡	Nm
MHD' 16	16	10	2,5	2 - 2,5
MHD' 20	20	13	3	4 - 4,5
MHD' 25	25	16	3	6,5 - 7,5
MHD' 32	32	20	4	7 - 8
MHD' 40	40	25	5	16 - 18
MHD' 50	50	32	6	30 - 35
MHD' 63	63	42	8	80 - 90
MHD' 80	80			
MHD' 110	110	76	14	250 - 270
MHD' 140	140			

GENERAL INFORMATIONS

• Assembly
- Secure the arbor to a rigid support.
- Fit the required component (adaptor, extension, boring head etc.) to the arbor ensuring that the radial expanding pin does not project from the cylindrical part.
- Clamp the component by turning the radial pin clockwise with the exagonal wrench provided or with a torque wrench.

• Disassembly
- Secure the arbor to a rigid support.
- Unlock the radial pin by turning it counterclockwise.

• Maintenance
- The conical and cylindrical surfaces of each component should be cleaned and lubricated at periodic intervals.
- The expanding radial pin should be treated regularly with an anti-souff lubricant.
- The slide guideway of the micrometric boring bars should be cleaned and lubricated at periodic intervals.

ALLGEMEINES

• Montage
- Die Grundaufnahme in einer Halterung befestigen.
- Gewünschtes Komponente (Reduzierung,Verlängerun, Ausdrehkopf usw.) einsetzen. Darauf achten, dass der radiale Spreizbolzen nicht aus dem zylindrischen Teil heraus ragt.
- Element durch Rechtsdrehen des Spreizbolzens mit dem mitgelieferten Sechskantschlüssel oder einem Drehmomentschlüssel festklemmen.

• Demontage
- Grundaufnahme in einer Halterung befestigen.
- Spreizbolzen durch Linksdrehen lösen.

• Wartung
- Zylindrische und konische Flächen der Komponenten von Zeit zu Zeit reinigen und schmieren.
- Den radialen Spreizbolzen mit einem Schmiermittel periodisch abschmieren.
- Schlittenführung der mikrometrischen Bohrstangen von Zeit zu Zeit reinigen und schmieren.

INFORMACIONES GENERALES

• Montaje
- Asegurar el acoplamiento base en un soporte.
- Montar el elemento deseado (reducción, prolongación, cabezal para mandrinar etc.) asegurándose que el perno radial no sobresalga del núcleo cilíndrico.
- Fijar girando en sentido horario el perno radial con la llave exagonal en dotación o con una llave torsiométrica.

• Desmontaje
- Asegurar el acoplamiento base en un soporte.
- Desbloquear, girando a fondo en sentido antihorario, el perno radial.

• Manutenciòn
- Mantener limpias y lubrificadas las partes cilíndrico-cònicas de los elementos.
- Mantener lubrificado con un producto antigripante el perno radial expansible.
- Mantener limpia y lubrificada la zona de deslizamiento de la guía de los cabezales micrométricos.

GENERALITES

• Montage
- Fixer le mandrin dans un support.
- Monter l'élément désiré (réduction, rallonge, tête à aléser etc...) et s'assurer que la tige radiale expandible ne saillit pas de la partie cylindrique.
- Bloquer l'élément en tournant la tige radiale dans le sens des aiguilles d'une montre au moyen de la clé hexagonale fournie ou d'une clé dynamométrique.

• Démontage
- Fixer le mandrin dans un support.
- Débloquer l'élément en tournant la tige radiale en sens inverse des aiguilles d'une montre.

• Entretien
- Nettoyer et lubrifier périodiquementles surfaces coniques et cylindriques des composants.
- Traiter périodiquement la tige radiale expandible avec un produit anti-grippage.
- Nettoyer et lubrifier périodiquement le guide du coulisseau des barres d'alésage micrométriques.

INFORMAZIONI GENERALI

• Montaggio
- Assicurare l'attacco base in un supporto.
- Montare l'elemento desiderato (riduzione, prolunga, testina per alesare ecc.) assicurandosi che il perno radiale non sporga dal mozzo cilindrico.
- Bloccare ruotando in senso orario il perno radiale con la chiave esagonale in dotazione o con una chiave torsiometrica.

• Smontaggio
- Assicurare l'attacco base in un supporto.
- Sbloccare, ruotando a fondo in senso antiorario, il perno radiale.

• Manutenzione
- Mantenere pulite e lubrificate le parti cilindrico-coniche degli elementi.
- Mantenere lubrificato con un prodotto antigrippante il perno radiale espandibile.
- Mantenere pulita e lubrificata la guida di scorrimento della slitta dei bareni micrometrici.

MODULHARD'ANDREA

Arbors Extensions Reductions

ARBORS
Arbors are manufactured in accordance with DIN 69871 A-B, MAS 403 BT, DIN 2080, ANSI-CAT, DIN 69893-A and are made of carburized steel, hardened and ground to AT3 tolerance. Arbor sizes MHD' 80, 110 and 140 are recommended for heavy milling and for bores deeper than 250 mm and exceeding 125 mm diameter.
Special arbors are available on request.

EXTENSIONS
Extensions of various lengths are available for each MHD' size, allowing greater flexibility in machining depth.

REDUCTIONS
MHD' components of a smaller size can be used by means of adaptor sleeves which allow greater interchangeability and ensure tool rigidity.

Grundaufnahmen Verlängerungen Reduzierungen

GRUNDAUFNAHMEN
Die Grundaufnahmen entsprechen den Normen DIN 69871 A-B, MAS 403 BT, DIN 2080, ANSI-CAT, DIN 69893-A. Sie werden aus Einsatzstahl gefertigt, gehärtet und auf Toleranz AT3 geschliffen.
Für schwere Fräsarbeiten und Bohrungen mit Tiefen über 250 mm und Durchmessern über 125 mm ist der Einsatz von Grundaufnahmen Größe MHD' 80, 110 und 140 zweckmäßig.
Grundaufnahmen in Sonderausführung sind auf Anfrage lieferbar.

VERLÄNGERUNGEN
Für jede MHD' Größe sind Verlängerungen verschiedener Länge vorhanden, die eine größere Anpassungsfähigkeit an die Bearbeitungstiefe ermöglichen.

REDUZIERUNGEN
Die Reduzierungen ermöglichen die Verwendung der Komponenten kleinerer MHD' Größen. Damit ist eine umfassende Austauschbarkeit und größere Steifigkeit gegeben.

Acoplamientos base Prolongaciones Reducciones

ACOPLAMIENTOS BASE
Los acoplamientos son realizados según las normas DIN 69871 A-B, MAS 403 BT, DIN 2080, ANSI-CAT, DIN 69893-A y son construidos en acero cementado, templado y rectificado según tabla AT3.
El empleo de acoplamientos con tamaños MHD' 80, 110 y 140 son aconsejables para peraciones de fresado gravoso y para los mandrinados profundos, por encima de los 250 mm con diámetros superiores a 125 mm.
A petición, se pueden construir acoplamientos especiales.

PROLONGACIONES
Para cada tamaño de MHD' existen prolongaciones de diferentes longitudes que permiten optimizar las profun didades de mecanización deseadas.

REDUCCIONES
Las reducciones permiten utilizar componentes de un tamaño MHD' más pequeño y, por lo tanto, tener mayor intercambiabilidad y estabilidad de la herramienta.

Mandrins Rallonges Réductions

MANDRINS
Les mandrins, conformes aux normes DIN 69871 A-B, MAS 403 BT, DIN 2080, AINSI-CAT, DIN 69893-A, sont fabriqués en acier de cémentation trempé et rectifié à la tolérance AT3.
Les tailles MHD' 80, 110 et 140 sont conseillée pour des travaux de fraisage lourds et d'alésage de profondeur supérieure à 250 mm et de diamètre supérieur à 125 mm.
Des mandrins spéciaux sont livrables sur demande.

RALLONGES
Pour chaque taille MHD' des ralloges de différentes longueurs sont prévues. Elles permettent une plus grande souplesse d'adaptation à la profondeur d'usinage.

RÉDUCTIONS
Les réductions sont utilisées pour l'emploi des éléments d'une taille MHD' plus petite et améliorent ainsi l'interchangeabilité et la rigidité de l'outil.

Attacchi base Prolunghe Riduzioni

ATTACCHI BASE
Gli attacchi sono realizzati secondo le norme DIN 69871 A-B, MAS 403 BT, DIN 2080, ANSI-CAT, DIN 69893-A e sono costruiti in acciaio cementato, temperato e rettificato secondo la tabella AT3.
L'impiego di attacchi con grandezze MHD' 80, 110 e 140 sono consigliati per operazioni di fresatura pesante e per alesature profonde oltre i 250 mm con diametri superiori a 125 mm.
A richiesta si possono costruire attacchi speciali.

PROLUNGHE
Per ogni grandezza di MHD' esistono prolunghe di differenti lunghezze che consentono di ottimizzare le profondità di lavorazione desiderate.

RIDUZIONI
Le riduzioni permettono di utilizzare componenti di una grandezza MHD' più piccola e quindi avere maggiore intercambiabilità e stabilità dell'utensile.

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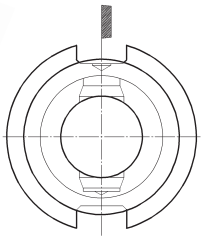
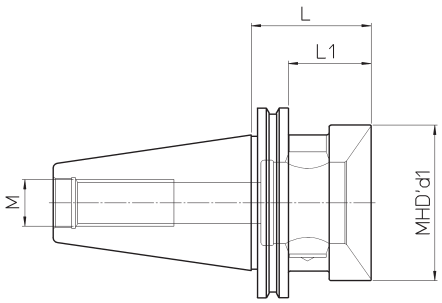
CAT INCH





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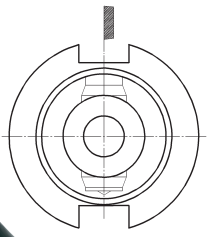
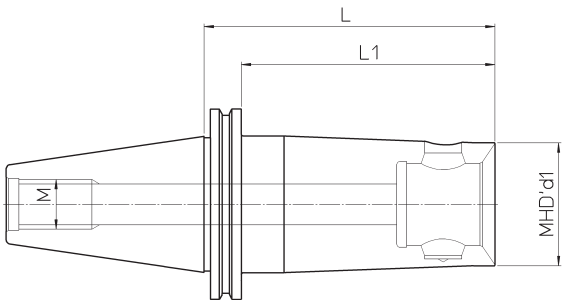
40	CAT40UNC MHD'50.66	41 6 50 01 040 45	50	2.59	1.85	UNC 5/8 - 11	2.43
	CAT40UNC MHD'63.100	41 6 63 01 040 45	63	3.94	–		4.19
45	CAT45UNC MHD'50.48	41 6 50 01 045 45	50	1.89	1.14	UNC 3/4 - 10	3.75
	CAT45UNC MHD'63.75	41 6 63 01 045 45	63	2.95	2.20		4.63
	CAT45UNC MHD'80.80	41 6 80 01 045 45	80	3.15	–		5.95
50	CAT50UNC MHD'50.48	41 6 50 01 050 45	50	1.89	1.14	UNC 1 - 8	5.29
	CAT50UNC MHD'63.56	41 6 63 01 050 45	63	2.20	1.45		6.39
	CAT50UNC MHD'80.62	41 6 80 01 050 45	80	2.44	1.69		7.05
	CAT50UNC MHD'110.150	41 6 91 01 050 45	110	5.90	–		16.76
	CAT50UNC MHD'140.160	41 6 94 01 050 45	140	6.29			22.05





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50	CAT50UNC MHD'50.120	41 6 50 01 050 49				UNC 1 - 8	7.72
	CAT50UNC MHD'63.150	41 6 63 01 050 49	63	5.90	5.16		11.02
	CAT50UNC MHD'80.180	41 6 80 01 050 49	80	7.09	6.34		15.21

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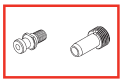
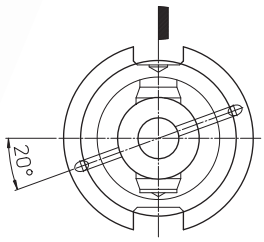
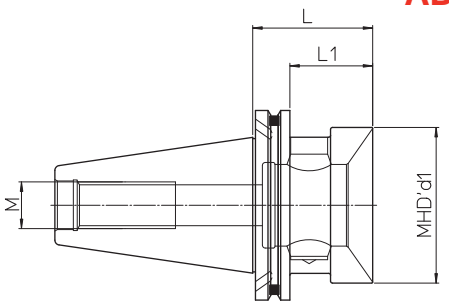


FC AD+B





ISO	REF.	CODE	MHD' d_1	L	L_1	M	lb
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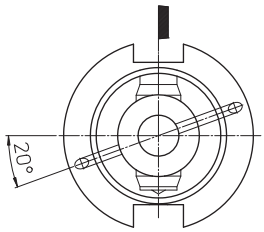
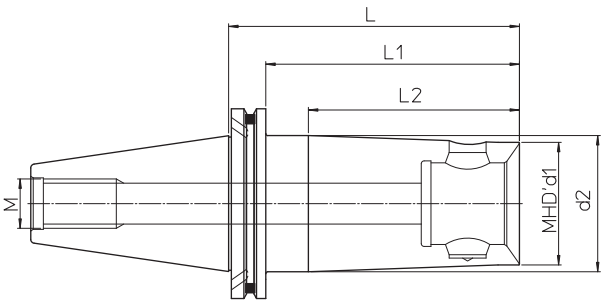
	CAT40UNC FC AD+B MHD'63.100	41 6 63 01 040 46F	63	3.94	–		4.19
50	CAT50UNC FC AD+B MHD'50.48	41 6 50 01 050 46F	50	1.89	1.14	UNC 1 - 8	3.75
	CAT50UNC FC AD+B MHD'63.56	41 6 63 01 050 46F	63	2.20	1.46		2.60
	CAT50UNC FC AD+B MHD'80.62	41 6 80 01 050 46F	80	2.44	1.69		4.41

FC AD+B





ISO	REF.	CODE	MHD' d_1	d_2	L	L_1	L_2	M	lb
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50	CAT50UNC FC AD+B MHD'50.120	41 6 50 01 050 47F		2.76				UNC 1 - 8	6.30
	CAT50UNC FC AD+B MHD'50.200	41 6 50 01 050 48F			7.87	7.12	6.42		7.05
	CAT50UNC FC AD+B MHD'63.150	41 6 63 01 050 47F	63		5.90	5.16	4.45		7.50
	CAT50UNC FC AD+B MHD'63.250	41 6 63 01 050 48F			9.84	9.09	8.38		11.05
	CAT50UNC FC AD+B MHD'80.180	41 6 80 01 050 47F	80	3.15	7.09	6.34	5.63		13.23
	CAT50UNC FC AD+B MHD'80.300	41 6 80 01 050 48F			11.81	11.06	10.35		17.64
	CAT50UNC FC AD+B MHD'110.150	41 6 91 01 050 46F	110	4.33	5.90	5.16	4.45		19.84
	CAT50UNC FC AD+B MHD'110.250	41 6 91 01 050 47F			9.84	9.09	8.38		22.05

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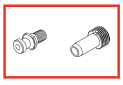
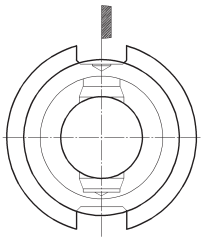
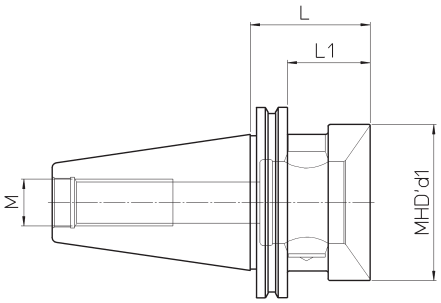


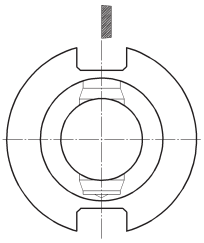
ANSI/CAT
METRIC

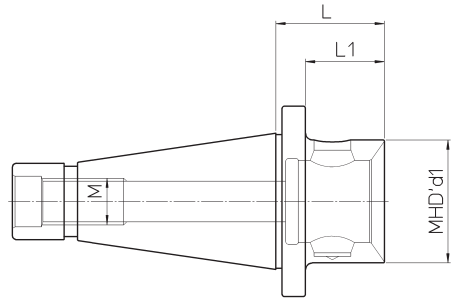




ANSI/CAT	REF.	CODE	MHD' d_1	L	L_1	M	lb
40	ANSI/CAT40 MHD'50.66	41 6 50 01 040 40	50	2.59	1.85	M16	2.43
	ANSI/CAT40 MHD'63.100	41 6 63 01 040 40	63	3.94	–		4.19
45	ANSI/CAT45 MHD'50.48	41 6 50 01 045 40	50	1.89	1.14	M20	3.75
	ANSI/CAT45 MHD'63.75	41 6 63 01 045 40	63	2.95	2.20		4.63
	ANSI/CAT45 MHD'80.80	41 6 80 01 045 40	80	3.15	–		5.95
50	ANSI/CAT50 MHD'50.48	41 6 50 01 050 40	50	1.89	1.14	M24	5.29
	ANSI/CAT50 MHD'63.56	41 6 63 01 050 40	63	2.20	1.45		6.39
	ANSI/CAT50 MHD'80.62	41 6 80 01 050 40	80	2.44	2.69		7.05

NMTB





ISO	REF.	CODE	MHD' d_1	L	L_1	M	lb
40	NMTB40 MHD'50.48	41 6 50 01 040 05	50	1.88	1.43	UNC 5/8 - 11	1.98
	NMTB40 MHD'63.60	41 6 63 01 040 05	63	2.36	–		2.65
50	NMTB50 MHD'50.48	41 6 50 01 050 05	50	1.88	1.30	UNC 1 - 8	5.73
	NMTB50 MHD'63.56	41 6 63 01 050 05	63	2.20	1.61		5.95
	NMTB50 MHD'80.60	41 6 80 01 050 05	80	2.36	1.77		7.05

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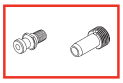

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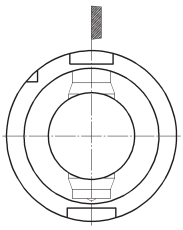
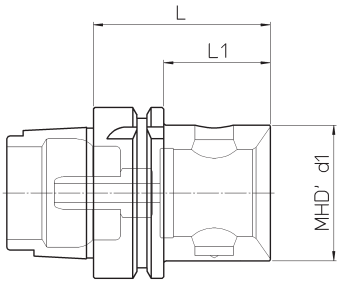
HSK-A

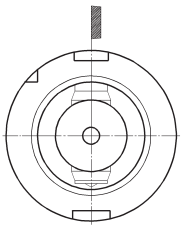


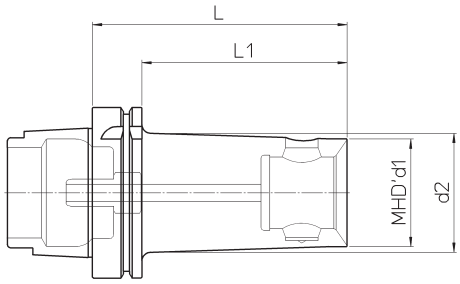


Supplied with coolant tube | Lieferung inklusive Kühlmittelrohr | Completo con racor para el refrigerante | Pourvu de raccord pour liquide d'arrosage | Completo di raccordo per il refrigerante

HSK-A	REF.	CODE	MHD' d_1	L	L_1	lb
40	HSK-A40 MHD'32.48	41 6 32 15 040 20	32	1.89	1.10	0.88
50	HSK-A50 MHD'50.66	41 6 50 15 050 20	50	2.60	–	1.32
63	HSK-A63 MHD'40.60	41 6 40 15 063 20	40	2.36	1.34	1.54
	HSK-A63 MHD'50.66	41 6 50 15 063 20	50	2.60	1.57	1.98
	HSK-A63 MHD'63.75	41 6 63 15 063 20	63	2.95	–	2.43
80	HSK-A80 MHD'50.70	41 6 50 15 080 20	50	2.76	1.73	3.31
	HSK-A80 MHD'63.80	41 6 63 15 080 20	63	3.15	2.13	3.97
	HSK-A80 MHD'80.86	41 6 80 15 080 20	80	3.39	–	4.63
100	HSK-A100 MHD'50.72	41 6 50 15 100 20	50	2.83	1.69	5.29
	HSK-A100 MHD'63.82	41 6 63 15 100 20	63	3.23	2.09	5.95
	HSK-A100 MHD'80.88	41 6 80 15 100 20	80	3.46	2.32	6.61

HSK-A





Supplied with coolant tube | Lieferung inklusive Kühlmittelrohr | Completo con racor para el refrigerante | Pourvu de raccord pour liquide d'arrosage | Completo di raccordo per il refrigerante

HSK-A	REF.	CODE	MHD' d_1	d_2	L	L_1	lb
63	HSK-A63 MHD'40.120	41 6 40 15 063 28	40	1.81	4.72	3.70	3.09
	HSK-A63 MHD'50.120	41 6 50 15 063 28	50	–			3.75
100	HSK-A100 MHD'50.120	41 6 50 15 100 28		2.36		3.58	7.05
	HSK-A100 MHD'63.150	41 6 63 15 100 28	63	2.76	5.91	4.76	9.92
	HSK-A100 MHD'80.180	41 6 80 15 100 28	80	–	7.09	5.94	14.33

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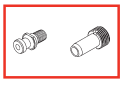
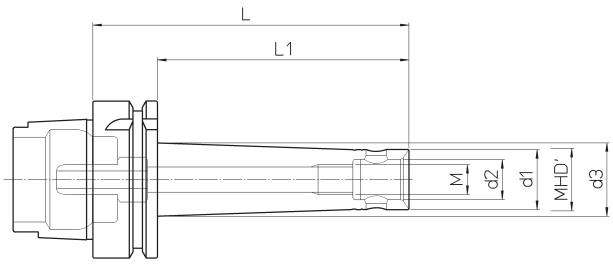


DIN 69893 HSK

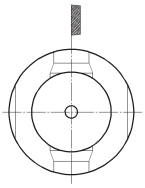
F-MHD' AD+B

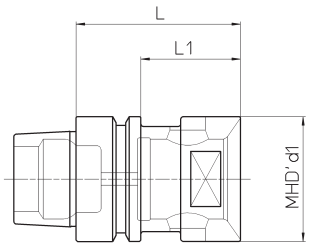


Supplied with coolant tube | Lieferung inklusive Kühlmittelrohr | Completo con racor para el refrigerante | Pourvu de raccord pour liquide d'arrosage | Completo di raccordo per il refrigerante

HSK-A	REF.	CODE	MHD'	d_1	d_2	d_3	M	L	L_1	lb
63	HSK-A63 F-MHD'16.63	41 6 16 06 563 20	16	.61	.39	.69	M 8	2.48	1.46	1.54
	HSK-A63 F-MHD'16.100	41 6 16 10 563 20				.79		3.94	2.91	1.76
	HSK-A63 F-MHD'20.63	41 6 20 06 563 20	20	.77	.51	–	M 10	2.48	1.46	1.32
	HSK-A63 F-MHD'20.90	41 6 20 09 563 20				.89		3.54	2.52	1.76
	HSK-A63 F-MHD'20.125	41 6 20 12 563 20				.98		4.92	3.90	1.98
	HSK-A63 F-MHD'25.63	41 6 25 06 563 20	25	.94	.63	–	M 12	2.48	1.46	1.54
	HSK-A63 F-MHD'25.90	41 6 25 09 563 20				1.06		3.54	2.52	0.9
	HSK-A63 F-MHD'25.125	41 6 25 12 563 20				1.16		4.92	3.90	1.98
	HSK-A63 F-MHD'32.90	41 6 32 09 563 20	32	1.22	.79	1.32	M 16	3.54	2.52	2.2
	HSK-A63 F-MHD'32.125	41 6 32 12 563 20				1.41		4.92	3.90	2.65

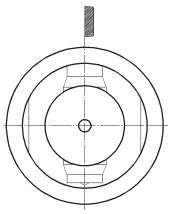
HSK-E

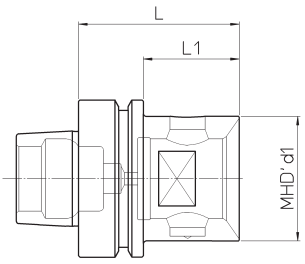




HSK-E	REF.	CODE	MHD' d_1	L	L_1	lb
40	HSK-E40 MHD'32.42	41 6 32 15 040 25	32	1.65	22	1.1
50	HSK-E50 MHD'50.66	41 6 50 15 050 25	50	2.60	–	1.32
63	HSK-E63 MHD'50.66	41 6 50 15 063 25			1.57	1.98

HSK-F





HSK-F	REF.	CODE	MHD' d_1	L	L_1	lb
63	HSK-F63 MHD'50.65	41 6 50 15 063 26	50	2.56	1.54	1.76

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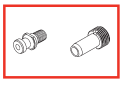

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ISO 26623-1

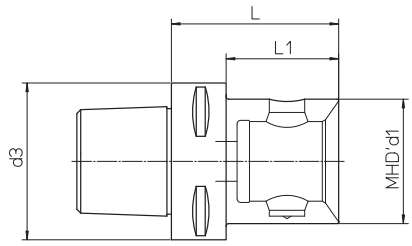


fig.1

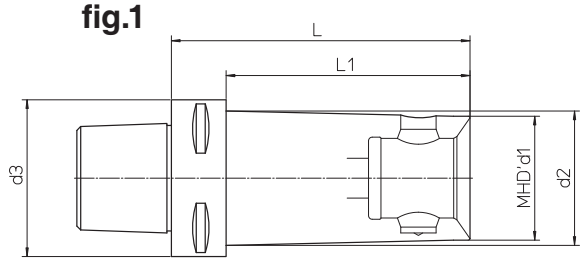
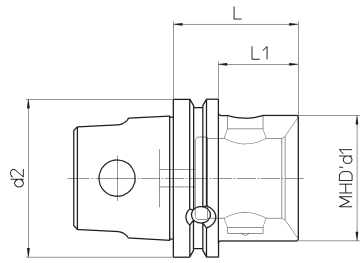


fig.2

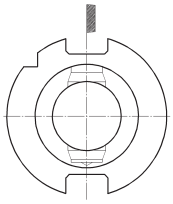
PSC	REF.	CODE	MHD' d_1	d_2	d_3	L	L_1	lb	fig.
40	PSC 40 - MHD' 32.42	41 6 32 26 040 04	32	–	1.57	1.65	.87	0.66	**1**
50	PSC 50 - MHD' 50.55	41 6 50 26 050 05	50		1.97	2.16	–	1.76	
63	PSC 63 - MHD' 40.50	41 6 40 26 063 05	40		2.48	1.97	1.10	1.98	
	PSC 63 - MHD' 40.120	41 6 40 26 063 12		1.73		4.72	3.86	3.31	**2**
	PSC 63 - MHD' 50.67	41 6 50 26 063 06	50	–		2.37	1.77	2.43	**1**
	PSC 63 - MHD' 50.120	41 6 50 26 063 12		2.13		4.72	3.85	1.9	**2**
	PSC 63 - MHD' 63.77	41 6 63 26 063 07	63	–		3.03	–	4.19	**1**
80	PSC 80 - MHD' 50.60	41 6 50 26 080 06	50		3.15	2.36	1.18	4.41	
	PSC 80 - MHD' 50.120	41 6 50 26 080 12		2.13		4.72	3.54	6.17	**2**
	PSC 80 - MHD' 63.70	41 6 63 26 080 07	63	–		2.75	1.57	5.07	**1**
	PSC 80 - MHD' 63.150	41 6 63 26 080 15		67		5.90	4.72	8.82	**2**
	PSC 80 - MHD' 80.75	41 6 80 26 080 07	80	–		2.95	–	5.73	**1**
	PSC 80 - MHD' 80.120	41 6 80 26 080 12				4.72		9.48	
100	PSC 100 - MHD' 80.80	41 6 80 26 100 08			3.94	3.15	1.90	7.72	
	PSC 100 - MHD' 110.120	41 6 91 26 100 12	110			4.72	3.46	11.02	

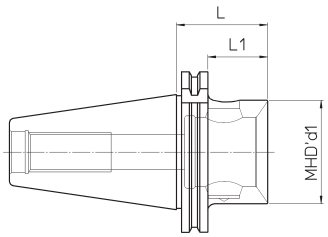
KM



KM	REF.	CODE	MHD' d_1	d_2	L	L_1	lb
63	RD KM - MHD' 50.50	65 70 950 0506 3	50	2.48	1.97	1.26	1.76
	RD KM - MHD' 63.70	65 70 963 0506 3	63		2.76	–	2.65

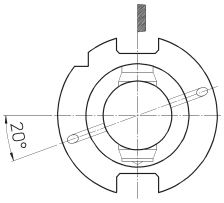
AD

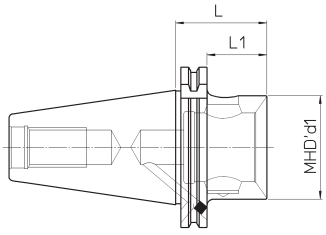




DIN	REF.	CODE	MHD' d_1	L	L_1	lb
30	DIN69871-A30 MHD'32.30	41 6 32 01 030 20	32	1.18	.43	0.88
	DIN69871-A30 MHD'40.45.5	41 6 40 01 030 20	40	1.79	1.04	1.1
	DIN69871-A30 MHD'50.60	41 6 50 01 030 20	50	2.36	–	1.32
40	DIN69871-A40 MHD'40.45	41 6 40 01 040 20	40	1.77	1.02	1.1
	DIN69871-A40 MHD'50.48	41 6 50 01 040 20	50	1.89	1.14	1.98
	DIN69871-A40 MHD'50.56	41 6 50 01 040 70		2.20	1.46	2.43
	DIN69871-A40 MHD'63.80	41 6 63 01 040 20	63	3.15	–	3.31
45	DIN69871-A45 MHD'50.48	41 6 50 01 045 20	50	1.89	1.14	3.75
	DIN69871-A45 MHD'63.60	41 6 63 01 045 20	63	2.36	1.61	4.19
	DIN69871-A45 MHD'80.66	41 6 80 01 045 20	80	2.60	–	4.85
50	DIN69871-A50 MHD'50.48	41 6 50 01 050 20	50	1.89	1.14	5.51
	DIN69871-A50 MHD'63.48	41 6 63 01 050 29	63			5.73
	DIN69871-A50 MHD'63.56	41 6 63 01 050 20		2.20	1.46	6.17
	DIN69871-A50 MHD'80.48	41 6 80 01 050 29	80	1.89	1.14	6.61
	DIN69871-A50 MHD'80.62	41 6 80 01 050 20		2.44	1.69	7.5
	DIN69871-A50 MHD'110.150	41 6 91 01 050 20	110	5.91	–	16.76
	DIN69871-A50 MHD'140.160	41 6 94 01 050 20	140	6.30	–	22.05
60	DIN69871-A60 MHD'50.50	41 6 50 01 060 20	50	1.97	1.22	18.3
	DIN69871-A60 MHD'63.60	41 6 63 01 060 20	63	2.36	1.61	20.5
	DIN69871-A60 MHD'80.65	41 6 80 01 060 20	80	2.56	1.81	22.11
	DIN69871-A60 MHD'110.100	41 6 91 01 060 20	110	3.94	3.19	23.15
	DIN69871-A60 MHD'110.200	41 6 91 01 060 28		7.87	7.13	39.68
	DIN69871-A60 MHD'140.100	41 6 94 01 060 20	140	3.94	3.19	28.22
	DIN69871-A60 MHD'140.250	41 6 94 01 060 28		9.84	9.09	66.14

B





DIN	REF.	CODE	MHD' d_1	L	L_1	lb
40	DIN69871-B40 MHD'50.48	41 6 50 01 040 21	50	1.89	1.14	1.98
	DIN69871-B40 MHD'63.80	41 6 63 01 040 21	63	3.15	–	3.31
45	DIN69871-B45 MHD'50.48	41 6 50 01 045 21	50	1.89	1.14	3.75
	DIN69871-B45 MHD'63.60	41 6 63 01 045 21	63	2.36	1.61	4.19
	DIN69871-B45 MHD'80.66	41 6 80 01 045 21	80	2.60	–	4.85
50	DIN69871-B50 MHD'50.48	41 6 50 01 050 21	50	1.89	1.14	5.95
	DIN69871-B50 MHD'63.56	41 6 63 01 050 21	63	2.20	1.46	6.17
	DIN69871-B50 MHD'80.62	41 6 80 01 050 21	80	2.44	1.69	7.5

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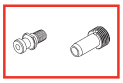

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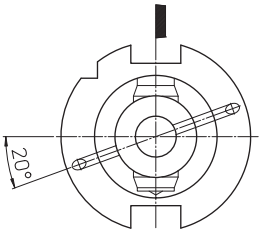
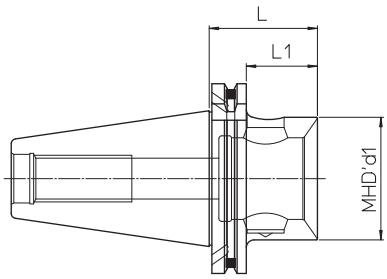
Member IMC Group Ingersoll Cutting Tools

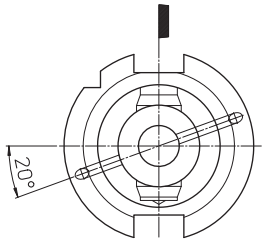
FC AD+B

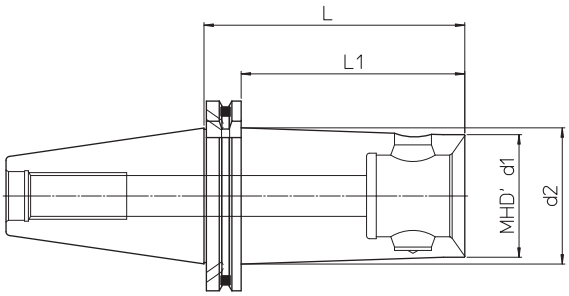




DIN	REF.	CODE	MHD' d_1	L	L_1	lb
40	DIN69871-AD+B40 FC MHD'50.48	41 6 50 01 040 21F	50	1.89	1.14	1.98
	DIN69871-AD+B40 FC MHD'63.80	41 6 63 01 040 21F	63	3.15	–	3.31
50	DIN69871-AD+B50 FC MHD'50.48	41 6 50 01 050 21F	50	1.89	1.14	5.51
	DIN69871-AD+B50 FC MHD'63.56	41 6 63 01 050 21F	63	2.20	1.46	6.17
	DIN69871-AD+B50 FC MHD'80.62	41 6 80 01 050 21F	80	2.44	1.69	7.5

FC AD+B





DIN	REF.	CODE	MHD' d_1	d_2	L	L_1	lb
40	DIN69871-AD+B40 FC MHD'50.120	41 6 50 01 040 28F	50	–	4.72	3.98	3.75
50	DIN69871-AD+B50 FC MHD'50.120	41 6 50 01 050 28F		2.36			7.72
	DIN69871-AD+B50 FC MHD'50.200	41 6 50 01 050 27F		2.68	7.87	7.13	13.23
	DIN69871-AD+B50 FC MHD'63.150	41 6 63 01 050 28F	63	2.97	5.91	5.16	11.02
	DIN69871-AD+B50 FC MHD'63.250	41 6 63 01 050 27F		3.15	9.84	9.09	15.43
	DIN69871-AD+B50 FC MHD'80.180	41 6 80 01 050 28F	80	–	7.09	6.34	15.21
	DIN69871-AD+B50 FC MHD'80.300	41 6 80 01 050 27F			11.81	11.06	19.84
	DIN69871-AD+B50 FC MHD'110.150	41 6 91 01 050 21F	110		5.91	–	16.76
	DIN69871-AD+B50 FC MHD'110.250	41 6 91 01 050 28F			9.84		20.94

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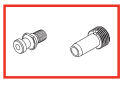
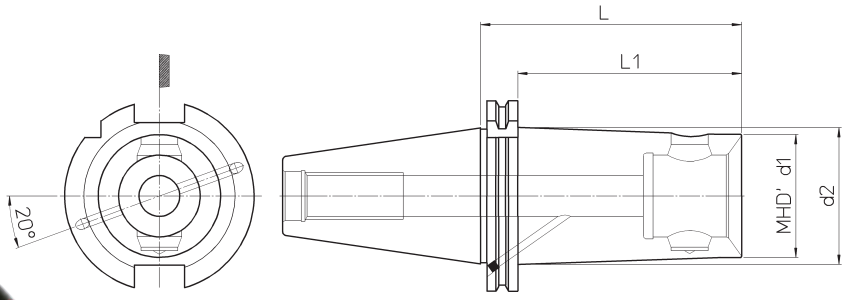


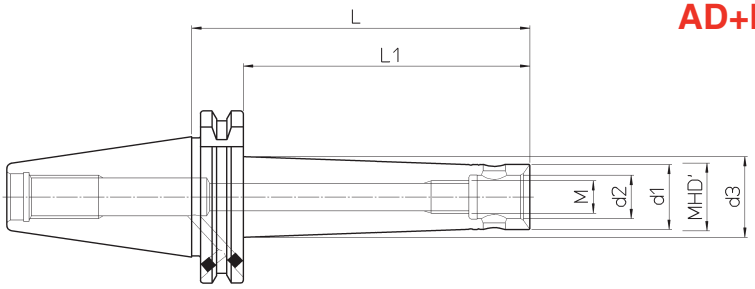
DIN 69871

AD+B



DIN	REF.	CODE	MHD' d_1	d_2	L	L_1	lb
40	DIN69871-AD+B40 MHD'40.120	41 6 40 01 040 28	40	1.75	4.72	3.98	3.09
	DIN69871-AD+B40 MHD'50.120	41 6 50 01 040 28	50	–			3.75
50	DIN69871-AD+B50 MHD'50.120	41 6 50 01 050 28		2.36			7.72
	DIN69871-AD+B50 MHD'63.150	41 6 63 01 050 28	63	2.76	5.91	5.16	11.02
	DIN69871-AD+B50 MHD'80.180	41 6 80 01 050 28	80	–	7.09	6.34	15.21

F-MHD' AD+B



DIN	REF.	CODE	MHD'	d_1	d_2	d_3	M	L	L_1	lb
40	DIN69871-AD+B40 F-MHD'16.40	41 6 16 04 140 21	16	.61	.39	–	M 8	1.57	.83	1.54
	DIN69871-AD+B40 F-MHD'16.63	41 6 16 06 140 21				.69		2.48	1.73	1.76
	DIN69871-AD+B40 F-MHD'16.100	41 6 16 10 140 21				.79		3.94	3.19	1.98
	DIN69871-AD+B40 F-MHD'20.50	41 6 20 05 140 21	20	.77	.51	–	M 10	1.97	1.22	1.76
	DIN69871-AD+B40 F-MHD'20.80	41 6 20 08 140 21				.89		3.15	2.40	1.98
	DIN69871-AD+B40 F-MHD'20.125	41 6 20 12 140 21				1.00		4.92	4.17	2.2
	DIN69871-AD+B40 F-MHD'25.50	41 6 25 05 140 21	25	.94	.63	–	M 12	1.97	1.22	1.98
	DIN69871-AD+B40 F-MHD'25.80	41 6 25 08 140 21				1.06		3.15	2.40	2.2
	DIN69871-AD+B40 F-MHD'25.125	41 6 25 12 140 21				1.18		4.92	4.17	2.43
	DIN69871-AD+B40 F-MHD'32.50	41 6 32 05 140 21	32	1.22	.79	–	M 16	1.97	1.22	2.2
	DIN69871-AD+B40 F-MHD'32.80	41 6 32 08 140 21				1.32		3.15	2.40	2.43
	DIN69871-AD+B40 F-MHD'32.125	41 6 32 12 140 21				1.44		4.92	4.17	2.65

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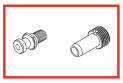

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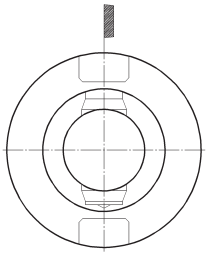
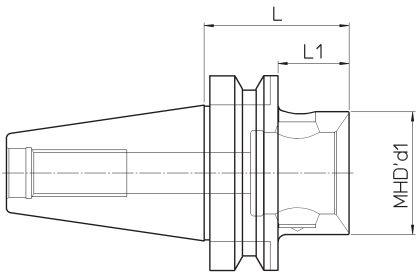
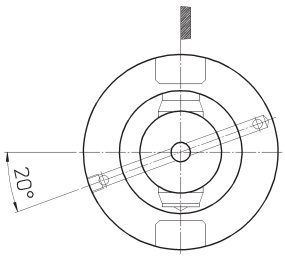
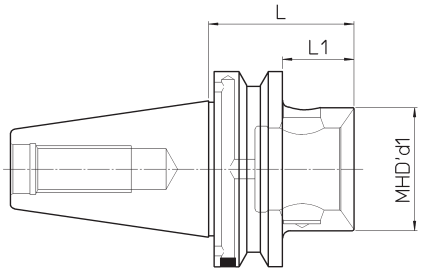




BT	REF.	CODE	MHD' d_1	L	L_1	lb
30	MAS403 BT30 MHD'32.32	41 6 32 01 030 30	32	1.26	.42	1.1
	MAS403 BT30 MHD'40.35.5	41 6 40 01 030 30	40	1.40	.55	1.32
	MAS403 BT30 MHD'50.60	41 6 50 01 030 30	50	2.36	–	1.54
35	MAS403 BT35 MHD'50.60	41 6 50 01 035 30			1.42	1.76
40	MAS403 BT40 MHD'40.45	41 6 40 01 040 30	40	1.77	.71	1.32
	MAS403 BT40 MHD'50.38.5	41 6 50 01 040 39	50	1.52	.45	1.76
	MAS403 BT40 MHD'50.48	41 6 50 01 040 30		1.89	.83	1.98
	MAS403 BT40 MHD'50.56	41 6 50 01 040 80		2.20	1.14	2.43
	MAS403 BT40 MHD'63.66	41 6 63 01 040 30	63	2.60	–	2.65
45	MAS403 BT45 MHD'50.62	41 6 50 01 045 30	50	2.44	1.14	3.75
	MAS403 BT45 MHD'63.70	41 6 63 01 045 30	63	2.76	1.46	5.07
	MAS403 BT45 MHD'80.70	41 6 80 01 045 30	80			5.95
50	MAS403 BT50 MHD'50.66	41 6 50 01 050 30	50	2.60	1.10	7.28
	MAS403 BT50 MHD'63.50	41 6 63 01 050 39	63	1.97	.47	7.5
	MAS403 BT50 MHD'63.75	41 6 63 01 050 30		2.95	1.46	8.16
	MAS403 BT50 MHD'80.50	41 6 80 01 050 39	80	1.97	.47	8.38
	MAS403 BT50 MHD'80.75	41 6 80 01 050 30		2.95	1.46	8.82
	MAS403 BT50 MHD'110.140	41 6 91 01 050 30	110	5.51	–	14.99
	MAS403 BT50 MHD'140.150	41 6 94 01 050 30	140	5.91		20.28
60	MAS403 BT60 MHD'110.110	41 6 91 01 060 30	110	4.33	2.48	25.35
	MAS403 BT60 MHD'110.200	41 6 91 01 060 38		7.87	5.98	39.9
	MAS403 BT60 MHD'140.100	41 6 94 01 060 30	140	3.94	2.05	28.44
	MAS403 BT60 MHD'140.250	41 6 94 01 060 38		9.84	7.95	66.36





B

BT	REF.	CODE	MHD' d_1	L	L_1	lb
40	MAS403 BT40B MHD'50.48	41 6 50 01 040 31	50	1.89	.83	1.98
	MAS403 BT40B MHD'63.66	41 6 63 01 040 31	63	2.60	–	2.65
50	MAS403 BT50B MHD'50.66	41 6 50 01 050 31	50		1.10	7.72
	MAS403 BT50B MHD'63.75	41 6 63 01 050 31	63	2.95	1.46	8.16
	MAS403 BT50B MHD'80.75	41 6 80 01 050 31	80			8.82

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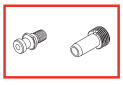
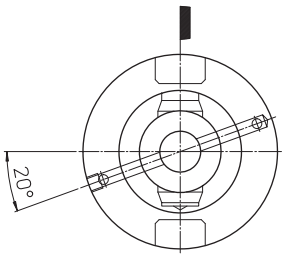
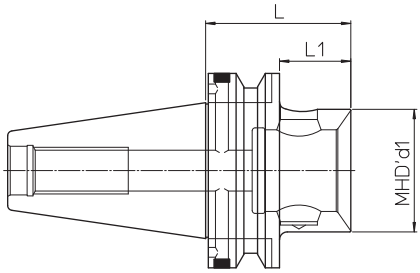


MAS 403 BT FC

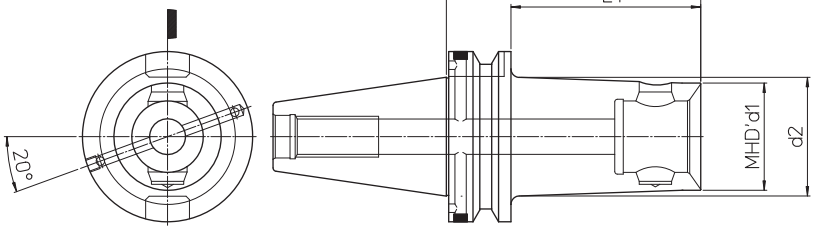
FC AD+B





BT	REF.	CODE	MHD' d_1	L	L_1	lb
40	MAS403 BT40 FC AD+B MHD'50.48	41 6 50 01 040 31F	50	1.89	.83	1.98
	MAS403 BT40 FC AD+B MHD'63.66	41 6 63 01 040 31F	63	2.60	–	2.65
50	MAS403 BT50 FC AD+B MHD'50.66	41 6 50 01 050 31F	50		1.10	7.28
	MAS403 BT50 FC AD+B MHD'63.75	41 6 63 01 050 31F	63	2.95	1.46	8.16
	MAS403 BT50 FC AD+B MHD'80.75	41 6 80 01 050 31F	80			8.82

FC AD+B



BT	REF.	CODE	MHD' d_1	d_2	L	L_1	lb
40	MAS403 BT40 FC AD+B MHD'50.120	41 6 50 01 040 38F	50	–	4.72	3.66	1.9
50	MAS403 BT50 FC AD+B MHD'50.120	41 6 50 01 050 38F		2.26		3.23	4.19
	MAS403 BT50 FC AD+B MHD'50.200	41 6 50 01 050 37F		2.58	7.87	6.38	9.92
	MAS403 BT50 FC AD+B MHD'63.150	41 6 63 01 050 38F	63	2.89	5.91	4.41	12.79
	MAS403 BT50 FC AD+B MHD'63.250	41 6 63 01 050 37F		3.30	9.84	8.34	13.23
	MAS403 BT50 FC AD+B MHD'80.180	41 6 80 01 050 38F	80	–	7.09	5.59	16.53
	MAS403 BT50 FC AD+B MHD'80.300	41 6 80 01 050 37F			11.81	10.31	19.84
	MAS403 BT50 FC AD+B MHD'110.150	41 6 91 01 050 31F	110		5.91	–	17.64
	MAS403 BT50 FC AD+B MHD'110.250	41 6 91 01 050 38F			9.84		20.94

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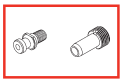
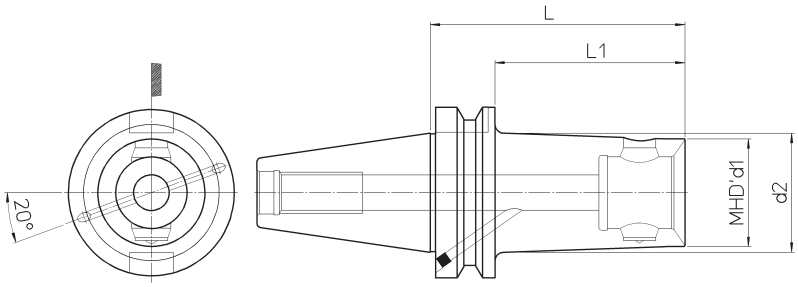
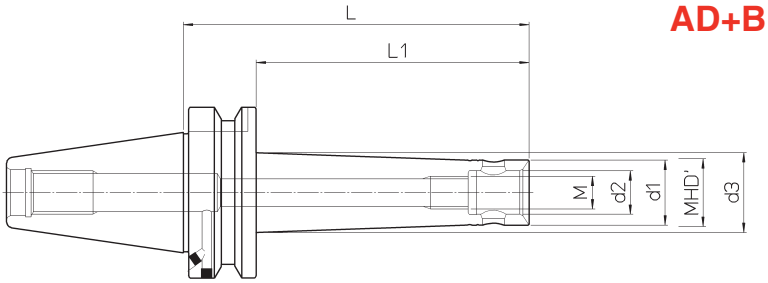


AD+B



BT	REF.	CODE	MHD' d_1	d_2	L	L_1	lb
40	MAS403 BT40-AD+B MHD'40.120	41 6 40 01 040 38	40	1.75	4.72	3.66	1.98
	MAS403 BT40-AD+B MHD'50.120	41 6 50 01 040 38	50	–			1.9
50	MAS403 BT50-AD+B MHD'50.120	41 6 50 01 050 38		2.36		3.23	4.19
	MAS403 BT50-AD+B MHD'63.150	41 6 63 01 050 38	63	2.76	5.91	4.41	12.79
	MAS403 BT50-AD+B MHD'80.180	41 6 80 01 050 38	80	–	7.09	5.59	16.53

F-MHD' AD+B



BT	REF.	CODE	MHD'	d_1	d_2	d_3	M	L	L_1	lb
40	MAS403 BT40-AD+B F-MHD'16.45	41 6 16 04 140 31	16	.61	.39	–	M 8	1.77	.71	1.76
	MAS403 BT40-AD+B F-MHD'16.63	41 6 16 06 140 31				.67		2.48	1.42	1.98
	MAS403 BT40-AD+B F-MHD'16.100	41 6 16 10 140 31				.77		3.94	2.87	2.2
	MAS403 BT40-AD+B F-MHD'20.50	41 6 20 05 140 31	20	.77	.51	–	M 10	1.97	.91	1.98
	MAS403 BT40-AD+B F-MHD'20.80	41 6 20 08 140 31				.87		3.15	2.09	2.2
	MAS403 BT40-AD+B F-MHD'20.125	41 6 20 12 140 31				.98		4.92	3.86	2.43
	MAS403 BT40-AD+B F-MHD'25.50	41 6 25 05 140 31	25	.94	.63	–	M 12	1.97	.91	2.2
	MAS403 BT40-AD+B F-MHD'25.80	41 6 25 08 140 31				1.04		3.15	2.09	2.43
	MAS403 BT40-AD+B F-MHD'25.125	41 6 25 12 140 31				1.16		4.92	3.86	2.65
	MAS403 BT40-AD+B F-MHD'32.50	41 6 32 05 140 31	32	1.22	.79	–	M 16	1.97	.91	2.43
	MAS403 BT40-AD+B F-MHD'32.80	41 6 32 08 140 31				1.30		3.15	2.09	2.65
	MAS403 BT40-AD+B F-MHD'32.125	41 6 32 12 140 31				1.42		4.92	3.86	3.09

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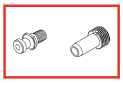
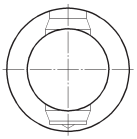
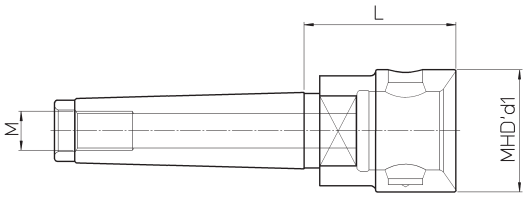


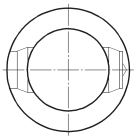
DIN 228/A 2207

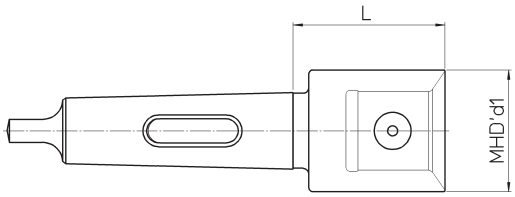




MORSE	REF.	CODE	MHD' d_1	L	M	lb
4	MORSE4-A MHD'50.63	41 6 50 03 004 00	50	2.48	M16	1.98
4 SIP	MORSE4-A SIP MHD'50.63	41 6 50 03 004 01			M14	

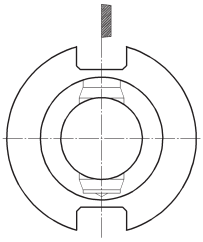
DIN 228/B 1806

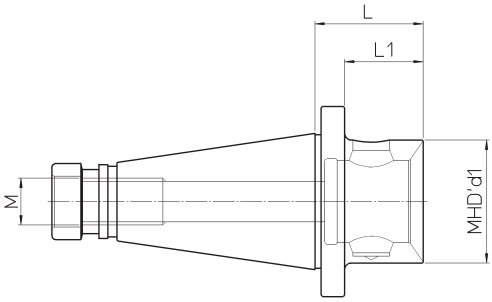




MORSE	REF.	CODE	MHD' d_1	L	lb
4	MORSE4-B MHD'50.56	41 6 50 02 004 00	50	2.20	1.98
5	MORSE5-B MHD'63.65	41 6 63 02 005 00	63	2.56	3.31

DIN 2080-A 'OTT'





ISO	REF.	CODE	MHD' d_1	L	L_1	M	lb
30	DIN2080-A30 MHD'50.58	41 6 50 01 030 00	50	2.28	–	M12	1.32
40	DIN2080-A40 MHD'50.48	41 6 50 01 040 00	50	1.89	1.44	M16	1.98
	DIN2080-A40 MHD'63.60	41 6 63 01 040 00	63	2.36	–		2.65
45	DIN2080-A45 MHD'50.48	41 6 50 01 045 00	50	1.89	1.30	M20	3.53
	DIN2080-A45 MHD'63.60	41 6 63 01 045 00	63	2.36	1.77		4.19
	DIN2080-A45 MHD'80.66	41 6 80 01 045 00	80	2.60	–		4.85
50	DIN2080-A50 MHD'50.48	41 6 50 01 050 00	50	1.89	1.30	M24	5.73
	DIN2080-A50 MHD'63.56	41 6 63 01 050 00	63	2.20	1.61		5.95
	DIN2080-A50 MHD'80.60	41 6 80 01 050 00	80	2.36	1.77		7.05

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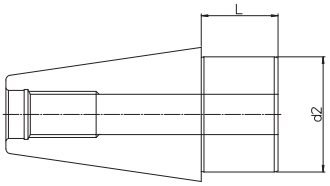
UNI DIN HSK MAS-BT

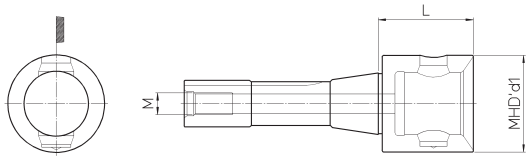
MODULHARD'ANDREA

ISO 50 D.60
ISO 60 D.60



REF.	CODE	d_2	L	lb
ISO 50 D.60	71ISO-50-DC6040	60	1.57	2.2
ISO 60 D.60	71ISO-60-DC6040			4.41

R8
INCH / METRIC

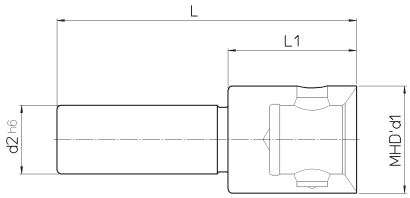


REF.	CODE	MHD' d_1	L	M	lb
R 8 (UNF 7/16-20)	41 6 50 05 008 05	50	1.97	UNF 7/16-20	1.76
R 8 (M12)	41 6 50 05 008 00			M12x1.75	

BR

fig.1

fig.2



INCH

REF.	CODE	MHD' d_1	L	L_1	d_2	lb	fig.
BR 5/8 16.100	65 70 816 6100 1	16	3.94	–	.625	0.33	1
BR 3/4 20.125	65 70 820 6125 1	20	4.92		.75	0.66	
BR 1 32.35	41 6 32 08 025 05	32	3.94	1.38	1	1.54	2
BR 1-1/4 50.60	41 6 50 08 032 05	50	5.51	2.36	1.25	2.2	

METRIC

REF.	CODE	MHD' d_1	L	L_1	d_2	lb	fig.
BR 16/16.100	65 70 816 0100 1	16	100	–	16	0.33	1
BR 20/20.125	65 70 820 0125 1	20	125	–	20	0.66	
BR 25/32.35	41 6 32 08 025 00	32	100	35	25	1.54	2
BR 32/50.60	41 6 50 08 032 00	50	140	60	32	2.2	

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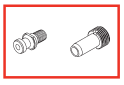

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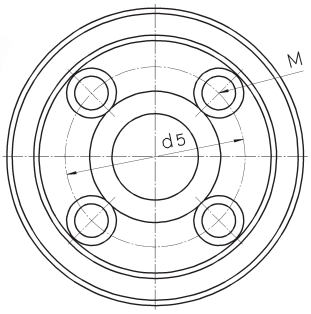
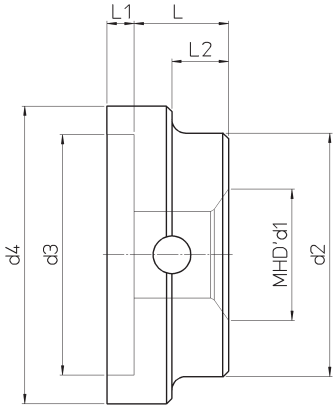
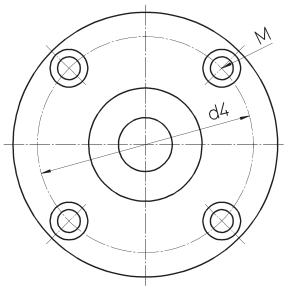
DIN 2079

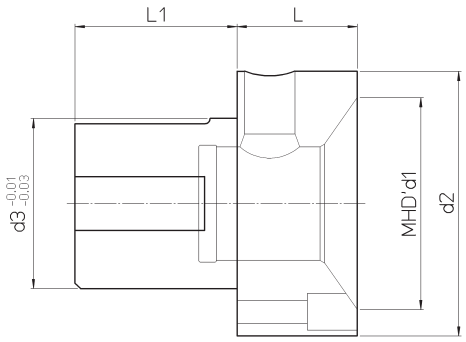




REF.	CODE	MHD' d_1	d_2	d_3	d_4	d_5	L	L_1	L_2	M	lb
DIN 2079-40.50	41 6 50 20 040 00	50	3.54	3.50	4.33	2.62	1.37	.39	.82	M12	3.97
DIN 2079-40.63	41 6 63 20 040 00	63					1.85		1.22		4.41
DIN 2079-50.63	41 6 63 20 050 00		5.31	5.06	5.90	3.99	1.77	.47		M16	11.9
DIN 2079-50.80	41 6 80 20 050 00	80					1.96		1.41		11.68
DIN 2079-50.110	41 6 91 20 050 00	110					4.40		3.85		18.52
DIN 2079-50.140	41 6 94 20 050 00	140	5.51				4.80		4.25		20.94

MR





REF.	CODE	MHD' d1	d_2	d_3	d_4	L	L_1	M	lb
MR 50/80.80	45 02 080 0106 0	63 ~ 80	3.15	1.96	2.55	1.77	1.96	M6	3.31
MR 63/98.80	45 02 098 0106 0		3.85	2.48	3.15		2.36	M8	6.83
MR 80/130.80	45 02 130 0124 0		5.11	3.15	4.11		3.15	M10	13.45

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MODULHARD'ANDREA

Carbide bars | **Hartmetall-Bohrstangen** | **Barras de metal duro** | **Barres carbure** | **Barre in metallo duro**

CARBIDE BARS FOR DEEP-HOLE MACHINING

D'Andrea solves the deep-hole boring machining by means of a wide programme of BMD carbide bars having diameter 16, 20, 25, 32 mm and ending with MHD' arbor.
BMD bars are built in three different working lengths for the machining of holes, whose depth is 6.3, 8 and 10 times the diameter/bar.
On BMD bars can be mounted: TS double-bit roughing heads, TRD-TRC-TRM Testarossa finishing heads, PE chucking tools for ER collets and GRINTA milling heads.

HARTMETALL-BOHRSTANGENFÜR TIEFLOCH-BEARBEITUNGEN

D'Andrea löst das Problem der Tiefloch-Bohrbearbeitungen durch eine große Auswahl an BMD Hartmetall-Bohrstangen mit Durchmessern 16, 20, 25 und 32 mm, die mit einer MHD' Grundaufnahme enden. BMD Bohrstangen werden in drei unterschiedlichen Längen zur Bearbeitung von Bohrungen angeboten, deren Tiefen bis zum 6,3- , 8- oder 10-fachen des Bohrstangendurchmessers gehen können. An BMD Bohrstangen können folgende Aufsätze montiert werden: TS Zweischneiderschruppköpfe, TRD-TRC-TRM Testarossa Schlichtköpfe, PE Spannzangenfutter für ER Spannzangen und Fräsköpfe GRINTA.

BARRAS DE METAL DURO PARA MECANIZACIONES DE AGUJEROS PROFUNDOS

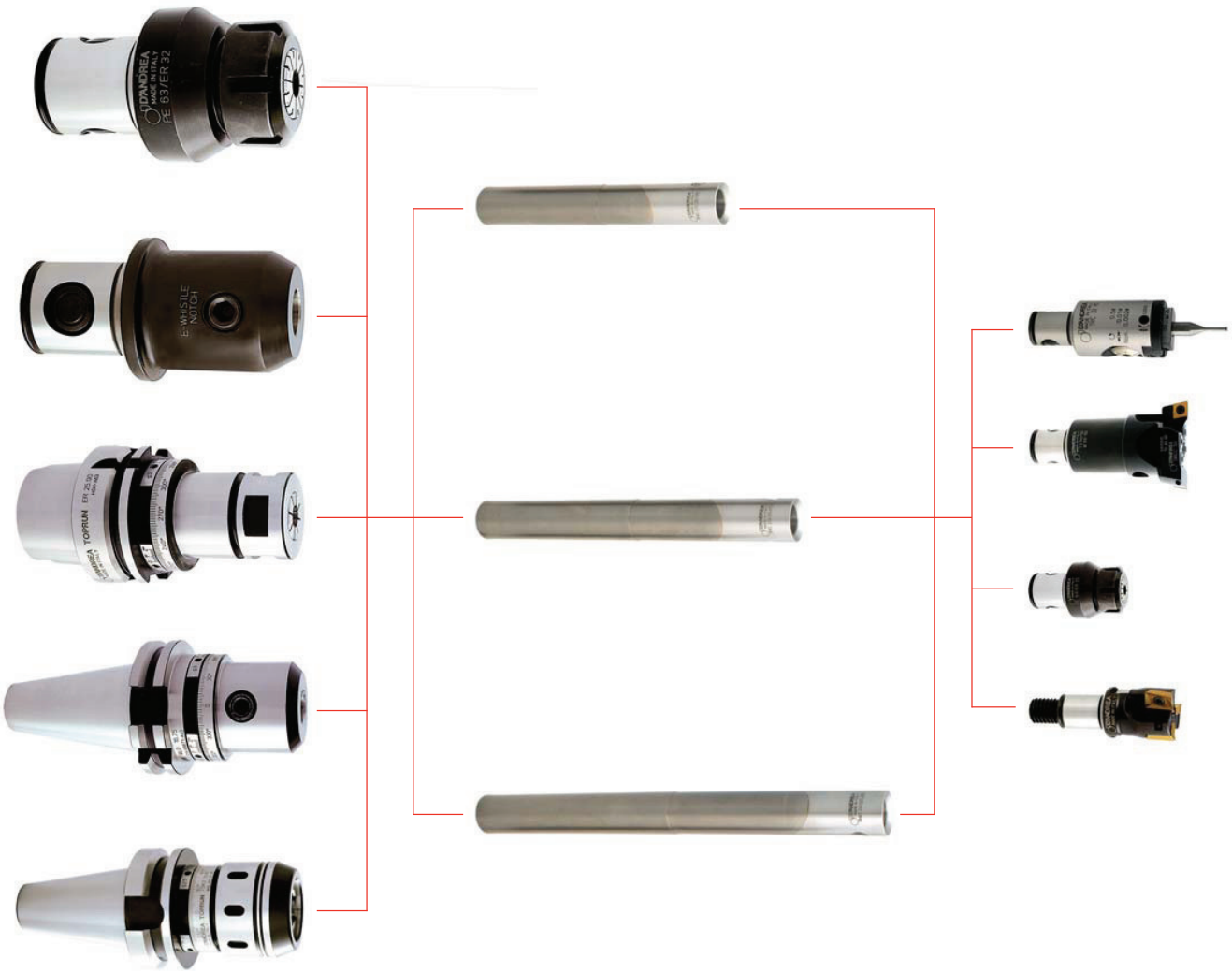
Para resolver las mecanizaciones de mandrinado en agujeros profundos, D'Andrea ha realizado un amplio programa de barras de metal duro BMD de diámetro 16, 20, 25 y 32 mm, que terminan con el acoplamiento base MHD'.
Se fabrican en tres medidas para mecanizaciones en agujeros profundos 6,3 – 8 y 10 veces el diámetro/barra. En las barras BMD se montan: los cabezales para desbaste de dos cuchillas TS, los cabezales para acabado TRD-TRC-TRM Testarossa,adaptadores PE para pinzas elásticas ER y los testine cabezales de fresado GRINTA.

BARRES CARBURE POUR USINAGES DE TROUS PROFONDS

Pour accomplir les alésages de trous profonds, D'Andrea a projecté un ample programme de barres carbure BMD de diamètre 16,20, 25 et 32 mm, avec au bout l'accouplement MHD'.
Elles sont fabriquées en trois longueurs pour usiner trous profonds 6,3 – 8 – 10 fois le diamètre/barre.
Sur les barres BMD on monte: têtes d'ébauche à deux coupants TS, têtes de finissage Testarossa TRD-TRC-TRM, adaptateurs PE pour pinces ER et les têtes de fraisage GRINTA.

BARRE IN METALLO DURO PER LAVORAZIONI DI FORI PROFONDI

Per risolvere le lavorazioni di alesatura di fori profondi D'Andrea ha realizzato un ampio programma di barre in metallo duro BMD di diametro 16, 20,25 e 32 mm, terminanti con l'attacco MHD'.
Sono costruite in tre lunghezze per lavorare fori profondi 6,3-8-10 volte il diametro/barra.Sulle barre BMD si montano: le testine di sgrossatura bitaglienti TS, le testine di finitura Testarossa TRD-TRC-TRM, gli adattatori PE per pinze elastiche ER e le testine di fresatura GRINTA.



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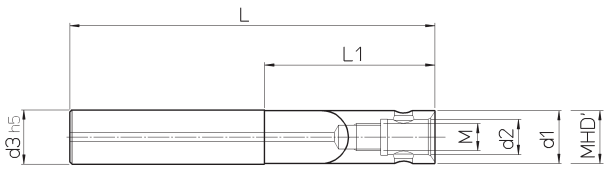
BMD



INCH

REF.	CODE	MHD'	d_1	d_2	d_3	M	L	L_1	lb
BMD 5/8 16.110	65 70 816 6110 5	16	.61	.39	.63	M 8	4.33	1.97	0.66
BMD 5/8 16.140	65 70 816 6140 5						5.51	2.48	0.88
BMD 5/8 16.170	65 70 816 6170 5						6.69	3.15	1.1
BMD 3/4 20.135	65 70 820 6135 5	20	.73	.51	.75	M 10	5.31	2.48	1.32
BMD 3/4 20.170	65 70 820 6170 5						6.69	3.15	1.65
BMD 3/4 20.210	65 70 820 6210 5						8.26	3.94	0.9
BMD 1 25.160	65 70 825 6160 5	25	.95	.63	1	M 12	6.29	3.15	1.98
BMD 1 25.205	65 70 825 6205 5						8.07	3.94	2.87
BMD 1 25.255	65 70 825 6255 5						10.03	4.92	3.53
BMD 1-1/4 32.195	65 70 832 6195 5	32	1.22	.78	1.25	M 16	7.67	3.94	4.63
BMD 1-1/4 32.250	65 70 832 6250 5						9.84	4.92	6.17
BMD 1-1/4 32.315	65 70 832 6315 5						12.40	6.30	7.72

METRIC

REF.	CODE	MHD'	d_1	d_2	d_3	M	L	L_1	lb
BMD 16/16.110	65 70 816 0110 5	16	15.5	10	16	M 8	110	50	0.66
BMD 16/16.140	65 70 816 0140 5						140	63	0.88
BMD 16/16.170	65 70 816 0170 5						170	80	1.1
BMD 20/20.135	65 70 820 0135 5	20	19.5	13	20	M 10	135	63	1.32
BMD 20/20.170	65 70 820 0170 5						170	80	1.65
BMD 20/20.210	65 70 820 0210 5						210	100	1.98
BMD 25/25.160	65 70 825 0160 5	25	24	16	25	M 12	160	80	2.2
BMD 25/25.205	65 70 825 0205 5						205	100	2.87
BMD 25/25.255	65 70 825 0255 5						255	125	3.53
BMD 32/32.195	65 70 832 0195 5	32	31	20	32	M 16	195	100	4.63
BMD 32/32.250	65 70 832 0250 5						250	125	6.17
BMD 32/32.315	65 70 832 0315 5						315	160	7.72

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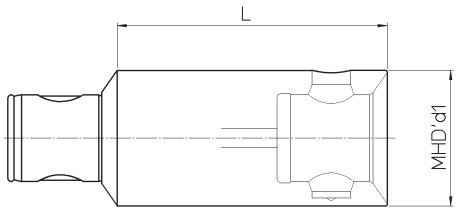
MODULHARD'ANDREA

Extensions | **Verlängerungen** | **Prolongaciones** | **Rallonges** | **Prolunghe**

PR



REF.	CODE	MHD' d_1	L	lb
PR 14.25	65 69 014 0025 0	14	.98	0.04
PR 16.25	65 69 016 0025 0	16		0.09
PR 20.32	65 69 020 0032 0	20	1.26	0.15
PR 25.25	65 69 025 0025 0	25	.98	0.09
PR 25.40	65 69 025 0040 0		1.57	0.2
PR 32.32	65 69 032 0032 0	32	1.26	0.44
PR 32.50	65 69 032 0050 0		1.96	0.66
PR 40.40	65 69 040 0040 0	40	1.57	0.88
PR 40.63	65 69 040 0063 0		2.48	1.32
PR 50.50	65 69 050 0050 0	50	1.96	1.54
PR 50.80	65 69 050 0080 0		3.15	1.1
PR 50.100	65 69 050 0100 0		3.93	2.43
PR 63.63	65 69 063 0063 0	63	2.48	3.09
PR 63.100	65 69 063 0100 0		3.93	4.85
PR 63.125	65 69 063 0125 0		4.92	6.39
PR 80.80	65 69 080 0080 0	80	3.15	6.61
PR 80.125	65 69 080 0125 0		4.92	10.14
PR 80.160	65 69 080 0160 0		6.30	13.45
PR 110.140	65 69 110 0140 0	110	5.51	29.76
PR 110.200	65 69 110 0200 0		7.87	31.53
PR 140.140	65 69 140 0140 0	140	5.51	52.91
PR 140.250	65 69 140 0250 0		9.84	62.83

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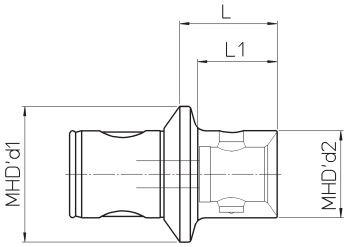
RD



REF.	CODE	MHD' d_1	MHD' d_2	L	L_1	lb
RD 16/14.25	65 70 016 0014 0	16	14	.98	.76	0.04
RD 20/14.20	65 70 020 0014 0	20		.78	.57	0.07
RD 20/16.20	65 70 020 0016 0		16		.62	0.11
RD 25/14.20	65 70 025 0014 0	25	14	.78	.53	0.13
RD 25/16.20	65 70 025 0016 0		16		.59	0.15
RD 25/20.25	65 70 025 0020 0		20	.98	.78	0.18
RD 32/14.25	65 70 032 0014 0	32	14	.98	.68	0.18
RD 32/16.24	65 70 032 0016 0		16	.94	.70	0.22
RD 32/20.25	65 70 032 0020 0		20	.98	.78	0.26
RD 32/25.28	65 70 032 0025 0		25	1.10	.90	0.31
RD 40/14.25	65 70 040 0014 0	40	14	.98	.64	0.22
RD 40/16.24	65 70 040 0016 0		16	.94	.66	0.4
RD 40/20.26	65 70 040 0020 0		20	1.02	.78	0.44
RD 40/25.28	65 70 040 0025 0		25	1.10	.86	0.25
RD 40/32.32	65 70 040 0032 0		32	1.26	1.06	0.66
RD 50/14.25	65 70 050 0014 0	50	14	.98	.57	0.55
RD 50/14.40	65 70 050 0014 2			1.57	1.16	0.22
RD 50/16.24	65 70 050 0016 0		16	.94	.59	0.75
RD 50/20.26	65 70 050 0020 0		20	1.02	.70	0.82
RD 50/25.28	65 70 050 0025 0		25	1.10	.82	0.88
RD 50/32.32	65 70 050 0032 0		32	1.26	.98	0.99
RD 50/40.36	65 70 050 0040 0		40	1.41	1.18	1.1
RD 63/50.40	65 70 063 0050 0	63	50	1.57	1.33	1.98
RD 80/50.45	65 70 080 0050 0	80		1.77	1.41	2.65
RD 80/63.60	65 70 080 0063 0		63	2.36	2.04	3.75
RD 110/80.70	65 70 110 0080 0	110	80	2.75	2.04	13.23
RD 140/80.70	65 70 140 0080 0	140			1.92	17.2

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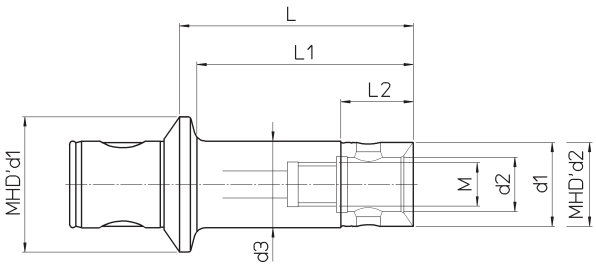
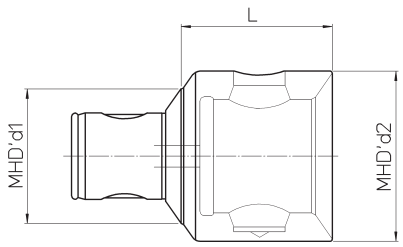
MODULHARD'ANDREA

RD



REF.	CODE	MHD' d_1	MHD' d_2	d_1	d_2	d_3	M	L	L_1	L_2	lb
RD 50/16.40	65 70 050 0016 2	50	16	.61	.39	.62	M 8	1.57	1.25	.59	0.44
RD 50/16.74	65 70 050 0016 3							2.91	2.55		0.55
RD 50/20.70	65 70 050 0020 2		20	.76	.51	.78	M 10	2.75	2.44	.72	0.66
RD 50/20.93	65 70 050 0020 3							3.66	3.34		0.77
RD 50/25.87	65 70 050 0025 2		25	.94	.62	.98	M 12	3.42	3.15	.80	1.32
RD 50/25.117	65 70 050 0025 3							4.60	4.33		1.43
RD 50/32.87	65 70 050 0032 2		32	1.22	.78	1.25	M 16	3.42	3.15	.98	1.65
RD 50/32.144	65 70 050 0032 3							5.66	5.39		2.2
RD 50/40.87	65 70 050 0040 2		40	1.57	.98	1.57	–	3.42	3.15	–	1.98
RD 50/40.176	65 70 050 0040 3							6.92	6.69		3.97

RD



REF.	CODE	MHD'd1	MHD'd2	L	lb
RD 50/63.56	65 70 050 0063 0	50	63	2.20	2.43

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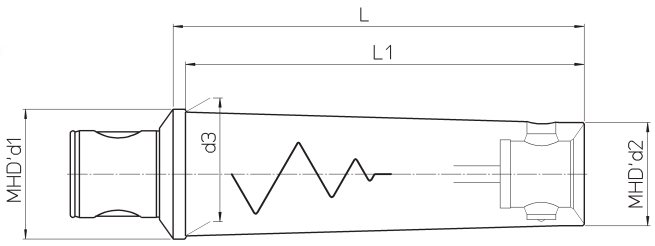
RAV



REF.	CODE	MHD' d_1	MHD' d_2	d_3	L	L_1	lb
RAV 50/16.74	65 70 050 0016 5	50	16	.68	2.91	2.56	0.88
RAV 50/20.93	65 70 050 0020 5		20	.84	3.66	3.34	1.1
RAV 50/25.117	65 70 050 0025 5		25	1.06	4.60	4.33	1.76
RAV 50/32.144	65 70 050 0032 5		32	1.37	5.67	5.43	3.09
RAV 50/40.176	65 70 050 0040 5		40	1.85	6.92	6.69	5.51
RAV 63/50.220	65 70 063 0050 5	63	50	2.36	8.66	8.42	12.35
RAV 80/63.280	65 70 080 0063 5	80	63	3.03	11.02	10.70	23.37

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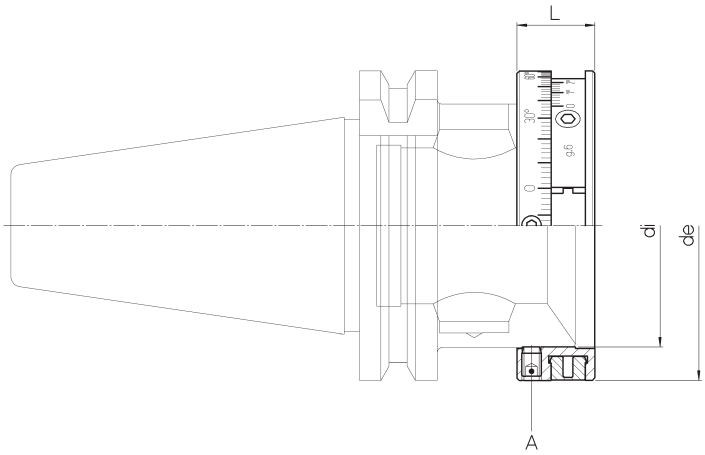
MODULHARD'ANDREA

Balancing rings | **Auswuchtringe** | **Anillos de equilibrado** | **Bagues d'équilibrage** | **Anelli di bilanciatura**

BLC



REF.	CODE	MHD'	de	di (G_6)	L
BLC 42.32	38 17 25 032 001	32	1.65	1.24	.55
BLC 50.40	38 17 25 040 001	40	1.96	1.55	.59
BLC 63.50	38 17 25 050 001	50	2.50	1.96	.62
BLC 80.63	38 17 25 063 001	63	3.15	2.47	.70

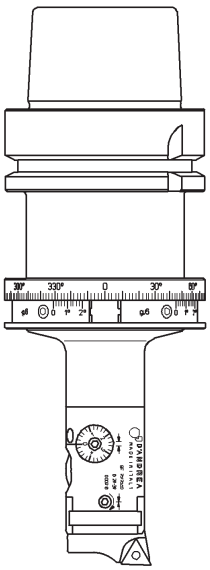
ASSEMBLY
-Remove the plastic guard ring
-Insert the BLC ring and lock the A screws.

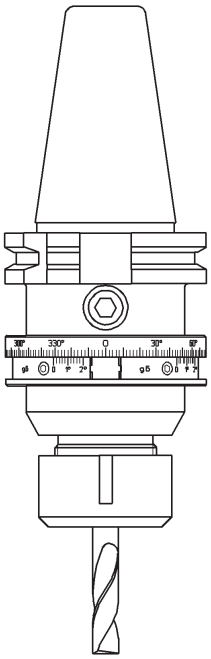
MONTAGE
-Schutzring aus Kunststoff entfernen.
-Auswuchtring BLC einsetzen und Schrauben A spannen.

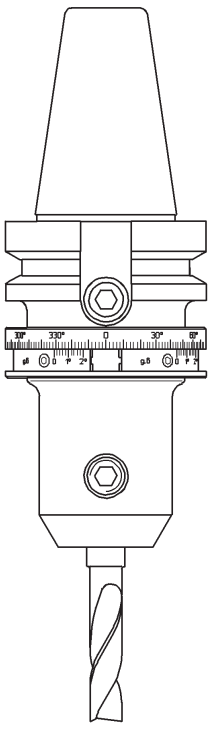
MONTAJE
-Quitar el anillo de protección en plástico
-Insertar anillo BLC y fijar los tornillos A.

MONTAGE
-Enlever la bague de protection en plastique
-Insérer la bague BLC et bloquer les clefs A.

MONTAGGIO
-Togliere l'anello di protezione in plastica
-Inserire l'anello BLC e bloccare le viti A.







Balancing rings

The BLC balancing ring, only by setting the two incorporated graduated counterweights, allows to balance, in an accurate and economical way, the toolholder on which it is mounted.
The use of the BLC ring provides the following advantages:
- improved accuracy and surface finish
- considerable extension of tool life
- considerable extension of spindle bearings life
- drastic reduction of vibrations and noise level in the machining centre.

The purpose of the balancing of a toolholder is to improve the distribution of the masses of the different elements in order to produce centrifugal forces within a prescribed limit, when spinning at a given spindle speed (RPM).
The balancing operation for a toolholder has the aim to bring the original unbalance within the maximum admissible level "G" prescribed by the ISO 1940/1 standards.

Auswuchtringe

Der Auswuchtring BLC mit integrierten und beweglichen Gewichten ermöglicht es, den Werkzeughalter, an dem der Ring montiert ist, genau und wirtschaftlich auszuwuchten.
Die Verwendung des BLC Auswuchtrings an Werkzeughaltern bietet folgende Vorteile:
- verbesserte Genauigkeit und Oberflächenfertigung (Qualität)
- merkbar höhere Lebensdauer der Werkzeuge und Schneidwerkzeuge
- Schonung der Spindellager, dadurch deutlich höhere Lebensdauer
- erhebliche Verminderung von Vibrationen und Geräuschen am Arbeitsplatz.

Um die vorgegebenen Grenzen der auftretenden Zentrifugalkräfte bei gegebener Spindeldrehzahl nicht zu überschreiten, werden Werkzeuge durch Optimierung der Massenverteilung aller beteiligten Elemente ausgewuchtet.
Das Ziel des Auswuchtens von Werkzeughaltern ist, die ursprüngliche Unwucht auf das max. zugelassene "G" Niveau entsprechend der ISO 1940/1 Norm zu reduzieren.

Anillos de equilibrado

El anillo de equilibrado BLC, con el simple posicionamiento de los dos contrapesos graduados incorporados, permite equilibrar, en forma precisa y económica, el portaherramientas en el cual va montado.
La utilización del anillo BLC da las siguientes ventajas:
- mejora la precisión y la calidad de las superficies mecanizadas
- aumenta la duración de la herramienta
- prolonga la vida del husillo del centro de mecanizado
- reduce las vibraciones y la rumorosidad del centro de mecanizado.

La función del equilibrado de un portaherramientas es la de mejorar la distribución de las masas de su cuerpo, en forma tal que el mismo gire sin crear fuerzas centrífugas superiores a un valor límite admisible.
La operación de equilibrado consiste en reducir el desequilibrio existente en el portaherramientas, llevándolo dentro del valor máximo admisible, definido por el grado de equilibrado "G", que hace referencia a la norma ISO 1940/1.

Bagues d'équilibrage

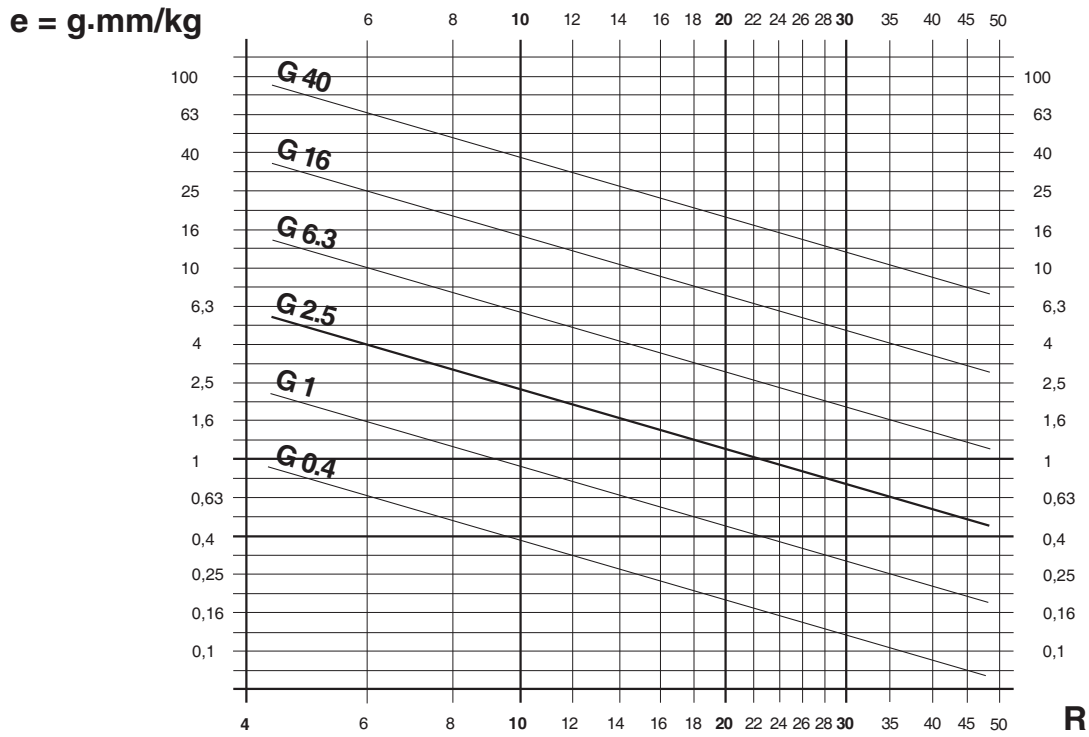
La bague d'équilibrage BLC, par simple réglage des deux contrepoids gradués incorporés, permet d'équilibrer le porte-outil d'une manière précise et économique.
L'utilisation de la bague BLC apporte les avantages suivants:
- amélioration de la précision et meilleur état de surface
- meilleure durée de vie de l'outil
- meilleure durée de vie des roulements de broche
- réduction des vibrations et des phénomènes de bruit.

L'équilibrage d'un porte-outil a pour but de mieux répartir les masses des différents éléments, ceci afin d'éviter que la force centrifuge soit supérieure à la valeur limite admissible lors d'une rotation à une vitesse donnée (RPM).
L'équilibrage d'un porte-outil consiste à porter le manque d'équilibrage d'origine au grade "G" maximum admissible prescrit par les normes ISO 1940/1.

Anelli di bilanciatura

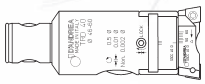
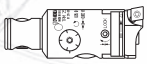
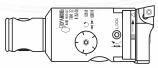
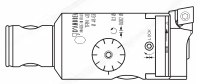
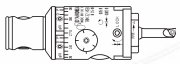
L'anello di bilanciatura BLC, con il semplice posizionamento dei due tasselli graduati incorporati, permette di equilibrare, in modo preciso ed economico, il portautensile nel quale lo stesso viene montato.
L'utilizzo dell'anello BLC dà i seguenti vantaggi:
- migliora la precisione e la qualità delle superfici lavorate
- aumenta la durata dell'utensile
- allunga la vita del mandrino del centro di lavoro
- riduce le vibrazioni e la rumorosità del centro di lavoro.

Lo scopo dell'equilibratura di un utensile è quello di migliorare la distribuzione delle masse del suo corpo in modo che esso ruoti senza creare forze centrifughe superiori ad un valore limite ammissibile.
L'operazione di equilibratura consiste nel ridurre lo squilibrio esistente nel portautensile, portandolo entro il valore massimo ammissibile definito dal grado di equilibratura "G" della norma 1940/1.



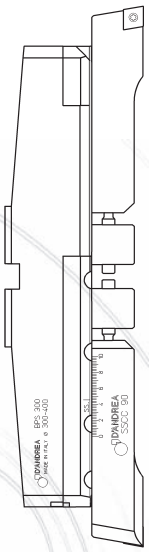
Member IMC Group Ingersoll Cutting Tools

BORING SYSTEM

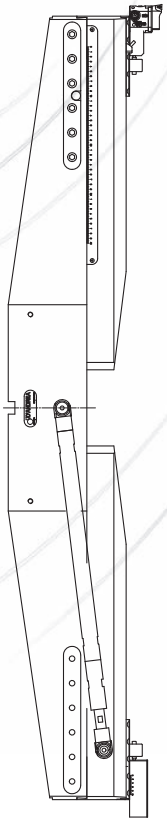
	16	20	25	32	40
TS - BPS Ø .71 ~ 110.23	**TS 16/16** Ø .71 ~ .87 	**TS 20/20** Ø .87 ~ 1.10 	**TS 25/25** Ø 1.10 ~ 1.50 	**TS 32/32** Ø 1.40 ~ 1.97 	**TS 40/40** Ø 1.97 ~ 2.68 
TRD Ø 1.10 ~ 4.72 **.0004 µin**			**TRD 25 INCH** Ø 1.10 ~ 1.42 	**TRD 32 INCH** Ø 1.42 ~ 1.81 	**TRD 40 INCH** Ø 1.81 ~ 2.36 
TRM Ø .10 ~ 31.50 **.00008 µin**	**TRM 16 INCH** Ø .71 ~ .91 	**TRM 20 INCH** Ø .87 ~ 1.14 	**TRM 25 INCH** Ø 1.10 ~ 1.50 	**TRM 32 INCH** Ø 1.40 ~ 1.97 	**TRM 40 INCH** Ø 1.89 ~ 2.48 
TRM HSB Ø .10 ~ .87 **.00008 µin**				**TRM32HSB INCH** Ø .10 ~ .71 	

BORING SYSTEM

50	63	80	125
TS 50/50 Ø 2.68 ~ 3.54	**TS 50/63** **TS 63/63** Ø 3.54 ~ 4.72	**TS 80/80** Ø 4.72 ~ 7.87	
TRD 50 INCH Ø 2.36 ~ 2.95	**TRD 63 INCH** Ø 2.95 ~ 3.74	**TRD 80 INCH** Ø 3.74 ~ 4.72	
TRM 50 INCH Ø .10 ~ 4.25	**TRM 50/63 INCH** **TRM 63/63 INCH** Ø .24 ~ 4.92	**TRM 50/80 INCH** **TRM 80/80 INCH** Ø .24 ~ 6.30	**TRM 80/125 INCH** Ø 1.42 ~ 16.69
TRM50HSB INCH Ø .10 ~ .87			



BPS 200 Ø 7.87 ~ 15.75
BPS 300 Ø 11.81 ~ 19.69
BPS 400 Ø 15.75 ~ 23.62
BPS 500 Ø 16.69 ~ 35.43
BPS 600 Ø 23.62 ~ 39.37
BPS 700 Ø 27.56 ~ 43.31
BPS 800 Ø 31.50 ~ 47.24
BPS 1000 Ø 39.37 ~ 74.80
BPS 1160 Ø 63.00 ~ 90.55
BPS 1600 Ø 63.00 ~ 110.23



Member IMC Group Ingersoll Cutting Tools

Double-bit heads | **Zweischneiderbohrköpfe** | **Cabezales de dos cuchillas** | **Têtes à double tranchant** | **Testine bitaglienti**

COMPONENTS
1. Body
2. Setting screws
3. Expanding pin
4. Coolant outlets
5. Bit holders
6. Tools clamp screws

BAUTEILE
1. Körper
2. Einstellschraube
3. Spreizbolzen
4. Kühlmittelaustritt
5. Plattenhalter
6. Werkzeugklemm-schrauben

COMPONENTES
1. Cuerpo
2. Tornillo de regulación
3. Perno radial expansible
4. Agujeros salida refrigerante
5. Portaplaquita
6. Tornillos blocaje herramienta

COMPOSANTS
1. Corps
2. Vis de réglage
3. Tige radiale expansible
4. Sortie du liquide d'arrosage
5. Porte-plaquettes
6. Vis blocage outil

COMPONENTI
1. Corpo
2. Vite di regolazione
3. Perno radiale espandibile
4. Fori uscita refrigerante
5. Seggio portainserti
6. Viti bloccaggio utensile

TS

Ø .71 ~ 7.87

TS 16/16
Ø .71 ~ .87

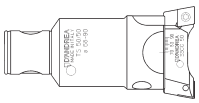
TS 20/20
Ø .87 ~ 1.10

TS 25/25
Ø 1.10 ~ 1.50

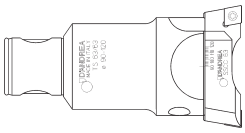
TS 32/32
Ø 1.40 ~ 1.97

TS 40/40
Ø 1.97 ~ 2.68

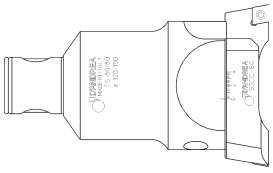
TS 50/50
Ø 2.68 ~ 3.54



TS 50/63
TS 63/63
Ø 3.54 ~ 4.72



TS 80/80
Ø 4.72 ~ 7.87



FEATURES
The double-bit heads are easy and extremely rigid thanks to the extensive area serrated with contacts between the bit holder and upper insert holder and the heads, together with the constant distance between the seat of the clamping screws and the cutter.

MERKMALE
Die Zweischneiderköpfe sind aufgrund des einfachen Aufbaus und der großen, verzahnten Kontaktfläche zwischen Plattenhalter und Kopf zusammen mit dem gleichbleibenden Abstand zwischen Wendeplattensitz und Plattenhalterklemmung extrem stabil.

CARACTERÍSTICAS
Los cabezales de dos cuchillas son sencillos y extremamente rígidos gracias a las amplias superficies dentadas de contacto entre los asientos porta-inserto y los cabezales mismos, así como a la distancia constante entre los tornillos de sujeción del asiento y el cuchillo.

CARACTÉRISTIQUES
Les têtes à double tranchant sont simples et extrêmement rigides grâce aux grandes surfaces dentelées de contact entre les logements porte plaquette et les têtes elles-mêmes, ainsi qu'à la distance constante entre la vis de serrage du logement et le tranchant.

CARATTERISTICHE
Le testine bitaglienti sono semplici ed estremamente rigide grazie alle ampie superfici dentellate di contatto tra i seggi portainserto e le testine stesse, unitamente alla distanza costante tra la vite di serraggio del seggio ed il tagliente.

D'ANDREA

Double-bit heads | **Zweischneiderbohrköpfe** | **Cabezales de dos cuchillas** | **Têtes à double tranchant** | **Testine bitaglienti**

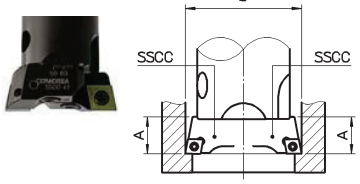


fig.1

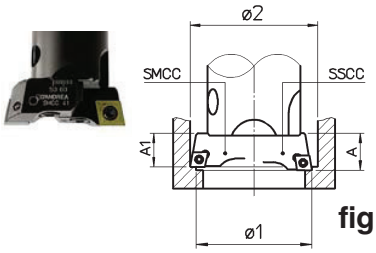


fig.2

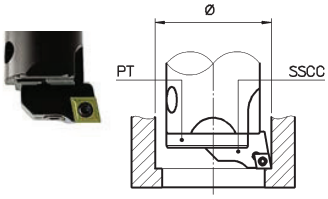


fig.3

USE
The radial setting of the cutting edges should be carried out with tool presetting equipment.

The boring bars are fitted with two bit holders for roughing operations involving heavy chip removal.
The double-bit boring bars may include:
- (fig. 1) two SSCC bit holders on the same plane and with the two cutting edges set at identical radial distance for high feed rate roughing operations.

- (fig. 2) an SSCC bit holder and an SMCC bit holder not at the same plane and with the two cutting edges set at different radial distances for high cutting depth roughing operations.

- (fig. 3) the boring bars are fitted with a single bit holder for roughing and finishing operations involving normal chip removal. The serrated surface protection plate PT should always be fitted.

IMPORTANT NOTE
Bit holders and inserts should be firmly fixed.

In order to protect from the chips the part of the TS serration groove remaining exposed, it is advisable to use a PT protection plate (see page. 47).

EINSATZ
Die Durchmessereinstellung der Wendeplatten ist auf einem Maschinenwerkzeug-voreinstellgerät vorzunehmen.

Mit zwei Plattenhaltern werden die Köpfe für Schrupparbeiten mit starker Spanabnahme verwendet.
Diese Köpfe können umfassen:
- (Abb. 1) zwei Plattenhalter SSCC auf gleicher Höhe mit der Schneidkante der Wendeplatten auf gleichem Durchmesser einstellen. Für Schrupparbeiten mit großem Vorschub.

- (Abb. 2) je einen Plattenhalter SSCC und SMCC auf verschiedener Höhe mit der Schneidkante der Wendeplatten auf verschiedenem Durchmesser einstellen für Schrupparbeiten mit großer Spantiefe.

- (Abb. 3) mit einem Plattenhalter werden die Bohrstangen für Schlicht- und Schrupparbeiten mit normaler Spanabnahme verwendet. PT Schutzplatte für die Kerbzahnfläche immer aufsetzen.

WICHTIGER HINWEIS
Bitte prüfen Sie, ob die Plattenhalter und Wendeplatten sicher festgespannt sind.

Zum Schutz der TS Kerbzahnfläche empfiehlt sich die Anbringung der PT Schutzplatte (siehe Seite 47).

EMPLEO
La regulación diametral de los cortes se efectúa sobre un banco presetting para herramientas.

Se utilizan con dos asientos para operaciones de desbaste con fuerte arranque de viruta.
Los cabezales de dos cuchillas pueden estar compuestos con:
- (fig. 1) dos asientos SSCC alineados y con la punta de la plaquita sobre el mismo diámetro para operaciones de desbaste con fuertes avances.

- (fig. 2) un asiento SSCC y un asiento más bajo SMCC desalineados y con la punta de las plaquitas sobre diámetros diversos para operaciones de desbaste con fuertes profundidades de pasada.

- (fig. 3) se utilizan con un solo asiento para operaciones de acabado y desbaste con normal arranque de viruta. Recordar siempre montar la plaquita PT para la protección de la superficie dentada.

ATENCIÓN
Asegurarse que los asientos y las plaquitas estén rígidamente bloqueados.

Para proteger de las virutas la parte que permanece descubierta de la superficie dentada en los cabezales TS, es conveniente montar la protección PT (véase página 47).

EMPLOI
Effectuer le réglage radial des plaquettes sur un appareil de préréglage d'outils.

Avec deux porte-plaquettes, les barres sont utilisées pour des operations d'ébauchage avec fort enlèvement de copeaux.
Ces barres d'alésage peuvent comprendre:
- (fig.1) deux porte-plaquettes SSCC dans le même plan avec les coupants réglés sur le même diamètre pour l'ébauchage à haute vitesse d'avance.

- (fig.2) un porte-plaquette SSCC et un porte-plaquette SMCC dans deux plans avec les coupants réglés sur des différents diamètres pour l'ébauchage avec grande profondeur de passe.

- (fig.3) avec un seul porte-plaquette les barres sont utilisées pour l'ébauchage et le finissage avec enlèvement de copeaux normal. Monter toujours la plaquette PT de protection de la surface dentelée.

NOTE IMPORTANTE
S'assurer que les porte-plaquettes et les plaquettes sont solidement bloqués.

Pour protéger des copeaux la partie de la tête TS qui reste découverte, il est convenable de monter un cache de protection PT (voir page 47).

IMPIEGO
La regolazione diametrale dei taglienti va eseguita su un banco di presetting di utensili.

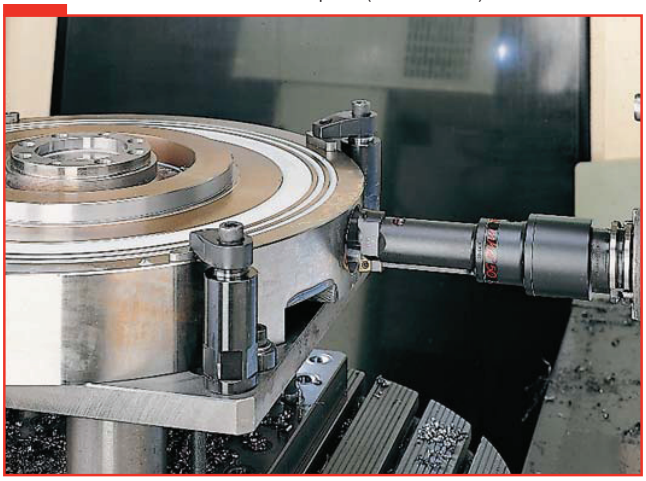
Si utilizzano con due seggi per operazioni di sgrossatura con forti asportazioni.
I bareni bitaglienti possono essere composti con:
- (fig. 1) due seggi SSCC allineati e con la punta degli inserti sullo stesso diametro per operazioni di sgrossatura con forti avanzamenti.

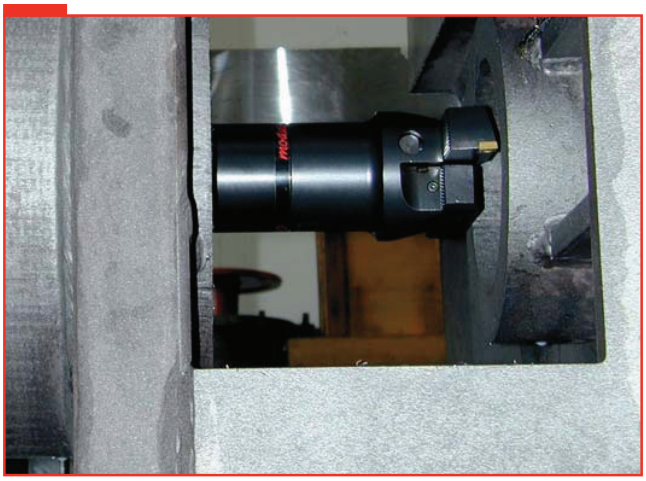
- (fig. 2) un seggio SSCC ed un seggio più basso SMCC disallineati e con la punta degli inserti su diametri diversi per operazioni di sgrossatura con forti profondità di passata.

- (fig. 3) si utilizzano con un solo seggio per operazioni di finitura e sgrossatura con normali asportazioni di truciolo. Ricordarsi sempre di montare la piastrina PT per la protezione della superficie dentellata.

ATTENZIONE
Assicurarsi che i seggi e gli inserti siano saldamente bloccati.

Per proteggere dai trucioli la parte rimasta scoperta dal millerighe della testina TS è opportuno montare una piastrina PT (vedi pag.47).





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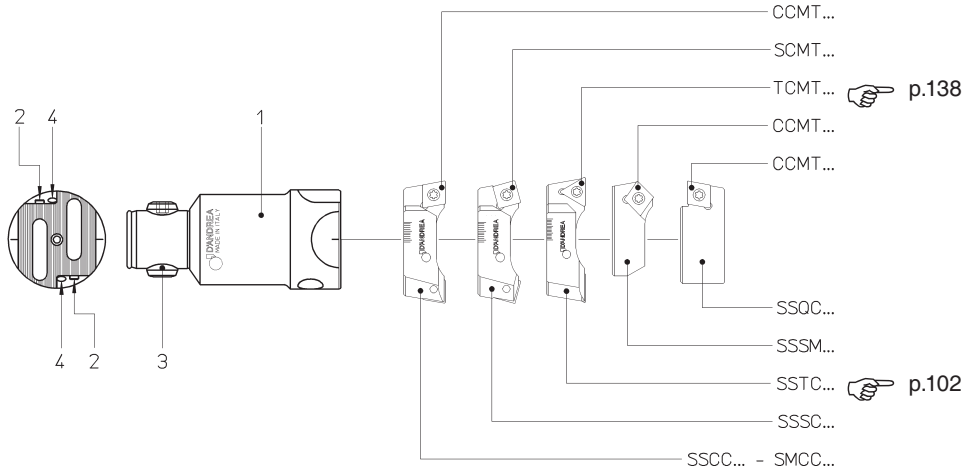
TS ....

Ø .71 ~ 7.87



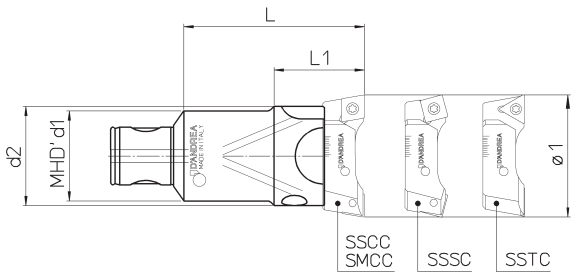


fig.1

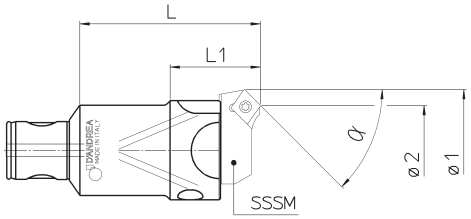


fig.2

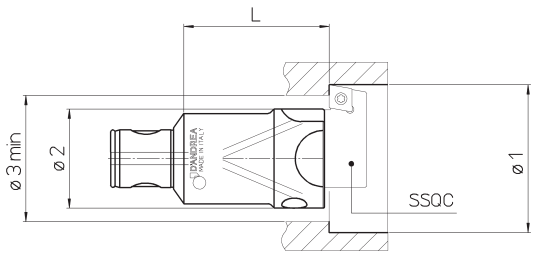


fig.3

fig.3 ø3 min = (Ø1+Ø2+1) : 2

COMPONENTS
1. Body
2. Setting screws
3. Expanding pin
4. Coolant outlets

BAUTEILE
1. Körper
2. Einstellschraube
3. Spreizbolzen
4. Kühlmittelaustritt

COMPONENTES
1. Cuerpo
2. Tornillo de regulación
3. Perno radial expansible
4. Agujeros salida refrigerante

COMPOSANTS
1. Corps
2. Vis de réglage
3. Tige radiale expansible
4. Sortie du liquide d'arrosage

COMPONENTI
1. Corpo
2. Vite di regolazione
3. Perno radiale espandibile
4. Fori uscita refrigerante

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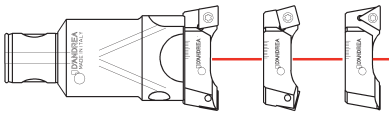
Member IMC Group Ingersoll Cutting Tools

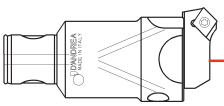
Double-bit heads | **Zweischneiderbohrköpfe** | **Cabezales de dos cuchillas** | **Têtes à double tranchant** | **Testine bitaglienti**



BORING

fig.1

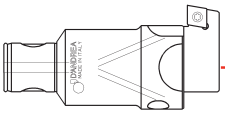
REF.	CODE	MHD'd_1	d_2	Ø$_1$	L	L_1	S...	▣	◎	△	lb
TS 16/16	45 55 016 0034 0	16	.63	.71 ~ .87	1.34	–	S... 16	•	–	–	0.11
TS 20/20	45 55 020 0040 0	20	.79	.87 ~ 1.10	1.57		S... 20	•	–	–	0.2
TS 25/25	45 55 025 0050 0	25	.98	1.10 ~ 1.50	1.97		S... 25	•	–	–	0.44
TS 32/32	45 55 032 0063 0	32	1.26	1.40 ~ 1.97	2.48		S...32-33	•	•	–	0.77
TS 40/40	45 55 040 0080 0	40	1.57	1.97 ~ 2.68	3.15		S... 40-41	•	•	–	1.54
TS 50/50	45 53 050 0100 0	50	2.17	2.68 ~ 3.54	3.94	1.97	S... 50	•	•	–	3.31
TS 50/63	45 53 063 0080 0		2.83	3.54 ~ 4.72	3.15	2.36	S... 63	•	•	•	4.41
TS 63/63	45 54 063 0125 0	63			4.92	2.48					6.61
TS 80/80	45 54 080 0140 0	80	3.74	4.72 ~ 6.30	5.51	2.95	S... 80	•	•	•	11.68
				6.30 ~ 7.87			S... 90				



CHAMFERING

fig.2

REF.	CODE	MHD'd_1	d_2	Ø$_1$	Ø$_2$	α	L	L_1	SSSM ..	▣	lb
TS 25/25	45 55 025 0050 0	25	.98	1.02 ~ 1.50	.91 ~ 1.38	15°	1.97	–	SSSM 25-15°	•	0.44
					.77 ~ 1.24	30°			SSSM 25-30°		
					.69 ~ 1.16	45°			SSSM 25-45°		
TS 32/32	45 55 032 0063 0	32	1.26	1.36 ~ 1.93	1.24 ~ 1.81	15°	2.48		SSSM 32-15°	•	0.77
					1.10 ~ 1.67	30°			SSSM 32-30°		
					1.02 ~ 1.59	45°			SSSM 32-45°		
TS 40/40	45 55 040 0080 0	40	1.57	1.83 ~ 2.60	1.63 ~ 2.40	15°	3.15		SSSM 40-15°	•	1.54
					1.46 ~ 2.22	30°			SSSM 40-30°		
					1.31 ~ 2.09	45°			SSSM 40-45°		
TS 50/50	45 53 050 0100 0	50	2.17	2.56 ~ 3.46	2.30 ~ 3.21	15°	3.94	1.97	SSSM 50-15°	•	3.31
					2.05 ~ 2.95	30°			SSSM 50-30°		
					1.85 ~ 2.75	45°			SSSM 50-45°		



BACK BORING

fig.3

REF.	CODE	MHD'd_1	Ø$_1$	Ø$_2$	L	SSQC ..	▣	lb
TS 16/16	45 55 016 0034 0	16	.79 ~ .94	.63	1.08	SSQC 16	•	0.11
TS 20/20	45 55 020 0040 0	20	.93 ~ 1.18	.79	1.28	SSQC 20	•	0.2
TS 25/25	45 55 025 0050 0	25	1.16 ~ 1.57	.98	1.53	SSQC 25	•	0.44
TS 32/32	45 55 032 0063 0	32	1.54 ~ 2.05	1.26	1.96	SSQC 33	•	0.77
TS 40/40	45 55 040 0080 0	40	2.01 ~ 2.76	1.57	2.50	SSQC 41	•	1.54
TS 50/50	45 53 050 0100 0	50	2.72 ~ 3.62	2.17	3.17	SSQC 50	•	3.31
TS 50/63	45 53 063 0080 0		3.58 ~ 4.80	2.83	2.19	SSQC 63	•	4.41
TS 63/63	45 54 063 0125 0	63			3.96			6.61
TS 80/80	45 54 080 0140 0	80	4.76 ~ 6.38	3.74	4.35	SSQC 80	•	11.68
			6.34 ~ 7.95			SSQC 90	•	

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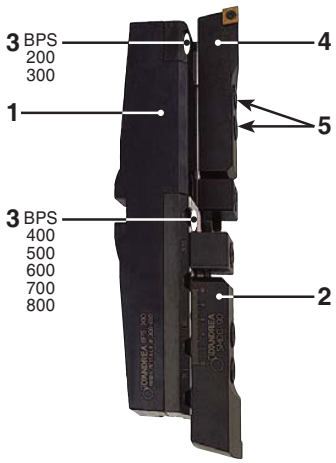
ALUMINIUM TOOLS LINE

BPS

Ø 7.87 ~ 110.23



COMPONENTS
1. Body
2. Setting screws
3. Coolant outlets
4. Bit holders
5. Tools clamp screws

BAUTEILE
1. Körper
2. Einstellschraube
3. Kühlmittelaustritt
4. Plattenhalter
5. Werkzeugklemm-schrauben

COMPONENTES
1. Cuerpo
2. Tornillo de regulación
3. Agujeros salida refrigerante
4. Portaplaquita
5. Tornillos blocaje herramienta

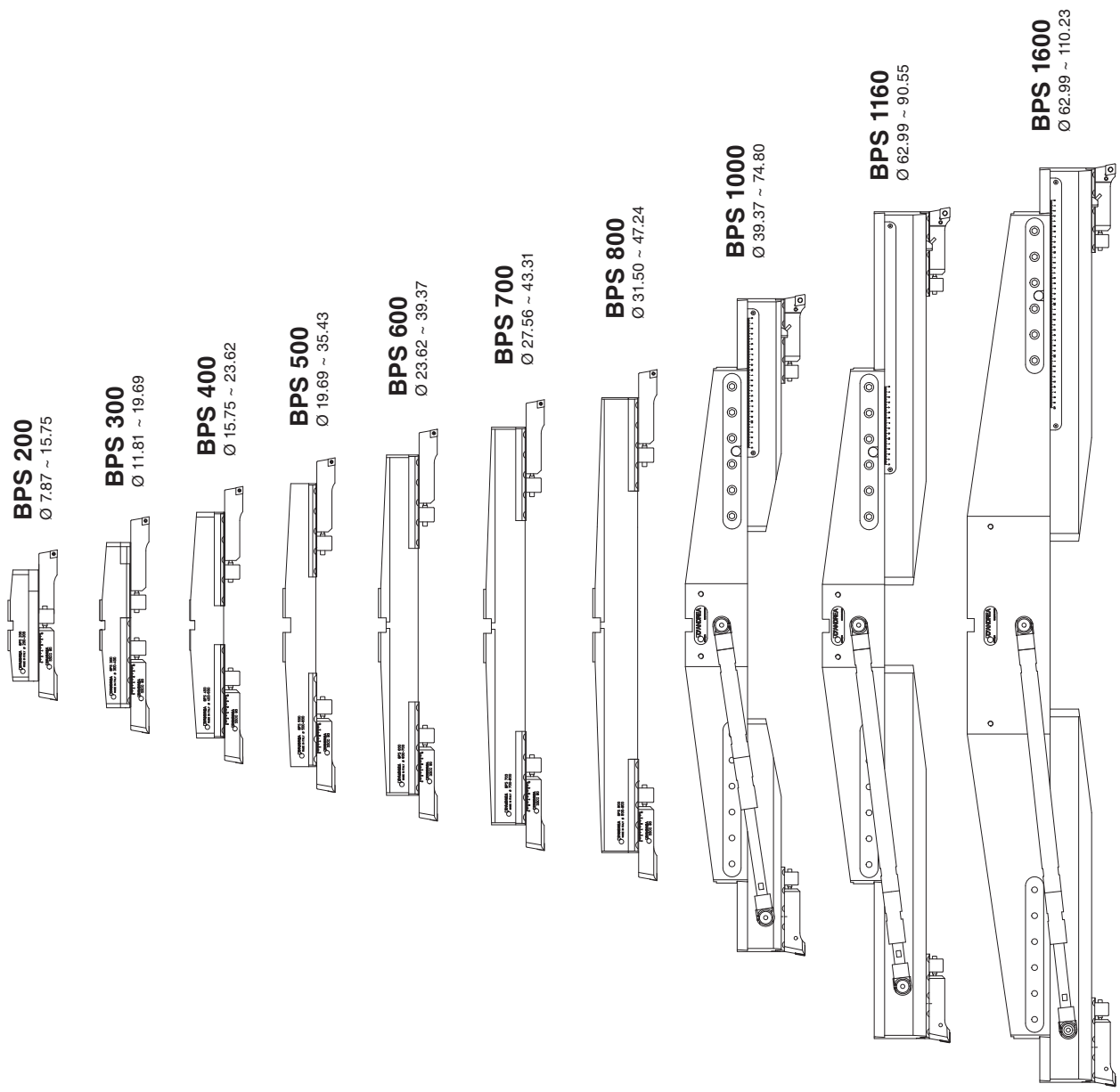
COMPOSANTS
1. Corps
2. Vis de réglage
3. Sortie du liquide d'arrosage
4. Porte-plaquettes
5. Vis blocage outil

COMPONENTI
1. Corpo
2. Vite di regolazione
3. Fori uscita refrigerante
4. Seggio portainserti
5. Viti bloccaggio utensile

ALUMINIUM TOOLS LINE

BPS

Ø 7.87 ~ 110.23



FEATURES

The BPS double-bit crossbars cover a working area from ø 7.87 - 110.23.
The BPS double-bit crossbars are constructed in aluminum and mounted on a steel double-bit plate.

MERKMALE

Die Zweischneider BPS bedecken ein Arbeitsfeld von ø 7.87 - 110.23.
Die Bohrschienen BPS bestehen aus Aluminium auf welches die Sitzhalterungsplatte aus Stahl befestigt wird.

CARACTERÍSTICAS

Las barras porta-asiento BPS cubren un campo de trabajo de 7.87 a 110.23.
Las barras porta-asiento BPS están realizadas en aluminio, sobre el cual se fija la placa porta-asiento de acero.

CARACTÉRISTIQUES

Les barres porte logement BPS couvrent un intervalle de travail de ø 7.87 - 110.23.
Les barres porte logement BPS sont réalisées en aluminium sur lequel est fixée la plaquette porte logement en acier

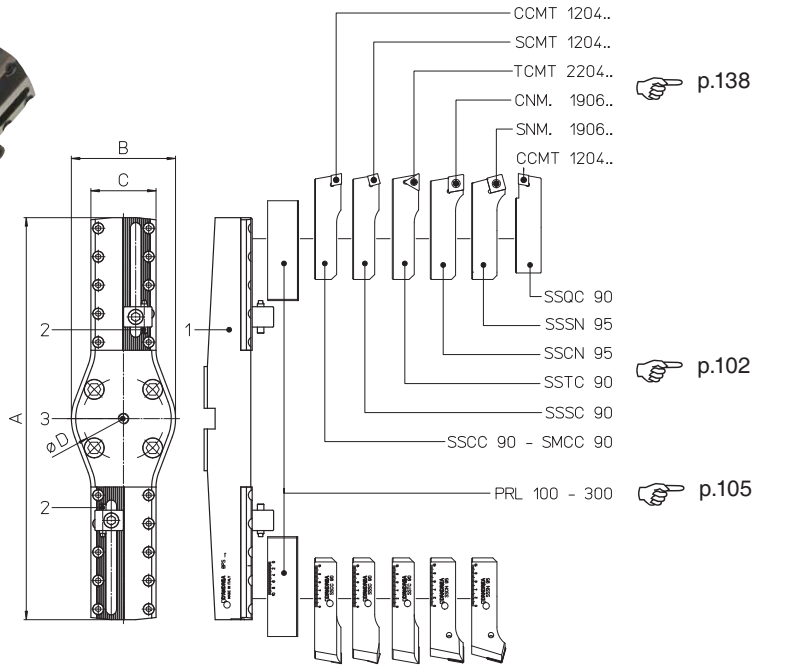
CARATTERISTICHE

Le barre portaseggio BPS coprono un campo di lavoro da ø 7.87 - 110.23.
Le barre portaseggio BPS sono costruite in alluminio sul quale viene fissata la piastra portaseggio in acciaio.

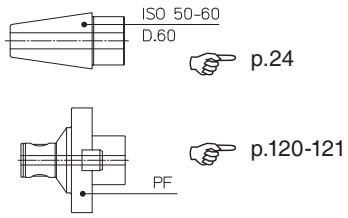
ALUMINIUM TOOLS LINE

BPS ...

Ø 7.87 ~ 47.32



p.138
p.102
p.105



p.24
p.120-121

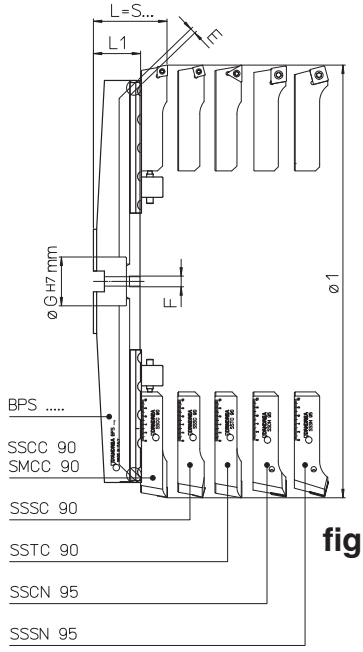


fig.1

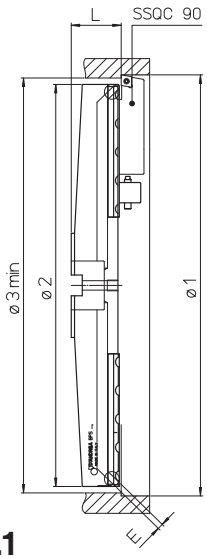


fig.2

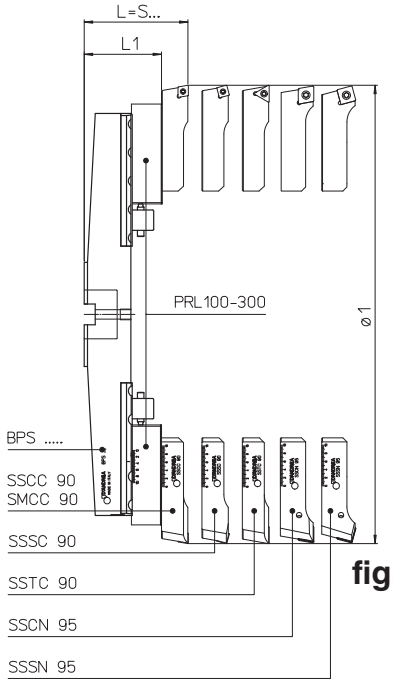


fig.3

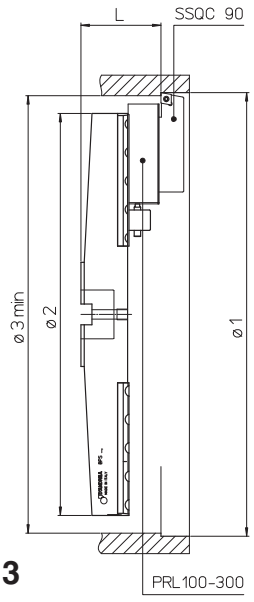


fig.4

fig.2 - 4 : Ø3 min = (Ø1+Ø2+1) : 2

COMPONENTS
1. Body
2. Setting screws
3. Coolant outlets

BAUTEILE
1. Körper
2. Einstellschraube
3. Kühlmittelaustritt

COMPONENTES
1. Cuerpo
2. Tornillo de regulación
3. Agujeros salida refrigerante

COMPOSANTS
1. Corps
2. Vis de réglage
3. Sortie du liquide d'arrosage

COMPONENTI
1. Corpo
2. Vite di regolazione
3. Fori uscita refrigerante

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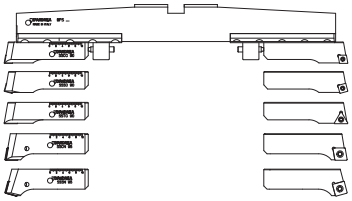


fig.1

BORING

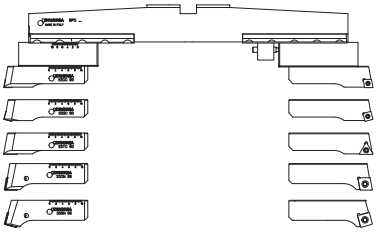


fig.3

ISO / PF excluded | Ohne ISO / PF | ISO / PF excluido | Sauf ISO /PF | ISO / PF escluso

REF.	CODE	Ø1	A	L(S...90)	L(SS..95)	L1	B	C	øD	øE	F	øG	S...	lb	fig.
BPS200	43 55 40 88 198 0	7.87 ~ 11.81	7.64	3.39	3.70	2.13	–	3.15	2.63	.10	–	40	SSCC90	7.05	1
BPS300	43 55 40 88 298 0	11.81 ~ 15.75	11.34										SMCC90	8.6	
BPS400	43 55 40 88 398 0	15.75 ~ 19.69	15.51	3.66	3.98	2.40							SSSC90	15.21	
BPS500	43 55 60 88 494 0	19.69 ~ 23.62	19.45	3.98	4.29	2.72	5.04		4.00	–	1/4 GAS	60	SSTC90	20.72	
BPS600	43 55 60 88 594 0	23.62 ~ 27.56	23.39	4.06	4.37	2.80							SSCC95	21.83	
BPS700	43 55 60 88 694 0	27.56 ~ 31.50	27.32	4.17	4.49	2.91							SSNC95	24.69	
BPS800	43 55 60 88 794 0	31.50 ~ 35.43	31.26	4.41	4.73	3.15								33.51	

REF.	CODE	Ø1	A	L(S...90)	L(SS..95)	L1	B	C	øD	F	øG	PRL	S...	lb	fig.
BPS200	43 55 40 88 198 0	11.81 ~ 15.75	7.64	4.57	4.88	3.31	–	3.15	2.63	–	40	PRL 100	SSCC90	7.05	3
BPS300	43 55 40 88 298 0	15.75 ~ 19.69	11.34										SMCC90	8.6	
BPS400	43 55 40 88 398 0	19.69 ~ 23.62	15.51	4.84	5.15	3.58				1/4 GAS			SSSC90	15.21	
BPS500	43 55 60 88 494 0	31.50 ~ 35.43	19.45	5.55	5.86	4.29	5.04		4.00		60	PRL 300	SSTC90	20.72	
BPS600	43 55 60 88 594 0	35.43 ~ 39.37	23.39	5.63	5.95	4.37							SSCC95	21.83	
BPS700	43 55 60 88 694 0	39.37 ~ 43.31	27.32	5.75	6.06	4.49							SSNC95	24.69	
BPS800	43 55 60 88 794 0	43.31 ~ 47.24	31.26	5.99	6.30	4.73								33.51	

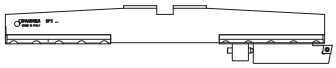


fig.2

BACK BORING

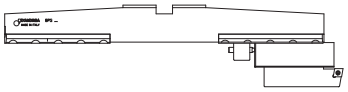


fig.4

ISO / PF excluded | Ohne ISO / PF | ISO / PF excluido | Sauf ISO /PF | ISO / PF escluso

REF.	CODE	Ø1	Ø2	L	B	C	øD	øE	F	øG	SSQC	lb	fig.
BPS 200	43 55 40 88 198 0	7.95 ~ 11.89	7.64	2.22	–	3.15	2.63	.10	–	40	SSQC90	7.05	2
BPS 300	43 55 40 88 298 0	11.89 ~ 15.83	11.34									8.6	
BPS 400	43 55 40 88 398 0	15.83 ~ 19.76	15.51	2.50								15.21	
BPS 500	43 55 60 88 494 0	19.76 ~ 23.70	19.45	2.81	5.04		4.00	–	1/4 GAS	60		20.72	
BPS 600	43 55 60 88 594 0	23.70 ~ 27.64	23.39	2.89								21.83	
BPS 700	43 55 60 88 694 0	27.64 ~ 31.57	27.32	3.01								24.69	
BPS 800	43 55 60 88 794 0	31.57 ~ 35.51	31.26	3.25								33.51	

REF.	CODE	Ø1	Ø2	L	B	C	øD	F	øG	PRL	S...	lb	fig.
BPS 200	43 55 40 88 198 0	11.89 ~ 15.83	7.64	3.45	–	3.15	2.63	–	40	PRL 100	SSQC90	7.05	4
BPS 300	43 55 40 88 298 0	15.83 ~ 19.76	11.34									8.6	
BPS 400	43 55 40 88 398 0	19.76 ~ 23.70	15.51	3.72				1/4 GAS				15.21	
BPS 500	43 55 60 88 494 0	31.57 ~ 35.51	19.45	4.43	5.04		4.00		60	PRL 300		20.72	
BPS 600	43 55 60 88 594 0	35.51 ~ 39.45	23.39	4.51								21.83	
BPS 700	43 55 60 88 694 0	39.45 ~ 43.38	27.32	4.63								24.69	
BPS 800	43 55 60 88 794 0	43.38 ~ 47.32	31.26	4.86								33.51	

ALUMINIUM TOOLS LINE

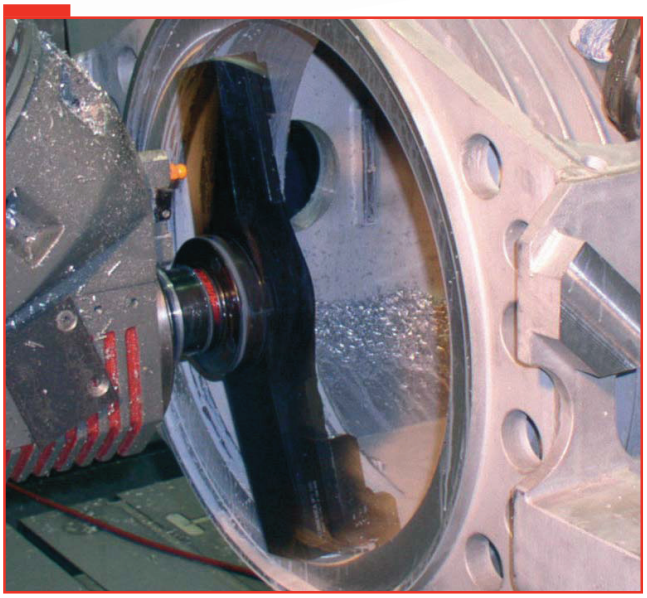
BPS ...

Ø 39.37 ~ 110.23

BPS 1000

BPS 1160

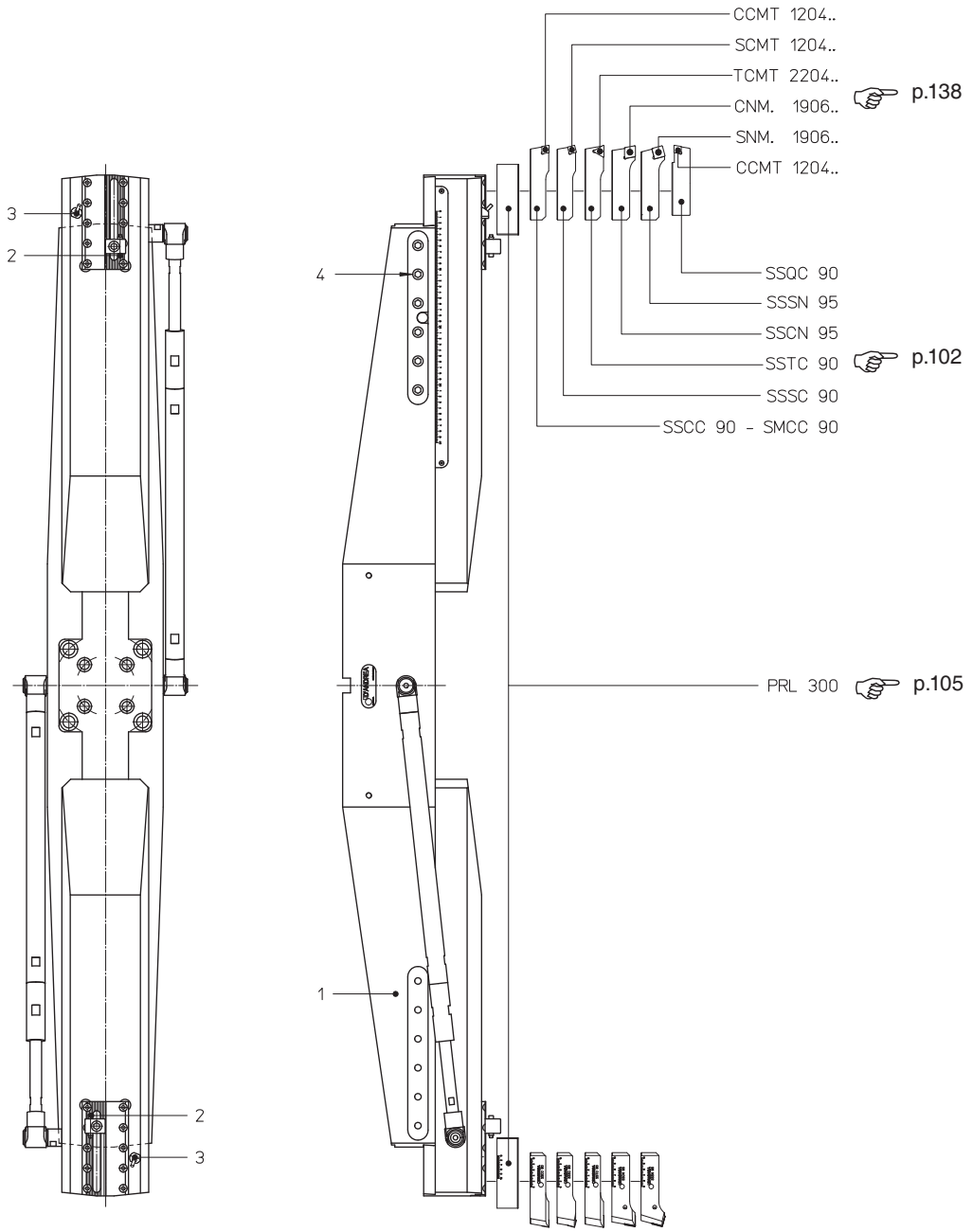
BPS 1600



ALUMINIUM TOOLS LINE

BPS ...

Ø 39.37 ~ 110.23



COMPONENTS
1. Body
2. Setting screws
3. Coolant outlets
4. Slide cramp screws
   120 Nm

BAUTEILE
1. Körper
2. Einstellschraube
3. Kühlmittelaustritt
4. Schlitten-Klemmschraube
   120 Nm

COMPONENTES
1. Cuerpo
2. Tornillo de regulación
3. Agujeros salida refrigerante
4. Tornillos blocaje guia
   120 Nm

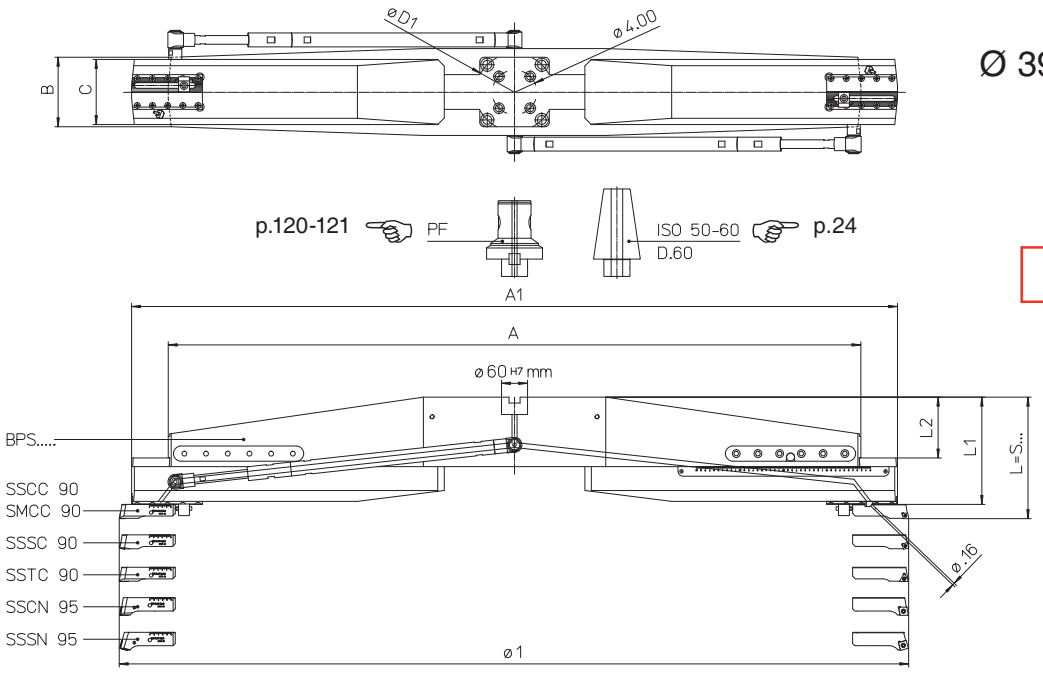
COMPOSANTS
1. Corps
2. Vis de réglage
3. Sortie du liquide d'arrosage
4. Vis blocage coulisseau
   120 Nm

COMPONENTI
1. Corpo
2. Vite di regolazione
3. Fori uscita refrigerante
4. Viti Bloccaggio Slitta
   120 Nm

Double-bit boring crossbars | **Zweischneiderbohrschienen** | **Barras porta-asiento de dos cortes** | **Semelles d'alésage à deux coupants** | **Barre portaseggio bitaglienti**

BPS ...

Ø 39.37 ~ 98.42



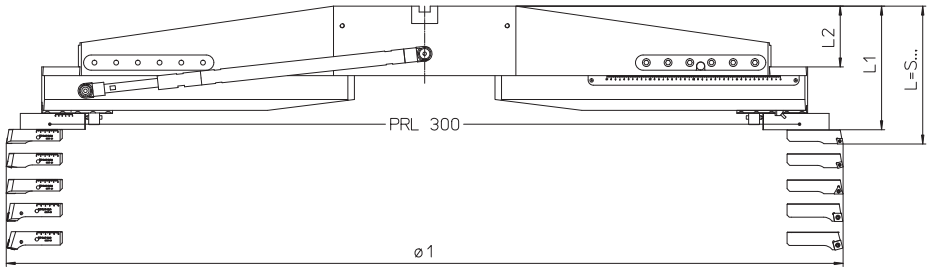
BORING

ISO / PF excluded | **Ohne ISO / PF** | **ISO / PF excluido** | **Sauf ISO /PF** | **ISO / PF escluso**

REF.	CODE	Ø1	A	A1	L(S...90)	L(SS..95)	L1	L2	B	C	øD1	S ...	lb
BPS 1000	43 55 60 90 1000	39.37 ~ 63.00	39.17	39.17 ~ 58.85	8.78	9.09	7.52	3.93	6.30	5.90	–	SSCC90 SMCC90	154.32
BPS 1160	43 55 60 90 1160	63.00 ~ 78.74		62.79 ~ 74.60	9.37	9.68	8.11					SSSC90 SSTC90	220.46
BPS 1600	43 55 60 90 1600	78.74 ~ 98.42	62.79	62.79 ~ 94.29	10.94	11.26	9.68	5.51	7.87	6.30	7.00	SSCN95 SSSN95	330.69

BPS ...

Ø 51.18 ~ 110.23



BORING

REF.	CODE	Ø1	A	A1	L(S...90)	L(SS..95)	L1	L2	B	C	øD1	PRL	S ...	lb
BPS 1000	43 55 60 90 1000	51.18~74.80	39.17	39.17~58.85	10.35	10.67	9.09	3.93	6.30	5.90	–	PRL300	SSCC90 SMCC90	154.32
BPS 1160	43 55 60 90 1160	74.80~90.55		62.79~74.60	10.94	11.26	9.68						SSSC90 SSTC90	220.46
BPS 1600	43 55 60 90 1600	74.80~110.23	62.79	62.79~94.29	12.52	12.83	11.26	5.51	7.87	6.30	7.00		SSCN95 SSSN95	330.69

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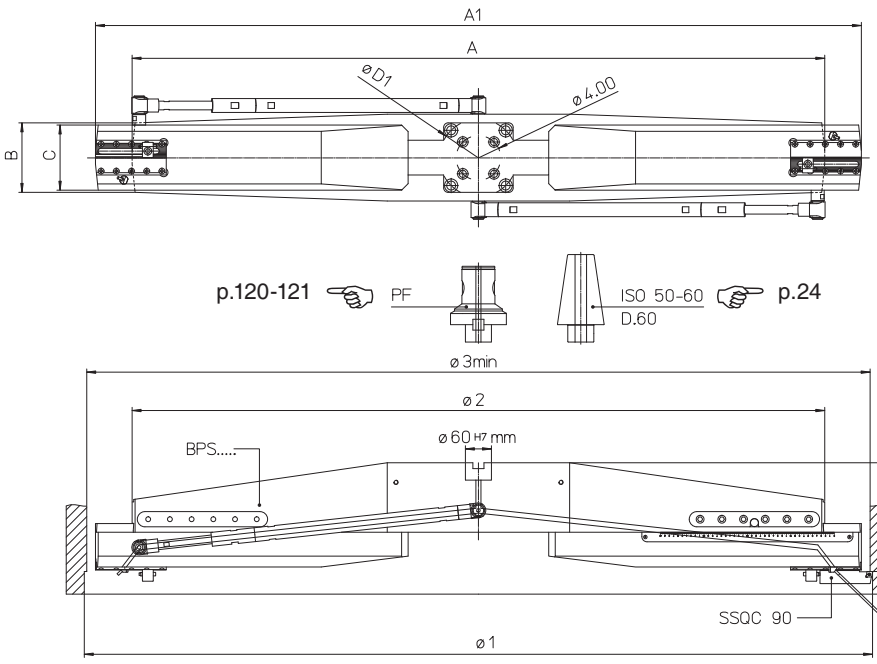


BPS ...

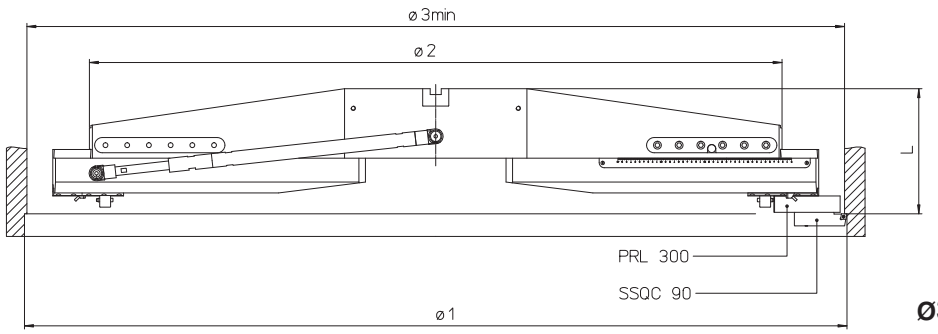
Ø 39.45 ~ 98.50

BACK BORING

ø3 min = (ø1+ø2+1) : 2

ISO / PF excluded | **Ohne ISO / PF** | **ISO / PF excluido** | **Sauf ISO /PF** | **ISO / PF escluso**

REF.	CODE	Ø1	Ø2	A	A1	L	B	C	øD1	S ...	lb
BPS 1000	43 55 60 90 1000	39.45 ~ 63.07	39.17		39.17 ~ 58.85	7.62	6.30	5.90	–	SSQC90	154.32
BPS 1160	43 55 60 90 1160	63.07 ~ 78.81			62.79 ~ 74.60						220.46
BPS 1600	43 55 60 90 1600	63.07 ~ 98.50	62.79		62.79 ~ 94.29	9.78	7.87	6.30	7.00		330.69



BPS ...

Ø 51.26 ~ 110.31

BACK BORING

ø3 min = (ø1+ø2+1) : 2

REF.	CODE	Ø1	Ø2	A	A1	L	B	C	øD1	PRL	S ...	lb
BPS 1000	43 55 60 90 1000	51.26 ~ 74.88	39.17		39.17 ~ 58.85	9.23	6.30	5.90	–	PRL300	SSQC90	154.32
BPS 1160	43 55 60 90 1160	74.88 ~ 90.63			62.79 ~ 74.60	9.23						220.46
BPS 1600	43 55 60 90 1600	90.63 ~ 110.31	62.79		62.79 ~ 94.29	11.39	7.87	6.30	7.00			330.69

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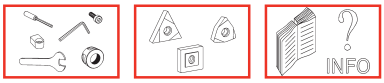
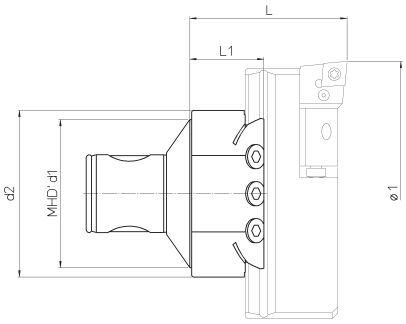


Member IMC Group Ingersoll Cutting Tools

MODULHARD'ANDREA

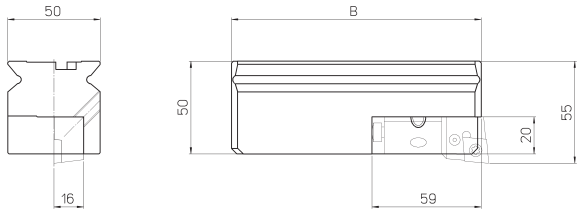
Toolholders | Werkzeughalter | Portaherramientas | Porte-outils | Portautensile

TP



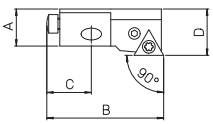
REF.	CODE	MHD' d_1	d_2	$Ø_1$	L	L_1	PC..	lb
TP 80/90.50	46 04 080 50 0 01	80	3.54	3.94 ~ 5.51	3.35	1.57	PC 11.50	5.07
				5.51 ~ 8.27			PC 12.50	
TP 80/125.50	46 04 080 50 0 02		4.92	5.51 ~ 8.27			PC 12.50	7.05
				8.27 ~ 12.20			PC 13.50	
				12.20 ~ 16.14			PC 14.50	
				16.14 ~ 19.69			PC 15.50	

PC

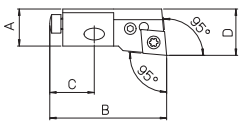


REF.	CODE	B	lb
PC 11.50	43 30 50 16 095 0	3.74	2.87
PC 12.50	43 30 50 16 135 0	5.31	4.41
PC 13.50	43 30 50 16 200 0	7.87	7.05
PC 14.50	43 30 50 16 300 0	11.81	10.58
PC 15.50	43 30 50 16 400 0	15.74	13.89

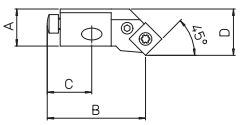
16CA ISO 5611



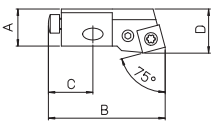
PTGNL 16CA-16



PCLNL 16CA-12



PSSNL 16CA-12



PSRNL 16CA-12

On request | Auf Anfrage | A petición | Sur demande | Fornibili su richiesta

REF.	CODE	A	B	C	D	△
PTGNL 16CA-16	48 3 01 016 1 001	.79	2.48	.98	.98	TNM. 1604..
PCLNL 16CA-12	48 3 01 016 1 002					CNM. 1204..
PSSNL 16CA-12	48 3 01 016 1 003					SNM. 1204..
PSRNL 16CA-12	48 3 01 016 1 004					SNM. 1204..

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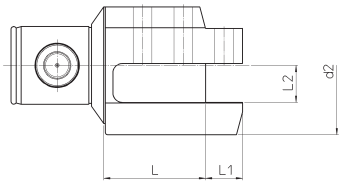
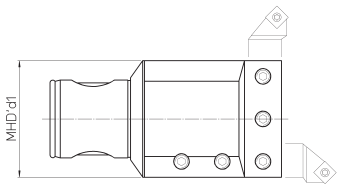
TU

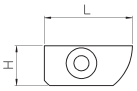


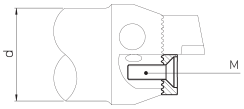


REF.	CODE	MHD' d_1	d_2	L	L_1	L_2	lb
TU 50/60.16	46 05 050 16 001	50	2.36	1.73	.63	.62	2.65
TU 63/75.20	46 05 063 20 001	63	2.95	2.17	.79	.79	5.29
TU 80/95.25	46 05 080 25 001	80	3.74	2.56	.98	.98	7.94

Cover plates | **Abdeckplatten** | **Protecciones** | **Caches de protection** | **Protezioni millerighe**

PT

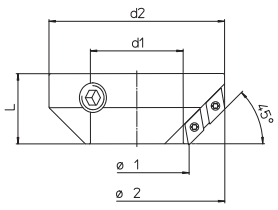


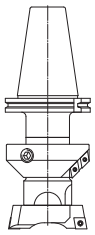


REF.	CODE	d	H	L	M
PT 16	38 47 65 000160	16	.27	.55	M 3x12
PT 20	38 47 65 000200	20	.33	.67	M 4x14
PT 25	38 47 65 000250	25	.40	.83	M 4x16
PT 32	38 47 65 000320	32	.55	1.10	M 5x20
PT 40	38 47 65 000400	40	.69	1.38	M 6x25
PT 50	38 47 65 000500	50	.84	1.87	M 8x25
PT 63	38 47 65 000630	63	1.04	2.44	M 10x30
PT 80	38 47 65 000800	80	1.33	3.25	M 12x35

Chamfering tools | **Fasringe** | **Herramientas para achaflanar** | **Outil à chanfreiner** | **Anello per smussi**

AS...45°





REF.	CODE	Ø$_1$	d_1	d_2	L	◇	▯	⌐	lb
AS 16.45	65 56 016 0013 0	.71 ~ 1.10	16	1.10	.51	DCMT 0702..	TS 25	TORX T08	0.08
AS 20.45	65 56 020 0015 0	.91 ~ 1.26	20	1.26	.59				0.1
AS 25.45	65 56 025 0018 0	1.10 ~ 1.70	25	1.70	.70				0.22
AS 32.45	65 56 032 0022 0	1.37 ~ 2.12	32	2.12	.86				0.44
AS 40.45	65 56 040 0030 0	1.81 ~ 2.83	40	2.83	1.18	DCMT 11T3..	TS 4	TORX T15	1.1
AS 50.45	65 56 050 0038 0	2.20 ~ 3.74	50	3.74	1.49				2.43
AS 63.45	65 56 063 0046 0	2.95 ~ 4.92	63	4.92	1.81	DCMT 1504..	TS 5	TORX T25	5.07
AS 80.45	65 56 080 0058 0	3.74 ~ 6.49	80	6.49	2.28				11.46

MODULHARD'ANDREA

FEATURES

The wide range of TRD testarossa heads is D'ANDREA solution or finishing in a field from 1.10 to 4.72 in diameter.

MERKMALE

Die umfangreiche Reihe der Testarossa Köpfe TRD ist D'ANDREA Lösung für Fertigbearbeitungen in einem Durchmesserbereich von 1.10 bis 4.72.

CARACTERÍSTICAS

La amplia gama de los cabezales testarossa TRD es la socución que propone D'ANDREA para acabados en un campo de 1.10 a 4.72 de diámetro.

CARACTÉRISTIQUES

La vaste gamme des têtes testarossa TRD est la solution de D'ANDREA pour les finissages comprenant un intervalle de 1.10 à 4.72 de diamètre.

CARATTERISTICHE

La vasta gamma delle teste testarossa TRD è la soluzione di D'ANDREA per finiture in un campo da 1.10 a 4.72 di diametro.

Member IMC Group Ingersoll Cutting Tools

FEATURES

The wide range of TRM testarossa heads is D'ANDREA solution or finishing in a field from .10 to 43.30 in diameter.

MERKMALE

Die umfangreiche Reihe der Testarossa Köpfe TRM ist D'ANDREA Lösung für Fertigbearbeitungen in einem Durchmesserbereich von .10 bis 43.30.

CARACTERÍSTICAS

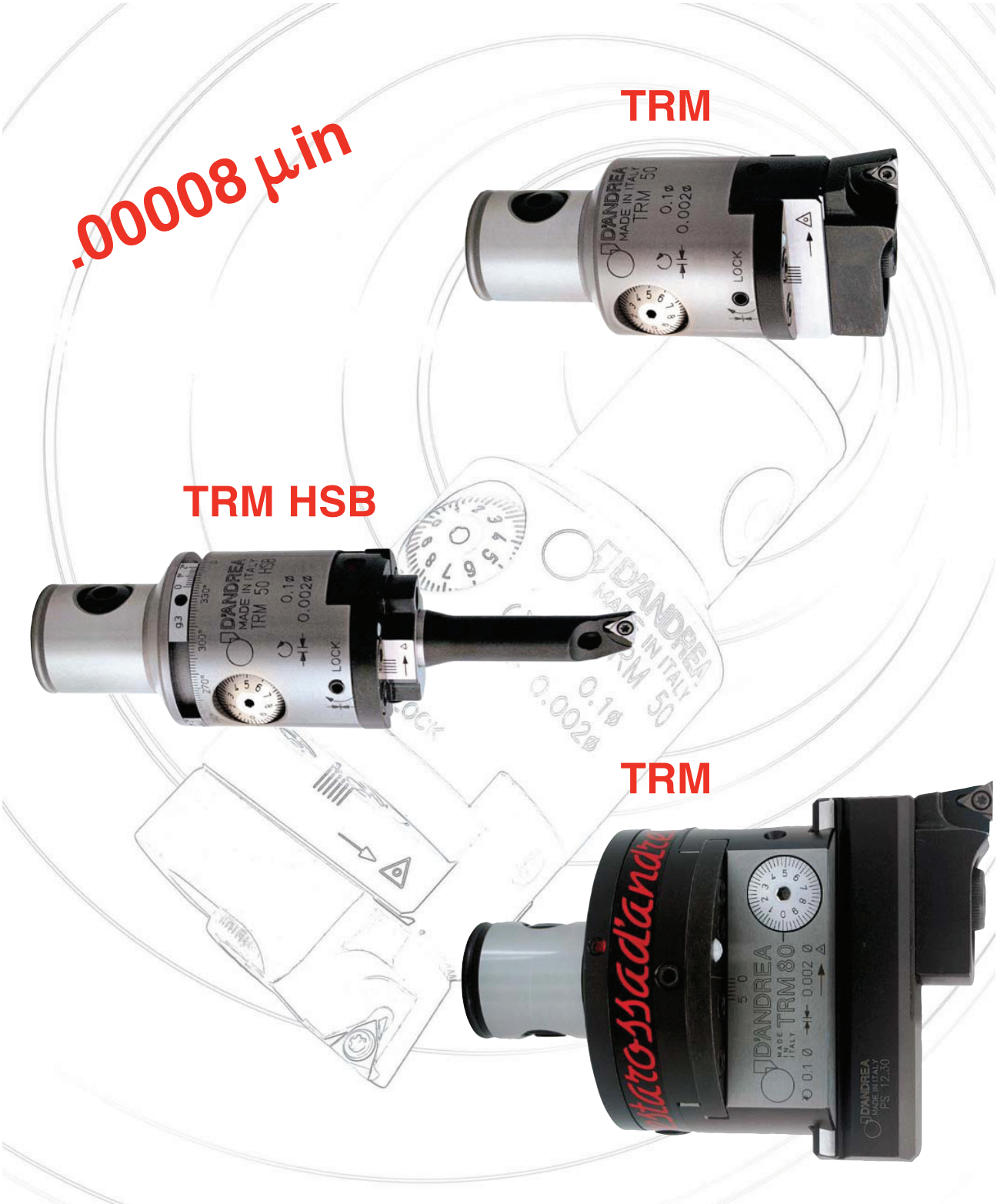
La amplia gama de los cabezales testarossa TRM es la socución que propone D'ANDREA para acabados en un campo de .10 a 43.30 de diámetro.

CARACTÉRISTIQUES

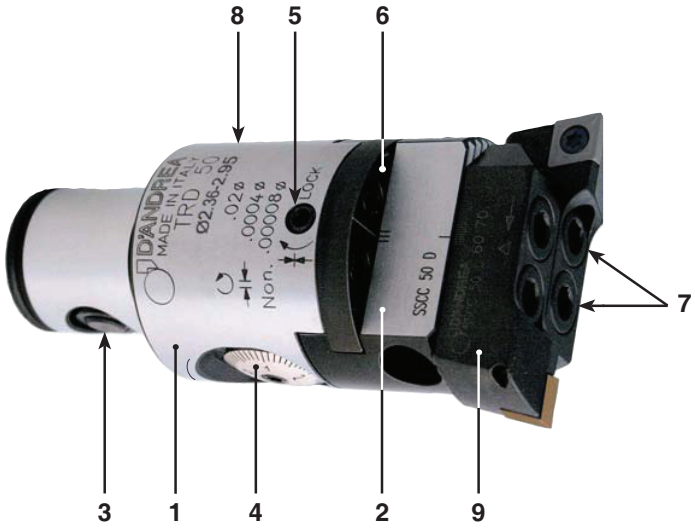
La vaste gamme des têtes testarossa TRM est la solution de D'ANDREA pour les finissages comprenant un intervalle de .10 à 43.30 de diamètre.

CARATTERISTICHE

La vasta gamma delle teste testarossa TRM è la soluzione di D'ANDREA per finiture in un campo da .10 a 43.30 di diametro.



Double-bit Testarossa | **Testarossa Zweischneiderköpfe** | **Testarossa de dos cuchillas** | **Double tranchant Testarossa** | **Testarossa Bitagliente**



Dom. Brev. Dep.
Patent Pending

FEATURES

The double-bit TRD heads allow both roughing and high precision finish thanks to their rigidity and the sensitivity of the sliding mechanism which can achieve radial correction of 5 micron.
This can be effected directly on the machine and easily read on the vernier scale.
The main advantage of the TRD head is that it can be pre-regulated independently of the bit holders found on the slide.
This allows both roughing and high precision finish work at the same time.

MERKMALE

Die TRD Zweischneiderköpfe ermöglichen eine kombinierte und hochpräzise Vor- und Fertigbearbeitung.
Dank der Steifigkeit und der auf radial 5 µm über Skala genauen Schlittenverstellung kann das Mass direkt an der Maschine korrigiert werden.
Der Hauptvorteil der TRD Köpfe liegt darin, dass beide Plattenhalter unabhänging von einander auf dem Schlitten voreingestellt werden können.
Dies erlaubt eine Vor-und hochpräzise Fertigbearbeitung zur selben Zeit.

CARACTERÍSTICAS

Los cabezales de dos cuchillas TRD permiten realizar operaciones combinadas de desbaste y acabado de alta precisión, gracias a su rigidez y a la sensibilidad del mecanismo de deslizamiento con ajuste de 5 micrones en el radio, que puede leerse en el nonio y realizarse directamente en la máquina.
El punto fuerte de los TRD es el pre-ajuste independiente de los asientos montados sobre la corredera que permiten realizar a la vez operaciones de desbaste y acabado.

CARACTÉRISTIQUES

Les têtes à double tranchant TRD permettent le travail combiné de dégrossissage et finition de haute précision.
Grâce à leur rigidité et à la sensibilité du déplacement du chariot avec un réglage de 5 microns sur le rayon, lisible sur le nonius et exécutable même dans la machine.
Le paragraphe fort des TRD est le pré-réglage indépendant des logements montés sur le chariot qui permettent d'effectuer en même temps des travaux de dégrossissage et de finition.

CARATTERISTICHE

Le testine bitaglienti TRD consentono lavorazioni combinate di sgrossatura e finitura di alta precisione, grazie alla loro rigidezza e alla sensibilità dello spostamento slitta con regolazione di 5 micron sul raggio, leggibile sul nonio ed eseguibile anche in macchina.
Il punto di forza delle TRD è la pre-regolazione indipendente dei seggi montati sulla slitta che consentono di eseguire contemporaneamente lavorazioni di sgrossatura e di finitura.

COMPONENTS

1. Body
2. Slide toolholder
3. Expanding radial pin
4. Vernier scale
5. Slide clamp screw
6. Coolant outlet
7. Tool clamp screw
8. Oiler
9. Bit holder

BAUTEILE

1. Körper
2. Werkzeugschlitten
3. Spreizbolzen
4. Nonius
5. Schlittenklemmschraube
6. Kühlmittelaustritt
7. Werkzeugklemmschraube
8. Schmiernippel
9. Plattenhalter

COMPONENTES

1. Cuerpo
2. Guía portaherramientas
3. Perno radial expansible
4. Nonio
5. Tornillo blocaje guía
6. Agujero salida refrigerante
7. Tornillo blocaje herramientas
8. Engrasador
9. Portaplaquita

COMPOSANTS

1. Corps
2. Coulisseau
3. Tige radial expansible
4. Vernier
5. Vis blocage coulisseau
6. Sortie du liquide d'arrosage
7. Vis blocage outil
8. Graisseur
9. Porte-plaquettes

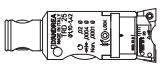
COMPONENTI

1. Corpo
2. Slitta portautensili
3. Perno radiale espandibile
4. Nonio
5. Vite bloccaggio slitta
6. Uscita refrigerante
7. Vite bloccaggio utensili
8. Oliatore
9. Seggio portainserti

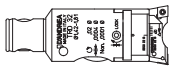
TRD

Ø 1.10 ~ 4.72

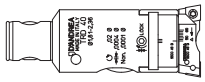
TRD 25 INCH
Ø 1.10 ~ 1.42



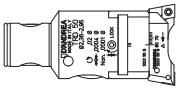
TRD 32 INCH
Ø 1.42 ~ 1.81



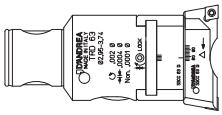
TRD 40 INCH
Ø 1.81 ~ 2.36



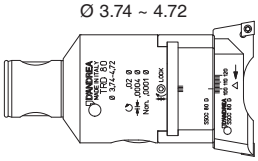
TRD 50 INCH
Ø 2.36 ~ 2.95



TRD 63 INCH
Ø 2.95 ~ 3.74



TRD 80 INCH
Ø 3.74 ~ 4.72



.0004 µin

nonio vernier .00008 µm

Dom. Brev. Dep.
Patent Pending

IMPORTANT NOTE

- Take care that the tools and tool holders are solidly blocked on the slide. The only maneuvring or adjusting screws to be used for the operations for the heads are those listed in the Components section.
- The screws not listed in the Components section should not be touched in order not to compromise the correct operation of boring bars and heads.
- The SCCC, SFCC, and SFTP bit holders must be mounted as indicated by the incision on the slide.
- Remember to loosen the screw (5) before the vernier setting(4). Fix the screw (5) at the end of the adjustment.

The adjustment of POSITIVE is carried out by turning the vernier (4) counter-clockwise.

The use of coolant on theTRD double-bit heads should be 40 BAR max.

WICHTIGER HINWEIS

- Sicherstellen, dass Werkzeuge und Plattenhalter fest auf dem Schlitten angebracht sind. Nur die Verstell- und Einstellschrauben, die wichtig für den Einsatz des Kopfes sind, sind unter dem Punkt Komponenten aufgeführt.
- Um die Funktionsweise des Kopfes nicht zu beeinträchtigen, dürfen die nicht aufgeführten Schrauben nicht verstellt werden.
- Die Plattenhalter SSCC, SFCC und SFTP müssen Gemäss der Schlittenbeschriftung auf dem Schlitten montiert werden.
- Sicherstellen, dass di e Klemmschraube (5) vor einer Schlitteneinstellung über die Skalenschraube (4) gelöst wird. Klemmenschraube (5) nach dem Einstellen wieder festziehen.

Die positive, Zustellung erfolgt durch Drehung der Skalenschraube (4) gegen den Uhrzeigersinn.

Bei Verwendung von Kühlmittel bei den TRD Köpfen darf der maximale Druck 40 Bar betragen.

ATENCIÓN

- Cerciorarse de que las herramientas y los porta-herramientas estén firmemente sujetos en la corredera. Los tornillos de maniobra o de ajuste útiles para el uso de los cabezales son los indicados en el punto “Componentes”.
- Los tornillos no indicados en el punto “Componentes” no deben tocarse para no comprometer el correcto funcionamiento de los cabezales.
- Los asientos SSCC, SFCC y SFTP han de montarse como indica la incisión en la corredera.
- Recordar aflojar el tornillo (5) antes de efectuar el ajuste del nonio (4). Bloquear el tornillo (5) una vez terminado el ajuste.

El ajuste POSITIVO se realiza girando el nonio (4) hacia la izquierda.

El uso del refrigerante en los cabezales de las cuchillas TRD debe ser de máx. 40 BAR.

NOTE IMPORTANTE

- S’assurer que les outils et les porte-outils sont solidement bloqués sur le chariot. Les vis de manœuvre ou de réglage utiles pour l’utilisation des têtes sont seulement celles indiquées au paragraphe Composants.
- Les vis non indiquées au paragraphe Composants ne doivent pas être touchées pour ne pas compromettre le bon fonctionnement des testes.
- Les sièges SSCC, SFCC et SFTP doivent être montés comme cela est indiqué sur la glissière.
- Ne pas oublier de desserrer la vis (5) avant d’effectuer un réglage du nonius (4). Bloquer la vis (5) à la fin du réglage.

Le réglage POSITIF est effectué en tournant en sans anti-horaire le nonius (4).

L’utilisation du réfrigérant sur les têtes à deux tranchants TRD doit être d’un max. de 40 BAR.

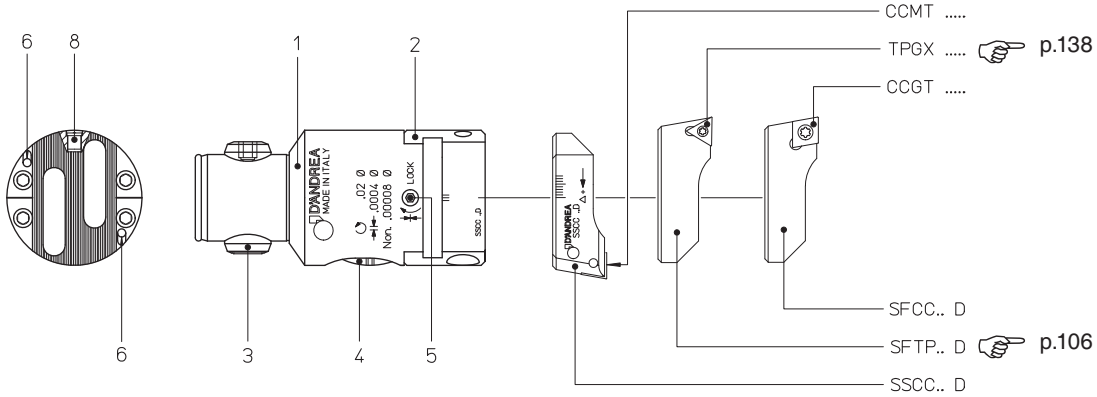
ATTENZIONE

- Assicurarsi che utensili e portautensili siano saldamente bloccati sulla slitta. Le viti di manovra o di regolazione utili per l’impiego delle testine sono solo quelle indicate nel punto Componenti.
- Le viti non indicate nel punto Componenti non devono essere toccate per non compromettere il buon funzionamento delle testine.
- I seggi SSCC, SFCC e SFTP devono essere montati come indica l'incisione sulla slitta.
- Ricordarsi di allentare la vite (5) prima di eseguire una regolazione del nonio (4). Bloccare la vite (5) a fine regolazione.

La regolazione POSITIVA si esegue ruotando in senso antiorario il nonio (4).

L'impiego del refrigerante sulle testine bitaglienti TRD deve essere max. 40 BAR.

TRD 25
TRD 32
TRD 40
TRD 50
TRD 63
TRD 80



COMPONENTS

1. Body
2. Slide toolholder
3. Expanding radial pin
4. Vernier scale
5. Slide clamp screw
6. Coolant outlet
8. Oiler

BAUTEILE

1. Körper
2. Werkzeugschlitten
3. Spreizbolzen
4. Nonius
5. Schlittenklemmschraube
6. Kühlmittelaustritt
8. Schmiernippel

COMPONENTES

1. Cuerpo
2. Guía portaherramientas
3. Perno radial expansible
4. Nonio
5. Tornillo blocaje guía
6. Agujero salida refrigerante
8. Engrasador

COMPOSANTS

1. Corps
2. Coulisseau
3. Tige radial expansible
4. Vernier
5. Vis blocage coulisseau
6. Sortie du liquide d'arrosage
8. Graisseur

COMPONENTI

1. Corpo
2. Slitta portautensili
3. Perno radiale espandibile
4. Nonio
5. Vite bloccaggio slitta
6. Uscita refrigerante
8. Oliatore

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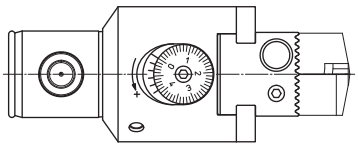
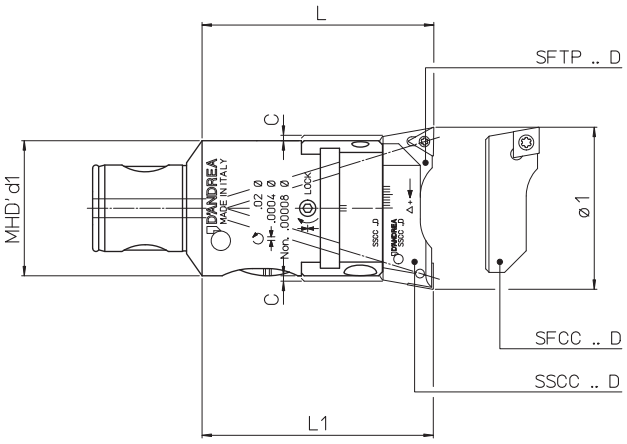
TRD 25
TRD 32
TRD 40
TRD 50
TRD 63
TRD 80

Ø 1.10 ~ 4.72





REF.	CODE	MHD' d_1	Ø$_1$	L	L_1	C	S.... D			lb
TRD 25 INCH	45 50 225 6057 0	25	1.10 ~ 1.42	2.21	2.22	± .02	S... 25 D			0.44
TRD 32 INCH	45 50 232 6071 0	32	1.42 ~ 1.81	2.78	2.79		S... 32 D			0.77
TRD 40 INCH	45 50 240 6090 0	40	1.81 ~ 2.36	3.53	3.54	± .04	S... 40 D	•	•	1.54
TRD 50 INCH	45 50 250 6086 0	50	2.36 ~ 2.95	3.41	3.42		S... 50 D			3.31
TRD 63 INCH	45 50 263 6108 0	63	2.95 ~ 3.74	4.28	4.29	± .08	S... 63 D			5.95
TRD 80 INCH	45 50 280 6129 0	80	3.74 ~ 4.72	5.11	5.12		S... 80 D			10.58

● **Available in metric upon request**

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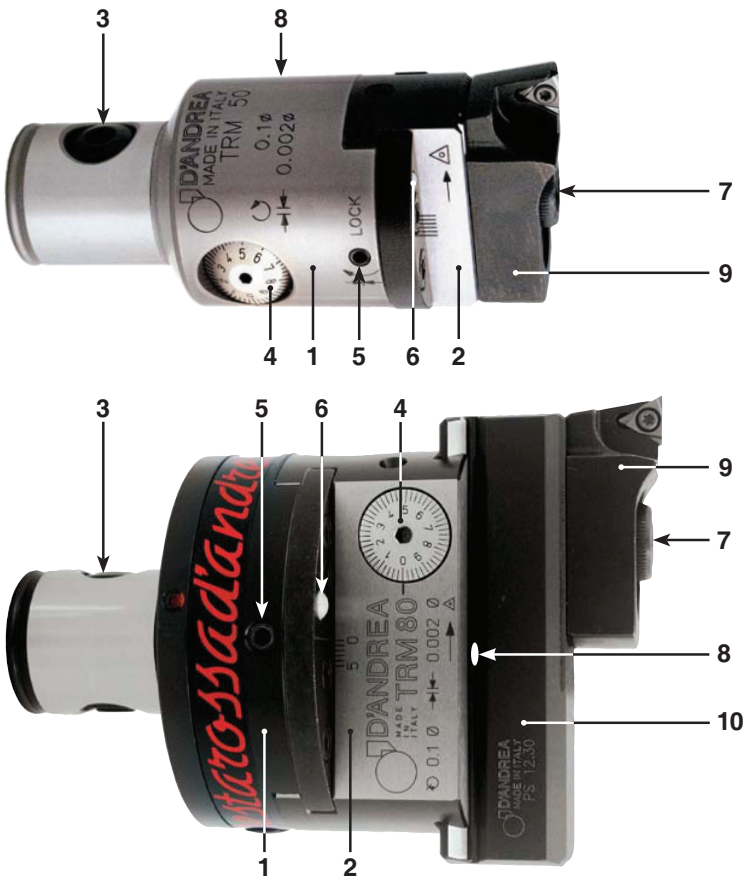
Testarossa Testarossa Testarossa Testarossa Testarossa



FEATURES

The TRM heads in the new line Testarossa D'Andrea have protective rustproof coating.
High precision work to IT6 tolerance, with excellent surface finish, is achieved using TRM boring heads. These are very sensitive and radial correction of 1 micron can be effected directly on the machine and easily read on the vernier scale.

COMPONENTS

1. Body
2. Slide toolholder
3. Expanding radial pin
4. Micrometric vernier scale
5. Slide clamp screw
6. Coolant outlet
7. Tool clamp screw
8. Oiler
9. Bit holder
10. Tool holder

MERKMALE

Die TRM Köpfe der neuen Testarossa Serie besitzen eine rostbeständige Oberfläche. Die TRM-Köpfe ermöglichen Bearbeitungstoleranzen bis zum Toleranzgrad IT6 bei hochwertiger Oberflächengüte.
Sie besitzen eine Feinverstellung mit einer Genauigkeit von radial 1 µm, leicht ablesbar auf der Skala. Somit können Einstellungen direkt an der Maschine ausgeführt werden.

BAUTEILE

1. Körper
2. Werkzeugschlitten
3. Spreizbolzen
4. Mikrometrischer Nonius
5. Schlittenklemmschraube
6. Kühlmittelaustritt
7. Werkzeugklemmschraube
8. Schmiernippel
9. Plattenhalter
10. Werkzeughalter

CARACTERÍSTICAS

Los cabezales TRM de la nueva línea Testarossa D'Andrea cuentan con una protección superficial anticorrosión. Los cabezales TRM permiten realizar operaciones de alta precisión con tolerancias de grado IT6 con un extraordinario acabado de la superficie. Tienen una sensibilidad de ajuste de 1 micrón en el radio, que puede leerse fácilmente en el nonio y realizarse directamente en la máquina.

COMPONENTES

1. Cuerpo
2. Guía portaherramientas
3. Perno radial expansible
4. Nonio micrométrico
5. Tornillo blocaje guía
6. Agujero salida refrigerante
7. Tornillo blocaje herramientas
8. Engrasador
9. Portaplaquita
10. Portaherramienta

CARACTÉRISTIQUES

Les têtes TRM de la nouvelle ligne Testarossa D'Andrea ont une protection superficielle anticorrosion. Les têtes TRM permettent des travaux de haute précision avec des tolérances de degré IT6 comprenant une finition superficielle optimum. Elles ont une sensibilité de réglage de 1 micron sur le rayon, facilement lisible sur le nonius et exécutable même en machine.

COMPOSANTS

1. Corps
2. Coulisseau
3. Tige radial expansible
4. Vernier micrométrique
5. Vis blocage coulisseau
6. Sortie du liquide d'arrosage
7. Vis blocage outil
8. Graisseur
9. Porte-plaquettes
10. Porte-outil

CARATTERISTICHE

Le testine TRM della nuova linea Testarossa D'Andrea hanno una protezione superficiale anticorrosiva. Le testine TRM consentono lavorazioni di alta precisione con tolleranze di grado IT6 con ottima finitura superficiale. Hanno una sensibilità di regolazione di 1 micron sul raggio, facilmente leggibile sul nonio ed eseguibile anche in macchina.

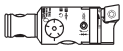
COMPONENTI

1. Corpo
2. Slitta portautensili
3. Perno radiale espandibile
4. Nonio micrometrico
5. Vite bloccaggio slitta
6. Ugello uscita refrigerante
7. Vite bloccaggio utensili
8. Oliatore
9. Seggio portainserti
10. Porta utensile

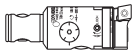
TRM

Ø .10 ~ 19.69

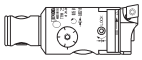
TRM 16 INCH
Ø .71 ~ .91



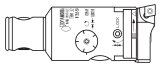
TRM 20 INCH
Ø .87 ~ 1.14



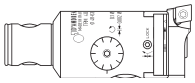
TRM 25 INCH
Ø 1.10 ~ 1.50



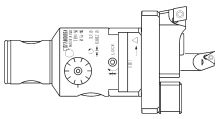
TRM 32 INCH
Ø 1.40 ~ 1.97



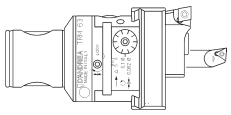
TRM 40 INCH
Ø 1.89 ~ 2.48



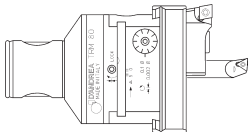
TRM 50 INCH
Ø .10 ~ 4.25



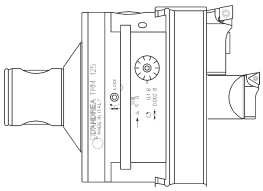
TRM 50/63 INCH
TRM 63/63 INCH
Ø .24 ~ 4.92



TRM 50/80 INCH
TRM 80/80 INCH
Ø .24 ~ 6.30



TRM 80/125 INCH
Ø 1.42 ~ 19.69



.00008 µin

IMPORTANT NOTE

- Take care that the tools and tool holders are solidly blocked on the slide. The only maneuvring or adjusting screws to be used for the operations for the heads are those listed in the Components section.
- The screws not listed in the Components section should not be touched in order not to compromise the correct operation of the heads.
- Bit holders and boring bars should be assembled with the insert turned on the same direction as the screw (5) (see photo).
- Remember to loosen the screw (5) before adjusting the vernier setting (4). Block the screw (5) at the end of the adjustment.

The micrometric adjustment of POSITIVE Is carried out by turning the vernier (4) counter clockwise.

The use of coolant on the TRM heads should be 40 BAR max.

WICHTIGER HINWEIS

- Sicherstellen, dass Werkzeuge und Plattenhalter fest auf dem Schlitten angebracht sind. Nur die Verstell- und Einstellschrauben, die wichtig für den Einsatz des Kopfes sind, sind unter dem Punkt Komponenten aufgeführt.
- Um die Funktionsweise des Kopfes nicht zu beeinträchtigen, dürfen Schrauben, die nicht aufgeführt sind, auch nicht verstellt werden.
- Die Wendeschneidplatten der Plattenhalter und Bohrstangen müssen in der gleichen Richtung, in der die Klemmschraube (5) sitzt, montiert werden.
- Sicherstellen, dass die Klemmschraube (5) vor einer Schlitteneinstellung über die Skalenschraube (4) gelöst wird. Klemmschraube (5) nach dem Einstellen wieder festziehen.

Die positive, mikrometrische Zustellung erfolgt durch Drehung der Skalenschraube (4) gegen den Uhrzeigersinn.

Bei Verwendung von Kühlmittel bei den TRM-Köpfen darf der Druck maximal 40 Bar betrage

ATENCIÓN

- Cerciorarse de que las herramientas y los porta-herramientas estén firmemente sujetos en la corredera. Los tornillos de maniobra o de ajuste útiles para el uso de los cabezales son los indicados en el punto “Componentes”.
- Los tornillos no indicados en el punto “Componentes” no deben tocarse para no comprometer el correcto funcionamiento de los cabezales.
- Los asientos y las barras deben montarse con el inserto mirando hacia la misma parte del tornillo (5) (ver foto).
- Recordar aflojar el tornillo (5) antes de efectuar el ajuste del nonio (4). Bloquear el tornillo (5) una vez terminado el ajuste.

El ajuste micrométrico POSITIVO se realiza girando el nonio (4) hacia la izquierda.

El uso del refrigerante en los cabezales de las cuchillas TRM debe ser de máx. 40 BAR.

NOTE IMPORTANTE

- S’assurer que les outils et les porte-outils sont solidement bloqués sur le chariot. Les vis de manœuvre ou de réglage utiles pour l’utilisation des têtes sont seulement celles indiquées au paragraphe Composants.
- Les vis non indiquées au paragraphe Composants ne doivent pas être touchées pour ne pas compromettre le bon fonctionnement des têtes.
- Les logements et les barres d’alésage doivent être installés avec la plaquette vers le même coté de la vis (5) (voir la photo)
- Ne pas oublier de desserrer la vis (5) avant d’effectuer un réglage du nonius (4). Bloquer la vis (5) à la fin du réglage.

Le réglage micrométrique POSITIF est effectué en tournant en sans anti-horaire le nonius (4).

L’utilisation du réfrigérant sur les têtes TRM doit être d’un max. de 40 BAR

ATTENZIONE

- Assicurarsi che utensili e portautensili siano saldamente bloccati sulla slitta. Le viti di manovra o di regolazione utili per l’impiego delle testine sono solo quelle indicate nel punto Componenti.
- Le viti non indicate nel punto Componenti non devono essere toccate per non compromettere il buon funzionamento delle testine.
- Seggi e bareni devono essere montati con l’inserto rivolto dalla stessa parte del nonio (4) (vedere foto).
- Ricordarsi di allentare la vite (5) prima di eseguire una regolazione del nonio (4). Bloccare la vite (5) a fine regolazione.

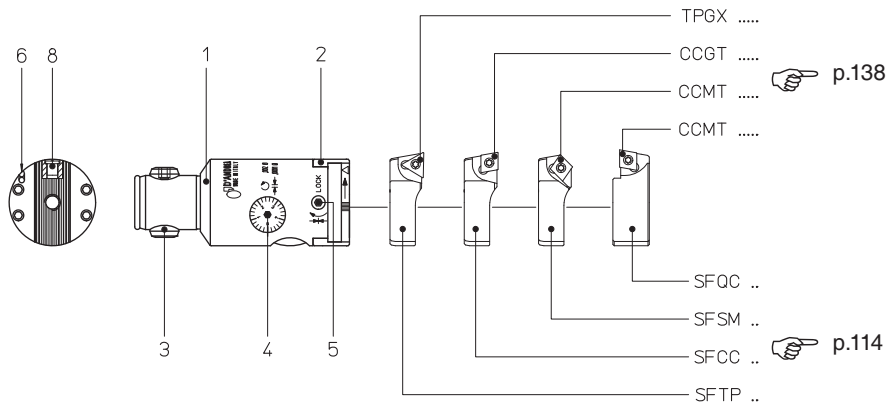
La regolazione micrometrica POSITIVA si esegue ruotando in senso antiorario il nonio (4).

L’impiego del refrigerante sulle testine TRM deve essere max. 40 BAR.

Testarossa | Testarossa | Testarossa | Testarossa | Testarossa

TRM 16
TRM 20
TRM 25
TRM 32
TRM 40

Ø .71 ~ 2.48



58

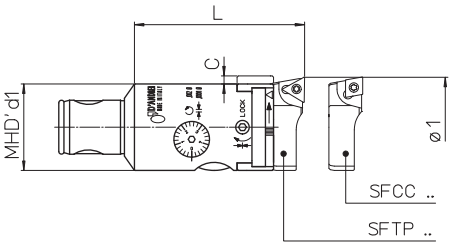


fig.1

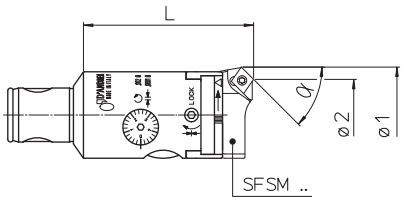


fig.2

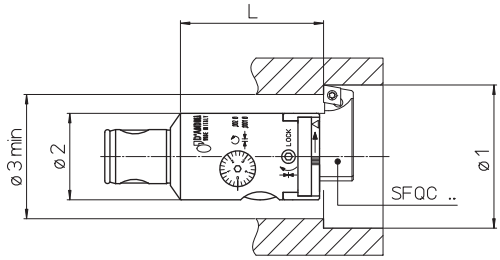


fig.3

fig.3 ø3 min = (Ø1+Ø2+1) : 2

COMPONENTS

1. Body
2. Slide toolholder
3. Expanding radial pin
4. Micrometric vernier scale
5. Slide clamp screw
6. Coolant outlet
8. Oiler

BAUTEILE

1. Körper
2. Werkzeugschlitten
3. Spreizbolzen
4. Mikrometrischer Nonius
5. Schlittenklemmschraube
6. Kühlmittelaustritt
8. Schmiernippel

COMPONENTES

1. Cuerpo
2. Guía portaherramientas
3. Perno radial expansible
4. Nonio micrométrico
5. Tornillo blocaje guía
6. Agujero salida refrigerante
8. Engrasador

COMPOSANTS

1. Corps
2. Coulisseau
3. Tige radial expansible
4. Vernier micrométrique
5. Vis blocage coulisseau
6. Sortie du liquide d'arrosage
8. Graisseur

COMPONENTI

1. Corpo
2. Slitta portautensili
3. Perno radiale espandibile
4. Nonio micrometrico
5. Vite bloccaggio slitta
6. Uscita refrigerante
8. Oliatore

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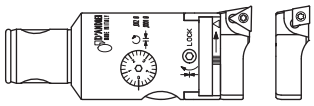
BORING

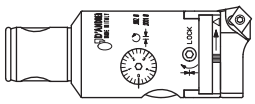
fig.1



REF.	CODE	MHD'd1	Ø1	L	C	SF..	△	◎	lb
TRM 16 INCH	45 50 016 6034 1	16	.71 ~ .91	1.34	.04	SF.. 16	–	•	0.11
TRM 20 INCH	45 50 020 6040 1	20	.87 ~ 1.14	1.57	.08	SF.. 20	–	•	0.22
TRM 25 INCH	45 50 025 6050 0	25	1.10 ~ 1.50	1.97		SF.. 25	•	•	0.44
TRM 32 INCH	45 50 032 6063 0	32	1.40 ~ 1.97	2.48	.12	SF.. 32	•	•	0.77
TRM 40 INCH	45 50 040 6080 0	40	1.89 ~ 2.48	3.15	.16	SF.. 40	•	•	1.54

CHAMFERING

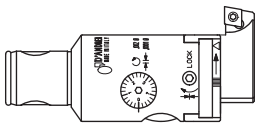
fig.2



REF.	CODE	MHD'd_1	Ø$_1$	Ø$_2$	α	L	C	SFSM ..	◎	lb
TRM 25 INCH	45 50 025 6050 0	25	1.04 ~ 1.48	.91 ~ 1.38	15°	1.97	.08	SFSM 25-15°		0.44
				.79 ~ 1.26	30°			SFSM 25-30°		
				.71 ~ 1.18	45°			SFSM 25-45°		
TRM 32 INCH	45 50 032 6063 0	32	1.34 ~ 1.97	1.20 ~ 1.83	15°	2.48	.12	SFSM 32-15°		0.77
				1.08 ~ 1.71	30°			SFSM 32-30°	•	
				.98 ~ 1.59	45°			SFSM 32-45°		
TRM 40 INCH	45 50 040 6080 0	40	1.75 ~ 2.5	1.57 ~ 2.30	15°	3.15	.16	SFSM 40-15°		1.54
				1.40 ~ 2.15	30°			SFSM 40-30°		
				1.26 ~ 1.99	45°			SFSM 40-45°		

BACK BORING

fig.3



REF.	CODE	MHD'd_1	Ø$_1$	Ø$_2$	L	C	SFQC ..	◎	lb
TRM 16 INCH	45 50 016 6034 1	16	.78 ~ .98	.63	1.08	.04	SFQC 16		0.11
TRM 20 INCH	45 50 020 6040 1	20	.96 ~ 1.26	.79	1.32	.08	SFQC 20		0.22
TRM 25 INCH	45 50 025 6050 0	25	1.24 ~ 1.59	.98	1.63		SFQC 25	•	0.44
TRM 32 INCH	45 50 032 6063 0	32	1.52 ~ 2.03	1.26	2.09	.12	SFQC 32		0.77
TRM 40 INCH	45 50 040 6080 0	40	1.99 ~ 2.56	1.57	2.68	.16	SFQC 40		1.54

● Available in metric upon request

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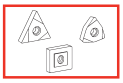

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TRM 50

Ø .10 ~ 4.25

Ø .10 ~ 1.18
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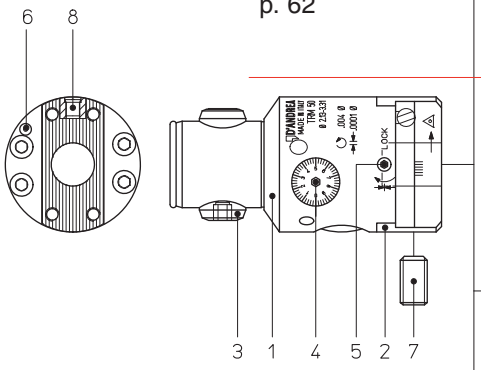
- D 08.16 — p.156
- B1.02 - B1.04
- B3... - B5... - B8... — p.108
- B3... - B5... - B8...
- TPGX 0902.. — p.138
- WCGT 0201..

Ø 1.10 ~ 2.13
p. 62

- TPGX 0902..
- CCGT 0602..
- SFCC 25 - SFCC 32 — p.114
- SFTP 25 - SFTP 32
- P 25.63 - P 25.105 — p.113



Ø 2.13 ~ 4.25
p. 63

- TPGX 1103..
- CCGT 09T3.. — p.138
- CCMT 09T3..
- CCMT 09T3..
- SFQC 50
- SFSM 50 — p.114
- SFCC 50
- SFTP 50
- BM10
- CW 32 — p.112
- PS 31.24

9

COMPONENTS
1. Body
2. Slide toolholder
3. Expanding radial pin
4. Micrometric vernier scale
5. Slide clamp screw
6. Coolant outlet
7. Tool clamp screw
8. Oiler
9. Toolholder lock screw

BAUTEILE
1. Körper
2. Werkzeugschlitten
3. Spreizbolzen
4. Mikrometrischer Nonius
5. Schlittenklemmschraube
6. Kühlmittelaustritt
7. Werkzeugklemmschraube
8. Schmiernippel
9. Werkzeughalter-spannschrauben

COMPONENTES
1. Cuerpo
2. Guía portaherramientas
3. Perno radial expansible
4. Nonio micrométrico
5. Tornillo blocaje guía
6. Agujero salida refrigerante
7. Tornillo blocaje herramientas
8. Engrasador
9. Tornillos blocaje portaherramientas

COMPOSANTS
1. Corps
2. Coulisseau
3. Tige radial expansible
4. Vernier micrométrique
5. Vis blocage coulisseau
6. Sortie du liquide d'arrosage
7. Vis blocage outil
8. Graisseur
9. Vis blocage porte-outils

COMPONENTI
1. Corpo
2. Slitta portautensili
3. Perno radiale espandibile
4. Nonio micrometrico
5. Vite bloccaggio slitta
6. Ugello uscita refrigerante
7. Vite bloccaggio utensili
8. Oliatore
9. Viti bloccaggio portautensili

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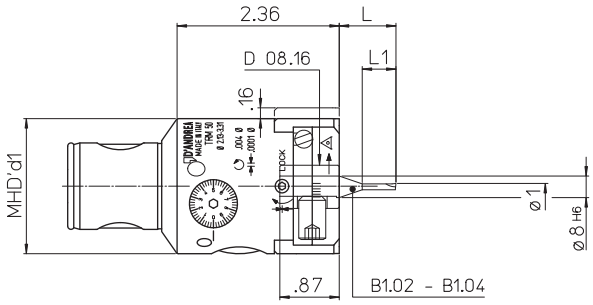
BORING

TRM 50

Ø .10 ~ .24

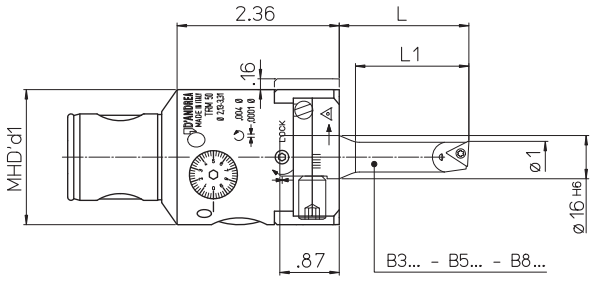


REF.	CODE	MHD'd_1	Ø$_1$	B...	L	L_1	lb
TRM 50 INCH	45 50 050 6050 0	50	.10 ~ .16	B1.02	.83	.49	2.2
			.16 ~ .24	B1.04	.94	–	

BORING

TRM 50

Ø .24 ~ 1.18



REF.	CODE	MHD'd_1	Ø$_1$	B...	L	L_1	⬡	⬡	lb
TRM 50 INCH	45 50 050 6050 0	50	.24 ~ .31	B3.06	1.14	.83	•	–	2.2
				B5.06	1.42	–			
				B8.06	1.77				
			.31 ~ .39	B3.08	1.41	1.10			
				B5.08	1.89	–			
				B8.08	2.36				
			.39 ~ .47	B3.10	1.69	1.38	–	•	
				B5.10	2.36	–			
				B8.10	2.95				
			.43 ~ .51	B3.11	1.89	1.57			
			.47 ~ .55	B3.12		1.65			
				B5.12	2.83	–			
				B8.12	3.54				
			.55 ~ .63	B3.14	2.05	1.97			
				B5.14	3.31	–			
				B8.14	4.13				
			.63 ~ .71	B3.16	2.28	1.96			
				B5.16	3.78	–			
				B8.16	4.72				
			.71 ~ .87	B3.18	2.48				
			.87 ~ 1.18	B3.22	2.68				

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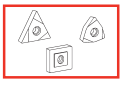


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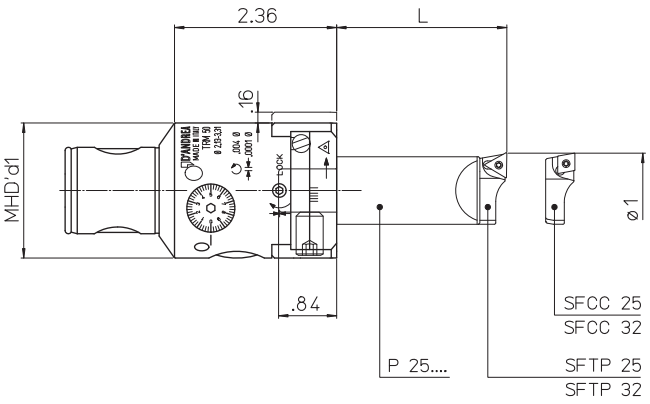
BORING

TRM 50

Ø 1.10 ~ 2.13



REF.	CODE	MHD'd_1	Ø$_1$	L	P 25..	SF..			lb
TRM 50 INCH	45 50 050 6050 0	50	1.10 ~ 1.65	2.48	P 25.63	SFTP 25 SFCC 25	•	•	2.2
				4.13	P 25.105				
			1.42 ~ 2.13	2.48	P 25.63	SFTP 32 SFCC 32	•	•	
				4.13	P 25.105				

● **Available in metric upon request**

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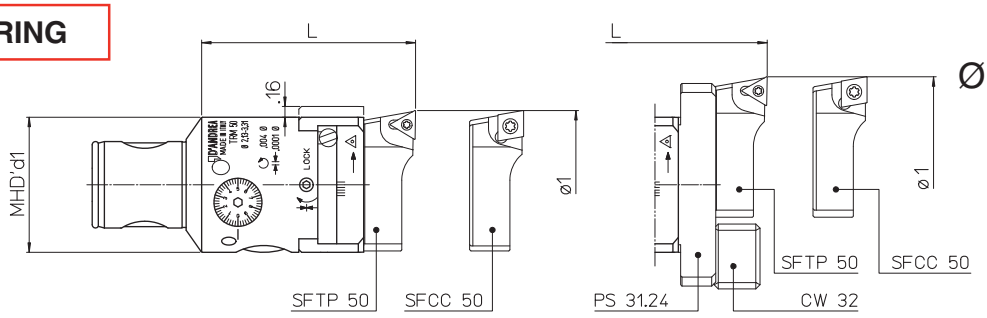
BORING

TRM 50

Ø 2.13 ~ 4.25

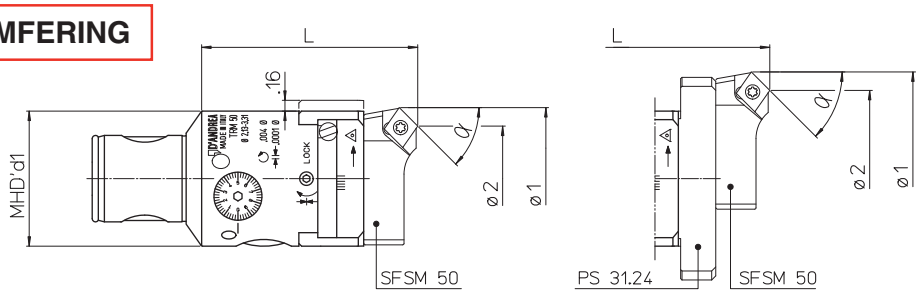


REF.	CODE	MHD'd1	Ø1	L	PS	SF..			lb
TRM 50 INCH	45 50 050 6050 0	50	2.13 ~ 3.31	3.11	–	SFTP 50 SFCC 50	•	•	2.2
			3.15 ~ 4.25	3.66	PS 31.24				
			3.62 ~ 4.25		PS 31.24+CW32				

CHAMFERING

TRM 50

Ø 2.05 ~ 4.29

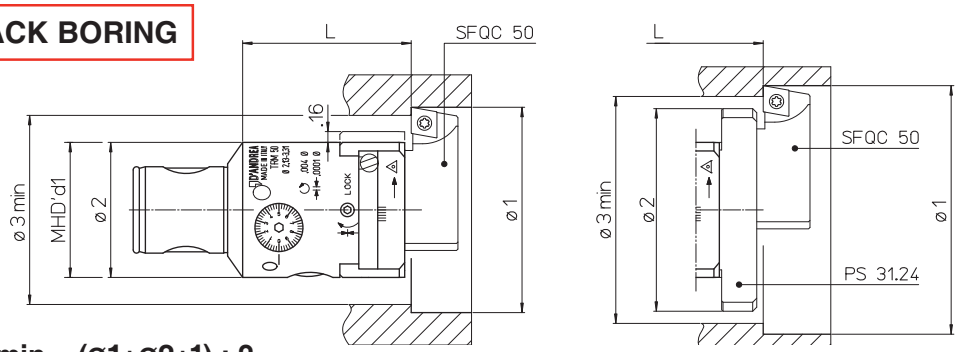


REF.	CODE	MHD'd1	Ø1	Ø2	α	L	PS	SFSM		lb
TRM 50 INCH	45 50 050 6050 0	50	2.05 ~ 3.31	1.87 ~ 3.13	15°	3.11	–	SFSM 50-15° SFSM 50-30° SFSM 50-45°	•	2.2
				1.69 ~ 2.93	30°					
				1.54 ~ 2.81	45°					
			3.03 ~ 4.29	2.83 ~ 4.09	15°	3.66	PS 31.24			
				2.66 ~ 3.90	30°					
				2.50 ~ 3.74	45°					

BACK BORING

TRM 50

Ø 2.20 ~ 4.37



ø3 min = (ø1+ø2+1) : 2

REF.	CODE	MHD'd1	Ø1	Ø2	L	PS	SFQC		lb
TRM 50 INCH	45 50 050 6050 0	50	2.20 ~ 3.43	1.97	2.44	–	SFQC 50	•	2.2
			3.19 ~ 4.37	2.95	2.99	PS 31.24			

● **Available in metric upon request**

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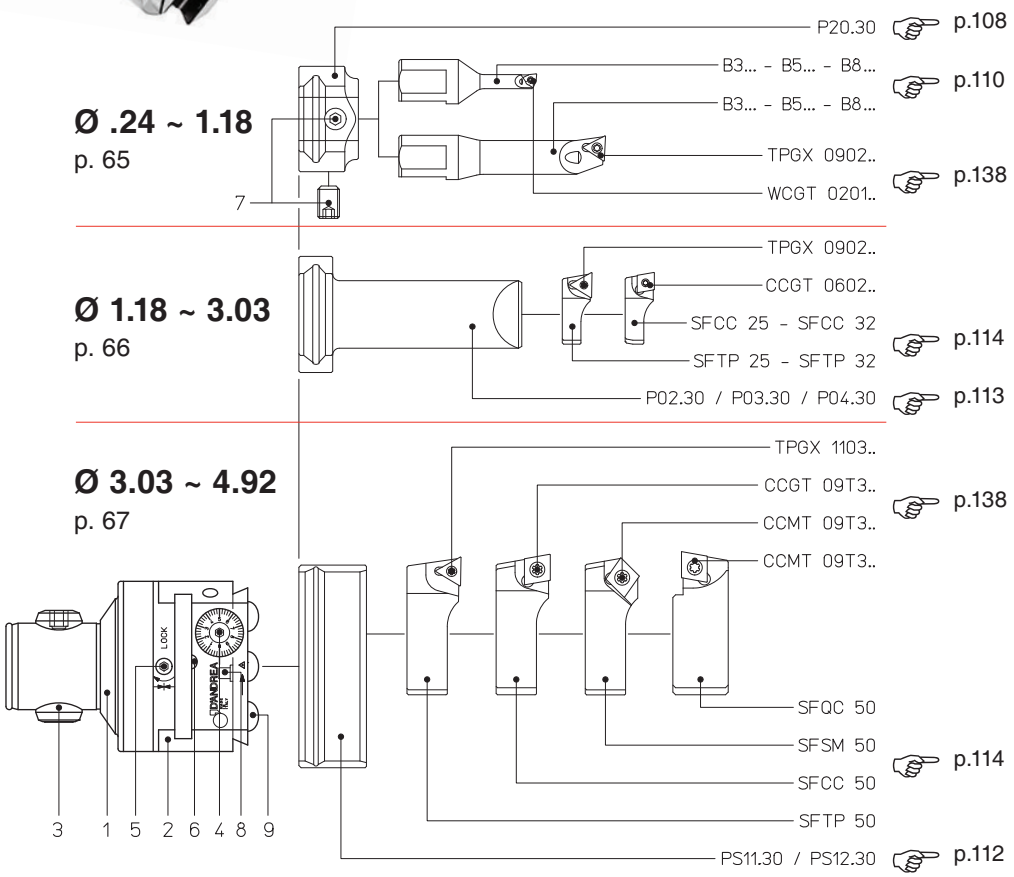
TRM 50/63
TRM 63/63

Ø .24 ~ 4.92



COMPONENTS
1. Body
2. Slide toolholder
3. Expanding radial pin
4. Micrometric vernier scale
5. Slide clamp screw
6. Coolant outlet
7. Tool clamp screw
8. Oiler
9. Toolholder lock screw

BAUTEILE
1. Körper
2. Werkzeugschlitten
3. Spreizbolzen
4. Mikrometrischer Nonius
5. Schlittenklemmschraube
6. Kühlmittelaustritt
7. Werkzeugklemmschraube
8. Schmiernippel
9. Werkzeughalter-spannschrauben

COMPONENTES
1. Cuerpo
2. Guía portaherramientas
3. Perno radial expansible
4. Nonio micrométrico
5. Tornillo blocaje guía
6. Agujero salida refrigerante
7. Tornillo blocaje herramientas
8. Engrasador
9. Tornillos blocaje portaherramientas

COMPOSANTS
1. Corps
2. Coulisseau
3. Tige radial expansible
4. Vernier micrométrique
5. Vis blocage coulisseau
6. Sortie du liquide d'arrosage
7. Vis blocage outil
8. Graisseur
9. Vis blocage porte-outils

COMPONENTI
1. Corpo
2. Slitta portautensili
3. Perno radiale espandibile
4. Nonio micrometrico
5. Vite bloccaggio slitta
6. Uscita refrigerante
7. Vite bloccaggio utensili
8. Oliatore
9. Viti bloccaggio portautensili

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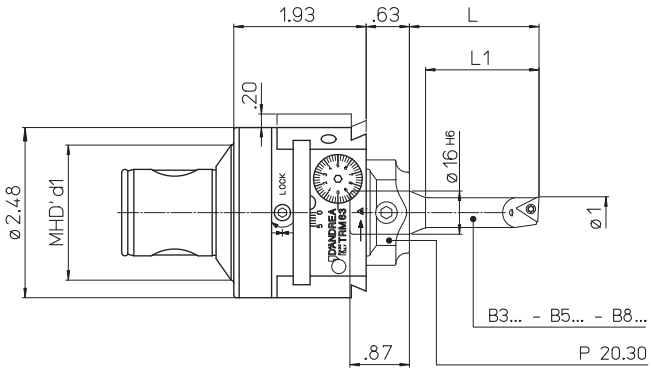
BORING

TRM 50/63
TRM 63/63

Ø .24 ~ 1.18



REF.	CODE	MHD'd_1	Ø$_1$	B...	L	L_1	△	△	lb
			.24 ~ .31	B3.06	1.14	.83	•	–	2.43 3.31
				B5.06	1.42	–			
				B8.06	1.77				
			.31 ~ .39	B3.08	1.41	1.10			
				B5.08	1.89	–			
				B8.08	2.36				
			.39 ~ .47	B3.10	1.69	1.38	–	•	
				B5.10	2.36	–			
				B8.10	2.95				
TRM 50/63 INCH	45 50 050 6063 0	50	.43 ~ .51	B3.11	1.89	1.57			
			.47 ~ .55	B3.12		1.65			
TRM 63/63 INCH	45 50 063 6063 0	63		B5.12	2.83	–			
				B8.12	3.54				
			.55 ~ .63	B3.14	2.05	1.97			
				B5.14	3.31	–			
				B8.14	4.13				
			.63 ~ .71	B3.16	2.28	1.97			
				B5.16	3.78	–			
				B8.16	4.72				
			.71 ~ .87	B3.18	2.48				
			.87 ~ 1.18	B3.22	2.68				

● **Available in metric upon request**

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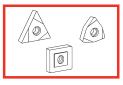
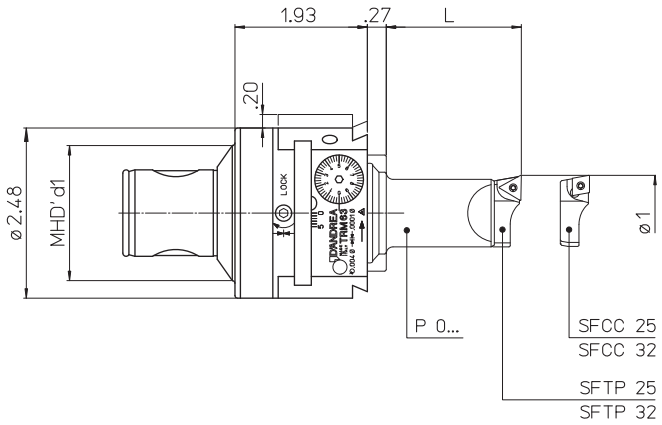



BORING

TRM 50/63
TRM 63/63

Ø 1.18 ~ 3.03



REF.	CODE	MHD'd_1	Ø$_1$	L	P 0...	SF..			lb
TRM 50/63 INCH	45 50 050 6063 0	50	1.18 ~ 2.60	1.97	P 02.30	SFTP 25 SFCC 25	•	•	2.43 3.31
				3.15	P 03.30				
				4.92	P 04.30				
TRM 63/63 INCH	45 50 063 6063 0	63	1.40 ~ 3.03	1.97	P 02.30	SFTP 32 SFCC 32	•	•	
				3.15	P 03.30				
				4.92	P 04.30				

● **Available in metric upon request**

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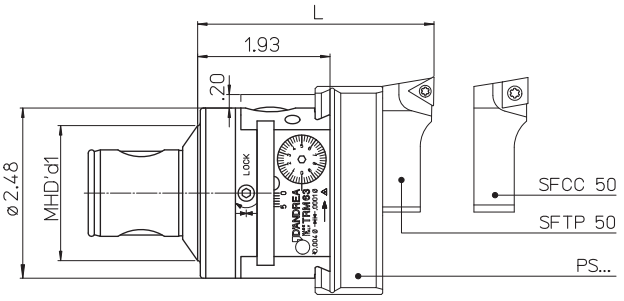
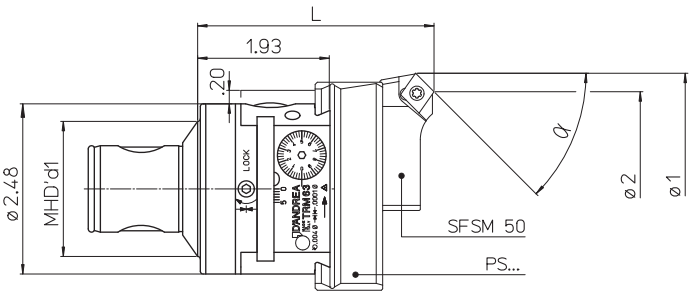
BORING



TRM 50/63
TRM 63/63
Ø 3.03 ~ 4.92

REF.	CODE	MHD'd_1	Ø$_1$	L	PS..	SF..	△	○	lb
TRM 50/63 INCH	45 50 050 6063 0	50	3.03 ~ 3.94	3.44	PS 11.30	SFTP 50 SFCC 50	•		2.43
TRM 63/63 INCH	45 50 063 6063 0	63	3.70 ~ 4.92		PS 12.30			•	3.31

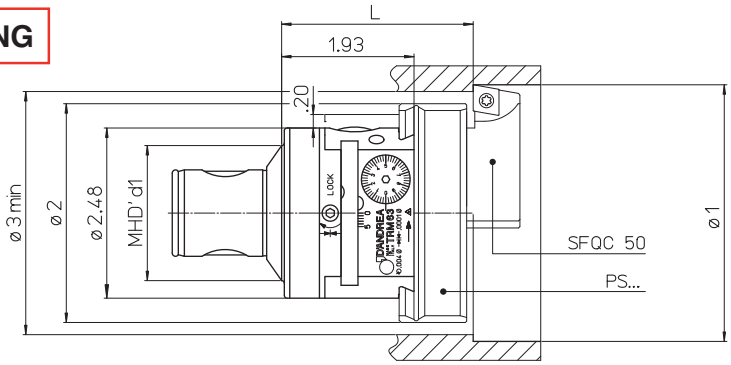
CHAMFERING



TRM 50/63
TRM 63/63
Ø 3.03 ~ 4.92

REF.	CODE	MHD'd_1	Ø$_1$	Ø$_2$	α	L	PS..	SFSM	○	lb
TRM 50/63 INCH	45 50 050 6063 0	50	3.03 ~ 3.94	2.83 ~ 3.74	15°	3.44	PS 11.30	SFSM 50-15° SFSM 50-30° SFSM 50-45°	•	2.43 3.31
				2.64 ~ 3.54	30°					
				2.50 ~ 3.41	45°					
TRM 63/63 INCH	45 50 063 6063 0	63	3.74 ~ 4.92	3.54 ~ 4.72	15°		PS 12.30			
				3.37 ~ 4.55	30°					
				3.21 ~ 4.39	45°					

BACK BORING



TRM 50/63
TRM 63/63
Ø 3.23 ~ 5.00

ø3 min = (ø1+ø2+1) : 2

REF.	CODE	MHD'd_1	Ø$_1$	Ø$_2$	L	PS..	SFQC	○	lb
TRM 50/63 INCH	45 50 050 6063 0	50	3.23 ~ 4.02	2.95	2.78	PS 11.30	SFQC 50	•	2.43
TRM 63/63 INCH	45 50 063 6063 0	63	3.94 ~ 5.00	3.66		PS 12.30			3.31

● **Available in metric upon request**

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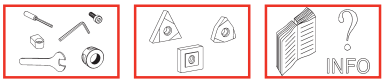
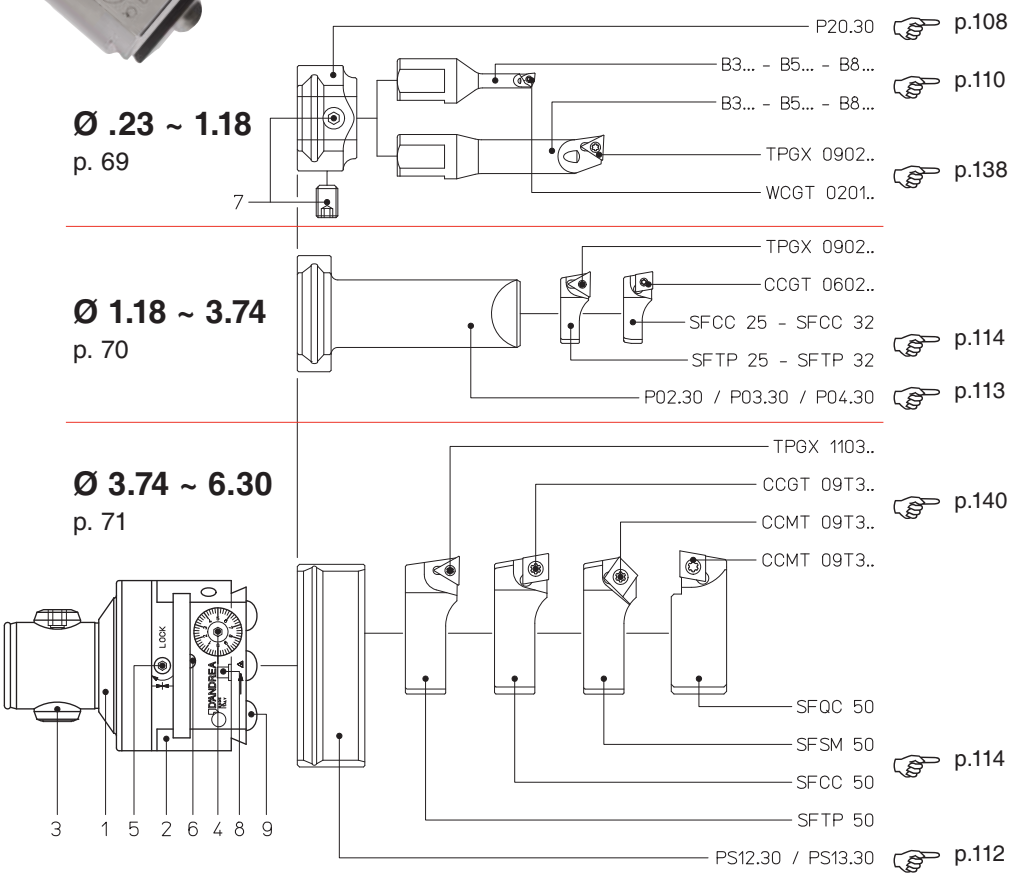


Member IMC Group Ingersoll Cutting Tools

TRM 50/80
TRM 80/80

Ø .24 ~ 6.30



68

COMPONENTS
1. Body
2. Slide toolholder
3. Expanding radial pin
4. Micrometric vernier scale
5. Slide clamp screw
6. Coolant outlet
7. Tool clamp screw
8. Oiler
9. Toolholder lock screw

BAUTEILE
1. Körper
2. Werkzeugschlitten
3. Spreizbolzen
4. Mikrometrischer Nonius
5. Schlittenklemmschraube
6. Kühlmittelaustritt
7. Werkzeugklemmschraube
8. Schmiernippel
9. Werkzeughalter-spannschrauben

COMPONENTES
1. Cuerpo
2. Guía portaherramientas
3. Perno radial expansible
4. Nonio micrométrico
5. Tornillo blocaje guía
6. Agujero salida refrigerante
7. Tornillo blocaje herramientas
8. Engrasador
9. Tornillos blocaje portaherramientas

COMPOSANTS
1. Corps
2. Coulisseau
3. Tige radial expansible
4. Vernier micrométrique
5. Vis blocage coulisseau
6. Sortie du liquide d'arrosage
7. Vis blocage outil
8. Graisseur
9. Vis blocage porte-outils

COMPONENTI
1. Corpo
2. Slitta portautensili
3. Perno radiale espandibile
4. Nonio micrometrico
5. Vite bloccaggio slitta
6. Uscita refrigerante
7. Vite bloccaggio utensili
8. Oliatore
9. Viti bloccaggio portautensili

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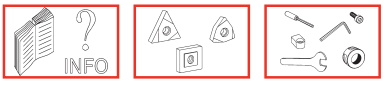
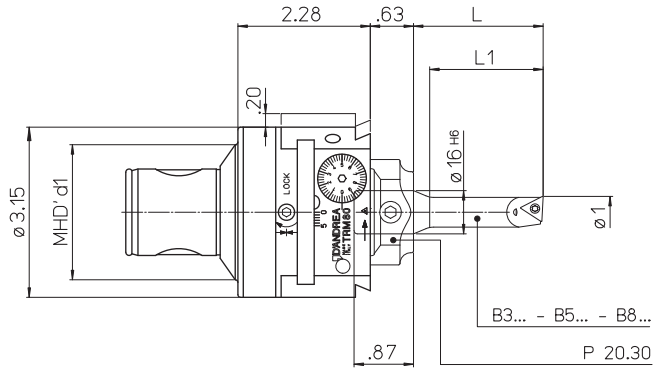


BORING

TRM 50/80
TRM 80/80

Ø .24 ~ 1.18



REF.	CODE	MHD'd_1	Ø$_1$	B...	L	L_1			lb
			.24 ~ .31	B3.06	1.14	.83	•	–	
				B5.06	1.42	–			
				B8.06	1.77	–			
			.31 ~ .39	B3.08	1.42	1.10			
				B5.08	1.89	–			
				B8.08	2.36	–			
			.39 ~ .47	B3.10	1.69	1.38	–	•	
				B5.10	2.36	–			
				B8.10	2.95	–			
TRM 50/80 INCH	45 50 050 6080 0	50	.43 ~ .51	B3.11	1.89	1.57			4.41
TRM 80/80 INCH	45 50 080 6080 0	80	.47 ~ .55	B3.12		1.65			5.51
				B5.12	2.83	–			
				B8.12	3.54				
			.55 ~ .63	B3.14	2.05	1.97			
				B5.14	3.31	–			
				B8.14	4.13	–			
			.63 ~ .71	B3.16	2.28	1.97			
				B5.16	3.78	–			
				B8.16	4.72				
			.71 ~ .87	B3.18	2.48				
			.87 ~ 1.18	B3.22	2.68				

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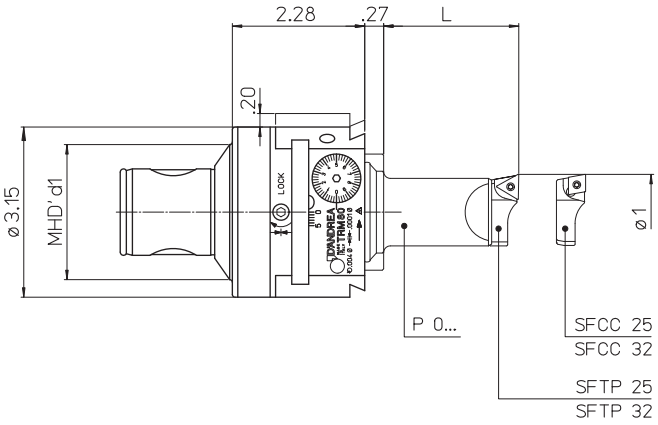
BORING

TRM 50/80
TRM 80/80

Ø 1.18 ~ 3.74



REF.	CODE	MHD'd_1	Ø$_1$	L	P 0...	SF..			lb
TRM 50/80 INCH	45 50 050 6080 0	50	1.18 ~ 3.27	1.97	P 02.30	SFTP 25 SFCC 25	•	•	4.41 5.51
				3.15	P 03.30				
				4.92	P 04.30				
TRM 80/80 INCH	45 50 080 6080 0	80	1.40 ~ 3.74	1.97	P 02.30	SFTP 32 SFCC 32	•	•	
				3.15	P 03.30				
				4.92	P 04.30				

● **Available in metric upon request**

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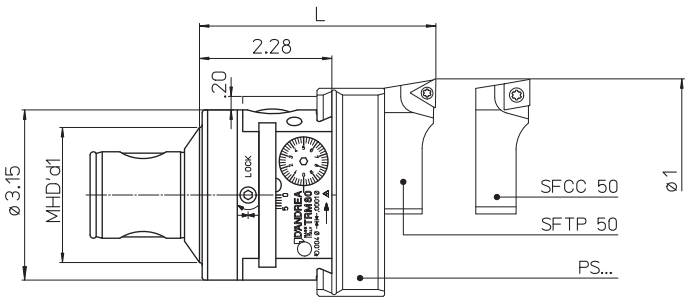
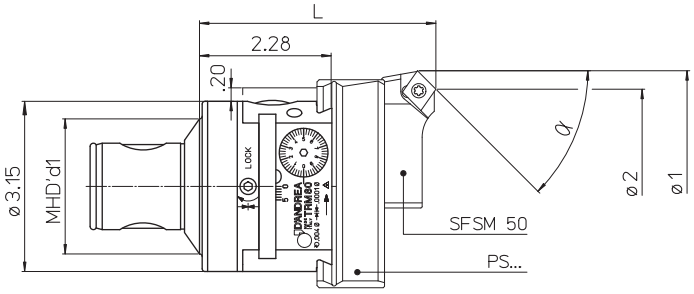
BORING



TRM 50/80
TRM 80/80
Ø 3.74 ~ 6.30

REF.	CODE	MHD'd_1	Ø$_1$	L	PS..	SF..			lb
TRM 50/80 INCH	45 50 050 6080 0	50	3.74 ~ 5.51	3.80	PS 12.30	SFTP 50 SFCC 50	•		4.41
TRM 80/80 INCH	45 50 080 6080 0	80	5.51 ~ 6.30		PS 13.30			•	5.51

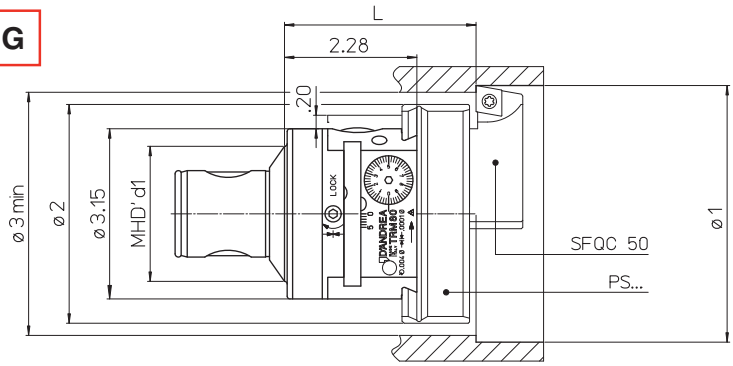
CHAMFERING



TRM 50/80
TRM 80/80
Ø 3.74 ~ 6.30

REF.	CODE	MHD'd_1	Ø$_1$	Ø$_2$	α	L	PS..	SFSM		lb
TRM 50/80 INCH	45 50 050 6080 0	50	3.74 ~ 5.51	3.54 ~ 5.31	15°	3.80	PS 12.30	SFSM 50-15° SFSM 50-30° SFSM 50-45°	•	4.41 5.51
				3.37 ~ 5.14	30°					
				3.21 ~ 4.98	45°					
TRM 80/80 INCH	45 50 080 6080 0	80	5.51 ~ 6.30	5.31 ~ 6.10	15°		PS 13.30			
				5.12 ~ 5.91	30°					
				4.98 ~ 5.77	45°					

BACK BORING



TRM 50/80
TRM 80/80
Ø 3.94 ~ 6.38

ø3 min = (ø1+ø2+1) : 2

REF.	CODE	MHD'd_1	Ø$_1$	Ø$_2$	L	PS..	SFQC		lb
TRM 50/80 INCH	45 50 050 6080 0	50	3.94 ~ 5.59	3.66	3.13	PS 12.30	SFQC 50	•	4.41
TRM 80/80 INCH	45 50 080 6080 0	80	5.59 ~ 6.38	5.31		PS 13.30			5.51

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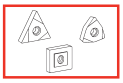


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TRM 80/125

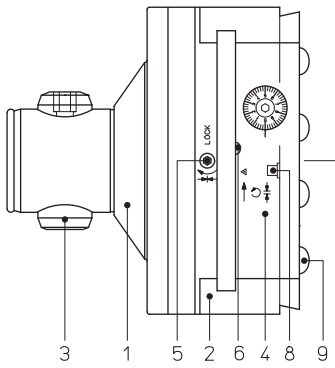
Ø 1.41 ~ 19.69

Ø 1.42 ~ 5.43
p. 72

P02.40 / P03.40 / P04.40 p.113
TPGX 0902.. - TPGX 1103... p.138
CCGT 0602... - CCGT 09T3...
SFCC32 - SFCC40 p.114
SFTP32 - SFTP40

Ø 5.31 ~ 19.69
p. 73

TPGX 1103..
CCGT 09T3.. p.138
CCMT 09T3..
CCMT 09T3..
SFQC 50
SFSM 50 p.114
SFCC 50
SFTP 50
PS11.40 - PS12.40 - PS13.40 - PS14.40 p.112



COMPONENTS
1. Body
2. Slide toolholder
3. Expanding radial pin
4. Micrometric vernier scale
5. Slide clamp screw
6. Coolant outlet
8. Oiler
9. Toolholder lock screw

BAUTEILE
1. Körper
2. Werkzeugschlitten
3. Spreizbolzen
4. Mikrometrischer Nonius
5. Schlittenklemmschraube
6. Kühlmittelaustritt
8. Schmiernippel
9. Werkzeughalter-spannschrauben

COMPONENTES
1. Cuerpo
2. Guía portaherramientas
3. Perno radial expansible
4. Nonio micrométrico
5. Tornillo blocaje guía
6. Agujero salida refrigerante
8. Engrasador
9. Tornillos blocaje portaherramientas

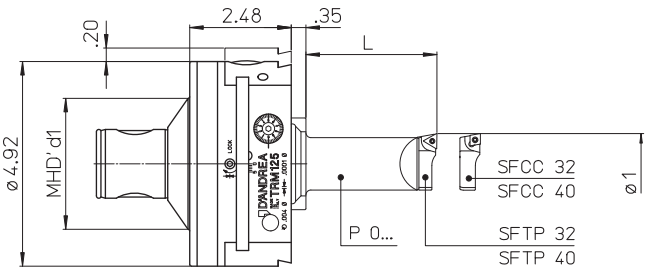
COMPOSANTS
1. Corps
2. Coulisseau
3. Tige radial expansible
4. Vernier micrométrique
5. Vis blocage coulisseau
6. Sortie du liquide d'arrosage
8. Graisseur
9. Vis bloccage porte-outils

COMPONENTI
1. Corpo
2. Slitta portautensili
3. Perno radiale espandibile
4. Nonio micrometrico
5. Vite bloccaggio slitta
6. Uscita refrigerante
8. Oliatore
9. Vite bloccaggio portautensile

BORING

TRM 80/125

Ø 1.42 ~ 5.43



REF.	CODE	MHD'd_1	Ø$_1$	L	P 0...	SF..			lb
TRM 80/125 INCH	45 50 080 6125 0	80	1.42 ~ 4.92	3.15	P 02.40	SFTP 32 SFCC 32	•	•	12.13
				4.92	P 03.40				
				7.87	P 04.40				
			1.97 ~ 5.43	3.15	P 02.40	SFTP 40 SFCC 40	•	•	
				4.92	P 03.40				
				7.87	P 04.40				

● Available in metric upon request

TRM 80/125

Ø 5.31 ~ 19.69

BORING

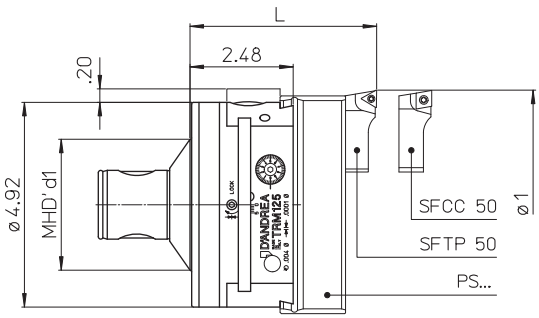


fig.1

CHAMFERING

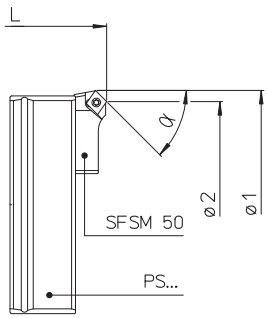


fig.2

BACK BORING

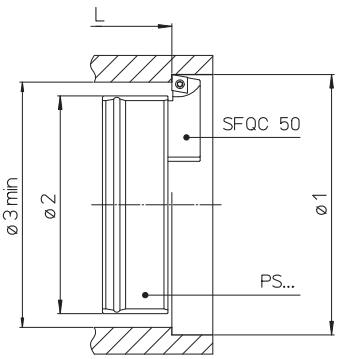


fig.3

ø3 min = (ø1+ø2+1) : 2

REF.	CODE	MHD'd_1	Ø$_1$	L	PS..	SF..			lb	fig.
TRM 80/125 INCH	45 50 080 6125 0	80	5.31 ~ 8.27	4.53	PS 11.40	SFTP 50 SFCC 50	•	•	12.13	1
			8.07 ~ 12.20		PS 12.40					
			12.01 ~ 16.14		PS 13.40					
			15.94 ~ 19.69		PS 14.40					

REF.	CODE	MHD'd_1	Ø$_1$	Ø$_2$	α	L	PS..	SFSM		lb	fig.
TRM 80/125 INCH	45 50 080 6125 0	80	5.31 ~ 19.68	5.12 ~ 8.07	15°	4.52	PS11.40	SFSM50-15° SFSM50-30° SFSM50-45°	•	12.13	2
				4.94 ~ 7.89	30°						
				4.78 ~ 7.74	45°						
			8.07 ~ 12.20	7.87 ~ 12.01	15°		PS12.40				
				7.70 ~ 11.83	30°						
				7.54 ~ 11.67	45°						
			12.01 ~ 16.14	11.81 ~ 15.94	15°		PS13.40				
				11.63 ~ 15.77	30°						
				11.48 ~ 15.61	45°						
			15.94 ~ 19.69	15.75 ~ 19.49	15°		PS14.40				
				15.57 ~ 19.31	30°						
				15.41 ~ 19.15	45°						

REF.	CODE	MHD'd_1	Ø$_1$	Ø$_2$	L	PS..	SFQC		lb	fig.
TRM 80/125 INCH	45 50 080 6125 0	80	5.51 ~ 8.35	5.24	3.85	PS 11.40	SFQC 50	•	12.13	3
			8.27 ~ 12.28	7.87		PS 12.40				
			12.20 ~ 16.14	11.81		PS 13.40				
			16.14 ~ 19.76	15.75		PS 14.40				

● **Available in metric upon request**

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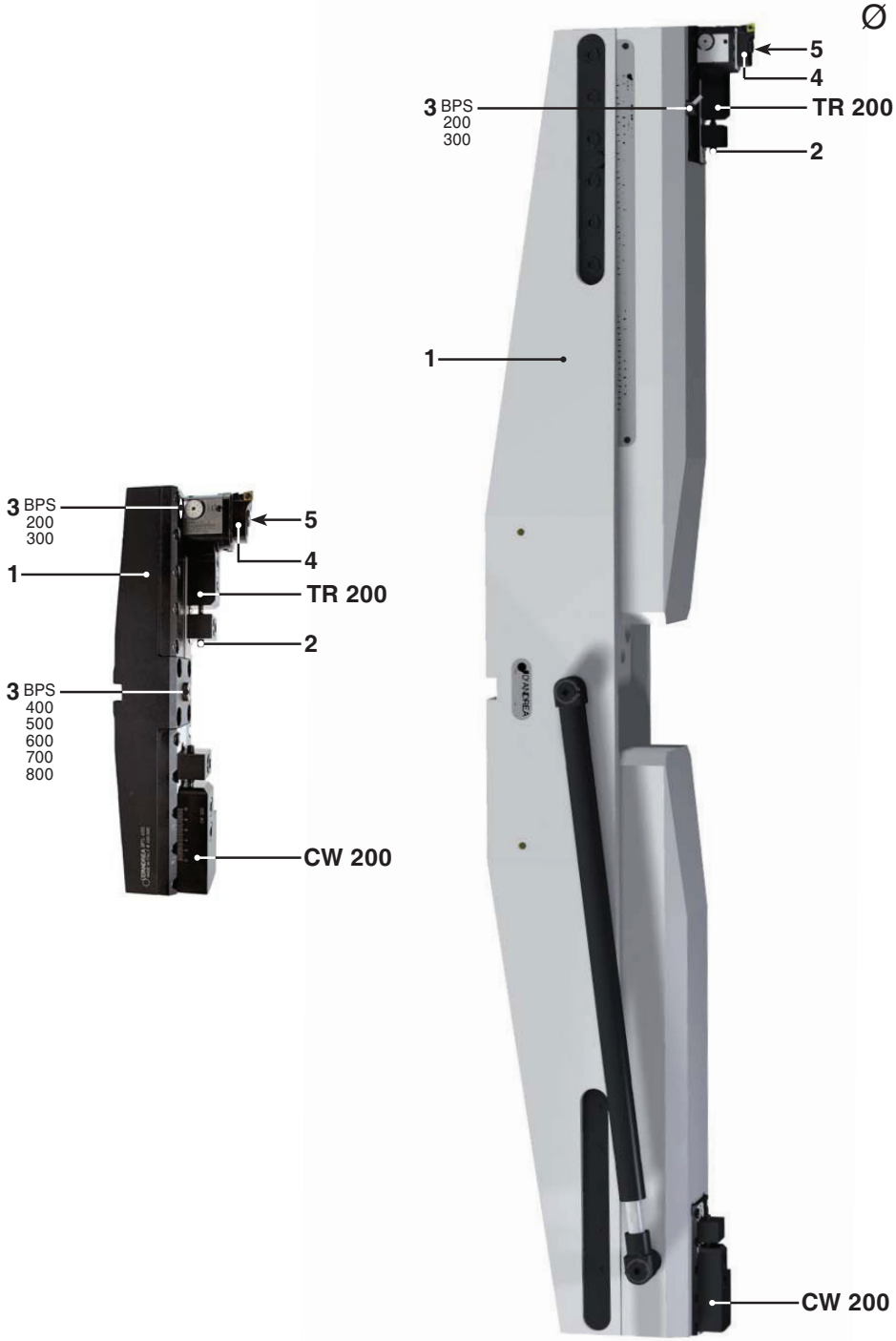
Member IMC Group Ingersoll Cutting Tools

Double-bit crossbars for big diameters finish | **Zweischneiderbohrschienen für Schlichtbearbeitungen großer Durchmesser** | **Barras porta-asiento de dos cortes** | **Semelles pour finissage grands diamètres** | **Barre portaseggio per finitura grandi diametri**

ALUMINIUM TOOLS LINE

BPS

Ø 7.87 ~ 110.23



COMPONENTS
1. Body
2. Setting screws
3. Coolant outlets
4. Bit holders
5. Tools clamp screws

BAUTEILE
1. Körper
2. Einstellschraube
3. Kühlmittelaustritt
4. Plattenhalter
5. Werkzeugklemm-schrauben

COMPONENTES
1. Cuerpo
2. Tornillo de regulación
3. Agujeros salida refrigerante
4. Portaplaquita
5. Tornillos blocaje herramienta

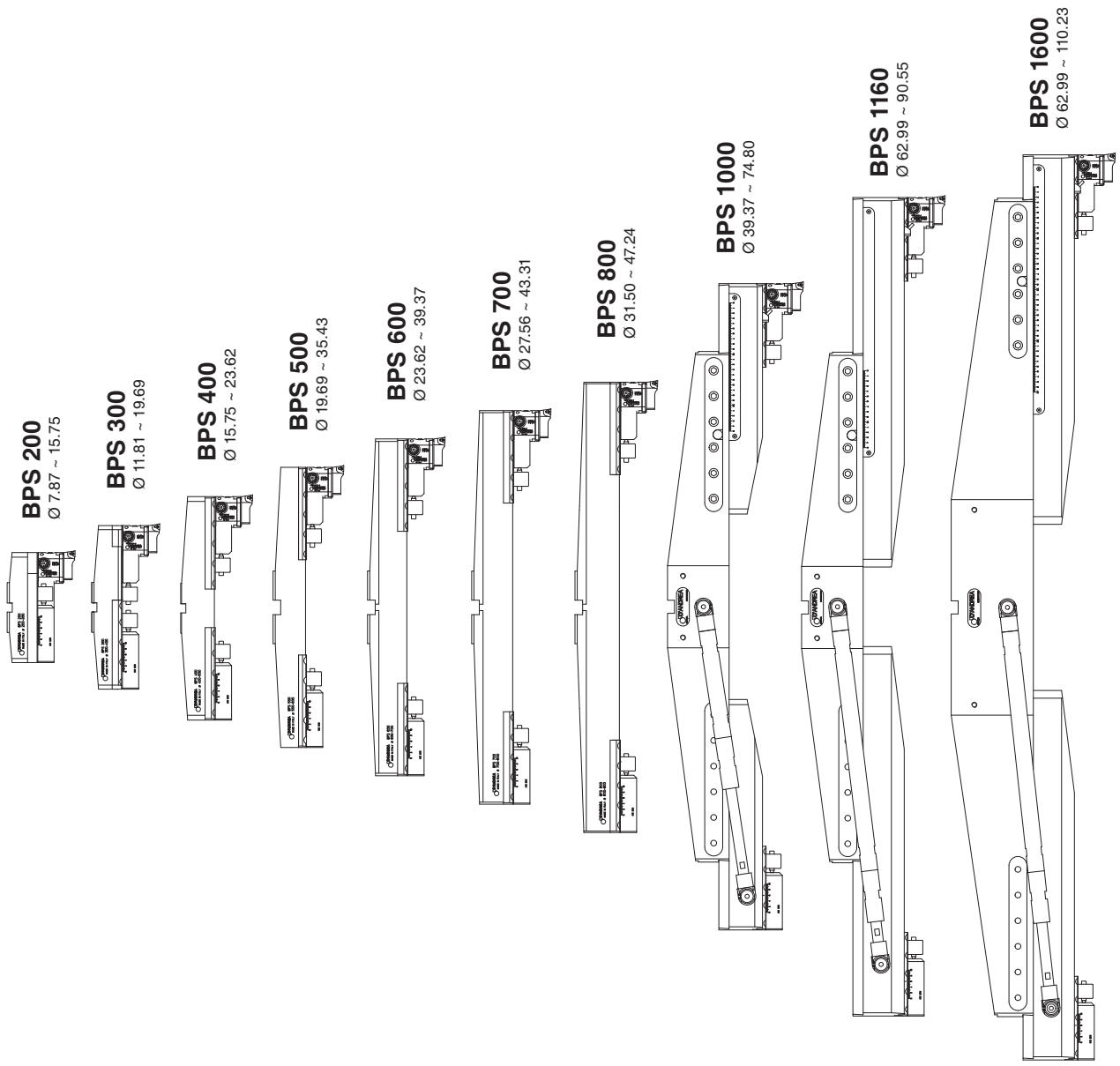
COMPOSANTS
1. Corps
2. Vis de réglage
3. Sortie du liquide d'arrosage
4. Porte-plaquettes
5. Vis blocage outil

COMPONENTI
1. Corpo
2. Vite di regolazione
3. Fori uscita refrigerante
4. Seggio portainserti
5. Viti bloccaggio utensile

ALUMINIUM TOOLS LINE

BPS

Ø 7.87 ~ 110.23



FEATURES

The BPS double-bit crossbars cover a working area from ø 7.87 - 110.23.
The BPS double-bit crossbars are constructed in aluminum and mounted on a steel double-bit plate.

MERKMALE

Die Zweischneider BPS bedecken ein Arbeitsfeld von ø 7.87 - 110.23.
Die Bohrschienen BPS bestehen aus Aluminium auf welches die Sitzhalterungsplatte aus Stahl befestigt wird.

CARACTERÍSTICAS

Las barras porta-asiento BPS cubren un campo de trabajo de 7.87 a 110.23.
Las barras porta-asiento BPS están realizadas en aluminio, sobre el cual se fija la placa porta-asiento de acero.

CARACTÉRISTIQUES

Les barres porte logement BPS couvrent un intervalle de travail de ø 7.87 - 110.23.
Les barres porte logement BPS sont réalisées en aluminium sur lequel est fixée la plaquette porte logement en acier

CARATTERISTICHE

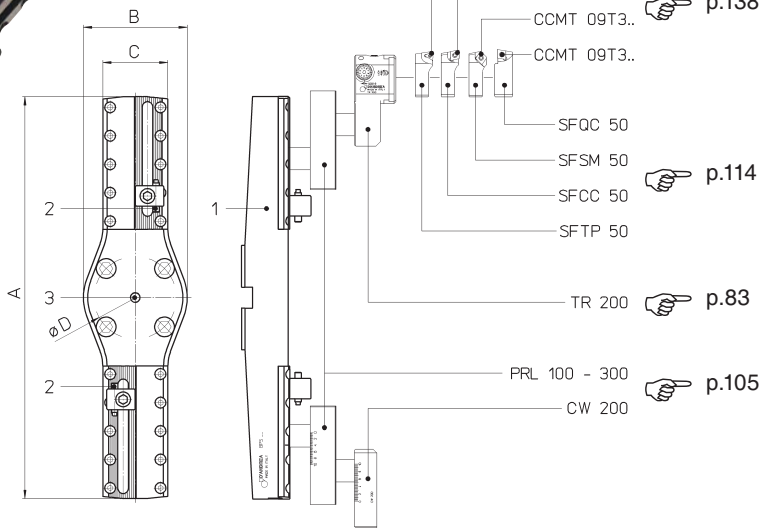
Le barre portaseggio BPS coprono un campo di lavoro da ø 7.87 - 110.23.
Le barre portaseggio BPS sono costruite in alluminio sul quale viene fissata la piastra portaseggio in acciaio.

Member IMC Group Ingersoll Cutting Tools

ALUMINIUM TOOLS LINE

BPS ...

Ø 7.87 ~ 43.30

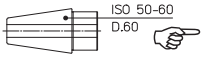


p.138

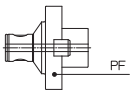
p.114

p.83

p.105



p.24



p.120-121

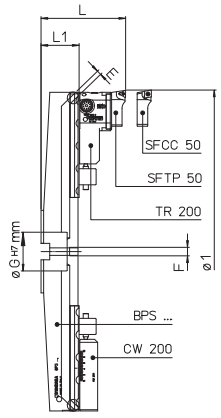


fig.1

p.77

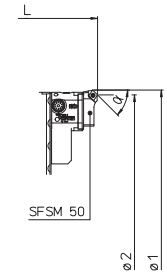


fig.2

p.77

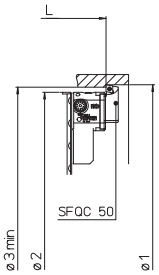


fig.3

p.77

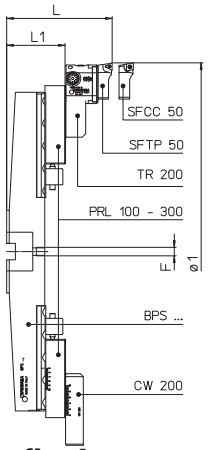


fig.4

p.78

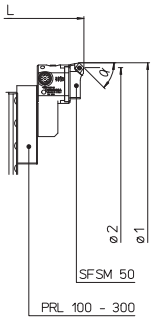


fig.5

p.78

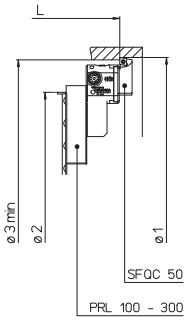


fig.6

p.79

fig.3 - 6 : ø3 min = (ø1+ø2+1) : 2

COMPONENTS
1. Body
2. Setting screws
3. Coolant outlets

BAUTEILE
1. Körper
2. Einstellschraube
3. Kühlmittelaustritt

COMPONENTES
1. Cuerpo
2. Tornillo de regulación
3. Agujeros salida refrigerante

COMPOSANTS
1. Corps
2. Vis de réglage
3. Sortie du liquide d'arrosage

COMPONENTI
1. Corpo
2. Vite di regolazione
3. Fori uscita refrigerante

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Member IMC Group Ingersoll Cutting Tools

BPS

Double-bit crossbars for big diameters finish | **Zweischneiderbohrschienen für Schlichtbearbeitungen großer Durchmesser** | **Barras porta-asiento de dos cortes** | **Semelles pour finissage grands diamètres** | **Barre portaseggio per finitura grandi diametri**

BORING

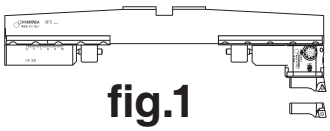

fig.1

CHAMFERING

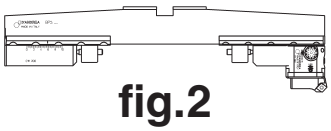

fig.2

BACK BORING

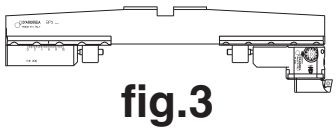

fig.3

ISO / PF excluded | **Ohne ISO / PF** | **ISO / PF excluido** | **Sauf ISO /PF** | **ISO / PF escluso**

REF.	CODE	Ø1	A	L	L1	B	C	øD	øE	F	øG	SF...	lb	fig.
BPS 200	43 55 40 88 198 0	7.87 ~ 11.81	7.64	4.72	2.13	–	3.15	2.63	.10	–	40	SFTP 50 SFCC 50	7.05	1
BPS 300	43 55 40 88 298 0	11.81 ~ 15.75	11.34										8.6	
BPS 400	43 55 40 88 398 0	15.75 ~ 19.69	15.51	5.00	2.40								15.21	
BPS 500	43 55 60 88 494 0	19.69 ~ 23.62	19.45	5.31	2.72	5.04		4.00	–	1/4 GAS	60		20.72	
BPS 600	43 55 60 88 594 0	23.62 ~ 27.56	23.39	5.39	2.80								21.83	
BPS 700	43 55 60 88 694 0	27.56 ~ 31.50	27.32	5.51	2.91								24.69	
BPS 800	43 55 60 88 794 0	31.50 ~ 35.43	31.26	5.75	3.15								33.51	

REF.	CODE	Ø1	Ø2	α	A	L	B	C	øD	øE	F	øG	SFSM	lb	fig.
BPS 200	43 55 40 88 198 0	7.87~11.81	7.68 ~ 11.61	15°	7.64	4.72	–	3.15	2.63	.10	–	80	SFSM50-15° SFSM50-30° SFSM50-45°	7.05	2
			7.50 ~ 11.04	30°											
			7.34 ~ 11.28	45°											
BPS 300	43 55 40 88 298 0	11.81~15.75	11.61 ~ 15.55	15°	11.34									8.6	
			11.44 ~ 15.37	30°											
			11.28 ~ 15.22	45°											
BPS 400	43 55 40 88 398 0	15.75~19.69	15.55 ~ 19.49	15°	15.51	5.00				–	1/4 GAS			15.21	
			15.37 ~ 19.31	30°											
			15.22 ~ 19.15	45°											
BPS 500	43 55 60 88 494 0	19.69~23.62	19.49 ~ 23.43	15°	19.45	5.31	5.04		4.00			60		20.72	
			19.31 ~ 23.25	30°											
			19.15 ~ 23.09	45°											
BPS 600	43 55 60 88 594 0	23.62~27.56	23.43 ~ 27.36	15°	23.39	5.39								21.83	
			23.25 ~ 27.19	30°											
			23.09 ~ 27.03	45°											
BPS 700	43 55 60 88 694 0	27.56~31.50	27.36 ~ 31.30	15°	27.32	5.51								24.69	
			27.19 ~ 31.12	30°											
			27.03 ~ 30.96	45°											
BPS 800	43 55 60 88 794 0	31.50~35.43	31.30 ~ 35.24	15°	31.26	5.75								33.51	
			31.12 ~ 35.06	30°											
			30.96 ~ 34.90	45°											

REF.	CODE	Ø1	Ø2	L	B	C	øD	øE	F	øG	SFQC	lb	fig.
BPS 200	43 55 40 88 198 0	7.95 ~ 11.89	7.64	4.06	–	3.15	2.63	.10	–	40	SFQC 50	7.05	3
BPS 300	43 55 40 88 298 0	11.89 ~ 15.83	11.34									8.6	
BPS 400	43 55 40 88 398 0	15.83 ~ 19.76	15.51	4.33								15.21	
BPS 500	43 55 60 88 494 0	19.76 ~ 23.70	19.45	4.65	5.04		4.00	–	1/4 GAS	60		20.72	
BPS 600	43 55 60 88 594 0	23.70 ~ 27.64	23.39	4.72								21.83	
BPS 700	43 55 60 88 694 0	27.64 ~ 31.57	27.32	4.84								24.69	
BPS 800	43 55 60 88 794 0	31.57 ~ 35.51	31.26	5.08								33.51	

BORING

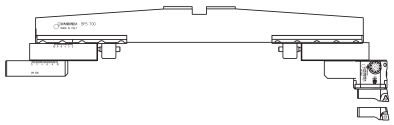

fig.4

ISO / PF excluded | Ohne ISO / PF | ISO / PF excluido | Sauf ISO /PF | ISO / PF escluso

REF.	CODE	Ø1	A	L	L1	B	C	øD	F	øG	PRL	SF...	lb	fig.
BPS 200	43 55 40 88 198 0	11.81 ~ 15.75	7.64	5.90	3.31	–	3.15	2.63	–	40	PRL 100	SFTP 50 SFCC 50	7.05	4
BPS 300	43 55 40 88 298 0	15.75 ~ 19.69	11.34										8.6	
BPS 400	43 55 40 88 398 0	19.69 ~ 23.62	15.51	6.18	3.58								15.21	
BPS 500	43 55 60 88 494 0	31.50 ~ 35.43	19.45	6.89	3.89	5.04		4.00	1/4 GAS	60	PRL 300		20.72	
BPS 600	43 55 60 88 594 0	35.43 ~ 39.37	23.39	6.97	4.37								21.83	
BPS 700	43 55 60 88 694 0	39.37 ~ 43.30	27.32	7.09	4.48								24.69	
BPS 800	43 55 60 88 794 0	43.30 ~ 47.24	31.26	7.32	4.72								33.51	

CHAMFERING

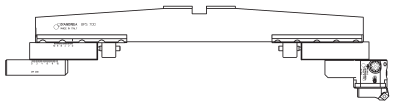

fig.5

ISO / PF excluded | Ohne ISO / PF | ISO / PF excluido | Sauf ISO /PF | ISO / PF escluso

REF.	CODE	Ø1	Ø2	α	A	L	B	C	øD	F	øG	PRL	SFSM	lb	fig.
BPS 200	43 55 40 88 198 0	11.81~15.75	11.61~15.55	15°	7.64	5.90	–	3.15	2.63	–	40	PRL 100	SFSM50-15° SFSM50-30° SFSM50-45°	7.05	5
			11.44~15.37	30°											
			11.28~15.22	45°											
BPS 300	43 55 40 88 298 0	15.75~19.69	15.55~19.49	15°	11.34									8.6	
			15.37~19.31	30°											
			15.22~19.15	45°											
BPS 400	43 55 40 88 398 0	19.69~23.62	19.49~23.43	15°	15.51	6.18				1/4 GAS				15.21	
			19.31~23.25	30°											
			19.15~23.09	45°											
BPS 500	43 55 60 88 494 0	31.50~35.43	31.30~35.24	15°	19.45	6.89	5.04		4.00		60	PRL 300		20.72	
			31.12~35.06	30°											
			30.96~34.90	45°											
BPS 600	43 55 60 88 594 0	35.43~39.37	35.23~39.17	15°	23.39	6.97								21.83	
			35.06~39.00	30°											
			34.90~38.84	45°											
BPS 700	43 55 60 88 694 0	39.37~43.30	39.17~43.11	15°	27.32	7.09								24.69	
			38.99~42.93	30°											
			38.84~42.77	45°											
BPS 800	43 55 60 88 794 0	43.30~47.24	43.11~47.04	15°	31.26	7.32								33.51	
			42.93~46.87	30°											
			42.77~46.71	45°											

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BACK BORING

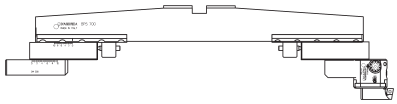

fig.6

ISO / PF excluded | Ohne ISO / PF | ISO / PF excluido | Sauf ISO /PF | ISO / PF escluso

REF.	CODE	Ø1	Ø2	L	B	C	øD	F	øG	PRL	SFQC	lb	fig.
BPS 200	43 55 40 88 198 0	11.89 ~ 15.83	7.64	5.23	–	3.15	2.63	–	40	PRL 100	SFQC 50	7.05	6
BPS 300	43 55 40 88 298 0	15.83 ~ 19.76	11.34									8.6	
BPS 400	43 55 40 88 398 0	19.76 ~ 23.70	15.51	5.51				1/4 GAS				15.21	
BPS 500	43 55 60 88 494 0	31.57 ~ 35.51	19.45	6.22	5.04		4.00		60	PRL 300		20.72	
BPS 600	43 55 60 88 594 0	35.51 ~ 39.45	23.39	6.30								21.83	
BPS 700	43 55 60 88 694 0	39.45 ~ 43.38	27.32	6.41								24.69	
BPS 800	43 55 60 88 794 0	43.38 ~ 47.32	31.26	6.65								33.51	

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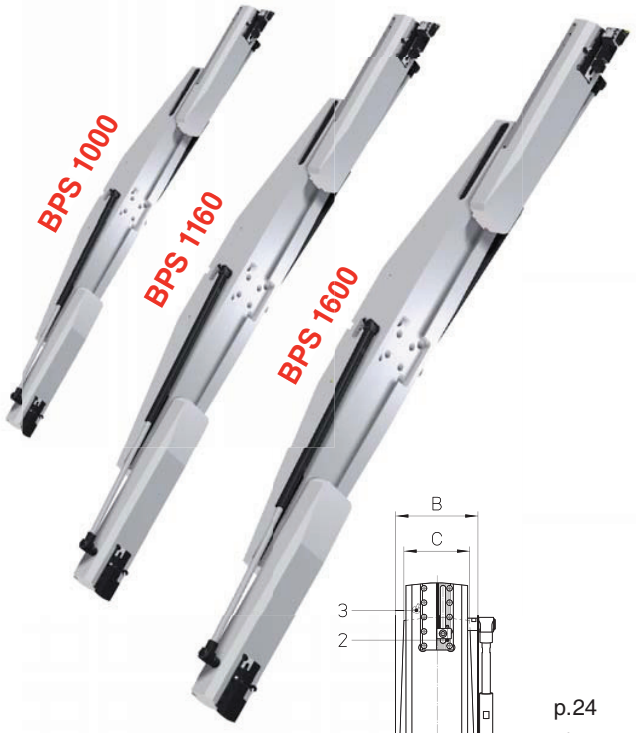
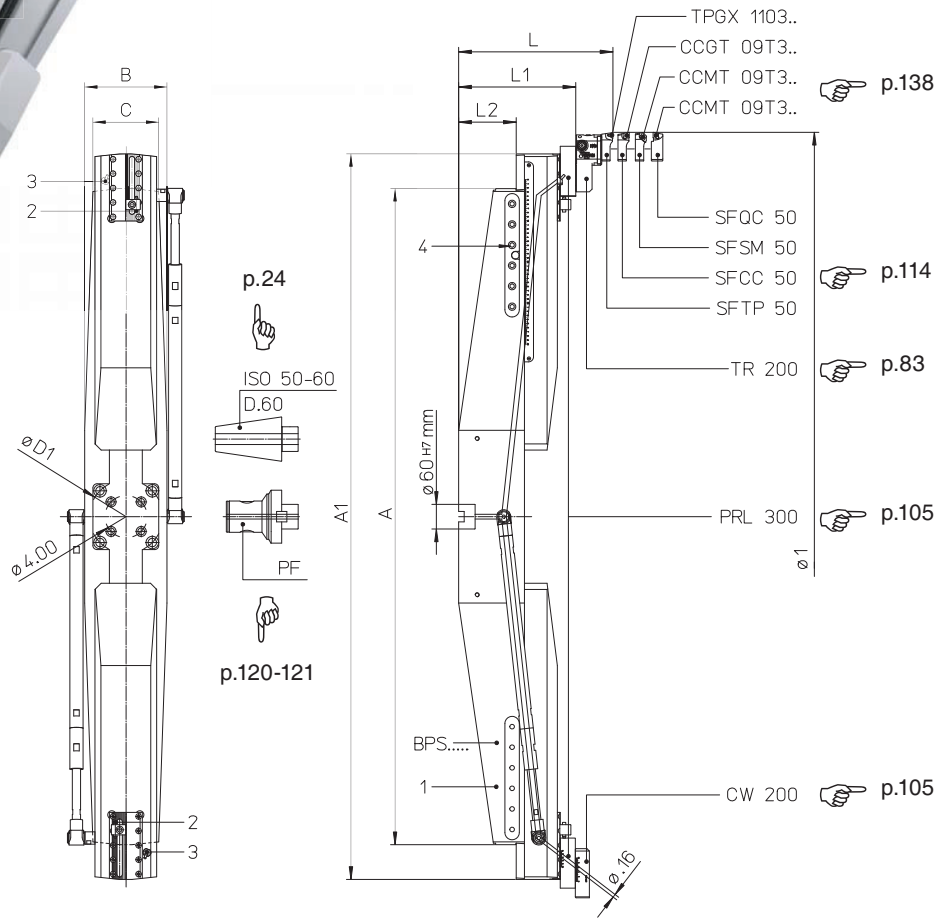
ALUMINIUM TOOLS LINE

BPS ...

Ø 39.37 ~ 110.23





ISO / PF excluded | Ohne ISO / PF | ISO / PF excluido | Sauf ISO /PF | ISO / PF escluso

COMPONENTS
1. Body
2. Setting screws
3. Coolant outlets
4. Slide cramp screws 120 Nm

BAUTEILE
1. Körper
2. Einstellschraube
3. Kühlmittelaustritt
4. Schlitten-Klemmschraube 120 Nm

COMPONENTES
1. Cuerpo
2. Tornillo de regulación
3. Agujeros salida refrigerante
4. Tornillos blocaje guia 120 Nm

COMPOSANTS
1. Corps
2. Vis de réglage
3. Sortie du liquide d'arrosage
4. Vis blocage coulisseau 120 Nm

COMPONENTI
1. Corpo
2. Vite di regolazione
3. Fori uscita refrigerante
4. Viti Bloccaggio Slitta 120 Nm

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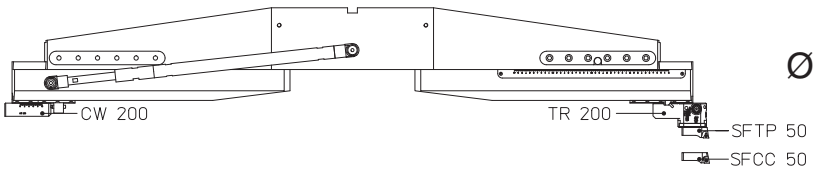
BORING

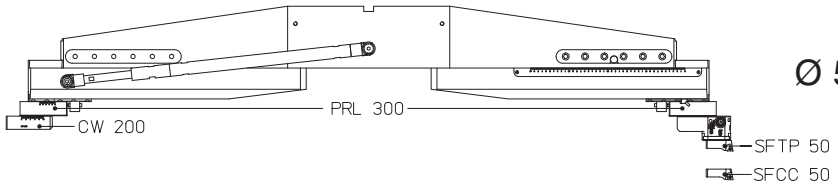


BPS ...

Ø 39.37 ~ 98.42

REF.	CODE	Ø1	A	A1	L	L1	L2	B	C	øD1	SF...	lb
BPS1000	43 55 60 90 1000	39.37 ~ 63.00	39.17	39.17 ~ 58.85	10.12	7.52	3.93	6.30	5.90	–	SFTP50 SFCC50	154.32
BPS1160	43 55 60 90 1160	63.00 ~ 78.74		62.79 ~ 74.60	10.71	8.11						220.46
BPS1600	43 55 60 90 1600	78.74 ~ 98.42	62.79	62.79 ~ 94.29	12.28	9.68	5.51	7.87	6.30	7.00		330.69

BORING

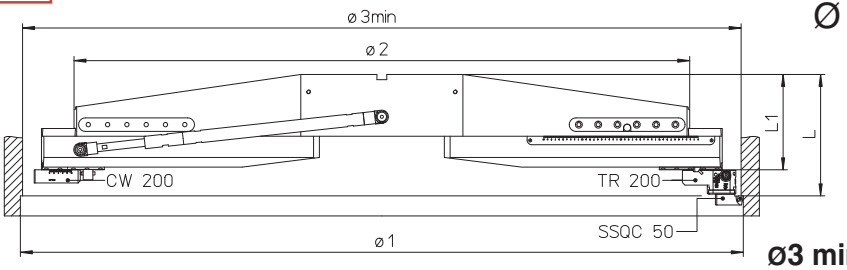


BPS ...

Ø 51.18 ~ 110.23

REF.	CODE	Ø1	A	A1	L	L1	L2	B	C	øD1	PRL	SF...	lb
BPS1000	43 55 60 90 1000	51.18 ~ 74.80	39.17	39.17 ~ 58.85	11.69	9.09	3.93	6.30	5.90	–	PRL300	SFTP50 SFCC50	154.32
BPS1160	43 55 60 90 1160	74.80 ~ 90.55		62.79 ~ 74.60	12.28	9.68							220.46
BPS1600	43 55 60 90 1600	74.80 ~ 110.23	62.79	62.79 ~94.29	13.86	11.26	5.51	7.87	6.30	7.00			330.69

BACK BORING



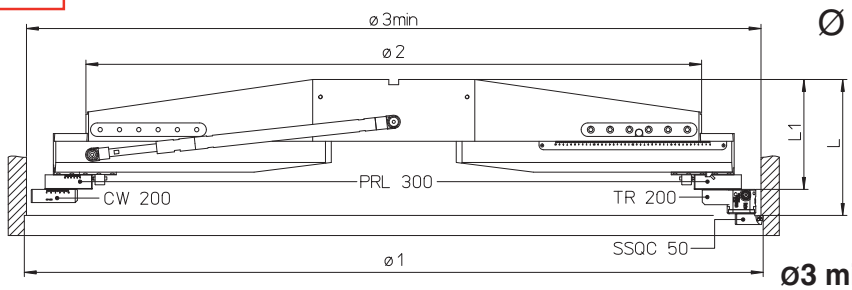
BPS ...

Ø 39.45 ~ 98.50

ø3 min = (Ø1+Ø2+1) : 2

REF.	CODE	Ø1	Ø2	A	A1	L	L1	B	C	øD1	S ...	lb
BPS1000	43 55 60 90 1000	39.45 ~ 63.07	39.17		39.17 ~ 58.85	9.45	7.52	6.30	5.90	–	SSQC90	154.32
BPS1160	43 55 60 90 1160	63.07 ~ 78.81			62.79 ~ 74.60	10.04	8.11					220.46
BPS1600	43 55 60 90 1600	63.07 ~ 98.50	62.79		62.79 ~ 94.29	11.61	9.68	7.87	6.30	7.00		330.69

BACK BORING



BPS ...

Ø 51.26 ~ 110.31

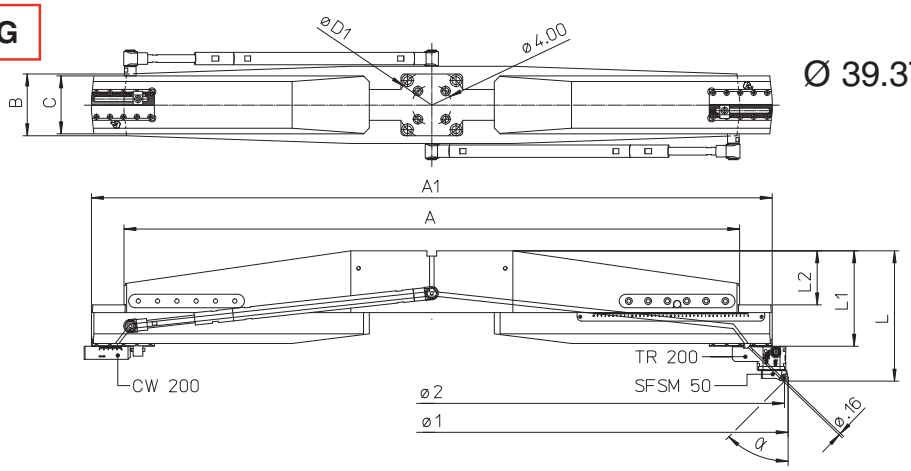
ø3 min = (Ø1+Ø2+1) : 2

REF.	CODE	Ø1	Ø2	A	A1	L	L1	B	C	øD1	PRL	S ...	lb
BPS1000	43 55 60 90 1000	51.26 ~ 74.88	39.17		39.17 ~ 58.85	11.02	9.09	6.30	5.90	–	PRL300	SSQC90	154.32
BPS1160	43 55 60 90 1160	74.88 ~ 90.63			62.79 ~ 74.60	11.61	9.68						220.46
BPS1600	43 55 60 90 1600	74.88 ~ 110.31	62.79		62.79 ~ 94.29	13.19	11.26	7.87	6.30	7.00			330.69

CHAMFERING

BPS ...

Ø 39.37 ~ 98.42

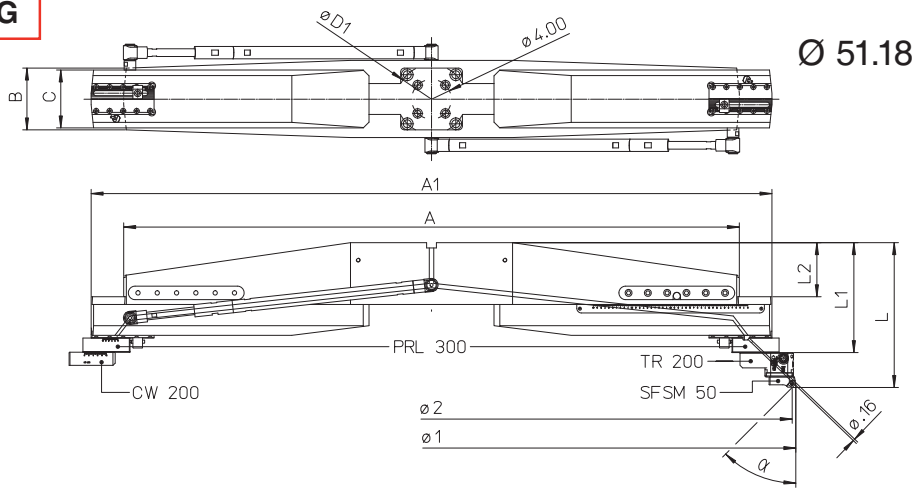


REF.	CODE	Ø1	Ø2	α	A	A1	L	L1	L2	B	C	øD1	SFSM	lb
BPS 1000	43 55 60 88 1000	39.37~63.00	39.17~62.79	15°	39.17	39.17~58.85	10.12	7.52	3.93	6.30	5.90	–	SFSM50-15° SFSM50-30° SFSM50-45°	154.32
			38.99~62.61	30°										
			38.84~62.85	45°										
BPS 1160	43 55 60 88 1160	63.00~78.74	62.79~78.54	15°		62.79~74.60	10.71	8.11						220.46
			62.61~78.36	30°										
			62.46~78.21	45°										
BPS 1600	43 55 40 88 1600	63.00~98.42	62.79~98.23	15°	62.79	62.79~94.29	12.28	9.68	5.51	7.87	6.30	7.00		330.69
			62.61~98.05	30°										
			62.46~97.89	45°										

CHAMFERING

BPS ...

Ø 51.18 ~ 110.23

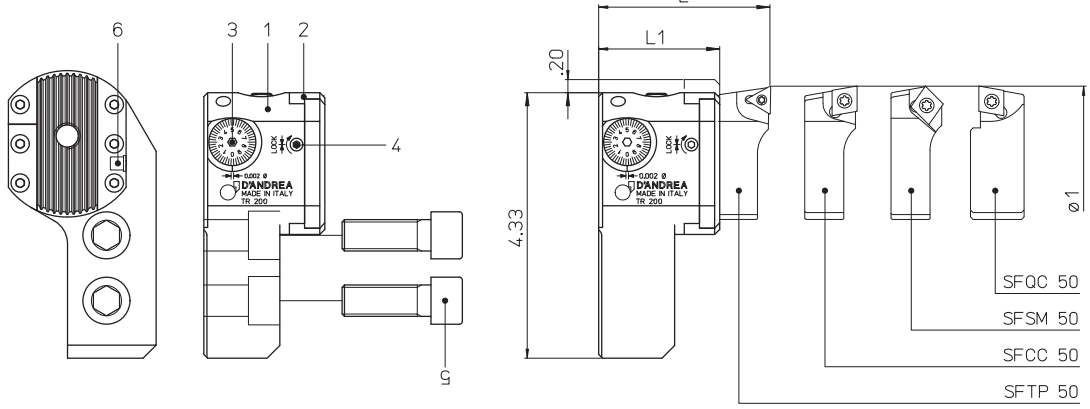


REF.	CODE	Ø1	Ø2	α	A	A1	L	L1	L2	B	C	øD1	PRL	SFSM	lb
BPS 1000	43 55 60 88 1000	51.18~74.80	50.98~74.60	15°	39.17	39.17~58.85	11.69	9.09	3.93	6.30	5.90	–	PRL 300	SFSM50-15° SFSM50-30° SFSM50-45°	154.32
			50.80~74.43	30°											
			50.65~74.27	45°											
BPS 1160	43 55 60 88 1160	74.80~90.55	74.60~90.35	15°		62.79~74.60	12.28	9.68							220.46
			74.43~90.18	30°											
			74.27~90.02	45°											
BPS 1600	43 55 40 88 1600	90.55~110.23	74.60~110.04	15°	62.79	62.79~94.29	13.85	11.26	5.51	7.87	6.30	7.00			330.69
			74.43~109.86	30°											
			74.27~109.70	45°											

Member IMC Group Ingersoll Cutting Tools

TR 200

Ø 7.87 ~ 43.30



● **Available in metric upon request**

REF.	CODE	Ø$_1$	L	L$_1$	SF.. 50	△	○	lb
TR 200 INCH	45 50 200 6200 0	7.87 ~ 43.30	2.59	1.85	SFTP 50 SFCC 50	•	•	2.87
		7.87 ~ 43.30			SFSM 50-15° SFSM 50-30° SFSM 50-45°	–	•	
		7.95 ~ 43.38			SFQC 50	–	•	

COMPONENTS
1. Body
2. Slide toolholder
3. Micrometric vernier scale
4. Slide clamp screw
5. Lock screw TR 200
6. Oiler

BAUTEILE
1. Körper
2. Werkzeugschlitten
3. Mikrometrischer Nonius
4. Schlittenklemmschraube
5. TR 200 Klemmschraube
6. Schmiernippel

COMPONENTES
1. Cuerpo
2. Guía portaherramientas
3. Nonio micrométrico
4. Tornillo blocaje guía
5. Tornillo blocaje TR 200
6. Engrasador

COMPOSANTS
1. Corps
2. Coulisseau
3. Vernier micrométrique
4. Vis blocage coulisseau
5. Vis blocage TR 200
6. Graisseur

COMPONENTI
1. Corpo
2. Slitta portautensili
3. Nonio micrometrico
4. Vite bloccaggio slitta
5. Vite bloccaggio TR200
6. Oliatore

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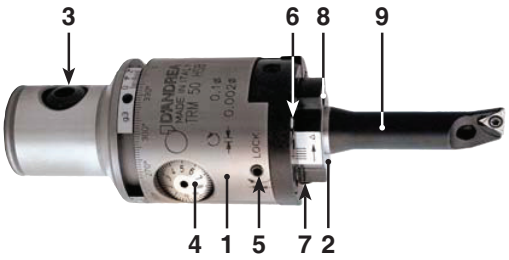
Balanceable Testarossa HSB | **Auswuchtbarer Testarossa Feinstbohrkopf HSB** | **Testarossa equilibrable HSB** | **Testarossa équilibrable HSB** | **Testarossa bilanciabile HSB**

.00008 µin



TRM HSB

Ø .10 ~ .87

RPM MAX 20.000

FEATURES
The TRM HSB heads in the new line Testarossa D'Andrea have protective rustproof coating. High precision work to IT6 tolerance, with excellent surface finish, is achieved using TRM HSB boring heads. These are very sensitive and radial correction of 1 micron can be effected directly on the machine and easily read on the vernier scale.

MERKMALE
Die TRM HSB Köpfe der neuen Testarossa Serie besitzen eine rostbeständige Oberfläche. Die TRM-Köpfe ermöglichen Bearbeitungstoleranzen bis zum Toleranzgrad IT6 bei hochwertiger Oberflächengüte. Sie besitzen eine Feinverstellung mit einer Genauigkeit von radial 1 µm, leicht ablesbar auf der Skala. Somit können Einstellungen direkt an der Maschine ausgeführt werden.

CARACTERÍSTICAS
Los cabezales TRM HSB de la nueva línea Testarossa D'Andrea cuentan con una protección superficial anticorrosión. Los cabezales TRM HSB permiten realizar operaciones de alta precisión con tolerancias de grado IT6 con un extraordinario acabado de la superficie. Tienen una sensibilidad de ajuste de 1 micrón en el radio, que puede leerse fácilmente en el nonio y realizarse directamente en la máquina.

CARACTÉRISTIQUES
Les têtes TRM HSB de la nouvelle ligne Testarossa D'Andrea ont une protection superficielle anticorrosion. Les têtes TRM HSB permettent des travaux de haute précision avec des tolérances de degré IT6 comprenant une finition superficielle optimum. Elles ont une sensibilité de réglage de 1 micron sur le rayon, facilement lisible sur le nonius et exécutable même en machine.

CARATTERISTICHE
Le testine TRM HSB della nuova linea Testarossa D'Andrea hanno una protezione superficiale anticorrosiva. Le testine TRM HSB consentono lavorazioni di alta precisione con tolleranze di grado IT6 con ottima finitura superficiale. Hanno una sensibilità di regolazione di 1 micron sul raggio, facilmente leggibile sul nonio ed eseguibile anche in macchina.

COMPONENTS
1. Body
2. Slide toolholder
3. Expanding radial pin
4. Micrometric vernier scale
5. Slide clamp screw
6. Coolant outlet
7. Tool clamp screw
8. Oiler
9. Tool

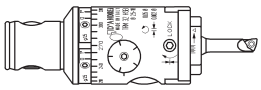
BAUTEILE
1. Körper
2. Werkzeugschlitten
3. Spreizbolzen
4. Mikrometrischer Nonius
5. Schlittenklemmschraube
6. Kühlmittelaustritt
7. Werkzeugklemmschraube
8. Schmiernippel
9. Werkzeug

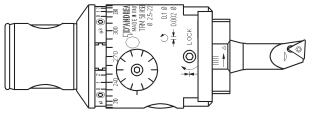
COMPONENTES
1. Cuerpo
2. Guía portaherramientas
3. Perno radial expansible
4. Nonio micrométrico
5. Tornillo blocaje guía
6. Agujero salida refrigerante
7. Tornillo blocaje herramientas
8. Engrasador
9. Herramienta

COMPOSANTS
1. Corps
2. Coulisseau
3. Tige radial expansible
4. Vernier micrométrique
5. Vis blocage coulisseau
6. Sortie du liquide d'arrosage
7. Vis blocage outil
8. Graisseur
9. Outil

COMPONENTI
1. Corpo
2. Slitta portautensili
3. Perno radiale espandibile
4. Nonio micrometrico
5. Vite bloccaggio slitta
6. Ugello uscita refrigerante
7. Vite bloccaggio utensili
8. Oliatore
9. Utensile

TRM 32 HSB
Ø .10 ~ .71





TRM 50 HSB
Ø .10 ~ .87

IMPORTANT NOTE
Take care that the tools and tool holders are solidly blocked on the slide. The only maneuvring or adjusting screws to be used for the operations for the heads are those listed in the Components section.

- The screws not listed in the Components section should not be touched in order not to compromise the correct operation of boring bars and heads.
- The boring bars should be assembled with the insert turned on the same direction of the vernier (4) scale (see photo).
- Remember to loosen the screw (5) before adjusting the vernier setting(4). Fix the screw (5) at the end of the adjustment.

The micrometric adjustment of POSITIVE is carried out by turning the vernier (4) counter-clockwise.

The use of coolant on the TRM HSB heads should be 40 BAR max.

WICHTIGER HINWEIS
- Sicherstellen, dass Werkzeuge und Plattenhalter fest auf dem Schlitten angebracht sind. Nur die Verstell- und Einstellschrauben, die wichtig für den Einsatz des Kopfes sind, sind unter dem Punkt Komponenten aufgeführt.
- Um die Funktionsweise des Kopfes nicht zu beeinträchtigen, dürfen Schrauben, die nicht aufgeführt sind, nicht verstellt werden.
- Die Wendeschneidplatten der Plattenhalter und Bohrstangen müssen in der gleichen Richtung, in der die Klemmschraube (5) sitzt, montiert werden.
- Sicherstellen, dass die Klemmschraube (5) vor einer Schlitteneinstellung über die Skalenschraube (4) gelöst wird. Klemmschraube (5) nach dem Einstellen wieder festziehen.

Die positive, mikrometrische Zustellung erfolgt durch Drehung der Skalenschraube (4) gegen den Uhrzeigersinn.

Bei Verwendung von Kühlmittel bei den TRM HSB Köpfen darf der maximale Druck 40 Bar betragen.

ATENCIÓN
- Cerciorarse de que las herramientas y los porta-herramientas estén firmemente sujetos en la corredera. Los tornillos de maniobra o de ajuste útiles para el uso de los cabezales son los indicados en el punto "Componentes".
- Los tornillos no indicados en el punto "Componentes" no deben tocarse para no comprometer el correcto funcionamiento de los cabezales.
- Las barras deben montarse con el inserto mirando hacia la misma parte del tornillo (4) (ver foto).
- Recordar aflojar el tornillo (5) antes de efectuar el ajuste del nonio (4). Bloquear el tornillo (5) una vez terminado el ajuste.

El ajuste micrométrico POSITIVO se realiza girando el nonio (4) hacia la izquierda.

El uso del refrigerante en los cabezales de las cuchillas TRM HSB debe ser de máx. 40 BAR.

NOTE IMPORTANTE
- S'assurer que les outils et les porte-outils sont solidement bloqués sur le chariot. Les vis de manœuvre ou de réglage utiles pour l'utilisation des têtes sont seulement celles indiquées au paragraphe Composants.
- Les vis non indiquées au paragraphe Composants ne doivent pas être touchées pour ne pas compromettre le bon fonctionnement des têtes.
- Les logements et les barres d'alésage doivent être installés avec la plaquette sur le même coté de la vis (4) (voir la photo)
- Ne pas oublier de desserrer la vis (5) avant d'effectuer un réglage du nonius (4). Bloquer la vis (5) à la fin du réglage.

Le réglage micrométrique POSITIF est effectué en tournant en sans anti-horaire le nonius (4).

L'utilisation du réfrigérant sur les têtes TRM HSB doit être d'un max. de 40 BAR

ATTENZIONE
- Assicurarsi che utensili e portautensili siano saldamente bloccati sulla slitta. Le viti di manovra o di regolazione utili per l'impiego delle testine sono solo quelle indicate nel punto Componenti.
- Le viti non indicate nel punto Componenti non devono essere toccate per non compromettere il buon funzionamento delle testine.
- I bareni devono essere montati con l'inserto rivolto dalla stessa parte del nonio (4) (vedere foto).
- Ricordarsi di allentare la vite (5) prima di eseguire una regolazione del nonio (4). Bloccare la vite (5) a fine regolazione.

La regolazione micrometrica POSITIVA si esegue ruotando in senso antiorario il nonio (4).

L'impiego del refrigerante sulle testine TRM HSB deve essere max. 40 BAR.

Ingersoll Cutting Tools

TRM HSB

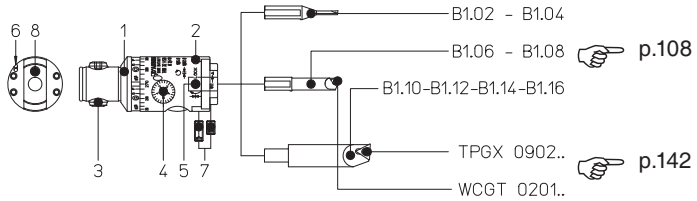
Balanceable
Testarossa HSB

Auswuchtbarer Testarossa
Feinstbohrkopf HSB

Testarossa
equilibrable HSB

Testarossa
équilibrable HSB

Testarossa
bilanciabile HSB



TRM 32 HSB

Ø .10 ~ .71

RPM MAX 20.000

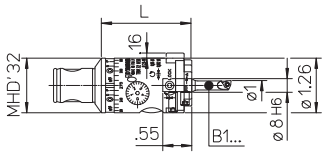
COMPONENTS
1. Body
2. Slide toolholder
3. Expanding radial pin
4. Micrometric vernier scale
5. Slide clamp screw
6. Coolant outlet
7. Tool clamp screw
8. Oiler

BAUTEILE
1. Körper
2. Werkzeugschlitten
3. Spreizbolzen
4. Mikrometrischer Nonius
5. Schlittenklemmschraube
6. Kühlmittelaustritt
7. Werkzeugklemmschraube
8. Schmiernippel

COMPONENTES
1. Cuerpo
2. Guía portaherramientas
3. Perno radial expansible
4. Nonio micrométrico
5. Tornillo blocaje guía
6. Agujero salida refrigerante
7. Tornillo blocaje herramientas
8. Engrasador

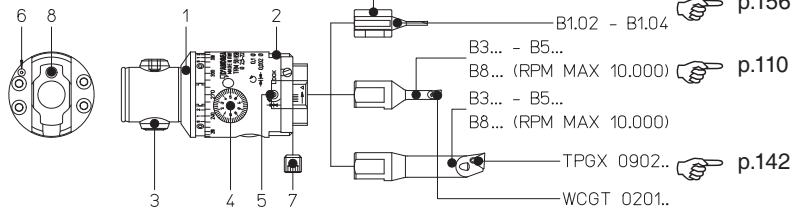
COMPOSANTS
1. Corps
2. Coulisseau
3. Tige radial expansible
4. Vernier micrométrique
5. Vis blocage coulisseau
6. Sortie du liquide d'arrosage
7. Vis blocage outil
8. Graisseur

COMPONENTI
1. Corpo
2. Slitta portautensili
3. Perno radiale espandibile
4. Nonio micrometrico
5. Vite bloccaggio slitta
6. Uscita refrigerante
7. Vite bloccaggio utensili
8. Oliatore



TRM 32 HSB

REF.	CODE	Ø1	L			lb
TRM 32 HSB INCH	45 51 032 6053 1	.10 ~ .71	2.08	•	•	0.77



TRM 50 HSB

Ø .10 ~ .87

RPM MAX 20.000

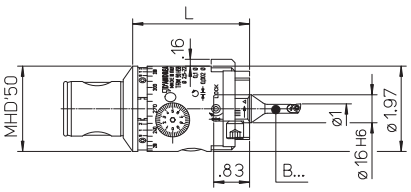
COMPONENTS
1. Body
2. Slide toolholder
3. Expanding radial pin
4. Micrometric vernier scale
5. Slide clamp screw
6. Coolant outlet
7. Tool clamp screw
8. Oiler

BAUTEILE
1. Körper
2. Werkzeugschlitten
3. Spreizbolzen
4. Mikrometrischer Nonius
5. Schlittenklemmschraube
6. Kühlmittelaustritt
7. Werkzeugklemmschraube
8. Schmiernippel

COMPONENTES
1. Cuerpo
2. Guía portaherramientas
3. Perno radial expansible
4. Nonio micrométrico
5. Tornillo blocaje guía
6. Agujero salida refrigerante
7. Tornillo blocaje herramientas
8. Engrasador

COMPOSANTS
1. Corps
2. Coulisseau
3. Tige radial expansible
4. Vernier micrométrique
5. Vis blocage coulisseau
6. Sortie du liquide d'arrosage
7. Vis blocage outil
8. Graisseur

COMPONENTI
1. Corpo
2. Slitta portautensili
3. Perno radiale espandibile
4. Nonio micrometrico
5. Vite bloccaggio slitta
6. Uscita refrigerante
7. Vite bloccaggio utensili
8. Oliatore



TRM 50 HSB

REF.	CODE	Ø1	L			lb
TRM 50 HSB INCH	45 51 050 6070 1	.10 ~ .87	2.69	•	•	3.09

● **Available in metric upon request**

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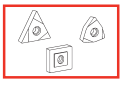

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MODULHARD'ANDREA

Kit Testarossa

SUPPLY

The boring heads TRM TESTAROSSA are supplied in a box with a wide range of toolholders, tools, inserts and service wrenches.

Testarossa Sets

LIEFERUMFANG

Die TESTAROSSA TRM Sets werden in einem Koffer mit einem umfassenden Sortiment an Werkzeugaufnahmen, Werkzeugen, Schneidplatten und Montageschlüsseln geliefert.

Kit Testarossa

SUMINISTRO

Los kits TESTAROSSA TRM se suministran en un estuche, con un amplio equipo de portaherramientas, herramientas, plaquitas y llaves de servicio.

kit Testarossa

FOURNITURE

Les kit TESTAROSSA TRM sont livrés dans une boîte avec un ample assortiment de porte-outils, d'outils, de plaquettes et de clés de service.

Kit Testarossa

FORNITURA

I kit TESTAROSSA TRM vengono forniti in una custodia con un ampio corredo di portautensili, utensili, inserti e chiavi di servizio.

.00008 µin

KIT K01 TRM 32 HSB INCH

KIT K01 TRM 50 HSB INCH

KIT K01 TRM 50 INCH

Kit Testarossa

SUPPLY

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kit Testarossa

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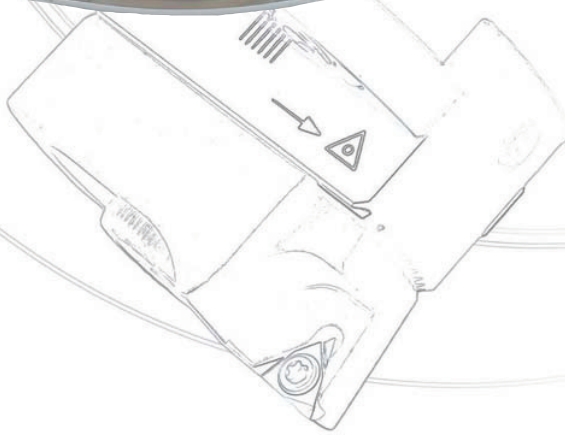
Kit Testarossa

FORNITURA

I kit TESTAROSSA TRM vengono forniti in una custodia con un ampio corredo di portautensili, utensili, inserti e chiavi di servizio.

KIT K01 TRM 50/63 INCH
KIT K01 TRM 63/63 INCH

KIT K01 TRM 50/80 INCH
KIT K01 TRM 80/80 INCH



.00008 µin

Member IMC Group Ingersoll Cutting Tools

Balanceable kit HSB | Auswuchtbares Set HSB | Kit equilibrable HSB | Kit équilibrable HSB | Kit Testarossa bilanciabile HSB

K01 TRM 32 HSB

Ø .10 ~ .47

RPM MAX 20,000

KIT K01 TRM 32 HSB INCH

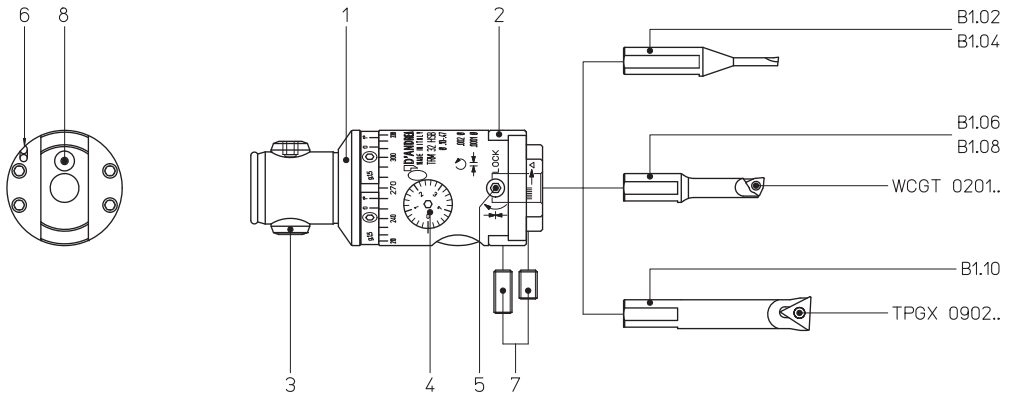
1 TRM 32 HSB INCH
1 B1.02
1 B1.04
1 B1.06
1 B1.08
1 B1.10
5 TPGX 090202L
2 WCGT 020102L

.00008 µin

REF.	CODE	Ø
K01 TRM 32 HSB INCH	65 50 032 8032 1	.10 ~ .47

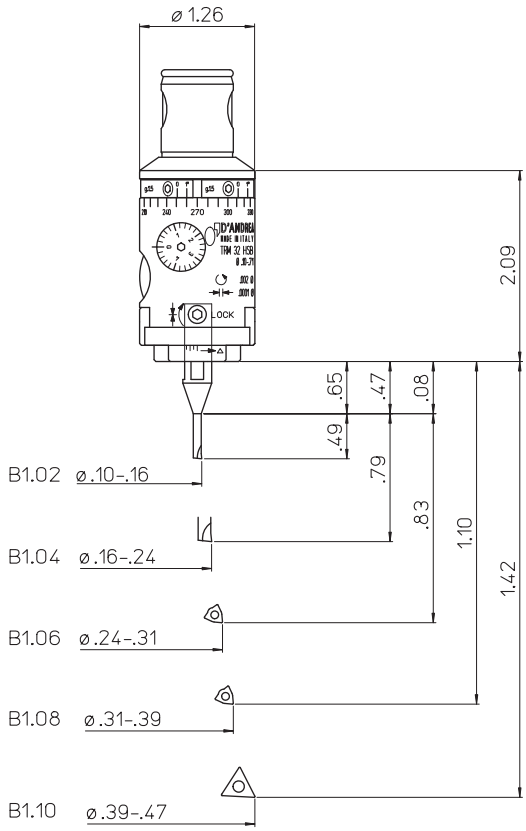
● **Available in metric upon request**

TRM 32 HSB COMPONENTS | TRM 32 HSB BAUTEILE | COMPONENTES TRM 32 HSB | COMPOSANTS TRM 32 HSB | COMPONENTI TRM 32 HSB



KIT - TRM

Working range | **Arbeitsbereich** | **Campo de trabajo** | **Capacité d'usinage** | **Campo di lavoro**



COMPONENTS

1. Body
2. Tool slide
3. Expanding pin
4. Micrometric vernier scale
5. Slide lock screw
6. Coolant outlet
7. Tool lock screw
8. Oiler

The boring head TRM 32 HSB bores diameters from .10 to .47.

- Fit the tool B.. into seat and lock with screw (7). The cutting tool must be on the slide longitudinal axis.

BAUTEILE

1. Körper
2. Werkzeugschlitten
3. Spreizbolzen
4. Mikrometrischer Nonius
5. Werkzeugschlitten-klemmschraube
6. Kühlmittelaustritt
7. Werkzeugklemmschraube
8. Schmiernippel

Der Kopf TRM 32 HSB dreht Durchmesser von .10 bis .47 aus.

- Werkzeug B.. in die Aufnahme einsetzen und mit Schraube (7) spannen. Versichern Sie sich, dass die Schneide der Wendeplatte auf der Längsachse des Schlittens liegt.

COMPONENTES

1. Cuerpo
2. Guía portaherramientas
3. Perno radial expansible
4. Nonio micrométrico
5. Tornillo blocaje guía portaherramientas
6. Agujero salida refrigerante
7. Tornillo blocaje herramientas
8. Engrasador

El Kit TRM 32 HSB mandrina agujeros de Ø .10 a .47.

- Colocar en el alojamiento la herramienta B.. bloqueándola con el tornillo (7), asegurándose que el corte de la plaquita se encuentre sobre el eje longitudinal de la guía.

COMPOSANTS

1. Corps
2. Coulisseau
3. Tige radiale expansible
4. Vernier micrométrique
5. Vis bloccage coulisseau
6. Sortie du liquide d'arrosage
7. Vis bloccage outil
8. Graisseur

Le kit TRM 32 HSB alèse des diamètres allant de .10 à .47.

- Introduire l'outil B.. dans le logement et le bloquer au moyen de la vis (7) n'oubliant pas de vérifier si le taillant de l'élément intercalaire est disposé sur l'axe longitudinal du coulisseau.

COMPONENTI

1. Corpo
2. Slitta portautensili
3. Perno radiale espandibile
4. Nonio micrometrico
5. Vite bloccaggio slitta
6. Uscita refrigerante
7. Vite bloccaggio utensili
8. Oliatore

Con il Kit TRM 32 HSB si alesano fori da Ø .10 a .47.

- Inserire nell'alloggiamento l'utensile B.. bloccandolo con la vite (7) assicurandosi che il tagliente dell'inserto si trovi sull'asse longitudinale della slitta.

Balanceable kit HSB | Auswuchtbares Set HSB | Kit equilibrable HSB | Kit équilibrable HSB | Kit Testarossa bilanciabile HSB

K01 TRM 50 HSB

Ø .24 ~ .87

RPM MAX 20,000

KIT K01 TRM 50 HSB INCH

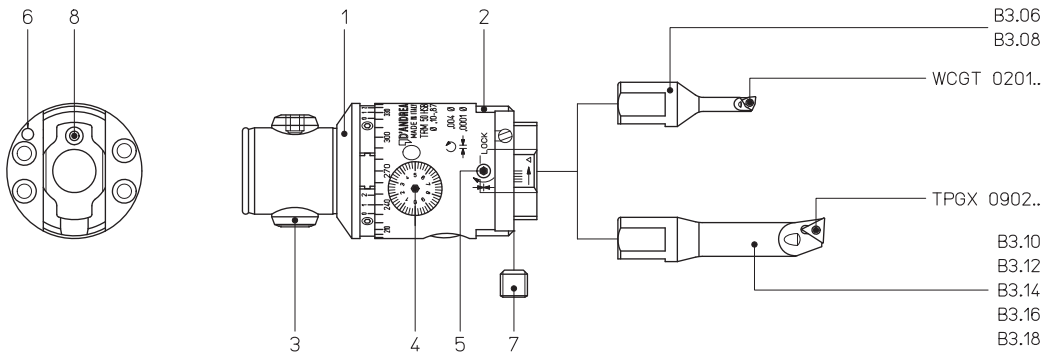
1 TRM 50 HSB INCH
1 B3.06
1 B3.08
1 B3.10
1 B3.12
1 B3.14
1 B3.16
1 B3.18
5 TPGX 090202L
2 WCGT 020102L

.00008 µin

REF.	CODE	Ø
K01 TRM 50 HSB INCH	65 50 050 8050 1	.24 ~ .87

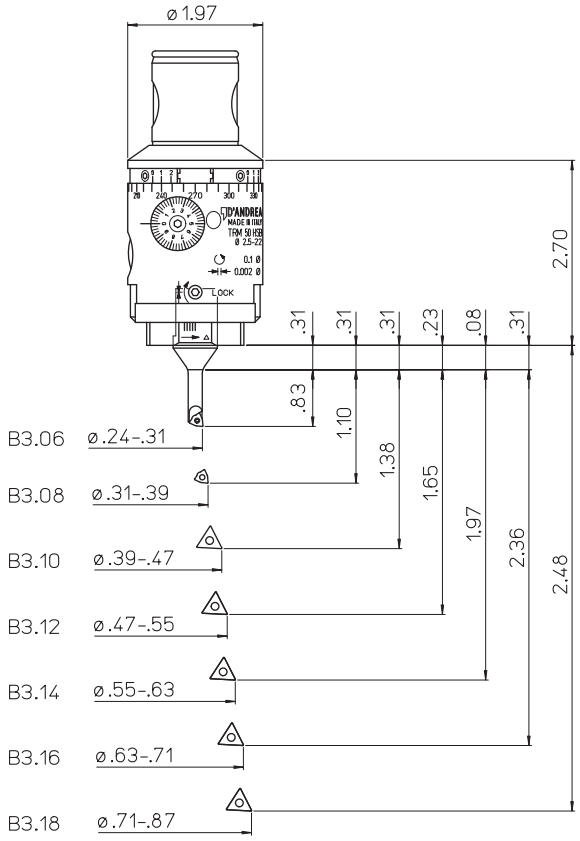
● **Available in metric upon request**

TRM 50 HSB COMPONENTS | TRM 50 HSB BAUTEILE | COMPONENTES TRM 50 HSB | COMPOSANTS TRM 50 HSB | COMPONENTI TRM 50 HSB



KIT - TRM

Working range	Arbeitsbereich	Campo de trabajo	Capacité d'usinage	Campo di lavoro



COMPONENTS

1. Body
2. Tool slide
3. Expanding pin
4. Micrometric vernier scale
5. Slide lock screw
6. Coolant outlet
7. Tool lock screw
8. Oiler

The boring head TRM 50 HSB bores diameters from .24 to .87.

- Fit the tool B.. into seat and lock with screw (7). The cutting tool must be on the slide longitudinal axis.

BAUTEILE

1. Körper
2. Werkzeugschlitten
3. Spreizbolzen
4. Mikrometrischer Nonius
5. Werkzeugschlitten-klemmschraube
6. Kühlmittelaustritt
7. Werkzeugklemmschraube
8. Schmiernippel

Der Feinstbohrkopf TRM 50 HSB dreht Durchmesser von .24 bis .87 aus.

- Werkzeug B.. in die Aufnahme einsetzen und mit Schraube (7) spannen. Versichern Sie sich, dass die Schneide der Wendeplatte auf der Längsachse des Schlittens liegt.

COMPONENTES

1. Cuerpo
2. Guía portaherramientas
3. Perno radial expansible
4. Nonio micrométrico
5. Tornillo blocaje guía portaherramientas
6. Agujero salida refrigerante
7. Tornillo blocaje herramientas
8. Engrasador

El Kit TRM 50 HSB mandrina agujeros de Ø .24 a .87.

- Colocar en el alojamiento la herramienta B.. bloqueándola con el tornillo (7), asegurándose que el corte de la plaquita se encuentre sobre el eje longitudinal de la guía.

COMPOSANTS

1. Corps
2. Coulisseau
3. Tige radiale expansible
4. Vernier micrométrique
5. Vis bloccage coulisseau
6. Sortie du liquide d'arrosage
7. Vis bloccage outil
8. Graisseur

Le kit TRM 50 HSB alèse des diamètres allant de .24 à .87.

- Introduire l'outil B.. dans le logement et le bloquer au moyen de la vis (7) n'oubliant pas de vérifier si le taillant de l'élément intercalaire est disposé sur l'axe longitudinal du coulisseau.

COMPONENTI

1. Corpo
2. Slitta portautensili
3. Perno radiale espandibile
4. Nonio micrometrico
5. Vite bloccaggio slitta
6. Ugello uscita refrigerante
7. Vite bloccaggio utensili
8. Oliatore

Con il Kit TRM 50 HSB si alesano fori da Ø .24 a .87.

- Inserire nell'alloggiamento l'utensile B.. bloccandolo con la vite (7) assicurandosi che il tagliente dell'inserto si trovi sull'asse longitudinale della slitta.

Kit Testarossa | Set Testarossa | Kit Testarossa | kit Testarossa | Kit Testarossa

K01 TRM 50

Ø .24 ~ 4.25

KIT K01 TRM 50 INCH

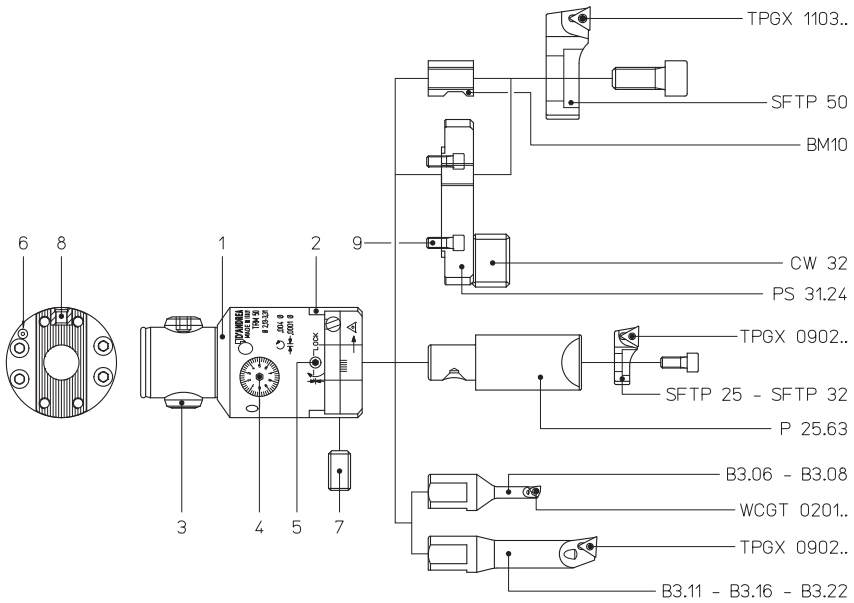
1 TRM 50 INCH
1 B3.06
1 B3.08
1 B3.11
1 B3.16
1 B3.22
1 PS 31.24
1 P25.63
1 SFTP25
1 SFTP32
1 SFTP50
1 BM10
1 CW 32
5 TPGX 090202L
1 TPGX 110302L
2 WCGT 020102L

.00008 µin

REF.	CODE	Ø
K01 TRM 50 INCH	65 50 050 6050 1	.24 ~ 4.25

● **Available in metric upon request**

TRM 50 COMPONENTS | TRM 50 BAUTEILE | COMPONENTES TRM 50 | COMPOSANTS TRM 50 | COMPONENTI TRM 50



COMPONENTS
1. Body
2. Tool slide
3. Expanding pin
4. Micrometric vernier scale
5. Slide lock screw
6. Coolant outlet
7. Tool lock screw
8. Oiler

BAUTEILE
1. Körper
2. Werkzeugschlitten
3. Spreizbolzen
4. Mikrometrischer Nonius
5. Werkzeugschlitten-klemmschraube
6. Kühlmittelaustritt
7. Werkzeugklemmschraube
8. Schmiernippel

COMPONENTES
1. Cuerpo
2. Guía portaherramientas
3. Perno radial expansible
4. Nonio micrométrico
5. Tornillo blocaje guía portaherramientas
6. Agujero salida refrigerante
7. Tornillo blocaje herramientas
8. Engrasador

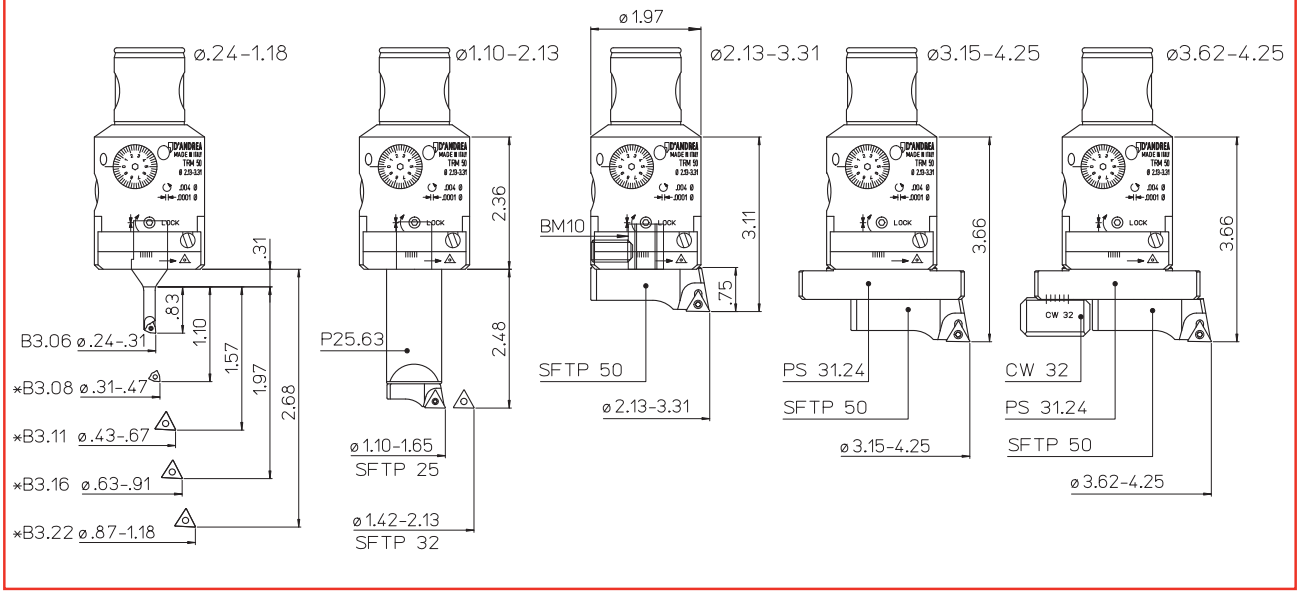
COMPOSANTS
1. Corps
2. Coulisseau
3. Tige radiale expansible
4. Vernier micrométrique
5. Vis bloccage coulisseau
6. Sortie du liquide d'arrosage
7. Vis bloccage outil
8. Graisseur

COMPONENTI
1. Corpo
2. Slitta portautensili
3. Perno radiale espandibile
4. Nonio micrometrico
5. Vite bloccaggio slitta
6. Ugello uscita refrigerante
7. Vite bloccaggio utensili
8. Oliatore

Member IMC Group Ingersoll Cutting Tools

KIT - TRM

Working range | **Arbeitsbereich** | **Campo de trabajo** | **Capacité d'usinage** | **Campo di lavoro**



The boring head TRM 50 bores diameters from .24 to 4.25.

- For bores from Ø .24 to 1.18 fit the tool B.. into seat and lock with screw (7). The cutting tool must be on the slide longitudinal axis.
- For bores from Ø 1.10 to 2.13 fit extension P25.63 into seat and lock with screw (7).
- For bores from Ø 2.13 to 3.31 fit sleeve BM10 into seat. Before tightening the screw (7) make sure that the latter engages the recess provided in sleeve BM10 which shall not project from the tool slide; if so, fit the sleeve overturned into seat. Fit the bit holder SF.. and secure it by the appropriate screw.
- For bores from Ø 3.15 to 4.25 fit the toolholder PS 31.24 in the slide and secure it by screws (9). Fit the bit holder SF.. on the toolholder and secure it by the screw.

* For a best flexibility of the TRM 50 kit, the working range of the B3.08, B3.11, B3.16, B3.22 tools is different from those suggested and reported on page 110.

Der Feinstbohrkopf TRM 50 dreht Durchmesser von .24 bis 4.25 aus.

- Bei Bohrungen mit Durchmesser von .24 bis 1.18 Werkzeug B.. in die Aufnahme einsetzen und mit Schraube (7) spannen. Versichern Sie sich, dass die Schneide der Wendeplatte auf der Längsachse des Schlittens liegt.
- Bei Bohrungen mit Durchmesser von 1.10 bis 2.13 Verlängerung P25.63 in die Aufnahme einsetzen und mit Schraube (7) spannen.
- Bei Bohrungen mit Durchmesser von 2.13 bis 3.31 Buchse BM10 in die Aufnahme einsetzen. Vor Anziehen der Schraube (7) darauf achten, dass sie im Einstich der Buchse BM10 eingreift und dass die Buchse aus dem Werkzeugschlitten nicht herausragt; sonst die Buchse umgekehrt einsetzen.Den Plattenhalter SF.. montieren und mit der passenden Schraube befestigen.
- Für Bohrungen von Ø 3.15 - 4.25, Werkzeughalterung PS 31.24 auf dem Schlitten anbringen und mit Schrauben (9) blockieren. Sitz SF auf die Werkzeughalterung montieren und mit den Schrauben befestigen.

* Zur höheren Flexibilität des TRM 50 Sets ist der Arbeitsbereich der Werkzeuge B3.08, B3.11, B3.16, B3.22 anders als der, der auf Seite 110 empfohlen und angegeben ist.

El Kit TRM 50 mandrina agujeros de Ø .24 a 4.25.

- Para los agujeros de Ø .24 a 1.18 colocar en el alojamiento la herramienta B.. bloqueándola con el tornillo (7), asegurándose que el corte de la plaquita se encuentre sobre el eje longitudinal de la guía.
- Para los agujeros de Ø 1.10 a 2.12 colocar en el alojamiento la prolongación P25.63 bloqueándola con el tornillo (7).
- Para los agujeros de Ø 2.13 a 3.31 colocar en el alojamiento el casquillo BM10 bloqueándolo con el tornillo (7), prestando atención a que el casquillo non sobresalga de la guía; en caso contrario, va colocado al revés. Montar el asiento SF.. bloqueándolo con el tornillo apropiado.
- Para los agujeros de 3.15 a 4.25 de diámetro, colocar sobre la corredera el porta-herramientas PS 31.24 y bloquearlo con los tornillos (9). Montar el asiento SF en el portaherramientas y bloquearlo con el tornillo.

* Para una mayor flexibilidad del kit TRM 50 el campo de trabajo de las herramientas B3.08, B3.11, B3.16, B3.22 es diferente de lo sugerido y reproducido en la página 110.

Le kit TRM 50 alèse des diamètres allant de .24 à 4.25.

- Pour des alésages de Ø .23 à 1.18, introduire l'outil B.. dans le logement et le bloquer au moyen de la vis (7) n'oubliant pas de vérifier si le taillant de l'élément intercalaire est disposé sur l'axe longitudinal du coulisseau.
- Pour des alésages de Ø 1.10 à 2.13, introduire la rallonge P 25.63 dans le logement et la bloquer au moyen de la vis (7).
- Pour des alésages de Ø 2.13 à 3.31, introduire la douille BM10 dans le logement. Avant de serrer la vis (7) s'assurer que la vis s'engage dans la niche prévue dans la douille BM10 et que celle-ci ne saillit pas du coulisseau, autrement l'introduire renversée. Monter le porte-plaquette SF.. et le bloquer au moyen de la vis appropriée.
- Pour les trous de 3.15 à 4.25 de diamètre positionner sur le chariot le porteplaquette PS 31.24 en le bloquant avec les vis (9).Installer sur le porteplaquette le logement SF en le bloquant avec la vis.

* Pour une supérieure flexibilité du kit TRM 50 la capacité d'usinage des outils B3.08, B3.11, B3.16, B3.22 est différente de celui suggéré et indiqué à la page 110.

Con il Kit TRM 50 si alesano fori da Ø .24 a 4.25.

- Per i fori da Ø .23 a 1.18 inserire nell'alloggiamento l'utensile B.. bloccandolo con la vite (7) assicurandosi che il tagliente dell'inserto si trovi sull'asse longitudinale della slitta.
- Per i fori da Ø 1.10 a 2.13 inserire nell'alloggiamento la prolunga P25.63 bloccandola con la vite (7).
- Per i fori da Ø 2.13 a 3.31 inserire nell'alloggiamento la bussola BM10. Prima di bloccare la vite (7) assicurarsi che la stessa entri nella nicchia ricavata nella bussola BM10 prestando attenzione che la bussola non sporga dalla slitta altrimenti va inserita capovolta. Montare il seggio SF.. bloccandolo con l'apposita vite.
- Per i fori da Ø 3.15 a 4.25 inserire nella slitta il portautensile PS 31.24 bloccandolo con le viti (9). Montare sul portautensili il seggio SF.. bloccandolo con la vite.

* Per una maggiore flessibilità del Kit TRM 50 il campo di lavoro degli utensili B3.08, B3.11, B3.16, B3.22 è differente da quello suggerito e riportato a pag.110.

K01 TRM 50/63
K01 TRM 63/63

Ø .24 ~ 4.92

KIT K01 TRM 50/63 - 63/63 INCH

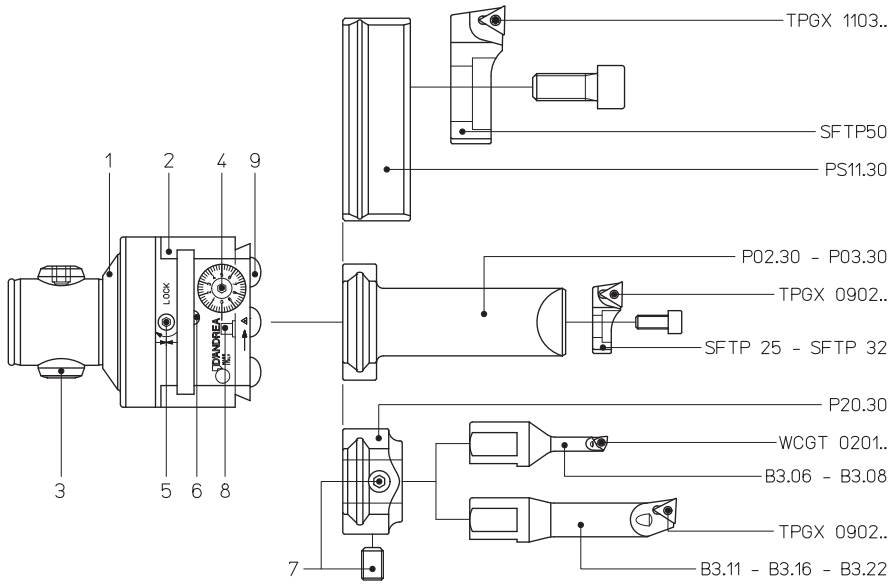
1 TRM ../63 INCH	
1 B3.06	
1 B3.08	
1 B3.11	
1 B3.16	1 SFTP25
1 B3.22	1 SFTP32
1 P20.30	1 SFTP50
1 P02.30	5 TPGX 090202L
1 P03.30	1 TPGX 110302L
1 PS11.30	2 WCGT 020102L

.00008 µin

REF.	CODE	Ø
K01 TRM 50/63 INCH	65 50 050 6063 1	.24 ~ 4.92
K01 TRM 63/63 INCH	65 50 063 6063 1	

● **Available in metric upon request**

TRM 50/63 - 63/63 COMPONENTS | **TRM 50/63 - 63/63 BAUTEILE** | **COMPONENTES TRM 50/63 - 63/63** | **COMPOSANTS TRM 50/63 - 63/63** | **COMPONENTI TRM 50/63 - 63/63**



COMPONENTS

1. Body
2. Tool slide
3. Expanding pin
4. Micrometric vernier scale
5. Slide lock screw
6. Coolant outlet
7. Tool lock screw
8. Oiler
9. Toolholder lock screws

BAUTEILE

1. Körper
2. Werkzeugschlitten
3. Spreizbolzen
4. Mikrometrischer Nonius
5. Werkzeugschlitten-klemmschraube
6. Kühlmittelaustritt
7. Werkzeugklemmschraube
8. Schmiernippel
9. Werkzeughalter-spannschrauben

COMPONENTES

1. Cuerpo
2. Guía portaherramientas
3. Perno radial expansible
4. Nonio micrométrico
5. Tornillo blocaje guía portaherramientas
6. Agujero salida refrigerante
7. Tornillo blocaje herramientas
8. Engrasador
9. Tornillo blocaje portaherramientas

COMPOSANTS

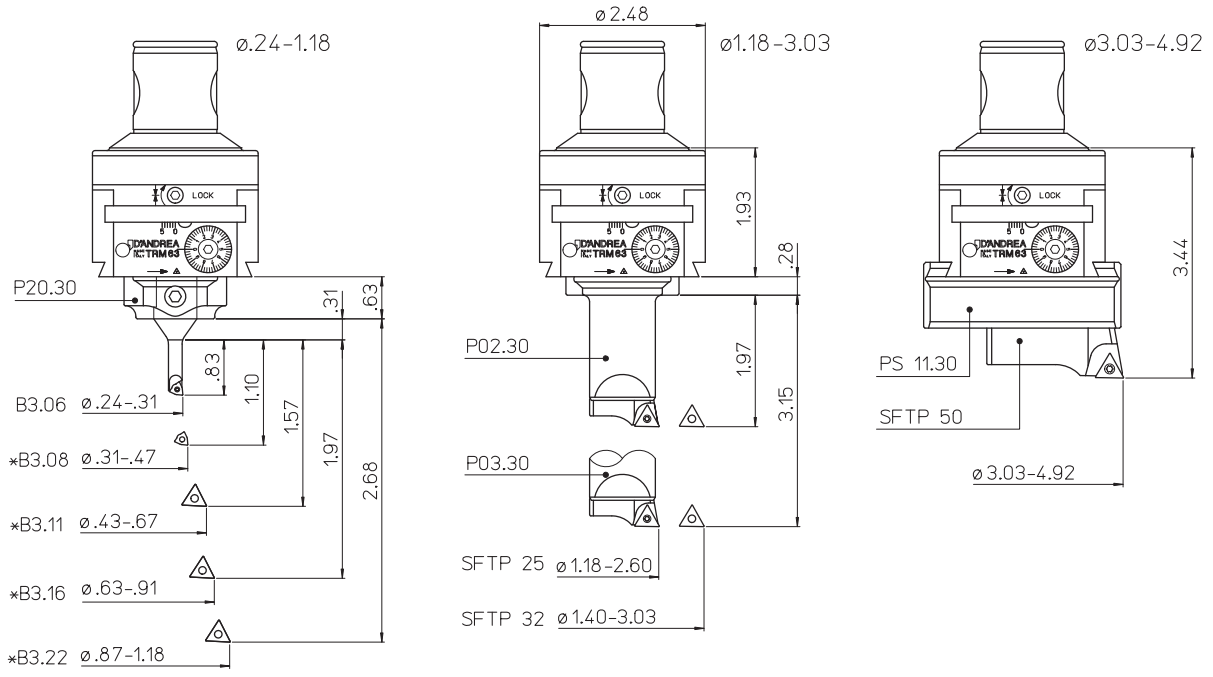
1. Corps
2. Coulisseau
3. Tige radiale expansible
4. Vernier micrométrique
5. Vis bloccage coulisseau
6. Sortie du liquide d'arrosage
7. Vis bloccage outil
8. Graisseur
9. Vis bloccage porte-outils

COMPONENTI

1. Corpo
2. Slitta portautensili
3. Perno radiale espandibile
4. Nonio micrometrico
5. Vite bloccaggio slitta
6. Ugello uscita refrigerante
7. Vite bloccaggio utensili
8. Oliatore
9. Viti bloccaggio portautensili

KIT - TRM

Working range | **Arbeitsbereich** | **Campo de trabajo** | **Capacité d'usinage** | **Campo di lavoro**



The boring head TRM 63 bores diameters from .24 to 4.92 .

- For bores from Ø .24 to 1.18 fit the toolholder P20.30 at the centre of the slide and secure it by screws (9). Fit the tool B.. and secure it by screws (7). The cutting tool must be on the slide longitudinal axis.
- For bores from Ø 1.18 to 3.03 fit the toolholder P.. in the slide and secure it by screws (9).
- For bores from Ø 3.03 to 4.92 fit the toolholder PS11.30 in the slide and secure it by screws (9). Fit the bit holder SF.. on the toolholder and secure it by the screw.

* For a best flexibility of the TRM 50/63 and 63/63, the working range of the B3.08, B3.11, B3.16, B3.22 tools is different from those suggested and reported on page 110.

Der Feinstbohrkopf TRM 63 dreht Durchmesser von .24 bis 4.92 aus.

- Bei Bohrungen mit Durchmesser von .24 bis 1.18 den Werkzeughalter P20.30 in die Mitte des Schlittens einsetzen und mit Schraube (9) spannen. Werkzeug B.. montieren und mit Schrauben (7) spannen. Versichern Sie sich, dass die Schneide der Wendeplatte auf der Längsachse des Schlittens liegt.
- Bei Bohrungen mit Durchmesser von 1.18 bis 3.03 den Werkzeughalter P.. in den Schlitten einsetzen und mit Schrauben (9) spannen.
- Bei Bohrungen mit Durchmesser von 3.03 bis 4.92 den Werkzeughalter PS11.30 in den Schlitten einsetzen und mit Schrauben (9) spannen. Den Plattenhalter SF.. am Werkzeughalter montieren und mit Schraube spannen.

* Zur höheren Flexibilität des TRM 50/63 und 63/63 Sets ist der Arbeitsbereich der Werkzeuge B3.08, B3.11, B3.16, B3.22 anders als der, der auf Seite 110 empfohlen und angegeben ist.

El Kit TRM 63 mandrina agujeros de Ø .24 a 4.92.

- Para los agujeros de Ø .24 a 1.18 colocar en el centro de la guía el portaherramientas P20.30 bloqueándolo con los tornillos (9). Montar la herramienta B.. bloqueándola con los tornillos (7), asegurándose que el corte de la plaquita se encuentre sobre el eje longitudinal de la guía.
- Para los agujeros de Ø 1.18 a 3.03 colocar en la guía los portaherramientas P.. bloqueándolos con los tornillos (9).
- Para los agujeros de Ø 3.03 a 4.92 colocar en la guía el portaherramientas PS11.30 bloqueándolo con los tornillos (9). Montar sobre el portaherramientas el asiento SF.. bloqueándolo con el tornillo.

* Para una mayor flexibilidad del kit TRM 50/63 y 63/63 el campo de trabajo de las herramientas B3.08, B3.11, B3.16, B3.22 es diferente de lo sugerido y reproducido en la página 110.

Le kit TRM 63 alèse des diamètres allant de .24 à 4.92.

- Pour des alésages de Ø .24 à 1.18, introduire le porte-outils P20.30 au centre du coulisseau et le bloquer au moyen des vis (9). Poser ensuite l'outil B.. et le bloquer au moyen des vis (7), n'oubliant pas de vérifier si le taillant de l'élément intercalaire est disposé sur l'axe longitudinal du coulisseau.
- Pour des alésages de Ø 1.18 à 3.03, introduire le porte-outils P.. dans le coulisseau et le bloquer au moyen des vis (9).
- Pour des alésages de Ø 3.03 à 4.92, introduire le porte-outils PS11.30 dans le coulisseau et le bloquer au moyen des vis (9). Monter le porte-plaquette SF.. sur le porte-outils et le bloquer au moyen de la vis.

* Pour une supérieure flexibilité du kit 50/63 et 63/63 KIT la capacité d'usinage des outils B3.08, B3.11, B3.16, B3.22 est différente de celui suggéré et indiqué à la page 110.

Con i Kit TRM 63 si alesano fori da Ø .24 a 4.92.

- Per i fori da Ø .24 a 1.18 mm inserire al centro della slitta il portautensili P20.30 bloccandolo con le viti (9). Montare l'utensile B.. bloccandolo con le viti (7) assicurandosi che il tagliente dell'inserto si trovi sull'asse longitudinale della slitta.
- Per i fori da Ø 1.18 a 3.03 inserire nella slitta i portautensili P.. bloccandoli con le viti (9).
- Per i fori da Ø 3.03 a 4.92 inserire nella slitta il portautensile PS11.30 bloccandolo con le viti (9). Montare sul portautensili il seggio SF.. bloccandolo con la vite.

* Per una maggiore flessibilità dei Kit TRM 50/63 e 63/63 il campo di lavoro degli utensili B3.08, B3.11, B3.16, B3.22 è differente da quello suggerito e riportato a pag.110.

Kit Testarossa | Set Testarossa | Kit Testarossa | kit Testarossa | Kit Testarossa

K01 TRM 50/80
K01 TRM 80/80

Ø .24 ~ 8.66

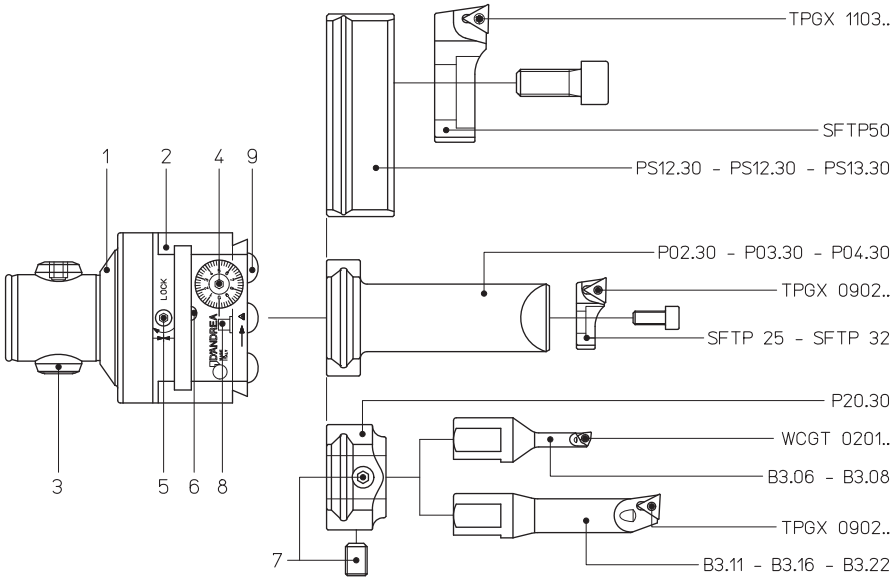
KIT K01 TRM 50/80 - 80/80 INCH

1 TRM ../80 INCH
1 B3.06
1 B3.08
1 B3.11
1 B3.16
1 B3.22
1 P20.30 — 1 SFTP25
1 P02.30 — 1 SFTP32
1 P03.30 — 1 SFTP50
1 P04.30 — 5 TPGX 090202L
1 PS12.30 — 1 TPGX 110302L
1 PS13.30 — 2 WCGT 020102L

REF.	CODE	Ø
K01 TRM 50/80 INCH	65 50 050 6080 1	.24 ~ 8.66
K01 TRM 80/80 INCH	65 50 080 6080 1	

● **Available in metric upon request**

TRM 50/80 - 80/80 COMPONENTS | TRM 50/80 - 80/80 BAUTEILE | COMPONENTES TRM 50/80 - 80/80 | COMPOSANTS TRM 50/80 - 80/80 | COMPONENTI TRM 50/80 - 80/80



COMPONENTS

1. Body
2. Tool slide
3. Expanding pin
4. Micrometric vernier scale
5. Slide lock screw
6. Coolant outlet
7. Tool lock screw
8. Oiler
9. Toolholder lock screws

BAUTEILE

1. Körper
2. Werkzeugschlitten
3. Spreizbolzen
4. Mikrometrischer Nonius
5. Werkzeugschlitten-klemmschraube
6. Kühlmittelaustritt
7. Werkzeugklemmschraube
8. Schmiernippel
9. Werkzeughalter-spannschrauben

COMPONENTES

1. Cuerpo
2. Guía portaherramientas
3. Perno radial expansible
4. Nonio micrométrico
5. Tornillo blocaje guía portaherramientas
6. Agujero salida refrigerante
7. Tornillo blocaje herramientas
8. Engrasador
9. Tornillo blocaje portaherramientas

COMPOSANTS

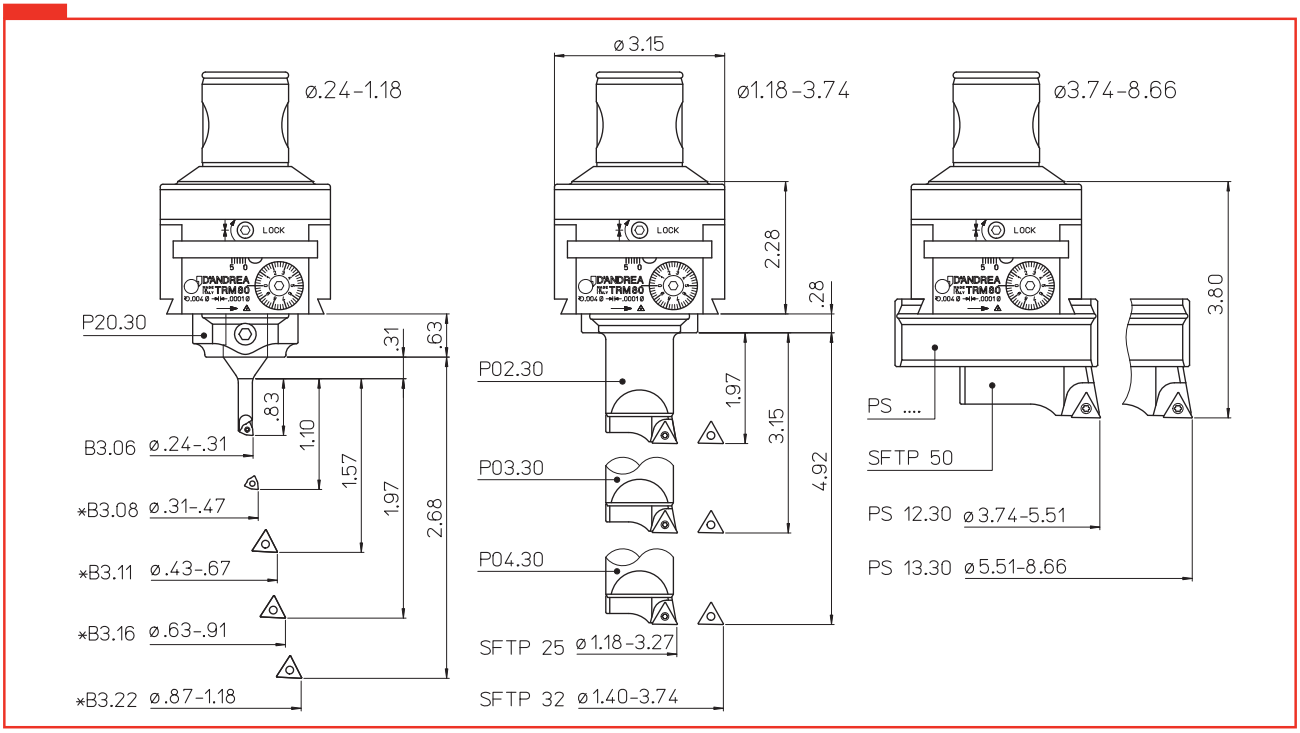
1. Corps
2. Coulisseau
3. Tige radiale expansible
4. Vernier micrométrique
5. Vis bloccage coulisseau
6. Sortie du liquide d'arrosage
7. Vis bloccage outil
8. Graisseur
9. Vis bloccage porte-outils

COMPONENTI

1. Corpo
2. Slitta portautensili
3. Perno radiale espandibile
4. Nonio micrometrico
5. Vite bloccaggio slitta
6. Ugello uscita refrigerante
7. Vite bloccaggio utensili
8. Oliatore
9. Viti bloccaggio portautensili

KIT - TRM

Working range | **Arbeitsbereich** | **Campo de trabajo** | **Capacité d'usinage** | **Campo di lavoro**



The boring head TRM 80 bores diameters from .24 to 8.66.

- For bores from Ø .24 to 1.18 fit the toolholder P20.30 at the centre of the slide and secure it by screws (9). Fit the tool B.. and secure it by screws (7). The cutting tool must be on the slide longitudinal axis.
- For bores from Ø .23 to 1.18 fit the toolholder in the slide and secure it by screws (9).
- For bores from Ø 1.18 to 3.74 fit the toolholder PS.. in the slide and secure it by screws (9). Fit the bit holder SF.. on the toolholder and secure it by the screw.

* For a best flexibility of the TRM 50/80 and 80/80 kits, the working range of the B3.08, B3.11, B3.16, B3.22 tools is different from those suggested and reported on page 110.

Der Feinstbohrkopf TRM 80 dreht Durchmesser von .24 bis 8.66 aus.

- Bei Bohrungen mit Durchmesser von .24 bis 1.18 den Werkzeughalter P20.30 in die Mitte des Schlittens einsetzen und mit Schrauben (9) spannen. Werkzeug B.. montieren und mit Schrauben (7) spannen. Versichern Sie sich, dass die Schneide der Wendeplatte auf der Längsachse des Schlittens liegt.
- Bei Bohrungen mit Durchmesser von 1.18 bis 3.74 den Werkzeughalter P.. in den Schlitten einsetzen und mit Schrauben (9) spannen.
- Bei Bohrungen mit Durchmesser von 3.74 bis 8.66 den Werkzeughalter PS.. in den Schlitten einsetzen und mit Schrauben (9) spannen. Den Plattenhalter SF.. am Werkzeughalter montieren und mit Schraube spannen.

* Zur höheren Flexibilität des TRM 50/80 und 80/80 Sets ist der Arbeitsbereich der Werkzeuge B3.08, B3.11, B3.16, B3.22 anders als der, der auf Seite 110 empfohlen und angegeben ist.

El Kit TRM 80 mandrina agujeros de Ø .24 a 8.66.

- Para los agujeros de Ø .24 a 1.18 colocar en el centro de la guía el portaherramientas P20.30 bloqueándolo con los tornillos (9). Montar la herramienta B.. bloqueándola con los tornillos (7), asegurándose que el corte de la plaquita se encuentre sobre el eje longitudinal de la guía.
- Para los agujeros de Ø 1.18 a 3.74 colocar en la guía los portaherramientas P.. bloqueándolos con los tornillos (9).
- Para los agujeros de Ø 3.74 a 8.66 colocar en la guía los portaherramientas PS.. bloqueándolos con los tornillos (9). Montar sobre el portaherramientas el asiento SF.. bloqueándolo con el tornillo.

* Para una mayor flexibilidad del kit TRM 50/80 y 80/80 el campo de trabajo de las herramientas B3.08, B3.11, B3.16, B3.22 es diferente de lo sugerido y reproducido en la página 110.

Le kit TRM 80 alèse des diamètres allant de .24 à 8.66.

- Pour des alésages de Ø .24 à 1.18, introduire le porte-outils P20.30 au centre du coulisseau et le bloquer au moyen des vis (9). Poser ensuite l'outil B..et le bloquer au moyen des vis (7), n'oubliant pas de vérifier si le taillant de l'élément intercalaire est disposé sur l'axe longitudinal du coulisseau.
- Pour des alésages de Ø 1.18 à 3.74, introduire le porte-outils P.. dans le coulisseau et le bloquer au moyen des vis (9).
- Pour des alésages de Ø 3.74 à 8.66, introduire le porte-outils PS.. dans le coulisseau et le bloquer au moyen des vis (9). Monter le porte-plaquette SF.. sur le porte-outils et le bloquer au moyen de la vis.

* Pour une supérieure flexibilité du kit 50/80 et 80/80 la capacité d'usinage des outils B3.08, B3.11, B3.16, B3.22 est différente de celui suggéré et indiqué à la page 110.

Con i Kit TRM 80 si alesano fori da Ø .24 a 8.66.

- Per i fori da Ø .24 a 1.18 inserire al centro della slitta il portautensili P20.30 bloccandolo con le viti (9). Montare l'utensile B.. bloccandolo con le viti (7) assicurandosi che il tagliente dell'inserto si trovi sull'asse longitudinale della slitta.
- Per i fori da Ø 1.18 a 3.74 inserire nella slitta i portautensili P.. bloccandoli con le viti (9).
- Per i fori da Ø 3.74 a 8.66 inserire nella slitta i portautensili PS.. bloccandoli con le viti (9). Montare sul portautensili il seggio SF.. bloccandolo con la vite.

* Per una maggiore flessibilità dei Kit TRM 50/80 e 80/80 il campo di lavoro degli utensili B3.08, B3.11, B3.16, B3.22 è differente da quello suggerito e riportato a pag. 110.

K03 (TRM 80/125)

Ø 1.42 ~ 16.14

K03 TRM 80/125 INCH

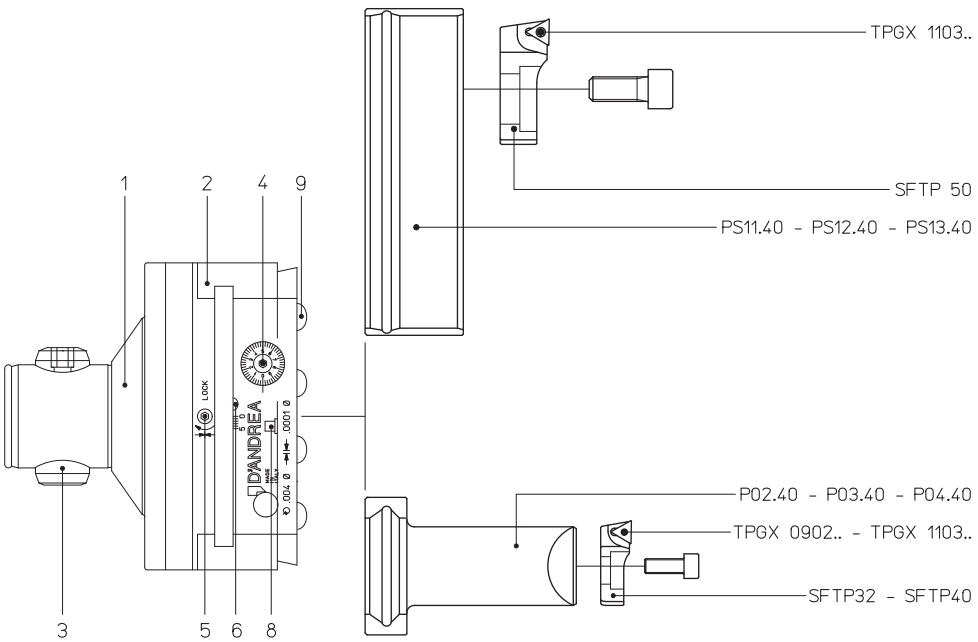
1 P02.40
1 P03.40
1 P04.40
1 PS11.40
1 PS12.40
1 PS13.40
1 SFTP32
1 SFTP40
1 SFTP50

2 µm

REF.	CODE	Ø
K03 TRM 80/125 INCH	65 50 125 0003 0	1.42 ~ 16.14

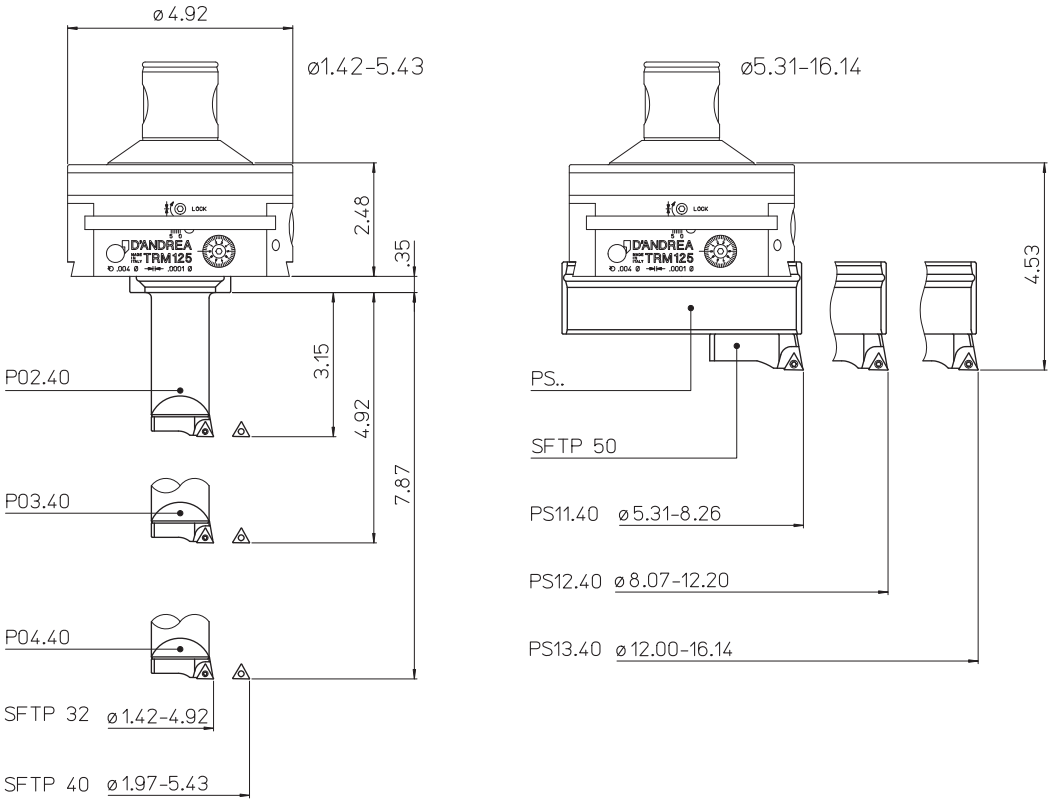
● **Available in metric upon request**

TRM 80/125 COMPONENTS | **TRM 80/125 BAUTEILE** | **COMPONENTES TRM 80/125** | **COMPOSANTS TRM 80/125** | **COMPONENTI TRM 80/125**



KIT - TRM

Working range | **Arbeitsbereich** | **Campo de trabajo** | **Capacité d'usinage** | **Campo di lavoro**



COMPONENTS

1. Body
2. Tool slide
3. Expanding pin
4. Micrometric vernier scale
5. Slide lock screw
6. Coolant outlet
8. Oiler
9. Toolholder lock screws

The boring head TRM 125 bores diameters from 1.42 to 16.14.

- For bores from Ø 1.42 to 5.43 fit the toolholder P.. in the slide and secure it by screws (9).

- For bores from Ø 5.31 to 16.14 fit the toolholder PS.. in the slide and secure it by screws (9).
  Fit the bit holder SF.. on the toolholder and secure it by the screw.

BAUTEILE

1. Körper
2. Werkzeugschlitten
3. Spreizbolzen
4. Mikrometrischer Nonius
5. Werkzeugschlitten-klemmschraube
6. Kühlmittelaustritt
8. Schmiernippel
9. Werkzeughalter-spannschrauben

Der Feinstbohrkopf TRM 125 dreht Durchmesser von 1.42 bis 16.14 aus.

-Bei Bohrungen mit Durchmesser von 1.42 bis 5.43 den Werkzeughalter P.. in den Schlitten einsetzen und mit Schrauben (9) spannen.

-Bei Bohrungen mit Durchmesser von 5.31 bis 16.14 den Werkzeughalter PS.. in den Schlitten einsetzen und mit Schrauben (9) spannen.
Den Plattenhalter SF.. am Werkzeughalter montieren und mit Schraube spannen.

COMPONENTES

1. Cuerpo
2. Guía portaherramientas
3. Perno radial expansible
4. Nonio micrométrico
5. Tornillo blocaje guía portaherramientas
6. Agujero salida refrigerante
8. Engrasador
9. Tornillos blocaje portaherramientas

El kit TRM 125 mandrina agujeros de Ø 1.42 a 16.14.

- Para los agujeros de Ø 1.42 a 16.14 colocar en la guía el portaherramientas P.. bloqueándolo con los tornillos (9).

- Para los agujeros de Ø 5.31 a 16.14 colocar en la guía los portaherramientas PS.. bloqueándolos con los tornillos (9). Montar sobre el portaherramientas el asiento SF.. bloqueándolo con el tornillo.

COMPOSANTS

1. Corps
2. Coulisseau
3. Tige radiale expansible
4. Vernier micrométrique
5. Vis bloccage coulisseau
6. Sortie du liquide d'arrosage
8. Graisseur
9. Vis bloccage porte-outils

Le kit TRM 125 alèse des diamètres allant de 1.42 à 16.14.

- Pour des alésages de Ø 1.42 à 16.14, introduire le porte-outils P.. dans le coulisseau et le bloquer au moyen des vis (9).

- Pour des alésages de Ø 5.31 à 16.14, introduire le porte-outils PS.. dans le coulisseau et le bloquer au moyen des vis (9).
  Monter le porte-plaquette SF.. sur le porte-outils et le bloquer au moyen de la vis.

COMPONENTI

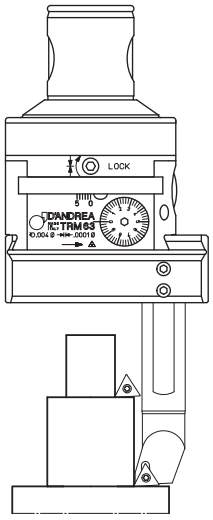
1. Corpo
2. Slitta portautensili
3. Perno radiale espandibile
4. Nonio micrometrico
5. Vite bloccaggio slitta
6. Ugello uscita refrigerante
8. Oliatore
9. Viti bloccaggio portautensili

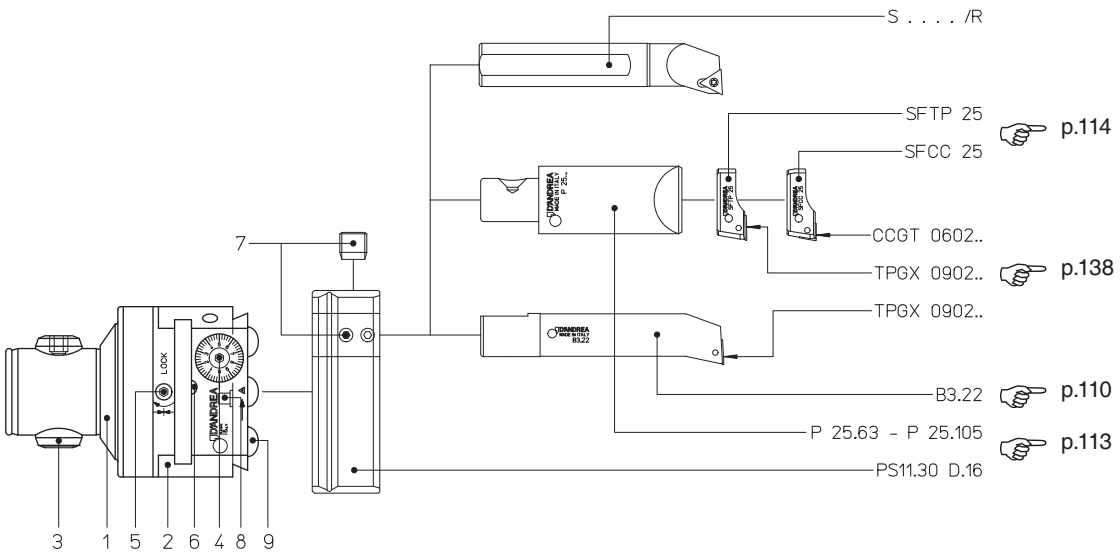
Con il Kit TRM 125 si alesano fori daØ 1.42 a 16.14 mm.

- Per i fori da Ø 1.42 a 16.14 inserire nella slitta i portautensili P.. bloccandoli con le viti (9).

- Per i fori da Ø 5.31 a 16.14 inserire nella slitta i portautensili PS.. bloccandoli con le viti (9).
  Montare sul portautensili il seggio SF.. bloccandolo con la vite.

TRM 50/63
TRM 63/63





COMPONENTS

1. Body
2. Slide toolholder
3. Expanding radial pin
4. Micrometric vernier scale
5. Slide clamp screw
6. Coolant outlet
7. Tool clamp screw
8. Oiler
9. Toolholder lock screw

BAUTEILE

1. Körper
2. Werkzeugschlitten
3. Spreizbolzen
4. Mikrometrischer Nonius
5. Schlittenklemmschraube
6. Kühlmittelaustritt
7. Werkzeugklemmschraube
8. Schmiernippel
9. Werkzeughalter-pannschrauben

COMPONENTES

1. Cuerpo
2. Guía portaherramientas
3. Perno radial expansible
4. Nonio micrométrico
5. Tornillo blocaje guía
6. Agujero salida refrigerante
7. Tornillo blocaje herramientas
8. Engrasador
9. Tornillos blocaje portaherramientas

COMPOSANTS

1. Corps
2. Coulisseau
3. Tige radial expansible
4. Vernier micrométrique
5. Vis blocage coulisseau
6. Sortie du liquide d'arrosage
7. Vis blocage outil
8. Graisseur
9. Vis bloccage porte-outils

COMPONENTI

1. Corpo
2. Slitta portautensili
3. Perno radiale espandibile
4. Nonio micrometrico
5. Vite bloccaggio slitta
6. Uscita refrigerante
7. Vite bloccaggio utensili
8. Oliatore
9. Viti bloccaggio portautensili

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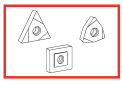
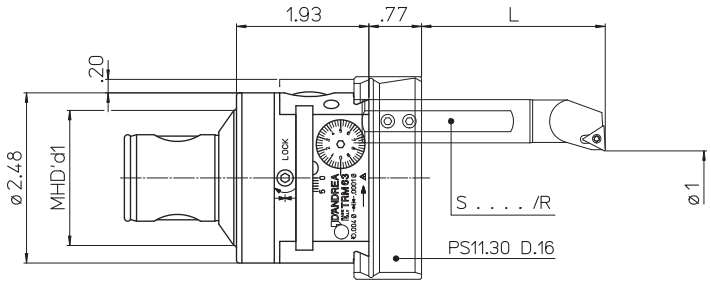


D'ANDREA

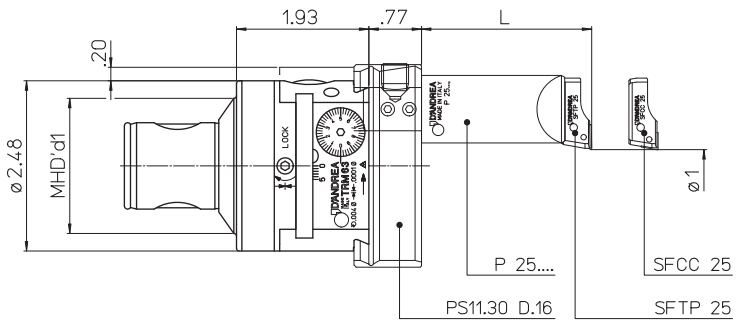
Testarossa | **Testarossa** | **Testarossa** | **Testarossa** | **Testarossa**
external turning | **Aussendrehen** | **torneado exterior** | **Tournage extérieur** | **tornitura esterna**

TRM 50/63
TRM 63/63
Ø .19 ~ 1.37



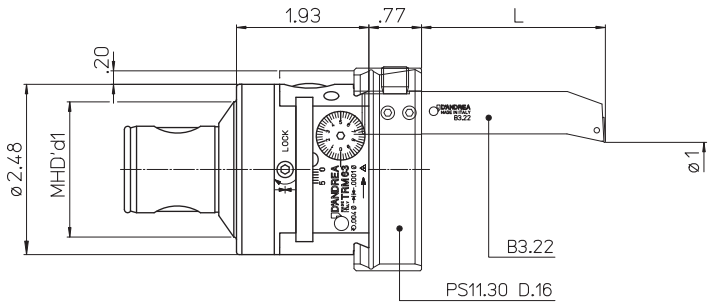
REF.	CODE	MHD'd_1	Ø$_1$	L	lb
TRM 50/63 INCH	45 50 050 6063 0	50	.19 ~ 1.37	2.67	2.43
TRM 63/63 INCH	45 50 063 6063 0	63			3.31

TRM 50/63
TRM 63/63
Ø .19 ~ 1.37



REF.	CODE	MHD'd_1	Ø$_1$	L	P 25..	SF.. 25	◬	◎	lb
TRM 50/63 INCH	45 50 050 6063 0	50	.19 ~ 1.37	2.48	P 25.63	SFTP 25	•		2.43
TRM 63/63 INCH	45 50 063 6063 0	63		4.13	P 25.105	SFCC 25		•	3.31

TRM 50/63
TRM 63/63
Ø .19 ~ 1.37



REF.	CODE	MHD'd_1	Ø$_1$	L	B..	◬	lb
TRM 50/63 INCH	45 50 050 6063 0	50	.19 ~ 1.37	2.67	B3.22	•	2.43
TRM 63/63 INCH	45 50 063 6063 0	63					3.31

● **Available in metric upon request**

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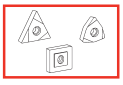

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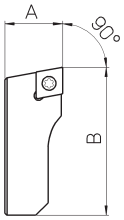
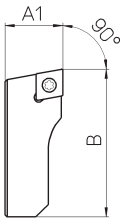
SSCC



REF.	CODE	Ø1	A	B				lb
SSCC 16	47 050 05 16 201	.71 ~ .87	.31	.59	CCMT 0602.. CCMT 21....	TS 25	TORX T08	0.01
SSCC 20	47 050 05 20 201	.87 ~ 1.10	.37	.75				0.01
SSCC 25	47 050 05 25 201	1.10 ~ 1.50	.49	.91				0.02
SSCC 32	47 050 05 32 201	1.40 ~ 1.97	.59	1.26				0.04
SSCC 33	47 050 05 32 204				CCMT 09T3.. CCMT 32....	TS 4	TORX T15	0.06
SSCC 40	47 050 05 40 201	1.97 ~ 2.68	.75	1.57				0.13
SSCC 41	47 050 05 40 204				CCMT 1204.. CCMT 43....	TS 5	TORX T25	0.13
SSCC 50	47 050 05 50 204	2.68 ~ 3.54	.87	2.13				0.22
SSCC 63	47 050 05 63 201	3.54 ~ 4.72	1.06	2.78				0.44
SSCC 80	47 050 05 80 201	4.72 ~ 6.30	1.26	3.72				1.1
SSCC 90	47 050 05 90 201	6.30 ~ 98.42		5.12				1.54
SSCN 95	47 050 05 95 201		1.53		CNM. 1906.. CNMG 64....	p. 160	p. 160	1.98

SMCC



REF.	CODE	Ø1	A1	B				lb
SMCC 25	47 050 05 25 203	1.10 ~ 1.50	.48	.91	CCMT 0602.. CCMT 21....	TS 25	TORX T08	0.02
SMCC 32	47 050 05 32 203	1.40 ~ 1.97	.58	1.26				0.04
SMCC 33	47 050 05 32 205				CCMT 09T3.. CCMT 32....	TS 4	TORX T15	0.06
SMCC 40	47 050 05 40 203	1.97 ~ 2.68	.74	1.57				0.13
SMCC 41	47 050 05 40 205				CCMT 1204.. CCMT 43....	TS 5	TORX T25	0.13
SMCC 50	47 050 05 50 205	2.68 ~ 3.54	.85	2.13				0.22
SMCC 63	47 050 05 63 203	3.54 ~ 4.72	1.05	2.78				0.44
SMCC 80	47 050 05 80 203	4.72 ~ 6.30	1.25	3.72				1.1
SMCC 90	47 050 05 90 203	6.30 ~ 98.42		5.12				1.54

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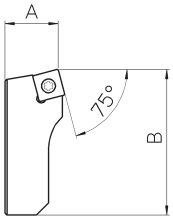
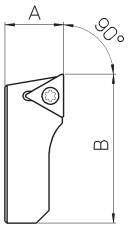
SSSC



REF.	CODE	Ø1	A	B				lb
SSSC 32	47 050 05 32 202	1.40 ~ 1.97	.59	1.26	SCMT 09T3.. SCMT 32....	TS 4	TORX T15	0.04
SSSC 40	47 050 05 40 202	1.97 ~ 2.68	.75	1.57				0.13
SSSC 50	47 050 05 50 202	2.68 ~ 3.54	.87	2.13	SCMT 1204.. SCMT 43....	TS 5	TORX T25	0.22
SSSC 63	47 050 05 63 202	3.54 ~ 4.72	1.06	2.78				0.44
SSSC 80	47 050 05 80 202	4.72 ~ 6.30	1.26	3.72				1.1
SSSC 90	47 050 05 90 202	6.30 ~ 98.42		5.12				1.54
SSSN 95	47 050 05 95 202		1.57		SNM. 1906.. SNMG 64....	p. 160	p. 160	1.98

SSTC



REF.	CODE	Ø1	A	B				lb
SSTC 63	47 050 05 63 206	3.54 ~ 4.72	1.06	2.78	TCMT 2204..	TS 5	TORX T25	0.44
SSTC 80	47 050 05 80 206	4.72 ~ 6.30	1.26	3.72				1.1
SSTC 90	47 050 05 90 206	6.30 ~ 98.42		5.12				1.54

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INFO

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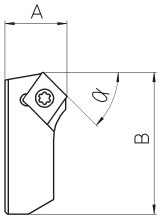
MODULHARD'ANDREA

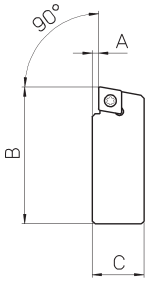
Bit-holders for double-bit items | **Plattenhalter für Zweischneiderwerkzeuge** | **Portaplaquitas para asientos a dos cuchillas** | **Porte-plaquettes pour produits à deux coupants** | **Seggi per bitaglienti**

SSSM



REF.	CODE	α	Ø1	A	B				lb
SSSM 25	47 050 05 25 211	15°	1.02 ~ 1.50	.49	.91	CCMT 0602.. CCMT 21....	TS 25	TORX T08	0.02
	47 050 05 25 213	30°							
	47 050 05 25 215	45°							
SSSM 32	47 050 05 32 211	15°	1.36 ~ 1.93	.59	1.22				0.06
	47 050 05 32 213	30°							
	47 050 05 32 215	45°							
SSSM 40	47 050 05 40 211	15°	1.83 ~ 2.60	.75	1.54	CCMT 09T3.. CCMT 32....	TS 4	TORX T15	0.13
	47 050 05 40 213	30°							
	47 050 05 40 215	45°							
SSSM 50	47 050 05 50 211	15°	2.56 ~ 3.46	.87	2.09	CCMT 1204.. CCMT 43....	TS 5	TORX T25	0.22
	47 050 05 50 213	30°							
	47 050 05 50 215	45°							

SSQC



REF.	CODE	Ø1	A	B	C				lb
SSQC 16	47 050 05 16 261	.79 ~ .94	.08	.63	.39	CCMT 0602.. CCMT 21....	TS 25	TORX T08	0.01
SSQC 20	47 050 05 20 261	.93 ~ 1.18	.06	.77	.43				0.02
SSQC 25	47 050 05 25 261	1.16 ~ 1.57	.10	.94	.57				0.04
SSQC 33	47 050 05 33 261	1.54 ~ 2.05	.12	1.26	.67	CCMT 09T3.. CCMT 32....	TS 4	TORX T15	0.07
SSQC 41	47 050 05 41 261	2.01 ~ 2.76	.14	1.65	.83	CCMT 1204.. CCMT 43....	TS 5	TORX T25	0.18
SSQC 50	47 050 05 50 261	2.72 ~ 3.62		2.24	.96				0.33
SSQC 63	47 050 05 63 261	3.58 ~ 4.80		2.99	1.12				0.66
SSQC 80	47 050 05 80 261	4.76 ~ 6.38		3.98	1.24				1.32
SSQC 90	47 050 05 90 261	6.34 ~ 98.50		4.88					1.76

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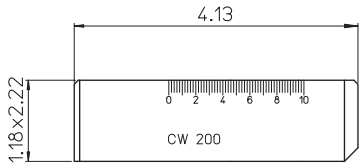
Counterweight **Gegengewicht** **Contrapeso** **Contrpoids** **Contrappeso**

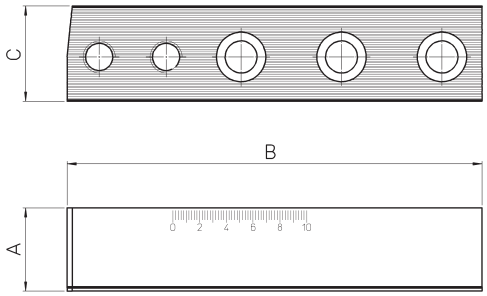
CW 200



REF.	CODE	lb
CW 200	39 20 110 105 01	2.87

Extensions **Verlängerungen** **Prolongaciones** **Rallonges** **Prolunghe**

PRL 100 - 300



REF.	CODE	A	B	C	lb
PRL 100	39 20 110 155 01	1.22	6.10	1.40	2.43
PRL 300	39 20 110 300 01	1.61	10.04		6.17

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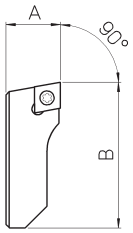
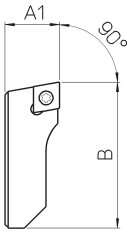
SSCC D



REF.	CODE	Ø1	A	B				lb
SSCC 25 D	47 050 05 25 220	1.10 ~ 1.42	.39	.94	CCMT 0602.. CCMT 21....	TS 25	TORX T08	0.02
SSCC 32 D	47 050 05 32 220	1.42 ~ 1.81	.45	1.18				0.03
SSCC 40 D	47 050 05 40 220	1.81 ~ 2.36	.55	1.57	CCMT 09T3.. CCMT 32....	TS 4	TORX T15	0.07
SSCC 50 D	47 050 05 50 220	2.36 ~ 2.95	.75	2.13				0.13
SSCC 63 D	47 050 05 63 220	2.95 ~ 3.74	.96	2.68				0.33
SSCC 80 D	47 050 05 80 220	3.74 ~ 4.72	1.16	3.43				0.66

SFCC D



REF.	CODE	Ø1	A1	B				lb
SFCC 25 D	47 050 05 25 020	1.10 ~ 1.42	.38	.94	CCGT 0602.. CCMT 21....	TS 25	TORX T08	0.02
SFCC 32 D	47 050 05 32 020	1.42 ~ 1.81	.44	1.18				0.03
SFCC 40 D	47 050 05 40 020	1.81 ~ 2.36	.54	1.57	CCGT 09T3.. CCMT 32....	TS 4	TORX T15	0.07
SFCC 50 D	47 050 05 50 020	2.36 ~ 2.95	.74	2.13				0.13
SFCC 63 D	47 050 05 63 020	2.95 ~ 3.74	.95	2.68				0.33
SFCC 80 D	47 050 05 80 020	3.74 ~ 4.72	1.15	3.43				0.66

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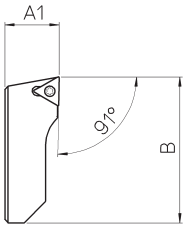
SFTP D



REF.	CODE	Ø1	A1	B	△			lb
SFTP 25 D	47 050 05 25 030	1.10 ~ 1.42	.38	.94	TPGX 0902.. TPGX 73....	CS 250T	TORX T08	0.02
SFTP 32 D	47 050 05 32 030	1.42 ~ 1.81	.44	1.18				0.03
SFTP 40 D	47 050 05 40 030	1.81 ~ 2.36	.54	1.57	TPGX 1103.. TPGX 22....	CS 300890T		0.07
SFTP 50 D	47 050 05 50 030	2.36 ~ 2.95	.74	2.13				0.13
SFTP 63 D	47 050 05 63 030	2.95 ~ 3.74	.95	2.67				0.33
SFTP 80 D	47 050 05 80 030	3.74 ~ 4.72	1.15	3.43				0.66

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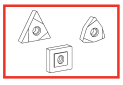

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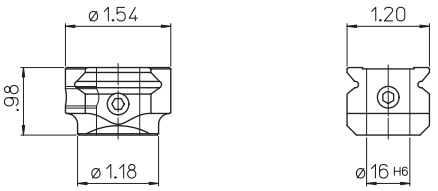
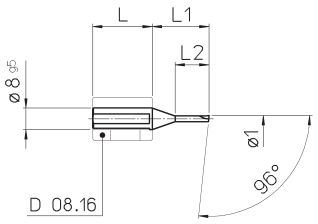
P20.30



REF.	CODE	lb
P20.30	43 10 30 16 030 0	0.44

B1...



Carbide tools | Bohrstange aus Hartmetall | Herramientas de metal duro | Outils carbure | Utensili in metallo duro

REF.	CODE	Ø$_1$	L	L$_1$	L$_2$	lb
B1.02	57 201 05 02 001	.10 ~ .16	.87	.83	.49	0.04
B1.04	57 201 05 04 001	.16 ~ .24	.94	.94	–	

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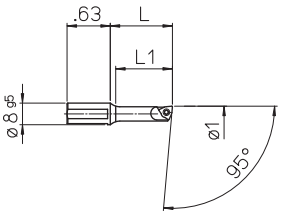
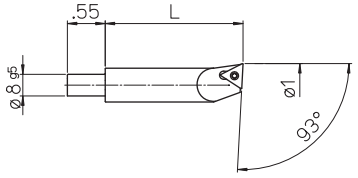
B1...



Tools	Bohrstange			Herramientas		Outils		Utensili	
REF.	CODE	Ø1	L	L1					lb
B1.06	57 201 05 06 000	.24 ~ .31	.91	.83	WCGT 0201..	–	TS 21	TORX T06	0.02
B1.08	57 201 05 08 000	.31 ~ .39	1.10	–			TS 211		0.03
B1.10	57 201 05 10 000	.39 ~ .47	1.42	–	–	TPGX 0902.. TPGX 73....	CS 250 T	TORX T08	0.04

B1...



Tools	Bohrstange			Herramientas	Outils		Utensili	
REF.	CODE	Ø1	L					lb
B1.12	57 201 05 12 000	.47 ~ .55	1.65	TPGX 0902.. TPGX 73....	CS 250 T	TORX T08		0.07
B1.14	57 201 05 14 000	.55 ~ .63	1.89					0.09
B1.16	57 201 05 16 000	.63 ~ .71	2.13					0.11

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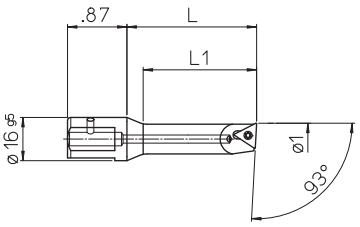
INFO

MODULHARD'ANDREA

Tools and toolholders for Testarossa TRM | **Werkzeuge und Grundhalter für Testarossa TRM** | **Herramientas y portaherramientas para Testarossa TRM** | **Outils et porte-outils pour Testarossa TRM** | **Utensili e portautensili per Testarossa TRM**

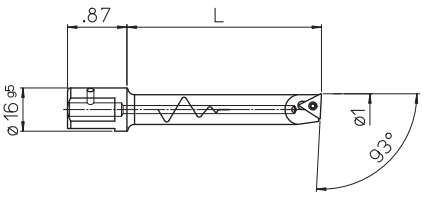
B3...



Tools | **Bohrstange** | **Herramientas** | **Outils** | **Utensili**

REF.	CODE	Ø1	L	L1					lb
B3.06	57 201 05 06 001	.24 ~ .31	1.14	.83	WCGT 0201..	–	TS 21	TORX T06	0.08
B3.08	57 201 05 08 001	.31 ~ .39	1.42	1.10			TS 211		0.09
B3.10	57 201 05 10 001	.39 ~ .47	1.69	1.38	–	TPGX 0902.. TPGX 73....	CS 250 T	TORX T08	0.11
B3.11	57 201 05 11 001	.43 ~ .51	1.89	1.57					0.12
B3.12	57 201 05 12 001	.47 ~ .55		1.65					0.13
B3.14	57 201 05 14 001	.55 ~ .63	2.05	1.97					0.15
B3.16	57 201 05 16 001	.63 ~ .71	2.28						
B3.18	57 201 05 18 001	.71 ~ .87	2.48	–					0.22
B3.22	57 201 05 22 001	.87 ~ 1.18	2.68						

B5...



Vibration-damping tools | **Vibrationsarme Bohrstangen** | **Herramientas anti-vibración** | **Outils anti-vibratoires** | **Utensili antivibranti**

REF.	CODE	Ø1	L					lb
B5.06	57 201 05 06 105	.24 ~ .31	1.42	WCGT 0201..	–	TS 21	TORX T06	0.17
B5.08	57 201 05 08 105	.31 ~ .39	1.89			TS 211		0.2
B5.10	57 201 05 10 105	.39 ~ .47	2.36	–	TPGX 0902.. TPGX 73....	CS 250 T	TORX T08	0.22
B5.12	57 201 05 12 105	.47 ~ .55	2.83					
B5.14	57 201 05 14 105	.55 ~ .63	3.31					0.44
B5.16	57 201 05 16 105	.63 ~ .71	3.78					0.66

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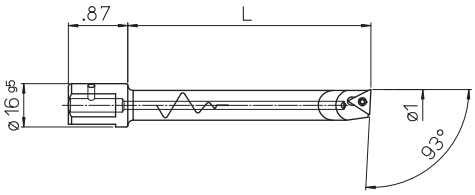
B8...



Tools with carbide shank | **Bohrstangen mit Hartmetallschaft** | **Herramientas con mango de metal duro** | **Outils avec queue carbure** | **Utensili con stelo in metallo duro**

REF.	CODE	Ø1	L					lb
B8.06	57 201 05 06 108	.24 ~ .31	1.77	WCGT 0201..	–	TS 21	TORX T06	0.14
B8.08	57 201 05 08 108	.31 ~ .39	2.36			TS 211		0.18
B8.10	57 201 05 10 108	.39 ~ .47	2.95	–	TPGX 0902.. TPGX 73....	CS 250 T	TORX T08	0.22
B8.12	57 201 05 12 108	.47 ~ .55	3.54					0.44
B8.14	57 201 05 14 108	.55 ~ .63	4.13					
B8.16	57 201 05 16 108	.63 ~ .71	4.72					0.66

K20.50

Ø .24 ~ 1.18

K 20.50

1 B3.06
1 B3.08
1 B3.11
1 B3.16
1 B3.22
5 TPGX090202L
3 WCGT020102L

REF.	CODE	Ø
K20.50	65 50 001 0020 0	.24 ~ 1.18

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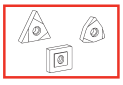
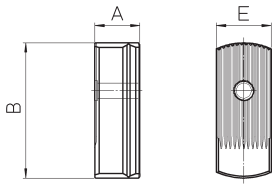


Member IMC Group Ingersoll Cutting Tools

MODULHARD'ANDREA

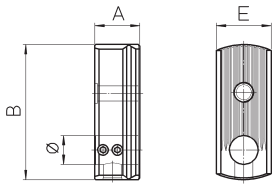
Tools and toolholders for Testarossa TRM | Werkzeuge und Grundhalter für Testarossa TRM | Herramientas y portaherramientas para Testarossa TRM | Outils et porte-outils pour Testarossa TRM | Utensili e portautensili per Testarossa TRM

PS ..



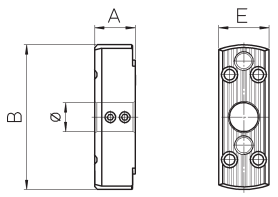
REF.	CODE	A	B	E	lb
PS 11.30	43 30 30 26 075 0	.98	2.95	1.20	0.88
PS 12.30	43 30 30 26 095 0		3.66		1.1
PS 13.30	43 30 30 26 140 0		5.31		1.54
PS 11.40	43 30 40 35 150 0	1.57	5.24	1.57	3.31
PS 12.40	43 30 40 35 230 0		7.87		5.29
PS 13.40	43 30 40 35 330 0		11.81		7.72
PS 14.40	43 30 40 35 400 0		15.75		10.14

PS 11.30 D .63



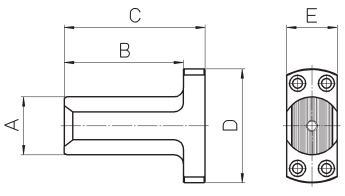
REF.	CODE	Ø H6	A	B	E	lb
PS 11.30 D.16	43 30 30 26 075 5	16	.98	2.95	1.20	0.01

PS ..



REF.	CODE	Ø H6	A	B	E	lb
PS 31.24	43 30 24 14 075 1	–	.57	2.95	.94	0.44
PS 31.28	43 30 28 22 080 1	16	.89	3.15	1.10	0.66
PS 32.28	43 30 28 22 108 1	–		4.25		1.1
PS 33.28	43 30 28 22 148 1			5.83		1.32

P 22.28



REF.	CODE	A	B	C	D	E	lb
P 22.28	43 30 28 22 063 1	1.26	2.60	3.07	63	2.48	0.99

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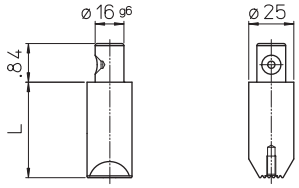
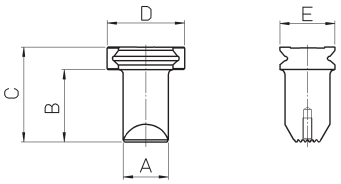


REF.	CODE	L	lb
P25.63	43 51 16 25 063 0	2.09	1.1
P25.105	43 51 16 25 105 0	3.74	1.76

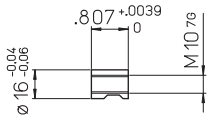
P0..



REF.	CODE	A	B	C	D	E	lb
P02.30	43 10 30 25 040 0	.98	1.57	2.07	1.69	1.20	0.66
P03.30	43 10 30 25 070 0		2.76	3.25			0.88
P04.30	43 10 30 25 115 0	1.06	4.53	5.02			1.54
P02.40	43 10 40 32 070 0	1.26	2.72	3.39	2.20	1.57	1.54
P03.40	43 10 40 32 115 0		4.49	5.16			2.2
P04.40	43 10 40 32 190 0	1.50	7.44	8.11			4.41

Blocking bit-holder sleeve | **Sitzblockierungsbuchse** | **Casquillo de bloqueo del asiento** | **Douille de blocage du logement** | **Bussola bloccaggio seggio**

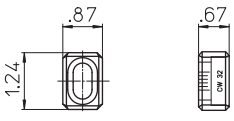
BM 10



REF.	CODE	lb
BM 10	20 104 10 150 02	0.04

Counterweight | **Gegengewicht** | **Contrapeso** | **Contrpoids** | **Contrappeso**

CW 32



REF.	CODE	lb
CW 32	39 20 110 032 01	1.1

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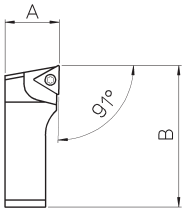
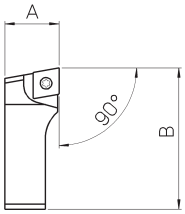
SFTP



REF.	CODE	Ø1	A	B				lb
SFTP 25	47 050 05 25 001	1.10 ~ 1.57	.39	1.04	TPGX 0902.. TPGX 73....	CS 250T	TORX T08	0.02
SFTP 32	47 050 05 32 001	1.38 ~ 2.09	.45	1.36				0.04
SFTP 40	47 050 05 40 001	1.89 ~ 2.60	.55	1.73	TPGX 1103.. TPGX 22....	CS 300890T		0.09
SFTP 50	47 050 05 50 001	2.13 ~ 98.42	.75	2.05				0.2

SFCC



REF.	CODE	Ø1	A	B				lb
SFCC 16	47 050 05 16 002	.71 ~ .94	.31	.67	CCGT 0602.. CCGT 22..	TS 25	TORX T08	0.01
SFCC 20	47 050 05 20 002	.87 ~ 1.18	.33	.83				0.01
SFCC 25	47 050 05 25 002	1.10 ~ 1.57	.39	1.04				0.02
SFCC 32	47 050 05 32 002	1.38 ~ 2.09	.45	1.36				0.04
SFCC 40	47 050 05 40 002	1.89 ~ 2.60	.55	1.73	CCGT 09T3.. CCGT 32..	TS 4	TORX T15	0.09
SFCC 50	47 050 05 50 002	2.13 ~ 98.42	.75	2.05				0.2

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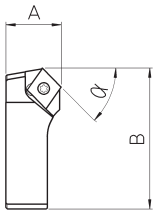
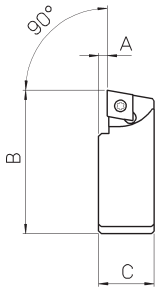
SFSM



REF.	CODE	α	Ø1	A	B				lb
SFSM 25	47 050 05 25 011	15°	1.10 ~ 1.57	.39	1.00	CCMT 0602.. CCGT 22..	TS 25	TORX T08	0.02
	47 050 05 25 013	30°							
	47 050 05 25 015	45°							
SFSM 32	47 050 05 32 011	15°	1.38 ~ 2.09	.45	1.32				0.04
	47 050 05 32 013	30°							
	47 050 05 32 015	45°							
SFSM 40	47 050 05 40 011	15°	1.89 ~ 2.60	.55	1.67	CCMT 09T3.. CCGT 32..	TS 4	TORX T15	0.09
	47 050 05 40 013	30°							
	47 050 05 40 015	45°							
SFSM 50	47 050 05 50 011	15°	2.13 ~ 98.42	.75	1.99				0.2
	47 050 05 50 013	30°							
	47 050 05 50 015	45°							

SFQC



REF.	CODE	Ø1	A	B	C				lb
SFQC 16	47 050 05 16 062	.79 ~ 1.02	.08	.71	.39	CCMT 0602.. CCGT 22..	TS 25	TORX T08	0.01
SFQC 20	47 050 05 20 062	.96 ~ 1.30		.89	.41				0.02
SFQC 25	47 050 05 25 062	1.24 ~ 1.65	.10	1.12	.47				0.02
SFQC 32	47 050 05 32 062	1.54 ~ 2.17		1.40	.53				0.07
SFQC 40	47 050 05 40 062	2.01 ~ 2.68	.12	1.81	.65	CCMT 09T3.. CCGT 32..	TS 4	TORX T15	0.13
SFQC 50	47 050 05 50 062	2.20 ~ 98.50		2.09	.81				0.22

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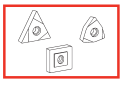

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Member IMC Group Ingersoll Cutting Tools

MODULHARD'ANDREA

CHUCKING TOOLS

Combi-toolholders Weldon (DIN 1835 B) and Whistle Notch (DIN 1835 E) with axial adjustment screw.

PE
Collet chucks to DIN 6499 sizes ER 11, ER 16, ER 20, ER 25, ER 32, ER 40, including axial adjustment screw. Supplied without collets.

AM
Tapping chuck holders for high production thread cutting.
Large length compensation in response to tension and compression.
With quick-change clutch for tap holders with or without torque clutch.

PF
Universal milling cutter-holders for disc cutters and facing cutters.

CM
Toolholders with internal morse taper for tools with thread to DIN 228-A and tang to DIN 228-B.

CM
Drill chuck-holders with internal taper B16 to DIN 238.

NS
Semi-finished toolholders for special tools with hardened and ground MHD' coupling part and cylindrical part with hardness HRC 22-25.

ACR
Coolant chucking tools.

WERKZEUGAUFNAHMEN

Werkzeugaufnahme für Weldon (nach DIN 1835-B) und Whistle Notch (nach DIN 1835-E) mit Axialverstellschraube.

PE
Spannzangenfutter nach DIN 6499, Größen ER 11, ER 16, ER 20, ER 25, ER 32, ER 40 mit Axialverstell-schraube. Sie werden ohne Spannzangen geliefert.

AM
Gewindeschneidspannfutter für höchste Beanspruchung in der Serienfertigung.
Großer Längenausgleich auf Zug und Druck, mit Schnellwechselkupplung für Gewindebohrerhalter mit oder ohne Drehmoment-kupplung.

PF
Kombiaufsteckfräsdorne für Scheibenfräser und Planfräser.

CM
Werkzeugaufnahmen mit Morseinnenkegel für Werkzeuge mit Rückzuggewinde nach DIN 228-A und Lappen nach DIN 228-B.

B16
Bohrerfutteraufnahme mit Innenkegel B16 nach DIN 238.

NS
Werkzeugaufnahmenrohlinge mit gehärtetem und geschliffenem MHD' Kupplungsteil und zylindrischem Teil mit Härte HRC 22-25.

ACR
Spannzeuge für Kühlmittel

ADAPTADORES

Adaptadores combinados Weldon (DIN 1835 B) y Whistle Notch (DIN 1835 E) con tornillo de regulación axial.

PE
Adaptadores portapinzas elásticas DIN 6499 tamaños ER 11, ER 16, ER 20, ER 25, ER 32, ER 40, completos con tornillos para la regulación axial. Los adaptadores se suministran sin pinzas elásticas.

AM
Adaptadores para roscar para alta producción.
Gran compensación axial, sea en compresión que en tracción. Posibilidad de utilizar manguitos de cambio rápido con y sin limitación de par.

PF
Adaptadores portafresas combinados para fresas a disco y de planear.

CM
Adaptadores combinados para cono morse con agujero roscado DIN 228-A y con uña DIN 228-B.

B16
Adaptadores para mandrinos portabrocas con acoplamiento B16 DIN 238.

NS
Adaptadores semielaborados para herramientas especiales, realizados con la parte del acoplamiento MHD' templada y rectificada y la parte cilíndrica neutra con dureza HRC 22-25.

ACR
Adaptadores para líquido refrigerante.

ADAPTATEURS

Adaptateurs combinés Weldon (DIN 1835 B) et Whistle Notch (DIN 1835 E) avec vis de réglage axial.

PE
Adaptateurs porte-pinces DIN 6499 tailles ER 11, ER 16, ER 20, ER 25, ER 32, ER 40 avec vis de réglage axial. Les adaptateurs sont fournies sans pinces.

AM
Adaptateurs de taraudage pour forte fabrication en série.
Grande compensation de longueur en traction et compression, avec adaptateurs à changement rapide, pour porte-tarauds avec ou sans limiteur de couple.

PF
Adaptateurs porte-fraises combinés pour fraises à disque et fraises à surfacer.

CM
Adaptateurs avec cône morse pour outils avec filetage DIN 228-A et tenon DIN 228-B.

B16
Adaptateurs pour mandrins porte-forets avec filetage B16 DIN 238.

NS
Adaptateurs semi-finis pour outils spéciaux avec la partie d'accouplement MHD' trempée et rectifiée et la partie cylindrique avec dureté HRC 22-25.

ACR
Adaptateurs pour liquide d'arrosage.

ADATTATORI

Adattatori combinati Weldon (DIN 1835 B) e Whistle Notch (DIN 1835 E) con vite di regolazione assiale.

PE
Adattatori portapinze elastiche DIN 6499 grandezze ER 11, ER 16, ER 20, ER 25, ER 32, ER 40 completi di vite per la regolazione assiale.
Gli adattatori vengono forniti senza pinze elastiche.

AM
Adattatori di maschiatura per forte produzione. Grande compensazione assiale sia in compressione sia in trazione. Possibilità di utilizzare bussole a cambio rapido, con e senza limitazione di coppia.

PF
Adattatori portafrese combinati per frese a disco e spianare.

CM
Adattatori combinati per cono morse con foro filettato DIN 228-A e con dente DIN 228-B.

B16
Adattatori per mandrini portapunte con attacco B16 DIN 238.

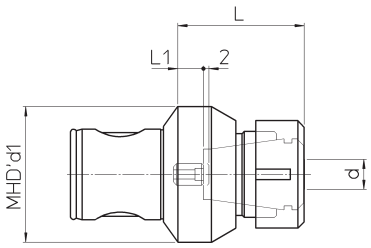
NS
Adattatori semilavorati per utensili speciali, realizzati con la parte dell'accoppiamento MHD' temprata e rettificata e la parte cilindrica neutra con durezza HRC 22-25.

ACR
Adduttori per liquido refrigerante.

Member IMC Group Ingersoll Cutting Tools

PE

ER DIN 6499



Supplied without collets and clamping wrenches | Ohne Spannzangen und Spannschlüssel. | Pinzas elásticas y llaves de apriete excluidas | Sans pinces et clés de serrage | Pinze elastiche e chiavi di serraggio escluse

REF.	CODE	MHD' d_1	d	L	L_1	lb			N·m
PE 16 / ER11M	65 57 016 0011 0	16	.02 ~ .28	.98	.10	0.07	ER-11M	E11M	30
PE 20 / ER16M	65 57 020 0016 0	20	.02 ~ .39	1.26	.04	0.13	ER-16M	E16M	40
PE 25 / ER20M	65 57 025 0020 0	25	.04 ~ .51	1.57	.10	0.33	ER-20M	E20M	80
PE 32 / ER25M	65 57 032 0025 0	32	.04 ~ .63	1.65	.06	0.55	ER-25M	E25M	160
PE 40 / ER25	65 57 040 0025 0	40		1.77	.20	0.88	UM/ER25	E25	200
PE 50 / ER25	65 57 050 0025 0	50		1.89	.28	1.54			
PE 50 / ER32	65 57 050 0032 0		.08 ~ .79	2.17	.31	2.2	UM/ER32	E32	220
PE 63 / ER32	65 57 063 0032 0	63		2.32	.47	2.87			
PE 63 / ER40	65 57 063 0040 0		.12 ~ 1.02	2.52		3.31	UM/ER40	E40	250

Collet chucks to DIN 6499 sizes ER 11, ER 16, ER 20, ER 25, ER 32, ER 40 supplied with axial adjustment screw and without collets.

Spannzangenfutter nach DIN 6499, Größen ER 11, ER 16, ER 20, ER 25, ER 32, ER 40 mit Axialverstell-schraube. Sie werden ohne Spannzangen geliefert.

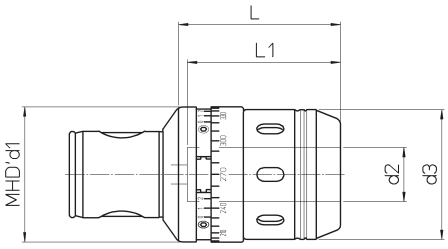
Adaptadores portapinzas elásticas DIN 6499 tamaños ER 11, ER 16, ER 20, ER 25, ER 32, ER 40, completos con tornillos para la regulación axial.Los adaptadores se suministran sin pinzas elásticas.

Adaptateurs porte-fraises flottants DIN 6499, tailles ER 11, ER 16, ER 20, ER 25, ER 32, ER 40 avec vis de réglage axial. Les adaptateurs sont pourvus sans pinces.

Adattatori portapinze elastiche DIN 6499 grandezze ER 11, ER 16, ER 20, ER 25, ER 32, ER 40 completi di vite per la regolazione assiale. Gli adattatori vengono forniti senza pinze elastiche.

Ultra-tight toolholder FORCE | FORCE Spannzangenfutter mit hochfester Werkzeugspannung | Adaptadores de fuerte blocaje FORCE | Adaptateurs à serrage fort FORCE | Adattatori a forte serraggio FORCE

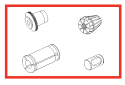
MHD' FORCE



REF.	CODE	MHD' d_1	d_2	d_3	L	L_1	lb
FORCE 50 3/4 HS INCH	65 63 050 0019 5	50	3/4	1.89	2.36	2.36	2.2
FORCE 63 1-1/4 HS INCH	65 63 063 0031 5	63	1-1/4	2.60	3.15	3.15	4.41

Supplied without collets and clamping wrenches | Ohne Spannzangen und Spannschlüssel. | Pinzas elásticas y llaves de apriete excluidas | Sans pinces et clés de serrage | Pinze elastiche e chiavi di serraggio escluse

p. 160-168 p. 152-153



AW INCH

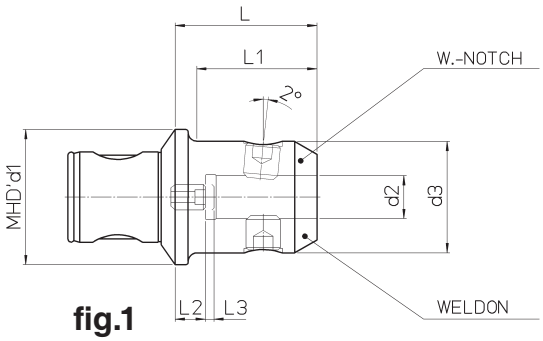


fig.1

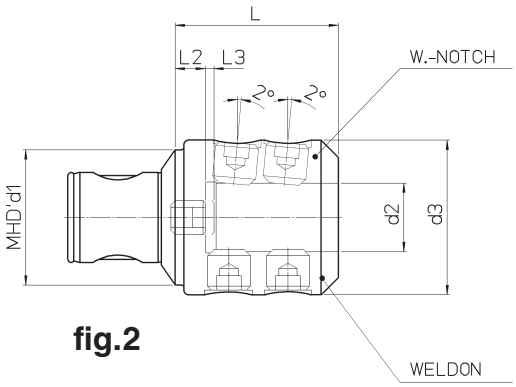


fig.2

REF.	CODE	MHD' d_1	d_{2H5}	d_3	L	L_1	L_2	L_3	lb	fig.
AW 50 1/4	65 58 050 6063 0	50	.250	.98	1.38	.93	.28	.08	1.1	1
AW 50 3/8	65 58 050 6095 0		.375	1.38	2.05	1.65	.43	.12	1.54	
AW 50 1/2	65 58 050 6127 0		.500	1.65	2.24	1.89			1.76	
AW 50 5/8	65 58 050 6158 0		.625	1.89	2.63	2.40	.66	.16	2.43	
AW 50 3/4	65 58 050 6190 0		.750	1.97		–	.63		2.65	
AW 63 1/2	65 58 063 6127 0	63	.500	1.65	2.24	1.89	.43	.12	3.09	
AW 63 5/8	65 58 063 6158 0		.625	1.89	2.52	2.09	.55	.16	3.09	
AW 63 3/4	65 58 063 6190 0		.750	1.97	2.60	2.20			3.31	
AW 63 1	65 58 063 6254 0		1.000	2.48	3.07	–	.59		4.63	2
AW 63 1-1/4	65 58 063 6317 0		1.250	2.76			.55		5.29	
AW 80 1-1/2	65 58 080 6381 0	80	1.500	3.15	3.27		.43		7.05	
AW 80 2	65 58 080 6508 0		2.000	3.74	3.94		.47		10.14	

Combi-toolholders Weldon and Whistle Notch with axial adjustment screw.

Werkzeugaufnahme Weldon und Whistle Notch mit Axialverstellschraube.

Adaptadores combinados Weldon y Whistle Notch con tornillo de regulación axial.

Adaptateurs combinés Weldon et Whistle Notch avec vis de réglage axial.

Adattatori combinati Weldon e Whistle Notch con vite di regolazione assiale.

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AW METRIC
DIN 1835 B-E

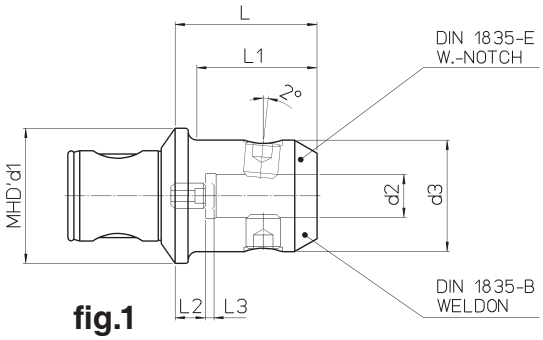

fig.1

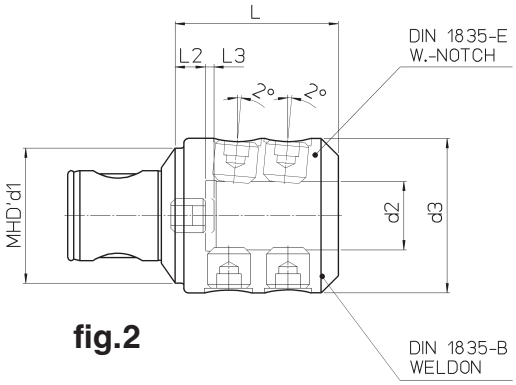

fig.2

REF.	CODE	MHD' d_1	d_2 H5	d_3	L	L_1	L_2	L_3	lb	fig.
AW 50/6	65 58 050 0006 0	50	6	25	44	32.5	7	2	1.1	1
AW 50/8	65 58 050 0008 0		8	28		33				
AW 50/10	65 58 050 0010 0		10	35	52	42	11	3	1.54	
AW 50/12	65 58 050 0012 0		12	42	57	48			1.76	
AW 50/14	65 58 050 0014 0		14							
AW 50/16	65 58 050 0016 0		16	48	67	61	17	4	2.43	
AW 50/20	65 58 050 0020 0		20	51		–	16		2.65	
AW 50/25	65 58 050 0025 0		25	63	80		22		3.97	2
AW 63/16	65 58 063 0016 0	63	16	48	64	53	14		3.09	1
AW 63/20	65 58 063 0020 0		20	52	66	56			3.31	
AW 63/25	65 58 063 0025 0		25	64	74	–	16		4.63	2
AW 63/32	65 58 063 0032 0		32	72	76		14		5.51	
AW 80/40	65 58 080 0040 0	80	40	80	83		12		7.05	

Combi-toolholders Weldon (DIN 1835 B) and Whistle Notch (DIN 1835 E) with axial adjustment screw.

Werkzeugaufnahme Weldon (nach DIN 1835-B) und Whistle Notch (nach DIN 1835-E) mit Axialverstellschraube.

Adaptadores combinados Weldon (DIN 1835 B) y Whistle Notch (DIN 1835 E) con tornillo de regulación axial.

Adaptateurs combinés Weldon (DIN 1835 B) et Whistle Notch (DIN 1835 E) avec vis de réglage axial.

Adattatori combinati Weldon (DIN 1835 B) e Whistle Notch (DIN 1835 E) con vite di regolazione assiale.

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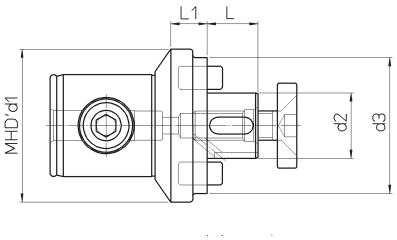
Member IMC Group Ingersoll Cutting Tools

MODULHARD'ANDREA

Disc and facing cutter holders | **Scheiben- und Planfräseraufsteckdorne** | **Adaptadores para fresas a disco y de planear** | **Adaptateurs pour fraises à disque et à surfacer** | **Adattatori per frese a disco e a spianare**

PF INCH



REF.	CODE	MHD' d_1	d_2	d_3	L	L_1	lb
PF 50 3/4	65 59 050 6190 0	50	.75	1.57	.68	.59	1.1
PF 50 1	65 59 050 6254 0		1.00	1.96			1.32
PF 63 3/4	65 59 063 6190 0	63	.75	1.57		.65	1.98
PF 63 1	65 59 063 6254 0		1.00	2.36		.59	2.2
PF 63 1-1/4	65 59 063 6317 0		1.25	2.75		.75	2.87
PF 80 1-1/2	65 59 080 6381 0	80	1.50	3.46	.94	94	4.85
PF 80 2	65 59 080 6508 0		2.00	3.85		1.06	6.61

Combi-chucking tools for disc and facing cutter holders. | **Kombiaufsteckfräsdorne für Scheibenfräser und Planfräser.** | **Adaptadores portafresas combinados para fresas a disco y de planear.** | **Adaptateurs combinés pour fraises à disque et à surfacer.** | **Adattatori portafrese combinati per frese a disco e a spianare.**

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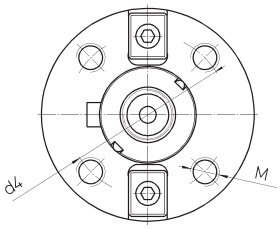
Member IMC Group Ingersoll Cutting Tools

PF METRIC



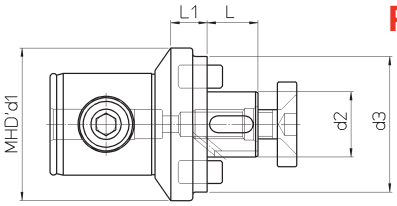


fig.1

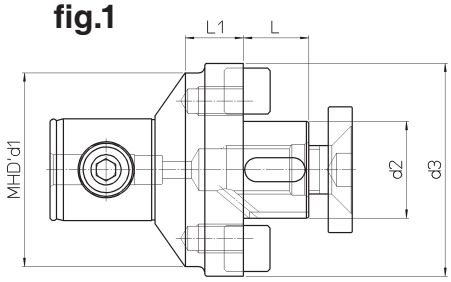
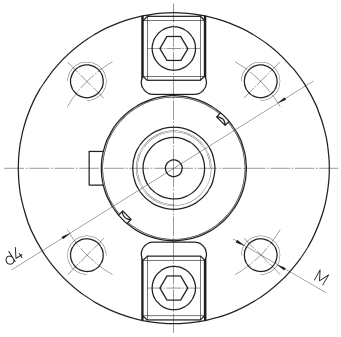


fig.2



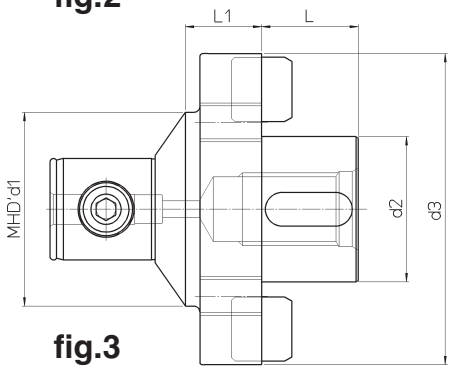


fig.3

REF.	CODE	MHD' d_1	d_2	d_3	d_4	M	L	L_1	lb	fig.
PF 40/16	65 59 040 2016 5	40	16	32	–	–	17	15	0.66	1
PF 40/22	65 59 040 2022 5		22	40			19	13	0.88	
PF 50/16	65 59 050 0016 0	50	16	32			17	15	1.1	
PF 50/22	65 59 050 0022 0		22	40			19			
PF 50/27	65 59 050 0027 0		27	50			21		1.32	
PF 50/32	65 59 050 0032 0		32	60			24		1.54	
PF 63/22	65 59 063 0022 0	63	22				19		1.98	
PF 63/27	65 59 063 0027 0		27				21		2.43	
PF 63/32	65 59 063 0032 0		32	70			24		2.65	
PF 80/32	65 59 080 0032 0	80	32	88				24	3.75	
PF 80/40	65 59 080 0040 0		40		66.7	M12	27		4.19	2
PF 80/50	65 59 080 0050 0		50	90	–	–	30		4.41	
PF 80/60	65 59 080 0060 0		60	128.5	101.6	M16	40	31.5	7.72	3
PF 110/40	65 59 110 0040 0	110	40	88	66.7	M12	27	20	9.26	2
PF 110/60	65 59 110 0060 0		60	128.5	101.6	M16	40	36	13.23	3
PF 140/40	65 59 140 0040 0	140	40	88	66.7	M12	27	26	13.67	2
PF 140/60	65 59 140 0060 0		60	140	101.6	M16	40		17.2	3

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Combi-chucking tools for disc and facing cutter holders.

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Kombiaufsteckfräsdorne für Scheibenfräser und Planfräser.

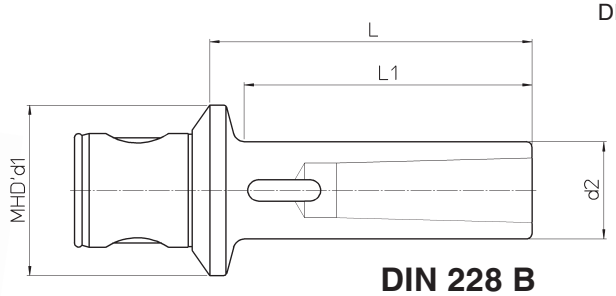
Adaptadores portafresas combinados para fresas a disco y de planear.

Adaptateurs combinés pour fraises à disque et à surfacer.

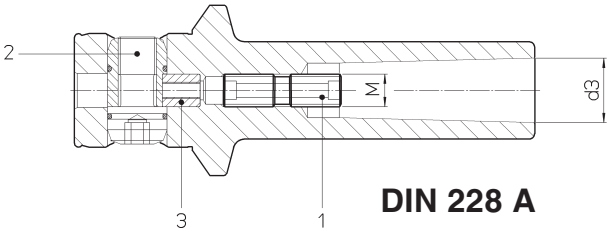
Adattatori portafrese combinati per frese a disco e a spianare.

CM

DIN 228 A-B



DIN 228 B



DIN 228 A

REF.	CODE	MHD' d_1	MORSE	d_2	d_3	L	L_1	M	lb
CM 50/1	65 60 050 0001 0	50	1	.79	.48	3.15	2.68	M6	1.32
CM 50/2	65 60 050 0002 0		2	1.18	.70	3.94	3.39	M10	1.54
CM 50/3	65 60 050 0003 0		3	1.42	.94	4.72	4.33	M12	2.2
CM 63/3	65 60 063 0003 0	63					4.25		2.87
CM 63/4	65 60 063 0004 0		4	1.89	1.23	5.91	5.24	M16	4.41

MT DIN 228-A

To chuck a morse taper tool with thread proceed as follows:
a. Drive in screw 1.
b. Remove expanding pin 2 and sleeve 3 to allow the Allen wrench to be introduced from the rear.
c. Fit the tool and tighten screw 1 clockwise.
d. Reassemble expanding pin 2 and sleeve 3.

MT DIN 228-B

To chuck a morse taper tool with tang remove screw 1. Combi-chucking tools for morse taper with DIN 228-A thread bore and with DIN 228-B tooth.

MK DIN 228-A

Zum Einspannen eines Morsekegelwerkzeuges mit Rückzuggewinde folgendermaßen vorgehen:
a. Schraube 1 eindrehen.
b. Spreizbolzen 2 und Buchse 3 entfernen, um den Sechskantschlüssel von hinten einführen zu können.
c. Werkzeug einsetzen und Schraube 1 im Uhrzeigersinn festziehen.
d. Buchse 3 und Spreizbolzen 2 wieder einsetzen.

MK DIN 228-B

Zum Einspannen eines Morsekegelwerkzeuges mit Austreiberlappen Schraube 1 herausdrehen. Werkzeughalter mit Morseinnenkegel für Werkzeuge mit Rückzuggewinde nach DIN 228-A und Austreiberlappen nach DIN 228-B.

CM DIN 228-A

Para montar una herramienta con cono morse con agujero roscado se precisa:
a. Montar roscando completamente el tornillo 1.
b. Quitar el perno expansible 2 y el casquillo 3 para permitir el paso posterior de la llave exagonal.
c. Montar la herramienta y roscar en sentido horario el tornillo 1.
d. Montar otra vez el casquillo 3 y el perno expansible 2.

CM DIN 228-B

Antes de montar una herramienta con cono morse con uña de arrastre, se precisa quitar el tornillo 1. Adaptadores combinados para cono morse con agujero roscado DIN 228-A y con uña DIN 228-B.

CM DIN 228-A

Pour monter un outil cône morse avec filetage procéder de cette façon:
a. Poser la vis 1.
b. Enlever la tige expansible 2 et la douille 3 pour permettre le passage postérieur de la clef hexagonale.
c. Monter l'outil et serrer la vis 1 dans le sens des aiguilles d'une montre.
d. Remonter la tige 2 et la douille 3.

CM DIN 228-B

Avant de monter un outil cône morse avec tenon, enlever la vis 1. Adaptateurs combinés pour cône morse avec trou fileté DIN 228-A et avec dent DIN 228-B

CM DIN 228-A

Per montare un utensile a cono morse con attacco filettato occorre:
a. Montare avvitando interamente la vite 1.
b. Togliere il perno espandibile 2 e la bussola 3 per permettere il passaggio posteriore della chiave esagonale.
c. Montare l'utensile e avvitare in senso orario la vite 1.
d. Rimontare bussola 3 e perno espandibile 2.

CM DIN 228-B

Prima di montare un utensile a cono morse con tenone occorre togliere la vite 1. Adattatori combinati per cono morse con foro filettato DIN 228-A e con dente DIN 228-B

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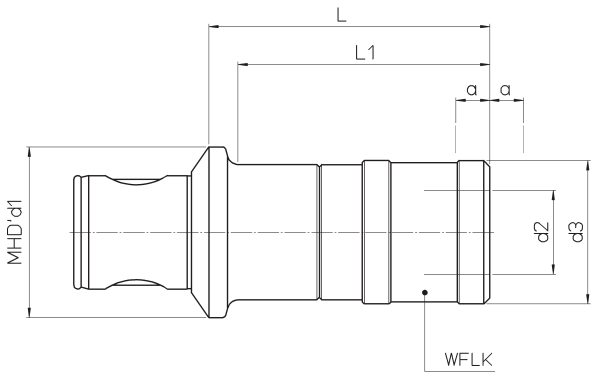
AM



REF.	CODE	MHD' d_1	WFLK	Capacity	L	L_1	d_2	d_3	a	lb
AM 50/M3-12	65 65 050 0010 0	50	WFLK 115B/A 308	M 3 ~ 12	2.83	2.36	.75	1.42	.30	1.98
AM 50/M8-20	65 65 050 0020 0		WFLK 225B/A 308	M 8 ~ 20	4.17	–	1.22	2.09	.49	2.65
AM 63/M3-12	65 65 063 0010 0	63	WFLK 115B/A 308	M 3 ~ 12	2.76	2.28	.75	1.42	.30	2.2
AM 63/M8-20	65 65 063 0020 0		WFLK 225B/A 308	M 8 ~ 20	4.09	3.66	1.22	2.02	.49	2.87

Tapping chuck holders suitable for high production. Great axial adjustment both in compression and tension. There is the possibility of using quick change clutches with or without torque clutch.

Gewindeschneid-spannfutter für hohe Beanspruchung in der Serienfertigung. Großer Längenausgleich auf Zug und Druck, mit Schnellwechselkupplung für Gewindebohrfutter mit oder ohne Drehmomentkupplung.

Adaptadores para roscar para alta producción. Gran compensación axial, sea en compresión que en tracción. Posibilidad de utilizar manguitos de cambio rápido con y sin limitación de par.

Adaptateurs de taraudage pour forte production. Grande compensation assiale en traction et compression, avec adaptateurs à changement rapide, pour porte-tarauds avec ou sans limiteur de couple.

Adattatori di maschiatura per forte produzione. Grande compensazione assiale sia in compressione sia in trazione. Possibilità di utilizzare bussole a cambio rapido, con e senza limitazione di coppia.

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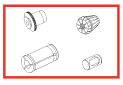
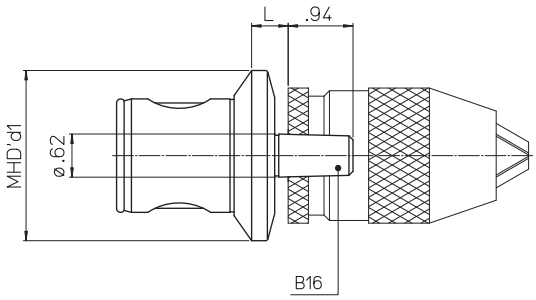


p. 159-160

MODULHARD'ANDREA

Drilling chuck holders and semifinished chuck holders | **Bohrfutteraufnahme und Werkzeugaufnahmerohling** | **Adaptadores para mandrinos portabrocas y adaptadores semielaborados** | **Adaptateurs pour mandrin à percer et adaptateurs semi-finis** | **Adattatori per mandrino di foratura e adattatori semilavorati**

B16
DIN 238



REF.	CODE	MHD' d_1	L	lb
B 50/16	65 61 050 0016 0	50	.39	0.88
B 63/16	65 61 063 0016 0	63	.53	1.76

Drilling chuck holders with B16 DIN 238 thread.

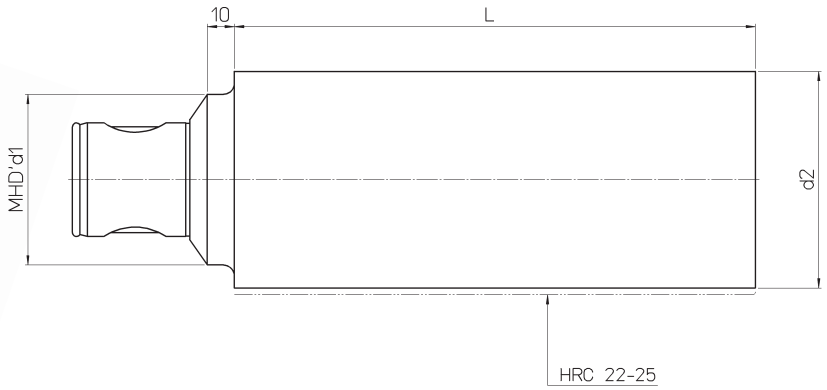
Bohrfutteraufnahme mit Innenkegel B16 nach DIN 238.

Adaptadores para mandrinos portabrocas con acoplamiento B16 DIN 238.

Adaptateurs pour mandrin porte-forets avec cône B16 DIN 238.

Adattatori per mandrini portapunte con attacco B16 DIN 238.

NS



REF.	CODE	MHD' d1	d_2	L	lb
NS 50	65 72 050 0160 0	50	2.48	6.30	9.26
NS 63	65 72 063 0200 0	63	3.15	7.87	19.18
NS 80	65 72 080 0250 0	80	3.94	9.84	35.27
NS 110	65 72 110 0250 0	110	5.12		39.68
NS 140	65 72 140 0250 0	140	5.91		66.14

Semifinished chucking holders for special tools, manufactured with the tempered and ground part of the MHD' coupling and the cylindrical neutral part with a hardness of HRC 22-25.

Werkzeugaufnahmnrohlinge mit gehärtetem und geschliffenem MHD' Kupplungsteil und zylindrischem Teil mit Härte HRC 22-25.

Adaptadores semielaborados para herramientas especiales, realizados con la parte del acoplamiento MHD' templada y rectificada y la parte cilíndrica neutra con dureza HRC 22-25.

Adaptateurs semi-finis pour outils spéciaux, realisés avec la partie de l'accouplement MHD' temprée et rectifiée et la partie cylindrique neutre avec dureté HRC 22-25.

Adattatori semilavorati per utensili speciali, realizzati con la parte dell'accoppiamento MHD' temprata e rettificata e la parte cilindrica neutra con durezza HRC 22-25.

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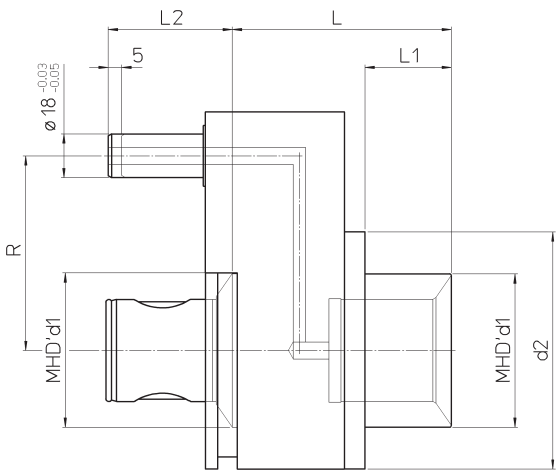
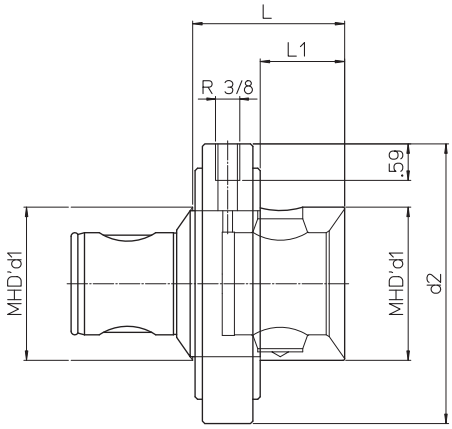
ACR/NC



REF.	CODE	MHD' d_1	R	d_2	L	L_1	L_2	RPM max	BAR	lb
ACR/NC 50/50	65 67 050 0050 1	50	2.56	3.15	2.83	1.12	1.69	7000	max 10	4.19
ACR/NC 50/50	65 67 050 0050 0		3.15							2.5
ACR/NC 63/63	65 67 063 0063 0	63		3.94	3.46	1.46	2.01	5600		5.51

ACR



REF.	CODE	MHD' d_1	d_2	L	L_1	RPM max	BAR	lb
ACR 63/63	65 67 063 1063 0	63	4.53	2.48	1.38	3500	max 10	6.39

IMPORTANT NOTE

Activate the coolant before the chuck **ROTATION** not to damage internal gaskets.

WICHTIGER HINWEIS

Das Kühlmittel vor der **SPINDELUMDREHUNG** einschalten, um die inneren Dichtungen nicht zu beschädigen.

ATENCIÓN

Accionar el líquido refrigerante antes de la **ROTACIÓN** del mandrino para preservar los retenes internos.

NOTE IMPORTANTE

Actionner le liquide d'arrosage avant la **ROTATION** du mandrin afin de ne pas endommager les joints intérieurs

ATTENZIONE

Azionare il liquido refrigerante prima della **ROTAZIONE** del mandrino per non danneggiare le guarnizioni interne.

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MONOforce

High precision ultra-tight toolholder

Präzisionsspannzangenfutter mit hochfester Werkzeugspannung

Portaherramientas de precisión de fuerte blocaje

Porte-outil de précision à serrage fort

Portautensile di precisione a forte serraggio

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Member IMC Group Ingersoll Cutting Tools

MONOforce

High precision ultra-tight toolholder

MONOforce is a new addition to D'Andrea range of tool holders, which complements the existing balanceable FORCE chuck from Toprun family.
This new chuck provides an economical and innovative solution for tool holding, where precision and high clamping forces for the cutting tool are required.
MONOforce is available with tapers conforming to DIN 69871, MAS-BT and CAT both in ISO 40 and 50 sizes, and also HSK 63 and 100. The chuck accepts reduction bushes to suit cutters having shank sizes ranging
from Ø 3 mm to Ø 25 mm.
MONOforce can also be supplied in kit form, which includes of a set of reduction bushes and clamping wrench. **MONOforce** toolholders are manufactured by D'Andrea in their modern manufacturing plants in Italy.

Präzisionsspannzangenfutter mit hochfester Werkzeugspannung

MONOforce ist eine neue Ergänzung zur D'Andrea Werkzeughalterserie und komplettiert die bestehende auswuchtbare FORCE-Spannzange aus der Toprun-Familie. Dieses neue innovative und wirtschaftliche Aufnahmefutter ist ausgelegt für Werkzeugspannungen, bei denen höchste Präzision und Spannkraft zur Klemmung von Fräswerkzeugen gefordert ist.
MONOforce ist erhältlich mit Aufnahmekegeln nach DIN 69871, MAS-BT und CAT, in ISO 40 und ISO 50 Ausführung sowie als HSK 63 und 100. Das Futter kann mittels Reduzierhülsen für Fräser von Ø 3 - 25 mm eingesetzt werden.
MONOforce wird auch als Set angeboten inklusive Reduzierhülsen und Klemmschrauben.
Alle **MONOforce**-Werkzeughalter werden in den modernen Produktionsstätten von D'Andrea in Italien hergestellt.

Portaherramientas de precisión de fuerte blocaje

MONOforce representa la nueva solución ideal y económica para el equipamiento de todas las Máquinas Herramientas donde existen exigencias de precisión y necesidad de blocaje de herramientas que necesitan elevadas cargas de torsion.
MONOforce acompaña al ya famoso Force de la familia Toprun, el sistema patentado de portaherramientas integrales equilibrables.
El programa **MONOforce** para husillos maquina HSK 63 y 100, DIN 69871, MAS-BT y CAT está realizado en los tama_os ISO 40 y ISO 50 con pinzas de reducción de Ø 12 mm, Ø 20 mm y de Ø 32 mm disponibles estándar en toda la gamma diametral compatible con estos diámetros de alojamientos para blocaje de Ø 3 mm a Ø 25 mm.
Los portaherramientas **MONOforce**, enteramente producidos por D'Andrea, están disponibles también en práticos Kits completos con pinzas de reducción y llaves de blocaje.

Porte-outil de précision à serrage fort

Le **MONOforce** vient agrandir la série de produits D'Andréa dans la gamme des attachements appartenant à la famille Toprun et concernant les attachements équilibrables Force.
Ce nouvel attachement est une solution économique et innovatrice dans le domaine des outils de serrage où précision et grande force de clamage sont nécessaires pour les outils coupants.
MONOforce est disponible avec des cônes conformément aux normes DIN 69871, MAS-BT et CAT toutes les deux en ISO 40, 50 et également HSK 63 et 100. Les attachements acceptent des pinces de réduction afin de pouvoir appliquer des outils coupants ayant des queues entre
Ø 3 et Ø 25 mm.
MONOforce peut être fourni en kit, comprenant un set de pinces de réduction ainsi que la clé de serrage. Les attachements MONOforce sont fabrqués par D'Andréa dans leur nouvelle usine située en Italie.

Portautensile di precisione a forte serraggio

MONOforce rappresenta la nuova soluzione ideale ed economica per l'attrezzatura di tutte le macchine utensili ove sussistano esigenze di precisione e necessità di serraggio utensili sollecitati a elevati carichi torsionali.
MONOforce si affianca al già noto Force della famiglia Toprun, il sistema brevettato di portautensili integrali bilanciabili.
Il programma **MONOforce** è costruito nella versione per mandrini macchina HSK 63 e 100, nonché DIN 69871, MAS-BT e CAT realizzati nelle grandezze ISO 40 e 50 e permette l'impiego di bussole di riduzione da Ø 12 mm, Ø 20 mm e Ø 32 mm. disponibili standard in tutta la gamma diametrale compatibile con questi diametri d'alloggiamento per serraggi da Ø 3 mm a Ø 25 mm.
I portautensili **MONOforce** – interamente prodotti dalla D'Andrea – sono disponibili anche in pratici kit completi di bussole di riduzione e chiave di serraggio.

High precision ultra-tight toolholder

INSTRUCTIONS
- After lightly tightening by hand, tighten furter by spanner (fig.1).
- Tighten by hand. Don't use hammer!
- Only for finishing operations and when higher run-out accuracy is required, return chuck ring just a little 1°- 2° after face contact (fig. 2).
- Don't clamp without end mill

Präzisionsspannzangenfutter mit hochfester Werkzeugspannung

MONTAGEANLEITUNG
- Erst leicht von Hand anziehen, dann weiter mit dem Schlüssel festziehen. (fig. 1)
- Nur per Hand anziehen - keinen Hammer verwenden !
- Drehen Sie nur für Schlichtbearbeitungen und wenn eine höhere Rundlaufgenauigkeit gefordert ist, die Spannmutter nach dem Flächenkontakt etwas zurück, max. 1 - 2° (fig. 2)
- Spannmutter nur mit Schaftfräser klemmen.

Portaherramientas de precisión de fuerte blocaje

INSTRUCCIÓNES
- Después de haber girado a mano la tuerca, blocar a fondo con la llave de apriete correspondiente (fig. 1).
- Apretar a mano. No utilizar nunca el martillo o tubo de prolongación !
- Sólo para operaciones de acabado, o donde se solicita una mayor precisión de run-out, después de apretar con la llave correspondiente, aflojar nuevamente de 1°- 2° después del contacto (fig.2).
- No girar la tuerca sin la herramienta incorporada.

Porte-outil de précision à serrage fort

INSTRUCTIONS
- Après un léger serrage manuel, continuez à serrer à l'aide de la clé de serrage. (fig. 1).
- Serrer à la main. Ne pas utiliser un marteau!
- Seulement pour des opérations de finition et uniquement lorsqu'une plus grande précision est requise, faire tourner très légèrement le joint du mandrin, 1°- 2° maximum, après le contact (fig. 2).
- Ne serrer pas le joint du mandrin sans la fraise.

Portautensile di precisione a forte serraggio

ISTRUZIONI
- Dopo aver serrato a mano la ghiera, bloccare a fondo con l'apposita chiave di serraggio (fig.1).
- Serrare a mano. Non usare mai martello o tubo di prolunga!
- Solo per operazioni di finitura, ove è richiesto una maggiore precisione di run-out, dopo il serraggio con l'apposita chiave, allentare nuovamente di 1°- 2° dopo il contatto (fig. 2).
- Non serrare la ghiera senza utensile inserito.

fig.1

fig.2

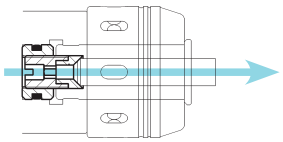
SETTING SCREW FOR INTERNAL COOLANT SUPPLY

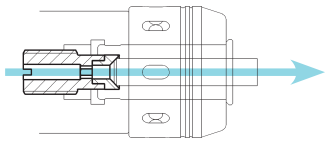
EINSTELLSCHRAUBE FÜR INNERE KÜHLMITTELZUFUHR

TORNILLO REGULACIÓN PASO REFRIGERANTE

VIS DE RÉGLAGE POUR L'ALIMENTATION DE REFROIDISSEMENT

VITE REGOLAZIONE CON PASSAGGIO REFRIGERANTE





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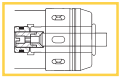


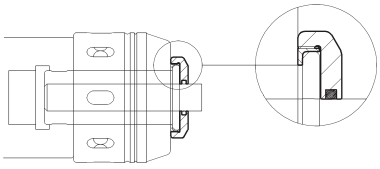
SEALING DEVICE FOR HIGH PRESSURE COOLANT SUPPLY
(max. 40 BAR)

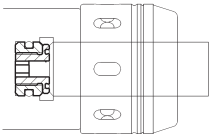
DICHTVORRICHTUNG FÜR HOCHDRUCK-KÜHLMITTELZUFUHR
(max. 40 BAR)

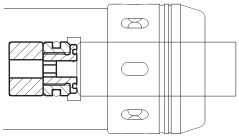
DISPOSITIVOS DE RETENCIÓN PARA EL REFRIGERANTE A ALTA PRESIÓN (màx. 40 BAR)

SYSTÈME D'ÉTANCHÉITÉ POUR L'ALIMENTATION DE REFROIDISSEMENT HAUTE PRESSION
(max. 40 BAR)

DISPOSITIVI A TENUTA PER REFRIGERANTE AD ALTA PRESSIONE
(max. 40 BAR)







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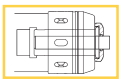

USING THE GH RING-NUT AND THE VCR THE MAXIMUM PRESSURE IS 40 BAR

DURCH ANWENDUNG DES GEWINDERINGS GH UND DES VCR BETRÄGT DER MAXIMALDRUCK 40 BAR

USANDO LA TUERCA ANULAR GH Y EL VCR, LA PRESIÓN MÁX. ES DE 40 BAR.

EN UTILISANT LA FRETTE GH ET LE VCR LA PRESSION MAXIMUM EST DE 40 BAR

IMPIEGANDO LA GHIERA GH E IL VCR LA PRESSIONE MAX È DI 40 BAR

High precision ultra-tight toolholder | **Präzisionsspannzangenfutter mit hochfester Werkzeugspannung** | **Portaherramientas de precisión de fuerte blocaje** | **Porte-outil de précision à serrage fort** | **Portautensile di precisione a forte serraggio**

MONOforce

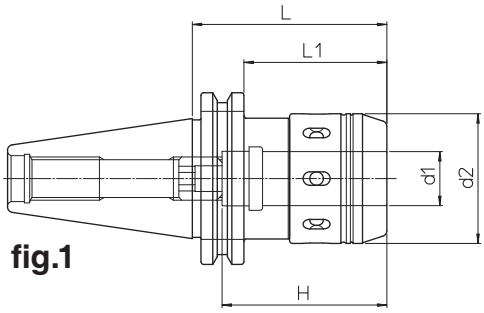

fig.1

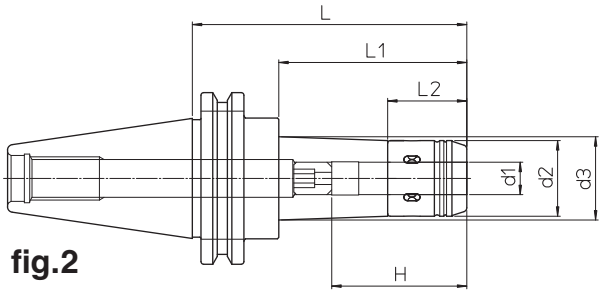

fig.2

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Without clamping wrench | **Ohne Spannschlüssel.** | **Llave de apriete excluida** | **Sans clef de serrage** | **Chiave di serraggio esclusa**

CAT	REF.	CODE	d_1	d_2	d_3	H	L	L_1	L_2	lb	fig.
40	CAT40 UNC MF1/2 2.50	71CAT-40-MF1306	1/2	1.10	–	1.85	2.50	1.25	–	1.32	1
	CAT40 UNC MF1/2 4.00	71CAT-40-MF1310			1.21		4.00	2.75	1.16	2.65	2
	CAT40 UNC MF3/4 3.00	71CAT-40-MF1907	3/4	1.89	–	2.48	3.00	2.25	–	2.43	1
	CAT40 UNC MF3/4 5.00	71CAT-40-MF1912					5.00	4.25		3.75	2
	CAT40 UNC MF1-1/4 4.25	71CAT-40-MF3110	1-1/4	2.59		3.15	4.25	–		3.53	1
	CAT40 UNC MF1-1/4 5.50	71CAT-40-MF3114					5.50			5.51	2
50	CAT50 UNC MF3/4 3.00	71CAT-50-MF1907	3/4	1.89		2.48	3.00	1.56		5.07	1
	CAT50 UNC MF3/4 6.00	71CAT-50-MF1915					6.00	4.56		6.39	2
	CAT50 UNC MF1-1/4 3.25	71CAT-50-MF3108	1-1/4	2.59		3.54	3.25	2.50		6.17	1
	CAT50 UNC MF1-1/4 6.50	71CAT-50-MF3116					6.50	5.75		4.41	2

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DIN 69893 HSK-A

High precision ultra-tight toolholder	Präzisionsspannzangenfutter mit hochfester Werkzeugspannung	Portaherramientas de precisión de fuerte blocaje	Porte-outil de précision à serrage fort	Portautensile di precisione a forte serraggio

MONOforce

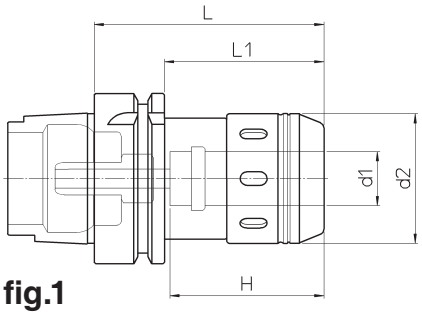

fig.1

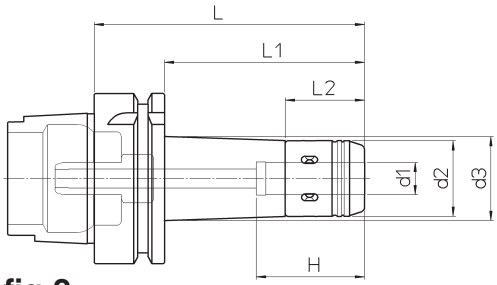

fig.2

Supplied with coolant tube - Without clamping wrench	Lieferung inklusive Kühlmittelrohr. Ohne Spannzangen und Spannschlüssel.	Completo con racor para el refrigerante -Llave de apriete excluida	Pourvu de raccord pour liquide d'arrosage - Sans clef de serrage	Completo di raccordo per il refrigerante - Chiave di serraggio esclusa

HSK-A	REF.	CODE	d_1	d_2	d_3	H	L	L_1	L_2	lb	fig.
63	HSK-A63 MF12.70	71HSK-A63MF1207	12	28	–	46	70	44	–	1.76	1
	HSK-A63 MF12.100	71HSK-A63MF1210			32		100	74	29.5	2.43	2
	HSK-A63 MF20.85	71HSK-A63MF2008	20	48	–	60	85	59	–	2.65	1
	HSK-A63 MF20.125	71HSK-A63MF2012					125	99		3.75	2
	HSK-A63 MF32.105	71HSK-A63MF3210	32	66		80	105	–		4.41	1
	HSK-A63 MF32.140	71HSK-A63MF3214					140			5.73	2
100	HSK-A100 MF32.110	71HSKA100MF3211					110	81	–	6.83	1
	HSK-A100 MF32.160	71HSKA100MF3216					160	131		7.94	

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High precision ultra-tight toolholder | **Präzisionsspannzangenfutter mit hochfester Werkzeugspannung** | **Portaherramientas de precisión de fuerte blocaje** | **Porte-outil de précision à serrage fort** | **Portautensile di precisione a forte serraggio**

MONOforce

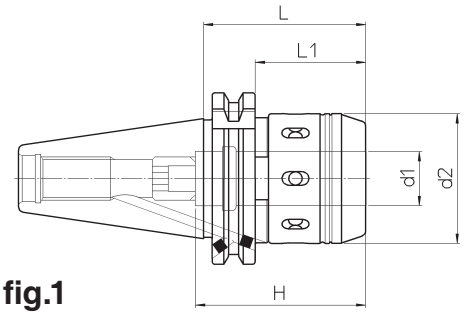

fig.1

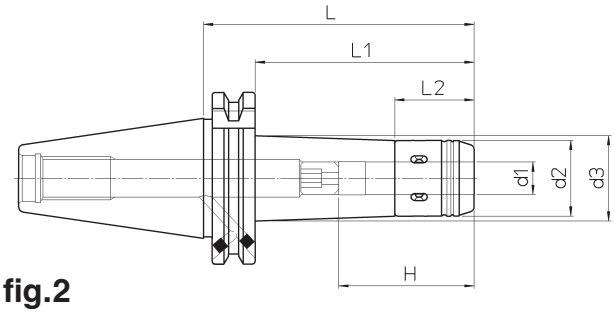

fig.2

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Without clamping wrench | **Ohne Spannschlüssel.** | **Llave de apriete excluida** | **Sans clef de serrage** | **Chiave di serraggio esclusa**

DIN	REF.	CODE	d_1	d_2	d_3	H	L	L_1	L_2	lb	fig.
40	DIN69871-AD+B40 MF12.50	71DIN-B40MF1205	12	28	–	46	50	31	–	1.76	1
	DIN69871-AD+B40 MF12.100	71DIN-B40MF1210			32		100	81	29.5	2.65	2
	DIN69871-AD+B40 MF20.60	71DIN-B40MF2006	20	48		63	60	41		2.43	1
	DIN69871-AD+B40 MF20.100	71DIN-B40MF2010					100	81		3.09	2
	DIN69871-AD+B40 MF32.95	71DIN-B40MF3209	32	66		80	95	–		3.53	1
	DIN69871-AD+B40 MF32.140	71DIN-B40MF3214					140			4.41	2
50	DIN69871-AD+B50 MF20.80	71DIN-B50MF2008	20	48	–	63	80	61	–	5.07	1
	DIN69871-AD+B50 MF20.125	71DIN-B50MF2012					125	106		5.95	2
	DIN69871-AD+B50 MF32.75	71DIN-B50MF3207	32	66		90	75	56		6.17	1
	DIN69871-AD+B50 MF32.160	71DIN-B50MF3216					160	141		7.05	2

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MAS 403 BT AD+B

High precision ultra-tight toolholder | **Präzisionsspannzangenfutter mit hochfester Werkzeugspannung** | **Portaherramientas de precisión de fuerte blocaje** | **Porte-outil de précision à serrage fort** | **Portautensile di precisione a forte serraggio**

MONOforce

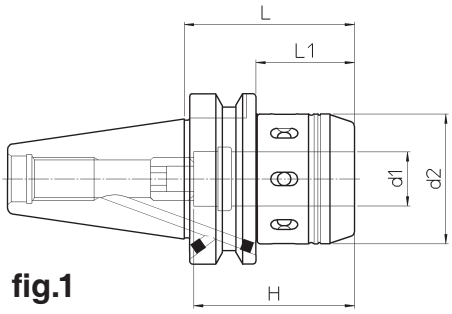

fig.1

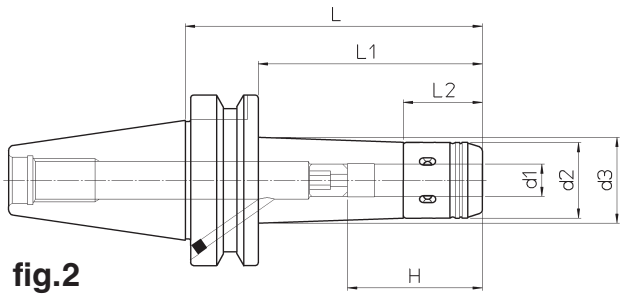

fig.2

Without clamping wrench | **Ohne Spannschlüssel.** | **Llave de apriete excluida** | **Sans clef de serrage** | **Chiave di serraggio esclusa**

BT	REF.	CODE	d_1	d_2	d_3	H	L	L_1	L_2	lb	fig.
40	MAS403 BT40-AD+B MF12.60	71MBT-B40MF1206	12	1.10	–	1.81	60	33	–	1.98	1
	MAS403 BT40-AD+B MF12.100	71MBT-B40MF1210			1.26		100	73	29.5	3.09	2
	MAS403 BT40-AD+B MF20.63	71MBT-B40MF2006	20	1.89		2.48	63	36		2.87	1
	MAS403 BT40-AD+B MF20.100	71MBT-B40MF2010					100	73		4.19	2
	MAS403 BT40-AD+B MF32.90	71MBT-B40MF3209	32	2.60		80	90	–		4.63	1
	MAS403 BT40-AD+B MF32.140	71MBT-B40MF3214					140			6.83	2
50	MAS403 BT50-AD+B MF20.85	71MBT-B50MF2008	20	1.89	–	63	85	47	–	8.16	1
	MAS403 BT50-AD+B MF20.125	71MBT-B50MF2012					125	87		9.04	2
	MAS403 BT50-AD+B MF32.95	71MBT-B50MF3209	32	2.60		90	95	57		9.7	1
	MAS403 BT50-AD+B MF32.160	71MBT-B50MF3216					160	122		10.8	2

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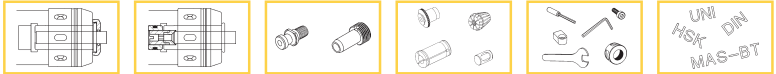


CAT

KIT K01
MONOforce 1/2

1 MONOFORCE 1/2
1 RC 1/2.1/4
1 RC 1/2.5/16
1 RC 1/2.3/8
1 CHV 28

KIT K01
MONOforce 3/4

1 MONOFORCE 3/4
1 RC 3/4.1/4
1 RC 3/4.5/16
1 RC 3/4.3/8
1 RC 3/4.1/2
1 RC 3/4.5/8
1 CHV 50

KIT K01
MONOforce 1-1/4

1 MONOFORCE 1-1/4
1 RC 1-1/4.3/8
1 RC 1-1/4.1/2
1 RC 1-1/4.5/8
1 RC 1-1/4.3/4
1 RC 1-1/4.1
1 CHV 75

CAT	REF.	CODE
40	KIT K01 MONOFORCE 1/2 2.50 CAT40	7KCAT-40-MF1306
	KIT K01 MONOFORCE 3/4 3.00 CAT40	7KCAT-40-MF1907
	KIT K01 MONOFORCE 1-1/4 4.25 CAT40	7KCAT-40-MF3110
50	KIT K01 MONOFORCE 3/4 3.00 CAT50	7KCAT-50-MF1907
	KIT K01 MONOFORCE 1-1/4 3.25 CAT50	7KCAT-50-MF3108

Member IMC Group Ingersoll Cutting Tools

MONOforce

HSK

DIN

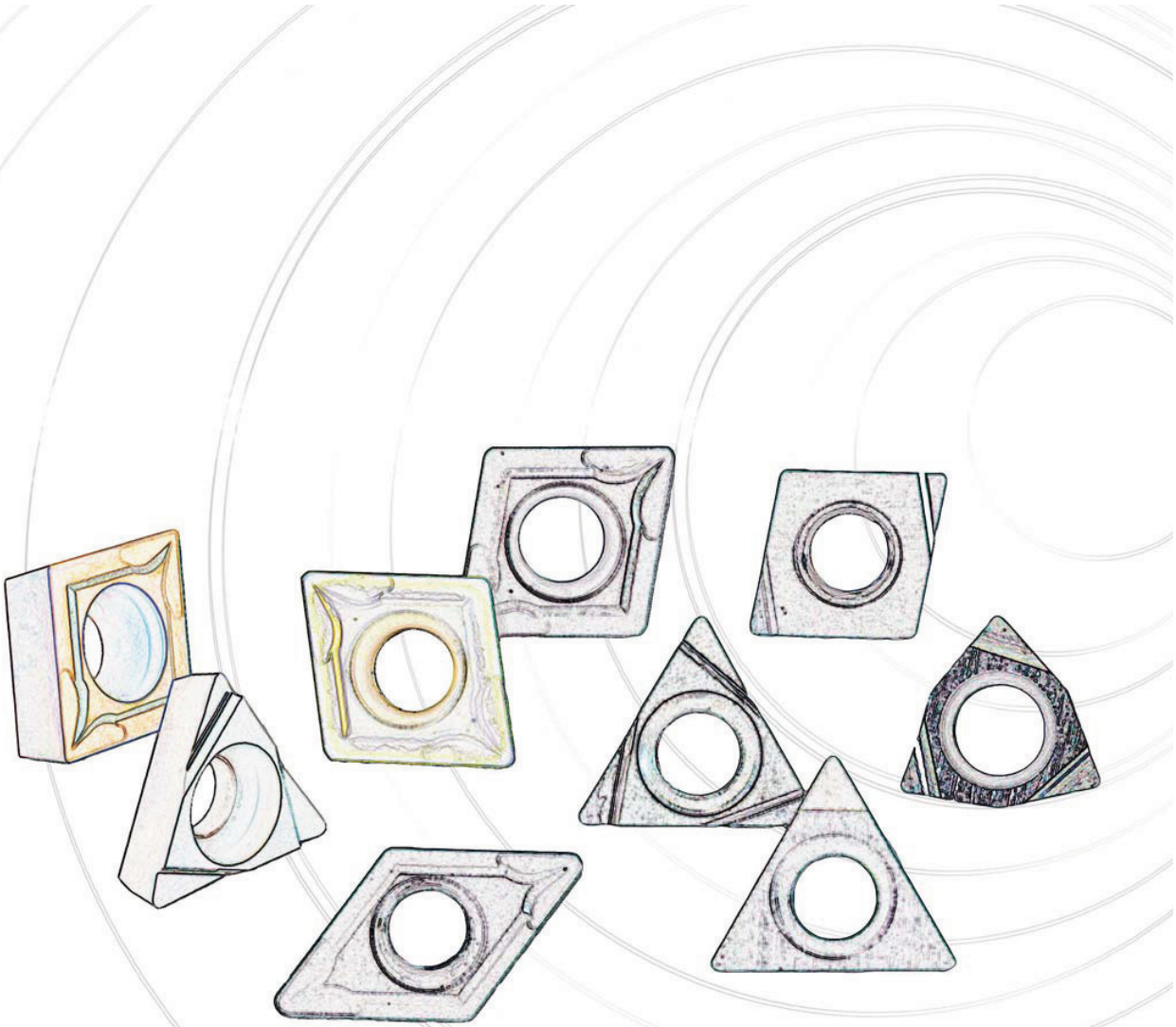
BT

KIT K01 MONOforce 12	KIT K01 MONOforce 20	KIT K01 MONOforce 32
1 MONOforce 12	1 MONOforce 20	1 MONOforce 32
1 RC 12.04	1 RC 20.06	1 RC 32.06
1 RC 12.06	1 RC 20.08	1 RC 32.08
1 RC 12.08	1 RC 20.10	1 RC 32.10
1 RC 12.10	1 RC 20.12	1 RC 32.12
1 CHV 28	1 RC 20.16	1 RC 32.16
	1 CHV 50	1 RC 32.20
		1 RC 32.25
		1 CHV 75

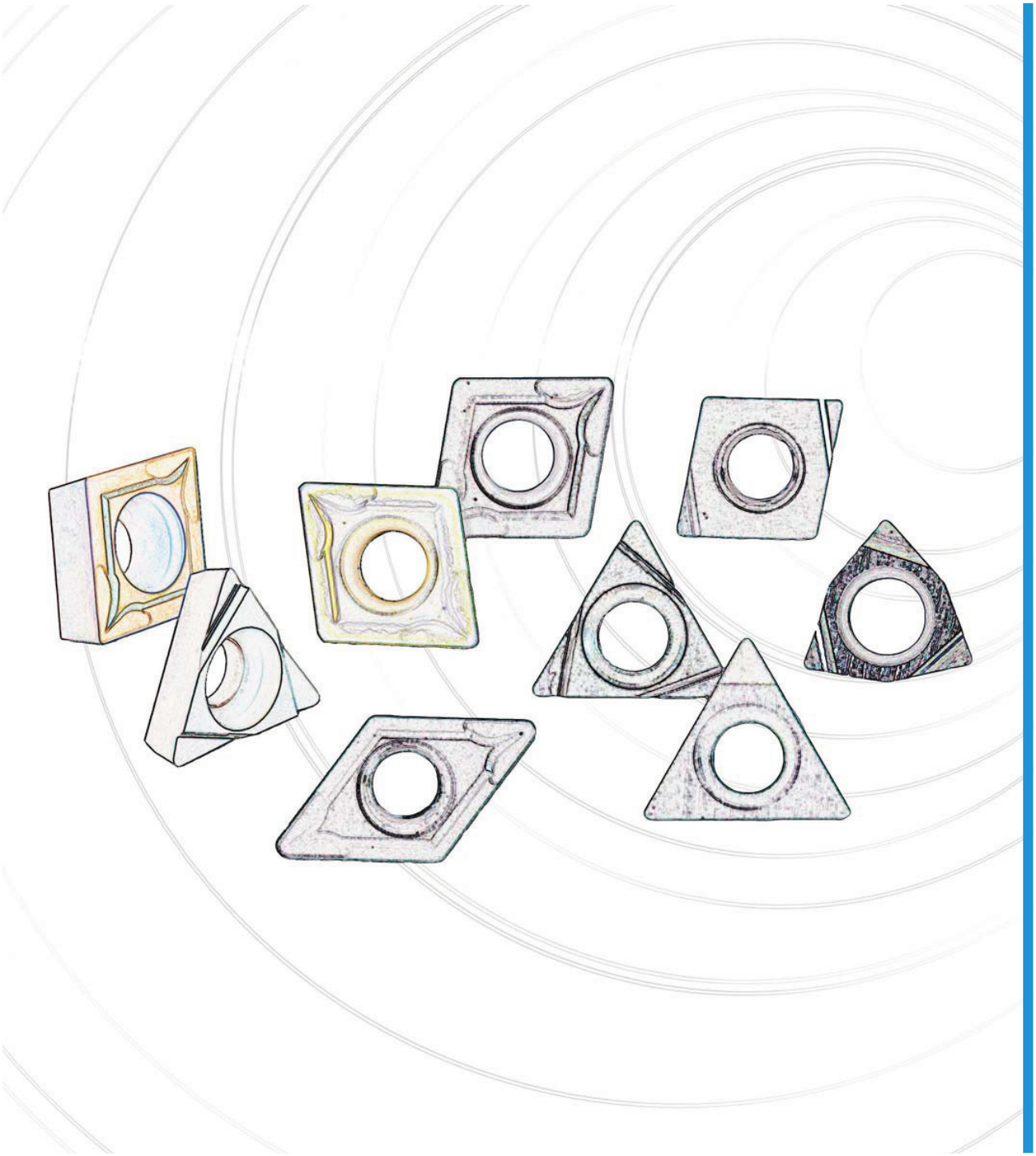
HSK-A	REF.	CODE
63	KIT K01 MONOFORCE 12.70 HSK63	7KHSK-A63MF1207
	KIT K01 MONOFORCE 20.85 HSK63	7KHSK-A63MF2008
	KIT K01 MONOFORCE 32.105 HSK63	7KHSK-A63MF3210
100	KIT K01 MONOFORCE 32.110 HSK100	7KHSKA100MF3211

DIN	REF.	CODE
40	KIT K01 MONOFORCE 12.50 DIN40AD+B	7KDIN-B40MF1205
	KIT K01 MONOFORCE 20.60 DIN40AD+B	7KDIN-B40MF2006
	KIT K01 MONOFORCE 32.95 DIN40AD+B	7KDIN-B40MF3209
50	KIT K01 MONOFORCE 20.80 DIN50AD+B	7KDIN-B50MF2008
	KIT K01 MONOFORCE 32.75 DIN50AD+B	7KDIN-B50MF3207

BT	REF.	CODE
40	KIT K01 MONOFORCE 12.60 BT40AD+B	7KMBT-B40MF1206
	KIT K01 MONOFORCE 20.63 BT40AD+B	7KMBT-B40MF2006
	KIT K01 MONOFORCE 32.90 BT40AD+B	7KMBT-B40MF3209
50	KIT K01 MONOFORCE 20.85 BT50AD+B	7KMBT-B50MF2008
	KIT K01 MONOFORCE 32.95 BT50AD+B	7KMBT-B50MF3209

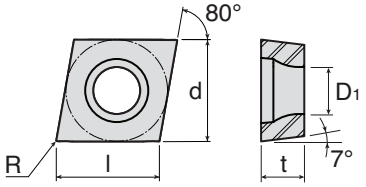


Inserts
Wendeplatten
Plaquitas
Plaquettes
Inserti



POSITIVE 7º CLEARANCE, 80º RHOMBIC INSERTS

CCET GF
CHIPBREAKER

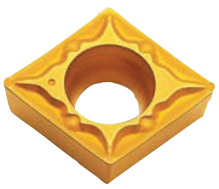


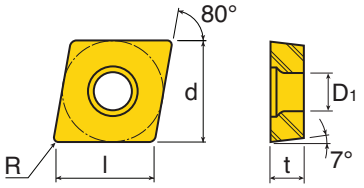
POSITIVE 7° CLEARANCE, 80° RHOMBIC GROUND INSERTS FOR FINISHING

ANSI Number	ISO Number	feed (ipr)	ap (inch)	l	d	t	R	D1	Grade	TT9020
CCET21.50.L-GF	CCET060201L-GF	.002 (.001 -.006)	.024 (.008 -.060)	0.248	0.250	0.094	0.004	0.110		
CCET21.50.5L-GF	CCET060202L-GF	.003 (.001 -.007)	.031 (.012 -.060)	0.244			0.008			
CCET21.51L-GF	CCET060204L-GF	.004 (.002 -.008)		0.236			0.016			
CCET21.52L-GF	CCET060208L-GF	.005 (.003 -.009)		0.220			0.031			
CCET32.50.L-GF	CCET09T301L-GF	.002 (.001 -.006)	.024 (.008 -.060)	0.374	0.375	0.156	0.004	0.173		
CCET32.50.5L-GF	CCET09T302L-GF	.003 (.001 -.007)	.031 (.012 -.100)	0.370			0.008			
CCET32.51L-GF	CCET09T304L-GF	.004 (.002 -.008)		0.362			0.016			
CCET32.52L-GF	CCET09T308L-GF	.005 (.003 -.009)		0.346			0.031			

● = P ● = M ● = K ● = N ● = S ○ = H

CCMT FG
CHIPBREAKER





POSITIVE 7° CLEARANCE, 80° RHOMBIC INSERTS FOR FINISHING

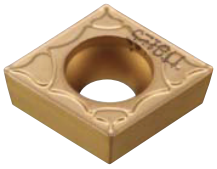
ANSI Number	ISO Number	feed (ipr)	ap (inch)	l	d	t	R	D1
CCMT32.51FG	CCMT09T304FG	.003 (.002 -.006)	.020 (.012 -.059)	0.362	0.375	0.156	0.016	0.173
CCMT32.52FG	CCMT09T308FG	.006 (.004 -.010)	.039 (.024 -.079)	0.346			0.031	
CCMT432FG	CCMT120408FG			0.472	0.500	0.187		0.217

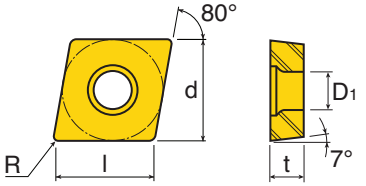
Part Number	Grade	CT3000	PV3010	TT1300	TT5080	TT5100	TT8020	TT8115	TT8125	TT9225	TT9235							
CCMT32.51FG		●	●	●	●	●	●	●	●	●	●							
CCMT32.52FG		●	●	●	●	●		●	●	●	●							
CCMT432FG			●			●			●									

● = P ● = M ● = K ● = N ● = S ○ = H

POSITIVE 7º CLEARANCE, 80º RHOMBIC INSERTS CONT.

CCMT PC
CHIPBREAKER





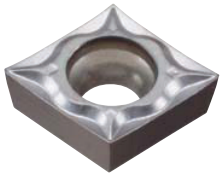
POSITIVE 7° CLEARANCE, 80° RHOMBIC INSERTS FOR MEDIUM MACHINING

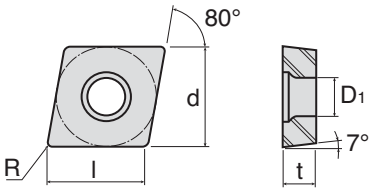
ANSI Number	ISO Number	feed (ipr)	ap (inch)	l	d	t	R	D1
CCMT21.51PC	CCMT060204PC	0.002 - 0.007	0.007 - 0.079	0.236	0.250	0.094	0.016	0.110
CCMT21.52PC	CCMT060208PC	.0.003 - 0.010	0.010 - 0.079	0.220			0.031	
CCMT32.51PC	CCMT09T304PC		0.010 - 0.118	0.362	0.375	0.156	0.016	0.173
CCMT32.52PC	CCMT09T308PC	0.004 - 0.011	0.011 - 0.118	0.346			0.031	
CCMT432PC	CCMT120408PC	0.004 - 0.012	0.012 - 0.157	0.472	0.500	0.187		0.217

Part Number	Grade	CT3000	TT8115	TT8125	TT9225	TT5100	TT9080
CCMT21.51PC		◔	●	●	●		◔
CCMT21.52PC		◔	●	●	●	◔	◔
CCMT32.51PC		◔	●	●	●	◔	◔
CCMT32.52PC		◔	●	●	●		◔
CCMT432PC		◔	●	●	●		◔

● = P ● = M ● = K ● = N ● = S ○ = H

CCGT SA
CHIPBREAKER





POSITIVE 7° CLEARANCE, 80° RHOMBIC INSERTS FOR FINISHING TO MEDIUM MACHINING

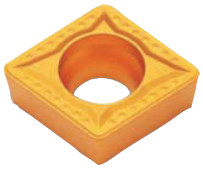
ANSI Number	ISO Number	feed (ipr)	ap (inch)	l	d	t	R	D1	Grade	TT5080	TT9020
CCGT 21.50 SA	CCGT 060201 SA	.0008 - .006	.004 - .060	0.248	0.250	0.094	0.004	0.110		◔	◔
CCGT 21.50.5 SA	CCGT 060202 SA			0.244			0.008			◔	◔
CCGT 21.51 SA	CCGT 060204 SA	.002 - .008	.004 - .095	0.236			0.016			◔	◔
CCGT 32.50 SA	CCGT 09T301 SA	.0008 - .006	.004 - .100	0.374	0.375	0.156	0.004	0.173		◔	◔
CCGT 32.50.5 SA	CCGT 09T302 SA			0.370			0.008			◔	◔
CCGT 32.51 SA	CCGT 09T304 SA	.002 - .008	.008 - .100	0.362			0.016			◔	◔

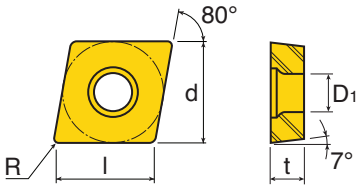
● = P ● = M ● = K ● = N ● = S ○ = H

Member IMC Group Ingersoll Cutting Tools

POSITIVE 7º CLEARANCE, 80º RHOMBIC INSERTS CONT.

CCMT MT CHIPBREAKER





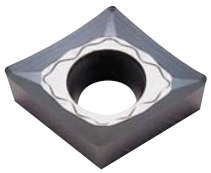
POSITIVE 7° CLEARANCE, 80° RHOMBIC INSERTS FOR MEDIUM ROUGHING

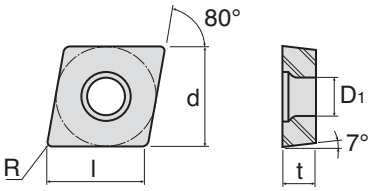
ANSI Number	ISO Number	feed (ipr)	ap (inch)	l	d	t	R	D1
CCMT21.51MT	CCMT060204MT	.004 (.003-.008)	.028 (.020-.079)	0.236	0.250	0.094	0.016	0.110
CCMT21.52MT	CCMT060208MT	.007 (.005-.012)	.039 (.028-.079)	0.220			0.031	
CCMT32.51MT	CCMT09T304MT	.006 (.004-.010)	.059 (.028-.138)	0.362	0.375	0.156	0.016	0.173
CCMT32.52MT	CCMT09T308MT	.007 (.005-.012)	.059 (.039-.138)	0.346			0.031	
CCMT431MT	CCMT120404MT	.007 (.005-.012)	.079 (.051-.197)	0.488	0.500	0.187	0.016	0.217
CCMT432MT	CCMT120408MT			0.472			0.031	
CCMT433MT	CCMT120412MT	.009 (.007-.014)	.079 (.059-.197)	0.457			0.047	

Part Number	Grade	CT3000	K10	P30	PV3010	TT1300	TT5080	TT5100	TT7310	TT8020	TT8115	TT8125	TT9225	TT9235				
CCMT21.51MT		● ●	● ●	●	● ●	●	● ●	● ●	●	● ●	●	●	●	●				
CCMT21.52MT		● ●				●		● ●	●		●	●						
CCMT32.51MT		● ●			● ●	●	● ●	● ●	●	● ●	●	●	●	●				
CCMT32.52MT						●	● ●	● ●	●	● ●	●	●	●	●				
CCMT431MT		● ●				●		● ●	●	● ●	●	●						
CCMT432MT		● ●				●	● ●	● ●	●	● ●	●	●	●	●				
CCMT433MT						●					●	●						

● = P ● = M ● = K ● = N ● = S ○ = H

CCGT FL CHIPBREAKER





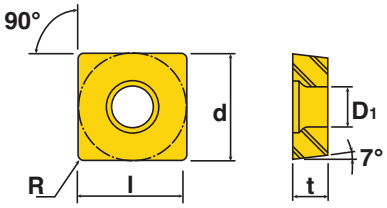
POSITIVE 7° CLEARANCE, 80° RHOMBIC INSERTS FOR ALUMINUM. GROUND AND VERY SHARP

ANSI Number	ISO Number	l	d	t	R	D1	Grade	K10
CCGT21.50.5FL	CCGT060202FL	0.244	0.250	0.094	0.008	0.110		●
CCGT21.51FL	CCGT060204FL	0.236			0.016			●
CCGT32.50.5FL	CCGT09T302FL	0.370	0.375	0.156	0.008	0.173		●
CCGT32.51FL	CCGT09T304FL	0.362			0.016			●
CCGT32.52FL	CCGT09T308FL	0.346			0.031			●
CCGT430.5FL	CCGT120402FL	0.496	0.500	0.187	0.008	0.217		●
CCGT431FL	CCGT120404FL	0.488			0.016			●
CCGT432FL	CCGT120408FL	0.472			0.031			●

● = P ● = M ● = K ● = N ● = S ○ = H

POSITIVE 7º CLEARANCE SQUARE INSERTS

SCMT MT
CHIPBREAKER



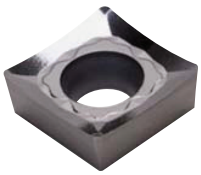
POSITIVE 7° CLEARANCE, SQUARE INSERTS FOR MEDIUM MACHINING

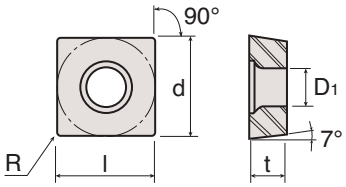
ANSI Number	ISO Number	feed (ipr)	ap (inch)	l	d	t	R	D1
SCMT32.51MT	SCMT09T304MT	.006 (.004-.010)	.059 (.028-.138)	0.358	0.375	0.156	0.016	0.173
SCMT32.52MT	SCMT09T308MT	.007 (.005-.012)	.059 (.039-.138)	0.343			0.031	
SCMT431MT	SCMT120404MT	.006 (.004-.010)	.079 (.039-.197)	0.484	0.500	0.187	0.016	0.217
SCMT432MT	SCMT120408MT	.007 (.005-.012)		0.469			0.031	
SCMT433MT	SCMT120412MT	.009 (.006-.014)		0.453			0.047	

Part Number	Grade	CT3000	TT1300	TT5080	TT5100	TT7100	TT7310	TT8020	TT8115	TT8125	TT9225	TT9235						
SCMT32.51MT		◔	●		◔		●	◔	●	●	○							
SCMT32.52MT		◔	●	◑	◔	◑	●	◔	●	●	○							
SCMT431MT		◔	●		◔				●	●								
SCMT432MT		◔	●	◑	◔		●	◔	●	●	○	○						
SCMT433MT			●					◔		●								

● = P ○ = M ● = K ● = N ● = S ○ = H

SCGT FL
CHIPBREAKER





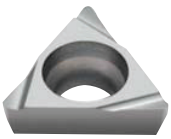
POSITIVE 7° CLEARANCE, SQUARE INSERTS FOR ALUMINUM MACHINING

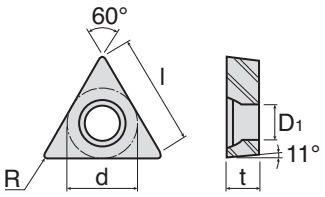
ANSI Number	ISO Number	l	d	t	R	D1	Grade	K10
SCGT32.52FL	SCGT09T308FL	0.343	0.375	0.156	0.031	0.173		●
SCGT431FL	SCGT120404FL	0.484	0.500	0.187	0.016	0.217		●
SCGT432FL	SCGT120408FL	0.469			0.031			●

● = P ○ = M ● = K ● = N ● = S ○ = H

POSITIVE 11º – 7º CLEARANCE SQUARE INSERTS

TPGX L





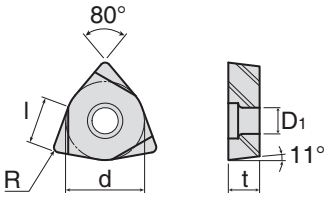
POSITIVE 11° CLEARANCE, TRIANGULAR GROUND INSERTS FOR FINISHING

ANSI Number	ISO Number	feed (ipr)	ap (inch)	l	d	t	R	D1
TPGX730.5L	TPGX090202L	.003 (.002-.006)	.028 (.012-.039)	0.358	0.219	0.094	0.008	0.118
TPGX731L	TPGX090204L	.005 (.003-.008)	.039 (.024-.059)	0.339			0.016	
TPGX220.5L	TPGX110302L	.003 (.002-.006)	.028 (.012-.039)	0.413	0.250	0.125	0.008	0.138
TPGX221L	TPGX110304L	.005 (.003-.008)	.039 (.024-.079)	0.394			0.016	

Part Number	Grade	CT3000	K10	K20	PV3010	TT9030
TPGX730.5L		●			●	●
TPGX731L		●	●	●		●
TPGX220.5L		●			●	●
TPGX221L		●	●			●

● = P ● = M ● = K ● = N ● = S ○ = H

WCGT L



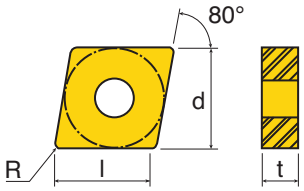
POSITIVE 7° CLEARANCE, 80º TRIANGULAR INSERTS FOR FINISHING

ISO Number	l	d	t	R	D1	Grade	TT9030
WCGT020102L	0.086	0.156	0.063	0.008	0.091		●
WCGT020104L				0.016			●

● = P ● = M ● = K ● = N ● = S ○ = H

NEGATIVE 80º CLEARANCE RHOMBIS INSERTS-ROUGHING

CNMG MT
CHIPBREAKER



NEGATIVE 80º RHOMBIC INSERTS FOR MEDIUM ROUGHING / TOUGH RAKE ANGLE

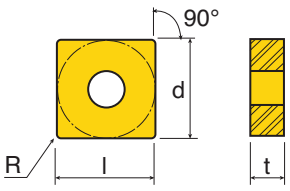
ANSI Number	ISO Number	feed (ipr)	ap (inch)	l	d	t	R
CNMG642MT	CNMG190608MT	.014 (.009-.022)	.197 (.118-.315)	0.728	0.750	0.250	0.031
CNMG643MT	CNMG190612MT	.017 (.010-.022)	.236 (.118-.315)	0.713			0.047
CNMG644MT	CNMG190616MT	.018 (.012-.022)		0.697			0.063

Part Number	Grade	TT1300	TT5080	TT5100	TT8020	TT8115	TT8125	TT9030	TT9215	TT9225	TT9235
CNMG642MT		●	◑	◑	◑	●	●		○	○	○
CNMG643MT		●	◑	◑	◑	●	●	◔		○	○
CNMG644MT						●	●				

● = P ○ = M ● = K ● = N ● = S ○ = H

NEGATIVE SQUARE INSERTS - ROUGHING

SNMG MT
CHIPBREAKER



NEGATIVE SQUARE INSERTS FOR MEDIUM ROUGHING/ TOUGH RAKE ANGLE

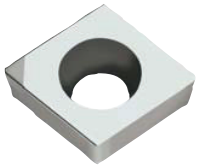
ANSI Number	ISO Number	feed (ipr)	ap (inch)	l	d	t	R
SNMG642MT	SNMG190608MT	.014 (.008-.022)	.197 (.118-.315)	0.717	0.750	0.250	0.031
SNMG643MT	SNMG190612MT	.017 (.010-.022)		0.701			0.047

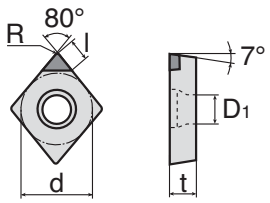
Part Number	Grade	TT5100	TT8020	TT8125	TT9225	TT9235
SNMG642MT				●	○	○
SNMG643MT		◑	◑	●	○	○

● = P ○ = M ● = K ● = N ● = S ○ = H

POSITIVE 7º CLEARANCE, 80º RHOMBIC CBN TIPPED INSERTS

CCGW LS



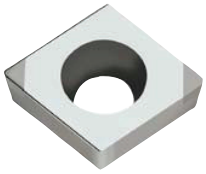


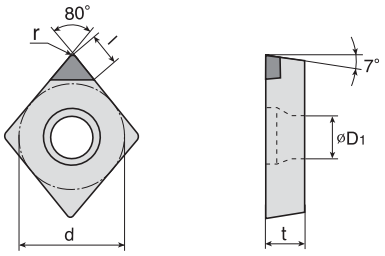
POSITIVE 7º CLEARANCE, 80º RHOMBIC CBN TIPPED INSERTS (SINGLE TIPPED)

ANSI Number	ISO Number	l	d	t	R	D1	Grade	KB50	KB90	TB650
CCGW21.50.5LS	CCGW060202LS	0.094	0.250	0.094	0.008	0.110			◐	◐
CCGW21.51LS	CCGW060204LS				0.016				◐	◐
CCGW32.51LS	CCGW09T304LS		0.375	0.156	0.016	0.173		◐	◐	◐
CCGW32.52LS	CCGW09T308LS				0.031			◐	◐	◐
CCGW431LS	CCGW120404LS	0.102	0.500	0.187	0.016	0.217			◐	

● = P ● = M ● = K ● = N ● = S ○ = H

CCGW LS2





POSITIVE 7º CLEARANCE, 80º RHOMBIC CBN TIPPED INSERTS (DOUBLE TIPPED)

ANSI Number	ISO Number	l	d	t	R	D1	Grade	TB610	TB670	TB730
CCGW 21.50.5LS2	CCGW 060202 LS2	0.087	0.250	0.094	0.008	0.110			◑	●
CCGW 21.51LS2	CCGW 060204 LS2	0.083			0.016			○	◑	●
CCGW 21.52LS2	CCGW 060208 LS2				0.031			○	◑	●
CCGW 32.51LS2	CCGW 09T304 LS2	0.094	0.375	0.157	0.016	0.173		○	◑	●
CCGW 32.52LS2	CCGW 09T308 LS2	0.091			0.031			○	◑	●
CCGW 431LS2	CCGW 120404 LS2	0.083	0.500	0.187	0.016	0.216				●
CCGW 432LS2	CCGW 120408 LS2				0.031					●

● = P ● = M ● = K ● = N ● = S ○ = H

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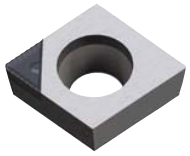
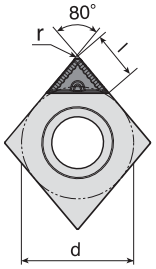
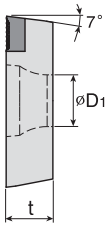
POSITIVE 7º CLEARANCE, 80º RHOMBIC CBN TIPPED INSERTS

CCGT CB
CHIPBREAKER





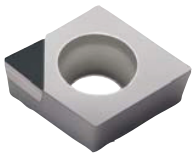


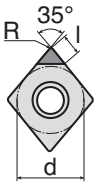
POSITIVE 7º CLEARANCE, 80º RHOMBIC PCD TIPPED INSERTS WITH CHIPBREAKER

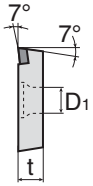
ANSI Number	ISO Number	l	d	t	R	D1	Grade	KP300
CCGT21.51CB	CCGT060204CB	0.122	0.250	0.094	0.016	0.110		●
CCGT32.50.5CB	CCGT09T302CB	0.163	0.375	0.156	0.008	0.173		●
CCGT32.51CB	CCGT09T304CB	0.161			0.016			●
CCGT32.52CB	CCGT09T308CB	0.157			0.031			●
CCGT431CB	CCGT120404CB	0.161	0.500	0.187	0.016	0.217		●
CCGT432CB	CCGT120408CB	0.157			0.031			●

● = P ● = M ● = K ● = N ● = S ○ = H

CCGW LN7







POSITIVE 7º CLEARANCE, 80º RHOMBIC PCD TIPPED INSERTS

ANSI Number	ISO Number	l	d	t	R	Grade	KP300
CCGW21.50.5LN-7	CCGW060202LN-7	0.122	0.250	0.094	0.008		●
CCGW21.51LN-7	CCGW060204LN-7				0.016		●
CCGW21.52LN-7	CCGW060208LN-7	0.118			0.031		●
CCGW32.51LN-7	CCGW09T304LN-7	0.157	0.375	0.156	0.016		●
CCGW32.52LN-7	CCGW09RT308LN-7	0.154			0.031		●
CCGW431LN-7	CCGW120404LN-7	0.157	0.500	0.187	0.016		●
CCGW432LN-7	CCGW120408LN-7	0.154			0.031		●

● = P ● = M ● = K ● = N ● = S ○ = H

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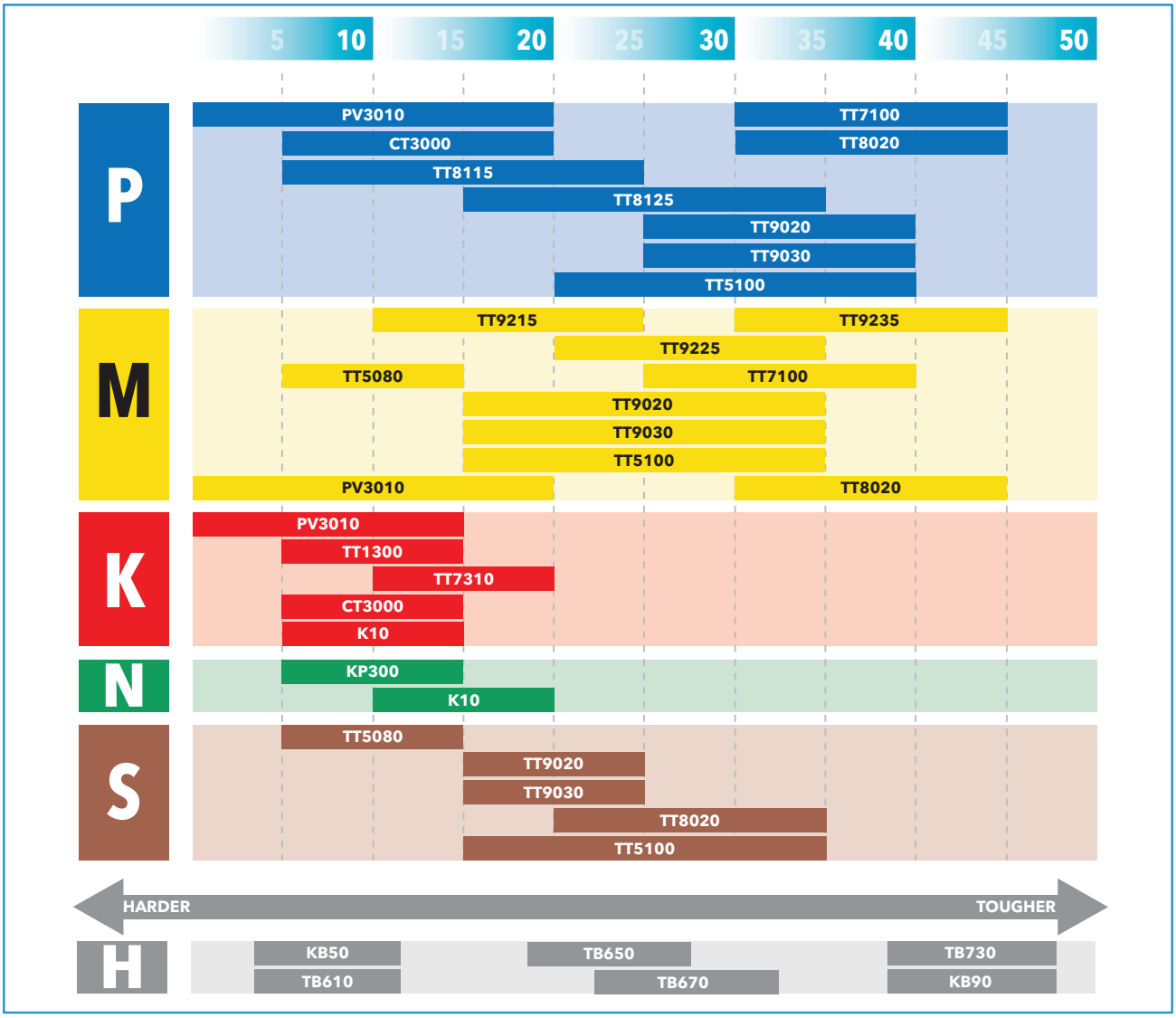
GENERAL TECHNICAL INFORMATION

CARBIDE AND CERMET GRADES

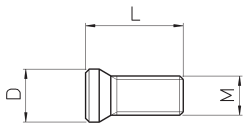
Grades	ISO	Application
TT1300 CVD Coated	K05 – K15	• For high speed turning of cast iron and steel. • Thick aluminum oxide coating on a high wear resistant substrate. • First choice for machining cast iron (Rough and Finish).
TT7310 CVD Coated	K10 – K20	• First choice for machining of ductile cast iron and cast iron. • Special coating and though substrate for the best wear resistance.
TT8115 CVD Coated	P05 – P25	• High speed turning of steel. • Very high wear resistance. • First choice for finishing.
TT9215 CVD Coated	M10 – M25	• For high speed cutting in stainless steel. • Very high wear resistance. • First choice for finishing, particularly in continuous cuts.
TT8125 CVD Coated	P15 – P35	• Steel turning application. • Very good combination of wear resistance and toughness. • For finish to medium turning of steel.
TT9225 PVD Coated	M20 – M35	• For a wide range of turning in stainless steel. • Excellent combination of wear resistance & fracture toughness.
TT5080 PVD Coated	S05 – S15 M05 – M15	• For a wide range of turning of high-temp alloys. • Very hard submicron substrate with good fracture toughness.
TT9020 TT9030 PVD Coated	P25 – P40 S15 – S25 M15 – M35	• For medium speed turning of stainless steel, exotic alloys and low carbon steel. • Good combination of toughness and wear resistance.
TT5100 CVD Coated	M15 – M35 S15 – S35 P20 – P40	• For a wide range of turning of sticky materials such as stainless steel and low carbon steel. • Excellent chipping resistance and sticking resistance. • For finish and medium machining on stainless steel and low carbon steel.
TT9235 CVD Coated	M30 – M45	• For interrupted cutting of stainless steel. • Ideal grade for unstable conditions or low cutting speeds. • Very good fracture toughness.
TT7100 CVD Coated	M25 M40 P30 – P45	• Low speed turning of steel and stainless steel. • Very tough substrate. • For heavy roughing with interrupted cut.
TT8020 PVD Coated	M30 – M45 S20 – S35 P30 – P45	• For medium to low speed turning of stainless steel, exotic alloys and low carbon steel. • Toughest grade in turning product line. • For interrupted cut on stainless steel and exotic alloys.
CT3000 CERMET	P05 – P20 K05 – K15	• Excellent surface finish turning of steel, stainless steel and cast iron. • Excellent wear resistance and low coefficient of friction
PV3010 PVD Coated Cermet	P01 – P20 K01 – K15 M01 – M20	• Turning of steel, stainless steel and cast iron with high surface quality. • Longer tool life.
K10 Uncoated	K05 – K15 N10 – N20	• General turning of cast iron, exotic alloy and non-ferrous materials including aluminum and copper alloy. • Excellent wear resistant grade.

GENERAL TECHNICAL INFORMATION

ISO GRADE CLASSIFICATIONS

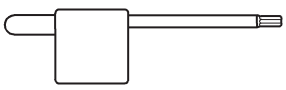


TORX

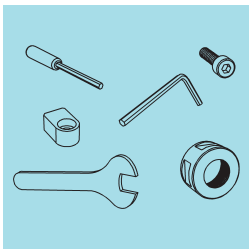


REF.	CODE	M	L	D
TS 21	49 40 1 0002034	M 2x0.4	.14	.10
TS 211	49 40 1 0002040		.15	
CS 250 T	49 40 1 0002565	M 2.5x0.45	.23	.14
CS 300890 T	49 40 1 0003008	M 3x0.5	.31	.16
TS 25	49 40 1 0002555	M 2.5x0.45	.22	.13
TS 4	49 40 1 0004008	M 4x0.7	.39	.21
TS 5	49 40 1 0005009	M 5x0.8	.45	.27
DMC US63	49 42 1 0035070	M 3.5x0.6	.39	.20

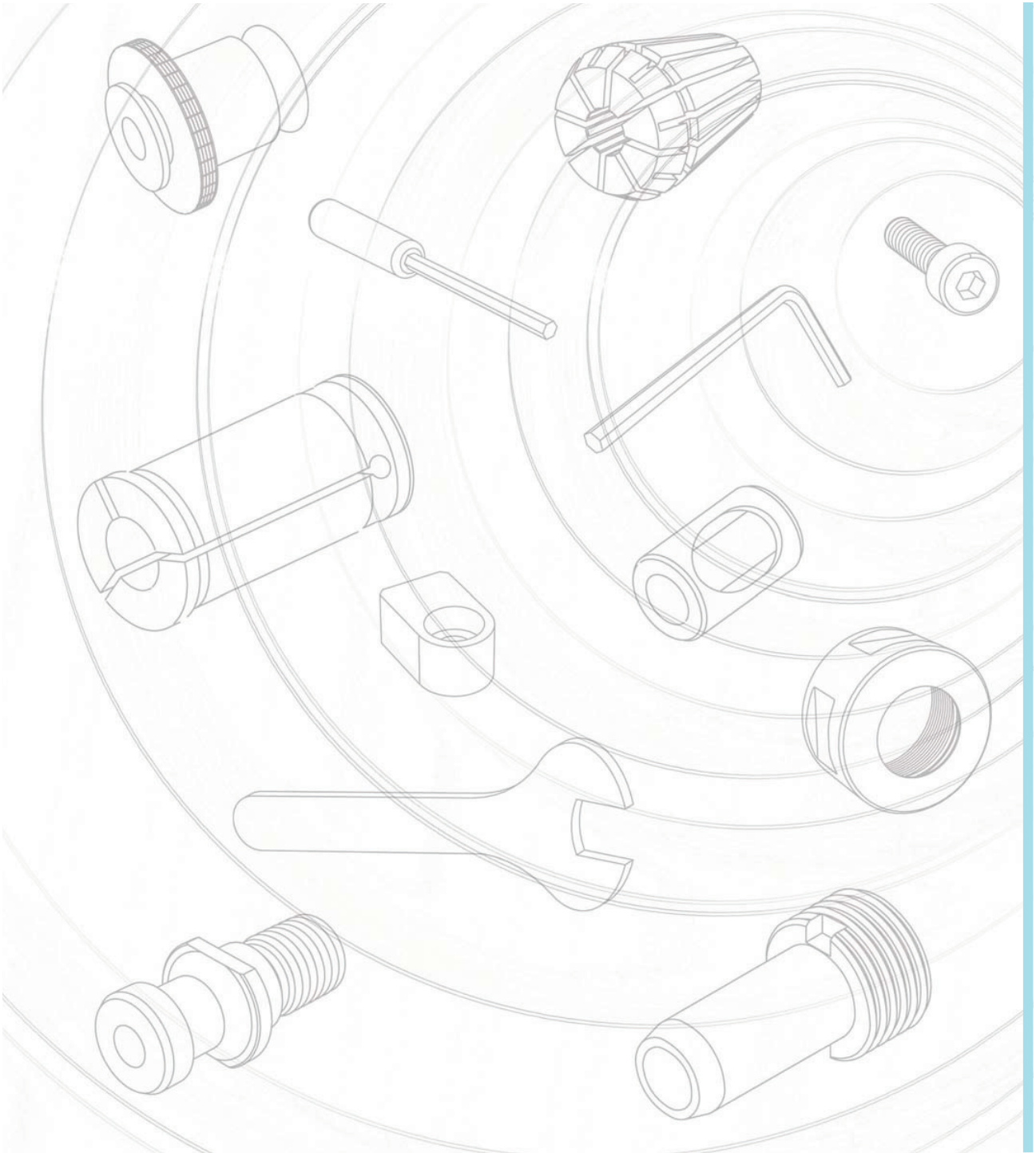
TORX



REF.	CODE
TORX TO6	10 150 09 0 0600
TORX TO8	10 150 09 0 0800
TORX T15	10 150 09 0 1500
TORX T25	10 150 09 0 2500
TORX T15	10 150 09 0 1500



ACCESSORIES AND SPARE PARTS
ZUBEHÖRTEILE UND ERSATZTEILE
ACCESORIOS Y PIEZAS DE RECAMBIO
ACCESSOIRES ET PIÈCES DETACHÉES
ACCESSORI E PARTI DI RICAMBIO



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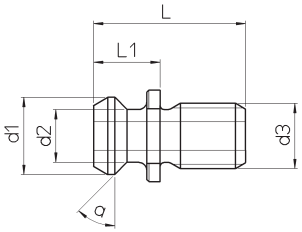
CAT INCH



REF.	CODE	CAT	d_1	d_2	d_3	L	L_1	a
CAT INCH	20 143 025 0403	40	.74	.49	UNC 5/8-11	1.50	.64	45°
	20 143 025 0503	50	1.14	.82	UNC 1-8	2.30	1.00	

ISO 7388/2 A - DIN 69872

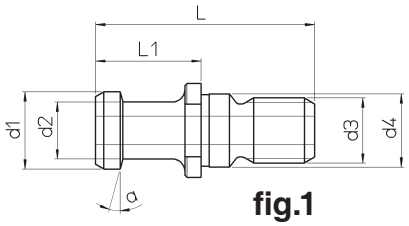


fig.1

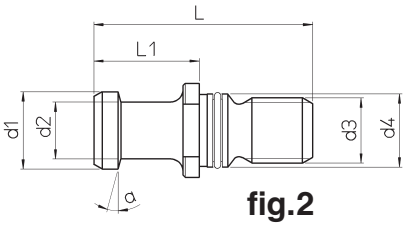


fig.2

REF.	CODE	ISO	d_1	d_2	d_3	d_4	L	L_1	a	fig.
ISO 7388/2 A DIN 69872	20 143 025 0401	40	.75	.55	M16	.67	2.12	1.02	15°	1
	20 143 025 0451	45	.90	.67	M20	.82	2.56	1.18		
	20 143 025 0501	50	1.10	.82	M24	.98	2.91	1.34		
	20 143 025 0400	40	.75	.55	M16	.67	2.12	1.02		2
	20 143 025 0500	50	1.10	.82	M24	.98	2.91	1.34		

ISO 7388/2 B - ANSI B.5 50

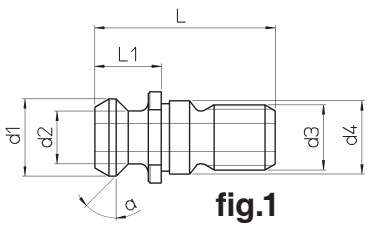


fig.1

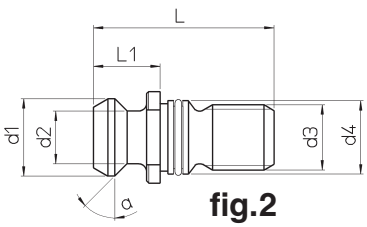
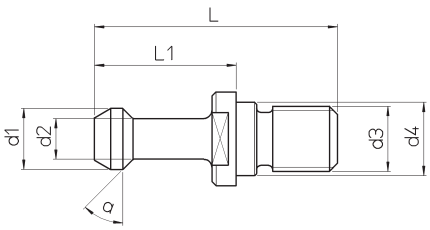


fig.2

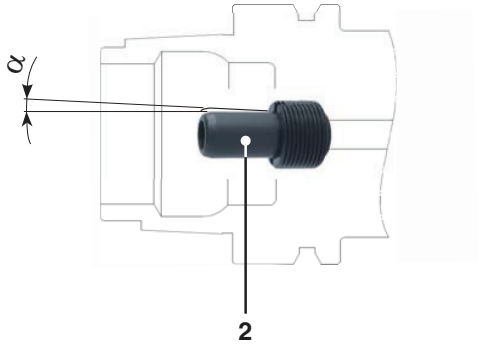
REF.	CODE	ISO	d_1	d_2	d_3	d_4	L	L_1	a	fig.
ISO 7388/2 B ANSI B.5 50	20 143 025 1401	40	.74	.51	M16	.67	1.75	.64	45°	1
	20 143 025 1451	45	.94	.64	M20	.82	2.20	.82		
	20 143 025 1501	50	1.14	.77	M24	.98	2.57	1.00		
	20 143 025 1400	40	.74	.51	M16	.67	1.75	.64		2
	20 143 025 1500	50	1.14	.77	M24	.98	2.57	1.00		

MAS 403 BT - 30° - 45°



REF.	CODE	ISO	d_1	d_2	d_3	d_4	L	L_1	a
MAS 403 BT 30°	20 143 025 2301	30	.43	.27	M12	.49	1.69	.90	30°
	20 143 025 2401	40	.59	.39	M16	.67	2.36	1.38	
	20 143 025 2451	45	.75	.55	M20	.82	2.75	1.57	
	20 143 025 2501	50	.90	.67	M24	.98	3.34	1.77	
MAS 403 BT 45°	20 143 025 2302	30	.43	.27	M12	.49	1.69	.90	45°
	20 143 025 2402	40	.59	.39	M16	.67	2.36	1.37	
	20 143 025 2452	45	.75	.55	M20	.82	2.75	1.57	
	20 143 025 2502	50	.90	.67	M24	.98	3.34	1.77	

HSK



REF.	CODE 1	α	CODE 2
HSK-A40	10 150 11 0 1000	± 1°	38 20 19 008001
HSK-A50	10 150 11 0 1400		38 20 19 010001
HSK-A63	10 150 11 0 1600		38 20 19 012001
HSK-A80	10 150 11 0 1800		38 20 19 014001
HSK-A100	10 150 11 0 2200		38 20 19 016001

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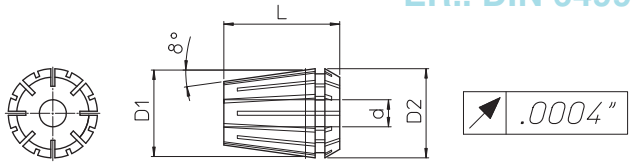
ER.. DIN 6499-B



REF.	d range (inch)	d range (metric)	D_1	D_2	L
ER 11	**? ~ ?**	0.5 ~ 7	.433	.452	.708
ER 16	1/64 ~ 3/8	0.5 ~ 10	.630	.669	1.083
ER 20	3/64 ~ 1/2	1 ~ 13	.787	.826	1.24
ER 25	1/32 ~ 5/8	1 ~ 16	.984	1.024	1.339
ER 32	5/64 ~ 3/4	2 ~ 20	1.260	1.299	1.575
ER 40	1/8 ~ 1.0	3 ~ 26	1.575	1.614	1.811

d range (inch)	d range (metric)	ER11	ER16	ER20	ER25	ER32	ER40
.0394 - .0197	1 - 0.5	49 60 8 0111010	49 60 8 0116010	-	-	-	-
.0590 - .0394	1.5 - 1	49 60 8 0111015	49 60 8 0116015	-	-	-	-
.0787 - .0394	2 - 1	-	-	49 60 8 0120020	49 60 8 0125020	-	-
.0787 - .0590	2 - 1.5	49 60 8 0111020	49 60 8 0116021	-	-	-	-
.0984 - .0787	2.5 - 2	49 60 8 0111025	49 60 8 0116025	-	-	-	-
.1181 - .0787	3 - 2		49 60 8 0116030	49 60 8 0120030	49 60 8 0125030	49 60 8 0132030	-
.1181 - .0984	3 - 2.5	49 60 8 0111030	-	-	-	-	-
.1377 - .1181	3.5 - 3	49 60 8 0111035	-	-	-	-	-
.1575 - .1181	4 - 3		49 60 8 0116040	49 60 8 0120040	49 60 8 0125040	49 60 8 0132040	49 60 8 0140040
.1575 - .1377	4 - 3.5	49 60 8 0111040	-	-	-	-	-
.1777 - .1575	4.5 - 4	49 60 8 0111045	-	-	-	-	-
.1969 - .1575	5 - 4		49 60 8 0116050	49 60 8 0120050	49 60 8 0125050	49 60 8 0132050	49 60 8 0140050
.1969 - .1777	5 - 4.5	49 60 8 0111050	-	-	-	-	-
.2165 - .1969	5.5 - 5	49 60 8 0111055	-	-	-	-	-
.2362 - .1969	6 - 5		49 60 8 0116060	49 60 8 0120060	49 60 8 0125060	49 60 8 0132060	49 60 8 0140060
.2362 - .2165	6 - 5.5	49 60 8 0111060	-	-	-	-	-
.2559 - .2362	6.5 - 6	49 60 8 0111065	-	-	-	-	-
.2756 - .2362	7 - 6		49 60 8 0116070	49 60 8 0120070	49 60 8 0125070	49 60 8 0132070	49 60 8 0140070
.2756 - .2559	7 - 6.5	49 60 8 0111070	-	-	-	-	-
.315 - .2756	8 - 7	-	49 60 8 0116080	49 60 8 0120080	49 60 8 0125080	49 60 8 0132080	49 60 8 0140080
.3543 - .315	9 - 8	-	49 60 8 0116090	49 60 8 0120090	49 60 8 0125090	49 60 8 0132090	49 60 8 0140090
.3937 - .3543	10 - 9	-	49 60 8 0116100	49 60 8 0120100	49 60 8 0125100	49 60 8 0132100	49 60 8 0140100
.4331 - .3937	11 - 10	-	-	49 60 8 0120110	49 60 8 0125110	49 60 8 0132110	49 60 8 0140110
.4724 - .4331	12 - 11	-	-	49 60 8 0120120	49 60 8 0125120	49 60 8 0132120	49 60 8 0140120
.5118 - .4724	13 - 12	-	-	49 60 8 0120130	49 60 8 0125130	49 60 8 0132130	49 60 8 0140130
.5512 - .5118	14 - 13	-	-	-	49 60 8 0125140	49 60 8 0132140	49 60 8 0140140
.5906 - .5512	15 - 14	-	-	-	49 60 8 0125150	49 60 8 0132150	49 60 8 0140150
.6299 - .5906	16 - 15	-	-	-	49 60 8 0125160	49 60 8 0132160	49 60 8 0140160
.6693 - .6299	17 - 16	-	-	-	-	49 60 8 0132170	49 60 8 0140170
.7087 - .6693	18 - 17	-	-	-	-	49 60 8 0132180	49 60 8 0140180
.748 - .7087	19 - 18	-	-	-	-	49 60 8 0132190	49 60 8 0140190
.7874 - .748	20 - 19	-	-	-	-	49 60 8 0132200	49 60 8 0140200
.8268 - .7874	21 - 20	-	-	-	-	-	49 60 8 0140210
.8661 - .8268	22 - 21	-	-	-	-	-	49 60 8 0140220
.9055 - .8661	23 - 22	-	-	-	-	-	49 60 8 0140230
.9449 - .9055	24 - 23	-	-	-	-	-	49 60 8 0140240
.9843 - .9449	25 - 24	-	-	-	-	-	49 60 8 0140250
1.0236 - .9843	26 - 25	-	-	-	-	-	49 60 8 0140260

SET ER	REF.	Ø (metric)	CODE
	**SET ER11/13**	0.5 ~ 7	49 60 8 0111000
	SET ER16/10	0.5 ~ 10	49 60 8 0116000
	SET ER20/12	1 ~ 13	49 60 8 0120000
	SET ER25/15	1 ~ 16	49 60 8 0125000
	SET ER32/18	2 ~ 20	49 60 8 0132000
	SET ER40/23	3 ~ 26	49 60 8 0140000

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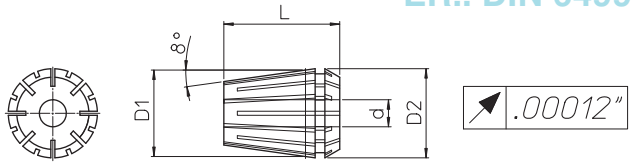
ER.. DIN 6499-B



REF.	d range (inch)	d range (metric)	D_1	D_2	L
ER 16.UP	1/64 ~ 3/8	0.5 ~ 10	.630	.669	1.083
ER 25.UP	1/32 ~ 5/8	1 ~ 16	.984	1.024	1.339
ER 32.UP	5/64 ~ 3/4	2 ~ 20	1.260	1.299	1.575
ER 40.UP	9/64 ~ 1	3 ~ 26	1.575	1.614	1.811

d range (inch)	d range (metric)		ER16	ER25	ER32	ER40
.0394 - .0197	1 - 0.5		49 60 8 0016010	-	-	-
.0590 - .0394	1.5 - 1	•	49 60 8 0016015	-	-	-
.0787 - .0590	2 - 1.5		49 60 8 0016020	49 60 8 0025020	-	-
.0984 - .0787	2.5 - 2	•	49 60 8 0016025	49 60 8 0025025	49 60 8 0032025	-
.1181 - .0984	3 - 2.5		49 60 8 0016030	49 60 8 0025030	49 60 8 0032030	-
.1377 - .1181	3.5 - 3	•	49 60 8 0016035	49 60 8 0025035	49 60 8 0032035	-
.1575 - .1378	4 - 3.5		49 60 8 0016040	49 60 8 0025040	49 60 8 0032040	49 60 8 0040040
.1772 - .1575	4.5 - 4	•	49 60 8 0016045	49 60 8 0025045	49 60 8 0032045	49 60 8 0040045
.1969 - .1772	5 - 4.5		49 60 8 0016050	49 60 8 0025050	49 60 8 0032050	49 60 8 0040050
.2165 - .1969	5.5 - 5	•	49 60 8 0016055	49 60 8 0025055	49 60 8 0032055	49 60 8 0040055
.2362 - .2165	6 - 5.5		49 60 8 0016060	49 60 8 0025060	49 60 8 0032060	49 60 8 0040060
.2559 - .2362	6.5 - 6	•	49 60 8 0016065	49 60 8 0025065	49 60 8 0032065	49 60 8 0040065
.2756 - .2559	7 - 6.5		49 60 8 0016070	49 60 8 0025070	49 60 8 0032070	49 60 8 0040070
.2953 - .2756	7.5 - 7	•	49 60 8 0016075	49 60 8 0025075	49 60 8 0032075	49 60 8 0040075
.3150 - .2953	8 - 7.5		49 60 8 0016080	49 60 8 0025080	49 60 8 0032080	49 60 8 0040080
.3346 - .3150	8.5 - 8	•	49 60 8 0016085	49 60 8 0025085	49 60 8 0032085	49 60 8 0040085
.3543 - .3346	9 - 8.5		49 60 8 0016090	49 60 8 0025090	49 60 8 0032090	49 60 8 0040090
.3740 - .3543	9.5 - 9	•	49 60 8 0016095	49 60 8 0025095	49 60 8 0032095	49 60 8 0040095
.3937 - .3740	10 - 9.5		49 60 8 0016100	49 60 8 0025100	49 60 8 0032100	49 60 8 0040100
.4134 - .3937	10.5 - 10	•	-	49 60 8 0025105	49 60 8 0032105	49 60 8 0040105
.4331 - .4134	11 - 10.5		-	49 60 8 0025110	49 60 8 0032110	49 60 8 0040110
.4528 - .4331	11.5 - 11	•	-	49 60 8 0025115	49 60 8 0032115	49 60 8 0040115
.4724 - .4528	12 - 11.5		-	49 60 8 0025120	49 60 8 0032120	49 60 8 0040120
.4921 - .4724	12.5 - 12	•	-	49 60 8 0025125	49 60 8 0032125	49 60 8 0040125
.5118 - .4921	13 - 12.5		-	49 60 8 0025130	49 60 8 0032130	49 60 8 0040130
.5315 - .5118	13.5 - 13	•	-	49 60 8 0025135	49 60 8 0032135	49 60 8 0040135
.5512 - .5315	14 - 13.5		-	49 60 8 0025140	49 60 8 0032140	49 60 8 0040140
.5709 - .5512	14.5 - 14	•	-	49 60 8 0025145	49 60 8 0032145	49 60 8 0040145
.5906 - .5709	15 - 14.5		-	49 60 8 0025150	49 60 8 0032150	49 60 8 0040150
.6102 - .5906	15.5 - 15	•	-	49 60 8 0025155	49 60 8 0032155	49 60 8 0040155
.6299 - .6102	16 - 15.5		-	49 60 8 0025160	49 60 8 0032160	49 60 8 0040160
.6496 - .6299	16.5 - 16	•	-	-	49 60 8 0032165	49 60 8 0040165
.6693 - .6496	17 - 16.5		-	-	49 60 8 0032170	49 60 8 0040170
.6890 - .6693	17.5 - 17	•	-	-	49 60 8 0032175	49 60 8 0040175
.7087 - .6890	18 - 17.5		-	-	49 60 8 0032180	49 60 8 0040180
.7283 - .7087	18.5 - 18	•	-	-	49 60 8 0032185	49 60 8 0040185
.7480 - .7283	19 - 18.5		-	-	49 60 8 0032190	49 60 8 0040190
.7677 - .7480	19.5 - 19	•	-	-	49 60 8 0032195	49 60 8 0040195
.7874 - .7677	20 - 19.5		-	-	49 60 8 0032200	49 60 8 0040200
.8071 - .7874	20.5 - 20	•	-	-	-	49 60 8 0040205
.8268 - .8071	21 - 20.5		-	-	-	49 60 8 0040210
.8465 - .8268	21.5 - 21	•	-	-	-	49 60 8 0040215
.8661 - .8465	22 - 21.5		-	-	-	49 60 8 0040220
.8858 - .8661	22.5 - 22	•	-	-	-	49 60 8 0040225
.9055 - .8858	23 - 22.5		-	-	-	49 60 8 0040230
.9252 - .9055	23.5 - 23	•	-	-	-	49 60 8 0040235
.9449 - .9252	24 - 23.5		-	-	-	49 60 8 0040240
.9646 - .9449	24.5 - 24	•	-	-	-	49 60 8 0040245
.9843 - .9646	25 - 24.5		-	-	-	49 60 8 0040250
1.0039 - .9843	25.5 - 25	•	-	-	-	49 60 8 0040255
1.0236 - 1.0039	26 - 25.5		-	-	-	49 60 8 0040260

• **On request** • **Auf Anfrage** • **A petición** • **Sur demande** • **Fornibili su richiesta**

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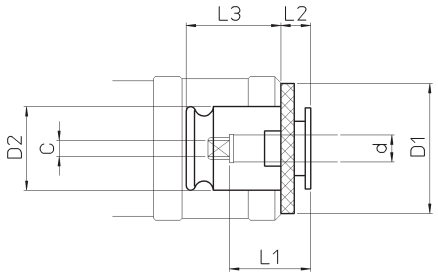
BFC



REF.	CODE	(d Ø x c□)	DIN 371	DIN 374	DIN 376	D_1	D_2	L_1	L_2	L_3
BFC1 (M3 ~ 12)	49 50 6 1035027	3.5 x 2.7	M3	M5	M5	1.18	.75	.67	.27	.84
	49 50 6 1045034	4.5 x 3.4	M4	M6	M6					
	49 50 6 1055043	5.5 x 4.3	-	M7	M7					
	49 50 6 1060049	6 x 4.9	M5	M8	M8					
			M6							
	49 50 6 1070055	7 x 5.5	-	M10	M10					
	49 50 6 1090070	9 x 7	-	M12	M12					
BFC2 (M6 ~ 20)	49 50 6 2060049	6 x 4.9	M5	M8	M8	1.89	1.22	1.18	.43	1.38
			M6							
	49 50 6 2070055	7 x 5.5	-	M10	M10					
	49 50 6 2090070	9 x 7	-	M12	M12					
	49 50 6 2110090	11 x 9	-	M14	M14					
	49 50 6 2120090	12 x 9	-	M16	M16					
	49 50 6 2140110	14 x 11	-	M18	M18					
	49 50 6 2160120	16 x 12	-	M20	M20					
BFC3 (M14 ~ 33)	49 50 6 3110090	11 x 9	-	M14	M14	2.76	1.89	1.73	.55	2.18
	49 50 6 3120090	12 x 9	-	M16	M16					
	49 50 6 3140110	14 x 11	-	M18	M18					
	49 50 6 3160120	16 x 12	-	M20	M20					
	49 50 6 3180145	18 x 14.5 -	-	M22	M22					
			M24	M24						
	49 50 6 3200160	20 x 16	-	M27	M27					
	49 50 6 3220180	22 x 18	-	M30	M30					
	49 50 6 3250200	25 x 20	-	M33	M33					

On request | **Auf Anfrage** | **A petición** | **Sur demande** | **Fornibili su richiesta**

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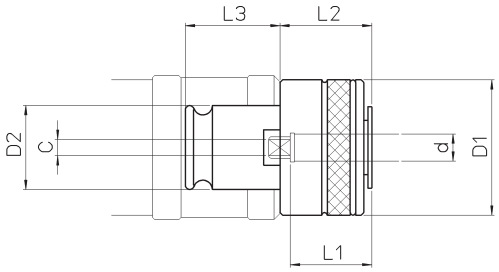
BFS



REF.	CODE	(dØ x c ⍁)	DIN 371	DIN 374	DIN 376	D1	D2	L1	L2	L3
BFS1 (M3 ~ 12)	49 50 7 1035027	3.5 x 2.7	M3	M5	M5	1.26	.75	.67	.98	.84
	49 50 7 1040030	4 x 3	M3.5	-	-					
	49 50 7 1045034	4.5 x 3.4	M4	M6	M6					
	49 50 7 1055043	5.5 x 4.3	-	M7	M7					
	49 50 7 1060049	6 x 4.9	M5	M8	M8					
			M6							
	49 50 7 1070055	7 x 5.5	-	M10	M10					
	49 50 7 1080062	8 x 6.2	M8	-	-					
	49 50 7 1090070	9 x 7	-	M12	M12					
	49 50 7 1100080	10 x 8	M10	-	-					
BFS2 (M6 ~ 20)	49 50 7 2060049	6 x 4.9	M5	M8	M8	1.97	1.22	1.18	1.34	1.38
			M6							
	49 50 7 2070055	7 x 5.5	-	M10	M10					
	49 50 7 2080062	8 x 6.2	M8	-	-					
	49 50 7 2090070	9 x 7	-	M12	M12					
	49 50 7 2100080	10 x 8	M10	-	-					
	49 50 7 2110090	11 x 9	-	M14	M14					
	49 50 7 2120090	12 x 9	-	M16	M16					
	49 50 7 2140110	14 x 11	-	M18	M18					
	49 50 7 2160120	16 x 12	-	M20	M20					
BFS3 (M14 ~ 33)	49 50 7 3110090	11 x 9	-	M14	M14	2.83	1.89	1.73	1.77	2.18
	49 50 7 3120090	12 x 9	-	M16	M16					
	49 50 7 3140110	14 x 11	-	M18	M18					
	49 50 7 3160120	16 x 12	-	M20	M20					
	49 50 7 3180145	18 x 14.5	-	M22	M22					
			-	M24	M24					
	49 50 7 3200160	20 x 16	-	M27	M27					
	49 50 7 3220180	22 x 18	-	M30	M30					
	49 50 7 3250200	25 x 20	-	M33	M33					

On request | **Auf Anfrage** | **A petición** | **Sur demande** | **Fornibili su richiesta**

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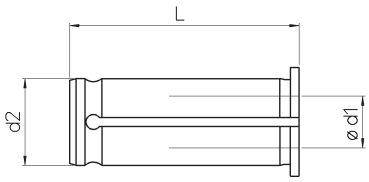
RC inch



FORCE (d_2)	REF.	CODE	d_1	L
1/2	**RC 1/2.3/16**	49 70 8 0013047	3/16	1.73
	RC 1/2.1/4	49 70 8 0013063	1/4	
	RC 1/2.5/16	49 70 8 0013079	5/16	
	RC 1/2.3/8	49 70 8 0013095	3/8	
3/4	**RC 3/4.1/4**	49 70 8 0019063	1/4	1.97
	RC 3/4.5/16	49 70 8 0019079	5/16	
	RC 3/4.3/8	49 70 8 0019095	3/8	
	RC 3/4.7/16	49 70 8 0019111	7/16	
	RC 3/4.1/2	49 70 8 0019127	1/2	
	RC 3/4.5/8	49 70 8 0019158	5/8	
1-1/4	**RC 1-1/4.1/4**	49 70 8 0031063	1/4	2.48
	RC 1-1/4.3/8	49 70 8 0031095	3/8	
	RC 1-1/4.1/2	49 70 8 0031127	1/2	
	RC 1-1/4.5/8	49 70 8 0031158	5/8	
	RC 1-1/4.3/4	49 70 8 0031190	3/4	
	RC 1-1/4.1	49 70 8 0031254	1	

Reductions | **Reduzierungen** | **Reducciones** | **Réductions** | **Riduzione**

D..

fig.1

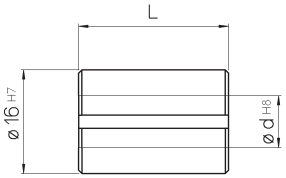
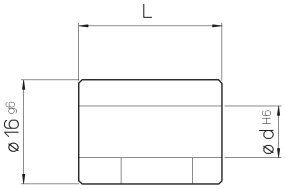
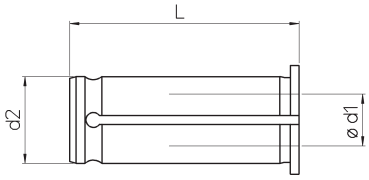


fig.2



REF.	CODE	L	Ø d	fig.
D04.16	20 056 01 16 04 0	.90	4	**1**
D08.16	20 056 01 16 08 2	.86	8	**2**
D10.16	20 056 01 16 10 0	.90	10	**1**
D12.16	20 056 01 16 12 0		12	

RC metric



FORCE (d_2)	REF.	CODE	d_1	L
12	**RC 12.03**	49 70 8 0012030	3	44
	RC 12.04	49 70 8 0012040	4	
	RC 12.06	49 70 8 0012060	6	
	RC 12.08	49 70 8 0012080	8	
	RC 12.10	49 70 8 0012100	10	
20	**RC 20.03**	49 70 8 0020030	3	50
	RC 20.04	49 70 8 0020040	4	
	RC 20.05	49 70 8 0020050	5	
	RC 20.06	49 70 8 0020060	6	
	RC 20.08	49 70 8 0020080	8	
	RC 20.10	49 70 8 0020100	10	
	RC 20.12	49 70 8 0020120	12	
	RC 20.14	49 70 8 0020140	14	
	RC 20.16	49 70 8 0020160	16	
32	**RC 32.03**	49 70 8 0032030	3	63
	RC 32.04	49 70 8 0032040	4	
	RC 32.05	49 70 8 0032050	5	
	RC 32.06	49 70 8 0032060	6	
	RC 32.08	49 70 8 0032080	8	
	RC 32.10	49 70 8 0032100	10	
	RC 32.12	49 70 8 0032120	12	
	RC 32.14	49 70 8 0032140	14	
	RC 32.16	49 70 8 0032160	16	
	RC 32.18	49 70 8 0032180	18	
	RC 32.20	49 70 8 0032200	20	
	RC 32.25	49 70 8 0032250	25	

RC 12 SEALED bushes supplied upon request | **Auf Anfrage RC 12 Dichtbuchsen lieferbar** | **Suministrables bajo pedido casquillos RC 12... ESTANCOS** | **Disponibles sur demande douilles RC12 étanches** | **Fornibili su richiesta bussole RC 12. . . a TENUTA**

GH - VT

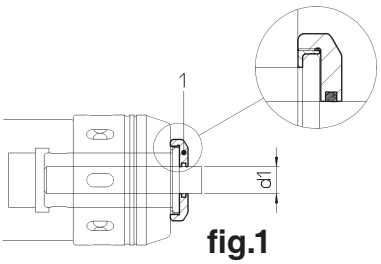


fig.1

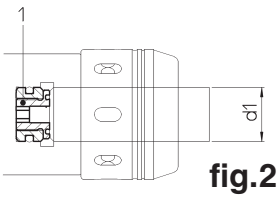


fig.2

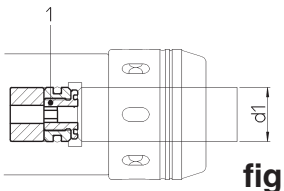
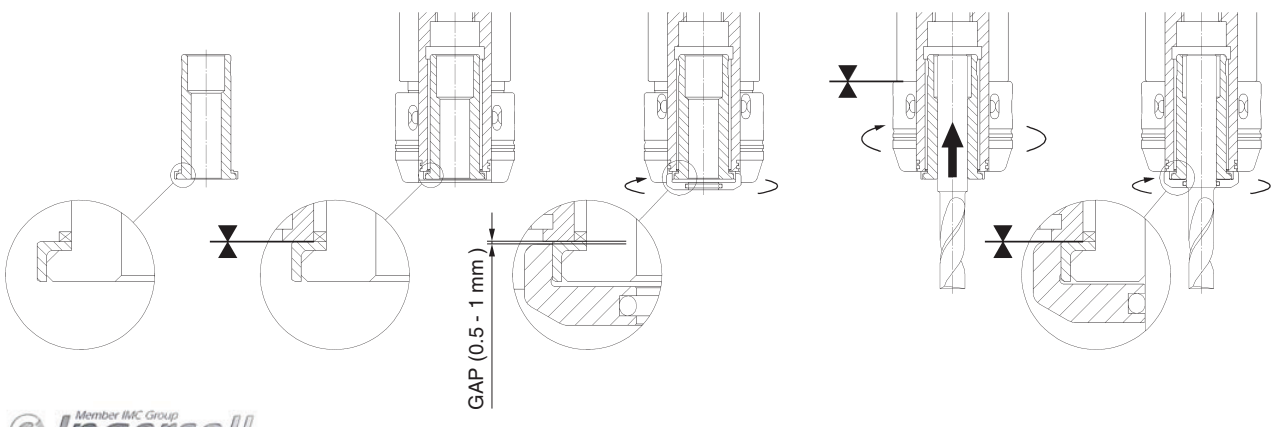


fig.3

fig.	REF inch	CODE 1	d1
1	**GH 3/4 MONO**force **3/4 CAT 40-50 MHD'50**	38 20 42 019063	1/4
		38 20 42 019079	5/16
		38 20 42 019095	3/8
		38 20 42 019111	7/16
		38 20 42 019127	1/2
		38 20 42 019158	5/8
2	**VT 3/4.3/4 MONO**force **3/4 CAT 40-50**	38 20 42 019190	3/4
1	**GH 1-1/4 MONO**force **1-1/4 CAT 40-50 MHD'63**	38 20 42 031095	3/8
		38 20 42 031127	1/2
		38 20 42 031158	5/8
		38 20 42 031190	3/4
		38 20 42 031254	1
2	**VT 1-1/4.1-1/4 MONO**force **1-1/4 CAT 40-50**	38 20 42 031317	1–1/4

fig.	REF metric	CODE 1	d1
1	**GH 20 MONO**force **20 HSK63 / DIN/BT-40-50 MHD'50**	38 20 42 020061	6
		38 20 42 020081	8
		38 20 42 020101	10
		38 20 42 020121	12
		38 20 42 020141	14
		38 20 42 020161	16
2	**VT 20.20 MONO**force **20 DIN/BT-40-50 HSK63**	38 20 42 020201	20
1	**GH 32 MONO**force **32 DIN/BT-40-50 / HSK63 MHD'63**	38 20 42 032061	6
		38 20 42 032081	8
		38 20 42 032101	10
		38 20 42 032121	12
		38 20 42 032141	14
		38 20 42 032161	16
		38 20 42 032181	18
		38 20 42 032201	20
		38 20 42 032251	25
2	**VT 32.32 MONO**force **32 DIN/BT-40 HSK/63**	38 20 42 032321	32
3	**VT 32.32.100 MONO**force **32 DIN/BT-50**	38 20 42 032322	32

STEPS 1: **STEPS 2:** **STEPS 3:** **STEPS 4:** **STEPS 5:**



VCR

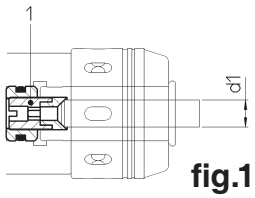


fig.1

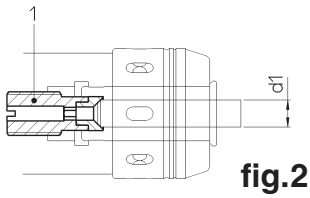
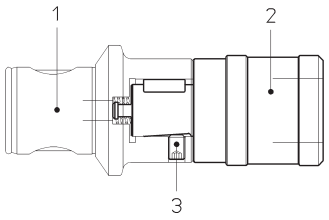


fig.2

fig.	REF metric	CODE 1	d1
1	**VCR 3/4 MONO**force **3/4 HSK63 MHD'50**	38 20 41 019069	1/4 ~ 7/16
		38 20 41 019129	1/2 ~ 3/4
1	**VCR 1-1/4 MONO**force **1-1/4 HSK63 MHD'63**	38 20 41 031099	3/8 ~ 1/2
		38 20 41 031159	5/8 ~ 3/4
		38 20 41 031259	1 ~ 1-1/4
2	**VCR 3/4 MONO**force **3/4 CAT40-50**	38 20 41 019063	1/4 ~ 7/16
		38 20 41 019127	1/2 ~ 3/4
2	**VCR 1-1/4 MONO**force **1-1/4 CAT40-50**	38 20 41 031095	3/8 ~ 1/2
		38 20 41 031158	5/8 ~ 3/4
		38 20 41 031254	1 ~ 1-1/4

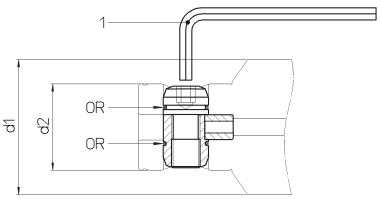
fig.	REF metric	CODE 1	d1
1	**VCR 20 MONO**force **20 HSK63 MHD'50**	38 20 41 020032	3 ~ 5
		38 20 41 020062	6 ~ 12
		38 20 41 020142	14 ~ 20
1	**VCR 32 MONO**force **32 HSK63 MHD'63**	38 20 41 032033	3 ~ 5
		38 20 41 032063	6 ~ 12
		38 20 41 032143	14 ~ 20
		38 20 41 032253	25 ~ 32
2	**VCR 20 MONO**force **20 DIN/BT-40-50**	38 20 41 020031	3 ~ 5
		38 20 41 020061	6 ~ 12
		38 20 41 020141	14 ~ 20
2	**VCR 32 MONO**force **32 DIN/BT-40**	38 20 41 032031	3 ~ 05
		38 20 41 032061	6 ~ 12
		38 20 41 032141	14 ~ 20
		38 20 41 032251	25 ~ 32
2	**VCR 32 MONO**force **32 DIN/BT-50**	38 20 41 032032	3 ~ 5
		38 20 41 032062	6 ~ 12
		38 20 41 032142	14 ~ 20
		38 20 41 032252	25 ~ 32

AM



REF.	REF. 1	CODE 1	REF. 2	CODE 2	CODE 3
AM 50/M3-12	RAM 50/M3-12	45 65 050 0010 0	WFLK 115B/A 308	49 50 9 0010312	10 023 1 060 008
AM 50/M8-20	RAM 50/M8-20	45 65 050 0020 0	WFLK 225B/A 308	49 50 9 0020820	10 023 1 080 012
AM 63/M3-12	RAM 63/M3-12	45 65 063 0010 0	WFLK 115B/A 308	49 50 9 0010312	10 023 1 060 008
AM 63/M8-20	RAM 63/M8-20	45 65 063 0020 0	WFLK 225B/A 308	49 50 9 0020820	10 023 1 080 012

SYSTEM MHD'



REF.	CODE	d_1	d_2	CODE 1	CODE OR
MHD' 16	38 17 25 001161	16	10	10 150 01 0 0250	-
MHD' 20	38 17 25 001201	20	13	10 150 01 0 0300	
MHD' 25	38 17 25 001251	25	16		
MHD' 32	38 17 25 001321	32	20	10 150 01 0 0400	10 125 4 007510
MHD' 40	38 17 25 001401	40	25	10 150 01 0 0500	10 125 4 010010
MHD' 50 (RD50/..)	38 17 25 001501	50	32	10 150 01 0 0600	10 125 4 013010
MHD' 50	38 17 25 001001				
MHD' 63 - 80	38 17 25 001002	63 - 80	42	10 150 01 0 0800	10 125 1 002075
MHD' 110 - 140	38 17 25 001003	110 - 140	76	10 150 01 0 1400	10 125 1 003112

TS

fig.1

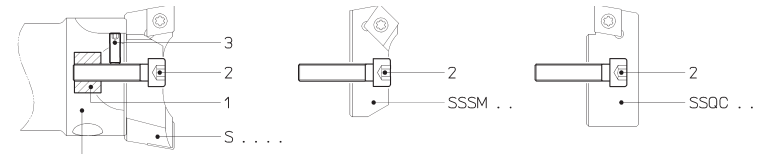


fig.2

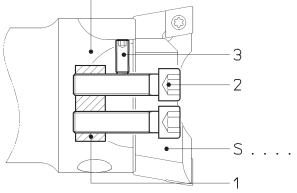
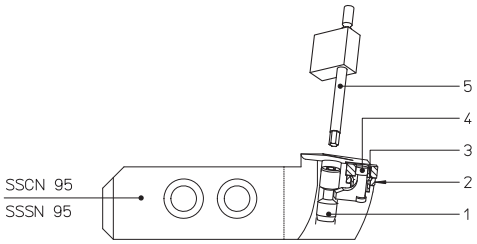


fig.	REF.	CODE 1	CODE 2	CODE 3
1	**TS 16/16**	20 143 011 0008	10 005 1 030 014	10 023 1 030 004
	TS 20/20	20 143 011 0009	10 005 1 040 015	10 023 1 030 005
	TS 25/25	20 143 011 0010	10 005 1 040 020	10 023 1 030 008
	TS 32/32	20 143 011 0011	10 005 1 050 025	10 023 1 040 012
	TS 40/40	20 143 011 0012	10 005 1 060 030	10 023 1 050 014
2	**TS 50/50**	20 143 011 0013	10 005 1 080 035	10 023 1 050 012
	TS 50/63	20 143 011 0014	10 005 1 100 040	10 023 1 060 016
	TS 63/63			
	TS 80/80	20 143 011 0015	10 005 1 120 045	10 023 1 080 025

SS . . 95



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SSCN 95	49 43 1 0070060	49 20 3 0004060	10 065 5 067 060	49 11 1 0000060	10 150 09 0 2500
SSSN 95		49 20 3 0004061			

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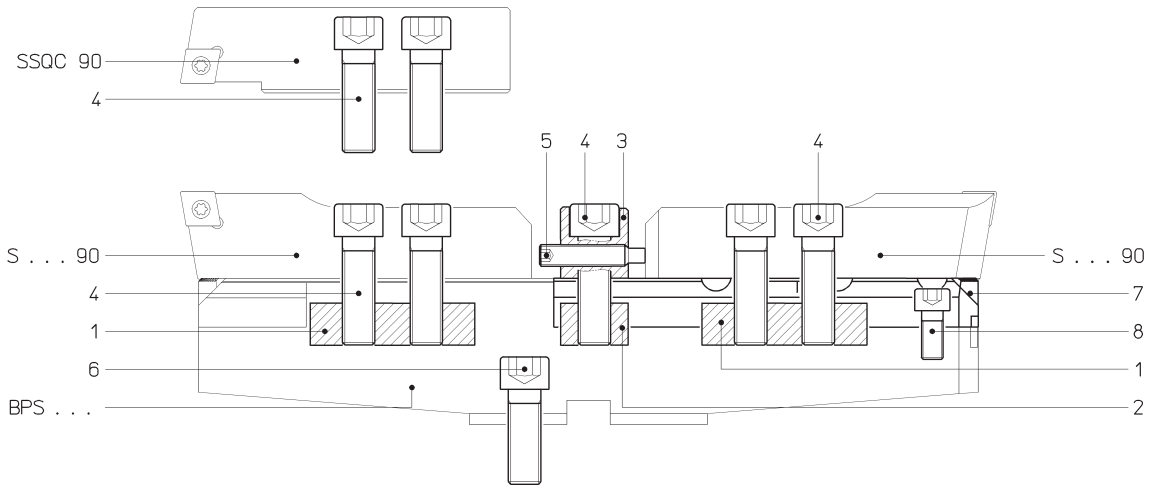
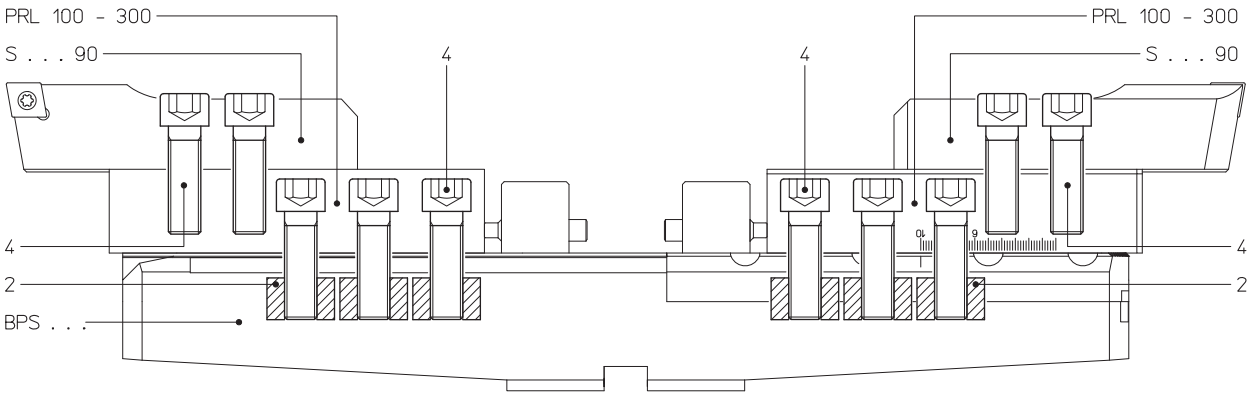
BPS



REF.	CODE 1	CODE 2	CODE 3	CODE 4
BPS 200-300-400 **BPS 500-600-700-800** **BPS 1000-1160-1600**	20 143 011 0017	20 143 011 0016	20 110 05 026 01	10 005 1 120 040

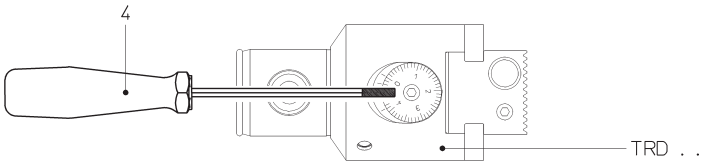
REF.	CODE 5	CODE 6	CODE 7	CODE 8
BPS 200-300	10 025 1 080 040	10 005 1 120 035	20 065 5 0157 01	10 005 1 080 025
BPS 400			20 065 5 0163 01	10 005 1 080 020
BPS 500-600-700-800		10 005 1 160 050		10 005 1 080 025
BPS 1000-1160-1600				10 005 1 080 030
BPS 1600		10 005 1 200 060		

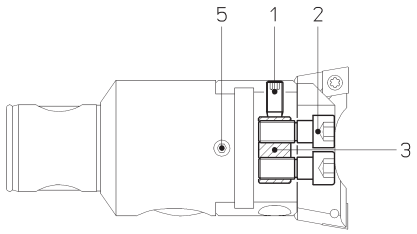
BPS . . . . + PRL 100 - 300



REF.	CODE 2	CODE 4
BPS 200-300-400 **BPS 500-600-700-800** **BPS 1000-1160-1600**	20 143 011 0016	10 005 1 120 040

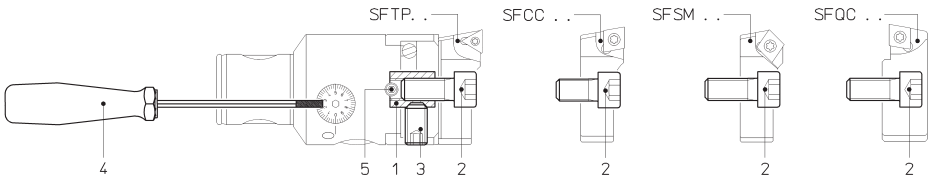
TRD





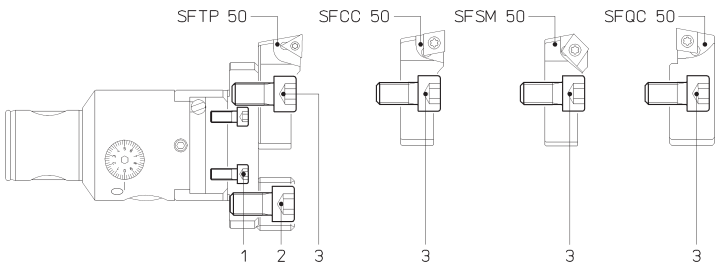
REF.	CODE 1	CODE 2	CODE 3	CODE 4	CODE 5
TRD 25	10 023 1 040 008	20 010 0 15 0411	20 143 011 0024	10 150 08 0 0200	10 023 1 040 005
TRD 32	10 023 1 050 010	20 010 0 15 0512	20 143 011 0023	10 150 08 0 0250	10 023 1 050 005
TRD 40	10 023 1 060 012	20 010 0 15 0616	20 143 017 0001	10 150 08 0 0300	10 023 1 060 006
TRD 50	10 023 1 060 014	20 010 0 15 0820	20 143 011 0021		10 023 1 060 008
TRD 63	10 023 1 060 016	20 010 0 15 1026	20 143 011 0026		
TRD 80	10 023 1 060 020	20 010 0 15 1230	20 143 011 0022		10 023 1 060 012

TRM



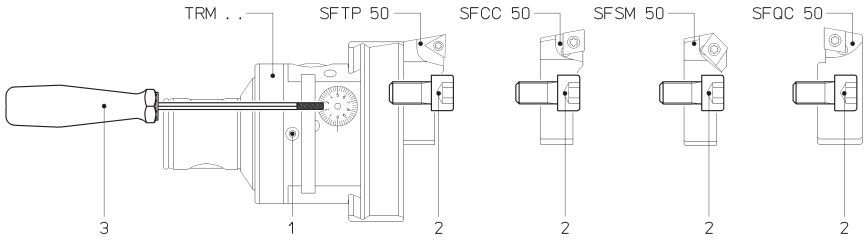
REF.	CODE 1	CODE 2	CODE 3	CODE 4	CODE 5
TRM 16	-	10 005 1 030 006	-	10 150 08 0 0150	20 010 0 19 0301
TRM 20		10 005 1 040 008			
TRM 25		10 005 1 050 010		10 150 08 0 0200	10 023 1 040 004
TRM 32		10 005 1 060 012			10 023 1 040 005
TRM 40		10 005 1 080 014		10 150 08 0 0250	10 023 1 050 006
TRM 50	20 104 10 150 02	10 005 1 100 025	10 023 1 100 016		10 023 1 050 008

TRM



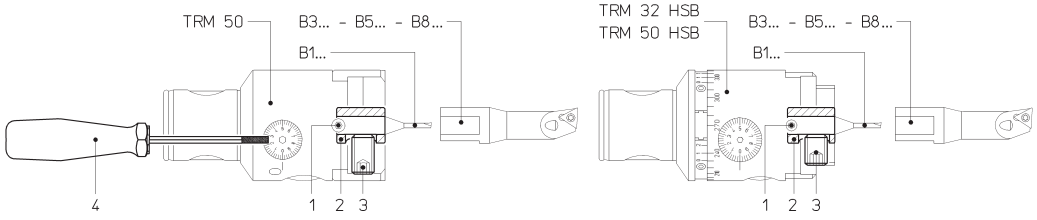
REF.	CODE 1	CODE 2	CODE 3
TRM 50	20 010 015 0501	10 005 1 100 020	10 005 1 100 025

TRM



REF.	CODE 1	CODE 2	CODE 3
TRM 63	10 025 1 060 010	10 005 1 100 025	10 150 08 0 0300
TRM 80	10 025 1 060 014		
TRM 125	10 025 1 060 022		

TRM



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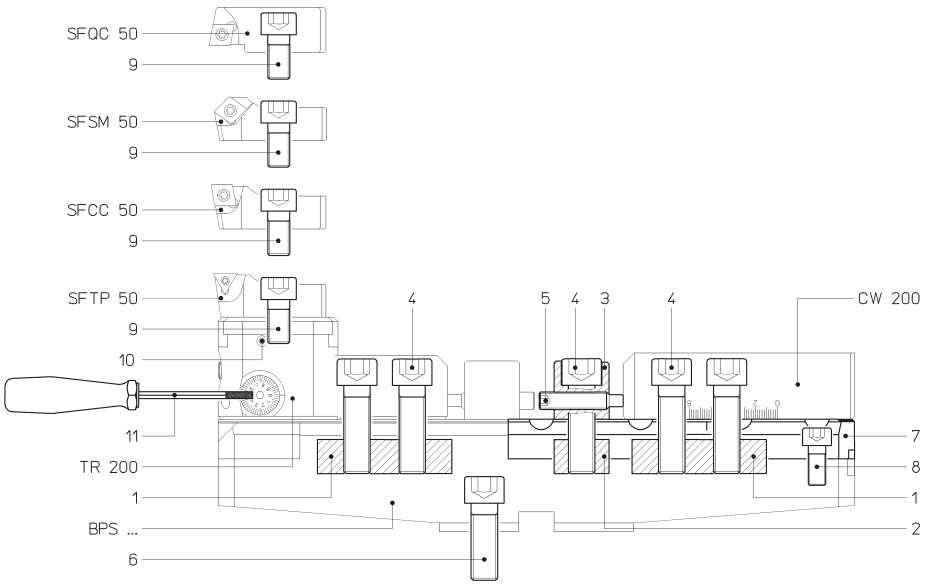
TRM 50	10 023 1 050 008	20 056 01 16 08 2	10 023 1 100 010	10 150 08 0 0250
TRM 32 HSB	10 023 1 040 005	-	10 023 1 050 008 10 023 1 050 012	10 150 08 0 0200
TRM 50 HSB	10 023 1 050 008	20 056 01 16 08 2	10 023 1 100 010	10 150 08 0 0250

BPS . . . .



REF.	CODE 1	CODE 2	CODE 3	CODE 4	CODE 5
BPS 200-300-400 **BPS 500-600-700-800** **BPS 1000-1160-1600**	20 143 011 0017	20 143 011 0016	20 110 05 026 01	10 005 1 120 040	10 025 1 080 040

REF.	CODE 6	CODE 7	CODE 8
BPS 200-300	10 005 1 120 035	20 065 5 0157 01	10 005 1 080 025
BPS 400		20 065 5 0163 01	10 005 1 080 020
BPS 500-600-700-800	10 005 1 160 050		10 005 1 080 025
BPS 1000-1160-1600			10 005 1 080 030
BPS 1600	10 005 1 200 060		

REF.	CODE 9	CODE 10	CODE 11
BPS 200-300-400 **BPS 500-600-700** **BPS 1000-1160-1600**	10 005 1 100 020	10 025 1 060 008	10 150 08 0 0300

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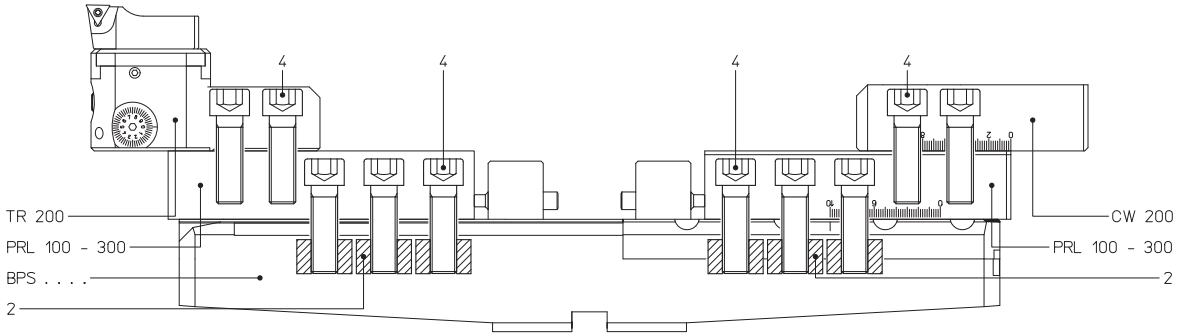
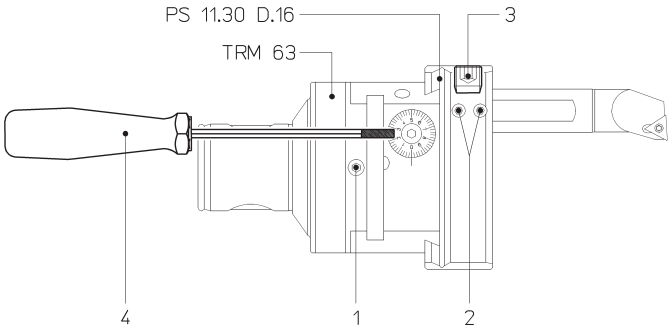
BPS . . . . + PRL 100 - 300



REF.	CODE 2	CODE 4
BPS 200-300-400 **BPS 500-600-700-800** **BPS 1000-1160-1600**	20 143 011 0016	10 005 1 120 040

TRM



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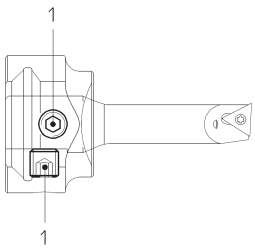
TRM 63	10 025 1 060 010	10 023 1 050 006	10023 1 100 010	10 150 08 0 0300

P 20.30



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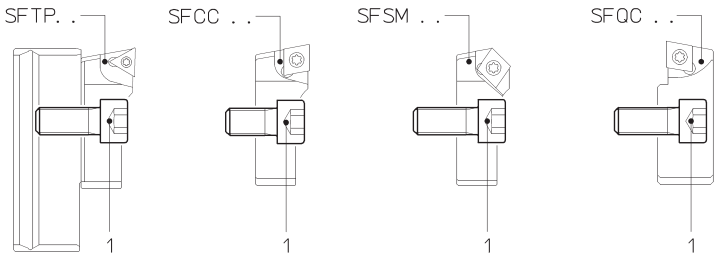
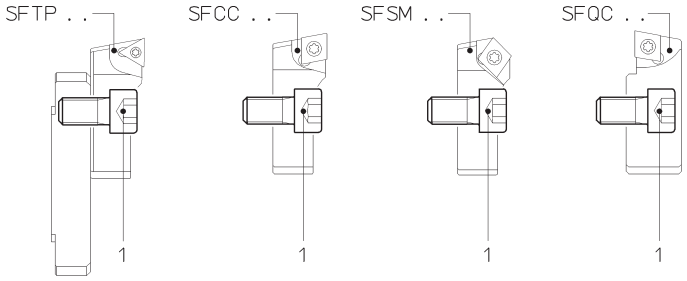
P20.30	10 025 1 080 008

PS..



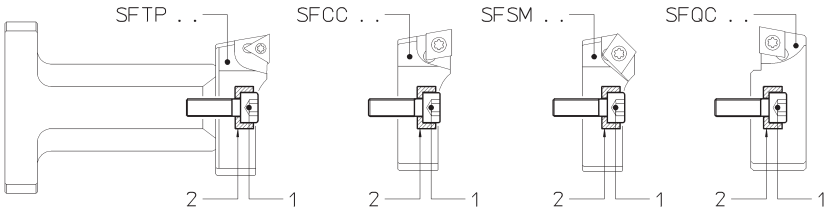
REF.	CODE 1
PS 11.30	10 005 1 100 018
PS 12.30	
PS 13.30	
PS 11.40	10 005 1 100 025
PS 12.40	
PS 13.40	
PS 14.40	

PS..



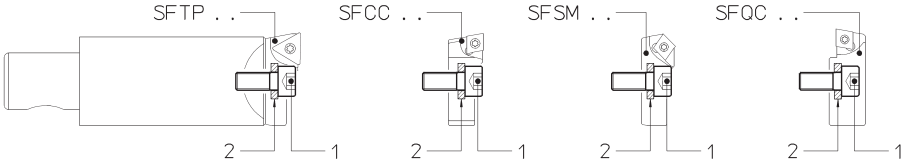
REF.	CODE 1
PS 31.24	10 005 1 100 020
PS 31.28	10 005 1 100 025
PS 32.28	
PS 33.28	

P 22.28



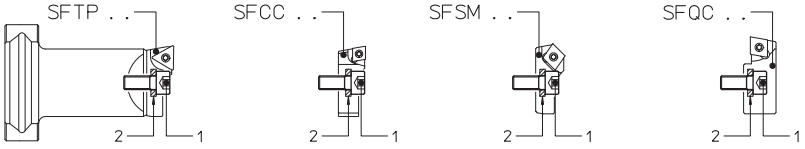
REF.	CODE 1	CODE 2
P22.28	10 005 1 060 020	20 104 06 070 01

P 25..



REF.	CODE 1	CODE 2
P25.63	10 005 1 050 012	10 080 01 0053 0
P25.105		

P..



REF.	CODE 1	CODE 2
P 02.30	10 005 1 050 012	10 080 01 0053 0
P 03.30		
P 04.30		
P 02.40	10 005 1 060 018	10 080 01 0064 0
P 03.40		
P 04.40		

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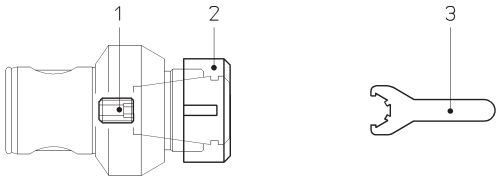
PE

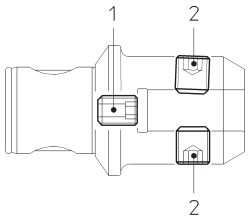
ER DIN 6499



REF.	CODE 1	CODE 2	CODE 3
PE 16 / ER11M	20 010 019 0403	10 045 1 01 11 00	10 150 10 0 1100
PE 20 / ER16M		10 045 1 01 16 00	10 150 10 0 1600
PE 25 / ER20M	20 010 019 0506	10 045 1 01 20 00	10 150 10 0 2000
PE 32 / ER25M	20 010 019 0608	10 045 1 01 25 00	10 150 10 0 2500
PE 40 / ER25	20 010 019 0808	10 045 1 03 25 00	10 150 10 0 2501
PE 50 / ER25			
PE 50 / ER32		10 045 1 03 32 00	10 150 10 0 3201
PE 63 / ER32	20 010 019 1014		
PE 63 / ER40	20 010 019 1214	10 045 1 03 40 00	10 150 10 0 4001

AW

DIN 1835 B-E



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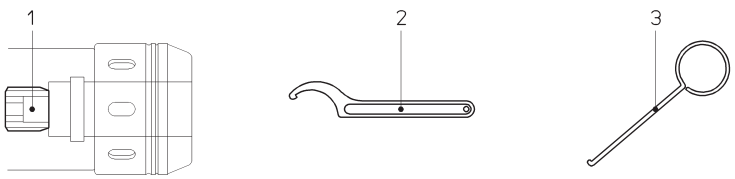
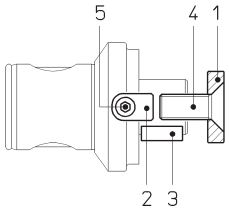
AW 50 1/4	20 010 019 0801	20 010 019 0601	**AW 50/6**	20 010 019 0808	20 010 019 0610
AW 50 3/8	20 010 019 0802	20 010 019 0901	**AW 50/8**		20 010 019 0810
AW 50 1/2		20 010 019 1101	**AW 50/10**	20 010 019 0809	20 010 019 1012
AW 50 5/8	20 010 019 1102	20 010 019 1401	**AW 50/12**		20 010 019 1216
AW 50 3/4		20 010 019 1581	**AW 50/14**		
AW 63 1/2	20 010 019 0802	20 010 019 1101	**AW 50/16**	20 010 019 1215	20 010 019 1416
AW 63 5/8	20 010 019 1102	20 010 019 1401	**AW 50/20**		20 010 019 1616
AW 63 1 - 1/4	20 010 019 1582	20 010 019 1901	**AW 50/25**	20 010 019 1615	20 010 019 1820
AW 63 1			**AW 63/16**	20 010 019 1215	20 010 019 1416
AW 63 1 - 1/4			**AW 63/20**		20 010 019 1616
AW 80 1 - 1/2	20 010 019 1902		**AW 63/25**	20 010 019 1615	20 010 019 1820
AW 80 2		20 010 019 2540	**AW 63/32**		20 010 019 2020
-	-	-	**AW 80/40**	20 010 019 2019	

FORCE



REF inch	CODE 1	CODE 2	CODE3	REF metric	CODE 1	CODE 2	CODE3
FORCE 1/2	20 010 019 0802	10 150 04 0 0028	20 127 1600 400	**FORCE 12**	20 010 019 1014	10 150 04 0 0028	20 127 1600 400
FORCE 3/4	20 010 019 1582	10 150 04 0 0050		**FORCE 20**	20 010 019 1615	10 150 04 0 0050	
FORCE 1-1/4		10 150 04 0 0075		**FORCE 32**		10 150 04 0 0075	

PF

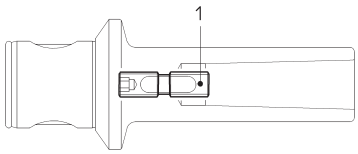


REF. inch	CODE 1	CODE 2	CODE 3	CODE 4
PF 50 3/4	20 108 02 95 001	20 110 18 079 01	20 110 18 035 01	10 005 1 040 010
PF 50 1	20 108 02 12 001	20 110 18 095 01	20 110 18 006 01	10 005 1 050 012
PF 63 3/4	20 108 02 95 001	20 110 18 079 01	20 110 18 035 01	10 005 1 040 010
PF 63 1	20 108 02 12 001	20 110 18 095 01	20 110 18 006 01	10 005 1 050 012
PF 63 1 - 1/4	20 108 02 16 001	20 110 18 124 01	20 110 18 007 02	10 005 1 060 014
PF 80 1 - 1/2	20 108 02 19 001	20 110 18 159 01	20 110 18 009 03	10 005 1 060 018
PF 80 2	20 108 02 25 001	20 110 18 187 01	-	10 005 1 060 025

REF. metric	CODE 1	CODE 2	CODE 3	CODE 4	CODE 5
PF 50/16 PF 40/16	20 101 0085 01 0	20 110 18 008 01	10 100 1 040 014	10 010 1 080 025	10 005 1 030 008
PF 50/22 PF 40/22	20 101 0105 03 0	20 110 18 010 02	10 100 1 060 016	10 010 1 100 025	10 005 1 040 010
PF 50/27	20 101 0125 03 0	20 110 18 012 02	10 100 1 070 018	10 010 1 120 030	10 005 1 050 012
PF 50/32	20 101 0165 02 0	20 110 18 014 02	10 100 1 080 020	10 010 1 160 035	10 005 1 060 016
PF 63/27	20 101 0125 03 0	20 110 18 012 02	10 100 1 070 018	10 010 1 120 030	10 005 1 050 012
PF 63/32	20 101 0165 02 0	20 110 18 014 02	10 100 1 080 020	10 010 1 160 035	10 005 1 060 016
PF 80/32					
PF 80/40	20 101 0210 01 0	20 110 18 016 03	10 100 1 100 025	10 010 1 200 045	10 005 1 060 018
PF 80/50	20 101 0260 33 0	20 110 18 018 02	10 100 1 120 028	10 010 1 240 050	10 005 1 060 020
PF 80/60	-	20 110 18 025 10	10 100 1 140 036	-	10 005 1 120 025
PF 110/40	20 101 0210 01 0	20 110 18 016 03	10 100 1 100 025	10 010 1 200 045	10 005 1 060 018
PF 110/60	-	20 110 18 025 10	10 100 1 140 036	-	10 005 1 120 025
PF 140/40	20 101 0210 01 0	20 110 18 016 03	10 100 1 100 025	10 010 1 200 045	10 005 1 060 018
PF 140/60	-	20 110 18 025 10	10 100 1 140 036	-	10 005 1 120 025

CM

DIN 228 A



REF.	CODE 1
CM 50/1	20 108 15 06 003
CM 50/2	20 108 15 10 002
CM 50/3	20 108 15 12 004
CM 63/3	
CM 63/4	20 108 15 16 001

TECHNICAL DATA | **TECHNISCHE DATEN** | **DATOS TÉCNICOS** | **DONNÉES TECHNIQUES** | **DATI TECNICI**

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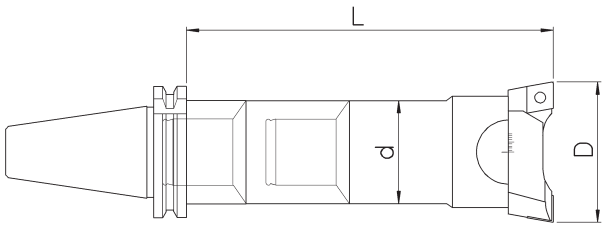
Member IMC Group Ingersoll Cutting Tools

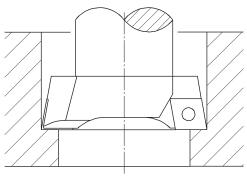
MODULHARD'ANDREA

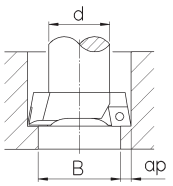
Recommended cutting conditions for roughing operations with Double-bit heads TS

material	*boring bar dimensions*	*working conditions*	*cutting speed Vc= sfmm/min.* *diameter*			*feed f= ipr (twin cutters)* *insert radius*		
			D < 1.50	D=1.50~4.72	D > 4.72	R = .008	R = .016	R = .31
carbon steel HB ≤ 200	L / d = 2.5	*good*	393 - 590	460 - 655	525 - 820	-	.008 - .016	.012 - .020
	L / d = 4	*normal*	328 - 525	393 - 590	460 - 655	-	.008 - .016	.012 - .020
	L / d = 6.3	difficult	230 - 328	230 - 328	230 - 328	.006 - .012	.008 - .016	-
carbon steel HB > 200	L / d = 2.5	*good*	328 - 525	393 - 590	460 - 655	-	.008 - .016	.012 - .020
	L / d = 4	*normal*	260 - 460	328 - 525	393 - 590	-	.008 - .016	.012 - .020
	L / d = 6.3	*difficult*	196 - 295	230 - 328	230 - 328	.006 - .012	.008 - .016	-
stainless steel AISI 304 - 316	L / d = 2.5	*good*	260 - 360	295 - 393	328 - 460	-	.008 - .016	.012 - .020
	L / d = 4	*normal*	230 - 328	260 - 360	295 - 393	-	.008 - .016	.012 - .020
	L / d = 6.3	*difficult*	196 - 295	196 - 295	196 - 295	.006 - .012	.008 - .016	-
cast iron	L / d = 2.5	*good*	295 - 393	328 - 460	393 - 525	-	.008 - .016	.012 - .020
	L / d = 4	*normal*	230 - 328	295 - 393	328 - 460	-	.008 - .016	.012 - .020
	L / d = 6.3	*difficult*	196 - 295	196 - 295	196 - 295	.006 - .012	.008 - .016	-
aluminium	L / d = 2.5	good	525 - 820	655 - 984	820 - 1148	-	.012 - .020	.016 - .024
	L / d = 4	*normal*	460 - 655	525 - 820	820 - 984	-	.012 - .020	.016 - .024
	L / d = 6.3	*difficult*	328 - 492	328 - 492	328 - 492	.006 - .012	.012 - .020	-

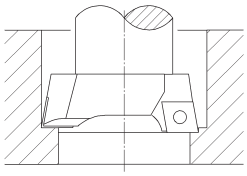


Twin cutters at the same cutting diameter



cutting depth ap = inch	*working range* Ø = inch	*max. cutting depth* *steel*	*cast iron, aluminium*
	.71 - 1.10	.06 - .07	.07 - .09
	1.10 - 1.97	.07 - .12	.09 - .14
	1.97 - 2.67	.12 - .15	.14 - .19
	2.67 - 7.87	.15 - .19	.19 - .27
	7.87 - 19.68	.19 - .23	.23 - .31

Twin cutters at different cutting diameters



<u>ATTENTION:</u> For boring operations at different diameters, reduce to a half the feed indicated on the above table.

It's advisable to start with B hole ≥ the boring bar diameter d.

MODULHARD'ANDREA

Recommended cutting conditions for boring operations with Double-bit Testarossa TRD

material	boring bar dimensions	working conditions	cutting speed Vc= sfm	feed f= ipr		quality insert		cutting depth			
				insert radius		finishing	roughing	finishing	roughing		
				R = .008	R = .016				ø1.10 ø1.81	ø1.81 ø2.95	ø2.95 ø4.72
carbon steel HB ≤ 200	L / d = 2.5	good	525 - 820	.004 - .008	.004 - .008	PV3010	TT8125	.008 - .012	.06	.08	.09
	L / d = 4	normal	393 - 590	.004 - .008	.004 - .008	CT3000					
	L / d = 6.3	difficult	230 - 328	*.004 - .006	.004 - .008	TT8115	TT5100				
carbon steel HB ≤ 200	L / d = 2.5	good	460 - 655	.004 - .008	.004 - .008	PV3010	TT8115	.008 - .012	.06	.08	.09
	L / d = 4	normal	328 - 525	.004 - .008	.004 - .008	CT3000	TT8125				
	L / d = 6.3	difficult	230 - 328	*.004 - .006	.004 - .008	TT8115	TT5100				
stainless steel AISI 304 - 316	L / d = 2.5	good	328 - 460	.004 - .008	.004 - .008	PV3010	TT9225	.008 - .012	.06	.08	.09
	L / d = 4	normal	260 - 360	.004 - .008	.004 - .008						
	L / d = 6.3	difficult	196 - 295	*.004 - .006	.004 - .008	TT9215	TT9235				
cast iron	L / d = 2.5	good	393 - 525	.004 - .008	.004 - .008	CT3000	TT7015	.008 - .012	.08	.09	.12
	L / d = 4	normal	295 - 393	.004 - .008	.004 - .008						
	L / d = 6.3	difficult	196 - 295	*.004 - .006	.004 - .008	TT7005					
aluminium	L / d = 2.5	good	820 - 1148	.004 - .008	.004 - .008						
	L / d = 4	normal	525 - 820	.004 - .008	.004 - .008	K10	K10	.008 - .012	.08	.09	.12
	L / d = 6.3	difficult	328 - 492	*.004 - .006	.004 - .008						

**** Only for finishing inserts***

Vc ***cutting speed*** ***(sfm)***

D ***diameter of workpiece*** ***(inch)***

n ***number of revolutions / min' (rpm)***

Vf ***feed rate*** ***(ipm)***

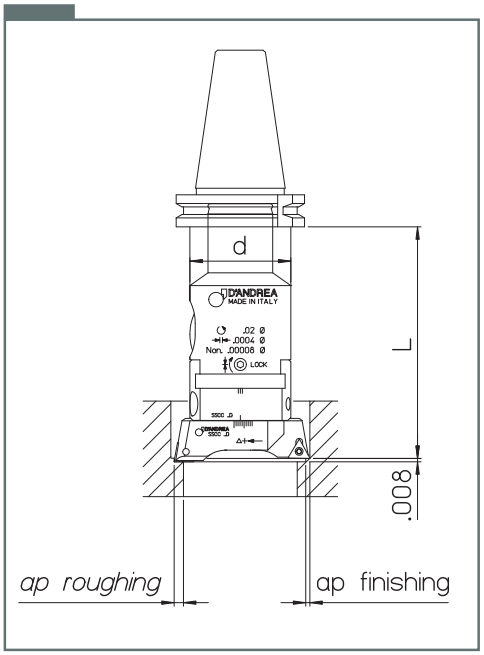
fn ***feed*** ***(ipr)***

pi

$$Vc = \frac{pi \cdot D \cdot n}{12}$$

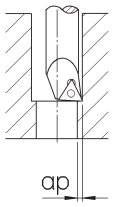
$$n = \frac{Vc \cdot 12}{pi \cdot D}$$

$$Vf = n \cdot f$$

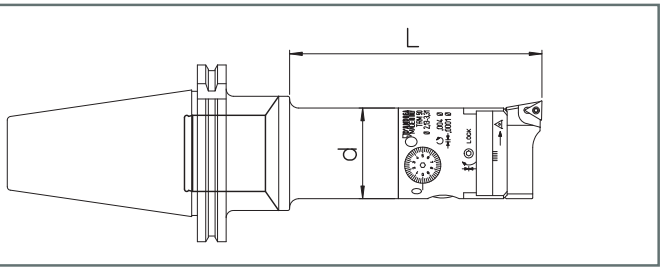


MODULHARD'ANDREA

Recommended cutting conditions for boring operations with Testarossa TRM

material	*boring bar*	*working*	*cutting speed Vc= m/min.*	*feed fn= mm/rev* *insert radius* R = .000	R = .008	R = .016	*quality insert*	*cutting depth*
carbon steel HB ≤ 200	L / d = 2.5	*good*	655 - 984	-	.002 - .003	.003 - .004	PV3010	 .004 - .010
	L / d = 4	*normal*	525 - 820	-	.002 - .003	.003 - .004	CT3000	
	L / d = 6.3	*difficult*	230 - 328	.002 - 0.03	.002 - .003	-	TT8115	
carbon steel HB > 200	L / d = 2.5	*good*	525 - 820	-	.002 - .003	.003 - .004	PV3010	
	L / d = 4	*normal*	492 - 655	-	.002 - .003	.003 - .004	CT3000 TT8115	
	L / d = 6.3	*difficult*	230 - 328	.002 - 0.03	.002 - .003	-	TT8125	
stainless steel AISI 304 - 316	L / d = 2.5	*good*	393 - 525	-	.002 - .003	.003 - .004	PV3010	
	L / d = 4	*normal*	328 - 460	-	.002 - .003	.003 - .004		
	L / d = 6.3	*difficult*	230 - 328	.002 - 0.03	.002 - .003	-	TT9215	
cast iron	L / d = 2.5	*good*	393 - 525	-	.002 - .003	.003 - .004	CT3000	
	L / d = 4	*normal*	328 - 460	-	.002 - .003	.003 - .004	TT7005	
	L / d = 6.3	*difficult*	230 - 328	.002 - 0.03	.002 - .003	-	TT7015	
aluminium	L / d = 2.5	*good*	984 - 1312	-	.002 - .003	.003 - .004		
	L / d = 4	*normal*	820 - 1148	-	.002 - .003	.003 - .004	K10	
	L / d = 6.3	*difficult*	260 - 492	.002 - 0.03	.002 - .003	-		
steel HRC > 50	L / d = 2.5	*good*	260 - 328	-	.002 - .003	.002 - 0.03	CBN	
	L / d = 4	*normal*	260 - 328	-	.002 - .003	.002 - 0.03		

CALCULATION FORMULAS FOR BORING



Vc ***cutting speed*** ***(sfm)***

D ***diameter of workpiece*** ***(inch)***

n ***number of revolutions / min' (rpm)***

Vf ***feed rate*** ***(ipm)***

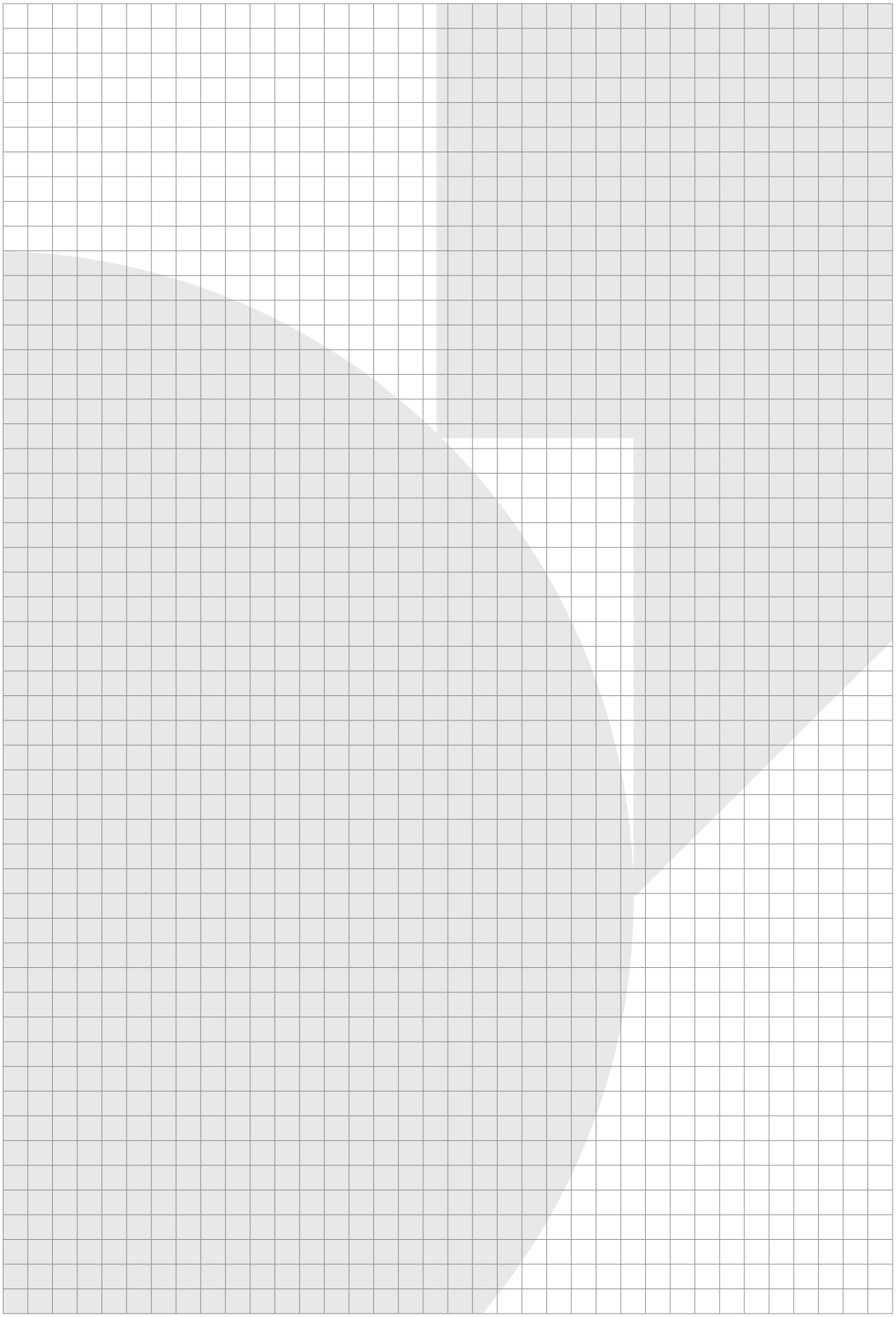
fn ***feed*** ***(ipr)***

pi

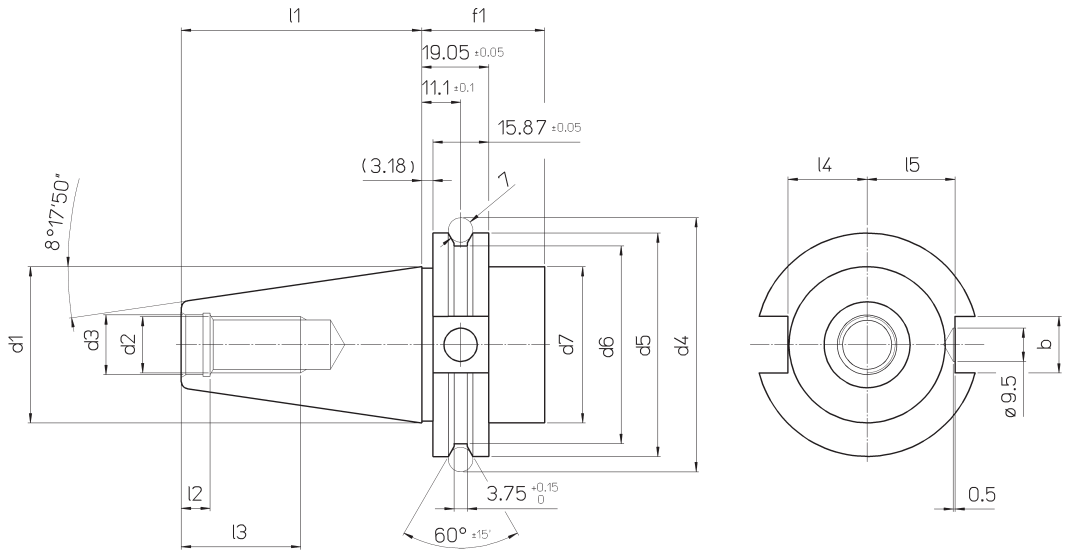
$$Vc = \frac{pi \cdot D \cdot n}{12}$$

$$n = \frac{Vc \cdot 12}{pi \cdot D}$$

$$Vf = n \cdot f$$



CAT inch - CAT metric



CAT inch			
ISO	**40**	**45**	**50**
b $^{+0.2}_{0}$	.63	.76	1.01
d1	1.75	2.25	2.75
d2	UNC 5/8-11	UNC 3/4-10	UNC 1-8
d3 H7	.64	.76	1.03
d4 ± 0.05	2.84	3.59	4.22
d5 $^{0}_{-0.1}$	2.50	3.25	3.87
d6 $^{0}_{-0.5}$	2.21	2.96	3.59
d7 ± 0.25	1.75	2.25	2.75
f1 ± 0.25	1.38	1.38	1.44
l1 $^{0}_{-0.3}$	2.69	3.26	4.00
l2 $^{+0.5}_{0}$	.19	.21	.23
l3 min.	1.18	1.49	1.77
l4 $^{0}_{-0.4}$	.89	1.14	1.39
l5 $^{0}_{-0.4}$	1.02	1.28	1.59

ANSI / CAT metric			
ISO	**40**	**45**	**50**
b $^{+0.2}_{0}$	16.1	19.3	25.7
d1	44.45	57.15	69.85
d2	M 16	M 20	M 24
d3 H7	17	21	25
d4 ± 0.05	72.3	91.35	107.25
d5 $^{0}_{-0.1}$	63.55	82.55	98.45
d6 $^{0}_{-0.5}$	56.25	75.25	91.25
d7 ± 0.25	44.45	57.15	69.85
f1 ± 0.25	35	35	36.5
l1 $^{0}_{-0.3}$	68.4	82.7	101.75
l2 $^{+0.5}_{0}$	4.75	5.25	5.75
l3 min.	30	38	45
l4 $^{0}_{-0.4}$	22.8	29.10	35.50
l5 $^{0}_{-0.4}$	26	32.5	40.40

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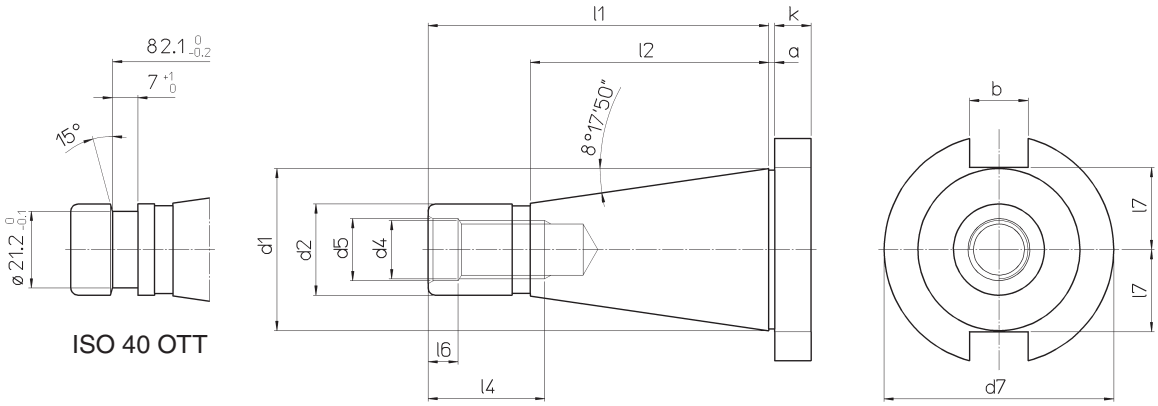
NMTB - DIN 2080

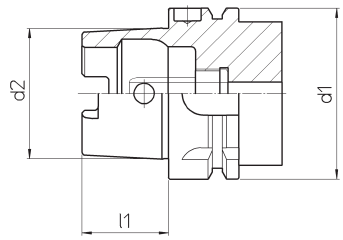


NMTB		
ISO	40	50
a ± 0.2	.06	.12
b H12	.63	1.01
d1	1.75	2.75
d2 a10	.99	1.56
d4	M 16	M 24
d5 +0.15 0	.67	1.02
d7 0 −0.4	2.48	3.83
k ± 0.15	.39	.47
l1	3.67	4.99
l2	2.57	4.00
l4	1.26	1.85
l6 +0.5 0	.32	.45
l7 max.	.88	1.39

DIN 2080				
ISO	30	40	45	50
a ± 0.2	1.6	1.6	3.2	
b H12	16.1		19.3	25.7
d1	31.75	44.45	57.15	69.85
d2 a10	17.4	25.3	32.4	39.6
d4	M 12	M 16	M 20	M 24
d5	13	17	21	26
d7 0 −0.4	50	63	80	97.5
k ± 0.15	8	10	12	12
l1	68.4	93.4	106.8	126.8
l2	48.4	65.4	82.8	101.8
l4	24	32	40	47
l6 +0.5 0	5.5	8.2	10	11.5
l7 max.	16.2	22.5	29	35.3

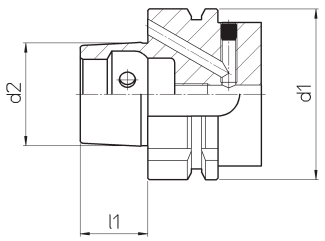
DIN 69893

HSK-A



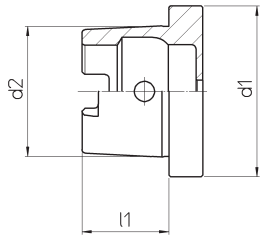
HSK-A	d_1	d_2	l_1
32	32	24	16
40	40	30	20
50	50	38	25
63	63	48	32
80	80	60	40
100	100	75	50

HSK-B



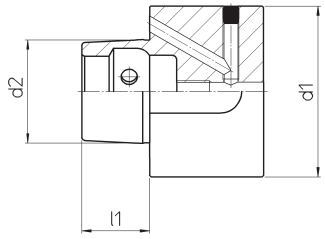
HSK-B	d_1	d_2	l_1
-	-	-	-
40	40	24	16
50	50	30	20
63	63	38	25
80	80	48	32
100	100	60	40

HSK-C



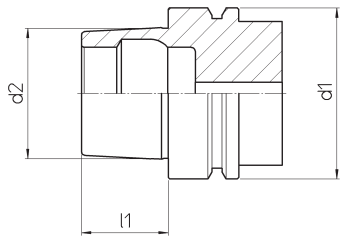
HSK-C	d_1	d_2	l_1
32	32	24	16
40	40	30	20
50	50	38	25
63	63	48	32
80	80	60	40
100	100	75	50

HSK-D



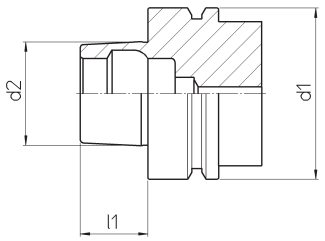
HSK-D	d_1	d_2	l_1
-	-	-	-
40	40	24	16
50	50	30	20
63	63	38	25
80	80	48	32
100	100	60	40

HSK-E



HSK-E	d_1	d_2	l_1
32	32	24	16
40	40	30	20
50	50	38	25
63	63	48	32
-	-	-	-

HSK-F



HSK-F	d_1	d_2	l_1
-	-	-	-
-	-	-	-
50	50	30	20
63	63	38	25
80	80	48	32

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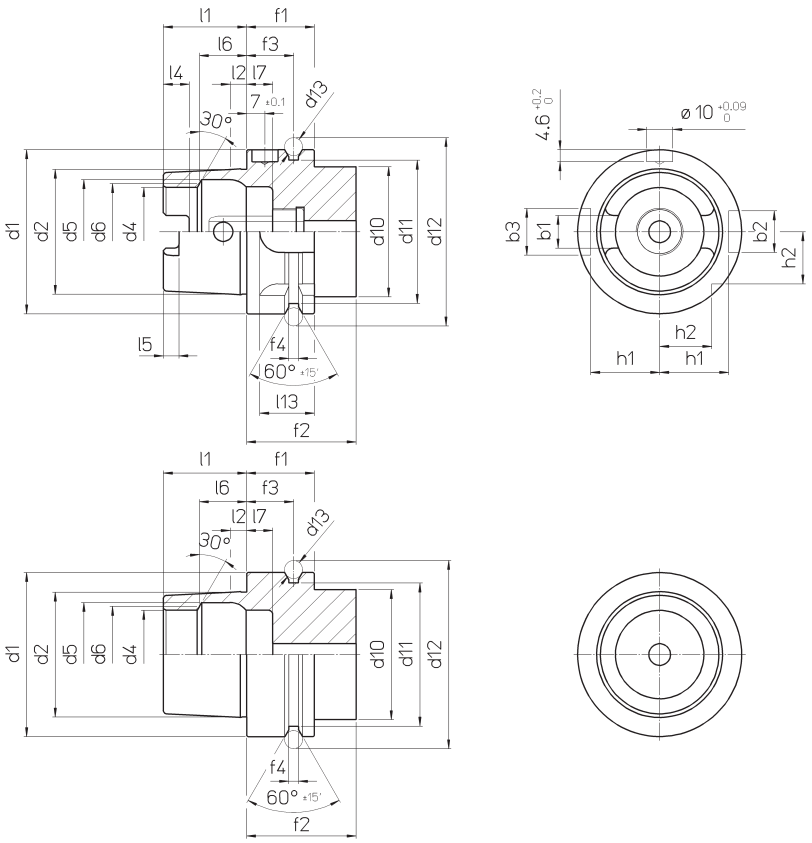
HSK-A
HSK-E



HSK	32	40	50	63	80	100
b1 $^{+0.04}_{-0.04}$	7.05	8.05	10.54	12.54	16.04	20.02
b2 H10	7	9	12	16	18	20
b3 H10	9	11	14	18	20	22
d1 H10	32	40	50	63	80	100
d2	24 $^{+0.007}_{+0.005}$	30 $^{+0.007}_{+0.005}$	38 $^{+0.009}_{+0.006}$	48 $^{+0.011}_{+0.007}$	60 $^{+0.013}_{+0.008}$	75 $^{+0.015}_{+0.009}$
d4 H10	17	21	26	34	42	53
d5 H11	21	25.5	32	40	50	63
d6	19	23	29	37	46	58
d10 max.	26	34	42	53	67	85
d11 $^{0}_{-0.1}$	26.5	34.8	43	55	70	92
d12 $^{0}_{-0.1}$	37	45	59.3	72.3	88.8	109.75
d13	4	4	7	7	7	7
f1 $^{0}_{-0.1}$	20	20	26	26	26	29
f2 min.	35	35	42	42	42	45
f3 ± 0.1	16	16	18	18	18	20
f4 $^{+0.15}_{0}$	2	2	3.75	3.75	3.75	3.75
h1 $^{0}_{-0.2}$	13	17	21	26.5	34	44
h2 $^{0}_{-0.13}$	9.5	12	15.5	20	25	31.5
l1 $^{0}_{-0.2}$	16	20	25	32	40	50
l2	3.2	4	5	6.3	8	10
l4 $^{+0.2}_{0}$	5	6	7.5	10	12	15
l5 $^{+0.2}_{0}$	3	3.5	4.5	6	8	10
l6 JS10	8.92	11.42	14.13	18.13	22.85	28.56
l7 $^{0}_{-0.1}$	8	8	10	10	12.5	12.5
l13	12	12	19	21	22	24

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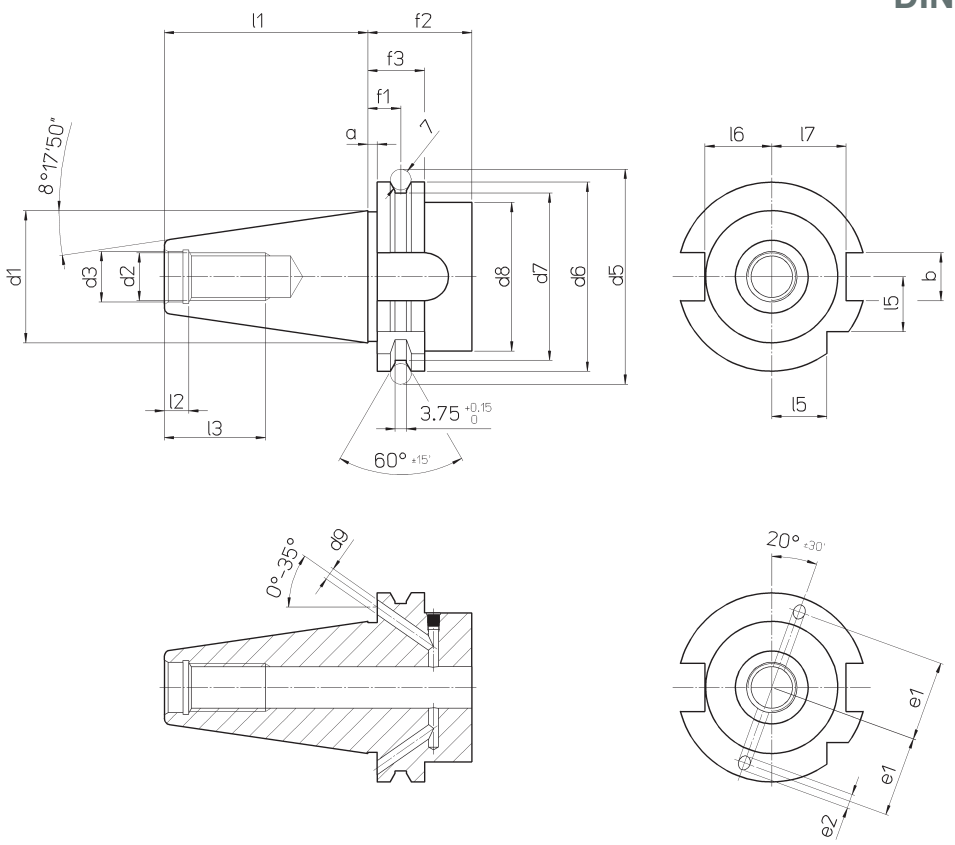
DIN 69871

DIN 69871 A-B



ISO	30	40	45	50	60
a ±0.1	3.2				
b H12	16.1		19.3	25.7	
d1	31.75mm	44.45mm	57.15mm	69.85mm	107.95mm
d2	M12	M16	M20	M24	M30
d3 H7	13	17	21	25	32
d5 ±0.05	59.3	72.3	91.35	107.25	164.75
d6 $^{0}_{-0.1}$	150	63.55	82.55	97.50	155
d7 $^{0}_{-0.5}$	44.3	56.25	75.25	91.25	147.70
d8 max.	45	50	63	80	130
d9	4		5	6	8
e1 ±0.1	21	27	35	42	66
e2 max.	5		6	7	9
f1 ±0.1	11.1				
f2 min.	35				38
f3 $^{0}_{-0.1}$	19.1				
l1 $^{0}_{-0.3}$	47.8	68.4	82.7	101.75	161.80
l2 $^{+0.5}_{0}$	5.5	8.2	10	11.5	14
l3 min.	24	32	40	47	59
l5 $^{0}_{-0.3}$	15	18.5	24	30	49
l6 $^{0}_{-0.4}$	16.4	22.8	29.1	35.5	54.5
l7 $^{0}_{-0.4}$	19	25	31.3	37.7	59.3

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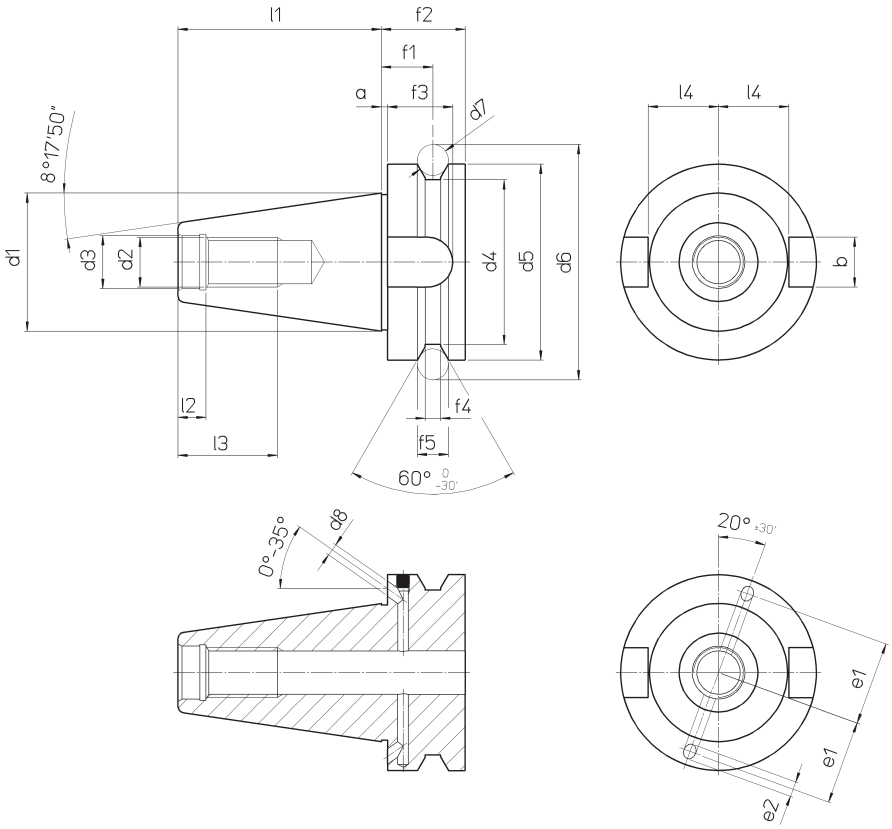
MAS 403 BT A-B



ISO	30	35	40	45	50	60
a ±0.4	2			3		
b H12	16.1			19.3	25.7	
d1	31.75mm	38.10mm	44.45mm	57.15mm	69.85mm	107.95mm
d2	M12	M12	M16	M20	M24	M30
d3 H8	12.5		17	21	25	31
d4	38	43	53	73	85	135
d5 H8	46	53	63	85	100	155
d6	56.144	65.680	75.679	100.215	119.019	180.359
d7	8	10		12	15	20
d8	4			5	6	
e1 ±0.1	21	23	27	35	42	66
e2 max.	5			6	7	9
f1 ±0.1	13.6	14.6	16.6	21.2	23.2	28.2
f2	22	24	27	33	38	45
f3 min.	17	20	21	26	31	
f4	4	5		6	7	11
f5 $^{+0.1}_{0}$	8	10		12	15	20
l1 ±0.2	48.4	56.4	65.4	82.8	101.8	161.8
l2 $^{+0.5}_{0}$	7		9	11	13	16
l3 min.	24		30	38	45	56
l4 $^{0}_{-0.2}$	16.3	19.6	22.6	29.1	35.4	59.9

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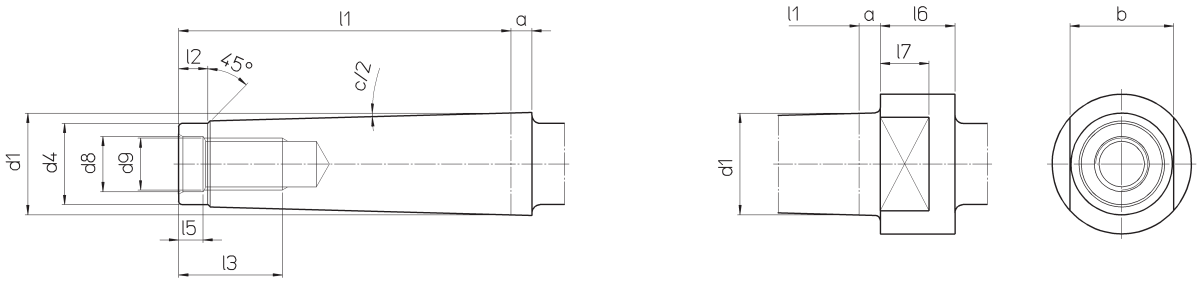
Arbors standards | Normen für Grundaufnahmen | Normas acoplamientos base | Normes mandrins | Norme attacchi base

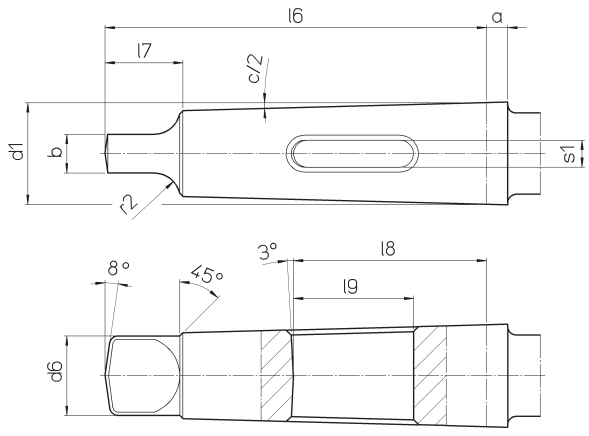
DIN 228/A

DIN 2207



MORSE	4	4 SIP
a	6.5	6.5
b d9	32	32
c/2	1°29’15”	1°29’15”
d1	31.267	31.267
d4 max.	25	25
d8	17	17
d9	M 16	M 14
l1 max.	102.5	102.5
l2	9	9
l3 min.	32	45
l5 $^{+0.5}_{0}$	8.2	8.5
l6	15	15
l7	23	23

DIN 228/B DIN 1806



MORSE	4	5
a	6.5	6.5
b H13	11.9	15.9
c/2	1°29’15”	1°30’26”
d1	31.267	44.399
d6 max.	24.5	35.7
l6 $^{0}_{-1}$	117.5	149.5
l7 max.	24	29
l8	59.5	64
l9	37	42
r2	8	10
s1	8.3	12.4

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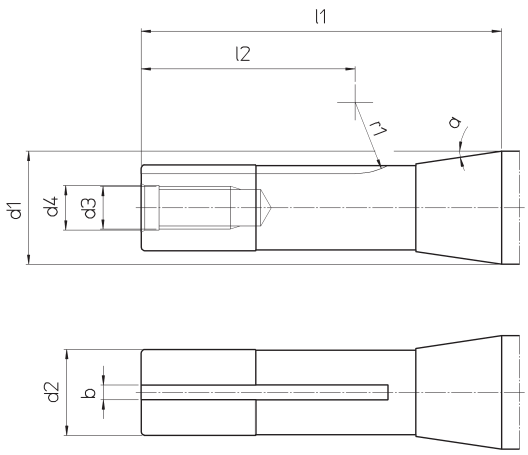
R8



R8	inch	metric
a	8°25'30"	
b ± 0.1	4.2	
d1	31.750 mm	
d2	24.109	
d3 -0.007 -0.020	UNF 7/16-20	M 12
d4	12.5	
l1	101	
l2 min.	60	
r1	20	

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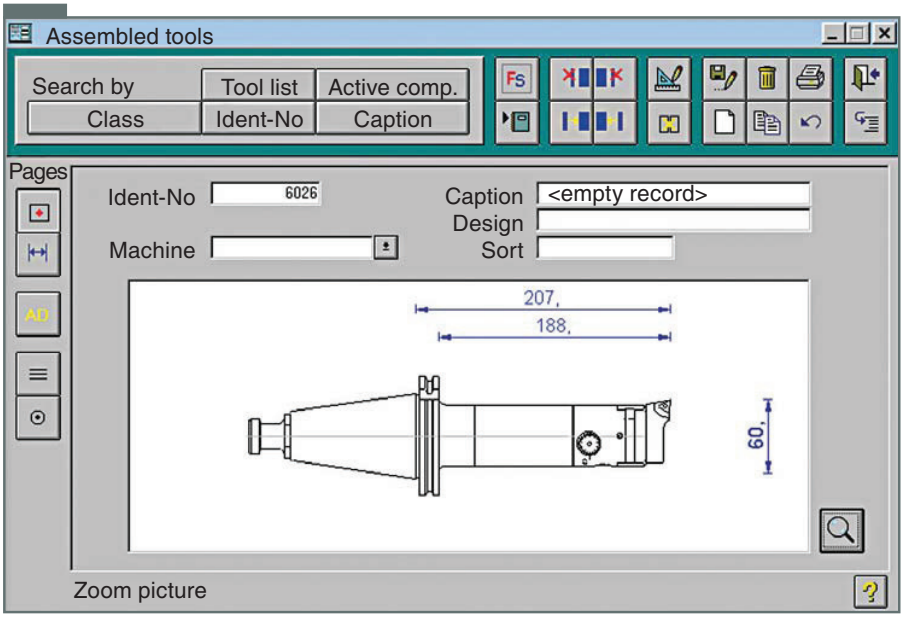
WINTOOL



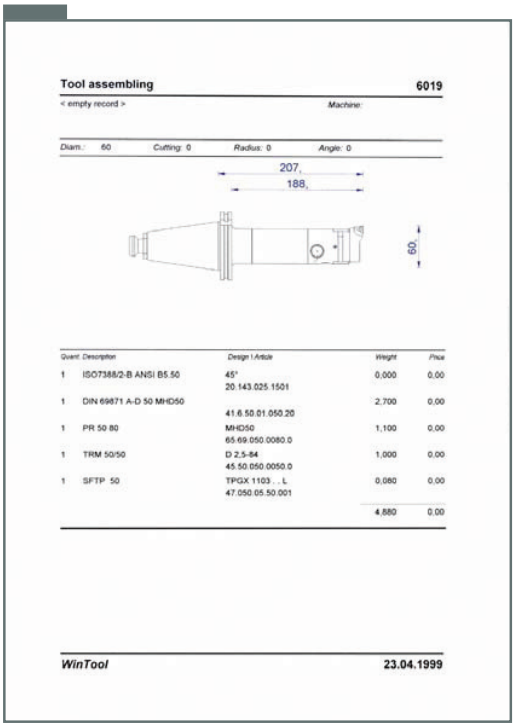
It allows to be graphically constructed in a short period of time, showing the complete composition of the MODULHARD'ANDREA tools, including dimensions, weight and the list of components.

Der Grafikgenerator ermöglicht in kurzer Zeit das Zusammenstellen kompletter Werkzeuge mit MODULHARD'ANDREA-Elementen, indem er die Abmessungen, das Gewicht und die Liste der Bauteile angibt.

Generador gráfico que permite componer en breve tiempo herramientas completas con elementos del MODULHARD'ANDREA, indicando las dimensiones, el peso y la lista de los componentes.

Générateur graphique qui permet de composer, en peu de temps, des outils complets avec des éléments du MODULHARD'ANDREA, tout en indicant les dimensions, le poids et la liste des composants.

Generatore grafico che permette di comporre in breve tempo utensili completi con elementi del MODULHARD'ANDREA, indicando le dimensioni, il peso e la lista dei componenti.


Tool assembling 6019

< empty record > Machine:

Diam.: 60 Cutting: 0 Radius: 0 Angle: 0

207,
188,
60,

Quant.	Description	Design / Article	Weight	Price
1	ISO7388/2-B ANSI B5.50	45° 20.143.025.1501	0,000	0,00
1	DIN 69871 A-D 50 MHD50	41.6.50.01.050.20	2,700	0,00
1	PR 50 80	MHD50 65.69.050.0080.0	1,100	0,00
1	TRM 50/50	D 2,5-84 45.50.050.0050.0	1,000	0,00
1	SFTP 50	TPGX 1103 . . L 47.050.05.50.001	0,080	0,00
			4,880	0,00

WinTool 23.04.1999

Cod. 18.10.41.001.095
CAT-022 Nr. 7810113

© D'ANDREA s.p.a.
Via Garbagnate 71 • 20020 Lainate (MI) Italy
Tel. +39 02 937532.1 • Fax +39 02 93753240
www.dandrea.com • info@dandrea.com

Produced by
Technical Department
D'ANDREA s.p.a. - Lainate (MI)

Graphics and printed by
Tipografica Luigi Monti s.r.l.
Via Don Volpi, 59 • 21047 Saronno (VA) Italy
Tel. +39 02 96703732 • Fax +39 02 9602260

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Ingersoll Cutting Tools For Americas

Marketing & Technology Center
845 S. Lyford Road
Rockford, IL 61108-2749 U.S.A.
Tel: 815.387.6600
Fax: 815.387.6968
Email: info@ingersoll-imc.com
Internet: www.ingersoll-imc.com

Ingersoll Mexico
Blvd. Cuauhtemoc Num 2411 Locales 6 y 7
Esquina Calle Manuel Perez Trevino
Fracc. Residencial Los Pinos
CP 25198
Saltillo, Coahuila, Mexico
Tel: 52-844-4-85-32-20
Fax: 52-844-4-85-32-23
Email: info@ingersoll-imc.com

Ingersoll Western Canada
Unit 14 – 1599 Dugald Rd.
Winnipeg, Manitoba
R2E 0B1
Tel: (204) 654-9894
Fax: (204) 654-6080
Toll Free: 1-866-460-4951
info@eagleindustrial.ca

Ingersoll Cutting Tools For Europe

Marketing & Technology Center
Ingersoll Werkzeuge GmbH
Kalteiche-Ring 21-25
35708 Haiger, Germany
Tel: 02773.742 0
Fax: 02773.742 812/814
Email: info@ingersoll-imc.de
Internet: www.ingersoll-imc.de

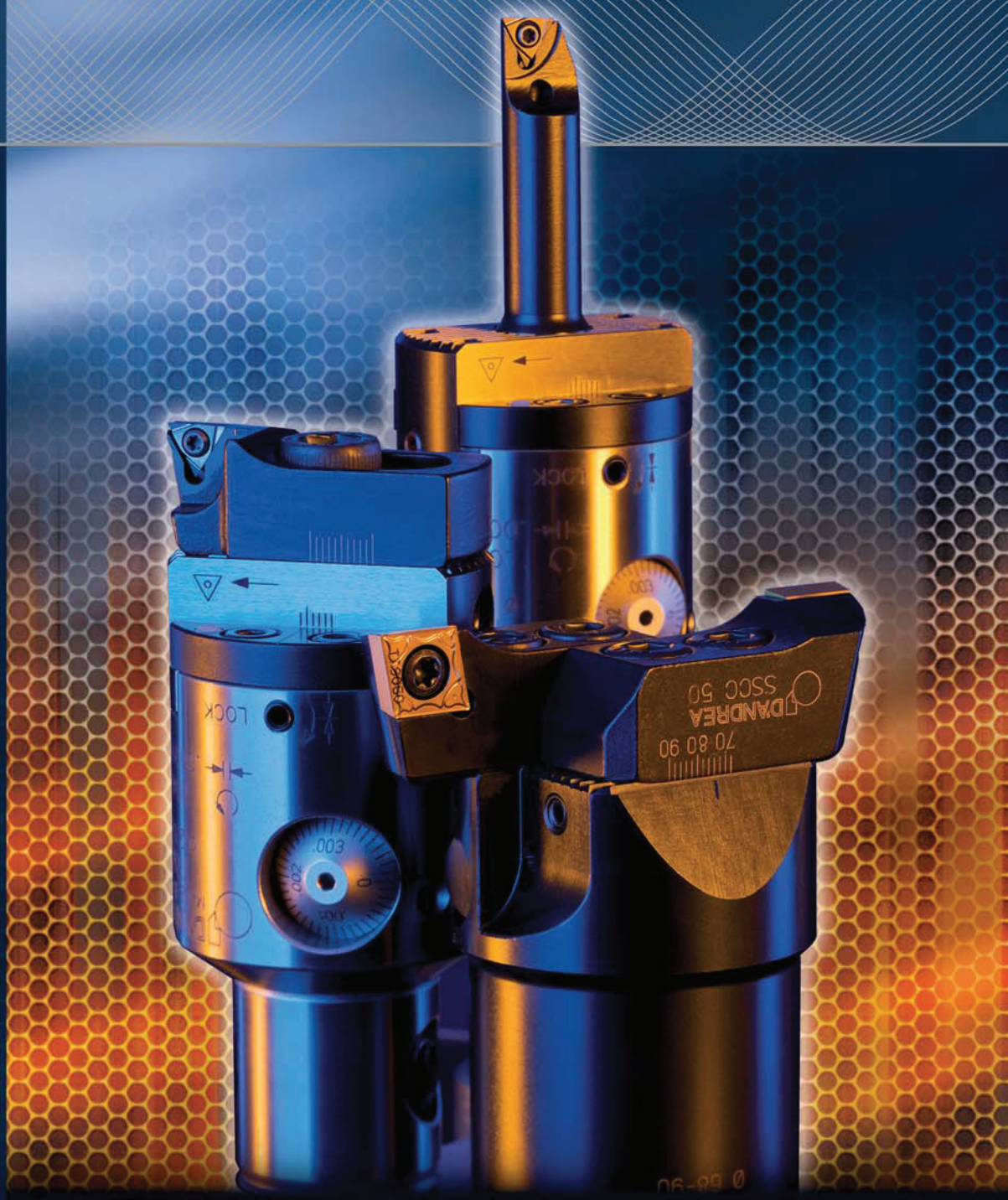
Ingersoll France s.a.r.l.
21, rue Galilée
F-77420 CHAMPS-sur-MARNE
Tel: +33 (0)1 64 68 45 36
Fax: +33 (0)1 64 68 45 24
Email: info@ingersoll-imc.fr

Ingersoll Italien
Via Monte Grappa, 78
20020 Arese (Milano)
Telefon: +39 02 99 76 67 00
Telefax: +39 02 99 76 67 10
Email: crespi@taegutec.it

Ingersoll Cutting Tools For Asia

Ingersoll Japan Ltd.
Senri Asahi Hankyu Bldg. 15F
1-5-3 Shinsenri-Higashimachi
Toyonaka-shi Osaka 560-0082
Tel: 81-6-6835-7731
Fax: 81-6-6835-7732

Ingersoll China
7B21,
Hanwei Plaza,
GuangHua Road,
Chaoyang District,
Beijing, P.R.C.,100004.
Tel: +86 10 656 10261/2/3
Fax: +86 10 656 10264



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