

poliangolar[®] srl
rotary broaching

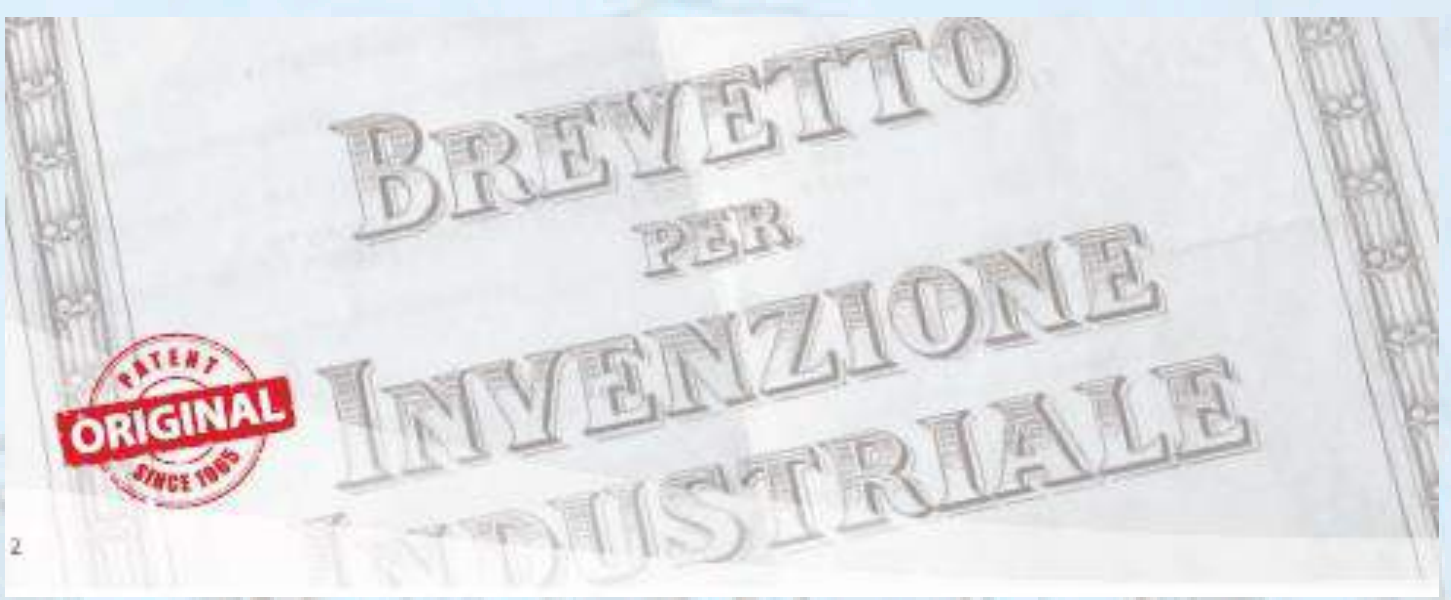
Catalogue



ROTARY BROACHING – SLOTTING – GEAR

FAST – PRECISE – INNOVATIVE





2



poliangolar[®]

CERTIFICATO DI GARANZIA
WARRANTY CERTIFICATE

5

ANNI – YEARS

Certificate of guarantee to be kept and shown in case of intervention or replacement request.

5 years warranty begins on the date of purchase stated on the certificate and it corresponds to the invoice issue. The buyer must be able to show the warranty certificate and the corresponding invoice, otherwise free repair or replacement are not permitted.

Warranty does not cover damages caused for the following reasons:





- a) Incorrect use**
- b) Negligence**
- c) Inability to use the equipment**
- d) Tampering and/or causes not depending on the manufacturer**
- e) Natural wear of bearings**

It is excluded any compensation for direct or indirect damages as well as damages of any nature caused to people or things for equipment failures.

MODELLO - MODEL : _____
MATRICOLA N. - SERIAL NUMBER : _____
NOME E INDIRIZZO DELL'ACQUIRENTE - BUYER NAME AND ADDRESS : _____ _____ _____
DATA ACQUISTO - PURCHASE DATE : _____



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Company Quality System

This document is intended to supply our clients and suppliers data relative to the process quality system used to manufacture the products in Poliangolar.

Management responsibility

The quality policy has been defined by the organization. The production process and the company organization are reviewed twice a year by the management to implement the relevant corrective actions.

The company structure and the pertinent role are clearly defined by the *organisation chart*. The responsibility of personnel are also clearly defined.

Quality System

Poliangolar products are manufactured following the technical documentation (technical specifications and drawings) with all the technical details included.

Offer request review

The client customization requests are evaluated to verified they are adequately defined and documented.

In case of technical documentation modifications (drawings and technical specs) is necessary to meet the customer request, the modifications are reviewed and approved by the management.

Document and data control

Technical documentation is reviewed and approved by the management twice a year. The old documentation is removed by the archives to be sure that only the current documentation is used.

Purchasing

The suppliers are evalutated and selected on the basis to meet the quality standard requested. The purchase documents contain data clearly describing the product ordered.

Purchasing document will be checked by the management to be sure that the company quality and quantity standard will be met. In case of discrepancy a set of corrective actions on the suppliers has been defined to be sure the suppliers match the quality standard requested.

Process control

The workmanship criterias are specified in clear a pratical manner for all the productive process steps. Also the special processes are performed in house.





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Test and inspection

There are procedures for inspection and testing of product for receiving, in-process and final acceptance.

Control of inspection, measuring and testing equipment

Inspection, measuring and test equipment are subjected to periodic calibration. Measuring and test equipment are inspected and calibrated prior to use. Poliangolar gives full attention to separation and waste disposal.

Inspection and test status

Product test are made by using suitable means that indicate the conformance (or nonconformance). Only the products that passed the inspection is dispatched, used or installed.

Control of non-conforming product

Non-conforming products are identified and discarded. Non-conforming products that can be repaired or reworked are reinspected to original acceptance criteria.

Statistical techniques

Poliangolar does not use statistical techniques for quality control, as the quality control is made on every single product.

Corrective action

The productive process is monitored by the management analyzing the available data to implement corrective action to improve the efficiency and the quality. The effectiveness of the corrective action is verified periodically.

Handling, storage, packaging, preservation and delivery

The packaging and preservation system is appropriate to keep the quality of the final product. The storage and working environments fits the product, parts and assemblies.

Internal audit

Periodic audit are conducted and the result are shared with the management to implement appropriate action.

Training

The personnel is properly trained to match the responsibility areas assigned through specific trainings, experience on the job and the mentorship of the experienced colleagues.

Poliangolar Srl



NEW COATINGS

Study, planning and innovation have always been in our DNA , over the last year, together with our suppliers of raw materials and coatings, we have studied the production of new tools to meet the needs of our customers who have recently been working on steels that are always tougher and more tied than the old materials and coatings are no longer able to guarantee.

The division of the steels can be divided, in extreme, into three bands as follows:

NON ALLOY STEELS : when minimum percentages of any other elements are present
WEAKLY STEELS ALLOY : when each of special elements is present in quantity less than 5%
ALLOY STEELS : when at least one of the special elements, it's present in quantity equal or more than 5%

To make it easier to identify the best performing tool in relation to the material to be processed, we decided to divide and identify the MOST SUITABLE in different colors and the explanatory table here below:

LABEL COLOUR	APPLICATION
NON ALLOY STEELS	NON-FERROUS METAL
	(ISO : N)
	<-20 HRC Fe-Brass(Cu/Zn)-Al
WEAKLY STEELS ALLOY	STEEL - CAST IRON * / **
	(ISO : P-K)
	20 -> 38 HRC C40-C50-ecc...
ALLOY STEELS	SUPER - ALLOYS ***
	(ISO : M)
	38 -> 45 HRCNiCrMo.....
ALLOY STEELS	STAINLESS STEEL*** - TITANIUM
	(ISO : S)
	45 -> HRC AISI
	SPECIAL PROFILE - GEAR



For information purposes we list all the new coatings, designed to make more efficient and also extend the life of our tools, we remind you that some of these steels or materials may be non-tenacious (read HRC) but present different work problems (Ex: Titanium).

LIST OF NEW COATINGS AND THEIR CHARACTERISTICS:

CRONAL :

Combining elements such as Aluminum, Chromium and Nitrogen is obtained a compound which reveals excellent values of hardness and wear resistance even when exposed to high temperatures.

By means of the PVD technology it is possible to bind these elements in thin layers to obtain the structure of AlCrN (Aluminum Chrome Nitride) that for its intrinsic characteristics finds wide application in the field of tooling for chip removal machining.

It proves to be a very flexible coating because it is applicable so much to HSS tools for traditional uses, as to HM tools for more demanding applications.

The peculiar characteristics of the elements that compose CRONAL also confer an extraordinary thermal stability which raises considerably the point of oxidation of the layer allowing its use even at very high temperatures (1000°C).

It expresses itself at its best in dry machining.

HDP STAR4 :

Thanks to the processes' parameters determined and refined during various laboratory experiments, it has come to a multilayer structure that combines excellent wear resistance to hot to a very high toughness, the latter feature that allows the deposition of the coating also in high thicknesses.

The particular layer of HDP STAR4 is able to express the best of its potential when the surfaces where it lies down are carefully prepared.

The invaluable contribution of final polishing instead makes a running tool and gives the surfaces involved in the process an extraordinarily smooth effect facilitating the sliding and the chip evacuation.



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ALNOVA :

Optimized coating adhesion results in high-level reliability.
High thermal shock stability.
For wet and dry machining. Increased oxidation resistance.
Lengthened tool lifetimes as compared to common high-performance coatings.
Extremely high tool cutting-edge stability.
Good chip removal and minimization of built-up edge formation.

ALCRONA PRO :

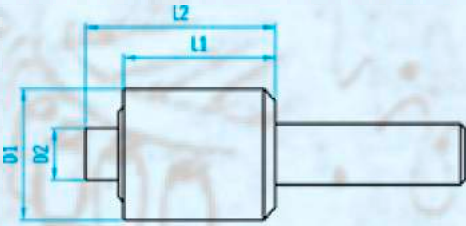
Significantly strengthened performance profile.
Broad application range.
Vastly improved tool lifetimes compared to conventional all-round coatings.
Top results in both wet and dry machining and at the highest of cutting speeds.
Increased machine utilization and productivity.
Groundbreaking all-round coating

All given information are approximate , they depend on application,
environment and test condition.

GARANZIA ITALIA



Internal Broaching Toolholders

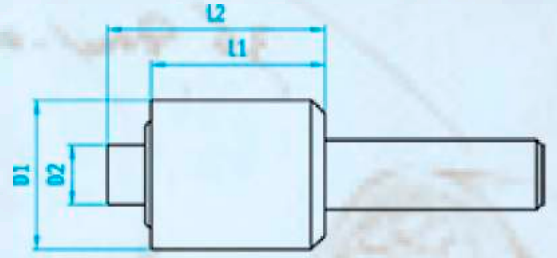


MODEL	MICRO	
Max capacity for hexagonal profiles	≤ 3	
Max capacity for square profiles	≤ 2,5	
Max capacity for torx profiles	-	
Max working depth	≤ 4	
Overall dimensions (mm)	D1	17
	D2	9
	L1	16
	L2	21
Cylindrical shank DIN 1835	∅	6
		7
		8
		10-12
		Tool shank

MODEL	0100N	
Max capacity for hexagonal profiles	≤ 5	
Max capacity for square profiles	≤ 4	
Max capacity for torx profiles	-	
Max working depth	≤ 10	
Overall dimensions (mm)	D1	24
	D2	13
	L1	24,5
	L2	30,5
Cylindrical shank DIN 1835	∅	6
		7
		8
		10
		12-16-3/4"
		20-22
Tool shank	NG06	

Internal Broaching Toolholders

MODEL	0200N
Max capacity for hexagonal profiles	≤ 10
Max capacity for square profiles	≤ 8
Max capacity for torx profiles	≤ 40
Max working depth	≤ 13
Tool shank	NG08



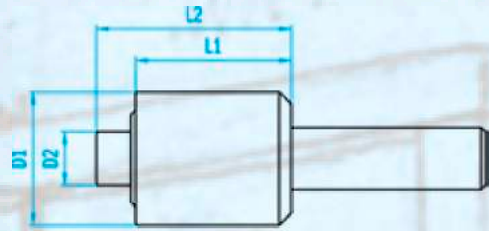
STANDARD			COMPACT		
Overall dimensions (mm)	D1	32	Overall dimensions (mm)	D1	32
	D2	16		D2	16
	L1	27		L1	25
	L2	36,5		L2	34,5

Cylindrical shank DIN 1835	∅	10	Cylindrical shank DIN 1835	∅	10
		12			12
		16			16
		3/4"			3/4"
		20-22			20-22
		25-1"			25-1"
shank Weldon DIN 1835-1	∅	3/4-16-20-25-1"	shank Weldon DIN 1835-1	∅	3/4-16-20-25-1"
shank M.T. DIN 228		1-2	shank M.T. DIN 228		1-2



Internal Broaching Toolholders

MODEL	0500N
Max capacity for hexagonal profiles	≤ 12
Max capacity for square profiles	≤ 10
Max capacity for torx profiles	≤ T50
Max working depth	≤ 25
Tool shank	NG12



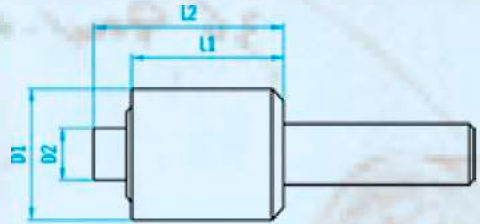
STANDARD			COMPACT		
Overall dimensions (mm)	D1	42	Overall dimensions (mm)	D1	42
	D2	20		D2	20
	L1	50,5		L1	37,5
	L2	69,5		L2	51

Cylindrical shank DIN 1835	Ø	16	Cylindrical shank DIN 1835	Ø	16
		¾			¾
		20			20
		22			22
		25-1"			25-1"
		32			32
shank Weldon DIN 1835-1	Ø	¾-16-20-25-1"	shank Weldon DIN 1835-1	Ø	¾-16-20-25-1"
shank VDI DIN 69880	Ø	20	shank VDI DIN 69880	Ø	20
shank BT MAS 403	Ø	BT30	shank BT MAS 403	Ø	BT30
shank M.T. DIN 228		2	shank M.T. DIN 228		2
shank ISO-DIN69871/DIN2080	Ø	ISO30	shank ISO-DIN69871/DIN2080	Ø	ISO30
shank HSK-DIN69893	Ø	50-63	shank HSK-DIN69893	Ø	50-63



Internal Broaching Toolholders

MODEL	1100N
Max capacity for hexagonal profiles	≤ 14
Max capacity for square profiles	≤ 12
Max capacity for torx profiles	≤ T60
Max working depth	≤ 25
Tool shank	NG12



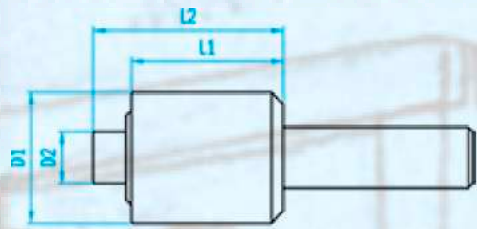
STANDARD			COMPACT		
Overall dimensions (mm)	D1	55	Overall dimensions (mm)	D1	55
	D2	21		D2	21
	L1	62		L1	41,5
	L2	76		L2	55,5

Cylindrical shank DIN 1835	∅	16	Cylindrical shank DIN 1835	∅	16
		3/4"			3/4"
		20			20
		25			25
		1"			1"
		32			32
shank Weldon DIN 1835-1	∅	3/4-16-20-25-32-1"	shank Weldon DIN 1835-1	∅	3/4-16-20-25-32-1"
shank VDI DIN 69880	∅	20-30	shank VDI DIN 69880	∅	20-30
shank BT MAS 403	∅	BT30	shank BT MAS 403	∅	BT30
shank M.T. DIN 228		2	shank M.T. DIN 228		2
shank ISO-DIN69871/DIN2080	∅	ISO30	shank ISO-DIN69871/DIN2080	∅	ISO30
shank HSK-DIN69893	∅	50-63	shank HSK-DIN69893	∅	50-63



Internal Broaching Toolholders

MODEL	2100N
Max capacity for hexagonal profiles	≤ 24
Max capacity for square profiles	≤ 16
Max capacity for torx profiles	≤ T70
Max working depth	≤ 25
Tool shank	NG16



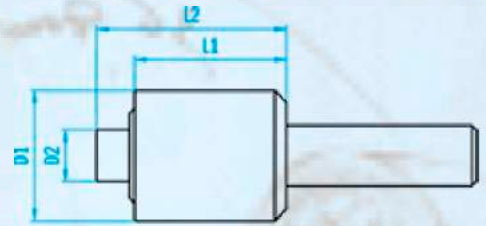
STANDARD			COMPACT		
Overall dimensions (mm)	D1	70	Overall dimensions (mm)	D1	70
	D2	30		D2	30
	L1	78		L1	54,5
	L2	90,5		L2	66,5

Cylindrical shank DIN 1835	∅	20	Cylindrical shank DIN 1835	∅	16
		22			¾
		25			20
		¾-1"			25
		32			¾-1"
		40			32
shank Weldon DIN 1835-1	∅	¾-20-25-32-40-1"	shank Weldon DIN 1835-1	∅	¾-20-25-32-40-1"
shank VDI DIN 69880	∅	30-40	shank VDI DIN 69880	∅	30-40
shank BT MAS 403	∅	BT40	shank BT MAS 403	∅	BT40
shank M.T. DIN 228		3	shank M.T. DIN 228		3
shank ISO-DIN69871/DIN2080	∅	ISO40	shank ISO-DIN69871/DIN2080	∅	ISO40
shank HSK-DIN69893	∅	63	shank HSK-DIN69893	∅	63



Internal Broaching Toolholders

MODEL	3100N
Max capacity for hexagonal profiles	≤ 40
Max capacity for square profiles	≤ 30
Max capacity for torx profiles	≤ T100
Max working depth	≤ 25
Tool shank	NG16



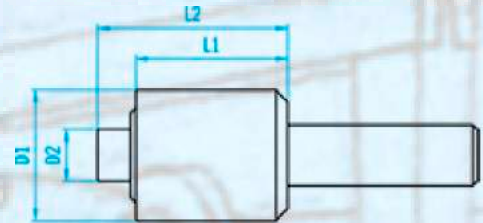
STANDARD			COMPACT		
Overall dimensions (mm)	D1	90	Overall dimensions (mm)	D1	90
	D2	42		D2	42
	L1	91,50		L1	79,5
	L2	104,5		L2	92,5

Cylindrical shank DIN 1835	∅	25	Cylindrical shank DIN 1835	∅	25
		1"			1"
		32			32
		40			40
		-			-
		-			-
shank Weldon DIN 1835-1	∅	25-32-40-1"	shank Weldon DIN 1835-1	∅	25-32-40-1"
shank VDI DIN 69880	∅	30-40	shank VDI DIN 69880	∅	30-40
shank BT MAS 403	∅	BT40-50	shank BT MAS 403	∅	BT40-50
shank M.T. DIN 228		3-4	shank M.T. DIN 228		3-4
shank ISO-DIN69871/DIN2080	∅	ISO40-50	shank ISO-DIN69871/DIN2080	∅	ISO40-50
shank HSK-DIN69893	∅	80-100	shank HSK-DIN69893	∅	80-100



Internal Broaching Toolholders

MODEL	3100S
Max capacity for hexagonal profiles	≤ 40
Max capacity for square profiles	≤ 30
Max capacity for torx profiles	≤ T100
Max working depth	≤ 45
Tool shank	SG16



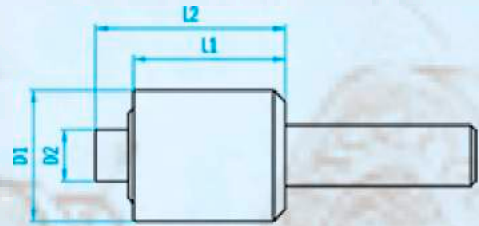
STANDARD			COMPACT		
Overall dimensions (mm)	D1	90	Overall dimensions (mm)	D1	90
	D2	42		D2	42
	L1	92,5		L1	79,5
	L2	105,5		L2	92,5

Cylindrical shank DIN 1835	∅	25	Cylindrical shank DIN 1835	∅	25
		1"			1"
		32			32
		40			40
		-			-
		-			-
shank Weldon DIN 1835-1	∅	25-32-40-1"	shank Weldon DIN 1835-1	∅	25-32-40-1"
shank VDI DIN 69880	∅	30-40	shank VDI DIN 69880	∅	30-40
shank BT MAS 403	∅	BT40-50	shank BT MAS 403	∅	BT40-50
shank M.T. DIN 228		3-4	shank M.T. DIN 228		3-4
shank ISO-DIN69871/DIN2080	∅	ISO40-50	shank ISO-DIN69871/DIN2080	∅	ISO40-50
shank HSK-DIN69893	∅	80-100	shank HSK-DIN69893	∅	80-100



Internal Broaching Toolholders

MODEL	4100XS
Max capacity for hexagonal profiles	≤ 42
Max capacity for square profiles	≤ 32
Max capacity for torx profiles	≤ T100
Max working depth	≤ 70
Tool shank	XG16



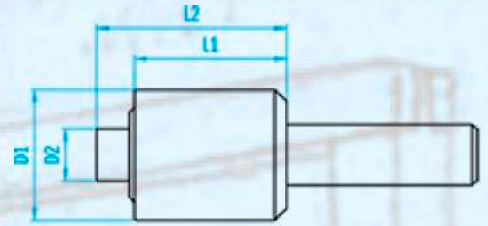
STANDARD			COMPACT		
Overall dimensions (mm)	D1	98	Overall dimensions (mm)	D1	98
	D2	42		D2	42
	L1	92,5		L1	79,5
	L2	105,5		L2	92,5

Cylindrical shank DIN 1835	∅	25	Cylindrical shank DIN 1835	∅	25
		1"			1"
		32			32
		40			40
		-			-
		-			-
shank Weldon DIN 1835-1	∅	25-32-40-1"	shank Weldon DIN 1835-1	∅	25-32-40-1"
shank VDI DIN 69880	∅	40-50	shank VDI DIN 69880	∅	40-50
shank BT MAS 403	∅	BT40-50	shank BT MAS 403	∅	BT40-50
shank M.T. DIN 228		4	shank M.T. DIN 228		4
shank ISO-DIN69871/DIN2080	∅	ISO 40-50	shank ISO-DIN69871/DIN2080	∅	ISO 40-50
shank HSK-DIN69893	∅	100	shank HSK-DIN69893	∅	100



Internal Broaching Toolholders

MODEL	MAXI
Max capacity for hexagonal profiles	≤ 42
Max capacity for square profiles	≤ 32
Max capacity for torx profiles	≤ T100
Max working depth	≤ 100
Tool shank	XG25



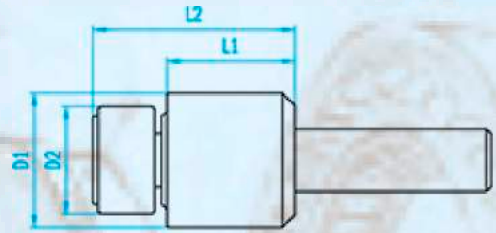
STANDARD			COMPACT		
Overall dimensions (mm)	D1	98	Overall dimensions (mm)	D1	98
	D2	42		D2	42
	L1	92,5		L1	79,5
	L2	105,5		L2	92,5

Cylindrical shank DIN 1835	∅	25	Cylindrical shank DIN 1835	∅	25
		1"			1"
		32			32
		40			40
		-			-
		-			-
Shank Weldon DIN 1835-1	∅	25-32-40-1"	shank M.T. DIN 228	∅	25-32-40-1"
shank VDI DIN 69880	∅	40-50	shank VDI DIN 69880	∅	40-50
shank BT MAS 403	∅	BT40-50	shank BT MAS 403	∅	BT40-50
shank M.T. DIN 228		4	shank M.T. DIN 228		4
shank ISO-DIN69871/DIN2080	∅	ISO40-50	shank ISO-DIN69871/DIN2080	∅	ISO40-50
shank HSK-DIN69893	∅	100	shank HSK-DIN69893	∅	100



External Broaching Toolholders

MODEL	0200E
Max capacity for hexagonal profiles	≤ 10
Max capacity for square profiles	≤ 8
Max capacity for torx profiles	≤ E08
Max working depth	≤ 15
Tool shank	EG20



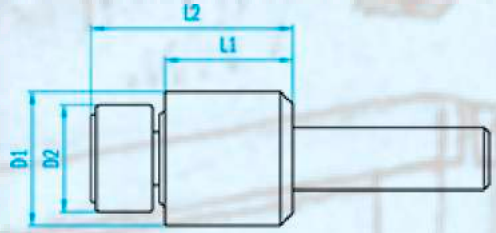
STANDARD			COMPACT		
Overall dimensions (mm)	D1	32	Overall dimensions (mm)	D1	32
	D2	30		D2	30
	L1	28,5		L1	26,5
	L2	50,5		L2	48,5

Cylindrical shank DIN 1835	∅	10	Cylindrical shank DIN 1835	∅	10
		12			12
		16			16
		3/4"			3/4"
		20-22			20-22
		25-1"			25-1"
shank Weldon DIN 1835-1	∅	16-20-25-1"	shank Weldon DIN 1835-1	∅	16-20-25-1"
shank M.T.DIN 228		2	shank M.T.DIN 228		2



External Broaching Toolholders

MODEL	0500E
Max capacity for hexagonal profiles	≤ 12
Max capacity for square profiles	≤ 10
Max capacity for torx profiles	≤ E08
Max working depth	≤ 25
Tool shank	EG20



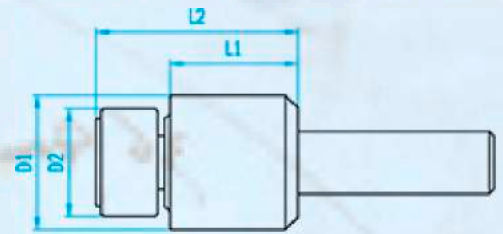
STANDARD			COMPACT		
Overall dimensions (mm)	D1	42	Overall dimensions (mm)	D1	42
	D2	30		D2	30
	L1	52,5		L1	37,5
	L2	88		L2	76

Cylindrical shank DIN 1835	∅	12	Cylindrical shank DIN 1835	∅	25
		16			1"
		3/4"			32
		20-22			40
		25-1"			-
		32			-
shank Weldon DIN 1835-1	∅	¾-16-20-25-1"	shank Weldon DIN 1835-1	∅	¾-16-20-25-1"
shank VDI DIN 69880	∅	20	shank VDI DIN 69880	∅	20
shank BT MAS 403	∅	BT30	shank BT MAS 403	∅	BT30
shank M.T. DIN 228		2	shank M.T. DIN 228		2
shank ISO-DIN69871/DIN2080	∅	ISO30	shank ISO-DIN69871/DIN2080	∅	ISO30
shank HSK-DIN69893	∅	50-63	shank HSK-DIN69893	∅	50-63



External Broaching Toolholders

MODEL	5100E
Max capacity for hexagonal profiles	≤ 15
Max capacity for square profiles	≤ 10
Max capacity for torx profiles	≤ E18
Max working depth	≤ 30
Tool shank	EG36



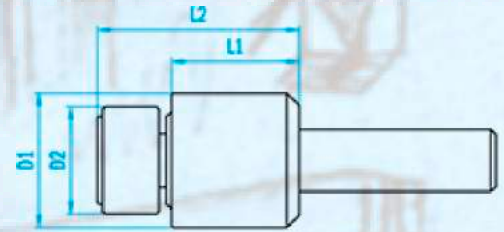
STANDARD				COMPACT			
Overall dimensions (mm)	D1	55	Overall dimensions (mm)	D1	55		
	D2	50		D2	50		
	L1	64,5		L1	41,5		
	L2	99		L2	81		

Cylindrical shank DIN 1835	∅	16	Cylindrical shank DIN 1835	∅	16
		3/4"			3/4"
		20-22			20-22
		25			25
		1"			1"
		32			32
shank Weldon DIN 1835-1	∅	¾-20-25-1"	shank Weldon DIN 1835-1	∅	¾-20-25-1"
shank VDI DIN 69880	∅	20-30	shank VDI DIN 69880	∅	20-30
shank BT MAS 403	∅	BT30	shank BT MAS 403	∅	BT30
shank M.T. DIN 228		2	shank M.T. DIN 228		2
shank ISO-DIN69871/DIN2080	∅	ISO30	shank ISO-DIN69871/DIN2080	∅	ISO30
shank HSK-DIN69893	∅	50-63	shank HSK-DIN69893	∅	50-63



External Broaching Toolholders

MODEL	7100E
Max capacity for hexagonal profiles	≤ 24
Max capacity for square profiles	≤ 16
Max capacity for torx profiles	≤ E18
Max working depth	≤ 30
Tool shank	EG36



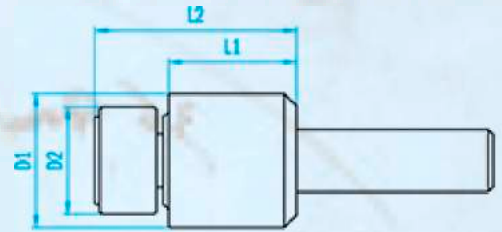
STANDARD			COMPACT		
Overall dimensions (mm)	D1	70	Overall dimensions (mm)	D1	70
	D2	50		D2	50
	L1	78		L1	54,5
	L2	113,5		L2	90

Cylindrical shank DIN 1835	∅	20	Cylindrical shank DIN 1835	∅	20
		22			22
		25			25
		¾-1"			1"
		32			32
		40			40
shank Weldon DIN 1835-1	∅	¾-25-32-40-1"	shank Weldon DIN 1835-1	∅	¾-25-32-40-1"
shank VDI DIN 69880	∅	30-40	shank VDI DIN 69880	∅	30-40
Shank BT MAS 403	∅	BT40	Shank BT MAS 403	∅	BT40
shank M.T. DIN 228		3	shank M.T. DIN 228		3
shank ISO-DIN69871/DIN2080	∅	ISO40	shank ISO-DIN69871/DIN2080	∅	ISO40
shank HSK-DIN69893	∅	63	shank HSK-DIN69893	∅	63



External Broaching Toolholders

MODEL	8100E
Max capacity for hexagonal profiles	≤ 30
Max capacity for square profiles	≤ 24
Max capacity for torx profiles	≤ E24
Max working depth	≤ 52
Tool shank	EG45

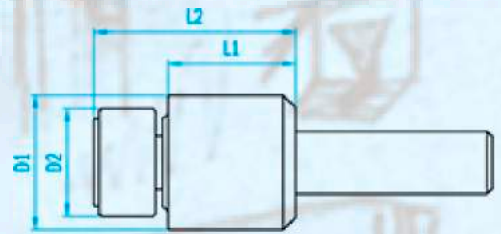


STANDARD			COMPACT		
Overall dimensions (mm)	D1	90	Overall dimensions (mm)	D1	90
	D2	59,5		D2	59,5
	L1	92,5		L1	79,5
	L2	148		L2	135

Cylindrical shank DIN 1835	∅	25	Cylindrical shank DIN 1835	∅	25
		1"			1"
		32			32
		40			40
		-			-
shank Weldon DIN 1835-1	∅	25-32-40-1"	shank Weldon DIN 1835-1	∅	25-32-40-1"
shank M.T. DIN 228		3-4	shank M.T. DIN 228		3-4
shank BT MAS 403	∅	BT40-50	shank BT MAS 403	∅	BT40-50
shank VDI DIN 69880	∅	30-40	shank VDI DIN 69880	∅	30-40
shank ISO-DIN69871/DIN2080	∅	ISO40-50	shank ISO-DIN69871/DIN2080	∅	ISO40-50
shank HSK-DIN69893	∅	100	shank HSK-DIN69893	∅	100



External Broaching Toolholders



MODEL	9100E
Max capacity for hexagonal profiles	≤ 40
Max capacity for square profiles	≤ 32
Max capacity for torx profiles	≤ E24
Max working depth	≤ 77
Tool shank	EG70

STANDARD			COMPACT		
Overall dimensions (mm)	D1	90	Overall dimensions (mm)	D1	90
	D2	89,5		D2	89,5
	L1	92,5		L1	79,5
	L2	173		L2	158

Cylindrical shank DIN 1835	∅	25	Cylindrical shank DIN 1835	∅	25
		1"			1"
		32			32
		40			40
		-			-
shank Weldon DIN 1835-1	∅	32-40	shank Weldon DIN 1835-1	∅	32-40
shank VDI DIN 69880	∅	40-50	shank VDI DIN 69880	∅	40-50
shank BT MAS 403	∅	BT40-50	shank BT MAS 403	∅	BT40-50
shank M.T. DIN 228		4	shank M.T. DIN 228		4
shank ISO-DIN69871/DIN2080	∅	ISO40-50	shank ISO-DIN69871/DIN2080	∅	ISO40-50
shank HSK-DIN69893	∅	100	shank HSK-DIN69893	∅	100

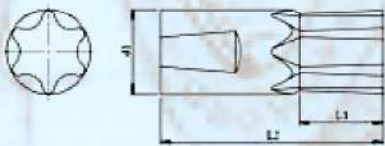


Tools for internal broaching profiles

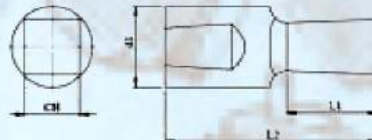
Part Number	Description
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NG04

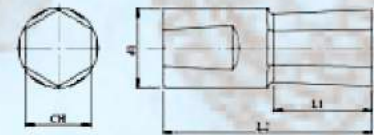
NG04E01	Tool NG04 Hexagon mm.1
NG04E01,5	Tool NG04 Hexagon mm.1,5
NG04E02	Tool NG04 Hexagon mm.2
NG04E02,5	Tool NG04 Hexagon mm.2,5
NG04E03	Tool NG04 Hexagon mm.3
NG04Q01	Tool NG04 Square mm.1
NG04Q02	Tool NG04 Square mm.2
NG04Q02,5	Tool NG04 Square mm.2,5
Standard tolerance	+0.05/+0.1
Supplement for special tolerance and length	



TORX



SQUARE

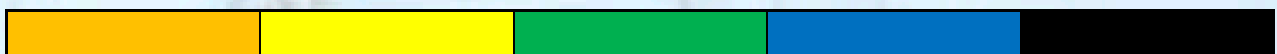


HEXAGON

d1	L2	L1
4 H7	11	*

* sharpening depth (L1) twice the section CH

Coating available on demand : see page n. 6

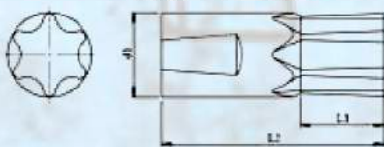


Tools for internal broaching profiles

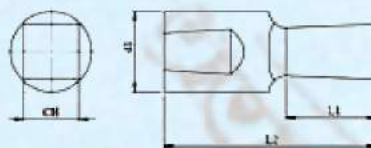
Part Number	Description
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NG06

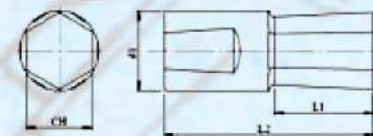
NG06E01	Tool NG06 Hexagon mm.1
NG06E01,5	Tool NG06 Hexagon mm.1,5
NG06E02	Tool NG06 Hexagon mm.2
NG06E02,5	Tool NG06 Hexagon mm.2,5
NG06E03	Tool NG06 Hexagon mm.3
NG06E04	Tool NG06 Hexagon mm.4
NG06E05	Tool NG06 Hexagon mm.5
NG06Q01	Tool NG06 Square mm.1
NG06Q02	Tool NG06 Square mm.2
NG06Q03	Tool NG06 Square mm.3
NG06Q04	Tool NG06 Square mm.4
Standard tolerance	+0.05/+0.1
Supplement for special tolerance and length	



TORX



SQUARE



HEXAGON

d1	L2	L1
6 H7	19	*

* sharpening depth (L1) twice the section CH

Coating available on demand : see page n. 6



Tools for internal broaching profiles

Part Number	Description
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Part Number	Description
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NG08

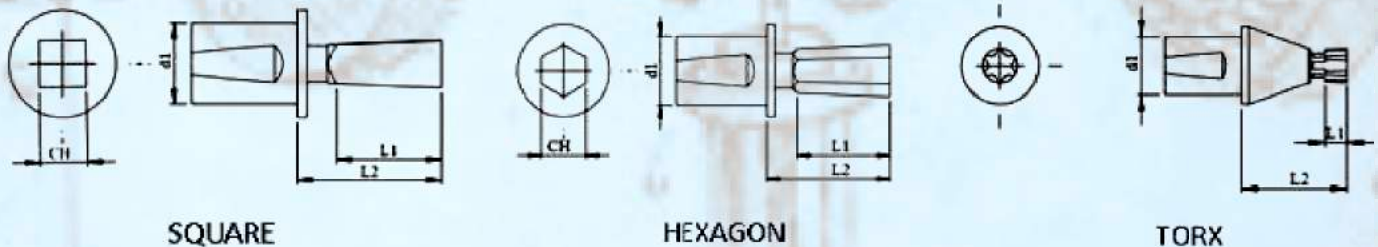
NG08E01	Tool NG08 Hexagon mm.1
NG08E01,5	Tool NG08 Hexagon mm.1,5
NG08E02	Tool NG08 Hexagon mm.2
NG08E02,5	Tool NG08 Hexagon mm.2,5
NG08E03	Tool NG08 Hexagon mm.3
NG08E04	Tool NG08 Hexagon mm.4
NG08E05	Tool NG08 Hexagon mm.5
NG08E06	Tool NG08 Hexagon mm.6
NG08E07	Tool NG08 Hexagon mm.7
NG08E08	Tool NG08 Hexagon mm.8
NG08E09	Tool NG08 Hexagon mm.9
NG08E10	Tool NG08 Hexagon mm.10
NG08Q01	Tool NG08 Square mm.1
NG08Q02	Tool NG08 Square mm.2
NG08Q03	Tool NG08 Square mm.3
NG08Q04	Tool NG08 Square mm.4
NG08Q05	Tool NG08 Square mm.5

NG08Q06	Tool NG08 Square mm.6
NG08Q07	Tool NG08 Square mm.7
NG08Q08	Tool NG08 Square mm.8
NG08T04	Tool NG08 Torx 4
NG08T05	Tool NG08 Torx 5
NG08T06	Tool NG08 Torx 6
NG08T07	Tool NG08 Torx 7
NG08T08	Tool NG08 Torx 8
NG08T09	Tool NG08 Torx 9
NG08T10	Tool NG08 Torx 10
NG08T15	Tool NG08 Torx 15
NG08T20	Tool NG08 Torx 20
NG08T25	Tool NG08 Torx 25
NG08T27	Tool NG08 Torx 27
NG08T30	Tool NG08 Torx 30
NG08T40	Tool NG08 Torx 40

Standard tolerance

+0.05/+0.1

Supplement for special tolerance and length



d1	L2	L1
8 H7	15	*

* sharpening depth (L1) twice the section CH
not applicable for torx profile

Coating available on demand : see page n. 6



Tools for internal broaching profiles

Part Number	Description
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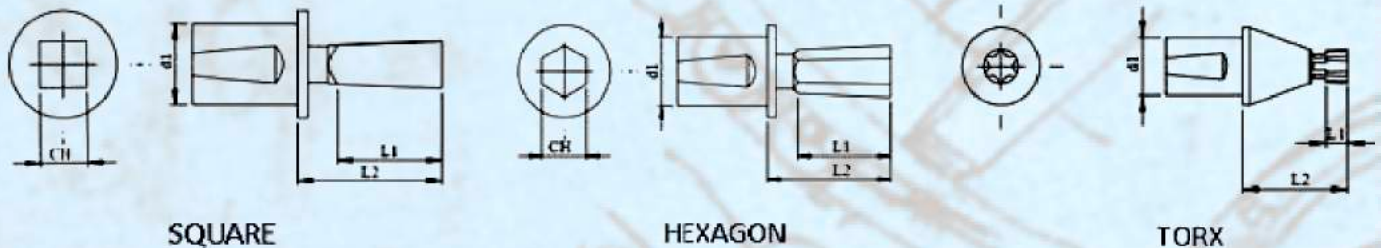
Part Number	Description
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NG12

NG12E01	Tool NG12 Hexagon mm.1
NG12E01,5	Tool NG12 Hexagon mm.1,5
NG12E02	Tool NG12 Hexagon mm.2
NG12E02,5	Tool NG12 Hexagon mm.2,5
NG12E03	Tool NG12 Hexagon mm.3
NG12E04	Tool NG12 Hexagon mm.4
NG12E05	Tool NG12 Hexagon mm.5
NG12E06	Tool NG12 Hexagon mm.6
NG12E07	Tool NG12 Hexagon mm.7
NG12E08	Tool NG12 Hexagon mm.8
NG12E09	Tool NG12 Hexagon mm.9
NG12E10	Tool NG12 Hexagon mm.10
NG12E11	Tool NG12 Hexagon mm.11
NG12E12	Tool NG12 Hexagon mm.12
NG12E13	Tool NG12 Hexagon mm.13
NG12E14	Tool NG12 Hexagon mm.14
NG12Q01	Tool NG12 Square mm.1
NG12Q02	Tool NG12 Square mm.2
NG12Q03	Tool NG12 Square mm.3
NG12Q04	Tool NG12 Square mm.4
NG12Q05	Tool NG12 Square mm.5
NG12Q06	Tool NG12 Square mm.6
NG12Q07	Tool NG12 Square mm.7

NG12Q08	Tool NG12 Square mm.8
NG12Q09	Tool NG12 Square mm.9
NG12Q10	Tool NG12 Square mm.10
NG12Q11	Tool NG12 Square mm.11
NG12Q12	Tool NG12 Square mm.12
NG12T4	Tool NG12 Torx 4
NG12T5	Tool NG12 Torx 5
NG12T6	Tool NG12 Torx 6
NG12T7	Tool NG12 Torx 7
NG12T8	Tool NG12 Torx 8
NG12T9	Tool NG12 Torx 9
NG12T10	Tool NG12 Torx 10
NG12T15	Tool NG12 Torx 15
NG12T20	Tool NG12 Torx 20
NG12T25	Tool NG12 Torx 25
NG12T27	Tool NG12 Torx 27
NG12T30	Tool NG12 Torx 30
NG12T40	Tool NG12 Torx 40
NG12T45	Tool NG12 Torx 45
NG12T50	Tool NG12 Torx 50
NG12T55	Tool NG12 Torx 55
NG12T60	Tool NG12 Torx 60
<i>Standard tolerance</i>	<i>+0.05/+0.1</i>

Supplement for special tolerance and length



d1	L2	L1
12 H7	25	*

* sharpening depth (L1) twice the section CH
not applicable for torx profile

Coating available on demand : see page n. 6



Tools for internal broaching profiles

Part Number	Description
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NG16

NG16E01	Tool NG16 Hexagon mm.1
NG16E01,5	Tool NG16 Hexagon mm.1,5
NG16E02	Tool NG16 Hexagon mm.2
NG16E02,5	Tool NG16 Hexagon mm.2,5
NG16E03	Tool NG16 Hexagon mm.3
NG16E04	Tool NG16 Hexagon mm.4
NG16E05	Tool NG16 Hexagon mm.5
NG16E06	Tool NG16 Hexagon mm.6
NG16E07	Tool NG16 Hexagon mm.7
NG16E08	Tool NG16 Hexagon mm.8
NG16E09	Tool NG16 Hexagon mm.9
NG16E10	Tool NG16 Hexagon mm.10
NG16E11	Tool NG16 Hexagon mm.11
NG16E12	Tool NG16 Hexagon mm.12
NG16E13	Tool NG16 Hexagon mm.13
NG16E14	Tool NG16 Hexagon mm.14
NG16E15	Tool NG16 Hexagon mm.15
NG16E16	Tool NG16 Hexagon mm.16
NG16E17	Tool NG16 Hexagon mm.17
NG16E18	Tool NG16 Hexagon mm.18
NG16E19	Tool NG16 Hexagon mm.19
NG16E20	Tool NG16 Hexagon mm.20
NG16E21	Tool NG16 Hexagon mm.21
NG16E22	Tool NG16 Hexagon mm.22
NG16E23	Tool NG16 Hexagon mm.23
NG16E24	Tool NG16 Hexagon mm.24
NG16E25	Tool NG16 Hexagon mm.25
NG16E26	Tool NG16 Hexagon mm.26
NG16E27	Tool NG16 Hexagon mm.27
NG16E28	Tool NG16 Hexagon mm.28
NG16E29	Tool NG16 Hexagon mm.29
NG16E30	Tool NG16 Hexagon mm.30
NG16E31	Tool NG16 Hexagon mm.31
NG16E32	Tool NG16 Hexagon mm.32
NG16E33	Tool NG16 Hexagon mm.33
NG16E34	Tool NG16 Hexagon mm.34
NG16E35	Tool NG16 Hexagon mm.35
NG16E36	Tool NG16 Hexagon mm.36

Part Number	Description
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NG16E37	Tool NG16 Hexagon mm.37
NG16E38	Tool NG16 Hexagon mm.38
NG16E39	Tool NG16 Hexagon mm.39
NG16E40	Tool NG16 Hexagon mm.40
NG16Q01	Tool NG16 Square mm.1
NG16Q02	Tool NG16 Square mm.2
NG16Q03	Tool NG16 Square mm.3
NG16Q04	Tool NG16 Square mm.4
NG16Q05	Tool NG16 Square mm.5
NG16Q06	Tool NG16 Square mm.6
NG16Q07	Tool NG16 Square mm.7
NG16Q08	Tool NG16 Square mm.8
NG16Q09	Tool NG16 Square mm.9
NG16Q10	Tool NG16 Square mm.10
NG16Q11	Tool NG16 Square mm.11
NG16Q12	Tool NG16 Square mm.12
NG16Q13	Tool NG16 Square mm.13
NG16Q14	Tool NG16 Square mm.14
NG16Q15	Tool NG16 Square mm.15
NG16Q16	Tool NG16 Square mm.16
NG16Q17	Tool NG16 Square mm.17
NG16Q18	Tool NG16 Square mm.18
NG16Q19	Tool NG16 Square mm.19
NG16Q20	Tool NG16 Square mm.20
NG16Q21	Tool NG16 Square mm.21
NG16Q22	Tool NG16 Square mm.22
NG16Q23	Tool NG16 Square mm.23
NG16Q24	Tool NG16 Square mm.24
NG16Q25	Tool NG16 Square mm.25
NG16Q26	Tool NG16 Square mm.26
NG16Q27	Tool NG16 Square mm.27
NG16Q28	Tool NG16 Square mm.28
NG16Q29	Tool NG16 Square mm.29
NG16Q30	Tool NG16 Square mm.30
NG16T4	Tool NG16 Torx 4
NG16T5	Tool NG16 Torx 5
NG16T6	Tool NG16 Torx 6
NG16T7	Tool NG16 Torx 7

Follow ...

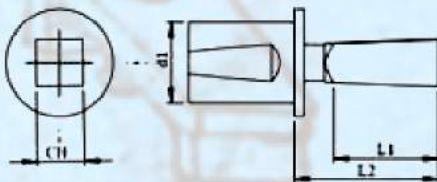


Tools for internal broaching profiles

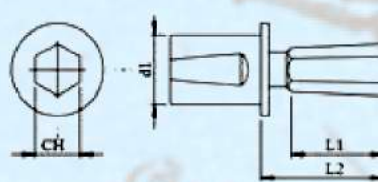
Part Number	Description
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NG16

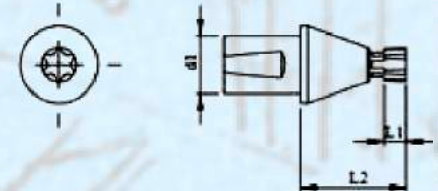
NG16T8	Tool NG16 Torx 8
NG16T9	Tool NG16 Torx 9
NG16T10	Tool NG16 Torx 10
NG16T15	Tool NG16 Torx 15
NG16T20	Tool NG16 Torx 20
NG16T25	Tool NG16 Torx 25
NG16T27	Tool NG16 Torx 27
NG16T30	Tool NG16 Torx 30
NG16T40	Tool NG16 Torx 40
NG16T45	Tool NG16 Torx 45
NG16T50	Tool NG16 Torx 50
NG16T55	Tool NG16 Torx 55
NG16T60	Tool NG16 Torx 60
NG16T70	Tool NG16 Torx 70
NG16T80	Tool NG16 Torx 80
NG16T90	Tool NG16 Torx 90
NG16T100	Tool NG16 Torx 100
<i>Standard tolerance</i>	<i>+0.05/+0.1</i>
<i>Supplement for special tolerance and length</i>	



SQUARE



HEXAGON



TORX

d1	L2	L1
16 H7	25	*

* sharpening depth (L1) twice the section CH
not applicable for torx profile

Coating available on demand : see page n. 6



Tools for internal broaching profiles

Part Number	Description
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Part Number	Description
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SG16

SG16E01	Tool SG16 Hexagon mm.1
SG16E02	Tool SG16 Hexagon mm.2
SG16E03	Tool SG16 Hexagon mm.3
SG16E04	Tool SG16 Hexagon mm.4
SG16E05	Tool SG16 Hexagon mm.5
SG16E06	Tool SG16 Hexagon mm.6
SG16E07	Tool SG16 Hexagon mm.7
SG16E08	Tool SG16 Hexagon mm.8
SG16E09	Tool SG16 Hexagon mm.9
SG16E10	Tool SG16 Hexagon mm.10
SG16E11	Tool SG16 Hexagon mm.11
SG16E12	Tool SG16 Hexagon mm.12
SG16E13	Tool SG16 Hexagon mm.13
SG16E14	Tool SG16 Hexagon mm.14
SG16E15	Tool SG16 Hexagon mm.15
SG16E16	Tool SG16 Hexagon mm.16
SG16E17	Tool SG16 Hexagon mm.17
SG16E18	Tool SG16 Hexagon mm.18
SG16E19	Tool SG16 Hexagon mm.19
SG16E20	Tool SG16 Hexagon mm.20
SG16E21	Tool SG16 Hexagon mm.21
SG16E22	Tool SG16 Hexagon mm.22
SG16E23	Tool SG16 Hexagon mm.23
SG16E24	Tool SG16 Hexagon mm.24
SG16E25	Tool SG16 Hexagon mm.25
SG16E26	Tool SG16 Hexagon mm.26
SG16E27	Tool SG16 Hexagon mm.27
SG16E28	Tool SG16 Hexagon mm.28
SG16E29	Tool SG16 Hexagon mm.29
SG16E30	Tool SG16 Hexagon mm.30
SG16E31	Tool SG16 Hexagon mm.31
SG16E32	Tool SG16 Hexagon mm.32
SG16E33	Tool SG16 Hexagon mm.33
SG16E34	Tool SG16 Hexagon mm.34
SG16E35	Tool SG16 Hexagon mm.35
SG16E36	Tool SG16 Hexagon mm.36
SG16E37	Tool SG16 Hexagon mm.37
SG16E38	Tool SG16 Hexagon mm.38

SG16E39	Tool SG16 Hexagon mm.39
SG16E40	Tool SG16 Hexagon mm.40
SG16Q01	Tool SG16 Square mm.1
SG16Q02	Tool SG16 Square mm.2
SG16Q03	Tool SG16 Square mm.3
SG16Q04	Tool SG16 Square mm.4
SG16Q05	Tool SG16 Square mm.5
SG16Q06	Tool SG16 Square mm.6
SG16Q07	Tool SG16 Square mm.7
SG16Q08	Tool SG16 Square mm.8
SG16Q09	Tool SG16 Square mm.9
SG16Q10	Tool SG16 Square mm.10
SG16Q11	Tool SG16 Square mm.11
SG16Q12	Tool SG16 Square mm.12
SG16Q13	Tool SG16 Square mm.13
SG16Q14	Tool SG16 Square mm.14
SG16Q15	Tool SG16 Square mm.15
SG16Q16	Tool SG16 Square mm.16
SG16Q17	Tool SG16 Square mm.17
SG16Q18	Tool SG16 Square mm.18
SG16Q19	Tool SG16 Square mm.19
SG16Q20	Tool SG16 Square mm.20
SG16Q21	Tool SG16 Square mm.21
SG16Q22	Tool SG16 Square mm.22
SG16Q23	Tool SG16 Square mm.23
SG16Q24	Tool SG16 Square mm.24
SG16Q25	Tool SG16 Square mm.25
SG16Q26	Tool SG16 Square mm.26
SG16Q27	Tool SG16 Square mm.27
SG16Q28	Tool SG16 Square mm.28
SG16Q29	Tool SG16 Square mm.29
SG16Q30	Tool SG16 Square mm.30
SG16T4	Tool SG16 Torx 4
SG16T5	Tool SG16 Torx 5
SG16T6	Tool SG16 Torx 6
SG16T7	Tool SG16 Torx 7
SG16T8	Tool SG16 Torx 8
SG16T9	Tool SG16 Torx 9

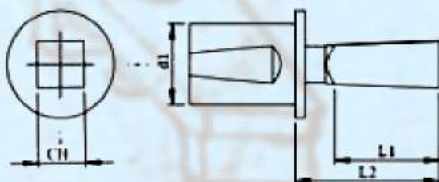


Tools for internal broaching profiles

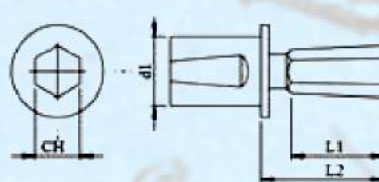
Part Number	Description
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SG16

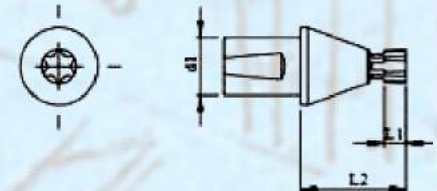
SG16T10	Tool SG16 Torx 10
SG16T15	Tool SG16 Torx 15
SG16T20	Tool SG16 Torx 20
SG16T25	Tool SG16 Torx 25
SG16T27	Tool SG16 Torx 27
SG16T30	Tool SG16 Torx 30
SG16T40	Tool SG16 Torx 40
SG16T45	Tool SG16 Torx 45
SG16T50	Tool SG16 Torx 50
SG16T55	Tool SG16 Torx 55
SG16T60	Tool SG16 Torx 60
SG16T70	Tool SG16 Torx 70
SG16T80	Tool SG16 Torx 80
SG16T90	Tool SG16 Torx 90
SG16T100	Tool SG16 Torx 100
Standard tolerance	+0.05/+0.1
Supplement for special tolerance and length	



SQUARE



HEXAGON

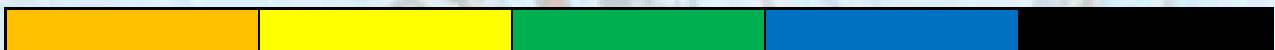


TORX

d1	L2	L1
16 H7	45	*

* sharpening depth (L1) 3 times the section CH
not applicable for torx profile

Coating available on demand : see page n. 6



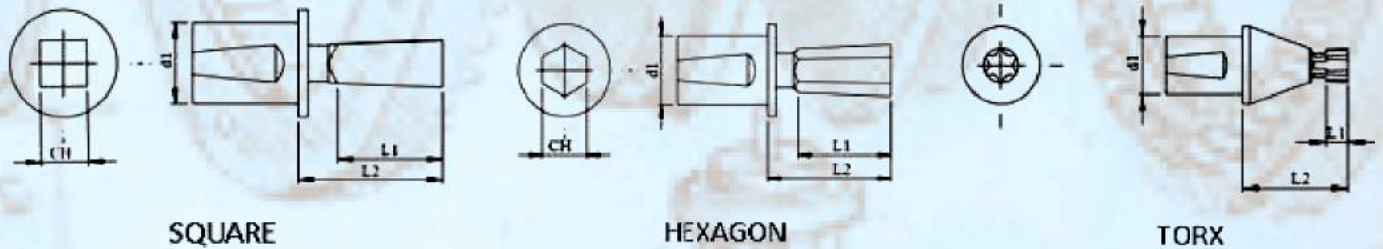
Tools for internal broaching profiles

Part Number	Description
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XG16

<u>XG16E</u>	Tool XG16 Hexagonal till to mm.17
	Tool XG16 Hexagonal till to mm.25
	Tool XG16 Hexagonal till to mm.36
	Tool XG16 Hexagonal till to mm.42
	Tool XG16 Hexagonal till to mm.50
<u>XG16Q</u>	Tool XG16 Square till to mm.17
	Tool XG16 Square till to mm.25
	Tool XG16 Square till to mm.36
	Tool XG16 Square till to mm.40
<u>XG16T</u>	Tool XG16 from Torx T4 to Torx T100
<i>Standard tolerance</i>	+0.05/+0.1

Supplement for special tolerance and length



d1	L2	L1
16 H7	70	*

*** sharpening depth (L1) 3 times the section CH
not applicable for torx profile**

Coating available on demand : see page n. 6



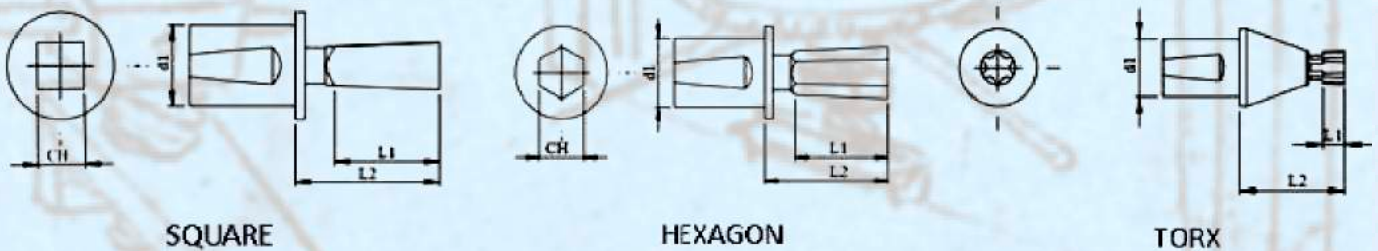
Tools for internal broaching profiles

Part Number	Description
-------------	-------------

XG25

<u>XG25E</u>	Tool XG25 Hexagon till to mm.17
	Tool XG25 Hexagon till to mm.25
	Tool XG25 Hexagon till to mm.36
	Tool XG25 Hexagon till to mm.42
	Tool XG25 Hexagon till to mm.50
<u>XG25Q</u>	Tool XG25 Square till to mm.17
	Tool XG25 Square till to mm.25
	Tool XG25 Square till to mm.36
	Tool XG25 Square till to mm.40
<u>XG25T</u>	Tool XG25 from Torx T4 to Torx T100
<i>Standard tolerance</i>	+0.05/+0.1

Supplement for special tolerance and length



d1	L2	L1
25 H7	100	*

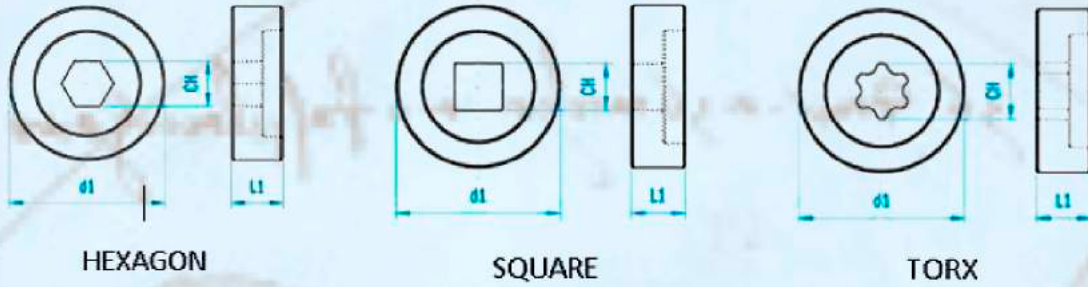
* sharpening depth (L1) 3 times the section CH
not applicable for torx profile

Coating available on demand : see page n. 6



SPECIAL TOOLS FOR INTERNAL BROACHING AVAILABLE ON DEMAND

Tools for external broaching profiles



d1	L1
20	8,5

Part Number	Description
<u>EG20</u>	
	Tool EG20 Hexagon till to mm.24
	Tool EG20 Square till to mm.16
	Tool EG20 Torx till to E8

d1	L1
36	12,2

Part Number	Description
<u>EG36</u>	
	Tool EG36 Hexagon till to mm.12
	Tool EG36 Square till to mm.10
	Tool EG36 Torx till to E18

d1	L1
45	12,2

Part Number	Description
<u>EG45</u>	
	Tool EG45 Hexagon till to mm.30
	Tool EG45 Square till to mm.24
	Tool EG45 Torx till to E24

d1	L1
70	12,2

Part Number	Description
<u>EG70</u>	
	Tool EG70 Hexagon till to mm.40
	Tool EG70 Square till to mm.32
	Tool EG70 Torx till to E24

Coating available on demand : see page n. 6



SPECIAL TOOLS FOR EXTERNAL BROACHING AVAILABLE ON DEMAND





MultibroX[®]



Low Cost Range **ROTARY BROACHING – GEAR**

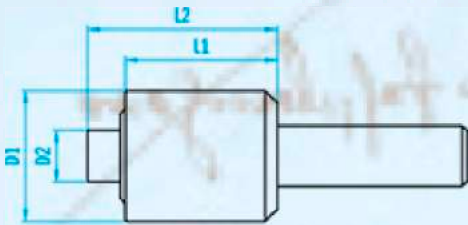


50 years of Italian Technology at your service

ATTENTION: **MultibroX** Toolholder is not recommended and warranted for a production over 1.000 pcs in a row .



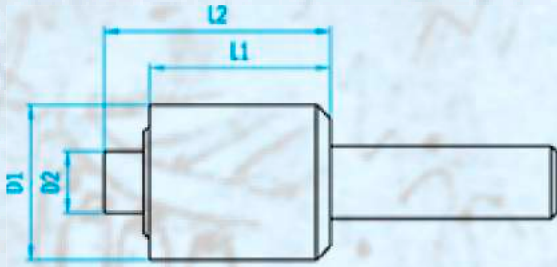
Internal Broaching Toolholders



MODEL		MX02
Max capacity for hexagonal profiles		≤ 8
Max capacity for square profiles		≤ 8
Max capacity for torx profiles		≤ T20
Max working depth		≤ 12
Overall dimensions (mm)	D1	32
	D2	16
	L1	27
	L2	36,5
Cylindrical shank DIN 1835	∅	10
		12
		16
		3/4"
		20-22
25-1"		
shank Weldon DIN 1835-1	∅	¾-16-20-25-1"
shank M.T. DIN 228		1-2
Tool shank		NG08



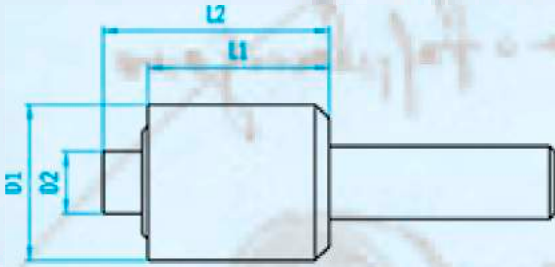
Internal Broaching Toolholders



MODEL	MX05	
Max capacity for hexagonal profiles	≤ 10	
Max capacity for square profiles	≤ 8	
Max capacity for torx profiles	≤ T20	
Max working depth	≤ 22	
Overall dimensions (mm)	D1	42
	D2	20
	L1	50,5
	L2	69,5
shank M.T. DIN 228		2
Cylindrical shank DIN 1835		16
		3/4"
		20
	∅	22
		25-1"
		32
shank Weldon DIN 1835-1	∅	¾-16-20-25-1"
shank VDI DIN 69880	∅	20
shank BT MAS 403	∅	BT30
shank ISO-DIN69871/DIN2080	∅	ISO30
shank HSK-DIN69893	∅	50-63
Tool shank	NG12	



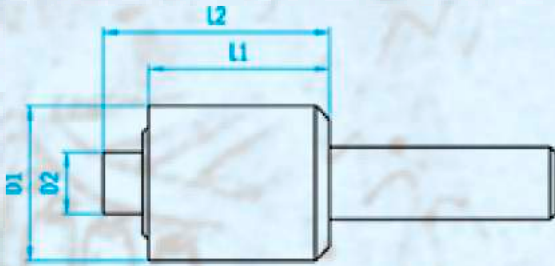
Internal Broaching Toolholders



MODEL	MX11	
Max capacity for hexagonal profiles	≤ 14	
Max capacity for square profiles	≤ 10	
Max capacity for torx profiles	≤ T30	
Max working depth	≤ 20	
Overall dimensions (mm)	D1	55
	D2	21
	L1	62
	L2	76
shank M.T. DIN 228		2
Cylindrical shank DIN 1835		16
		3/4"
		20
	∅	25
		1"
		32
shank Weldon DIN 1835-1	∅	¾-16-20-25-32-1"
shank VDI DIN 69880	∅	20-30
shank BT MAS 403	∅	BT30
shank ISO-DIN69871/DIN2080	∅	ISO30
shank HSK-DIN69893	∅	50-63
Tool shank	NG12	



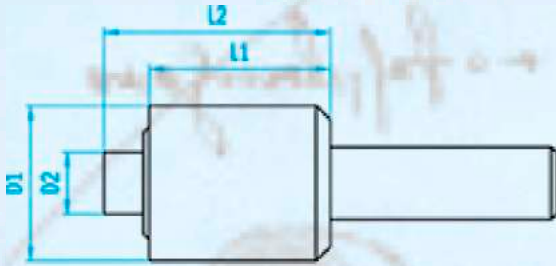
Internal Broaching Toolholders



MODEL	MX21	
Max capacity for hexagonal profiles	≤ 17	
Max capacity for square profiles	≤ 12	
Max capacity for torx profiles	≤ T50	
Max working depth	≤ 20	
Overall dimensions (mm)	D1	70
	D2	30
	L1	78
	L2	90,5
shank M.T. DIN 228		3
Cylindrical shank DIN 1835		20
		22
		25
	∅	1"
		32
		40
shank Weldon DIN 1835-1	∅	20-25-32-40-1"
shank VDI DIN 69880	∅	30-40
shank BT MAS 403	∅	BT40
shank ISO-DIN69871/DIN2080	∅	ISO40
shank HSK-DIN69893	∅	63
Tool shank	NG16	



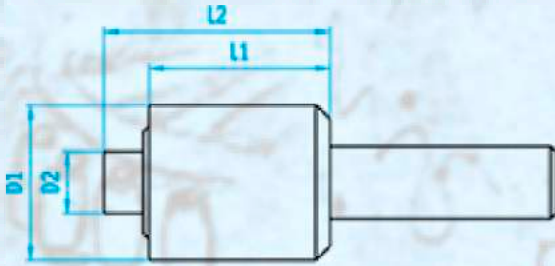
Internal Broaching Toolholders



MODEL	MX31	
Max capacity for hexagonal profiles	≤ 24	
Max capacity for square profiles	≤ 20	
Max capacity for torx profiles	≤ T60	
Max working depth	≤ 21	
Overall dimensions (mm)	D1	90
	D2	42
	L1	91,5
	L2	104,5
shank M.T. DIN 228	3-4'	
Cylindrical shank DIN 1835	∅	25
		1"
		32
		40
		-
shank Weldon DIN 1835-1	∅	25-32-40-1"
shank VDI DIN 69880	∅	30-40
shank BT MAS 403	∅	BT40-50
shank ISO-DIN69871/DIN2080	∅	ISO40-50
shank HSK-DIN69893	∅	80-100
Tool shank	NG16	

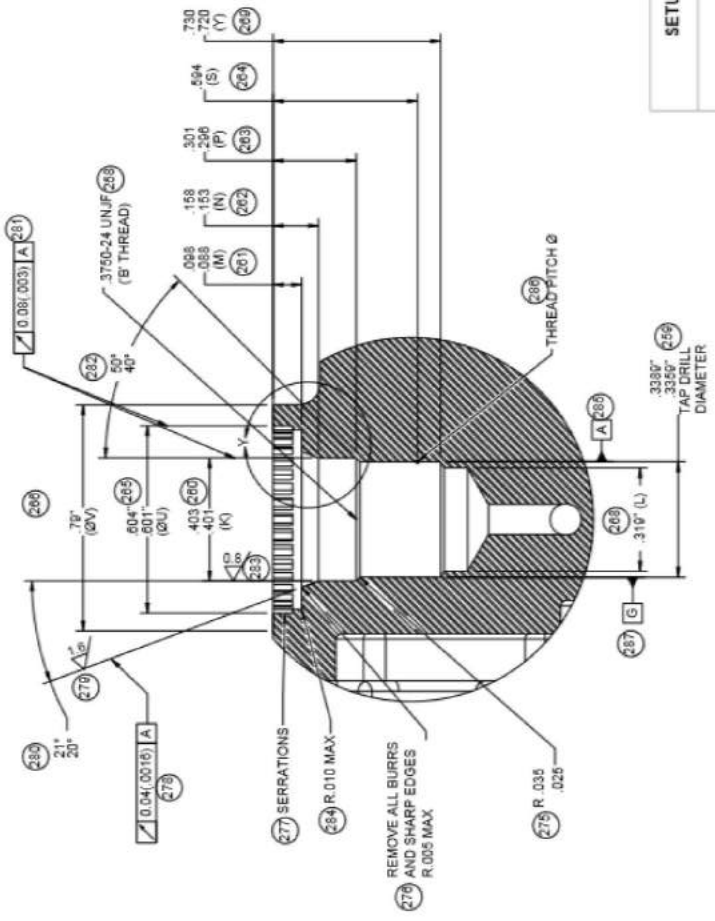
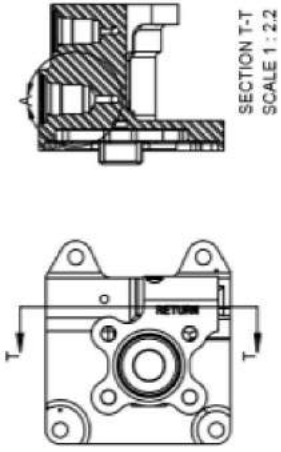


Internal Broaching Toolholders




















MODEL	MX31S	
Max capacity for hexagonal profiles	≤ 40	
Max capacity for square profiles	≤ 25	
Max capacity for torx profiles	≤ T60	
Max working depth	≤ 42	
Overall dimensions (mm)	D1	90
	D2	42
	L1	92,5
	L2	105,5
shank M.T. DIN 228		3-4'
Cylindrical shank DIN 1835	Ø	25
		1"
		32
		40
		-
shank Weldon DIN 1835-1	Ø	25-32-40-1"
shank VDI DIN 69880	Ø	30-40
shank BT MAS 403	Ø	BT40-50
shank ISO-DIN69871/DIN2080	Ø	ISO40-50
shank HSK-DIN69893	Ø	80-100
Tool shank	SG16	





DETAIL Y
SCALE 4:1

TOOL DATA

  		 IN METRIC <small>FOR ALL DIMENSIONS UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES AND DECIMALS THEREOF.</small>	 MATERIAL CORROSION RESISTANT STEEL AMS 565 H1025	 PART # PART NAME DRAWING #	 REV # & DATE
 WORKSTATION		 VERSION CODE	 MODEL & QUANTITY	 REVISION S / I / L / U	 REVISION # REVISION DATE
 X0# NA Y0# NA Z0# NA		 CNC MAIN PROG # CNC SUB PROG # SPSI # SCALE	 OPERATOR OPERATION SHEET # OPERATION # OPERATION DESCRIPTION	 CENTER	 Attiva Windows Passa a Impostazioni per attivare Windows.

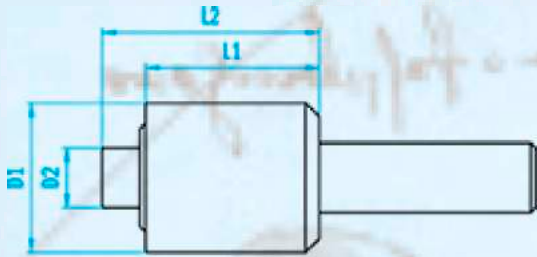


poliangolar[®] **H.P.**
rotary broaching

High Performance Range



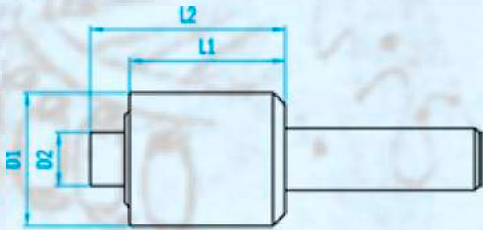
Internal Broaching Toolholders



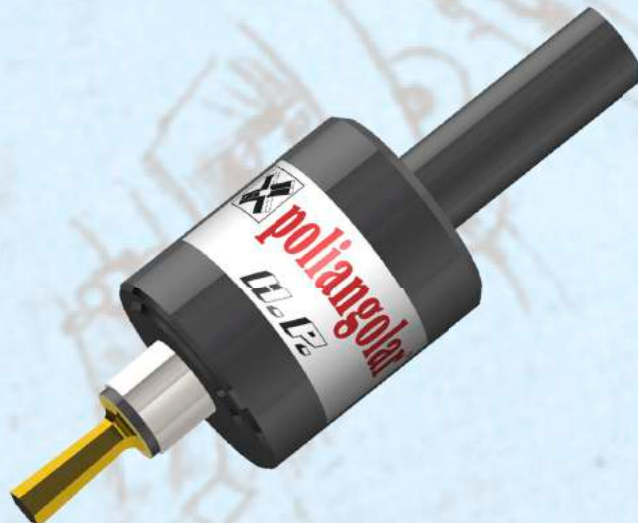
MODEL	0200HP	
Max capacity for hexagonal profiles	≤ 10	
Max capacity for square profiles	≤ 8	
Max capacity for torx profiles	≤ 40	
Max working depth	≤ 13	
Tool shank	NG08	
Overall dimensions (mm)	D1	32
	D2	16
	L1	27
	L2	36,5
Cylindrical shank DIN 1835	Ø	10
		12
		16
		3/4"
		20-22
		25-1"
shank Weldon DIN 1835-1	Ø	¾-16-20-25-1"
shank ISO-DIN69871/DIN2080	Ø	ISO20



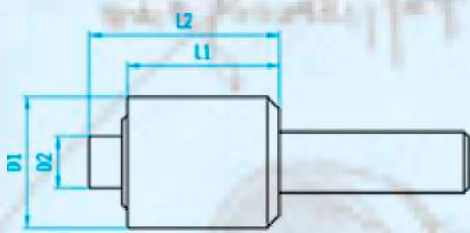
Internal Broaching Toolholders



MODEL	0500HP	
Max capacity for hexagonal profiles	≤ 12	
Max capacity for square profiles	≤ 10	
Max capacity for torx profiles	≤ T50	
Max working depth	≤ 25	
Tool shank	NG12	
Overall dimensions (mm)	D1	42
	D2	20
	L1	50,5
	L2	69,5
Cylindrical shank DIN 1835	Ø	16
		¾
		20
		22
		25-1"
		32
shank Weldon DIN 1835-1	Ø	¾-16-20-25-1"
shank VDI DIN 69880	Ø	20
shank BT MAS 403	Ø	BT30
shank M.T. DIN 228		2
shank ISO-DIN69871/DIN2080	Ø	ISO30
shank HSK-DIN69893	Ø	50-63



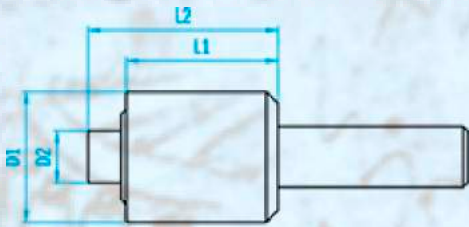
Internal Broaching Toolholders



MODEL		1100HP	
Max capacity for hexagonal profiles		≤ 14	
Max capacity for square profiles		≤ 12	
Max capacity for torx profiles		≤ T60	
Max working depth		≤ 25	
Tool shank		NG12	
Overall dimensions (mm)	D1	55	
	D2	21	
	L1	62	
	L2	76	
Cylindrical shank DIN 1835	Ø	16	
		3/4"	
		20	
		25	
		1"	
32			
shank Weldon DIN 1835-1	Ø	¾-16-20-25-32-1"	
shank VDI DIN 69880	Ø	20-30	
shank BT MAS 403	Ø	BT30	
shank M.T. DIN 228		2	
shank ISO-DIN69871/DIN2080	Ø	ISO30	
shank HSK-DIN69893	Ø	50-63	



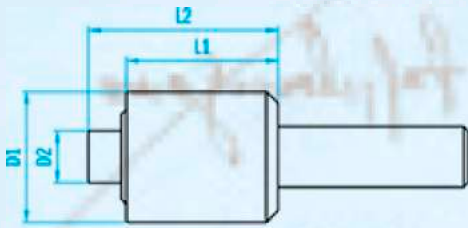
Internal Broaching Toolholders



MODEL	2100HP	
Max capacity for hexagonal profiles	≤ 24	
Max capacity for square profiles	≤ 16	
Max capacity for torx profiles	≤ T70	
Max working depth	≤ 25	
Tool shank	NG16	
Overall dimensions (mm)	D1	70
	D2	30
	L1	78
	L2	90,5
Cylindrical shank DIN 1835	Ø	20
		22
		25
		¾-1"
		32
shank Weldon DIN 1835-1	Ø	¾-20-25-32-40-1"
shank VDI DIN 69880	Ø	30-40
shank BT MAS 403	Ø	BT40
shank M.T. DIN 228		3
shank ISO-DIN69871/DIN2080	Ø	ISO40
shank HSK-DIN69893	Ø	63



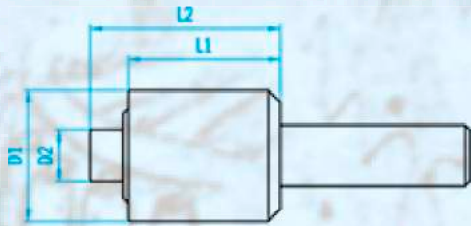
Internal Broaching Toolholders



MODEL		3100HP
Max capacity for hexagonal profiles		≤ 40
Max capacity for square profiles		≤ 30
Max capacity for torx profiles		≤ T100
Max working depth		≤ 25
Tool shank		NG16
Overall dimensions (mm)	D1	90
	D2	42
	L1	91,50
	L2	104,5
Cylindrical shank DIN 1835	Ø	25
		1"
		32
		40
		-
		-
shank Weldon DIN 1835-1	Ø	25-32-40-1"
shank VDI DIN 69880	Ø	30-40
shank BT MAS 403	Ø	BT40-50
shank M.T. DIN 228		3 - 4
shank ISO-DIN69871/DIN2080	Ø	ISO40-50
shank HSK-DIN69893	Ø	80-100



Internal Broaching Toolholders



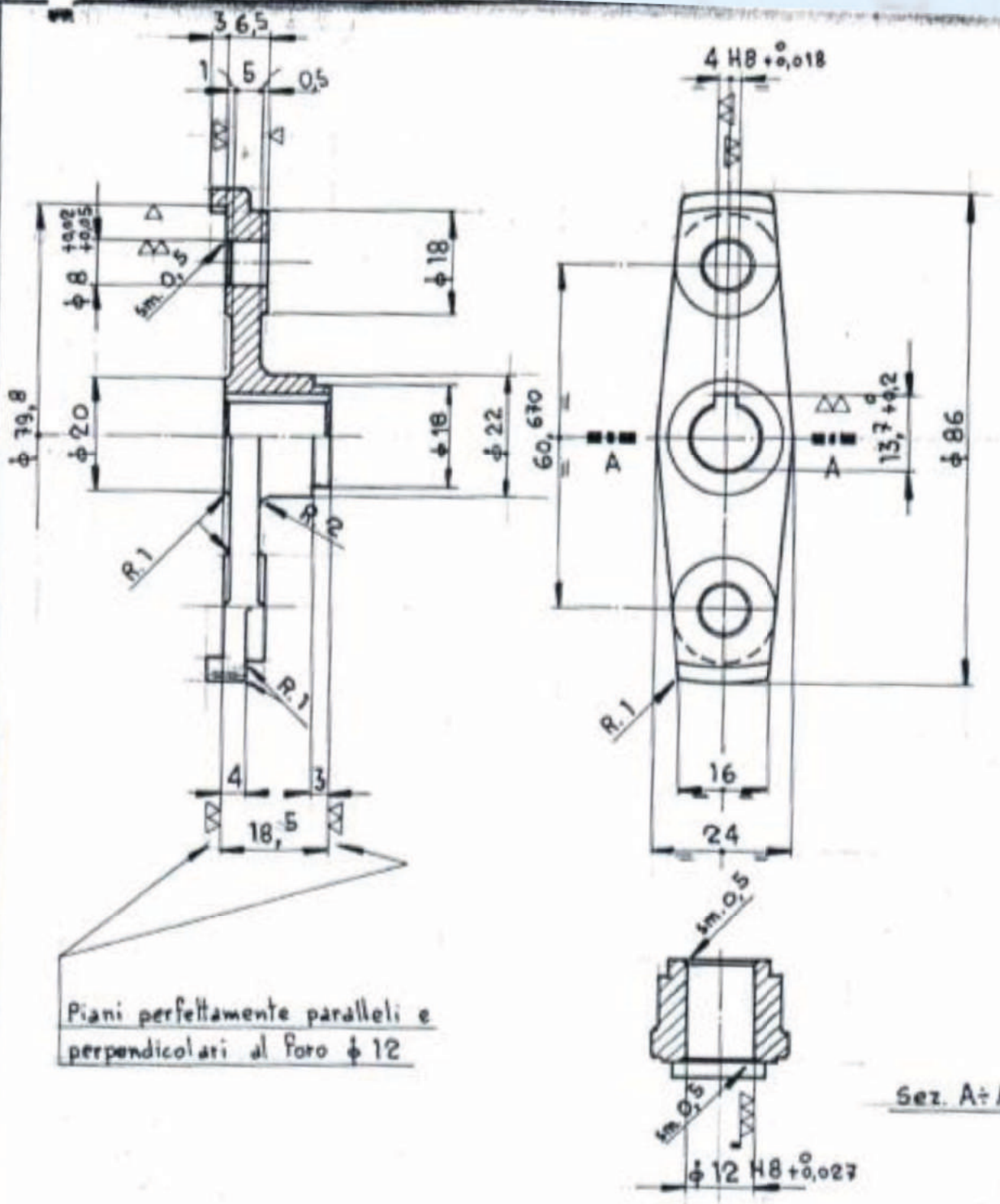
MODEL	3100SHP	
Max capacity for hexagonal profiles	≤ 40	
Max capacity for square profiles	≤ 30	
Max capacity for torx profiles	≤ T100	
Max working depth	≤ 45	
Tool shank	SG16	
Overall dimensions (mm)	D1	90
	D2	42
	L1	92,5
	L2	105,5
Cylindrical shank DIN 1835	Ø	25
		1"
		32
		40
		-
		-
shank Weldon DIN 1835-1	Ø	25-32-40-1"
shank VDI DIN 69880	Ø	30-40
shank BT MAS 403	Ø	BT40-50
shank M.T. DIN 228		3 - 4
shank ISO-DIN69871/DIN2080	Ø	ISO40-50
shank HSK-DIN69893	Ø	80-100



Tolleranza generale $\pm 0,1$ dove non è specificato diversamente.

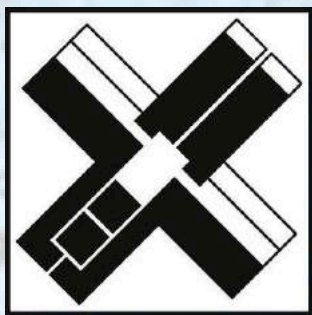
Superfici: ∇ Include ∇ ∇ Ripetizione

Spizze: \sim grossa \sim ∇ sgrata



Materiale: Ottone Delta A fuso in conch.				Data	
Trattamento: //				Approvato	
Modello	N.	Peso grezzo Kg.	Durezza Hd	Scala	Quantità
Stampo e caldo	N.	Peso finito Kg.	Durezza HRc.	1:1	
Modifiche:				GRUPPO	
				DISEGNO N.	





polikey®

slotting

Slotting tools program

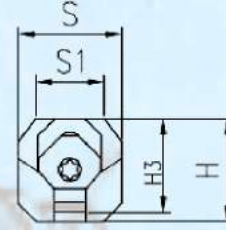
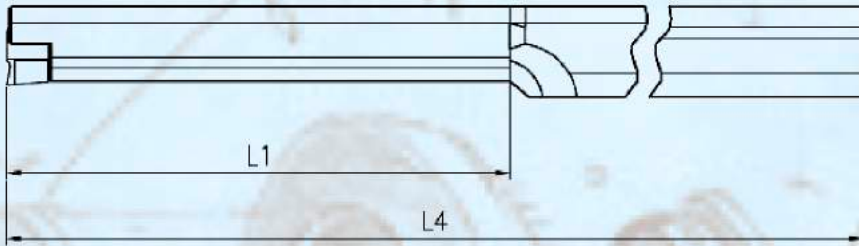


GARANZIA ITALIA



Program for Conventional slotting machine

mono cutting edge



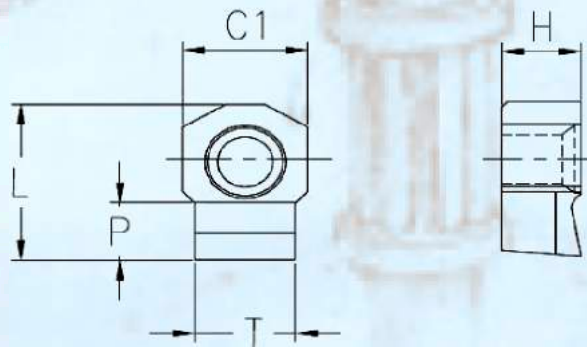
Toolholders :

PLKS

Cod.	H	H3	S	S1	L1	L4	T	DIAM.	P	Torx	Ref. Insert
								min			
PLKS1603	12	9,3	12	8,2	40	160	3	9,9	2	2,5X10	PLKIN30
PLKS160	12	10	12	7	60	160	4	10,4	3	2,5X10	PLKIN40
							5	10,8	3,2	2,5X10	PLKIN50
PLKS220	15,5		12			220	6	17,9	4,9	4X15	PLKIN60
							8	18,4	5,2	4X15	PLKIN80
PLKS250	20,6		14			250	10	23,8	6,2	6X18	PLKIN100
							12	24,2	7,2	6X18	PLKIN120

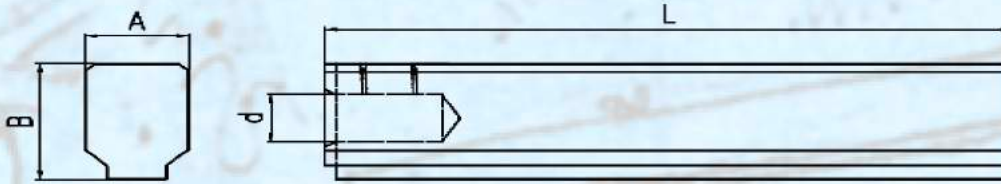
Inserts :

PLKIN



Cod.	C1	H	L	P	T	Tolerance	Packing Qty	Ref. Toolholder
						T		
PLKIN30	6	4,7	7	2	3	H7/C11	2	PLKS1603
PLKIN40	6	4,7	8	3	4	H7/C11	2	PLKS160
PLKIN50	6	4,7	8	3,2	5	H7/C11	2	PLKS160
PLKIN60	10	6,3	13,8	4,9	6	H7/C11	2	PLKS220
PLKIN80	10	6,3	13,8	5,2	8	H7/C11	2	PLKS220
PLKIN100	13	9,4	18,5	6,2	10	H7/C11	2	PLKS250
PLKIN120	13	9,4	18,5	7,2	12	H7/C11	2	PLKS250

Program for double cutting edge



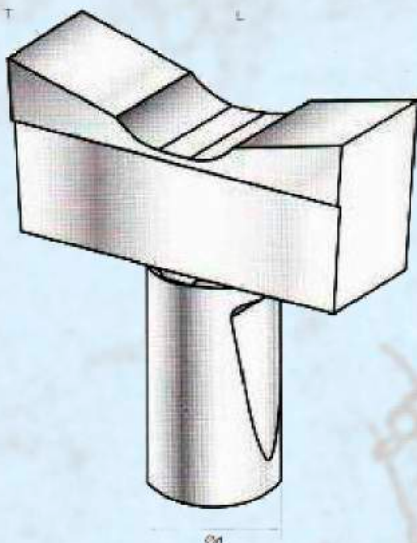
Toolholders :

PLKS

PLKS4040	14	19	200	4	M5	PLKDB04
PLKS5050	14	19	200	5	M5	PLKDB05
PLKS6060	14	19	220	6	M6	PLKDB06
PLKS8080	14	19	220	8	M8	PLKDB08
PLKS1010	18	28	250	10	M10	PLKDB10
PLKS1212	22	34	250	12	M10	PLKDB12
PLKS1414	22	34	300	14	M12	PLKDB14
PLKS1616	24	39	350	16	M12	PLKDB16
PLKS1818	29	45	375	18	M14	PLKDB18
PLKS2020	35	54	430	20	M14	PLKDB20
				22	M14	PLKDB22

Tools :

PLKDB

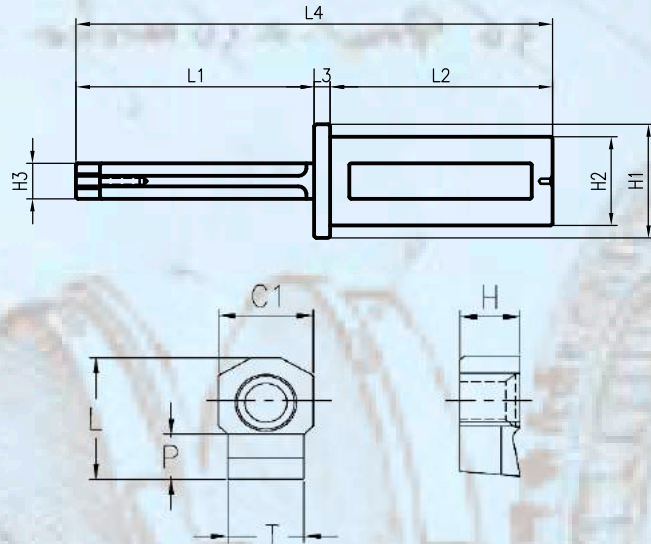
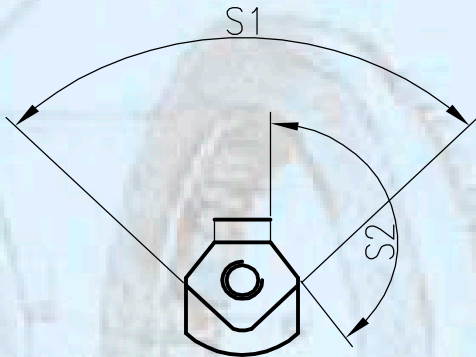


Cod.	T	L	d	Tolerance
PLKDB04	4	11	4	H7-C11
PLKDB05	5	12	5	H7-C11
PLKDB06	6	18	6	H7-C11
PLKDB08	8	21	8	H7-C11
PLKDB10	10	30	10	H7-C11
PLKDB12	12	38	12	H7-C11
PLKDB14	14	40	14	H7-C11
PLKDB16	16	45	16	H7-C11
PLKDB18	18	55	18	H7-C11
PLKDB20	20	65	20	H7-C11
PLKDB22	22	65	20	H7-C11

CNC lathe machine tools mono cutting edge

Toolholders :

PLKT



Cod.	L1	L2	L3	L4	H1	H2	H3	S1	S2	Torx	Ref.
										screw	Insert
PLKT50	50	56	5	111	35	25	9,2	90°	135°	2,5X10	PLKIN30
PLKT60	60	56	5	121	35	25	10	90°	135°	2,5X10	PLKIN40
										2,5X10	PLKIN50
PLKT100	100	56	5	161	35	25	14	120°	135°	4X15	PLKIN60
										4X15	PLKIN80
PLKT140	140	56	5	201	35	25	20	120°	135°	6X18	PLKIN100
										6X18	PLKIN120

KIT :

PLKSKIT (slotting machine)



List Item	Qty
PLKS1603	1
PLKS160	1
PLKS220	1
PLKS250	1
PLKIN30	2
PLKIN40	2
PLKIN50	2
PLKIN60	2
PLKIN80	2
PLKIN100	2
PLKIN120	2

PLKTKIT (CNC machine tools)

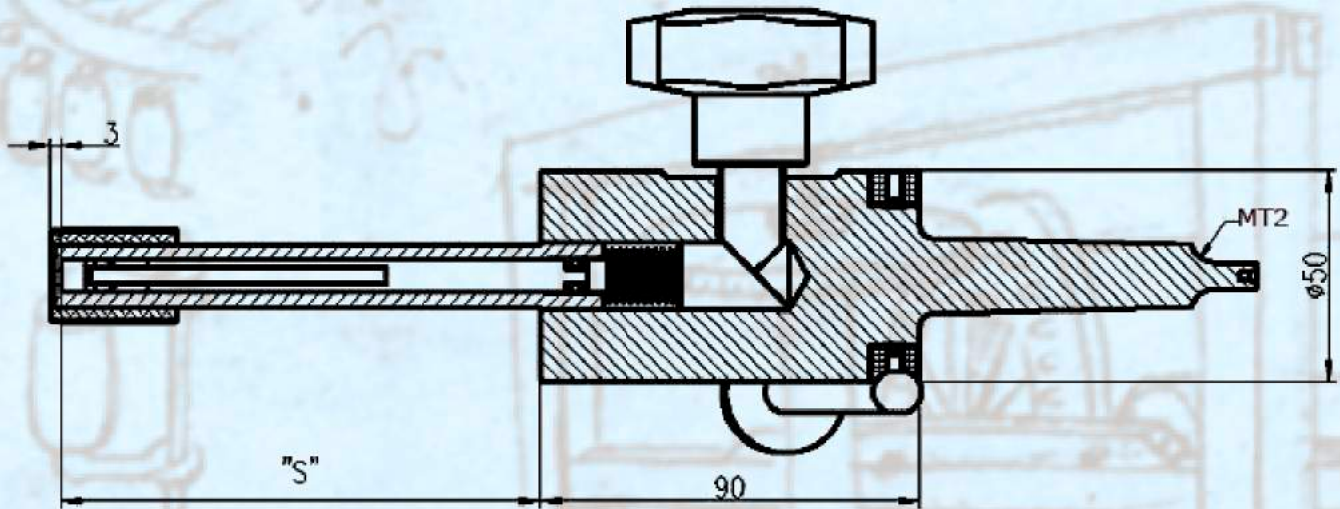


List Item	Qty
PLKT50	1
PLKT60	1
PLKT100	1
PLKT140	1
PLKIN30	2
PLKIN40	2
PLKIN50	2
PLKIN60	2
PLKIN80	2
PLKIN100	2
PLKIN120	2



MANUAL

TECHNICAL DATA



TOOLBAR								
Model	S3	S4	S5	S6	S8	S10	S12	S14
Keyway size mm	3	4	5	6	8	10	12	14
Ø Diam.STD guide Bush	8	10	15	20	25	32	40	45
Ø Diam. Other guide bush****	9<->10	11<->12	12<->17	17<->22	22<->30	30<->38	38<->44	44<->52
Working depth "S"	50	50	50	85	105	105	140	140
Weight Kgs	1,3	1,4	1,5	1,65	1,8	2	2,2	2,5
**** from keyway S3 up to keyway S8 entire toolbar								
**** from keyway S10 up to keyway S14 interchangeable guide bush								





polikey[®]
slotting

KIT :

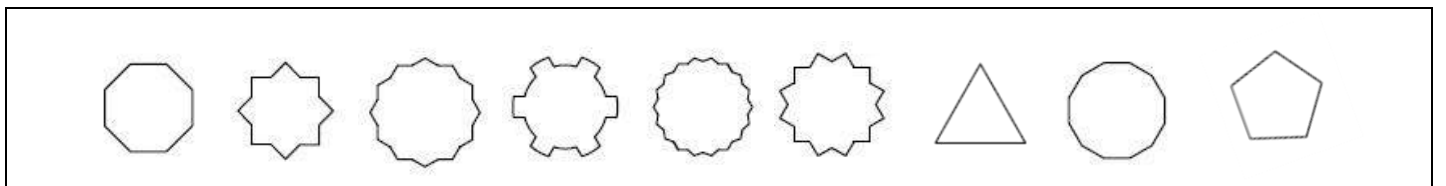
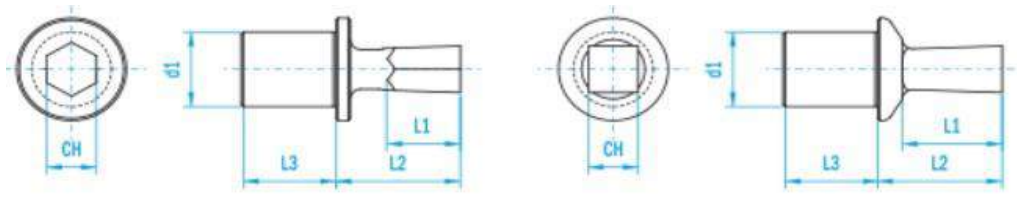
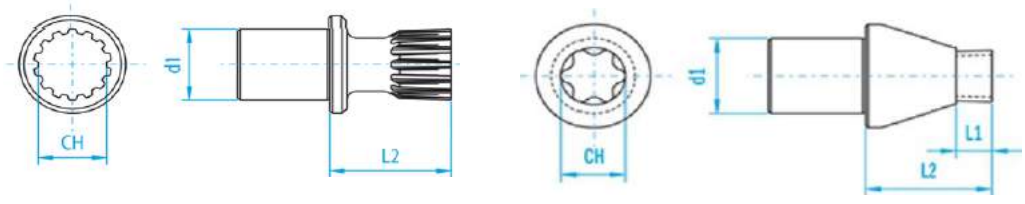
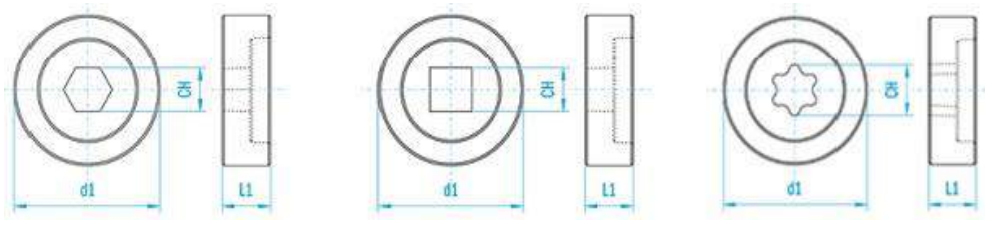
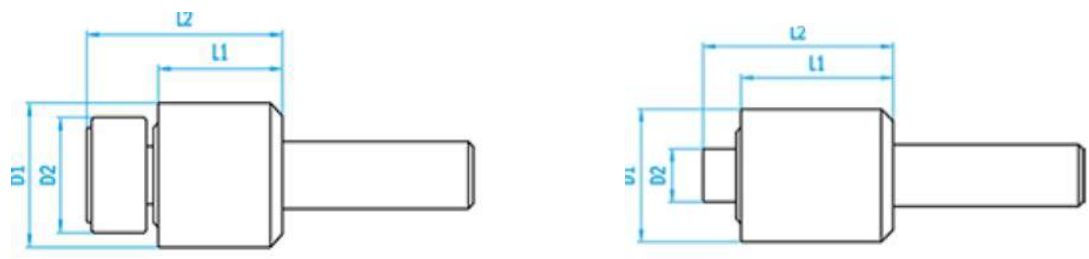
Ref.	Description
<u>PLK 1</u>	<i>Kit composed by : universal body with STD shank M.T.2, n.1 tool's bar completed with guide bush, tool's feed rod, n. 1 tool at your choice.</i>
<u>PLK 5</u>	<i>Kit composed by : universal body with STD shank M.T.2, n.5 tool's bar completed with guide bush, tool's feed rod, n. 5 tools at your choice.</i>
<u>PLK 8</u>	<i>Kit composed by : universal body with STD shank M.T.2, n.8 tool's bar completed with guide bush, tool's feed rod, n. 8 tools at your choice</i>

Spare parts :

Ref.	Description
S3	<i>Tool bar key mm 3</i>
S4	<i>Tool bar key mm 4</i>
S5	<i>Tool bar key mm 5</i>
S6	<i>Tool bar key mm 6</i>
S8	<i>Tool bar key mm 8</i>
S10	<i>Tool bar key mm 10 with interchangeable guide bush</i>
S12	<i>Tool bar key mm 12 with interchangeable guide bush</i>
S14	<i>Tool bar key mm 14 with interchangeable guide bush</i>
PLKBUS	<i>Guide bush for key mm 10/12/14</i>
PLKUT	<i>Tool for key from mm.3 to mm 14</i>



TECHNICAL SUPPORT



ROTARY BROACHING INSTRUCTION MANUAL

Recommendations and Part Preparation

This guide provides some basic rules and tips for successfully producing forms using the rotary broaching process.

Rotary broaching requires two components: a rotary broach tool holder and a rotary broach. Rotary Broaching can be performed in almost any turning center: lathe (manual or CNC) or mill. The only difference is that in a lathe the tool holder is stationary and the part is turning whereas in a mill, the rotary broach tool holder is rotated in the machine spindle and the part is stationary.

Tool Holder Set-up

The Poliangular tool holders have completely sealed bearings. Therefore, there is no need for constant greasing.

Poliangular tool holders are completely adjustment-free. Alignment between the rotary broach to the center of the workpiece is extremely important. Broken rotary broaches or uneven form configuration can result from improperly centered broaching. As long as the toolholder block on your turret (or machine spindle on a mill) is centered with your workpiece, simply insert the tool holder and clamp it down.

Coolant & Fluids:

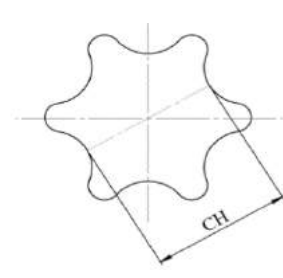
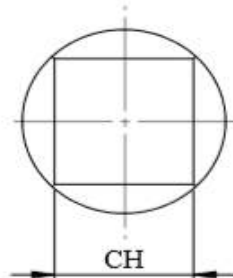
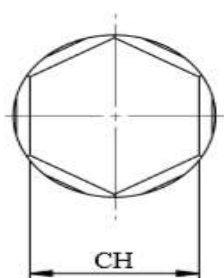
Fluids play a minor role in rotary broaching being, generally, a low heat operation. However, it is recommended that cutting oil be used, or conventional water-based coolant.

INTERNAL BROACHING PART PREPARATION GUIDE

Pre-Drill Hole Diameter:

A pre-broach drill hole is required for Internal rotary broaching. It is strongly recommended to make hole diameter larger than the minor diameter of the form being broached. See below the formulas for recommended pre-broach drill hole diameters for hex, square and torx forms. When broaching forms with serrations or splines, it is recommended to pre-drill a hole 2-3% larger than the minor diameter of the form. These percentages may be reduced for free cutting material and increased in materials with tougher machinability.

<p>Hexagon Forms Pre-Drill Hole $\varnothing = CH \times 1.03$</p>	<p>Square Forms Pre-Drill Hole $\varnothing = CH \times 1.10$</p>	<p>Torx Forms Pre-Drill Hole $\varnothing = CH \times 1.03$</p>
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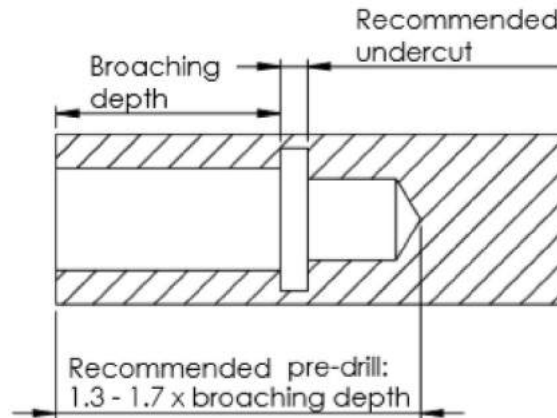


Pre-Drill Hole Depth:

The depth of the pre-drill hole must be greater than the broaching depth to allow for swarf to accumulate and avoid excess build up.

It is recommended to have a pre-drill depth of 1.3 - 1.7 times the depth of broached area.

If swarf must be removed after broaching, it can be done by drilling out. If possible, an undercut at the bottom of the pre-broach drill hole will allow the swarf to break cleanly. The undercut diameter should be larger than the major diameter of the broach.



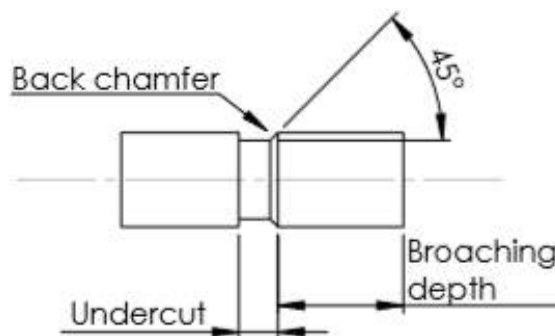
EXTERNAL BROACHING PART PREPARATION

Pre-Turn Diameter:

Pre-turning the diameter of the workpiece is required for external broaching.

The pre-turned diameter must be smaller than the major diameter of the broach.

It is recommended to turn the workpiece diameter to the smallest allowable diameter so the broach will clear on the major diameter. Allowing for more clearance will reduce the required broaching pressure and increase tool life.



External Form Depth:

A back-chamfer or undercut will allow swarf to break cleanly. The undercut should be a approximately 10-20 mm wide.

ROTARY BROACHING ORIENTATION LEVER

The Rotary Broaching orientation lever is used to orientate or align the broach to the workpiece in milling application. This equipment holds the spindle of the rotary broach tool holder stationary against the stop rod as the tool holder body rotates.



SPEEDS & FEEDS

Many factors affect speeds and feeds, including material, pre-broach drill diameter and form being broached.

It is a good practice to slow the RPM to 50 -100 when first engaging the part until you reach a depth of about 1 mm. After that, you can speed up to your recommended RPM and feed accordingly. This will prevent skipping around on the face of the workpiece and reduce the risk of chipping or breaking the broach tool also it can reduce tool life.

Contact Poliangular for the best solution on your specific application.

In all materials, the smaller the broach diameter, the lighter the feed should be.

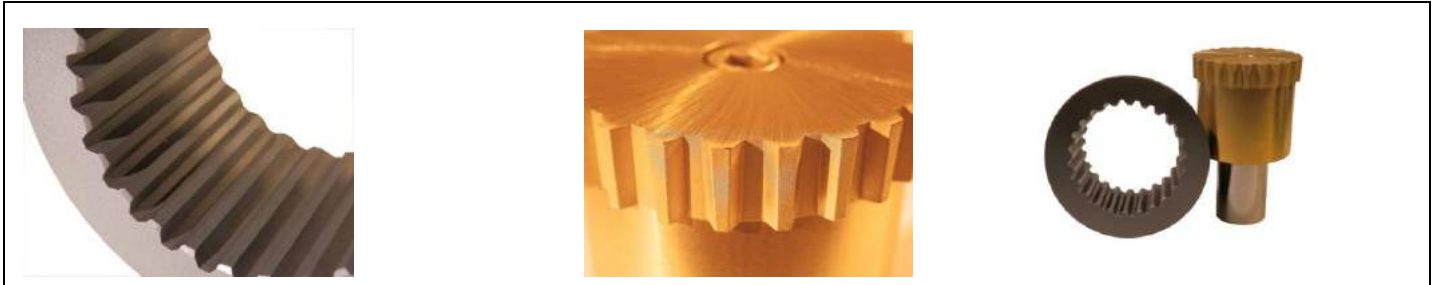
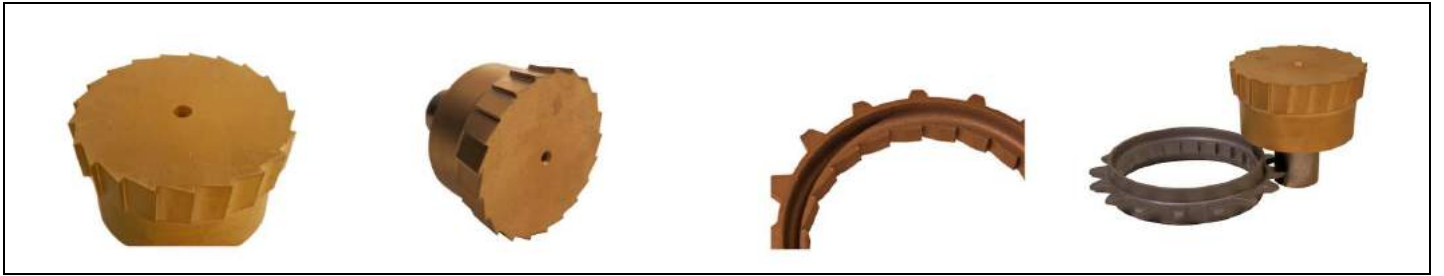
Lower feed rates give better workpiece finish. However, feed rates under 0,1 mm per revolution can cause swarf to loose the flowing motion, causing excessive end loading pressure.

Use rapid movement when retracting off or out of a part, keeping the same RPM.

TROUBLESHOOTING SOLUTIONS

<u>ISSUE</u>	<u>POSSIBLE CAUSES</u>	<u>RECOMMENDATIONS</u>
Machine is alarming or stalling	<ol style="list-style-type: none"> 1. Broach Holder is off-center 2. Excessive swarf accumulation 	<ol style="list-style-type: none"> 1. Make sure the Tool Holder is centered correctly. 2. Solutions to reduce swarf accumulation: <ul style="list-style-type: none"> • For Internal Broaches, increase pre-drill size (larger workpiece I.D.) • For External Broaches, pre-turn dia. smaller (smaller workpiece O.D.)

<u>ISSUE</u>	<u>POSSIBLE CAUSES</u>	<u>RECOMMENDATIONS</u>
Witness marks or skid on workpiece	1. Broach is bouncing off the face of the workpiece at initial contact	1. Reduce the speed to approx. 50-100 RPM during initial contact into the part (maintaining feed rate) Then, increase the speed back to the recommended RPMs once tool is about 1 mm into part. Consider leaving extra stock on workpiece and clean-off after broaching
Spiraling form / form is getting smaller towards bottom	1. Excessive swarf accumulation	1. Solutions to reduce swarf accumulation: <ul style="list-style-type: none"> • For Internal Broaches, increase pre-drill size (larger workpiece I.D.) • For External Broaches, pre-turn dia. smaller (smaller workpiece O.D.) To prevent spiraling use the orientation lever.
Workpiece is pushing back into the machine	1. Workpiece not held tight	1. Use a serrated collet to hold the workpiece.
Broach tool chipping / poor tool life	1. Broach Holder is off-center 2. Improper workpiece preparation 3. Inaccurate speeds and feeds	1. Make sure the Tool Holder is centered correctly. 2. Be sure that pre-drill is large and deep enough. 3. Slow down your speeds and feeds especially at initial contact with the workpiece
Form not centered/teeth larger on one side	1. Broach Holder is off-center 2. Workpiece deflection	1. Poliangular Tool holders are adjustment-free. 2. Reduce speed during initial contact (maintain feed rate). Support the workpiece to ensure there is no deflection.
Swarf remain in the bottom of the part	1. Missing undercut	1. Swarf may be cleared out from the bottom of the part by going back in with the same drill used to pre-drill the pilot hole. A small undercut may be added at the end of the broaching depth prior to broaching the form.



GENERAL CONDITIONS OF SALES :

- 01)** The code: essential to mention it on all the orders; in absence of it, we don't take the responsibility for any miscarriages.
- 02)** The showed prices are indicative and not binding: the value will be the one in force at the moment of the sending. Anyway, every price variation will be communicated.
- 03)** Minimum value of order: Euro 155 net. For any exception, it will be charged Euro 25 + VAT as management expenses. Not taken into account request of sending for less than Euro 50.
- 04)** The parcels are always sent, in every case, at your own risk (also for free carriage)
- 05)** Carriage: ex-factory Settimo Milanese (MI) Italy
- 06)** Packing: free of charge (if normal)
- 07)** Payments: they must be executed at our headquarters in Settimo Milanese at the agreed conditions.
- 08)** Times of delivery: they are indicatives and not binding. They are subordinated to the normal supplying of raw material as well as to production impediments in case of force majeure (strikes, lockout, natural calamity, ecc.). The delivery are intended working days and run from the date of our acceptance of the order. No delay can become reason of cancellation of order or any compensation. So we are not accountable for any damage depending on our delay and the goods cannot be refused for this reason.
- 09)** Every complaint for shortage or defect of the tools will be taken into account only if reached us within 8 days from the receipt of the goods.
- 10)** Every return of material for ordering error (or any other motivation not due to us) will be accepted only if preventively authorized and returned without carriage expenses. The returned material, if founded in perfect condition, will be credit for the invoiced amount, minus the 10% as expenses for control, re-storage and administrative operations. In any case we don't accept any returning after 6 months from the date of purchase.
- 11)** All the items are guaranteed for quality and manufacture. Their substitution or, in our opinion, their repair, are subordinate to this conditions:
 - A** - The goods have to be returned in free port without carriage expenses
 - B** - The tools must have obvious construction and quality defects, that have to be mentioned on the transport document with the return. It's also essential to mention the reference of the supply (N. invoice, date, ecc.)
 - C** - The tools will not be substituted, neither repaired free of charge, if they would result damaged by lack of skill, tampering, adaptation to improper use or performance over maximum allowed.
- 12)** The illustrations, the characteristics and all others indications on the catalogue and price list are intended approximate; we reserve the right to bring any modify that, in our opinion, constitute an improvement, without justify for this reason any complaint from the buyer.
- 13)** Qualified court: for every controversy on recognize the competence of the court of Milano - Italy

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