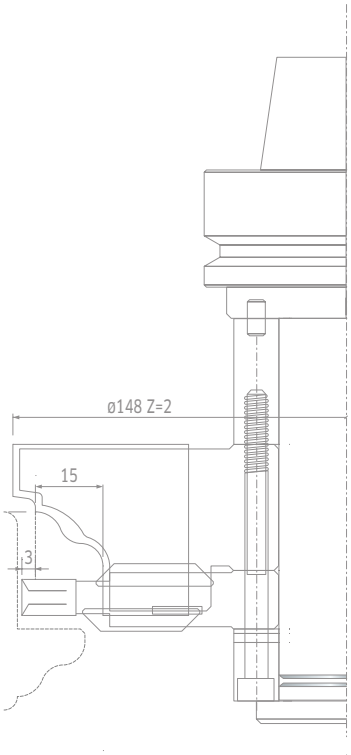
Window Tooling

Freud produces a comprehensive range of standard and custom window systems, engineered and designed with advanced technologies and cutting-edge solutions. This increases the window & door efficiency levels and guarantees compliance to the latest energy regulations for buildings.
The superior quality solutions include a number of innovative projects and designs to produce windows & doors CE certified, via Freud Cascading Service.

WINDOW TOOLING

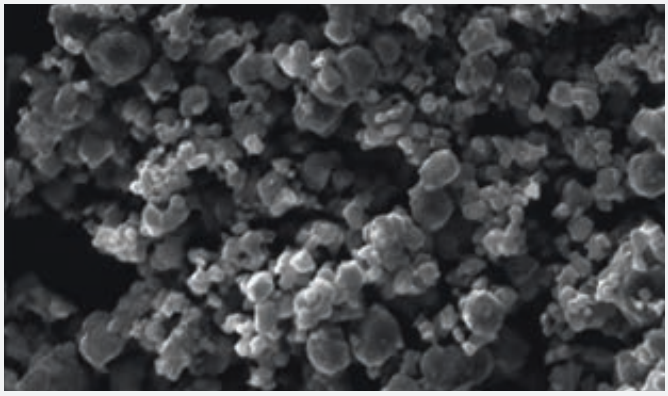


LEADING TECHNOLOGY

TiCo CARBIDE TECHNOLOGY

Freud ownership and control of the entire Carbide manufacturing cycle ensures that the correct formula is used for every application, to constantly maximise the knives performance.

TiCo Carbide
A specially formulated, highly compact Titanium Cobalt Carbide, engineered and manufactured by freud.
It provides a sharper edge and flawless finish with a dramatically longer cutting life.

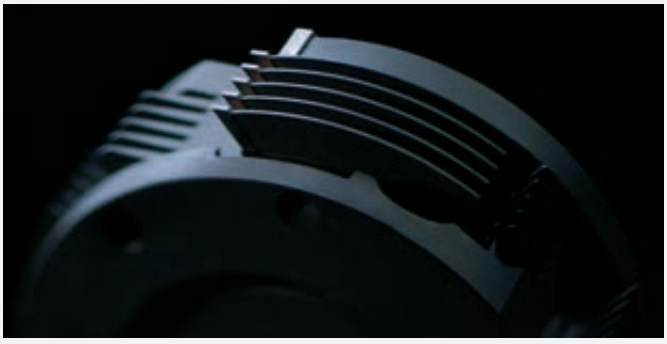


DESIGN INNOVATION

The design of Freud's special knives is engineered to perform perfect cuts and deliver extraordinary durability. The ISOprofil cutterheads are developed to work with 17 different knives.

Split Edge knives
Freud Split Edge knives reduce cutting pressure and prevent edge chip out.
These knives, resharpenable up to 6 times, both enhance the productivity and increase profitability, always delivering a flawless door and window joint profiling.

Performance System knives
Freud Performance System knives are designed with extra thickness - 3 mm - for up to 6 x resharping cycles and a prolonged durability.
These knives are available in a wide range of sizes.

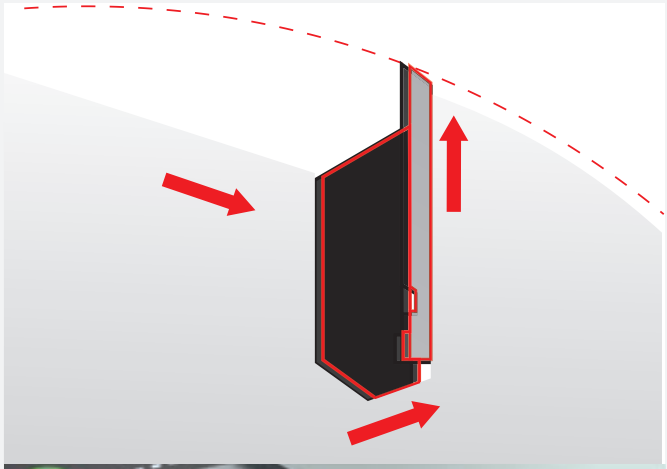


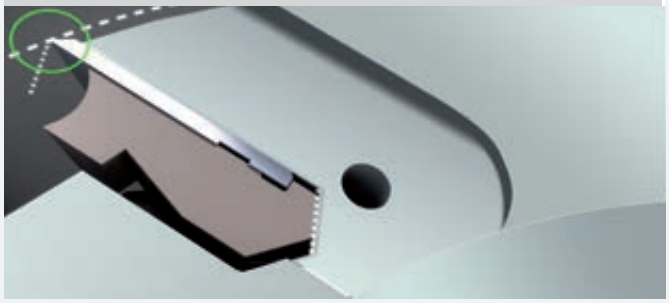
PIONEERING SOLUTIONS

Freud's continuous investment in R&D and its superior knowledge of the industry provide cutting-edge and patented solutions, for maximum production efficiency and increased safety.

ISOprofil technologies
Freud's **ISOprofil** is the only patented system in the world, with an automatic cutting profile recovery, at a rotating speed of 70 m/s.

The **High Speed ISOprofil (H.S.I.)** leverages this innovative technology at higher speed - 100 m/s - offering a solution for automated CNC machines as well as automated and throughfeed machines.





The ISOprofil solutions feature an exclusive and extra safe locking system that allows the use of resharpenable knives, also at high rotating speed and feed-rates, delivering higher production in a shorter time.

The easy access to knives and their fast re-positioning after sharpening reduce the set-up & maintenance time and, consequently, the machine downtime.

Hybrid technologies
Freud leverages the Hybrid technology, a combination of property and tested locking systems that processes, in one step only, the two-step phases of pre-cutting and finishing.
This results in an impeccable finishing and in an increased productivity.

Cascading Service

CE CERTIFICATION FREUD CASCADING

Freud is a “System House“ certified by the prestigious IFT Rosenheim Institute.
The offer to customers is more than a selection of premium cutting tools and it is enriched by a comprehensive Cascading Service.
Freud has developed a wide range of innovative projects and design solutions to produce windows & doors CE certified, leveraging a solid technical know-how, mastered over decades of experience in the window tooling industry.

The systems are tested and released using the designs and the window components (gaskets, hardware, Aluminium profiles etc.) of the main Italian and European System Houses.

Therefore, customers have access to a 100% turnkey solution, inclusive of all components and work cycles and completed by the competent assistance of Freud Customer Service, available also to fulfill specific needs.

In addition, Freud offers a broad ST12MG range for standard CNC tools to create tilt & turn, lift & slide, pivot windows as well as internal & external doors.

Freud Cascading Service includes:
- Documentation management via Freud’s Quasar software.
- Training, technical support and post sales assistance.
- Factory Production Control (FPC) to manufacture products compliant to the stated performance parameters.
- Freud’s Customer Service assistance.

Wood Window

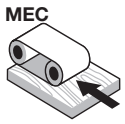
System	Frame thickness mm	Sash Thickness mm	Hardware axis mm
Ermetic	56-58-64	56-58-64	9
Ermetic 17	58-64-68	58-64-68	9
Eurost	56-58-64-68	56-58-64-68	9
Eurost 17	58-64-68	58-64-68	9
Freumex	56-58-64-68	56-58-64-68	9
Freumex 17	58-64-68	58-64-68	9
Euronorm	68-70	68-70	9
Freumex C13	68-78-80	68-78-80-92	13
Euronorm C13	68 - 78 - 80	68 - 78 - 80	13
Freumex HP	80-92	80-92	13
Euronorm HP	80-92	80-92	13
Ghost	68-80	68-80	13
Luce	80	68	13
Fox 92	92	92	13
Excellence	68-78-88-98	68-78-88-98	13

Wood/Aluminium Window

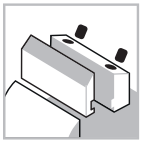
System	Frame thickness mm	Sash Thickness mm	Hardware axis mm
Ermetic	56-56	56-64	9
Ermetic 17	58-58	58-68	9
Eurost	58-61	58-68	9
Eurost 17	58-63	58-68	9
Freumex	56-61	56-68	9
Freumex 17	58-63	58-68	9
Euronorm	63	68	9
Freumex C13	65	68	13
Euronorm C13	68	68	13
Freumex HP	77	80	13
Euronorm HP	77-79	80	13
Ghost	68-80	68-80	13
Luce Freumex	74	68	13
Luce Euronorm	73	68	13
Easy slim	58	68	13
Excellence	68-72-82-92	68-78-88-98	13

Profiling

ST12MG — Profiling cutterhead sets for internal and external doors



Automatic Feed

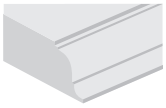


Clamping System

Steel Body

Softwood

Hardwood



Profiling

ISOprofil TECHNOLOGY

Performance System TECHNOLOGY

Machines:
Automatic feed and window tooling machines.

Materials:
Softwood and hardwood.

Applications:
Profiling.

Technical information:
Tool set for internal door profile with a 140 mm zero diameter.

- Performance cutterheads are designed to work with 17 different knives.
- Adjustable timber thickness from 44 to 70 mm. tool set is provided on sleeve to fit every machine spindle dimension.
- Steel body.
- Sleeve and Performance knives to be ordered separately.

Groove bead cutters

Dimensions mm	Sleeve code	Art. No.
Ø70 x 90 x 30	**BF10MD EA9**	F03FC24536
Ø70 x 90 x 32	**BF10MD EL9**	F03FC24537
Ø70 x 90 x 35	**BF10MD EB9**	F03FC00633
Ø70 x 90 x 40	**BF10MD EC9**	F03FC00634
Ø70 x 90 x 50	**BF10MD ED9**	F03FC00635

Wood thickness mm	Double-glazing thickness adj. mm
44	5 ÷ 8
56	13 ÷ 20
58	15 ÷ 22
64	21 ÷ 28
68	25 ÷ 32
70	27 ÷ 34

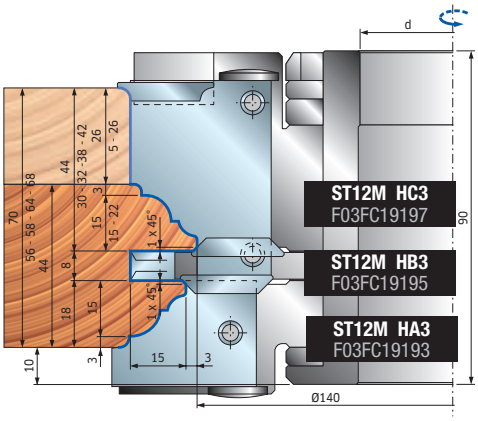
Tool set zero diameter: 140 mm

D mm	B mm	d mm	Z	V	Max RPM 1/min.	Freud Code	Art. No.
186	-	-	2	-	7.300	**ST12MG 800**	F03FC19647
186	-	-	2	-	7.300	**ST12MG 801**	F03FC19648

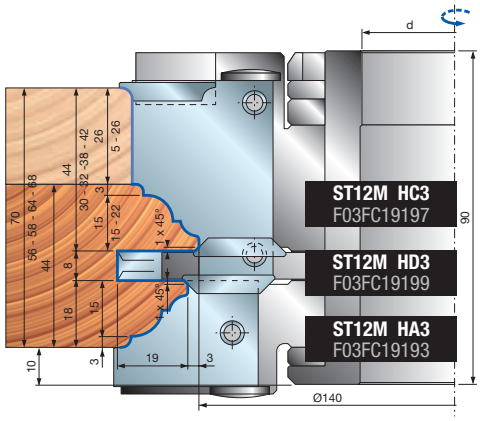
Tools for ST12MG-800 and ST12MG-801 sets

D mm	B mm	d mm	Z	V	Max RPM 1/min.	Freud Code	Art. No.
186	29	70	2	-		**ST12M HA3**	F03FC19193
176	8	70	2	4		**ST12M HB3**	F03FC19195
176	58,5	70	2	-		**ST12M HC3**	F03FC19197
184	8	70	2	4		**ST12M HD3**	F03FC19199

	Spare parts	Dimensions mm	Freud Code	Art. No.
HA3	Screw	M10 x 18	**VT03M CC9**	F03FA04438
	Screw	M5 x 7 x 16	**VT08M AE9**	F03FA04457
HC3	Screw	M10 x 18	**VT03M CC9**	F03FA04438
	Screw	M5 x 7 x 16	**VT08M AE9**	F03FA04457
	Rounding insert	22 x 16 x 5 R=3	**IG52MAE305**	F03FH03025
	Screw	M6 x 13	**VT16M AE9**	F03FC20658
	Wedge	28 x 9,5 x 8	**CN03M BB9**	F03FA00585
	Screw	M8 x 22	**VT19M BB9**	F03FA04493
HB3 - HD3	Knife	7,6 x 12 x 1,5	**CG06MHA310**	F03FH02897
	Wedge	15 x 7,2 x 8	**CN09M DA9**	F03FC01295
	Screw	M5 x 19	**VT11M AA9**	F03FA04468
	Spur	22,86 x 2,5	**RG02MAA305**	F03FH03041
	Screw	M5 x 6	**VT05M AC9**	F03FA04446
	Beveling insert	22 x 16 x 5	**IG51MBA305**	F03FH03022
	Screw	M6 x 11,5	**VT16M AB9**	F03FA04477

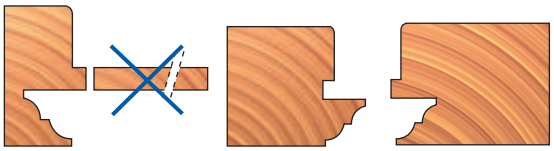


Set ST12MG-800
No. 7+7 interchangeable profiles.



Set ST12MG-801
No. 7+7 interchangeable profiles. With anti-torsion pin for assembly of elements with counter profile.

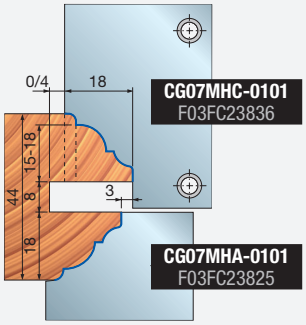
ST12MG Profiling cutterhead sets for internal and external doors



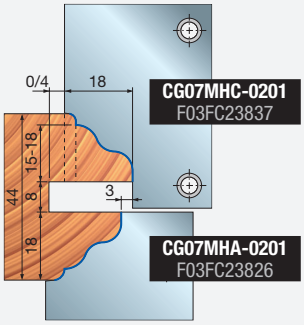
Jamb and transom with ST12MG-801 set: by cutting the tenon as shown, the counter profile with anti-torsion pin is obtained.

Profiles with 3 mm external rounding for cutterheads: ST12M HC3 - ST12M HA3

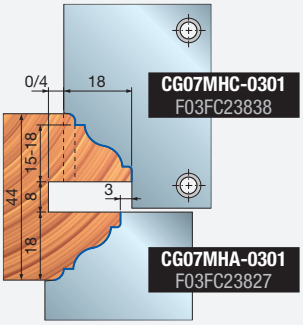
PROFILE 1



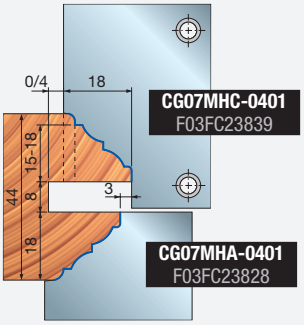
PROFILE 2



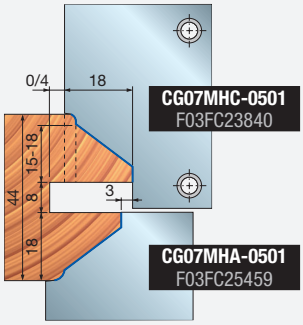
PROFILE 3



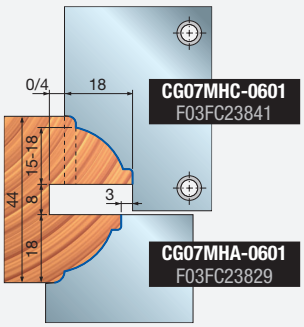
PROFILE 4



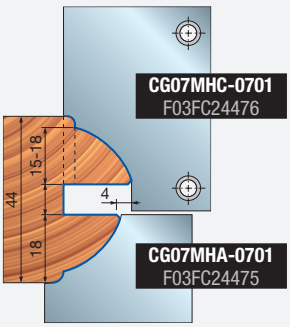
PROFILE 5



PROFILE 6

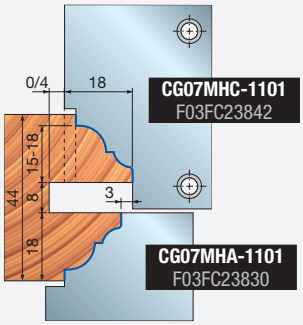


PROFILE 7

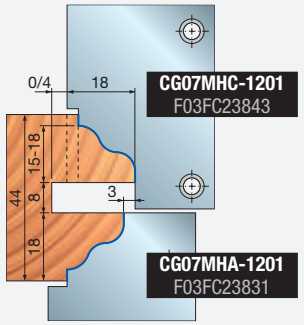


Profiles without external rounding for cutterheads: ST12M HC3 - ST12M HA3

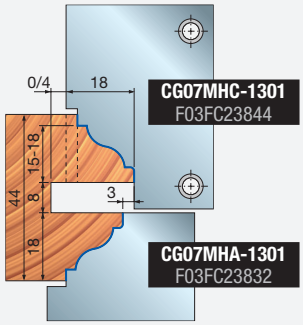
PROFILE 11



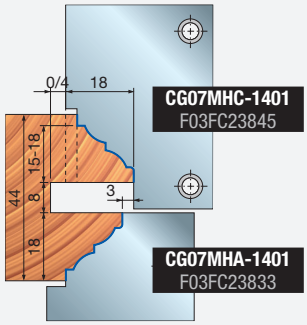
PROFILE 12



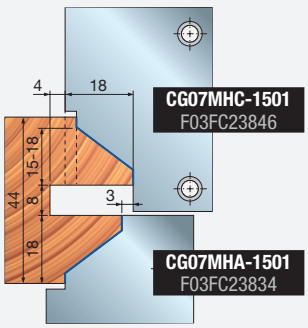
PROFILE 13



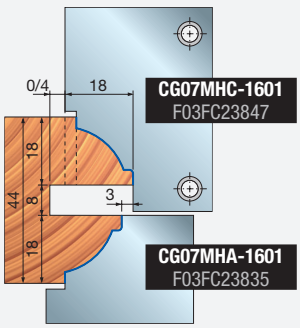
PROFILE 14



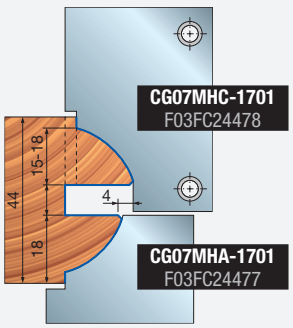
PROFILE 15



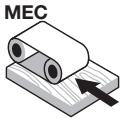
PROFILE 16



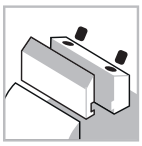
PROFILE 17



ST12MG Tenoning cutterhead sets



Automatic Feed

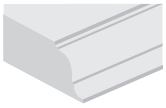


Clamping System

Steel Body

Softwood

Hardwood



Profiling

ISOprofil TECHNOLOGY

Performance System TECHNOLOGY

Machines:
Automatic feed and window tooling machines.

Materials:
Softwood and hardwood.

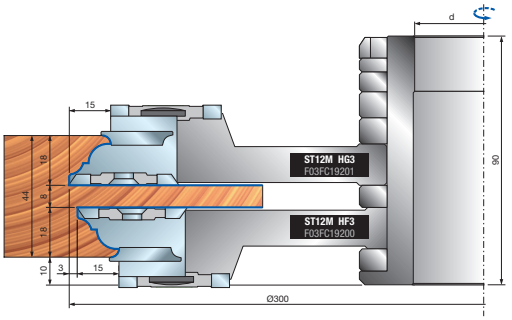
Applications:
Scribing.

Technical information:
Tool set for internal door profile with a 300 mm zero diameter.

- Performance cutterheads are designed to work with 17 different knives (to be combined with **ST12MG 800-801** profiles).
- Adjustable timber thickness from 44 to 70 mm, tool set is both available with and without bead recovery version and provided on sleeve to fit every machine spindle dimension.
- Steel body.
- Sleeve and Performance knives to be ordered separately.

Dimensions mm	Sleeve code	Art. No.
Ø70 x 90 x 30	**BF10MD EA9**	F03FC24536
Ø70 x 90 x 32	**BF10MD EL9**	F03FC24537
Ø70 x 90 x 35	**BF10MD EB9**	F03FC00633
Ø70 x 90 x 40	**BF10MD EC9**	F03FC00634
Ø70 x 90 x 50	**BF10MD ED9**	F03FC00635

BF10MD sleeves and knives for cutterheads HF3 and HG3 are not included.



Tool set zero diameter: 300 mm

D mm	B mm	d mm	Z	V	Max RPM 1/min.	Freud Code	Art. No.
294	-	-	-	-	5.000	**ST12MG 820**	F03FC19649
294	-	-	-	-	5.000	**ST12MG 821**	F03FC19650
294	-	-	-	-	5.000	**ST12MG 822**	F03FC19651

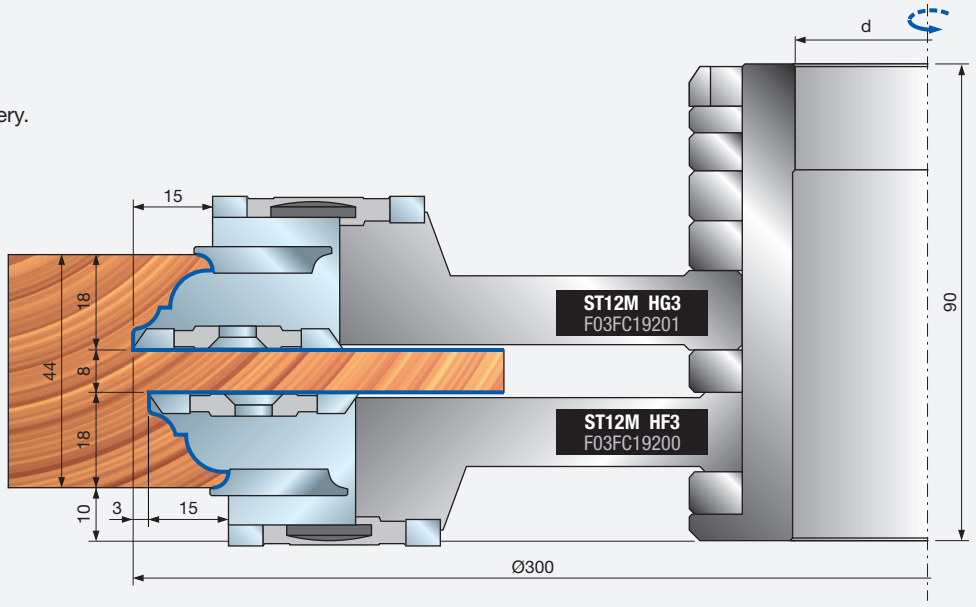
Tools for ST12MG-820, ST12MG-821, ST12MG-822 sets

D mm	B mm	d mm	Z	V	Max RPM 1/min.	Freud Code	Art. No.
264	8	70	2	4		**ST12M DB3**	F03FC19081
294	26	70	2	-		**ST12M HF3**	F03FC19200
300	26	70	2	-		**ST12M HG3**	F03FC19201
264	30	70	2	2		**ST12M HH3**	F03FC19202

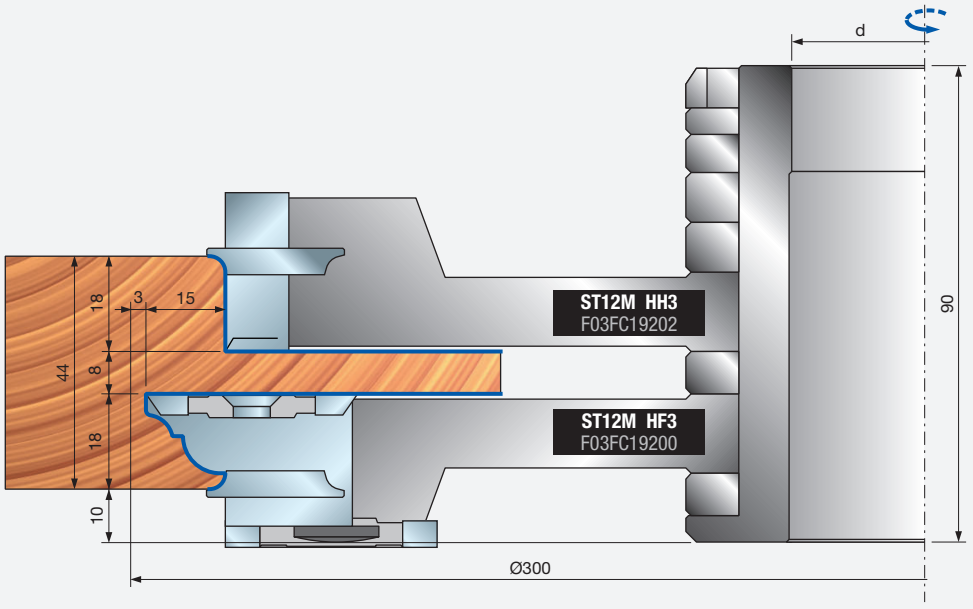
		Spare parts	Dimensions mm	Freud Code	Art. No.
DB3		Knife	7,6 x 12 x 1,5	**CG06MHA310**	F03FH02897
		Wedge	15 x 7,2 x 8	**CN09M DA9**	F03FC01295
		Screw	M5 x 19	**VT11M AA9**	F03FA04468
		Spur	22,86 x 2,5	**RG02MAA305**	F03FH03041
		Grooving insert	40 x 5 x 8	**SR01MSAA301**	F03FC24186
		Screw	M6 x 10	**VT01M AA9**	F03FA04429
		Threaded ring	11,7 x 2,5 x 4	**VT18M BB9**	F03FA04484
		Screw	M4 x 6,5	**VT05M BD9**	F03FA04449
		Screw	M5 x 6	**VT05M AC9**	F03FA04446
HF3		Screw	M5 x 7 x 16	**VT08M AE9**	F03FA04457
		Screw	M10 x 18	**VT03M CC9**	F03FA04438
		Spur insert	40 x 16 x 4	**IG05MDAA305**	F03FH02998
		Screw	M6 x 11,5	**VT16M AB9**	F03FA04477
		Rounding insert	22 x 16 X 5 R=3	**IG52MAE305**	F03FH03025
		Screw	M6 x 14,5	**VT16M AA9**	F03FA04476
HG3		Screw	M5 x 7 x 16	**VT08M AE9**	F03FA04457
		Screw	M10 x 18	**VT03M CC9**	F03FA04438
		Spur insert	40 x 16 x 4	**IG05MSAA305**	F03FH02999
		Screw	M6 x 11,5	**VT16M AB9**	F03FA04477
		Rounding insert	22 x 16 X 5 R=3	**IG52MAE305**	F03FH03025
		Screw	M6 x 14,5	**VT16M AA9**	F03FA04476
HH3		Knife	30 x 12 x 15	**CG06MDA310**	F03FH02892
		Wedge	15 x 26 x 8	**CN09MS AD9**	F03FC01326
		Nut	15 x 13,3 x M10	**VT20M MA9**	F03FC20670
		Screw	M10 x 22	**VT19M MA9**	F03FA04496
		Spur	22,86 x 2,5	**RG02MAA305**	F03FH03041
		Screw	M5 x 8	**VT05M AA9**	F03FA04444
		Rounding insert	22 x 16 X 5 R=3	**IG52MAE305**	F03FH03025
		Screw	M6 x 13	**VT16M AE9**	F03FC20658
		Wedge	14 x 21,5 x 22	**CN03M BA9**	F03FA00584
		Wedge	28 x 9,5 x 8	**CN03M BB9**	F03FA00585
		Screw	M8 x 22	**VT19M BB9**	F03FA04493

Profiles with 3 mm external rounding for cutterheads: ST12M HC3 - ST12M HA3

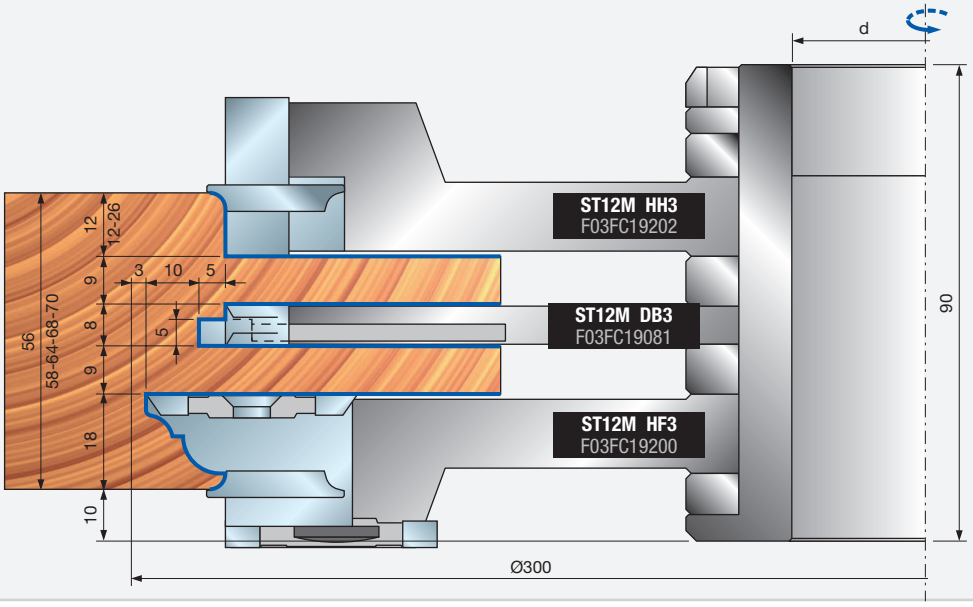
Set ST12MG-820
Single tenon.
For profile without bead recovery.



Set ST12MG-821
Single tenon.
For profile with bead recovery.

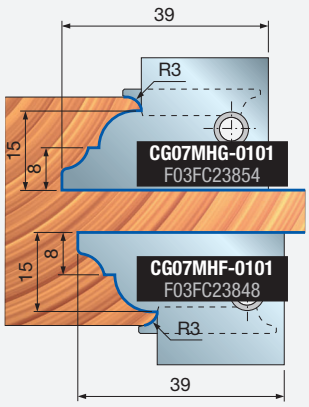


Set ST12MG-822
Double tenon.
For profile with bead recovery.

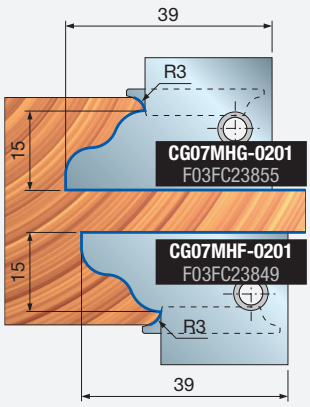


Scribes with 3 mm external rounding for cutterheads: ST12M HG3 - ST12M HF3

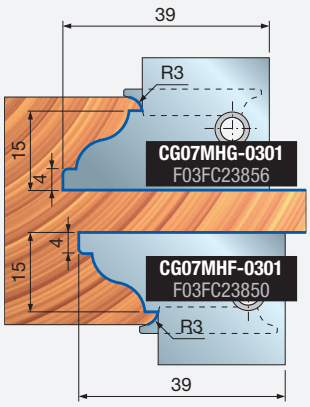
SCRIBE 1



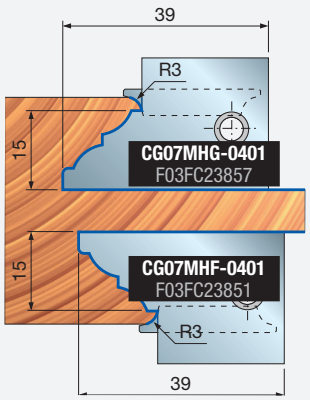
SCRIBE 2



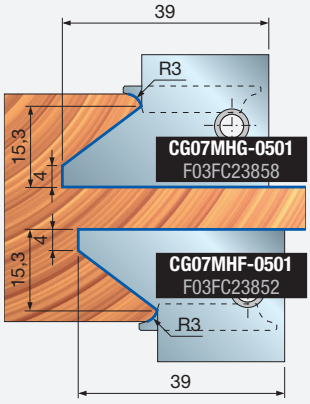
SCRIBE 3



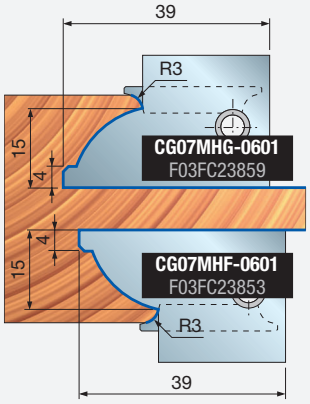
SCRIBE 4



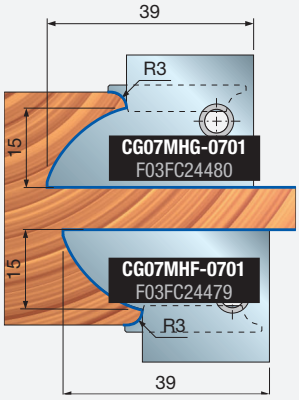
SCRIBE 5



SCRIBE 6

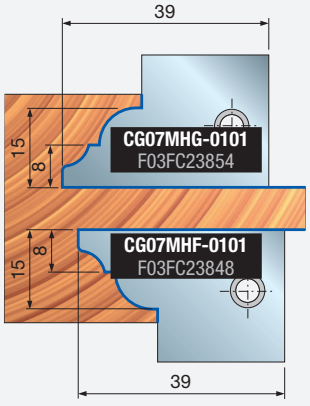


SCRIBE 7

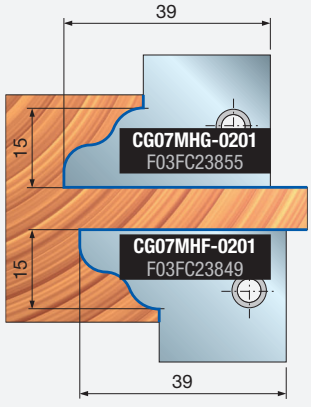


Scribes without external rounding for cutterheads: ST12M HG3 - ST12M HF3

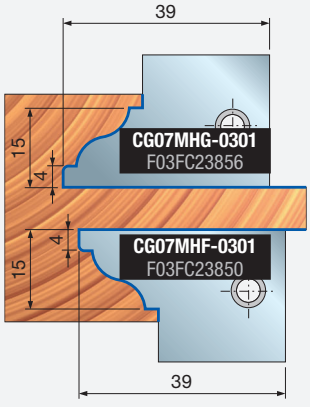
SCRIBE 11



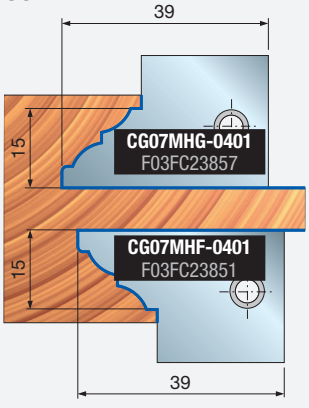
SCRIBE 12



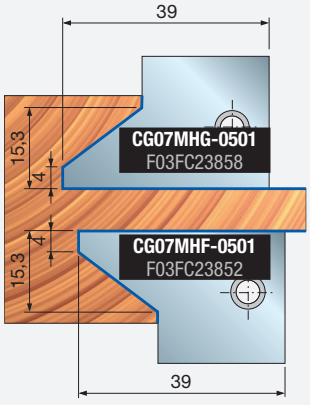
SCRIBE 13



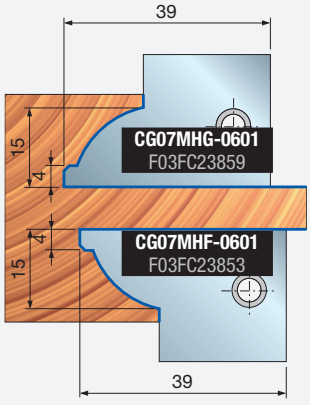
SCRIBE 14



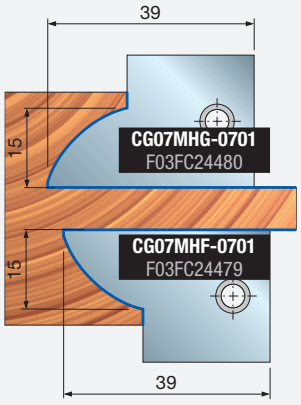
SCRIBE 15



SCRIBE 16

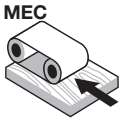


SCRIBE 17

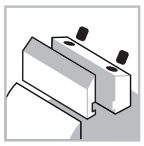


ST12MG

Cutterhead sets for doors rebates



Automatic Feed

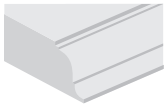


Clamping System

Steel Body

Softwood

Hardwood



Profiling

Rebating

Tool set zero diameter: 140 mm

D mm	B mm	d mm	Max RPM 1/min.	Freud Code	Art. No.
162	-	-	8.300	**ST12MG 840**	F03FC19653
162	-	-	8.300	**ST12MG 841**	F03FC19654
162	-	-	8.300	**ST12MG 842**	F03FC19655

Tools for ST12MG-840, ST12MG-841, ST12MG-842 sets

D mm	B mm	d mm	Z	Max RPM 1/min.	Freud Code	Art. No.
161,8	41	70	2		**ST12M HL3**	F03FC19208
147	33	70	2		**ST12M HM3**	F03FC19209
140	30	70	2		**ST12M HN3**	F03FC19210
166	35	70	2		**ST12M HR3**	F03FC19214

		Spare parts	Dimensions mm	Freud Code	Art. No.
HL3		Knife	40 x 12 x 1,5	**CG08MLA310**	F03FH02909
		Wedge	15 x 36 x 8	**CN09MD AR9**	F03FC01309
		Screw	M10 x 22	**VT19M MA9**	F03FA04496
		Nut	15 x 13,3 x M10	**VT20M NA9**	F03FC20671
		Multipurpose insert	10	**IG25MD10302**	F03FC24164
		Screw	M6 x 10	**2622M CB9**	F03FA07455
		Screw	M6 x 13	**VT16M AE9**	F03FC20658
		Wedge	28 x 9,5 x 8	**CN03M BB9**	F03FA00585
		Screw	M8 x 22	**VT19M BB9**	F03FA04493
HM3 - HN3		Knife	30 x 12 x 1,5	**CG08MEA310**	F03FH02906
		Wedge	15 x 26 x 8	**CN09MD AD9**	F03FC01300
		Screw	M10 x 22	**VT19M MA9**	F03FA04496
		Nut	15 x 13,3 x M10	**VT20M NA9**	F03FC20671
		Rounding insert	22 x 16 x 5 R=1,5	**IG52MAB305**	F03FH03023
		Screw	M6 x 13	**VT16M AE9**	F03FC20658
		Wedge	28 x 9,5 x 8	**CN03M BB9**	F03FA00585
		Screw	M8 x 22	**VT19M BB9**	F03FA04493
HR3		Screw	M10 x 18	**VT03M CC9**	F03FA04438
		Screw	M5 x 7 x 16	**VT08M AE9**	F03FA04457

ISOprofil TECHNOLOGY

Performance System TECHNOLOGY

Machines:
Automatic feed and window tooling machines.

Materials:
Softwood and hardwood.

Applications:
Profiling and rebating.

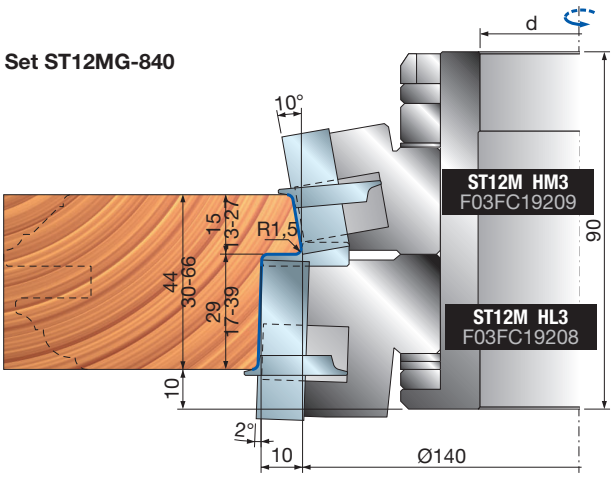
Technical information:
Tool set for internal door profile with a 140 mm zero diameter.

- Tool set can execute 5 different profiles.
- Adjustable timber thickness from 30 to 66 mm.
- Tool set is provided on sleeve to fit every machine spindle dimension.
- Steel body.
- Sleeve and Performance knives to be ordered separately.

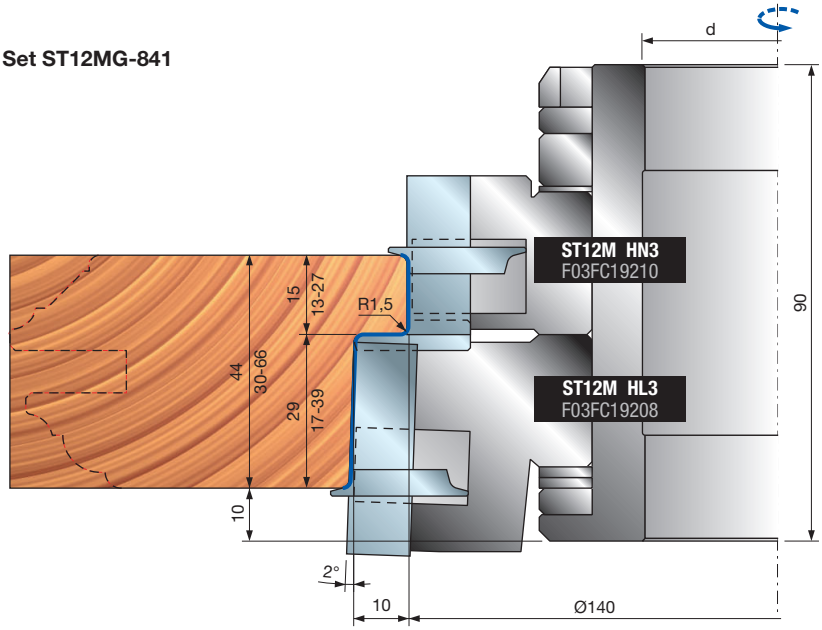
Dimensions mm	Sleeve code	Art. No.
Ø70 x 90 x 30	**BF10MD EA9**	F03FC24536
Ø70 x 90 x 32	**BF10MD EL9**	F03FC24537
Ø70 x 90 x 35	**BF10MD EB9**	F03FC00633
Ø70 x 90 x 40	**BF10MD EC9**	F03FC00634
Ø70 x 90 x 50	**BF10MD ED9**	F03FC00635

BF10MD sleeves and knives for cutterheads HR3 are not included.

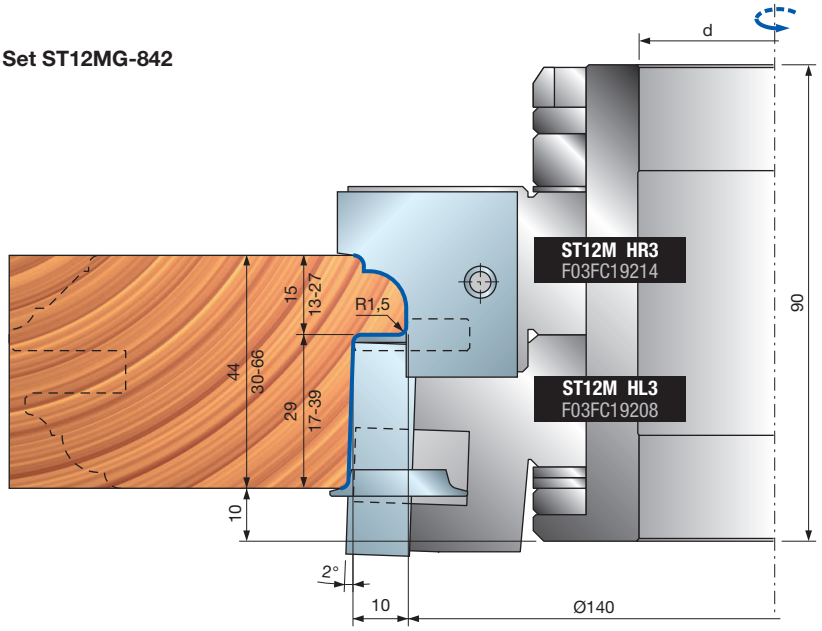
Set ST12MG-840



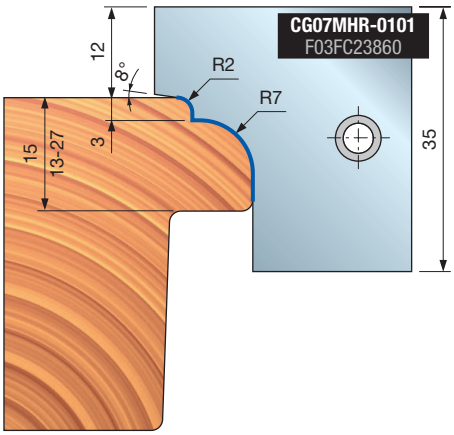
Set ST12MG-841

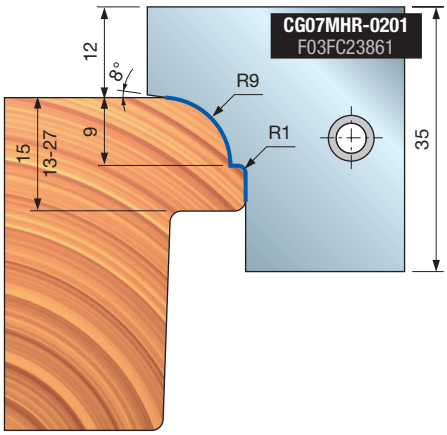


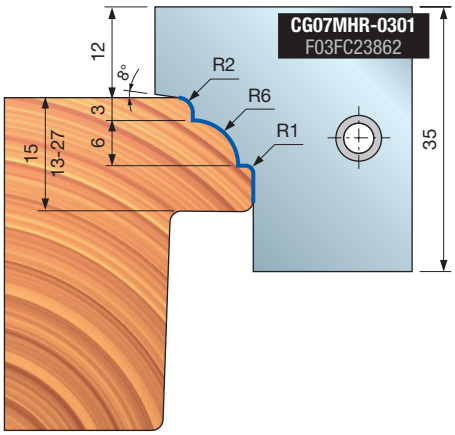
Set ST12MG-842



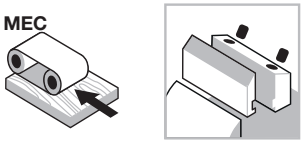
Knives for cutterhead ST12M HR3







ST12MG Bead recovery cutterhead sets



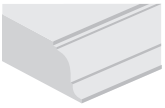
Automatic Feed

Clamping System

Steel Body

Softwood

Hardwood



Profiling

Machines:
Automatic feed and window tooling machines.

Materials:
Softwood and hardwood.

Applications:
Bead recovering.

Technical information:
Cutterhead for bead recovery with a 140 mm zero diameter.
- Adjustable Timber thickness from 44 to 70 mm.
- Bead thickness from 15 to 22 mm.
- Tool set is provided on sleeve to fit every machine spindle dimension.
- Steel body.

Dimensions mm	Sleeve code	Art. No.
Ø60 x 90 x 30	**BF10MD DA9**	F03FC24534
Ø60 x 90 x 32	**BF10MD DL9**	F03FC24535
Ø60 x 90 x 35	**BF10MD DB9**	F03FC00630
Ø60 x 90 x 40	**BF10MD DC9**	F03FC00631
Ø60 x 90 x 50	**BF10MD DD9**	F03FC00632

Tool set zero diameter: 140 mm

D mm	B mm	d mm	Max RPM 1/min.	Freud Code	Art. No.
200	-	-	9.000	**ST12MG 302**	F03FC19584

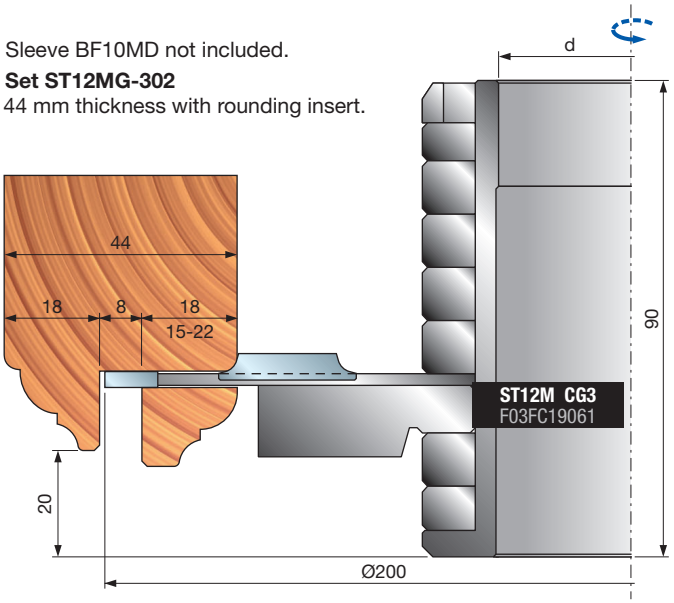
Tools for ST12MG-302

D mm	B mm	d mm	Z	Max RPM 1/min.	Freud Code	Art. No.
144	13,5	60	2		**ST12M CG3**	F03FC19061

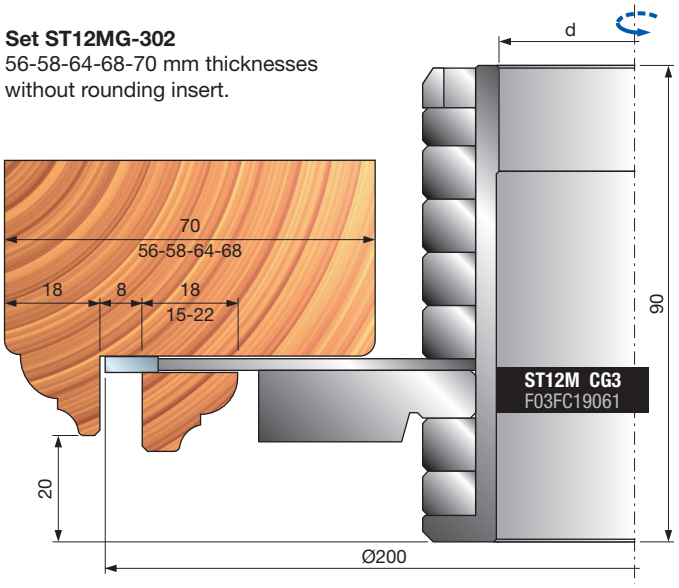
	Spare parts	Dimensions mm	Freud Code	Art. No.
	Saw blade	200 x 3 x 60 Z34	**LL02M20060**	F03FC15418
	Screw	M6 x 10	**VT01M AA9**	F03FA04429
	Rounding insert	22 x 16 X 5 R=3	**IG52MAE305**	F03FH03025
	Screw	M6 x 14,5	**VT16M AA9**	F03FA04476
	Rounding insert	18 x 26 x 8,5	**IG23MDAE305**	F03FC24163
	Screw	M6 x 15,5	**VT16M AD9**	F03FC20657

Sleeve BF10MD not included.

Set ST12MG-302
44 mm thickness with rounding insert.

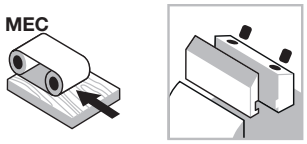


Set ST12MG-302
56-58-64-68-70 mm thicknesses without rounding insert.



ST12MG

Cutterhead sets for door frames



Automatic Feed

Clamping System

Steel Body

Softwood

Hardwood

Rebating

ISOprofil TECHNOLOGY

Performance System TECHNOLOGY

Shear Angle TECHNOLOGY

Machines:
Automatic feed and window tooling machines.

Materials:
Softwood and hardwood.

Applications:
Rebating.

Technical information:
Performance tool for door rebating, front shear angle to guarantee a perfect step surface, rounding and beveling insert to offer different solutions on step corners.

- Cuttherhead is provided on sleeve to fit every machine spindle dimension.
- Steel body.
- Sleeve and inserts to be ordered separately.

BF10MD sleeve is not included.

Dimensions mm	Sleeve code	Art. No.
Ø70 x 90 x 30	**BF10MD EA9**	F03FC24536
Ø70 x 90 x 32	**BF10MD EL9**	F03FC24537
Ø70 x 90 x 35	**BF10MD EB9**	F03FC00633
Ø70 x 90 x 40	**BF10MD EC9**	F03FC00634
Ø70 x 90 x 50	**BF10MD ED9**	F03FC00635

Tools supplied with HW knives

D mm	B mm	d mm	Max RPM 1/min.	Freud Code	Art. No.
218	-	-	6.500	**ST12MG 830**	F03FC19652

Tools supplied with HSS knives

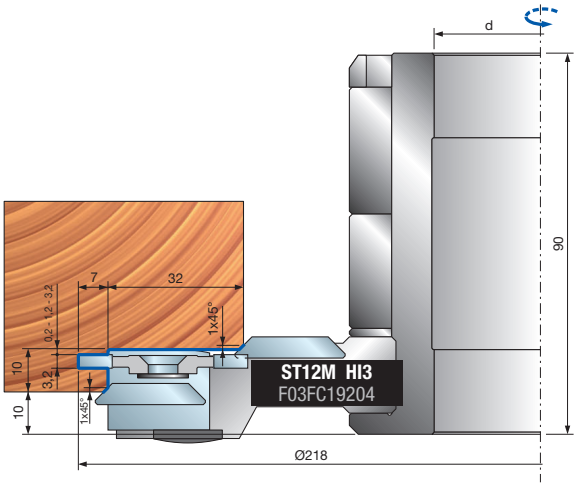
D mm	B mm	d mm	Z	Max RPM 1/min.	Freud Code	Art. No.
204	24	70	2		**ST12M HI3**	F03FC19204

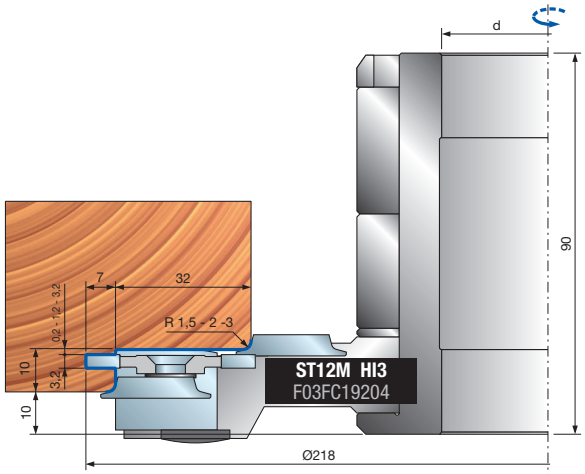
	Spare parts	Dimensions mm	Freud Code	Art. No.
	Knife	20 x 25 x 3	**CG07MDHI301**	F03FC23824
	Screw	M10 x 18	**VT03M CC9**	F03FA04438
	Screw	M5 x 7 x 16	**VT08M AE9**	F03FA04457
	Grooving insert	40 x 16 x 3	**IG04MDAC305**	F03FH02992
	Screw IG04MD	M6 x 14,5	**VT16M AA9**	F03FA04476
	Screw for IG51M and IG52M	M6 x 11,5	**VT16M AB9**	F03FA04477

	Spare parts	Dimensions mm	Freud Code	Art. No.
	Knife	20 x 25 x 3	**CG07MDHI301**	F03FC23824
	Screw	M10 x 18	**VT03M CC9**	F03FA04438
	Screw	M5 x 7 x 16	**VT08M AE9**	F03FA04457
	Grooving insert	40 x 16 x 3	**IG04MDAC305**	F03FH02992
	Screw IG04MD	M6 x 14,5	**VT16M AA9**	F03FA04476
	Screw for IG51M and IG52M	M6 x 11,5	**VT16M AB9**	F03FA04477

With seat pockets for beveling inserts IG51M or radius inserts IG52M (R= 1,5 - 2 - 3 mm). (Not included).

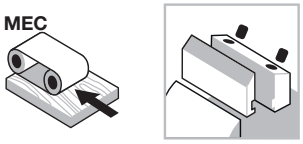
	Spare parts	Dimensions mm	Freud Code	Art. No.
	Rounding insert	22 x 16 X 5 R=3	**IG52Mì**	F03FH03025
	Beveling insert	22 x 16 x 5 45°	**IG51Mì**	F03FH03022
	Screw for IG51-IG52	M6 x 13	**VT16M AE9**	F03FC20658





TP43M

Cutterhead sets for vertical slat shutters



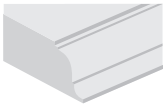
Automatic Feed

Clamping System

Steel Body

Softwood

Hardwood



Profiling

Tool set zero diameter: 125 mm

D mm	B mm	d mm	Z	Max RPM 1/min.	Freud Code	Art. No.
139	-	-	2+2	9.600	**TP43M MD3**	F03FC20497
147	-	-	2+2	9.000	**TP43M FD3**	F03FC20496

Tool		Spare parts	Dimensions mm	Freud Code	Art. No.
		Screw	M10 x 18	**VT03M CC9**	F03FA04438
		Screw	M5 x 7 x 16	**VT08M AE9**	F03FA04457
		Set of spacers	70 x 5 x 50	**AN01MD0509**	F03FC00175
		Set of spacers	70 x 17 x 50	**AN04MTP43**	F03FC00517
		Set of spacers	70 x 22 x 50	**AN01MD2209**	F03FC00194
MD3	1	Knife	34 x 24 x 3	**CP43M1MD301**	F03FC24009
	2	Knife	34 x 24 x 3	**CP43M2MD301**	F03FC24011
FD3	1	Knife	35 x 29 x 3	**CP43M1FD301**	F03FC24008
	2	Knife	35 x 29 x 3	**CP43M2FD301**	F03FC24010
		Spacer	70 x 10 x 50	**AN01MD1009**	F03FC00182

Performance System TECHNOLOGY

Machines:
Moulders, automatic and throughfeed machines.

Materials:
Softwood and hardwood.

Applications:
Profiling.

Technical information:
Performance cutterheads set for vertical slat shutters.

- Profile and counterprofile set can perfectly work as a left and right hand rotation tool (with different sleeves). Tools are provided on sleeve (to be ordered separately) to fit every machine spindle dimension.
- Steel body.
- Performance System knives included.

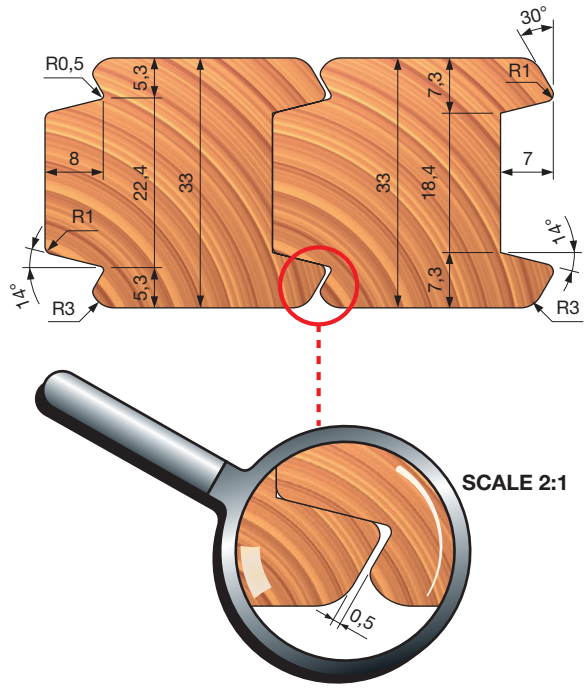
Right-hand sleeves

Dimensions mm	Sleeve code	Art. No.
Ø50 x 110 x 30	**BF10MD AA9**	F03FC00616
Ø50 x 110 x 32	**BF10MD AL9**	F03FC24533
Ø50 x 110 x 35	**BF10MD AB9**	F03FC00617
Ø50 x 110 x 40	**BF10MD AC9**	F03FC00618

Left-hand sleeves

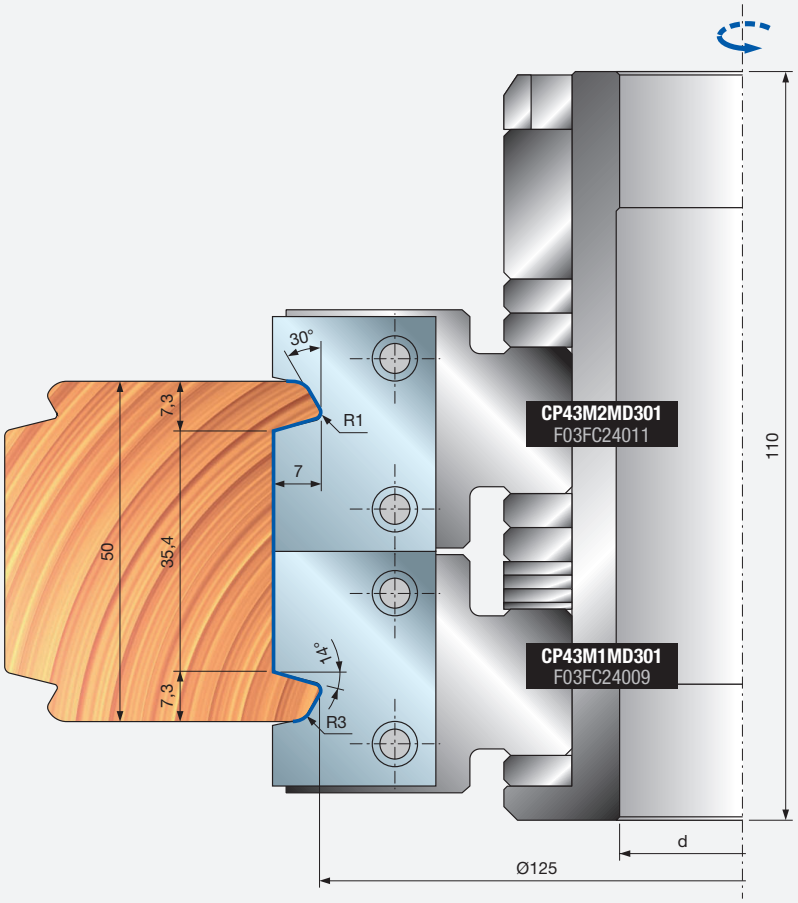
Dimensions mm	Sleeve code	Art. No.
Ø50 x 110 x 30	**BF10MS AA9**	F03FC00661
Ø50 x 110 x 32	**BF10MS AL9**	F03FC24538
Ø50 x 110 x 35	**BF10MS AB9**	F03FC00662
Ø50 x 110 x 40	**BF10MS AC9**	F03FC00663

Sleeves must be ordered separately.
Please note: The sets can be ordered with clockwise rotation with BF10MS sleeve.

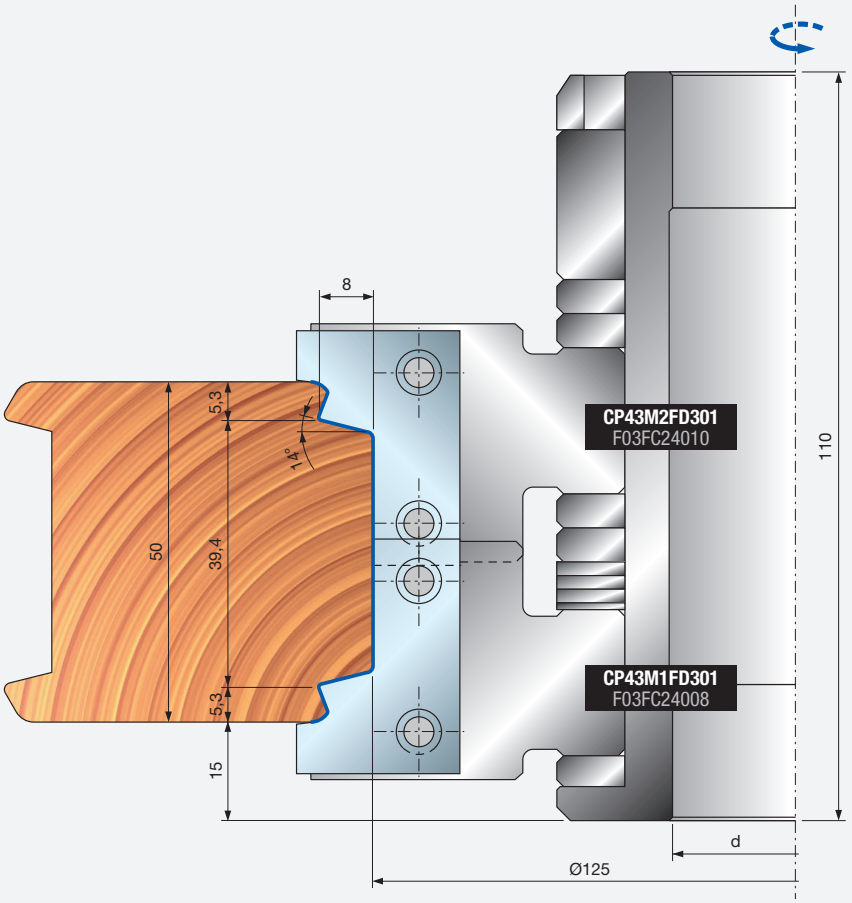


Cutterheads sets for vertical slat shutters

Set TP43M MD3



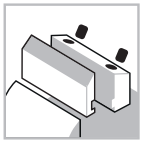
Set TP43M FD3



TP45M

Cutterhead sets for lifting-sliding doors

Manual Feed

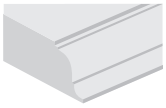


Clamping System

Steel Body

Softwood

Hardwood



Profiling

Performance System TECHNOLOGY

Machines:
Spindle moulders and manual feed machines.

Materials:
Softwood and hardwood.

Applications:
Profiling.

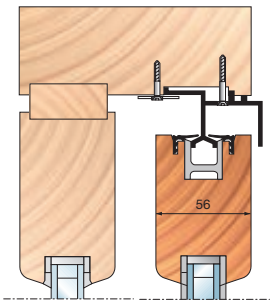
Technical information:
Cutterhead tool set for lift and sliding doors with maximum weight of 250 Kg using hardware.
- HS25 from MAICO, AGB or G.U.
- Steel body.
- Knives included.

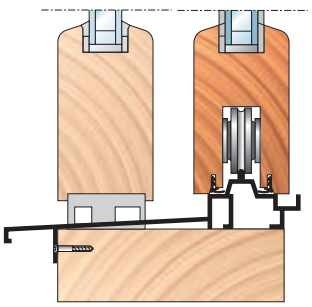
D mm	B mm	d mm	Z	Max RPM 1/min.	Freud Code	Art. No.
200	45	30	2	7.000	**TP45M AA3**	F03FC23136
200	45	32	2	7.000	**TP45M AC3**	F03FC24453
200	45	35	2	7.000	**TP45M AB3**	F03FC20503

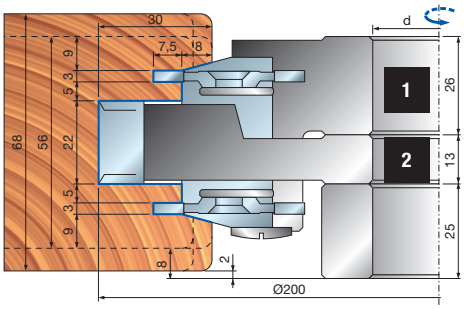
		Spare parts	Dimensions mm	Freud Code	Art. No.
		Torx key	T20	**CB03M CC9**	F03FA00167
		Allen key	4	**CB03M BA9**	F03FA00163
		Allen key	5	**CB03M EA9**	F03FA00169
1		Knife	45 x 25 x 3	**CP45MAA301**	F03FC24014
1		Screw	M5 x 16 x 7	**VT08M AE9**	F03FA04457
1		Screw	M10 x 18	**VT03M CC9**	F03FA04438
1		Grooving insert	40 x 16 x 3	**IG04MDAC305**	F03FH02992
1		Grooving insert	40 x 16 x 3	**IG04MSAC305**	F03FH02996
1		Screw	M6 x 14,5	**VT16M AA9**	F03FA04476
1		Deflector	30,8 x 6 x 24,5	**ID04MDAC901**	F03FC24135
1		Deflector	30,8 x 6 x 24,5	**ID04MSAC901**	F03FC24139
1		Screw	M4 x 12	**VT05M DA9**	F03FC20647
2		Knife	21,6 x 12 x 1,5	**CG06MTA310**	F03FC23821
2		Wedge	15 x 20 x 8	**CN09M AO9**	F03FC01289
2		Nut	15 x 13,3 x M10	**VT20M MA9**	F03FC20670
2		Screw	M10 x 22	**VT19M MA9**	F03FA04496
2		Spur	22,86 x 2,5	**RG02MAA305**	F03FH03041
2		Screw	M5 x 8	**VT05M AA9**	F03FA04444
AB3		Spacer	50 x 25 x 30	**AN01MB2509**	F03FC00110
AC3		Spacer	52 x 25 x 32	**AN01MX2509**	F03FC24512
AA3		Spacer	55 x 25 x 35	**AN01MA2509**	F03FC00059

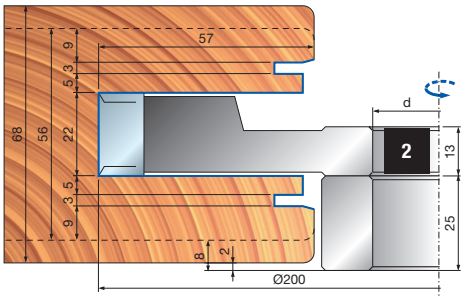
This item is supplied with 25 mm thick ring for base programming.

For doors with maximum weight of 250 Kg using hardware HS25 from MAICO, AGB or G.U.









ST16MG Profiling CNC sets for internal doors without bead recovery

MEC

Automatic Feed | CNC Machines | Clamping System | Aluminium Body

Softwood | Hardwood

Profiling

ISOprofil TECHNOLOGY | Performance System TECHNOLOGY

Machines:
CNC overhead routing machines.

Materials:
Softwood and hardwood.

Applications:
Internal door profiling.

Technical information:
CNC tool set for internal door profile without bead recovery.
- ISOprofil cutterheads are designed to work with 17 different knives.
- Timber thickness 44 mm.
- Chuck and Performance knives to be ordered separately.
- Aluminium light alloy body.

D mm	B mm	d mm	Z	Max RPM 1/min.	Freud Code	Art. No.
154	123	-	2	8.500	**ST16MGC13700**	F03FC23497
154	123	-	2	8.500	**ST16MGC13701**	F03FC23498

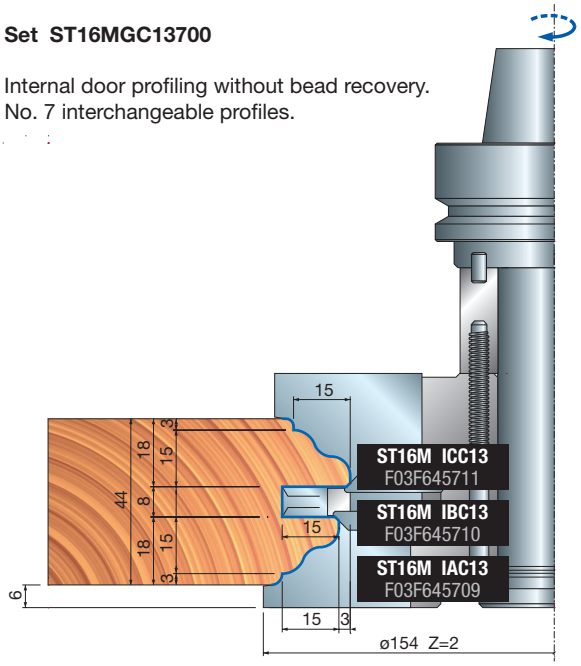
Cutterheads for ST16MGC13700 and ST16MGC13701 sets

D mm	B mm	d mm	Z	Max RPM 1/min.	Freud Code	Art. No.
144	15	30	2		**ST16M IBC13**	F03F645710
148	38	30	2		**ST16M ICC13**	F03F645711
152	15	30	2		**ST16M IDC13**	F03F645712
154	23,7	30	2		**ST16M IAC13**	F03F645709

		Spare parts	Dimensions mm	Freud Code	Art. No.
IAC13 ICC13		Screw	M5 x 8	**VT05M AA9**	F03FA04444
		Positioning plate	22 x 1,7 x 6,5	**VT18M GB9**	F03FA04489
		Screw	M10 x 16	**2616M EE9**	F03FA07426
IAC13		Wedge	21 x 42,5 x 8	**CN33M IA9**	F03FC23308
ICC13		Wedge	34,5 x 42,5 x 8	**CN33M IC9**	F03FC23309
IBC13 IDC13		Knife	7,6 x 12 x 1,5	**CG62MHA310**	F03FH02956
		Wedge	15 x 7,2 x 8	**CN09M DA9**	F03FC01295
		Beveling insert	22 x 16 x 5	**IG51MBA305**	F03FH03022
		Spur	22,86 x 2,5	**RG02MAA305**	F03FH03041
		Screw	M5 x 6	**VT05M AC9**	F03FA04446
		Screw	M5 x 19	**VT11M AA9**	F03FA04468
		Screw	M6 x 13	**VT16M AE9**	F03FC20658

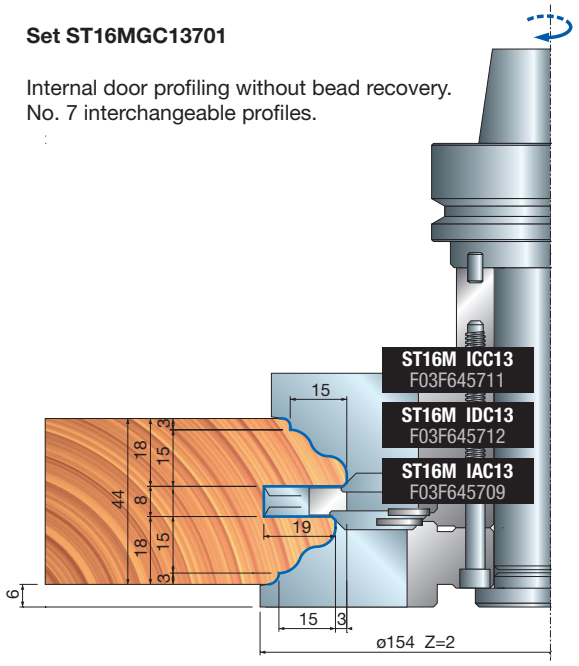
Set ST16MGC13700

Internal door profiling without bead recovery.
No. 7 interchangeable profiles.



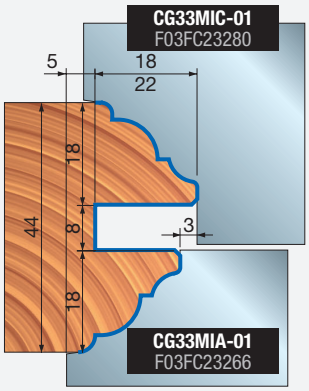
Set ST16MGC13701

Internal door profiling without bead recovery.
No. 7 interchangeable profiles.

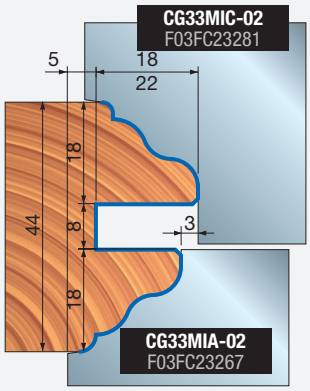


Profiling with external rounding - Knives for cutterheads ST16MIAC13 - ST16MICC13

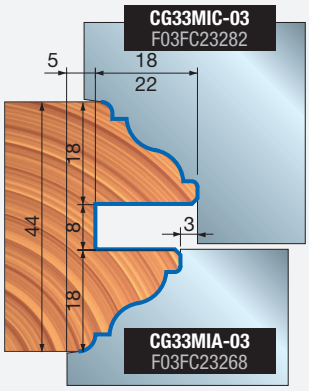
Profile 1



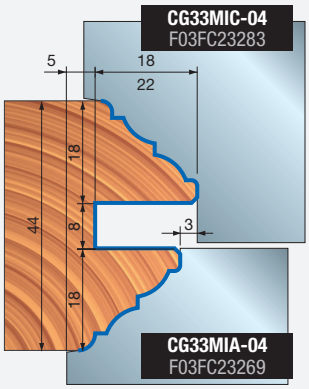
Profile 2



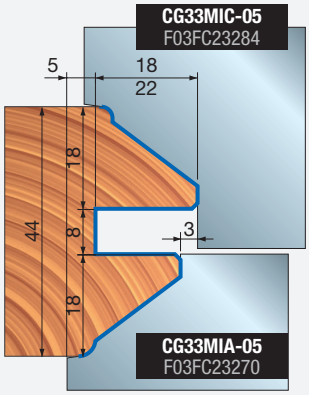
Profile 3



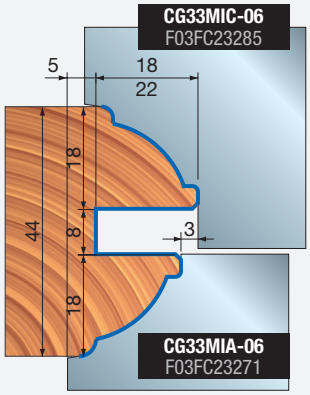
Profile 4



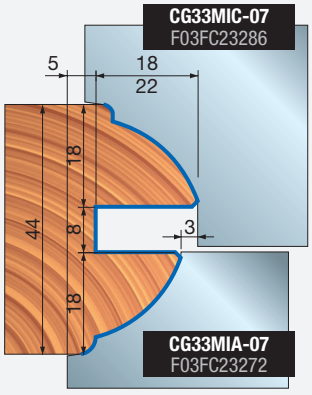
Profile 5



Profile 6

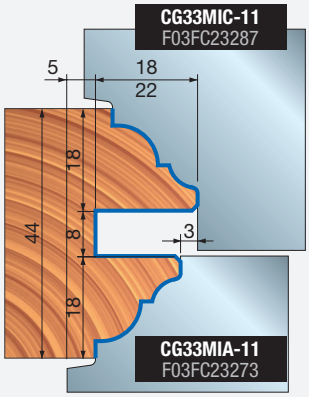


Profile 7

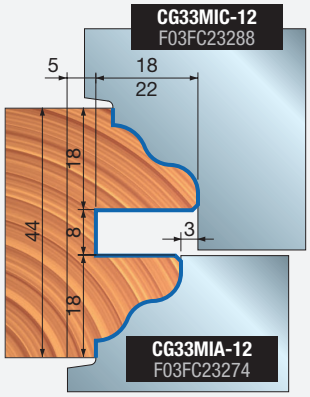


Profiling without external rounding - Knives for cutterheads ST16MIAC13 - ST16MICC13

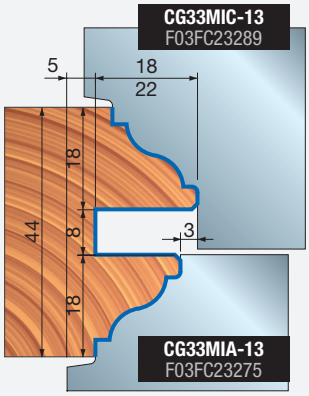
Profile 11



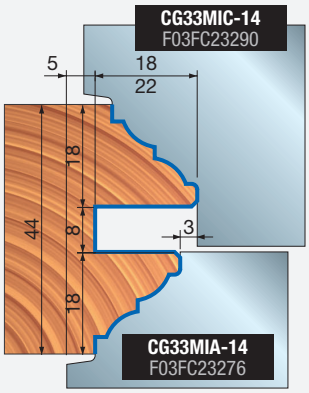
Profile 12



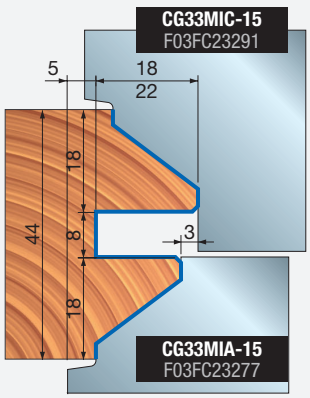
Profile 13



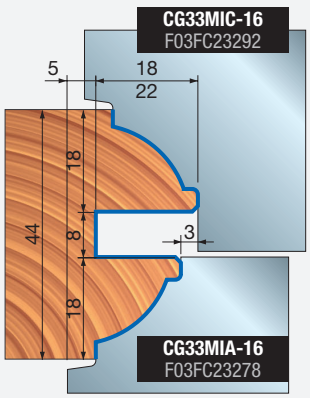
Profile 14



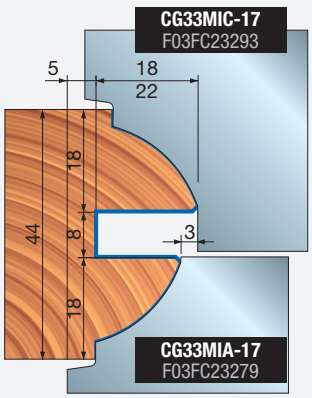
Profile 15



Profile 16

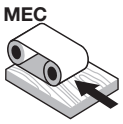


Profile 17



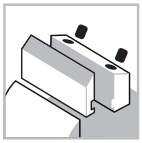
ST16MG

CNC sets for internal doors profiling with bead recovery



Automatic Feed

CNC Machines

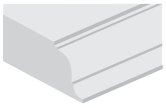


Clamping System

Aluminium Body

Softwood

Hardwood



Profiling

Rebating

ISOprofil TECHNOLOGY

Machines:
CNC overhead routing machines.

Materials:
Softwood and hardwood.

Applications:
Internal door profiling.

Technical information:
CNC tool set for internal door profile with bead recovery.

- ISOprofil cutterheads are designed to work with 17 different knives.
- Timber thickness 44 mm.
- Chuck and Performance knives to be ordered separately.
- Aluminium light alloy body.

D mm	B mm	d mm	Z	Max RPM 1/min.	Freud Code	Art. No.
148	123	-	2	9.000	**ST16MGC13702**	F03FC23499
154	123	-	2	8.500	**ST16MGC13703**	F03FC23500
154	123	-	2	8.500	**ST16MGC13704**	F03FC23501

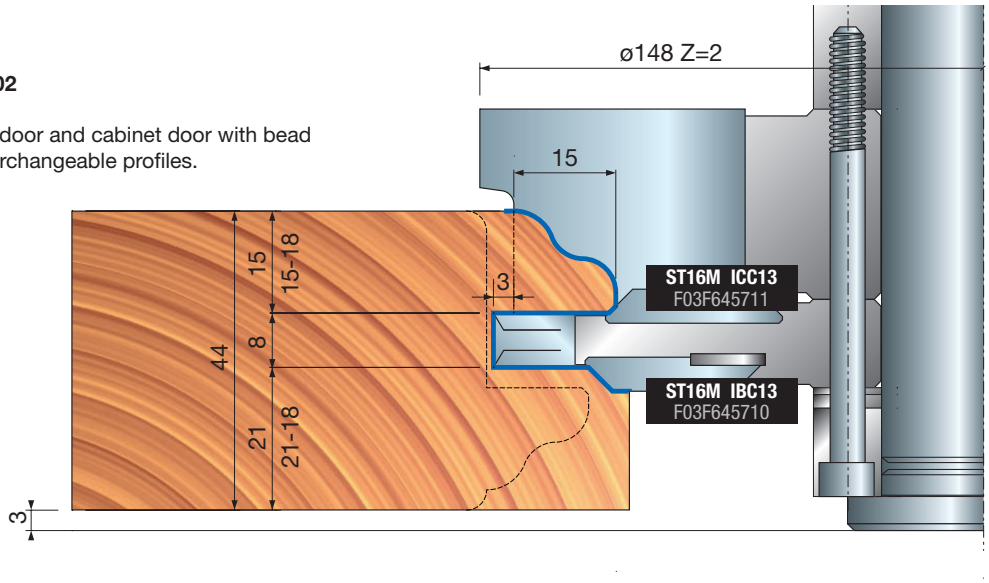
Tools for ST16MGC13702, ST16MGC13703 and ST16MGC13704 sets

D mm	B mm	d mm	Z	Max RPM 1/min.	Freud Code	Art. No.
144	15	30	2		**ST16M IBC13**	F03F645710
148	38	30	2		**ST16M ICC13**	F03F645711
151	22	30	2		**ST16M IFC13**	F03F645714
151	33	30	2		**ST16M IEC13**	F03F645713
152	15	30	2		**ST16M IDC13**	F03F645712
154	23,7	30	2		**ST16M IAC13**	F03F645709

		Spare parts	Dimensions mm	Freud Code	Art. No.
IAC13 ICC13		Screw	M5 x 8	**VT05M AA9**	F03FA04444
		Positioning plate	22 x 1,7 x 6,5	**VT18M GB9**	F03FA04489
		Screw	M10 x 16	**2616M EE9**	F03FA07426
ICC13		Wedge	34,5 x 42,5 x 8	**CN33M IC9**	F03FC23309
AA2 - AA3		Wedge	15 x 7,2 x 8	**CN09M DA9**	F03FC01295
		Beveling insert	22 x 16 x 5	**IG51MBA305**	F03FH03022
		Spur	22,86 x 2,5	**RG02MAA305**	F03FH03041
AA2 - AA3		Knife	7,6 x 12 x 1,5	**CG62MHA310**	F03FH02956
		Screw	M5 x 6	**VT05M AC9**	F03FA04446
		Screw	M5 x 19	**VT11M AA9**	F03FA04468
		Screw	M6 x 13	**VT16M AE9**	F03FC20658
AA2 - AA3		Knife	30 x 12 x 1,5	**CG62MDA310**	F03FH02951
		Screw	M5 x 8	**VT05M AA9**	F03FA04444
AA2 - AA3		Knife	21,6 x 12 x 1,5	**CG62MTA310**	F03FC25458
		Wedge	15 x 20 x 8	**CN09MD AK9**	F03FC01304
AA2 - AA3		Rounding insert	22 x 16 x 5 R=3	**IG52MAE305**	F03FH03025
		Screw	M6 x 14,5	**VT16M AA9**	F03FA04476
		Screw	M10 x 22	**VT19M MA9**	F03FA04496
		Nut	15 x 13,3 x M10	**VT20M MA9**	F03FC20670

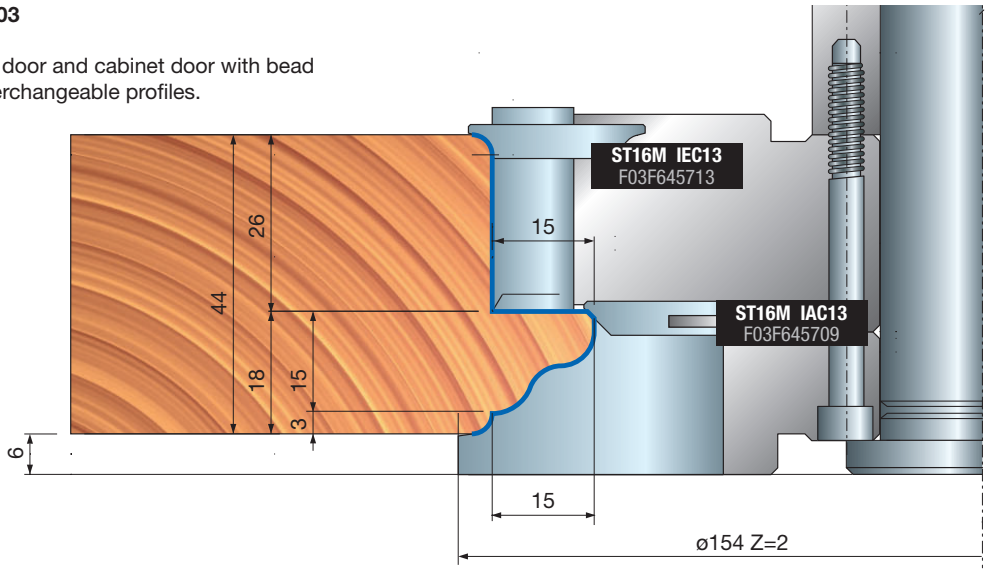
Set ST16MGC13702

Internal profiling of door and cabinet door with bead recovery. No. 7 interchangeable profiles.



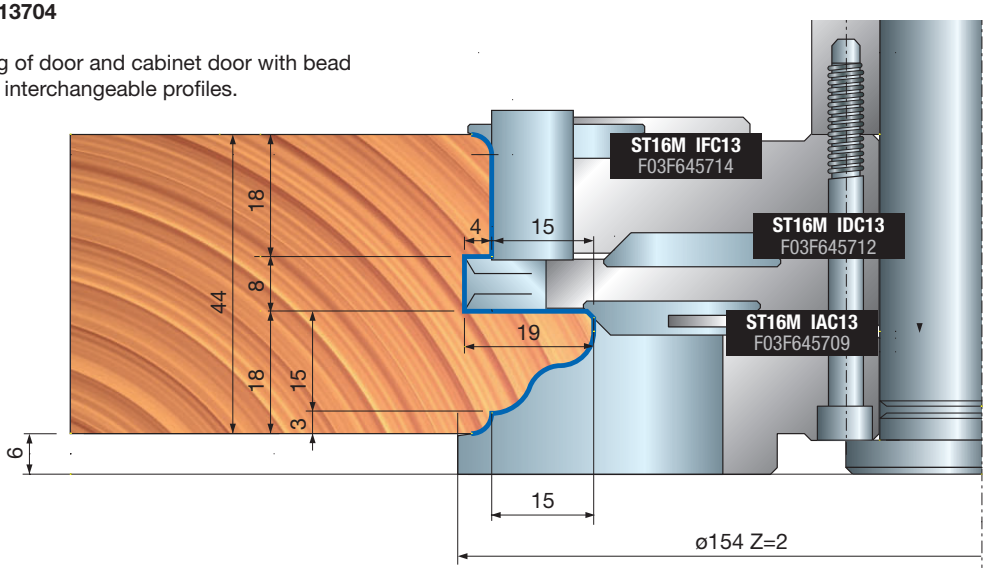
Set ST16MGC13703

Internal profiling of door and cabinet door with bead recovery. No. 7 interchangeable profiles.



Set ST16MGC13704

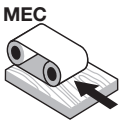
Internal profiling of door and cabinet door with bead recovery. No. 7 interchangeable profiles.



ST16MG

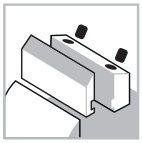
CNC scribing sets for internal doors

MEC



Automatic Feed

CNC Machines



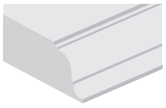
Clamping System

Aluminium Body

Softwood

Hardwood

ISOprofil TECHNOLOGY



Profiling

Rebating

Machines:
CNC overhead routing machines.

Materials:
Softwood and hardwood.

Applications:
Door profile scribing.

Technical information:
CNC tool set for internal door counterprofile.

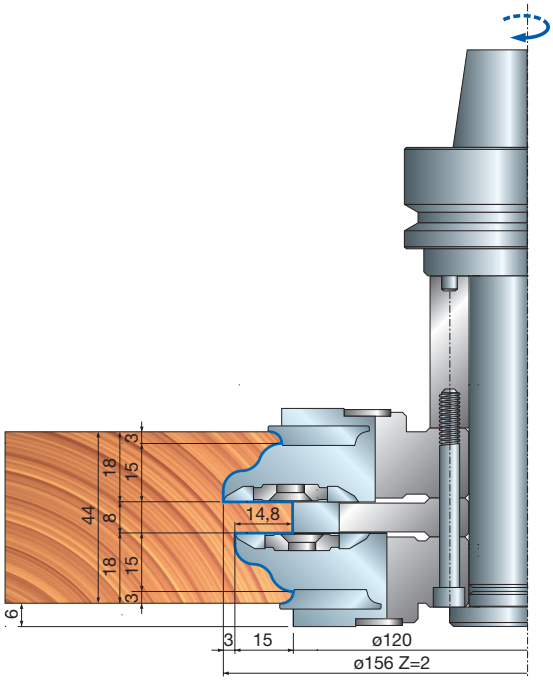
- ISOprofil cutterheads are designed to work with 6 different knives (please refer to ST16MGC13 700-701-702-703-704 profiles).
- Timber thickness 44 mm.
- Chuck and Performance knives to be ordered separately.
- Aluminium light alloy body.

D mm	B mm	d mm	Z	Max RPM 1/min.	Freud Code	Art. No.
156	123	-	2	8.500	**ST16MGC13705**	F03FC23502
156	123	-	2	8.500	**ST16MGC13706**	F03FC23503
150	123	-	2	9.000	**ST16MGC13707**	F03FC23504
150	123	-	2	9.000	**ST16MGC13708**	F03FC23505

Tools for ST16MGC13705, ST16MGC13706, ST16MGC13707 and ST16MGC13708 sets

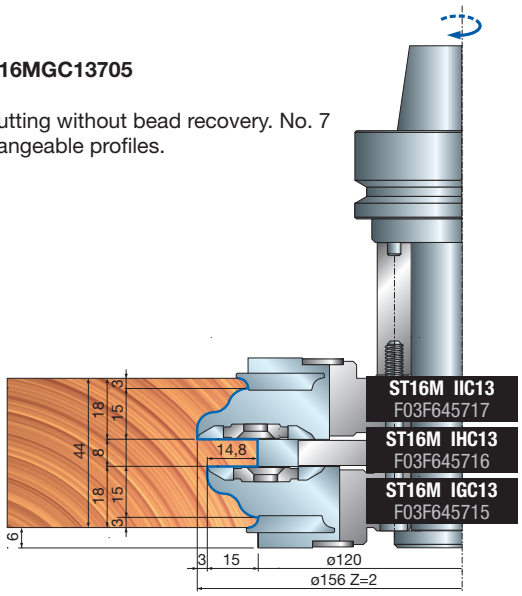
D mm	B mm	d mm	Z	V	Max RPM 1/min.	Freud Code	Art. No.
112,4	10	30	2	-		**ST16M IJC13**	F03F645718
120,4	10	30	2	-		**ST16M IHC13**	F03F645716
127	22	30	2	4		**ST16M ILC13**	F03F645720
127	30,5	30	2	2		**ST16M IKC13**	F03F645719
150	24	30	2	4		**ST16M IGC13**	F03F645715
156	24	30	2	4		**ST16M IIC13**	F03F645717

	Spare parts	Dimensions mm	Freud Code	Art. No.
IGC13	Screw	M10 x 16	**2616M EE9**	F03FA07426
	Wedge	20,5 x 42,5 x 8	**CN33M IG9**	F03FC23310
	Spur insert	40 x 16 x 4	**IG05MSAA305**	F03FH02999
	Rounding insert	22 x 16 x 5 R=3	**IG52MAE305**	F03FH03025
	Screw	M5 x 8	**VT05M AA9**	F03FA04444
	Screw	M6 x 14,5	**VT16M AA9**	F03FA04476
	Screw	M6 x 11,5	**VT16M AB9**	F03FA04477
	Positioning plate	22 x 1,7 x 6,5	**VT18M GA9**	F03FA04488
IHC13 IJC13	Knife	8,6 x 12 x 1,5	**CG62MJA310**	F03FH02958
	Wedge	15 x 7,2 x 8	**CN09M DA9**	F03FC01295
	Screw	M5 x 19	**VT11M AA9**	F03FA04468
IIC13	Screw	M10 x 16	**2616M EE9**	F03FA07426
	Wedge	20,5 x 42,5 x 8	**CN33M II9**	F03FC23311
	Spur insert	40 x 16 x 4	**IG05MDAA305**	F03FH02998
	Rounding insert	22 x 16 x 5 R=3	**IG52MAE305**	F03FH03025
	Screw	M5 x 8	**VT05M AA9**	F03FA04444
	Screw	M6 x 14,5	**VT16M AA9**	F03FA04476
	Screw	M6 x 11,5	**VT16M AB9**	F03FA04477
	Positioning plate	22 x 1,7 x 6,5	**VT18M GA9**	F03FA04488
IKC13	Knife	30 x 12 x 1,5	**CG62MDA310**	F03FH02951
	Wedge	15 x 26 x 8	**CN09MD AD9**	F03FC01300
	Rounding insert	22 x 16 x 5 R=3	**IG52MAE305**	F03FH03025
	Screw	M6 x 14,5	**VT16M AA9**	F03FA04476
	Screw	M10 x 22	**VT19M MA9**	F03FA04496
	Nut	15 x 13,3 x M10	**VT20M MA9**	F03FC20670
ILC13	Knife	21,6 x 12 x 1,5	**CG62MTA310**	F03FC25458
	Wedge	15 x 20 x 8	**CN09MD AK9**	F03FC01304
	Rounding insert	22 x 16 x 5 R=3	**IG52MAE305**	F03FH03025
	Spur	22,86 x 2,5	**RG02MAA305**	F03FH03041
	Screw	M5 x 8	**VT05M AA9**	F03FA04444
	Screw	M6 x 14,5	**VT16M AA9**	F03FA04476
	Screw	M10 x 22	**VT19M MA9**	F03FA04496
	Reduced nuts	15 x 13,3 x M10	**VT20M NA9**	F03FC20671



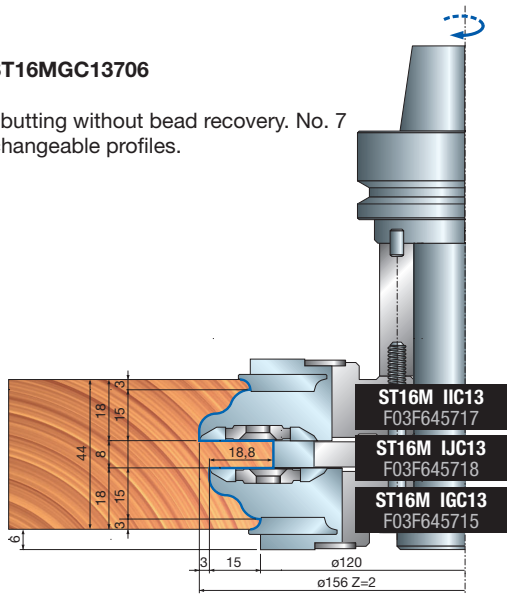
Set ST16MGC13705

Door butting without bead recovery. No. 7 interchangeable profiles.



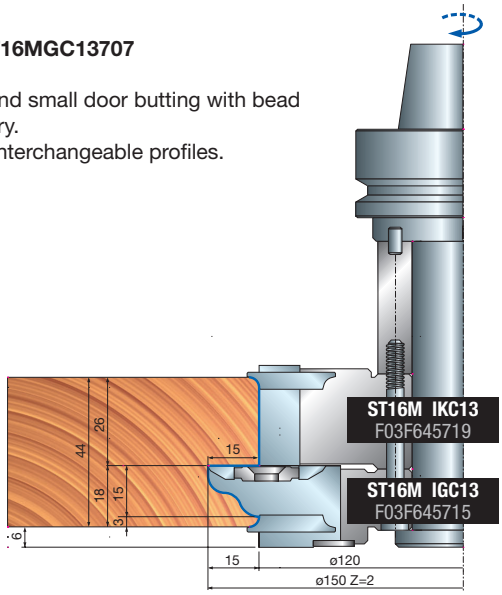
Set ST16MGC13706

Door butting without bead recovery. No. 7 interchangeable profiles.



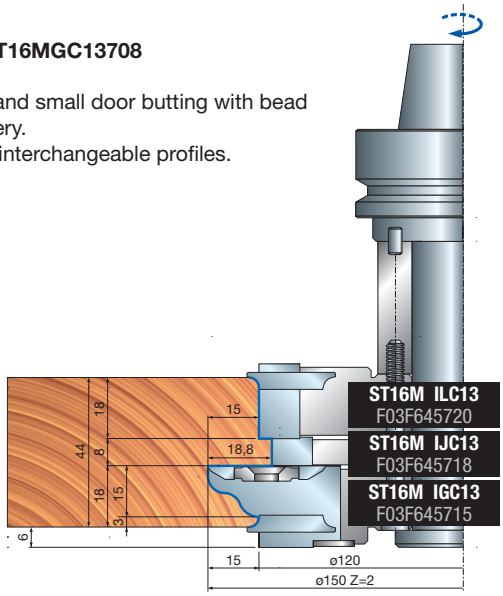
Set ST16MGC13707

Door and small door butting with bead recovery.
No. 7 interchangeable profiles.



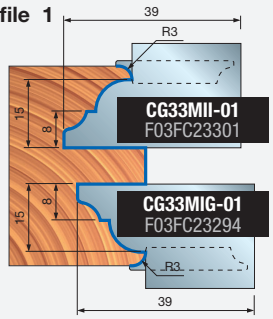
Set ST16MGC13708

Door and small door butting with bead recovery.
No. 7 interchangeable profiles.

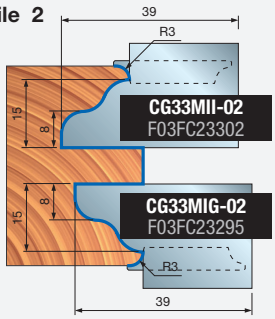


Profiling with 3 mm external rounding - Knives for cutterheads ST16M IGC13 - ST16M IIC13

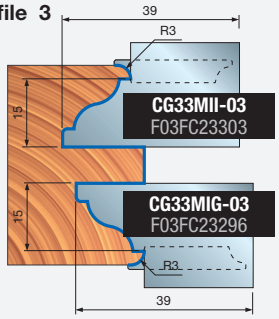
Profile 1



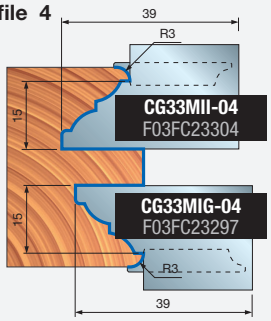
Profile 2



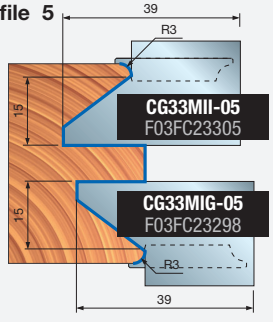
Profile 3



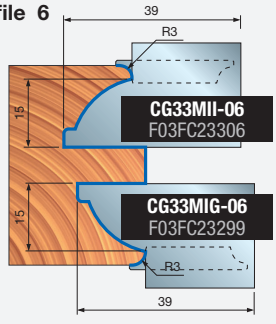
Profile 4



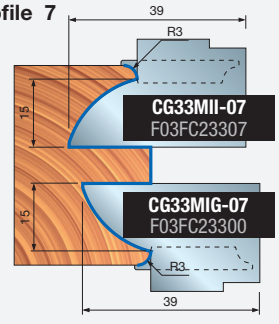
Profile 5



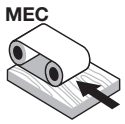
Profile 6



Profile 7

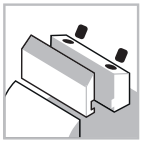


ST16MG CNC sets for door rebates



Automatic Feed

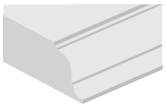

CNC Machines


Clamping System


Aluminium Body


Softwood


Hardwood


Profiling


Rebating

Machines:
CNC overhead routing machines.

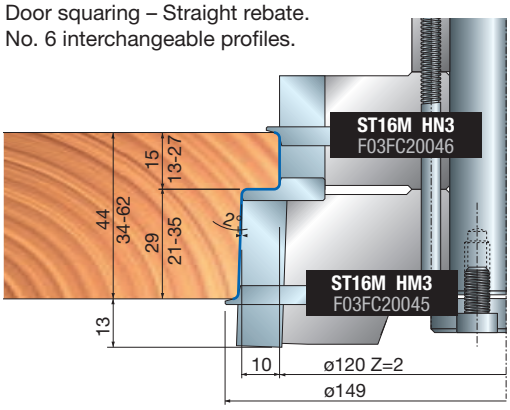
Materials:
Softwood and hardwood.

Applications:
Door rebate profiling.

Technical information:
Adjustable CNC tool set for internal door rebates.
- Adjustable rebate dimension with NSR system
- Chuck to be ordered separately.
- Aluminium light alloy body. For cleaning do not use products containing caustic soda.
- The tools for **ST16MG 820** and **ST16MG 821** are supplied without chuck.

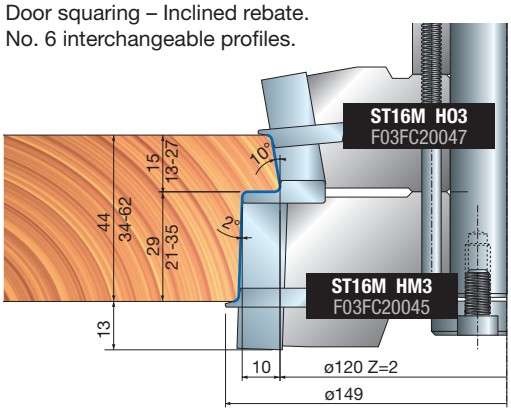
Set ST16MG 820

Door squaring – Straight rebate.
No. 6 interchangeable profiles.



Set ST16MG 821

Door squaring – Inclined rebate.
No. 6 interchangeable profiles.



D mm	B mm	d mm	Z	Max RPM 1/min.	Freud Code	Art. No.
149	127	-	2	9.000	**ST16MG 820**	F03FC20127
149	127	-	2	9.000	**ST16MG 821**	F03FC20128

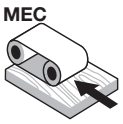
Tools for ST16MG 820 and ST16MG 821 sets

D mm	B mm	d mm	Z	I	Freud Code	Art. No.
120	30	30	2	2	**ST16M HN3**	F03FC20046
128,4	30	30	2	2	**ST16M HO3**	F03FC20047
141,8	40	30	2	4	**ST16M HM3**	F03FC20045

	Spare parts	Dimensions mm	Freud Code	Art. No.
	Knife	40 x 12 x 1,5	**CG08MLA310**	F03FH02909
	Wedge	15 x 36 x 8	**CN09MS AR9**	F03FC01334
	Nut	15 x 13,3 x M10	**VT20M MA9**	F03FC20670
	Screw	M10 x 22	**VT19M MA9**	F03FA04496
	Multipurpose insert	10	**IG25MS10302**	F03FC24172
	Screw	M6 x 10	**2622M CB9**	F03FA07455
	Adjustment ring	16 x 11,9 x 2,6	**VT18M AG9**	F03FC20660
	Wedge	28 x 9,5 x 8	**CN03M BB9**	F03FA00585
	Screw	M8 x 22	**VT19M BB9**	F03FA04493
	Rounding insert	22 x 16 x 5 R=1,5	**IG52MAB305**	F03FH03023
	Screw	M6 x 13	**VT16M AE9**	F03FC20658
	Knife	30 x 12 x 1,5	**CG08MEA310**	F03FH02906
	Wedge	15 x 26 x 8	**CN09MD AD9**	F03FC01300
	Nut	15 x 13,3 x M10	**VT20M MA9**	F03FC20670
	Screw	M10 x 22	**VT19M MA9**	F03FA04496
	Rounding insert	22 x 16 x 5 R=1,5	**IG52MAB305**	F03FH03023
	Screw	M6 x 13	**VT16M AE9**	F03FC20658
	Wedge	28 x 9,5 x 8	**CN03M BB9**	F03FA00585
	Screw	M8 x 22	**VT19M BB9**	F03FA04493
	Knife	30 x 12 x 1,5	**CG08MEA310**	F03FH02906
	Wedge	15 x 26 x 8	**CN09MS AD9**	F03FC01326
	Nut	15 x 13,3 x M10	**VT20M MA9**	F03FC20670
	Screw	M10 x 22	**VT19M MA9**	F03FA04496
	Rounding insert	22 x 16 x 5 R=1,5	**IG52MAB305**	F03FH03023
	Screw	M6 x 13	**VT16M AE9**	F03FC20658
	Wedge	28 x 9,5 x 8	**CN03M BB9**	F03FA00585
	Screw	M8 x 22	**VT19M BB9**	F03FA04493

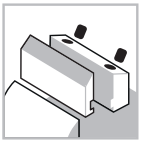
ST16MG

Window tooling set for door frame internal profiling



Automatic Feed

CNC Machines

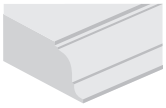


Clamping System

Aluminium Body

Softwood

Hardwood



Profiling

Rebating

ISOprofil TECHNOLOGY

Shear Angle TECHNOLOGY

D mm	B mm	d mm	Z	Max RPM 1/min.	Freud Code	Art. No.
158	123	-	2	9.000	**ST16MG 830**	F03FC20129

Machines:
CNC overhead routing machines.

Materials:
Softwood and hardwood.

Applications:
Door fame profiling.

Technical information:
Performance CNC tool set suitable for door frames.

- Front shear angle to guarantee a perfect step surface, rounding and beveling insert to offer different solutions on step corners chuck and radius/chamfer inserts to be ordered separately.
- Aluminium light alloy body. For cleaning do not use products containing caustic soda.

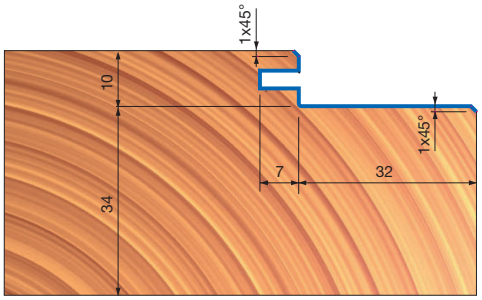
Tools for ST16MG 830 set

D mm	B mm	d mm	Z	V	Max RPM 1/min.	Freud Code	Art. No.
141	29	30	2	2		**ST16M HP3**	F03FC20048

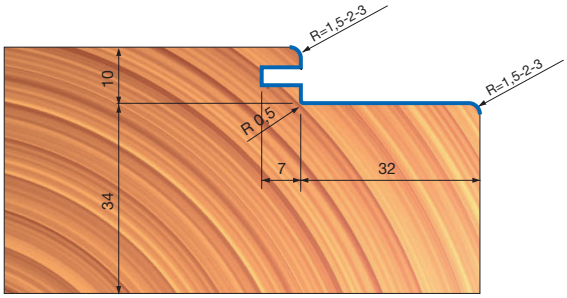
	Spare parts	Dimensions mm	Freud Code	Art. No.
	Knife	18,5 x 24 x 3	**CG30M02401**	F03FC23905
	Screw	5 x 7 x 18	**VT08M AE9**	F03FA04457
	Screw	M10 x 18	**VT03M CC9**	F03FA04438
	Grooving insert	40 x 16 x 3	**IG04MDAC305**	F03FH02992
	Screw	M6 x 14,5	**VT16M AA9**	F03FA04476

	Optional inserts	Dimensions mm	Freud Code	Art. No.
	Beveling insert	22 x 16 x 5 45°	**IG51MBA305**	F03FH03022
	Rounding insert	22 x 16 x 5 R=1,5	**IG52MAB305**	F03FH03023
	Rounding insert	22 x 16 x 5 R=2	**IG52MAC305**	F03FH03024
	Rounding insert	22 x 16 x 5 R=3	**IG52MAE305**	F03FH03025

With Beveling inserts

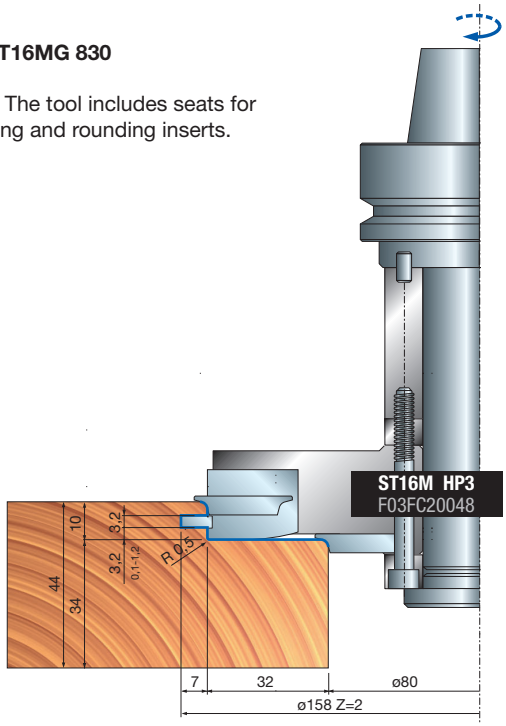


With Rounding inserts

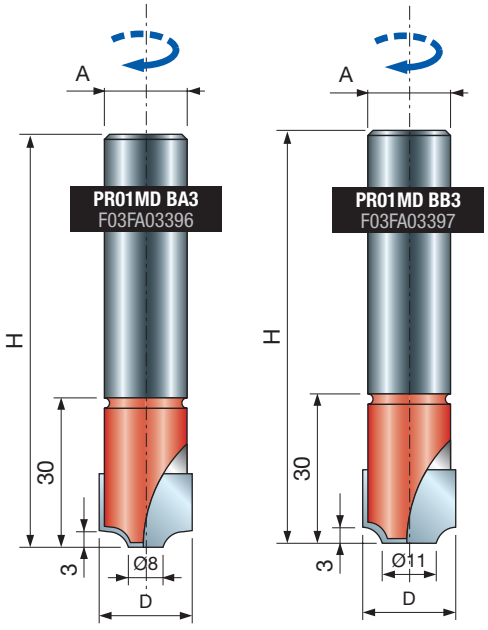


Set ST16MG 830

Note: The tool includes seats for beveling and rounding inserts.



PR01MD Bead profiling router bits

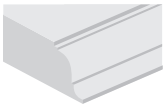


CNC Router

Brazed Cutters

Softwood

Hardwood



Profiling

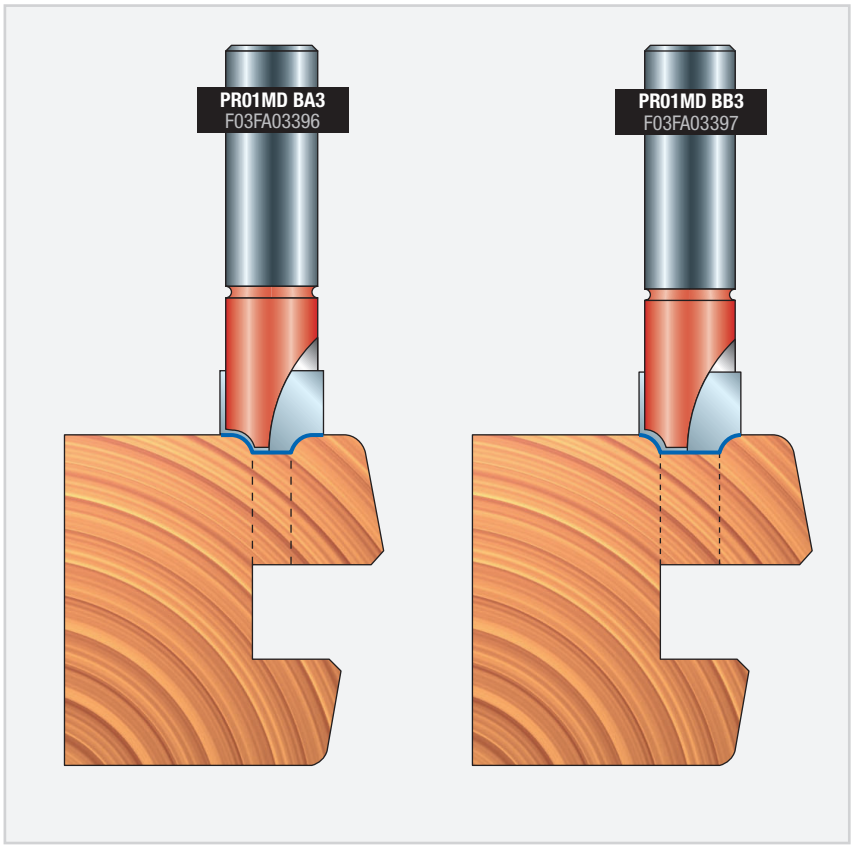
Machines:
CNC machines.

Materials:
Softwood and hardwood.

Applications:
Profiling.

Technical information:
Suitable for window bead recovery operations.
Manufactured in steel with brazed HW tips.

D mm	h mm	H mm	A mm	Z	Max RPM 1/min.	Freud Code	Art. No.
20	-	80	20	2	18.000	**PR01MD BA3**	F03FA03396
20	-	80	20	2	18.000	**PR01MD BB3**	F03FA03397



PCARM Bead recovering router bits

CNC Routers

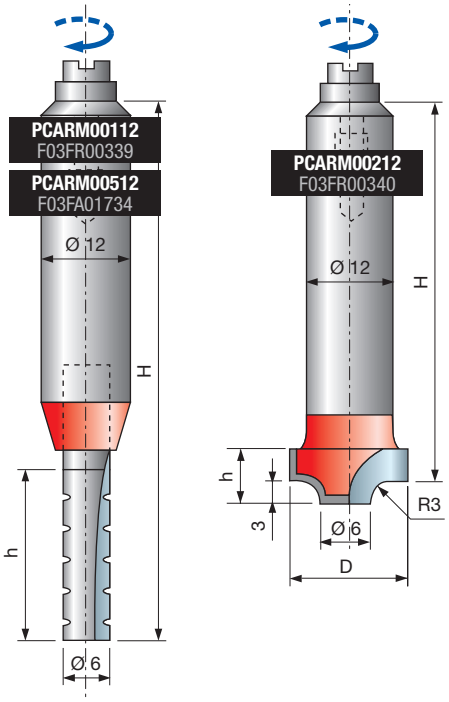
Brazed Cutters

Softwood

Hardwood

Profiling

D mm	h mm	H mm	A mm	Z	Max RPM 1/min.	Freud Code	Art. No.
6	23,5	71	12	1	24.000	**PCARM00112**	F03FR00339
6	30	80	12	1	24.000	**PCARM00512**	F03FA01734
16	8	56	12	2	24.000	**PCARM00212**	F03FR00340
19	8	56	12	2	24.000	**PCARM00312**	F03FR00341
20	26	71	12	2	24.000	**PCARM00412**	F03FR00342

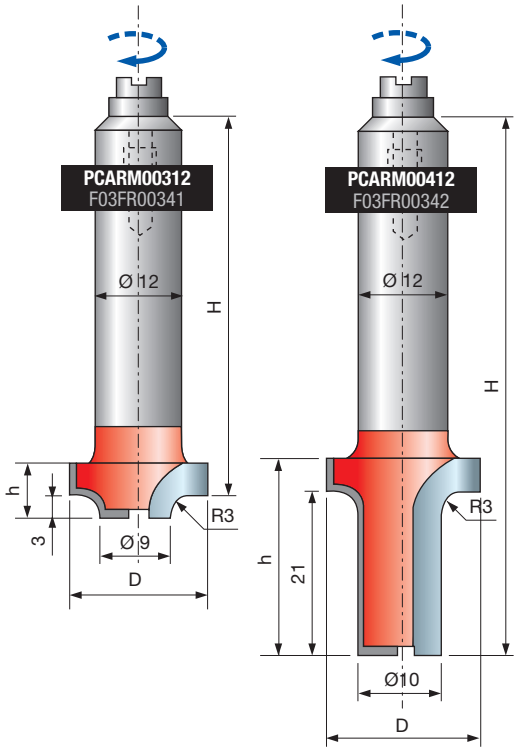


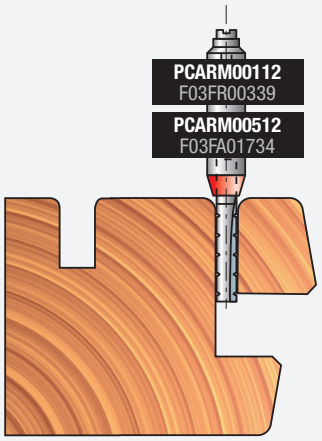
Machines:
CNC machines.

Materials:
Softwood and hardwood.

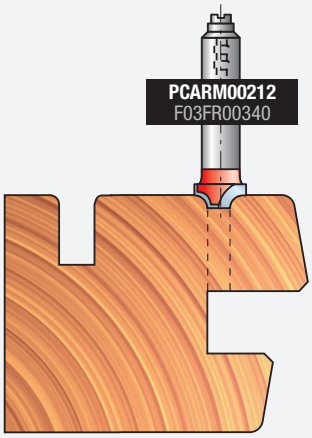
Applications:
Profiling.

Technical information:
Suitable for arch window bead recovery operations.
- Manufactured in steel with brazed HW tips.

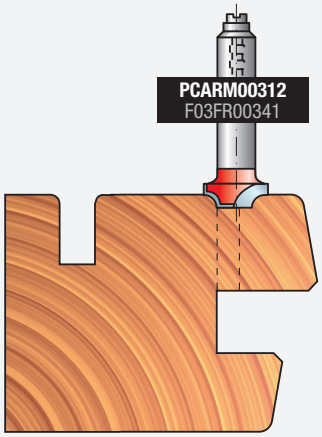




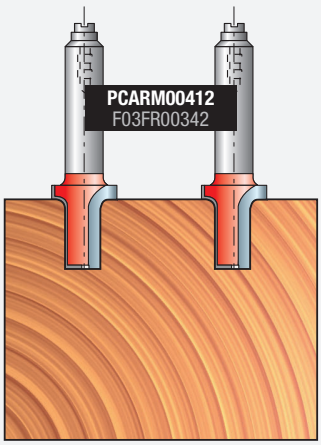
20-28 mm bead recovery bit.



Bead profiling bit.



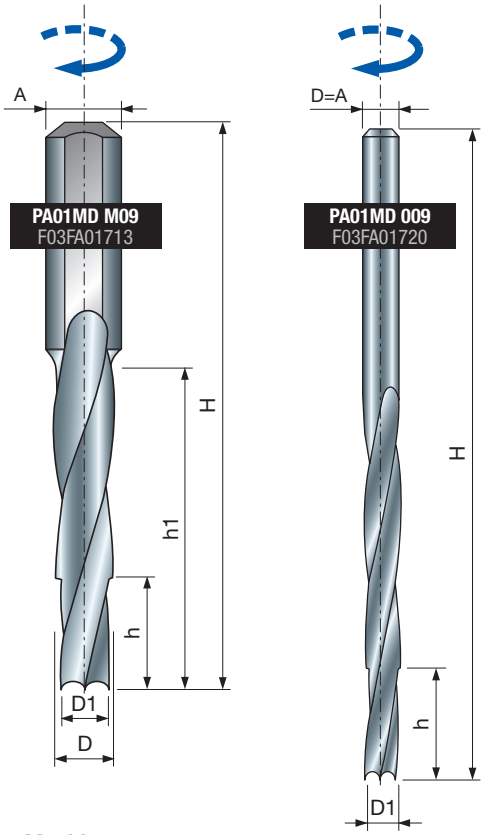
Bead profiling bit.

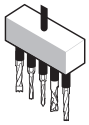


Arch tracing bit.

Boring

PA01MD HS stepped drill for hinges





Boring Machines

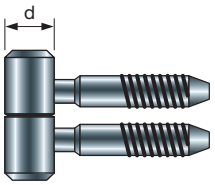
CNC Routers

Softwood

Hardwood

D1 mm	D mm	h mm	h1 mm	H mm	A mm	d mm	Freud Code	Art. No.
3,8	5	20	40	75	10	9	**PA01MD M09**	F03FA01713
5,2	6,5	15	50	85	10	13	**PA01MD M13**	F03FA01715
5,5	7	15	55	90	10	14	**PA01MD M14**	F03FA01716
6	7,7	15	60	95	10	16	**PA01MD M16**	F03FA01717
6,6	8,2	20	70	105	10	18	**PA01MD M18**	F03FA01718
6,7	8,7	20	80	115	10	20	**PA01MD M20**	F03FA01719

D1 mm	D mm	h mm	h1 mm	H mm	A mm	d mm	Freud Code	Art. No.
4,5	5,25	10	45	83	5,25	9	**PA01MD 009**	F03FA01720
5,8	6,75	20	85	155	6,75	13	**PA01MD 013**	F03FA01722
6,3	7,25	19	95	165	7,25	14	**PA01MD 014**	F03FA01723
6,7	7,75	25	100	165	7,75	16	**PA01MD 016**	F03FA01724
7,7	8,75	20	70	121	8,75	18	**PA01MD 018**	F03FA01725



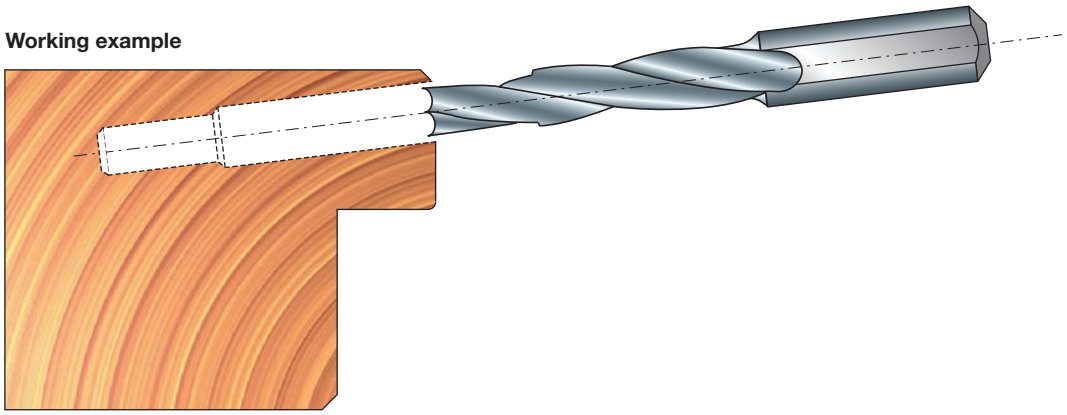
Machines:
Boring and CNC machines.

Materials:
Softwood and hardwood.

Applications:
Boring.

Technical information:
Right hand rotation router bit with double diameter for window hinges.

Working example



The tools have been designed and manufactured in accordance with the European Safety Standard EN-847

TOOLS

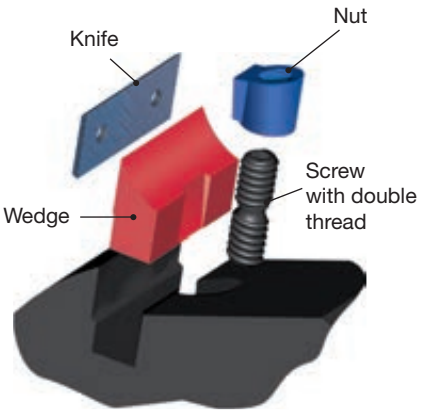
Tools shall be used only by persons of training and experience who have knowledge of how to use and handle tools.
The maximum rotational speed marked on the tool shall not be exceeded.
Circular saw blades, the bodies of which are cracked, shall be scrapped (repairing is not permitted).
One piece tool with visible cracks shall not be used.
Clamping surfaces shall be cleaned to remove dirt, grease, oil and water.

- Resin shall only be removed from light alloys with solvents that do not affect the mechanical characteristics of these materials.
  Tools and tool bodies shall be clamped in such a way that they shall not loosen during operation. Tools with cylindrical shank must be clamped in a way that the mark of the maximum free shank length shall be covered, at least partially, by the clamping device or by the locking collet.
- During assembly procedures, attention must be paid that knives, inserts and spurs do not collide with other elements.
  Fastening screws and nuts shall be tightened using the appropriate spanners etc. and to the torque value provided by the manufacturer. Extension of the spanner or tightening using hammer blows shall not be permitted.
  Clamping screws shall be tightened according to instructions provided by the manufacturer. Where instructions are not provided clamping screws shall be tightened in sequence from the centre outwards.
  Use of fixed rings, e. g. pressed or held by adhesive fixing, in flanged sleeves, shall be permitted if made to the manufacturers specifications.
- Repair and regrinding of tools shall only be allowed according to the tool manufacturer's instructions.
  After repair and regrinding of tools it shall be ensured that the tools observe balancing requirements.
  The design of composite (tipped) tools shall not be changed in the process of repair.
- Composite tools shall be repaired by a competent person, i.e. a person of training and experience, who has knowledge of the design requirements and understands the level of safety to be achieved.
  Repair shall therefore include, e.g. use of spare parts which are in accordance with the specification of the original parts provided by the manufacturer.
- Tolerances which ensure correct clamping shall be maintained.
  For one piece tools care shall be taken that regrinding of the cutting edge will not cause weakening of the hub and the connection of the cutting edge to the hub.
  To avoid injuries, tools shall be handled in accordance with the guidance provided by the manufacturer. Typically, safe handling involves the use of devices such as carrying hooks, proprietary handles, frames (e. g. for circular saw blades), boxes, trolleys etc.
  The wearing of protective gloves improves the grip on the tool and further reduces the risk of injury.
  Maintenance and modification of milling tools and related components and circular saw blades should always be in accordance with the design requirements/the manufacturer's instructions.
  Maintenance and modification of milling tools and circular saw blades should only be carried out by a competent person, i. e. a person of training and experience, who has knowledge of the design requirements and understand levels of safety to be achieved.
  When regrinding milling tools and circular saw blades, the minimum requirements of cutting blade thickness and cutting blade projection should be observed.
  Composite tools should be repaired by persons experienced in and with understanding of design and use of milling tools for processing wood and similar materials, e.g. an expert with a relevant education and knowledge of the brazing process, including in particular the influence of the brazing process on tension in tool body and cutting material. When brazing off worn tips and subsequently brazing on new tips it should be made sure that the tip is correctly mounted in the tool body and that the process does not result in critical tension in the tool body.
- After any type of maintenance, milling tools marked with MAN should continue to observe the requirements of the standards related to tools for hand feed.
  When modifying milling tools, e. g. modification of bore diameter, modification of shank, retipping of composite tools and similar, it should be ensured that the requirements of the standard relating to balancing are still observed.
  After being modified and/or retipped, milling tools and circular saw blades should be marked according to the rules applying to new tools. However, the name/logo of the company making the modification/ retipping should be added.
  To avoid injuries, tools shall be handled in accordance with the guidance provided by the manufacturer. Tools which weigh more than 15 kg may require the use of special handling devices or attachments, these will depend on the features that the manufacturer has designed into the tool to allow easy handling. The manufacturer can advise on the availability of necessary devices.

CLAMPING DEVICES

The speeds indicated on the clamping device and the tool to be clamped should be compared. For adjusting the speed on the machine the lower speed should be applied.
Screws and nuts should be tightened using the appropriate spanners.
Clamping surfaces should be cleaned to remove dirt, grease, oil and water.
Clamping devices and tools should be mounted or clamped according to given torques, pressures and wrenches to be used.
Extension of spanners or tightening or loosening by means of hammer blows should not be permitted.
Maximum tool diameters and tool lengths should not be exceeded.
Shank diameters must be in accordance with the clamping range of the clamping devices.
The minimum required clamping length must be kept.
Care should be taken that the data relevant to the safety of the clamped tool are always stored in the data medium.
Repairs should only be carried out by a competent person, i.e. a person with professional training and experience, who has knowledge of the design, construction and safety requirements.
Repair should therefore include the use of spare parts which are in compliance with the specifications of the original parts.

HRL HIGH RESISTANCE LOCKING SYSTEM



Components of HRL system

THE MOST TRIED AND TESTED SYSTEM:
Refined after many years of continuous improvements, both technologically as well as in the materials used to construct each component, without, however, losing sight of the functionability and security of the product. Furthermore, the HRL Locking System has undergone accurate controls, even from the mechanical and technological point of view.

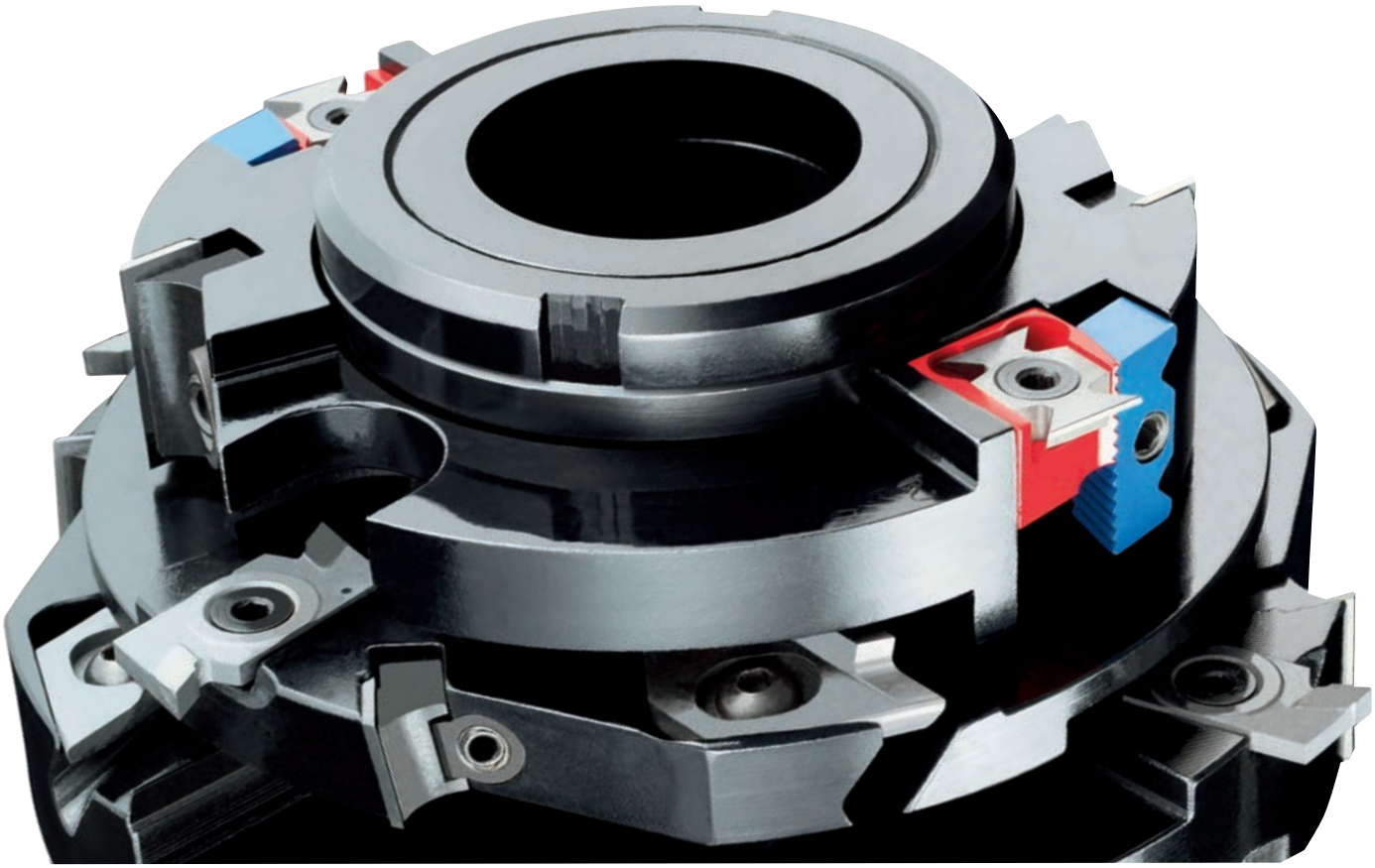
THE SAFEST SYSTEM:
Thanks to its wedge shaped design, the HRL Locking System takes advantage of centrifugal forces determined by the tool's rotation in order to block itself. For this reason as weil as the oversized components, there is no risk of accidental breakage or expulsion of the knife.

THE MOST PRECISE SYSTEM:
All seats and components are constructed using precision levels never before reached in the woodworking tools industry, guaranteeing an always perfect and efficient positioning.

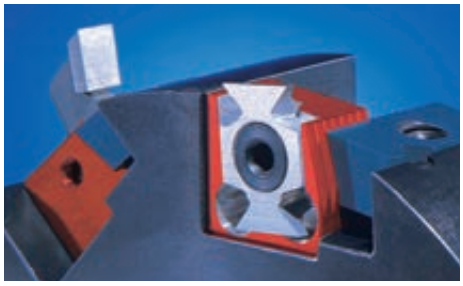
THE SIMPLEST SYSTEM:
Complexity is not always synonymous of efficiency! There are other more complex locking methods than ours, but none as efficient. Our research centre has been able to carry out its realisation whilst keeping in consideration 2 fundamental points: have as few components as possible so as to be able to change knives quickly, even in the most difficult conditions.

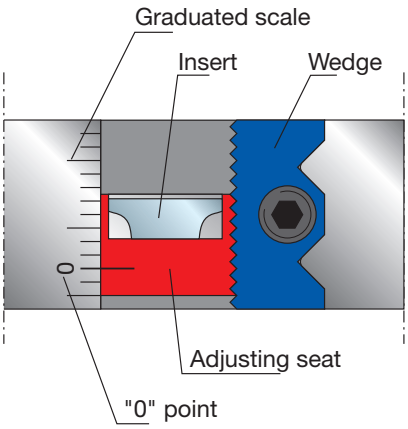
THE STRONGEST SYSTEM:
The use of wedges which have undergone special thermic treatment, the oversized screws and the precision of the HRL Locking System, guarantee an almost unlimited number of changes, without reducing its efficiency and in the most difficult conditions.

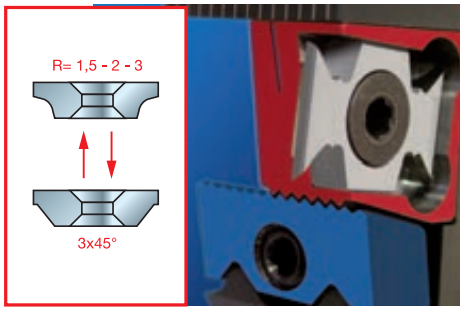
THE EASIEST SYSTEM TO MAINTAIN:
The use of only frontal screws, allow knife changes, without taking the tool off the operating machine, therefore reducing actual machine stoppages. It has been demonstrated by repeated tests, that a large frontal screw is less likely to become clogged up compared to a small one, whatever may be its position.

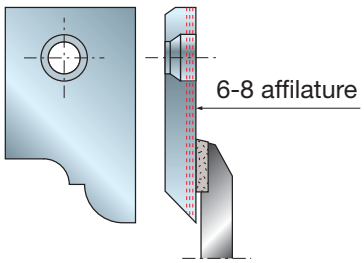


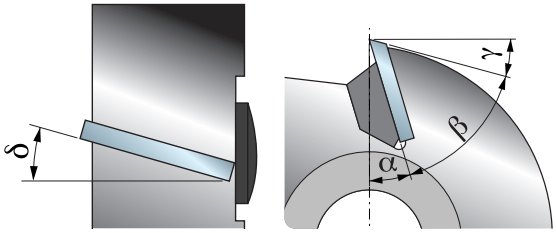
Components of NSR system











NSR REGULATION SYSTEM

- The NSR system, is currently the only one on the market which allows you to regulate and change the inserts directly on to the machine and without the need of any particular measuring instruments thanks to its particular technological charateristics and not to mention its constructive precision. The specially grained surface allows you to regulate the insert's height with increments of 1 mm and with precision of up to 1/100 of a mm, which in time will remain constant even after hundreds of changes. Furthermore the regulation is continuous along the thickness of the tool and not limited to fixed positions as happens with older systems.
- Special reference marks are incisioned using laser technology at intervals of 2 mm, in corrispondence to the grain's pass, allowing the user to carry out the easiest and most rapid positioning with absolute precision.
- Special incisioned markings consent a safe reference even after years of use. In the same seat and changing only the serrated support, it is possible to mount certain elements: rounding inserts, beveling inserts, inserts for grooves and spurs second to the necessity of use. Furthermore the insert has a positive cutting angle (hook angle) and a shear angle so as to consent the maximum finish possible on any type of workpiece.
- The insert's position with the NSR system is simple and requires the use of only a key. The very same key is also used to change the insert and is made up of very few components. With a simple gest, it is possible to take the insert off the serrated support or modify its position without even taking the tool of the operating machine, therefore avoiding useless and damaging machine stoppages.
- The exclusive type of hard metal used is produced directly by our own company. The hard metal is accurately controlled and its microstructure is modified second to the kind of use it will have to undergo, so as to obtain the best possible duration in corrispondence to the kind of finish required.

PROFILED AND RESHARPENABLE PERFORMANCE SYSTEM KNIVES

- Whereas on a traditional cutterhead, disposable blades are mounted with a thickness of 1.5 mm, on a Performance System cutter head, blades are mounted that can be sharpened 6 to 8 times, with a thickness of 3 mm, with straight or shaped profile. The second kind of tool undergoes more complex working to allow housing of blades with different profiles on the same body.
- Performance System knives are constructed in hard metal, which Freud produces in 6 grades of hardness, second to the material to be worked: softwoods and hardwoods, heavy, abrasive, chipboard, melamine, laminated, MDF etc. It is possible to use HW with a high grade of hardness, so as to permit a superior hold of 30% more with respect to the HW used for brazed cutting edges destined to work very abrasive materials.
- Other than being a solution that practically substitutes brazed cutters, thanks to the interchangeability of the profiles on the same tool and the duration of the tool itself, there is a notable advantage and convenience when working on overhead CNC router machines, where machine stoppages can result costly: infact the changing of a used or damaged knife does not require the dismounting of the cutterhead from the machine, since it is sufficient to loosen the screw that holds it in place. Instead a brazed cutter must be completely changed and a substitute available to avoid time wastage.
- Freud has an entire range of tools with performance, standard or personalised knives for manual or overhead CNC router machines.
- Even after sharpening, performance knives maintain their original profile and the tool's cutting diameter, considering maximum loses of 0,15~0,20 mm.
- We have already seen the economic advantage as compared to braze-welded tools. But the Performance System is also advantageous if compared to traditional cutterheads, thanks to the ease with which blades can be sharpened and the low cost of this operations, since no special machinery is required (all that is required is a grinder or a sharpener). Specialised personnel is also not required.

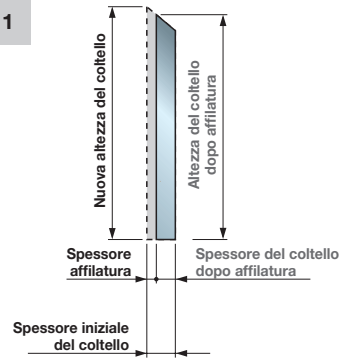
THE MOST CHARACTERISTIC ANGLES OF A CUTTERHEAD ARE:

- **Hook angle (α):** depends on the type of material to be cut.
- **Wedge angle (β):** this angle is a direct consequence of angles α and γ.
- **Clearance angle (γ):** depends on the material to be cut and the thickness of the cutting edge.
- **Shear angle (δ):** necessary to obtain a better penetration into the material to be cut and a gradual removal of the chips. When the tools have different diameters, this angle allows the hook angle to remain constant.

AUTOMATIC DIAMETER RECOVERY SYSTEM

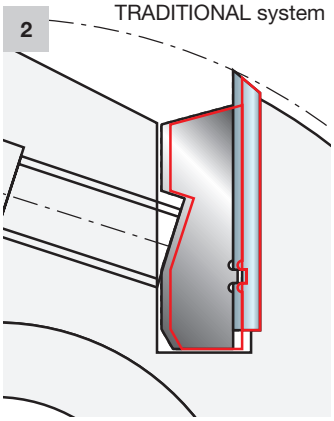
As is known, sharpening Performance System knives implicates variations in the tool cutting diameter that cause the tool to carry out an incorrect profile. The removal of material parallel to the knife surface causes a reduction in its thickness, its height (Fig. 1 and 2) and therefore in the diameter of the tool itself (Fig. 3).The introduction of this ISOprofil system consents us to avoid in a definitive way the reduction of the diameter, with extreme operative simplicity and without the need of auxiliary measuring instruments to verify the correct functionality of the knife after sharpening. The idea is fundamentally based on the geometrical form of the wedge and its positioning seats on the tool (Fig. 4). Tightning the locking screw, pushes the wedge until it locks the knife on to the tool. The wedge running on the inclined surface blocks the knife and rises until it compensates the reduction in the cutting diameter, determined by the sharpening. Those liable to draw particular advantage, are those who use numerically controlled machines with the necessity of maintaining a tool with a constant diameter, without having to intervene on the reprograming of the operating machine, so as to compensate dimensional errors that may derive from sharpening.

1



2

TRADITIONAL system



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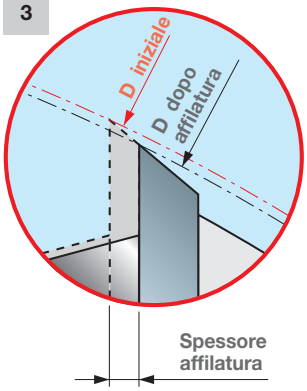

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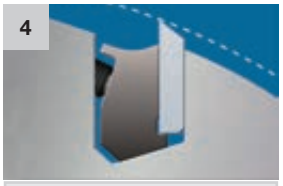
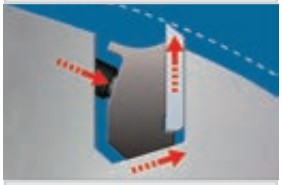
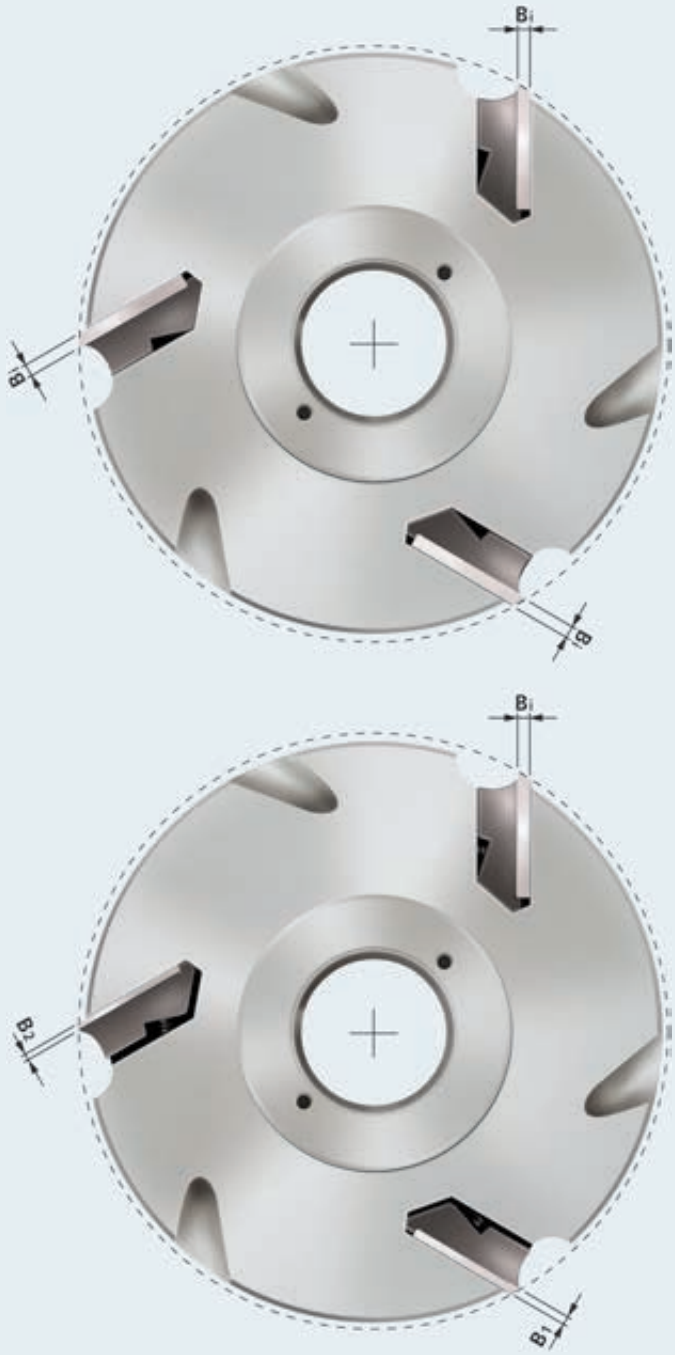


Initial diameter



Resharpened knife

Initial D = final D



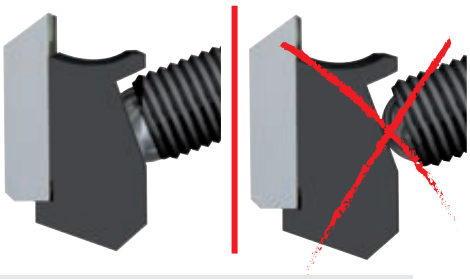
KEY

Bi: Initial knife's thickness
B1: Resharpened knife with thickness < Bi
B2: Resharpened knife with thickness < B1

AUTOMATIC DIAMETER RECOVERY SYSTEM

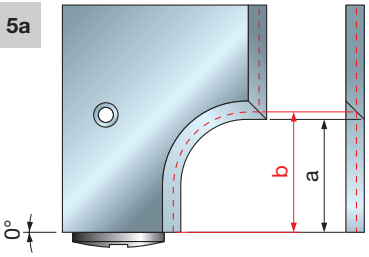
Furthermore, in order to maintain the profile of Performance knives even after several resharpenings, Freud has invented and adopted a simple but determined device, by also creating a relief angle on the support side of the knife on the positioning screw (Fig. 5a). In this way whilst sharpening is carried out, the profile does not vary, as would happen with a traditional knife. The user is surely to gain an advantage from the new system. Carrying out work where there are resharpenable knives to create the profile and the scribe (Fig. 6), it is evident that the maintenance of original shape allows to obtain a perfect fitting all through the knives'life, even after 8-10 sharpenings, without regulation of guides or CNC axes. In this way you can enjoy the reduced operating costs of "Performance" knives, without any limitation in comparison to disposable knives.
In the second example (Fig. 5b), thanks to the clearance angle on the underside, the sharpened knife would move to the value ΔS, until it rests on the positioning screw, maitaining an unaltered width a.

Screws with spherical insert, for ISOprofil System



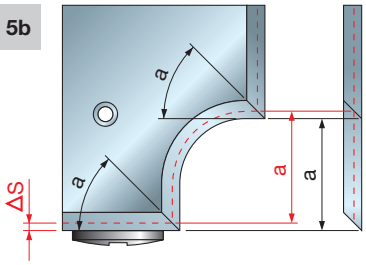
Proper locking is obtained when the flat surface of the spherical insert completely adheres to the wedge.

5a



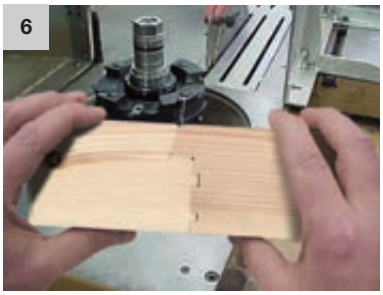
Traditional knife

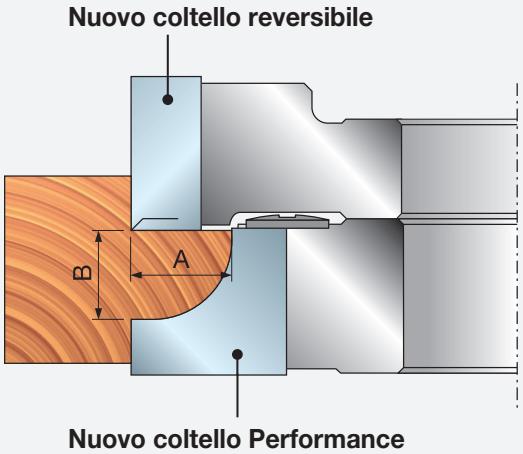
5b



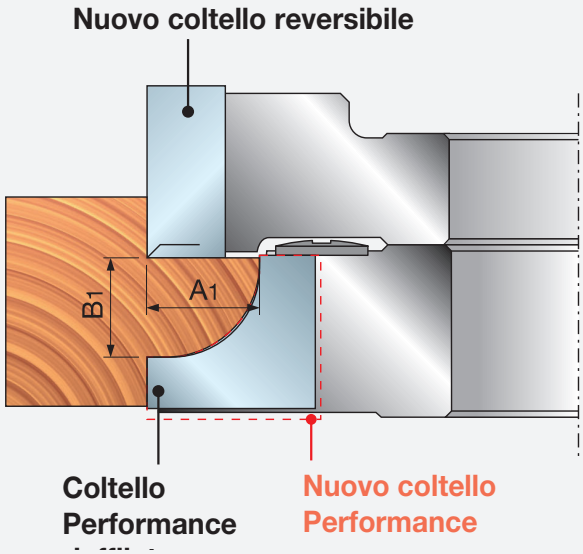
New type of knife

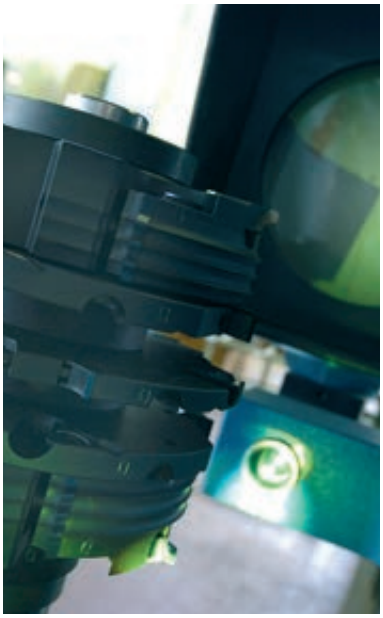
6





A= A1
B= B1





ABSOLUTE QUALITY

- The use of smart machines connected to a complex information system and the use of highly specialised personnel makes it possible to achieve a level of precision never before seen in the field of woodworking tools.
- Each tool is computer-designed in our design department, optimising characteristics based on customer needs. This leads to a tool with the utmost in performance for the desired applications.
- Each tool is then balanced to eliminate vibrations due to uneven distribution of the ferrous mass that would occur during work. Three different balancing operations are performed. The first is on the single tool, and the second is on the complete group. The third, of extreme importance, is on the set of groups that will be assembled on the machine shaft.
- Each tool is checked with a computerised system that makes it possible to verify, even before final testing, the precision of the required group.
- All of these working and verification phases mean that Freud can provide clients with a turnkey product that is immediately productive and therefore economically profitable.
- Fine tuning is performed by the testing department, where a production simulation is carried out. For each single group, a wood sample is worked with the requested profile. In this way, the customer is provided with a system that can be used right away without the need for any further adaptation.