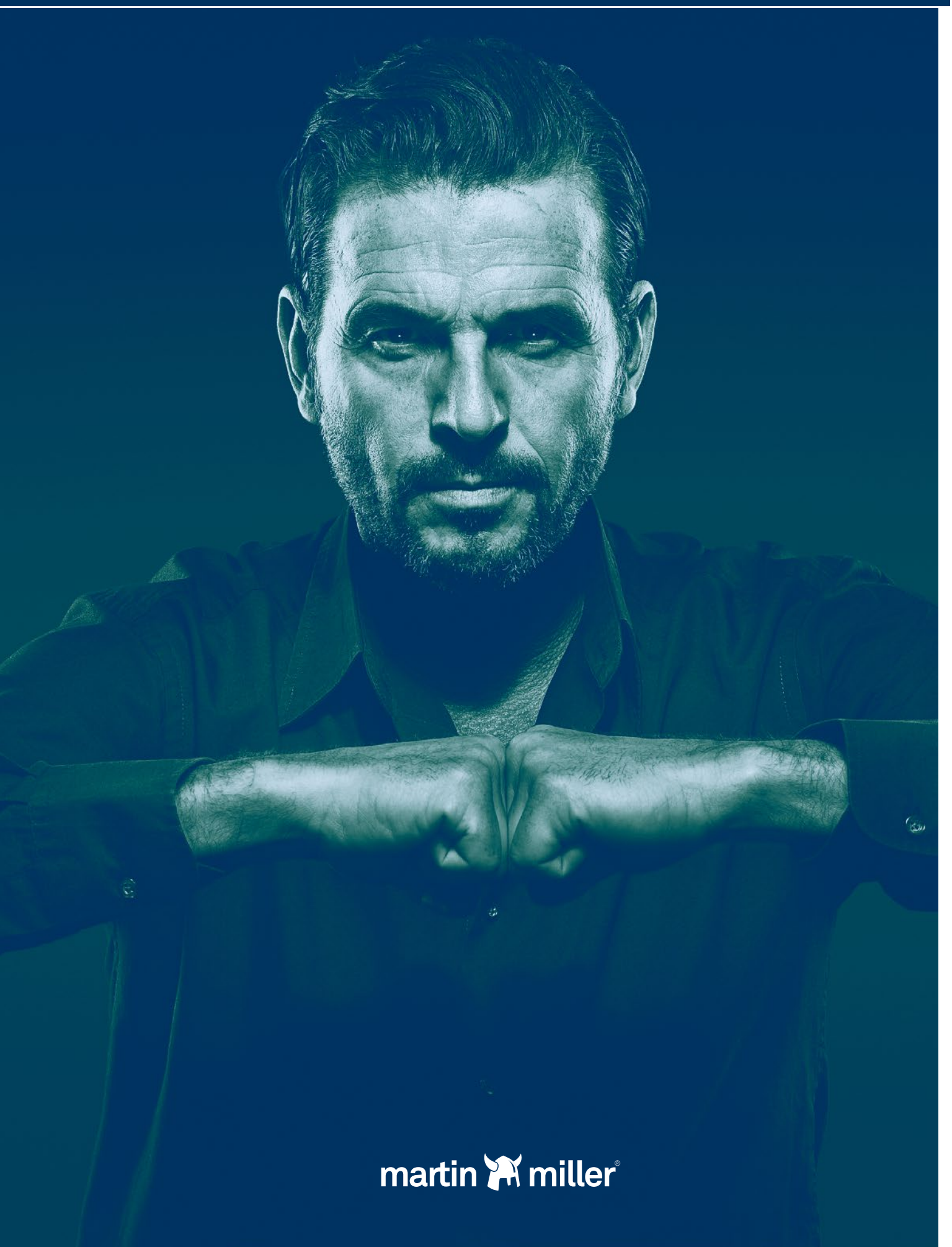

MILLER
CUTTING-EDGE
STEEL
martin miller®

MARTIN MILLER FLATBED STEEL RULES

MARTIN MILLER ROTARY STEEL RULES


martin miller®

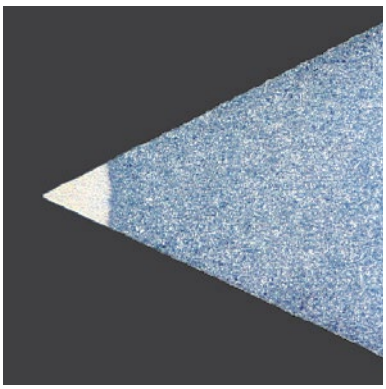
“YOUR BUSINESS MAY BE TOUGH.

BUT OUR CUTTING EDGE IS EVEN TOUGHER.”

Plasma technology: Martin Miller´s secret. A few seconds at a temperature of approximately 10,000° C ensures a precise hardening process, without affecting the body hardness like other methods do. The result: extreme edge hardness for extreme rule lifetime. **Martin Miller steel rules**

CUTTING RULES HP / HP+ / MM

Edge-hardened Cutting Rules



HP plasma hardened

HP – Properties

· Edge-hardened by special plasma hardening process

· Highest possible lifetime of the die, due to high cutting edge hardness of ~ 700 HV (~ 60 HRC)

· HP is unique to Martin Miller cutting rules

HP – Application

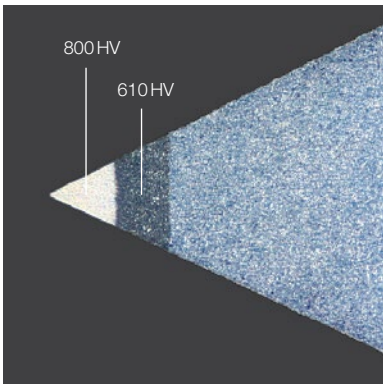
· For high to extremely high production runs / number of cuts

· Dust reduction in the cutting process

· Optimized for tight bends

Special execution

Vikingflex HF cutting rules on request



HP+

HP+ – Properties

· Unique dual edge hardening process

· Multi layer combines HF and Plasma hardening technology with ~800 HV (~64 HRC) on tip and deep edge hardened zone

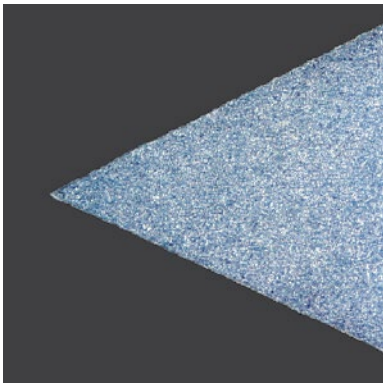
· Extended lifetime of cutting tool

HP+ – Application

· Processing on automatic bending machines still possible

· Carton, duplex board, rigid and thick materials, gaskets, stiff plastic, compounds

Through-hardened Cutting Rules



MM through hardened

MM – Properties

· The same hardness of cutting edge and body

· Good bendability due to soft and ductile surface layer

MM – Application

· Small to medium size runs / number of cuts

· Good bending properties

· All purpose rule (carton, corrugated)

CUTTING RULES HP / HP+ / MM

Dimensions

Rule Thickness

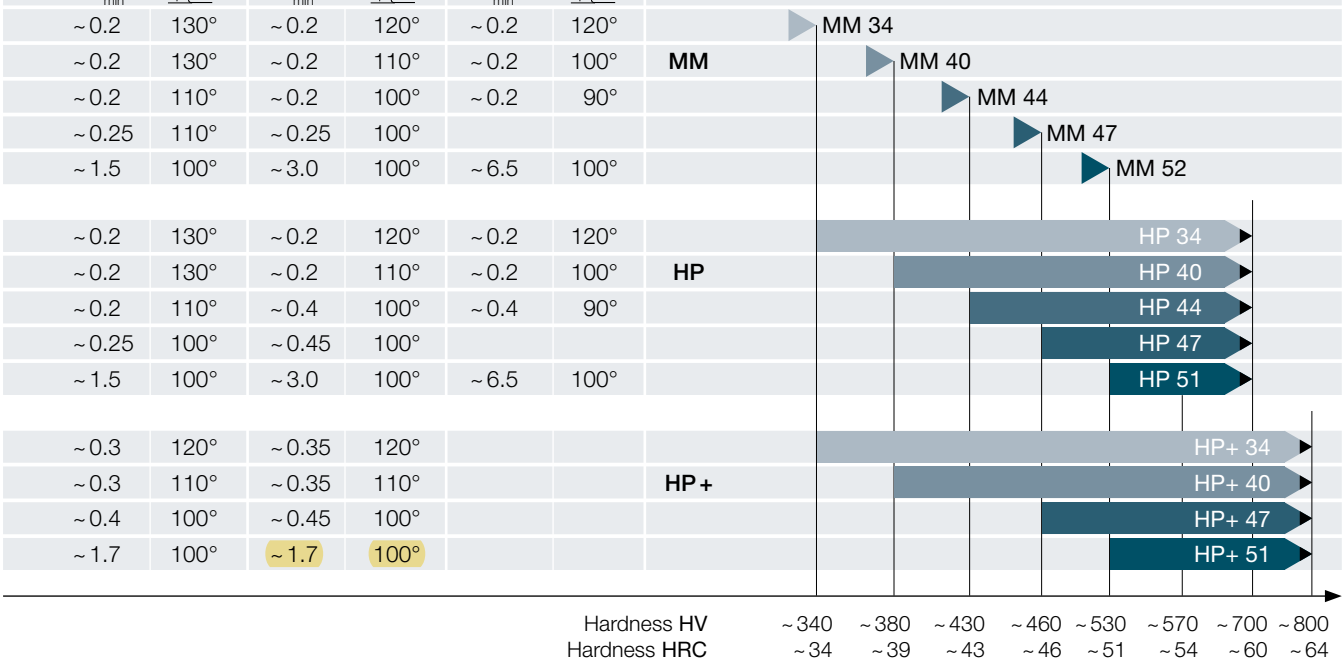
1.3 pt / 0.45 mm · 1.5 pt / 0.53 mm · 2 pt / 0.71 mm · 3 pt / 1.05 mm · 4 pt / 1.42 mm · 6 pt / 2.13 mm

Rule Height

8 mm · 9.5 mm · 10 mm · 12 – 100 mm

Bendability / Hardness Scale

	2 pt		3 pt		4 pt	
	R_{min}	∠	R_{min}	∠	R_{min}	∠
MM	~ 0.2	130°	~ 0.2	120°	~ 0.2	120°
	~ 0.2	130°	~ 0.2	110°	~ 0.2	100°
	~ 0.2	110°	~ 0.2	100°	~ 0.2	90°
	~ 0.25	110°	~ 0.25	100°		
	~ 1.5	100°	~ 3.0	100°	~ 6.5	100°
HP	~ 0.2	130°	~ 0.2	120°	~ 0.2	120°
	~ 0.2	130°	~ 0.2	110°	~ 0.2	100°
	~ 0.2	110°	~ 0.4	100°	~ 0.4	90°
	~ 0.25	100°	~ 0.45	100°		
	~ 1.5	100°	~ 3.0	100°	~ 6.5	100°
HP+	~ 0.3	120°	~ 0.35	120°		
	~ 0.3	110°	~ 0.35	110°		
	~ 0.4	100°	~ 0.45	100°		
	~ 1.7	100°	~ 1.7	100°		



Cutting Bevel

Bevels

A – Center bevel

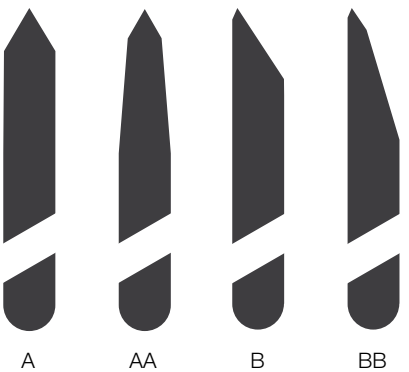
AA – Long center bevel

B – Side bevel

BB – Long side bevel

Standard angle of the bevel: 54°
(for all bevel-types)

Other possible angles of the bevel:
30° / 35° / 42° / 60° / 75° (A-bevel only)




martin miller®

“OUR RESPONSE TO A CHANGING WORLD:

FLEXIBLE ACTIONS AND THINKING OUTSIDE OF THE BOX”

It is not only a question of what we do but also how we do it: With passion and high performance engineering we provide our customers with today´s and tomorrow´s leading technologies. Take for example our SUPRA Z rule: An extremely sharp, precision-ground cutting edge with homogeneous, super-smooth bevel surfaces guarantees an outstandingly clean and burr-free cutting performance. Martin Miller steel rules

CUTTING RULES

Bevel Finish

Shaved bevel – standard

Martin Miller cutting rules have a shaved bevel surface as standard which offers a very high degree of accuracy and edge straightness as well as excellent bending properties.

ExtraSharp ES bevel – vertical ground

This rule offers very good cutting results because of the micro-teeth on the bevel. For materials like plastics, rubber and laminates the ground execution has proven its highest efficiency. With high sharpness and low friction reduce formation of dust and angel hair. In comparison with the shaved execution, ES has a slightly reduced bendability.

Reflexion R – special bevel surface

Due to our latest manufacturing technology we are able to offer a very smooth bevel structure which greatly improves the bendability compared to rules with a ground cutting edge. The rounded transition area between the bevel and the body also provides a better workability on all rule processing tools and in die cutting. Reflexion is suitable for synthetic material as well as for paper boards.

SUPRA Z fine ground bevel

SUPRA Z

SUPRA Z. One of the latest developments by Martin Miller sets new standards regarding precision, sharpness and surface quality of the bevel.

Ideally this rule should be used for:

· Plastics

· Blister

· Laminated or coated carton boards

· Labels

Especially in the field of label cutting sharpness, highest precision and tightest tolerances are required. When cutting plastic packaging materials, extraordinary sharp rules are requested, which reduce cutting pressure and permit smooth cutting. Our cutting rule SUPRA Z meets all these requirements and is the best choice for your perfect cutting result.

View on SUPRA Z cutting edge under electron microscope, 30-times magnified.

Execution	Vikingflex 34	**Vikingflex 40**	Vikingflex 47
Body hardness	~ 340 HV (~ 34 HRC)	~ 380 HV (~ 39 HRC)	~460 HV (~46 HRC)
Edge hardness	~ 640 HV (~ 57 HRC)	~ 700 HV (~ 60 HRC)	~ 700 HV (~ 60 HRC)
Cutting bevel	A, AA	A, AA, B, BB	A, AA
Bevel finish	fine ground	fine ground	fine ground
Bevel angle	42°	30° / 42° / 54°	42°

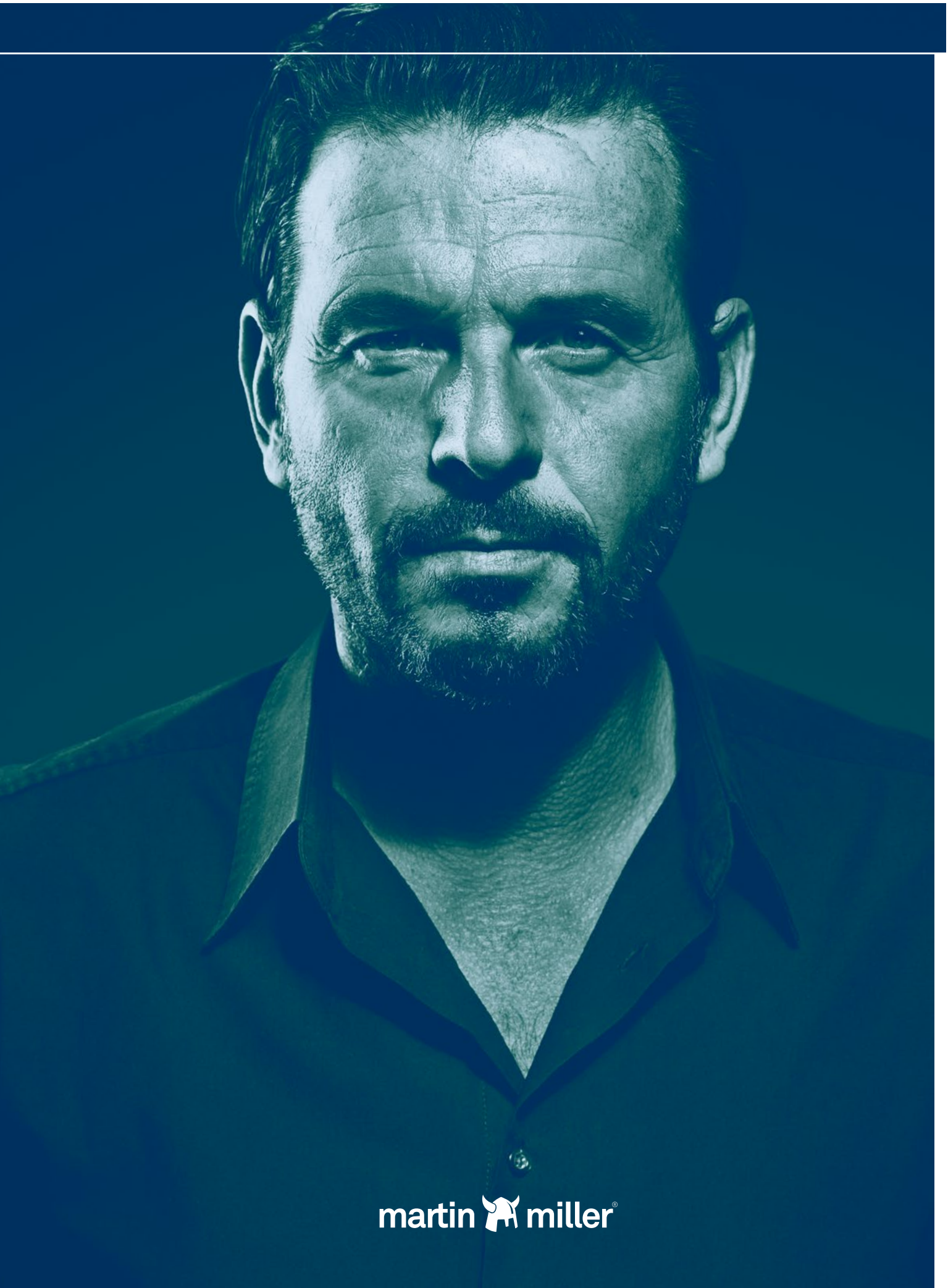
60-times magnified

SUPRA Z. Plastic Cutting Rule

	Vikingflex 34	**Vikingflex 40**	Vikingflex 47
Thickness	2 pt / 0.71 mm	2 pt / 0.71 mm	2 pt / 0.71 mm
		3 pt / 1.05 mm	3 pt / 1.05 mm
Height	23.60 mm / 23.80 mm	23.30–50.00 mm	23.30–50.00 mm

SUPRA Z. Label Cutting Rule

	Vikingflex 34	**Vikingflex 40**	Vikingflex 47
Thickness	1.3 pt / 0.45 mm	1.3 pt / 0.45 mm	1.3 pt / 0.45 mm
	1.5 pt / 0.53 mm	1.5 pt / 0.53 mm	
		2 pt / 0.71 mm	
Height	8 mm / 12 mm	8 mm / 9.5 mm / 12 mm	8 mm / 9.5 mm / 12 mm


martin miller®

N° 3

“OTHER MANUFACTURERS MAY BEND.

BUT WE ARE IN THE RIGHT POSITION TO MEET OUR PROMISES.”

Martin Miller is a reliable and stable partner for successful customers. And stability in every situation is what our customers expect from our cutting rules. Need an example? Our MICROTOP rule combines three advantages in one product: It offers the stability of a big cutting angle (75°), it works with the cutting pressure and cutting process of a proven standard 54° rule and it features the unique Martin Miller plasma hardening technology. Martin Miller steel rules

CUTTING EDGE FINISH – OPTIONS

Molykote / Tinit

Molykote Mo

Based on a special coating process a thin Molykote film covers the cutting bevel and fills the small pores, providing a smooth edge surface.

Advantages are:

· Best suitability for self-adhesive materials

· Low dust risk

· Minimized friction between bevel and cut material

Tinit Ti

The ~ 2,400 HV hard Tinit-coating with a thickness of only ~ 0.002 mm on the hardened cutting bevel is one of our latest innovations. Processing and bending properties remain the same as with standard cutting rules.

Special advantages are:

· Increased efficiency and cutting quality during the converting process

· Reduced „sticky“ effect on the cutting bevel

· Dust reduction and increased rule life

MICROTOP

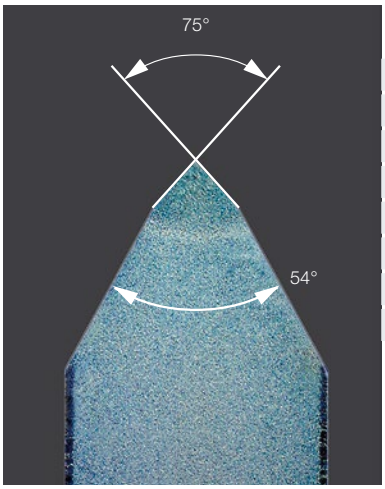
The Cutting Rule with More Power

The well-established cutting rule MICROTOP developed by Martin Miller combines the properties of the unique HP plasma hardening technology with the advantages of higher bevel strength and improved rule stability. The key success factor lies in the special bevel geometry of the product that is manufactured with highest accuracy in order to ensure optimal shape. MICROTOP advantages and applications:

Reduction of make-ready time:
The MICROTOP cutting rule bevel is less sensitive to high cutting pressure, resulting in quick and easy make-ready.

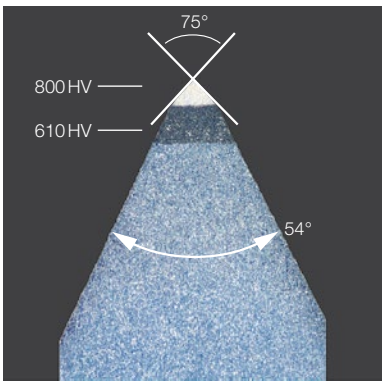
Longer rule lifetime:
The cutting results of our MICROTOP rule show a reduced tendency to create angel hairs and dust. Even with very long runs MICROTOP offers optimum cutting quality.

Improved pressure distribution:
MICROTOP offers less risk of edge damage thanks to the specific bevel geometry. A 75° tip angle improves robustness against cutting pressure overload. The rule tip remains sharp longer, thus increasing rule lifetime.



Execution	HP 34
	HP 40
Thickness	2 pt / 0.71 mm
	3 pt / 1.05 mm
Height	23.80 mm
Cutting bevel	A, AA
Bevel finish	shaved
Bevel angle	42° / 75° or 54° / 75°

The comprehensive strength of the MICROTOP rule is far higher compared to a rule with standard A-bevel. With the same edge hardeness, the rule stays in shape longer due to the higher pressure resistance achieved through the unique bevel design.



HP+ 34 MICROTOP

HP+ 34 MICROTOP is the latest evolution by Martin Miller. The rule has all standard features of MICROTOP along with a special dual-hardened cutting edge with a tip hardness of of approx. 800 HV. It performs best with long-run jobs which also require narrow-angle bending.

Ideally this rule should be used for:
– carton (e.g. cigarette boxes, food trays...)
– corrugated board
– duplex board

PRECISION CUTTING RULES

Recommendations

4ec-bend:

The most important benefits of 4ec-bend cutting rules are tight thickness tolerances, extraordinary straightness as well as accurate flatness. Consequently easy processing on modern automatic cutting / bending machinery is guaranteed. This again will bring you closer to your target of an economic and efficient die shop.

Another aspect is to guarantee tightest specifications concerning mechanical and metallurgical parameters, in order to optimise consistent rule bending properties for fewer rule calibration actions on your auto bending equipment.

Application Recommendation

Application:	Our Recommendation:	Comments:
Lose bends/tight bending angle	HP 34	depending on the required production runs
Highest bending consistency	4ec-bend	especially for automatic bending machines
Long die life	Tinit, HP+ 34 MICROTOP	hard coating, special bevel + edge hardening
Tightest height tolerances	shaved finish	in coils and bars
Low dust formation	Molykote, SUPRAZ	clean cut
Reduced make-ready	MICROTOP	high resistance against overload
Elastic material	SUPRAZ	for laminated boards
Hard cutting material	HP 44, HP 51, HP+	higher body stability and edge hardness
High/thick materials	AA bevel, HP+	easy material penetration
Stiff material	B, BB bevel, HP+	if vertical cuts are required

CREASING RULES

Product Range

Execution

Standard	hardened and tempered creasing rule
HW	hardness is achieved through modern cold-rolling technology, non-tempered

General

Only creasing rules with an exact profile geometry and tight height tolerances achieve an excellent creasing result. Higher speeds are possible on automatic die presses and folder-gluers, also for challenging materials.

R RD

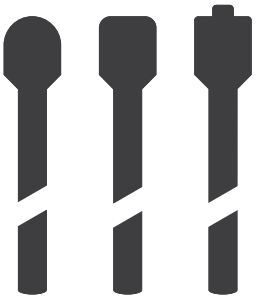
Standard Creasing Rules

Execution	HW	Standard
Hardness	min. 270 HV	~ 370 HV (≤ 3 pt)
Profile		R, RD
Thickness		1.5 pt / 0.53 mm – 6 pt / 2.13 mm
Height		20.30 – 24.40 mm / 0.800″ – 0.960″

RR

Tapered Creasing Rules

Execution	Standard
Hardness	~ 370 HV
Profile	RR
Thickness	2/1 pt, 2/1.5 pt
Height	20.30 – 24.40 mm / 0.800″ – 0.960″



RT FRT PT

Heavy Top Creasing Rules

Execution	Standard
Hardness	~ 370 HV
Profile	RT, FRT, PT
Thickness	2/3 pt, 2/4 pt, 3/4 pt, 3/6 pt, 3/8 pt, 4/6 pt, 4/8 pt
Height	20.30 – 24.40 mm / 0.800″ – 0.960″

SPECIAL RULES

Perforating Rules

Execution	MM 44	HP 40
Hardness	~430 HV	~380/700 HV
Bevel		A (edge angle: 54°)
Thickness	2 pt/0.71 mm, 3 pt/1.05 mm, 4 pt/1.42 mm	
Height	21.30–25.40 mm / 0.840″–1.000″	

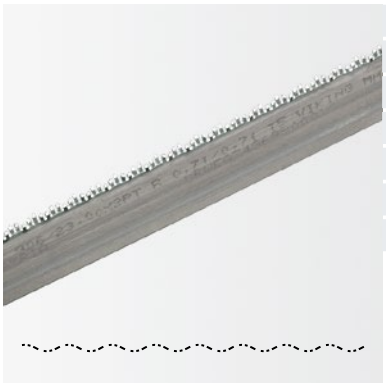
Spacing (tooth/gap)
all common tooth/gap-variations available (in millimeter-, point- and inch-spacings)

Combination Cut/Crease Rules

Execution	MM 44
Hardness	~430 HV
Bevel	A (edge angle: 54°)
Thickness	2 pt/0.71 mm, 3 pt/1.05 mm, 4 pt/1.42 mm
Height	21.30–25.40 mm / 0.840″–1.000″

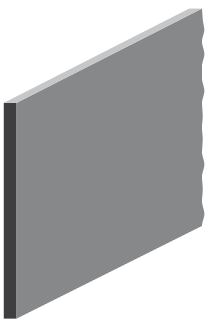
Spacing (cut/crease)
all common cut/crease-variations available (in millimeter- and inch-spacings)

Glue Flap Rules



Execution		MM 44
Hardness		~430 HV
Bevel		A (edge angle: 54°)
Thickness		2 pt/0.71 mm
Height		22.80–23.60 mm / 0.897″–0.929″
Spacing	spacing (tooth/gap)	2 pt/2 pt · 1 mm/1 mm
	wave spacing	5 mm

Spacing Rules



Execution	HW
Hardness	~370 HV (≤3 pt) min. 270 HV (>3 pt)
Profile	GK (cut edges)
Thickness	0.5 pt/0.18 mm–6 pt/2.13 mm
Height	14–18 mm

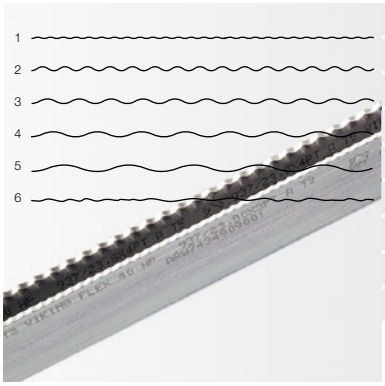
Standard heights for all common die boards available

SPECIAL RULES

Stripping Rules

Execution	HW	MM 34	MM 40
Hardness	min. 270 HV	~ 340 HV	~ 380 HV
Bevel	GK (cut edges), FT (shaved), Needle Point (with teeth), waved		
Thickness			3 pt / 1.05 mm
Height			45 mm, 50 mm, 55 mm, 65 mm
Spacing	waved: 6:2 mm · 6:2.5 mm · 6:3 mm · 8:3 mm · 10:4.5 mm · 12:6 mm		
Needle Point	spacing: 5 mm · 6 mm		tooth depth: 0.5 mm · 1 mm

Wave Edge Rules

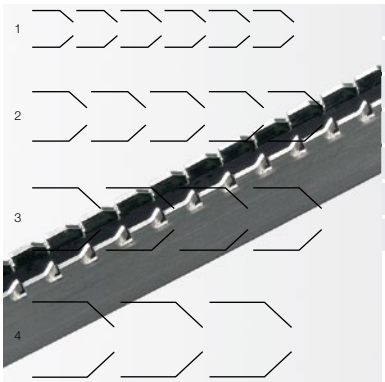


Execution		MM 40	HP 40
Hardness		~ 380 HV	~ 380 / 700 HV
Bevel			A, AA (edge angle: 54°)
Thickness			2 pt / 0.71 mm, 3 pt / 1.05 mm
Height			21.30 – 25.40 mm / 0.840″ – 1.000″
Spacing			
waved:	1.7 mm [1] 2 mm · 2.5 mm [2] 3 mm · 3.5 mm [3] 5 mm [4] 7 mm [5] 10 mm		
			[6] irregular wave (deckle edge rules)
Autobender-qualified coils on request			

TearM flatbed Zipper Rule – used for creating hand holes and general zipper applications.

Execution	HP 34
Hardness	~ 340 HV
Bevel	AA
Thickness	1.05 mm / 3 pt
Height	23.80 mm
Spacing	3 mm · 4 mm · 5 mm
Direction left / right (separately packed)	

Zipper Rules



Execution	MM 34
Hardness	~ 340 HV
Bevel	A (edge angle: 54°)
Thickness	2 pt / 0.71 mm, 3 pt / 1.05 mm
Height	21.30 – 25.40 mm / 0.840″ – 1.000″
Spacing	[1] 6 mm [2] 8 mm [3] 10 mm [4] 12 mm
straight – angled part	3/5 – 2/5


martin miller®

“AT MARTIN MILLER WE DEFINE CORE QUALITIES LIKE THIS:

SOFT WHERE IT IS NEEDED – HARD WHERE IT MATTERS!”

Thanks to our special hardening technique every Martin Miller steel rule comes with a hard inner body and a decarburized surface zone that acts like a soft skin. This combines the advantages of high rule stability (needed for long tool life) and good and uniform bendability (needed for automatic rule processing) in one product.
Martin Miller steel rules

QUALITY CHARACTERISTICS

Dimension Tolerances

Thickness Tolerances

Rule Thickness			Thickness Tolerance	
[pt]	[mm]	[inch]	[mm]	[inch]
1.1	0.40	0.016″	±0.015	±0.0006″
1.3	0.45	0.018″	±0.015	±0.0006″
1.5	0.53	0.021″	±0.015	±0.0006″
2	0.71	0.028″	±0.015	±0.0006″
3	1.05	0.041″	±0.020	±0.0008″
4	1.42	0.056″	±0.020	±0.0008″
6	2.13	0.084″	±0.025	±0.0010″

Height Tolerances

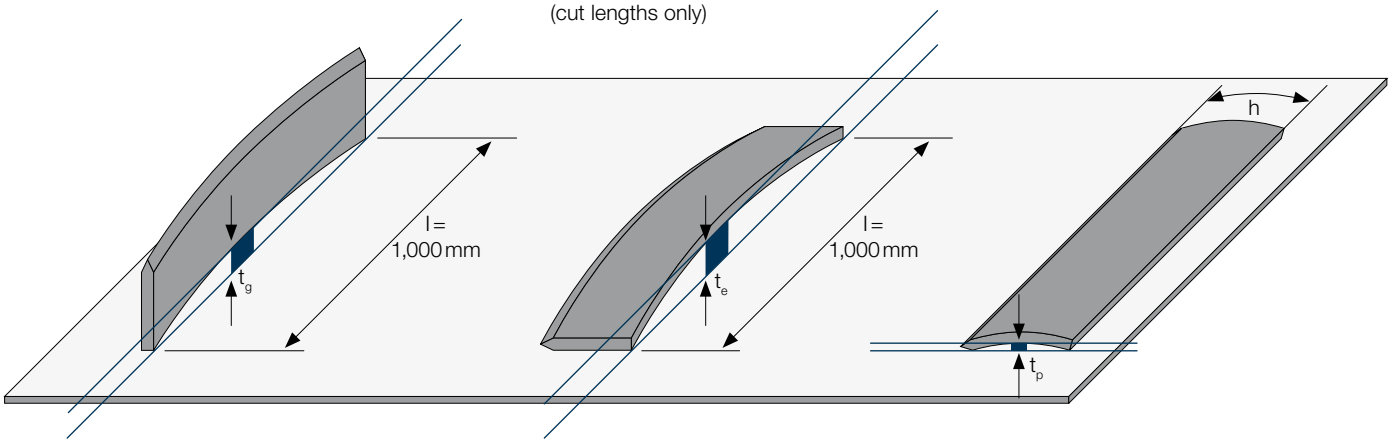
Rule Height h		Height Tolerance	
[mm]	[inch]	[mm]	[inch]
8.00–25.40	0.315″–1.000″	±0.020	±0.0008″
>25.40–50.80	>1.000″–2.000″	±0.025	±0.0010″
>50.80–76.20	>2.000″–3.000″	±0.030	±0.0012″
>76.20–100.00	>3.000″–3.937″	±0.035	±0.0014″
Height tolerances for creasing rules:			
20.30–24.40	0.800″–0.960″	+0/-0.040	+0/-0.0016″

Tolerances of Form

Straightness
tg: = max. 0.5 mm/1,000 mm rule length l

Coilset
te: = max. 5 mm/1,000 mm rule length l
(cut lengths only)

Flatness
tp: = max. 1 µm/mm rule height h



PACKAGING UNITS AND FORMS OF DELIVERY

All Types of Rule

M = 1 m and 1.5 m lengths
I = 762 mm (30″) lengths

Rule Thickness			Packing units (in pieces) for heights of:				
			6.35 – 27 mm	> 27 – 40 mm		> 40 – 100 mm	
[pt]	[mm]	[inch]		M	I	M	I
1.3	0.45	0.018″	150				
1.5	0.53	0.021″	140				
2	0.71	0.028″	100	35	70	35	
3	1.05	0.041″	70	25	50	25	24
4	1.42	0.056″	50	17	34	17	16
6	2.13	0.084″	30	12	24	12	
8	2.84	0.056″	25				

Wave Edge and Glue Flap Rules

Rule Thickness			for Wave Spacing W of:	
[pt]	[mm]	[inch]	2 · 2.5 · 3 · 3.5 mm	5 · 7 · 10 mm
2	0.71	0.028″	100	70
3	1.05	0.041″	60	60

Zipper Rules: packed in pairs

Rule Thickness			for Tooth Spacing A of:	
[pt]	[mm]	[inch]	6 mm	8 · 10 · 12 mm
2	0.71	0.028″	60 (30 pairs)	40 (20 pairs)
3	1.05	0.041″	40 (20 pairs)	30 (15 pairs)

Stripping Rules: waved

Rule Thickness			for Rule Heigth of:	
[pt]	[mm]	[inch]	30 – 40 mm	45 – 50 mm
3	1.05	0.041″	40	20

Form of Delivery

In lengths	rule length	1 m / 762 mm (30″) – Standard	1.5 m / 2 m or on request
In coils	coil length	2 pt – 100 m · 3 pt – 70 m · 4 pt – 50 m · 6 pt – 30 m	
	inner coil Ø	356 mm, 400 mm	
	winding direction	coil end on top right hand “6”	coil end on top left hand “9”
	(view on bevel)	(R: clockwise)	(RU: counter-clockwise)
	rule marking	coil outside	coil inside


martin miller®

N° 5

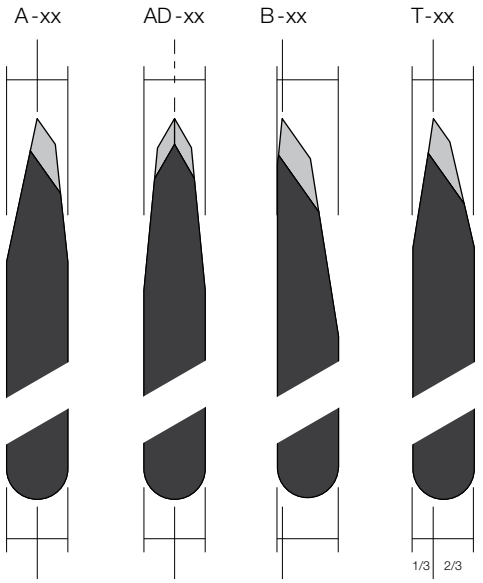
“NO MATTER HOW STRESSFUL YOUR DAILY BUSINESS MIGHT BE.

WE KNOW THAT ONLY RELAXED ACTIONS LEAD TO FANTASTIC RESULTS.”

The way we treat our customers is also the way we treat our high-performance steel: stress-free! We use mechanical and thermal stress relieving on our rotary rules after curving them to the required diameter. This technique offers important benefits: a precise inner curving diameter, a tight fit in the die tool, and a minimised risk of cracks and material fatigue fractures. Martin Miller steel rules

ROTARY CUTTING RULES

Types of Bevel



Specification

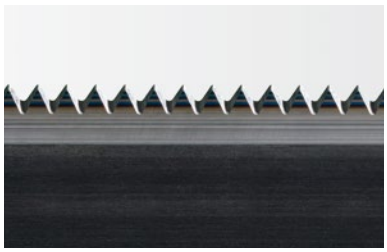
Execution*	MM 34	HP 34 / HF 34
Hardness body	~340 HV	~340 HV
Hardness edge	~340 HV	~530 HV
Bevel finish	ground teeth, long bevel shaved	
Thickness	3 pt / 1.05 mm, **4 pt / 1.42 mm**, 6 pt / 2.13 mm	
Height	21.30–30.16 mm / 0.840″–1.187″	

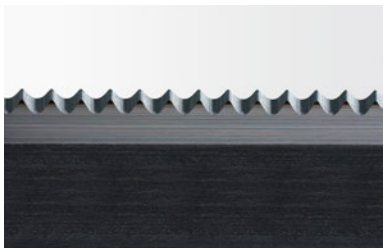
* HP40 on request

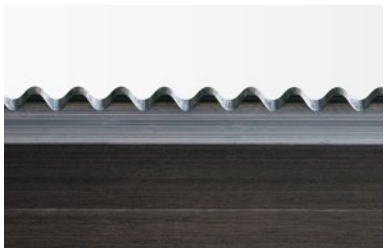
Tooth Shape

Standard Rotary Cutting Rules

ST – Standard	RS – Round Shape	DC – Double Cut
Standard design,	round gullet – pointed tooth	smaller gullet depth
aggressive tooth shape		
for general use	best bendability	less wear on anvils







Profiles	TPI	Profiles	TPI	Profiles	TPI
A-ST / AD-ST	8 T	A-RS / AD-RS	8 T	**AD-DC**	**8 T***
A-ST / AD-ST	10 T	A-RS / AD-RS	10 T	AD-DC	10 T
A-ST / AD-ST	**12 T***	**A-RS / AD-RS**	**12 T***	AD-DC	12 T

* preferred stock item

SPECIAL ROTARY CUTTING RULES

FineCut 14T / BST 12T / AST 20T

FineCut 14T

It performs with minimal penetration on many different types of materials.

Execution	MM 40	MM 44	HP 44
Hardness body	~380 HV	~430 HV	~430 HV
Hardness edge	~380 HV	~430 HV	~530 HV
Thickness			3 pt / 1.05 mm
			4 pt / 1.42 mm
Height			23.80–50.80 mm
			0.937″–2.000″
Bevel			T (Asymmetric)

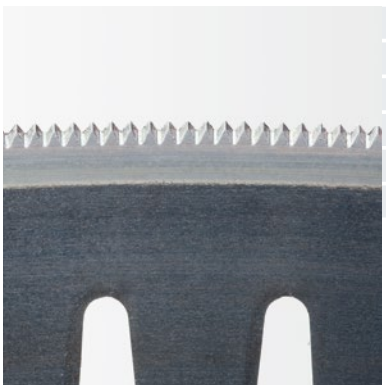
BST 12T

12T was the starting point in rotary diecutting and has moved more and more from side bevel to center bevel. But side bevel still has some limited uses today.

Execution	MM 34	HP 34
Hardness body	~340 HV	~340 HV
Hardness edge	~340 HV	~530 HV
Thickness		4 pt / 1.42 mm
Height		23.80–26.40 mm
		0.937″–1.039″
Bevel		B (Side bevel)

AST 20T

This rule is appropriate when a clean edge appearance is required.



Execution	MM 34	HP 34
Hardness body	~340 HV	~340 HV
Hardness edge	~340 HV	~530 HV
Thickness		4 pt / 1.42 mm
Height		23.80–26.40 mm
		0.937″–1.039″

ROTARY CREASING RULES

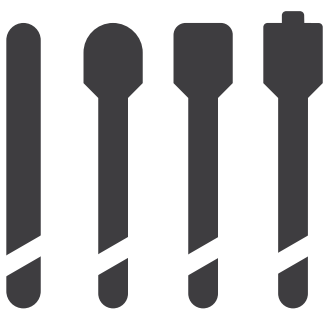
Rotary Creasing Rules

Specification

Execution	Standard
Hardness	~370 HV
Profile	R, RT, FRT, PT
Thickness Body	4 pt / 1.42 mm
Thickness Head	RT, FRT, PT = 6 pt / 2.13 mm . 8 pt / 2.84 mm
Height	20.0 – 26.00 mm / 0.790˝ – 1.024˝

Other heights on request

Types of Profile



R RT FRT PT

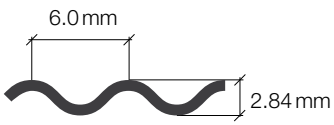
WaveM WaveM Special rotary wave cutting and creasing rule

· Cutting: For safety edge applications
· Creasing: For creasing in direction of the corrugated flute, supports better dimensional accuracy when folding the carton

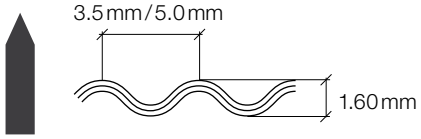
	Creasing	Cutting
Execution	HW (hard rolled)	MM 34
Hardness	~265 HV (850 N/mm²)	~340 HV
Bevel	R (single round, waved)	AD/ST 12 tpi
Thickness	4 pt / 1.42 mm	4 pt / 1.42 mm
Height	20.00–26.00 mm	23.80–26.40 mm
Wave spacing	6.0 mm	3.5 mm / 5.0 mm
Wave depth	2.84 mm	1.60 mm

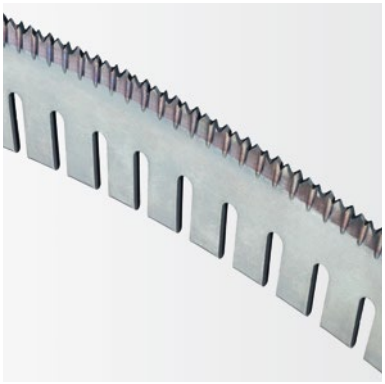
WaveM creasing rule – 6.0 mm wave spacing

Creasing



Cutting





WaveM cutting rule – 3.5 mm wave spacing

ROTARY SPECIAL RULES

Perforating and Cut-Crease Rules

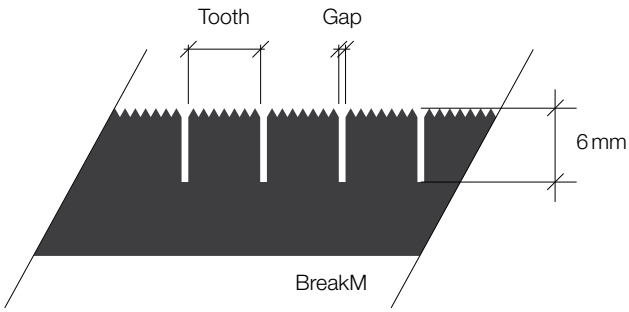
Perforating and Cut-Crease Rules

Execution	MM 34
Hardness	~340 HV
Bevel	A (shaved standard bevel) AD/ST, 12 tpi
	(ground teeth, long bevel shaved)
Thickness	4 pt / 1.42 mm
Height	21.30–26.70 mm / 0.840″–1.050″

BreakM Special tooth gap combination – for nicks on rotary knives with standard serration

Execution	MM 34
Hardness	~340 HV
Bevel	AD/ST 12 tpi
Thickness	4 pt / 1.42 mm
Height	21.30–26.70 mm / 0.840″–1.050″
Minimum gap	1.42 mm
Back notch depth	9.50 mm

Available combinations on request



TearM Serrated rotary zipper rule – used for creating hand holes and general zipper applications.

Execution	MM 34
Hardness	~340 HV
Bevel	AD/ST 12 tpi
Thickness	4 pt / 1.42 mm
Height	21.30 mm–26.40 mm (0.840″–1.039″)
Length of tooth	4 mm
Direction	left / right (separately packed)

Others on request.

Back Executions

SNN	SN	CUR	CNN
straight, no notches	straight, with notches	curved, with notches	curved, no notches

Notch depth t = 12.7 mm – conical (**CON**), t = 12.2 mm – parallel (**PAR**)

Notch distance T = 12.7 mm – conical (**CON**), T = 10 mm – parallel (**PAR**)

Other notch depths on request.

Form of Delivery

		SNN	SN	CUR	CNN
in lengths	rule length	1 m / 762 mm (30″)	1 m / 762 mm (30″)	–	–
in coils	coil length	3 pt – 70 m · 4 pt – 50 m	3 pt – 70 m · 4 pt – 50 m	4 pt – 30.5 m	4 pt – 30.5 m
standard inner coil-Ø		400 mm	400 mm	487 mm	487 mm
(others on request)				(177 mm – 664 mm)	(270 mm – 664 mm)
winding direction		RU: coil end on top left hand “6”		N: counter-clockwise	
(view on bevel)		R: coil end on top right hand “6”		U: clockwise	

Due to our unique production method we achieve extremely small curving diameters: CUR = 177 mm, CNN = 270 mm

HARDNESS CONVERSION

Martin Miller Cutting Edge Steel Hardness Conversion

Vickers Hardness		Rockwell Hardness		Shore Hardness	
(HV)	(HV)	(HRC)	(HRC)	~ (HS)	~ (HS)
800	490	64.0	48.4	88	65
780	480	63.3	47.7	87	–
760	470	62.5	46.9	86	63
740	460	61.8	46.1	–	–
720	450	61.0	45.3	83	–
700	440	60.1	44.5	–	59
690	430	59.7	43.6	–	–
680	420	59.2	42.7	80	–
670	410	58.8	41.8	–	56
660	400	58.3	40.8	79	54
650	390	57.8	39.8	–	–
640	380	57.3	38.8	77	–
630	370	56.8	37.7	–	51
620	360	56.3	36.6	75	50
610	350	55.7	35.5	–	48
600	340	55.2	34.4	–	47
590	330	54.7	33.3	73	46
580	320	54.1	32.2	–	45
570	310	53.6	31.0	71	43
560	300	53.0	29.8	–	–
550	290	52.3	28.5	70	41
540	280	51.7	27.1	–	40
530	270	51.1	25.6	68	38
520	260	50.5	24.0	–	37
510	250	49.8	22.2	66	35
500	240	49.1	20.3	–	34

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