

LONGITUDINAL SHEAR CUTTING SYSTEMS AND MODULES

# HELIOS®

...to cut PAPER, CARDBOARD, PLASTIC FILM, VARIOUS BONDED MATERIALS, ALUMINIUM, TEXTILES, NON WOVENS, FIBER GLASS AND CARBON-FIBER-WEBS, etc



OUR MANUFACTURING PROGRAM  
8th Edition



## HELIOS around the world...



## STILO-SOFT-CUT® SHEAR-CUT Without dust!

Under the brand name **HELIOS**, Elio Cavagna S.r.l. has built shear cutting systems for more than 30 years.

The term "SOFT-CUT®" was created to attract the attention to the minimal pressure exerted between blade and counterblade to cut all kinds of materials.

A further positive factor is the practically dust-free production; latter is caused by rapid blade wear when too much lateral cutting pressure is applied.

SOFT for HELIOS is obviously not in the project stages anymore, given that more than 100'000 knifeholders have been sold.

This shows the great qualities of the HELIOS knifeholders with regard to the level of achievable productivity, together with the absence of problems and long life of blades and counterblades.

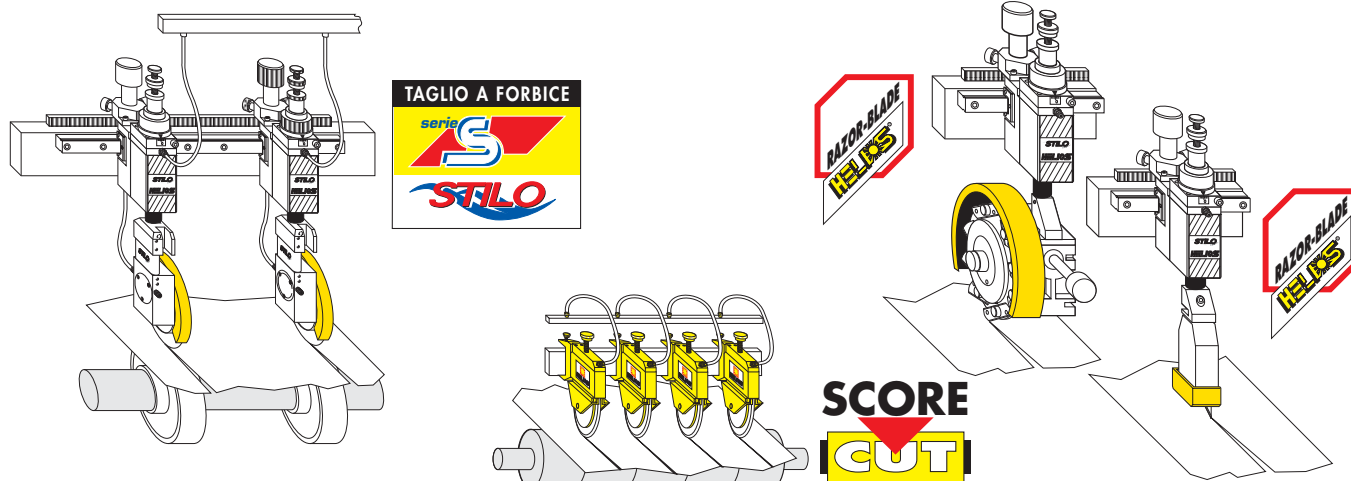
HELIOS has been, unquestionably so, an impulse for the market by bringing a number of innovations. The addition to the aforementioned low blade consumption has reduced the market for corresponding spares, a factor that brings significant advantages for the HELIOS customer in the way of increased production thanks to the reduction of dead time due to machine stoppages.

Today Elio Cavagna S.r.l. not only builds knifeholders, but also complete cutting modules, either for new slitters, as well as for retrofit on existing machines, new or old, presenting cutting problems.

The HELIOS systems are applicable on traditional, as well as highly sophisticated machines, by offering automatic format changing systems that are the result of experience in co-operation with firms that knew cutting problems.

Thus the HELIOS engineers are perfectly armed to bring solutions to a multitude of problems, thanks to their experience grown in the field in resolving problems that appeared insoluble at the outset.

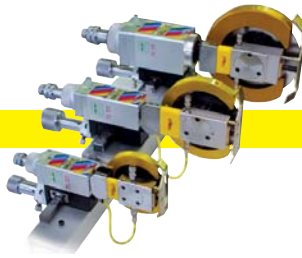
The aforementioned outlined here is obviously valid for all flexible products like NON-WOVENS, PAPER, PLASTIC FILM, as well as GLASS-FIBRE and ALUMINIUM film with maximum thickness of 0.6 mm.



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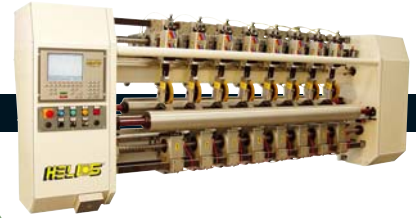
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Pneumatic blade carriage **Serie S-STILO**



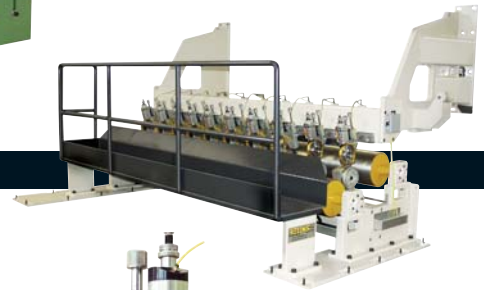
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**RETROFIT 1, 10, 100, 1000...**



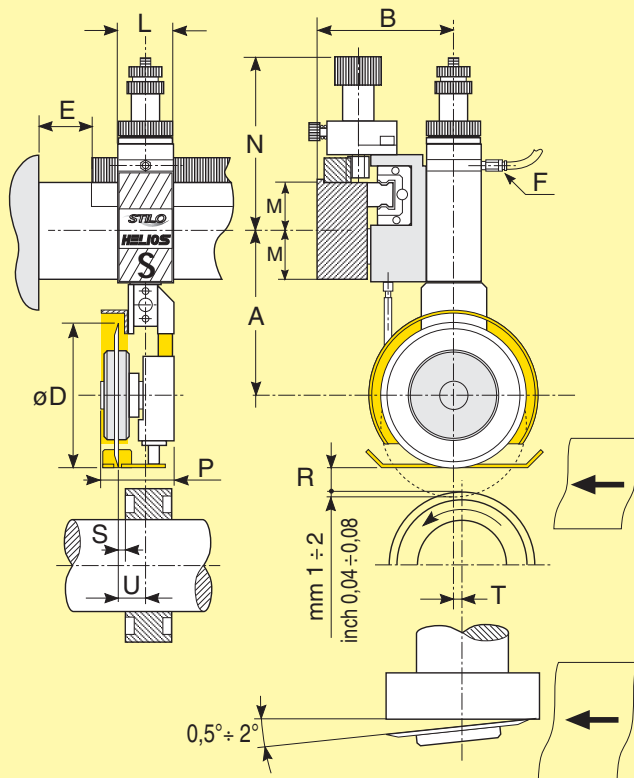
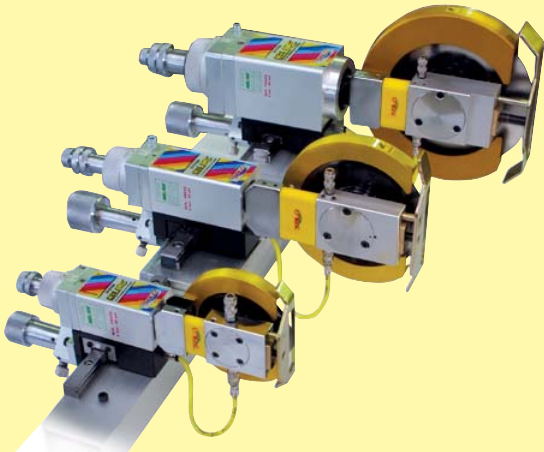
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**PRODUCTION EXAMPLES...**

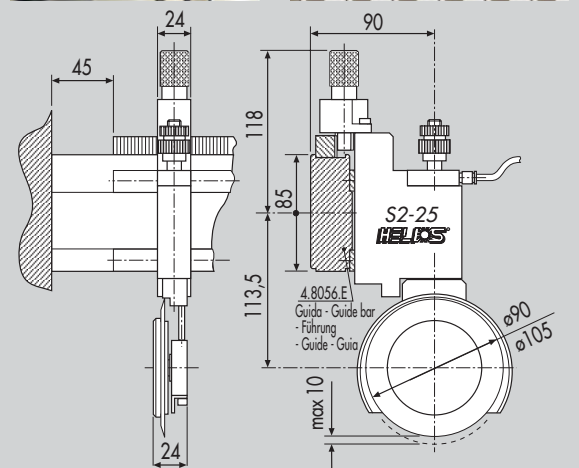


# New self-locking pneumatic blade carriage Serie S-STILO mounted on ball slides

**S2-40 S3-48 S3-75**  
**S4-75 S4-100**



**S2-25**



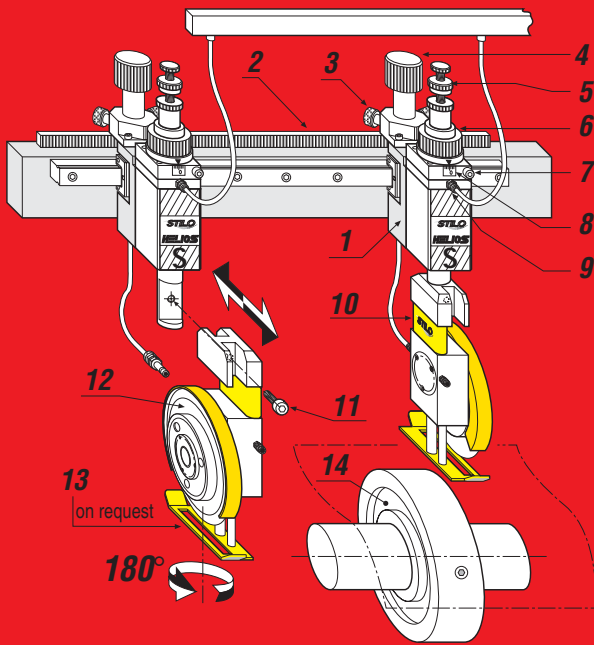
Minimum slit width:	25 mm
Maximum paper slitting capacity:	300 gr/m <sup>2</sup>
Maximum plastic films slitting capacity:	0,5 mm
Maximum speed:	500 m/min

STILO TYPE	GUIDE TYPE	A min inch	A max inch	B inch	D inch	E inch	F inch	L inch	M inch	N inch	P inch	R inch	S inch	T inch	U inch	Min. slit. width inch	Max. paper cutting capacity gr/m <sup>2</sup>	Max. plastic film capacity inch	Top speed FPM
S2-40	4.7282.E	3.82	4.29	3.15	3.54-4.1	3.94	M5	1.58	1.18	4.52	1.58	.236	.078	.197	.59	1.58	400	.024	3200
S3-48	4.7283.E	5.59	6.37	3.47	5.12-5.9	4.33	M5	1.89	1.65	6.50	1.89	.393	.010	.315	.59	1.89	800	.040	4600
S3-75	4.7283.E	5.59	6.37	3.47	5.12-5.9	4.33	M5	1.89	1.65	6.50	2.95	.393	.137	.315	.83	2.95	1000	.060	5250
S4-75	4.7283.E	6.42	7.40	3.98	5.12-5.9	4.33	R1/8"	2.95	1.65	7.50	2.95	.492	.137	.315	.83	2.95	1200	.080	5900
S4-100	4.7283.E	6.42	7.40	3.98	5.9-7.09-7.9	4.33	R1/8"	2.95	1.65	7.50	3.94	.492	.157	.315	.98	3.94	1800	.12	7200

STILO TYPE	GUIDE TYPE	A min mm	A max mm	B mm	D mm	E mm	F mm	L mm	M mm	N mm	P mm	R mm	S mm	T mm	U mm	Min. slit. width mm	Max. paper cutting capacity gr/m <sup>2</sup>	Max. plastic film capacity mm	Top speed m/min
S2-40	4.7282.E	97	109	80	90-105	100	M5	40	30	115	40	6	2	5	15	40	400	0,6	1000
S3-48	4.7283.E	142	162	88	130-150	110	M5	48	42	165	48	10	2,5	8	15	48	800	1,0	1400
S3-75	4.7283.E	142	162	88	130-150	110	M5	48	42	165	75	10	3,5	8	21	75	1000	1,5	1600
S4-75	4.7283.E	163	188	101	130-150	110	R1/8"	75	42	190	75	12,5	3,5	8	21	75	1200	2,0	1800
S4-100	4.7283.E	163	188	101	150-180-200	110	R1/8"	75	42	190	75	12,5	4	8	25	100	1800	3,0	2200

# S-STILO Series

Air loaded knife holder with "SOFT-CUT®" flexible blade connection and "SELF LOCK" automatic air locking.  
(PATENTED System)



- 1) Inbuilt self-locking brake
- 2) Guide with rack
- 3) Safety stop
- 4) Knob to adjust end of cutting pressure
- 5) Blade penetration depth adjusting screw
- 6) Cutting angle and 180° rotation head adjusting screw
- 7) Cutting angle adjustment locking and unlocking screw
- 8) Vernier graduated scale for cutting angle reading
- 9) Compressed air connector
- 10) Bladeholder flexible "SOFT CUT®" connection
- 11) "Bladeholder head" rapid disassembly screw
- 12) Circular blade
- 13) Automatic blade protection (on request)
- 14) Knife, bottom, female, driven

## 1) EASY CUTTING ANGLE ADJUSTMENT WITH GRADUATED SCALE

Cutting angle adjustment on the STILO series takes place on the front side, in a zone facilitating access for the operator.

This important innovation was engineered to make the operation particularly easy to perform. The operator, even while machine is in operation, only needs to loosen the set screw (nr. 7) and adjust the cutting angle by means of the knurled ring (nr. 6).

The nonius on latter, allows to determine the optimum cutting angle on the graduated scale (nr.8) below.

It should be noted that a given cutting angle, will almost always allow successful cutting of a wide variety of materials.

By repeated use of predetermined angles, the operator will permanently benefit from the best possible cutting conditions.

By removing the screw (nr.11), while machine is not in operation, to rotate the bladeholder head by 180°, either for use of the second cutting edge on the bottom blade, or for special applications with side-trim units.

## 2) RAPID BLADEHOLDER HEAD CHANGE

This equally system of rapid bladeholder head change, was developed through the necessity for quick and easy blade changes, in particular when the knifeholders are placed very close together, e.g. strip cuts.

To achieve this, simply loosen screw (nr.11), placed in front and thus of easy access, and pull out bladeholder head.

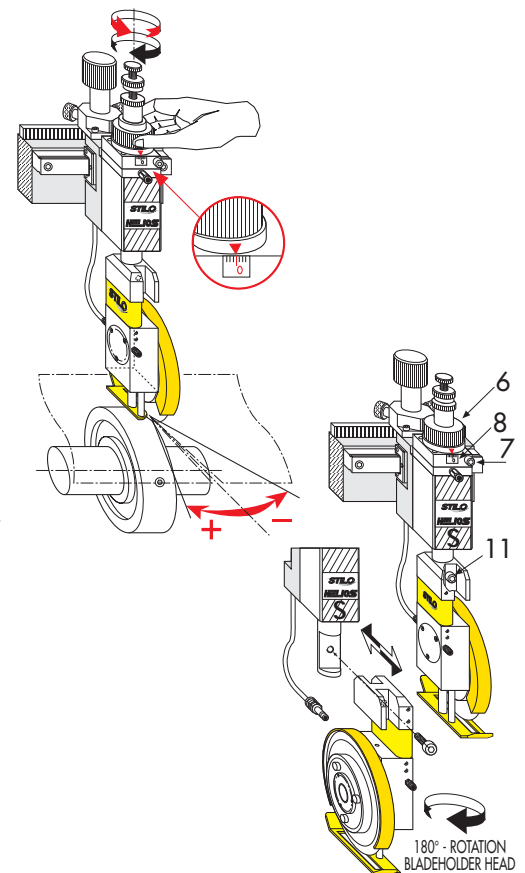
Blade replacement can then be carried out easily on the workbench.

We wish to point out, however, that blade replacements can obviously be carried out, as up to now, directly on the knifeholders when these are placed sufficiently far apart, by simply loosening the three screws on the knife retainer-plate.

## 3) AUTOMATIC RESTING BLADE PROTECTION (on request)

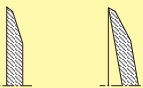
This system was designed to offer an automatic blade protection when top-blade is drawn upwards, away from the bottom blade, during production cuts.

This pneumatic safety system thus completely protects blade circumference, inside the blade-housing, during abovementioned production cuts. All functions are pneumatic.



## BLADES AND BOTTOM KNIFE

### SHEAR CUTTING BLADES

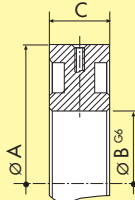


Ø inch 3.543 x 2.362 x 0.047  
Ø inch 4.133 x 2.362 x 0.047  
Ø inch 5.118 x 3.149 x 0.06  
Ø inch 5.905 x 3.149 x 0.99  
Ø inch 5.905 x 1.571 x 0.99  
Ø inch 7.09 x 1.571 x 0.157

Ø mm 90 x 60 x 1,2  
Ø mm 105 x 60 x 1,2  
Ø mm 130 x 80 x 1,5  
Ø mm 150 x 80 x 2,5  
Ø mm 150 x 70 x 2,5  
Ø mm 180 x 70 x 4

TYPE	A inch	B inch	C inch
T 69	2.755	1.574	1.18
T 72	3.031	1.771	1.016
T 100	3.543	2.362	.78
T 101	3.543	2.362	1.18
T 200	4.133	2.362	.78
T 201	4.133	2.362	1.18
T 300	4.133	3.149	.78
T 301	4.133	3.149	1.18
T 400	4.724	3.149	1.574
T 500	5.118	3.149	1.574
T 504	5.118	3.937	1.18
T 505	5.118	3.937	1.574
T 600	6.299	4.000	1.574
T 601	6.299	3.937	1.574
T 602	5.905	4.000	1.574
T 603	6.299	4.724	1.574
T 604	6.299	5.118	1.574
T 606	5.905	3.937	1.574

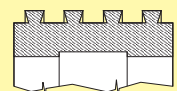
### DUAL-EDGE BOTTOM KNIFE WITH GRUB SCREW LOCKING ACTION



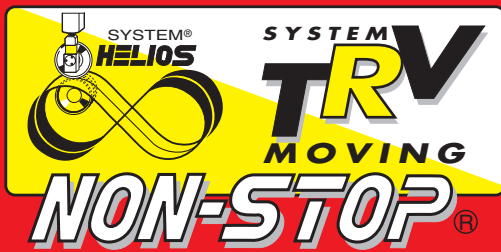
TYPE	A mm	B mm	C mm
T 69	70	40	30
T 72	77	45	25
T 100	90	60	20
T 101	90	60	30
T 200	105	60	20
T 201	105	60	30
T 300	105	80	20
T 301	105	80	30
T 400	120	80	40
T 500	130	80	40
T 504	130	100	30
T 505	130	100	40
T 600	160	101,6	40
T 601	160	100	40
T 602	150	101,6	40
T 603	160	120	40
T 604	160	130	40
T 606	150	100	40



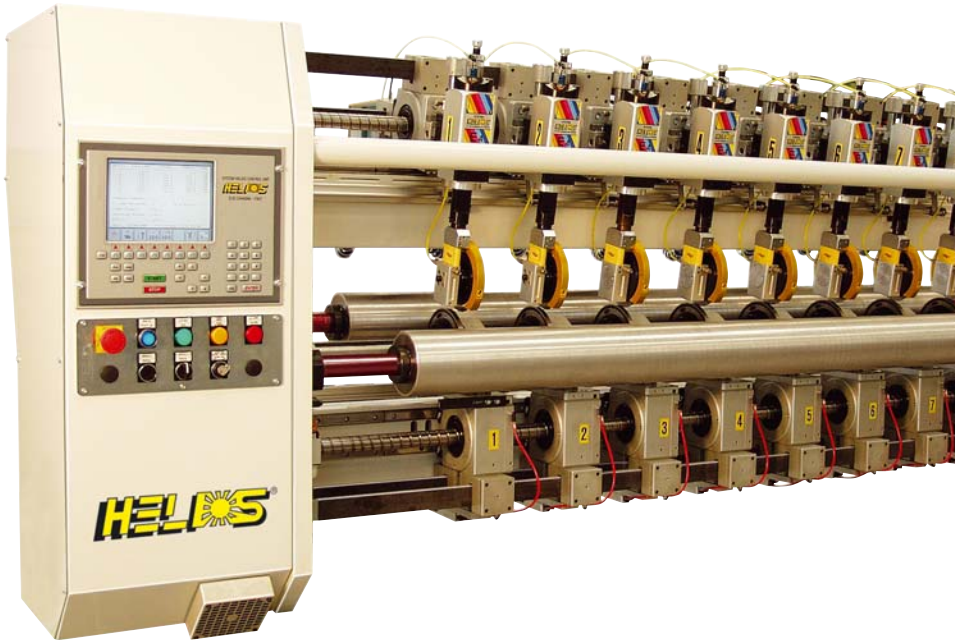
### MULTI-GROOVE KNIFE RING



DIMENSIONS ON SPECIFIC REQUEST



# NON-STOP TRV SHEAR CUTTING MODULES



**HELIOS CNC System**

•Minimum slit width.....	100 mm
•Nbr of units: .....	3 to 20 or more
•Paper weight: .....	50 gr/m <sup>2</sup> to 2000 gr/m <sup>2</sup>
•Plastic film: .....	50 µ to 1600 µ
•Non-wovens: .....	17 gr/m <sup>2</sup> to over 1000 gr/m <sup>2</sup>
•Aluminium foils:.....	50 µ to 600 µ
•Top speed with shaft drive with only one motor for all units: .....	800 m/1'
•Top speed with AC motors for every unit: .....	2200 m/1'
•Format precision: .....	± 0,2 mm

The patented **NON-STOP** system mainly means continuous shear-cutting, even during format changes.

The NON-STOP system is mainly used on calendering machines for plastic materials, or on continuous cardboard and paperboard production lines.

With the longitudinal NON-STOP cutting system, format changes can be carried out with material in the machine and even during production.

Positioning of the units can occur:

- 1) **MANUALLY** by means of a handwheel
- 2) **SEMI-AUTOMATIC CONTROL**: the movement of the cutting units occurs by means of an electric motor and two push buttons (right-left), that the operator will use to move the units, once he has selected the one to move with the pneumatic selector.

An additional handwheel allows small decimal corrections.

UPON REQUEST: formats may be visualised on a display.

The format displayed always refers to the unit actually engaged.

- 3) **AUTOMATIC CONTROL**: positioning in this case occurs using an electric motor.

Automatism is achieved by means of a Brushless servo-motor, controlled by the corresponding new born computer panel **CNC (PLC system upon request)**.

All the operator has to do, is to set the measures and the number of formats to be changed on the keyboard and enter OK.

Everything will automatically move without further assistance from the operator.

The computer will decide which units will be used for cutting and will move the unused ones to a parking- or shadow-zone.

If, during maintenance or machine stop, one or more cutting units are moved by chance, they'll reposition to the preset measure once the machine is started, without further assistance from the operator.

This means maximum measurement reliability.

It is possible to store up to **600** orders with precise formats and recall them by entering the order number on the display.

Upon request it is also possible to select if cutting should take place during the phase of format changes, or not.

As an example:, necessary format change time for 5 units, machine frame width 2,5 m, is roughly 1 minute.

# NON-STOP TRV

SHEAR CUTTING MODULES



## SHEAR CUTTING MODULES

With automatic positioning of the cutting units,  
 also with material in the machine.



- Minimum slit width (on request) .....50 mm
- Nbr of units: .....3 to 36 or more
- Paper weight: .....30 gr/m<sup>2</sup> to 1600 gr/m<sup>2</sup>
- Plastic film: .....30 μ to 1200 μ
- Non-wovens: .....17 gr/m<sup>2</sup> to over 1000 gr/m<sup>2</sup>
- Aluminium foils: .....50 μ to 600 μ
- Top speed with shaft drive with only one motor for all units: .....800 m/1'
- Top speed with AC motors for every unit: .....2200 m/1'
- Format precision: .....± 0,2 mm

This system was planned for format changes with material in the machine, but not during production (for changes of format during production, revert to our NON-STOP-System).

Said changes of format are achieved by means of a **BRUSHLESS** motor which drives the two spindles that move the cutting units.

The cutting units (knife holder and bottom blade) are moved by means of a (patented and **TRC** called) system that is mounted on the carriages and which, when actuated, will lock on the spindles. The selection of units to be moved is carried out by the computer that will initiate the locking on of the clutch.

The operators have the possibility to store a great number of customer formats (up to **600**); these can be recalled at any time by entering the code corresponding to the requested format.

When the **START** button is actuated, the system goes in operation and automatically sets the units to the requested format.

The same computer then decides which units will be used for a give format, and which ones, because not needed, are to be placed in "parking lots" (or shadow places).

If at any give time, because of maintenance or long term machine shut down, a top- or bottom unit has lost its position, the actuation of the **START** button will automatically reset the unit to its initial position.

Thus, all operations or controls by the operator become unnecessary. The specificity of our machines is to ensure greatest possible safety for the conservation of the selected formats.

Furthermore, the zero setting or other interventions can be spared, because the system carries these out automatically.

Finally, it has become possible, by means of computer based assistance, included in our CNC-units, to offer long distance diagnosis, modifications and support.

The salient features of this system thus are:

**EFFICIENCY, ADAPTABILITY AND PRECISION.**



# SHEAR CUTTING MODULES

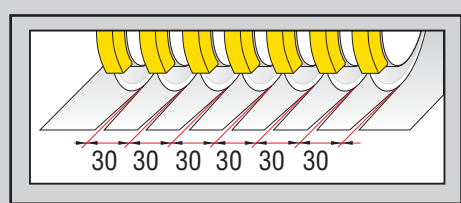
With automatic positioning of the cutting units, also with material in the machine.



Module with automatic positioning of the cutting units, also with material in the machine. **Smallest cutting width: 30 mm**



- Minimum slit width.....30 mm
- Nbr of units .....3 ÷ 45 o oltre
- Paper weight .....30 g/m<sup>2</sup> ÷ 800 g/m<sup>2</sup>
- Plastic film .....30 µ ÷ 1000 µ
- Non-wovens .....17 g/m<sup>2</sup> ÷ oltre 1000 g/m<sup>2</sup>
- Aluminium foils .....50 µ ÷ 600 µ
- Top speed.....200 ÷ 500 m/1'





# FAST-MAN

## SHEAR CUTTING MODULES



• Minimum slit width.....	60 mm
• Nbr of units: .....	3 to 36 or more
• Paper weight: .....	30 gr/m <sup>2</sup> to 2000 gr/m <sup>2</sup>
• Plastic film: .....	30 μ to 1200 μ
• Non-wovens: .....	17 gr/m <sup>2</sup> to over 1000 gr/m <sup>2</sup>
• Aluminium foils: .....	50 μ to 600 μ
• Top speed with shaft drive with only one motor for all units: .....	800 m/1'
• Top speed with AC motors for every unit: .....	2200 m/1'

**FAST-MAN** means **QUICK FORMAT CHANGES** in manual mode.

These are carried out during a machine stop without material in the cutting zone, i.e. web interrupted.

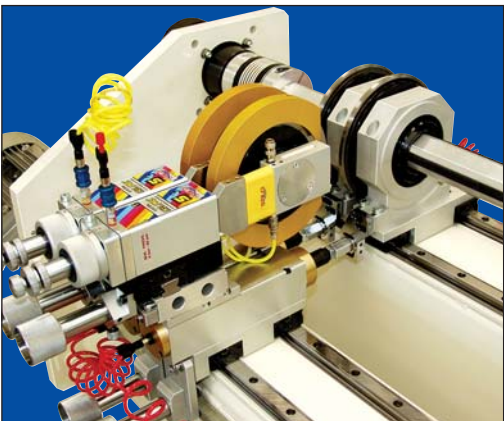
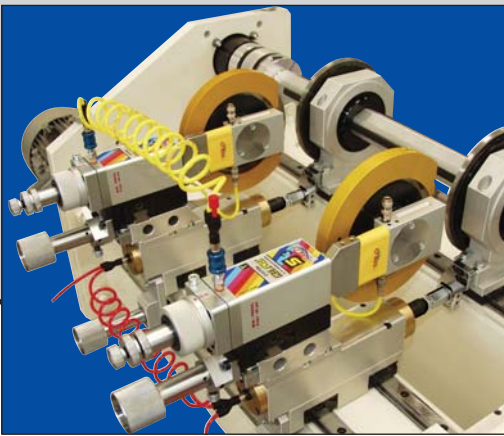
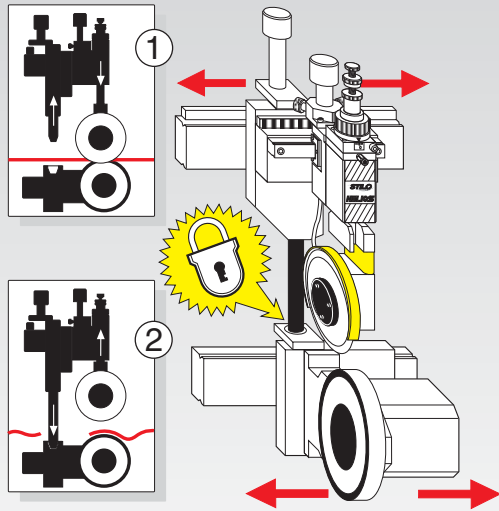
The machine operator, actuating the pneumatic selector, in a **single operation** releases the brakes of the cutting groups and, simultaneously, anchors top- and bottom-units mechanically; all in a few seconds. He then sets the new formats by means of the corresponding pinion knob.

As an example, it becomes thus possible to change 10 formats **in 2 to 3 minutes** and resume production without any further intervention.

It is therefore ideally suited, when multiple daily format changes are required.

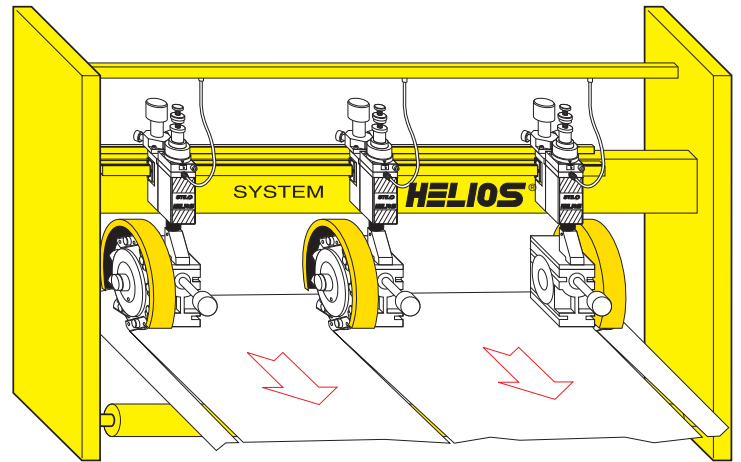
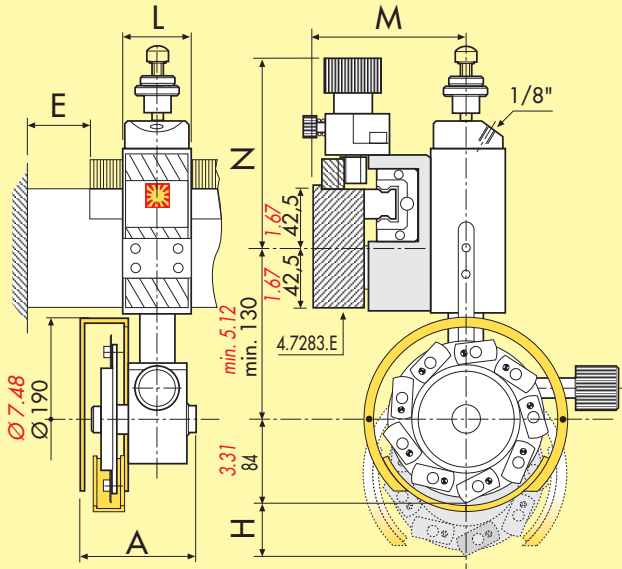
- Format sizes from 60 to 200 mm.
- Material weights from 30 to 2000 gr/m<sup>2</sup>.
- Machine speeds up to 2200 m/1'.
- Optional drives by drive shaft and/or independent AC- or DC-motors.

**An automatic format change version is available**



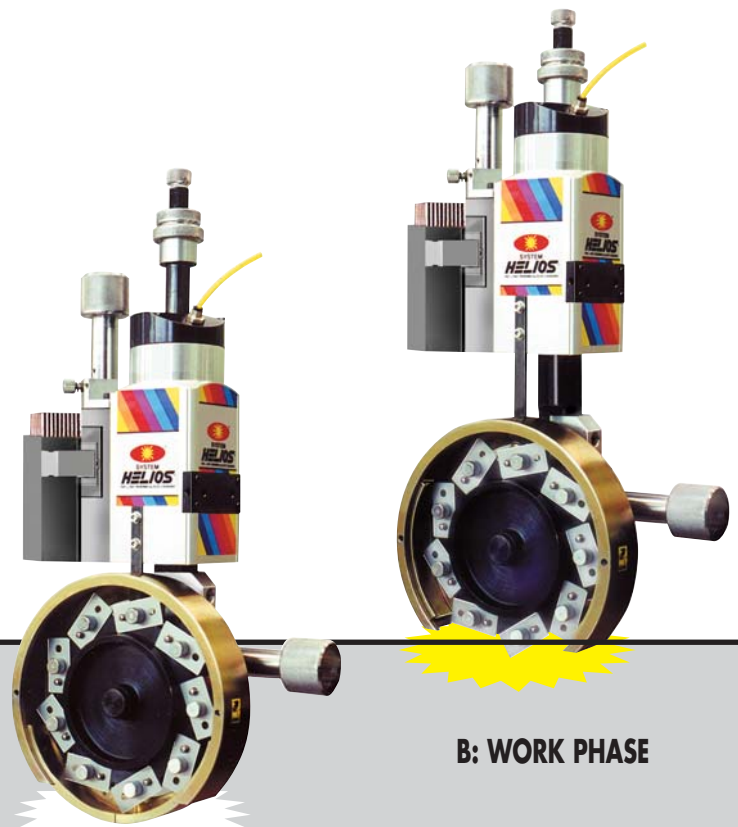
# MULTIPLE RAZOR BLADE HOLDER WITH PATENTED SAFETY PROTECTIONS

The MULTIPLE RAZOR BLADE HOLDER type S3 and S4 TL is recommended for cutting thin plastic film up to a thickness of 25 $\mu$ . To cut plastic film over 25 $\mu$  and up to 2mm SOFT-CUT<sup>®</sup> - STILO shear cutting system is preferable. All multiple razor blade holders type TL (S3 and S4) are equipped with patented safety protections with automatic closure.



TYPE **S3** and **S4 TL** SELF LOCKING  
MULTIPLE RAZORBLADE-HOLDER  
WITH AUTOMATICALLY CLOSING SAFETY SYSTEM

TYPE		A	E	H	L	M	N
S3 TL60 C	mm	60	90	20	48	88	130
	inch	2.36	3.54	0.79	1.89	3.47	5.12
S3 TL 107 C	mm	107	90	20	48	88	130
	inch	4.21	3.54	0.79	1.89	3.47	5.12
S4 TL107 C	mm	107	110	45	75	101	160
	inch	4.21	4.33	1.77	2.95	3.98	6.30

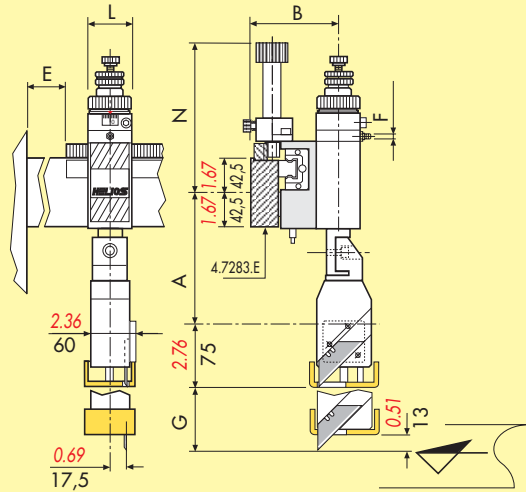


A: IDLE PHASE

B: WORK PHASE

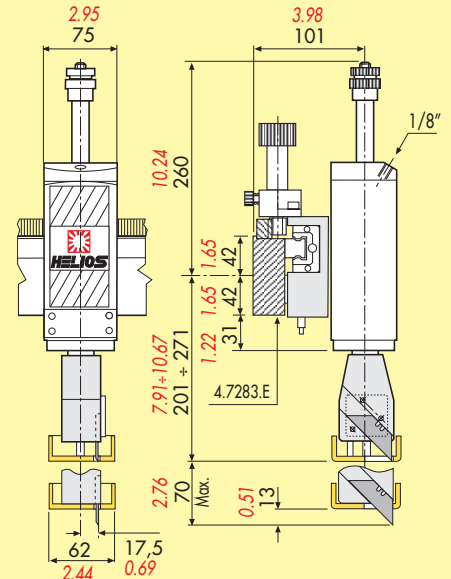
# SINGLE RAZOR BLADE HOLDER WITH PATENTED SAFETY PROTECTIONS

To cut **very thick** plastic materials, over 2mm, we recommend using our single **razor blade cutting system** type **RB**. All single razor blade holders Type S4-RB are equipped with patented **safety protections** with automatic closure.



TYPE **S3 RB** STROKE 20 - **S4 RB** STROKE 25

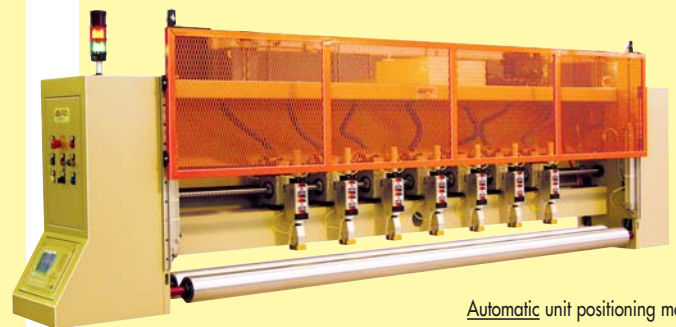
TYPE		A	B	E	F	G	L	N
<b>S3 RB</b>	mm	142	80	90	M5	20	48	165
	inch	5.60	3.15	3.54	M5	0.79	1.89	6.50
<b>S4 RB</b>	mm	163	95	110	1/8"	25	75	190
	inch	6.42	3.74	4.33	1/8"	0.98	2.95	7.48



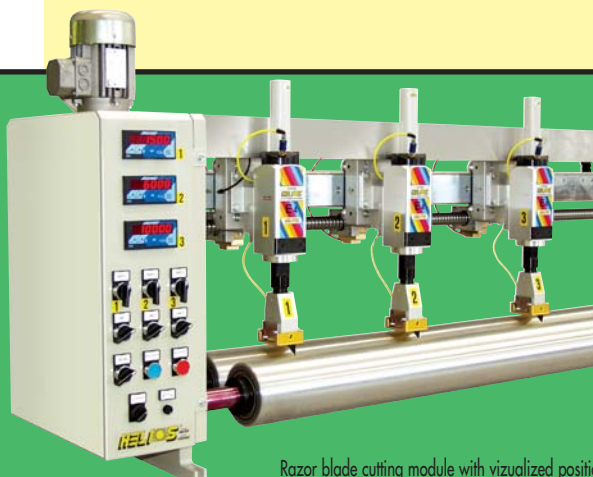
TYPE **S4 RB** STROKE 70



Manual unit positioning module.

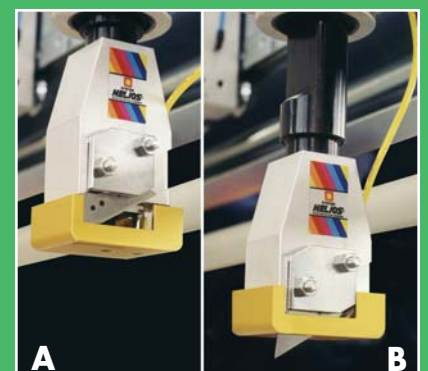


Automatic unit positioning module.



Razor blade cutting module with visualized positioning (TRC)

RAZOR BLADE CUTTING SYSTEM  
WITH AUTOMATICALLY CLOSING  
SAFETY SYSTEM  
...for **VERY THICK** plastic material!  
The operator runs no risk of cutting himself when  
changing material, because the razor blade is  
enclosed in a protective housing (fig.A).  
(PATENTED SYSTEM)

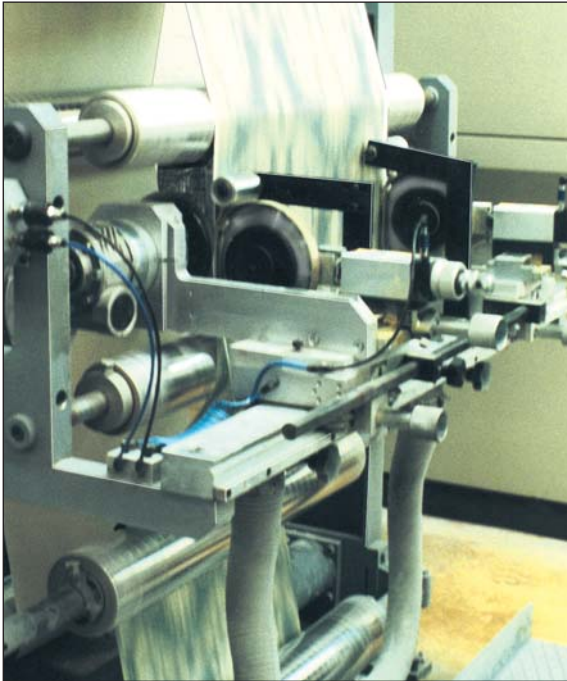


A: IDLE PHASE

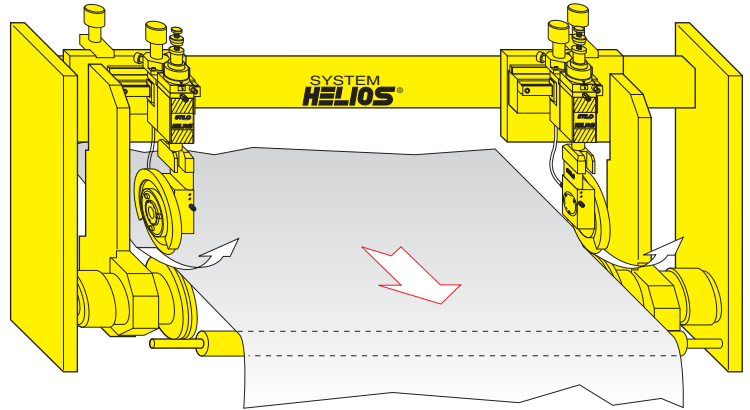
B: WORK PHASE

# SIDE TRIM

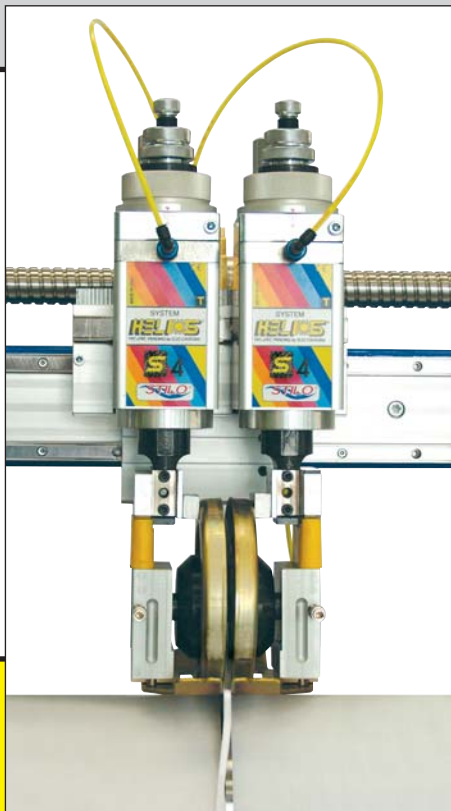
# SIDE TRIM SHEAR CUT



The **EDGE-TRIM UNITS** are supplied with the famous **SOFT-CUT®** system, available either with **automatic** or **manual** positioning.



- Paper weight: ..... 30 gr/m<sup>2</sup> to 1600 gr/m<sup>2</sup>
- Plastic film: ..... 25 μ to 1600 μ
- Non-wovens: ..... 17 gr/m<sup>2</sup> to over 1000 gr/m<sup>2</sup>
- Aluminium foils: ..... 50 μ to 600 μ
- Top speed with shaft drive: ..... 2 to 150 m/1'
- Top speed with independent motors: ..... 2 to 1600 m/1'



STRIPE CUT



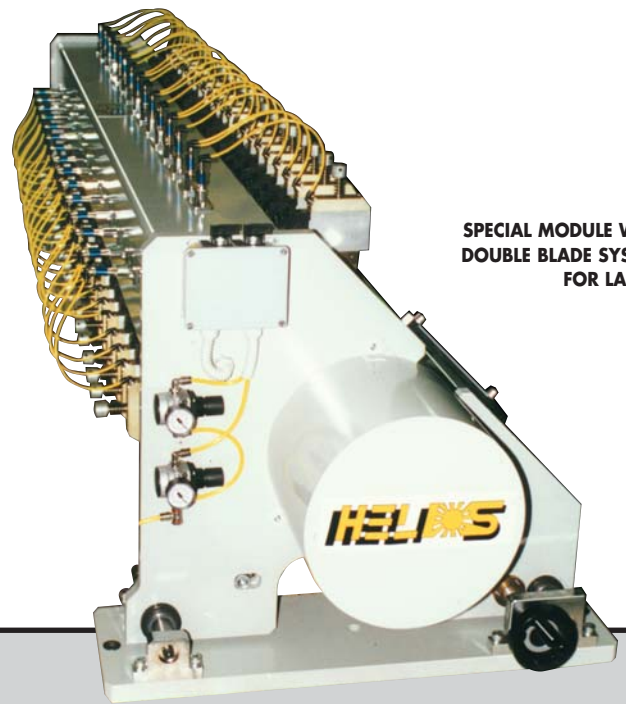
SIDE TRIM CUT

# PRESSURE CUTTING

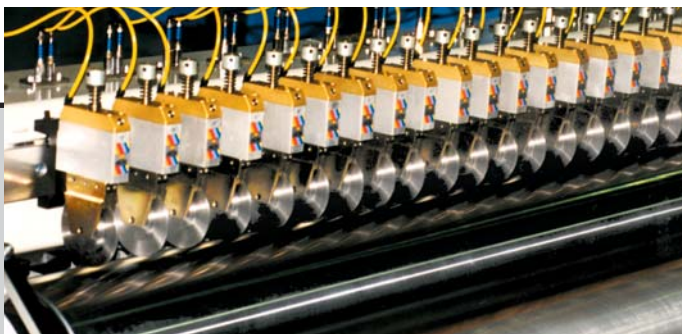


The PRESSURE CUTTING system is a traditional one, used for perforation-, half- and groove-cutting. Pressure cutting is used where high speed is not paramount, cutting material are of soft and when cutting pressure is weak. With direct contact between the blade and the counter-blade cylinder, blade wear is high and directly proportional to the pressure employed. In the event of the cutting and production qualities are determining factors a shear cutting system, such as A and/or E series, is necessary.

Score-cut: This system is used to score silicon paper before it is joined to paper or adhesive film (already coated with glue). To obtain optimum scoring a special blade is used and air pressure must be carefully regulated. Helios can satisfy all needs, by supplying shear- or half-cutting systems or modules.



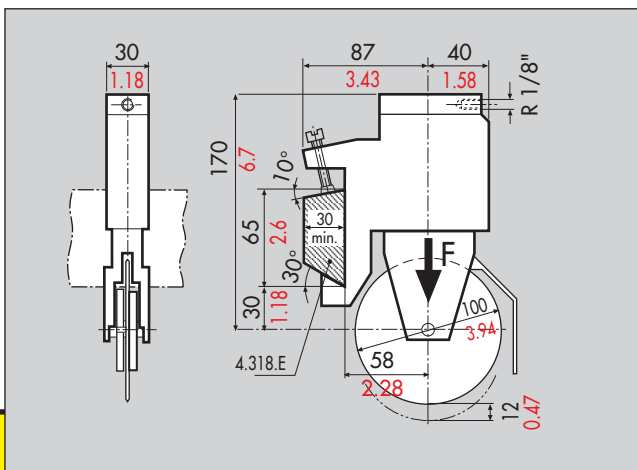
**SPECIAL MODULE WITH  
DOUBLE BLADE SYSTEM  
FOR LABELS**



## TYPE EK - 30

### PNEUMATIC BLADE HOLDER FOR PRESSURE CUTTING

Minimum cutting width: 1.18 inch - Max. speed: 400 m/min  
Max. cutting capacity: 600 g/m<sup>2</sup> - Blade dimensions: 3.94 x 0.098 mm  
-Pressure: 25 Kg with compressed air pressure at 6 bar

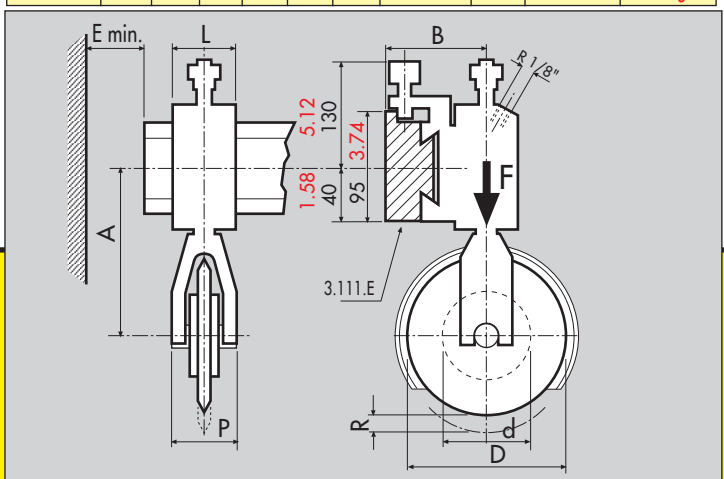


## TYPE EPFS - 48

### PNEUMATIC BLADE HOLDER FOR PRESSURE CUTTING

- Max. speed: 400 m/min

TYPE	A	B	E	L	P	R	D	d	Max.Cut gr/m <sup>2</sup>	F Pressure 6 bar
EPFS 48	140	78	55	48	50	20	130/150	70	800	32 Kg
	5.51	3.07	2.17	1.89	1.97	0.79	5.12/5.9	2.76	800	32 Kg
EPFL 100	173	95	80	75	60	25	150/180	70	1000	60 Kg
	6.81	3.74	3.15	2.95	2.36	0.98	5.9/7.09	2.76	1000	60 Kg



# RETROFIT 1, 10, 100, 1000...



**Helios-Elio Cavagna**, manufacturer of longitudinal cutting systems, has always also been a specialist in **retrofit** on slitters/rewinders, calendering lines, a.s.o.

Helios modifies the longitudinal cutting system by removing the old system, that has become obsolete, as it no longer gives best yield, and replaces it with a new cutting module that increases productivity, improves quality and amortises the cost of the retrofit in a short period of time.

We have reaped great rewards in the longitudinal shear cutting sector, thanks to our capability of understanding the requirements of the manufacturing and converting industry in the fields of paper, plastic film, fibres, etc.

This is very important, because it underlines the extreme care that Helios-Elio Cavagna places in designing its cutting systems, acting as an interpreter to the needs of those that use them daily for work.

This care has allowed Helios-Elio Cavagna to acquire vast experience in the various sectors to improve and study cutting- and automatic positioning-systems with positive results and great success.

Another factor of great importance to be underlined is work safety that Helios-Elio Cavagna systems offer. In fact, safety hazards have been greatly reduced in the companies that have adopted our systems, these are usually quite common when working with blades, knives, razor blades, etc.

All Helios-Elio Cavagna products are equipped with patented efficient **safety** systems that are activated when a production cycle is interrupted and when maintenance operations or format changes take place.

Speaking of production interruptions, with the **SOFT-CUT®** system and with the **NON-STOP** system, months can go by before blade replacement for sharpening is necessary. This reduces waste, or even eliminates it, highlighting the noteworthy returns on investments investments.



# PRODUCTION EXAMPLES



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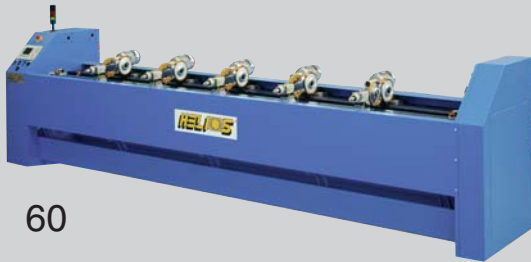
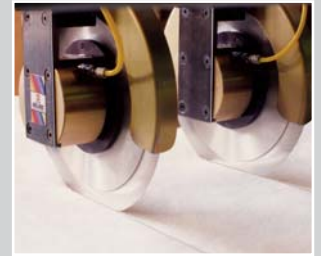
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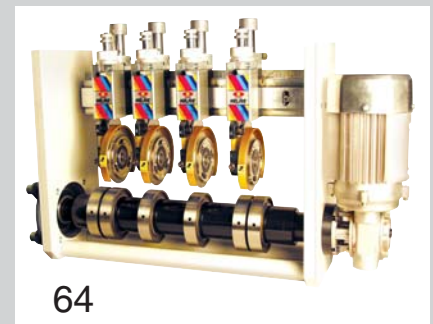
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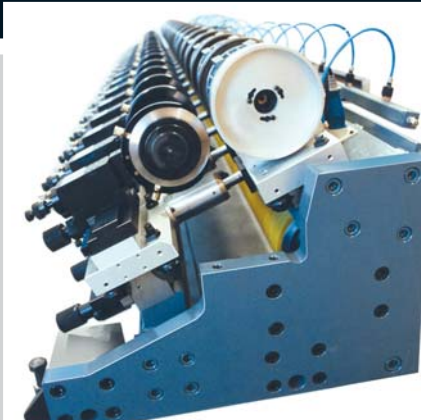
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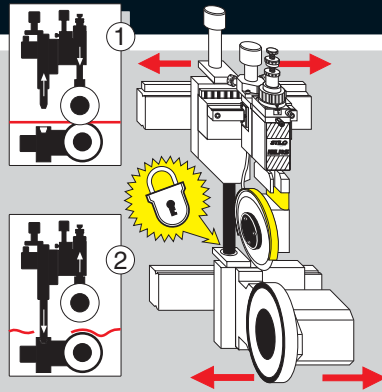
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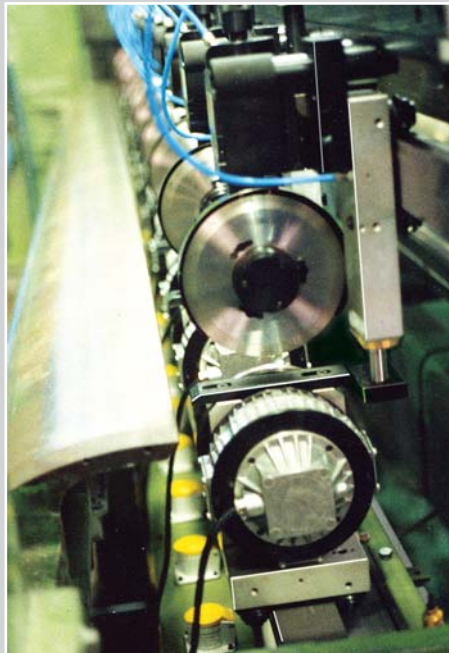
# PRODUCTION EXAMPLES



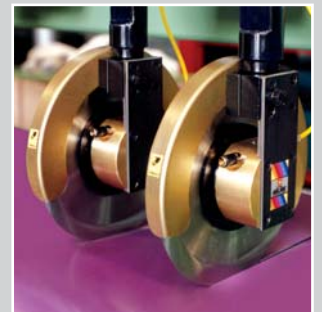
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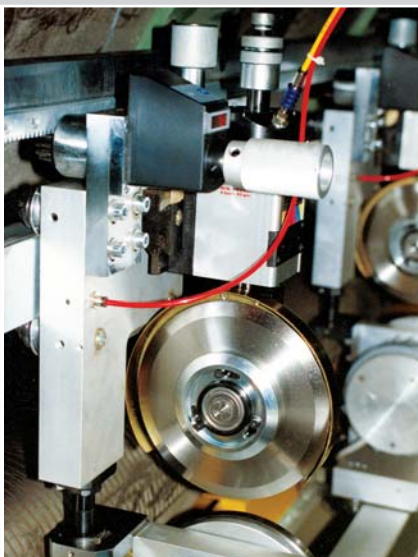
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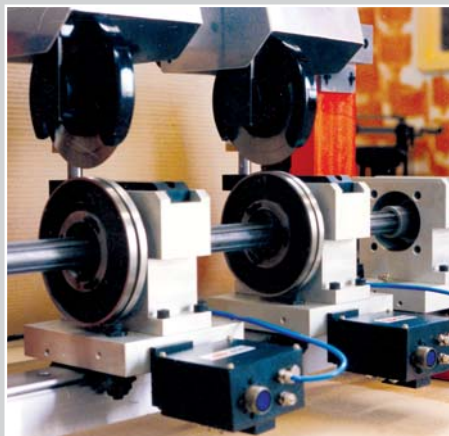
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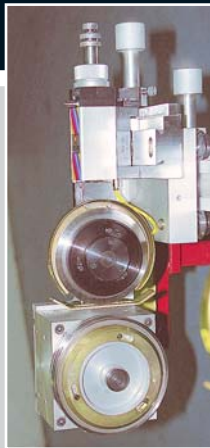
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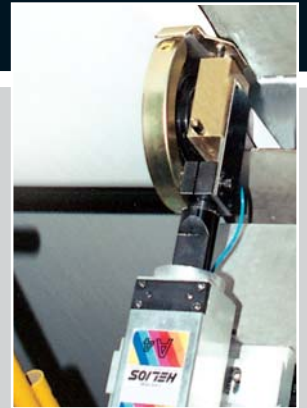
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**T-CUT**  
*transversal cutting*

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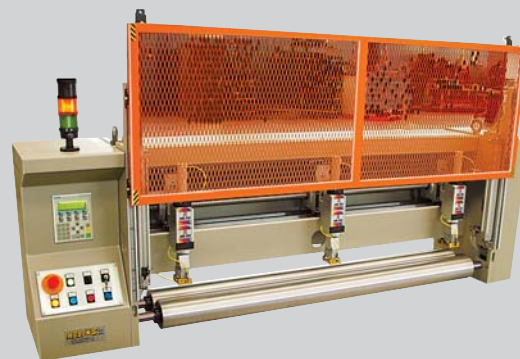
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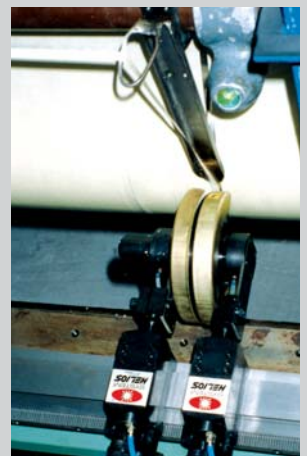


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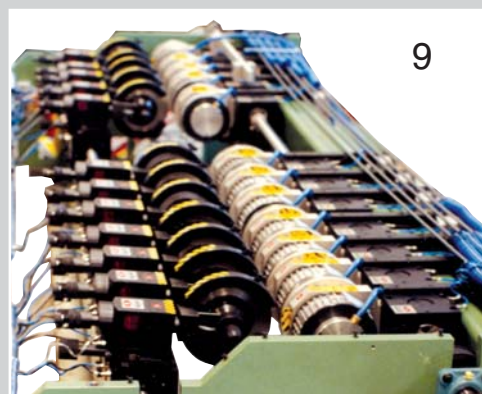


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