



BOW SAWS

ALO 185

AUTOMATIC SET GAUGE FOR BOW SAW BLADES

ALO 193

INDUCTION TOOTH HARDENING AND TEMPERING FOR BOW SAW BLADES

ALO 193-300

INDUCTION TOOTH HARDENING AND CUT TO LENGTH OF BOW SAW BLADES

ALO 390

TOOTH HARDENING AND TEMPERING FOR BOW SAW BLADES

ALO 390-300

INDUCTION TOOTH HARDENING AND CUT TO LENGTH OF BOW SAW BLADES

ALO 600-40-1

TOOTH HARDENING AND TEMPERING FOR BOW SAW BLADES

ALO 185

Automatic set gauge for band saw blades



THE SYSTEM COMPRISES:

Measuring fixture
Camera
PC and SGS software

CAPACITY:

Blade width: 12 - 100 mm
Blade thickness: 0,4 - 1.6 mm
Tooth pitch: 0.5 - 14 tpi
Measure width max: 5 mm

OPTIONS / ACCESSORIES:



ALO 81-60
Set gauge



ALO 185-011 / 185-012
Band symmetry control kit



MACHINE DESCRIPTION

The set gauge will measure each set tooth on a band saw blade and check against user defined tolerances.

The individual setting of each tooth as well as average, imbalance and overall set can be displayed on the PC monitor. Control of the set gauge and programming of all parameters and tolerances are done interactive by the menu driven software. The user can freely choose metric or inch as measuring units.

The software supports all Western languages. A special set gauge computer equipped with a CCD line camera scanning the teeth of the saw blade does the measuring. The analysis of the incoming data is done in real-time and the result is transmitted online to the PC. The gauge can be placed in line with any ALO band saw setting machine.

If the 185 stand together with an ALO band saw setting machine, a kit that automatically will control and adjust the set symmetry can be added, making it possible to keep a very tight tolerance without any unnecessary stops for manual adjustments.

OPTIONS:

- 185 - 001A PC monitor stand
- 185 - 003 Laser printer
- 185 - 011 Automatic symmetry adjustment kit for 181 machine
- 185 - 012 Automatic symmetry adjustment kit for 182 and 183 machines
- 185 - 181 Kit with all necessary parts, including a free standing coiler type 820 - 6, for connecting ALO 185 to an existing ALO 181 setting machine.
- 185 - 182 Kit with all necessary parts for connecting ALO 185 to an existing ALO 182 or ALO 183 setting machine.

TECHNICAL SPECIFICATION:

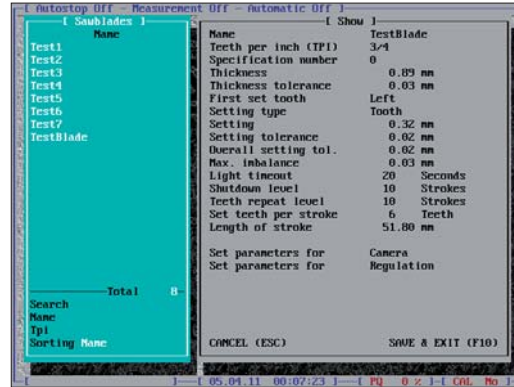
Blade width:	12 - 100 mm
Blade thickness:	0,4 - 1.6 mm
Tooth pitch:	0.5 - 14 tpi
Measure width max:	5 mm
Resolution:	0.002 mm
Resolution on screen(user selectable):	.01, 0.001 mm
Camera:	High speed, high resolution CCD line camera
PC:	Actual market standard with monitor, keyboard and SGS software



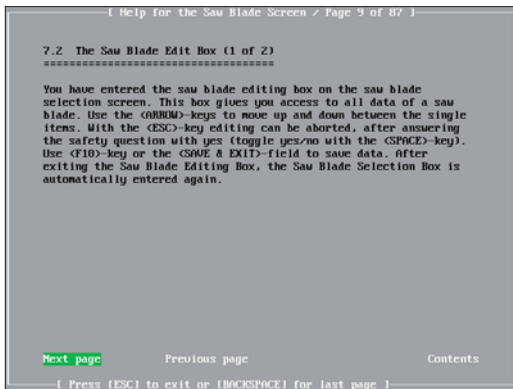
SCREENSHOTS FROM SGS SOFTWARE:



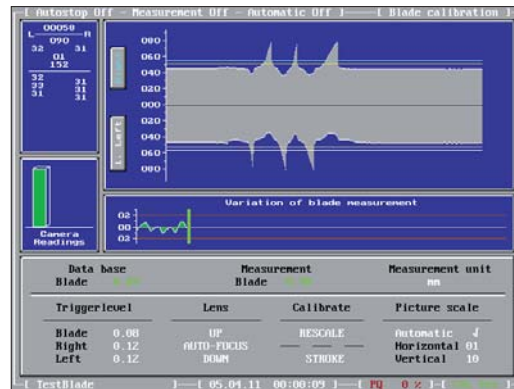
MAIN MENU:
 Choose mode of operation in a simple interactive menu system. The program handles all European languages and works with metric or Imperial readings.



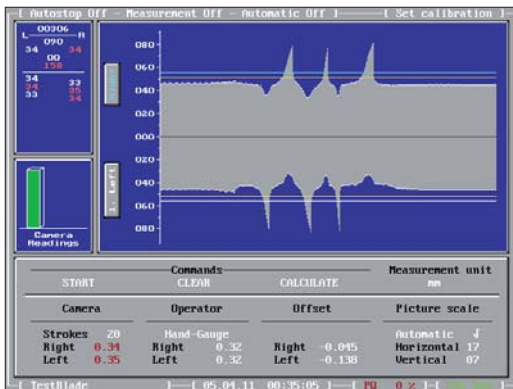
EDIT SAW BLADE:
 Pre-programming of all band and system parameters makes it easy for the operator to select the actual blade from the library at set up. The use of passwords prevents tampering with band or system parameters.



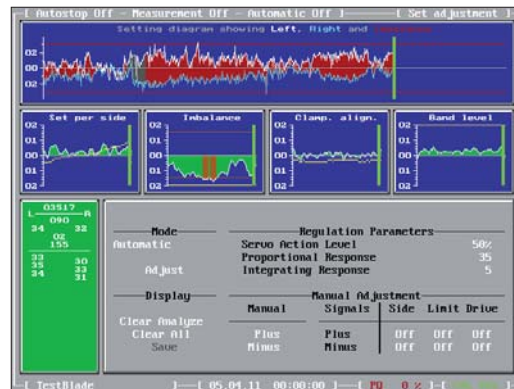
HELP MENU:
 Help is available at any place in the program by pressing the help function key. The help system also provides help with common setup mistakes.



OPTICAL CALIBRATION:
 Real time vision showing the blade with set teeth, actual set readings, the database as well as quality of the camera readings.



SET CALIBRATION:
 A very simple calibration system makes it possible to calibrate the system to any other measuring system as well as fulfilling standards like ISO-9000



AUTO SYMMETRY ADJUSTMENT:
 If the ALO 185 set gauge stands together with a ALO setting machine, a kit is available that will control and adjust the symmetry automatically.

During the actual measurement its possible to see the results of the set and several different statistical diagrams while the system keeps control of the set.

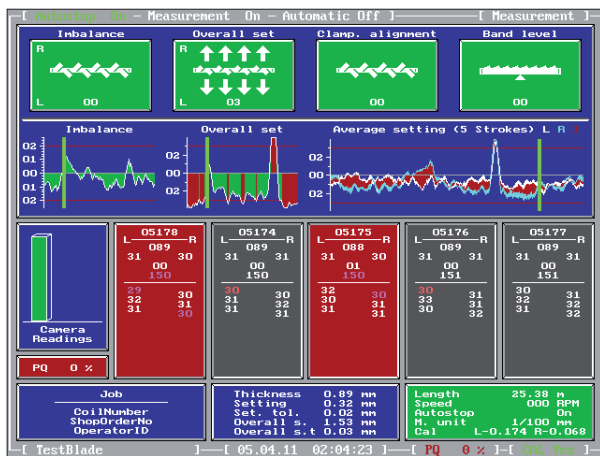


Top part of the screen is showing a setting diagram over the last 500 feedings.

Left side set = white
 Right side set = blue
 Imbalance = red

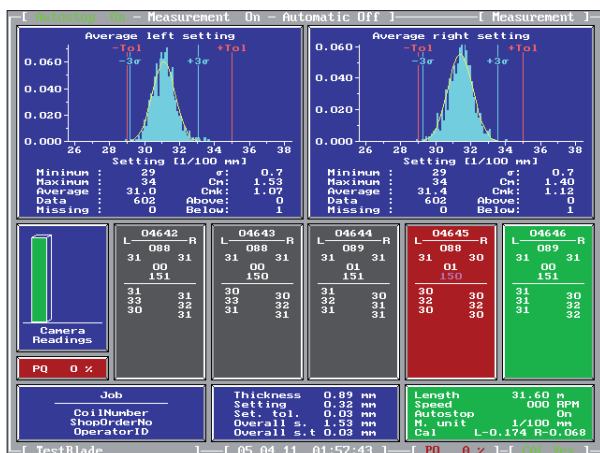
The red horizontal lines are the tolerance limits. The grey line in the middle represents the nominal set. Mid part of the screen is showing the last five groups of set/tooth, imbalance, average/side and the overall set. Each tooth is measured and the set value is displayed. The background colour is showing the status of the set; green yellow or red.

The change between these screens is done by a simple touch on a function key. The frame around all screens is always showing basic information like actual band name or number, auto stop on or off, video quality and calibration status.



The system can stop the setter if the set goes out of the tolerances and will give instructions how to adjust the setting machine to correct the set.

Low part of the screen is from left showing coil number, shop order and operators id. Mid part is showing the basic blade information. Right side is giving band length, speed, auto stop on or off, metering system and the actual offset.



Top part of the screen is showing a standard deviation diagram over left and right side set. Min, max, average set as well as standard deviations are shown. The set values with histogram can be printed out at any time or at the end of the measurement.

Automatic self-test of the set gauge computer and the camera at system start up. The system also displays the current speed and the produced length as well as speed and length counter.

ALO 193

Tooth hardening and tempering of bow saw blades



THE SYSTEM COMPRISES:

Pay off coiler
Hardening generator
Tempering generator
Hardening and tempering inductors
Closed cooling system
Band feeder
Quench system
Take up coiler

CAPACITY:

Band Width: 10 - 25 mm
Band thickness: 0.4 - 1.3 mm
Tooth pitch: Acc. to spec.
Capacity: 5 - 25 m/min

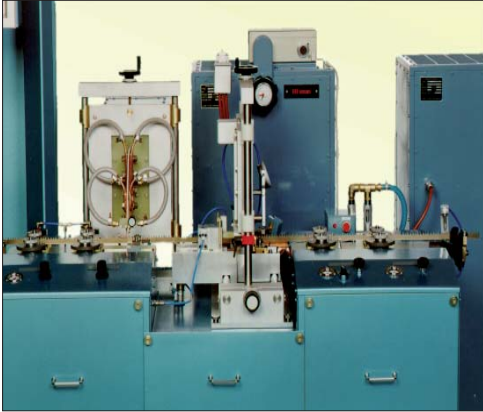
OPTIONS / ACCESSORIES:



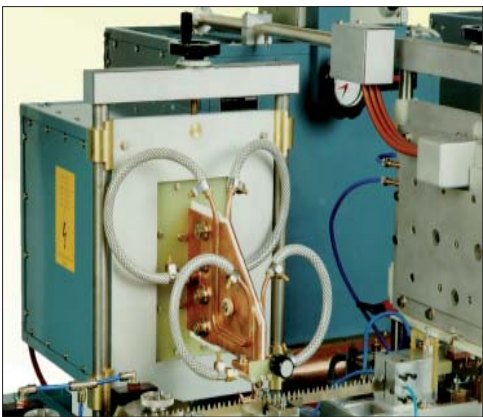
ALO 822
Double coiler



ALO 106 CUBE
Coil handling system



Feed unit with hardening and tempering unit



Tempering circuit

MACHINE DESCRIPTION

Band feeder

The band feeder consists of two units, one 4-wheel feed unit, the other as an adjustable brake to control the band tension by using an electro magnetic friction brake. Both units are equipped with two pairs of inclined rolls. The four rolls on the feed unit are driven by a servomotor, and the speed is controlled by a servo controller. The oscillating circuits with the inductors are located between the brake and the feed units such that the band is pulled through the inductors at a controlled tension.

Generators

The hardening and tempering generators are enclosed in separate aluminium cabinets, equipped with separate oscillating circuits connected to the cabinets via coaxial cables. The generators are air cooled, thus limiting the cooling water requirements to inductors and oscillating circuit only.

The hardening generator is equipped with an automatic anode current regulator, thus ensuring a stable power during the hardening operation. The tempering generator is equipped with a chopper for infinitely variable control of the output power.

Inductors

The interchangeable inductors are made of copper tubing and can be custom made for different pitches and band gauges. Adjustable in height for different blade widths and sideways for different blade gauges.

TECHNICAL SPECIFICATION:

Band width:	10 - 25 mm
Band thickness:	0.4 - 1.3 mm
Tooth pitch:	Acc. to spec.
Capacity:	5 -25 m/min
Coiler ID:	300 - 315 mm
Coiler OD:	820 mm
Max coil weight:	300 kg
Air pressure:	6.3 bar
Voltage:	220 - 480 VAC, 3-phase, 50 - 60 Hz direct earthed system
Space requirement (l x w x h):	4 x 2 x 2m
Power consumption (at max output power):	20 kVA

Other customer requirements may be discussed between customer and ALO.

ALO 193-300

Induction tooth hardening and cut to length of bowsaw blades



THE SYSTEM COMPRISES:

Hardening generator
Hardening inductor
Band feeder
Air quench
Loop table
Cut to length machine
Collect magazine

CAPACITY:

Band width: 20 - 40 mm
Band thickness: 0.6 - 0.8 mm
Feed length: 300 - 915 mm
Accuracy: ± 0.1 mm
Approx. magazine capacity: 450 blades

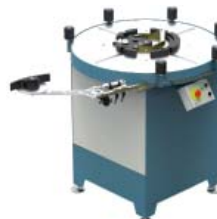
OPTIONS / ACCESSORIES:



ALO 822
Double coiler



ALO 831
Double coiler



ALO 880
Electrical coiler



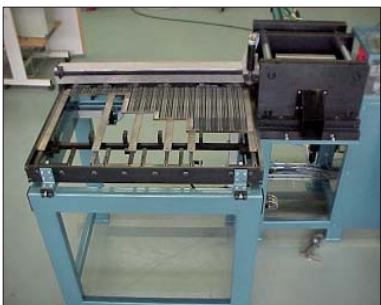
ALO 106 CUBE
Coil handling system



Hardening unit and looptable



Cut-to-length feeder and control panel



Pneumatic press and collect magazine

MACHINE DESCRIPTION

Band feeder

The band feeder consists of two units, one feed unit, the other as an adjustable brake to control the band tension by using an electro magnetic friction brake. Both units are equipped with two pairs of inclined rolls. The four rolls on the feed unit are driven by a servomotor, and the speed is controlled by a servo controller. The oscillating circuit with the inductor are located between the brake and the feed units such that the band is pulled through the inductors at a controlled tension.

Generators

The hardening generator is enclosed in separate aluminium cabinet, equipped with separate oscillating circuit connected to the cabinet via coaxial cable. The generator is air cooled, thus limiting the cooling water requirements to inductor and oscillating circuit only. The generator is equipped with an automatic anode current regulator, thus ensuring a stable power during the hardening operation.

Inductors

The interchangeable inductors are made of copper tubing and can be custom made for different pitches and band gauges. Adjustable in height for different blade widths and sideways for different blade gauges.

Air quench

The teeth are quenched with compressed air using nozzles on both sides of the teeth.

Loop table

The table consists of a welded stand with a table top of hardened steel sheet. The table top has a brim to prevent the loop falling over the edge.

Cut to length with magazine

The band is fed from the hardening unit via the loop table by means of a linear feeder. Blade lengths up to 24" are fed in one feed cycle. The punching is done with a pneumatic press. At the punching operation the tang of the blades and the holes are formed with hard metal die cutters mounted in a pillar stand. Number of blades are chosen on a keyboard and surveillance of the machine operations is done via a PLC. An air motor feeds the blades into a collect magazine, the magazine consists of a collect slot and a vertical stacking magazine.

TECHNICAL SPECIFICATION:

Band width:	20 - 40 mm
Band thickness:	0.6 - 0.8 mm
Feed length:	300 - 915 mm
Accuracy:	± 0.1 mm
Approx. magazine capacity:	450 blades
Air pressure:	6.3 bar
Standard voltage:	400VAC ±10% 3-phase, 50-60 Hz ±1% directly earthed system, other voltages available upon request.
Power consumption (at max output power):	10 kVA
Other customer requirements may be discussed between customer and supplier.	

ALO 390

Induction tooth hardening and tempering for bow saw blades



CAPACITY:

Band width: 19 - 25 mm
Band thickness: 0.4 - 1.3 mm
Hardening generator frequency is: 27 MHz.
Tempering generator frequency is: 1.5 MHz.

THE SYSTEM COMPRISES:

Hardening generator
Tempering generator
Hardening and tempering inductors
Blade feeder
Closed coolant system
Collector magazine

The combination of high production rate, easy handling, low power consumption and an automatic active control system leads to high quality and low production costs.

OPTIONS / ACCESSORIES:



ALO 822
Double coiler



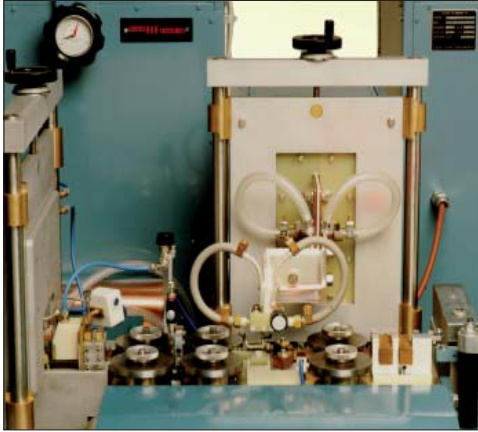
ALO 831
Double coiler



ALO 880
Electrical coiler



ALO 106 CUBE
Coil handling system



Hardening unit with flash guard and tempering unit



Collect magazine with inc-jet printer (option)

MACHINE DESCRIPTION

Band feeder

The band feeder consists of two units, one 4-wheel feed unit, the other as an adjustable brake to control the band tension by using an electro magnetic friction brake. Both units are equipped with two pairs of inclined rolls. The four rolls on the feed unit are driven by a servomotor, and the speed is controlled by a servo controller. The oscillating circuits with the inductors are located between the brake and the feed units such that the band is pulled through the inductors at a controlled tension.

Generators

The hardening and tempering generators are enclosed in separate aluminium cabinets, equipped with separate oscillating circuits connected to the cabinets via coaxial cables. The generators are air cooled, thus limiting the cooling water requirements to inductors and oscillating circuit only. The hardening generator is equipped with an automatic anode current regulator, thus ensuring a stable power during the hardening operation. The tempering generator is equipped with a chopper for infinitely variable control of the output power.

Inductors

The interchangeable inductors are made of copper tubing and can be custom made for different pitches and band gauges. Adjustable in height for different blade widths and sideways for different blade gauges.

TECHNICAL SPECIFICATION:

Band width:	19 - 25mm
Band thickness:	0.4 - 1.3mm
Min blade length:	320 mm
Capacity:	5 - 25 m/min
Magazine capacity:	500 blades
Air pressure:	6.3 bar
Standard voltage:	400VAC $\pm 10\%$ 3-phase, 50-60 Hz $\pm 1\%$ directly earthed system, other voltages available upon request.

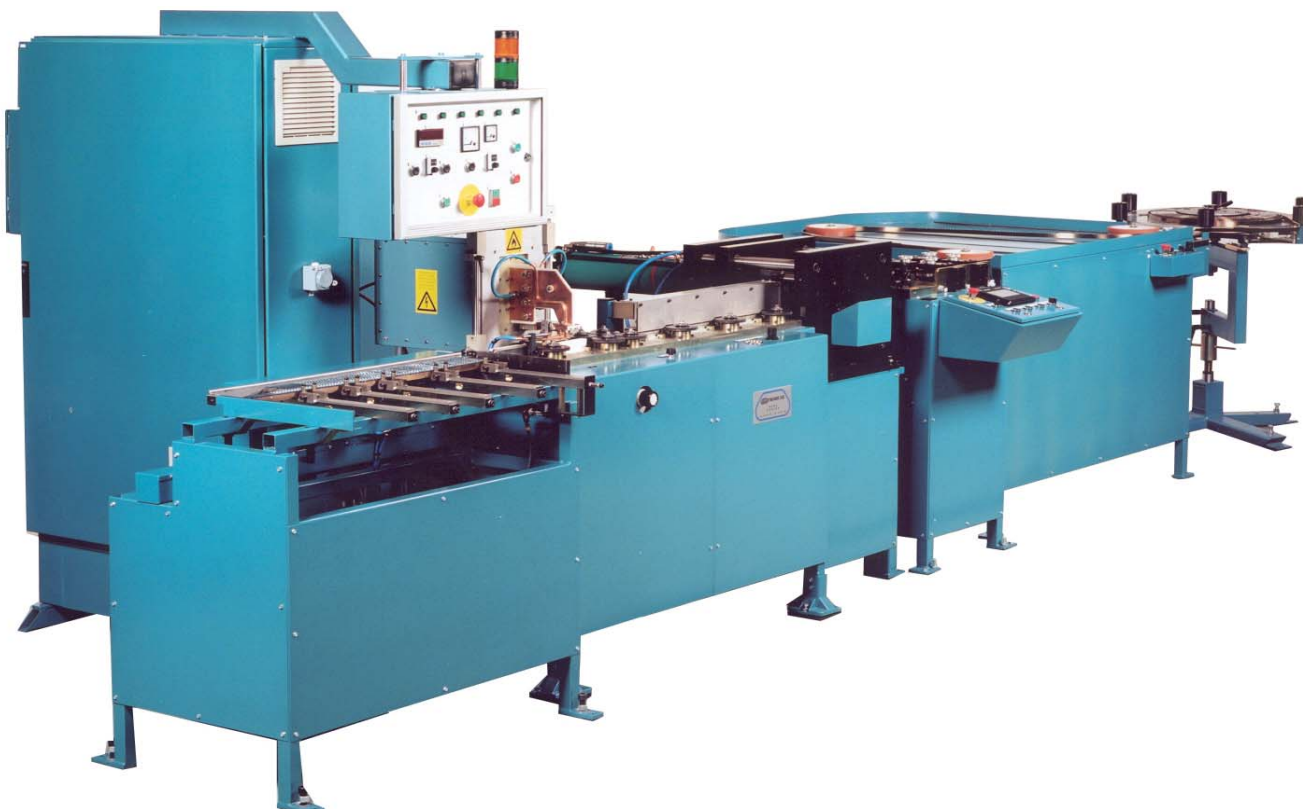
Power consumption (at max output power): 20 kVA

Other customer requirements may be discussed between customer and ALO.



ALO 390-300

Continuous cut to length and induction tooth hardening of bow saw blades



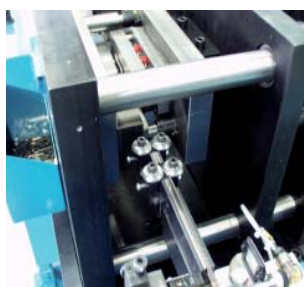
Loop table



Hardening inductors



OP-Terminal



Punch



Magazine

CAPACITY:

Band width:	20 mm
Band thickness:	0.7 mm
Band lengths:	300–910 mm
Magazine capacity:	approx 450 blades
Production capacity:	0–20 m/min



SWEDISH QUALITY
WITH RESPECT FOR THE
ENVIRONMENT AND
SAFETY REGULATIONS



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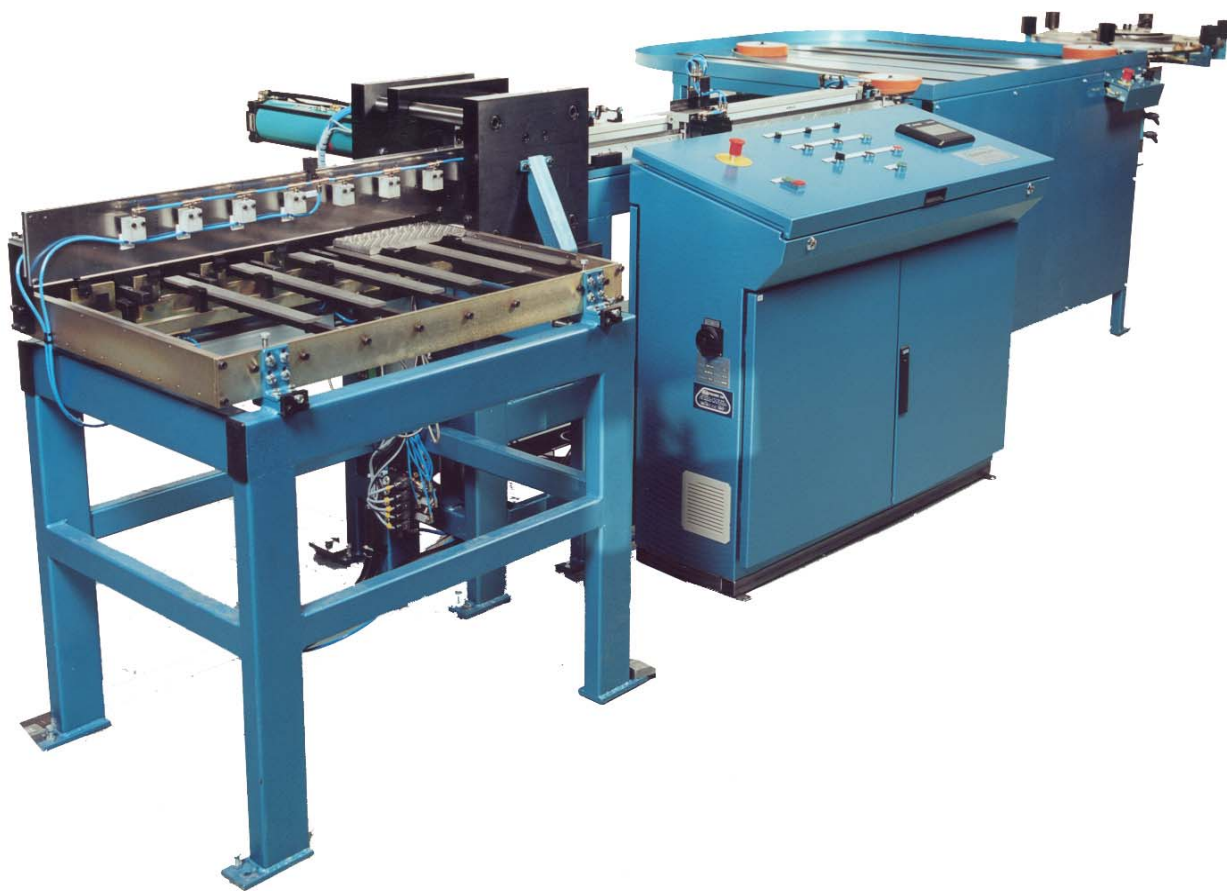
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ALO 600-40-1

ALO 600-40-1

Cut to length machine for blades



THE SYSTEM COMPRISES:

Pay off coiler
Band loop controller
Feed and punch unit
Collect magazine

CAPACITY:

Blade width: 10 - 25 mm
Blade thickness: 0.3 -1.1 mm
Feed length: 254 - 915mm
Approx. capacity: 35 blades/min





Feeding system with programmable linear feeder.



Collect magazine with pneumatic press.
Blades are vertically stacked.

MACHINE DESCRIPTION

The band is fed from the decoiler via a band loop controller to a blade feeding system, which is done by a programmable linear feeder capable to handle blade lengths up to 36" in one feed cycle.

The blade is locked with a clamping device during the punch operation and the return stroke of the feed unit.

The punching is done with a pneumatic press. At the punching operation the tang of the blades and the holes are formed with hard metal die cutters mounted in a pillar stand, which with die cutters can easily be dismantled for regrinding or exchange. (One set of punch and die incl.).

Length and number of blades are chosen on a keyboard and surveillance of the machine operations is done via a programmable controller. Blade parameters can/will be stored under a program number and operator will through an interactive program only have to choose blade type number and how many blades to cut.

Up to 3 different blade lengths/types can be ordered/set up and machine will automatically change from first, to second and third type without any down time.

Machine set up or change over will take from 30 seconds to maximum 5 minutes if going from shortest to longest blade type. The controller will also signal when machine or punch tools require service. An air motor will feed the blade out of punching device into drop position for the collect magazine.

The blades drop down to a magazine packing mechanism that feed the blades into the magazine where they are vertically stacked. Specification below is valid for standard machine, custom modifications on request.

TECHNICAL SPECIFICATION:

Band width:	10 - 25 mm
Band thickness:	0.3 - 1.1 mm
Feed length:	254 - 915 mm
Linear feeder accuracy:	0.08 mm
Blade length accuracy:	0.1 mm (L=430mm)
Approx. capacity:	35 blades/min
Coiler ID:	325 mm
Coiler OD:	820 mm
Approx. magazine capacity:	450 blades
Press capacity:	8 metric tons
Air pressure:	6.3 bar
Voltage:	380 VAC, $\pm 5\%$, 3-phase, 50 – 60 Hz $\pm 1\%$
Space requirement (l x w x h):	3.3 x 1.6 x 1.1m
Weight:	450 kg

