

# APHS - HYBRID

www.baykal.com.tr



Think Big, We Do.

**PRESS BRAKE**  
technology 

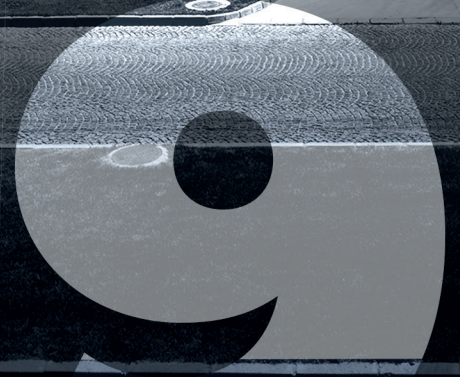
**Baykal**



# READY 4.0 CHANGE



Baykal







## From Past to *Future*

With a foundation history going back to early 1950s, Baykal today is placed as a leading manufacturer and global supplier of sheet metal working machinery specialising in the production of press brakes, shears, notchers, punching machines, laser cutting systems, plasma cutting machines and Vertical Machining Center.

For its manufacturing operations Baykal utilises three factories which together combine a production area of 60,000 square meters, making it one of Europe's largest facility for sheet metal working and fabricating machinery. The total workforce at Baykal is currently numbered at 650 employees and is composed of highly trained and qualified machine operators and assembly technicians supported by a staff of 50 engineers. All the machines offered by Baykal are designed, manufactured, assembled and finished at Baykal's purpose-built plants in a CAD environment with extensive use of CNC machining and modern workshop equipment.

Baykal Company is accredited for the ISO 9001 Certification issued by the German TÜV institution. Also, since 1995, Baykal has been building machines in conformity with the European CE regulations for safety, being the first Turkish machine-tool manufacturer certified eligible to bear the CE Mark on its products. In addition, all Baykal products are manufactured with the TSE and TSEK quality certificates issued by the Turkish Standards Institution.

Since the last 40 years Baykal has progressed to become a major exporter of sheet metal working machines to the world markets with customers located in all the machine-tool consuming countries of the global geography from Americas to Australias. Baykal is currently represented in over 100 countries worldwide through appointed dealers. In the base market of Turkey, Baykal sheet metal working machines have traditionally commanded a leading market share thanks to the company's pioneering role in the development of Turkey's machine industry and its never-lessening emphasis on quality and service. Here, with a long engineering experience behind, Baykal wishes to present itself as a quality-conscious, professional machine-building company serving the industry.



# APHS - HYBRID

01

## ACCURATE

Because each side of the Hybrid press brake is independently operated by its own hydraulic system, it is an on demand direct drive system. It's very fast, accurate and repeatable.

02

## AFFORDABLE

While still not the least expensive option, the Hybrid brake technology allows for a more efficient design and therefore a system costing less than some of its full electric counterparts.

03

## FLEXIBLE

Large Range of Tonnages available.







04

## GREEN

Up to a 60% energy savings while in standby and a 45% savings during forming with a likely total of 60% savings over one hour with 15 press cycles. That's a very big deal when you are looking at saving energy and operating costs.

05

## QUIET

When it's in standby mode and not moving, the hydraulics are not running

06

## SAFE

Most hybrid machines are incorporating a great deal of safety into their designs including interactive light curtains, Lasers and other features to improve operator safety while also decreasing the part processing time.



# Servo electric technology: innovation first

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Over the years, manufacturers have been developing different solutions to improve the performance of their products. Through tools, functionalities and technological innovations sheet metal press brakes have evolved starting from mechanical presses to hybrid cnc press brakes. Hybrid is a new developed technology which use hydraulics but instead without gear pump. Hybrid Brakes are becoming more prevalent and more widely available. With a servo-hydraulic drive, when you turn the pump on each cylinder in one direction, you are pumping the ram down, when the computer sets the pump in the other direction, you are pumping the ram back up. By controlling the speed of the servo, you can also control the ram speed.

Benefits of this technology include substantial power saving as you don't have a conventional AC motor running all or most the time. The servos only activate as required. You also get incredibly fast response time and minimal piping as it does away with a central tank and proportional valves. You can expect higher speeds for both high-speed approach and high-speed return, around 200mm/sec. Hybrid press brakes use hydraulics in small tanks to assist with bending process and servo motors to control the flow to the cylinders. Small oil tanks translate into many advantages, such as:



## User Friendly

Easy to install, use and maintain

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## Modular

Capable of meeting any production need, with a variety of possible configurations

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## Energy Efficient

Less energy required and lower environmental impact

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## Productive

High productivity due to reduced cycle times and higher process reliability

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## Flexible

Suitable for a wide range of different products



# Headlines to enhance Your **Worklife**

**Dramatically low oil consumption compared to the hydraulic press brakes.**

- **More savings**
- **Less environmental impact**
- **Less maintenance costs**
- **A quicker production**



The brushless engines are directly connected to two small oil tanks. The advantage is that the cnc press brake is more precise and is not affected by temperature variation, as opposed to traditional machines.

The advantage of the hybrid machine is to run the hydraulics with servo motors only during bending and go off during standby which brings about half as much electrical energy. Hybrid system allows the machine to consume energy only when the pedal is activated. This means that the consumption of the press brake is minimum when tools are changed and, in general, during those steps in which the crosspiece is not involved.

There is a mix of electric and hydraulic systems that allow the machine to be much more responsive while maintaining a higher degree of accuracy than a traditional hydraulic press brake system. Reducing cycle times by 30% or more while maintaining a high degree of accuracy these systems.

*Baykal*

APHSH 31200  
HYBRID

Industry 4.0  
**READY**



**GREEN**

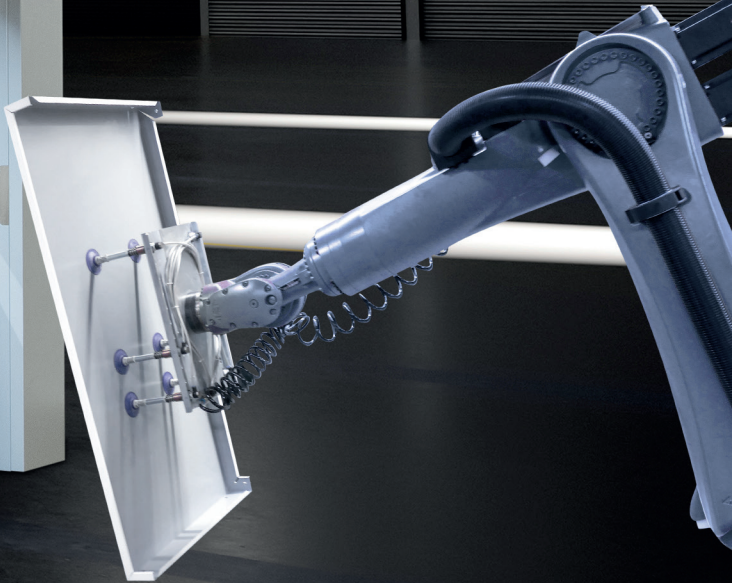
**60 % less energy and oil consumption in average compared to the Standard Hydraulic Press Brakes.**





*Baykal*

APHS 31200  
HYBRID



**AUTOMATION**

Ready for robotic applications





## EFFICIENCY

Compared with standard hydraulic press brakes, Hybrids can easily reach 200 mm/s movement speeds.



# High reliability and Maximum Productivity



Time Cycle Comparison



**32s**

100t Hydraulic  
180 mm/s

**22s**

APHS-H mm/s  
110 mm/S

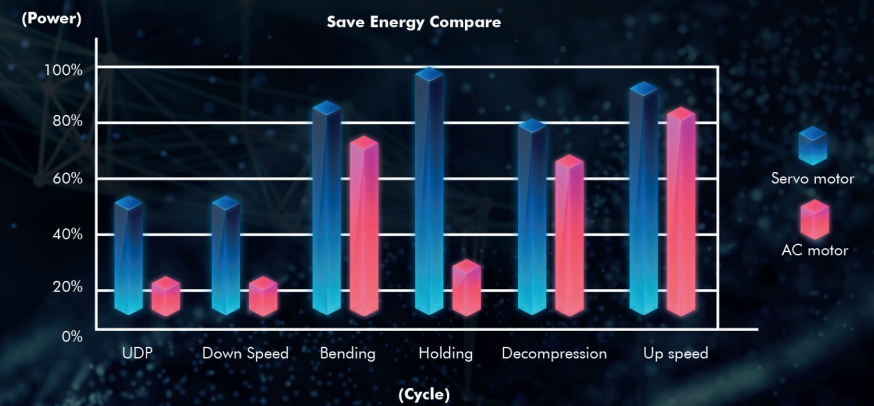




**MOTORIZED SHUTTER SYSTEM**

Easily openable door with remote control





## ENERGY SAVE

To reduce electrical consumption and heat, the pump motor is active only when the machine is working.





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APHSH 31200  
HYBRID



**INNOVATIVE**

**Lead to Lean Manufacturing and Ready for Industry 4.0**





Baykal

Baykal

BLE PRO 1530

BLE PRO 1530

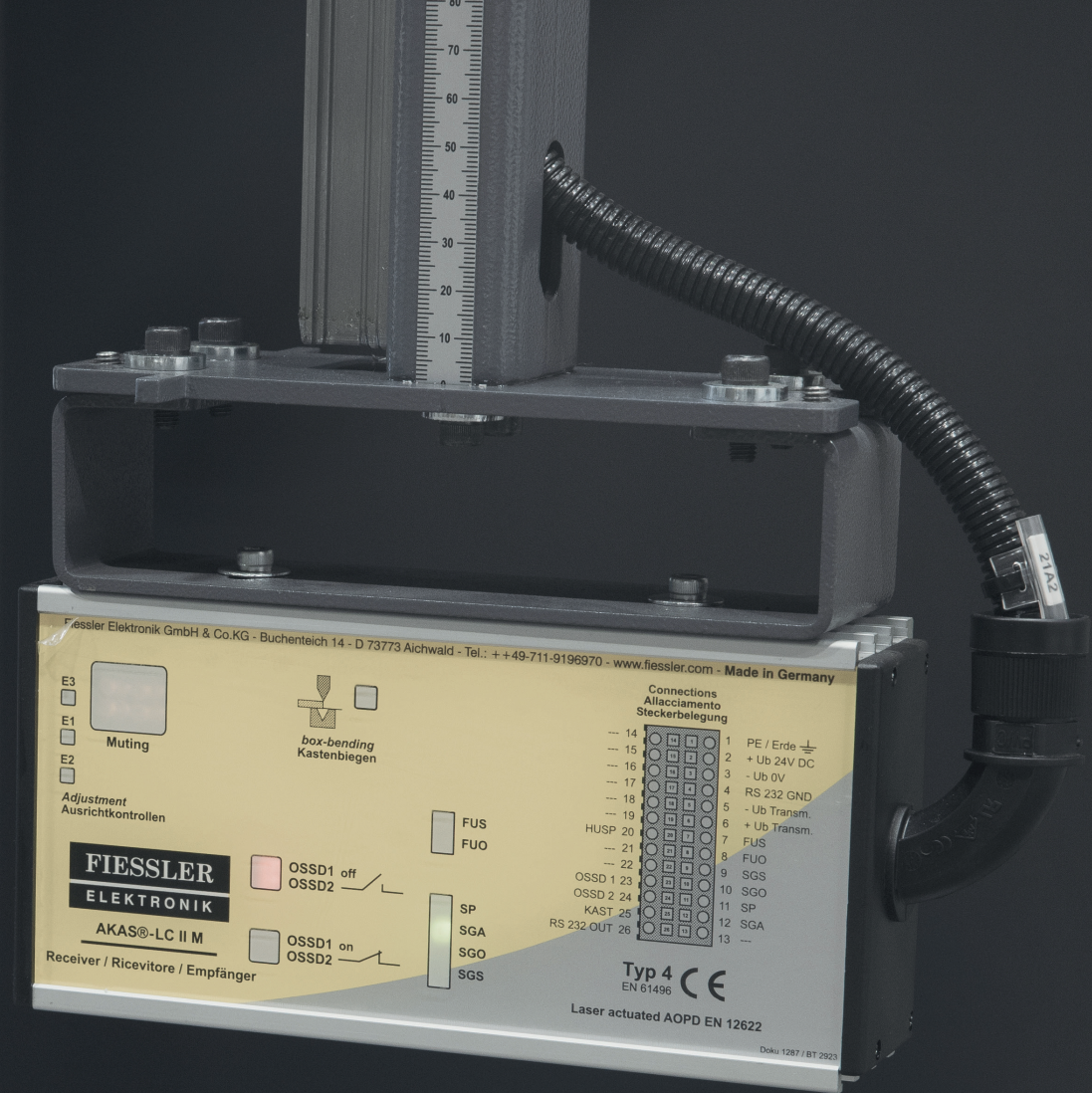






## INTEGRATED SAFETY

Front and Rear Safeguarding systems allow safe operation



Fessler Elektronik GmbH & Co.KG - Buchenteich 14 - D 73773 Aichwald - Tel.: ++49-711-9196970 - www.fessler.com - Made in Germany

E3   
E1   
E2

Muting

Adjustment  
Ausrichtkontrollen

**FIESSLER**  
**ELEKTRONIK**  
**AKAS@-LC II M**

Receiver / Ricevitore / Empfänger

box-bending  
Kastenbiegen

FUS  
FUO

SP  
SGA  
SGO  
SGS

OSSD1 off  
OSSD2

OSSD1 on  
OSSD2

Connections  
Allacciamento  
Steckerbelegung

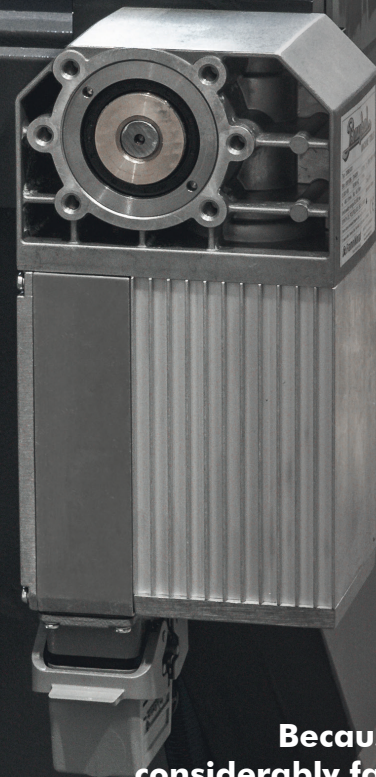
14	1	PE / Erde
15	2	+ Ub 24V DC
16	3	- Ub 0V
17	4	RS 232 GND
18	5	- Ub Transm.
19	6	+ Ub Transm.
20	7	FUS
21	8	FUO
22	9	SGS
23	10	SGO
24	11	SP
25	12	SGA
26	13	---

Typ 4  
EN 61496

Laser actuated AOPD EN 12622

Doku 1287 / BT 2923





## **ACCURATE**

**Because of the servo drives, the movement of the brakes is considerably faster in all directions when compared to conventional brakes, the result of that is increased productivity while maintaining  $\pm .0004$  accuracy and repeat-ability in all directions.**





## QUIET

With 63 dB of sound level, .As servo motor and pump assembled inside the tank with compact design of hydraulic system, 13% more silent work achieved.





**REPEATABILITY WITH SERVO MOTOR SYSTEM**

With servo motor and compact hydraulic system,  
precision and repeatability achieved as 0.01.

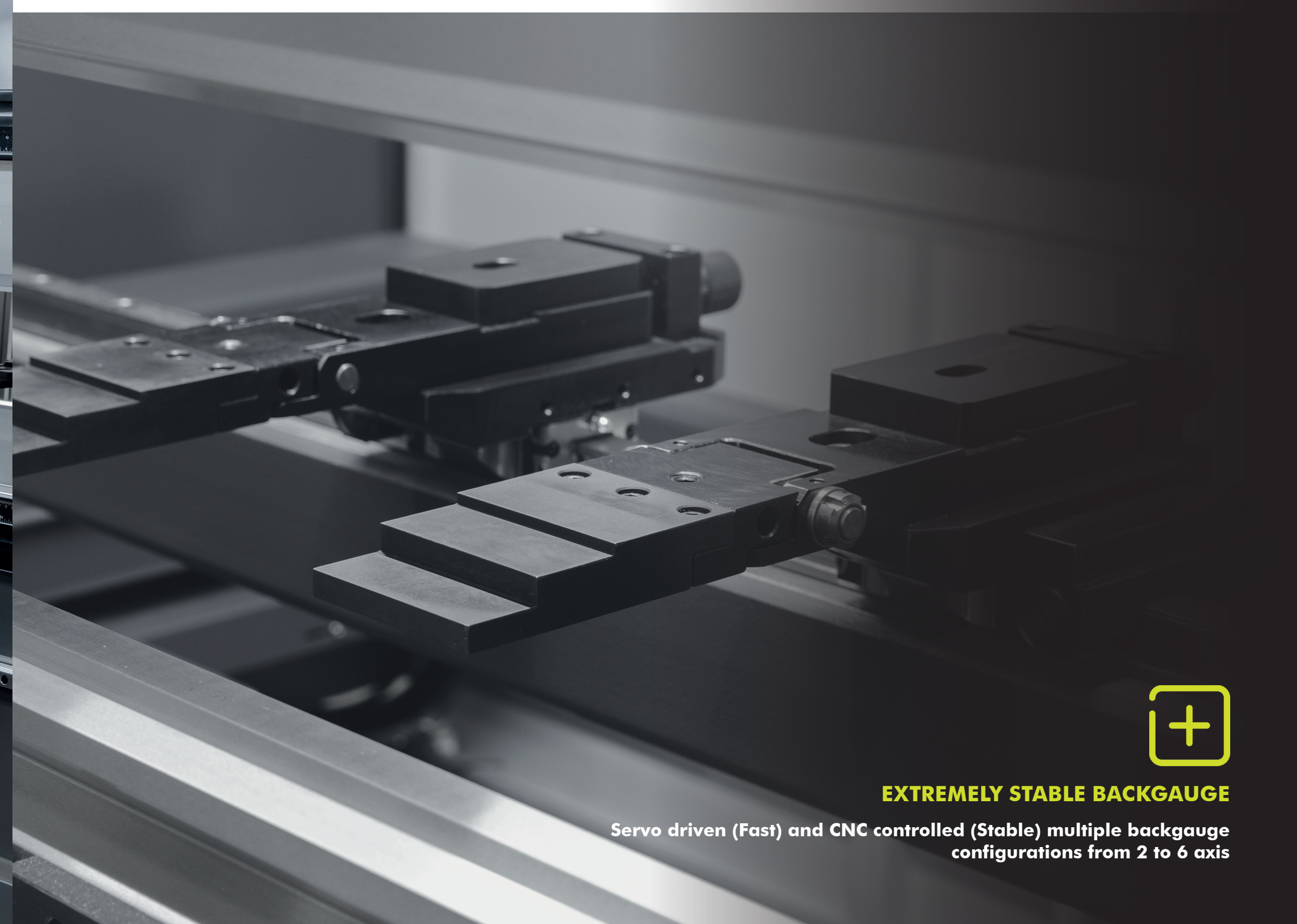




## **MOVABLE AND ADJUSTABLE SUPPORT ARMS**

**A Range of Support Arms for Light- and Heavy-Duty- Sheet Metal-Work**





**EXTREMELY STABLE BACKGAUGE**

Servo driven (Fast) and CNC controlled (Stable) multiple backgauge configurations from 2 to 6 axis





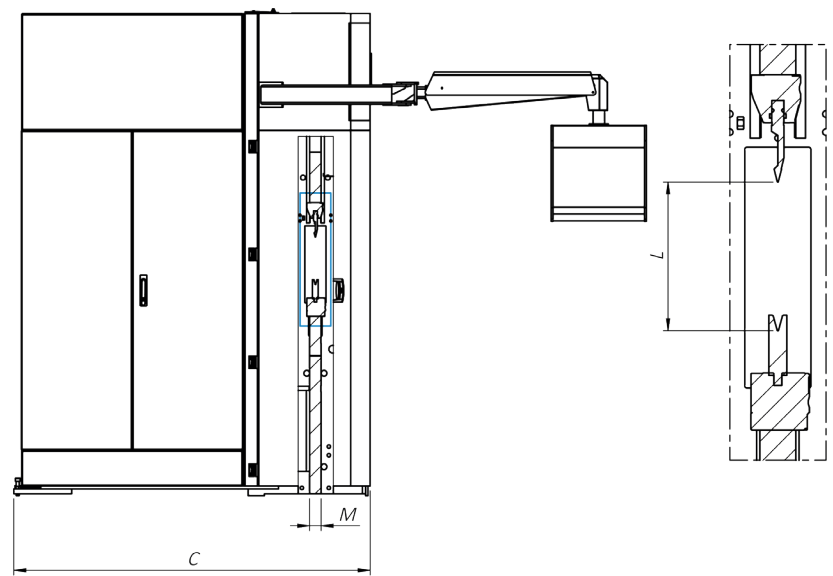
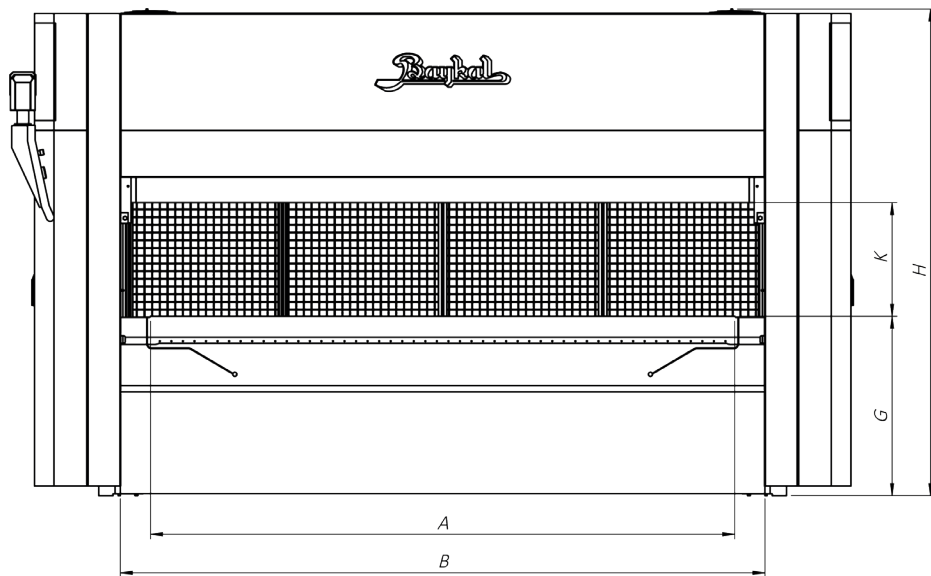
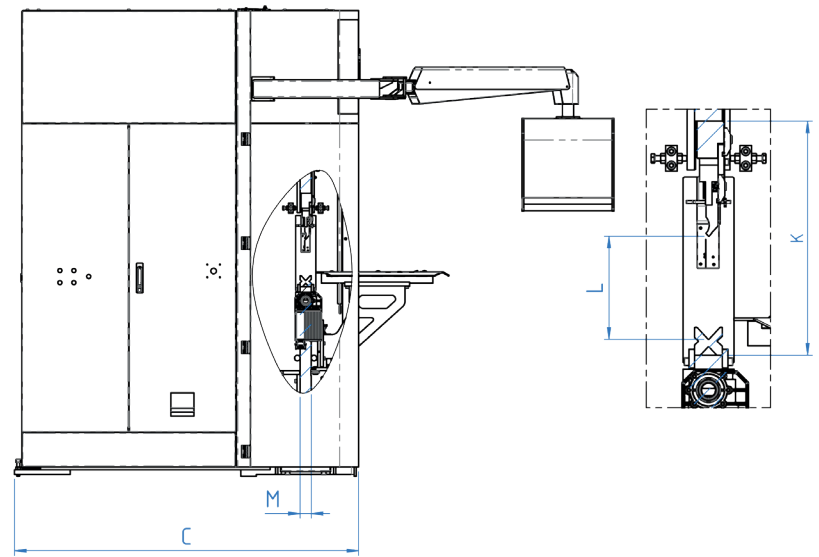
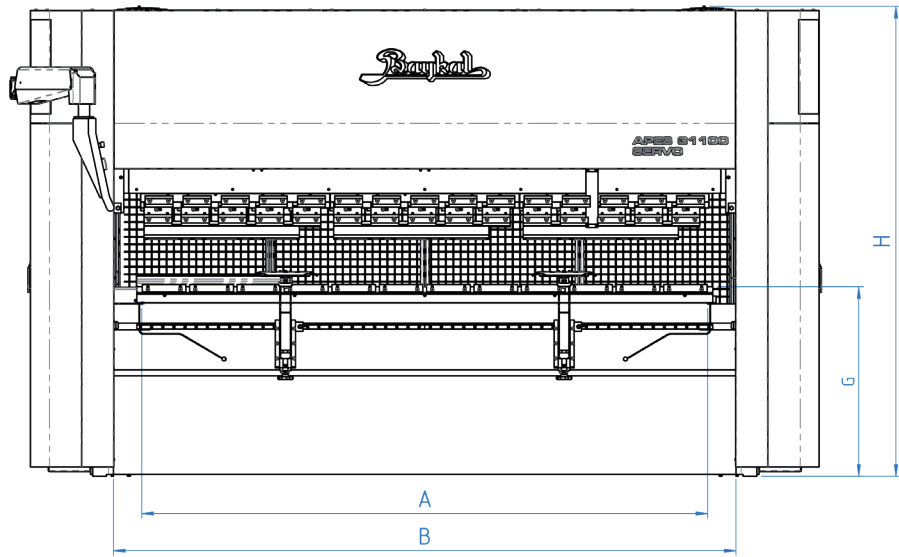
## ERGONOMICS

Full Control of Operations with one finger











## TECHNICAL DATA

Model	APES Servo Electric Press Brake "Belt&Pulley"				
No	#	SERVO 15040	SERVO 20050	SERVO 26080	SERVO 31100
Bending Force		40 Tons	50 Tons	80 Tons	100 Tons
Motor Output (Power)		2x5.5 kW	2x5.5 kW	2x5.5 kW	2x5.5 kW
Bending Length	A	1530 mm	2040 mm	2550 mm	3050 mm
Inside Frames	B	1790 mm	2300 mm	2810 mm	3350 mm
Side Frame Width	C	1850 mm	1850 mm	1850 mm	1850 mm
Machine Height	H	2525 mm	2525 mm	2525 mm	2525 mm
Bed Height	G	930/(1015*) mm	930/(1015*) mm	930/(1015*) mm	930/(1015*) mm
Daylight Opening	K	590/(505*) mm	590/(505*) mm	590/(505*) mm	590/(505*) mm
Max. Stroke Adjustment	L	300/(240*) mm	300/(240*) mm	300/(240*) mm	300/(240*) mm
Table Width	M	60 mm	60 mm	60 mm	60 mm
Throat Gap		O Frame	O Frame	O Frame	O Frame
Approach Speed		170 mm/s	150 mm/s	90 mm/s	75 mm/s
Working Speed		10/20** mm/s	10/20** mm/s	10/20** mm/s	10/20** mm/s
Return Speed		170 mm/s	150 mm/s	90 mm/s	75 mm/s
Approximate Weight		4.800 Kgs	5.600 Kgs	6,400 Kgs	7,200 Kgs

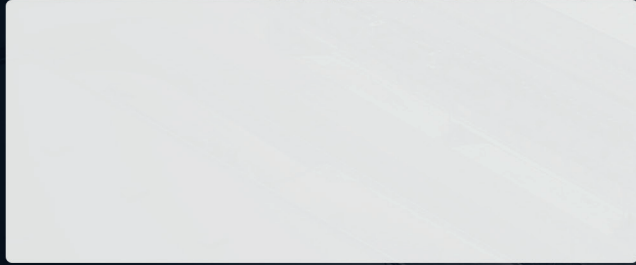
\* With Promecam Clamping combination.

\*\* Accordance with local regulations, except for Robotic use.

**Legal Notice:**

Machines built with CE-safety conformity are available as option. Design and specifications are subject to change without notice.





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