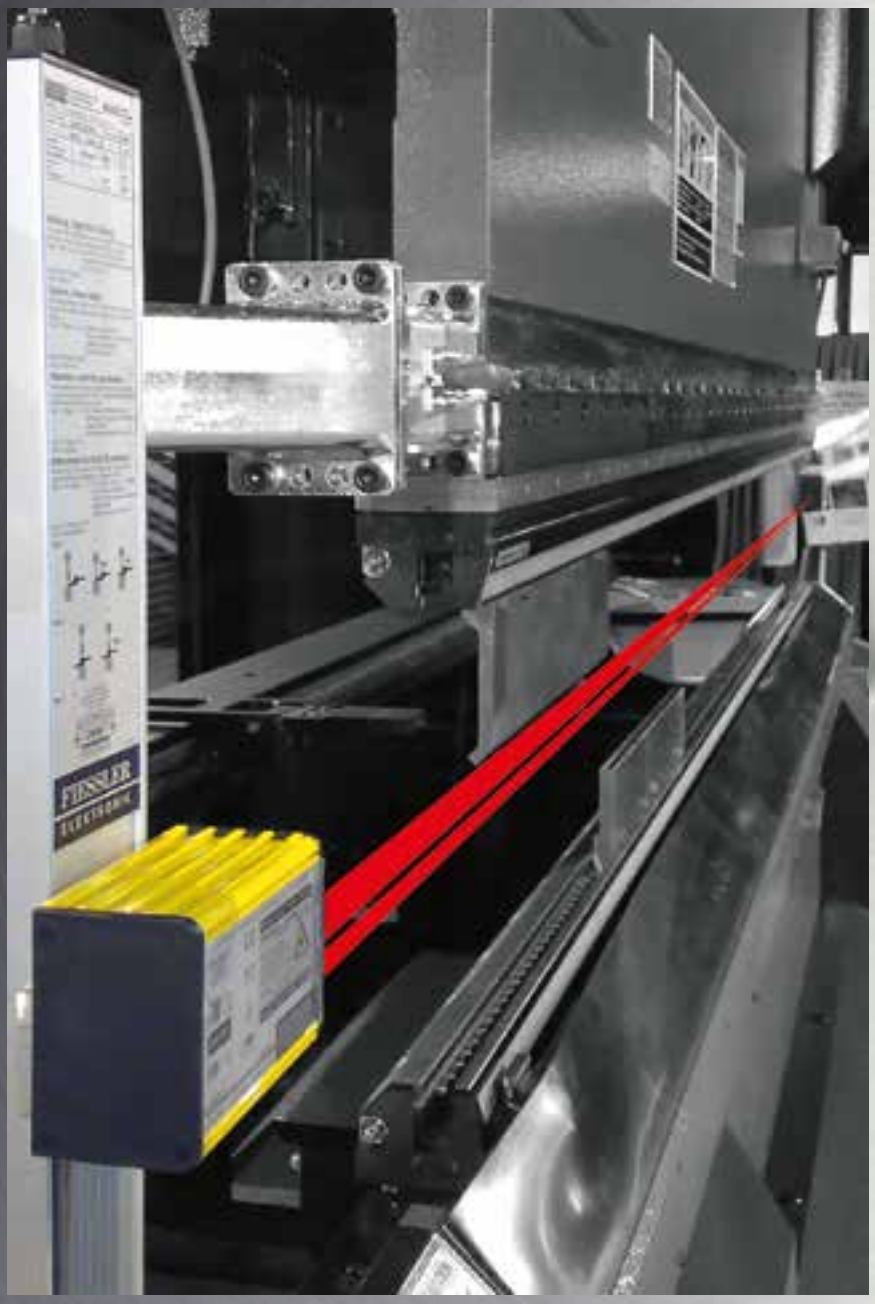
FIESSLER
ELEKTRONIK



AKAS®

Press brake safety system

Laser actuated AOPD in compliance with EN 12622

OEM and Retrofit

Installed safety intelligence

Compatible with all control units

WEBSITE

AKAS®

FIESSLER ELEKTRONIK

Innovation

Our vision:

We protect people from accidents and have convincing high quality innovative, user-friendly safety solutions for the customers and are always willing to provide the customer with help and advice.

Our passion:

Fiessler Elektronik has been producing optoelectronic components for the industry since 1956. The resulting development and production of the first fully electronic safety light curtain and safety light grid on the basis of the transmitter-receiver principle began in 1965.

Nearly 30 years later in 1996, Fiessler Elektronik was the first manufacturer worldwide to introduce the groundbreaking innovation of a specially coupled motion safety solution for blanking presses (AKAS®).

In 2005, Fiessler Elektronik completed its solution for blanking presses with its programmable FPSC safety control.

Permanent product care and new developments in dialogue with our customers is what guarantees perfect solutions and high quality products. Certifications, quality monitoring and prototype tests in accordance with worldwide standards are a matter of course for Fiessler Elektronik.

Company description

Service

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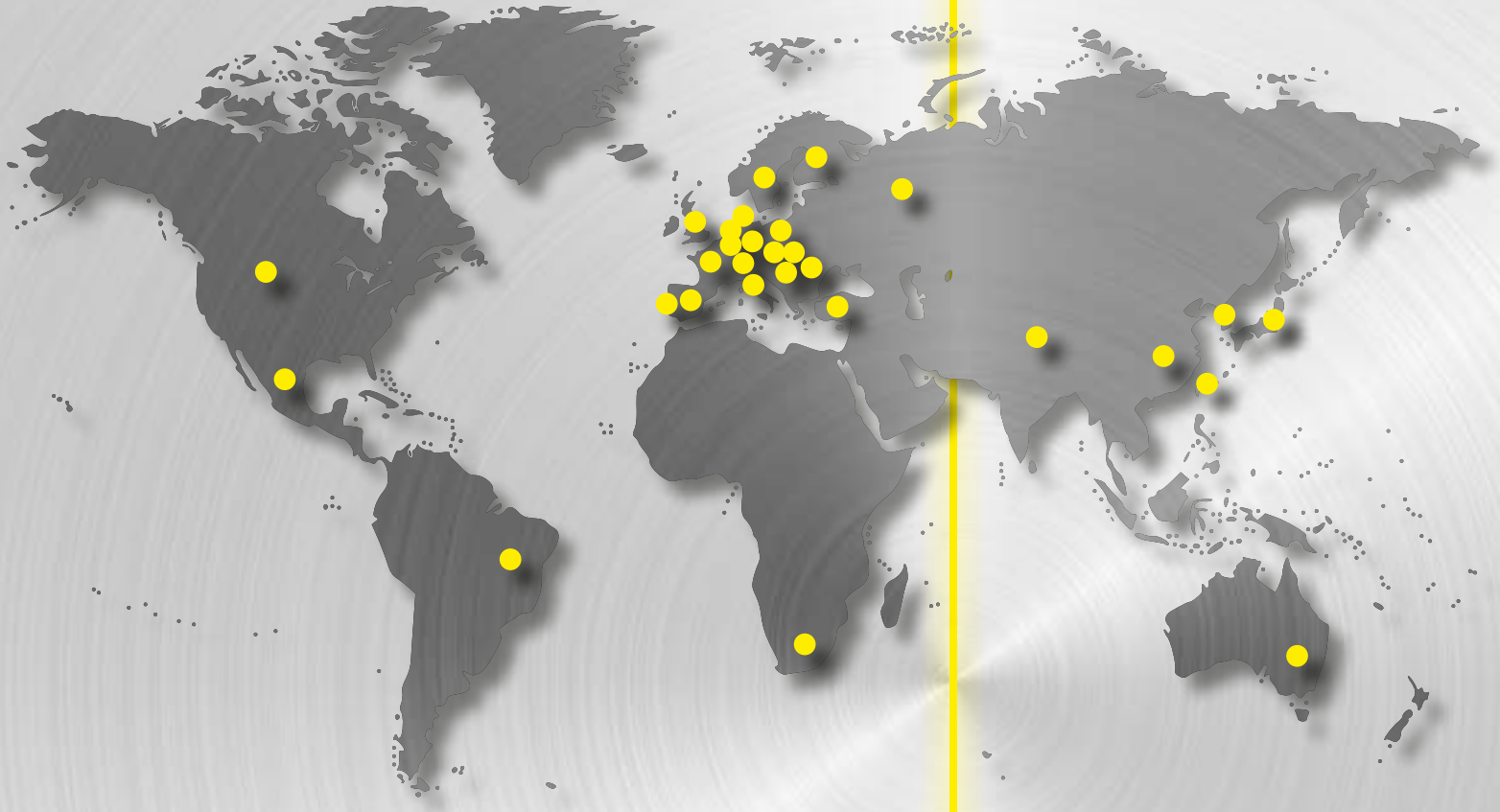

Service – worldwide

Fiessler Elektronik serves customers in all industrial regions of the world. The service network of Fiessler Elektronik is available in more than 30 countries.

These support points provide effective supervision to machine manufacturers as well as end users.

Branches

FIESSLER ELEKTRONIK

Integration

use our experience:

The AKAS® safety systems of Fiessler Elektronik are in daily industrial use in more than 25,000 blanking presses.

The Fiessler Elektronik competence centre for the protection of blanking presses, swivel bending machines, shears and other sheet metal processing machines supports our customers in implementing this machine-specific safety solution.

A highly-efficient engineering team offers full integration service and safety advice on new and used machines. All services are offered, from circuit diagram integration to installation and commissioning (among other things by an international network of authorized integration partners).
These services are supported by a database consisting of more than 800 processed hydraulic and electric circuit diagrams of press brakes of various manufacturers.

Members of the competence centre also contribute significantly to the further development of international norms and standards, such as DIN EN 12622, B11.3, NR12...

Training

Type selection

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finding the optimal device:

Fiessler Elektronik safety solutions for blanking presses consist of an optical safety area and a safety control. The components are CE type tested (c)UL listed and comply with further national and international standards.

Operating principle of optical protective device:

A three-dimensional laser protective field between the AKAS® transmitter and AKAS® receiver monitors the hazardous area underneath the clamped top tool.

The special type of beam configuration guarantees protection directly up to hazardous area.

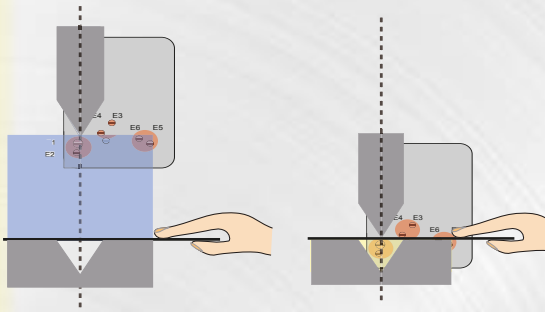
Depending on the machine performance („stopping distance of the blanking press“), the press can be operated at high speed right before the top tool meets the sheet metal to be bent.

The result: maximum safety at maximum productivity.

The AKAS® press brake safety system is offered in various versions and can therefore be optimally adapted to the respective situation.

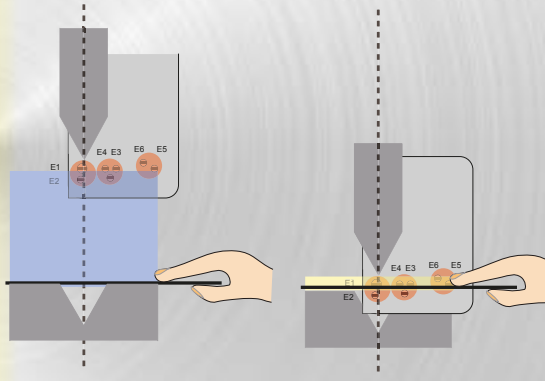
Secure area: Protective zone (intervention in this area shuts down the closing movement of the press)

AKAS® 3 PM **AKAS® 3 PF**



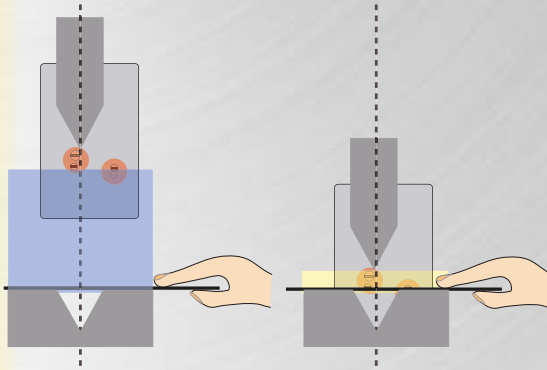
Rapid traverse up to clamping point

AKAS® 3 M **AKAS® 3 F**



Rapid traverse up to 5 mm

AKAS® II M **AKAS® II F**



Rapid traverse up to 10 mm

Press in rapid traverse

Press in creep speed

Description of AKAS

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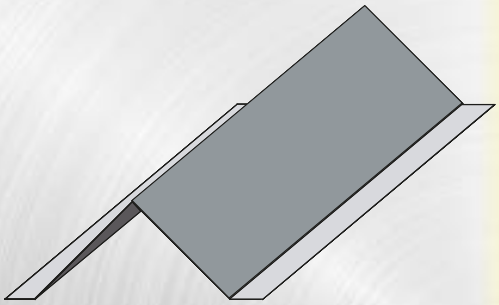
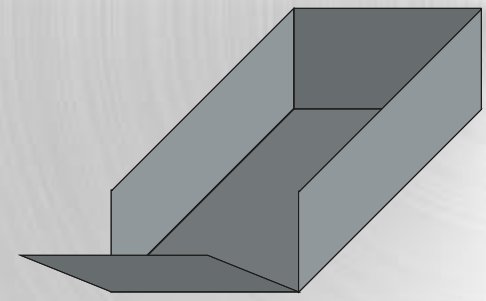
Bending mode

Exactly right for every bending type

The AKAS® safety system provides the user with three easy to select operating modes:



Flat bending mode
The basic mode of the AKAS® safety system is the flat bending mode. During the flat bending mode, the protective field upstream of the operator as well as the vertical protective field directly below the tool tip is active. This means the entire 3-dimensional protective field below the stamp tip protects the operator during the complete closing movement of the press.



Box bending mode
The operator selects the box bending mode when box-shaped parts are to be bent. For this operating type, the upstream part of the laser protective field is shielded for the duration of the box bending stroke. The press can be closed without hindrance even when the upstream part of the protective field is interrupted by the turned up edges of a box. Operator protection is guaranteed by the vertical protective field on the bending line and by the slightly higher switching point from rapid traverse to bending speed (only applies to AKAS® 3 and AKAS® 3P).
The AKAS® safety system thus offers full protection against rapid intervention shortly before the press closes completely even in this operating mode.

Bending of wavy material
This operating mode enables the bending of wavy material or even edge bending within a closed box.

AKAS Film

Product choice

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AKAS®
fully automatic adjustment

Different tools can be used at blanking presses, depending on the application. To enable the adjustment necessary after changing tools with differently sized tools without losing time, the AKAS® system has a fully automatic electromotive support for the transmitter and receiver.

Version	M (Safety-PLC required)	F (integrated safety control in the AKAS® receiver)	150 1)	190 1)	290 1)	390 1)	490 1)	/8 (increased range)
AKAS® II	M	F	150	190	290	390	490	/8
AKAS® 3								
AKAS® 3P	M	F	150	190	290	390	490	

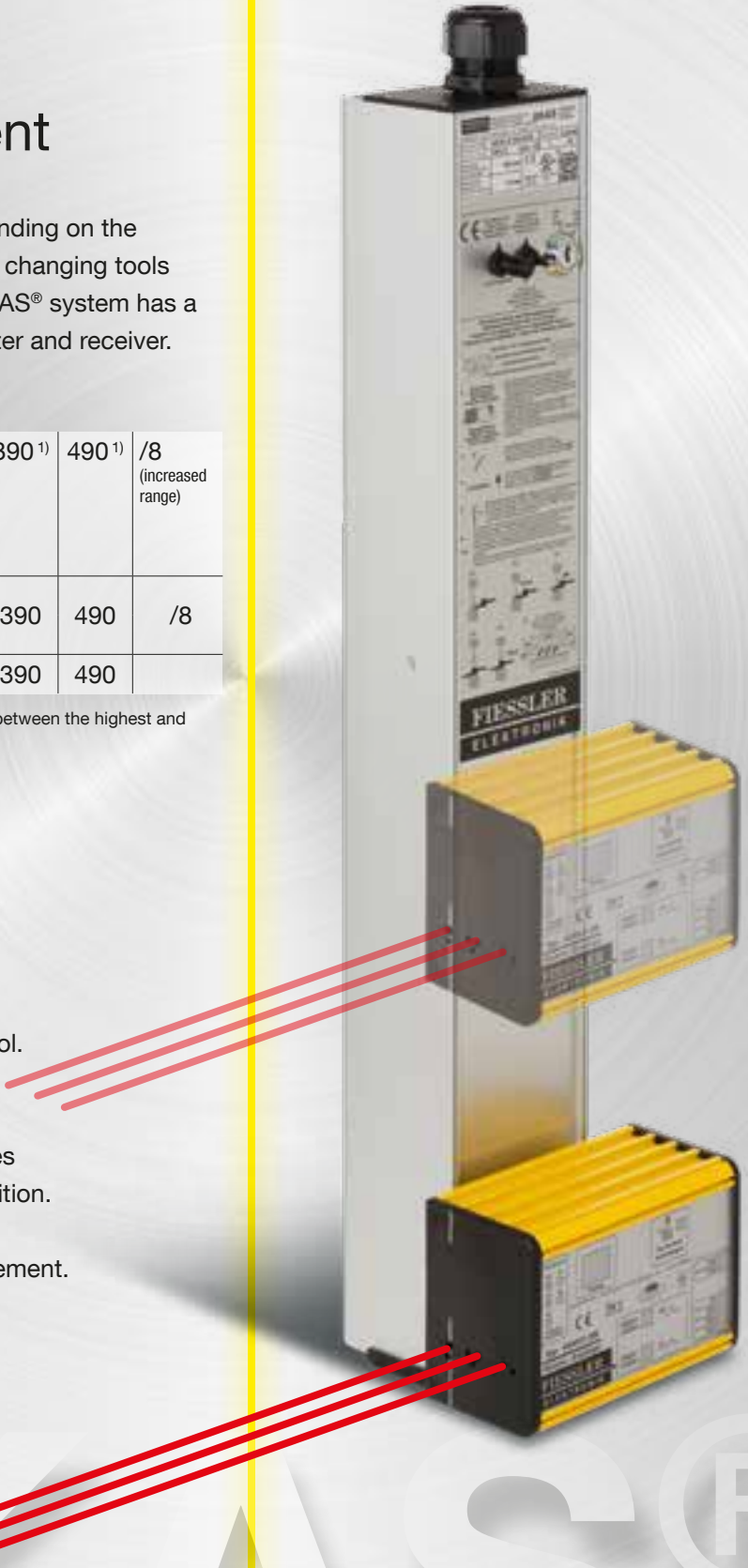
1) (Traversed distance of electromotive supports) for an over tool difference between the highest and lowest top tool of xxx mm

AKAS® with fully automatic motor adjustment:

To optically broaden the tip of the top tool, a magnetic plate is fastened to the top tool.

When the automatic switch is pressed, the transmitter moves to the optimal monitoring position.

The receiver follows this movement.



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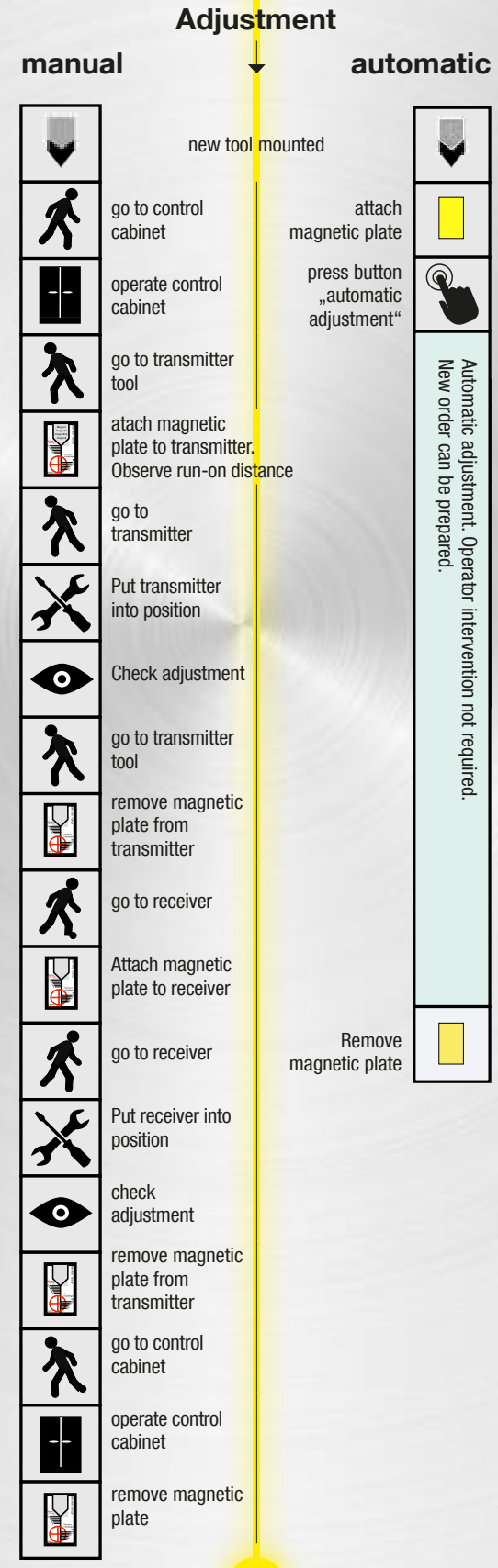
Save money



High savings potential thanks to automatic adjustment

As the only provider of coupled motion safety systems for blanking presses, Fiessler Elektronik offers fully automatic adjustment after a tool change. The otherwise required adjustment time can be used for other activities, e.g. such as providing the material or programming the machine parameters. This means time savings and productivity gain.

The AKAS® transmitter and AKAS® receiver for this version are equipped with a fully automatic electromotive support.

The adjustment process for a new top tool is activated by pressing the key-operated switch and is started by pressing the „Automatic“ button. During this process, the AKAS® transmitter and AKAS® receiver adjust fully automatically to the clamped top tool.

The otherwise required adjustment time can be used for other activities, e.g. such as providing the material or programming the machine parameters. According to the machine performance („run-on distance of blanking press“), the distance of the AKAS® transmitter and receiver to the clamped top tool in the AKAS® receiver support is programmed to achieve maximum productivity of the blanking press with optimum safety.

This fully automatic adjustment process also definitively prevents the operator from making an incorrect adjustment.
Various holder systems are available for the mechanical mounting of the AKAS® transmitter support and the AKAS® receiver support.

The holders

FIESSLER ELEKTRONIK

The right holder for every machine

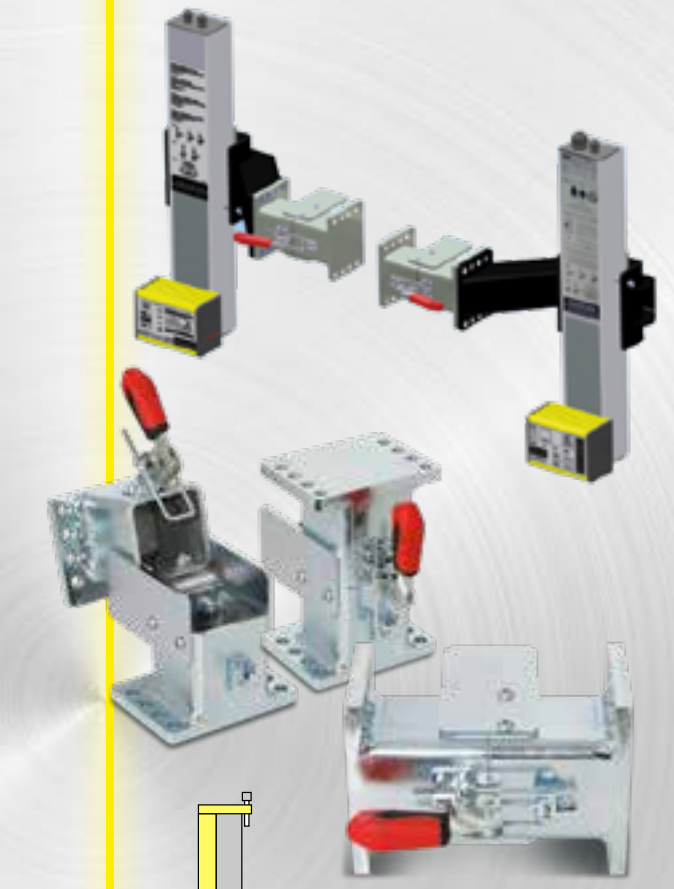
From practical experience for practical application

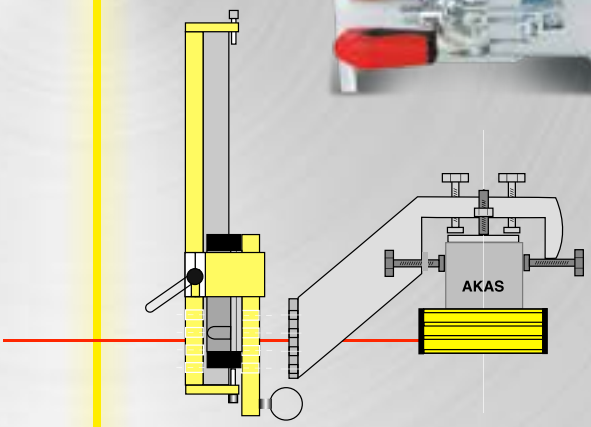
No two press brakes are exactly the same.
The mounting holders are subject to high requirements:

- variable mounting option
- adapters for optimal adjustment
- great stability and torsional strength
- versatile adjustment possibility
- precise repeating accuracy for swivelling and shifting versions.

- mounting holder for all AKAS® with support.
- comprehensive fastening and adjustment options.
- swivelling adapter. Permits the AKAS® to be swung out of the way e.g. during tool change.

- mounting holder for positioning the AKAS® LC without support.
- manual height movement for different tool sizes.
- marking stops for simple reproduction of already used tools.
- clamping protection while driving up through friction brake.





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product choice

Overview:

AKAS® for manual mounting

**AKAS®
with manual
adjustment**

Version	M (Safety PLC required)	F (integrated safety control in the AKAS® receiver)	/8 (increased range)
AKAS® LC II	M	F	/8
AKAS® LC II V [1)]	M	F	vertical (p. 18)

1) AKAS® LC V - Protection of compact blanking presses - see p. 18.

LC holder

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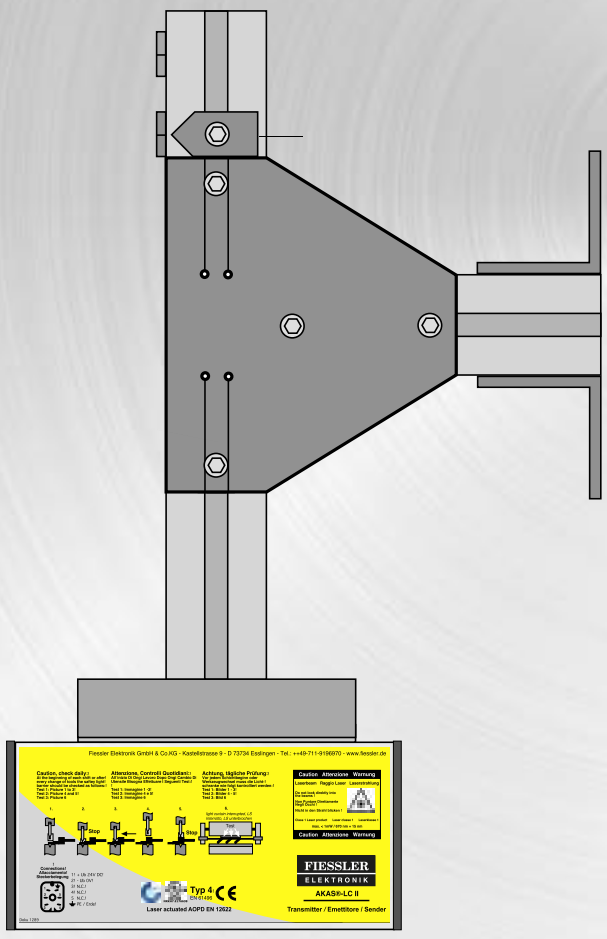
manual adjustment for infrequent tool change:

AKAS® holder for manual adjustment

The AKAS® pressbrakes protection system in a version without fully automatic electromotive support is available for applications which always work with the same or equal-height top tools.
The manual adjustment also enables adjustment to the respectively clamped top tool.



AKAS® transmitter and AKAS® receiver with this version are mounted to a manually adjustable AKAS LC holder.

Manually shifting the AKAS® transmitter and AKAS® receiver adjusts the system to the respecti-ve top tool.

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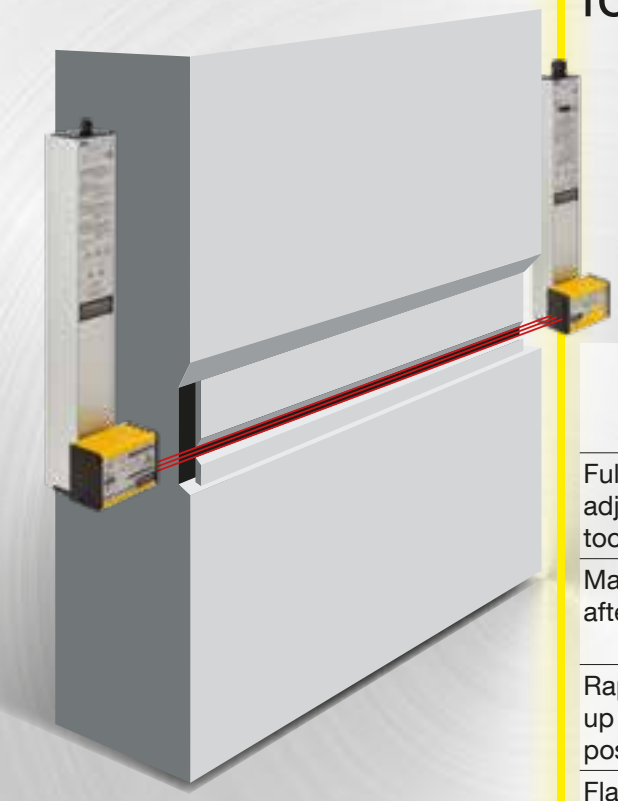
Overview

Optical safety systems for blanking presses



	AKAS® II	AKAS® 3	AKAS® 3P	Safety light curtains BLVT	BLVT
Fully automatic adjustment after tool change	✔	✔	✔	4	4
Manual adjustment after tool change	LC [1]			4	4
Rapid traverse up to clamping point possible			✔	✔	✔
Flat bending mode	✔	✔	✔	✔	✔
Box bending mode	✔	✔	✔		
PSDI [3] cycle mode				✔	✔
Tandem solution	LC [1]			✔	✔
Integrated safety functions	F [1]	F [1]	F [1]	EDM	EDM
Max. length of top tool 6 m	✔	✔	✔	✔	✔
Max. length of top tool > 6 m	✔ [2]	✔ [2]		✔	✔
Max. range up to 30 m				✔	✔

1 version design
2 in version /8
3 PSDI presence sensing device initiation
4 not necessary as related to product

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FMSC safety controller

FMSC (Fiessler modular Safety Center):

The FMSC safety PLC provides an optimal OEM integrated solution for the integration of the AKAS® safety system.

Short reaction times enables maximum productivity and safety of the press brake. The safety PLC FMSC performs all safety-relevant tasks of the machine. Due to the free programming, the respective parameters can be optimally adapted to the situation of the machine.

The integrated interface enables status messages to be displayed on the terminal screen of the machine controller or via an additional HMI („human machine interface“).

FMSC press brake set:

- 2 counter inputs Y1/Y2 linear scales for permanent speed monitoring. The counter inputs are also used for Overrun monitoring.
- 36 safe inputs, expandable
- 12 safe outputs, expandable
- 15 digital outputs, expandable
- Application modules for all security applications on a press brake
- Optical security system connectivity like AKAS®, safety light curtains, two-hand controls.
- Interface for communication with all common CNC controllers.
- Connection option for HMI („human machine interface“).
- I/O expansions via additional slaves

FMSC

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Safety functions

Overview

	FMSC	AMS3/G + AKAS® F		
Inputs	up to 204	14		
Safe outputs	up to 68	9		
Expandable I/O modules	up to 16			
Counter inputs	up to 34	2		
Interface to CNC control unit	✔	✔		
Reaction time	0,5 ms	1,5 ms		
Finger protection	✔	✔		
EDM	✔	✔		
Safety foot pedal	✔	✔		
E-stop, emergency stop	✔	✔		
Speed monitoring	✔	✔		
Overrun traverse monitoring	✔	✔		
Safety door monitoring	✔	✔		
Two-hand control	✔			
PSDI cycle mode	✔			
In combination with safety light curtain	✔			
In combination with safety curtain				
Tandem operation	✔			
Combination mode finger protection (AKAS®) and PSDI	✔			
In combination with AKAS® and safety light curtain	✔			
In combination with AKAS® and safety light curtain				
Selector switch operation	✔			
Optical safety device	✔		Fully automatic adjustment after tool change	
Optical safety device				Manual adjustment
AKAS® II	M[1]	F[1]	✔	LC[1]
AKAS® 3	M[1]	F[1]	✔	
AKAS® 3P	M[1]	F[1]	✔	
ULVT/BLVT Sicherheitslichtvorhang	✔			

1) version

The right control unit

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FMSC and AMS

If the AKAS® safety system is integrated via the FMSC safety PLC, the status messages are displayed on the machine control screen via the integrated interface or via an additional HMI („human machine interface“).

There is also the possibility of worldwide technical online support.

Indicator LEDs are provided for each off/input, enabling simple initial diagnosis directly at the safety PLC.

Interface AMS

For blanking presses equipped with the AKAS®_F system (integrated safety control in the AKAS® receiver), the Interface AMS offers secure permanent speed monitoring. The AMS3/G system has 2 counter inputs for Y1/Y2 linear scales.

As interface for retrofitting, this interface is also available with two magnetic tapes and matching sensors. This enables an easy retrofit installation. The speed of the closing movement is permanently recorded by these sensors and evaluated by means of the AMS interface.

AMS

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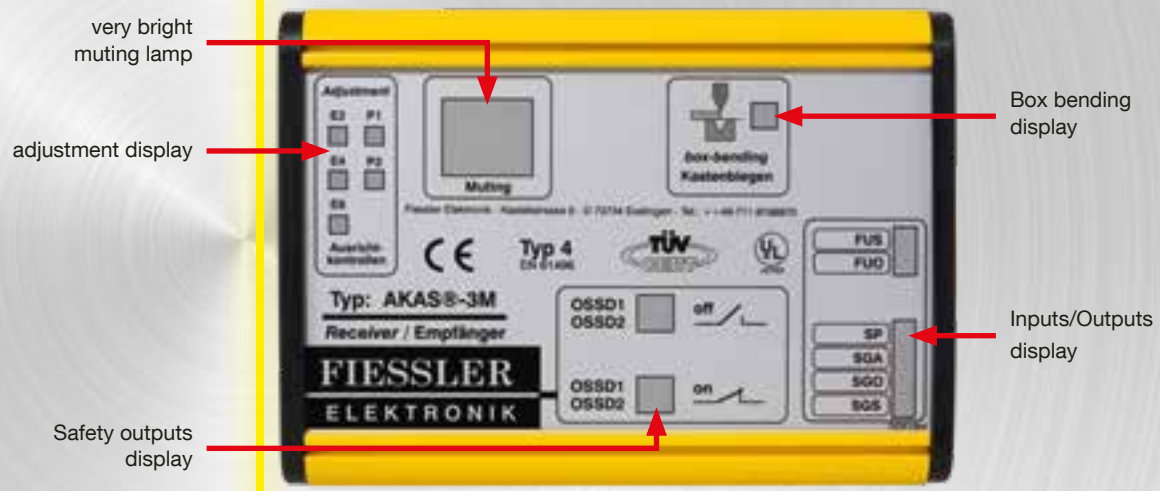
The safety control

Simple diagnosis

Simple status indicator

The AKAS® receiver is equipped with status indicators. A simple on-site diagnosis is possible with these LED indicators.
The AKAS® receiver also has an interface for displaying the status directly on the screen of the control unit or via HMI in text format.



HMI text displays

broad product range of displays in text and touch screen versions for direct connection to FPSC and AKAS® systems.

HMI text displays

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Optimized application for tandem presses

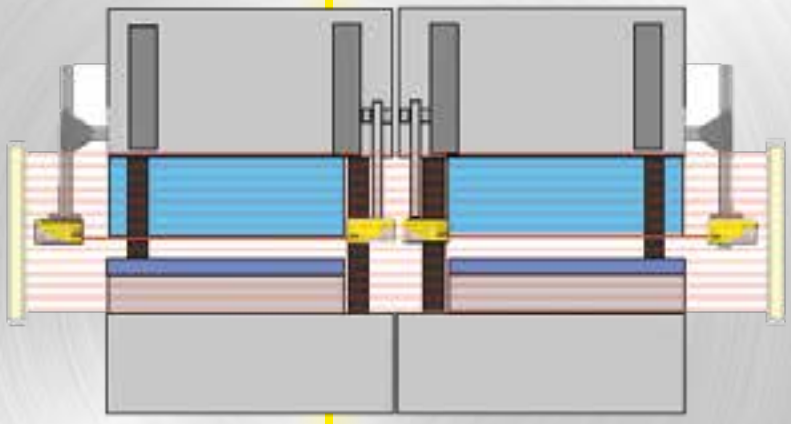
Protection of tandem presses

Fiessler Elektronik developed a special solution for the protection of tandem systems. With this solution it is possible to securely bend the edges of small parts in single operation as well as large or long parts in tandem operation.

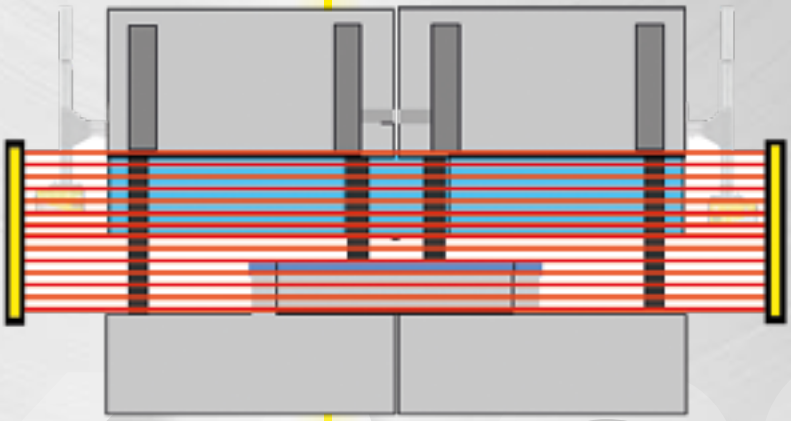
In stand-alone operation, both blanking presses are protected with the AKAS®-LC safety system. Since there is very little room between the two presses, Fiessler Elektronik developed a special holder that will mount both the AKAS® transmitter as well as the AKAS® receiver between the two presses.

In tandem use, both presses together are operated as connected machine. The safety of the machine operator(s) is ensured through a safety light curtain BLVT with blanking function across the entire front side of the tandem system.

An especially narrow holder allows the AKAS® to be mounted between both machines. The tandem presses can consequently be used like individual presses.



If the entire width of the machine is required, the bending tools will be extended at the ram. The AKAS® is deactivated. The operator is now protected by the light curtain.



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Individual solutions

Optimized applications for compact presses

Protection of compact blanking presses

Compact blanking presses with a maximum working length of 1,300 mm are used for small dimension workpieces with slim wall thickness. The minor required space is one of the advantages of these systems. In addition, these machines also feature an ergonomic seated workplace and very close work at the bending line. But the operating personnel are constantly exposed to the hazardous area as a consequence. A safety device which permits safe work in this area is therefore absolutely mandatory. The AKAS® laser safety system allows the safe bending of edges of small parts as well as workpieces with different geometries.

The press brake protection system LCII _V features a compact design. The safety device consists of a transmitter and a receiver. Thanks to special optics, the receiver and the transmitter add only very minor bulk to the right and left of the top tool. This in turn means no significant space requirement. The compactness of the system is thus retained. Blanking presses with a bar length of up to 1,300 mm can be monitored with this 3-dimensional laser protection field underneath the top tool.

The **AKAS®-LC-II-F-V** system, specifically developed for the protection of small blanking presses.

An angular optical system diverts the laser beam by 90 degrees. This permits the housing to be mounted upright in a space-saving position. Safety and high productivity now also for small compact presses.

FIESSLER ELEKTRONIK

High productivity, fast closing speed

The innovative generation
- AKAS® press brake protection – permanent product care

Very short reaction time of 0.75 ms (1.5 ms worst case)
- minimal run-on distance.
- significantly higher rapid traverse speeds of presses possible.
- high productivity of the press as a result.

Maximum safety
- due to specially arranged beams during flat bending as well as box bending.
- optimal bending frequencies.

Integrated safety functions (F)
- option to directly connect and monitor the foot pedal, emergency stop button, safety switch for left and right safety door, back area protection, monitor of safety valves

30% increased productivity
- (comparison without material handling times) compared to previous solutions. Absolute minimal creep speed distance during bending of flat material through special configuration of laser beams.

User friendly
- fully automatic adjustment to other tool sizes, resulting in low safety responsibility for the machine operator during tool change.
- box function without intermediate stop and unnecessary foot pedal sequences.

83% time savings
- compared to manually adjustable systems during tool change

FIESSLER ELEKTRONIK

The delivery programme

Innovative solutions

Safety light curtains
Type 4, SIL 3, PL e
high range up to 60 m
Very short response time as of 2 ms
Blanking and cascading
Type 2, SIL 1, PL c
Protective field height up to 2500 m
Finger and hand guard, entrance protection
Safety controller integrated

AKAS® press brake safety system
fully automatic adjustment after tool change
laser-optics safety light grid
innovative finger guard through continuous bending without stop

FMSC safety PLC
Emergency shutdown (fast shut down) max. 0.5 ms
Expandable with up to 16 expansion modules
Easiest programming
Cat 4, SIL 3, PL e

Safety contact mats
Type 3, SIL 2, PL d
Series connection of up to ten mats
Load capacity up to 2000N
single component casting also in several colors
individual sizes and shapes
Polyurethane, aluminum or Stainless steel surface
with integrally cast ramp rail available

Safety laser scanner
Cat 3, SIL 2, PL d
Protective field 4 m, range 7 m
Metering section 50 m range
Easy assembly
Warning field 15 m
Several programmable sections

Safety foot pedals
Single-pedal or double-pedal

Controlling, detecting and measuring
Measuring light curtains
Loop sensors
Directional counting light barriers
Hole detectors
Encoding strips

FIESSLER ELEKTRONIK

Fiessler Elektronik GmbH & Co. KG
Buchenteich 14 · D - 73773 Aichwald
Tel.: +49-(0)711 91 96 97-0 · Fax: +49-(0)711 91 96 97-50
info@fiessler.de · www.fiessler.de

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