



Lasermatic®

Adjust Box EG 495



**for the contactless height control
of Lasermatic® cutting heads**

- precise height control of Lasermatic® cutting heads
- analog control signal -10...+10 V
- linear distance signal 0...+10 V
- easy 1-point calibration
- rugged and easy to handle
- voltage input to adjust the nozzle stand-off distance
- error signals when
 - collision with the nozzle electrode
 - collision with the nozzle body
 - system fault, e.g. cable cut

When laser beam cutting, deviations of the distance between nozzle and material surface, caused for example by work piece tolerances or position tolerances, may result in a disadvantageous cutting effect.

The Lasermatic® enables a precise height control with high cutting speed. The distance to the work-piece is detected by a capacitive distance sensor in the cutting head. The sensor signal is transmitted via a preamplifier to the adjust box EG 495 which evaluates the signal. The output signal then can be used to control an axis.

The adjust box EG 495 optionally produces either an analog control voltage or a linear voltage corresponding to the distance. The P-parameter of the control signal can be adjusted at the adjust box. The polarity of the control voltage is reversible.

The 1-point calibrating facility of the EG 495 reduces the calibration process to the heading for just one reference point. The automatic calibration process is initiated by a switch signal.

To set up a complete control circuit the following system components are recommended:

- Lasermatic® cutting heads
- motor controller
- linear drives

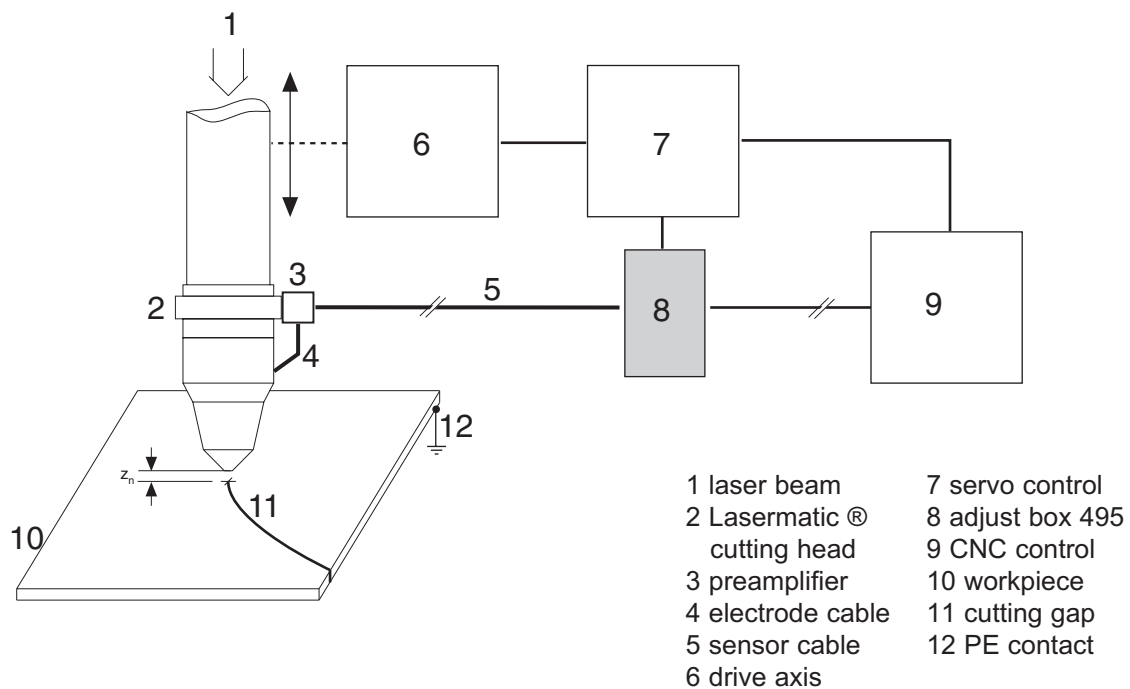
We will be pleased to send you further technical information on request.

Adjust Box EG 495



A: analog signal
S: switch signal, 24 V, 20 mA
(S): switch signal, 0/24 V, 20 mA

Adjust Box EG 495





Control circuit

To set up an automatic distance control besides the adjust box EG 495 a Lasermatic® cutting head with preamplifier, a servo amplifier and an axis are needed.

The adjust box EG 495 delivers a control voltage or, alternatively, a distance signal. The output is correspondingly adjusted by rearranging a jumper inside of the device.

Connection of the cutting head

The cutting head is equipped with a height sensor which is connected to the adjust box EG 495 via a preamplifier. Between the preamplifier and the adjust box transmission cables up to a length of 20 m are permissible¹⁾.

Calibration

For the calibration the cutting head has to be positioned within the upper limit of the measuring range and the automatic calibration process has to be initiated by a switch impulse. After a short while the calibration process is terminated. Therefore it hardly requires time to repeat the calibration for quality reasons after each changing of the nozzle electrode, the cutting head etc.

Changing the nozzle stand-off distance or the calibration basically influences the amplification of the control circuit. To optimize the control dynamic therefore an adjusting of the P-parameter is recommended which is manually adjustable on the front side of the adjust box EG 495.

Nozzle stand-off distance

The nozzle stand-off distance is adjustable with an external DC-voltage. Voltages between 0.5 V and 9.5 V correspond to a nozzle stand-off distance between 5% and 95% of the upper measuring range limit. Does a voltage exceed these limits the manually adjusted value is valid. For the programming of the control this fact eventually has to be taken into account.

Control voltage

The adjust box EG 495 produces a control voltage between -10 V and +10 V proportionally to the control difference between the nozzle distance and the preset nozzle stand-off distance. The polarity of the control voltage can be inverted by rearranging a jumper inside of the device.

Displays

Following states are displayed by the adjust box EG 495 by light-emitting diodes (LED's):

These displays are simultaneously available as switch signals which can e.g. be used to release a stopping of the motor drive, an escape reaction of the cutting head, a stopping of the feed or an emergency switch off of parts of the plant.

Explanations:

	availability (power)
	nozzle electrode touched
	nozzle body touched
	position reached
	cable cut
P	P-Parameter

The outputs for the switch signals are insulated by opto-coupler and can be wired with 24 V. A current limiting to 20 mA must be planned.

¹⁾ longer cables on request

**Technical Data****Adjust Box EG 495**

Upper measuring range limit	adjustable via 1-point calibration
recommended	5 mm
possible	10 mm
Adjusting range for the nozzle stand-off distance ¹⁾	5%...95% of the upper measuring range limit
Cut-off frequency	1 kHz
Inputs, analog	
sensor	BNC
nozzle stand-off distance	0...+10 V, $R_i = 10\text{ k}\Omega$
Output, analog	
alternative (jumper)	
control voltage	-10...+10 V, $R_L \geq 10\text{ k}\Omega$
distance	0...+10 V, $R_L \geq 10\text{ k}\Omega$
Switch outputs	
availability (power)	24 V, 20 mA, opto-coupler
nozzle electrode touched (tip touch)	24 V, 20 mA, opto-coupler
nozzle body touched (body touch)	24 V, 20 mA, opto-coupler
position reached	24 V, 20 mA, opto-coupler
cable cut	24 V, 20 mA, opto-coupler
Switch inputs	
1-point calibration	24 V, 20 mA, opto-coupler
LED-displays	availability (power), nozzle electrode touched (tip touch), nozzle body touched (body touch), position
reached, cable cut	
Adjusting possibilities at the device	nozzle stand-off distance, P-parameter (P)
Power supply voltage	+15 V, 250 mA -15 V, 100 mA
Dimensions (l x w x h)	193 mm x 50 mm x 105 mm
Operating temperature	5°...55° C
Protective class	IP30
Mass	0,6 kg
EMC	EN 50081-2; EN 50082-2

¹⁾ The adjusting range depends on the type of cutting head used

Ordering Data**Adjust Box EG 495**

Product	Designation	Order Number
Adjust Box *	EG 495 A	P0495-100-00001
Set of plugs	ZE EG 495 STS	P0495-215-00001
Preamplifier Cable*		
Lenghts:		
1,2 m	KS 1200 gg	P0492-003-01200
5 m	KS 5m gg	P0492-003-05000
20 m	KS 20m gg	P0492-003-20000
* other models on request		underlayered: standard configuration

Subject to change without notice

17.07.2000