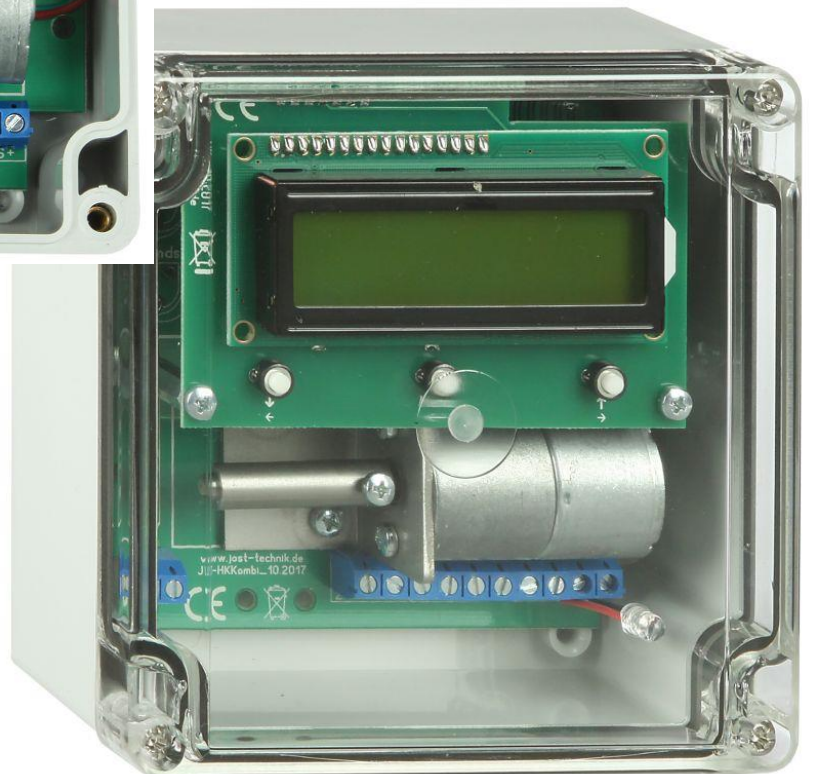
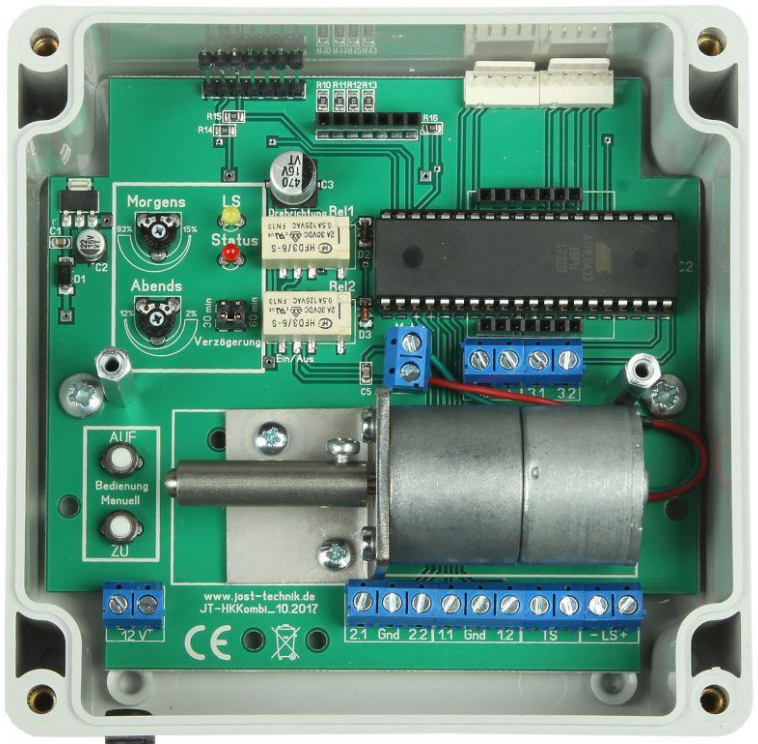


Flap Actuator HK and HK-ZSU

Description and Operating Manual



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General Description

Flap Actuator HK

The electronic **KH** flap actuator from the company JOSTechnik is a further development on the **JT-KS** flap actuator, which has already been marketed worldwide for many years. It serves to automatically open and close gates for small domesticated animal stalls. With **HK**, gates weighing approximately 400 g - max. 2.5 kg can be moved. You can either use gates from the web shop at www.jost-technik.de, already existing ones or even self-manufactured gates.

*Functionalities of the **HK** model:*

- Automatic opening/closing of the flap
- Control with a photoelectric switch
- Manual operation using the keys integrated into the device (**OPEN** or **CLOSED** or ▲ and ▼ respectively)
- **Optional** radio control or **optional** remote keys (keys ▲ and ▼)
- The closing point is reached without a limit switch for controlling the speed.
- Safety function to check if there are animals in the way of the gate.
(an interrupted closing process is repeated)
- **optional** remote display of the flap status with 2 extra bright LEDs
- Mounting inside or outside of the stall is possible
- Use of self-closing doors is an option

The **HK** generally operates in automatic mode. Manual operation is an option (see chapter *Manual Operation*).

The **HK** works with 12 V DC. An appropriate wall power supply for connection to the 230V network can be supplied. The **HK** has IP65 protection and can therefore be installed outdoors without further protection. The wall power supply must be connected in the inside **in every case** as it does *not* belong to a protection category which would allow you to proceed otherwise.

The function can be enhanced with optional modules (see chapter *Optional Modules*). The device is configured in such a way that there is little work involved in setting the parameters when used only as a flap actuator.

- External light sensor JT-SFH
- Wired remote keys JT-key
- Wired remote display JT-FA
- Radio control with 2 keys JT-FB
- Timer JT-ZSU
- Solar set for mains-independent power supply of the flap actuator with 12 V DC (JT-S-kit)

You can retrofit optional modules yourself. It is *not* required to have knowledge of electrical engineering or soldering. All required connections are available and the connections are made with screws. To check what module connection is to be placed where can be found in the chapter *Assembly Instructions*.

For additional modules (except radio remote control) you must insert cable bushings into the housing. Use a $\varnothing 7 \text{ mm}$ drill for this. Then insert the supplied bushing into the hole. To connect the solar set you need a $\varnothing 10 \text{ mm}$ hole. A drilling template can be found in the *Appendix*.

Caution: Be careful not to cause damage to the components situated behind; it is preferable to use a depth stop.

For retrofitting, always open the housing. Disconnect the power supply first. Once you have connected the modules, sensors or connection cables, close the housing and reconnect the power supply.

Flap Actuator HK-ZSU

The flap actuator **HK-ZSU** already contains the HK extension in the form of a ZSU-timer. In that way the poultry flap can be controlled both with light sensor and timer. The setting for the light value is chosen with the help of a menu and further control options such as **continuous** mode or **semi-automatic** mode. There is no control or settings panel as these functions are assumed by the timer (ZSU).

Assembly Instructions

Flap Actuator HK and HK-ZSU



Before you put the electronic flap actuator into service it must be fitted according to the assembly instructions and connected with the poultry flap. If you put it into service without connecting the flap, it will lead to malfunctions.

Please read through this manual completely in order to be able to use all options for the flap actuator.

Open the housing and connect the power supply to the 12 V terminal (red on + and black on -). If you have purchased optional modules, connect them as well (see *Optional Modules* chapter). Also note the polarity here. Then you can close the housing and tighten the 4 screws using light pressure. Now install the poultry flap and connect it to the flap actuator.

Please note the following: The aluminium nut of the flap actuator must be located directly on the housing (cord rolled up). Attach a separate cord here (not included in the supplied kit). Slide the flap into the open position and connect the separate cord with the open flap.

Optional Modules

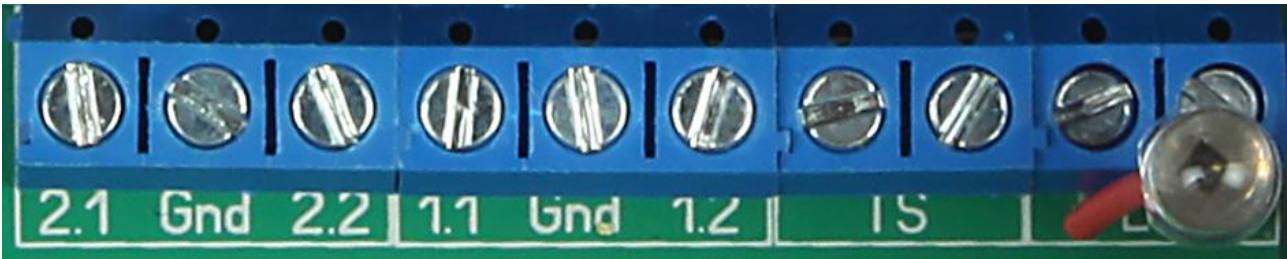


Figure 1: Terminal strip of the flap actuators HK and HK_ZSU

Optional Modules	Terminals on the flap actuator HK	Cable Color
Remote key	2.2 – Gnd – 2.1	Green / white / brown
Remote display	1.2 – Gnd – 1.1	Green / white / brown
-----	TS	Not adjustable
Light sensor	– LS +	White / Brown (external light sensor)



Figure 2: Remote control key

Using the remote keys, the device can be operated manually without needing to open the housing or use a radio remote control. The different functions are as follows:

Flap Actuator HK	
Open flap key ▲	Close flap key ▼
Carry out factory reset	key ▲ + key ▼ simultaneously
Detect final position	key ▼
Lower final position reached / Flap closed	key ▲
Flap Actuator HK-ZSU	
Open flap key ▲	Close flap key ▼

The remote display indicates the flap status for open/closed over a distance of approx. 30 m. The extremely bright LEDs indicate the following:



Figure 3: Remote display

Red	Green	Flap Status
On	Off	Open
Off	On	Closed
Flashing	Off	Open (by hand)
Off	Flashing	Closed (by hand)
Flashing	Flashing	Error – The flap has not been closed properly
		see chapter Troubleshooting

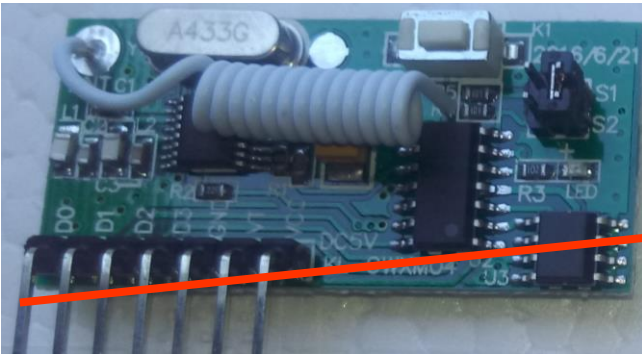


Figure 4: Radio receiver

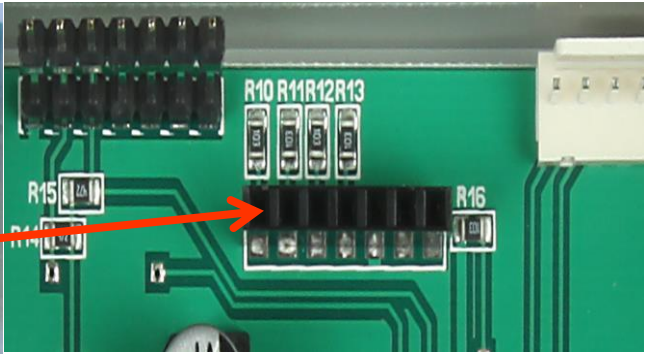


Figure 5: Slot for radio receiver

The radio remote control receiver is simply plugged into the female connector on the printed circuit board.

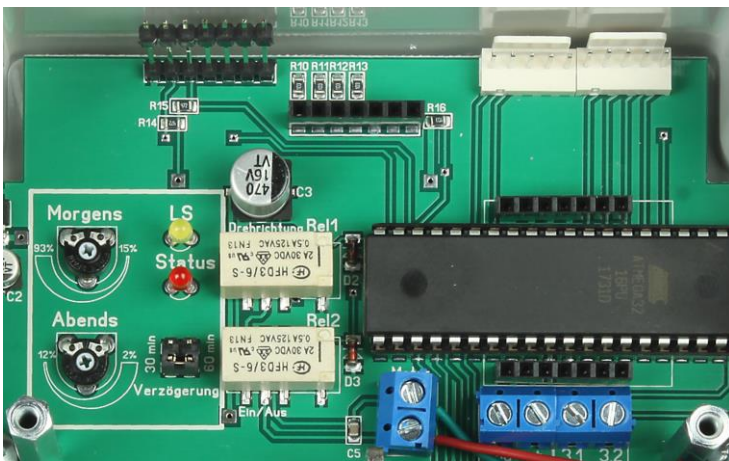


Figure 6: Retrofitting the timer

The timer is plugged into the 7-pin holder and fixed to the stud with the screws provided. For the **HK-ZSU**, it has already been done at the factory. Further adjustments are not required.

Operation and Settings

Flap Actuator HK



Figure 7: Settings panel HK

The **HK** flap actuator offers only a few setting options described below.

The status of the internal light sensor or a separately connected outer light sensor is checked at regular intervals. If the measured brightness level reaches the pre-set switching value for opening in the morning or closing in the evening, then the respective action (opening or closing) is carried out. In order to avoid perturbation of the light value by short-term events, such as passing clouds, a flash or a vehicle's headlights, a safety minute is programmed. Changes to the pre-set values can be made using the setting controls "Mornings" or "Evenings". For that purpose, you will need a small cross-tip screwdriver.

Use only the correct screwdriver size or the setting controller may become damaged and unusable!

Function	Direction of Rotation
Open later mornings	turn clockwise towards 93%
Open earlier mornings	anti-clockwise towards 15%
Close later evenings	anti-clockwise towards 2%
Close earlier evenings	turn clockwise towards 12%
<u>Attention!</u> The interval of the setting controller is very large, so turn only slightly and never set to end stop!	

The closing process in the evening can be delayed via the "delay" jumper bridge. The setting control "evening" does not have to be adjusted.

Jumper is in place	The delay period is
Horizontal at the bottom	No delay (stand-by position for jumper)
Vertical to the right	60 minutes
Vertical on the left	30 minutes

Furthermore the parameter setting panel contains the LEDs, LS and the status LED.

LS	Status	Meaning
OFF	--	Light sensor has recognized "Dark"
ON	--	Light sensor has recognized "Light"
flashes	--	Delay time is running
--	OFF	None
--	Flashes 3x	Pressing of key recognized
--	Flashes continuously	<Detect end position >
flashes	flashes	Error on closing

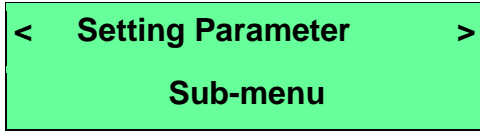
Flap Actuator HK-ZSU

The flap actuator **HK-ZSU** is operated via display of the timer. The operating options available with **HK** are not available and will be deactivated at the subsequent installation of a **ZSU** timer. The operation is menu-guided and will be described below.

Menu Operation

General Structure

Key < leads to the previous menu item or exits the menu



Key > leads to the next menu item or exits the menu

Key ↵ leads to the sub-menu item

The icons on the display have the following meanings:			
	Light sensor value outside	V 3.X.XXXX Software Version	
	Flap status Open (OPEN)		Flap status Close (CLOSED)
	Light sensor "Dark"		Light sensor "Light"

Line 1 shows the command keys (< >) and the menu text. If the text length exceeds the character width of the display, the text scrolls through. Line 2 shows the corresponding parameter value and is used to change the setting.

The menu is structured and is divided into the following main menu levels:

1. Flap actuator
2. Date/time
3. Reset

In order to change or display parameters you need to scroll through the menu tree using the **key >** or the **key <**; it is not possible to specifically activate individual parameters. If you hold down the > key or the < key in the main menu level, you will automatically scroll forwards or backwards through the main menu. To select a menu item use the Enter **key ↵**. It is compulsory that you then leave the menu in order to return the device the normal operating mode. None of functions of the **HK** are available inside the menu.

In the sub-menus, the keys have the function described below and always refer to the value below the flashing cursor:

The **key >** : Increase the parameter

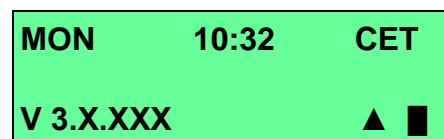
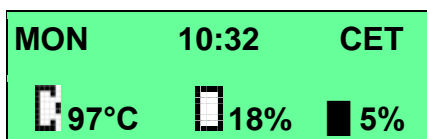
The **key >** : Reset the parameter to "0" or a default setting

The **key ↵** : Apply the modified parameters

Go to the next changeable parameter in the sub-menu

Exit the sub-menu to the next higher menu level

The changed parameters are saved after leaving the menu item and are retained even after a power failure.



Press **Enter key** ↵ until the display light is on, and the menu opens up.

In order to avoid entry errors, most settings have limits in the controlling range that cannot be exceeded. For almost all inputs, a check is made for the plausibility of the input values. If you keep the **> key** pressed while changing values (time, etc.), the value will be incremented automatically.

In general: If several values can be changed in submenus, the corresponding function can be switched off by setting both values to "0" or equal value. Exceptions are indicated in the corresponding menu item.

Settings and Changes

Factory Settings

Operating Parameter/Setting Value	Factory Setting	Adjustment Range (pre-set)
Flap Control		
Timer	Open	07:03
	Close	19:05
Operating Mode	Open	+/+
	Close	x/x
Brightness setting	Open	18 %
	Close	5 %
Set the lower end position	No	Automatic
Light sensor		Automatic
Clock / Date		
	Time	Current time
	Date	Current date
Language		
	German	German, English, French, Dutch

Main Menu Level "Flap Actuator"

Sub-menu Timer

Setting the times for automatic opening (▲) / closing (▼) of the flap. Setting the time is limited to the interval between 3:00 and 22:59. No automatic function is possible between 23:00 p.m. and 02:59. This restriction does not apply in manual mode. The timing is determined automatically based on the set times.



The operating mode determines the way in which the flap is opened / closed. The mode must be set separately for opening and closing. The following modes are available:

Operating Mode		Open/Close if	Explanation
0	+/+	Switching time and light sensor setting reached	
1	x/-	Switching time reached	Only timer operation
2	-/x	Light sensor setting reached	Only light sensor operation
3	x/x	Switching time or light sensor setting reached	
4	-/-	Push-button or remote control operated	Only manual operation

Key > scrolls through the operating modes, **key <** is without function.

Mode	Example
0	Flap will open if light is "light" but <u>not before</u> the set opening time.
3	Flap will close if it is "dark" <u>or</u> at the set closing time.

Sub-menu Light Sensor

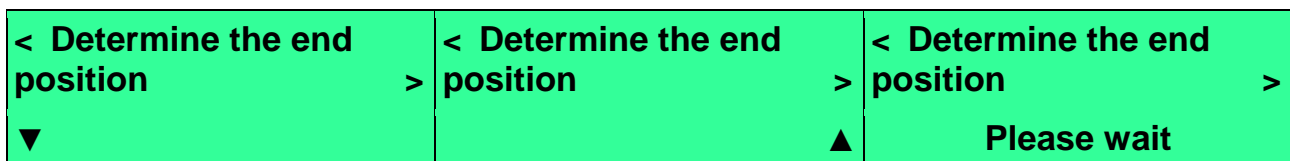


Setting the light sensor switching thresholds, at which the flap is opened (▲) or closed (▼).

Remark: Note: The smaller the percentage value, the darker it is.

Key > increases the light value, **key <** sets the values to the factory settings.

Sub-menu Determining the End Position (Flap CLOSED)



Due to the structural differences of pens, the path of the flap or the gate needs to be determined. The *Determine end position* function is required, so that the flap actuator knows when the flap is closed. During initial start-up, this menu item automatically is activated.

After a **RESET**, where the device is reset to factory settings, the device automatically starts with the menu item *Determine end position*.

You only have to call this menu item, if you want to determine the lower end position again for example e.g. because the flap has been changed or the device has been mounted in another position (see chapter *Start-up*).

Main Menu Level "Time/Date"

Sub-menu "Time"



< Time >
10:32:00

Sub-menu "Date"



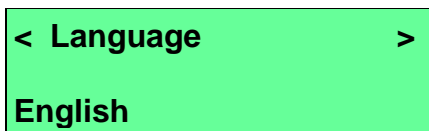
< Date >
10.01.17

The device comes with the current time and date. If you are in another time zone, the clock will run incorrectly after a change of battery, or if a deviation is detected; you can set the time / date manually. Seconds are set **automatically** to "00" after exiting the menu.

When you set the date, the month is set first, and only then can the day be entered. The entry is checked for correctness based on the month and then the day of the week automatically determined.

The clock is battery-backed. The time and date are correct even in the event of a power failure.

Sub-menu Language



< Language >
English

After change of the language and exiting the language menu the apparatus will restart. Thereafter all display outputs will be in the selected language.

Key > scrolls through the installed languages, Press **key <** to set "English" as default.

Main Menu Level "Reset"



< Reset >

key > exits the complete menu *without* further action and calls up the standard display. The Enter **key ↵** starts reset of all values to the factory settings *without further prompt*. The time and the date are retained. After reset, the device performs a self-test and awaits activation to determine the lower end position (see chapter *Start-up*).

Note: If you only want to reset the "lower end position" then select the option "Determine end position" on the flap actuator menu instead of "Reset".

Start-up and Operation

Start-up

After properly installing the **HK** or the **HK-ZSU**, plug the wall power supply into the wall socket or connect it to the solar set. **The HK** switches on automatically and initially performs a self-test.

1. Flap actuator HK



Figure 8: HK console

The LEDs on the setting panel will flash in succession and the device initializes. The engine starts, the flap is pulled up to the stop, the engine stops briefly so that the tension rope is relieved by a few millimetres. The status LED (red) starts flashing. You must now set the lower end position of the flap.

Press the **CLOSED** button. The engine starts and the flap moves downwards.

When the flap arrives at the bottom, press the **CLOSED** button. If you are using a self-locking door, do not push the **CLOSED** button until the lock is engaged. The engine stops, the flap is pulled to the upper stop, the pull rope relieved. The device is now in automatic mode, start-up is complete.

Instead of using the **CLOSED** button or the **OPEN** button, you can also use the remote buttons ▼ or ▲ which are optionally available. The buttons on the **optional** radio remote control are not suited for start-up.

2. Flap Actuator HK-ZSU

The background display of the screen lights up and the following will appear:

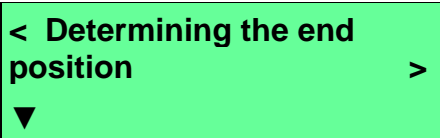
Initialization
Please wait

The engine starts, the flap is pulled up to the stop, the engine stops briefly so that the tension rope is relieved by a few millimetres. Initialization is complete.

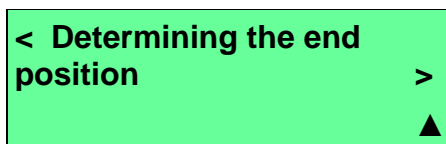
You will be prompted to start up the device for the first time.

< Determining the end position >

Key ↵ leads to next phase of the start-up.

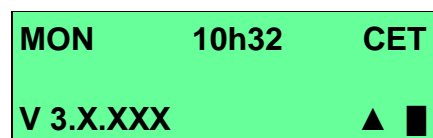
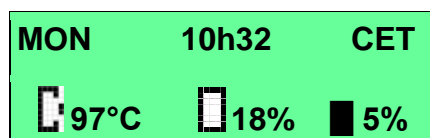


Key ▼ starts the process, the engine starts, the flap moves downwards



When the flap arrives at the bottom, press the **▲ key**. If you use a self-locking flap, do not press the **▲ key** until the latch engages. The engine stops, the flap is pulled to the upper stop, the tension rope relieved.

The display shows the default view of the **HK-ZSU**, which changes between the two following views. The backlight is turned off.



Line 1 shows weekday, current time and time zone CET/CEST (standard / summer). You have now put the device into service and it is **ready for use**. Without changes to factory settings (see chapter *Factory Settings*), the device operates with the following settings:

Open	Daily at 07:00 and when it is already light outside	(Mode 0 +/-)
Close	Daily at 19:00 or when it is already dark	(Mode 3 x/x)

Alternatively you can operate the flap with the internal **key ▲** and **key ▼**, the optional radio remote control or the **optional** remote buttons. If you want other times or operating modes, you must set this in the menu (see chapter **Settings and Changes**).

If you have subsequently added a ZSU-timer to a flap actuator HK, there are still buttons on the console. These are not suitable for start-up and programming the parameters and can only be used for manual operation (flap open / close).

Automatic Operation

The device is designed for automatic operation and opens and closes the flap in accordance with the set operating mode. Interventions in the automated procedure are required only if you wish to deviate from standard usage, e.g. closing the pen by the hour for cleaning or opening it manually to put a stray animal into the pen.

The automatic mode is only interrupted without "outside" intervention in the event of errors signalled by the status LED (flap actuator **HK**) or on the display (flap actuator **HK_ZSU**). Actions interrupted by errors will *not* be restarted automatically; they *always* require intervention by the user (see chapter *Troubleshooting*).

Manual Operation

Pressing the **▲** or **▼** keys, or the **optional** radio remote control will exit the automatic mode and will **not** cause any further automatic opening/closing until manual operation is complete. The fact that the device is in manual mode is signaled as follows:

Explanation:

For example, if the **auto**-closed flap is opened **manually** in the evening, it stays **OPEN** until **the flap is again manually closed**.

The flap actuator **HK-ZSU** additionally provides for the following manual operating modes (see the *Sub-menu Mode* page 8)

Manual Mode	Mode Setting		
	Mornings	Evenings	
Continuous	-/-	-/-	Flap can only be operated manually, e.g. enclosure obligation
Semi-automatic	-/-	0 - 3	Flap is always opened manually.
	0 - 3	-/-	Flap is always closed manually.

You can recognize this by the fact that, while the hand-held button is depressed, the status of the flap thus achieved is signalled by the continuous light of the LED1. If you do not press the manual control key within the set time range, the device will remain in its current state (i.e. constantly OPEN or CLOSED).

Troubleshooting and Maintenance

- (1) *Flap has not been closed correctly*
 - Check the smooth movement of the gate in the guide rails. The slider must not tilt or rub
 - Check for dirt, ice, etc., in the guide rails, and clean if necessary

This error is notified as follows:

	Flap actuator	
	HK	HK-ZSU
LED LS	flashes	---
LED LS	flashes	---
LED remote display - red	flashes	flashes
- Green	flashes	flashes
Display	---	<Determine the end position >
Error remedy	Carry out reset then re-detect the end position	Re-detect the end position

It still doesn't work. What to do now?

First phone the maintenance service (you will find the phone number on the invoice / delivery note) Have your invoice ready and a list of the set values (Printed Form User Settings in the *Appendix*). Before making a call, please note the following questions:

- Which appliance do I own?
- When and where did I buy it?
- What is not working?
- What have I already tried?

If you wish to send the device to the service department to be checked/repaired,

- Send the device as a simple parcel
- Please attach a copy of your invoice/delivery note.
- Write a short description of what is not working and what you have already tried.
- Please enter a telephone number or email address so that we can contact you for questions if required to examine the claim.

This ensures that any inspection / repair work is carried out quickly and for soon return of your device.

Should the check / repair be billed (for instance after the warranty period) you will receive a quote beforehand. It is only after you have accepted the quote that the repair job will be carried out.

Please note! Without proof of purchase, your warranty is not valid.
--

Technical Data

Data

Designation	Flap Actuator HK and HK-ZSU
Connection	230 V~ 1,0 A via power socket on 12 VDC internal
Power consumption	approx. 20 mA (only HK), approx. 100 mA including extra modules
Current carrying capacity of the exits	max. 20 mA je per exit max. 500 mA via all exits
Inner cable length	approx. 1.10 m
Minimal weight of flap	approx. 400 g
Maximal weight of flap	approx. 2500 g
Size (W x L x H)	120 x 120 x 60 mm
Weight (without flap)	approx. 300 g
WEEE-Reg.--No.	DE58973207

Disposal

Sales packaging is packaging the responsibility of the end user (§ 3, paragraph 1, no. 2 of the regulation on packaging). Manufacturers or distributors of the products are required to either return the packaging waste to the store or to the immediate vicinity free of charge (section 6, paragraph 1) or participate in an across-the-board scheme that collects the packaging waste from the private end user or nearby (so-called dual schemes).

Reporting requirement in accordance with the battery directive

In connection with the sale of batteries or the delivery of devices containing batteries, we are required to inform you of the following:

You are legally required to return used batteries as the end user. You can return used batteries, which we stock or have stocked as new batteries in our collection free of charge to our shipping warehouse (shipping address).

The symbols on the batteries have the following meanings:

The symbol of the crossed-out wheelee bin means that the battery must not be disposed of with household waste.

Pb = The battery contains more than 0.004% by mass lead.

Cd = The battery contains more than 0.002% by mass cadmium.

Hg = The battery contains more than 0.0005% by mass mercury.

Directive WEEE 2002/96/CE

WEEE guideline 2002/96/EC

Electrical and electronic equipment must not be disposed of with household waste in accordance with the European WEEE Directive. Your components must be recycled separately or disposed of separately as toxic and hazardous components, if not disposed of properly, it can cause permanent damage to the environment. As a consumer, under the German Electrical and Electronic Equipment Act (ElektroG) you are required to return electrical and electronic equipment at the end of its service life to the manufacturer, point of sale or public collection sites set up for this purpose at no charge.

Information about this is governed by the respective national legislation. The symbol on the product, operating instructions and/or the packaging indicates these terms.

WEEE-Reg.--Nr.: DE58973207



Declaration of Conformity

EC declaration of conformity in accordance with EC Machinery Directive 2006/42/EC of 17 May 2006, Annex II A

We hereby declare that the design and construction described below, as well as in the version we have marketed, comply with the essential health and safety requirements of EC Directive 2006/42/EC.

In case of any change made to the device that has not been agreed to by us, this declaration will be void.

Manufacturer/Authorised representative:

Jost-Technik owner Ilka Jost

Martha-Brautzsch-Str. 26a, D- 04838 Doberschütz Tel.: +49(0)34244/59566

Description of the machine:

- Function: Flap actuator • Type/Model: HK / HK-ZSU
- Serial number: 3.5 • Year of manufacture: 2017

Conformity with other directives/regulations, which also apply to the product, is also declared:

- EC - EMC-Directive (2004/108/EC) of 15 December 2004
- EC - Low Voltage Directive (2006/95/EC) of 27 December 2006

Authorized representative for compiling the technical documentation:

Gerd Jost

Martha-Brautzsch-Str. 26a D-04838 Doberschütz

Doberschütz 26.05.2016 Ilka Jost JOSTechnik

Appendix

Printed Form User Settings

Parameters	Set value
Switching time 1	Open Close
Mode Mornings / Evenings	Open Close
Light sensor	Open Close
Delay	0 Minuten 30 Minuten 60 Minuten

Changes and Additions