O P E R A T I O N

M A N U A L

for the

I n d u c t i o n C a p s e a l e r

E q u i p m e n t

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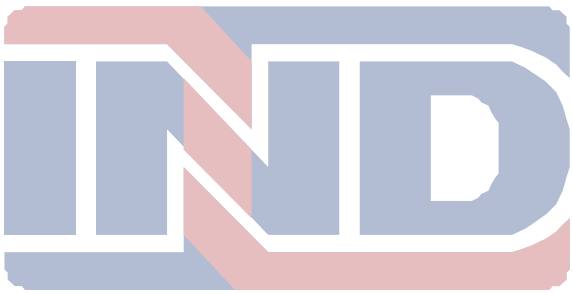
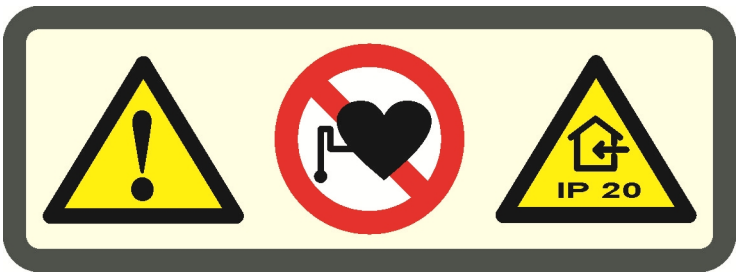


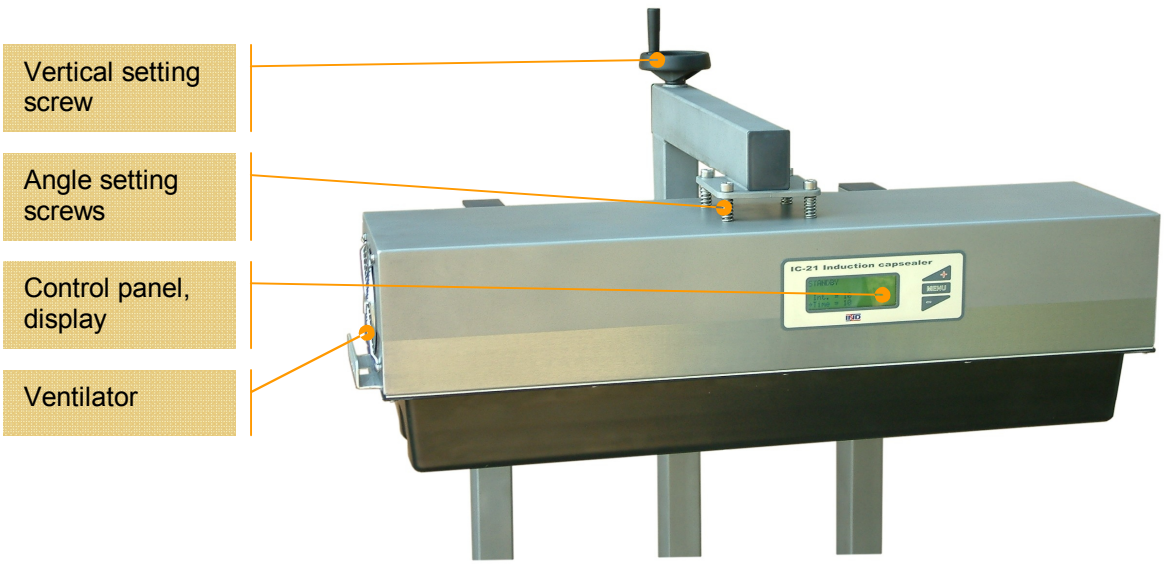
INDUCTOR Kft. www.inductor.hu
H-2049 Diósd, Kőbányai út 1. Tel/fax:+36/23-370281



1. Introduction of the equipment type IC-21

This microprocessor-controlled device is applied for the warranty closure of the PVC, PE, PP, PET and glass flasks used in packaging technology. The equipment performs the intermittent or continuous closure of flasks, carried on a conveyor belt. The closure of caps of same geometry and material can be performed with a particular setting.

The inductive heating head of this device has been designed for the closure of „ketchup" flasks, too.



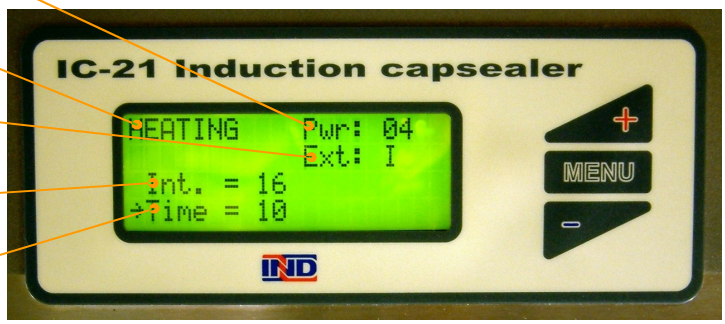
Power

Mode status

External control

Intensity

Time



Connector to external control

Connector to optical sensor

Main switch

Cover of fuse

Mains connector

Optical sensor

2. Installation of the device

IF ANY PROBLEM OCCUR DURING THE INSTALLATION OF THIS DEVICE, PLEASE CONTACT OUR SERVICE!

BEFORE INSTALLING AND OPERATING THE DEVICE, PLEASE READ CAREFULLY THIS OPERATING MANUAL!

2.a Placement of the device

1. The stand-mounted equipment should be placed above the given section of the conveyor belt in such a way, that the longitudinal axis of the heating head should be parallel to the longitudinal axis of the conveyor belt. The turned-on caps of the flasks moving on the conveyor belt should move unhindered in a rectilinear uniform motion in the groove of the heating head.
2. The environment of the IC-21 type device should be arranged in such a way, that no heat, dust, chemical material or mechanical damaging effects should harm it. In exception of the stand itself, no metal objects are allowed within a 200 mm environment of the heating head!
3. The ventilation of the device, and the natural cooling arising out of it, should be faultless.
4. Sufficient lighting should be provided in the vicinity of the device for the setting and handling of the device.
5. An accurate setting of the equipment in all three dimensions is an indispensable prerequisite for an economic and safe operation. It follows from this that the position of the heating head relative to the motion of the caps may not change during operation. In order to avoid any accidental motion, sufficiently large free space should be provided around the equipment.
6. The placement of the objects in the vicinity of the equipment should ensure under all conditions the free handling, operation and control by the operator.

7. Care should be taken that the curvature (bow) of the conveyor belt from the plane of the groove of the heating head should not be more than 2 mms.
8. A well adjustable rail should be used on both sides of the conveyor belt, to put the flasks in order and to guide them with a technologically minimum gap.
9. Optical sensor starting the heat procedure should be mounted on the side of the heating head where the caps enter the groove. Connect swinging connector of the cable of the sensor to the shell on the back panel of equipment. Hang cable to the tabs on the back of equipment.

2.b Adjustment of the device to the flasks moving on the conveyor belt

1. Before performing the steps of the adjustment, the device mounted on a stand should be lifted with the help of the vertical setting screw on the stand somewhat above the caps placed on the belt.
2. The first step of adjusting the device mounted on the stand is to install the stand itself. The aim is that the caps to be closed should move in the longitudinal center line of the heating head. This can be achieved by moving the stand vertically and parallel with respect to the conveyor belt, and by turning the height setting screw in the requested direction. Stable positioning of the stand can be made by help of adjustable legs.

3. The next step is to align the heating head to the track of the caps carried on the conveyor belt. The aim is to have the track of the caps moving under the heating head both vertically and horizontally parallel to the heating head, while being in the center-line of it. This setting is performed by tightening or loosening three spring-loaded screws, which fasten the device to the stand.
4. If the diameter of the cap allows it (D < 57 mm), lower the heating head down to the plane of sealing foil in the cap would be upper the lower plane of heating head, and would move the cap in the groove of the head. This adjustment results in maximum productivity of the equipment. During the move of the flasks, check the distance between the heating head and caps.
5. The equipment is also suitable to closing of caps with a big diameter (D > 57 mm), under the plane of heating head. In such a case, adjust the heating head, as above, to reach the conditions of symmetry and parallelism so that the upper plane of the cup would be in the technologically minimum distance from the lower plane of the heating head (height scatter of flasks). In such mode of operation productivity may be decreased (a lower velocity of the conveyor belt is needed for the longer heating), because in consequence of the larger distance energy input to the sealing foil is lower.
6. <u>The cap cannot touch the heating head even in an extreme situation, because it causes wearing and damaging of the head</u>.
7. Care should be taken not to screw out any of three nuts to the point where the springs would be loosened.

2.c Connecting external control

1. When the equipment is supplied with a connector to external control, the status of ready to heating is activated by an external permission signal. For connecting a 5-pole swinging shell type XLR shall be available. Connecting the shell:

No of outputs	*Denomination and description*
1	Output of confirmation signal: in case of normal operation, it regenerates the voltage appearing at the input of the permission signal. Loadability 100 mA.
2	Input of permission signal: +12 .. +24 V DC, it permits the status of ready to heating, relative to mass. Input resistance 2500 Ω.
3	Mass: 0 V for the permission and confirmation signals.
4	Not used
5	Not used

2.d Putting the device into operation

1. The stand-mounted device, having be installed and mechanically adjusted to the given task, should be connected to the 230 V, 50-60 Hz electrical network, which is protected by a 10 A fuse and provided with protecting grounding.
2. Switch on the equipment by main switch on the back panel.
3. After 8 sec period of preparation **PREPARING**, equipment is ready to operation, which is indicated by the **STANDBY** inscription on the display, and at the existence of the permission signal, confirmation signal is generated.
4. When on the conveyor belt a flask arrives and permission signal exists, optical sensor will give a start signal, heating will be switched on, while **HEATING** indication is read on the display. Beside this inscription, a

value proportional to the heating power **Pwr** will also be shown. At the **Ext** indication, status of the permission signal is shown: I: exists, 0: no signal). When no signal is presented, despite the start signal by the optical sensor, heating will not start. Time and intensity of heating will be determined by the values shown on the display. When before expiring of time of heating another flask arrives, time accounting restarts, and heating will be continued. When a flask stops before the optical sensor (flask jam), having the heating time period expired, heating will be ceased. Optical sensor gives a signal as well, when the flask leaves the section, so the stopped and re-moved flasks will also be closed.

5. The intensity of the heating is set in ready-to-operation state (**STANDBY**) of the equipment, under menu **INT**, by pushing the buttons + and -. The set value is stored in the memory by pushing the **MENU** button. Intensity should be increased up to the cap moving under the heating head would be closed. Practically adjust this so that at the same time one cap moved under the heating head. (Intensity of heating is not affected by the number of caps moving simultaneously under the heating head.) Avoid adjusting causeless high intensity, because doing so the sealing foil overheats, and the orifice of flasks melts. Repeat the intensity adjustment, if any change occurred in the characteristics of the flasks or sealing foil, or their position relative to the heating head.

6. Setting of time of heating is performed in ready-to-operation state of the equipment (**STANDBY**) in menu **TIME**, by pushing the buttons + and -. The set value is stored in the memory by pushing the button **MENU**. Time is correctly adjusted, if heating is directly ceased when the flask left the position under the heating head. Too long time results in surplus operation, energy wasting, while too short time makes quality of sealing not perfect because of untimely switching off heating.

7. Menu points can be changed by pushing the button **MENU**, while the value set previously is stored in the memory. The stored values are kept also in switched-off state of the equipment. The actual menu point is indicated by the → symbol appearing beside it.

8. In case of overheating equipment switches off, inscription **OVERHEATING** is indicated on the display. The confirmation signal ceases. In such cases, check the proper operation of cooling, air ventilation. Error inscription can be deleted by switching off the equipment.
9. In case of electric overload equipment switches off, inscription of **OVERCURRENT** is indicated on the display. The confirmation signal ceases. In such cases, check completeness of heating head, remove the foreign objects in its vicinity. Error signal can be deleted by switching off the equipment.
10. The device gives a short acoustic signal when optical sensor generates start signal, thus helping with the work of the operator. The acoustic signal misses, if no permission signal existed. In case of a malfunction the device gives a continuous pulsating acoustic signal, calling attention to make an intervention.

3. Operating the device

The device putted into operation does not require further settings and control during operation.

The position of the induction head should be checked in all three dimensions as required.

The quality of the cap-closure should be checked from time to time.

The values indicated on display should be watched and evaluated.

In case of a malfunction stop the equipment! Repeat the settings. In case of an operational failure please contact the service or the manufacturer.

Do not cover equipment under operation.

4. Maintenance of the device

1. For maintenance the device should be disconnected, the mains connection should be shut off.
2. The device and its mains cable should always be kept in clean and dry state, dust and mechanical or chemical effects should be avoided.
3. The outer cover should be de-dusted with a dry (or slightly moistened) cloth. No aggressive cleaning solvents should be used. No moisture should penetrate into the device.
4. The electrical network cable and connector should be cleaned with special care. **The device may not be operated with a faulty or damaged cable!**

5. Safety precautions

1. The equipment type IC-21 may only be operated for its intended purpose, according to its operational manual.
2. The manufacturer of the device, or a person assigned by him, performs the installation, putting into operation and repair of the device, and provides practical training regarding the setting and operation of the device for the operator as well as for persons responsible for the adjusting of the machine.
3. Equipment shall be operated by trained persons of age of over 18 years.
4. It is forbidden to stay within a 10 m vicinity of the device for any person using an electronic pacemaker.
5. The device may only be operated in its original form as produced by the manufacturer, with undamaged cover and electric leads. It is forbidden to operate the device with faulty controls or damaged mains cable.
6. Only spare parts delivered by the manufacturer and belonging to the given type may be used for supplying or repairing the device.

7. It is forbidden to make any conversions or modifications on the equipment without written permission of the manufacturer.
8. It is forbidden to cover a device under operation.
9. It is forbidden to place metal objects or spare parts in the vicinity of the device, because these quickly heat up during operation. The hot metal parts can cause accidents and damage the device.
10. It should be avoided to come close to the heating head with any part of the body during operation. The heating-up of any metal objects or metal jewels on the body and fingers may cause special dangers and burn injuries (e.g. rings, bracelets, necklaces etc.).
11. The device may be repaired by the service of the manufacturer or a person entrusted by him, or, in case they are not available, by a qualified expert of electro-mechanics.
12. The heating head can be easily damaged. Please avoid its mechanical overstressing (such as jamming of a flask into the groove of the heating head etc.), and any eventual damage with a sharp tool.
13. Should the device be damaged so severely that its cover opens up, touching the inner part of the device may cause an electric shock! Therefore the device should be immediately disconnected from the mains by pulling out the mains connector!

6. Storage and transport

The device should be stored in a dry, dust-, and moisture-free place.

During the movement of the device, consider all the principles regarding the prevention against mechanical damage, heat, dust or chemical contamination.

For transportation or storage, first disconnect the electric mains connection, then dismount the device from the holder on the stand, then move it as a separate unit. Put the device on the heating head by the use of a weight distributor and a soft shore up. During transport, the mechanical vibration of the carefully packaged

device should be avoided. Take special care while re-mounting of the device after transport, as described in paragraph 2 (Installation of the device).

7. Technical characteristics

Electric network required:.....230 V, 50 – 60 Hz, 6 A

Electric network connection, main switch, fuses: ..... on back side of device

Fast switch-off from mains: ..... by shut off the mains connection

Level of permission signal .....+12 ..+24 V DC

Operation ..... automatic

Start of heating:..... with opto-sensor

Power regulation: .....in 32 stages (50% – 100%)

Power indication:.....alphanumeric display

Error indication:.....alphanumeric display

Time values adjustable: ..... in 32 stages (0,25 s/step)

Maximum speed of the cap under the heating head: ..... 20 m / min

Number of caps under the heating head simultaneously: ..... arbitrary

Cooling:.....air-cooling

Ambient temperature range:.....+ 15°C – + 40°C

Relative humidity:.....10 – 80 %

Protection against overheating: ..... built in

Finish: .....operational, corrosion-free steel, ABS

Outside dimensions of the device: .....250 mm × 750 mm, height 400 mm

Weight of the device: ..... ca. 15 kg

.....CE