Screw capping machine TV 2000
KTM-TROXLER
Wine cellar machines – Stainless steel technology
In der Rohrmatt 8
77955 Ettenheim - Münchweier
Tel. 07822/446940-0
Fax. 07822/446940-25
e-mail : info@ktm-troxler.de
Internet :www.ktm-troxler.de
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About these operating instructions

This document
• explains how to safely operate and adjust the machine
• indicates any hazards and explain how they can be avoided (safety instructions)
• includes numerous tips on efficient working and using the machine to its full potential
• shows what steps should be taken when a malfunction occurs.

Read through these operating instructions before using the machine for the first time. Pay particular attention to the safety instructions. Store these operating instructions in a safe location for future use.

We do not accept liability for damages resulting from improper operation.

The KTM-Team

1. For your safety

Symbols used in these instructions

Hazard

Indicates an immediate hazard. Non-observance may result in death or serious injury.

Caution

Indicates a potentially dangerous situation. Non-observance may result in minor injury or material damage.

Information/tip

Indicates important information or a tip on usage.

Warning signs on the screw capping machine

Dangerous electrical voltage. Only qualified electricians should work on the machine and its components.

During emergencies

If an emergency situation arises, switch off the machine as follows:
• set the main circuit breaker to "OFF/0".
• disconnect the compressed air supply.

Safe working environment

Ensure there is adequate lighting when working on the screw capping machine.

Stability of the plant

Ensure the stability of all plant components (e.g. connection of belt drives, bottle transfer points...) used in conjunction with the machine. If necessary, fit additional support feet.
Safety devices
Only work on the screw capping machine when the safety devices are fitted and functioning correctly.

1. Guard on screw capping machine
Plexiglas guard over capping unit. The control system immediately shuts off the screw capping machine when the guard is pulled up.
The screw capping machine cannot be switched on if the guard is up.

2. Panels fitted to machine frame
The machine frame panels serve to protect against accidental contact with sharp-edged metallic parts and moving belt drive components during operation. Only start up the screw capping machine when the panels are fixed in position.

Intended use
This screw capping machine is used to seal off bottles with screw caps. The bottles are fed in using a belt drive system, the caps are automatically picked up. The screw head presses the cap onto the bottle. The screw head then knurls the thread into the cap. After the bottle is sealed, it is transported away by the belt drive.

For the environment
Dispose of the condensation from the pneumatic water separator in an environmentally-friendly manner.

Safe transportation
The TV 2000 screw capping machine may be transported using a fork-lift truck or overhead crane.

- Two lifting eyes are provided at the top of the TV 2000 (see main diagram page 5, position 2). These may be used to attach a lifting rope using a rope shackle or carabiner. The TV 2000 can then be transported using a crane or on the lifting fork of a fork-lift truck.
- The TV2000 can be laid on its back (rear doors) if it is being transported by HGV or trailer.
The screw cap container can be detached from the screw cap channel during transportation, see chapter 4.
2. Overview of screw capping machine

1. Screw cap container:
   Storing and separating screw caps.

2. Lifting eyes:
   Suspending the machine for transportation by crane.

3. Screw head adjustment:
   Adjust screw head to the height of the bottle.

4. Screw cap feeder adjustment:
   Adjust the screw cap feed to the height of the bottle.

5. Switching unit with controls:
   Controlling and switching the TV2000.

6. Guard:
   Protects against rotating screw head.

7. Bottle belt:
   Feeds bottles in/out for capping.

8. Bottle guide:
   Adjust to bottle diameter.

9. Compressed air supply:
   Connect compressed air and adjust pressure.

10. Adjustable feet:
    Used to set the machine upright on an uneven floor.
3. Operator controls on switching unit

Information/tip

The plexiglas guard is a safety device with an integrated EMERGENCY-OFF function. The capping unit can only be switched on when the guard is closed.

<table>
<thead>
<tr>
<th>Connecting the screw capping machine</th>
<th>Establish the compressed air connection and open the compressed air feed.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Plug in the cable and set the main circuit breaker to &quot;ON/I&quot;.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Adjusting the screw capping machine</th>
<th>Adjust the screw head and cap feed mechanism.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Switch the capping unit on/off</th>
<th>Close the guard.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Press the &quot;screw head&quot; button, the screw head turns. The green indicator lamp in the &quot;screw head&quot; button is lit. Press again to switch off the screw head.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Switch the belt drive on/off</th>
<th>Press the &quot;belt drive&quot; button, the belt starts to move. The green indicator lamp in the &quot;belt drive&quot; button is lit. Press again to switch off the belt drive.</th>
</tr>
</thead>
</table>

Note

- Check the pressure drop during capping. The pressure at the pressure gauge should not drop by more than 0.1 bar during capping. If the pressure drop is higher, use pressure lines with an inner diameter of at least 10 mm or ⅛".
- Correctly dispose of any condensation which has collected in the pneumatic water separator (see maintenance tasks).
- The screw head motor will become hot during continuous operation. This is the operational temperature of the motor and does not represent a malfunction.
4. Adjusting the TV 2000

Preparing the capping unit

- Set down the capping machine on flat, level ground.
  (engage the wheel brakes, use the support feet to keep the machine upright if the floor is not level.)
- Connect the mains power cable.
- Connect the compressed air line.
- Adjust the pressure.
  Adjust the pressure according to the specified weight exerted by the screw cap. (e.g. MCA = 180 kg - 200 kg)

<table>
<thead>
<tr>
<th>Pressure in bar</th>
<th>3</th>
<th>3.5</th>
<th>4</th>
<th>4.5</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exerted weight in kg</td>
<td>135</td>
<td>146</td>
<td>178</td>
<td>200</td>
<td>222</td>
</tr>
</tbody>
</table>

Sterilising the screw capping machine

Information/tip

Observe the following in order to guarantee a sterile capping process:

- Clean and sterilise the container before filling it with caps.
- Avoid the ingress of impurities such as foreign bodies, dust and fluids during capping.
- After capping has been completed, remove any unused caps, clean the container and cover with a cloth or film to prevent the ingress of dirt.

Suitable sterilisation agents are listed in the Technical Data section.

Sterilise the capping unit

- Switch off the screw capping machine at the main circuit breaker.
- Clean out the bottle cap container using a damp cloth.
- Disinfect the bottle cap container using suitable disinfectant sprays (manual pump spray/spray can).
- Clean the bottle cap feeder and use a suitable disinfectant spray (manual pump spray/spray can).
Adjusting the bottle cap feeder to the bottle height

- Open out the bottle feeder.

- Pull up the guard.

- Insert a bottle in the area of the screw cap feeder.

- Unscrew the hex socket head screw.

- Adjust the height using the knurled screw. (adjust the feeder channel until there is 1 mm clearance between the bottle/mouth and the feeder channel. The mouth of the bottle is at half the height of the screw cap, see diagram).

- Tighten the hex socket head screw to lock the setting.

Adjusting the bottle guide to the bottle diameter

- Place three bottles on the belt, one at the start, one at the end, and one under the screw head.

- Fit an unscrewed cap onto the middle bottle and interrupt the air supply. The screw head will drop onto the bottle. Place the bottles at the start and end of the belt in the centre of the belt.

- Adjust the bottle guides (bottle rail) at the front and rear until each is a distance of 1 mm to the bottle.
Assembling the capping unit
Height adjustment of roll-on head

- Connect the machine to the compressed air supply
- Use the socket spanner to loosen the counternut on the hand-wheel
- Adjust the roll-on head upwards by turning the hand-wheel

- Place the spacer bolt on the bottle mouth and centre it under the roll-on head

- Turn the hand-wheel to move the roll-on head down and let it rest on the spacer bolt
Dismantling the screw cap separator prior to transportation

**Caution**

*Possible malfunction at control valve!*

Before tipping and transporting the machine, drain the condensation from the water separator and air reservoir (see chapter 6, Maintenance and Care). This prevents water from entering the control valve as the machine is tipped.

- Release the screw cap channel at the mouth section (screw).
- Release the screw cap channel at the screw cap separator (snap-fit).
- Unplug the motor for the screw cap separator.
- Lift the screw cap separator out of the suspension.
## 5. Technical Data

### Electrical data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>235 V ~ 50 Hz</td>
</tr>
<tr>
<td>Control voltage</td>
<td>24 V =</td>
</tr>
<tr>
<td>Noise level</td>
<td>less than 85 dB(A)</td>
</tr>
</tbody>
</table>

### Compressed air

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air requirement</td>
<td>250 l/min effective</td>
</tr>
<tr>
<td>Input pressure</td>
<td>At least 5 bar</td>
</tr>
</tbody>
</table>

### Performance data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capping performance</td>
<td>2500 bottles/hour</td>
</tr>
</tbody>
</table>

### Dimensions/sizes

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height (with/without cap container)</td>
<td>2350/2000 mm</td>
</tr>
<tr>
<td>Width</td>
<td>900 mm</td>
</tr>
<tr>
<td>Depth</td>
<td>420 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 200 kg</td>
</tr>
</tbody>
</table>

### Bottle sizes/caps

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bottle diameter</td>
<td>50 to 120 mm</td>
</tr>
<tr>
<td>Bottle height</td>
<td>160-370 mm</td>
</tr>
</tbody>
</table>

### Lubricants

- **For the screw head:** Food-safe grease spray (e.g. Biolup) or Teflon spray
- **For the belt chain:** Washing up liquid

### Disinfection agent

- **Capping unit:** Sterilising fluids (e.g. Wigol, Sterilan, ...)
  - **CAUTION! Not for plexiglas**

### Cleaning agent for V2A-steel

<table>
<thead>
<tr>
<th>Cleaning agent for V2A-steel</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleaner</td>
<td>e.g. Nirostol 55</td>
</tr>
<tr>
<td>Polishing paste</td>
<td>e.g. Venol</td>
</tr>
</tbody>
</table>
6. Maintenance and Care

Hazard
Accident risk due to moving machine parts when performing repairs.
For all repairs:
• Switch off the machine at the main circuit breaker.
• Pull out the mains power cable.
• Disconnect the compressed air supply.

Information/tip
Avoid “rust spots” on all parts made from V2A-stainless steel.
Almost all components of the screw capping machine are made from V2A-steel and do not “rust”. "Rust spots" may form on the surface of V2A-parts if items manufactured from other types of steel (e.g. tools) are placed on the screw capping machine.
To prevent this occurring on V2A-steel parts:
• do not place down any items manufactured from other steels
• use a suitable cleaning agent to remove "rust spots".

After the work has been completed
• Switch off the machine at the main circuit breaker and pull out the mains power cable.
• Interrupt the compressed air supply.
• Drain the condensation from the water separator and dispose of in an appropriate manner. Also open the cover at the rear of the machine and open the drain tap on the air reservoir to drain off the condensation.
• Clean the cap container using a damp cloth.
• Spray the capping head using a Teflon spray or food-safe grease spray (e.g. Biolup).
7. Assistance in case of malfunctions

Troubleshooting instructions

Hazard

Accident risk due to moving machine parts when performing repairs.

For all repairs:

- Switch off the machine at the main circuit breaker.
- Pull the mains power cable.
- Disconnect the compressed air supply.

Who should rectify faults

Operator

Work tasks labelled "Operator" should only be performed by persons who can safely operate and adjust the screw capping machine.

Electrician

Work tasks labelled "Electrician" should only be performed by persons who are qualified professional electricians.

Service personnel

Work tasks labelled "Service personnel" should only be performed by the following persons:

- Service engineer from Troxler GmbH
- Persons authorised by Troxler GmbH to perform specific tasks on the equipment.
- Persons with appropriate qualifications.

Fault table

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Remedial measure</th>
<th>By</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belt drive and capping unit cannot be switched on.</td>
<td>Guard on capping unit is open.</td>
<td>Close the guard.</td>
<td>Operator</td>
</tr>
<tr>
<td>Caps are not fed through</td>
<td>Separation motor does not turn.</td>
<td>Check motor/plug contact for separation.</td>
<td>Operator/electrician</td>
</tr>
<tr>
<td>Capping unit moves very slowly or not at all.</td>
<td>Compressed air pressure too low</td>
<td>Check pressure.</td>
<td>Operator</td>
</tr>
<tr>
<td></td>
<td>Condensation has entered the compressed air control unit.</td>
<td>Regularly drain the condensation in the pressure reducer and air reservoir. Operate the valve by hand to remove the water.</td>
<td>Operator/service personnel</td>
</tr>
<tr>
<td>Caps are not properly fitted.</td>
<td>Rails not centred.</td>
<td>Re-align rails.</td>
<td>Operator</td>
</tr>
<tr>
<td></td>
<td>Height of dispenser head not correctly adjusted.</td>
<td>Re-adjust height of dispenser head.</td>
<td>Operator</td>
</tr>
<tr>
<td></td>
<td>Insufficient caps in drop channel.</td>
<td>Re-fill caps.</td>
<td>Operator</td>
</tr>
<tr>
<td>Capping head does not hit the centre of the bottle.</td>
<td>Wedge raising elements under bottle/belt.</td>
<td>Remove raising elements, clean raising elements and cut-outs (glass shards).</td>
<td>Operator</td>
</tr>
</tbody>
</table>
8. Accessories

Wheels
Wheels for mobile use, galvanized or stainless steel parts.

Brushes
The brushes serve to support narrow bottles as they are moving.

Crown cork capping device
The machine can be equipped to allow the capping of crown corks. Further information can be obtained from KTM.

Belt extensions
*Information/tip*
The standard length of the belt drive is 900 mm. It is possible to extend the belt depending on the machine model and space restrictions in your factory.
- Double belt extension 450 mm, extension at the input side.
- Double belt extension 450 mm, extension at the output side.
- Double belt deflecting station 450 mm.
- Double belt drive station 450 mm.

Collection table
For the convenient removal of bottles, size 600 x 500 mm. Suitable for extended double belt drive stations.

9. Appendix

Parameter change for Siemens LOGO!
Circuit diagram for electricians
SETTING AND ADJUSTMENT OF THE CAPPING HEAD

To achieve the correct performance of the capping head M2000 a periodic maintenance as well as its accurate setting is indispensable.

A first and complete setting is given at the time of the final test of the capping head according to the specific characteristics of the cap to be applied or according to specific Customer requirements.

Read this Manual accurately and carefully observe the instructions therein in order to guarantee the optimal efficiency of the equipment.

**WARNING**

*Any modification not in line with the following instructions could lead to serious troubles.*

*Our Company declines all responsibilities deriving from the non-observance of the following instructions.*

1 GENERAL DESCRIPTION

The capping head is a compact group entirely made from stainless steel and mountable on the capping machine turret. The chuck diameter and ring nut to fix the capping head to the turret conform to the existing standards (M52x1.5). Some elements of the capping head vary dimensionally according to the size and type of cap to be applied, so that the full range of caps from 18mm dia to 43mm dia can be applied as well as some special caps:

- diameter 18 ÷ 25mm miniature series
- diameter 25 ÷ 35mm standard series
- diameter 38 ÷ 43mm large series

To reduce to a minimum the maintenance operations, the free running shaft is mounted on roller bearings. The capping head is mounted at the end of a vertical shaft and is completed at its lower end by a particular pressure-block.

This pressure block is fitted with a “NO-CAP NO-ROLL” device which stops the threading and tuck-under operation in the absence of the cap.

On the vertical shaft is mounted the cross piece which carry the four arms: two for the threading rollers and two for the tuck-under rollers.

The arms which carry the rollers are centrally balanced between two springs and are fitted in the upper end with cam-followers.

The cam followers, under the push of a conical cam, transmit through the arms, the radial load to the threading and tuck-under rollers.

The pressure or radial load of the threading and tuck-under rollers is adjustable by acting by means of a threaded bush, on the load of the springs situated at the extremities of the threading and tuck-under arms.

The lower end of the capping head carries, fixed by four columns, a centering plate which guides the capped bottle under the pressure-block to execute the application of the cap on the bottle finish.

2 MOUNTING/DISMOUNTING THE HEAD ON THE CAPPING MACHINE (Fig.1)

**Mounting**

- Place yourself with the capping head vertically in line with the head carrier shaft B.
- Thread the ring nut D thus fixing the head to the head carrier shaft B.
- Then, with the special key E tighten and firmly lock the ring nut D.

**Dismounting**

- Loosen the ring nut D with the key E supplied with the tool-kit.
- Completely unscrew the ring nut D by hand and remove the capping head.
ADJUSTMENT OF THE SPRING LOAD (Fig.2)

- Remove the centering plate A (Fig.2) by loosening the four screws B.
- Measure the following diameters:

D1 = diameter of the root of the thread  
D2 = diameter of the tuck-under (neck of the bottle)  
D3 = inner diameter of the pressure-block and diameter of the pressure-block DT3

With the above dimensions previously taken choose the round calibre C which has the dimensions (DT1, DT2) 1±2 mm less than those taken.

Introduce the chosen calibre C inside the capping head and at the same time push cam D downwards till you bring the arms in the closed position and the cam-roller E to ride on the cylindrical portion of the cam as shown on Fig. 2.

With the capping head in this position, the threading rollers and the tuck-under rollers must touch the cylindrical part of the calibre as shown in F.

If the rollers are too tight on the calibre (to the point of marking it) or they are too far away from touching it, it is necessary to adjust the load of the side spring of each arm by proceeding as follows:

- Remove the safety grub screw G on the side of each arm;
- Unscrew the grub screw B as far as possible;
- Verify that the roller is touching the cylindrical part of the calibre as shown in F;
- Screw the grub screw H and lightly lock the safety grub screw G so that grub screw H does not move.

WARNING

Make sure that before putting back safety grub screw G it is dipped in medium density “loctite” yellow paste.

Repeat the same operations on the rest of the rollers.

Free the cam D by taking it back in the “rest” position (upwards). The arms will open up with a light “click” leaving the space required to let calibre C pass through.

Once these operations are completed reassemble the centering plate A.

HEIGHT ADJUSTMENT OF THE THREADING ROLLERS (Fig.3)

Fix the capping head on the capping machine.

Cut the upper part A of a cap (Fig.3) making sure that the lining material does not fall out.

Mark with a marker the start of the thread B on the bottle finish.

Insert the bottle, with on top the part A of the cap previously cut, under the capping head and turn the bottle to make sure that the reference mark on the start of the thread on the bottle finish is in line with the axis of the threading roller C.

Lower the machine so that the roller arms close. In this position the cam follower D must be 2[mm] upward on the cylindrical profile of the cam. At this point the capping inner spring is completely loaded and its load should not allow the bottle to rotate or even be removed.

Also at this point, verify that the threading roller is in line with the start of the thread E on the bottle and centered within the first two threads.

To carry out any adjustment it will be necessary to loosen the safety grub screw F thus freeing the bush of the
threading rollers. Screw (clockwise) or unscrew (anti-clockwise) this bush by introducing a long pin in the cavities G.

Once the adjustments are completed firmly lock the safety grub screw F.

**WARNING**

Make sure that before putting back safety grub screw F it is dipped in medium density “loctite” yellow paste.

Lift the machine so that the load on the capping inner spring is now released.

By operating intermittently the machine, turn the capping head intermittently and turning by hand the bottle bring the second thread rollers in line with the reference mark on the bottle.

Lower the machine thus bringing the arms in the closed position and repeat the above described operations.

5  **HEIGHT ADJUSTMENT OF THE TUCK-UNDER ROLLERS (Fig.3)**

With the capping head mounted on the machine, insert the bottle with on top the part of the cap A previously cut and bring the center C of the tuck-under roller in line with the reference mark on the bottle (Fig.3).

Lower the machine so that the roller arms close. In this position the cam follower D must be 2.0 [mm] upward on the cylindrical profile of the cam. At this point the capping inner spring is completely loaded and its load should not allow the bottle to rotate or even be removed.

Also at this point, verify that the tuck-under roller is 0.2÷0.3 [mm] below the neck of the bottle finish H (tuck-under line). Actually, this gap is the thickness of the skirt of the cap and therefore can vary according to the type of the cap to be applied.

In the case of caps with a shaped skirt or with particular metal thickness, it is in any case necessary to check this dimension by trial and error (capping a few bottles and observing the final tuck-under results).

To carry out any adjustments it will be necessary to loosen the safety grub screw I thus freeing the bush of the tuck-under rollers. Screw (clockwise) or unscrew (anti-clockwise) by introducing a long pin in the cavities L.

Once the adjustments are completed firmly lock the safety grub screw I.

**WARNING**

Make sure that before putting back safety grub screw I it is dipped in medium density “loctite” yellow paste.

6  **ADJUSTMENT OF ARMS RADIAL LOAD**

Normally the radial loads of the arms are set according to the technical datas supplied by the manufacturers of the caps. However, if there should be anomalies in the formation of the thread on the cap on application, it is possible to carry out further adjustments.

First of all it is necessary to check that the load on the spring of each arm is the same.

To measure this load it is necessary to hook the dynamometer to the arm at M (fig.3) and putting one hand on the fulcrum N of the lever to detect any small movement of the arm itself.

Pull hard on the dynamometer thus moving the arm towards yourself and read on the dynamometer the load of the spring the moment you feel any movement of the arm.

To adjust the radial load act on the screw O. Pay particular attention when screwing or unscrewing this screw because any little variation means a big load variation of the spring.
After verifying that all the arms are adjusted to the same load, carry out a few applications of the cap on the bottle thus verifying that it conforms to the technical specification.

If the quality of the application is acceptable, then it means that the loads on the arms are correct. If negative, repeat the above described adjustments.

At this stage, by means of a “torquetester” verify that the effort to unscrew the cap is according to one’s own requirements.

If this does not correspond modify the radial load of the arms bearing in mind that too much load can deform the cap (cut thread and/or irregular tuck-under) during the application of the cap on the bottle.

It is therefore necessary to carry out several trial and error applications until the right compromise is obtained which agrees with Customer’s requirements.

7 REPLACEMENT OF THE ROLLER (Fig.4)

Prior to removing the roller to be replaced check with a caliber the dimension X (Fig.4) between the arm and the flat part of the roller to be replaced.

Remove the centering plate A (Fig.4) by unscrewing the four screws B.
Remove the safety grub screw C and completely unscrew the bush D thus freeing from the arm the whole roller group.
After this, compress the spring and remove the washer (spring retainer).
Now it is possible to remove the spring E, the bush D and the roller G.
Replace the roller, assemble the bush and retain the spring by means of its washer and screw the whole group into the arm respecting the distance X previously taken between this and the flat part of the roller.
Once this operation has been completed firmly lock the safety grub screw C.

WARNING
Make sure that before putting back safety grub screw C it is dipped in medium density “loctite” yellow paste.

CHARACTERISTIC DATAS

MAIN SPRING VERTICAL LOAD

Non-Carbonated liquids
80 ÷ 120 kg ( Ø = 22 ÷ 25 mm)
110 ÷ 140 kg ( Ø = 28 ÷ 31.5mm)

Carbonated liquids
180 ÷ 220 Kg ( Ø = 25 ÷ 35mm)

MAIN SPRING STRENGTH

<table>
<thead>
<tr>
<th>Load Wire Ø</th>
<th>Kg mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>4</td>
</tr>
<tr>
<td>80</td>
<td>4.5</td>
</tr>
<tr>
<td>100</td>
<td>5</td>
</tr>
<tr>
<td>140</td>
<td>5.5</td>
</tr>
<tr>
<td>180</td>
<td>6*</td>
</tr>
<tr>
<td>200</td>
<td>6.2*</td>
</tr>
</tbody>
</table>

*Values for pressure holding sealing with mobile pressure-block.
ROLLERS RADIAL LOAD

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threading Rollers</td>
<td>8 ÷ 13 [Kg]</td>
</tr>
<tr>
<td>Tuck-under rollers</td>
<td>6 ÷ 10 [Kg]</td>
</tr>
</tbody>
</table>

These values are starting values and can be varied according to the results to be achieved.

9 PRESSURE-BLOCK DESCRIPTION

The pressure-blocks are divided into two categories:
- Fixed pressure-block.
- Mobile pressure-block

Assemble/disassemble the pressure-block.

Remove the capping head from the turret of the capping machine.
Unscrew the two locking screws A (Fig 6) situated on the cross piece and remove the centering plate together with the columns B by pushing downwards.
Loosen the grub screw C.
Position the special key D in the holes E provided in the pressure-block.
Insert a long pin in the hole provided on the shaft so as to impede its rotation.
Unscrew the pressure-block by turning clockwise the special key D.
Screw in the new pressure-block by turning anticlockwise the special key D.
Remove the long pin from the shaft and tighten the grub screw which had been previously loosened.
Reassemble the centering plate, taking care of the location direction when mounting it, pushing it slowly upwards, and screw in the two locking screws situated on the cross piece.

Fixed pressure-block.
This is used to apply caps to seal flat liquids -non carbonated (Fig. 6 E).
The shape of the inner profile can be flat or concave.
Normally a concave profile of 5° is used.

Mobile pressure-block.
This is used to apply caps to seal carbonated liquids or with STELVIN caps (Fig. 6 G).
Each individual cap manufacturer tests the cap’s inner liner pressure holding characteristics on the bottle with its own pressure-block profile.
With equal characteristics of the cap, a change of cap supplier lack of holding pressure can be experienced. To a different type of inner liner corresponds a different profile of application.
It is therefore necessary to know the profile details of the pressure block used by the cap supplier when testing the cap to assess its pressure holding characteristics.

10 ROLLERS DESCRIPTION

The rollers are divided into two categories:
- Threading rollers.
- Tuck-under rollers.

THREADING ROLLER
The standard threading roller A (Fig. 7) has a profile radius B of 0.8mm.
In certain instances, a radius B of 0.6 [mm] can be used, or for caps with a diameter above 35 [mm] a radius B of 1.2[mm] can be used.
TUCK-UNDER ROLLER

There are two types of tuck-under rollers:

- Tuck-under forming roller
- Tuck-under finishing roller

The standard tuck-under forming roller C (Fig.7) has a radius D of 0.8 [mm]

There are more than one version of the tuck-under finishing roller:

- The standard version E with a step F between the outside diameter and the shoulder (for side tucking) of 2 [mm]
- The version for STELCAP caps G with a step H between the outside diameter and the shoulder (for side tucking) which varies according to the cap diameter:

<table>
<thead>
<tr>
<th>Cap Ø (mm)</th>
<th>H (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>22 ÷ 25</td>
<td>1.25</td>
</tr>
<tr>
<td>28 ÷ 36</td>
<td>1.5</td>
</tr>
</tbody>
</table>

Special version for STELCAP caps I with the step L between the outside diameter and the shoulder (for side tucking) which can vary according to the diameter of the cap.

<table>
<thead>
<tr>
<th>Cap Ø (mm)</th>
<th>L (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>22 ÷ 25</td>
<td>1.25</td>
</tr>
<tr>
<td>28 ÷ 36</td>
<td>1.5</td>
</tr>
</tbody>
</table>

11 POSSIBLE TROUBLES

INSUFFICIENT STEP ON TOP OF CAP

Not enough axial load.
Diameter of the pressure-block not adequate for the type of cap. (too big)

CUT ON THE UPPER PART OF THE CAP

Step on top of the cap too deep.
Diameter of the pressure-block too small, making sure that the axial load is the right one to form the step.

IRREGULAR STEP ON TOP OF CAP

Incorrect adjustment of the pressure-block.
Inclined bottle or inclined bottle neck.
Bottle too tight in the center star of the capping machine.
Center star of the capping machine too low.

SCARCE DEPTH OF THREAD

Verify the radial load of the rollers.
Roller arms incorrectly adjusted.
Rollers too wide apart.

THE THREAD ROLLERS MAKE A GROOVE ON THE CAP WITHOUT ENTERING THE START OF THE THREAD OF THE GLASS FINISH.

Gripped rollers.
Rollers adjusted too high.
Pressure-block incorrectly adjusted (unscrewed).
Cap material of poor quality.
THE THREAD ROLLERS CUT THE CAP AT THE START OF THREAD.

Rollers set too high.

Rollers set too low.
Rollers radial load too high.
Partially gripped rollers.

THE THREAD ROLLERS CUT THE CAP AFTER THE START OF THREAD

Rollers radial load too high.
Partially gripped rollers.

THE THREAD ROLLERS START TO THREAD THE CAP TOO LOW THUS DOWNWARD DEFORMING IT.

Roller springs worn out or broken.
Rollers out of phase.
Tendency of the rollers to grip.
Bushes locking grub screws loosened.

THREAD TOO WEAK

Not enough radial load.

TUCK-UNDER NOT FORMED

Insufficient tuck-under bead on the cap.

BREAKAGE OF THE CAP BRIDGES

Gripped rollers.
Rollers set too high.
Very high radial load.
Bridges too weak.
Diameter of the tuck-under bead too small.
Tuck-under bead too low.
Bottle finish too high or too low.

DENTED OR MARKED CAP BELOW THE KNURL.

Thread rollers too low.
Very high radial load.

CUT CAP

Very high radial load.
Thread rollers too high.

12 SPECIAL APPLICATION FOR “MIGNON” CAPPING HEADS

The reduced dimensions of the bottle and consequently those of the cap, require reduced structural dimensions of the capping head as well as the application of a particular device A (Fig. 9) to stop the pressure-block from rotating.

As there is a very low vertical load on the cap (about 30 Kg) the pressure-block does not sufficiently block the cap at the moment when the cap is being threaded by the rollers on the finish of the bottle. Practically the rollers mark very lightly the thread as the cap rotates with the bottle. By applying to the capping head the above mentioned device A it is possible to stop the rotation of the pressure-block thus allowing the rollers to form a good thread.
- Lubrication of the thread rollers: weekly.
- Lubrication of the tuck-under rollers: weekly.
- Check that the grub screws are well tightened: Half yearly.

For a trouble free working of the capping head we advice to observe the following recommendations:

- Monthly: Inject grease (for food machinery) compatible with the FDA norms, using the grease gun A (Fig 5) for the lubrication of the inner ball bearings of the capping head.
- At regular intervals oil the outer parts of the capping head.
- Wash with warm water and lubricate after drying, the thread rollers and the tuck-under rollers.
- Lubricate at least once a week the rollers using oil spray. The oil must be for food machinery compatible with FDA norms.