FS32 & FS10

(example; exact model may vary)

This instruction handbook is for the daily users of the equipment.

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1 Introduction

1.1 FS10 / FS32

FS10 and FS32 are both semi-automatic capping machines designed for crimping aluminium caps.

FS10 is designed for crimping 8 mm, 13 mm and 20 mm standard crimp caps* with or without flip-off plastic disc.
FS32 is mainly designed for 20mm and 32 mm caps*, also with or without flip-off plastic disc.

Crimping is performed by pressing the bottle or vial against the bottle holder. This causes the crimp head to move down onto the bottle, the jaws close around the cap, pressure is applied, the jaws release and the head lifts again.

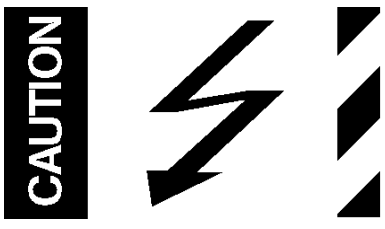
All used compressed air is collected and can be removed through a hose mounted on the side of the cabinet.

*ISO 8362

1.2 Abbreviations in this manual

App.	Approximately
Hz	Hertz
IH	Instruction Handbook
Max.	Maximum
PE	Protective Earth (electrical units safety measure)
SOP	Standard Operating Procedure
VAC	Volt Alternating Current
WMF	Watson-Marlow Flexicon a/s

1.3 Symbols on the machine

Warning against touching	Warning against high voltage
	

1.4 Caution and employee safety

This manual should be read before using the FS10/FS32.

It is strongly advised that

- Any kind of maintenance or cleaning of the machine not is carried out while power is connected
- Unauthorised / non-trained personnel should not maintain the electrical parts
- The machine is placed in such a way that it is not exposed to high humidity, high temperatures or other abnormal operating environment.
- FS10 / FS32 is used for capping bottles, only

1.5 Essential training before daily use

Read the section with *Daily Use*, thoroughly before using the machine.

Protective equipment and protective devices are installed:

- If fingers accidently are placed on the top of the bottle while the crimp head is going down, crimping will not take place. If the inner side of crimp head is prohibited to “rest” on the top of the cap it will return to top position.
- Always respect the warning symbols on the machine.

Cleaning must be performed as described in this IH.

1.6 References

N/A

1.7 Dismantling and disposal

Prior to dismantling, it must be observed that all services are disconnected, and connections to other equipment are removed.

WM-Flexicon machines may not be disposed using normal refuse collection. The machines must be collected and disposed separately as they contain electrical components such as batteries, electrolyte capacitors, liquid crystal displays and printed circuit boards.
Further information is available on www.wmflexicon.dk.

* (WEEE) DS/EN 50419

2 General information

2.1 Unpacking and inspection

Please check that all ordered items have been received and that no items are damaged during transport. In case of any defects or omissions, please contact WMF or your supplier immediately.

2.2 Receiving and storing the FS10/FS32

Before unpacking or storing of the FS10/FS32 it should be checked if the crate is damaged.
In case of long-term storage of the FS10/FS32 before installation, the machine must be stored in the crate, and placed in a dry room. The crate is not water resistant.

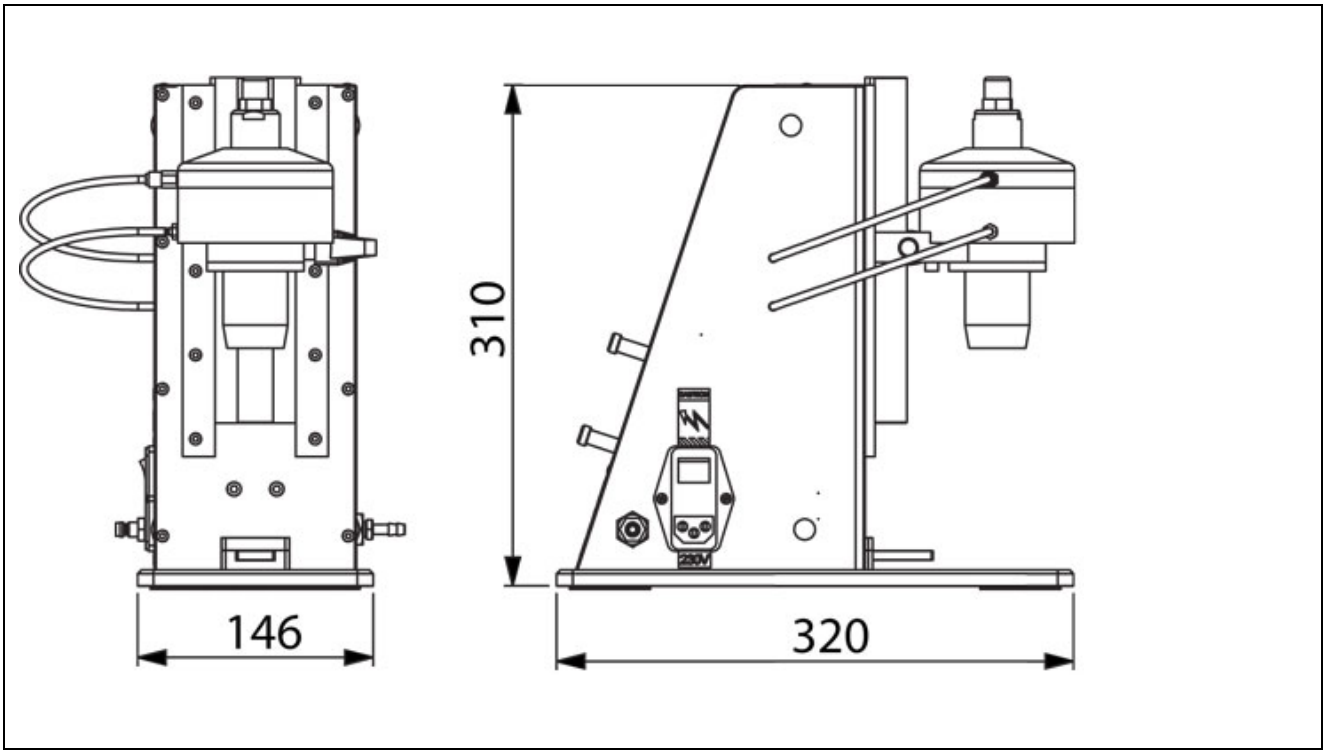
2.3 Mounting of capping head

If the capping head has been removed during shipping it is mounted as described in section 3.2

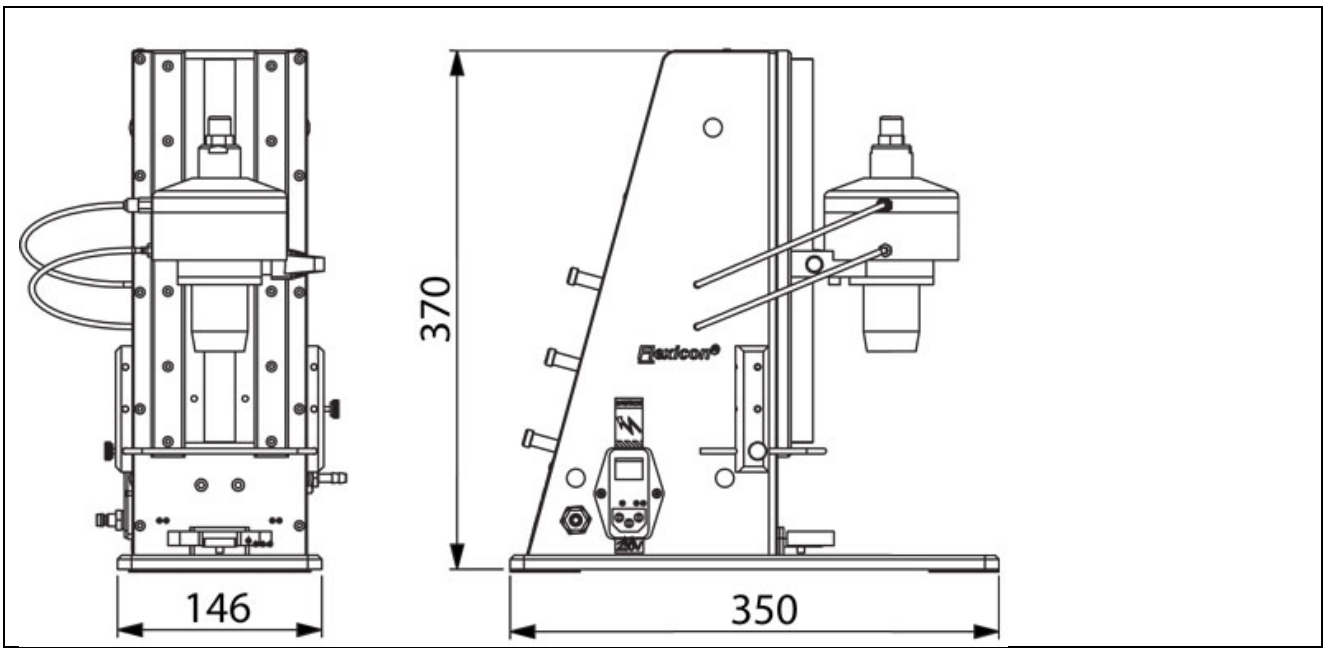
2.4 Technical specifications

2.4.1 Dimensions

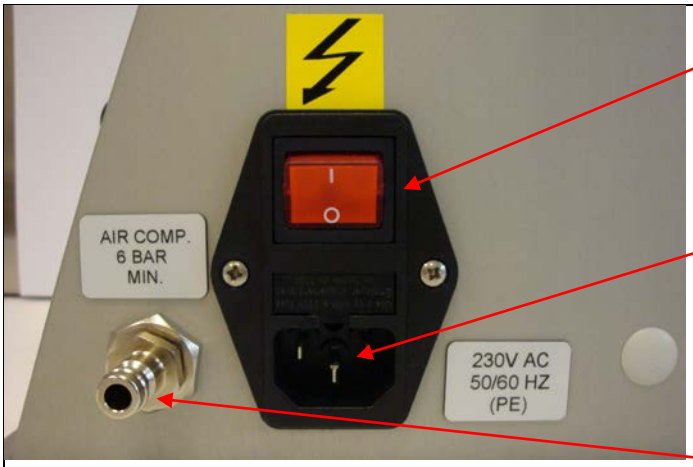
FS10



FS32



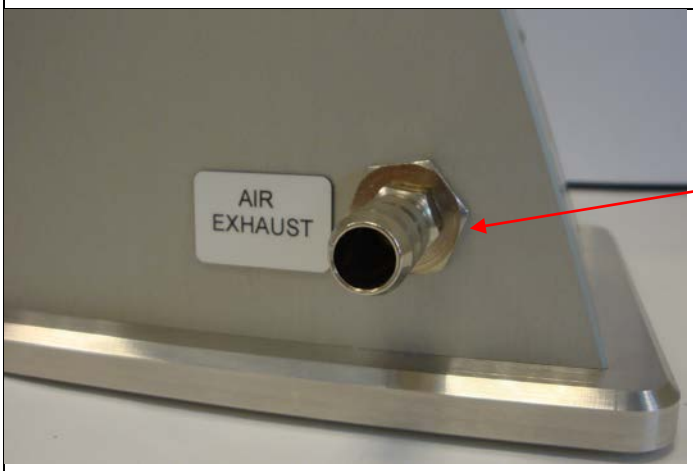
2.4.2 Buttons / Connections



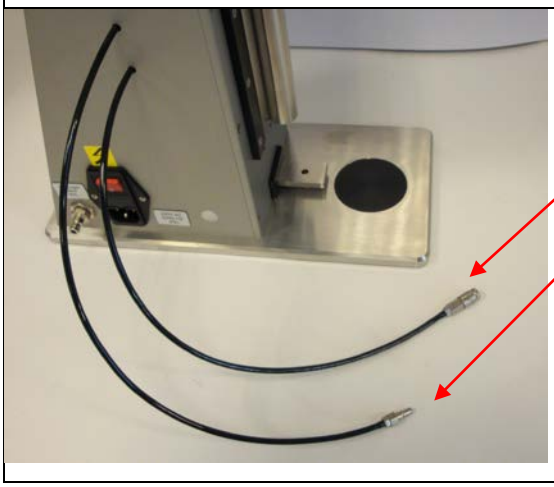
ON/OFF Button / Emergency stop
Power indicator; lights when power is on.
OFF is used for emergency stopping.

Power supply connection

Compressed air connection



Exhaust filter and air collection



Air tubes for the crimp head

2.4.3 Services

All electrical systems are placed inside the machine.

Power supply:	110/230 VAC earthed, 50/60Hz
Consumption:	50 W
Compressed air:	6 bar, clean and dry air
Consumption, FS10:	35 L/min. free air
Consumption, FS32:	50 L/min. free air

Note: Only authorised personnel can gain access to the installations. The main power cable must be removed completely from power supply before the installations are touched.

2.4.4 Bottles and caps

Bottle sizes

	FS10	**FS32**
Max. Diameter	55 mm	95 mm
Max. Height	180 mm	240 mm

Cap sizes

	FS10	**FS32**
DIN standard With or without flip-top	8-20 mm	20-32 mm

2.4.5 Ingress protection

Ingress protection	IP31

2.4.6 Weight

Weight, FS10	app. 12 kg
Weight, FS32	App. 16 kg

2.4.7 Materials

Cabinet	Anodised aluminium
Closing head	Hardened steel jaws Anodised aluminium housing

3 Installation

3.1 Connections

FS10 / FS32 must be placed on a stable and horizontal bedplate.

The mains cable (1) is connected to a single-phase power supply with earth.

The plug box (1) contains 2 fuses. When the cover of fuse box is removed 1 more fuse is found inside the machine.

Compressed air is connected to (2) by use of the supplied quick release clutch.

2 **1**

Please contact your supplier or WMF -

IF the machine is not made for your local power supply. The sign on the machine indicates the value of power (110/120 VAC or 220/240 VAC). The frequency has no influence.

or

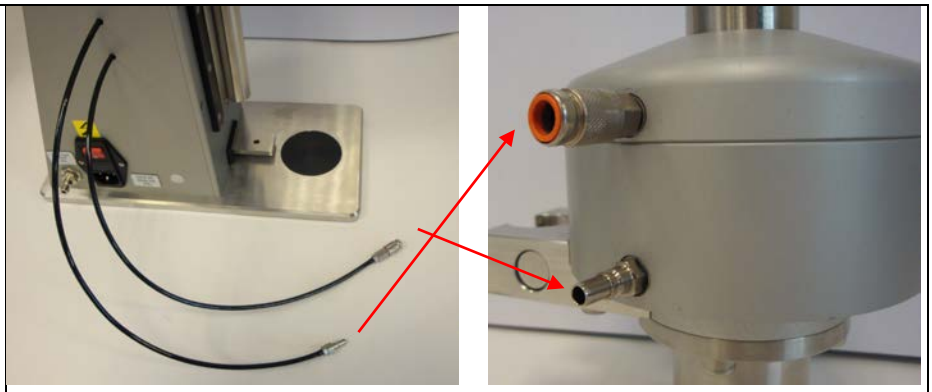
If the delivered power cable does not match your socket,

All exhaust air is collected and exhausted through the air exhaust filter (2)

A hose connection can be mounted in order to "remove" the process air form the capping area; but the machine will function even if no hose is mounted.

3

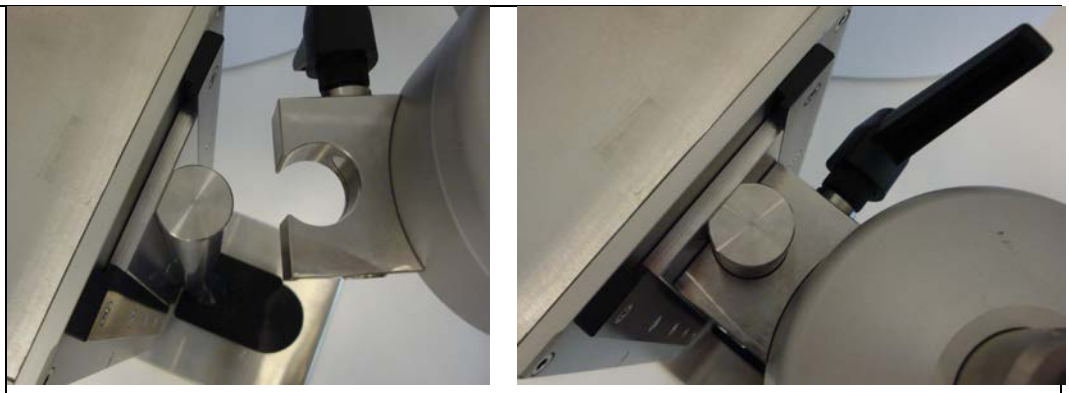
The tubes (4) are mounted on the capping head.
The upper tube on the upper connection and the lower on the lower connection



4

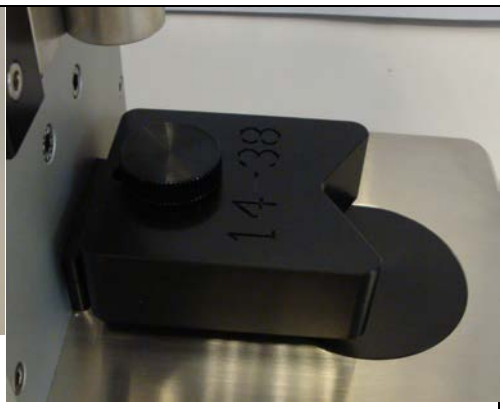
3.2 Mounting of capping head

Loosen the handle on the side of the capping head and mount the head gently on the slide bar.
Tighten the handle.
Re-mount the air tubes on the capping head



Changing of capping head is done the opposite way as mounting.

3.3 Mounting of bottle tool

Place the bottle tool on the bracket and mount the screw.		

Note: If the bottle tool is mounted too close to the machine the switch function will not work, see section 4.1

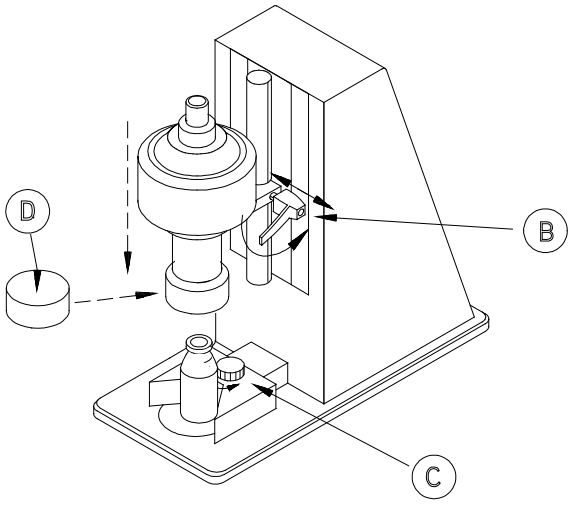
4 Adjustments

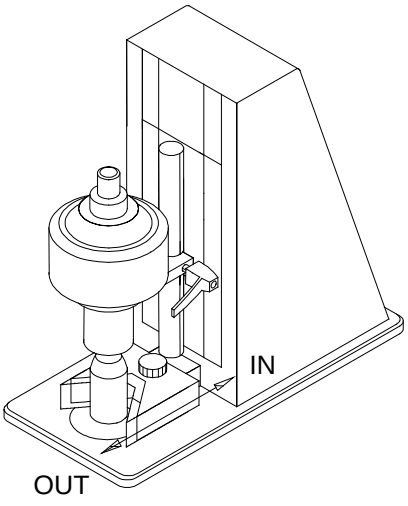
4.1 Adjustment of the height of the capping head

Before starting the production the initial height of the capping head and the bottle tool should both be adjusted.

Begin with the bottle tool; for safety reasons switch the power OFF

Place a bottle on the base plate under the capping head.
Loosen the handle “B” and lower the capping head until it is just above the bottle neck.
Now adjust the bottle tool so the bottle is centred under the capping head – WHEN THE BOTTLE TOOL IS PUSHED “IN”
Now FS10 is ready for height adjustment.





Connect compressed air and power. Turn power ON.
Choose the spacer (D) which best fits the capping head on the machine.

Place a bottle under the capping head – With NO stopper or cap in place.
Place the spacer on the capping head, so that it fits on the capping head.

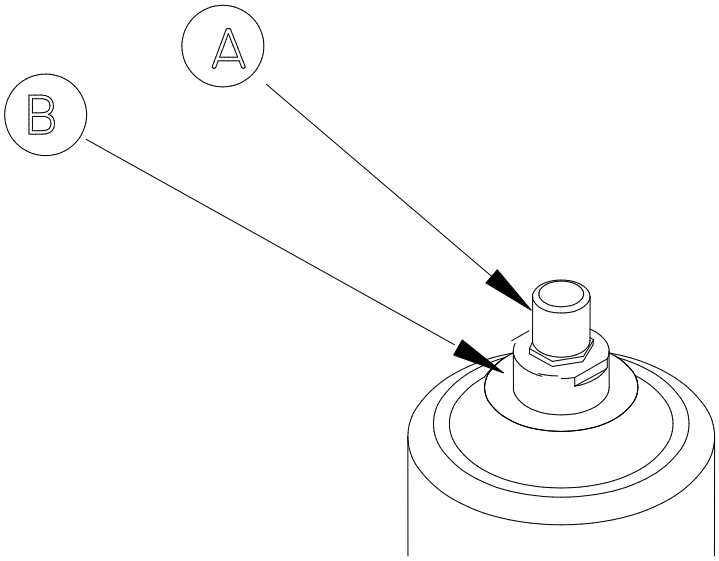
Loosen the handle (B), press the capping head down until it rests firmly on the bottle.
It should be so firm, that the bottle can only be removed by the use of some force.

Tighten the handle (B) again. Remove bottle and spacer. The height is now roughly adjusted.

For final adjustment, a few vials should be capped and crimped.
Examine the results and if necessary make adjustments according to trouble shooting table, see section 6.1

4.2 Adjustment of the stroke length of piston in capping head

Under normal condition it is possible to operate with full stroke length on the piston, but in certain combination of cap and bottle ring tolerances, the cap might fold when hitting the bottle neck.
If this happens, the stroke length can be adjusted as following:



1. Loosen the nut (A) and screw down the piston cap (B).

2. While holding contra on the piston cap with the key surface, the nut is tightened.

3. Repeat the procedure until the cap is crimped satisfactorily.

5 Daily Use

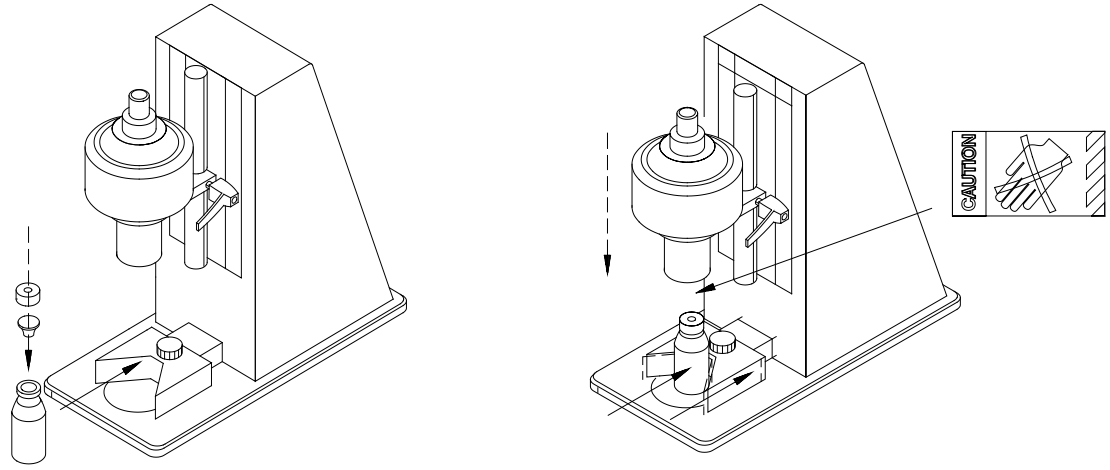
5.1 Production START and STOP

FS10/FS32 is ready for production start when:

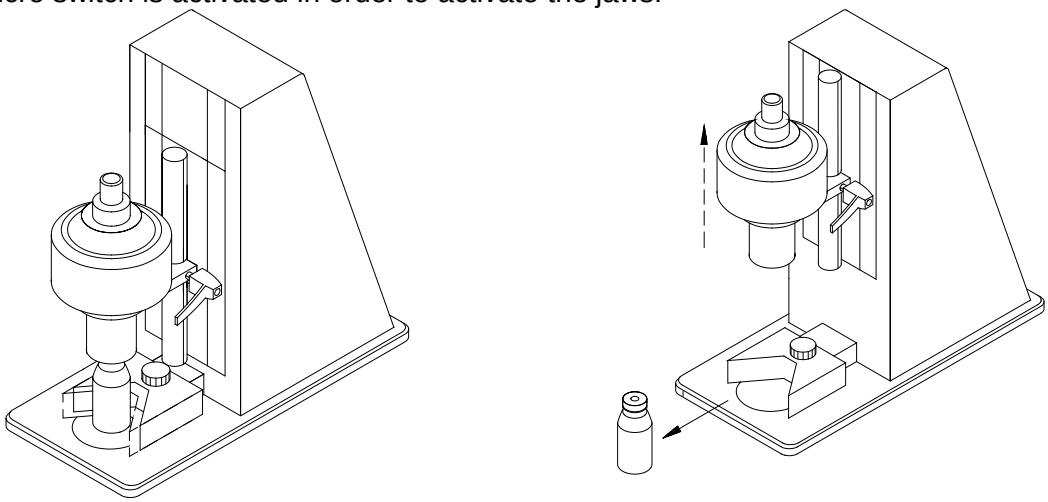
- Section 3 has been completed
- The height of the capping head has been set (section 4.2.1)
- and the Power signal is ON

5.2 Starting-up and running

The bottle with cap is placed in the bottle tool, which is activated by pressing it towards the rear of the machine. The capping head moves down onto the cap and bottle.



The bottle tool activates a micro switch which releases the compressed air; the capping head then descends on the cap by its own weight. In case something prevents the capping head (e.g. a finger) in encircling the cap, a stroke will not be achieved. When the capping head is in position over the cap, a micro switch is activated in order to activate the jaws.



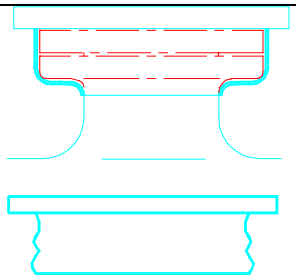
The jaws crimp the cap on the bottle and then the capping head returns to its upper position.

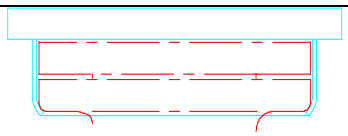
6 Malfunctioning

6.1 Function errors / Trouble shooting

FS10/FS32 is a relatively simple machine to operate and normally errors will be due to incorrect adjustment of certain functions.
In the table below, the most common faults are described and what causes it.

Problem:	Crimping leaves marks on the cap skirt, and crimping is not tight.
Reason:	Capping head is too high.
Action:	Lower capping head.

Problem:	Caps are closed on the bottle neck. Or the caps are deformed. (harmonica deformation) 
Reason:	Caps skirts are too long for stopper-vial combination. Too long stroke.
Action:	Check combination of rubber stopper, vial and cap. Adjust the stroke. (see section 4.2)

Problem:	Crimping is done on the rim of caps. 
Reason:	Too short stroke. Cap skirt is too short.
Action:	Make an adjustment of the stroke. Check rubber stopper's head for thickness.

Problem:	Cap is not crimped tight. Cap is crimped too tight.
Reason:	Incorrect height of crimp head. Stroke length incorrect. Dirty/worn jaws.
Action:	Adjust the crimp head height slightly. Lower is tighter – Higher is looser. Make an adjustment of the stroke. Clean and polish the jaws; please contact your supplier or WMF

7 Cleaning

7.1 Cleaning Frequency

As FS10/FS32 is not in direct contact with the dispensed product, daily cleaning might not be necessary.
Cleaning might be determined by local SOP's and cleaning validations; but must never be with detergents more potent than the ones below.

7.2 Preparations for cleaning

Before cleaning the machine:

- Turn off the power
- Remove the capping head and the air tubes

7.3 Cleaning Guidance

Correct cleaning of the FS10/FS32 is carried out by washing it off with water or detergents, using a lint-free firmly wrung cloth or lint-free paper towel; subsequently the machine is wiped off with a dry cloth.

7.4 Detergents or cleaning agents

Normal cleaning agents such as tepid/medium hot water, ethyl alcohol (ethanol) 70% and may be used all over the machine.
The FS10/FS32 can be cleaned in several ways:

Cleaning of parts made of:	**May be autoclaved**	**Can be cleaned with ethyl alcohol 70%**	**Can be cleaned with water and afterwards wiped off with dry a cloth**
Anodized aluminium	X	X	X
Nylon (Compressed Air tubes)			X

Recommendation: Keep a log on the cleaning in order to keep a sense of perspective.

8 Maintenance & service

8.1 Service

Should service be needed, please contact W-M Flexicon or your local supplier.

8.2 Methods and frequency of inspections for safety functions

Safety functions should be tested once a year:

- Emergency switch

When pressed the compressed air is switched off

Keep a log and read the previous log recordings to present an overview of the machines state.
After testing the safety functions the results must be recorded in the log.

9 Accessories

For FS10/FS32 a number of standard capping heads are made as well as capping heads for special purposes. The mounted standard bottle tool covers most bottle sizes, but customised bottle tools can also be delivered.

10 Declaration of conformity

We Watson-Marlow Flexicon A/S
Frejasvej 2-6
DK-4100 Ringsted

Declare on our sole responsibility that the flex seal:

Flex Seal type	Item no	Model
FS10	93-100-100	63-100-020
FS32	93-100-110	63-100-050

to which this declaration relates is in conformity with the following standard(s):

DS EN/ISO 12100	Safety of machinery - Basic concepts, general principles of design
DS/EN 60204	Safety of machinery – Electrical equipment of machines

According to the provisions in the Directives:

2006/42/EC	On the approximation of the laws of the Member States relating to machinery
2006/95/EC	On the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits
2004/108/EC	On the approximation of the laws of the Member States relating to electromagnetic compatibility

Signature:

October, 2012

Ringsted, Denmark

Jørn Jeppesen, Development Manager