

# colombi®

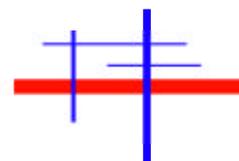
## SPEEDFEEDER

### SPRING FEEDING UNIT

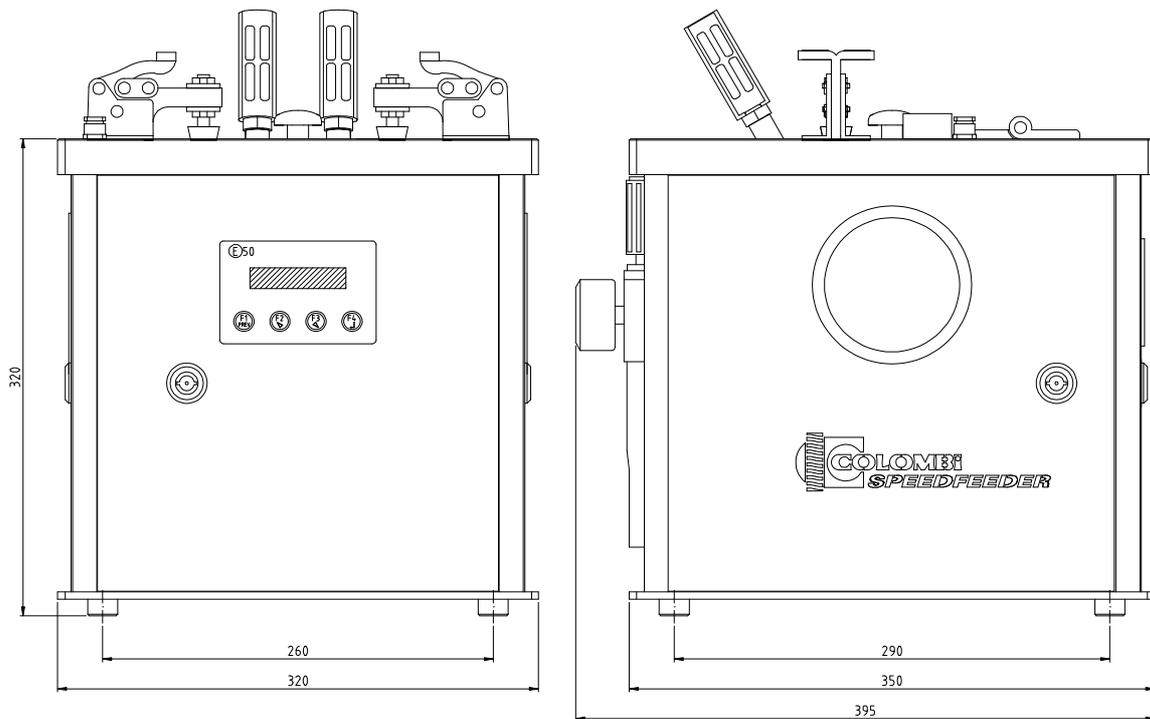
#### TECHNICAL MANUAL



**Tekno-Detaljer AB**



<b>1</b>	<b>SYSTEM-DESCRIPTION.....</b>	<b>3</b>
<b>2</b>	<b>UNPACKING AND SETTING THE UNIT .....</b>	<b>3</b>
<b>3</b>	<b>OPERATING THE UNIT .....</b>	<b>4</b>
<b>3.1</b>	<b>START-UP AND LOAD .....</b>	<b>4</b>
<b>3.2</b>	<b>MENU LAYOUT .....</b>	<b>5</b>
<b>3.3</b>	<b>MAIN MENU .....</b>	<b>6</b>
<b>3.4</b>	<b>SETTINGS MENU .....</b>	<b>6</b>
<b>3.5</b>	<b>TIMERS MENU.....</b>	<b>7</b>
<b>3.6</b>	<b>EXTERNAL EQUIPMENT MENU .....</b>	<b>8</b>
<b>3.7</b>	<b>TANGLED SPRINGS .....</b>	<b>9</b>
<b>3.8</b>	<b>ERROR-CHECKING .....</b>	<b>9</b>
<b>4</b>	<b>EXTERNAL EQUIPMENT (OPTIONS) .....</b>	<b>10</b>
<b>4.1</b>	<b>QUEUE SENSOR.....</b>	<b>10</b>
<b>4.2</b>	<b>ESCAPEMENT.....</b>	<b>11</b>
<b>5</b>	<b>MAINTENANCE.....</b>	<b>12</b>
<b>5.1</b>	<b>DAILY: .....</b>	<b>12</b>
<b>5.2</b>	<b>WEEKLY:.....</b>	<b>12</b>



## 1 SYSTEM-DESCRIPTION

Colombi Speedfeeder is a simple operated product for spring-separation and feeding. The springs are poured into the separation-chamber. A feeding-procedure separates the tangled springs and feed them through the outlets.

Two solenoid valves control the feeding procedure. One of the valves controls the feed-air and the other one handles the reject-air.

A small PLC-system controls the automatic feeding/rejecting-procedure. With a small panel, which is placed in front of the Spedfeeder, is it possible to adjust four timers: time on, time off, cleartime and feedtime.

In our factory the setting of the machine has been tested to suit just your spring. In the enclosed "Data sheet" you will find all setting figures.

## 2 UNPACKING AND SETTING THE UNIT

The Colombi Speedfeeder must be placed on a horizontal and stable place. Connect air to min. 80 psi (5,44 bar) and power to 115 or 230V, 10Amps.

When connecting the delivery tubes to the nozzles make sure that the end with the "air-release-holes" (if there are any) is mounted in the nozzle.

## 3 OPERATING THE UNIT

### 3.1 Start-up and load

The Speedfeeder is controlled by a PLC with a panel as an interface.  
When "Power" is turned on the "Main-menu" appears on the panel.

The lid is opened/closed by two handles. A sensor automatically switches off the power to the valves, and sets the speedfeeder in off mode, as soon as the lid is opened.

If the lid is closed when pressing the power on button, the Speedfeeder sets in on mode.

**WARNING! The Speedfeeder should never be forced to run with the lid open or with any of the air-vents, blanking-plug or outlets removed.**

To start separation do the following:

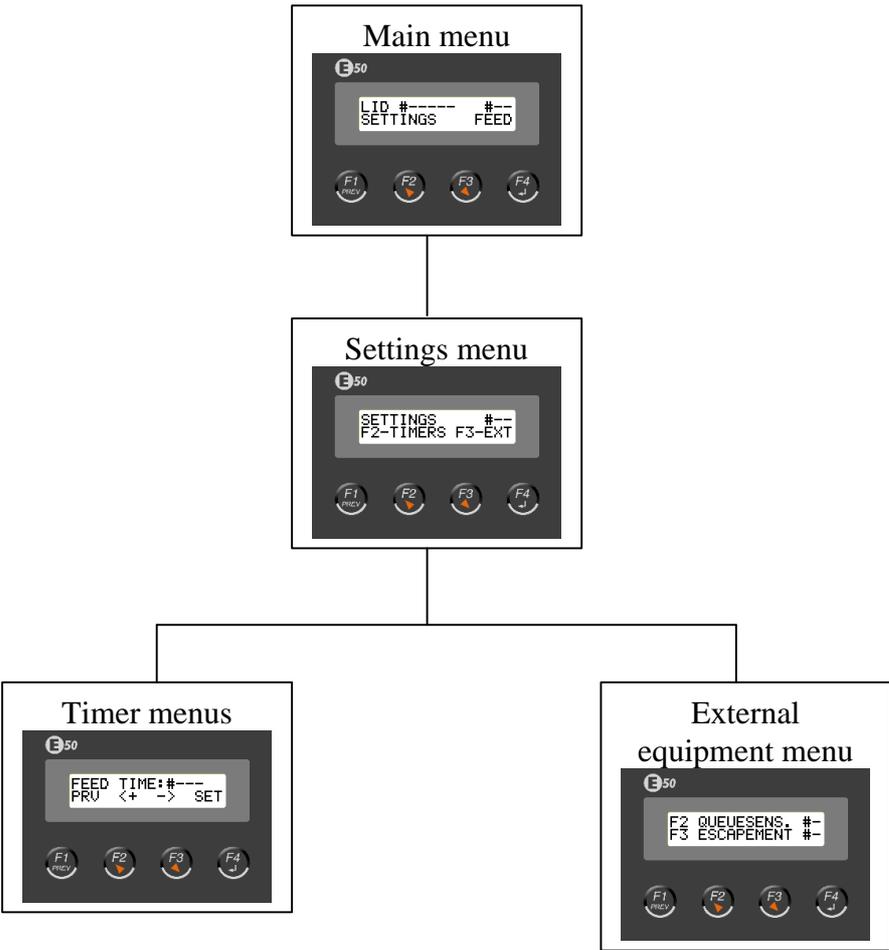
If springs are already loaded when power is turned on:

- The Speedfeeder starts automatically.

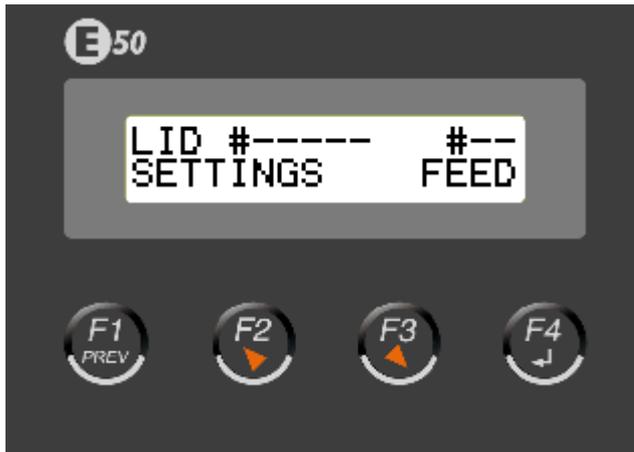
If springs are not loaded when power is turned on:

- Open lid
- Load springs
- Close lid
- Press **F4**

### 3.2 Menu layout



### 3.3 Main menu



- F1** Open the “Settings menu”
- F2** No function in this menu
- F3** No function in this menu
- F4** Starts/Stops Speedfeeder

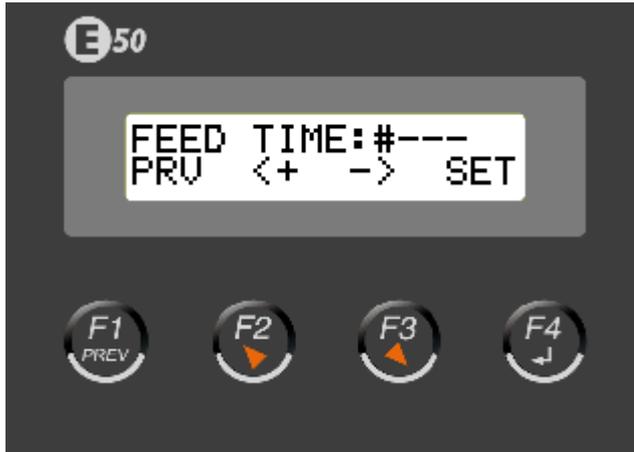
In the “Settings menu” “Timers menu” and “External equipment menu” can be selected.

### 3.4 Settings menu



- F1** Return to “Main menu”
- F2** Opens “Timers menu”
- F3** Opens “External equipment menu”
- F4** Starts/Stops Speedfeeder

### 3.5 Timers menu



**F1** Return to previous menu (“Settings menu”)

To change a timer setting do the following:

- Select timer with **F2** or **F3**
- Confirm selection with **F4**
- Increase timer value with **F2**, or decrease value with **F3**
- Save setting with **F4**
- Return to “Main menu” by pressing **F1** twice

**On:** This timer handles the on-time when the unit is doing a clear/feed-seq.

**Off:** This timer handles the off-time when the unit is waiting to feed/clear.

**Feed:** Timer for the feeding-sequence through the outlets.

**Clear:** Timer for the clear/rinse-sequence through the outlets.

**Principal function of timers:**

<b>ON</b>				<b>OFF</b>	<b>ON</b>				<b>OFF</b>
<b>Clear</b>	<b>Feed</b>	<b>Clear</b>	<b>Feed</b>		<b>Clear</b>	<b>Feed</b>	<b>Clear</b>	<b>Feed</b>	

When setting a new spring or adjusting an old one there are some things to remember:

- It is better to use low values on the timers especially On/Feed to avoid springs from getting stacked in the nozzles.
- If you have a hard spring to feed try to use max. three Feed/Clear-sequences before the Off-sequence.
- Always use as low air as you can to avoid springs from getting stacked. But remember to check that the springs rotate well in the separation-chamber.
- Do not forget to make evacuate-holes, (if needed), in the end of the tube that fits in the nozzle and mount the tube all way down.

**Note! The Speedfeder is delivered to suit a specific spring for best capacity. The capacity can depend on the quantity of springs in the separation-chamber. The Speedfeeder should never be operated more than third full.**

### 3.6 External equipment menu



- F1** Return to previous menu (“Settings menu”)
- F2** Queue sensor option
- F3** Escapement option
- F4** External 2 menu

To enable an external equipment do the following:

- Toggle equipment ON/OFF with **F2** or **F3**
- Return to “Main menu” by pressing **F1** twice

### 3.7 Tangled springs

Certain kinds of springs may not be untangled and must be taken away before next refill otherwise tangled and old springs may get stuck into the nozzle and cause unnecessary stoppage.

### 3.8 Error-checking

Stops are normally caused by differing springs. End coils not closed enough often cause problems. Different spring diameters may also be a problem.

If the springs in the separation-chamber do not rotate they are probably too heavy or too many. Check your data sheet if the air regulator is rightly adjusted. If not, increase the feed-air by turning the handle on the regulator, **inside the Speedfeeder**, counterclockwise.

If the springs have a tendency to rotate unequally or if they seem to concentrate in the corner of the separation chamber, you can move or add some air connections (standard 3 pcs.) on the separation chamber. The springs usually gather where the feed-airflow is lowest.

Ex: If you have one nozzle in the middle you normally want the mainpart of the springs to rotate there to get high capacity. Move the air connections to the ends of the separation chamber (if they are not already placed there). There are five connections to choose from.

The Speedfeeder can never separate all springs loaded inside it. There will always be a small amount of springs left when you will leave the unit on. If the amount of unseparated springs is unusually large try to change/check the following items:

- Try to run the unit with as few and short feeding cycles as possible.  
(Decrease the On and Feed timers)
- Do not use too high air-pressure if it isn't necessary. Decrease the pressure with the regulator **inside** the unit.
- Do not overload the unit with springs, as they will rotate abnormally long time and or get deformed.

Other kind of interruption and similar problems may be solved with help from enclosed drawings and part-lists.

## 4 External equipment (options)

### 4.1 Queue sensor.

To enable queue sensor option, do the following: (When at Main menu)

- Press **F1** to open settings menu
- Press **F3** to open external equipment menu
- Press **F2** to toggle queue sensor option ON/OFF
- Press **F1** twice to return to “Main menu”
- Replace plug situated lower left from air filter unit with queue sensor cable and mount sensor on delivery tube.
- Adjust distance between sensor and delivery point for Your application.

The queue-sensor stops the Speedfeeder when the springs reach the position of the sensor. These kinds of sensors can detect a spring with O.D. of 2mm and it is also possible to adjust the detecting-sensitivity with a small screwdriver at the side of the sensor.

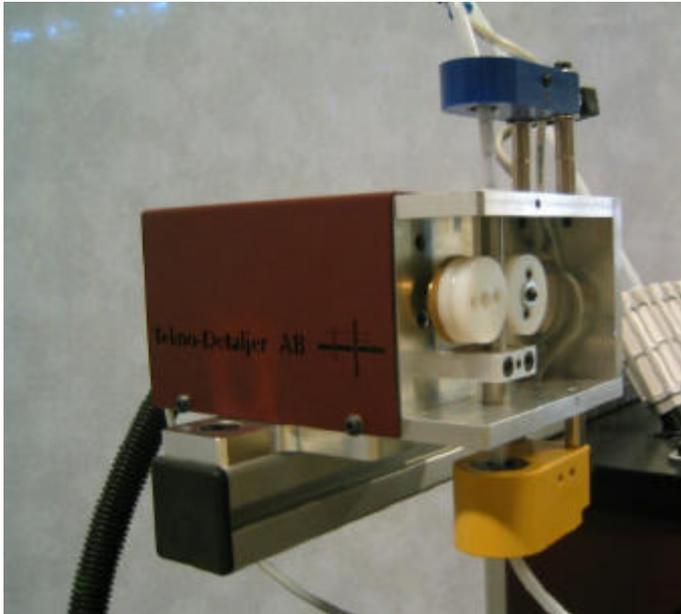
Do not place the queue-sensor too far away from the end of the tube as the pressure of the queue can cause stoppage.

Connection for the plug is found in the electrical schemes delivered with the machine

## 4.2 Escapement.

To enable escapement option, do the following: (When at Main menu)

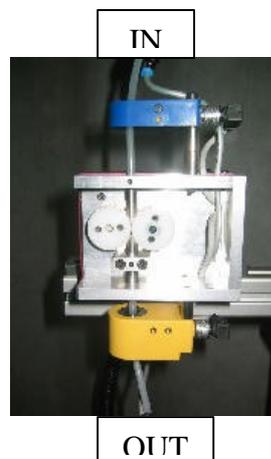
- Press **F1** to open settings menu
- Press **F3** to open external equipment menu
- Press **F4** to toggle ON/OFF
- Press **F1** twice to return to “Main menu”



A Speedfeeder equipped with an escapement means that one signal delivers the springs one by one.

An escapement should always be mounted vertically with the outlet downwards. It is very important to mount the tube all the way down into the escapement-inlet otherwise it may cause stoppage

When starting up the unit the Speedfeeder will fill up the queue and when that is done the escapement will deliver one spring if it receives an external start signal. As soon as the escapement is activated the Speedfeeder starts and runs until the queue are full again.



## **5 Maintenance**

### **5.1 Daily:**

Make the following checks:

- The air pressure should be correct
- Remove any debris or foreign matter from the nozzles.

The outlets and tubes must be free of obstruction.

### **5.2 Weekly:**

- Remove all springs from the separation-chamber and blow out all the accumulated debris with a jet of air.
- This should be done more frequently if the springs being fed are soiled or greasy.