

Tablet Filling Machine

Selected number of tablets will be loaded into a glass tube which is transported by belt conveyor.

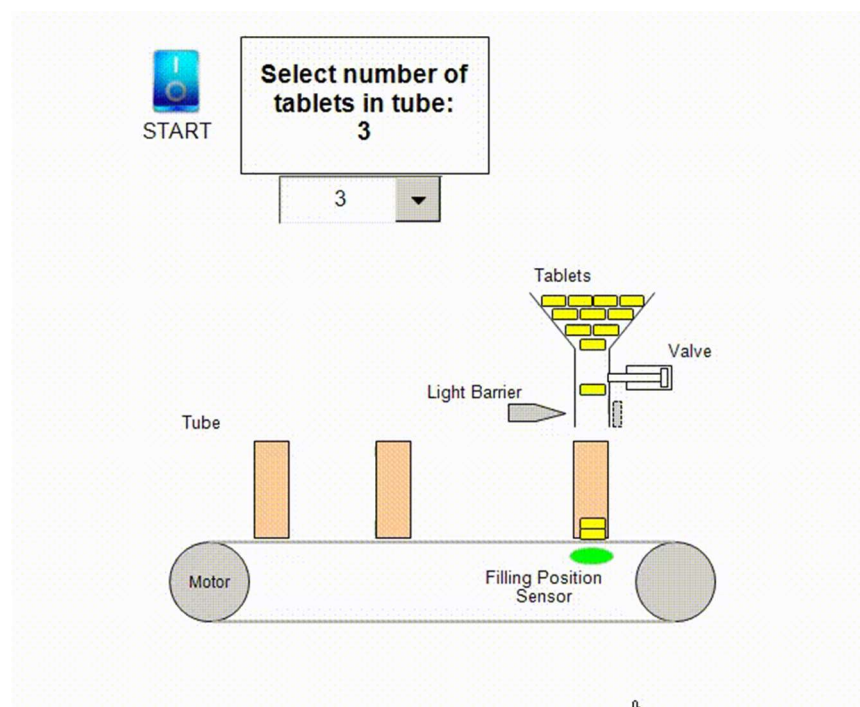
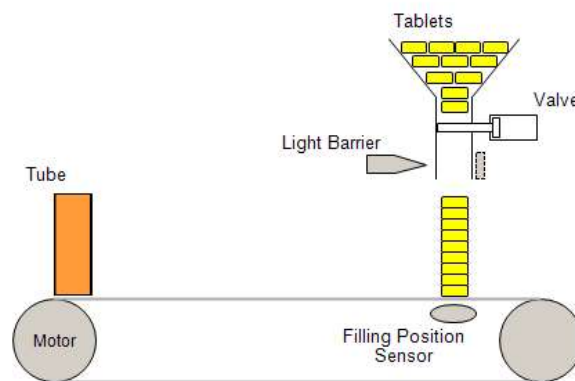
The belt motor runs until the tube appears at the *Filling Position* sensor.

Then the valve opens and tablets fall down into the tube.

Falling tablets are detected by the *Light Barrier* sensor.

After the selected number of tablets is placed in the tube, the conveyor runs again.

In case the selection of tablets number changes the current running filling process will be completed with the old tablets number.

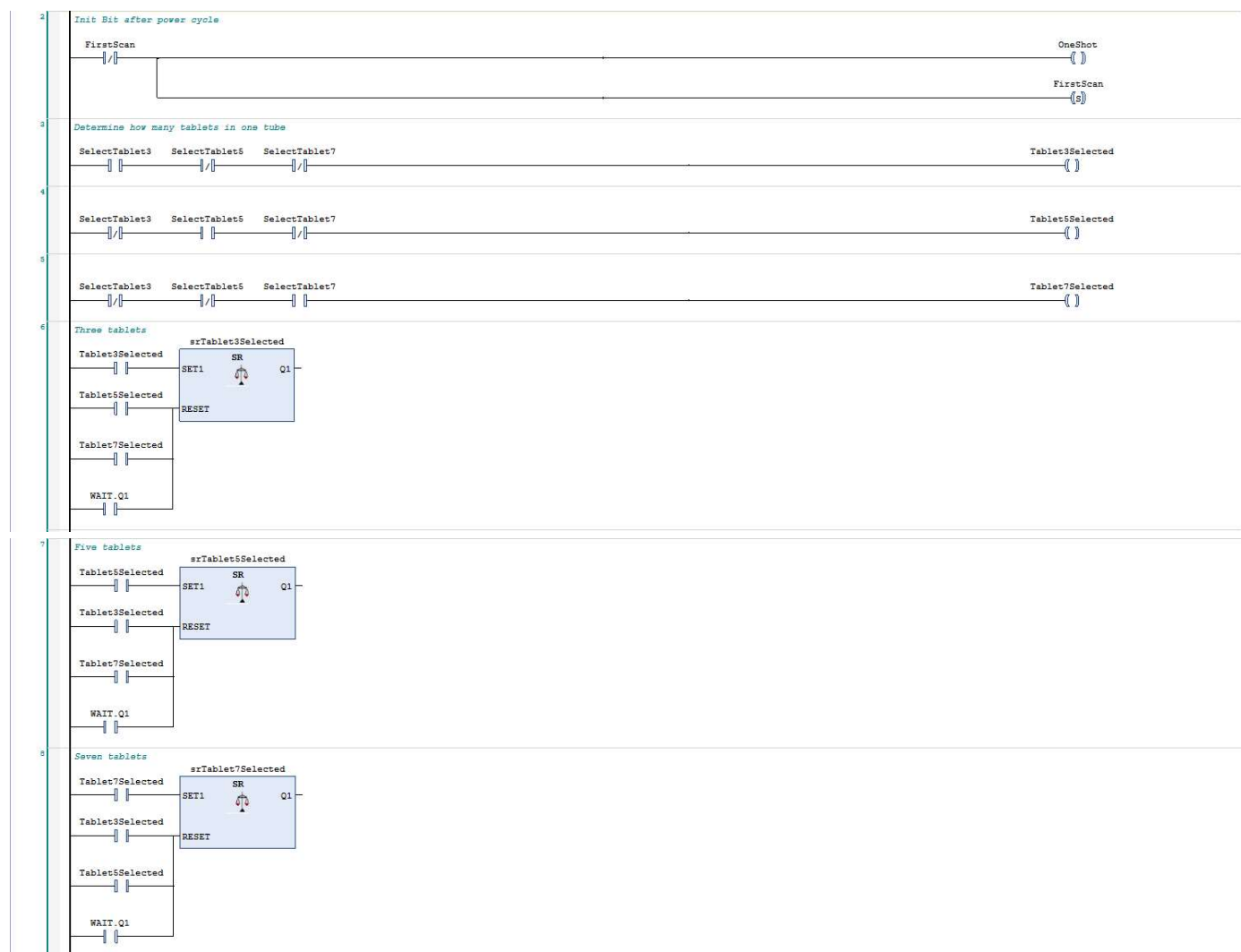


Version 1 – only three fixed number (3, 5, 7) of tablets can be chosen by boolean input.

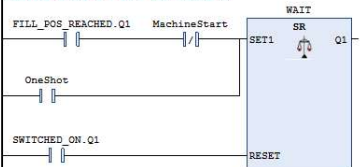
```

1  FUNCTION BLOCK TabletFillingControl01
2  VAR_INPUT
3      MachineStart          : BOOL;      // True=Machine On
4      FillingPosition        : BOOL;
5      SelectTablet3         : BOOL;      // amount (3) of tablet in tube selected
6      SelectTablet5         : BOOL;      // amount (5) of tablet in tube selected
7      SelectTablet7         : BOOL;      // amount (7) of tablet in tube selected
8      LightBarrier          : BOOL;      // False = free (no tablet present)
9  END_VAR
10 VAR_OUTPUT
11      BeltMotorCmdOn        : BOOL;
12      ValveCmdOpen          : BOOL;
13      LampTablet3           : BOOL;      // True = 3 tablet in tube selected
14      LampTablet5           : BOOL;      // True = 5 tablet in tube selected
15      LampTablet7           : BOOL;      // True = 7 tablet in tube selected
16 END_VAR
17 VAR
18     CountTablet3           : CTD;      // down counter for three tablets
19     CountTablet5           : CTD;      // down counter for five tablets
20     CountTablet7           : CTD;      // down counter for seven tablets
21
22     Tablet3Selected        : BOOL;
23     Tablet5Selected        : BOOL;
24     Tablet7Selected        : BOOL;
25     FirstScan              : BOOL;
26     OneShot                : BOOL;      // one shot pulse after power restart
27     srTablet3Selected      : SR;
28     srTablet5Selected      : SR;
29     srTablet7Selected      : SR;
30
31     WAIT: SR;
32     SWITCHED_ON: SR;
33     WAIT_FOR_FILL_POS: SR;
34     FILL_POS_REACHED: SR;
35     LOAD_CTR_3_TABLETS: SR;
36     LOAD_CTR_5_TABLETS: SR;
37     LOAD_CTR_7_TABLETS: SR;
38
39     rtCount3Tablets: R_TRIG;
40     rtCount5Tablets: R_TRIG;
41     rtCount7Tablets: R_TRIG;
42     tonCount3Tablet: TON;
43     tonCount5Tablet: TON;
44     tonCount7Tablet: TON;
45 END_VAR

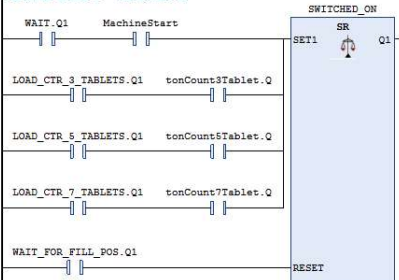
```



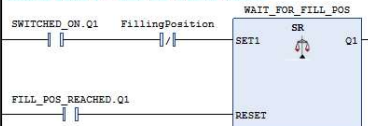
Machine state 0 - WAIT for SWITCH ON



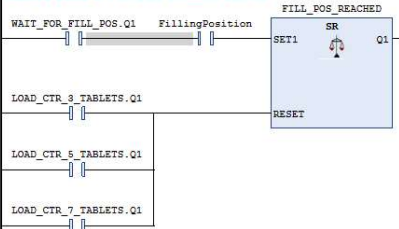
Machine state 1 - SWITCHED ON



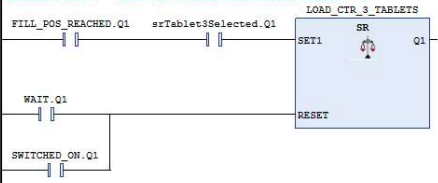
Machine state 2 - WAIT for FILLING POSITION



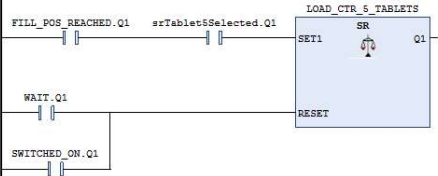
Machine state 3 - FILLING POSITION REACHED



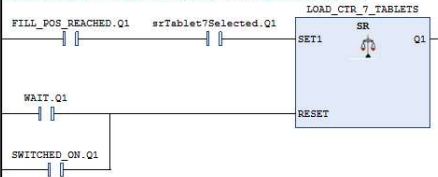
Machine state 4 - LOAD CTD COUNTER with tablets amount = 3



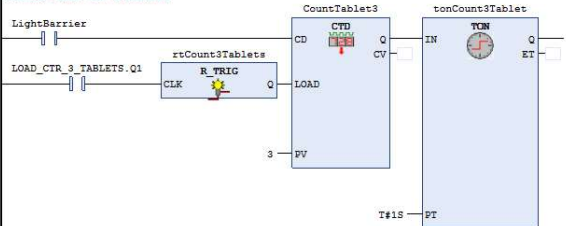
Machine state 5 - LOAD CTD COUNTER with tablets amount = 5

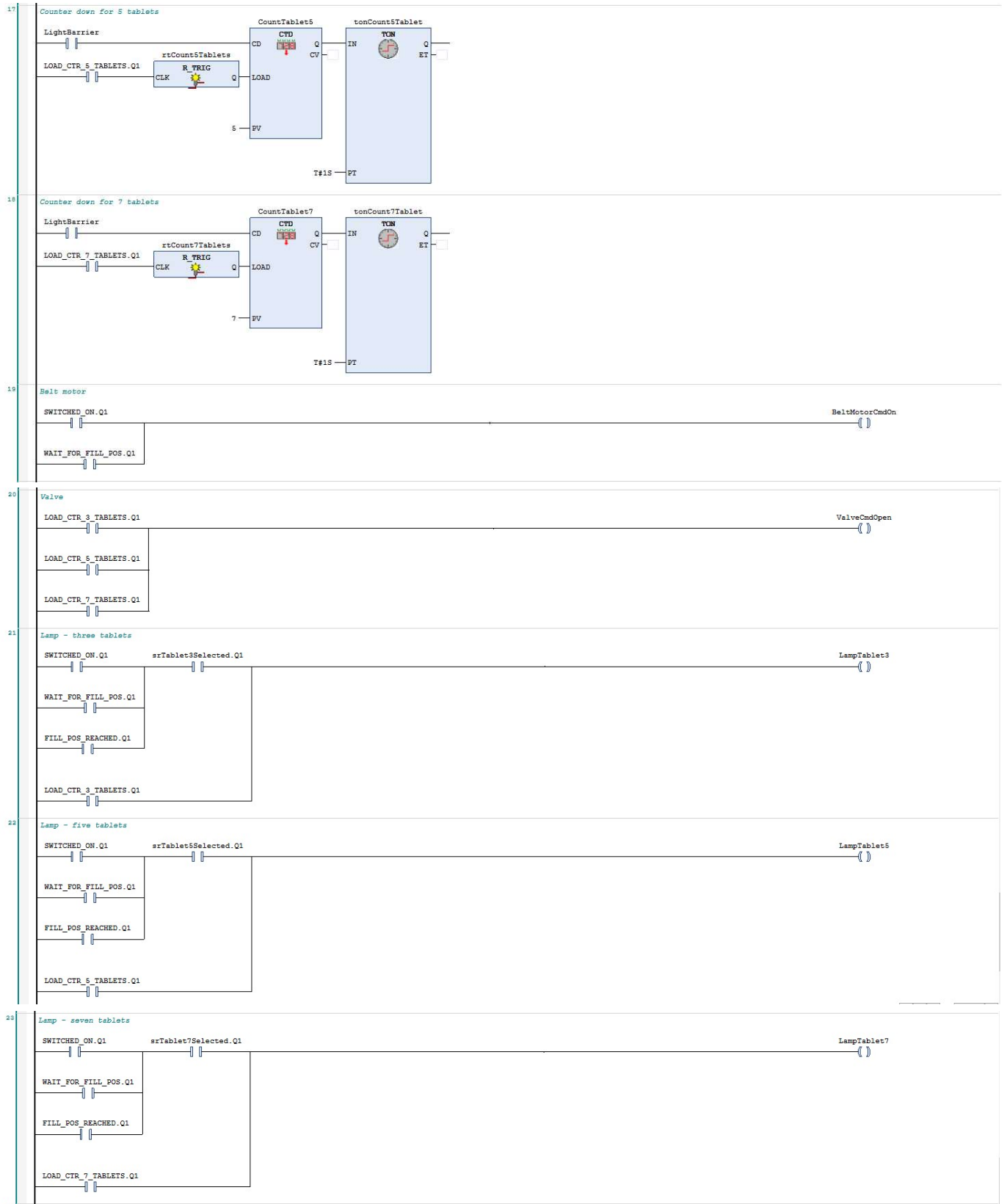


Machine state 6 - LOAD CTD COUNTER with tablets amount = 7



Counter down for 3 tablets





Version 2 – any number of tablets can be chosen by 'TabletsInTube' variable.

```

1 FUNCTION_BLOCK TabletFillingControl02
2 VAR_INPUT
3     MachineStart          : BOOL;      // True=Machine On
4     FillingPosition        : BOOL;      // Tube in loading position
5     TabletsInTube          : UINT;      // Number of tablets which should be loaded into one tube
6     LightBarrier           : BOOL;      // False=free (no tablet present), True=tablet present
7 END_VAR
8 VAR_OUTPUT
9     BeltMotorCmdOn         : BOOL;      // Belt motor command ON
10    ValveCmdOpen           : BOOL;      // Valve command OPEN
11    TabletsSelected         : UINT;      // Number of tablet selected to be loaded into one tube
12 END_VAR
13 VAR
14     ctdTablets             : CTD;       // down counter for three tablets
15
16     FirstScan              : BOOL;
17     OneShot                : BOOL;      // one shot pulse after power restart
18     srTabletNumberSelected : SR;        // Number of tablets properly selected (>0)
19
20     WAIT                   : BOOL;      // Machine state 'Wait'
21     SWITCHED_ON            : BOOL;      // Machine state 'Switched on'
22     WAIT_FOR_FILL_POS      : BOOL;      // Machine state 'Waiting for filling position'
23     FILL_POS_REACHED        : BOOL;      // Machine state 'Filling position reached'
24     LOAD_CTR_TABLETS        : BOOL;      // Machine state 'Load counter with tablets number'
25
26
27     rtTabletCntLoaded       : R_TRIG;    // Tablet counter loaded with number of tablet
28     tonCountTablet         : TON;        // delay after last tablet detected to allow proper positioning in the tube
29 END_VAR

```

