

# The Comparison Block

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## Comparing Numeric Values

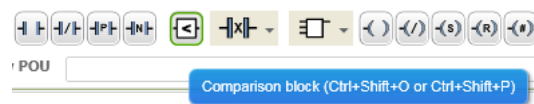
Sometimes it is necessary to compare values to see if a value is above or below another. For example, consider a storage silo weighing 200Kg and that silo can contain 100 Kg of product. If the silo is fitted with a load cell then the weight can be measured. If the weight exceeds 290 Kg then the storage silo can be considered full and the control system can ensure that no more product is put into that silo.

Comparing numeric values in SoMachine Basic is achieved using the Comparison block.

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## How to Create a Comparison Block

The Comparison Block tool is located on the toolbar next to the XOR and Functions. It is a rectangle with a left chevron (<) inside.



To create a Comparison Block select the tool and place the object on the rung in any position except the right hand side of the rung.

Double-click the Comparison Expression above the block to open an entry box and enter the required expression.

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## Conveyor Application

The speed of a conveyor is represented by an analog value on input %IW0.0 and will be compared with the low and high setpoints that were configured previously. If the speed of the conveyor is outside the range of the setpoints then an indication will be made to the operator. No other automation control is required.

# Exercise - Comparing With the Setpoints

## Learning Outcomes

By the completion of this exercise you will:

- Be able to use the Comparison block


### 1 Create the rungs for comparing the analog value.

- Create two new rungs in the Speed Monitoring POU.
- Rename these rungs VS High and VS Low

### 2 Program the rung to compare with the high setpoint

- Place a contact at the start of the rung and assign it to address **%M100**.

The comparison only needs to be done when the conveyor is running.

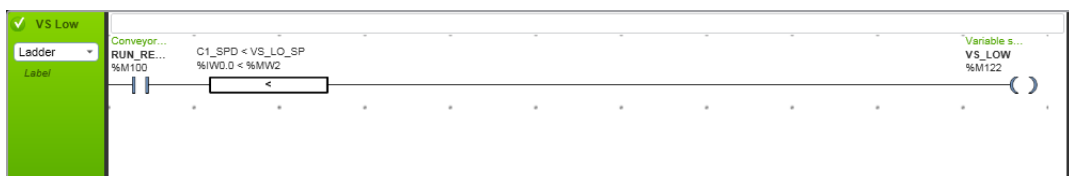
- Select the Comparison Block tool  and place the block next to the contact.
- Click the Operation Expression above the Operation block and enter the expression **%IW0.0 > %MW1**.
- Add a coil to the rung and assign it to address **%M121**.

The completed rung should look like this



### 3 Program the rung to compare the low setpoint.

- Program the Low SP rung with the following objects and the expression **%IW0.0 < %MW2**



### 4 Save the application.

