**Function Block Description Document:**

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**Function Block Name:** VFValveBasic

**Function Block Use:** This function block is intended to provide all the code necessary to operate valves inside the printer. It should provide cycle option as well as error monitoring. Since not all valves use limit switches, it has the capability to enable or disable limit switches.

**FB Structure and Data Types:**

Graphical user interface

Description automatically generated

**Inputs Explained:**

Table

Description automatically generated with medium confidence

Parameters:

Table

Description automatically generated with low confidence

* TimeOutValue
  + Only used if hasLimitSensors is TRUE
  + Will set Outputs.status.error if time out period elapses on a move before the sensor is made.
* hasLimitSensors
  + Set TRUE if the end positions of the valve have limit sensor feedback.
* enabled
  + Set TRUE always to use the function block
* cycleTime
  + when a cycle command is issued, the amount of time it holds the open or closecommand.
  + If cycleTime is 1 second, and Inputs.commands.cycle is set TRUE then the FB will set Outputs.OpenValveSignal high for 1 second, then Outputs.CloseValveSignal high for 1 second.

Commands:

Table

Description automatically generated

open

* + set Outputs.OpenValveSignal and monitor for feedback

close

* + Set Outputs.CloseValveSignal and monitor for feedback

cycle

* + Cycle the valve open then closed

stop

* + Set Outputs.CloseValveSignal and Outputs.OpenValveSignal both low.

This function block uses a pointer for commands in order to achieve a workflow like this:

Diagram

Description automatically generated with low confidence

**Outputs Explained:**

Table

Description automatically generated

OpenValveSignal

* + Map this to the valve control DO for opening

CloseValveSignal

* + Map this to the valve control DO for closing

.status**.**

**Currently this “status” structure is used in other functions of the code that still use older valve logic. As such, there are a lot of status output bits that are unused by this function block. This document will touch on all status output bits that *are* used by the function block.**

.fbState – string of the current function block state

.readyForCommand – bit which signifies that the function block is ready to receive a command

.opened – the conditions for the valve being opened are met

.closed – the conditions for the valve being closed are met.

.cycling – the valve is in the process of cycling

.doOpen – currently the valve is opening

**.doClose** – currently the valve is closing

**Example Implementation:**

A picture containing text

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If limit switches are used map limit switches on input side



Map Outputs to DO module

Set gMachine.VIA.valveControl[0].commands to manipulate the valve.