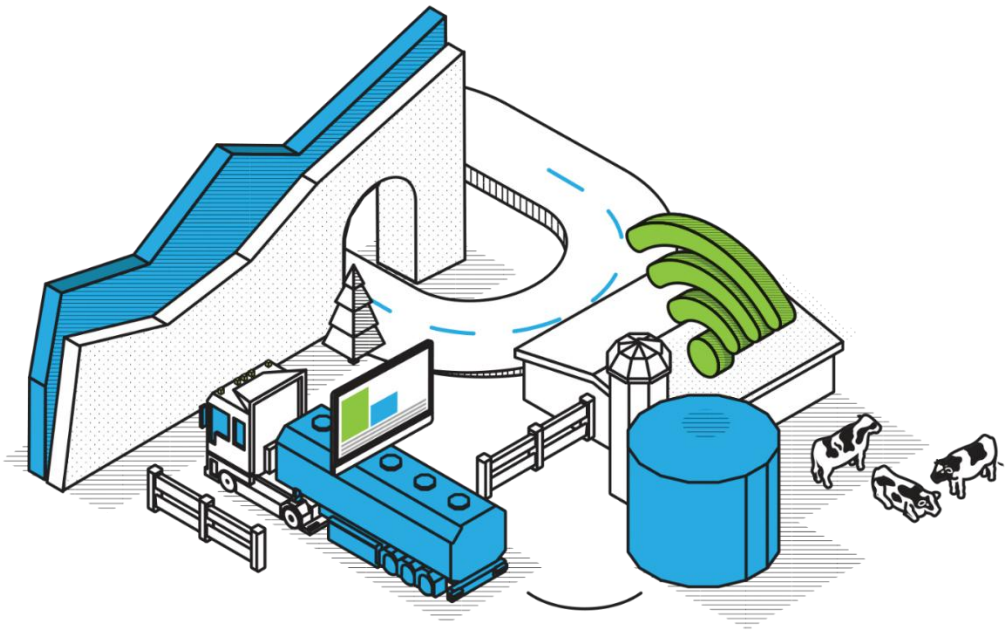
PIPER



US FloStream

CIP Sequence

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1.0 PURPOSE

This document outlines the operational sequence for the CIP process, detailing how the Piper FloStream interacts with various signals and probes.

2.0 ACRONYMS

- **P1** – Liquid detect probe at the pump (LMT102)
- **P3** – Liquid detect probe at the flow transmitter (LMT100)
- **DR1** – Drain valve furthest from the pump
- **DR2** – Drain valve closest to the pump
- **DEL** – Deliver valve

3.0 INPUT SIGNALS

- **CP1** – Input signal from the wash system to indicate the start of the Clean-in-Place (CIP) process. This signal must be continuous throughout the entire CIP cycle.
- **CP2** – Input signal from the wash system to indicate the start of a cycle. This signal must go low at the end of the cycle.

4.0 CIP PARAMETER OVERVIEW

Parameter Number	Parameter Description	FUNCTION
92	P1 debounce **ON** time during CIP	Time after the P1 probe becomes wet when the system registers its wet status
93	P1 debounce **OFF** time during CIP	Time after the P1 probe becomes dry when the system registers its wet status
121	MainPumpKickInCIP	Pump speed after the CP2 signal goes high. This is a percentage of the of the Variable Frequency Drive's (VFD) maximum frequency
127	US_TwoSpeedCIPDrainSP	Pump speed after CP2 goes low at the end of the cycle. This is a percentage of the of the Variable Frequency Drive's (VFD) maximum frequency
128	CIPCyclePrimeTime	Time that the system waits after CP2 goes high. This is to allow enough time for the system to fill with water
132	MainPumpCIPSpeedVat_1	Pump speed for Vat1 during CIP. This is a percentage of the of the Variable Frequency Drive's (VFD) maximum frequency
133	MainPumpCIPSpeedVat_2	Pump speed for Vat2 during CIP. This is a percentage of the of the Variable Frequency Drive's (VFD) maximum frequency
134	MainPumpCIPSpeedVat_3	Pump speed for Vat3 during CIP. This is a percentage of the of the Variable Frequency Drive's (VFD) maximum frequency
135	MainPumpCIPSpeedVat_4	Pump speed for Vat4 during CIP. This is a percentage of the of the Variable Frequency Drive's (VFD) maximum frequency

5.0 CIP PROCESS

- The process begins when the CP1 input signal goes high, indicating the start of the CIP

The Piper FloStream will prompt the operator to select the Vat/Silo to be washed and then confirm it is empty (refer to section 4.0 for details)

- When the CP2 signal goes high, initiating the cycle, the "CIP Cycle Prime Time" (parameter 128) countdown timer will begin. This timer ensures the wash system has enough time to fill the Vat/Silo with water. Once the "CIP Cycle Prime Time" has elapsed, the Piper FloStream will check the status of the P1 probe:

    - If P1 is wet: The Piper FloStream will open the DEL and DR1 valves and start the pump (parameter 121). When the P3 probe becomes wet, the DR1 valve will close, and the pump will ramp up to the desired speed (parameters 132-135)

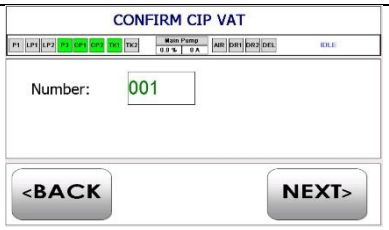
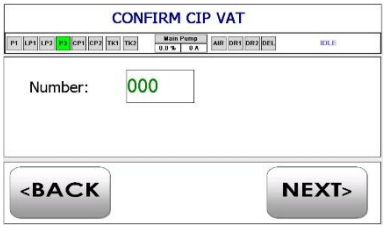
    - If P1 is dry: The Piper FloStream will open the DR2 valve to flood the pipe and wait for P1 to become wet, plus the debounce time (parameter 92). Once P1 is wet, the DR2 valve will close, and the DEL and DR1 valves will open, starting the pump (parameter 121). When the P3 probe becomes wet, the DR1 valve will close, and the pump will ramp up to the desired speed (parameters 132-135)

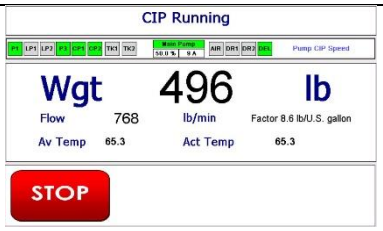
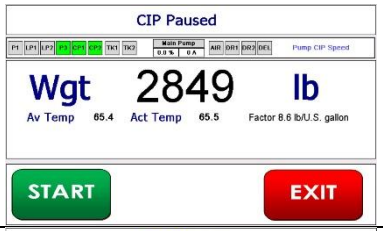
- When the CP2 signal goes low, indicating the end of the cycle, the Piper FloStream will slow the pump to the drain speed (parameter 127). Once the pump reaches the required drain speed, the DR1 valve will open to pump water from the Vat/Silo to the drain

- When the P1 probe goes dry, plus the debounce time (parameter 93), the Piper FloStream will shut off the pump and open the DR2 valve, entering drain-down mode. The system will remain in drain-out mode until either:
    - The CP2 signal goes high, indicating the start of the next cycle, at which point the DR1 and DR2 valves will close
    - The CP1 signal goes low, indicating the end of the CIP.

Note: If the P1 probe goes dry during a cycle, please check for leaks or ensure there is sufficient water in the system.

6.0 CIP SCREEN PROMPTS

INDEX	FUNCTION	SCREEN
1 Home Screen	When the CIP signals are switched on the system will automatically switch to CIP. There are two CIP signals: CIP1 (ON constantly during the CIP) CIP2 (ON during each cycle and OFF during cycle drain down)	
2 Confirm VAT	If the VAT select sensor (proximity, wand, switch, etc..) is fitted then the Piper FloStream will prompt which VAT is connected. The operator must confirm this by pressing NEXT If the VAT select sensor (proximity, wand, switch, etc..) is ***not*** fitted then the operator must enter which VAT is to be CIP'd.	 
3 Ensure tank is empty	The system will prompt the operator to check that the VAT is empty prior to starting the CIP The operator Must press START to start the CIP process	
4 CIP Running Waiting for P1	The Piper FloStream waits for the probe (P1) at the pump inlet (including the dry to wet debounce time) to go wet before starting the CIP sequence.	

5a CIP Running	During CIP the operator can pause the CIP by pressing STOP		STOP	Go to Index 5b
5b CIP Paused			START EXIT	Go to Index 5a Go to Index 1
6a CIP2 Signal OFF (Open DR1)	At the end of the cycle the CIP2 signal will go OFF. The Piper FloStream will automatically slow the pump down and open the drain port (DR1) downstream of the pump.		CIP2 Signal ON	Go to Index 4
6b CIP2 Signal OFF (Open DR2)	When the probe (P1) at the inlet of the pump goes dry the Piper FloStream will stop the pump and open the drain port upstream of the pump		CIP1 Signal OFF	Go to Index 1