



**BCM CONTROL SERIES**

# **T7 Recipe Control Operator Manual**

Recipe setup, operation and load completion

**WORKING DRAFT**

**Rev F | 2026.09.14**

Document BCM-T7-RCP-OM



**LIVE DOCUMENTS**

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**REVISION RECORD**

**Rev F | 2026.09.14** - Adds Section 7.2 with the completed-load screenshot and final delivered total. Updates navigation, page numbering and document control.  
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# Prerequisite - Standard T7 Control

Recipe Control builds on the standard T7 functions and assumes the operator is already familiar with basic T7 operation. Before using this manual, review the standard T7 Control Operator Manual and understand the following sections.

| Required section | What you should understand                                                                                                                      |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| Startup Screen   | How to identify the control, read software versions, recognize a likely communication fault and enter the available operating modes.            |
| Manual Mode      | Basic machine operation and the standard T7 controls used to run, stop, reverse and observe the system outside of an automatic Recipe sequence. |
| Meter Data       | Meter configuration, meter status and the communication information used by the Recipe system.                                                  |

## WHY THIS MATTERS

The Recipe system coordinates multiple PLCs while still relying on the normal T7 HMI, meter and manual-control functions. This manual will focus on what is unique to Recipe Control rather than repeating the standard T7 material.

### SAFETY BOUNDARY

The HMI is an operating interface, not an energy-isolation device. Before inspection or service, stop the process, follow the machine owner's lockout/tagout procedure, verify zero hazardous energy and account for hot product, stored pressure and moving equipment.

**Applicability:** For T7 systems configured for Recipe Control and the installed component channels. The Truck Driver sequence shown uses Microtech valve validation. Standard Manual Mode and meter setup remain in the core T7 manual. Screen values are examples; use the installed, verified configuration.

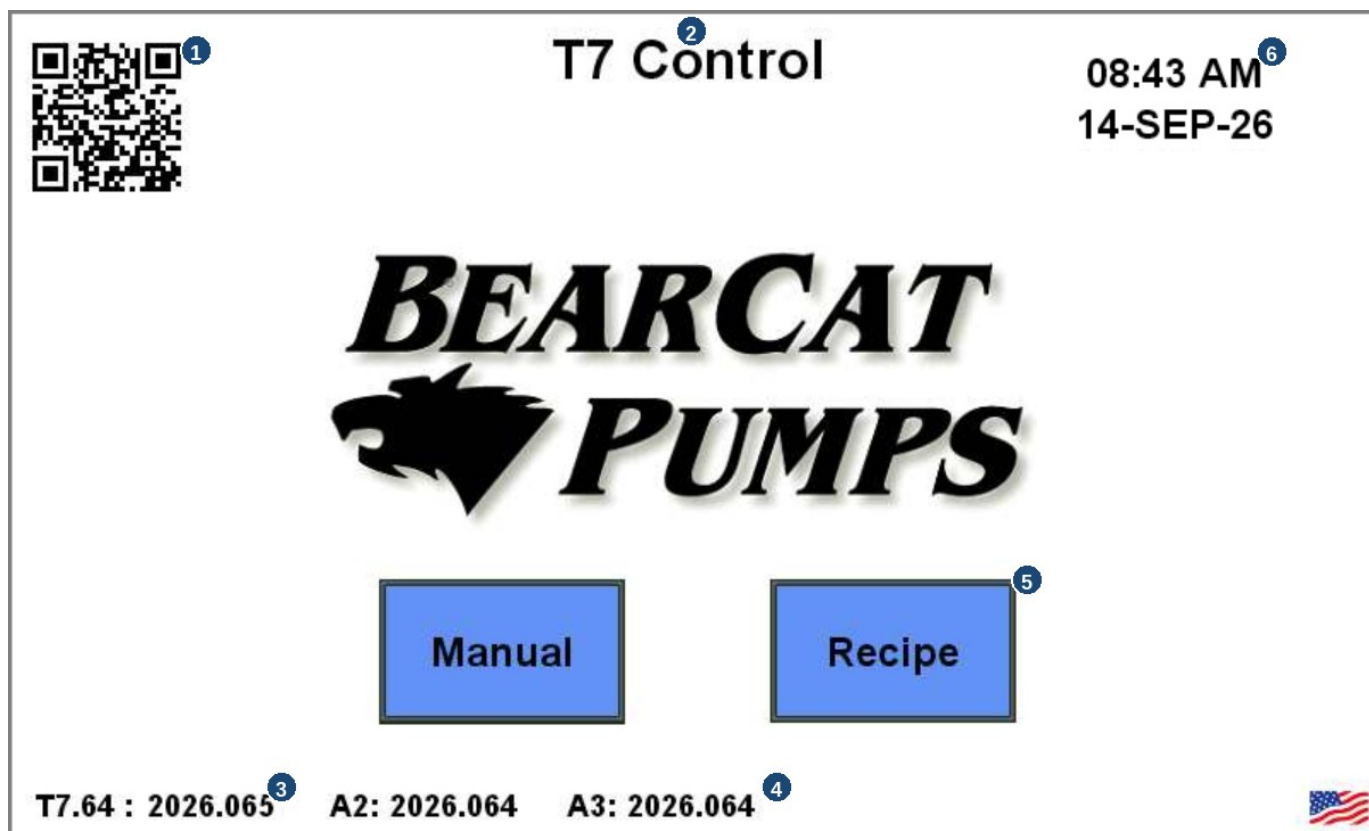
### SEND PHOTOS BEFORE CALLING

Send wide, well-lit, high-resolution photos of the complete installation from several angles, including the pump, drive, piping, valve positions, controls and surroundings. Include the machine identity, exact HMI and A1/A2/A3 software versions, operating readings, fault behavior, what still works, when the fault occurs, PLC/drive indicators and recent work or replacements.

Any pump that is heated or pumping hot liquid should be operated with Safety Blankets properly installed.

## Recipe startup screen

The Recipe system uses the standard T7 startup screen with additional PLC software-version fields. These values provide a quick communication check before entering Recipe Mode.



| # | Field             | What it tells you                                                                                                                                          |
|---|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | QR code           | Opens BearCat technical information, training material and manuals for the T7 Control.                                                                     |
| 2 | Screen title      | Confirms that the T7 application has loaded.                                                                                                               |
| 3 | HMI / A1 software | The HMI version is shown first. The seven-digit value immediately to its right is the A1 PLC software version. A1 is the farthest-left PLC in the control. |
| 4 | A2 / A3 software  | Software versions reported by the additional PLCs. A zero value usually indicates the HMI is not communicating with that PLC.                              |
| 5 | Recipe            | Enters Recipe Mode. The Manual button remains available for standard T7 manual operation.                                                                  |
| 6 | Clock / date      | HMI date and time used for operator reference and timestamped records.                                                                                     |

### COMMUNICATION QUICK CHECK

If A1, A2 or A3 reports zero, check that PLC's power, Ethernet connection and Run/Stop switch. Verify the PLC is powered and in RUN before troubleshooting deeper.

## Operator screen overview

The Recipe operating screen brings the three component channels onto one page. It shows the active Driver and Recipe, each component channel, combined system flow and total, and the primary operating controls.



| # | Field                | What it tells you                                                                                                                              |
|---|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Software versions    | HMI and A1/A2/A3 PLC software revisions remain visible across the top. A zero PLC value is a quick indication of a likely communication fault. |
| 2 | Driver / Recipe      | Shows the active Driver and Recipe. Use Edit Driver or Edit Recipe to change the selected operator or recipe.                                  |
| 3 | A1 / A2 / A3         | Each component channel shows its commanded percentage, operating frequency, flow rate and accumulated total.                                   |
| 4 | Flow All / Total All | Combines the three component channels to show overall system flow and accumulated total.                                                       |
| 5 | Operating controls   | Driver Screen opens the Driver screen. RESET, START and STOP are the primary Recipe operating controls.                                        |

### OVERVIEW PAGE

This page is intended to orient the operator to the main Recipe display. Driver setup, Recipe setup and component behavior are covered in later sections. Names, units and configured values may differ by system.

## Driver setup and defaults

From the Recipe operating screen, press Edit Driver to open Driver Defaults. Each driver is stored under a three-digit number beginning at 100. Select an unused number, then use Edit to enter the driver defaults.

| Driver Defaults        |                           |       |                   |
|------------------------|---------------------------|-------|-------------------|
| LOAD NAME...           | RECIPE TARGET             | DF178 | RECIPE 2025 DS422 |
| 102 J <sup>1</sup> HN1 | 5 <sup>2</sup> 000.000000 |       | <sup>3</sup> 1    |
| 103 P81                | 51000.000000              |       | 3                 |
| 104 P103               | 51000.000000              |       | 3                 |
| 105 A116               | 51000.000000              |       | 3                 |
| 106 A114               | 51000.000000              |       | 3                 |
| 107 Enter Na...        |                           |       |                   |

| # | Field                       | What it tells you                                                                                                          |
|---|-----------------------------|----------------------------------------------------------------------------------------------------------------------------|
| 1 | <b>Driver number / name</b> | Driver numbers begin at 100 and remain three digits. Select an unused number and enter a name of up to 10 characters.      |
| 2 | <b>Recipe Target</b>        | Default target for that driver, commonly the driver's normal tank or load size. The value remains editable during loading. |
| 3 | <b>Default Recipe</b>       | Recipe selected automatically when this driver is chosen. The operator may select a different Recipe when required.        |
| 4 | <b>Edit</b>                 | Enables editing of the selected row and its editable fields.                                                               |
| 5 | <b>Navigation</b>           | Use the lower-right navigation controls to move through the Driver list and reach the 100-series entries.                  |
| 6 | <b>Close / save</b>         | Close the edit screen when finished and save the changes when prompted.                                                    |

### USEFUL DEFAULT

Set the target and Recipe to the values that driver uses most often. They are defaults, not locked values, so the operator can still change them for a particular load.

## Building a recipe

From the Recipe operating screen, press Edit beside the Recipe field. Open the edit controls in the lower-right corner, select Edit and enter the values for the selected Recipe row.

| Recipe 2025  |           |           |           |                                                                  |          |                                                                  |          |  |
|--------------|-----------|-----------|-----------|------------------------------------------------------------------|----------|------------------------------------------------------------------|----------|--|
| RECIPE DE... | A2 % T... | A3 % T... | TOTAL...  | TREV ...                                                         | TREV ... | TREV ...                                                         | VALVE... |  |
| 1 RE①        | 1.900②    | 0.1000... | 80③00...  | On                                                               | ④ff      | Off                                                              | 1⑤25     |  |
| 2 L1-T1-T5   | 0.0000... | 1.0000... | 2500.0... | On                                                               | Off      | Off                                                              | 5125     |  |
| 3 L1-T2      | 100.00... | 0.0000... | 2500.0... | Off                                                              | On       | Off                                                              | 2049     |  |
| 4 L1-T2-T5   | 99.000... | 1.0000... | 2500.0... | Off                                                              | On       | Off                                                              | 6149     |  |
| 5 NAME       | 0.0000... | 0.0000... | 0.0000... | On                                                               | Off      | Read PLC 0                                                       |          |  |
| 6 NAME       | 0.0000... | 0.0000... | 0.0...    | <div> <div>⌕</div> <div>⌕</div> <div>□</div> <div>,</div> </div> |          | <div> <div>⏮</div> <div>⏭</div> <div>⏪</div> <div>⏩</div> </div> |          |  |
| Close ⑦      |           | 1.900000  |           | Load                                                             |          | ⑥                                                                |          |  |

| # | Field               | What it tells you                                                                                                                                            |
|---|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Recipe name         | Enter a descriptive Recipe name of up to 10 characters.                                                                                                      |
| 2 | A2 / A3 percentages | Enter the A2 and A3 percentages. A1 is calculated automatically so the three components total 100%.<br>Example: A2 = 1.9% and A3 = 0.1% produces A1 = 98.0%. |
| 3 | Total flow rate     | Enter the desired combined flow. The control calculates the required flow for each component from the Recipe percentages.                                    |
| 4 | T Rev               | Controls end-of-Recipe reverse by component. In a typical installation, the larger A1 pump reverses briefly while the smaller additive pumps remain OFF.     |
| 5 | Valve number        | Valve identifier used by the Microtech system. Use the valve number provided for the applicable Recipe.                                                      |
| 6 | Edit / navigation   | Use the lower-right controls to select and edit the desired Recipe row.                                                                                      |
| 7 | Close / save        | Press Close when finished and select Yes when prompted to save the Recipe changes.                                                                           |

### REVERSE IS CONFIGURATION-DEPENDENT

The usual arrangement is to reverse the larger pump enough to relieve pressure when a Recipe completes and a valve closes. The exact T Rev settings are system-specific; use the configured values for the installation.

## Running a recipe

After the Driver and Recipe have been created, select the Driver for the load. The stored Driver name, default Recipe and default target populate automatically. Review the values before accepting the load.

| T7.00                   |                   | A1: 2026.065                       |       | A2: 2026.064                |       | A3: 2026.064       |                   | 09/14/26<br>10:16 AM                     |  | X |
|-------------------------|-------------------|------------------------------------|-------|-----------------------------|-------|--------------------|-------------------|------------------------------------------|--|---|
| <b>Edit Driver</b>      | <b>1</b> <b>2</b> | <b>Driver Name</b><br><b>JOHN1</b> |       |                             |       | <b>Edit Recipe</b> | <b>1</b> <b>2</b> | <b>Recipe Description</b><br><b>REC1</b> |  |   |
| <b>A1</b> <b>98.00%</b> |                   | <b>A2</b> <b>1.90%</b> <b>3</b>    |       | <b>A3</b> <b>0.10%</b>      |       |                    |                   |                                          |  |   |
| <u>0.00 Hz</u>          |                   | <u>0.00 Hz</u>                     |       | <u>0.00 Hz</u>              |       |                    |                   |                                          |  |   |
| 00900                   | 101.59%           | 00040                              | 0.00% | LAS P1                      | 0.00% |                    |                   |                                          |  |   |
| <b>Flow</b>             |                   | <b>Flow</b>                        |       | <b>Flow</b>                 |       | <b>Flow All</b>    |                   |                                          |  |   |
| <b>0.00</b>             |                   | <b>0.00</b>                        |       | <b>0.00</b>                 |       | <b>0.0</b>         |                   |                                          |  |   |
| 784.00                  |                   | 15.20                              |       | 0.80                        |       | 800.0              | <b>4</b> bs / min |                                          |  |   |
| <b>Total</b>            |                   | <b>Total</b>                       |       | <b>Total</b>                |       | <b>Total All</b>   |                   |                                          |  |   |
| <b>0.0</b>              |                   | <b>0.0</b>                         |       | <b>0.00</b>                 |       | <b>0.00</b>        |                   |                                          |  |   |
| 52,920.0                | 100               | 1,026.0                            | 100   | 54.00                       | 100   | 54,000.0           | <b>5</b> Lbs      |                                          |  |   |
| <b>Driver Screen</b>    |                   | <b>RESET</b>                       |       | <b>Accept Load</b> <b>6</b> |       | <b>STOP</b>        |                   |                                          |  |   |

| # | Field                 | What it tells you                                                                                                                                                 |
|---|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Driver                | The selected Driver number loads the stored Driver name and that Driver's default values.                                                                         |
| 2 | Recipe                | The selected Recipe loads its description and operating values.                                                                                                   |
| 3 | Component percentages | A2 and A3 use the stored Recipe values; A1 is the calculated remainder so the total equals 100%.                                                                  |
| 4 | Flow target           | The combined target flow for the Recipe. In this example the requested total is 800 lb/min.                                                                       |
| 5 | Load target           | The Driver default target. Here the load target is 54,000 lb and remains editable before the load is accepted.                                                    |
| 6 | Accept Load           | Accepts the displayed Driver, Recipe and target. The control then validates the configured valve number with the Microtech system before Start is made available. |

### REVIEW BEFORE ACCEPT

Accept Load is the handoff from setup to operation. Confirm the Driver, Recipe, percentages, flow target and load target before accepting the load.

## 6.1

## Automatic ratio correction

After valve validation, press Start. All enabled pumps begin running. The first several seconds establish flow; the individual component percentages may be close to the Recipe but are not expected to be exact immediately.

| T7.00                |                | A1: 2026.065                       |                 | A2: 2026.064       |                 | A3: 2026.064                             |  | 09/14/26<br>10:19 AM |  | X |
|----------------------|----------------|------------------------------------|-----------------|--------------------|-----------------|------------------------------------------|--|----------------------|--|---|
| <b>Edit Driver</b>   | <b>102</b>     | <b>Driver Name</b><br><b>JOHN1</b> |                 | <b>Edit Recipe</b> | <b>1</b>        | <b>Recipe Description</b><br><b>REC1</b> |  |                      |  |   |
| <b>A1</b>            | <b>98.00%</b>  | <b>A2</b>                          | <b>1.90%</b>    | <b>A3</b>          | <b>0.10%</b>    |                                          |  |                      |  |   |
| <b>2</b>             | <b>28.1 Hz</b> | <b>+</b>                           | <b>14.61 Hz</b> | <b>+</b>           | <b>27.17 Hz</b> |                                          |  |                      |  |   |
| 00900                | 99.80%         | 00040                              | 2.98%           | LAS P1             | 0.12%           |                                          |  |                      |  |   |
| <b>Flow</b>          |                | <b>Flow</b>                        |                 | <b>Flow</b>        |                 | <b>Flow All</b>                          |  |                      |  |   |
| <b>717.47</b>        |                | <b>13.46</b>                       |                 | <b>0.80</b>        |                 | <b>73.2</b>                              |  |                      |  |   |
| 784.00               |                | 15.20                              |                 | 0.80               |                 | 800.0 Lbs / min                          |  |                      |  |   |
| <b>Total</b>         |                | <b>Total</b>                       |                 | <b>Total</b>       |                 | <b>Total All</b>                         |  |                      |  |   |
| <b>814.3</b>         |                | <b>23.8</b>                        |                 | <b>0.97</b>        |                 | <b>805.85</b>                            |  |                      |  |   |
| 52,920.0             | 111            | 1,026.0                            | 111             | 54.00              | 111             | 54,000.0 Lbs                             |  |                      |  |   |
| <b>Driver Screen</b> |                | <b>RESET</b>                       |                 | <b>STOP</b>        |                 |                                          |  |                      |  |   |

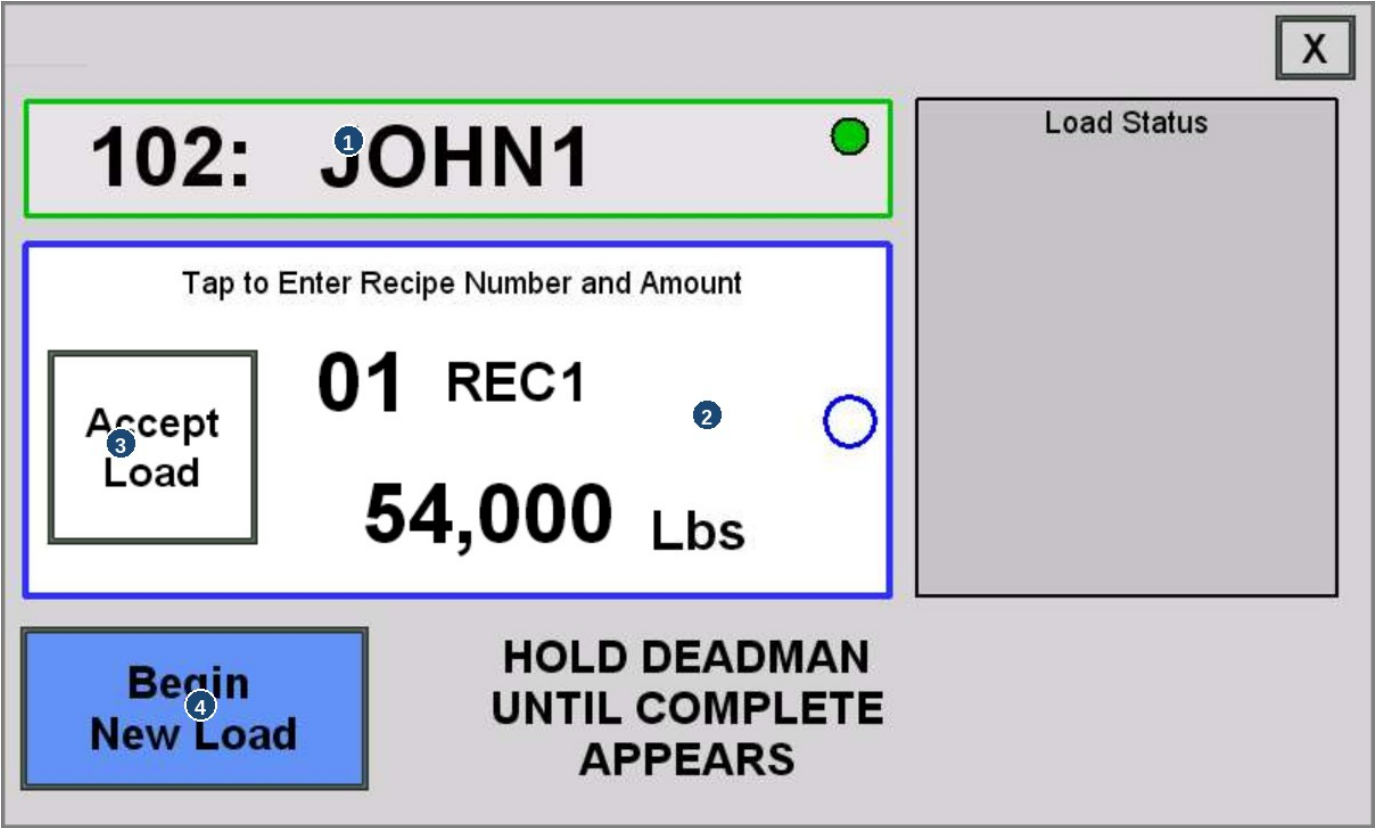
| # | Field                             | What it tells you                                                                                                                                                        |
|---|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | <b>Pump frequency / status</b>    | Each component shows its operating frequency. The green status line indicates the pump is running.                                                                       |
| 2 | <b>Ratio-correction indicator</b> | After roughly 15 seconds, the small plus indicator appears. This indicates automatic ratio correction is active.                                                         |
| 3 | <b>Component flow</b>             | The control adjusts pump speed from live flow feedback to move each component toward its Recipe percentage.                                                              |
| 4 | <b>Flow All</b>                   | Combined live flow compared with the Recipe flow target. As the control stabilizes, the total should move toward the requested flow.                                     |
| 5 | <b>Total All</b>                  | Combined delivered total compared with the load target. When the target is reached, the control completes the load using the configured stop or target-reverse sequence. |

### ALLOW THE CONTROL TO SETTLE

The first reading after Start is not the final ratio. Once automatic correction is active, the control trims pump speed from measured flow and continues correcting as the load runs.

# Truck Driver screen

The Truck Driver screen provides a simplified load sequence for the driver. If information from a previous load is still displayed, press Begin New Load before entering the next Driver. This clears the prior load setup and returns the sequence to Driver ID entry.



| # | Field           | What it tells you                                                                                                                                            |
|---|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Driver          | Enter the three-digit Driver ID. The stored Driver name and defaults populate automatically. Driver 102 loads JOHN1 in this example.                         |
| 2 | Recipe / amount | The Driver default Recipe and target amount appear automatically. The driver may change the Recipe number or target amount before accepting the load.        |
| 3 | Accept Load     | Accepts the displayed setup and starts the valve-number validation with the Microtech system. After the correct valve is confirmed, Start becomes available. |
| 4 | Begin New Load  | Clears previous load information and returns the Truck Driver screen to the beginning of the load sequence. This is the driver-screen equivalent of Reset.   |

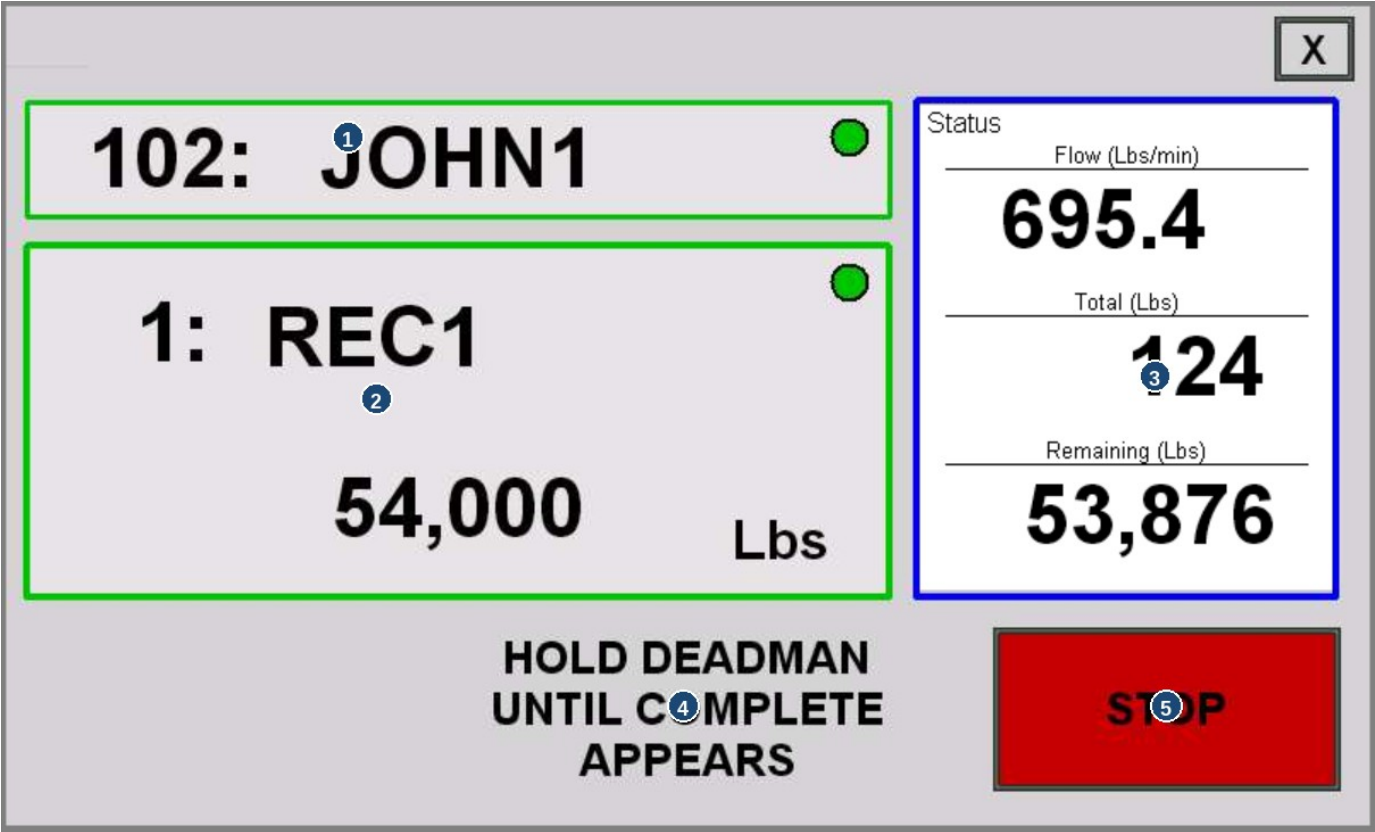
## START CLEAN

If the screen contains anything left from a previous load, use Begin New Load first. Do not build a new load on top of old load information.

7.1

# Running from the Truck Driver screen

After valve validation, hold the deadman switch and press Start. Keep the deadman held while the load runs and while the control completes its automatic stopping sequence.



| # | Field               | What it tells you                                                                                                                  |
|---|---------------------|------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Driver              | Confirms the active Driver number and stored name.                                                                                 |
| 2 | Recipe / target     | Confirms the active Recipe and the requested total load amount.                                                                    |
| 3 | Load Status         | Shows live flow rate, total delivered and the amount remaining to the target.                                                      |
| 4 | Deadman instruction | Hold the deadman until COMPLETE appears. Reaching zero remaining does not by itself mean the stopping sequence is finished.        |
| 5 | STOP                | Stops the load when required. Normal target completion should be allowed to finish its configured stop or target-reverse sequence. |

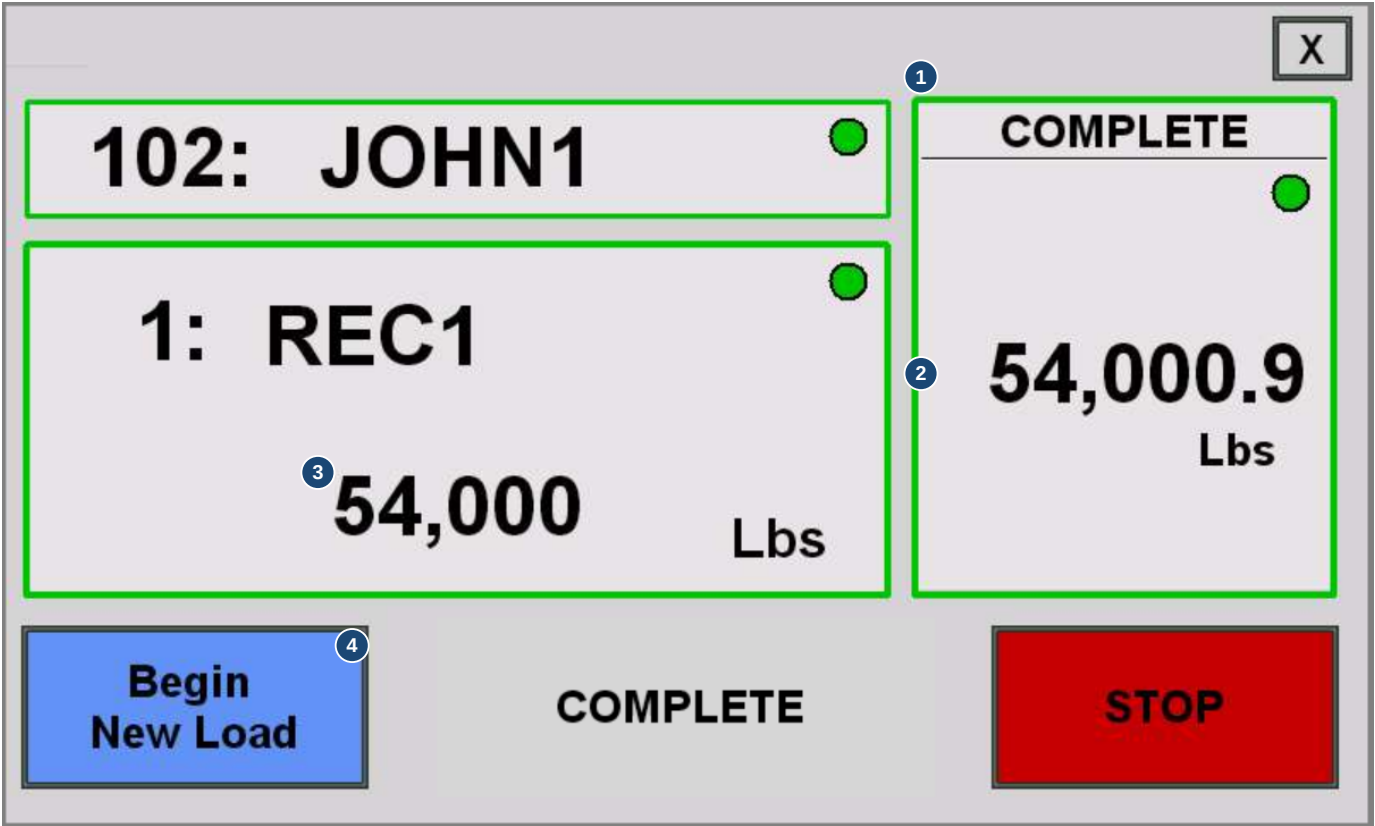
DO NOT RELEASE AT ZERO

Continue holding the deadman after Remaining reaches zero. Release it only after the control has completed the stop sequence and COMPLETE appears. Releasing early interrupts the sequence.

7.2

# Load complete

Keep the deadman held until **COMPLETE** appears. This confirms that the configured stopping sequence has finished. The completed-load screen shows the final delivered total.



Example screen: Driver 102 / JOHN1, Recipe 1 / REC1. Values and units vary by installation.

| # | Field           | What it tells you                                                                                      |
|---|-----------------|--------------------------------------------------------------------------------------------------------|
| 1 | COMPLETE        | The automatic stopping sequence has finished. Release the deadman only after COMPLETE appears.         |
| 2 | Delivered total | The final amount delivered for this load. This example shows 54,000.9 lb.                              |
| 3 | Recipe / target | The selected Recipe and requested load amount remain visible. The target in this example is 54,000 lb. |
| 4 | Begin New Load  | Clears the previous load information and returns to Driver ID entry for the next load.                 |

## WAIT FOR COMPLETE

Reaching the target or seeing zero remaining is not the release signal. Hold the deadman through the stopping sequence and wait for **COMPLETE**.