

Servo Press Supplemental Manual

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1: OVERVIEW

Servo presses function differently than standard presses. A traditional press begins its cycle at the fully opened position (top dead center, or 0°), proceeds to the fully closed position (bottom dead center, or 180°) to form the part, then finishes its cycle back at the top. The motion of a servo press is not cyclical. It does not always return to top after every forming stroke, or it might make several hits before returning to top. Because of this, two new tonnage modes have been added:

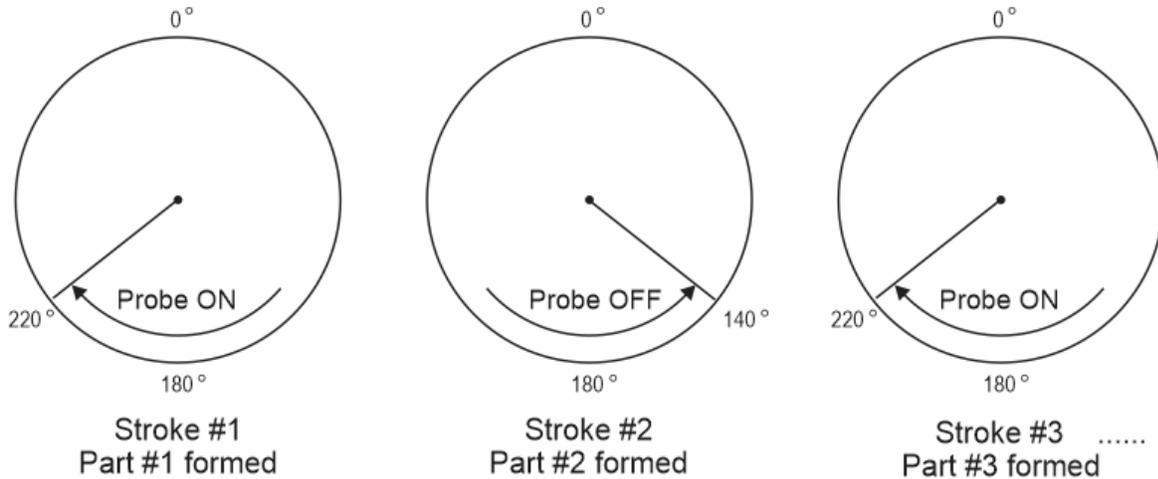
- Pendulum Tonnage Mode: When the tonnage mode in SlimWare is set to “Pendulum”, the tonnage monitor’s probe input is used to read the direction of the press. This allows the tonnage monitor to record individual strokes without the press physically returning to top.
- Multi-Strike Tonnage Mode: When the tonnage mode in SlimWare is set to “Multi-Strike”, the tonnage monitor essentially ignores the press direction. This allows the tonnage monitor to record the multiple hits that makes up a single part.

Pendulum and Multi-Strike tonnage modes are currently compatible with the ZT-SLIM and SLIM-RV2* tonnage monitors only.

* SLIM-RV2 tonnage monitors require a custom firmware program for this feature.

2: PENDULUM TONNAGE MODE

In Pendulum Mode, the press does not return to top after every forming stroke. For example, it might travel through bottom dead center, stop at 220°, reverse direction to form another part, stop at 140°, reverse direction again, etc. You can visualize this like the swinging motion of a pendulum.



The Pendulum tonnage mode allows the tonnage monitor to accurately capture tonnage information for this specific movement. Rather than depend on press angle to trigger the stroke start/end, the Pendulum mode utilizes the tonnage monitor's probe input to signal the unit which direction the press is traveling and when to start and stop gathering its tonnage data for the current part.

Basic Operation:

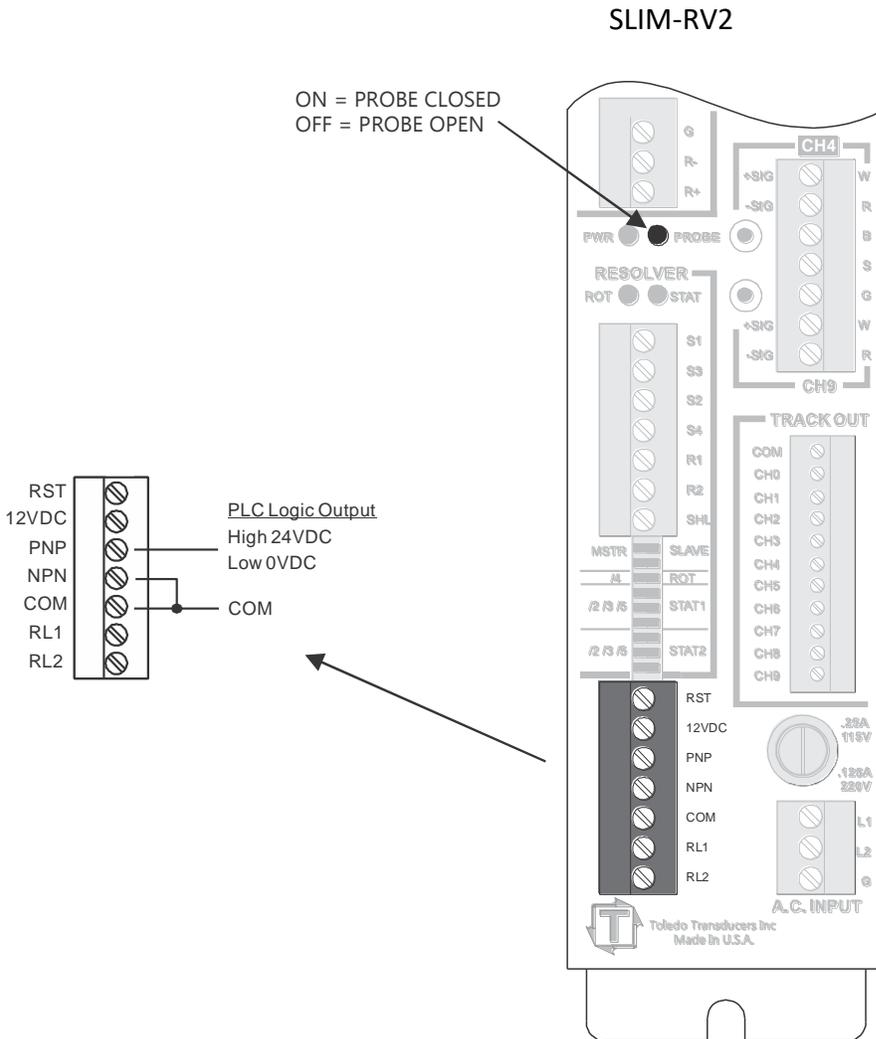
The basic operation of the Pendulum tonnage mode is simple.

- Probe Input On → Press is moving forward
- Probe Input Off → Press is moving backward
- Probe Input Transition → End current stroke and begin new stroke

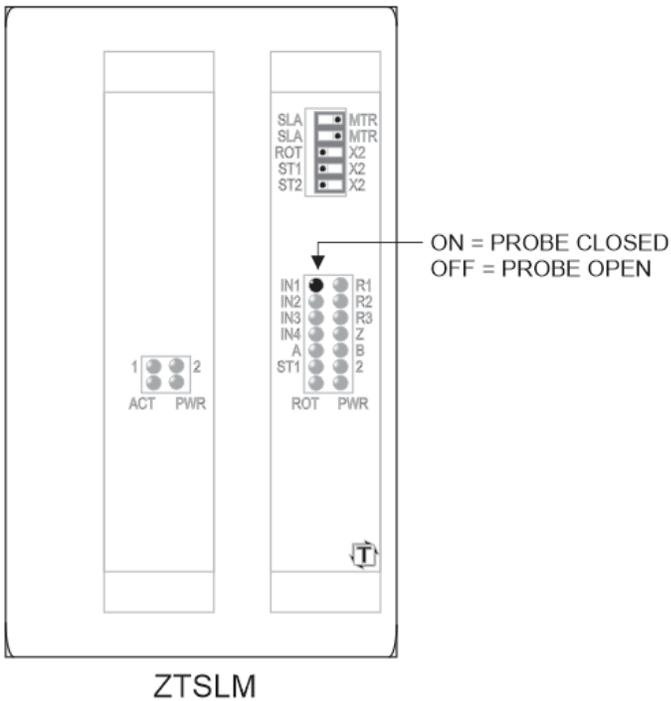
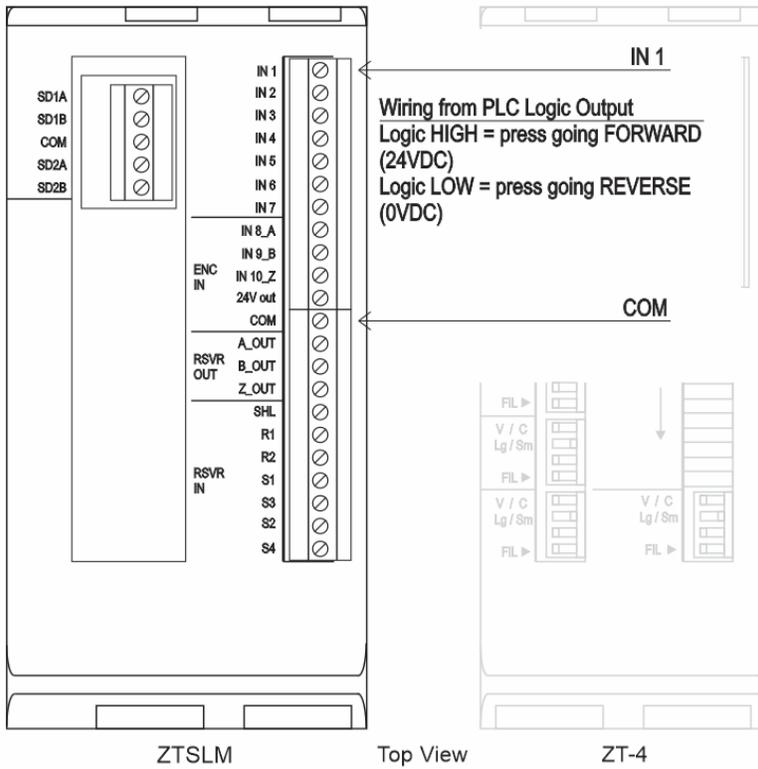
A new stroke is initiated when the probe input changes state. After a transition, the peak tonnage and signature will be available.

Wiring Details:

As previously mentioned, the Pendulum feature uses the Probe Input to trigger the tonnage data gathering. The probe supply voltage is supplied by a PLC Logic Output. The figures below show the probe input connections.



ZT-SLIM



Enabling the Pendulum Feature:

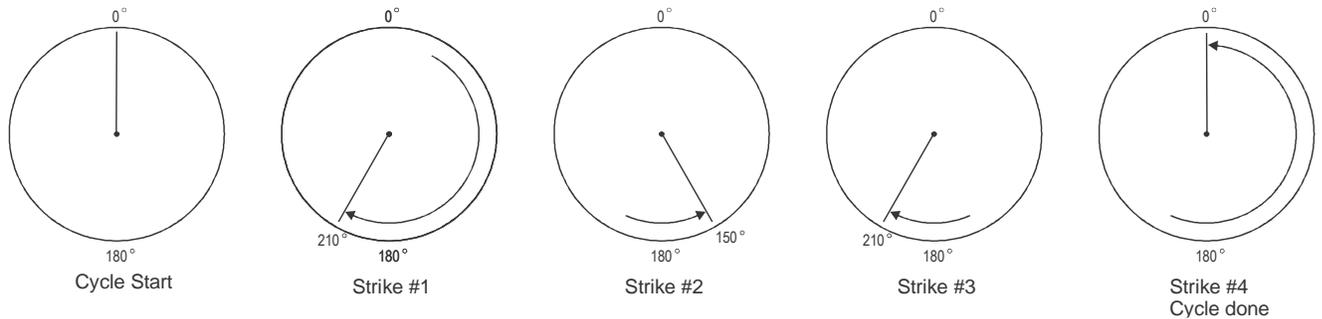
To begin using the Pendulum feature, it must be enabled using the SlimWare HMI software. In SlimWare, go to the **Configure → Hardware / Trigger** screen and select the **Hardware Configuration** tab. Click the **Pendulum** button in the **Tonnage Mode** section.



Note: Enveloping mode is not currently compatible with the Pendulum feature.

3: MULTI-STRIKE TONNAGE MODE

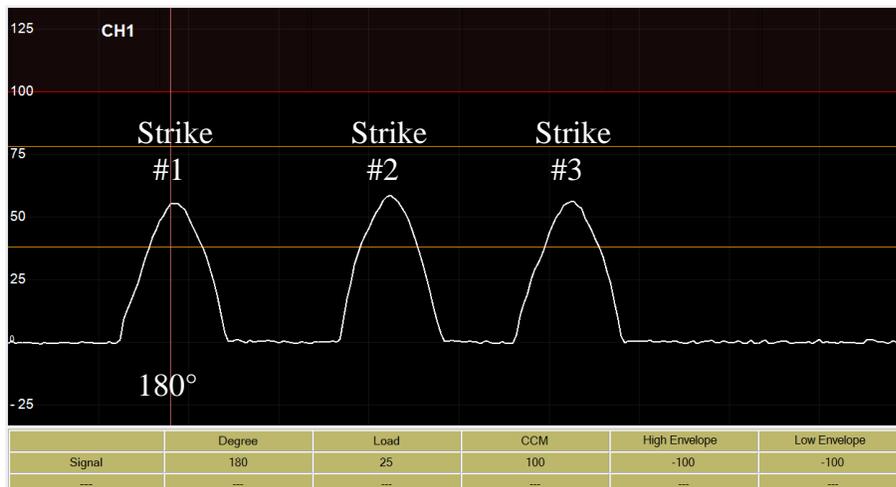
In Multi-Strike Mode, the press begins at top, then makes several hits (strikes) to form a single part, before returning to the top. For example, it might travel through bottom dead center, stop at 210°, reverse direction to strike the material again, stop at 150°, reverse direction again, etc. It can repeat this motion several times before returning to top again to end the cycle.



The Multi-Strike tonnage mode allows the monitor to accurately capture tonnage information for this specific movement. Tonnage gathering begins at the initial downstroke of the press and continues until the ram returns to the top. At this time, the peak tonnage and the signature will be available.

Please note the following:

- Because these multiple strikes occur on a single part, only the largest peak tonnage from all the hits is shown.
- Due to storage limits, it is possible that all strikes may not be shown in the signature. In most cases, 3 or 4 strikes are viewable.
- When viewing the signature, press position is accurate through the first strike. Each successive strike's position will be relative to the first.



Enabling the Multi-Strike Feature:

To begin using the Multi-Strike feature, it must be enabled using the SlimWare HMI software. In SlimWare, go to the **Configure → Hardware / Trigger** screen and select the **Hardware Configuration** tab. Click the **Multi-Strike** button in the **Tonnage Mode** section.



Note: Enveloping mode is not currently compatible with the Multi-Strike feature.

