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### Using your SmartPAC2 Programmable Limit Switch (PLS)

**Featured Application:** Optimizing and monitoring belted scrap removal and shaker conveyors with Wintriss SmartPAC 2 features:

Required equipment: SmartPAC2 with ProCamPAC and DiProPAC

Utilizing standard ProCamPAC programmable cam and DiProPAC die protection programming allows users to safely and efficiently monitor and control scrap and part shakers and conveyors.

ProCamPAC (PLS programmable limit switch): Utilizing the DSV ON programming feature will help ensure that critical scrap and part removal conveyors and shakers are on when the press is running. The DSV programming feature closes the selected ProCamPAC cam relay whenever the dual solenoid valve (DSV) is energized. Turning off the signal can be time delayed by programming an off delay time when creating the setup. This feature keeps the conveyor or shaker on for a predetermined amount of time after the DSV has de-energized. This allows the last part/scrap to travel the length of the conveyor/shaker before the unit stops.

The cam channel selected for the control of the shaker/conveyor can also be selected as a global Cam. Global Cams are programmed from the SmartPAC2 initialization menu, when a cam is programmed as a global cam it is automatically included in all the programmed setups thus insuring that the conveyor/shaker is always part of all tool numbers. (See global cams pdf in our technical resources section)

DiProPAC: Using the SmartPAC 2's DiProPAC die protection feature to monitor that the conveyor's belts/shaker trays are operating properly.

Monitoring the shaker crossbar: Many shaker units have a cross bar that the shaker trays attach to. To ensure it's moving when the press runs, simply mount a proximity or optical sensor so that its sensing field is broken whenever the shaker bar passes the sensing range. In this application the sensor is programmed as a green special, the rules governing a green special dictate that the sensor must activate at least once during a predetermined amount of strokes, this stroke count is programmed when creating the tool number in the program mode. The same application can be used to monitor the belt of a conveyor or many popular conveyor systems have optional sensors that monitor the belt drive mechanism.

Please note that monitoring the shaker bar or the conveyor drive does not guarantee that the tray/belt is operating properly, installing specific sensors to monitor actual tray/belt movement would be required to ensure each is working.

### Typical ProCamPAC Applications:

*An important note to begin: programmable cams are not suitable for use in safety functions such as clutch/brake control. Consult your SmartPAC2 user manual or call Wintriss Technical Support for more detailed information.*

1. Set feed advance and pilot release timing for servo and air feeds. These settings are usually programmed as crankshaft angle to turn on and turn off. For example: start the feed cycle (on angle 210 degrees and off angle 350 degrees). Note that some feeds may require the feed advance signal to remain on through the entire feed cycle.
2. Control the timing of air blow off devices for part ejection or similar applications. Use angle on and time off to prevent air staying on if the press is stopped at a position where the blow off solenoid is still energized.
3. Control the timing of solenoid operated air cylinders, conveyors, diverters, part/scrap chutes, and gags. Note: SmartPAC2 counter provisions may also be useful in these applications when you only want the event to turn on every "n" strokes. Also refer to feature application above.
4. Set a window for ram adjustment to be active only at top dead center. This is an ideal application for the "global cams" function since you'd want it to operate the same for all tools.
5. Control your Pax or similar spray lube system on/off cycle. When you need to apply lots of lubricant or apply lube at different points in the stroke you can program up to 4 on/off's.
6. Use a channel in conjunction with a die protection function. This would be most commonly used with red (normally closed to ground) event types. Here the programmable limit switch channel holds the circuit to ground at all stroke points except where the event sensor is actuated.
7. Enhance the top stop function of relay based OEM clutch/brake controls by integrating a PLS channel with auto advance in parallel with the existing rotary limit switch contacts controlling top stop. This function will normally be set as "auto advance" so top stop is compensated for press speed changes. See insert below.

**Note for systems using WPC (Wintriss Press Control):** ACTS or automatic compensation for top stop is a software option that adjusts top stop with press speed changes. The ACTS software also offers an energy saving feature that will shut the press motor down if it doesn't see the press stroke in a user adjustable time.

## Wiring the ProCamPAC Output with Your Mechanical Top Stop Cam Switch (Optional)

### **⚠ DANGER**

#### **PROGRAMMABLE CAM SWITCH NOT FOR SAFETY USE**

- Use SmartPAC 2's programmable cam switch to control auxiliary functions only. The SmartPAC 2 programmable cam capability should never be used to provide timing signals for any safety use including clutch/brake control or muting of light curtains.
- Ensure that the clutch/brake control is control reliable on its own. The wiring shown below does not affect or improve the safety of the system. This optional top-stop wiring only aids in adjusting the top stop and in utilizing the auto advance feature to mimic Auto-compensated Top Stop (ACTS).
- Test the system after wiring, as described below, to ensure proper functioning of the Top-stop circuit.

**Failure to comply with these instructions will result in death or serious injury.**

The diagrams provided in Figure 2-19 show how to wire ProCamPAC and your mechanical cam switch for Top Stop. This optional top-stop wiring only aids in adjusting the top stop and in utilizing the auto advance feature to mimic Auto-compensated Top Stop (ACTS).

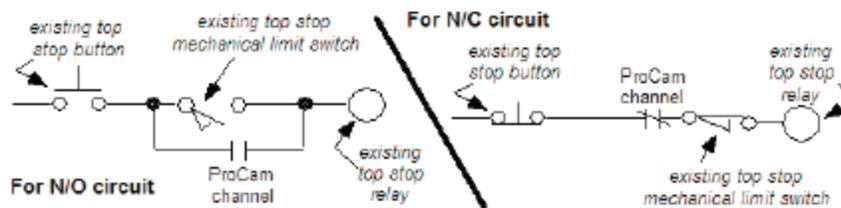


Figure 2-19. Optional Top-Stop Wiring

Check your wiring by performing the appropriate test:

- *For an N/O circuit:* Temporarily program the ProCamPAC channel used for this wiring so that it is "off" (open) all the time (i.e., On = 0°, Off = 0°). Confirm that the press will top-stop.
- *For an N/C circuit:* Temporarily program the ProCamPAC channel used for this wiring so that it is "on" (closed) all the time (i.e., On = 1°, Off = 0°). Confirm that the press will top-stop.

**For more information contact your PRI Application Engineer or call 800-863-3164**

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