

# Pulse Picker Spindle Alignment Procedure

The pulse picker spindle comes pre-aligned out of the box. Should you wish to re-align the spindle to the beam path (essentially, computing an adjustment to the current **MO** calibration), you will need to follow these steps:

1. If the picker is not already aligned in X and Y, perform that alignment first.
2. If the expert panel is not already open, open it using the **CNTRL** button on the simple GUI (Figure 2).
3. Home the spindle using the pulse picker interface (Figure 1). The spindle is now in the positive closed position.
4. Ensure that you have a way of shining light through the picker, and a way of detecting it.
5. Now, start to nudge the picker spindle in the negative direction by entering into the **Move Relative** box, followed by <Enter>:

-5

In this command, -5 is the number of steps to move from the current position. You can enter any number of steps for this command (1600 steps = 1 rotation, 0.225deg/step).

The objective in this step is to move the spindle to the point where light *just* starts to shine through. You can move in finer steps, and in the positive direction, to fine-tune this point. Once the spindle is there, record the current position in motor steps, which is on the expert interface as **Motor Steps (C1)** (click the green number to refresh it; it does not automatically refresh). Let this number be A.

6. Now, continue to nudge the pulse picker spindle in the negative direction by issuing in the **Move Relative** box:

-5

until the spindle interrupts the light. Nudge it in the positive direction by single steps (enter 1 in the box) until you *just* see light again. Record the current motor position **C1**, and call this number B.

7. Compute the average of A and B, and call that number C.
8. Compute a *new Magic Motor Offset (MO)* by taking the existing motor offset **MO** (from the GUI, click to refresh) and *subtracting* C from it. For example, if the current **MO** is -250, and C is 5, then the new **MO** = -250 - 5 = -255.
9. Enter the new **MO** value into the box directly adjacent to the **MO** readback, and press <Enter> to send that new value to the motor.
10. Press the **SAVE** button in the upper left of the GUI to save all parameters.
11. Repeat steps 3 through 6 to ensure that the spindle is now centered (A and B should be almost the same). If not yet centered, repeat steps 7 through 10, and re-check.

./pp\_gui.edl

XIP Pulse Picker

XCS:SB2:MMS:09

SAVE

Pulse Picker Mcode Version

94

Switch Status

Positive Limit (I1)

OFF

Home Switch (I3)

On

Negative Limit (I2)

OFF

IO Switch (I4)

On

Status

Program Exe (BY)

Running

Fan Status

ON

Upper Limit

0

Lower Limit

0

Error Check (EC)

EC ON

EC OFF

Mcode Status

Waiting for Se

Mcode Heartbeat

1180

Blade Position

0

Motor Moving

Not moving

Mode Select

Program Select (SE)

Waiting for Selection

0

RESET MODE

ONE SHOT

FLIP FLOP

BURST MODE

HOME MOTOR

OPEN

CLOSE

EVR SEQ Settings

EVR Delay

4500 ms

4500

Number of Shots

5

5

Number of Repeats

0

0

Frequency

120 Hz

120 Hz

Use Sequencer

No

No

Encoder Center Position (N0)

0

Positive Encoder Closed Position (N1)

512

0

Negative Encoder Closed Position (N2)

-512

0

Motor Center Position (P0)

0

0

Positive Motor Closed Position (P1)

50

0

Negative Motor Closed Position (P2)

-50

0

Motor Sweep Distance (SW)

50

0

Encoder Sweep Distance (SR)

512

0

Encoder Drift (DR)

-31

0

Encoder Drift Limit (DL)

46

0

Magic Motor Offset (MO)

-250

-250

Motor Steps (C1)

0

0

Zero

Encoder Counts (C2)

523

0

Zero

Shadow Encoder Register (CS)

519

0

Zero

Move Relative

0

Actual

Set

Max Velocity (V/M)

3000

0

Mo/C1/MOVE RELATIVE

Acceleration (A)

640

0

Deceleration (D)

640

0

Setup I/O (S13)

60, 0

Setup I/O (S1)

0, 0, 0

Setup I/O (S2)

0, 0, 0

Setup I/O (S3)

16, 1, 1

16, 1, 1

Setup I/O (S4)

16, 0, 0

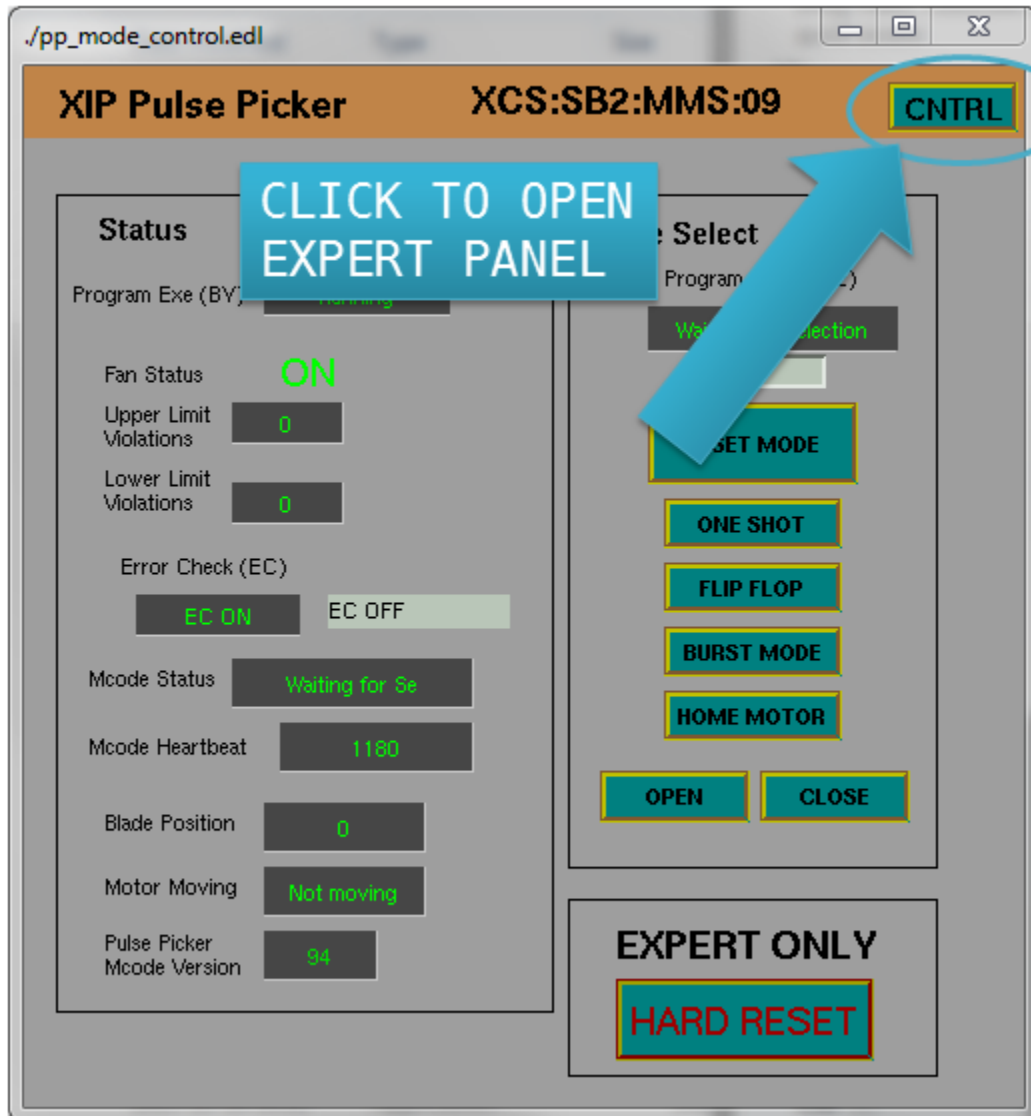
HARD RESET

SAVE TO NVRAM

HOME/OPEN/CLOSE CONTROLS



**Figure 1:** Pulse picker expert GUI, showing locations of controls necessary for alignment.



**Figure 2:** Pulse picker mode select GUI, showing location of **CNTRL** button to get to expert GUI in Figure 1.