



ServoCam® UltraTurn XL™ Start-up Check List

1. Turn the electrical disconnect switch on the upper rear cabinet of the machine to the on position (clockwise).
2. Press the Power button on the front terminal of the machine below the touch panel display.
3. Wait for the controller to initialize ...
 - Windows boots ~ 40 sec
 - ServoCam® version display ~ 5 sec
 - Synchronizing axis controllers ~ 60 sec
 ... and the Main Menu to appear, as shown below.

```
Part Cycle Name
>RUN Part Cycle
  EDIT Tool AutoAdjs
  LOAD Part Cycle
```

4. Select *RUN Part Cycle*, then press **ENTER** .
5. Locate the ServoCam® axes.
6. Locate the collet.
7. Put the controller on-cam.
8. The machine is now ready for CNC operation.

Locating the ServoCam® Axes

If the orange Unlocated light is on or if the display shows LOCATE SLIDE(S), then at least one of the ServoCam® axes is un-located.

Press and hold the AUTO key until the display indicates that all axes are located. The orange light on the display turns off when the controller completes this operation.

Locating the Collet

If the collet state (shown next to the Main Collet trip button) is Unlocated, the collet needs to be located.

While the Cycle Operating Mode is in Manual mode, jog the backshaft by holding Cycle Start until the collet is located. When located, the collet state will display either Open (only in chucker mode) or Closed.

Putting the Controller On-Cam

Before running a part cycle, the controller must be *on-cam*. When the green light is illuminated, the controller is *on-cam* -- the axes are synchronized and ready for automatic operation.

To put the controller on-cam, press the AUTO button until the green light illuminates.

Note that ALL axes begin to move when the AUTO button is pressed. Make sure they are free of obstruction as they move into place.

Selecting Menu Options and Using the Keypad

The ServoCam® controller displays up to four text lines.

A caret (>) beside a menu item indicates the item is highlighted. Use the **↑** and **↓** keys to scroll through all menu items.

Press **ENTER** to select the highlighted menu item.

Press **ESC** to exit the current display and return to previous display.

Use the keys **0** through **9** to jump to the beginning, middle or end of a long menu. Use **←** and BKSP to page down/up in a long menu.

Use the keys **0** through **9**, **.**, and **←** to enter numeric values. The BKSP key is used to erase errors when entering numeric values.

The AUTO key is used for two purposes: to locate the ServoCam® axes (see *Locating the ServoCam® Axes*) and to put the controller on-cam (see *Putting the Controller On-Cam*).

Changing the Active Part Cycle

1. Press **ESC** to view the controller Main Menu.
2. Select *LOAD Part Cycle*, then press **ENTER** .

```
Part Cycle Name
  RUN Part Cycle
  EDIT Tool AutoAdjs
>LOAD Part Cycle
```

3. To reload the Active Part Cycle (after making changes, for example), check Reload, and click OK. - or -
4. To load a different part cycle, click Browse, use the Open dialog to select a ServoCam part cycle, and click OK. The display indicates that the part cycle is being loaded.
5. Now Run the part cycle by selecting *RUN Part Cycle* from the Main Menu, then pressing **ENTER** .

Operating the Bar Feeder

Enabling the bar feeder

Turn the *FEEDER switch* to the *AUTO* position. This puts the barfeeder under automatic control.

Disabling the bar feeder

Turn the *FEEDER switch* to the *OFF* position.

Manually tripping the collet/bar feeder

With the indicator light showing Manual (*blue* light on) and the Cycle Operating Mode in Manual mode, hold Cycle Start and press the Main Collet trip button. Hold Cycle Start until the trip is complete.



Single Cycle Mode

In *single cycle mode*, the ServoCam® system will stop automatic operation after each complete part cycle (see "Setting the Part-done Detector"). When in *single cycle mode*, the symbol "1x" is shown at the bottom, right-hand corner of the *Summary Run Screen*.

Setting the single cycle mode

1. At the Main Menu, select *Part Counter Menu* and press **ENTER**.
2. Select *Single-cycle* and press **ENTER**.
3. Select ON or OFF and press **ENTER**, or press **ESC** to cancel.

Setting the Cycle Phase

To change the *Cycle Phase* (to jump forward in the part cycle):

1. At the Main Menu, select *Setup Menu* and press **ENTER**.
2. Select *Cycle Phase: xx.x (current value shown)* and press **ENTER**.
3. Type the desired value for cycle phase (in hundredths) and press **ENTER**, or press **ESC** to cancel.

Saving a Datalog

To Save a Datalog:

1. At the Main Menu, select *Advanced Menu*.
2. At the Advanced Menu, select *Archive Datalog*.
3. Wait approximately 3 - 4 minutes for the ServoCam® XL to generate the datalog.
4. Insert a USB media device into one of the USB ports accessible on the bottom of the ServoCam® XL terminal.
5. Select Options.
6. Highlight the desired datalog (if more than one are listed, select the one with the most recent time stamp)
7. Press *Copy to D:* or *Copy to E:*. If *Eject Drive after Copy* is checked, then the USB media device can now be removed.
8. If *Eject Drive after Copy* is NOT checked, then press *Eject D:* or *Eject E:* to ensure the datalog is completely written to the USB media device before removing it.

Operator Alert Light

An amber light is mounted on top of the controller to alert the operator.

Mode	Description
On	A slide force is more than 90% of the maximum allowable force
Slow flash	Thermal limit reached, or ToolSentry™ warning occurred, or part conveyor failure occurred, or electrical input signal is inconsistent
Fast flash	System fault or ToolSentry™ alarm occurred

Using the Tool Auto-Adjust Feature

1. From the Main Menu, use the **↑** and **↓** keys to select *EDIT Tool AutoAdjs*, then press **ENTER**.
2. Select the slide of the tool you wish to adjust, then press **ENTER**.
3. The display lists the tools associated with the selected slide.

```

Stn Descrip Adj[in]
1 Feed St -0.0186
2 Center 0.0032
>3 3/16 Tw -0.0050
4 3/16 Ta 0.0244
...
    
```

4. Select the tool station you want to adjust, then press **ENTER**.
5. The *Edit* display for that tool appears:

```

Tool AutoAdj [in]
3 3/16 Twist Drill
Old AutoAdj -0.0050
New AutoAdj>
    
```

Original Setting

Enter New Setting

6. Enter the adjustment, or press **ESC** to cancel.
 - Ø To *replace* the original setting, type in the new value, then press **ENTER**.
 - Ø To *increase* the original setting, press the **↑** key, type in the amount to increase, then press **ENTER**.
 - Ø To *decrease* the original setting, press the **↓** key, type in the amount to decrease, then press **ENTER**.

Note: A *positive* value is like tapping the tool longer.
A *negative* value is like tapping the tool shorter.
7. Repeat steps 4 - 6 for each tool that needs adjustment.
8. Press **ESC** once to change slides or twice to return to the controller Main Menu.

Controller Front Panel Lights

GREEN	On-cam (ServoCam® axes are synchronized)
GREEN <i>flashing</i>	On-cam, but not ready (i.e. Spindle not running).
BLUE	Manual (responds to handwheel if decade is selected)
BLUE <i>flashing</i>	Disabled (Emergency Stop button is engaged)
ORANGE	Unlocated -- one or more axes (use caution near ends of travel because unlocated axes will NOT stop automatically)
ORANGE <i>flashing</i>	Power pre-charge
RED	Fault (further operation not possible)
ALL	Controller startup and initialization



Displaying the Summary Run Screen

After selecting *RUN Part Cycle* from the Main Menu, the *Summary Run Screen* will appear on the display:

```
CP 32.4
SS=H FD#O T=1
LOT 10000 200:59:59
BAR 17 0:21:34
```

Line 1: CP 32.4

where:

CP 32.4 Cycle phase (hundredths)

Line 2: SS=H FD#O T=1

where:

SS=H	Spindle speed
	H High
	L Low
	2 Speed 2
	3 Speed 3
	4 Speed 4
FD#O	Bar Feeder
	O Open (Chucker mode)
	C Closed (Chucker mode)
	F Feeding (Feeder mode)
	- Idle (Feeder mode)
T=1	Tool turret station
	1 Tool station #1

and where:

= Tripper *enabled*
 # Tripper *disabled*
 ? Tripper changing state (jog to finish) or state unknown (no trips defined).

Line 3: LOT 10000 200:59:59

See "Part Counter Basics" for description.

Line 4: BAR 17 0:21:34

See "Part Counter Basics" for description.

Displaying the Axis Run Screens

When running a part cycle, several run screens are available to be displayed. By default, the *Summary Run Screen* is displayed. There is also a display for each of the ServoCam axes.

Use the or keys to cycle through the displays. Line 1 indicates which screen is displayed. Below is an example of the *Turret Slide Run Screen*:

```
Turret Slide
CP 32.4 SL 0.0957 in
T 22% F 35%
3/16 Twist FDI 14.4
```

Line 1: Slide Name

where:

Slide Name	Turret Slide
	Front Cross Slide
	Front Vertical Slide
	Rear Cross Slide
	Rear Vertical Slide
	Sub-Spindle

Line 2: CP 32.4 SL 0.0957 in

where:

CP 32.4	Cycle phase (hundredths)
SL 0.0957 in	Distance of slide datum from Collet

Line 3: TE 22% F 35%

where:

TE 22%	Slide temperature (% of maximum)
F 35%	Slide force (% of maximum)

Line 4: 3/16 Twist FDI 14.4

where

3/16 Twist	Description of current tool
FDI 14.4	Current operation and beginning hundredth
	14.4 = beginning hundredth

and where:

FCI	Feed Change - In
FCO	Feed Change - Out
FDI	Feed In
CLR	Clear
DWL	Dwell
POS	Position

Controlling Individual Axes

In order to control an individual axis, the *Run Screen* for that axis must be displayed on the controller (see "Displaying the Axis Run Screens".)

Select a decade:

x1	Normal speed for jogging a slide
x.1	1/10 th speed for jogging a slide
x.01	1/100 th speed for jogging a slide

Use the handwheel to manually "jog" the slide.

If 60 seconds elapse without the handwheel being turned, the decade will become deselected, and must be selected again.

Note that if the axis is UNLOCATED -- solid yellow light on controller front panel -- use caution when jogging the slide near the ends of travel because it will NOT stop automatically.



Part Counter Basics

Part-done detector

Before the ServoCam® system can count parts, it must know when to consider a part *done* (or complete). For this, a *part-done detector* is used. (See "Setting the Part-done Detector").

Lot counter (see "Setting the Lot Counter")

The ServoCam® system increments the #Parts Done (in Lot) every time a part is done -- if the Bar Feeder Switch is set to *Auto*.

If the #Parts/Lot (Lot size) is set to UNLIMITED, then the ServoCam® display counts *up* the number of parts done (or *made*), for example:

```
LOT 1021 made
```

If the #Parts/Lot (Lot size) is set to a value other than UNLIMITED, then the ServoCam® display counts *down* the number of parts and time remaining (hh:mm:ss) until the Lot is finished, for example:

```
LOT 10000 200:59:59
```

When the Lot is finished (#Parts Done equals #Parts/Lot), then the ServoCam® system will stop the machine, flash the Operator Alert Light, and the display will show "LOT finished". To stop the Operator Alert Light, escape to the Main Menu. The machine will not run automatically until #Parts Done is less than #Parts/Lot or until #Parts/Lot is set to UNLIMITED.

If the Bar Feeder Switch is NOT set to *Auto*, then the #Parts Done (in Lot) is not incremented, and the display will show "NC" on the right-hand side for *not counting*.

Bar-end counter (see "Setting the Bar-end Counter")

The ServoCam® system increments the #Parts Done (in Bar-end) every time a part is done -- if the Bar Feeder Switch is set to *Auto* and if the bar-end has passed the "bar-end switch".

If the #Parts/Bar-end (Bar-end size) is set to UNLIMITED, then the ServoCam® display shows:

```
BAR unlimited
```

If the #Parts/Bar-end (Bar-end size) is set to a value other than UNLIMITED, then the ServoCam® display counts *down* the number of parts and time remaining (hh:mm:ss) until the Bar-end is consumed, for example:

```
BAR 17 0:21:34
```

When the Bar-end is consumed (#Parts Done equals #Parts/Bar-end), then the ServoCam® system will stop the machine, flash the Operator Alert Light, and the display will show "BAR finished". To stop the Operator Alert Light, escape to the Main Menu. The Bar-end counter will reset when the *DRIVESHAFT START* button is next pressed.

If the bar-end has not passed the "bar-end switch", then the bar is *long*, and the ServoCam® display shows, for example:

```
BAR long (20+)
```

If the Bar Feeder Switch is NOT set to *Auto*, then the #Parts Done (in Bar-end) is not incremented, and the display will show "NC" on the right-hand side for *not counting*.

Setting the Part-done Detector

1. At the Main Menu, select *Part Counter Menu* and press **ENTER**.
2. Select *Part-done detector* and press **ENTER**.
3. Select *CyclePhase:* and press **ENTER**.
4. Type the cycle phase (in hundredths) where the part should be considered *done* and press **ENTER**, or press **ESC** to cancel.

Setting the Lot Counter

To change the #Parts/Lot (lot size):

1. At the Main Menu, select *Part Counter Menu* and press **ENTER**.
2. Select *Lot Counter* and press **ENTER**.
3. Select *#Parts/Lot:* and press **ENTER**.
4. Type the lot size and press **ENTER**, or press **ESC** to cancel.

To change the #Parts Done (number of parts already done in the lot):

1. At the Main Menu, select *Part Counter Menu* and press **ENTER**.
2. Select *Lot Counter* and press **ENTER**.
3. Select *#Parts Done:* and press **ENTER**.
4. Type the number of parts already completed and press **ENTER**, or press **ESC** to cancel.

Setting the Bar-end Counter

To change the #Parts/Bar-end (bar-end size):

1. At the Main Menu, select *Part Counter Menu* and press **ENTER**.
2. Select *Bar-end Counter* and press **ENTER**.
3. Select *#Parts/Bar-end:* and press **ENTER**.
4. Type the number of parts per bar-end and press **ENTER**, or press **ESC** to cancel.

To change the #Parts Done (number of parts already done out of the bar-end):

1. At the Main Menu, select *Part Counter Menu* and press **ENTER**.
2. Select *Bar-End Counter* and press **ENTER**.
3. Select *#Parts Done:* and press **ENTER**.
4. Type the number of parts already done out of the bar end, and press **ENTER**, or press **ESC** to cancel.