



ServoCam® UltraTurn Start-up Check List

1. **Insert a Cam Diskette.**
2. **Turn the controller switch On** (clockwise).
3. **Wait for the controller to initialize ...**
 - All front-panel lights on ~ 20 sec
 - ServoCam® loading ~ 10 sec
 - ServoCam® version display ~ 5 sec
 - Synchronizing axis controllers ~ 30 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** .
5. **Locate the ServoCam® axes.**
6. **Locate the spindle clutch.**
7. **Locate the bar feeder (if in Chucker Mode).**
8. **Locate the tool turret.**
9. **Put the controller on-cam.**
10. **The screw machine is now ready for CNC operation.**

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 to select the highlighted menu item.

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

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

The and keys are used to manually "jog" the slides.

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*).

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.

Inserting the Cam Diskette

1. Open the ServoCam® controller front-panel door.
2. Insert your Cam Diskette in the disk drive. Make sure the diskette label is facing up.
3. Close the controller front-panel door.

Locating the ServoCam® Axes

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

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

Locating the Spindle Clutch

If the spindle clutch is not properly located for the desired speed (as indicated on the ServoCam™ controller display), then *manually trip the spindle clutch trip switch and jog the backshaft to reposition the spindle clutch.*

Note that the ServoCam™ controller must be in **Manual** mode (blue light on, green light off) to trip the spindle clutch.

Locating the Bar Feeder (Chucker Mode only)

When the bar feeder is in Chucker Mode, the collet needs to be located to either the open or closed position, as appropriate.

If the bar feed mechanism is not properly located to the desired position (as indicated on the ServoCam™ controller display), then *manually trip the bar feeder trip switch and jog the backshaft to reposition it.*

Locating the Tool Turret

If the tool turret is not properly located for the desired tool (as indicated by the ServoCam™ controller display), then *manually reposition the tool turret to the correct tool.*

Changing a Part Cycle

It is not necessary to turn off the controller when changing part cycles.

1. Insert the new Cam Diskette.
2. Press to view the controller Main Menu.
3. Select **LOAD Part Cycle**, then press .

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

4. 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 .



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

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

Setting the Cycle Speed and Cycle Phase

To change the **Cycle Speed**, you actually change the *percentage of full speed*:

- At the Main Menu, select **Setup Menu** and press **ENTER**.
- Select **Set Cycle Speed** and press **ENTER**.
- Type the desired percentage of full cycle speed (up to 100) and press **ENTER**, or press **ESC** to cancel.

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

- At the Main Menu, select **Setup Menu** and press **ENTER**.
- Select **Set Cycle Phase** and press **ENTER**.
- Type the desired value for cycle phase (in hundredths) and press **ENTER**, or press **ESC** to cancel.

Enabling and Disabling All AutoTrippers™

- At the Main Menu, select **Setup Menu** and press **ENTER**.
- Select **DIS/ENABLE Trippers** and press **ENTER**. The following will be displayed:

```
All Trippers
> Enable
  Disable
```

- Select **Enable** or **Disable**, then press **ENTER**.

Operator Alert Light

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

Mode	Description
On	Turret-slide force is more than 90% of the maximum allowable force.
Slow flash	System warning message is displayed on the controller.
Fast flash	Part counter needs operator intervention.

Using the Tool Auto-Adjust Feature

- From the Main Menu, use the **↑** and **↓** keys to select **EDIT Tool AutoAdjs**, then press **ENTER**.
- Select the slide of the tool you wish to adjust, then press **ENTER**.
- 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
...
```

- Select the tool station you want to adjust, then press **ENTER**.
- 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

- Enter the adjustment, or press **ESC** to cancel.
 - To **replace** the original setting, type in the new value, then press **ENTER**.
 - To **increase** the original setting, press the **↑** key, type in the amount to increase, then press **ENTER**.
 - 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.
- Repeat steps 3 - 5 for each tool that needs adjustment.
- 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 flashing	On-cam, but not ready (i.e. Spindle not running).
BLUE	Manual (responds to ← → keys)
BLUE flashing	Disabled (Emergency Stop button is engaged)
YELLOW	Unlocated -- one or more axes (use caution near ends of travel because unlocated axes will NOT stop automatically)
YELLOW flashing	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#0 T=1
LOT
BAR
```

Line 1: CP 32.4

where:

CP 32.4 Cycle phase (hundredths)

Line 2: SS=H FD#0 T=1

where:

SS=H	Spindle speed
	H High
	L Low
	2 Speed 2
	3 Speed 3
	4 Speed 4
FD#0	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 or state unknown

Line 3: LOT

See "*Part Counter Basics*" for description.

Line 4: BAR

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
                          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

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: F 35%

where:

F 35%	Slide force (percent 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	<i>Feed Change - In</i>
FCO	<i>Feed Change - Out</i>
FDI	<i>Feed In</i>
CLR	<i>Clear</i>
DWL	<i>Dwell</i>
POS	<i>Position</i>

Operating the Bar Feeder

Enabling the bar feeder

Turn the *bar feeder trip switch* to the *AUTO* position.

Disabling the bar feeder

Turn the *bar feeder trip switch* to the *OFF* position.

Manually tripping the bar feeder

With the ServoCam™ controller in **Manual** mode (*blue* light on, *green* light off), turn the *bar feeder trip switch* to the *TRIP* 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*").

Use the and keys to manually "jog" the slide.

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 ServoCam® 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")

ServoCam® 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 until the Lot is finished, for example:

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

When the Lot is finished (#Parts Done equals #Parts/Lot), then ServoCam® 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")

ServoCam® 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 until the Bar-end is consumed, for example:

```
BAR 10000 200:59:59
```

When the Bar-end is consumed (#Parts Done equals #Parts/Bar-end), then ServoCam® 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 machine will not run automatically until the CYCLE STOP button is pressed, #Parts/Bar-end is set to UNLIMITED, or #Parts Done is reset.

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

```
BAR long (9999+)
```

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 **Lot 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.