

# Software Setups and Operations

## Selecting Menu Pages

There are currently five menus available to the user when Meta-Speed<sup>□</sup> is in operation. Each may be selected by a keystroke as follows:

- Home Menu (Press **Q**)
- Gate Menu (Press **Ctl-W**)
- Servo Menu (Press **Ctl-E**)
- Setup Menu (Press **Ctl-R**)
- Test Menu (Press **Ctl-T**) Mainly for system development and not used in normal operation.

## Control Panel Operation

The telecine Mechanism Control Panel functions as before Meta-Speed<sup>□</sup>, with the following exceptions:

1. If Varispeed (or 30 fps) operation is selected, then the Meta-Speed<sup>□</sup> has access to the Speedbus. This must be true for Meta-Speed<sup>□</sup> to control the Digiscan frame rate. If Non-Varispeed operation at 24/25 or 18 fps is selected, then Meta-Speed<sup>□</sup> will be forced to that speed.
2. In Stop, pressing the Frame Up button will cause the scanning raster to change to a Run patch size. This is to facilitate alignment of devices such as the CRE Kit, or Auto-Shading systems. Note that this will not affect the value of Framing, since the machine will remain in stop.

## CTM290 Remote Control Panel Operation

This optional control panel provides the operator with the means to control the following basic functions of the Meta-Speed<sup>□</sup> servo.

1. Setting a speed.
2. Selecting or setting a User Preset Speed.
3. Selecting a Gate Memory Location.
4. Enter a Framing offset.
5. Setting up a Strobe rate.

Operation of the panel is simple:

- Press the button corresponding to the feature that is to be changed.
- Enter the desired value using the numeric keypad.
- Press the same (illuminated) feature button to implement the change.

## Reprogramming the CTM290 Panel

Occasionally, the CTM290 panel can give the appearance of being defective by displaying only a flashing cursor. In most cases this problem can be resolved by reprogramming the panel using the following procedure.

1. With the Meta-Speed<sup>□</sup> Setup Menu displayed, set port 3 to **Off**.
2. Unplug and re-connect the CTM290 terminal onto the Meta-Speed<sup>□</sup> terminal adapter cable. The cable inserts into the MAIN port on the CTM290 back panel. Immediately press **Shift**, then press **Enter**. The display should read HOST BAUD 9600 or 19200. **Note:** If display is blank, perform step 3. Display should now be visible. Use “Set Preset Speed” button to select desired baud rate.
3. Press **Shift**. Press **Shift** again, then press the **left arrow** to reduce the display intensity. Repeat once to achieve the minimum brightness setting.
4. Press **Shift** and the “Framing” button to save display settings. Press the “Set Strobe” button to exit.
5. Set port 3 on Meta-Speed<sup>□</sup> to **On**. The CTM290 unit will program automatically. Programming will be complete when a normal speed display shows on the CTM290.
6. Remove the cable from the CTM290 at the MAIN port. Reinsert the cable from the CTM290 into the MAIN port. The normal speed display should show again.

If unable to program the CTM-290 Remote Control Panel, verify the cable connecting it to the SRCP2 panel **P3** is good. Refer to the CTM290 Cable drawing (page 95) in the schematic section of this manual.

# Home Menu

A typical Home Menu display might look like this:

```

LINE                18-76                NO PRINTER
FPS:  32.054 (32.086 - 0.1%)  DigiFPS:16.027                525/59.94

Transport Mode.....Stop                Gate:                16mm Cintel

-D+ Frames per second..... 23.976      N Gate Memory Number.....4
 I SlowScan..... On                O Perfs per Frame.....1
 F Framing..... 0.000                C Counter..... 0.833
 A Strobe Frames..... 0                T TimeCode..... 00:00:00:00

To store to User Speed Presets, type U <preset #>
1 Recall Speed Preset 1..... 2.000      6 Recall Speed Preset 6..... 12.000
2 Recall Speed Preset 2..... 4.000      7 Recall Speed Preset 7..... 24.000
3 Recall Speed Preset 3..... 6.000      8 Recall Speed Preset 8..... 30.000
4 Recall Speed Preset 4..... 8.000      9 Recall Speed Preset 9..... 48.000
5 Recall Speed Preset 5..... 10.000     0 Recall Speed Preset 10..... 90.000

                Meta-Speed Digital Servo System
                Version: 1.98I  Date: 12-Aug-97
                ^W-Gate Menu      ^E-Servo Menu      ^R-Setup Menu      ^T-Test Menu
    
```

**Note:** All adjustable parameters allowing numeric entry (except Frames per Second) may be adjusted incrementally by using the bracket [ ] keys. When a number has been entered, **Enter** must be pressed to allow subsequent entries or Menu page changes.

## Home Menu parameters

1. **Transport Mode:** Displays the current status of the transport.
2. **-D + (Frames Per Second)**
  - Pressing “**D**” followed by the Plus or Minus Key will increment / decrement to the next available speed.
  - Pressing “**D**”, then entering the desired speed and pressing **Enter** will allow direct entry of a particular speed.
  - Selecting a number between 0 and 9 , then pressing **Enter** will select one of the ten programmable preset speeds. **Note:** This method of speed selection will work on any of the menu pages.

**Note:** If a \* is displayed on the Remote Control Panel, the telecine is operating in a Fixed Speed mode and the word **FIX** will appear instead of the “**D**” symbol.

3. **I (SlowScan):** This function is active only when the transport speed is in the range of 18 fps to 48 fps and the telecine is in Run Forward mode. Pressing the **I** key will toggle the status of SlowScan availability.

SlowScan cannot be turned on or off from a remote source or the remote control panel. It must be enabled or disabled locally, at the telecine.

**Note:** Some users (especially those with Kinesis units) have requested a GPI to turn SlowScan On or Off via hardware. This is available at **PL1-6** of the Gate & System Adapter Board (PN:23005). If this line is pulled low, SlowScan will be turned Off. This input overrides any selection made at the terminal.

4. **F** (Framing): Framing can be adjusted by pressing the **F** key, typing in the desired value and pressing **Enter**. This parameter should be set to zero when performing the Framing Alignment procedure.
5. **A** (Strobe Frames): Strobe is automatically enabled anytime you enter a value other than zero in the Strobe Frames setting. To set a strobe amount, press the **A** key followed by the number of strobe frames, then press **Enter**. This is the number of film frames to **skip** for each displayed film frame. For example, a value of 2 indicates a repeating cycle of 1 live film frame, which is then frozen and held during the next 2 film frames. Thus, the cycle length is the strobe amount plus one. Strobe allows interesting effects to be created during the film transfer. It can be used at any speed. Interesting effects can be created using this feature in conjunction with a digital noise reduction system. Set Strobe Frames to **Zero** for normal operation.
6. **Gate**: Displays the contents of the Gate Description field in the Gate Menu.
7. **N** (Gate Memory Number): Ranging from 1 to 12, this displays the current Gate Memory in use. Press the **N** key, type the desired number and press **Enter** to select a gate memory location. However, if the telecine is cycled from LOAD to NORMAL, the Gate Memory number will revert to the default Gate Memory for the film gauge as determined by the socket on the gate in use.
8. **O** (Perfs per Frame): Displays the perfs per frame setting for the current gate. To alter this parameter press the **O** key, type the desired number and press **Enter**.
9. **C** (Counter): Displays the active frame count. To enter a desired count press the **C** key, type the required frame count and press **Enter**.
10. **T** (Timecode): Displays the 24 fps timecode equivalent to the count value in the Counter field.
11. **User Speed Presets**: 1 through 10. These are user speed settings which can be recalled for use by pressing a numerical key from 0 to 9. To store the current operating speed into a User Speed Preset, press the **U** key followed by a number from 0 to 9.

## Selecting Film Frame Rate (Frames per Second)

Depending on the telecine type, the Meta-Speed<sup>□</sup> frame rate operates in one of two modes: Speedbus Master or Speedbus Slave.

### Speedbus Master Mode

This mode is used in **MkIIIB**, **MkIIIC**, and **Turbo** telecines. Meta-Speed<sup>□</sup> is the speedbus master and can force the Digiscan framestore to run at the desired frame rate. The only requirement for Meta-Speed<sup>□</sup> to control the frame rate is that the telecine must be in Varispeed mode (sometimes referred to as '30 fps' on older telecine control panels).

In Speedbus Master mode, there are 3 ways you can set film speed. In all cases Meta-Speed<sup>□</sup> will go to the closest speed and display the actual run speed.

1. Recall a preset speed by typing in a number from 0 to 9. The speed will be selected based on the Preset Speeds, which are listed and programmable in the Home Menu.
2. On the Home Menu only, directly set the speed by typing the letter **D**, followed by the speed, then typing the **Enter** key.
3. On the Home Menu only, type the + or - keys to increment or decrement to the next available speed.

**Note:** In 525/NTSC mode, the speed entered will be adjusted down by 0.1%, and the closest available speed to this adjusted value will be selected. This allows the operator to enter "round numbers" and get the customary 'NTSC' frame rates. For example, enter 24 and get 23.98 fps. The "round number" will also be displayed in parenthesis to the right of the actual current speed.

### Speedbus Slave Mode

This mode is used on **URSA type telecines**. The telecine **must** be in Varispeed mode before any non-standard speed operation is possible. Because the frame rate of the framestore on these telecines cannot be forced by the speedbus, a different strategy is used. Meta-Speed<sup>□</sup> follows the speedbus as if it was a standard servo, unless the operator wishes to select a speed not included in the stock telecine. For non-standard speed operation, Meta-Speed<sup>□</sup> will calculate the required frame rate for the framestore and display it as the **DigiFPS** parameter (the number in parenthesis) on both the terminal Home Menu and on the optional Meta-Speed<sup>□</sup> Remote Control Panel. To select a non-standard speed in Speedbus Slave mode do the following.

1. With the telecine stopped, select the desired non-standard speed, in fps, using either the Meta-Speed<sup>□</sup> terminal as described above in the Speedbus Master mode section, or by using the optional Meta-Speed<sup>□</sup> Remote Control Panel.
2. Set the color corrector to the speed indicated by the **DigiFPS** parameter available on either the terminal Home Menu or on the Meta-Speed<sup>□</sup> Remote Control Panel.
3. When the telecine is run at play speed, Meta-Speed<sup>□</sup> compares the **DigiFPS** value to the speed selected by the color corrector. If they match, Meta-Speed<sup>□</sup> runs the film at the non-standard speed selected in step 1. If they don't match, Meta-Speed<sup>□</sup> switches to the standard speed set by the color corrector.

## **Speedbus Slave Mode (cont.)**

Example: Select a Play speed of 54.000 frames per second.

1. Stop the telecine.
2. Select **Varispeed** or 30 fps mode.
3. On the terminal Home Menu type: **D 54** and press **Enter**. (On the Meta-Speed<sup>□</sup> remote panel, press “**Set Speed, 54, Enter**”).
4. The **DigiFPS** parameter now reads 27.000, so set the color corrector to 27.000 fps. (*Consult your color corrector Operations Manual for the exact procedure for setting non-standard speeds, if necessary*)
5. When Run Forward mode is selected, the telecine should now run at 54.000 frames per second.

# Gate Menu

A typical Gate Menu display might look like this:

LINE	21-39	NO PRINTER
FPS: 32.054	(32.086 - 0.1%)	GATE MENU (Q for Home Menu)
<b>Identification</b>		<b>Adjustments</b>
<b>N</b> Gate Memory Number.....4		<b>U</b> Run Size..... 1.000
<b>G</b> Gate Description..... 16mm Cintel		<b>V</b> SlowScan gain..... 1.000
<b>#</b> Serial# or Comment.		<b>B</b> SlowScan Range(frames p-p). 0.2440
<b>D</b> Gate Code..... 16mm		<b>*</b> SlowScan Length (Frames).... 4320
Gate Code Live Reading.... 16mm		<b>S</b> Active Stop Gain..... 1500
		<b>A</b> Acceleration(KTach/S^2)..... 50
<b>Configuration</b>		<b>\$</b> DC Adaptive Gain..... 1000
<b>P</b> Perf Pitch (inch)..... 0.29930		<b>%</b> AC Adaptive Gain..... 100
<b>O</b> Perfs per frame..... 1		<b>K</b> EPR Gain..... 0
<b>T</b> Sprocket Teeth/Turn..... 8		<b>^</b> Phase Lock Limit..... 300
<b>C</b> Encoder Cycles/Turn..... 8		
<b>H</b> Encoder Index Pulses..... 8		
<b>Y</b> Encoder Type.....Cintel		
<b>&amp;</b> DDS Code..... Default		
		314
<b>Speed Limits</b>		<b>Framing Calibration</b>
<b>I</b> Inch Speed(FPS)..... 2.000		<b>!</b> Stop Edge (coarse adjust)..... 0
<b>M</b> Maximum Speed(FPS)..... 240.080		<b>zZ/xX</b> Stop from Run Forward... -0.0820
<b>F</b> Maximum Fwd Scans FPS..... 120.04		<b>zZ/xX</b> Stop from Run Reverse... -0.0234
<b>L</b> Maximum Rev Scans FPS..... -60.02		<b>zZ/xX</b> Run Forward Framing..... 3.154
<b>J</b> Shuttle Pot.... 0.025 to 20.000		<b>zZ/xX</b> Run Reverse Framing..... 1.769

**Note:** All adjustable parameters allowing numeric entry may be adjusted incrementally by using the bracket [ ] keys. When a number has been entered, **Enter** must be pressed to allow subsequent entries or Menu page changes.

## Gate Menu Parameters

### Identification

1. **N** (Gate Memory Number): Ranging from 1 to 12, this displays the current Gate Memory in use. Press the **N** key, type the desired number and press **Enter** to select a gate memory location. However, if the telecine is cycled from LOAD to NORMAL, the Gate Memory number will revert to the default Gate Memory for the film gauge as determined by the socket on the gate in use.
2. **G** (Gate Description): This field is intended to allow facilities to assign names to the gate entries, such as “35mm 4-Perf”, or “Stedi-Film”. The assigned names are for display and function as labels only. Press the **G** key, type the desired description and press **Enter**.

## Gate Menu Parameters (cont.)

3. **#** (Serial # or Comment): This field, like Gate Description, is for display only. If users desire to store the calibrations of multiple gates having the same Gate Description, this provides an additional form of identification. Press the **#** key, type the desired comment and press **Enter**.
4. **D** (Gate Code): Displays the assigned Gate Code of the Gate Memory number in use. Press the **D** key to select from the options available. Press **Enter** to accept the entry.
5. **Gate Code Live Reading**: Identifies the gate mounted on the telecine from the film gauge information encoded by the socket on the gate in use.

## Configuration

6. **P** (Perf Pitch): This entry is used by the servo to determine the velocity setting for each gate. It can be entered directly by pressing the **P** key, typing the desired value and pressing **Enter**, or it can be adjusted in 0.0001 inches per perf by pressing the **[** or **]** keys.
7. **O** (Perfs per Frame): This should be set to the number of sprocket perfs per film frame. Press the **O** key, type the desired value and press **Enter**.
8. **T** (Sprocket Teeth/Turn): This should be set to the number of teeth on the gate sprocket. Press the **T** key, type the desired value and press **Enter**.
9. **C** (Encoder Cycles/Turn): This should be set to the number of castellations on the gate encoder cylinder. Press the **C** key, type the desired value and press **Enter**.
10. **H** (Encoder Index Pulses): The servo utilizes this parameter to determine if “any perf” loading is available to the user. Press the **H** key, type the desired value and press **Enter**.
11. **Y** (Encoder Type): Set to Cintel for conventional encoders ( including JumpFree) or RTS for Steadi-Film external encoders. Toggle the **Y** key to select the desired type and press **Enter**.
12. **&** (DDS Code): This is the gate code for the DAV Digital Deflection System. Press the **&** key to step through the available options. Press **Enter** to accept the entry.

## Speed Limits

13. **I** (Inch Speed): This field allows the inch speed to be set in FPS for each gate. Press the **I** key, type the desired value and press **Enter**.
14. **M** (MaxSpeed): This field allows the maximum allowable speed to be set for each gate. This is also the full shuttle speed. Press the **M** key, type the desired value and press **Enter**.
15. **F** (Maximum Fwd Scans FPS): Sets the limit on the CRT scans at the indicated speed in forward, the speed at which the scanning system reverts to a STILL sized raster. Press the **F** key, type the desired value and press **Enter**.
16. **L** (Maximum Rev Scans FPS): Same as above, except for reverse speeds. Press the **L** key, type the desired value and press **Enter**.

## Gate Menu Parameters (cont.)

17. **J** (Shuttle Pot): Press the **J** key and use the **[** or **]** keys to set the speed range of the shuttle pot.

## Adjustments

18. **U** (Run Size): Adjusts Run Vs Still height. Press the **U** key, type the desired value and press **Enter**.
19. **V** (SlowScan gain): Calibrates the gain of the SlowScan system. Press the **V** key, type the desired value and press **Enter**.
20. **B** (SlowScan Range): The range of the SlowScan system is the distance in frames (peak to peak) that the patch travels over the face of the CRT. Press the **B** key, type the desired value and press **Enter**.
21. **\*** (SlowScan Length): This is the number of film frames that are to be transported through the gate before one complete cycle of SlowScan is complete. Press the **\*** key, type the desired value and press **Enter**.
22. **S** (Active Stop Gain): This sets the gain of the active stop system. Press the **S** key, type the desired value and press **Enter**. Lowering this value may reduce the tendency of the capstan to oscillate when in stop.
23. **A** (Acceleration): This sets the acceleration of the capstan. This can be increased, on average, to about 80 before slippage occurs. It can also be reduced for especially gentle film handling, in case of delicate or badly packed film. **Note:** If acceleration is set excessively high, film slippage and scratching are possible. Press the **A** key, type the desired value and press **Enter**.
24. **\$** (DC Adaptive Gain): This is the low frequency gain of the DeWobble adaptation system. Press the **\$** key, type the desired value and press **Enter**.
25. **%** (AC Adaptive Gain): This is the high frequency gain of the DeWobble adaptation system. Press the **%** key, type the desired number and press **Enter**.
26. **K** (EPR Gain): Gain factor when operating EPR system. Press **K** key, type desired value and press **Enter**.
27. **^** (Phase Lock Limit): Controllers operating with Sony protocol use this to set the Sony Servo Lock bit limit. Should not need to be altered in normal operation.

## Framing Calibration

28. This part of the Gate Menu relates to the Framing alignment procedure. See page 74 "Film Framing Alignment" for details.

## Meta-Speed<sup>□</sup> Gate Memory Locations

The Meta-speed<sup>□</sup> system has twelve gate memory locations allowing the user to have twelve different gate settings configured and saved for recall at any time.

When a system is shipped eight of these twelve locations are pre-programmed with several different gate types and configurations. Details of these preset gates memories are as follows:

- |              |                 |
|--------------|-----------------|
| 1. 35mm J/F  | 5. S16mm J/F    |
| 2. S35mm J/F | 6. RTS S16mm    |
| 3. RTS 35mm  | 7. Super 8mm    |
| 4. 16mm J/F  | 8. Standard 8mm |

Memory locations 9 through 12 are left blank for the user to define gates as desired. Users who use only standard Cintel gates (non-JumpFree) will need to define their gates at whatever memory locations they wish. Refer to the **Typical Gate Parameters** section on page 73.

**Note:** For all Meta-speed<sup>□</sup> systems, a gate can be defined and programmed into any memory location the user chooses. The preprogrammed locations are there merely as an added convenience to aid in the initial installation process.

A default gate memory location is one that the system recalls when a new gate is mounted on the telecine and the transport is cycled from **Load** to **Normal**. Diligent use of the Gate Code parameter “**D**” on the Gate Menu determines which gate memory location is to be used for each gate type.

## Gate Coding

MkIII type telecines allow for identification of 4 different gate types. These are 16mm, 35mm, S8mm and Slide. **Note:** The logic signal Slide = 0 is not used directly by Meta-Speed<sup>□</sup>, but is decoded via the Servo Logic 11 board. The type of gate in use is identified on the Gate Setup page (**Ctl-W**) under the Gate Code Live Reading parameter.

From this it is apparent that the MkIII telecine is not capable of distinguishing between standard 35mm and S35mm gates, nor can it tell a standard 16mm gate from a S16mm one.

Later URSA and URSA Gold telecines use three Gate Code lines to decode what type of gate is mounted on the machine. This allows for identification of eight different gate types. These are 35mm 4perf, 35mm 3perf, S35mm 4perf, S35mm 3perf, 16mm, S16mm, S8mm and Slides. (Details can be found in the Cintel URSA handbook)

**Defining a Gate** in a specific memory location.

Press **Ctl-W** to view the Gate Menu.

Press **N** and type the number of desired memory location. Press **Enter**.

If desired, press **G** and type the gate description. Press **Enter**.

If desired, press **#** and type a comment. Press **Enter**.

Toggle the **D** key until the Gate Code parameter matches the **Gate Code Live** reading. Press **Enter**.

## Gate Coding (cont.)

Configure the gate parameters for the gate in use referring to the **Typical Gate Parameters** section (next page). Then save the gate settings:

- Return to the Setup Menu, Press **Memory**, **Save**, **Yes** and **Yes** to perform a save.

As it is possible to have several gate memory locations with the same gate code there are certain limitations as to how Meta-Speed<sup>□</sup> decides which gate memory location is to be used. When the transport is cycled from Load to Normal, Meta-Speed<sup>□</sup> compares the **Gate Code** parameter “**D**” with the **Gate Code Live Reading**. If these are the same then Meta-Speed<sup>□</sup> keeps the current gate memory location active. If they do not agree, then Meta-Speed<sup>□</sup> searches through the other locations for a match. If none is found the system defaults to gate memory location #1.

## Typical Gate Parameters

Before performing the Film Frame Tracking Alignment, it is necessary to check that the gates in use have been properly set up in the Meta-Speed<sup>□</sup> software. Refer to Table 28 for standard, unmodified gates.

Press **Ctl-W** to go to the Gate Menu. Locate the Configuration section. There are five parameters to be verified:

- O** Perfs per Frame
- T** Sprocket teeth / turn
- C** Encoder Cycles / turn
- H** Encoder Index Pulses
- Y** Encoder Type

<b>35mm:</b>	<b>Cintel</b>	<b>Jump-Free</b>	<b>RTS</b>
Perfs per frame	4	4	4
Sprocket Teeth	16	16	16
Encoder Cycles	4	16	16
Encoder Index	4	16	16
Encoder Type	Cintel	Cintel	RTS
<b>16mm:</b>			
	<b>Cintel</b>	<b>Super 16 Jump-Free</b>	<b>Super 16 RTS</b>
Perfs per frame	1	1	1
Sprocket Teeth	8	8	8
Encoder Cycles	8	16	16
Encoder Index	8	16	8
Encoder Type	Cintel	Cintel	RTS
<b>8mm:</b>			
	<b>Regular 8</b>	<b>Super 8</b>	
Perfs Per Frame	1	1	
Sprocket Teeth	16	16	
Encoder Cycles	16	16	
Encoder Index	16	16	
Encoder Type	Cintel	Cintel	

**Table 28 – Standard Gate Configurations**

# Film Framing Alignment

Once properly aligned the Meta-Speed<sup>□</sup> Servo should exhibit consistent image framing to within one line at any speed from 6 fps to 48 fps.

## Preparation

1. Confirm that the **Velocity DSP Alignment** has been performed. (see page 55)
2. Load a 35mm test loop. Set **F** (Framing) in Home Menu to zero.
3. Select the Gate Menu by pressing **Ctrl-W**. Set the **!** (Stop Edge) parameter to zero. If difficulties are experienced in obtaining correct framing after performing framing alignment, Stop Edge may then be adjusted to compensate.
4. Run the film forward for approximately twenty seconds without making any adjustments to allow the Adaptive Learning function to stabilize.

## Set Capstan Tach Pitch

Cintel capstans vary considerably in diameter from unit to unit. To compensate for this, the Meta-Speed<sup>□</sup> Servo has an adjustment for **Tach Pitch**. This is a measure of the number of capstan tach pulses per film inch. Tach Pitch is the primary velocity alignment, but there are also independent trims for each gate, called **Perf Pitch**.

5. On the Gate Menu ensure that the Perf Pitch is set to 0.1866” for 35mm film.
6. Select the Servo Menu by pressing **Ctrl-E**. Press **P** to disable the Phase Servo. Typically, the image will begin to roll.
7. Press **T** to allow adjustment of the Capstan Tach Pitch to stabilize the film image. Use of the bracket keys will permit fine adjustment of this parameter. The objective is to reduce vertical image drift to a minimum. In general, a very slow upward drift is acceptable. Press **Enter** to accept the value selected. Tach Pitch is now set.

**Note:** With any other gate set Perf Pitch by following this same procedure.

8. Press the **P** key to re-enable the Phase Servo.

# Film Framing Alignment (cont.)

## Film Framing Calibration

**Note:** When performing Framing calibration, the shifted **X** or **Z** keys produce larger framing changes, while lower-case **x** or **z** keys will produce small changes. If the Caps Lock key is engaged, operation will be reversed.

9. Run the film forward at 24 or 30 fps. Stop the film. Adjust **Stop from Run Forward** for a properly framed image.
10. Run the film forward at 24 or 30 fps and adjust **Run Forward Framing**.
11. Repeat steps 9 and 10 until **Stop Framing** and **Run Forward Framing** are the same.
12. Run the film in reverse at 24 or 30 fps. Stop the film. Adjust **Stop from Run Reverse**.
13. Run the film in reverse at 24 or 30 fps and adjust **Run Reverse Framing**.
14. Repeat steps 12 and 13 until **Stop Framing** and **Run Reverse Framing** are the same.
15. Run the film forward at 48 fps and fine tune **Run Forward** framing.
16. If necessary, repeat steps 9 through 15 until framing is consistent.
17. **Save the settings!** Press **Ctrl-R** to view the Setup Menu, and select **Memory, Save Yes** and **Yes** to save Framing values.
18. Framing calibration is complete. Repeat as needed for different TV standards, gates and film formats. Remember to adjust Perf Pitch rather than Tach Pitch when setting up other gates.

# Servo Menu

A typical Servo Menu display might look like this:

LINE	8-30	NO PRINTER
FPS: 32.054	(32.086 - 0.1%)	SERVO MENU (Q for Home Menu)
<b>Velocity Measurements</b>		<b>Phase Measurements</b>
Velocity.....	0.0	SlowScan..... 0.0000
Current Velocity.....	-1314.2	SlowScan Status..... Off
Measured Velocity.....	-0.0	Command Phase..... 0.5820
Velocity Error.....	1314.2	Measured Phase..... 0.8333
Torque.....	0.0%	Phase Error..... 0.3468
Arm Info.....	25968 0	StartTime..... 0.0000 0.00
TorqueClip.....	FALSE	EPR Framing.....0.0000
<b>Velocity Adjustments</b>		<b>Phase Adjustments</b>
<b>T</b> Capstan Tach Pitch....	664.30	<b>Z</b> Kphase..... 0.0015 25
<b>C</b> KVel (Kv).....	6800	<b>P</b> Phase Servo.....On (Off)
<b>[</b> Fcv (Kwcv).....	4.0	<b>O</b> DeWobble..... Adapt (Hold)
<b>F</b> Fiv (Kwci).....	10.0	<b>I</b> SlowScan..(^I for Max)..... On
<b>J</b> FSO Factor.....	10%	<b>U</b> Phase Integrator..... On
<b>L</b> Arm Gain.....	25000	<b>S</b> Locked Pictures in Shuttle..... On
<b>G</b> Arm Offset.....	1000	<b>A</b> Start Freeze..... On

**Note:** All adjustable parameters allowing numeric entry may be adjusted incrementally by using the bracket [ ] keys. When a number has been entered, **Enter** must be pressed to allow subsequent entries or Menu page changes.

## Velocity Measurements

- Run Velocity:** This is the target velocity for the capstan. The units are capstan tach pulses per second. This value is calculated by the equation:  
**Velocity = TachPitch x PerfPitch x Perfs x FPS** where:
  - Velocity is measured in tach/sec
  - TachPitch is measured in tachs/inch
  - PerfPitch is measured in inch/perf
  - Perfs is measured in perf/Frame
  - FPS is measured in frame/sec
- Current Velocity:** This is the acceleration limited command velocity. This value tracks the Run Velocity at the Acceleration rate.
- Measured Velocity:** This is the instantaneous measurement of actual capstan velocity.
- Velocity Error:** This is the difference between the Current and Measured Velocity.
- Torque:** This is the torque command to the Capstan drive amplifier. It ranges from -32768 to 32767, full scale.

## Velocity Measurements (cont.)

6. **ArmInfo:** This indicates the error voltage from the spooling motor drive amplifiers. Positive numbers indicate possible overrun of the reels.
7. **TorqueClip:** This indicates that the drive signal to the capstan motor is limited to values with the same sign as the Current Velocity.

## Velocity Adjustments

8. **T (Capstan Tach Pitch): Important** This is the fundamental calibration of velocity for the servo system. It affects all gates the same. Accurate set up will ensure fast system startup times. (See “Set Capstan Tach Pitch” on page 74 for correct adjustment procedure).
9. **C (Kvel):** This sets the Velocity Loop Gain. If it is set too high, instability and noise occur. If it is set too low, stability suffers. Press the **C** key, type the desired value and press **Enter**.
10. **[ (Fcv):** This is the Frequency of the Velocity Closed Loop. Press the **[** key, type the desired value and press **Enter**.
11. **B (Fiv):** This is the Frequency of the Velocity Loop Integrator. Press the **B** key, type the desired value and press **Enter**.
12. **J (FSO Factor):** This is the amount of Film Speed Override that the TLC will apply during edit preroll. Value is dependent on which version of TLC software is in use. Press the **J** key, type the desired value and press **Enter**.
13. **L (Arm gain):** This is the gain factor of the correction that is applied to the control loop in response to the “Arm Info” signal. Press the **L** key, type the desired value and press **Enter**.
14. **G (Arm Offset):** This is a number that represents the amount of movement the compliance arm can move away from it’s normal operating position before the “Arm Info” information is used to slow the capstan speed down. Press the **G** key, type the desired value and press **Enter**.

## Phase Measurements

15. **SlowScan:** This is the value of phase of SlowScan measured in frame pitch.
16. **SlowScan Status:** This indicates ON when SlowScan is operating.
17. **Command Phase:** This is the target phase value in clock cycles, from the start of the frame.
18. **Measured Phase:** This is the last measurement of actual phase, in clock cycles.
19. **Phase Error:** The difference between Command Phase and Measured Phase in clock cycles.
20. **StartTime:** Time, in clock cycles, at which to initiate a mode transition. This is based in part on the Acceleration parameter.
21. **EPR Framing:** Phase measurement when operating the EPR system.

## Phase Adjustments

22. **Z** (Kphase): Press the **Z** key, type the desired value and press **Enter**. This sets the Phase Loop Gain or speed of response of the framing system. If it is set too high, vertical stability will suffer. If set too low, the framing corrections will take excessively long to settle. The default value is 50 but many users find that lowering this value to 25 greatly improves 16mm and 8mm stability when in run.
23. **P** (Phase Servo): Toggle the **P** key to set this parameter to the desired setting. This toggles the phase, or framing, system on and off. The default setting is **On**, but may be turned off when only velocity control is desired, such as when setting Tach Pitch or Perf Pitch.
24. **O** (DeWobble): Toggle the **O** key to set this parameter as desired. This controls the operation of the adaptive correction mode, which corrects for gate sprocket shaft and/or interrupter wheel run out or out-of-round (wobble). These errors show up as a cyclic vertical movement, in time with the rotation of the gate sprocket. DeWobble takes about 20 seconds while the film is running at 24 fps. Note that DeWobble adaption is disabled at speeds below 20 fps. Default setting is Adapt (Hold).
25. **I** (SlowScan): Toggle the **I** key to set this parameter as desired. If this is set to ON, SlowScan will operate when appropriate for the current speed and direction. When OFF, SlowScan is inhibited. Pressing **Ctl-I** will force the SlowScan value to its maximum excursion for alignment purposes when using a DAV Digital Deflection System.
26. **U** (Phase Integrator): Toggle the **U** key to set this parameter as desired. When enabled it will force velocity errors (like those due to film shrinkage) to zero. However, when disabled, the telecine will pull into lock faster. Default setting is **On**.
27. **S** (Locked Pictures in Shuttle): Toggle the **S** key to set this parameter as desired. When enabled, the Phase Servo will function in Shuttle mode, causing the picture to be locked vertically. Default setting is **On**.
28. **A** (Start Freeze): Toggle the **A** key to set this parameter as desired. This enables the servo to freeze the image while the transport transitions from Still to Run Forward or Run Reverse. Default setting is **On**.

# Setup Menu

A typical Setup Menu display might look like this:

LINE	16-73	NO PRINTER
FPS:	32.054 (32.086 - 0.1%)	SETUP MENU (Q for Home Menu)
<b>A</b>	ArmInfo Available.....	TrueM Memory Save/Recall
<b>B</b>	Biphase Capstan Tach..... Speed Override Type..... Off	True N Film
<b>C</b>	FrameInt Delay(uS) NTSC..... Sprocket LED1 current..... 100%	0 O
<b>C</b>	FrameInt Delay(uS) PAL..... Sprocket LED2 current..... 100%	0 P
<b>Shuttle vs. FastFwd/FastRev Logic T</b>		<b>S</b> Port 1..... Off
<b>D</b>	Local..... Analog Normal	Port 2..... Off
<b>F</b>	Remote1..... Analog Normal	<b>U</b> Port 3..... Remote Panel
<b>G</b>	Remote2..... Analog Normal	<b>V</b> Port 4..... Off
<b>H</b>	Gate Coding..... MkIII	<b>W</b> Ursa Digital Scans..... False
<b>I</b>	Ursa LowSpeed available..... False	<b>X</b> Main Biphase Framing..... 0.0000
<b>J</b>	Drive Pulse Timing (NTSC) 301.000	<b>Y</b> Main Biphase Cycles..... 1
<b>J</b>	Drive Pulse Timing (PAL) 346.000	<b>Z</b> Mag Biphase Cycles..... 10
<b>K</b>	Digiscan Delay..... 0	
<b>L</b>	SpeedBus Slave Mode..... False	<b>^X</b> Exit Program

**Note:** All adjustable parameters allowing numeric entry (except Frames per Second) may be adjusted incrementally by using the bracket [ ] keys. When a number has been entered, **Enter** must be pressed to allow subsequent entries or Menu page changes.

## Setup Menu Parameters

- A** (ArmInfo Available): Set to TRUE to enable the ArmInfo information to modify capstan speed in shuttle.
- B** (Biphase Capstan Tach): *Meta-Speed software versions 1.98 and above support biphase capstan tachs only.* Set this parameter to **TRUE**.
- C** (FrameInt Delay NTSC): This is a timing trim, in microseconds, of a Supervisor Frame Interrupt relative to the Vertical Scan center. The default setting of zero seems to work best for most systems.
- C** (FrameInt Delay PAL): This is a timing trim, in microseconds, of a Supervisor Frame Interrupt relative to the Vertical Scan center. The default setting of zero seems to work best for most systems.

## Setup Menu Parameters (cont.)

### Shuttle vs. FastFwd/FastRev Logic

The following three entries are set to correspond to what type of control the original Cintel servo was configured for. A MkIIIB telecine does not have the shuttle pot control which was introduced in the MkIIIC machine design. Normal settings are as follows:

- For URSA type telecines set to Digital Normal.
  - For MkIIIC type telecines set to Analog Normal.
  - For MkIIIB type telecines set to FastFwd/FastRev.
5. **D** (Local): Toggle the **D** key to set the parameter as desired. Press **Enter** to accept the entry.
  6. **F** (Remote1): Toggle the **F** key to set the parameter as desired. Press **Enter** to accept the entry.
  7. **G** (Remote2): Toggle the **G** key to set the parameter as desired. Press **Enter** to accept the entry.
  8. **H** (Gate Coding): Toggle the **H** key to select the type of gate coding in use on the telecine. Press **Enter** to accept the entry. It is important to set **J10** on the VDSP to the correct position to enable the gate coding to operate correctly. For URSA type coding **J10** is set to link pins 1 and 2. For MkIII type coding **J10** is removed.
  9. **I** (Ursa LowSpeed available): Toggle the **I** key to set the parameter as desired. Press **Enter** to accept the entry. Set to TRUE for URSA telecines that had the LowSpeed option installed before the Meta-Speed Servo upgrade. Otherwise, set to FALSE.
  10. **J** (Drive Pulse Timing NTSC): This is a timing adjustment, in number of lines, of the Drive Pulse Advance to the servo. Nominal value is 301, however values as high as 371 have been found to function well on some systems. Press the **J** key, type the desired value and press **Enter**.
  11. **J** (Drive Pulse Timing PAL): This is a timing adjustment, in number of lines, of the Drive Pulse Advance to the servo. Nominal value is 346, however values as high as 375 have been found to function well on some systems. Press the **J** key, type the desired value and press **Enter**.
  12. **K** (Digiscan Delay): Effectively a PreStore Delay. See page 54 for details of how to select the correct value for this parameter.
  13. **L** (SpeedBus Slave Mode): Toggle the **L** key to set TRUE for URSA telecines or FALSE for MkIII type machines. Press **Enter** to accept the entry.

## **Setup Menu Parameters (cont.)**

14. **M** (Memory Save/Recall): Many of the parameters of the Meta-Speed<sup>□</sup> system can be saved to non-volatile memory, and are automatically recalled when the system is reset, or by operator request. There are two sets of parameters, called **GATES** and **SETUP**, which can be independently saved and recalled.
  - To **SAVE** parameters to NOVRAM, press **M** followed by **S**. When prompted, answer **Y** or **N** to select whether GATES or SETUP or both are SAVED.
  - To **RECALL** parameters from Novram, press **M** followed by **R**. When prompted, answer **Y** or **N** to RECALL either GATES, SETUP or both.
  - To **RECALL FACTORY** default settings, press **M** followed by **F**. When prompted, answer **Y** or **N** to select whether GATES or SETUP or both are set to factory default values.
15. **N** (Film Speed Override Type): Toggle the **N** key to select the desired parameter. Press **Enter** to accept the entry.
16. **O** (Sprocket LED1 current): Set according to the VDSP Alignment Procedure on page 55.
17. **P** (Sprocket LED2 current): Set according to the VDSP Alignment Procedure on page 55.
18. **S** (Port 1): Always active. Non-adjustable.
19. **T** (Port 2): Non adjustable.
20. **U** (Port 3): Toggle the **U** key to enable or disable communication with the CTM290 Meta-Speed<sup>□</sup> Remote Panel. Press **Enter** to accept the entry.
21. **V** (Port 4): Toggle the **V** key to enable communications with DDS and/or Clrview systems. Press **Enter** to accept the entry. If using a Meta-Speed<sup>□</sup> Frame Timebase set this parameter to OFF.
22. **W** (Ursa Digital Scans): Toggle the **W** key to select TRUE if using an URSA telecine. Press **Enter** to accept the entry. On non-URSA telecines set this to FALSE.
23. **X** (Main Biphase Framing): Timing adjustment for framing of Main Biphase pulse outputs. Press the **X** key, type the desired value and press **Enter**. Default setting is zero.
24. **Y** (Main Biphase Cycles): Selects the frequency of the biphase pulses for the Ferrit Pulse Outputs on the Phase Adapter 4 board. Press the **Y** key, type the desired value and press **Enter**. Default setting is 1.00
25. **Z** (Mag Biphase Cycles): Selects the frequency of the biphase pulses for the Mag Pulse Outputs on the Phase Adapter 4 board. Press the **Z** key, type the desired value and press **Enter**. Default setting is 10.00
26. **X** (Exit Program): Pressing **Ctl-X** will exit Meta-Speed<sup>□</sup> to ROMDOS.

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