


## ManoView™ high resolution manometry


# Quick reference guide

## ManoView™ ESO 3.4 esophageal manometry study analysis instructions

1. Open **ManoView™ ESO 3.4 analysis software** by double-clicking on the desktop icon.
2. Open the desired study by double-clicking on the patient's name (**C:\Program Files (x86)\SSI\ManoScan3.0\Patients**).  

If you have ManoView™ 3.0 or higher, you can use the guided protocol by clicking on the Guide button on the toolbar. This tool will guide you through the analysis steps of a High Resolution Esophageal Manometry study acquired using the Chicago Classification 4.0 protocol.
3. Change the window presentation to thirty seconds.  
Click on the **magnifying glass** (upper left) or Time Control box to the left of the navigation bar.
4. Set Thermal Compensation:
  - Click on the  arrow on the right of the navigation bar at the bottom of the screen to display the end of the study where the catheter was removed.
  - Position the red vertical time bar just beyond the waterfall image that represents catheter removal.
  - In the Tools menu at the top of the screen, select **Set Thermal Compensation**.
5. Set **Color Range** (optional):

If desired, click on **Set Range** button below the pressure color scale on the left side of the screen to adjust screen colors. Adjust minimum to eliminate excessive gray coloring and/or adjust maximum to minimize any off-scale hot pink colors. Click anywhere on the screen to close the box.

6. If you have ManoView™ v3.0 or higher, the impedance range is set automatically. If reviewing an impedance manometry study, initially set the impedance scale lower range to 1.5 kOhms and the upper range limit to 0.10KOhms. Fine-tune the range by eliminating magenta in the esophageal body in the **Landmark ID Frame** while maximizing the magenta in the esophageal body during wet swallows. The **Hide Z/Show Z** button will hide and show the magenta impedance signal. The magenta impedance signal should only be visible while marking bolus clearance.
7. Review Study Measurement Frames:
  - On the navigation bar at the bottom of the window, click the  arrow on the left side of the toolbar to navigate and adjust each measurement frame.
  - Adjust the **Swallow Frames** so the left edge of the swallow frame includes approximately 3 seconds prior to the UES relaxation and the right edge of the swallow frame includes the LES clampdown.

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- Adjust the **Landmark ID Frame** over an area in the Contour mode where the UES & LES are baseline; no swallows should be in this frame.
8. Edit Supine Landmark ID Frame: marking bolus clearance.
- Open **Supine Landmark ID Frame** for editing by double-clicking on the green box with a red dot in the middle which is located on the navigation bar. This will open the frame for editing (the measurement frame will turn red and the red dot on the navigation bar will change to yellow).
  - Evaluate the UES:
    - i. Position **UES marker** in the middle of the horizontal UES pressure band.

**Hint:** Position the red time bar over a prominent section of the UES. Glance at the Anatomy Profile Panel and place the UES marker in the highest pressure peak which represents the high pressure zone of the UES.


- Evaluate the LES:
  - ii. Position **LES marker** in the middle of the end expiratory pressure profile of the LES.

**Hint:** Position the red time bar over a prominent section of the LES during an end-expiratory period (between 2 diaphragmatic pinches). Glance at the Anatomy Profile Panel and place the LES marker in the highest pressure peak, which represents the high pressure zone of the LES.

- iii. Position LES Upper & Lower Margin Markers:
  1. The **LES Upper Margin Marker** is placed just at the upper extent of LES proximal, end- expiratory, pressure signature.
  2. The **LES Lower Margin Marker** is placed just at the lower extent of LES distal, end-inspiratory, pressure signature.
- iv. Position **proximal and distal eSleeve border markers** (**proximal eSleeve** is placed at the upper extent of the LES during end-expiratory and the **distal eSleeve** is placed at the lower extent of the LES during end-inspiratory period).
- v. Position **gastric marker** (place 2 cm below LES lower margin).
- vi. Position **PIP (Pressure Inversion Point)**: The PIP marker is placed where the “diamond pattern” of the green trace is at its maximum pressure reading and the blue trace is at its minimum pressure reading (where the green and blue traces from the **PIP locator** tool are most out of phase).

**Hint:** Place the red dotted line of the PIP locator tool on the top of the diaphragmatic pinch.

**Hint:** Report will indicate “Hiatal Hernia” when PIP is placed below distal border of LES. Conversely, “No Hiatal Hernia” will be indicated when PIP is placed within the borders of the LES.

9. Edit Supine Landmark ID Frame: marking bolus clearance.
- Open swallow frame by clicking on  arrow at the end of the navigation bar. This will close the analysis for the current frame and open the next frame for analysis.
- Note:** The colored dots on the navigation bar change from red (not analyzed), to yellow (currently being analyzed), and then to green (analyzed) to indicate which frames have been analyzed.
- Evaluate the UES:
    - i. Confirm that the **UES marker** remained in the high pressure zone as in the Landmark ID Frame.
    - ii. Adjust **UES wave markers** as needed (switch to line tracing and expand screen for better visualization).
  - Evaluate the LES:
    - iii. Confirm that the **LES markers** remained unchanged. If necessary, adjust as you did in the Landmark ID Frame.
    - iv. LES shift may be noted with sliding hiatal hernia, in which case, each swallow frame will require adjusting.
  - Adjust **IRP/LES Relaxation Markers** (Integrated Relaxation Pressure/Brackets):
    - v. The left side of the bracket should line up with the UES relaxation, just prior to the swallow.
    - vi. The right side of the bracket should be positioned at the end of the esophageal body wave form. This ensures the automatic placement of the white **eSleeve box** (LES residual pressure).
  - Evaluate the esophageal body: If using High Resolution and Chicago Classification Parameters review and if necessary, adjust the:
    - i. **DL (Distal Latency)**: Change the UES relaxation marker or the CDP point to modify the DL value. “Premature” will appear at the bottom right of the frame if the value is <4.5 seconds

- ii. **DCI (Distal Contractile Integral):** Place the proximal boundary of the DCI rectangle control at the proximal pressure trough. "Hyper" will appear at the bottom right of frame if value is  $> 8,000 \text{ mmHg*s*cm}$ .
- iii. Confirm peristaltic integrity **red tab** is accurate: Intact, Weak, Fragmented, Failed-Weak/Premature, Failed-Panesoph, Failed-Absent.
- Evaluate Bolus Clearance (if performing impedance study):
  - i. Click on the **magenta colored label** (located on right edge of swallow frame) to indicate bolus status-bolus cleared (no magenta after peristalsis) or incomplete clearance (magenta is present after peristalsis).
- Move to the next swallow frame by clicking on the arrow at the end of the navigation bar and repeat the steps above until all swallow frames are edited. When finished editing last swallow frame, double-click on the yellow dot.
- All dots on the navigation bar become green, which confirms completion of the frame analysis.

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1. Edit Multiple Rapid Swallow Frame:
  - Evaluate the UES:
    - i. Confirm that the **UES marker** remained in the high pressure zone as in the **Supine Landmark ID Frame**.
  - Evaluate the LES:
    - i. Confirm that the **LES markers** remained unchanged. If necessary, adjust as you did in the **Supine Landmark ID Frame**
  - Adjust **IRP/LES Relaxation Markers** (Integrated Relaxation Pressure/Brackets)
    - i. The left side of the bracket should line up with the UES relaxation, just prior to the first swallow.
    - ii. The right side of the bracket should be positioned at the end of the esophageal body wave form after the post-MRS contraction.
  - Evaluate the esophageal body: If using High Resolution and Chicago Classification Parameters review and if necessary, adjust the:

- i. **DCI (Distal Contractile Integral):** Place the proximal boundary of the DCI rectangle control at the proximal pressure trough of the post-MRS contraction.
  - ii. Confirm peristaltic integrity red tab is accurate: Intact, Weak, Fragmented, Failed-Weak/ Premature, Failed-Panesoph, Failed-Absent.
1. Edit Upright Landmark ID Frame:
    - Open **Upright Landmark ID Frame** for editing by double-clicking on the green box with a red dot in the middle which is located on the navigation bar.
    - Evaluate the UES:
      - i. Position **UES marker** in the middle of the horizontal UES pressure band.
    - Evaluate the LES:
      - i. Position **LES marker** in the middle of the end expiratory pressure profile of the LES
      - ii. Position **LES Upper & Lower Margin Markers**
      - iii. Position **proximal and distal eSleeve border markers**
      - iv. Position **gastric marker**
      - v. Position **PIP (Pressure Inversion Point)**
  2. Edit Upright Swallow Frames:
    - Evaluate the UES:
      - i. Confirm that the **UES marker** remained in the high pressure zone as in the Upright Landmark ID Frame.
    - Evaluate the LES:
      - i. Confirm that the **LES markers** remained unchanged. If necessary, adjust as you did in the Upright Landmark ID Frame
    - Adjust **IRP/LES Relaxation Markers** (Integrated Relaxation Pressure/Brackets)
      - i. The left side of the bracket should line up with the UES relaxation, just prior to the swallow.
      - ii. The right side of the bracket should be positioned at the end of the esophageal body wave form.
    - Adjust **IRP/LES Relaxation Markers** (Integrated Relaxation Pressure/Brackets)
      - i. The left side of the bracket should line up with the UES relaxation, just prior to the swallow.

- ii. The right side of the bracket should be positioned at the end of the esophageal body wave form.
  - Evaluate the esophageal body: If using High Resolution and Chicago Classification Parameters review and if necessary, adjust the:
    - i. **DL (Distal Latency):** Change the UES relaxation marker or the CDP point to modify the DL value.
    - ii. **DCI (Distal Contractile Integral):** Place the proximal boundary of the DCI rectangle control at the proximal pressure trough.
  - iii. Confirm peristaltic integrity **red tab** is accurate: Intact, Weak, Fragmented, Failed-Weak/ Premature, Failed-Panesoph, Failed-Absent.
  - Evaluate **Bolus Clearance** (if performing impedance study)
    - i. Click on the **magenta colored label** (located on right edge of swallow frame) to indicate bolus status-bolus cleared (no magenta after peristalsis) or incomplete clearance (magenta is present after peristalsis).
1. Edit Rapid Drink Challenge Frame:
    - Evaluate the UES:
      - i. Confirm that the **UES marker** remained in the high pressure zone as in the **Upright Landmark ID Frame**.
    - Evaluate the LES:
      - i. Confirm that the **LES markers** remained unchanged. If necessary, adjust as you did in the **Upright Landmark ID Frame**
    - Adjust **IRP/LES Relaxation Markers** (Integrated Relaxation Pressure/Brackets)
      - i. The left side of the bracket should line up with the UES relaxation, just prior to the first swallow.
      - i. The right side of the bracket should be positioned at the end of the first 30 seconds of the Rapid Drink Challenge.
  1. Create Report
    - Click on the **Report tab** (located in the right upper corner of screen).
    - Review the data.
    - Add procedure description, indications, interpretation/findings, impressions, and physician name.

- Click on Create (located in the lower left corner of screen).
- Select the information to be included in the report document.
- Select PDF or Word Document format.
- Click on OK to generate a report document.
- Print report.
- Click on File > Save Analysis and confirm file name before saving to Default Study Directory.



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