



Modulate TLSO Scoliosis Brace
User Manual

Thank you for following this guide to ensure the best quality of our products



Postprocessing

Patient Data

Please share patient **name**, **weight**, **sex** and **age**.

File Summary

FILE	TYPE	EXTENSION	REQUIRED
STANDING SCAN	3D MESH	STL, OBJ, IMED, MED	YES
SUPINE SCAN	3D MESH	STL, OBJ, IMED, MED	NIGHTTIME BRACE ONLY
PA X-RAY	IMAGE	DCM, PNG, JPG	YES
LAT X-RAY	IMAGE	DCM, PNG, JPG	STRONGLY RECOMMENDED

X-Rays

Optimal requirements: Two X-rays in **.dcm** format: one **frontal** (PA or AP) and one **LAT**.
If available, EOS calibrated images are preferred.

Alternatives: If .dcm format is unavailable, high-quality **.jpg** or **.png** can be used, but please ensure the following:

- ✗ Avoid using photos of screens, as they distort the image. Use a direct export or screenshot instead.
- ➔ If photographing the screen is the only option, ensure the picture is taken head-on to avoid distortion.

Note: We understand that LAT X-rays might not always be available. Our process can operate with frontal X-rays only, but including both frontal and LAT significantly improves accuracy. Please include both whenever possible.

Surface Topography Scan

Required: A standard 360° torso scan with arms elevated at 90° (T-position).
Additional requirement for nighttime braces: A supine torso scan (two-sided).
Accepted formats: .iMed, .Med, .obj, or .stl

Note: During the scan, ensure the patient maintains a neutral, relaxed posture, taking care to avoid exaggerated lordosis or kyphosis. Please use a belt or ribbon around the waist to highlight the pelvis / iliac crests. Make sure the scan shows the torso from trochanters to neck, and a bit of the arms up to the biceps.

Optional but beneficial: Include texture with the scan and mark key anatomical landmarks using stickers: xyphoid process, T1 spinous process, L5 spinous process, ASIS (both side), inferior scapula (both side).

Any question?

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Send us a message or call us!



Material Removal

Brace trimlines may be adjusted using different methods, depending on the desired outcome. Options include cutting with **heavy-duty scissors**, trimming with a **jigsaw**, or controlled material melting using a **router**. These options are suggested for the following situations:

- **Heavy-duty scissors:** Used for cutting small sections of the brace (e.g., opening corners).
- **Jigsaw:** Used for removing larger amounts of material and creating smoother, curved trajectories.
- **Router:** Used for adjusting trimline heights up to 1.5 cm. This method requires a high operating speed (approximately **2,100 RPM**), a coarse-grit sanding cone (**P36 or coarser**), and firm, controlled pressure of the brace against the sanding tip. This method intentionally causes localized melting of the brace material. Use caution, as hot residues may be ejected during operation. Any residual material remaining along the edges will be removed during the subsequent router sanding steps.



Material melting using a router

Thermoforming Adjustment

Localized thermoforming allows controlled reshaping of the 3D-printed PP brace after fabrication. Compared to conventional braces, higher heat is required, and the brace must be cooled while held in the adjusted position to maintain the new shape.

1. Identify the adjustment area and the direction of deformation.
2. Apply localized heat with a heat gun held **7–10 cm** from the surface, using continuous movements for **30–60 seconds** (target temperature: **90–120 °C**).
3. Form the brace using the appropriate forming tool and hold the desired shape.
4. Cool the area while maintaining the deformation (cold spray or ice pack may be used).
5. Verify fit once fully cooled and repeat if necessary.



Hold heat gun 7–10 cm from surface

Any question?

Phone: **+1.514.862.5181**

Email: **contact@modulate.ca**

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Postprocessing

Router Sanding

After trimming the brace, sanding may be required to reduce skin irritation. The recommendations below outline best practices for achieving optimal results for smoothing Modulate's braces edges.

To prevent plastic melting, apply light pressure on the router with the brace and use a low operating speed. A speed of approximately **1,050 RPM** is recommended.

1. Start by roughly smoothing the edges using a **rasp head** mounted on a router. If a rasp head is not available, a **coarse-grit sanding cone (P36)** may be used instead.
2. Perform a second pass over the desired area with a **finer sanding cone (P120)**. Fine melted filaments may appear; these will be removed in the next steps.
3. Complete the process with a third pass using a **Coneiak polishing arbor**, using long, continuous movements. This step removes any remaining plastic residues and achieves the final edge smoothness. It is normal for the edges to be superficially melted.
4. For very skin sensitive patients, it is recommend to finish with by handsanding with a really fine paper (**P180**)



Second pass with P120 cone



Final pass with Coneiak arbor

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