

※ This equipment can only be operated by physicians who have received training from HIRONIC, and users must familiarize themselves with the user manual in advance.

※ This document is for reference purposes only. Depending on the patient's skin condition, the physician should conduct a TEST SHOT first and then use an appropriate treatment setting based on their judgment.

※ Please note that any issues arising from user negligence are not the responsibility of the manufacturing company.

※ Laser treatment cannot be performed on skin that does not meet the requirements or is prone to hypersensitivity reactions.

※ Before the procedure, the patient must wear EYE SHIELD, and the physician and assistant must wear protective glasses.

## • Toning

### ① Laser Toning / Full Face

Indication	Handpiece	Wavelength (nm)	Spot Size (mm)	Fluence (J/cm²)	Repetition (Hz)	Pass	Shot	Interval (Week)	End Point
Melasma	Collimated	1064	10	0.20~0.24	10	1~2	1,000~1,500	2	Erythema
Toning (Mild)				0.30~		2~3	1,500~2,000	1~2	
Perioral	Zoom								

- Collimated: Used when precise energy control is needed or when performing the procedure with the handpiece lifted from the skin. In the case of Melasma, a safe approach involves using low energy and doing several treatment sessions.

- Zoom: Applied when there is pigmentation requiring focused toning in specific areas.

- If the skin tone becomes brighter or the color seems to have faded compared to before, gradually increase the energy (by 0.02J) during the treatment (based on 10 sessions: after 5-7 sessions).

- Pre-procedure: Use numbing cream if needed / Post-procedure: Cooling immediately after the procedure.

### ② PIH

Handpiece	Wavelength (nm)	Spot Size (mm)	Fluence (J/cm <sup>2</sup> )	Repetition (Hz)	Pass	Interval (Week)	End Point
Zoom	1064	7	0.70~	10	Stacking (2~3sec)	1~2	Erythema Darkening
DOE	532	7X7	0.04~	5~10	3~4		

- Zoom: Used for performing stacking treatments on areas with pigment build-up.

- DOE: Applied as a part of epidermal pigmentation treatment or when there is light pigmentation spread across the entire skin surface requiring toning.

- If the color of the lesion becomes lighter than it was in the previous session, increase the energy for the new session.

- Pre-procedure: Use numbing cream if needed / Post-procedure: Cooling immediately after the procedure.

# • Pigmented Lesion

## ① Dermal Pigmentation

### ABNOM / Ota's Nevus

Handpiece	Wavelength (nm)	Spot Size (mm)	Fluence (J/cm <sup>2</sup> )	Repetition (Hz)	Pass	Interval (Week)	End Point
Zoom	1064	4	1.20~	1	1	4~6	Whitening
		7	0.70~	5~10	Stacking (2~3sec)	2~4	Erythema Darkening

- Spot Size 4mm: Used for skin with low risk of PIH or when performing intensive treatment. Choose energy level based on Whitening reaction.
- Spot Size 7mm: Used for skin with the risk of pigmentation build-up or when performing a mild treatment. Select energy based on the appearance of erythema and darkening reactions.
- If there is no reaction, increase the energy to adjust it to the appropriate level.
- Pre-procedure: Use numbing cream / Post-procedure: Cooling immediately after the procedure.
- In case of bleeding or blister formation, prescribe medication. If there is a risk of pigmentation, prescribe steroid ointment.
- Scabs may form 2-3 days later and naturally fall off within a week.

## ② Epidermal Pigmentation

### Freckles / Lentigines / Seborrheic Keratosis

Handpiece	Wavelength (nm)	Spot Size (mm)	Fluence (J/cm <sup>2</sup> )	Repetition (Hz)	Pass	Interval (Week)	End Point
Zoom	532	3	0.20~	1~2	1	4~6	Mild whitening
		4	0.18~				
Zoom	532	3~4	0.15~	1~2	1	4~6	Mild whitening Darkening Erythema
DOE		7x7	0.04~0.06	5~10	2~3	3~4	

### Nevus Spilus

Handpiece	Wavelength (nm)	Spot Size (mm)	Fluence (J/cm <sup>2</sup> )	Repetition (Hz)	Pass	Interval (Week)	End Point
Zoom	532	3~4	0.15~	1~2	1	4~6	Mild whitening Darkening Erythema
DOE		7X7	0.04~0.06	5~10	2~3	3~4	

- Zoom: Used when selecting a Spot size appropriate for the lesion size and performing only a single pass.
- DOE: Used in cases where there are various types of pigmentation or when there is a risk of pigmentation, requiring a milder treatment.
- Considering the somewhat delayed response due to the characteristics of a 300ps pulse, **wait for a sufficient time** after a test shot, confirm the condition of the skin, and adjust the settings to an energy level that produces very mild Whitening.
- If Whitening is too strong, lower the energy; if there is no reaction, increase the energy to adjust it to the appropriate level.
- Pre-procedure: Numbing cream / Post-procedure: Cooling.
- In case of bleeding or blister formation, prescribe medication. If there is a risk of pigmentation, prescribe steroid ointment.
- Scabs may form 2-3 days later and naturally fall off within a week.
- If the color of the lesion becomes lighter than it was in the previous session, increase the energy for the new session.

# • Tattoo Removal

## ① Black / Blue / Eyebrow

### Dark shades of black and blue / Eyeliner tattoos and eyebrow tattoos

Handpiece	Wavelength (nm)	Spot Size (mm)	Fluence (J/cm <sup>2</sup> )	Repetition (Hz)	Pass	Interval (Week)	End Point
Zoom	1064	3	1.10~	1~5	1	6~8	Whitening
		4	1.00~				
		5	0.80~				

- Procedure sequence: Wide Spot → Small Spot (5mm → 4mm).
- For areas with a larger surface, apply the 4mm laser spots with less than a 20% overlap, ensuring the entire treatment is completed in a single pass.
- Set Repetition to 1Hz, confirm the reaction after a test shot, and proceed with the treatment.
- Considering the somewhat delayed response due to the characteristics of a 300ps pulse, **wait for a sufficient time** after a test shot, confirm the condition of the skin, and adjust the settings to an energy level that produces very mild Whitening.
- If there is no reaction, increase the energy to confirm the appropriate level before proceeding with the treatment.
- In case of bleeding, reduce the energy, confirm the appropriate level, and proceed with the treatment.
- For the first treatment, perform it at 1-2Hz, and increase to 5Hz once the tattoo color lightens. If the tattoo color does not fade even after treatment at 5 Hz, increase the energy.
- Pre-procedure: Use numbing cream / Post-procedure: Cooling and applying gauze dressing.
- In case of bleeding or blister formation, prescribe antibiotics/anti-inflammatory medication.

## ② Red / Orange

### Bright shades of red and orange

Handpiece	Wavelength (nm)	Spot Size (mm)	Fluence (J/cm <sup>2</sup> )	Repetition (Hz)	Pass	Interval (Week)	End Point
Zoom	532	4	0.15~	1~5	1	6~8	Whitening
		5	0.12~				

- Procedure sequence: Wide Spot → Small Spot (5mm → 4mm).
- For areas with a larger surface, apply the 4mm laser spots with less than a 20% overlap, ensuring the entire treatment is completed in a single pass.
- Set Repetition to 1Hz, confirm the reaction after a test shot, and proceed with the treatment.
- Considering the somewhat delayed response due to the characteristics of a 300ps pulse, **wait for a sufficient time** after a test shot, confirm the condition of the skin, and adjust the settings to an energy level that produces very mild Whitening.
- If there is no reaction, increase the energy to confirm the appropriate level before proceeding with the treatment.
- In case of bleeding, reduce the energy, confirm the appropriate level, and proceed with the treatment.
- For the first treatment, perform it at 1-2Hz, and increase to 5Hz once the tattoo color lightens. If the tattoo color does not fade even after treatment at 5 Hz, increase the energy.
- Pre-procedure: Use numbing cream / Post-procedure: Cooling and applying gauze dressing.
- In case of bleeding or blister formation, prescribe antibiotics/anti-inflammatory medication.

## • Skin Renewal (Pore, Scar, Skin Rejuvenation)

### ① Pores / Skin Rejuvenation

#### Short-downtime skin regeneration (Pores/Skin texture)

Handpiece	Wavelength (nm)	Spot Size (mm)	Fluence (J/cm <sup>2</sup> )	Repetition (Hz)	Depth	Pass	Shot	Interval (Week)	End Point
DOE	1064	7x7	0.05~0.10	5~10	-	3~4	2,000~3,000	1~2	Erythema Mild petechiae
VMLA		13	0.03~0.08		II ~ III			2~3	

- DOE: Used for performing skin toning procedure along with the skin texture and pores improvement.

Administer 1,000 to 1,500 shots for the full face and check for Erythema reactions.

- VMLA: Used for treatment of skin texture and pores without downtime. Administer 1,000 to 1,500 shots for the full face (Depth: 2~3) and check for erythema reactions [Treatment order: Deep depth → Shallow depth].

- Keep the tip end of the handpiece perpendicular to the skin surface and in contact with it during the procedure.

- Start with a slow Repetition of 5Hz since the tip needs to adhere to the skin for treatment; as handling becomes familiar, increase the speed to 10Hz for faster treatment.

- Pre-procedure: Apply numbing cream for 15~20 minutes / Post-procedure: Cooling and soothing/regenerative skin care.

- Erythema: Disappears within 3 hours. Petechiae: Disappear within 3-7 days.

### ② Acne Scars (Full Face)

#### Wide area with acne scars/pores

Handpiece	Wavelength (nm)	Spot Size (mm)	Fluence (J/cm <sup>2</sup> )	Repetition (Hz)	Depth	Pass	Shot	Interval (Week)	End Point
VMLA	1064	13	0.10~0.20	5~10	I ~ IV	Total	1,500~2,000	4~6	Petechiae + Edema
ZMLA		10	0.12~		-	3~4	-	3~4	
DOE (Skin surface)		7x7	0.08~0.20		-	1~2	-	2~4	

- VMLA: Used when treating areas with enlarged pores and clustered acne scars. Confirm Petechiae + Edema reaction in the corresponding area (Depth: 1~4).

- [Procedure order: Stage 4 → Stage 1 (500~750 shots per stage / Total 2,000~3,000 shots)]

- ZMLA: When treating areas smaller than 13mm, perform 3~4 passes in that area / Confirm Petechiae + Edema reaction (Petechiae: Disappear after 5~7 days).

- DOE: Used for treating uneven skin surfaces above scars / Confirm Petechiae + Edema (Petechiae: disappear after 5 to 7 days).

- Keep the tip end of the handpiece in close contact with the skin surface, ensuring it is positioned perpendicular during the procedure (if shooting from a distance, penetration depth may not be accurate).

- Start with a slow Repetition of 5Hz since the tip needs to adhere to the skin for treatment; as handling becomes familiar, increase the speed to 10Hz for faster treatment.

- Before the procedure: Numbing cream (40~60 minutes). After the procedure: Cooling and soothing/regenerative skin care.

### ③ Acne Scars / Scratched Scar

#### Localized acne scarring, General scars

Handpiece	Wavelength (nm)	Spot Size (mm)	Fluence (J/cm <sup>2</sup> )	Repetition (Hz)	Pass	Interval (Week)	End Point
ZMLA	1064	4	0.80~	2	Stacking (3~4sec)	4~6	Petechiae + Edema
		5	0.50~	5~10	3~4		

- Use only when treating acne scars or general scars. Adjust the Spot size according to the size of the lesion and stack the energy on the relevant area for 2 to 3 seconds to check for Petechiae reactions after the procedure.

- Position the handpiece tip perpendicular to the skin surface, ensuring that the tip end makes contact with the skin.

- Bleeding: may occur depending on the number of stacking shots / Petechiae: disappear within 3 to 7 days.

- Before the procedure: Apply numbing cream / Immediately after the procedure: Cooling and regenerative skin care.

## • Special Treatment

### Skin tone & texture treatment (Toning + Pores)

Step	Handpiece	Wavelength (nm)	Spot Size (mm)	Fluence (J/cm <sup>2</sup> )	Repetition (Hz)	Shot	Interval (Week)	Session
1	Collimated	1064	10	0.30	10	2,000	2~3	5
2	VMLA		13	0.08				

#### Treatment process

- ① Apply numbing cream for 15-20 minutes.
- ② Install Collimated (blue) Handpiece, set parameters for Step 1 of the treatment.
- ③ Raise the end of the handpiece by 2~5cm from the skin surface and perform 1,000 shots on the entire face at a speed of 10Hz.
- ④ Install VMLA (silver) Handpiece, select Depth Level 3, set parameters for Step 2 of the treatment.
- ⑤ Attach the tip of the handpiece perpendicularly to the skin surface and perform 1,000 shots on the entire face at a speed of 10Hz.
- ⑥ Check for Erythema or localized Petechiae.
- ⑦ Provide cooling and regenerative skin care right after the procedure.
- ⑧ Perform 5 or more treatments at intervals of 2 weeks.

### Treatment for wrinkle-free smooth skin (Pores / Acne scars)

Step	Handpiece	Wavelength (nm)	Spot Size (mm)	Fluence (J/cm <sup>2</sup> )	Repetition (Hz)	Shot	Interval (Week)	Interval (Week)
1	VMLA	1064	13	0.10	10	1,000	4	5
2	ZMLA		4	0.80	5	Stacking (2~3sec)		

#### Treatment process

- ① Apply numbing cream for 15-20 minutes.
- ② Install VMLA (silver) Handpiece, select Depth Level 3~4, set parameters for Step 1 of the treatment.
- ③ Attach the tip of the handpiece perpendicularly to the skin surface and apply 1,000 shots, targeting areas with acne scars.
- ④ Check for Petechiae reactions on the treated area.
- ⑤ Install ZMLA (black) Handpiece, change Spot Size to 4 mm, set parameters for Step 2 of the treatment.
- ⑥ Place the handpiece tip perpendicular to the skin surface and concentrate on stacking energy on the noticeable, deep, and large scar areas.
- ⑦ Check for strong Petechiae reactions or Bleeding on the treated area.
- ⑧ Provide cooling and regenerative skin care right after the procedure.
- ⑨ Perform 5 or more treatments at intervals of 4 weeks.
- ⑩ It is recommended to treat the areas that require higher Depth first and then move to the areas that require less Depth.

## • Special Treatment

### Treatment for clean and clear skin with no blemishes (532 +1064 Toning)

Step	Handpiece	Wavelength (nm)	Spot Size (mm)	Fluence (J/cm <sup>2</sup> )	Repetition (Hz)	Shot	Interval (Week)	Session
1	Collimated	1064	10	0.30	10	1,500	2~3	5
2	DOE	532	7	0.02	2	500		

#### Treatment process

- ① Apply numbing cream for 15-20 minutes.
- ② Install Collimated (blue) Handpiece, set parameters for Step 1 of the treatment.
- ③ Raise the end of the handpiece by 2~5cm from the skin surface and perform 1,500 shots on the entire face at a speed of 10Hz.
- ④ Install DOE (green) Handpiece, set parameters for Step 2 of the treatment.
- ⑤ Attach the tip of the handpiece perpendicularly to the skin surface and apply 500 shots, targeting areas with blemishes.
- ⑥ Check for Erythema reaction.
- ⑦ Provide cooling and regenerative skin care right after the procedure.
- ⑧ Perform 5 or more treatments at intervals of 2 weeks.

### Treatment for clear skin with no pigmentation

Step	Handpiece	Wavelength (nm)	Spot Size (mm)	Fluence (J/cm <sup>2</sup> )	Repetition (Hz)	Shot	Interval (Week)	Session
1	Collimated	1064	10	0.30	10	2,000	2~3	5~10
2				0.60		Stacking (2~3sec)		

#### Treatment process

- ① Apply numbing cream for 15-20 minutes.
- ② Install Collimated (blue) Handpiece, set parameters for Step 1 of the treatment (0.30J/cm<sup>2</sup>).
- ③ Raise the tip of the handpiece 2 to 5 cm above the skin surface and perform 2,000 shots on the entire face at a speed of 10Hz.
- ④ Change to Step 2 parameters (0.60J/cm<sup>2</sup>), stack energy only on areas with freckles/pigmented spots for 2~3 seconds.
- ⑤ Check for Erythema reaction on the treated area.
- ⑥ Provide cooling and regenerative skin care right after the procedure.
- ⑦ Perform 5 or more treatments at intervals of 2 weeks.

## • Precautions after treatment

- Erythema, swelling, and petechiae are common reactions of the skin that occur after the procedure. These reactions usually gradually subside after 2 to 3 days.
- If one experiences severe symptoms or has any of the following symptoms 2 to 3 days after the treatment, contact the hospital:
  - \*Blisters, exudate, or bleeding within 24 hours after the procedure
  - \*Severe pain or pain that persists even after 24 hours
- Post-inflammatory hyperpigmentation (PIH) is a common adverse reaction to laser treatment and can occur 3 to 4 weeks after the procedure. If the treated area becomes darker in color compared to the surrounding skin, it may be suspected, and in patients of Asian descent, it is often interpreted as a result of excessive laser treatment in the majority of cases. PIH naturally disappears after 3 to 6 months, and patients with darker skin tones are more likely to experience this reaction. If PIH occurs, the use of hydroquinone ointment with sunscreen or toning treatment can be recommended for recovery.
- Depigmentation can occur during treatments with wavelengths that have a high melanin absorption rate. It is characterized by a lighter color compared to the surrounding normal skin and typically recovers after approximately 4 weeks.
- When undergoing scar treatment, hypertrophic or keloid scars may occur in a small number of individuals with a specific skin composition. This can result from inadequate post-treatment care leading to infection, and it is more likely to occur in areas where the fat layer is thin and close to the bone.
- Some patients with sensitive skin may experience itching due to laser stimulation at the beginning of the procedure, but this can be alleviated with cooling of the area or short-term use of hydrocortisone ointment.
- When repeated treatments are performed using high parameters on the same area, changes in skin texture may occur, but these are generally reversible with time. Adding Fractional Laser therapy can enhance the effectiveness.
- For tattoos with particles embedded in the dermal layer or those using various pigments, there may be cases where complete removal is not achieved despite repeated treatments. Additionally, tattoos containing ink with iron oxide components may react with lasers and, instead, darken. Such tattoos may not be effectively treated with lasers, and even if multiple treatment sessions get performed, there is no guarantee of complete improvement.
- After tattoo removal, it is highly recommended to use gauze dressing, and it is advisable to visit the hospital 1-2 days after the procedure to change the dressing.
- If a patient got gauze dressing after the procedure (tattoo removal or MLA HP procedure), they have to avoid exposing it to water for 3 to 5 days and also have to change it every day.
- After the Toning treatment, patients should avoid exposure to sunlight. For other treatments, sunlight exposure should be avoided after the scabs have fallen off. Post-procedure care should include wearing sunscreen (SPF 30 or higher).
- Apply regenerating cream and moisturizing cream regularly to keep your skin hydrated.
- In cases of pigmentary lesions, tattoo procedures, and after MLA treatment, if scabs are formed, they will naturally fall off within 5-7 days for the face and 7-14 days for the body. Do not deliberately peel or scratch the scabs.
- Washing your face or applying makeup is possible the day after the procedure. For tattoo removal, be careful not to expose the treatment area to water and avoid wearing makeup for 3 to 5 days.
- Avoid sun exposure, tanning, and use of tanning products for at least 4 weeks.
- Do not use peeling/scrubbing products for about 1-2 weeks.
- Avoid activities that can irritate the skin, such as hot baths, saunas, intense exercise, or swimming, for about 1 to 2 weeks.
- Smoking and drinking alcohol can delay the skin healing process or cause inflammation.