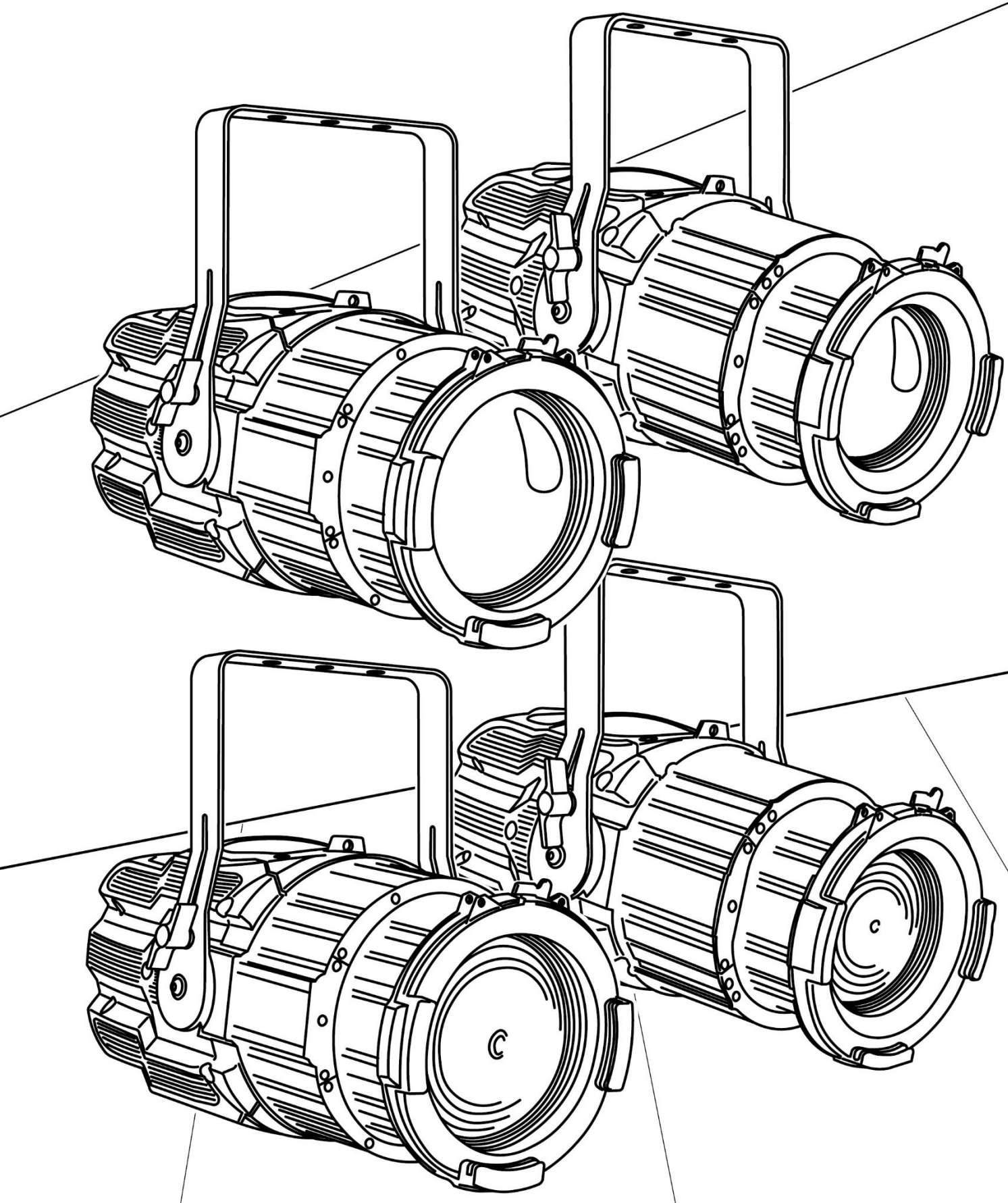
TENORE SERIES

USER'S MANUAL



Release	1.0.1	**Code: 0517I366**	**For more information**
Language	EN		

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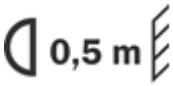
Table of Contents

1 Symbols

Symbol	Meaning
	General risk.
	Electric shock risk
	Hot surface
	Suitable for indoor use only.
	Maximum operating ambient temperature.
	Minimum distance from illuminated objects.
	Do not stare at the operating light source.
	Photobiological safety risk group 2
	Never expose the front lens to sunlight or any strong artificial Light source from any angle to avoid damage of head internal parts.
	European Community Directive 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE).

2 General Warning

Carefully read the instruction contained in this User Manual, as they give important information regarding your safety and others during installation, use, and maintenance of the product.
The unit is not suitable for domestic use and must be installed by qualified personnel only.
The device must always be equipped with an efficient ground connection.

3 Safety and Operation

Do not attempt to install and use the device before carefully reading this manual and understanding all warning symbols. Installing the device without following the instructions in this document may be dangerous and cause damage, injury, or death.
Any ordinary maintenance operation not described in this manual must be done only by a qualified technician.
Failing to follow the instructions on this “User Manual” shall cancel the warranty issued by D.T.S. Illuminazione Srl. Before installation, please carefully read this “User Manual” and make sure to check the latest technical updates available on the D.T.S. Illuminazione Srl’s website – (www.dts-lighting.it).

3.1 Fire prevention

- **Minimum distance from illuminated surface.**

- **Never expose the front lens, from any angle, to direct sun light or strong artificial light sources in order to avoid damage to the internal parts of the product.**
  The front lens may act as a powerful magnifying glass if exposed towards the sun or any strong artificial light source; this will cause damage to the internal parts of the moving head, even if exposed for a few seconds, and even when the unit is turned off.
  It is strongly recommended to leave the front lens directed towards the ground when switching off or leaving the unit unattended.

- **The unit features various air inlets and cooling fans located on both the base and the head of the fixture. Under no circumstances should these be blocked or obstructed whilst the projector is operating. Doing so may cause the fixture to seriously overheat, damaging it and compromising its proper operation.**
- Each fixture produces heat and must be installed in a well-ventilated place.
- Connect the projector to mains power via a thermal magnetic circuit breaker.

3.2 Prevention of electric shock

- **High voltage is present inside the unit.**
- **Unplug the unit prior to performing any function which involves handling of the insides of all parts of the product.**
- **Class I Appliance: Connection must be made to a mains system fitted with an efficient earthing.**
- SOPRANO requires the assistance of specialized personnel for all servicing. Please always refer to an authorized DTS service center.

3.3 Level of protection IP

- **The projector is classified as an ordinary appliance and its protection level against the penetration of solid and liquid objects is IP20.**
- The projector contains electric and electronic components which should under no circumstances come into contact with oil, water, or any other liquid. The proper functioning of the unit would be compromised should this occur**.**

- **Suitable for indoor use only.**

3.4 Safety

- Before carrying out any installation, check that all parts of the product are intact. In the event that parts are broken, not fully functional or damaged, do not install the product and send it to the nearest repair centerThese products must be installed by qualified personnel only, following national laws and local regulation.
- Do not exceed the specified input voltage and current.
- Do not drop, hit, or shake the product. Strong accelerations or shocks can damage the device and cancel its warranty.
- The fixing point must always be capable of supporting the weight of the unit.
- Always use a safety cable to sustain the weight of the unit in case of failure of the main fixing point.
- The light source contained in this fixture cannot be replaced.

- Burn risk – hot surface.
  The external surface of the unit's body, at various points, may exceed 50 °C.
  Never handle the unit until at least 5 minutes have elapsed since the unit was turned off.

- **The ambient temperature should not exceed 45°C**
- **This fixture is intended for use where humidity does not exceed 90% (non-condensing).**

- If the product has been subjected to drastic temperature variances, for example, following transportation, do not connect the fixture until it has reached ambient temperature, as moisture condensation may cause electric shock and product damages.
- After storage, and before switching on the fixture, please ensure that its ambient temperature has been restored to acceptable values.
- Never install the fixture in places that lack a constant air flow.
- **Risk Group 2 product according to IEC 62471**

Do not look directly at the light output and do not stare at the light beam through optical instruments or any other device that may concentrate the light beam.
May be harmful to the eyes and skin.
The luminaire should be positioned so that prolonged staring into the luminaire from a minimum distance of is not expected**.**
Minimum distance for different models

				Minimum distance	
Models	**Lens**	**Led**	**Risk Group**	m	ft
Tenore 3	Fresnel	White	Risk Group 2	7,83	25.68
		HQS HDW	Risk Group 1	Unlimited	
	PC	White	Risk Group 1	Unlimited	
		HQS HDW	Risk Group 1	Unlimited	
Tenore 5	Fresnel	White	Risk Group 2	11,66	38.25
		HQS HDW	Risk Group 2	10,01	32.84
	PC	White	Risk Group 2	14,29	46.88
		HQS HDW	Risk Group 1	Unlimited	

3.5 Waste Electrical and Electronic Equipment (WEEE) directive

Electrical and Electronic Equipment
The projector, accessories and packaging should be sorted for environmental-friendly recycling. European Community Directive 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE).
(For EC countries: according to the European Directive 2012/19/EU for Waste Electrical and Electronic Equipment and its implementation into national right, luminaires that are no longer usable must be collected separately and disposed of in an environmentally correct manner)

4 General Warranty Conditions

The unit is guaranteed for 36 months from the date of purchase against manufacturing material defects.
The warranty covers defects in materials and workmanship. The warranty is not applicable where a defect is caused by misuse or unauthorized repair of the product.
Any functional or/and physical modification of the product is not allowed.

5 Features

5.1 Color Generation - Only HQS models

- 6-color LED engine
- Linear CCT (1,800 K – 10,000 K)
  - Linear ‘green saturation’
- Tungsten emulation function
- 100 gel filter emulations:
  - Linear crossfade from gel filters emulation to CCT whites
  - Linear crossfade between emulated gel filters
  - True color of gel filters emulation at any CCT values
- “Raw” RGBACL color-mixing in ‘Advanced’ mode
- Dimming: Hi-Q Dimming technology

5.2 White Generation - Only HDW models

- 6-color LED engine
- Linear CCT (1,800 K – 10,000 K)
  - Linear ‘green saturation’
- Tungsten emulation function
- Dimming: Hi-Q Dimming technology

5.3 Single White models

- Single White LED engine
- Color Temperature: 3000 K, 5700K
- Dimming: PWM Dimming technology

5.4 Control

- Protocols: RDM; DMX 512 A
- Firmware updatable: via DTS firmware uploader dongle
- DMX MODES: refer to paragraph number ***11.2***
- Fan modes (DMX-selectable): ‘Standard’, ‘Silent’, ‘Ultra Silent’ and ‘Automatic’

Model	Noise level @ "Standard” mode Full Power	Noise level @ "Silent” mode Full Power	Noise level @ "Ultra Silent” mode Full Power
TENORE 3 WHITE	24 dBA @ 1m	23 dBA @ 1m	22 dBA @ 1m
TENORE 3 HQS or HDW	24 dBA @ 1m	23 dBA @ 1m	22 dBA @ 1m
TENORE 5 WHITE	30 dBA @ 1m	26 dBA @ 1m	25 dBA @ 1m
TENORE 5 HQS or HDW	34 dBA @ 1m	29 dBA @ 1m	26 dBA @ 1m

6 Technical Specifications

6.1 Tenore 3

Model	TENORE 3			
	HQS HDW		WHITE	
	Fresnel	PC - Antihalo	Fresnel	PC - Antihalo
Source				
LED detail	Six color LED engine		White cob led	
Colors	Red, Green, Blue, Amber, Cyan, Lime		CCT 3000 K, CCT 5700 K	
Lumen output	4200 lm		7400 lm – 8700 lm	
Led lifespan	20000 hours (70% lumen output)			
Optical				
Lenses	FR Ø 130 mm	PC Ø 130 mm	FR Ø 130 mm	PC Ø 130 mm
Linear zoom range	12° ÷ 68°	6° ÷ 44°	13° ÷ 77°	7° ÷ 46°
Lenses material	Optical glass			
Electrical				
Power supply	Auto-ranging SMPS			
Supply voltage	100 ÷ 240 Vac – 50/60 Hz			
Max Input Current	1,9 A		1,4 A	
Max Power	190 W		145 W	
Power factor	PF >0.94 / 230Vac		PF >0.95 / 230Vac	
Inrush current	30A/115Vac – 60A/230Vac		65A/230Vac	
Internal Protection Devices	Overvoltage and over temperature circuits protection			
Mechanical				
Weight	7,7 kg (17.0 lb)	8,5 kg (18.7 lb)	7,8 kg (17.1 lb)	8,6 kg (19.0 lb)
IP grade	IP20			
Body Materials	Aluminium, ABS			
Color	Black			
Thermal				
Operating temperature	-10 to 45 °C (14 °F to 113 °F)			
Storage temperature	-20 to 60 °C (-4 °F to 140 °F)			
Operating humidity	<90% r.H. non-condensing			
Storage humidity	<90% r.H. non-condensing			
User Interface				
Display	Blu & White LCD graphic display			

Input system		Jog wheel with push button
Connections		
Connection	Power supply	powerCON TRUE1 In/Out panel connectors
	DMX	XLR 5-pole In/Out panel connectors

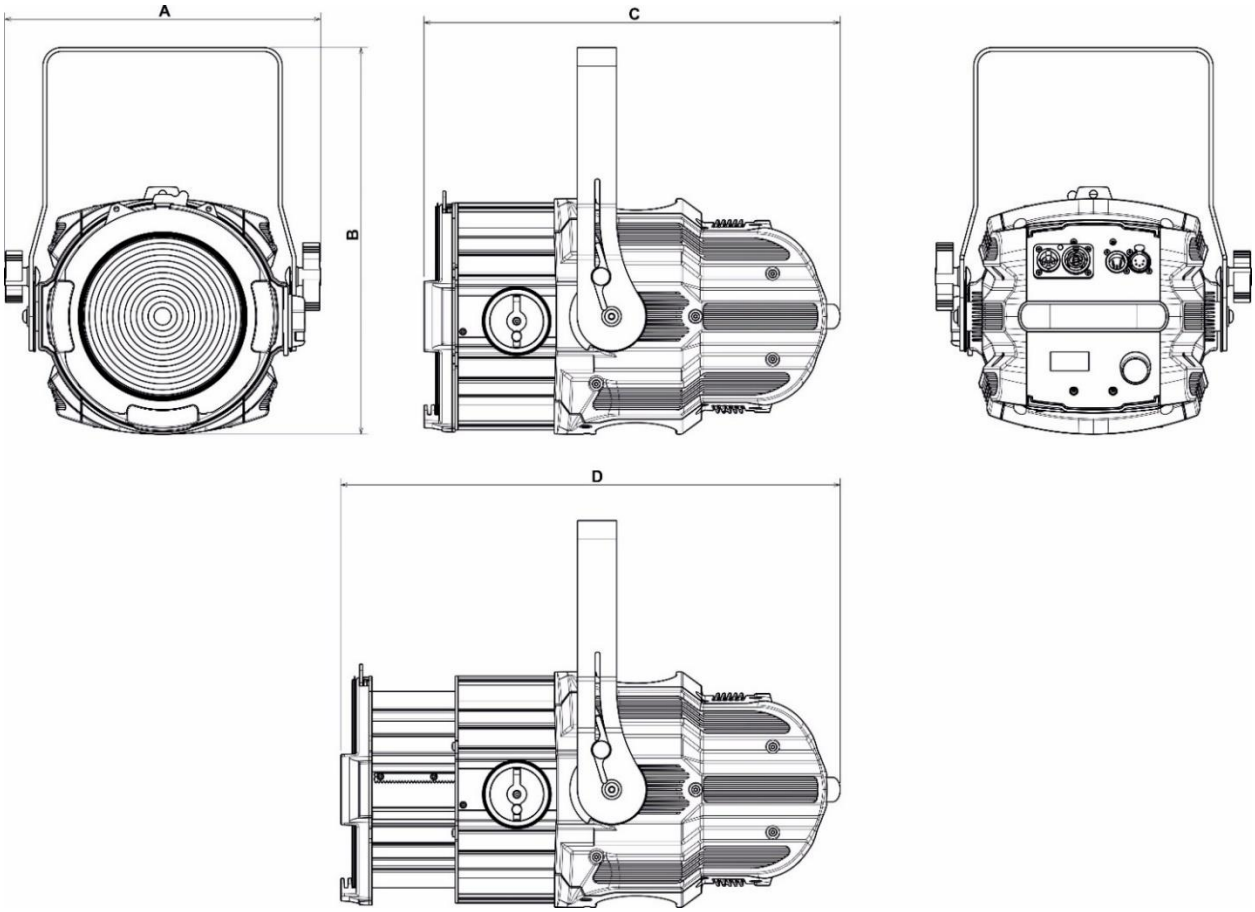
6.2 Tenore 5

Model		**TENORE 5**			
		HQS HDW		**WHITE**	
		Fresnel	PC - Antihalo	Fresnel	PC - Antihalo
Source					
LED detail		Six color LED engine		White cob led	
Colors		Red, Green, Blue, Amber, Cyan, Lime		CCT 3000 K, CCT 5700 K	
Lumen output		9300 lm		11200 lm – 16000 lm	
Led lifespan		20000 hours (70% lumen output)			
Optical					
Lenses		FR Ø 175 mm	PC Ø 150 mm	FR Ø 175 mm	PC Ø 150 mm
Linear zoom range		12° ÷ 62°	6° ÷ 47°	13° ÷ 69°	7° ÷ 51°
Lenses material		Optical glass			
Electrical					
Power supply		Auto-ranging SMPS			
Supply voltage		100 ÷ 240 Vac – 50/60 Hz			
Max Input Current		3,8 A		2,5 A	
Max Power		390 W		260 W	
Power factor		PF >0.94 / 230Vac			
Inrush current		40A/115Vac – 80A/230Vac		75A/230Vac	
Internal Protection Devices		Overvoltage and over temperature circuits protection			
Mechanical					
Weight		9,3 kg (20.5 lb)	10,4 kg (22.9 lb)	9,5 kg (20.9 lb)	10,6 kg (23.4 lb)
IP grade		IP20			
Body Materials		Aluminium, ABS			
Color		Black			
Thermal					
Operating temperature		-10 to 45 °C (14 °F to 113 °F)			
Storage temperature		-20 to 60 °C (-4 °F to 140 °F)			
Operating humidity		<90% r.H. non-condensing			

Storage humidity		<90% r.H. non-condensing
User Interface		
Display		Blu & White LCD graphic display
Input system		Jog wheel with push button
Connections		
Connection	Power supply	powerCON TRUE1 In/Out panel connectors
	DMX	XLR 5-pole In/Out panel connectors

NOTE:
As for all electrical devices, LEDs will degrade through time with a consequent reduction in their luminosity. This explains why it is almost impossible to obtain identical photometric performances between two different LED devices with different operating lifetime. LEDs lifespan varies greatly and is the result of a complex formula which considers multiple factors such as operating efficiency, continuous operating time, and environment conditions (e.g., ambient temperature).
All semi-conductor devices, such as LEDs, are subject to inherent variables related to their technical features. In order to improve output and performance uniformity, D.T.S. Illuminazione Srl uses selected LEDs considering the aforementioned factors, reducing to the minimum variations in output luminosity, color temperature and tone shift in color between devices.

6.3 Dimensions



	A		B		C		D	
Model	mm	in	mm	in	mm	in	mm	in
TENORE 3 FR	287	11.3	360	14.17	402	15.82	477	18.78
TENORE 5 FR	322	12.68	394	15.51	424	16.7	509.19	20.05
TENORE 3 PC	287	11.3	360	14.17	456	17.97	576	22.69
TENORE 5 PC	322	12.68	394	15.51	4278	18.83	599	23.57

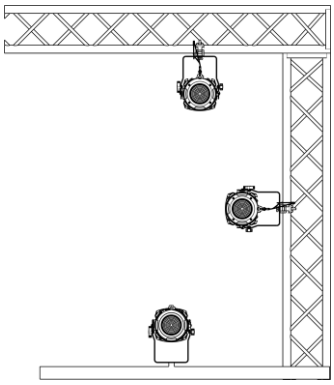
7 Included Items

- 1x PowerCON TRUE1 female connector (Code 0520P066)
- 1 x XLR 5 pins female cable connector (Code 0508B147)
- 1 x XLR 5 pins male cable connector (Code 0508B148)
- 1 x Gel Holder black finishing
  (Code 02M093424.49 for TENORE 3 / Code 02M093399.49 for TENORE 5)

8 Installation

The unit is suitable for dry locations only.

Before carrying out any installation, check that all parts of the product are intact. In the event that any broken, not fully functional or damaged parts are observed, do not install the product and send it to the nearest repair center.



TENORE may be either ceiling or floor mounted on tripod.

For ceiling mounting installations, DTS recommend the use of appropriate clamps to fix the unit to the mounting surface.

The supporting structure from which the unit is hung should be capable of bearing the weight of the unit, as should any clamps used to hang it.

One hole, on the center of the bracket, allow TENORE to hang by using an appropriate clamp

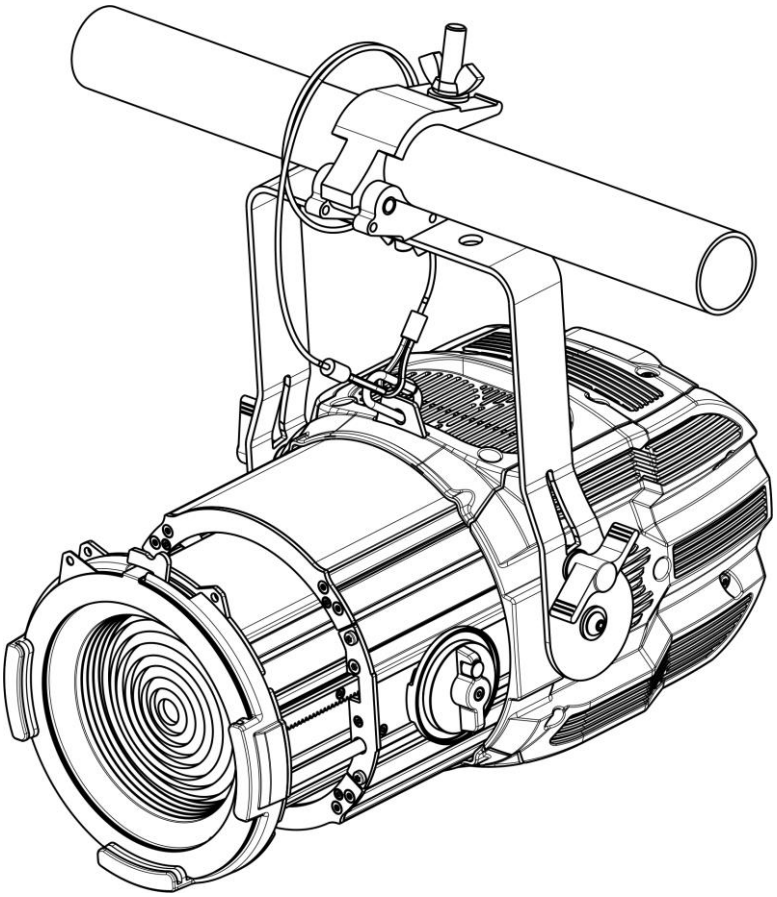
8.1 Safety Cable

A safety cable must be securely fixed to TENORE and to the suspension truss in order to avoid the fixture accidentally falling, should the main fixing point fail.

The safety cable used must be approved by a notified body according to IEC 60598-2-17 and must be capable of bearing at least 10 times the weight of the unit. For more information, please refer to an authorized DTS service center.

A suitable safety cable (code 0521A049) is available on demand.

Securely fix the safety cable to the unit's mounting bracket and to the support structure of the projector as shown in the next picture



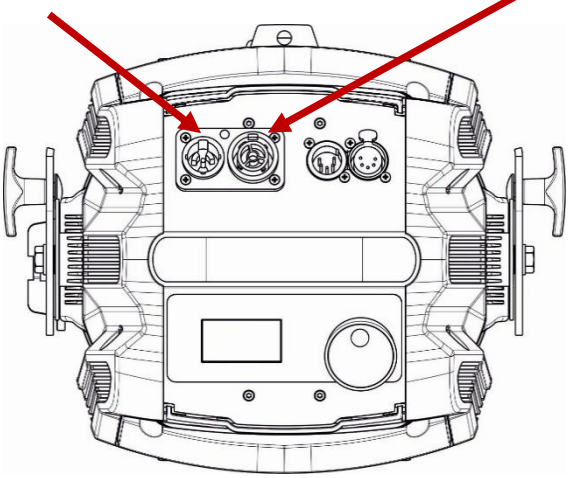
9 Mains Connection

Prior to connecting the unit to the mains, ensure that your local mains electricity supply properties are compatible with those of the product.

Strict adherence to regulatory norms is strongly recommended.

MAINS IN
100 - 240 Vac 50 / 60Hz
male PowerCON TRUE1 panel connector

MAINS OUT
100-240Vac 50-60 Hz
(TENORE 3 MAX 14A)
(TENORE 5 HQS/HDW MAX 12A)
(TENORE 5 WHITE MAX 13A)
female PowerCON TRUE1 panel connector

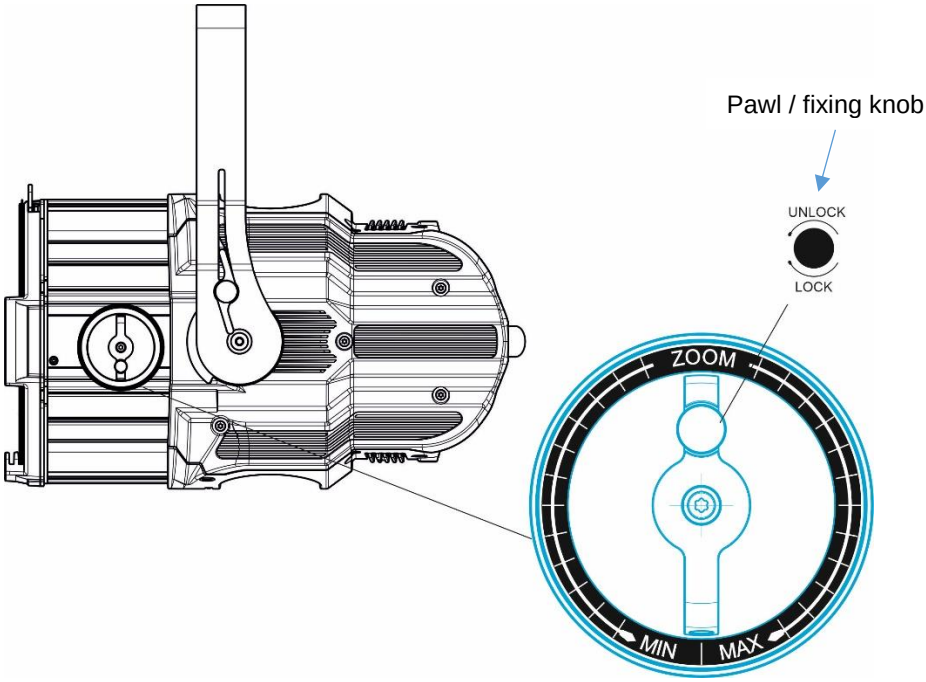


9.1 Protection

The use of a thermal magnetic circuit breaker is recommended for each unit.
Class I appliance: connection must be made to a mains system fitted with an efficient earthing.

10 ZOOM Adjustment

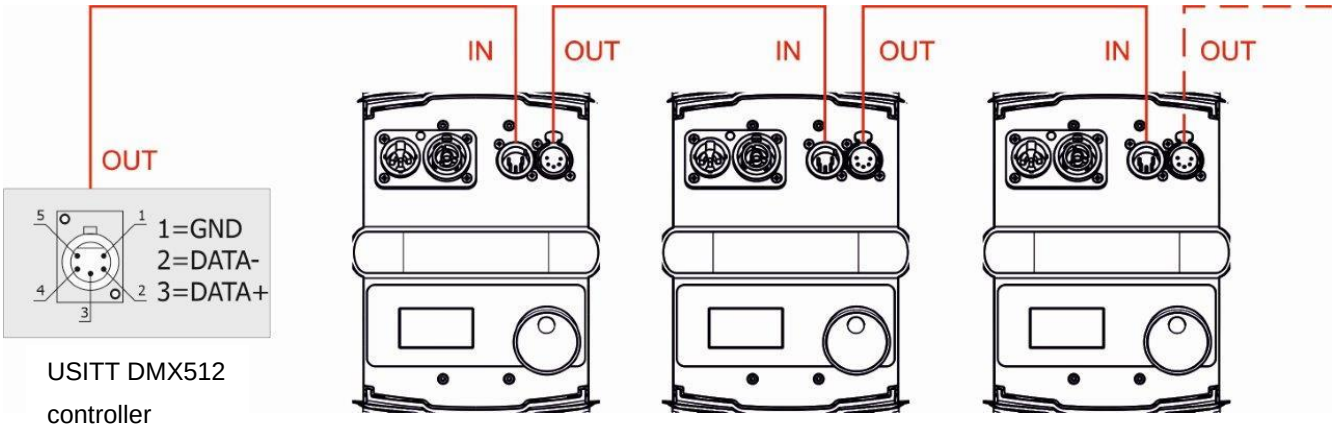
Before regulating the Zoom, be sure to unlock the fixing knob (do not unscrew it completely) and do not force the movement if the knob is blocked or excessively hard to rotate.



11 DMX Signal Connection

- The unit operates using the digital USITT DMX512 signal.
- Connection between the light controller and the projector, or between projectors, must be carried out using a two-pair screened ø 0.5 mm cable, and a XLR 5 pins connector.
- Ensure that the conductors do not touch each other. Do not connect the ground cable to the XLR chassis. The housing of the plug must be isolated.
- Connect the light controller to the DMX IN panel connector of the projector, to create a link to the next projector, simply connect the DMX OUT plug of the first unit to the DMX IN plug of the next fixture in line.

Following this procedure, all the projectors will be cascade connected.



PS. If the display showing the DMX address flashes, then one of the following errors has occurred:

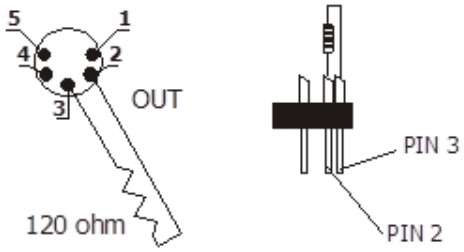
- DMX signal not present
- DMX reception problem

11.1 DMX terminator

The use of a DMX terminator is recommended.

The DMX terminator is a male XLR 5-pins connector with a 120 Ω resistor between pin 2 and pin 3.

The DMX terminator must be plugged in into the last unit's DMX OUT panel connector of the DMX line.



Place a 120 Ω resistor between pin 2 and 3 of a male XRL connector;

Plug the resistor into the DMX OUT panel connector of the last unit connected to the DMX line.

11.2 DMX Modes

TENORE can be used in different DMX modes:

TENORE 3_5 HQS / SOPRANO 3_5 HQS can be used in five different DMX modes:

- CCT (Default) -Correlated color Temperature
- Advanced - Correlated Color temperature plus Raw control for color channels RGBACL
- Basic – Correlated Color Temperature with priority on Gel Library and RGBACL color
- Expo - Dimmer 8 bit and Correlated Color Temperature priority on Gel Library
- CMY Emulation – Cyan, Magenta, Yellow and CTO emulation Mode.

e.g., when using the unit in "CCT" (Default) mode (10 DMX channels), set the following addresses on the light desk:

Projector 1	A001
Projector 2	A011
Projector 3	A021
…..	A….
Projector 6	A051

If you want to select the next projector, just add "10" to the former DMX address

TENORE 3_5 HDW / SOPRANO 3_5 HDW can be used in two different DMX modes:

- CCT (Default) - Dimmer 16 bit with Correlated color Temperature and Green saturation control.
- Basic – Dimmer 8 bit with Correlated color Temperature control.

e.g., when using the unit in “CCT” (Default) mode (6 DMX channels), set the following addresses on the light desk:

Projector 1	A001	
Projector 2	A007	*If you want to select the next projector, just add “6” to the former DMX address*
Projector 3	A013	
…..	A….	
Projector 6	A031	

TENORE 3_5 / SOPRANO 3_5 can be used in three different DMX modes:

- 4ch (Default) – Shutter, Dimmer 16bit and Fixture Control channel.
- 1ch – Dimmer 8bit
- Fine – Dimmer 16bit.

e.g., when using the unit in “4ch” (Default) mode, set the following addresses on the light desk:

Projector 1	A001	
Projector 2	A005	*If you want to select the next projector, just add “4” to the former DMX address*
Projector 3	A009	
…..	A….	
Projector 6	A021	

11.3 Setting Up the DMX Address

1 Rotate the jog shuttle until you reach the desired DMX address. The numbers on the display will start flashing (new DMX address hasn't yet been set).

2 Push to confirm your selection. The numbers on the display will stop flashing; the projector is now set to the new DMX address.

12 RDM-DMX-Display Functions, Error messages

All information regarding RDM, DMX, DISPLAY FUNCTION, ERROR MESSAGES and how to update the firmware is available in the RDM/DMX Manual

TENORE/SOPRANO HDW-RDM DMX MANUAL	**0517I368**
TENORE/SOPRANO HQS-RDM DMX MANUAL	**0517I369**
TENORE/SOPRANO WHITE-RDM DMX MANUAL	**0517I370**

13 Updating the Firmware

In order to update to the latest firmware release of the TENORE, you will need:

- DTS firmware uploader dongle (code 03.LA.206).
- “DTS Firmware Upgrade Utility v.2.02” program installed on PC (Windows OS).
- Latest firmware release available for the TENORE unit. (Depends on the model)

Updating to the latest firmware release:

To perform the update, please follow the procedure as described below:

1 Connect the DTS Firmware Uploader Dongle to a spare USB port on the PC.

2 Connect the unit’s DMX IN to the DTS Firmware Uploader Dongle’s DMX OUT with a standard DMX cable and turn on the fixture.

3 Send the new firmware release into the unit by using “DTS Firmware Upgrade Utility v.2.02” program. During software upgrade the led will blink. At the end of the procedure, the unit will reboot.

For more information, please refer to an authorized DTS service center.

14 Accessories and their installation

14.1 Accessories on Request

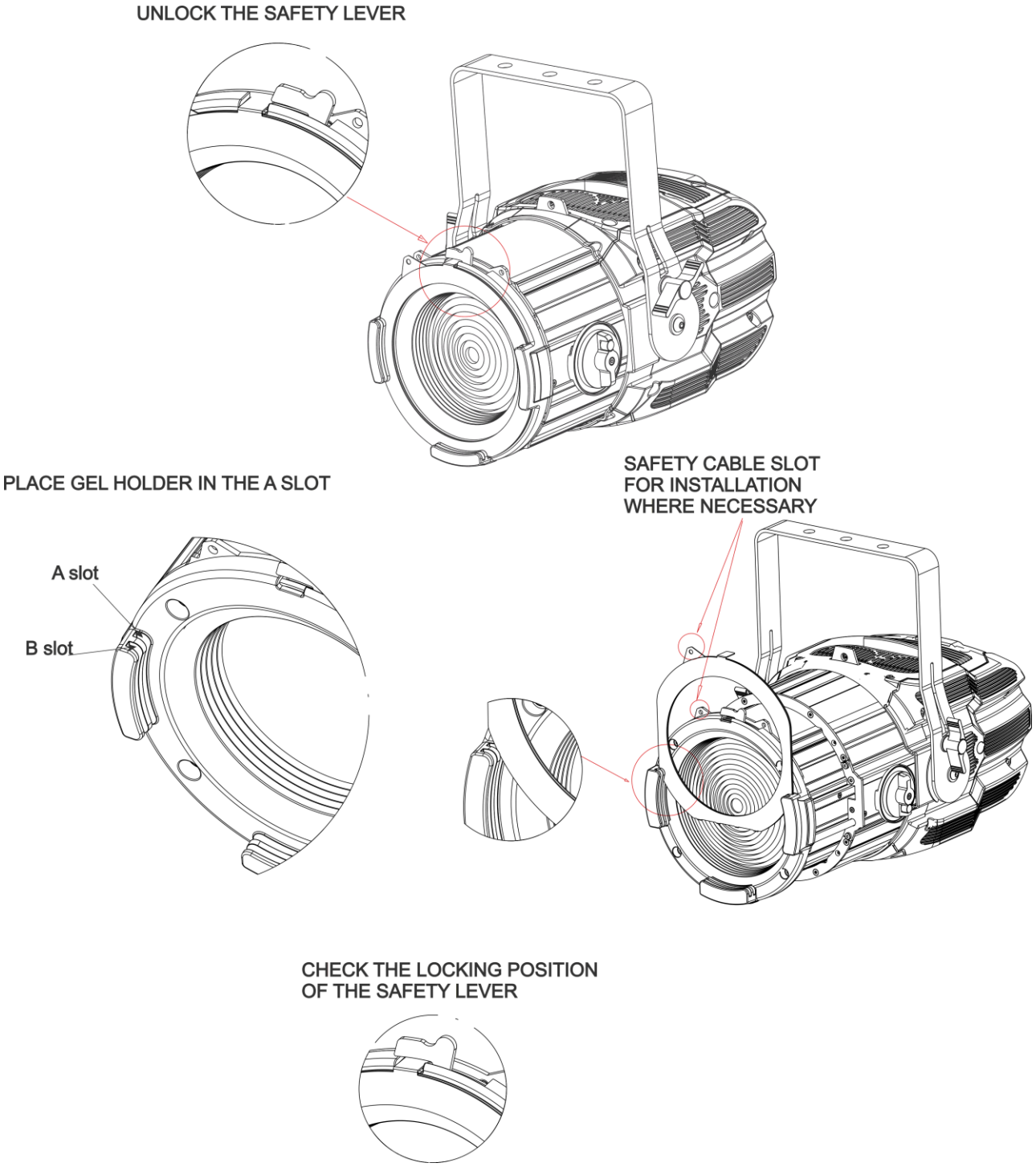
- Aliscaf clamp for Ø 48-51 mm tube - max load 200 Kg (code 0521A033)
  Indicated for any kind of loads, both vertical and/or horizontal.
- Professional G-QUICK clamp - max load 100 Kg (code 0521A037)
  Not indicated for horizontal load.
- Safety cable 3 x 600 mm - max load 20 Kg (code 0521A049)
- Safety cable for Barndoors and Gel Holder (code 0521A048)
- DTS firmware uploader dongle (code 03.LA.206)

14.2 Accessories specifically designed for TENORE and SOPRANO

The different accessories, which can be installed, are specifically designed for projectors TENORE and SOPRANO. The accessories can be ordered separately from the product.

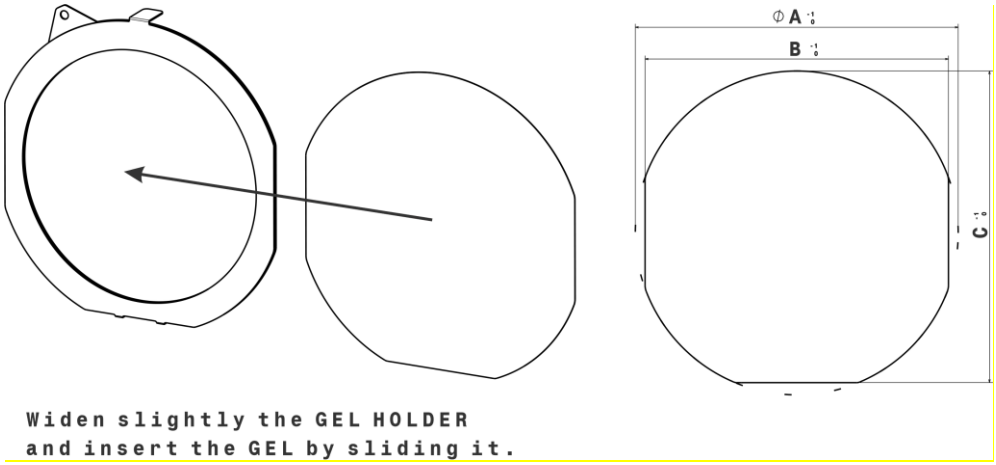
14.2.1 Gel holder placement

The Gel Holders are supplied with the unit and are specific to the model. If the Gel Holder is broken or damaged, you can purchase a new one



The gel holder must only be inserted in position A

14.2.1.1 GEL placement



	A		B		C	
Model	mm	in	mm	in	mm	in
TENORE 3	190	7.48	178,5	7.03	183	7.21
TENORE 5	220	8.66	198,5	7.82	208	8.19

14.2.2 Barndoors

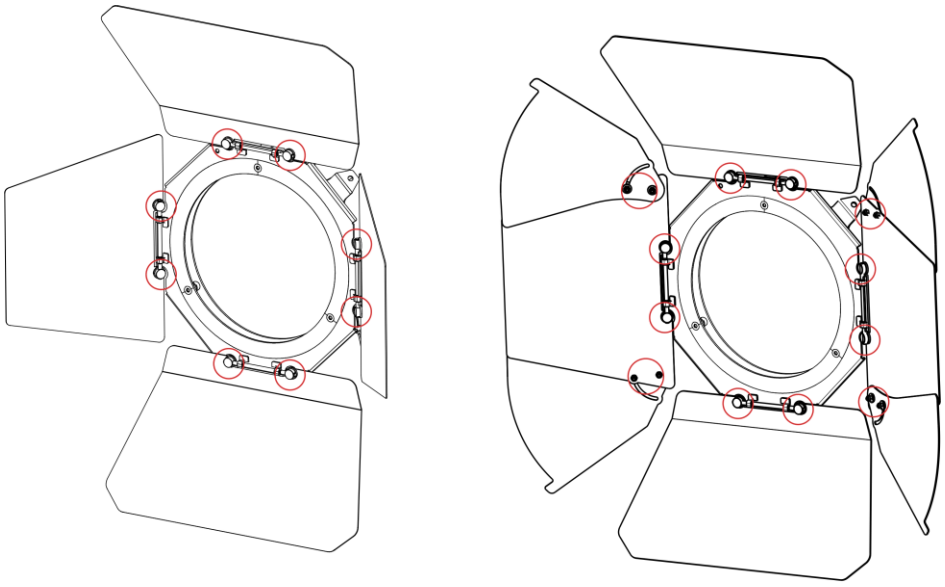
The Bandoors are available on request in the two versions with 4 leaf and 8 leaf and are specific for the model.

03.TBD06.49 BARNDOOR 4 TENORE/SOPRANO 3 BLACK

03.TBD07.49 BARNDOOR 4 TENORE 5 BLACK

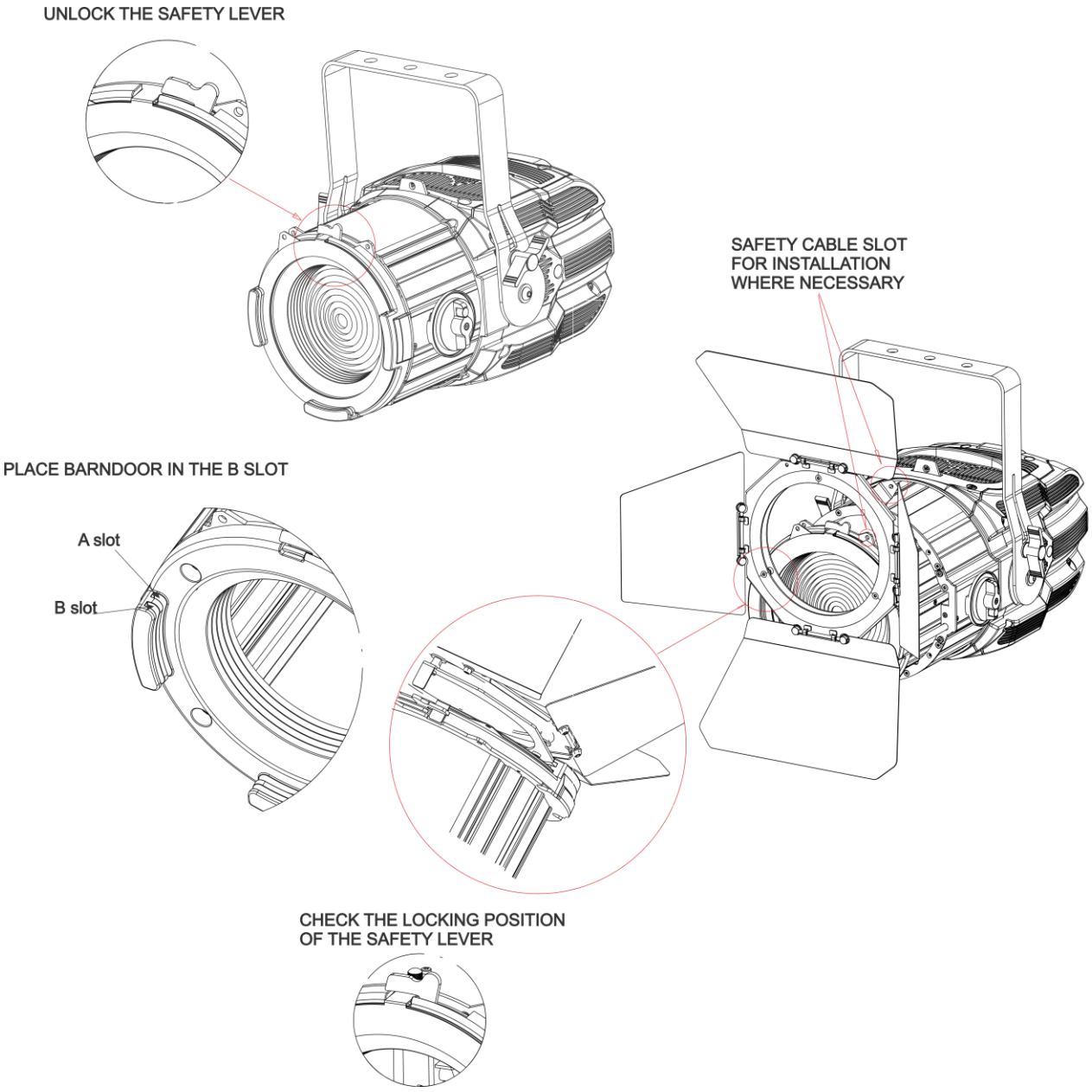
03.TBD08.49 BARNDOOR 8 TENORE/SOPRANO 3 BLACK

03.TBD09.49 BARNDOOR 8 TENORE 5 BLACK



It is possible to adjust the resistance of the blades by loosening or tightening the nuts

14.2.3 Barndoors placement



The barndoors must only be inserted in position B

14.2.4 Safety cable for Barndoors and Gel Holder

As additional security to the safety Lever, it's possible to secure Gel Holder and Barndoors to the unit body with a dedicated Safety cable.

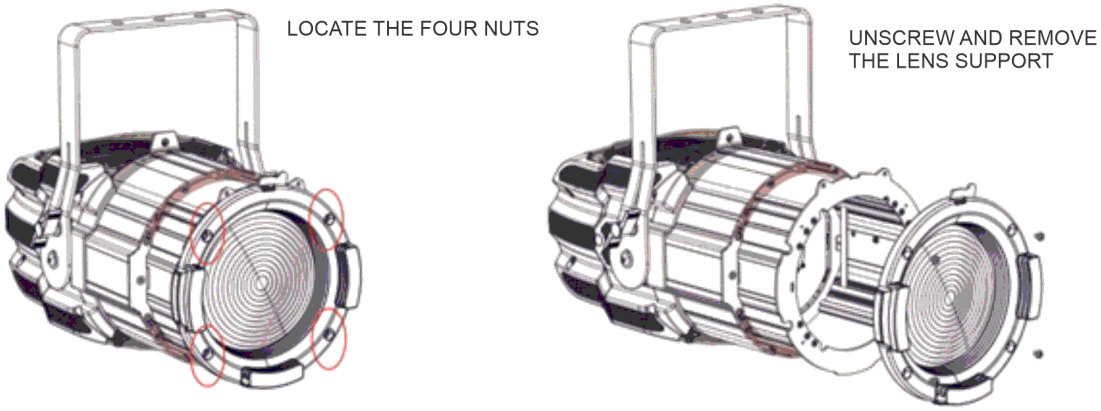
Barndoors/Gel holder Safety cable can be ordered separately (code 0521A048)

15 Periodic Cleaning

WARNING! Disconnect from mains before servicing.

15.1 Opening the housing

It is possible to inspect the frontal part of the projector by removing the Fresnel lens support, as indicated below.



15.2 Lenses

Even a fine layer of dust can substantially reduce the luminous output.
Excessive dust, smoke fluid, and particle buildup can degrade and seriously damage lenses.
After removing the frontal part, as indicated in the previous paragraph, proceed to clean it.
Without removing other parts it is possible to proceed with the cleaning of the primary lens.

It is recommended to regularly clean all lenses using a soft cotton cloth, dampened with a dedicated lens cleaning solution.
Maintenance period may vary, depending on environmental conditions.

15.3 Fans and Air Passages

The fans and air passages must be cleaned approximately every 6 weeks.
This time period will of course vary depending on the conditions in which the projector is operating.
Suitable instruments for performing this type of maintenance are a brush and a common vacuum cleaner. To simplify cleaning the heatsink and fans, you can help yourself by using a can of compressed air normally used in cleaning electronic equipment.
If necessary, clean the fans and air passages more frequently than suggested.

16 Periodic Check-ups

WARNING! Disconnect from mains before servicing.

16.1 Mechanical Parts

Periodically check all mechanical parts, gears, guides, covers, etc., for wear or damaged. Replace them if necessary.

16.2 Electrical Components

Check all electrical components for correct earthing and proper connection of all connectors. Refasten where necessary.

17 Product Disposal

TENORE are electrical devices and therefore, at the end of their lifetime, must be disposed according to local regulations and for no reason can they be dispersed in the environment.

18 Troubleshooting

	Probable cause	Possible solutions
The product doesn't turn on.	Product is not powered	Check that: • MAIN AC is available • the MAIN AC cable is intact and correctly connected.
	The product is defective	• Do not remove covers or disassemble the product. Do not attempt to carry out repairs or operations not described in this manual. • Please contact your nearest DTS service center.
Output light intensity is too low	Dirty lenses	• Remove the gel holder and barndoors and clean the lenses as indicated in the user manual.
	The projector is too hot and is reducing output power.	• Check that the air intakes are not obstructed or dirty. • Reduce the ambient temperature
	Operating mode silent or ultra-silent.	• Change operating mode.
Light output turn OFF	The projector is too hot	• Check that the air intakes are not obstructed or dirty and fans are properly rotating. • Be sure ambient temperature do not exceed 45°C.
	Hardware failure (light source, fans, led driver temperature sensors…)	• Please contact your nearest DTS service center.
The projector does not respond correctly to DMX or RDM commands after a power reset	DMX line is not properly terminated	• Insert DMX termination plug in signal output socket of the last product on the signal line • Plug a DMX Terminator into the DMX OUT panel connector of the last unit connected to the DMX line.
	Faulty or incorrectly plugged wiring	• Replace damaged cables • Check that connections are correct and fix them if necessary.
	Product DMX address incorrectly set	• Check the product address and its configuration.
	A defective product is connected to the same network.	• Disconnect all products connected to the same network. Reconnect the products one at a time until the one corrupting the communication signal is identified. The faulty product should be sent to the nearest DTS service center.

If the information in the table was not sufficient to solve your issue, we recommend that you contact your nearest DTS service center.

NOTES

ISO 9001:2015

DTS quality system is certified to the ISO 9001:2015 standard.

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