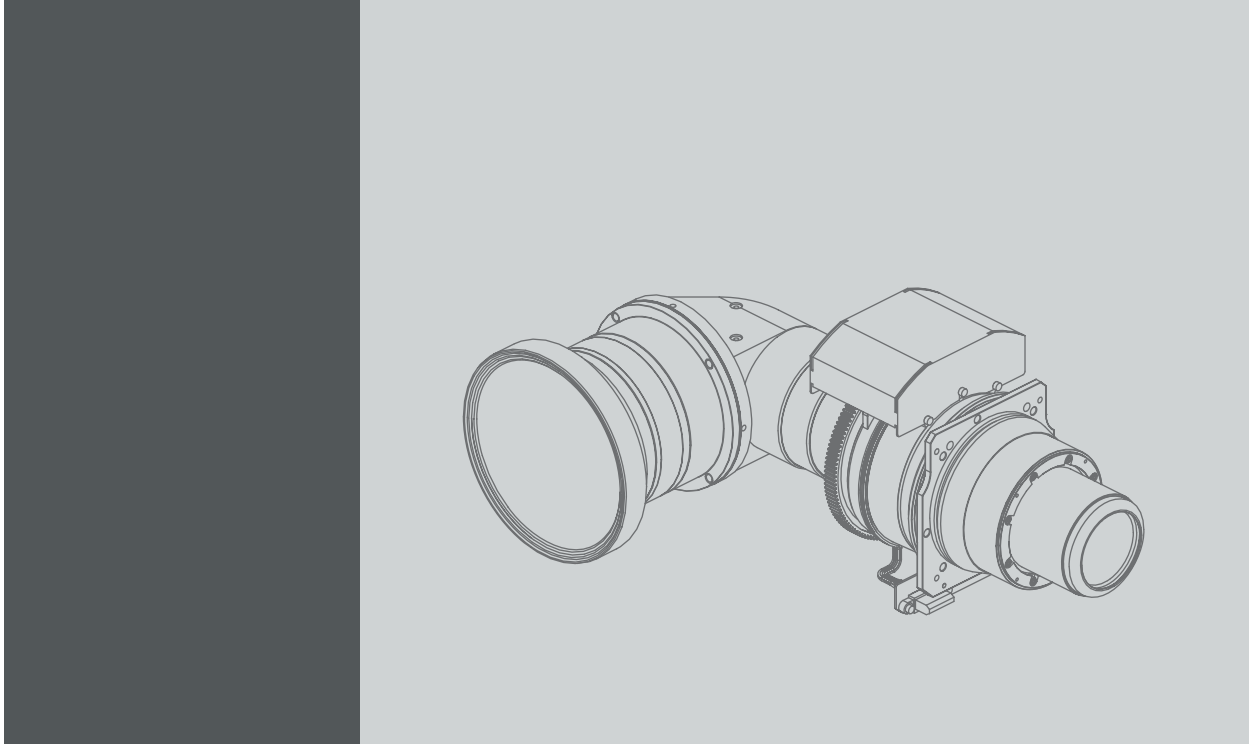


# TLD+ lens 90° Ultra Short Throw (0.4:1)



## Installation manual

R9801661

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# 1. TLD+ LENS 90° ULTRA SHORT THROW

## About this document

Read this document attentively. It contains important information on how to correctly install and adjust the TLD+ lens 90° Ultra Short Throw (UST). The latest edition of this document can be downloaded from the Barco website: [www.barco.com/td/R9801661](http://www.barco.com/td/R9801661).



**Because this 90 degrees lens makes use of an intermediate image in the optics of the lens, Top becomes Bottom. For that the projector orientation settings have to be adapted accordingly: Ceiling Mount becomes Table Mount and Front Projection becomes Rear Projection. See user manual of the projector to modify the projector orientation.**

## Overview

- Introduction
- Install the UST lens on an UDX projector
- Install the UST lens on a HDX/HDF projector
- Adjustment of the UST lens
- Change the motor block orientation

## 1.1 Introduction

### About the TLD+ lens 90° Ultra Short Throw (UST)

This lens is exclusively designed to be used on the Barco projector series UDX, HDX and HDF. The lens output is 90° turned. This allows an optimal use of the vertical shift range when projecting to the left seen from the rear side of the projector.

This lens is designed for ultra short throw video performance.

Lens shift +/-150%, depending on projector type, please use the Barco Lens calculator to calculate actual values.

### Different motor block orientations

The HDX and HDF projector series have an different lens holder than the UDX series: the socket for the electrical connection has another orientation between these two types of lens holders.

For that the UST lens is designed with a motor block that easily can be rotated around the lens body. This allows that the lens output direction remains the same while the electrical plug on the motor block can be turned to matches the electrical plug on the lens holder front plate. See example illustration below.



Image 1-1

For UDX series the motor block must always be located above the lens body (ref. 1 image 1-2) when facing the projector from the front side in table mount. For HDX/HDF series the motor block must always be located at the right side (ref. 2 image 1-2) of the lens body when facing the projector from the front side in table mount.

## 1. TLD+ lens 90° Ultra Short Throw

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Image 1-2

The lens body can be rotated per 90° relative to the motor block. However, the most common configuration is probably with the lens output oriented to the left seen from the rear side of the projector in table mount. Other directions (e.g. downwards) may cause interference of the projector housing/rigging frame in the light path of the projected image.

The Ultra Short Throw lens is delivered with the motor block mounted in the orientation for left projection of the UDX series in table mount. To change the motor block orientation see procedure "Change the motor block orientation", page 5 .

## 1.2 Install the UST lens on an UDX projector

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### How to install the UST lens on an UDX projector

1. Place the primary lens lock in "unlock" position. Handle (ref. 1) towards electrical socket (ref. 4).
2. Check if the secondary lens lock stands in the "unlock" position (ref. 2)
3. Check if the motor block (ref. 3) of the UST lens is oriented for UDX projectors. If not, see procedure "Change the motor block orientation", page 5 , to adapt the orientation.
4. Check if the set screw (ref. 5) in the lower left corner of the mounting plate on the UST lens is inserted. The set screw should exceed 1.5 mm.

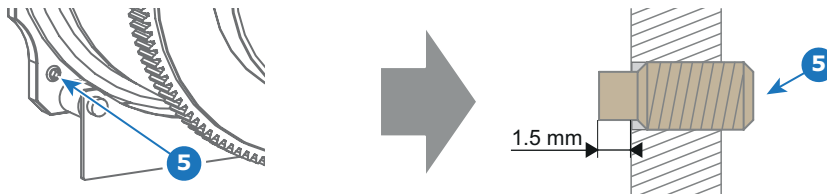


Image 1-3

5. Gently insert the lens. Ensure the lens connector matches the electrical socket on the lens holder.
6. Insert the lens until the connector seats into the socket.

**Note:** The secondary lens lock (ref. 2) makes an audible clicking sound when latching.

**Caution:** Do not release the lens yet, keep pushing the lens against the front plate!

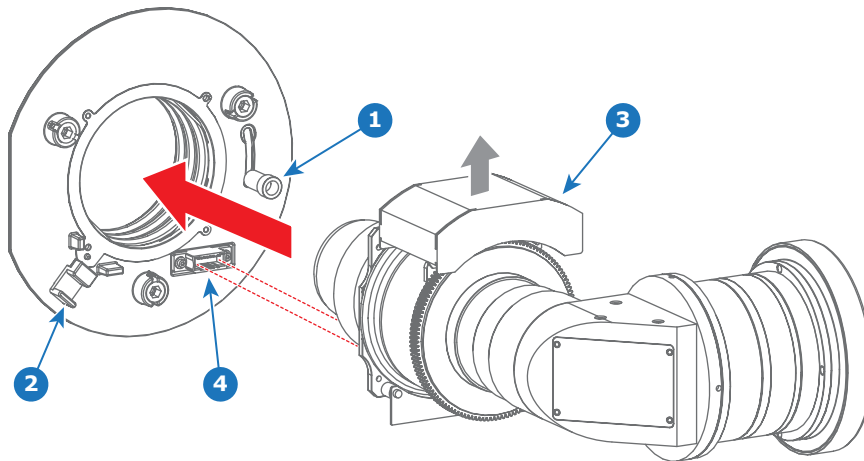


Image 1-4

7. Secure the lens in the lens holder by sliding the primary lens lock handle into the “locked” position.
8. Check if the lens touches the front plate of the Lens Holder.
9. Check if the lens is really secured by trying to pull the lens out of the lens holder.

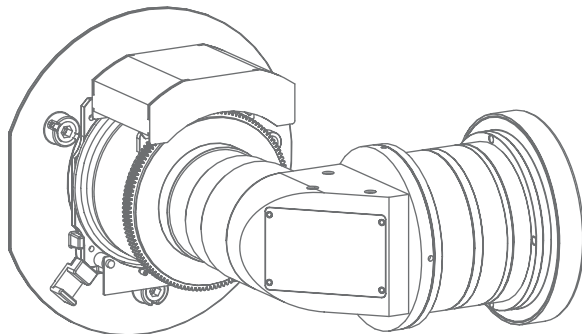


Image 1-5



After installation the UST lens needs to be adjusted. See procedure "Adjustment of the UST lens", page 4 .

### 1.3 Install the UST lens on a HDX/HDF projector

#### How to install the UST lens on a HDX/HDF projector

1. Place the lens lock in “unlock” position. Handle (ref. 1) towards electrical socket (ref. 4).
2. Check if the motor block (ref. 3) of the UST lens is oriented for HDX/HDF projectors. If not, see procedure "Change the motor block orientation", page 5 , to adapt the orientation.
3. Check if the set screw (ref. 5) in the lower left corner of the mounting plate on the UST lens does not exceed the mounting plate.

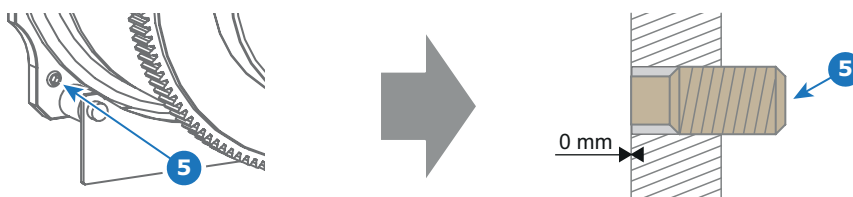


Image 1-6

## 1. TLD+ lens 90° Ultra Short Throw

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4. Gently insert the lens. Ensure the lens connector matches the electrical socket on the lens holder.
5. Insert the lens until the connector seats into the socket.  
**Caution:** Do not release the lens yet, keep pushing the lens against the front plate!

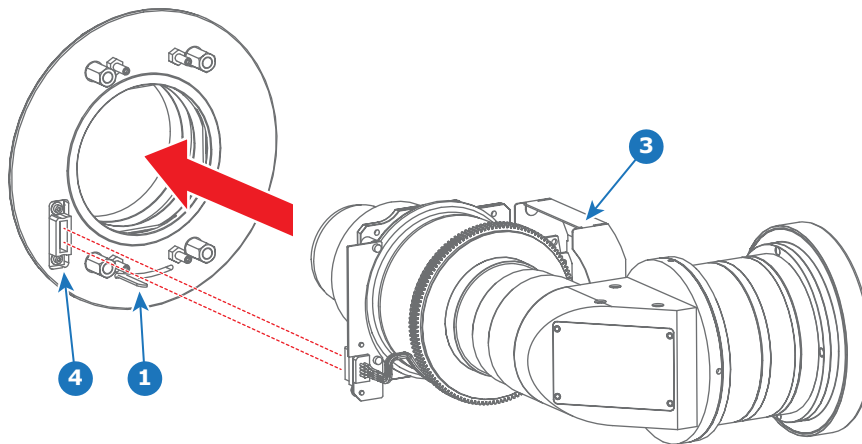


Image 1-7

6. Secure the lens in the lens holder by sliding the lens lock handle into the “locked” position.
7. Check if the lens touches the front plate of the Lens Holder.
8. Check if the lens is really secured by trying to pull the lens out of the lens holder.

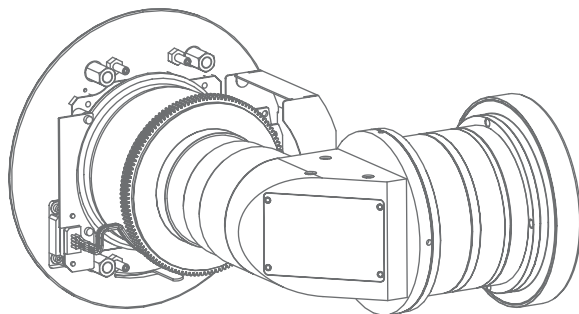


Image 1-8

9. Install the lens safety cable. Keep safety cable as short as possible. See user manual of the projector for detailed instructions.



After installation the UST lens needs to be adjusted. See procedure "Adjustment of the UST lens", page 4 .

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## 1.4 Adjustment of the UST lens

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Because this 90 degrees lens makes use of an intermediate image in the optics of the lens, Top becomes Bottom. For that the projector orientation settings have to be adapted accordingly: Ceiling Mount becomes Table Mount and Front Projection becomes Rear Projection. See user manual of the projector to modify the projector orientation.

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### How to adjust the UST lens

1. Start up the projector and project the focus pattern on the screen. See user manual of the projector for detailed instructions.



2. Rotate the "adjusting ring for various throw distance" (Ring-A) to the position of the throw distance you need.  
If your throw distance is 1.716m, the mark should be located between 1.5m and 2m. (as shown in image 1-9)  
**Note:** Ring-A is not motorized. Manual adjustment is needed.
3. Rotate "the focusing gear" (Ring-B) to get good focus of CENTER.  
**Note:** Ring-B is motorized. Use the remote control or local keypad of the projector to adjust.

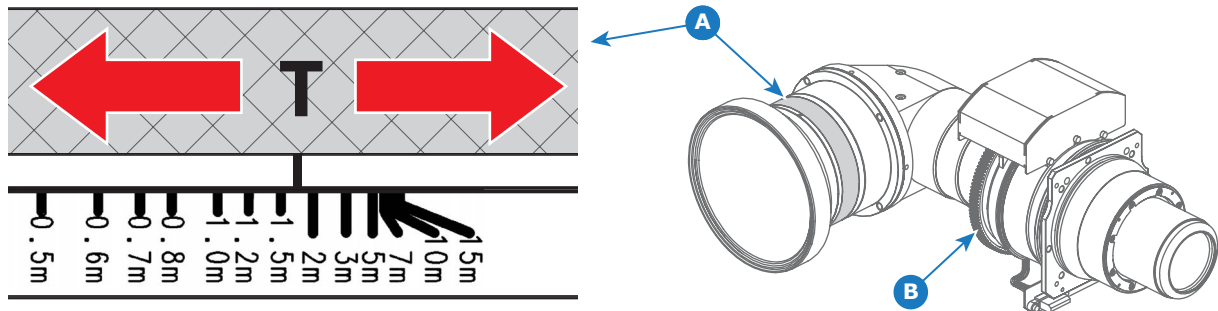


Image 1-9

- A Adjustment Ring-A : various throw distance
- B Adjustment Ring-B : focusing gear
- T Throw distance (projection distance)

4. If NOT getting good focus of both CENTER and CORNERS, rotate the Ring-A in the direction of getting better focus of CORNERS.
5. Rotate the Ring-B again to get good focus of CENTER.
6. Repeat from step 4 until both CENTER and CORNERS have good focus.

## 1.5 Change the motor block orientation



The illustrations in this procedure shows a motor block rotation from UDX left side projection to HDX/HDF left side projection (seen from the rear side of the projector in table mount)

### Necessary tools

Allen wrench 2.5mm.

### Necessary parts

Set screw M5x8 DIN915.

### Rotate the motor block of the UST lens

1. Remove the eight screws (reference 1) as illustrated. Use a 2.5mm Allen wrench

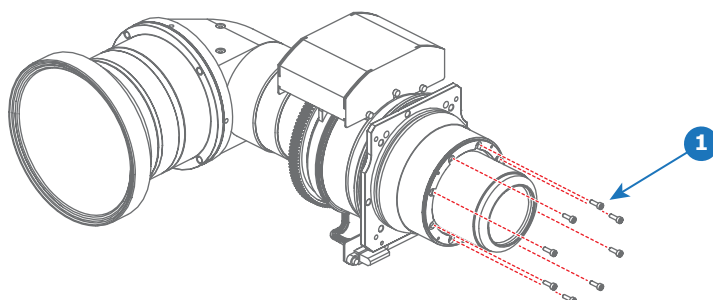


Image 1-10

## 1. TLD+ lens 90° Ultra Short Throw

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2. Rotate the motor block around the lens body in to the desired position.

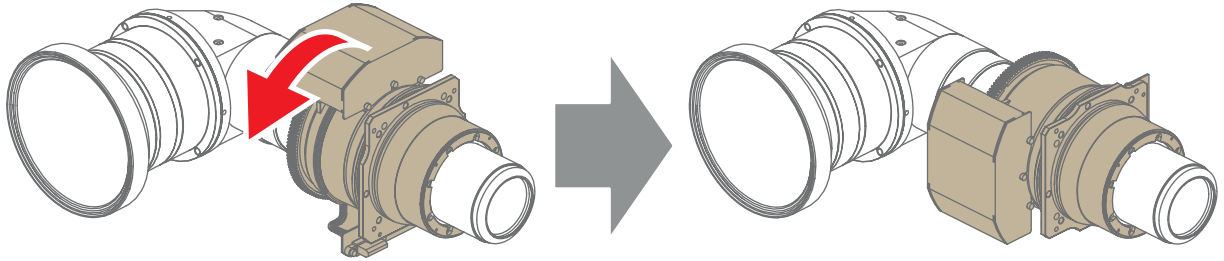


Image 1-11

3. Fasten the motor block with the eight screws which you have removed in step 1.

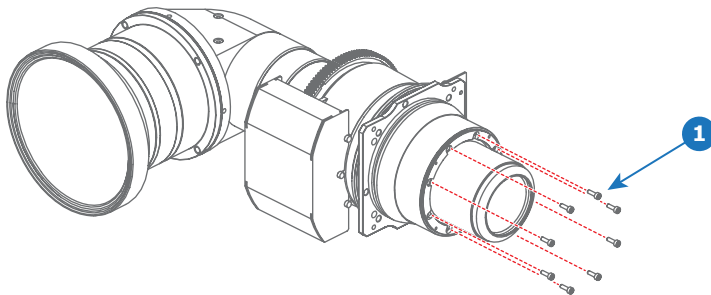


Image 1-12

4. Will the UTS lens be installed on an UDX projector?

If yes, turn the set screw into the mounting plate until it exceed 1.5 mm on the other side of the mounting plate.

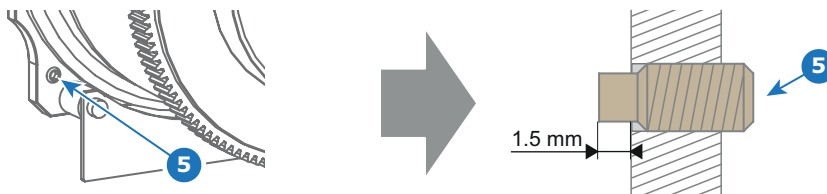


Image 1-13

If no, turn the set screw out of the mounting plate until it doesn't exceed on the other side of the mounting plate.

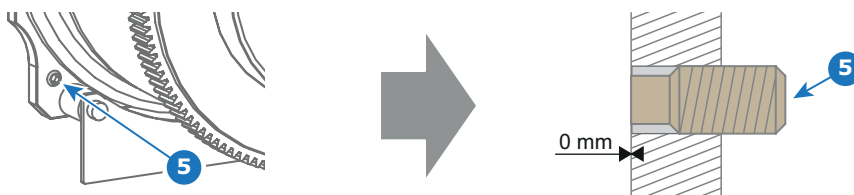


Image 1-14