

Optional Lens USER'S MANUAL

SAFETY INSTRUCTIONS

Warning

For safety, do work in accordance with the Exchange Manual to install this product.

Please read this manual and manuals for the LCD projector to be used thoroughly to ensure correct usage through understanding. Incorrect usage could result in fire, an injury or damage.

Do not give any shock or impact.

Any shock or impact could result in an injury or damage. The lens part is projected. Take care not to strike it.

NOTE

Take care of the lens.

- When carrying it, protect the lens parts with lens cap.
- Do not scratch and polish the lens with hard object.
- Do not touch the lens to prevent fog or dirt of the lens that cause deterioration of display quality.

Cleaning

- Use commercially available lens tissue to clean the lens (used to clean cameras, eyeglasses, etc.).
- Excepting for lens, use a soft cloth to clean. When excessively soiled dilute a neutral detergent in water, wet and wring out the soft cloth.
- Do not use detergents or chemicals other than those noted above (e.g. benzene or thinners).

OPERATIONS

- Project an image as described in the LCD Projector user's manual, and adjust the size and focus of the projected image.
- See the Projection Distance table in this user's manual for information on optional lens projection distances.
- In order to optimize keystone distortion correction (trapezoidal distortion correction), make note of the [LENS TYPE] shown on the label of the optional lens to be used and select this lens type on the LCD Projector's option menu.
- For more information see the "LENS TYPE" of the "SERVICE" item of the "OPTION Menu" in the LCD Projector user's manual.

NOTE

- The distance of projection may not allow focusing on the peripheral area of the screen. Adjust the focus to keep the center and the peripheral area of the screen balanced.
- This specifications are subject to change without notice.
- The zoom lens may cause some distortion of the image on the screen depending on the zoom position.
- Distortion may appear on screen if the keystone correction (trapezoidal distortion correction) is overly adjusted.
- Keystone correction (trapezoidal distortion correction) may be limited with some lenses.

Model FL-601 (LENS TYPE 2)

- Fixed Zoom, Manual Focus
- Lens Shift Position(4 directional):1:1(Fixed)
- Specifications
 - F-Number : 2.3
 - Focal Length : 13mm
 - Throw Distance Ratio : 1:0.8
 - Screen Sizes : 40~350inch
 - Projection Distance (Aspect ratio 4:3)

Diagonal Screen size [inch(m)]	Projection Distance [inch(m)] ±10%
40(1.0)	24(0.6)
60(1.5)	37(0.9)
70(1.8)	43(1.1)
100(2.5)	63(1.6)
120(3.0)	76(1.9)
150(3.8)	95(2.4)
200(5.1)	128(3.3)
250(6.4)	161(4.1)
300(7.6)	193(4.9)
350(8.9)	226(5.7)

y:Projection Distance[inch]
 x:Diagonal Screen size[inch] ,
 $y=0.0165x-0.0553$

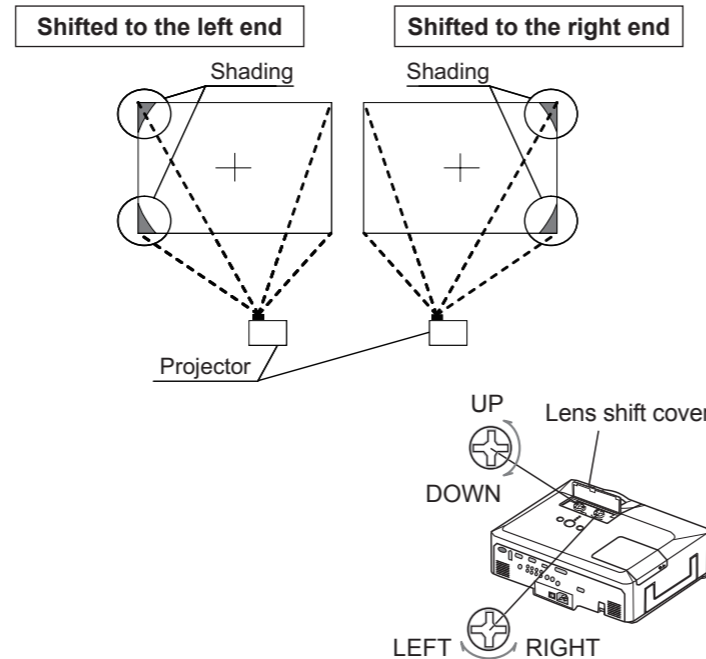
FL-601 Notes on Use

When using this optional lens, adjust the projected image position using the following procedure.

- Adjust the up-down lens shift dial to the DOWN direction (same for ceiling installations).
- Adjust the left-right lens shift dial to the center position.

*Adjusting the left-right lens shift dial to shift the lens to the left end or right end may cause the shading at a corner area (*1) as shown in the illustration below. This lens cannot display the projected image properly in these areas, so adjust the left-right lens shift dial not to have the shading in the projected image.

(*1) The corner area of the projected image may appear dark, or be shaded.



Model SL-602 (LENS TYPE 3)

- Manual Zoom, Manual Focus
- Lens Shift Position(VERTICAL):10:0~1:1
- Specifications
 - F-Number : 1.9~2.6
 - Focal Length : 20~32mm
 - Zoom Ratio : 1.6
 - Throw Distance Ratio : 1:1.2~2.0
 - Screen Sizes : 40~350inch
 - Projection Distance (Aspect ratio 4:3)

Diagonal Screen size [inch(m)]	Projection Distance [inch(m)] ±10%	
	Minimum	Maximum
40(1.0)	38(1.0)	62(1.6)
60(1.5)	58(1.5)	94(2.4)
70(1.8)	68(1.7)	110(2.8)
100(2.5)	98(2.5)	159(4.0)
120(3.0)	118(3.0)	191(4.8)
150(3.8)	148(3.8)	239(6.1)
200(5.1)	199(5.0)	319(8.1)
250(6.4)	249(6.3)	400(10.2)
300(7.6)	299(7.6)	480(12.2)
350(8.9)	349(8.9)	561(14.2)

y:Projection Distance[inch]
 x:Diagonal Screen size[inch] ,
 Min.:y=0.0255x-0.0599
 Max.:y=0.0408x-0.0558

Model LL-603 (LENS TYPE 4)

- Manual Zoom, Manual Focus
- Lens Shift Position(VERTICAL):10:0~1:1
- Specifications
 - F-Number : 2.1~2.9
 - Focal Length : 32~63mm
 - Zoom Ratio : 2.0
 - Throw Distance Ratio : 1:2.0~3.9
 - Screen Sizes : 40~500inch
 - Projection Distance (Aspect ratio 4:3)

Diagonal Screen size [inch(m)]	Projection Distance [inch(m)] ±10%	
	Minimum	Maximum
40(1.0)	60(1.5)	122(3.1)
60(1.5)	93(2.4)	185(4.7)
70(1.8)	109(2.8)	216(5.5)
100(2.5)	157(4.0)	311(7.9)
120(3.0)	190(4.8)	374(9.5)
150(3.8)	238(6.0)	468(11.9)
200(5.1)	319(8.1)	626(15.9)
250(6.4)	400(10.2)	783(19.9)
300(7.6)	480(12.2)	941(23.9)
400(10.2)	642(16.3)	1256(31.9)
500(12.7)	803(20.4)	1571(39.9)

y:Projection Distance[inch]
 x:Diagonal Screen size[inch] ,
 Min.:y=0.0410x-0.1084
 Max.:y=0.0800x-0.1055

Model NL-600 (LENS TYPE 1)

- Manual Zoom, Manual Focus
- Lens Shift Position(VERTICAL):9:1~1:1
- Specifications
 - F-Number : 1.7~2.1
 - Focal Length : 24~29mm
 - Zoom Ratio : 1.2
 - Throw Distance Ratio : 1:1.5~1.8
 - Screen Sizes : 30~350inch
 - Projection Distance (Aspect ratio 4:3)

Diagonal Screen size [inch(m)]	Projection Distance [inch(m)] ±10%	
	Minimum	Maximum
30(0.8)	35(0.9)	42(1.1)
40(1.0)	47(1.2)	57(1.4)
60(1.5)	71(1.8)	86(2.2)
70(1.8)	83(2.1)	100(2.6)
100(2.5)	120(3.0)	144(3.7)
120(3.0)	144(3.7)	174(4.4)
150(3.8)	181(4.6)	217(5.5)
200(5.1)	241(6.1)	291(7.4)
250(6.4)	302(7.7)	364(9.2)
300(7.6)	363(9.2)	437(11.1)
350(8.9)	424(10.8)	510(13.0)

y:Projection Distance[inch]
 x:Diagonal Screen size[inch] ,
 Min.:y=0.0309x-0.0416
 Max.:y=0.0371x-0.0484

Model UL-604 (LENS TYPE 5)

- Manual Zoom, Manual Focus
- Lens Shift Position(VERTICAL):10:0~1:1
- Specifications
 - F-Number : 2.2~3.1
 - Focal Length : 63~117mm
 - Zoom Ratio : 1.9
 - Throw Distance Ratio : 1:3.9~7.4
 - Screen Sizes : 40~500inch
 - Projection Distance (Aspect ratio 4:3)

Diagonal Screen size [inch(m)]	Projection Distance [inch(m)] ±10%	
	Minimum	Maximum
40(1.0)	121(3.1)	235(6.0)
60(1.5)	184(4.7)	355(9.0)
70(1.8)	215(5.5)	415(10.5)
100(2.5)	310(7.9)	595(15.1)
120(3.0)	373(9.5)	716(18.2)
150(3.8)	467(11.9)	896(22.8)
200(5.1)	625(15.9)	1196(30.4)
250(6.4)	782(19.9)	1497(38.0)
300(7.6)	939(23.9)	1797(45.6)
400(10.2)	1254(31.9)	2398(60.9)
500(12.7)	1569(39.9)	2999(76.2)

y:Projection Distance[inch]
 x:Diagonal Screen size[inch] ,
 Min.:y=0.0800x-0.1372
 Max.:y=0.1526x-0.1352

Lens Replacement Manual

This manual describes the procedure for replacing the following lenses.

Lens	Model
Fixed short focal length projection lens	FL-601
Short focal length projection lens	SL-602
Normal projection lens	NL-600
Long focal length projection lens	LL-603
Ultra long focal length projection lens	UL-604

Supplied Accessories

The following accessories are included with each lens.

Lens	Model	Supplied accessories
Fixed short focal length projection lens	FL-601	Fixed short focal length projection lens, louver, front cover, lens cap, lens blinder, strap, lens replacement manual, option lens user's manual
Short focal length projection lens	SL-602	Short focal length projection lens, louver, front cover, lens cap, lens blinder, strap, lens replacement manual, option lens user's manual
Normal projection lens	NL-600	Normal projection lens, lens replacement manual, option lens user's manual
Long focal length projection lens	LL-603	Long focal length projection lens, front cover, lens cap, lens blinder, strap, lens replacement manual, option lens user's manual
Ultra long focal length projection lens	UL-604	Ultra long focal length projection lens, front cover, lens cap, lens blinder, strap, lens replacement manual, option lens user's manual

Important Safety Instructions (Always follow these instructions.)

Please read this section on important safety instructions before replacing the projector lens.

To prevent accidents during lens replacement and ensure product safety after replacing the lens, be sure to follow the safety instructions described herein.

- These symbols indicate actions that can result in injury or damage if these operations are not followed correctly.

	This symbol indicates that there is a possibility of serious injury or even death if the operation is not followed correctly.
	This symbol indicates that there is a possibility of physical injury or damage to equipment if the operation is not followed correctly.

- These symbols indicate the types of precautions that must be followed.

	This symbol indicates that caution must be taken.		This symbol warns of possible high heat.
	This symbol warns of possible electrical shock.		This symbol indicates an action that must not be performed.

Important Operation Instructions

Warning

- Before replacing the projector lens, be sure to read this manual and the operation manual of the LCD projector for use with this lens.**
To ensure safe operations and the continued safety of this product, be sure to follow all of the safety instructions written in this manual and the operation manual of the LCD projector.
- Do not place the lens in a location subject to direct sunlight or other strong lighting or near heat-radiating equipment.**
This can cause a fire due to the properties of the lens. It can also cause injury or damage to the lens.
- Do not subject the lens to shocks.**
This can cause injury or damage to the lens.
- Be sure to unplug the LCD projector before replacing the lens.**
The inside of the LCD projector has areas of high voltage which can cause electrical shock.
- Do not touch the fan of the LCD projector during operation.**
This can cause injury.

- Before replacing the lens, be sure to turn off and unplug the LCD projector, and allow at least 45 minutes for the projector to fully cool.**
Before replacing the lens, be sure to turn off and unplug the LCD projector, and allow at least 45 minutes for the projector to fully cool.

- When removing the louver, first shut off the projector and wait approximately ten minutes.**
Removing while the cooling plate is still hot may result in burns.

- When attaching, take care so that dust not enter inside.**
Continued use with dust inside may result in fire or electric shock.

Caution

- When replacing the lens, do not touch the LCD panels or polarizing plates of the LCD projector or subject them to shocks.**
This can cause damage to the equipment. It can also cause a misalignment of the optical adjustment and, therefore, require readjustments.

- When replacing the lens, be careful not to damage the connectors or wires inside the LCD projector.**
This can cause damage to the equipment. Be careful not to pull on the connectors or wires or get them caught in the circuit board or case.

- After replacing the lens, part of the lens and louver (Only for models FL-601 and SL-602) may stick out from the LCD projector.**
Transporting the LCD projector in the original projector shipping box can cause damage to the equipment.

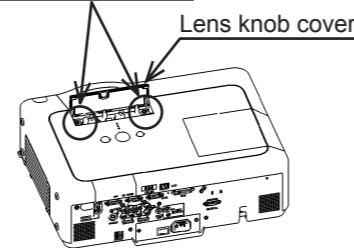
Follow these Instructions

- Do not touch the lens directly with your hands or fingers.**
This can dirty the lens and cause deterioration in image quality.
- The lens is a precision optical device. Carefully handle the lens without subjecting it to shocks or vibrations.**
- When resting the lens on a surface, place the lens face down on a soft cloth.**

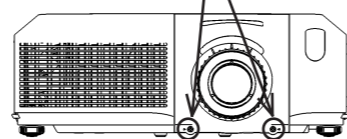
Replacing the Lens

1.Remove the front cover.

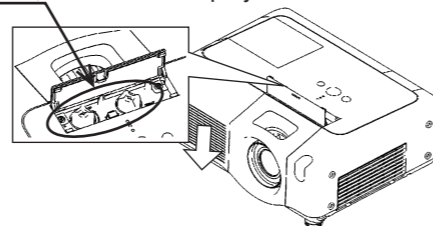
- Remove the 2 screws marked (triangle) from the inside of the lens knob cover.



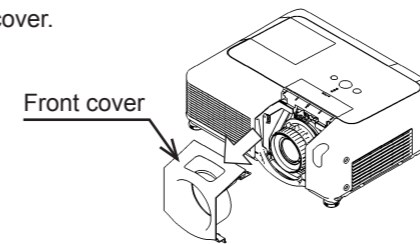
- Remove the 2 screws marked (triangle) from the front of the projector.



- Turn the lens shift dial, and lower the projection lens to the lowest position.

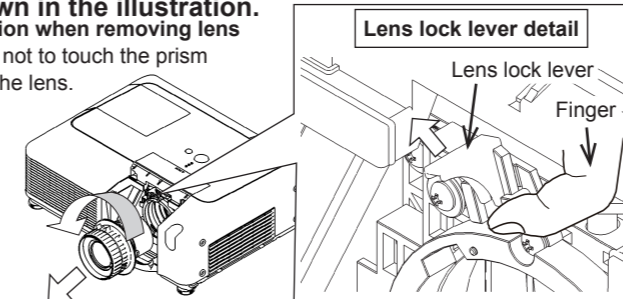


- Remove the front cover.



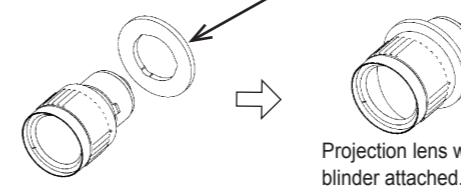
- Insert your finger from the side, turn the lens to the left and remove while pulling up on the lens lock lever, as shown in the illustration.

※ Caution when removing lens
Be sure not to touch the prism behind the lens.

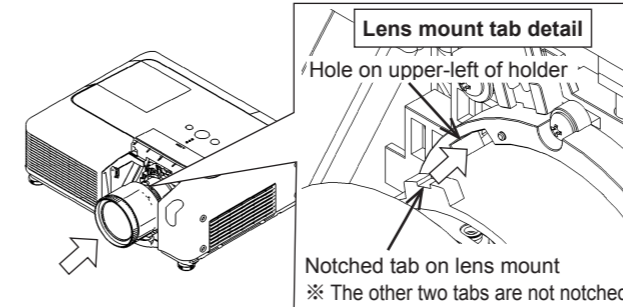


- Attach the replacement projection lens.

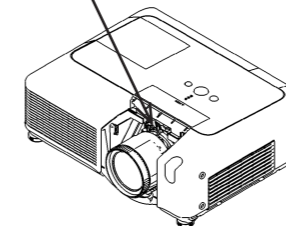
- Attach the lens blinder to the rear of the projection lens while holding open the lens blinder hole.



- Line up the notched tab on the lens mount with the hole on the upper-left part of the holder, and insert the lens.

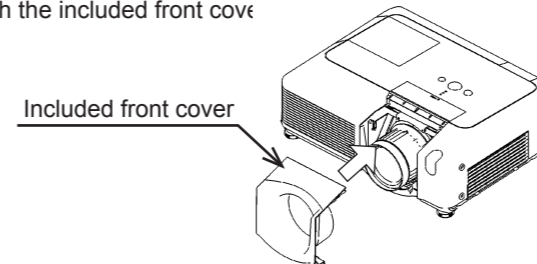


- Turn the lens to the right until it "clicks" into place to ensure that the lens is locked in place.

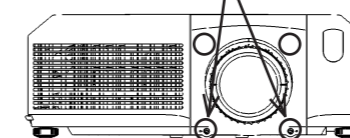


- Reattach the front cover to complete lens replacement.

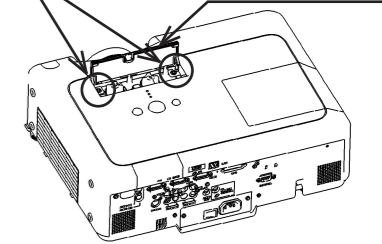
- Reattach the included front cover



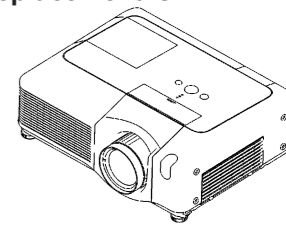
- Re-fasten the 2 screws marked (triangle) that were removed in step 1. (2).



- Re-fasten the 2 screws marked (triangle) that were removed in step 1. (1).



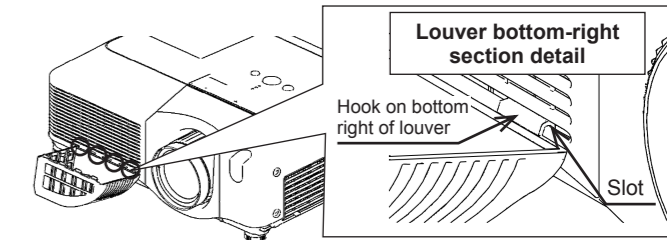
- This is the projector after lens replacement is completed.



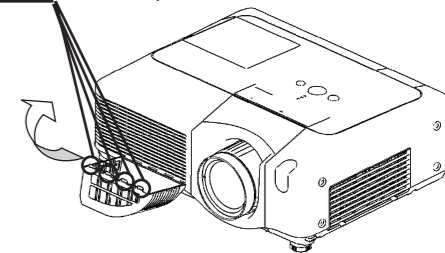
- Attach the louver. (Only for models FL-601 and SL-602)

※ This attachment prevents screen "flicker" created by projector heat exhaust when using a lens with a shorter focus than standard lenses, and must be used with such lenses.

- Attach the 4 hooks on the bottom of the louver to the slots on the projector. When attaching, attach the bottom-right hook on the louver to the bottom-right slot closest to the lens on the projector.

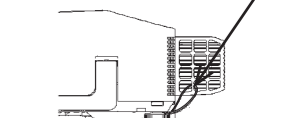
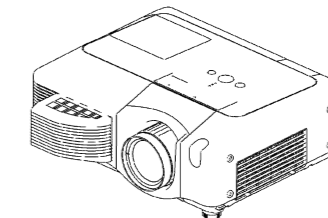


- Raise the top of the louver towards the top of the projector and attach the 4 hooks on the top of the louver to the slots on the projector.



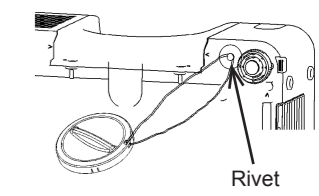
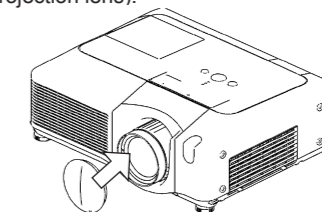
- This is the projector with the louver attached. (Only models FL-601 and SL-602)

※ If the projector is installed in a high location, use the strap to attach the louver to the adjustment foot's axle to prevent it from falling.



- Use the included lens cap to protect the lens surface when the projector is not in use.

※ Use the lens cap attached to the LCD projector for model NL-600 (standard projection lens).



※ Attach the lens cap by passing the strap through the loop on the lens cap and the included rivet. If unnecessary, remove the currently attached lens cap for standard projection lenses.