

**Canon**

**BROADCAST TELEVISION LENS**

**HJ40x LENSES** DIGITAL DRIVE **DD**

**HJ40x10B 10-400mm 1 : 2.0**

**HJ40x14B 14-560mm 1 : 2.8**

**OPERATION MANUAL**

Read this operation manual before using the product.

Keep the manual safe so that it can be referenced when it is needed.

## FCC REGULATIONS

**Note :** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference, when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the operation manual, may cause harmful interference to radio communications. Operation to this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

- Use of shielded cable is required to comply with Class A limits in Subpart B of Part 15 of the FCC rules.

Do not make any changes or modifications to the equipment unless otherwise specified in the manual. If such changes or modifications should be made, you could be required to stop operation of the equipment.

## Canadian Radio Interference Regulations

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur brouilleur du Canada.



We, Canon Inc., in Japan and Canon Europa N. V., in The Netherlands, confirm that the **HJ40x10B**, **HJ40x14B** series zoom lens is conformity with the essential requirements of EC Directive (s)

89/336/EEC, and 93/68/EEC

by applying the following standards

EN55103-1, and EN55103-2

Note:

- Applicable Electromagnetic Environment:
  - E1 (Residential area)
  - E2 (Commercial and light industrial area)
  - E3 (Urban outdoors area)
- Use of shielded cable is required to comply with limits specified by above standards.

## FOREWORD

Thank you for purchasing the Canon TV zoom lens HJ40x.

This operation manual consists of the operation manual for the lens and Japanese/English technical documents.

|                     |   |    |
|---------------------|---|----|
| Operation manual    | : Functions, operation of the lens in the standard configuration and notes on use ..... | 3  |
| Technical documents | : External views and general circuit diagrams .....                                     | 51 |

This operation manual is applicable for the following lens models:

HJ40x 10B IASD-V

HJ40x 14B IASD-V

## Overview

The HJ40x series lens is an HDTV-compatible super-telescopic zoom lens that has been designed to meet customer requirements for higher magnification and performance in a portable lens, where maneuverability is paramount. To maximize the full power of this higher magnification and performance, the highly-popular image stabilizer in the box-type super-telescopic lens DIGI SUPER 86xs has been reduced in size to fit portable lenses and is installed as standard with this lens. The result is a lens providing high-quality, vivid images with no blurring even at the telescopic end.



# CONTENTS



|   |    |
|---|----|
| GENERAL SAFETY INFORMATION.....                                       | 4  |
| § 1. STANDARD COMPOSITION OF THE LENS .....                           | 9  |
| § 2. NOMENCLATURE.....  | 10 |
| § 3. MOUNTING AND CONNECTIONS   |    |
| 3-1. MOUNTING THE SUPPORTER, LENS, AND TRIPOD .....                   | 12 |
| 3-2. MOUNTING THE HOOD ON THE LENS .....                              | 16 |
| 3-3. MOUNTING AND CONNECTING THE IMAGE STABILIZER (IS) CONTROLLER.... | 17 |
| § 4. PREPARATION  |    |
| 4-1. FLANGE BACK ADJUSTMENT OF THE LENS .....                         | 19 |
| 4-2. IRIS GAIN ADJUSTMENT .....                                       | 20 |
| § 5. OPERATION  |    |
| 5-1. ZOOM OPERATION.....  | 21 |
| 5-2. FOCUS OPERATION .....  | 32 |
| 5-3. IRIS OPERATION .....   | 33 |
| 5-4. IMAGE STABILIZER OPERATION .....                                 | 35 |
| 5-5. EXTENDER OPERATION .....   | 40 |
| 5-6. MACRO OPERATION .....  | 41 |
| 5-7. VTR SWITCH AND RET SWITCH OPERATIONS .....                       | 43 |
| 5-8. DIP SWITCH SETTINGS .....  | 44 |
| 5-9. ZOOM MODE ADJUSTMENT .....                                       | 46 |
| § 6. PRODUCT SPECIFICATIONS .....                                     | 47 |
| § 7. OPTIONAL ACCESSORIES (SOLD SEPARATELY)                           |    |
| 7-1. AVAILABLE ACCESSORIES.....                                       | 49 |
| 7-2. SYSTEM CONFIGURATION FOR ZOOM AND FOCUS OPERATIONS .....         | 50 |



# GENERAL SAFETY INFORMATION

The safety warnings and cautions provided on the product or in this operation manual must be observed. Failure to observe warnings and cautions provided to guard against hazards may result in injury or accident.

Read this operation manual carefully to familiarize yourself with its contents and ensure that you can operate the product properly.

Also, store this manual in a safe place where it can easily be referenced whenever required.

This operation manual uses the following symbols and terms to identify hazards to protect you and others by aiming to prevent the occurrence of accidents.

|  |   |
|--|---|
|  <b>WARNING</b>  | Indicates hazardous situations which, if not heeded, may result in death or serious injury to you or other persons.   |
|  <b>CAUTION</b> | Indicates hazardous situations which, if not heeded, may result in minor or moderate injury to you or other persons, or damages to your property.                                 |
| <b>※ (NOTE)</b>  | Emphasizes essential information which, if not heeded, may render the product unworkable or cause it to function improperly.<br>Also, provides helpful information for operation. |

## HANDLING THE PRODUCT

### WARNING

1. Never allow water to enter or be spilled on the product. Immediately stop using the product if water enters the product. Otherwise, a fire or electric shock hazard may result.
2. Do not stare at the sun or other source of high-intensity light through the lens. Doing so may result in injury to your eyes.

### CAUTION

1. Do not drop the lens when transporting it or when attaching or detaching it to or from the camera head. The lens may fall, possibly causing injury.
2. Make sure all mountings are tightened securely. If any of these mountings becomes loose, the lens may fall, possibly causing injury.
3. Always grasp the connector itself when connecting or disconnecting the lens cable. Pulling on the cable portion may result in damage to the cable, such as exposure or breakage of the conductors. Power leaking from a damaged cable may present a fire or electric shock hazard.
4. Inspect all mountings periodically (about every 6 months to 1 year) to make sure they are securely tightened, and tighten any loose portions. Otherwise, the lens may fall, possibly causing injury.
5. If it becomes necessary to repair this product, or to perform any operations or adjustments not mentioned in this operation manual, contact Canon's representative or the dealer who originally supplied the lens.

### ※ (NOTE)

1. Protect the lens from strong impacts or shocks. Striking or dropping the lens may result in a malfunction.
2. This lens is not completely waterproof, so avoid exposing it directly to rain or snow. When the lens must be used in rain or snow, provisions should be made to prevent the lens from getting wet.
3. Under dusty conditions, the lens should be mounted or dismounted with a cover placed over the mount so as to prevent dust from entering into the interior.
4. Do not bring the lens, kept in a very cold ambient temperature, into a warm room, because the lens may fog on the inside or condensation may occur. In these cases, the lens cannot be used until these problems clear. If the lens must be used under such conditions, countermeasures are recommended. (For instance, before bringing the lens into a warm room, put it in a vinyl bag with an effective desiccant, and then bring it into the room. After the temperature acclimatizes to the same level as the room temperature, take out the lens out of the vinyl bag.)
5. If the lens is to be used in adverse environments, such as in a chemical laden atmosphere, consult with Canon's representative beforehand.

## DEALING WITH ABNORMALITIES

### WARNING

1. Should any of the abnormalities described below occur, immediately unplug the lens cable from the camera, and then contact Canon's representative or the dealer from whom you purchased the lens.
  - Smoke, abnormal smell, or abnormal noise.
  - Entry of foreign objects (including metals and liquids) inside the lens.

## MAINTENANCE AND INSPECTION

### WARNING

1. Unplug the lens cable and remove the lens from the camera, before attempting to clean the lens.  
Never use flammable substances such as benzene or thinner for cleaning, as this may present a serious fire or electric shock hazard.

### ※ (NOTE)

1. Dust or fingerprints on the lens surface.

Gently blow or brush away dust or dirt on the lens surface using a lens blower or a soft lens brush. Remove any fingerprints or other stains with a clean cotton cloth moistened with commercially available lens cleaning fluid or lens cleaning paper.

Gently swirl the cloth or cleaning paper over the lens surface, starting at the center area of the lens, and then circling gradually outward until whole lens surface has been covered.

Be careful not to rub dust across the lens, as the lens surface may be scratched.

2. Periodic inspection

A periodic inspection about once a year is recommended.

The inspection and maintenance interval depends on the operating conditions, the frequency of use, and the environment. If required, overhaul the lens.

## STORAGE

### CAUTION

1. Always attach the lens cap (or hood cap) and the dust cap before storing the lens.

Storing the lens without these caps attached may present a fire hazard. (Very bright light, such as sunlight, may be focused by the lens and cause a fire.)

### ※ (NOTE)

1. Moisture inside the lens

If the lens becomes damp because of use in fog, mist or drizzle, wipe off the moisture with a soft dry cloth and seal the lens together with an efficient desiccant in a vinyl bag to remove moisture which has entered into the interior.



## TO THE CUSTOMER

1. Canon shall bear no responsibility for damage resulting from improper operation of this product by the customer.
2. Canon shall make no guarantees about the product quality, functions, or operation manual and its marketability and suitability for the customer's purpose.  
Moreover, Canon shall bear no responsibility for any damage, direct or incidental, that results from usage for the customer's purpose.
3. Canon shall make no guarantees about the results obtained using this product or the operation manual.
4. The product specifications, configuration, and appearance are subject to change without prior notice.
5. Repairs or modifications of this product, or adjustments not mentioned in this operation manual require special service manuals and training in some cases. For further information on these adjustments, repairs or modifications, contact your Canon dealer or your Canon sales representative.
6. Note that Canon may be unable to undertake servicing or repair of a product if it is modified without consulting Canon or your Canon sales representative.

Contact :

Broadcast Equipment Group

Canon Inc.

23-10 Kiyohara Kogyo Danchi,

Utsunomiya-shi, Tochigi-ken, 321-3298, Japan

TEL: 81-(028)-667-5711

FAX: 81-(028)-667-8672

---

©2004 Canon Inc.

All right reserved. No part of this operation manual may be reproduced or copied in any form or by any means without the written permission of Canon Inc.

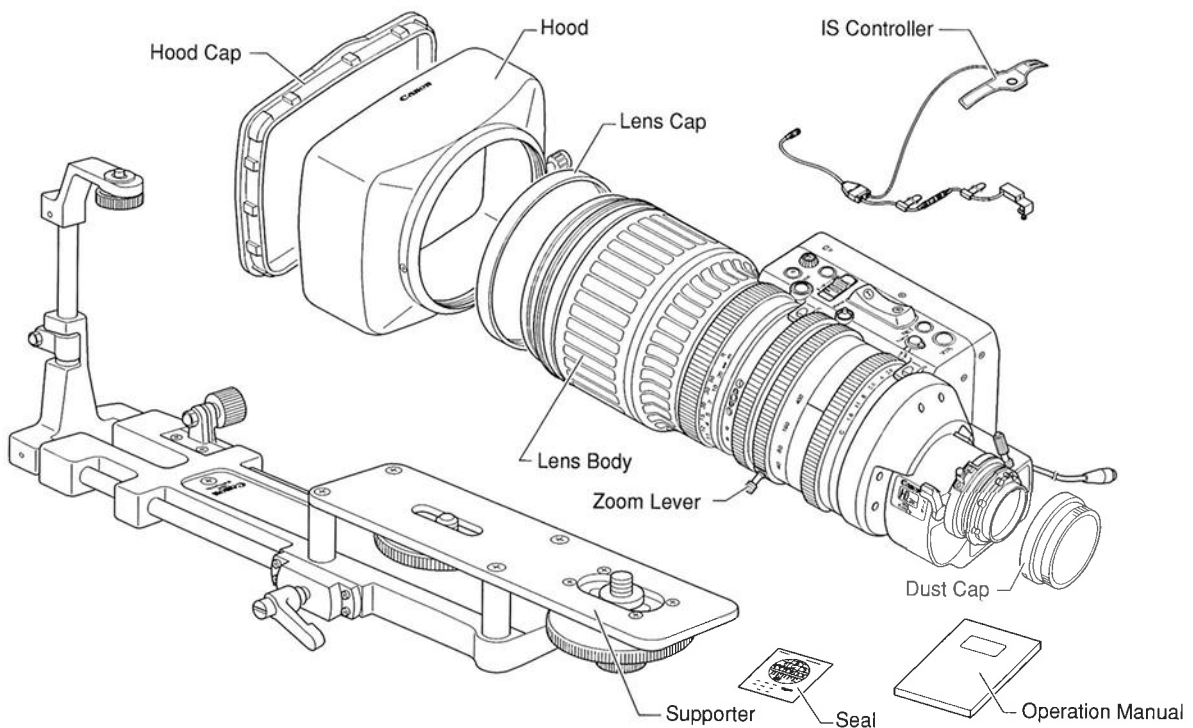


## § 1. STANDARD COMPOSITION OF THE LENS

Make sure all of the following items are included in the packing box.

(If you find any item missing, please contact the dealer from whom you purchased this product.)

| UNIT                                    | Q'TY |
|---|------|
| LENS BODY .....                         | 1    |
| HOOD CAP .....                          | 1    |
| HOOD .....                              | 1    |
| LENS CAP .....                          | 1    |
| DUST CAP .....                          | 1    |
| ZOOM LEVER (mounted on lens body) ..... | 1    |
| SUPPORTER .....                         | 1    |
| IS CONTROLLER .....                     | 1    |
| OPERATION MANUAL .....                  | 1    |
| SEAL .....                              | 1    |



(The above drawing shows the HJ40x 10B IASD-V; shapes of other models differ slightly from this sketch.)

### ※ (NOTE): Storage environment

Check the following points, and make sure the place where the lens is stored satisfies the following conditions.

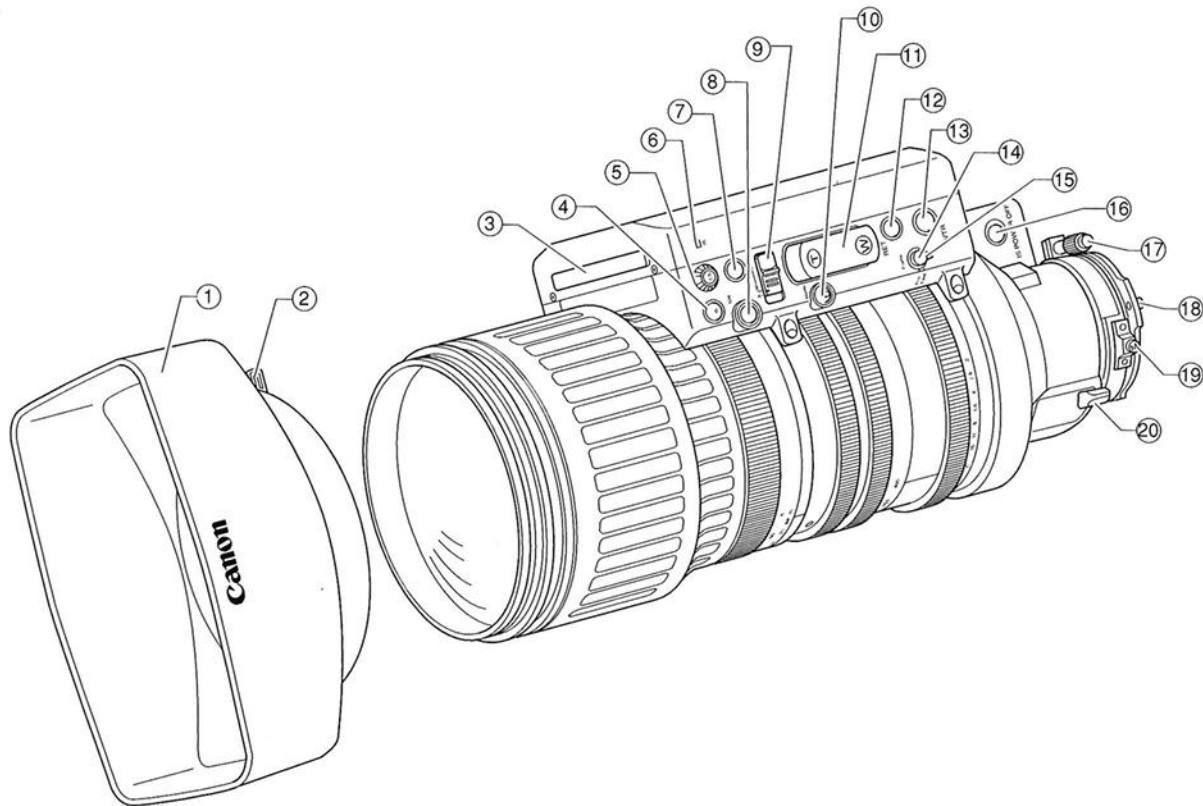
1) Store the lens only under the following ambient conditions.

- Ambient temperature : -30°C to +60°C
- Ambient humidity : up to 60% RH (no condensation)

2) Do not suddenly move the lens from storage at a very cold ambient temperature into a warm room. Doing so may cause the lens to fog on the inside or may cause condensation.

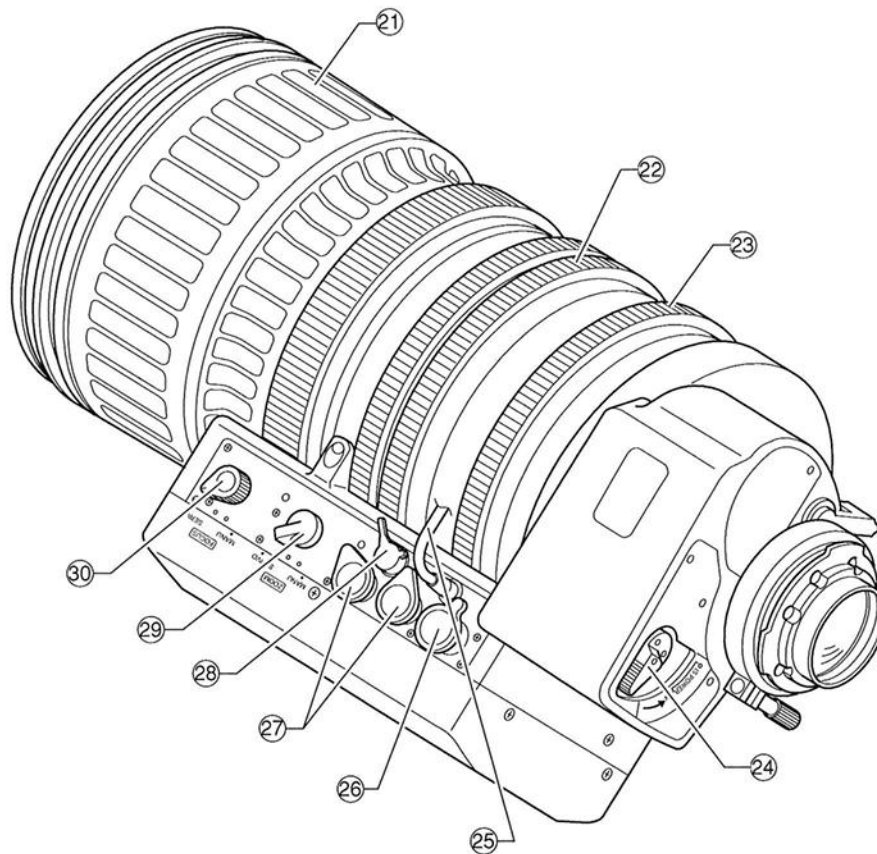
3) Do not subject the lens to strong physical shocks or vibration.

## § 2. NOMENCLATURE



(This drawing shows the model HJ40x 10B IASD-V)

- ① **Hood**  
This hood is used to cut or reduce ghosting / flaring.
- ② **Hood Lock Knob**  
Loosen or tighten this knob to remove or fix the lens hood on the lens.
- ③ **DIP Switches**  
DIP switches for various settings.
- ④ **IS ON/OFF Switch**  
Use this switch to turn image stabilizer (IS) operation on and off.
- ⑤ **Max. Zoom Speed Volume**  
The maximum zoom speed available when pressing the zoom seesaw switch all the way down can be adjusted by turning this volume.
- ⑥ **IS Operating Status Indicator LED**  
This LED indicates the operating or standby status of the image stabilizer and the status of power supplied to the image stabilizer circuitry.
- ⑦ **Momentary Auto-Iris Switch (Momentary Automatic Iris Switch)**  
While pressing this switch, momentary automatic iris operation takes effect.
- ⑧ **Shtl Button (Shuttle-Shot Button)**  
This switch is used for the shuttle-shot function.
- ⑨ **Iris Operation Change-over Switch**  
Slide this switch to change from manual to servo iris operation or vice versa.
- ⑩ **Memo Button (Memory Button)**  
Memorize the zoom position and/or zoom speed by pressing this button together with one of the other buttons (Shtl, Frame, or Zoom seesaw switch).
- ⑪ **Zoom Seesaw Switch**  
Use this switch for servo zoom operation.  
The zoom speed changes according to how far down the switch is pressed.
- ⑫ **RET Switch (Return Video Switch)**  
While pressing this switch, the external video sent to the camera can be seen on the viewfinder.
- ⑬ **VTR Switch**  
Press this switch to start or stop the VTR.
- ⑭ **Frame Button (Framing Preset Button)**  
Press this button to zoom to a preset zoom position.
- ⑮ **Speed Mode Selector Lever**  
Use this lever to select the speed setting for the framing preset function.
- ⑯ **IS Power Off Switch**  
Use this switch to turn off the power supply to the image stabilizer.



- ①7 F.B. Adjusting Lock Screw**  
Turn this screw to tighten or loosen the F.B. adjusting ring.
- ①8 Positioning Pin**  
Determines the mounting position of the lens.
- ①9 Macro Button**  
Use this button to shoot an object which is closer than the M.O.D.
- ②0 Extender Lever**  
The built-in 2x extender can be moved in and out by turning this lever.
- ②1 Focus Ring**  
Turn this ring to focus on the object manually.
- ②2 Zoom Ring**  
Use the zoom ring to operate the zoom manually.
- ②3 Iris Ring**  
Turn this ring to operate the iris manually.
- ②4 IS Power On Lever**  
Use this lever to release the mechanical lock on the image stabilizer.
- ②5 Lens Cable**  
Power and signals are sent to the lens from the camera head through this cable.
- ②6 Connector for Remote Zoom Control (8pin)**  
Plug in the 8 pin connector from the remote servo zoom accessories.
- ②7 Remote Zoom & Remote Focus Control Connectors (20pin)**  
Plug in the 20 pin connector from the zoom or the focus control accessories.
- ②8 IS Remote Connector**  
This connects the Image Stabilizer (IS) controller.
- ②9 Zoom Operation Change-over Knob**  
Use this knob to change from manual to servo zoom operation or vice versa.
- ③0 Focus Operation Change-over Knob**  
Use this knob to change from manual to servo focus operation or vice versa.