No. TD05-28-1016

Date Mar.17,2005

INSTRUCTION MANUAL

FOR

Fiberoptic Rotary Joint

Optical Component Engineering
Information Systems Group

Hitachi Cable, Ltd.

1. General

This instruction manual describes install procedure of multi-port Fiberoptic Rotary Joint (FRJ).

2. Construction

Construction of Fiberoptic Rotary Joint and connecting rod (accessory) are shown in Drawings listed in Table 1.

Table 1. List of Construction Drawings

Type (Port Number)	Drawing No.	
	Main body	Connecting rod
2 ports	EH3784023	EH4785826
4 ports	EH3784024	
6 ports	EH3784025	
8 ports	EH3784026	
10 ports	EH3803916	
12 ports	EH3784027	
18 ports	EH3815049	

3. Install procedure

Example of FORJ and optical signal transmission cable installation is shown in figure 1.

(a) Fix connecting rod to rotator shaft.

(b) Fix FORJ to fixing hardware with four bolts (M6).
[Note] Head of connecting rod shall be seated between guide-pins of FORJ.

(c) Connect optical connectors to FORJ of Rotator side and Stator side.
[Note] Before connecting optical connectors, ferrules shall be cleaned up with ethyl alcohol or appropriate kit.
[Note] In case optical connector is FC, rotation prevention key in connectors shall meet optical adapter groove. See attached figure 2.

For details of install procedure, please refer to drawings listed in Table.2.

Table 2. List of Installed Position Drawings

Type (Port Number)	Drawing No.
2, 4 ports	EH4785827
6, 8, 10, 12 ports	EH4785828
18 ports	EH4803786

4. Handling

Below items shall be paid attention to carefully, because of the precision optical instrument. (See attached DRG. EH3786547.)

(a) Rotating axis
Keep the rotation axis to horizontally or vertically.
[Note] In case axis of rotating is vertical, fix optical fiber cord in certain interval (approximately 5 to 10cm) so as to release the load of optical fiber on connectors.

(b) Install environment

FORJ is delicate against rain drops and dust. They shall be stored in rain drops, and dust-proof case.

(c) Space for the optical fibers and connectors

Take a space for attach and/or detach of optical fibers and connectors. Required space is listed in Table 3.

Table 3. Required Space of FORJ to Shaft

Type (Port Number)	Required Space	Drawing No.
2, 4 ports	125 +/- 1mm	EH4785827
6, 8, 10, 12 ports	132 +/- 1mm	EH4785828
18 ports	132 +/- 1mm	EH4803786

(d) Do not shock and fall FORJ.

(e) Do not load axis of rotating with excessive force

Do not load axis of rotating with excessive force because optical system that is consist of prism and lens is aligned delicately.

(f) Fixing accuracy for connecting rod

Fixing accuracy for connecting rod shall be kept listed in Table 4 from axis of rotation. Connecting rod shall be screwed tightly.

Table 4. Fixing Accuracy for Connecting Rod from axis of rotation

Type (Port Number)	Required Accuracy	Drawing No.
2, 4 ports	36 +/- 2.5mm	EH4785827
6, 8, 10, 12 ports	47 +/- 2.5mm	EH4785828
18 ports	47 +/- 2.5mm	EH4803786

5. Optical fiber cord with connectors

Handling manual for optical fiber cord with connectors is shown in figure 3.
Optical connectors polishing shall be **Flat**.

6. Others

All disputes arising out of or in connection with this instruction manual, including any question shall be resolved between Hitachi Cable, Ltd. and purchaser.

- End of document –

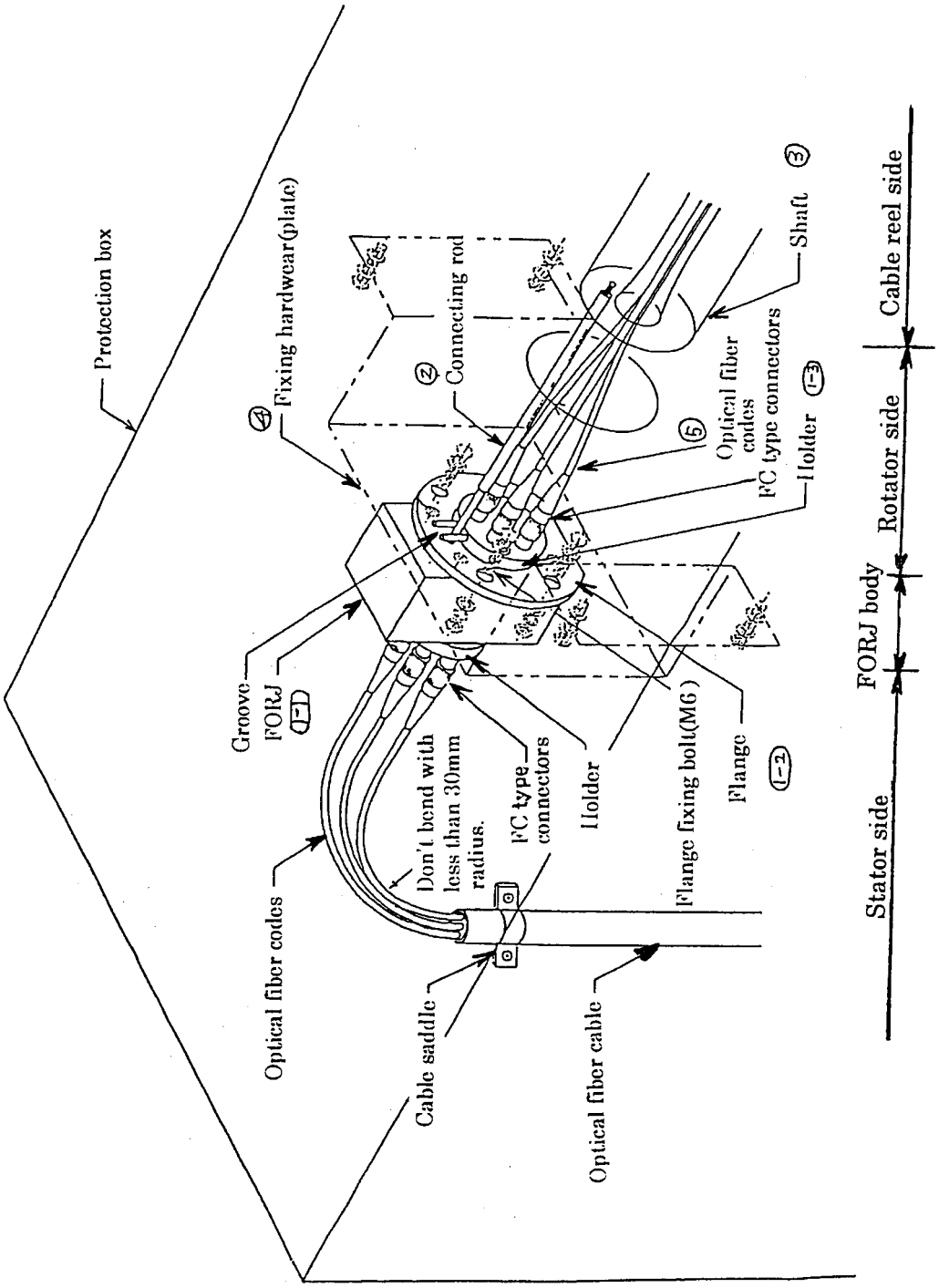


Fig.1 Example of FORJ and optical signal transmission cable installation

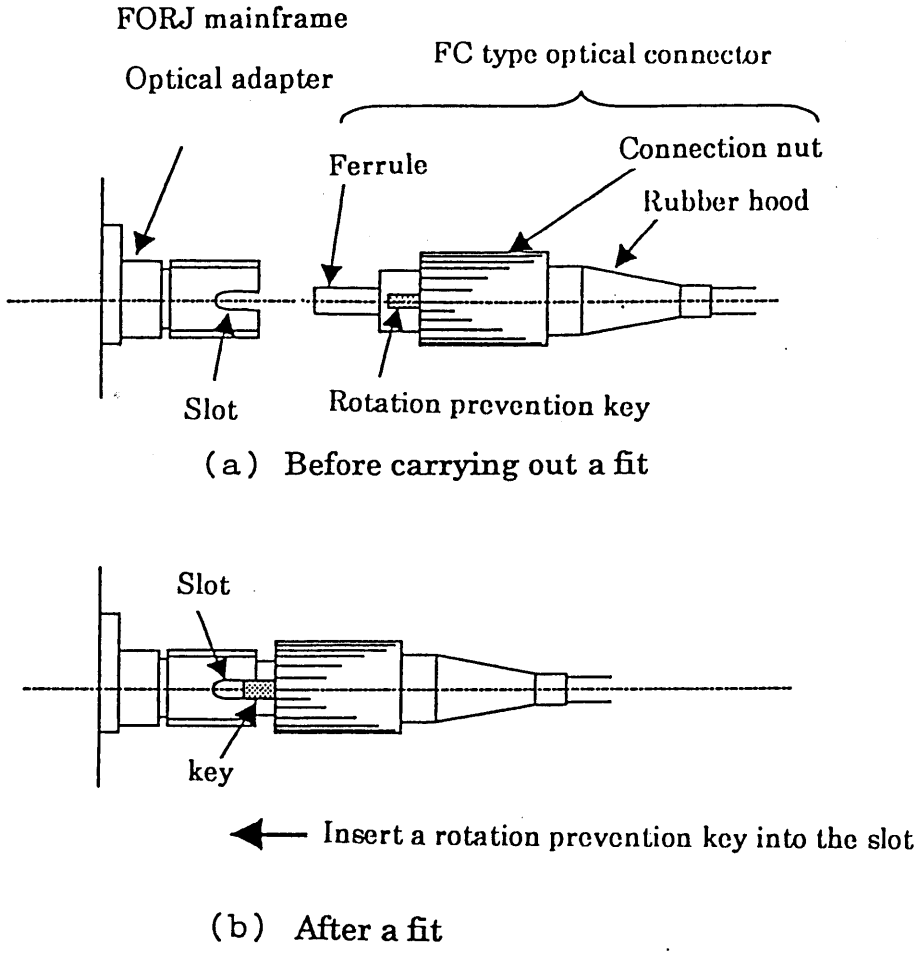
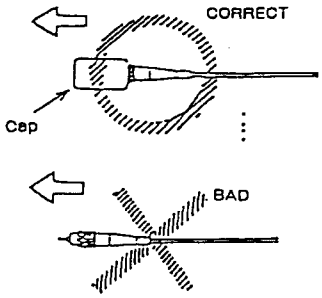
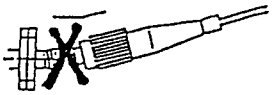


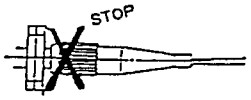
Fig.2 The connection technique of optical adapter and FC type connector



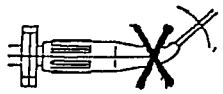
Handle a connector with a cap. When you find dusts on the endface of connector, the end face should be cleanded out with ethanol soaked gauze.



☆ Don't insert obliquely.
(Insert straight.)

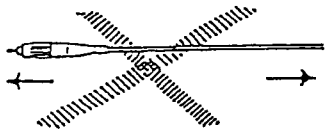


☆ Don't leave the locknut loose.
(Screw up.)



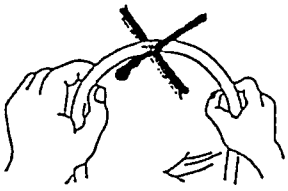
☆ Don't bend at the neck.

☆ Don't twist.



☆ Don't pull roughly.
Allowable tensile strength:
Less than 2.5kg(24.5N).

☆ Don't kink.

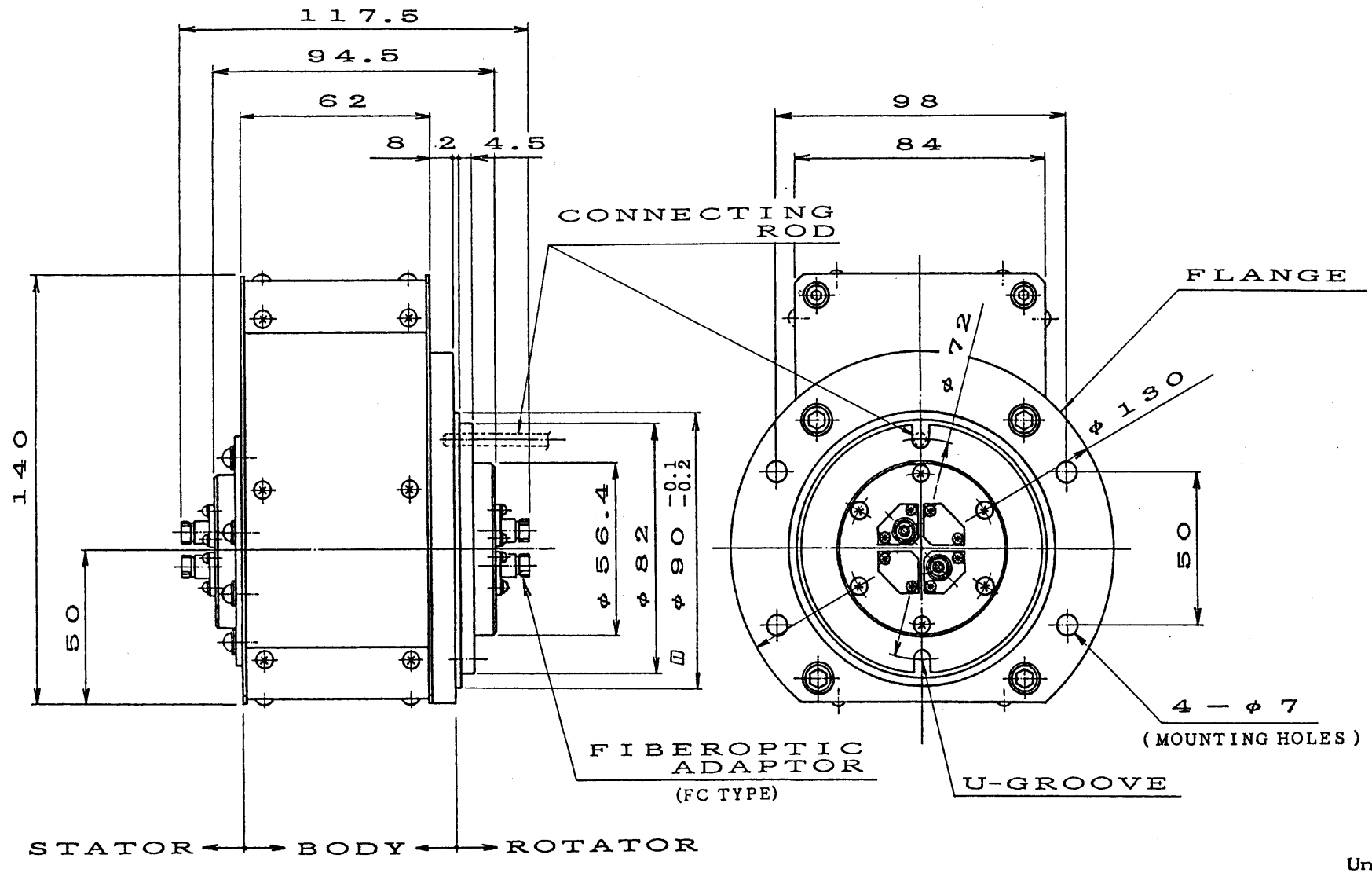


☆ Don't bend with less than
30mm radius.

Fig.3 Handling manual for optical fiber cord with connectors

EH3784023

MARK	REVISION	DATE	NAME	CHKD.
L	CHANGED DIMENSION	18. FEB. '93	Nakano	T. Yamada



Unit: mm

DWN.	K. Nakano	16 Jul. '90	TITLE	MULTIPORT FIBEROPTIC ROTARY JOINT (HRJ-2G7-S)
CHKD.	H. Kuruziyama	REGD.	PROJ.	
APPD.	Y. Koyama	REGD 18. JUL 1990		
SCALE	N.T.S			

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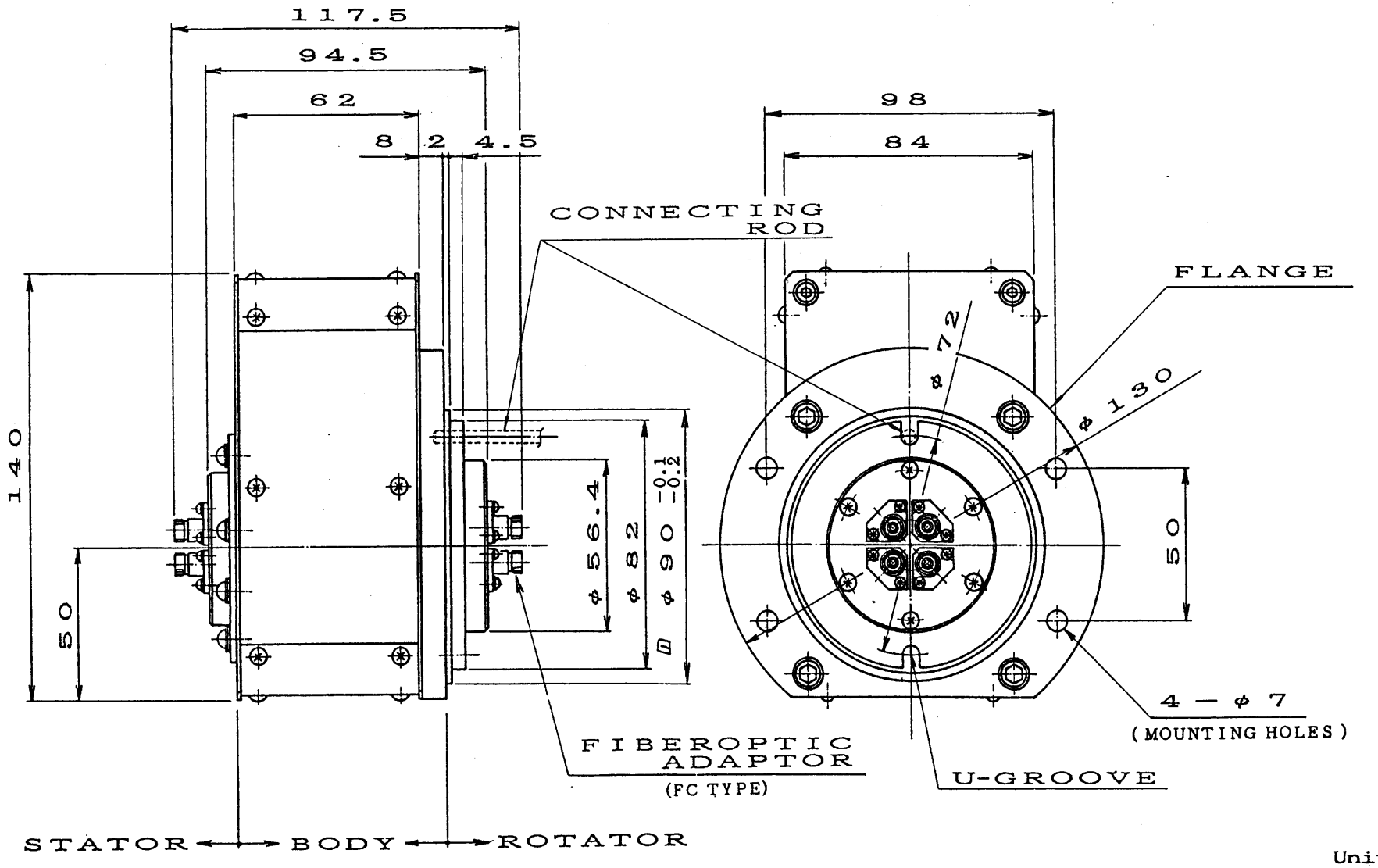
EH3784023 REV.

EH 3784024

M	REVISION	DATE	NAME	CHKD.
L	CHANGED DIMENSION	18. FEB. '93	Nakano	T. Yamada



Unit: mm

DWN.	K. Nakano	16·Jul·'90	TITLE
CHKD.	H. Kumagiyama	REGD.	PROJ.
APPD.	Y. Koyama	RECD 18 JUL 1990	
SCALE	N.T.S		

MULTIPORT FIBEROPTIC ROTARY JOINT (HRJ-4G7-S)

HITACHI
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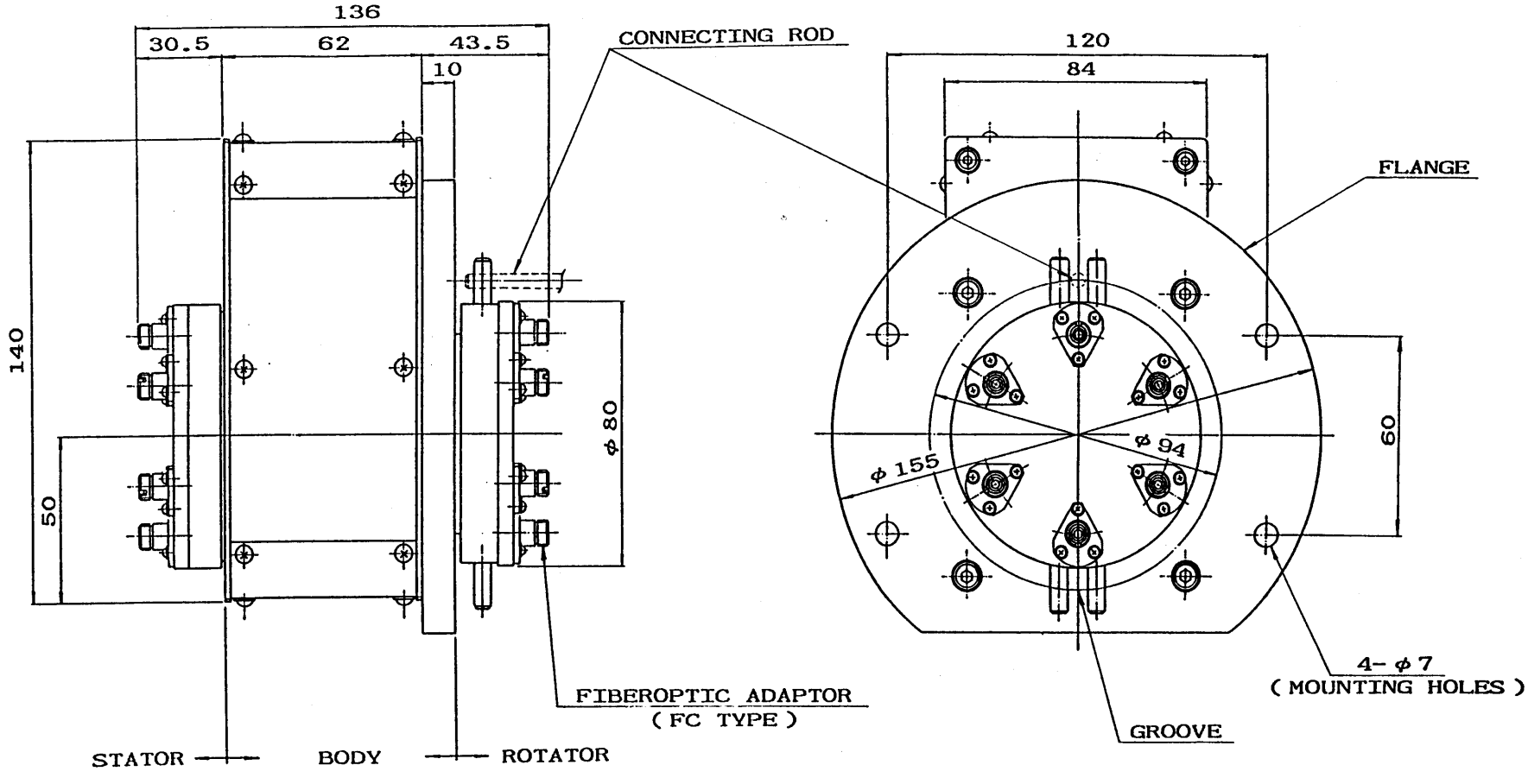
EH3784024

REV.

EH 3784025

RK	REVISION	DATE	NAME	CHKD.
D	A kind of RJ add a postscript.	Aug. 10. '99	H. Kuruyama	T. Takami



Unit: mm

DWN.	K. Nakano	16 · Jul · '99		TITLE
CHKD.	H. Isekawa / H. Kuruyama	REGD.	PROJ.	MULTIPORT FIBEROPTIC ROTARY JOINT
APPD.	Y. Koyama	18 JUL 1999		(HRJ-6G7-S, L) (HRJ-6R7-S, L)
SCALE	N.T.S			

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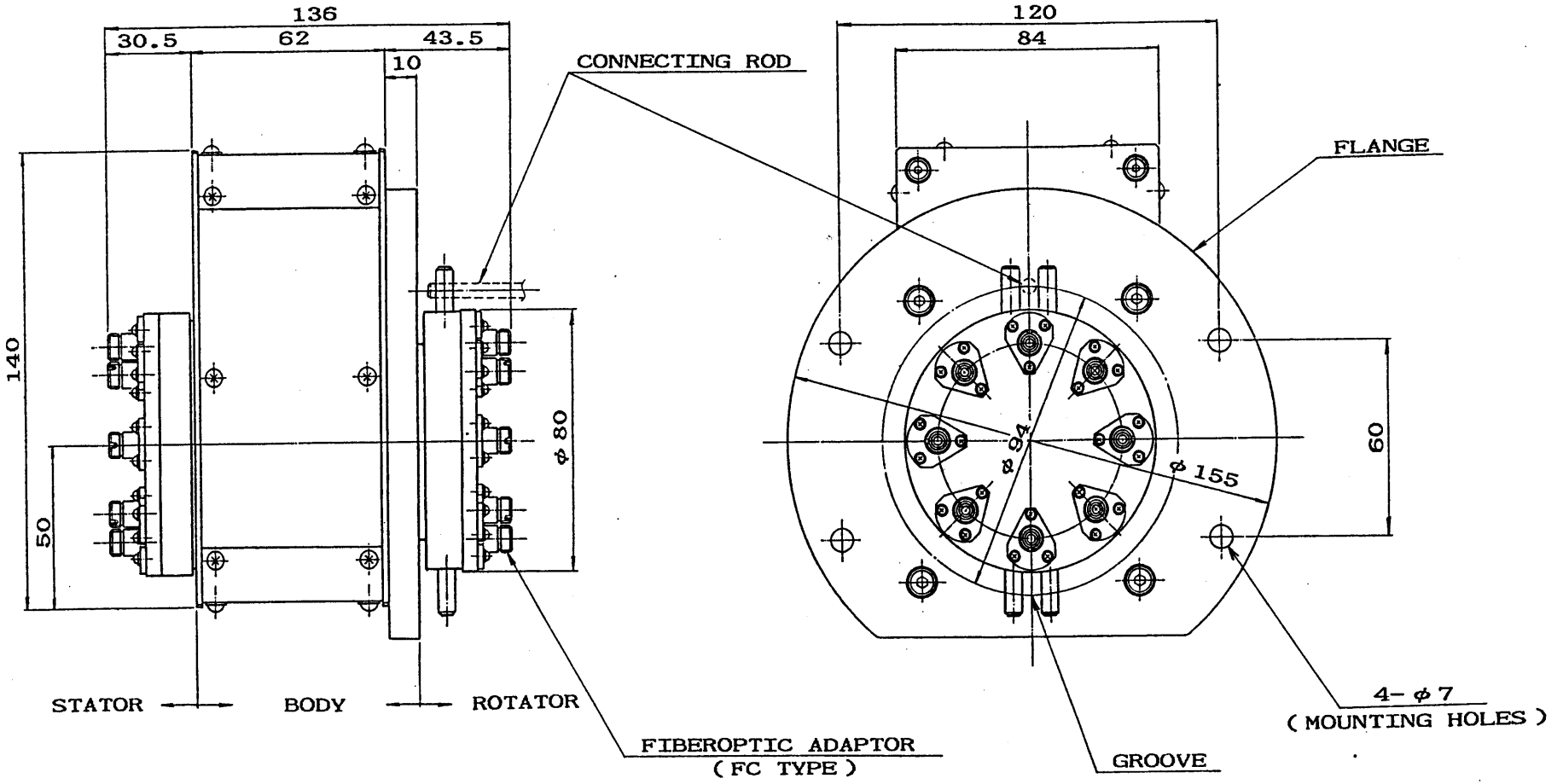
EH3784025

REV. A

EH 3784026

MARK	REVISION	DATE	NAME	CHKD.



Unit: mm

DWN.	K. Nakano	16 · Jul · '90		TITLE
CHKD.	A. Saekawa / H. Kunugiyama	REGD.	PROJ.	MULTIPORT FIBEROPTIC ROTARY JOINT (HRJ-8G7-S)
APPD.	Y. Koyama	RECD 18. JUL 1990		
SCALE	N.T.S			

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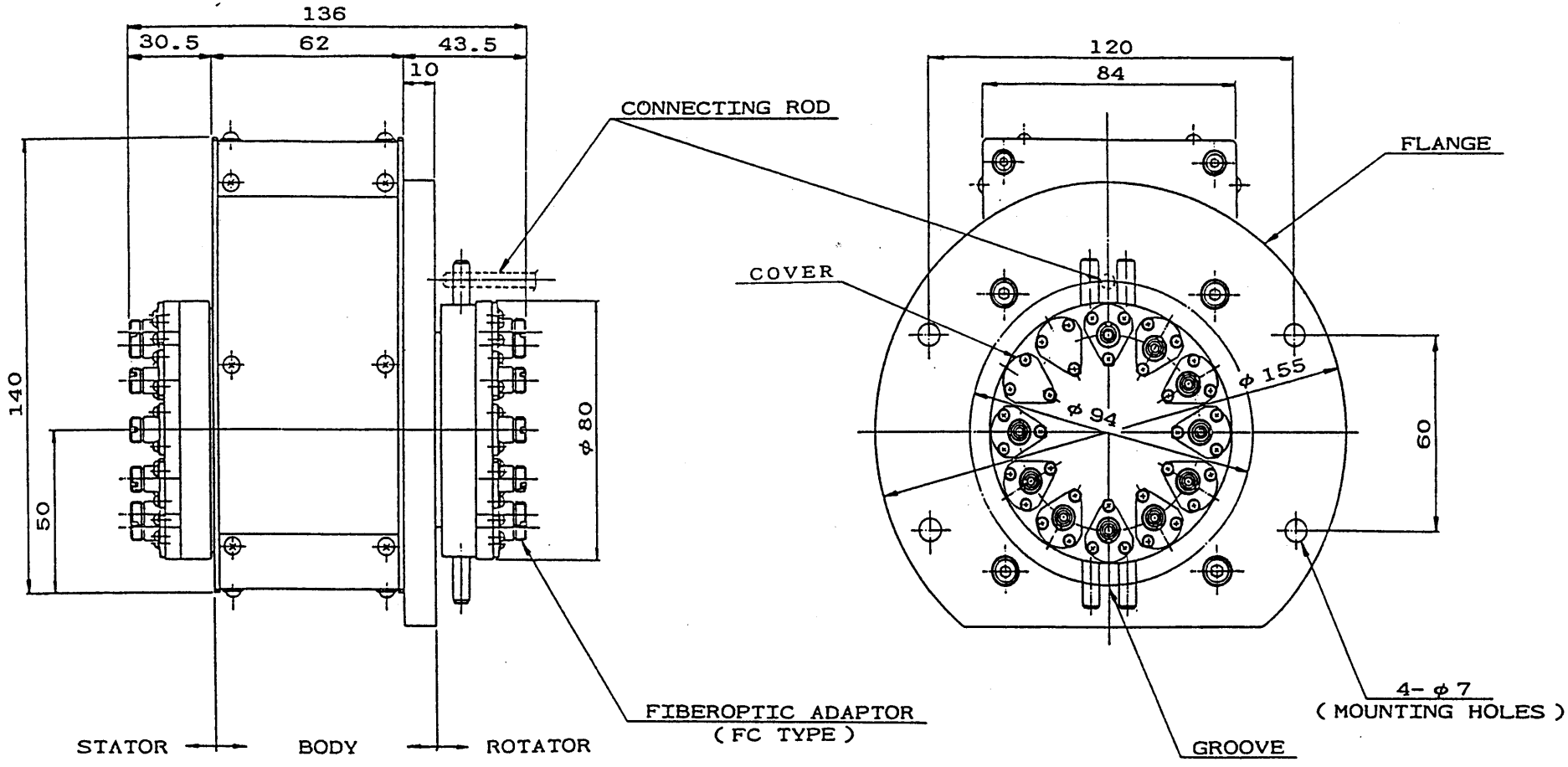
EH3784026

REV.

EH 3803916

MARK	REVISION	DATE	NAME	CHKD.



Unit: mm

DWN.	K. Nakano	5. Apr. '93		TITLE
CHKD.	T. Yamada	REGD.	PROJ.	MULTIPORT FIBEROPTIC ROTARY JOINT (HRJ-10G7-S)
APPD.	Y. Koyama	REGD. 8 APR. 1993		
SCALE	N.T.S			

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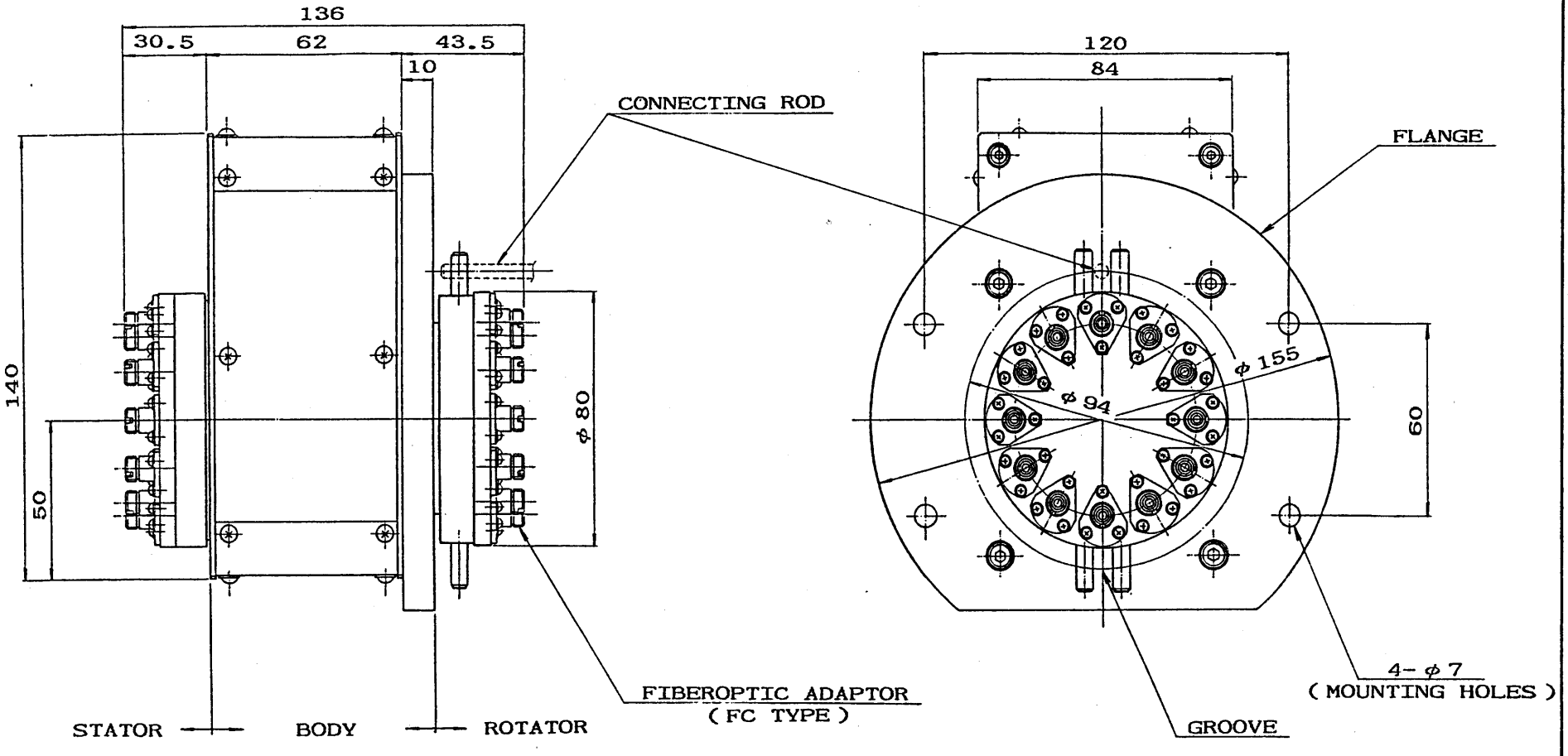
EH3803916

REV.

EH 3784027

MARK	REVISION	DATE	NAME	CHKD.
	Changed Designation	10·Apr·'95	K.Nakano	H.Kumagiyama



Unit: mm

DWN.	K.Nakano	16·Jul·'90	TITLE
CHKD.	K.Sekema	REGD.	PROJ.
	H.Kumagiyama		
APPD.	Y.Kozama	REGD 18·JUL 1990	
SCALE	N.T.S		

MULTIPORT FIBEROPTIC ROTARY JOINT
□ (HRJ-12□7-□□)

HITACHI
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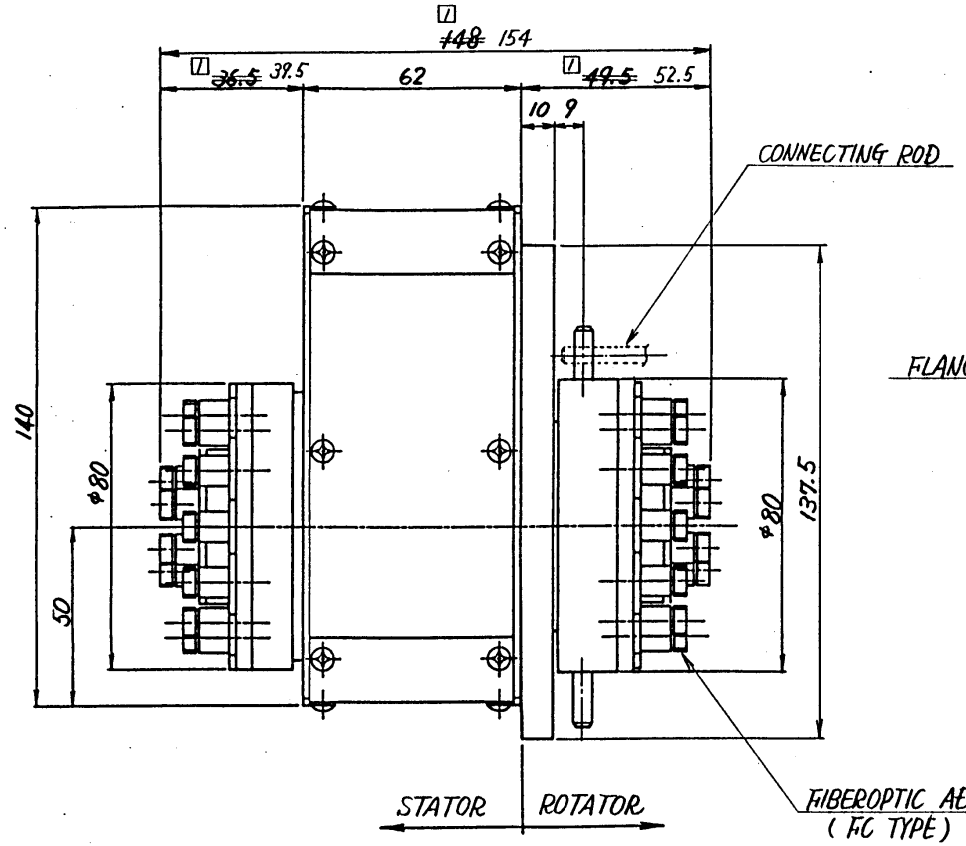
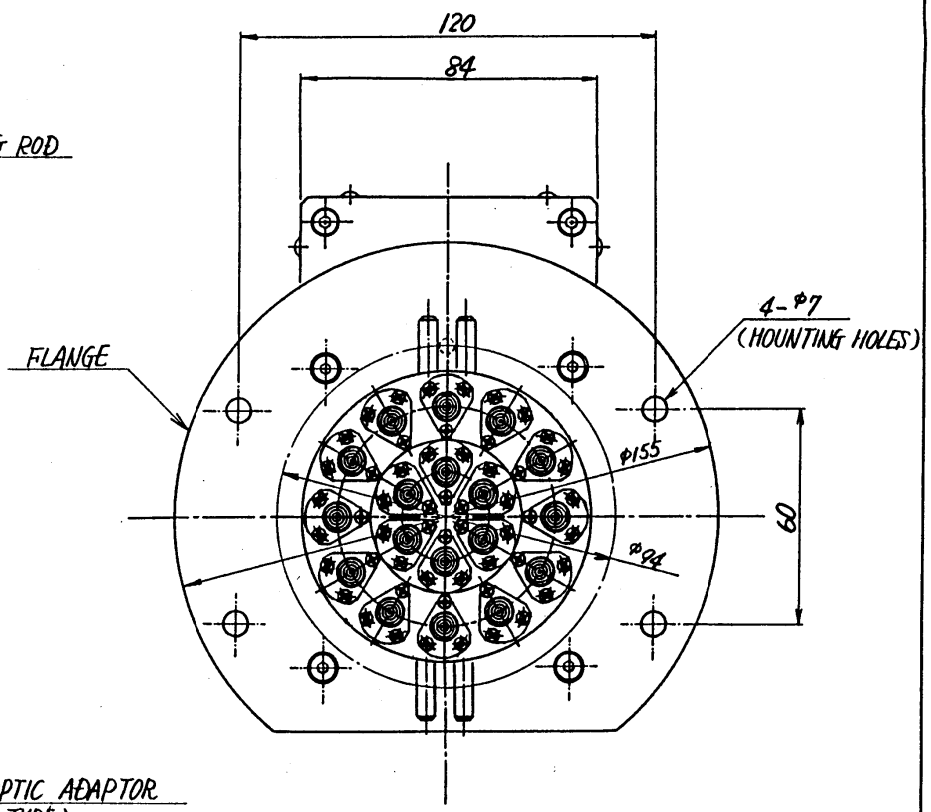
EH3784027

REV.

EH 3815049

MARK	REVISION	DATE	NAME	CHKD.
1	CHANGED DIMENSIONS	1.Sep.'98	K.Nakano	H.Kuwahara





(Unit : mm)

DWN.	K. Nakano	16 · Mar '95	
CHKD.	H. Kuwajima	REGD.	PROJ.
APPD.	Y. Kogama	REGD. 18 MAR 1995	
SCALE	N.T.S		

TITLE

MULTIPORT FIBEROPTIC ROTARY JOINT

(HRJ-1867-S, L)

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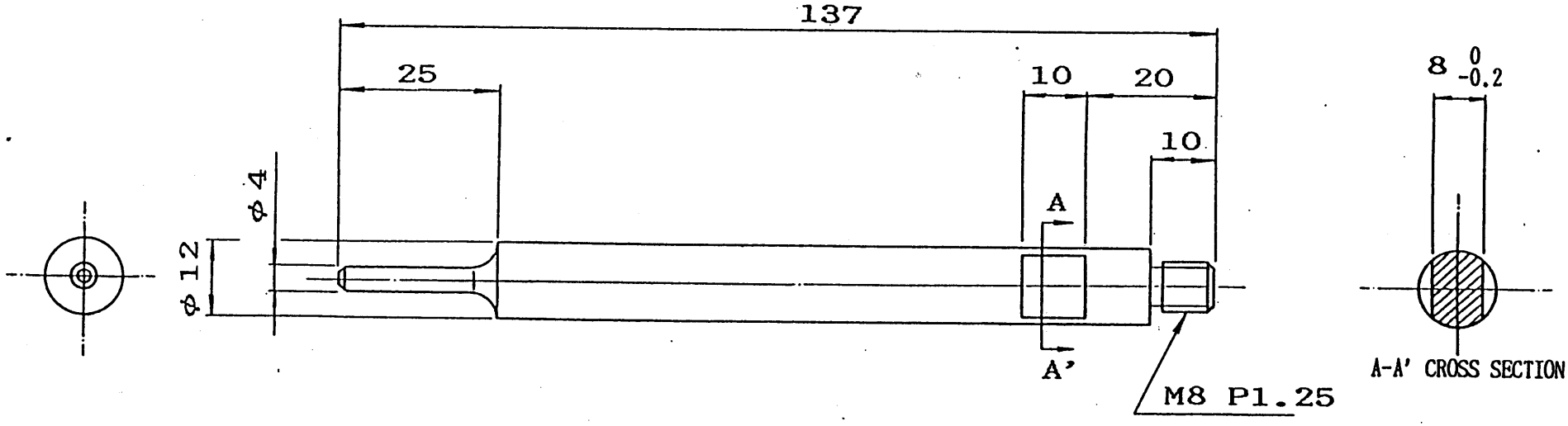
EH3815049

REV.

MARK	REVISION	DATE	NAME	CHKD.

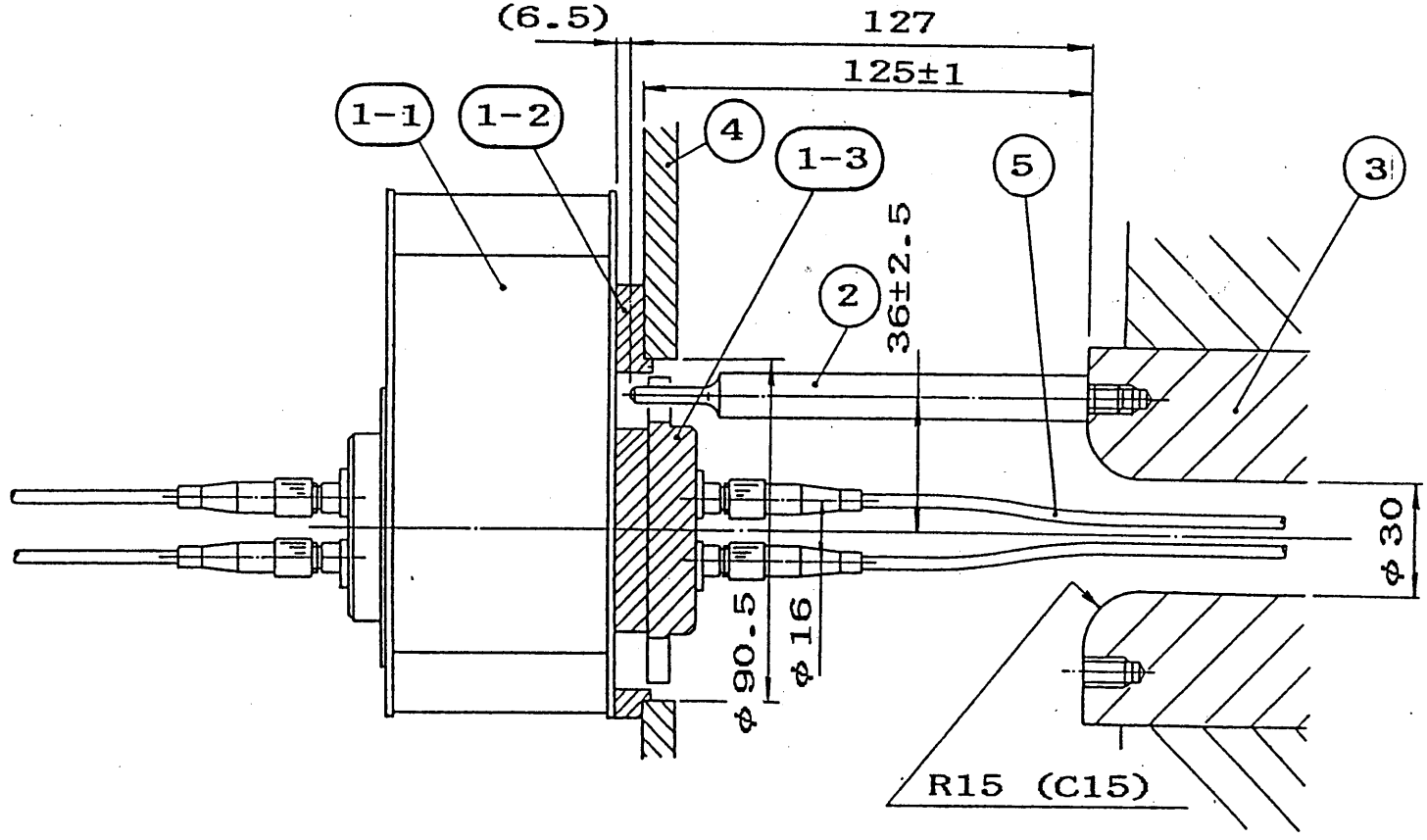


MATERIAL : STAINLESS STEEL

Unit: mm

REGD.	DWN.	K. Nakano	16 · Jul · '90	TITLE	HITACHI Hitachi Cable, Ltd.
	CHKD.	Y. Isokawa	RPOJ.	CONNECTING ROD	REV.
	APPD.	Y. Koyama			EH 4785826
	SCALE	N.T.S			

MARK	REVISION	DATE	NAME	CHKD.



Hitachi's scope of supply
- (1-1) MULTIPORT FIBEROPTIC ROTARY JOINT
- (1-2) FLANGE
- (1-3) HOLDER
- (2) CONNECTING ROD

Client's supply
- (3) SHAFT
- (4) FIXING HARDWEAR
- (5) OPTICAL FIBER CABLE with CONNECTOR

Unit: mm

REGD.	DWN.	K. Nakano	18 Jul 90
REGD 18.JUL 1990	CHKD.	A. Asekawa	RPOJ.
	APPD.	Y. Koyama	
	SCALE	N.I.S	

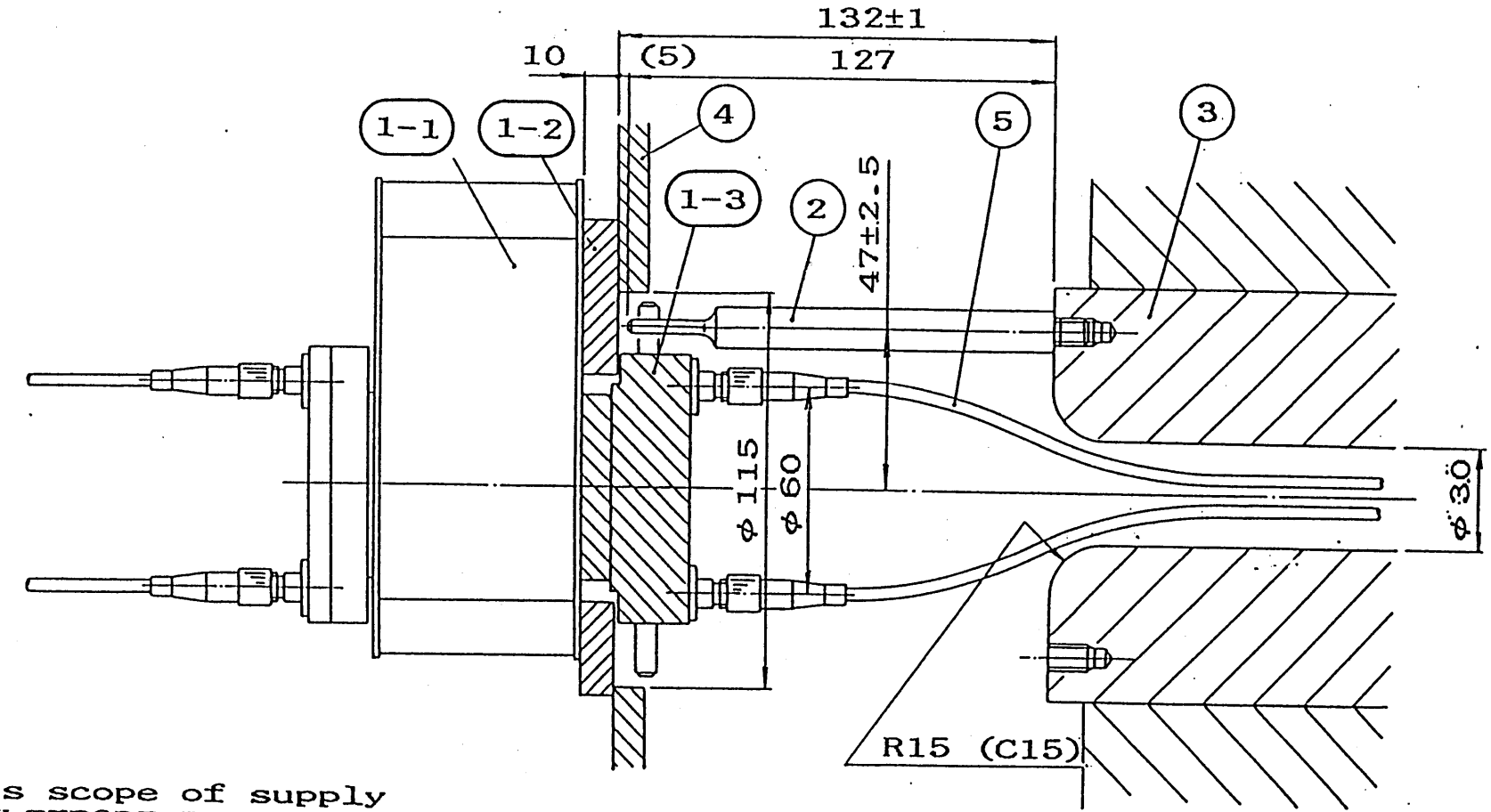
TITLE: INSTALLATION METHOD OF MULTIPORT FIBEROPTIC ROTARY JOINT

HITACHI
Hitachi Cable, Ltd.

EH 4785827

REV.

MARK	REVISION	DATE	NAME	CHKD.



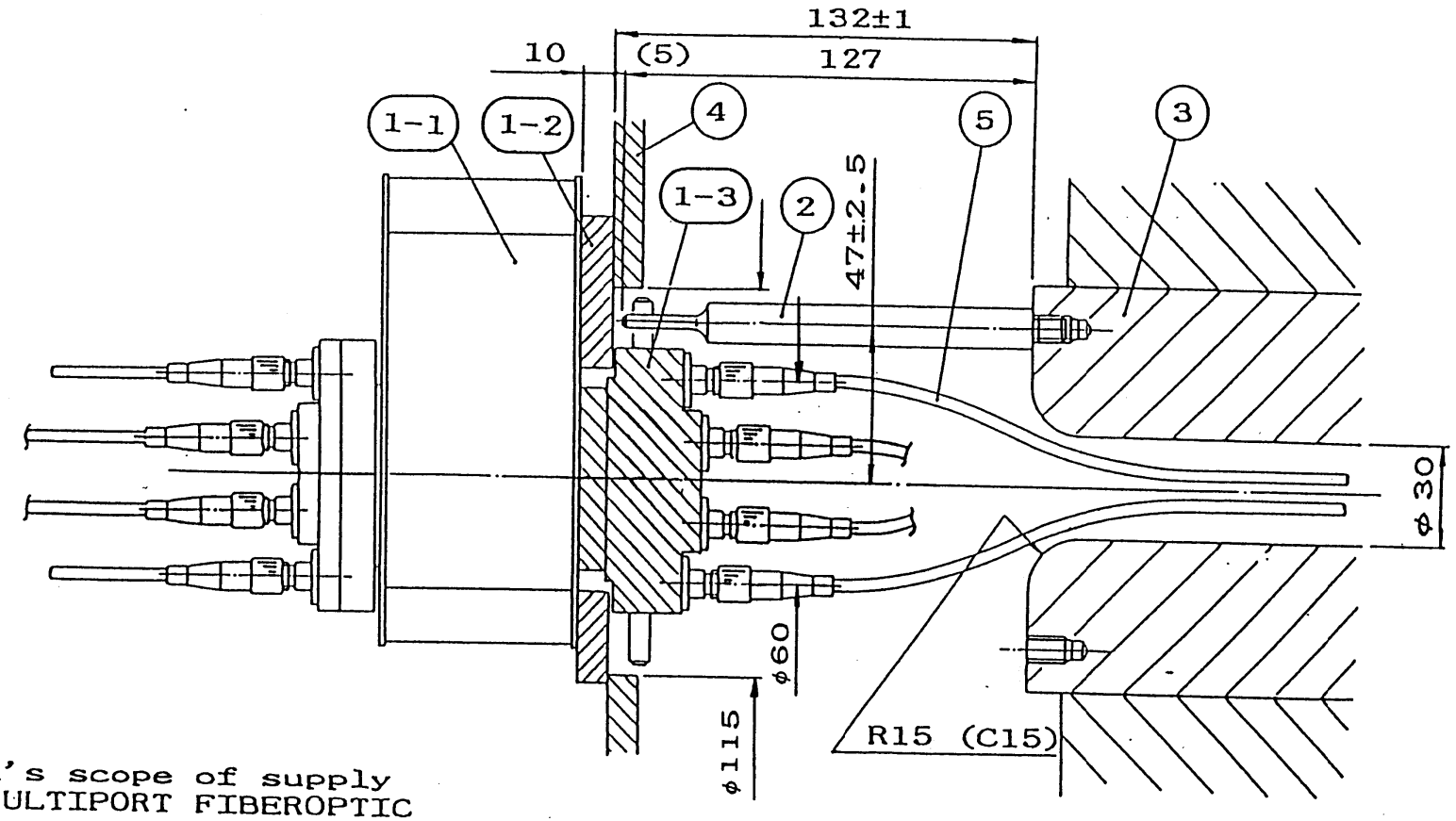
Hitachi's scope of supply
- (1-1) MULTIPORT FIBEROPTIC ROTARY JOINT
- (1-2) FLANGE
- (1-3) HOLDER
- (2) CONNECTING ROD

Client's supply
- (3) SHAFT
- (4) FIXING HARDWEAR
- (5) OPTICAL FIBER CABLE with CONNECTOR

Unit: mm

REGD.	DWN.	K. Nakano	18 Jul '90	TITLE: INSTALLATION METHOD OF MULTIPORT FIBEROPTIC ROTARY JOINT	HITACHI Hitachi Cable, Ltd.
REGD. 18 JUL 1990	CHKD.	H. Sukizaki	RPOJ.		EH 4785828
	APPD.	Y. Koyama			REV.
	SCALE	N.T.S			

MARK	REVISION	DATE	NAME	CHKD.



Hitachi's scope of supply
- (1-1) MULTIPORT FIBEROPTIC ROTARY JOINT
- (1-2) FLANGE
- (1-3) HOLDER
- (2) CONNECTING ROD

Client's supply
- (3) SHAFT
- (4) FIXING HARDWEAR
- (5) OPTICAL FIBER CABLE with CONNECTOR

Unit: mm

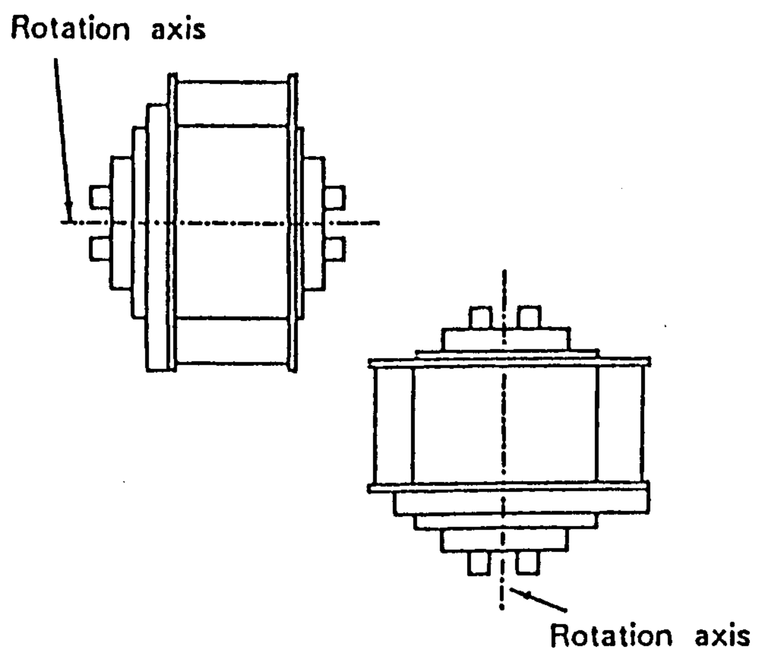
REGD. 28 DEC. 1994	DWN.	K. Nakano	27-Dec-'94	TITLE: INSTALLATION METHOD OF MULTIPORT FIBEROPTIC ROTARY JOINT	HITACHI Hitachi Cable, Ltd.
	CHKD.	Y. Kuruzawa	RPOJ.		REV.
	APPD.	Y. Koyama			EH 4803786
	SCALE	N.T.S			

EH3786547

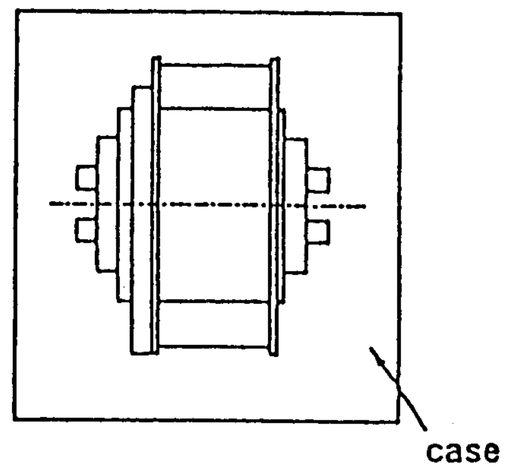
MARK	REVISION	DATE	NAME	CHKD.

Installation method of the fiber optic rotary joint

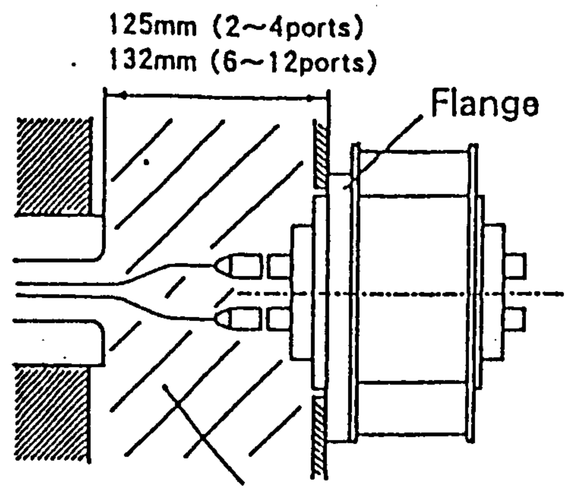
Please take care of the fiber optic rotary joint installate to the machine, because of the precision optical instrument.
The following figures are instalation guides for fiber optic rotary joint.



Keep the rotation axis to horizontaly or vertically.

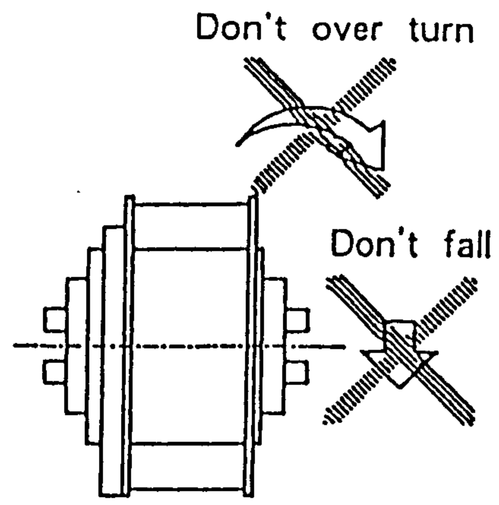


Use the case for protecting from the moisture and the dusts.

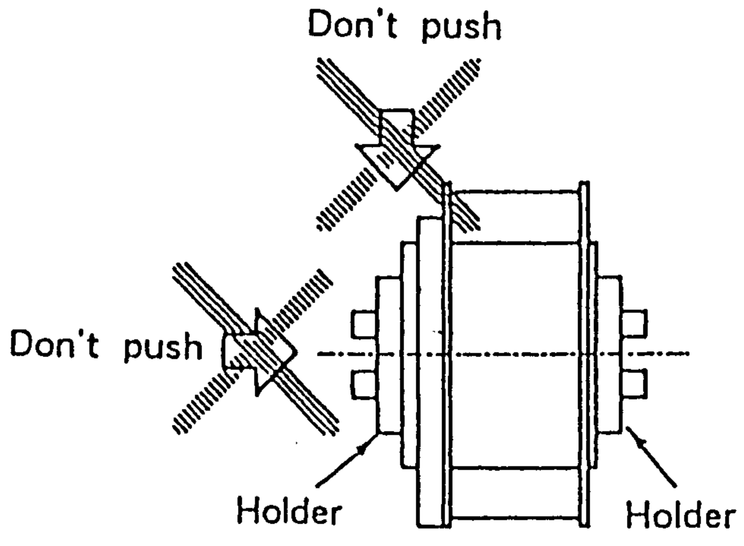


Space for the optical fibers and connecters

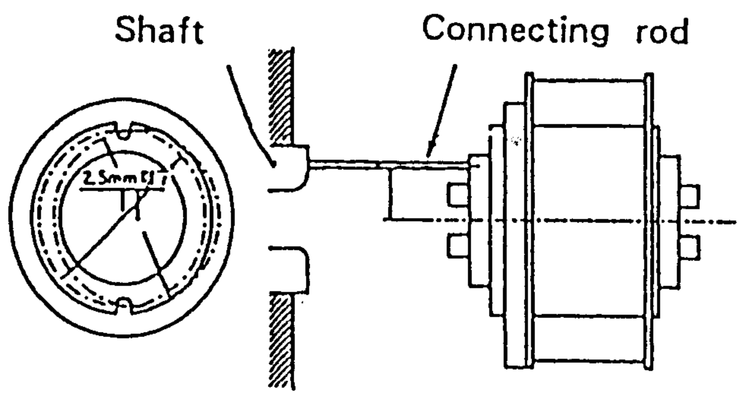
Take the space for the optical fibers and connecters.



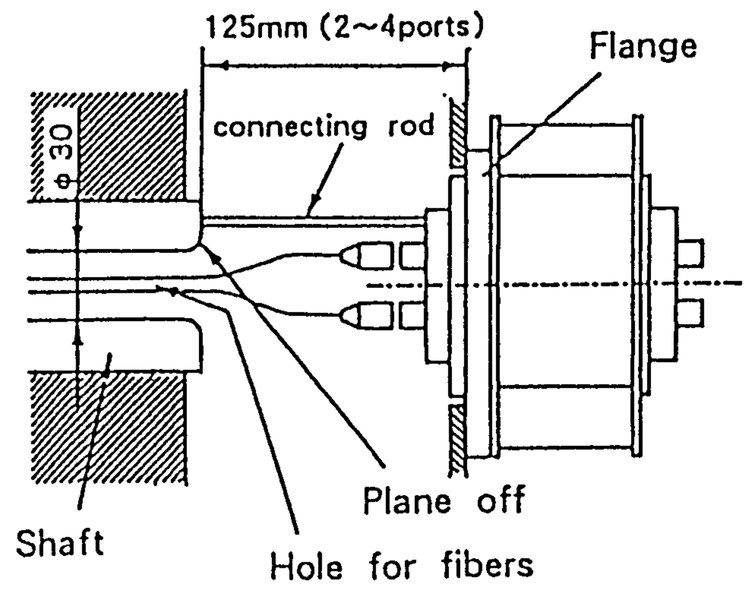
Don't shock and fall !



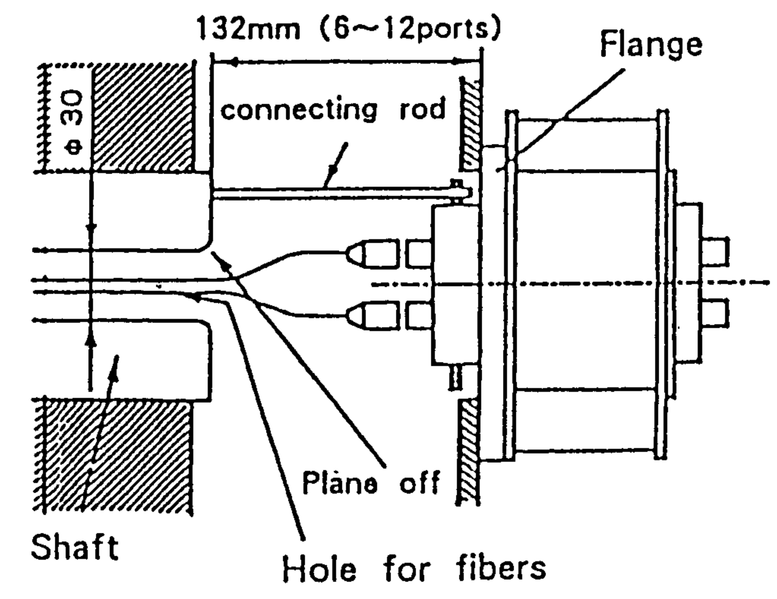
Don't put the force to the holders for protecting.



1. Off-axis between shaft and the rotary joint shall be saved less than ± 2.5mm.
2. The connecting rod shall be screwed tightly keep from loosing.



2~4 ports fiber optic rotary joint



6~12ports fiber optic rotary joint

DWN.	H. Tochihara	Dec. 19. 90	TITLE
CHKD.		REGD. / PROJ.	Installation method of the fiber optic rotary joint
APPD.	Y. Kiyama	REGD 21 DEC 1990	
SCALE	NTS		

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