

FORJing a Lightpath



FIBER OPTIC ROTARY JOINT SELECTION GUIDE

Series code	RPT/MJX	RFC/RST	RPC	RFCX	MJP	MJ2/RJ2	PJ2	MXn	JXn	MJn	RJn
Channel count	1	1	1	1	1	2	2	2-3	2-12	2-10	2-19
Fiber type	SM&MM	SM&MM	SM&MM	SM&MM	SM&MM	MM	Plastic (POF)	SM&MM	SM&MM	SM&MM	SM&MM
Package style	Pigtails	Receptacle	Pigtail	FC/PC	Pigtails	Pigtails	Pigtails	Pigtails	PT, FC, ST	PT, FC, ST	Pigtails
Wavelength (nm)	650-1550	650-1550	650-1550	650-1550	650-1550	850-1550	650	850-1550	850-1550	850-1550	850-1550
Insertion loss (dB)	<2	<3	<2	<3	<2	<4/6	<7/10	<5	<5	<5	<5
IL WOW (dB)	<+/-0.25	<+/-0.25	<+/-0.25	<+/-0.25	<+/-1	<+/-1.5	<+/-1.5	<+/-1.5	<+/-1.5	<+/-1.5	<+/-1.5
Return loss (dB)	>40 (50)	>30	>40 (50)	>30	>50	NA	NA	>45	>45	>45	>45
Crosstalk (dB)	-	-	-	-	-	<-50	~-20 dB	<-50	<-50	<-50	<-50
Pwr handling (dBm)	23	23	23	23	23	23	23	23	23	23	23
Rot. speed (rpm)	2,000	2,000	2,000	2,000	1,000	100	2,000	200	100	100	100
Pulling strength (N)	10	NA	50	10	10	10	10	10	10	10	10
Working temp (C)	-40 to 85	-40 to 85	-40 to 85	-40 to 85	-20 to 65	-20 to 65	-40 to 85	-20 to 65	-20 to 65	-20 to 65	-20 to 65
Storage temp (C)	-50 to 85	-50 to 85	-50 to 85	-50 to 85	-25 to 75	-25 to 75	-50 to 85	-25 to 75	-25 to 75	-25 to 75	-25 to 75
Connector type	All types	FC/ST	All types	FC/PC	All types	All types	SMA, ST, FC	All types	All types	All types	All types
Dimensions (mm)	17x26/6.8x28	17x26	17x46	8.5x40	17x37	20x65/44x83	24x130	44x111	67x120	67x120	98x161
Weight (g)	~50/10	~50	~80	~20	~50	~100/550	~250	~1,000	~2,500	~2,500	~3,500
Pressure comp.	Optional	No	20,000psi	No	No	Optional	Optional	No	TBD	Optional	No
IP rating	>IP 68	IP 68	>IP 68	IP 68	IP00	IP 60	>IP 68	IP 65/68	IP 65/68	IP 65/68	IP 64

FIBER CODE

FIBER TYPE	CODE
Corning SMF28 (9/125 um)	28
Fujikura SM13 PANDA (PM)	13
Fujikura SM15 PANDA (PM)	15
Nufern 1060XP (SM, 980 nm)	56
Nufern 780HP (SM, 780 nm)	42
Nufern 630HP (SM, 635 nm)	32
Nufern 460HP (SM, 532 nm)	46
GI 50/125/900 (MM, 0.2 NA)	50
GI 62.5/125/900 (MM, 0.2 NA)	62
SI 105/125/245 (MM, 0.2 NA)	10
SI 200/240 (MM, 0.39 NA)	20
SI 300/325 (MM, 0.39 NA)	30
SI 400/425 (MM, 0.39 NA)	40
SI 600/630 (MM, 0.39 NA)	60
1 mm plastic fiber	01
2 mm plastic fiber	02

CONNECTOR CODE

CONNECTOR TYPE	CODE
FC/PC (SM & MM)	FC
SC/PC (SM & MM)	SC
LC/PC (SM & MM)	LC
ST/PC (SM & MM)	ST
FC/APC (SM only)	FA
SC/APC (SM only)	SA
LC/APC (SM only)	LA
SMA 905 (MM or SM)	SM
MURJ (2 fibers, MM)	MU
FC/PC for harsh environment	FCX
ST/PC for harsh environment	STX
FC/APC for harsh environment	FAX
Zirconia ferrule, 1.25 mm, 0 deg	12
Zirconia ferrule, 2.50 mm, 0 deg	25
Zirconia ferrule, 1.25 mm, 8 deg	12A
Zirconia ferrule, 2.50 mm, 8 deg	25A

λ CODE

850=850 nm, 131=1310 nm, 155=1550 nm

Refer to our website for the most updated product information at www.princetel.com.

MODEL RPT, RFC, & RST SINGLE-CHANNEL FORJs



The R series Single-channel (SM or MM) rotary joints offer the most versatile designs on the market. The rugged body allows fiber pigtail, ST, or FC receptacles on either the rotor side or the stator side. One can configure the package to fit his need exactly. The standard base models are RPT, RFC, and FST for pigtails, FC/UPC, and ST/PC receptacles.

The R series features extremely low insertion loss and impressive return loss performance for both singlemode and multimode fibers. These rugged devices can operate under arctic temperature environments. All three models are dust and water tight, suitable for harsh environments. Optional pressure compensation is available with model RPT for underwater applications.

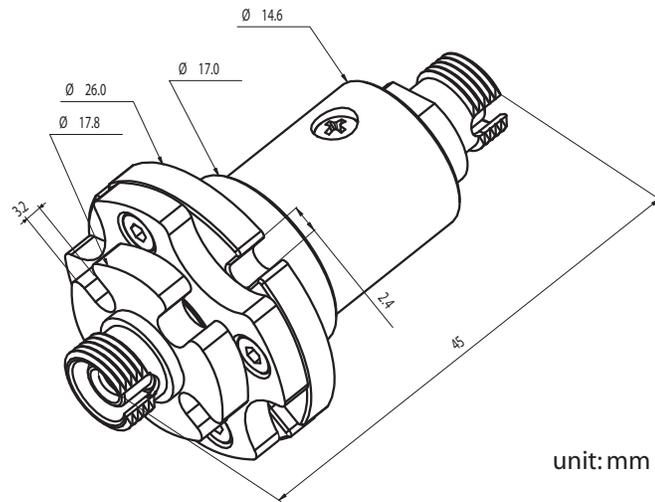
TOTAL 9 CONFIGURATIONS:

RPT-λ-FIBER-CONNECTOR
RFC-λ-FIBER
RST-λ-FIBER
RFCPT-λ-FIBER-CONNECTOR
RPTFC-λ-FIBER-CONNECTOR
RSTPT-λ-FIBER-CONNECTOR
RPTST-λ-FIBER-CONNECTOR
RFCST-λ-FIBER
RSTFC-λ-FIBER

FOR PRESSURE COMP (10,000 psi):
RPTPC-λ-FIBER-CONNECTOR

FOR ULTRA-HIGER RETURN LOSS:
RPTA-λ-FIBER-CONNECTOR

(See inside cover for codes)



unit: mm

MODEL RPC SINGLE-CHANNEL FORJ w/HIGH PRESSURE RATING



Model RPC series FORJs are designed to offer extreme pressure rating of 20,000 psi while maintaining identical optical performance as the RPT series. 900 um Hytel tight buffer and 2.9 mm armored jacket are standard cable arrangements.

Like the RPT series, the RPC series FORJs offer extremely low insertion loss and can operate under arctic temperature environments. Standard return loss spec is 40 dB or higher. 50 dB return loss figure is also available as a custom option.

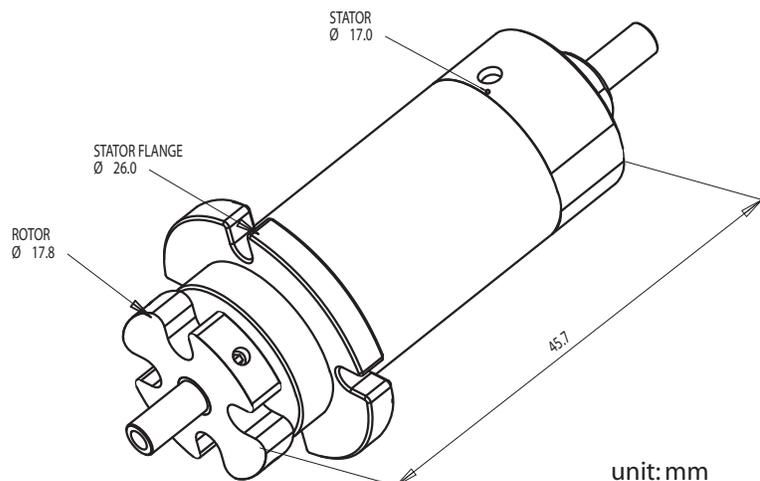
HIGH PRESSURE RATING
(20,000 psi)

PART NUMBERS:

RPC-λ-FIBER-CONNECTOR

FOR ULTRA-HIGH RETURN LOSS:
RPCA-λ-FIBER-CONNECTOR

(See inside cover for codes)



unit: mm

MODEL MJX SINGLE-CHANNEL FORJ



Princetel broke the record when it released the MJX series Fiber Optic Rotary Joints (FORJs). They are still the smallest and lightest on the market. They feature extremely low insertion loss and impressive return loss performance. These rugged devices can operate under arctic temperature environments.

The standard packages are dust and water tight for harsh environment applications. They are designed to tolerate both occasional water splash and shallow water (or oil) immersion. Pressure compensation of upto 1,000 psi is available on this model.

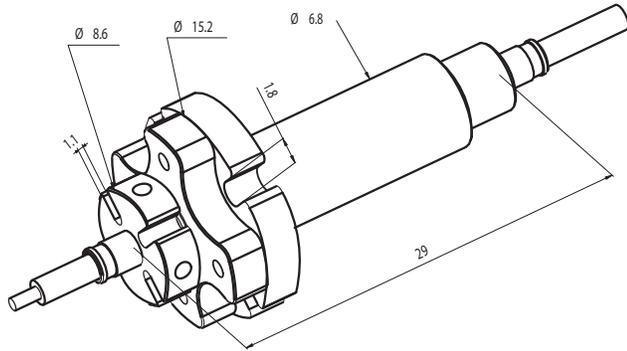
PART NUMBERS:

MJX- λ -FIBER-CONNECTOR

**FOR ULTRA-HIGH RETURN LOSS:
MJXA- λ -FIBER-CONNECTOR**

**FOR PRESSURE COMPENSATION:
(5,000 psi)
MJXPC- λ -FIBER-CONNECTOR**

(See inside cover for codes)



unit: mm

MODEL RFCX SINGLE-CHANNEL FORJ



RFCX series Fiber Optic Rotary Adapters (FORAs) are unique since they have the identical cross sections and mounting features as their standard adapter counterparts, sometimes also called bulkheads or mating sleeves. FORAs allow the fiber to rotate freely while maintaining uninterrupted transmission of optical signal. Princetel's FORAs can be pop-in replacement of FC bulkheads.

Princetel's design team successfully transformed the proprietary technology used in the MJX series FORJs to create the miniature rotary adapters. They are very rugged, sealed for dust and moisture, and can operate under temperature extremes. RFCX series FORAs feature extremely low insertion loss and good return loss performance.

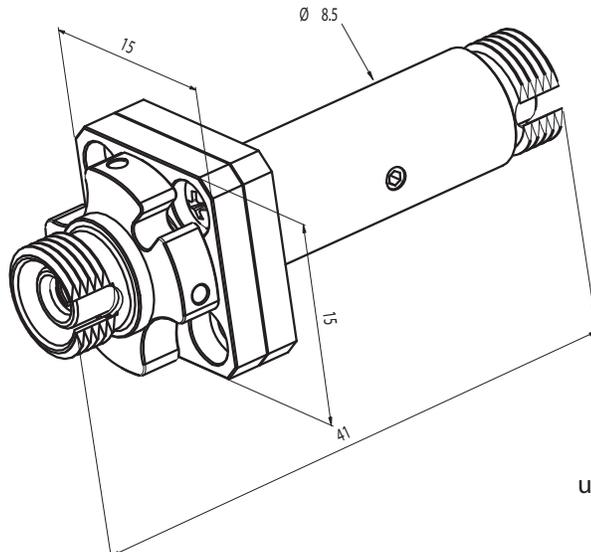
**ULTRA COMPACT
IDENTICAL TO STD FC BULKHEAD**

PART NUMBERS:

RFCX- λ -FIBER

**FOR angled connectors (FC/APC):
RFAX- λ -FIBER**

(See inside cover for codes)



unit: mm

MODEL MJP SINGLE-CHANNEL FORJ



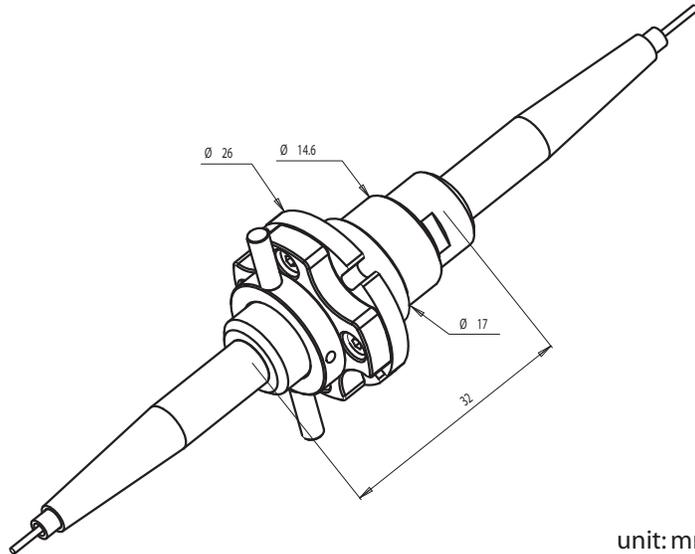
The MJP series FORJs are designed to accommodate specialty fibers such as large core or plastic fibers. The device is free of index-matching fluid and therefore is ideal for spectroscopic applications. Stainless steel construction and ceramic ball bearings make the device rugged, precise, stable, and long lasting.

SPECIALTY FIBERS

PART NUMBERS:

MJP- λ -FIBER-CONNECTOR

(See inside cover for codes)



unit:mm

MODEL MJ2 DUAL-CHANNEL FORJ



This dual-pass Fiber Optic Rotary Joint (FORJ) connects two independent fiber channels simultaneously. It allows uninterrupted transmission of optical signals while rotating along the common mechanical axis. It is designed to accommodate at least one multimode fiber. The other channel can be either single or multimode fiber. Princetel's unique design has raised the standard for size and performance of two-channel FORJs.

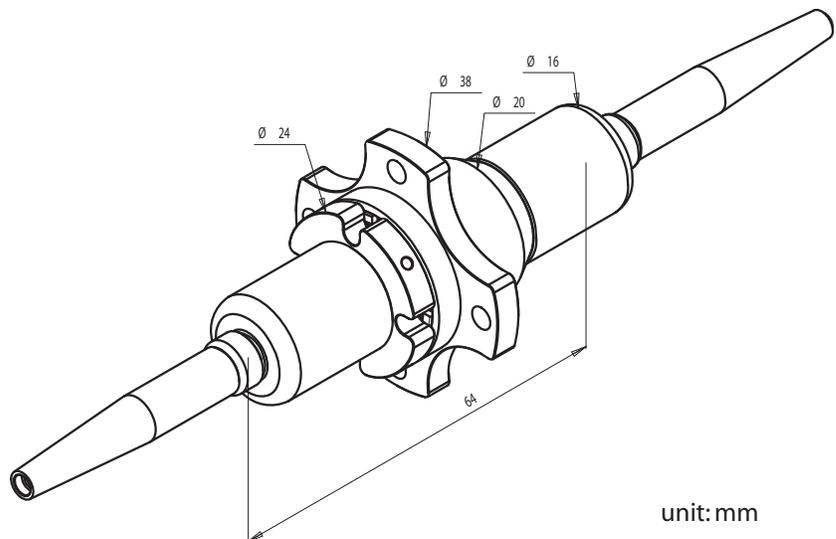
COMPACT DESIGN

PART NUMBERS:

MJ2- λ -FIBER-CONNECTOR
MJ2- λ -SMMM*-CONNECTOR

* Single & multimode mix

(See inside cover for codes)



unit:mm

MODEL RJ2 DUAL-CHANNEL FORJ



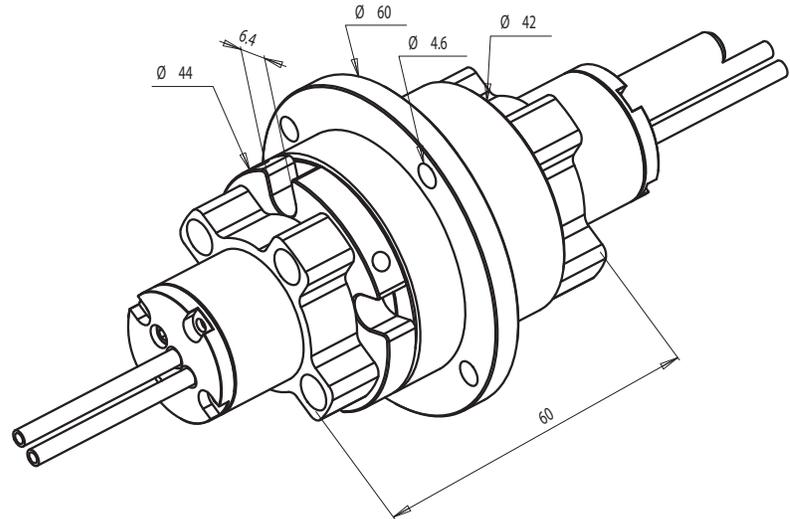
Dual-pass Fiber Optic Rotary Joints (FORJs) connect two independent fiber channels simultaneously. They allow uninterrupted transmission of optical signals while rotating along the common mechanical axis. The RJ2 series FORJs feature enhanced ruggedness. It is designed to accommodate at least one multimode fiber. The other channel can be either single or multimode fiber.

RUGGEDIZED PACKAGE

PART NUMBERS:

RJ2- λ -FIBER-CONNECTOR
 RJ2- λ -SMMM*-CONNECTOR
 * Single & multimode mix

(SEE BACKCOVER FOR CODES)



unit: mm

MODEL PJ2 DUAL-CHANNEL FORJ FOR PLASTIC OPTICAL FIBER (POF)



Plastic optical fibers (POF) possess a few important characters that make them favorite choices for certain short-distance fiber optic applications. Their large cores allow easy light coupling. Termination can be simplified to quick hot knife cutting or diamond turning. They are bend insensitive and do not fatigue easily.

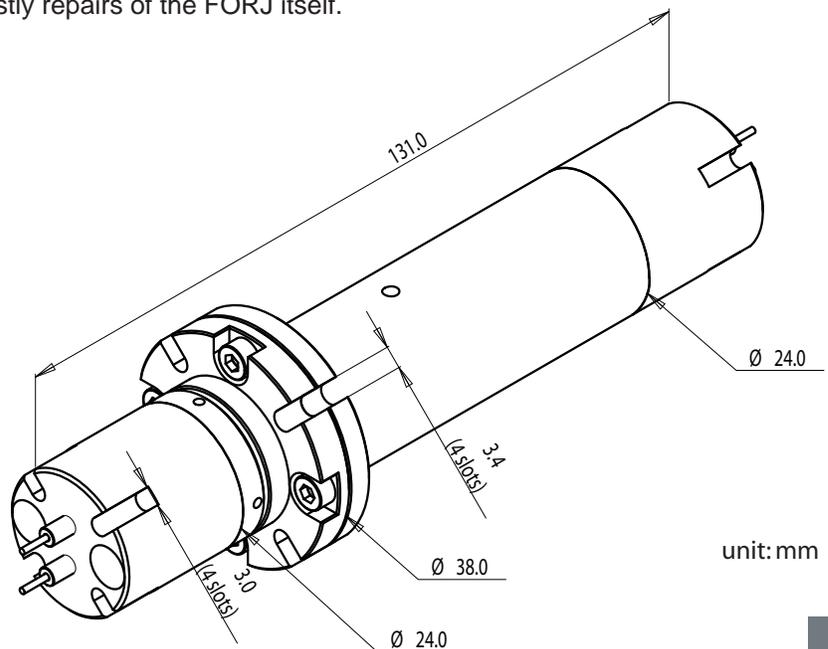
Princeton's PJ2 series 2-channel FORJ connects two independent fiber channels simultaneously. They are blind-spot free during rotation and are ideal for machine control applications such as SERCOS Interfaces. The rugged design permits underwater usage. Damaged fibers can be easily replaced without costly repairs of the FORJ itself.

RUGGEDIZED PACKAGE

PART NUMBERS:

PJ2-650-01-CONNECTOR

(See inside cover for codes)



unit: mm

MODEL MX_n MULTI-CHANNEL FORJ



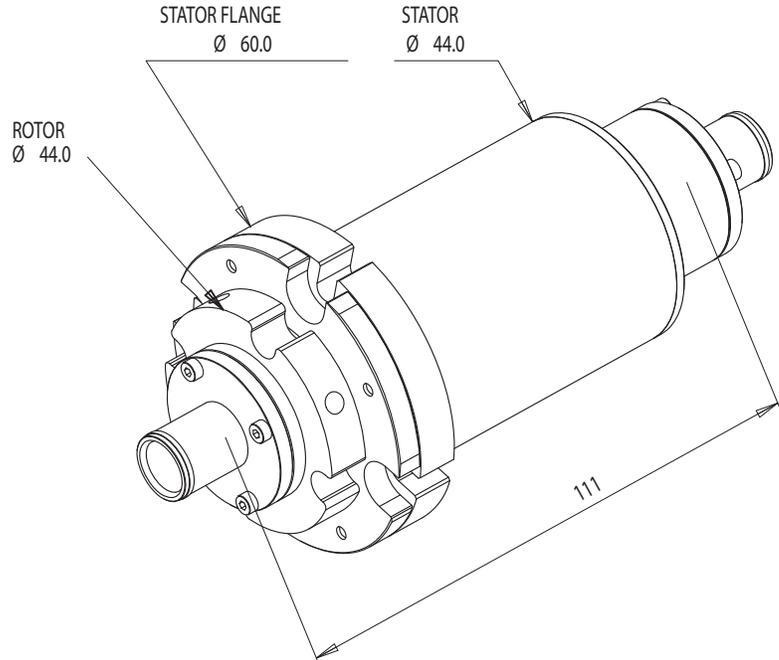
This ultra-compact multi-pass Fiber Optic Rotary Joint (FORJ) accommodates 2-3 channels. This is the latest addition to our FORJ line of products. The MX_n series FORJs feature extremely low crosstalk performance (<-50 dB) for singlemode and multimode fibers. All channels can accommodate either singlemode or multimode fibers. It is also possible to combine the two types of fibers in one device.

ULTRA-COMPACT (2-3 CHANNELS)

PART NUMBERS:

MX_n-λ-FIBER-CONNECTOR
MX_n-λ-SMMM*-CONNECTOR
n=number of passes
*** Single & multimode mix**

(SEE BACKCOVER FOR CODES)



MODEL JX_n MULTI-CHANNEL FORJ



JX_n series multi-pass Fiber Optic Rotary Joints (FORJs) connect 2-12 independent fiber channels simultaneously. They are almost identical to MJ_n series FORJs except the location of the mounting flange. The JX_n series FORJs feature extremely low crosstalk (<-50 dB) for single and multi-mode fibers. All channels can accommodate either singlemode or multimode fibers. It is also possible to combine the two types of fibers in one device.

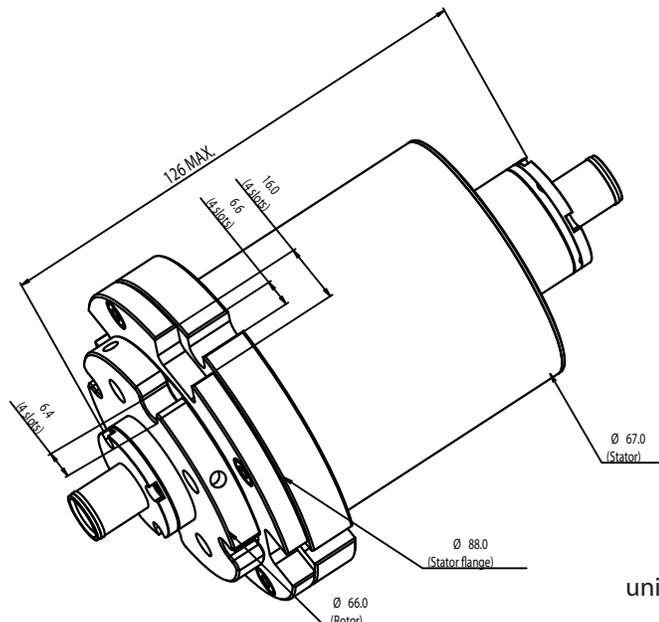
ULTRA LOW CROSSTALK
OPTIONAL PRESSURE COMP

PART NUMBERS:

JX_n-λ-FIBER-CONNECTOR
JX_n-λ-SMMM*-CONNECTOR
n=number of passes
*** Single & multimode mix**

FOR PRESSURE COMPENSATION:
MJ_nPC-λ-FIBER-CONNECTOR

(See inside cover for codes)



unit: mm

MODEL MJ_n MULTI-CHANNEL FORJ



MJ_n series multi-pass Fiber Optic Rotary Joints (FORJs) connect 2-10 independent fiber channels simultaneously. They allow uninterrupted transmission of optical signals while rotating along the common mechanical axis. The MJ_n series FORJs feature extremely low crosstalk (<-50 dB) for single and multimode fibers. Pressure compensation is available with this model. All channels can accommodate either singlemode or multimode fibers. It is also possible to combine the two types of fibers in one device.

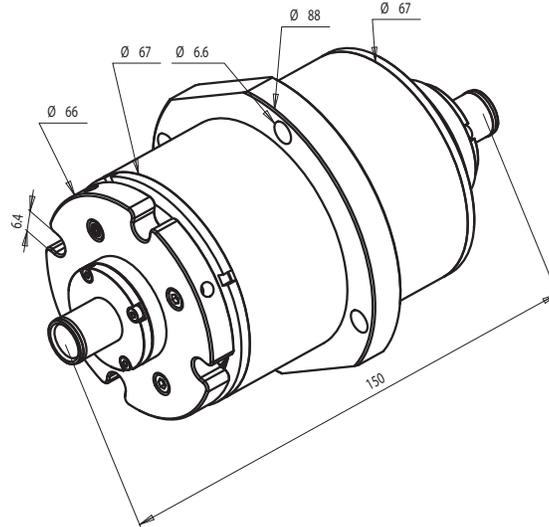
**ULTRA LOW CROSSTALK
OPTIONAL PRESSURE COMP**

PART NUMBERS:

MJ_n-λ-FIBER-CONNECTOR
MJ_n-λ-SMMM*-CONNECTOR
n=number of passes
*** Single & multimode mix**

FOR PRESSURE COMPENSATION:
MJ_nPC-λ-FIBER-CONNECTOR

(See inside cover for codes)



unit:mm

MODEL RJ_n MULTI-CHANNEL FORJ



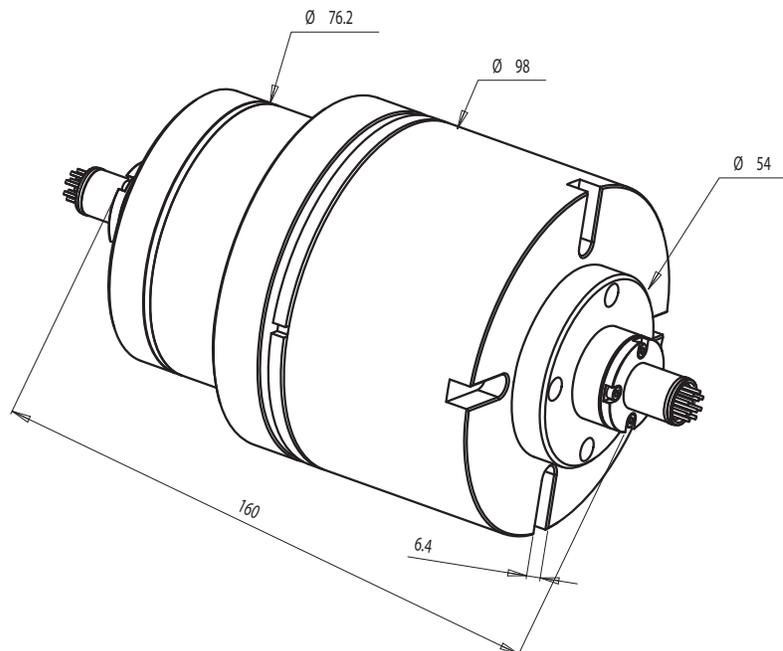
Multi-pass Fiber Optic Rotary Joints (FORJs) connect 2-10 independent fiber channels simultaneously. They allow uninterrupted transmission of optical signals while rotating along the common mechanical axis. The RJ_n series FORJs feature extremely low crosstalk performance (<-50 dB) for singlemode and multimode fibers. All channels can accommodate either singlemode or multimode fibers. It is also possible to combine the two types of fibers in one device.

ULTRA-LOW CROSSTALK

PART NUMBERS:

RJ_n-λ-FIBER-CONNECTOR
RJ_n-λ-SMMM*-CONNECTOR
n=number of passes
*** Single & multimode mix**

(See inside cover for codes)



unit:mm