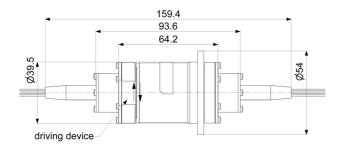


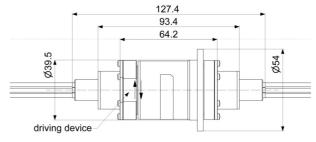
Multi-Channel Fiber Optic Rotary Joints x.40 (FORJ)

The FORJ type x.40 fills a gap in the intermediate range of Spinner's portfolio of fiber-optic rotary joints. With an outer diameter of 40 mm, it falls between the small x.25 (with a diameter of 25 mm) and the large model, namely the x.60 (60 mm in diameter). The x.40 can be configured with up to eight independent channels. Like in all the other SPINNER FORJs, our proprietary active alignment approach delivers superior optical performance in a compact casing. In-house production of the mechanical parts used also ensures efficient quality management, backed by multiple visual checks during the assembly of each FORJ. This ensures reliability and ideal performance. The x.40 can be configured with single-mode or multimode channels or a mix of both. Each channel is independently optimized, thus minimizing attenuation and preventing crosstalk between channels. The x.40 also stands out with its high rotational speed of up to 1000 rpm and beyond. To facilitate integration into existing setups, SPINNER provides customized FLEXIFLANGES to suit your needs. This type of FORJs is used in high performance applications with restricted space available, e.g in cable drums, aerospace, optronic systems, and civil and military radar systems.

SPINNER FORJ x.40 IP50

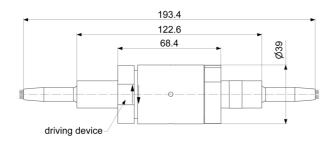


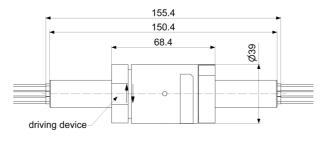




SPINNER FORJ x.40 IP65



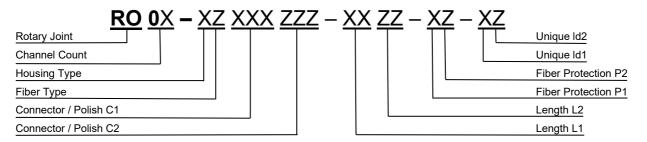






Multi-Channel Fiber Optic Rotary Joints x.40 (FORJ)

Standard series part number explanation



## 0 0x x x z x x x x x x	Rotary Joint	Fiber Optic	Channel Count		Housing Type	Fiber Type		Connector Polish C1	Connector Polish C2		Length L1	Length L2		Fiber Protection P1 / P2		Unique ID1	Uniqu ID2
Single-mode E9 / 125 (standard OS1) S	R	o	0 X	-	X	Z	-	XXX	ZZZ	-	XX	ZZ	-	XZ	-	Х	Z
Single-mode E9 / 125 (standard OS1) S Single-mode SMF28 Ultra U Multi-mode G50 / 125 (standard OM2) M Multi-mode G60 / 125 (standard OM2) N Special fiber (e.g. G87, H11000, etc.) X Connector Type C1 & C2 Single Mode Connector / Polish LC / APC (Standard) LC A	Ø 40 mm	n (Type x.40) IP50		С												
Single-mode SMF28 Ultra	Ø 40 mm	n (Type x.40) IP65		J												
Multi-mode G50 / 125 (standard OM2) M Multi-mode G62.5 / 125 N Special fiber (e.g. G657, H11060, etc.) X Connector Type C1 & C2 Single Mode Connector / Polish CC / PC LCP LCP LCP LCP LCP LCP LCP LCP LCP	Single-m	ode E9 / 12	5 (standard	OS1)	S												
Multi-mode G62.5 / 125 N Special fiber (e.g. G657, HI1080, etc.) X Connector Type C1 & C2 Single Mode	Single-m	ode SMF28	Ultra		U												
Special fiber (e.g. G657, HI1060, etc.) X	Multi-mo	de G50 / 12	5 (standard	OM2)	М												
Connector Type C1 & C2	Multi-mo	de G62.5 /	125		N												
Single Mode Connector / Polish C	Special fi	iber (e.g. G	657, HI1060	, etc.)	Х												
Connector / Polish	Connect	tor Type C1	& C2														
LC / APC (Standard) LC / UPC LC / UPC LC / C LC LC LC LC / PC LC LC FC / APC FCA FCA FC / UPC FC FCU FC / PC FC / PC (Standard) FCP FCP SC / APC SCA SCA SC / UPC SCU SCU SC / PC SC / PC SCP SCP ST / UPC STU STU ST / UPC ST / PC STP Other connectors: LSA, LuxCis, Molex, special, expanded beam etc. unique ID Length L1 in m [0.2 4.5] (standard 4.5 m for 900µm, 1.5 m for 3 mm and 2 mm) Length L2 in m [0.2 4.5] (standard 4.5 m for 900µm, 1.5 m for 3 mm and 2 mm) Bare fiber only 5 mm bending radius 0 Fiber protective tube 900µm buffer 30 mm bending radius 2 Metallic protective tube Kevlar / aramid armor 20 mm bending radius M Special protection (e.g. military grade) X																	
LC / PC LC / PC FC / APC FC / FC A FC A FC A FC A FC B FC / PC FC								LCA	LCA								
FC / APC FC / UPC FC / PC FC /	LC / UPC							LCU	LCU								
FC / UPC FC / PC (Standard) FCP FCP SC / APC SC A SCA SCA SC / UPC SC / PC SC PC SC PC SC PC SC PC SC PC ST / UPC ST J PC ST P				LC / PC				LCP	LCP								
FC / PC FC / PC (Standard) FCP FCP FCP SC / APC SC / APC SCU SCU SCU SCU SCU SCU SCU SC / PC SC / PC SC / PC STU STU STU STU STU STU STU OTH O	FC / APC							FCA	FCA								
SC / APC SC / BC /	FC / UPC	0						FCU	FCU								
SC / UPC SC / PC SC / PC SC / PC SC / PC ST / UPC ST U ST U ST / PC Other connectors: LSA, LuxCis, Molex, special, expanded beam etc. unique ID OTH OTH Length L1 in m [0.2 4.5] (standard 4.5 m for 900µm, 1.5 m for 3 mm and 2 mm) Length L2 in m [0.2 4.5] (standard 4.5 m for 900µm, 1.5 m for 3 mm and 2 mm) Bare fiber only 5 mm bending radius 0 Fiber protective tube 900µm buffer 30 mm bending radius (Standard) 1 Fiber protective tube Kevlar / aramid armor 20 mm bending radius 2 Metallic protective tube 30 mm bending radius M Special protection (e.g. military grade) X	FC/PC			FC / PC	C (Standard)			FCP	FCP								
SC / PC SC / PC SCP SCP ST / UPC ST / PC ST / PC STP STP Other connectors: LSA, LuxCis, Molex, special, expanded beam etc. unique ID OTH OTH Length L1 in m [0.2 4.5] (standard 4.5 m for 900µm, 1.5 m for 3 mm and 2 mm) Length L2 in m [0.2 4.5] (standard 4.5 m for 900µm, 1.5 m for 3 mm and 2 mm) Bare fiber only 5 mm bending radius 0 Fiber protective tube 900µm buffer 30 mm bending radius (Standard) 1 Fiber protective tube Kevlar / aramid armor 20 mm bending radius 2 Metallic protective tube 30 mm bending radius M Special protection (e.g. military grade) X	SC / APC							SCA	SCA								
ST / UPC ST / PC ST / PC ST / PC STP Other connectors: LSA, LuxCis, Molex, special, expanded beam etc. unique ID OTH OTH Length L1 in m [0.2 4.5] (standard 4.5 m for 900µm, 1.5 m for 3 mm and 2 mm) Length L2 in m [0.2 4.5] (standard 4.5 m for 900µm, 1.5 m for 3 mm and 2 mm) Bare fiber only 5 mm bending radius 0 Fiber protective tube 900µm buffer 30 mm bending radius (Standard) 1 Fiber protective tube Kevlar / aramid armor 20 mm bending radius 2 Metallic protective tube 30 mm bending radius X Special protection (e.g. military grade) X	SC / UPO	0						SCU	SCU								
ST / PC ST / PC STP STP Other connectors: LSA, LuxCis, Molex, special, expanded beam etc. unique ID OTH OTH Length L1 in m [0.2 4.5] (standard 4.5 m for 900µm, 1.5 m for 3 mm and 2 mm) Length L2 in m [0.2 4.5] (standard 4.5 m for 900µm, 1.5 m for 3 mm and 2 mm) Bare fiber only Fiber protective tube 900µm buffer 30 mm bending radius (Standard) 1 Fiber protective tube Kevlar / aramid armor 20 mm bending radius 2 Metallic protective tube 30 mm bending radius X Special protection (e.g. military grade)	SC / PC			SC / P	0			SCP	SCP								
Other connectors: LSA, LuxCis, Molex, special, expanded beam etc. unique ID OTH OTH Length L1 in m [0.2 4.5] (standard 4.5 m for 900µm, 1.5 m for 3 mm and 2 mm) Length L2 in m [0.2 4.5] (standard 4.5 m for 900µm, 1.5 m for 3 mm and 2 mm) Bare fiber only 5 mm bending radius 0 Fiber protective tube 900µm buffer 30 mm bending radius (Standard) 1 Fiber protective tube Kevlar / aramid armor 20 mm bending radius M Special protection (e.g. military grade) X	ST / UPC							STU	STU								
Length L1 in m [0.2 4.5] (standard 4.5 m for 900µm, 1.5 m for 3 mm and 2 mm) Length L2 in m [0.2 4.5] (standard 4.5 m for 900µm, 1.5 m for 3 mm and 2 mm) Bare fiber only 5 mm bending radius 0 Fiber protective tube 900µm buffer 30 mm bending radius (Standard) 1 Fiber protective tube Kevlar / aramid armor 20 mm bending radius 2 Metallic protective tube 30 mm bending radius M Special protection (e.g. military grade) X	ST / PC			ST / PC				STP	STP								
Length L2 in m [0.2 4.5] (standard 4.5 m for 900µm, 1.5 m for 3 mm and 2 mm) Bare fiber only 5 mm bending radius 0 Fiber protective tube 900µm buffer 30 mm bending radius (Standard) 1 Fiber protective tube Kevlar / aramid armor 20 mm bending radius 2 Metallic protective tube 30 mm bending radius M Special protection (e.g. military grade) X			special, exp	oanded	beam etc. ur	nique ID		ОТН	ОТН								
Length L2 in m [0.2 4.5] (standard 4.5 m for 900µm, 1.5 m for 3 mm and 2 mm) Bare fiber only 5 mm bending radius 0 Fiber protective tube 900µm buffer 30 mm bending radius (Standard) 1 Fiber protective tube Kevlar / aramid armor 20 mm bending radius 2 Metallic protective tube 30 mm bending radius M Special protection (e.g. military grade) X																	
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Fiber protective tube 900µm buffer 30 mm bending radius (Standard) 1 Fiber protective tube Kevlar / aramid armor 20 mm bending radius 2 Metallic protective tube 30 mm bending radius M Special protection (e.g. military grade) X	Length L	.z in in ju.2 .	4.5] (stan	uar0 4.	5 m 10F 900µ	III, I.Ə M TO	ıı o M	iii anu 2 mm)									
Fiber protective tube Kevlar / aramid armor 20 mm bending radius 2 Metallic protective tube 30 mm bending radius M Special protection (e.g. military grade) X	Bare fiber only				5 mm bending radius					0							
Metallic protective tube 30 mm bending radius M Special protection (e.g. military grade) X	Fiber protective tube 900µm buffer				30 mm bendi	30 mm bending radius (Standard)					1						
Special protection (e.g. military grade) X	Fiber protective tube Kevlar / aramid armor				20 mm bending radius						2						
	Metallic protective tube				30 mm bending radius					М							
	Special p	protection (e	e.g. military g	grade)										X			
FLEXIFLANGE Unique identifier	EI EYIFI	ANGE						Unique identi	ifior								

Example: FORJ 4.40 IP50 type with SMF28 Ultra, FC/APC and SC/UPC, 1 m length each side with Kevlar protection ${\bf RO04-CU-FCASCU-1010-22-**}$



Multi-Channel Fiber Optic Rotary Joints x.40 (FORJ)

Fiber optic channel characteristics

Channels	Up to 8 CHs					
Fiber type	Singlemode	Multimode				
Fiber model	See fiber list	See fiber list				
Wavelength (dependent on fiber model)	450 nm – 1650 nm	450 nm – 1650 nm				
Average power capability, max.	500 mW	500 mW				
Return Loss, min. / premium	45 - 55 dB	35 - 45 dB				
Insertion loss, max. / premium	3.5 – 2.5 dB	4.5 – 2.5 dB				
Insertion loss variation over rotation, max. / premium	1.5 - 0.5 dB	1.5 - 0.5 dB				

Mechanical characteristics

Rotation speed, max.	Up to 1000 rpm				
Life, min.	200 x 10 ⁶ revolutions				
Torque (room temperature), max.	0.15 Nm (depending on IP protection level)				
Interface loads, max.	no loads allowed				
Case material	stainless steel, copper alloy (corrosion resistant)				
Case surface finish	no finish				
IP protection level	IP50/IP65 per EN 60529 (all interfaces connected with appropriate gaskets)				
Weight, approx.	0.7 kg				

Environmental conditions

Operation					
Ambient temperature range	-40 °C to +85 °C				
Relative humidity, max.	95% - 100%				
Storage					
Ambient temperature range	-40 °C to +85 °C				
Relative humidity, max.	95% - 100%				