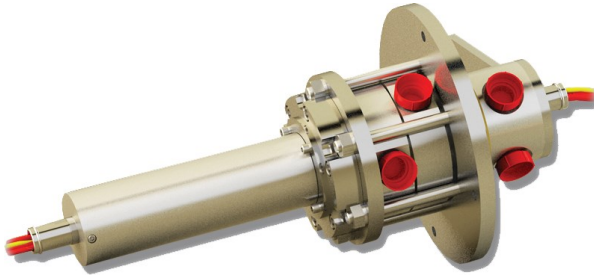


Multi-Pass Fluid Rotary Union with an Electrical Slip Ring or Fiber Optic Rotary Joint

Model 200

Focal Technologies Corporation, a Moog Inc. company, has over 30 years of expertise in supplying standard and custom marine products for harsh environments and is a leading manufacturer of high performance and high quality fluid rotary unions, slip rings and fiber optic rotary joints. Contact Focal for any assistance in selecting the best solution for your requirements.



The Model 200 is a multi-pass Fluid Rotary Union (FRU) combined with an Electric Slip Ring (ESR) and can also include a Moog Fiber Optic Rotary Joint (FORJ). Moog electrical optical fluid swivels have served the marine industry for over 30 years.

The FRU portion is typically configured with up to 13 passes, inter-port mixing is prevented through the use of double seals and an intermediate vent between passes. It is available in several standard port configurations or types. It is available with the standard seal technology or with a new low leakage seal option. In its standard configuration, it is rated for 1000 psi [68 bar] at 10 rpm continuous service and up to 30 rpm intermittent service.

The ESR portion is comprised of power and signal electrical passes. Ideal for small systems, it is a compact, rugged unit designed for harsh operating conditions. For the hazardous area environment, there is an option for a fully certified flame-proof enclosure. When underwater operational capability is required, the it can also be adapted for use as a fluid-filled pressure compensated unit.

The FORJ portion can be configured with any of Moog's single channel or multi-channel singlemode or multimode catalog fiber joints. Our FORJs are capable of working with all fiber types, sizes and the wavelengths and meet insertion loss performance typical of customer requirements. In addition to FORJs operating at standard wavelengths for data communication, FORJ versions have been developed to work with optical sensors with enhanced optical loss and return loss over a broader range of wavelengths. Moog has been the leading supplier of FORJ products to the marine industry for over 20 years with many thousands of products delivered to the oil and gas markets. For the oilfield market, products are designed to be robust and weatherproof with all models being shock and vibration tested and options for operating fluid-filled and pressure compensated.

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Features

- Electrical passes rated up to 1500 V / 7 A
- Hazardous area certification available
- Configurable with up to 13 ports as standard
- 1/4, 1/2, 5/8 and 1 inch SAE straight thread o-ring ports standard
- Corrosion resistant materials suitable for hot sea water and other harsh chemicals
- Rated to 1000 psi [68 bar] at 10 rpm continuous service
- Maximum speed 30 rpm intermittent
- Polymer bearings eliminate the need for periodic service
- Optional rolling element bearing design available
- Sealed housing design tested to IP 66 standards
- Can accommodate a variety of wire and cable types
- Rugged design
- Reliable operation under shock and vibration

Benefits

- Low leakage
- Configurable
- Integrated assembly for ease of installation
- Compact size

Applications

- Diving umbilical winches
- Seismic survey winches
- Hydraulic and electric control winches
- Remote Operated Vehicles (ROVs)
- Winch applications
- Mine countermeasures
- Towed instrument arrays
- Wirelining

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Specifications

Fluid Rotary Union (FRU) Specifications

Mechanical	
Rotational Speed ¹	10 rpm max continuous 30 rpm max intermittent (dependent on configuration)
Torque ^{2,3}	Consult product specific installation drawing. Operating torque varies based on number of passes, shaft diameter, pressure, speed, medium and seal type
Weight	Dependent on configuration
Pressure ¹	1000 psi (3000 psi optional)
Nominal Port Size	SAE straight thread O-ring thread size
1/4 inch	7/16-20 UNF
1/2 inch	3/4-16 UNF
5/8 inch	7/8-14 UNF (passage size suitable for 3/4" nominal, 1-1/16-12 UN adapter)
1 inch	1-5/16-12 UN
Environmental	
Ambient Temperature	-40°C to +60°C
Gases	-40°C to +100°C
Liquids	0°C to +60°C
Leakage	
Leakage, Standard Seal	50 std. mL / min N ₂ gas per seal rotating @ 1000 psi max Typically less than 10 std. mL / min N ₂ gas per seal rotating @ 1000 psi
Leakage, Reduced Leakage Seal	2 std. mL / min N ₂ gas per seal rotating @ 1000 psi max Typically less than 0.05 std. mL / min N ₂ gas per seal rotating @ 1000 psi

- Operational life is dependent on pressure, temperature, rotational speed duty cycle and size of assembly. Maximum values do not apply concurrently. Please consult the factory for actual value.
- Break-in torque may be higher
- Flexible conduit should be used to couple to the rotating component. The torque arm must be loose coupled.

Electrical Slip Ring (ESR) Specifications

Electrical	
Voltage	Maximum 1000 VAC (1500v optional)
Current	Maximum 7 A per pass Maximum 100 A total current, dependent on duty cycle, ambient temperature and specific configuration. Consult factory to ensure configuration is suitable for application
Contact Resistance	20 mΩ nominal
Insulation Resistance	Typical > 500 MΩ @ 1 kVDC

Fiber Optic Rotary Joint (FORJ) Specifications

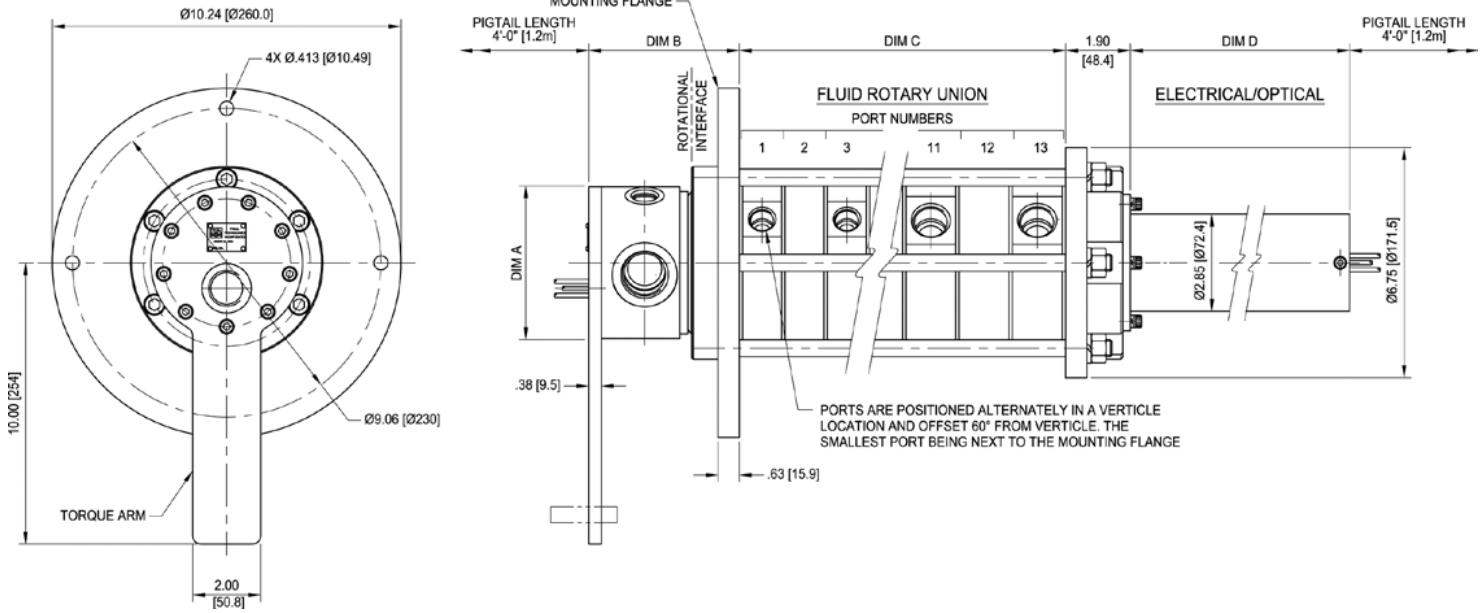
Product	Fiber Type	No. Channels
FO197	MM	1
FO286	MM	1
FO206	SM	1
FO285	SM	1
FO292	MM	2
FO291	SM	2 - 6
FO300	SM & MM	2 - 12

Unit Specifications

Mechanical	
Rotational Speed	Maximum 10 rpm continuous, contact factory for higher speeds
Protection Class	IP66
Operating Temperature	-20°C to +55°C (standard)
Housing	Stainless steel (304)
Length "L"	Varies with number of electrical passes
Terminations	Wire & fiber pigtails, custom lengths
Options	
Design Certification	ABS, DNV, BV, LRS
Submersed Applications	Factory filled or field fillable. Consult factory.
Other Devices	RF Rotary Joints, shaft encoder, sensors, customer supplied product
Ingress Protection	IP68 to 'x' m, contact factory for other ratings
Certification	ETL (CAN, US), ATEX, IECEx
Termination	Supply and installation of connectors, terminals, conduit, cable, glands, junction boxes

All specifications and information are subject to change without notice. Please contact Focal for the latest updates.

Specifications



Sample Configurations

Type	0-0-1-2-2	3-0-0-0-0	0-9-0-0-2	0-0-5-0-5	0-4-0-2-7
Port Size	Number of Ports	Number of Ports	Number of Ports	Number of Ports	Number of Ports
1"	0	3	0	0	0
3/4"	0	0	9	0	4
5/8"	1	0	0	5	0
1/2"	2	0	0	0	2
1/4"	2	0	2	5	7
DIM "A"	Ø4.450 [Ø113.03]	Ø5.00 [Ø127]	Ø6.25 [Ø158.8]	Ø4.50 [Ø114]	Ø5.50 [Ø139.7]
DIM "B"	Ø4.42 [Ø112.2]	Ø4.05 [Ø102.8]	Ø4.61 [Ø117]	Ø4.53 [Ø115]	Ø4.52 [Ø114.9]
DIM "C"	Ø6.04 [Ø153.3]	Ø9.15 [Ø232.3]	Ø20.462 [Ø519.7]	Ø15.81 [Ø401]	Ø19.57 [Ø497.1]
DIM "D"	See Note*	See Note*	See Note*	See Note*	See Note*

*Please note that dimension "D" vary with number of electrical and fiber passes required. Please contact factory for dimension details.