



## **Radial Lip Seals with PTFE Sealing Lip**

A reliable sealing for difficult and  
extreme conditions



# Radial Lip Seals with PTFE Sealing Lip

A reliable sealing for difficult and extreme working conditions.

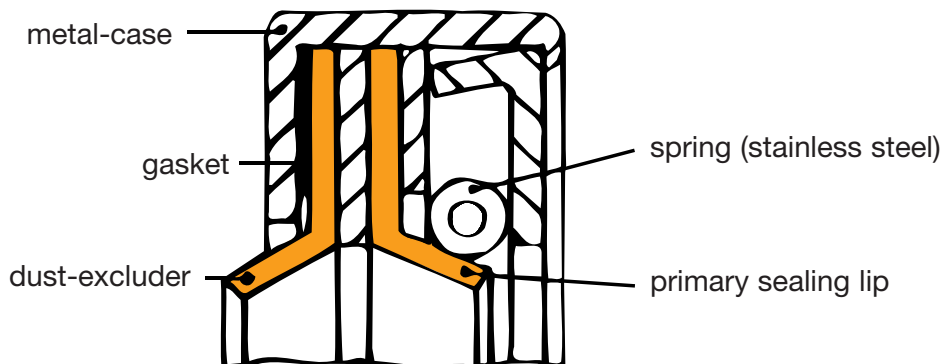
The new generation of GFD-rotary shaft lip seals were especially developed for use under difficult and extreme conditions.

The superior properties of PTFE as lip material combined with a corrosion resistant stainless steel housing provide the particular advantages of these GFD-rotary shaft lip seals.

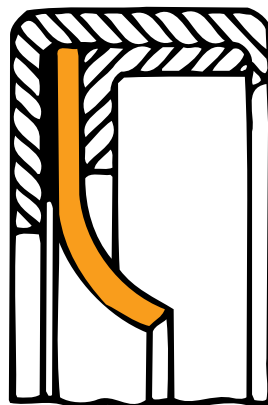
## Advantages and applications:

- Temperature range from  $-70^{\circ}\text{C}$  to  $+260^{\circ}\text{C}$
- Lowest friction and power draw
- Long seal life because of wear resistant lip materials
- Almost universal chemical resistance (depending on lip material)
- Suitable for dry running and poorly lubricated conditions
- High shaft speed up to 36 m/s
- Exchangeable with standard lip seals according to DIN 3760
- For food or pharmaceutical industry

## Design example:



## Standard-Type M:



- Shaft speed up to 30 m/s
- Pressure up to 10 bar
- Suitable for dry and poorly lubricated conditions
- Economical seal design

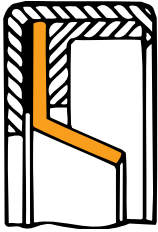


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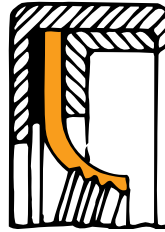
## Other Designs:

### Type L



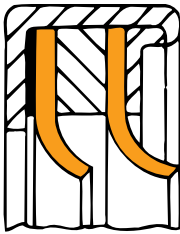
- low torque design
- shaft speed up to 40 m/s
- for pressureless applications
- low friction torque
- suitable for dry running

### Type MH



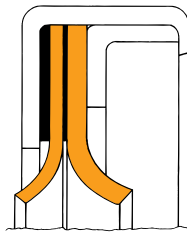
- with hydrodynamic feature on the sealing lip
- low friction
- higher flexibility of the sealing lip
- unidirectional shaft rotation

### Type MD



- same design as type M (but with 2 lips)
- high tightness, recommended for pumps and hydraulic motors
- for pressurized service (MDP)
- recommended if sealing plate is under a medium

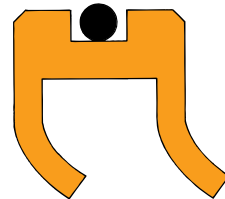
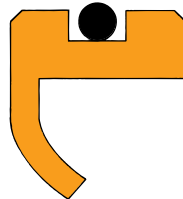
### Type MW



- same design as type M (but with an auxiliary wiper lip)

## Special designs:

These special designs were developed for special applications. Any individual dimensions can be realized without considering dimension lists and standards. Special designs with hydrodynamic features as well as applications for the pharmaceutical industry are available. Larger diameters up to 2000 mm are possible.



## Shaft finish:

- hardness  $\geq 45$  HRC (for poor lubrication and high speed  $\geq 58$  HRC)
- Ra = 0,2–0,6  $\mu\text{m}$
- tolerance h 11, ISO standard 286
- plunge grind surface finish
- lead-in chamfer 15°–30°

## Housing bore:

- tolerance H8, ISO standard 286
- lead-in chamfer 5°–15°



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## Tool- and dimension List:

<u>Type M</u>	Shaft diameter [mm] x Outside diameter [mm] x Ring width [mm]			
		10 x 22 x 7	22 x 35 x 7	38 x 55 x 8
	10 x 24 x 7	22 x 40 x 7	38 x 58 x 8	70 x 95 x 10
	10 x 25 x 7	22 x 47 x 7	38 x 62 x 8	70 x 100 x 10
	10 x 28 x 7	25 x 40 x 7	40 x 52 x 8	75 x 95 x 10
	12 x 22 x 7	25 x 42 x 7	40 x 55 x 8	75 x 100 x 10
	12 x 24 x 7	25 x 47 x 7	40 x 60 x 8	80 x 100 x 10
	12 x 25 x 7	25 x 52 x 7	40 x 62 x 8	80 x 110 x 10
	12 x 28 x 7	28 x 40 x 7	42 x 55 x 8	85 x 110 x 10
	12 x 30 x 7	28 x 47 x 7	42 x 60 x 8	85 x 120 x 12
	15 x 26 x 7	28 x 52 x 7	42 x 62 x 8	90 x 110 x 10
	15 x 30 x 7	30 x 40 x 7	45 x 62 x 8	95 x 120 x 12
	15 x 32 x 7	30 x 42 x 7	45 x 65 x 8	95 x 120 x 12
	15 x 35 x 7	30 x 45 x 7	48 x 65 x 8	100 x 120 x 12
	16 x 30 x 7	30 x 47 x 7	50 x 68 x 8	100 x 125 x 12
	16 x 35 x 7	30 x 50 x 7	50 x 72 x 8	100 x 130 x 12
	17 x 35 x 7	30 x 52 x 7	52 x 72 x 8	105 x 130 x 12
	18 x 30 x 7	32 x 45 x 8	55 x 72 x 8	110 x 130 x 12
	18 x 32 x 7	32 x 47 x 8	55 x 80 x 8	110 x 140 x 12
	18 x 35 x 7	32 x 52 x 8	60 x 75 x 8	115 x 140 x 12
	20 x 30 x 7	35 x 47 x 8	60 x 80 x 8	115 x 150 x 12
	20 x 32 x 7	35 x 50 x 8	60 x 85 x 8	120 x 150 x 12
	20 x 35 x 7	35 x 52 x 8	62 x 80 x 8	125 x 150 x 12
	20 x 40 x 7	35 x 55 x 8	65 x 85 x 8	125 x 160 x 12
	20 x 47 x 7	35 x 62 x 8	65 x 90 x 10	130 x 160 x 12

Many of these dimensions are in stock. Special dimensions can be delivered within a short period of time.

## Materials:

The sealing quality and the service life depend on the right choice of the design, the geometry of the seal lips and the lip material. Standard materials cover a great application range. This special compounds have proven themselves exceptionally well in years of use for radial lip seals.

**Lip materials:** Approximately 45 lip materials are available for special applications. Following please find a selection of materials:

Material Description	Relative Wear Resistance 1 = low, 9 = high	Temperature Range
PTFE – virgin; for food and pharmaceutical applications	3	-230... +190°C
PTFE with Carbon and Graphite; good general properties	8	-100... +225°C
PTFE with Graphite; good general properties	7	-130... +250°C
PTFE with Glass fiber and Graphite; good wear resistance	9	-100... +260°C
PTFE with special filler; good wear resistance, for unhardened stainless steel shafts	9	-100... +260°C

**Housing materials:** Stainless steel (301, 304)

Additional materials on request.



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## Technical Questionnaire for Rotary Shaft Lip Seals:

Please copy, fill in and send to: GFD Gesellschaft für Dichtungstechnik mbH, Hofwiesenstraße 7, D-74336 Brackenheim, Fax (071 35) 95 11-11

In order to work out a design proposal for seals, the following information is required or useful:

A sketch showing the fitting conditions and a short description of the application.

**Description:** \_\_\_\_\_

### **Dimensions:**

- Shaft-Ø and tolerance [mm]: \_\_\_\_\_
- Housing-Ø and tolerance [mm]: \_\_\_\_\_
- Bore depth and tolerance [mm]: \_\_\_\_\_

### **Materials:**

- Shaft material: \_\_\_\_\_
- Housing material: \_\_\_\_\_

### **Surface finish:**

- Shaft surface finish [ $\mu\text{m}$ ]: \_\_\_\_\_  
DIN 4768 (Ra/Rz/Rmax)
- Housing surface finish [ $\mu\text{m}$ ]: \_\_\_\_\_
- Shaft hardness [HRC]: \_\_\_\_\_

### **Operating conditions:**

- Revolutions normal: \_\_\_\_\_ max.: \_\_\_\_\_ [r/min]
- Temperature normal: \_\_\_\_\_ max.: \_\_\_\_\_ [ $^{\circ}\text{C}$ ]
- Pressure normal: \_\_\_\_\_ max.: \_\_\_\_\_ [bar]
- Medium: \_\_\_\_\_
- Medium level under  or over  the lower edge of the shaft

### **Further data of the sealing place:**

- Shaft misalignment [mm]: \_\_\_\_\_
- Dynamic runout [mm]: \_\_\_\_\_
- Seal in contact with food/pharmaceutical drugs  
 Yes  No
- Dirt, deposits, contamination  
 Yes  No

### **Life expectancy:**

- Usable life [h]: \_\_\_\_\_
- Operating time [h] or [%]: \_\_\_\_\_

### **Quantities required:**

- Immediately (sample): \_\_\_\_\_ [piece]
- One-time: \_\_\_\_\_ [piece]
- Yearly: \_\_\_\_\_ [piece]

**Company:** \_\_\_\_\_

**Name/agent:** \_\_\_\_\_

**Phone:** \_\_\_\_\_ **Fax:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Seals    Sealing Elements    Sealing Systems**

## **GFD – Gesellschaft für Dichtungstechnik mbH**

Hofwiesenstraße 7, D-74336 Brackenheim, Tel. (+49) 71 35 95 11-0, Fax 95 11-11  
http: www.gfd-dichtungen.de · E-mail: info@gfd-dichtungen.de  
(Company for Sealing Technology)

**Don't hesitate to use our experience and talk to us**





# Radial Lip Seals with PTFE Sealing Lip

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## Applications:

- Chemical processing equipment
- Hydraulic motors
- Compressors
- Shafts on gearboxes
- Rotary Blowers
- Ventilators
- Actuators
- Rotary unions
- Encoders
- Mixers and Dryers
- Robotics
- Milling-machines
- Pumps of all kinds
- Pharmaceutical and food processing equipment
- Centrifugal machines
- Engines and Compressors crankshaft

For the sealing of different media, such as water, oils, greases, cooling fluids, food and pharmaceutical products, aggressive as well as corrosive media, chemicals, adhesives, resins, air and gases etc.

## Technical Consultation and Service:

We will help you find the best solution for your seal problem.

Send us your drawing/sketch, working conditions (dimensions, shaft/housing material, operating speed, medium, pressure, life expectancy etc.).

All recommendations and data are based on the experience gained over decades of using those radial lip seals with PTFE sealing lip. Unknown factors and special conditions may restrict the generally valid promises.

In critical cases we suggest tests with samples.

## Product Lines:

### Spring Energized PTFE-Seals

or made of other high performance plastics with a stainless steel spring for permanent elasticity.

### Metallic- O-Rings and C-Rings

developed as static seals for gases and fluids under extreme conditions, temperatures from  $-269^{\circ}\text{C}$  to  $+980^{\circ}\text{C}$  and UHV-vacuum up to 6800 bar pressure.

### PTFE-Seals

universal chemical resistance, sterilisable, suitable for food and pharmaceutical products.

### PTFE-Parts

according to clients' drawings and specifications.

