



## **M-Series Top-Entry Mixer Seals**

Versatile cartridge seals designed for  
top-entry mixing equipment



*Experience In Motion*



## Unprecedented flexibility to meet challenging mixer applications

Sealing mixing equipment can be challenging. Product contamination, high pressures, shaft run-out, spatial limitations and emissions control are just a few of the potential issues that need to be considered when determining the proper seal.

With unprecedented flexibility in one cartridge, M-Series top-entry mixer seals from Flowserve are designed to provide versatile and reliable performance for a wide range of mixer applications.

### Key features and benefits

- **Standardized seal designs** permit interchangeability of seal housing, sleeves and glands for applications in liquid-lubricated, dry-running or full fluid-film face technologies.
- **Non-contacting gas barrier** technology enables operation at 0 rpm.
- **Tolerates radial run-out** of up to 3.2 mm (0.126 in.) total indicator reading (TIR); eliminates bearing from the housing and permits reduced shaft diameters for lower cost.
- **Standard shaft-centered seal housings** reduce the need for critical shaft-to-flange bore radial alignment (concentricity).

- **Economical high-alloy options** provide superior performance in harsh, corrosive environments.
- **Available sanitary gland with debris well** for applications requiring steam cleaning.
- **Cooling canister seal chamber liner** efficiently removes heat in the seal area.
- **MD and MW designs** feature pressure-reversal capabilities for greater seal integrity under off-design operation.
- **Hydraulically balanced stators** reduce high-pressure loading, minimizing seal face distortion and leakage.
- **RedRaven Ready** to be compatible with Flowserve's condition monitoring hardware.

### Materials of construction

- Metal components:
  - 316 stainless steel for major metal parts
- Rotating face:
  - Carbon, tungsten carbide, silicon carbide
- Stationary face:
  - Silicon carbide, tungsten carbide
- Gaskets:
  - Fluoroelastomer

# M-Series mixer seal platform



## MW-200

Liquid-barrier, dual-pressurized mixer seal

- Internal cooling option for higher temperatures available
- Cooling flange for higher temperatures up to 300°C (572°F) available
- Product-side seal has reverse-pressure capability
- Available with or without bearing
- Designed for steel- or glass-lined vessels
- DIN compatibility available

### Operating parameters

- **Pressure:** Vacuum to 32 bar (464 psi)
- **Temperature:** -40°C to 150°C (-40°F to 302°F)
- **Radial run-out:** Up to 3.2 mm (0.126 in.) TIR
- **Speed:** Up to 225 rpm
- **Shaft size:** 20 to 165 mm (0.750 to 6.500 in.)



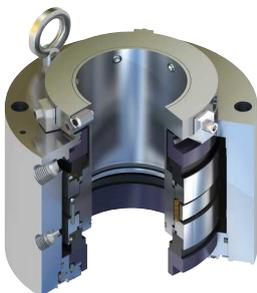
## MD-200

Gas-barrier, dry-contacting, dual-pressurized mixer seal

- Product-side seal has reverse-pressure capability
- Dry-running for minimized product contamination from barrier fluid
- Features self-lubricating faces
- Cooling flange for higher temperatures up to 200°C (392°F) available
- Available with or without bearing
- Optional debris well at inboard seal
- Available for steel- or glass-lined vessels
- DIN compatibility available

### Operating parameters

- **Pressure:** Vacuum to 6.7 bar (97 psi)
- **Temperature:** -40°C to 150°C (-40°F to 302°F)
- **Radial run-out:** Up to 3.2 mm (0.126 in.) TIR
- **Speed:** Up to 300 rpm
- **Shaft size:** 20 to 165 mm (0.750 to 6.500 in.)



## ML-200

Gas-barrier, non-contacting, dual-pressurized mixer seal

- Advanced lift-off technology avoids wear from seal face contact
- Barrier leakage does not affect product quality
- Dynamic O-ring designed to eliminate hang-up
- Operates with a simple gas barrier support system
- Optional with or without bearing
- Cooling flange for higher temperatures up to 300°C (572°F) available
- DIN compatibility available

### Operating parameters

- **Pressure:** Vacuum to 6.7 bar (97 psi)
- **Temperature:** -40°C to 260°C (-40°F to 500°F)
- **Radial run-out:** Up to 3.2 mm (0.126 in.) TIR
- **Speed:** Up to 500 rpm
- **Shaft size:** 20 to 165 mm (0.750 to 6.500 in.)



## Better understand conditions inside mechanical seals with RedRaven



Proactive mechanical seal maintenance is one of the best ways to improve equipment reliability. With RedRaven from Flowserve, you'll be able to monitor M-Series mixer seal temperatures, pressures and flow rates, enabling plant operators and technicians to virtually see inside your mechanical seals. This means corrective actions can be taken sooner, often preventing unplanned shutdowns. By proactively addressing equipment issues, uptime can be improved, maintenance costs can be reduced, and — most importantly — safety and reliability increase.

Discover more at: [Flowserve.com/RedRaven](https://Flowserve.com/RedRaven)

### Seal support systems



#### NR reservoirs

NR Series reservoirs are ideally suited for sustaining Plan 52 unpressurized and Plan 53A pressurized operations. Available in many pre-engineered configurations or customizable to your requirements, these reservoirs are easy to install and maintain with water or other barrier/buffer fluids.



#### API Plan 54 circulators

API Plan 54 circulators are designed to provide clean barrier fluid at a controlled flow rate, pressure and temperature. Flowserve offers a complete line of standard circulators for a wide range of sealing applications and custom-designed circulation systems based on your specifications.

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