DMR™ Bearing Isolators

Full Range of Bearing Isolators

Features:

- *Ensures Longer Bearing Life*
- *Total Exclusion of Contaminants*
- *Zero Lubricant Leakage*
- *Unitized, Two-Piece, Non-Contact Design*

Technology

The unique technology has been developed over a number of years to provide total bearing protection by ensuring zero leakage of lubricant to atmosphere and total exclusion of contaminants from the bearing housing. Lip seals are primarily designed to keep lubricants in, and are not always effective at keeping contaminants out. Surveys have shown that even a tiny amount of water or dirt in the lubricant can drastically reduce bearing operating life.

Unique Design

The DMR bearing isolator is based on a simple, unitized, two-piece design normally manufactured in chemically resistant PTFE. The product range consists of a complete family of complementary designs that provides outstanding performance for virtually any application. Applications with pressurized, flooded, or sealed bearing housings can now benefit from Types FS and FN, which feature an internal lip seal, again offering benefits of zero leakage and zero entry of contaminants.

Applications

High-grade PTFE composites in the construction of the standard bearing isolator range ensure a wide range of operating capabilities, including high and low temperature and extreme chemical environments. The use of alternative PTFE fillers extends the physical properties and capabilities into such areas as food production and pharmaceuticals.

DMR bearing isolators can normally replace existing sealing devices, without modification to the equipment. Extending equipment operating life across these industries:

- Chemical Processing
- Pulp and Paper
- Oil and Gas
- Mining
- Food and Beverage

DMR™ ISO 9001:2000 Registered QMS

SUPPLYING THE PACE OF INDUSTRY

1-800-387-7115

Daemar Inc.

www.daemar.com

Bearing Isolator Designs

Standard Operating Parameters :

A - Shaft Tolerances = ± .002" (± .05mm)

B - Bore Tolerances = ± .002" (± .05mm)

C - Cavity Width

D - Seal Into Bore Depth

E - Seal Width

F - Overall Diameter (B + 1/4")

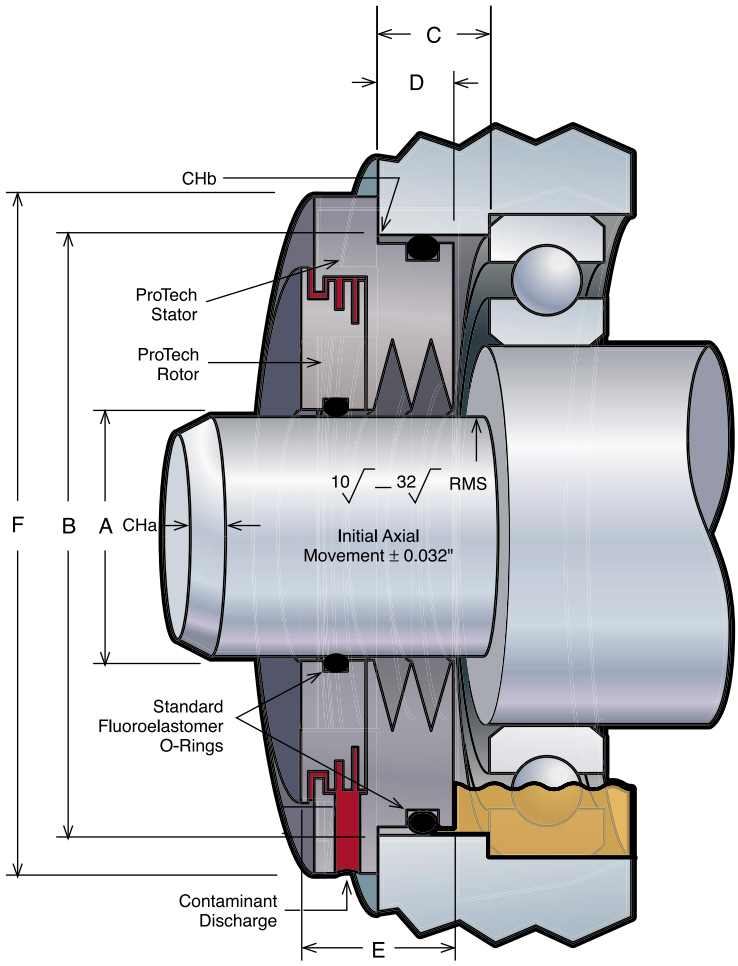
Total Eccentricity:	.020" TIR (0.51mm)
Shaft Speed:	Up to 5,000 fpm
Pressure:	0 psi
Temperature Range:	-40° to 250° F (-40° to 121° C) (Standard Materials)
Chamfer Width – CHa:	.032" to .063" (0.81mm–1.6mm)
Bore Width – CHb:	.032" to .063" (0.81mm–1.6mm)
Compatibility:	Compatible with most bore and shaft materials

Material Availability

Graphite-reinforced PTFE
Mineral-reinforced PTFE
Stainless steel-reinforced PTFE
Bronze-reinforced PTFE
New high-temp and large-diameter reinforced PTFE

Flanged Design – LS

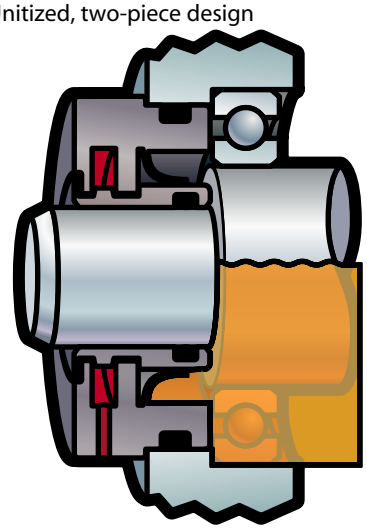
- Single expulsion port
- External flange
- Non-contact



Bearing Isolator Designs

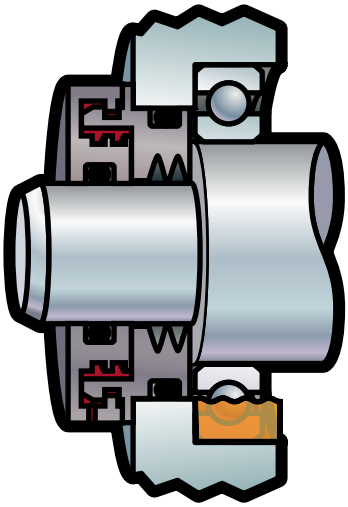
DMR -360 Flooded Design – FS

- Zero leakage in any orientation
- Excludes contaminants
- Performs when vertical or flooded
- PTFE construction
- Unitized, two-piece design



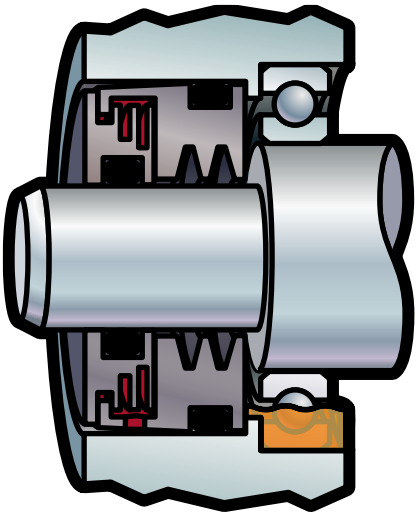
Wrap-Around Design – LW

- Single or no-expulsion port
- For vertical applications
- Non-contact



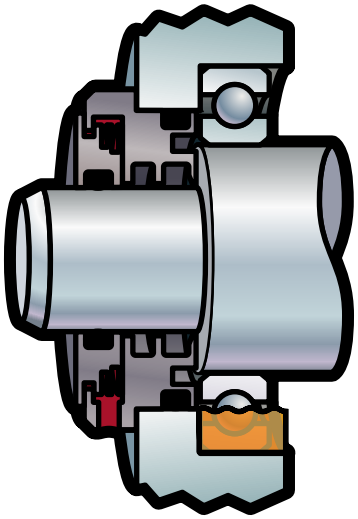
Flush-Mount Design – LN

- Single port
- No space required outside bore
- Non-contact



Severe-Splash Design – SS

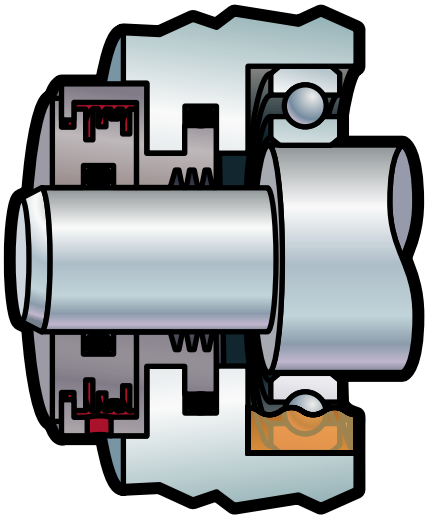
- For severe oil-splash applications
- Ideal for double-rolled bearings
- Non-contact



Bearing Isolator Designs

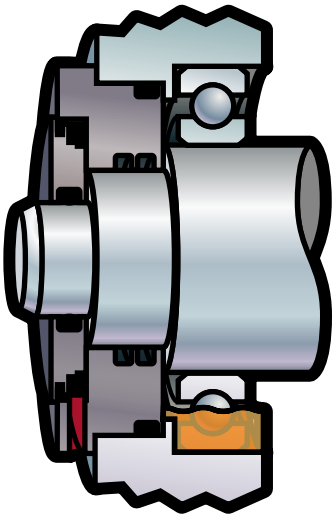
Split Pillow Block Design – LB

- Meets manufacturers' specifications
- Successfully tested for taconite applications
- Accommodates variations in casting tolerances



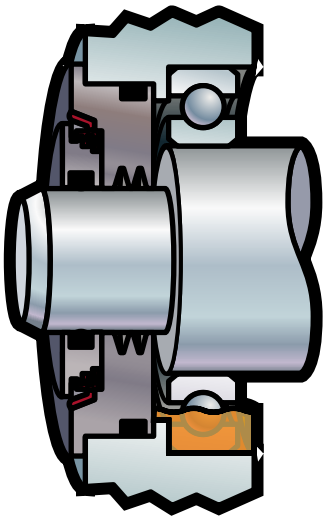
Step-Shaft Design – LM

- Single expulsion port
- Designed for electric motors with step shafts
- Non-contact



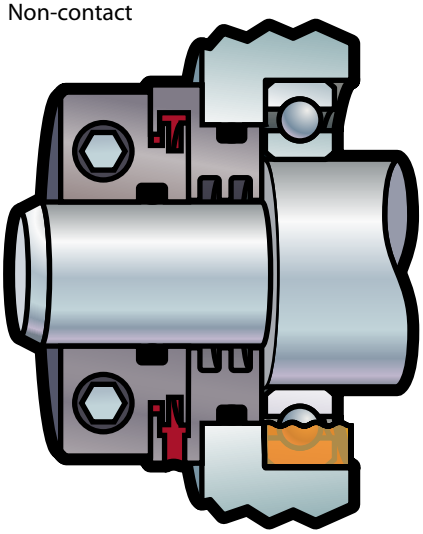
Multi-Port Design – LD

- No need to position drain port
- No seal orientation required
- Less space required outside bore



Split Design – SLT

- Reduced maintenance costs
- Eliminates equipment disassembly for installation
- Non-contact



Standard Requirements
(Imperial English Standards) (inches)

Type	Shaft Size	In Bore Depth	Overall Width	Cross Section
LSE	.500 - .300	.313	.688	.313-.750
LSE	3.001 - 4.000	.375	.750	.313-.750
LSE	4.001 - 6.000	.375	.750	.437-.750
LSE	6.001- 10.000	.438	.815	.437-.750
LNE	.500 - 4.000	.562	.562	.375-.750
LNE	4.001- 10.000	.625	.625	.437-.750
LWE/LXE	.500 - 3.000	.313	.688	.375-.750
LWE/LXE	3.001 - 6.000	.375	.750	.437-.750
LWE/LXE	6.001- 10.000	.438	.815	.437-.750
FSE	.500 - 3.000	.313	.688	.375-.750
FSE	3.001 - 6.000	.375	.750	.375-.750
FSE	6.001- 10.000	.438	.813	.438-.750
FNE	.500 - 6.000	.562	.562	.375-.750
FNE	6.001- 10.000	.625	.625	.437-.750
SSE	.750 - 3.000	.313	.688	.500-.750
SSE	3.001 - 6.000	.375	.750	.500-.750
SSE	6.001- 10.000	.438	.815	.500-.750
SLE	.500 - 4.000	.313	1.113	.313-.750
SLE	4.001 - 6.000	.375	1.275	.437-.750
SLE	6.001- 10.000	.438	1.438	.437-.750

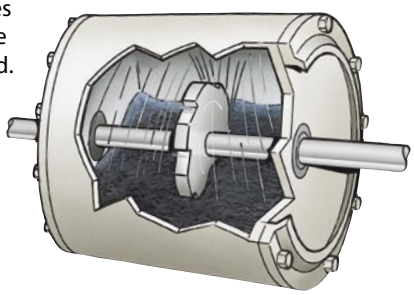
Standard Requirements
(Metric Standards) (mm)

Type	Shaft Size	In Bore Depth	Overall Width	Cross Section
LSM	12-40	7	16	5-20
LSM	> 40-60	8	17	6-20
LSM	> 60-80	9	18	7.5-20
LSM	> 80-130	9	18	10-20
LSM	> 130-250	11	20	12-20
LNM	12-80	10	10	7-20
LNM	> 80-130	12	12	8-20
LNM	> 130-250	15	15	9-20
LWM/LXM	12-40	7	16	5-20
LWM/LXN	> 40-60	8	17	6-20
LWM/LXN	> 60-80	9	18	7.5-20
LWM/LXN	> 80-130	9	18	10-20
LWM/LXN	> 130-250	11	20	12-20
FSM	13-76	8	17	9-20
FSM	> 76-152	9	18	9-20
FSM	> 152-250	11	20	12-20
FNM	13-152	14	14	9-20
FNM	> 152-250	15	15	12-20
SSM	40-60	8	17	12-20
SSM	> 60-130	9	18	12-20
SSM	> 130-250	11	20	12-20
SLM	12-40	7	27	5-20
SLM	> 40-60	8	28	6-20
SLM	> 60-80	9	29	7.5-20
SLM	> 80-130	9	33	10-20
SLM	> 130-200	11	35	12-20

Extreme Testing

Laboratory testing has significant advantages over field testing. The lab effectively compresses time and more easily explores limits. Before the DMR bearing isolator saw its first field test, we put it through laboratory tests that were far more severe than seals ever encounter in the field. The DMR bearing isolator has also been tested by an independent lab.

DMR bearing isolators and competitive seals were subjected to three extreme in-house tests with DMR bearing isolators clearly the seals of choice.



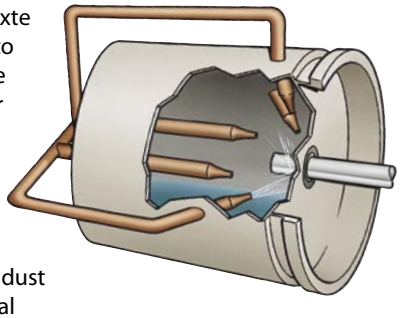
Oil Leakage Test

1. Oil Leakage Test

DMR bearing isolators and other seals were subjected to critical oil seal testing using a test machine built to SAE J110 standards. One-hundred hour tests were conducted with severe oil splash.

2. Water Exclusion Test

The test machine was modified by mounting five nozzles at various positions relative to the exte rior of the seal to simulate a most severe external hose down. Using water at pressures of 30 to 62 psi, these nozzles individually sprayed each seal from a distance of 3" in both a static mode and while the shaft rotated at various speeds up to 3525 rpm. The nozzles tried to force water past the seal for nearly two hours.

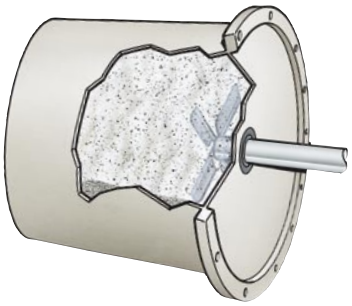


Water Exclusion Test

3. Dust Exclusion Test

The test machine was modified with an enclosed chamber containing a large quantity of fine dust and sand which was vigorously agitated with the chamber attached to the outside of each seal area. The equipment operated at speeds up to 3525 rpm for a period of 70 hours in an environ ment that was literally a dense dust storm.

The DMR bearing isolator passed all three torture tests. After lab testing, it was ready to confirm its performance superiority in field trials.



Dust Exclusion Test

Severe-Duty Electric Motor Applications

Based on outside testing, the DMR bearing isolator meets IEEE-841 standards and exceeds testing under IP-56.

Extreme Test Results

Material: Expulsion Method: Design Type:	PTFE Single-Port 2-Pc. Unitized	Bronze Single-Port 2-Pc. Non-Unitized	PTFE Multi-Port 3-Pc.Unitized	Bronze Single-Port 3-Pc. Unitized
Brand:	DMR	Brand A	Brand B	Brand C
Oil Leak Test	Pass	Fail	Pass	Fail
Water Pressure Test	Pass	Fail	Fail	Fail
Dust Test	Pass	Pass	Fail	Fail

DMR™

Features & Benefits

Characteristics	Features	Benefits
The unitized design of the DMR bearing isolator has many unique features not found in other labyrinth seals. The DMR bearing isolator is a custom-blended reinforced PTFE seal made to per form in high speed, high tempera ture, and chemical environments. Because of its non-contact design and PTFE construction, the equip ment experiences negligible energy loss.	PTFE Materials	• Chemical resistant • Lower seal cost • Provides alternative materials for specific applications • Low coefficient of friction and low heat build up • PTFE flaking = solid lubricant (metallic flaking = damaging abrasive)
	Non-Contact Design	• Virtually no torque consumption • Will not wear out or groove shafts
	Two-Piece Unitized	• Complete exclusion of dust and water • Zero oil leakage • Fewer components
	Greatest Axial Movement in Industry	• Reduces a major factor causing labyrinth seal leakage
	Fluoroelastomer O-Rings	• Static elastomer seal for the most severe services
The DMR bearing isolator can replace standard radial lip oil seals when performance and reliability are critical. In addition, DMR bearing isolators can be made for a wide range of industrial applications.	Multiple PTFE Compounds	• Pulp and paper • Petrochemical • Food service
	No Lubrication Required	• Can run dry because of non-contact design
	High Shaft Speeds	• Operates far beyond shaft speed limits of standard radial lip seals • Liberal specifications for shaft and bore finish resulting in low shaft cost
	Precision-Machined Seal	• Allows retrofit of most bore and shaft combinations • No tooling charges
DMR bearing isolators are available in multiple designs to meet specific design requirements and geometry constraints.	Available With or Without Flange	• Provides labyrinth sealing in restricted gland width
	Single and Multiple Expulsion Ports	• Available in multiple port if directional installation is a problem
	Exceeds IEEE-841	• Provides premium bearing protection on severe-duty electric motors
	New Split Pillow Block Design	• Meets split pillow block OEM specifications

Materials

Standard reinforced PTFE construction provides a wide range of operating capabilities including high or low temperatures and extreme chemical environments. The addition of other PTFE fillers extends the capability to special designs and services with enhanced physical properties. Two examples are large-diameter seals and food service requirements.

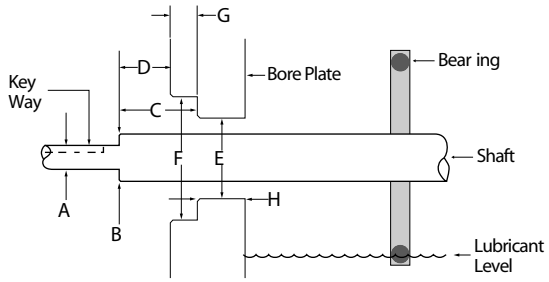
Quality

DMR bearing isolators are manufactured in our modern PTFE facility where the entire process from raw materials to finished product is tightly controlled. The highest quality and absolute consistency from lot to lot are assured by:

- Our many years of experience manufacturing seals
- The use of only first-grade virgin PTFE resins
- A very sophisticated system for controlling the critical sintering process
- Our special CNC production equipment

Ordering a DMR Bearing Isolator

- Measure shaft, bore, and gland length.
- Note any deviations from these dimensions outside the bore (i.e. shaft step down or housing counter bore).
- Provide dimensional descriptions and distance from the end of the housing.
- A small sketch would be helpful.



A Step shaft diameter (if applicable)
B Seal shaft diameter
C Location of step from CB housing (if applicable)
D Location of step from end of housing (if applicable)
E Bore diameter
F Counter bore diameter (if applicable)
G Counter bore depth (if applicable) = C minus D
H Gland depth

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