

# LabTecta<sup>®</sup>OP

Eliminate over 50% of bearing failures with the LabTecta<sup>®</sup>OP IP66 & IP69K certified bearing protector



## Improved

- Equipment life
- Process uptime
- Operational profit
- Environment

## Reduced

- Bearing failures
- Maintenance cost
- Operational losses
- Clean-up costs



# Improving Rotating Equipment Reliability by Preventing Bearing Failure

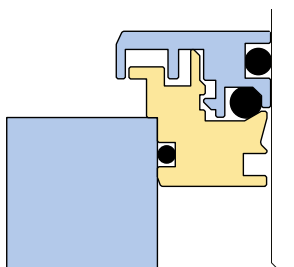
## Bearing Protection

The most cost effective reliability upgrade for your equipment

The LabTecta®OP range can eliminate the cause of 52% of your bearing failures. Through its dynamic lift technology, it allows the equipment to breathe when running, but is perfectly sealed when the equipment isn't running, preventing the ingress of contaminants.

### Top entry applications

LabTecta®T\* – Advanced non-contacting labyrinth seal with integral shut-off valve for top-entry applications.



### ATEX Certified

Complying with ATEX directive 2014/34/EU, the LabTecta®OP is available certified for use in Group I M2 (Mining) and Group II Cat 2 & 3 (Zone 1/21 & 2/22) equipment.



\* LabTecta®T sealed to IPX5

“Water ingress can have a disastrous effect on bearing life.”

## Reducing Bearing Failure

52% of bearing failures are due to contamination of the bearing oil\*. This represents 20.8% of all rotating equipment failures.

A major study into equipment reliability has shown 48% of all bearing failures are due to particle contamination of the bearing oil, with an additional 4% due to corrosion caused by contamination of the bearing oil.

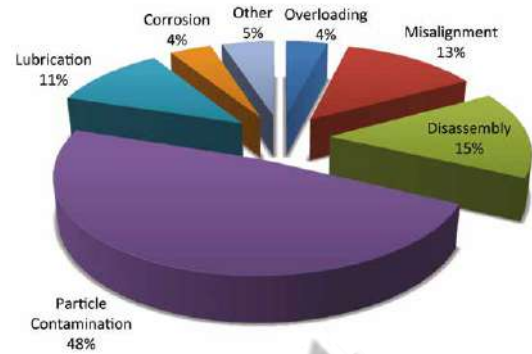
## Reducing Water Contamination

Research conducted by a major academic institution has shown that water contamination as low as 0.002% (20ppm) in some oils can reduce bearing life by as much as 48%.

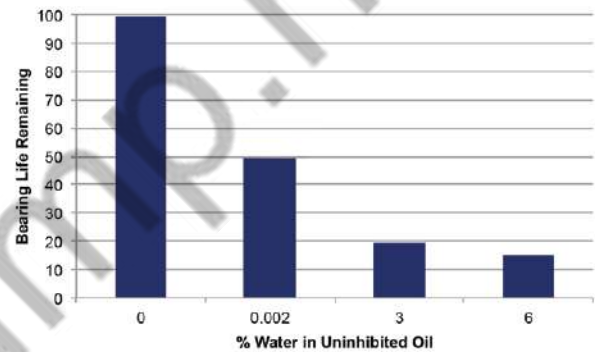
LabTecta®OP reduces bearing failure by:

- Preventing water ingress
- Preventing dust ingress
- Eliminating shaft damage due to rubbing
- Non-contacting design, thus no wearing of O'ring

## Causes of Bearing Failure



## Water Contamination Reduces Bearing Life Significantly



\* Bloch, Heinz; "Pump Users Handbook: Life Extension" 2011.

52% of Bearing failures are due to contamination of the bearing oil\*

The effect of water contamination







## LabTecta®OP Features & Benefits

- Velocity Reducing Cavity - Prevents loss of oil from the bearing chamber
- Zenith Barrier - Further protects against loss of oil
- Multi-tiered labyrinth - Keeps water, dust & contaminants out, improving bearing life
- Water Expulsion Port - Further protects against water ingress
- IP66 & IP69K Certified - Exceeds the requirements of IEEE std 841-2009 for electrical motors. Improves safety and reliability
- Non-wearing - Eliminates shaft wear in operation
- Maintenance-free - No routine maintenance required

## LabTecta®OP is IP66 and IP69K Certified

Proven protection through 3rd party testing

### Ingress Protection code rating .....

The premier third-party standard for Ingress Protection.

### Protection Rating against solids .....

**Level 6** — Defined as “No ingress of dust; complete protection against contact.”

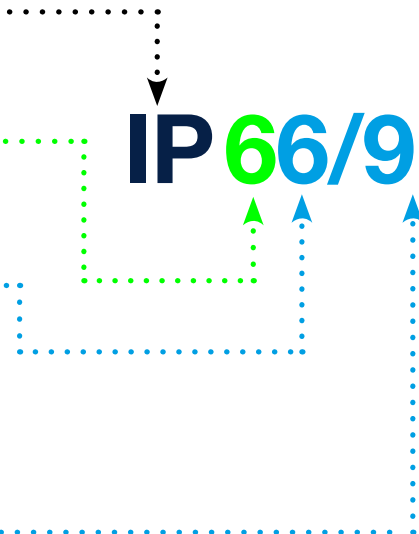
### Protection Rating against water.....

**Level 6** — Defined as “Water projected in powerful jets (0.5” / 12.5mm nozzle) against the enclosure from all practicable angles shall have no harmful effects”. Tested with at least 26 US gallons (100 litres) per minute for at least 3 minutes, while equipment is both static & rotating.

### Protection Rating against water.....

**Level 9K** — 80°C / 176°F Water jet at 80 to 100bar (1160 to 1450psi) and flow rate of 14 to 16c/m (3 to 3.5 gall/hr) from a distance of 10 to 15cm (3.9 to 5.9”) at 0, 40°, 60° and 90° for 30s each (DIN40050 Part 9 testing)

**IP 66/9K**



## The Problem with Lip-Seals – What is the True Cost?

Extensive testing shows conclusively that lip-seals cannot effectively protect your bearing oil. Recognized problems with lip-seals include:

- Have a short effective lifespan
- Ineffectiveness at keeping contamination from bearing housings
- Serious wear of shafts, causing extensive equipment damage and added cost
- The loss of lubrication, leading to catastrophic bearing and equipment failure

For these reasons API 610 11th edition, section 6.10.2.6 states “Lip-type seals shall not be used”

### Comparison of Lip-Seal versus LabTecta®OP

Requirement	Lip Seal	LabTecta®OP
Ability to keep oil in bearing	No lasting ability	Yes
Protection against water ingress	No lasting protection	IP66 & IP69K
Protection against ingress of particles	No lasting protection	IP66 & IP69K
Shaft wear	Significant	None

### Non Contacting. No Wear. No Loss of Protection

Seal Type	New	100 hours Use	1000 hours Use	1 Year Use
Lip Seal	Effective Sealing	Deterioration of Lip Seal	Visible Shaft Wear*	Significant loss of protection
Bearing Isolator	Effective Sealing	Effective Sealing	Effective Sealing	Effective Sealing

\*After a little over a 100 hours shaft wear can be perceived

Lip-seals wear grooves in shafts



## Dynamic Lift O-ring:

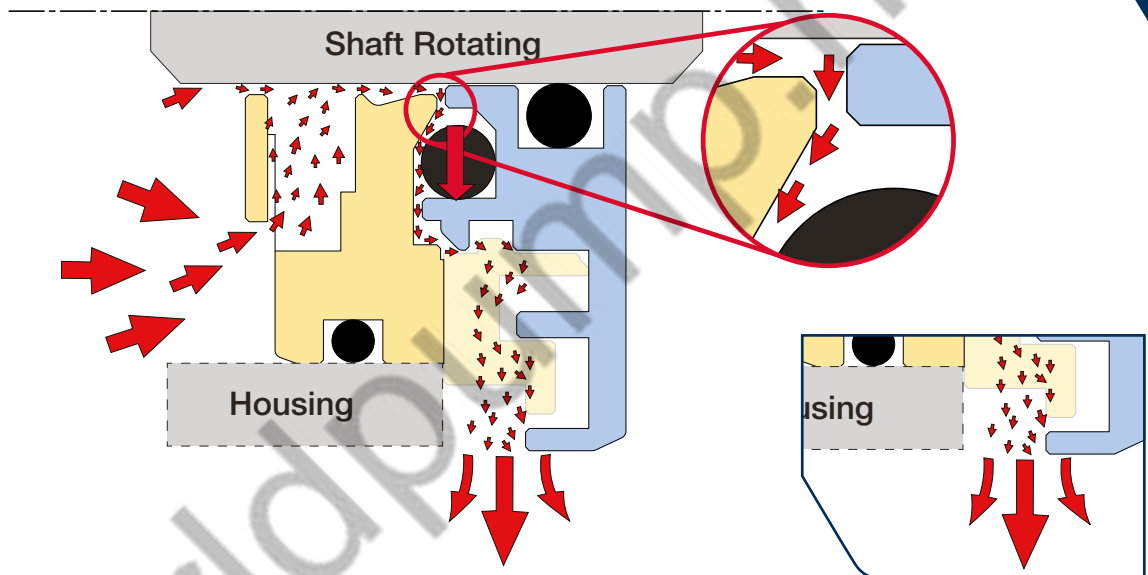
LabTecta®OP uses dynamic lift technology to prevent premature bearing failure.

As the equipment rotates, centrifugal force causes a temporary micro gap to be created, (allowing the expansion of the oil / air mixture in the bearing housing).

When equipment stops, the centrifugal force ceases and the micro-gap is closed. This stops atmosphere from being sucked back into the bearing-housing, preventing moisture laden air from coming in.

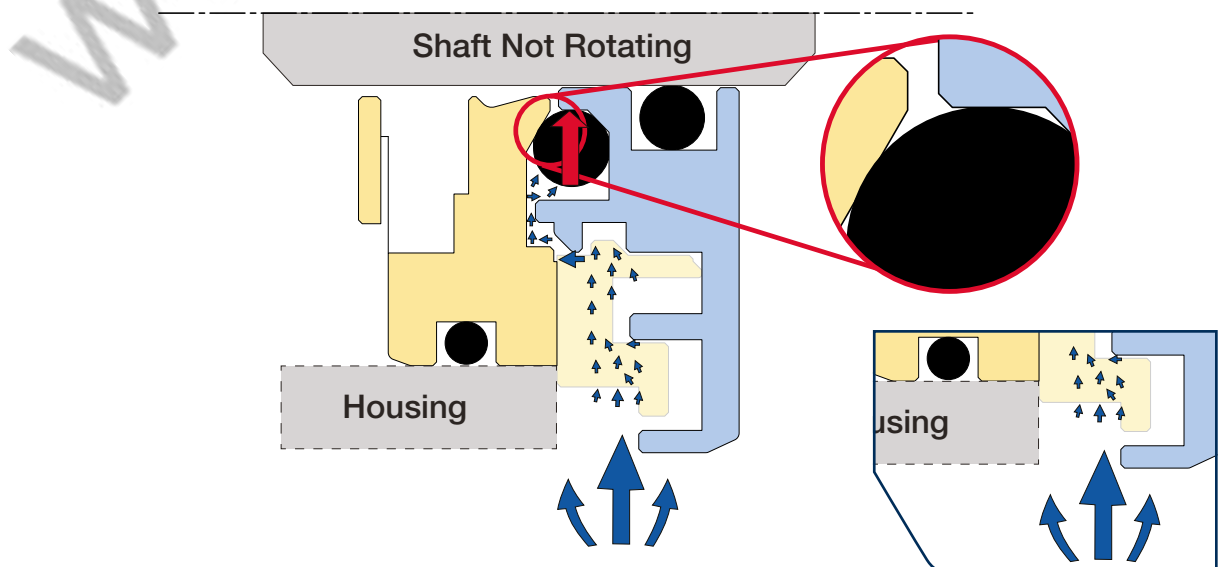
### Essential Micro-Gap When Rotating

During equipment rotation a micro-gap is created, allowing equipment to breathe.

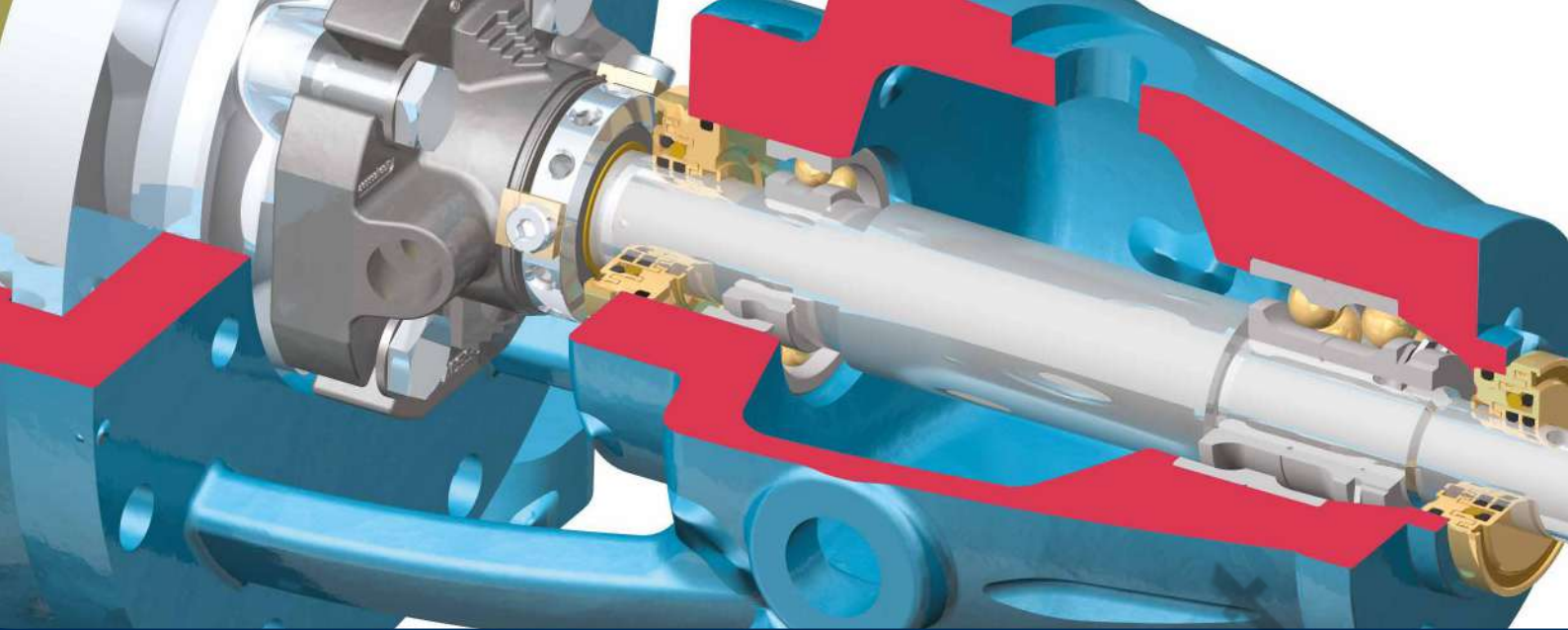


### Effective Vapour-Seal When Not Rotating

Once equipment stops the micro-gap closes, forming a perfect seal. Atmosphere and water vapour are prevented from entering the bearing chamber.







## Design Features

The LabTecta® IP66 technology has been further optimised to give greater protection against water ingress and oil egress.

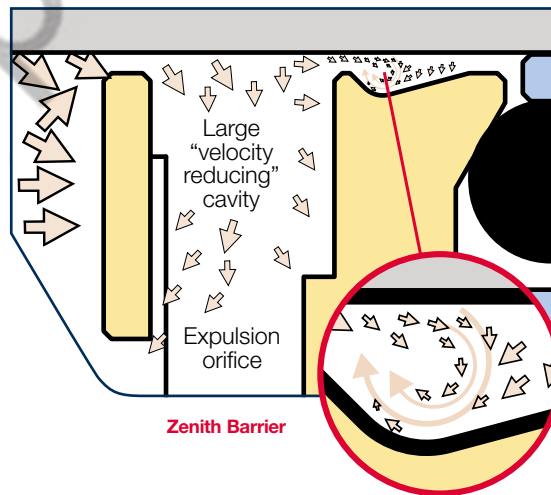
The LabTecta® technology has been combined with unique patented features to create **Optimised Protection** for industry standard bearing chambers. These features ensure the optimum operating conditions for the bearings are maintained. Oil does not escape out of the bearing chamber whilst moisture and particulates cannot enter into the bearing environment.

### Zenith Barrier

#### Designed to keep oil In

Most of the oil splash from the bearing housing is expelled back through the velocity-reducing stator cavity and expulsion orifice.

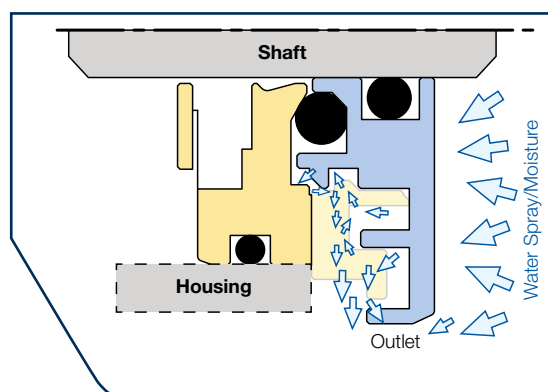
Any oil that remains is subjected to centrifugal forces from the rotating shaft. Combined with the profile of the stator and the close proximity to the shaft, this creates a standing vortex, acting as a secondary physical barrier to further oil egress.



### Multi Tiered Labyrinth

#### Designed to keep Contaminants Out

The labyrinth design of the LabTecta®OP features a multi tiered expulsion system, stopping any water that has passed the micro labyrinth from entering further into the bearing protector.



**This latest development in bearing protection** further refines what is already a superb design

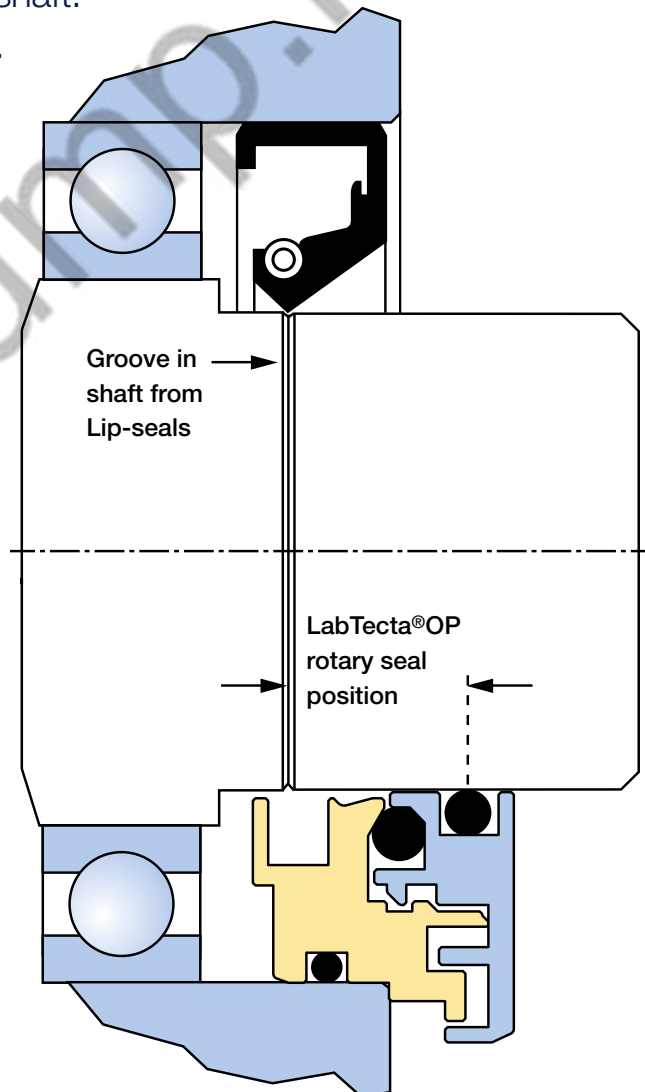
Heinz P .Bloch P.E.  
Independent Professional Engineer

## No Need to Refurbish a Lip-Seal Damaged Shaft

Never refurbish or replace a lip-seal worn shaft: the permanent upgrade could be cheaper.

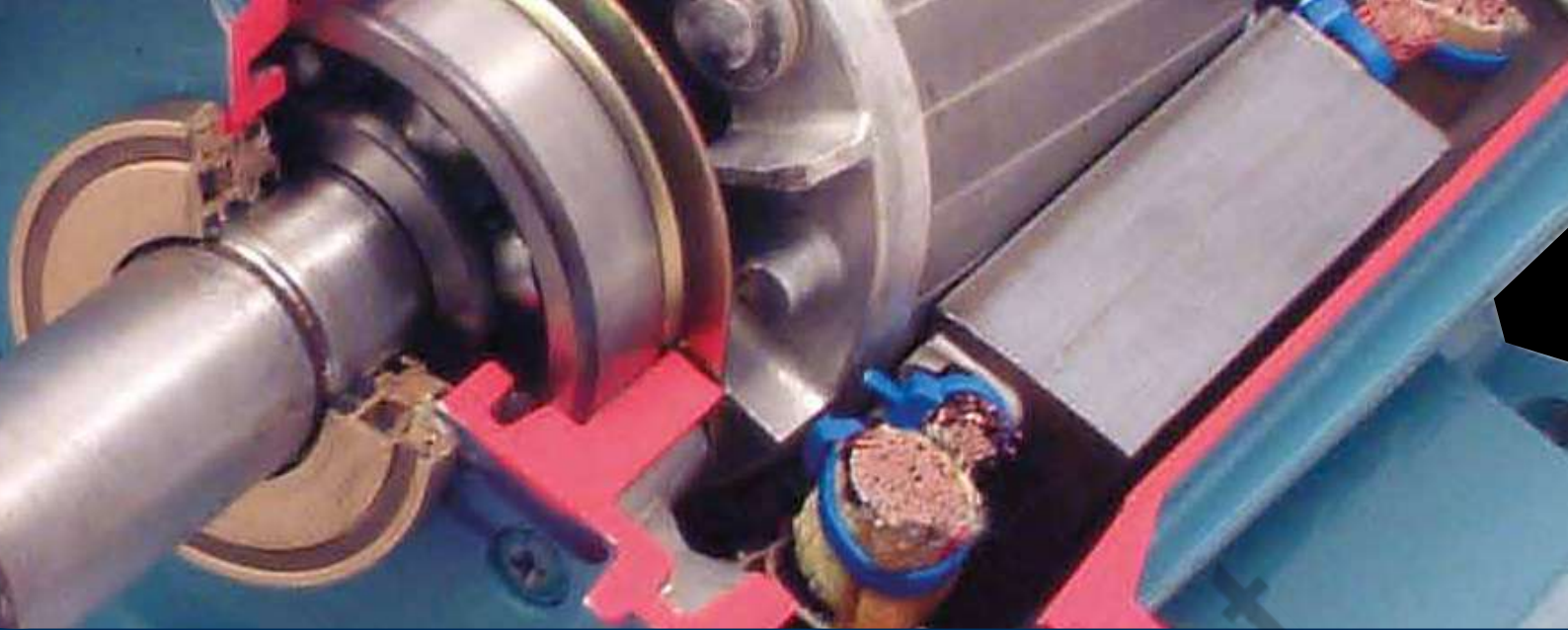
Lip-seals wear shafts, causing expensive damage. LabTecta®OP can permanently eliminate this expense.

Why pay for a replacement shaft when upgrading to LabTecta®OP costs less?



**Eliminate Shaft Refurbishment Costs**  
Because LabTecta®OP is positioned differently on the shaft  
there is no need to refurbish before you upgrade





## Protecting Electrical Motors

Approximately 51% of motor failures\*\* are caused by bearing failure.

LabTecta®OP products:

- Protect against the major cause of bearing failure
- Meet the requirements of IEEE standard 841-2009
- Improve electrical safety by preventing water ingress
- Eliminate motor shaft damage due to rubbing
- Are maintenance free



IEEE 841-2009 (the premier standard for electrical motors) requires an ingress protection rating of IP55 and the use of a non-contacting rotating device to seal contaminants from the bearing chamber.

\*\* IEEE Petrochem Paper PCIC-94-01

## Technical Data

### Standard Sizes:

16mm - 145mm (0.750" - 5.875")

### Typical incremental Size:

1mm & 0.062"

### Materials:

Stator Housing Phosphor Bronze

Rotary Stainless Steel

**Elastomer Options:** FKM (standard), others available on request.

**Sealing:** LabTecta®OP IP66 & IP69K, LabTecta®T IPX5

### Maximum Shaft Peripheral Speed:

Dry running 20 m/s (3940 ft/min)

Oil Splash Lubrication 20 m/s (3940 ft/min)

Grease 20 m/s (3940 ft/min)



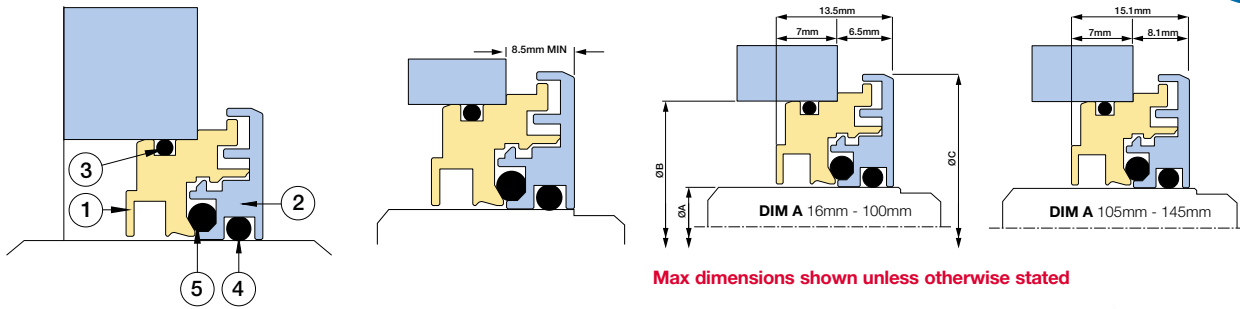
(API 7th Edition and earlier/Flow through oil mist systems only) (For faster shaft speed applications, contact Bearing Protection division)

**Operating Process Temperature range:** -20°C to 180°C (-4°F to 356°F)

**Dependent upon:** Bearing Isolator material of construction, particularly elastomers – consult AESSEAL® Bearing Protection Division if in doubt.



# LabTecta®OP Dimensions – 16.0mm - 145.0mm



DIM A	DIM B	DIM C	STOCK CODE	DIM A	DIM B	DIM C	STOCK CODE	DIM A	DIM B	DIM C	STOCK CODE		
16	34	42.06	L6M016SP-001-M034-OP	45	65	71.06	L6M045SP-001-M065-OP	85	105	111.06	L6M085SP-001-M105-OP		
36	42.06	L6M016SP-001-M036-OP	70	71.06	L6M045SP-001-M070-OP	110	111.06	L6M085SP-001-M110-OP	110	111.06	L6M085SP-001-M110-OP		
38	42.06	L6M016SP-001-M038-OP	71	71.06	L6M045SP-001-M071-OP	111	111.06	L6M085SP-001-M111-OP	111	111.06	L6M085SP-001-M111-OP		
41	42.06	L6M016SP-001-M041-OP	75	71.06	L6M045SP-001-M075-OP	115	111.06	L6M085SP-001-M115-OP	115	111.06	L6M085SP-001-M115-OP		
36	44.06	L6M018SP-001-M036-OP	48	68	74.06	L6M048SP-001-M068-OP	90	110	116.06	L6M090SP-001-M110-OP	110	116.06	L6M090SP-001-M110-OP
38	44.06	L6M018SP-001-M038-OP	73	74.06	L6M048SP-001-M073-OP	115	116.06	L6M090SP-001-M115-OP	115	116.06	L6M090SP-001-M115-OP		
40	44.06	L6M018SP-001-M040-OP	74	74.06	L6M048SP-001-M074-OP	116	116.06	L6M090SP-001-M116-OP	116	116.06	L6M090SP-001-M116-OP		
43	44.06	L6M018SP-001-M043-OP	78	74.06	L6M048SP-001-M078-OP	120	116.06	L6M090SP-001-M120-OP	120	116.06	L6M090SP-001-M120-OP		
38	46.06	L6M020SP-001-M038-OP	50	70	76.06	L6M050SP-001-M070-OP	95	115	121.06	L6M095SP-001-M115-OP	115	121.06	L6M095SP-001-M115-OP
40	46.06	L6M020SP-001-M040-OP	75	76.06	L6M050SP-001-M075-OP	120	121.06	L6M095SP-001-M120-OP	120	121.06	L6M095SP-001-M120-OP		
42	46.06	L6M020SP-001-M042-OP	76	76.06	L6M050SP-001-M076-OP	121	121.06	L6M095SP-001-M121-OP	121	121.06	L6M095SP-001-M121-OP		
45	46.06	L6M020SP-001-M045-OP	80	76.06	L6M050SP-001-M080-OP	125	121.06	L6M095SP-001-M125-OP	125	121.06	L6M095SP-001-M125-OP		
40	48.06	L6M022SP-001-M040-OP	52	72	78.06	L6M052SP-001-M072-OP	100	120	126.06	L6M100SP-001-M120-OP	120	126.06	L6M100SP-001-M120-OP
42	48.06	L6M022SP-001-M042-OP	77	78.06	L6M052SP-001-M077-OP	125	126.06	L6M100SP-001-M125-OP	125	126.06	L6M100SP-001-M125-OP		
44	48.06	L6M022SP-001-M044-OP	78	78.06	L6M052SP-001-M078-OP	126	126.06	L6M100SP-001-M126-OP	126	126.06	L6M100SP-001-M126-OP		
47	48.06	L6M022SP-001-M047-OP	82	78.06	L6M052SP-001-M082-OP	130	126.06	L6M100SP-001-M130-OP	130	126.06	L6M100SP-001-M130-OP		
42	50.06	L6M024SP-001-M042-OP	53	73	79.06	L6M053SP-001-M073-OP	105	125	131.06	L6M105SP-001-M125-OP	125	131.06	L6M105SP-001-M125-OP
44	50.06	L6M024SP-001-M044-OP	78	79.06	L6M053SP-001-M078-OP	130	131.06	L6M105SP-001-M130-OP	130	131.06	L6M105SP-001-M130-OP		
46	50.06	L6M024SP-001-M046-OP	79	79.06	L6M053SP-001-M079-OP	131	131.06	L6M105SP-001-M131-OP	131	131.06	L6M105SP-001-M131-OP		
49	50.06	L6M024SP-001-M049-OP	83	79.06	L6M053SP-001-M083-OP	135	131.06	L6M105SP-001-M135-OP	135	131.06	L6M105SP-001-M135-OP		
43	51.06	L6M025SP-001-M043-OP	55	75	81.06	L6M055SP-001-M075-OP	110	130	136.06	L6M110SP-001-M130-OP	130	136.06	L6M110SP-001-M130-OP
45	51.06	L6M025SP-001-M045-OP	80	81.06	L6M055SP-001-M080-OP	135	136.06	L6M110SP-001-M135-OP	135	136.06	L6M110SP-001-M135-OP		
47	51.06	L6M025SP-001-M047-OP	81	81.06	L6M055SP-001-M081-OP	136	136.06	L6M110SP-001-M136-OP	136	136.06	L6M110SP-001-M136-OP		
50	51.06	L6M025SP-001-M050-OP	85	81.06	L6M055SP-001-M085-OP	140	136.06	L6M110SP-001-M140-OP	140	136.06	L6M110SP-001-M140-OP		
46	54.06	L6M028SP-001-M046-OP	58	78	84.06	L6M058SP-001-M078-OP	115	135	141.06	L6M115SP-001-M135-OP	135	141.06	L6M115SP-001-M135-OP
48	54.06	L6M028SP-001-M048-OP	83	84.06	L6M058SP-001-M083-OP	140	141.06	L6M115SP-001-M140-OP	140	141.06	L6M115SP-001-M140-OP		
50	54.06	L6M028SP-001-M050-OP	84	84.06	L6M058SP-001-M084-OP	141	141.06	L6M115SP-001-M141-OP	141	141.06	L6M115SP-001-M141-OP		
53	54.06	L6M028SP-001-M053-OP	88	84.06	L6M058SP-001-M088-OP	145	141.06	L6M115SP-001-M145-OP	145	141.06	L6M115SP-001-M145-OP		
48	56.06	L6M030SP-001-M048-OP	60	80	86.06	L6M060SP-001-M080-OP	120	140	146.06	L6M120SP-001-M140-OP	140	146.06	L6M120SP-001-M140-OP
50	56.06	L6M030SP-001-M050-OP	85	86.06	L6M060SP-001-M085-OP	145	146.06	L6M120SP-001-M145-OP	145	146.06	L6M120SP-001-M145-OP		
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50	58.06	L6M032SP-001-M050-OP	63	83	89.06	L6M063SP-001-M083-OP	125	145	151.06	L6M125SP-001-M145-OP	145	151.06	L6M125SP-001-M145-OP
52	58.06	L6M032SP-001-M052-OP	88	89.06	L6M063SP-001-M088-OP	150	151.06	L6M125SP-001-M150-OP	150	151.06	L6M125SP-001-M150-OP		
54	58.06	L6M032SP-001-M054-OP	89	89.06	L6M063SP-001-M089-OP	151	151.06	L6M125SP-001-M151-OP	151	151.06	L6M125SP-001-M151-OP		
57	58.06	L6M032SP-001-M057-OP	93	89.06	L6M063SP-001-M093-OP	155	151.06	L6M125SP-001-M155-OP	155	151.06	L6M125SP-001-M155-OP		
51	59.06	L6M033SP-001-M051-OP	65	85	91.06	L6M065SP-001-M085-OP	130	150	156.06	L6M130SP-001-M150-OP	150	156.06	L6M130SP-001-M150-OP
53	59.06	L6M033SP-001-M053-OP	90	91.06	L6M065SP-001-M090-OP	155	156.06	L6M130SP-001-M155-OP	155	156.06	L6M130SP-001-M155-OP		
55	59.06	L6M033SP-001-M055-OP	91	91.06	L6M065SP-001-M091-OP	156	156.06	L6M130SP-001-M156-OP	156	156.06	L6M130SP-001-M156-OP		
58	59.06	L6M033SP-001-M058-OP	95	91.06	L6M065SP-001-M095-OP	160	156.06	L6M130SP-001-M160-OP	160	156.06	L6M130SP-001-M160-OP		
53	61.06	L6M035SP-001-M053-OP	68	83	94.06	L6M068SP-001-M088-OP	135	155	161.06	L6M135SP-001-M155-OP	155	161.06	L6M135SP-001-M155-OP
55	61.06	L6M035SP-001-M055-OP	93	94.06	L6M068SP-001-M093-OP	160	161.06	L6M135SP-001-M160-OP	160	161.06	L6M135SP-001-M160-OP		
57	61.06	L6M035SP-001-M057-OP	94	94.06	L6M068SP-001-M094-OP	161	161.06	L6M135SP-001-M161-OP	161	161.06	L6M135SP-001-M161-OP		
60	61.06	L6M035SP-001-M060-OP	98	94.06	L6M068SP-001-M098-OP	165	161.06	L6M135SP-001-M165-OP	165	161.06	L6M135SP-001-M165-OP		
56	64.06	L6M038SP-001-M056-OP	70	90	96.06	L6M070SP-001-M090-OP	140	160	166.06	L6M140SP-001-M160-OP	160	166.06	L6M140SP-001-M160-OP
58	64.06	L6M038SP-001-M058-OP	95	96.06	L6M070SP-001-M095-OP	165	166.06	L6M140SP-001-M165-OP	165	166.06	L6M140SP-001-M165-OP		
60	64.06	L6M038SP-001-M060-OP	96	96.06	L6M070SP-001-M096-OP	166	166.06	L6M140SP-001-M166-OP	166	166.06	L6M140SP-001-M166-OP		
63	64.06	L6M038SP-001-M063-OP	100	96.06	L6M070SP-001-M100-OP	170	166.06	L6M140SP-001-M170-OP	170	166.06	L6M140SP-001-M170-OP		
58	66.06	L6M040SP-001-M058-OP	75	95	101.06	L6M075SP-001-M095-OP	145	165	171.06	L6M145SP-001-M165-OP	165	171.06	L6M145SP-001-M165-OP
60	66.06	L6M040SP-001-M060-OP	100	101.06	L6M075SP-001-M100-OP	170	171.06	L6M145SP-001-M170-OP	170	171.06	L6M145SP-001-M170-OP		
62	66.06	L6M040SP-001-M062-OP	101	101.06	L6M075SP-001-M101-OP	171	171.06	L6M145SP-001-M171-OP	171	171.06	L6M145SP-001-M171-OP		
65	66.06	L6M040SP-001-M065-OP	105	101.06	L6M075SP-001-M105-OP	175	171.06	L6M145SP-001-M175-OP	175	171.06	L6M145SP-001-M175-OP		
61	69.06	L6M043SP-001-M061-OP	80	100	106.06	L6M080SP-001-M100-OP	140	165	176.06	L6M150SP-001-M165-OP	165	176.06	L6M150SP-001-M165-OP
63	69.06	L6M043SP-001-M063-OP	105	106.06	L6M080SP-001-M105-OP	170	176.06	L6M150SP-001-M170-OP	170	176.06	L6M150SP-001-M170-OP		
65	69.06	L6M043SP-001-M065-OP	106	106.06	L6M080SP-001-M106-OP	171	176.06	L6M150SP-001-M171-OP	171	176.06	L6M150SP-001-M171-OP		
68	69.06	L6M043SP-001-M068-OP	110	106.06	L6M080SP-001-M110-OP	175	176.06	L6M150SP-001-M175-OP	175	176.06	L6M150SP-001-M175-OP		

Dimensional Information (mm)

## OEM Specific Range

Models available for most popular pump models

GOULDS

KSB

FLOWERVE

SUNDYNE

3196, 3175, 3700, 3410,  
3796, 3996

MegaCPK, CPK, RPH

DURCO, RV9

MARELLI

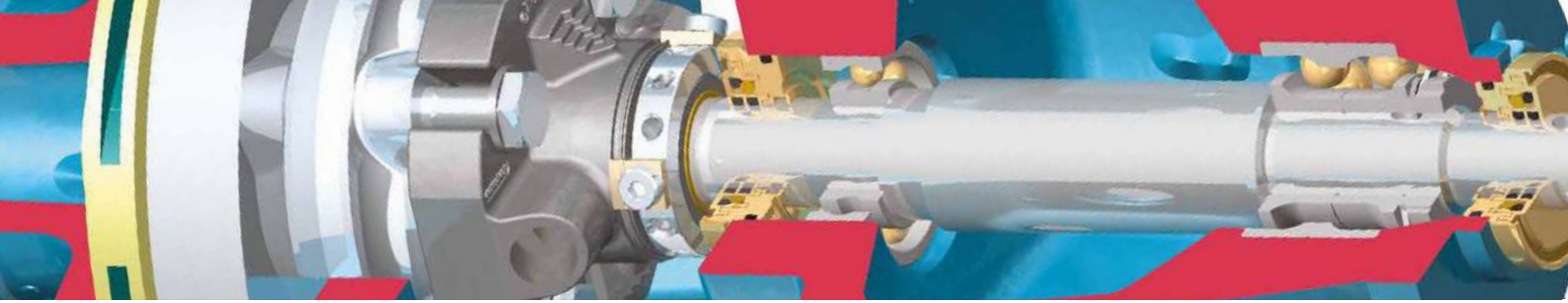
Other models available -  
Contact AESSEAL®

Other models available -  
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Other models available -  
Contact AESSEAL®





ENVIRONMENTAL TECHNOLOGY

To experience the exceptional, please contact your local representative. Discover full details on our website:

[www.aesseal.com](http://www.aesseal.com)

This brochure is fully recyclable. When laminated, a sustainable, biodegradable and recyclable lamination is used.

For further information and safe operating limits contact our technical specialists at the locations below.



Use double mechanical seals with hazardous products.

Always take safety precautions:

- Guard your equipment
- Wear protective clothing



**WARNING**

AESSEAL plc is certified to ISO 9001, ISO 14001, ISO/IEC 20000, ISO/IEC 27001, ISO/TS 29001, ISO 37001, ISO 45001 & ISO 50001

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