



ENVIRONMENTAL TECHNOLOGY

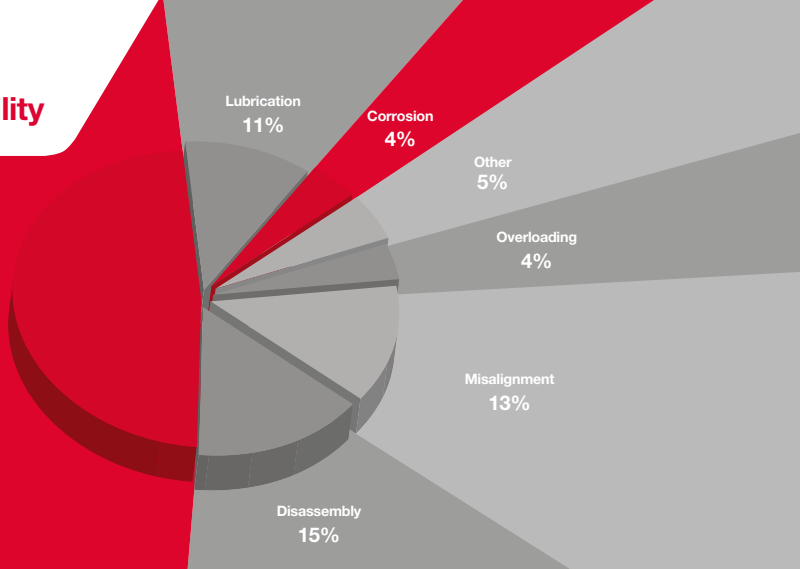
## Bearing Protection

The first step towards reliability

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

## Bearing Reliability

Particle  
Contamination  
48%



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.

AESSEAL® offer a range of bearing protection devices suitable for most applications. The innovative LabTecta® and MagTecta™ products include patented features that deliver the best possible bearing housing sealing solution for your motor, pump, plumber block, gearbox or steam turbine.

The LabTecta® product range is an advanced labyrinth design that offers ingress protection up to IP69K. The design is non-contacting and does not wear the equipment's shaft. The advanced labyrinth design allows the bearing housing to breathe when the shaft is rotating but seals when the shaft stops. The MagTecta™ product range uses magnetically-energized contacting faces. The design protects from both external contamination and loss of lubrication and is ideal for oil mist applications. The design is non-shaft wearing and requires no routine maintenance.

Upgrading your rotating equipment with AESSEAL® bearing protection is one of the most effective upgrades you can perform that will deliver increased equipment reliability without routine additional maintenance. AESSEAL® bearing protection devices are also available with ATEX hazardous area certification.

Installing AESSEAL® bearing protection devices reduces the energy used by your rotating equipment, ensuring the cost is quickly recovered

## Recommended for use on applications

The icons below are used throughout this booklet to show the product's common applications. Products are not limited to these applications and have many potential uses - contact your local AESSEAL® representative for advice.



**Pumps**



**Electric  
Motors**



**Gearboxes**



**Plumber  
Blocks**



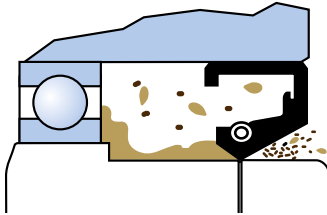
**Steam  
Turbines**

[sales@labtecta.com](mailto:sales@labtecta.com)

## Improved Reliability

Contamination of bearing oils is responsible for 52% of bearing failure. It is therefore clear that preventing contamination could significantly improve the reliability of rotating equipment. The traditional solution is a lip-seal, which cannot provide an effective seal:

- They have a short effective lifespan
- They are ineffective at keeping contamination from bearing housings over time
- They cause serious wear of shafts, leading to extensive equipment damage and added cost
- They allow the loss of lubrication, leading to catastrophic bearing and equipment failure
- They consume energy through friction when running against the equipment shaft



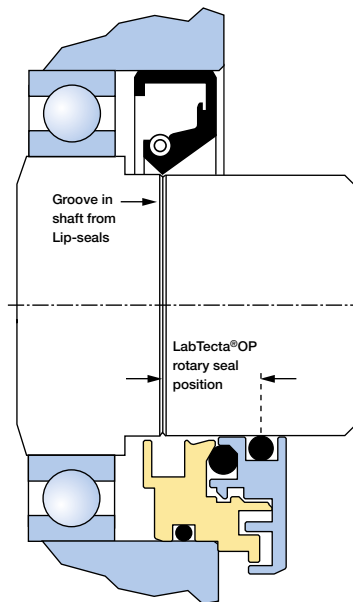
The Oil and Gas industry standard API610 11th ed. Section 6.10.2.6 states specifically that lip-seals should not be used. Electrical motors standard IEEE 841-2009 requires that the motor has ingress protection to IP55 and that only non-contacting rotating devices should be used to prevent contamination of the bearing oils.

## 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?**



## Energy Savings

Sealing a shaft with a contacting seal such as a lip-seal, as well as damaging the shaft over time, consumes energy. According to Heinz Bloch P.E. the amount of energy consumed is on average 160 watts per seal per hour.

A non-contacting bearing protector such as the AESSEAL® LabTecta® does not damage the shaft or consume energy. Typically, upgrading from a lip-seal to a LabTecta® bearing protector will return the investment in a little over 6 months on energy savings alone (even shorter when you factor in the improved reliability of the rotating equipment, and that the LabTecta® will provide many years of maintenance-free operation).

To find out more about the savings you could make contact your local AESSEAL® Sales representative who can provide a return on investment calculator.



## 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
Energy saving	None	Yes

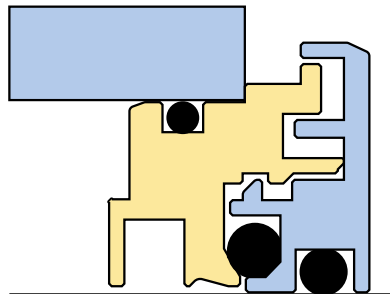
## Non Contacting. No Wear. No Loss of Protection

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 Protector	Effective Sealing	Effective Sealing	Effective Sealing	Effective Sealing

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

AESSEAL® labyrinth bearing protectors offer the highest levels of ingress protection available (IP66 as standard and IP69K for the LabTecta®OP). The products are non-contacting and do not wear the shaft.

LabTecta®OP





The LabTecta®OP is the latest generation of advanced labyrinth bearing protector. The LabTecta®OP offers ingress protection certified to IP66/9K.

## Features & Benefits

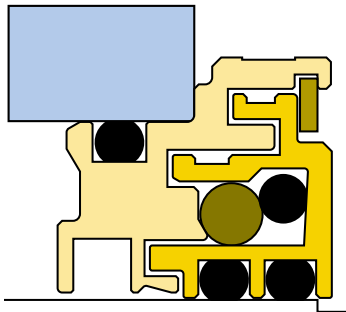
- Non-contacting and non-wearing - Eliminates shaft wear in operation
- Maintenance-free - No routine maintenance required
- Suitable for old or worn shafts
- Multi-tiered labyrinth - Keeps water, dust & contaminants out, improving bearing life
- ATEX certification available

## Top entry applications

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



LabTecta®66



The LabTecta®66 offers ingress protection certified to IP66 and is field-repairable.

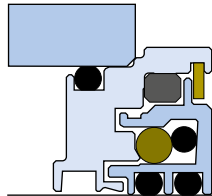
## Features & Benefits

- Non-contacting and non-wearing - Eliminates shaft wear in operation
- Maintenance-free - No routine maintenance required
- Field-repairable
- Suitable for old or worn shafts
- Zenith Barrier - Prevents loss of oil from the bearing chamber
- Multi-tiered labyrinth - Keeps water, dust & contaminants out, improving bearing life
- ATEX certification available

Also available in an all Stainless Steel construction (LabTecta®66SS)

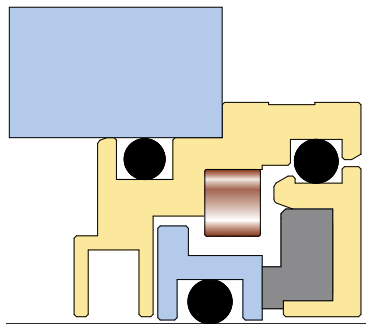
## Stainless Steel Option

The LabTecta®66SS is suited to harsher environments owing to its fully stainless steel construction. The LabTecta®66SS includes all the features of the LabTecta®66 and incorporates a unique Wear Bush to prevent any metal-to-metal contact.



LabTecta®66SS

# MagTecta-S™



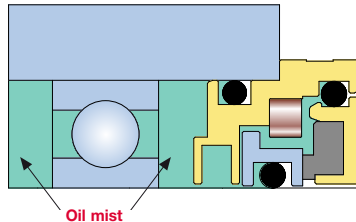
The MagTecta-S™ is a magnetically energized contacting face bearing protector developed specifically for Oil Mist applications

### Features & Benefits

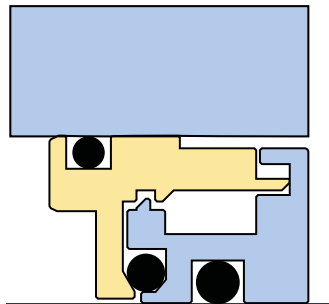
- Non-wearing - Eliminates shaft wear in operation
- Maintenance-free - No routine maintenance required
- Suitable for old or worn shafts
- Contacting seal face prevents loss of oil from the bearing chamber

### Oil Mist Applications

The MagTecta-S™ is suitable for use in oil mist applications. The positive seal created by the magnetically energized contacting faces offers effective sealing of oil mist, preventing the loss of bearing lubrication.



LabTecta®M / MG



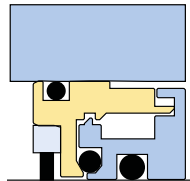
The LabTecta®M is an advanced labyrinth bearing protector designed specifically for use on motors, offering ingress protection certified to IP55.

## Features & Benefits

- Non-contacting and non-wearing - Eliminates shaft wear in operation
- Maintenance-free - No routine maintenance required
- Suitable for old or worn shafts
- IP55 ingress protection - Exceeds the requirements of IEEE 841-2009 for electric motors, improving safety and reliability
- Multi-tiered labyrinth - Keeps water, dust & contaminants out, improving bearing life
- ATEX certification available

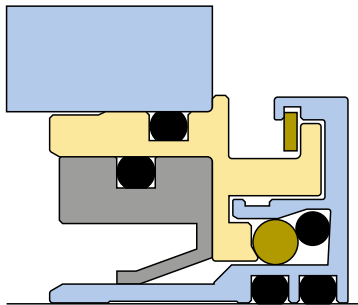
## Shaft Grounding Applications

In addition, the LabTecta®MG is suitable for variable frequency drives (VFD). This model includes an AEGIS® grounding ring that prevents the premature failure of the bearings as a result of electrical fluting caused by the stray currents created when using VFD motor controllers.



LabTecta®MG

LabTecta®66FS





The LabTecta®66FS is the latest generation of advanced labyrinth bearing protector designed for use on oil flooded bearing housings. The LabTecta®66FS offers ingress protection to IP66.

### **Features & Benefits**

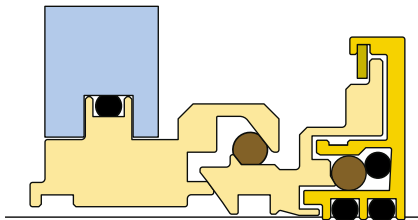
- Non-contacting and non-wearing - Eliminates shaft wear in operation
- Maintenance-free - No routine maintenance required
- Suitable for old or worn shafts
- Multi-tiered labyrinth - Keeps water, dust & contaminants out, improving bearing life
- ATEX certification available

LabTecta®66PB



IP55

IP66



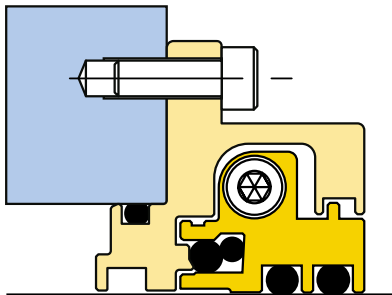
The LabTecta®66PB is an advanced labyrinth bearing protector designed specifically for use on Plummer or Pillow blocks. The revolutionary AESSEAL® design is specifically engineered to absorb shaft misalignment and maximize the performance of the seal. The LabTecta®66PB offers ingress protection to IP66.

The LabTecta®66PB uses a unique two-piece stator design that creates a self-aligning joint, allowing it to align to both the bearing block and the shaft. The joint also provides constant pressure on the static 'O' ring to provide positive sealing throughout the range of motion found in Plummer / Pillow block applications.

### **Features & Benefits**

- Non-contacting and non-wearing - Eliminates shaft wear in operation
- Maintenance-free - No routine maintenance required
- Field repairable
- Suitable for old or worn shafts
- Multi-tiered labyrinth - Keeps water, dust & contaminants out, improving bearing life
- ATEX certification available

# LabTecta®66RDS

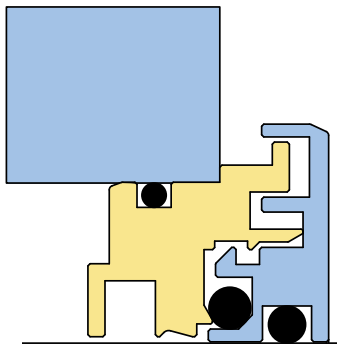


The LabTecta®66RDS is an advanced labyrinth bearing protector. The LabTecta®66RDS is specifically designed so that it can be fitted to a shaft without the need to dismantle the equipment. The LabTecta®66RDS offers ingress protection to IP66.

### **Features & Benefits**

- Split metalwork components for ease of installation
- Non-contacting and Non-wearing - Eliminates shaft wear in operation
- Maintenance-free - No routine maintenance required
- Field-repairable
- Suitable for old or worn shafts
- Multi-tiered labyrinth - Keeps water, dust & contaminants out, improving bearing life
- ATEX certification available

LabTecta®TP

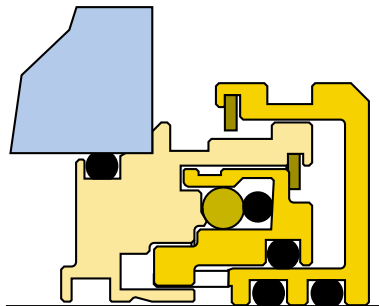


The LabTecta®TP is the latest generation of advanced labyrinth bearing protectors. The LabTecta®TP has been designed for use with tilting pad bearings allowing up to +/-0.64mm (+/-0.025") axial movement. The LabTecta®TP offers ingress protection to IP66.

### **Features & Benefits**

- Non-contacting and non-wearing - Eliminates shaft wear in operation
- Maintenance-free - No routine maintenance required
- Suitable for old or worn shafts
- Multi-tiered labyrinth - Keeps water, dust & contaminants out, improving bearing life
- ATEX certification available

LabTecta®66AX





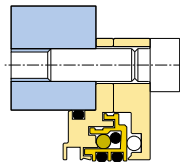
The LabTecta®66AX is the latest generation of advanced labyrinth bearing protector. The LabTecta®66AX has been designed to accommodate axial movement up to +/- 2.5mm (+/-0.100”) as standard and offers ingress protection to IP66. The LabTecta®66AX can be designed to accommodate axial movement up to +/- 4.5mm (+/- 0.177”).

## Features & Benefits

- Non-contacting and Non-wearing - Eliminates shaft wear in operation
- Maintenance-free - No routine maintenance required
- Field-repairable
- Suitable for old or worn shafts
- Multi-tiered labyrinth - Keeps water, dust & contaminants out, improving bearing life
- ATEX certification available

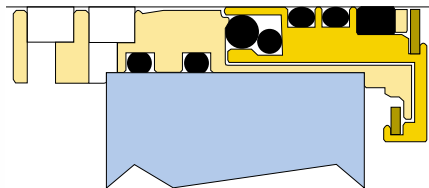
## Applications With More Axial Movement

For applications with excessive amounts of axial movement that exceed the limits of the LabTecta®66AX the LabTecta®66AXX is available. The LabTecta®66AXX incorporates a retained rotary component which allows the shaft to slide through the rotary 'O' Rings in either axial direction.



LabTecta®66AXX

LabTecta®66ST



The LabTecta®66ST is an advanced labyrinth bearing protector and is designed specifically for use on steam turbines. The LabTecta®66ST offers ingress protection to IP66 and comes with AFLAS® 'O' Rings as standard.

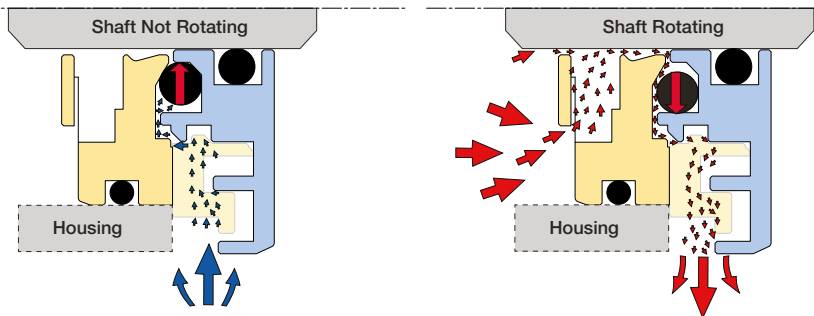
### **Features & Benefits**

- Non-contacting and non-wearing - Eliminates shaft wear in operation
- Maintenance-free - No routine maintenance required
- Field-repairable
- Suitable for old or worn shafts
- Multi-tiered labyrinth - Keeps water, dust & contaminants out, improving bearing life
- ATEX certification available

## How Does it Work?

### Dynamic Lift 'O' Ring

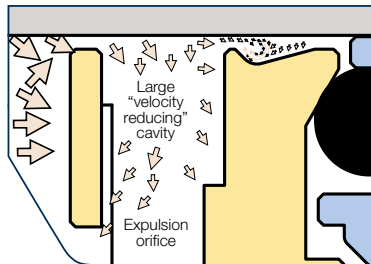
During equipment rotation, the dynamic 'O' Ring lifts to create a micro-gap, allowing the equipment to breathe. When the equipment stops the micro-gap closes, forming a perfect seal. Atmosphere and water vapour are prevented from being drawn into the bearing chamber.



## Designed to Keep Oil In

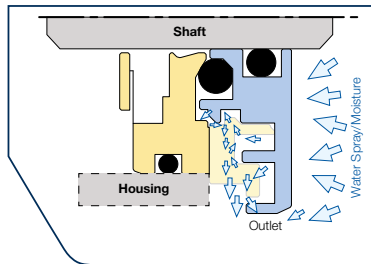
Most of the oil splash from the bearing housing is expelled back through the velocity-reducing stationary cavity and expulsion orifice.

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.



## 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.

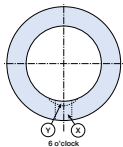


## Installation Best Practice

The following installation instructions may vary by model type, depending on the equipment configuration and are provided as a guide only. An installation guide for the specific product will be provided with the product.

1. Press the seal into the bearing housing plate. This plate is typically separate to the bearing housing.

**Note:** Use a hydraulic press if available. The force from the press should be concentric to the plate bore. Avoid using grease on the housing. Always position outlet ports 'X' and 'Y' at the 6 o'clock position as shown.



2. Slide the seal and housing plate assembly into the running position, on the shaft.
3. Secure the housing plate onto the bearing chamber.
4. Assemble rest of equipment in final running position.
5. Fill the bearing housing with an appropriate fluid, to the OEM/suppliers recommended fluid level.
6. Spin the shaft by hand. Listen and feel for any shaft binding, etc.
7. Ensure the Rotary is fully pushed up against the Stationary prior to start up.

Use the provided lubricant (P-80 ONLY) to grease the shaft and shaft 'O' Rings.

Do not hit the seal. The outer housing is a slight interference fit with the nominal housing bore.

If in doubt, use a press to install the into the equipment housing plate.

# Ingress Protection

**IP** **XX**

## Ingress Protection code rating .....

The premier third-party standard for Ingress Protection

## Protection Rating against solids .....

**Level 5** Partially protected against contact with dust

**Level 6** Fully protected against contact with dust

## Protection Rating against water .....

**Level 5** Protected against water jets from all practicable angles

**Level 6** Protected against powerful water jets from all practicable angles

**Level 9K** Protected against powerful high temperature water jets at angles of 0°, 40°, 60° and 90°

All product IP ratings are valid for both static and dynamic running conditions.

## Hazardous Area Applications

### **ATEX Certification**

LabTecta® models are available on request with full ATEX certification, the world's first bearing protectors to be certified to the latest harmonised standards, complying with ATEX directive 2014/34/EU. Certificate Number: CML 18ATEX6110X

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



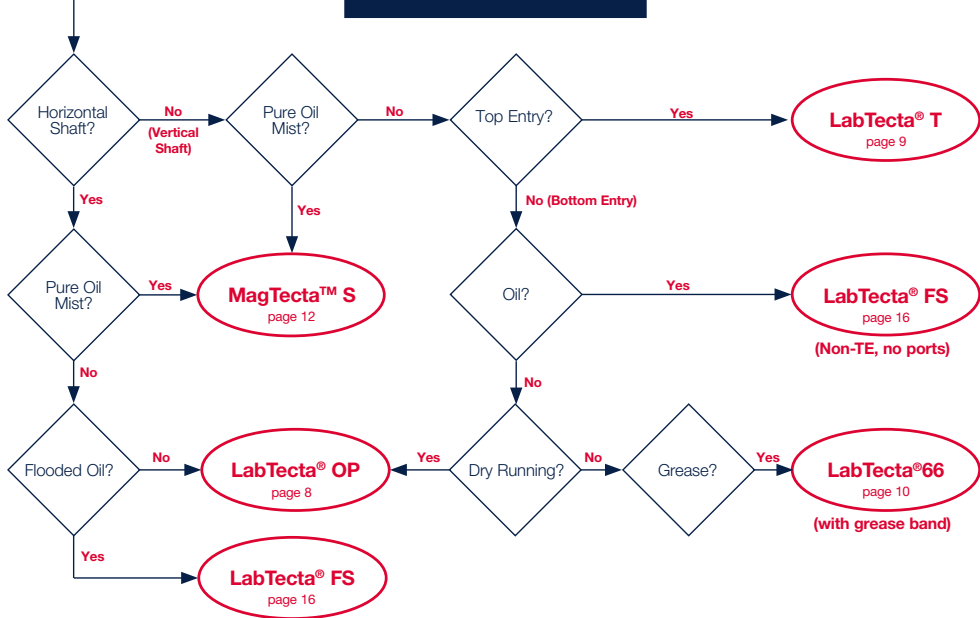




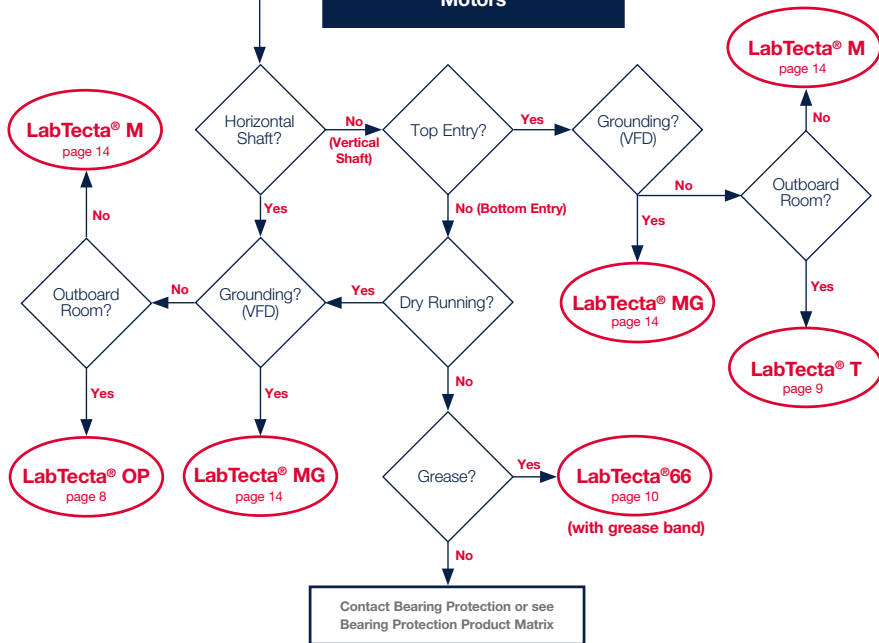
	Requirements	LabTecta®OP	LabTecta®T	LabTecta®66	LabTecta®66SS	MagTecta-S™	LabTecta®M	LabTecta®MG	LabTecta®66FS	LabTecta®66PB	LabTecta®66RDS	LabTecta®TP	LabTecta®66AX	LabTecta®66AXX	LabTecta®66ST
<b>Common Applications</b>	Bearing chamber	●	●	●	●	●			●		●	●	●	●	
	Gearbox	●	●	●	●	●			●		●	●	●	●	
	Plummer or Pillow block									●					
	Motor	●	●	●	●		●	●			●				
	VFD motor							●							
	Steam turbine														●
<b>Lubrication Conditions</b>	Oil splash	●	●	●	●	●				●	●	●	●	●	●
	Grease	●	●	●	●		●	●		●	●	●	●	●	●
	Dry running	●	●	●	●		●	●		●	●	●	●	●	●
	Oil flooded								●						
	Oil mist					●									
<b>Ingress Protection Ratings</b>	IP55	●	●	●	●		●	●	●	●	●	●	●	●	●
	IP66	●	●	●	●				●	●	●	●	●	●	●
	IP69K	●													
<b>Features &amp; Benefits</b>	Maintenance-free	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Suitable for old or worn shafts	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Field-repairable			●	●					●	●		●	●	●
	Increased axial movement											●	●	●	
	Angular misalignment									●					
	Split metalwork components										●				
	ATEX certification available	●	●	●	●		●	●	●	●	●	●	●	●	

This information is intended for guidance only and assessment by trained technical personnel may be required. For more information contact your local AESSEAL® representative.

# Bearing Housing or Gearbox



## Motors





ENVIRONMENTAL TECHNOLOGY



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

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

