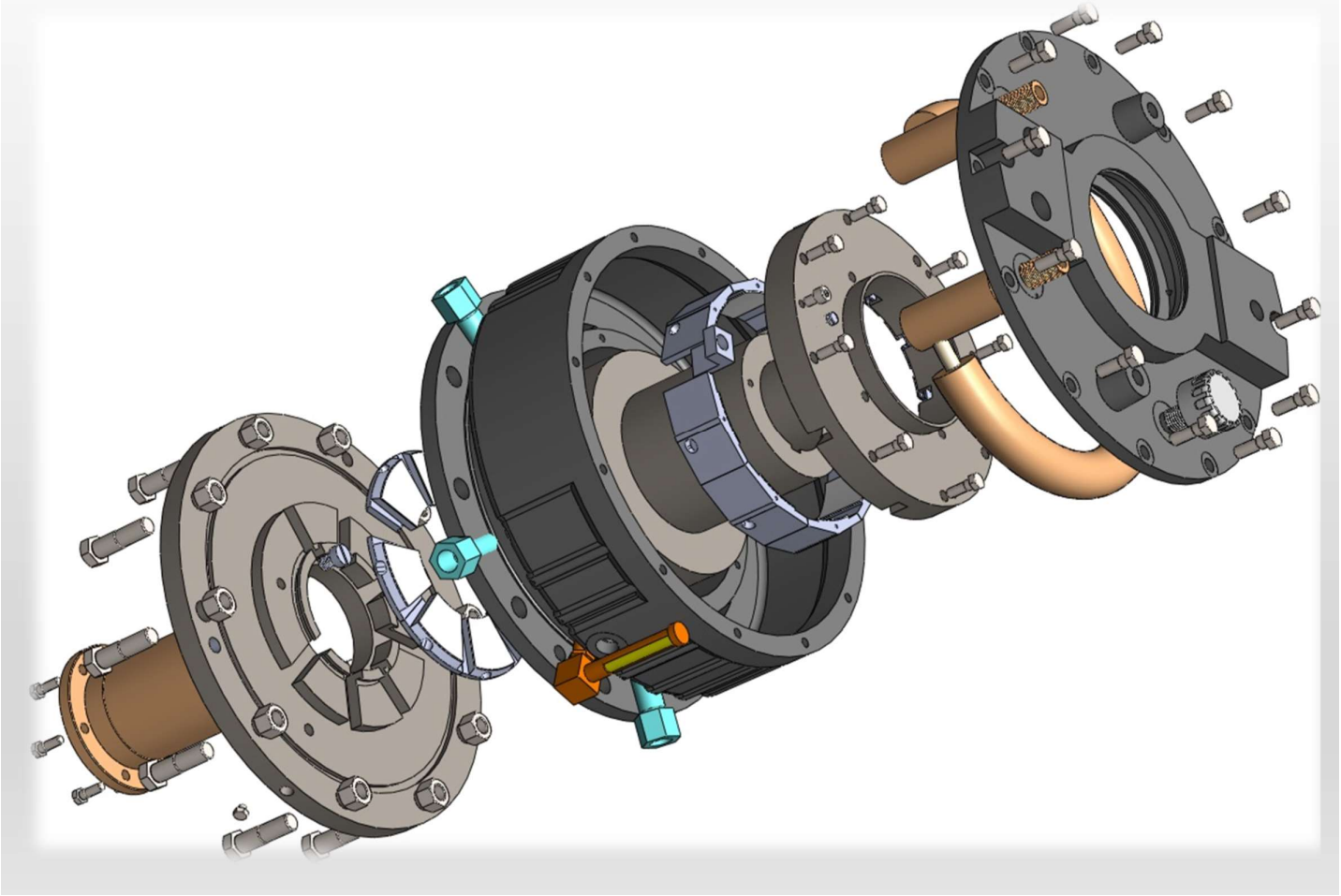
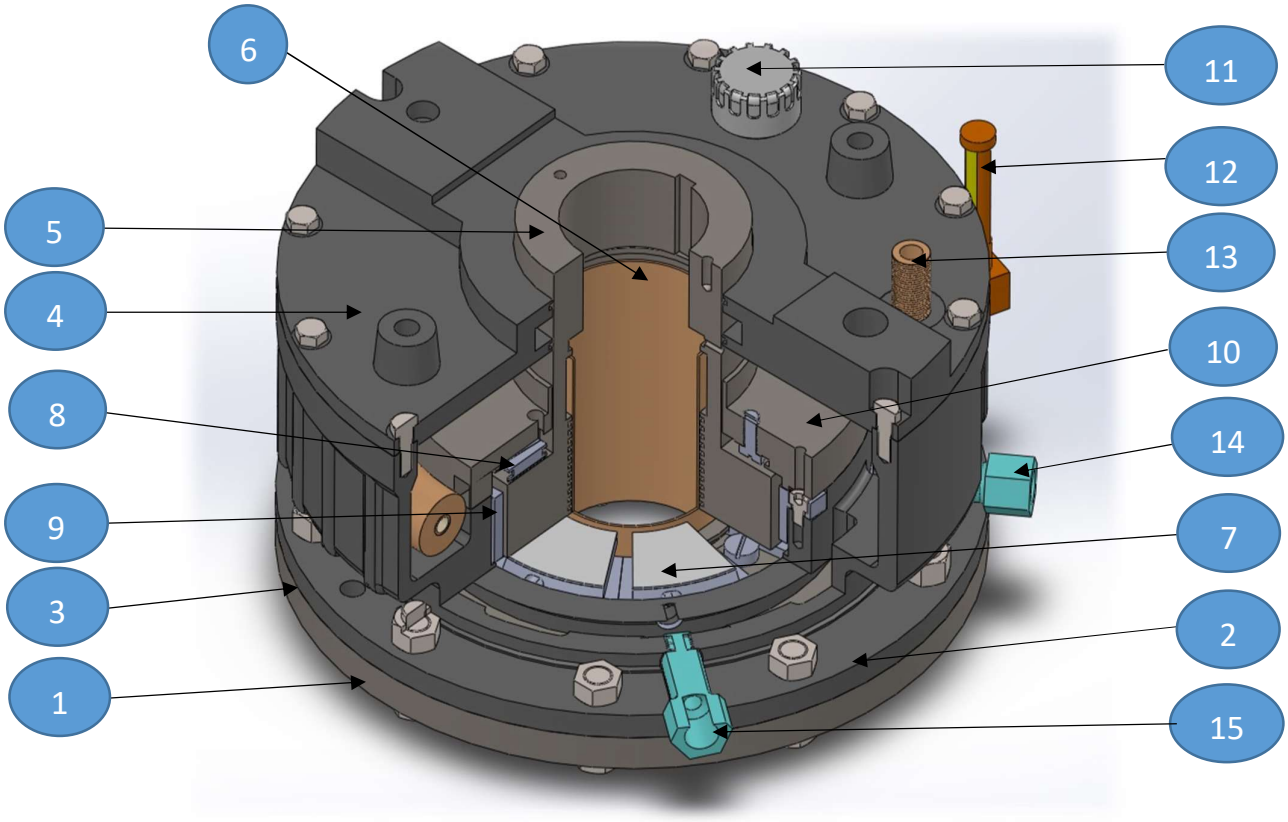


VERTICAL BEARING “SV” SERIES.
FOR SLOW AND MEDIAM SPEED.

SUNTECH®
ENGINEERING CORPORATION

INNOVATION FOR THE NEXT

www.suntechbearings.com



TECHNICAL FEATURES

- Bumped fin housing design provides a larger area for heat dissipation.
- Projects generated in a 3D platform.(For reverse Engineering 3D scanning facility available)
- Finite element analysis are used to assist the design of parts subjected to stress.
- High electric and mechanical resistance isolating materials.
- High configuration Microscope enable to take Microstructure to ensure homogenies distribution of Babbitt grain.
- Interchangeable assembly positions for sensors, displays and thermometers.
- Specific calculations for each bearing, according to the customer‘s specification.
- Easy handling to maintenance for assembly and dismantling.
- Anti-corrosive paints.
- Proper oil drainage system.
- Tailor-made bearing designs according to customer’s needs, are also available.
- Unique design feature enable implement hydrostatic pressure system for starting up and shut down.
- PTFE , PEEK coated and Tri Metalic thrust pads also available with project specific requirements.

1.BASE PLATE	6.SLEEVE	11.AIR VENT / OIL FILLING
2.CASING	7.THRUST PADS	12.OIL LEVEL GUAGE
3.”O” RING OIL SEAL	8.THRUST PADS	13.WATER COOLER
4.TOP PLATE	9.GUIDE PADS	14.OIL DRAIN PLUG
5.COLLAR	10. ANTY VORTEX SHROUD	15.RTD ENTRY PLUG

1.0 BASIC PRINCIPLES

1.1 HYDRODYNAMIC LUBRICATION

SUNTECH® “SV” bearings are usually designed based on the principle of hydrodynamic lubrication which increases its reliability. When the calculation design and manufacturing conditions permit this type of lubrication, the slide bearing will full fill all the requirements expected of them .

It has been proven that plain cylindrical bearings (fig. 01) built-up its carrying oil wedge by making possible clearance between bearing shell and shaft due to its eccentric position (converging film).
Now a days various special geometry design has been Implanted which also based on hydrodynamic Calculation and analysis.

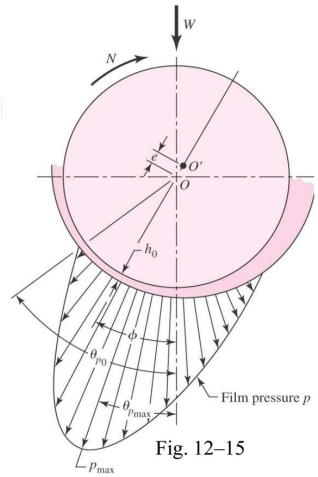


Figure 01 Pressure build-up in a plain cylindrical

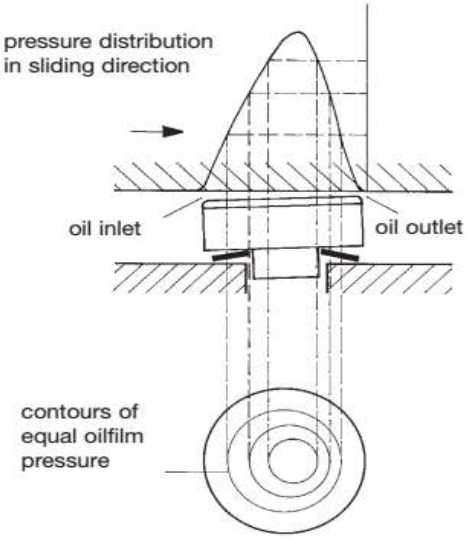


Figure 02 Pressure build-up at a tilting RD pad

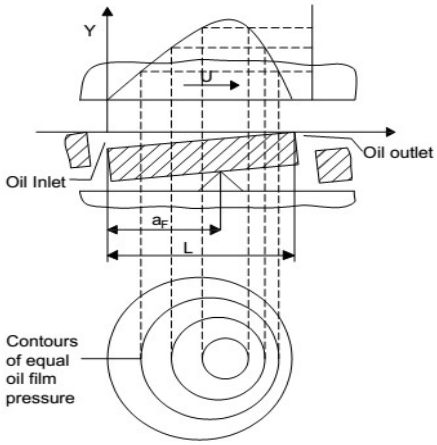


Figure 03 Pressure build-up at a tilting Rectangular pad

From the design point of view of thrust pads for Upwards , Downwards loads are be implemented with advanced edge design which enable it to take higher load capacity. General standard design are trapezoidal tilting pad, LEG thrust pad (Leading Edge Groove), RD Pad etc.

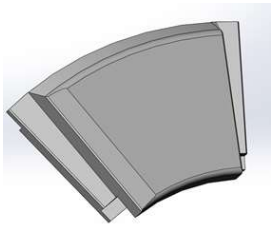


Figure 08 Taper landed thrust pad

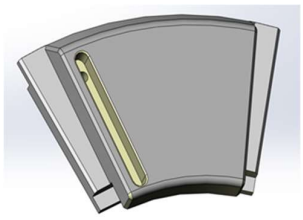


Figure 09 LEG thrust pad

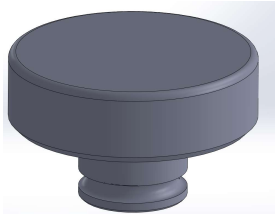


Figure 10 RD thrust pad

We can also enable the bi-directional motion of journal by changing the pivot position of tilting pad as per hydrodynamic calculation specification DIN 31652.

Customized design tilting pad journal bearing also available with us against customer requirements.

2.0 GENERAL ARRANGEMENT AND ACCESSORIES

2.1 BEARING CASING

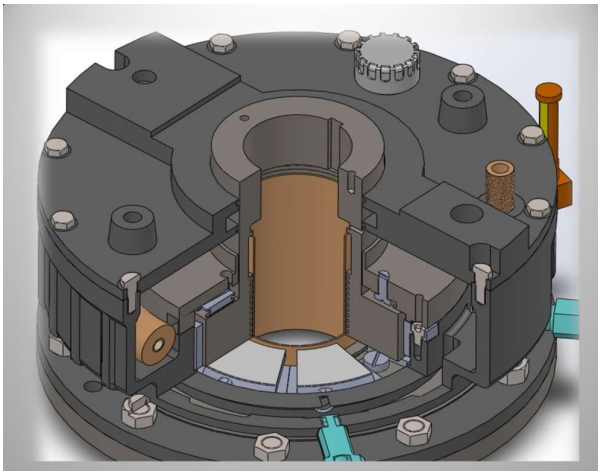
SUNTECH® "SV" series bearings are designed as combined thrust and guide bearings with axial and journal parts as well all required accessories.

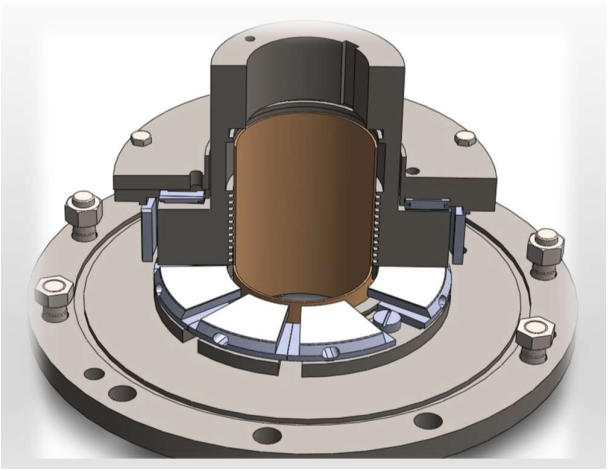
SUNTECH® Vertical Bearings are designed to meet a wide range of application requirements. All the bearings are based on the state of art technology as well as structural analysis and evolution, which enable all the bearings to achieve design efficacy & reliability. The bearing housing are fined and manufactured with nodular cast iron type GG25 , GG30 , GG40 as per requirements thus being provided with high mechanical resistance, excellent heat dissipation capacity, high structural strength, and low vibration levels. They can with stand very cold ambient temperature. The bearings will use natural cooling, water cooling, fans or forced external oil cooling system, depending on the operating conditions and on the application.

In the case of slow speed machines, the heat dissipation will be natural cooling. In such cases, a relatively small bearing housing will be necessary, since the oil quantity is low and there is no need for space for a water cooler. The same applies to medium speed bearings connected to an external oil system.

Due to the higher oil quantity, the medium speed bearings need a larger housing. SUNTECH® can offer you the most suitable bearing housing to satisfy each specific application.

The bearing housing, made of 3 separate parts (Base Plate, Casing, Top Cover), is easy to service. Removal or installation of the journal or axial parts is also easy.





2.2 VERTICAL THRUST PART

SUNTECH® make tilting Trapezoidal Thrust Pads are a major characteristic of the "SV" bearings. The pads are supported with straight pivot which ensure uniform load distribution. The bearings as standard are provided with 8 thrust pads which support downward loads. If required, the bearing shell can be provided with a variable number of thrust pads to take upward axial loads.

One of the basic features of the SUNTECH® vertical thrust bearings are the trapezoidal thrust pads made of Low Carbon Steel (15C8 / 20C8),(for special application CuCrZr also used) with the working surface made of tin based Babbitt IS25,GR90,GR84/ ASTM B23 , GR 2 to reduce surface wear(Or as pe customer requirements). (Tri layer Pads also available with SUNTECH®.)

According to working conditions and customer requirements, e. g. when load at the instant of start-up is larger than 2.5 Mpa, or for frequent start-up and shutdown application, thrust pads lined with polymeric material such as PTFE or PEEK are available to further improve abrasive resistance and lubrication performance under low speed, and to start or stop the machine without hydrostatic jacking. If required, vertical thrust bearings with hydrostatic jacking system are also available to achieve completely wear-free start-up and shutdown.

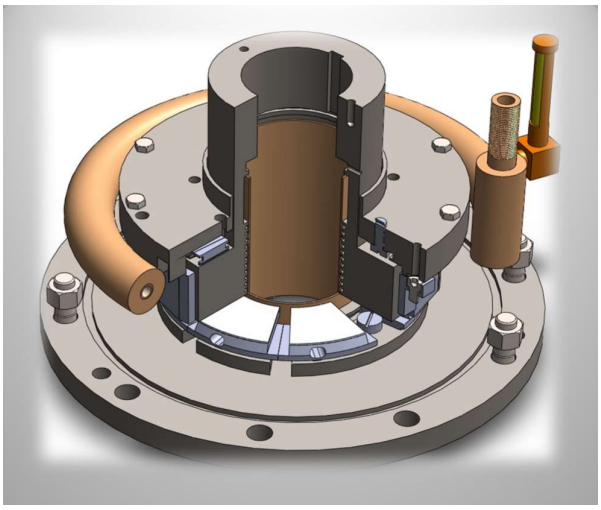
The Collar, usually made of forging medium carbon steel, is connected to the shaft by a proper key arrangement.

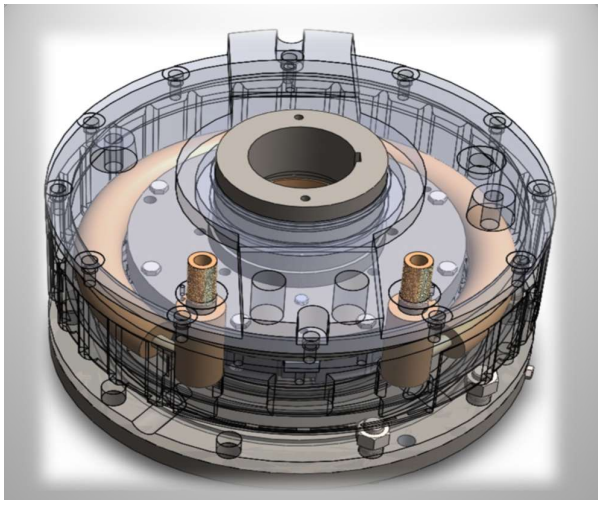
2.3 JOURNAL PART

The journal part functions as a guide bearing. The plain cylindrical bore can also be provided with several lubricating grooves. If required, the bearing can be provided with a four lobe shell instead of the plain cylindrical bore. This type of shell has a stabilising effect when the shaft is not loaded or only slightly loaded.

Guide pads are made of Low Carbon Steel (15C8 / 20C8),(for special application CuCrZr also used), with the working surface casted with tin based Babbitt IS25,GR90,GR84/ ASTM B23 , GR 2 to reduce surface wear(Or as pe customer requirements). (Tri Layer Pads also available with SUNTECH®.)

“SV” series bearings are designed with clearance adjustable tilting pads as standard, and the assembly clearance can be adjusted by a SUNTECH®, which makes installation and maintenance easier. During the procedure of trial running and installation, stiffness and damping characteristics of guide pads can be changed by adjusting bearing assembly clearance, so as to change the critical speed of the system to achieve better system stability. SUNTECH® bearings can designed with four-lobe guide bearing as standard, which is compact in structure and easy for installation.





2.4LUBRICATION AND HEAT DISSIPATION

Depending on operating conditions and application, there are commonly three kinds of lubrication and heat dissipation systems are available with SUNTECH® Vertical Bearings

1.Self-lubrication / natural cooling
2.Water cooling through high efficiency water cooler equipped in oil sump.
3.External cooling of the circulating oil.

With its own advantages and disadvantages, the user can choose any way according to the actual running conditions: For natural cooling through oil reservoir surface, it is simple, reliable and low cost, but the cooling efficiency is not good, so it is not suitable for relatively high-speed applications; for built-in water cooler, with high cooling efficiency, it can be used for higher speed and higher load applications. For external cooling by circulating oil, with best cooling efficiency, it can be widely used for different speed and load applications, but it is expensive with an extra lubricant oil tank is required.

The safest and renowned manner to operate vertical bearings is using water cooling arrangement in the bearing casing. reservoir should be large enough and equipped with oil blocking plate to guarantee emergency self-lubrication in case of a breakdown of the oil circulating system to avoid bearing damage caused by oil starvation. When cooled with water cooler, both annular bimetallic finned coolers and copper wired coolers are available. Different materials like Copper tube, Cupro-nickel or Titanium alloy tube can be chosen to meet requirements of different water quality. The cooler is normally with a working water pressure of 0. 3-0. 5 Mpa, a flow rate of 1.2- 1.5 m/s. The water pressure for testing should be twice of working pressure and no leakage in 30 minutes.

2.5 OIL SUMP

Vertical bearing is generally self-lubricated by oil tank with a certain amount of lubricating oil, consist of Casing, Base plate and Top plate. Casing for “SV” series bearings, made of high-quality nodular cast iron, has good strength and shock resistance, also has perfect resistance to low temperature. For easy installation and disassembling, the Top plate can be made to two halves. The welded oil tank is also available for customer’s special applications.

2.6 TEMPERATURE MONITORING

Temperature measurement is the preferred condition monitoring tool for most bearing assemblies. For temperature monitoring of the Thrust Pads or of the Guide Pads SUNTECH® supplies the especially developed resistance thermometer sensors.
As standard, thrust pads and guide pads are equipped with 2 thermometers respectively. If customer have special requirement, please show the number on Enquiry Data Sheet.

2.7 SEALS

Standard oil reservoirs are fitted with seals conforming to protection type IP 42. Seals for higher protection grades can be fitted on request. To prevent oil mist from being sucked out by external local vacuum, dual seals are provided where internal pressure can be made to conform to external influence by the equalization of atmospheric pressure or by admission of higher pressure.

There are various options available including:

- A flinger and a felt dust seal arrangement can be fitted to the top and bottom of the bearing to give protection against the ingress of foreign matter
- Rubber lipped oil seals can also be fitted
- Where suction pressures at the machine side of the bearing are high, a separate seal assembly for pressure compensation is used

2.8 LOAD CARRYING COMPONENTS

- Downward thrust loads are normally supported with offset pivoted white metal (babbitt) lined thrust pads positioned below the bearing thrust collar for a principal direction of rotation
- For bi-directional operation, centre pivoted white metal (babbitt) lined thrust pads are used
- Radial loads are supported on eight centre pivoted white metal (babbitt) lined journal (guide) pads

2.9 NON STANDARD FEATURE

- Mechanical load equalisation of the lower thrust face
- Load measurement using load cells
- Any other customer or specification specific requirements

2.10 TECHNICAL DOCUMENTATION

With every order SUNTECH® Bearings will provide:

- A detailed general arrangement drawing
- An Operating and Maintenance Instruction Manual
- A comprehensive bearing Operating condition prediction including
  - Oil viscosity grade.
  - Thrust and journal pad geometry & Specific Pressure
  - Minimum oil film thickness.
  - Maximum pad operating temperatures.
  - Power losses
  - Bearing oil bath temperature
  - Cooling requirement

2.11 INSTRUMENTATION

All instrumentation can be physically supplied or provision made in the design and can either be compliant to end user specification or our own standard design.

• **Temperature measurement** – oil bath and white metal surfaces using a combination of the following methods:

A. Dial type thermometer for local measurement

B. Resistance temperature detector (RTD) or thermocouples for remote measurement

C. Use of thermowells to facilitate the replacement of instruments without the need to dismantle the bearing

• Provision for vibration or shaft displacement measurement

• Oil level float switches for monitoring the bearing oil level

2.12 INSULATION

SUNTECH® Bearings standard method of electrically insulating bearings is to insulate the baseplate, cooling connections and instrumentation.

If there is any special requirement, the bearings can also be insulated at the thrust collar (AV and LV Series only).

2.13 OIL GRADE

To ensure that bearing operating temperatures, oil film thickness and power losses are in line with computer predictions, the correct viscosity of oil must be used in the bearing. Generally oil details are mentioned in the Bearing GA Drawing. The oil should preferably be a mineral oil with additives to inhibit oxidation, corrosion and foaming.

For recommended bearing lubrication oils refer to the leaflet 'Oil Selection The optimum oil bath design reduces the cost of a bearing oil change which should take place every 6 months / or as per project recommendation for bearings operating under normal conditions. Where if site conditions are dirty or dusty frequent changes of oil are advised.

APPROX BEAR WEIGHTS OF THE COMPLETE SV SERIES BEARINGS										
FRAME SIZE-	SV5	SV6	SV7	SV8	SV9	SV10	SV11	SV12	SV13	SV14
SV SNT	44	60	87	128	175	315	450	635	980	1390
SV DNT	45	61	90	130	185	322	460	652	985	1410

OIL SUMP CAPACITY FOR STANDARD SV SERIES BEARINGS (LITRES)										
FRAME SIZE	S5	SV6	SV7	SV8	SV9	SV10	SV11	SV12	SV13	SV14
SNT	1.75	2	4	6	7.5	13	17	25	42	55

2.14 OIL FLOW CONTROL FOR CIRCULATING SYSTEMS

We recommend the use of the flow meter , especially developed for application with slide bearings. These flow meters can be checked visually or, if fitted with a switching device, can be monitored electrically.

3.0 GUIDE TO SELECTION OF VERTICAL " SV" SERIES BEARING ACCORDING TO ITS INPUT SPECIFICATION

3.1 SELECTION OF BEARING GEOMETRY

The bearing size selection it's directly depends on load applicable to its surface area and which may effect on stability temperature and bearing life. The chart (2.3) will helps designer to select proper bearing size and frame efficiently.
Appendix: Approximate permissible unit radial load considered as to point to n/mm2 (Higher can be achieved by special design as early described).

of RTD (Temperature Detector) can be provident with thrust and guide pad arrangement.

3.2 BEARING VERTICAL & RADIAL LOAD V/S SIZE & SHAFT DIAMETER

STD. NO.	THRUST/GUIDE MAX SHAFT DIA.(mm) VS & BS	Thrust Surface (mm2)		Max. starting load (Down) (Newtons) For VS & BS	Max. running load (Down) (newtons) For VS & BS
		For VS & BS (Down)	Double Thrust For BS (Up)		
SV5	54	6130	3548	14802	21140
SV6	68	9360	6520	22590	32270
SV7	78	12709	8090	30671	43810
SV8	90	17180	11610	41460	59230
SV9	115	26410	18270	63741	91059
SV10	142	37970	22400	91620	130890
SV11	165	52530	35520	126760	181090
SV12	192	66810	44190	161230	230327
SV13	216	88280	58890	213040	304350
SV14	256	125930	69060	303890	434130

STD. NO.	Max. starting load (Up) (newtons) BS	Max. Running Load (Up) (Newtons) BS	Approx Radial Load (KN)	Approx Max. RPM (Water Cooled)	SUNTECH proposed Cooler type
SV5	8560	12231	2570	4000	1 Tube
SV6	15735	22490	3820	3000	1 Tube
SV7	19534	27910	5001	2500	1 Tube
SV8	28034	40045	9230	1950	1 Tube
SV9	44109	63010	14492	1550	1 Tube
SV10	54000	77310	20383	1200	1 Tube
SV11	85730	122465	27485	850	1 Tube
SV12	106640	152341	36850	830	1 Tube
SV13	142120	203030	44580	1040	2 Tube
SV14	166645	238062	67800	800	2 Tube

3.3 BEARING SELECTION EXAMPLE: SV6 BSW3

		1	2	3	4	5
Model Selection - "SV" model SUNTECH® Series		SV	6	B	S	W3
Frame Size						
5						
6						
8						
9						
10						
11						
12						
13						
14						
Thrust application						
V	Vertical Downward					
B	Vertical Double Thrust Downwards + Upwards					
T	Transient Upward Load With Vertical Double Thrust					
Shaft Accommodation						
S	Standard Shaft range					
L	Large Shaft Range					
Cooling Method						
W1	Water Cooled through 1 wire wound tube					
W2	Water Cooled through 2 wire wound tube					
W3	Water Cooled through 3 wire wound tube					
Z	Cooling by Circulating Oil					

3.4 SELECTION OF LUBRICATION OIL

The calculation of hydrodynamic state of bearing its directly depend on viscosity of oil, higher viscosity sustained at higher load but frictional loss also increases with higher viscous oil i.e. selection of proper viscous oil according to load is very important.

3.5 GENERAL GUIDE TO LUBRICANT SELECTION WITH VISCOSITY*

Specific load (N/mm2)	Surface Speed (m/s)				
	<3	<3 to 10	<10 to 25	<25 to 50	<50
≤ 1.25	68	46	46	32	32
>1.25 to 2.5	100	68	46	46	32
>2.5	150	100	68	46	46

Note: *For final Oil selection it is mandate to communicate with SUNTECH Technical team for proper result.

3.6 SELECTION OF BEARING BORE DESIGN (SPECIAL APPLICATION)**

Bearing type	Cylindrical	Two-lobe	Four-lobe	Tilting Pads
Designation	C	Y	X	K
Type of radial bearing for electrical machines, fans, compressors and turbines				
Peripheral speed U [m/s] Specific load p [N/mm2]	30 3.5	76 2.5	120 1.8	140 1.8
Type of radial bearing for gear boxes				
Peripheral speed U [m/s] Specific load p [N/mm2]	30 0,1 to 5	60 3.5	45 to 100 1.8	63 to 160 2.8

Note: **For final Bearing Bore selection it is mandate to communicate with SUNTECH Technical team for proper result.

4.0 ADMISSIBLE BEARING TEMPERATURES**

To improve and maintain the bearing Operation life with respect to Lubrication oil and effect of Cladding Metal / Babbitt Metal there are some Hydro-dynamically proved points which are indicating the admissible temperature of SUNTECH® Bearings.

a) Maximum temperature of Oil Bath - to maintain 80°C.
b) Maximum temperature of Bearing Loaded zone – to maintain 90°C.
d) For precise measurements maximum distance should maintain approx. 10 to 3 mm from the Bond and Cladding surface steel/White Metal .

Though Design has it's own speciality to calculate the Hydro-dynamic Calculation with respect to Temperature at loaded zone of Bearing so it is to important to conform The best Designed Operating temperature from Our Team.

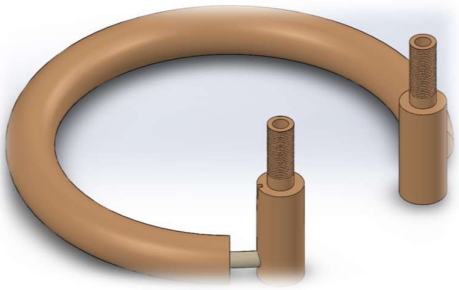
Note: **For final Bearing tripping temperature selection it is mandate to communicate with SUNTECH® Technical team for proper result.

5.0 ALARM AND SHUTDOWN TEMPERATURES

Temperatures on the order of 160° C cause plastic flow of the Babbitt. Maximum temperature are conservatively limited to 135° C. Allowing 8° C for alarm and 15°C for tripe setting, maximum operating Babbitt temperature is 120° C. It is important to note that alarm and trip are set relative to normal design temperatures. Specifically, if the design temperature is 85° C, the trip should be set at 100° C, not 120° C.

In addition to the bearing, consideration has to be given to the temperature limitations of the lubricant. Consult the lubricant Supplier for information on the lubricant limitations.

6.0 WATER COOLING



One of a special Cooling-arrangements also be incorporated With Housing Assembly to handle heat generated due to Tribological reason and also sufficient to handled residual heat which are not able to dissipated due to Housing geometry. To maintain the proper oil bath temperature a special type of N/F Base Finned Cooling Coil (Top Mounted) inserted in to the oil sump is depend on the thermodynamic heat decapitation calculation).

Different materials like Cupper tube, Cupro-nickel or Titanium alloy tube can be chosen to meet requirements of different water quality. The cooler is normally with a working water pressure of 0.3 - 0.5 Mpa, a flow rate of 1.2 - 1.5 m/s. The water pressure for testing should be twice of working pressure and no leakage in 30 minutes.

Approximate Cooling Water Flow Rate				
Interface of cooler	G1/2	G3/4	G1	G1-1/4
Water flow(l/min)	15	25	40	75

Note: The information above is for reference only , SUNTECH® will approve on the base of bearing power loss.

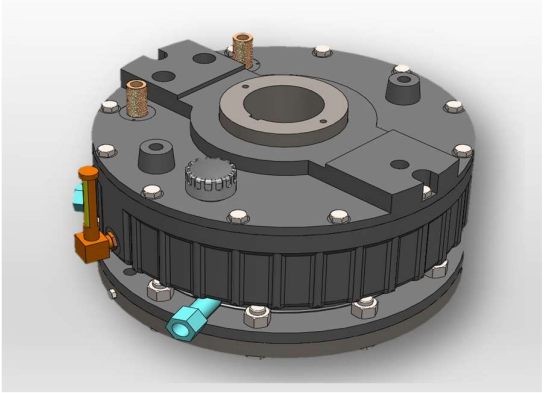
Material of water cooler and water quality						
No.	Water source	Material		Speed m/s		Size
		Standard	Grade	Min.	Max	
1	Underground water, reservoirs water, rivers and lakes water	ASTM B68	-	1	2	Ø14 x 1/As per standard
2	Coastal water	ASTM B111	-	1.4	3	
3	Sea water	ASTM B111	-	1.4	3	
4	Not limited	ASTM B338	Ti	Not Limited		
Notes: The above information can be used for initially cooler material selection , SUNTECH® can make the final decision as per water reports supplied by customer.						

7.0 EXTERNAL OIL SUPPLY

Another special type Lubrication system which is incorporated to release more circumferential heat through external oil supply (lubrication by oil circulation from an external system).when water cooling system cannot able to handle heat generated due to the exceeding peripheral speed “External Oil Supply system” will incorporated is to enable and handle such heat properly. In general bearings should always be connected to oil supply systems where a system is already installed and contains oil suitable for the bearing.

8.0 FINNED HOUSING SURFACE

Finned Bearing housing can be applied in order to prevent emergency situations, such as failure of the rotor, which can occur while the bearing is overloaded. The fins provide an increase of heat transfer surface, thus improving the cooling efficiency and enhancing heat dissipation. This also contributes to more uniform temperature distribution in Bearing and Lubricating Oil also, and to better working conditions of the Bearing and rotary Equipment.



9.0THE SPECIAL FEATURES OF THE 'SV' SERIES BEARING

9.1 ADDITIONAL SAFETY AND RELIABILITY

All bearing working faces are fully submerged in a self- contained oil bath with no possibility of their deterioration due to adverse atmospheric conditions - no matter how long the machine is on stand- by or shut down.

Generally SUNTECH® vertical offset pivoted thrust pads are used. These give approximately 40% additional safe load carrying Capacity/safety margin over centre pivoted thrust pads of the same size. They also operate with a much reduced "hot-spot" temperature. SUNTECH® vertical offset thrust pads also function safely in reverse for prolonged periods (e.g. pump head run down).

SUNTECH® pre-loaded pivoted Journal pads provide a ring of generated oil films to stabilise the rotating collar and shaft at all speeds. No adjustments necessary.

The pumping action of the thrust collar face is fully utilised to give a positive circulation of lubricating oil to the thrust pads and journal pads, and cooler. The journal pads do not have to compete with the
thrust pads for their share of lubricating oil (with risk of journal oil starvation), as in the old conventional vertical bearing designs.

Minimised foaming of the oil at high speeds through advanced internal design features.

9.2 EASIER MAINTENANCE

A very compact casing size with overall height reduced to a safe minimum providing additional working headroom on driven equipment installations.

All pads can be conveniently withdrawn radially outwards from the bearing through the gap formed by simply raising the casing from the baseplate. The journal pads are easily accessible from the top of the bearing.

All spare pads are fully interchangeable - specially finished to obviate bedding-in.

MINIMISED OIL USAGE
Economy in the quantity of lubricant necessary to fill the bearing whilst maintaining an efficient and reliable performance.

9.3 TROUBLE-FREE OIL LEVEL AND TEMPERATURE MONITORING

In this design the thrust collar is prevented from generating any vortex action within the oil bath. Thus true oil levels can be recorded at all speeds - ideal for remote control and unmanned installations.

The standard thermometer position is vertically down from the top cover measuring the hot oil flowing from the working faces. This eliminates a vulnerable thermometer entry point below the oil level.

Standard RTD positions are readily available in Ga Drawing,The bossing is built into the standard design.

9.4 ADVANCED OIL SEALING METHODS

Oil is pumped away from the space between the re-entrant sleeve and rotating thrust collar, thus absolutely minimising the possibility of oil escaping down the shaft. The anti- syphon holes are retained for double protection.

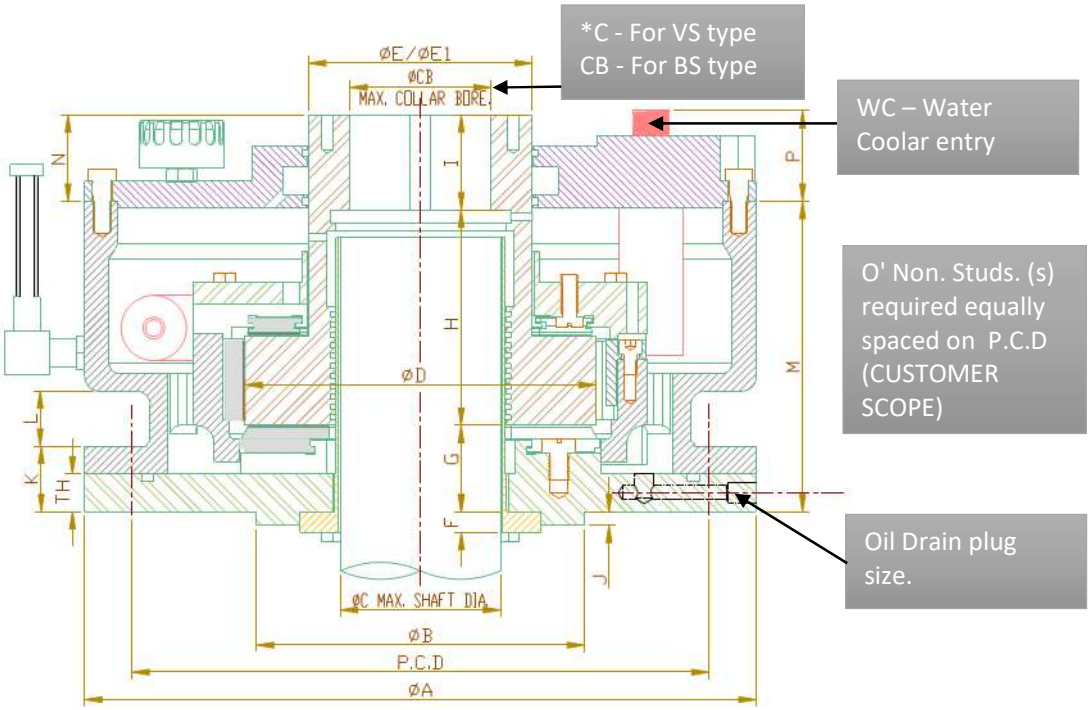
A specially designed and positioned double labyrinth baffle arrangement in the top cover prevents any oil leaking from the top of the bearing.

9.5 HIGHLY EFFICIENT WATER-COOLING SYSTEM

A wire wound cooling coil (cupronickel) is carefully positioned for maximum cooling effect.

Screwed water connections provide a strong dependable link to the external cooling water service.

"SV" SERIES VERTICAL BEARING DIMENSIONAL FIT.



STD NO.	A	B NOMINAL	MAX COLLAR DIA FOR C	MAX COLLAR BORE FOR CB	D	E FOR VS	E1 FOR BS	F	G	H	I	J
SV5	273	127	54	50	127	110	85	12	37	85	42	8
SV6	310	140	68	65	152	130	95	12	40	93	47	8
SV7	358	165.1	78	74	178	160	120	12	46	104	49	8
SV8	390	190.5	90	86	204	190	130	12	50	125	55	8
SV9	460	228.6	115	109	254	240	160	16	60	140	64	12
SV10	552	279.4	142	137	305	290	200	16	70	165	80	12
SV11	610	330	165	156	356	340	230	16	85	180	100	12
SV12	698	368	192	187	407	380	260	16	95	200	110	12
SV13	813	400	216	212	460	340	290	16	105	235	110	12
SV14	914	440	256	246	554	400	380	16	115	260	120	12

STD NO.	J	K	L	M	N	TH	O	P	FIXING BOLT	PCD	WC	OD
SV5	8	30	28	128	36	18	8	-	M12	241	1/2	1/4
SV6	8	30	28	138	42	18	8	70	M12	279.5	1/2	1/4
SV7	8	35	34	154	45	19	10	70	M16	324	1/2	1/4
SV8	8	38	32	180	50	22	10	85	M16	352.5	1/2	1/4
SV9	12	41	34	210	54	25	10	70	M16	425.5	1/2	1/4
SV10	12	50	40	245	70	30	12	85	M20	508	3/4	3/8
SV11	12	60	40	280	85	40	12	85	M20	568	3/4	3/8
SV12	12	65	40	305	100	45	12	85	M20	654	3/4	3/8
SV13	12	70	50	345	105	45	12	85	M24	770	3/4	1/2
SV14	12	75	60	380	115	45	12	85	M24	864	3/4	1/2

Collar Locking

There are a number of different ways of locking the vertical collar in position on the shaft and SUNTECH® can, in most cases, adapt the standard collar to suit a customer's specific requirements.

The most popular method is a simple shaft nut and locking washer arrangement holding the collar hard up against a shoulder on the vertical shaft.

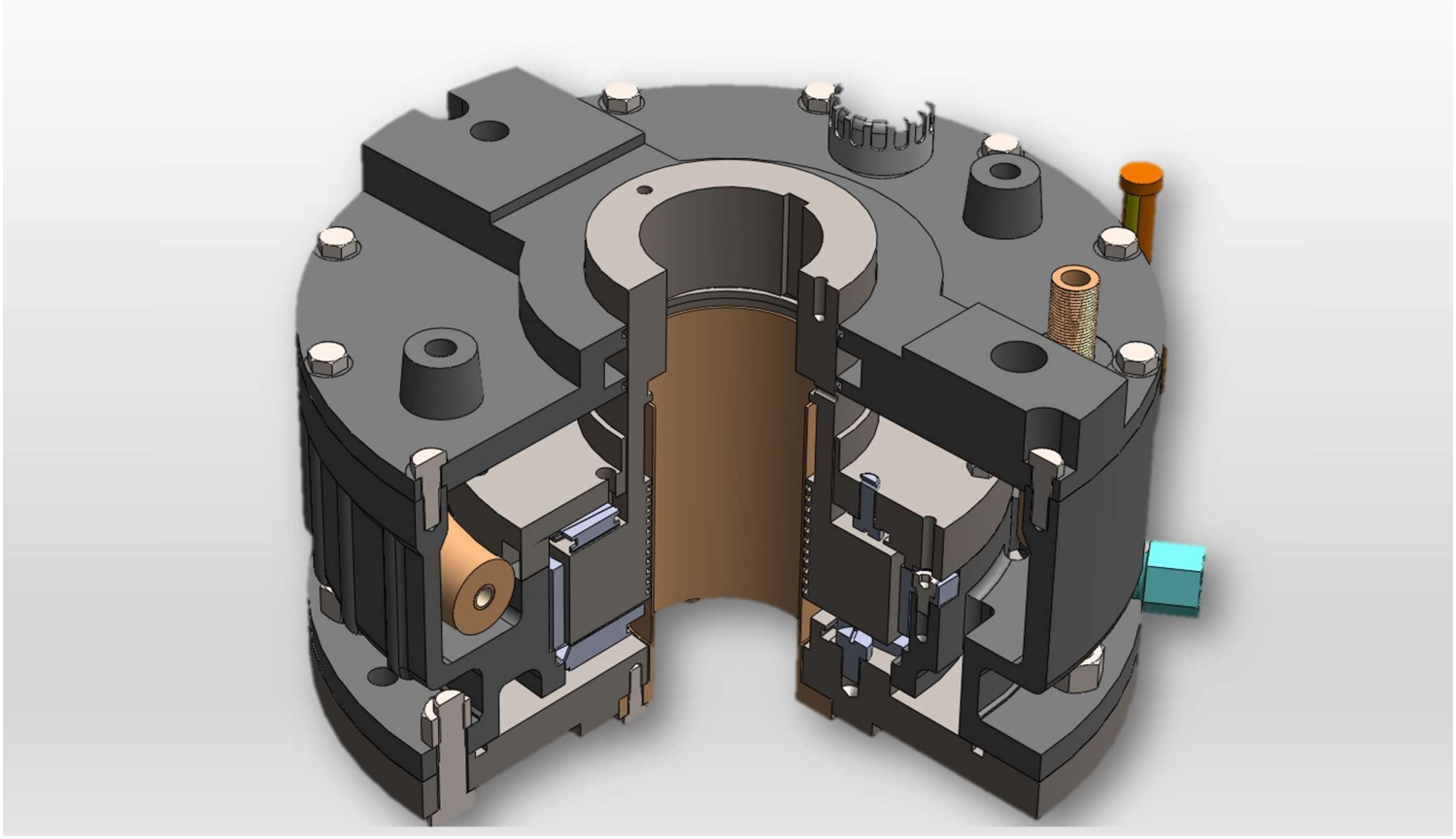
Running torque is minimal with a coefficient of friction between 0.001 and 0.055: and even at start-up it can be assumed to range between 0.4 and 0,15. Therefore the driving key in the collar bore can be safely reduced to the sizes recommended in table 'D'.
Pump manufacturers sometimes prefer a parallel shaft form with a Gib Head Key to give vertical adjustment of the pump runner clearances.

KEY AND KEYWAY SIZES (Dimensions in mm)

Shaft Dia (D)		Key size b x h	t2 depth of slot cut into collar	w width of slot cut into collar
Over	Up to & including			
10	22	2 x 2	1.0 + 0 +0.1	2 + 0.0125 - 0.0125
22	44	5 x 5	2.3 + 0 + 0.1	5 + 0.015 - 0.015
44	65	10 x 8	3.3 + 0 + 0.2	10 + 0.018 - 0.018
65	95	16 x 10	4.3 + 0 + 0.2	16 + 0.0215 - 0.0215
95	150	22 x 14	5.4 + 0 +0.2	22 + 0.026 - 0.026
150	230	32 x 18	7.4 + 0 + 0.3	32 + 0.031 - 0.031
230	350	45 x 25	10.4 + 0 + 0.3	45 + 0.031 - 0.031
330	500	63 x 32	12.4 + 0 + 0.3	63 + 0.034 - 0.034

Enquiry Data Sheets for Vertical Slide Bearings

CUSTOMER INFORMATION
Company Name:
Project Name:
Contact Person:
Contact No:
E-mail:
1 General
Application:
☐ Thermal power ☐ Chemical industry ☐ Nuclear power ☐ Sewage treatment ☐ Other _____ .
Rotating Machinery:
☐ Motor ☐ Pump ☐ Generator ☐ Gear box ☐ Steam turbine ☐ Hydro turbine ☐ Others_____.
Bearing Type:
☐ Journal bearing ☐ Thrust bearing ☐ Axial thrust bearing ☐
IP Grade: IP_____Operating condition: ☐ In door ☐ Outdoor ☐ Humidity
Nominal shaft diameter: _____ in mm.
Initially chosen bearing code:
2 Rotating Speed
Normal running speed: _____r/min Max. continuous speed: _____ r/min
Over speed: _____ r/min Time of over speed: _____ min
Rotation direction: ☐ Drawing attached ☐ Counter clockwise ☐ Clockwise ☐ Bi-direction
3 Radial Load
Normal: _____N Max. instant:_____ N At instant of start-up: _____N
4 Axial Load (Please Attach Drawing if Any)
Load direction: ☐ Single thrust ☐ Active thrust and in-active thrust
Active thrust load:
Normal: _____N Max. instant: _____N At instant of start-up: _____N
In-active thrust load:
Normal: _____N Max. instant: _____N At instant of start-up: _____N
5 Cooling, Lubrication and Lubricant
Cooling: ☐ Self-cooling ☐ By cooler ☐ By external lubricant
Lubrication: ☐ Flooded Lubrication ☐ Circulating Lubricant ☐ Others
Viscosity grade of Lubricant: ☐ Required by customer
Cooled by cooler: Water Inlet Temp.: _____C° Cooling water volume: _____L/min
External cooling: Oil inlet Temp.: ☐ Customer required: _____C°
Oil inlet pressure: ☐ Customer required: _____Mpa
Oil flow: _____L/min
6 Other requirements
Frequent start-up and stopping: ☐ Yes, monthly times _____☐ No
Hydrostatic Jacking: ☐ Yes, Max. pressure _____Mpa ☐ No
Insulation: ☐ Yes ☐ No
Temperature sensors: ☐ Yes (Specify quantity, type of detector, cable length_____☐ No



SUNTECH® Engineering Corporation.
www.suntehbearings.com

OFFICE:157C, LENIN SARANI (4TH FLOOR)
KOLKATA -700013
Tel Con: 9831207030 / 7278849399
sales@suntechbearings.com

WORKS :
151A Porllad Das Road,
Balitikuri,Ghosh Para Howrah, West Bengal 711113.
Tel Con: 9831207030 / 7278849399
suntech.ecorp@gmail.com

SUNTECH® ENGINEERING CORPORATION