

Bearings for liquid gas submerged pumps (low temperatures)

Bearings for LNG submerged pumps must operate at a temperature of -162°C . Lubrication of the bearings must be provided by the low-viscosity liquid that is being

pumped and the bearings must have high durability.

• Operating conditions

Speed: 1,160~3,600 rpm
Temperature of liquid pumped: $-196\sim 0^{\circ}\text{C}$

• Performance requirements

Capable of lubrication by the low-viscosity liquid pumped
Rust resistant

• Bearing specifications

Type: deep-groove ball bearing
Lubrication: self-lubricating resin
Material: inner & outer rings - martensite stainless steel
balls - martensite stainless steel or AISI M50

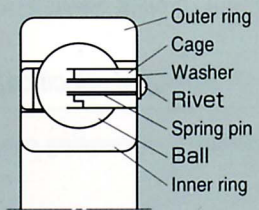


Fig. 42 Bearing for submerged pump

Fig. 43 Submerged pump

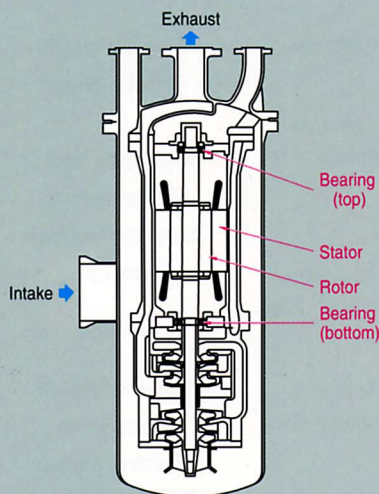
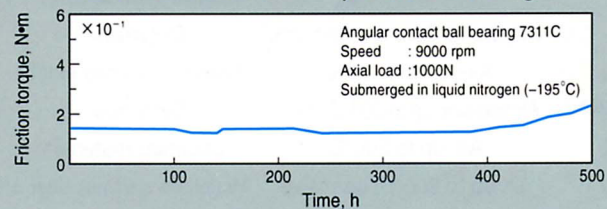


Table 6 Dimensions of submerged pump bearing (Unit: mm)

Shaft diameter	Model No.	Bore diameter	Outside diameter	Width
30	6206-H-T35D	30	62	16
35	6207-H-T35D	35	72	17
55	6211-H-T35D	55	100	21
40	6308-H-T35D	40	90	23
55	6311-H-T35D	55	120	29
70	6314-H-T35D	70	150	35
90	6318-H-T35D	90	190	43
100	6320-H-T35D	100	215	47

Note: Please contact NSK for other dimensions.

Fig. 44 Endurance life of low temperature bearing



Bearings for machine tool spindles (high speeds)

Bearings for machine tool spindles are used at high rotational speeds (high $d_m n$). The use of ceramic materials reduces the rise in temperature of the bearing,

increases its rigidity and enhances its resistance to seizure.

• Operating conditions

Speed: 4,000~15,000 rpm
Temperature: room temperature~ 50°C
Atmosphere: air

• Performance requirements

Small temperature rise
High rigidity
High resistance to seizure

• Bearing specifications

Type: angular contact ball bearing, cylindrical roller bearing
Lubrication: grease or oil
Material: inner & outer rings - bearing steel
balls - ceramics

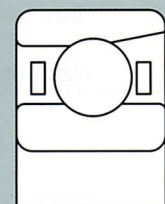


Fig. 45 Bearing for machine tool spindle

Fig. 46 Spindle

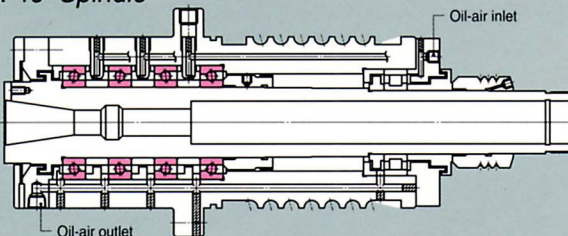
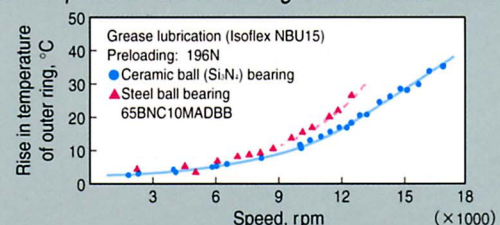


Fig. 47 Temperature rise in bearing used as machine tool spindle



Note: For more information on bearings for machine tool spindles, see Precision Ceramic Angular Contact Ball Bearings and Neo-Brid™ Angular Contact Ball Bearings.