



OIL & GAS  
**BEARINGS FOR  
STRATEGIC APPLICATIONS**

Solutions for Drilling & Refining



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With You



# UPSTREAM

Land based and offshore drilling rigs have similar elements as they are related to the same bearing applications.

The infrastructure will vary to suit the environment.

The size of the rig and its components are directly proportional to the depth of the well.

## BEARINGS FOR DRILLING RIGS



### TAPER ROLLER BEARING TRB

- The quality of our steel: only premium quality is retained
- Under extreme conditions, impacts and heavy loads, case-hardened steel shows a 40% increase in service life when compared with through-hardened steel. It can also withstand radial loads due to a high contact angle
- Optimum static and dynamic capacities (ex. by increasing the number and the size of rollers)
- Controlled internal geometry by roller/rib contact optimization

#### TRB APPLICATIONS

- ③ Top drive
- ④ Swivel
- ⑥ Mud pumps



### BALL BEARING BB

- Japanese manufacturing style (premium quality)
- CM clearance as standard range. Reduced clearance to improve performance
- Shield and sealed performance : ZZ, LLU, LLB

#### BB APPLICATIONS

- ⑤ Draw works



### SPHERICAL ROLLER THRUST BEARING SRTB

- Very high axial load capacity
- Can also withstand radial loads due to a high contact angle
- Can withstand 2° to 3° of misalignment

#### SRTB APPLICATIONS

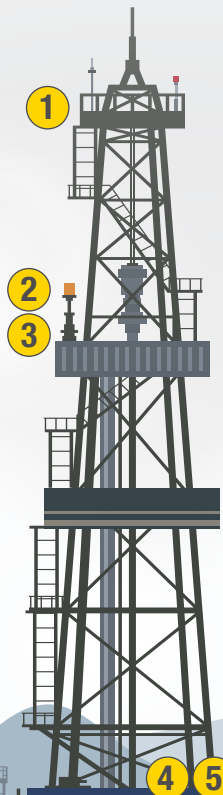
- ③ Top drive

### SPHERICAL ROLLER BEARING SRB

- Designed to withstand large radial loads, shock loading and vibration
- Capable of up to 2° of misalignment
- Available NTN-SNR E-type series for extreme loads and long life

#### SRB APPLICATIONS

- ④ Rotary table
- ⑤ Draw works
- ⑥ Mud pump



Crown block & Sheave ①



Traveling block ②



Top drive ③



Swivel & Rotary table ④



Draw works ⑤



Mud pump ⑥



### CYLINDRICAL ROLLER BEARING CRB

- Widest selection of CRBs on the market
- Capable of large radial loads at relatively high speeds
- Metric, inch, ISO, and ABMA series available
- All NTN ABMA series cylindrical roller bearings use shock resistant, longer life, case hardened material

#### CRB APPLICATIONS

- ③ Top drive
- ④ Swivel & rotary table
- ⑤ Draw works
- ⑥ Mud pump



### DOUBLE ROW TAPERED ROLLER BEARINGS DTRTB

We manufacture a large range of TNASWE type TRBs used in crown and traveling block sheaves. For years, we have been an OE/AM supplier to oilfields in these applications.

#### DTRTB APPLICATIONS

- ① Crown block & sheave
- ② Traveling block

Bore diameter	NTN-Bower part#
4.25"	NA56425SW/56650D#01
5.625"	NA48685SW/48620D#01
6.5"	NA46790SW/46720D#01
7.5"	NA67885SW/67820D#01
8"	LM241149NW/LM241#01
10"	LM249747NW/LM249#01
10.5"	LM251649NW/LM251#01
12"	L357049NW/L35701#01

### TAPER ROLLER THRUST BEARING TRTB

- Extremely high axial load capacity
- Commonly used in oilfield applications to handle extreme thrust load
- Available in shock resistant, longer life, case hardened material

#### TRTB APPLICATIONS

- ③ Top drive
- ④ Swivel



NTN References
E-CRT3018PX1
E-CRT3407PX1
E-CRT3614PX1
E-CRT4112PX1
E-CRT4604PX1
CRT5613PX1

# DOWNSTREAM

Pumps and compressors are typical applications from the refining stage.  
Bearings used correspond to specific standards.

## BEARINGS FOR REFINING PUMPS



### API610

The standard for petroleum refining process pump defined by American Petroleum Institute.  
The conditions for use and specification of bearings are defined

BEARING LIFE	Bearing “system” life (not for individual bearings) should be <ul style="list-style-type: none"><li>• over 25000h (Continuous operations)</li><li>• 16000h (Maximum radial and axial loads and rated speed)</li></ul>
ROTATION	$dm \ N < 500,000$ $dm \ [mm] \dots (bore \ diameter + Outer \ diameter) / 2$ $N \ [min^{-1}] \dots Rotational \ speed$
LUBRICATION	Oil lubrication * The housing shall be equipped with an oil leveler.



### DEEP GROOVE BALL BEARINGS DGBB

- Radial clearance : C3 (Larger than normal clearance)
- Metal cage

#### DGBB DESIGNATION (example)

6 3 08 ZZ C3 / 5K

Grease  
Radial clearance : C3  
Shielded (both sides)  
Nominal bore diameter 40mm  
Dimension series 3  
Deep groove ball bearing



### ANGULAR CONTACT BALL BEARING ACBB

- Contact angle 40°(For axial load)
- Arrangement: back to back
- Machined brass cage

#### ACBB DESIGNATION (example)

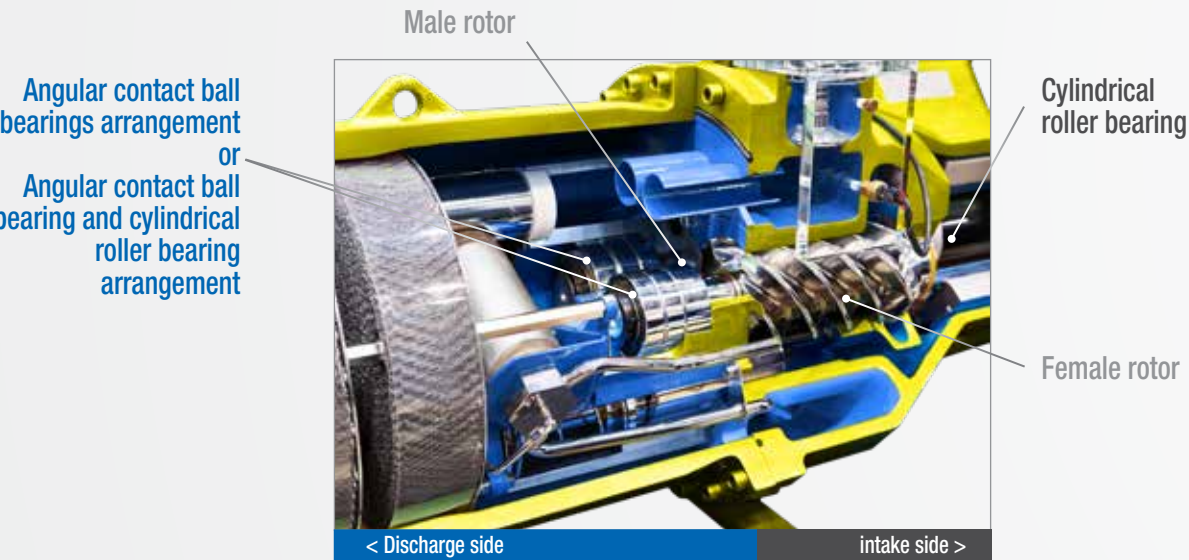
7 3 10B L1 DB ..

Arrangement back to back  
Machined brass cage  
Contact angle 40°  
Nominal bore diameter 50mm  
Dimension series 3  
Angular contact ball bearing

# DOWNSTREAM

Pumps and compressors are typical applications from the refining stage.  
Bearings used correspond to specific standards.

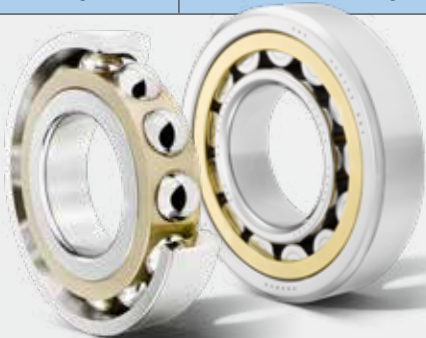
## BEARINGS FOR AIR COMPRESSORS



### THE BEARING SPECIFICATION FOR SCREW COMPRESSOR

Used place	Discharge side (Fixed)		Intake side (Floating)
Bearing type	Angular contact ball bearing	Cylindrical roller bearing	Cylindrical roller bearing
Example of bearing number	7304BT2PXn (ID 20mm)	NF2304ET2XCSnPXn (ID 20mm)	NU213ET2XCSnPXn (ID 65mm)
Precision class of JIS(*)	0-class	0-class	0-class
Contact degree	40-degree	-	-
Cage	Material: Polyamide Guided by ball	Material: Polyamide Guided by roller	Material: Polyamide Guided by roller
Lubrication	Circulating oiling	Circulating oiling	Circulating oiling
Clearance	-	Special	Special
Another specialty	Control of side face height difference of inner and outer ring	Control of side face height difference of inner and outer ring	-

\* Japanese industrial standards





# LONGER LIFE (TMB / TAB BEARINGS)

## NTN-SNR RECOMMENDATION

Bearing dimensions are the same as those of standard deep groove ball bearings, but the bearings have special heat treatment that considerably extends life.  
These bearings are especially effective in countering short life due to the effects of infiltration by dust and other foreign matter.

P/NS FOR EXAMPLE : **6206 / TMB206 / TAB206**

Features are as follows:

- Load rating and speed limit are the same as standard bearings.
- TMB 62 series bearings used instead of standard 63 series bearings enabling lighter, more compact designs.
- **TAB bearings have a 5x longer life in polluted oil compared to standard bearings and 2x longer than TMB bearings.**

CONTAMINATED LUBRICATION >> **TMB**

CONTAMINATED LUBRICATION AND PEELING\* >> **TAB**



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