



Tilting Pad Journal Bearings

Types W140 and W141
Diameter Range 40...355 mm

Standard GTW Tilting Pad Journal Bearings type W140 with 4-pads and W141 with 5-pads.

These bearings are used in high speed machines, mostly in turbo gearboxes, industrial turbines and turbocompressors.



Tilting Pad Journal Bearings

Advantages of Tilting Pad Journal Bearings:

- maximum possible stability of rotating parts
- low sensitivity to load direction
- oil flow can be minimised - it reduces losses caused by friction
- standard components can be used
- spare parts for these bearings are the pads

Advantages of GTW Tilting Pad Journal Bearings:

- optimised lubrication of bearings enables minimum power loss and temperature
- simple design
- universal design enables the combination of axial/radial loads
- provision of static and dynamic performance data as standard

General Information:

GTW Tilting Pad Journal Bearings are designed for transfer of radial loads with optimal dynamic features and minimum power loss.

They are available in these ranges:

W140 – these are 4 pad bearings

W141 – these are 5 pad bearings

W140 and W141 series have the same outside dimensions and they are proposed on the identical systems. GTW Tilting Pad Journal Bearings are designed for shaft sizes up to 355 mm.

Movement of radial pads is limited by nozzles. Standard pads are supported centrally, enabling both directions of shaft rotation. It is standard that bearing housings are manufactured as to be suitable for disassembly.

Material:

The standard pads are manufactured from steel lined with tin based white metal. The housings and end flange covers are manufactured from steel.

Preload:

Preload describes relationship between the pad diameter, shaft diameter and bearing diameter. Standard pads are supplied with positive preload value ratio in the range of 0,3 – 0,55. GTW bearings have a positive preload, that means the pad radius is larger than bearing radius.



Designation of Bearing Types

1.) Manufacturer

W GTW

2.) Type

140 Non-locating bearing with four tilting pads

141 Non-locating bearing with five tilting pads

3.) Width

040 Pad width is 40% of nominal bearing diameter

070 Pad width is 70% of nominal bearing diameter

100 Pad width is 100% of nominal bearing diameter

4.) Nominal bearing diameter

5.) Sealings

O Open Covers

F Fixed seals

G Floating seals with garter spring

T Floating seals with tension spring

6.) Direction of rotation

L Left when looking at the thrust surface

R Right when looking at the thrust surface

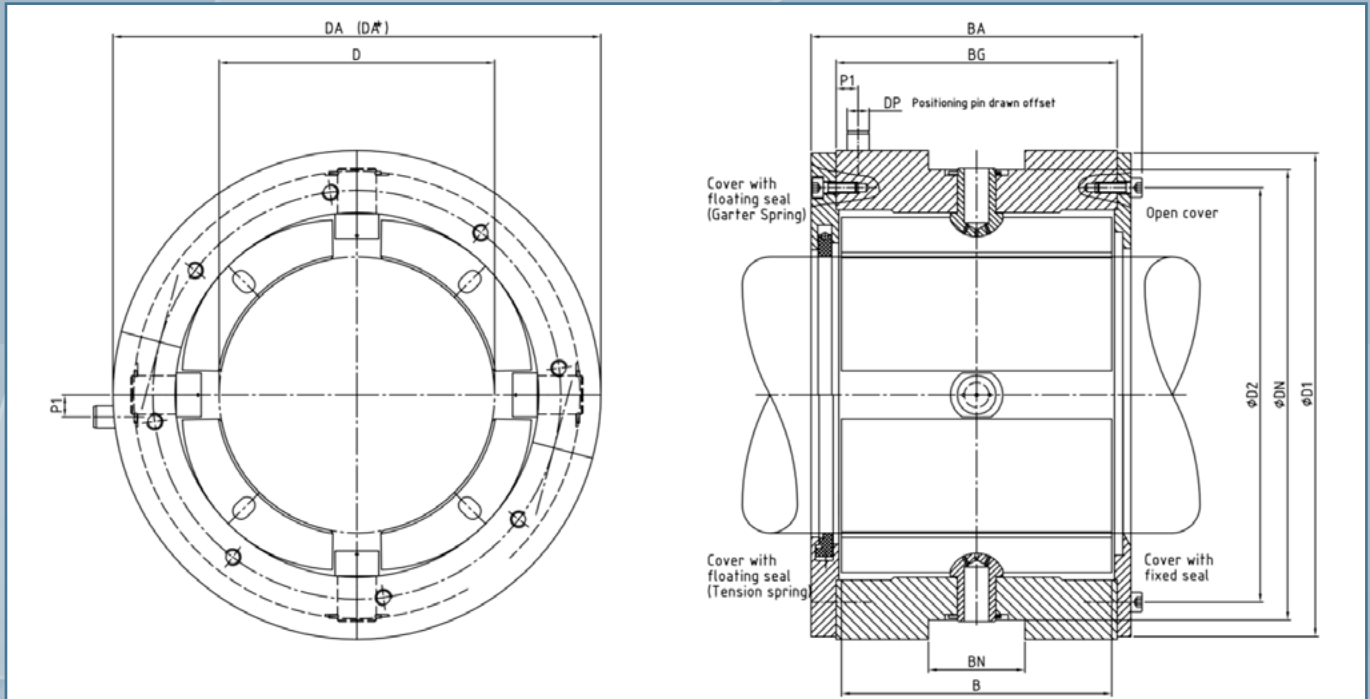
B Both

Example

Non-locating tilting pad bearing with five pads and nominal diameter 280 mm, pad width 100% of nominal diameter, open covers and for both directions of rotation.

Slide bearing W141-100-280-OB

Dimensions of Bearings Type W140

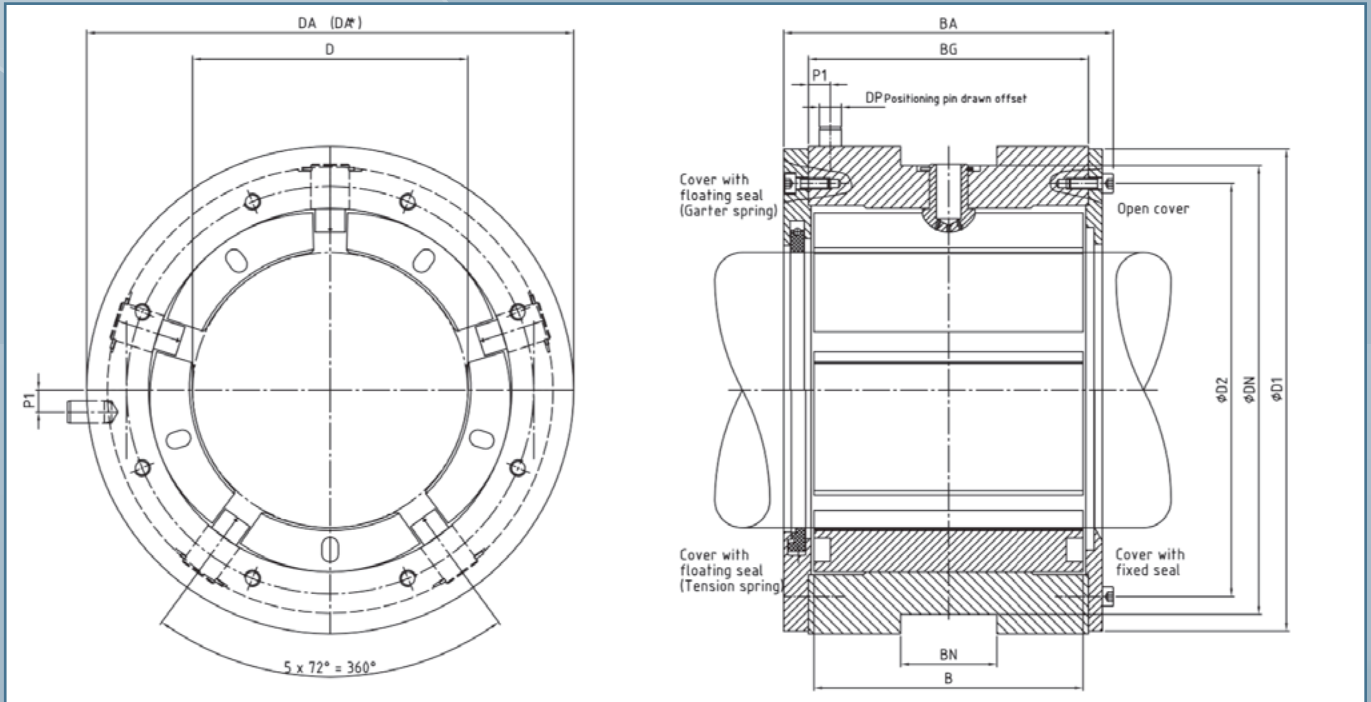


D H6	DA j6	DA*	DN h9	DP	P1	D1	B h7			BG k8			BA			BN		
							040	070	100	040	070	100	040	070	100	040	070	100
40	85	82	75	4	4	84	16	28	40	18.15	30.20	42.20	32.2	44.2	56.2	6	10	14
45	90	89	81	4	4	89	18	32	45	20.15	34.20	47.20	34.2	48.2	61.2	6	11	16
50	95	95	88	5	5	94	20	35	50	22.15	37.20	52.20	36.2	51.2	66.2	7	12	18
55	110	110	103	5	5	109	22	38	55	24.15	40.20	57.20	42.2	58.2	75.2	7	13	20
60	120	120	112	5	5	119	24	42	60	26.15	44.20	62.20	44.2	62.2	80.2	8	15	21
65	125	120	112	5	5	124	26	45	65	28.15	47.20	67.20	46.2	65.2	85.2	9	16	23
70	130	130	121	6	6	129	28	49	70	30.20	51.20	72.20	48.2	69.2	90.2	10	17	25
80	140	138	128	6	6	139	32	56	80	34.20	58.20	82.20	52.2	76.2	100.2	11	20	28
90	160	160	150	8	8	159	36	63	90	39.20	66.20	93.25	63.2	90.2	117.3	13	22	32
100	175	175	163	8	8	174	40	70	100	43.20	73.20	103.25	67.2	97.2	127.3	14	25	35
110	195	190	178	8	8	194	44	77	110	47.20	80.20	113.25	71.2	104.2	137.3	15	27	39
120	215	215	200	10	10	214	48	84	120	51.20	87.25	123.30	75.2	111.3	147.3	17	29	42
125	220	220	205	10	10	219	50	88	125	53.20	91.25	128.30	77.2	115.3	152.3	18	30	44
140	230	228	212	10	10	229	56	98	140	59.20	101.25	143.30	83.2	125.3	167.3	20	34	49
160	265	265	245	12	12	264	64	112	160	68.20	116.30	164.35	100.2	148.3	196.4	22	39	56
180	295	295	272	12	12	294	72	125	180	76.20	129.30	184.35	108.2	161.3	216.4	25	44	63
200	330	330	305	16	16	329	80	140	200	84.20	144.30	204.40	116.2	176.3	236.4	28	49	70
220	370	370	345	16	16	369	88	154	220	92.25	159.35	224.40	124.3	191.4	256.4	31	54	77
225	370	370	345	16	16	369	90	158	225	94.25	162.35	229.40	126.3	194.4	261.4	32	55	80
250	400	400	370	20	20	399	100	175	250	104.25	179.35	254.40	136.3	211.4	286.4	35	61	88
280	460	450	420	20	20	459	112	196	280	116.25	200.40	284.45	156.3	240.4	324.5	39	69	98
315	510	510	474	20	20	509	126	220	315	130.30	224.40	319.50	170.3	264.4	359.5	45	77	105
355	575	575	535	20	20	574	142	248	355	146.30	252.40	359.50	186.3	292.4	399.5	50	90	120

All dimensions in mm

We reserve the right to introduce modifications

Dimensions of Bearings Type W141

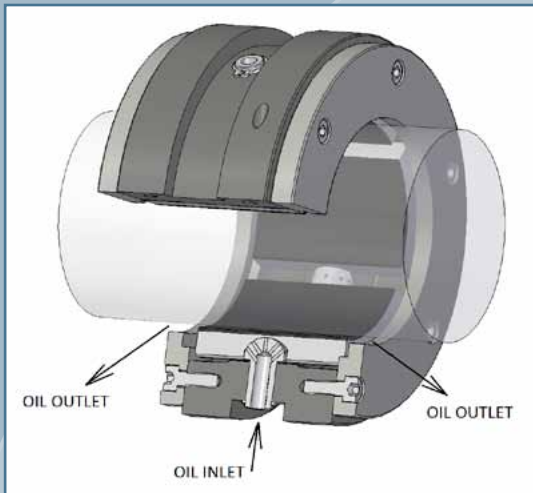


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100	175	175	163	8	8	174	40	70	100	43.20	73.20	103.25	67.2	97.2	127.3	14	25	35
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355	575	575	535	20	20	574	142	248	355	146.30	252.40	359.50	186.3	292.4	399.5	50	90	120

All dimensions in mm

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Tilting Pad Journal Bearings



GTW Bearings System:

The Standard GTW Tilting Pad Journal Bearings

– Direct Lubrication design:

- oil flow controlled by nozzles between each pad
- oil outlet – from each end of bearing

Load Capacity:

The load capacity of Tilting Pad Journal Bearings depends on different factors such as direction of load in reference to the pad position, shaft speed, inlet oil temperature, oil viscosity etc. There are two possibilities of direction of load in reference to the pad position - load on pad and load between pads.

Bearing Calculations:

For selection of bearing size it is necessary to make bearing calculation using special software. GTW provides white metal bearing calculation services for standard customers. GTW calculation software provides relevant parameters such as required oil quantity, power loss, admissible load, stiffness and damping coefficient, maximum bearing temperature etc.

Temperature Sensors:

Temperature sensors are used for measuring of bearing temperature. All GTW Tilting Pad Journal Bearings can be supplied with temperature sensors guarantees permanent monitoring of bearing temperatures.

Hydrostatic Jacking:

GTW can also supply bearings with hydrostatic jacking, especially for applications with high load during start-up.

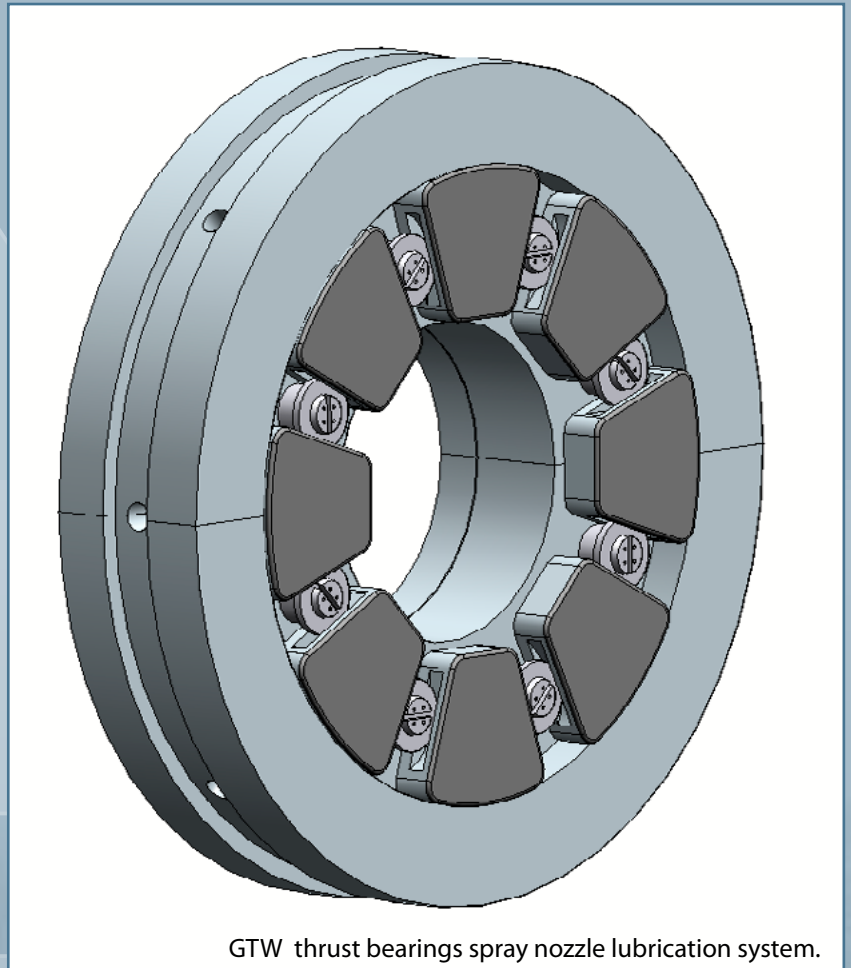


GTW Tilting Pad Thrust Bearings - for axial loads

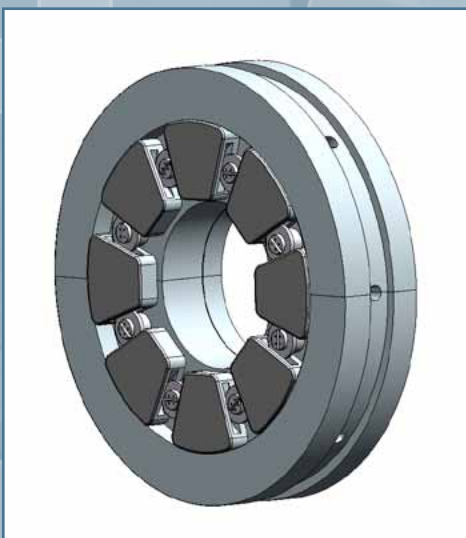
GTW Tilting Pad Thrust Bearings are designed to transfer high axial loads from rotating shafts. GTW bearings can be produced with either double or single axial faces.

Bearings description:

GTW uses a spray nozzle lubrication system for thrust bearings. Spray nozzles are located between pads which improves oil flow and oil film thickness. The thrust pad profile is designed to reduce power loss. GTW standard pads are made from steel with tin white metal lining. Centre pivoted pads are designed for bi-directional running. All thrust pads can be also supplied with offset pivots.



GTW thrust bearings spray nozzle lubrication system.



The Tilting Pad Thrust Bearings can be supplied with temperature sensors. For bearing size selection it is necessary to make bearing calculation. Number of pads in bearing depends on calculation results. GTW can supply thrust bearings with hydrostatic jacking for special applications.



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