GTW Gleitlagertechnik Weißbacher GmbH

Tilting Pad Journal Bearings

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

Bearings type W140 and W141 are tilting pad journal bearings without thrust capability.
They are used in fast-running turbo machines, mostly in turbo gearboxes.

Journal Bearings Type W140 and W141
Diameter Range 40...355 mm

Applications
Tilting pad journal bearings type W140 and W141 are successfully applied in turbo machines and other high-speed applications.

Materials
The tilting pads are made of a steel body, lined with a babbitt layer. Standard material for the tilting pad steel body is a special heat-treated manganese carbon steel, for the babbitt it is GTW V90, a tin-based material able to sustain high bearing temperatures. Standard material for the bearing supporting body is C45N. Floating seals are made of bronze CuSn12. Other materials are available and may be necessary depending upon the application.

Machine Interface
Clearance between shaft and bearing is determined by machining of the shaft. Angular position of bearings type W140 and W141 is determined by a pin usually connecting to a groove in the machine housing split line. The position of this pin depends upon the application-specific load angles.

Pad-Body-Contact
The contact between radial tilting pads and supporting body is cylindrical, allowing for tilting of the pads in circumferential direction. Elliptical double-tilt contacts to additionally allow for some tilting in axial direction are available on request.

Special Designs
Modifications to the bearings of the W series are available to optimally suit your machine design and application. The majority of W bearings is specially adapted to the customers' specifications. Configurations of bearings type W140 or W141 with thrust part in one bearing body are possible.

Oil Supply
Oil lubrication and cooling has to be achieved through an external oil circulation system. Usually, this is part of the machine oil lubrication system.

Oil Management
Bearings type W140 and W141 are available in four different sealing configurations:

- Open covers
- Covers with fixed seal
- Covers with floating seal with garter spring
- Covers with floating seal with tension spring

Seal configuration and oil flow have a large influence on bearing behaviour and must be adapted to the individual application. Both flooded and direct lubrication can be achieved by variation of seal configuration and oil flow.

Heat Dissipation
The friction heat is dissipated by convection via the external oil circulation system.

Temperature Control
Bearing temperature measurements may be taken in the tilting pads. Provisions for temperature measurements are available on request. Temperature readings may help in determining bearing failure when evaluating transient temperature changes.

Bearing Selection
Calculation software based on DIN 31657 for bearing pre-selection is available on request. Specified load cases will be calculated by GTW with specialized calculation software able to model bearing behaviour more precisely.

Designation of Bearing Types

1.) Manufacturer

W	Gleitlagertechnik Weißbacher GmbH

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

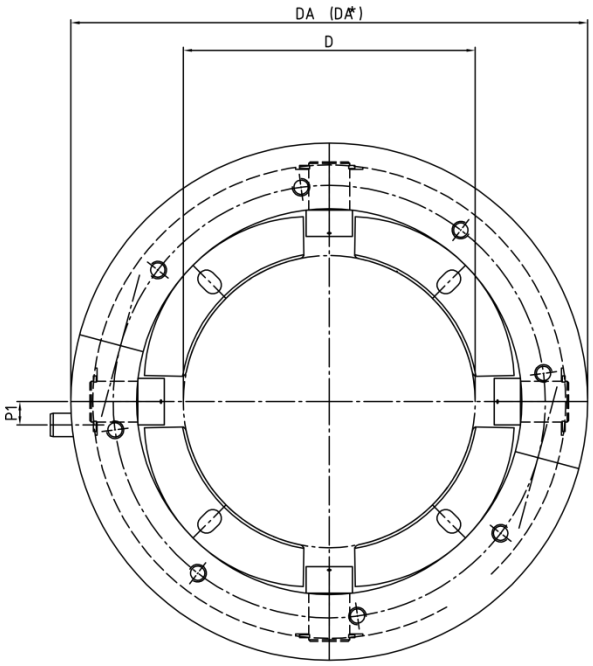
6.) Direction of rotation

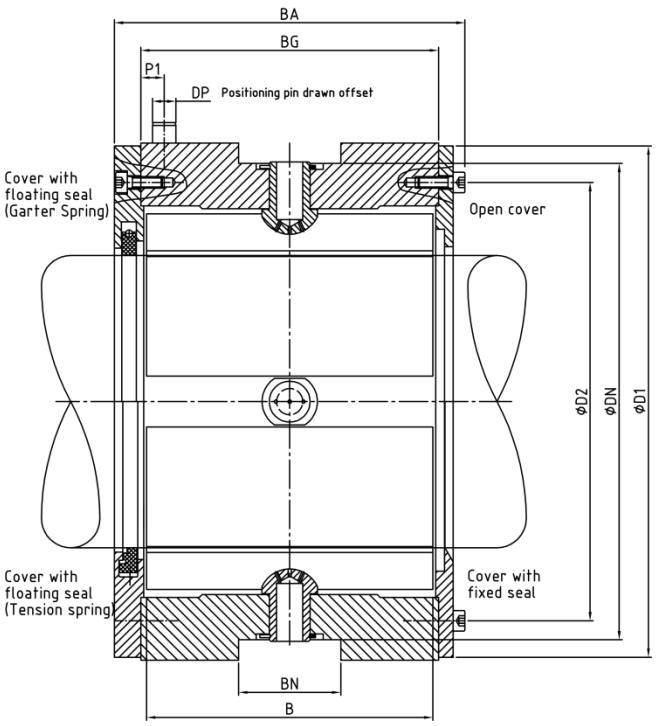
L	Left when looking at the thrust surface
R	Right when looking at the thrust surface
B	Both

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



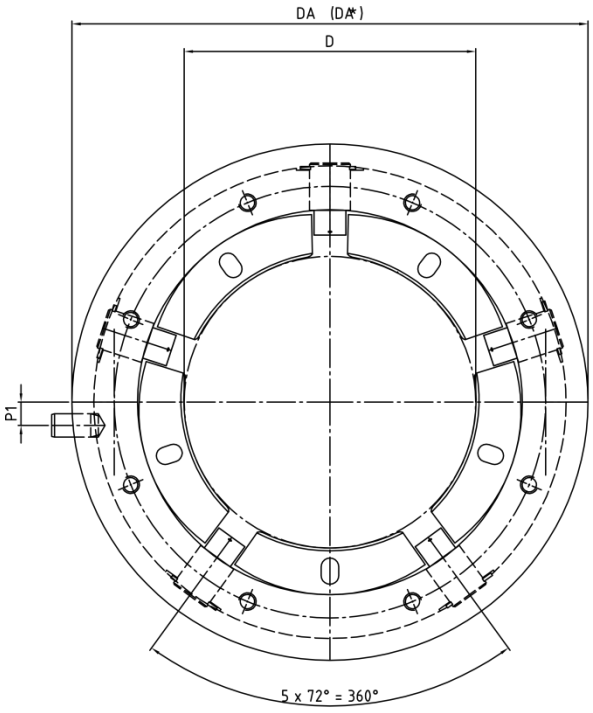


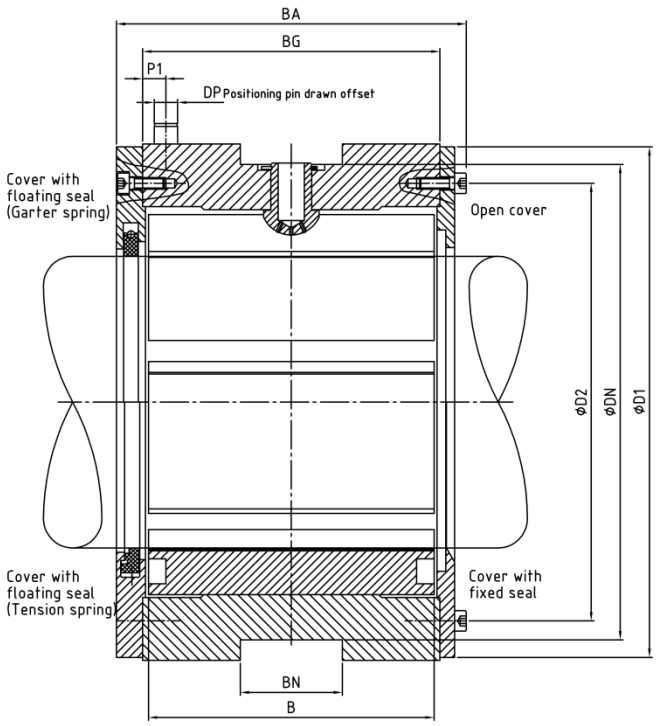
D H6	DA j6	DA*	DN h9	DP	P1	D1	B h7			BG k8			BA			BN		
							040	070	100	040	070	100	040	070	100	040	070	100
40	85	82	75	4	4	84	16	28	40	18.15	30.20	42.20	32.2	44.2	56.2	6	10	14
45	90	89	81	4	4	89	18	32	45	20.15	34.20	47.20	34.2	48.2	61.2	6	11	16
50	95	95	88	5	5	94	20	35	50	22.15	37.20	52.20	36.2	51.2	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





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

GTW Gleitlagertechnik Weißbacher GmbH

Weseler Straße 32
D-46519 Alpen
www.gtwalpen.de

Tel. +49-2802-1025-0
Fax. +49-2802-7435
E-Mail: office@gtwalpen.de