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## Plates with organic friction linings for dry-running

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External plates with splines	<b>3. 0. -. 88-. . -</b>	2.14.00
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## Plates with sintered linings

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External plates with lugs, for wet- and dry-running	<b>3. 0. -01. -. . -</b>	2.18.00
External plates with splines for wet- and dry-running	<b>3100-. 15-. . -</b>	2.19.00
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External plates with splines for wet-running	<b>3021-6. . -. . -029</b>	2.21.00

## Clutch plates have a long tradition at Ortlinghaus

Ortlinghaus has been a pioneer in the development of clutch plates. As early as 1904 we were manufacturing plates for clutches and brakes. In 1934 the company Otto Ortlinghaus and Sons in Remscheid was granted a patent for the sprung steel plate which was marketed and accepted throughout the world under the brand name of the "Sinus" plate.

At the beginning of the fifties Ortlinghaus was the first manufacturer in Europe to supply multi-disc clutches with sintered plates. Since then the range has been continually developed and expanded - always on the basis of trials on our high performance test rigs. The result of decades of production of complete clutches of all types has resulted in a wide range of knowledge in the use of clutches for the most varied of applications. Supported by this long tradition Ortlinghaus today supplies a comprehensive range of clutch plates in a wide variety of sizes, friction combinations and surface designs to suit all applications and functions.

**Standard plates** are mostly available ex stock; splines, dimensions and frictional properties are matched to each other and have been proven in millions of applications.

Our strength also lies in the cost efficient manufacture of **specifically customised plates**. These allow our customers the freedom in the design of drive units which they often need in competitive markets.

**Details of the friction characteristics and coefficients for the different frictional combinations can be found in Section 1 "Technical Information".**

Our specialist engineers, available in all important locations at home and abroad, and our experts in the factory will be glad to advise you in all questions on the use and installation of plates and clutches. Please describe your application or return the completed questionnaire.

## The friction system - central components of multi-plate clutches or brakes

The engagement/disengagement characteristics and the service life of a multi-plate clutch or a multi-plate brake are determined by the choice and specified size of the frictional combination (plates) and - for wet-running - by the lubricant. In the two areas of application

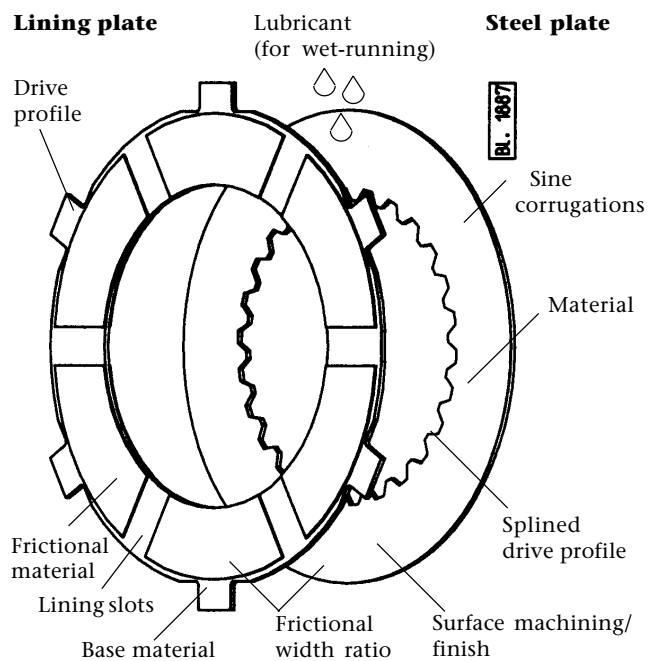
- "Dry-running" and
- "Wet-running"

different principal characteristics are decisive for the application.

Thus for dry-running the wear of the friction linings (result from friction between two faces) is an effect which accompanies the friction and is at the centre of the design calculation. In wet-running on the other hand the friction combination is largely protected from wear by the lubricant and the frictional heat generated is effectively dissipated. Due to this, together with the high thermal loading capacity of the Ortlinghaus lining materials, an extremely high single and continuous engagement/disengagement performance of the assemblies is achieved.

Figure 1 illustrates the most important construction parameters for a frictional system. The selection and design of the individual components, the lining plates and steel plates together with the lubricant are all subject to the requirements and performance specification of the clutch or brake being designed.

For frictional materials and frictional pairs see Section 1 "Technical Information".



**Figure 1**  
Lining plates and steel plates, the main components of a frictional system.

## Drive profiles

Plates are fitted to their drive components in a way, so that they can move in the axial direction but are guided in the circumferential direction to prevent rotation.

For this purpose there are various forms of drives available:

- Lugs and slots (straight and bowed)
- Splines to DIN 867 and DIN 5480
- Bores in the body of the plate or tongues to take pick-up studs,
- Special profiles to customer requirements.

## The radial clearance

The radial clearance between the flanks of the plates and of the drive component guarantees that the plates can be displaced axially - a basic requirement to allow multi-plate clutches to be engaged/disengaged. Defined dimensions must be adhered to in order to avoid damage due, for instance, to hammering in the drive component profile or due to excessive thermal loading as result of incomplete disengagement of the plate pack when running disengaged.

For this reason defined specifications for the radial clearance in relation with the plate size, the type of drive component profile, the material and any heat treatment of the material, apply in the manufacturing of all Ortlinghaus plates. The relevant factory standard for this is based on the main required tolerance bands of the spline standards (DIN/ISO) guaranteeing a clear match with the dimensions of the drive component - sometimes manufactured by the customer.

## Running clearance

In addition to being determined by the plate size, the running clearance of a plate pack also depends on the type of steel plates. If Sine plates are used the air gap will be about 0.1 mm to 0.2 mm per friction surface (medium sized plate). For flat plates a slightly larger clearance is necessary.

## The Sine profile of the steel plates

As already explained in Section 1 "Technical Information" the sprung steel plate gives a soft engagement, a quick and accurate release when disengaging and also stable running characteristics. The creation of the Sine profile is carried out during manufacturing in accordance with special specifications with regard to the heat treatment and the strength of the steel body. This process is a prerequisite for a plate which is virtually free of

residual stress and whose thermal loading capacity is fully equal to that of the flat plate.

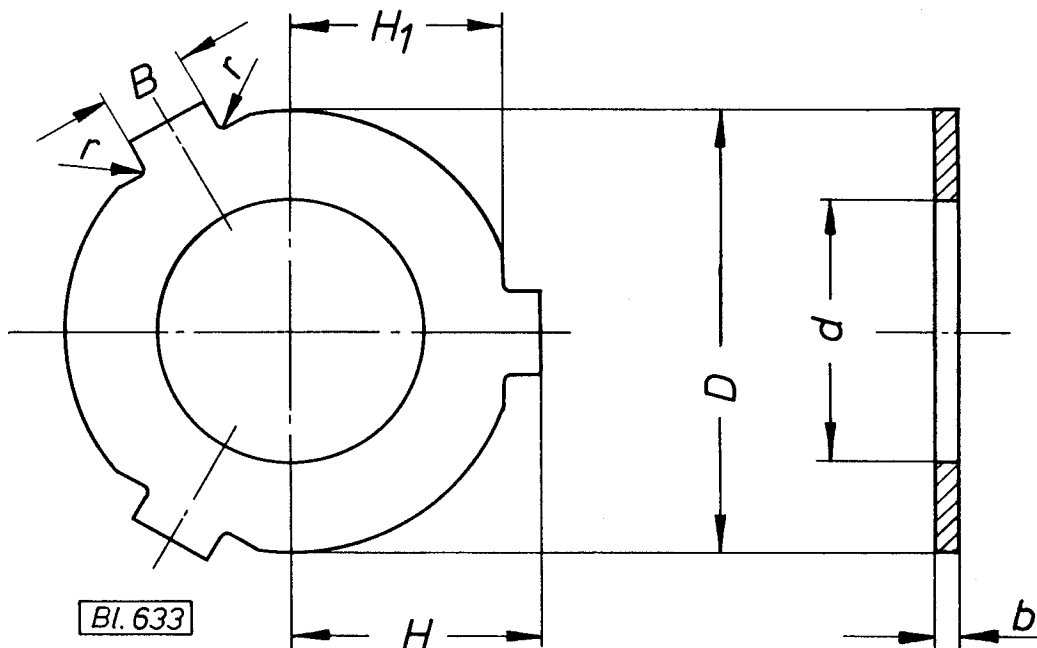
The number of corrugations and their height are determined by the diameter of the plate, the type of slots on the lining plate and the thickness of the steel plate.

## The friction width ratio


The friction width ratio is the ratio of the outside diameter to the inside diameter of the friction lining. The normal figure for our standard plates is 1.2 to 1.4. "Wider plates" should be avoided because of the uneven thermal loading. The permissible thermal loading per unit area would be smaller which in the final analysis would result in a lower power to weight ratio of the assembly.

## The number of friction surfaces

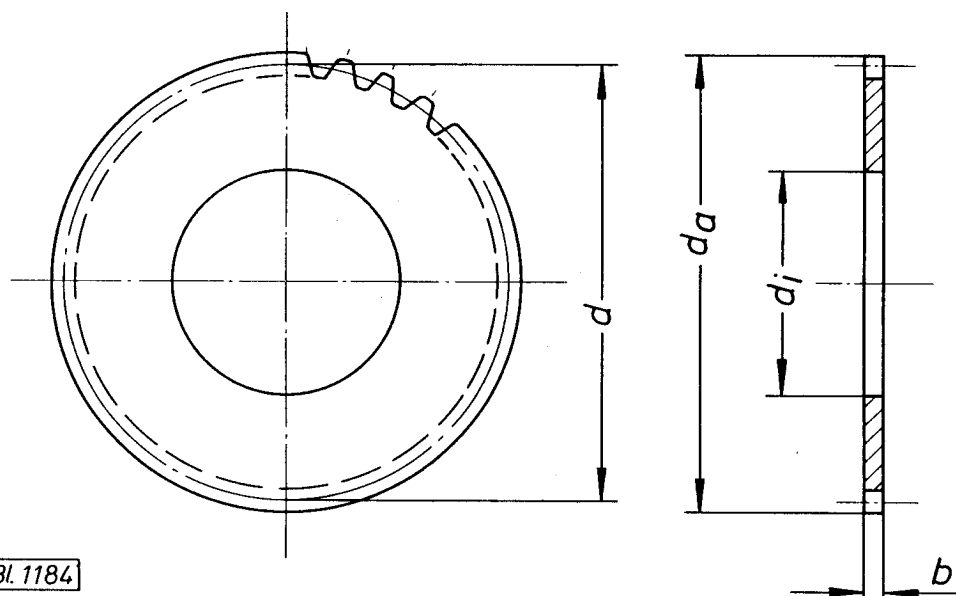
In the standard clutches and brakes listed there are plate packs with 6 to 24 friction surfaces. The following (also by calculation) relationship applies to the design: the dynamic torque does not increase linearly with the number of friction surfaces but in reducing steps. The reason for this is based on the fact that the axial engagement force applied by the actuator/piston is reduced by friction on all the drive teeth so that the frictional surface pressure falls off with increasing distance from the actuator/piston.



Number	D	d	B	H	H <sub>1</sub>	b	r	Number of lugs
<b>3100-040-07-...000</b>	54,5	34	10	31	25,8	1	1,2	3
<b>3100-040-11-...000</b>	69,8	50	12	38,5	33,3	1,45		
<b>3100-040-15-...000</b>	79,8	60	12	44	38,3			
<b>3000-040-19-...000</b>	89,8	68	12	49,5	43,3			6
<b>3000-040-23-...000</b>	100	72	12	55	48,5	4		
<b>3100-040-23-...000</b>	100	72	12	55	48,5	8		
<b>3100-040-25-...000</b>	111,5	72	19	61	53,8	1,8	1,5	6
<b>3000-040-27-...000</b>	109,8	78	12	61	53,2			
<b>3100-040-31-...000</b>	124,8	84	12	68,5	61			
<b>3000-040-35-...000</b>	134,8	95	12	73,5	65,9			
<b>3100-040-39-...000</b>	144,5	102	19,7	78,5	70,5			
<b>3100-040-43-...000</b>	164,5	118	19,7	88,5	80,5			
<b>3100-040-47-...000</b>	181,5	132	19,7	97	89			


  
 -000 with spiral grooves  
 -030 without spiral grooves

Connection dimensions of the outside drive housing in accordance with the factory standard on request.



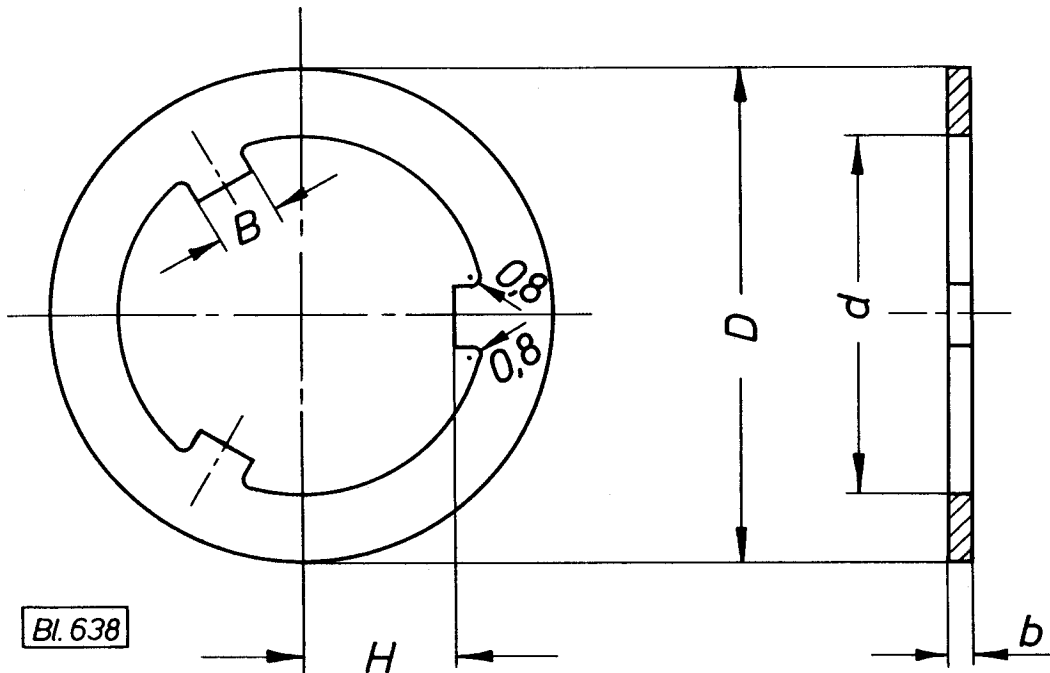
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Number	Number of teeth x modulus	Profile displacement x · m	d	d <sub>a</sub>	d <sub>i</sub>	b
<b>3100-640-31-0..000</b>	32 x 4 <sup>*)</sup>	+ 0,8	128	133,2	92	1,45
<b>3100-640-39-0..000</b>	36 x 4 <sup>*)</sup>	+ 1,8	144	151,2	102	1,8
<b>3100-240-39-0..000</b>	60 x 2,5	-	150	153	102	1,8
<b>3100-240-43-0..000</b>	68 x 2,5	-	170	173	118	1,8
<b>3100-240-47-0..000</b>	62 x 3	-	186	188	132	1,8
<b>3000-240-51-0..000</b>	68 x 3	-	204	208	145	1,8
<b>3100-240-55-0..000</b>	78 x 3	-	234	236	155	2,3
<b>3000-240-59-0..000</b>	88 x 3	-	264	268	175	2,3
<b>3100-240-63-0..000</b>	95 x 3	-	285	287	189	2,5
<b>3000-240-66-0..000</b>	105 x 3	-	315	320	205	2,5
<b>3100-240-69-0..000</b>	84 x 4	-	336	340	220	3,5
<b>3000-240-72-0..000</b>	90 x 4	-	360	365	255	3,5
<b>3100-240-75-0..000</b>	100 x 4	-	400	404	285	4
<b>3100-240-78-0..000</b>	90 x 5	-	450	455	315	4
<b>3002-240-81-0..000</b>	108 x 5	-	540	545	375	5
<b>3100-240-84-0..000</b>	100 x 6	-	600	605	440	5
<b>3000-240-86-0..000</b>	115 x 6	-	690	695	520	6
<b>3000-240-90-0..000</b>	128 x 6	-	768	775	520	6

-Size-000 with spiral grooves  
 -Size-030 without spiral grooves up to size 66  
 -Size-002 without spiral grooves from size 69

<sup>\*)</sup> Spline to DIN 5480

Connection dimensions of the outside drive housing in accordance with the factory standard on request.

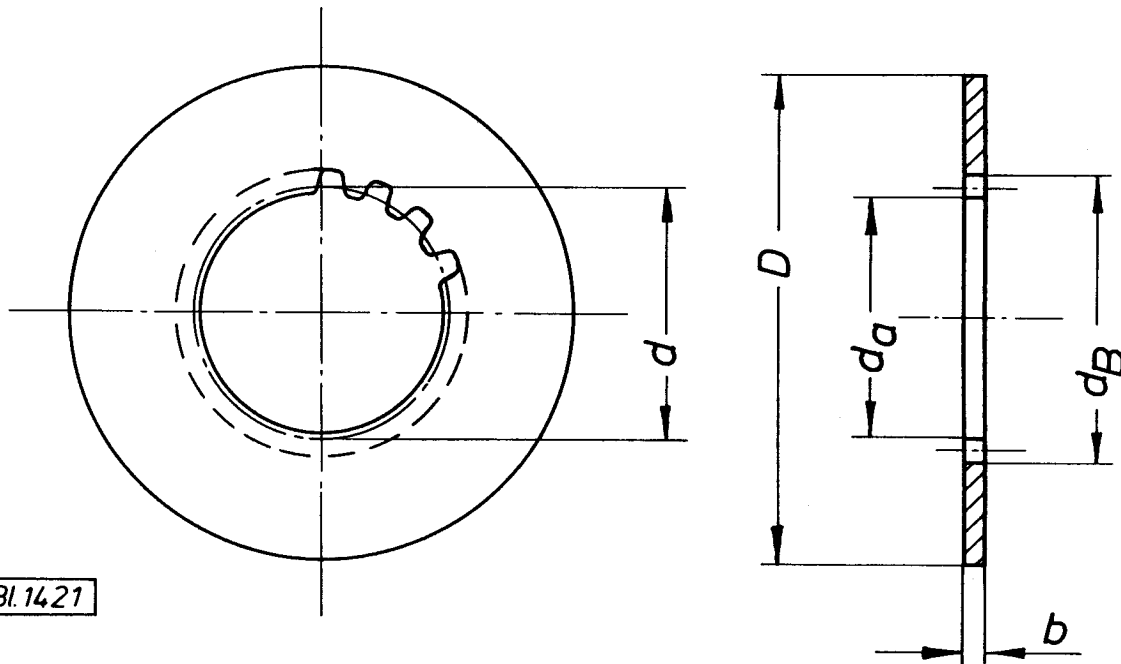


Number	D	d	H	B	b	Number of lugs	Sine height	
<b>3100-140-07-000000</b>	54	33,2	13,5	8	1	3	0,25	
<b>3100-140-11-000000</b>	67	48,2	19,6	9,75	1,45		0,16	
<b>3100-140-15-000000</b>	78	58,2	24,4				0,18	
<b>3000-140-19-000000</b>	88	65,2	27,9				0,25	
<b>3100-140-23-000000</b>	98	70,2	30,1				0,2	
<b>3100-140-25-000000</b>	110	70,2	30,1				0,25	
<b>3000-140-27-000000</b>	108	75,2	32,6			11,75	2,3	0,3
<b>3100-140-31-000000</b>	123	82,2	36,1	9,75	6			0,35
<b>3000-140-35-000000</b>	132	92,2	41,1					0,4
<b>3100-140-39-000000</b>	141	100,2	45,1 <sup>1)</sup> 47,1 <sup>2)</sup>	11,75	6	0,4		
<b>3100-140-43-000000</b>	162	112,2	50,1 <sup>1)</sup> 53,6 <sup>2)</sup>					
<b>3000-140-47-000000</b>	178	129,2	57,6					

T  
 -001 without Sinus corrugations (flat)

1) 3 lugs as an alternative to<sup>2)</sup>  
 2) 3 lugs as an alternative to<sup>1)</sup>

Connection dimensions of the inside drive hub in accordance with the factory standard on request.



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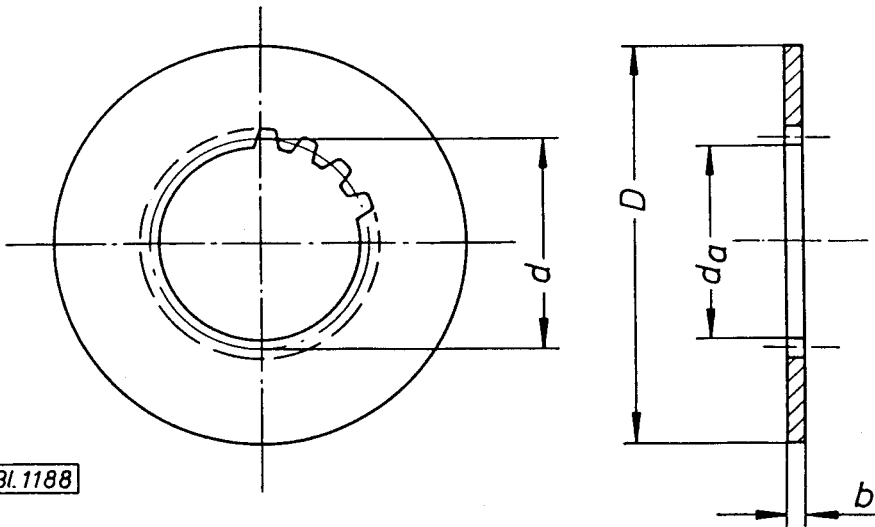
Number	Profile description N $d_B^{*}) \times m \times z$	Profile displacement $x \cdot m$	d	D	$d_a$	b	Sine height
3021-744-15-000000	68 x 1,5 x 45	+ 0,575	67,5	85	65	1	0,12
3021-744-23-000000	80,4 x 2 x 39	- 0,1	78	100	76,4	1,2	0,12
3021-744-27-000000	88 x 2 x 42	- 0,9	84	111	84	1,2	0,18
3021-744-32-000000	102,4 x 2 x 51	+ 0,9	102	126	98,4	1,45	0,18
3021-744-39-000000	114,4 x 2 x 57	+ 0,9	114	141	110,4	2	0,25
3021-744-43-000000	130 x 3 x 42	- 0,35	126	162	124	2	0,25
3021-744-47-000000	145,5 x 3 x 48	+ 0,9	144	178	139,5	2,3	0,3
3021-744-51-000000	159 x 3 x 51	- 1,35	153	195	153	2,5	0,3
3021-744-55-000000	183 x 3 x 60	+ 0,15	180	225	177	3	0,35
3021-744-59-000000	196 x 4 x 48	+ 0,2	192	245	188	3	0,35
3021-744-63-000000	220 x 4 x 54	+ 0,2	216	275	212	3	0,4
3021-744-66-000000	245 x 4 x 60	- 0,3	240	300	237	3,5	0,4
3021-744-69-000000	261 x 4 x 63	- 2,3	252	321	253	3,5	0,45
3021-744-72-000000	280 x 5 x 54	- 2,25	270	348	270	4	0,45
3021-744-75-000000	311,5 x 5 x 60	- 3	300	380	301,5	4,5	0,5
3021-744-78-000000	351 x 5 x 69	- 0,25	345	428	341	5	0,55
3021-744-79-000000	385 x 5 x 75	- 2,25	375	472	375	5,5	0,6
3021-744-81-000000	429 x 5 x 84	- 1,75	420	524	419	6,5	0,65

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-001 without Sinus corrugations (flat)

\*)  $d_B$  = diameter for  $d_{f2}$  (base circle of the plate spline)

Larger sizes and different friction face designs on request (See ON 2.8.60, Sht 2).

Connection dimensions of the inside drive hub in accordance with the factory standard on request.

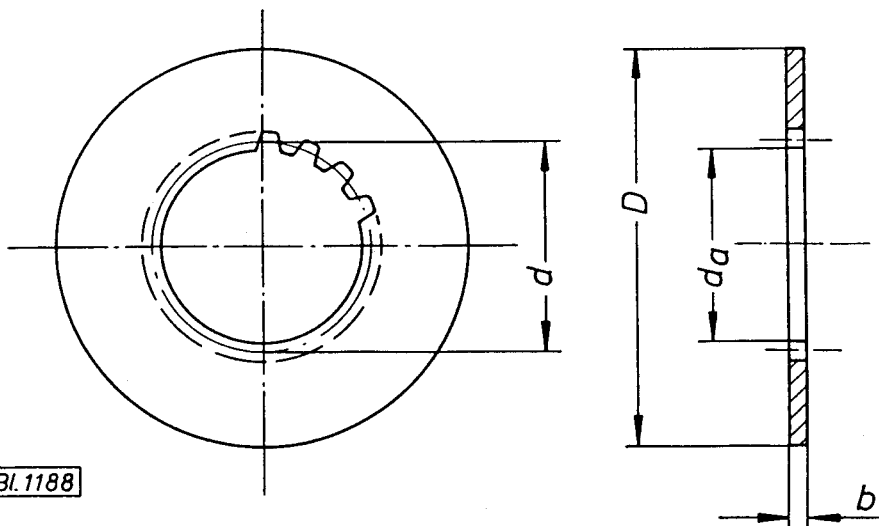


Nummer	Tooth system DIN	Number of teeth x modulus	Profile displacement x · m	d	d <sub>a</sub>	D	b	Sinus height
<b>3110-740-11-000000</b>	5480	24 x 2	+ 0,1	48	46	67	1	0,12
<b>3002-740-15-000000</b>		28 x 2	+ 0,1	56	54	77	1	0,15
<b>3110-740-23-000000</b>		22 x 3	- 0,35	66	64	95	1,2	0,15
<b>3110-740-25-000000</b>		24 x 3	+ 0,15	72	69	100	1,2	0,15
<b>3002-740-27-000000</b>		24 x 3	+ 0,15	72	69	108	1,2	0,2
<b>3002-740-31-000000</b>		26 x 3	- 0,35	78	76	123	1,45	0,15
<b>3002-740-32-000000</b>		21 x 4	- 0,8	84	82	123	1,45	0,3
<b>3002-340-39-000000</b>	867	38 x 2,5	-	95	90	141	2,3	0,35
<b>3002-340-43-000000</b>		44 x 2,5	-	110	105	162	2,3	0,4
<b>3002-340-47-000000</b>		41 x 3	-	123	119	178	2,3	0,4
<b>3002-340-51-000000</b>		45 x 3	-	135	133	195	2,3	0,35
<b>3002-340-55-000000</b>		48 x 3	-	144	142	225	3	0,4
<b>3002-340-59-000000</b>		55 x 3	-	165	163	250	3	0,45
<b>3002-340-63-020000</b>		60 x 3	-	180	178	270	3	0,25
<b>3002-340-66-020000</b>		65 x 3	-	195	193	300	3	0,3
<b>3002-340-69-020000</b>		52 x 4	-	208	206	318	3,5	0,3
<b>3002-340-72-020000</b>		61 x 4	-	244	242	342	3,5	0,3
<b>3002-340-73-020000</b>		65 x 4	-	260	257	368	4	0,45
<b>3002-340-75-020000</b>		68 x 4	-	272	270	380	4	0,3
<b>3002-340-76-020000</b>		57 x 5	-	285	283	409	5	0,5
<b>3002-340-78-020000</b>		60 x 5	-	300	298	428	5	0,35
<b>3002-340-80-020000</b>		66 x 5	-	330	328	477	5	0,5
<b>3002-340-81-020000</b>		72 x 5	-	360	358	518	5	0,4
<b>3002-340-84-020000</b>		70 x 6	-	420	418	575	5	0,5
<b>3002-340-87-020000</b>		75 x 6	-	450	442	665	6	0,5
<b>3002-340-90-020000</b>		83 x 6	-	498	490	742	6	0,5
<b>3002-340-92-020000</b>		100 x 6	-	600	592	903	7	0,5

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-001 without Sinus profile (flat).

Connection dimensions of the inside drive hub in accordance with the factory standard on request.

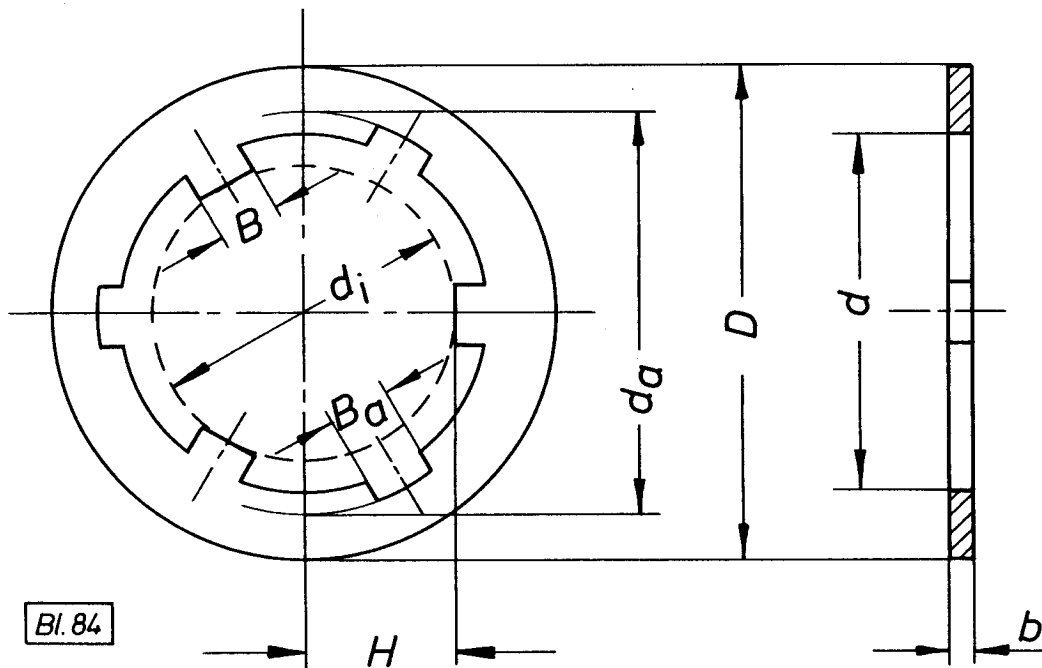




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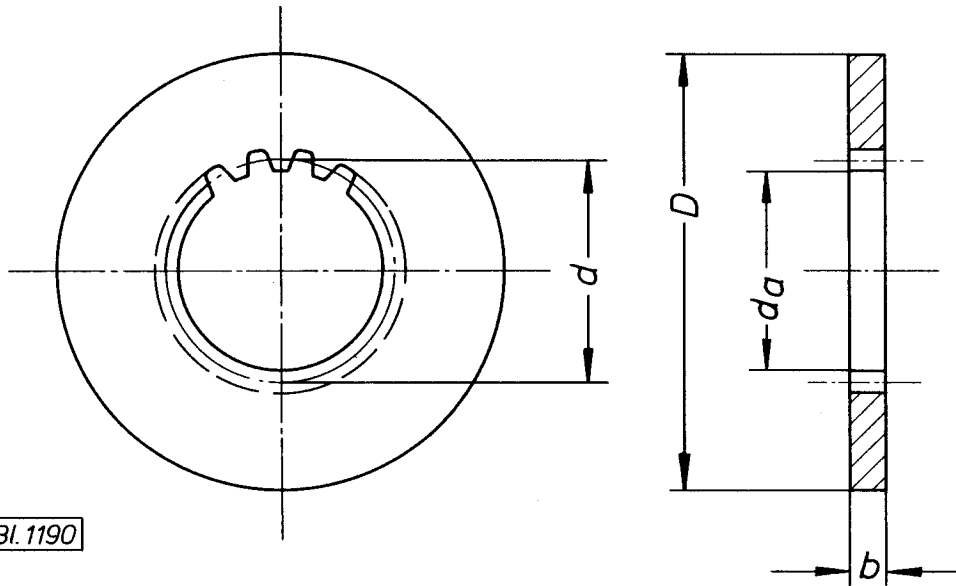
Number	Number of teeth x modulus	d	d <sub>a</sub>	D	b
<b>3901-300-47-004000</b>	41 x 3	123	119	178	6
<b>3903-300-55-004000</b>	48 x 3	144	140	225	8
<b>3100-300-63-004000</b>	60 x 3	180	175	270	12
<b>3100-300-69-004000</b>	52 x 4	208	204	318	12
<b>3100-300-75-004000</b>	68 x 4	272	268	380	12
<b>3100-300-78-004000</b>	60 x 5	300	295	428	15
<b>3100-300-81-004000</b>	72 x 5	360	355	518	18
<b>3150-300-84-004000</b>	70 x 6	420	412	575	20
<b>3401-300-86-004000</b>	70 x 6	420	412	665	20
<b>3000-300-90-004000</b>	83 x 6	498	490	742	25
<b>3000-300-96-004000</b>	87 x 8	696	680	1000	25

Connection dimensions of the inside drive hub in accordance with the factory standard on request.



Number	D	d <sub>a</sub>	d	d <sub>i</sub>	H	B	B <sub>a</sub>	b	Number of lugs and slots
<b>1100-070-07-000000</b>	54	39	33,2	27	13,5	8	8	2,5	3
<b>1100-070-11-000000</b>	67	-	48,2	39	19,6	9,75	-	4	
<b>1100-070-15-000000</b>	78	-	58,2	48,6	24,4	9,75	-	4	
<b>1100-070-23-000000</b>	98	78	70,2	60	30,1	9,75	12	3	
<b>1100-070-25-000000</b>	110	78	70,2	60	30,1	9,75	12	3	
<b>1100-070-31-000000</b>	123	91	82,2	72	36,1	11,75	13	5	
<b>1100-070-39-000000</b>	141	106	100,2	90	45,1	9,75	12	5	

Connection dimensions of the inside drive hub in accordance with the factory standard on request.



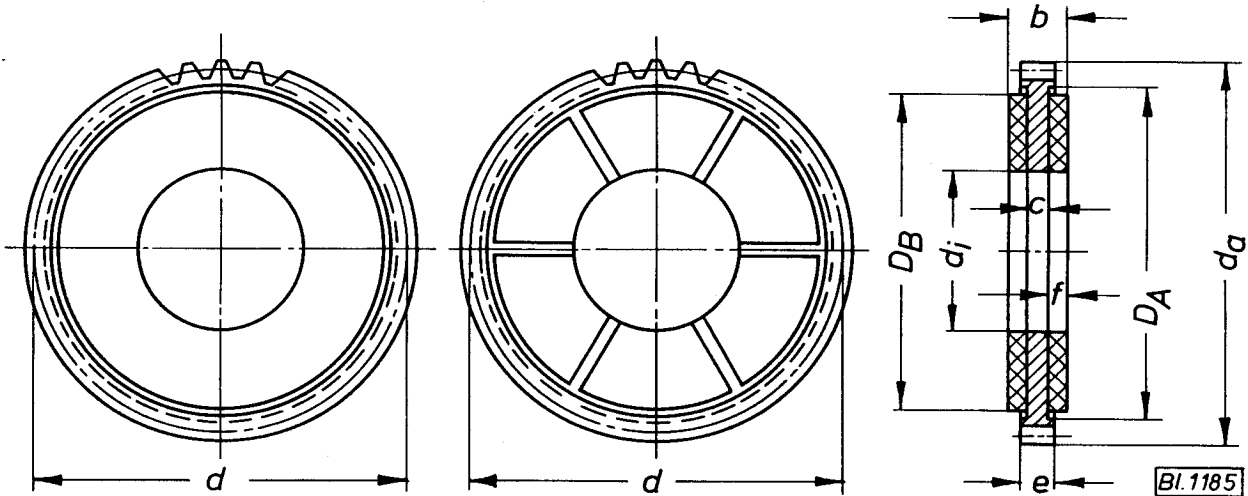
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Number	Number of teeth x modulus	d	d <sub>a</sub>	D	b
<b>1100-070-43-004000</b>	44 x 2,5	110	105	162	5
<b>1100-070-47-004000</b>	41 x 3	123	119	178	10
<b>1100-070-55-004000</b>	48 x 3	144	140	225	12
<b>1100-070-63-004000</b>	60 x 3	180	175	270	15
<b>1100-070-69-004000</b>	52 x 4	208	204	318	15
<b>1100-070-75-004000</b>	68 x 4	272	268	380	20
<b>1100-070-78-004000</b>	60 x 5	300	295	428	22
<b>1100-070-84-004000</b>	70 x 6	420	412	575	30

Connection dimensions of the inside drive hub in accordance with the factory standard on request.



**External plates with splines  
to DIN 867, for dry-running**

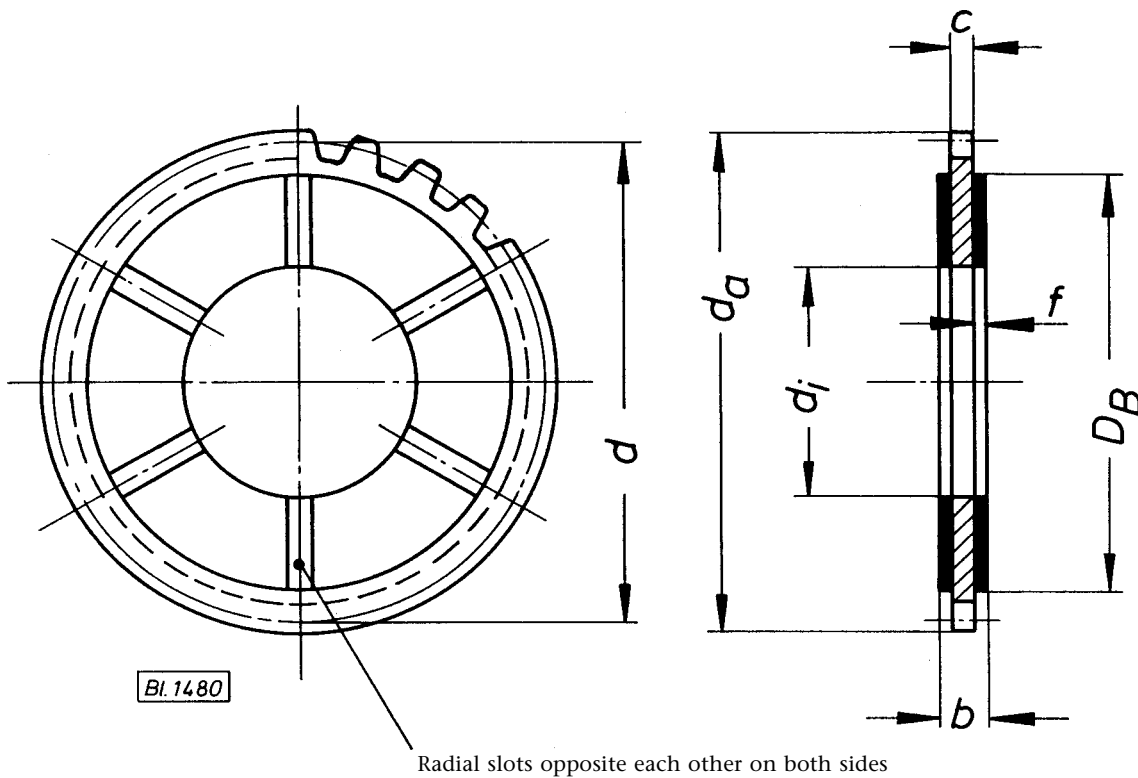


Number	Number of teeth x modulus	Profile displacement x · m	d	d <sub>a</sub>	D <sub>A</sub>	D <sub>B</sub>	d <sub>i</sub>	b	c	e	f	Number of lining segments
<b>3100-688-31-000</b>	32 x 4*)	+0,8	128	133,2	-	121	84	3,4	1,45	1,45	~1	-
<b>3100-688-39-000</b>	36 x 4*)	+1,8	144	151,2	-	140	102	4,5	1,45	1,45	~1,5	-
<b>3100-288-39-000</b>	60 x 2,5	-	150	153	-	140	102	5,5	2,5	2,5	1,5	-
<b>3100-288-43-000</b>	68 x 2,5	-	170	173	-	161	118	5	1,8	1,8	1,6	-
<b>3100-288-47-000</b>	62 x 3	-	186	188	-	176	132	5,5	2,5	2,5	-	-
<b>3100-288-55-000</b>	78 x 3	-	234	236	-	225	155	6	3	3	1,5	-
<b>3000-288-59-000</b>	88 x 3	-	264	268	-	250	175	6	3	3	-	-
<b>3901-288-63-008</b>	95 x 3	-	285	287	273	270	189	15	5	12	5	8
<b>3100-288-63-000</b>					-			6	3	3	1,5	-
<b>3901-288-69-008</b>	84 x 4	-	336	340	321	318	220	18	6	12	6	8
<b>3100-291-69-000</b>					-			9	4	4	2,5	-
<b>3901-288-75-008</b>	100 x 4	-	400	404	384	380	285	21	6	12	7,5	12
<b>3100-288-75-008</b>								11	3	10,5	4	16
<b>3901-288-78-008</b>	90 x 5	-	450	455	431	428	315	24	8	15	8	12
<b>3100-288-78-008</b>								11	3	10,5	4	16
<b>3901-288-81-008</b>	108 x 5	-	540	545	521	518	375	26	10	18	8	12
<b>3901-288-81-011</b>								15	5	14,5	5	
<b>3901-288-84-008</b>	100 x 6	-	600	605	578	575	440	30	10	20	10	
<b>3100-288-84-008</b>								15	5	14,5	5	
<b>3901-288-86-008</b>	115 x 6	-	600	695	668	665	440	30	10	20	10	12
<b>3901-288-86-011</b>								15	5	14,5	5	
<b>3000-288-90-008</b>	128 x 6	-	768	775	746	742	520	35	15	25	10	12
<b>3000-288-90-011</b>								15	5	14,5	5	
<b>3000-288-93-008</b>	129 x 8	-	1032	1043	1005	1000	750	35	15	25	10	20

- 000 Friction lining bonded on both sides without radial slots
- 001 Friction lining bonded on both sides with radial slots
- 008 Friction segments riveted on both sides
- 011 Friction segments riveted on both sides

\*) Spline to DIN 5480

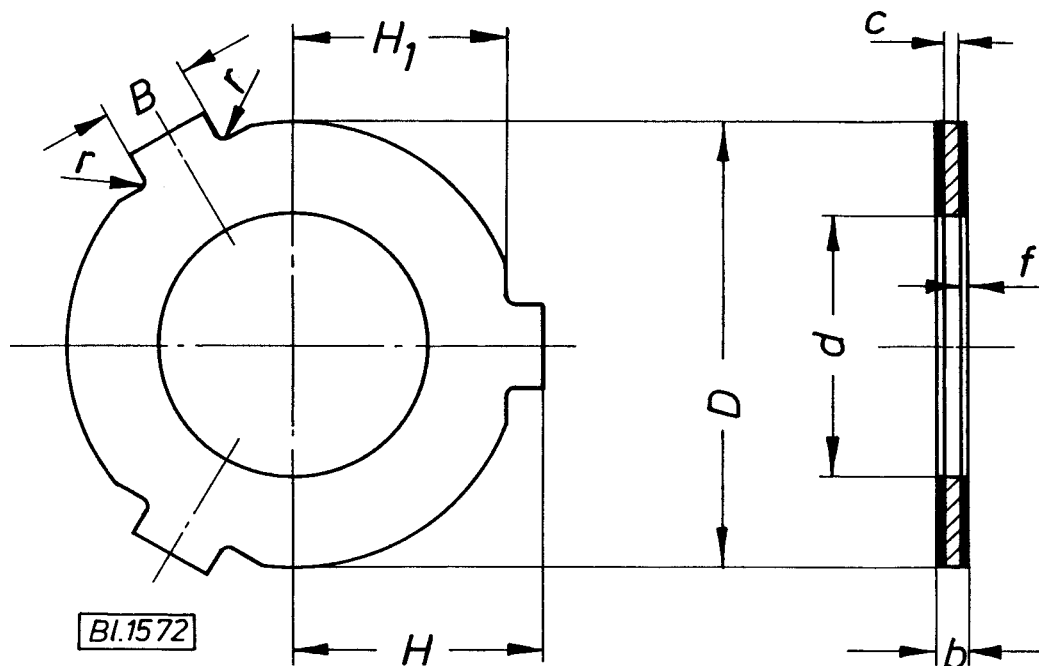
Connection dimensions of the outside drive housing in accordance with the factory standard on request.



Number	Profile description W $d_B^*) \times m \times z$	Profile displacement $x \cdot m$	d	$d_a$	$D_B$	$d_i$	b	f	c
<b>3421-688-15-001000</b>	90 x 1,5 x 60	- 0,825	90	89,7	84	70	2,3	0,65	1
<b>3421-688-23-001000</b>	106 x 2 x 51	+ 0,9	102	105,6	98	82	2,3	0,65	1
<b>3421-688-27-001000</b>	119 x 3 x 39	- 0,65	117	118,4	109	90	2,7	0,75	1,2
<b>3421-688-32-001000</b>	134 x 3 x 44	- 0,65	132	133,4	124	104	3	0,78	1,45
<b>3421-688-39-001000</b>	152 x 4 x 36	+ 1,8	144	151,2	139	116	3,4	0,98	1,45
<b>3421-688-43-001000</b>	172 x 4 x 42	- 0,2	168	171,2	160	132	3,9	1,05	1,8
<b>3421-688-47-001000</b>	190 x 5 x 36	+ 2,25	180	189	176	147	4,2	1,2	1,8
<b>3421-688-51-001000</b>	207 x 5 x 39	+ 3,25	195	206	193	161	4,8	1,25	2,3
<b>3421-688-55-001000</b>	237 x 5 x 45	+ 3,25	225	236	223	185	5,2	1,35	2,5
<b>3421-688-59-001000</b>	257 x 5 x 51	- 1,75	255	256	243	198	5,6	1,55	2,5
<b>3421-688-63-001000</b>	287 x 5 x 57	- 1,75	285	286	273	223	6,3	1,65	3
<b>3421-688-66-001000</b>	315 x 6 x 51	+ 1,2	306	313,8	298	248	6,3	1,65	3
<b>3421-688-69-001000</b>	334 x 6 x 54	+ 1,7	324	332,8	319	263	7	1,75	3,5
<b>3421-688-72-001000</b>	363 x 6 x 60	- 1,8	360	361,8	346	285	7	1,75	3,5
<b>3421-688-75-001000</b>	400 x 8 x 48	+ 3,6	384	398,4	378	315	7,8	1,9	4
<b>3421-688-78-001000</b>	448 x 8 x 54	+ 3,6	432	446,4	426	355	9	2,25	4,5
<b>3421-688-79-001000</b>	492 x 8 x 60	+ 1,6	480	490,4	470	390	10	2,5	5

\*)  $d_B$  = diameter for  $d_{f2}$  (base circle of the housing spline)

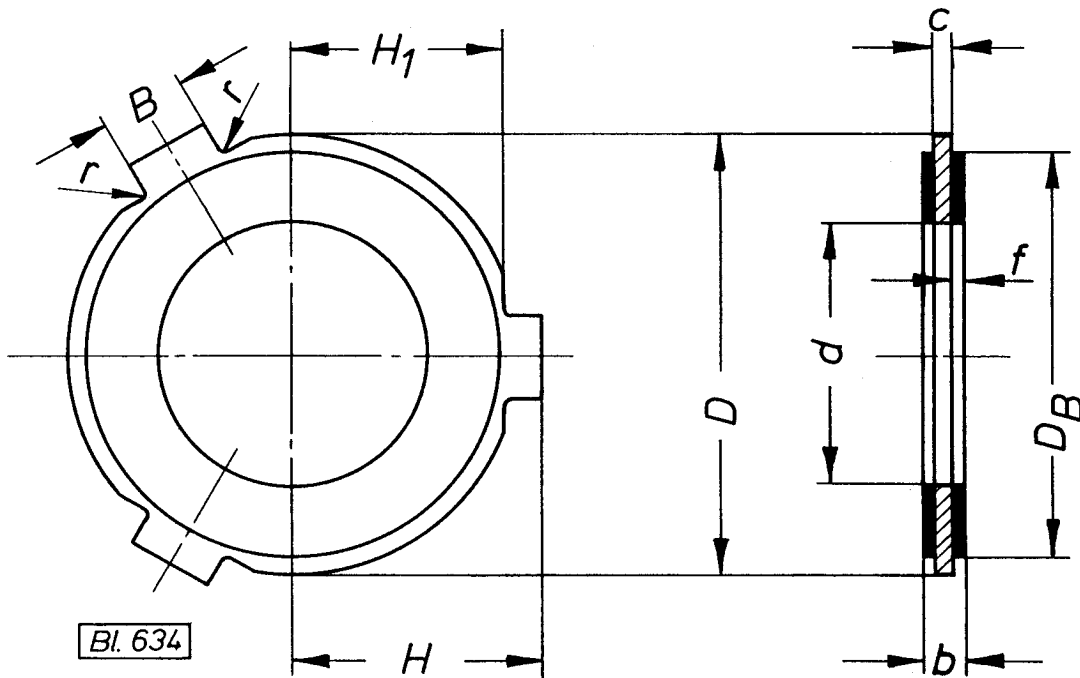
Connection dimensions of the outside drive housing in accordance with the factory standard on request.



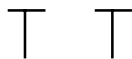
Number	D	d	B	H	H <sub>1</sub>	b	c	f	r	Number of lugs
<b>3100-015-07-00.000</b>	54,5	34	10	31	25,8	1,5	0,9	0,3	1,2	3
<b>3100-015-11-00.000</b>	69,8	50	12	38,5	33,3					
<b>3100-015-15-00.000</b>	79,8	60	12	44	38,3					
<b>3000-015-19-00.000</b>	89,8	68	12	49,5	43,3	1,8	1,2	0,3	1,5	6
<b>3100-015-23-00.000</b>	100	72	12	55	48,5					
<b>3100-015-25-00.000</b>	111,5	72	19	61	53,8					
<b>3000-015-27-00.000</b>	109,8	78	12	61	53,2	1,9	1,2	0,35	1,5	6
<b>3100-015-31-00.000</b>	124,8	84	12	68,5	61					
<b>3000-015-35-00.000</b>	134,8	95	12	73,5	65,9					
<b>3100-015-39-00.000</b>	144,5	102	19,7	78,5	70,5	1,9	1,2	0,35	1,5	6
<b>3100-015-43-00.000</b>	164,5	118	19,7	88,5	80,5					
<b>3100-015-47-00.000</b>	181,5	132	19,7	97	89					

-005 with spiral grooves for wet-running  
-007 without spiral grooves for dry-running

Connection dimensions of the outside drive housing in accordance with the factory standard on request.



Number	D	D <sub>B</sub>	d	b	c	f	B	H	H <sub>1</sub>	r	Number of lugs
<b>3100-01.-11-...000</b>	69,8	65	50					38,5	33,3		3
<b>3100-01.-15-...000</b>	79,8	76	60	2,2	1,2	0,5	12	44	38,3		
<b>3100-01.-23-...000</b>	100	96	72	2,4	1,45	~0,5	19	55	48,5	1,2	8
<b>3002-01.-25 ...000</b>	111,5	107	78	2,2		~0,4		61	53,8		
<b>3100-01.-25-...000</b>	111,5	108	72				61	53,8			
<b>3100-01.-31-...000</b>	124,8	121	84				12	68,5	61	1,5	6
<b>3100-01.-39-...000</b>	144,5	139	102	2,4		~0,5		78,5	70,5		
<b>3100-01.-43-...000</b>	164,5	160	118				19,7	88,5	80,5		
<b>3100-01.-47-...000</b>	181,5	176	132					97	89		
<b>3000-01.-51-...000</b>	199,5	193	145	3,5	2	0,75		107	97,5		8



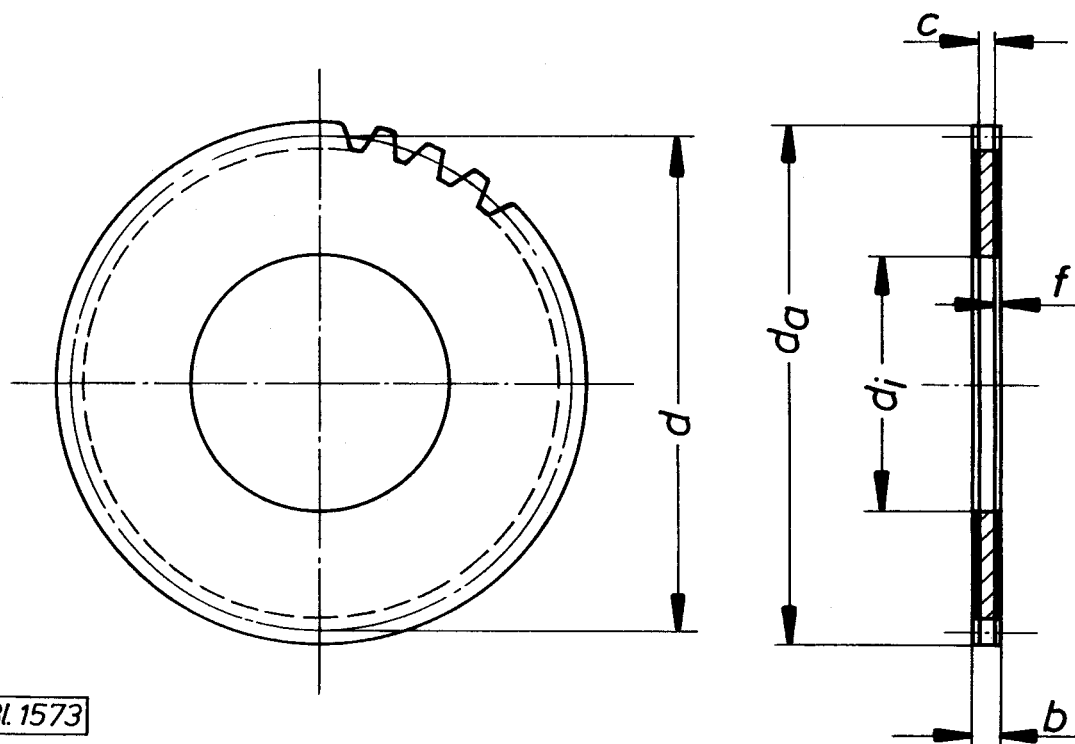
-010-size-008 for wet-running with spiral grooves and radial slots  
other friction surface designs on request

-010-size-029 for wet-running with honeycomb pattern

-014-size-009 for dry-running with radial slots

Connection dimensions of the outside drive housing in accordance with the factory standard on request.



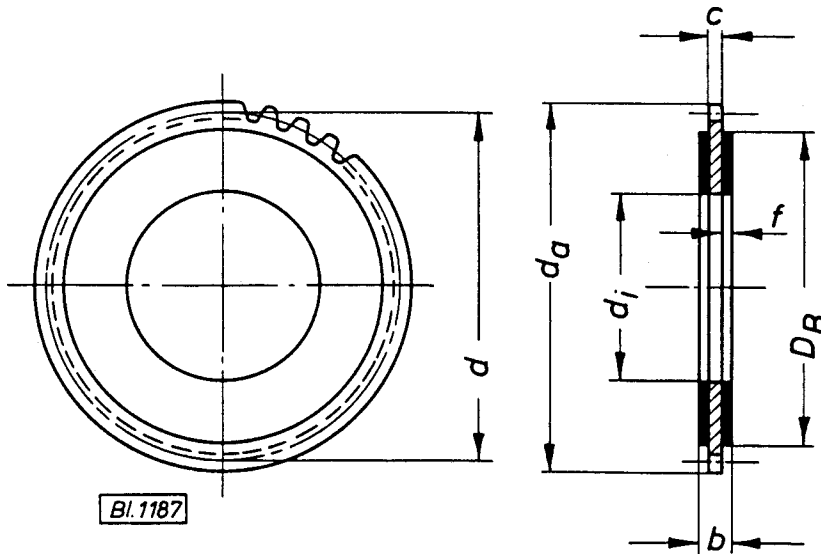


Bl. 1573

Number	Number of teeth x modulus	Profile displacement x · m	d	d <sub>a</sub>	d <sub>i</sub>	b	c	f
<b>3100-615-31-00.000</b>	32 x 4 <sup>*)</sup>	+ 0,8	128	133,2	92	1,5	0,9	0,3
<b>3100-615-39-00.000</b>	36 x 4 <sup>*)</sup>	+ 1,8	144	151,2	102	1,8	1,2	
<b>3100-215-39-00.000</b>	60 x 2,5	-	150	153	102	1,8		0,35
<b>3100-215-43-00.000</b>	68 x 2,5	-	170	173	118	1,9		
<b>3100-215-47-00.000</b>	62 x 3	-	186	188	132	1,9	1,5	0,4
<b>3100-215-55-00.000</b>	78 x 3	-	234	236	155	2,3		

T  
 -005 with spiral grooves for wet-running  
 -007 without spiral grooves for dry-running

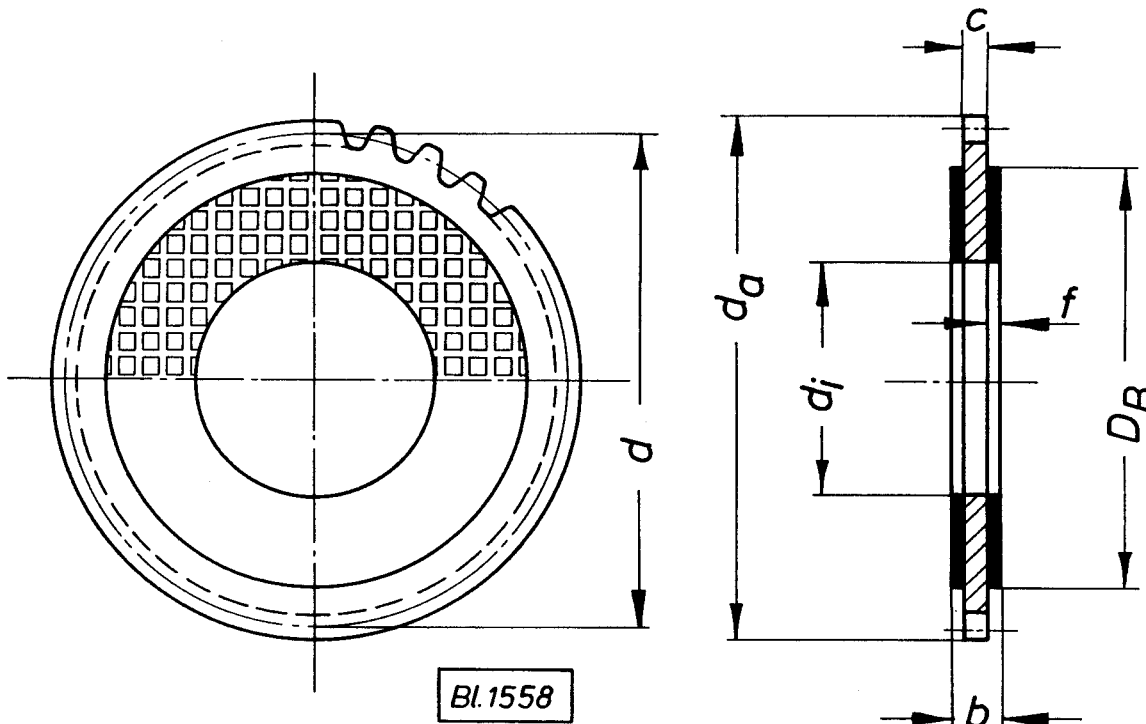
<sup>\*)</sup> Spline to DIN 5480  
 Connection dimensions of the outside drive housing in accordance with the factory standard on request.



Number	Tooth system DIN	Number of teeth x modulus	Profile displacement x · m	d	d <sub>a</sub>	D <sub>B</sub>	d <sub>i</sub>	b	f	c
<b>3002-637-11-029000</b>	5480	24 x 3	-0,15	72	74,4	66	52	1,8	0,4	1
<b>3002-637-15-029000</b>		27 x 3	+0,35	81	84,4	76	58,5	1,8	0,4	1
<b>3002-637-23-029000</b>		25 x 4	+0,148	100	104,2	94	72	2	0,4	1,2
<b>3002-637-25-029000</b>		26 x 4	+0,8	104	109,2	98	77	2	0,4	1,2
<b>3002-637-27-029000</b>		28 x 4	+0,8	112	117,2	106	78	2,4	~0,5	1,45
<b>3002-637-31-029000</b>		32 x 4	+0,8	128	133,2	121	92	2,4	~0,5	1,45
<b>3002-637-39-029000</b>	36 x 4	+1,8	144	151,2	139	102	2,4	~0,5	1,45	
<b>3002-237-43-029000</b>	867	68 x 2,5	-	170	170	160	118	2,4	~0,5	1,45
<b>3002-237-47-029000</b>		62 x 3	-	186	187	176	132	2,5	~0,5	1,45
<b>3002-237-51-029000</b>		68 x 3	-	204	206	193	145	3,55	~0,8	2
<b>3002-237-55-029000</b>		78 x 3	-	234	236	223	155	4,05	~0,8	2,5
<b>3002-237-59-029000</b>		88 x 3	-	264	266	248	175	4,1	~0,8	2,5
<b>3002-237-63-029000</b>		95 x 3	-	285	287	268	189	4,1	~0,8	2,5
<b>3002-237-66-029000</b>		105 x 3	-	315	317	298	205	4,1	~0,8	2,5
<b>3002-237-69-029000</b>		84 x 4	-	336	340	316	220	5,1	0,8	3,5
<b>3002-237-72-029000</b>		90 x 4	-	360	362	340	255	5,15	0,8	3,5
<b>3002-237-73-029000</b>		95 x 4	-	380	382	367	275	5	0,85	3,3
<b>3002-237-75-029000</b>		100 x 4	-	400	402	378	285	5,6	1	3,5
<b>3002-237-76-029000</b>		85 x 5	-	425	427	408	300	6	1	4
<b>3002-237-78-029000</b>		90 x 5	-	450	452	426	315	7	1	5
<b>3002-237-80-029000</b>		100 x 5	-	500	505	475	345	7	1	5
<b>3002-237-81-029000</b>		108 x 5	-	540	545	516	375	8	1	6
<b>3002-237-84-029000</b>		100 x 6	-	600	605	573	440	8	1	6
<b>3002-232-86-029000</b>		115 x 6	-	690	695	663	470	10	1,5	7
<b>3002-232-90-008000</b>		128 x 6	-	768	775	740	520	10	1,5	7
<b>3002-232-92-008000</b>		132 x 7	-	924	930	900	625	11	1,5	8

-029 for wet-running with honeycomb pattern only up to size 86  
-008 for wet-running with spiral groove and radial slots size 90 upward  
other friction surface designs on request

Connection dimensions of the outside drive housing in accordance with the factory standard on request.



Number	Profile description W $d_B^{*)} \times m \times z$	Profile displacement $x \cdot m$	d	$d_a$	$D_B$	$d_i$	b	f	c
<b>3021-637-15-029000</b>	90 x 1,5 x 60	-0,825	90	89,7	83	70	1,7	0,35	1
<b>3021-637-23-029000</b>	106 x 2 x 51	+0,9	102	105,6	98	82	1,7	0,35	1
<b>3021-637-27-029000</b>	119 x 3 x 39	-0,65	117	118,4	109	90	2	0,4	1,2
<b>3021-637-32-029000</b>	134 x 3 x 44	-0,65	132	133,4	124	104	2,2	0,38	1,45
<b>3021-637-39-029000</b>	152 x 4 x 36	+1,8	144	151,2	139	116	2,4	0,48	1,45
<b>3021-637-43-029000</b>	172 x 4 x 42	-0,2	168	171,2	160	132	2,8	0,5	1,8
<b>3021-637-47-029000</b>	190 x 5 x 36	+2,25	180	189	176	147	3	0,6	1,8
<b>3021-637-51-029000</b>	207 x 5 x 39	+3,25	195	206	193	161	3,5	0,6	2,3
<b>3021-637-55-029000</b>	237 x 5 x 45	+3,25	225	236	223	185	3,7	0,6	2,5
<b>3021-637-59-029000</b>	257 x 5 x 51	-1,75	255	256	243	198	4	0,75	2,5
<b>3021-637-63-029000</b>	287 x 5 x 57	-1,75	285	286	273	223	4,5	0,85	2,8
<b>3021-637-66-029000</b>	315 x 6 x 51	+1,2	306	313,8	298	248	4,5	0,85	2,8
<b>3021-637-69-029000</b>	334 x 6 x 54	+1,7	324	332,8	319	263	5	0,85	3,3
<b>3021-637-72-029000</b>	363 x 6 x 60	-1,8	360	361,8	346	285	5	0,85	3,3
<b>3021-637-75-029000</b>	400 x 8 x 48	+3,6	384	398,4	378	315	5,5	0,85	3,8
<b>3021-637-78-029000</b>	448 x 8 x 54	+3,6	432	446,4	426	355	6,5	1	4,5
<b>3021-637-79-029000</b>	492 x 8 x 60	+1,6	480	490,4	470	390	7	1	5
<b>3021-637-81-029000</b>	544 x 8 x 66	+3,6	528	542,4	522	432	7	1	5

\*)  $d_B$  = diameter for  $d_{f2}$  (base circle of the housing spline)

Larger sizes and other friction surface designs on request (see ON 2.8.58, Sheet 2)

Connection dimensions of the outside drive housing in accordance with the factory standard on request.