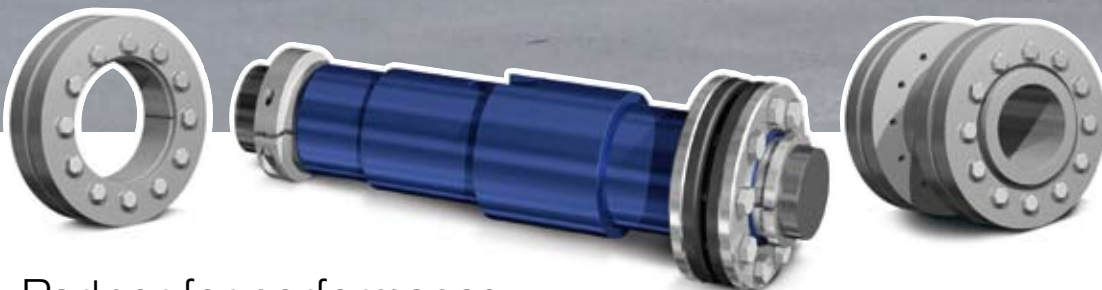


US  
08|2009

# Shrink Discs<sup>®</sup>, Smart-Lock & Shaft Couplings



Partner for performance  
[www.ringfeder.com](http://www.ringfeder.com)

 **RINGFEDER**



# A Global Presence For You

The RINGFEDER POWER TRANSMISSION GMBH was founded in 1922 in Krefeld, Germany to fabricate and promote Friction Spring technology. Today we have expanded our offerings to top power transmission and damping products. Innovative thinking sets us apart and allows us to develop progressive and economical solutions to support our customers.

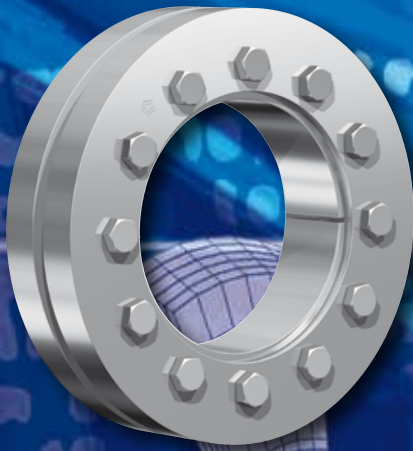




### Special applications require special solutions

Our extensive range of RINGFEDER POWER TRANSMISSION products can be applied to solve most applications. We don't just sell, but by understanding the individual requirements of our customers (e.g. loads on the components, easy installation/removal capability and reduction of production costs) assist you in every step with innovative engineering to plan efficient and technically mature solutions.





## Shrink Discs®

Overview .....	Page 6
Characteristics.....	Page 8
RINGFEDER® RfN 4012.....	Page 10
RINGFEDER® RfN 4023.....	Page 12
RINGFEDER® RfN 4051.....	Page 16
RINGFEDER® RfN 4061.....	Page 24
RINGFEDER® RfN 4071.....	Page 32
RINGFEDER® RfN 4073.....	Page 36
RINGFEDER® RfN 4091.....	Page 40
RINGFEDER® RfN 4161.....	Page 48
RINGFEDER® RfN 4171.....	Page 52
RINGFEDER® RfN 4181.....	Page 56
RINGFEDER® RfN 4071 Stainless .....	Page 60



All technical details and information is non-binding and cannot be used as a basis for legal claims. The user is obligated to determine whether the represented products meet his requirements. We reserve the right at all times to carry out modifications in the interests of technical progress. Upon the issue of this catalogue all previous brochures and questionnaires on the products displayed are no longer valid.

# Content

# Content

## Smart-Lock

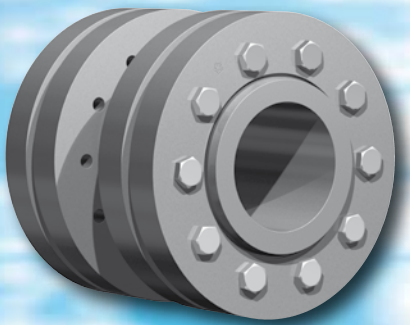


RINGFEDER® RfN 4001 ..... Page 66

Smart-Lock Parts ..... Page 72

# Content

## Shaft Couplings



Overview ..... Page 74

Characteristics ..... Page 76

RINGFEDER® WK 5071 ..... Page 78

RINGFEDER® WK 5091 ..... Page 82

## Installation and removal instructions

Shrink Discs® ..... Page 86

Shrink Discs®  
Stainless ..... Page 90

# Content

# Content

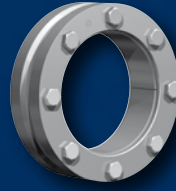
# RINGFEDER® Shrink Discs®



**RfN 4012**  
Light Duty Series



**RfN 4023**  
Light Duty Series



**RfN 4051**  
Light Duty Series



**RfN 4051**  
Light Duty Series,  
split



**RfN 4061**  
Standard Series



**RfN 4061**  
Standard Series,  
split



**RfN 4071**  
Standard Series



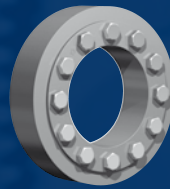
**RfN 4071**  
Standard Series,  
split



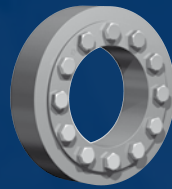
**RfN 4073**  
Ultra Light  
Duty Series



**RfN 4161**  
Standard Series



**RfN 4171**  
Standard Series



**RfN 4181**  
Heavy Duty Series



**RfN 4091**  
Heavy Duty Series



**RfN 4091**  
Heavy Duty Series,  
split



## Characteristics

The Shrink Disc® is the modern method for creating a mechanical shrink fit. The Shrink Disc® consists of either one or two thrust rings with tapered bores and a mating tapered inner ring. By tightening locking screws the thrust rings are drawn together compressing the inner ring and applying pressure to the outside of the hub clamping it to the shaft. Being positioned around the hub there is only one interface transmitting the loads giving the Shrink Disc® method distinct advantages such as offering the possibility of very concentric and well balanced connections that are suited to high speed applications. Traditional shrink fits require complicated calculations, close machining tolerances and fine surface finishes. They also need considerable effort with mounting and removal. The Shrink Disc® connection has none of these disadvantages and is better than any of the other usual connection methods with regard to fatigue strength under alternating torsional stress.

Unlimited range of applications – RINGFEDER® Shrink Disc® connections are suitable for securing all types of hubs onto shafts and axles. Replacing traditional shrink fits, keys and polygon connections, splined shafts etc.

Clearances considered for the calculation of the function values:

$d_w$		ISO	clearance INCH
above INCH	up to INCH		
0.236	0.394	H6/j6	0.0005
0.394	0.709		0.0007
0.709	1.181		0.0007
1.181	1.969	H6/h6	0.0013
1.969	3.150	H6/g6	0.0019
3.150	4.724	H7/g6	0.0027
4.724	7.087		0.0031
7.087	9.843		0.0035
9.843	12.402		0.0040
12.402	15.748		0.0044
15.748	19.685		0.0048

Any other tolerances can be chosen. As long as the stated max. clearance is not exceeded, there will be no variations of the functional characteristics.



## Explanations to tables

d, D, L, l, L<sub>1</sub>, L<sub>2</sub>, d<sub>1</sub> = Basic dimensions

d<sub>w</sub> = solid shaft diameter (provided by the customer)

T = transmissible torque

F<sub>ax</sub> = transmissible axial force

p = approx. surface pressure on the hub extension (diameter d)

T<sub>A</sub> = required tightening torque per screw (Screws greased with molykote or equivalent!)

n = quantity of screws

T<sub>max</sub> = maximum theoretical transmissible torque

C<sub>w</sub> = shaft clearances

C<sub>n</sub> = hub tolerances

C<sub>d</sub> = shaft tolerances

|l<sub>1</sub> = Inner ring centering shoulder length

d<sub>2</sub> = clamped component bore

x = clamped component thickness

B = width dimension, relaxed condition

R<sub>1</sub> = hub max. radius (split Shrink Disc®)

s<sub>v</sub> = calculated combined stress in the hub extension (d/dw) under consideration of the tangential, radial and torsional stresses following the equation:

$$\sigma_v = \sqrt{1/2 [(\sigma_x - \sigma_y)^2 + (\sigma_y - \sigma_z)^2 + (\sigma_z - \sigma_x)^2] + 3\tau^2}$$

Additional loads, e.g. tension, thrust or bending have to be taken into consideration accordingly.

### Function values

The functional characteristics are valid with the screw tightening torque listed in the tables and the following assumed conditions:

The locking screws are lubricated using MoS<sub>2</sub> (μ<sub>tot</sub> = 0.1).

The tapered cones are lubricated using MoS<sub>2</sub> (μ = 0.05).

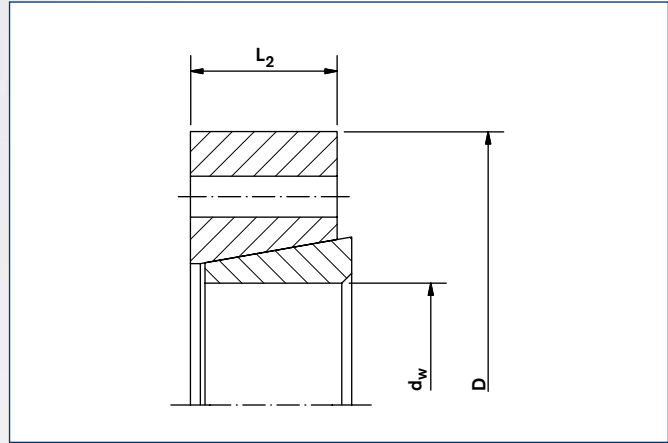
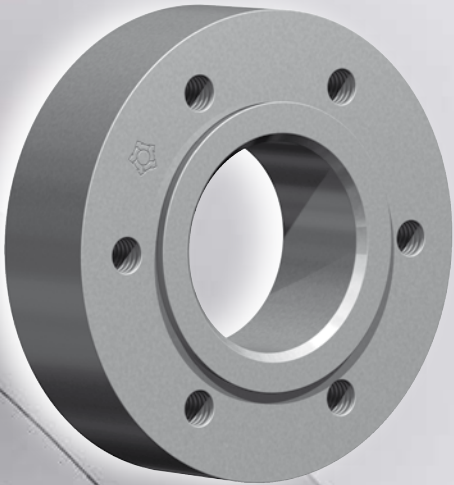
The contact surfaces (d<sub>w</sub>) are in lightly oiled condition with coefficient of friction μ = 0.12.

The hub and shaft materials have a modulus of elasticity of 30 x 10<sup>6</sup> PSI. (Lower values result in increased values for T and Fax with reduced tangential stress.)

The maximum clearance is being fully utilized.

The shaft being used is solid, for hollow shaft applications the functional values will change.

In cases where the assumed conditions do not apply then contact our Technical Department where we will be happy to assist you with your application.



SDA RfN 4012 with tapped holes  
SDC RfN 4012 with clearance holes

## Characteristics

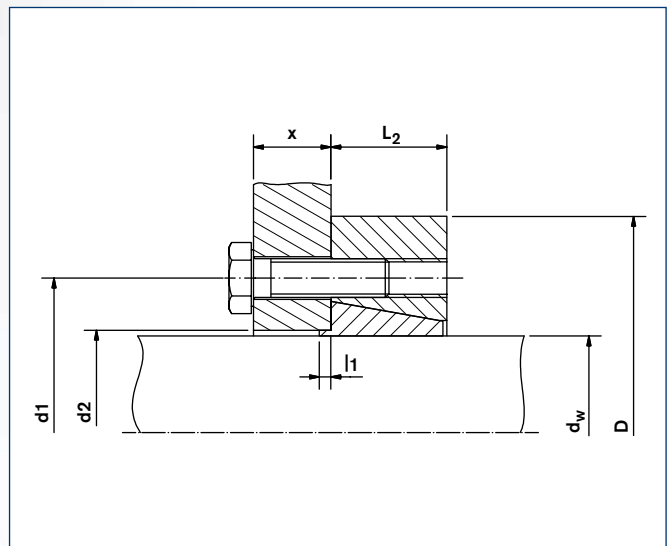
**Reduced dimensions with lower transmission values** – especially for applications with restricted space.

**Simplified manufacture** – only plain shaft and bore diameters with easily achieved surface finish and tolerances are required.

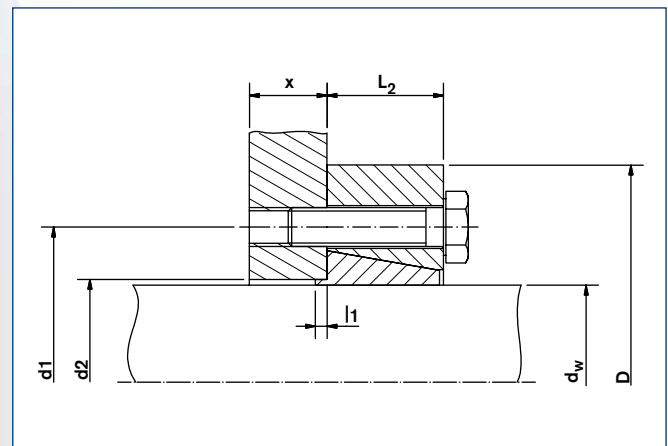
**Easy adjustability** – No stops, steps, keyways, splines etc. are required, therefore hubs can be located and locked at any point or angle on the shaft.

**Easy mounting** – RINGFEDER® Shrink Discs® use standard screws and tightened using standard tools. No additional machining or fitting work is required.

**Easy removal** – after loosening the locking screws, the RINGFEDER® Shrink Disc® will self release and the hub will move freely on the shaft.



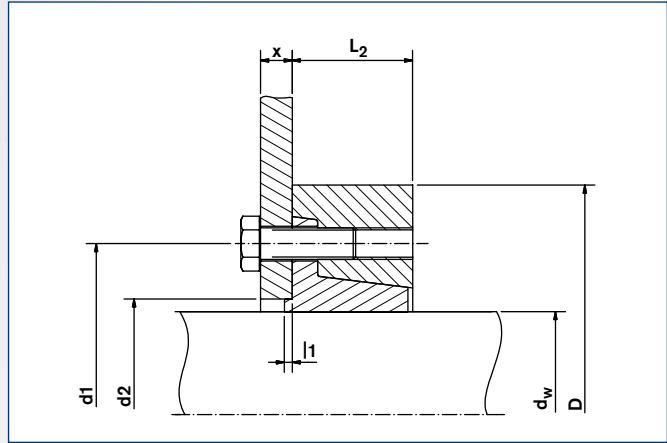
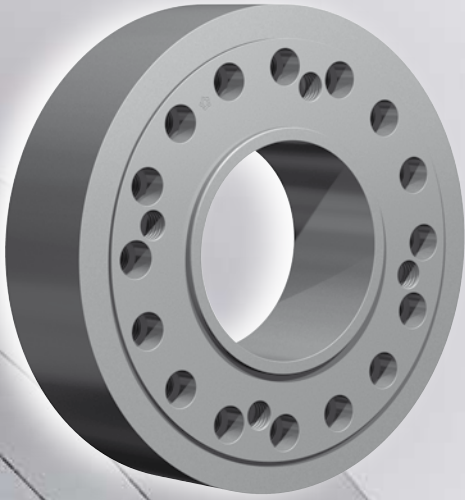
SDB RfN 4012



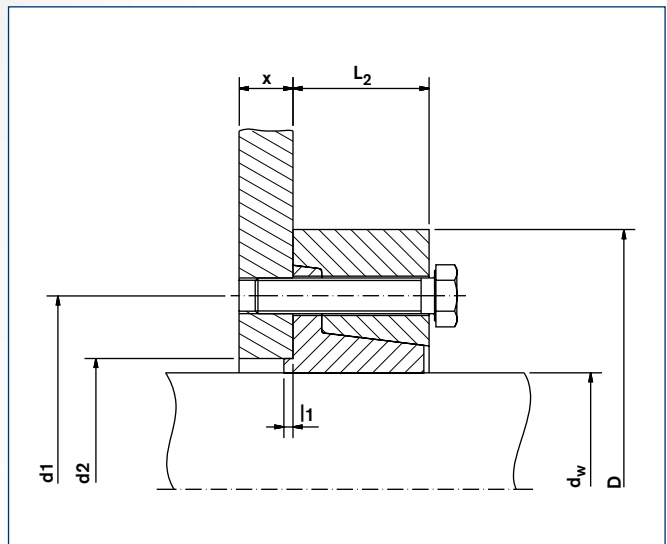
Shrink Disc® RINGFEDER® SDD RfN 4012 · Dimensions

Type	d <sub>w</sub>	Cd	D	d <sub>1</sub>	d2 h7	Ch	L <sub>2</sub>	l1	T <sub>A</sub>	Transmissible Torques	Locking screws* DIN EN ISO 4014-10.9		Weight
										T	Quantity	Thread	WT
										lb-ft	n		lbs
10 SD-x	0.354	+0 -0.0004	1.535	0.984	0.472		0.394	0.059	9	15	3	M6	0.2
12 SD-x	0.433	+0 -0.0006	1.732	1.102	0.551		0.512	0.059	9	15	3	M6	0.2
	37												
15 SD-x	0.512	+0 -0.0006	2.047	1.417	0.709		0.591	0.079	22	37	3	M8	0.4
	96												
20 SD-x	0.630		2.362	1.654	0.866		0.669	0.079	22	96	3	M8	0.7
	148												
25 SD-x	0.787	+0 -0.0007	2.598	1.890	1.063		0.748	0.079	22	148	5	M8	0.9
	251												
30 SD-x	0.984		2.992	2.205	1.260		0.827	0.079	22	251	6	M8	1.3
	406												
40 SD-x	1.181		3.780	2.756	1.693		0.984	0.118	44	406	6	M10	2.6
	782												
50 SD-x	1.575	+0 -0.0013	4.409	3.307	2.087		1.181	0.118	74	782	7	M12	4.0
	1106												
	1.969									1623			

Design SDA and SDC without centering · Ordering example: 40 SDA 35 RfN 4012 · \* Shrink discs® delivered without screws



Shrink Disc® RINGFEDER® SDB RfN 4023 · Location



Shrink Disc® RINGFEDER® SDD RfN 4023 · Dimensions

Type	Shrink Disc® Dimensions									Transmissible Torques	Locking screws* DIN EN ISO 4014-10.9		Weight
	d <sub>w</sub>	Cd	D	d <sub>1</sub>	d <sub>2</sub>	Ch	L <sub>2</sub>	l <sub>1</sub>	T <sub>A</sub>		T	Quantity	
	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	lb-ft	lb-ft	n		lbs
50 SD-x	1.575		4.528	3.307	2.087	+0 -0.0010	1.181	0.118	74	1033	7	M12	4.4
	1.969									2434			
60 SD-x	1.969	+0 -0.0011	4.724	3.700	2.480		1.339	0.118	74	1696	9	M12	4.8
	2.362									3466			
70 SD-x	2.362		5.827	4.409	2.913	+0 -0.0012	1.575	0.157	184	4278	8	M16	10
	2.756									6933			
80 SD-x	2.756		6.693	5.118	3.307		1.732	0.157	184	5900	9	M16	13
	3.150									8850			
90 SD-x	3.150		7.283	5.669	3.701		1.969	0.157	184	8850	12	M16	18
	3.543									13275			
100 SD-x	3.543	+0 -0.0013	7.756	6.142	4.094	+0 -0.0014	2.126	0.157	184	11800	14	M16	21
	3.937									16963			
110 SD-x	3.937		8.465	6.535	4.567		2.283	0.197	362	16225	10	M20	27
	4.331									19913			
120 SD-x	4.331		9.055	7.323	4.961		2.559	0.197	362	24338	14	M20	75
	4.724									31713			
140 SD-x	4.724		11.417	8.504	5.748		2.992	0.197	362	28763	16	M20	145
	5.512									41300			
160 SD-x	5.512	+0 -0.0015	12.598	9.213	6.535	+0 -0.0016	3.268	0.197	627	47200	14	M24	189
	6.299									56788			
180 SD-x	6.299		13.386	10.870	7.323		3.701	0.197	627	62688	16	M24	105
	7.087									76700			
200 SD-x	7.087	+0 -0.0017	14.567	11.420	8.110	+0 -0.0018	3.780	0.197	922	84075	16	M27	125
	7.874									106200			

Design SDA and SDC without centering · Ordering example: 40 SDA 35 RfN 4023 · \* Shrink discs® delivered without screws

To continue see next page

## Characteristics

**Reduced dimensions with lower transmission values** – especially for applications with restricted space.

**Simplified manufacture** – only plain shaft and bore diameters with easily achieved surface finish and tolerances are required.

**Easy adjustability** – No stops, steps, keyways, splines etc. are required, therefore hubs can be located and locked at any point or angle on the shaft.

**Easy mounting** – RINGFEDER® Shrink Discs® use standard screws and tightened using standard tools. No additional machining or fitting work is required.

**Easy removal** – after loosening the locking screws, the RINGFEDER® Shrink Disc® will self release and the hub will move freely on the shaft.

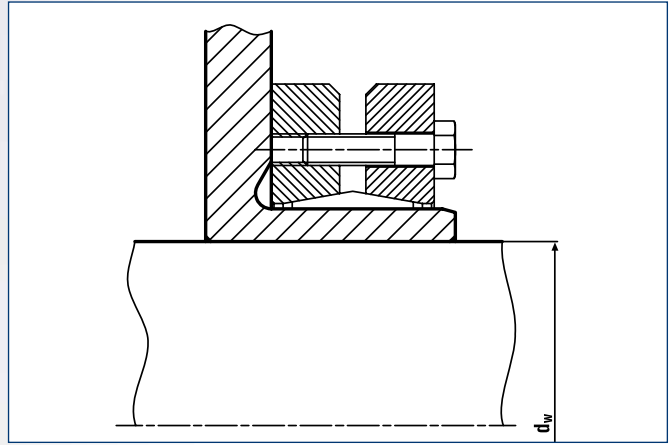
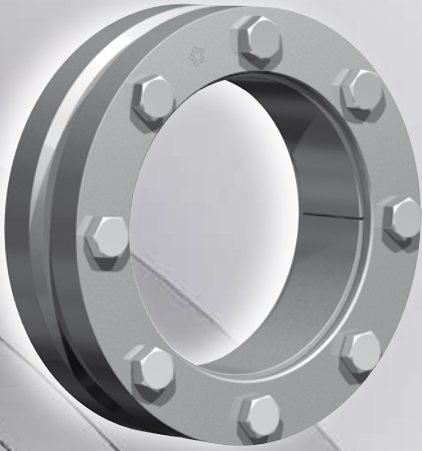
**Low susceptibility to contamination** – when the locking screws are tightened the contact (functional) surfaces are pressed firmly together and prevent contamination by dirt and moisture.

**Highest reliability** – due to the materials chosen and manufacturing processes used, RINGFEDER® Shrink Discs® can be tightened and released as often as required. If locking screws need replacing, they are standard items and thus easily available.

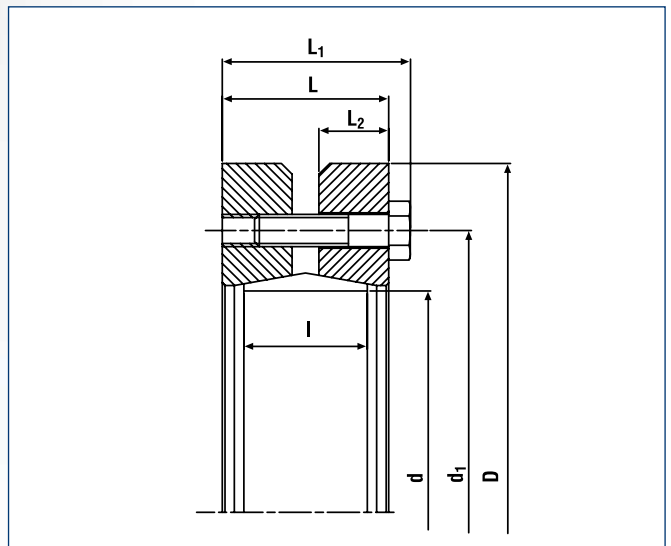
Type	Shrink Disc® Dimensions									Transmissible Torques T	Locking screws* DIN EN ISO 4014-10.9		Weight WT
	d <sub>w</sub>	Cd	D	d <sub>1</sub>	d <sub>2</sub>	Ch	L <sub>2</sub>	l <sub>1</sub>	T <sub>A</sub>		Quantity	Thread	
	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	lb-ft		lb-ft	n	
220 SD-x	7.874	+0 -0.0035	15.945	12.598	8.898	+0 -0.0018	3.937	0.197	922	117263	18	M27	156
240 SD-x	8.661		16.929	13.386	9.685		4.331	0.197	922	131275 155613			
260 SD-x	9.449	+0 -0.0040	18.110	14.016	11.260	+0 -0.0020	4.882	0.197	922	155613 172575	21	M27	241
280 SD-x	10.236		19.094	14.173	12.05		5.118	0.197	922	171100 172575			
300 SD-x	11.024	+0 -0.0044	20.472	14.961	12.99	+0 -0.0022	5.118	0.197	922	172575 182163	21	M27	317
320 SD-x	11.811		21.654	15.827	13.780		5.354	0.315	922	182163 220513			
340 SD-x	12.598	+0 -0.0048	22.441	16.693	14.57	+0 -0.0025	5.630	0.315	922	220513 232313	24	M27	403
360 SD-x	13.386		24.016	17.874	15.75		5.787	0.315	1254	232313 302375			
390 SD-x	14.173	+0 -0.0048	24.803	19.134	16.93	+0 -0.0025	6.575	0.315	1254	302375 323763	24	M30	550
420 SD-x	15.354		26.378	19.921	17.72		6.890	0.394	1254	323763 337038			
440 SD-x	16.535	+0 -0.0048	27.559	21.024	18.5	+0 -0.0025	6.890	0.394	1254	337038 414475	28	M30	700
	17.323												

Design SDA and SDC without centering · Ordering example: 40 SDA 35 RfN 4023 · \* Shrink discs® delivered without screws

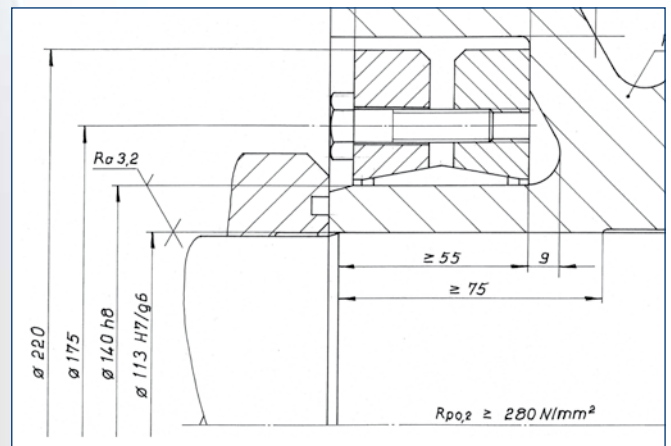
More sizes on request



Shrink Disc® RINGFEDER® RfN 4051 · Location



Shrink Disc® RINGFEDER® RfN 4051 · Dimensions

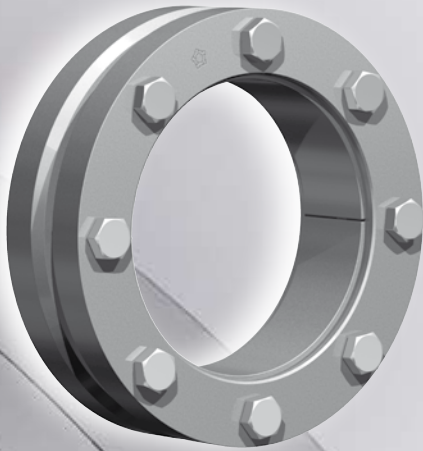


Thrust bearing locking collar (metric example)



Size	Shrink Disc® dimensions										Transmissible torques or axial forces				Locking screws DIN EN ISO 4014-10.9		Weight		
	d <sub>w</sub>	C <sub>w</sub>	d	Ch	D	L <sub>1</sub>	L	d <sub>1</sub>	L <sub>2</sub>	l	T <sub>A</sub>	T	F <sub>ax</sub>	P	σ <sub>v</sub>	Quantity	Thread	WT	T <sub>max</sub>
	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	lb-ft	lb-ft	lbs	psi	psi	n		lbs	lb-ft
125	3.740	0.0027	4.921		7.283	2.283	2.008	6.220	0.866	1.535	44	7781	49456	27695	40310	8	M10x40	13	9736
	4.134											10178	58448		41760				12723
	4.331											10916	59572		38860				13645
140	4.921	0.0031	5.512		8.661	2.283	2.008	6.890	0.866	1.535	44	15120	73060	27840	45675	9	M10x40	18	18900
	5.118											17701	82052		42485				22127
155	5.512	0.0035	6.102	+0 -0.0025	9.646	2.283	2.008	7.559	0.866	1.535	44	21389	92168	30740	48430	11	M10x40	22	26737
	5.315											23602	106780		43210				29502
	165											5.709	28396		119144				47415
5.709		28765	120268	43790	35956														
175	6.102	0.0031	6.890		10.827	2.756	2.441	8.661	1.024	1.811	74	33928	132632	33640	48430	11	M12x50	35	42410
	6.102											34370	134880		44515				42963
	185											6.496	39828		146120				49445
6.496		46466	170848	44370	58083														
195	6.890	0.0035	7.874	+0 -0.0028	12.402	3.150	2.835	9.331	1.220	2.205	74	53473	185460	33785	51475	15	M12x55	60	66841
	6.890											54579	191080		48430				68316
	200											7.283	62324		205692				63800
7.087		61070	206816	40165	76337														
220	7.874	0.0035	8.661		13.583	3.701	3.307	10.433	1.417	2.598	184	77444	237164	31900	53215	10	M16x65	77	96805
	7.874											83344	255148		44080				104180
	240											8.465	99202		281000				51620
8.661		109896	303480	43935	137371														
260	9.252	0.0035	10.236		15.551	4.016	3.622	12.205	1.575	2.835	184	127598	331580	34800	52780	14	M16x70	106	159497
	9.055											126123	333828		39150				157653
	280											9.843	153412		373168				46980
9.843		158575	386656	40455	198219														
300	10.630	0.0040	11.811		18.110	4.488	4.094	14.094	1.811	3.307	184	188078	424872	33205	49590	18	M16x75	165	235097
	10.630											191766	436112		42485				239707
	320											11.417	225693		477700				51475
11.417		221268	465336	41760	276585														
340	12.008	0.0040	13.386		21.063	4.567	4.173	15.827	1.890	3.307	184	248558	496808	34220	47270	21	M16x75	221	310697
	11.811											274372	558628		42340				342965
	350											12.205	295024		582232				46400
11.811		265522	539520	39150	331902														
360	12.598	0.0035	14.173	+0 -0.0035	21.850	5.315	4.803	16.654	2.126	3.937	361	306087	582232	32335	45530	16	M20x90	276	382609
	12.598											320839	611456		38860				401048
	380											14.961	344441		637308				41325
12.992		372468	687888	41325	465585														
390	12.992	0.0044	15.354		23.425	5.866	5.354	17.795	2.362	4.409	361	425572	740716	33350	48865	20	M20x100	344	531965
	13.780																		

To continue see next page



## Characteristics

**Reduced dimensions with lower transmission values** – especially for applications with restricted space.

**Simplified manufacture** – only plain shaft and bore diameters with easily achieved surface finish and tolerances are required.

**Easy adjustability** – No stops, steps, keyways, splines etc. are required, therefore hubs can be located and locked at any point or angle on the shaft.

**Easy mounting** – RINGFEDER® Shrink Discs® use standard screws and tightened using standard tools. No additional machining or fitting work is required.

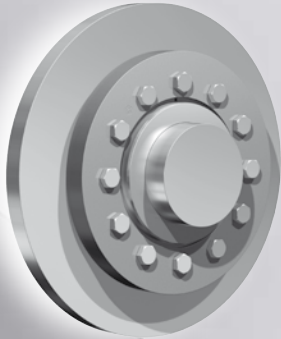
**Easy removal** – after loosening the locking screws, the RINGFEDER® Shrink Disc® will self release and the hub will move freely on the shaft.

**Low susceptibility to contamination** – when the locking screws are tightened the contact (functional) surfaces are pressed firmly together and prevent contamination by dirt and moisture.

**Highest reliability** – due to the materials chosen and manufacturing processes used, RINGFEDER® Shrink Discs® can be tightened and released as often as required. If locking screws need replacing, they are standard items and thus easily available.

Size	Shrink Disc® dimensions										Transmissible torques or axial forces				Locking screws DIN EN ISO 4014-10.9		Weight		
	d <sub>w</sub>	C <sub>w</sub>	d	Ch	D	L <sub>1</sub>	L	d <sub>1</sub>	L <sub>2</sub>	l	T <sub>A</sub>	T	F <sub>ax</sub>	P	σ <sub>v</sub>	Quantity	Thread	WT	T <sub>max</sub>
	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	lb-ft	lb-ft	lbs	psi	psi	n		lbs	lb-ft
400	13.386	0.0044	15.748	+0 -0.0035	24.213	5.866	5.354	18.189	2.362	4.409	361	405658	727228	34220	42195	21	M20x100	375	507073
	14.173											461713	782304		50025				577141
13.780	16.535		24.803	6.181	5.669	19.094	2.520	4.724	361	426310	741840	38425	532887						
14.567										483102	796916	43065	603877						
14.567	17.323		25.984	6.181	5.669	19.882	2.520	4.724	361	499328	822768	39730	624160						
15.354										562021	878968	44805	702526						
15.354	18.110		26.969	6.732	6.220	20.748	2.795	5.197	361	619550	971136	41035	774438						
16.142										689619	1029584	47560	862945						
16.142	18.898		28.150	6.732	6.220	21.535	2.795	5.197	361	657166	977880	39875	821457						
16.732										712483	1022390,4	43645	890604						
16.732	19.685	29.528	6.732	6.220	22.323	2.795	5.197	361	727234	1044196	39875	909043							
17.323									786239	1089156	33060	628	982799						

More sizes on request



### Split Shrink Discs®

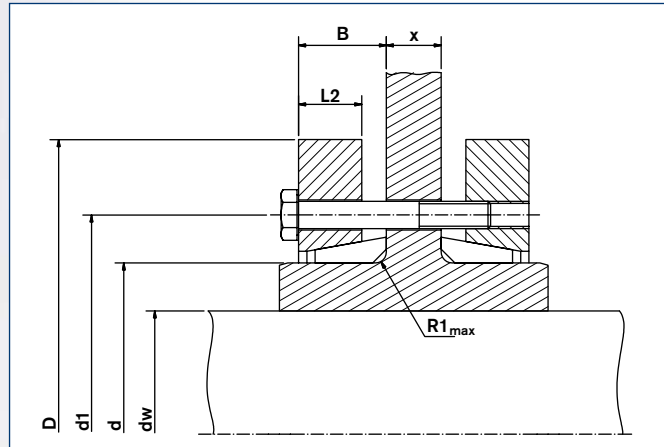
In the application shown above special screws according to the dimension X are required, which have to be ordered accordingly. If the dimension X is above  $2 \times L$  (L taken from the Standard and the Light Duty Series) or above  $1 \times L$  (taken from the Heavy Duty Series) the transmissible torque may be reduced by up to 50%.

### Half Shrink Discs®

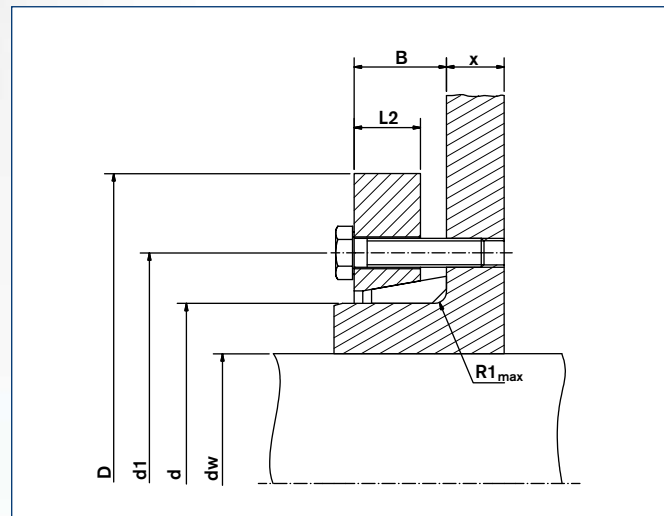
With half shrink discs® HC/HT only 50% of stated T is transmitted.

type HT (Threaded holes in thrust ring)

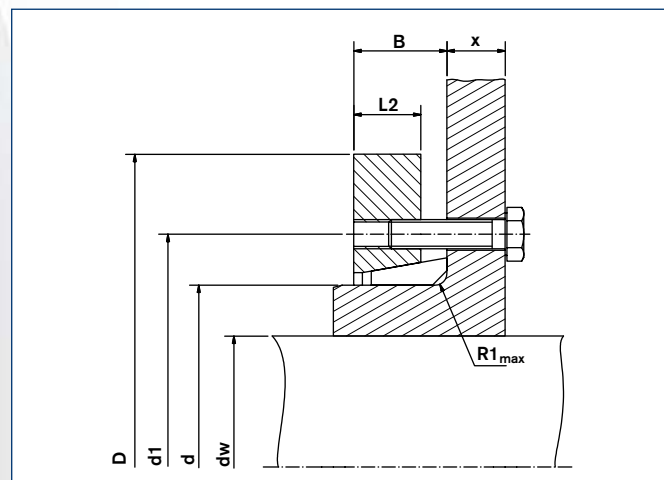
type HC (Clearance holes in thrust ring)



Shrink Disc® RINGFEDER® RfN 4051 split · Location



Shrink Disc® RINGFEDER® RfN 4051 HC · Dimensions



Shrink Disc® RINGFEDER® RfN 4051 HT · Dimensions

Size	Shrink Disc® dimensions									Transmissible torques or axial forces		Locking screws DIN EN ISO 4014-10.9		Weight
	d <sub>w</sub>	C <sub>w</sub>	d	Ch	D	d <sub>1</sub>	B±0.039	R1 max	T <sub>A</sub>	T	F <sub>ax</sub>	Quantity	Thread	WT
	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	lb-ft	lb-ft	lbs	n		lbs
125	3.740	0.0027	4.921		7.283	6.220	1.201	0.189	44	7781	49456	8	M10	13
	4.134									10178	58448			
	4.331									10916	59572			
140	4.921	0.0031	5.512		8.661	6.890	1.215	0.189	44	15120	73060	9	M10	18
	5.118									17701	82052			
155	5.512	0.0035	6.102	+0 -0.0025	9.646	7.559	1.201	0.189	44	21389	92168	11	M10	22
	5.315									23602	106780			
165	5.709	0.0039	6.496		10.236	8.268	1.417	0.189	74	28396	119144	10	M12	31
	5.709									28765	120268			
175	6.102	0.0043	6.890		10.827	8.661	1.417	0.189	74	33928	132632	11	M12	35
	6.102									34370	134880			
185	6.496	0.0047	7.283		11.614	8.858	1.417	0.189	74	39828	146120	12	M12	44
	6.496									46466	170848			
195	6.890	0.0051	7.677		12.402	9.331	1.614	0.189	74	53473	185460	15	M12	60
	6.890									54579	191080			
200	7.283	0.0055	7.874	+0 -0.0028	12.992	9.528	1.614	0.189	74	62324	205692	16	M12	66
	7.087									61070	206816			
220	7.874	0.0059	8.661		13.583	10.433	1.850	0.189	184	77444	237164	10	M16	77
	7.874									83344	255148			
240	8.465	0.0063	9.449		14.567	11.417	1.850	0.189	184	99202	281000	12	M16	97
	8.661									109896	303480			
260	9.252	0.0067	10.236		15.551	12.205	2.067	0.252	184	127598	331580	14	M16	106
	9.055									126123	333828			
280	9.843	0.0071	11.024	+0 -0.0032	16.732	13.110	2.343	0.252	184	153412	373168	16	M16	132
	9.843									158575	386656			
300	10.630	0.0075	11.811		18.110	14.094	2.343	0.252	184	188078	424872	18	M16	165
	10.630									191766	436112			
320	11.417	0.0079	12.598		19.488	14.882	2.382	0.252	184	225693	477700	20	M16	185
	11.417									221268	465336			
340	12.008	0.0083	13.386		21.063	15.827	2.382	0.252	184	248558	496808	21	M16	221
	11.811									274372	558628			
350	12.205	0.0087	13.780		21.457	16.260	2.697	0.252	361	295024	582232	16	M20	265
	11.811									265522	539520			
360	12.598	0.0091	14.173	+0 -0.0035	21.850	16.654	2.697	0.252	361	306087	582232	16	M20	276
	12.598									320839	611456			
380	12.992	0.0095	14.961		23.031	17.402	2.972	0.252	361	344441	637308	18	M20	331
	12.992									372468	687888			
390	13.780	0.0099	15.354		23.425	17.795	3.071	0.331	361	425572	740716	20	M20	344
	13.386									405658	727228			
400	14.173	0.0103	15.748		24.213	18.189	3.071	0.331	361	461713	782304	21	M20	375
	13.780									426310	741840			
420	14.567	0.0107	16.535	+0 -0.0038	24.803	19.094	3.228	0.331	361	483102	796916	22	M20	408

To continue see next page

## Characteristics

**Reduced dimensions with lower transmission values** – especially for applications with restricted space.

**Simplified manufacture** – only plain shaft and bore diameters with easily achieved surface finish and tolerances are required.

**Easy adjustability** – No stops, steps, keyways, splines etc. are required, therefore hubs can be located and locked at any point or angle on the shaft.

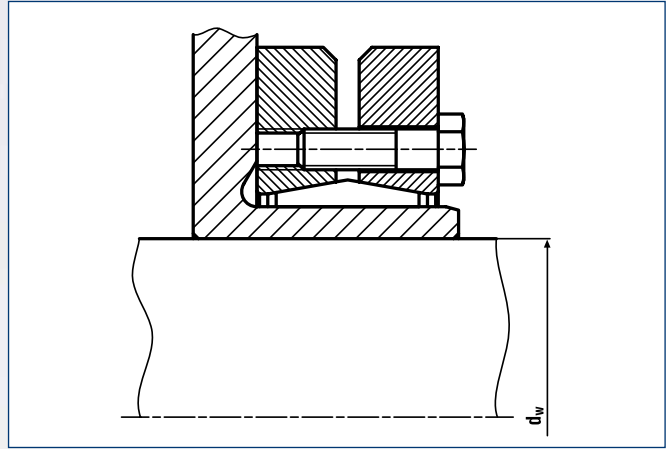
**Easy mounting** – RINGFEDER® Shrink Discs® use standard screws and tightened using standard tools. No additional machining or fitting work is required.

**Easy removal** – after loosening the locking screws, the RINGFEDER® Shrink Disc® will self release and the hub will move freely on the shaft.

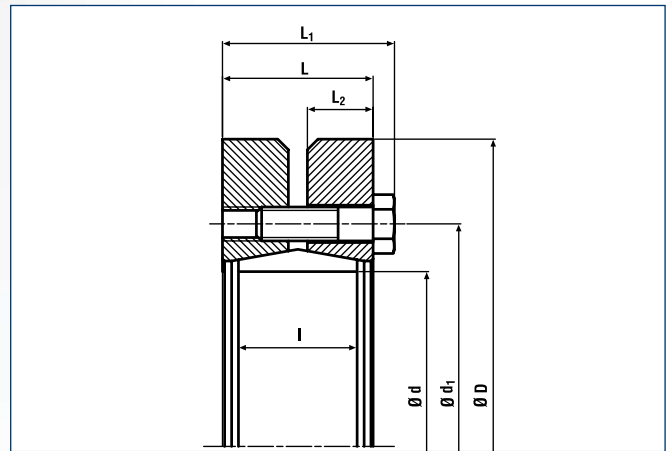
**Low susceptibility to contamination** – when the locking screws are tightened the contact (functional) surfaces are pressed firmly together and prevent contamination by dirt and moisture.

**Highest reliability** – due to the materials chosen and manufacturing processes used, RINGFEDER® Shrink Discs® can be tightened and released as often as required. If locking screws need replacing, they are standard items and thus easily available.

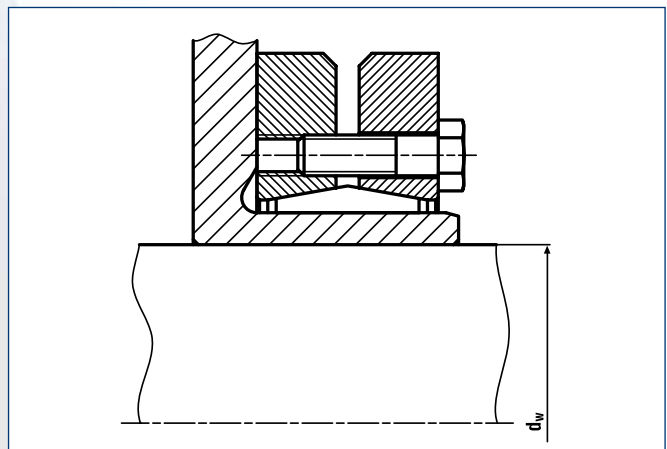
Size	Shrink Disc® dimensions									Transmissible torques or axial forces		Locking screws DIN EN ISO 4014-10.9		Weight
	d <sub>w</sub>	C <sub>w</sub>	d	Ch	D	d <sub>1</sub>	B±0.039	R1 max	T <sub>A</sub>	T	F <sub>ax</sub>	Quantity	Thread	WT
	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	lb-ft	lb-ft	lbs	n		lbs
440	14.567	0.0044	17.323	+0 -0.0038	25.984	19.882	3.228	0.331	361	499328	822768	24	M20	452
	562021									878968				
460	15.354		18.110		26.969	20.748	3.602	0.390	361	619550	971136	28	M20	518
	16.142	689619	1029584											
480	16.142	0.0048	18.898		28.150	21.535	3.602	0.390	361	657166	977880	28	M20	562
	16.732			712483						1022390				
500	16.732		19.685	29.528	22.323	3.602	0.390	361	727234	1044196	30	M20	628	
	17.323	786239	1089156											



Shrink Disc® RINGFEDER® RfN 4061 · Location



Shrink Disc® RINGFEDER® RfN 4061 · Dimensions



Axial bearing disc



Size	Shrink Disc® dimensions										T <sub>A</sub>	Transmissible torques or axial forces				σ <sub>v</sub>	Locking screws DIN EN ISO 4014-10.9		Weight	
	d <sub>w</sub>	C <sub>w</sub>	d	Ch	D	L <sub>1</sub>	L	d <sub>1</sub>	L <sub>2</sub>	l		T	F <sub>ax</sub>	P	Quantity		Thread	lbs	T <sub>max</sub>	
	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	lb-ft		lb-ft	lbs	psi	psi	n		lbs	lb-ft	
14	0.394	0.0007	0.551	+0 -0.0013	1.457	0.591	0.472	0.945	0.197	0.354	1.5	13	1191	56105	99470	3	M5x12	0.2	17	
	0.472					0.472	1.614	0.728	0.591	1.063	0.246	0.472	3	26	1798					119805
16	0.472		63		3619	113680								4	M5x16	0.2	78			
18	0.551	0.709	96	4518	185465	3												M5x16	0.2	78
	0.551		81	4271	114415		5	M5x16	0.3	102										
20	0.630	0.787	1.811	0.807	0.669	1.260					0.276	0.472	3	112	5170	152635	199			
	0.591						162	7194	120540	6				M5x18	0.4	295				
24	0.669	0.945	1.969	0.906	0.748	1.417	0.315	0.591	3.7		236	8318	165130				347			
	0.748									280	8542	101185	7	M5x20	0.7	435				
30	0.827	1.181	2.047	0.984	0.846	1.654	0.354	0.669	3.7	347	9666	124950					354			
	0.945									278	10790	94325	5	M6x20	0.9	524				
36	1.024	1.417	2.835	1.083	0.925	2.047	0.394	0.709	9	420	13038	109270					605			
	1.024									479	13488	92365	6	M6x25	1.1	686				
38	1.181	1.496	2.835	1.181	1.024	2.165	0.433	0.827	9	553	14387	115885					583			
	1.142									465	13263	98000	6	M6x25	1.2	671				
40	1.220	1.575	2.953	1.122	0.965	2.244	0.413	0.748	9	538	14162	113925					679			
	1.181									546	14162	104860	7	M6x25	1.3	937				
44	1.260	1.732	3.150	1.181	1.024	2.402	0.433	0.787	9	752	17085	111965					671			
	1.260									538	13713	86730	7	M6x25	1.2	1018				
48	1.417	1.890	3.150	1.181	1.024	2.677	0.433	0.866	9	774	20007	103635					966			
	1.417									819	16410	89425	9	M6x25	1.8	1416				
50	1.575	1.969	3.543	1.260	1.102	2.756	0.472	0.866	9	1136	23154	115395					1069			
	1.496									856	17759	84280	8	M6x25	2.4	1733				
55	1.654	2.165	3.937	1.358	1.201	2.953	0.512	0.906	9	1387	21806	101920					2043			
	1.654									1637	28100	99470	12	M6x30	2.9	2663				
62	1.890	2.441	4.331	1.378	1.220	3.386	0.512	0.906	9	2132	30348	117845								
	1.890																			
	2.047																			

To continue see next page

### Characteristics

**Reduced dimensions with lower transmission values** – especially for applications with restricted space.

**Simplified manufacture** – only plain shaft and bore diameters with easily achieved surface finish and tolerances are required.

**Easy adjustability** – No stops, steps, keyways, splines etc. are required, therefore hubs can be located and locked at any point or angle on the shaft.

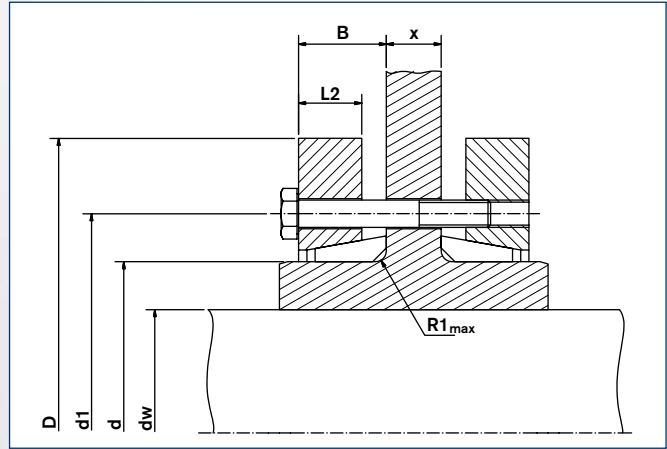
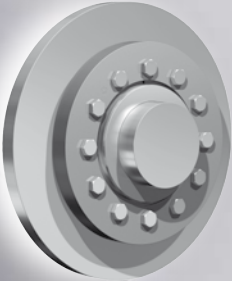
**Easy mounting** – RINGFEDER® Shrink Discs® use standard screws and tightened using standard tools. No additional machining or fitting work is required.

**Easy removal** – after loosening the locking screws, the RINGFEDER® Shrink Disc® will self release and the hub will move freely on the shaft.

**Low susceptibility to contamination** – when the locking screws are tightened the contact (functional) surfaces are pressed firmly together and prevent contamination by dirt and moisture.

**Highest reliability** – due to the materials chosen and manufacturing processes used, RINGFEDER® Shrink Discs® can be tightened and released as often as required. If locking screws need replacing, they are standard items and thus easily available.





Shrink Disc® RINGFEDER® RfN 4061 split · Location

**Split Shrink Discs®**

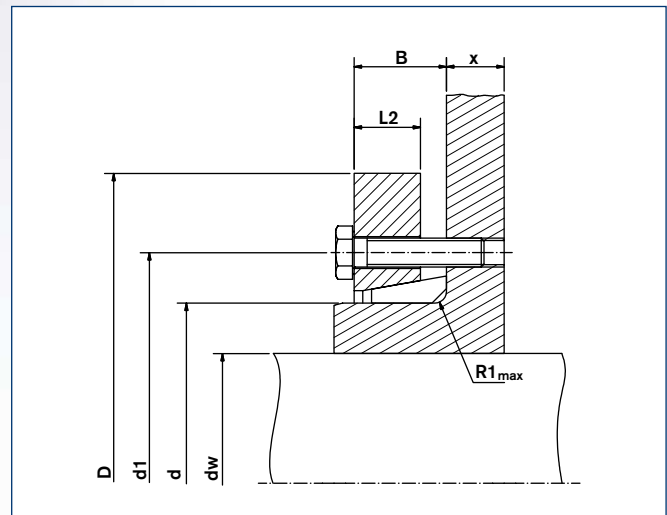
In the application shown above special screws according to the dimension X are required, which have to be ordered accordingly. If the dimension X is above 2 x L (L taken from the Standard and the Light Duty Series) or above 1 x L (taken from the Heavy Duty Series) the transmissible torque may be reduced by up to 50%.

**Half Shrink Discs®**

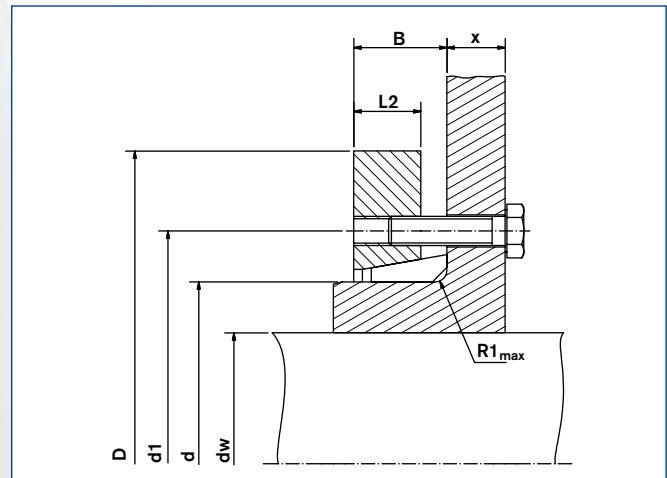
With half shrink discs® HC/HT only 50% of stated T is transmitted.

type HT (Threaded holes in thrust ring)

type HC (Clearance holes in thrust ring)



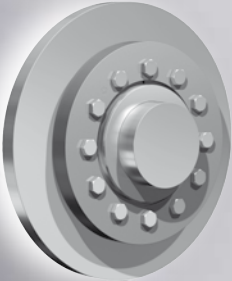
Shrink Disc® RINGFEDER® RfN 4061 HC · Dimensions



Shrink Disc® RINGFEDER® RfN 4061 HT version

Size										T <sub>A</sub>	Transmissible torques or axial forces		Locking screws DIN EN ISO 4014-10.9		Weight	
dw	Cw	d	Ch	D	L <sub>2</sub>	d <sub>1</sub>	B±0.039	R1 max	T		F <sub>ax</sub>	Quantity	Thread	WT	T <sub>max</sub>	
Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	lb-ft	lb-ft	lbs	n		lbs	lb-ft	
20	0.591		0.787		1.811	0.197	1.260	0.453	0.051	3	4271	81	5	M5	0,3	89
	5170										112	123				
24	0.669		0.945	+0 -0.0013	1.969	0.246	1.417	0.463	0.051	4	7194	162	6	M5	0,4	178
	8318										236	260				
30	0.748	0.0007	1.181		2.047	0.246	1.654	0.502	0.051	4	8542	280	7	M5	0,7	308
	0.827										9666	347				381
36	0.945		1.417		2.835	0.276	2.047	0.541	0.051	9	10790	278	5	M6	0,9	306
	1.024										13038	420				462
38	1.024		1.496		2.835	0.315	2.165	0.600	0.051	9	13488	479	6	M6	1,1	527
	1.181										14387	553				608
40	1.142		1.575		2.953	0.354	2.244	0.581	0.051	9	13263	465	6	M6	1,2	511
	1.220										14162	538				592
44	1.181		1.732	+0 -0.0015	3.150	0.394	2.402	0.600	0.110	9	14162	546	7	M6	1,3	600
	1.260										17085	752				828
48	1.260	0.0013	1.890		3.150	0.433	2.677	0.600	0.110	9	13713	538	7	M6	1,2	592
	1.417										16410	819				901
50	1.417		1.969		3.543	0.413	2.756	0.640	0.110	9	20007	774	9	M6	1,8	852
	1.496										23154	1136				1249
55	1.575		2.165		3.937	0.433	2.953	0.699	0.110	9	17759	856	8	M6	2,4	941
	1.654										21806	1387				1525
62	1.654		2.441		4.331	0.433	3.386	0.699	0.110	9	28100	1637	12	M6	2,9	1801
	1.890										30348	2132				2345
68	1.890	0.0019	2.677	+0 -0.0018	4.528	0.472	3.386	0.699	0.110	9	21356	1475	10	M6	3,1	1623
	2.047										26976	2323				2556
75	1.969		2.953		5.433	0.512	3.937	0.778	0.110	22	26751	1844	7	M8	3,7	2028
	2.165										34844	2913				3205
80	2.165		3.150		5.709	0.512	3.937	0.778	0.110	22	27875	2360	7	M8	4,2	2596
	2.362										35518	3393				3732
80	2.756															

To continue see next page



## Characteristics

**Standard series** – this range is the most popular, being used in most applications. High transmission values are possible, and by varying the screw tightening torque the Shrink Disc® can be adapted to the design specification.

**Simplified manufacture** – only plain shaft and bore diameters with easily achieved surface finish and tolerances are required.

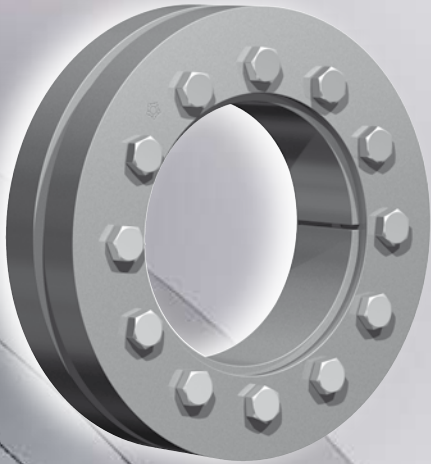
**Easy adjustability** – No stops, steps, keyways, splines etc. are required, therefore hubs can be located and locked at any point or angle on the shaft.

**Easy mounting** – RINGFEDER® Shrink Discs® use standard screws and tightened using standard tools. No additional machining or fitting work is required.

**Easy removal** – after loosening the locking screws, the RINGFEDER® Shrink Disc® will self release and the hub will move freely on the shaft.

**Low susceptibility to contamination** – when the locking screws are tightened the contact (functional) surfaces are pressed firmly together and prevent contamination by dirt and moisture.

Size	Size										Transmissible torques or axial forces		Locking screws DIN EN ISO 4014-10.9		Weight	
	d <sub>w</sub>	Cw	d	Ch	D	L <sub>2</sub>	d <sub>1</sub>	B±0.039	R1 max	T <sub>A</sub>	T	F <sub>ax</sub>	Quantity	Thread	WT	T <sub>max</sub>
	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	lb-ft	lb-ft	lbs	n		lbs	lb-ft
85	2.362	0.0019	3.346	+0 -0.0021	6.102	0.512	4.488	0.906	0.130	22	37991	3172	10	M8	7.7	3489
	47658										4861	5347				
	38216										3503	3854				
90	2.756	0.0019	3.543	+0 -0.0021	6.102	0.551	4.488	0.906	0.130	22	47208	5347	10	M8	7.3	5882
	2.559										43836	3968				4365
95	2.559	0.0019	3.740	+0 -0.0021	6.693	0.551	4.882	0.925	0.130	22	53952	6048	12	M8	10.4	6653
	2.953										43836	5089				5598
100	2.756	0.0019	3.937	+0 -0.0021	6.693	0.669	4.882	1.004	0.130	22	53952	6638	12	M8	10.4	7302
	3.150										51479	5310				5841
110	2.953	0.0019	4.331	+0 -0.0021	7.283	0.669	5.354	1.122	0.189	44	58898	7966	9	M10	13.0	8762
	3.346										60696	6786				7464
115	3.150	0.0019	4.528	+0 -0.0021	7.283	0.748	5.591	1.260	0.189	44	74184	11063	10	M10	13.2	12170
	3.346										77556	8113				8924
125	3.346	0.0027	4.921	+0 -0.0025	8.465	0.748	6.299	1.260	0.189	44	77781	11063	12	M10	18.3	12170
	3.740										7418	11137				12251
140	4.134	0.0027	5.512	+0 -0.0025	9.055	0.866	6.890	1.398	0.189	74	74409	14825	10	M12	22.1	16307
	4.134										71936	16226				17849
155	4.528	0.0027	6.102	+0 -0.0025	10.433	1.102	3.622	1.467	0.189	74	72386	20652	12	M12	33.1	22717
	4.528										22864	133756				25151
165	4.921	0.0031	6.496	+0 -0.0025	11.417	1.220	8.268	1.594	0.189	184	28765	147244	8	M16	48.5	31641
	4.921										26552	136004				29207
175	5.315	0.0031	6.890	+0 -0.0025	11.811	1.220	8.661	1.594	0.189	184	33190	151740	8	M16	48.5	36509
	5.315										38353	174894				42188
185	5.709	0.0031	7.283	+0 -0.0028	12.992	1.496	9.291	1.890	0.189	184	45729	193553	10	M16	81.6	50302
	5.512										47941	209738				52736
195	6.102	0.0031	7.677	+0 -0.0028	13.780	1.496	9.685	1.890	0.189	184	60111	240761	12	M16	90.4	66122
	5.906										54579	222552				60037
200	6.299	0.0031	7.874	+0 -0.0028	13.780	1.496	9.685	1.890	0.189	184	63430	242784	12	M16	90.4	69773



## Characteristics

**Standard series** – this range is the most popular, being used in most applications. High transmission values are possible, and by varying the screw tightening torque the Shrink Disc® can be adapted to the design specification.

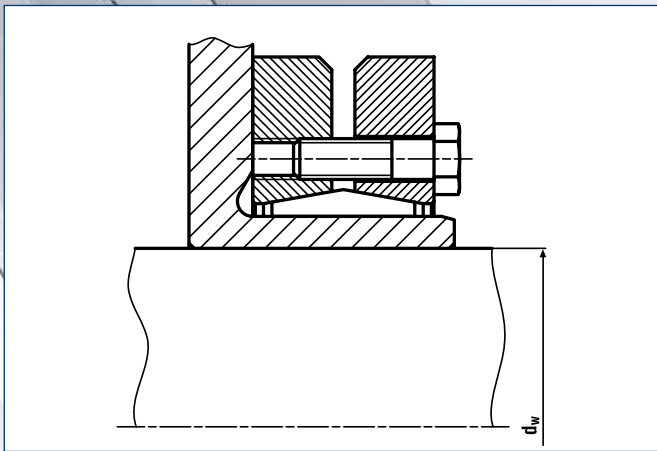
**Simplified manufacture** – only plain shaft and bore diameters with easily achieved surface finish and tolerances are required.

**Easy adjustability** – No stops, steps, key-ways, splines etc. are required, therefore hubs can be located and locked at any point or angle on the shaft.

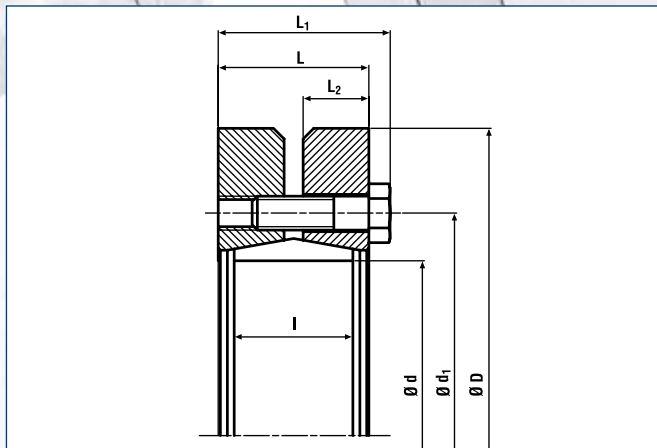
**Easy mounting** – RINGFEDER® Shrink Discs® use standard screws and tightened using standard tools. No additional machining or fitting work is required.

**Easy removal** – after loosening the locking screws, the RINGFEDER® Shrink Disc® will self release and the hub will move freely on the shaft.

**Low susceptibility to contamination** – when the locking screws are tightened the contact (functional) surfaces are pressed firmly together and prevent contamination by dirt and moisture.



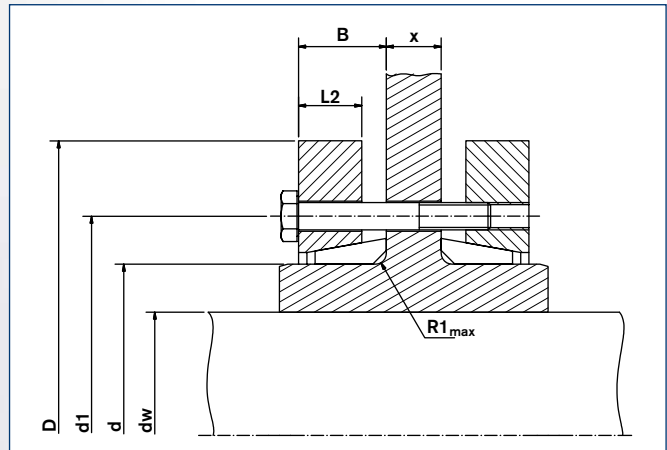
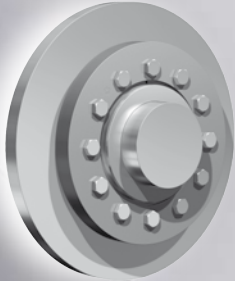
Shrink Disc® RINGFEDER® RfN 4071 · Location



Shrink Disc® RINGFEDER® RfN 4071 · Dimensions



Size	Shrink Disc® dimensions											Transmissible torques or axial forces		P	σ <sub>v</sub>	Locking screws DIN EN ISO 4014-10.9		Weight lbs	T <sub>max</sub> lb-ft
	d <sub>w</sub>	C <sub>w</sub>	d	Ch	D	L <sub>1</sub>	L	d <sub>1</sub>	L <sub>2</sub>	l	T <sub>A</sub>	T	F <sub>ax</sub>			Quantity	Thread		
	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	lb-ft	lb-ft	lbs			psi	n		
220	6.299	0.0031	8.661	+0 -0.0028	14.567	4.488	4.094	10.630	1.850	3.465	184	70068	267512	35960	42775	15	M16x80	119	87585
	6.693											81132	289992						43935
240	6.693	0.0035	9.449	+0 -0.0032	15.945	4.803	4.291	11.614	1.929	3.622	361	88507	329107	39440	44805	12	M20x80	148	110634
	7.480											115059	376540						48430
260	7.480	0.0040	10.236	+0 -0.0035	16.929	5.236	4.724	12.638	2.126	4.055	361	120960	395648	37990	44370	14	M20x90	181	151200
	8.268											151200	451848						47705
280	8.268	0.0044	11.024	+0 -0.0035	18.110	5.787	5.276	13.622	2.362	4.488	361	160051	469832	36395	42775	16	M20x100	225	200063
	9.055											199141	528280						46980
300	9.055	0.0048	11.811	+0 -0.0038	19.094	6.102	5.591	14.331	2.520	4.803	361	202829	546489	35670	42195	18	M20x100	260	253536
	9.646											232331	592573						45240
320	9.449	0.0052	12.598	+0 -0.0042	20.472	6.102	5.591	15.197	2.520	4.803	361	230119	595046	37265	42485	20	M20x100	289	287648
	10.236											275847	651920						46400
340	9.843	0.0056	13.386	+0 -0.0046	22.441	6.654	6.142	16.063	2.795	5.276	361	287648	701151	38280	42775	24	M20x110	410	359561
	10.630											339278	764320						45965
350	10.630	0.0060	13.780	+0 -0.0050	22.835	6.890	6.378	17.008	2.874	5.512	361	326002	736445	35525	41905	24	M20x110	430	407502
	11.220											368780	786800						44515
360	11.024	0.0064	14.173	+0 -0.0055	23.228	6.890	6.378	17.008	2.874	5.512	361	341490	744088	34510	40890	24	M20x110	450	426863
	11.614											385006	794893						43210
380	11.417	0.0068	14.961	+0 -0.0059	25.394	7.205	6.614	18.031	2.992	5.669	620	418197	878968	38135	43500	20	M24x120	527	522746
	12.205											485314	954950						46400
390	11.811	0.0072	15.354	+0 -0.0063	25.984	7.205	6.614	18.425	2.992	5.669	620	460237	935168	39150	44225	21	M24x120	573	575297
	12.598											529568	1008003						47995
400	12.402	0.0076	15.748	+0 -0.0067	26.772	7.205	6.614	18.898	2.992	5.669	620	494165	957648	38135	43790	21	M24x120	617	617707
	12.992											548745	1011600						46980
420	12.992	0.0080	16.535	+0 -0.0071	27.165	7.992	7.402	19.843	3.386	6.457	620	575297	1090280	36395	42775	24	M24x130	697	719121
	13.780											663804	1173456						46690
440	13.386	0.0084	17.323	+0 -0.0075	29.528	8.543	7.953	20.748	3.583	6.969	620	594473	1065552	32335	38715	24	M24x140	900	743092
	14.173											676343	1144232						41325
460	14.173	0.0088	18.110	+0 -0.0079	30.315	8.543	7.953	21.535	3.583	6.969	620	737560	1274616	35960	42485	28	M24x140	926	921950
	14.961											-	1360040						45530
480	14.961	0.0092	18.898	+0 -0.0083	31.496	8.976	8.386	22.441	3.780	7.402	620	862945	1382520	34800	40890	30	M24x140	1114	-
	15.748											966204	1472440						44370
500	15.748	0.0096	19.685	+0 -0.0087	33.465	9.055	8.386	23.228	3.780	7.402	922	967679	1474688	35090	41180	24	M27x150	1268	-
	16.535											-	1557864						45095



Shrink Disc® RINGFEDER® RfN 4071 split · Location

### Split Shrink Discs®

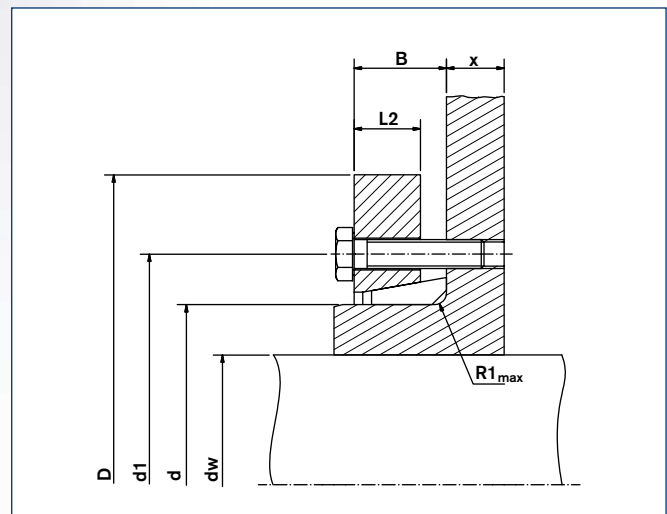
In the application shown above special screws according to the dimension X are required, which have to be ordered accordingly. If the dimension X is above  $2 \times L$  (L taken from the Standard and the Light Duty Series) or above  $1 \times L$  (taken from the Heavy Duty Series) the transmissible torque may be reduced by up to 50%.

### Half Shrink Discs®

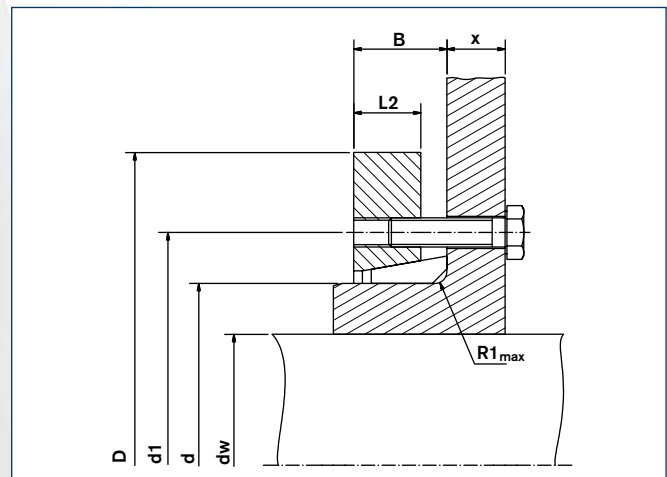
With half shrink discs® HC/HT only 50% of stated T is transmitted.

type HT (Threaded holes in thrust ring)

type HC (Clearance holes in thrust ring)

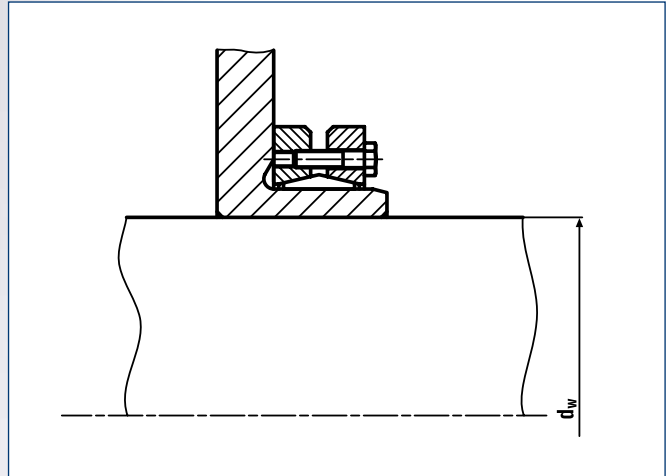
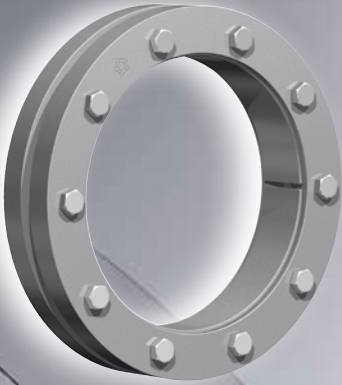


Shrink Disc® RINGFEDER® RfN 4071 HC · Dimensions

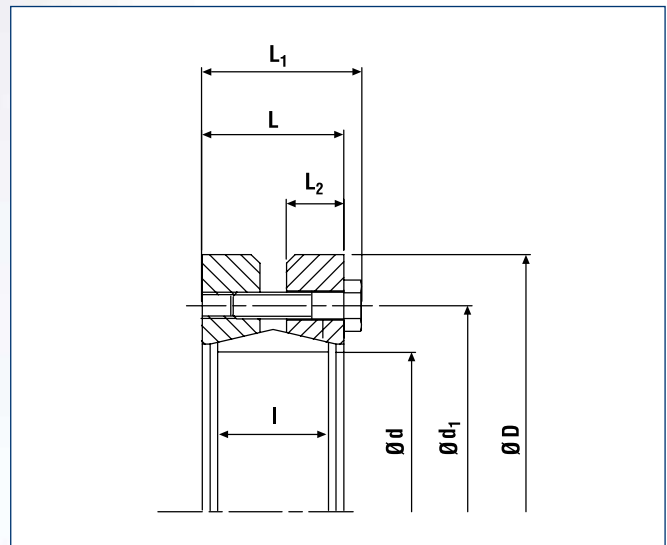


Shrink Disc® RINGFEDER® RfN 4071 HT version

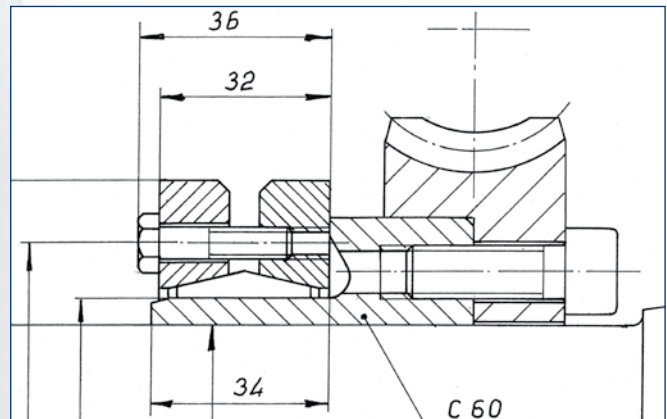
Size	Shrink Disc® dimensions									T <sub>A</sub>	Transmissible torques or axial forces		Locking screws DIN EN ISO 4014-10.9		Weight	
	d <sub>w</sub>	C <sub>w</sub>	d	Ch	D	L <sub>2</sub>	d <sub>1</sub>	B±0.039	R1 max		T	F <sub>ax</sub>	Quantity	Thread	WT	T <sub>max</sub>
	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	lb-ft	lb-ft	lbs	n		lbs	lb-ft
220	6.299	0.0031	8.661	+0 -0.0028	14.567	1.850	10.630	2.343	0.291	184	70068	267512	15	M16	119	77075
	81132										289992	89245				
240	6.693		8.661		14.567	1.850	10.630	2.343	0.291	184	70068	267512	15	M16	119	77075
	6.693	9.449	15.945	1.929	11.614	2.441	0.291	361	88507	329107	12	M20	148	97358		
260	7.480	0.0035	10.236	+0 -0.0032	16.929	2.126	12.638	2.657	0.291	361	115059	376540	14	M20	181	126565
	7.480										120960	395648				133056
280	8.268		10.236		16.929	2.126	12.638	2.657	0.291	361	115059	376540	14	M20	181	126565
	8.268	11.024	18.110	2.362	13.622	3.012	0.331	361	160051	469832	16	M20	225	176056		
300	9.055	0.0040	11.811	+0 -0.0035	19.094	2.520	14.331	3.130	0.331	361	179965	499056	18	M20	260	219055
	9.055										202829	546489				223112
320	9.646		11.811		19.094	2.520	14.331	3.130	0.331	361	179965	499056	18	M20	260	219055
	9.449	12.598	20.472	2.520	15.197	3.130	0.331	361	232331	592573	20	M20	289	255565		
340	10.236	0.0044	13.386	+0 -0.0035	22.441	2.795	16.063	3.406	0.331	361	230119	595046	24	M20	410	253131
	9.843										275847	651920				303432
350	10.630		13.386		22.441	2.795	16.063	3.406	0.331	361	230119	595046	20	M20	289	255565
	10.630	13.780	22.835	2.874	17.008	3.524	0.331	361	287648	701151	24	M20	410	316413		
360	11.220	0.0040	14.173	+0 -0.0035	23.228	2.874	17.008	3.524	0.331	361	339278	764320	24	M20	430	375639
	11.024										341490	744088				405658
380	11.614		14.173		23.228	2.874	17.008	3.524	0.331	361	341490	744088	24	M20	450	375639
	11.417	14.961	25.394	2.992	18.031	3.642	0.331	620	368780	786800	20	M24	527	533846		
390	12.205	0.0044	15.354	+0 -0.0038	25.984	2.992	18.425	3.642	0.331	620	385006	794893	21	M24	573	423507
	11.811										460237	935168				506261
400	12.598		15.354		25.984	2.992	18.425	3.642	0.331	620	460237	935168	21	M24	573	506261
	12.402	15.748	26.772	2.992	18.898	3.642	0.331	620	485314	954950	20	M24	527	533846		
420	12.992	0.0044	16.535	+0 -0.0038	27.165	3.386	19.843	4.193	0.390	620	494165	957648	24	M24	697	543582
	12.992										548745	1011600				603619
440	13.780		16.535		27.165	3.386	19.843	4.193	0.390	620	575297	1090280	24	M24	697	632826
	13.386	17.323	29.528	3.583	20.748	4.469	0.390	620	663804	1173456	24	M24	900	730184		
460	14.173	0.0048	18.110	+0 -0.0038	30.315	3.583	21.535	4.469	0.390	620	594473	1065552	28	M24	926	653921
	14.173										676343	1144232				743977
480	14.961		18.110		30.315	3.583	21.535	4.469	0.390	620	737560	1274616	28	M24	926	811316
	14.961	18.898	31.496	3.780	22.441	4.685	0.390	620	1032584	1360040	30	M24	1114	1135842		
500	15.748	0.0048	19.685	+0 -0.0038	33.465	3.780	23.228	4.685	0.390	922	862945	1382520	24	M27	1268	949240
	15.748										966204	1472440				1062824
	16.535		19.685		33.465	3.780	23.228	4.685	0.390	922	967679	1474688	24	M27	1268	1064447
											1073150	1557864				1180465



Shrink Disc® RINGFEDER® RfN 4073 · Location



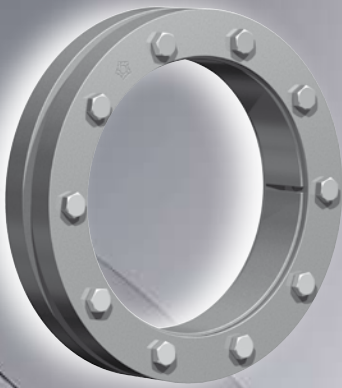
Shrink Disc® RINGFEDER® · Dimensions



Worm gear (metric example)

Size	Shrink Disc® dimensions											Transmissible torques or axial forces		P	σ <sub>v</sub>	Locking screws DIN EN ISO 4014-10.9		Weight	
	d <sub>w</sub>	C <sub>w</sub>	d	Ch	D	L <sub>1</sub>	L	d <sub>1</sub>	L <sub>2</sub>	l	T <sub>A</sub>	T	F <sub>ax</sub>			Quantity	Thread	WT	T <sub>max</sub>
	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	lb-ft	lb-ft	lbs	psi	n		lbs	lb-ft	
14	0.354	0.0007	0.551		1.339	0.551	0.472	0.945	0.197	0.354	1.8	6.6	562	28130	56405	3	M4x10	0.2	13
	15											1034	52345						26
	24											1619	59160						30
16	0.433	0.630			1.654	0.583	0.472	1.181	0.197	0.354	1.8	38	2226	38280	63800	4	M4x10	0.2	47
	0.512											30	1641						44950
20	0.551	0.787			1.850	0.689	0.551	1.339	0.236	0.394	2.2	46	2158	27985	46400	4	M5x12	0.3	58
	0.630											50	2360						46400
22	0.630	0.866	+0 -0.0013		1.969	0.728	0.591	1.457	0.256	0.394	2.2	69	2922	31755	49445	5	M5x12	0.4	87
	0.709											60	2473						42630
24	0.709	0.945			2.047	0.728	0.591	1.535	0.256	0.394	2.2	77	2922	29145	48430	5	M 5x12	0.4	97
	0.787											57	2158						39150
28	0.787	1.102			2.205	0.728	0.591	1.693	0.256	0.394	2.2	97	3035	24940	41905	5	M 5x12	0.4	122
	0.945											81	2473						35380
31	0.945	1.220			2.362	0.728	0.591	1.811	0.256	0.394	2.2	114	3147	22620	38280	5	M 5x12	0.4	142
	1.063											119	3147						33785
36	1.102	1.417			2.598	0.728	0.591	2.047	0.256	0.394	2.2	159	3709	23345	47560	6	M 5x12	0.5	198
	1.260											195	4496						47125
40	1.299	1.575	+0 -0.0015		2.677	0.728	0.591	2.165	0.256	0.394	3.0	236	5058	28130	48720	6	M 5x12	0.5	292
	1.378											295	5845						40310
46	1.496	1.811			3.150	0.886	0.748	2.480	0.315	0.551	3.0	406	7306	23200	47270	8	M 5x16	1.0	504
	1.654											325	5845						36105
51	1.654	2.008			3.386	0.886	0.748	2.697	0.315	0.551	3.0	406	6744	20880	37845	8	M 5x16	1.1	502
	1.772											413	6744						34945
56	1.811	2.205			3.583	0.886	0.748	2.874	0.315	0.551	3.0	524	7868	21460	37410	9	M 5x16	1.1	656
	1.969											524	7643						41325
61	2.047	2.402			3.780	0.886	0.748	3.031	0.315	0.551	3.0	524	7643	21895	41325	10	M 5x16	1.2	656
	2.205											671	8992						44805
66	2.283	2.598	+0 -0.0018		3.937	0.886	0.748	3.228	0.315	0.551	3	627	8205	20300	38570	10	M 5x16	1.3	789
	2.441											782	9554						44660
70	2.441	2.756			4.331	1.083	0.945	3.543	0.394	0.709	4.4	1040	12701	22185	40455	10	M5x20	2.1	1305
	2.559											1202	14050						46690
75	2.598	2.953			4.488	1.083	0.945	3.661	0.394	0.709	4.4	1092	12364	20590	37120	10	M5x20	2.1	1357
	2.756											1305	14162						43645
80	2.795	3.150			4.724	1.083	0.945	3.976	0.394	0.709	4.4	1475	15736	23345	39005	12	M5x20	2.3	1844
	2.953											1719	17422						47705
85	3.228	3.346			5.039	1.260	1.102	4.134	0.453	0.866	9	1748	17422	19865	35670	8	M6x25	3.1	2183
	3.150											2036	19333						45820
94	3.228	3.701	+0 -0.0021		5.512	1.260	1.102	4.685	0.453	0.866	9	1696	15624	17980	36685	8	M6x25	3.7	2117
	3.465											2154	18658						41905
105	3.622	4.134			5.906	1.260	1.102	5.039	0.453	0.866	9	2213	18209	18125	34655	9	M6x25	3.9	2766
	3.858											2714	21019						38570

To continue see next page



## Characteristics

**Ultra Light Duty Series** – this range is a very compact design with low inertia values. It is ideally suited for mechanical seal and small gearbox applications.

**Simplified manufacture** – only plain shaft and bore diameters with easily achieved surface finish and tolerances are required.

**Easy adjustability** – No stops, steps, keyways, splines etc. are required therefore hubs can be located and locked at any point or angle on the shaft.

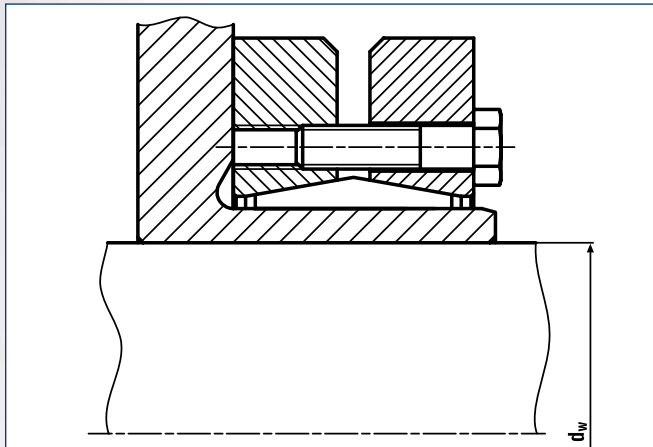
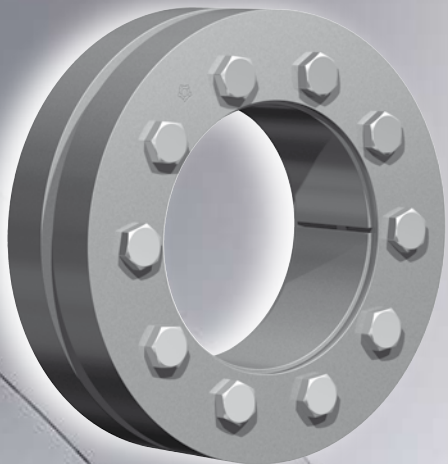
**Easy mounting** – RINGFEDER® Shrink Discs® use standard screws and tightened using standard tools. No additional machining or fitting work is required.

**Easy removal** – after loosening the locking screws, the RINGFEDER® Shrink Disc® will self release and the hub will move freely on the shaft.

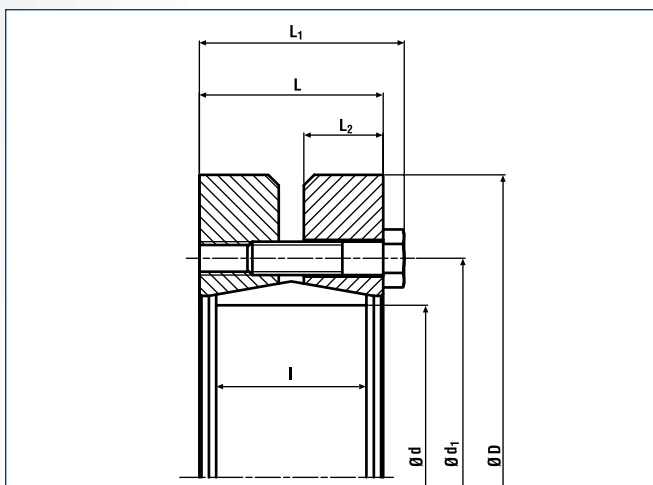
**Low susceptibility to contamination** – when the locking screws are tightened the contact (functional) surfaces are pressed firmly together and prevent contamination by dirt and moisture.

Size	Shrink Disc® dimensions											Transmissible torques or axial forces		P	$\sigma_v$	Locking screws DIN EN ISO 4014-10.9		Weight	
	$d_w$	Cw	d	Ch	D	L <sub>1</sub>	L	d1	L <sub>2</sub>	l	T <sub>A</sub>	T	F <sub>ax</sub>			Quantity	Thread	WT	T <sub>max</sub>
	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch		lb-ft	lb-ft	lbs	psi	n		lbs	lb-ft	
112	3.937	0.0019	4.409	+0	6.220	1.260	1.102	5.315	0.453	0.866	9	2500	18996	16965	32625	9	M6x25	4.2	3127
	-0.0021			3024								21581	38280						3776
120	4.173	4.724	5.118	+0	6.457	1.417	1.260	5.551	0.512	0.984	9	2876	20569	15515	30160	10	M6x25	4.9	3592
	-0.0025											3444	23379						33350
130	4.409	5.118	5.512	+0	6.772	1.417	1.260	5.945	0.512	0.984	9	3135	22255	14355	27695	10	M6x25	4.9	3924
	-0.0025											3762	23379						32625
140	4.173	0.0027	5.512	+0	7.165	1.417	1.260	6.339	0.512	0.984	9	4197	30348	15950	30160	12	M 6x25	5.3	5244
	-0.0025			4757								27875	31900						5945
150	4.921	5.906	6.299	+0	7.638	1.417	1.260	6.732	0.512	0.984	9	4632	26077	14935	28130	12	M6x25	6.0	5782
	-0.0025											5200	28100						29870
160	5.315	6.299	8.031	+0	8.031	1.417	1.260	7.126	0.512	0.984	9	4691	24953	13920	25955	12	M6x25	6.2	5856
	-0.0025											5355	27426						27115

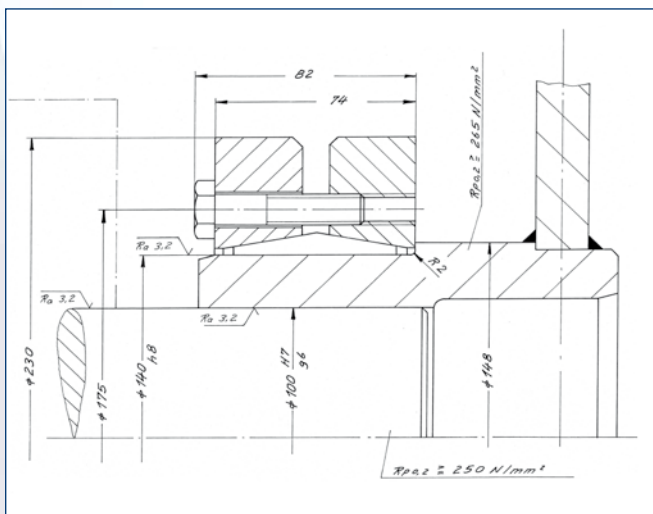
More sizes on request



Shrink Disc® RINGFEDER® RfN 4091 · Location



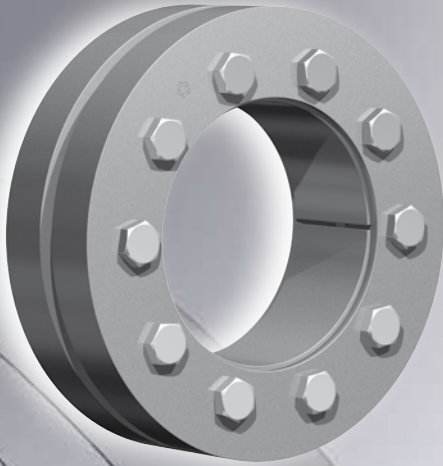
Shrink Disc® RINGFEDER® RfN 4091 · Dimensions



Lever · metric example







### Characteristics

**Highest transmission values** – for heavy duty applications.

**Simplified manufacture** – only plain shaft and bore diameters with easily achieved surface finish and tolerances are required.

**Easy adjustability** – No stops, steps, keyways, splines etc. are required therefore hubs can be located and locked at any point or angle on the shaft.

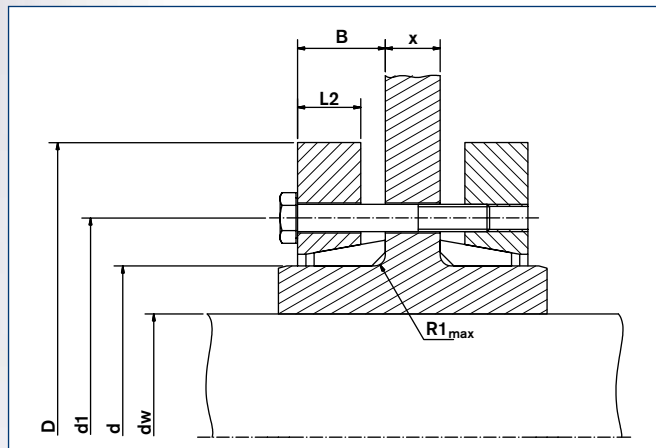
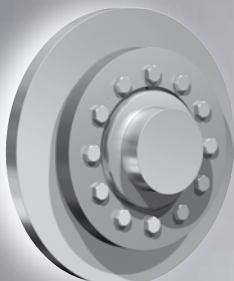
**Easy mounting** – RINGFEDER® Shrink Discs® use standard screws and tightened using standard tools. No additional machining or fitting work is required.

**Easy removal** – after loosening the locking screws, the RINGFEDER® Shrink Disc® will self release and the hub will move freely on the shaft.

**Low susceptibility to contamination** – when the locking screws are tightened the contact (functional) surfaces are pressed firmly together and prevent contamination by dirt and moisture.

**Highest reliability** – due to the materials chosen and manufacturing processes used, RINGFEDER® Shrink Discs® can be tightened and released as often as required. If locking screws need replacing, they are standard items and thus easily available.





Shrink Disc® RINGFEDER® RfN 4091 · Location

### Split Shrink Discs®

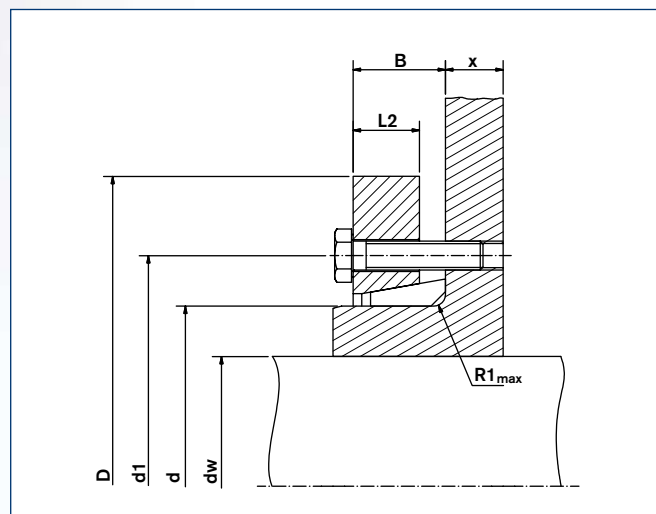
In the application shown above special screws according to the dimension X are required, which have to be ordered accordingly. If the dimension X is above  $2 \times L$  (L taken from the Standard and the Light Duty Series) or above  $1 \times L$  (taken from the Heavy Duty Series) the transmissible torque may be reduced by up to 50%.

### Half Shrink Discs®

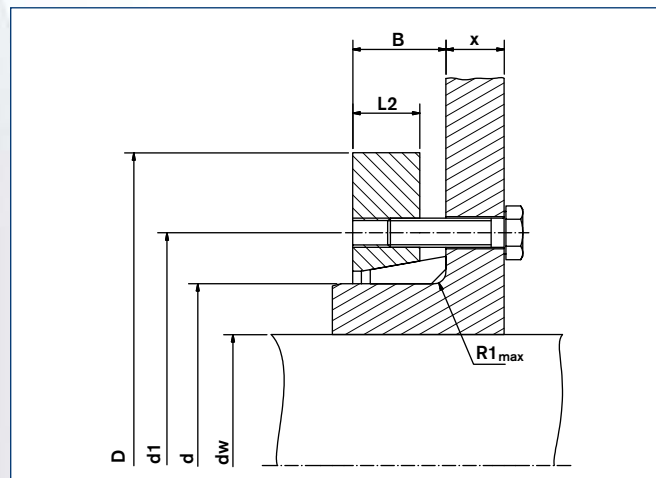
With half shrink discs® HC/HT only 50% of stated T is transmitted.

type HT (Threaded holes in thrust ring)

type HC (Clearance holes in thrust ring)



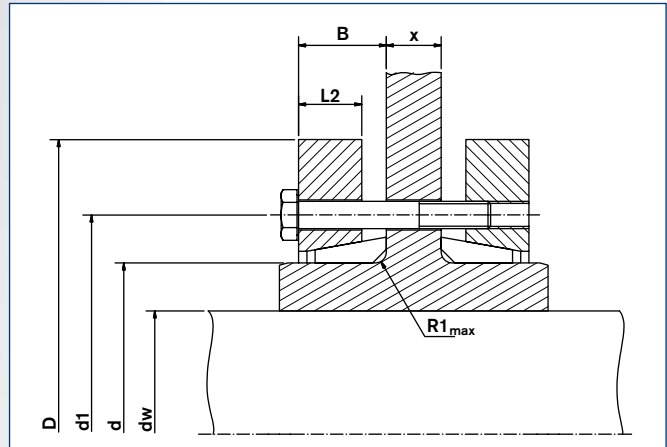
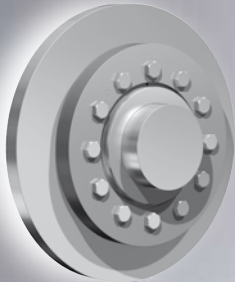
Shrink Disc® RINGFEDER® RfN 4091 HC · Dimensions



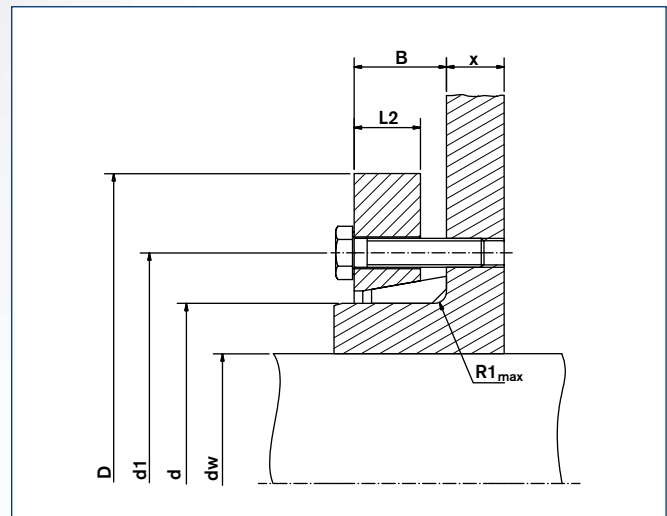
Shrink Disc® RINGFEDER® RfN 4091 HT

Size									T <sub>A</sub>	Transmissible torques or axial forces		Locking screws DIN EN ISO 4014-10.9		Weight
d <sub>w</sub>	C <sub>w</sub>	d	Ch	D	D <sub>1</sub>	B±0.039	R1 max.	T		F <sub>ax</sub>	Quantity	Thread	WT	
Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	lb-ft		lb-ft	lbs	n		lbs
50	1.496	0.0013	1.969	+0 -0.0015	3.740	2.874	0.906	0.071	18	1328	23829	7	M8	3.1
	1.654									1770	27875			
55	1.654	0.0013	2.165		4.134	3.071	0.906	0.071	21	1660	27426	7	M8	3.7
	1.890									2360	33270			
62	1.890	0.0013	2.441		4.528	3.346	0.906	0.071	22	2176	30123	7	M8	4.4
	2.047									2655	32596			
68	1.969	0.0018	2.677	+0 -0.0018	4.724	3.622	0.906	0.071	22	2360	32596	8	M8	4.6
	2.283									3835	40914			
75	2.165	0.0019	2.953		5.709	4.134	1.063	0.110	44	3172	43386	7	M10	8.4
	2.559									516	55975			
80	2.362	0.0019	3.150		5.709	4.134	1.063	0.110	44	4204	44960	7	M10	7.9
	2.756									6196	56874			
90	2.559	0.0019	3.543		6.299	4.567	1.142	0.110	44	4942	48782	8	M10	11
	2.953									7081	60471			
100	2.756	0.0021	3.937	+0 -0.0021	6.693	4.961	1.260	0.130	44	6491	59572	10	M10	12
	3.150									8998	72161			
110	2.953	0.0027	4.331		7.283	5.433	1.378	0.130	44	8113	69238	12	M10	17
	3.346									10842	79130			
125	3.346	0.0027	4.921		8.465	6.299	1.476	0.130	74	11063	79804	10	M12	24
	3.740									14751	94866			
135	3.543	0.0027	5.315		8.346	6.693	1.772	0.189	74	12391	94416	12	M12	23
	4.134									18365	119144			
140	3.740	0.0027	5.512		9.055	6.890	1.654	0.189	74	15194	97338	12	M12	29
	4.134									19545	112400			
140	3.543	0.0027	5.512		11.969	7.283	2.126	0.189	184	29355	198948	12	M16	77
	4.331									46909	258520			
155	4.134	0.0025	6.102	+0 -0.0025	10.354	7.795	1.772	0.189	74	19914	122741	15	M12	43
	4.528									25077	140275			
165	4.528	0.0027	6.496		11.417	8.268	1.929	0.189	184	30240	166352	10	M16	57
	4.921									37394	183212			
175	4.921	0.0031	6.890		11.811	8.661	1.929	0.189	184	34665	168600	10	M16	64
	5.315									42041	188832			
175	4.921	0.0031	6.890		11.811	9.252	2.323	0.189	184	51629	260768	15	M16	81
	5.315									62693	289992			
185	5.315	0.0031	7.283		12.992	9.291	2.402	0.189	184	53104	247280	14	M16	104
	5.709									70806	269760			
190	5.315	0.0028	7.480	+0 -0.0028	13.780	9.843	2.441	0.189	347	66602	316743	12	M20	115
	6.102									91457	378788			
195	5.512	0.0028	7.677		13.780	9.685	2.500	0.189	184	55317	241660	14	M16	117
	6.102									70806	277628			

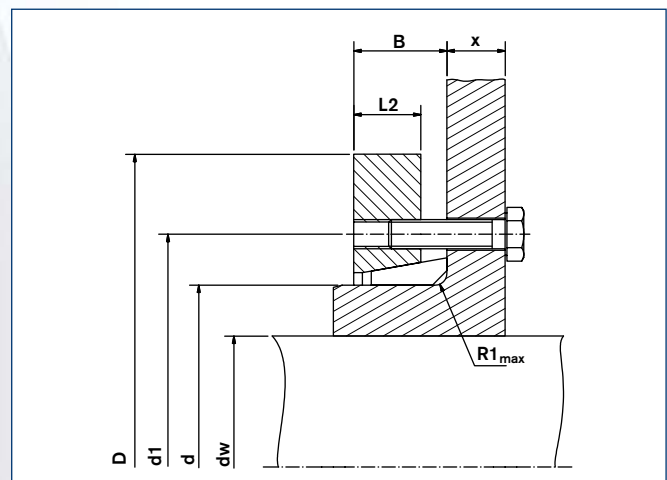
To continue see next page



Shrink Disc® RINGFEDER® RfN 4091 · Location

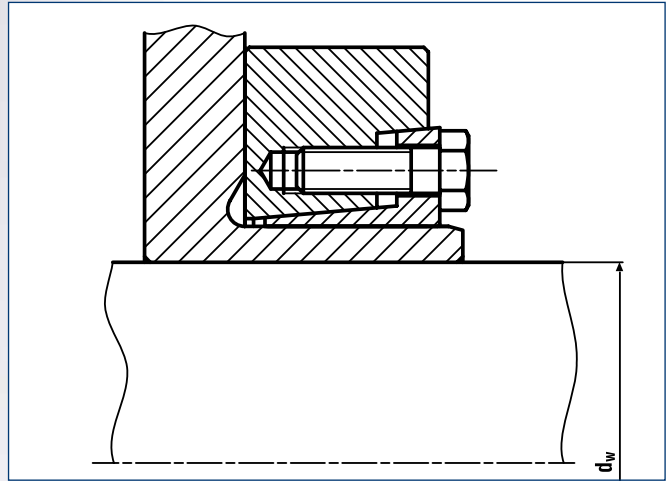
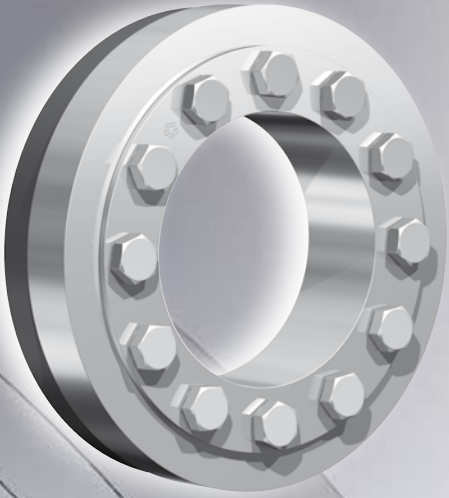


Shrink Disc® RINGFEDER® RfN 4091 HC · Dimensions

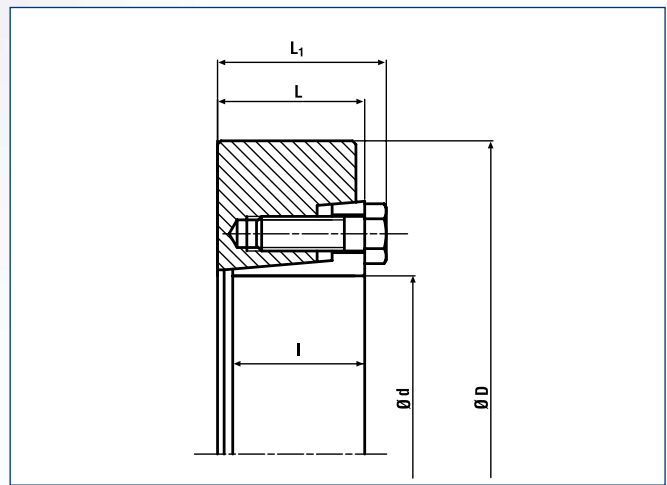


Shrink Disc® RINGFEDER® RfN 4091 HT

Size									T <sub>A</sub>	Transmissible torques or axial forces		Locking screws DIN EN ISO 4014-10.9		Weight
d <sub>w</sub>	C <sub>w</sub>	d	Ch	D	D <sub>1</sub>	B±0.039	R1 max.	T		F <sub>ax</sub>	Quantity	Thread	WT	
Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	lb-ft		lb-ft lbs	n		lbs	
200	5.709	0.0031	7.874	+0 -0.0028	13.780	9.685	2.500	0.189	184	62693	263016	15	M16	110
	6.102									73756	289992			
	6.299									93670	357432			
220	6.693	0.0031	8.661	+0 -0.0028	14.567	10.630	2.933	0.252	184	108053	386656	20	M16	143
	6.693									114322	409136			
240	7.480	0.0031	9.449	+0 -0.0028	15.945	11.614	3.130	0.252	361	146037	467584	15	M20	192
	7.480									157100	508048			
260	8.268	0.0035	10.236	+0 -0.0032	16.929	12.638	3.445	0.252	361	197666	579984	18	M20	221
	8.268									210205	615952			
280	9.055	0.0035	11.024	+0 -0.0032	18.110	13.622	3.780	0.331	361	261834	694632	21	M20	291
	9.055									251508	665408			
300	9.646	0.0035	11.811	+0 -0.0032	19.094	14.331	3.858	0.331	361	290599	722732	22	M20	309
	9.449									278798	708120			
320	10.236	0.0040	12.598	+0 -0.0035	20.472	15.197	4.016	0.331	361	332640	780056	24	M20	364
	9.843									361036	878968			
340	10.630	0.0040	13.386	+0 -0.0035	22.441	16.535	4.331	0.331	620	426310	961020	21	M24	529
	10.630									410083	926626			
350	11.220	0.0040	13.780	+0 -0.0035	22.835	16.732	4.331	0.331	620	463925	992492	21	M24	545
	11.024									451387	982376			
360	11.614	0.0040	14.173	+0 -0.0035	23.228	17.008	4.508	0.390	620	508179	1049816	22	M24	551
	11.417									455812	959896			
380	12.205	0.0040	14.961	+0 -0.0035	25.394	18.031	4.508	0.390	620	530306	1044196	22	M24	706
	11.811									522192	1059932			
390	12.598	0.0040	15.354	+0 -0.0035	25.984	18.425	4.665	0.390	620	600743	1144232	24	M24	772
	12.402									564233	1091404			
400	12.992	0.0044	15.748	+0 -0.0038	26.772	18.898	4.665	0.390	620	623238	1152100	24	M24	816
	12.992									736822	1361164			
420	13.780	0.0044	16.535	+0 -0.0038	27.165	19.843	5.177	0.390	620	840818	1464572	30	M24	904
	13.386									780338	1400504			
440	14.173	0.0044	17.323	+0 -0.0038	29.528	20.748	5.453	0.390	922	888022	1503912	24	M27	1191
	14.173									973579	1672512			
460	14.961	0.0044	18.110	+0 -0.0038	30.315	21.535	5.551	0.488	922	1106340	1787160	28	M27	1191
	14.961									1132155	1816384			
480	15.748	0.0048	18.898	+0 -0.0038	31.496	22.835	5.984	0.488	922	1268603	1933280	30	M27	1433
	15.748									1290730	1967000			
500	16.535	0.0048	19.685	+0 -0.0038	33.465	23.622	5.984	0.488	922	1430866	2079400	32	M27	1654



Shrink Disc® RINGFEDER® RfN 4161 · Location

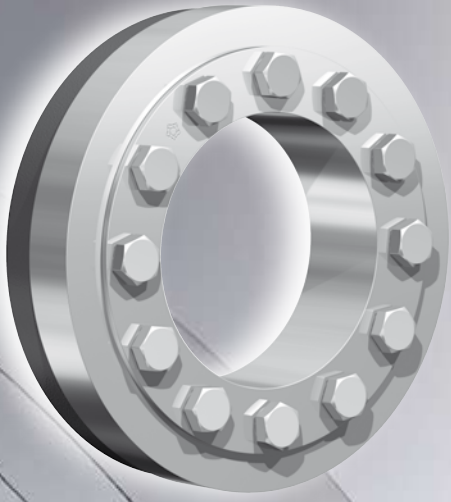


Shrink Disc® RINGFEDER® RfN 4161 · Dimensions



Size	Shrink Disc® dimensions									Transmissible torques or axial forces			Weight		
	d <sub>w</sub>	C <sub>w</sub>	d	Ch	D	L <sub>1</sub>	L	I	T <sub>A</sub>	T	F <sub>ax</sub>	Thread	WT	T <sub>max</sub>	
	mm	Inch	Inch	Inch	Inch	Inch	Inch	Inch	lb-ft	lb-ft	lbs		lbs	lb-ft	
18	0.591	+0 -0.0013	0.71	0.0010	1.73	0.75	0.59	0.53	9	59	2473	M6	0.2	89	
	0.630									81	3147				
20	0.669		0.79		1.85	0.75	0.59	0.53	9	9	111	4047	M6	0.2	122
	0.709										133	4496			
24	0.748		0.94		1.97	0.87	0.71	0.59	9	9	122	3822	M6	0.4	134
	0.866										218	6070			
26	0.787		1.02		2.03	0.87	0.71	0.59	9	9	170	5171	M6	0.4	187
	0.945										258	6520			
30	0.945		1.18		2.36	0.94	0.79	0.67	9	9	273	6969	M6	0.7	300
	1.024										347	8094			
36	1.063	+0 -0.0015	1.42	0.0020	2.83	1.08	0.87	0.75	22	354	8094	M8	1.1	389	
	1.299									634	11691				
38	1.063		1.50		2.83	1.08	0.87	0.75	22	22	354	8094	M8	1.1	389
	1.299										634	11691			
40	1.339		1.57		3.15	1.16	0.94	0.81	22	22	597	10791	M8	1.3	657
	1.457										708	11691			
44	1.378		1.73		3.15	1.16	0.94	0.81	22	22	597	10342	M8	1.3	657
	1.457										708	11691			
50	1.496		1.97		3.54	1.24	1.02	0.87	22	22	848	13714	M8	1.8	933
	1.654										1121	16187			
55	1.654	2.17	3.94	1.36	1.14	0.96	22	22	959	13939	M8	2.4	1055		
	1.890								1402	17761					
60	1.890	2.36	4.33	1.36	1.14	0.96	22	22	1254	15962	M8	2.9	1379		
	2.047								1593	18660					
62	1.890	2.44	4.33	1.36	1.14	0.96	22	22	1254	15962	M8	2.9	1379		
	2.047								1593	18660					
68	1.969	+0 -0.0018	2.68	0.0023	4.53	1.38	1.16	0.96	22	1402	17086	M8	2.9	1542	
	2.362									2324	23606				
75	2.165		2.95		5.43	1.50	1.22	0.98	44	44	1992	22032	M10	5.1	2191
	2.559										3024	28327			
80	2.362		3.15		5.55	1.50	1.22	0.98	44	44	2434	24730	M10	5.1	2678
	2.756										3651	31700			
85	2.559		3.35		6.10	1.77	1.50	1.34	44	44	4057	37995	M10	7.1	4463
	2.953										5827	47437			
90	2.559		3.54		6.10	1.77	1.50	1.24	44	44	4057	37995	M10	7.1	4463
	2.953										5827	47437			
95	2.756	3.74	6.69	1.99	1.71	1.44	44	44	4573	39793	M10	9.5	5031		
	3.150								6344	48336					
100	2.756	3.94	6.69	1.99	1.71	1.44	44	44	7745	39793	M10	9.5	5031		
	3.150								10106	48336					

To continue see next page



## Characteristics

**Standard series** – this range is the most popular, being used in most applications. High transmission values are possible, and by varying the screw tightening torque the Shrink Disc® can be adapted to the design specification.

**Simplified manufacture** – only plain shaft and bore diameters with easily achieved surface finish and tolerances are required.

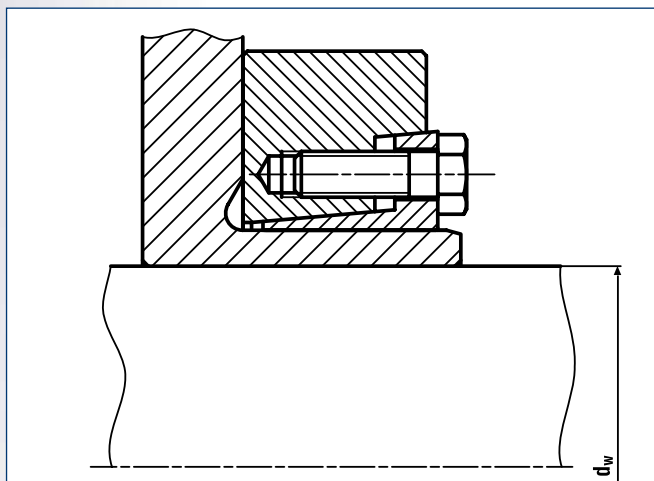
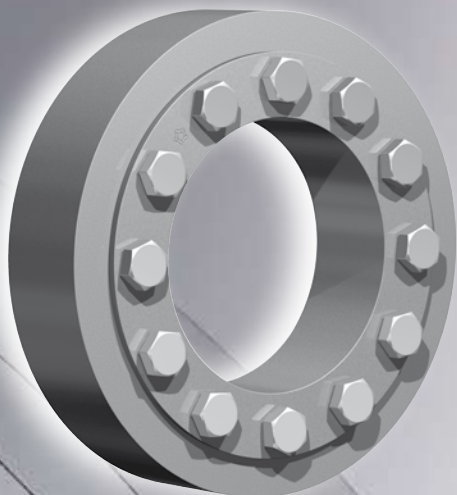
**Easy adjustability** – No stops, steps, keyways, splines etc. are required, therefore hubs can be located and locked at any point or angle on the shaft.

**Easy mounting** – RINGFEDER® Shrink Discs® use standard screws and tightened using standard tools. No additional machining or fitting work is required.

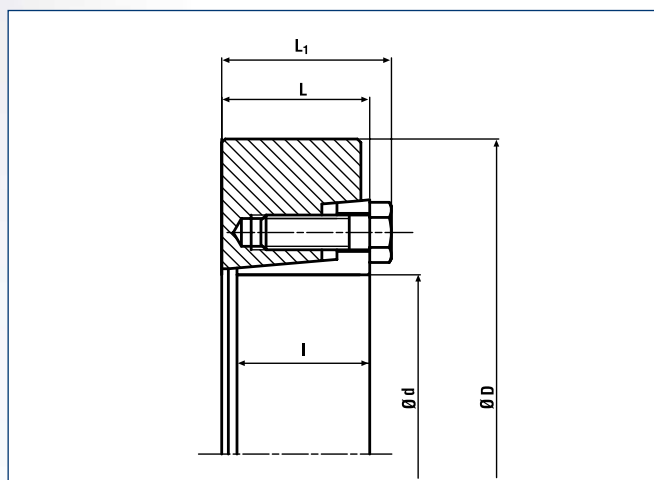
**Easy removal** – after loosening the locking screws, the RINGFEDER® Shrink Disc® will self release and the hub will move freely on the shaft.

**Low susceptibility to contamination** – when the locking screws are tightened the contact (functional) surfaces are pressed firmly together and contamination by dirt and moisture.

Size	Shrink Disc® dimensions									Transmissible torques or axial forces			Weight	
	d <sub>w</sub>	C <sub>w</sub>	d	Ch	D	L <sub>1</sub>	L	I	T <sub>A</sub>	T	F <sub>ax</sub>	Thread	WT	T <sub>max</sub>
	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	lb-ft	lb-ft	lbs		lbs	lb-ft
105	3.150	+0 -0.0021	4.13	0.0027	7.28	2.24	1.93	1.59	74	7745	59128	M12	13	8520
	3.543									10106	68345			11116
110	3.150	+0 -0.0021	4.33	0.0027	7.28	2.24	1.93	1.59	74	7745	59128	M12	13	8520
	3.543									10106	68345			11116
115	3.346	+0 -0.0025	4.53	0.0027	7.76	2.40	2.09	1.77	74	9220	59128	M12	15	10142
	3.740									11802	68345			12982
120	3.346	+0 -0.0025	4.72	0.0027	7.76	2.40	2.09	1.77	74	9220	66097	M12	15	10142
	3.740									11802	75764			12982
125	3.543	+0 -0.0025	4.92	0.0027	8.46	2.42	2.11	1.77	74	10696	72392	M12	19	11765
	3.937									13868	84532			15254
130	3.740	+0 -0.0025	5.12	0.0027	9.06	2.62	2.26	1.85	118	13572	87005	M14	24	14930
	4.331									19326	107014			21259
135	3.740	+0 -0.0025	5.31	0.0027	9.06	2.62	2.26	1.85	118	13572	87005	M14	24	14930
	4.331									19326	107014			21259
140	3.937	+0 -0.0025	5.51	0.0027	9.06	2.64	2.28	1.85	118	14679	89478	M14	23	16147
	4.528									20506	108588			22557
150	4.331	+0 -0.0025	5.91	0.0027	10.35	2.83	2.48	2.01	118	19916	110387	M14	34	21908
	4.921									26702	130171			29373
155	4.331	+0 -0.0025	6.10	0.0027	10.35	2.83	2.48	2.01	118	19916	110387	M14	34	21908
	4.921									26702	130171			29373
160	4.724	+0 -0.0028	6.30	0.0031	11.42	3.11	2.68	2.20	184	28768	146133	M16	47	31645
	5.315									37619	169964			41381
165	4.724	+0 -0.0028	6.50	0.0031	11.42	3.11	2.68	2.20	184	28768	146133	M16	47	31645
	5.315									37619	169964			41381
170	5.118	+0 -0.0028	6.69	0.0031	11.81	3.15	2.72	2.20	184	34300	160746	M16	50	37730
	5.709									43520	183004			47873
175	5.118	+0 -0.0028	6.89	0.0031	11.81	3.15	2.72	2.20	184	34300	160746	M16	50	37730
	5.709									43520	183004			47873
180	5.512	+0 -0.0028	7.09	0.0031	12.60	3.80	3.37	2.81	184	48684	212005	M16	72	53552
	6.102									61224	240782			67346
185	5.512	+0 -0.0028	7.28	0.0031	12.60	3.80	3.37	2.81	184	48684	212005	M16	72	53552
	6.102									61224	240782			67346
190	5.906	+0 -0.0028	7.48	0.0031	13.39	3.80	3.37	2.81	184	60486	245728	M16	82	66535
	6.496									75239	277878			82763
195	5.906	+0 -0.0028	7.68	0.0031	13.39	3.80	3.37	2.81	184	60486	245728	M16	80	66535
	6.496									75239	277878			82763
200	5.906	+0 -0.0028	7.87	0.0031	13.39	3.80	3.37	2.81	184	60486	245728	M16	80	66535
	6.496									75239	277878			82763



Shrink Disc® RINGFEDER® RfN 4171 · Location



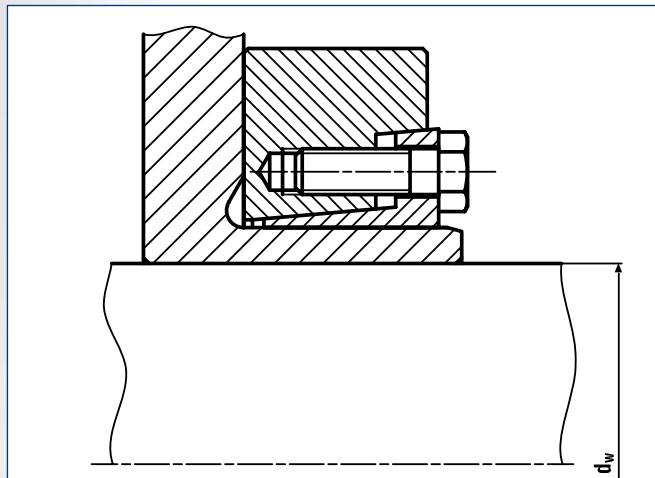
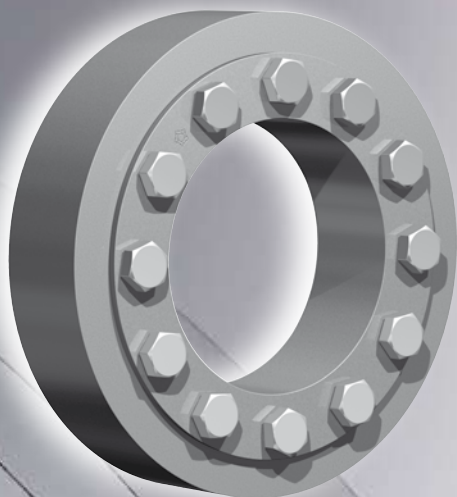
Shrink Disc® RINGFEDER® RfN 4171 · Dimensions



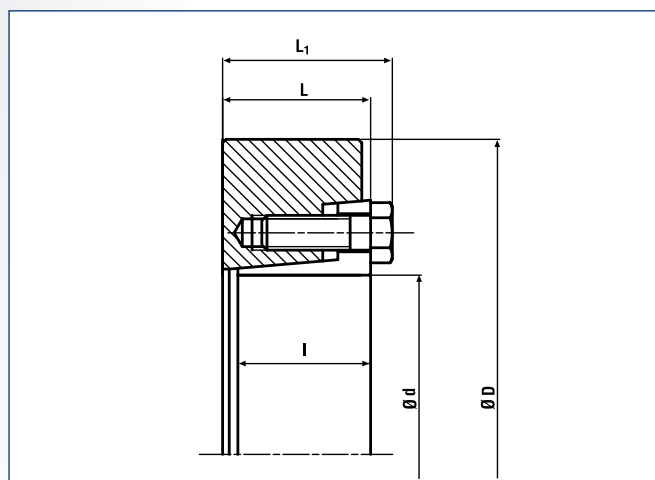
Wind turbine

Shrink Disk dimensions						T <sub>A</sub>	Transmissible torques or axial forces		Locking screws 12.9	Weight	T <sub>max</sub>
d	dw	D	L <sub>1</sub>	L	I		T	F <sub>ax</sub>			
mm	Inch					lb-ft	lb-ft	lbs	lbs	lb-ft	
18	0.591 0.630	1.73	0.75	0.59	0.53	9	59 81	2398 3091	M6	0.2	65 89
20	0.669 0.709	1.85	0.75	0.59	0.53	9	111 133	3968 4497	M6	0.2	122 146
24	0.748	1.97	0.87	0.71	0.59	9	122	3905	M6	0.4	134
26	0.866 0.787	2.03	0.87	0.71	0.59	9	218 170	6030 5171	M6	0.4	239 187
30	0.945 0.945	2.36	0.94	0.79	0.67	9	258 273	6558 6932	M6	0.7	284 300
36	1.024 1.063	2.83	1.08	0.87	0.75	22	347 354	8129 7994	M8	1.1	381 389
38	1.299 1.063	2.83	1.08	0.87	0.75	22	634 354	11718 7994	M8	1.1	698 389
40	1.299 1.339	3.15	1.16	0.94	0.81	22	634 597	11718 10713	M8	1.3	698 657
44	1.457 1.378	3.15	1.16	0.94	0.81	22	708 597	11667 10406	M8	1.3	779 657
50	1.457 1.496	3.54	1.24	1.02	0.87	22	708 848	11667 13608	M8	1.8	779 933
55	1.654 1.654	3.94	1.36	1.14	0.96	22	1121 959	16273 13918	M8	2.4	1233 1055
60	1.890 1.890	4.33	1.36	1.14	0.96	22	1402 1254	17799 15926	M8	2.9	1542 1379
62	2.047 1.890	4.33	1.36	1.14	0.96	22	1593 1254	18678 15926	M8	2.9	1753 1379
68	2.047 1.969	4.53	1.38	1.16	0.96	22	1593 1402	18678 17087	M8	2.9	1753 1542
75	2.362 2.165	5.43	1.50	1.22	0.98	44	2324 1992	23607 22074	M10	5.1	2556 2191
80	2.559 2.362	5.55	1.50	1.22	0.98	44	3024 2434	28363 24731	M10	5.1	3327 2678
85	2.756 2.559	6.10	1.77	1.50	1.34	44	3651 4057	31798 38048	M10	7.1	4016 4463
90	2.953 2.559	6.10	1.77	1.50	1.24	44	5827 4057	47364 38048	M10	7.1	6410 4463
95	2.953 2.756	6.69	1.99	1.71	1.44	44	5827 4573	47364 39827	M10	9.5	6410 5031
100	3.150 2.756	6.69	1.99	1.71	1.44	44	6344 4573	48339 39827	M10	9.5	6978 5031
105	3.150 3.150	7.28	2.24	1.93	1.59	74	6344 7745	48339 59018	M12	12.8	6978 8520
110	3.543 3.150	7.28	2.24	1.93	1.59	74	10106 7745	68449 59018	M12	12.8	11116 8520
115	3.543 3.346	7.76	2.40	2.09	1.77	74	10106 9220	68449 66127	M12	15.2	11116 10142
120	3.740 3.346	7.76	2.40	2.09	1.77	74	11802 9220	75733 66127	M12	15.2	12982 10142
125	3.740 3.543	8.46	2.42	2.11	1.77	74	11802 10696	75733 72446	M12	19.2	12982 11765
130	3.937 3.740	9.06	2.62	2.26	1.85	118	13868 13572	84536 87092	M14	23.8	15254 14930
135	4.331 3.740	9.06	2.62	2.26	1.85	118	19326 13572	107101 87092	M14	23.8	21259 14930
140	4.331 3.937	9.06	2.64	2.28	1.85	118	19326 14679	107101 89483	M14	22.7	21259 16147
140	4.528	9.06	2.64	2.28	1.85	118	20506	108701	M14	22.7	22557

To continue see next page

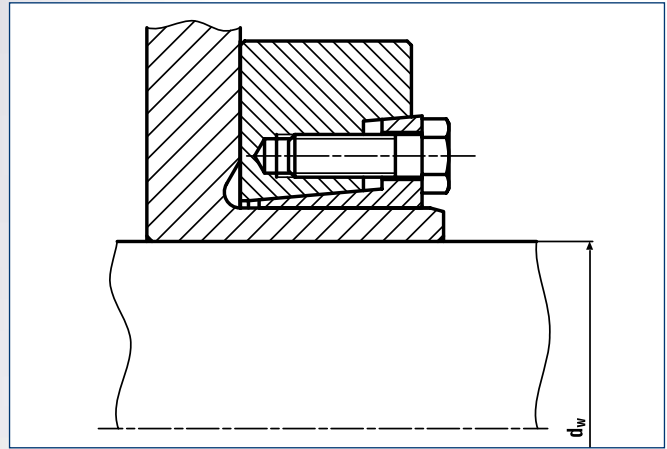
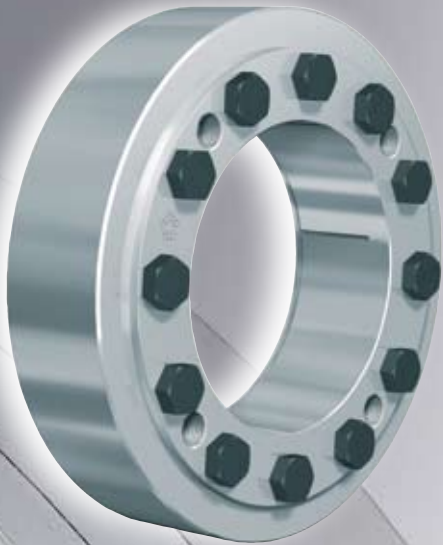


Shrink Disc® RINGFEDER® RfN 4171 · Location

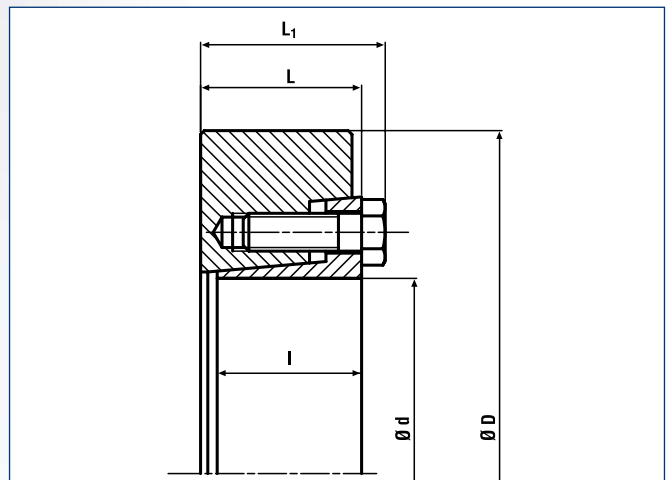


Shrink Disc® RINGFEDER® RfN 4171 · Dimensions

Shrink Disk dimensions						T <sub>A</sub>	Transmissible torques or axial forces		Locking screws 12.9	Weight	T <sub>max</sub>
d	dw	D	L <sub>1</sub>	L	I		T	F <sub>ax</sub>			
mm	Inch					lb-ft	lb-ft	lbs	lbs	lb-ft	
150	4.331	10.35	2.83	2.48	2.01	118	19916	110372	M14	33.5	21908
155	4.921	10.35	2.83	2.48	2.01	118	26702	130222	M14	33.5	29373
	4.331						19916	110372			21908
160	4.921	11.42	3.11	2.68	2.20	184	26702	130222	M16	47.4	29373
	4.724						28768	146140			31645
165	5.315	11.42	3.11	2.68	2.20	184	37619	169872	M16	47.4	41381
	4.724						28768	146140			31645
170	5.315	11.81	3.15	2.72	2.20	184	37619	169872	M16	49.6	41381
	5.118						34300	160841			37730
175	5.709	11.81	3.15	2.72	2.20	184	43520	182966	M16	49.6	47873
	5.118						34300	160841			37730
180	5.709	12.60	3.80	3.37	2.81	184	43520	182966	M16	72	47873
	5.512						48684	211984			53552
185	6.102	12.60	3.80	3.37	2.81	184	61224	240787	M16	72	67346
	5.512						48684	211984			53552
190	6.102	13.39	3.80	3.37	2.81	184	61224	240787	M16	82	67346
	5.906						60486	245815			66535
195	6.496	13.39	3.80	3.37	2.81	184	75239	277973	M16	80	82763
	5.906						60486	245815			66535
200	6.496	13.39	3.80	3.37	2.81	184	75239	277973	M16	80	82763
	5.906						60486	245815			66535
220	6.496	14.57	4.65	4.13	3.46	354	75239	277973	M20	117	82763
	6.299						77452	295091			85197
240	7.087	15.94	4.80	4.29	3.62	354	101794	344741	M20	146	111973
	6.693						92204	330634			101425
260	7.874	16.93	5.24	4.72	4.06	354	134250	409193	M20	181	147675
	7.480						121710	390496			133881
280	8.661	18.11	5.83	5.31	4.49	354	175557	486453	M20	227	193113
	8.268						162280	471075			178508
300	9.449	19.09	6.18	5.59	4.80	627	221290	562078	M24	265	243420
	8.661						202850	562078			223135
320	9.843	20.47	6.18	5.59	4.80	627	268237	656507	M24	304	296160
	9.449						224979	571446			247477
340	10.630	22.44	6.73	6.14	5.28	627	295054	666166	M24	417	324559
	9.843						287678	701473			316445
350	11.024	22.83	7.01	6.42	5.51	627	376194	819028	M24	445	413813
	10.630						365129	824381			401642
360	11.417	23.23	7.09	6.50	5.51	627	431516	907077	M24	456	474668
	10.630						368817	832708			405699
380	11.811	25.20	7.20	6.50	5.67	922	468398	951785	M27	538	515238
	11.417						435205	914830			478725
390	12.205	25.59	7.24	6.57	5.67	922	505280	993608	M27	549	555808
	11.417						479463	1007864			527409
400	12.598	25.98	7.99	7.32	6.54	922	590108	1124156	M27	628	649119
	12.598						547325	1042654			602058
420	13.780	26.38	7.99	7.32	6.54	922	672723	1171691	M27	628	739995
	12.598						547325	1042654			602058
440	13.780	29.13	8.31	7.64	6.85	922	672723	1171691	M27	867	739995
	13.386						697065	1249796			766771
460	14.567	30.31	8.31	7.64	6.85	922	843117	1389092	M27	924	927428
	14.173						814349	1378964			895784
480	15.354	31.50	9.13	8.39	7.52	922	973678	1521934	M30	1085	1071046
	15.748						958925	1461402			1054818
500	16.929	33.46	9.13	8.39	7.52	922	1136695	1611464	M30	1250	1250365
	16.929						1103502	1564406			1213852
	18.110						1297500	1719469			1427250



Shrink Disc® RINGFEDER® RfN 4181 · Location



Shrink Disc® RINGFEDER® RfN 4181 · Dimensions



Wind turbine



Shrink Disk dimensions						T <sub>A</sub>	Transmissible torques or axial forces		Locking screws 12.9	Weight	T <sub>max</sub>
d	d <sub>w</sub>	D	L <sub>1</sub>	L	l		T	F <sub>ax</sub>			
mm	Inch					lb-ft	lb-ft	lbs	lbs	lb-ft	
50	1.496 1.654 1.654	3.54	1.24	1.02	0.87	26	1180 1475 1254	18933 21412 18201	M8	1.8	1298 1623 1379
55	1.890 1.890	3.94	1.36	1.14	0.96	26	1844 1697	23420 21546	M8	2.4	2028 1866
60	2.047 1.890	4.33	1.36	1.14	0.96	26	2139 1697	25077 21546	M8	2.9	2353 1866
62	2.047 1.969	4.33	1.36	1.14	0.96	26	2139 1770	25077 21584	M8	2.9	2353 1947
68	2.362 2.165	4.53	1.38	1.16	0.96	26	2951 2803	29977 31068	M10	2.9	3246 3083
75	2.559 2.362	5.43	1.50	1.22	0.98	52	4426 3172	41507 32226	M10	5.1	4868 3489
80	2.756 2.559	5.55	1.50	1.22	0.98	52	4795 4426	41754 41507	M10	5.1	5274 4868
85	2.953 2.559	6.10	1.77	1.50	1.24	52	6344 4426	51561 41507	M10	7.1	6978 4868
90	2.953 2.756	6.10	1.77	1.50	1.24	52	6344 5532	51561 48178	M10	7.1	6978 6085
95	3.150 2.756	6.69	1.99	1.71	1.44	52	7819 5532	59580 48178	M10	9.5	8601 6085
100	3.150 3.150	6.69	1.99	1.71	1.44	52	7819 9442	59580 71946	M10	9.5	8601 10386
105	3.543 3.150	7.28	2.24	1.93	1.59	89	12540 9442	84936 71946	M12	12.8	13794 10386
110	3.543 3.346	7.28	2.24	1.93	1.59	89	12540 10106	84936 72475	M12	12.8	13794 11116
115	3.740 3.346	7.76	2.40	2.09	1.77	89	13425 10106	86146 72475	M12	15.2	14767 11116
120	3.740 3.543	7.76	2.40	2.09	1.77	89	13425 12245	86146 82938	M12	15.2	14767 13469
125	3.937 3.740	8.46	2.42	2.11	1.77	89	15859 15122	96677 97032	M12	19.2	17445 16634
130	4.331 3.740	9.06	2.62	2.26	1.85	140	21760 15122	120591 97032	M14	23.8	23936 16634
135	4.331 3.937	9.06	2.62	2.26	1.85	140	21760 17334	120591 105671	M14	23.8	23936 19068
140	4.528 4.331	9.06	2.64	2.28	1.85	140	23973 23235	127078 128767	M14	22.7	26370 25559
150	4.921 4.331	10.35	2.83	2.48	2.01	140	31718 23235	154684 128767	M14	33.5	34890 25559
155	4.921 4.331	10.35	2.83	2.48	2.01	140	31718 23235	154684 128767	M14	33.5	34890 25559
160	4.921 4.724	11.42	3.11	2.68	2.20	214	31718 33194	154684 168623	M16	47.4	34890 36513
165	5.315 4.724	11.42	3.11	2.68	2.20	214	43520 33194	196519 168623	M16	47.4	47873 36513
170	5.315 5.118	11.42	3.11	2.68	2.20	214	43520 40570	196519 190242	M16	47.4	47873 44627
175	5.709 5.118	11.81	3.15	2.72	2.20	214	52372 40570	220179 190242	M16	49.6	57609 44627
180	5.709 5.512	11.81	3.15	2.72	2.20	214	52372 59748	220179 260162	M16	49.6	57609 65723
185	6.102 5.512	12.60	3.80	3.37	2.81	214	74501 59748	293006 260162	M16	72	81951 65723
190	6.102 5.906	12.60	3.80	3.37	2.81	214	74501 71551	293006 290782	M16	72	81951 78706
190	6.496	13.39	3.80	3.37	2.81	214	88516	327027	M16	80	97368

To continue see next page

## Characteristics

**Two part Shrink Disc® heavy duty series** – with additional guide mechanism for the inner ring. For the transmission of maximum torques.

**Highest reliability** – applicable for static, dynamic and impact loads.

**Simplified manufacture** – only plain shaft and bore diameters with easily achieved surface finish and tolerances are required.

**Fully replaceable** – the RINGFEDER® Shrink Discs® work without any positive locking.

**Visual check of the tightening status** – minimizing installation errors during assembly.

**Easy mounting** – RINGFEDER® Shrink Discs® use standard screws and tightened using standard tools. No additional machining or fitting work is required.

**Short assembly times** – cost savings particularly in the case of quantity production.

**Low susceptibility to contamination** – when the locking screws are tightened the contact (functional) surfaces are pressed firmly together and prevent contamination by dirt and moisture.

**Easy adjustability** – No stops, steps, key-ways, splines etc. are required therefore, hubs can be located and locked at any point or angle on the shaft.

Shrink Disk dimensions						T <sub>A</sub>	Transmissible torques or axial forces		Locking screws 12.9	Weight	T <sub>max</sub>
d	dw	D	L <sub>1</sub>	L	l		T	F <sub>ax</sub>			
mm			Inch			lb-ft	lb-ft	lbs	lbs	lb-ft	
	5.906						71551	290782		78706	
195	6.496 5.906	13.39	3.80	3.37	2.81	214	88516 71551	327027 290782	M16	80	97368 78706
200	6.496 6.299	13.39	3.80	3.37	2.81	214	88516 95893	327027 365351	M16	80	97368 105482
220	7.087 6.693	14.57	4.65	4.13	3.46	420	125398 112121	424681 402051	M20	117	137938 123333
240	7.874 7.480	15.94	4.80	4.29	3.62	420	161542 158592	492380 508828	M20	146	177696 174451
260	8.661 8.268	16.93	5.24	4.72	4.06	420	221290 208013	613176 603832	M20	181	243420 228814
280	9.449 8.661	18.11	5.83	5.31	4.49	420	280301 250796	711965 694933	M20	227	308331 275875
300	9.843 9.449	19.09	6.18	5.59	4.80	738	324559 302430	791406 768173	M24	265	357015 332673
320	10.630 9.843	20.47	6.18	5.59	4.80	738	390946 383570	882670 935297	M24	304	430041 421927
340	11.024 10.630	22.44	6.73	6.14	5.28	738	486839 435205	1059918 982595	M24	417	535523 478725
350	11.417 10.630	22.83	7.01	6.42	5.51	738	516344 464710	1085392 1049212	M24	417	567979 511181
360	11.811 11.417	23.23	7.09	6.50	5.51	738	590108 516344	1199099 1085392	M24	456	649119 567979
380	12.205 11.417	25.20	7.17	6.50	5.67	1070	612237 582732	1203934 1224942	M27	518	673461 641005
390	12.598 11.811	25.59	7.24	6.57	5.67	1070	722882 590108	1377091 1199099	M27	549	795170 649119
400	12.598 12.598	25.98	7.99	7.32	6.61	1070	663871 714768	1264675 1361633	M27	562	730259 786245
420	13.780 13.386	26.38	7.99	7.32	6.61	1070	872622 894013	1519858 1602914	M27	628	959884 983415
440	14.567 14.173	29.13	8.31	7.64	6.77	1070	1076947 1027525	1774343 1739943	M27	867	1184642 1130278
460	15.354 14.961	30.31	8.31	7.64	6.77	1070	1224474 1222261	1913947 1960764	M27	924	1346921 1344487
480	16.142 15.748	31.50	9.13	8.39	7.40	1453	1442814 1391917	2145218 2121282	M30	1085	1587095 1531109
500	16.929	33.46	9.13	8.39	7.40	1453	1630911	2312100	M30	1250	1794002

**STAINLESS**



Shrink Discs®



**RfN 4071**  
Standard Series, stainless

## Characteristics

**Inexpensive manufacture** – The large tolerances that are possible and the simple turning process guarantee inexpensive manufacture.

**Simple installation** – Only a few screws need to be tightened, alignment to precise angles between the hub and shaft is possible in any position, no fitting work is required.

**Simple dismantling** – Locking Assemblies RINGFEDER® are fitted with threaded extraction holes, so that no additional auxiliary equipment is necessary, series RfN 7012 is self-releasing.

**Large constant reverse-torsion fatigue strength** – shaft and hub are ungrooved, so that there is no weakening of these components. Shaft and hub can be designed to be considerably smaller (lighter, cost and space-saving design possible).

**No danger of deflection** – Locking Assemblies RINGFEDER® are absolutely backlash-free.

**Effect similar to overload protection** – After the set frictional connection force has been exceeded the Locking Assemblies simply slide. Valuable machine parts are protected. The Locking Assemblies are subject to the same laws as any other connection with force transmission by friction - not suitable as sliding clutch.

**Completely maintenance-free** – no follow-up costs.

## Explanations to tables

$d, D, L, l, L_1, L_2, d_1$  = Basic dimensions

$d_w$  = solid shaft diameter (provided by the customer)

$T$  = transmissible torque

$F_{ax}$  = transmissible axial force

$p$  = approx. surface pressure on the hub extension (diameter  $d$ )

$T_A$  = required tightening torque per screw (Screws greased with molykote!)

$n$  = quantity of screws

$T_{max}$  = maximum theoretical transmissible torque

$C_w$  = shaft clearance

$Ch$  = Hub tolerance

$\sigma_v$  = calculated combined stress in the hub extension ( $d/d_w$ ) under consideration of the tangential, radial and torsional stresses following the equation:

$$\sigma_v = \sqrt{\frac{1}{2} [(\sigma_x - \sigma_y)^2 + (\sigma_y - \sigma_z)^2 + (\sigma_z - \sigma_x)^2] + 3\tau^2}$$

Additional loads, e.g. tension, thrust or bending have to be taken into consideration accordingly.

### Function values

The functional characteristics are valid with the screw tightening torque listed in the tables and the following assumed conditions:

The locking screws are lubricated using MoS<sub>2</sub> ( $\mu_{tot} = 0.1$ ).  
The tapered cones are lubricated using MoS<sub>2</sub> ( $\mu = 0.05$ ).  
The contact surfaces ( $d_w$ ) are in lightly oiled condition with coefficient of friction  $\mu = 0.12$ .

The hub and shaft materials have a modulus of elasticity of  $30 \times 10^6$  PSI. (Lower values result in increased values for  $T$  and  $F_{ax}$  with reduced tangential stress.)

The maximum clearance is being fully utilized.

The shaft being used is solid, for hollow shaft applications the functional values will change.

In cases where the assumed conditions do not apply then contact our Technical Department where we will be happy to assist you with your application.

## Characteristics

**Standard series** – this range is the most popular, being used in most applications. High transmission values are possible, and by varying the screw tightening torque the Shrink Disc® can be adapted to the design specification.

**Simplified manufacture** – only plain shaft and bore diameters with easily achieved surface finish and tolerances are required.

**Easy adjustability** – No stops, steps, keyways, splines etc. are required, therefore hubs can be located and locked at any point or angle on the shaft.

**Easy mounting** – RINGFEDER® Shrink Discs® use standard screws and tightened using standard tools. No additional machining or fitting work is required.

**Easy removal** – after loosening the locking screws, the RINGFEDER® Shrink Disc® will self release and the hub will move freely on the shaft.

**Low susceptibility to contamination** – when the locking screws are tightened the contact (functional) surfaces are pressed firmly together and prevent contamination by dirt and moisture.



STAINLESS

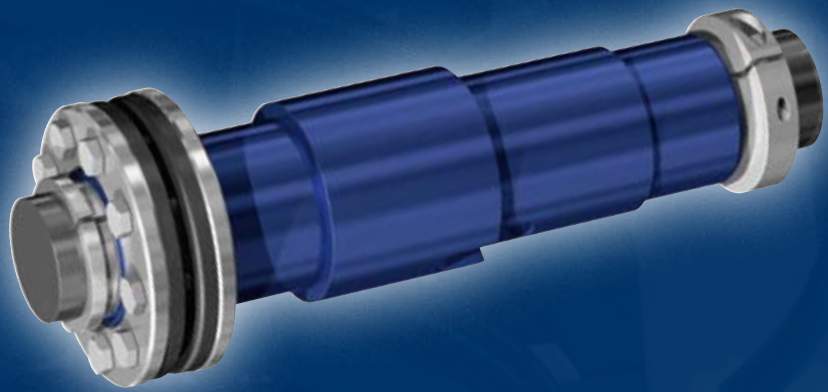


Size	Shrink Disc® dimensions											Transmissible torques or axial forces				Quantity	Locking screws DIN EN ISO A2-70		Weight	
	d <sub>w</sub>	C <sub>w</sub>	d	Ch	D	L <sub>1</sub>	L	d <sub>1</sub>	L <sub>2</sub>	l	T <sub>A</sub>	T	F <sub>ax</sub>	P	σ <sub>v</sub>		Thread	WT	T <sub>max</sub>	
	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	lb-ft	lb-ft	lbs	psi	n		lbs	lb-ft		
14	0.394	0.0007	0.551	+0 -0.0013	1.457	0.591	0.472	0.945	0.197	0.354	1.5	16	1124	33350	61190	3	M4x10	0.2	20	
	28											1798	76995	35						
	38											2473	62785	47						
16	0.472	0.0007	0.630	+0 -0.0013	1.614	0.728	0.591	1.063	0.246	0.472	3	59	3147	36250	99180	3	M5x12	0.2	74	
	66											3597	70035	83						
	95											4496	119190	119						
18	0.551	0.0007	0.709	+0 -0.0013	1.732	0.728	0.591	1.142	0.246	0.472	3	87	4496	48430	69455	5	M5x15	0.3	109	
	119											5395	94105	149						
	140											5620	63945	177						
20	0.630	0.0007	0.945	+0 -0.0013	1.969	0.906	0.768	1.417	0.315	0.591	3	184	6744	38715	91785	6	M5x18	0.4	229	
	236											7643	56115	295						
	295											8542	74240	369						
24	0.827	0.0013	1.181	+0 -0.0015	2.362	0.984	0.846	1.732	0.354	0.669	3	243	7194	35090	42775	7	M5x18	0.7	302	
	295											8542	74240	369						
	361											9442	43645	450						
30	1.024	0.0013	1.417	+0 -0.0015	2.835	1.083	0.925	2.047	0.394	0.709	6	354	8992	31030	51475	5	M6x20	0.9	443	
	413											9442	30160	509						
	450											9442	44370	561						
36	1.181	0.0013	1.496	+0 -0.0015	3.150	1.181	1.024	2.402	0.433	0.866	6	620	11690	31900	48140	7	M6x25	1.2	774	
	671											13488	49590	841						
	788											15736	55825	1099						
38	1.220	0.0013	1.732	+0 -0.0015	3.543	1.260	1.102	2.756	0.472	0.866	6	642	11690	32915	40745	9	M6x25	1.8	1099	
	937											14837	49155	1173						
	1210											19333	46835	1512						
44	1.260	0.0013	1.890	+0 -0.0018	4.331	1.378	1.220	3.386	0.512	0.906	6	1416	20682	33785	57275	12	M6x30	2.9	1770	
	833											12814	44515	1040						
	1460											11914	59160	1829						
48	1.417	0.0019	2.677	+0 -0.0018	5.433	1.496	1.280	3.937	0.551	0.984	15	1195	16635	26680	43355	7	M8x30	3.7	1497	
	1940											22705	47560	2427						
	1364											17310	40600	1704						
50	1.496	0.0019	2.953	+0 -0.0021	5.709	1.496	1.280	3.937	0.551	0.984	15	2124	23154	25085	44950	7	M8x30	4.2	2655	
	2058											24054	39875	2574						
	2552											27650	37265	3194						
55	1.654	0.0019	3.150	+0 -0.0021	6.102	1.752	1.535	4.488	0.669	1.181	15	3046	31022	26535	41905	10	M8x35	7.3	3806	
	2552											27650	37265	3194						
	3666											34844	37845	4580						
62	1.969	0.0019	3.543	+0 -0.0025	6.693	1.949	1.732	4.882	0.748	1.339	15	3201	32596	25230	35090	12	M8x35	10.4	4005	
	3201											32596	35090	4005						
	4492											40239	35235	5613						
68	2.362	0.0027	4.331	+0 -0.0025	7.283	2.244	1.969	5.354	0.866	1.535	30	4595	41138	24215	40745	9	M10x40	13.0	5746	
	4595											41138	40745	5746						
	6314											50805	26390	7892						
75	2.559	0.0027	4.921	+0 -0.0025	8.465	2.402	2.126	6.299	0.906	1.654	30	6314	50805	26390	40310	12	M10x40	18.3	7892	
	6314											50805	26390	7892						

More sizes on request

**RINGFEDER® Smart-Lock**





**Smart-Lock-Set RfN 4001**

## Smart-Lock-Set: the connection of the future

For the perfect hollow shaft connection, the solid shaft is always manufactured to a high degree of precision, normally with a dimensional tolerance of h6/H6. This close tolerance, high-finish shaft is inserted into the equally close tolerance hollow bore of the gearbox and secured in place by the compressive force of the Shrink Disc®. Only by maintaining the strict dimensional tolerances the full torque capacity can be reliability achieved.

Smart-Lock puts an end to all the precision machining involved and guarantees an optimum connection even with clearances up to 0.2 mm (0.008 inches).

The flexibility offered by using interchangeable bushings between the solid shaft and the hollow shaft of the gearbox makes the Smart-Lock-Set an invaluable aid to the marketplace. Thanks to the availability of shaft adapter bushings with various inside diameters, one gearbox can be used with a range of shaft sizes without a change out of the shaft or Shrink Disc®. The ease of selecting and using the Smart-Lock-Set is child's play.

The Smart-Lock-Set is an efficient design that makes economic sense to the user. Not only can it compensate for larger dimensional tolerances up to 0.2 mm (0.008 inches), it also offers significant cost savings by requiring a minimal number of spare parts needed in inventory. Furthermore, inexpensive, cold drawn, commercial available shafting up to quality grade h11 can be utilized without additional machining. The export market also benefits from using Smart-Lock-Set; adapter bushings in inch size standards are readily available from local inventories for countries that don't use metric measurements. Expensive specials and large spare part inventories are a thing of the past.

## Characteristics

Flexible, cost-saving, easy to maintain: Smart-Lock-Set is the new Shaft/Hollow Shaft connection from RINGFEDER®. Cylindrical Bushings allow the attachment of hollow shaft gear reducers and other hollow shaft connections to any metric and inch size solid shaft diameter.

- **Reliable:**

Tension-optimized and virtually indestructible Shrink Discs guarantee the highest possible degree of safety

- **Uncompromising:**

Cylindrical Bushings for a wide range of shaft diameters provide the perfect connection.

- **Economical:**

The Smart-Lock-Set requires minimal labor at installation and reduces spare part inventory costs up to 70 %.

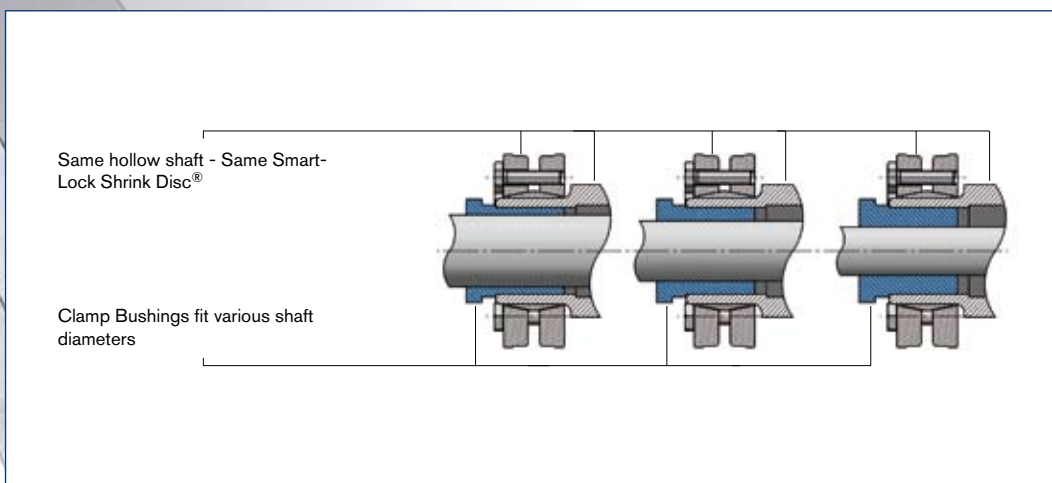
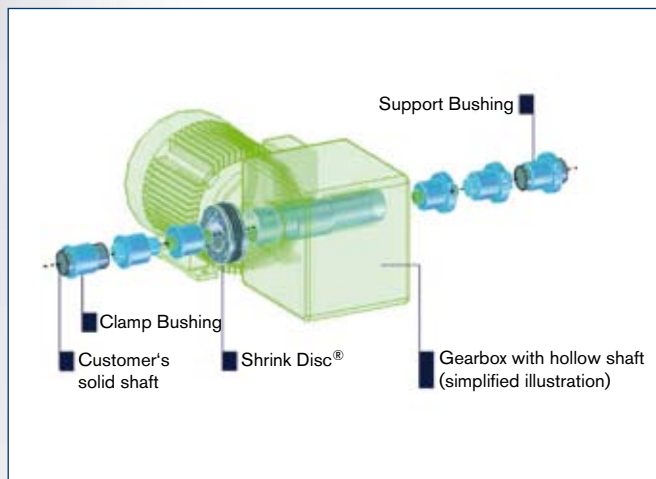
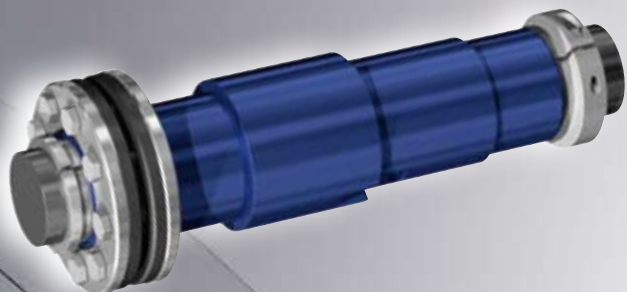
### Technical details of the Smart-Lock-Set

#### For Gearbox manufacturers:

- Eight standard sizes of adaptor bushings are available for hollow shaft outside diameters from 44 to 90 mm.
- The inside diameters are variable and accommodate the most common metric and inch size shaft sizes.
- Commercially available solid shafting without any machining can be used. Diameters from 25 to 70 mm are possible.

#### For users of Gearboxes:

- The torque to be transmitted is the criterion used to select the shaft diameter.
- The optimum shaft size for an individual gearbox can be used in connection with the Smart-Lock-Set.
- It is possible to standardize on a certain gearbox size for a range of shaft diameters. The results are lower costs for maintenance and spare parts.

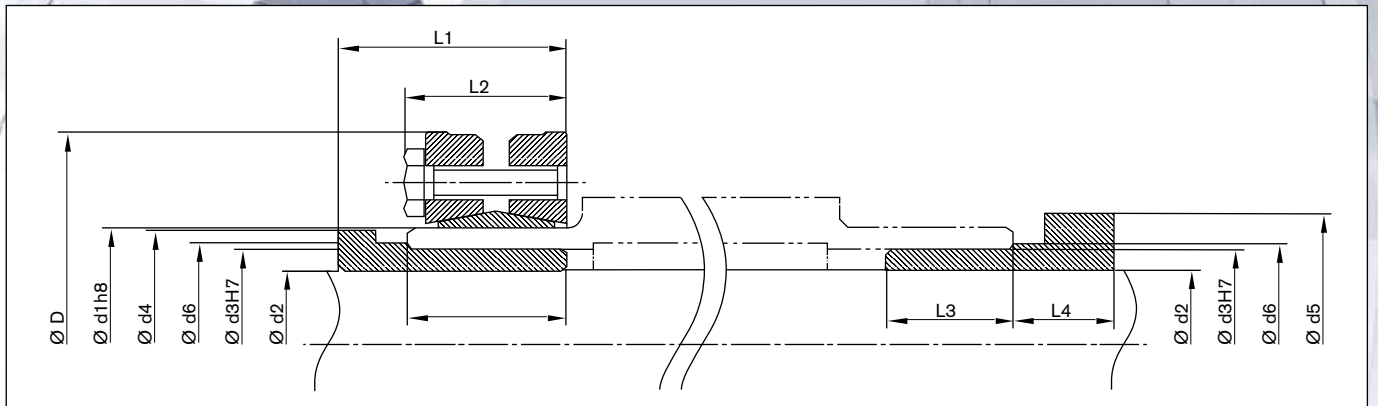


Larger dimensions available upon request. Technical data subject to change without notice. The Smart-Lock-Set is supplied with a RfN 4001 Shrink Disc® only. The bushings are only suitable for one-time use.

■ ■ ■ Transmissible torque without bushings in presence of  $d_3$  and  $d_2$  with identical diameter and clearance values as mentioned above, assuming dry contact surfaces.

dimensions											Max. allowable clearance	technical data heat-treated steel					
Ød 1	Ød 2	Ød 3	Ød 4	Ød 5	Ød 6	ØD	L1	L2	L3	L4		Transmissible torque		axial force	screws	tightening torque	Weight
mm/ in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.		in.	lb.-in.	lb.-ft.	F <sub>ax</sub> lbs	ISO 4014	T <sub>A</sub> lbs-ft
44 1.732	1 1 1/8 1 3/16 1 1/4	1.417	1.693	1.949	1.496	3.150	1.614	1.220	1.181	0.709	0.005	5222 5841 6019 6196	435 487 502 516	10566	M6	12	0.75
50 1.969	1 3/16 1 1/4 1 3/8 1 7/16	1.654	1.929	2.343	1.732	3.543	1.772	1.339	1.339	0.709	0.006	7612 8054 8851 9205	634 671 738 767	12814	M6	8.85	2.20
55 2.165	1 3/16 1 1/4 1 3/8 1 7/16 1 1/2	1.890	2.126	2.539	1.969	3.937	1.811	1.378	1.378	0.709	0.006	7966 8408 9293 9647 10090	664 701 774 804 841	13489	M6	8.85	2.87
62 2.441	1 3/8 1 7/16 1 1/2 1 5/8 1 3/4	2.047	2.362	2.736	2.126	4.331	1.850	1.417	1.417	0.109	0.006	14869 15622 16285 17613 18941	1239 1302 1357 1468 1578	21806	M6	8.85	3.31
68 2.441	1 5/8 1 3/4 1 15/16 2	2.362	2.638	2.933	2.441	4.528	1.890	1.457	1.457	0.709	0.006	17879 19295 21357 19560	1490 1608 1780 1630	22031 20008	M6	8.85	3.86
75 2.953	1 15/16 2	2.559	2.874	3.130	2.638	5.433	1.969	1.535	1.535	0.709	0.006 0.007	16374 16462	1364 1372	16861	M8	22.13	5.95
80 3.150	1 15/16 2 2 3/8 2 7/16	2.756	3.071	3.327	2.835	5.709	1.969	1.535	1.535	0.709	0.007	31155 29384 34872 35846	2596 2449 2906 2987	32148 31923	M8	22.13	6.39
90 3.543	2 3/8 2 7/16 2 3/4	2.953	3.465	3.524	3.031	6.102	2.244	1.811	1.811	0.709	0.007	42041 43192 48679	3503 3599 4057	35520	M8	22.13	8.60

Larger dimensions available upon request. Technical data subject to change without notice. The Smart-Lock-Set is supplied with a RfN 4061 Shrink Disc® only. The bushings are only suitable for one-time use.



Dimensions S.75



Shrink Discs®



Clamp bushing



Support bushing

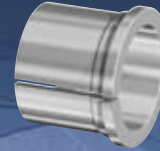
Smart-Lock-Set-Part numbers for metric size spare parts

Shrink Discs®	Ød 1	Ød 2	Ød 3	Clamp bushing	Support bushing
	mm	mm	mm	metric sizes	metric sizes
RfN 4001-44x80	44	25	36	44 K 25/36	44 S 25/36
		28		44 K 28/36	44 S 28/36
		30		44 K 30/36	44 S 30/36
		32		44 K 32/36	44 S 32/36
RfN 4001-50x90	50	30	42	50 K 30/42	50 S 30/42
		32		50 K 32/42	50 S 32/42
		35		50 K 35/42	50 S 35/42
		38		50 K 38/42	50 S 38/42
		40		50 K 40/42	50 S 40/42
RfN 4001-55x100	55	35	48	55 K 35/48	55 S 35/48
		38		55 K 38/48	55 S 38/48
		40		55 K 40/48	55 S 40/48
		42		55 K 42/48	55 S 42/48
		45		55 K 45/48	55 S 45/48
RfN 4001-62x110	62	40	52	62 K 40/52	62 S 40/52
		45		62 K 45/52	62 S 45/52
		48		62 K 48/52	62 S 48/52
		50		62 K 50/52	62 S 50/52
RfN 4001-68x115	68	40	60	68 K 40/60	68 S 40/60
		45		68 K 45/60	68 S 45/60
		48		68 K 48/60	68 S 48/60
		50		68 K 50/60	68 S 50/60
		55		68 K 55/60	68 S 55/60
RfN 4001-75x138	75	45	65	75 K 45/65	75 S 45/65
		48		75 K 48/65	75 S 48/65
		50		75 K 50/65	75 S 50/65
		55		75 K 55/65	75 S 55/65
		60		75 K 60/65	75 S 60/65
RfN 4001-80x145	80	45	70	80 K 45/70	80 S 45/70
		50		80 K 50/70	80 S 50/70
		55		80 K 55/70	80 S 55/70
		60		80 K 60/70	80 S 60/70
		65		80 K 65/70	80 S 65/70
RfN 4001-90x155	90	50	75	90 K 50/75	90 S 50/75
		55		90 K 55/75	90 S 55/75
		60		90 K 60/75	90 S 60/75
		65		90 K 65/75	90 S 65/75
		70		90 K 70/75	90 S 70/75

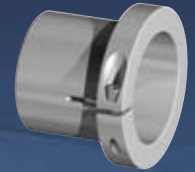




Shrink Discs®



Clamp bushing



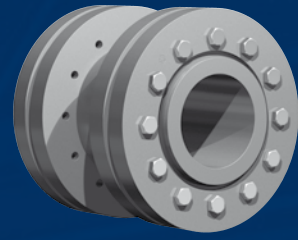
Support bushing

Smart-Lock-Set-Part numbers for metric size spare parts

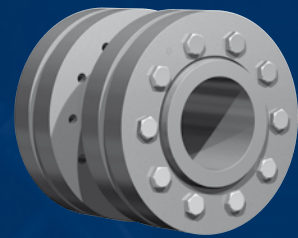
Shrink Discs®	Ød 1	Ød 2	Ød 3	Clamp bushing	Support bushing
	mm	inch	mm	inch sizes	inch sizes
RfN 4001-44x80	44	1.0	36	44 K 1.0/36	44 S 1.0/36
		1.125		44 K 1.125/36	44 S 1.125/36
		1.1875		44 K 1.1875/36	44 S 1.1875/36
		1.25		44 K 1.25/36	44 S 1.25/36
RfN 4001-50x90	50	1.1875	42	50 K 1.875/42	50 S 1.875/42
		1.25		50 K 1.25/42	50 S 1.25/42
		1.375		50 K 1.375/42	50 S 1.375/42
		1.4375		50 K 1.4375/42	50 S 1.4375/42
RfN 4001-55x100	55	1.1875	48	55 K 1.875/48	55 S 1.875/48
		1.25		55 K 1.25/4	55 S 1.875/48
		1.375		55 K 1.375/48	55 S 1.875/48
		1.4375		55 K 1.4375/48	55 S 1.875/48
RfN 4001-62x110	62	1.5	52	55 K 1.5/48	55 S 1.5/48
		1.375		62 K 1.375/52	62 S 1.375/52
		1.4375		62 K 1.4375/52	62 S 1.4375/52
		1.5		62 K 1.5/52	62 S 1.5/52
		1.625		62 K 1.625/52	62 S 1.625/52
RfN 4001-68x115	68	1.75	60	62 K 1.75/52	62 S 1.75/52
		1.9375		62 K 1.9375/52	62 S 1.9375/52
		1.625		68 K 1.625/60	68 S 1.625/60
		1.75		68 K 1.75/60	68 S 1.75/60
RfN 4001-75x138	75	1.9375	65	68 K 1.9375/60	68 S 1.9375/60
		2.0		68 K 2.0/60	68 S 2.0/60
		1.9375		75 K 1.9375/65	75 S 1.9375/65
RfN 4001-80x145	80	2.0	70	75 K 2.0/65	75 S 2.0/65
		2.375		80 K 1.9375/70	80 S 1.9375/70
		2.4375		80 K 2.0/70	80 S 2.0/70
		2.375		80 K 2.375/70	80 S 2.375/70
RfN 4001-90x155	90	2.4375	75	80 K 2.4375/70	80 S 2.4375/70
		2.75		90 K 2.375/75	90 S 2.375/75
		2.4375		90 K 2.4375/75	90 S 2.4375/75
				90 K 2.75/75	90 S 2.75/75

**RINGFEDER® Shaft Couplings**





**WK 5071**



**WK 5091**

## Characteristics

RINGFEDER rigid sleeve Couplings, type WK 5071 and WK 5091 have a proven track record in the industry. These Couplings are pre-engineered with RINGFEDER Shrink Discs® to connect two components rigidly and backlash free, when there is no misalignment between those components permitted.

Applications such as conveyor drives, ship drive shafts, line shafts in steel mills, etc., are ideal applications for the standard and heavy duty rigid sleeve Couplings.

Although our catalog shows some preselected standard length sleeve Couplings, our technical staff can custom make a design to fit your needs. We can provide special lengths, materials and versions for every need. Please contact the nearest RINGFEDER POWER TRANSMISSION OFFICE!

## Explanations to tables

d, D, L, l, L<sub>1</sub>, L<sub>2</sub>, d<sub>1</sub> = Basic dimensions

d<sub>w</sub> = solid shaft diameter (provided by the customer)

T = transmissible torque

F<sub>ax</sub> = transmissible axial force

p = approx. surface pressure on the hub extension (diameter d)

T<sub>A</sub> = required tightening torque per screw (Screws greased with molykote!)

n = quantity of screws

T<sub>max</sub> = maximum theoretical transmissible torque

C<sub>w</sub> = shaft clearance

LH = overall Coupling length

LD = overall Shrink Disc<sup>®</sup> width

σ<sub>v</sub> = calculated combined stress in the hub extension (d/d<sub>w</sub>) under consideration of the tangential, radial and torsional stresses following the equation:

$$\sigma_v = \sqrt{1/2 [(\sigma_x - \sigma_y)^2 + (\sigma_y - \sigma_z)^2 + (\sigma_z - \sigma_x)^2] + 3\tau^2}$$

Additional loads, e.g. tension, thrust or bending have to be taken into consideration accordingly.

### Function values

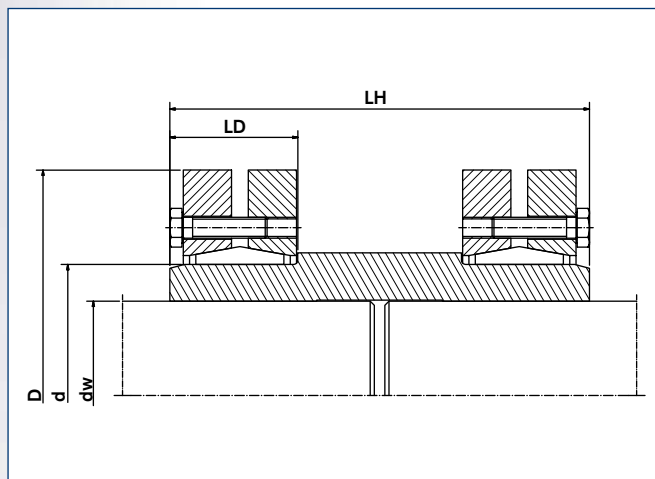
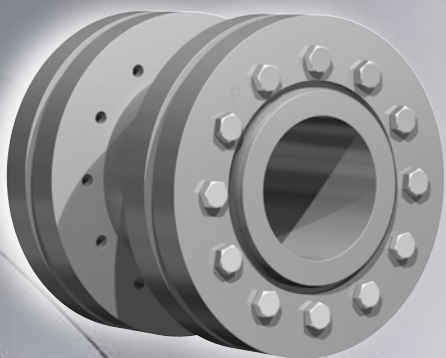
The functional characteristics are valid with the screw tightening torque listed in the tables and the following assumed conditions:

The locking screws are lubricated using MoS<sub>2</sub> (μ<sub>tot</sub> = 0.1). The tapered cones are lubricated using MoS<sub>2</sub> (μ = 0.05). The contact surfaces (d<sub>w</sub>) are in lightly oiled condition with coefficient of friction μ = 0.12.

The hub and shaft materials have a modulus of elasticity of 30 x 10<sup>6</sup> PSI. (Lower values result in increased values for T and Fax with reduced tangential stress.)

The maximum clearance is being fully utilized. The shaft being used is solid, for hollow shaft applications the functional values will change.

In cases where the assumed conditions do not apply then contact our Technical Department where we will be happy to assist you with your application.



### Explanations

- TA = tightening torque per screw (dG)
- T = transmissible torque
- Fax = transmissible axial force

Further hints, explanations and fundamentals of calculation may be taken from our Shrink Disc® catalog.

### Surface

For shaft diameter  $d_w$ :  
peak-to-valley height  $R_a \leq 125$  RMS.

Clearances considered for the calculation of the function values:

$d_w$		ISO	clearance $C_w$ INCH
above INCH	up to INCH		
0.236	0.394	H6/j6	0.0005
0.394	0.709		0.0007
0.709	1.181		0.0007
1.181	1.969	H6/h6	0.0013
1.969	3.150	H6/g6	0.0019
3.150	4.724	H7/g6	0.0027
4.724	7.087		0.0031
7.087	9.843		0.0035
9.843	12.402		0.0040
12.402	15.748		0.0044
15.748	19.685		0.0048

Size	Coupling dimensions							Transmissible torques or axial forces		
	$d_w$	$C_w$	$d$	$D$	$L_H$	$L_D$	$d_G$	$T_A$	$T$	$F_{ax}$
	Inch							lb-ft	lb-ft	lbs
20	0.591		0.787	1.811	1.772	0.827	M 5	3	81	4271
	0.669								112	5170
24	0.748	+0 -0.0007	0.945	1.969	1.969	0.906	M 5	3	125	5620
	0.827								184	6519
30	0.945		1.181	2.362	2.165	0.984	M 5	3	221	6519
	1.024								273	7418
36	1.102		1.417	2.835	2.559	1.102	M 6	9	325	11240
	1.220								465	13038
40	1.181		1.575	2.953	2.559	1.142	M 6	9	446	13938
	1.260								487	14162
44	1.260		1.732	3.150	2.756	1.181	M 6	9	524	15736
	1.417								634	17310
50	1.496	+0 -0.0013	1.969	3.543	3.150	1.260	M 6	9	693	17759
	1.654								1018	20682
55	1.654		2.165	3.937	3.346	1.378	M 6	9	856	17759
	1.890								1387	21806
62	1.890		2.441	4.331	3.543	1.378	M 6	9	1364	22480
	2.047								1770	26302
68	1.969		2.677	4.528	3.937	1.378	M 6	9	1475	21806
	2.362								2323	26976
75	2.165		2.953	5.433	4.724	1.496	M 8	22	1844	26751
	2.559								2913	34844
80	2.362		3.150	5.709	5.118	1.496	M 8	22	2360	27875
	2.756								3393	35518
90	2.559	+0 -0.0019	3.543	6.102	5.512	1.772	M 8	22	3503	38216
	2.953								5347	47208
100	2.756		3.937	6.693	6.299	1.969	M 8	22	5089	43836
	3.150								6638	53952
110	2.953		4.331	7.283	7.087	2.244	M 10	44	5310	51479
	3.346								7966	58898
125	3.346		4.921	8.465	7.874	2.402	M 10	44	8113	66541
	3.740								11063	79130
140	3.740		5.512	9.055	8.268	2.717	M 12	74	11137	82502
	4.134								14825	95540
155	4.134	+0 -0.0027	6.102	10.433	9.055	2.874	M 12	74	16226	100486
	4.528								20652	114423
165	4.528		6.496	11.417	9.449	3.189	M 16	184	22864	133756
	4.921								28765	147244
175	4.921		6.890	11.811	9.843	3.189	M 16	184	26552	136004
	5.315								33190	151740
185	5.315		7.283	12.992	10.433	3.780	M 16	184	38353	174894
	5.709								45729	193553
195	5.512	+0 -0.0031	7.677	13.780	11.024	3.780	M 16	184	47941	209738
	6.102								60111	240761
200	5.906		7.874	13.780	11.417	3.780	M 16	184	54579	222552
	6.299								63430	242784

To continue see next page

### Characteristics

**Three part Shrink Disc® heavy duty series** – with additional guide mechanism for the inner ring. For the transmission of maximum torques.

**Highest reliability** – applicable for static, dynamic and impact loads.

**Simplified manufacture** – only plain shaft and bore diameters with easily achieved surface finishes and tolerances are required.

**Fully replaceable** – the RINGFEDER® Shrink Discs® work are self releasing.

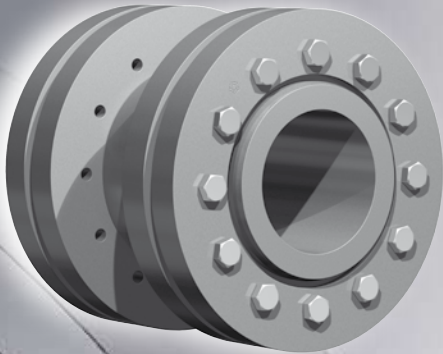
**Visual check of the tightening status** – minimization of faults during assembly.

**Easy mounting** – RINGFEDER® Shrink Discs® use standard screws and tightened using standard tools. No additional machining or fitting work is required.

**Short assembly times** – cost savings particularly in the case of series production.

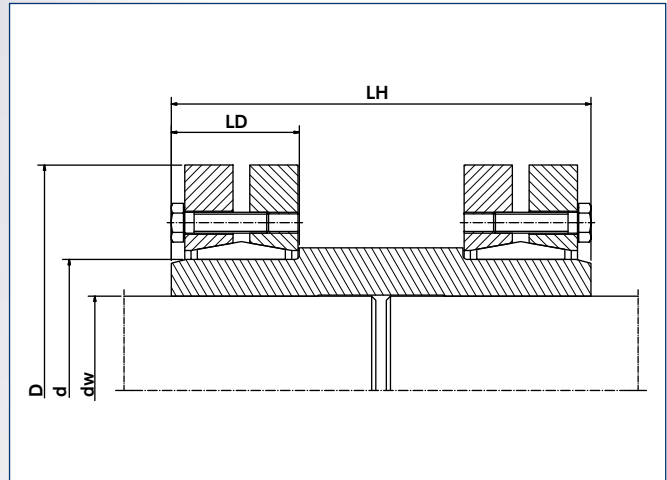
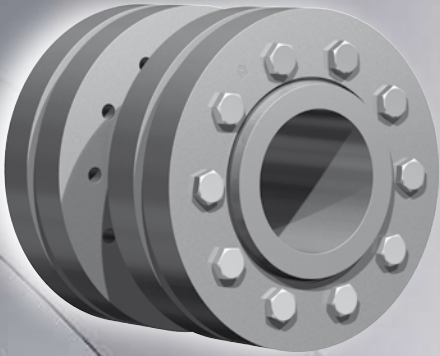
**Low susceptibility to contamination** – when the locking screws are tightened the contact (functional) surfaces are pressed firmly together and prevent contamination by dirt and moisture.

**Easy adjustability** – No stops, steps, key-ways, splines etc. are required therefore, hubs can be located and locked at any point or angle on the shaft.





Size	Coupling dimensions							Transmissible torques or axial forces		
	d <sub>w</sub> Inch	C <sub>w</sub> Inch	d Inch	D Inch	L <sub>H</sub> Inch	L <sub>D</sub> Inch	d <sub>G</sub> Inch	T <sub>A</sub> lb-ft	T lb-ft	F <sub>ax</sub> lbs
220	6.299	0.0031	8.661	14.567	12.205	4.488	M 16	184	70068	267512
	6.693								81132	289992
240	6.693		9.449	15.945	13.780	4.803	M 20	361	88507	329107
	7.480	0.0035	10.236	16.929	15.354	5.236	M 20	361	115059	376540
7.480	120960								395648	
260	8.268	0.0035	11.024	18.110	16.929	5.787	M 20	361	151200	451848
	8.268								160051	469832
280	9.055		11.811	19.094	17.520	6.102	M 20	361	199141	528280
	9.055	0.0040	12.598	20.472	18.110	6.142	M 20	361	202829	546489
9.646	232331								592573	
300	9.449	0.0040	13.386	22.441	18.898	6.772	M 20	361	230119	595046
	10.236								275847	651920
320	9.843		13.780	22.835	19.291	6.890	M 20	361	287648	701151
	10.630	0.0044	14.173	23.228	19.685	6.890	M 20	361	339278	764320
10.630	326002								736445	
350	11.220	0.0044	14.961	25.394	20.866	7.205	M 24	620	368780	786800
	11.024								341490	744088
360	11.614		15.354	25.984	21.260	7.205	M 24	620	385006	794893
	11.417	0.0048	15.748	26.772	21.260	7.205	M 24	620	418197	878968
12.205	485314								954950	
380	11.811	0.0048	16.535	27.165	22.835	7.992	M 24	620	460237	935168
	12.598								529568	1008003
400	12.402		16.929	28.557	24.252	8.661	M 24	620	494165	957648
	12.992	0.0044	17.323	29.528	23.622	8.661	M 24	620	548745	1011600
12.992	575297								1090280	
420	13.780	0.0044	18.110	30.315	24.409	8.661	M 24	620	663804	1173456
	13.386								594473	1065552
440	14.173		18.898	31.496	25.394	9.055	M 24	620	676343	1144232
	14.173	0.0048	19.685	33.465	26.378	9.055	M 27	922	737560	1274616
14.961	840818								1360040	
460	14.961	0.0048	19.685	33.465	26.378	9.055	M 27	922	862945	1382520
	15.748								966204	1472440
480	15.748		19.685	33.465	26.378	9.055	M 27	922	967679	1474688
	16.535	1073150	1557864							



Heavy Duty Coupling

Size	Coupling dimensions							Transmissible torques or axial forces		
	d <sub>w</sub> Inch	C <sub>w</sub> Inch	d Inch	D Inch	L <sub>H</sub> Inch	L <sub>D</sub> Inch	d <sub>G</sub> Inch	T <sub>A</sub> lb-ft	T lb-ft	F <sub>ax</sub> lbs
125	3.346		4.921	8.465	7.874	2.874	M 12	74	11063	79804
	3.740								+0 -0.0013	14751
140	3.740		5.512	9.055	8.268	3.228	M 12	74	15194	97338
	4.134								19545	112400
155	4.134		6.102	10.433	9.055	3.465	M 12	74	21094	123640
	4.528								26847	141624
165	4.528		6.496	11.417	9.449	3.858	M 16	184	10326	166352
	4.921								37394	183212
175	4.921		6.890	11.811	9.843	3.858	M 16	184	34665	168600
	5.315								+0 -0.0015	42041
185	5.315		7.283	12.992	10.433	4.803	M 16	184	53104	247280
	5.709								63430	269760
195	5.512		7.677	13.780	11.024	4.803	M 16	184	55317	241660
	6.102								70806	277628
200	5.906		7.874	13.780	11.417	4.803	M 16	184	68224	276504
	6.299								78919	302356
220	6.299		8.661	14.567	12.205	5.669	M 16	184	93670	357432
	6.496								108053	386656
240	6.693		9.449	15.945	13.780	6.181	M 20	361	114322	409136
	6.693								146037	467584
260	7.480		10.236	16.929	15.354	6.811	M 20	361	157100	508048
	7.480								197666	579984
280	8.268		11.024	18.110	16.929	7.283	M 20	361	210205	615952
	8.268								261834	694632
300	9.055		11.811	19.094	17.520	7.441	M 20	361	251508	665408
	9.055								+0 -0.0019	290599
	9.646									

To continue see next page

### Characteristics

**Three part Shrink Disc® heavy duty series** – with additional guide mechanism for the inner ring. For the transmission of maximum torques.

**Highest reliability** – applicable for static, dynamic and impact loads.

**Simplified manufacture** – only plain shaft and bore diameters with easily achieved surface finishes and tolerances are required.

**Fully replaceable** – the RINGFEDER® Shrink Discs® work are self releasing.

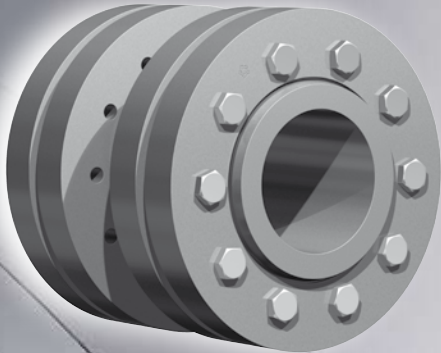
**Visual check of the tightening status** – minimization of faults during assembly.

**Easy mounting** – RINGFEDER® Shrink Discs® use standard screws and tightened using standard tools. No additional machining or fitting work is required.

**Short assembly times** – cost savings particularly in the case of series production.

**Low susceptibility to contamination** – when the locking screws are tightened the contact (functional) surfaces are pressed firmly together and prevent contamination by dirt and moisture.

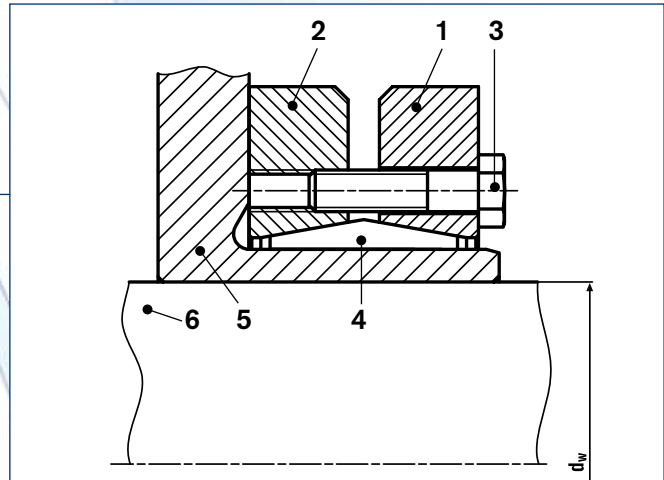
**Easy adjustability** – No stops, steps, key-ways, splines etc. are required therefore, hubs can be located and locked at any point or angle on the shaft.



Size	Coupling dimensions							Transmissible torques or axial forces			
	d <sub>w</sub> Inch	C <sub>w</sub> Inch	d Inch	D Inch	L <sub>H</sub> Inch	L <sub>D</sub> Inch	d <sub>G</sub> Inch	T <sub>A</sub> lb-ft	T lb-ft	F <sub>ax</sub> lbs	
320	9.449	+0 -0.0019	12.598	20.472	18.110	7.756	M 20	361	278798	708120	
	10.236								332640	780056	
340	9.843		13.386	22.441	18.898	8.465	M 24	620	361036	878968	
	10.630								426310	961020	
350	10.630		13.780	22.835	19.291	8.465	M 24	620	410083	926626	
	11.220								463925	992492	
360	11.024		14.173	23.228	19.685	8.622	M 24	620	451387	982376	
	11.614								508179	1049816	
380	11.417		+0 -0.0021	14.961	25.394	20.866	8.622	M 24	620	455812	959896
	12.205									530306	1044196
390	11.811			15.354	25.984	21.260	8.937	M 24	620	522192	1059932
	12.598									600743	1144232
400	12.402	15.748		26.772	21.260	8.937	M 24	620	564233	1091404	
	12.992								623238	1152100	
420	12.992	16.535		27.165	22.835	9.961	M 24	620	736822	1361164	
	13.780								840818	1464572	
440	13.386	17.323		29.528	23.622	10.591	M 27	922	780338	1400504	
	14.173								888022	1503912	
460	14.173	18.110		30.315	24.409	10.591	M 27	922	973579	1672512	
	14.961								1106340	1787160	
480	14.961	+0 -0.0024	18.898	31.496	25.394	11.457	M 27	922	1132155	1816384	
	15.748								1268603	1933280	
500	15.748		19.685	33.465	26.378	11.457	M 27	922	1290730	1967000	
	16.535								1430866	2079400	

## 3-part design

- 1 front thrust ring
- 2 rear thrust ring
- 3 locking screw
- 4 inner ring
- 5 hub
- 6 shaft



Shrink Discs® RfN 4051/4071/4061/4091/4073: designation of the parts

# Installation and removal instructions

Shrink Discs® RfN 4051, 4061, 4071, 4091, 4073

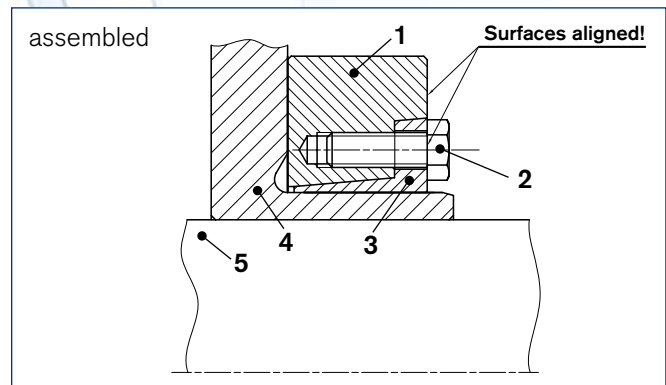
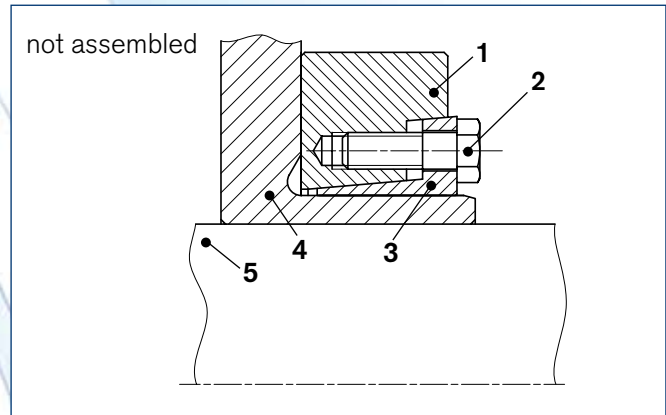
## Installation

1. Clean the area on the hub where the Shrink Disc® will be seated and oil to ease assembly, if necessary.
2. Removing spacers which may be present between the thrust rings for transport purposes.
3. Sliding the Shrink Disc® onto the hub.  
Attention: Do not start tightening the bolts before the shaft is in the bore of the hub, as this may cause permanent deformation.
4. Slide the hub onto the shaft and position as required. Use a thin oil to lightly lubricate the hub bore and shaft to facilitate assembly.  
Attention: Do not use lubricants containing MOS2.
5. Tighten 3 or 4 locking screws that are equally spaced around the diameter to establish a parallel or perpendicular position of Shrink Disc® collar(s) relative to hub web or shaft, respectively. This step properly seats the collar(s) on the taper of the inner ring.
6. Using a torque wrench, tighten all locking screws gradually and in sequence all the way around (not in a diametrically opposite sequence). Several passes may be required until all screws are torqued to the specified tightening torque ( $T_A$ ).
7. Verify that the screws are completely tight by applying the specified tightening torque ( $T_A$ ). The gap between the Shrink Disc® collars or between the Shrink Disc® collar and the hub should be even all the way around.

## Removal

1. Loosen the bolts evenly and in sequence, again in several circular sequences, to avoid jamming of the discs on the inner ring. Never completely remove the bolts from their threaded holes, this creates a risk of accidents.
2. Slide the Shrink Disc® and its attached part from the shaft. Clean shaft and remove possible traces of rust from the shaft.

## 2-part design



Shrink Discs® RfN 4171/4161/4181: designation of the parts

- 1 outer ring
- 2 locking screw
- 3 inner ring
- 4 hub
- 5 shaft



# Installation and removal instructions

Shrink Discs® 4161, 4171, 4181

## Installation

1. Clean the area on the hub where the Shrink Disc® will be seated and oil to ease assembly, if necessary.
2. Sliding the Shrink Disc® onto the hub.  
Attention: Do not start tightening before the shaft is in the bore of the hub; this may cause permanent deformation.
3. Slide the hub onto the shaft and position as required. Use a thin oil to lightly lubricate the hub bore and shaft to facilitate assembly.  
Attention: Do not use lubricants containing MOS2.
4. Tighten 3 or 4 locking screws that are equally spaced around the diameter to establish a parallel position of the Shrink Disc® inner relative to outer ring. This step properly seats the the taper of the inner ring.
5. Using a torque wrench, tighten all locking screws gradually and in sequence all the way around (not in a diametrically opposite sequence). Several passes may be required until all screws are torqued to the specified tightening torque ( $T_A$ ).
6. Verify that the screws are completely tight by applying the specified tightening torque ( $T_A$ ).



- Assembly, using a torque wrench:  
Check torquing of the bolts in sequence of their positions. Assembly is only complete once all the bolts have been torqued as specified.

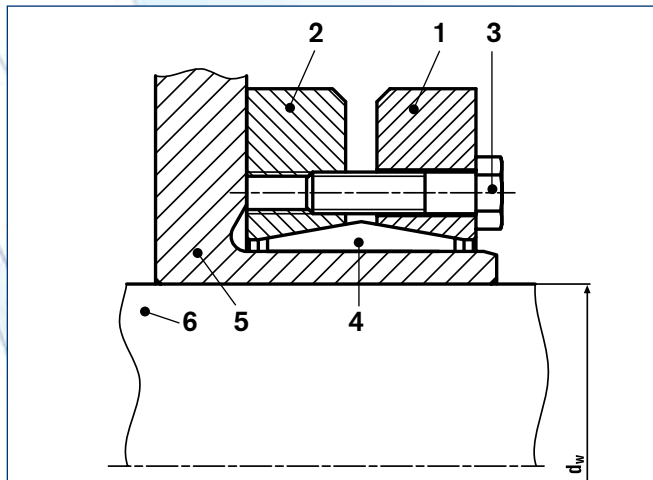


- Assembly, without a torque wrench:  
Assembly is complete once the faces of the inner and outer rings are aligned flush.

## Removal

1. Gradually release the locking bolts all the way around. Begin by releasing each bolt only about one quarter of a turn.
2. If the Shrink Disc® does not loosen, back all screws out until there is a gap between the head of the bolts and the Shrink Disc® face.
3. Completely remove a few screws and thread them into the adjacent removal threads roughly equally spaced around the diameter. Use these fasteners to push the inner ring away from the outer collar until the Shrink Disc® is loose on the shaft.

## 3-part design



Shrink Discs® RfN 4071: designation of the parts

- 1 front thrust ring
- 2 rear thrust ring
- 3 locking screw
- 4 inner ring
- 5 hub
- 6 shaft

**STAINLESS**

# Installation and removal instructions

## Shrink Discs® RfN 4071 Stainless

### Installation

1. Clean the area on the shaft where the Shrink Disc® will be seated and oil lightly to ease assembly, if necessary.  
Attention: Do not use lubricants containing MOS2.
2. Fasten the attachment part to the Shrink Disc®.  
ATTENTION: Tighten the bolts lightly.
3. Slide the Shrink Disc® onto the shaft.
4. Tighten 3 or 4 locking screws that are equally spaced around the diameter to establish a parallel or perpendicular position of Shrink Disc® collar(s) relative to hub web or shaft, respectively. This step properly seats the collar(s) on the taper of the inner ring.
5. Using a torque wrench, tighten all locking screws gradually and in sequence all the way around (not in a diametrically opposite sequence). Several passes may be required until all screws are torqued to the specified tightening torque ( $T_A$ ).
6. Verify that the screws are completely tight by applying the specified tightening torque ( $T_A$ ). The gap between the Shrink Disc® collars or between the Shrink Disc® collar and the hub should be even all the way around.

### Removal

1. Loosen the bolts evenly and in sequence, again in several circular sequences, to avoid jamming of the discs on the inner ring. Never completely remove the bolts from their threaded holes, this creates a risk of accidents.
2. Slide the Shrink Disc® and its attachment part from the shaft. First remove possible traces of rust from the shaft.
3. Release the attachment part from the Shrink Disc®.





# Fax Inquiry

To get a design proposal for RINGFEDER® shaft-hub-connections

RINGFEDER POWER TRANSMISSION Corp., P.O. Box 691 Westwood · NJ 07675

**Fax +1 201 664 6053**

## From

Company

attn.

Dept.

Address

Phone

Fax

E-Mail

Please have someone contact me at the following number or email address:

To make it easier for our technical staff and to avoid errors or mistakes your inquiry should include the following information:

## Information for technical service

Expected maximum loads:

Max. torque	T max.	=		lb-ft
Max. bending moment	M max.	=		lb-ft
Max. axial load	F max.	=		lbs
Max. radial load	F <sub>r</sub> max.	=		lbs

Dimensions, materials:

Shaft diameter	d <sub>w</sub>	=		inches
In case of hollow shaft, internal diameter	d <sub>B</sub>	=		inches
Speed	n	=		rpm
Hub outside diameter	D <sub>N</sub>	=		lbs
Hub width	B	=		inches
Hub material yield strength	R <sub>p0.2N</sub>	=		psi
Shaft material yield strength	R <sub>p0.2W</sub>	=		psi
Ambient temperature	Temp.	=		degree F

Additional information:

**Please send a drawing or sketch together with your inquiry!**

**RINGFEDER PT CORPORATION** · 165 Carver Avenue, P.O. Box 691 Westwood, NJ 07675, USA

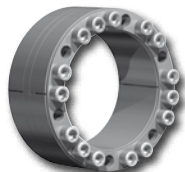
Toll Free: +1 888 746-4333 · Phone: +1 201 666 3320 · Fax: +1 201 664 6053

E-mail: sales.usa@ringfeder.com · E-mail: sales.usa@gerwah.com

# Delivery Program



## Locking Devices



Locking Assemblies



Locking Elements



Shrink Discs®



Smart-Lock

## Damping Technology



Friction Springs



DEFORM plus®  
DEFORM plus® R



Fluid Elastomeric Damper

## Special Solutions



Shaft Couplings



Locking Assemblies



Flange Couplings



## Couplings



Magnetic Couplings



Metal Bellows Couplings



Servo-Insert Couplings



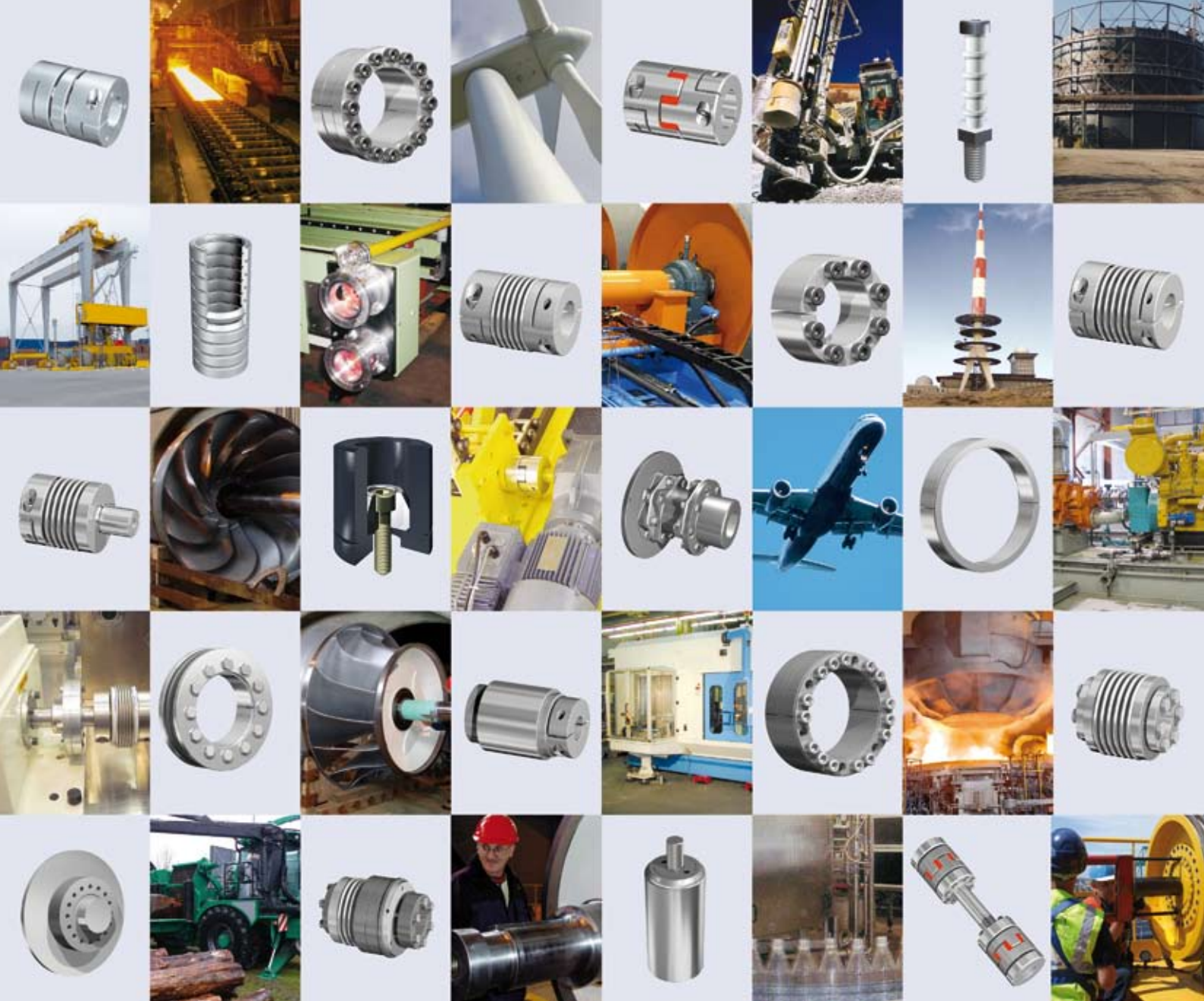
RING-flex® – torsionally rigid Disc Couplings



Safety Couplings



Line Shafts



**RINGFEDER POWER TRANSMISSION CORPORATION** · 165 Carver Avenue, P.O. Box 691 Westwood, NJ 07675, USA  
Toll Free: +1 888 746-4333 · Phone: +1 201 666 3320 · Fax: +1 201 664 6053 · E-mail: [sales.usa@ringfeder.com](mailto:sales.usa@ringfeder.com)/[sales.usa@gerwah.com](mailto:sales.usa@gerwah.com)