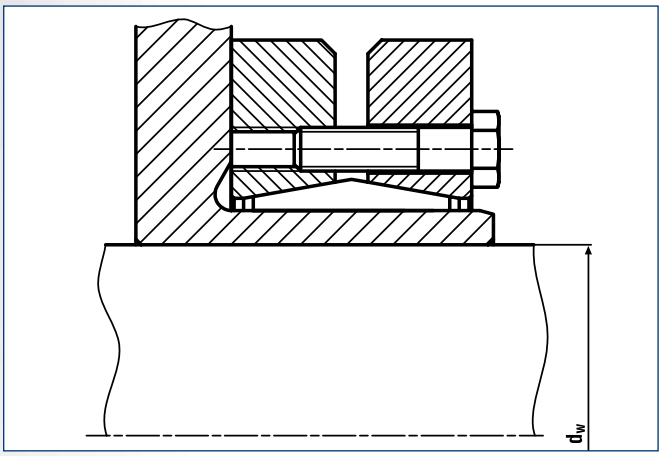
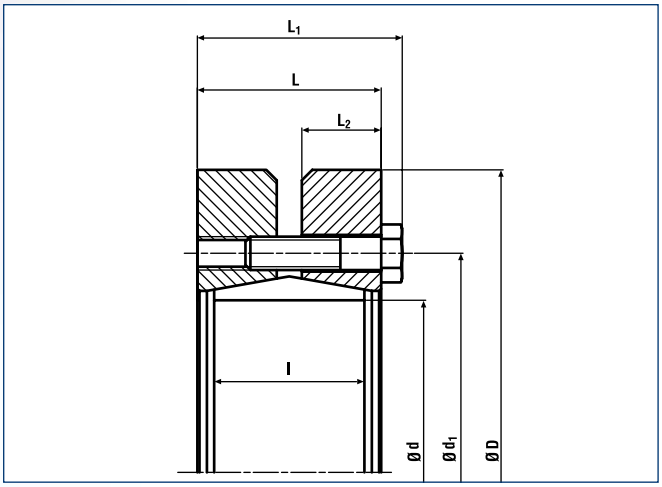
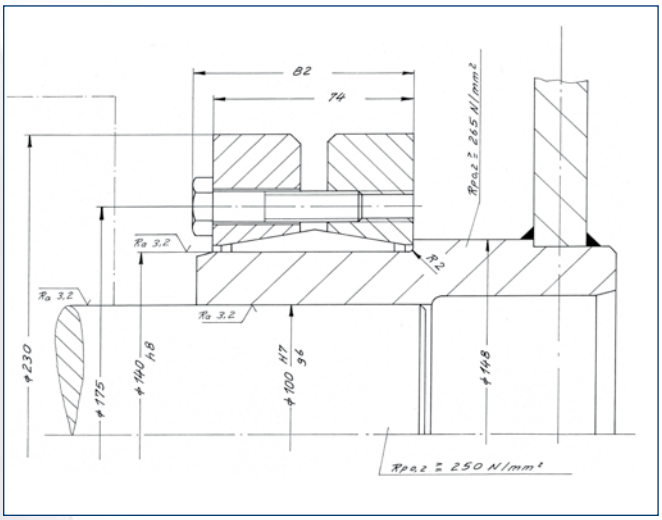
CfN 4091
Heavy Duty Series



Shrink Disc® CfN 4091 · Location



Shrink Disc® CfN 4091 · Dimensions



Lever · metric example

Size	Shrink Disc® dimensions												Transmissible torques or axial forces				Locking screws DIN EN ISO 4014-10.9		Weight	
	d_w		Cw	d	Ch	D	L_1	L	d1	L_2	l	T_A	T	F_{ax}	P	σ_v	Quantity	Thread	WT	T_{max}
	mm	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	lb-ft	lb-ft	lbs	psi		n		lbs	lb-ft
	38	1.496											1328	23829		59450				1660
50	40			1.969	+0 -0.0015	3.740	1.752	1.535	2.874	0.669	1.181	18			41325		7	M8x35	3.1	
	42	1.654											1770	27875		74095				2213
	42	1.654											1660	27426		58580				2075
55	45		0.0013	2.165		4.134	1.752	1.535	3.071	0.669	1.181	21			42050		7	M8x35	3.7	
	48	1.890											2360	33270		83230				2950
	48	1.890											2176	30123		54520				2720
62	62			2.441		4.528	1.752	1.535	3.346	0.669	1.181	22			40020		7	M8x35	4.4	
	52	2.047											2655	32596		66410				3319
	50	1.969											2360	32596		52345				2950
68	55			2.677	+0 -0.0018	4.724	1.752	1.535	3.622	0.669	1.181	22			41615		8	M8x35	4.6	
	58	2.283											3835	40914		78155				4794
	55	2.165											3393	43386		58435				4241
75	60			2.953		5.709	2.087	1.811	4.134	0.787	1.417	44			43790		7	M10x40	8.4	
	65	2.559											5163	55975		78300				6454
	60	2.362											4204	44960		54955				5255
80	65			3.150		5.709	2.087	1.811	4.134	0.787	1.417	44	5163		41035		7	M10x40	7.9	
	70	2.756											6196	56874		73950				7744
	65	2.559	0.0019										4942	48782		49155				6177
90	70			3.543		6.299	2.244	1.969	4.567	0.866	1.575	44			37555		8	M10x40	11	
	75	2.953											7081	60471		57275				8851
	70	2.756											6491	59572		48430				8113
100	75			3.937	+0 -0.0021	6.693	2.402	2.126	4.961	0.906	1.732	44			38425		10	M10x45	12	
	80	3.150											8998	72161		53360				11248
	75	2.953											8113	69238		45820				10141
110	80			4.331		7.283	2.638	2.362	5.433	1.024	1.969	44			36830		12	M10x45	17	
	85	3.346											10842	79130		52200				13553
	85	3.346											11063	79804		47995				13829
125	90			4.921		8.465	2.874	2.559	6.299	1.102	2.165	74			35960		10	M12x50	24	
	95	3.740											14751	94866		48865				18439
	90	3.543											12391	94416		47560				15489
135	95			5.315		8.346	3.268	2.953	6.693	1.260	2.362	74			36250		12	M12x55	23	
	105	4.134											18365	119144		48720				22953
	95	3.740											15194	97338		45385				18992
140	100			5.512		9.055	3.228	2.913	6.890	1.260	2.362	74			35235		12	M12x55	29	
	105	4.134	0.0027										19545	112400		46110				24432
	90	3.543											29355	198948		60030				36694
140	100			5.512		11.969	4.173	3.780	7.283	1.654	3.150	184			49735		12	M16x70	77	
	110	4.331			+0 -0.0025								46909	258520		74385				58636
	105	4.134											19914	122741		44950				24893
155	110			6.102		10.354	3.543	3.228	7.795	1.378	2.598	74			36250		15	M12x60	43	
	115	4.528											25077	140275		45530				31346
	115	4.528											30240	166352		46980				37800
165	120			6.496		11.417	3.858	3.465	8.268	1.496	2.835	184			39150		10	M16x65	57	
	125	4.921											37394	183212		49880				46743
	125	4.921											34665	168600		45820				43332
175	130			6.890		11.811	3.858	3.465	8.661	1.496	2.835	184			36830		10	M16x65	64	
	135	5.315											42041	188832		47125				52551
	125	4.921											51629	260768		53070				64537
175	130			6.890		11.811	4.961	4.567	9.252	1.969	3.622	184			43500		15	M16x80	81	
	135	5.315											62693	289992		55680				78366
	135	5.315											53104	247280		47415				66380
185	140		0.0031	7.283		12.992	4.803	4.409	9.291	1.969	3.622	184			38135		14	M16x80	104	
	145	5.709											63430	269760		50025				88507
	135	5.315											66602	316743		55970				83248
190	140			7.480	+0 -0.0028	13.780	4.921	4.409	9.843	1.969	3.622	347			47850		12	M20x90	115	
	155	6.102											91457	378788		63800				114322
	140	5.512											55317	241660		44950				78366
195	150			7.677		13.780	4.803	4.409	9.685	1.969	3.622	184			36250		14	M16x80	117	
	155	6.102											70806	277628		47850				92195

To continue see next page

CfN 4091
Heavy Duty Series

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 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 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, 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	d_w	Cw	d	Ch	D	L_1	L	d1	L_2	l	T_A	Transmissible torques or axial forces T	F_{ax}	P	σ_v	Locking screws DIN EN ISO 4014-10.9 Quantity	Thread	Weight WT	T_{max}
	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	Inch	lb-ft	lb-ft	lbs	psi		n		lbs	lb-ft
200	5.709	0.0031	7.874	+0 -0.0028	13.780	4.803	4.409	9.685	1.969	3.622	184	62693	712616	37845	45965	15	M16x80	110	117088
	6.102											73756	741840		47850				135066
220	6.299		8.661		14.567	5.669	5.276	10.630	2.362	4.488	184	93670	357432	36975	44805	20	M16x90	143	142902
	6.693											108053	386656		47125				182546
240	6.693		9.449	+0 -0.0028	15.945	6.181	5.669	11.614	2.559	4.724	361	114322	409136	37845	44225	15	M20x100	192	196375
	7.480											146037	467584		49445				247083
260	7.480	0.0035	10.236	+0 -0.0032	16.929	6.811	6.299	12.638	2.835	5.354	361	157100	508048	36975	44660	18	M20x110	220	262756
	8.268											197666	579984		50170				327292
280	8.268		11.024		18.110	7.283	6.772	13.622	3.071	5.827	361	210205	615952	36830	44950	21	M20x120	291	314385
	9.055											261834	694632		51620				363248
300	9.055		11.811		19.094	7.441	6.929	14.331	3.150	5.984	361	251508	665408	35090	43210	22	M20x120	309	314385
	9.646											290599	722732		47415				363248
320	9.449		12.598		20.472	7.756	7.244	15.197	3.228	6.299	361	278798	708120	34075	40890	24	M20x130	364	348497
	10.236											332640	780056		46110				415799
340	9.843	0.0040	13.386	+0 -0.0035	22.441	8.465	7.874	16.535	3.622	6.929	620	361036	878968	36685	42775	21	M24x130	529	451295
	10.630											426310	961020		47270				532887
350	10.630		13.780		22.835	8.465	7.874	16.732	3.622	6.929	620	410083	926626	35815	44080	21	M24x130	544	512604
	11.220											463925	992492		47995				579907
360	11.024		14.173		23.228	8.622	8.031	17.008	3.622	7.087	620	451387	982376	35525	43935	22	M24x140	551	564233
	11.614											508179	1049816		48140				635224
380	11.417		14.961		25.394	8.622	8.031	18.031	3.622	7.087	620	455812	959896	33785	40455	22	M24x140	705	569765
	12.205											530306	1044196		44515				662882
390	11.811		15.354		25.984	8.937	8.346	18.425	3.780	7.402	620	522192	1059932	34220	41180	24	M24x140	771	652741
	12.598											600743	1144232		46110				750836
400	12.402	0.0044	15.748	+0 -0.0038	26.772	8.937	8.346	18.898	3.780	7.402	620	564233	1091404	33495	41325	24	M24x140	815	705292
	12.992											623238	1152100		45240				779048
420	12.992		16.535		27.165	9.961	9.370	19.843	4.370	8.425	620	736822	1361164	34945	43790	30	M24x150	904	921028
	13.780											840818	1464572		49590				1051023
440	13.386		17.323		29.528	10.591	9.921	20.748	4.528	8.819	922	780338	1400504	33495	41035	24	M27x170	1190	975423
	14.173											888022	1503912		45240				1110028
460	14.173		18.110		30.315	10.591	9.921	21.535	4.528	8.819	922	973579	1672512	37265	45240	28	M27x170	1190	1216974
	14.961											1106340	1787160		50170				1382925
480	14.961		18.898		31.496	11.457	10.787	22.835	5.039	9.685	922	1132155	1816384	34945	43790	30	M27x180	1433	1415193
	15.748											1268603	1933280		49300				1585754
500	15.748	0.0048	19.685		33.465	11.457	10.787	23.622	5.039	9.685	922	1290730	1967000	35670	44805	32	M27x180	1653	1613413
	16.535											1430866	2079400		50750				1788583

More sizes on request

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 or equivalent!)

n = quantity of screws

T_{max} = maximum theoretical transmissible torque

C_w = shaft clearances

C_h = hub tolerances

C_d = shaft tolerances

l1 = Inner ring centering shoulder length

d_2 = clamped component bore

x = clamped component thickness

B = width dimension, relaxed condition

R_1 = hub max. radius (split Shrink Disc®)

s_v = 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 MoS2 (μ_{tot}= 0.1).
The tapered cones are lubricated using MoS_2 (μ = 0.05).
The contact surfaces (d_w) 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 10^6 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.