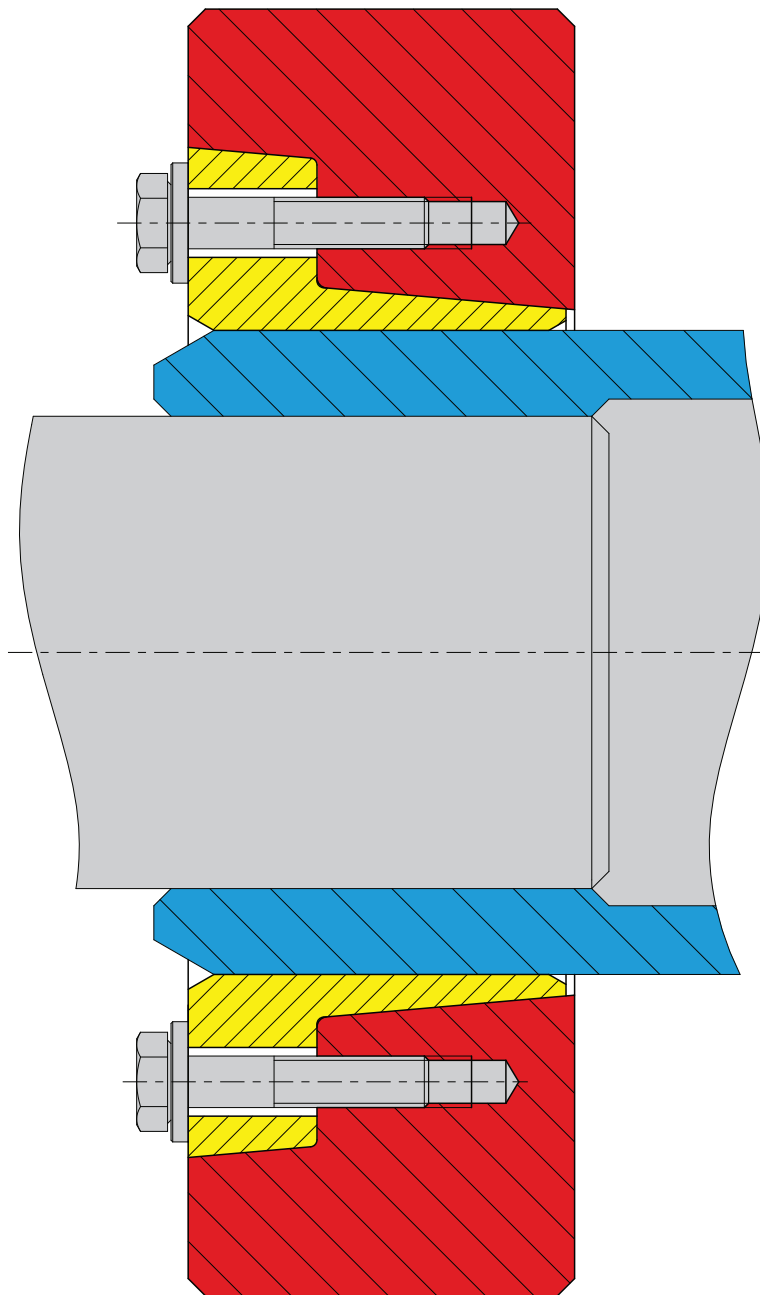
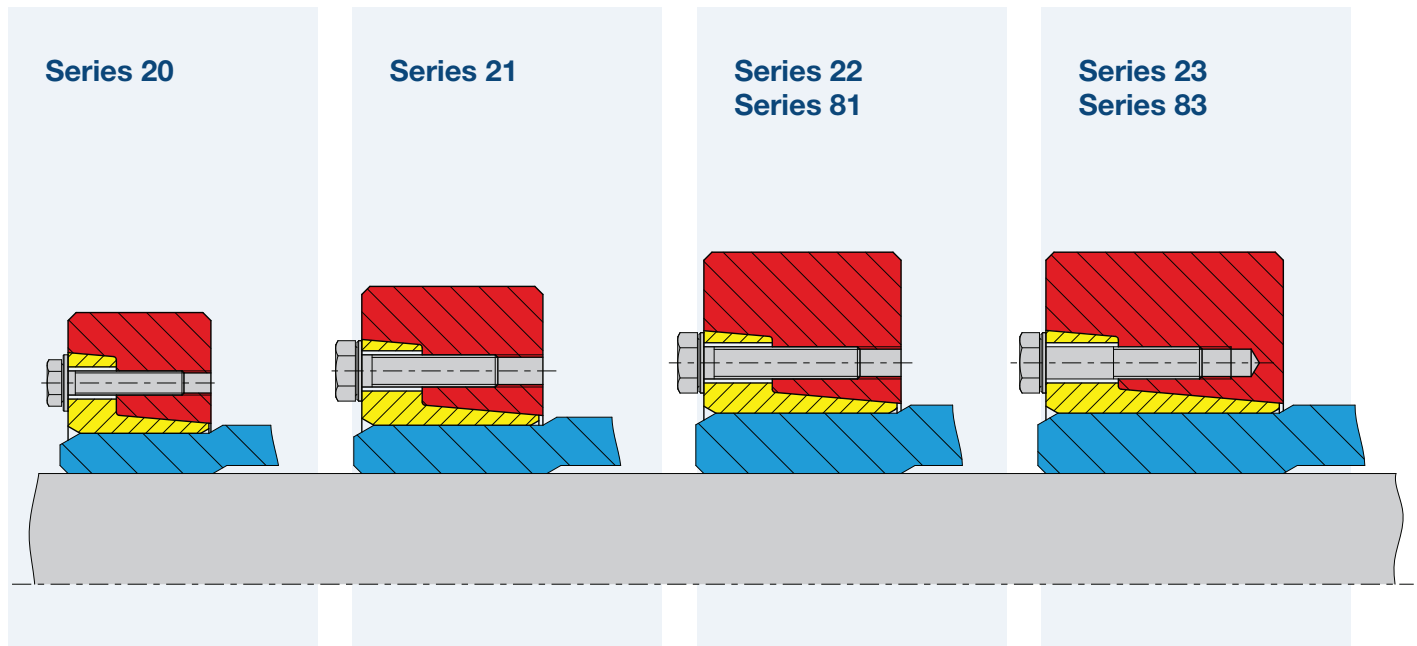


# Shrink Disc Type HSD



# Shrink Disc Type HSD

Shrink Disc HSD are supplied as standard in six types.



## Series 20

For transmission of small torques.

Page 06

## Series 21

For transmission of medium torques.

Page 08

## Series 22

Standard type for transmission of high torques.

Page 10

## Series 23

For transmission of very high torques.

Page 14

## Series 81

As series 22, but with 20–30% higher torques capacity.

Page 16

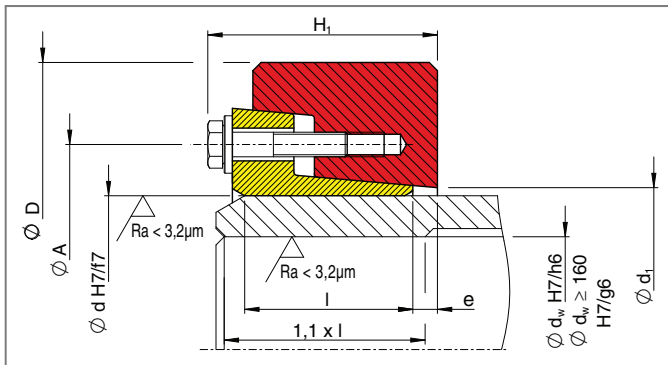
## Series 83

As series 23, but with 20–30% higher torques capacity.

Page 19

# Shrink Disc HSD

Series 20



## Code:

- $M_t$  maximum transmissible torque of a shrink disc with  $P_{ax}=0$
- $P_{ax}$  maximum transmissible axial load of a shrink disc with  $M_t=0$
- $M_a$  required tightening torque of the tightening bolts (see also "Mounting and Removal Instructions")

Dimensions  $H_1$  and  $e$  apply to untightened units.

Type	d	d <sub>w</sub>	M <sub>t</sub>	P <sub>ax</sub>	M <sub>a</sub>	B*	D	l	H <sub>1</sub>	A	d <sub>1</sub>	e	kg
	mm	mm	kNm	kN	Nm		mm	mm	mm	mm	mm	mm	
HSD 24 - 20	24	20	0,15	15	12	M6	53	9	17,5	36	25	2,3	0,1
		21	0,17	17									
		22	0,21	19									
HSD 29 - 20	29	25	0,22	18	12	M6	58	9	17,5	44	32	2,3	0,1
		26	0,25	19									
		27	0,29	21									
HSD 35 - 20	34	29	0,22	15	12	M6	64	9	17,5	50	38	2,3	0,2
		30	0,25	16									
		32	0,31	19									
HSD 40 - 20	38	34	0,28	16	12	M6	69	9	17,5	55	43	2,3	0,2
		35	0,31	18									
		36	0,34	19									
HSD 46 - 20	46	38	0,41	22	12	M6	80	13	22	62	49	2,5	0,3
		40	0,50	25									
		42	0,60	28									
HSD 51 - 20	51	44	0,55	25	12	M6	86	13	22	67	54	2,5	0,4
		45	0,60	27									
		47	0,70	30									
HSD 56 - 20	55	48	0,57	24	12	M6	90	13	22	72	59	2,5	0,4
		50	0,66	26									
		52	0,76	29									
HSD 61 - 20	61	53	0,68	26	12	M6	96	13	22	76	64	2,5	0,4
		55	0,79	29									
		57	0,90	32									
HSD 66 - 20	65	58	0,74	26	12	M6	100	13	22	82	69	2,5	0,5
		60	0,85	28									
		62	0,97	31									
HSD 73 - 20	70	63	0,94	30	29	M8	115	18	30	94	77	3,0	0,9
		65	1,07	33									
		68	1,29	38									
HSD 78 - 20	76	68	1,21	36	29	M8	120	18	30	100	82	3,0	1,0
		70	1,36	39									
		72	1,52	42									
HSD 83 - 20	81	73	1,24	34	29	M8	125	18	30	104	87	3,0	1,0
		75	1,38	37									
		77	1,54	40									
HSD 88 - 20	86	78	1,47	38	29	M8	130	18	30	110	92	3,0	1,1
		80	1,62	40									
		82	1,78	43									
HSD 93 - 20	93	83	1,63	39	29	M8	135	18	30	114	97	3,0	1,1
		85	1,80	42									
		87	1,97	45									
HSD 98 - 20	96	88	1,72	39	29	M8	140	18	30	120	102	3,0	1,1
		90	1,89	42									
		92	2,07	45									

\*Tightening bolts: standard DIN EN ISO 4014/4017 Grade 10.9, alternative DIN EN ISO 4762 Grade 10.9  
M16 and upwards with washers: DIN EN ISO 70416

When ordering please state: e. g. HSD51 - 20x51 (Type x Ø d)

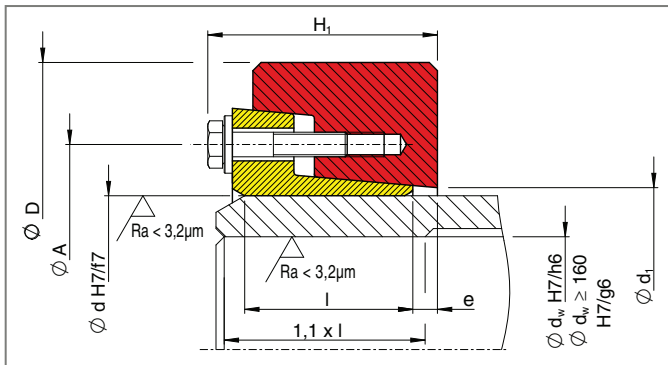
Type				d	d <sub>w</sub>	M <sub>t</sub>	P <sub>ax</sub>	M <sub>a</sub>	B*	D	l	H <sub>1</sub>	A	d <sub>i</sub>	e	kg
				mm	mm	kNm	kN	Nm		mm	mm	mm	mm	mm	mm	
HSD	103	-	20	103	93	2,13	46	29	M8	145	18	30	124	107	3,5	1,2
					95	2,31	49									
					97	2,50	52									
HSD	108	-	20	106	98	2,16	44	29	M8	150	18	30	128	112	3,5	1,2
					108	2,34	47									
					102	2,53	50									
HSD	115	-	20	112	103	2,34	45	29	M8	160	22	35	134	118	3,5	1,8
					115	2,54	48									
					108	2,86	53									
HSD	120	-	20	118	108	2,82	52	29	M8	164	22	35	140	124	3,5	1,7
					120	3,03	55									
					113	3,37	60									
HSD	125	-	20	125	113	2,94	52	29	M8	169	22	35	144	129	3,5	1,7
					115	3,16	55									
					118	3,49	59									
HSD	130	-	20	130	118	3,15	53	29	M8	174	22	35	150	134	3,5	1,8
					120	3,37	56									
					123	3,71	60									
HSD	135	-	20	135	123	3,57	58	29	M8	179	22	35	154	139	3,5	1,9
					125	3,81	61									
					128	4,19	66									
HSD	140	-	20	138	128	3,93	61	29	M8	184	22	35	160	144	3,5	2,0
					140	4,18	64									
					132	4,44	67									
HSD	145	-	20	145	133	4,39	66	29	M8	189	22	35	164	149	3,5	2,0
					135	4,65	69									
					137	4,92	72									
HSD	150	-	20	150	138	4,89	71	29	M8	194	22	35	170	154	3,5	2,0
					140	5,16	74									
					142	5,44	77									
HSD	160	-	20	160	146	4,86	67	29	M8	204	22	35	180	164	3,5	2,2
					150	5,39	72									
					152	5,67	75									
HSD	170	-	20	166	156	5,20	67	29	M8	214	22	35	190	174	3,5	2,5
					170	5,73	72									
					162	6,01	74									
HSD	182	-	20	182	166	7,62	92	29	M8	230	25	40	206	188	4,5	3,0
					170	8,35	98									
					172	8,73	101									
HSD	192	-	20	189	176	8,35	95	29	M8	240	25	40	216	198	4,5	3,4
					192	9,09	101									
					182	9,47	104									
HSD	202	-	20	202	186	8,88	95	29	M8	250	25	41	224	208	5,5	3,3
					198	9,67	102									
					197	10,08	105									
HSD	212	-	20	212	196	9,74	99	29	M8	260	25	41	234	218	5,5	3,5
					200	10,55	106									
					202	10,97	109									
HSD	222	-	20	220	206	10,83	105	29	M8	270	25	41	244	228	5,5	3,6
					222	11,66	111									
					212	12,09	114									
HSD	232	-	20	230	216	14,40	133	29	M8	280	25	41	254	238	5,5	3,8
					232	15,35	140									
					222	15,83	143									
HSD	242	-	20	242	226	15,27	135	29	M8	290	25	42	264	248	6,5	3,9
					230	16,22	141									
					232	16,72	144									
HSD	252	-	20	252	234	15,98	137	29	M8	300	25	42	274	258	6,5	4,1
					238	16,94	142									
					240	17,44	145									
HSD	262	-	20	262	244	16,84	138	29	M8	310	25	42	286	268	6,5	4,2
					248	17,80	144									
					250	18,30	146									

Further sizes on request. Technical changes to be reserved without notice.

\*Tightening bolts: standard DIN EN ISO 4014/4017 Grade 10.9, alternative DIN EN ISO 4762 Grade 10.9  
M16 and upwards with washers: DIN EN ISO 7416 When ordering please state : e.g. HSD 108-20x106 (Type x Ød)

# Shrink Disc HSD

Series 21



## Code:

$M_t$  maximum transmissible torque of a shrink disc with  $P_{ax}=0$

$P_{ax}$  maximum transmissible axial load of a shrink disc with  $M_t=0$

$M_a$  required tightening torque of the tightening bolts (see also "Mounting and Removal Instructions")

Dimensions  $H_1$  and  $e$  apply to untightened units.

Type	d mm	d <sub>w</sub> mm	M <sub>t</sub> kNm	P <sub>ax</sub> kN	M <sub>a</sub> Nm	B*	D mm	l mm	H <sub>1</sub> mm	A mm	d <sub>1</sub> mm	e mm	kg
HSD 140 - 21	140	110	16	298	100	M12	215	38	54	164	143	8	6
		120	20	341									
		130	25	385									
HSD 155 - 21	155	130	26	398	100	M12	245	38	54	184	164	8	8
		160	28	420									
		140	31	443									
HSD 165 - 21	165	135	29	432	160	M14	263	43	62	200	174	10	11
		170	32	456									
		145	35	480									
HSD 175 - 21	175	145	36	497	160	M14	275	43	62	208	184	10	12
		180	39	522									
		155	42	547									
HSD 185 - 21	185	155	50	645	160	M14	290	51	71	220	195	11	16
		190	54	675									
		165	58	704									
HSD 195 - 21	195	165	68	822	160	M14	320	51	71	230	204	11	20
		200	73	855									
		180	83	922									
HSD 220 - 21	220	180	80	892	240	M16	340	55	84	254	227	15	23
		190	91	962									
		200	103	1032									
HSD 240 - 21	240	200	103	1026	240	M16	370	55	84	274	246	15	27
		210	115	1095									
		220	128	1165									
HSD 260 - 21	260	220	132	1197	240	M16	405	55	84	294	266	15	33
		230	146	1271									
		240	161	1344									
HSD 280 - 21	280	230	160	1392	470	M20	430	65	97	320	288	15	43
		240	177	1473									
		250	194	1555									
HSD 300 - 21	300	250	191	1529	470	M20	460	65	97	340	307	15	49
		260	209	1610									
		270	228	1691									
HSD 320 - 21	320	270	243	1804	470	M20	485	77	109	364	327	15	63
		280	265	1894									
		290	288	1986									

\*Tightening bolts: standard DINENISO 4014/4017 Grade 10.9, alternative DINENISO 4762 Grade 10.9  
M16 and upwards with washers: DINENISO 7416

When ordering please state : e. g. HSD 185 - 21 x 190 (Type x Ø d)

# Series 21

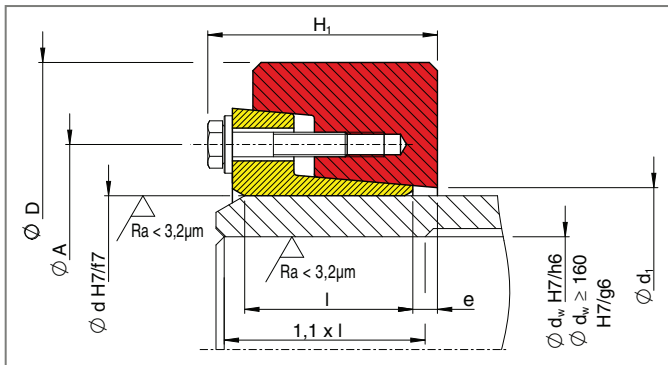
Type				d	d <sub>w</sub>	M <sub>t</sub>	P <sub>ax</sub>	M <sub>a</sub>	B*	D	l	H <sub>1</sub>	A	d <sub>i</sub>	e	kg
				mm	mm	kNm	kN	Nm		mm	mm	mm	mm	mm	mm	
HSD	340	-	21	340	280	274	1958	470	M20	520	77	109	384	347	15	73
					290	297	2050									
					300	322	2143									
HSD	360	-	21	360	300	356	2373	470	M20	570	89	122	410	367	16	107
					310	384	2476									
					330	443	2686									
HSD	390	-	21	390	330	438	2654	470	M20	590	89	123	440	398	17	107
					340	469	2759									
					350	501	2865									
HSD	420	-	21	420	350	624	3564	820	M24	630	120	159	470	428	20	163
					360	665	3697									
					370	709	3831									
HSD	440	-	21	440	370	778	4203	820	M24	660	132	173	494	448	22	196
					380	826	4350									
					390	877	4497									
HSD	460	-	21	460	390	852	4370	820	M24	690	132	171	522	468	20	230
					400	903	4514									
					410	955	4658									
HSD	480	-	21	480	410	1086	5298	820	M24	720	152	193	540	488	22	269
					420	1147	5461									
					430	1210	5626									
HSD	500	-	21	500	420	1137	5415	820	M24	745	152	195	560	508	24	285
					430	1200	5581									
					450	1331	5914									
HSD	530	-	21	530	450	1376	6114	1210	M27	790	162	208	594	540	24	341
					460	1446	6287									
					480	1592	6635									
HSD	560	-	21	560	480	1578	6576	1210	M27	830	162	209	626	570	25	373
					490	1653	6748									
					510	1809	7093									
HSD	590	-	21	590	510	1873	7344	1210	M27	880	172	219	658	598	25	450
					520	1957	7526									
					540	2131	7891									
HSD	620	-	21	620	540	2097	7768	1210	M27	930	172	220	690	630	26	508
					550	2186	7948									
					570	2368	8309									
HSD	660	-	21	660	570	2426	8511	1640	M30	990	182	234	734	670	28	609
					580	2522	8696									
					610	2823	9255									
HSD	700	-	21	700	610	2772	9088	1640	M30	1040	182	234	774	710	28	661
					620	2874	9271									
					640	3084	9638									
HSD	750	-	21	750	640	3104	9700	1640	M30	1100	192	246	826	760	30	764
					650	3214	9888									
					680	3555	10456									
HSD	800	-	21	800	680	3443	10128	1640	M30	1150	192	248	876	810	32	805
					700	3673	10495									
					730	4033	11049									

Further sizes on request.  
 Technical changes to be reserved without notice.

\*Tightening bolts: standard DINENISO4014/4017 Grade 10.9, alternative DINENISO4762 Grade 10.9  
 M16 and upwards with washers: DINENISO7416 When ordering please state : e.g. HSD660 - 21 x 660 (Type x Ø d)

# Shrink Disc HSD

Series 22



## Code:

- $M_t$  maximum transmissible torque of a shrink disc with  $P_{ax}=0$
- $P_{ax}$  maximum transmissible axial load of a shrink disc with  $M_t=0$
- $M_a$  required tightening torque of the tightening bolts (see also "Mounting and Removal Instructions")

Dimensions  $H_1$  and  $e$  apply to untightened units.

Type	d mm	d <sub>w</sub> mm	M <sub>t</sub> kNm	P <sub>ax</sub> kN	M <sub>a</sub> Nm	B*	D mm	l mm	H <sub>1</sub> mm	A mm	d <sub>1</sub> mm	e mm	kg
HSD 12 - 22	12	9 10	0,02 0,04	5 8	12	M6	35	9	15	24	13	1,0	0,1
HSD 14 - 22	14	11 12	0,03 0,05	6 9	12	M6	38	9	15	26	15	1,0	0,1
HSD 16 - 22	16	13 14	0,07 0,09	10 13	12	M6	41	12	19	28	17	1,5	0,1
HSD 18 - 22	18	15 16	0,08 0,11	11 14	12	M6	44	12	19	30	19	1,5	0,1
HSD 20 - 22	20	17 18	0,15 0,18	18 20	12	M6	47	12	19	32	21	1,5	0,1
HSD 24 - 22	24	19 20 22	0,16 0,20 0,28	17 20 25	12	M6	50	14	22	36	26	2,0	0,2
HSD 30 - 22	30	24 25 26	0,27 0,32 0,36	23 25 28	12	M6	60	16	24	44	32	2,0	0,3
HSD 36 - 22	36	28 30 33	0,49 0,61 0,82	35 41 50	29	M8	72	18	28	52	39	2,0	0,5
HSD 44 - 22	44	34 35 36	0,69 0,77 0,84	41 44 47	29	M8	80	20	30	61	47	2,0	0,6
HSD 50 - 22	50	38 40 42	1,10 1,29 1,50	58 65 71	29	M8	90	22	32	68	53	2,5	0,8
HSD 55 - 22	55	42 45 48	1,23 1,53 1,86	59 68 78	29	M8	100	23	35	72	58	3,0	1,1
HSD 62 - 22	62	48 50 52	1,67 1,89 2,12	70 76 81	29	M8	110	23	35	80	66	3,0	1,3
HSD 68 - 22	68	50 55 60	1,87 2,45 3,12	75 89 104	29	M8	115	23	35	86	72	3,0	1,3
HSD 75 - 22	75	55 60 65	2,33 3,02 3,80	85 101 117	58	M10	138	25	38	100	79	4,0	2,3
HSD 80 - 22	80	60 65 70	3,19 4,00 4,90	106 123 140	58	M10	141	25	38	104	84	4,0	2,3

\*Tightening bolts: standard DINENISO4014/4017 Grade 10.9, alternative DINENISO4762 Grade 10.9  
M16 and upwards with washers: DINENISO 7416 When ordering please state : e. g. HSD62-22x62 (Type x Ø d)

# Series 22

Type				d	d <sub>w</sub>	M <sub>t</sub>	P <sub>ax</sub>	M <sub>a</sub>	B*	D	l	H <sub>1</sub>	A	d <sub>1</sub>	e	kg
				mm	mm	kNm	kN	Nm		mm	mm	mm	mm	mm	mm	
HSD	90	-	22	90	65	5,4	166	58	M10	155	30	45	114	94	4,0	3,2
				85	70	6,5	187									
					75	7,8	208									
HSD	100	-	22	100	70	6,0	171	58	M10	170	34	50	124	104	4,0	4,3
				95	75	7,2	192									
					80	8,5	213									
HSD	110	-	22	110	80	10,0	249	100	M12	185	39	57	138	114	5,5	5,8
				105	85	11,7	275									
					90	13,6	302									
HSD	120	-	22	120	85	11,9	280	100	M12	197	42	61	147	124	6,5	6,9
				115	90	13,8	307									
					95	15,9	334									
HSD	125	-	22	125	90	14,4	319	100	M12	215	42	61	152	129	6,5	8,7
					95	16,5	347									
					100	18,7	375									
HSD	135	-	22	135	95	18,1	382	160	M14	230	46	67	165	139	8,5	10,8
				130	100	20,6	412									
					110	26,0	473									
HSD	140	-	22	140	100	19,6	392	160	M14	230	46	67	170	144	8,5	10,3
					105	22,1	421									
					115	27,6	481									
HSD	155	-	22	155	110	26,5	482	160	M14	263	50	71	184	159	8,5	15,2
				150	115	29,5	514									
					125	36,1	578									
HSD	165	-	22	165	120	37,3	622	240	M16	290	56	82	198	169	9,5	21,5
				160	125	41,2	659									
					135	49,6	734									
HSD	175	-	22	175	130	45	692	240	M16	300	56	82	208	179	10,0	22,5
				170	135	49	730									
					145	58	805									
HSD	185	-	22	185	140	64	916	240	M16	320	71	99	222	191	10,0	32,7
				180	145	70	961									
					155	82	1053									
HSD	200	-	22	200	150	80	1073	240	M16	340	71	99	238	206	11,0	36,3
				195	155	87	1120									
					165	100	1216									
HSD	220	-	22	220	160	103	1283	470	M20	370	88	120	268	228	12	53
					170	119	1395									
					180	136	1509									
HSD	240	-	22	240	170	122	1439	470	M20	405	92	124	288	248	13	66
					180	140	1555									
					200	179	1790									
HSD	260	-	22	260	190	163	1715	470	M20	430	103	136	306	268	14	82
					200	184	1842									
					220	231	2099									
HSD	280	-	22	280	210	215	2051	470	M20	460	114	149	328	288	16	103
					220	240	2186									
					240	295	2458									
HSD	300	-	22	300	220	270	2456	820	M24	485	122	159	354	308	16	120
					230	300	2605									
					250	363	2906									
HSD	320	-	22	320	240	301	2511	820	M24	520	122	159	380	328	16	138
					250	332	2655									
					270	398	2945									
HSD	340	-	22	340	250	390	3118	820	M24	570	134	174	402	348	18	189
					260	427	3283									
					280	506	3617									
HSD	350	-	22	350	270	493	3649	820	M24	580	140	162	414	358	20	202
					280	535	3825									
					290	580	4001									
HSD	360	-	22	360	270	496	3676	820	M24	590	140	181	424	368	20	207
					280	539	3852									
					300	631	4206									
HSD	380	-	22	380	290	585	4034	1210	M27	640	144	166	444	388	20	244
					300	632	4215									
					310	681	4397									

\*Tightening bolts: standard DINENISO4014/4017 Grade 10.9, alternative DINENISO4762 Grade 10.9  
M16 and upwards with washers: DINENISO7416 When ordering please state : e.g. HSD200 - 22x 195 (Type x Ød)



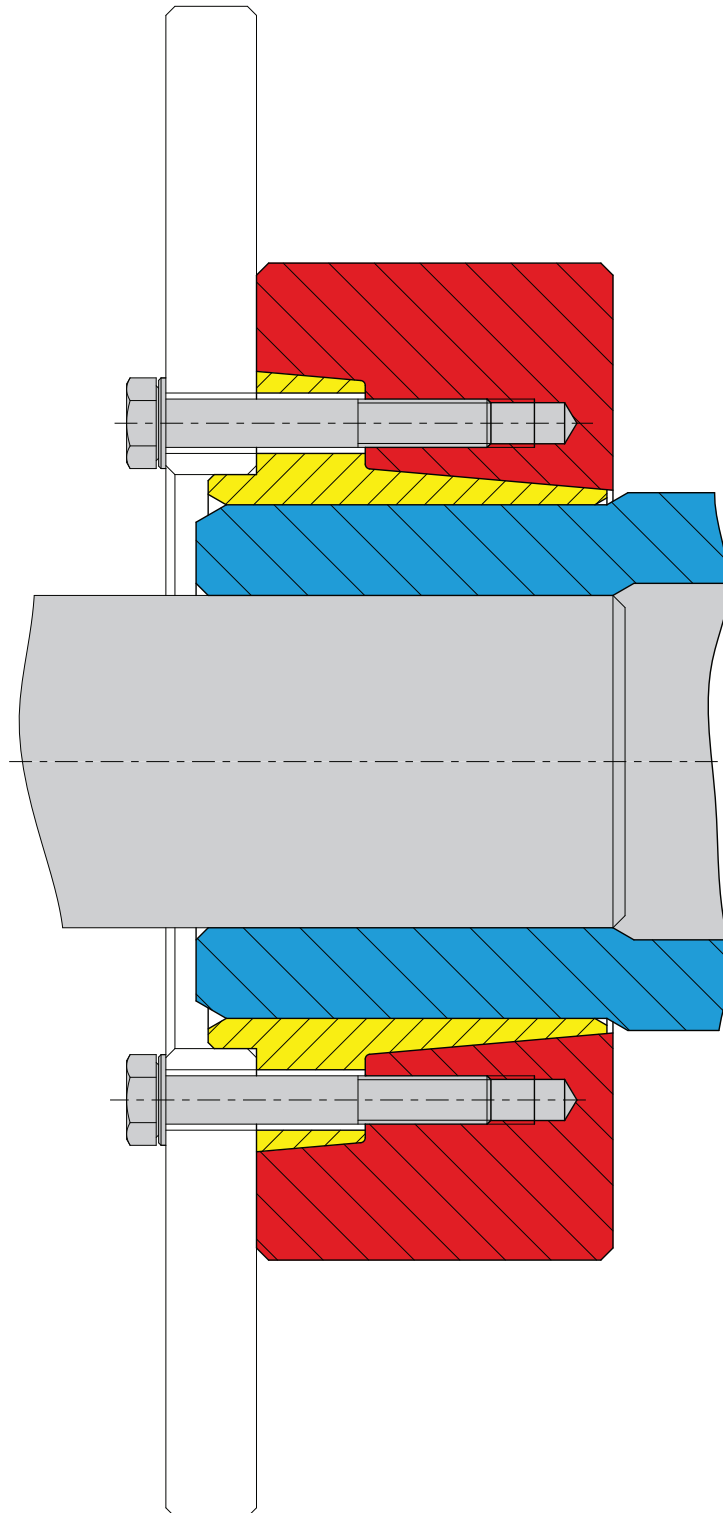
Type				d	d <sub>w</sub>	M <sub>t</sub>	P <sub>ax</sub>	M <sub>a</sub>	B*	D	l	H <sub>1</sub>	A	d <sub>1</sub>	e	kg
				mm	mm	kNm	kN	Nm		mm	mm	mm	mm	mm	mm	
HSD	390	-	22	390	290	640	4411	1210	M27	650	144	188	454	398	20	249
					300	691	4605									
					320	799	4996									
HSD	420	-	22	420	320	742	4640	1210	M27	670	164	208	486	428	20	285
					330	797	4829									
					350	912	5209									
HSD	440	-	22	440	340	945	5557	1210	M27	710	172	216	506	448	22	341
					350	1009	5764									
					370	1143	6181									
HSD	460	-	22	460	360	1104	6133	1210	M27	750	172	216	534	468	22	386
					370	1174	6345									
					390	1320	6771									
HSD	480	-	22	480	380	1300	6843	1640	M30	770	188	237	552	488	23	435
					390	1378	7066									
					410	1541	7516									
HSD	500	-	22	500	400	1496	7478	1640	M30	820	188	237	572	508	23	507
					410	1581	7711									
					430	1759	8180									
HSD	530	-	22	530	430	1930	8976	1640	M30	845	213	262	606	538	25	589
					440	2031	9234									
					460	2243	9752									
HSD	560	-	22	560	450	2097	9318	1640	M30	885	213	265	632	568	28	639
					460	2201	9572									
					480	2420	10081									
HSD	590	-	22	590	470	2593	11032	1640	M30	955	228	284	664	598	32	821
					480	2715	11314									
					500	2970	11881									
HSD	620	-	22	620	500	2904	11616	1640	M30	960	254	310	706	630	32	872
					520	3169	12190									
					540	3447	12767									
HSD	660	-	22	660	530	3329	12562	2210	M33	1020	260	318	748	670	32	1004
					550	3614	13140									
					570	3911	13722									
HSD	700	-	22	700	560	3804	13585	2210	M33	1085	260	318	788	710	32	1141
					580	4109	14169									
					600	4427	14756									
HSD	750	-	22	750	600	4801	16004	2210	M33	1150	278	346	850	760	38	1346
					620	5157	16636									
					650	5716	17589									
HSD	800	-	22	800	640	5620	17562	2210	M33	1230	296	364	900	810	42	1646
					660	6012	18219									
					700	6839	19541									
HSD	850	-	22	850	650	5942	18282	2850	M36	1300	315	386	950	860	42	1942
					700	6994	19983									
					730	7669	21011									
HSD	900	-	22	900	700	6967	19905	2850	M36	1350	332	413	1000	915	52	2142
					730	7640	20930									
					760	8345	21961									
HSD	950	-	22	950	750	8295	22121	2850	M36	1400	360	441	1050	965	52	2425
					780	9041	23182									
					820	10088	24606									
HSD	1000	-	22	1000	800	9568	23920	2850	M36	1460	380	461	1100	1020	52	2740
					830	10380	25013									
					860	11228	26111									
HSD	1050	-	22	1050	850	11241	26449	2850	M36	1520	400	481	1150	1070	52	3078
					880	12135	27579									
					920	13383	29092									
HSD	1100	-	22	1100	900	13045	28990	2850	M36	1570	430	511	1200	1120	52	3438
					930	14023	30156									
					960	15038	31328									
HSD	1200	-	22	1200	940	12902	27452	2850	M36	1630	460	541	1300	1220	52	3566
					1000	14803	29606									
					1050	16493	31415									

Further sizes on request.  
 Technical changes to be reserved without notice.

\*Tightening bolts: standard DINENISO4014/4017 Grade 10.9, alternative DINENISO4762 Grade 10.9  
 M16 and upwards with washers: DINENISO7416 When ordering please state : e.g. HSD750 - 22x750 (Type x Ød)

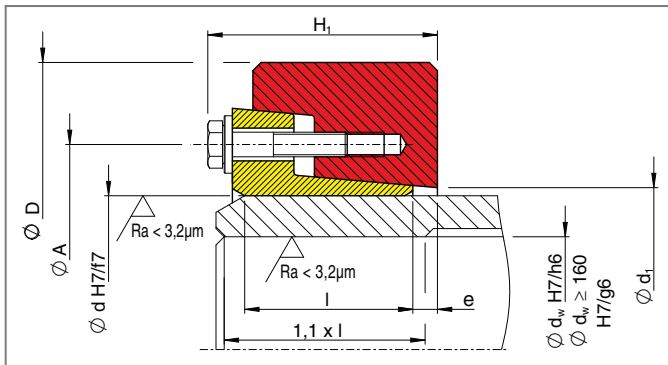
# Shrink Disc Type HSD

Combined with brake disc,  
economic solution for wind turbine, conveyor etc.



# Shrink Disc HSD

Series 23



## Code:

$M_t$  maximum transmissible torque of a shrink disc with  $P_{ax}=0$

$P_{ax}$  maximum transmissible axial load of a shrink disc with  $M_t=0$

$M_a$  required tightening torque of the tightening bolts (see also "Mounting and Removal Instructions")

Dimensions  $H_1$  and  $e$  apply to untightened units.

Type	d mm	d <sub>w</sub> mm	M <sub>t</sub> kNm	P <sub>ax</sub> kN	M <sub>a</sub> Nm	B*	D mm	l mm	H <sub>1</sub> mm	A mm	d <sub>1</sub> mm	e mm	kg
HSD 140 - 23	140	100	26	523	240	M16	230	60	88	174	144	10	13
	135	105	30	562									
		115	37	641									
HSD 155 - 23	155	110	36	646	240	M16	263	66	94	194	159	10	19
	150	115	40	687									
		125	48	772									
HSD 165 - 23	165	120	50	828	240	M16	290	72	102	200	169	10	26
	160	125	55	877									
		135	66	977									
HSD 175 - 23	175	130	61	943	240	M16	300	72	102	210	179	11	27
	170	135	67	993									
		145	79	1094									
HSD 185 - 23	185	140	89	1269	470	M20	320	92	131	232	189	12	40
	180	145	96	1330									
		155	113	1455									
HSD 200 - 23	200	150	104	1391	470	M20	340	92	131	246	204	12	44
	195	155	113	1453									
		165	130	1577									
HSD 220 - 23	220	160	127	1591	470	M20	370	114	148	266	224	13	64
		165	137	1661									
		180	169	1876									
HSD 240 - 23	240	170	157	1847	470	M20	405	120	154	286	244	14	81
		180	180	1996									
		200	230	2300									
HSD 260 - 23	260	190	230	2424	470	M20	430	136	171	306	265	16	102
		200	260	2600									
		220	325	2957									
HSD 280 - 23	280	210	306	2918	820	M24	460	148	185	334	285	16	126
		220	342	3105									
		240	418	3485									
HSD 300 - 23	300	230	360	3132	820	M24	485	152	191	354	305	18	141
		240	398	3314									
		250	437	3498									
HSD 320 - 23	320	240	430	3580	820	M24	520	160	199	374	325	18	171
		250	473	3781									
		270	565	4186									
HSD 340 - 23	340	250	551	4407	1210	M27	570	176	220	404	345	20	235
		260	603	4637									
		280	714	5100									
HSD 360 - 23	360	270	671	4969	1210	M27	590	180	224	424	365	22	251
		280	729	5204									
		300	852	5679									
HSD 390 - 23	390	290	850	5860	1210	M27	650	188	238	456	398	24	324
		300	917	6116									
		320	1061	6633									

\*Tightening bolts: standard DINENISO4014/4017 Grade 10.9, alternative DINENISO4762 Grade 10.9  
M16 and upwards with washers: DINENISO7416 When ordering please state : e. g. HSD240 - 23x240 (Type x Ø d)

# Series 23

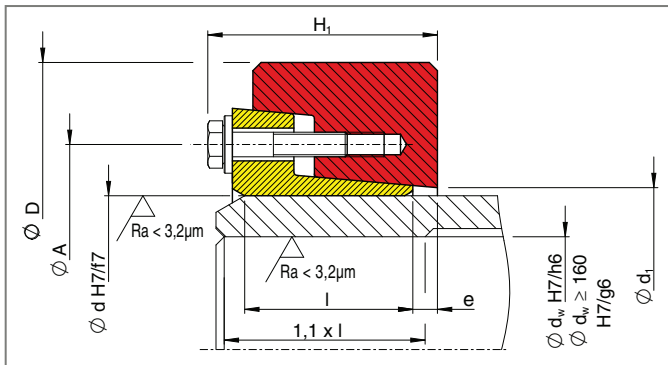
Type				d	d <sub>w</sub>	M <sub>t</sub>	P <sub>ax</sub>	M <sub>a</sub>	B*	D	l	H <sub>1</sub>	A	d <sub>1</sub>	e	kg
				mm	mm	kNm	kN	Nm		mm	mm	mm	mm	mm	mm	
HSD	420	-	23	420	320	1008	6301	1210	M27	670	214	263	486	428	25	372
					330	1082	6555									
					350	1237	7067									
HSD	440	-	23	440	340	1218	7166	1640	M30	720	224	279	534	448	25	464
					350	1301	7433									
					370	1475	7972									
HSD	460	-	23	460	360	1402	7791	1640	M30	750	224	276	534	468	26	501
					370	1491	8062									
					390	1678	8606									
HSD	480	-	23	480	380	1712	9008	1640	M30	780	246	304	552	488	32	592
					390	1814	9302									
					410	2028	9893									
HSD	500	-	23	500	400	1993	9963	1640	M30	830	246	304	572	508	32	688
					410	2106	10273									
					430	2342	10895									
HSD	530	-	23	530	430	2549	11857	2210	M33	860	276	340	616	538	34	807
					440	2683	12196									
					460	2962	12878									
HSD	560	-	23	560	450	2849	12660	2210	M33	920	276	364	646	568	34	937
					460	2990	13002									
					480	3285	13689									
HSD	590	-	23	590	470	3310	14084	2210	M33	960	296	366	676	598	40	1082
					480	3467	14446									
					500	3793	15171									
HSD	620	-	23	620	500	4069	16276	2210	M33	1000	330	396	706	630	40	1294
					510	4251	16672									
					540	4824	17866									
HSD	660	-	23	660	530	4746	17909	2850	M36	1080	330	405	760	670	40	1536
					540	4944	18313									
					570	5566	19530									
HSD	700	-	23	700	560	5316	18985	2850	M36	1140	330	413	800	710	44	1702
					570	5525	19387									
					600	6179	20596									
HSD	750	-	23	750	600	6326	21086	2850	M36	1190	360	433	850	760	44	1958
					620	6794	21917									
					650	7530	23169									
HSD	800	-	23	800	640	7358	22993	2850	M36	1280	360	439	900	810	50	2290
					660	7871	23851									
					700	8952	25576									
HSD	850	-	23	850	650	7354	22627	2850	M36	1300	380	469	950	860	58	2342
					700	8653	24723									
					730	9486	25989									
HSD	900	-	23	900	700	8455	24156	2850	M36	1350	400	493	1000	915	60	2580
					730	9271	25400									
					760	10127	26649									
HSD	950	-	23	950	750	10018	26714	2850	M36	1400	430	525	1050	v965	64	2897
					780	10917	27993									
					820	12181	29709									
HSD	1000	-	23	1000	800	11388	28470	2850	M36	1450	460	555	1100	1020	66	3231
					830	12357	29775									
					860	13367	31087									
HSD	1050	-	23	1050	850	12814	30152	2850	M36	1490	480	579	1150	1070	68	3418
					880	13839	31451									
					920	15269	33194									
HSD	1100	-	23	1100	900	14735	32743	2850	M36	1540	510	613	1200	1120	70	3774
					930	15844	34073									
					960	16996	35409									
HSD	1200	-	23	1200	940	15404	32775	2850	M36	1630	540	649	1300	1220	76	4187
					1000	17670	35340									
					1050	19684	37494									

Further sizes on request.  
 Technical changes to be reserved without notice.

\*Tightening bolts: standard DINENISO4014/4017 Grade 10.9, alternative DINENISO4762 Grade 10.9  
 M16 and upwards with washers: DINENISO7416 When ordering please state : e.g. HSD420 - 23x420 (Type x Ød)

# Shrink Disc HSD

Series 81



## Code:

$M_t$  maximum transmissible torque of a shrink disc with  $P_{ax}=0$

$P_{ax}$  maximum transmissible axial load of a shrink disc with  $M_t=0$

$M_a$  required tightening torque of the tightening bolts (see also "Mounting and Removal Instructions")

Dimensions  $H_1$  and  $e$  apply to untightened units.

Type	d	d <sub>w</sub>	M <sub>t</sub>	P <sub>ax</sub>	M <sub>a</sub>	B*	D	l	H <sub>1</sub>	A	d <sub>1</sub>	e	kg
	mm	mm	kNm	kN	Nm		mm	mm	mm	mm	mm	mm	
HSD 50 - 81	50	38	1,5	79	35	M8	90	22	32	68	53	2,5	0,8
		40	1,7	87									
		42	2,0	94									
HSD 55 - 81	55	42	1,6	78	35	M8	100	23	35	72	58	3,0	1,1
		45	2,0	88									
		48	2,4	99									
HSD 62 - 81	62	48	2,2	92	35	M8	110	23	35	80	66	3,0	1,3
		60	2,5	98									
		52	2,7	105									
HSD 68 - 81	68	50	2,4	94	35	M8	115	23	35	86	72	3,0	1,3
		55	3,0	111									
		60	3,8	128									
HSD 75 - 81	75	55	3,7	135	70	M10	138	25	38	100	79	4,0	2,3
		60	4,7	156									
		65	5,8	177									
HSD 80 - 81	80	60	4,2	141	70	M10	141	25	38	104	84	4,0	2,3
		65	5,2	160									
		70	6,3	180									
HSD 90 - 81	90	65	5,9	182	70	M10	155	30	45	114	94	4,0	3,2
		85	7,2	204									
		75	8,5	227									
HSD 100 - 81	100	70	7,4	213	70	M10	170	34	50	124	104	4,0	4,3
		95	8,9	236									
		80	10,4	260									
HSD 110 - 81	110	80	12,6	314	121	M12	185	39	57	138	114	5,5	5,8
		105	14,6	345									
		90	16,9	376									
HSD 120 - 81	120	85	13,6	320	121	M12	197	42	61	147	124	6,5	6,9
		115	15,7	349									
		95	18,0	379									
HSD 125 - 81	125	90	16,4	365	121	M12	215	42	61	152	129	6,5	8,7
		95	18,8	395									
		100	21,3	425									
HSD 135 - 81	135	95	20,3	428	193	M14	230	46	67	165	139	8,5	10,8
		130	23,0	461									
		110	29,0	527									
HSD 140 - 81	140	100	23,0	460	193	M14	230	46	67	170	144	8,5	10,3
		105	25,9	493									
		115	32,2	561									

\*Tightening bolts: standard DINENISO4014/4017 Grade 12.9, alternative DINENISO4762 Grade 12.9  
M16 and upwards with washers: DINENISO 7416 When ordering please state : e. g. HSD62-81x60 (Type x Ød)

# Series 81

Type				d	d <sub>w</sub>	M <sub>t</sub>	P <sub>ax</sub>	M <sub>a</sub>	B*	D	l	H <sub>1</sub>	A	d <sub>1</sub>	e	kg
				mm	mm	kNm	kN	Nm		mm	mm	mm	mm	mm	mm	
HSD	155	-	81	155	110	31,1	566	193	M14	263	50	71	184	159	8,5	15,2
				150	115	34,6	602									
					125	42,1	673									
HSD	165	-	81	165	120	44,0	734	295	M16	290	56	82	198	169	9,5	21,5
				160	125	48,5	776									
					135	58,1	860									
HSD	175	-	81	175	130	54	831	295	M16	300	56	82	208	179	10	22,5
				170	135	59	874									
					145	70	960									
HSD	185	-	81	185	140	81	1153	295	M16	320	71	99	222	191	10	32,7
				180	145	88	1207									
					155	102	1315									
HSD	200	-	81	200	150	96	1280	295	M16	340	71	99	238	206	10	36,3
				195	155	103	1335									
				190	165	119	1446									
HSD	220	-	81	220	160	129	1614	570	M20	370	88	118	268	228	10	53
					170	149	1751									
					180	170	1888									
HSD	240	-	81	240	170	151	1778	570	M20	405	92	122	288	248	11	66
					180	172	1916									
					200	220	2195									
HSD	260	-	81	260	190	212	2234	570	M20	430	103	134	306	268	12	82
					200	239	2391									
					220	298	2707									
HSD	280	-	81	280	210	279	2657	570	M20	460	114	145	328	288	12	103
					220	311	2823									
					240	379	3158									
HSD	300	-	81	300	220	332	3016	900	M24	485	122	158	354	308	15	120
					230	367	3194									
					250	444	3554									
HSD	320	-	81	320	240	404	3371	900	M24	520	122	158	380	328	15	138
					250	444	3554									
					270	530	3924									
HSD	340	-	81	340	250	489	3909	900	M24	570	134	172	402	348	17	189
					260	534	4109									
					280	632	4511									
HSD	360	-	81	360	270	625	4626	900	M24	590	140	179	424	368	18	207
					280	678	4841									
					300	791	5275									
HSD	390	-	81	390	290	780	5377	1310	M27	650	144	188	454	398	20	249
					300	841	5608									
					320	972	6074									
HSD	420	-	81	420	320	969	6055	1310	M27	680	164	209	486	428	22	300
					330	1038	6292									
					350	1185	6769									
HSD	440	-	81	440	340	1212	7129	1310	M27	725	172	219	506	448	24	365
					350	1293	7386									
					370	1462	7904									
HSD	460	-	81	460	360	1397	7759	1310	M27	760	172	220	534	468	25	402
					370	1484	8020									
					390	1666	8545									
HSD	480	-	81	480	380	1658	8729	1800	M30	790	188	238	552	488	25	473
					390	1756	9006									
					410	1961	9564									
HSD	500	-	81	500	400	1888	9441	1800	M30	835	188	238	572	508	25	537
					410	1994	9727									
					430	2215	10304									

\*Tightening bolts: standard DINENISO4014/4017 Grade 12.9, alternative DINENISO4762 Grade 12.9  
M16 and upwards with washers: DINENISO7416 When ordering please state : e.g. HSD360-81x360 (Type x Ød)

# Series 81

Type				d	d <sub>w</sub>	M <sub>t</sub>	P <sub>ax</sub>	M <sub>a</sub>	B*	D	l	H <sub>1</sub>	A	d <sub>i</sub>	e	kg
				mm	mm	kNm	kN	Nm		mm	mm	mm	mm	mm	mm	
HSD	530	-	81	530	430	2397	11148	1800	M30	890	213	266	606	538	27	696
					440	2521	11461									
					460	2781	12090									
HSD	560	-	81	560	450	2546	11314	1800	M30	920	213	268	632	568	30	725
					460	2672	11617									
					480	2934	12225									
HSD	590	-	81	590	470	2969	12634	1800	M30	960	228	286	664	598	32	835
					480	3109	12955									
					500	3400	13600									
HSD	620	-	81	620	500	3404	13617	1800	M30	970	254	313	706	630	34	903
					520	3713	14281									
					540	4036	14949									
HSD	660	-	81	660	530	4034	15222	2400	M33	1070	260	322	748	670	34	1178
					550	4373	15902									
					570	4726	16584									
HSD	700	-	81	700	560	4605	16447	2400	M33	1140	260	321	788	710	35	1345
					580	4969	17134									
					600	5347	17823									
HSD	750	-	81	750	600	5806	19354	2400	M33	1220	278	346	850	760	42	1640
					620	6231	20099									
					650	6896	21219									
HSD	800	-	81	800	640	6798	21244	2400	M33	1270	296	272	900	810	48	1835
					660	7265	22016									
					700	8249	23569									
HSD	850	-	81	850	650	7214	22197	3100	M36	1340	315	394	950	860	48	2154
					700	8470	24199									
					730	9274	25408									
HSD	900	-	81	900	700	8453	24152	3100	M36	1400	332	419	1000	915	56	2433
					730	9256	25360									
					760	10098	26573									
HSD	950	-	81	950	750	10060	26826	3100	M36	1450	360	447	1050	965	56	2752
					780	10949	28076									
					820	12197	29750									
HSD	1000	-	81	1000	800	11614	29034	3100	M36	1510	380	467	1100	1020	56	3099
					830	12582	30319									
					860	13592	31609									
HSD	1050	-	81	1050	850	13636	32086	3100	M36	1570	400	487	1150	1070	56	3472
					880	14702	33414									
					920	16189	35193									
HSD	1100	-	81	1100	900	15818	35151	3100	M36	1620	430	517	1200	1120	56	3875
					930	16983	36523									
					960	18192	37900									
HSD	1200	-	81	1200	940	15680	33361	3100	M36	1670	460	551	1300	1220	60	3953
					1000	17946	35892									
					1050	19958	38016									

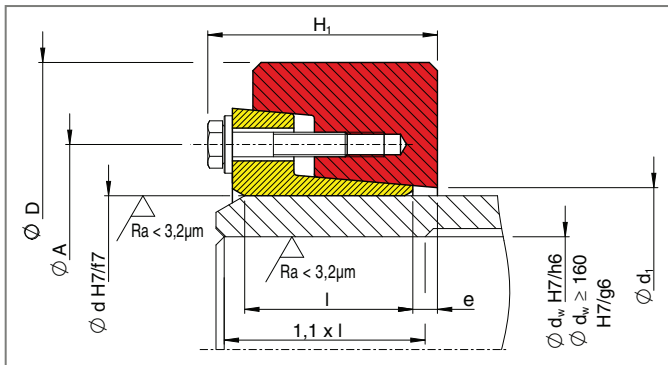
Further sizes on request.  
 Technical changes to be reserved without notice.

\*Tightening bolts: standard DINENISO 4014/4017 Grade 12.9, alternative DINENISO 4762 Grade 12.9  
 M16 and upwards with washers: DINENISO 7416

When ordering please state : e. g. HSD 800 - 81 x 800 (Type x Ø d)

# Shrink Disc HSD

Series 83



## Code:

$M_t$  maximum transmissible torque of a shrink disc with  $P_{ax}=0$

$P_{ax}$  maximum transmissible axial load of a shrink disc with  $M_t=0$

$M_a$  required tightening torque of the tightening bolts (see also "Mounting and Removal Instructions")

Dimensions  $H_1$  and  $e$  apply to untightened units.

Type	d mm	d <sub>w</sub> mm	M <sub>t</sub> kNm	P <sub>ax</sub> kN	M <sub>a</sub> Nm	B*	D mm	l mm	H <sub>1</sub> mm	A mm	d <sub>1</sub> mm	e mm	kg
HSD 140 - 83	140	100	30	608	295	M16	240	60	88	178	144	10	15
	135	105	34	652									
		115	43	742									
HSD 155 - 83	155	110	45	816	295	M16	270	66	94	196	159	10	21
	150	115	50	867									
		125	61	970									
HSD 165 - 83	165	120	64	1062	295	M16	290	72	102	204	169	13	26
	160	125	70	1122									
		135	84	1244									
HSD 175 - 83	175	130	74	1132	295	M16	300	72	102	210	179	13	27
	170	135	80	1191									
		145	95	1309									
HSD 185 - 83	185	140	106	1519	570	M20	320	92	129	236	189	14	40
	180	145	115	1592									
		155	135	1737									
HSD 200 - 83	200	150	127	1696	570	M20	340	92	129	246	204	15	44
	195	155	137	1769									
		165	158	1917									
HSD 220 - 83	220	160	163	2042	570	M20	370	114	151	270	224	15	64
		165	176	2128									
		180	215	2391									
HSD 240 - 83	240	170	209	2459	570	M20	405	120	161	298	244	16	81
		180	238	2647									
		200	303	3029									
HSD 260 - 83	260	190	288	3036	570	M20	430	136	177	326	265	18	102
		200	325	3247									
		220	404	3675									
HSD 280 - 83	280	210	361	3437	900	M24	460	148	191	346	285	18	126
		220	402	3654									
		240	491	4092									
HSD 300 - 83	300	230	465	4047	900	M24	485	152	195	366	305	19	141
		240	513	4273									
		250	563	4501									
HSD 320 - 83	320	240	510	4250	900	M24	520	160	203	388	325	20	171
		250	560	4484									
		270	669	4955									
HSD 340 - 83	340	250	664	5316	1310	M27	570	176	228	410	345	20	235
		260	726	5587									
		280	859	6135									
HSD 360 - 83	360	270	763	5655	1310	M27	590	180	232	434	365	20	251
		280	829	5921									
		300	969	6457									
HSD 390 - 83	390	290	972	6703	1310	M27	650	188	242	470	398	24	324
		300	1049	6994									
		320	1213	7580									

\*Tightening bolts: standard DINENISO4014/4017 Grade 12.9, alternative DINENISO4762 Grade 12.9  
M16 and upwards with washers: DINENISO7416 When ordering please state : e. g. HSD200-83x195 (Type x Ød)



# Series 83

Type				d	d <sub>w</sub>	M <sub>t</sub>	P <sub>ax</sub>	M <sub>a</sub>	B*	D	l	H <sub>1</sub>	A	d <sub>1</sub>	e	kg
				mm	mm	kNm	kN	Nm		mm	mm	mm	mm	mm	mm	
HSD	420	-	83	420	320	1297	8105	1310	M27	690	214	268	508	428	28	409
					330	1389	8421									
					350	1585	9057									
HSD	440	-	83	440	340	1585	9323	1800	M30	750	224	282	528	448	28	526
					350	1690	9659									
					370	1912	10336									
HSD	460	-	83	460	360	1747	9706	1800	M30	770	224	282	548	468	29	544
					370	1856	10035									
					390	2086	10697									
HSD	480	-	83	480	380	2105	11076	1800	M30	800	246	322	576	488	34	642
					390	2229	11430									
					410	2489	12142									
HSD	500	-	83	500	400	2552	12762	1800	M30	860	246	324	586	508	34	767
					410	2695	13147									
					430	2993	13922									
HSD	530	-	83	530	430	3108	14455	2400	M33	890	276	364	616	538	39	899
					440	3270	14861									
					460	3606	15678									
HSD	560	-	83	560	450	3452	15341	2400	M33	940	276	364	642	568	42	1002
					460	3622	15749									
					480	3976	16567									
HSD	590	-	83	590	470	4027	17138	2400	M33	980	296	386	676	598	44	1155
					480	4217	17571									
					500	4610	18439									
HSD	620	-	83	620	500	5040	20160	2400	M33	1020	330	422	716	630	45	1379
					510	5263	20641									
					540	5964	22089									
HSD	660	-	83	660	530	5833	22013	3100	M36	1120	330	427	760	670	49	1722
					540	6075	22501									
					570	6832	23972									
HSD	700	-	83	700	560	6485	23160	3100	M36	1180	330	427	800	710	50	1897
					570	6738	23642									
					600	7528	25095									
HSD	750	-	83	750	600	7671	25569	3100	M36	1220	360	457	860	760	50	2124
					620	8234	26562									
					650	9119	28059									
HSD	800	-	83	800	640	9085	28390	3100	M36	1340	360	459	920	810	54	2651
					660	9709	29422									
					700	11024	31497									
HSD	850	-	83	850	650	8924	27459	3100	M36	1440	380	469	950	860	58	3271
					700	10474	29927									
					730	11467	31416									
HSD	900	-	83	900	700	10259	29310	3100	M36	1470	400	493	1000	915	60	3443
					730	11233	30774									
					760	12253	32245									
HSD	950	-	83	950	750	12147	32392	3100	M36	1520	430	525	1050	965	64	3857
					780	13220	33898									
					820	14726	35917									
HSD	1000	-	83	1000	800	13823	34557	3100	M36	1560	460	555	1100	1020	66	4201
					830	14978	36091									
					860	16181	37631									
HSD	1050	-	83	1050	850	15550	36589	3100	M36	1580	480	579	1150	1070	68	4263
					880	16771	38116									
					920	18474	40162									
HSD	1100	-	83	1100	900	17871	39712	3100	M36	1630	510	613	1200	1120	70	4701
					930	19193	41274									
					960	20564	42842									
HSD	1200	-	83	1200	940	18711	39812	3100	M36	1720	540	649	1300	1220	76	5224
					1000	21413	42826									
					1050	23811	45354									

Further sizes on request.  
 Technical changes to be reserved without notice.

\*Tightening bolts: standard DINENISO4014/4017 Grade 12.9, alternative DINENISO4762 Grade 12.9  
 M16 and upwards with washers: DINENISO7416 When ordering please state : e.g. HSD420-83x420 (Type x Ød)

# Technical Specifications

## Torque "M<sub>t</sub>"

The transmissible torque depends on the coefficient of friction between shaft and hub, the fit clearance and the shaft diameter.

### • Coefficient of friction

The coefficient of friction of dry and grease free surface (steel/steel) ranges from 0.15 to 0.33.

The chart is based on a coefficient of friction ( $\mu_w$ ) of 0,15!

The coefficient of friction will increase to approximately 0.2 provided that the surfaces are carefully degreased and additionally cleansed by using lime milk. The transmissible torque can thus be increased accordingly.

### • Fit clearance

The torque calculations is based on the maximum clearance (up to 150 mm shaft diameter H7/h6, from 160 mm H7/g6) and the surface roughness.

If the actual fit between shaft and hub is tighter, then the transmissible torque consequently increases and vice versa.

### • Shaft diameter

The shaft diameter range for each shrink disc is specified in the chart. The transmissible torque can be interpolated with sufficient accuracy for shaft diameters which lie between two sizes given in the chart. (Larger shaft diameters can be chosen if hub material permits. The transmissible torque can be extrapolated.)

## Axial load "P<sub>ax</sub>"

The maximum transmissible axial load can be determined on the basis of the following equation:

$$P_{ax,max} = M_{t,chart} \cdot \frac{2}{d_w}$$

## Transmission of torque combined with axial load

If torsional and axial loads are to be transmitted simultaneously, use the following equation:

$$M_t'' = \sqrt{M_{t,chart}^2 - \left( \frac{d_w \cdot P_{ax}}{2} \right)^2}$$

M<sub>t</sub>" is the torque reduced by axial load P<sub>ax</sub>.

## Hub material

As hub material steel, cast steel or nodular cast iron with a yield strength of at least 360 N/mm<sup>2</sup> can be used.

On assemblies which have to transmit also bending moments (rotating bending) the hub should be of heat-treatable steel like 42CrMo4 or higher quality cast steel or nodular cast iron.

Grey cast iron can be used for assemblies where negligible bending moments occur.

## Surface quality

The surface roughness (R<sub>a</sub>) of shaft and hub should be below 16 μm (turning on a lathe is sufficient).

## Lubricant

Conical surfaces are greased with a MoS<sub>2</sub>-lubricant (Combination of bonding coating and paste). The following lubricants (coefficient of friction appr. 0.04) are examples of commercially available lubricants:

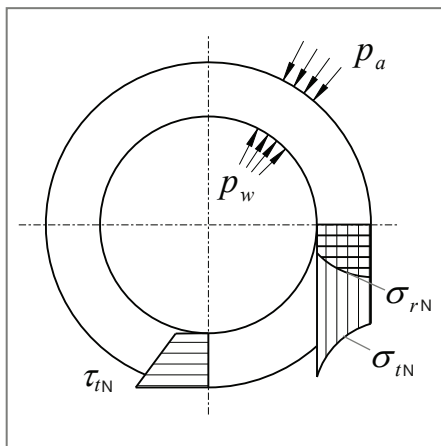
Lubricant	Source
Molykote D 321 R (bonded coating)	Dow Corning
Aema-Sol MO 84-K (bonding coating)	A.C. Matthes
Molykote G Rapid + (paste)	Dow Corning
Aema-Sol M 19 P (paste)	A.C. Matthes

The bolts are lubricated with commercially available bolt lubricants ( $\mu=0,1$ ).

## Tightening bolts

All units are equipped with commercial available hexagonal bolts DIN EN ISO 4014/4017, quality 10.9 or 12.9.

# Hub calculation



When tensioning the **shrink disc** multidirectional stresses occur in the hub. Tangential and radial stress can be calculated by using the following equation for the thick-walled pipes (axial stress can be neglected).

Maximum stress occurs on the inner diameter.

$$\sigma_t = \frac{p_w \left( 1 + \left( \frac{d_w}{d} \right)^2 \right) - 2 \cdot p_a}{1 - \left( \frac{d_w}{d} \right)^2}$$

$$\sigma_r = -p_w$$

Resultant stress can be calculated on the basis of the following equation:

$$\sigma_V = \sqrt{\sigma_t^2 + \sigma_r^2 - \sigma_t \cdot \sigma_r + 3\tau^2}$$

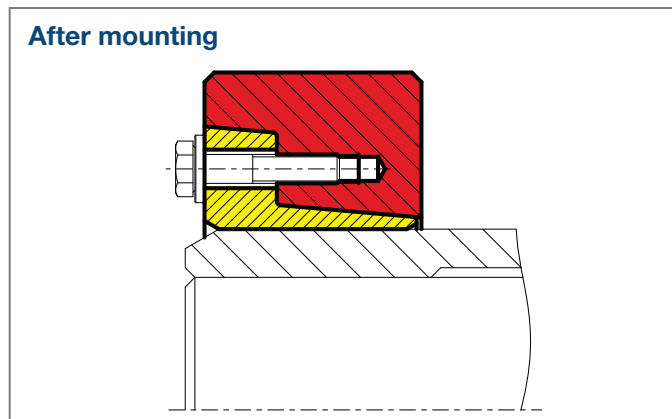
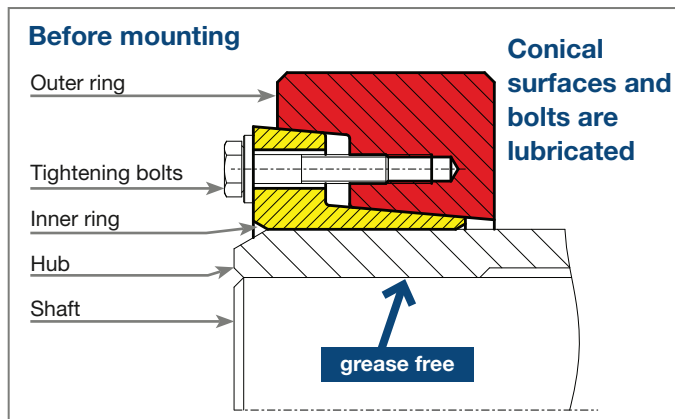
Pressure p<sub>w</sub> determined by means of equation (with the maximum transmissible torque M<sub>t</sub>).

$$p_w = \frac{2 \cdot M_t}{\pi \cdot d_w^2 \cdot l \cdot \mu_w}$$

$$p_a = p_w + \frac{\Delta d_w \cdot E \left( 1 - \left( \frac{d_w}{d} \right)^2 \right)}{2 \cdot d_w}$$

with  
 $\Delta d_w$  = fit clearance between shaft and hub  
 E = modulus of elasticity

# Mounting and Removal Instructions for Shrink Disc Type HSD



## Mounting

The STÜWE® shrink discs type HSD are supplied ready to be mounted. Therefore they should not be dismantled prior to employing the unit for the first time.

1. Degrease shaft and hub bore.  
The outer surface of the hub may be greased.

2. Slide shrink disc onto hub.



**Do not tighten the tightening bolts before the shaft is mounted.**

3. Fit the shaft or slide the hub onto the shaft.
4. Tighten four bolts distributed evenly over the circumference by reduced torque (approx. 50 to 70 % of maximum tightening torque).
5. Afterwards tighten all tightening bolts uniformly, one by one, over several revolutions until the outer ring and inner ring are flush.  
This indicates that the full transmissible torque is achieved.
6. Check each tightening bolt twice for the required tightening torque.

## Dismounting

This is similar to mounting.

1. Loosen all tightening bolts, initially not more than a quarter turn per bolt, one after one.



**Under no circumstances should the locking bolts be completely removed as this could be dangerous and result in injury.**

2. Should the outer ring, when loosening the bolts, not slide automatically from the inner ring, this can be assisted by removing those locking bolts adjacent to the tapped bores provided for jacking purposes and screwing them into these. The jacking procedure must be continued until a complete release of the outer ring is achieved.
3. Dismount shaft or draw off hub. Remove rust which may have formed on the shaft in front of the hub.
4. Remove shrink disc from hub.

## Cleaning and lubrication

Dismounted shrink discs do not have to be dismantled and re-lubricated before remounting.  
The shrink disc has to be cleaned and re-lubricated only if employed in dirty environment.

**Use a solid containing lubricant with a high content of MoS<sub>2</sub> and a coefficient of friction of  $\mu=0,04$  to lubricate the conical surfaces.**

**Usually a combination of bonded coating and paste is chosen.**

The bolts have to be renewed if possible.  
The bolts are lubricated with commercially available bolt lubricants ( $\mu=0,1$ ).

Examples:

Lubricant	Source
Molykote D 321 R (bonded coating)	Dow Corning
Aema-Sol MO 84-K (bonding coating)	A.C. Matthes
Molykote G Rapid + (paste)	Dow Corning
Aema-Sol M 19 P (paste)	A.C. Matthes