made in GERMANY

In-house development

Own manufacturing

Sole distributor in Germany

Working with distributors worldwide

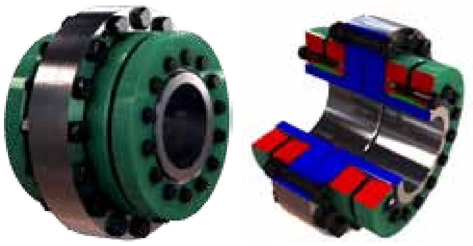
TAS SCHÄFER

Flange coupling

Connecting flange

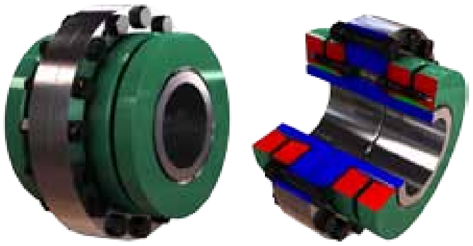
rigid connection

Design examples



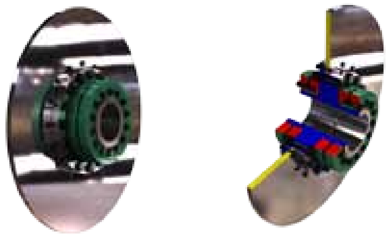
FK

Standard design



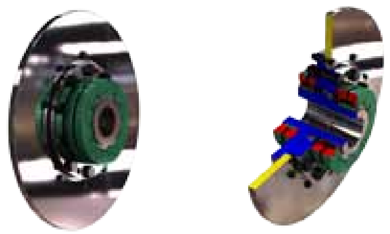
FKB

Like FK, but shrink disc
with hexagon socket screws
(bolting through flange)



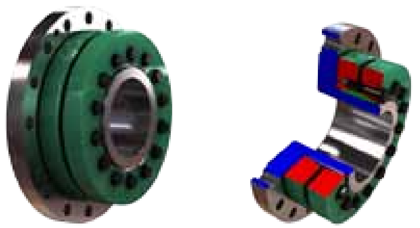
FKS

FK with brake disc



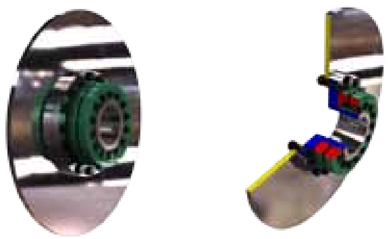
FKBS

Like FKS, but shrink disc
with hexagon socket screws
(bolting through flange)



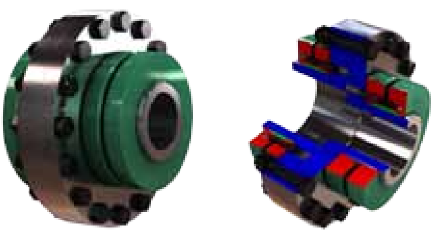
FK half design

Half FK in standard design.
Also available as half-FKB.



FKS half design

Half FK in standard design with brake disc
Also available as half FKBS.



FK with large diameter difference

Large variations in shaft diameters
with different shrink discs for all designs
(e.g. FKB-200/145/220 TAS)

Design examples

AFS

For medium torque transmission
Without bending moments

AF 12

For medium torque transmission
Without bending moments

AF 22

For high torque transmission
For bending moments

AF 23

For very high torque transmission
For bending moments

Content


QUALITY ON
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Hydraulic Shrink Disc
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Hydraulic Shrink Disc
for Wind power and Industrial applications
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for shaftings
Hydraulic Flange Coupling
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Description of function FK

Rigid flange coupling with three-parted shrink disc of the type TAS 30..

The main function of the rigid flange coupling (FK) is the safe and backlash-free connection of two shafts by means of friction. For example, between a drive shaft and an agitator shaft. Flange couplings are directly separable at the flanges. The used shrink discs generate a backlash-free connection by pressing the flange-hubs onto the shafts. This connection is mainly used to transmit torque.

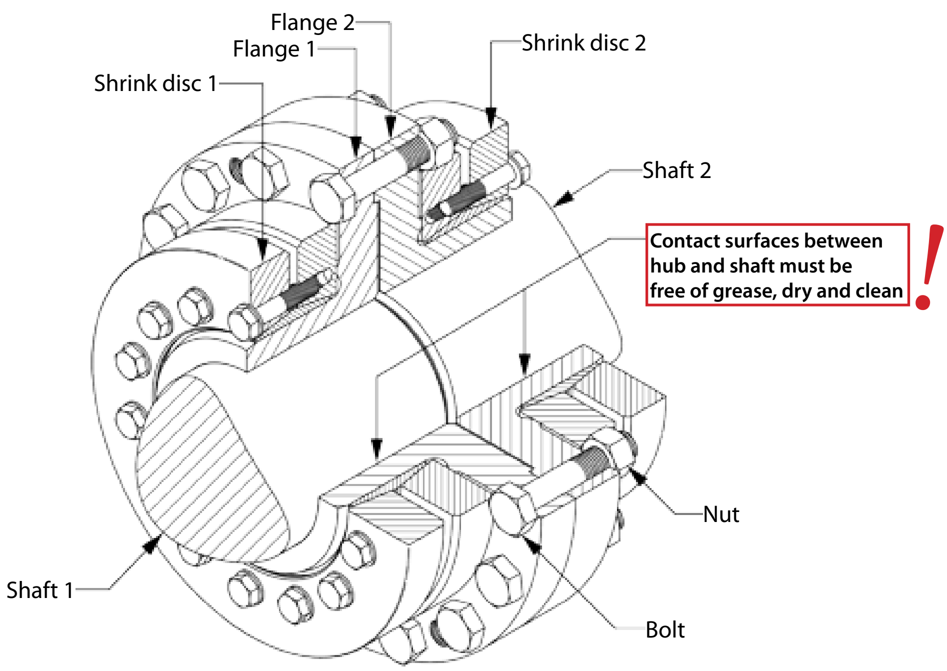
The shrink discs do not transmit any forces and/or moments between the shafts and hubs, they just provide the necessary forces. They are not in the flow of forces.

It is installed by sliding the flanges onto the shaft ends and subsequent tightening of the shrink disc. Thereafter the flanges are connected by bolting.

The rigid flange couplings are supplied ready for installation.

To achieve proper operation and a sufficiently high coefficient of friction, the contact surfaces between the shaft extensions and flange-hubs, as well as the contact surfaces of the flanges, must be free of grease, dry and clean. The functional surfaces of the shrink disc, threads and head rests of the screws are provided at the factory with lubricant. The contact surfaces between the flange-hubs and shrink discs are oiled.

A detailed installation manual is available on the Internet.



Product data

Data sheets

- Contact us if a data sheet for an individual product is required.

CAD data

- For CAD data of flange couplings, contact us directly, please. We provide them only upon request.

Basics - Design FK

Advantages and differences to other systems

- **Use of shrink discs / flow of forces**

  Due to the use of shrink discs, the forces and moments are transferred directly between the shaft and flange. In comparison with internal clamping systems the achievable runout accuracy is higher.

- **Pursue the same diameter - but an adaptation to different diameters is also possible**

  Basically the target should be to connect shaft ends of the same size. With larger deviations the flange-hubs can be adapted for the different diameters. This is done by using different shrink discs.

- **Tightening torque of the clamping screws**

  When using different shrink discs and shaft diameters, the tightening torque and therefore the clamping forces of the shrink discs are adjustable. For example, this is also possible with soft shaft materials and reduces, if required, the stresses in the components.

- **Positioning**

  The cylindrical connection, as well as the used clearance, allows an easy and precise positioning of the flanges on the shaft ends. During the clamping process there is no more shift.

- **Short length (B version)**

  The design „B", with clamping the shrink discs through the flange face, provides a very short mounting length, as there is no extra space needed behind the coupling.

- **No hydraulic necessary**

  A hydraulic expansion of the hubs is not necessary for mounting.

- **No heating necessary**

  There is no need for expansion of the hubs by heating. To increase the clearance between the shaft and flange, a slight warming is possible.

- **Shafts with keyways**

  The couplings can be used on shafts with keyways. As far as possible, the keyways should be closed.

Tolerances and surfaces

The values found in the product data, are based on surface quality and tolerances, according to the table below. These values are given as recommendations.

Higher values for the surface roughness reduce the transmissible torque and promote unwanted settling.

Larger clearance also reduces the transmissible torque and increases stresses in the flange-hub.

If you have different shaft tolerances, please let us know. Then we can adjust the bores in the flanges accordingly!

Recommended tolerances and surface roughness

>	≤	FS_{max} mm	Clearance Hub/Shaft	Rz µm
9	18	0,022	H6/h6	10
18	30	0,026	H6/h6	10
30	50	0,032	H6/h6	10
50	80	0,049	H7/h6	10
80	120	0,057	H7/h6	16
120	150	0,065	H7/h6	16
150	180	0,079	H7/g6	16
180	250	0,090	H7/g6	16
250	315	0,101	H7/g6	16
315	400	0,111	H7/g6	16
400	500	0,123	H7/g6	25
500	630	0,136	H7/g6	25
630	800	0,154	H7/g6	25
800	1000	0,172	H7/g6	25

Basics - Calculation FK

The calculation of the values, given in the catalogue, are based on the following assumptions and simplifications:

Distinction flange connection / shrink disc

Due to the design, the transmissible forces and torque, are to look separately for the shrink disc and the flange. While the shrink disk provides clamping forces only, the transmissible forces and torque must accommodated by the flange. This results in different values for shrink connection and flange.

Transmissible torque at the shrink disc

A shrink disc connection is capable of transmitting torque, bending moment and axial force. Substituted, the transmissible torque M_{max} is specified in the product data. If such loads occur simultaneously then they must be added vectorially to the resultant moment M_{res}. The formula below applies to the resulting moment:

$$M_{res} \leq M_{max}$$

At different load cases, they must be individually checked against M_{max}!

M_{res} is determined for combined loads as follows:

$$M_{res} = \sqrt{M_T^2 + M_B^2 + (F_{AX}\,\tfrac{dw}{2})^2}$$

with $M_B \leq 0{,}3\,M_T$ as the limit* for the the bending moment

*In principle, the maximum bending moment corresponds to the maximum transmittable torque. The limitation to 0,3 M_T is due to the change of the surface pressure at the edges of the connection. (This information applies to the shrink connection **only**!)

This results in the following relationships:

Torque only:
The maximum torque is equivalent to M_{max}.

Bending moment only:
The maximum bending moment corresponds to 0,3 M_T.

Axial force only:
The maximum axial force is $M_{max}\,\frac{2}{d_W}$.

Transmissible forces and torques at the flange connection

The bolt connection of the flanges is also based on friction. Based on this, torques can be transmitted. The torque capacity usually corresponds to the shrink disc, or is higher. The transmissible bending moment must be especially considered.

Bending influences the bolt connections and the flange itself. The static load usually corresponds to the transmissible bending moment of the shrink disc, the dynamic load is lower and will be determined in a particular case by us (Product questionnaire).

The same applies to axial loads, as they are transmitted directly by the bolt connection of the flanges.

Static and dynamic load

For some applications, a static view of the coupling is sufficient. The clamping forces of the shrink disk are static. Also steady torques and/or axial forces can be considered as static loads. Rotating bending, has to be considered as dynamic load and the coupling must be examined for that. Therefore, it is also essential to specify the occurring load cases.

Shaft and hub calculation

The catalogue contains information on the generated surface pressure for each shrink disc. The flange-hub will be deformed due to the applied clamping force. In addition to the clearance between shaft and flange-hub, shaft stiffness and surface finish should be concidered. For solid shafts the stiffness can be ignored, but with hollow shafts (see „Bore in the shaft (hollow shaft)") there is higher deformation and thus higher stresses in the components. This must be considered in addition to other loads.

The stresses in the hub can be determined by various hypotheses, such as GEH. We will not make a presentation and analyse results at this point because we would only be able to cover a very limited range of static applications. Various calculation methods for different cases can be found in engineering literature or using specialiced software. However, for complex geometry often only a calculation by FEM gives reliable results.

The information, about the minimum yield strength of shafts and hubs are suggested recommendations, based on typical values for such applications. They are provided as guidelines and are not a replacement for a proper calculation for a given application!

Notch effect

Generally there is a notch effect on the components, caused by the radial pressure of the shrink disc. This depends mainly on the applied pressure. The notch effect is generally higher on the hub than on the shaft, because here the inner ring of the shrink disc is directly pressed onto the hub, while the stresses are distributed through the hub before reaching the shaft. The notch factors range from 2,5 to 3,5 for the hub and between 1,5 and 2 for the shaft. This can be mitigated by suitable design features, such as relief notches.

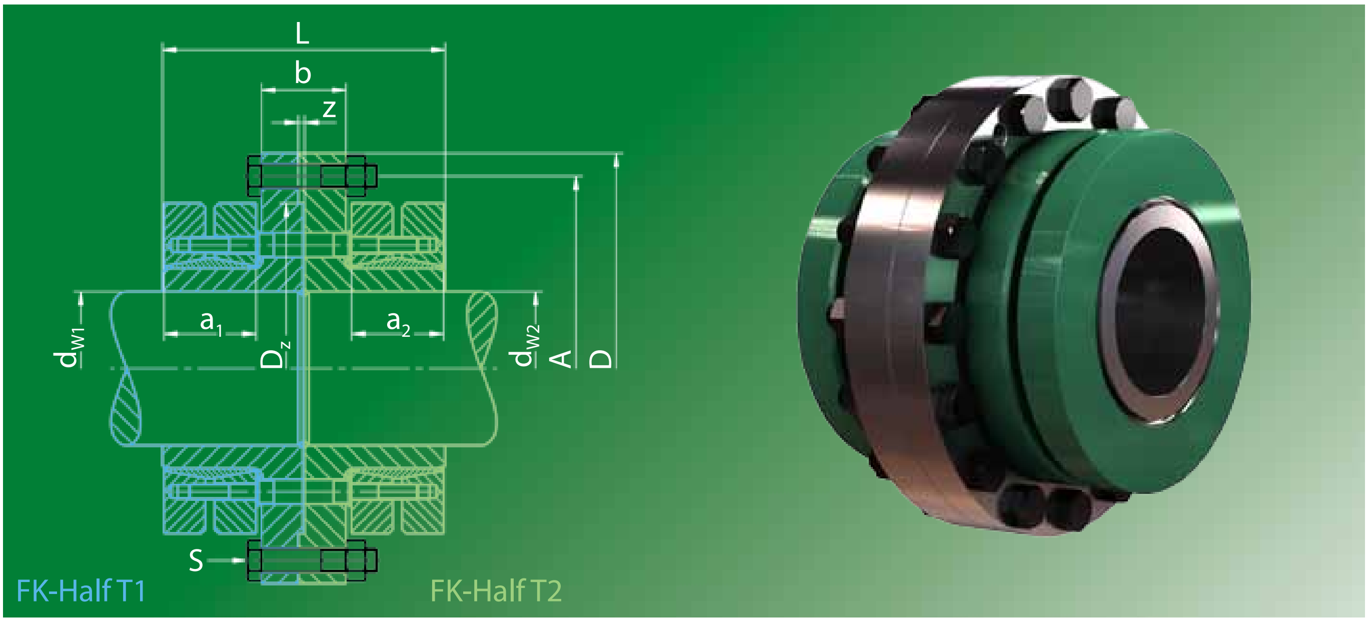
Basics - Calculation FK

Some standards provide the possibility of a notch factor to be determined by a fit pairing (interference fit) for a shrink-connection. A similar method also can be used for a shrink disc connection. To this end an oversize can be calculated from the applied surface pressures. As a result, a matching fit pair can be determine and thus a resultant notch factor found.

Bore in the shaft (hollow shaft)

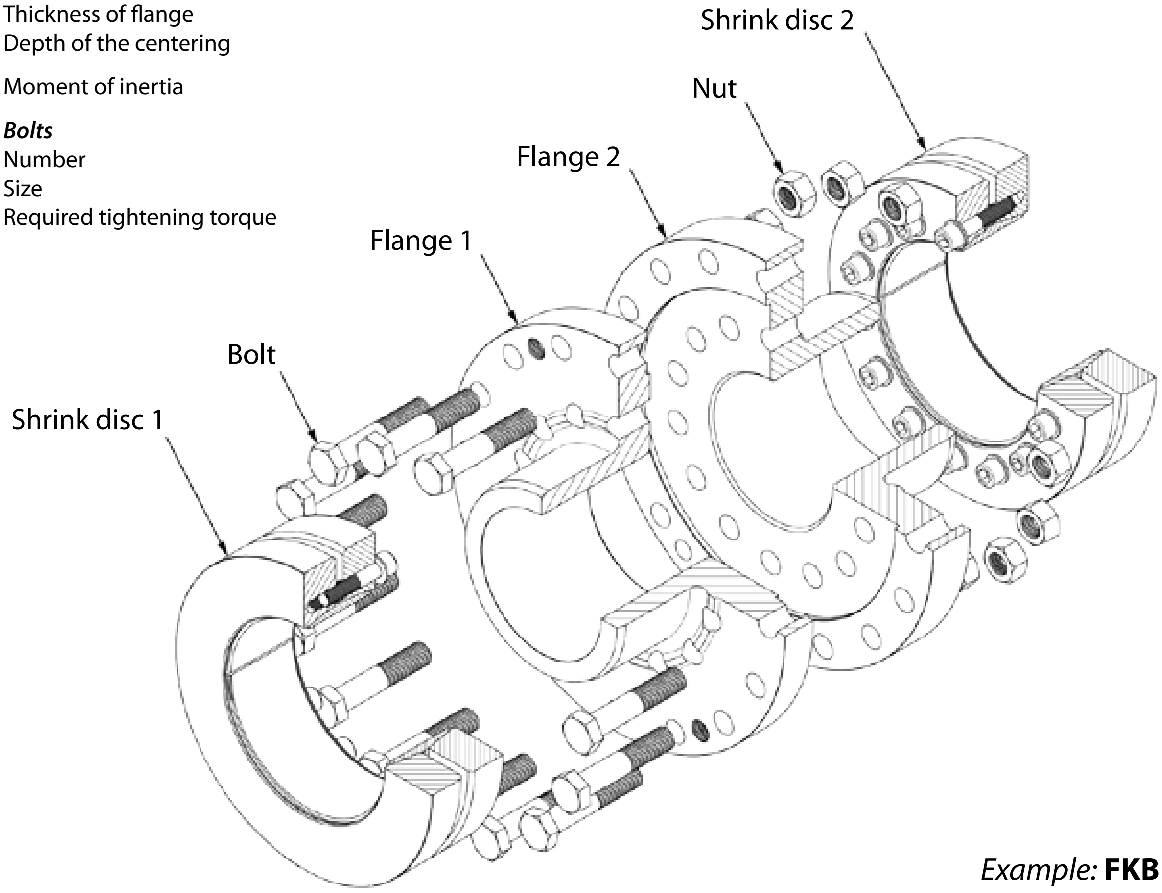
A large bore d_B in the shaft or the use of a hollow shaft, reduces the stiffness of this component against radial pressure. This leads to a decrease in pressure p_W , a reduced transmissible torque M, a contraction Δd_B within the shaft and an increase of stresses in these components. Basically, a bore should not be greater than 0,3 d_W .

Rigid flange coupling FK



Used Symbols

FK		Nominal size
d_{W1} & d_{W2}	[mm]	Shaft diameters
$M_{t\,max}$	[Nm]	Maximal transmittable torque (depends on used shrink disc and d_W)
A	[mm]	Pitch circle diameter
D	[mm]	Outer diameter
D_z	[mm]	Diameter of the flange centering
L	[mm]	Width of the flange coupling
a	[mm]	Width of the shrink disc
b	[mm]	Thickness of flange
z	[mm]	Depth of the centering
I	[kgm²]	Moment of inertia
		Bolts
Z		Number
S		Size
M_A	[Nm]	Required tightening torque



Example: **FKB**

Rigid flange coupling FK

Standard dimensions

FK	d_W	$M_{t\,max}$	Shrink disc Type	Shrink disc M_A	Dimensions A	D	D_z	L	a	b	z	Flange bolts Z	S	M_A	I	Weight
	mm	Nm	3071-*d*	Nm	mm	mm	mm	mm	mm	mm	mm	Stk		Nm	kgm^2	kg
75	75	7300	100	30	210	240	170	136	44	44	4	6	M 16 x 70	210	0,165499	26
90	90	13100	125	59	265	305	215	160	54	48	5	6	M 20 x 80	420	0,487699	48
100	100	17900	140	100	286	340	230	190	64	56	5	5	M 24 x 90	720	0,829143	63
120	120	38700	165	250	356	400	300	228	75	72	5	8	M 24 x 110	720	2,126131	120
130	130	42600	175	250	356	400	300	228	75	72	5	8	M 24 x 110	720	2,246611	120
150	150	79500	195	250	420	475	350	278	90	90	6	10	M 30 x 130	1450	5,408399	215
165	165	103000	220	250	440	510	370	314	108	90	6	14	M 30 x 130	1450	7,692146	270
180	180	144000	240	490	475	540	405	322	113	88	6	16	M 30 x 130	1450	10,247074	310
200	200	193000	(1) 260	490	500	560	430	368	125	110	8	16	M 30 x 150	1450	14,889123	395
220	220	251000	280	490	530	590	460	392	139	104	8	18	M 30 x 150	1450	18,392262	445
240	240	318000	300	490	555	615	485	408	147	104	8	20	M 30 x 150	1450	22,627586	500
260	260	435000	340	490	640	710	570	450	161	118	8	24	M 30 x 160	1450	45,880687	780
290	290	519000	360	490	660	720	590	450	167	106	8	24	M 30 x 150	1450	76,117692	790
310	310	697000	390	840	735	805	660	484	180	114	8	28	M 30 x 160	1450	81,558246	1060
340	340	891000	420	840	770	835	690	528	208	122	10	30	M 30 x 160	1450	102,442438	1230
380	380	1198000	460	840	845	920	770	586	202	128	10	35	M 30 x 170	1450	166,038502	1420
410	410	1431000	500	1250	940	1030	850	618	225	156	12	32	M 36 x 200	2400	283,051874	2200
440	440	1961000	530	1250	1000	1100	900	696	258	160	14	36	M 36 x 200	2400	382,170457	2680
470	470	2397000	590	1250	1080	1180	980	744	280	164	14	40	M 36 x 200	2400	553,092493	3340
500	500	2742000	620	1250	1110	1210	1020	744	280	164	14	42	M 36 x 200	2400	638,288490	3620

(1) **3071.4**

How to order (*product identification*)

T	A	S		F	K	B	S	-	0	9	0	/	1	0	0	/	1	0	0	-	0	0	0	1

type

optional - design „B"

optional - brake disc

nominal size of the flange coupling *FK*

Shaft diameter at flange T1 d_{W1}

Shaft diameter at flange T2 d_{W2} *(not applicable for half FK)*

Item number *(if known)*

Includes reference to:
Type of shrink discs
Size of shrink discs
Toleranced dimensions
Tightening torques

Examples:

TAS FK-090/085/095	Flange coupling in nominal size FK = 090 / d_{W1} = Ø85 / d_{W2} = Ø95
TAS FKB-090/085/095	Flange coupling design „B" in nominal size FK = 090 / d_{W1} = Ø85 / d_{W2} = Ø95
TAS FKS-090/085/095	Flange coupling with brake disc in nominal size FK = 090 / d_{W1} = Ø85 / d_{W2} = Ø95
TAS FKBS-090/085/095	Flange coupling design „B" with brake disc in nominal size FK = 090 / d_{W1} = Ø85 / d_{W2} = Ø95

Explanation of the product questionnaire FK/FKH

Application questionnaire

Why this questionnaire exists! *(Notes on the questionnaire)*

The purpose of the flange coupling of the type FK is, the rigid connection of two shafts, generally for transmission of torque. This type of coupling, meanwhile are used in many different applications. These transmits various loads through the coupling and therefore they have diverse requirements.

The questionnaire was developed to illustrate the main features of such couplings and to determine requirements, depending on the application. This includes the loads, exact geometry data and design type of the coupling.

The typical characteristics, which can be found in almost every application, will be queried on the first sheet. Special needs arise in applications that generate significant bending torques at the couplings. They can be of static and dynamic nature and affect dramatically the usability of couplings. Often, the bending moments, are the most important design criteria!

Special attention will be paid to applications such as belt drives. These applications are treated specially on page 2 of the questionnaire. The additional requested information here, should make it possible to determine the loads of all possible operating conditions. Depending on the design and operating conditions, many different load cases are considered, which are mainly influenced by the following points:

- Mass, center of gravity and torque-arm define the static loads
- Torque, rotating direction and torque-arm define the dynamic loads
- Brakes and backstops can invert the loads
- Movable systems may cause load changes
- Stiffness and manufacturing tolerances can cause unwanted reactions

The requested information in this area allows us a closer look at these relations. Finally this results in a reliable choice or new design of a flange coupling for your application.

TAS SCHÄFER

Dimensioning of Rigid Coupling Design FK/FKH

(Shaft - Connection)

Sheet 1/2

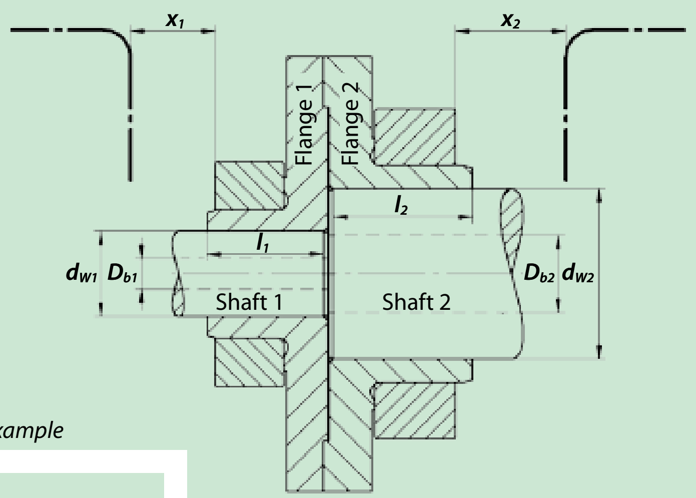
Company		Date	
Address			
Contact		Department	
Phone		FAX	
E-Mail			
Reference			

TAS Schäfer GmbH
Osterfeldstraße 75
58300 Wetter (Ruhr)
Germany
☎ +49 (0) 2335 9781-0
🖷 +49 (0) 2335 72956
E-Mail: info@tas-schaefer.de

In order to allow us an accurate evaluation / design, please fill in all the known data.
If you are able to provide us a drawing, a sketch or similar, please send us such known information too.

Loads:

Motor power	*p*	[kW]	
Motor speed	*n*	[min^{-1}]	
Transmission ratio	i		
Drive speed	*n*	[min^{-1}]	
Nominal torque	M_t	[Nm]	
Max. torque	$M_{t\,max}$	[Nm]	
Safety factor	*SF*		
Nominal braking torque	M_{br}	[Nm]	
Holdback torque	M_{rh}	[Nm]	
Operation time		[%]	
Number of starts		[n/t]	



Example

Geometric details:

Shaft 1 / Flange 1 (*male*)

Shaft diameter	d_{W1}[mm]		Tolerance		Rz
Bore in the shaft	D_{b1}[mm]				
Material		$R_e/R_{p0,2}$ [MPa]		*E-Modulus* [MPa]	
Max. clamping length	l_1 [mm]				
available space	x_1 [mm]				

Shaft 2 / Flange 2 (*female*)

Shaft diameter	d_{W2}[mm]		Tolerance		Rz
Bore in the shaft	D_{b2}[mm]				
Material		$R_e/R_{p0,2}$ [MPa]		*E-Modulus* [MPa]	
Max. clamping length	l_2 [mm]				
available space	x_2 [mm]				

Device type:

- ◯ FK standard
- ◯ FK type „B“
- ◯ FKH (hydraulic)
- ◯ Customized

Environment:

- ☐ corrosive
- ☐ Dust

Temperature range [°C]

(for a “flying” drive, use sheet 2 please)

			static	*dynamic*
Max. bending moment	M_b	[Nm]		
Max. radial load	F_{rad}	[N]		
Max. axial load	F_{ax}	[N]		

Comments: (coatings, environmental conditions, number of tensions, special requirements, etc. ...)

This form is also available on our website at - www.tas-schaefer.de

Dimensioning of Rigid Coupling Design FK/FKH

(Shaft - Connection)

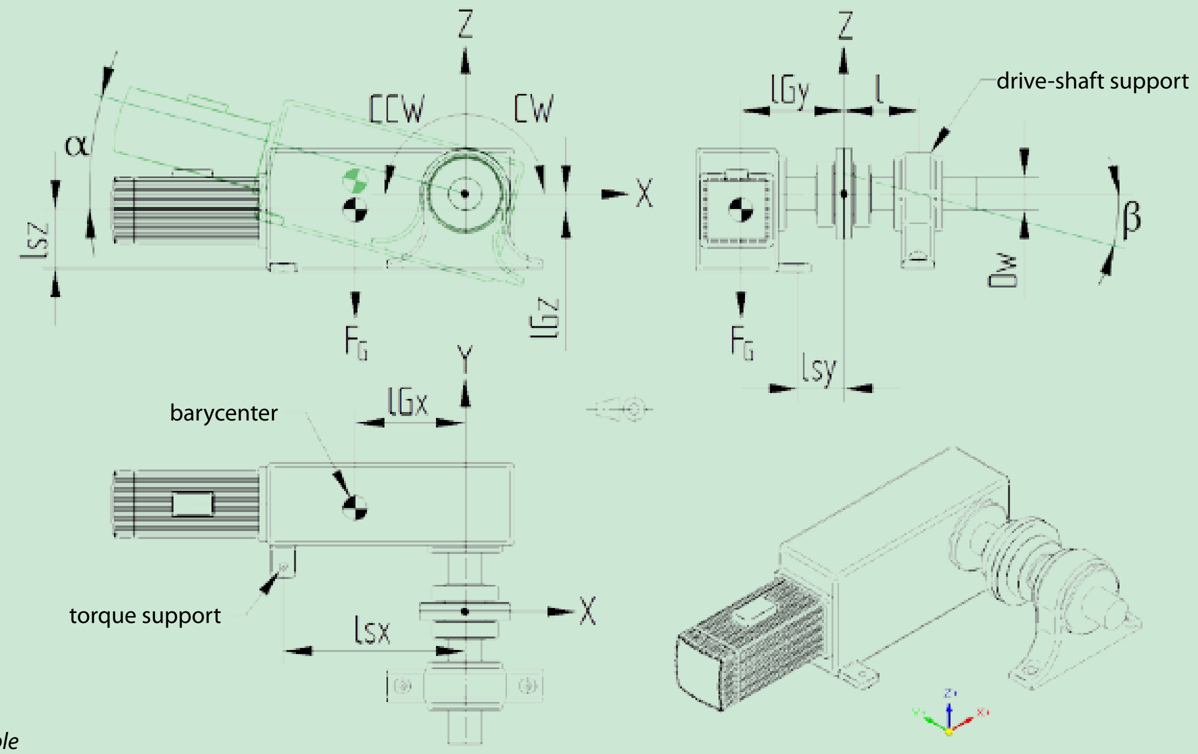
Company ______________________ Date __________

Address ______________________

Reference ______________________

TAS Schäfer GmbH
Osterfeldstraße 75
58300 Wetter (Ruhr)
Germany

Using a "flying" drive (typical arrangement for conveyor drives), creates bending moment. Information about weight, COG, torque-arm, rotational direction and type of torque support are very important to evaluate the bending loads. All information is needed to do this calculation completely!



Example

Drivetrain mass	F_G [N]						
Shaft extension	l [mm]						
Position of barycenter (COG)		lGx [mm]		lGy [mm]		lGz [mm]	
	min.						
	max.(1)					(1)	
Position torque support		lsx [mm]		lsy [mm]		lsz [mm]	
	min.						
(1) *only if variable*	max. (1)					(1)	

Angle of drivetrain α [°] ____ ☐ alterable from ____ to ____

Further details

Rigidity of torque support	[N/mm]			
Enabled movement	X± [mm]		Y± [mm]	
Shaft bending under load	β [minute]			
Max. shaft run-out (manufacturing):	radial [mm]		angle [minute]	

Examples for torque support mounting

Fixed: stationary (screws, bolts fastening, …)
Flexible: freely movable or possible slight movements (rubber bearing, …)
Variable: movable in a defined direction (rail system, swinging support, …)

Direction of rotation:
- ◯ CW (clockwise)
- ◯ CCW (counterclockwise)
- ◯ CW/CCW (both directions)

Torque support design:
- ◯ fixed
- ◯ flexible
- ◯ variable

Backstop:
- ◯ without
- ◯ at drive
- ◯ not at drive

Brake:
- ◯ without
- ◯ at drive
- ◯ not at drive

This form is also available on our website at - www.tas-schaefer.de

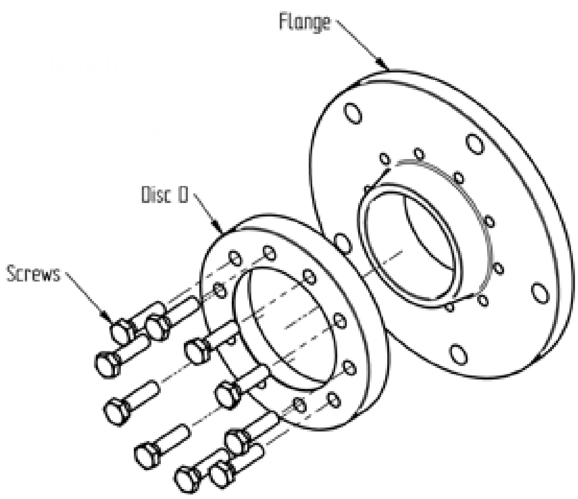
Connecting flange AFS

Used Symbols

d_W	[mm]	Shaft diameter
D	[mm]	Outer diameter of the connecting flange
$M_{t\,max}$	[Nm]	max transmittable torque
H	[mm]	Width of the connecting flange
d	[mm]	Outer diameter disc D
A	[mm]	Pitch circle diameter disc D
$A1$	[mm]	Pitch circle diameter flange
b	[mm]	Width of the flange
		Schrauben
Z		Number of screws disc D
S		Size
M_A	[Nm]	Required tightening torque
S/a		Number/ Size bores of the flange

Design of the connecting flange

Alternative versions with centering, tapped holes and additional sizes on request.

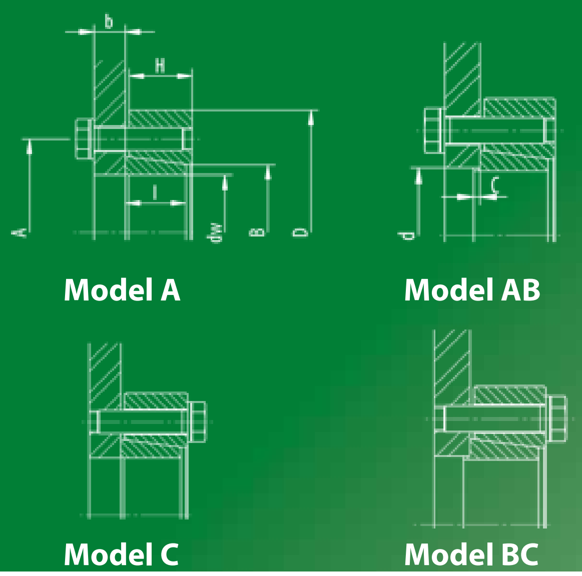


Example: **AFS-200/470**

Connecting flange AFS

d_w mm	D mm	M_t Nm	H mm	d mm	A mm	Z Stk	S	M_A Nm	A_1 mm	S/a_1	M_A Nm	b mm	Weight kg
30	**105**	310	23	70	54	6	M6 x 020	12	90	4/6,6	12	34	1,00
35	**110**	450	23	75	59	7	M6 x 020	12	95	5/6,6	12	34	1,1
40	**130**	645	26	85	64	8	M6 x 022	12	110	4/9	30	34	1,3
45	**135**	850	26	90	68	9	M6 x 022	12	115	4/9	30	34	1,4
50	**140**	1100	27	95	73	10	M6 x 025	12	120	5/9	30	34	1,7
55	**150**	1375	27	105	78	11	M6 x 025	12	130	5/9	30	34	1,9
60	**155**	1725	28	110	84	12	M6 x 025	12	135	6/9	30	34	2,0
65	**170**	1940	30	125	95	7	M8 x 030	30	150	7/9	30	34	2,6
70	**180**	2500	30	135	100	8	M8 x 030	30	160	8/9	30	34	3,1
75	**195**	3000	34	140	105	9	M8 x 030	30	170	6/11	59	34	3,6
80	**200**	3650	34	145	110	10	M8 x 030	30	175	7/11	59	34	4,1
85	**210**	4150	37	155	118	11	M8 x 035	30	185	7/11	59	34	4,8
90	**215**	4950	37	160	123	12	M8 x 035	30	190	8/11	59	34	5,4
100	**235**	7350	40	180	138	10	M10 x 040	59	210	10/11	59	34	5,7

AF Series 12



Used Symbols

Typ		Nominal size
d_W	[mm]	Shaft diameter
$M_{t\,max}$	[Nm]	Max transmittable torque
D	[mm]	Outer diameter
l	[mm]	Length of the bush
H	[mm]	Width of the external clamping element
A	[mm]	Pitch circle diameter
C	[mm]	Length of the centering
d	[mm]	Diameter of the centering
B	[mm]	Attachment size
		Screws
Z		Number of screws
S		Size of screws
M_A	[Nm]	Required tightening torque

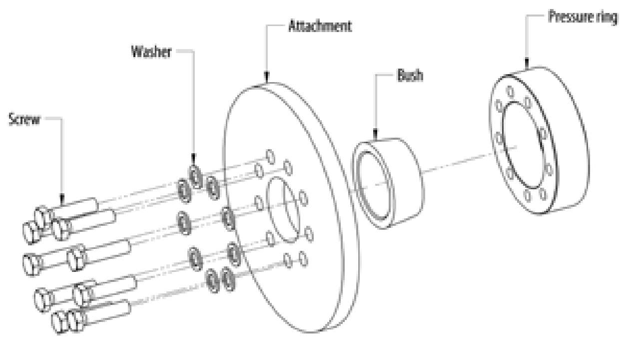
Design of the external clamping element

Pressure ring painted

Dimension ***H*** in unlocked position

Applies to all types:

b > 1,4 x Screw diameter



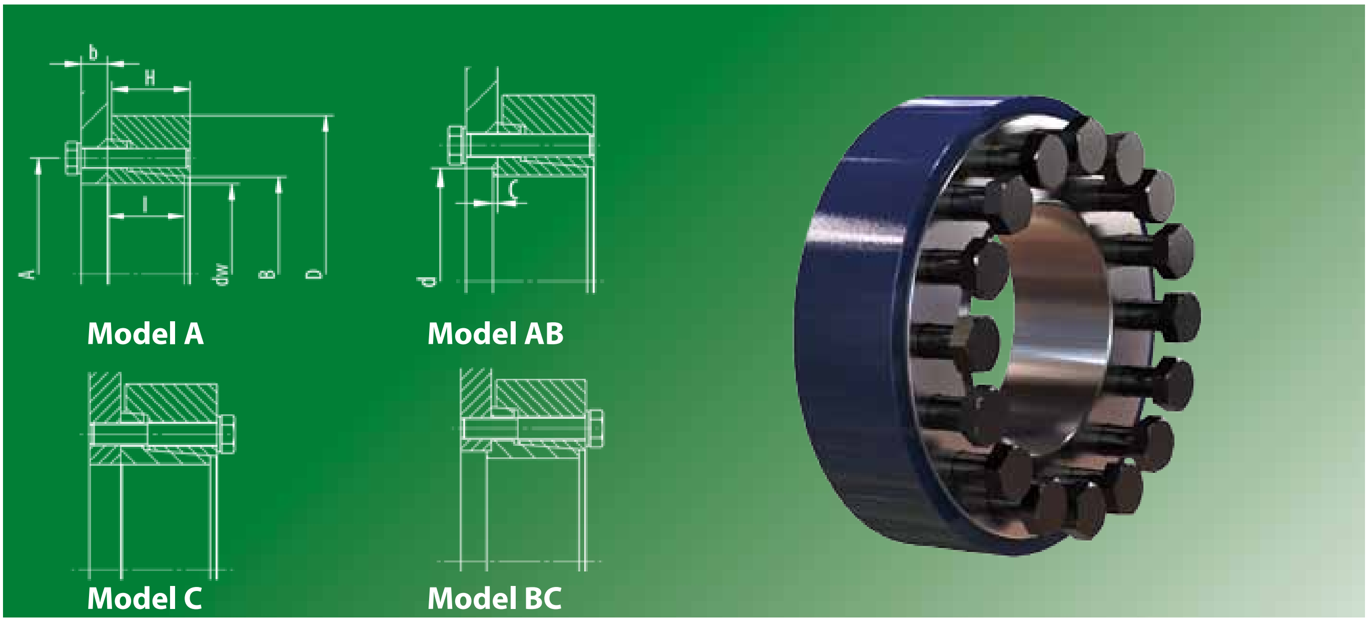
Example: **AF-60-12-60 A**

- Model
- Shaft diameter
- Series
- Nominal size

AF Series 12

Typ	d_w mm	Mt_{max} Nm	D mm	*l* mm	H mm	A mm	C mm	d mm	B mm	Z Stk.	S	Class	Ma Nm	Weight kg
	11	20												
AF-10	10	20	39	9	10	25	1,5	12	13	3	M6x18	10.9	12	0,1
	9	20												
	13	50												
AF-12	12	50	44	12	13	28	1,5	14	16	3	M6x20	10.9	12	0,1
	11	50												
	16	130												
AF-15	15	130	52	14	15	36	2	18	21	3	M8x25	10.9	29	0,2
	14	130												
	20	200												
AF-20	18	200	60	16	17	42	2	22	25	3	M8x30	10.9	29	0,3
	16	200												
	25	340												
AF-25	22	340	70	18	19	48	2	27	31	5	M8x30	10.9	29	0,4
	20	340												
	30	550												
AF-30	28	550	76	20	21	56	2	32	38	6	M8x35	10.9	29	0,6
	25	550												
	40	1060												
AF-40	35	1060	96	24	25	70	3	43	47	6	M10x35	10.9	58	1,2
	30	1060												
	50	2200												
AF-50	45	1800	112	29	30	84	3	53	58	7	M12x45	10.9	100	2
	40	1000												
	60	3230												
AF-60	55	3230	120	32	34	94	3	63	66	9	M12x50	10.9	100	2,3
	50	2300												
	70	5800												
AF-70	65	5800	148	38	40	112	4	74	79	8	M16x60	10.9	240	4,2
	60	4500												
	80	8640												
AF-80	75	8640	170	42	44	130	4	84	94	9	M16x65	10.9	240	6,1
	70	6900												
	90	12000												
AF-90	85	12000	185	48	50	144	4	94	104	12	M16x70	10.9	240	8
	80	10700												
	100	15800												
AF-100	95	15800	197	52	54	156	4	104	113	14	M16x75	10.9	240	9,5
	90	15800												

AF Series 22



Used Symbols

Typ		Nominal size
d_W	[mm]	Shaft diameter
$M_{t\,max}$	[Nm]	Max transmittable torque
D	[mm]	Outer diameter
l	[mm]	Length of the bush
H	[mm]	Width of the external clamping element
A	[mm]	Pitch circle diameter
C	[mm]	Length of the centering
d	[mm]	Diameter of the centering
B	[mm]	Attachment size
		Screws
Z		Number of screws
S		Size of screws
M_A	[Nm]	Required tightening torque

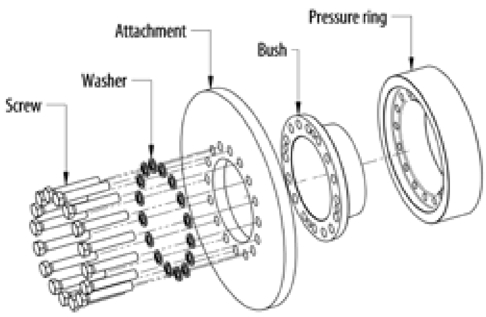
Design of the external clamping element

Pressure ring painted

Dimension ***H*** in unlocked position

Applies to all types:

b > 1,4 x Screw diameter



Example: **AF-60-22-60 A**

- Model
- Shaft diameter
- Series
- Nominal size

AF Series 22

Typ	d_w mm	Mt_{max} Nm	D mm	l mm	H mm	A mm	C mm	d mm	B mm	Z Stk.	S	Class	Ma Nm	Weight kg
	12	50												
AF-12	11	50	35	10	7	24	1,5	14	13	3	M6x20	10.9	12	0,1
	14	70												
AF-14	13	70	38	10	7,3	26	1,5	16	15	3	M6x20	10.9	12	0,1
	16	80												
AF-16	15	80	41	13,5	9	28	2	18	17	3	M6x25	10.9	12	0,1
	18	130												
AF-18	17	130	44	13,5	9	30	2	20	19	4	M6x25	10.9	12	0,1
	20	140												
AF-20	19	140	47	13,5	9	32	2	22	21	4	M6x25	10.9	12	0,2
	25	200												
AF-25	24	200	50	17	17	36	2	27	26	5	M6x30	10.9	12	0,2
	22	200												
	30	300												
AF-30	28	300	60	18	19	44	3	32	32	6	M6x30	10.9	12	0,3
	26	300												
	36	500												
AF-35	35	500	72	20	21	52	3	38	38	5	M8x35	10.9	29	0,5
	32	450												
	44	750												
AF-40	40	750	80	22	23	61	3	46	47	6	M8x35	10.9	29	0,7
	38	720												
	50	1300												
AF-50	45	1300	90	24	25	68	3	53	53	8	M8x40	10.9	29	0,9
	42	1000												
	55	1600												
AF-55	52	1600	100	26	27	72	3	58	58	8	M8x40	10.9	29	1,2
	45	1600												
	62	2000												
AF-60	60	2000	110	26	27	80	3	63	66	9	M8x40	10.9	29	1,4
	50	2000												
	70	2100												
AF-70	65	2100	115	26	27	86	4	74	72	9	M8x40	10.9	29	1,5
	60	2100												
	80	4000												
AF-80	75	4000	141	28	29	100	4	84	82	10	M10x45	10.9	58	2,5
	70	4000												
	90	5700												
AF-90	85	5700	155	34	35	114	4	94	94	12	M10x50	10.9	58	3,6
	80	5700												

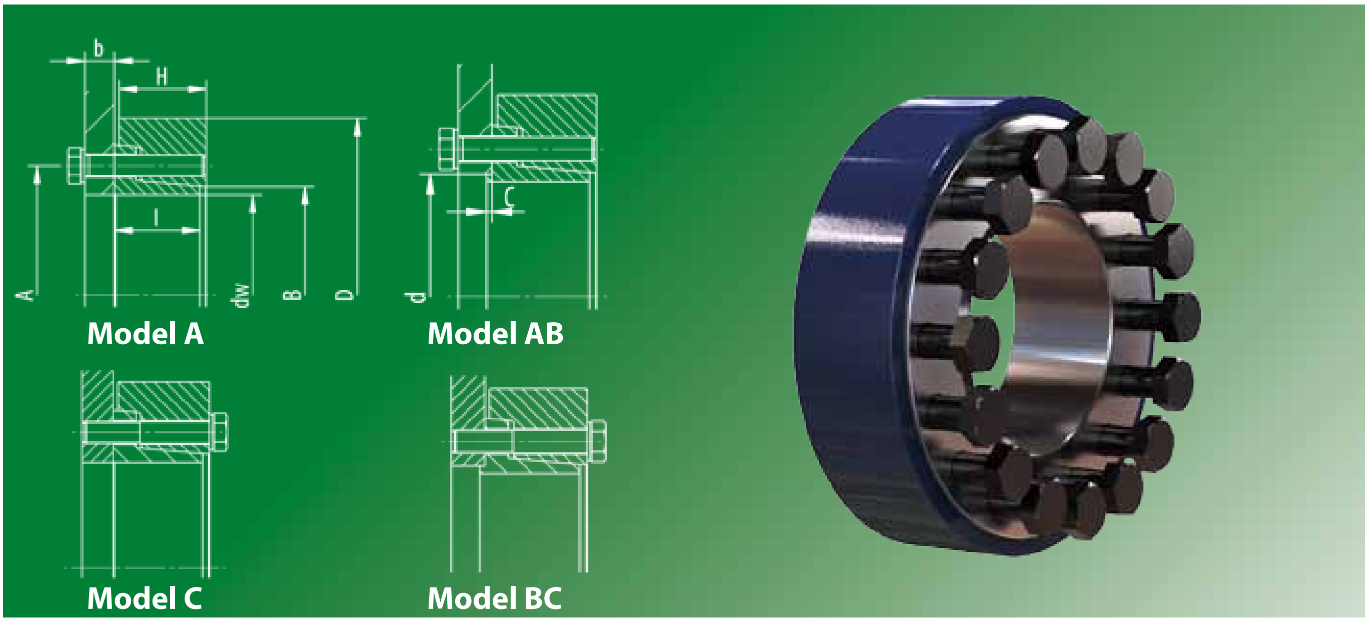
AF Series 22

Typ	d_w mm	Mt_{max} Nm	D mm	l mm	H mm	A mm	C mm	d mm	B mm	Z Stk.	S	Class	Ma Nm	Weight kg
	100	8400												
AF-100	95	8400	170	39	40	124	4	104	104	12	M12x60	10.9	100	4,6
	90	8400												
	110	9200												
AF-110	105	9200	185	45	46	136	5	116	114	12	M12x70	10.9	100	6,2
	100	9200												
	125	21000												
AF-125	120	21000	215	48	50	160	5	126	134	12	M16x75	10.9	240	8,8
	115	21000												
	140	26000												
AF-140	135	26000	230	52	54	176	5	146	146	14	M16x80	10.9	240	11
	130	26000												
	160	31000												
AF-155	155	31000	263	54	55	192	5	166	162	15	M16x80	10.9	240	15
	150	31000												
	170	36000												
AF-170	165	36000	290	61	62	204	5	176	175	16	M16x90	10.9	240	21
	160	36000												
	180	43000												
AF-180	175	43000	300	61	62	218	5	186	185	18	M16x90	10.9	240	22
	170	43000												
	190	60000												
AF-190	185	60000	320	77	78	232	5	196	195	15	M20x110	10.9	470	31
	180	60000												
	200	67000												
AF-200	195	67000	340	75	78	246	5	206	209	16	M20x110	10.9	470	35
	190	67000												
	220	93000												
AF-220	210	93000	370	95	96	270	5	226	230	14	M24x130	10.9	820	53
	200	93000												
	240	117000												
AF-240	230	117000	405	98	100	296	5	246	248	16	M24x140	10.9	820	64
	220	117000												
	260	126000												
AF-260	250	126000	430	106	106	318	5	266	266	16	M24x150	10.9	820	80
	240	126000												
	280	151000												
AF-280	270	151000	460	118	118	340	5	286	288	18	M24x160	10.9	820	95
	260	151000												
	300	178000												
AF-300	290	178000	485	125	126	360	5	306	309	20	M24x170	10.9	820	110
	280	178000												
	320	248000												
AF-320	300	248000	520	125	126	380	5	330	328	20	M27x170	10.9	1210	134
	280	248000												

AF Series 22

Typ	d_w mm	Mt_{max} Nm	D mm	l mm	H mm	A mm	C mm	d mm	B mm	Z Stk.	S	Class	Ma Nm	Weight kg
AF-340	340	275000	570	134	136	402	5	350	351	21	M27x180	10.9	1210	180
	320	275000												
	300	275000												
AF-360	360	290000	590	142	144	424	8	370	367	21	M27x180	10.9	1210	200
	340	290000												
	320	290000												
AF-390	390	363000	630	146	148	458	8	400	398	20	M30x190	10.9	1640	222
	370	363000												
	350	363000												
AF-420	420	407000	650	166	168	490	8	430	424	21	M30x210	10.9	1640	263
	400	407000												
	380	407000												
AF-440	440	426000	670	174	176	512	8	450	448	21	M30x220	10.9	1640	309
	420	426000												
	400	426000												

AF Series 23



Used Symbols

Typ		Nominal size
d_W	[mm]	Shaft diameter
$M_{t\,max}$	[Nm]	Max transmittable torque
D	[mm]	Outer diameter
l	[mm]	Length of the bush
H	[mm]	Width of the external clamping element
A	[mm]	Pitch circle diameter
C	[mm]	Length of the centering
d	[mm]	Diameter of the centering
B	[mm]	Attachment size
		Screws
Z		Number of screws
S		Size of screws
M_A	[Nm]	Required tightening torque

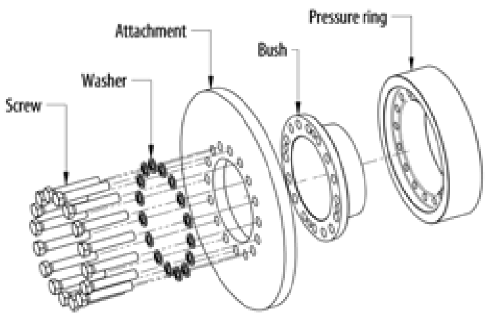
Design of the external clamping element

Pressure ring painted

Dimension ***H*** in unlocked position

Applies to all types:

b > 1,4 x Screw diameter



Example: **AF-60-23-60 A**

- Model
- Shaft diameter
- Series
- Nominal size

AF Series 23

Typ	d_w mm	Mt_{max} Nm	D mm	l mm	H mm	A mm	C mm	d mm	B mm	Z Stk.	S	Class	Ma Nm	Weight kg
	50	3300												
AF-50	45	2200	115	29	30	84	3	53	58	7	M12x45	10.9	100	2
	40	1400												
	60	4700												
AF-60	55	3500	120	32	34	94	3	63	66	9	M12x50	10.9	100	2,2
	50	2300												
	70	9400												
AF-70	65	7600	148	38	40	112	4	74	79	8	M16x60	10.9	240	3,9
	60	5800												
	80	12000												
AF-80	75	10000	167	43	46	130	4	84	94	9	M16x65	10.9	240	5,4
	70	8000												
	90	18000												
AF-90	85	15000	185	48	50	144	4	94	104	12	M16x70	10.9	240	7,4
	80	12000												
	100	23000												
AF-100	95	19000	197	52	54	156	4	104	114	14	M16x75	10.9	240	8,7
	90	16000												
	110	27000												
AF-110	105	26000	215	56	58	166	5	116	124	10	M20x90	10.9	470	11
	100	22000												
	120	43000												
AF-120	115	38000	230	62	65	186	5	126	134	14	M20x90	10.9	470	13,6
	110	33000												
	140	56000												
AF-140	130	50000	290	75	76	216	5	146	160	16	M20x100	10.9	470	29
	120	39000												
	160	77000												
AF-160	150	77000	320	82	83	234	5	166	180	14	M24x110	10.9	820	36,1
	140	64000												
	180	104000												
AF-180	170	101000	340	91	94	276	5	186	205	16	M24x130	10.9	820	45,3
	160	85000												
	200	144000												
AF-200	190	133000	370	95	96	290	5	206	226	16	M27x140	10.9	1210	53,7
	180	114000												
	220	178000												
AF-220	210	178000	405	96	96	320	5	226	246	18	M27x140	10.9	1210	64,3
	200	159000												
	240	211000												
AF-240	230	211000	430	109	110	340	5	246	267	20	M27x150	10.9	1210	81
	220	211000												
	260	232000												
AF-260	250	234000	460	118	118	356	5	286	289	21	M27x160	10.9	1210	109,4
	240	234000												

AF Series 23

Typ	d_w mm	Mt_{max} Nm	D mm	l mm	H mm	A mm	C mm	d mm	B mm	Z Stk.	S	Class	Ma Nm	Weight kg
AF-280	280	234000	485	124	125	360	5	306	304	21	M27x180	10.9	1210	116
	270	234000												
	260	234000												
AF-300	300	247000	520	128	126	380	5	330	315	21	M27x180	10.9	1210	141
	290	247000												
	280	247000												
AF-320	320	299000	550	134	136	402	5	350	336	24	M27x180	10.9	1210	161
	310	299000												
	300	299000												
AF-340	340	315000	570	140	143	424	8	370	368	24	M27x180	10.9	1210	177
	330	315000												
	320	315000												
AF-360	360	410000	610	144	147	454	8	400	383	24	M30x190	10.9	1640	210
	350	410000												
	340	410000												
AF-390	390	439000	630	164	167	486	8	430	428	24	M30x200	10.9	1640	250
	380	439000												
	360	439000												
AF-420	420	457000	670	172	175	506	10	450	440	24	M30x220	10.9	1640	292
	410	457000												
	390	457000												
AF-440	440	562000	700	172	175	534	10	470	468	28	M30x220	10.9	1640	318
	420	562000												
	400	562000												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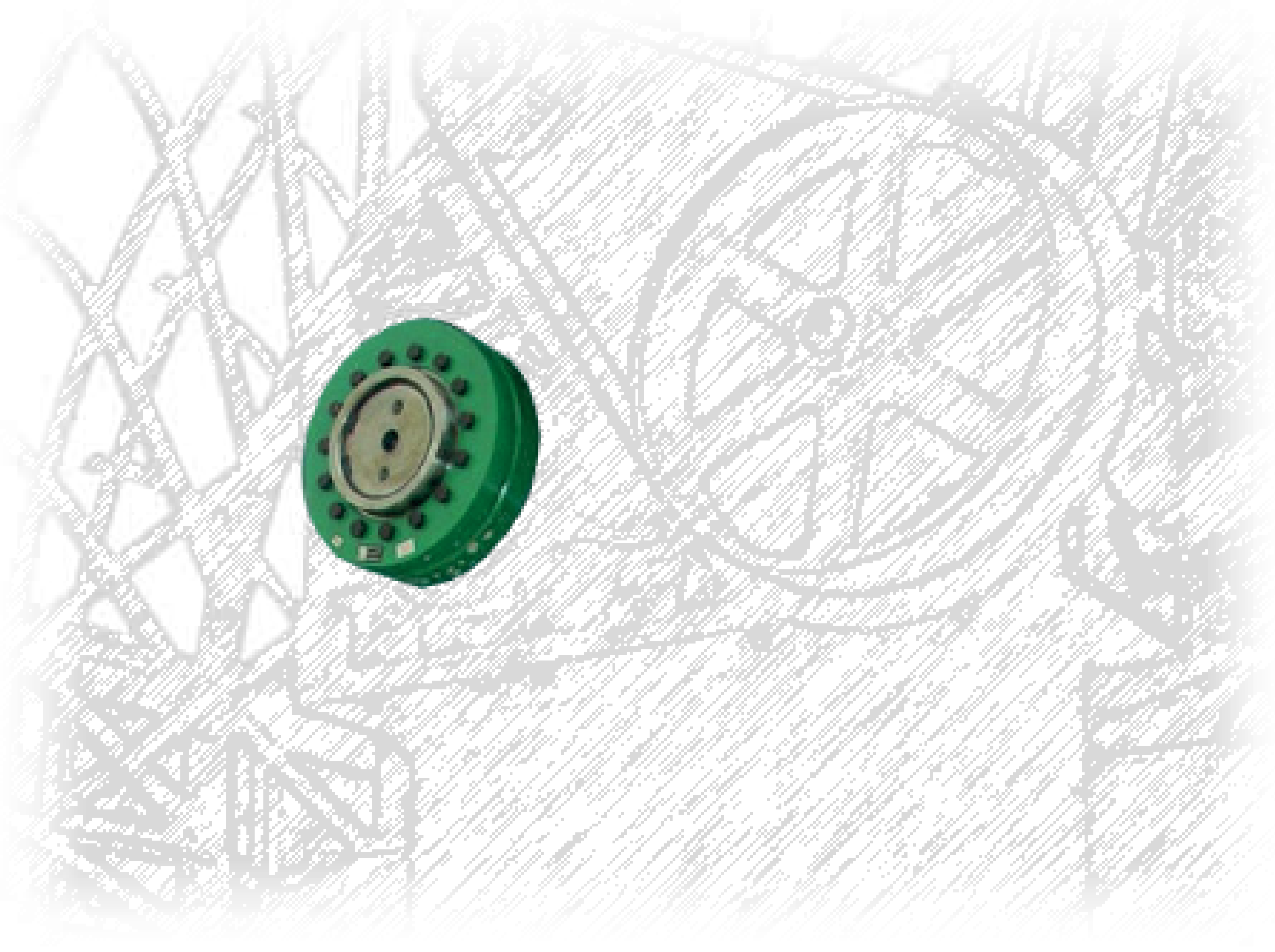
Notes



Further products from our company

Clamping devices


TAS 110


TAS 130


TAS 131


TAS 3003


TAS 3006


TAS 3012


TAS 3013


TAS 3015


TAS 3015DK


TAS 3020


TAS 4006


TAS 7014

Shrink discs in two-parts design


TAS 3173


TAS 3171, 3181, 3191, 3193

Shrink discs in three-parts design


TAS 3073


TAS 3051, 3071, 3081, 3091, 3093


Geteilt


Halb-G


Halb-D

Shaft couplings


TAS W


TAS WK


TAS WLA


TAS WLB


TAS AFS

Hydraulic actuated shrink discs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