

SITEX® ST Couplings



SITEX® ST

Contents

SITEX® ST Couplings	Page
Description	99
Features	99
SITEX® ST executions	100
• GST type C	101
• GST type CV	102
• GST type CF A-B-C (AGMA)	103
• GST type CF D-E-F	104
Coupling selection	105
Installation and maintenance	106



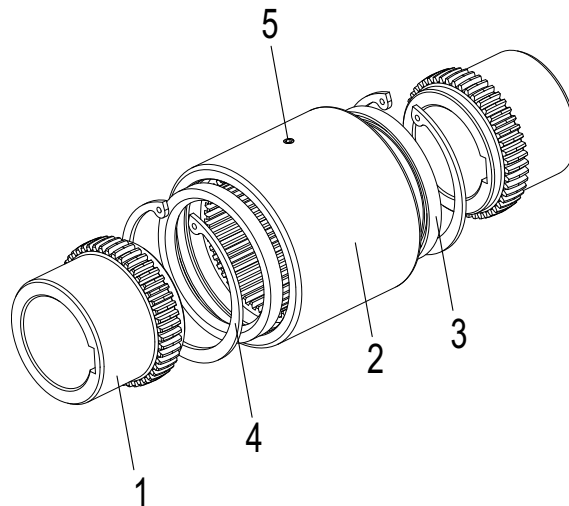
SITEX® ST couplings

Description

SITEX® ST couplings are fully manufactured in high quality steel. They are made of 1 or 2 geared hubs which are coupled with one sleeve through which the torque is transmitted. The special **OPTIGEAR** profile allows very high torque transmission and the compensation of axial, angular and radial misalign-

ment (only in the version with 2 hubs). The maximum recommended working temperature is -10 °C a + 80 °C.

For special applications special materials should be used. Please contact our technical department for information.



- 1) hub
- 2) sleeve
- 3) seal
- 4) snap ring
- 5) grease nipple

Features

With the special design of the **OPTIGEAR** crown, the contact surface area under misalignment is larger than conventional crown. Therefore, the surface stresses are reduced resulting in a longer coupling life. Therefore, backlash is reduced to a minimum, reducing impact load in reverse application, and allow optimum torque transmission and low vibration. All this results in an improved machine design.

OPTIGEAR profile

SITEX® ST couplings are machined with the unique OPTIGEAR profile, allows backlash reduced to a minimum reducing impact load in reverse applications and allow optimum torque transmission and low vibration. The machine design is then optimized by using the most compact solution in coupling.

Interchangeability

The range GST CF "A-B-C" conforms to AGMA specification in flange dimensions, type and positions of the screws. They are, therefore, interchangeable with any other AGMA coupling half.

The most compact solution

Due to the exceptional torque transmission capability, SITEX® ST couplings are the most compact solution in weight and dimensions for a safe torque transmission.

Special executions

Special executions are available for any application need. Accurate finite element analysis can be made for special high demanding applications.

Corrosion protection

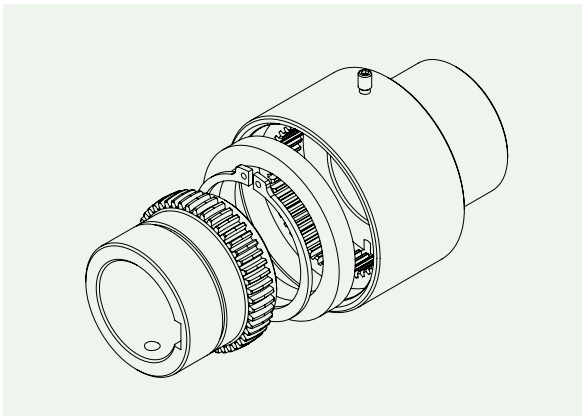
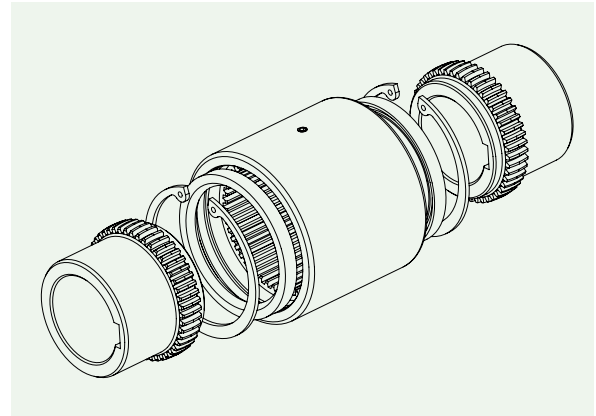
SITEX® ST couplings are protected against corrosion with a special surface treatment. Mounting and dismounting are, therefore, guaranteed even after many years of use in difficult environment conditions.



SITEX® ST executions

GST type C

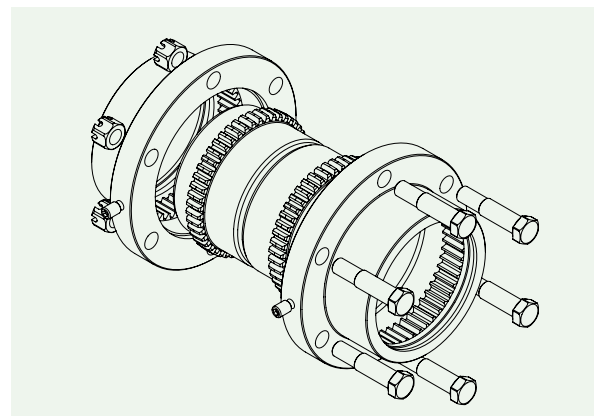
Standard type with 2 hubs and one sleeve. Allows for axial, angular, and radial misalignment. Long hub version also available. Offers compact, powerful design, and easy assembly.



GST type CV

Standard type made of a single hub and one sleeve. It is also available in long hub execution. Offers an economical solution to an application without radial misalignment.

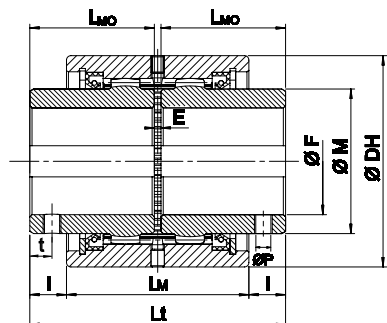
GST type CF
Flanged type made of 2 semi couplings.
Flanges dimensions are according to AGMA standards (type A-B-C).
They will fit any AGMA standard half.



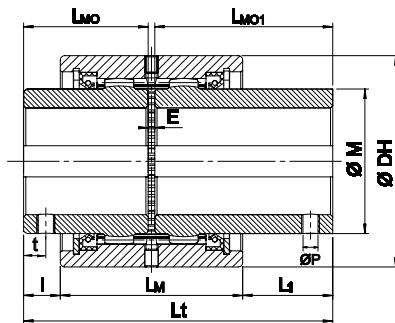
SITEX® ST type “C”

Standard type with 2 hubs and one sleeve. Allows for axial, angular and radial misalignment. Long hub version is also

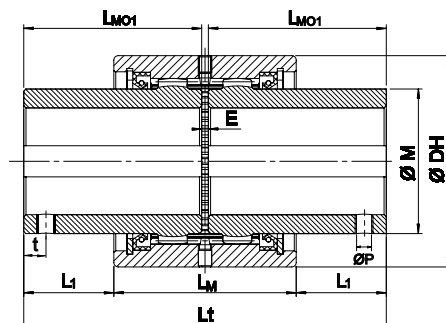
available. Offers compact, powerful design, and easy assembly. Maximum bore in the table is valid for keyway seat DIN 6885/1.



Type 1



Type 2



Type 3

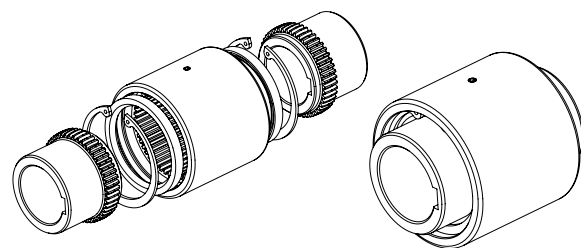
Size	Dimensions [mm]											
	DH	E	F _{max}	M	LM	I	LMO	L1	LMO1	L _t		
										Type 1	Type 2	Type 3
28	70	3	28	40	61	12	41	31	60	85	104	123
38	85	3	38	55	65	17,5	48,5	49	80	100	131,5	163
48	95	3	48	65	82	16,5	56	40,5	80	115	139	163
62	120	4	62	85	90	25	68	57	100	140	172	204
82	145	4	82	110	96	28,5	74,5	73,5	119,5	153	198	243
98	175	5	98	130	113	28,5	82,5	86,0	140	170	227,5	285
110	198	6	110	150	130	43	105	112,5	174,5	216	285,5	355
133	230	8	133	180	175	56,5	140	124	207,5	288	355,5	423
155	270	10	155	210	214	58	160	123	225	330	395	460
170	300	10	170	230	240	65	180	130	245	370	435	500

Setscrews type

Bore size [mm]	Ø P [mm]	t [mm]
up to 38	M8	14
> 38 - 44	M10	14
> 44 - 50	M12	14
> 50 - 55	M14	14
over 55	M16	14

Note: set screw position 90° from the keyway.

Size	Technical data						
	Torque [Nm]		n _{max} [min ⁻¹]	ΔK _r [mm]	ΔK _w * [°]	Coupling**	
	T _{KN}	T _{Kmax}				Momento of inertia x10 ⁻⁴ kg·m ²	W [kg]
28	600	1200	7700	0,13	2 x 1°	9,8	1,4
38	850	1700	5800	0,13	2 x 1°	22,7	2,2
48	1300	2600	5100	0,22	2 x 1°	43	3,1
62	2200	4400	4000	0,22	2 x 1°	124	5,7
82	3800	7600	3200	0,24	2 x 1°	285	8,8
98	7000	14000	2750	0,39	2 x 1°	693	14,6
110	10000	20000	2300	0,48	2 x 1°	1327	23,3
133	15000	30000	2000	0,79	2 x 1°	3260	39,7
155	24000	48000	1650	1,05	2 x 1°	7606	66,5
170	34000	68000	1550	1,31	2 x 1°	13235	94,0



Floating shaft designs and special executions are available upon request

* = maximum static misalignment for a correct mounting

** = considering maximum bore

T _{KN}	Coupling nominal torque	Nm
T _{Kmax}	Coupling maximum torque	Nm
n _{max}	Maximum rpm	min ⁻¹
ΔK _r	Maximum radial misalignment	mm
ΔK _w	Maximum angular misalignment	°
W	Weight	kg

Order form

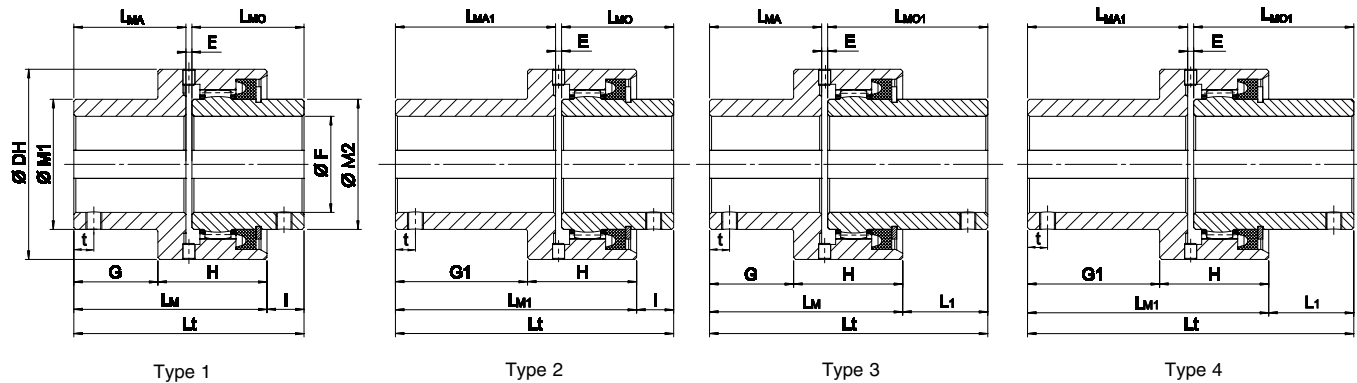
Hubs			
GST	082	M	F40
Sitex ST	Size	M: Std hub	Bore [mm]
		ML: Long hub	

Sleeve		
GST	082	AD
Sitex ST C execution	Size	AD: std sleeve

SITEX® ST type “CV”

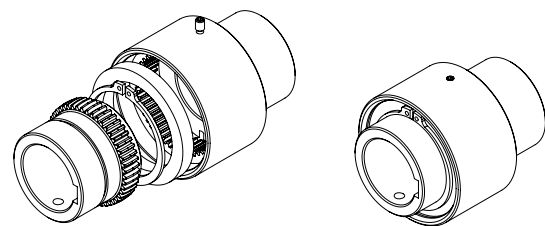
Standard type made of a single hub and one sleeve. It is also available in long hub execution. Offers an economical solution

in applications without radial misalignment. Maximum bore in the table is valid for keyway seat DIN 6885/1.



Size	Dimensions [mm]														
	DH	E	F _{max}	H	M1	M2	I	L _{MO}	L1	L _{MO1}	G	L _{MA}	G1	L _{MA1}	t
28	70	3	28	43	42	40	13	41	32	60	29	41	48	60	14
38	85	3	38	49	55	55	16	48,5	47,5	80	35	48,5	66,5	80	14
48	95	3	48	54,5	65	65	18,5	56	42,5	80	42	56	66	80	14
62	120	4	62	60	85	85	27	68	59	100	45	60	85	100	14
82	145	4	82	63	110	110	31	74,5	76	119,5	46	61,5	104	119,5	14
98	175	5	98	76	130	130	26	82,5	83,5	140	51	65,5	123,5	138	14
110	198	6	110	92	150	150	38	105	107,5	174,5	71	90	143	162	14

Size	Technical data					
	Torque [Nm]		n _{max} [min ⁻¹]	ΔK _w * [°]	Coupling**	
	T _{KN}	T _{Kmax}			Momento of inertia x10 ⁻⁴ kg·m ²	W [kg]
28	600	1200	7700	1°	7,1	1,1
38	850	1700	5800	1°	17,9	1,9
48	1300	2600	5100	1°	31,5	2,5
62	2200	4400	4000	1°	95	4,7
82	3800	7600	3200	1°	212	6,9
98	7000	14000	2750	1°	511	11,2
110	10000	20000	2300	1°	1080	19



* = maximum static misalignment for a correct mounting
 ** = considering maximum bore

T _{KN}	Coupling nominal torque	Nm
T _{Kmax}	Coupling maximum torque	Nm
n _{max}	Maximum rpm	min ⁻¹
ΔK _r	Maximum radial misalignment	mm
ΔK _w	Maximum angular misalignment	°
W	Weight	kg

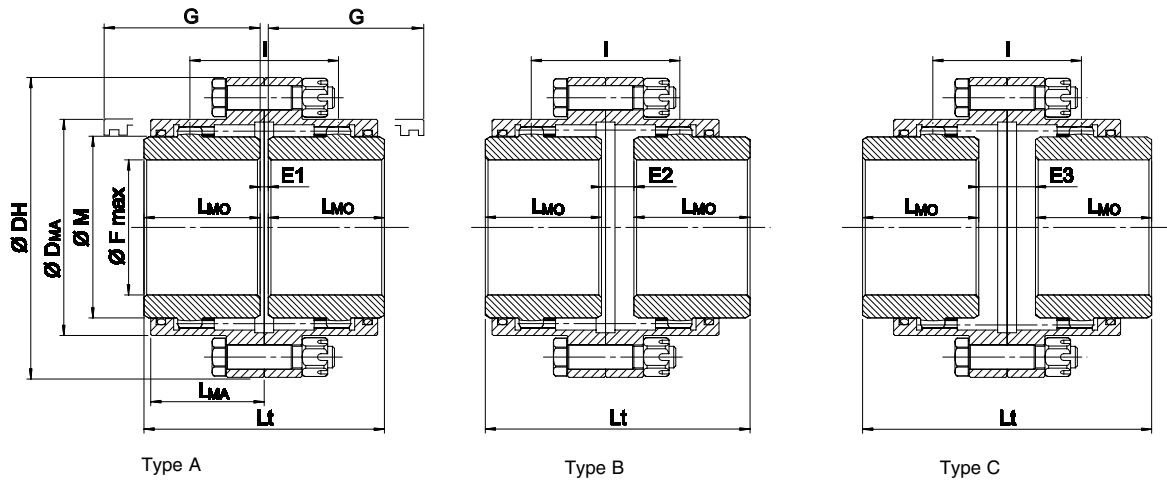
Order form

Hub			
GST	082	M	F40
Sitex ST	Size	M: Std hub	Bore [mm]
		ML: Long hub	

Sleeve			
GSTV	082	AD	F40
Sitex ST CV execution	Size	AD: std hub-sleeve	Bore [mm]
		ADL: long hub-sleeve	

SITEX® ST type “CF” A-B-C (AGMA)

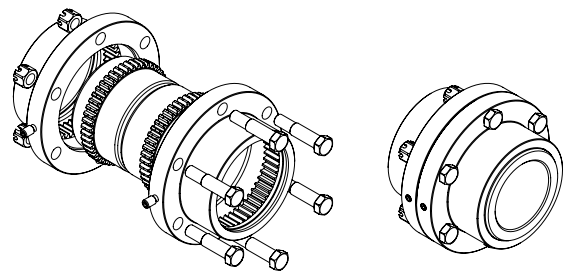
STCF A-B-C range conforms to AGMA specifications with regard to flange dimensions, type, and positions of the screws. They are interchangeable with any AGMA coupling half.



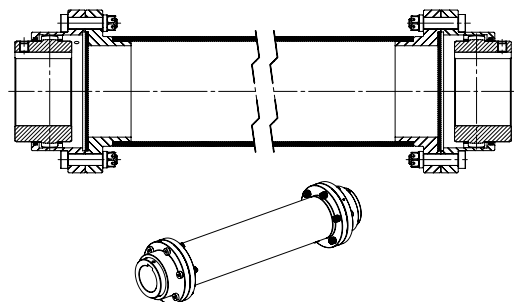
Size	Dimensions [mm]																Technical data						
	F _{max} [mm]	DH	D _{MA}	M	L _{MO}	L _{MA}	G*	Type A			Type B			Type C			Torque [Nm]		n _{max} [min ⁻¹]	ΔK _w [°]	ΔK _r [mm]	Type A**	
								I	Lt	E ₁	I	Lt	E ₂	I	Lt	E ₃	T _{KN}	T _{Kmax}				Moment of inertia x10 ⁻⁴ kg·m ²	W [kg]
48	48	117	83	65	43	42	74	55	89	3	55	98	12	55	107	21	1300	2600	5100	2 x 0,5°	0,48	53	3,1
62	62	152	107	85	50	48	84	59	103	3	59	109	9	59	115	15	2200	4400	4000	2 x 0,5°	0,51	193	6,6
82	82	178	129,5	110	62	59	104	79	127	3	79	141	17	79	155	31	3800	7600	3200	2 x 0,5°	0,69	423	10,6
98	98	213	156	130	76	69	123	93	157	5	93	169	17	93	181	29	7000	14000	2750	2 x 0,5°	0,81	1009	17,5
110	110	240	181	150	90	82	148	109	185	5	109	199	19	109	213	33	10000	20000	2300	2 x 0,5°	0,95	1822	25,3
133	133	280	211	180	105	98	172	128	216	6	128	233	23	128	250	40	15000	30000	2000	2 x 0,5°	1,12	4257	42,5
155	155	318	249,5	210	120	107	192	144	246	6	144	264	24	144	282	42	24000	48000	1650	2 x 0,5°	1,26	7920	61,4
170	170	347	274	230	135	120	216	164	278	8	164	299	29	164	320	50	34000	68000	1550	2 x 0,5°	1,43	11132	75,6

* = maximum static misalignment for a correct mounting
 ** = considering maximum bore
 Maximum static misalignment for a correct mounting ΔK_w = 2 x 1°

Floating shaft designs and special executions are available upon request



Special execution with intermediate shaft



T _{KN}	Coupling nominal torque	Nm
T _{Kmax}	Coupling maximum torque	Nm
n _{max}	Maximum rpm	min ⁻¹
ΔK _r	Maximum radial misalignment	mm
ΔK _w	Maximum angular misalignment	°
W	Weight	kg

Order form

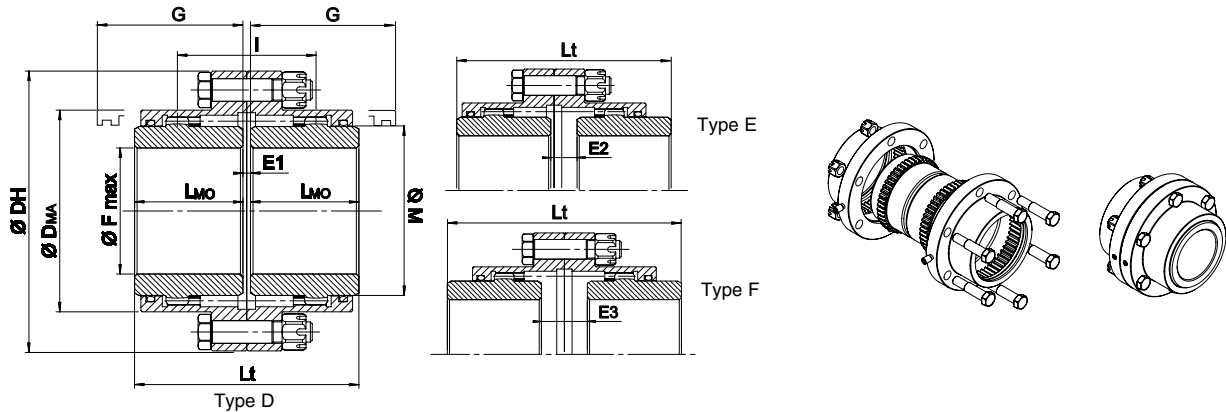
Hubs (2 pcs for coupling)				
GST	F	082	M	F40
Sitex ST	CF Execution	Size	Hub	Bore [mm]

Flanges (2 pcs for coupling)			
GST	F	082	AD
Sitex ST	CF Execution	Size	Flange

Set of screw (1 kit for coupling)			
GST	F	082	KIT
Sitex ST	CF Execution	Size	set of screws

SITEX® ST type "CF" D-E-F

Double-cardanic crowned gear coupling. Allows for axial, angular, and radial shaft misalignment.



Size	Dimensions [mm]												Technical data					
	F _{max} [mm]	DH	DMA	M	L _{MO}	*G	Type D		Type E		Type F		Torque [Nm]		n _{max} [min ⁻¹]	ΔK _w [°]	**Moment of inertia x10 ⁻⁴ kg · m ²	**W [kg]
							Lt	E ₁	Lt	E ₂	Lt	E ₃	T _{KN}	T _{Kmax}				
50	50	111	82,5	69	43	58	89	3	91	5	93	7	1800	4200	6000	2 x 0,5°	50	4
60	60	142	104,5	85	50	68	103	3	108	8	113	13	2700	6400	4620	2 x 0,5°	120	8
75	75	168	130,5	107	62	87	127	3	138	14	149	25	5500	13000	4140	2 x 0,5°	320	13
95	95	200	158,5	133	76	95	157	5	164	12	171	19	8600	21000	4000	2 x 0,5°	850	26
110	110	225	183,5	152	90	120	185	5	204	24	223	43	13500	34000	3860	2 x 0,5°	1620	37
130	130	265	211,5	178	105	130	216	6	237	27	258	48	22200	54000	3720	2 x 0,5°	3760	59
155	155	300	245,5	209	120	135	246	6	272	32	298	58	34200	83000	3190	2 x 0,5°	7280	91
170	170	330	275	234	135	155	278	8	307	37	336	66	43500	101000	2900	2 x 0,5°	12260	123
190	190	370	307	254	150	195	308	8	350	50	392	92	69200	156000	2570	2 x 0,5°	20990	170
210	210	406	335	279	175	220	358	8	403	53	448	98	82500	196000	2330	2 x 0,5°	34010	234
230	230	438	367	305	190	236	388	8	438	58	488	108	150500	349000	2150	2 x 0,5°	50520	295
280	280	505	423	355	220	273	450	10	512	72	574	134	198200	480000	1800	2 x 0,5°	103200	455
325	325	580	475	400	250	-	512	12	-	-	-	-	275000	551000	1200	2 x 0,5°	206000	685
370	370	630	520	450	275	-	562	12	-	-	-	-	381000	762000	980	2 x 0,5°	335000	920
400	400	700	556	490	305	-	622	12	-	-	-	-	492000	984000	900	2 x 0,5°	533000	1210
430	430	760	615	550	330	-	672	12	-	-	-	-	658000	1315000	800	2 x 0,5°	835000	1590
475	475	825	680	580	355	-	722	12	-	-	-	-	835000	1669000	700	2 x 0,5°	128400	2060

* = required space to align the coupling or replace the sealing ring
 ** = considering hub without bore

Maximum static misalignment for a correct mounting ΔK_w = 2 x 1°

Seal flange sizes from 325 to 475

T _{KN}	Coupling nominal torque	Nm
T _{Kmax}	Coupling maximum torque	Nm
n _{max}	Maximum rpm	min ⁻¹
ΔK _w	Maximum angular misalignment	°
W	Weight	kg

Order form

Coupling **GST FD 75 F40 L F50**

GST: SITEX® ST coupling

"CF" execution type D

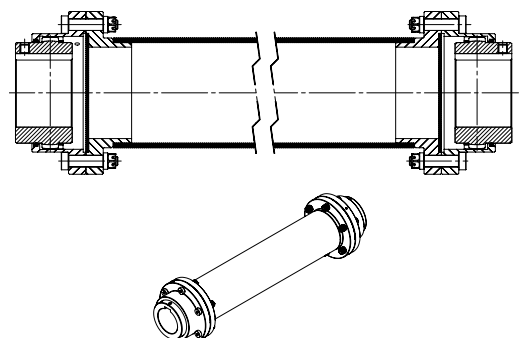
Size

F...: hub bore 1 end execution (mm)

L: long hub

F...: hub bore 2 end execution (mm)

Special execution with intermediate shaft



Coupling selection

- 1) Select the coupling according to the largest shaft diameter
- 2) Calculate the nominal torque T_N to be transmitted:

$$T_N = \frac{9550 \cdot P}{n} \text{ [Nm]}$$

With P = nominal power installed (kW), n = rpm in the drive (1/min)

- 3) Select the correct service factors k_1 and k_2
- 4) Verify the nominal torque of the coupling is greater than the corrected machine nominal torque:

$$T_{kn} \geq T_N \cdot k_1 \cdot k_2$$

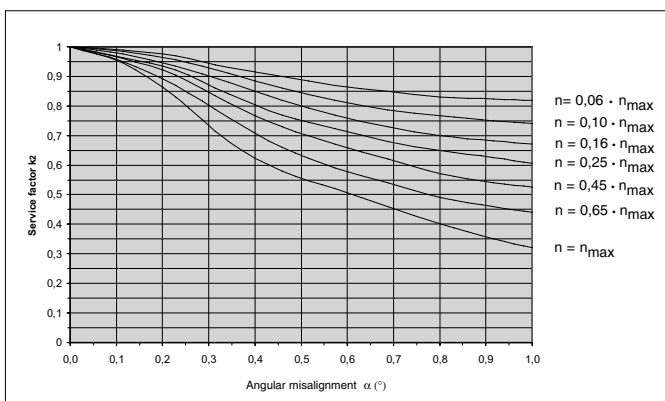
With k_1 application service factor and k_2 angular misalignment (per hub) service factor

- 5) Verify the machine peak or starting torque T_s is lower than the coupling maximum torque T_{kmax}
- 6) Verify the maximum misalignments are respected.
- 7) Verify the hub shaft connection could bear the transmission peak torque. If necessary change the hub shaft connection type.
- 8) Verify the maximum RPM of the coupling is respected.

Application service factor k_1

Load type	Type of service	Application driven machine	Driver machine		
			Electric motors or turbines	Hydraulic motors, gears drivers	Reciprocating engine Electric motors frequent starts
UNIFORM	Continuous duty without overloads, occasional starts up	Electrical generators Centrifugal pumps and compressors Light fans, escalators, belt and chain conveyors	1	1,25	1,5
LIGHT peak torque	Continuous duty with light overloads and shocks for a short time and not frequent	Multistage centrifugal blowers, Steel wire machine Reciprocating pumps, Large fans Agitators (liquids) Machine tools main drive Conveyor and elevators not uniform loaded	1,4	1,75	2
MEDIUM peak torque	Intermittent duty with frequent light shocks, medium overloads (short time)	Reciprocating compressors and pumps Cranes, Agitators (solids) Hoisting equipment, Calenders for rubber or plastic Winding machine (paper industry)	1,75	2	2,5
HEAVY peak torque	Duty with very high and frequent shocks, frequent load reversal	Laundry machines, Mixers for rubber and plastic Road and rail machines/equipment, Cranes (heavy duty) Pulp grinders and refiners, paper presses Marine drives, mine fans, Wire drawing, Metal mills drives Heavy duty drives in steel mills, Hammer mills, rubber and plastic mills Stone crushers	2	2,5	3

Service factor k_2 for angular misalignment



Installation and maintenance

Good alignment of the shafts help to reduce reaction forces on shafts and bearing and is important for the coupling life. In case the hubs are machined by the user in order to adapt them to the machine, it is user responsibility:

- to control all parameters regarding balancing, bore concentricity and any other parameter which may affect coupling life and a safe transmission, are respected.
- to verify the hub length and corresponding keyway seat are compatible with the necessary torque transmission considering the peak loads. Maximum bore diameters allowed in hubs as described in dimensional tables.
- to verify the hub material is adequate for the clamping system.

During compensation of misalignments, axial forces are generated. These forces must be considered when sizing machine bearing. For a calculation, please consult our technical office.

It is also recommended that hubs are axially secured in order to avoid axial forces on the seals which may cause lubricant leakage and, therefore, shorter coupling life.

It is recommended to secure the set screw with Loctite, use an end plate, or interference fit.

Warning

Gear couplings are rotating parts and potentially dangerous. It is recommended to protect the rotating parts and comply with existing safety regulations in order to keep personnel and equipment safe.

Mounting

SITEX® ST couplings must be stored in a non-corrosive environment prior to installation.

In case of environment with high humidity it is the user's responsibility to protect the couplings, or to ask for a special surface treatment.

Prior to starting the mounting operation, it is recommended to:

- verify there are no missing or damaged components
- have the necessary mounting instructions and tools required for mounting and shaft alignment.
- make sure the machine is shut down and there is no risk of accidental start up
- be careful in handling the coupling components. Particular care should be taken with the geared crown

1) Check all components to be assembled are clean.

2) Position one snap ring and one seal on every shaft.

3) Position the hubs on the respective shafts. If necessary in order to facilitate the mounting operation, it is possible to heat the hubs (max. 120 °C). In such cases avoid contact between hub and seal until room temperature is reached.

For a safe mounting hub must be positioned flush with the shaft. Mount the set screws and tighten properly. In order to avoid accidental screws loosening due to vibration, use some Loctite glue.

4) Mount the sleeve on the longer shaft.

5) Position the units to be connected respecting the dimension "E" between the shafts.

6) Align the 2 shafts being careful that the catalogue values are respected. It is possible to use the SIT LINE-LASER® to facilitate the operation.

7) Couplings are delivered without lubricant. Lightly grease the geared parts of hubs and sleeve. Lightly lubricate the seal and position them on the respective hubs.

8) Position the sleeve on the hubs. Insert the seals and the snap rings on the proper groove.

9) Remove the grease nipple and properly fill the chamber with grease. For the CF type, repeat the operation on the second half coupling. Position the grease nipple and tighten properly. Inspect and maintain.

It is recommended to make a regular inspection which may detect abnormal noise, vibration, or leakage.

Every 5.000 hours, or once a year, remove grease nipples, position the coupling with one nipple at 45° with respect to the rotation axis, force grease from the bottom hole until clean grease flows. Reinsert the nipples and tighten properly.

Every 10.000 hours or every 2 years, remove snap rings and seals, clean and inspect seals and geared parts, verify alignments and mount the coupling. Low viscosity oil may be used to clean the coupling from used grease.

Recommended lubricants

Coupling lubrication is important for a long coupling duration.

1. Standard speed and load

Agip GR MV/EP 1
 Amoco coupling grease
 API: API grease PGX-0
 Caltex Coupling Grease
 Castrol Impervia MDX
 Chevron Polyurea grease EP0
 Esso Fibrax 370
 Fina Marson EPL 1
 Kübler Klüberplex GE 11-680
 IP: ATHESIA-EPO
 Mobil Mobilux EP0, Mobilgrease XTC
 Q8 Rembrandt EP0
 Shell Alvania grease EP R-0 or EP 1 Albida GC
 Texaco Coupling Grease
 Total Specis EPG
 Tribol 3020/1000-1
 Unirex RS 460, Pen-0- Led EP

2. High speed (> 50 m/s), high loads

Caltex Coupling Grease
 Klüber Klüberplex GE 11-680
 Mobil Mobilgrease XTC
 Shell Albida GC1