SITEX® TEETH COUPLINGS

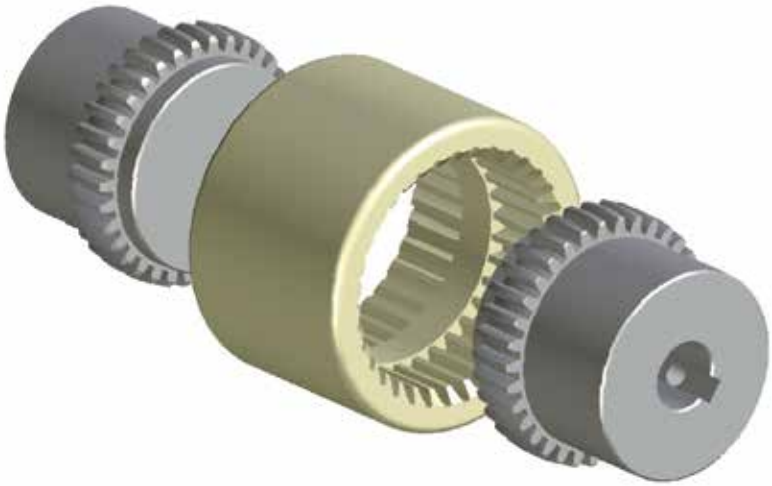
DRIVE SOLUTIONS

SITEX®
SITEX® FL

SITEX® teeth couplings

Description

SITEX® couplings consist of two toothed hubs which are connected with one internally toothed sleeve. The hubs are made of steel and the teeth, which are both profiled and section crowned, are milled. The sleeve is manufactured from stabilized 6.6 superpolyamide resin. **Note:** It is possible to have aligned keyways upon inquiry.



Features

SITEX® couplings are members of the elastic coupling family range. Sitex couplings are well suited for applications with axial, radial, and angular displacement of the connected shafts. The double cardanic action eliminates the imposition of loads on the shafts which results from radial and axial misalignment. The torsional rigidity of the sleeve prevents angular speed variation. The combination of steel hubs with Polyamide sleeve makes the coupling maintenance and lubrication free.
The particular toothed profile prevents contact of tooth edges with the sleeve, ensuring long life of the coupling.

Performance

Mounting can be in both the horizontal and vertical planes. Installation is simple and quick, which lowers installation costs.
The coupling is suitable for operating in temperatures ranging from - 25 °C to +90 °C.
For short intervals, temperatures of +125 °C can be tolerated.
Components of the coupling are resistant to all types of lubricants and hydraulic fluids.

ATEX Directive 2014/34/EU

It is possible to ask for specific certification for use in hazardous area according to ATEX Directive 2014/34/EU.
SITEX® couplings are available with specific mounting/operating instruction manual and conformity.
For information, please contact our technical office.

SITEX® coupling selection

Size	T_{KN} [Nm]	T_{Kmax} [Nm]	T_{KW} [Nm]	Transmissible power at various speeds [kW]										n_{max} [rpm]	W* [kg]	J* [kg·m²]	ΔKa [mm]	ΔKr [mm]	ΔKw [°]
				n = 500 [rpm]		n = 750 [rpm]		n = 1000 [rpm]		n = 1500 [rpm]		n = 3000 [rpm]							
				std	max	std	max	std	max	std	max	std	max						
14	10	30	5	0,5	1,6	0,8	2,4	1,0	3,1	1,6	4,7	3,1	9,4	14.000	0,18	0,000026	±1	±0,3	+1
19	16	48	8	0,8	2,5	1,3	3,8	1,7	5,0	2,5	7,5	5,0	15,1	11.800	0,24	0,000054	±1	±0,3	±1
24	21	63	10,5	1,1	3,3	1,6	4,9	2,2	6,6	3,3	9,9	6,6	19,8	10.500	0,30	0,000088	±1	±0,3	±1
28	45	135	22,5	2,4	7,1	3,5	10,6	4,7	14,1	7,1	21,2	14,1	42,4	8.500	0,73	0,000312	±1	±0,4	±1
32	60	180	30	3,1	9,4	4,7	14,1	6,3	18,8	9,4	28,3	18,8	56,5	7.600	0,99	0,000572	±1	±0,4	±1
38	81	243	40,5	4,2	12,7	6,4	19,1	8,5	25,4	12,7	38,2	25,4	76,3	6.700	1,20	0,000877	±1	±0,4	±1
42	100	300	50	5,2	15,7	7,9	23,6	10,5	31,4	15,7	47,1	31,4	94,2	6.000	1,62	0,001467	±1	±0,4	±1
48	142	426	71	7,4	22,4	11,2	33,6	14,9	44,8	22,3	67,1	44,6	134,3	5.580	1,79	0,001869	±1	±0,4	±1
65	380	1140	190	19,9	59,7	29,8	89,5	39,8	119,4	59,7	179,1	119,4	358,1	4.000	5,28	0,010542	±1	±0,6	±1
80	700	2100	350	36,6	109,9	55,0	164,9	73,3	219,9	109,9	329,8	219,9	659,7	3.100	11,70	0,036774	±1	±0,7	±1
100	1210	3630	605	63,4	190,1	95,0	285,1	126,7	380,1	190,1	570,2	380,1	1140,3	3.000	20,40	0,095742	±1	±0,8	±1
125	2500	7500	1250	130,9	392,7	196,3	589,0	261,8	785,3	392,7	1178,0	-	-	2.100	43,30	0,329397	±1	±1,1	±1

*= Values are for complete couplings, max bore diameter, only.

SITEX® coupling sizing

SITEX® coupling sizing shown below is carried out according to DIN 740/2. The sizing requires that the maximum moments to be transmitted by the coupling under the various operating conditions be less than the maximum allowable stresses of the coupling itself.

Verification should be conducted on both the nominal torque and the maximum transmissible torque:

1) Verify the nominal torque
The nominal torque to be transmitted multiplied by the temperature coefficient must be less than the nominal torque supportable of the coupling.

$$T_{KN} \geq T_N \cdot S_\theta \quad [Nm]$$

where the nominal torque of the T_N motor side is obtained by the formula:

$$T_N = 9550 \frac{P_N}{n} \quad [Nm]$$

where P_N is the rated power of the motor in kW and ***n*** is the number of revolutions per minute.

2) Peak torque verification.
The maximum torque of the coupling must be greater than the starting torque and multiplied by the temperature coefficients, starting frequency and shock frequency.

$$T_{Kmax} \geq T_S \cdot S_\theta \cdot S_Z \cdot S_U \quad [Nm]$$

3) Verification of torque with reversals.
In the case of torque with reversals in addition to 1) and 2), it must also be verified that the torque with reversals that can be borne by the T_{KW}, coupling, is greater than or equal to the T_W torque variation of the transmission, corrected by the temperature coefficient.

$$T_{KN} \geq T_N \cdot S_\theta \quad [Nm]$$

In the case of transmissions subject to high torsional vibrations (e.g., piston compressors, internal combustion engines), a calculation of the torsional vibrations themselves should be carried out to ensure proper operation of the coupling. For this purpose, consult our Technical Department.

T_{KN}	Coupling nominal torque	Nm
T_{Kmax}	Coupling maximum torque	Nm
T_{KW}	Torque with reversal transmissible by the coupling	Nm
T_N	Coppia nominale del motore	Nm
T_S	Coppia di spunto del motore o coppia d'urto	Nm
T_W	Coppia con inversioni dell'impianto	Nm
S_θ	Temperature factor	
S_Z	Start frequency factor	
S_U	Motor or driven-side shock factor	

P_N	Motor nominal torque	kW
n	Number of engine operating revolutions	rpm
W	Weight of the complete coupling with max bore	kg
ΔK_a	Maximum axial misalignment	mm
ΔK_r	Maximum radial misalignment	mm
ΔK_w	Maximum angular misalignment	°
J	Coupling moment of inertia	kgm²
n_{max}	Maximum rpm	rpm

Shock load safety factor

Shock load type	S_U
Light	1,5
Medium	1,8
Hard	2,5

Shock load safety factor

T (°C)	-25 °C / +60 °C	-60 °C / +80 °C	-80 °C / +90 °C
S_θ	1	1,4	1,6

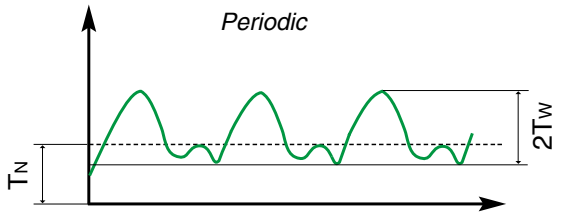
Safety factor for frequency of starting

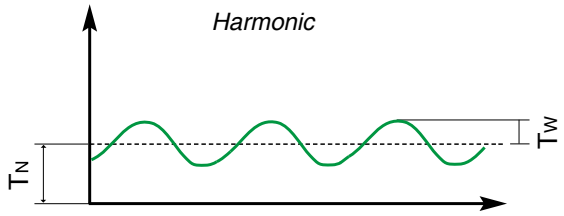
Starts/h	0 ÷ 100	101 ÷ 200	201 ÷ 400	401 ÷ 800
S_Z	1	1,2	1,4	1,6

Hub shaft connection check

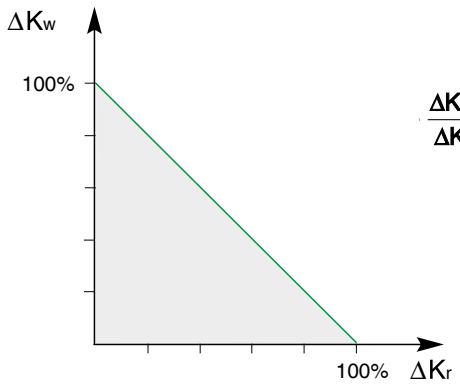
Hub shaft connection must always be checked by the user. It is important to verify the maximum torque in the drive is lower than the torque which the hub shaft connection can bear. In case of keyway connection, it is important to verify the tensile strength of the hub material with the load which the keyway seat must transmit.

Type of stress





The values shown in the table for radial and angular misalignment, must be corrected in case they are simultaneously acting on the coupling.
The sum of the admissible value (A) and the respective values shown in the table must be less than or equal to 1.

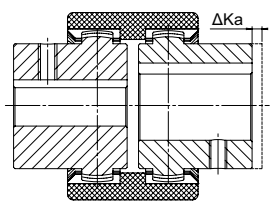


$$\frac{\Delta K_{rA}}{\Delta K_r} + \frac{\Delta K_{wA}}{\Delta K_w} \leq 1$$

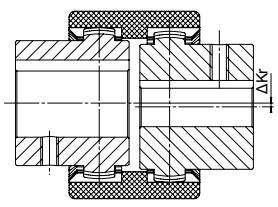
ΔK_a	Maximum axial misalignment	mm
ΔK_r	Maximum radial misalignment	mm
ΔK_w	Maximum angular misalignment	°

Mounting standards

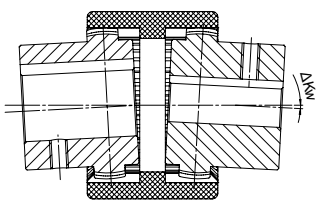
- Attach the two hubs to the shafts, making sure that the inner faces are flush with the respective ends of the shafts.
- "Thread the sleeve onto the two half-hubs by adjusting the distance between them (dimension "b") while simultaneously trying to align the as much as possible between the two shafts.
- Secure the two elements to be coupled in place.
- Before rotating the coupling, check that the sleeve is free to move axially.



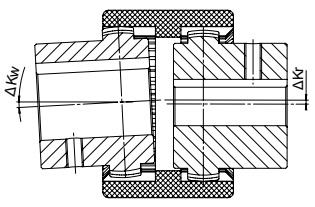
Axial misalignment



Radial misalignment



Angular misalignment



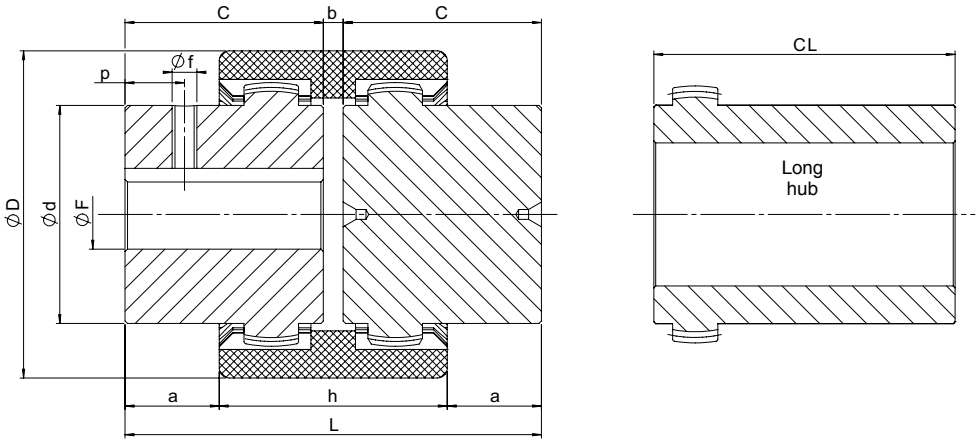
Angular and radial misalignment

T_N	Motor nominal torque	Nm
T_W	Torque with reversal of the machine	Nm
S_θ	Temperature factor	

S_Z	Start frequency factor
S_U	Motor or driven-side shock factor

SITEX® dimensional characteristics

Due to compact dimensions and excellent performances, SITEX® couplings may be used in a wide range of applications. Couplings are available from stock, both the standard and the “long” hub execution, which entirely covers the motor shaft.
SITEX® hubs are available with certain stock bores as listed below. The standard solid hub has a pilot center concentric to the hub OD and can be bored to specific needs. **Approved according to ATEX Directive.**



Size	D [mm]	d [mm]	F (H7)			C [mm]	CL [mm]	b [mm]	a [mm]	h [mm]	L [mm]	f [mm]	p [mm]	Hub teeth number
			min. [mm]	max. [mm]	UNI keyway and set-screw* [mm]									
14	40	24,5	8	14	8 - 11 - 12 - 14	23	30	4	6,5	37	50	M5	6	20
19	48	30	8	19	11 - 14 - 16 - 18 - 19	25	-	4	8,5	37	54	M5	6	24
24	52	35	11	24	11 - 14 - 19 - 20 - 22 - 24	26	50	4	7,5	41	56	M5	6	28
28	66	43	11	28	11 - 16 - 19 - 20 - 22 - 24 - 25 - 28	40	60	4	18,5	47	84	M8	10	34
32	76	50	14	32	14 - 20 - 22 - 24 - 25 - 28 - 30 - 32	40	60	4	17,5	48	84	M8	10	40
38	83	58	14	38	14 - 19 - 20 - 24 - 28 - 30 - 32 - 38	40	80	4	18	48	84	M8	10	44
42	92	65	14	42	14 - 25 - 28 - 32 - 38 - 42	42	110	4	18,5	51	88	M8	10	50
48	100	68	19	48	18 - 19 - 25 - 32 - 38 - 42 - 48	50	110	4	27	50	104	M8	10	50
65	142	96	19	65	19 - 38 - 42 - 48 - 55 - 60 - 65	70	140	4	35,5	73	144	M10	20	42
80	175	124	-	80	-	90	-	6	46,5	93	186	M10	20	46
100	210	152	36	100	-	110	-	8	63	102	228	M10	20	48
125	270	192	45	125	-	140	-	10	78	134	290	M10	20	62

* = Up to size 24, set-screw is 180° from keyway; from size 28 set-screw is set onto the keyway.
Keyway according to DIN 6885 sheet 1 - JS9

Hub **GDM** **48** **F32**

GDM: SITEX® Hub

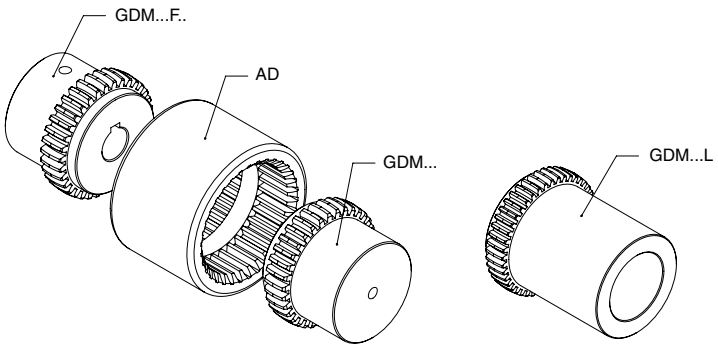
Size

L: long hub execution
F...: bore diameter

Sleeve **AD** **48**

AD: SITEX® sleeve

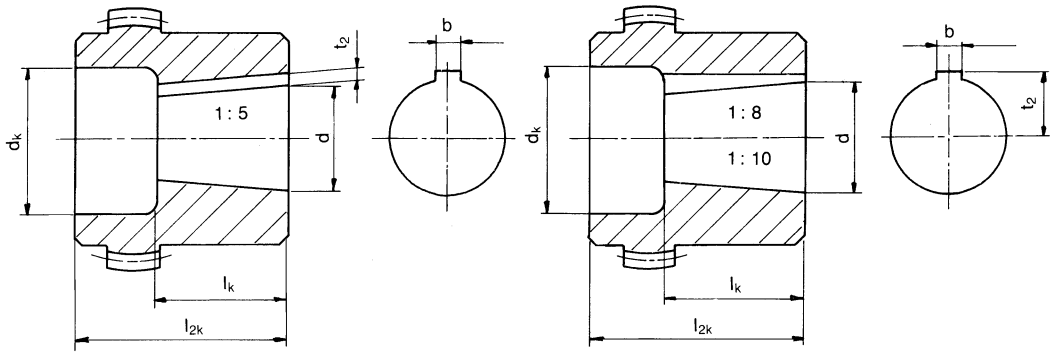
Size



Standard couplings

Long hub execution

Tables for SITEX® couplings with taper or splined bores



Taper 1 : 5 for
BOSCH - BUCHER -LEDUC - DÜSTERLOH

Type	dø + 0,05	b JS9	t^2+0,1	l_k	14		19		24		28		32		38		42		48		65	
					d_k	l_{2k}	d_k	l_{2k}	d_k	l_{2k}	d_k	l_{2k}	d_k	l_{2k}	d_k	l_{2k}	d_k	l_{2k}	d_k	l_{2k}	d_k	l_{2k}
a1	9,85	2	1	11,5	18	23	22	25	24	26	35	26	36	26	45	26						
a2	16,85	3	1,8	18,5			25	30	28	30	35	40	36	40	45	40	45	42	45	42	45	50
a3	19,85	4	2,2	21,5					28	36	35	40	36	40	45	40	45	42	45	42	45	50
a4	21,95	3	1,8	21,5					30	26	32	40	32	40	42	40	45	42				
a5	24,85	5	2,9	26,5							35	40	36	40	45	40	45	42	45	42	55	50
a6	29,85	6	2,6	31,5											45	55	45	55	45	55	55	55
a7	34,85	6	2,6	36,5															52	60	55	60
a8	39,85	6	2,6	41,5															52	60	65	70

Taper 1 : 8 for
ATOS - CASAPPA - GARBE LAHMEYER - JOTTI & STROZZI - MARZOCCHI - SALAMI - SAUER-FLUID

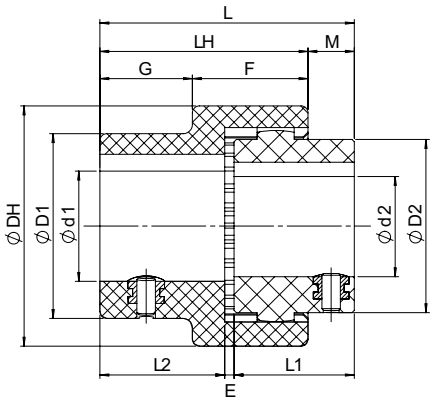
Type	dø + 0,05	b JS9	t^2+0,1	l_k	14		19		24		28		32		38		42		48		65	
					d_k	l_{2k}	d_k	l_{2k}	d_k	l_{2k}	d_k	l_{2k}	d_k	l_{2k}	d_k	l_{2k}	d_k	l_{2k}	d_k	l_{2k}	d_k	l_{2k}
b1	9,7	2,4	6	17	18	26	19	25	24	26	35	30	36	30	36	30						
b2	11,6	3	7,1	16,5	18	23			26	26	32	30										
b3	13	2,4	7,3	21					26	30	32	30			32	30						
b4	14	3	8,5	17,5	20	23	24	30	24	30	32	30	36	40								
b5	14,3	3,2	8,5	19,5																		
b6	17,287	3,2	9,6	24					28	35	32	40	36	40	42	40	45	42	45	42	45	50
b7	17,287	4	10,3	24					28	35	32	40	36	40	42	40	45	42	45	42	45	50
b8	17,287	3	9,7	24					28	35					42	40			45	42		
b9	22,002	3,99	12,4	28							32	40	36	40	42	40	45	42	45	42	55	50
b10	25,463	4,78	15,1	36							34	50	36	50	42	50	45	50	45	50	55	62
b11	25,463	5	15,5	36							34	50					45	50	45	50	55	62
b12	27	4,78	15,3	32,5											42	50						
b13	28,45	6	15,1	38,5											42	60	45	60				
b14	33,176	6,38	18,8	44											44	60	45	60	45	60	55	62
b15	33,176	7	18,8	44													45	60			55	62
b16	43,057	7,95	3,378	51																		
b17	41,15	8	3,1	42															48	60	55	60

Taper 1 : 10 for
PARKER HANNIFIN NMF - TEVES

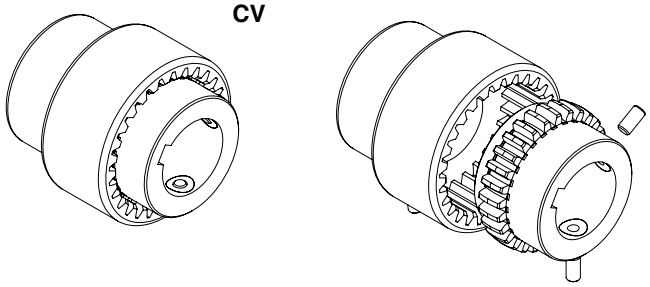
Type	dø + 0,05	b JS9	t^2+0,1	l_k	14		19		24		28		32		38		42		48		65	
					d_k	l_{2k}	d_k	l_{2k}	d_k	l_{2k}	d_k	l_{2k}	d_k	l_{2k}	d_k	l_{2k}	d_k	l_{2k}	d_k	l_{2k}	d_k	l_{2k}
c1	19,95	5	12,1	32							35	50			42	50	45	50	45	50		
c2	24,95	6	14,1	45									36	55			45	60	45	60	55	60
c3	29,75	8	17	50													54	60	54	60	55	70

SITEX® Nylex

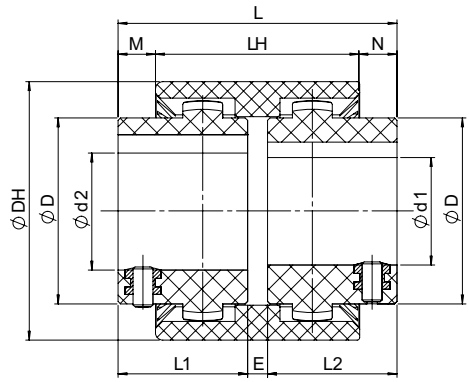
SITEX® Nylex couplings are made of 100% Polyamide. Two executions are available:
• **CV**: in 2 parts (1 hub and one sleeve including the hub);
• **C**: in 3 parts (2 hubs and one sleeve).
Designed for light applications, low cost and available with finished bore keyway and thread for set screw.
Temperature range: -25 °C ÷ +90 °C. **Compliant with ATEX Directive.**



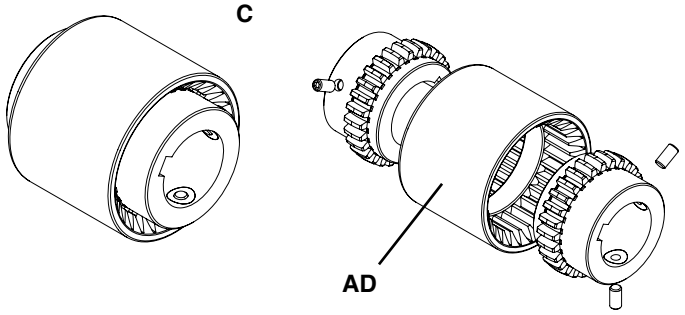
CV



Size	GDNV hub d1 [mm] min	max	UNI keyway and set screw [mm]	D1 [mm]	GDN hub d2 [mm] min	max	UNI keyway and set screw [mm]	D2 [mm]	DH [mm]	L1 [mm]	L2 [mm]	E [mm]	L [mm]	LH [mm]	M [mm]	F [mm]	G [mm]	T_{KN} [Nm]	T_{Kmax} [Nm]	T_{KW} [Nm]	n_{max} [rpm]
14	6	14	14	25	6	14	7-9-10-11-12-14	26	40	23	23	2	48	40	8	23	17	5	10	2,5	6.000
19	14	19	18-19	31,5	14	19	14-17-19	40	48	25	25	2	52	42	9	23	19	8	16	4	6.000
24	10	24	19-20-24	37,5	10	24	10-14-16-19-20-24	40	52	26	26	2	54	45	10	25	20	12	24	6	6.000



C



Size	d1 - d2 [mm] min	max	UNI keyway and set screw [mm]	D [mm]	DH [mm]	L1 [mm]	L2 [mm]	E [mm]	L [mm]	LH [mm]	M [mm]	N [mm]	T_{KN} [Nm]	T_{Kmax} [Nm]	T_{KW} [Nm]	n_{max} [rpm]
14	6	14	7-9-10-11-12-14	25	40	23	23	4	50	37	6,5	6,5	5	10	2,5	6.000
19	14	19	14-17-19	31,5	48	25	25	4	54	37	8,5	8,5	8	16	4	6.000
24	10	24	10-14-16-19-20-24	37,5	52	26	26	4	56	41	7,5	7,5	12	24	6	6.000

Hub — **GDN 14 F14**

GDN: SITEX® Nylex hub
GDNV: SITEX® Nylex sleeve hub

Size

F...: bore diameter

"C" execution sleeve — **AD 24**

AD: SITEX® Nylex sleeve

Size

T_{KN}	Coupling nominal torque	Nm
T_{Kmax}	Coupling maximum torque	Nm
T_{KW}	Torque with reversal transmissible by the coupling	Nm
n_{max}	Motor maximum rpm	rpm