

t1000 – STANDARD CLAW COUPLING



Description

The t1000 standard claw coupling has been specially developed for use in motor sport, two-wheel applications, and special applications, for example tests with dual mass flywheels or original vehicle clutches. This coupling is characterized by its relatively low weight, very robust design, high damping capability and easy maintenance.

The development aim of this coupling (to transfer very high alternating torques at low stiffness) was achieved in various designs.

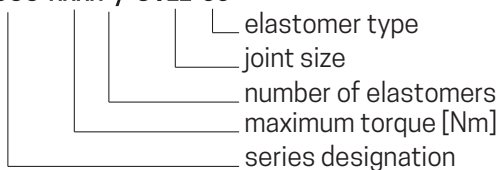
The design principle of the coupling allows the torsional stiffness to be adjusted for different requirements by using elastomers of varying hardness.

The t1000 claw coupling is available in 2 sizes.

Naming

The product is named according to the following convention:

t1000-xxxx-y-CVzz-ee



Example: t1000-800-1-CV05-SN

Operating range

Torque: up to 3000 Nm
Speed: up to 10000 rpm

Benefits

- for high dynamic loads
- compact and modular design
- no elastomer failure when overloaded
- no shaft damage when elastomer fails
- fast exchange of the elastomer
- high damping and long lifetime
- stiffness adjustment by elastomer placement

Function

The design provides a strongly non-linear coupling characteristic. The special design allows problem-free adaptation to new applications and a short downtime when exchanging the elastomers.

Coupling	T_{KN} [Nm]	T_{Kmax} [Nm]	T_{KW} [Nm]	n_{max} [rpm]	Ψ [-]	ϑ [°C]	z [-]
t1000-800	800	1500	700	10000	0.1 - 0.35	+80	64
t1000-1500	1500	2450	950	10000	0.1 - 0.35	+80	64
t1000-3000	2000	3000	1800	10000	0.35	+80	128

T_{Kmax} - maximum torque
 Ψ - relative damping
 T_{KN} - nominal torque⁸

T_{KW} - maximum alternating torque
 n_{max} - maximum speed

ϑ - operating temperature for elastomer made of natural rubber⁶
 z - number of toothed ring teeth⁷ shaft-side

Coupling	Flange	m [kg]	x_s [mm]	$\Delta\varphi_{max}$ [°]	J_1 [kgm ²]	J_2 [kgm ²]	C_{Tdyn} [Nm/rad]
t1000-800-1	CV05	2.51	29.9	±7.5	2.26E-03	3.54E-03	2000 - 12000
	CV15	2.50	28.9		2.32E-03	3.52E-03	
t1000-800-2	CV05	3.89	46.6	±15.0	3.70E-03	5.28E-03	1000 - 6000
	CV15	3.87	45.6		3.80E-03	5.26E-03	
t1000-800-3	CV05	5.26	63.0	±22.5	5.06E-03	6.97E-03	700 - 3000
	CV15	5.25	62.0		5.12E-03	6.96E-03	
t1000-1500-1	CV15	3.08	29.7	±7.5	3.92E-03	6.84E-03	2000 - 12000
t1000-1500-2	CV15	4.67	46.3	±15.0	5.75E-03	1.17E-02	1000 - 6000
	CV21	5.31	48.1		6.58E-03	1.20E-02	
t1000-1500-3	CV15	6.26	62.5	±22.5	7.04E-03	1.53E-02	670 - 4000
t1000-3000	CV21	13.5	64.0	±7.5	1.62E-02	2.99E-02	14844

m - mass
 x_s - center of gravity flange-side

C_{Tdyn} - torsional stiffness
 $\Delta\varphi_{max}$ - maximum torsional angle

J_1 - inertia flange-side
 J_2 - inertia shaft-side

elastomer type	t1000-800-1			t1000-800-2			t1000-800-3		
	cp_1 [Nm/rad]	cp_3 [Nm/rad ³]	Ψ [-]	cp_1 [Nm/rad]	cp_3 [Nm/rad ³]	Ψ [-]	cp_1 [Nm/rad]	cp_3 [Nm/rad ³]	Ψ [-]
HN	1622	217894	0.10	811	27237	0.10	541	8070	0.10
EN	2043	259170	0.10	1022	32396	0.10	681	9599	0.10
WN	2696	270138	0.15	1348	33767	0.15	899	10005	0.15
NN	3144	449459	0.25	1572	56182	0.25	1048	16647	0.25
SN	4617	581122	0.30	2309	72640	0.30	1539	21523	0.30
UN	6484	1136191	0.35	3242	142024	0.35	2161	42081	0.35

cp_1 - Linear stiffness coefficient

cp_3 - Non-linear stiffness coefficient

Ψ - relative damping

elastomer type	t1000-1500-1			t1000-1500-2			t1000-1500-3		
	cp_1 [Nm/rad]	cp_3 [Nm/rad ³]	Ψ [-]	cp_1 [Nm/rad]	cp_3 [Nm/rad ³]	Ψ [-]	cp_1 [Nm/rad]	cp_3 [Nm/rad ³]	Ψ [-]
HN	1857	326860	0.10	929	40858	0.10	619	12106	0.10
EN	2339	388778	0.10	1169	48597	0.10	780	14399	0.10
WN	3086	405231	0.15	1543	50654	0.15	1029	15009	0.15
NN	3599	674229	0.25	1799	84279	0.25	1200	24971	0.25
SN	5286	871735	0.30	2643	108967	0.30	1762	32286	0.30
UN	7422	1704387	0.35	3711	213048	0.35	2474	63125	0.35

cp_1 - Linear stiffness coefficient

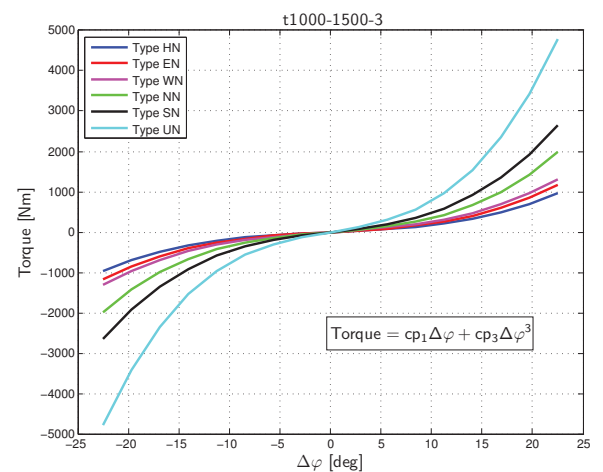
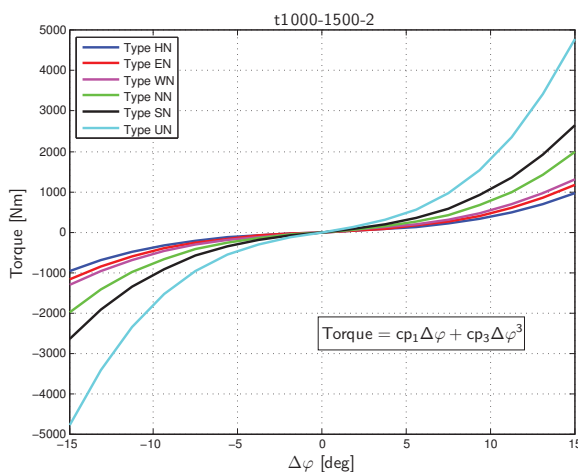
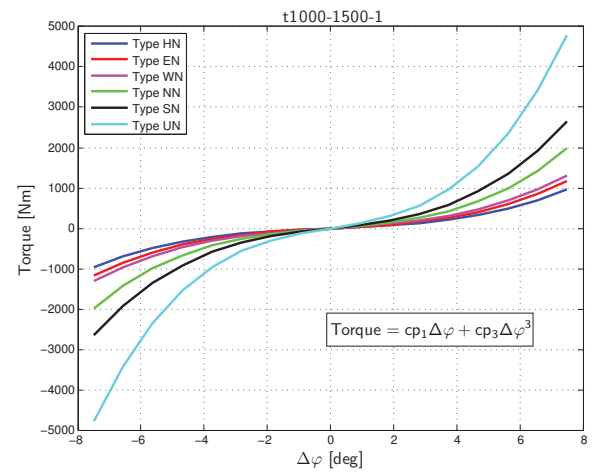
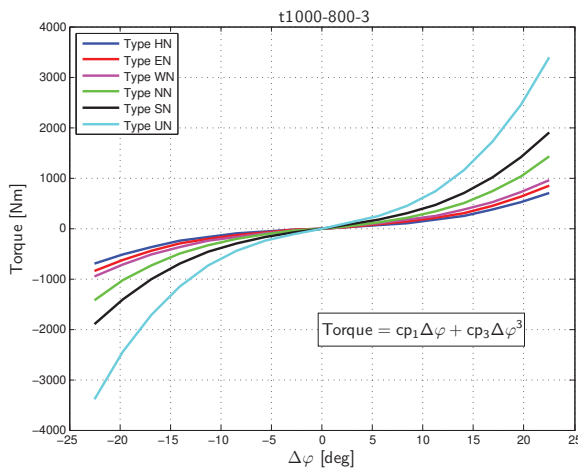
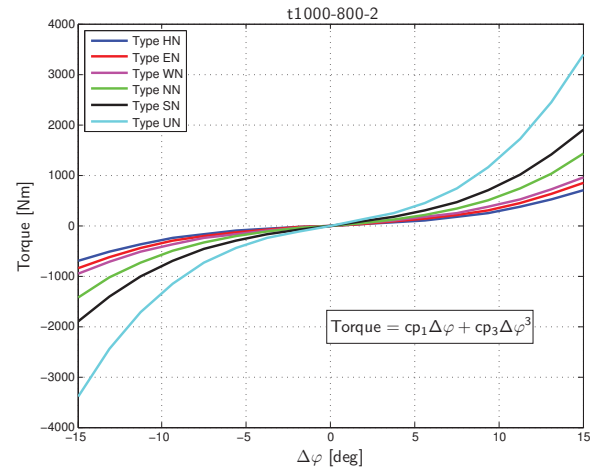
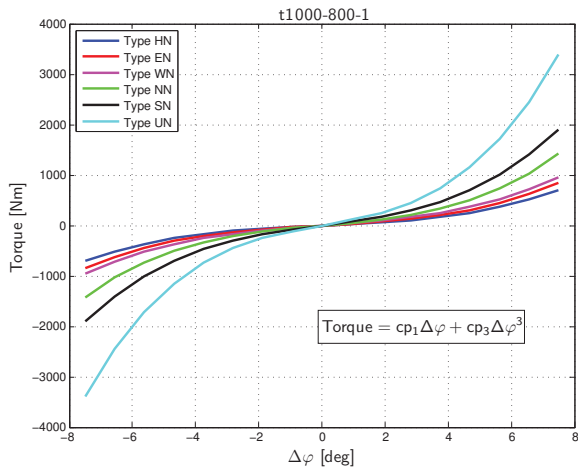
cp_3 - Non-linear stiffness coefficient

Ψ - relative damping

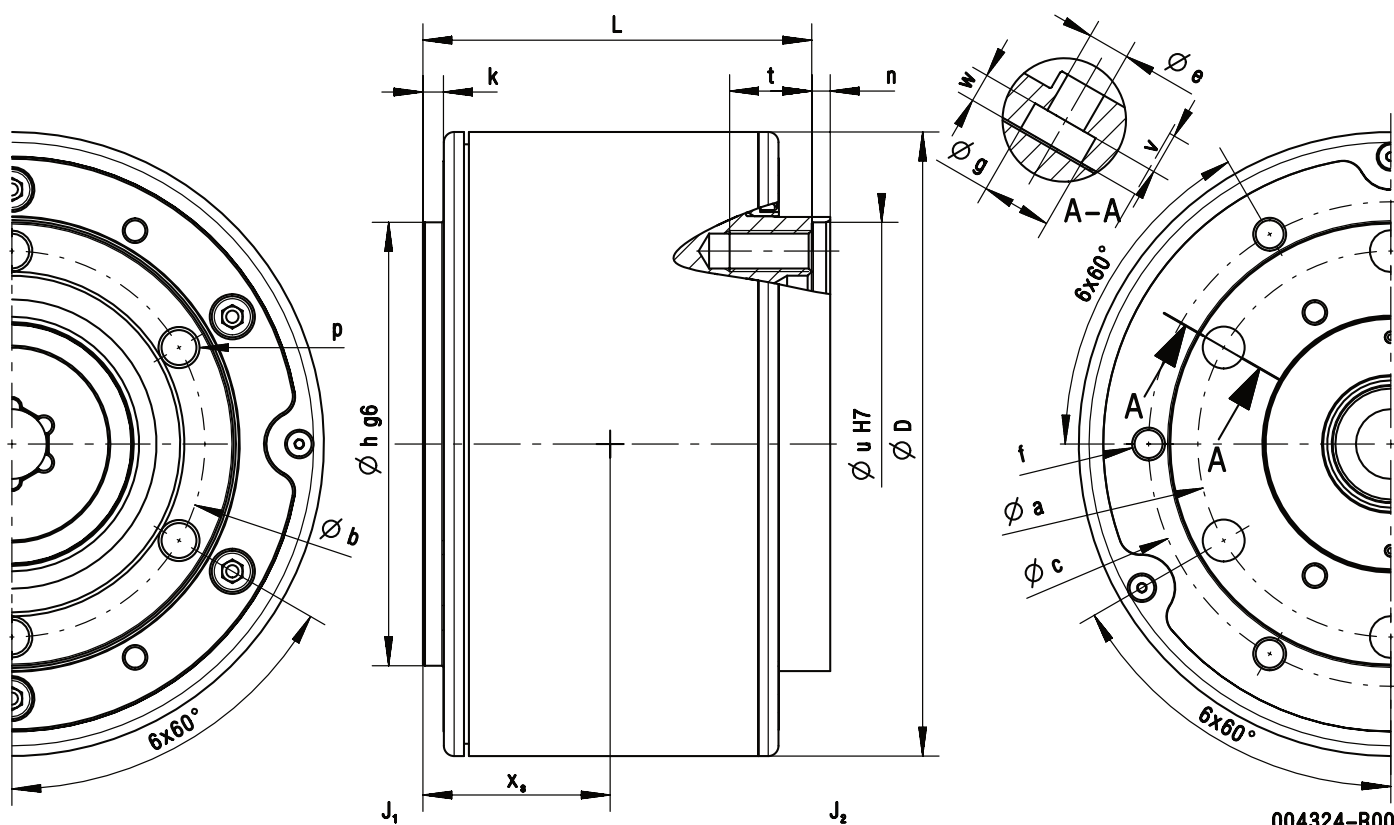
⁶Elastomers made of silicone for higher operating temperatures are available on request.

⁷Toothed rings for rotational speed measurement available as an option.

⁸The nominal torque must be equal to or greater than the maximum combustion engine torque



Elastomer type	Material	Shore hardness
HN	Natural rubber	45 - 50° Shore A
EN		50 - 55° Shore A
WN		53 - 58° Shore A
NN		63 - 68° Shore A
SN (Standard)		73 - 78° Shore A
UN		83 - 88° Shore A



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Coupling	Flange	D	L	a	b	c	e	f	g	h(g6)	k	n	p	t	u(H7)	v	w
		[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]	[mm]	[mm]	[mm]
t1000-800-1	CV05	152	62.6	74	74	118	8.2	M8	15	86	5	10.5	M8	16	86	10.0	7.0
	CV15			94	94		10.2		17			108		4.5			
t1000-800-2	CV05	152	94.7	74	74	118	8.2	M8	15	86	5	10.5	M8	16	86	10.0	7.0
	CV15			94	94		10.2		17			108		4.5			
t1000-800-3	CV05	152	126.8	74	74	118	8.2	M8	15	86	5	10.5	M8	16	86	10.0	7.0
	CV15			94	94		10.2		17			108		4.5			
t1000-1500-1	CV15	174	62.6	94	94	124	10.2	M10	17	108	5	4.5	M10	22	108	10.0	7.0
t1000-1500-2	CV15	174	94.7	94	94	124	10.2	M10	17	108	5	4.5	M10	22	108	10.0	7.0
	CV21		100.7	108	108	-	13.0	-	20	128	6	5.5	M12	31	128	11.4	7.6
t1000-1500-3	CV15	174	126.8	94	94	124	10.2	M10	17	108	5	4.5	M10	22	108	10.0	7.0
t1000-3000	CV21	174	132.7	108	108	-	13	-	20	128	6	5.5	M12	30	128	11.2	7.6

Other dimensions available on request.