

t1000-1500 – CLAW COUPLING



Description

The t1000-1500 has been especially developed for use in motor sport, two-wheel applications, and special applications, for example tests with dual mass fly-wheels or original vehicle clutches. This coupling is characterized by its relatively low weight, very robust design, high damping capability and easy maintenance.

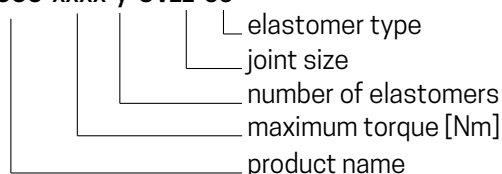
The development aim of this coupling (to transfer very high alternating torques at low stiffness) was achieved in various different designs.

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

Naming

The product is named according to the following convention:

t1000-xxxx-y-CVzz-ee



Example: t1000-1500-1-CV15-SN

Operating Range

Torque: up to 1500 Nm

Speed: up to 10000 rpm

Benefits

- for high dynamic loads
- fast exchange of the elastomer
- compact and modular design
- no elastomer failure when overloaded
- no shaft damage when elastomer fails
- 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.

t1000-1500

Nominal torque ¹⁶ T_{KN}	[Nm]	1500
Maximum torque T_{Kmax}	[Nm]	2450
Maximum alternating torque T_{KW}	[Nm]	950
Maximum speed	[rpm]	10000
Relative damping Ψ	[-]	0.1 - 0.35
Operating temperature for elastomer made of natural rubber ¹⁷	[°C]	80
Number of toothed ring teeth for speed measurement ¹⁸	[-]	64

Coupling	Joint	m [kg]	x_s [mm]	α_{max} [°]	J_1 [kgm ²]	J_2 [kgm ²]	C_{Tdyn} [Nm/rad]
t1000-1500-1	CV15	3.24	29.8	7.5	3.67E-03	6.87E-03	2000 - 12000
t1000-1500-2	CV15	4.99	46.4	15.0	5.61E-03	1.06E-02	1000 - 6000
	CV21	5.31	48.1	15.0	6.58E-03	1.20E-02	1000 - 6000
t1000-1500-3	CV15	6.74	62.5	22.5	7.59E-03	1.52E-02	670 - 4000

m - Mass

 x_s - Center of gravity flange-side

 C_{Tdyn} - Torsional stiffness

 α_{max} - Maximum torsional angle

 J_1 - Inertia flange-side

 J_2 - Inertia shaft-side

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

¹⁶The nominal torque must be equal to or greater than the maximum combustion engine torque

¹⁷Silicone elastomers for higher temperatures are available on request

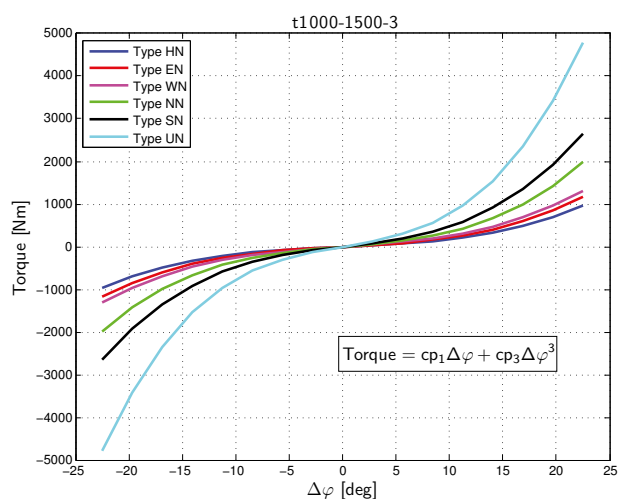
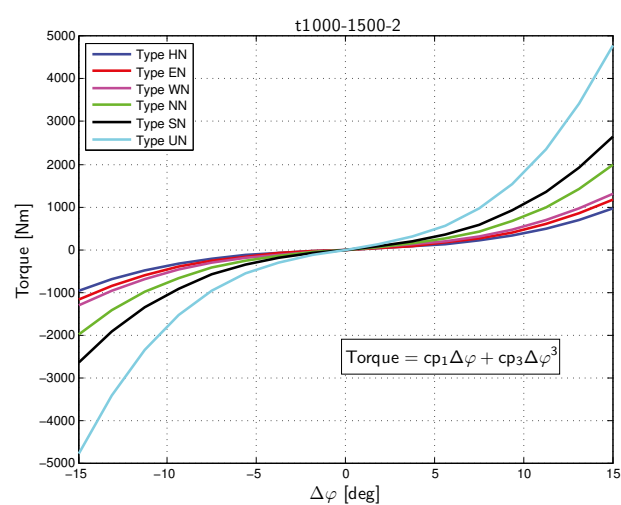
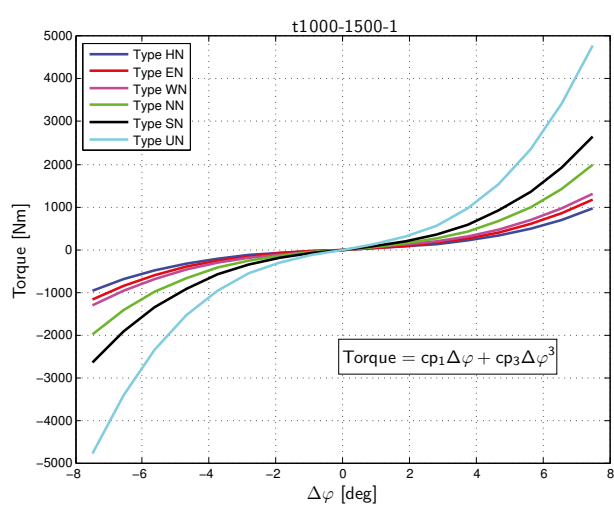
¹⁸Toothed rings for rotational speed measurement available as an option

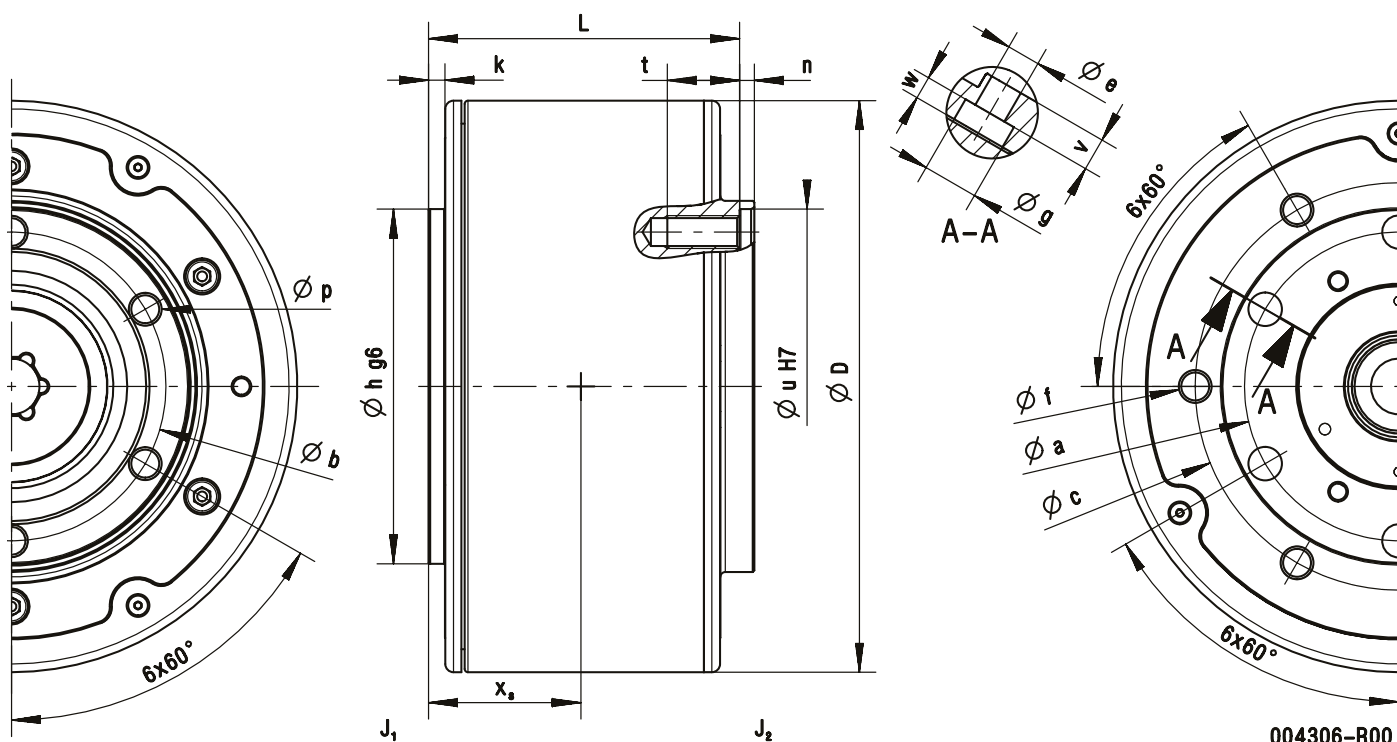
Elastomer type	t1000-1500-1			t1000-1500-2			t1000-1500-3		
	cp_1	cp_3	Ψ	cp_1	cp_3	Ψ	cp_1	cp_3	Ψ
	[Nm/rad]	[Nm/rad ³]	[-]	[Nm/rad]	[Nm/rad ³]	[-]	[Nm/rad]	[Nm/rad ³]	[-]
HN	1857	326860	0.10	929	40858	0.10	619	12106	0.10
EN	2339	388778	0.10	1169	48597	0.10	780	14399	0.10
WN	3086	405231	0.15	1543	50654	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





Coupling	Joint	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]
t1000-1500-1	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	174	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

Other dimensions available on request