

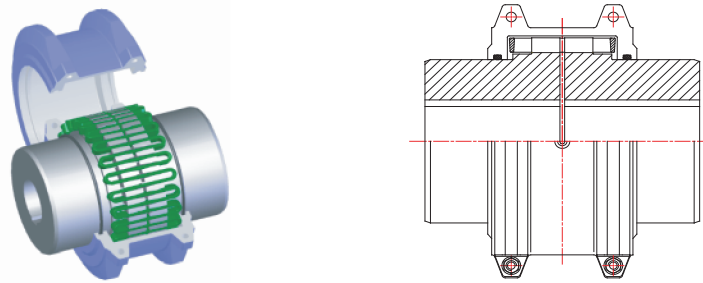


General Information

TRUMY grid coupling is a flexible coupling with advanced and mature technology transmitting torque and compensating misalignment through a snake-like spring. Compact construction, quick installation and variable stiffness make it widely used in most area of power transmission. TRUMY Grid coupling is also a good choice in low-speed applications.

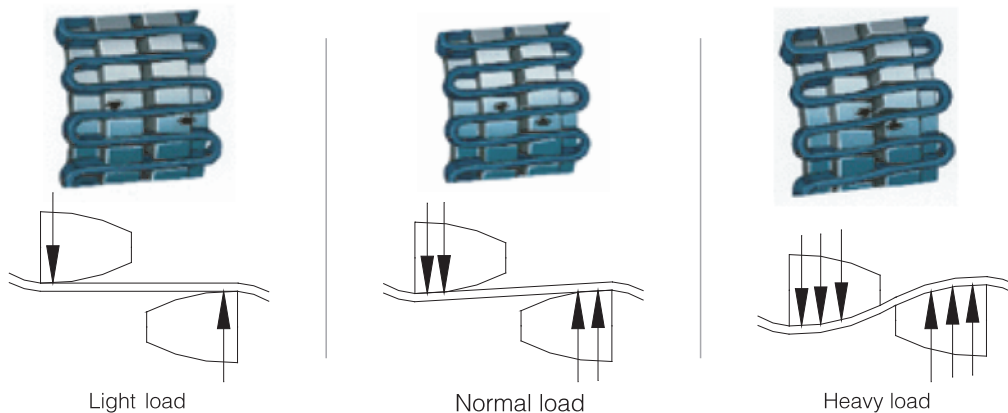
Construction and Operation Principle

Pic.1 Shows a typical construction of grid coupling.



Pic.1 Typical construction of grid coupling

The embedded snake-like spring in the teeth space of two coupling halves connects driving and driven shafts. While operating, teeth on driving side transmit power to the spring and then to the driven side. Contact points and the stiffness of the spring change as torque increases (see Pic.2). Thus grid coupling is applied to large torque fluctuation and short distance between shaft ends.



Pic.2 Sketch of different loads on grid coupling

Features

The transmission characteristics and advantages of grid coupling are as follows:

- 1) Good vibration absorbance, long service life. The spring could absorb 30% or more vibration through deformation, the specially processed spring made of high quality spring steel has good mechanical behavior and a longer life than non-metal elastic materials.
- 2) Enduring alternate load, safe starting. The contact area between coupling halve and spring is profile curve, when torque increases, the spring deforms along profile curve teeth surfaces, thus makes the force points on the spring closer. The larger the torque is the more points forcing on the teeth surfaces, and the variable stiffness shows.
- 3) Effective and reliable.
- 4) Low noise and well lubricated. Coupling cover keeps spring from departing, and grease lubricate spring sufficiently, that reduces noise.
- 5) Compact construction, easy installation. Grid coupling is small and light and has few component parts, especially suitable for machines with short distance between two shaft ends. Elastic element renewal can be done without moving the unit.
- 6) High permissible of installation displacement. The flexibility of Grid coupling makes it possible to accommodate radial misalignment, axial displacement and angular misalignment.

Selection Procedure

Selection should be based on working load, calculated torque, bore diameter and rotational speed.

Where: T_c – calculated torque, N.m
 T_n – coupling nominal torque, N.m
 K – service factor, depends on driving and driven type, take table 1 as reference or decided jointly.
 P_w – driving power, Kw
 n – rotational speed, r/min.

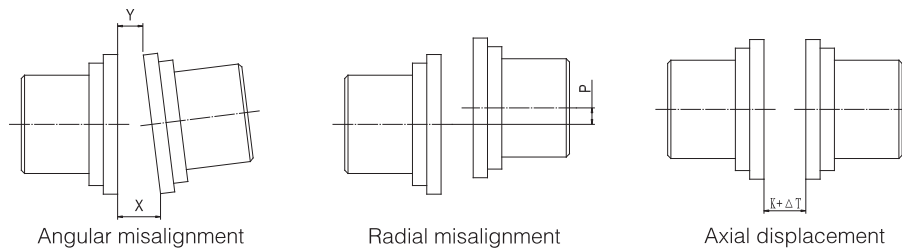
$$T_c = K \frac{9550 P_w}{n}$$

According to the formula, $T_c \leq T_n$, and the type is determined primarily. Then the following items should be considered:

- 1) Maximum axial displacement, angular misalignment and radial misalignment allowance (referent table 2) should meet requirements;
- 2) Working speed should not exceed maximum allowance;
- 3) Journal of both driving and driven shafts should not exceed its maximum bore D1;
- 4) Other installation requirements.

Table 1 service factor K

Duty	Driven machine	Driving machine Electromotor, steam or gas turbine
Constant torque	Centrifugal pumps, light conveyors, alternators, light fans	1.75
Slight torque fluctuations	Machine tools, screw compressor, screw pumps, liquid ring compressors, rotary dryers	2.0
Substantial torque fluctuations	Reciprocating pumps, low viscosity mixer, cranes, winches	2.5
Exceptionally high torque fluctuations	Rotary presses, reciprocating compressors, high viscosity mixers, marine propellers	3.0
Consult TRUMY sales engineer if no suitable factor is found.		



Pic.3 Grid coupling compensating sketch

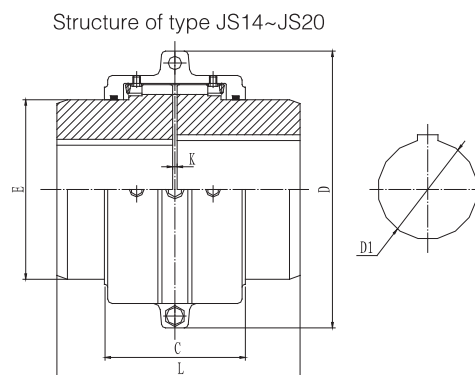
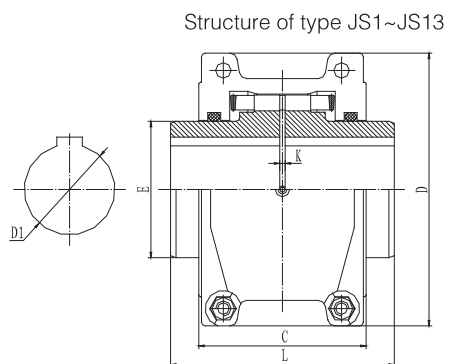
Table 2 maximum compensating capacity

Type	Radial misalignment P (mm)	Angular misalignment X-Y (mm)	Axial displacement ΔT (mm)
JS1~JS3	0.31	0.25	± 0.3
JS4~JS8	0.41	0.4	± 0.3
JS9~JS10	0.51	0.84	± 0.5
JS11~JS13	0.56	1	± 0.6
JS14~JS16	0.61	1.57	± 0.6
JS17~JS19	0.76	2.26	± 0.6
JS20	0.92	2.99	± 1.3

Note: The data here describes permissible displacement or misalignment caused by installation error, vibration, impulse or change in temperature under working condition.

Table 3 Maximum permissible value of installation error

Type	Radial misalignment P (mm)	Angular misalignment X-Y (mm)	Axial displacement ΔT (mm)
JS1~JS3	0.15	0.076	± 0.3
JS4~JS8	0.2	0.1	± 0.3
JS9~JS10	0.25	0.2	± 0.5
JS11~JS13	0.28	0.25	± 0.6
JS14~JS16	0.3	0.4	± 0.6
JS17~JS19	0.38	0.56	± 0.6
JS20	0.46	0.74	± 1.3

Basic dimensions


Type	Nominal torque T_n $T_n(\text{Nm})$	Permissible speed $R(\text{r/min})$	Maximum bore diameter $D1(\text{mm})$	D(mm)	L(mm)	C(mm)	E(mm)	DBSE K(mm)	Gross mass ($D1=0$) m(Kg)
JS1	45	4500	28	98	107	70	40	3	2
JS2	140	4500	35	110	107	70	50	3	2.8
JS3	224	4500	42	120	107	74	55	3	3.6
JS4	400	4500	48	138	127	80	65	3	6.5
JS5	630	4350	55	155	127	95	75	3	7
JS6	900	4125	65	170	167	98	90	3	12
JS7	1800	3600	75	195	228	120	105	4	20
JS8	3150	3600	85	212	228	124	125	4	27
JS9	5600	2440	100	248	290	160	140	6	50
JS10	8000	2250	110	274	290	166	160	6	59
JS11	12500	2025	125	324	290	190	180	6	77
JS12	18000	1800	150	368	350	190	220	6	126
JS13	25000	1650	180	400	350	200	255	6	170
JS14	35500	1500	200	458	430	275	270	6	253
JS15	50000	1350	220	500	430	275	305	6	358
JS16	63000	1225	250	565	510	310	360	6	501
JS17	90000	1100	275	610	510	310	395	6	640
JS18	125000	1050	305	675	610	325	440	6	870
JS19	160000	900	330	755	610	350	500	6	1116
JS20	224000	820	350	845	614	432	535	10	1420

- ◆ Perfect calculation and design program
- ◆ Reliable test and verification means
- ◆ Professional experience in manufacturing



- ◆ Grid coupling is a beneficial supplement of disc coupling, used for low speed applications with short DBSE, but most of these applications can also choose disc coupling or diaphragm coupling.

- ◆ For middle or high speed applications, TRUMY high speed disc coupling or diaphragm coupling series are recommended.



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