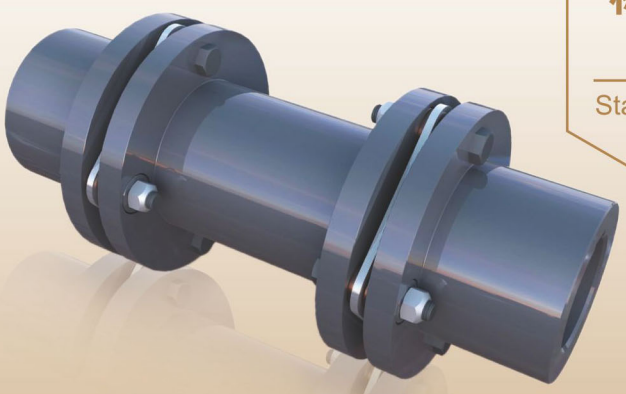
创明TMY
POWER TRANSMISSION PRODUCTS

TDE4

叠片挠性联轴器

FLEXIBLE DISC COUPLINGS



标准化设计
Standardized Design

批量化生产
Batch Production

更具性价比
More Cost-effective

工业流程泵首选
Customized for Industrial Process Pumps

产品特点

创明TDE4系列叠片挠性联轴器是在吸收三十多年专业制造经验的基础上，针对工业流程泵和中、低转速的旋转机械开发的具有竞争力的挠性传动产品。该系列产品标准化程度更高，采用批生产模式制造，更具性价比优势和交货期竞争力。

- 挠性元件采用高强度不锈钢制造。
- 采用4孔膜片，挠性更好。
- 膜片经有限元分析和优化，具有优良的综合性能。
- 采用广为认可的DIN标准紧固件。

Product Features

TRUMY TDE4 series flexible disc coupling is developed on the basis of more than thirty years of professional manufacturing experience. It's a competitive flexible transmission products for industrial process pumps and other medium or low speed rotating machinery. Based on a higher degree of standardization, this series of products are manufactured in batch production mode, and have the advantages of cost performance and delivery competitiveness.

- Flexible components are made of high strength stainless steel.
- Square disc with 4 bolt–holes, higher flexibility.
- Excellent comprehensive performance based on finite element analysis and contour profile optimization.
- DIN standard fasteners used.

型号说明

TDE4系列产品的编号由五段组成例如：

TDE4 – 112 – 65 × 100 / 48 × 80 – 180 – 00T1

A　B　C　D　E

A段：表示联轴器型号特性，数字“4”表示四孔膜片。

B段：联轴器规格代号，表示联轴器传递扭矩的等级，数值越大，传递扭矩越大。

C段：表示主、从动机轴端配合轴径和长度，以分式表示：一般分子为主动机轴端，分母为从动机轴端。

D段：表示主、从动机轴端间的距离。

E段：表示该联轴器设计号。

Coupling Series Designation

TDE4 series coupling designation consists of 5 groups:

TDE4 – 112 – 65 × 100 / 48 × 80 – 180 – 00T1

A　B　C　D　E

Group A is the type name, where figure 4 indicating the number of bolt holes in a disc.

Group B is the coupling specification code, indicating the grade of torque transmission. Larger numerical number means higher torque transmitted.

Group C shows the fitting diameter and length of driving and driven shaft ends (in a fraction form, with numerator representing driving shaft end, while denominator – driven shaft end).

Group D represents the distance between shaft ends of driving and driven equipment.

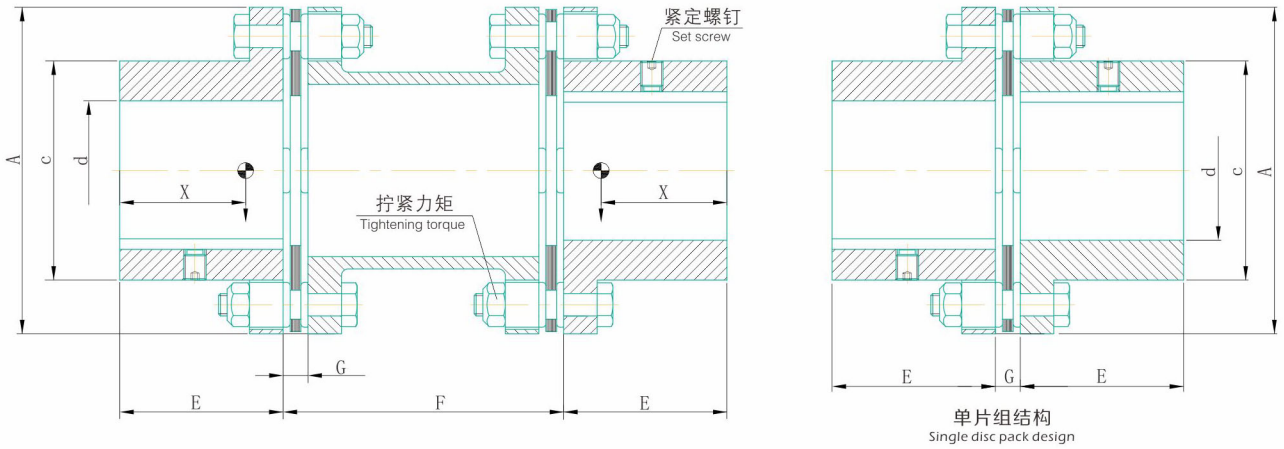
Group E shows the design number of the coupling.

推荐应用

TDE4系列推荐应用于各类工业流程泵和其它工作转速不超过4000r/min的场合。

Recommended Applications

TDE4 series is recommended for all types of industrial process pumps and other machines working at 4000r/min and below.



单片组结构
Single disc pack design

技术数据 Technical Data

型号 Type	公称扭矩 Continuous Torque Rating (Nm)	峰值扭矩 Peak Torque Rating (Nm)	最大瞬时扭矩 Momentary torque limit (Nm)	最大许用转速 Max Speed (r/min)	螺母拧紧力矩 Tighte Ning Torque (Nm)	总质量 Weight of Total Coupling (Kg)	质心 Centre of Gravity X (mm)	扭转刚度 Torsional Stiffness K_t (MNm/Rad)	转动惯量 Moment of Inertia (Kgm^2)	间隔轴每米长 Spacer Tube Per m			角向不对中 Angular Misalignment		轴向不对中 Axial Displacement	
										质量 Weight (Kg)	扭转刚度 Torsional Stiffness ΔK_t (MNm/Rad)	转动惯量 Inertia (Kgm^2)	最大 Max (deg)	角向刚度 Restoring Moment (Nm/deg)	最大 Max (±mm)	轴向力 Axial Force (N)
TDE4-4	40	140	300	4000	6	2.1	38.1	0.021	0.0015	4.05	0.014	0.0014	1	15.4	2	185
TDE4-6	63	200	400		6	3.2	49.7	0.024	0.0028	4.72	0.022	0.0022	1	19.4	2.5	215
TDE4-14	140	400	700		7	4.7	66.4	0.034	0.0050	5.72	0.039	0.0038	1	22.9	2.8	315
TDE4-22	200	630	1500		11	7.5	66.8	0.035	0.0122	8.61	0.089	0.0087	1	15	3.4	290
TDE4-44	400	1000	1750		14	9.3	80.0	0.055	0.0197	9.97	0.138	0.0135	1	20.5	3.9	515
TDE4-112	1000	2000	3100		30	13.9	84.2	0.086	0.0353	11.2	0.195	0.0191	1	25.2	4.0	700
TDE4-142	1400	3550	5300		55	22.4	84.6	0.209	0.0813	13.8	0.362	0.0356	1	37.9	5.9	1630
TDE4-220	2000	6300	10000		92	31.2	106.1	0.290	0.1441	13.8	0.362	0.0356	1	44.8	6.4	2150

1. 表中总质量、质心、扭转刚度、转动惯量为按最大许用轴孔直径和最短法兰面间距计算得出，其中扭转刚度已计入1/3轴伸配合段，其它尺寸下的上述参数需另行计算或换算。

2. 单片组设计不能补偿径向不对中，轴向不对中补偿量是表中数据的一半（参见第04页上的机组径向、角向和轴向不对中示意图）。单片组设计只能在特定条件下选用，如有需要请向创明销售工程师咨询。

1. In the catalogue the total mass, centre of mass, torsional stiffness and moment of inertia are calculated according to max. allowable shaft diameter, and minimum standard distance between flange mating faces F, where the torsional stiffness is taken in 1/3 shaft penetration. For other sizes of shaft diameter or other distance between flange mating faces, above mentioned parameters should be calculated or corrected separately.

2. Single disc pack design can not compensate radial misalignment, and it's axial misalignment value is only half of the data in the table. (For more information, please refer to the diagrammatic sketch of radial, angular mislignment and axial displacement on page 04.) Single disc pack design can only be used under certain conditions. If necessary, please consult TRUMY sales engineer.

主要尺寸表（mm） Main Dimentions（mm）

型号 Type	最大外径 Flange Diameter, A	叠片组件厚度 Disc Pack Thickness, G	最大许用轴径 Allowable Shaft Diameter, D	轮毂外径 Hub Diameter, C	轮毂长度 Hub Length, E	法兰面间距，F Distance Between Flange Ends（创明标准值 TRUMY Standard）						
TDE4-4	78	7.2	28	42	见标准轮毂长度表 See the table of standard hub length.	100	140					
TDE4-6	90	7.2	38	54		100	140	180				
TDE4-14	100	8.4	42	61		100	140	180				
TDE4-22	120	9.5	55	78		100	140	180	200			
TDE4-44	130	10.7	60	88		100	140	180	200			
TDE4-112	146	11.1	70	98			140	180	200	250		
TDE4-142	176	13.6	75	114				180	200	250		
TDE4-220	196	15.2	90	126				180	200	250	280	300

标准轮毂长度表（mm）

Standard Hub Length（mm）

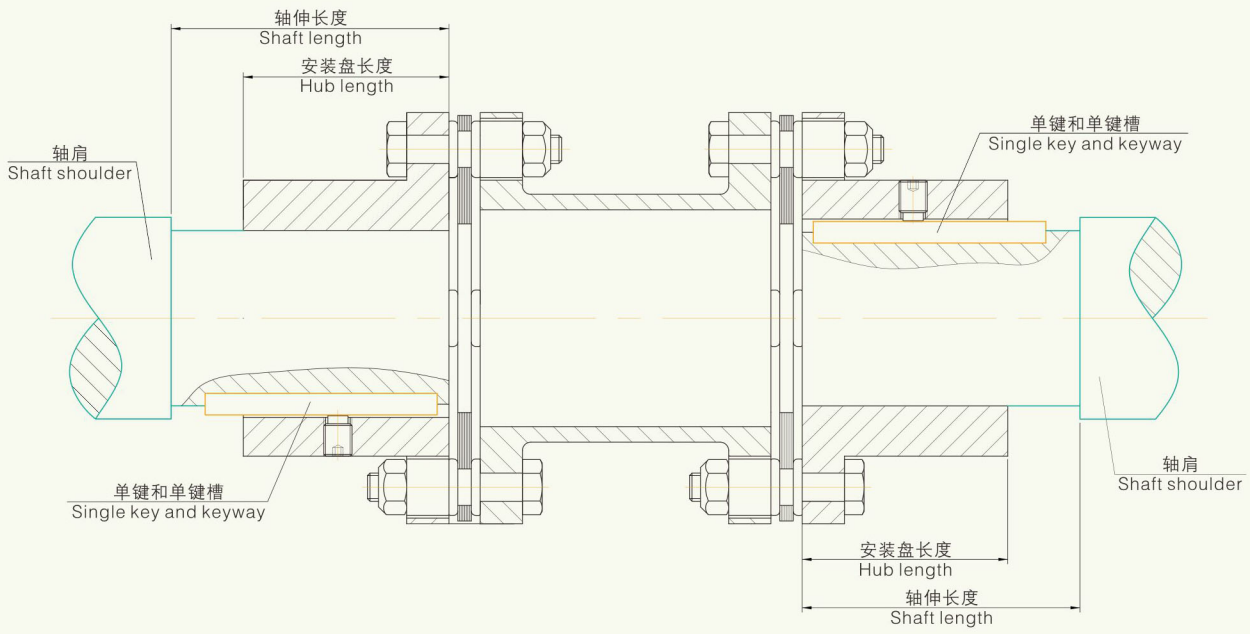
轴径 Shaft Diameter	轮毂长度* Standard Hub Length, E	TDE4-4	TDE4-6	TDE4-14	TDE4-22	TDE4-44	TDE4-112	TDE4-142	TDE4-220
19	25	○	○	○	—	—	—	—	—
24	35	○	○	○	○	○	—	—	—
28	50	○	○	○	○	○	—	—	—
32	50	—	○	○	○	○	○	—	—
38	50	—	○	○	○	○	—	—	—
42	70	—	—	○	○	○	○	○	○
48	80	—	—	—	○	○	○	○	○
55	80	—	—	—	○	○	○	○	○
60	80	—	—	—	—	○	○	○	○
65	100	—	—	—	—	—	○	○	○
70	100	—	—	—	—	—	○	○	○
75	100	—	—	—	—	—	—	○	○
80	100	—	—	—	—	—	—	—	○
85	100	—	—	—	—	—	—	—	○
90	100	—	—	—	—	—	—	—	○

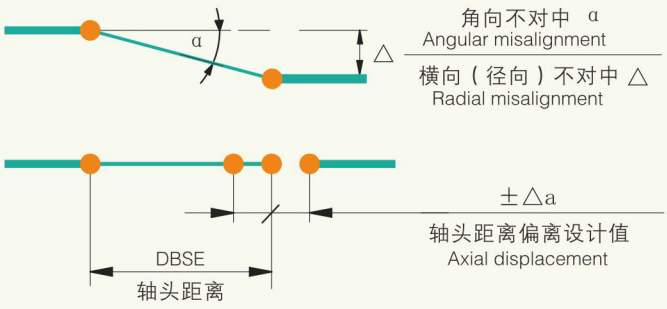
1. “○”——可供应标准轮毂，“–”——无标准轮毂供应。
2. 标准轮毂的孔公差为H7或F7。
3. 创明推荐轴、孔配合为松配合，标准轮毂在键槽顶部设置紧定螺钉，用以将轮毂固定在轴上。
4. 键槽剖面尺寸符合GB/T 1095，键槽宽度公差为Js9。

*轮毂长度不必与轴伸长度相同，留出一段光轴不仅可以在需要的时候安置找正支架，也便于轮毂的安装和拆卸。

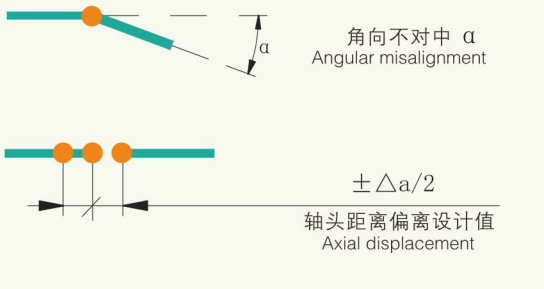
1. "○"__Standard hub is available, "–"__No standard hub supply.
2. The bore tolerance of a standard hub is H7 or F7.
3. Slight clearance fit is recommended for hub–shaft connection, standard hub has a set screw on the top of the keyway to fix it on the shaft.
4. The keyway dimensions and tolerances conform with the China national standard GB/T 1095. (the keyway width tolerance is Js9.)

*Hub length is not necessary to equal to the shaft length. It can be shorter than the shaft, leaving a bare shaft to install alignment brackets when needed. This design is also helps to hub installation or removal.





双膜片组可以补偿三向不对中
Double disc pack design can compensate three direction misalignment



单膜片组只能补偿角向不对中和一半的轴向不对中
Single disc pack design can compensate only angular and axial misalignment, cannot compensate radial misalignment

机组径向、角向和轴向不对中示意图
Diagrammatic sketch of radial, angular misalignment and axial displacement

选型程序

TDE4系列适用于工作转速不超过4000r/min的中、低速机组，如需更高转速，请选用我公司高速高性能叠片挠性联轴器或膜盘挠性联轴器。

我们建议由供需双方共同选型。您在选型过程中遇到任何疑问，请随时向创明销售工程师咨询。

1. 根据主、从动机及工作情况，选择工况系数K，K值见第05页上的工况系数表。

2. 确定联轴器计算功率P_c

$P_c=P\times K$ 式中：

P_c --计算功率(Kw)；

P --传递功率(Kw),考虑到从动机可能会过载工作，建议P按驱动机功率计算；K --工况系数。

3. 计算联轴器传递扭矩T

$T=9549\times P_c/n$ 式中：

T --扭矩（N.m）；

n --额定或正常工作转速（r/min）。

4. 根据T≤公称扭矩的原则，从系列列表中初步选出合适的联轴器型号。

5. 从系列列表中选择合适的法兰面间距。

6. 复核使用条件

Selection Procedure

TDE4 series is prepared for medium and low speed applications with working speed not exceeding 4000r/min. If a higher speed is needed, please select TRUMY high speed-high performance flexible disc coupling or flexible diaphragm coupling.

It is recommended to select a disc coupling jointly by both supply and demand sides. Whenever you have questions during the selection process, please contact TRUMY sales engineer at any time.

1. According to the type of driving and driven machines and operation conditions, select a service factor K from the service factor table on page 05.

2. Determine coupling calculation power rating P_c

$P_c=P\times K$

Where: P_c -- calculation power (Kw); P -- transmitting power (Kw). Suggest that P is calculated according to the power value of the driving machine; K -- service factor.

3. Calculate transmitting torque of the coupling T

$T=9549\times P_c/n$

Where: T -- torque (N.m); n -- rated or normal working speed (r/min).

4. According to the principle T≤Continuous torque rating, make a tentative choice of coupling type from the table.

5. Select a suitable distance between flange ends (DBSE) from the table.

6. Check the operating conditions

a. Check up peak torque rating and momentary torque limit with the requirements of the machines. For the machines starting frequently and those with big start-up shock, the starting torque should be checked. For the machines equipped with brake apparatus, the braking torque should

a. 复核峰值扭矩和最大瞬时扭矩是否满足机组需要。对于频繁启动的机组和启动冲击较大的设备应校核其启动扭矩；对于有刹车装置的设备应校核其刹车扭矩；对于同步电机驱动的设备或发电机组，应校核由于短路引起的瞬态扭矩或分析由于启动引起的交变扭矩。必要时应加大型号或选择其它系列。

b. 所选型号的最大许用轴径能否满足要求，必要时应加大型号或选择其它系列。

c. 复核联轴器的轴向和角向补偿能力是否满足机组需要，必要时应加大型号或选择其它系列。对于热涨量较大的机组，可采用冷态预拉伸的方法，使机组在达到热平衡时联轴器工作在小变形状态。

be checked. For power generation packages or machines driven by synchronous motors, the transient torque associated with generator short-circuit torque or the cyclic torque associated with synchronous motor start-up should be checked. If necessary, select the types with higher parameter values or select other coupling series.

b. Check up the coupling type selected with the requirement for max. Allowable shaft diameter. If necessary, select the types with higher parameter values or select other coupling series.

c. Check up the capacity to accommodate axial displacement and angular misalignment of the coupling selected with requirements of the machines. If necessary, select the types with higher parameter values or select other coupling series. For the machines with larger thermal expansion the coupling may be processed by cold pre-stretching so that the coupling works in a small deformation state when the machines are thermally balanced in operation.

工况系数表

Service Factors

负载类型 Duty	从动机 Driven machine	驱动机 Driving machine		
		电动机、汽轮机或燃气轮机 Electromotor, steam or gas turbines	蒸汽机或水轮机 Steam engine or water turbine	内燃机 Internal combustion engine
扭矩恒定 Constant torque	离心泵、轻型皮带运输机、交流发电机、轻型风机 Centrifugal pumps, light conveyors, alternators, light fans	1.0*	1.5	3.0
扭矩波动轻微 Slight torque fluctuations	机床、螺杆压缩机、螺杆泵、液环式压缩机、旋转干燥机 Machine tools, screw compressor, screw pumps, liquid ring compressors, rotary dryers	1.5	2.0	3.0
扭矩波动较大 Substantial torque fluctuations	往复泵、低粘度搅拌机、起重机、纹盘机 Reciprocating pumps, low viscosity mixers, cranes, winches	2.0	2.5	4.0
扭矩波动特大 Exceptionally high torque fluctuations	回转式冲床、往复式压缩机、高粘度搅拌机、船用螺浆 Rotary presses, reciprocating compressors, high viscosity mixers, marine propellers	3.0	3.5	5.0

*用齿轮箱传动则为1.25，用电机直接起动则为1.5。按API671，最小工况系数为1.5。如果有必要，可以根据API671（第4版）第6节关于联轴器设计的有关规定增减工况系数。用户若在本推荐表中找不到相应的驱、从动机类型，可按AGMA514.02选取工况系数，或向我公司销售工程师咨询。

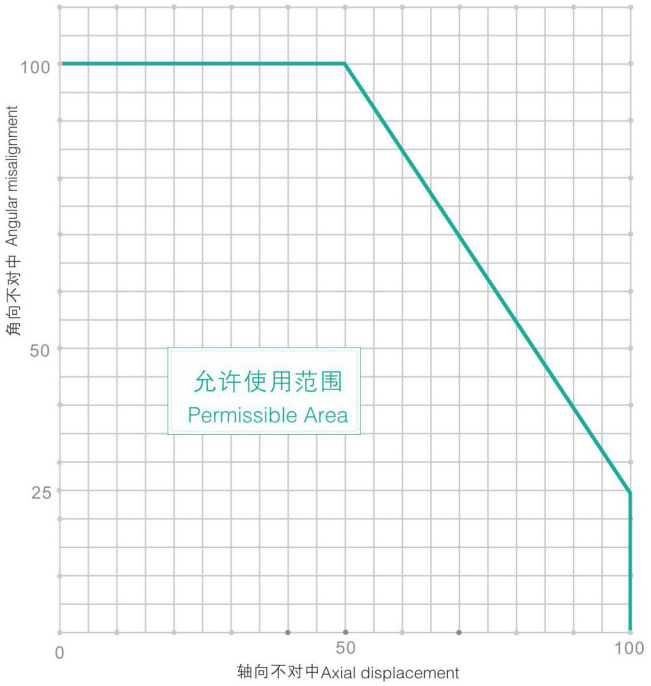
*For the gear box the value of the factor 1.25 may be adopted, for direct electromotor start-up is 1.5, according to the requirements in API671 the minimum is 1.5. When needed, the service factor value may be increased or decreased following the relative rules in API671 (4th edition) chapter 6. If the customer can not find the corresponding types of driving or driven machines recommended in the table, please select the service factors from AGMA514.02 or consult TRUMY sales engineer.

关于许用补偿能力的说明

联轴器一般要同时承受角向、径向和轴向不对中，如图所示。径向不对中补偿能力是通过挠性元件的角向变形来实现的，是角向变能力和轴头间距的函数。联轴器在工作时的各项变形应不超过许用不对中补偿范围。

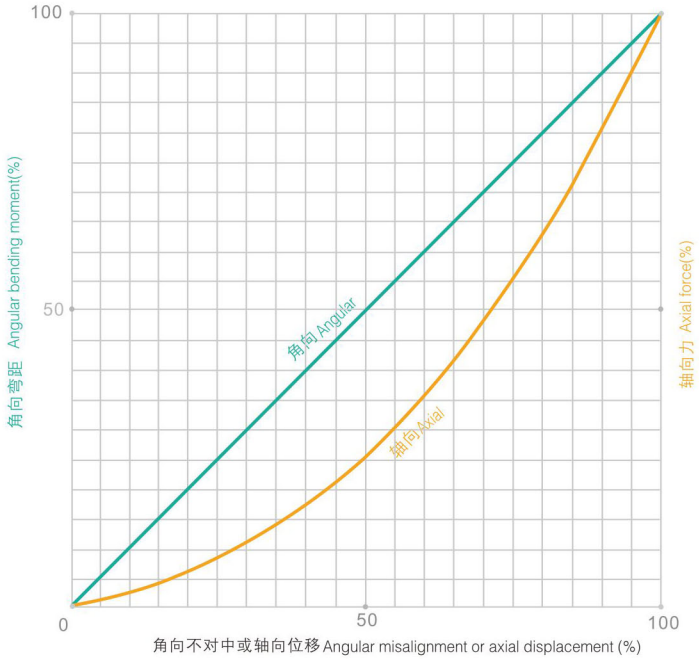
Transmitting torque and motion, the coupling in operation has to endure angular and radial misalignments and axial displacement simultaneously, as shown in the figure. The capability for compensating radial misalignment, a function of angular deformation and distance between the ends of shafts, is usually realized by angular deformation of the flexible elements. Deformations of the coupling, when in operation, should not beyond the range of permissible misalignments.

Description of Allowable Compensation Capacity



许用不对中补偿范围
Range of allowable misalignment compensation

关于轴向力、角向弯矩的说明



轴向力和角向弯矩曲线
Curves of relationship between axial force, angular bending moment and deformation

Description of Axial Force and Angular Bending Moment

挠性元件在有轴向变形时会产生轴向回弹力（轴向力），在有角向变形时会产生角向回弹力矩（角向弯矩）。轴向力和角向弯矩与变形量的关系见轴向力和角向弯矩曲线。

The flexible elements with axial deformation will generate axial bounce force (axial force), while angular deformation will lead to angular bounce moment (angular bending moment). The relation between axial force, angular bending moment and deformation is illustrated on the left.

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