

《聯軸器》

聯軸器介紹與特性 Coupling Features

聯軸器是連接兩軸使之供回轉並傳遞安全轉矩的一種機械裝置。一般聯軸器可分為撓性與剛性聯軸器兩大類。當動力傳達兩軸要配置成一直線發生困難時，或者兩軸之安裝非常簡單時，應使用可撓性聯軸器，它具有緩和衝擊、吸收平行、偏角、軸向位差、改善系統傳動動力特性的功能，因此在安裝時，即使軸發生少許之偏差而軸承也不會有勉強的情形，在市場上應用非常廣泛，而剛性聯軸器為一無法造成偏心、偏角之元件，能使被連接的兩軸固定成爲一體。因此使用上同心度必須要求非常高。

◆聯軸器的選擇要件：

依據機械特性、系統運作來選用適合的聯軸器型式：

1. 『扭力大小』

聯軸器的扭力應爲傳動扭力最大值的二倍，例：若傳動扭力值爲5(N.m)，則應選擇扭力值10(N.m)的聯軸器；材質以鋼質的扭力爲佳。

2. 『撓性 / 剛性』

撓性聯軸器可吸收平行偏差、角度偏差、軸向位差；高剛性聯軸器則無，因此軸端的精準度必須非常高。

3. 『適用的場合—高低溫、酸、鹼...』

須慎選聯軸器之材質，其是否可以負荷酸、鹼、高低溫之場合。

4. 『有無背隙』

5. 『絕緣性』

6. 『抗震性』

7. 『可承受的最大轉速』

8. 『具有保護機台的安全性』

9. 『孔徑範圍是否適用』

Introduction

A coupling is a machinery device used to connect two shafts together at their ends for the purpose of rotation and transmitting power. Generally, there two main types of coupling, flexible coupling and rigid coupling. When two power-transmitting shafts perform a complete centering is very difficult work, or shafting is very easy, flexible coupling provides thrust moderation, and accommodates parallel, angular and axial misalignment to optimize the transmission system. Therefore, when installing, few degrees of shafts misalignment will not be constrained to shafts. This coupling has wide range of application in the market. Rigid coupling provides free parallel misalignment and angular misalignment to firmly connect two shafts as one body. It highly requires precise parallel and angular alignment.

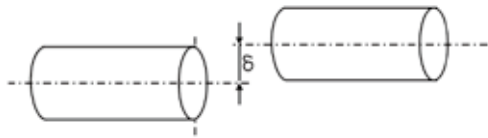
◆How to select a coupling:

Choose an appropriate coupling in accordance with the intended use, machinery requirements and power transmission.

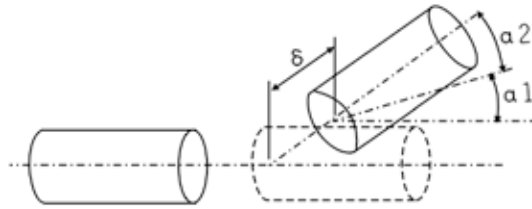
1. Torque: The torque of coupling is supposed to be twice as much as the max transmissible torque. For example, if transmissible torque is 5 (N.m), then choose the coupling of 10 (N.m) torque; steel coupling of high torque is preferred.
2. Flexible/Rigidity: flexible coupling can accommodate parallel misalignment, angular misalignment and axial end-play, while rigid coupling requires highly precise alignment.
3. Applicable condition: high/low temperature, acidity, alkalinity) it is required that coupling material must withstand acidity, alkalinity and high/low temperature.
4. With or without backlash
5. Electrical Insulation
6. Vibration resistance
7. Allowable max. rotational frequency
8. Protection to the machinery
9. Appropriate bore diameter range

偏差調整 Alignment Adjustment

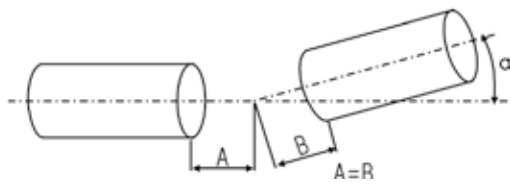
◆ 偏心 Parallel Offset Misalignment



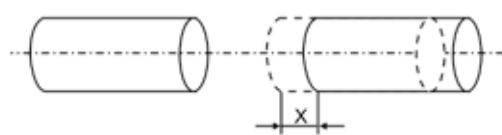
◆ 偏心·偏角的複合 Combined Angular Offset Misalignment



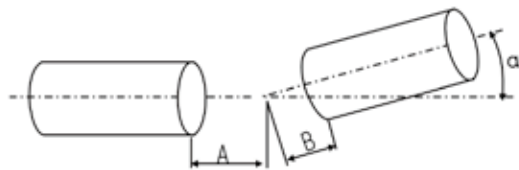
◆ 偏心(中心一致) Symmetrical Angular Misalignment



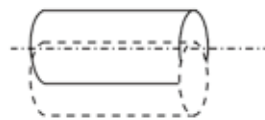
◆ 軸端部位差 End-Play



◆ 偏角(中心不一致) Non-Symmetrical Angular Misalignment



◆ 震動 Run Out



◆ 撓性聯軸器可傳遞扭矩和迴轉角度，同時吸收軸的安裝偏差。當安裝偏差超過容許值時，可能產生振動或導致聯軸器的壽命縮短，因此要確保偏差的調整適當。

Flexible Couplings are designed to transmit torque and rotational angle while absorbing misalignment. However, when misalignment exceeds allowable levels, vibration may result and the longevity of the coupling may be reduced. Therefore, be certain to make alignment adjustments.

◆ 本型錄所列之最大偏差容許值是指：只有一種偏差存在的情況下。當兩種或更多種偏差同時存在時，容許值應低於規格表中最大偏差的1/2。

Maximum Allowable Misalignment Level in the catalog refers to the case that there exists only a single type of misalignment. In case that there exist two or more types of misalignment, the allowable level shall be less than 1/2 of maximum misalignment in the specification

◆ 偏差並不只有發生在設備裝配，工作過程中的振動、熱膨脹、軸承磨損等都會引起偏差。因此，建議將軸向偏差調整至低於最大值的1/3。

In addition to assembly, misalignments can be caused by heat expansion, wear of bearings, and vibration from operation. It is therefore recommended to adjust shaft misalignments to below 1/3 of maximum values.

◆ 軸的偏差有三種，分別是徑向偏差、角度偏差和軸向偏差。請調整偏差，使其低於本型錄提供的各產品規格表中列出的容許值。

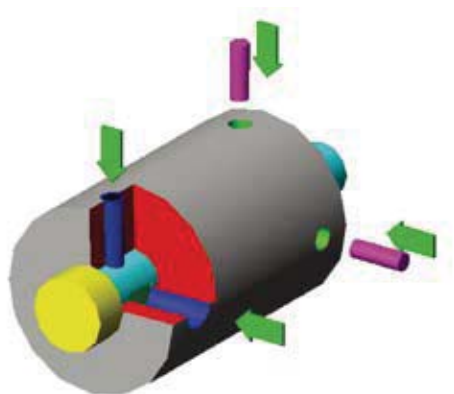
There are three types of shaft misalignment: parallel misalignment, angular misalignment, and shaft end-play. Please adjust alignment to levels below those listed in the specification charts of the various product pages.

固定方式 Attachment to Shaft

● 止付螺絲型 Setscrew type

這種低成本類型是最傳統的固定方式。然而螺栓的前端與軸心直接接觸，可能會造成軸心的損傷或拆卸的困難。

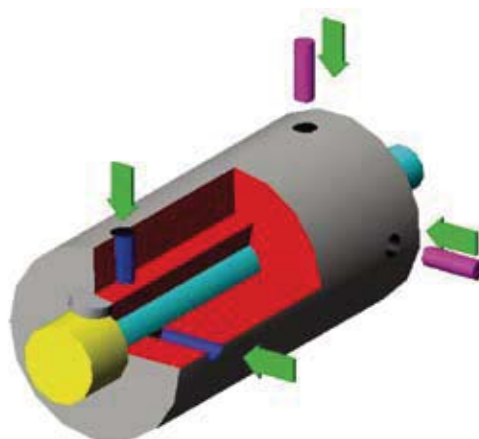
The setscrew type is a conventional and most low-cost way of attachment. However, the front end of bolt could reach the surface of shaft, and impair it or cause the hardness of disassembling.



● 鍵槽型 Keyway type

這種類型與止付螺絲型一樣，是最傳統的固定方式，適合較高扭力矩的傳動。為防止軸向移動，通常與止付螺絲型，夾緊式並用。

The keyway type is a conventional way of attachment as setscrew type. It is suitable for the transmission of high torque loads. It is usually used with setscrew type and clamp type to prevent shaft movement.



● 夾緊式 Clamp type

利用沈頭螺栓鎖緊的力量來使狹縫收縮，而將軸心緊緊夾持住。固定和拆卸方便，而且不會造成軸心的損壞。

Using countersunk head bolts to compress the slit to clamp the shaft firmly. Clamp type is not only easy to hold as well as to disassemble, but also cause no impairment to the shaft.

