軸心

軸心依不同的材質(SUJ2、SUS440C、S45C)及各種處理方式(高週波熱處理、鍍鉻處理等)提供相配合的軸承高精度的運行，在合理的使用條件之下保持良好的耐磨及受力的機能保證。

特性

1．優異的製造技術
Advanced Machining Technology
2.高耐磨耗熱處理 Excellent Wear Resistance
3．提供不同材料選擇
Wide Selection of Shaft Types
4．可根據不同仕樣加工製作
Special requirements
5．有效硬化層及深度
Effective Depth of Hardened Layer

SUJ2 高週波硬鉻軸心-WCS

C	Si	Mn	P	S	Cr
0.95 ~ 1.10	0.15 ~ 0.35	Less than0.5	Less than 0.025	Less than 0.025	1.3~1.6

外徑 Outer diameter	有效深度 Effective hardened layer depth
Over 6mm up to 12mm	0.8mm or more
Over 12mm up to 30mm	1.0mm or more
Over 30mm	2.0mm or more

1．硬化層硬度 HRC60 ±2。
2．表面粗度 Surface roughness less than：0.4Ra。
3．外徑公差 Outer diameter tolerance：g6。
4．表面鍍硬鉻防銹處理 Trartment-chromium plated。

SUS440C

C	Si	Mn	P	S	Cr
0.95 ~ 1.2	Less than1.0	Less than1.0	Less than 0.04	Less than 0.03	1.3~1.6

g6 公差尺寸表

直徑 Diameter(mmφ)容許公差	g6 級(Lever g6)
6 ~ 10	-0.005 ~ -0.014
10 ~ 18	-0.006 ~ -0.017
18 ~ 30	-0.007 ~ -0.020
35 ~ 50	-0.009 ~ -0.025
50 ~ 80	-0.010 ~ -0.029

軸心

S45C 硬鉻軸心規格表

直徑一覽表 Diameter(mmφ)					附註 Remark
6	19	32	50.8	80	
8	20	35	55	85	★ 外徑精度(External Diameter Accuracy)：h7、f8
10	22	35.5	56	90	★ 表面粗度(Surface Roughness)：0.8～1.6S
12	22.4	36	57.15	95	★ 硬鉻厚度(Hard Chrom Thickness)：20Micron±10%
13	25	38	60	100	★ 表面硬度(Surface Hardness)：HV800 以上
14	25.4	38.1	63	101.6	★ 標準長度(Standard Lengths)：3m～3.5m
15	28	40	63.5		★ 材質(Material)：SAE1045 , JIS(S45C)特殊材質亦可
16	30	44.45	65		★ 訂製(And others, especially can be available)
17	31.5	45	70		★ 最大直徑(Max Diameter)：1m
18	31.75	50	75		

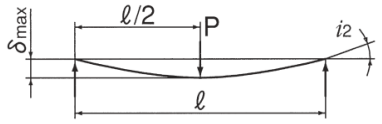
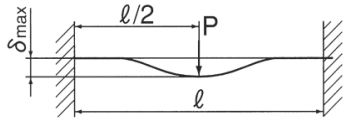
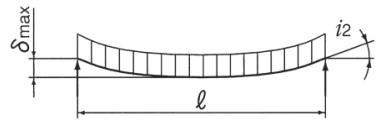
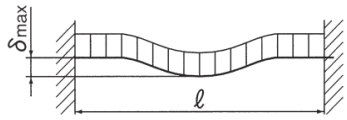
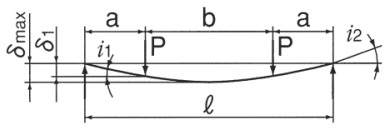
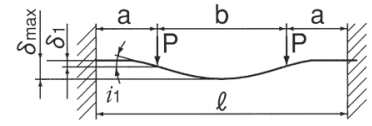
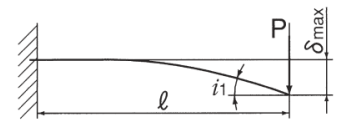
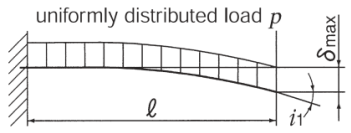
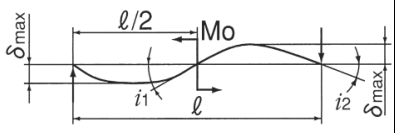
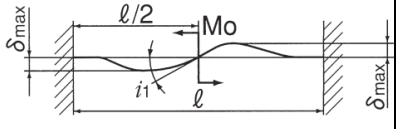
f8 公差尺寸表

直徑 Diameter(mmφ)容許公差	f8 級(Lever f8)
6～10	-0.013～-0.035
10～18	-0.016～-0.043
18～30	-0.020～-0.053
35～50	-0.025～-0.064
50～80	-0.030～-0.076
80～101.6	-0.036～-0.090

圖 34

軸心相關技術資料

各式固定方式的軸心撓性計算公式

Support method		Specification	Formula for deflection	Formula for angle
1	Support - Support		$\delta_{max}=\frac{P\ell^3}{48EI}P\ell^3C$	$i_1=0$ $i_2=\frac{P\ell^2}{16EI}=3P\ell^2C$
2	Fixed - Fixed		$\delta_{max}=\frac{P\ell^3}{192EI}=\frac{1}{4}P\ell^3C$	$i_1=0$ $i_2=0$
3	Support - Support		$\delta_{max}=\frac{5P\ell^4}{384EI}=\frac{5}{8}P\ell^4C$	$i_2=\frac{P\ell^3}{24EI}=2P\ell^3C$
4	Fixed - Fixed		$\delta_{max}=\frac{P\ell^4}{384EI}=\frac{1}{8}P\ell^4C$	$i_2=0$
5	Support - Support		$\delta_1=\frac{Pa^3}{6EI}\left(2+\frac{3b}{a}\right)=8Pa^3\left(2+\frac{3b}{a}\right)C$ $\delta_{max}=\frac{Pa^3}{24EI}\left(\frac{3\ell^2}{a^2}-4\right)=2Pa^3\left(\frac{3\ell^2}{a^2}-4\right)C$	$i_1=\frac{P_{ab}}{2EI}=24P_{ab}C$ $i_2=\frac{P_{a(a+b)}}{2EI}=24P_{a(a+b)}C$
6	Fixed - Fixed		$\delta_1=\frac{Pa^3}{6EI}\left(2-\frac{3a}{\ell}\right)=8Pa^3\left(2-\frac{3a}{\ell}\right)C$ $\delta_{max}=\frac{Pa^3}{24EI}\left(2+\frac{3b}{a}\right)=2Pa^3\left(2+\frac{3b}{a}\right)C$	$i_1=\frac{P_{a^2b}}{2EI\ell}=\frac{24P_{a^2b}C}{\ell}$ $i_2=0$
7	Fixed - Free		$\delta_{max}=\frac{P\ell^3}{3EI}=16P\ell^3C$	$i_1=\frac{P\ell^2}{2EI}=24P\ell^2C$ $i_2=0$
8	Fixed - Free		$\delta_{max}=\frac{P\ell^4}{8EI}=6P\ell^4C$	$i_1=\frac{P\ell^3}{6EI}=8P\ell^3C$ $i_2=0$
9	Support - Support		$\delta_{max}=\frac{\sqrt{3}Mo\ell^2}{216EI}=\frac{\sqrt[3]{3}}{9}Mo\ell^2C$	$i_1=\frac{Mo\ell}{12EI}=4Mo\ell C$ $i_2=\frac{Mo\ell}{24EI}=2Mo\ell C$
10	Fixed - Fixed		$\delta_{max}=\frac{Mo\ell^2}{216EI}=\frac{2}{9}Mo\ell^2C$	$i_1=\frac{Mo\ell}{16EI}=3Mo\ell C$ $i_2=0$

δ_1 : Deflection when load is applied(mm). δ_{max} : Maximum deflection(mm). i : Deflection angle when load is applied(red). i_2 : Deflection angle at the support(red). Mo : Moment (N+mm). P : Concentrated load(N). p : Uniformly distributed loan(N/mm). a, b : Loading point distance. ℓ : Span(mm). I : geometrical moment of inertia(mm^4). E : Modulus of direct elasticity 2.06×10^5(N/mm^2). C : 1/48EI(1/N+mm^2).

實心及空心 I 的計算方式(C=1/48EI)

- For solid shaft : $I=\frac{\pi D^4}{64}$
- For hollow shaft : $I=\frac{\pi}{64}(D^4-d^4)$