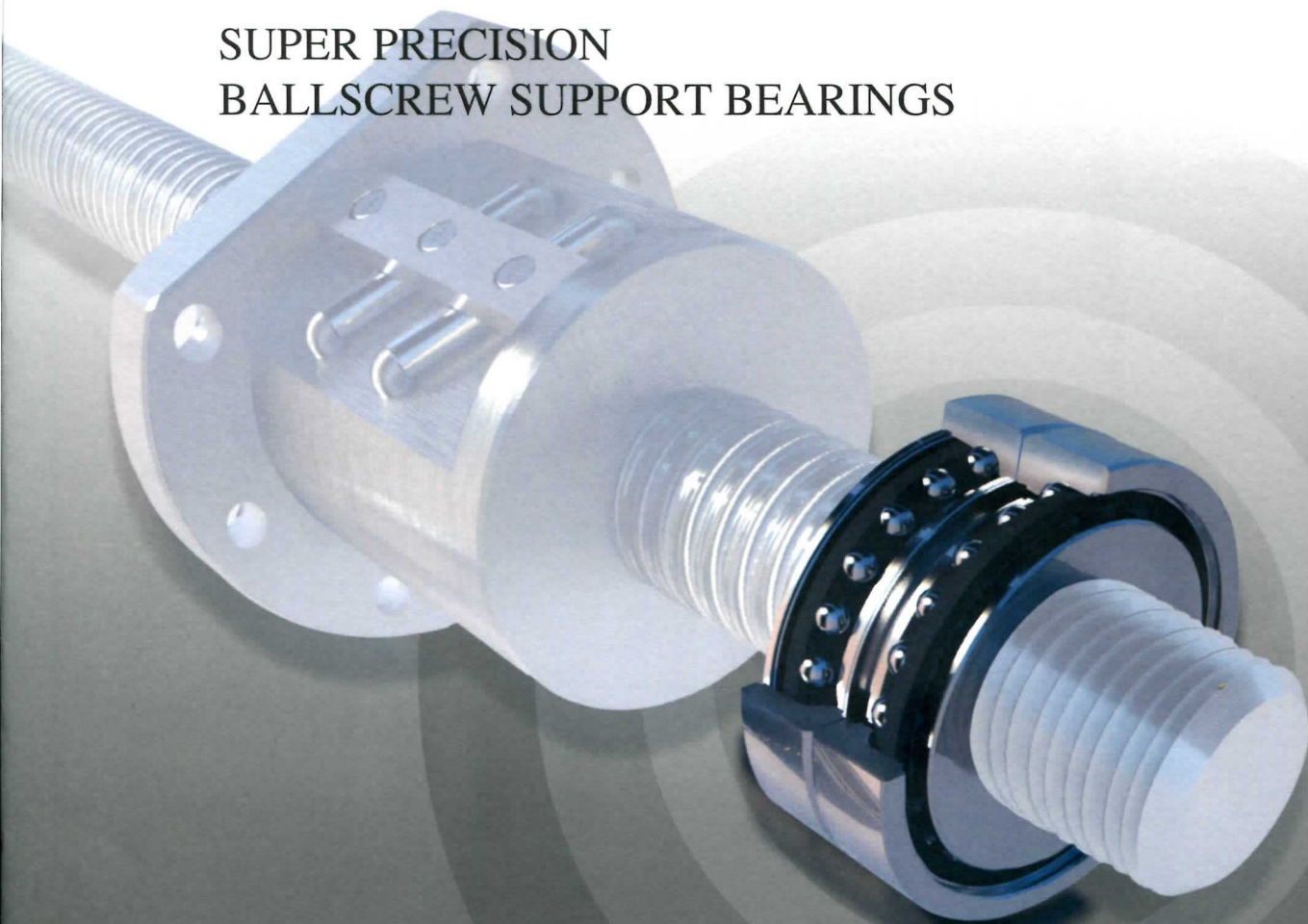


BS Series

滾珠螺桿支撐軸承

SUPER PRECISION

BALLSCREW SUPPORT BEARINGS



ABM
PRECISION BEARINGS

Index....

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BS Series

滾珠螺桿支撐軸承

當CNC數值控制已經成了工具機工業發展的主要技術，為配合精密的進給機構，ABM研發了高性能且高剛性的滾珠螺桿支撐軸承，以滿足數控工具機高精度時代的來臨。

特性：

60°接觸角的ABM精密滾珠螺桿支撐軸承（BS系列），可以承受大的軸向負荷及一定大小範圍內的徑向負荷。

萬向的軸承設計可以自由的用於2個（DB、DF、DT）或2個軸承以上（TBT、TFT、TT、QBC、QFC、QT……）的排列組合，並對每一組軸承包裝提供了相同的內、外徑公差管理。

預壓：

BS系列軸承提供了輕（L）、中（M）和重（H）三種預壓，可應用於不同的使用場合，在組裝時不需要用間隔環等進行預壓調整，ABM也可針對客戶需求設計符合特殊需求的預壓。例如：某些須快速進給的機台，我們可提供XL級的預壓，它的預壓值為L級軸承預壓值的50%。

保持器：

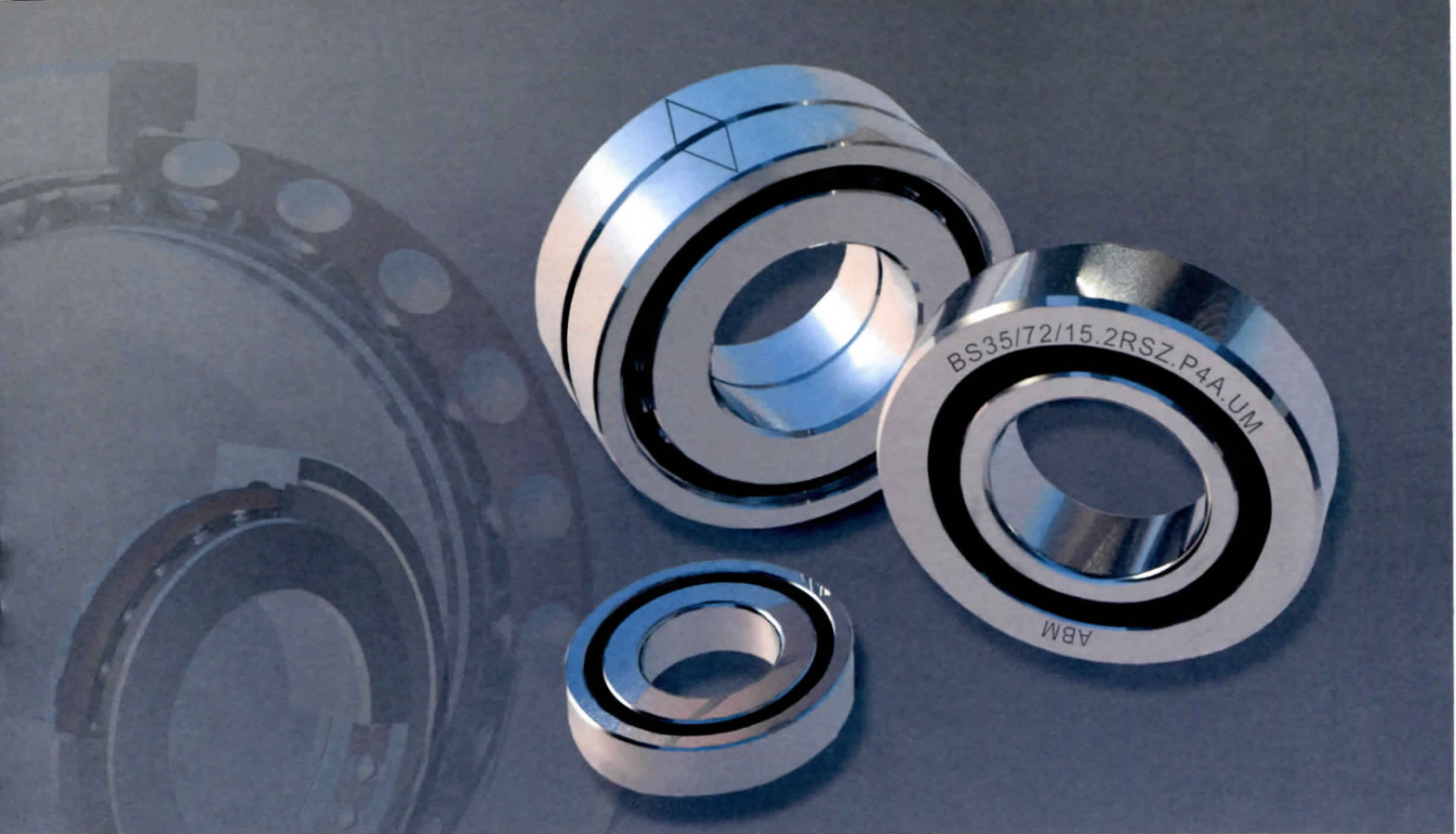
採用聚酰胺成型保持器，低震動，低噪音。

潤滑：

所有BS系列軸承都預先充填了高性能的潤滑油脂（KLÜBER PETAMO GHY 133N），並以真空包裝確保油脂新鮮不變質。

橡膠防塵蓋：

本公司2RSZ規格之軸承，採用輕接觸密封型橡膠防塵蓋，具有優異的防塵和潤滑油脂保持的性能，並比一般外部式軸封擁有更佳的啓動轉矩和減少溫昇，且主要尺寸與開放型軸承相同可進行軸承互換。



軸承規格說明 Designation System

BS 35 / 72 / 15 . 2RSZ . P4A . D U M

BS: 滾珠螺桿支撐軸承
Ball screw support bearing

35: 軸承內徑尺寸(mm)
Bore size in mm

72: 軸承外徑尺寸(mm)
O.D. size in mm

15: 軸承寬度尺寸(mm)
Bearing width in mm

2RSZ: 雙面有橡膠蓋
Seal version
: 無橡膠蓋
Non seal version

XL: 極輕預壓(PCB鑽孔機用)
Extra light preload

L: 輕預壓
Light preload

M: 中預壓
Medium preload

H: 重預壓
Heavy preload

U: 萬向組合
Universal face matched

D: 二顆軸承一組
Duplex pair

T: 三顆軸承一組
Triplex set

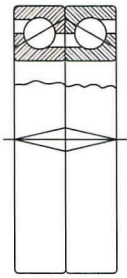
Q: 四顆軸承一組
Quadruplex set

P4A: 軸承精度等級
Precision grade P4A

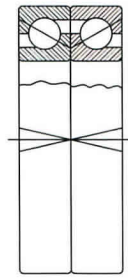
Arrangements

軸承排列方式

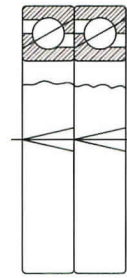
BS series bearings are normally supplied as universally factory matched pairs, triplex set, and quadruplex set. Although these bearings are packed as DB, TBT and QBC arrangements in every individual box as our standard packing, but they are apt to many different arrangements shown below.



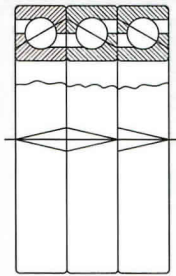
DB



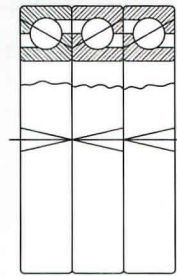
DF



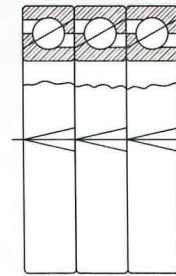
DT



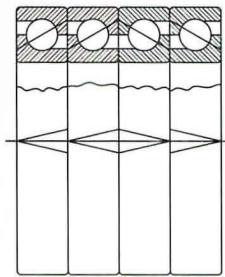
TBT



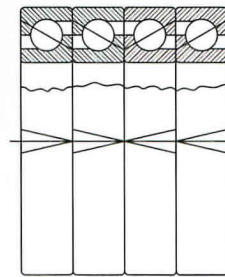
TFT



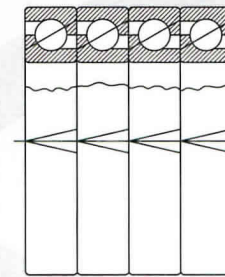
TT



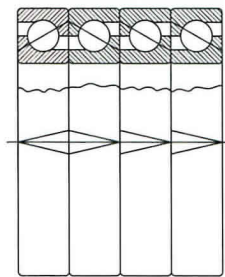
QBC



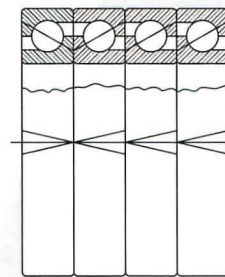
QFC



QT



QBT



QFT

Tolerance for BS series bearing

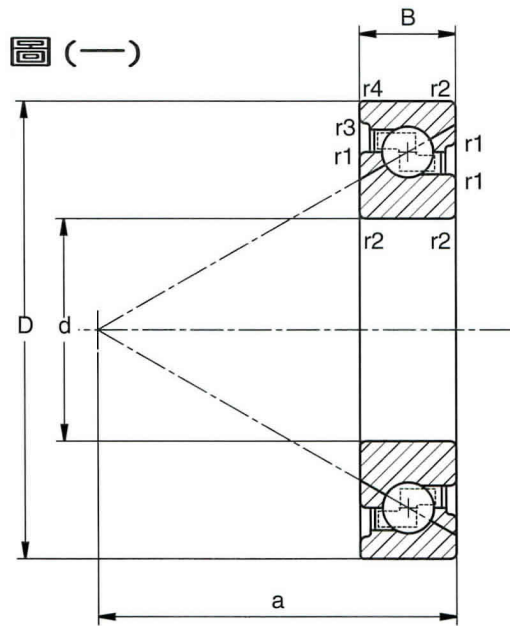
BS系列軸承精度

單位/unit : μm

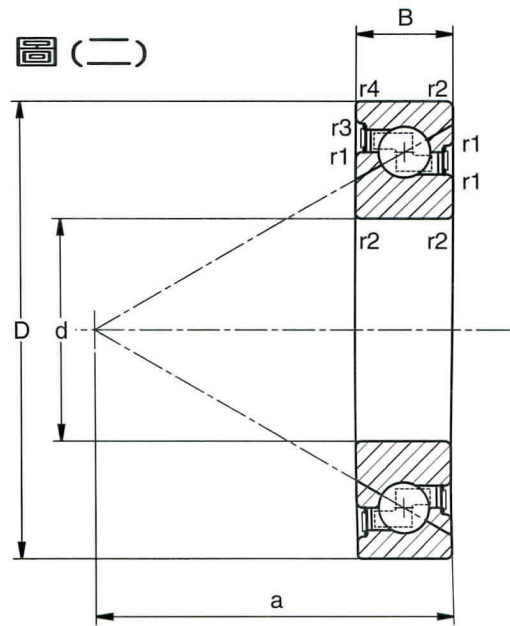
	內環 Inner ring	精度等級 Class	Ø10mm to 18mm	18 30	30 50	50 80	80 120
Δd_{mp}	平均內徑的尺寸差 Deviation of mean bore diameter	P4A	-5	-5	-6	-7	-8
K_{ia}	軸承成品的 內環徑向偏擺 Radial runout of an assembled bearing inner ring	P4A	2.5	2.5	2.5	2.5	2.5
S_d	端面相對於 內孔之偏擺 Axial runout of inner ring face against bore.	P2A	1.3	1.3	1.3	1.3	2.5
S_{ia}	軸承成品內環端面 相對於軌道面之偏擺 Axial runout of inner ring face against raceway.	P2A	1.3	2.5	2.5	2.5	2.5
ΔB_s	單一軸承內環 寬度尺寸差 Deviation of a single inner ring width against nominal dimension.	P4A, P2A	-200	-200	-200	-250	-320
V_{Bs}	內環寬度變動量 Width variation between inner ring and its mating outer ring.	P4A	2.5	2.5	2.5	4	4

	外環 Outer ring	精度等級 Class	Ø30mm to 50mm	50 80	80 120	120 150	150 180
ΔD_{mp}	平均外徑的尺寸差 Deviation of mean outside diameter	P4A, P2H	-6	-7	-8	-9	-10
K_{ea}	軸承成品的 外環徑向偏擺 Radial runout of an assembled bearing outer ring	P4A	5	5	5	7	7.5
S_D	外環外徑相對於 端面之直角度 Outside diameter runout against reference face	P2A	1.3	1.3	2.5	2.5	2.5
S_{ea}	軸承成品外環端面 相對於軌道面之偏擺 Raceway groove runout against reference face	P2A	2	3	3	4	4

外環寬度公差 ΔC_s , V_{Cs} 與內環寬度公差 ΔB_s , V_{Bs} 同。



BS...



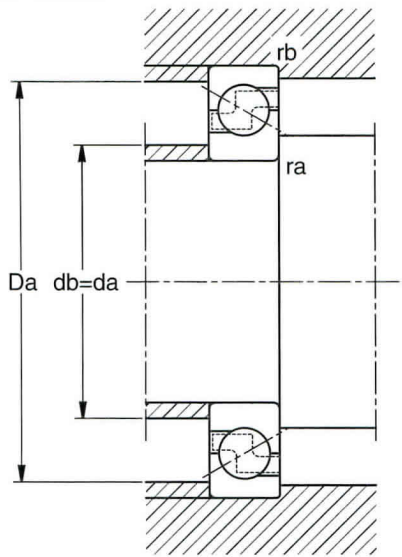
BS..2RSZ..

主要尺寸(mm) Primary Dimensions						軸承代號 Basic Bearing No.	周邊尺寸(mm) Abutment and fillet dimension					軸向基本額定負荷(N) Axial load ratings		單重(kg) Weight
d	D	B	r1,2 min	r3,4 min	a ~		ra max	rb max	da min	Da max	Db max	Ca	Coa	
17	47	15	0.6	0.6	36.5	BS 17/47/15	1.0	0.6	26	38	40	25000	32100	0.13
20	47	15	0.6	0.6	36.5	BS 20/47/15	1.0	0.6	28	38	40	25000	32100	0.14
25	52	15	1.0	0.6	39	BS 25/52/15	1.0	0.6	34	44	45	26500	37000	0.22
25	62	15	1.0	0.6	46.5	BS 25/62/15	1.0	0.6	34	52	54	29200	42800	0.27
30	62	15	1.0	0.6	46	BS 30/62/15	1.0	0.6	38	52	54	29200	42800	0.25
30	72	15	1.0	0.6	56	BS 30/72/15	1.0	0.6	39	63	64	35600	55000	0.32
35	72	15	1.0	0.6	56	BS 35/72/15	1.0	0.6	43	63	64	35600	55000	0.29
35	100	20	1.0	0.6	75	BS 35/100/20	1.0	0.6	47	86	89	70500	116000	1.05
40	72	15	1.0	0.6	56	BS 40/72/15	1.0	0.6	48	63	64	35600	55000	0.28
40	90	20	1.0	0.6	71.5	BS 40/90/20	1.0	0.6	49	80	82	59000	90000	0.64
40	100	20	1.0	0.6	75	BS 40/100/20	1.0	0.6	49	86	89	70500	116000	1.00
45	100	20	1.0	0.6	75	BS 45/100/20	1.0	0.6	54	86	89	70500	116000	0.95
50	90	20	1.0	0.6	71.5	BS 50/90/20	1.0	0.6	59	80	82	59000	90000	0.60
50	100	20	1.0	0.6	75	BS 50/100/20	1.0	0.6	59	86	89	70500	116000	0.89
55	100	20	1.0	0.6	75	BS 55/100/20	1.0	0.6	65	86	89	70500	116000	0.71
55	120	20	1.0	0.6	88	BS 55/120/20	1.0	0.6	65	106	108	80800	137000	1.43
60	120	20	1.0	0.6	88	BS 60/120/20	1.0	0.6	70	100	108	80800	137000	1.36

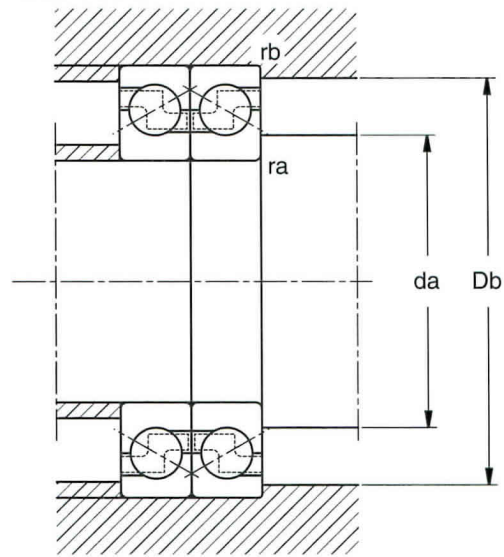
*以上規格均作參考，本廠隨時有修改之權利，不另行通知。

滾珠螺桿支撐軸承

圖(三)



圖(四)



d	預壓(N) Preload			軸向剛性 (N/μm) Axial stiffness			允許轉速 (rev/min) Limiting speeds			啟動力矩(N-m/Bearing) Drag torque		
	L	M	H	L	M	H	L	M	H	L	M	H
17	875	1750	3500	460	580	740	14300	12500	6200	0.04	0.08	0.16
20	875	1750	3500	460	580	740	14300	12500	6200	0.04	0.08	0.16
25	1000	1900	3900	500	630	800	12500	10900	5400	0.05	0.09	0.18
25	1125	2250	4500	650	830	1050	10500	9100	4500	0.06	0.11	0.22
30	1125	2250	4500	650	830	1050	10500	9100	4500	0.06	0.11	0.22
30	1700	3400	6800	780	990	1260	8600	7500	3700	0.06	0.11	0.22
35	1700	3400	6800	780	990	1260	8600	7500	3700	0.06	0.11	0.22
35	3200	6400	12800	1090	1390	1760	6400	5600	2800	0.13	0.26	0.51
40	1700	3400	6800	780	990	1260	8600	7500	3700	0.06	0.11	0.22
40	2500	5000	10000	1035	1320	1680	6900	6000	3000	0.12	0.24	0.48
40	3200	6400	12800	1090	1390	1760	6400	5600	2800	0.13	0.26	0.51
45	3200	6400	12800	1090	1390	1760	6400	5600	2800	0.13	0.26	0.51
50	2500	5000	10000	1035	1320	1680	6900	6000	3000	0.12	0.24	0.48
50	3200	6400	12800	1090	1390	1760	6400	5600	2800	0.13	0.26	0.51
55	3200	6400	12800	1090	1390	1760	6400	5600	2800	0.13	0.26	0.51
55	3900	7800	15600	1340	1690	2150	5300	4600	2300	0.17	0.34	0.68
60	3900	7800	15600	1340	1690	2150	5300	4600	2300	0.17	0.34	0.68

*以上規格均作參考，本廠隨時有修改之權利，不另行通知。

Recommended

軸及軸承座之建議尺寸

shaft and housing dimensions for BS series

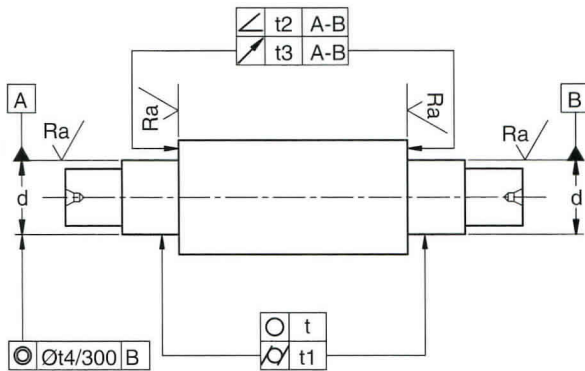
單位/unit : mm

軸承規格 Bearing Size	軸承孔徑 Bearing Bore	軸徑 Shaft	軸承外徑 Bearing O.D.	軸承座孔徑 Housing Dia.
BS 17/47	17.000	16.997	47.000	47.008
	16.995	16.992	46.995	47.000
BS 20/47	20.000	19.997	47.000	47.008
	19.995	19.992	46.995	47.000
BS 25/52	25.000	24.997	52.000	52.008
	24.995	24.992	51.995	52.000
BS 25/62	25.000	24.997	62.000	62.008
	24.995	24.992	61.995	62.000
BS 30/62	30.000	29.997	62.000	62.008
	29.995	29.992	61.995	62.000
BS 30/72	30.000	29.997	72.000	72.008
	29.995	29.992	71.995	72.000
BS 35/72	35.000	34.995	72.000	72.008
	34.995	34.990	71.995	72.000
BS 35/100	35.000	34.995	100.000	100.010
	34.995	34.990	99.992	100.000
BS 40/72	40.000	39.995	72.000	72.008
	39.995	39.990	71.995	72.000
BS 40/90	40.000	39.995	90.000	90.008
	39.995	39.990	89.992	90.000
BS 40/100	40.000	39.995	100.000	100.010
	39.995	39.990	99.992	100.000
BS 45/100	45.000	44.995	100.000	100.010
	44.995	44.990	99.992	100.000
BS 50/90	50.000	49.995	90.000	90.008
	49.995	49.990	89.992	90.000
BS 50/100	50.000	49.995	100.000	100.010
	49.995	49.990	99.992	100.000
BS 55/100	55.000	54.995	100.000	100.010
	54.995	54.990	99.992	100.000
BS 55/120	55.000	54.995	120.000	120.010
	54.995	54.990	119.992	120.000
BS 60/120	60.000	59.995	120.000	120.010
	59.995	59.990	119.992	120.000

Permissible 軸及軸承座的幾何容許公差

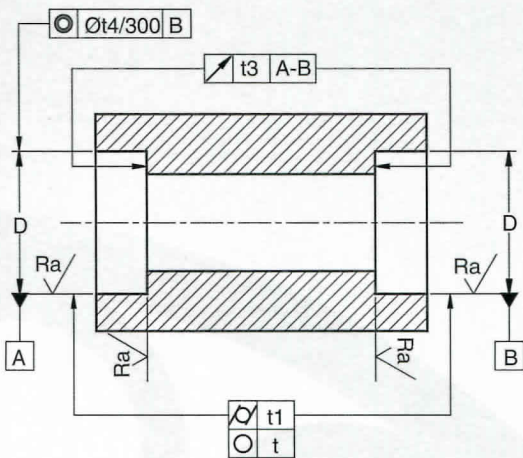
form errors of mating shaft & housing.

Form tolerance for shaft



軸 Shaft	公差符號 Tolerance symbol	公差值代號 Tolerance designation	容許公差 Permissible form error tolerance/ roughness class		
			軸承等級 Tolerance of bearing		
			P5	P4A	P2A
真圓度 Roundness	○	t	IT3/2	IT2/2	IT1/2
圓筒度 Cylindricity	⊂	t1	IT3/2	IT2/2	IT1/2
傾斜度 Taper	∟	t2	-	IT3/2	IT2/2
偏擺 Runout	↗	t3	IT3	IT3	IT2
同心度 Concentricity	⊙	t4	IT5	IT4	IT3
表面粗糙度 Roughness Ra					
d ≤ 80mm		-	N4	N4	N3
d > 80mm		-	N5	N5	N4

Form tolerance for housing



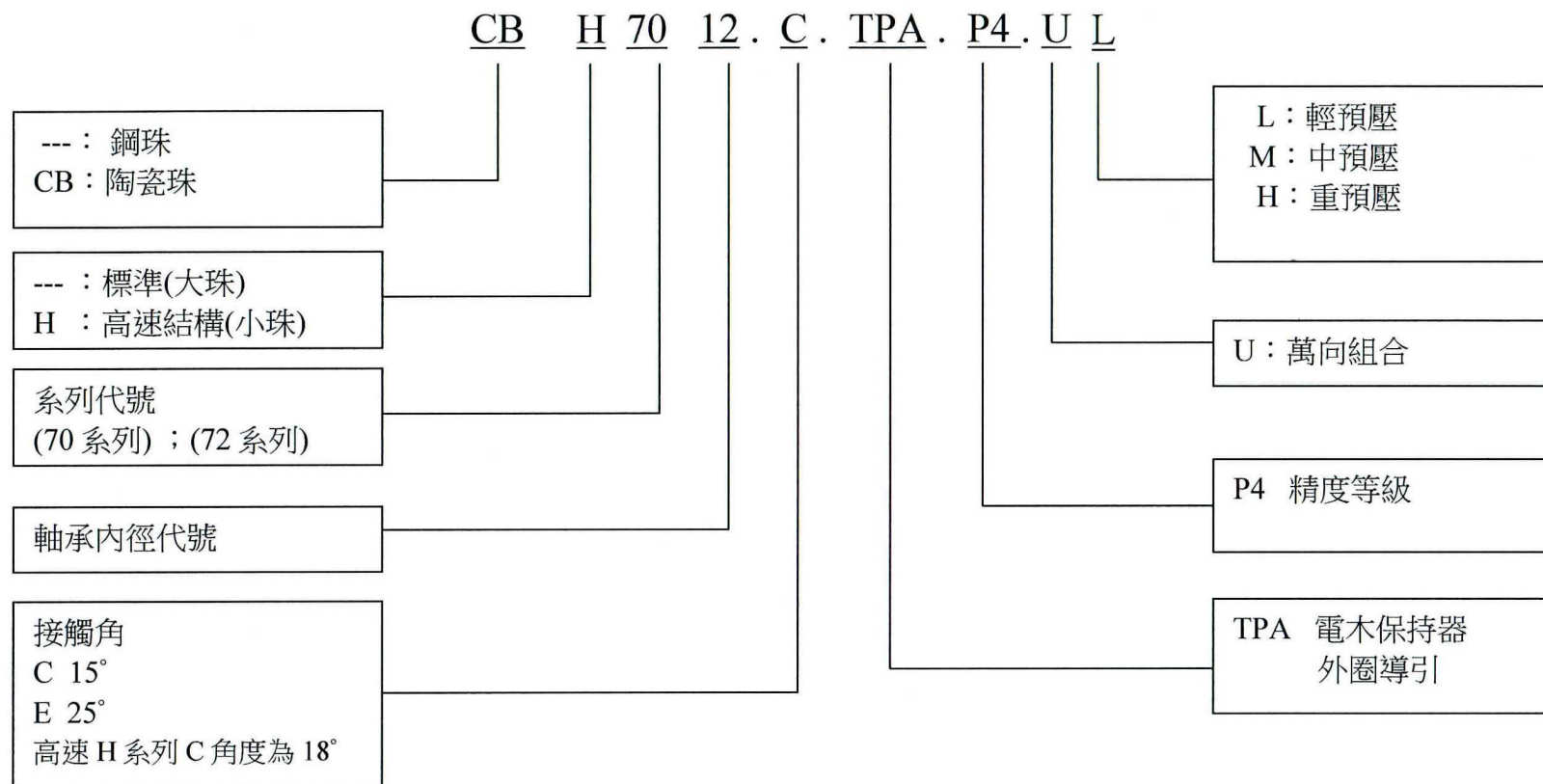
軸承座 Housing	公差符號 Tolerance symbol	公差值代號 Tolerance designation	容許公差 Permissible form error tolerance/ roughness class		
			軸承等級 Tolerance of bearing		
			P5	P4A	P2A
真圓度 Roundness	○	t	IT3/2	IT2/2	IT1/2
圓筒度 Cylindricity	⊂	t1	IT3/2	IT2/2	IT1/2
偏擺 Runout	↗	t2	IT3	IT3	IT2
同心度 Concentricity	⊙	t4	IT5	IT4	IT3
表面粗糙度 Roughness Ra					
D ≤ 80mm		-	N5	N5	N4
80 > D ≥ 250mm		-	N6	N6	N5

依DIN 7151規範之基本公差 ISO basic tolerance according to DIN7151

直徑尺寸 Diameter		公差等級 Tolerance							
超過 over mm	以內 including	IT0	IT1	IT2	IT3	IT4	IT5	IT6	IT7
		μm							
6	10	0.6	1	1.5	2.5	4	6	9	15
10	18	0.8	1.2	2	3	5	8	11	28
18	30	1	1.5	2.5	4	6	9	13	21
30	50	1	1.5	2.5	4	7	11	16	25
50	80	1.2	2	3	5	8	13	19	30
80	120	1.5	2.5	4	6	10	15	22	35
120	180	2	3.5	5	8	12	18	25	40

表面粗糙度等級 Roughness class	表面粗糙度值 Roughness value (Ra)
	μm
N3	0.1
N4	0.2
N5	0.4
N6	0.8
N7	1.6

ABM 主軸軸承規格說明





ABM 主軸軸承規格表

70 系列

	軸承代號	額定載荷 KN		可達轉速 rpm		預壓 N	軸向剛性 N/μ
		動荷	靜荷	潤滑脂	油		
	ABM						
大鋼珠	7012.C.TPA.P4.UL	39.00	33.50	14000	22000	211	64.5
	7012.E.TPA.P4.UL	36.50	31.50	13000	20000	299	147.9
小鋼珠	H7012.C.TPA.P4.UL	19.30	20.00	18000	30000	67	45.4
	H7012.E.TPA.P4.UL	18.30	19.00	15000	24000	107	112.7
大陶珠	CB7012.C.TPA.P4.UL	27.00	23.20	18000	30000	105	54.7
	CB7012.E.TPA.P4.UL	25.50	22.00	15000	24000	137	127.0
小陶珠	CBH7012.C.TPA.P4.UL	13.40	14.00	20000	34000	46	44.2
	CBH7012.E.TPA.P4.UL	12.70	13.20	18000	30000	75	113.2
大鋼珠	7013.C.TPA.P4.UL	40.00	35.50	13000	20000	216	67.1
	7013.E.TPA.P4.UL	38.00	33.50	12000	19000	310	155.1
小鋼珠	H7013.C.TPA.P4.UL	20.00	21.60	17000	28000	70	48.0
	H7013.E.TPA.P4.UL	19.00	20.00	15000	24000	112	119.7
大陶珠	CB7013.C.TPA.P4.UL	27.50	24.50	17000	28000	109	57.4
	CB7013.E.TPA.P4.UL	26.00	23.60	15000	24000	137	131.6
小陶珠	CBH7013.C.TPA.P4.UL	13.70	15.00	20000	34000	47	46.6
	CBH7013.E.TPA.P4.UL	12.90	14.00	17000	28000	77	119.2
大鋼珠	7014.C.TPA.P4.UL	50.00	43.00	12000	19000	278	73.9
	7014.E.TPA.P4.UL	46.50	41.50	11000	18000	398	170.1
小鋼珠	H7014.C.TPA.P4.UL	26.00	28.00	16000	26000	89	52.5
	H7014.E.TPA.P4.UL	24.50	26.00	13000	20000	146	131.9
大陶珠	CB7014.C.TPA.P4.UL	34.00	30.00	16000	26000	140	63.0
	CB7014.E.TPA.P4.UL	32.50	29.00	13000	20000	184	146.7
小陶珠	CBH7014.C.TPA.P4.UL	18.00	19.60	18000	30000	63	52.0
	CBH7014.E.TPA.P4.UL	17.00	18.30	15000	24000	101	131.8



72 系列

	軸承代號	額定載荷 KN		可達轉速 rpm		預壓 N	軸向剛性 N/μ
		動荷	靜荷	潤滑脂	油		
	ABM						
	7207.C.TPA.P4A.UL	25.50	18.00	20000	34000	136	45.3
	7208.C.TPA.P4A.UL	32.00	22.40	18000	30000	176	49.6
	7208.E.TPA.P4A.UL	30.50	21.60	17000	28000	259	114.2

備註：

一. 軸承表內記載之可達轉速，是彈性預壓單列軸承轉速能力之指示。

剛性預壓軸承、軸承對或軸承群，需依照各軸承配置乘以減速系數，係數如下

大跨距			固定端	游動端
<	>	*0.85	<>	<>
<<	>>	*0.8	><	><
<<<	>>>	*0.75	<<>	<>
			<<>>	<>

二. 70 系列小鋼珠及小陶珠系列皆可以加裝 “ 橡膠密封蓋 ”

ABM
PRECISION BEARINGS

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