

## P5 and ABEC 5 Precision Tolerances

In Accordance with ISO 492 and ABMA 20 Standards



Phone: (800) 323-5725

Inner R	ing Tole	rance -	Metric	:				
Manager I ID forms	Above	2.5	10	18	30	50	80	Naminal OD (mm)
Nominal ID [mm]	Including	10	18	30	50	80	120	Nominal OD [mm]
Δ <sub>dmp</sub> [μm]	Max	0	0	0	0	0	0	Δ <sub>Dmp</sub> [μm]
Average ID tolerance	Min	-5.0	-5.0	-6.0	-8.0	-9.0	-10.0	Average OD tolerance
Δ <sub>ds</sub> (Bearing Series 60 & 62) [μm]	Max							Δ <sub>Ds</sub> (Bearing Series 60 & 6
Single ID tolerance	Min							Single OD tolerance
V <sub>dp max</sub> (Bearing Series 618 & 619) [μm]	Max	5.0	5.0	6.0	8.0	9.0	10.0	V <sub>Dp max</sub> (Bearing Series 61
Difference between largest and smallest ID	IVIAX	5.0	5.0	0.0	0.0	9.0	10.0	Difference between larges
V <sub>dp max</sub> (Bearing Series 60) [μm]	Max	4.0	4.0	5.0	6.0	7.0	8.0	V <sub>Dp max</sub> (Bearing Series 60
Difference between largest and smallest ID	IVIAX	4.0	4.0	5.0	0.0	7.0	6.0	Difference between larges
V <sub>dp max</sub> (Bearing Series 62) [μm]	Max	x 4.0	4.0	5.0	6.0	7.0	8.0	V <sub>Dp max</sub> (Bearing Series 62
Difference between largest and smallest ID	IVIAX	4.0	4.0	3.0	0.0	7.0	0.0	Difference between larges
V <sub>dmp max</sub> [μm]								V <sub>Dmp max</sub> [µm]
Difference between largest average ID and	Max	3.0	3.0	3.0	4.0	5.0	5.0	Difference between larges
smallest average ID in different planes								smallest average OD in di
K <sub>ia max</sub> [μm]	Max	4.0	4.0	4.0	5.0	5.0	6.0	K <sub>ea max</sub> [µm]
Assembled bearing inner ring radial runout								Assembled bearing outer i
S <sub>d max</sub> [µm]	Max	7.0	7.0	8.0	8.0	9.0	10.0	S <sub>D max</sub> [µm]
Inner ring face runout	- max		1.0	0.0	0.0	0.0	.0.0	Outer ring face runout
S <sub>ia max</sub> [µm]	Max	ax 7.0	7.0	8.0	8.0	9.0	10.0	S <sub>ea max</sub> [µm]
Assembled bearing inner ring axial runout								Assembled bearing outer i
Δ <sub>BS</sub> Single Bearing [μm]	Max	0	0	0	0	0	0	Δ <sub>CS</sub> Single Bearing [μm]
Single inner ring width tolerance	Min	-40	-80	-120	-120	-150	-200	Single outer ring width tole
Δ <sub>BS</sub> Bearing Pair [μm]	Max	0	0	0	0	0	0	Δ <sub>CS</sub> Bearing Pair [μm]
Inner ring pair width tolerance	Min	-250	-250	-250	-250	-250	-380	Outer ring pair width tolera
V <sub>BS max</sub> [µm]	Max	5.0	5.0	5.0	5.0	6.0	7.0	V <sub>CS max</sub> [µm]
Difference between largest and smallest width	IVIAX	5.0	5.0	5.0	5.0	0.0	7.0	Difference between larges
Inner Ri	ng Tolera	ance -	Imperia	al				
		0.0984	0.3937	0.7087	1.1811	1.9685	3.1496	
Nominal ID [inch]	Including	0.3937	0.7087	1.1811	1.9685	3.1496	4.7244	Nominal OD [Inch]
Δ <sub>dmp</sub> [0.0001"]	Max	0	0	0	0	0	0	Δ <sub>Dmp</sub> [0.0001"]
Average ID tolerance	Min	-2.0	-2.0	-2.4	-3.1	-3.5	-3.9	Average OD tolerance

Outer Ring Tolerance - Metric											
Nominal OD [mm]							120	150			
	Including	18	30	50	80	120	150	180			
Δ <sub>Dmp</sub> [μm]	Max	0	0	0	0	0	0	0			
Average OD tolerance	Min	-5.0	-6.0	-7.0	-9.0	-10.0	-11.0	-13.0			
Δ <sub>Ds</sub> (Bearing Series 60 & 62) [μm]	Max										
Single OD tolerance	Min										
V <sub>Dp max</sub> (Bearing Series 618 & 619) [μm]	Max	5.0	6.0	7.0	9.0	10.0	11.0	13.0			
Difference between largest and smallest OD											
V <sub>Dp max</sub> (Bearing Series 60) [μm]	Max	4.0	5.0	5.0	7.0	8.0	8.0	10.0			
Difference between largest and smallest OD	IVIAA	4.0	3.0	3.0	7.0	0.0	0.0	10.0			
V <sub>Dp max</sub> (Bearing Series 62) [μm]	Max	4.0	5.0	5.0	7.0	8.0	8.0	10.0			
Difference between largest and smallest OD	IVIGA	4.0	5.0	3.0	7.0	0.0	0.0	10.0			
V <sub>Dmp max</sub> [μm]											
Difference between largest average OD and	Max	3.0	3.0	4.0	5.0	5.0	6.0	7.0			
smallest average OD in different planes											
K <sub>ea max</sub> [μm]	Max	5.0	6.0	7.0	8.0	10.0	11.0	13.0			
Assembled bearing outer ring radial runout											
S <sub>D max</sub> [µm]	Max	8.0	8.0	8.0	8.0	9.0	10.0	10.0			
Outer ring face runout											
Sea max [µm]	Max	8.0	8.0	8.0	10.0	11.0	13.0	14.0			
Assembled bearing outer ring axial runout  Δ <sub>CS</sub> Single Bearing [μm]											
Single outer ring width tolerance	Min	Max Identical to the Δ <sub>BS</sub> of the inner ring of the same bearing									
Δ <sub>CS</sub> Bearing Pair [μm]											
Outer ring pair width tolerance	Min	Max Identical to the $\Delta_{BS}$ of the inner ring of the same bearing									
V <sub>CS max</sub> [µm]											
	Max	5.0	5.0	5.0	6.0	8.0	8.0	8.0			
Difference between largest and smallest width											

Inner Ring Tolerance - Imperial										
Nominal ID [inch]			0.3937	0.7087			3.1496			
Nominal ID [inch]	Including	0.3937	0.7087	1.1811	1.9685	3.1496	4.7244			
Δ <sub>dmp</sub> [0.0001"]	Max	0	0	0	0	0	0			
Average ID tolerance	Min	-2.0	-2.0	-2.4	-3.1	-3.5	-3.9			
Δ <sub>ds</sub> (Bearing Series 60 & 62) [0.0001"]	Max									
Single ID tolerance	Min									
V <sub>dp max</sub> (Bearing Series 618 & 619) [0.0001"]	Max	2.0	2.0	2.4	3.1	3.5	3.9			
Difference between largest and smallest ID	IVIAX	2.0	2.0	2.4	3.1	3.5	3.9			
V <sub>dp max</sub> (Bearing Series 60) [0.0001"]	Max	1.6	1.6	2.0	2.4	2.8	3.1			
Difference between largest and smallest ID	IVIAX	1.0	1.0	2.0	2.4	2.0	3.1			
V <sub>dp max</sub> (Bearing Series 62) [0.0001"]	Max	1.6	1.6	2.0	2.4	2.8	3.1			
Difference between largest and smallest ID	IVIGA						5.1			
V <sub>dmp max</sub> [0.0001"]										
Difference between largest average ID and	Max	1.2	1.2	1.2	1.6	2.0	2.0			
smallest average ID in different planes										
Kia max [0.0001"]	Max	1.6	1.6	1.6	2.0	2.0	2.4			
Assembled bearing inner ring radial runout					1	1				
S <sub>d max</sub> [0.0001"]	Max	2.8	2.8	3.1	3.1	3.5	3.9			
Inner ring face runout										
S <sub>ia max</sub> [0.0001"]	Max	2.8	2.8	3.1	3.1	3.5	3.9			
Assembled bearing inner ring axial runout										
Δ <sub>BS</sub> Single Bearing [0.0001"]	Max	0	0	0	0	0	0			
Single inner ring width tolerance	Min	-15.7	-31.5	-47.2	-47.2	-59.1	-78.7			
Δ <sub>BS</sub> Bearing Pair [0.0001"]	Max	0	0	0	0	0	0			
Inner ring pair width tolerance	Min	-98.4	-98.4	-98.4	-98.4	-98.4	-149.6			
V <sub>BS max</sub> [0.0001"]	Max	2.0	2.0	2.0	2.0	2.4	2.8			
Difference between largest and smallest width										

Outer Ring Tolerance - Imperial										
Nominal OD [Inch]	Above	0.2362	0.7087	1.1811	1.9685	3.1496	4.7244	5.9055		
	Including	0.7087	1.1811	1.9685	3.1496	4.7244	5.9055	7.0866		
Δ <sub>Dmp</sub> [0.0001"]	Max	0	0	0	0	0	0	0		
Average OD tolerance	Min	-2.0	-2.4	-2.8	-3.5	-3.9	-4.3	-5.1		
Δ <sub>Ds</sub> (Bearing Series 60 & 62) [0.0001"]	Max									
Single OD tolerance	Min									
V <sub>Dp max</sub> (Bearing Series 618 & 619) [0.0001"]	Max	2.0	2.4	2.8	3.5	3.9	4.3	5.1		
Difference between largest and smallest OD										
V <sub>Dp max</sub> (Bearing Series 60) [0.0001"]	Max	1.6	2.0	2.0	2.8	3.1	3.1	3.9		
Difference between largest and smallest OD		1.0	2.0	2.0	2.0	3.1	3.1	3.9		
V <sub>Dp max</sub> (Bearing Series 62) [0.0001"]	Max	1.6	2.0	2.0	2.8	3.1	3.1	3.9		
Difference between largest and smallest OD	IVIAX	1.0	2.0	2.0	2.0	3.1	3.1	5.9		
V <sub>Dmp max</sub> [0.0001"]										
Difference between largest average OD and	Max	1.2	1.2	1.6	2.0	2.0	2.4	2.8		
smallest average OD in different planes										
Kea max [0.0001"]	Max	2.0	2.4	2.8	3.1	3.9	4.3	5.1		
Assembled bearing outer ring radial runout										
S <sub>D max</sub> [0.0001"]	Max	3.1	3.1	3.1	3.1	3.5	3.9	3.9		
Outer ring face runout	-		-	-	-					
S <sub>ea max</sub> [0.0001"]	Max	3.1	3.1	3.1	3.9	4.3	5.1	5.5		
Assembled bearing outer ring axial runout								0.0		
Δ <sub>CS</sub> Single Bearing [0.0001"]	Max Identical to the $\Delta_{BS}$ of the inner ring of the same bearing									
Single outer ring width tolerance	Min Min									
Δ <sub>CS</sub> Bearing Pair [0.0001"]	Max Identical to the $\Delta_{BS}$ of the inner ring of the same bearing									
Outer ring pair width tolerance	Min	Min								
V <sub>CS max</sub> [0.0001"]	Max	2.0	2.0	2.0	2.4	3.1	3.1	3.1		
Difference between largest and smallest width	· · · · ·					2		2		