ISO P4 SERIES PRECISION MACHINE TOOL SPINDLE BALL BEARINGS

MORE CHOICE. ENHANCED CONVENIENCE AND FLEXIBILITY.

71900C(E)-...-P4S Series *2(3)MM9300WI Series*

Bearing Number 15° C/2[3] or 25° E/3[4]	Bore d	O.D. D	Width[1] C	Ball Qty. x Dia.	Bearing Wt.	15° (C/2) Load Ratings			25° (E/3) Load Ratings			Grease Capacity[2]	
						Static C_o	Dynamic C_e	Speed Rating[Ng]	Static C_o	Dynamic C_e	Speed Rating[Ng]	10%	15%
	mm Tolerance: 0 to -µm			mm in.	kg	N		RPM	N		RPM	g	
71900	**10**	**22**	**6**	**12 x 3.2**	**0.01**	**1640**	**3510**	77500	**1580**	**3380**	69800	**0.04**	**0.06**
9300WI	-4	-5	-40	12 x 1/8									
71901	**12**	**24**	**6**	**13 x 3.2**	**0.01**	**1840**	**3690**	67200	**1770**	**3550**	66500	**0.05**	**0.07**
9301WI	-4	-5	-80	13 x 1/8									
71902	**15**	**28**	**7**	**13 x 3.6**	**0.02**	**2370**	**4560**	55600	**2280**	**4360**	50000	**0.08**	**0.12**
9302WI	-4	-5	-80	13 x 9/64									
71903	**17**	**30**	**7**	**14 x 3.6**	**0.02**	**2800**	**4970**	50100	**2680**	**4740**	45100	**0.08**	**0.12**
9303WI	-4	-5	-80	14 x 9/64									
71904	**20**	**37**	**9**	**14 x 4.8**	**0.04**	**4560**	**8080**	42100	**4360**	**7700**	41600	**0.17**	**0.25**
9304WI	-5	-6	-120	14 x 3/16									
71905	**25**	**42**	**9**	**17 x 4.8**	**0.04**	**5750**	**9040**	34800	**5470**	**8590**	31300	**0.20**	**0.29**
9305WI	-5	-6	-120	17 x 3/16									
71906	**30**	**47**	**9**	**19 x 4.8**	**0.05**	**6610**	**9540**	29700	**6270**	**9040**	26700	**0.23**	**0.34**
9306WI	-5	-6	-120	19 x 3/16									
71907	**35**	**55**	**10**	**19 x 5.6**	**0.08**	**9020**	**12600**	25400	**8530**	**11600**	22900	**0.34**	**0.51**
9307WI	-6	-7	-120	19 x 7/32									
71908	**40**	**62**	**12**	**19 x 6.4**	**0.11**	**11700**	**16000**	22400	**11100**	**15100**	20200	**0.54**	**0.80**
9308WI	-6	-7	-120	19 x 1/4									
71909	**45**	**68**	**12**	**21 x 6.4**	**0.13**	**13200**	**16800**	20000	**12500**	**15900**	18,000	**0.59**	**0.88**
9309WI	-6	-7	-120	21 x 1/4									
71910	**50**	**72**	**12**	**23 x 6.4**	**0.14**	**14600**	**17600**	18300	**13800**	**16600**	16500	**0.64**	**0.95**
9310WI	-6	-7	-120	23 x 1/4									
71911	**55**	**80**	**13**	**23 x 7.1**	**0.19**	**18500**	**21800**	16600	**17400**	**20600**	14900	**0.85**	**1.30**
9311WI	-7	-7	-150	23 x 9/32									
71912	**60**	**85**	**13**	**25 x 7.1**	**0.2**	**20200**	**22700**	15300	**19000**	**21400**	13800	**0.90**	**1.40**
9312WI	-7	-8	-150	25 x 9/32									
71913	**65**	**90**	**13**	**27 x 7.1**	**0.22**	**21900**	**23600**	14200	**20400**	**22200**	12800	**0.95**	**1.40**
9313WI	-7	-8	-150	27 x 9/32									
71914	**70**	**100**	**16**	**24 x 8.7**	**0.34**	**29000**	**32000**	13100	**27300**	**30200**	11800	**1.60**	**2.40**
9314WI	-7	-8	-150	24 x 11/32									
71915	**75**	**105**	**16**	**25 x 8.7**	**0.36**	**30300**	**32500**	12300	**28400**	**30600**	11100	**1.70**	**2.50**
9315WI	-7	-8	-150	25 x 11/32									
71916	**80**	**110**	**16**	**27 x 8.7**	**0.39**	**32700**	**33800**	11600	**30500**	**31900**	10400	**1.75**	**2.70**
9316WI	-7	-8	-150	27 x 11/32									
71917	**85**	**120**	**18**	**26 x 9.5**	**0.56**	**37500**	**38700**	10800	**35000**	**36500**	9700	**2.40**	**3.60**
9317WI	-8	-8	-200	26 x 3/8									
71918	**90**	**125**	**18**	**26 x 10.3**	**0.57**	**44000**	**45000**	10300	**41200**	**42400**	9300	**2.60**	**3.90**
9318WI	-8	-9	-200	26 x 13/32									
71919	**95**	**130**	**18**	**28 x 10.3**	**0.6**	**47400**	**46800**	9800	**44200**	**44100**	8800	**2.70**	**4.10**
9319WI	-8	-9	-200	28 x 13/32									
71920	**100**	**140**	**20**	**29 x 10.3**	**0.85**	**48800**	**47200**	9100	**45500**	**44400**	8200	**3.35**	**5.00**
9320WI	-8	-9	-200	29 x 13/32									
71922	**110**	**150**	**20**	**31 x 10.3**	**0.92**	**51700**	**48400**	8400	**48200**	**45600**	7600	**3.65**	**5.40**
9322WI	-8	-9	-200	31 x 13/32									
71924	**120**	**165**	**22**	**30 x 11.9**	**1.24**	**66900**	**62000**	7700	**62300**	**58300**	6900	**4.95**	**7.40**
9324WI	-8	-10	-200	30 x 15/32									
71926	**130**	**180**	**24**	**30 x 13.5**	**1.65**	**86400**	**78500**	7100	**80500**	**73900**	6400	**6.50**	**9.70**
9326WI	-10	-10	-250	30 x 17/32									
71928	**140**	**190**	**24**	**32 x 13.5**	**1.75**	**91600**	**80700**	6600	**85400**	**76000**	5900	**6.90**	**10.40**
9328WI	-10	-10	-250	32 x 17/32									

[Ng] For a single, grease-lubricated, spring-preloaded bearing. This value to be used in permissible operating speed (Sp) calculation.
[1] Width tolerance of preloaded bearing set +0.000/-0.254 mm (+0.0000/-0.0100 in.).
[2] Fill weights based upon specific gravity of 0.99.
[3] C is ISO designation for 15° contact angle, 2 is Timken designation for 15° contact angle.
[4] E is ISO designation for 25° contact angle, 3 is Timken designation for 25° contact angle.

7000C(E)-...-P4S Series *2(3)MM9100WI Series*

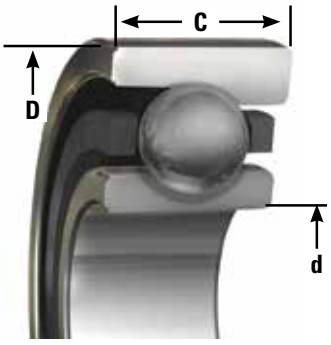
Bearing Number 15° C/2[3] or 25° E/3[4]	Bore d	O.D. D	Width[1] C	Ball Qty. x Dia.	Bearing Wt.	15° (C/2) Load Ratings			25° (E/3) Load Ratings			Grease Capacity[2]	
						Static C_o	Dynamic C_e	Speed Rating[Ng]	Static C_o	Dynamic C_e	Speed Rating[Ng]	10%	15%
	mm Tolerance: 0 to -µm			mm in.	kg	N		RPM	N		RPM	g	
7000 9100WI	**10** -4	**26** -5	**8** -40	**8 x 4.8** 8 x 3/16	**0.018**	**2200**	**5400**	68500	**2100**	**5300**	61700	**0.10**	**0.20**
7001 9101WI	**12** -4	**28** -5	**8** -80	**10 x 4.8** 10 x 3/16	**0.02**	**2900**	**6400**	57300	**2800**	**6200**	51600	**0.10**	**0.20**
7002 9102WI	**15** -4	**32** -6	**9** -80	**12 x 4.8** 12 x 3/16	**0.03**	**3600**	**7300**	48600	**3530**	**7020**	43700	**0.15**	**0.20**
700 9103WI	**17** -4	**35** -6	**10** -80	**11 x 4.8** 11 x 3/16	**0.038**	**3400**	**6800**	43100	**3300**	**6600**	38800	**0.20**	**0.30**
7004 9104WI	**20** -5	**42** -6	**12** -120	**11 x 6.4** 11 x 1/4	**0.067**	**6000**	**11600**	37100	**5700**	**11100**	33400	**0.35**	**0.50**
7005 9105WI	**25** -5	**47** -6	**12** -120	**13 x 6.4** 13 x 1/4	**0.077**	**7400**	**12900**	30900	**7100**	**12300**	27800	**0.40**	**0.60**
7006 9106WI	**30** -5	**55** -7	**13** -120	**14 x 7.1** 14 x 9/32	**0.113**	**10300**	**16800**	25500	**9900**	**16000**	23000	**0.55**	**0.80**
7007 9107WI	**35** -6	**62** -7	**14** -120	**15 x 7.9** 15 x 5/16	**0.151**	**13700**	**21200**	22600	**13000**	**20200**	20300	**0.75**	**1.10**
7008 9108WI	**40** -6	**68** -7	**15** -120	**16 x 7.9** 16 x 5/16	**0.187**	**14900**	**21900**	19900	**14200**	**20800**	17900	**0.90**	**1.40**
7009 9109WI	**45** -6	**75** -7	**16** -120	**17 x 8.7** 17 x 11/32	**0.24**	**19300**	**27000**	17900	**18300**	**25600**	16100	**1.10**	**1.70**
7010 9110WI	**50** -6	**80** -7	**16** -120	**18 x 8.7** 18 x 11/32	**0.258**	**20800**	**27900**	16300	**19700**	**26300**	14700	**1.25**	**1.90**
7011 9111WI	**55** -7	**90** -8	**18** -150	**18 x 10.3** 18 x 13/32	**0.383**	**28600**	**37800**	14700	**27200**	**35900**	13200	**1.75**	**2.70**
7012 9112WI	**60** -7	**95** -8	**18** -150	**19 x 10.3** 19 x 13/32	**0.409**	**30500**	**38800**	13600	**33200**	**36900**	12200	**1.90**	**2.80**
7013 9113WI	**65** -7	**100** -8	**18** -150	**20 x 10.3** 20 x 13/32	**0.435**	**32600**	**39800**	12700	**31000**	**37700**	11400	**2.00**	**3.00**
7014 9114WI	**70** -7	**110** -8	**20** -150	**19 x 11.9** 19 x 15/32	**0.604**	**40700**	**50300**	11700	**38800**	**47600**	10500	**2.80**	**4.20**
7015 9115WI	**75** -7	**115** -9	**20** -150	**20 x 11.9** 20 x 15/32	**0.638**	**43500**	**51600**	11000	**41200**	**48900**	9900	**2.95**	**4.40**
7016 9116WI	**80** -8	**125** -9	**22** -200	**20 x 13.5** 20 x 17/32	**0.859**	**55200**	**64900**	10300	**52500**	**61400**	9300	**3.85**	**5.80**
7017 9117WI	**85** -8	**130** -9	**22** -200	**21 x 13.5** 21 x 17/32	**0.901**	**58700**	**66700**	9700	**55600**	**63200**	8700	**4.05**	**6.00**
7018 9118WI	**90** -8	**140** -9	**24** -200	**20 x 15.1** 20 x 19/32	**1.17**	**68900**	**79600**	9200	**65800**	**75200**	8,300	**5.20**	**7.80**
7019 9119WI	**95** -8	**145** -9	**24** -200	**21 x 15.1** 21 x 19/32	**1.222**	**73400**	**81400**	8700	**69400**	**77400**	7800	**5.45**	**8.10**
7020 9120WI	**100** -8	**150** -10	**24** -200	**22 x 15.1** 22 x 19/32	**1.299**	**77400**	**83600**	8300	**73400**	**79200**	7500	**5.40**	**8.10**
7021 9121WI	**105** -8	**160** -10	**26** -200	**21 x 16.7** 21 x 21/32	**1.617**	**89400**	**97900**	7900	**84500**	**92100**	7100	**7.05**	**10.60**
7022 9122WI	**110** -8	**170** -10	**28** -200	**22 x 17.5** 22 x 11/16	**2.043**	**102700**	**109400**	7500	**97400**	**103200**	6800	**8.40**	**12.60**
7024 9124WI	**120** -8	**180** -10	**28** -200	**23 x 17.5** 23 x 11/16	**2.18**	**108500**	**111200**	6900	**103200**	**105000**	6200	**9.10**	**13.70**
7026 9126WI	**130** -10	**200** -11	**33** -250	**21 x 20.6** 21 x 13/16	**3.273**	**137000**	**143200**	6400	**129900**	**135700**	5800	**14.10**	**21.10**

[Ng] For a single, grease-lubricated, spring-preloaded bearing. This value to be used in permissible operating speed (Sp) calculation.
[1] Width tolerance of preloaded bearing set +0.000/-0.254 mm (+0.0000/-0.0100 in.).
[2] Fill weights based upon specific gravity of 0.99.
[3] C is ISO designation for 15° contact angle, 2 is Timken designation for 15° contact angle.
[4] E is ISO designation for 25° contact angle, 3 is Timken designation for 25° contact angle.

7200C(E)-...-P4S Series *2(3)MM200WI Series*

Bearing Number 15° C/2[3] or 25° E/3[4]	Bore d	O.D. D	Width[1] C	Ball Qty. x Dia.	Bearing Wt.	15° (C/2) Load Ratings			25° (E/3) Load Ratings			Grease Capacity[2]	
						Static C_o	Dynamic C_e	Speed Rating[Ng]	Static C_o	Dynamic C_e	Speed Rating[Ng]	10%	15%
	mm Tolerance: 0 to -µm			mm in.	kg	N		RPM	N		RPM	g	
7200	**10**	**30**	**9**	**8 x 5.56**	0.03	**2900**	**7100**	62800	**2800**	**6900**	56500	**0.14**	**0.20**
200WI	-4	-5	-40	8 x 7/32									
7201	**12**	**32**	**10**	**9 x 5.95**	0.036	**3800**	**8760**	56700	**3700**	**8500**	51000	**0.17**	**0.25**
201WI	-4	-6	-80	9 x 15/64									
7202	**15**	**35**	**11**	**10 x 5.95**	0.044	**4500**	**9580**	47800	**4400**	**9250**	43000	**0.22**	**0.32**
202WI	-4	-6	-80	10 x 15/64									
7203	**17**	**40**	**12**	**10 x 6.75**	0.064	**5900**	**12000**	41900	**5600**	**11600**	37700	**0.30**	**0.45**
203WI	-4	-6	-80	10 x 17/64									
7204	**20**	**47**	**14**	**10 x 7.94**	0.103	**8100**	**16100**	35700	**7700**	**15500**	32100	**0.48**	**0.72**
204WI	-5	-6	-130	10 x 5/16									
7205	**25**	**52**	**15**	**12 x 7.94**	0.127	**10200**	**18400**	29800	**9800**	**17600**	26800	**0.59**	**0.88**
205WI	-5	-7	-130	12 x 5/16									
7206	**30**	**62**	**16**	**12 x 9.53**	0.195	**14700**	**25500**	25100	**14000**	**24400**	22600	**0.87**	**1.31**
206WI	-5	-7	-130	12 x 3/8									
7207	**35**	**72**	**17**	**12 x 11.11**	0.282	**20000**	**33700**	21600	**19100**	**32200**	19400	**1.22**	**1.82**
207WI	-6	-7	-130	12 x 7/16									
7208	**40**	**80**	**18**	**11 x 12.70**	0.352	**23800**	**40400**	19300	**22700**	**38700**	17400	**1.66**	**2.49**
208WI	-6	-7	-130	11 x 1/2									
7209	**45**	**85**	**19**	**13 x 12.7**	0.408	**28800**	**45200**	17500	**27600**	**43100**	15800	**1.85**	**2.77**
209WI	-6	-8	-130	13 x 1/2									
7210	**50**	**90**	**20**	**14 x 12.70**	0.457	**31700**	**47400**	16000	**30200**	**45200**	14400	**2.15**	**3.20**
210WI	-6	-8	-130	14 x 1/2									
7211	**55**	**100**	**21**	**14 x 14.29**	0.608	**40000**	**58700**	14500	**38500**	**55900**	13100	**2.70**	**4.10**
211WI	-7	-8	-150	14 x 9/16									
7212	**60**	**110**	**22**	**14 x 15.88**	0.787	**48900**	**71000**	13200	**47100**	**67700**	11900	**3.35**	**5.00**
212WI	-7	-8	-150	14 x 5/8									
7213	**65**	**120**	**23**	**14 x 16.67**	0.998	**54700**	**77400**	12100	**52500**	**73700**	10900	**4.05**	**6.10**
213WI	-7	-8	-150	14 x 21/32									
7214	**70**	**125**	**24**	**14 x 17.46**	1.074	**60000**	**84200**	11400	**57400**	**80200**	10300	**4.70**	**7.00**
214WI	-7	-9	-150	14 x 11/16									
7215	**75**	**130**	**25**	**15 x 17.46**	1.174	**64900**	**87900**	10800	**62300**	**83700**	9700	**5.15**	**7.80**
215WI	-7	-9	-150	15 x 11/16									
7216	**80**	**140**	**26**	**15 x 19.05**	1.448	**77000**	**102900**	10100	**73800**	**98000**	9100	**6.10**	**9.20**
216WI	-7	-9	-150	15 x 3/4									
7217	**85**	**150**	**28**	**15 x 20.64**	1.817	**90700**	**118900**	9400	**85800**	**113300**	8500	**7.55**	**11.30**
217WI	-8	-9	-200	15 x 13/16									
7218	**90**	**160**	**30**	**14 x 22.23**	2.196	**97900**	**129900**	8900	**92500**	**123700**	8000	**9.55**	**14.40**
218WI	-8	-10	-200	14 x 7/8									
7219	**95**	**170**	**32**	**14 x 23.81**	2.669	**111200**	**147100**	8400	**106800**	**140100**	7600	**11.50**	**17.30**
219WI	-8	-10	-200	14 x 15/16									
7220	**100**	**180**	**34**	**14 x 25.4**	3.209	**126800**	**165200**	8000	**120100**	**15500**	7200	**13.65**	**20.50**
220WI	-8	-10	-200	14 x 1									
7222	**110**	**200**	**38**	**14 x 28.58**	4.486	**160100**	**194900**	7200	**153500**	**185800**	6500	**18.80**	**28.20**
222WI	-8	-11	-200	14 x 1 1/8									

[Ng] For a single, grease-lubricated, spring-preloaded bearing. This value to be used in permissible operating speed (Sp) calculation.
[1] Width tolerance of preloaded bearing set +0.000/-0.254 mm (+0.0000/-0.0100 in.).
[2] Fill weights based upon specific gravity of 0.99.
[3] C is ISO designation for 15° contact angle, 2 is Timken designation for 15° contact angle.
[4] E is ISO designation for 25° contact angle, 3 is Timken designation for 25° contact angle.



ISO P4 SERIES PRECISION MACHINE TOOL SPINDLE BALL BEARINGS

Performance and Precision

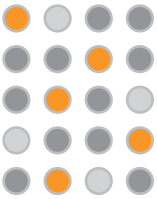
Today's machine tool operators need choice and performance. That is why Timken® ISO P4 Series Precision Machine Tool Spindle Ball Bearings are available in a range of sizes and go beyond basic requirements by imposing tighter tolerances and uniformity that meet or exceed ISO P4 (ABEC 7) precision tolerances. Enhanced features include low operating noise, reduced vibration and smooth operation.

For added flexibility, our P4 Series ball bearings are available in two cage options – phenolic and nylon.

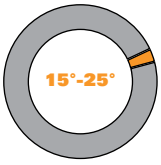
Nylon Cages (PRL) – For use in applications requiring grease lubrication, lightweight ball-riding polymer cage enhances grease distribution that results in lower operating temperature.

Phenolic Cages (CR/T) – For use in applications requiring oil lubrication. Promotes oil absorption and release between the cage pocket and ball for improved lubrication and lower operating temperature.

High Load Capacity: Angular contact design incorporates relieved outer ring, allowing for an increased ball complement that results in a high load rating.

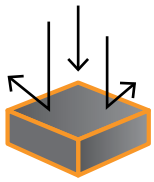


More Choice: Available in a variety of series options with a choice of cross sections to meet performance requirements and application challenges.



More Options: Choose between 15° and 25° contact angles to better satisfy unique application speed and load direction requirements.

Reduced Contamination: Careful control of assembly in a clean environment helps prevent the contamination often attributable to vibration and reduced life.



Enhanced Durability: Timken metallurgical experts optimize steel selection for enhanced durability and life.

Precision Control: Micron-coded bore and O.D. help match and calibrate envelope dimensions for consistent preload and mounting practices.

Convenience: Dual part numbering in Timken and ISO configurations.

Timken	2	MV	C	91	03	WI	PRL	QU	H	FS937
ISO	–	C	70	03	C	PRL	P4	QU	H	FS937

Construction | Ball Material | Series | Bore | Contact Angle | Cage | Precision | Matching | Preload | Specification/Application Number

Machine Tool Applications:

- Turning
- Milling
- Grinding
- Boring
- Woodworking
- Profiling
- Slab Milling
- Textile Spindles

TIMKEN

The Timken team applies their know-how to improve the reliability and performance of machinery in diverse markets worldwide. The company designs, makes and markets high-performance mechanical components, including bearings, gears, belts, chain and related mechanical power transmission products and services.

www.timken.com

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