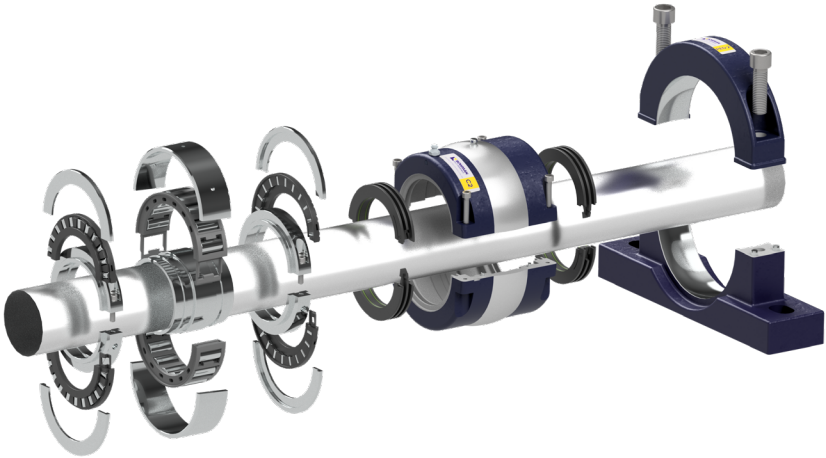
Bowman Split Bearings

Advanced Split Roller Bearing Solutions



Product Information and Technical Data

Bearings to suit shaft diameter from (metric) 30mm to 300mm and (inch) 1 3/16" to 12"

www.bowmansplitbearings.com

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Designed and Manufactured in the UK

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BOWMAN
SPLIT BEARINGS

Bowman Split Bearings

Product Information and Technical Data

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(Headquarters)

BOWMAN Birmingham
(Bowman Split Bearings)

BOWMAN GmbH
(München)

The Bowman Group

The Bowman Group is a group of divisions dedicated to innovation, reliability and quality customer service within the engineering sector. Our aim is to stock everything where possible to offer fast delivery and offer competitive pricing and performance. The Bowman Group incorporates Bowman International, Bowman Additive Production, Bowman Advanced Engineering, Bowman GmbH and Bowman Split Bearings. The Split Bearing is the result of a collaboration between different parts of the Bowman Group, utilising design and manufacturing expertise across the various divisions.

BOWMAN

BOWMAN Additive Production | BOWMAN INTERNATIONAL GmbH | BOWMAN SPLIT BEARINGS

Bowman Advanced Split Roller Bearings *Introduction*

The split roller bearing was invented at the beginning of the 20th century and has been an industry stalwart ever since. Split roller bearings are renowned throughout industry for their ability to improve efficiency by reducing downtime, resulting in increased production. They are highly regarded for saving time during installation, inspection and maintenance for end-users, whilst also offering simplified machine and shaft design for equipment manufacturers. Essential for applications where bearing locations are trapped or access is limited, split roller bearings also eliminate the need to remove ancillary equipment from the shaft when installing or replacing the bearing.

The design of the split roller bearing has remained largely unchanged for over one hundred years.... **until now!**

The Bowman Group, have developed a split roller bearing with significantly increased load capacities with an innovative new design which incorporates separate radial and axial elements. We have updated the split roller bearing for the modern world by extending its operating envelope into high thrust load applications that cannot be covered by existing split roller bearings.

The Bowman Advanced Split Roller Bearing is designed and manufactured in the UK and is offered with price and numerous performance advantages over existing split roller bearings as well as exceptional technical support through Bowman Advanced Engineering – the technical wing of the Bowman Group.

What Advantages does the Bowman Range have over all the other Manufacturers?

Increased radial capacity of between 25% and 70% dependant on the size of the unit

Axial capability in both directions 1000% higher than the competition

Stronger ductile (SG) cartridges and pedestals as standard

The axial bearing design enables calculation of L_{10} life

Screw sizes have been increased to accommodate increased capacities for the clamp rings, cartridges and pedestals

Patented triple labyrinth seals as standard

Quieter Running

Longer Life

Patented triple labyrinth extended seals available to overcome worn shaft problems

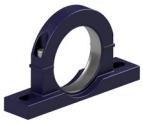
Far less down time especially on the SN range

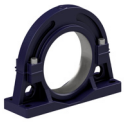
Reversible Clamp Rings

Mounting Options

The most popular method of mounting is via standard pedestal housings, however Bowman bearings can also be mounted in a variety of outer supports, including flanges, take-up, rod ends and hangers depending on the application.

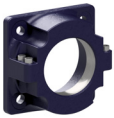
Our range includes pedestals with critical dimensions to match industry-standard bearing housings, however Bowman has the capability to design and manufacture bespoke housings. Please contact our Technical Department with details of your requirements.

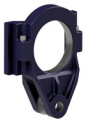

Two Bolt Case


Large Bore Base

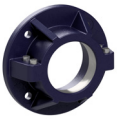
Rod End Casting

Take Up Push Casting


Square Flange Casting


Take Up Tension Casting

Hanger Casting


Round Flange Casting

Stepped Bolt Case

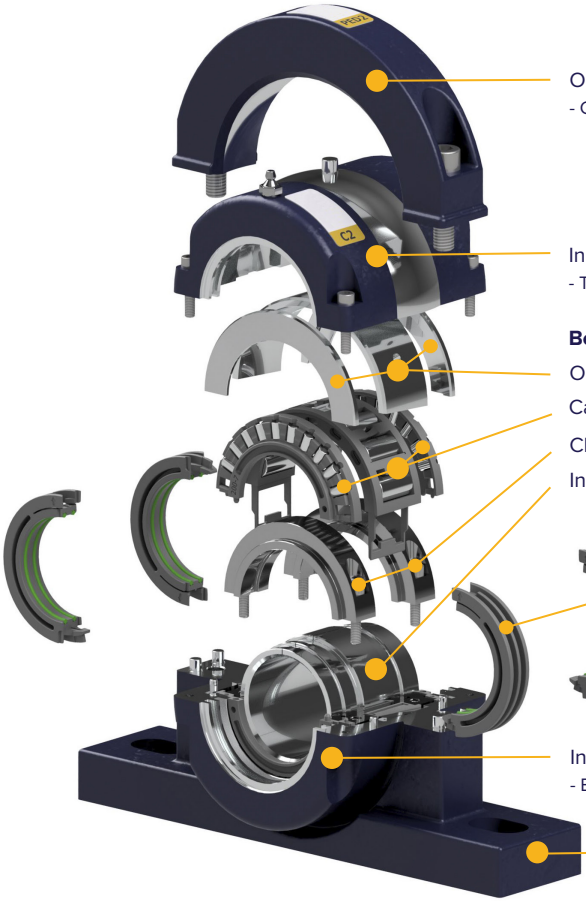
Design Ethos

- The remit for the product was to design a bearing with:
  The highest radial and axial capacities (static and dynamic) of any split-to-the-shaft bearing currently available in any format, cylindrical; spherical; taper or ball bearing – by completely re-engineering the split roller bearing and utilising the new technologies now available.
  ▶ Radial Capacity 70% Increase ▶ Axial Capacity 1000% Increase
- High strength housings to cope with increased loads.
- Uprated fixing hardware compared to currently available product.
- Simplified installation and maintenance – run-safe bearing design / minimised bearing failure strategy by designing cage jointing method with no loose parts, housings with no grub screws/ side rods to axially locate the fixed bearing outer races.
- ROLLER TRAIN 3D printed bearing cages allow complex geometries and flexible design to be utilised.
- Separate rolling elements accommodate axial loads independently of radial loads enabling, for the first time, calculation of an axial L10 life.
- Greater axial expansion of the non-locating bearing than leading competitors.
- Extended working life by the ability to replace or re-use components.
- Inner housing is interchangeable within existing manufacturers outer housings. Inner housing incorporates patented SEAL TRAIN composite multi labyrinth seals.
- Triple labyrinth seals which are intrinsically safe unlike other manufacturers.
- Inner and outer housings manufactured from ductile (SG) cast iron for high strength and durability.

Minimising Inventory

- Interchangeable bearing components within a group size.
- Using one inner housing per bearing group size, by use of independent seals, enabling inner housing seal bore variation within the same inner housing.
- Designing one series of bearing with the capacity to replace five series of existing manufacturers product range, whilst remaining interchangeable with existing products.
- To maintain the highest stock levels to improve product availability and minimise customer spares holding requirements.

BOWMAN
SPLIT BEARINGS



Outer Housing (Pedestal)
- Cap

Inner Housing (Cartridge)
- Top Half

Bearing parts:

Outer Races (1x Radial & 2x Axial)

Cage & Rollers (1x Radial & 2x Axial)

Clamp Rings

Inner Race

Triple Labyrinth Seals

Inner Housing (Cartridge)
- Bottom Half

Outer Housing (Pedestal)
- Base

Product Technical Data

Advanced Split Roller Bearings

Delivering the highest radial and axial capacity split roller bearing currently within the market and intended for both the 'free' and 'fixed' bearing positions, Bowman split bearing units have the ability to adapt the 'free' bearing into a 'fixed' bearing via the addition of split thrust roller (axial) bearings within the bearing housing.

The resulting 'fixed' bearing is capable of handling high axial loads in either direction – with no decrease in radial performance (unlike spherical and taper roller bearings), due to the unit's independent thrust bearings. Each bearing performs one task only – compared to competitor's units which employ multirole rollers. 'Free' bearings have plain outer races to allow unrestricted axial movement of the rollers with thermal expansion and contraction.
Bowman bearing inner race halves are retained on the shaft by hardened steel clamp rings with high-tensile (grade 12.9) socket head screws.

Bowman split bearings utilise cylindrical rollers within the ROLLER TRAIN® 3D printed cage. The cage material has excellent mechanical properties, and resistance to chemicals, and the manufacturing processes utilised allow for flexible design.
* For high temperature bronze cages are available.

Radial rollers are not located or axially loaded by the races, therefore reducing skewing within the cage pockets and reducing the minimum loading requirements.

Plain outer races are used for both locating and non-locating bearings, thus negating the need for additional retaining or side location screws within the inner housing; only one housing type is required for 'free' or 'fixed' bearing types.

Axial split thrust roller bearings use 3D printed cages with ROLLER TRAIN® joining technology.

The two halves of the cage are joined using rollers, therefore no risk of damage can occur from loose metal cage joints or clips becoming loose within the bearing.

Ceramic rollers can be provided for cryogenic applications where lubrication cannot be tolerated and for applications where the shaft needs to be electrically insulated from the housing

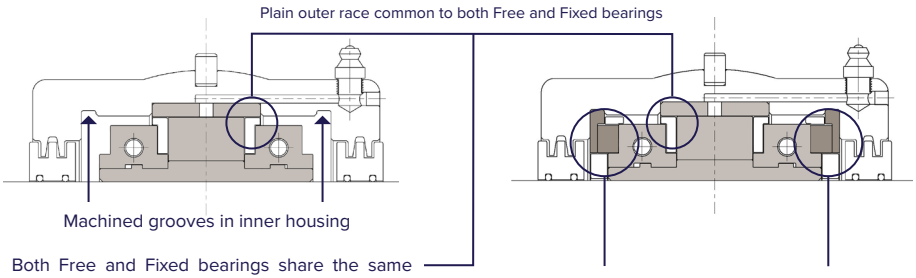
Additional Features

For high temperatures above 150C bronze cages can be incorporated and metallic triple labyrinth seals adopted.	Adaptations of the design can be accommodated with fast turn round usually within 12 weeks.
All screws can be supplied in stainless steel if required.	All available in metric and imperial.
Temperature monitoring sensors can also be provided which can send warnings via mobile telephones.	Vibration monitoring sensors can also be provided which can send warnings via mobile telephones.

For applications that require the shaft to be insulated from the housing ceramic rollers can be incorporated. Ceramic rollers are also ideal for cryogenic applications where lubrication cannot be accommodated and for applications where the shaft need to be electrically insulated fro the housing.

Free (Non-Locating) Bearing

Fixed (Locating) Bearing



Both Free and Fixed bearings share the same radial bearing components (inner races, clamp rings, radial cage and roller assemblies AND plain radial outer races). For the Free bearing this plain outer race accommodates axial expansion as the radial rollers are not axially constrained.

Free bearings can be converted into Fixed bearings by adding axial bearing components (axial cage and roller assemblies and axial outer races) between the clamp rings of the free bearing and machined grooves in the inner housing.

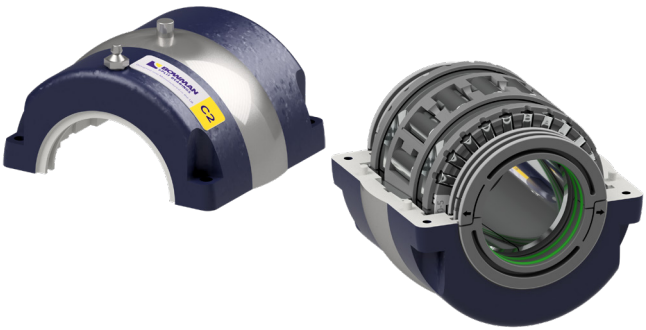
Inner Housings (Cartridges)

Bowman split bearings are mounted within an inner housing which in turn is mounted (via a spherical ball joint) within an outer housing. The outer housing connects the Bowman split bearing unit to the mounting structure. This spherical ball joint between the inner & outer housings allows misalignment between the shaft and the mounting structure and reduces edge-loading of the bearing.

Whilst providing location for the bearing the inner housing also contains the composite multi-labyrinth seals which, via the spherical ball jointing, remain concentric to the shaft even with shaft/mounting structure misalignment. Multi-labyrinth seals are fitted to the shaft and rotate within close tolerances to the inner housing, resulting in efficient non-contact sealing for a wide range of environmental conditions.

Bowman inner housings are manufactured from high strength ductile cast iron and can be installed in outer housings (such as pedestals, flanges, take-up units etc) from other split roller bearing manufacturers.

There are two different Bowman inner housings for each bearing group size - one to fit the Light/01/E Series outer housings of other manufacturers, and one to fit the Medium/02 Series. This is because of the high capacities of the Bowman bearings which are in most cases suitable as a direct interchange for both other manufacturers bearing series.



Outer Housings (Pedestals)

Bowman split bearing unit outer housings are designed to be interchangeable with existing split bearing manufacturers outer housings and hence share the spherical ball socket dimensions, heights to shaft centre, base foot print and fixing bolt dimensions. Bowman outer housings are manufactured from high strength ductile cast iron. Bowman can also provide bespoke outer housings to order. Bowman can also provide bespoke outer housings to order, as well as our unique Stepped Pedestals which enable our units to be fitted under an existing shaft in situ.

Bearing Ratings and Selection

Bearing ratings for dynamic radial capacity (C_R), dynamic axial capacity (C_A), static radial capacity (C_{OR}) and static axial capacity (C_{OA}) shown in this catalogue are based on ISO 281-1990 (dynamic capacity) and ISO 76-1987 (static capacity) respectively.

Radial and axial loads can be considered independently and Bowman split bearing units isolate one from the other.

Bearing Radial and Axial Ratings

Size Group	Bearing Bore Ø		Radial		Axial [1]		Max Speed
	(mm)	(inch)	Dynamic C_R (kN)	Static C_{OR} (kN)	Dynamic C_A (kN)	Static C_{OA} (kN)	
108	30, 35, 40	1.1875”- 1.5”	97	108	42	138	5400
200	45, 50	1.6875”- 2.0”	123	146	50	140	4630
208	55, 60, 65	2.1875” - 2.5”	152	192	70	246	3940
300	70, 75	2.6875” - 3.0”	203	268	79	313	3310
308	80, 85, 90	3.1875”- 3.5”	293	414	103	388	2790
400	100, 105	3.6875”- 4.0”	371	544	130	550	2340
408	110, 115	4.1875”- 4.5”	418	615	162	656	1970
500	120, 125, 130	4.6875”- 5.0”	561	874	178	770	1740
508	135, 140	5.1875”- 5.5”	593	937	210	895	1570
600	150, 155, 160	5.6875”- 6.0”	634	1040	233	1028	1450
608	170	6.4375”- 6.5”	672	1083	235	1094	1320
700	175, 180	6.9375”- 7.0”	715	1201	278	1368	1220
800	190, 200	7.9375” - 8.0”	753	1327	281	1459	1070
900	220, 230	9.0”	893	1588	281	1459	930
1000	240, 250, 260	10.0”	988	1872	267	1459	820
1100	270, 275, 280	11.0”	1146	2216	292	1641	730
1200	290, 300	12.0”	1125	2234	316	1823	650

1) Axial ratings apply only to fixed bearings where the radial inner race is located against shaft abutments. Shaft abutment should be shaft diameter +5mm for bearings up to and including 308 group, and +10mm for bearings from 400 to 1200 group.

Maximum Axial Load when Inner Race is Mounted on Plain Shaft

Size Group	Bearing Bore Ø		Max Axial Load
	(mm)	(inch)	F_A(kN)
108	30, 35, 40	1.1875”- 1.5”	18.3
200	45, 50	1.6875”- 2.0”	18.3
208	55, 60, 65	2.1875” - 2.5”	18.3
300	70, 75	2.6875” - 3.0”	26.13
308	80, 85, 90	3.1875”- 3.5”	26.13
400	100, 105	3.6875”- 4.0”	26.13
408	110, 115	4.1875”- 4.5”	46.24
500	120, 125, 130	4.6875”- 5.0”	46.24
508	135, 140	5.1875”- 5.5”	46.24
600	150, 155, 160	5.6875”- 6.0”	46.24
608	170	6.4375”- 6.5”	73.4
700	175, 180	6.9375”- 7.0”	73.4
800	190, 200	7.9375” - 8.0”	106.6
900	220, 230	9.0”	106.6
1000	240, 250, 260	10.0”	106.6
1100	270, 275, 280	11.0”	197.0
1200	290, 300	12.0”	197.0

(Figures are based on coefficient of friction for steel on steel, with lubrication, and the clamp force generated by the four clamp ring screws. These figures apply for shafts of the correct tolerance and no guarantee can be given where shafts are outside of specified tolerance for diameter and form).

Abutment Width (mm)	Over	-	50mm	80mm	120mm	180mm	250mm
	Up to and including	50mm	80mm	120mm	180mm	250mm	315mm
Tolerance Band D11 to BS4500		+0.080	+0.100	+0.120	+0.145	+0.170	+0.190
		+0.240	+0.290	+0. 340	+0.395	+0.460	+0.510

Note:

Recess mounting may require a special inner housing (cartridge), special triple labyrinth seal and axial bearing cage. On some sizes a modified inner race may also be required to allow radial assembly. If the bearing is to be mounted in a shaft recess please inform our engineering/technical department so we can specify the correct parts you require.

See pages 15 and 16 for further details on shaft abutments.

Maximum Axial Load when Inner Race is Mounted with Four Location Pins on Plain Shaft

Size Group	Bearing Bore Ø		Pin (mm)	Max Axial Load F_A (kN)
	(mm)	(inch)		
108	30, 35, 40	1.1875”- 1.5”	6	60
200	45, 50	1.6875”- 2.0”	6	60
208	55, 60, 65	2.1875” - 2.5”	6	60
300	70, 75	2.6875” - 3.0”	8	106
308	80, 85, 90	3.1875”- 3.5”	8	106
400	100, 105	3.6875”- 4.0”	8	106
408	110, 115	4.1875”- 4.5”	10	168
500	120, 125, 130	4.6875”- 5.0”	10	168
508	135, 140	5.1875”- 5.5”	12	240
600	150, 155, 160	5.6875”- 6.0”	12	240
608	170	6.4375”- 6.5”	12	240
700	175, 180	6.9375”- 7.0”	12	240
800	190, 200	7.9375” - 8.0”	16	420
900	220, 230	9.0”	16	420
1000	240, 250, 260	10.0”	16	420
1100	270, 275, 280	11.0”	20	680
1200	290, 300	12.0”	20	680

(Figures are based on the inner race being located by four ‘Spirol’ heavy duty coiled pins. The shaft must be drilled and further guidance for this can be provided on request).

Maximum Axial Load when used with Bowman Inner Housing (Cartridge) and Bowman Outer Housing (Pedestal) and also when used within other Manufacturer's Outer Housing (Pedestal)

Size Group	Bearing Bore Ø		Max Axial Load F_A (kN)		
	(mm)	(inch)	Bowman Inner Housing (Bearing Maximum)	Bowman Outer Housing (Pedestal)	Other Outer Housing (Pedestal)
108	30, 35, 40	1.1875"- 1.5"	138	22	13.8
200	45,50	1.6875"- 2.0"	140	18.5	11.7
208	55,60,65	2.1875" - 2.5"	246	30	20.7
300	70,75	2.6875" - 3.0"	313	56.7	30.7
308	80, 85, 90	3.1875"- 3.5"	388	102.8	66.2
400	100, 105	3.6875"- 4.0"	550	89.5	57.7
408	110, 115	4.1875"- 4.5"	656	146	100.9
500	120, 125, 130	4.6875"- 5.0"	770	150.8	104.2
508	135, 140	5.1875"- 5.5"	895	143.7	99.3
600	150, 155, 160	5.6875"- 6.0"	1028	146.8	101.4
608	170	6.4375"- 6.5"	1094	177.6	114.5
700	175, 180	6.9375"- 7.0"	1368	156.7	101.0
800	190, 200	7.9375" - 8.0"	1459	174.2	112.3
900	220, 230	9.0"	1459	153.4	98.9
1000	240, 250, 260	10.0"	1459	225.3	155.6
1100	270, 275, 280	11.0"	1641	219.4	151.6
1200	290, 300	12.0"	1823	209.9	145.0

Notes:

In all instances of high axial load, when considering suitability of the bearing for an applied axial load, the highest axial capacity is achieved when using Bowman housings and a shaft recess or abutment to locate the radial inner race.

Other methods of locating the radial inner race can be used, such as coiled dowel pins, which provide an improvement over using only the clamp ring force. In the majority of normal applications the clamp force is sufficient to ensure the axial bearings perform under moderate force. Consideration should be given to using suitable location and retaining bolts to connect the outer housing (pedestal) to the machine structure.

Bearing Selection

Rolling element bearing life calculations given below are based on ISO standards, where statistical life expectancy for rolling contact fatigue provides a reasonable estimate of service life under conditions of adequate lubrication and protection against contamination and excessive misalignment. In practice the service life of a bearing may be determined by factors other than the normal fatigue life.

Calculating Bearing Radial Life

Expected radial bearing life is calculated by the following equation:

$$L10_R = [C_R / (P_R \times f_{Rd})]^{10/3}$$

Where:

- $L10_R$ = Expected radial life of 90% of similar bearings under similar operating conditions (in millions of revolutions)
- C_R = Radial Dynamic Rating (kN)
- P_R = Dynamic Radial Load (kN)
- f_{Rd} = Radial Dynamic (or Service) Factor

Radial Dynamic (or Service) Factors f_{Rd} are determined depending on application conditions, as below:

Steady Load / Small Fluctuations	1.0 to 1.3
Light to Medium Fluctuations	1.3 to 2.0
Heavy Shock, Reciprocation or Vibration	2.0 to 3.5

Calculating Bearing Axial Life

Expected axial bearing life is calculated by the following equation.

$$L10_A = [C_A / (P_A \times f_{Ad})]^{10/3}$$

Where:

- $L10_A$ = Expected axial life of 90% of similar bearings under similar operating conditions (in millions of revolutions)
- C_A = Axial Dynamic Rating (kN)
- P_A = Dynamic Axial Load (kN)
- f_{Ad} = Axial Dynamic (or Service) Factor

Axial Dynamic (or Service) Factors f_{Ad} are determined depending on application conditions, as below:

Steady Load / Small Fluctuations	1.0 to 1.3
Light to Medium Fluctuations	1.3 to 2.0
Heavy Shock, Reciprocation or Vibration	2.0 to 3.5

Static Ratings

The static rating is defined as that load which causes a permanent deformation of 0.0001 times the diameter of the roller and can be considered to correspond to a contact stress of 4,000 MPa at the centre of the most heavily loaded roller.

For slow rotation speeds (less than 5 rpm) consider static ratings for the bearing selection.

$$C_{OR} \geq f_{Rs} \times P_{OR} \quad \text{(Radial)}$$

$$C_{OA} \geq f_{As} \times P_{OA} \quad \text{(Axial)}$$

Where:

C_{OR} = Bearing Radial Static Rating (kN)

C_{OA} = Bearing Axial Static Rating (kN)

P_{OR} = Bearing Radial Static Load (kN)

P_{OA} = Bearing Axial Static Load (kN)

f_{Rs} = Static Safety Factor (Radial)

f_{As} = Static Safety Factor (Axial)

Guidelines for appropriate static safety factor are below:

Type of Operation	Requirement For Smooth Operation		
	Low	Normal	High
Smooth / Vibration Free	1	1.5	3
Normal	1	2	3.5
High Shock Loads	2.5	3	4

(Refer to our Technical Department for advice on service factors)

Bearing Minimum Radial Loading

To avoid excessive skidding of the radial rollers, sufficient radial load must be applied to the bearing. Generally, radial load with a magnitude of 1% of the dynamic radial capacity of the bearing would be required to drive the radial rollers.

Shaft Tolerance & Surface Finish

Split roller bearings rely on accurate shaft form and diameter to ensure the desired bearing diametric clearance is obtained. Journal diameter at bearing seating is generally required to be within h7 tolerance (based on BS4500 / BS-EN-ISO 286-2) for most applications.

Where shaft speeds and loads permit, wider tolerances can be used. Generally:

h6 tolerance should be applied where speed is over 150,000dn mm

h7 tolerance can be applied for speeds between 50,000dn mm and 150,000dn mm

For speeds under 50,000dn mm, h9 tolerance can be applied

Note, 'dn' is an expression of shaft speed used by bearing manufacturers, where:-

'dn' = bearing bore (mm) x shaft speed (rpm)

Diameter	Over	-	50mm	80mm	120mm	180mm	250mm
	Up to and including	50mm	80mm	120mm	180mm	250mm	315mm
Tolerance Band (BS4500)	h6	+0 -0.016	+0 -0.019	+0 -0.022	+0 -0.025	+0 -0.029	+0 -0.032
	h7	+0 -0.025	+0 -0.030	+0 -0.035	+0 -0.040	+0 -0.046	+0 -0.052
	h9	+0 -0.062	+0 -0.074	+0 -0.087	+0 -0.100	+0 -0.115	+0 -0.130
	IT6	0.016	0.019	0.022	0.025	0.029	0.032
	D11	+0.080 +0.240	+0.100 +0.290	+0.120 +0.340	+0.145 +0.395	+0.170 +0.460	+0.190 +0.510

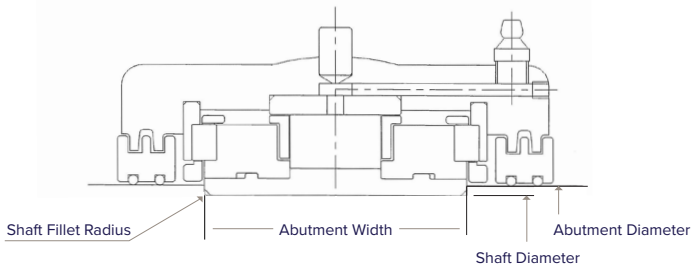
Tolerances in the table above are in mm.

IT6 is roundness and parallelism (cylindricity) of the bearing seating.

Tolerance of h9 and surface texture of 3.2µm Ra are applicable to the seal seating area.

Shaft surface finish for the bearing seating is generally 3.2µm Ra, for shafts of h7 tolerance, and 1.6µm Ra, where h6 shaft tolerance is applied.

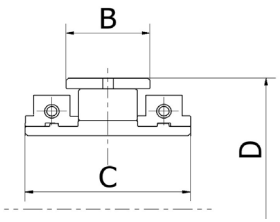
Shaft Abutment/Recess Mounted Bearings

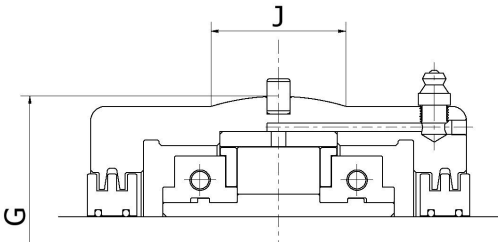


Note:

Recess mounting may require a special inner housing (cartridge), special triple labyrinth seal and axial bearing cage. On some sizes a modified inner race may also be required to allow radial assembly. If the bearing is to be mounted in a shaft recess please inform our engineering/technical department so we can specify the correct parts you require.

Product Range and Dimensions





Roller Bearings and Inner Housings (Cartridges)

Size Group	B (E7)	C	D Ø (H7)	Axial Float ref (i)	Inner Housing ref (ii)	G Ø (g6)	J	Inner Housing ref (iii)	G Ø (g6)	J
108	30	62.7	84.14	9	C1	100.00	25	-	-	-
200	32	63.7	98.42	10	C2	117.48	25	C2A	134.94	32
208	35	68.7	114.30	12	C3	134.94	32	C3A	157.16	38
300	40	78.7	133.35	12	C4	157.16	38	C4A	177.80	50
308	51	88.7	152.40	17	C5	177.80	50	C5A	203.20	50
400	59	94.7	174.62	17	C6	203.20	50	C6A	231.78	64
408	60	109.7	203.20	19	C7	231.78	64	C7A	266.70	76
500	71	116.7	222.25	20	C8	266.70	76	C8A	295.28	82
508	73	121.7	241.30	23	C9	279.40	76	C9A	323.85	90
600	73	121.7	254.00	23	C10	295.28	82	C10A	336.55	95
608	65	136.7	273.05	11	C11	311.15	76	C11A	368.30	95
700	65	136.7	285.75	11	C12	323.85	70	C12A	381.00	95
800	65	144.7	311.15	11	C13	358.78	86	C13A	425.50	105
900	70	148.7	342.90	12	C14	387.35	82	C14A	457.20	110
1000	70	148.7	374.65	12	C15	419.10	90	C15A	495.30	118
1100	77	175.2	406.40	13	C16	454.00	95	C16A	527.10	130
1200	77	175.2	438.15	13	C17	489.00	98	C17A	552.50	128

Ref (i) Total axial float. Maximum offset from centreline is half of this amount

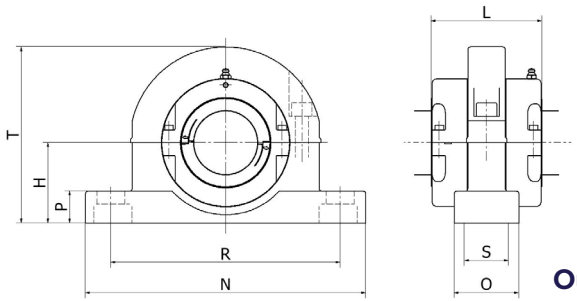
Ref (ii) Bowman Inner housings to match 'Light' or '01/E' series from other manufacturers

Ref (iii) Bowman Inner housings to match 'Medium' or '02/E' series from other manufacturers

Notes:
1) Spherical diameter of corresponding outer housing requires G7 tolerance
2) Recess / abutment for inner race would require D11 tolerance on race width C
3) Recommended abutment diameter and shaft fillet radii:

For bearings up to and including 308 group: +5mm on shaft diameter and maximum 1.2mm fillet radii

For bearings from 400 to 1200 group: +10mm on shaft diameter and maximum 2.3mm fillet radii



Outer Housings (Pedestals)

Equivalent to “Light” (Timken/SRB), “01/E” (SKF Cooper) and "S1" (Craft) Series

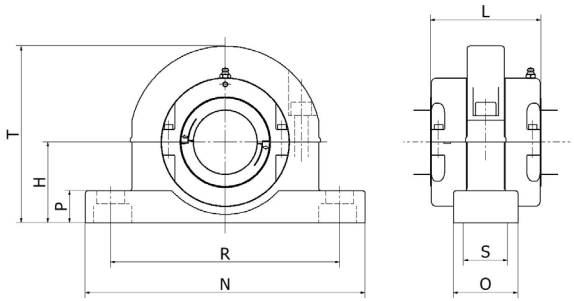
Size Group	H	R		S	Fixing Bolts	N	O	P	T	L	Bowman Ref
		Min	Max								
108	60	172	192	-	M12	228	60	22	138	105	PED1
200	70	203	227	-	M16	270	60	25	158	106	PED2
208	80	226	242	-	M16	280	70	32	180	120	PED3
300	95	260	280	-	M20	330	76	38	208	131	PED4
308	112	312	328	-	M24	380	90	44	252	148	PED5
400	125	342	366	-	M24	420	102	52	272	154	PED6
408	143	374	410	-	M24	466	120	60	314	179	PED7
500	162	438	462	120	M24	508	178	38	372	191	PED8
508	181	470	494	120	M24	558	178	41	405	198	PED9
600	181	484	508	120	M24	558	178	41	415	208	PED10
608	213	356	380	114	M24	508	178	32	430	228	PED11
700	235	376	400	128	M24	534	190	35	470	234	PED12
800	248	410	434	140	M24	572	204	38	495	242	PED13
900	270	440	480	140	M30	636	216	40	540	256	PED14
1000	292	482	522	140	M30	686	228	44	585	256	PED15
1100	311	514	554	140	M30	724	228	48	620	283	PED16
1200	343	564	604	178	M30	762	254	50	685	283	PED17

Notes:

1) Overall length (L) is taken over seals
2) Pedestal design shown for representation only

Component Weights (kg)

Size Group	Free Bearing	Fixed Bearing	Inner Housing	Pedestal
108	1.63	1.76	2.00	3.00
200	2.08	2.29	2.80	3.9
208	2.86	3.19	3.80	5.8
300	4.18	4.61	5.70	8.5
308	6.41	7.09	7.30	17.00
400	8.94	9.83	10.20	19.00
408	13.55	14.85	15.80	32.00
500	17.73	19.21	26.90	48.00
508	21.09	23.11	27.60	61.00
600	22.85	25.00	33.10	60.00
608	27	30	38	64.00
700	28	32	43	76.00
800	36	40	54	100.00
900	42	46	63	108.00
1000	52	56	71	137.00
1100	66	71	89	170.00
1200	78	84	105	203.00

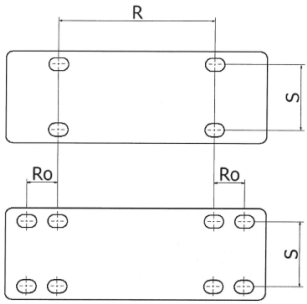


Equivalent to “Medium” (Timken/SRB), “02/E” (SKF Cooper) and "S2" (Craft) Series

Size Group	H	R		S	Fixing Bolts	N	O	P	T	L	Bowman Ref
		Min	Max								
200	80	226	242	-	Ø16	280	70	32	180	106	PED3
208	95	260	280	-	Ø20	330	76	38	208	120	PED4
300	112	312	328	-	Ø24	380	90	44	252	131	PED5
308	125	342	366	-	Ø24	420	102	52	272	148	PED6
400	143	374	410	-	Ø24	466	120	60	314	154	PED7
408	162	438	462	120	Ø24	508	178	38	372	179	PED8
500	181	484	508	120	Ø24	558	178	41	415	191	PED10
508	203	534	558	120	Ø24	610	178	51	460	198	PED9A
600	210	546	570	128	Ø24	636	204	50	470	208	PED10A
608	267	428	468	114	M30	596	242	44	535	228	PED11A
700	273	438	478	128	M30	636	242	44	545	234	PED12A
800	305	488	528	140	M30	686	266	50	610	242	PED13A
900	324	530	570	140	M36	750	280	50	650	256	PED14A
1000	356	576	616	140	M36	812	292	54	710	256	PED15A
1100	378	514	554	140	M30	914	330	60	760	283	PED16A
1200	394	546	586	178	M30	958	330	60	790	283	PED17A

Notes:

1) Overall length (L) is taken over seals
2) Pedestal design shown for representation only



Size Group	Ro
1100	101
1200	101

Component Weights (kg)

Size Group	Free Bearing	Fixed Bearing	Inner Housing	Pedestal
200	2.08	2.29	5.2	5.8
208	2.86	3.19	7.9	8.5
300	4.18	4.61	10.1	17.00
308	6.41	7.09	15.2	19.00
400	8.94	9.83	29.8	32.00
408	13.55	14.85	31.9	48.00
500	17.73	19.21	43.4	60.00
508	21.09	23.11	55.8	84.00
600	22.85	25.00	61.8	98.00
608	27	30	84	127.00
700	28	32	91	139.00
800	36	40	84	174.00
900	42	46	99	215.00
1000	52	56	116	254.00
1100	66	71	139	350.00
1200	78	84	152	396.00

Part Numbering and Ordering

The radial bearing and labyrinth seals are ***shaft size*** dependent and as such are given numbers which refer to the shaft size, either in mm for metric or inch for imperial. Bowman offers imperial sizes in increments based on 16th inch, for example '215' would be 2 inches and 15/16, and '208' would be 2 inches and 8/16, equal to 2.5".

The radial bearing comprises the inner race, clamp rings, radial cage & roller assembly and radial outer race and is identified and ordered using a part numbering system with the shaft size referenced; For example, B050M for a metric shaft size of 50mm, and B200 for an imperial shaft size of 2 inches.

The remaining individual parts are group size dependent and are referenced as per the below table accordingly. For example, the 50mm bearing is from size group **200** and is referenced '**2**', hence other individual parts within that group will be referenced and marked '**2**' accordingly.

Size Ref No	1	2	3	4	5	6	7	8	9	10
Size Group	108	200	208	300	308	400	408	500	508	600
Size Ref No	11	12	13	14	15	16	17			
Size Group	608	700	800	900	1000	1100	1200			

Examples

"**C2**" **C**artridge ref **2** (also referred to as Inner Housing)

"**PED2**" **PED**estal ref **2** (also referred to as Outer Housing)

Labyrinth seals use the shaft size principle, where "**CTL**050**M**" is a **C**omposite **T**riple **L**abyrinth seal to suit a shaft of 50mm diameter. Likewise, "**CTL**215" is a seal to suit 2.15/16" shaft size. Note **M** denotes metric bore, to distinguish from imperial bores.

Typical Order References are as Follows

Fixed bearing unit, pedestal mounted to suit 50mm shaft diameter:

Radial bearing:	**B050M**	quantity 1 required
Axial bearing:	**AB2**	quantity 2 required
Inner housing:	**C2**	quantity 1 required
Labyrinth seals:	**CTL050M**	quantity 2 required
Pedestal housing:	**PED2**	quantity 1 required

Free bearing unit, pedestal mounted to suit 2 15/16” shaft diameter:

Radial bearing:	**B215**	quantity 1 required
Axial bearing:	Not required	
Inner housing:	**C4**	quantity 1 required
Labyrinth seals:	**CTL215**	quantity 2 required
Pedestal housing:	**PED4**	quantity 1 required

Fixed bearing unit, pedestal mounted to suit 150mm shaft diameter
(Matching other manufacturer's Medium/02 series unit):

Radial bearing:	**B150M**	quantity 1 required
Axial bearing:	**AB10**	quantity 2 required
Inner housing:	**C10A**	quantity 1 required
Labyrinth seals:	**CTL150M**	quantity 2 required
Pedestal housing:	**PED10A**	quantity 1 required

Ordering Spare Components

When necessary replacement units can be ordered using the method stated above. However, a unique feature of the Bowman split bearing is the ability to replace individual components within the radial and axial bearings as all bearing components are fully interchangeable. Components are marked with their unique reference number, simplifying the order process. After identifying those components needing to be replaced within the bearing use the following example based on the 2” size group (ref 2) bearings:

“**IR**050M” **I**nner **R**ace
(1 per bearing)
“**CRA**2” **C**lamp **R**ing **A**ssembly
(2 per bearing)
“**ROR**2” **R**adial **O**uter **R**ace
(1 per bearing)
“**RCRA**2” **R**adial **C**age & **R**oller **A**ssembly
(1 per bearing)

} (part of the radial bearing)

“**AR**2” **A**xial **R**ace
(1 per axial bearing) (2 per fixed bearing)
“**ACRA**2” **A**xial **C**age & **R**oller **A**ssembly
(1 per axial bearing) (2 per fixed bearing)

} (part of the axial bearing)

Please consult Bowman for advice before ordering spare components.

Assembly and Installation Procedure

The following section shows a typical procedure for the assembly and installation of the Bowman split roller bearing unit. Each bearing is supplied with detailed instructions in the box for use by the installer. The information given below is intended to guide engineers using this catalogue to understand the product and aid them in determining suitability for their machinery and plant. Further guidance on installation of specific bearings or applications can be provided by our Technical Department.

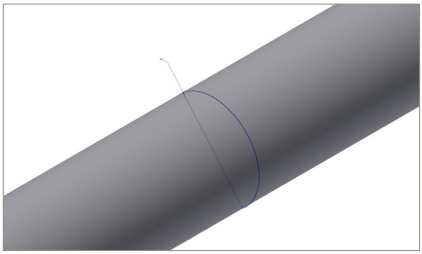
Preliminary Notes

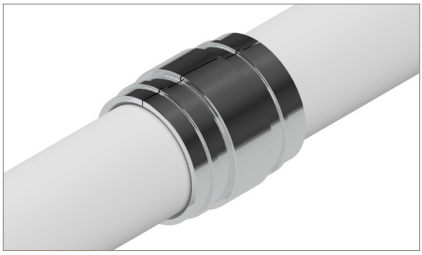
Determine the bearing positions and where possible install the fixed bearing first as this then locates the shaft axially. Wipe clean all bearing parts to remove preservative oil before fitting. All split components have marking numbers at the joint to identify matching halves. Lightly oil the shaft with thin oil. Other interfaces and threads should also be lubricated.

Stage 1:

Clean and inspect the shaft at the bearing seating. Determine the tolerance required from the table provided. When the two halves of the inner race are assembled around the shaft there should be a gap at each joint. This feature ensures the race is gripped to the shaft securely by the clamp ring halves. Maintain even joint gaps on the inner race and clamp rings. Soft packing can be used to equalise the inner race joint gaps. Fit the clamp rings with their joints approximately 90° to the inner race joints. Progressively tighten the clamp ring joint screws keeping all gaps equalised. With a soft faced hammer, tap the clamp ring halves to seat in their grooves. Finally, tighten the joint screws to the torque figure indicated in the provided table.

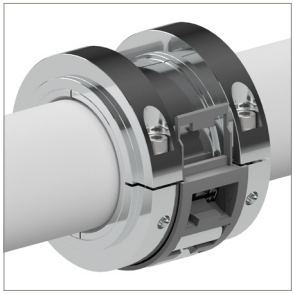
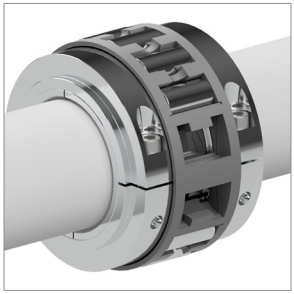
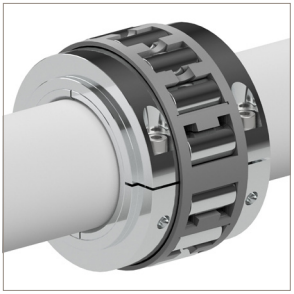
For expansion bearings, the inner race can be offset according to the amount of shaft thermal expansion, so that when operating temperature is reached, the rollers will run central to the outer race. When fitted, re-check the inner race and clamp ring joint gaps are equal and the race is correctly positioned axially.





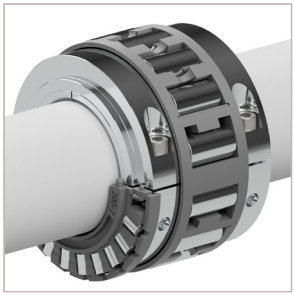
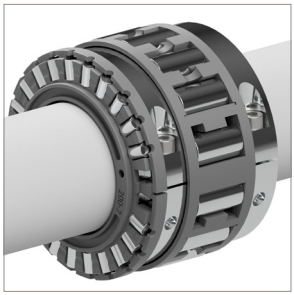
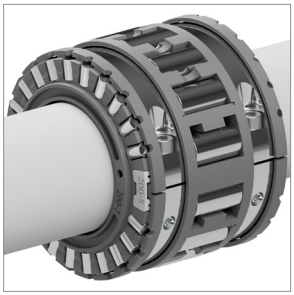
Stage 2:

The radial cage is supplied with some loose rollers which join the cage halves once assembled on the inner race. Apply a film of grease to the roller path and bore of the cage before placing the cage around the race. Insert the **joint coupler** with its bevel edge toward the shaft. The cage halves do not have matching numbers, instead each half has a male / female tenon. With the two halves around the inner race, fit the loose rollers with firm pressure until they lock in the pockets and retain the halves of the cage. Couplers can be fitted to one half of the cage before the cage is fitted. Rotate the cage to assemble the second joint.

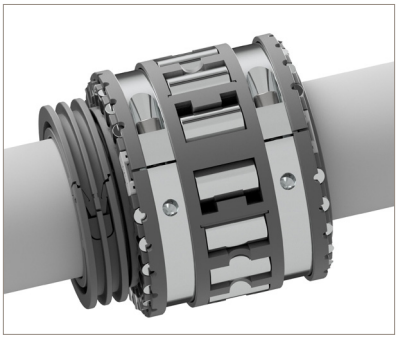




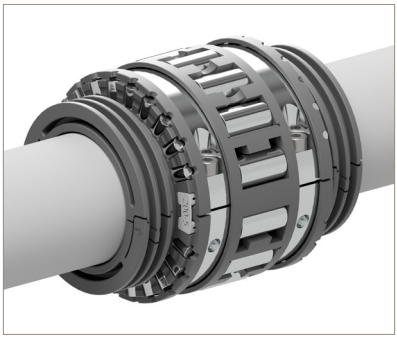
Stage 3 (applicable only for a locating bearing):

The axial cage halves are joined in a similar way to the radial cages. Apply a film of grease to the side face of the clamp ring and axial rollers.

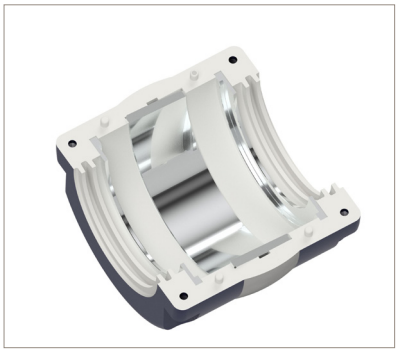
Stage 4:
Individual instructions are supplied with each seal. Separate the seal halves using the release tool provided. Lubricate the bore of the seal and the shaft with a thin film of grease. Place the two halves of seal around the shaft ensuring the male / female joints correspond and compress the 'O' rings to clip the halves together. Once fitted, the seals can be moved axially to position them relative to the housing grooves (when the housing is fitted)





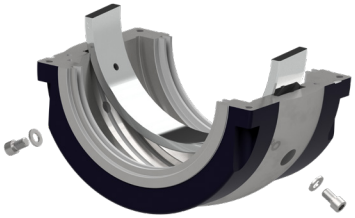
Stage 5:
Prime the small radial groove of the inner housing with grease. Take the radial outer race halves. The upper half is identifiable by the radial lubrication holes and must be fitted in the housing top half which has the lubrication nipple. Push the race halves into the seating grooves ensuring matching numbers coincide. The race joints will protrude slightly beyond the housing joints. Protect these faces when handling the halves.

For fixed bearings, place the axial races in their recesses as shown. When pushed fully into their seating the joints of the axial races will be slightly below the face of the housing.



Stage 5a:

For inner housings (cartridges) sizes C13 to C17A, additional radial hold back screws and washers are required to retain the radial outer race in the inner housing. Insert the screws and washers supplied with the bearing, through the inner housing into the race but do not fully tighten. Assemble the two halves of the inner housing together, with their radial outer races fitted, fully tighten inner housing joint screws then fully tighten radial hold back screws. Then disassemble the inner housing halves ready for installation around the bearing. Only use the screws and washers provided and do not exceed torque values listed.

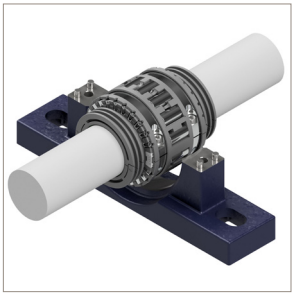


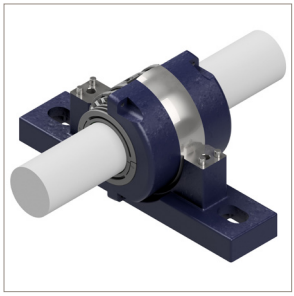
Stage 6:

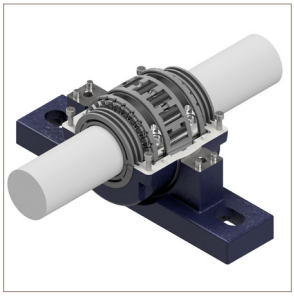
Apply lubricant to the inside surface of the housing, covering the fitted races. Coat the assembled cages & rollers on the inner race and add some grease to the labyrinths of the seals. The quantity of grease to be used in the bearing can be determined from the grease weights table.

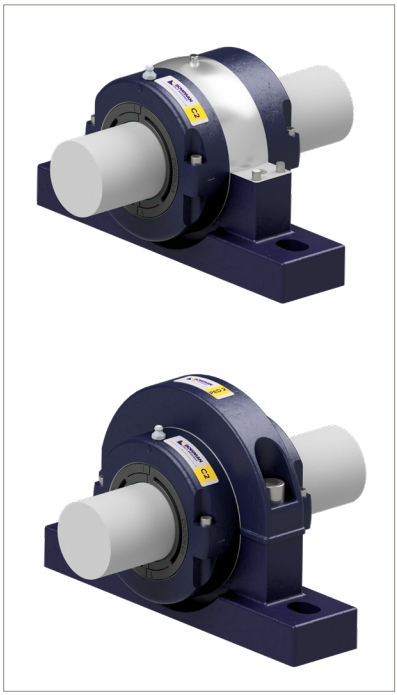
Stage 7:

With the pedestal base located in position, place the lower half of the inner housing on top of the shaft. Lubricate the spherical surfaces of pedestal and inner housing. Align the two spherical surfaces, ensure the labyrinth seals mate with their corresponding grooves and rotate the housing around the shaft into the pedestal base until both joint faces are aligned. It may be necessary to manually guide the axial rollers between the clamp rings and axial outer races whilst rotating the housing into position.









Stage 8:

Place the upper half of the inner housing on top of the shaft in position, ensuring the axial rollers & races align. Lower gently into position, then fit and progressively tighten the housing joint screws.

Shaft supports or jacks can now be removed.

Apply a thin film of grease to the spherical surfaces of the pedestal cap and the upper half of the inner housing. The pedestal cap can now be fitted, ensuring the matching numbers are together. Fit the joint screws, tighten then release approximately half a turn.

Rotate the shaft by hand or under power for a few revolutions before finally tightening the cap screws. This allows the housings to align the bearing with the shaft.

Assembly Check List

- Clean bearing parts and shaft before installation
- Measure shaft to ensure it is within tolerance
- Keep matched component halves together
- Equalise joint gaps on both sides of inner race and clamp rings
- Inner race must be fully tightened
- Lubricate bearing during assembly NOT after
- Lubricate seal bores, labyrinths and housing spherical surfaces
- Tighten screws according to torque figures provided

Screw Sizes and Tightening Torques

(All screws are metric coarse thread, socket-head cap screws grade 12.9)

Size Group	Bearing Bore Ø		Clamp Ring Joint Screw	Torque (Nm)	Cartridge Joint Screw	Torque (Nm)	Cartridge Radial Screw	Torque (Nm)
	(mm)	(inch)						
108	30, 35, 40	1.1875" - 1.5"	M5	8.5	M5	6.5	None	None
200	45, 50	1.6875" - 2.0"	M5	8.5	M5	6.5	None	None
208	55, 60, 65	2.1875" - 2.5"	M5	8.5	M5	6.5	None	None
300	70, 75	2.6875" - 3.0"	M6	15	M6	11	None	None
308	80, 85, 90	3.1875"- 3.5"	M6	15	M6	11	None	None
400	95, 100, 105	3.6875" - 4.0"	M6	15	M6	11	None	None
408	110, 115	4.1875" - 4.5"	M8	35	M8	26	None	None
500	120, 125, 130	4.6875" - 5.0"	M8	35	M8	26	None	None
508	135, 140	5.1875" - 5.5"	M8	35	M8	26	None	None
600	150, 155, 160	5.6875" - 6.0"	M8	35	M8	26	None	None
608	170	6.4375" - 6.5"	M10	70	M10	52.5	None	None
700	175, 180	6.9375" - 7.0"	M10	70	M10	52.5	None	None
800	190, 200	7.9375" - 8.0"	M12	120	M12	90	M12	60
900	220, 230	9.0"	M12	120	M12	90	M12	60
1000	240, 250, 260	10.0"	M12	120	M12	90	M12	60
1100	270, 275, 280	11.0"	M16	300	M16	225	M12	60
1200	290, 300	12.0"	M16	300	M16	225	M12	60

Hexagon Key Sizes

Screw Size	M5	M6	M8	M10	M12	M16	M20	M24
Key Size (A/F)	4mm	5mm	6mm	8mm	10mm	14mm	17mm	19mm

Pedestal	PED1	PED2	PED3	PED4	PED5	PED6	PED7	PED8	PED9	PED10
Joint Screw	M10	M10	M12	M16	M20	M20	M24	M24	M24	M24
Torque (Nm)	52.5	52.5	90	225	420	420	712	712	712	712

Pedestal	PED11	PED12	PED13	PED14	PED15	PED16	PED17
Joint Screw	M10	M10	M12	M16	M20	M20	M24
Torque (Nm)	420	420	420	420	712	712	712

Pedestal	PED9A	PED10A	PED11A	PED12A	PED13A	PED14A	PED15A	PED16A	PED17A
Joint Screw	M24	M24M	M24M	M24	M24	M24	M24	M24	M24
Torque (Nm)	712	712	712	712	712	712	712	712	712

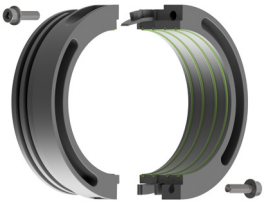
SEALTRAIN® Triple Labyrinth Seals

Standard and Extended Seals to Overcome Worn Shafts

Peak performance and long life of the roller bearing depends on keeping contaminants out of the bearing and protecting the lubricant within the housing. The lubricant not only enhances the running of the bearing but also protects the bearing surfaces from corrosion. Effective sealing and maintaining the integrity of the housing is therefore of prime importance.

Standard Triple Labyrinth Seal

Bowman units incorporate an inner/outer housing with a spherical ball socket which maintains the Sealtrain® multi labyrinth seals concentric with the shaft even under shaft/mounting structure misalignment. This allows the use of tight running clearances between seal and inner housing seal bore surfaces.



Extended Triple Labyrinth Seal to Accommodate Worn Shafts

Sealtrain® seals are directly interchangeable with other manufacturer triple labyrinth seals and can replace both nitrile rubber and aluminium seals. They can be ordered separately to the inner housing, specific to the shaft size required.

Sealtrain® seals can be fitted and released in seconds using the handy release tool which comes as standard with each seal.

- Compatible with all major split roller bearing manufacturer's housings
- Can replace nitrile rubber and aluminium types
- Intrinsically safe – can be used where aluminium is prohibited
- Gripped on the shaft with Viton 'O' rings as standard
- Suitable for temperatures from -20° to 150°C
- Ease of installation. No tools required
- Simple to remove using the removal tool supplied with each seal
- Lighter than other types of triple labyrinth seals
- Operates up to bearing maximum speeds
- Special shaft sizes easily accommodated with bespoke seals
- Extended seals can be supplied to overcome worn shaft area

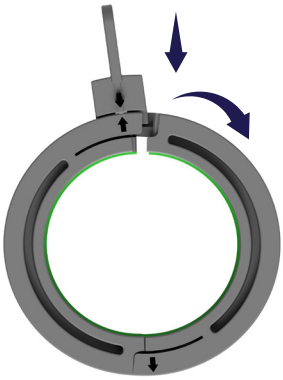
Seal Installation / Disassembly

Each seal is supplied assembled in the box. Remove the seal and release tool from the box. Separate each seal into its two halves using the release tool as follows:

1

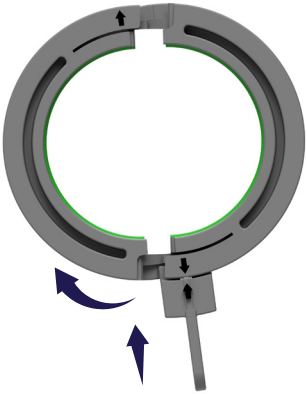
Insert tool, aligning arrows on seal and tool

2



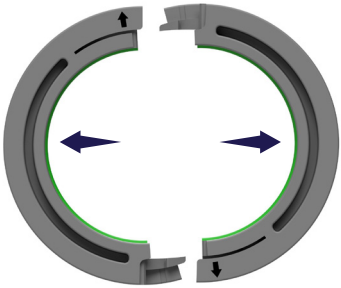
Press and hold tool whilst applying light pressure to the bore of the seal until the joint separates

3

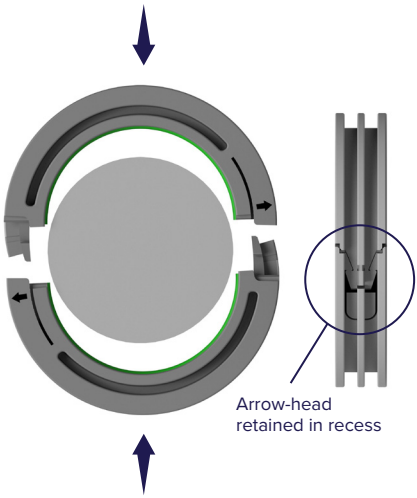


Repeat action on opposite joint

4

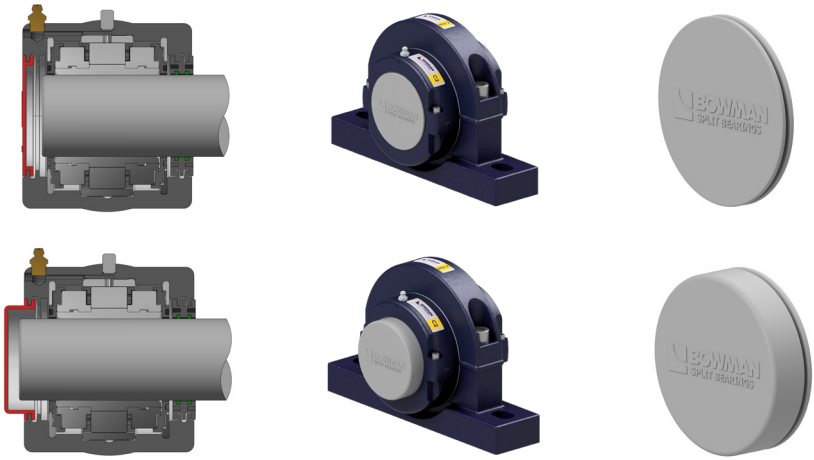


Pull both seal halves apart



Seal Installation

1) The seals can be installed before or after the radial & axial bearings are assembled. If fitted before the bearing, slide the seals axially away to each side of the bearing position allowing space to assemble the bearing.
2) Lightly lubricate the bore of each seal half, ensuring the 'O' rings remain in place.
3) Place both halves around the shaft ensuring male and female joints are aligned.
4) Clip the two halves together so that the 'arrow-head' is retained in the corresponding recess. Use jubilee clip if tight.
5) Move the assembled seals into their correct position by sliding along the shaft.
6) Greasing the labyrinths before closing the cartridge serves to lubricate the seals and adds an additional grease barrier against contamination.
7) Seals rotate with the shaft and axially align themselves with their corresponding cartridge grooves during operation.



Blanking Plates are available to seal the end bore where the shaft terminates within the inner housing. Blanking plates are also available to seal the end bore where the shaft extends beyond the inner housing. Blanking plates and Extended Blanking Plates are ordered specific to the inner housing.

Bearing Lubrication

Bowman split bearing units are designed for grease lubrication. Grease is easier to retain in the housing than oil, offering reduced lubricant loss and improved sealing. It also offers better protection against corrosion to the rolling surfaces. Lubricant is directly injected into the path of the rollers for optimum distribution throughout the radial and axial bearings.

Inner housing lubrication points are tapped 1/8" NPT and fitted with nipples for grease lubrication. Grease nipples can be replaced with other fittings or pipes, however pipework must be flexible to allow the inner/outer housing spherical ball joint to operate correctly. BSP fittings may be used, but care must be taken to avoid blocking off the lubrication cross drilling in the inner housing as BSP fittings generally screw in further than NPT fittings.

Lubricant Type

Greases of NLGI No.2 designation are recommended for most applications. For centrally pumped systems a No.1 grease may be used for increased pumpability.

Greases with extreme pressure (EP) additives are recommended. However, Bowman split bearing units do not rely upon EP greases being used to achieve the axial capacities listed, unlike existing manufacturers units.

Grease with a lithium complex thickener is usually used for normal applications operating at temperatures between 0° and 80°C. When water resistance is required a grease with an aluminium complex thickener can be used. Some greases may not mix with each other so if changing lubricants, the bearing unit must be solvent-cleaned of the old lubricant before using the new lubricant.

Please contact our Technical Department if lubrication advice is required.

Grease Quantity for Initial Lubrication

The quantity of grease required for initial lubrication is dependent upon operating speed. For slow applications the bearing and housing can be packed full of grease, however at higher speeds excessive grease will cause the bearing to overheat.

The following table shows the fully packed quantity of grease for each housing size. The actual amount should be estimated using the percentage of this quantity factored according to the shaft speed.

Fully Packed Grease Quantity

Group Size	Inner Housing Ref	Fixed Bearing Grease Quantity (g)	Free Bearing Grease Quantity (g)
108	C1	45	80
200	C2 / C2A	55	100
208	C3 / C3A	70	150
300	C4 / C4A	90	165
308	C5 / C5A	150	325
400	C6 / C6A	170	400
408	C7 / C7A	310	640
500	C8 / C8A	420	770
508	C9 / C9A	450	950
600	C10 / C10A	465	1000
608	C11 / C11A	710	1275
700	C12 / C12A	750	1350
800	C13 / C13A	750	1360
900	C14 / C14A	1165	2020
1000	C15 / C15A	1310	2240
1100	C16 / C16A	1735	2855
1200	C17 / C17A	1925	3170

Estimation of the quantity required depending on the speed can be made using the table below.

Speed Range			Percentage
0	→	50,000dn	100%
50,000dn	→	100,000dn	75%
150,000dn	→	200,000dn	50%
Above 200,000dn			25%

The routine greasing interval is dependent upon operating speed, temperature and environment. As a guide, the re-lubrication quantity should be around 2 – 3 grams given at the following interval:

- Radial bearing with axial bearing (fixed or thrust arrangement) re-grease every 100 hours
- Radial bearing only (expansion arrangement) re-grease every 400 hours

Temperature Characteristics

The normal operating temperature range for the bearing is from 0° to 100°C. Operating temperatures outside of this range will require consideration for lubrication, seals and materials of construction. Please consult our Technical Department for further advice.

Condition Monitoring Frequency Data

Condition monitoring of machinery is used to identify significant changes which in turn indicates developing faults and is a major component of the predictive maintenance process. By using the bearing frequency data listed below, machine operators can input the correct information into condition monitoring equipment, enabling them to identify and monitor potential faults and schedule maintenance procedures accordingly. Successful use of this system reduces downtime by enabling repairs to be planned, avoiding the possibility of catastrophic failure and breakdowns.

Bearing component frequencies are given per shaft revolution and can be explained as follows:

Cage (Radial): The frequency at which a point on the radial cage rotates relative to the inner housing.
(Axial): The frequency at which a point on the axial cage rotates relative to the inner housing.

Roller (Radial): The frequency at which a point on a given radial roller contacts the inner race or radial outer race or the radial cage roller pocket.
(Axial): The frequency at which a point on a given axial roller contacts the clamp ring or axial outer race or the axial cage roller pocket.

Outer (Radial): The frequency at which a point on the radial outer race contacts the radial rollers.
(Axial): The frequency at which a point on the axial outer race contacts the axial rollers.

Inner (Radial): The frequency at which a point on the inner race contacts the radial rollers.
(Axial): The frequency at which a point on the clamp ring contacts the axial rollers.

Roller details, such as PCD, number of rollers and their diameter are often required in monitoring and are included on the following page.

Radial Data

Size Group	Bearing Bore Ø		Cage	Roller	Outer	Inner	Radial PCD (mm)	No. of Rollers	Roller Ø (mm)
	(mm)	(inch)							
108	30, 35, 40	1.1875” - 1.5”	0.404	2.516	4.851	7.149	62.687	12	12
200	45, 50	1.6875” - 2.0”	0.415	2.845	5.806	8.194	76.20	14	13
208	55, 60, 65	2.1875” - 2.5”	0.423	3.152	6.761	9.239	90.424	16	14
300	70, 75	2.6875” - 3.0”	0.425	3.251	6.797	9.203	106.426	16	16
308	80, 85, 90	3.1875” - 3.5”	0.427	3.366	7.691	10.309	123.80	18	18
400	100, 105	3.6875” - 4.0”	0.429	3.463	7.727	10.273	141.351	18	20
408	110, 115	4.1875” - 4.5”	0.431	3.539	7.753	10.247	158.75	18	22
500	120, 125, 130	4.6875” - 5.0”	0.431	3.569	8.626	11.374	174.625	20	24
508	135, 140	5.1875” - 5.5”	0.434	3.744	8.688	11.312	190.50	20	25
600	150, 155, 160	5.6875” - 6.0”	0.438	4.002	9.647	12.353	203.20	22	25
608	170	6.4375" - 6.5"	0.438	3.995	8.768	11.232	219.08	20	27
700	175, 180	6.9375" - 7.0"	0.442	4.234	9.719	12.281	231.78	22	27
800	190, 200	7.9375" - 8.0"	0.448	4.710	10.740	13.260	257.18	24	27
900	220, 230	9.0"	0.448	4.710	10.740	13.260	285.75	24	30
1000	240, 250, 260	10.0"	0.452	5.191	12.664	15.336	314.33	28	30
1100	270, 275, 280	11.0"	0.453	5.311	12.693	15.307	342.90	28	32
1200	290, 300	12.0"	0.457	5.761	12.794	15.206	371.48	28	32

Typically, velocity of a new bearing could be 4mm/s (RMS) and alarm levels should be set to 15mm/s (RMS), however experience and monitoring trends will assist with establishing alarm and shut-down levels.

Axial Data

Size Group	Bearing Bore Ø		Cage	Roller	Outer	Inner	Axial PCD (mm)	No. of Rollers	Roller Ø (mm)
	(mm)	(inch)							
108	30, 35, 40	1.1875” - 1.5”	0.500	5.724	12	12	62.687	20	6
200	45, 50	1.6875” - 2.0”	0.500	6.850	12	12	76.20	20	6
208	55, 60, 65	2.1875” - 2.5”	0.500	6.152	12	12	90.424	20	8
300	70, 75	2.6875” - 3.0”	0.500	7.152	12	12	106.426	20	8
308	80, 85, 90	3.1875” - 3.5”	0.500	6.690	12	12	123.80	20	10
400	100, 105	3.6875” - 4.0”	0.500	7.568	14	14	141.351	24	10
408	110, 115	4.1875” - 4.5”	0.500	7.115	14	14	158.75	24	12
500	120, 125, 130	4.6875” - 5.0”	0.500	7.776	14	14	174.625	24	12
508	135, 140	5.1875” - 5.5”	0.500	7.304	14	14	190.50	24	14
600	150, 155, 160	5.6875” - 6.0”	0.500	7.757	14	14	203.20	24	14
608	170	6.4375" - 6.5"	0.500	7.824	12	12	219.08	24	14
700	175, 180	6.9375" - 7.0"	0.500	8.278	15	15	231.78	30	14
800	190, 200	7.9375" - 8.0"	0.500	9.185	16	16	257.18	32	14
900	220, 230	9.0"	0.500	10.205	16	16	285.75	32	14
1000	240, 250, 260	10.0"	0.500	11.226	16	16	314.33	32	14
1100	270, 275, 280	11.0"	0.500	12.246	18	18	342.90	36	14
1200	290, 300	12.0"	0.500	13.267	20	20	371.48	40	14

Part Numbering and Referencing

	SKF Cooper™	Timken SRB™	Craft™	BOWMAN SPLIT BEARINGS
Group Size	01 / 01E	Light	S1	Only one series
	02 / 02E	Medium	S2	
	03	Heavy	S3	
Bearing Type	EX (Expansion)	BX (Bearing Expansion)	FL (Floating)	Radial Bearing = Expansion
	GR (Ground Race)	BR (Bearing Retained)	HD (Held)	Radial Bearing + Axial Bearing = Locating
Units				
Metric (mm)	M	M	mm	M
Imperial (inch)		E		
Housing				
Cartridge	C	H (Housing)	C	C
	01C100MEX	LSM100HX	S1C100mm	C6
Pedestal	P	S (Support)	Pedestal Housing	PED
	P06	S06	H6	PED6
Flange	F	F	F	
Examples				
Metric	01EB100MEX	LSM100BX	S1B100mmFL	B100M
	01EB100MGR	LSM100BR	S1B100mmHD	B100M - AB6
Imperial	02B215EX	HSE215BX	S2B215FL	B215
	02B215GR	HSE215BR	S2B215HD	B215 - AB4
Bearing / Shaft Size				
Metric	Reference using the shaft size in millimetres (mm)			
Imperial	Reference using the shaft size in inches. The last two digits are always the number of sixteenths. In a 3 digit reference number; the first number is the whole inch, in a 4 digit reference number; the first two numbers are the whole inch.			
		215	2 15/16"	
		508	5 8/16" (5 1/2")	
		1000	10 0/16" (10")	

Selection Guide

Imperial - Equivalent to"Light" (Timken/SRB), "01/E" (SKF/Cooper) and "S1" (Craft) Series

Size Group	Bearing Bore Ø (inch)	Bearing		Inner Housing	Outer Housing	Seal
		Fixed	Free	Cartridge	Pedestal	
108	1.3/16"	B103-AB1	B103	C1	PED1	CTL103
	1.1/4"	B104-AB1	B104			CTL104
	1.7/16"	B107-AB1	B107			CTL107
	1.1/2"	B108-AB1	B108			CTL108
200	1.11/16"	B111-AB2	B111	C2	PED2	CTL111
	1.3/4"	B112-AB2	B112			CTL112
	1.15/16"	B115-AB2	B115			CTL115
	2"	B200-AB2	B200			CTL200
208	2.3/16"	B203-AB3	B203	C3	PED3	CTL203
	2.1/4"	B204-AB3	B204			CTL204
	2.7/16"	B207-AB3	B207			CTL207
	2.1/2"	B208-AB3	B208			CTL208
300	2.11/16"	B211-AB4	B211	C4	PED4	CTL211
	2.3/4"	B212-AB4	B212			CTL212
	2.15/16"	B215-AB4	B215			CTL215
	3"	B300-AB4	B300			CTL300
308	3.3/16"	B303-AB5	B303	C5	PED5	CTL303
	3.1/4"	B304-AB5	B304			CTL304
	3.7/16"	B307-AB5	B307			CTL307
	3.1/2"	B308-AB5	B308			CTL308
400	3.11/16"	B311-AB6	B311	C6	PED6	CTL311
	3.3/4"	B312-AB6	B312			CTL312
	3.15/16"	B315-AB6	B315			CTL315
	4"	B400-AB6	B400			CTL400
408	4.3/16"	B403-AB7	B403	C7	PED7	CTL403
	4.1/4"	B404-AB7	B404			CTL404
	4.7/16"	B407-AB7	B407			CTL407
	4.1/2"	B408-AB7	B408			CTL408

Size Group	Bearing Bore Ø (inch)	Bearing		Inner Housing	Outer Housing	Seal
		Fixed	Free	Cartridge	Pedestal	
500	4.11/16" 4.3/4" 4.15/16" 5"	B411-AB8 B412-AB8 B415-AB8 B500-AB8	B411 B412 B415 B500	C8	PED8	CTL411 CTL412 CTL415 CTL500
508	5.3/16" 5.1/4" 5.7/16" 5.1/2"	B503-AB9 B504-AB9 B507-AB9 B508-AB9	B503 B504 B507 B508	C9	PED9	CTL503 CTL504 CTL507 CTL508
600	5.11/16" 5.3/4" 5.15/16" 6"	B511-AB10 B512-AB10 B515-AB10 B600-AB10	B511 B512 B515 B600	C10	PED10	CTL511 CTL512 CTL515 CTL600
608	6.7/16" 6.1/2"	B607-AB11 B608-AB11	B607 B608	C11	PED11	CTL607 CTL608
700	6.15/16" 7"	B615-AB12 B700-AB12	B615 B700	C12	PED12	CTL615 CTL700
800	7.15/16" 8"	B715-AB13 B800-AB13	B715 B800	C13	PED13	CTL715 CTL800
900	9"	B900-AB14	B900	C14	PED14	CTL900
1000	10"	B1000-AB15	B1000	C15	PED15	CTL1000
1100	11"	B1100-AB16	B1100	C16	PED16	CTL1100
1200	12	B1200-AB17	B1200	C17	PED17	CTL1200

Note:

* 2 x Seals required per inner housing (unless using end cap / blanking plate)
* For equivalent to "Medium" (Timken/SRB), "02/E" (SKF/Cooper) and "S2" (Craft) series see alternate selection guide)

Imperial - Equivalent to"Medium" (Timken/SRB), "02/E" (SKF/Cooper) and "S2" (Craft) Series

Size Group	Bearing Bore Ø (inch)	Bearing		Inner Housing	Outer Housing	Seal
		Fixed	Free	Cartridge	Pedestal	
200	1.11/16"	B111-AB2	B111	C2A	PED3	CTL111
	1.3/4"	B112-AB2	B112			CTL112
	1.15/16"	B115-AB2	B115			CTL115
	2"	B200-AB2	B200			CTL200
208	2.3/16"	B203-AB3	B203	C3A	PED4	CTL203
	2.1/4"	B204-AB3	B204			CTL204
	2.7/16"	B207-AB3	B207			CTL207
	2.1/2"	B208-AB3	B208			CTL208
300	2.11/16"	B211-AB4	B211	C4A	PED5	CTL211
	2.3/4"	B212-AB4	B212			CTL212
	2.15/16"	B215-AB4	B215			CTL215
	3"	B300-AB4	B300			CTL300
308	3.3/16"	B303-AB5	B303	C5A	PED6	CTL303
	3.1/4"	B304-AB5	B304			CTL304
	3.7/16"	B307-AB5	B307			CTL307
	3.1/2"	B308-AB5	B308			CTL308
400	3.11/16"	B311-AB6	B311	C6A	PED7	CTL311
	3.3/4"	B312-AB6	B312			CTL312
	3.15/16"	B315-AB6	B315			CTL315
	4"	B400-AB6	B400			CTL400
408	4.3/16"	B403-AB7	B403	C7A	PED8	CTL403
	4.1/4"	B404-AB7	B404			CTL404
	4.7/16"	B407-AB7	B407			CTL407
	4.1/2"	B408-AB7	B408			CTL408
500	4.11/16"	B411-AB8	B411	C8A	PED10	CTL411
	4.3/4"	B412-AB8	B412			CTL412
	4.15/16"	B415-AB8	B415			CTL415
	5"	B500-AB8	B500			CTL500

Size Group	Bearing Bore Ø (inch)	Bearing		Inner Housing	Outer Housing	Seal
		Fixed	Free	Cartridge	Pedestal	
508	5.3/16" 5.1/4" 5.7/16" 5.1/2"	B503-AB9 B504-AB9 B507-AB9 B508-AB9	B503 B504 B507 B508	C9A	PED9A	CTL503 CTL504 CTL507 CTL508
600	5.11/16" 5.3/4" 5.15/16" 6"	B511-AB10 B512-AB10 B515-AB10 B600-AB10	B511 B512 B515 B600	C10A	PED10A	CTL511 CTL512 CTL515 CTL600
608	6.7/16" 6.1/2"	B607-AB11 B608-AB11	B607 B608	C11A	PED11A	CTL607 CTL608
700	6.15/16" 7"	B615-AB12 B700-AB12	B615 B700	C12A	PED12A	CTL615 CTL700
800	7.15/16" 8"	B715-AB13 B800-AB13	B715 B800	C13A	PED13A	CTL715 CTL800
900	9"	B900-AB14	B900	C14A	PED14A	CTL900
1000	10"	B1000-AB15	B1000	C15A	PED15A	CTL1000
1100	11"	B1100-AB16	B1100	C16A	PED16A	CTL1100
1200	12"	B1200-AB17	B1200	C17A	PED17A	CTL1200

Note:

* 2 x Seals required per inner housing (unless using end cap / blanking plate)
* For equivalent to "Light" (Timken/SRB), "01/E" (SKF/Cooper) and "S1" (Craft) series see alternate selection guide)

Metric - Equivalent to "Light" (Timken/SRB), "01/E" (SKF/Cooper) and "S1" (Craft) Series

Size Group	Bearing Bore Ø (mm)	Bearing		Inner Housing	Outer Housing	Seal
		Fixed	Free	Cartridge	Pedestal	
108	30mm	B030M-AB1	B030M	C1	PED1	CTL030M
	35mm	B035M-AB1	B035M			CTL035M
	40mm	B040M-AB1	B040M			CTL040M
200	45mm	B045M-AB2	B045M	C2	PED2	CTL045M
	50mm	B050M-AB2	B050M			CTL050M
208	55mm	B055M-AB3	B055M	C3	PED3	CTL055M
	60mm	B060M-AB3	B060M			CTL060M
	65mm	B065M-AB3	B065M			CTL065M
300	70mm	B070M-AB4	B070M	C4	PED4	CTL070M
	75mm	B075M-AB4	B075M			CTL075M
308	80mm	B080M-AB5	B080M	C5	PED5	CTL080M
	85mm	B085M-AB5	B085M			CTL085M
	90mm	B090M-AB5	B090M			CTL090M
400	95mm	B095M-AB6	B095M	C6	PED6	CTL095M
	100mm	B100M-AB6	B100M			CTL100M
	105mm	B105M-AB6	B105M			CTL105M
408	110mm	B110M-AB7	B110M	C7	PED7	CTL110M
	115mm	B115M-AB7	B115M			CTL115M
500	120mm	B120M-AB8	B120M	C8	PED8	CTL120M
	125mm	B125M-AB8	B120M			CTL125M
	130mm	B130M-AB8	B130M			CTL130M
508	135mm	B135M-AB9	B135M	C9	PED9	CTL135M
	140mm	B140M-AB9	B140M			CTL140M
600	150mm	B150M-AB10	B150M	C10	PED10	CTL150M
	155mm	B155M-AB10	B155M			CTL155M
	160mm	B160M-AB10	B160M	OC10		CTL160M
608	160mm	B160M-AB10	B160M	C11-600	PED11	CTL160M
	170mm	B170M-AB11	B170M	OC11		OCTL170M

Size Group	Bearing Bore Ø (mm)	Bearing		Inner Housing	Outer Housing	Seal
		Fixed	Free	Cartridge	Pedestal	
700	170mm	B170M-AB11	B170M	C12-608	PED12	CTL170M
	175mm	B175M-AB12	B175M	C12		CTL175M
	180mm	B180M-AB12	B180M			CTL180M
800	190mm	B190M-AB13	B190M	C13	PED13	CTL190M
	200mm	B200M-AB13	B200M			CTL200M
900	220mm	B220M-AB14	B220M	C14	PED14	CTL220M
	230mm	B230M-AB14	B230M			CTL230M
1000	240mm	B240M-AB15	B240M	C15	PED15	CTL240M
	250mm	B250M-AB15	B250M			CTL250M
	260mm	B260M-AB15	B260M	OC15		OCTL260M
1100	260mm	B260M-AB15	B260M	C16-1000	PED16	CTL260M
	270mm	B270M-AB16	B270M	C16		CTL270M
	275mm	B275M-AB16	B275M			CTL275M
	280mm	B280M-AB16	B280M			CTL280M
1200	290mm	B290M-AB17	B290M	C17	PED17	CTL290M
	300mm	B300M-AB17	B300M			CTL300M

Note:

* 2 x Seals required per inner housing (unless using end cap / blanking plate)
* For equivalent to "Medium" (Timken/SRB), "02/E" (SKF/Cooper) and "S2" (Craft) series see alternate selection guide)

Metric - Equivalent to"Medium" (Timken/SRB), "02/E" (SKF/Cooper) and "S2" (Craft) Series

Size Group	Bearing Bore Ø (mm)	Bearing		Inner Housing	Outer Housing	Seal
		Fixed	Free	Cartridge	Pedestal	
200	45mm	B045M-AB2	B045M	C2A	PED3	CTL045M
	50mm	B050M-AB2	B050M			CTL050M
208	55mm	B055M-AB3	B055M	C3A	PED4	CTL055M
	60mm	B060M-AB3	B060M			CTL060M
	65mm	B065M-AB3	B065M			CTL065M
300	70mm	B070M-AB4	B070M	C4A	PED5	CTL070M
	75mm	B075M-AB4	B075M			CTL075M

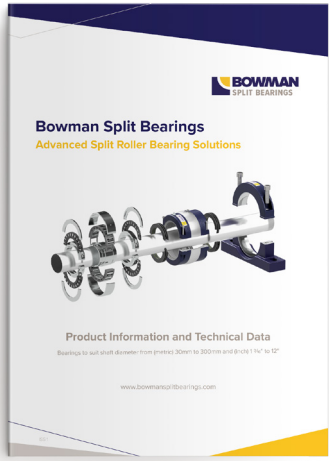
Size Group	Bearing Bore Ø (mm)	Bearing		Inner Housing	Outer Housing	Seal
		Fixed	Free	Cartridge	Pedestal	
308	80mm	B080M-AB5	B080M	C5A	PED6	CTL080M
	85mm	B085M-AB5	B085M			CTL085M
	90mm	B090M-AB5	B090M			CTL090M
400	95mm	B095M-AB6	B095M	C6A	PED7	CTL095M
	100mm	B100M-AB6	B100M			CTL100M
	105mm	B105M-AB6	B105M			CTL105M
408	110mm	B110M-AB7	B110M	C7A	PED8	CTL110M
	115mm	B115M-AB7	B115M			CTL115M
500	120mm	B120M-AB8	B120M	C8A	PED10	CTL120M
	125mm	B125M-AB8	B120M			CTL125M
	130mm	B130M-AB8	B130M			CTL130M
508	135mm	B135M-AB9	B135M	C9A	PED9A	CTL135M
	140mm	B140M-AB9	B140M			CTL140M
600	150mm	B150M-AB10	B150M	C10A	PED10A	CTL150M
	155mm	B155M-AB10	B155M			CTL155M
	160mm	B160M-AB10	B160M	OC10A		CTL160M
608	160mm	B160M-AB10	B160M	C11A-600	PED11A	CTL160M
	170mm	B170M-AB11	B170M	OC11A		OCTL170M
700	170mm	B170M-AB11	B170M	C12A-608	PED12A	CTL170M
	175mm	B175M-AB12	B175M	C12A		CTL175M
	180mm	B180M-AB12	B180M			CTL180M
800	190mm	B190M-AB13	B190M	C13A	PED13A	CTL190M
	200mm	B200M-AB13	B200M			CTL200M
900	220mm	B220M-AB14	B220M	C14A	PED14A	CTL220M
	230mm	B230M-AB14	B230M			CTL230M
1000	240mm	B240M-AB15	B240M	C15A	PED15A	CTL240M
	250mm	B250M-AB15	B250M			CTL250M
	260mm	B260M-AB15	B260M	OC15A		OCTL260M
1100	260mm	B260M-AB15	B260M	C16A-1000	PED16A	CTL260M
	270mm	B270M-AB16	B270M	C16A		CTL270M
	275mm	B275M-AB16	B275M			CTL275M
	280mm	B280M-AB16	B280M			CTL280M
1200	290mm	B290M-AB17	B290M	C17A	PED17	CTL290M
	300mm	B300M-AB17	B300M			CTL300M

Note:

* 2 x Seals required per inner housing (unless using end cap / blanking plate)
* For equivalent to "Light" (Timken/SRB), "01/E" (SKF/Cooper) and "S1" (Craft) series see alternate selection guide)

Literature

Interchangeable Split Roller Bearings Catalogue



Advanced Split Roller Bearings Catalogue

Advanced Spherical Split Roller Bearings Flyer

Other Products & Services from the Bowman Group

Linear Bearings & Guides

Bowman is proud to hold distributorships with Thomson Linear and NSK Linear and holds considerable stock of both manufacturers products. Bowman also offer a same day cutting service.

Plain Bearings

Bowman International is one of the leading suppliers and manufacturers of plain bearings in the UK and holds one of the largest stock profiles of plain bearings in the world.

Sintered Parts

Bowman can offer shaped sintered components in a variety of iron or bronze materials and have the ability to produce complex shaped parts to close tolerances in volume at much lower cost than conventional methods of forming.

Volume 3D Printing

Bowman Additive Production is the 3D printing division of the group. Using the latest HP Multi Jet Fusion technology, Bowman AP offers a full production 3D printing service from design to manufacture.

Rod Ends & Spherical Bearings

Bowman stock a large range of metric and imperial rod ends and spherical bearings from a wide range of manufacturers.

Inspection & Testing

Bowman International's inhouse bearing test facility is able to determine bearing capabilities and provide fault analysis for plain and rolling element bearings. Our inspection facility guarantees the quality of each bearing that leaves our premises.

For more information about the Bowman Group or any of our products or services visit www.bowman.co.uk
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