Gleitlagertechnik

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Composite Self-lubricating Bearings

Metallic Self-lubricating Bearings

The others

Plastic Compound Bearings

CSB-10 Steel bronze powder with PTFE/Pb dry bearings

Dimensions of Standard Products See P35~42

Features

Suitable for dry running, low coefficient of friction, lower wear, good sliding characteristics, forming a transfer film can protect the mating metal surface, suitable for rotary and oscillating movement. High chemical resistance, low absorption of water and swelling. Also performs well with lubrication.

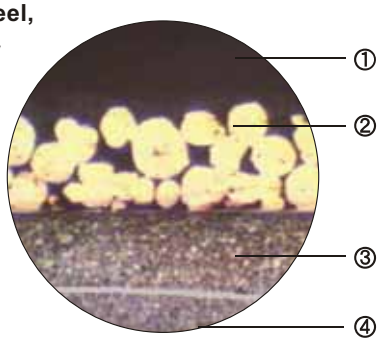
Structure

1. PTFE/Pb mixture 0.01~0.03mm, provides an excellent initial transfer film, which effectively coats the mating surface of the bearing assembly, forming an oxide type solid lubricant film.

2. Sintered bronze powder 0.20-0.35mm, provides Max. thermal conductivity away from the bearing surface, also serves as a reservoir for the PTFE-lead mixture.

3. Low-carbon steel, gives exceptionally high load carrying capacity, excellent heat dissipation.

4. Copper/Tin plating 0.002mm, provides good corrosion resistance.



Tech. Data

Max. Load	Static	250N/mm^2	Friction coefficient		0.03~0.20
	Very low speed	140N/mm^2	Max. speed	Dry running	2m/s
	Rotating oscillating	60N/mm^2		Hydrodynamic operation	>2m/s
Max. PV dry running	Short-term operation	3.6N/mm^2*m/s	Thermal conductivity		42 W(m*K)$^{-1}$
	Continuous operation	1.8N/mm^2*m/s	Coefficient of thermal expansion		11*10^{-6}*K^{-1}
Temp. limit		-195℃~+280℃			

Typical Application

Can meet the demanding criteria for long life and trouble-free performance with or without lubrication.

Automotive: tractors, combines, crop sprayers, earth-movers, graders and other construction, auto machines, specific uses in power steering cylinders, steering gear thrust washers, disc brakes, calipers and pistons, shock absorbers, governor linkage, windshield wiper motor, tilt gear assemblies...

Business machines: photocopy machines, typewriters, mail sorters, postage meter systems, computer terminal printers and peripheral equipment, automatic printing devices, mail processing machinery...

Hydraulics and valves: pumps including gear, rotary, water, axial piston, and other types, ball, butterfly, poppet steam, and other valves and valve trunnions...

Home appliances: tape recorders, refrigerators, air conditioners, cleaners, polishers, sewing machines, ovens, dishwashers, clothes washing machines...

And materials handling, marine engine, packaging, textile equipment, tools...

CSB-50 Steel bronze powder with PTFE dry bearings

Dimensions of Standard Products See P43~46

Without Pb

Features

The features same as CSB-10 but without lead, Suitable for dry running, low coefficient of friction, lower wear, good sliding characteristics, forming a transfer film can protect the mating metal surface, suitable for rotary and oscillating movement. High chemical resistance, lower absorption of water and swelling. Also performs well with lubrication.

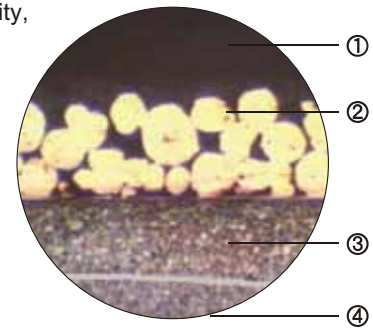
Structure

1.PTFE fibres mixture 0.01~0.03mm,lead-free provides an excellent initial transfer film, which effectively coats the mating surface of the bearing assembly, forming an oxide type solid lubricant film.

2.Sintered bronze powder 0.20-0.35mm, provides max. thermal conductivity away from the bearing surface, also serves as a reservoir for the PTFE mixture.

3.Steel backing, provides high load carrying capacity, excellent heat dissipation.

4.Copper/Tin plating 0.002mm, provides good corrosion resistance.



Tech. Data

Max. Load	Static	250N/mm^2	Friction coefficient		0.03~0.20
	Very low speed	140N/mm^2	Max. speed	Dry running	2m/s
	Rotating oscillating	60N/mm^2		Hydrodynamic operation	>2m/s
Max. PV dry running	Short-term operation	3.6N/mm^2*m/s	Thermal conductivity		42 W(m*K)$^{-1}$
	Continuous operation	1.8N/mm^2*m/s	Coefficient of thermal expansion		11*10^{-6}*K^{-1}
Temp. limit		-195℃~+280℃			

Typical Application

The CSB-50 have same application as the normal CSB-10 type bearings, but much more for automotive industry, food industry, medicine machines, drink machines and so on which not allowed use the lead and difficulty forming the oil film or need dry lubrication parts.

CSB-LA10 Aluminum alloy bronze powder with PTFE/fibre

Dimensions of Standard Products See P47~50

Features

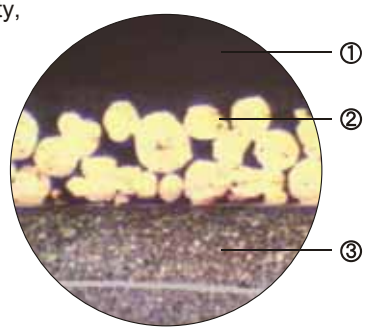
This material structure enables the final goods have more light and easy installation. Suitable for dry running, low coefficient of friction, lower wear, good sliding characteristics, forming a transfer film can protect the mating metal surface, suitable for rotary, directing and oscillating movement.

Structure

1. PTFE/fibre mixture 0.01~0.03mm, provides an excellent initial transfer film, which effectively coats the mating surface of the bearing assembly, forming an oxide type solid lubricant film.

2. Sintered bronze powder 0.20-0.35mm, provides Max. thermal conductivity away from the bearing surface, also serves as a reservoir for the PTFE layer mixture.

3. Aluminum alloy, gives good load carrying capacity, excellent heat dissipation.



Tech. Data

Max. Load	Static	100N/mm^2		Friction coefficient		0.03~0.20
	Very low speed	50N/mm^2		Max. speed	Dry running	2m/s
	Rotating oscillating	20N/mm^2			Hydrodynamic operation	>2m/s
Max. PV dry running	Short-term operation	2.8N/mm^2*m/s		Thermal conductivity		150W(m*K)$^{-1}$
	Continuous operation	1.8N/mm^2*m/s		Coefficient of thermal expansion		24*10^{-6}*K^{-1}
Temp. limit		-195℃~+200℃				

Typical Application

CSB-LA10 have much lower weight can be applied in OA machineries, fitness equipments, bicycle, food industry machines, packaging machineries etc.

CSB-10DH Steel bronze powder with PTFE/fibre dry bearings

Dimensions of Standard Products See CSB-10

Features

Suitable for dry running, low coefficient of friction, lower wear, good sliding characteristics, forming a transfer film can protect the mating metal surface, suitable for rotary and oscillating movement.

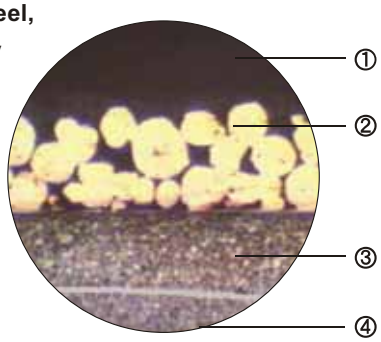
Structure

1. PTFE/fibre mixture 0.01~0.03mm, provides an excellent initial transfer film, which effectively coats the mating surface of the bearing assembly, forming an oxide type solid lubricant film.

2. Sintered bronze powder 0.20-0.35mm, provides Max. thermal conductivity away from the bearing surface, also serves as a reservoir for the PTFE mixture.

3. Low-carbon steel, gives exceptionally high load carrying capacity, excellent heat dissipation.

4. Copper/Tin plating 0.002mm, provides good corrosion resistance.



Tech. Data

Max. Load	Static	250N/mm^2	Friction coefficient		0.05~0.20
	Very low speed	140N/mm^2	Max. speed	Dry running	2m/s
	Rotating oscillating	60N/mm^2		Hydrodynamic operation	>2m/s
Max. PV dry running	Short-term operation	3.6N/mm^2*m/s	Thermal conductivity		42 W(m*K)$^{-1}$
	Continuous operation	1.8N/mm^2*m/s	Coefficient of thermal expansion		11*10^{-6}*K^{-1}
Temp. limit		-195℃~+280℃			

Typical Application

The material have same application like normal CSB-10 material, but typical application for automotive industry like door hinges, trunk hinges, bonnet hinges, dampers, seats etc.

CSB-10HP Steel bronze powder with PTFE/fibre dry bearings

Dimensions of Standard Products See CSB-10

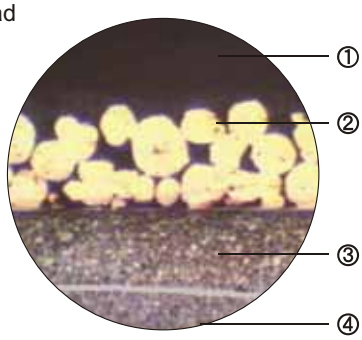
Structure

1. PTFE/fibre mixture 0.01~0.03mm, provides an excellent initial transfer film, which effectively coats the mating surface of the bearing assembly, forming an oxide type solid lubricant film.

2. Sintered bronze powder 0.20-0.35mm,provides Max. thermal conductivity away from the bearing surface, also serves as a reservoir for the PTFE layer mixture.

3. Low-carbon steel, gives exceptionally high load carrying capacity, excellent heat dissipation.

4. Copper/Tin plating 0.002mm, provides good corrosion resistance.



Features

The new material CSB-10HP have been developed for high load with high speed under lubrication. The special resin can support high PV value with lower friction and good wear resistance. The speed can be up to 5m/s, PV up to 60N/mm^2*m/s.

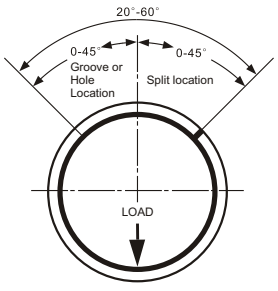
Tech. Data

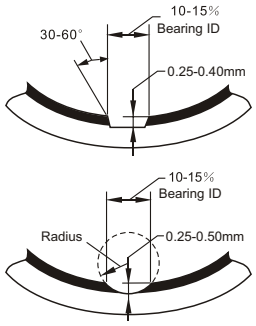
Max. Load	Static	250N/mm^2
	Very low speed	140N/mm^2
	Rotating oscillating	60N/mm^2
Max. PV dry running	Short-term operation	3.6N/mm^2*m/s
	Continuous operation	1.8N/mm^2*m/s
PV hydrodynamic		60N/mm^2*m/s

Temp. limit		-195℃~+280℃
Friction coefficient		0.03~0.20
Max. speed	Dry running	2m/s
	Hydrodynamic operation	>5m/s
Thermal conductivity		42W(m*K)$^{-1}$
Coefficient of thermal expansion		11*10^{-6}*K^{-1}

Typical Application

This new material can work for high PV value application with oil lubrication, and also well performance under dry lubrication. The typical application like gear pump, vane pump, shock absorber, gear motor, axial and radial piston pumps etc. The inner side of bushes can design oil groove or holes for performance oil lubricating (detail please refer CSB oil groove notice).





CSB-11 Bronze backed with bronze powder PTFE/Pb dry bearings

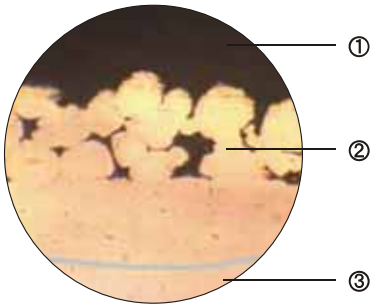
Dimensions of Standard Products See P51~54

Structure

1.PTFE/Pb mixture 0.01~0.03mm, provides an excellent initial transfer film, which effectively coats the mating surface of the bearing assembly, forming an oxide type solid lubricant film.

2.Sintered bronze powder 0.20-0.35mm, provides max. thermal conductivity away from the bearing surface, also serves as a reservoir for the PTFE-lead mixture.

3.Bronze backing, gives exceptionally high load carrying capacity, excellent heat dissipation. Have very good corrosion resistance.



Features

Suitable for dry running, low coefficient of friction, lower wear, good sliding characteristics, forming a transfer film can protect the mating metal surface, suitable for rotary and oscillating movement. Very high chemical resistance, low absorption of water and swelling. Also performs well with lubrication. Bronze backing provides improved corrosion resistance compared with CSB-10.

Tech. Data

Max. Load	Static	250N/mm^2	Friction coefficient		0.03~0.20
	Very low speed	140N/mm^2	Max. speed	Dry running	2m/s
	Rotating oscillating	60N/mm^2		Hydrodynamic operation	>2m/s
Max. PV dry running	Short-term operation	3.6N/mm^2*m/s	Thermal conductivity		70W(m*K)$^{-1}$
	Continuous operation	1.8N/mm^2*m/s	Coefficient of thermal expansion		17*10^{-6}*K^{-1}
Temp. limit		-195℃~+280℃			

Typical Application

Can meet the demanding criteria for long life and trouble-free performance with or without lubricant, of high safety factor even...

Same as the CSB-10 BUSHING, But especially for high chemical resistance request.

Steel metallurgy industry such as bushes for roller grooves of successive casting machines, cement grouting pumps and screw conveyers for cement, it can also be composed in steel housing or fabricated into flanged bushes which can move both in radial and in axial directions.

The bearings are particularly appropriate for high temperature environment where no oil is efficient and the machine must be under successive long period working condition.

CSB-30 Stainless steel bronze powder with PTFE dry bearings

Dimensions of Standard Products See P55~57

Without Pb

Features

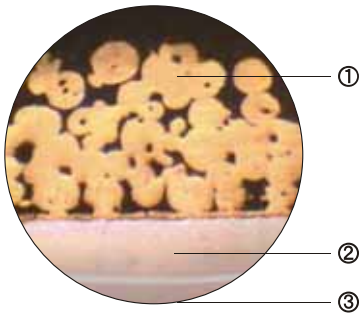
Suitable for dry running, low coefficient of friction, lower wear, good sliding characteristics, forming a transfer film can protect the mating metal surface, suitable for rotary and oscillating movement. Very high chemical resistance, low absorption of water and swelling. Also performs well with lubrication. Stainless steel backing provides improved corrosion resistance compared with CSB-10/11.

Structure

1.PTFE、 polymer fibres mixture 0.01~0.03mm, lead-free provides an excellent initial transfer film, which effectively coats the mating surface of the bearing assembly, forming an oxide type solid lubricant film.

2.Sintered bronze powder 0.20-0.35mm, provides max. thermal conductivity away from the bearing surface, also serves as a reservoir for the PTFE mixture.

3.Stainless steel backing, provides high load carrying capacity, very high level of resistance in corrosive environments.



Tech. Data

Max. Load	Static	250N/mm^2
	Very low speed	140N/mm^2
	Rotating oscillating	60N/mm^2
Max. PV dry running	Short-term operation	3.6N/mm^2*m/s
	Continuous operation	1.8N/mm^2*m/s
PV max. hydrodynamic		30N/mm^2*m/s

Temp. limit		-195°C~+280°C
Max. speed	Dry running	2m/s
	Hydrodynamic operation	>2m/s
Thermal conductivity		42 W(m*K)$^{-1}$
Coefficient of thermal expansion		15*10^{-6}*K^{-1}
Friction coefficient	Dry	0.08~0.20
	Hydrodynamic	0.02~0.08

Typical Application

The high level of resistance in corrosion environment provides good application for chemical industry like chemical valve, chemical pump, flow meter, food industry, medicine industry, seawater/water lubrication parts etc.

CSB-40 Steel bronze powder with PTFE/fibre dry bearings

Dimensions of Standard Products See P58~61

Features

Suitable for dry running, low coefficient of friction, lower wear, good sliding characteristics, forming a transfer film can protect the mating metal surface, suitable for rotary and oscillating movement. High chemical resistance, low absorption of water and swelling. The CSB-40 improved the friction and much good wear resistance over the common CSB-10 under lubricated operation.

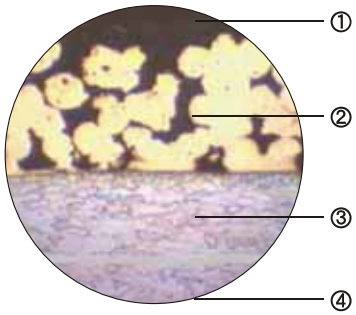
Structure

1.PTFE、 polymer fibres mixture 0.01~0.03mm,lead-free provides an excellent initial transfer film, which effectively coats the mating surface of the bearing assembly, forming an oxide type solid lubricant film.

2.Sintered bronze powder 0.20-0.35mm, provides max. thermal conductivity away from the bearing surface, also serves as a reservoir for the PTFE mixture.

3.Steel backing, provides high load carrying capacity, excellent heat dissipation.

4.Copper/Tin plating 0.002mm, provides good corrosion resistance.



Tech. Data

Max. Load	Static	250N/mm^2	Temp. limit		-195°C~+280°C
	Very low speed	140N/mm^2	Max. speed	Dry running	2m/s
	Rotating oscillating	60N/mm^2		Hydrodynamic operation	>2m/s
Max. PV dry running	Short-term operation	3.6N/mm^2*m/s	Thermal conductivity		42 W(m*K)$^{-1}$
	Continuous operation	1.8N/mm^2*m/s	Coefficient of thermal expansion		11*10^{-6}*K^{-1}
PV max. hydrodynamic		30N/mm^2*m/s	Friction coefficient	Dry	0.08~0.20
				Hydrodynamic	0.02~0.08

Typical Application

Developed for high duty, oil lubricated, hydraulic applications...

Automotive suspension struts, shock absorbers guide bushing, hydraulic cylinders, gear pumps and motors and axial and radial piston pumps and motors. CSB-40 is designed for use mainly under lubricated lubrications and shows excellent wear resistance, low static and dynamic friction coefficient.

CSB-20 Steel bronze powder with POM marginal bearings

Dimensions of Standard Products See P62~66

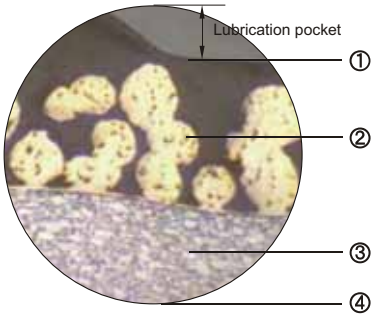
Structure

1.POM 0.30~0.50mm, has high wear resistance and low friction even only minute quantities of lubricant are supplied, this bearing surface carries a pattern of circular indents which should be filled with grease on assembly of the bearing.

2.Sintered bronze powder 0.20-0.35mm, provides max. thermal conductivity away from the bearing surface, also serves as a reservoir for the resin mixture.

3.Low-carbon steel, gives exceptionally high load carrying capacity, excellent heat dissipation.

4.Copper plating 0.002mm, good corrosion resistance.



Features

Suitable for rotary and oscillating movement, lower maintenance requirements due to the long re-lubrication intervals, lower wear, lower susceptibility to edge loading, no absorption of water and therefore no swelling, good damping behaviours, good resistance to shock loads.

Tech. Data

Max. Load	Static	250N/mm^2	Temp. limit		-40°C~+110°C
	Very low speed	140N/mm^2	Max. speed	Pre-lubricated	2m/s
	Rotating oscillating	70N/mm^2		Oiling Grease continuous	>2m/s
Max. PV		3N/mm^2*m/s	Thermal conductivity		4 W(m*K)$^{-1}$
Coefficient of thermal expansion		11*10^{-6}*K^{-1}	Friction coefficient		0.05~0.20
Initial pre-lubrication at assembly required...					

Typical Application

Recommended for applications involving intermittent operation or boundary lubrication...

Automotive: suspension joints, kingpin assemblies and stub axles of tucks, automobile driving joint hinges, steering and other linkages, articulation joints, rear chassis hinges, fair leader rollers...

Machine tool building industry: spindles in drill, grinding, and milling machines, ram guide plates in multiram presses...

Agricultural equipment: gearbox, clutch, bale trips and wheel caster swivels for bale accumulators, front axle pivot bearings, steering idler box bearings and kingpin bearings for harvesters...

Be especially well-suited for applications where lubricant can not be supplied continuously or repeatedly.

CSB-22 Steel bronze powder with PVDF marginal bearings

Dimensions of Standard Products See P67~69

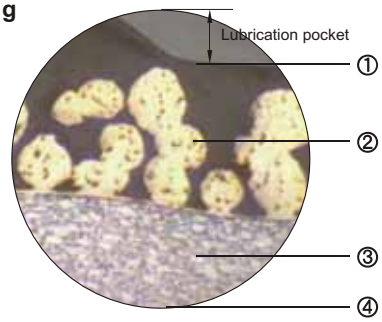
Structure

1.PVDF/PTFE 0.30~0.50mm, has high wear resistance and low friction even only minute quantities of lubricant are supplied, this bearing surface carries a pattern of circular indents which should be filled with grease on assembly of the bearing.

2.Sintered bronze powder 0.20-0.35mm, provides max. thermal conductivity away from the bearing surface, also serves as a reservoir for the resin mixture.

3.Low-carbon steel, gives exceptionally high load carrying capacity, excellent heat dissipation.

4.Copper plating 0.002mm, good corrosion resistance.



Features

The special resin supply with excellent wear resistance and very lower friction, can be keep good work condition even no oil giving. This material can be produce as CSB-20 with the oil pocket for oil/grease containing. To get much high tolerance of the ID, the resin surface can be machine again after the bushes fitting. The applications including metallurgy machines, ming machines, irrigation work, automotive industries, agriculture machines.

Tech. Data

Max. Load	Static	250N/mm^2	Temp. limit		-50°C~+160°C
	Very low speed	140N/mm^2	Max. speed	Pre-lubricated	2m/s
	Rotating oscillating	70N/mm^2		Oiling Grease continuous	>3m/s
Max. PV		3.6N/mm^2*m/s	Thermal conductivity		4 W(m*K)$^{-1}$
Coefficient of thermal expansion		11*10^{-6}*K^{-1}	Friction coefficient		0.03~0.20
Initial pre-lubrication at assembly required...					

Typical Application

Recommended for applications involving intermittent operation or boundary lubrication...

Automotive: suspension joints, kingpin assemblies and stub axles of tucks, automobile driving joint hinges, steering and other linkages, articulation joints, rear chassis hinges, fair leader rollers...

Machine tool building industry: spindles in drill, grinding, and milling machines, ram guide plates in multiram presses...

Agricultural equipment: gearbox, clutch, bale trips and wheel caster swivels for bale accumulators, front axle pivot bearings, steering idler box bearings and kingpin bearings for harvesters...

Be especially well-suited for applications where lubricant can not be supplied continuously or repeatedly.

CSB-80 Steel bronze powder with PEEK/PTFE marginal bearings

Dimensions of Standard Products See P70~72

Features

1. CSB-80 provides maintenance-free operation
2. Operate satisfactorily without lubrication under light duty and low speed
3. CSB-80 has a high PV capability under high temperature
4. Temperature be allowance from -150℃~+250℃
5. Good chemical resistance
6. High static and dynamic load capacity
7. No water absorption
8. Suitable for rotating, oscillating, reciprocating and sliding movement.

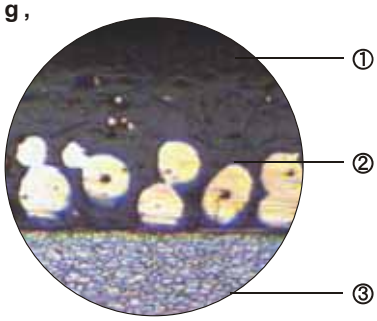
Structure

1.PEEK+PTFE 0.30~0.50mm, gives high wear resistance and low friction even only minute quantities of lubricant are supplied. This bearing surface carries a pattern of circular indents which should be filled with grease on assembly of the bearing.

2.Bronze layer 0.20~0.35mm, provides max. thermal conductivity away from the bearing surface, also serves as a reservoir for the PTFE/PEEK mixture.

3.Steel backing, provides mechanical strength and high load carrying capacity.

4.Copper/Tin plating 0.002mm, provides good corrosion resistance.



Tech. Data

Max. Load	Static	250N/mm^2		Friction coefficient		0.03~0.20
	Very low speed	140N/mm^2		Max. speed	Pre-lubricated	2m/s
	Rotating oscillating	60N/mm^2			Oiling Grease continuous	>2m/s
Max. PV	Short-term operation	3.6N/mm^2*m/s		Thermal conductivity		50 W(m*K)$^{-1}$
	Continuous operation	1.8N/mm^2*m/s		Coefficient of thermal expansion		11*10^{-6}*K^{-1}
Temp. limit		-150℃~+250℃				

CSB-80 is a composite bearing material, developed specifically to operate with marginal lubrication and consists of three bonded layers. It is designed for marginally lubricated operation, and is capable of operating continuously within -150℃~+250℃, and short time up to +300℃. Better for high load, high temperature and low speed with heavy load condition.

CSB-12/32 2 layer dry bearings

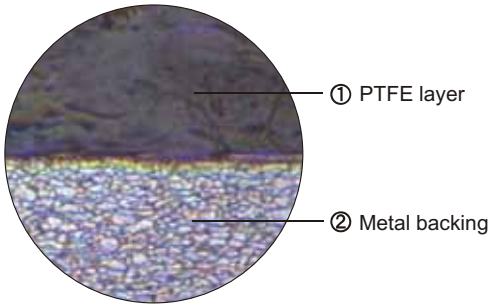
Structure

CSB-12 consists of a steel shell, laminated with compounded PTFE tape. This material structure enables the final goods have more light. It is widely used like automotive door hinges, trunk hinges, engines cover hinges , bicycle pedal and office machines etc which need dry lubrications.

CSB-32 is same as CSB-12, but with stainless steel backing which provides good corrosion resistance. It is widely been used in chemical industries, medical industries, food industries etc.

Features

This material structure enables the final goods have more light and easy installation. Suitable for dry running, low coefficient of friction, lower wear, good sliding characteristics, forming a transfer film can protect the mating metal surface, suitable for rotary, directing and oscillating movement. It is widely been used in chemical industries, medical industries, food industries, textile machines, OA machines, door/window hinges etc.



Tech. Data

Standard Thick. mm	Backing Material	
	CSB-12	CSB-32
	Carbon steel	Stainless steel
0.50	*	
0.75	*	*
1.00	*	*
1.50	*	

Max. Load	Static	120N/mm^2
	Dynamic	80N/mm^2
Max. Seepd	Dry	1m/s
	Oil	＞1m/s
Temp.		-195℃~+180℃
Friction coefficient		0.03~0.20

CSB-FR/3S Metal mesh with PTFE layer

Structure

CSB-FR consist of a metal mesh shell, laminated with compounded PTFE tape. This material structure enables the final goods have more light and easy for install. It is widely been used in chemical industries, medical industries, food industries, textile machines, OA machines, door/window hinges etc. we can supply Bronze mesh (CSB-FRB), stainless steel mesh (CSB-FRS) as the backing material.

Structure

CSB-3S consists of a stainless steel mesh shell laminated with compounded PTFE tape. This material structure enables the final goods have more light. The stainless steel provides good corrosion resistance. It is widely been used in chemical industries like chemical valves, medical industries, food industries etc.

CSB-FD Bronze powder with PTFE tape

Structure

CSB-FD consist of PTFE with bronze powder and additive material, this material structure enable the final goods have more light and easy for install. It is widely been used in chemical industries, medical industries, fluid hydraulic industries, textile machines, OA machines, door/window hinges etc.

CSB-TEX Steel with PTFE fibre fabric

Dimensions as CSB-20 standard size

Structure

This new material use the PTFE fibres fabric overlay on metal backings, the fabric have very high load capacity and much longer operating life compare with conventional 3-layer bushes. The metal can be carbon steel (CSB-TEX), stainless steel (CSB-TEX3), bronze (CSB-TEXB) etc.

Features

Suitable for rotary and oscillating movement, lower maintenance requirements due to the long re-lubrication intervals, lower wear, lower susceptibility to edge loading, no absorption of water and therefore no swelling, good damping behaviours, good resistance to shock loads. much long service life under lower speed with high load.

Tech. Data

Max. Load	Static	350N/mm^2		Temp.	-50℃~+250℃
	Dynamic	180N/mm^2		Friction coefficient	0.03~0.20
Max. Speed	Dry	0.5m/s		Thermal conductivity	42W(m*k)$^{-1}$
	Grease	＞1m/s			
Max. PV (Dry)	Short-term	3.6N/mm^2*m/s		Coefficient of thermal expansion	11*10^{-6}k^{-1}
	Continuous	1.8N/mm^2*m/s			

Typical Application

Now have been used like suspension and auxiliary of agriculture and construction machines, cranes and hydraulic and mechanical jibs, ball butterfly and sluice valves, water pumps, chemical industries etc.

CSB650 Cast bronze with graphite oilless bearings

Dimensions of Standard Products See P73~78

Structure

650# material is made of strong cast bronze based metal with special solid lubricants embedded. The base metal withstands high load and the solid lubricants provide for self-lubrication. The bearing shows excellent performance without pre-lubrication under conditions of extreme high/lower temperature with low speed.

This material provides a maintenance-free bearing solution, particularly for high load, intermittent of oscillating motion.

Features

1. May work without any oil for long period
2. Extremely high load capacity, good anti-wear and lower friction
3. Particularly appropriate for low speed and high load
4. Suitable for reciprocating, oscillation or intermittent motion where oil film is hard to be formed
5. Good chemical resistant and anti-corrosion characteristics
6. Can be used in wide range of temperature from -40℃ ~+300℃

Typical Application

This kind of bearing can be applied under dry, high temperature, high pressure, corrosive, water or other chemical environments when no oil can be introduced. Now is widely be used in automotive products line, water engineering, dam gate, plastic industries, successive casting machines, steel rollers in metallurgy industry, mineral machines, ships, turbo generators, hydraulic turbines and injection molding machines...

CSB650 Cast bronze with graphite oilless bearings

Main metal type

CSB Standard	650# Strong cast bronze	650S1 Copper alloy	650S2 Copper alloy	650S3 Copper alloy	650S5 Special strong cast bronze
Cu%	65	85	80	88	65
Sn%		5		12	
Pb%		5			
Zn%	25	5			25
Ni%			5		
Al%	6		10		6
Fe%			5		
Mn%	4				4
Density	8.0	8.8	7.6	8.8	8.0
Hardness HB	>210	>70	>150	>80	>250
Tensile strength N/mm^2	>750	>200	>500	>270	>800
Elongation%	>12	>15	>10	>8	>4
Coefficient of linear expansion	$1.9*10^{-5}/℃$	$1.8*10^{-5}/℃$	$1.6*10^{-5}/℃$	$1.8*10^{-5}/℃$	$1.9*10^{-5}/℃$
Friction coefficient	0.03~0.20	0.03~0.18	0.03~0.20	0.03~0.18	0.03~0.20
Thermal conductivity	60 $W(m*K)^{-1}$	60 $W(m*K)^{-1}$	60 $W(m*K)^{-1}$	60 $W(m*K)^{-1}$	60 $W(m*K)^{-1}$
Limit Temp.	300℃	400℃	400℃	400℃	300℃
Max. load N/mm^2	100	60	50	70	150
Max. speed m/min	15	10	20	10	10
Max. PV $N/mm^{2}*m/min$	200	200	200	200	200

For special heavy load application, CSB also can supply the strong cast bronze of special high hardness 650HP. The material can be up to HB270~300.

Solid Lubricants

Lubricant	Features	Typical application
SL1 Graphite+add	Excellent resistance against chemical attacks and low friction. Temp limit 400℃	Suite for general machines and under atmosphere
SL4 PTFE+MOS_2	Lower in friction and good for water lubrication, Temp. limit 300℃	Suite for water/sea lubrication, like ship, hydraulic turbine, gas turbine etc.

CSB600 Solid bronze turned bearings

Structure

Machined Cast bronze bearings offer technically and economically favourable bearings solutions. High loading capability, low weight, good corrosion resistance. CSB can offered different type bronze alloys according to the life time, service etc. The tolerance is much tighter than wrapped bronze bushes.

Oil groove

Tech. Data

Material		600	600S1	600S2	600S3	600S4	600S5	600S6
Composition %	Cu	65	85	80	88	80	65	76
	Sn		5		12	10		8
	Pb		5			10		15
	Zn	25	5				25	
	Ni			5				1
	Al	6		10			6	
	Fe			5				
	Mn	4					4	
Density		8.0	8.8	7.6	8.8	8.9	8.0	9.1
Yield point N/mm^2		＞350	＞90	＞260	＞150	＞100	＞450	＞80
Tensile strength N/mm^2		＞750	＞200	＞500	＞270	＞210	＞800	＞180
Elongation %		＞12	＞15	＞10	＞5	＞8	＞4	＞8
Hardness HB		＞210	＞70	＞150	＞80	＞75	＞250	＞60

CSB250 Cast iron with graphite oilless bearings

Dimensions of Standard Products See P79~82

Structure

250# material is made of cast iron based metal with special lubricants embedded. The base metal withstands high load and the solid lubricants provide for self-lubrication. The bearing shows excellent performance without pre-lubrication under conditions of extreme high/lower temperature with lower speed.

Features

This material provides a maintenance-free bearing solution, particularly for high load, intermittent of oscillating motion. Solid lubricants within cast iron combines the high load with the wear resistance and low friction. The application including automotive products line, mold & die, plastic industries etc.

Tech. Data

Max. Load	Static	70N/mm^2		Tensile strength	150N/mm^2
	Dynamic	10N/mm^2		Temp.	-40℃~+400℃
Max. Speed	Dry	0.15m/s		Friction coefficient	0.08~0.20
	Hydrodynamic	0.25m/s		Hardness	HB＞160
Max. PV		0.8N/mm^2*m/s			

Typical Application

This type products can be widely used under high temperature and high load with low speed conditions. like kind of mould, machinery assembly line, automotive assembly line, automotive mold, steel miller, plastic industries and so on.

CSB200 Hard steel with special treatment slide bearings

Structure

Carbon steel machined slide bearings, the oil groove can be produced according to the bearing work condition if needed. The bushes have been treated by special techniques have high load capacity with lower friction and excellent wear resistance.

Features

High load capacity over 150N/mm^2, Suitable for rotary and oscillating movement, lower maintenance requirements due to long re-lubrication intervals, excellent wear resistance under high load with lower speed. Good resistance to shock loads, good characteristics when operating in the presence of abrasive media or dirty environment.Initial pre-lubrication at assembly required.We can supply the parts as your detail drawings.

Tech. Data

Max. Load	Static	250N/mm^2		Hardness	HRC＞50
	Dynamic	150N/mm^2		Elongation	15%
Max. Speed		0.6m/s		Temp.	-100℃~+200℃
Max. PV		1.2N/mm^2*m/s		Friction coefficient	0.05~0.25
Tensile strength		400N/mm^2		Thermal conductivity	60W(m*k)$^{-1}$
Yield point		300N/mm^2		Coef. of thermal expansion	15*10^{-6}k^{-1}

Typical Application

This type of bushing is widely applied in hoisting machines and other construction machines, automobiles, tractors, trucks, machines tools and some mineral engines, agriculture machines ,refuse truck, plastic machines, steel industries etc.

CSB-090(FB090) Bronze wrapped bearings

Dimensions of Standard Products See P83~86

Structure

The bearings are wrapped of a cold formable homogenous bronze (CuSn8), which will obtain exceptional material properties. The standard size are fitted with diamond shaped lubrication indents on the bearing surface. These indents serve as lubricant reservoirs to rapidly build up a lubrication film in the start movement and therewith reduce the start friction. The material suitable for constructions, agriculture etc where high load and slow movement are occurring.

Chemical compositions

Material type	Cu%	Sn%	P%	Pb%	Zn%
CSB-090	91.3	8.5	0.2	/	/

Tech. Data

Max. Load	Static	120N/mm^2	Hardness	HB 110-150
	Dynamic	40N/mm^2	Elongation	40%
Max. Speed		2m/s	Temp.	-100℃~+200℃
Max. PV		2.8N/mm^2*m/s	Friction coefficient	0.08~0.25
Tensile strength		450N/mm^2	Thermal conductivity	60W(m*k)$^{-1}$
Yield point		250N/mm^2	Coef. of thermal expansion	15*10^{-6}k^{-1}

Feature

1. Easy of fitting and lubrication
2. High load capacity
3. Possibility of producing items, inner side can be machined
4. High level thermal conductivity
5. Minimum overall dimensions
6. Chemical resistance

Initial pre-lubrication at assembly required...

Typical Application

This type of bushing is widely applied in hoisting machines and other construction machines, automobiles, tractors, trucks, machines tools and some mineral engines. It can be fabricated into bushes, half bearings, flanged bushes, trust washers, spherical bearing so on.

CSB-09G(FB09G) Bronze with graphite wrapped bearings

Dimensions of Standard Products as CSB-090

Structure

The same produce process and application as CSB-090 type material except overlay the solid lubricants into the diamond shaped lubrication indents on the bearing surface, which will offer good friction at the start and process works and keep good condition even no oil giving at short time. So can be used in construction machines, gears, automotive clutch parts etc.

Chemical compositions

Material type	Cu%	Sn%	P%	Pb%	Zn%
CSB-09G	91.3	8.5	0.2	/	/

Tech. Data

Max. Load	Static	120N/mm^2	Hardness	HB＞110
	Dynamic	40N/mm^2	Elongation	40%
Max. Speed		2.5m/s	Temp.	-100℃~+200℃
Max. PV		2.8N/mm^2*m/s	Friction coefficient	0.05~0.25
Tensile strength		450N/mm^2	Thermal conductivity	60W(m*k)$^{-1}$
Yield point		250N/mm^2	Coef. of thermal expansion	15*10^{-6}k^{-1}

Feature

1. Easy of fitting and lubrication
2. High load capacity
3. Excellent wear resistance with lower friction
4. High level thermal conductivity
5. Minimum overall dimensions
6. Chemical resistance
7. Can be worked under dry/marginal lubrication at short time, have much lower friction factor at initial moving

Initial pre-lubrication at assembly required...

Typical Application

This type of bushing is widely applied in hoisting machines and other construction machines, automobiles, tractors, trucks, machines tools and some mineral engines.

CSB-T90(FT090) Bronze wrapped bearings with through holes

Dimensions of Standard Products See P87~90

Structure

CSB-T90 derive from CSB-090 bearings, but with the difference that the indentations on the sliding surface are replaced by through-holes which have a greater capacity to collect the lubricant compared with the indentations. These indents serve as lubricant reservoirs to rapidly build up a lubrication film in the start movement and therewith reduce the start friction. The material suitable for constructions, agriculture etc where high load and slow movement are occurring.

The bearing surface of the CSB-T90 should be reduced by 15% in consideration of the through-holes.

Chemical compositions

Material type	Cu%	Sn%	P%	Pb%	Zn%
CSB-T90	91.3	8.5	0.2	/	/

Tech. Data

Max. Load	Static	120N/mm^2	Hardness	HB 110-150
	Dynamic	40N/mm^2	Elongation	40%
Max. Speed		2.5m/s	Temp.	-100℃~+200℃
Max. PV		2.8N/mm^2*m/s	Friction coefficient	0.08~0.25
Tensile strength		450N/mm^2	Thermal conductivity	60W(m*k)$^{-1}$
Yield point		250N/mm^2	Coef. of thermal expansion	15*10^{-6}k^{-1}

Features

1. Easy of fitting and lubrication
2. High load capacity
3. Excellent wear resistance with lower friction
4. High level thermal conductivity
5. Minimum overall dimensions
6. Chemical resistance
7. Extended service life and lubrication intervals than normal CSB-090 type bearings
8. Free choice of lubricant
9. Collection of dust and rub off particles in the holes

Initial pre-lubrication at assembly required...

Typical Application

This type of bushing is widely applied in hoisting machines and other construction machines, automobiles, tractors, trucks, machines tools and some mineral engines. It can be fabricated into bushes, half bearings, flanged bushes, trust washers, spherical bearing so on.

CSB850S Metal backed with bronze alloy graphite oilless bearings

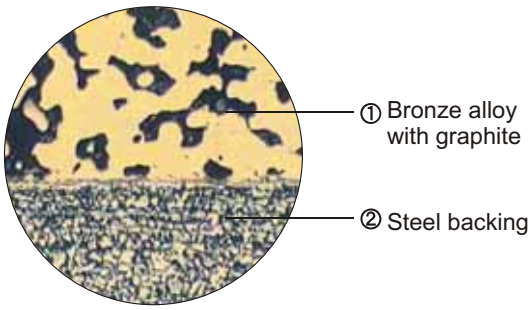
Dimensions of Standard Products See P91~96

Structure

CSB850S is a composite multi-layer bearing composed of special sintered material used as sliding surfaces and steel material as backing metal. Sintered layers are of a special copper-nickel alloy containing uniformly dispersed solid lubricant, the main component of which is graphite. The solid lubricants will be released at the bearing surface as wear occurs, this will ensure have lower coefficient of friction during operation. In addition, these sintered layers have been processed by the oil impregnation treatment.

Features

Pertinence for motions of any direction due to solid lubricant dispersed evenly, with high performance even for very small motions. Apply for self-lubrication work condition, to aid lower start friction, we recommend to pre-lubricated if possible. Oiling would be drastically reduced. Very good load capacity with good wear resistance and lower friction, can be machined again after the parts fixed to get much high tolerance.



Tech. Data

Max. Load	Static	150N/mm^2		Temp.	-150℃~+250℃
	Dynamic	100N/mm^2		Friction coefficient	0.1~0.30
Max. Speed	Dry	0.5m/s		Alloy hardness	>45HB
	Lubrication	＞1m/s			
Max. PV	Dry	1.5N/mm^2*m/s		Coefficient of thermal expansion	14*10^{-6}k^{-1}
	Lubrication	2.5N/mm^2*m/s			

Typical Application

This material have been widely used in high load with lower friction and good wear resistance requested mechanical parts which oil given is difficulty. like automotive Die wear plate, industrial robots, injection wear plate, injection Tie-bar bushes, construction machines self-lubricating bearings etc.

CSB850BM Metal backed with bronze graphite oilless bearings

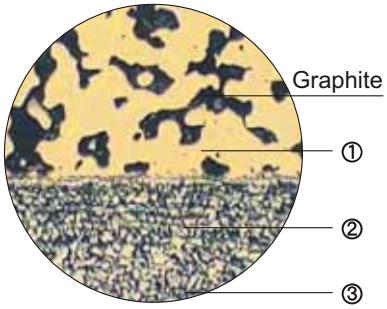
Dimensions of Standard Products See P97~100

Structure

1.Sinter bronze powder with graphite: good wear resistance with lower friction and excellent load carrying capacity. Can be machined after fitting to get precision tolerance. CSB also can supply the bearings with PTFE or graphite sprayed layer on the work surface to get much lower start friction.

2. Metal backing: gives exceptionally high load carrying capacity, excellent heat dissipation.

3.Copper plating 0.002mm, good corrosion resistance.



Features

CSB850BM metal backed bronze with graphite lined bearing materials, sintered layers are of special copper alloy containing uniformly dispersed solid lubricants. The solid lubricant will be released at the bearing surface as wear occurs. To aid the running-in process, a thin film of solid lubricant can be applied to the bearing surface. This will be ensure a consistently low coefficient of friction with total freedom from stick-slip, even from initial assembly. The inner side can be machined after the parts fixed to get high tolerance.

Final machine after assembly

CSB850BM bearings with running-in film are pre-finished and should not e machined. In the event of damage during assembly, the spray material can be available for on-site repair.

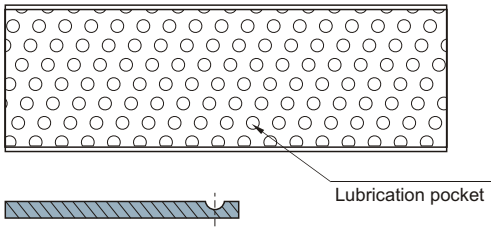
The standard CSB850BM bearings can be manufactured, these material supplied without a running-in film, can be applied after final machining. The machined layer can not be exceed the sintered layer.

CSB850BM Metal backed with bronze graphite oilless bearings

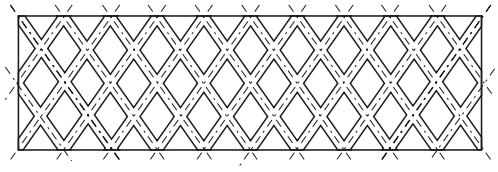
Tech. Data					
CSB standard material		CSB850BM1	CSB850BM2	CSB850BM3	CSB850BM4
Backing Metal		steel	steel	stainless steel	Bronze
Lining layer	Composition	CuSn12+Gr	CuSn12Pb2+Gr	CuSn12+Gr	CuSn12+Gr
	Solid Lubricants	6%	10%	6%	6%
	Hardness	＞40HB	＞40HB	＞40HB	＞40HB
	Compressive strength	300N/mm^2	300N/mm^2	300N/mm^2	300N/mm^2
Max. Load	Static	150N/mm^2	120N/mm^2	150N/mm^2	150N/mm^2
	Dynamic	100N/mm^2	80N/mm^2	100N/mm^2	100N/mm^2
Max. Speed		0.5m/s	0.5m/s	0.5m/s	0.5m/s
Max. PV		1.5	1.5	1.5	1.5
Friction coefficient		0.1~0.3	0.06~0.3	0.1~0.3	0.1~0.3
Temp.℃		-150~+250	-150~+250	-150~+250	-150~+250

Bearing surface

The standard bearings we supply as plain surface, also we supply with cleaning grooves for small angular movements or in the presence of abrasive media or dirt, and indented surface for grease lubricated applications.



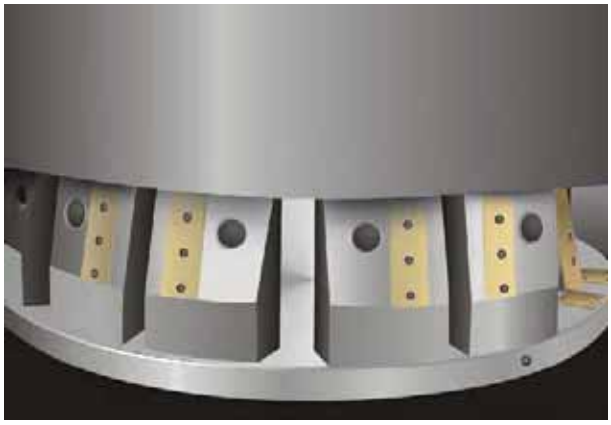
Indented surface for grease lubricated applications.



Cleaning grooves for small angular movements or in the presence of abrasive media or dirt.

Typical Application

The special structure of the material suitable for hostile environments, for high load application which lubrication is difficult. Now CSB850BM has been widely used in water turbines, vane controls, injection molding machinery, packing machines, construction equipment, tire moulds, paper production machinery, furnace expansion plates, automotive transmission, heavy lifting chain linkage, food production equipment etc.



CSB-800 Steel with bronze powder bimetal bearings

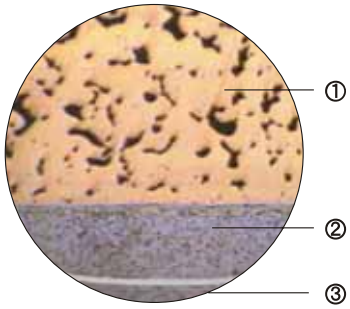
Dimensions of Standard Products See P101~104

Structure

1.Sinter bronze powder: good wear resistance and excellent load carrying capacity.

2. Steel backing: gives exceptionally high load carrying capacity, excellent heat dissipation.

3.Copper plating 0.002mm, good corrosion resistance.



Features

Steel backed lead bronze lined bearing material for lubricated applications, high load capacity and good fatigue properties, have been widely used in automotive, common industrial like steering gear, power steering, pedal bushes, king-pin bushes, tailgate pivots, mechanical handling, lifting equipment, hydraulic motors, agricultural machines etc.

Chemical compositions

Material	Alloy composition	International standard	Alloy Hardness
CSB-800	CuPb10Sn10	JIS-LBC3/SAE-797	HB70-100
CSB-720	CuPb24Sn4	JIS-LBC6/SAE-799	HB45-70
CSB-700	CuPb30	JIS-KJ3/SAE-48	HB30-45
CSB-J20	AlSn20Cu	JIS-AJL/SAE-783	HB30-40

Tech. Data

Max. Load	Static	120N/mm^2		Yield Point	240N/mm^2
	Dynamic	60N/mm^2		Temp.	-40℃~+250℃
Max. Speed		2m/s		Friction coefficient	0.08~0.20
Max. PV		2.8N/mm^2*m/s		Thermal conductivity	60W(m*k)$^{-1}$
Breaking Load		350N/mm^2		Coef. of thermal expansion	14*10^{-6}k^{-1}

CSB450 Steel with bronze high precision bearings

Dimensions of Standard Products See P105~106

Structure

CSB450 is the Steel backed bronze alloy lined bearing material, the work surface can be produced the oil groove if requested which can improve the oil giving system. Characteristic compare with the traditional steel bushes this structure provides the material have lower friction, excellent wear resistance, higher temp. can bear etc. . Now the bearings have been succeed in the high speed mold & Die industries.

Structure

CSB450G the steel backed bronze alloy lined with solid lubricants for high load capacity and high speed application like the high speed press die etc. As the solid lubricants, so the bearing can be maintenance-free.

CSB452G Iron cast backed with solid lubricant bearing material, suit for high load capacity and high speed application like the high speed press die etc. This material provides good delivery and lower cost compare with CSB450G.

Tech. Data

CSB Standard	CSB450	CSB450G	CSB452G
tæSI e	⩾45HRC	⩾45HRC	Cast iron ⩾160HB
Bronze alloy	⩾80HB	⩾80HB	
Max. Static load	50N/mm^2	50N/mm^2	50N/mm^2
Max. Dynamic load	30N/mm^2	30N/mm^2	30N/mm^2
Max. Speed	1.2m/s	2m/s	1.5m/s
Max. PV	1.2N/mm^2*m/s	1.8N/mm^2*m/s	1.5N/mm^2*m/s
Friction coefficient	0.05~+0.20	0.03~+0.15	0.03~+0.15
Temp. (℃)	-50~+250	-50~+250	-50~+250

CSB-SNF Powder sintered bearings

Structure

The base material for sintered parts such as sliding bearings or other formed parts are iron, bronze, iron with bronze and other metal in powder form. This powder is formed under high pressure in dies into a temperature which is just below the melting point. According to the work condition, the bearings can impregnated different oil or solid lubricants for the self-lubricating.

Sintered self-lubricating bearings are the ideal and economical solution for applications where lubrication is difficult or can not be given.

Features

1. Good wear resistance with lower friction
2. Lower maintenance requirement
3. Lower the material cost for large production
4. High speed with lower noise
5. Can be machined again after installation if possible
6. Can produced different structure as special request

Tolerance

Inside Diameter ID: F7

Outside Diameter OD: r7

Flange Diameter: js13

Flange Thickness: js13

Length: js13

Main material supply

Material type	Chemical compositions							Mechanical Properties			
	Fe	C	Cu	Sn	Zn	Pb	others	Density g/cm^3	Oil %	Pressure stress kgf/mm^2	HB
SNF-11	＜0.5	0.5~2.0	Remain	5~7	5~7	2~4	＜1.5	6.4	≥18	＞15	20~50
SNF-12	＜0.5	0.5~2.0	Remain	5~7	5~7	2~4	＜1.5	6.8	≥12	＞20	30~60
SNF-21	＜0.5	0.5~2.0	Remain	8~11	—	—	＜1.0	6.0	≥25	＞15	25~55
SNF-22	＜0.5	0.5~2.0	Remain	8~11	—	—	＜1.0	6.4	≥18	＞20	35~65
SNF-31	Remain	—	18~22	—	—	—	＜3	6.0	≥18	＞30	30~60
SNF-32	Remain	—	18~22	—	—	—	＜3	6.4	≥12	＞35	40~70
SNF-41	Remain	＜1.0	—	—	—	—	＜3	6.0	≥18	＞15	30~60
SNF-42	Remain	＜1.0	—	—	—	—	＜3	6.4	≥12	＞20	40~70
SNF-51	Remain	0.25~0.6	70~90				＜3	6.4	≥18	＞30	30~60
SNF-52	Remain	0.25~0.6	50~70				＜3	6.8	≥12	＞25	40~70

JOCU Oilless unit parts

Dimensions of Standard Products See P107~109

This JOCU unit allows smooth removal of various core blocks at the desired angle with completely no lubrication. The CAM can be supply as special request.

The other materials

CSB-EP Plastic compound bearings

Dimensions of Standard Products See P111~114

Structure

New economic self-lubricating bearings made by kinds of resin with additive fibre as base material produced by injection molding machines. The application for high load with lower speed and lower friction request, like automotive industries, lift machineries, copier, OA machines, sports machines, food industries, chemical machines etc. compare with the metal bushes, the weight and cost is much lower. Suite for large production with low cost and short delivery time.

Features

1. Design for dry and maintenance-free
2. Lower friction, excellent wear resistance
3. Higher load capacity
4. Excellent chemical resistance
5. Lower moisture absorption
6. Thin wall thickness design, reduce the space and weight
7. Can reduced cost when mass production
8. No special request for matting material

Material selection

The user can select the bearing by temp. of work environment, wear resistance request, moving method, installation method, the cos of the material etc. Normally the temp., load and PV value should be firstly consideration. We recommend design lower PV value will leads to longer service life. Please select the correct one refer the attached material table.

Bearing Installation

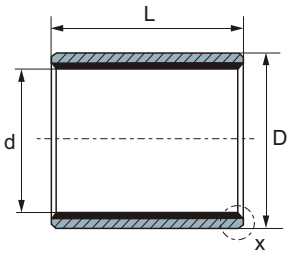
we recommend the housing as H7 and the shaft as h9. The ID shown in the size table is after fitting in the ring gauge(± 0.002mm). The bearing, housing and fitting tools must be kept clean during fitting. To make the fit easy should be have the chamfer on the housing and shaft, if possible the pre-lubrication is much better for getting lower start friction.

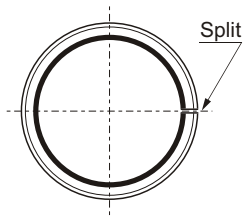
CSB-EP Main materials supply

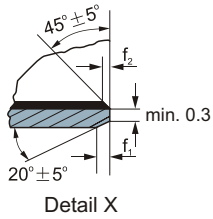
Designation	Test method	Unit	CSB-EP	CSB-EP1	CSB-EP2	CSB-EP3
Basic features			Normal	Special	Economic	Improved
Common capability						
Density	ISO1183	g/cm^3	1.46	1.51	1.29	1.24
Dynamic friction /steel(dry)			0.05~0.20	0.08~0.20	0.07~0.20	0.08~0.20
Max. PV (dry)		$N/mm^2*m/s$	0.4	0.6	0.5	0.6
Mechanical capability						
Tensile strength	ISO527	N/mm^2	>40	>42	>45	>60
Compressive strength	ISO527	N/mm^2	>75	>70	>80	>100
E-module	ISO527	N/mm^2	>1300	>1700	>1500	>1500
Max. static pressure of the surface, 20℃		N/mm^2	>70	>70	>70	>100
Charpy notched impact strength 30℃	ISO179-2	Kj/m^2	3	3	10	11
Hardness, rockwell	ISO2039-2	HRR	108	115	111	107
Physical and thermal capaciability						
Continuous work temperature		℃	-40/+80	-40/+100	-40/+120	-40/+150
Short-time work temperature		℃	-70/+120	-70/+150	-70/+170	-70/+200
Thermal conductivity	ASTME1461	W/m.k	0.20	0.25	0.25	0.20
Linear coef. Of thermal expansion	ASTMD696	$k^{-1}.10^{-5}$	10.0	8.0	10.0	9.0
Moisture absorption RH50/23℃	ASTMD570	%	0.20	0.10	0.05	1.80
Electrically conductivity capability						
Volume resistivity	IEC60093	Ω.cm	$>10^{12}$	$>10^{14}$	$>10^{14}$	$>10^{12}$
Surface resistivity	IEC60093	Ω	$>10^{15}$	$>10^{15}$	$>10^{15}$	$>10^{12}$
Flammability	UL94		HB	V-0	V-0	V-0
Colour			Dark Grey	Red brown	Olive	Grey
Price level			2	2	1	3

CSB-EP4	CSB-EP5	CSB-EP6	CSB-EP7	CSB-EP8	CSB-EP9	CSB-EP10
Anti-corrosive	High function	Food-used	Anti-wear	Anti-water	Electric conductivity	High temperature
1.56	1.38	1.35	1.20	1.50	1.49	1.52
0.10~0.30	0.09~0.25	0.05~0.18	0.09~0.20	0.08~0.25	0.09~0.25	0.05~0.20
1.5	2.0	0.3	0.7	1.3	0.5	2.5
>60	>65	>40	>65	>60	>40	>70
>80	>120	>70	>115	>85	>80	>120
>3200	>2000	>1300	>1500	>3200	>1500	>2000
>85	>110	>70	>110	>90	>75	>110
2	5	4	13	3	3	8
118	120	108	108	117	113	121
-40/+200	-100/+250	-40/+80	-40/+150	-40/+200	-40/+100	-100/+300
-70/+240	-130/+300	-70/+120	-70/+200	-70/+240	-70/+150	-130/+400
0.30	0.20	0.20	0.20	0.30	0.20	0.40
4.0	7.0	10.0	9.0	3.0	9.5	2.5
0.04	0.10	0.30	1.80	0.03	0.10	0.50
$>10^{13}$	$>10^{7}$	$>10^{12}$	$>10^{12}$	$>10^{13}$	$<10^{2}$	$>10^{14}$
$>10^{15}$	$>10^{8}$	$>10^{15}$	$>10^{12}$	$>10^{15}$	/	$>10^{15}$
V-0	V-0	HB	V-0	V-0	V-0	V-0
Black	Black	White	Cream	Aubergine	Black	Black
4	5	1	3	4	3	6

CSB-10 Metric cylindrical bushes







Unit:mm

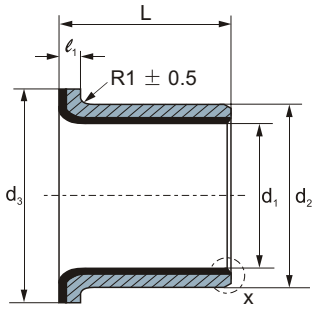
Axle	Housing H7	OD tolerance	ID after fixed	Wall thick-ness	f_1	f_2	L $^{0}_{-0.40}$ ($d \leq \phi 30$ L -0.3; $d > \phi 30$ L -0.4)										
							6	8	10	12	15	20	25	30	40	50	60
6 -0.013 -0.028	8 +0.015	8 +0.055 +0.025	5.990 6.055	0.980 1.005	0.6	0.3	CSB-10 0606	CSB-10 0608	CSB-10 0610								
8 -0.013 -0.028	10 +0.015	10 +0.055 +0.025	7.990 8.055				CSB-10 0806	CSB-10 0808	CSB-10 0810	CSB-10 0812	CSB-10 0815						
10 -0.016 -0.034	12 +0.018	12 +0.065 +0.030	9.990 10.058				CSB-10 1006	CSB-10 1008	CSB-10 1010	CSB-10 1012	CSB-10 1015	CSB-10 1020					
12 -0.016 -0.034	14 +0.018	14 +0.065 +0.030	11.990 12.058				CSB-10 1206	CSB-10 1208	CSB-10 1210	CSB-10 1212	CSB-10 1215	CSB-10 1220	CSB-10 1225				
13 -0.016 -0.034	15 +0.018	15 +.0.065 +0.030	12.990 13.058						CSB-10 1310			CSB-10 1320					
14 -0.016 -0.034	16 +0.018	16 +0.065 +0.030	13.990 14.058						CSB-10 1410	CSB-10 1412	CSB-10 1415	CSB-10 1420	CSB-10 1425				
15 -0.016 -0.034	17 +0.018	17 +0.065 +0.030	14.990 15.058						CSB-10 1510	CSB-10 1512	CSB-10 1515	CSB-10 1520	CSB-10 1525				
16 -0.016 -0.034	18 +0.018	18 +0.065 +0.030	15.990 16.058						CSB-10 1610	CSB-10 1612	CSB-10 1615	CSB-10 1620	CSB-10 1625				
17 -0.016 -0.034	19 +0.021	19 +0.075 +0.035	16.990 17.061						CSB-10 1710	CSB-10 1712		CSB-10 1720					
18 -0.016 -0.034	20 +0.021	20 +0.075 +0.035	17.990 18.061						CSB-10 1810	CSB-10 1812	CSB-10 1815	CSB-10 1820	CSB-10 1825				
20 -0.020 -0.041	23 +0.021	23 -0.075 +0.035	19.990 20.071	1.475 1.505	0.6	0.4			CSB-10 2010	CSB-10 2012	CSB-10 2015	CSB-10 2020	CSB-10 2025	CSB-10 2030			
22 -0.020 -0.041	25 +0.021	25 +0.075 +0.035	21.990 22.071						CSB-10 2210	CSB-10 2212	CSB-10 2215	CSB-10 2220	CSB-10 2225	CSB-10 2230			
24 -0.020 -0.041	27 +0.021	27 +0.075 +0.035	23.990 24.071								CSB-10 2415	CSB-10 2420	CSB-10 2425	CSB-10 2430			
25 -0.020 -0.041	28 +0.021	28 +0.075 +0.035	24.990 25.071						CSB-10 2510	CSB-10 2512	CSB-10 2515	CSB-10 2520	CSB-10 2525	CSB-10 2530	CSB-10 2540	CSB-10 2550	
28 -0.020 -0.041	32 +0.025	32 +0.085 +0.045	27.990 28.085	1.970 2.005	1.2	0.4					CSB-10 2815	CSB-10 2820	CSB-10 2825	CSB-10 2830	CSB-10 2840		
30 -0.020 -0.041	34 +0.025	34 +0.085 +0.045	29.990 30.285							CSB-10 3012	CSB-10 3015	CSB-10 3020	CSB-10 3025	CSB-10 3030	CSB-10 3040		
32 -0.025 -0.050	36 +0.025	36 +0.085 +0.045	31.990 32.085									CSB-10 3220		CSB-10 3230	CSB-10 3240		
35 -0.025 -0.050	39 +0.025	39 +0.085 +0.045	34.990 35.085							CSB-10 3512	CSB-10 3515	CSB-10 3520	CSB-10 3525	CSB-10 3530	CSB-10 3540	CSB-10 3550	
38 -0.025 -0.050	42 +0.025	42 +0.085 +0.045	37.990 38.085								CSB-10 3815			CSB-10 3830	CSB-10 3840		
40 -0.025 -0.050	44 +0.025	44 +0.085 +0.045	39.990 40.085							CSB-10 4012		CSB-10 4020	CSB-10 4025	CSB-10 4030	CSB-10 4040	CSB-10 4050	

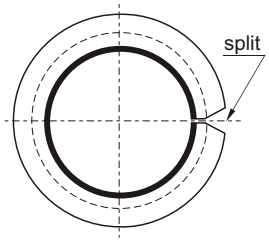
CSB-10 Metric cylindrical bushes

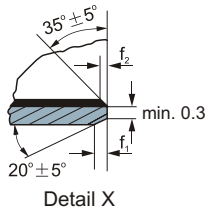
Unit:mm

Axle	Housing H7	OD tolerance	ID after fixed	Wall thick-ness	f_1	f_2	L $^{0}_{-0.40}$									
							20	25	30	40	50	60	70	80	100	115
45 $^{-0.025}_{-0.050}$	50 $^{+0.025}$	50 $^{+0.085}_{+0.045}$	44.990 45.105	2.460 2.505	1.8	0.6	CSB-10 4520	CSB-10 4525	CSB-10 4530	CSB-10 4540	CSB-10 4550					
50 $^{-0.025}_{-0.050}$	55 $^{+0.030}$	55 $^{+0.100}_{+0.055}$	49.990 50.110				CSB-10 5020		CSB-10 5030	CSB-10 5040	CSB-10 5050	CSB-10 5060				
55 $^{-0.030}_{-0.060}$	60 $^{+0.030}$	60 $^{+0.100}_{+0.055}$	54.990 55.110						CSB-10 5530	CSB-10 5540	CSB-10 5550	CSB-10 5560				
60 $^{-0.030}_{-0.060}$	65 $^{+0.030}$	65 $^{+0.100}_{+0.055}$	59.990 60.110						CSB-10 6030	CSB-10 6040	CSB-10 6050	CSB-10 6060	CSB-10 6070			
65 $^{-0.030}_{-0.060}$	70 $^{+0.030}$	70 $^{+0.100}_{+0.055}$	64.990 65.110						CSB-10 6530	CSB-10 6540	CSB-10 6550	CSB-10 6560	CSB-10 6570			
70 $^{-0.030}_{-0.060}$	75 $^{+0.030}$	75 $^{+0.100}_{+0.055}$	69.990 70.110							CSB-10 7040	CSB-10 7050	CSB-10 7060	CSB-10 7070	CSB-10 7080		
75 $^{-0.030}_{-0.060}$	80 $^{+0.030}$	80 $^{+0.100}_{+0.055}$	74.990 75.110						CSB-10 7530	CSB-10 7540	CSB-10 7550	CSB-10 7560	CSB-10 7570	CSB-10 7580		
80 $^{}_{-0.030}$	85 $^{+0.035}$	85 $^{+0.120}_{+0.070}$	80.020 80.155	2.440 2.490	1.8	0.6				CSB-10 8040	CSB-10 8050	CSB-10 8060	CSB-10 8070	CSB-10 8080	CSB-10 80100	
85 $^{}_{-0.035}$	90 $^{+0.035}$	90 $^{+0.120}_{+0.070}$	85.020 85.155							CSB-10 8540		CSB-10 8560		CSB-10 8580	CSB-10 85100	
90 $^{}_{-0.035}$	95 $^{+0.035}$	95 $^{+0.120}_{+0.070}$	90.020 90.155							CSB-10 9040	CSB-10 9050	CSB-10 9060		CSB-10 9080	CSB-10 90100	
95 $^{}_{-0.035}$	100 $^{+0.035}$	100 $^{+0.120}_{+0.070}$	95.020 95.155								CSB-10 9550	CSB-10 9560		CSB-10 9580	CSB-10 95100	
100 $^{}_{-0.035}$	105 $^{+0.035}$	105 $^{+0.120}_{+0.070}$	100.020 100.155								CSB-10 10050	CSB-10 10060		CSB-10 10080		CSB-10 100115
105 $^{}_{-0.035}$	110 $^{+0.035}$	110 $^{+0.120}_{+0.070}$	105.020 105.155									CSB-10 10560		CSB-10 10580		CSB-10 105115
110 $^{}_{-0.035}$	115 $^{+0.035}$	115 $^{+0.120}_{+0.070}$	110.020 110.155									CSB-10 11060		CSB-10 11080		CSB-10 110115
120 $^{}_{-0.035}$	125 $^{+0.040}$	125 $^{+0.170}_{+0.100}$	120.070 120.210	2.415 2.465	1.8	0.6						CSB-10 12060		CSB-10 12080	CSB-10 120100	
125 $^{}_{-0.040}$	130 $^{+0.040}$	130 $^{+0.170}_{+0.100}$	125.070 125.210									CSB-10 12560			CSB-10 125100	CSB-10 125115
130 $^{}_{-0.040}$	135 $^{+0.040}$	135 $^{+0.170}_{+0.100}$	130.070 130.210									CSB-10 13060		CSB-10 13080	CSB-10 130100	
140 $^{}_{-0.040}$	145 $^{+0.040}$	145 $^{+0.170}_{+0.100}$	140.070 140.210									CSB-10 14060		CSB-10 14080	CSB-10 140100	
150 $^{}_{-0.040}$	155 $^{+0.040}$	155 $^{+0.170}_{+0.100}$	150.070 150.210									CSB-10 15060		CSB-10 15080	CSB-10 150100	
160 $^{}_{-0.040}$	165 $^{+0.040}$	165 $^{+0.170}_{+0.100}$	160.070 160.210									CSB-10 16060		CSB-10 16080	CSB-10 160100	CSB-10 160115
180 $^{}_{-0.040}$	185 $^{+0.046}$	185 $^{+0.210}_{+0.130}$	180.070 180.216	2.415 2.465	1.8	0.6								CSB-10 18080	CSB-10 180100	
190 $^{}_{-0.046}$	195 $^{+0.046}$	195 $^{+0.210}_{+0.130}$	190.070 190.216											CSB-10 19080	CSB-10 190100	
200 $^{}_{-0.046}$	205 $^{+0.046}$	205 $^{+0.210}_{+0.130}$	200.070 200.216									CSB-10 20060		CSB-10 20080	CSB-10 200100	
220 $^{}_{-0.046}$	225 $^{+0.046}$	225 $^{+0.210}_{+0.130}$	220.070 220.216											CSB-10 22080	CSB-10 220100	
250 $^{}_{-0.046}$	255 $^{+0.052}$	255 $^{+0.260}_{+0.170}$	250.070 250.222	2.415 2.465	1.8	0.6								CSB-10 25080	CSB-10 250100	
260 $^{}_{-0.052}$	265 $^{+0.052}$	265 $^{+0.260}_{+0.170}$	260.070 260.222											CSB-10 26080	CSB-10 260100	
280 $^{}_{-0.052}$	285 $^{+0.052}$	285 $^{+0.260}_{+0.170}$	280.070 280.222											CSB-10 28080	CSB-10 280100	
300 $^{}_{-0.052}$	305 $^{+0.052}$	305 $^{+0.260}_{+0.170}$	300.070 300.222											CSB-10 30080	CSB-10 300100	

CSB-10 Metric flange bushes





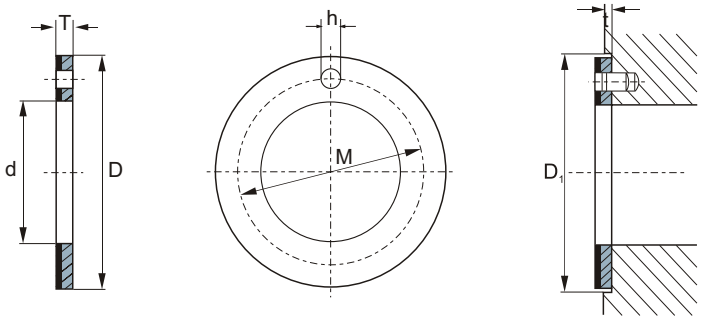


Unit:mm

Axle	Housing H7	OD tolerance	ID after fixed	Designation	Wall thickness	f_1	f_2	Dimension				
								d_1	d_2	d_3±0.5	L±0.25	ℓ_1-0.2
6 -0.013 -0.028	8 +0.015	6 +0.055 +0.025	5.990 6.005	CSB-10F06040	+0.005 -0.020	0.6	0.3	6	8	12	4	1
				CSB-10F06070							7	
8 -0.013 -0.028	10 +0.015	8 +0.055 +0.025	7.990 8.055	CSB-10F08055				8	10	15	5.5	
				CSB-10F08075							7.5	
10 -0.016 -0.034	12 +0.018	10 +0.055 +0.025	9.990 10.058	CSB-10F10070				10	12	18	7	
				CSB-10F10090							9	
				CSB-10F10120							12	
12 -0.016 -0.034	14 +0.018	12 +0.065 +0.030	11.990 12.058	CSB-10F12070				12	14	20	7	
				CSB-10F12090							9	
				CSB-10F12120							12	
14 -0.016 -0.034	16 +0.018	14 +0.065 +0.030	13.990 14.058	CSB-10F14120				14	16	22	12	
				CSB-10F14170							17	
15 -0.016 -0.034	17 +0.018	15 +0.065 +0.030	14.990 15.058	CSB-10F15090				15	17	23	9	
				CSB-10F15120							12	
				CSB-10F15170							17	
16 -0.016 -0.034	18 +0.018	16 +0.065 +0.030	15.990 16.058	CSB-10F16120				16	18	24	12	
				CSB-10F16170							17	
18 -0.016 -0.034	20 +0.021	18 +0.065 +0.030	17.990 18.061	CSB-10F18120				18	20	26	12	
				CSB-10F18170							17	
				CSB-10F18200							20	
20 -0.020 -0.041	23 +0.021	20 +0.075 +0.035	19.990 20.071	CSB-10F20115	+0.005 -0.025	0.6	0.4	20	23	30	11.5	1.5
				CSB-10F20165							16.5	
				CSB-10F20215							21.5	
22 -0.020 -0.041	25 +0.021	22 +0.075 +0.035	21.990 22.071	CSB-10F22150				22	25	32	15	
				CSB-10F22200							20	
25 -0.020 -0.041	28 +0.021	25 +0.075 +0.035	24.990 25.071	CSB-10F25115				25	28	35	11.5	
				CSB-10F25165							16.5	
				CSB-10F25215							21.5	
30 -0.025 -0.050	34 +0.025	30 +0.075 +0.035	29.990 30.085	CSB-10F30160	+0.005 -0.030	1.2	0.4	30	34	42	16	2
				CSB-10F30260							26	
35 -0.025 -0.050	39 +0.025	35 +0.085 +0.045	34.990 35.085	CSB-10F35160				35	39	47	16	
				CSB-10F35260							26	
40 -0.025 -0.050	44 +0.025	40 +0.085 +0.045	39.990 40.085	CSB-10F40260				40	44	53	26	
				CSB-10F40400							40	

CSB-10 Metric thrust washer and strip

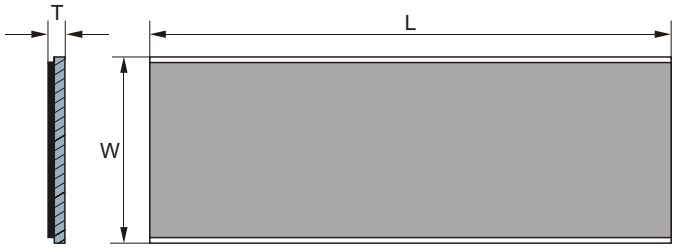
Metric thrust washer



Unit:mm

Axle	Designation	Washer dimension				Installation size		D_1+0.12
		d +0.25	D -0.25	T -0.05	M ±0.125	$h^{+0.4}_{+0.1}$	t±0.2	
8	CSB-10WC10	10	20	1.5	15	1.5	1	20
10	CSB-10WC12	12	24		18			24
12	CSB-10WC14	14	26		20	2		26
14	CSB-10WC16	16	30		23			30
16	CSB-10WC18	18	32		25			32
18	CSB-10WC20	20	36		28	3		36
20	CSB-10WC22	22	38		30			38
22	CSB-10WC24	24	42		33			42
24	CSB-10WC26	26	44		35			44
26	CSB-10WC28	28	48		38	4		48
30	CSB-10WC32	32	54		43			54
36	CSB-10WC38	38	62		50			62
40	CSB-10WC42	42	66		54			66
46	CSB-10WC48	48	74	2	61		1.5	74
50	CSB-10WC52	52	78		65			78
60	CSB-10WC62	62	90		76			90

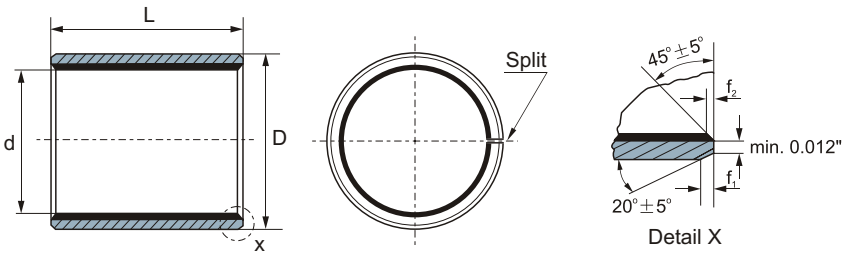
Metric standard strip



Unit:mm

Type	Length±1	Width±1	Thickness -0.05
CSB-10SP	500	150	1.0
CSB-10SP	500	150	1.5
CSB-10SP	500	150	2.0
CSB-10SP	500	150	2.5

CSB-10 Inch cylindrical bushes



Unit: inch"

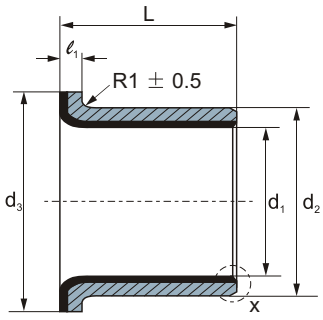
Recommended		Installed bearing d	Length±0.010						
Shaft Dia	Housing bore								
0.1243 0.1236	0.1878 0.1873	0.1268 0.1243	CSB-10 02IB02	CSB-10 02IB03					
0.1554 0.1547	0.2191 0.2186	0.1581 0.1556	CSB-10 025IB025	CSB-10 025IB04					
0.1865 0.1858	0.2503 0.2497	0.1893 0.1867	CSB-10 03IB03	CSB-10 03IB04	CSB-10 03IB06				
0.2490 0.2481	0.3128 0.3122	0.2518 0.2492	CSB-10 04IB04	CSB-10 04IB06					
0.3115 0.3106	0.3753 0.3747	0.3143 0.3117	CSB-10 05IB06	CSB-10 05IB08					
0.3740 0.3731	0.4691 0.4684	0.3769 0.3742	CSB-10 06IB03	CSB-10 06IB04	CSB-10 06IB06	CSB-10 06IB08	CSB-10 06IB10	CSB-10 06IB12	
0.4365 0.4355	0.5316 0.5309	0.4394 0.4367	CSB-10 07IB08	CSB-10 07IB12					
0.4990 0.4980	0.5941 0.5934	0.5019 0.4992	CSB-10 08IB04	CSB-10 08IB06	CSB-10 08IB08	CSB-10 08IB10	CSB-10 08IB12	CSB-10 08IB14	
0.5615 0.5605	0.6566 0.6559	0.5644 0.5617	CSB-10 09IB06	CSB-10 09IB08	CSB-10 09IB10	CSB-10 09IB12			
0.6240 0.6230	0.7192 0.7184	0.6270 0.6242	CSB-10 10IB04	CSB-10 10IB08	CSB-10 10IB10	CSB-10 10IB12	CSB-10 10IB14	CSB-10 10IB16	
0.6865 0.6855	0.7817 0.7809	0.6895 0.6867	CSB-10 11IB14						
0.7491 0.7479	0.8755 0.8747	0.7525 0.7493	CSB-10 12IB04	CSB-10 12IB06	CSB-10 12IB08	CSB-10 12IB10	CSB-10 12IB12	CSB-10 12IB16	
0.8116 0.8104	0.9380 0.9372	0.8150 0.8118	CSB-10 13IB12	CSB-10 13IB18					
0.8741 0.8729	1.0005 0.9997	0.8775 0.8743	CSB-10 14IB04	CSB-10 14IB06	CSB-10 14IB12	CSB-10 14IB16	CSB-10 14IB20		
0.9991 0.9979	1.1255 1.1247	1.0025 0.9993	CSB-10 16IB06	CSB-10 16IB08	CSB-10 16IB12	CSB-10 16IB16	CSB-10 16IB20	CSB-10 16IB24	
1.1238 1.1226	1.2818 1.2808	1.1278 1.1240	CSB-10 18IB06	CSB-10 18IB10	CSB-10 18IB12	CSB-10 18IB16			
1.2488 1.2472	1.4068 1.4058	1.2528 1.2490	CSB-10 20IB06	CSB-10 20IB12	CSB-10 20IB14	CSB-10 20IB16	CSB-10 20IB20	CSB-10 20IB28	
1.3738 1.3722	1.5318 1.5308	1.3778 1.3740	CSB-10 22IB12	CSB-10 22IB12	CSB-10 22IB24	CSB-10 22IB28			
1.4988 1.4972	1.6568 1.6558	1.5028 1.4990	CSB-10 24IB08	CSB-10 24IB16	CSB-10 24IB18	CSB-10 24IB20	CSB-10 24IB24	CSB-10 24IB32	
1.6238 1.6222	1.7818 1.7808	1.6278 1.6240	CSB-10 26IB16	CSB-10 26IB24					
1.7487 1.7471	1.9381 1.9371	1.7535 1.7489	CSB-10 28IB16	CSB-10 28IB24	CSB-10 28IB32				
1.8737 1.8721	2.0633 2.0621	1.8787 1.8739	CSB-10 30IB12	CSB-10 30IB16	CSB-10 30IB36				
1.9987 1.9969	2.1883 2.1871	2.0037 1.9989	CSB-10 32IB08	CSB-10 32IB16	CSB-10 32IB24	CSB-10 32IB28	CSB-10 32IB32	CSB-10 32IB40	

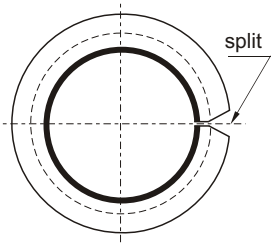
CSB-10 Inch cylindrical bushes

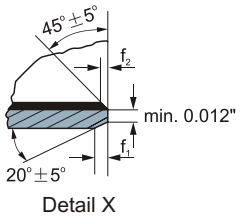
Unit: inch"

Recommended		Installed bearing d	Length ±0.010									
Shaft Dia	Housing bore											
2.1257 2.1239	2.3130 2.3118	2.1326 2.1262	CSB-10 34IB48									
2.2507 2.2489	2.4377 2.4365	2.2573 2.2509	CSB-10 36IB28	CSB-10 36IB32	CSB-10 36IB40	CSB-10 36IB48	CSB-10 36IB56	CSB-10 36IB60	CSB-10 36IB64	CSB-10 36IB72		
2.5011 2.4993	2.6881 2.6869	2.5077 2.5013	CSB-10 40IB16	CSB-10 40IB26	CSB-10 40IB32	CSB-10 40IB40	CSB-10 40IB48	CSB-10 40IB56	CSB-10 40IB60	CSB-10 40IB64	CSB-10 40IB72	CSB-10 40IB76
2.7500 2.7482	2.9370 2.9358	2.7566 2.7502	CSB-10 44IB32	CSB-10 44IB36	CSB-10 44IB40	CSB-10 44IB48	CSB-10 44IB56	CSB-10 44IB60	CSB-10 44IB64	CSB-10 44IB72	CSB-10 44IB76	CSB-10 44IB80
2.8752 2.8734	3.0623 3.0610	2.8819 2.8754	CSB-10 46IB32	CSB-10 46IB36	CSB-10 46IB40	CSB-10 46IB48	CSB-10 46IB56	CSB-10 46IB60	CSB-10 46IB64	CSB-10 46IB72	CSB-10 46IB76	CSB-10 46IB80
3.0000 2.9982	3.1872 3.1858	3.0068 3.0002	CSB-10 48IB32	CSB-10 48IB36	CSB-10 48IB40	CSB-10 48IB48	CSB-10 48IB56	CSB-10 48IB60	CSB-10 48IB64	CSB-10 48IB72	CSB-10 48IB76	CSB-10 48IB80
3.2500 3.2480	3.4372 3.4358	3.2568 3.2502	CSB-10 52IB32	CSB-10 52IB36	CSB-10 52IB40	CSB-10 52IB48	CSB-10 52IB56	CSB-10 52IB60	CSB-10 52IB64	CSB-10 52IB72	CSB-10 52IB76	CSB-10 52IB80
3.5000 3.4978	3.6872 3.6858	3.5068 3.5002	CSB-10 56IB32	CSB-10 56IB36	CSB-10 56IB40	CSB-10 56IB48	CSB-10 56IB56	CSB-10 56IB60	CSB-10 56IB64	CSB-10 56IB72	CSB-10 56IB76	CSB-10 56IB80
3.6250 3.6228	3.8122 3.8108	3.6318 3.6252	CSB-10 58IB32	CSB-10 58IB36	CSB-10 58IB40	CSB-10 58IB48	CSB-10 58IB56	CSB-10 58IB60	CSB-10 58IB64	CSB-10 58IB72	CSB-10 58IB76	CSB-10 58IB80
3.7500 3.7478	3.9372 3.9358	3.7568 3.7502	CSB-10 60IB32	CSB-10 60IB36	CSB-10 60IB40	CSB-10 60IB48	CSB-10 60IB56	CSB-10 60IB60	CSB-10 60IB64	CSB-10 60IB72	CSB-10 60IB76	CSB-10 60IB80
4.0000 3.9978	4.1872 4.1858	4.0068 4.0002	CSB-10 64IB32	CSB-10 64IB36	CSB-10 64IB40	CSB-10 64IB48	CSB-10 64IB56	CSB-10 64IB60	CSB-10 64IB64	CSB-10 64IB72	CSB-10 64IB76	CSB-10 64IB80
4.2500 4.2478	4.4372 4.4358	4.2568 4.2502	CSB-10 68IB32	CSB-10 68IB36	CSB-10 68IB40	CSB-10 68IB48	CSB-10 68IB56	CSB-10 68IB60	CSB-10 68IB64	CSB-10 68IB72	CSB-10 68IB76	CSB-10 68IB80
4.3750 4.3728	4.5622 4.5608	4.3818 4.3752	CSB-10 70IB32	CSB-10 70IB36	CSB-10 70IB40	CSB-10 70IB48	CSB-10 70IB56	CSB-10 70IB60	CSB-10 70IB64	CSB-10 70IB72	CSB-10 70IB76	CSB-10 70IB80
4.5000 4.4978	4.6872 4.6858	4.5068 4.5002	CSB-10 72IB32	CSB-10 72IB36	CSB-10 72IB40	CSB-10 72IB48	CSB-10 72IB56	CSB-10 72IB60	CSB-10 72IB64	CSB-10 72IB72	CSB-10 72IB76	CSB-10 72IB80
4.7500 4.7475	4.9374 4.9358	4.7572 4.7502	CSB-10 76IB32	CSB-10 76IB36	CSB-10 76IB40	CSB-10 76IB48	CSB-10 76IB56	CSB-10 76IB60	CSB-10 76IB64	CSB-10 76IB72	CSB-10 76IB76	CSB-10 76IB80
4.9986 4.9961	5.1860 5.1844	5.0056 4.9988	CSB-10 80IB32	CSB-10 80IB36	CSB-10 80IB40	CSB-10 80IB48	CSB-10 80IB56	CSB-10 80IB60	CSB-10 80IB64	CSB-10 80IB72	CSB-10 80IB76	CSB-10 80IB80
5.2500 5.2475	5.4374 5.4358	5.2570 5.2502	CSB-10 84IB32	CSB-10 84IB36	CSB-10 84IB40	CSB-10 84IB48	CSB-10 84IB56	CSB-10 84IB60	CSB-10 84IB64	CSB-10 84IB72	CSB-10 84IB76	CSB-10 84IB80
5.5000 5.4975	5.6874 5.6858	5.5070 5.5002	CSB-10 88IB32	CSB-10 88IB36	CSB-10 88IB40	CSB-10 88IB48	CSB-10 88IB56	CSB-10 88IB60	CSB-10 88IB64	CSB-10 88IB72	CSB-10 88IB76	CSB-10 88IB80
5.7500 5.7475	5.9374 5.9358	5.7570 5.7502	CSB-10 92IB32	CSB-10 92IB36	CSB-10 92IB40	CSB-10 92IB48	CSB-10 92IB56	CSB-10 92IB60	CSB-10 92IB64	CSB-10 92IB72	CSB-10 92IB76	CSB-10 92IB80
6.0000 5.9975	6.1874 6.1858	6.0070 6.0002	CSB-10 96IB32	CSB-10 96IB36	CSB-10 96IB40	CSB-10 96IB48	CSB-10 96IB56	CSB-10 96IB60	CSB-10 96IB64	CSB-10 96IB72	CSB-10 96IB76	CSB-10 96IB80
6.2500 6.2475	6.4374 6.4358	6.2570 6.2502	CSB-10 100IB32	CSB-10 100IB36	CSB-10 100IB40	CSB-10 100IB48	CSB-10 100IB56	CSB-10 100IB60	CSB-10 100IB64	CSB-10 100IB72	CSB-10 100IB76	CSB-10 100IB80
6.5000 6.4975	6.6874 6.6858	6.5070 6.5002	CSB-10 104IB32	CSB-10 104IB36	CSB-10 104IB40	CSB-10 104IB48	CSB-10 104IB56	CSB-10 104IB60	CSB-10 104IB64	CSB-10 104IB72	CSB-10 104IB76	CSB-10 104IB80
6.7500 6.7475	6.9374 6.9358	6.7570 6.7502	CSB-10 108IB32	CSB-10 108IB36	CSB-10 108IB40	CSB-10 108IB48	CSB-10 108IB56	CSB-10 108IB60	CSB-10 108IB64	CSB-10 108IB72	CSB-10 108IB76	CSB-10 108IB80
6.9954 6.9929	7.1830 7.1812	7.0026 6.9956	CSB-10 112IB32	CSB-10 112IB36	CSB-10 112IB40	CSB-10 112IB48	CSB-10 112IB56	CSB-10 112IB60	CSB-10 112IB64	CSB-10 112IB72	CSB-10 112IB76	CSB-10 112IB80

CSB-10 Inch flange bushes



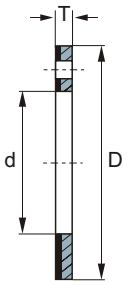


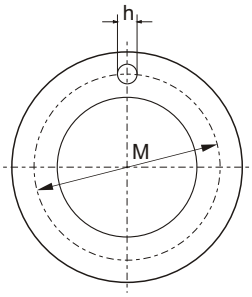


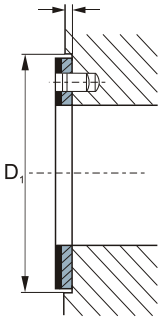
Unit: inch"

Shaft Dia	Housing Bore	Installed Bearing d_1	Nominal Flange d_3	Flange Thickness ℓ_1	Length ±0.010			
0.3750 0.3740	0.4691 0.4684	0.3779 0.3752	11/16	0.052 0.044	CSB-10 06FIB04	CSB-10 06FIB06	CSB-10 06FIB08	CSB-10 06FIB12
0.5000 0.4990	0.5941 0.5934	0.5029 0.5002	13/16	0.052 0.044	CSB-10 08FIB04	CSB-10 08FIB06	CSB-10 08FIB08	CSB-10 08FIB12
0.6250 0.6240	0.7192 0.7184	0.6280 0.6252	15/16	0.052 0.044	CSB-10 10FIB06	CSB-10 10FIB08	CSB-10 10FIB10	CSB-10 10FIB12
0.7500 0.7488	0.8755 0.8747	0.7534 0.7502	1-1/8	0.068 0.060	CSB-10 12FIB06	CSB-10 12FIB08	CSB-10 12FIB12	CSB-10 12FIB16
0.8750 0.8738	1.0005 0.9997	0.8784 0.8752	1-1/5	0.068 0.060	CSB-10 14FIB08	CSB-10 14FIB12	CSB-10 14FIB16	CSB-10 14FIB20
1.0000 0.9988	1.1255 1.1247	1.0034 1.0002	1-3/8	0.068 0.060	CSB-10 16FIB08	CSB-10 16FIB12	CSB-10 16FIB16	CSB-10 16FIB20
1.2500 1.2484	1.4068 1.4058	1.2540 1.2502	1-3/4	0.083 0.075	CSB-10 20FIB16	CSB-10 20FIB20	CSB-10 20FIB24	
1.5000 1.4984	1.6568 1.6558	1.5040 1.5002	2	0.083 0.075	CSB-10 24FIB16	CSB-10 24FIB24	CSB-10 24FIB32	
1.7500 1.7484	1.9381 1.9371	1.7548 1.7502	2-3/8	0.098 0.090	CSB-10 28FIB16	CSB-10 28FIB24	CSB-10 28FIB32	

CSB-10 Inch thrust washer



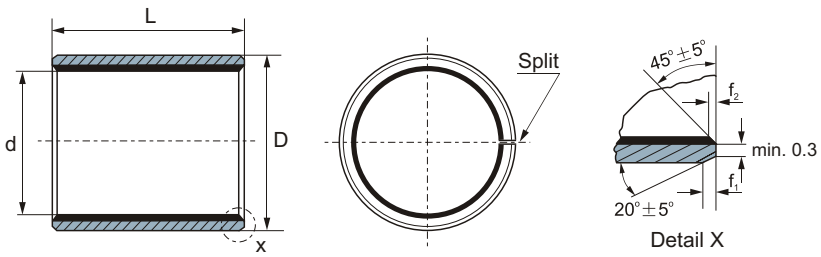




Unit: inch"

Designation	Washer dimension				Installation size		
	Inner side d +0.010	Outside D -0.010	T	M -0.01	h +0.010	t±0.010	D_1 +0.010
CSB-10WC06IB	0.500	0.875	0.0630 0.0610	0.692	0.067	0.04	0.875
CSB-10WC07IB	0.562	1.000		0.786			1.000
CSB-10WC08IB	0.625	1.125		0.880	0.099		1.125
CSB-10WC09IB	0.687	1.187		0.942			1.187
CSB-10WC10IB	0.750	1.250		1.005			1.250
CSB-10WC11IB	0.812	1.375		1.099			1.375
CSB-10WC12IB	0.875	1.500		1.192	0.130		1.500
CSB-10WC13IB	0.937	1.625		1.286			1.625
CSB-10WC14IB	1.000	1.750		1.380			1.750
CSB-10WC16IB	1.125	2.000		1.567	0.161		2.000
CSB-10WC18IB	1.250	2.125		1.692			2.125
CSB-10WC20IB	1.375	2.250		1.817			2.250
CSB-10WC22IB	1.500	2.500		2.005	0.192		2.500
CSB-10WC24IB	1.625	2.625		2.130		0.07	2.625
CSB-10WC26IB	1.750	2.750		2.255			2.750
CSB-10WC28IB	2.000	3.000	0.0930 0.0910	2.505			3.000
CSB-10WC30IB	2.125	3.125		2.630			3.125
CSB-10WC32IB	2.250	3.250		2.755			3.250

CSB-50 Metric cylindrical bushes



Unit:mm

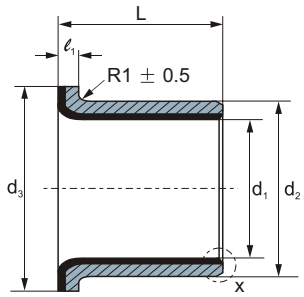
Axle	Housing H7	OD tolerance	ID after fixed	Wall thick-ness	f_1	f_2	L $^{0}_{-0.40}$ ($d \leq \phi 30$ L -0.3, $d > \phi 30$ L -0.4)									
							6	8	10	12	15	20	25	30	40	50	60
6 $^{-0.013}_{-0.028}$	8 $^{+0.015}$	8 $^{+0.055}_{+0.025}$	5.990 6.055	0.980 1.005	0.6	0.3	CSB-50 0606	CSB-50 0608	CSB-50 0610								
8 $^{-0.013}_{-0.028}$	10 $^{+0.015}$	10 $^{+0.055}_{+0.025}$	7.990 8.055				CSB-50 0806	CSB-50 0808	CSB-50 0810	CSB-50 0812	CSB-50 0815						
10 $^{-0.016}_{-0.034}$	12 $^{+0.018}$	12 $^{+0.065}_{+0.030}$	9.990 10.058				CSB-50 1006	CSB-50 1008	CSB-50 1010	CSB-50 1012	CSB-50 1015	CSB-50 1020					
12 $^{-0.016}_{-0.034}$	14 $^{+0.018}$	14 $^{+0.065}_{+0.030}$	11.990 12.058				CSB-50 1206	CSB-50 1208	CSB-50 1210	CSB-50 1212	CSB-50 1215	CSB-50 1220	CSB-50 1225				
13 $^{-0.016}_{-0.034}$	15 $^{+0.018}$	15 $^{+.0.065}_{+0.030}$	12.990 13.058						CSB-50 1310			CSB-50 1320					
14 $^{-0.016}_{-0.034}$	16 $^{+0.018}$	16 $^{+0.065}_{+0.030}$	13.990 14.058						CSB-50 1410	CSB-50 1412	CSB-50 1415	CSB-50 1420	CSB-50 1425				
15 $^{-0.016}_{-0.034}$	17 $^{+0.018}$	17 $^{+0.065}_{+0.030}$	14.990 15.058						CSB-50 1510	CSB-50 1512	CSB-50 1515	CSB-50 1520	CSB-50 1525				
16 $^{-0.016}_{-0.034}$	18 $^{+0.018}$	18 $^{+0.065}_{+0.030}$	15.990 16.058						CSB-50 1610	CSB-50 1612	CSB-50 1615	CSB-50 1620	CSB-50 1625				
17 $^{-0.016}_{-0.034}$	19 $^{+0.021}$	19 $^{+0.075}_{+0.035}$	16.990 17.061						CSB-50 1710	CSB-50 1712		CSB-50 1720					
18 $^{-0.016}_{-0.034}$	20 $^{+0.021}$	20 $^{+0.075}_{+0.035}$	17.990 18.061						CSB-50 1810	CSB-50 1812	CSB-50 1815	CSB-50 1820	CSB-50 1825				
20 $^{-0.020}_{-0.041}$	23 $^{+0.021}$	23 $^{-0.075}_{+0.035}$	19.990 20.071	1.475 1.505	0.6	0.4			CSB-50 2010	CSB-50 2012	CSB-50 2015	CSB-50 2020	CSB-50 2025	CSB-50 2030			
22 $^{-0.020}_{-0.041}$	25 $^{+0.021}$	25 $^{+0.075}_{+0.035}$	21.990 22.071						CSB-50 2210	CSB-50 2212	CSB-50 2215	CSB-50 2220	CSB-50 2225	CSB-50 2230			
24 $^{-0.020}_{-0.041}$	27 $^{+0.021}$	27 $^{+0.075}_{+0.035}$	23.990 24.071								CSB-50 2415	CSB-50 2420	CSB-50 2425	CSB-50 2430			
25 $^{-0.020}_{-0.041}$	28 $^{+0.021}$	28 $^{+0.075}_{+0.035}$	24.990 25.071						CSB-50 2510	CSB-50 2512	CSB-50 2515	CSB-50 2520	CSB-50 2525	CSB-50 2530	CSB-50 2540	CSB-50 2550	
28 $^{-0.020}_{-0.041}$	32 $^{+0.025}$	32 $^{+0.085}_{+0.045}$	27.990 28.085	1.970 2.005	1.2	0.4					CSB-50 2815	CSB-50 2820	CSB-50 2825	CSB-50 2830	CSB-50 2840		
30 $^{-0.020}_{-0.041}$	34 $^{+0.025}$	34 $^{+0.085}_{+0.045}$	29.990 30.285							CSB-50 3012	CSB-50 3015	CSB-50 3020	CSB-50 3025	CSB-50 3030	CSB-50 3040		
32 $^{-0.025}_{-0.050}$	36 $^{+0.025}$	36 $^{+0.085}_{+0.045}$	31.990 32.085									CSB-50 3220		CSB-50 3230	CSB-50 3240		
35 $^{-0.025}_{-0.050}$	39 $^{+0.025}$	39 $^{+0.085}_{+0.045}$	34.990 35.085							CSB-50 3512	CSB-50 3515	CSB-50 3520	CSB-50 3525	CSB-50 3530	CSB-50 3540	CSB-50 3550	
38 $^{-0.025}_{-0.050}$	42 $^{+0.025}$	42 $^{+0.085}_{+0.045}$	37.990 38.085								CSB-50 3815			CSB-50 3830	CSB-50 3840		
40 $^{-0.025}_{-0.050}$	44 $^{+0.025}$	44 $^{+0.085}_{+0.045}$	39.990 40.085							CSB-50 4012		CSB-50 4020	CSB-50 4025	CSB-50 4030	CSB-50 4040	CSB-50 4050	

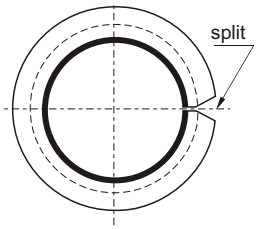
CSB-50 Metric cylinrical bushes

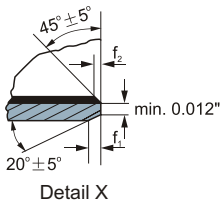
Unit:mm

Axle	Housing H7	OD tolerance	ID after fixed	Wall thick-ness	f_1	f_2	L $^{0}_{-0.40}$									
							20	25	30	40	50	60	70	80	100	115
45 $^{-0.025}_{-0.050}$	50 $^{+0.025}$	50 $^{+0.085}_{+0.045}$	44.990 45.105	2.460 2.505	1.8	0.6	CSB-50 4520	CSB-50 4525	CSB-50 4530	CSB-50 4540	CSB-50 4550					
50 $^{-0.025}_{-0.050}$	55 $^{+0.030}$	55 $^{+0.100}_{+0.055}$	49.990 50.110				CSB-50 5020		CSB-50 5030	CSB-50 5040	CSB-50 5050	CSB-50 5060				
55 $^{-0.030}_{-0.060}$	60 $^{+0.030}$	60 $^{+0.100}_{+0.055}$	54.990 55.110						CSB-50 5530	CSB-50 5540	CSB-50 5550	CSB-50 5560				
60 $^{-0.030}_{-0.060}$	65 $^{+0.030}$	65 $^{+0.100}_{+0.055}$	59.990 60.110						CSB-50 6030	CSB-50 6040	CSB-50 6050	CSB-50 6060	CSB-50 6070			
65 $^{-0.030}_{-0.060}$	70 $^{+0.030}$	70 $^{+0.100}_{+0.055}$	64.990 65.110						CSB-50 6530	CSB-50 6540	CSB-50 6550	CSB-50 6560	CSB-50 6570			
70 $^{-0.030}_{-0.060}$	75 $^{+0.030}$	75 $^{+0.100}_{+0.055}$	69.990 70.110							CSB-50 7040	CSB-50 7050	CSB-50 7060	CSB-50 7070	CSB-50 7080		
75 $^{-0.030}_{-0.060}$	80 $^{+0.030}$	80 $^{+0.100}_{+0.055}$	74.990 75.110						CSB-50 7530	CSB-50 7540	CSB-50 7550	CSB-50 7560	CSB-50 7570	CSB-50 7580		
80 $_{-0.030}$	85 $^{+0.035}$	85 $^{+0.120}_{+0.070}$	80.020 80.155	2.440 2.490	1.8	0.6				CSB-50 8040	CSB-50 8050	CSB-50 8060	CSB-50 8070	CSB-50 8080	CSB-50 80100	
85 $_{-0.035}$	90 $^{+0.035}$	90 $^{+0.120}_{+0.070}$	85.020 85.155							CSB-50 8540		CSB-50 8560		CSB-50 8580	CSB-50 85100	
90 $_{-0.035}$	95 $^{+0.035}$	95 $^{+0.120}_{+0.070}$	90.020 90.155							CSB-50 9040	CSB-50 9050	CSB-50 9060		CSB-50 9080	CSB-50 90100	
95 $_{-0.035}$	100 $^{+0.035}$	100 $^{+0.120}_{+0.070}$	95.020 95.155								CSB-50 9550	CSB-50 9560		CSB-50 9580	CSB-50 95100	
100 $_{-0.035}$	105 $^{+0.035}$	105 $^{+0.120}_{+0.070}$	100.020 100.155								CSB-50 10050	CSB-50 10060		CSB-50 10080		CSB-50 100115
105 $_{-0.035}$	110 $^{+0.035}$	110 $^{+0.120}_{+0.070}$	105.020 105.155									CSB-50 10560		CSB-50 10580		CSB-50 105115
110 $_{-0.035}$	115 $^{+0.035}$	115 $^{+0.120}_{+0.070}$	110.020 110.155									CSB-50 11060		CSB-50 11080		CSB-50 110115
120 $_{-0.035}$	125 $^{+0.040}$	125 $^{+0.170}_{+0.100}$	120.070 120.210	2.415 2.465	1.8	0.6						CSB-50 12060		CSB-50 12080	CSB-50 120100	
125 $_{-0.040}$	130 $^{+0.040}$	130 $^{+0.170}_{+0.100}$	125.070 125.210									CSB-50 12560			CSB-50 125100	CSB-50 125115
130 $_{-0.040}$	135 $^{+0.040}$	135 $^{+0.170}_{+0.100}$	130.070 130.210									CSB-50 13060		CSB-50 13080	CSB-50 130100	
140 $_{-0.040}$	145 $^{+0.040}$	145 $^{+0.170}_{+0.100}$	140.070 140.210									CSB-50 14060		CSB-50 14080	CSB-50 140100	
150 $_{-0.040}$	155 $^{+0.040}$	155 $^{+0.170}_{+0.100}$	150.070 150.210									CSB-50 15060		CSB-50 15080	CSB-50 150100	
160 $_{-0.040}$	165 $^{+0.040}$	165 $^{+0.170}_{+0.100}$	160.070 160.210									CSB-50 16060		CSB-50 16080	CSB-50 160100	CSB-50 160115
180 $_{-0.040}$	185 $^{+0.046}$	185 $^{+0.210}_{+0.130}$	180.070 180.216	2.415 2.465	1.8	0.6								CSB-50 18080	CSB-50 180100	
190 $_{-0.046}$	195 $^{+0.046}$	195 $^{+0.210}_{+0.130}$	190.070 190.216											CSB-50 19080	CSB-50 190100	
200 $_{-0.046}$	205 $^{+0.046}$	205 $^{+0.210}_{+0.130}$	200.070 200.216									CSB-50 20060		CSB-50 20080	CSB-50 200100	
220 $_{-0.046}$	225 $^{+0.046}$	225 $^{+0.210}_{+0.130}$	220.070 220.216											CSB-50 22080	CSB-50 220100	
250 $_{-0.046}$	255 $^{+0.052}$	255 $^{+0.260}_{+0.170}$	250.070 250.222	2.415 2.465	1.8	0.6								CSB-50 25080	CSB-50 250100	
260 $_{-0.052}$	265 $^{+0.052}$	265 $^{+0.260}_{+0.170}$	260.070 260.222											CSB-50 26080	CSB-50 260100	
280 $_{-0.052}$	285 $^{+0.052}$	285 $^{+0.260}_{+0.170}$	280.070 280.222											CSB-50 28080	CSB-50 280100	
300 $_{-0.052}$	305 $^{+0.052}$	305 $^{+0.260}_{+0.170}$	300.070 300.222											CSB-50 30080	CSB-50 300100	

CSB-50 Metric flange bushes





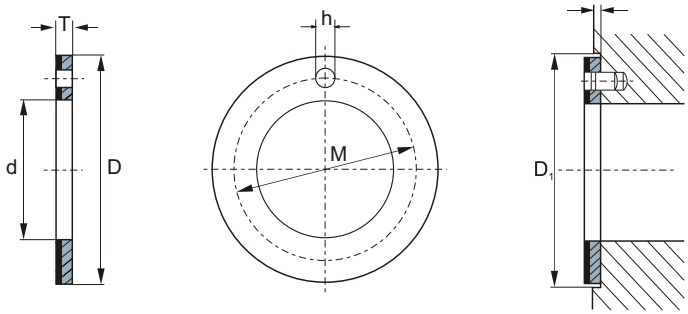


Unit:mm

Axle	Housing H7	OD tolerance	ID after fixed	Designation	Wall thickness	f_1	f_2	Dimension				
								d_1	d_2	d_3±0.5	L±0.25	ℓ_1-0.2
6 -0.013 -0.028	8 +0.015	6 +0.055 +0.025	5.990 6.005	CSB-50F06040	+0.005 -0.020	0.6	0.3	6	8	12	4	1
				CSB-50F06070							7	
8 -0.013 -0.028	10 +0.015	8 +0.055 +0.025	7.990 8.055	CSB-50F08055				8	10	15	5.5	
				CSB-50F08075							7.5	
10 -0.016 -0.034	12 +0.018	10 +0.055 +0.025	9.990 10.058	CSB-50F10070				10	12	18	7	
				CSB-50F10090							9	
				CSB-50F10120							12	
12 -0.016 -0.034	14 +0.018	12 +0.065 +0.030	11.990 12.058	CSB-50F12070				12	14	20	7	
				CSB-50F12090							9	
				CSB-50F12120							12	
14 -0.016 -0.034	16 +0.018	14 +0.065 +0.030	13.990 14.058	CSB-50F14120				14	16	22	12	
				CSB-50F14170							17	
15 -0.016 -0.034	17 +0.018	15 +0.065 +0.030	14.990 15.058	CSB-50F15090				15	17	23	9	
				CSB-50F15120							12	
				CSB-50F15170							17	
16 -0.016 -0.034	18 +0.018	16 +0.065 +0.030	15.990 16.058	CSB-50F16120				16	18	24	12	
				CSB-50F16170							17	
18 -0.016 -0.034	20 +0.021	18 +0.065 +0.030	17.990 18.061	CSB-50F18120				18	20	26	12	
				CSB-50F18170							17	
				CSB-50F18200							20	
20 -0.020 -0.041	23 +0.021	20 +0.075 +0.035	19.990 20.071	CSB-50F20115	+0.005 -0.025	0.6	0.4	20	23	30	11.5	1.5
				CSB-50F20165							16.5	
				CSB-50F20215							21.5	
22 -0.020 -0.041	25 +0.021	22 +0.075 +0.035	21.990 22.071	CSB-50F22150				22	25	32	15	
				CSB-50F22200							20	
25 -0.020 -0.041	28 +0.021	25 +0.075 +0.035	24.990 25.071	CSB-50F25115				25	28	35	11.5	
				CSB-50F25165							16.5	
				CSB-50F25215							21.5	
30 -0.025 -0.050	34 +0.025	30 +0.075 +0.035	29.990 30.085	CSB-50F30160	+0.005 -0.030	1.2	0.4	30	34	42	16	2
				CSB-50F30260							26	
35 -0.025 -0.050	39 +0.025	35 +0.085 +0.045	34.990 35.085	CSB-50F35160				35	39	47	16	
				CSB-50F35260							26	
40 -0.025 -0.050	44 +0.025	40 +0.085 +0.045	39.990 40.085	CSB-50F40260				40	44	53	26	
				CSB-50F40400							40	

CSB-50 Metric thrust washer and strip

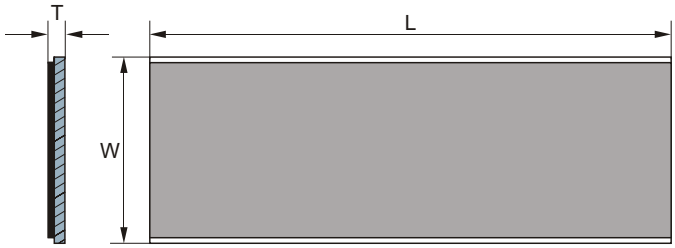
Metric thrust washer



Unit:mm

Axle	Designation	Washer dimension				Installation size		D_1+0.12
		d +0.25	D -0.25	T -0.05	M ±0.125	$h^{+0.4}_{+0.1}$	t±0.2	
8	CSB-50WC10	10	20	1.5	15	1.5	1	20
10	CSB-50WC12	12	24		18			24
12	CSB-50WC14	14	26		20	2		26
14	CSB-50WC16	16	30		23			30
16	CSB-50WC18	18	32		25			32
18	CSB-50WC20	20	36		28	3		36
20	CSB-50WC22	22	38		30			38
22	CSB-50WC24	24	42		33			42
24	CSB-50WC26	26	44		35			44
26	CSB-50WC28	28	48		38	4		48
30	CSB-50WC32	32	54		43			54
36	CSB-50WC38	38	62		50			62
40	CSB-50WC42	42	66		54			66
46	CSB-50WC48	48	74	2	61		1.5	74
50	CSB-50WC52	52	78		65			78
60	CSB-50WC62	62	90		76			90

Metric standard strip



Unit:mm

Type	Length±1	Width±1	Thickness -0.05
CSB-50SP	500	150	1.0
CSB-50SP	500	150	1.5
CSB-50SP	500	150	2.0
CSB-50SP	500	150	2.5

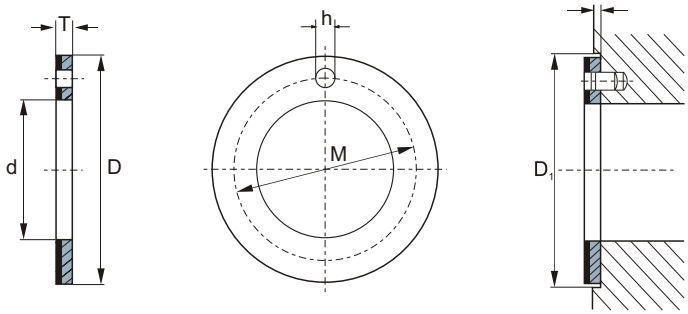
CSB-LA10 Metric cylindrical bushes

Unit:mm

Axle	Housing H7	OD tolerance	ID after fixed	Wall thick-ness	f_1	f_2	L $^{0}_{-0.40}$									
							20	25	30	40	50	60	70	80	100	115
45 $^{-0.025}_{-0.050}$	50 $^{+0.025}$	50 $^{+0.085}_{+0.045}$	44.990 45.105	2.460 2.505	1.8	0.6	CSB-LA10 4520	CSB-LA10 4525	CSB-LA10 4530	CSB-LA10 4540	CSB-LA10 4550					
50 $^{-0.025}_{-0.050}$	55 $^{+0.030}$	55 $^{+0.100}_{+0.055}$	49.990 50.110				CSB-LA10 5020		CSB-LA10 5030	CSB-LA10 5040	CSB-LA10 5050	CSB-LA10 5060				
55 $^{-0.030}_{-0.060}$	60 $^{+0.030}$	60 $^{+0.100}_{+0.055}$	54.990 55.110						CSB-LA10 5530	CSB-LA10 5540	CSB-LA10 5550	CSB-LA10 5560				
60 $^{-0.030}_{-0.060}$	65 $^{+0.030}$	65 $^{+0.100}_{+0.055}$	59.990 60.110						CSB-LA10 6030	CSB-LA10 6040	CSB-LA10 6050	CSB-LA10 6060	CSB-LA10 6070			
65 $^{-0.030}_{-0.060}$	70 $^{+0.030}$	70 $^{+0.100}_{+0.055}$	64.990 65.110						CSB-LA10 6530	CSB-LA10 6540	CSB-LA10 6550	CSB-LA10 6560	CSB-LA10 6570			
70 $^{-0.030}_{-0.060}$	75 $^{+0.030}$	75 $^{+0.100}_{+0.055}$	69.990 70.110							CSB-LA10 7040	CSB-LA10 7050	CSB-LA10 7060	CSB-LA10 7070	CSB-LA10 7080		
75 $^{-0.030}_{-0.060}$	80 $^{+0.030}$	80 $^{+0.100}_{+0.055}$	74.990 75.110						CSB-LA10 7530	CSB-LA10 7540	CSB-LA10 7550	CSB-LA10 7560	CSB-LA10 7570	CSB-LA10 7580		
80 $^{}_{-0.030}$	85 $^{+0.035}$	85 $^{+0.120}_{+0.070}$	80.020 80.155	2.440 2.490	1.8	0.6				CSB-LA10 8040	CSB-LA10 8050	CSB-LA10 8060	CSB-LA10 8070	CSB-LA10 8080	CSB-LA10 80100	
85 $^{}_{-0.035}$	90 $^{+0.035}$	90 $^{+0.120}_{+0.070}$	85.020 85.155							CSB-LA10 8540		CSB-LA10 8560		CSB-LA10 8580	CSB-LA10 85100	
90 $^{}_{-0.035}$	95 $^{+0.035}$	95 $^{+0.120}_{+0.070}$	90.020 90.155							CSB-LA10 9040	CSB-LA10 9050	CSB-LA10 9060		CSB-LA10 9080	CSB-LA10 90100	
95 $^{}_{-0.035}$	100 $^{+0.035}$	100 $^{+0.120}_{+0.070}$	95.020 95.155								CSB-LA10 9550	CSB-LA10 9560		CSB-LA10 9580	CSB-LA10 95100	
100 $^{}_{-0.035}$	105 $^{+0.035}$	105 $^{+0.120}_{+0.070}$	100.020 100.155								CSB-LA10 10050	CSB-LA10 10060		CSB-LA10 10080		CSB-LA10 100115
105 $^{}_{-0.035}$	110 $^{+0.035}$	110 $^{+0.120}_{+0.070}$	105.020 105.155									CSB-LA10 10560		CSB-LA10 10580		CSB-LA10 105115
110 $^{}_{-0.035}$	115 $^{+0.035}$	115 $^{+0.120}_{+0.070}$	110.020 110.155									CSB-LA10 11060		CSB-LA10 11080		CSB-LA10 110115
120 $^{}_{-0.035}$	125 $^{+0.040}$	125 $^{+0.170}_{+0.100}$	120.070 120.210	2.415 2.465	1.8	0.6						CSB-LA10 12060		CSB-LA10 12080	CSB-LA10 120100	
125 $^{}_{-0.040}$	130 $^{+0.040}$	130 $^{+0.170}_{+0.100}$	125.070 125.210									CSB-LA10 12560			CSB-LA10 125100	CSB-LA10 125115
130 $^{}_{-0.040}$	135 $^{+0.040}$	135 $^{+0.170}_{+0.100}$	130.070 130.210									CSB-LA10 13060		CSB-LA10 13080	CSB-LA10 130100	
140 $^{}_{-0.040}$	145 $^{+0.040}$	145 $^{+0.170}_{+0.100}$	140.070 140.210									CSB-LA10 14060		CSB-LA10 14080	CSB-LA10 140100	
150 $^{}_{-0.040}$	155 $^{+0.040}$	155 $^{+0.170}_{+0.100}$	150.070 150.210									CSB-LA10 15060		CSB-LA10 15080	CSB-LA10 150100	
160 $^{}_{-0.040}$	165 $^{+0.040}$	165 $^{+0.170}_{+0.100}$	160.070 160.210									CSB-LA10 16060		CSB-LA10 16080	CSB-LA10 160100	CSB-LA10 160115
180 $^{}_{-0.040}$	185 $^{+0.046}$	185 $^{+0.210}_{+0.130}$	180.070 180.216	2.415 2.465	1.8	0.6								CSB-LA10 18080	CSB-LA10 180100	
190 $^{}_{-0.046}$	195 $^{+0.046}$	195 $^{+0.210}_{+0.130}$	190.070 190.216											CSB-LA10 19080	CSB-LA10 190100	
200 $^{}_{-0.046}$	205 $^{+0.046}$	205 $^{+0.210}_{+0.130}$	200.070 200.216									CSB-LA10 20060		CSB-LA10 20080	CSB-LA10 200100	
220 $^{}_{-0.046}$	225 $^{+0.046}$	225 $^{+0.210}_{+0.130}$	220.070 220.216											CSB-LA10 22080	CSB-LA10 220100	
250 $^{}_{-0.046}$	255 $^{+0.052}$	255 $^{+0.260}_{+0.170}$	250.070 250.222	2.415 2.465	1.8	0.6								CSB-LA10 25080	CSB-LA10 250100	
260 $^{}_{-0.052}$	265 $^{+0.052}$	265 $^{+0.260}_{+0.170}$	260.070 260.222											CSB-LA10 26080	CSB-LA10 260100	
280 $^{}_{-0.052}$	285 $^{+0.052}$	285 $^{+0.260}_{+0.170}$	280.070 280.222											CSB-LA10 28080	CSB-LA10 280100	
300 $^{}_{-0.052}$	305 $^{+0.052}$	305 $^{+0.260}_{+0.170}$	300.070 300.222											CSB-LA10 30080	CSB-LA10 300100	

CSB-50 Metric thrust washer and strip

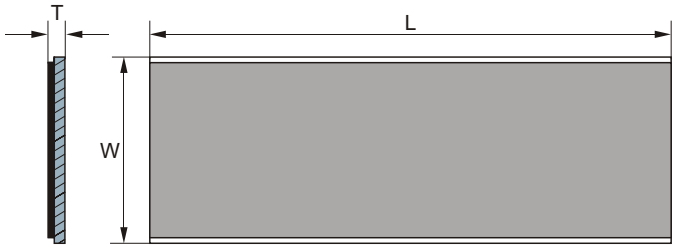
Metric thrust washer



Unit:mm

Axle	Designation	Washer dimension				Installation size		D_1+0.12
		d +0.25	D -0.25	T -0.05	M ±0.125	$h^{+0.4}_{+0.1}$	t±0.2	
8	CSB-50WC10	10	20	1.5	15	1.5	1	20
10	CSB-50WC12	12	24		18			24
12	CSB-50WC14	14	26		20	2		26
14	CSB-50WC16	16	30		23			30
16	CSB-50WC18	18	32		25			32
18	CSB-50WC20	20	36		28	3		36
20	CSB-50WC22	22	38		30			38
22	CSB-50WC24	24	42		33			42
24	CSB-50WC26	26	44		35			44
26	CSB-50WC28	28	48		38	4		48
30	CSB-50WC32	32	54		43			54
36	CSB-50WC38	38	62		50			62
40	CSB-50WC42	42	66		54			66
46	CSB-50WC48	48	74	2	61		1.5	74
50	CSB-50WC52	52	78		65			78
60	CSB-50WC62	62	90		76			90

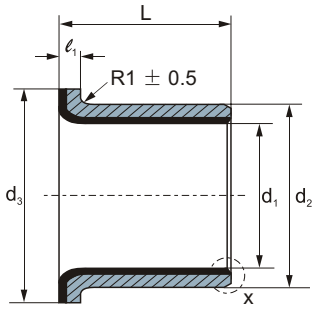
Metric standard strip

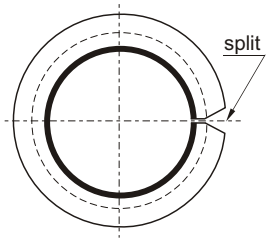


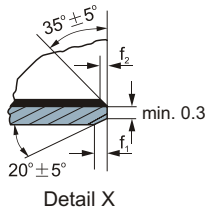
Unit:mm

Type	Length±1	Width±1	Thickness -0.05
CSB-50SP	500	150	1.0
CSB-50SP	500	150	1.5
CSB-50SP	500	150	2.0
CSB-50SP	500	150	2.5

CSB-LA10 Metric flange bushes





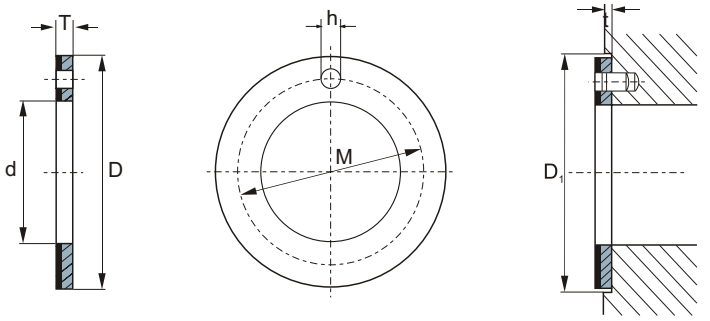


Unit:mm

Axle	Housing H7	OD tolerance	ID after fixed	Designation	Wall thickness	f_1	f_2	Dimension				
								d_1	d_2	d_3±0.5	L±0.25	ℓ_1-0.2
6 -0.013 -0.028	8 +0.015	6 +0.055 +0.025	5.990 6.005	CSB-LA10F06040	+0.005 -0.020	0.6	0.3	6	8	12	4	1
				CSB-LA10F06070							7	
8 -0.013 -0.028	10 +0.015	8 +0.055 +0.025	7.990 8.055	CSB-LA10F08055				8	10	15	5.5	
				CSB-LA10F08075							7.5	
10 -0.016 -0.034	12 +0.018	10 +0.055 +0.025	9.990 10.058	CSB-LA10F10070				10	12	18	7	
				CSB-LA10F10090							9	
				CSB-LA10F10120							12	
12 -0.016 -0.034	14 +0.018	12 +0.065 +0.030	11.990 12.058	CSB-LA10F12070				12	14	20	7	
				CSB-LA10F12090							9	
				CSB-LA10F12120							12	
14 -0.016 -0.034	16 +0.018	14 +0.065 +0.030	13.990 14.058	CSB-LA10F14120				14	16	22	12	
				CSB-LA10F14170							17	
15 -0.016 -0.034	17 +0.018	15 +0.065 +0.030	14.990 15.058	CSB-LA10F15090				15	17	23	9	
				CSB-LA10F15120							12	
				CSB-LA10F15170							17	
16 -0.016 -0.034	18 +0.018	16 +0.065 +0.030	15.990 16.058	CSB-LA10F16120				16	18	24	12	
				CSB-LA10F16170							17	
18 -0.016 -0.034	20 +0.021	18 +0.065 +0.030	17.990 18.061	CSB-LA10F18120				18	20	26	12	
				CSB-LA10F18170							17	
				CSB-LA10F18200							20	
20 -0.020 -0.041	23 +0.021	20 +0.075 +0.035	19.990 20.071	CSB-LA10F20115	+0.005 -0.025	0.6	0.4	20	23	30	11.5	1.5
				CSB-LA10F20165							16.5	
				CSB-LA10F20215							21.5	
22 -0.020 -0.041	25 +0.021	22 +0.075 +0.035	21.990 22.071	CSB-LA10F22150				22	25	32	15	
				CSB-LA10F22200							20	
25 -0.020 -0.041	28 +0.021	25 +0.075 +0.035	24.990 25.071	CSB-LA10F25115				25	28	35	11.5	
				CSB-LA10F25165							16.5	
				CSB-LA10F25215							21.5	
30 -0.025 -0.050	34 +0.025	30 +0.075 +0.035	29.990 30.085	CSB-LA10F30160	+0.005 -0.030	1.2	0.4	30	34	42	16	2
				CSB-LA10F30260							26	
35 -0.025 -0.050	39 +0.025	35 +0.085 +0.045	34.990 35.085	CSB-LA10F35160				35	39	47	16	
				CSB-LA10F35260							26	
40 -0.025 -0.050	44 +0.025	40 +0.085 +0.045	39.990 40.085	CSB-LA10F40260				40	44	53	26	
				CSB-LA10F40400							40	

CSB-LA10 Metric thrust washer and strip

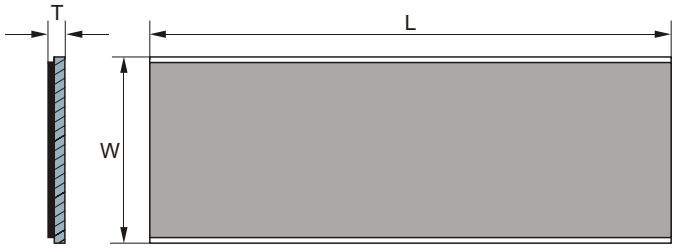
Metric thrust washer



Unit:mm

Axle	Designation	Washer dimension				Installation size		D_1+0.12
		d +0.25	D -0.25	T -0.05	M ±0.125	$h^{+0.4}_{+0.1}$	t±0.2	
8	CSB-LA10WC10	10	20	1.5	15	1.5	1	20
10	CSB-LA10WC12	12	24		18			24
12	CSB-LA10WC14	14	26		20	2		26
14	CSB-LA10WC16	16	30		23			30
16	CSB-LA10WC18	18	32		25			32
18	CSB-LA10WC20	20	36		28	3		36
20	CSB-LA10WC22	22	38		30			38
22	CSB-LA10WC24	24	42		33			42
24	CSB-LA10WC26	26	44		35			44
26	CSB-LA10WC28	28	48		38	4		48
30	CSB-LA10WC32	32	54		43			54
36	CSB-LA10WC38	38	62		50			62
40	CSB-LA10WC42	42	66		54			66
46	CSB-LA10WC48	48	74	2	61		1.5	74
50	CSB-LA10WC52	52	78		65			78
60	CSB-LA10WC62	62	90		76			90

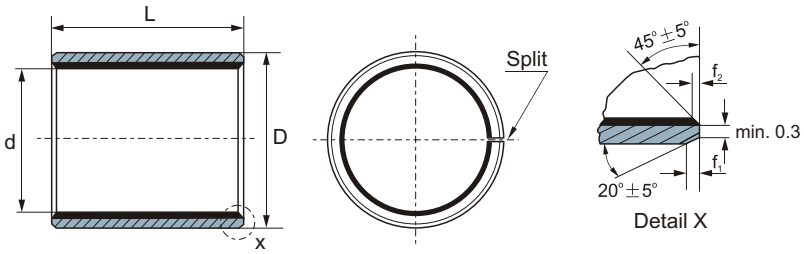
Metric standard strip



Unit:mm

Type	Length±1	Width±1	Thickness -0.05
CSB-LA10SP	500	150	1.0
CSB-LA10SP	500	150	1.5
CSB-LA10SP	500	150	2.0
CSB-LA10SP	500	150	2.5

CSB-11 Metric cylindrical bushes



Unit:mm

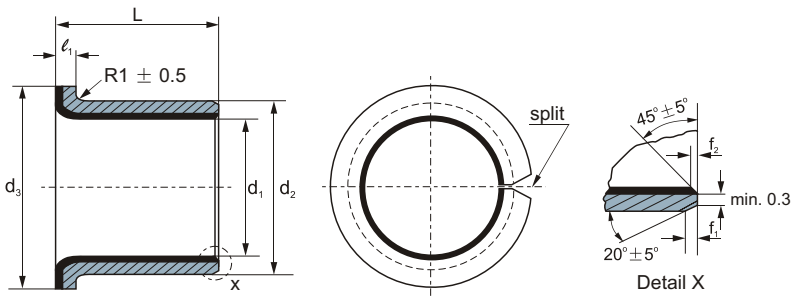
Axle	Housing H7	OD tolerance	ID after fixed	Wall thick-ness	f_1	f_2	L $^{0}_{-0.40}$ ($d \leq \phi 30$ L -0.3; $d > \phi 30$ L -0.4)									
							6	8	10	12	15	20	25	30	40	50	60
6 $^{-0.013}_{-0.028}$	8 $^{+0.015}$	8 $^{+0.075}_{+0.045}$	5.990 6.055	0.980 1.005	0.6	0.3	CSB-11 0606	CSB-11 0608	CSB-11 0610								
8 $^{-0.013}_{-0.028}$	10 $^{+0.015}$	10 $^{+0.075}_{+0.045}$	7.990 8.055				CSB-11 0806	CSB-11 0808	CSB-11 0810	CSB-11 0812	CSB-11 0815						
10 $^{-0.016}_{-0.034}$	12 $^{+0.018}$	12 $^{+0.080}_{+0.050}$	9.990 10.058				CSB-11 1006	CSB-11 1008	CSB-11 1010	CSB-11 1012	CSB-11 1015	CSB-11 1020					
12 $^{-0.016}_{-0.034}$	14 $^{+0.018}$	14 $^{+0.080}_{+0.050}$	11.990 12.058				CSB-11 1206	CSB-11 1208	CSB-11 1210	CSB-11 1212	CSB-11 1215	CSB-11 1220	CSB-11 1225				
13 $^{-0.016}_{-0.034}$	15 $^{+0.018}$	15 $^{+.0.080}_{+0.050}$	12.990 13.058						CSB-11 1310			CSB-11 1320					
14 $^{-0.016}_{-0.034}$	16 $^{+0.018}$	16 $^{+0.080}_{+0.050}$	13.990 14.058						CSB-11 1410	CSB-11 1412	CSB-11 1415	CSB-11 1420	CSB-11 1425				
15 $^{-0.016}_{-0.034}$	17 $^{+0.018}$	17 $^{+0.080}_{+0.050}$	14.990 15.058						CSB-11 1510	CSB-11 1512	CSB-11 1515	CSB-11 1520	CSB-11 1525				
16 $^{-0.016}_{-0.034}$	18 $^{+0.018}$	18 $^{+0.080}_{+0.050}$	15.990 16.058						CSB-11 1610	CSB-11 1612	CSB-11 1615	CSB-11 1620	CSB-11 1625				
17 $^{-0.016}_{-0.034}$	19 $^{+0.021}$	19 $^{+0.095}_{+0.055}$	16.990 17.061						CSB-11 1710	CSB-11 1712		CSB-11 1720					
18 $^{-0.016}_{-0.034}$	20 $^{+0.021}$	20 $^{+0.095}_{+0.055}$	17.990 18.061						CSB-11 1810	CSB-11 1812	CSB-11 1815	CSB-11 1820	CSB-11 1825				
20 $^{-0.020}_{-0.041}$	23 $^{+0.021}$	23 $^{+0.095}_{+0.055}$	19.990 20.071	1.475 1.505	0.6	0.4			CSB-11 2010	CSB-11 2012	CSB-11 2015	CSB-11 2020	CSB-11 2025	CSB-11 2030			
22 $^{-0.020}_{-0.041}$	25 $^{+0.021}$	25 $^{+0.095}_{+0.055}$	21.990 22.071						CSB-11 2210	CSB-11 2212	CSB-11 2215	CSB-11 2220	CSB-11 2225	CSB-11 2230			
24 $^{-0.020}_{-0.041}$	27 $^{+0.021}$	27 $^{+0.095}_{+0.055}$	23.990 24.071								CSB-11 2415	CSB-11 2420	CSB-11 2425	CSB-11 2430			
25 $^{-0.020}_{-0.041}$	28 $^{+0.021}$	28 $^{+0.095}_{+0.055}$	24.990 25.071						CSB-11 2510	CSB-11 2512	CSB-11 2515	CSB-11 2520	CSB-11 2525	CSB-11 2530	CSB-11 2540	CSB-11 2550	
28 $^{-0.020}_{-0.041}$	32 $^{+0.025}$	32 $^{+0.110}_{+0.065}$	27.990 28.085	1.970 2.005	1.2	0.4					CSB-11 2815	CSB-11 2820	CSB-11 2825	CSB-11 2830	CSB-11 2840		
30 $^{-0.020}_{-0.041}$	34 $^{+0.025}$	34 $^{+0.110}_{+0.065}$	29.990 30.285							CSB-11 3012	CSB-11 3015	CSB-11 3020	CSB-11 3025	CSB-11 3030	CSB-11 3040		
32 $^{-0.025}_{-0.050}$	36 $^{+0.025}$	36 $^{+0.110}_{+0.065}$	31.990 32.085									CSB-11 3220		CSB-11 3230	CSB-11 3240		
35 $^{-0.025}_{-0.050}$	39 $^{+0.025}$	39 $^{+0.110}_{+0.065}$	34.990 35.085							CSB-11 3512	CSB-11 3515	CSB-11 3520	CSB-11 3525	CSB-11 3530	CSB-11 3540	CSB-11 3550	
38 $^{-0.025}_{-0.050}$	42 $^{+0.025}$	42 $^{+0.110}_{+0.065}$	37.990 38.085								CSB-11 3815			CSB-11 3830	CSB-11 3840		
40 $^{-0.025}_{-0.050}$	44 $^{+0.025}$	44 $^{+0.110}_{+0.065}$	39.990 40.085							CSB-11 4012		CSB-11 4020	CSB-11 4025	CSB-11 4030	CSB-11 4040	CSB-11 4050	

CSB-11 Metric cylindrical bushes

Unit:mm

Axle	Housing H7	OD tolerance	ID after fixed	Wall thick-ness	f_1	f_2	L $^{0}_{-0.40}$									
							20	25	30	40	50	60	70	80	100	115
45 $^{-0.025}_{-0.050}$	50 $^{+0.025}$	50 $^{+0.110}_{+0.065}$	44.990 45.105	2.460 2.505	1.8	0.6	CSB-11 4520	CSB-11 4525	CSB-11 4530	CSB-11 4540	CSB-11 4550					
50 $^{-0.025}_{-0.050}$	55 $^{+0.030}$	55 $^{+0.125}_{+0.075}$	49.990 50.110				CSB-11 5020		CSB-11 5030	CSB-11 5040	CSB-11 5050	CSB-11 5060				
55 $^{-0.030}_{-0.060}$	60 $^{+0.030}$	60 $^{+0.125}_{+0.075}$	54.990 55.110						CSB-11 5530	CSB-11 5540	CSB-11 5550	CSB-11 5560				
60 $^{-0.030}_{-0.060}$	65 $^{+0.030}$	65 $^{+0.125}_{+0.075}$	59.990 60.110						CSB-11 6030	CSB-11 6040	CSB-11 6050	CSB-11 6060	CSB-11 6070			
65 $^{-0.030}_{-0.060}$	70 $^{+0.030}$	70 $^{+0.125}_{+0.075}$	64.990 65.110						CSB-11 6530	CSB-11 6540	CSB-11 6550	CSB-11 6560	CSB-11 6570			
70 $^{-0.030}_{-0.060}$	75 $^{+0.030}$	75 $^{+0.125}_{+0.075}$	69.990 70.110							CSB-11 7040	CSB-11 7050	CSB-11 7060	CSB-11 7070	CSB-11 7080		
75 $^{-0.030}_{-0.060}$	80 $^{+0.030}$	80 $^{+0.125}_{+0.075}$	74.990 75.110						CSB-11 7530	CSB-11 7540	CSB-11 7550	CSB-11 7560	CSB-11 7570	CSB-11 7580		
80 $^{}_{-0.030}$	85 $^{+0.035}$	85 $^{+0.140}_{+0.090}$	80.020 80.155	2.440 2.490	1.8	0.6				CSB-11 8040	CSB-11 8050	CSB-11 8060	CSB-11 8070	CSB-11 8080	CSB-11 80100	
85 $^{}_{-0.035}$	90 $^{+0.035}$	90 $^{+0.140}_{+0.090}$	85.020 85.155							CSB-11 8540		CSB-11 8560		CSB-11 8580	CSB-11 85100	
90 $^{}_{-0.035}$	95 $^{+0.035}$	95 $^{+0.140}_{+0.090}$	90.020 90.155							CSB-11 9040	CSB-11 9050	CSB-11 9060		CSB-11 9080	CSB-11 90100	
95 $^{}_{-0.035}$	100 $^{+0.035}$	100 $^{+0.140}_{+0.090}$	95.020 95.155								CSB-11 9550	CSB-11 9560		CSB-11 9580	CSB-11 95100	
100 $^{}_{-0.035}$	105 $^{+0.035}$	105 $^{+0.140}_{+0.090}$	100.020 100.155								CSB-11 10050	CSB-11 10060		CSB-11 10080		CSB-11 100115
105 $^{}_{-0.035}$	110 $^{+0.035}$	110 $^{+0.140}_{+0.090}$	105.020 105.155									CSB-11 10560		CSB-11 10580		CSB-11 105115
110 $^{}_{-0.035}$	115 $^{+0.035}$	115 $^{+0.140}_{+0.090}$	110.020 110.155									CSB-11 11060		CSB-11 11080		CSB-11 110115
120 $^{}_{-0.035}$	125 $^{+0.040}$	125 $^{+0.190}_{+0.120}$	120.070 120.210	2.415 2.465	1.8	0.6						CSB-11 12060		CSB-11 12080	CSB-11 120100	
125 $^{}_{-0.040}$	130 $^{+0.040}$	130 $^{+0.190}_{+0.120}$	125.070 125.210									CSB-11 12560			CSB-11 125100	CSB-11 125115
130 $^{}_{-0.040}$	135 $^{+0.040}$	135 $^{+0.190}_{+0.120}$	130.070 130.210									CSB-11 13060		CSB-11 13080	CSB-11 130100	
140 $^{}_{-0.040}$	145 $^{+0.040}$	145 $^{+0.190}_{+0.120}$	140.070 140.210									CSB-11 14060		CSB-11 14080	CSB-11 140100	
150 $^{}_{-0.040}$	155 $^{+0.040}$	155 $^{+0.190}_{+0.120}$	150.070 150.210									CSB-11 15060		CSB-11 15080	CSB-11 150100	
160 $^{}_{-0.040}$	165 $^{+0.040}$	165 $^{+0.190}_{+0.120}$	160.070 160.210									CSB-11 16060		CSB-11 16080	CSB-11 160100	CSB-11 160115
180 $^{}_{-0.040}$	185 $^{+0.046}$	185 $^{+0.230}_{+0.150}$	180.070 180.216	2.415 2.465	1.8	0.6								CSB-11 18080	CSB-11 180100	
190 $^{}_{-0.046}$	195 $^{+0.046}$	195 $^{+0.230}_{+0.150}$	190.070 190.216											CSB-11 19080	CSB-11 190100	
200 $^{}_{-0.046}$	205 $^{+0.046}$	205 $^{+0.230}_{+0.150}$	200.070 200.216									CSB-11 20060		CSB-11 20080	CSB-11 200100	
220 $^{}_{-0.046}$	225 $^{+0.046}$	225 $^{+0.230}_{+0.150}$	220.070 220.216											CSB-11 22080	CSB-11 220100	
250 $^{}_{-0.046}$	255 $^{+0.052}$	255 $^{+0.280}_{+0.190}$	250.070 250.222	2.415 2.465	1.8	0.6								CSB-11 25080	CSB-11 250100	
260 $^{}_{-0.052}$	265 $^{+0.052}$	265 $^{+0.280}_{+0.190}$	260.070 260.222											CSB-11 26080	CSB-11 260100	
280 $^{}_{-0.052}$	285 $^{+0.052}$	285 $^{+0.280}_{+0.190}$	280.070 280.222											CSB-11 28080	CSB-11 280100	
300 $^{}_{-0.052}$	305 $^{+0.052}$	305 $^{+0.280}_{+0.190}$	300.070 300.222											CSB-11 30080	CSB-11 300100	

CSB-11 Metric flange bushes

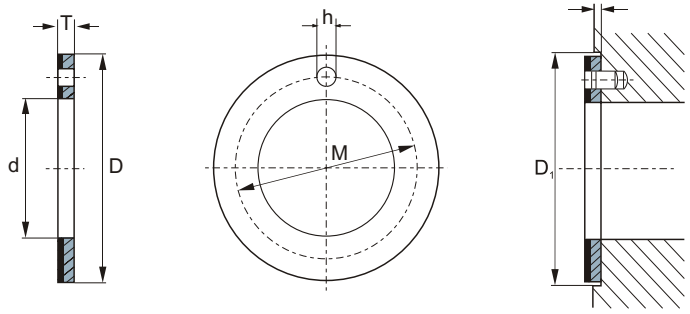


Unit:mm

Axle	Housing H7	OD tolerance	ID after fixed	Designation	Wall thickness	f_1	f_2	Dimension				
								d_1	d_2	d_3±0.5	L±0.25	ℓ_1-0.2
6 -0.013 -0.028	8 +0.015	6 +0.075 +0.045	5.990 6.005	CSB-11F06040	+0.005 -0.020	0.6	0.3	6	8	12	4	1
				CSB-11F06070							7	
8 -0.013 -0.028	10 +0.015	8 +0.075 +0.045	7.990 8.055	CSB-11F08055				8	10	15	5.5	
				CSB-11F08075							7.5	
10 -0.016 -0.034	12 +0.018	10 +0.075 +0.045	9.990 10.058	CSB-11F10070				10	12	18	7	
				CSB-11F10090							9	
				CSB-11F10120							12	
12 -0.016 -0.034	14 +0.018	12 +0.080 +0.050	11.990 12.058	CSB-11F12070				12	14	20	7	
				CSB-11F12090							9	
				CSB-11F12120							12	
14 -0.016 -0.034	16 +0.018	14 +0.080 +0.050	13.990 14.058	CSB-11F14120				14	16	22	12	
				CSB-11F14170							17	
15 -0.016 -0.034	17 +0.018	15 +0.080 +0.050	14.990 15.058	CSB-11F15090				15	17	23	9	
				CSB-11F15120							12	
				CSB-11F15170							17	
16 -0.016 -0.034	18 +0.018	16 +0.080 +0.050	15.990 16.058	CSB-11F16120				16	18	24	12	
				CSB-11F16170							17	
18 -0.016 -0.034	20 +0.021	18 +0.080 +0.050	17.990 18.061	CSB-11F18120				18	20	26	12	
				CSB-11F18170							17	
				CSB-11F18200							20	
20 -0.020 -0.041	23 +0.021	20 +0.095 +0.055	19.990 20.071	CSB-11F20115	+0.005 -0.025	0.6	0.4	20	23	30	11.5	1.5
				CSB-11F20165							16.5	
				CSB-11F20215							21.5	
22 -0.020 -0.041	25 +0.021	22 +0.095 +0.055	21.990 22.071	CSB-11F22150				22	25	32	15	
				CSB-11F22200							20	
25 -0.020 -0.041	28 +0.021	25 +0.095 +0.055	24.990 25.071	CSB-11F25115				25	28	35	11.5	
				CSB-11F25165							16.5	
				CSB-11F25215							21.5	
30 -0.025 -0.050	34 +0.025	30 +0.095 +0.055	29.990 30.085	CSB-11F30160	+0.005 -0.030	1.2	0.4	30	34	42	16	2
				CSB-11F30260							26	
35 -0.025 -0.050	39 +0.025	35 +0.110 +0.065	34.990 35.085	CSB-11F35160				35	39	47	16	
				CSB-11F35260							26	
40 -0.025 -0.050	44 +0.025	40 +0.110 +0.065	39.990 40.085	CSB-11F40260				40	44	53	26	
				CSB-11F40400							40	

CSB-11 Metric thrust washer and strip

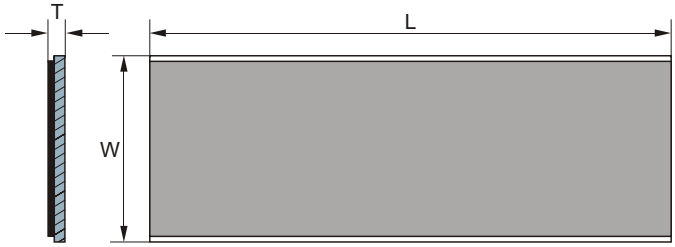
Metric thrust washer



Unit:mm

Axle	Designation	Washer dimension				Installation size		D_1+0.12
		d +0.25	D -0.25	T -0.05	M ±0.125	$h^{+0.4}_{+0.1}$	t±0.2	
8	CSB-11WC10	10	20	1.5	15	1.5	1	20
10	CSB-11WC12	12	24		18			24
12	CSB-11WC14	14	26		20	2		26
14	CSB-11WC16	16	30		23			30
16	CSB-11WC18	18	32		25			32
18	CSB-11WC20	20	36		28	3		36
20	CSB-11WC22	22	38		30			38
22	CSB-11WC24	24	42		33			42
24	CSB-11WC26	26	44		35			44
26	CSB-11WC28	28	48		38	4		48
30	CSB-11WC32	32	54		43			54
36	CSB-11WC38	38	62		50			62
40	CSB-11WC42	42	66		54			66
46	CSB-11WC48	48	74	2	61		1.5	74
50	CSB-11WC52	52	78		65			78
60	CSB-11WC62	62	90		76			90

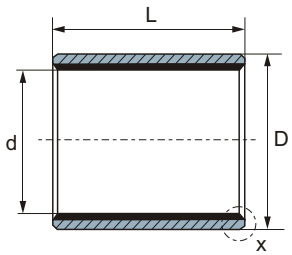
Metric standard strip

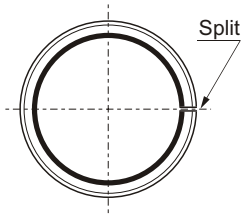


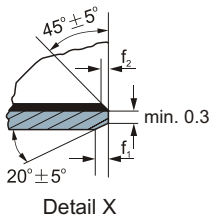
Unit:mm

Type	Length±1	Width±1	Thickness -0.05
CSB-11SP	500	150	1.0
CSB-11SP	500	150	1.5
CSB-11SP	500	150	2.0
CSB-11SP	500	150	2.5

CSB-30 Metric cylinrical bushes







Unit:mm

Axle	Housing H7	OD tolerance	ID after fixed	Wall thick-ness	f_1	f_2	L $^{0}_{-0.40}$ ($d \leq \phi 30$ L -0.3, $d > \phi 30$ L -0.4)									
							6	8	10	12	15	20	25	30	40	50	60
6 $^{-0.013}_{-0.028}$	8 $^{+0.015}$	8 $^{+0.055}_{+0.025}$	5.990 6.055	0.980 1.005	0.6	0.3	CSB-30 0606	CSB-30 0608	CSB-30 0610								
8 $^{-0.013}_{-0.028}$	10 $^{+0.015}$	10 $^{+0.055}_{+0.025}$	7.990 8.055				CSB-30 0806	CSB-30 0808	CSB-30 0810	CSB-30 0812	CSB-30 0815						
10 $^{-0.016}_{-0.034}$	12 $^{+0.018}$	12 $^{+0.065}_{+0.030}$	9.990 10.058				CSB-30 1006	CSB-30 1008	CSB-30 1010	CSB-30 1012	CSB-30 1015	CSB-30 1020					
12 $^{-0.016}_{-0.034}$	14 $^{+0.018}$	14 $^{+0.065}_{+0.030}$	11.990 12.058				CSB-30 1206	CSB-30 1208	CSB-30 1210	CSB-30 1212	CSB-30 1215	CSB-30 1220	CSB-30 1225				
13 $^{-0.016}_{-0.034}$	15 $^{+0.018}$	15 $^{+.0.065}_{+0.030}$	12.990 13.058						CSB-30 1310			CSB-30 1320					
14 $^{-0.016}_{-0.034}$	16 $^{+0.018}$	16 $^{+0.065}_{+0.030}$	13.990 14.058						CSB-30 1410	CSB-30 1412	CSB-30 1415	CSB-30 1420	CSB-30 1425				
15 $^{-0.016}_{-0.034}$	17 $^{+0.018}$	17 $^{+0.065}_{+0.030}$	14.990 15.058						CSB-30 1510	CSB-30 1512	CSB-30 1515	CSB-30 1520	CSB-30 1525				
16 $^{-0.016}_{-0.034}$	18 $^{+0.018}$	18 $^{+0.065}_{+0.030}$	15.990 16.058						CSB-30 1610	CSB-30 1612	CSB-30 1615	CSB-30 1620	CSB-30 1625				
17 $^{-0.016}_{-0.034}$	19 $^{+0.021}$	19 $^{+0.075}_{+0.035}$	16.990 17.061						CSB-30 1710	CSB-30 1712		CSB-30 1720					
18 $^{-0.016}_{-0.034}$	20 $^{+0.021}$	20 $^{+0.075}_{+0.035}$	17.990 18.061						CSB-30 1810	CSB-30 1812	CSB-30 1815	CSB-30 1820	CSB-30 1825				
20 $^{-0.020}_{-0.041}$	23 $^{+0.021}$	23 $^{-0.075}_{+0.035}$	19.990 20.071	1.475 1.505	0.6	0.4			CSB-30 2010	CSB-30 2012	CSB-30 2015	CSB-30 2020	CSB-30 2025	CSB-30 2030			
22 $^{-0.020}_{-0.041}$	25 $^{+0.021}$	25 $^{+0.075}_{+0.035}$	21.990 22.071						CSB-30 2210	CSB-30 2212	CSB-30 2215	CSB-30 2220	CSB-30 2225	CSB-30 2230			
24 $^{-0.020}_{-0.041}$	27 $^{+0.021}$	27 $^{+0.075}_{+0.035}$	23.990 24.071								CSB-30 2415	CSB-30 2420	CSB-30 2425	CSB-30 2430			
25 $^{-0.020}_{-0.041}$	28 $^{+0.021}$	28 $^{+0.075}_{+0.035}$	24.990 25.071						CSB-30 2510	CSB-30 2512	CSB-30 2515	CSB-30 2520	CSB-30 2525	CSB-30 2530	CSB-30 2540	CSB-30 2550	
28 $^{-0.020}_{-0.041}$	32 $^{+0.025}$	32 $^{+0.085}_{+0.045}$	27.990 28.085	1.970 2.005	1.2	0.4					CSB-30 2815	CSB-30 2820	CSB-30 2825	CSB-30 2830	CSB-30 2840		
30 $^{-0.020}_{-0.041}$	34 $^{+0.025}$	34 $^{+0.085}_{+0.045}$	29.990 30.285							CSB-30 3012	CSB-30 3015	CSB-30 3020	CSB-30 3025	CSB-30 3030	CSB-30 3040		
32 $^{-0.025}_{-0.050}$	36 $^{+0.025}$	36 $^{+0.085}_{+0.045}$	31.990 32.085									CSB-30 3220		CSB-30 3230	CSB-30 3240		
35 $^{-0.025}_{-0.050}$	39 $^{+0.025}$	39 $^{+0.085}_{+0.045}$	34.990 35.085							CSB-30 3512	CSB-30 3515	CSB-30 3520	CSB-30 3525	CSB-30 3530	CSB-30 3540	CSB-30 3550	
38 $^{-0.025}_{-0.050}$	42 $^{+0.025}$	42 $^{+0.085}_{+0.045}$	37.990 38.085								CSB-30 3815			CSB-30 3830	CSB-30 3840		
40 $^{-0.025}_{-0.050}$	44 $^{+0.025}$	44 $^{+0.085}_{+0.045}$	39.990 40.085							CSB-30 4012		CSB-30 4020	CSB-30 4025	CSB-30 4030	CSB-30 4040	CSB-30 4050	

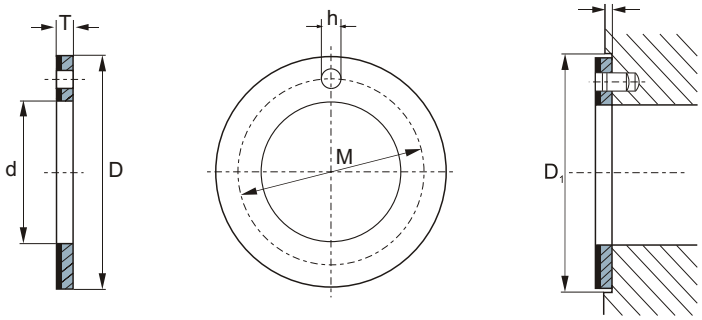
CSB-30 Metric cylindrical bushes

Unit:mm

Axle	Housing H7	OD tolerance	ID after fixed	Wall thick-ness	f_1	f_2	L $^{0}_{-0.40}$									
							20	25	30	40	50	60	70	80	100	115
45 $^{-0.025}_{-0.050}$	50 $^{+0.025}$	50 $^{+0.085}_{+0.045}$	44.990 45.105	2.460 2.505	1.8	0.6	CSB-30 4520	CSB-30 4525	CSB-30 4530	CSB-30 4540	CSB-30 4550					
50 $^{-0.025}_{-0.050}$	55 $^{+0.030}$	55 $^{+0.100}_{+0.055}$	49.990 50.110				CSB-30 5020		CSB-30 5030	CSB-30 5040	CSB-30 5050	CSB-30 5060				
55 $^{-0.030}_{-0.060}$	60 $^{+0.030}$	60 $^{+0.100}_{+0.055}$	54.990 55.110						CSB-30 5530	CSB-30 5540	CSB-30 5550	CSB-30 5560				
60 $^{-0.030}_{-0.060}$	65 $^{+0.030}$	65 $^{+0.100}_{+0.055}$	59.990 60.110						CSB-30 6030	CSB-30 6040	CSB-30 6050	CSB-30 6060	CSB-30 6070			
65 $^{-0.030}_{-0.060}$	70 $^{+0.030}$	70 $^{+0.100}_{+0.055}$	64.990 65.110						CSB-30 6530	CSB-30 6540	CSB-30 6550	CSB-30 6560	CSB-30 6570			
70 $^{-0.030}_{-0.060}$	75 $^{+0.030}$	75 $^{+0.100}_{+0.055}$	69.990 70.110							CSB-30 7040	CSB-30 7050	CSB-30 7060	CSB-30 7070	CSB-30 7080		
75 $^{-0.030}_{-0.060}$	80 $^{+0.030}$	80 $^{+0.100}_{+0.055}$	74.990 75.110						CSB-30 7530	CSB-30 7540	CSB-30 7550	CSB-30 7560	CSB-30 7570	CSB-30 7580		
80 $^{}_{-0.030}$	85 $^{+0.035}$	85 $^{+0.120}_{+0.070}$	80.020 80.155	2.440 2.490	1.8	0.6				CSB-30 8040	CSB-30 8050	CSB-30 8060	CSB-30 8070	CSB-30 8080	CSB-30 80100	
85 $^{}_{-0.035}$	90 $^{+0.035}$	90 $^{+0.120}_{+0.070}$	85.020 85.155							CSB-30 8540		CSB-30 8560		CSB-30 8580	CSB-30 85100	
90 $^{}_{-0.035}$	95 $^{+0.035}$	95 $^{+0.120}_{+0.070}$	90.020 90.155							CSB-30 9040	CSB-30 9050	CSB-30 9060		CSB-30 9080	CSB-30 90100	
95 $^{}_{-0.035}$	100 $^{+0.035}$	100 $^{+0.120}_{+0.070}$	95.020 95.155								CSB-30 9550	CSB-30 9560		CSB-30 9580	CSB-30 95100	
100 $^{}_{-0.035}$	105 $^{+0.035}$	105 $^{+0.120}_{+0.070}$	100.020 100.155								CSB-30 10050	CSB-30 10060		CSB-30 10080		CSB-30 100115
105 $^{}_{-0.035}$	110 $^{+0.035}$	110 $^{+0.120}_{+0.070}$	105.020 105.155									CSB-30 10560		CSB-30 10580		CSB-30 105115
110 $^{}_{-0.035}$	115 $^{+0.035}$	115 $^{+0.120}_{+0.070}$	110.020 110.155									CSB-30 11060		CSB-30 11080		CSB-30 110115
120 $^{}_{-0.035}$	125 $^{+0.040}$	125 $^{+0.170}_{+0.100}$	120.070 120.210	2.415 2.465	1.8	0.6						CSB-30 12060		CSB-30 12080	CSB-30 120100	
125 $^{}_{-0.040}$	130 $^{+0.040}$	130 $^{+0.170}_{+0.100}$	125.070 125.210									CSB-30 12560			CSB-30 125100	CSB-30 125115
130 $^{}_{-0.040}$	135 $^{+0.040}$	135 $^{+0.170}_{+0.100}$	130.070 130.210									CSB-30 13060		CSB-30 13080	CSB-30 130100	
140 $^{}_{-0.040}$	145 $^{+0.040}$	145 $^{+0.170}_{+0.100}$	140.070 140.210									CSB-30 14060		CSB-30 14080	CSB-30 140100	
150 $^{}_{-0.040}$	155 $^{+0.040}$	155 $^{+0.170}_{+0.100}$	150.070 150.210									CSB-30 15060		CSB-30 15080	CSB-30 150100	
160 $^{}_{-0.040}$	165 $^{+0.040}$	165 $^{+0.170}_{+0.100}$	160.070 160.210									CSB-30 16060		CSB-30 16080	CSB-30 160100	CSB-30 160115
180 $^{}_{-0.040}$	185 $^{+0.046}$	185 $^{+0.210}_{+0.130}$	180.070 180.216	2.415 2.465	1.8	0.6								CSB-30 18080	CSB-30 180100	
190 $^{}_{-0.046}$	195 $^{+0.046}$	195 $^{+0.210}_{+0.130}$	190.070 190.216											CSB-30 19080	CSB-30 190100	
200 $^{}_{-0.046}$	205 $^{+0.046}$	205 $^{+0.210}_{+0.130}$	200.070 200.216									CSB-30 20060		CSB-30 20080	CSB-30 200100	
220 $^{}_{-0.046}$	225 $^{+0.046}$	225 $^{+0.210}_{+0.130}$	220.070 220.216											CSB-30 22080	CSB-30 220100	
250 $^{}_{-0.046}$	255 $^{+0.052}$	255 $^{+0.260}_{+0.170}$	250.070 250.222	2.415 2.465	1.8	0.6								CSB-30 25080	CSB-30 250100	
260 $^{}_{-0.052}$	265 $^{+0.052}$	265 $^{+0.260}_{+0.170}$	260.070 260.222											CSB-30 26080	CSB-30 260100	
280 $^{}_{-0.052}$	285 $^{+0.052}$	285 $^{+0.260}_{+0.170}$	280.070 280.222											CSB-30 28080	CSB-30 280100	
300 $^{}_{-0.052}$	305 $^{+0.052}$	305 $^{+0.260}_{+0.170}$	300.070 300.222											CSB-30 30080	CSB-30 300100	

CSB-30 Metric thrust washer and strip

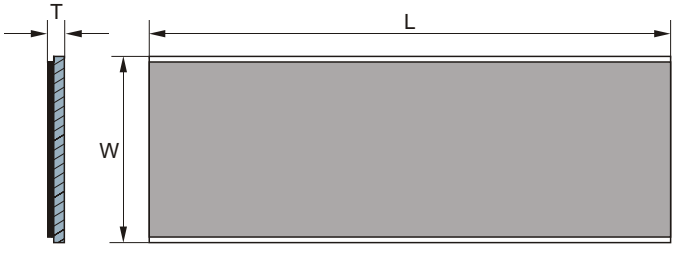
Metric thrust washer



Unit:mm

Axle	Designation	Washer dimension				Installation size		D_1+0.12
		d +0.25	D -0.25	T -0.05	M ±0.125	$h^{+0.4}_{+0.1}$	t±0.2	
8	CSB-30WC10	10	20	1.5	15	1.5	1	20
10	CSB-30WC12	12	24		18			24
12	CSB-30WC14	14	26		20	2		26
14	CSB-30WC16	16	30		23			30
16	CSB-30WC18	18	32		25			32
18	CSB-30WC20	20	36		28	3		36
20	CSB-30WC22	22	38		30			38
22	CSB-30WC24	24	42		33			42
24	CSB-30WC26	26	44		35			44
26	CSB-30WC28	28	48		38	4		48
30	CSB-30WC32	32	54		43			54
36	CSB-30WC38	38	62		50			62
40	CSB-30WC42	42	66		54			66
46	CSB-30WC48	48	74	2	61		1.5	74
50	CSB-30WC52	52	78		65			78
60	CSB-30WC62	62	90		76			90

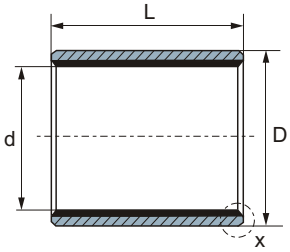
Metric standard strip

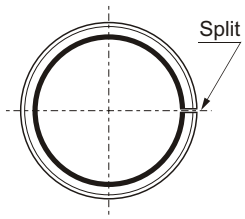


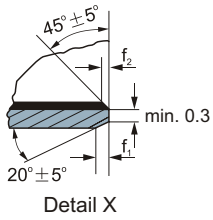
Unit:mm

Type	Length±1	Width±1	Thickness -0.05
CSB-30SP	500	150	1.0
CSB-30SP	500	150	1.5
CSB-30SP	500	150	2.0
CSB-30SP	500	150	2.5

CSB-40 Metric cylindrical bushes







Unit:mm

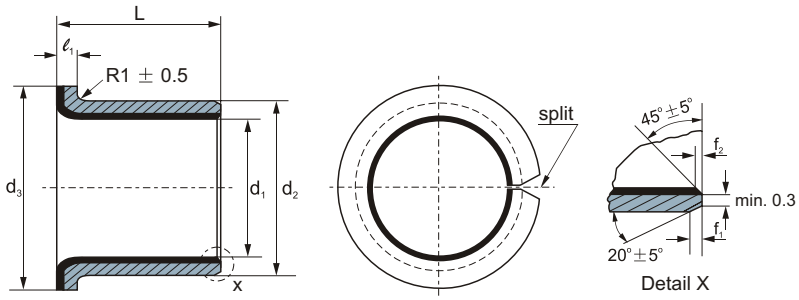
Axle	Housing H7	OD tolerance	ID after fixed	Wall thick-ness	f_1	f_2	L $^{0}_{-0.40}$ ($d \leqslant \phi 30$ L -0.3; $d > \phi 30$ L -0.4)										
							6	8	10	12	15	20	25	30	40	50	60
6 $^{-0.013}_{-0.028}$	8 $^{+0.015}$	8 $^{+0.055}_{+0.025}$	5.990 6.055	0.980 1.005	0.6	0.3	CSB-40 0606	CSB-40 0608	CSB-40 0610								
8 $^{-0.013}_{-0.028}$	10 $^{+0.015}$	10 $^{+0.055}_{+0.025}$	7.990 8.055				CSB-40 0806	CSB-40 0808	CSB-40 0810	CSB-40 0812	CSB-40 0815						
10 $^{-0.016}_{-0.034}$	12 $^{+0.018}$	12 $^{+0.065}_{+0.030}$	9.990 10.058				CSB-40 1006	CSB-40 1008	CSB-40 1010	CSB-40 1012	CSB-40 1015	CSB-40 1020					
12 $^{-0.016}_{-0.034}$	14 $^{+0.018}$	14 $^{+0.065}_{+0.030}$	11.990 12.058				CSB-40 1206	CSB-40 1208	CSB-40 1210	CSB-40 1212	CSB-40 1215	CSB-40 1220	CSB-40 1225				
13 $^{-0.016}_{-0.034}$	15 $^{+0.018}$	15 $^{+.0.065}_{+0.030}$	12.990 13.058						CSB-40 1310			CSB-40 1320					
14 $^{-0.016}_{-0.034}$	16 $^{+0.018}$	16 $^{+0.065}_{+0.030}$	13.990 14.058						CSB-40 1410	CSB-40 1412	CSB-40 1415	CSB-40 1420	CSB-40 1425				
15 $^{-0.016}_{-0.034}$	17 $^{+0.018}$	17 $^{+0.065}_{+0.030}$	14.990 15.058						CSB-40 1510	CSB-40 1512	CSB-40 1515	CSB-40 1520	CSB-40 1525				
16 $^{-0.016}_{-0.034}$	18 $^{+0.018}$	18 $^{+0.065}_{+0.030}$	15.990 16.058						CSB-40 1610	CSB-40 1612	CSB-40 1615	CSB-40 1620	CSB-40 1625				
17 $^{-0.016}_{-0.034}$	19 $^{+0.021}$	19 $^{+0.075}_{+0.035}$	16.990 17.061						CSB-40 1710	CSB-40 1712		CSB-40 1720					
18 $^{-0.016}_{-0.034}$	20 $^{+0.021}$	20 $^{+0.075}_{+0.035}$	17.990 18.061						CSB-40 1810	CSB-40 1812	CSB-40 1815	CSB-40 1820	CSB-40 1825				
20 $^{-0.020}_{-0.041}$	23 $^{+0.021}$	23 $^{-0.075}_{+0.035}$	19.990 20.071	1.475 1.505	0.6	0.4			CSB-40 2010	CSB-40 2012	CSB-40 2015	CSB-40 2020	CSB-40 2025	CSB-40 2030			
22 $^{-0.020}_{-0.041}$	25 $^{+0.021}$	25 $^{+0.075}_{+0.035}$	21.990 22.071						CSB-40 2210	CSB-40 2212	CSB-40 2215	CSB-40 2220	CSB-40 2225	CSB-40 2230			
24 $^{-0.020}_{-0.041}$	27 $^{+0.021}$	27 $^{+0.075}_{+0.035}$	23.990 24.071								CSB-40 2415	CSB-40 2420	CSB-40 2425	CSB-40 2430			
25 $^{-0.020}_{-0.041}$	28 $^{+0.021}$	28 $^{+0.075}_{+0.035}$	24.990 25.071						CSB-40 2510	CSB-40 2512	CSB-40 2515	CSB-40 2520	CSB-40 2525	CSB-40 2530	CSB-40 2540	CSB-40 2550	
28 $^{-0.020}_{-0.041}$	32 $^{+0.025}$	32 $^{+0.085}_{+0.045}$	27.990 28.085	1.970 2.005	1.2	0.4					CSB-40 2815	CSB-40 2820	CSB-40 2825	CSB-40 2830	CSB-40 2840		
30 $^{-0.020}_{-0.041}$	34 $^{+0.025}$	34 $^{+0.085}_{+0.045}$	29.990 30.285							CSB-40 3012	CSB-40 3015	CSB-40 3020	CSB-40 3025	CSB-40 3030	CSB-40 3040		
32 $^{-0.025}_{-0.050}$	36 $^{+0.025}$	36 $^{+0.085}_{+0.045}$	31.990 32.085									CSB-40 3220		CSB-40 3230	CSB-40 3240		
35 $^{-0.025}_{-0.050}$	39 $^{+0.025}$	39 $^{+0.085}_{+0.045}$	34.990 35.085							CSB-40 3512	CSB-40 3515	CSB-40 3520	CSB-40 3525	CSB-40 3530	CSB-40 3540	CSB-40 3550	
38 $^{-0.025}_{-0.050}$	42 $^{+0.025}$	42 $^{+0.085}_{+0.045}$	37.990 38.085								CSB-40 3815			CSB-40 3830	CSB-40 3840		
40 $^{-0.025}_{-0.050}$	44 $^{+0.025}$	44 $^{+0.085}_{+0.045}$	39.990 40.085							CSB-40 4012		CSB-40 4020	CSB-40 4025	CSB-40 4030	CSB-40 4040	CSB-40 4050	

CSB-40 Metric cylindrical bushes

Unit:mm

Axle	Housing H7	OD tolerance	ID after fixed	Wall thick-ness	f_1	f_2	L $^{0}_{-0.40}$									
							20	25	30	40	50	60	70	80	100	115
45 $^{-0.025}_{-0.050}$	50 $^{+0.025}$	50 $^{+0.085}_{+0.045}$	44.990 45.105	2.460 2.505	1.8	0.6	CSB-40 4520	CSB-40 4525	CSB-40 4530	CSB-40 4540	CSB-40 4550					
50 $^{-0.025}_{-0.050}$	55 $^{+0.030}$	55 $^{+0.100}_{+0.055}$	49.990 50.110				CSB-40 5020		CSB-40 5030	CSB-40 5040	CSB-40 5050	CSB-40 5060				
55 $^{-0.030}_{-0.060}$	60 $^{+0.030}$	60 $^{+0.100}_{+0.055}$	54.990 55.110						CSB-40 5530	CSB-40 5540	CSB-40 5550	CSB-40 5560				
60 $^{-0.030}_{-0.060}$	65 $^{+0.030}$	65 $^{+0.100}_{+0.055}$	59.990 60.110						CSB-40 6030	CSB-40 6040	CSB-40 6050	CSB-40 6060	CSB-40 6070			
65 $^{-0.030}_{-0.060}$	70 $^{+0.030}$	70 $^{+0.100}_{+0.055}$	64.990 65.110						CSB-40 6530	CSB-40 6540	CSB-40 6550	CSB-40 6560	CSB-40 6570			
70 $^{-0.030}_{-0.060}$	75 $^{+0.030}$	75 $^{+0.100}_{+0.055}$	69.990 70.110							CSB-40 7040	CSB-40 7050	CSB-40 7060	CSB-40 7070	CSB-40 7080		
75 $^{-0.030}_{-0.060}$	80 $^{+0.030}$	80 $^{+0.100}_{+0.055}$	74.990 75.110						CSB-40 7530	CSB-40 7540	CSB-40 7550	CSB-40 7560	CSB-40 7570	CSB-40 7580		
80 $^{}_{-0.030}$	85 $^{+0.035}$	85 $^{+0.120}_{+0.070}$	80.020 80.155	2.440 2.490	1.8	0.6				CSB-40 8040	CSB-40 8050	CSB-40 8060	CSB-40 8070	CSB-40 8080	CSB-40 80100	
85 $^{}_{-0.035}$	90 $^{+0.035}$	90 $^{+0.120}_{+0.070}$	85.020 85.155							CSB-40 8540		CSB-40 8560		CSB-40 8580	CSB-40 85100	
90 $^{}_{-0.035}$	95 $^{+0.035}$	95 $^{+0.120}_{+0.070}$	90.020 90.155							CSB-40 9040	CSB-40 9050	CSB-40 9060		CSB-40 9080	CSB-40 90100	
95 $^{}_{-0.035}$	100 $^{+0.035}$	100 $^{+0.120}_{+0.070}$	95.020 95.155								CSB-40 9550	CSB-40 9560		CSB-40 9580	CSB-40 95100	
100 $^{}_{-0.035}$	105 $^{+0.035}$	105 $^{+0.120}_{+0.070}$	100.020 100.155								CSB-40 10050	CSB-40 10060		CSB-40 10080		CSB-40 100115
105 $^{}_{-0.035}$	110 $^{+0.035}$	110 $^{+0.120}_{+0.070}$	105.020 105.155									CSB-40 10560		CSB-40 10580		CSB-40 105115
110 $^{}_{-0.035}$	115 $^{+0.035}$	115 $^{+0.120}_{+0.070}$	110.020 110.155									CSB-40 11060		CSB-40 11080		CSB-40 110115
120 $^{}_{-0.035}$	125 $^{+0.040}$	125 $^{+0.170}_{+0.100}$	120.070 120.210	2.415 2.465	1.8	0.6						CSB-40 12060		CSB-40 12080	CSB-40 120100	
125 $^{}_{-0.040}$	130 $^{+0.040}$	130 $^{+0.170}_{+0.100}$	125.070 125.210									CSB-40 12560			CSB-40 125100	CSB-40 125115
130 $^{}_{-0.040}$	135 $^{+0.040}$	135 $^{+0.170}_{+0.100}$	130.070 130.210									CSB-40 13060		CSB-40 13080	CSB-40 130100	
140 $^{}_{-0.040}$	145 $^{+0.040}$	145 $^{+0.170}_{+0.100}$	140.070 140.210									CSB-40 14060		CSB-40 14080	CSB-40 140100	
150 $^{}_{-0.040}$	155 $^{+0.040}$	155 $^{+0.170}_{+0.100}$	150.070 150.210									CSB-40 15060		CSB-40 15080	CSB-40 150100	
160 $^{}_{-0.040}$	165 $^{+0.040}$	165 $^{+0.170}_{+0.100}$	160.070 160.210									CSB-40 16060		CSB-40 16080	CSB-40 160100	160115
180 $^{}_{-0.040}$	185 $^{+0.046}$	185 $^{+0.210}_{+0.130}$	180.070 180.216	2.415 2.465	1.8	0.6								CSB-40 18080	CSB-40 180100	
190 $^{}_{-0.046}$	195 $^{+0.046}$	195 $^{+0.210}_{+0.130}$	190.070 190.216											CSB-40 19080	CSB-40 190100	
200 $^{}_{-0.046}$	205 $^{+0.046}$	205 $^{+0.210}_{+0.130}$	200.070 200.216									CSB-40 20060		CSB-40 20080	CSB-40 200100	
220 $^{}_{-0.046}$	225 $^{+0.046}$	225 $^{+0.210}_{+0.130}$	220.070 220.216											CSB-40 22080	CSB-40 220100	
250 $^{}_{-0.046}$	255 $^{+0.052}$	255 $^{+0.260}_{+0.170}$	250.070 250.222	2.415 2.465	1.8	0.6								CSB-40 25080	CSB-40 250100	
260 $^{}_{-0.052}$	265 $^{+0.052}$	265 $^{+0.260}_{+0.170}$	260.070 260.222											CSB-40 26080	CSB-40 260100	
280 $^{}_{-0.052}$	285 $^{+0.052}$	285 $^{+0.260}_{+0.170}$	280.070 280.222											CSB-40 28080	CSB-40 280100	
300 $^{}_{-0.052}$	305 $^{+0.052}$	305 $^{+0.260}_{+0.170}$	300.070 300.222											CSB-40 30080	CSB-40 300100	

CSB-40 Metric flange bushes

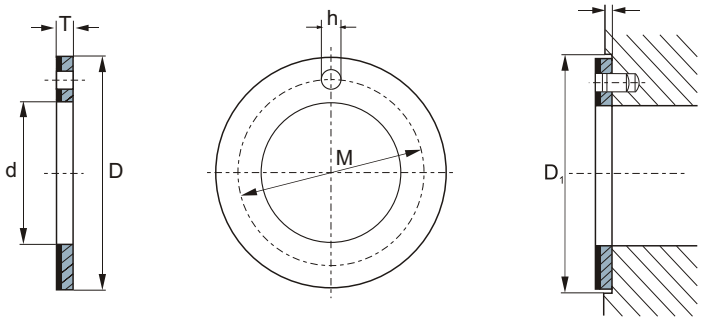


Unit:mm

Axle	Housing H7	OD tolerance	ID after fixed	Designation	Wall thickness	f_1	f_2	Dimension				
								d_1	d_2	d_3±0.5	L±0.25	ℓ_1-0.2
6 -0.013 -0.028	8 +0.015	6 +0.055 +0.025	5.990 6.005	CSB-40F06040	+0.005 -0.020	0.6	0.3	6	8	12	4	1
				CSB-40F06070							7	
8 -0.013 -0.028	10 +0.015	8 +0.055 +0.025	7.990 8.055	CSB-40F08055				8	10	15	5.5	
				CSB-40F08075							7.5	
10 -0.016 -0.034	12 +0.018	10 +0.055 +0.025	9.990 10.058	CSB-40F10070				10	12	18	7	
				CSB-40F10090							9	
				CSB-40F10120							12	
12 -0.016 -0.034	14 +0.018	12 +0.065 +0.030	11.990 12.058	CSB-40F12070				12	14	20	7	
				CSB-40F12090							9	
				CSB-40F12120							12	
14 -0.016 -0.034	16 +0.018	14 +0.065 +0.030	13.990 14.058	CSB-40F14120				14	16	22	12	
				CSB-40F14170							17	
15 -0.016 -0.034	17 +0.018	15 +0.065 +0.030	14.990 15.058	CSB-40F15090				15	17	23	9	
				CSB-40F15120							12	
				CSB-40F15170							17	
16 -0.016 -0.034	18 +0.018	16 +0.065 +0.030	15.990 16.058	CSB-40F16120				16	18	24	12	
				CSB-40F16170							17	
18 -0.016 -0.034	20 +0.021	18 +0.065 +0.030	17.990 18.061	CSB-40F18120				18	20	26	12	
				CSB-40F18170							17	
				CSB-40F18200							20	
20 -0.020 -0.041	23 +0.021	20 +0.075 +0.035	19.990 20.071	CSB-40F20115	+0.005 -0.025	0.6	0.4	20	23	30	11.5	1.5
				CSB-40F20165							16.5	
				CSB-40F20215							21.5	
22 -0.020 -0.041	25 +0.021	22 +0.075 +0.035	21.990 22.071	CSB-40F22150				22	25	32	15	
				CSB-40F22200							20	
25 -0.020 -0.041	28 +0.021	25 +0.075 +0.035	24.990 25.071	CSB-40F25115				25	28	35	11.5	
				CSB-40F25165							16.5	
				CSB-40F25215							21.5	
30 -0.025 -0.050	34 +0.025	30 +0.075 +0.035	29.990 30.085	CSB-40F30160	+0.005 -0.030	1.2	0.4	30	34	42	16	2
				CSB-40F30260							26	
35 -0.025 -0.050	39 +0.025	35 +0.085 +0.045	34.990 35.085	CSB-40F35160				35	39	47	16	
				CSB-40F35260							26	
40 -0.025 -0.050	44 +0.025	40 +0.085 +0.045	39.990 40.085	CSB-40F40260				40	44	53	26	
				CSB-40F40400							40	

CSB-40 Metric thrust washer and strip

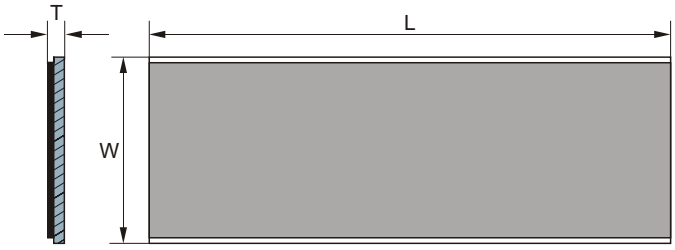
Metric thrust washer



Unit:mm

Axle	Designation	Washer dimension				Installation size		D_1+0.12
		d +0.25	D -0.25	T -0.05	M ±0.125	$h^{+0.4}_{+0.1}$	t±0.2	
8	CSB-40WC10	10	20	1.5	15	1.5	1	20
10	CSB-40WC12	12	24		18			24
12	CSB-40WC14	14	26		20	2		26
14	CSB-40WC16	16	30		23			30
16	CSB-40WC18	18	32		25			32
18	CSB-40WC20	20	36		28	3		36
20	CSB-40WC22	22	38		30			38
22	CSB-40WC24	24	42		33			42
24	CSB-40WC26	26	44		35			44
26	CSB-40WC28	28	48		38	4		48
30	CSB-40WC32	32	54		43			54
36	CSB-40WC38	38	62		50			62
40	CSB-40WC42	42	66		54			66
46	CSB-40WC48	48	74	2	61		1.5	74
50	CSB-40WC52	52	78		65			78
60	CSB-40WC62	62	90		76			90

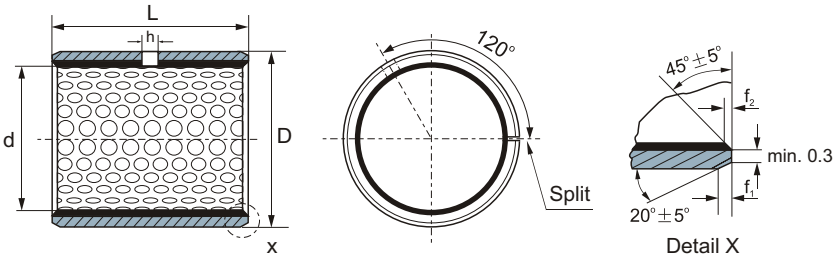
Metric standard strip



Unit:mm

Type	Length±1	Width±1	Thickness -0.05
CSB-40SP	500	150	1.0
CSB-40SP	500	150	1.5
CSB-40SP	500	150	2.0
CSB-40SP	500	150	2.5

CSB-20 Metric cylindrical bushes



Unit:mm

Axle h8	Housing H7	OD tolerance	ID after fixed	Wall thick-ness	Oil hole	f_1	f_2	L $^{0}_{-0.40}$									
								10	15	20	25	30	35	40	45	50	60
$10_{-0.022}$	$12^{+0.018}$	$12^{+0.065}_{+0.030}$	10.040 10.108	0.955 0.980	4	0.6	0.3	CSB-20 1010	CSB-20 1015	CSB-20 1020							
$12_{-0.027}$	$14^{+0.018}$	$14^{+0.065}_{+0.030}$	12.040 12.108					CSB-20 1210	CSB-20 1215	CSB-20 1220							
$14_{-0.027}$	$16^{+0.018}$	$16^{+0.065}_{+0.030}$	14.040 14.108						CSB-20 1415	CSB-20 1420							
$15_{-0.027}$	$17^{+0.018}$	$17^{+0.065}_{+0.030}$	15.040 15.108						CSB-20 1515	CSB-20 1520	CSB-20 1525						
$16_{-0.027}$	$18^{+0.018}$	$18^{+0.065}_{+0.030}$	16.040 16.108						CSB-20 1615	CSB-20 1620	CSB-20 1625						
$18_{-0.027}$	$20^{+0.021}$	$20^{+0.075}_{+0.035}$	18.040 18.111						CSB-20 1815	CSB-20 1820	CSB-20 1825						
$20_{-0.033}$	$23^{+0.021}$	$23^{+0.075}_{+0.035}$	20.050 20.131	1.445 1.475		0.6	0.4		CSB-20 2015	CSB-20 2020	CSB-20 2025	CSB-20 2030					
$22_{-0.033}$	$25^{+0.021}$	$25^{+0.075}_{+0.035}$	22.050 22.131						CSB-20 2215		CSB-20 2225						
$25_{-0.033}$	$28^{+0.021}$	$28^{+0.075}_{+0.035}$	25.050 25.131		6				CSB-20 2515	CSB-20 2520	CSB-20 2525	CSB-20 2530					
$28_{-0.033}$	$32^{+0.025}$	$32^{+0.085}_{+0.045}$	28.060 28.155	1.935 1.970		1.2	0.4			CSB-20 2820		CSB-20 2830					
$30_{-0.033}$	$34^{+0.025}$	$34^{+0.085}_{+0.045}$	30.060 30.155							CSB-20 3020	CSB-20 3025	CSB-20 3030		CSB-20 3040			
$35_{-0.039}$	$39^{+0.025}$	$39^{+0.085}_{+0.045}$	35.060 35.155							CSB-20 3520		CSB-20 3530	CSB-20 3535	CSB-20 3540			
$40_{-0.039}$	$44^{+0.025}$	$44^{+0.085}_{+0.045}$	40.060 40.155		8					CSB-20 4020		CSB-20 4030		CSB-20 4040		CSB-20 4050	
$45_{-0.039}$	$50^{+0.025}$	$50^{+0.085}_{+0.045}$	45.080 45.195	2.415 2.460		1.8	0.6			CSB-20 4520		CSB-20 4530		CSB-20 4540	CSB-20 4545	CSB-20 4550	
$50_{-0.039}$	$55^{+0.030}$	$55^{+0.100}_{+0.055}$	50.080 50.200									CSB-20 5030		CSB-20 5040		CSB-20 5050	CSB-20 5060
$55_{-0.046}$	$60^{+0.030}$	$60^{+0.100}_{+0.055}$	55.080 55.200									CSB-20 5530		CSB-20 5540		CSB-20 5550	CSB-20 5560
$60_{-0.046}$	$65^{+0.030}$	$65^{+0.100}_{+0.055}$	60.080 60.200									CSB-20 6030		CSB-20 6040		CSB-20 6050	CSB-20 6060

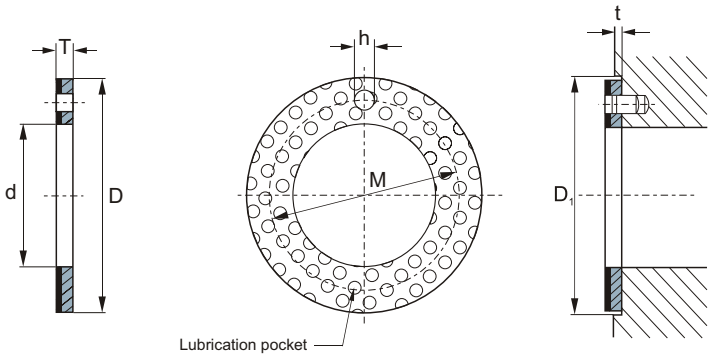
CSB-20 Metric cylindrical bushes

Unit:mm

Axle h8	Housing H7	OD tolerance	ID after fixed	Wall thick-ness	Oil hole	f_1	f_2	L $^{0}_{-0.40}$								
								40	50	60	80	90	95	100	110	120
$65_{-0.046}$	$70^{+0.030}$	$70^{+0.100}_{+0.055}$	65.080 65.200	2.415 2.460	8	1.8	0.6	CSB-20 6540		CSB-20 6560						
$70_{-0.046}$	$75^{+0.030}$	$75^{+0.100}_{+0.055}$	70.080 70.200					CSB-20 7040	CSB-20 7050		CSB-20 7080					
$75_{-0.046}$	$80^{+0.030}$	$80^{+0.100}_{+0.055}$	75.080 75.200					CSB-20 7540		CSB-20 7560	CSB-20 7580					
$80_{-0.046}$	$85^{+0.035}$	$85^{+0.120}_{+0.070}$	80.100 80.265	2.385 2.450	9.5	1.8	0.6	CSB-20 8040		CSB-20 8060	CSB-20 8080					
$85_{-0.054}$	$90^{+0.035}$	$90^{+0.120}_{+0.070}$	85.100 85.265					CSB-20 8540		CSB-20 8560	CSB-20 8580					
$90_{-0.054}$	$95^{+0.035}$	$95^{+0.120}_{+0.070}$	90.100 90.265					CSB-20 9040		CSB-20 9060	CSB-20 9080	CSB-20 9090				
$100_{0.054}$	$105^{+0.035}$	$105^{+0.120}_{+0.070}$	100.100 100.265						CSB-20 10050		CSB-20 10080		CSB-20 10095			
$105_{0.054}$	$110^{+0.035}$	$110^{+0.120}_{+0.070}$	105.110 105.265							CSB-20 10560	CSB-20 10580		CSB-20 10595		CSB-20 105110	
$110_{-0.054}$	$115^{+0.035}$	$115^{+0.120}_{+0.070}$	110.110 110.265							CSB-20 11060	CSB-20 11080		CSB-20 11095		CSB-20 110110	
$120_{-0.054}$	$125^{+0.040}$	$125^{+0.170}_{+0.100}$	120.110 120.270			1.8	0.6			CSB-20 12060	CSB-20 12080				CSB-20 120110	
$125_{-0.063}$	$130^{+0.040}$	$130^{+0.170}_{+0.100}$	125.110 125.270							CSB-20 12560					CSB-20 125110	
$130_{-0.063}$	$135^{+0.040}$	$135^{+0.170}_{+0.100}$	130.110 130.270						CSB-20 13050	CSB-20 13060	CSB-20 13080			CSB-20 130100		
$140_{-0.063}$	$145^{+0.040}$	$145^{+0.170}_{+0.100}$	140.110 140.270						CSB-20 14050	CSB-20 14060	CSB-20 14080			CSB-20 140100		
$150_{-0.063}$	$155^{+0.040}$	$155^{+0.170}_{+0.100}$	150.110 150.270						CSB-20 15050	CSB-20 15060	CSB-20 15080			CSB-20 150100		
$160_{-0.063}$	$165^{+0.040}$	$165^{+0.170}_{+0.100}$	160.110 160.270		9.5				CSB-20 16050	CSB-20 16060	CSB-20 16080			CSB-20 160100		
$170_{-0.063}$	$175^{+0.040}$	$175^{+0.170}_{+0.100}$	170.110 170.270						CSB-20 17050		CSB-20 17080			CSB-20 170100		
$180_{-0.063}$	$185^{+0.046}$	$185^{+0.210}_{+0.130}$	180.110 180.276						CSB-20 18050	CSB-20 18060	CSB-20 18080			CSB-20 180100		
$190_{-0.072}$	$195^{+0.046}$	$195^{+0.210}_{+0.130}$	190.110 190.276						CSB-20 19050	CSB-20 19060	CSB-20 19080			CSB-20 190100		CSB-20 190120
$200_{-0.072}$	$205^{+0.046}$	$205^{+0.210}_{+0.130}$	200.110 200.276						CSB-20 20050	CSB-20 20060	CSB-20 20080			CSB-20 200100		CSB-20 200120
$220_{-0.072}$	$225^{+0.046}$	$225^{+0.210}_{+0.130}$	220.110 220.276		9.5				CSB-20 22050	CSB-20 22060	CSB-20 22080			CSB-20 220100		CSB-20 220120
$240_{-0.072}$	$245^{+0.046}$	$245^{+0.210}_{+0.130}$	240.110 240.276						CSB-20 24050	CSB-20 24060	CSB-20 24080			CSB-20 240100		CSB-20 240120
$250_{-0.072}$	$255^{+0.052}$	$255^{+0.260}_{+0.170}$	250.110 250.282						CSB-20 25050	CSB-20 25060	CSB-20 25080			CSB-20 250100		CSB-20 250120
$260_{-0.081}$	$265^{+0.052}$	$265^{+0.260}_{+0.170}$	260.110 260.282						CSB-20 26050	CSB-20 26060	CSB-20 26080			CSB-20 260100		CSB-20 260120
$280_{-0.081}$	$285^{+0.052}$	$285^{+0.260}_{+0.170}$	280.110 280.282						CSB-20 28050	CSB-20 28060	CSB-20 28080			CSB-20 280100		CSB-20 280120
$300_{-0.081}$	$305^{+0.052}$	$305^{+0.260}_{+0.170}$	300.110 300.282						CSB-20 30050	CSB-20 30060	CSB-20 30080			CSB-20 300100		CSB-20 300120

CSB-20 Metric thrust washer and strip

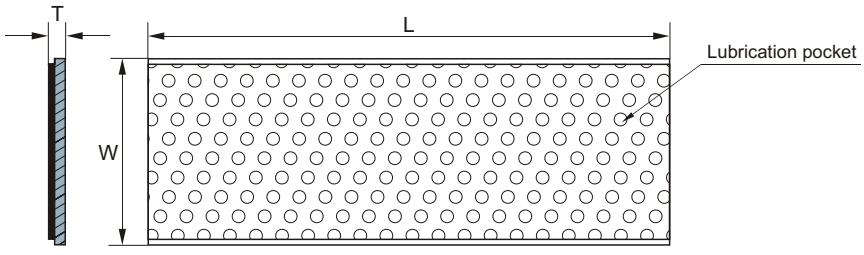
Metric thrust washer



Unit:mm

Axle	Designation	Washer dimension				Installation size		
		d +0.25	D -0.25	T -0.05	M ±0.125	$h^{+0.4}_{+0.1}$	t ±0.2	D_1 +0.12
8	CSB-20WC10	10	20	1.5	15	1.5	1	20
10	CSB-20WC12	12	24		18			24
12	CSB-20WC14	14	26		20	2		26
14	CSB-20WC16	16	30		23			30
16	CSB-20WC18	18	32		25			32
18	CSB-20WC20	20	36		28	3		36
20	CSB-20WC22	22	38		30			38
22	CSB-20WC24	24	42		33			42
24	CSB-20WC26	26	44		35			44
26	CSB-20WC28	28	48		38	4		48
30	CSB-20WC32	32	54		43			54
36	CSB-20WC38	38	62		50			62
40	CSB-20WC42	42	66		54			66
46	CSB-20WC48	48	74	2	61		1.5	74
50	CSB-20WC52	52	78		65			78
60	CSB-20WC62	62	90		76			90

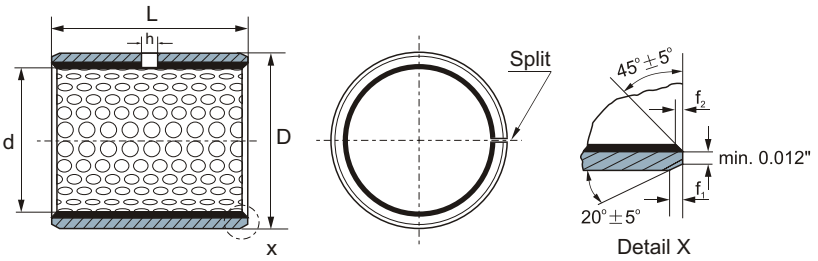
Metric standard strip



Unit:mm

Type	Length ±1	Width ±1	Thickness -0.05
CSB-20SP	500	150	1.0
CSB-20SP	500	150	1.5
CSB-20SP	500	150	2.0
CSB-20SP	500	150	2.5

CSB-20 Inch cylindrical bushes

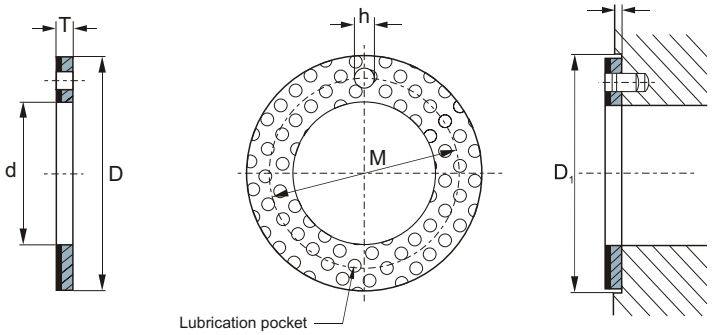


Unit:inch"

Recommended		installed bearing d	Length±0.010										
shaft Dia	housing bore												
0.3648 0.3639	0.4694 0.4687	0.3694 0.3667	CSB-20 06IB06	CSB-20 06IB08	CSB-20 06IB12								
0.4273 0.4263	0.5319 0.5312	0.4319 0.4292	CSB-20 07IB08	CSB-20 07IB12									
0.4897 0.4887	0.5944 0.5937	0.4944 0.4917	CSB-20 08IB06	CSB-20 08IB08	CSB-20 08IB10	CSB-20 08IB14							
0.5522 0.5512	0.6569 0.6562	0.5569 0.5542	CSB-20 09IB08	CSB-20 09IB12									
0.6146 0.6136	0.7195 0.7178	0.6195 0.6167	CSB-20 10IB08	CSB-20 10IB10	CSB-20 10IB12	CSB-20 10IB14							
0.6770 0.6760	0.7820 0.7812	0.6820 0.6792	CSB-20 11IB14										
0.7390 0.7378	0.8758 0.8750	0.7444 0.7412	CSB-20 12IB08	CSB-20 12IB12	CSB-20 12IB16								
0.8639 0.8627	1.0008 1.0000	0.8694 0.8662	CSB-20 14IB12	CSB-20 14IB14	CSB-20 14IB16								
0.9888 0.9876	1.1258 1.1250	0.9944 0.9912	CSB-20 16IB12	CSB-20 16IB16	CSB-20 16IB24								
1.1138 1.1126	1.2822 1.2812	1.1202 1.1164	CSB-20 18IB12	CSB-20 18IB16									
1.2387 1.2371	1.4072 1.4062	1.2452 1.2414	CSB-20 20IB12	CSB-20 20IB16	CSB-20 20IB20	CSB-20 20IB28							
1.3635 1.3619	1.5322 1.5312	1.3702 1.3664	CSB-20 22IB16	CSB-20 22IB22	CSB-20 22IB28								
1.4884 1.4868	1.6572 1.6562	1.4952 1.4914	CSB-20 24IB16	CSB-20 24IB20	CSB-20 24IB24	CSB-20 24IB32							
1.6133 1.6117	1.7822 1.7812	1.6202 1.6164	CSB-20 26IB16	CSB-20 26IB24									
1.7383 1.7367	1.9385 1.9375	1.7461 1.7415	CSB-20 28IB16	CSB-20 28IB24	CSB-20 28IB28	CSB-20 28IB32							
1.8632 1.8616	2.0637 2.0625	1.8713 1.8665	CSB-20 30IB16	CSB-20 30IB30	CSB-20 30IB36								
1.9881 1.9863	2.1887 2.1875	1.9963 1.9915	CSB-20 32IB16	CSB-20 32IB24	CSB-20 32IB32	CSB-20 32IB40							
2.2378 2.2360	2.4387 2.4375	2.2463 2.2415	CSB-20 36IB32	CSB-20 36IB36	CSB-20 36IB40								
2.4875 2.4857	2.6887 2.6875	2.4963 2.4915	CSB-20 40IB32	CSB-20 40IB40									
2.7351 2.7333	2.9387 2.9375	2.7457 2.7393	CSB-20 44IB32	CSB-20 44IB40	CSB-20 44IB48	CSB-20 44IB56							
2.9849 2.9831	3.1889 3.1875	2.9959 2.9893	CSB-20 48IB32	CSB-20 48IB48	CSB-20 48IB60								
3.4844 3.4822	3.6889 3.6875	3.4959 3.4893	CSB-20 56IB40	CSB-20 56IB48	CSB-20 56IB60								
3.9839 3.9817	4.1889 4.1875	3.9959 3.9893	CSB-20 64IB48	CSB-20 64IB60	CSB-20 64IB76								

CSB-20 Inch thrust washer

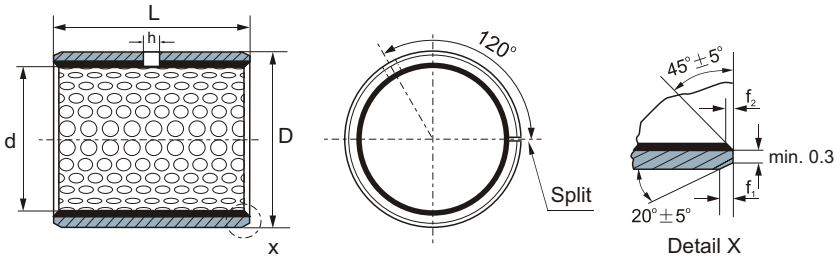
Inch Thrust washer



Unit:inch"

Specification	Dimension				installation size		
	inner side d+0.010	outside D-0.010	T	M -0.010	h +0.010	t ±0.010	D1 +0.010
CSB-20 WC06IB	0.500	0.875	0.0660 0.0625	0.692	0.067	0.04	0.875
CSB-20 WC07IB	0.562	1.000		0.786			1.000
CSB-20 WC08IB	0.625	1.125		0.880	0.099		1.125
CSB-20 WC09IB	0.687	1.187		0.942			1.187
CSB-20 WC10IB	0.750	1.250		1.005			1.250
CSB-20 WC11IB	0.812	1.375		1.099			1.375
CSB-20 WC12IB	0.875	1.500		1.192	0.130		1.500
CSB-20 WC13IB	0.937	1.625		1.286			1.625
CSB-20 WC14IB	1.000	1.750		1.380			1.750
CSB-20 WC16IB	1.125	2.000		1.567	0.161		2.000
CSB-20 WC18IB	1.250	2.125		1.692			2.125
CSB-20 WC20IB	1.375	2.250		1.817			2.250
CSB-20 WC22IB	1.500	2.500		2.005	0.192		2.500
CSB-20 WC24IB	1.625	2.625		2.130			2.625
CSB-20 WC26IB	1.750	2.750		2.255			2.750
CSB-20 WC28IB	2.000	3.000	0.0970 0.0935	2.505		0.07	3.000
CSB-20 WC30IB	2.125	3.125		2.630			3.125
CSB-20 WC32IB	2.250	3.250		2.755			3.250

CSB-22 Metric cylindrical bushes



Unit:mm

Axle h8	Housing H7	OD tolerance	ID after fixed	Wall thick-ness	Oil hole	f_1	f_2	L 0 -0.40									
								10	15	20	25	30	35	40	45	50	60
$10_{-0.022}$	$12^{+0.018}$	$12^{+0.065}_{+0.030}$	10.040 10.108	0.955 0.980	4	0.6	0.3	CSB-22 1010	CSB-22 1015	CSB-22 1020							
$12_{-0.027}$	$14^{+0.018}$	$14^{+0.065}_{+0.030}$	12.040 12.108					CSB-22 1210	CSB-22 1215	CSB-22 1220							
$14_{-0.027}$	$16^{+0.018}$	$16^{+0.065}_{+0.030}$	14.040 14.108						CSB-22 1415	CSB-22 1420							
$15_{-0.027}$	$17^{+0.018}$	$17^{+0.065}_{+0.030}$	15.040 15.108						CSB-22 1515	CSB-22 1520	CSB-22 1525						
$16_{-0.027}$	$18^{+0.018}$	$18^{+0.065}_{+0.030}$	16.040 16.108						CSB-22 1615	CSB-22 1620	CSB-22 1625						
$18_{-0.027}$	$20^{+0.021}$	$20^{+0.075}_{+0.035}$	18.040 18.111						CSB-22 1815	CSB-22 1820	CSB-22 1825						
$20_{-0.033}$	$23^{+0.021}$	$23^{+0.075}_{+0.035}$	20.050 20.131	1.445 1.475		0.6	0.4		CSB-22 2015	CSB-22 2020	CSB-22 2025	CSB-22 2030					
$22_{-0.033}$	$25^{+0.021}$	$25^{+0.075}_{+0.035}$	22.050 22.131						CSB-22 2215		CSB-22 2225						
$25_{-0.033}$	$28^{+0.021}$	$28^{+0.075}_{+0.035}$	25.050 25.131		6				CSB-22 2515	CSB-22 2520	CSB-22 2525	CSB-22 2530					
$28_{-0.033}$	$32^{+0.025}$	$32^{+0.085}_{+0.045}$	28.060 28.155	1.935 1.970		1.2	0.4			CSB-22 2820		CSB-22 2830					
$30_{-0.033}$	$34^{+0.025}$	$34^{+0.085}_{+0.045}$	30.060 30.155							CSB-22 3020	CSB-22 3025	CSB-22 3030		CSB-22 3040			
$35_{-0.039}$	$39^{+0.025}$	$39^{+0.085}_{+0.045}$	35.060 35.155							CSB-22 3520		CSB-22 3530	CSB-22 3535	CSB-22 3540			
$40_{-0.039}$	$44^{+0.025}$	$44^{+0.085}_{+0.045}$	40.060 40.155		8					CSB-22 4020		CSB-22 4030		CSB-22 4040		CSB-22 4050	
$45_{-0.039}$	$50^{+0.025}$	$50^{+0.085}_{+0.045}$	45.080 45.195	2.415 2.460		1.8	0.6			CSB-22 4520		CSB-22 4530		CSB-22 4540	CSB-22 4545	CSB-22 4550	
$50_{-0.039}$	$55^{+0.030}$	$55^{+0.100}_{+0.055}$	50.080 50.200									CSB-22 5030		CSB-22 5040		CSB-22 5050	CSB-22 5060
$55_{-0.046}$	$60^{+0.030}$	$60^{+0.100}_{+0.055}$	55.080 55.200									CSB-22 5530		CSB-22 5540		CSB-22 5550	CSB-22 5560
$60_{-0.046}$	$65^{+0.030}$	$65^{+0.100}_{+0.055}$	60.080 60.200									CSB-22 6030		CSB-22 6040		CSB-22 6050	CSB-22 6060

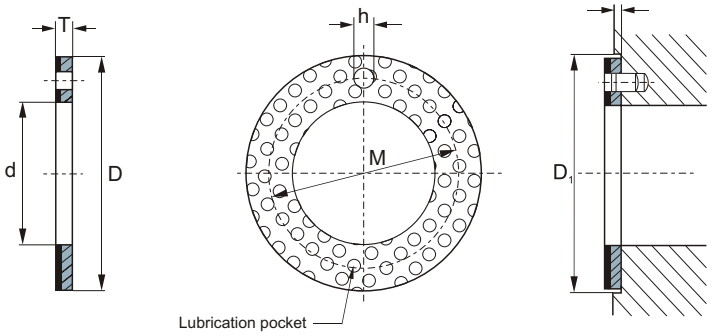
CSB-22 Metric cylindrical bushes

Unit:mm

Axle h8	Housing H7	OD tolerance	ID after fixed	Wall thick-ness	Oil hole	f_1	f_2	L $^{0}_{-0.40}$								
								40	50	60	80	90	95	100	110	120
65 $_{-0.046}$	70 $^{+0.030}$	70 $^{+0.100}_{+0.055}$	65.080 65.200	2.415 2.460	8	1.8	0.6	CSB-22 6540		CSB-22 6560						
70 $_{-0.046}$	75 $^{+0.030}$	75 $^{+0.100}_{+0.055}$	70.080 70.200					CSB-22 7040	CSB-22 7050	CSB-22	CSB-22 7080					
75 $_{-0.046}$	80 $^{+0.030}$	80 $^{+0.100}_{+0.055}$	75.080 75.200					CSB-22 7540		CSB-22 7560	CSB-22 7580					
80 $_{-0.046}$	85 $^{+0.035}$	85 $^{+0.120}_{+0.070}$	80.100 80.265	2.385 2.450	9.5	1.8	0.6	CSB-22 8040		CSB-22 8060	CSB-22 8080					
85 $_{-0.054}$	90 $^{+0.035}$	90 $^{+0.120}_{+0.070}$	85.100 85.265					CSB-22 8540		CSB-22 8560	CSB-22 8580					
90 $_{-0.054}$	95 $^{+0.035}$	95 $^{+0.120}_{+0.070}$	90.100 90.265					CSB-22 9040		CSB-22 9060	CSB-22 9080	CSB-22 9090				
100 $_{-0.054}$	105 $^{+0.035}$	105 $^{+0.120}_{+0.070}$	100.100 100.265						CSB-22 10050		CSB-22 10080		CSB-22 10095			
105 $_{-0.054}$	110 $^{+0.035}$	110 $^{+0.120}_{+0.070}$	105.110 105.265							CSB-22 10560	CSB-22 10580		CSB-22 10595		CSB-22 105110	
110 $_{-0.054}$	115 $^{+0.035}$	115 $^{+0.120}_{+0.070}$	110.110 110.265							CSB-22 11060	CSB-22 11080		CSB-22 11095		CSB-22 110110	
120 $_{-0.054}$	125 $^{+0.040}$	125 $^{+0.170}_{+0.100}$	120.110 120.270			1.8	0.6			CSB-22 12060	CSB-22 12080				CSB-22 120110	
125 $_{-0.063}$	130 $^{+0.040}$	130 $^{+0.170}_{+0.100}$	125.110 125.270							CSB-22 12560					CSB-22 125110	
130 $_{-0.063}$	135 $^{+0.040}$	135 $^{+0.170}_{+0.100}$	130.110 130.270						CSB-22 13050	CSB-22 13060	CSB-22 13080			CSB-22 130100		
140 $_{-0.063}$	145 $^{+0.040}$	145 $^{+0.170}_{+0.100}$	140.110 140.270						CSB-22 14050	CSB-22 14060	CSB-22 14080			CSB-22 140100		
150 $_{-0.063}$	155 $^{+0.040}$	155 $^{+0.170}_{+0.100}$	150.110 150.270						CSB-22 15050	CSB-22 15060	CSB-22 15080			CSB-22 150100		
160 $_{-0.063}$	165 $^{+0.040}$	165 $^{+0.170}_{+0.100}$	160.110 160.270		9.5				CSB-22 16050	CSB-22 16060	CSB-22 16080			CSB-22 160100		
170 $_{-0.063}$	175 $^{+0.040}$	175 $^{+0.170}_{+0.100}$	170.110 170.270						CSB-22 17050		CSB-22 17080			CSB-22 170100		
180 $_{-0.063}$	185 $^{+0.046}$	185 $^{+0.210}_{+0.130}$	180.110 180.276			1.8	0.6		CSB-22 18050	CSB-22 18060	CSB-22 18080			CSB-22 180100		
190 $_{-0.072}$	195 $^{+0.046}$	195 $^{+0.210}_{+0.130}$	190.110 190.276						CSB-22 19050	CSB-22 19060	CSB-22 19080			CSB-22 190100		CSB-22 190120
200 $_{-0.072}$	205 $^{+0.046}$	205 $^{+0.210}_{+0.130}$	200.110 200.276						CSB-22 20050	CSB-22 20060	CSB-22 20080			CSB-22 200100		CSB-22 200120
220 $_{-0.072}$	225 $^{+0.046}$	225 $^{+0.210}_{+0.130}$	220.110 220.276		9.5				CSB-22 22050	CSB-22 22060	CSB-22 22080			CSB-22 220100		CSB-22 220120
240 $_{-0.072}$	245 $^{+0.046}$	245 $^{+0.210}_{+0.130}$	240.110 240.276						CSB-22 24050	CSB-22 24060	CSB-22 24080			CSB-22 240100		CSB-22 240120
250 $_{-0.072}$	255 $^{+0.052}$	255 $^{+0.260}_{+0.170}$	250.110 250.282						CSB-22 25050	CSB-22 25060	CSB-22 25080			CSB-22 250100		CSB-22 250120
260 $_{-0.081}$	265 $^{+0.052}$	265 $^{+0.260}_{+0.170}$	260.110 260.282						CSB-22 26050	CSB-22 26060	CSB-22 26080			CSB-22 260100		CSB-22 260120
280 $_{-0.081}$	285 $^{+0.052}$	285 $^{+0.260}_{+0.170}$	280.110 280.282						CSB-22 28050	CSB-22 28060	CSB-22 28080			CSB-22 280100		CSB-22 280120
300 $_{-0.081}$	305 $^{+0.052}$	305 $^{+0.260}_{+0.170}$	300.110 300.282						CSB-22 30050	CSB-22 30060	CSB-22 30080			CSB-22 300100		CSB-22 300120

CSB-22 Metric thrust washer and strip

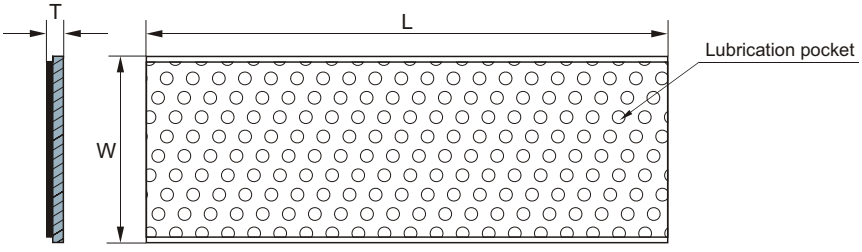
Metric thrust washer



Unit:mm

Axle	Designation	Washer dimension				Installation size		
		d +0.25	D -0.25	T -0.05	M ±0.125	$h^{+0.4}_{+0.1}$	t ±0.2	D_1 +0.12
8	CSB-22WC10	10	20	1.5	15	1.5	1	20
10	CSB-22WC12	12	24		18			24
12	CSB-22WC14	14	26		20	2		26
14	CSB-22WC16	16	30		23			30
16	CSB-22WC18	18	32		25			32
18	CSB-22WC20	20	36		28	3		36
20	CSB-22WC22	22	38		30			38
22	CSB-22WC24	24	42		33			42
24	CSB-22WC26	26	44		35			44
26	CSB-22WC28	28	48		38	4		48
30	CSB-22WC32	32	54		43			54
36	CSB-22WC38	38	62		50			62
40	CSB-22WC42	42	66		54			66
46	CSB-22WC48	48	74	2	61		1.5	74
50	CSB-22WC52	52	78		65			78
60	CSB-22WC62	62	90		76			90

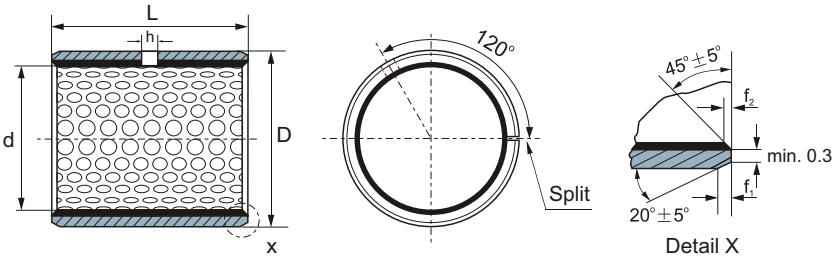
Metric standard strip



Unit:mm

Type	Length±1	Width±1	Thickness -0.05
CSB-22SP	500	150	1.0
CSB-22SP	500	150	1.5
CSB-22SP	500	150	2.0
CSB-22SP	500	150	2.5

CSB-80 Metric cylindrical bushes



Unit:mm

Axle h8	Housing H7	OD tolerance	ID after fixed	Wall thick-ness	Oil hole	f_1	f_2	L $^{0}_{-0.40}$									
								10	15	20	25	30	35	40	45	50	60
$10_{-0.022}$	$12^{+0.018}$	$12^{+0.065}_{+0.030}$	10.040 10.108	0.955 0.980		0.6	0.3	CSB-80 1010	CSB-80 1015	CSB-80 1020							
$12_{-0.027}$	$14^{+0.018}$	$14^{+0.065}_{+0.030}$	12.040 12.108		4			CSB-80 1210	CSB-80 1215	CSB-80 1220							
$14_{-0.027}$	$16^{+0.018}$	$16^{+0.065}_{+0.030}$	14.040 14.108						CSB-80 1415	CSB-80 1420							
$15_{-0.027}$	$17^{+0.018}$	$17^{+0.065}_{+0.030}$	15.040 15.108						CSB-80 1515	CSB-80 1520	CSB-80 1525						
$16_{-0.027}$	$18^{+0.018}$	$18^{+0.065}_{+0.030}$	16.040 16.108						CSB-80 1615	CSB-80 1620	CSB-80 1625						
$18_{-0.027}$	$20^{+0.021}$	$20^{+0.075}_{+0.035}$	18.040 18.111						CSB-80 1815	CSB-80 1820	CSB-80 1825						
$20_{-0.033}$	$23^{+0.021}$	$23^{+0.075}_{+0.035}$	20.050 20.131	1.445 1.475		0.6	0.4		CSB-80 2015	CSB-80 2020	CSB-80 2025	CSB-80 2030					
$22_{-0.033}$	$25^{+0.021}$	$25^{+0.075}_{+0.035}$	22.050 22.131						CSB-80 2215		CSB-80 2225						
$25_{-0.033}$	$28^{+0.021}$	$28^{+0.075}_{+0.035}$	25.050 25.131		6				CSB-80 2515	CSB-80 2520	CSB-80 2525	CSB-80 2530					
$28_{-0.033}$	$32^{+0.025}$	$32^{+0.085}_{+0.045}$	28.060 28.155	1.935 1.970		1.2	0.4			CSB-80 2820		CSB-80 2830					
$30_{-0.033}$	$34^{+0.025}$	$34^{+0.085}_{+0.045}$	30.060 30.155							CSB-80 3020	CSB-80 3025	CSB-80 3030		CSB-80 3040			
$35_{-0.039}$	$39^{+0.025}$	$39^{+0.085}_{+0.045}$	35.060 35.155							CSB-80 3520		CSB-80 3530	CSB-80 3535	CSB-80 3540			
$40_{-0.039}$	$44^{+0.025}$	$44^{+0.085}_{+0.045}$	40.060 40.155		8					CSB-80 4020		CSB-80 4030		CSB-80 4040		CSB-80 4050	
$45_{-0.039}$	$50^{+0.025}$	$50^{+0.085}_{+0.045}$	45.080 45.195	2.415 2.460		1.8	0.6			CSB-80 4520		CSB-80 4530		CSB-80 4540	CSB-80 4545	CSB-80 4550	
$50_{-0.039}$	$55^{+0.030}$	$55^{+0.100}_{+0.055}$	50.080 50.200									CSB-80 5030		CSB-80 5040		CSB-80 5050	CSB-80 5060
$55_{-0.046}$	$60^{+0.030}$	$60^{+0.100}_{+0.055}$	55.080 55.200									CSB-80 5530		CSB-80 5540		CSB-80 5550	CSB-80 5560
$60_{-0.046}$	$65^{+0.030}$	$65^{+0.100}_{+0.055}$	60.080 60.200									CSB-80 6030		CSB-80 6040		CSB-80 6050	CSB-80 6060

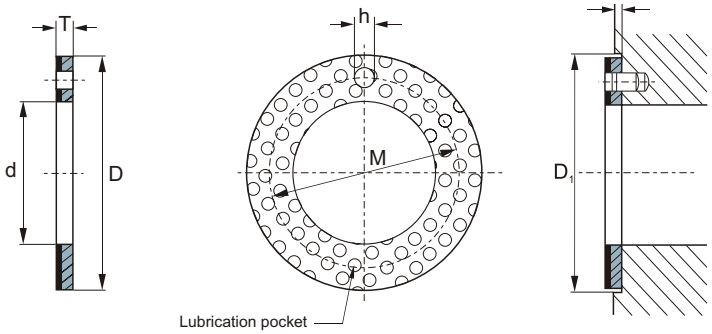
CSB-80 Metric cylindrical bushes

Unit:mm

Axle h8	Housing H7	OD tolerance	ID after fixed	Wall thick-ness	Oil hole	f_1	f_2	L $^{0}_{-0.40}$								
								40	50	60	80	90	95	100	110	120
65 $_{-0.046}$	70 $^{+0.030}$	70 $^{+0.100}_{+0.055}$	65.080 65.200	2.415 2.460	8	1.8	0.6	CSB-80 6540		CSB-80 6560						
70 $_{-0.046}$	75 $^{+0.030}$	75 $^{+0.100}_{+0.055}$	70.080 70.200					CSB-80 7040	CSB-80 7050		CSB-80 7080					
75 $_{-0.046}$	80 $^{+0.030}$	80 $^{+0.100}_{+0.055}$	75.080 75.200					CSB-80 7540		CSB-80 7560	CSB-80 7580					
80 $_{-0.046}$	85 $^{+0.035}$	85 $^{+0.120}_{+0.070}$	80.100 80.265	2.385 2.450	9.5	1.8	0.6	CSB-80 8040		CSB-80 8060	CSB-80 8080					
85 $_{-0.054}$	90 $^{+0.035}$	90 $^{+0.120}_{+0.070}$	85.100 85.265					CSB-80 8540		CSB-80 8560	CSB-80 8580					
90 $_{-0.054}$	95 $^{+0.035}$	95 $^{+0.120}_{+0.070}$	90.100 90.265					CSB-80 9040		CSB-80 9060	CSB-80 9080	CSB-80 9090				
100 $_{-0.054}$	105 $^{+0.035}$	105 $^{+0.120}_{+0.070}$	100.100 100.265						CSB-80 10050		CSB-80 10080		CSB-80 10095			
105 $_{-0.054}$	110 $^{+0.035}$	110 $^{+0.120}_{+0.070}$	105.110 105.265							CSB-80 10560	CSB-80 10580		CSB-80 10595		CSB-80 105110	
110 $_{-0.054}$	115 $^{+0.035}$	115 $^{+0.120}_{+0.070}$	110.110 110.265							CSB-80 11060	CSB-80 11080		CSB-80 11095		CSB-80 110110	
120 $_{-0.054}$	125 $^{+0.040}$	125 $^{+0.170}_{+0.100}$	120.110 120.270			1.8	0.6			CSB-80 12060	CSB-80 12080				CSB-80 120110	
125 $_{-0.063}$	130 $^{+0.040}$	130 $^{+0.170}_{+0.100}$	125.110 125.270							CSB-80 12560					CSB-80 125110	
130 $_{-0.063}$	135 $^{+0.040}$	135 $^{+0.170}_{+0.100}$	130.110 130.270						CSB-80 13050	CSB-80 13060	CSB-80 13080			CSB-80 130100		
140 $_{-0.063}$	145 $^{+0.040}$	145 $^{+0.170}_{+0.100}$	140.110 140.270						CSB-80 14050	CSB-80 14060	CSB-80 14080			CSB-80 140100		
150 $_{-0.063}$	155 $^{+0.040}$	155 $^{+0.170}_{+0.100}$	150.110 150.270						CSB-80 15050	CSB-80 15060	CSB-80 15080			CSB-80 150100		
160 $_{-0.063}$	165 $^{+0.040}$	165 $^{+0.170}_{+0.100}$	160.110 160.270		9.5				CSB-80 16050	CSB-80 16060	CSB-80 16080			CSB-80 160100		
170 $_{-0.063}$	175 $^{+0.040}$	175 $^{+0.170}_{+0.100}$	170.110 170.270						CSB-80 17050		CSB-80 17080			CSB-80 170100		
180 $_{-0.063}$	185 $^{+0.046}$	185 $^{+0.210}_{+0.130}$	180.110 180.276			1.8	0.6		CSB-80 18050	CSB-80 18060	CSB-80 18080			CSB-80 180100		
190 $_{-0.072}$	195 $^{+0.046}$	195 $^{+0.210}_{+0.130}$	190.110 190.276						CSB-80 19050	CSB-80 19060	CSB-80 19080			CSB-80 190100		CSB-80 190120
200 $_{-0.072}$	205 $^{+0.046}$	205 $^{+0.210}_{+0.130}$	200.110 200.276						CSB-80 20050	CSB-80 20060	CSB-80 20080			CSB-80 200100		CSB-80 200120
220 $_{-0.072}$	225 $^{+0.046}$	225 $^{+0.210}_{+0.130}$	220.110 220.276		9.5				CSB-80 22050	CSB-80 22060	CSB-80 22080			CSB-80 220100		CSB-80 220120
240 $_{-0.072}$	245 $^{+0.046}$	245 $^{+0.210}_{+0.130}$	240.110 240.276						CSB-80 24050	CSB-80 24060	CSB-80 24080			CSB-80 240100		CSB-80 240120
250 $_{-0.072}$	255 $^{+0.052}$	255 $^{+0.260}_{+0.170}$	250.110 250.282						CSB-80 25050	CSB-80 25060	CSB-80 25080			CSB-80 250100		CSB-80 250120
260 $_{-0.081}$	265 $^{+0.052}$	265 $^{+0.260}_{+0.170}$	260.110 260.282						CSB-80 26050	CSB-80 26060	CSB-80 26080			CSB-80 260100		CSB-80 260120
280 $_{-0.081}$	285 $^{+0.052}$	285 $^{+0.260}_{+0.170}$	280.110 280.282						CSB-80 28050	CSB-80 28060	CSB-80 28080			CSB-80 280100		CSB-80 280120
300 $_{-0.081}$	305 $^{+0.052}$	305 $^{+0.260}_{+0.170}$	300.110 300.282						CSB-80 30050	CSB-80 30060	CSB-80 30080			CSB-80 300100		CSB-80 300120

CSB-80 Metric thrust washer and strip

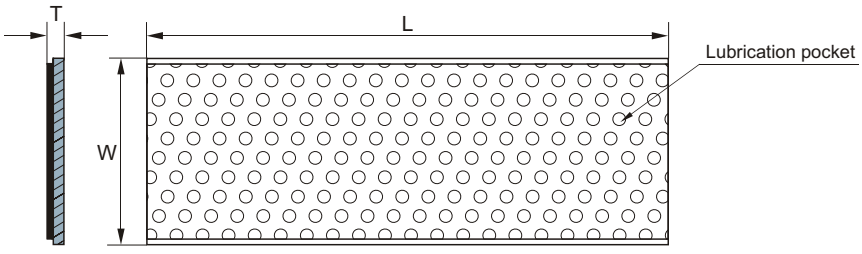
Metric thrust washer



Unit:mm

Axle	Designation	Washer dimension				Installation size		
		d +0.25	D -0.25	T -0.05	M ±0.125	$h^{+0.4}_{+0.1}$	t ±0.2	D_1 +0.12
8	CSB-80WC10	10	20	1.5	15	1.5	1	20
10	CSB-80WC12	12	24		18			24
12	CSB-80WC14	14	26		20	2		26
14	CSB-80WC16	16	30		23			30
16	CSB-80WC18	18	32		25			32
18	CSB-80WC20	20	36		28	3		36
20	CSB-80WC22	22	38		30			38
22	CSB-80WC24	24	42		33			42
24	CSB-80WC26	26	44		35			44
26	CSB-80WC28	28	48		38	4		48
30	CSB-80WC32	32	54		43			54
36	CSB-80WC38	38	62		50			62
40	CSB-80WC42	42	66		54			66
46	CSB-80WC48	48	74	2	61		1.5	74
50	CSB-80WC52	52	78		65			78
60	CSB-80WC62	62	90		76			90

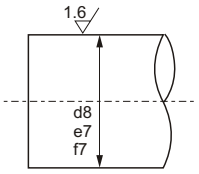
Metric standard strip



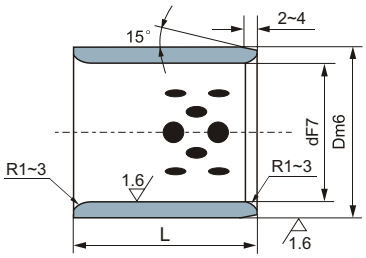
Unit:mm

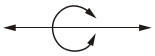
Type	Length ±1	Width ±1	Thickness -0.05
CSB-80SP	500	150	1.0
CSB-80SP	500	150	1.5
CSB-80SP	500	150	2.0
CSB-80SP	500	150	2.5

JDB650 Metric cylindrical bushes

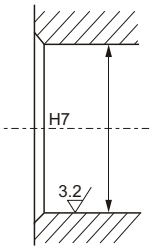


Shaft





Sliding direction



Unit:mm

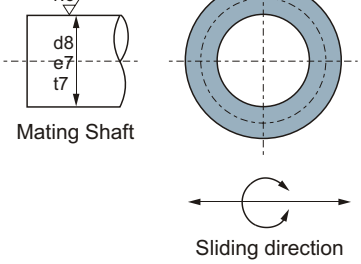
dF7		Dm6		L $^{-0.10}_{-0.30}$												
				8	10	12	15	16	20	25	30	35	40	50	60	70	80
8	+0.028 +0.013	12	+0.018 +0.007	JDB650 081208	JDB650 081210	JDB650 081212	JDB650 081215										
10		14		JDB650 101408	JDB650 101410	JDB650 101412	JDB650 101415		JDB650 101420								
12	+0.034 +0.016	18			JDB650 121810	JDB650 121812	JDB650 121815	JDB650 121816	JDB650 121820	JDB650 121825	JDB650 121830						
13		19	+0.021 +0.008		JDB650 131910		JDB650 131915	JDB650 131916									
14		20			JDB650 142010	JDB650 142012	JDB650 142015		JDB650 142020	JDB650 142025	JDB650 142030						
15		21			JDB650 152110	JDB650 152112	JDB650 152115	JDB650 152116	JDB650 152120	JDB650 152125	JDB650 152130						
16		22			JDB650 162210	JDB650 162212	JDB650 162215	JDB650 162216	JDB650 162220	JDB650 162225	JDB650 162230	JDB650 162235	JDB650 162240				
18		24				JDB650 182412	JDB650 182415	JDB650 182416	JDB650 182420	JDB650 182425	JDB650 182430	JDB650 182435	JDB650 182440				
20		28			JDB650 202810	JDB650 202812	JDB650 202815	JDB650 202816	JDB650 202820	JDB650 202825	JDB650 202830	JDB650 202835	JDB650 202840	JDB650 202850			
22	+0.041 +0.020	32				JDB650 223212	JDB650 223215		JDB650 223220	JDB650 223225							
25		33				JDB650 253312	JDB650 253315	JDB650 253316	JDB650 253320	JDB650 253325	JDB650 253330	JDB650 253335	JDB650 253340	JDB650 253350	JDB650 253360		
30		38	+0.025 +0.009			JDB650 303812	JDB650 303815		JDB650 303820	JDB650 303825	JDB650 303830	JDB650 303835	JDB650 303840	JDB650 303850	JDB650 303860		
35	+0.050 +0.025	45							JDB650 354520	JDB650 354525	JDB650 354530	JDB650 354535	JDB650 354540	JDB650 354550	JDB650 354560		
40		50							JDB650 405020	JDB650 405025	JDB650 405030	JDB650 405035	JDB650 405040	JDB650 405050	JDB650 405060	JDB650 405070	JDB650 405080
45		55	+0.030 +0.011								JDB650 455530	JDB650 455535	JDB650 455540	JDB650 455550	JDB650 455560		
50		60									JDB650 506030	JDB650 506035	JDB650 506040	JDB650 506050	JDB650 506060	JDB650 506070	JDB650 506080

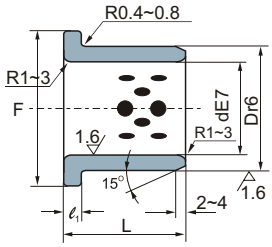
JDB650 Metric cylindrical bushes

Unit:mm

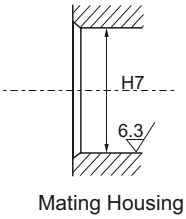
IDF7		ODm6		L -0.10 -0.30											
				30	35	40	50	60	70	80	100	120	130	140	150
50	+0.050 +0.025	62	+0.030 +0.011	JDB650 506230	JDB650 506235	JDB650 506240	JDB650 506250	JDB650 506260	JDB650 506270						
50		65		JDB650 506530		JDB650 506540	JDB650 506550	JDB650 506560	JDB650 506570	JDB650 506580	JDB650 5065100				
55	+0.060 +0.030	70				JDB650 557040	JDB650 557050	JDB650 557060	JDB650 557070						
60		74		JDB650 607430	JDB650 607435	JDB650 607440	JDB650 607450	JDB650 607460	JDB650 607470	JDB650 607480					
60		75		JDB650 607530	JDB650 607535	JDB650 607540	JDB650 607550	JDB650 607560	JDB650 607570	JDB650 607580	JDB650 6075100				
63		75						JDB650 637560	JDB650 637570	JDB650 637580					
65		80					JDB650 658050	JDB650 658060	JDB650 658070	JDB650 658080					
70		85	+0.035 +0.013		JDB650 708535	JDB650 708540	JDB650 708550	JDB650 708560	JDB650 708570	JDB650 708580	JDB650 7085100				
70		90					JDB650 709050	JDB650 709060	JDB650 709070	JDB650 709080					
75		90						JDB650 759060	JDB650 759070	JDB650 759080	JDB650 7590100				
75		95						JDB650 759560	JDB650 759570	JDB650 759580	JDB650 7595100				
80		96				JDB650 809640	JDB650 809650	JDB650 809660	JDB650 809670	JDB650 809680	JDB650 8096100	JDB650 8096120			
80		100				JDB650 8010040	JDB650 8010050	JDB650 8010060	JDB650 8010070	JDB650 8010080	JDB650 80100100	JDB650 80100120		JDB650 80100140	
90	+0.071 +0.036	110		JDB650 9011030			JDB650 9011050	JDB650 9011060	JDB650 9011070	JDB650 9011080	JDB650 90110100	JDB650 90110120			
100		120						JDB650 10012060	JDB650 10012070	JDB650 10012080	JDB650 100120100	JDB650 100120120		JDB650 100120140	
110		130	+0.040 +0.015							JDB650 11013080	JDB650 110130100	JDB650 110130120			
120		140								JDB650 12014080	JDB650 120140100	JDB650 120140120		JDB650 120140140	
125	+0.083 +0.043	145									JDB650 125145100	JDB650 125145120			
130		150									JDB650 130150100		JDB650 130150130		
140		160									JDB650 140160100			JDB650 140160140	
150		170									JDB650 150170100				JDB650 150170150
160		180									JDB650 160180100				JDB650 160180150

JFB650 Metric flange bushes





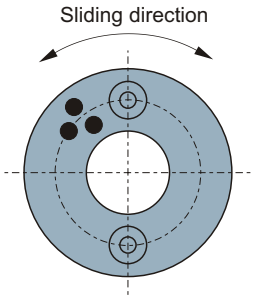
Material 650# + Graphite

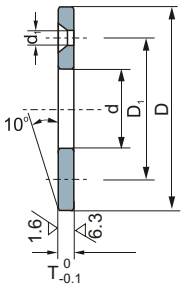


Unit:mm

d	D	IDE7		ODr6		F	ℓ_1 -0.10	L -0.10 -0.30									
								15	20	25	30	35	40	50	60	80	100
10	14	10	+0.040 +0.025	14	+0.034 +0.023	22	2	JFB650 1015	JFB650 1020								
12	18	12		18		25		JFB650 1215	JFB650 1220								
13	19	13		19		26		JFB650 1315	JFB650 1320								
14	20	14	+0.050 +0.032	20		27	3	JFB650 1415	JFB650 1420								
15	21	15		21	+0.041 +0.028	28		JFB650 1515	JFB650 1520	JFB650 1525	JFB650 1530						
16	22	16		22		29		JFB650 1615	JFB650 1620	JFB650 1625	JFB650 1630						
20	30	20		30		40		JFB650 2015	JFB650 2020	JFB650 2025	JFB650 2030		JFB650 2040				
25	35	25	+0.061 +0.040	35		45		JFB650 2515	JFB650 2520	JFB650 2525	JFB650 2530		JFB650 2540				
30	40	30		40		50			JFB650 3020	JFB650 3025	JFB650 3030	JFB650 3035	JFB650 3040	JFB650 3050			
31.5	40	31.5		40	+0.050 +0.034				JFB650 3120			JFB650 3135					
35	45	35		45		60	5		JFB650 3520		JFB650 3530		JFB650 3540	JFB650 3550			
40	50	40	+0.075 +0.050	50		65			JFB650 4020		JFB650 4030		JFB650 4040	JFB650 4050			
45	55	45		55		70					JFB650 4530		JFB650 4540	JFB650 4550	JFB650 4560		
50	60	50		60	+0.060 +0.041	75					JFB650 5030		JFB650 5040	JFB650 5050	JFB650 5060		
55	65	55		65		80							JFB650 5540		JFB650 5560		
60	75	60		75	+0.062 +0.043	90							JFB650 6040	JFB650 6050		JFB650 6080	
63	75	63	+0.090 +0.060	75		85										JFB650 6367	
70	85	70		85		105	7.5							JFB650 7050		JFB650 7080	
75	90	75		90	+0.073 +0.051	110									JFB650 7560		
80	100	80		100		120									JFB650 8060	JFB650 8080	JFB650 80100
90	110	90		110	+0.076 +0.054	130									JFB650 9060	JFB650 9080	
100	120	100	+0.107 +0.072	120		150	10									JFB650 10080	JFB650 100100
120	140	120		140	+0.088 +0.063	170										JFB650 12080	JFB650 120100

JTW650 Metric thrust washer



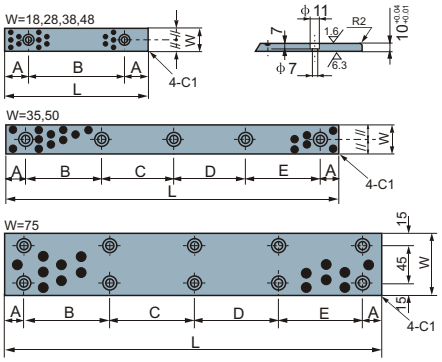


Material 650# + Graphite

Unit:mm

Stanard No.	d	D	T 0 -0.1	Bolt			
				D1	Q'ty	size	d1
JTW650 -10	10.2	30	3	------	------	------	------
JTW650 -12	12.2	40		28	2	M 3	3.5
JTW650 -13	13.2						
JTW650 -14	14.2						
JTW650 -15	15.2	50		35			
JTW650 -16	16.2						
JTW650 -16N				------	------	------	------
JTW650 -18	18.2			35	2	M 3	3.5
JTW650 -20	20.2		5			M 5	6
JTW650 -20N				------	------	------	------
JTW650 -25	25.2	55		40	2	M 5	6
JTW650 -25N				------	------	------	------
JTW650 -30	30.2	60		45	2	M 5	6
JTW650 -35	35.2	70		50			
JTW650 -40	40.2	80	7	60		M 6	7
JTW650 -45	45.3	90		67.5			
JTW650 -50	50.3	100	8	75			
JTW650 -55	55.3	110		85			
JTW650 -60	60.3	120		90	4	M 8	9
JTW650 -65	65.3	125		95			
JTW650 -70	70.3	130	10	100			
JTW650 -75	75.3	140		110			
JTW650 -80	80.3	150		120			
JTW650 -90	90.5	170		140		M 10	11
JTW650 -100	100.5	190		160			
JTW650 -120	120.5	200		175			

JSP650 Wear plate

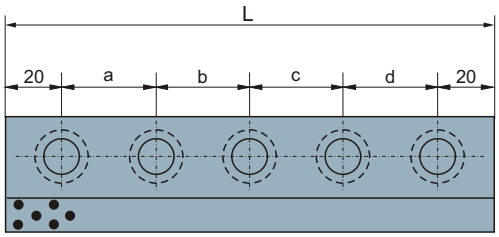


Material 650# + Graphite

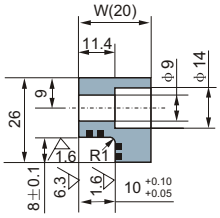
Unit:mm

Standard No.	W	L	A	B	C	D	E	Flat Head Screw	No.of Holes
JSP650 -1875	18	75	15	45				M 6	2
JSP650 -18100		100	25	60					
JSP650 -18125		125		75					
JSP650 -18150		150		100					
JSP650 -2875	28	75	15	45					
JSP650 -28100		100	25	50					
JSP650 -28125		125		75					
JSP650 -28150		150		100					
JSP650 -35100	35	100	20	60				M 8	
JSP650 -35150		150		55	55				3
JSP650 -35200		200		55	50	55			4
JSP650 -35250		250		70	70	70			4
JSP650 -35300		300		65	65	65	65		5
JSP650 -35350		350		80	75	75	80		5
JSP650 -3875	38	75	15	45				M 6	2
JSP650 -38100		100	25	50					
JSP650 -38125		125		75					
JSP650 -38150		150		100					
JSP650 -4875	48	75	15	45					
JSP650 -48100		100	25	50					
JSP650 -48125		125		75					
JSP650 -48150		150		100					
JSP650 -50100	50	100	20	60				M 8	
JSP650 -50150		150		55	55				3
JSP650 -50200		200		55	50	55			4
JSP650 -50250		250		70	70	70			4
JSP650 -50300		300		65	65	65	65		5
JSP650 -50400		400		90	90	90	90		5
JSP650 -75150	75	150		110					4
JSP650 -75200		200		80	80				6
JSP650 -75250		250		105	105				6
JSP650 -75300		300		85	90	85			8
JSP650 -75400		400		120	120	120			8
JSP650 -75500		500		115	115	115	115		10

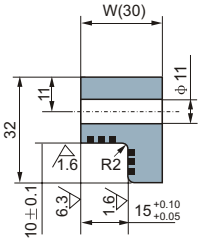
JSL650 Wear plate



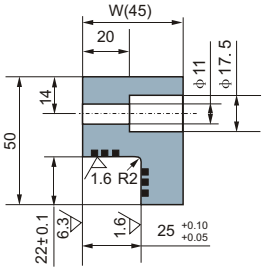
Material 650# + Graphite



A



B

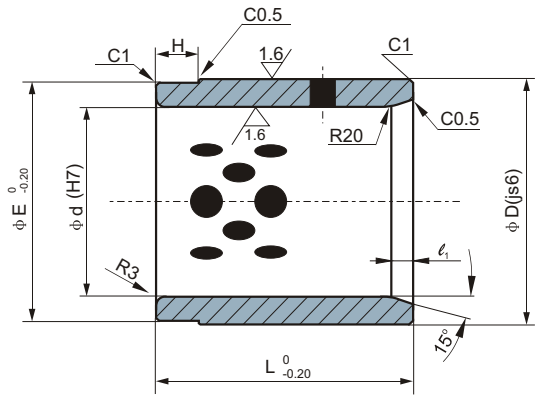


C

Unit:mm

Stanard No.	W	L	Bolt						Sketch
			a	b	c	d	Size	Q'ty	
JSL650-20×100	20	100	60	---	---	---	M8	2	A
JSL650-20×150		150	55	55	---	---		3	
JSL650-20×200		200	55	50	55	---		4	
JSL650-30×100	30	100	60	---	---	---	M10	2	B
JSL650-30×150		150	55	55	---	---		3	
JSL650-30×200		200	55	50	55	---		4	
JSL650-30×250		250	70	70	70	---		4	
JSL650-45×200	45	200	55	50	55	---		4	C
JSL650-45×250		250	70	70	70	---		4	
JSL650-45×300		300	65	65	65	65		5	
JSL650-45×350		350	80	75	75	80		5	

GB250 Self-lubricating bearing

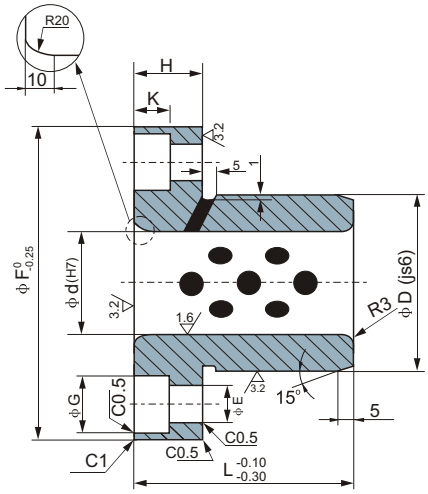


Material 250# + Graphite

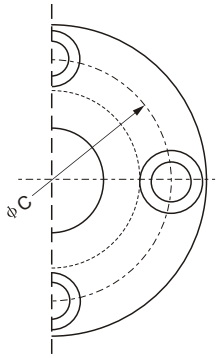
Unit:mm

Item	Code	Specification	Φ D	Φ d	L	Φ E	H	ℓ1
1	GB250-30	50 × 30 × 50	50	30	50	49	10	5
2	GB250-40	60 × 40 × 60	60	40	60	59	10	
3	GB250-50	70 × 50 × 75	70	50	75	69	15	
4	GB250-60	80 × 60 × 90	80	60	90	79	20	10
5	GB250-80	100 × 80 × 120	100	80	120	99	25	
6	GB250-100	120 × 100 × 150	120	100	150	119	25	
7	GB250-120	140 × 120 × 180	140	120	180	139	25	

HGB250 Self-lubricating bearing



Material 250# + Graphite

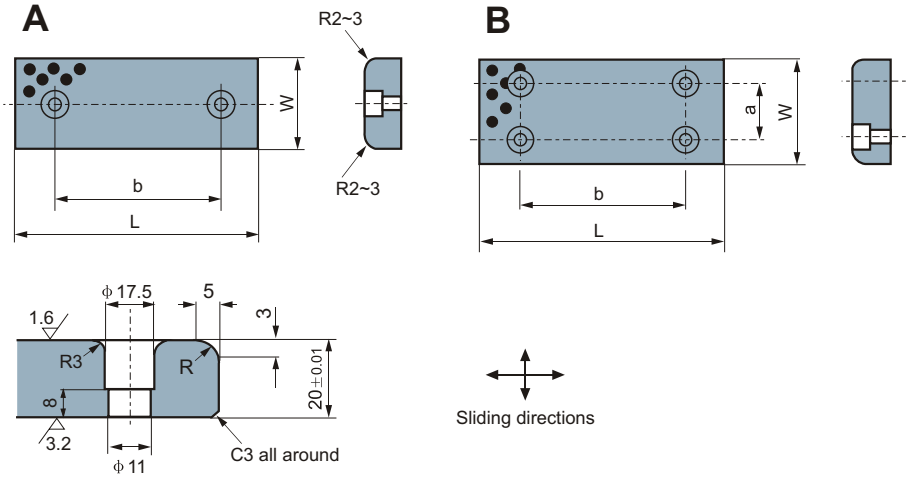


Unit:mm

Item	Code	Specification	ϕF	ϕD	ϕd	H	L	ϕC	ϕE	ϕG	K
1	HGB250-30	90/50×30×50	90	50	30	20	50	70	11	17.5	10.8
2	HGB250-40	100/60×40×65	100	60	40	20	65	80	11	17.5	10.8
3	HGB250-50	125/75×50×80	125	75	50	20	80	100	11	17.5	10.8
4	HGB250-60	135/85×60×100	135	85	60	20	100	110	11	17.5	10.8
5	HGB250-80	170/110×80×130	170	110	80	25	130	140	14	20	13
6	HGB250-100	190/130×100×160	190	130	100	25	160	160	14	20	13

CSB250 JESF wear plate

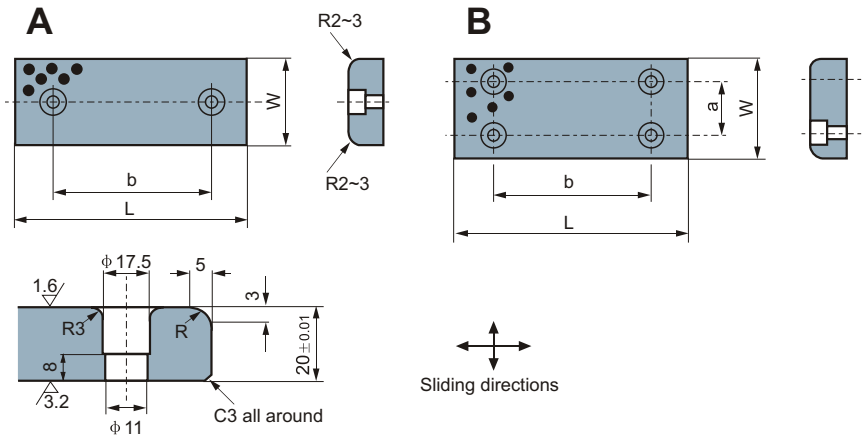
Material 250# + Graphite



Unit:mm

Standard No.	W	L	a	b	Sketch
JESF-48×75	48	75	–	45	A
JESF-48×100		100		50	
JESF-48×125		125		75	
JESF-48×150		150		100	
JESF-48×200		200		150	
JESF-75×75	75	75	–	25	
JESF-75×100		100		50	
JESF-75×125		125		75	
JESF-75×150		150		100	
JESF-75×200		200		150	
JESF-75×250		250		200	
JESF-100×100	100	100	50	50	B
JESF-100×125		125		75	
JESF-100×150		150		100	
JESF-100×200		200		150	
JESF-100×250		250		200	
JESF-100×300		300		200	
JESF-125×125	125	125	50	75	
JESF-125×150		150		100	
JESF-125×200		200		150	
JESF-125×250		250		200	
JESF-125×300		300		200	
JESF-150×150	150	150	100	100	
JESF-150×200		200		150	
JESF-150×250		250		200	

CSB250 JMWP wear plate

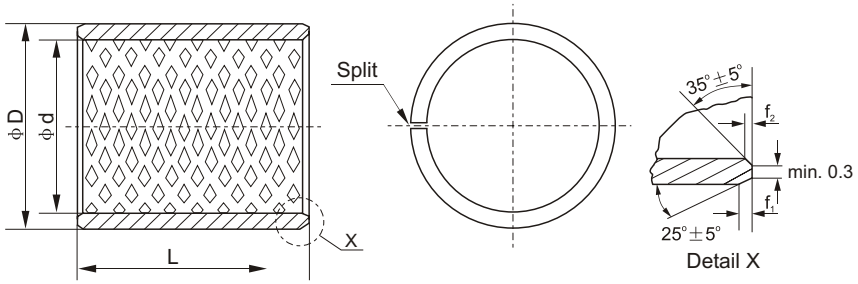


Material 250# + Graphite

Unit:mm

Standard No.	W	L	a	b	Sketch
JMWP-28×75	28	75	–	45	A
JMWP-28×100		100		50	
JMWP-28×125		125		75	
JMWP-28×150		150		100	
JMWP-28×200		200		150	
JMWP-38×75	38	75	–	45	
JMWP-38×100		100		50	
JMWP-38×125		125		75	
JMWP-38×150		150		100	
JMWP-38×200		200		150	
JMWP-48× 75	48	75	–	45	
JMWP-48× 100		100		50	
JMWP-48× 125		125		75	
JMWP-48×150		150		100	
JMWP-48×200		200		150	
JMWP-58×75	58	75	–	45	
JMWP-58×100		100		50	
JMWP-58×150		150		100	
JMWP-75×75	75	75	–	25	
JMWP-75×100		100		50	
JMWP-75×125		125		75	
JMWP-75×150		150		100	
JMWP-75×200		200		150	
JMWP-100×100	100	100	50	50	B
JMWP-100×125		125		75	
JMWP-100×150		150		100	
JMWP-100×200		200		150	
JMWP-100×250		250		200	
JMWP-125× 125	125	125	50	75	
JMWP-125× 150		150		100	
JMWP-125× 200		200		150	
JMWP-125× 250		250		200	
JMWP-150× 150	150	150	100	100	
JMWP-150× 200		200		150	
JMWP-150× 250		250		200	
JMWP-150× 300		300		250	
JMWP-200× 200	200	200	150	150	
JMWP-200× 250		250		200	
JMWP-200× 300		300		250	

CSB-090(FB090) Metric cylindrical bushes



Unit:mm

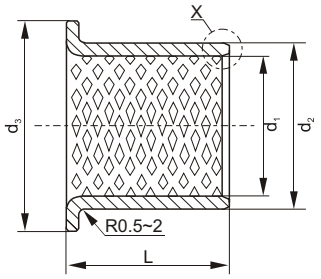
d	D	f_1	f_2	L $^{0}_{-0.40}$												
				10	15	20	25	30	35	40	50	60	70	80	90	100
10	12	0.5	0.3	CSB-090 1010	CSB-090 1015	CSB-090 1020										
12	14			CSB-090 1210	CSB-090 1215	CSB-090 1220										
14	16			CSB-090 1410	CSB-090 1415	CSB-090 1420	CSB-090 1425									
15	17			CSB-090 1510	CSB-090 1515	CSB-090 1520	CSB-090 1525									
16	18			CSB-090 1610	CSB-090 1615	CSB-090 1620	CSB-090 1625									
18	20			CSB-090 1810	CSB-090 1815	CSB-090 1820	CSB-090 1825									
20	23	0.8	0.4	CSB-090 2010	CSB-090 2015	CSB-090 2020	CSB-090 2025									
22	25			CSB-090 2210	CSB-090 2215	CSB-090 2220	CSB-090 2225	CSB-090 2230								
24	27				CSB-090 2415	CSB-090 2420	CSB-090 2425	CSB-090 2430								
25	28				CSB-090 2515	CSB-090 2520	CSB-090 2525	CSB-090 2530								
28	31				CSB-090 2815	CSB-090 2820	CSB-090 2825	CSB-090 2830								
30	34	1.0	0.6		CSB-090 3015	CSB-090 3020	CSB-090 3025	CSB-090 3030	CSB-090 3035	CSB-090 3040						
32	36				CSB-090 3215	CSB-090 3220	CSB-090 3225	CSB-090 3230	CSB-090 3235	CSB-090 3240						
35	39				CSB-090 3515	CSB-090 3520	CSB-090 3525	CSB-090 3530	CSB-090 3535	CSB-090 3540						
40	44					CSB-090 4020	CSB-090 4025	CSB-090 4030	CSB-090 4035	CSB-090 4040	CSB-090 4050					
45	50	1.2	0.8			CSB-090 4520	CSB-090 4525	CSB-090 4530	CSB-090 4535	CSB-090 4540	CSB-090 4550					
50	55					CSB-090 5020	CSB-090 5025	CSB-090 5030	CSB-090 5035	CSB-090 5040	CSB-090 5050	CSB-090 5060				
55	60					CSB-090 5520	CSB-090 5525	CSB-090 5530	CSB-090 5535	CSB-090 5540	CSB-090 5550	CSB-090 5560				
60	65						CSB-090 6025	CSB-090 6030	CSB-090 6035	CSB-090 6040	CSB-090 6050	CSB-090 6060	CSB-090 6070			
65	70							CSB-090 6530	CSB-090 6535	CSB-090 6540	CSB-090 6550	CSB-090 6560	CSB-090 6570			
70	75							CSB-090 7030	CSB-090 7035	CSB-090 7040	CSB-090 7050	CSB-090 7060	CSB-090 7070	CSB-090 7080		
75	80							CSB-090 7530	CSB-090 7535	CSB-090 7540	CSB-090 7550	CSB-090 7560	CSB-090 7570	CSB-090 7580		
80	85	1.4	0.8					CSB-090 8030	CSB-090 8035	CSB-090 8040	CSB-090 8050	CSB-090 8060	CSB-090 8070	CSB-090 8080		
85	90							CSB-090 8530	CSB-090 8535	CSB-090 8540	CSB-090 8550	CSB-090 8560	CSB-090 8570	CSB-090 8580	CSB-090 8590	
90	95							CSB-090 9030	CSB-090 9035	CSB-090 9040	CSB-090 9050	CSB-090 9060	CSB-090 9070	CSB-090 9080	CSB-090 9090	
95	100									CSB-090 9540	CSB-090 9550	CSB-090 9560	CSB-090 9570	CSB-090 9580	CSB-090 9590	CSB-090 95100
100	105										CSB-090 10050	CSB-090 10060	CSB-090 10070	CSB-090 10080	CSB-090 10090	CSB-090 100100
105	110										CSB-090 10550	CSB-090 10560	CSB-090 10570	CSB-090 10580	CSB-090 10590	CSB-090 105100
110	115										CSB-090 11050	CSB-090 11060	CSB-090 11070	CSB-090 11080	CSB-090 11090	CSB-090 110100

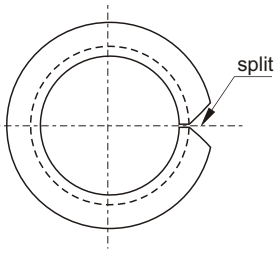
CSB-090(FB090) Metric cylindrical bushes

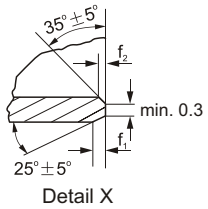
Unit:mm

d	D	f_1	f_2	L $^{0}_{-0.40}$									
				25	30	35	40	50	60	70	80	90	100
115	120							CSB-090 11550	CSB-090 11560	CSB-090 11570	CSB-090 11580	CSB-090 11590	CSB-090 115100
120	125								CSB-090 12060	CSB-090 12070	CSB-090 12080	CSB-090 12090	CSB-090 120100
125	130								CSB-090 12560	CSB-090 12570	CSB-090 12580	CSB-090 12590	CSB-090 125100
130	135								CSB-090 13060	CSB-090 13070	CSB-090 13080	CSB-090 13090	CSB-090 130100
135	140								CSB-090 13560	CSB-090 13570	CSB-090 13580	CSB-090 13590	CSB-090 135100
140	145								CSB-090 14060	CSB-090 14070	CSB-090 14080	CSB-090 14090	CSB-090 140100
145	150								CSB-090 14560	CSB-090 14570	CSB-090 14580	CSB-090 14590	CSB-090 145100
150	155								CSB-090 15060	CSB-090 15070	CSB-090 15080	CSB-090 15090	CSB-090 150100
155	160								CSB-090 15560	CSB-090 15570	CSB-090 15580	CSB-090 15590	CSB-090 155100
160	165								CSB-090 16060	CSB-090 16070	CSB-090 16080	CSB-090 16090	CSB-090 160100
165	170								CSB-090 16560	CSB-090 16570	CSB-090 16580	CSB-090 16590	CSB-090 165100
170	175								CSB-090 17060	CSB-090 17070	CSB-090 17080	CSB-090 17090	CSB-090 170100
175	180								CSB-090 17560	CSB-090 17570	CSB-090 17580	CSB-090 17590	CSB-090 175100
180	185	1.4	0.8						CSB-090 18060	CSB-090 18070	CSB-090 18080	CSB-090 18090	CSB-090 180100
185	190								CSB-090 18560	CSB-090 18570	CSB-090 18580	CSB-090 18590	CSB-090 185100
190	195								CSB-090 19060	CSB-090 19070	CSB-090 19080	CSB-090 19090	CSB-090 190100
195	200								CSB-090 19560	CSB-090 19570	CSB-090 19580	CSB-090 19590	CSB-090 195100
200	205								CSB-090 20060	CSB-090 20070	CSB-090 20080	CSB-090 20090	CSB-090 200100
205	210								CSB-090 20560	CSB-090 20570	CSB-090 20580	CSB-090 20590	CSB-090 205100
215	220								CSB-090 21560	CSB-090 21570	CSB-090 21580	CSB-090 21590	CSB-090 215100
225	230								CSB-090 22560	CSB-090 22570	CSB-090 22580	CSB-090 22590	CSB-090 225100
230	235								CSB-090 23060	CSB-090 23070	CSB-090 23080	CSB-090 23090	CSB-090 230100
240	245								CSB-090 24060	CSB-090 24070	CSB-090 24080	CSB-090 24090	CSB-090 240100
250	255								CSB-090 25060	CSB-090 25070	CSB-090 25080	CSB-090 25090	CSB-090 250100
260	265								CSB-090 26060	CSB-090 26070	CSB-090 26080	CSB-090 26090	CSB-090 260100
270	275								CSB-090 27060	CSB-090 27070	CSB-090 27080	CSB-090 27090	CSB-090 270100
280	285								CSB-090 28060	CSB-090 28070	CSB-090 28080	CSB-090 28090	CSB-090 280100
290	295								CSB-090 29060	CSB-090 29070	CSB-090 29080	CSB-090 29090	CSB-090 290100
300	305								CSB-090 30060	CSB-090 30070	CSB-090 30080	CSB-090 30090	CSB-090 300100

CSB-B90(FBB090) Metric flange bushes







Unit:mm

d_1	d_2	d_3	f_1	f_2	L $^{0}_{-0.40}$										
					15	20	25	30	35	40	50	60	70	80	90
25	28	35	0.8	0.4	CSB-B90 25150	CSB-B90 25200	CSB-B90 25250								
30	34	45	1.0	0.6		CSB-B90 30200	CSB-B90 30250	CSB-B90 30300							
35	39	50				CSB-B90 35200	CSB-B90 35250	CSB-B90 35300	CSB-B90 35350						
40	44	55					CSB-B90 40250	CSB-B90 40300	CSB-B90 40350	CSB-B90 40400					
45	50	60	1.2	0.8				CSB-B90 45300	CSB-B90 45350	CSB-B90 45400	CSB-B90 45500				
50	55	65						CSB-B90 50300	CSB-B90 50350	CSB-B90 50400	CSB-B90 50500				
55	60	70						CSB-B90 55300	CSB-B90 55350	CSB-B90 55400	CSB-B90 55500				
60	65	75						CSB-B90 60300	CSB-B90 60350	CSB-B90 60400	CSB-B90 60500	CSB-B90 60600			
65	70	80						CSB-B90 65300	CSB-B90 65350	CSB-B90 65400	CSB-B90 65500	CSB-B90 65600			
70	75	85							CSB-B90 70350	CSB-B90 70400	CSB-B90 70500	CSB-B90 70600	CSB-B90 70700		
75	80	90							CSB-B90 75350	CSB-B90 75400	CSB-B90 75500	CSB-B90 75600	CSB-B90 75700		
80	85	100	1.4	0.8					CSB-B90 80350	CSB-B90 80400	CSB-B90 80500	CSB-B90 80600	CSB-B90 80700	CSB-B90 80800	
90	95	110									CSB-B90 90500	CSB-B90 90600	CSB-B90 90700	CSB-B90 90800	CSB-B90 90900
100	105	120									CSB-B90 100500	CSB-B90 100600	CSB-B90 100700	CSB-B90 100800	CSB-B90 100900
110	115	130									CSB-B90 110500	CSB-B90 110600	CSB-B90 110700	CSB-B90 110800	CSB-B90 110900
120	125	140									CSB-B90 120500	CSB-B90 120600	CSB-B90 120700	CSB-B90 120800	CSB-B90 120900
130	135	155										CSB-B90 130600	CSB-B90 130700	CSB-B90 130800	CSB-B90 130900
140	145	165										CSB-B90 140600	CSB-B90 140700	CSB-B90 140800	CSB-B90 140900
150	155	180										CSB-B90 150600	CSB-B90 150700	CSB-B90 150800	CSB-B90 150900
160	165	190										CSB-B90 160600	CSB-B90 160700	CSB-B90 160800	CSB-B90 160900
170	175	200										CSB-B90 170600	CSB-B90 170700	CSB-B90 170800	CSB-B90 170900
180	185	215										CSB-B90 180600	CSB-B90 180700	CSB-B90 180800	CSB-B90 180900
190	195	225										CSB-B90 190600	CSB-B90 190700	CSB-B90 190800	CSB-B90 190900
200	205	235										CSB-B90 200600	CSB-B90 200700	CSB-B90 200800	CSB-B90 200900
225	230	260										CSB-B90 225600	CSB-B90 225700	CSB-B90 225800	CSB-B90 225900
250	255	290										CSB-B90 250600	CSB-B90 250700	CSB-B90 250800	CSB-B90 250900
265	270	305										CSB-B90 265600	CSB-B90 265700	CSB-B90 265800	CSB-B90 265900
285	290	325										CSB-B90 285600	CSB-B90 285700	CSB-B90 285800	CSB-B90 285900
300	305	340										CSB-B90 300600	CSB-B90 300700	CSB-B90 300800	CSB-B90 300900

CSB-090(FB090) Bronze wrapped bushes

Chemical composition

Material type	Cu%	Sn%	P%	Pb%	Zn%
CSB-090	91.3	8.5	0.2	/	/

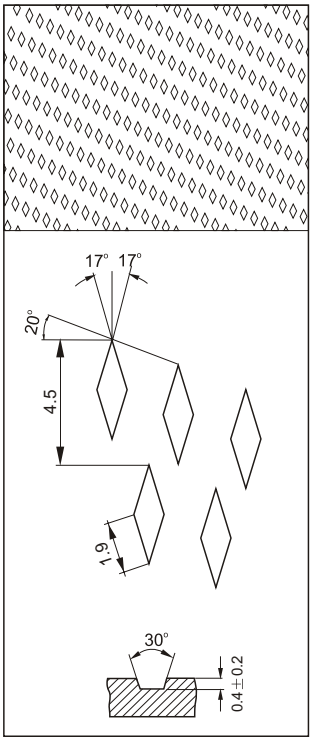
Bushes tolerance

Unit:mm

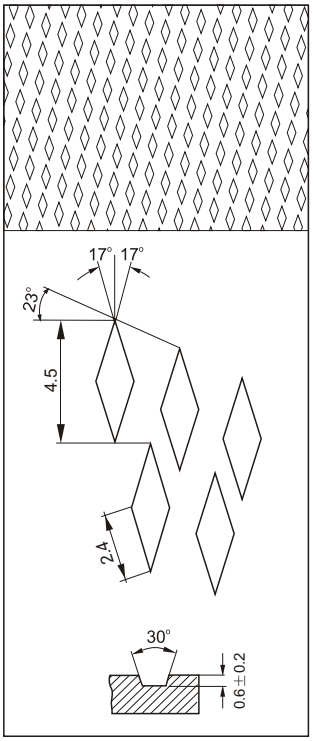
I.D.	10<d≤18	18<d≤30	30<d≤50	50<d≤80	80<d≤120	120<d≤180	180<d≤250	250<d≤300
O.D. tolerance	+0.065 +0.030	+0.075 +0.035	+0.085 +0.045	+0.100 +0.055	+0.120 +0.070	+0.170 +0.100	+0.210 +0.130	+0.260 +0.170
Installed I.D.H9	+0.043 0	+0.052 0	+0.062 0	+0.074 0	+0.087 0	+0.100 0	+0.115 0	+0.130 0
Housing: H7								

Oil pocket type

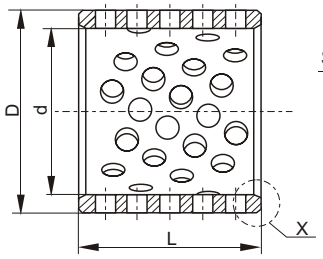
Inside Dia. < φ 22

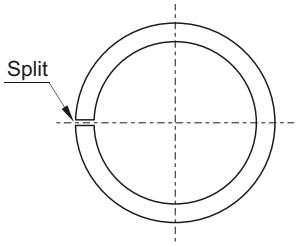


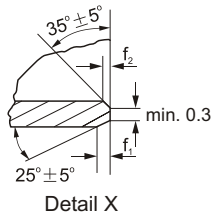
Inside Dia. ≥ φ 22



CSB-T90(FT090) Metric cylindrical bushes







Unit:mm

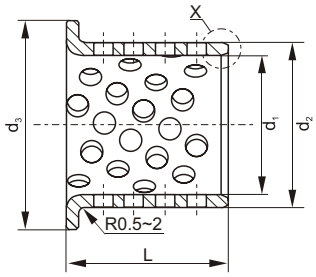
d	D	f_1	f_2	L $^{0}_{-0.40}$												
				10	15	20	25	30	35	40	50	60	70	80	90	100
10	12	0.5	0.3	CSB-T90 1010	CSB-T90 1015	CSB-T90 1020										
12	14			CSB-T90 1210	CSB-T90 1215	CSB-T90 1220										
14	16			CSB-T90 1410	CSB-T90 1415	CSB-T90 1420	CSB-T90 1425									
15	17			CSB-T90 1510	CSB-T90 1515	CSB-T90 1520	CSB-T90 1525									
16	18			CSB-T90 1610	CSB-T90 1615	CSB-T90 1620	CSB-T90 1625									
18	20			CSB-T90 1810	CSB-T90 1815	CSB-T90 1820	CSB-T90 1825									
20	23	0.8	0.4	CSB-T90 2010	CSB-T90 2015	CSB-T90 2020	CSB-T90 2025									
22	25			CSB-T90 2210	CSB-T90 2215	CSB-T90 2220	CSB-T90 2225	CSB-T90 2230								
24	27				CSB-T90 2415	CSB-T90 2420	CSB-T90 2425	CSB-T90 2430								
25	28				CSB-T90 2515	CSB-T90 2520	CSB-T90 2525	CSB-T90 2530								
28	31				CSB-T90 2815	CSB-T90 2820	CSB-T90 2825	CSB-T90 2830								
30	34	1.0	0.6		CSB-T90 3015	CSB-T90 3020	CSB-T90 3025	CSB-T90 3030	CSB-T90 3035	CSB-T90 3040						
32	36				CSB-T90 3215	CSB-T90 3220	CSB-T90 3225	CSB-T90 3230	CSB-T90 3235	CSB-T90 3240						
35	39				CSB-T90 3515	CSB-T90 3520	CSB-T90 3525	CSB-T90 3530	CSB-T90 3535	CSB-T90 3540						
40	44					CSB-T90 4020	CSB-T90 4025	CSB-T90 4030	CSB-T90 4035	CSB-T90 4040	CSB-T90 4050					
45	50	1.2	0.8			CSB-T90 4520	CSB-T90 4525	CSB-T90 4530	CSB-T90 4535	CSB-T90 4540	CSB-T90 4550					
50	55					CSB-T90 5020	CSB-T90 5025	CSB-T90 5030	CSB-T90 5035	CSB-T90 5040	CSB-T90 5050	CSB-T90 5060				
55	60					CSB-T90 5520	CSB-T90 5525	CSB-T90 5530	CSB-T90 5535	CSB-T90 5540	CSB-T90 5550	CSB-T90 5560				
60	65						CSB-T90 6025	CSB-T90 6030	CSB-T90 6035	CSB-T90 6040	CSB-T90 6050	CSB-T90 6060	CSB-T90 6070			
65	70							CSB-T90 6530	CSB-T90 6535	CSB-T90 6540	CSB-T90 6550	CSB-T90 6560	CSB-T90 6570			
70	75							CSB-T90 7030	CSB-T90 7035	CSB-T90 7040	CSB-T90 7050	CSB-T90 7060	CSB-T90 7070	CSB-T90 7080		
75	80							CSB-T90 7530	CSB-T90 7535	CSB-T90 7540	CSB-T90 7550	CSB-T90 7560	CSB-T90 7570	CSB-T90 7580		
80	85	1.4	0.8					CSB-T90 8030	CSB-T90 8035	CSB-T90 8040	CSB-T90 8050	CSB-T90 8060	CSB-T90 8070	CSB-T90 8080		
85	90							CSB-T90 8530	CSB-T90 8535	CSB-T90 8540	CSB-T90 8550	CSB-T90 8560	CSB-T90 8570	CSB-T90 8580	CSB-T90 8590	
90	95							CSB-T90 9030	CSB-T90 9035	CSB-T90 9040	CSB-T90 9050	CSB-T90 9060	CSB-T90 9070	CSB-T90 9080	CSB-T90 9090	
95	100									CSB-T90 9540	CSB-T90 9550	CSB-T90 9560	CSB-T90 9570	CSB-T90 9580	CSB-T90 9590	CSB-T90 95100
100	105										CSB-T90 10050	CSB-T90 10060	CSB-T90 10070	CSB-T90 10080	CSB-T90 10090	CSB-T90 100100
105	110										CSB-T90 10550	CSB-T90 10560	CSB-T90 10570	CSB-T90 10580	CSB-T90 10590	CSB-T90 105100
110	115										CSB-T90 11050	CSB-T90 11060	CSB-T90 11070	CSB-T90 11080	CSB-T90 11090	CSB-T90 110100

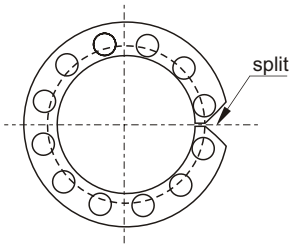
CSB-T90(FT090) Metric cylindrical bushes

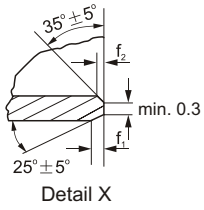
Unit:mm

d	D	f_1	f_2	L $^{0}_{-0.40}$									
				25	30	35	40	50	60	70	80	90	100
115	120							CSB-T90 11550	CSB-T90 11560	CSB-T90 11570	CSB-T90 11580	CSB-T90 11590	CSB-T90 115100
120	125								CSB-T90 12060	CSB-T90 12070	CSB-T90 12080	CSB-T90 12090	CSB-T90 120100
125	130								CSB-T90 12560	CSB-T90 12570	CSB-T90 12580	CSB-T90 12590	CSB-T90 125100
130	135								CSB-T90 13060	CSB-T90 13070	CSB-T90 13080	CSB-T90 13090	CSB-T90 130100
135	140								CSB-T90 13560	CSB-T90 13570	CSB-T90 13580	CSB-T90 13590	CSB-T90 135100
140	145								CSB-T90 14060	CSB-T90 14070	CSB-T90 14080	CSB-T90 14090	CSB-T90 140100
145	150								CSB-T90 14560	CSB-T90 14570	CSB-T90 14580	CSB-T90 14590	CSB-T90 145100
150	155								CSB-T90 15060	CSB-T90 15070	CSB-T90 15080	CSB-T90 15090	CSB-T90 150100
155	160								CSB-T90 15560	CSB-T90 15570	CSB-T90 15580	CSB-T90 15590	CSB-T90 155100
160	165								CSB-T90 16060	CSB-T90 16070	CSB-T90 16080	CSB-T90 16090	CSB-T90 160100
165	170								CSB-T90 16560	CSB-T90 16570	CSB-T90 16580	CSB-T90 16590	CSB-T90 165100
170	175								CSB-T90 17060	CSB-T90 17070	CSB-T90 17080	CSB-T90 17090	CSB-T90 170100
175	180								CSB-T90 17560	CSB-T90 17570	CSB-T90 17580	CSB-T90 17590	CSB-T90 175100
180	185	1.4	0.8						CSB-T90 18060	CSB-T90 18070	CSB-T90 18080	CSB-T90 18090	CSB-T90 180100
185	190								CSB-T90 18560	CSB-T90 18570	CSB-T90 18580	CSB-T90 18590	CSB-T90 185100
190	195								CSB-T90 19060	CSB-T90 19070	CSB-T90 19080	CSB-T90 19090	CSB-T90 190100
195	200								CSB-T90 19560	CSB-T90 19570	CSB-T90 19580	CSB-T90 19590	CSB-T90 195100
200	205								CSB-T90 20060	CSB-T90 20070	CSB-T90 20080	CSB-T90 20090	CSB-T90 200100
205	210								CSB-T90 20560	CSB-T90 20570	CSB-T90 20580	CSB-T90 20590	CSB-T90 205100
215	220								CSB-T90 21560	CSB-T90 21570	CSB-T90 21580	CSB-T90 21590	CSB-T90 215100
225	230								CSB-T90 22560	CSB-T90 22570	CSB-T90 22580	CSB-T90 22590	CSB-T90 225100
230	235								CSB-T90 23060	CSB-T90 23070	CSB-T90 23080	CSB-T90 23090	CSB-T90 230100
240	245								CSB-T90 24060	CSB-T90 24070	CSB-T90 24080	CSB-T90 24090	CSB-T90 240100
250	255								CSB-T90 25060	CSB-T90 25070	CSB-T90 25080	CSB-T90 25090	CSB-T90 250100
260	265								CSB-T90 26060	CSB-T90 26070	CSB-T90 26080	CSB-T90 26090	CSB-T90 260100
270	275								CSB-T90 27060	CSB-T90 27070	CSB-T90 27080	CSB-T90 27090	CSB-T90 270100
280	285								CSB-T90 28060	CSB-T90 28070	CSB-T90 28080	CSB-T90 28090	CSB-T90 280100
290	295								CSB-T90 29060	CSB-T90 29070	CSB-T90 29080	CSB-T90 29090	CSB-T90 290100
300	305								CSB-T90 30060	CSB-T90 30070	CSB-T90 30080	CSB-T90 30090	CSB-T90 300100

CSB-TB90(FTB090) Metric flange bushes







Unit:mm

d_1	d_2	d_3	f_1	f_2	$L\ ^{0}_{-0.40}$										
					15	20	25	30	35	40	50	60	70	80	90
25	28	35	0.8	0.4	CSB-TB90 25150	CSB-TB90 25200	CSB-TB90 25250								
30	34	45	1.0	0.6		CSB-TB90 30200	CSB-TB90 30250	CSB-TB90 30300							
35	39	50				CSB-TB90 35200	CSB-TB90 35250	CSB-TB90 35300	CSB-TB90 35350						
40	44	55					CSB-TB90 40250	CSB-TB90 40300	CSB-TB90 40350	CSB-TB90 40400					
45	50	60	1.2	0.8				CSB-TB90 45300	CSB-TB90 45350	CSB-TB90 45400	CSB-TB90 45500				
50	55	65						CSB-TB90 50300	CSB-TB90 50350	CSB-TB90 50400	CSB-TB90 50500				
55	60	70						CSB-TB90 55300	CSB-TB90 55350	CSB-TB90 55400	CSB-TB90 55500				
60	65	75						CSB-TB90 60300	CSB-TB90 60350	CSB-TB90 60400	CSB-TB90 60500	CSB-TB90 60600			
65	70	80						CSB-TB90 65300	CSB-TB90 65350	CSB-TB90 65400	CSB-TB90 65500	CSB-TB90 65600			
70	75	85							CSB-TB90 70350	CSB-TB90 70400	CSB-TB90 70500	CSB-TB90 70600	CSB-TB90 70700		
75	80	90							CSB-TB90 75350	CSB-TB90 75400	CSB-TB90 75500	CSB-TB90 75600	CSB-TB90 75700		
80	85	100	1.4	0.8					CSB-TB90 80350	CSB-TB90 80400	CSB-TB90 80500	CSB-TB90 80600	CSB-TB90 80700	CSB-TB90 80800	
90	95	110									CSB-TB90 90500	CSB-TB90 90600	CSB-TB90 90700	CSB-TB90 90800	CSB-TB90 90900
100	105	120									CSB-TB90 100500	CSB-TB90 100600	CSB-TB90 100700	CSB-TB90 100800	CSB-TB90 100900
110	115	130									CSB-TB90 110500	CSB-TB90 110600	CSB-TB90 110700	CSB-TB90 110800	CSB-TB90 110900
120	125	140									CSB-TB90 120500	CSB-TB90 120600	CSB-TB90 120700	CSB-TB90 120800	CSB-TB90 120900
130	135	155										CSB-TB90 130600	CSB-TB90 130700	CSB-TB90 130800	CSB-TB90 130900
140	145	165										CSB-TB90 140600	CSB-TB90 140700	CSB-TB90 140800	CSB-TB90 140900
150	155	180										CSB-TB90 150600	CSB-TB90 150700	CSB-TB90 150800	CSB-TB90 150900
160	165	190										CSB-TB90 160600	CSB-TB90 160700	CSB-TB90 160800	CSB-TB90 160900
170	175	200										CSB-TB90 170600	CSB-TB90 170700	CSB-TB90 170800	CSB-TB90 170900
180	185	215										CSB-TB90 180600	CSB-TB90 180700	CSB-TB90 180800	CSB-TB90 180900
190	195	225										CSB-TB90 190600	CSB-TB90 190700	CSB-TB90 190800	CSB-TB90 190900
200	205	235										CSB-TB90 200600	CSB-TB90 200700	CSB-TB90 200800	CSB-TB90 200900
225	230	260										CSB-TB90 225600	CSB-TB90 225700	CSB-TB90 225800	CSB-TB90 225900
250	255	290										CSB-TB90 250600	CSB-TB90 250700	CSB-TB90 250800	CSB-TB90 250900
265	270	305										CSB-TB90 265600	CSB-TB90 265700	CSB-TB90 265800	CSB-TB90 265900
285	290	325										CSB-TB90 285600	CSB-TB90 285700	CSB-TB90 285800	CSB-TB90 285900
300	305	340										CSB-TB90 300600	CSB-TB90 300700	CSB-TB90 300800	CSB-TB90 300900

CSB-T90(FT090) Bronze wrapped bushes

Chemical composition

Material type	Cu%	Sn%	P%	Pb%	Zn%
CSB-T09	91.3	8.5	0.2	/	/

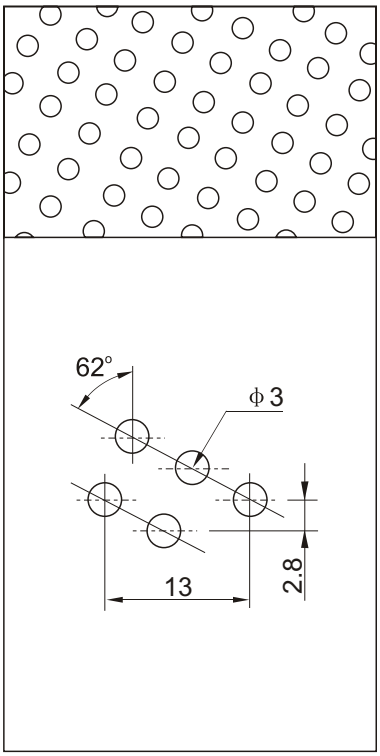
Bushes tolerance

Unit:mm

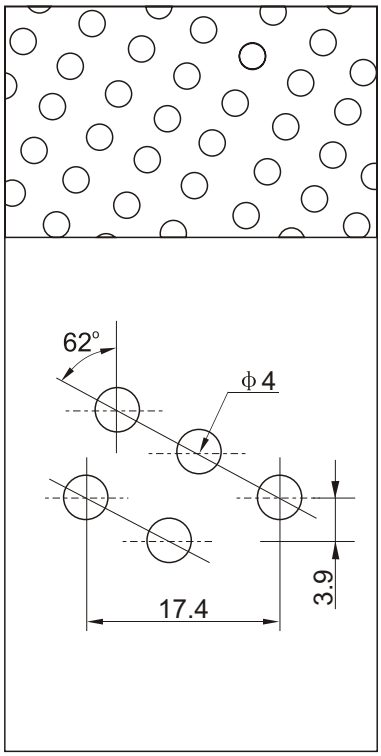
I.D.	10＜d≤18	18＜d≤30	30＜d≤50	50＜d≤80	80＜d≤120	120＜d≤180	180＜d≤250	250＜d≤300
O.D. tolerance	+0.065 +0.030	+0.075 +0.035	+0.085 +0.045	+0.100 +0.055	+0.120 +0.070	+0.170 +0.100	+0.210 +0.130	+0.260 +0.170
Installed I.D.H9	+0.043 0	+0.052 0	+0.062 0	+0.074 0	+0.087 0	+0.100 0	+0.115 0	+0.130 0
Housing: H7								

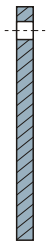
Oil hole type

Inside Dia.≤ ϕ 25

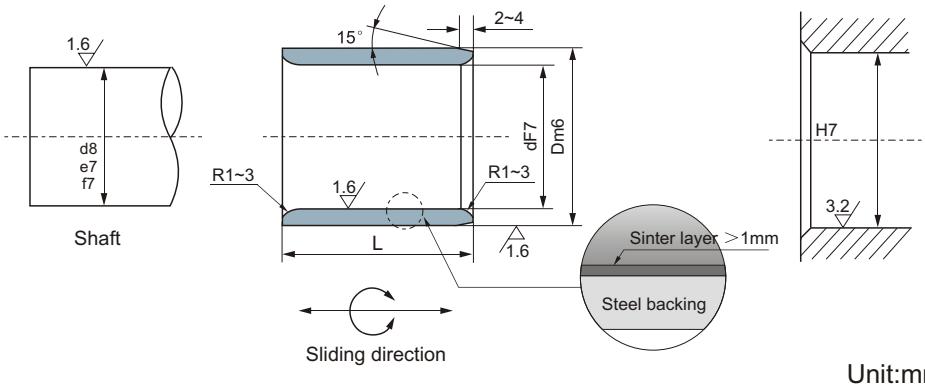


Inside Dia.≥ ϕ 28





CSB850S Metric cylindrical bushes



Unit:mm

dF7		Dm6		L -0.10 -0.30													
				8	10	12	15	16	20	25	30	35	40	50	60	70	80
8	+0.028 +0.013	12	+0.018 +0.007	850SB 081208	850SB 081210	850SB 081212	850SB 081215										
10		14		850SB 101408	850SB 101410	850SB 101412	850SB 101415		850SB 101420								
12	+0.034 +0.016	18			850SB 121810	850SB 121812	850SB 121815	850SB 121816	850SB 121820	850SB 121825	850SB 121830						
13		19	+0.021 +0.008		850SB 131910		850SB 131915	850SB 131916									
14		20			850SB 142010	850SB 142012	850SB 142015		850SB 142020	850SB 142025	850SB 142030						
15		21			850SB 152110	850SB 152112	850SB 152115	850SB 152116	850SB 152120	850SB 152125	850SB 152130						
16		22			850SB 162210	850SB 162212	850SB 162215	850SB 162216	850SB 162220	850SB 162225	850SB 162230	850SB 162235	850SB 162240				
18		24				850SB 182412	850SB 182415	850SB 182416	850SB 182420	850SB 182425	850SB 182430	850SB 182435	850SB 182440				
20		28			850SB 202810	850SB 202812	850SB 202815	850SB 202816	850SB 202820	850SB 202825	850SB 202830	850SB 202835	850SB 202840	850SB 202850			
22	+0.041 +0.020	32				850SB 223212	850SB 223215		850SB 223220	850SB 223225							
25		33				850SB 253312	850SB 253315	850SB 253316	850SB 253320	850SB 253325	850SB 253330	850SB 253335	850SB 253340	850SB 253350	850SB 253360		
30		38	+0.025 +0.009			850SB 303812	850SB 303815		850SB 303820	850SB 303825	850SB 303830	850SB 303835	850SB 303840	850SB 303850	850SB 303860		
35	+0.050 +0.025	45							850SB 354520	850SB 354525	850SB 354530	850SB 354535	850SB 354540	850SB 354550	850SB 354560		
40		50							850SB 405020	850SB 405025	850SB 405030	850SB 405035	850SB 405040	850SB 405050	850SB 405060	850SB 405070	850SB 405080
45		55	+0.030 +0.011								850SB 455530	850SB 455535	850SB 455540	850SB 455550	850SB 455560		
50		60									850SB 506030	850SB 506035	850SB 506040	850SB 506050	850SB 506060	850SB 506070	850SB 506080

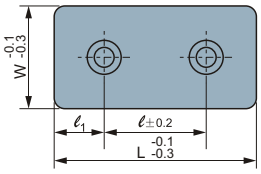
CSB850S Metric cylindrical bushes

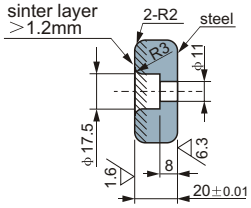
Unit:mm

dF7		Dm6		L -0.10 -0.30								
				30	35	40	50	60	70	80	100	120
50	+0.050 +0.025	62	+0.030 +0.011	850SB 506230	850SB 506235	850SB 506240	850SB 506250	850SB 506260	850SB 506270			
50		65		850SB 506530		850SB 506540	850SB 506550	850SB 506560	850SB 506570	850SB 506580	850SB 5065100	
55	+0.060 +0.030	70				850SB 557040	850SB 557050	850SB 557060	850SB 557070			
60		74		850SB 607430	850SB 607435	850SB 607440	850SB 607450	850SB 607460	850SB 607470	850SB 607480		
60		75		850SB 607530	850SB 607535	850SB 607540	850SB 607550	850SB 607560	850SB 607570	850SB 607580	850SB 6075100	
63		75						850SB 637560	850SB 637570	850SB 637580		
65		80					850SB 658050	850SB 658060	850SB 658070	850SB 658080		
70		85	+0.035 +0.013		850SB 708535	850SB 708540	850SB 708550	850SB 708560	850SB 708570	850SB 708580	850SB 7085100	
70		90					850SB 709050	850SB 709060	850SB 709070	850SB 709080		
75		90						850SB 759060	850SB 759070	850SB 759080	850SB 7590100	
75		95						850SB 759560	850SB 759570	850SB 759580	850SB 7595100	
80		96				850SB 809640	850SB 809650	850SB 809660	850SB 809670	850SB 809680	850SB 8096100	850SB 8096120
80		100				850SB 8010040	850SB 8010050	850SB 8010060	850SB 8010070	850SB 8010080	850SB 80100100	850SB 80100120
90	+0.071 +0.036	110		850SB 9011030			850SB 9011050	850SB 9011060	850SB 9011070	850SB 9011080	850SB 90110100	850SB 90110120
100		120						850SB 10012060	850SB 10012070	850SB 10012080	850SB 100120100	850SB 100120120

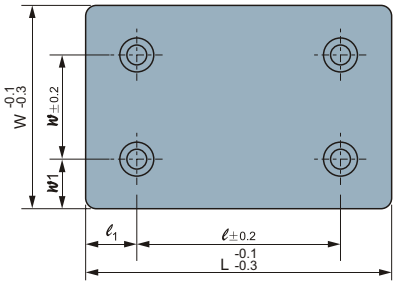
CSB850S JSOX wear plate

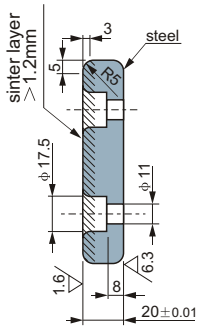
W=28~75

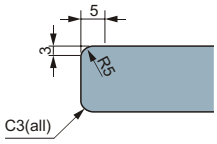




W⩾100







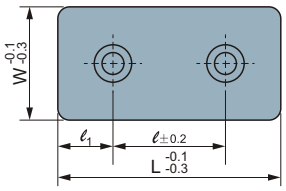
Unit:mm

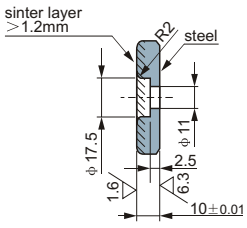
Stanard No.	W	L	w	w_1	ℓ	$ℓ_1$
JSOX	28	75	—	—	45	15
		100			50	25
		150			100	
	38	75			45	15
		100			50	25
		150			100	
	48	75			45	25
		100			50	50
		125			75	
		150			100	
		200				25
	75	75			25	
		100			50	
		125			75	
		150			100	
		200			150	
	100	100	50	25	50	
		125			75	
		150			100	
		200			150	
		250			200	
		300				50
	125	150	50	37.5	100	25
		200			150	
		250			200	
		300				50
	150	150	100	25	100	25
		200			150	
		250			200	

CSB850S JTWX wear plate

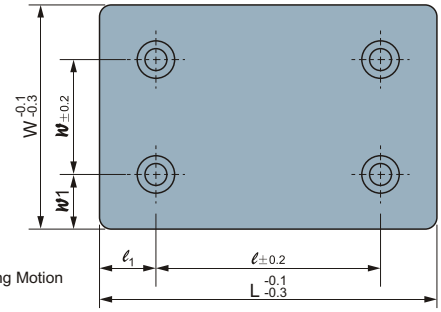
JTWX

W=28~75

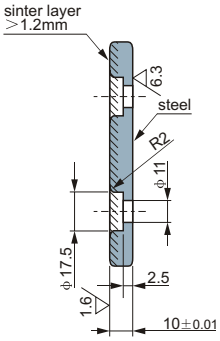




W≥100



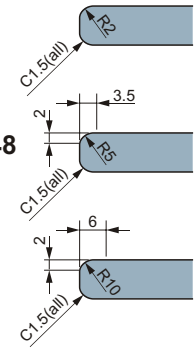
Reciprocating Motion



W=28

W=38 • 48

W≥75

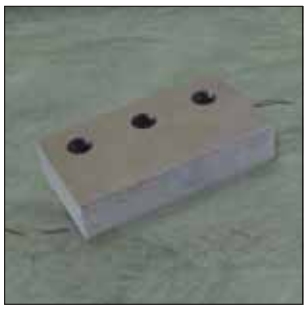


Unit:mm

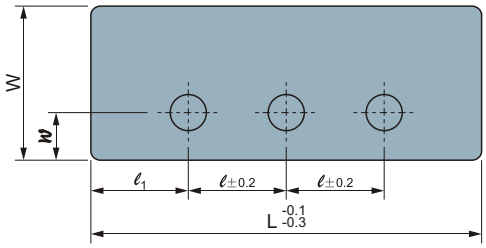
Standard No.	W	L	w	w_1	ℓ	$ℓ_1$
JTWX	28	75	—	—	45	15
		100			50	25
		125			75	
		150			100	
	38	75			45	15
		100			50	25
		125			75	
		150			100	
	48	75			45	15
		100			50	25
		125			75	
		150			100	50
		200				
	75	75			25	25
		100			50	
		125			75	
		150			100	
		200			150	
	100	100	50	25	50	
		125			75	
		150			100	
		200			150	
		250			200	
		300				50
	125	125	75		75	25
		150	50	37.5	100	
		200			150	
		250			200	
		300				50
	150	150	100	25	100	25
		200			150	
		250			200	

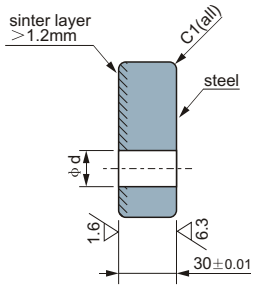
CSB850S JCUX wear plate

JCUX

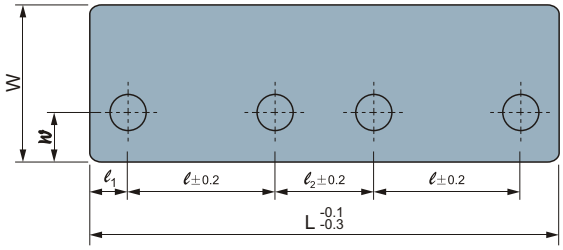


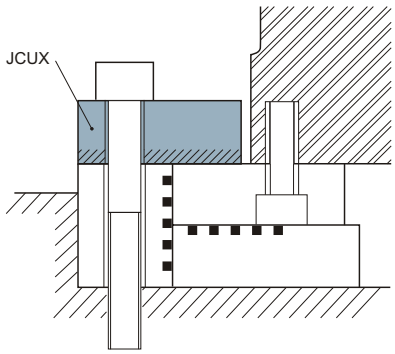
L=150・200





L=250

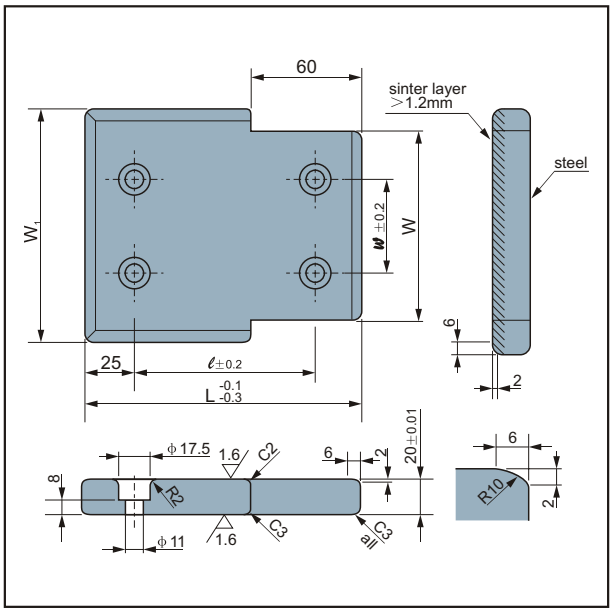




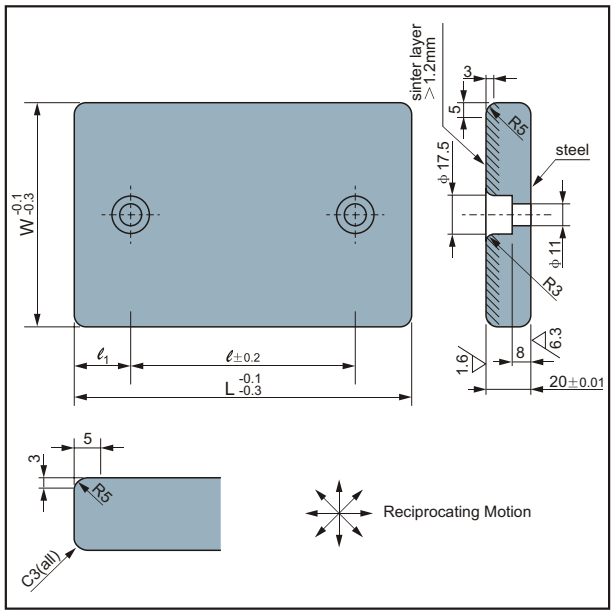
Unit:mm

Standard No.	W	L	ℓ	ℓ_1	ℓ_2	w	d
JCUX	82	150	50	25	—	25	18
		200	75				
		250			50		

CSB850S JPRX/JOXT wear plate



JPRX



JOXT

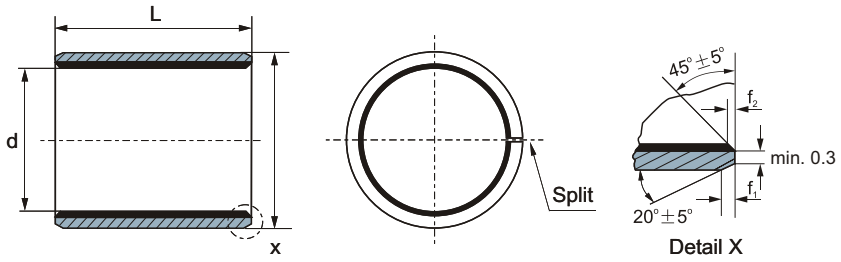
Unit:mm

Standard No.	W	L	W_1	w	ℓ
JPRX	74	100	100	40	50
		125			75
		150			100
		200			150
		250			200
	99	150	125	50	100
		200			150
		250			200
	124	150	150	90	100
		200			150

Unit:mm

Standard No.	W	L	ℓ	$ℓ_1$
JOXT	100	100	50	25
		125	75	
		150	100	
		200	150	
		250	200	
		300		50
	125	125	75	25
		150	100	
		200	150	
		250	200	
		300		50
	150	150	100	25
		200	150	
		250	200	

CSB850BM Metric cylindrical bushes



Unit:mm

d	D	f_1	f_2	L $^{0}_{-0.40}$												
				10	15	20	25	30	35	40	50	60	70	80	90	100
10	12	0.6	0.3	1010	1015	1020										
12	14			1210	1215	1220										
14	16			1410	1415	1420	1425									
15	17			1510	1515	1520	1525									
16	18			1610	1615	1620	1625									
18	20			1810	1815	1820	1825									
20	23	0.6	0.4	2010	2015	2020	2025									
22	25			2210	2215	2220	2225	2230								
24	27				2415	2420	2425	2430								
25	28				2515	2520	2525	2530								
28	31				2815	2820	2825	2830								
30	34	1.2	0.4		3015	3020	3025	3030	3035	3040						
32	36				3215	3220	3225	3230	3235	3240						
35	39				3515	3520	3525	3530	3535	3540						
40	44					4020	4025	4030	4035	4040	4050					
45	50	1.8	0.6			4520	4525	4530	4535	4540	4550					
50	55					5020	5025	5030	5035	5040	5050	5060				
55	60					5520	5525	5530	5535	5540	5550	5560				
60	65						6025	6030	6035	6040	6050	6060	6070			
65	70							6530	6535	6540	6550	6560	6570			
70	75							7030	7035	7040	7050	7060	7070	7080		
75	80							7530	7535	7540	7550	7560	7570	7580		
80	85	1.8	0.6					8030	8035	8040	8050	8060	8070	8080		
85	90							8530	8535	8540	8550	8560	8570	8580	8590	
90	95							9030	9035	9040	9050	9060	9070	9080	9090	
95	100									9540	9550	9560	9570	9580	9590	95100
100	105										10050	10060	10070	10080	10090	100100
105	110										10550	10560	10570	10580	10590	105100
110	115										11050	11060	11070	11080	11090	110100

CSB850BM Metric cylindrical bushes

Unit:mm

d	D	f_1	f_2	L $^{0}_{-0.40}$									
				25	30	35	40	50	60	70	80	90	100
115	120							11550	11560	11570	11580	11590	115100
120	125								12060	12070	12080	12090	120100
125	130								12560	12570	12580	12590	125100
130	135								13060	13070	13080	13090	130100
135	140								13560	13570	13580	13590	135100
140	145								14060	14070	14080	14090	140100
145	150								14560	14570	14580	14590	145100
150	155								15060	15070	15080	15090	150100
155	160								15560	15570	15580	15590	155100
160	165								16060	16070	16080	16090	160100
165	170								16560	16570	16580	16590	165100
170	175								17060	17070	17080	17090	170100
175	180								17560	17570	17580	17590	175100
180	185	1.4	0.8						18060	18070	18080	18090	180100
185	190								18560	18570	18580	18590	185100
190	195								19060	19070	19080	19090	190100
195	200								19560	19570	19580	19590	195100
200	205								20060	20070	20080	20090	200100
205	210								20560	20570	20580	20590	205100
215	220								21560	21570	21580	21590	215100
225	230								22560	22570	22580	22590	225100
230	235								23060	23070	23080	23090	230100
240	245								24060	24070	24080	24090	240100
250	255								25060	25070	25080	25090	250100
260	265								26060	26070	26080	26090	260100
270	275								27060	27070	27080	27090	270100
280	285								28060	28070	28080	28090	280100
290	295								29060	29070	29080	29090	290100
300	305								30060	30070	30080	30090	300100

CSB850BM Metric cylindrical bushes

Unit:mm

Bushes tolerance

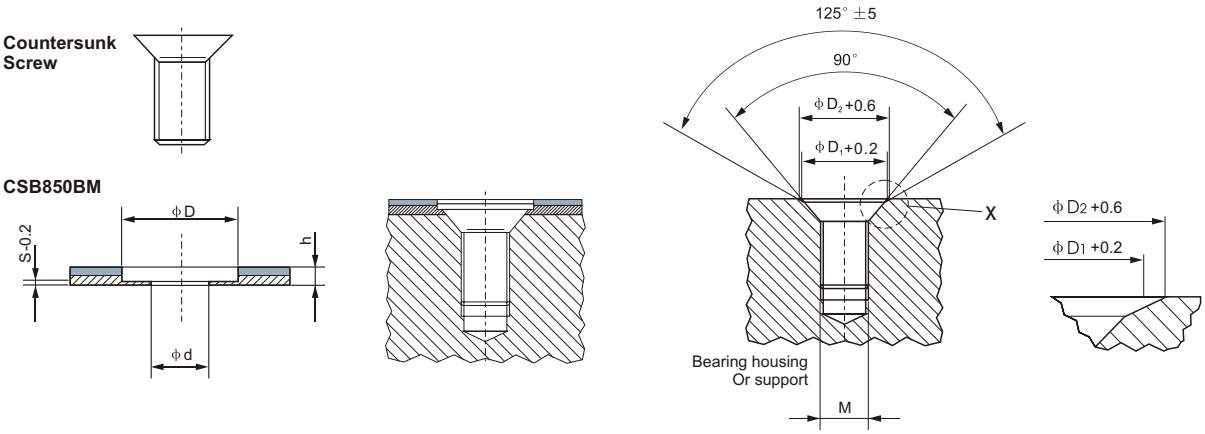
I.D.	10＜d≤18	18＜d≤30	30＜d≤50	50＜d≤80	80＜d≤120	120＜d≤180	180＜d≤250	250＜d≤300
O.D. tolerance	+0.065 +0.030	+0.075 +0.035	+0.085 +0.045	+0.100 +0.055	+0.120 +0.070	+0.170 +0.100	+0.210 +0.130	+0.260 +0.170
Installed I.D.H9	+0.043 0	+0.052 0	+0.062 0	+0.074 0	+0.087 0	+0.100 0	+0.115 0	+0.130 0
Housing: H7								

Metric standard strip

Unit:mm

Thickness -0.05	Lining layer thickness	Length±1	Thickness -0.05
1.0	≥0.40	500	150
1.5	≥0.50	500	150
2.0	≥0.70	500	150
2.5	≥0.75	500	150
3.0	≥1.00	500	150
5.0	≥1.50	500	150

CSB850BM Strip 2, 2.5 and 3 mm thick

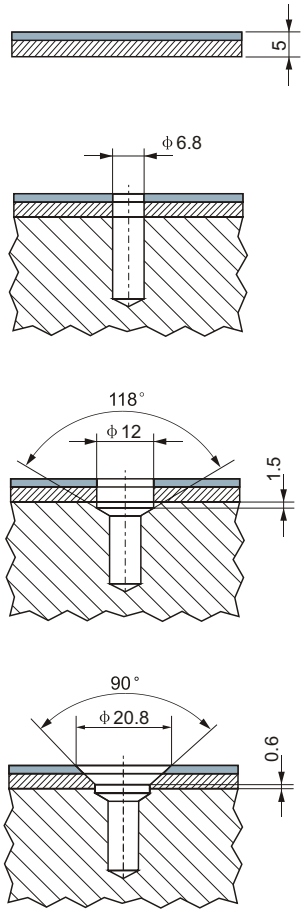


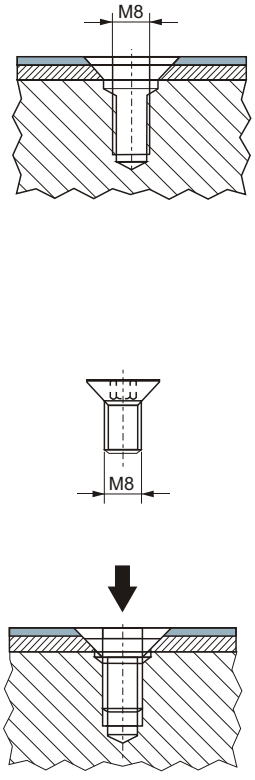
CSB850BM Metric cylindrical bushes

Unit:mm

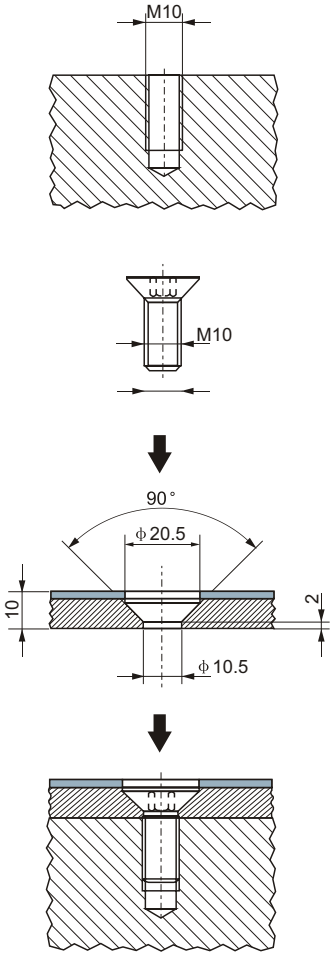
Thread to DIN 13	d	D	D_1	D_2	h	S		Hole spacing tolerance
						BM 10	BM 11	
M5	5.3	11	9.5	10.5	2	0.8	0.8	±0.1
M6	6.4	13	11.5	12.5	2/2.5			
M8	8.4	17	15	16	2.5/3	3		
M10	10.5	21	18.5	19.5	3			±0.15

CSB850BM Strip 5 mm thick

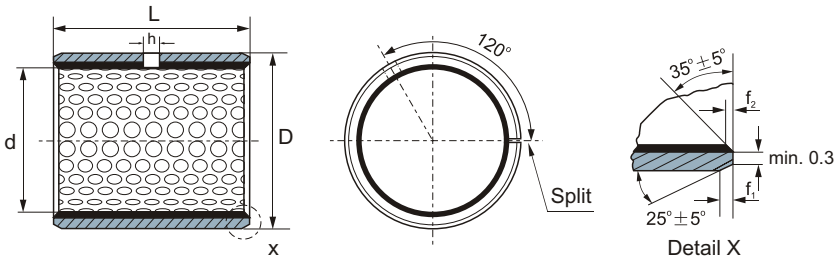




CSB850BM Strip 10 mm thick



CSB-800 Metric cylindrical bushes



Unit:mm

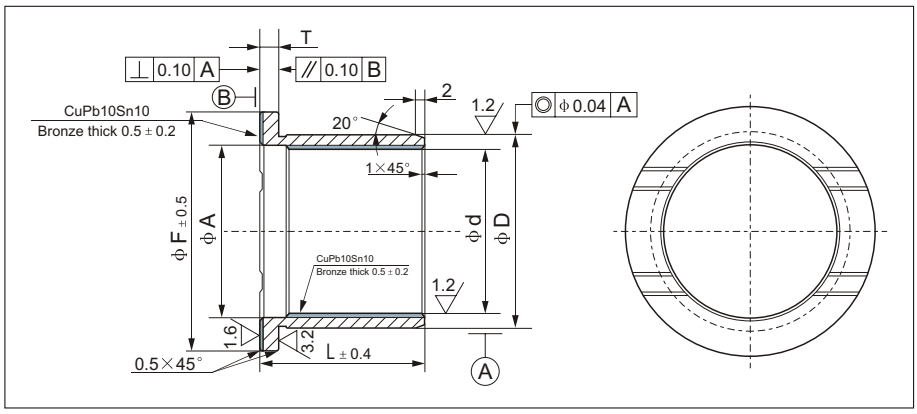
d	D	Axle h8	Housing H7	Installed bearing d	Wall thickness min	Wall thickness max	Oil hole	f_1	f_2	L 0 -0.40 10	15	20	25	30	40	50	60
10	12	$10_{-0.022}$	$12^{+0.018}$	+0.148 +0.010	0.995	0.935	4	0.5	0.3	1010	1015	1020					
12	14	$12_{-0.027}$	$14^{+0.018}$							1210	1215	1220					
14	16	$14_{-0.027}$	$16^{+0.018}$							1410	1415	1420					
15	17	$15_{-0.027}$	$17^{+0.018}$							1510	1515	1520					
16	18	$16_{-0.027}$	$18^{+0.018}$					0.8	0.4	1610	1615	1620					
18	20	$18_{-0.027}$	$20^{+0.021}$	+0.151 +0.010						1810	1815	1820	1825				
20	23	$20_{-0.033}$	$23^{+0.021}$	+0.181 +0.020	1.490	1.430				2010	2015	2020	2025				
22	25	$22_{-0.033}$	$25^{+0.021}$				6			2210	2215	2220	2225				
24	27	$24_{-0.033}$	$27^{+0.021}$					1.0	0.5	2410	2415	2420	2425	2430			
25	28	$25_{-0.033}$	$28^{+0.021}$								2515	2520	2525	2530			
26	30	$26_{-0.033}$	$30^{+0.021}$	+0.205 +0.030	1.980	1.920					2615	2620	2625	2630			
28	32	$28_{-0.033}$	$32^{+0.025}$								2815	2820	2825	2830	2840		
30	34	$30_{-0.033}$	$34^{+0.025}$					1.2	0.6		3015	3020	3025	3030	3040		
32	36	$32_{-0.039}$	$36^{+0.025}$								3215	3220	3225	3230	3240		
35	39	$35_{-0.039}$	$39^{+0.025}$									3520	3525	3530	3540	3550	
38	42	$38_{-0.039}$	$42^{+0.025}$				8					3820	3825	3830	3840	3850	
40	44	$40_{-0.039}$	$44^{+0.025}$									4020	4025	4030	4040	4050	

CSB-800 Metric cylindrical bushes

Unit:mm

d	D	Axle h8	Housing H7	Installed bearing d	Wall thickness min	Wall thickness max	Oil hole	f_1	f_2	L $^{0}_{-0.40}$ 25	30	40	50	60	80	90	100
45	50	$45_{-0.039}$	$50^{+0.025}$	$^{+0.205}_{+0.030}$	2.460	2.400	8	1.5	1.0	4525	4530	4540	4550				
50	55	$50_{-0.039}$	$55^{+0.030}$	$^{+0.210}_{+0.030}$							5030	5040	5050	5060			
55	60	$55_{-0.046}$	$60^{+0.030}$								5530	5540	5550	5560			
60	65	$60_{-0.046}$	$65^{+0.030}$								6030	6040	6050	6060			
65	70	$65_{-0.046}$	$70^{+0.030}$								6530	6540	6550	6560			
70	75	$70_{-0.046}$	$75^{+0.030}$								7030	7040	7050	7060	7080		
75	80	$75_{-0.046}$	$80^{+0.030}$				9.5				7530	7540	7550	7560			
80	85	$80_{-0.046}$	$85^{+0.035}$	$^{+0.215}_{+0.030}$								8040	8050	8060	8080		
85	90	$85_{-0.054}$	$90^{+0.035}$								8530		8550	8560	8580		85100
90	95	$90_{-0.054}$	$95^{+0.035}$										9050	9060	9080		90100
95	100	$95_{-0.054}$	$100^{+0.035}$											9560	9580	9590	95100
100	105	$100_{-0.054}$	$105^{+0.035}$											10060	10080	10090	100100
105	110	$105_{-0.054}$	$110^{+0.035}$											10560	10580		105100
110	115	$110_{-0.054}$	$115^{+0.035}$											11060	11080		110100
115	120	$115_{-0.054}$	$120^{+0.035}$										11550		11580		
120	125	$120_{-0.054}$	$125^{+0.040}$	$^{+0.220}_{+0.030}$									12050	12060			120100
125	130	$125_{-0.063}$	$130^{+0.040}$														125100
130	135	$130_{-0.063}$	$135^{+0.040}$											13060			130100
135	140	$135_{-0.063}$	$140^{+0.040}$											13560	13580		
140	145	$140_{-0.063}$	$145^{+0.040}$											14060	14080		140100
150	155	$150_{-0.063}$	$155^{+0.040}$											15060	15080		150100

MJF-800 Welding flange type bushes



Unit:mm

Type A Grinding technical

ϕ F	ϕ D	t7	ϕ d	D8	L ± 0.4	T ± 0.5	ϕ F	ϕ D	t7	ϕ d	D8	L ± 0.4	T ± 0.5
60	46	+0.079 +0.054	40	+0.119 +0.080	39.5	4.5	92.5	77	+0.105 +0.075	70.4	+0.146 +0.100	70	4.5
67	50		44.4		37	4.7	99	77		70		82.5	4.5
63	53	+0.096 +0.066	43.4		48	5	112	77.25		70.35		89.6	4.5
70	57		50		45	4.5	93	78		70.4		72	6
70	57		50		48	4.5	93	80		70.4		75	8
70	58		50		46	7.9	98	82	+0.126 +0.091	75.4		74	4.5
92	60.6		54.5	+0.146 +0.100	59	4.5	107	82		75.4		80	4.5
85	62		55		51	4.5	97	85		75.4		70	5
95	67	+0.105 +0.075	60		67	3.5	97	85		75.4		80	10
87	68		60.2		60	6	120	87.6		80		93	3.8
103	70.8		63.7		65	4.5	128	90.5		82.8	+0.174 +0.120	108	4.5
103	70.8		63.7		73	4.5	129.6	91.2		83.1		107.7	4.5
95	72		65		64	3.5	120	92		85.4		82	4.5
95	72		65		72	4.5	128	92.6		85		103.5	4.5
108	72		65		75	3.5	120	93		85		94	6
97	72		65		77	3.5	138	97.5		89.3		126.5	4.5
97	77		70		62	4.5	144	105	+0.139 +0.104	95		127	5

The above mentioned sizes are only for reference, CSB can produce the parts according to the customers drawings.

Grinding type bushe inspection and tolerance recommend

A: Grinding technical type bushes

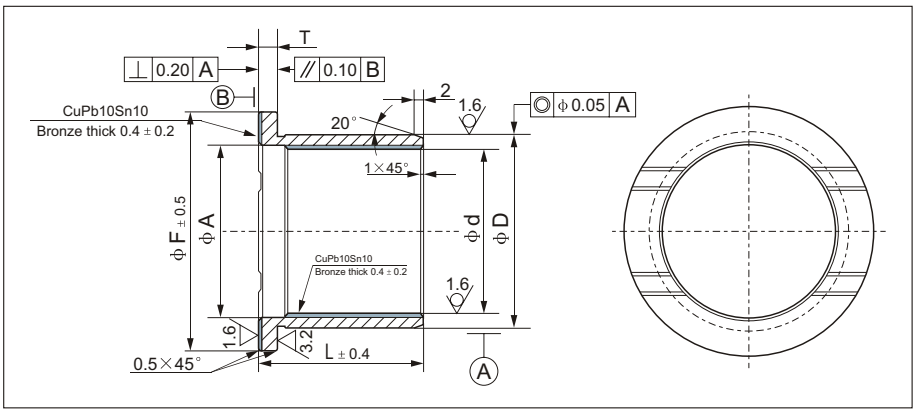
O.D.: Average data by O.D. Micro-meter

I.D.: Average data by 3-point Micro-meter

Tolerance: OD-t7 ID-D8

Mating tolerance: Housing-H7 shaft-e7/f7

MJF-800 Welding flange type bushes



Unit:mm

Type B Sizing technical

ϕ F	ϕ D	ϕ d	Wall thick.		L ± 0.4	T +0.05 -0.15		ϕ F	ϕ D	ϕ d	Wall thick.		L ± 0.4	T +0.05 -0.15
60	41	35.4	2.8	-0.03 -0.08	42	3.5		87	72	65.4	3.3	-0.03 -0.08	63	4.5
70	44	40	2		32	4.5		95	72	65	3.5		64	3.5
53	44	40	2		37	4.5		95	72	65	3.5		72	4.5
53	44	40	2		40	4.5		108	72	65	3.5		75	3.5
60	44	40	2		39.5	4.5		97	72	65	3.5		77	3.5
60	46	40	2		39.5	4.5		97	77	70	3.5		62	4.5
67	50	44.4	2.8		37	4.7		99	77	70	3.5		82.5	4.5
70	54	50	2		53	4.5		112	77.25	70.35	3.45		89.6	4.5
70	57	50	3.5		45	4.5		98	79	75	2		74	4.5
70	57	50	3.5		48	4.5		98	82	75.4	3.3		74	4.5
92	60.6	54.5	3.05		59	4.5		107	82	75.4	3.3		80	4.5
85	62	55	3.5		51	4.5		112	89	85	2		74.5	4.5
95	67	60	3.5		67	3.5		120	92	85.4	3.3		82	4.5
87	69	65	2		64.5	4.5		125	94	90	2		80	4.5

The above mentioned sizes are only for reference, CSB can produce the parts according to the customers drawings.

Sizing type bushe inspection and tolerance recommend

B: Sizing technical type bushes

This type bushes can not be measured directly as the bushe fail to keep round under freedom, we normally recommend check the fitting pressure and wall thickness to control the products.

The pressure data = (3.1416xODxL)x(6-12kg/cm^2)

For example: Bushe ϕ90/80x70x70

Theory contact area: 3.1416x8cmx7cm=176cm^2

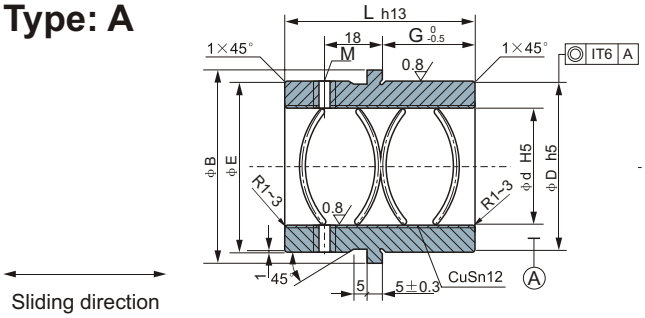
Theory pressure: 176cm^{2}x6kg/cm^2=1056kg

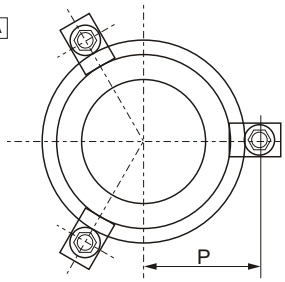
Standard wall thickness:-0.03/-0.08mm

Mating tolerance: Housing-H7 Shaft-e7/f7

CSB450 Metric bushes

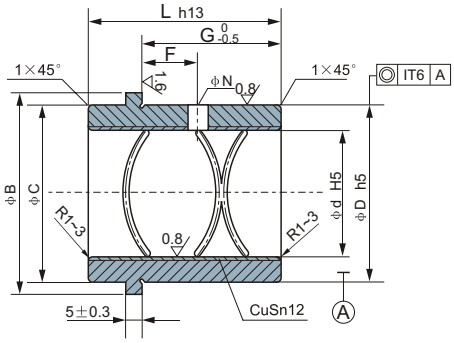
Type: A





Sliding direction

Type: B



Order

CSB450-18×37×50B

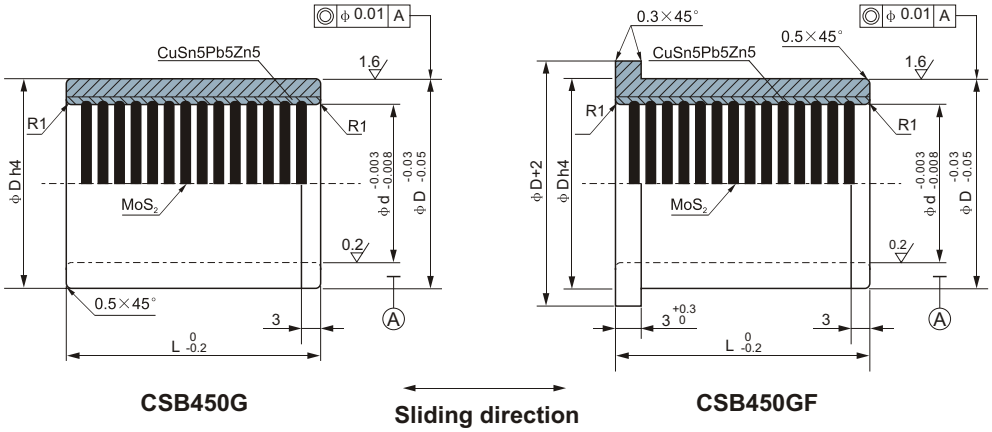
d G L Type

Material

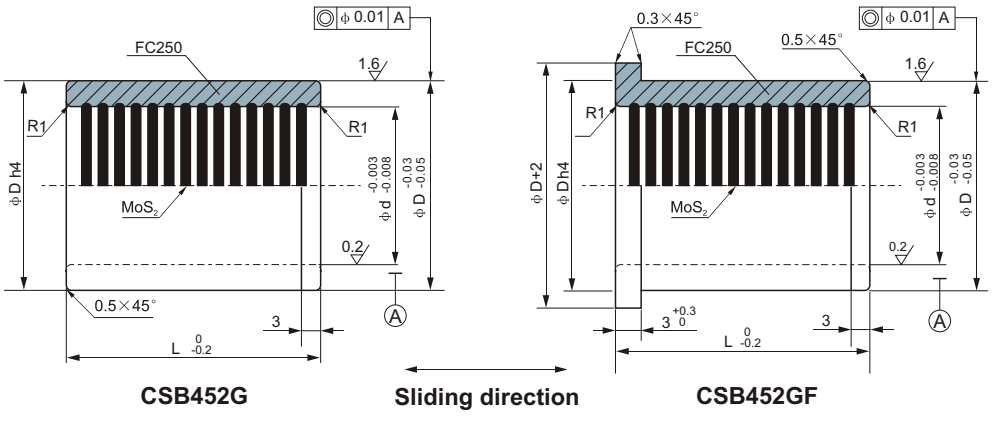
Unit:mm

Type	d	D	B	C	E	F	G	L	M	N	P	Housing
B	18-19	28	34	29	—	8	18	31	—	5	20.5	$28^{+0.013}_{0}$
							37	50				
A				—	31	—	18		M6×1	—		
							27	70				
							18					
B	24-25	38	44	39	—	12	23	36	—	5	25.5	$38^{+0.016}_{0}$
							42	55				
A				—	41	—	23		M10×1	—		
							32	80				
							23					
B	30-32	45	53	48	—	16	30	43	—	5	31.5	$45^{+0.016}_{0}$
							47	60				
A				—	50	—	26		M10×1	—		
							37	90				
							26					
B	40-42	54	63	58	—	19	38	51	—	8	36.5	$54^{+0.019}_{0}$
							54	67				
A				—	60	—	30		M10×1	—		
							47	100				
							30					
B	50-52	65	79	74	—	19	48	61	—	8	44.5	$65^{+0.019}_{0}$
							62	75				
A				—	76	—	35		M10×1	—		
							57	110				
							35					
B	63	81	92	87	—	19	61	74	—	8	51	$81^{+0.022}_{0}$
							77	90				
A				—	89	—	48		M10×1	—		
							67	130				
							48					
B	80	100	111	106	—	19	78	91	—	8	60.5	$100^{+0.022}_{0}$
A				—	108	—	48	100	M10×1	—		
							77	150				
							48					

CSB450G/452G Metric bushes



CSB450G　　Sliding direction　　CSB450GF

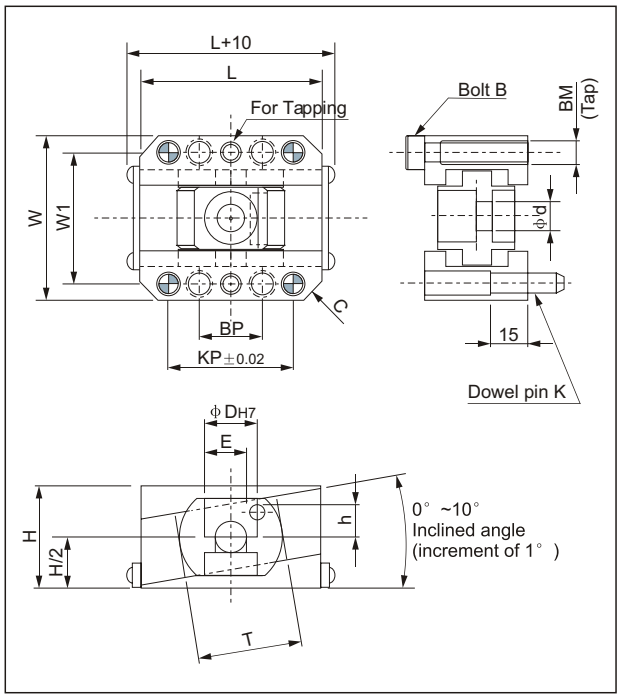


CSB452G　　Sliding direction　　CSB452GF

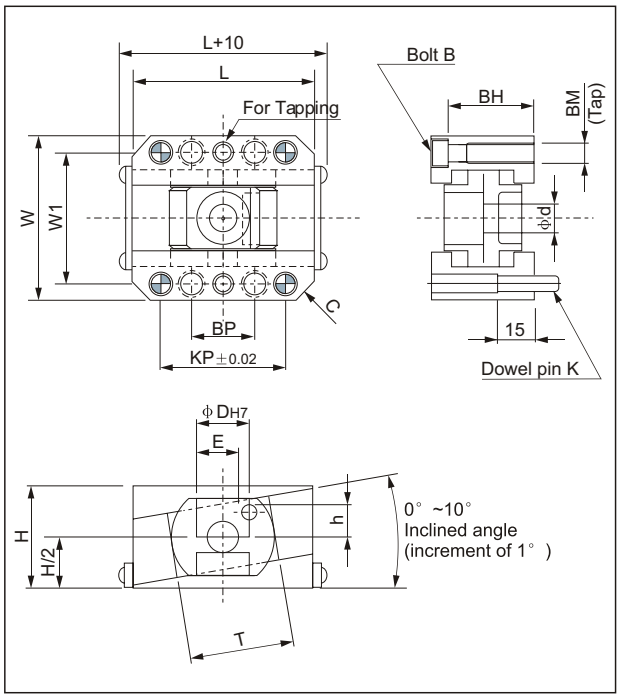
Unit:mm

Type	d	D h4		L							
CSB450G CSB452G	10	16	0 -0.005	10	13	16	20	22	25		
	13	20	0 -0.006		13	16	20	22	25		
	16	24				16	20	22	25	30	35
	20	28					20	22	25	30	35
	25	34	0 -0.007				20	22	25	30	35
CSB450GF CSB452GF	10	16	0 -0.005	10	13	16	20	22	25		
	13	20	0 -0.006		13	16	20	22	25		
	16	24				16	20	22	25	30	35
	20	28					20	22	25	30	35
	25	34	0 -0.007				20	22	25	30	35

JOCU-FC/JOCU-F Oilless unit parts



JOCU-FC



JOCU-F

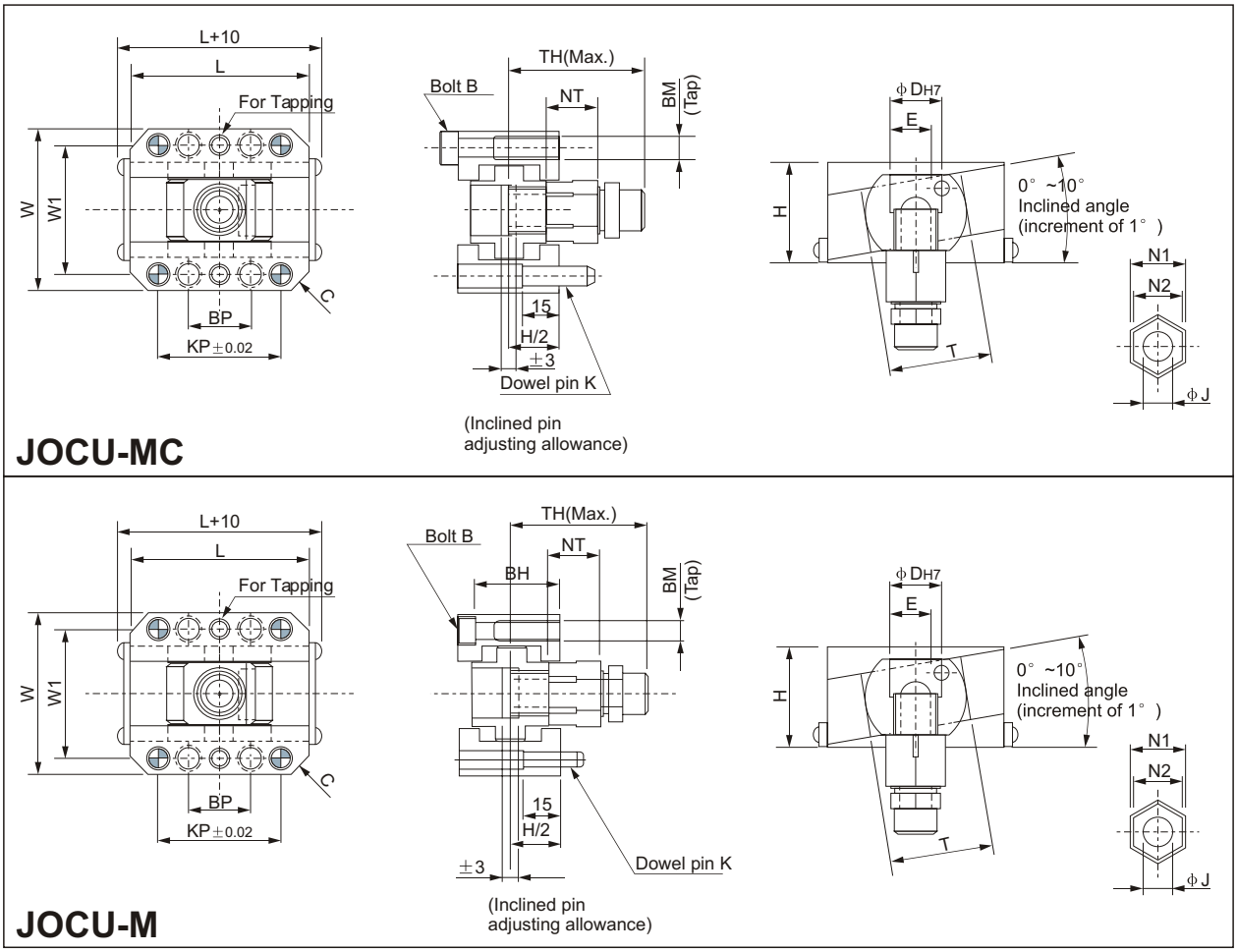
Unit:mm

Stanadard No.	D (pin diameter)	W	L	H	W1	BP	B (Accessory)	KP	k	BM	E	h	C	T	d
JOCU-FC	8	41	44	24	33	12	M3×30	25	Φ4×25	M4	7.5	6.5	3	25	5
	10	47	50	28	38	16	M4×35	30	Φ5×25	M5	8.5	6.5	3	32	6
	12	53	60	36	42	20	M6×50	40	Φ6×25	M8	10	8	4	40	7
	25	75	85	48	62	40	M8×65	65	Φ8×30	M10	22	14	8	50	14
	30	81	100	54	68	50	M8×70	80	Φ8×30	M10	27	15	8	60	14
	35	100	115	60	80	50	M10×80	85	Φ10×30	M12	31	15	8	70	14
	40	108	125	65	88	50	M10×85	85	Φ10×30	M12	36	16	8	80	18

Unit:mm

Stanadard No.	D (pin diameter)	W	L	H	W1	BP	B (Accessory)	KP	k	BM	BH	E	h	C	T	d
JOCU-F	16	64	70	40	50	25	M6×45	50	Φ6×25	M8	33.5	13	10	6	45	9
	20	76	75	46	60	30	M8×55	55	Φ8×30	M10	37.5	17	13	8	45	11
	25	81	85	48	65	40	M8×55	65	Φ8×30	M10	39.5	22	14	8	50	14
	30	88	100	54	72	50	M8×60	80	Φ8×30	M10	45.5	27	15	8	60	14

JOCU-MC/M Oilless unit parts



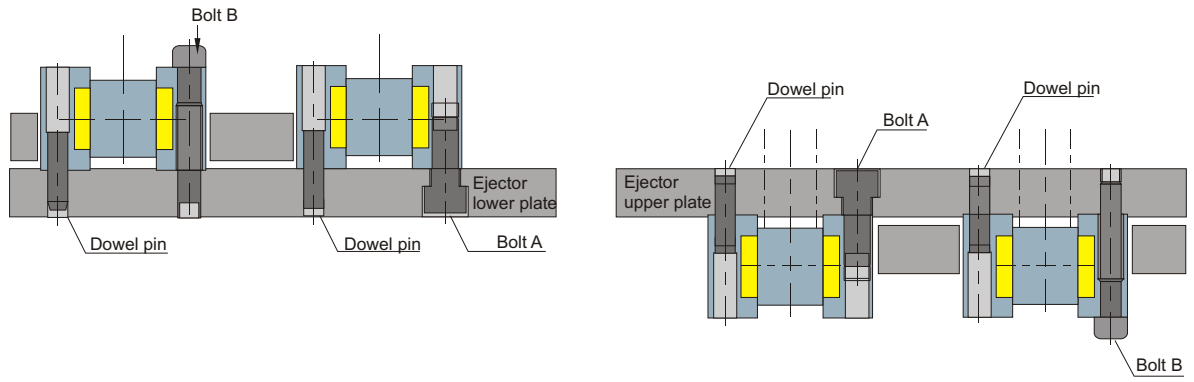
Unit:mm

Standard No.	D (pin diameter)	W	L	H	W1	BP	B (Accessory)	KP	k	BM	E	h	C	T	TH	N1	N2	NT	J
JOCU-MC	25	75	85	48	62	40	M8×65	65	φ8×30	M10	22	14	8	50	64	27	22	21.52	13
	30	81	100	54	68	50	M8×70	80	φ8×30	M10	27	15	8	60	70	32	27	26	13
	35	100	115	60	80	50	M10×80	85	φ10×30	M12	31	15	8	70	73	36	32	28	13
	40	108	125	65	88	50	M10×85	85	φ10×30	M12	36	16	8	80	79.5	41	38	29	17

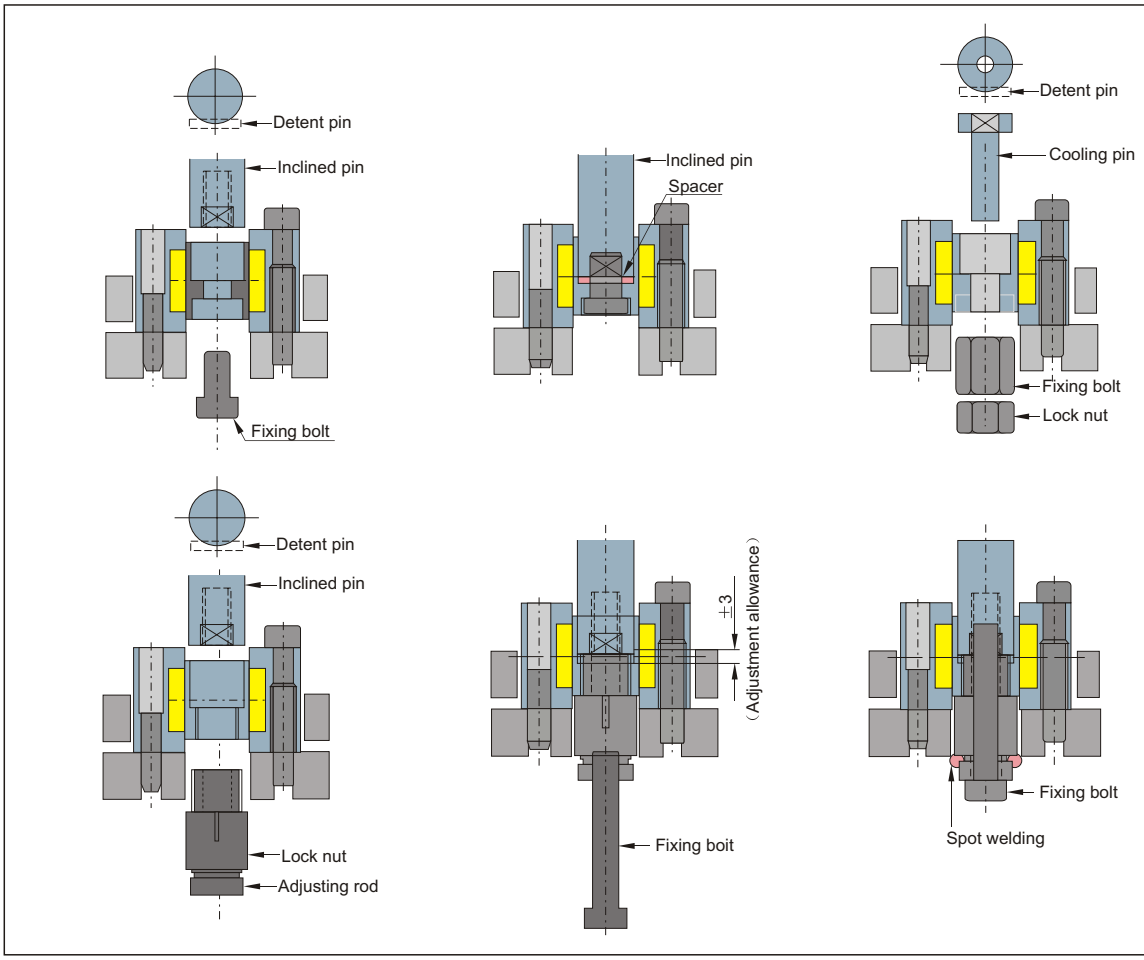
Standard No.	D (pin diameter)	W	L	H	W1	BP	B (Accesspry)	KP	k	BM	BH	E	h	C	T	TH	N1	N2	NT	J
JOCU-M	16	64	70	40	50	25	M6×45	50	φ6×25	M8	33.5	13	10	6	45	53	17	14	21	9
	20	76	75	46	60	30	M8×55	55	φ8×30	M10	37.5	17	13	8	45	58	22	19	21	11
	25	81	85	48	65	40	M8×55	65	φ8×30	M10	39.5	22	14	8	50	64	27	22	21.5	13
	30	88	100	54	75	50	M8×60	80	φ8×30	M10	45.5	27	15	8	60	70	32	27	26	13

JOCU Installation

Installation method on molding



Inclined pin Installation method



CSB-EP Metric cylindrical bushes

Recommend fitting tolerance:

Housing: H7

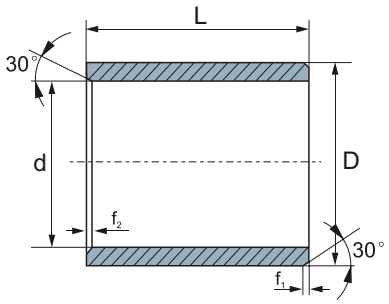
Shaft: h9

Order

EP2-0608-06

d D L

Material



d	f_1	f_2
d≤10	0.5	0.5
10<d≤30	0.8	0.5
30<d	1.2	0.5

Unit:mm

Designation	d After fitting	D	L (h13)	Designation	d After fitting	D	L (h13)
EP-0304-03	3 +0.054 +0.014	4.5	3	EP-1214-06	12 +0.102 +0.032	14	6
EP-0304-05			5	EP-1214-08			8
EP-0304-06			6	EP-1214-10			10
EP-0405-04	4 +0.068 +0.020	5.5	4	EP-1214-12			12
EP-0405-06			6	EP-1214-15			15
EP-0507-05	5 +0.068 +0.020	7	5	EP-1214-20			20
EP-0507-08			8	EP-1214-25			25
EP-0507-10			10	EP-1416-15	14 +0.102 +0.032	16	15
EP-0608-06	6 +0.068 +0.020	8	6	EP-1416-20			20
EP-0608-08			8	EP-1416-25			25
EP-0608-10			10	EP-1517-10	15 +0.102 +0.032	17	10
EP-0810-06	8 +0.083 +0.025	10	6	EP-1517-15			15
EP-0810-08			8	EP-1517-20			20
EP-0810-10			10	EP-1517-25			25
EP-0810-12			12	EP-1618-12	16 +0.102 +0.032	18	12
EP-0810-15			15	EP-1618-15			15
EP-1012-04	10 +0.083 +0.025	12	4	EP-1618-20			20
EP-1012-06			6	EP-1618-25			25
EP-1012-08			8	EP-1820-15	18 +0.102 +0.032	20	15
EP-1012-10			10	EP-1820-20			20
EP-1012-12			12	EP-1820-25			25
EP-1012-15			15	EP-2023-15	20 +0.124 +0.040	23	15
EP-1012-18			18	EP-2023-20			20
EP-1012-20			20	EP-2023-23			23

Material: EP,EP1,EP2...EP10

CSB-EP Metric cylindrical bushes

Unit:mm

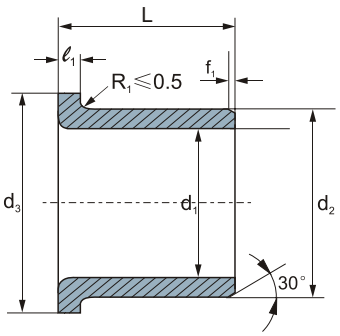
Designation	d After fitting	D	L (h13)
EP-2023-25	20 +0.124 +0.040	23	25
EP-2023-30			30
EP-2225-15	22 +0.124 +0.040	25	15
EP-2225-20			20
EP-2225-25			25
EP-2225-30			30
EP-2528-12	25 +0.124 +0.040	28	12
EP-2528-15			15
EP-2528-20			20
EP-2528-25			25
EP-2528-30			30
EP-2832-20	28 +0.124 +0.040	32	20
EP-2832-25			25
EP-2832-30			30
EP-3034-20	30 +0.124 +0.040	34	20
EP-3034-25			25
EP-3034-30			30
EP-3034-40			40
EP-3236-20	32 +0.150 +0.050	36	20
EP-3236-30			30
EP-3236-40			40
EP-3539-20	35 +0.150 +0.050	39	20
EP-3539-25			25
EP-3539-30			30
EP-3539-40			40
EP-3539-50			50
EP-4044-20	40 +0.150 +0.050	44	20
EP-4044-30			30
EP-4044-40			40
EP-4044-50			50

Designation	d After fitting	D	L (h13)
EP-4550-30	45 +0.150 +0.050	50	30
EP-4550-50			50
EP-5055-20	50 +0.150 +0.050	55	20
EP-5055-30			30
EP-5055-40			40
EP-5055-50			50
EP-5560-40	55 +0.180 +0.060	60	40
EP-5560-60			60
EP-6065-40	60 +0.180 +0.060	65	40
EP-6065-50			50
EP-6570-50	65 +0.180 +0.060	70	50
EP-7075-60	70 +0.180 +0.060	75	60
EP-7580-60	75 +0.180 +0.060	80	60
EP-8085-100	80 +0.180 +0.060	85	100
EP-8590-100	85 +0.212 +0.072	90	100
EP-9095-100	90 +0.212 +0.072	85	100
EP-95100-100	95 +0.212 +0.072	100	100
EP-100105-100	100 +0.212 +0.072	105	100
EP-110115-100	110 +0.212 +0.072	115	100
EP-120125-100	120 +0.212 +0.072	125	100
EP-125130-100	125 +0.245 +0.085	130	100
EP-130135-100	130 +0.245 +0.085	135	100
EP-140145-100	140 +0.245 +0.085	145	100
EP-150155-100	150 +0.245 +0.085	155	100

CSB-EPF Metric flange bushes

Recommend fitting tolerance:
Housing: H7
Shaft: h9
Order

EP2 F-0608-06
Flange bushes
Material
d_1 d_2 L



d	f_1
d≤10	0.5
10<d≤30	0.8
30<d	1.2

Unit:mm

Designation	d_1 After fitting	d_2	d_3(d13)	L(h13)	ℓ_1-0.14
EPF-0304-03	$3^{+0.054}_{+0.014}$	4.5	7.5	3	0.75
EPF-0304-05				5	
EPF-0405-03	$4^{+0.068}_{+0.020}$	5.5	9.5	3	
EPF-0405-04				4	
EPF-0405-06				6	
EPF-0507-04	$5^{+0.068}_{+0.020}$	7	11	4	1
EPF-0507-05				5	
EPF-0608-04	$6^{+0.068}_{+0.020}$	8	12	4	
EPF-0608-06				6	
EPF-0608-08				8	
EPF-0608-10				10	
EPF-0810-05	$8^{+0.083}_{+0.025}$	10	15	5.5	
EPF-0810-07				7.5	
EPF-0810-09				9.5	
EPF-1012-07	$10^{+0.083}_{+0.025}$	12	18	7	
EPF-1012-09				9	
EPF-1012-10				10	
EPF-1012-12				12	
EPF-1012-15				15	
EPF-1012-17				17	
EPF-1214-07	$12^{+0.102}_{+0.032}$	14	20	7	
EPF-1214-09				9	
EPF-1214-10				10	
EPF-1214-12				12	
EPF-1214-15				15	
EPF-1214-17				17	
EPF-1214-20				20	
EPF-1416-10	$14^{+0.102}_{+0.032}$	16	22	10	
EPF-1416-12				12	
EPF-1416-17				17	

Designation	d_1 After fitting	d_2	d_3(d13)	L(h13)	ℓ_1-0.14
EPF-1517-09	$15^{+0.102}_{+0.032}$	17	23	9	1
EPF-1517-12				12	
EPF-1517-17				17	
EPF-1517-20				20	
EPF-1618-12	$16^{+0.102}_{+0.032}$	18	24	12	
EPF-1618-17				17	
EPF-1820-12	$18^{+0.102}_{+0.032}$	20	26	12	
EPF-1820-17				17	
EPF-1820-20				20	
EPF-2023-11	$20^{+0.124}_{+0.040}$	23	30	11.5	1.5
EPF-2023-16				16.5	
EPF-2023-21				21.5	
EPF-2528-11	$25^{+0.124}_{+0.040}$	28	35	11.5	
EPF-2528-16				16.5	
EPF-2528-21				21.5	
EPF-3034-16	$30^{+0.124}_{+0.040}$	34	42	16	2
EPF-3034-26				26	
EPF-3034-37				37	
EPF-3236-16	$32^{+0.150}_{+0.050}$	36	40	16	
EPF-3236-26				26	
EPF-3539-16	$35^{+0.150}_{+0.050}$	39	47	16	
EPF-3539-26				26	
EPF-3842-22	$38^{+0.150}_{+0.050}$	42	54	22	
EPF-4044-30	$40^{+0.150}_{+0.050}$	44	52	30	
EPF-4044-40				40	
EPF-4550-50	$45^{+0.150}_{+0.050}$	50	58	50	
EPF-5055-40	$50^{+0.150}_{+0.050}$	55	63	40	
EPF-5055-50				50	
EPF-6065-50	$60^{+0.180}_{+0.060}$	65	73	50	

Material: EP,EP1,EP2...EP10

CSB-EPF Metric flange bushes

Unit:mm

Designation	d_1 After fitting	d_2	d_3(d13)	L(h13)	ℓ_1-0.14	Designation	d_1 After fitting	d_2	d_3(d13)	L(h13)	ℓ_1-0.14
EPF-6570-50	65 $^{+0.180}_{+0.060}$	70	78	50	2	EPF-100105-100	100 $^{+0.212}_{+0.072}$	105	113	100	2.5
EPF-7075-50	70 $^{+0.180}_{+0.060}$	75	83	50		EPF-110115-100	110 $^{+0.212}_{+0.072}$	115	123	100	
EPF-7580-50	75 $^{+0.180}_{+0.060}$	80	88	50		EPF-120125-100	120 $^{+0.212}_{+0.072}$	125	133	100	
EPF-8085-100	80 $^{+0.180}_{+0.060}$	85	93	100	2.5	EPF-125130-100	125 $^{+0.245}_{+0.085}$	130	138	100	
EPF-8590-100	85 $^{+0.212}_{+0.072}$	90	98	100		EPF-130135-100	130 $^{+0.245}_{+0.085}$	135	143	100	
EPF-9095-100	90 $^{+0.212}_{+0.072}$	95	103	100		EPF-140145-100	140 $^{+0.245}_{+0.085}$	145	153	100	
EPF-95100-100	95 $^{+0.212}_{+0.072}$	100	108	100		EPF-150155-100	150 $^{+0.245}_{+0.085}$	155	163	100	

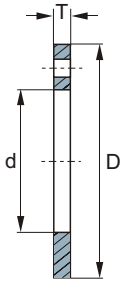
Order

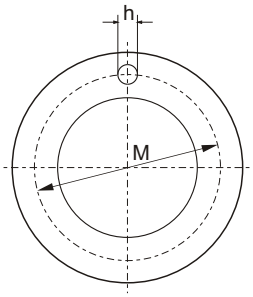
EP2W-0818-015

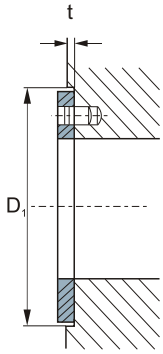
d D T

washer

Material







Metric thrust washer

Unit:mm

Designation	Washer Dim.				Fitting Dim.		
	d +0.25	D -0.25	T -0.05	M ±0.125	h +0.1~+0.4	t±0.2	D_1+0.12
EPW-0818-015	8	18	1.5	13	1.5	1	18
EPW-1018-015	10	18		15			20
EPW-1224-015	12	24		18			24
EPW-1426-015	14	26		20	2		26
EPW-1630-015	16	30		23			30
EPW-1832-015	18	32		25			32
EPW-2036-015	20	36		28	3		36
EPW-2238-015	22	38		30			38
EPW-2442-015	24	42		33			42
EPW-2644-015	26	44		35			44
EPW-2848-015	28	48		38	4		48
EPW-3254-015	32	54		43			54
EPW-3862-015	38	62		50			62
EPW-4266-015	42	66		54			66
EPW-4874-020	48	74	2	61		1.5	74
EPW-5278-020	52	78		65			78
EPW-6290-020	62	90		76			90

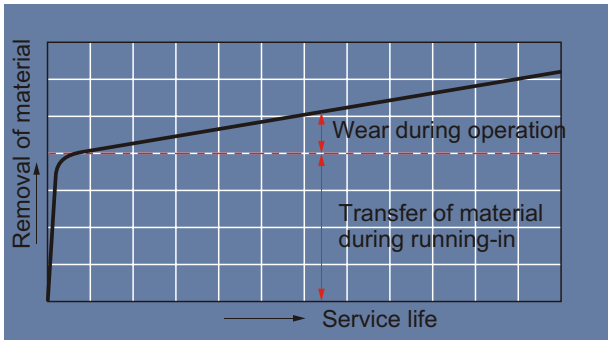
Material: EP,EP1,EP2...EP10

DESIGN NOTES

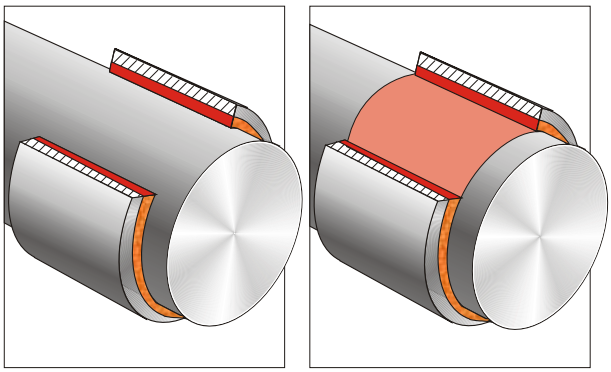
Influences on the service life:

Wear and service life of the CSB slide bearings are dependent on the following:

- Specific bearing load
- Sliding speed
- PV value
- Roughness depth of the mating surface
- Mating surface material and
- Temperature etc. and so on

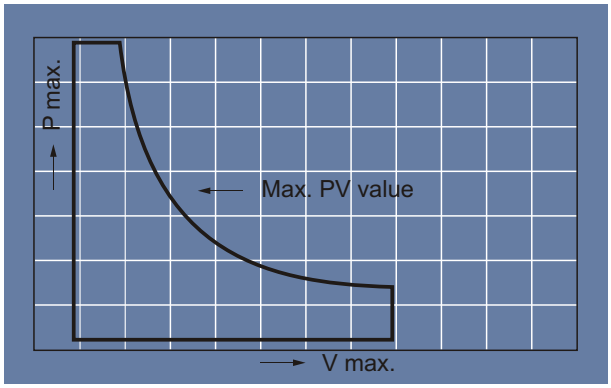


During running-in, some of the surface of the PTFE/Pb or solid lubricants is transferred to the mating surface. A running surface is formed which has low coefficient of friction and this has a positive effect on the operating behaviours. For 3-layer dry bearings, after running-in, some of the porous bronze layer can be seen on the sliding layer as individual areas of different size. This shows that the bearing is functioning correctly.



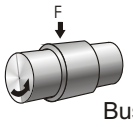
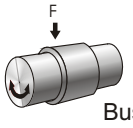
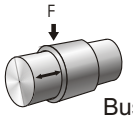
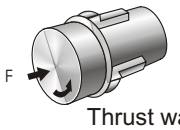
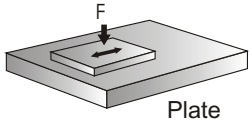
PV value

The PV value has a considerable influence on the bearing service life. It is the product of the specific load P and the sliding speed V and the PV is very important design data, we recommend design lower PV value will leads to a longer service life.



DESIGN NOTES

Direction of Motion and PV Value

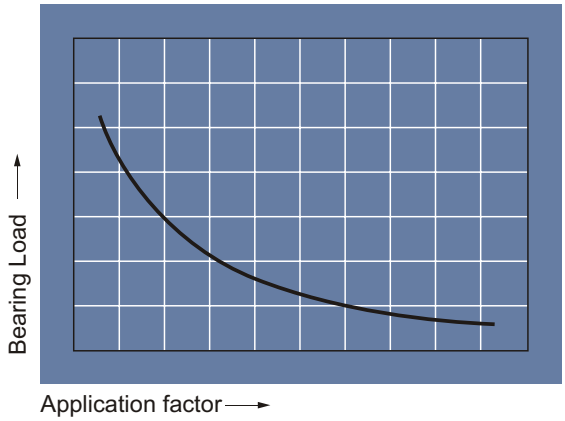
		Bearing Pressure P N/mm^2 {kgf/cm^2}	Velocity V m/s {m/min}	PV Value N/mm^2*m/s {kgf/cm^2*m/min}
1. Rotating motion in single direction of radial journal	 Bushing	$\frac{F}{dL}$ $\left\{\frac{10^2F}{dL}\right\}$	$\frac{\pi dn}{10^3}$ $\left\{\frac{\pi dn}{10^3}\right\}$	$\frac{\pi Fn}{10^3L}$ $\left\{\frac{\pi Fn}{10L}\right\}$
2. Oscillating motion	 Bushing	$\frac{F}{dL}$ $\left\{\frac{10^2F}{dL}\right\}$	$\frac{dc\,\theta}{10^3}$ $\left\{\frac{\pi dc\,\theta}{180\times10^3}\right\}$	$\frac{Fc\,\theta}{10^3L}$ $\left\{\frac{\pi Fc\,\theta}{180\times10^2L}\right\}$
3. Reciprocating motion	 Bushing	$\frac{F}{dL}$ $\left\{\frac{10^2F}{dL}\right\}$	$\frac{2cS}{10^3}$ $\left\{\frac{2cS}{10^3}\right\}$	$\frac{2FcS}{10^3dL}$ $\left\{\frac{FcS}{5dL}\right\}$
4. Thrust motion	 Thrust washer	Rotation $\frac{4F}{\pi(D^2-d^2)}$ $\left\{\frac{400F}{\pi(D^2-d^2)}\right\}$	Rotation $\frac{\pi Dn}{10^3}$ $\left\{\frac{\pi Dn}{10^3}\right\}$	Rotation $\frac{4FDn}{10^3(D^2-d^2)}$ $\left\{\frac{4FDn}{10(D^2-d^2)}\right\}$
		Oscillation $\frac{4F}{\pi(D^2-d^2)}$ $\left\{\frac{400F}{\pi(D^2-d^2)}\right\}$	Oscillation $\frac{Dc\,\theta}{10^3}$ $\left\{\frac{\pi Dc\,\theta}{180\times10^3}\right\}$	Oscillation $\frac{4FDc\,\theta}{10^3\,\pi\,(D^2-d^2)}$ $\left\{\frac{4FDc\,\theta}{180\times10(D^2-d^2)}\right\}$
5. Plane reciprocating motion	 Plate	$\frac{F}{BL}$ $\left\{\frac{10^2F}{WL}\right\}$	$\frac{2cS}{10^3}$ $\left\{\frac{2cS}{10^3}\right\}$	$\frac{2FcS}{10^3BL}$ $\left\{\frac{FcS}{5WL}\right\}$

F : Vertical load ..... N {kgf}
N : Number of rotation ..... S^{-1} {rpm}
c : Cylic velocity of reciprocating or oscillating motion ..... S^{-1} {cpm}
S : Stroke distance ..... m {mm}
θ : Oscillating angle ..... rad
d : Bearing ID ..... mm {mm}
D : Bearing OD ..... mm {mm}
L : Bearing length ..... mm {mm}
W : Bearing width ..... mm {mm}

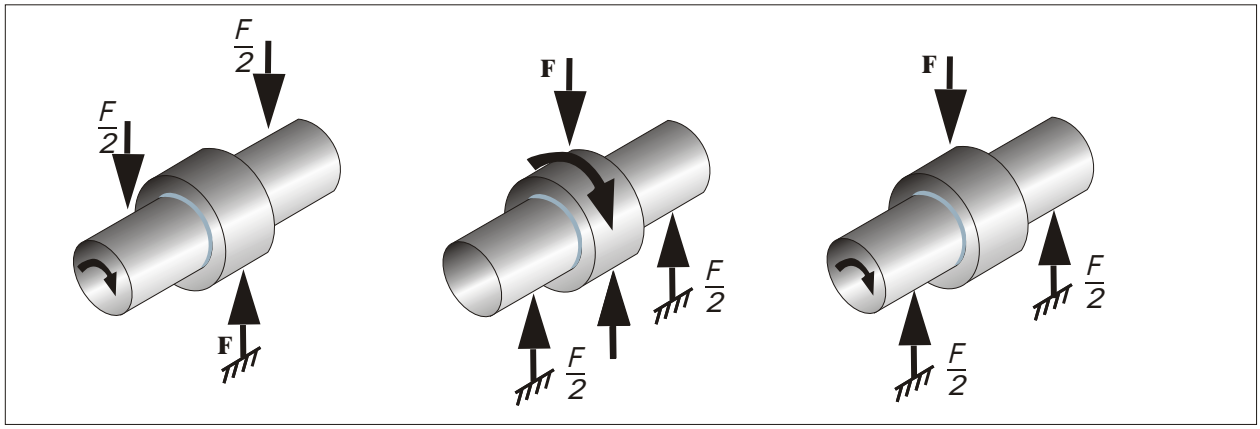
DESIGN NOTES

Bearing Load

In general, the bearing pressure is obtained by dividing the max. load imposed on the bearing by the pressure supporting area of the bearing. The pressure supporting area is defined as the projected loading area which contacts with the shaft, projected in the direction of the load in cases of a cylindrical and spherical bearings.

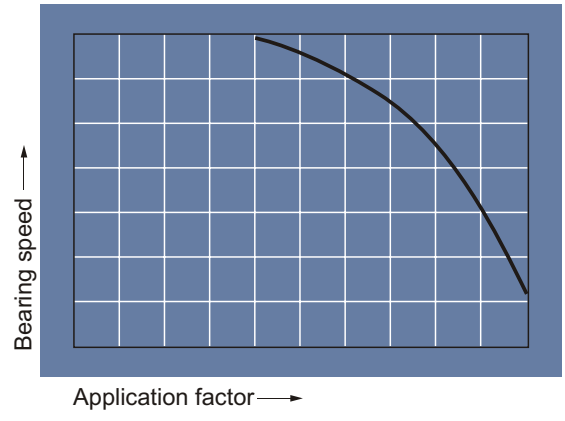


Type of load



Velocity

The main cause of generated heat is the work done at the friction surface of the bearing. It is known from experience that the rise in temperature at the friction surface is affected more by the velocity than by the pressure. With the same PV value, the larger V value is, the high bearing temperature will be. When used in a high velocity operation, it is recommended that the bearings should be designed and used in such a manner that the co-efficient of friction be reduced by positive supply of oil to enhance both cooling and lubricating effectiveness, in order to take advantage of their wear resistance.



DESIGN NOTES

Oscillating Motion

The oscillating motion is considered to be one of the most severe conditions to bearings zero velocity in each cycle of motion. Oil film is liable to be disrupted, fatigue and wear of material be accelerated and wear particles tend to remain longer. The ball bearing which are designed mainly for rotational motion have a very small contact area causing, extreme high contact stress to develop at their pressure supporting areas. They are, thus, unsuitable for oscillating motion because which have large contact sleeve bearings which have large contact area are generally considered better for this application.

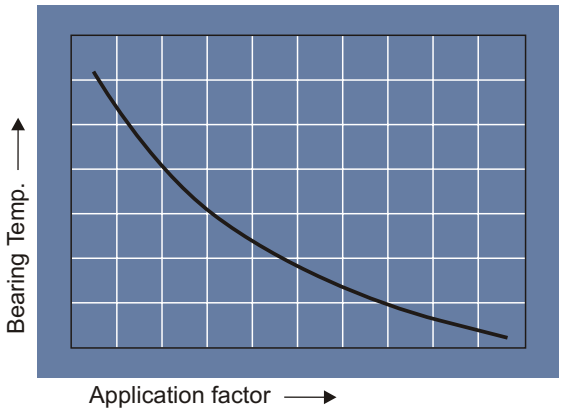
CSB self-lubricating bearings are the most adequate bearings for oscillating motion having a very tough sliding surface which generates little wear particles, and being an oil-containing type which will not cause noise due to disruption of oil film.

Operation intervals

Operation may either be continuous or intermittent. Intermittent operations can be advantageous for general type bearings because of intervals which allows generated friction heat to cool down. This enables a PV value to remain relatively high. The disadvantage of intermittent operations is that frequent operational interruptions tend to cause inadequate amount. Moreover, resulting in increasing wear occur when restarting. The heavy load imposed in an intermittent operation is liable to cause boundary lubrication condition. A bearing should be selected which safely endures friction and wear in that condition. Oil-containing bearings self-supply lubricant oil to the sliding surface, and exhibit excellent lubricant-maintaining capability. CSB650# in particular has a high load carrying capacity and displays excellent performance in intermittent operations with high load because of the tough film of solid lubricants covers the sliding surface.

Bearing Temperature

The life of a bearing is greatly influenced by environment temperature and friction heat that is generated from oscillating and reciprocating motion. For a high temperature application, the PV value of the bearing should be limited to a small value. The heat resistance of plastic bearings are generally inferior to that of metallic bearings. In particular thermoplastic resins poor resistance to heat. They also have high thermal expansion rate. Consequently to maintain a min. Required clearance, careful dimensional control is necessary when the bearings of these materials are designed.

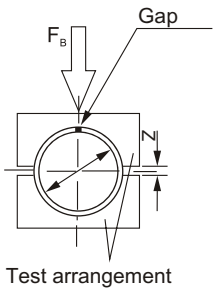


BEARINGS DIMENSIONAL INSPECTION

The wrapped or thin wall bushes are not accurately mensurable in the unfitted condition. Here we list the standard measurement method.

Testing the outside diameter

The outside diameter of CSB wrapped plain bearings that have to have the interference fit (press fit) in the housing are tested with the aid of a special device.



Test arrangement

Test A according to DIN 1494, part 2

Test arrangement and gauge pin Q = _____ mm

Test force FB = _____ N

Limiting value for ⊿z = ____e____ mm

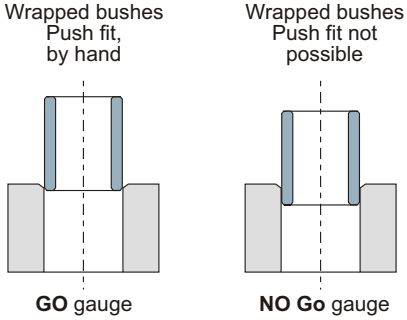
Outside diameter d2 = ____to____ mm

In this test the outside diameter is measured under prestressing force according to DIN 1494, part 2, test A to determine the deviation Delta Z from a standard value. Test load and permissible deviation are calculated according to DIN 1494.

Normally this method is suitable for large series.

The simplified method for testing the outside diameter of plain bearings is based on DIN 1494 Method B. The test uses GO and NO GO ring gauge. The corresponding diameters of the GO and NO GO ring gauges are selected according to the DIN standard.

Normally this method is suitable for smaller series.

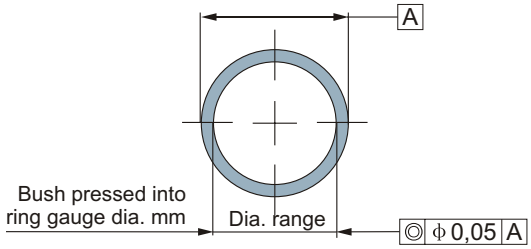


GO gauge **NO Go** gauge

Testing the inside diameter

The inside diameter is tested according to DIN1494, part 2, test C. To perform this test, the bushes should be fixed in a ring gauge (table 5 according to DIN1494 part 1) in this condition the inside diameter can be tested with GO or NO GO plug gauges.

Normally this method is suitable for smaller series. The big size bushes recommend use of a three-point micrometer is preferable.

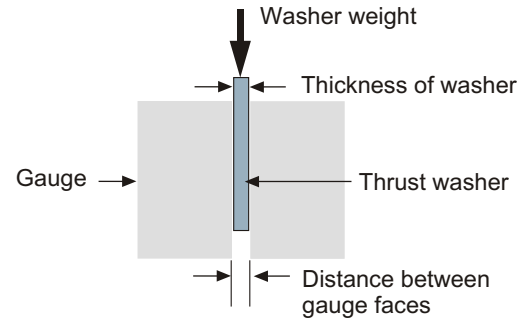


Method C according to DIN 1494,part 2

Testing the thrust washer

Beside the thickness, the flatness of a washer is of particular importance as it has impact on the life of both the washer and its mate.

We use very helpful test in which the washer falls through the gap between two plain parallel plates of a gauge under its dead weight. The plates must be big enough to cover the whole washer.

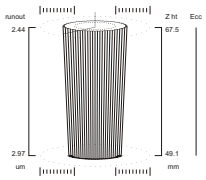


BEARINGS DIMENSIONAL INSPECTION

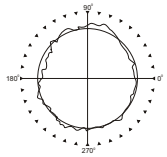
Machined bushing like CSB650#, CSB600#, CSB450#, CSB200 etc are high-precision parts. Therefore precision equipment is needed to check them. Here we list the popular check method.

The tester used to check a bushing depends on the quality standard and the number of bushings involved.

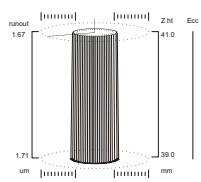
LS CYLINDER RESULTS		Filt. Type	2CR
Feature name	JDB3	Filter	1-50 upr
⌖	3.81 um	No. Planes	2
⌒	5.25 um	Profile	100.0%
ⓘ ISO	2.39 um	Meas mode	External
Max par val	3.19 um	Phase	240.4 deg
Max par ang	126.0 deg	Angle	89.996 deg
		Meas. date	29-04-2001
Scale	1.00 um	Meas. Time	15:07:48
Datum	SPINDLE		



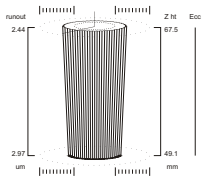
LS ROUNDNESS RESULTS		Datum	SPINDLE
Feature name	JDB2	Filter type	2CR
Feature no.	03	Filter	1-50 upr
R	29.639 um	Profile	100.0%
O	1.58 um	Meas mode	External
E	17.06 um	Meas. Date	29-04-2001
∠	234.1 deg	Meas. Time	14:31:18
⌒	34.52um		
Scale	1.00 um		
Z height	76.5 mm		



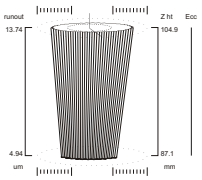
LS CYLINDER RESULTS		Filter type	2CR
Feature name	JDB2T1	Filter	1-50 upr
⌖	1.71 um	No. Planes	2
⌒	40.03 um	Profile	100.0%
ⓘ ISO	39.85 um	Meas mode	External
Max par val	-0.75 um	Phase	241.7 deg
Max par ang	153.0 deg	Angle	89.976 deg
		Meas. date	29-04-2001
Scale	1.00 um	Meas. Time	14:37:58
Datum	JDB2T		

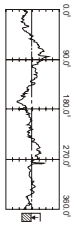


LS CYLINDER RESULTS		Filt. Type	2CR
Feature name	JDB3	Filter	1-50 upr
⌖	3.81 um	No. Planes	2
⌭	5.25 um	Profile	100.0%
		Meas mode	External
Max par val	3.19 um	Phase	240.4 deg
Max par ang	126.0 deg	Angle	89.996 deg
		Meas. date	29-04-2001
Scale	1.00 um	Meas. Time	15:07:48
Datum	SPINDLE		



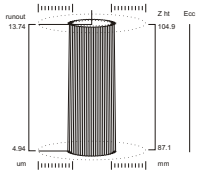
LS CYLINDER RESULTS		Filt. Type	2CR
Feature name	JDB3	Filter	1-50 upr
⌖	13.78 um	No. Planes	2
⌭	13.48 um	Profile	100.0%
ⓘ ISO	0.9 um	Meas mode	External
Max par val	13.16 um	Phase	246.1 deg
Max par ang	78.0 deg	Angle	89.994 deg
		Meas. date	29-04-2001
Scale	2.00 um	Meas. Time	15:12:47
Datum	SPINDLE		

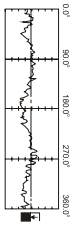




LS ROUNDNESS RESULTS	
Feature name	JDB2
Feature num	04
R	29.639 mm
O	2.19 um
E	16.12 um
∠	234.2 deg
↗	32.64 um
Scale	0.50 um
Z height	74.5 mm
Datum	SPINDLE
Filter type	2CR
Filter	1-50 upr
Profile	100.0 %
Meas mode	External
Meas. date	29-04-2001
Meas. Time	14:31:52

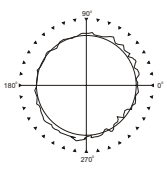
LS CYLINDER RESULTS		Filt. type	2CR
Feature name	JDB2T	Filter	1-50 upr
⌖	2.05 um	No. Planes	2
⌭	35.39 um	Profile	100.0%
		Meas mode	External
Max par val	-1.07 um	Phase	235.7 deg
Max par ang	177.0 deg	Angle	89.942 deg
		Meas. date	29-04-2001
Scale	1.00 um	Meas. Time	14:34:02
Datum	SPINDLE		

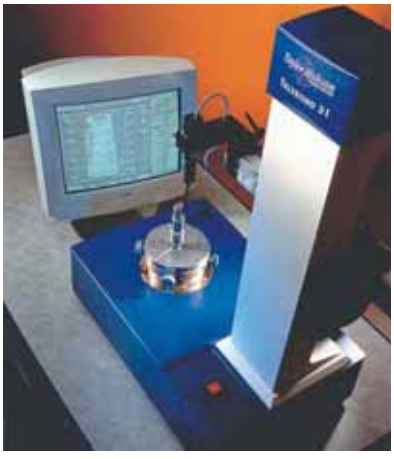




LS ROUNDNESS RESULTS	
Feature name	JDB3
Feature num	00
R	33.476 mm
O	2.51 um
E	1.19 um
∠	219.6 deg
↗	4.60 um
Scale	1.00 um
Z height	67.5 mm
Datum	SPINDLE
Filter type	2CR
Filter	1-50 upr
Profile	100.0 %
Meas mode	External
Meas. date	29-04-2001
Meas. time	15:07:48

LS CYLINDER RESULTS		Datum	SPINDLE
Feature name	JDB3	Filt. type	2CR
Feature no.	01	Filter	1-50 upr
R	33.475 mm	Profile	100.0%
O	3.09 um	Meas mode	External
E	0.46 um	Meas. date	29-04-2001
∠	129.8 deg	Meas. Time	14:59:36
↗	3.45 um		
Scale	2.00 um		
Z height	49.1 mm		





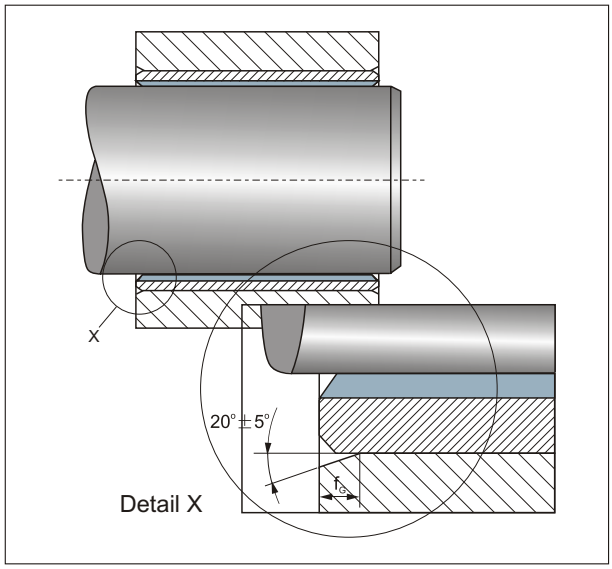
DESIGN OF BEARING ARRANGEMENTS

Housing

Bushes

The housing bore should have a chamfer f_Gx20°±5°, This chamfer makes it easier to press the bushes into the housing.

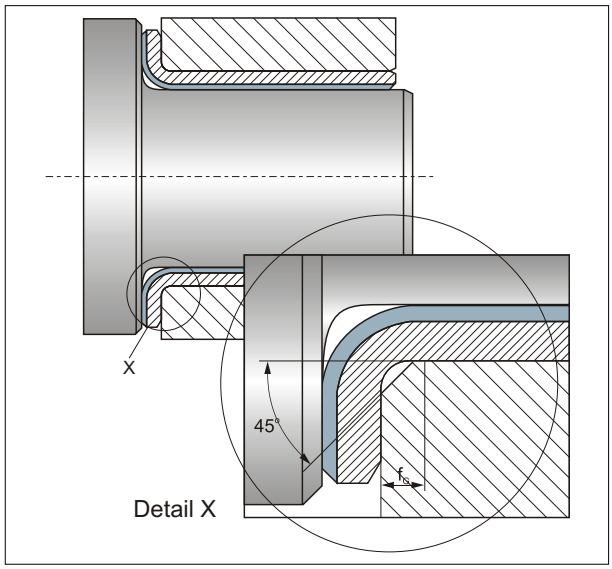
Housing bore diameter d_G	Chamfer with f_G
$d_G \leqslant 30$	0.8±0.3
$30 < d_G \leqslant 80$	1.2±0.4
$80 < d_G \leqslant 180$	1.8±0.8
$180 < d_G$	2.5±1.0



Flange Bushes

The radius at the transition from the radial to the axial component must be taken into consideration for flange bushes. A sufficiently large chamfer must be provided on the housing to prevent the flanged bushes fouling in the area of the radius. Sufficient support must be provided for the flange in applications with axial loading.

Housing bore diameter d_G	Chamfer with f_G
$d_G \leqslant 10$	1.2±0.2
$10 < d_G$	1.7±0.2

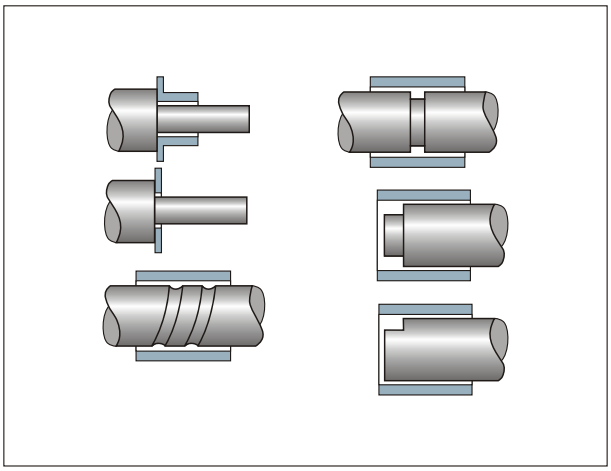


DESIGN OF BEARING ARRANGEMENTS

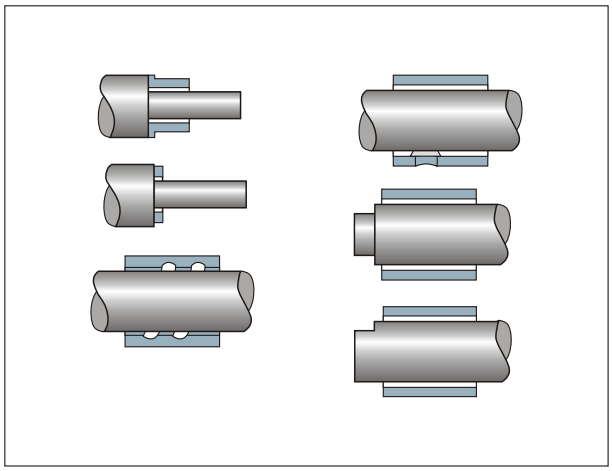
Shaft

To make fitting easier, the shaft ends should be chamfered. All sharp edges which could damage the sliding layer must be broken. Higher surface qualities will extend the service life only slightly whereas greater roughness depths will reduce the service life considerably. Ground or drawn surfaces are preferred. The surface finish of the mating material should be between Ra 0.2-Ra0.8 um obtained by grinding normally.

incorrect

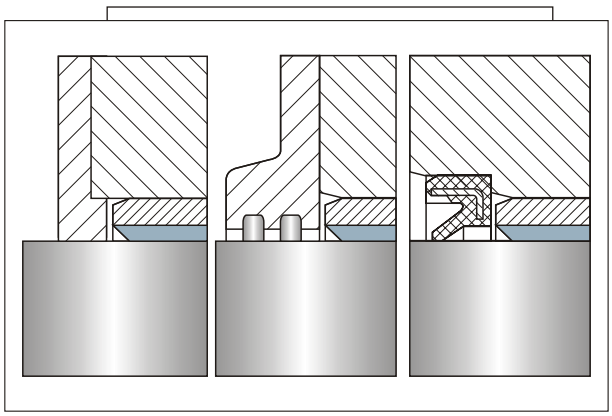


correct



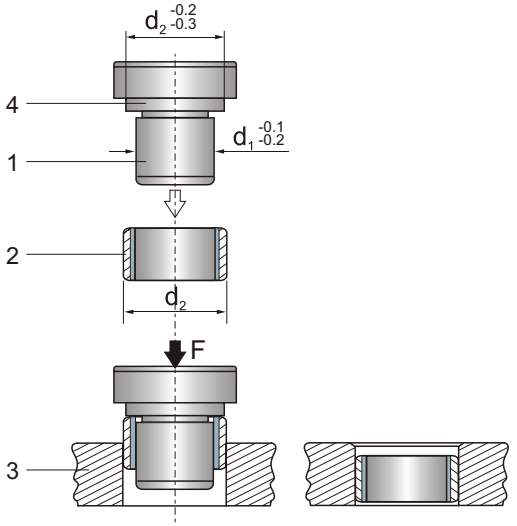
Seals

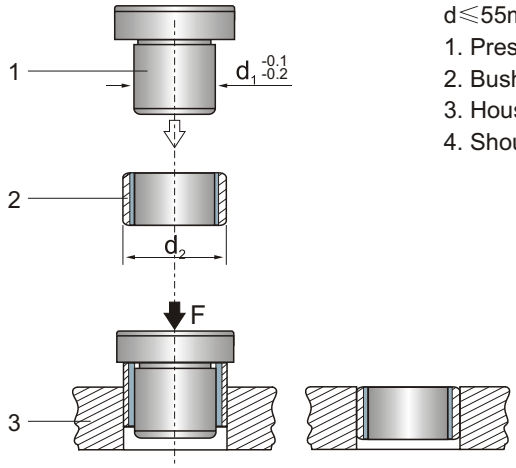
If increased levels of contamination occur or the bearing is used in an aggressive environment, the bearing position should be protected. The usual solution is to design the surrounding structure so that the contamination cannot reach the bearing position. A collar of grease may also be used or shaft seals if the level of contamination is particularly high.



BEARINGS INSTALLATION

Bushes

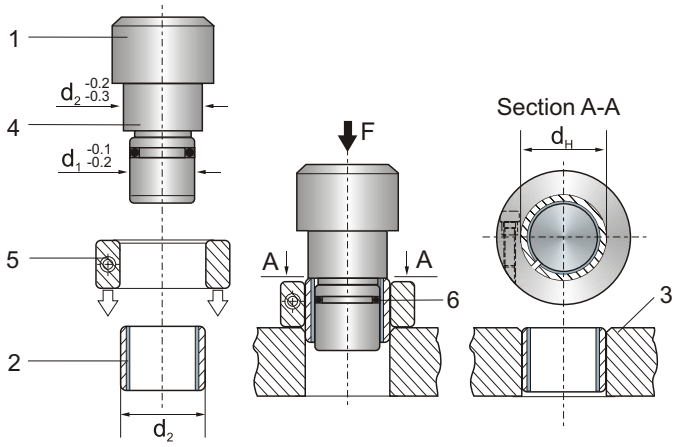




d⩽55mm
1. Pressing-in arbor
2. Bushes
3. Housing
4. Shoulder diameter

In most cases, CSB slide bearings are used with a press-fit in the same manner as general sleeve bearings. Fit the bearings into housings using mandrels or press. In case of a relatively large interference, provide both the I.D. of the housing and the O.D. of the bearing with chamfers, and fit the bearing into the housing with mandrel for easy installation. When using plastic bearings in an environment where temperature fluctuates, install the bearings using set screws, keys or flange pins for better results.

For some special application like CSB650# bushes for injection molding machines, can be used shrink fitting. This is the preferred method of inserting a bush in its housing and provides the optimum interference fit without risking bearing damage during press fitting. Frozen carbon dioxide (Co_2) should be packed around the bearing for up to 2 hours, depending on the cross section of bush to be cooled. Once removed from the Co_2, the bush should be offered to its housing without delay. It should fit without force, gravity will usually be adequate for a vertical installation.



d⩾55mm
1. Pressing-in arbor
2. Bushes
3. Housing
4. Shoulder diameter
5. Auxiliary ring
6. O ring

d_2 mm	d_H mm
$55 \leqslant d_2 \leqslant 100$	d_2 $^{+0.28}_{+0.25}$
$100 < d_2 \leqslant 200$	d_2 $^{+0.40}_{+0.36}$
$200 < d_2 \leqslant 305$	d_2 $^{+0.50}_{+0.46}$

BEARINGS INSTALLATION

At the on-start of operation, contact surfaces of shaft and bearings are smooth, however, microscopic irregularities are inevitable to develop after continued use. A deviation from true center alignment may also exist. Thus, the initial contact between sliding surface could be local. Do not immediately start a regular loaded operation, it may result in damaging the gearing surface, leading to a shorter service life. Instead, gradually break-in operations so to smooth out the microscopic irregularities, and allow the entire pressure support area to slowly come in contact without causing damage.

Storage

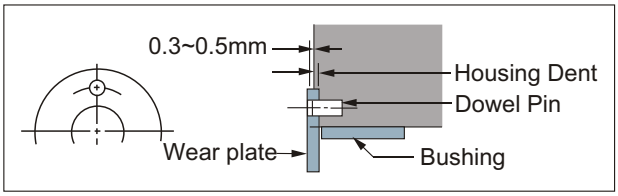
CSB slide bearings are supplied packed in boxes or in a bag in a box. The bearings should be stored in clean, rust proof manner. The thin wall bearings like EP should be protected from deformation during storage. Do not store in locations exposed to high temperatures, high humidity, or the direct rays of the sun, and do not place under a heavy load also.

Initial operation

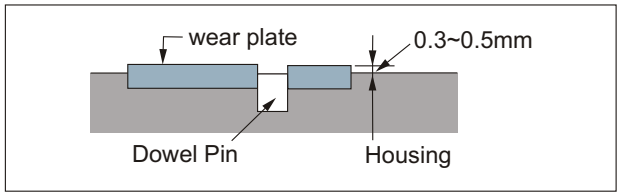
Thrust washers and plate

We recommended to provide housing with hollowed dents for installing thrust washers and sliding plates. Dowel pins should be applied to prevent turning.

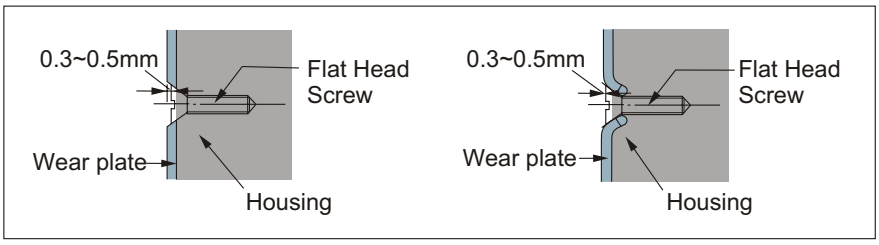
1. Dowel pin application(thrust washer)



2. Inlaid installation(plate)



3. Flat head screw application



Alternative fixing methods

Laser welding, adhesive fixing or soft soldering have also been used for economical alternative fixing if the interference fit on the bush is not sufficient or it is uneconomical to use dowel pins or screws for trust washer and plate. When using laser welding or other higher temperature manners should be considering not exceed the max. slide layer temp. Can be bear. The sliding layer must always be kept free from adhesives.

SHAFT TOLERANCE TABLE (ISO)

Unit:mm

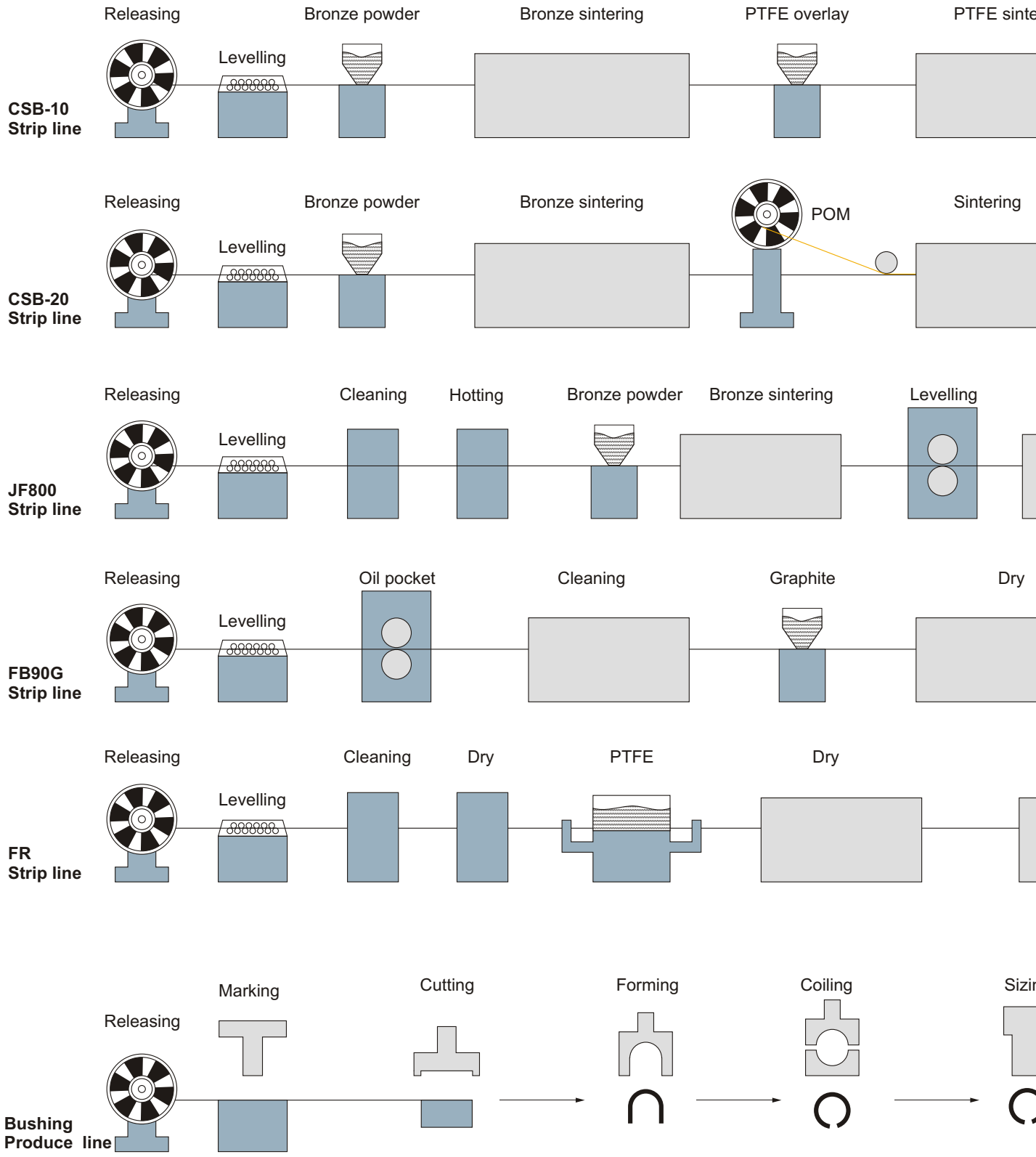
⩾	<	c9	d8	e7	e8	f7	g6	h5	h6	h7	h8	js6	js7	k6	m6	n6	p6	p7	r6	s6
—	3	-60 -85	-20 -34	-14 -24	-14 -28	-6 -16	-2 -8	0 -4	0 -6	0 -10	0 -14	±3	±5	+6 0	+8 +2	+10 +4	+12 +6	+16 +6	+16 +10	+20 +14
3	6	-70 -100	-30 -48	-20 -32	-20 -38	-10 -22	-4 -12	0 -5	0 -8	0 -12	0 -18	±4	±6	+9 +1	+12 +4	+16 +8	+20 +12	+24 +12	+23 +15	+27 +19
6	10	-80 -116	-40 -62	-25 -40	-25 -47	-13 -28	-5 -14	0 -6	0 -9	0 -15	0 -22	±4.5	±7	+10 +1	+15 +6	+19 +10	+24 +15	+30 +15	+28 +19	+32 +23
10	18	-95 -138	-50 -77	-32 -50	-32 -59	-16 -34	-6 -17	0 -8	0 -11	0 -18	0 -27	±5.5	±9	+12 +1	+18 +7	+23 +12	+29 +18	+36 +18	+34 +23	+39 +28
18	24	-110 -162	-65 -98	-40 -61	-40 -73	-20 -41	-7 -20	0 -9	0 -13	0 -21	0 -33	±6.5	±10	+15 +2	+21 +8	+28 +15	+35 +22	+43 +22	+41 +28	+48 +35
24	30																			
30	40	-120 -182	-80 -119	-50 -75	-50 -89	-25 -50	-9 -25	0 -11	0 -16	0 -25	0 -39	±8	±12	+18 +2	+25 +9	+33 +17	+42 +26	+51 +26	+50 +34	+59 +43
40	50	-130 -192																		
50	65	-140 -214	-100 -146	-60 -90	-60 -106	-30 -60	-10 -29	0 -13	0 -19	0 -30	0 -46	±9.5	±15	+21 +2	+30 +11	+39 +20	+51 +32	+62 +32	+60 +41	+72 +53
65	80	-150 -224																	+62 +43	+78 +59
80	100	-170 -257	-120 -174	-72 -107	-72 -126	-36 -71	-12 -34	0 -15	0 -22	0 -35	0 -54	±11	±17	+25 +3	+35 +13	+45 +23	+59 +37	+72 +37	+73 +51	+93 +71
100	120	-180 -267																	+76 +54	+101 +79
120	140	-200 -300	-145 -208	-85 -125	-85 -148	-43 -83	-14 -39	0 -18	0 -25	0 -40	0 -63	±12.5	±20	+28 +3	+40 +15	+52 +27	+68 +43	+83 +43	+88 +63	+117 +92
140	160	-210 -310																	+90 +65	+125 +100
160	180	-230 -330																	+93 +68	+133 +108
180	200	-240 -355	-170 -242	-100 -146	-100 -172	-50 -96	-15 -44	0 -20	0 -29	0 -46	0 -72	±14.5	±23	+33 +14	+46 +17	+60 +31	+79 +50	+96 +50	+106 +77	+151 +122
200	225	-260 -375																	+109 +80	+159 +130
225	250	-280 -395																	+113 +84	+169 +140
250	280	-300 -430	-190 -271	-110 -162	-110 -191	-56 -108	-17 -49	0 -23	0 -32	0 -52	0 -81	±16	±26	+36 +4	+52 +20	+66 +34	+88 +56	+108 +56	+126 +94	+190 +158
280	315	-330 -460																	+130 +98	+202 +170
315	355	-360 -500	-210 -299	-125 -182	-125 -214	-62 -119	-18 -54	0 -25	0 -36	0 -57	0 -89	±18	±28	+40 +4	+57 +21	+73 +37	+98 +62	+119 +62	+114 +108	+226 +190
355	400	-400 -540																	+150 +114	+244 +208
400	450	-440 -595	-230 -327	-135 -198	-135 -232	-68 -131	-20 -60	0 -27	0 -40	0 -63	0 -97	±20	±31	+45 +5	+63 +23	+80 +40	+108 +68	+131 +68	+166 +126	+272 +232
450	500	-480 -635																	+172 +132	+292 +252

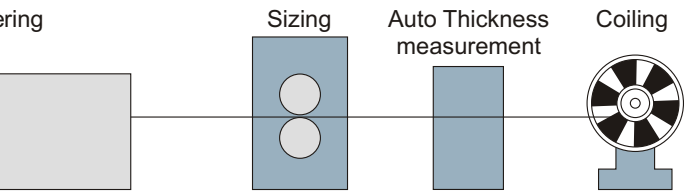
HOUSING TOLERANCE TABLE(ISO)

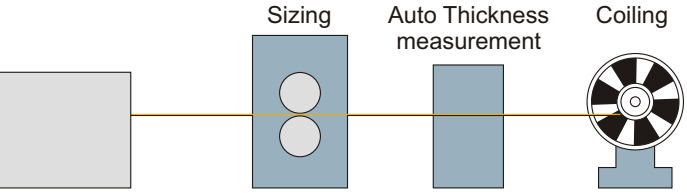
Unit:mm

≥	<	B10	C9	D8	E7	E8	F7	G7	H6	H7	H8	JS7	K7	M7	N7	P7	R7	S7	T7
—	3	+180 +140	+85 +60	+34 +20	+24 +14	+28 +14	+16 +6	+12 +2	+6 0	+10 0	+14 0	±5	0 -10	-2 -12	-4 -14	-6 -16	-10 -20	-14 -24	—
3	6	+188 +140	+100 +70	+48 +30	+32 +20	+38 +20	+22 +10	+16 +4	+8 0	+12 0	+18 0	±6	+3 -9	0 -12	-4 -16	-8 -20	-11 -23	-15 -27	—
6	10	+208 +150	+116 +80	+62 +40	+40 +25	+47 +25	+28 +13	+20 +5	+9 0	+15 0	+22 0	±7	+5 -10	0 -15	-4 -19	-9 -24	-13 -28	-17 -32	—
10	14	+200 +150	+138 +95	+77 +50	+50 +32	+59 +32	+34 +16	+24 +6	+11 0	+18 0	+27 0	±9	+6 -12	0 -18	-5 -23	-11 -29	-16 -34	-21 -39	—
14	18																		
18	24	+244 +160	+162 +110	+98 +65	+61 +40	+73 +40	+41 +20	+28 +7	+13 0	+21 0	+33 0	±10	+6 -15	0 -21	-7 -28	-14 -35	-20 -41	-27 -48	—
24	30																		-33 -54
30	40	+270 +170	+182 +120	+119 +80	+75 +50	+89 +50	+50 +25	+34 +9	+16 0	+25 0	+39 0	±12	+7 -18	0 -25	-8 -33	-17 -42	-25 -50	-34 -59	-39 -64
40	50	+280 +180	+192 +130																-45 -70
50	65	+310 +190	+214 +140	+146 +100	+90 +60	+106 +60	+60 +30	+40 +10	+19 0	+30 0	+46 0	±15	+9 -21	0 -30	-9 -39	-21 -51	-30 -60	-42 -72	-55 -85
65	80	+320 +200	+224 +150														-32 -62	-48 -78	-64 -94
80	100	+360 +220	+257 +170	+174 +120	+107 +72	+125 +72	+71 +36	+47 +12	+22 0	+35 0	+54 0	±17	+10 -25	0 -35	-10 -45	-24 -59	-38 -73	-58 -93	-78 -113
100	120	+380 +240	+267 +180														-41 -76	-66 -101	-91 -126
120	140	+420 +260	+300 +200	+208 +145	+125 +85	+148 +85	+83 +43	+54 +14	+25 0	+40 0	+63 0	±20	+12 -28	0 -40	-12 -52	-28 -68	-48 -88	-77 -117	-107 -147
140	160	+440 +280	+310 +210														-50 -90	-85 -125	-119 -159
160	180	+470 +310	+330 +230														-53 -93	-93 -133	-131 -171
180	200	+525 +340	+355 +240	+242 +170	+146 +100	+172 +100	+96 +50	+61 +15	+29 0	+46 0	+72 0	±23	+13 -33	0 -46	-14 -60	-33 -79	-60 -106	-105 -151	-149 -195
200	225	+565 +380	+375 +260														-63 -109	-113 -159	-163 -209
225	250	+605 +420	+395 +280														-67 -113	-123 -169	-179 -225
250	280	+690 +480	+430 +300	+271 +190	+162 +110	+191 +110	+108 +56	+69 +17	+32 0	+52 0	+81 0	±26	+16 -36	0 -52	-14 -66	-36 -88	-74 -126	-138 -190	-198 -250
280	315	+750 +540	+460 +330														-78 -130	-150 -202	-220 -272
315	355	+830 +600	+500 +360	+299 +210	+182 +125	+214 +125	+119 +62	+75 +18	+36 0	+57 0	+89 0	±28	+17 -40	0 -57	-16 -73	-41 -98	-87 -144	-169 -226	-247 -304
355	400	+910 +680	+540 +400														-93 -150	-187 -244	-273 -330
400	450	+1010 +760	+595 +440	+327 +230	+198 +135	+232 +135	+131 +68	+83 +20	+40 0	+63 0	+97 0	±31	+18 -45	0 -63	-17 -80	-45 -108	-103 -166	-209 -272	-307 -370
450	500	+1090 +840	+635 +480														-109 -172	-229 -292	-337 -400

BEARINGS PRODUCE




ering
Sizing
Auto Thickness measurement
Coiling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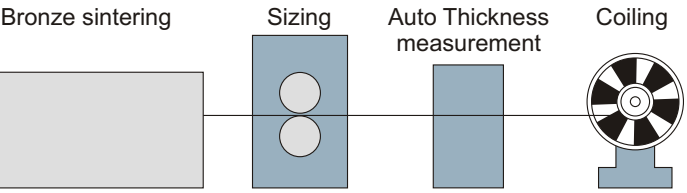
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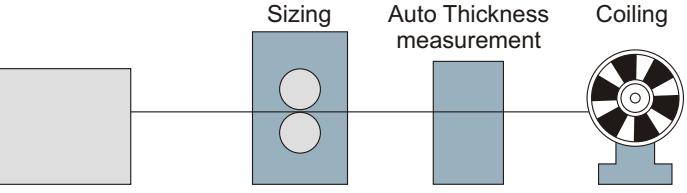
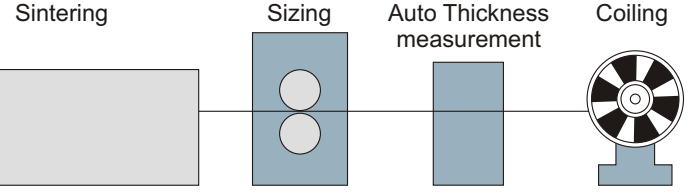
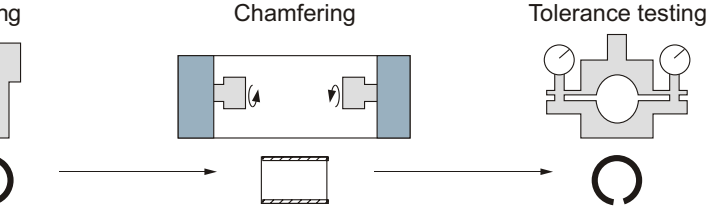
Sizing
Auto Thickness measurement
Coiling


Sizing
Auto Thickness measurement
Coiling


Sintering
Sizing
Auto Thickness measurement
Coiling


ng
Chamfering
Tolerance testing

BEARINGS PRODUCE

CNC machines workroom

CNC machines (Japan)

Honing machines (USA)

Lathe machines workroom

CNC Machines

CSB EP compound bearings workroom

Grinding Machines

Lathe Machines

Friction welding

R&D CENTER

CSB Testing center

Instron 5567 material testing (USA)

Thermomechanical analysis(German)

Electronic scanning microscope(Japan)

Accelerated weathering tester(USA)

Dynatup pendulum impact machine(USA)

Micrograph

Linear motion testing machine

Oscillation motion testing machine

High load PV testing

MMD testing machine

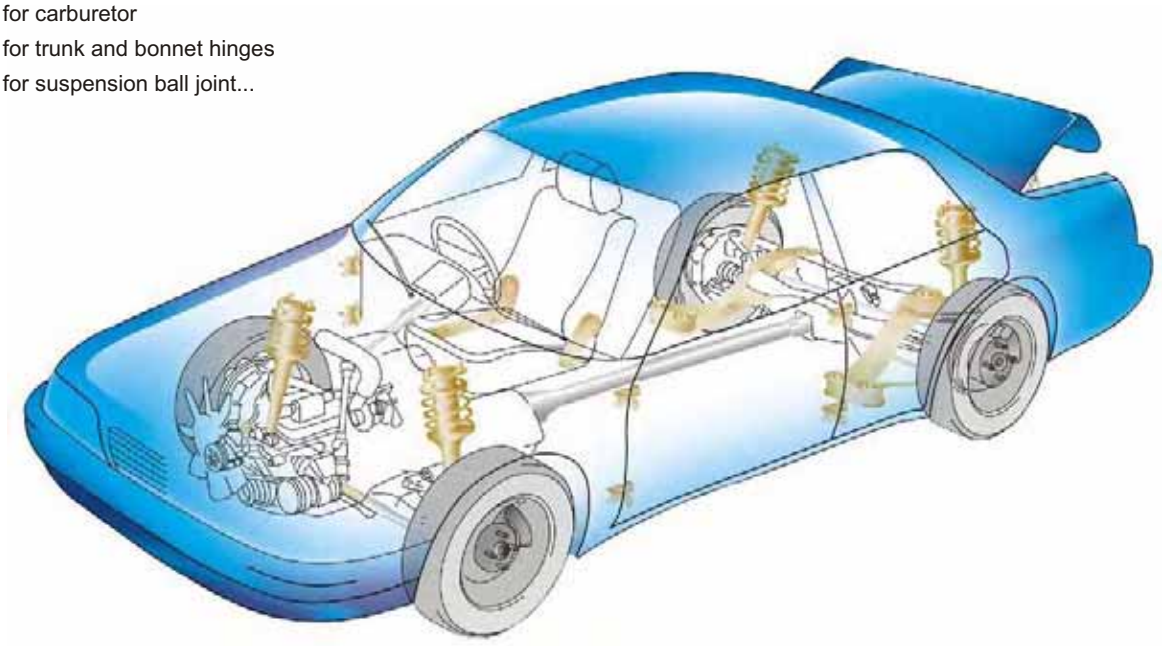
Low load high speed PV testing

Spectrograph machine

AUTOMOTIVE INDUSTRIES

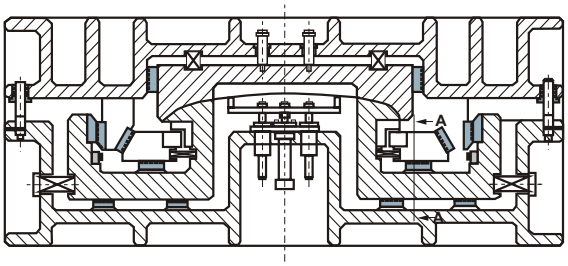
We supply CSB 3-layer dry/marginal bearings and EP series self-lubricating bearings for automotive industries.

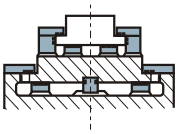
Bushes for accelerator, brake, clutch pedal
Bushes for reflector control
Bushes for windscreen wipers
Bushes for windscreen lift system
Bushes for roof window system
Bushes for gear lever
Bushes for door hinges
Bushes for door lock
Bushes for seat belt system
Bushes for engineer
Bushes for starter motor
Bushes for chair control
Bushes for shock absorbers
Bushes for carburetor
Bushes for trunk and bonnet hinges
Bushes for suspension ball joint...



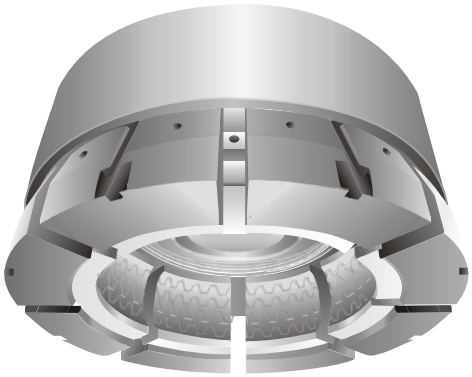
CSB 650#/250#/850# oilless bearings apply in automotive produce tools.

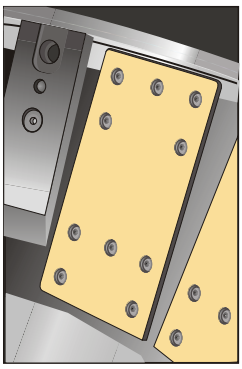
Cam Flange Die

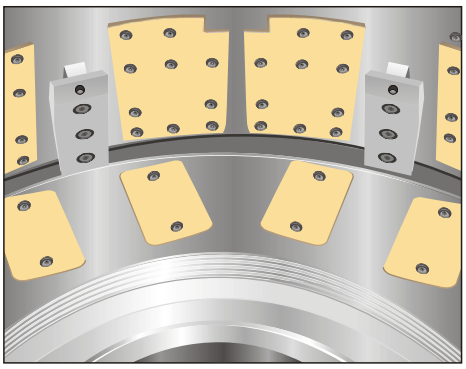


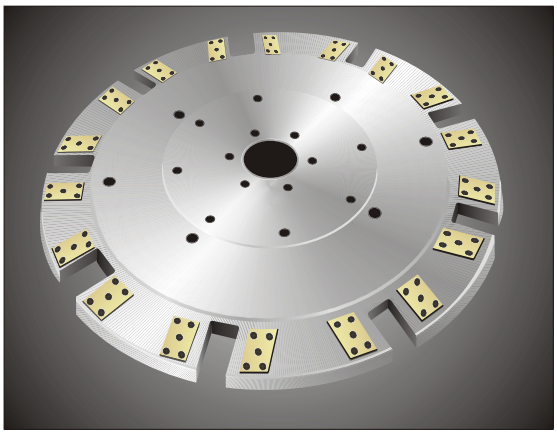


A-A





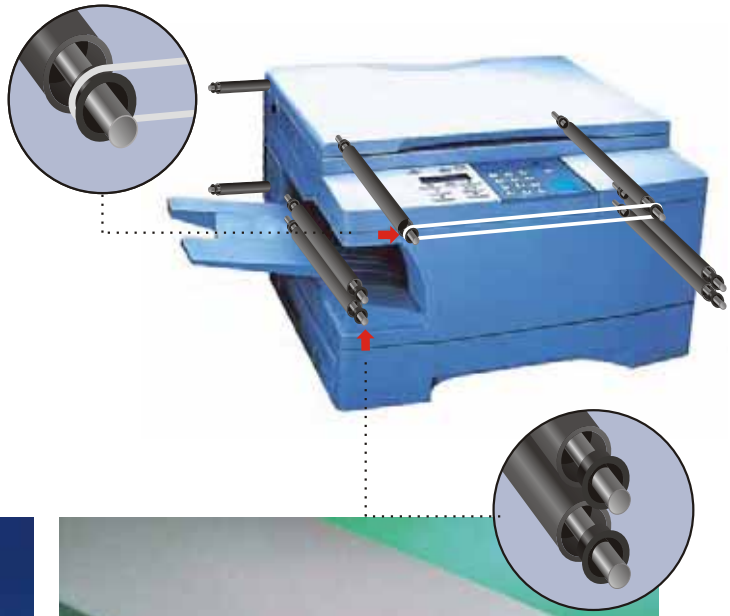




CSB850# Bimetal self-lubricating strip applied in segment tire mold.

OA MACHINES & FITNESS EQUIPMENTS

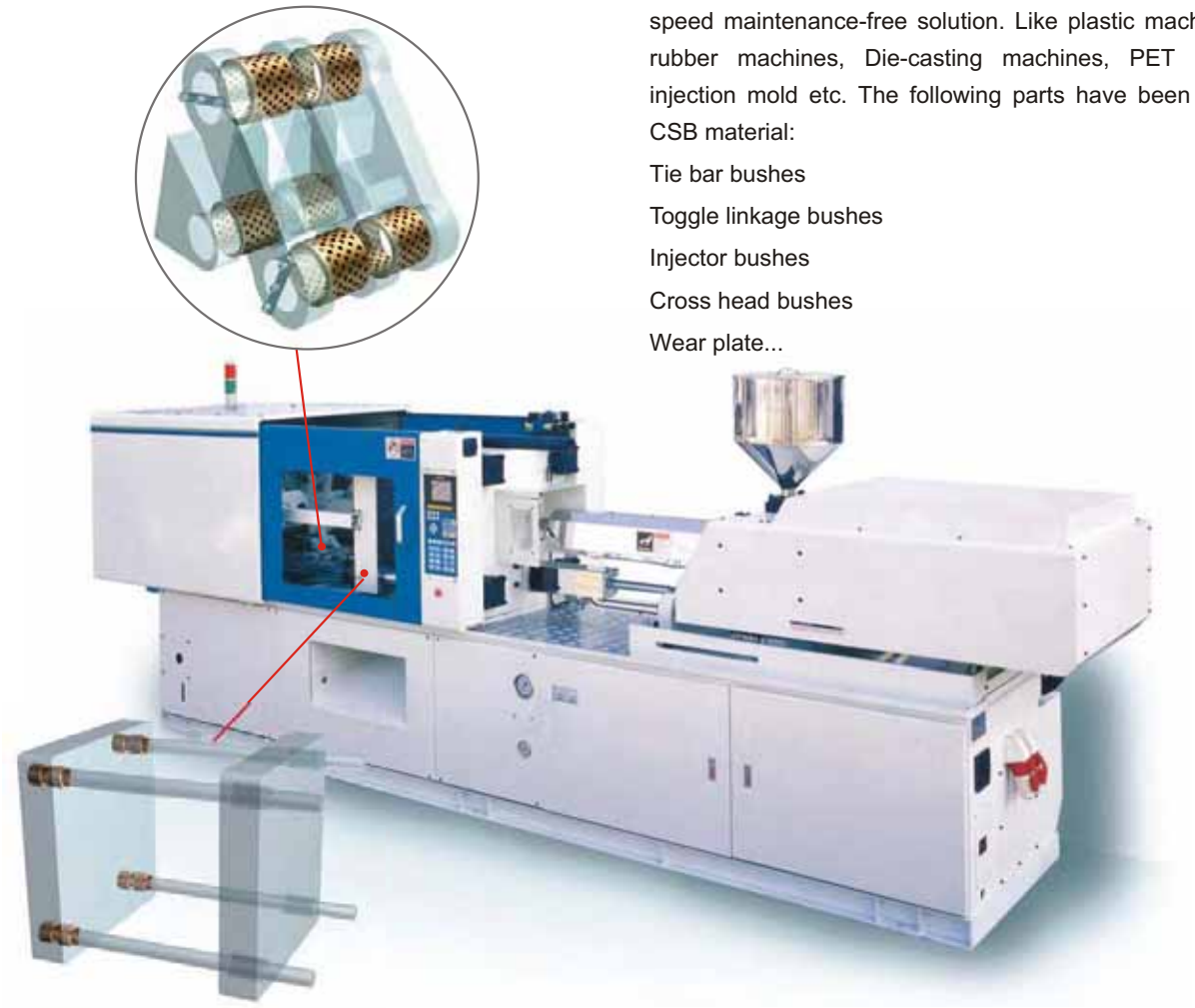
We supply CSB 3-layer dry/marginal bearings and EP series self-lubricating bearings for OA machines, ATM machines, food industries, chemical machines, sports machines and fitness equipments and so on. The advantage compare with the metal bushes is lower weight and lower cost...



CONSTRUCTION & AGRICULTURAL MACHINES

The CSB650#/250#/200# can apply for high load with lower speed application like bulldozer, grab, scraper, crane and so on construction machines.

PLASTIC MACHINES



We supply CSB650#/420#/200# for higher load and lower speed maintenance-free solution. Like plastic machines, rubber machines, Die-casting machines, PET mold, injection mold etc. The following parts have been used CSB material:

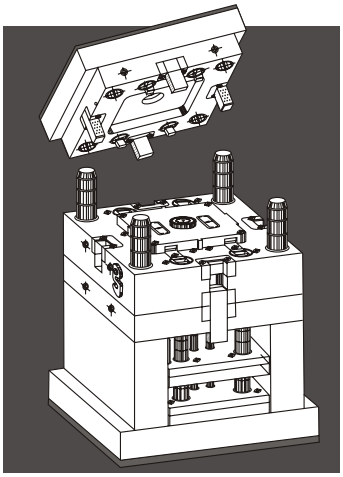
Tie bar bushes

Toggle linkage bushes

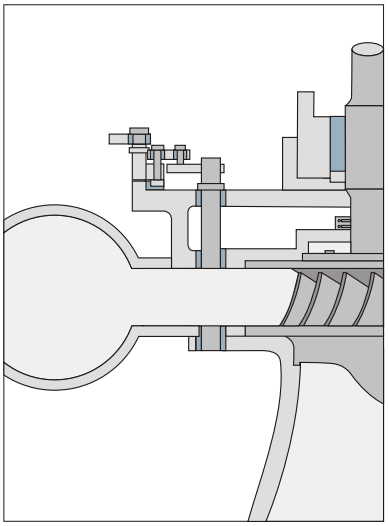
Injector bushes

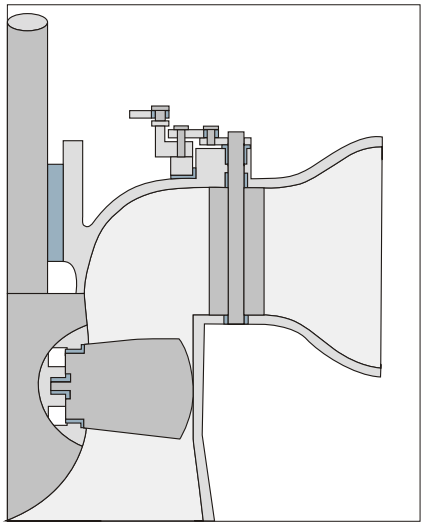
Cross head bushes

Wear plate...



CIVIL PROJECTION





CSB850#/650# Self-lubricating materials applied in water turbine parts.

The good wear resistance and maintenance-free solution bearings can be used in civil industries.

Hydraulic power station

Dam-gate

Sluice-gate

Bridge oilless bearings...

CSB650#/CSB850 is good material for this kind industries.