

BTL Taper bushing

***1008 - 5050
6050 - 12100***



BTL Taper bushing produced by CHSSB are made of GG25 cast iron. With precision machining, they are fixed with set screws imported from Japan and packed separately in nice cartons. They are truly the excellent choice for taper bushings.

Specifications for the series of BTL Taper Bushings:

1008-5050 items can be sold off the shelf based on the stock with immediate delivery. At the same time, we can make BS, UNC tap holes, inner bore and keyways for taper bushing in metric and standard calculations. They are very suitable to the European, U.S. and Japanese markets.

6050-12100 are produced against orders with prompt delivery. Bore and keyways of taper bushing can be in metric and standard dimensions according to BS and UNC standards.



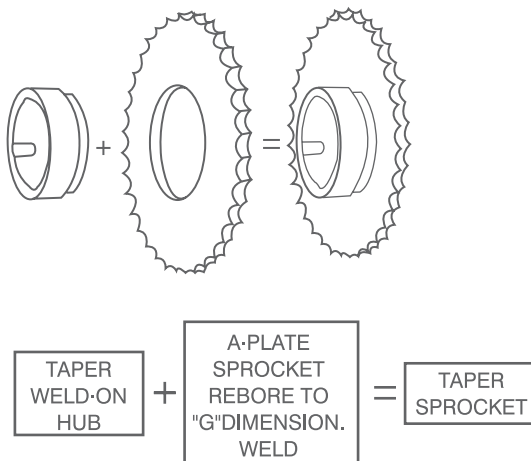
BTL Taper bushing

Taper bushing is a new type of component used for joining mechanical transmissions. It changed traditional designs. It's easy on and easy off, compact in construction and with high standardization. The grip is tightened through its taper surface. They have excellent concentricity and non clearance joint; its transmission efficiency can be increased.

The sizes of the taper bushings are designed in a standard series. The bore, keyway and thread are machined in accordance with ISO standards. It is interchangeable and the customers can make their own choice in accordance to their own purpose and usage. This new design is widely used.

Grey cast iron is the common material for BTL taper bushings. If high tensional bushing is required, ductile iron, steel and forged steel can be used. Bushing made of stainless steel can be used together with sprockets, clutches, gears and other transmission parts that are also made of

When taper bushings are used with other transmissions parts, the starting and frequent inversions will cause damages to the bore and keyway; degrade precision due to pressing loads. If the case is a severe one, the whole transmission part will be ruined.



This can be largely reduced if BTL taper bushings are used. In case the bore and keyway are damaged, it will resume service so long as you remove the old bushing and reassemble a new one in its place. The lifetime of the transmission part can be raised so the maintenance expenses are reduced.

BTL taper bushing includes: taper bushing itself and tightening screws (including packing).

The range for its uses can be enlarged if a weld on taper hub is used.

If more detailed information about taper bushing is required, please contact the manufacturer.



BTL Taper bushing

3. Bushings' Type and Loading Capacity

3.1 General Type

3.1.1 Dimension series: this type is divided into three series according to its load bearing capacity and number of tapped holes.

1.Light Series: Type 1008-3030 has two untapped half holes for tightening screws and one semi tapped hole for unloading.

2.Medium Series: Type 3535-5050 has three half holes for tightening screws and two half tapped holes for unloading.

3.Heavy Series: Type 6050-120100 has four half holes for tightening screws and two half tapped holes for unloading.

3.1.2 Taper and nomenclatures. For each type of bushing there will be different standard shaft sizes for selection. Written in four numbers, e.g. 2517, the initial two are divided by ten indicating max bore of the bushing(in inches); the

other two are divided by ten indicating length through bore (in inches). For example, the max bore of the bushing is 2.5 inches(2.5x 25.4mm) and length through the bore is 1.7 inches (1.7x25.4mm).

Written in six numbers, e.g. 120100, the initial three divided by ten indicates the max bore of the bushing (in inches) and the other three are divided by ten, indicating the length through bore (in inches). For example, 120 indicates that the max bore of the bushing is 12 inches (12x 25.4mm) where 100 indicates the length through bore is 10 inches (10x 25.4mm).

Written in five numbers, the initial three indicates through bore. For example,10085.

3.1.3 Rating load-bearing capacity. See torque capacity parameters for general type in the following table:

Bush.No	Torque Capacity		Bush.No	Torque Capacity	
	1bf.in	N.m		Lbf.in	N.m
1008	1,200	136	3535	44,800	5,060
1108	1,300	147	4040	77,300	8,740
1210 1215	3,600	407	4545	110,000	12,400
1310 1315	3,850	435	5050	126,000	14,200
1610 1615	4,300	486	6050	282,000	31,900
			7060	416,000	47,000
2012	7,150	808	8065	456,000	51,500
2517 2525	11,600	1,310	10085	869,000	98,200
3020 3030	24,000	2,710	120100	1,520,000	172,000

1bf.in=0.113N.m

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It should be noted that bushings load bearing capacity has some relations with screw tightening torque and shaft size. In this catalogue, the related tightening torque has been given. The load bearing capacity increases as the shaft increases. Please consult with the factory if more detail is needed.

3.2 Flange type (Q Bushing)

3.2.1 Dimension Series: Q Bushings can be divided into two series according to whether they can be reversed mounted or not.

1).Reversible Mounting Series: Type JA-J.

There are three screws and three bores on the flange.

2).Un-reversible Mounting Series: Type M-W. Only with four tapped holes on the flange, with no untapped holes.

3.2.2 Type and load-bearing capacity According to the dimensions and load bearing capacity, Q bushings have thirteen specifications. See torque capacity and related screw tightening torque in the table below:

Bush.No	Torque Capacity		Screw Tightening Torque	
	1bf.in	N.m	Lbf.in	N.m
JA	1,000	113	54	6.1
SH	3,500	396	108	12.2
SDS	5,000	565	108	12.2
SK	7,000	791	180	20.3
SF	11,000	1,243	360	40.8
E	20,000	2,260	720	81.4
F	30,000	3,390	900	102
J	45,000	5,090	1,620	183
M	85,000	9,600	2,700	305
N	150,000	17,000	3,600	408
P	250,000	28,300	5,400	610
W	375,000	42,400	7,200	814
S	625,000	70,600	9,000	1,020

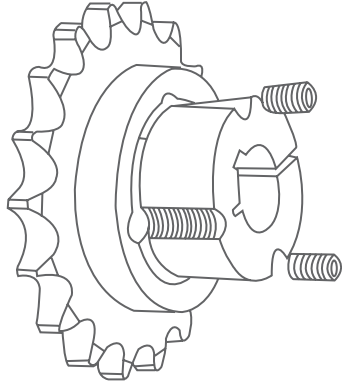
4.Selection

After selecting bushing type according to the bushings' features under different usage conditions, the selection of the

type mainly depends on the torque and loading force. See loading coefficient K for bushing connection below:

K	Load type
1.0	light loading start,work even
1.5	light loading start,work uneven
2.0	medium loading start,work even or uneven
2.5	light or heavy loading start,medium shock
3.0	lighty or heavy loading start,heavy shock or rotating

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BTL TAPER BUSHING INSTALLATION INSTRUCTIONS

TO ASSEMBLE:

1. Clean and degrease the bore and taper surfaces of the bush and the tapered bore of the pulley. Insert the bush into the pulley hub and line up holes (half thread holes must line up with half unloading holes).

2. Lightly oil the grub screws (bush size 1008-3030) or oil the cap screws (bush size to 5050) and screw them in but do not tighten yet.

3. Clean and degrease the shaft. Fit pulley with taper bush on shaft and place in your desired position.

4. When using a key, it should first be fitted in the shaft keyway. There should be a top clearance between the key and the keyway bore.

5. Using a hexagon socket wrench (DIN911) gradually tighten the grub cap screws in accordance with the torques listed in the schedule.

6. When the drive has been operating under-load for a short period of time (roughly half an hour), check and ensure that the screws remained at the appropriate tightening torque.

7. In order to eliminate the ingress of dirt, fill all empty holes with grease.

REMOVAL

1. Loosen and remove all screws and place them in the holes of the bushing.

2. Tighten the screws alternatively till the hub's grip on the bushing is loosened. The inner bore of the bushing can be slid on the shaft.

3. Remove the bushing from the shaft.

BUSH NO	SCREW TIGHTENING TORQUES(Nm)	SCREW	
		QUANTITY	SIZE
1008	5.6	2	1/4"
1108			BSW
1210	20	2	3/8"
1215			BSW
1310	20	2	3/8"
1315			BSW
1610	20	2	3/8"
1615			BSW
2012	31	2	7/16" BSW
2517	48	2	1/2" BSW
3020	90	2	5/8"
3030			BSW
3535	112	3	1/2" BSW
4040	170	3	5/8" BSW
4545	192	3	3/4" BSW
5050	271	3	7/8" BSW

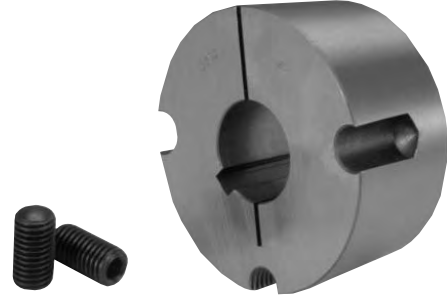
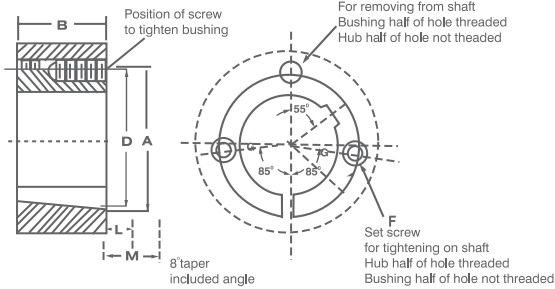
The BTL Taper Bushings are a registered patent product. Any production and sales should be authorized and permitted.

Special Note

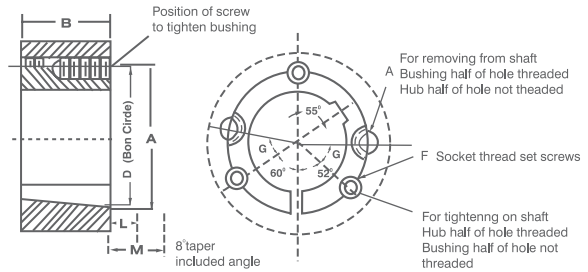
BTL Taper Bushings are made of GG25 case iron. We can also offer other materials according to customers' requirements.
We can do surface coating according to

the customer's requirements (i.e. painting, black phosphate, black oxidizing, etc.). Each part is individually boxed.
BTL Bushing come with high quality screws made in Japan.

BTL Taper bushing



3535 thru 5050 sizes



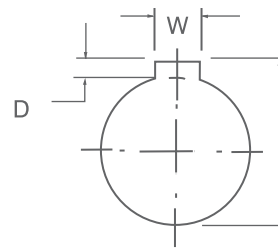
Dimensions for 1008 thru 3030 BTL Taper Bushings

BUSH NO	A	B	D	Set Screws
1008	1.386	7/8	1 21/64	1/4x1/2
1108	1.511	7/8	1 29/64	1/4x1/2
1210	1 7/8	1	1 3/4	3/8x5/8
1215	1 7/8	1 1/2	1 3/4	3/8x5/8
1310	2	1	1 7/8	3/8x5/8
1610	2 1/4	1	2 1/8	3/8x5/8
1615	2 1/4	1 1/2	2 1/8	3/8x5/8
2012	2 3/4	1 1/4	2 5/8	7/16x7/8
2517	3 3/8	1 3/4	3 1/4	1/2x1
2525	3 3/8	2 1/2	3 1/4	1/2x1
3020	4 1/4	2	4	5/8x1 1/4
3030	4 1/4	3	4	5/8x1 1/4

Dimensions for 1008 thru 5050 BTL Taper Bushings

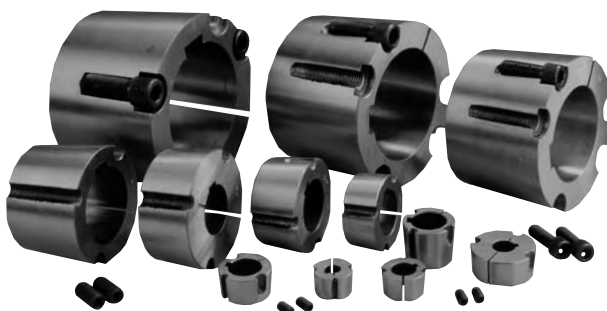
BUSH NO	A	B	D	Set Screws	G
3535	5	3 1/2	4.83	1/2x1 1/2	40°
4040	5 3/4	4	5.54	5/8x1 3/4	40°
4545	6 3/8	4 1/2	6.13	3/4x2	40°
5050	7	5	6.72	7/8x2 1/4	37°

Two screws required
Three screws required



Ref: Bore + D

MM Bore Key way dimensions conform to ISO standard
Depth measured at centerline



BTL Taper bushing KEYWAY

A

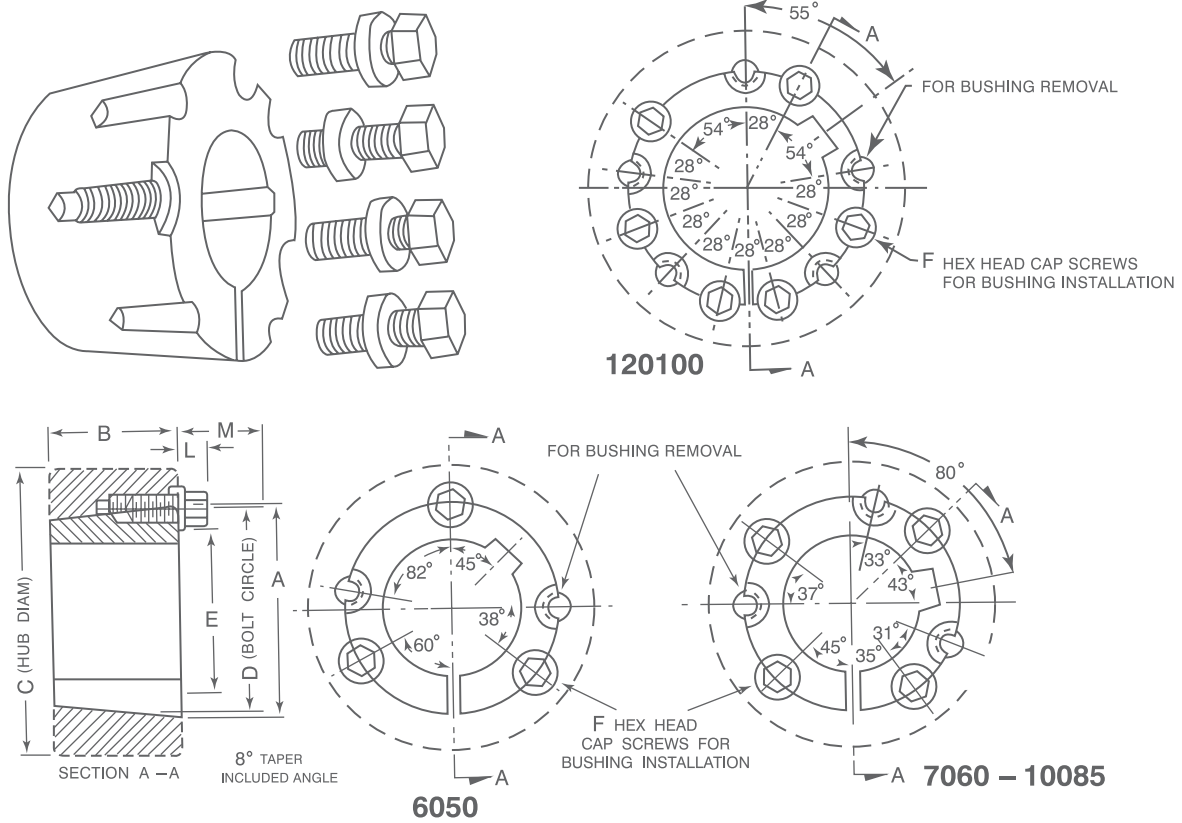
DIN 6885
 JIS B 1301-1976
 UNI 6604-1969
 GB 1095-1979

Bush No	Bore	Bushing Keyway	Bush No	Bore	Bushing Keyway	Bush No	Bore	Bushing Keyway	Bush No	Bore	Bushing Keyway	Bush No	Bore	Bushing Keyway	Bush No	Bore	Bushing Keyway
1008	10	3x1.40	1610	14	5x2.30	2517	20	6x2.80	3020	25	8x3.30	3535	35	10x3.30	4545	55	16x4.30
	11	4x1.80		16	5x2.30		22	6x2.80		28	8x3.30		38	10x3.30		60	18x4.40
	12			18			24			30			40			65	
	14	5x2.30		19	6x2.80		25	8x3.30		32	10x3.30		35	10x3.30		70	20x4.90
	16			20			28			38			45			75	
	18	6x2.80		22	8x3.30		30	10x3.30		40	12x3.30		48	14x3.80		80	22x5.40
	19			24			32			42			50			85	
	20	8x3.30		25	8x3.30		35	10x3.30		45	14x3.80		55	16x4.30		90	25x5.40
	22			28			38			48			60			95	
	24	8x2.00		30	10x3.30		40	12x3.30		50	16x4.30		65	18x4.40		100	28x6.40
	25	8x1.30		32	10x3.30		42	12x3.30		55	16x4.30		70	20x4.90		105	28x6.40
	1180	10		3x1.40	1615		14	5x2.30		2525	20		6x2.80	3030		25	8x3.30
11		4x1.80	16	5x2.30		22	6x2.80	28	8x3.30		30	8x3.30	65		18x4.40		
12			18			24		32			35		70		20x4.90		
14		5x2.30	19	6x2.80		25	8x3.30	38	10x3.30		40	12x3.30	75		25x5.40		
16			20			28		42			45		80				
18		6x2.80	22	8x3.30		30	10x3.30	45	14x3.80		48	14x3.80	85		22x5.40		
19			24			32		50			50		90				
20		8x3.30	25	8x3.30		35	10x3.30	55	16x4.30		60	18x4.40	95		25x5.40		
22			28			38		65			65		100				
24		8x3.30	30	10x3.30		40	12x3.30	70	20x4.90		75	20x4.90	105		28x6.40		
25		8x3.30	32	10x3.30		42	12x2.20	75	20x4.90		80		110				
1210		11	4x1.80	2012		18	6x2.80	2517	24		8x3.30	3020	32		10x3.30	3535	45
	12		19			30			38		48			95			
	14	5x2.30	20		6x2.80	32	10x3.30		40	12x3.30	50		16x4.30	100	28x6.40		
	16		22			35	10x3.30		42	12x3.30	55		16x4.30	105	28x6.40		
	18	6x2.80	24		8x3.30	38	10x3.30		45	14x3.80	60		18x4.40	110			
	19		25		8x3.30	40	12x3.30		48	14x3.80	65		18x4.40	115			
	20	8x3.30	28		8x3.30	42	12x3.30		50	14x3.80	70		20x4.90	120	32x7.40		
	22		30		10x3.30	45	14x3.80		55	16x4.30	75		20x4.90	125			
	24	10x3.30	32		10x3.30	50	16x4.30		60	18x4.40	80						
	25	8x3.30	35		10x3.30	60	18x4.40		70	20x4.90	90						
	28		38														
	30		40														
1215	11	4x1.80	2012	18	6x2.80	2525	24	8x3.30	3030	32	10x3.30	4040	45	16x4.30	5050	90	25x5.40
	12			19			30			38			48			95	
	14	5x2.30		20	6x2.80		32	10x3.30		40	12x3.30		50	16x4.30		100	28x6.40
	16			22			35	10x3.30		42	12x3.30		55	16x4.30		105	28x6.40
	18	6x2.80		24	8x3.30		38	10x3.30		45	14x3.80		60	18x4.40		110	
	19			25	8x3.30		40	12x3.30		48	14x3.80		65	18x4.40		115	
	20	8x3.30		28	8x3.30		42	12x3.30		50	14x3.80		70	20x4.90		120	32x7.40
	22			30	10x3.30		45	14x3.80		55	16x4.30		75	20x4.90		125	
	24	10x3.30		32	10x3.30		60	18x4.40		70	20x4.90		80				
	25	8x3.30		35	10x3.30												
	28			38													
	30			40													
1310	14	5x2.30	2012	40	12x3.30	2517	45	14x3.80	3020	50	16x4.30	3535	60	18x4.40	4545	90	25x5.40
	16			42			48			55			65			95	
	18	6x2.80		45	14x3.80		50	16x4.30		60	18x4.40		70	20x4.90		100	28x6.40
	19			48			55			65			75			105	
	20	6x2.80		50	16x4.30		60	18x4.40		70	20x4.90		80			110	
	22															115	
	24	8x3.30														120	32x7.40
	25															125	
	28																
	30																
	32	10x3.30															
	35																

BTL Taper bushing

TAPER BUSHING DIMENSIONS(Con t.)

6050 thru 120100 Sizes



Dimensions for 6050 thru 120100 BTL Taper Bushings

Bush.No.	A	B	D	Socket Head Cap Screws	E	L	M
6050	9 1/4	5	9	3-1 1/4x3 1/2	6 3/4	1 5/8	4 3/8
7060	10 1/4	6	10	4-1 1/4x3 1/2	7 3/4	1 5/8	4 3/8
8065	11 1/4	6 1/2	11	4-1 1/4x3 1/2	8 3/4	1 5/8	4 3/8
10085	14 3/4	8 1/2	14 1/2	4-1 1/2x4 1/4	11 3/4	2	5 3/8
120100	17 1/4	10	17	6-1 1/2x4 1/4	14 1/4	2	5 3/8

Dimensions for TAPER Bushings Metric. Inches Bore

Bush.No	inches bore		metric bore	
	Min.	Max.	Min.	Max.
6050	4 7/16	6	80	150
7060	4 15/16	7	90	175
8065	5 7/16	8	110	200
10085	7	10	175	250
12100	8	12	200	300

Instruction is sheet packed into each bushing box.

Bore and keyway dimensions conform to ISO standard recommendation R773. for "free" fit

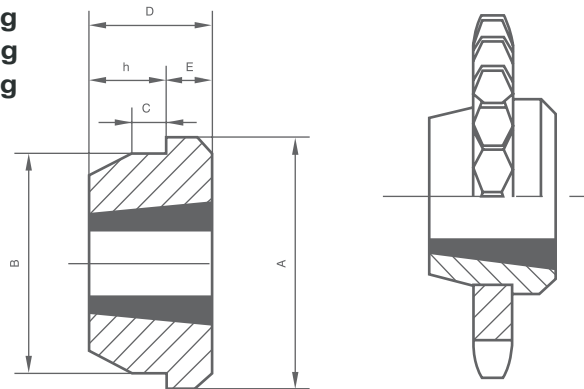
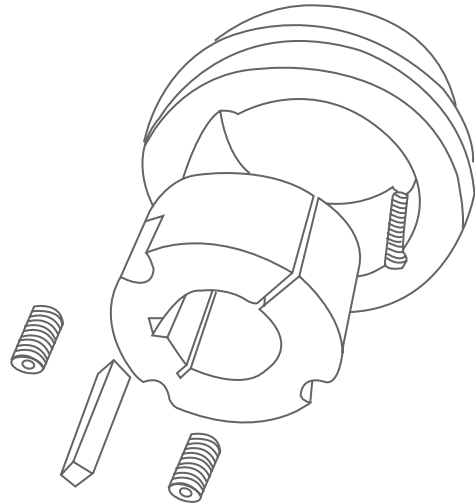
BTL

**T_{aper}
B_{ore} W/WH weld-on hubs**

This type of taper bore weld-on hubs adopt the Europe standards.

Taper Bore Weld-on Hubs are made of steel; drilled, tapped and taper bored to receive standard taper bushes. The extended flange provides a convenient means of welding hubs into fan rotors, steel pulleys, plate sprockets, impellers, agitators and many other devices which must be firmly fastened.

These are entirely suitable for severe operating conditions. Tightening the screws will contract the bores of the bush thereby locking it to the shaft with the equivalent of a press fit. This type of construction eliminates mounting difficulties. It also prevents loosening and wearing that may occur during operation.

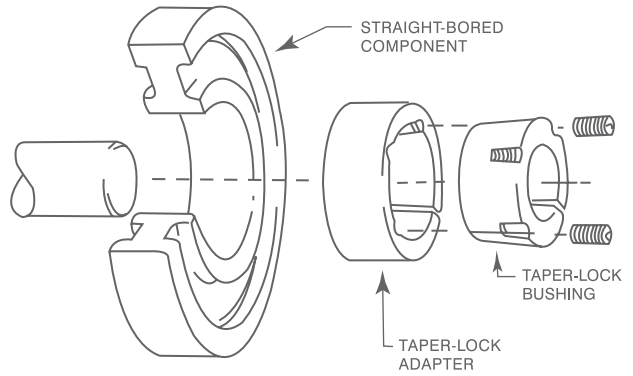


WH WELD-ON HUBS

Hub Rel	Bush No	A	B	C	D	E	h
WH1210	1210	73	60	10	25	9	16
WH1215	1215	76	60	11	38	16	22
WH1610	1610	83	70	10	25	9	16
WH1615	1615	83	70	11	38	16	22
WH2012	2012	96	90	12	32	10	22
WH2517	2517	127	110	13	45	19	26
WH3020	3020	152	130	18	51	24	27
WH3030	3030	152	130	19	76	25	51
WH3525	3525	184	155	25	65	25	40
WH3535	3535	184	155	25	89	32	57
WH4040	4040	225	195	35	102	32	70
WH4545	4545	254	220	40	114	38	76
WH5050	5050	276	242	40	127	38	89

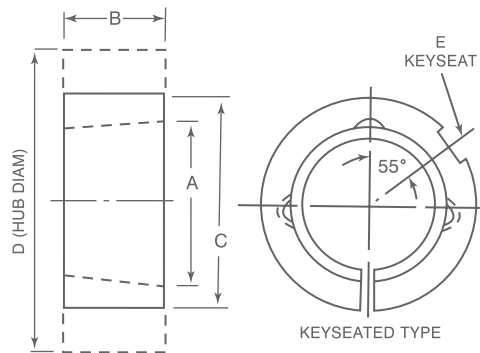
Taper Bore Adapters

BTL



Adapters for Taper Bushings are recommended for usage where it is more convenient to use a straight bore rather than to drill and tap to accommodate the bushings.

The adapter is a taper bored sleeve of grey cast iron which fits into the straight bore of a hub. The bushing simply fits inside the adapter which is tapped for the bushing screws. When tightening the locking screws, the adapter is expanded against the hub bore, pressing the bushing tightly upon the shaft.



TAPER ADAPTERS

Adapter No.	Bush No.	A	B	C	D			E Keyseat	Wt
					class 20 Gray Iron	Class30 Gray Iron	Steel		
1215B	1215	1 7/8	1 1/2	2 3/8	3 5/8	3 3/8	3 1/4	1/4x1/8	0.7
1615B	1615	2 1/4	1 1/2	2 3/4	4	3 3/4	3 1/2	3/8x1/8	0.9
2517B	2517	3 3/8	1 3/4	4 1/8	5 7/8 Δ	5 1/2	5	5/8x1/8	2.2
2525B	2525	3 3/8	2 1/2	4 1/8	5 1/2 Δ	5 1/4	5	5/8x1/8	3.2
3030B	3030	4 1/4	3	5 1/8	7 3/8 Δ	6 7/8	6 1/4	3/4x3/16	5.8
3535B	3535	5	3 1/2	6 1/4	9 1/8	8 3/8	7 7/8	7/8x3/16	11.3
4040B	4040	5 3/4	4	7 1/4	11 1/8	10 1/8	9 3/8	1x3/16	17.3
4545B	4545	6 3/8	4 1/2	7 7/8	12	11	10 1/4	1x3/16	21.9

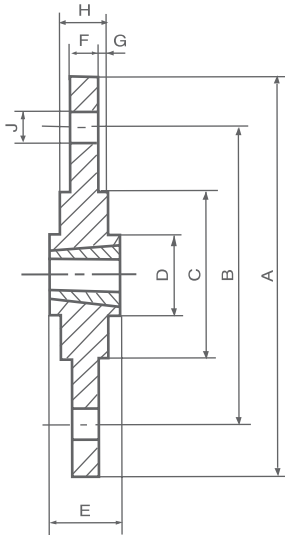


Bolt-on-hubs

BTL

Taper Bolt-On Hub is one type of bolt-on hubs that are specially designed for bushes. It's characteristics are simple structures with easy on and easy off capabilities and the ability to use on both sides simultaneously. It applies to vane wheels, fans and other parts which must be fixed closely with shafts.

Taper Bolt-On Hubs are made of high standard grey cast iron GG25 which have enough intensity. The surface is phosphate, attractive and anti-rust. They are a standardized product and highly interchangeable which will lower stock costs.



TAPER BOLT - on - HUBS

specification	Bush No.	main dimensions								screw hole nxj
		A	B	C _{H9}	D	E	F	G	H	
SM1200	1210	180	135	90	75	25	6.5	2.5	11.5	6xφ7.5
SM1600	1615	200	150	110	85	38	7.5	2.5	12.5	6xφ7.5
SM2000	2012	270	190	140	110	32	8.5	2.5	13.5	6xφ9.5
SM2500	2517	340	240	170	125	45	9.5	2.5	14.5	8xφ11.5
SM30-1	3020	430	300	220	160	51	13.5	2.5	18.5	8xφ13.5
SM30-2	3020	485	340	250	160	51	13.5	2.5	18.5	8xφ13.5
SM1210	1210	120	100	80	75	25	6.5	2.5	11.5	6xφ7.5
SM1610	1610	130	110	90	85	25	7.5	2.5	12.5	6xφ7.5
SM2012	2012	145	125	115	110	32	8.5	2.5	13.5	6xφ7.5
SM2517	2517	185	155	130	125	45	9.5	2.5	14.5	8xφ11.5
SM3020	3020	220	190	160	160	51	13.5	-	13.5	8xφ13.5

QTL Taper bushing

JA - S



QTL Taper Bushings are made of GGG40 ductile iron and the surface is phosphate. They are fixed with UNC bolts (12.9 grade) and packed individually.

QTL Taper Bushing and JA-E with inner bore and keyways in standard measurements can be sold off the shelf with immediate delivery. F-S are produced against orders with prompt delivery.

QTL Taper Bushing in metric measurements can also be produced.

QTL Taper bushing QTL

The QTL bushing is used throughout the industry offering convenience and design flexibility. They are made of quality grey or ductile iron and are installed by tightening several cap

This draws the bushing into the taper bore of the product which compresses the bore of the bushing, gripping the shaft so that no external keys or dowels are required. QTL bushings are easily removed by using the cap screws as jack

Double drilled holed are furnished in QTL bushing which permit the mounting of the product in the conventional or reverse positions. This allows cap screws to be installed through the product hub or bushing flange, whichever is most convenient. No matter which way the product is installed, cap screws are always inserted from the outside where they are easily assembled.

QTL bushing are available from stock with all popular bores within the range of each size bushing.



Some of the power transmission products which use QTL bushing are pulleys, sprockets, sheaves and couplings. Used in unlimited fans, impellers or any product which needs to be shaft mounted.

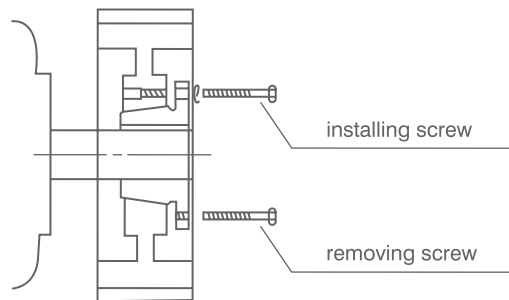
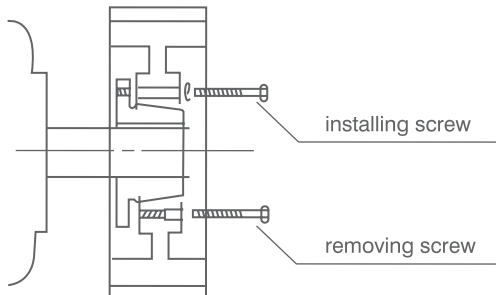
TYPICAL INSTALLATION OF A PRODUCT ON A MOTOR SHAFT

Reverse Mounting:

Place the small end of bushing taper toward the motor as shown in drawing at left.

Easy On: Place cap screws through drilled holes in bushing flange and install (finger tight) into thread holes in product hub. Slip loosely assembled unit (small end of taper first) into the desired position on the shaft. Tighten each cap screw alternatively and evenly.

Easy Off: Remove cap screws and place them in threaded holes in bushing flange. As they are drawn up they will act as jack screws against the face of the product hub to release the grip between the bushing and the hub.



Conventional Mounting:

Bushing flange is towards the motor as shown in drawing at right.

Easy On: place QTL bushing in the product hub and insert cap screws through drilled holes in product hub. Tighten cap screws (finger tight) into threaded holes in bushing flange. Slip loosely assembled unit (flange end first) into the desired position on the shaft. Tighten each cap screw alternatively and evenly to specified wrench torque.

Easy Off: Remove cap screws and place them in threaded holes in the product hub. As they are drawn up, they will act as jack screws against the flange of the bushing to release the grip between the bushing and hub.

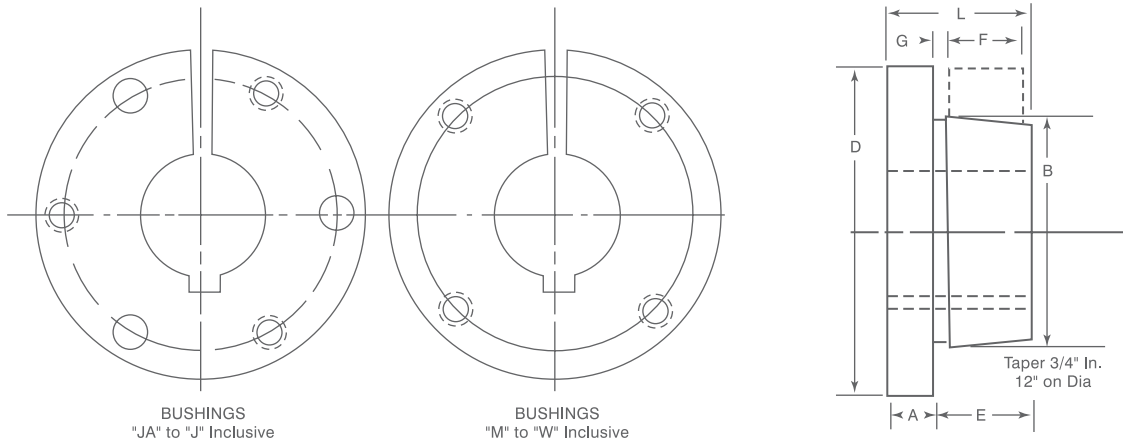
QTL Taper bushing

The "QTL" Bushing easily fits over the tapered hub and a tight press can be produced on the shaft by tightening capscrews. The bushing is easily removed from the hub by using the pull-up bolts as jack bushing in the holes tapped in the rim of bushing. All hubs "JA" through "J" are drilled for REVERSE MOUNTING.



* F = Length of Mating Bore

** G = Gap Between " QTL " Bushing and Mating Hub



STOCK QTL BUSHINGS DIMENSIONS

Bush- ing	DIMENSIONS(Inches)								Cap Screws Required	STOCK BORE RANGE			Average Weight (Approv.)
	A	B	D	E	* F	** G	L	Bolt Circle		Mini- mum	MAXIMUM		
											Standard Keyway	Shallow Keyway	
JA	5/16	1.375	2	11/16	9/16	0.20	1	1.656	3-10x1	3/8	1	13/16	.9
SH	7/16	1.871	2 11/16	7/8	13/16	0.23	1 5/16	2 1/4	3 1/4x1 3/8	1/2	1 3/8	1 5/8	1
SDS	7/16	2.187	3 1/8	7/8	3/4	0.23	1 5/16	2 11/16	3 1/4x1 3/8	1/2	1 5/8	1 15/16	1
SD	7/16	2.187	3 1/8	1 3/8	1 1/4	0.23	1 13/16	2 11/16	3 1/4x1 3/8	1/2	1 5/8	1 15/16	1.5
SK	9/16	2.812	3 7/8	1 3/8	1 1/4	0.23	1 15/16	3 5/16	3 5/16x2	1/2	2 1/8	2 1/2	2
SF	5/8	3.125	4 5/8	1 7/16	1 1/4	0.23	2 1/16	3 7/8	3 3/8x2	1/2	2 1/4	2 7/8	4
E	7/8	3.834	6	1 7/8	1 5/8	9/32	2 3/4	5	3 1/2x2 3/4	7/8	2 7/8	3 1/2	10.5
F	1	4.437	6 5/8	2 3/4	2 1/2	11/32	3 3/4	5 5/8	3 9/16x3 5/8	1	3 1/4	3 15/16	15
J	1 1/8	5.148	7 1/4	3 1/2	3 3/16	5/16	4 5/8	6 1/4	3 5/8x4 1/2	1 1/2	3 13/16	4 1/2	23
M	1 1/4	6.494	9	5 1/2	5 3/16	11/32	6 3/4	7 7/8	4 3/4x6 3/4	2	4 11/16	5 1/2	55
N	1 1/2	6.992	10	6 5/8	6 1/4	9/16	8 1/8	8 1/2	4 7/8x8	2 7/16	5 1/16	5 7/8	73
P+	1 3/4	8.242	11 3/4	7 5/8	7 1/4	5/8	9 3/8	10	4 1x9 1/2	2 15/16	5 13/16	7	120
W+	2	10.437	15	9 3/8	9	11/16	11 3/8	12 3/4	4-1 1/8x11 1/2	4	7 1/2	8 1/2	250
S+	3 1/4	12.125	17 3/4	12 1/2	12	3/4	15 3/4	15	5-1 1/4x15 1/2	6	8 1/4	10	400

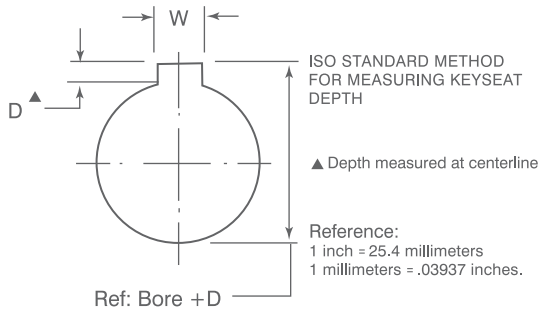
+ Consult Factory

QTL Taper bushing

QTL BUSHING DIMENSIONS AND RANGES FOR INNER BORES AND KEYWAYS

Bushing	Bores Key Seat	Bushing	Bores	Key Seat	Bushing	Bores	Key Seat	
JA	3/8-7/16	None	SF	1/2-2 1/4	Std.	M	2-4 11/16	Std.
	1/2-1	Std.		25/16-2 1/2	5/8x3/16		43/4-5 1/2	1 1/4x1/4
	1 1/16-13/16	1/4x1/16		29/16-23/4	5/8x1/16		27/16-5 1/16	Std.
	1 1/4	None		2 13/16-27/8	3/4x1/16		5 1/8-5 1/2	1 1/4x1/4
SH	1/2-13/8	Std.	E	2 15/16	None	P	59/16-57/8	1 1/2x1/4
	17/16-15/8	3/8x1/16		7/8-27/8	Std.		2 15/16-5 13/16	Std.
	1 11/16	None		2 15/16-3 1/4	3/4x1/8		5 7/8-6 1/2	1 1/2x1/4
SDS SD	1/2-15/8	Std.	F	3 5/16-3 1/2	7/8x1/16	W	69/16-7	13/4x1/8
	1 11/16-13/4	3/8x1/8		1-3 1/4	Std.		4-7 1/2	Std.
	1 13/16	1/2x1/8		3 5/16-3 3/4	7/8x3/16		79/16-8 1/2	2x1/4
	1 7/8-1 15/16	1/2x1/16		3 13/16-3 15/16	1x1/8			
	2	None		4	None			
SK	1/2-2 1/8	Std.	J	1 1/2-3 13/16	Std.			
	2 3/16-2 1/4	1/2x1/8		3 7/8-4 1/2	1x1/8			
	2 5/16-2 1/2	5/8x1/16						
	2 9/16-2 5/8	None						

STANDARD KEYWAY & KEY DIMENSION



Bores	Key Seat	Key
1/2-9/16	1/8x1/16	1/8x1/8
5/8-7/8	3/16x3/32	3/16x3/16
15/16-1 1/4	1/4x1/8	1/4x1/4
1 5/16-1 3/8	5/16x5/32	5/16x5/16
1 7/16-1 3/4	3/8x3/16	3/8x3/8
1 13/16-2 1/4	1/2x1/4	1/2x1/2
2 5/16-2 3/4	5/8x5/16	5/8x5/8
2 13/16-3 1/4	3/4x3/8	3/4x3/4
3 5/16-3 3/4	7/8x7/16	7/8x7/8
3 13/16-4 1/2	1x1/2	1x1
4 9/16-5 1/2	1 1/4x5/8	1 1/4x1 1/4
5 9/16-6 1/2	1 1/2x3/4	1 1/2x1 1/2
6 9/16-7 1/2	1 3/4x7/8	1 3/4x1 3/4

Dimensions:inch

BORE RANGE FOR QTL BUSHING

Bush.	Min. Bore	Max. Bore with:		
		Full Keyway	Shallow Keyway	No Keyway
JA	3/8	1	1 3/16	1 1/4
SH	1/2	1 3/8	1 5/8	1 11/16
SDS	1/2	1 5/8	1 15/16	2
SD	1/2	1 5/8	1 15/16	2
SK	1/2	2 1/8	2 1/2	2 5/8, 29/16
SF	1/2	2 1/4	2 7/8	2 15/16
E	7/8	2 7/8	3 1/2	—
F	1	3 1/4	3 15/16	4
J	1 1/2	3 13/16	4 1/2	—
M	2	4 11/16	5 1/2	—
N	2 7/16	5 1/16	5 7/8	—
P	2 15/16	5 13/16	7	—
W	4	7 1/2	8 1/2	—
S	6	8 1/4	10	—

SHALLOW KEY DIMENSION

Key Seat	Key	Key Seat	Key
3/8x1/16	3/8x1/4	7/8x3/16	7/8x5/8
3/8x1/8	3/8x5/16	1x1/16	1x9/16
1/2x1/32	1/2x9/32	1x1/8	1x5/8
1/2x1/16	1/2x5/16	1 1/4x1/4	1 1/4x3/4
1/2x1/8	1/2x3/8	1 1/4x1/4	1 1/4x7/8
5/8x1/16	5/8x3/8	1 1/2x1/8	1 1/2x1
5/8x3/16	5/8x1/2	1 3/4x3/8	1 3/4x3/4
3/4x1/8	3/4x1/2	1 3/4x3/8	1 3/4x1
7/8x1/16	7/8x1/2	2x5/16	2x1

Dimensions:inch

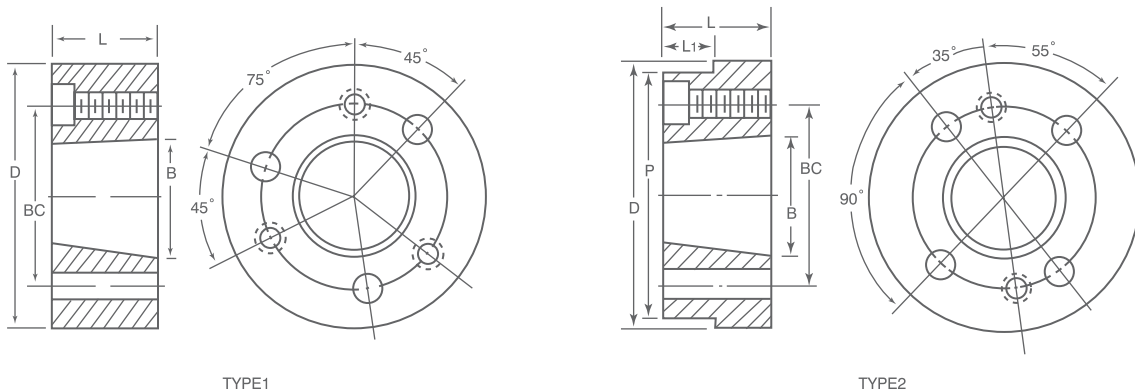
**T_{aper}
B_{ore}** **Bolt-on-hubs**

QTL



QTL WELD-ON HUBS

QTL weld-on hubs are suitable in many applications, such as welding to steel plate wheels. Weld-on hubs are made of steel. Drilled, tapered and taper bored to receive QTL bushing



QTL TYPE 1 AND TYPE 2 WELD- ON HUBS

Catalog Number	Dimensions-Inches						Type Drilling BC	Torque Transmitted Bolt Stress in Pounds Per Sq.In			Weight Pounds
	D*	L	B	P+	L1	BC		6.000	9.000	12.000	
SH-A	3.000	13/16	1.871	—	—	2 1/4	1	950	1,425	1,900	1
SDS-A	3.500	3/4	2.188	—	—	2 11/16	1	1,130	1,695	2,260	1.30
SK-A	4.375	1 1/4	2.813	—	—	3 5/16	1	2,400	3,600	4,800	3
SF-A	5.000	1 1/4	3.125	—	—	3 7/8	1	4,060	6,090	8,120	4
E-A	6.250	1 5/8	3.832	—	—	5	1	9,240	13,860	18,480	9
F-A	7.000	2 1/2	4.437	—	—	5 5/8	1	13,960	20,940	27,920	16
J-A	7.750	3 3/16	5.140	—	—	6 1/4	1	19,550	29,325	39,100	25
M-A	9.500	5 3/16	6.494	9.250	3 9/16	7 7/8	2	49,000	73,500	98,000	50
N-A	10.500	6 1/4	6.990	10.250	4 1/2	8 1/2	2	73,200	109,800	146,400	75

*Tolerance of "D" - "SH" thru "J" = (+.000 -.002)
+Tolerance of "P"- "M" and "N" = (+.000-.003