Think threads with YAMAWA

What kind of taps are used for Bicycle Threads? We'll explain it simply!

Hand Taps for Bicycle Threads HT BC

Hand Taps for Bicycle Tire Valve Threads HT CTV









Bicycle Parts Name

Introduction of the parts name of a General Bicycle.

There are different types of bicycles, such as General Bicycle, Cross Bikes, Road Bikes, and Mountain Bikes.This leaflet is mainly for a General Bicycle.
Typical Bicycles are mostly JIS (BSC: In accordance with British Standard), but there are also French and Italian standards as well.

Introduction to Bicycle Threads

There are many "Threads" used in Bicycles, and almost all parts are assembled with "Threads". The threads used in bicycles have two types, one is general metric size threads, and the other one is a specially designed thread call out as “BC” which is classified into "General Use" and "Spoke Use".
In addition,the valve stem (Air inlet) of the Bicycle is also a special standard, and the thread is called out as "CTV" is used.

▪ General use Bicycle Threads

Unit:mm

Nominal Size	Number of Threads	Pitch	Thread Height of External Threads	Root Radius	Internal Threads			Application Examples
					Major Dia.	Pitch Dia.	Minor Dia.	
BC 5/16	26	0.977	0.52	0.16	7.94	7.42	7.06	Front Hub Shaft
BC 3/8	26	0.977	0.52	0.16	9.53	9.01	8.65	Rear Hub Shaft
BC 7/16	26	0.977	0.52	0.16	11.11	10.59	10.23	Rear Hub Shafts for heavy loads
BC 1/2	20	1.270	0.68	0.21	12.70	12.02	11.55	Pedal Shaft (Left, Right) and Gear Crank (Left, Right)
BC 9/16	20	1.270	0.68	0.21	14.29	13.61	13.14	Pedal Shaft (Left, Right) and Gear Crank (Left, Right)
BC 5/8	20	1.270	0.68	0.21	15.88	15.20	14.73	Hub Shaft for Bicycle Trailer
BC 11/16	24	1.058	0.56	0.18	17.46	16.90	16.48	BB (Bottom Bracket) (Left)
BC 3/4	30	0.847	0.45	0.14	19.05	18.60	18.29	BB (Bottom Bracket)
BC 31/32	30	0.847	0.45	0.14	24.61	24.16	23.85	Front Fork Shaft
BC 1	24	1.058	0.56	0.18	25.40	24.84	24.46	Front Fork Shaft
BC 1.29	24	1.058	0.56	0.18	32.77	32.21	31.83	Rear Hub Retaining Nut (Left)
BC 1.37	24	1.058	0.56	0.18	34.80	34.24	33.86	Rear Hub, Handbrake Body, Small Gear, BB (Bottom Bracket) (Left, Right), Freewheel
BC 1'7/16	24	1.058	0.56	0.18	36.51	35.95	35.57	BB (Bottom Bracket)
BC 1.45	24	1.058	0.56	0.18	36.83	36.27	35.89	BB (Bottom Bracket)
BC 1'9/16	24	1.058	0.56	0.18	39.69	39.13	38.75	Freewheel•Cores (Left)

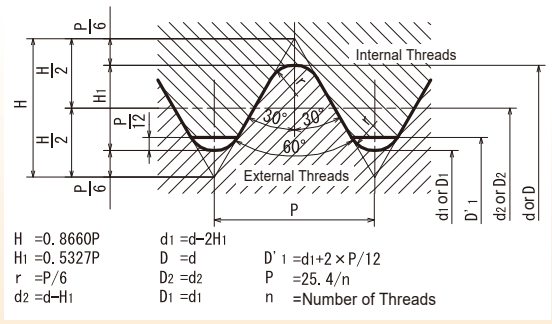
▪ Bicycle Threads for Spokes

Unit:mm

Nominal Size*	Number of Threads	Pitch	Thread Height of External Threads	Root Radius	Internal Threads			Application Examples	No. Size for Spoke
					Major Dia.	Pitch Dia.	Minor Dia.		
BC 1.8	56	0.454	0.24	0.08	2.06	1.82	1.66	For Light Bicycle	#15
BC 2	56	0.454	0.24	0.08	2.27	2.03	1.87	For Utility Bicycle	#14
BC 2.3	56	0.454	0.24	0.08	2.57	2.33	2.17		#13
BC 2.6	56	0.454	0.24	0.08	2.87	2.63	2.47	For Bicycle Trailer and Heavy Loads	#12
BC 2.9	44	0.577	0.31	0.10	3.24	2.93	2.72		#11
BC 3.2	40	0.635	0.34	0.11	3.57	3.23	3.00		#10
BC 3.5	40	0.635	0.34	0.11	3.87	3.53	3.30		#9
BC 4	32	0.974	0.42	0.13	4.45	4.03	3.74		#8

* The nominal value of the spoke threads is based on the diameter of the spoke wire.

▪ Basic profile for Bicycle Threads (BC)



H =0.8660P
H1 =0.5327P
r =P/6
d2 =d−H1
d1 =d−2H1
D =d
D2 =d2
D1 =d1
D'1 =d1+2×P/12
P =25.4/n
n =Number of Threads

The Bicycle thread is characterized by a round shape, and the basic thread profile is different from Metric or Unified threads.

▪ Bicycle Tire Valve

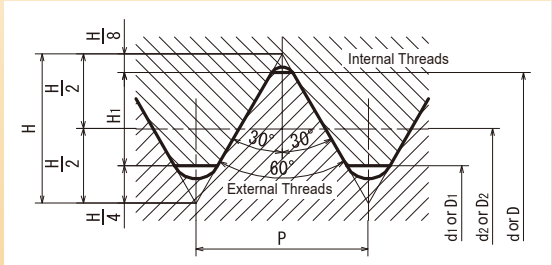
Unit:mm

Nominal Size	Pitch	Engagement Height	Internal Threads		
			Major Dia.	Pitch Dia.	Minor Dia.
CTV 5-36	0.7056	0.382	5.330	4.872	4.566
CTV 5-24	1.0583	0.573	5.100	4.413	3.954
CTV 8-32	0.7938	0.430	7.900	7.384	7.041
CTV 8-30	0.8466	0.458	8.100	7.550	7.183

Unit:mm

Nominal Size	Dia. X Pitch	Internal Threads						
		Major Dia.	Pitch Dia.			Minor Dia.		
		Min.	Max.	Min.	Tolerance.	Max.	Min.	Tolerance.
5 V 2	5.2X1.058	5.370	4.865	4.760	0.105	4.600	4.400	0.200
6 V 1	6 X 0.8	6.160	5.830	5.725	0.105	5.540	5.440	0.100

▪ Basic Profile for Bicycle Tire Valve Threads (CTV)

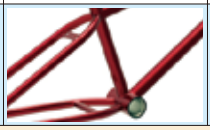


H =0.866025P
H1 =0.541266P
d2 =d−0.649519P
d1 =d−1.082532P
D =d
D2 =d2
D1 =d1
P =25.4/n
n =Number of Threads

Application Examples for Bicycle Threads

The main sizes of bicycle threads are determined by each component. For example, the most common thread size for pedals is BC9/16-20, and BC2-56 is for spokes. The valve stem (Air Inlet) is also a special standard, and most bicycles use the CTV8-30 thread.The following is an overview of the main applications and parts.

▪ General use Bicycle Threads

Nominal Size	Application/Summary		
BC 5/16-26	Front Hub Shaft		Hub: The Hub is a cylindrical part in the middle of a Bicycle Wheel that supports and rotates the wheel. There is a bearing inside through which the Hub Axle passes, and Hub flanges are on both sides for attaching the spokes. The spokes extend from the flange to the rim. Hub Shaft: Shaft for attaching the Hub to the Fork and Frame Claw.
BC 3/8-26	Rear Hub Shaft		
BC 7/16-26	Rear Hub Shafts for Heavy Loads		This is a transport Bicycle that was used in the 1940s and 1950s. It is no longer manufactured.
BC 1/2-20	Pedal Shaft (Left, Right) and Gear Crank (Left, Right)		The pedal shaft is fixed by screwing into the internal thread of the crank. The most common thread is BC9/16-20. It's used in general bicycles, MTB, Cross Bikes, Electric Bicycles, etc. BC1/2-10 is used for BMX and children's bicycles with smaller axles.
BC 9/16-20	Pedal Shaft (Left, Right) and Gear Crank (Left, Right)		
BC 5/8-20	Hub Shaft for Bicycle Trailer		Bicycle Trailers are used for food stalls and deliveries.
BC 1-24	Front Fork Shaft		Blade for supporting front wheel hub axle
BC 1.37-24	Rear Hub, Handbrake Body, Small Gear, BB (Bottom Bracket) (Left, Right), Freewheel		BB (Bottom Bracket) It is located in the center of the frame and the pipes are joined horizontally to this part.This pipe is the Bottom Bracket Shell.There are threads cut inside of the shell to attach the BB.This is an important part that requires precision and rigidity in order to transmit power from the pedals to the tires efficiently.

▪ Bicycle Threads for Tire Valves

Nominal Size	Application/Summary
CTV 5-36	 There are three types of valve stems: English style valve stems, American style valve stems, and French style valve stems, but most ordinary bicycles use English style valves stems and the main thread size is CTV8-30.
CTV 5-24	
CTV 8-32	
CTV 8-30	
5 V 2	
6 V 1	

▪ Bicycle Threads for Spokes

Nominal Size	Application Examples	No. Size for Spoke	Application/Summary
BC1.8-56	For Light Bicycle	#15	 A thin metal rod called a spoke, connects the flange of the hub to the rim. A special nut with an internal thread, called a Nipple, is screwed onto the threaded end of the spoke to secure it to the rim and set the initial tension at the same time. Basically, #14 is used for general bicycles. In some cases, #13 and #15 are also used.
BC2-56	For Utility Bicycle	#14	
BC2.3-56		#13	
BC2.6-56	For Bicycle Trailer and Heavy Loads	#12	
BC2.9-44		#11	
BC3.2-40		#10	
BC3.5-40		#9	
BC4-32		#8	

Taps for Bicycle Threads

General Bicycle use

YAMAWA has a line of taps for Bicycle Threads (For General Bicycles).

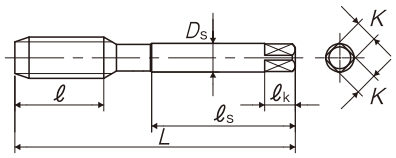
HT BC

Hand Taps for Bicycle Threads

Specification

HSS

TYPE:1



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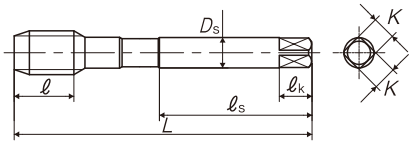

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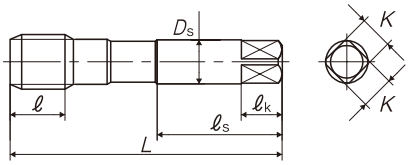


Nominal Size	Code	Chamfer	L (mm)	ℓ (mm)	ℓn (mm)	ℓs (mm)	Ds (mm)	K (mm)	ℓk (mm)	No. of Flutes	TYPE	MSRP(JPY)
For Bicycle Threads												
BC 5/16-26	TYBC01RHEB5	5P	70	19	–	36	6.2	5	8	3	1	2,800
BC 5/16-26	TYBC01RHEBA	1.5P	70	19	–	36	6.2	5	8	3	1	2,800
BC 3/8-26	TYBC02RHEB5	5P	75	23	–	38	7	5.5	8	4	1	3,200
BC 3/8-26	TYBC02RHEBA	1.5P	75	23	–	38	7	5.5	8	4	1	3,200
BC 7/16-26	TYBC03RHEB5	5P	82	26	–	42	8.5	6.5	9	4	1	4,720
BC 7/16-26	TYBC03RHEBA	1.5P	82	26	–	42	8.5	6.5	9	4	1	4,720
BC 1/2-20	TYBC04RHEB5	5P	88	26	–	45	10.5	8	11	4	1	5,670
BC 1/2-20	TYBC04RHEBA	1.5P	88	26	–	45	10.5	8	11	4	1	5,670
BC 9/16-20	TYBC05RHEB5	5P	95	26	–	48	12.5	10	13	4	1	8,200
BC 9/16-20	TYBC05RHEBA	1.5P	95	26	–	48	12.5	10	13	4	1	8,200
BC 5/8-20	TYBC06RHEB5	5P	95	26	–	48	12.5	10	13	4	1	8,200
BC 5/8-20	TYBC06RHEBA	1.5P	95	26	–	48	12.5	10	13	4	1	8,200
BC 11/16-24	TYBC07RHEB5	5P	100	18	–	51	14	11	14	4	2	9,800
BC 11/16-24	TYBC07RHEBA	1.5P	100	18	–	51	14	11	14	4	2	9,800
BC 3/4-30	TYBC08RHEB5	5P	105	18	–	50	15	12	15	4	3	13,200
BC 3/4-30	TYBC08RHEBA	1.5P	105	18	–	50	15	12	15	4	3	13,200
BC 31/32-30	TYBC09RHEB5	5P	125	20	–	58	19	15	18	4	3	29,100
BC 31/32-30	TYBC09RHEBA	1.5P	125	20	–	58	19	15	18	4	3	29,100
BC 1 -24	TYBC10RHEB5	5P	125	20	–	58	19	15	18	4	3	29,100
BC 1 -24	TYBC10RHEBA	1.5P	125	20	–	58	19	15	18	4	3	29,100
BC 1.29-24	TYBC11RHEB5	5P	145	21	–	67	25	19	22	4	3	42,000
BC 1.29-24	TYBC11RHEBA	1.5P	145	21	–	67	25	19	22	4	3	42,000
BC 1.37-24	TYBC12RHEB5	5P	155	26	–	71	28	21	24	4	3	48,800
BC 1.37-24	TYBC12RHEBA	1.5P	155	26	–	71	28	21	24	4	3	48,800
BC 1 7/16-24	TYBC13RHEB5	5P	165	26	–	76	30	23	26	4	3	56,000
BC 1 7/16-24	TYBC13RHEBA	1.5P	165	26	–	76	30	23	26	4	3	56,000
BC 1.45-24	TYBC14RHEB5	5P	165	26	–	76	30	23	26	4	3	56,000
BC 1.45-24	TYBC14RHEBA	1.5P	165	26	–	76	30	23	26	4	3	56,000
BC 1 9/16-24	TYBC15RHEB5	5P	175	27	–	81	32	26	30	4	3	68,100
BC 1 9/16-24	TYBC15RHEBA	1.5P	175	27	–	81	32	26	30	4	3	68,100

Taps for Bicycle Tire Valve Threads

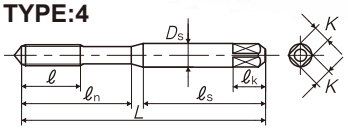
HT CTV

Hand Taps for Bicycle Tire Valve Threads

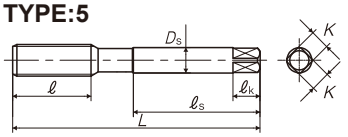
Specification

HSS

TYPE:4



TYPE:5



Nominal Size	Code	Chamfer	L (mm)	ℓ (mm)	ℓn (mm)	ℓs (mm)	Ds (mm)	K (mm)	ℓk (mm)	No. of Flutes	TYPE	MSRP(JPY)
For Bicycle Tire Valve Threads												
CTV 5-36	TYCV5IRLEBA	1.5P	62	15	26	33	6	4.5	7	3	4	2,110
CTV 5-24	TYCV5MSLEBA	1.5P	62	15	26	33	6	4.5	7	3	4	2,110
CTV 8-32	TYCV8JRLEBA	1.5P	70	19	–	36	6.2	5	8	3	5	2,800
CTV 8-30	TYCV83RLEBA	1.5P	70	19	–	36	6.2	5	8	3	5	3,200
5 V 2	TY05V2QLEBA	1.5P	62	15	26	33	6	4.5	7	3	4	2,110
6 V 1	TY06V1QLEBA	1.5P	62	15	26	33	6	4.5	7	3	4	2,110

Recommended Tapping Speed and Bored Hole Size

HT BC Hand Taps for Bicycle Threads

Workpiece Material	Recommended Tapping Speed(m/min)
Low Carbon Steel Medium Carbon Steel	~10

Bored Hole Size Unit:mm

Nominal Size	Minor dia. of Internal Threads(D_1)		Bored Hole Size (Reference)
	Max.	Min.	
BC 5/16-26	7.16	7.06	7.14
BC 3/8-26	8.75	8.65	8.73
BC 7/16-26	10.33	10.23	10.31
BC 1/2-20	11.66	11.55	11.63
BC 9/16-20	13.25	13.14	13.22
BC 5/8-20	14.84	14.73	14.81
BC 11/16-24	16.59	16.48	16.56
BC 3/4-30	18.40	18.29	18.37
BC 31/32-30	23.96	23.85	23.93
BC 1-24	24.58	24.46	24.55
BC 1.29-24	31.96	31.83	31.93
BC 1.37-24	33.99	33.86	33.96
BC 1 7/16-24	35.70	35.57	35.67
BC 1.45-24	36.02	35.89	35.99
BC 1 9/16-24	38.88	38.75	38.85

HT CTV Hand Taps for Bicycle Tire Valve Threads

Workpiece Material	Recommended Tapping Speed(m/min)
Brass	~10

Bored Hole Size Unit:mm

Nominal Size	Minor dia. of Internal Threads(D_1)		Bored Hole Size (Reference)
	Max.	Min.	
CTV 5-36	4.732	4.630	4.71
CTV 5-24	4.214	3.954	4.15
CTV 8-32	7.192	7.040	7.15
CTV 8-30	7.344	7.183	7.30
5V2	4.600	4.400	4.55
6V1	5.540	5.440	5.52

Warning

- ♦Tools may shatter. Wear cover or eye glasses to avoid injury during tapping.
- ♦Tools may shatter. Use tools under the proper tapping condition.
- ♦Never wear gloves during turning operations as the gloves may get caught with the tools.
- ♦Wear safety shoes to avoid injuring yourself by the falling tools.
- ♦On attaching tools to the machine, fasten firmly to avoid chattering and run-out.
- ♦Fasten the work pieces firmly so that they never move during operation. Never use worn tools or damaged tools with chipping.
- ♦Take a special care to fire trouble. High temperature during machining may cause fire.

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YAMAWA group for Overseas

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