

# HV Chain Sprocket Dimensions



## HV Sprockets

Cross+Morse can provide a full range of HV Sprockets manufactured in the best combination of materials and heat treatment to ensure long service life with ability to transmit full designed torques and powers with minimum noise and vibration.

Sprockets up to 30 teeth and below are usually manufactured from low carbon alloy steels with teeth carburised and sprockets hardened to provide maximum wear resistance with high core strength, larger sprockets are produced in medium carbon steel with induction hardened teeth, or meehanite castings.

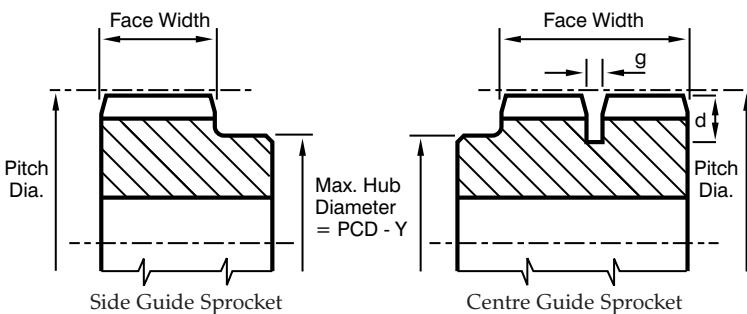
It is recommended that a minimum 25 tooth sprockets be used in all drives to provide best efficiency, smooth transmission and low noise levels, however, all sizes of chain can operate on sprockets down to 19 teeth, but such drive designs should always be referred to Cross+Morse. It is preferred practice to use sprockets with odd numbers of teeth, but for 1:1 ratio even teeth sprockets should always be used for optimum chain life and performance.

## Sprocket Dimensions

Detailed dimensions for all sizes of sprockets can be supplied on request, including blank dimensions and material specifications for customers wishing to supply their own blanks for teeth cutting only.

The following sprocket design information can be used for initial design and selection.

## Sprocket Face Widths, Groove Dimensions, and Maximum Hub



## Side Guide Imperial Width HV Chain Sprocket Dimensions

Chain Width Inches	Chain Pitch Size							
	HV3	HV4	HV6/139	HV8/139	HV6	HV8	HV12	HV16
3/4"	16.76	16.76						
1"	22.86	22.86						
1 1/4"	29.21	29.21						
1 1/2"	35.56	35.56	33.53		29.72			
2"	48.26	48.26	46.23	44.45	42.16	38.10		
3"	73.66	73.66	71.63	69.85	67.56	63.50	63.50	59.44
4"	99.06	99.06	97.03	95.25	92.56	88.90	88.90	84.84
5"			122.43	120.65	118.56	114.30	114.30	110.24
6"				146.05	143.76	139.70	139.70	136.64
8"							190.50	187.44
Y	16.5	21.5	30.6	43.5	26.0	36.5	53.8	71.5

Side Guide Chain Sprocket Face-Width Tolerance +0.0 -0.5mm

## Sprocket Mounting and Alignment

### Sprocket Mounting

To ensure smooth transmission of torque, sprockets should be mounted on shafts with a light interference-fit. A positive mechanical connection is necessary for torque-transmission, with standard side-fitting keys or close fit involute splines being satisfactory. Compression connecting rings and expanding bushes can also be used subject to meeting torque and concentricity requirements; but split tapered bushes must never be used to mount HV sprockets.

For maintenance of alignment it is recommended that sprockets are located positively against a shoulder or step on the shaft. This method of mounting does permit the use of 'A' type platewheels to simplify design and minimise costs.

### Sprocket Alignment and Concentricities

Shafts must be parallel in both planes within 0.4mm/Metre of bearing mounting distance. Offset from the machined face on tooth side to the corresponding face of other sprocket should ideally be zero, and otherwise limited to value 'K' mm in table.

When mounted on shafting sprockets should be concentric to within 0.15mm or 0.1% Pitch Diameter T.I.R.; and have maximum face runout of 0.25mm or 1% Pitch Diameter T.I.R.

## Pitch Circle Diameter and Maximum Shaft Size

$$PCD = \frac{PN}{\pi} \secant \frac{180^\circ}{N}$$

where N = No. of teeth in Sprocket

P = Pitch of Chain

Maximum Hub Dia. = PCD - Y

where Y = factor - see tables

Bore diameter for keyed shafts should not exceed 67%.  
Hub Diameter on Steel Sprockets and 57% on Cast Sprockets.

## Centre Guide HV Chain Sprocket Dimensions

Chain Width mm	Chain Pitch Size			
	HV 3	HV 4	HV 6	HV 8
15	12.0*			
17	13.5*			
20	16.5*	16.5*		
25	30.0	30.0		
30	35.0	35.0	26.0*	
35			40.0	
40	45.0	45.0	45.0	50.0
50	55.0	55.0	55.0	60.0
65	70.0	70.0	70.0	75.0
75		80.0		85.0
85			90.0	
100		105.0	105.0	110.0
125			130.0	135.0
150			155.0	160.0
200			205.0	210.0
d	6.0	7.0	12.0	15.0
g	3.0	3.0	4.0	6.0
Y	16.5	21.5	26.0	36.5

\* These Sprockets are without groove for side guide Chains  
Dimensions for Centre Guide Chains are Minimum

Chain Pitch Inches	3/8"	1/2"	3/4"	1"	1 1/2"	2"
K mm	0.55	0.63	0.78	0.91	1.11	1.29

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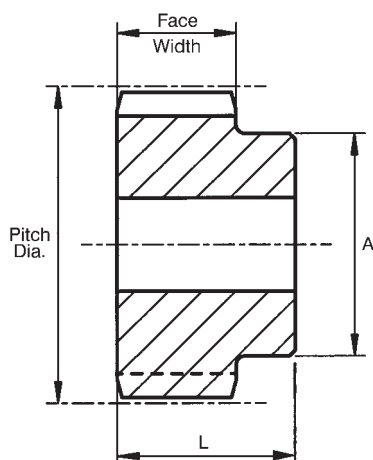
Email sales@crossmorse.com

# HV Chain Sprocket Dimensions



## Standard HV Chain Sprockets

Generally HV Chain drives, by their very nature, require custom designed sprocket, which impose delays in the delivery of initial orders or prototype drives. To enable fast delivery of complete drives, a range of standard sprockets is offered for  $\frac{3}{8}$ " and  $\frac{1}{2}$ " pitch chain. These sprockets can be quickly modified to suit customers specific designs, and thus provide the ideal solution for one-off or prototype drives.



Standard Sprockets have hardened teeth for maximum life, but bores are left soft to enable finish machining to customers requirements. Sprockets can be supplied finished bored, keyed or splined. 76 tooth sprockets are cast meehanite manufacture, all others are from carburised low carbon steel.

## Standard Sprockets for $\frac{1}{2}$ " pitch HV4 Series Chains

1" FACE WIDTH for HV404 CHAIN							
No. Teeth	Catalogue No.	Pitch Dia.	Min. Bore Dia.	Max. Bore	Hub Ø A	L.T.B. L	Approx. Wt.
19	HV404B19	77.16	12.70	37	56	50.8	1.15
21	HV404B21	85.22	12.70	43	63	50.8	1.50
23	HV404B23	93.27	19.05	46	73	50.8	1.80
25	HV404B25	101.32	19.05	53	81	50.8	2.20
27	HV404B27	109.40	19.05	60	89	50.8	2.65
29	HV404B29	117.47	19.05	65	97	50.8	3.15
31	HV404B31	125.53	19.05	70	106	63.5	4.55
38	HV404B38	153.80	19.05	95	134	63.5	7.30
42	HV404B42	169.95	19.05	111	150	63.5	9.15
57	HV404B57	230.53	31.75	114	152	63.5	12.30
76	HV404B76	307.31	25.40	64	92	50.8	14.10

1 1/2" FACE WIDTH for HV406 CHAIN							
No. Teeth	Catalogue No.	Pitch Dia.	Min. Bore Dia.	Max. Bore	Hub Ø A	L.T.B. L	Approx. Wt.
19	HV406B19	77.16	12.70	37	56	63.5	1.50
21	HV406B21	85.22	12.70	43	63	63.5	1.95
23	HV406B23	93.27	19.05	46	73	63.5	2.30
25	HV406B25	101.32	19.05	53	81	63.5	2.85
27	HV406B27	109.40	19.05	60	89	63.5	3.45
29	HV406B29	117.47	19.05	65	97	63.5	4.10
31	HV406B31	125.53	19.05	70	106	76.2	5.60
38	HV406B38	153.80	19.05	95	134	76.2	8.95
42	HV406B42	169.95	19.05	111	150	76.2	11.15
57	HV406B57	230.53	31.75	114	152	76.2	16.00
76	HV406B76	307.31	25.40	64	92	63.5	20.90

2" FACE WIDTH for HV408 CHAIN							
No. Teeth	Catalogue No.	Pitch Dia.	Min. Bore Dia.	Max. Bore	Hub Ø A	L.T.B. L	Approx. Wt.
19	HV408B19	77.16	12.70	37	56	76.2	1.85
21	HV408B21	85.22	12.70	43	63	76.2	2.35
23	HV408B23	93.27	19.05	46	73	76.2	2.85
25	HV408B25	101.32	19.05	53	81	76.2	3.50
27	HV408B27	109.40	19.05	60	89	76.2	4.15
29	HV408B29	117.47	19.05	65	97	76.2	4.95
31	HV408B31	125.53	19.05	70	106	76.2	5.75
38	HV408B38	153.80	19.05	95	134	76.2	9.10
42	HV408B42	169.95	19.05	111	150	76.2	11.40
57	HV408B57	230.53	31.75	114	152	88.9	19.80
76	HV408B76	307.31	25.40	64	92	76.2	27.50

3" FACE WIDTH for HV412 CHAIN							
No. Teeth	Catalogue No.	Pitch Dia.	Min. Bore Dia.	Max. Bore	Hub Ø A	L.T.B. L	Approx. Wt.
19	HV412B19	77.16	19.05	37	56	102.0	2.40
21	HV412B21	85.22	19.05	43	63	102.0	3.15
23	HV412B23	93.27	19.05	46	73	102.0	3.90
25	HV412B25	101.32	19.05	53	81	102.0	4.75
27	HV412B27	109.40	19.05	60	89	102.0	5.70
29	HV412B29	117.47	19.05	65	97	102.0	6.65
31	HV412B31	125.53	19.05	70	106	102.0	7.85
38	HV412B38	153.80	19.05	95	134	102.0	12.30
42	HV412B42	169.95	19.05	111	150	102.0	15.40
57	HV412B57	230.53	31.75	114	152	114.0	27.30
76	HV412B76	307.31	25.40	64	92	102.0	37.75

All dimensions are in mm

## Standard Sprockets for $\frac{3}{8}$ " pitch HV3 Series Chains

3/4" FACE WIDTH for HV303 CHAIN							
No. Teeth	Catalogue No.	Pitch Dia.	Min. Plain Bore	Max. Bore	Hub Dia. A	L.T.B. L	Appr. Wt.
19	HV303B19	57.86	12.70	30	41	35.7	0.40
21	HV303B21	63.91	12.70	33	48	35.7	0.55
23	HV303B23	69.95	12.70	35	54	35.7	0.65
25	HV303B25	76.00	19.05	42	60	35.7	0.80
27	HV303B27	82.04	19.05	45	67	35.7	1.00
29	HV303B29	88.09	19.05	46	73	35.7	1.15
31	HV303B31	94.16	19.05	53	79	35.7	1.40
38	HV303B38	115.34	19.05	73	100	35.7	2.25
42	HV303B42	127.46	19.05	84	112	35.7	2.85
57	HV303B57	172.90	31.75	115	152	35.7	5.30
76	HV303B76	230.48	31.75	115	152	35.7	7.55

1" FACE WIDTH for HV304 CHAIN							
No. Teeth	Catalogue No.	Pitch Dia.	Min. Plain Bore	Max. Bore	Hub Dia. A	L.T.B. L	Appr. Wt.
19	HV304B19	57.86	12.70	30	41	41.3	0.50
21	HV304B21	63.91	12.70	33	48	41.3	0.65
23	HV304B23	69.95	12.70	35	54	41.3	0.80
25	HV304B25	76.00	19.05	42	60	41.3	0.95
27	HV304B27	82.04	19.05	45	67	41.3	1.16
29	HV304B29	88.09	19.05	46	73	41.3	1.40
31	HV304B31	94.16	19.05	53	79	41.3	1.65
38	HV304B38	115.34	19.05	73	100	41.3	2.65
42	HV304B42	127.46	19.05	84	112	41.3	3.35
57	HV304B57	172.90	31.75	115	152	41.3	6.20
76	HV304B76	230.48	31.75	115	152	41.3	9.35

1 1/2" FACE WIDTH for HV306 CHAIN							
No. Teeth	Catalogue No.	Pitch Dia.	Min. Plain Bore	Max. Bore	Hub Dia. A	L.T.B. L	Appr. Wt.
19	HV306B19	57.86	12.70	30	41	54.8	0.65
21	HV306B21	63.91	12.70	33	48	54.8	0.85
23	HV306B23	69.95	12.70	35	54	54.8	1.10
25	HV306B25	76.00	19.05	42	60	54.8	1.25
27	HV306B27	82.04	19.05	45	67	54.8	1.55
29	HV306B29	88.09	19.05	46	73	54.8	1.85
31	HV306B31	94.16	19.05	53	79	54.8	2.45
38	HV306B38	115.34	19.05	73	100	54.8	3.55
42	HV306B42	127.46	19.05	84	112	54.8	4.40
57	HV306B57	172.90	31.75	115	152	54.8	8.25
76	HV306B76	230.48	31.75	115	152	54.8	13.10

## Custom Designed Sprockets

Cross+Morse can manufacture Sprockets for all HV ..... Chains with diameters to 1500mm and face width to 250mm; to custom drawings or to our own design to meet customers requirements. Sprockets can also be Gearcut and finished on Customer blanks. The purchase of Chain and Sprocket together ensures optimum performance and service life.

## Package Drive Design

Our design team can assist in selection, detail design of sprockets, shafting etc. on all Inverted Tooth drives ensuring correct application of Chains. We can also offer a complete supply package of Chain, Sprockets and Shafting contained in a rigid Chainless specifically designed to suit individual Customer requirements. Call us now for the best Drive Solution.

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