KCM Roller Chain

On the Forefront of Integrated Technologies

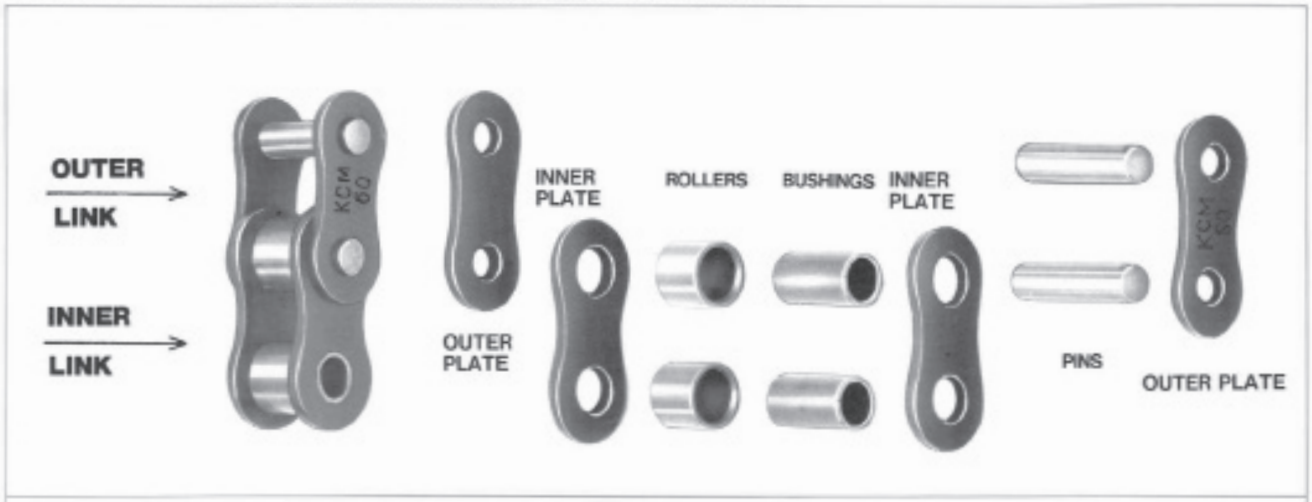
FINERPOWER TRANSMISSIONS

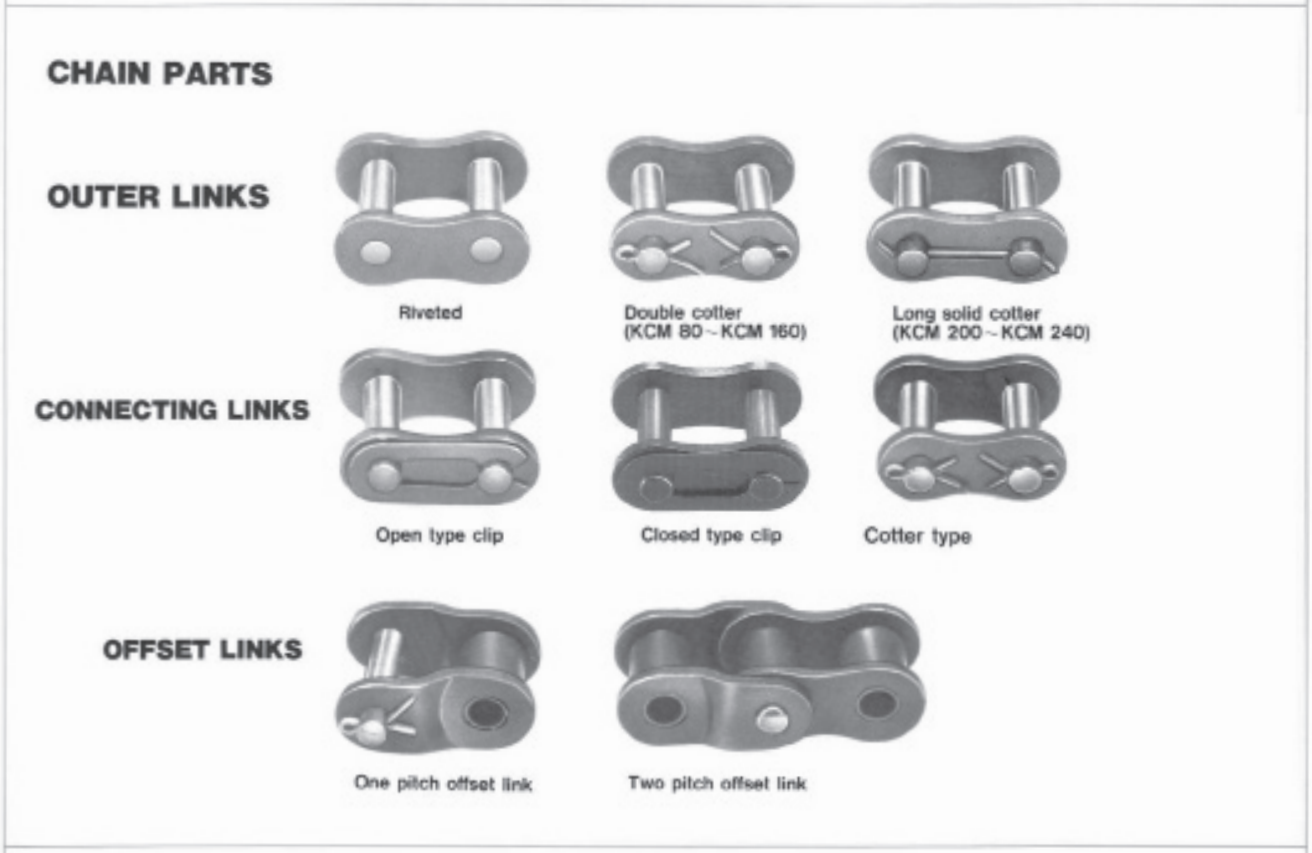
KCM®

KCM Roller Chain

Chain Components

Roller Chains are indispensable drive and transfer components in modern industries, to meet diversified needs of the times.
Roller chains are composed of five component parts as shown below.





General Roller Chain Selection Method

For roller chain transmission, it is important to select appropriate roller chain and sprockets.

1 Compensated chain drive power

2 Power to be transmitted

Determine the compensated chain drive power by multiplying the power to be transmitted by service factor shown in Table 2 according to the driven machine and prime mover. If the desired power transmission power cannot be achieved with single strand chain, select multiple strand chain. In this case, it is required to make compensation with multiple strand factor listed in Table 1 as follows.

○Single strand chain:
Compensated chain drive power
= Power to be transmitted × Service factor

○Multiple strand chain:
$$\text{Compensated chain drive power} = \frac{\text{Power to be transmitted} \times \text{Service factor}}{\text{multiple strand factor}}$$

3 Speeds of drive and driven shafts:

Determine appropriate roller chain and number of teeth of smaller sprocket from Table 3 "Quick selection chart" according to the speed (rpm) of higher-speed shaft (drive shaft in case of deceleration and driven shaft in acceleration) and compensated chain drive power.
In this case, it is recommended to select a chain with pitches as small as possible for smooth, quiet operation.

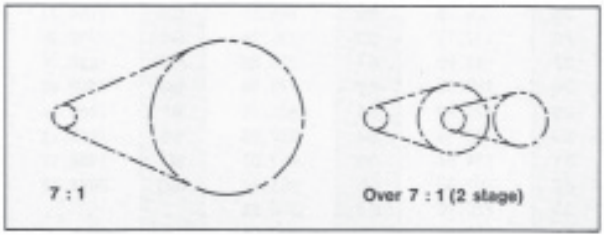
4 Shaft diameter and boss diameter:

After determining the number of teeth of smaller sprocket, refer to Sprocket dimensions tables on pages 77 to 86 to find boss diameter and maximum bore diameter. If the bore diameter is less than the actual shaft diameter, reselect the increased number of teeth of smaller sprocket so that the bore diameter matches the actual shaft diameter.

5 Speed ratio of both shafts

Determine the number of teeth of larger sprocket by multiplying the number of teeth of smaller sprocket by the speed ratio of smaller sprocket to larger sprocket. Here, note that the number of teeth of smaller sprocket must be 17 or more, and that of larger sprocket must be 114 or less.
When uniform load is transferred at low speed, it is possible to select a sprocket whose number of teeth is down to 13.

In roller chain drive, the speed ratio of smaller sprocket to larger sprocket is normally 7 : 1 or less. If larger speed ratio is required, select two or more stages for speed change.



6 Shaft-to-shaft distance

It is ideal that shaft-to-shaft distance is 30 to 50 times chain pitch employed, although both shaft are positioned close to each other just before engagement of both sprockets. If subjected to pulsating load, shaft-to-shaft distance must be 20 or less times chain pitch employed.

Low Speed Roller Chain Selection Method

When the chain speed is 50 m/min or less, follow the "Low Speed Roller Chain Selection Method", rather than "General Roller Chain Selection Method", described above, for economical operation.
This low speed roller chain selection method is suitable for smooth power transmisson with less frequent starts and stops. Working conditions such as operating environment, arrangement and lubrication are similar to those of general roller chain selection method.

1 Chain Speed

$$V = \frac{P \cdot N \cdot n}{1000}$$

V: Chain speed, m/min
P: Chain pitch, mm
N: No. of teeth of smaller sprocket
n: No. of speed of smaller sprocket, rpm

2 Load acting on roller chain

$$F = \frac{6120 \cdot kW}{V}$$

F: Max. load acting on roller chain, kgf
kW: Transmission Power, kW

3 Max. acting load and max. allowable load

Max. load acting on chain, kgf	×	Service factor Table 2	×	Speed factor Table 4	≤	Ma. allowable load of roller chain, kg

Table 4 Speed Factors

Chain speed	Speed factor
15 m/min or less	1.0
15~30m/min	1.2
30~50m/min	1.4

If the foregoing equation is not satisfied, change the size of roller chain and the number of teeth of sprocket, and try to recheck if the equation is satisfied or not.

4 For low-speed application subjected to frequent starts and stops or braking and shocks, contact us.

Required Roller Chain Length

The required roller chain length (number of pitches) can be determined by the following equation, using center-to-center distance between shafts and number of teeth of sprocket.

$$L_P = \frac{N_1+N_2}{2} + 2C_P + \frac{\{(N_2-N_1)/2\pi\}^2}{C_P}$$

Lp: Overall roller chain length (no. of pitches)
N_1 = Number of teeth of smaller sprocket
N_2 = Number of teeth of larger sprocket
Cp = Center-to-center distance between shafts (no. of pitches)

Center-to-center Distance between Drive and Driven Shafts

The required roller chain length (number of pitches) determined at left is just approximation; which does not coincide with arbitrary center-to-center distance of drive and driven shafts. Therefore, it is required to obtain accurate center-to-center distance of drive and driven shafts. Therefore, it is reguired to obtain accurate center-to-center distance of drive and driven shafts by making calculation based on the required roller chain length equation.

$$C_P = \frac{1}{4}\left\{L_P - \frac{N_1+N_2}{2} + \sqrt{\left(L_P - \frac{N_1+N_2}{2}\right)^2 - \frac{2}{\pi^2}(N_2-N_1)^2}\right\}$$

Cp = Center-to-center distance between both drive and driven shafts (pitches)
Lp = Overall chain length (pitches)
N_1 = No. of teeth of smaller sprocket
N_2 = No. of teeth of larger sprocket

$\{(N_2-N_1)/2\pi\}^2$ can be found from the table below.

N_2-N_1	$\{(N_2-N_1)/2\pi\}^2$	N_2-N_1	$\{(N_2-N_1)/2\pi\}^2$	N_2-N_1	$\{(N_2-N_1)/2\pi\}^2$
1	0.03	35	31.06	69	120.72
2	0.10	36	32.86	70	124.24
3	0.23	37	34.71	71	127.82
4	0.41	38	36.61	72	131.45
5	0.63	39	38.57	73	135.12
6	0.91	40	40.57	74	138.85
7	1.24	41	42.62	75	142.63
8	1.62	42	44.73	76	146.46
9	2.05	43	46.88	77	150.34
10	2.54	44	49.09	78	154.27
11	3.07	45	51.35	79	158.25
12	3.65	46	53.65	80	162.28
13	4.29	47	56.01	81	166.36
14	4.97	48	58.42	82	170.49
15	5.71	49	60.88	83	174.68
16	6.49	50	63.39	84	178.91
17	7.33	51	65.95	85	183.20
18	8.22	52	68.56	86	187.53
19	9.15	53	71.22	87	191.92
20	10.14	54	73.94	88	196.36
21	11.18	55	76.70	89	200.84
22	12.27	56	79.52	90	205.38
23	13.41	57	82.38	91	209.97
24	14.61	58	85.30	92	214.61
25	15.85	59	88.26	93	219.30
26	17.14	60	91.28	94	224.05
27	18.48	61	94.35	95	228.84
28	19.88	62	97.47	96	233.68
29	21.32	63	100.64	97	238.57
30	22.82	64	103.86	98	243.52
31	24.37	65	107.13	99	248.51
32	25.96	66	110.45	100	253.56
33	27.61	67	113.82		
34	29.31	68	117.25		

NOTE:
Lp (number of pitches), determined by the equation above, is not integer, almost having fraction part. Therefore, it is necessary to round up the function part to obtain integer. If the round-up integer is odd number, use an offset link, but even number is preferable.

$\frac{2}{\pi^2}(N_2-N_1)^2$ can be found from the table below.

N_2-N_1	$\frac{2}{\pi^2}(N_2-N_1)^2$	N_2-N_1	$\frac{2}{\pi^2}(N_2-N_1)^2$	N_2-N_1	$\frac{2}{\pi^2}(N_2-N_1)^2$
1	0.20	35	248.49	69	9965.76
2	0.81	36	262.89	70	9993.95
3	1.83	37	277.70	71	1022.56
4	3.25	38	292.91	72	1051.56
5	5.07	39	308.53	73	1080.98
6	7.30	40	324.56	74	1110.80
7	9.94	41	340.99	75	1141.19
8	12.98	42	357.82	76	1171.65
9	16.43	43	375.07	77	1202.69
10	20.28	44	392.71	78	1234.13
11	24.54	45	410.77	79	1265.97
12	29.21	46	429.23	80	1298.23
13	34.28	47	448.09	81	1330.88
14	39.76	48	467.36	82	1363.95
15	45.64	49	487.04	83	1397.42
16	51.93	50	507.12	84	1431.29
17	58.62	51	527.61	85	1465.58
18	65.72	52	548.50	86	1500.26
19	73.23	53	569.80	87	1535.36
20	81.14	54	591.50	88	1570.85
21	89.46	55	613.61	89	1606.76
22	98.18	56	636.13	90	1643.07
23	107.31	57	659.05	91	1679.78
24	116.84	58	682.38	92	1716.90
25	126.78	59	706.11	93	1754.43
26	137.13	60	730.25	94	1792.36
27	147.88	61	754.80	95	1830.70
28	159.03	62	779.75	96	1869.45
29	170.60	63	805.10	97	1908.60
30	182.56	64	830.86	98	1948.15
31	194.94	65	857.03	99	1988.11
32	207.92	66	883.61	100	2028.48
33	220.90	67	910.58		
34	234.49	68	937.97		

Use in Severe Working Conditions

1. Application at High Temperature

If the chain is heated, its strength and wear resistance are decreased.

Table 5 Atmospheric temperature and strength

Atmospheric temp (℃)	Strength	
Up to -30	Allowable tensile force*	×0.25
-30 to -20	〃	×0.30
-10 to 150	〃	×1
150 to 200	〃	×0.75
200 to 250	〃	×0.5

2. Described in catalog

For use in alkalic or acidic environment, it is required to use the chain made of material having high corrosion resistance, for instance, stainless steel. Note that corrosion resistance of stainless steel may be decreased significantly according to kinds of liquid and gas, and operating temperatures.

Installation

(A) Arrangement of Shafts

Horizontal arrangement;
Even if both shafts are arranged horizontally, pay due attention to rotational direction of the shafts. In cases of Fig. (2) and (3), there is a fear that the chain is disengaged from the sprocket when the chain is eoingated. Particularly, in the case of Fig. (3), there is a fear that the upper and lower chain parts make contact: use an idler at midspan between shafts as shown.

Vertical arrangement:
The chain, if elongated, will be deflected as illustrated in Fig. (5). Particularly, if a smaller sprocket is located at the bottom side, there is a concern that the chain can disengage from the sprocket. To avoid disengagement, it is required the line linking centers of both shafts is at 60° or less to horizontal line, as illustrated in Fig. (4). If this arrangement is not allowed due to limitation of mechanism or space, it is recommended to arrange a larger sprocket at the lower side, and an idler inside or outside the chain as illustrated in Fig. (6).

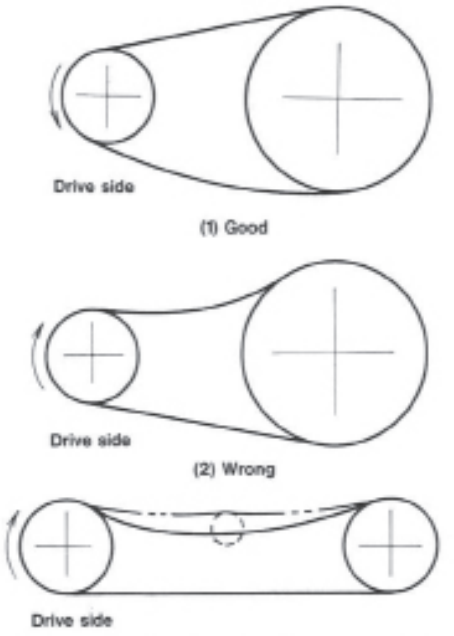
(B) Sag

Sag of the chain is approximately 4% of shaft-to-shaft distance, and approximately 2% of that in the following cases"
1) Vertical arrangement or similar arrangement.
2) Shaft-to-shaft distance is 1 m or longer.
3) Frequent starts and stops under heavy load.
4) Reversing operation

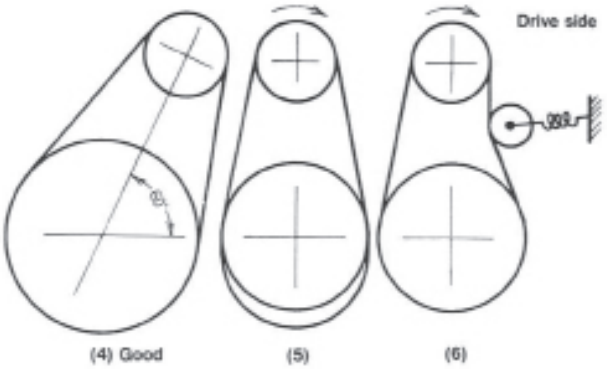
(C) Varying loads

It is required to place a tensioner on the tensed side or slackened side of the chain to give pre-tension. This eliminates vibration in operation and reduces noise.

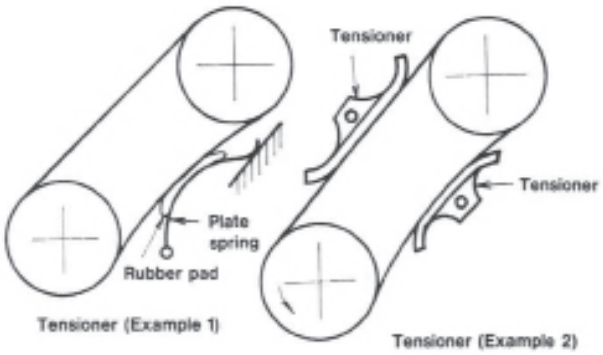
Horizontal arrangement:



Vertical arrangement:



Examples of Tensioners



Power Transmission Capacity Tables

Power Transmission capacities of the KCM products shown in this catalog are determined under the following conditions:

1) Operation at -10°C to +60°C in the atmosphere free from abrasive dirt.
2) No corrosive gas and high humidity.
3) Two sprockets on which roller chain is mounted are properly aligned on parallel , level shafts.
4) Use of lubricant and lubrication method.
5) Less loading variations.

Multiple strand factor (Table 1)

Power transmission capacity of multiple strand roller chain is not equal to the number of strands times that of single strand roller chain , because the load is not evenly distributed to respective strands of roller chains.Therefore, power transmission capacity of multiple strand roller chain is determined by multiplying that of single strand roller chain by multiple strand factor.

Service factor (Table 2)

Actual power transmission capacity is adjusted according to the degree of loading variations, because the power transmission capacity tables are prepared on condition that loading variations are small.

Quick Selection Chart (Table 3)

How to Use:

EXAMPLE: Single strand roller chain with 5kW compensated chain drive power.

1. When smaller sprocket speed is 100 rpm:

Find the intersection of 5kW horizontal line of the compensated chain drive power and 100 rpm vertical line of the smaller sprocket speed in the quick selection chart. You'll find that the chain is KCM 80, and number of sprocket teeth is between 16T and 20T, judging as 17T from the exact location of the intersection.

2. When smaller sprocket speed is 300 rpm:

1) Find the intersection in the same way as 1, you'll find that the chain is KCM 60, and number of sprocket teeth is 13T to 18T, judging as 15T from the exact location of the intersection. Also, you'll find that there is KCM 50/24T line (dotted) near this intersection. This means you can use either KCM 60/15T and KCM 50/24T. After making quick selection with this chart confirm the selected sprocket is appropriate with reference to the power transmission capacity tables.
2) For power transmission capacity lines of 20T, 24T and 30T, only its high speed portions are shown to simplify the quick selection chart. For lower speed portions, extend a line in parallel to the lines, just like a dotted line of KCM50/24T.
3) For chain speeds of 50 m/min or lower, it is economical to make selection by "Low speed selection method"described later.

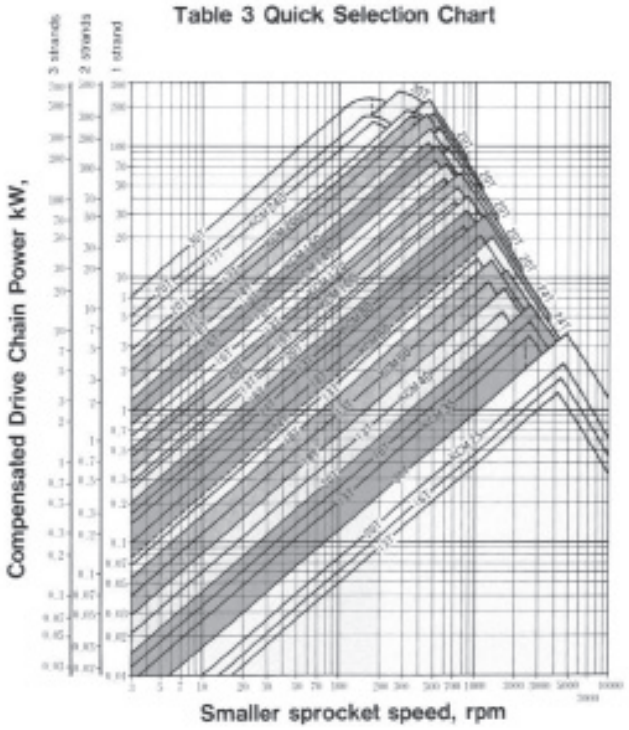
Table 1 Multiple strand factor

NO. of Chain Strands	Multiple Strand factor
2 strands	1.7
3 strands	2.5
4 strands	3.3
5 strands	3.9
6 strands	4.6

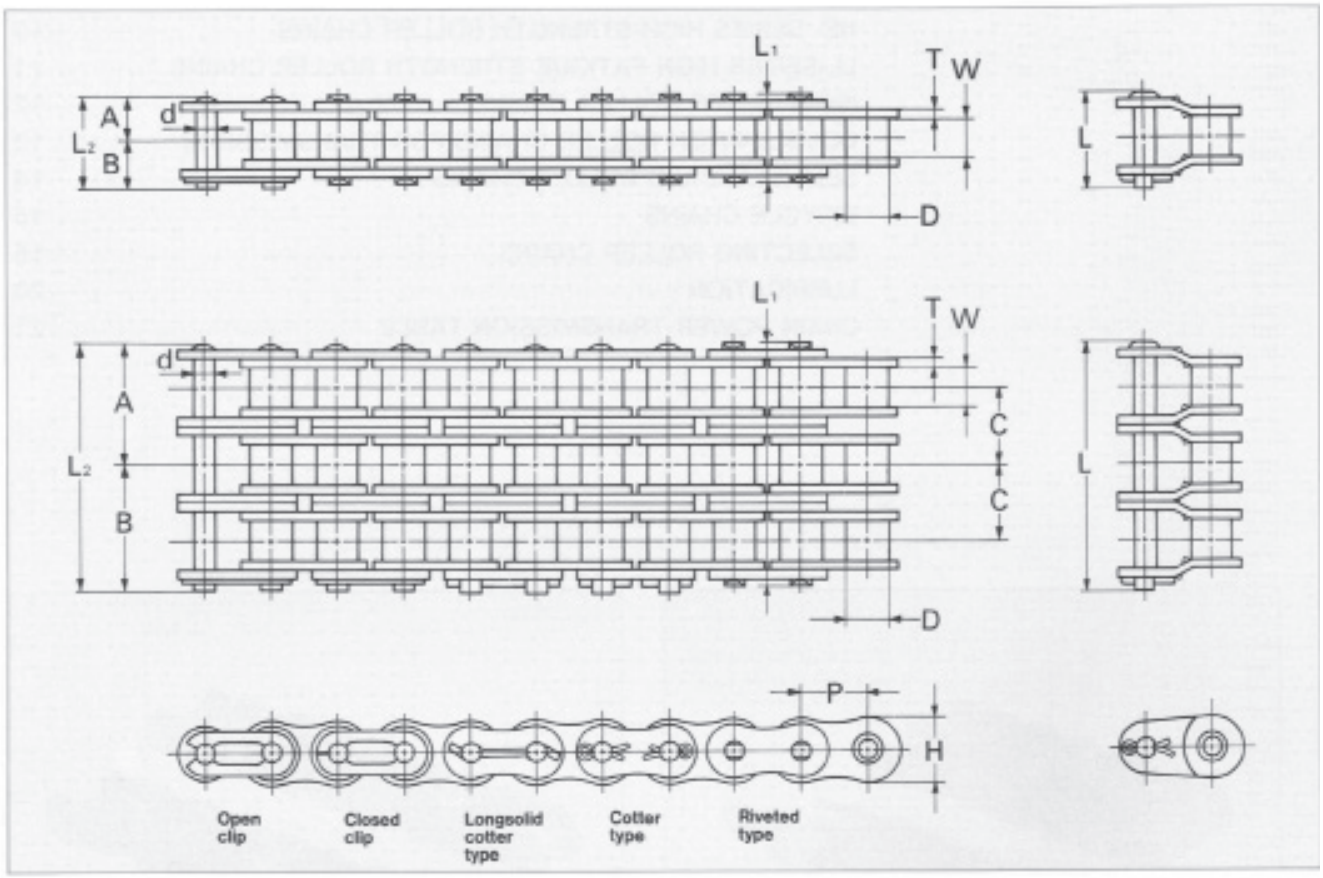
Table 2 Service factor

Load	Prime mover / Driven machine	Motor turbine	Combustion engine	
			W/hyd. equipment	W/o hyd. equipment
Smooth loading	Belt conveyor subjected to small loading variations, chain conveyor, centrifugal pump, centrifugal blower, textile machine, and other machinery subjected to small loading variations.	1.0	1.0	1.2
With some shocks	Centrifugal compressor, marine propulsion system, conveyor subjected to some loading variations, automatic furnace, drier, crusher, machine tool, compressor.	1.3	1.2	1.4
With heavy shocks	construction machinery, and paper mill, press, crusher, mining machinery, vibrator, oil-well machinery, rubber mixer, roll, roll gang, and other machinery subjected to reversing loads or heavy shocks.	1.5	1.4	1.7

Table 3 Quick Selection Chart



Twelve types of KCM standard rollers, conforming to JIS and ANSI, chains are available.

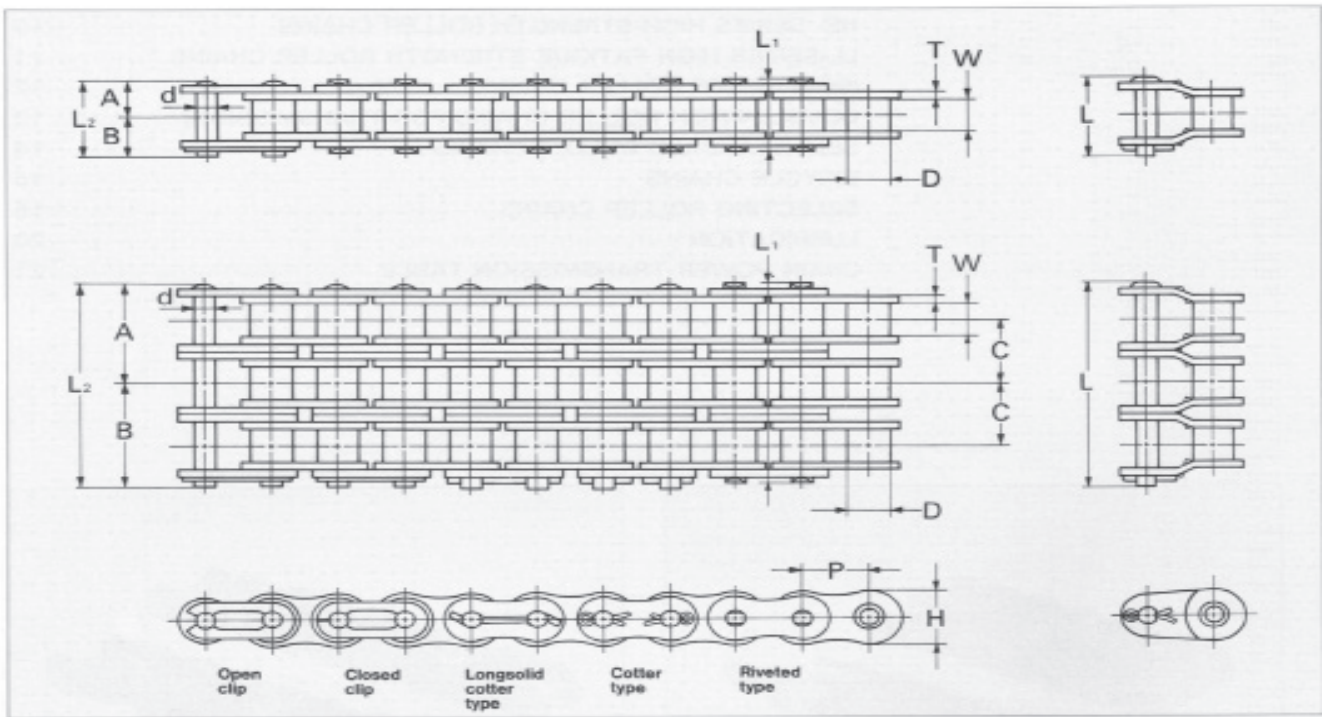


Chain No	Pitch P	Width between inner pitch W	Roller Diameter D	PIN						Link Plate		JIS &ANSI Tensile strength kgf (kN	Average Tensile strength kgf (kN)	Maximum Allowable Load kgf (Kn)	Approx weight (kg/m)	Links of 1unit
KCM				Diameter d	A	B	(A+A) L1	(A+B) L1	Offset L	Thick-ness T	Height H					
25	6.35	3.18	*3.30	2.31	3.80	4.80	7.60	8.60		0.75	5.8	357(3.5)	450(4.4)	65(0.64)	0.13	480.00
35	9.525	4.78	*5.08	3.59	5.70	7.10	11.40	12.80	13.65	1.25	8.8	806(7.9)	1,100(10.8)	220(2.16)	0.33	320.00
41	12.70	6.38	7.77	3.59	6.52	7.93	13.05	14.45	14.95	1.25	9.5	683(6.7)	1,200(11.8)	230(2.25)	0.40	240.00
40	12.70	7.95	7.95	3.91	8.02	9.53	16.05	17.55	18.95	1.5	11.7	1,407(13.8)	1,850(18.1)	370(3.63)	0.61	240.00
50	15.875	9.53	10.16	5.09	10.15	11.60	20.30	21.75	23.00	2.0	14.6	2,223(21.8)	3.050(29.9)	650(6.3J)	1.01	192.00
60	19.05	12.70	11.91	5.96	12.65	14.15	26.30	26.80	29.45	2.4	17.5	3,172(31.1)	4,200(41.2)	900(8.83)	1.49	160.00
80	25.4	15.88	15.88	7.94	16.07	19.18	32.15	35.25	36.90	3.2	23.0	5,670(55.6)	J,400(72.6)	1,500(14.71)	2.50	130.00
100	31.75	19.05	19.05	9.54	20.10	23.05	40.20	43.15	45.05	4.0	28.9	8,841(85.1)	11,500(112.8)	2,300(22.56)	3.85	96.00
120	38.1	25.40	22.23	11.11	25.20	28.60	50.40	53.80	55.90	4.8	36.0	12,706(124.6)	16,000(156.9)	3,100(30.40)	5.66	80.00
140	44.45	25.40	25.4	12.31	27.30	31.30	54.60	58.60	60.50	5.6	40.7	17233(169.0)	21,500(210.8)	4,100(40.21)	7.19	68.00
160	50.80	31.75	28.58	14.29	32.45	37.15	64.90	69.60	71.85	6.4	46.7	22,678(222.4)	2J,500(269.7)	5,400(52.96)	9.63	60.00
200	63.50	38.10	39.68	19.86	39.65	46.65	79.30	86.30	89.20	8.0	58.4	35,384(347.0)	46,000(470.7)	3.300(J1.59)	15.97	48.00

Dimensions (Millimeters)

ANSI Roller Chain

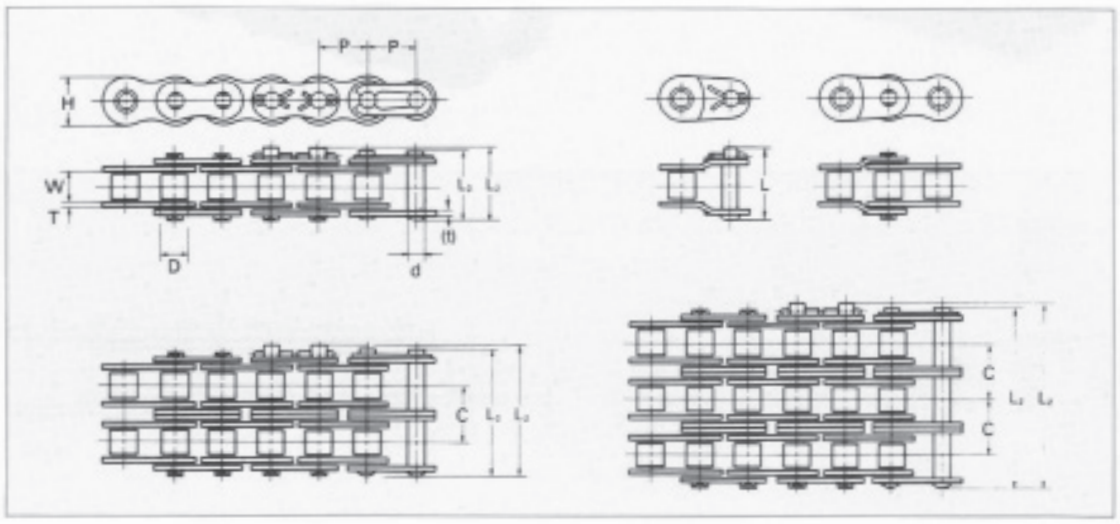
Nine types of multiple STRAND roller chains, conforming to JIS and ANSI, are available.



Chain No KCM	Pitch P	Width between inner plates W	Roller Diam-eter D	PIN Diam-eter d	PIN A	PIN B	PIN (A+A) L1	PIN (A+B) L1	PIN Offset L	Link Plate Thick-ness T	Link Plate Height H	Trans-verse pitch C	JIS &ANSI Tensile strength kgf (kN)	Average Tensile strength kgf (kN)	Maximum Allow-able Load kgf(Kn)	Approx weight (kg/m)	Links of 1unit
25-2	6.35	3.18	*3.30	2.31	7.00	8.0	14.0	15.		0.75	5.8	6.4	714 (1.0)	900 (8.8)	100	0.26	480
35-2 35-3	9.53	4.78	*5.08	3.59	10.75 15.80	12.15 17.20	21.50 31.60	22.90 33.00	23.75 33.85	1.25	8.8	10.1	1.612 (15.8) 2.418 (23.7)	2.200(21.6) 3.300(32.4)	370 (3.63) 550 (5.39)	0.64 0.95	320
40-2 40-3	12.70	7.95	7.95	3.97	15.22 22.42	16.73 23.53	30.45 44.85	31.95 46.35	33.35 47.75	1.5	11.7	14.4	2.814 (21.6) 4.221 (41.4)	3.100 (36.3) 5.550 (54.4)	630(6.17) 930 (9.11)	1.19 1.79	240
50-2 50-3	15.88	9.53	10.16	5.09	19.20 28.25	20.66 29.70	38.40 56.50	39.85 57.95	41.10 59.20	2.00	14.6	18.1	4,446 (43.6) 6,669 (65.4)	6,100 (59.8) 9,150(89.7)	1,100) (10.79) 1,620 (15.89)	2.01 2.99	192
60-2 60-3	19.05	12.70	11.91	5.96	24.05 35.45	25.55 36.95	48.10 70.90	49.6 72.40	52.25 75.05	2.4	17.5	22.8	6,383 (62.6) 9,575 (93.9)	8,400 (82.4) 12,600 (123.5)	1,530 (15.00) 2,250 (22.06)	2.95 4.41	160
80-2 80-3	25.40	15.88	15.88	7.94	30.72 45.37	33.83 48.48	61.45 90.75	64.55 93.85	66.20 95.50	3.2	23.00	29.3	11,339 (111.2) 17,009(166.8)	14,800 (145.0) 22,200 (217.7)	2,550 (25.01) 3,750 (36.77)	4.96 7.40	120
100-2 100-3	31.75	19.05	19.05	9.54	38.00 55.90	40.95 58.85	76.00 111.80	78.95 114.75	80.85 116.50	4.00	28.9	35.8	17,743 (174.0) 26,615 (261.0)	23,000 (225.6) 34,500(338.3)	3,900 (38.25) 5,750(56.39) 10,580(103.75)	7.62 11.38	96
120-2 120-3	38.10	25.40	22.23	11.11	47.90 70.60	51.30 74.00	95.8 141.20	99.2 144.60	100.7 146.10	4.8	35.00	45.4	25,493 (250.0) 38,239 (375.0)	32,000 (313.8) 48,000 (470.7)	5,250 (51.48() 7,750(76.00)	11.21 16.74	80
140-2 140-3	44.45	25.40	25.4	12.71	51.75 76.20	55.75 80.20	103.5 152.40	107.5 156.40	108.95 157.85	5.6	40.7	48.9	34,670 (340.0) 52,006 (510.0)	43,000 (421.7) 64,500(632.5)	6,970 (68.31) 10,250(100.52) 13,500 (132.39)	14.24 21.30	34

Dimensions (Millimeters)

ISO-B Series roller chains, conforming to ISO 606-B, are available for Europe-built equipment.

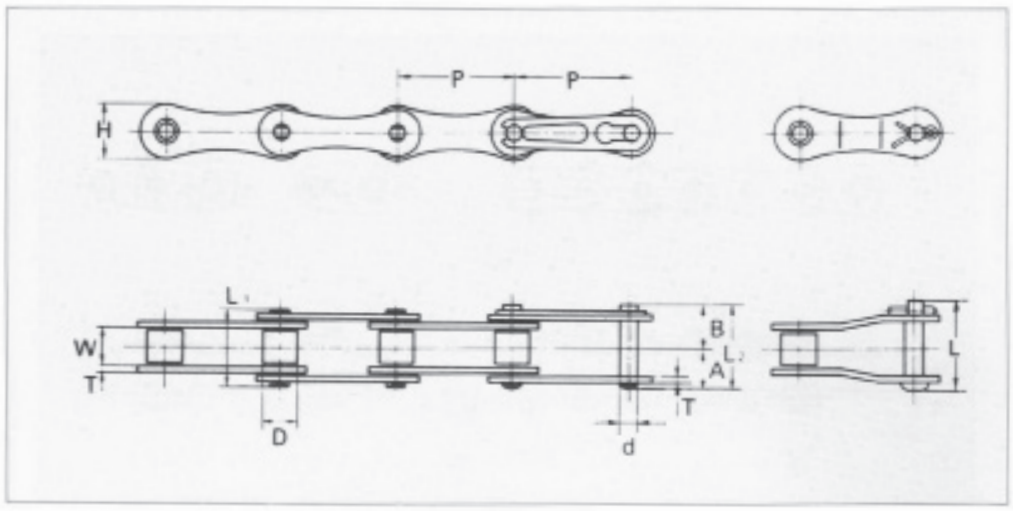


KCM Chain No.	Pitch P	Width between Inner Plates W	Roller Dia. D	PIN			Link Plate		Transversion pitch C	ISO 606 Min. Tensile Strength kN (kgf)	KCM Min. Tensile Strength kN (kgf)	Approx. Weight (kg/m)	Links of Dia. 1 unit
				Diameter d	L2	Offset L	Thickness T	Heights H					
04	6	2.8	4	1.85	7.35	–	0.6	4.9	–	–	3.2(330)	0.11	834
05B 05B-2	8.00	3	5	2.31	8.60 14.25	– –	0.75	7.1	5.64	4.4(449) 7.8(800)	4.9(500) 8.5(870)	0.18 0.31	626
06B 06B-2 06B-3	9.525	5.72	6.35	3.28	13.60 23.85 34.10	15.15 25.40 35.65	1.3 (1.0)	8.1	10.24	8.9(910) 16.9(1,720) 24.9(2,540)	9.0(920) 17.0(1,730) 24.9(2,540)	0.39 0.74 1.10	320
08B 08B-2 08B-3	12.7	7.75	8.51	4.45	18.05 31.95 45.90	19.2 33.10 47.05	1.6	11.7	13.92	17.8(1,820) 31.1(3,170) 44.5(4,540)	18.9(1,930) 32.0(3,260) 47.5(4,840)	0.65 1.25 1.85	240
10B 10B-2 10B-3	15.875	9.65	10.16	5.08	20.15 36.95 53.35	21.5 38.10 54.70	1.5	14.6	16.59	22.2(2,260) 44.5(4,540) 66.7(6,800)	22.9(2,340) 44.5(4,540) 66.8(6,810)	0.91 1.80 2.70	192
12B 12B-2 12B-3	19.05 1	11.68	12.07	5.72	23.60 43.05 62.50	26.30 45.75 65.20	1.8	16	19.46	28.9(2,950) 57.8(5,890) 86.7(8,840)	31.0(3,160) 61.0(6,220) 92.2(9,400)	1.24 2.44 3.65	160
16B 16B-2 16B-3	25.4	17.02	15.88	8.28	38.10 70.00 101.90	41.45 73.35 105.25	4.0 (3.2)	19.7	31.88	60 (6,120) 106 (10,810) 160 (16,320)	69.6(7,100) 127.5(13,000) 192.2(19,600)	2.62 5.18 7.74	120
20B 20B-2 20B-3	31.75	19.56	19.05	10.19	43.95 80.40 116.85	47.25 83.70 120.15	4.5 (3.5)	26	36.45	95 (9,690) 170 (17,340) 250 (25,490)	98.1(10,000) 197.1(20,100) 295.2(30,100)	3.81 7.52 11.24	96
24B 24B-2 24B-3	38.1	25.4	25.4	14.63	58.70 107.05 155.40	4.20 112.55 160.90	6.0 (5.0)	33	48.36	160 (16,320) 280 (28,550) 425 (42,340)	166.7(17,000) 334.4(34,100) 500.1(51,000)	6.65 13.11 19.57	80 40

Dimensions (Millimeters)

Double Pitch (Conveyor) Roller Chain

Double Pitch roller chain, whose pitch is doubled compared to standard roller chain, employs parts of standard roller chain except for link plate. Therefore, the length and strength are the same, but the number of parts is reduced to a half, decreasing weight and improving economy. This roller chain is suited for relatively long power transmission at low speed.



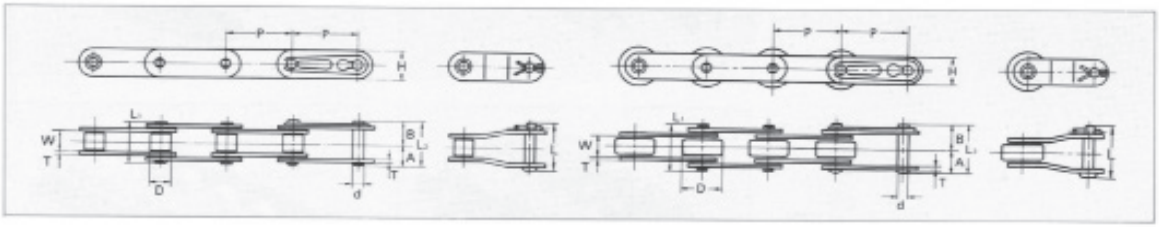
KCM Chain No.	Pitch P	Width between Inner Plates W	Roller Dia. D	PIN						Link Plate		Ave. Tensile Strength kN (kgf)	Max. Allow-able Load kN (kgf)	Approx. Weight (kg/m)	Links of Dia. 1 unit
				Diameter d	A	B	(A+A) L1	(A+B) L1	Offset L	Thick-ness T	Height H				
A2040	25.4	7.95	7.92	3.97	8.02	9.53	16.05	17.55	18.95	1.5	11.7	17.2(1,750)	2.65(270)	0.4	120
A2050	31.75	9.53	10.16	5.09	10.15	11.6	20.3	21.75	23	2	14.6	27.9(2,850)	4.31(440)	0.65	96
A2060	38.1	12.7	11.91	5.96	12.65	14.15	25.3	26.8	29.45	2.4	17.5	39.5(4,000)	6.28(640)	0.95	80

Dimensions (Millimeters)

The double pitch roller chains for conveyors fall into two roller types: S types (KCM chain No. is suffixed with "0") and R types (KCM chain No. suffixed with "2") Using a variety of standard attachments, the double pitch roller chain can be used as a compact, high-precision conveyor. Nickel plated models as well as stainless steel models are also available.

S Roller Type

R Roller Type

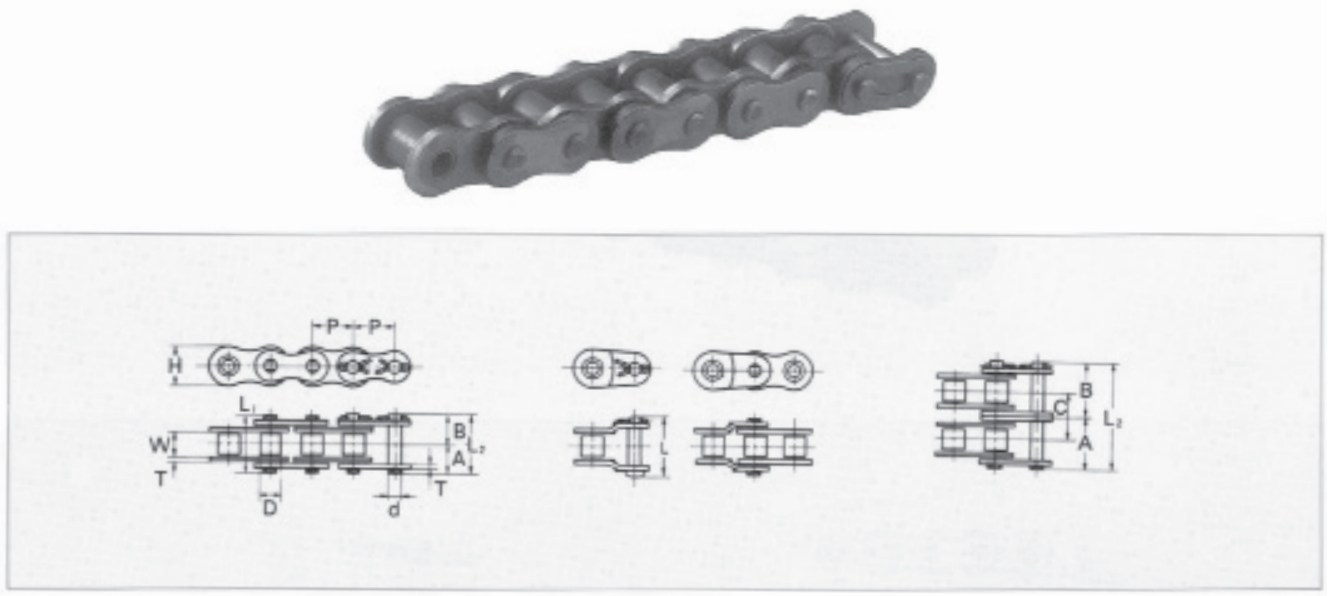


KCM Chain No.	Pitch P	Width between Inner Plates W	Roller Dia. D	PIN						Link Plate		Ave. Tensile Strength kN (kgf)	Max. Allow-able Load kN (kgf)	Approx. Weight (kg/m)	Links of Dia. 1 unit
				Diameter d	A	B	(A+A) L1	(A+B) L1	Offset L	Thick-ness T	Heights H				
C2040 C2042	25.40	7.95	7.92 15.88	3.97	8.02	9.53	16.05	17.55	18.95	1.5	11.7	17.2(1,750)	2.65(270)	0.48 0.82	120
C2050 C2052	31.75	9.53	10.16 19.05	5.09	10.15	11.60	20.30	21.75	23.00	2	14.6	27.9(2,850)	4.31(440)	0.79 1.25	96
C2060H C2062H	38.10	12.70	11.91 22.23	5.96	14.25	15.75	28.50	30.00	32.65	3.2	17.5	39.5(4,000)	6.28(640)	1.43 2.11	80
C2080H C2082H	50.8	15.88	15.88 28.58	7.94	17.70	20.80	35.40	38.50	40.15	4.0	23.0	68.6(7,000)	10.69(1,090)	2.37 3.41	60
C2100H C2102H	63.5	19.05	19.05 39.67	9.54	21.72	24.68	43.45	46.4	48.30	4.8	28.9	106.9(10,900)	17.06(1,740)	3.53 5.68	48
C2120H	76.20	25.40	22.23	11.11	26.85	30.25	53.70	57.10	59.30	5.6	35.0	149.1(15,200)	23.93(2,440)	4.75 7.40	40

Dimensions (Millimeters)

ANSI Heavy Series Chain

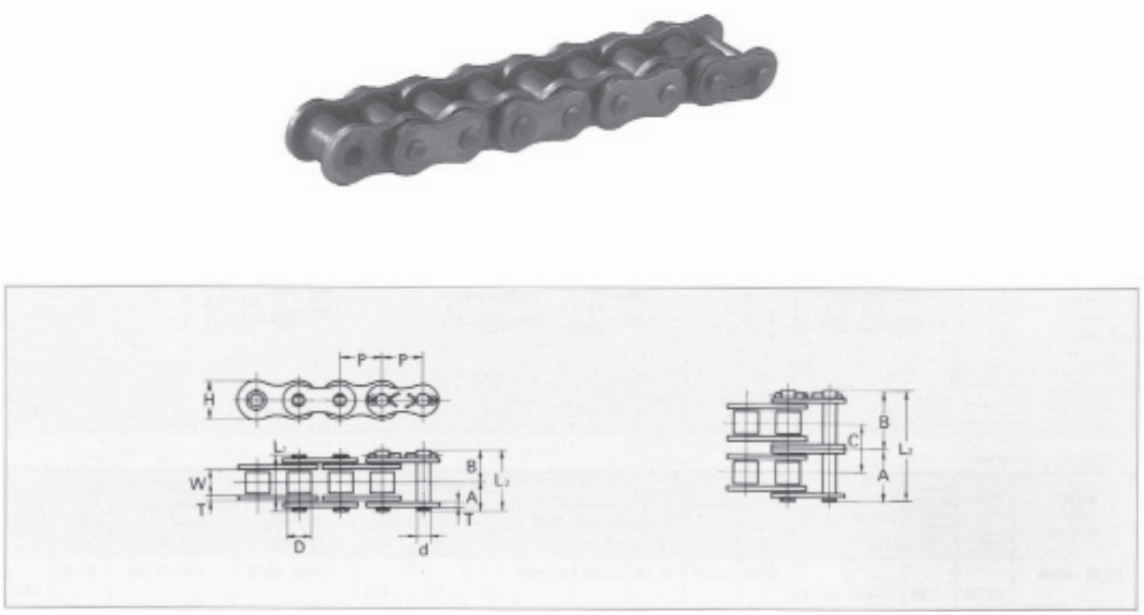
KCM H-Series roller chains are designed for heavy-duty operation thickening the link plate of standard roller chains and using high-strength pins.



KCM Chain No.	Pitch P	Width between Inner Plates W	Roller Dia. D	PIN					Link Plate		Ave. Tensile Strength kN (kgf)	Transversion Pitch C	Max. Allowable Load kN (kgf)	Approx. Weight (kg/m)	Links of Dia. 1 unit
				Diameter d	A	B	(A+A) L1	(A+B) L1	Thickness T	Height H					
50H	15.875	9.53	10.16	5.09	10.98	12.42	21.95	23.40	2.4	14.6	19.6	36.2(3,700)	6.67(680)	1.43	192
60H 60H-2	19.05	12.70	11.91	5.96	14.35 27.30	15.75 28.80	28.7 54.60	30.00 56.10	3.2	17.5	26.1	55.9(5,100) 111.8(10,200)	9.81(1000) 16.27(1,700)	1.77 3.56	160
80H 80H-2	25.4	15.88	15.88	7.94	17.8 34.00	20.7 37.10	35.6 68.00	38.5 71.10	4	23	32.6	93.2(9,500) 186.3(19,000)	15.57(1.700) 28.34(2,890)	2.96 5.84	120
100H	31.75	19.05	19.05	9.54	21.8	24.6	43.6	46.4	4.8	28.9	39.1	43.2(14,600)	25.99(2,650)	4.17	96
120H	38.10	25.40	22.23	11.11	26.95	30.15	53.9	57.1	5.6	35	48.9	191.2(19,500)	33.34(3,3400)	6.28	80
140H	44.45	25.40	25.40	12.71	28.95	32.95	57.90	61.90	6.4	40.7	52.2	250.1(25,000)	44.13(4,500)	7.83	68 34

Dimensions (Millimeters)

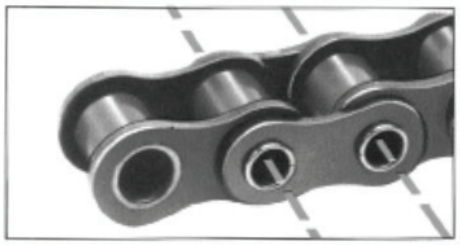
HE-Series high-strength roller chains are designed for extra strength and resistance to fatigue higher than those of H-Series. The HE-Series is best suited for heavy-duty power transmission with significant loading variations.



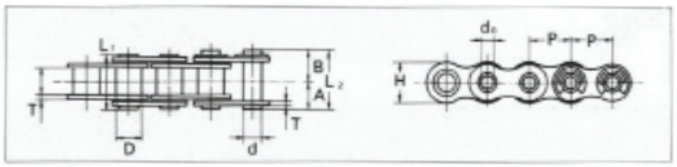
KCM Chain No.	Pitch P	Width between Inner Plates W	Roller Dia. D	PIN					Link Plate		Ave. Tensile Strength kN (kgf)	Transversion Pitch C	Max. Allowable Load kN (kgf)	Approx. Weight (kg/m)	Links of Dia. 1 unit
				Diameter d	A	B	(A+A) L1	(A+B) L1	Thickness T	Height H					
50HE	15.875	9.53	10.16	5.09	10.98	12.42	21.95	23.40	2.4	14.6	19.6	36.2(3,700)	6.67(680)	1.43	192
60HE	19.05	12.70	11.91	5.96	14.35	15.75	28.7	30.00	3.2	17.5	26.1	55.9(5,100)	9.81(1000)	1.77	160
80HE	25.4	15.88	15.88	7.94	17.8	20.7	35.6	38.5	4	23	32.6	93.2(9,500)	15.57(1.700)	2.96	120
100HE	31.75	19.05	19.05	9.54	21.8	24.6	43.6	46.4	4.8	28.9	39.1	43.2(14,600)	25.99(2,650)	4.17	96
120HE	38.10	25.40	22.23	11.11	26.95	30.15	53.9	57.1	5.6	35	48.9	191.2(19,500)	33.34(3,3400)	6.28	80

Dimensions (Millimeters)

Hollow Pin Chain



This chain uses hollow pins to which various attachments can easily be fixed. Nickel plated version and stainless steel version are available. Standard and double pitch chains are available.

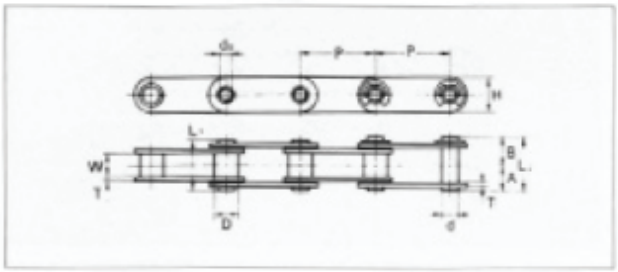


Roller Chain Type

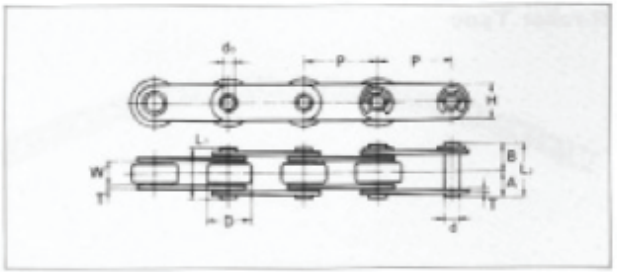
KCM Chain No.	Pitch P	Width between Inner Plates W	Bush Dia. D	PIN						Link Plate		Average Tensila strength kgf KN (kgf)	Maximum Allowable Load KN (kgf)	Approx weight (kg/m)	Links of 1unit
				Outside diameter d	Outside diameter do (min)	A	B	(A+B) L1	(A+B) L2	Thick-ness T	Heights H				
40 HP	12.7	7.95	7.92	5.69	4.00	8.12	9.43	16.25	17.55	1.5	11.7	13.2(1,350)	1.77(180)	0.51	240
50 HP	15.875	9.53	10.16	7.24	5.12	10.3	11.7	20.6	22	2	14.6	20.6(2,100)	3.14(320)	0.83	192
60 HP	19.05	12.7	11.91	8.39	5.99	12.9	14.3	25.8	27.2	2.4	17.5	31.4(3,200)	4.22(430)	1.24	160

Dimensions (Millimeters)

Double Pitch Chain Type
S-roller Type (bushed)



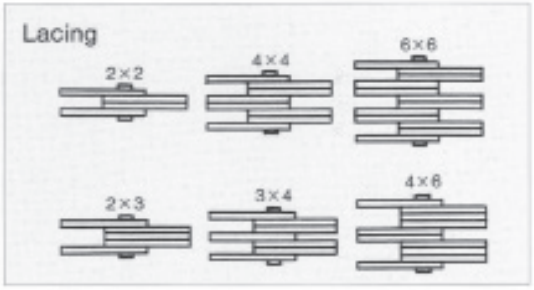
R-roller Type



KCM Chain No.	Pitch P	Width between Inner Plates W	Bush Dia. D	PIN						Link Plate		Average Tensila strength kgf KN (kgf)	Maximum Allowable Load KN (kgf)	Approx weight (kg/m)	Links of 1unit
				Outside diameter d	Outside diameter do (min)	A	B	(A+B) L1	(A+B) L2	Thickness T	Heights H				
C2040 HP C2042 HP	25.4	7.95	7.92 15.88	5.69	4.00	8.12	9.43	16.25	17.55	1.5	11.7	13.2(1,350)	1.77(180)	0.46 0.80	120
C2050 HP C2052 HP	31.75	9.53	10.16 19.05	7.24	5.12	10.3	11.7	20.6	22	2	14.6	20.6(2,100)	3.14(320)	0.76 1.25	96
C2060 HP C2062 HP	38.1	12.7	11.91 22.23	8.39	5.99	12.9	14.3	25.8	27.2	2.4	17.5	31.4(3,200)	4.22(430)	1.12 1.79	80

Dimensions (Millimeters)

Leaf chain, also called a balance chain, features a simple steel structure consisting of plates and pins.
This chain is used for load lifting and balancing. Application Example: Fork Lifts



Type

Leaf chain falls into two types: AL type for light loading and BL type for heavy loading.
AL type is used for applications without impact and with daily repetition of 100 times or less.

Selection

1.Determine the following items according to operating conditions.
- Chain speed
- Daily repetition of power applications
- Working load (attachment weight, inertia force and impact force)

2.Determine chain type.
- **U BL type is recommended**
- **Use roller chain if speed exceeds 30 m/min or number of daily repetition exceeds 1000.**

3.Determine chain size by the following equation.

Working load x Use coefficient (Table 1) x Safety factor (Table 2) ≦ Min. tensile strength

Table 1 Use Coefficient

Type of impact	Use	Use coefficient
Smooth transmission	Smooth starts and stops, and moderate load change (i.e., lowering of balance-weight)	1.0
Impact to some extent	Frequent starts, stops, load changes and operations (i.e., fork lift)	1.3
Impact	Rapid starts, stops, load changes and operations (i.e., mining and construction machinery)	1.5

Table 2 Safety Factor

Plate combination / No. repetition		Safety factory	
		2 x 2, 3 x 4 / 2 x 3, 4 x 4	4 x 6 / 6 x 6
BL type	1000 times/day	8 or more	9 or more
AL type	10 times/day	8 or more	9 or more
	100 times/day	11 or more	12 or more

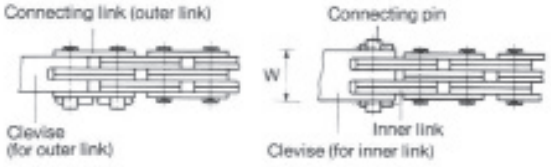
Notes to Selection

- Do not use a chain with low safety factor. Otherwise, pin will turn, resulting in chain failure.
- Perform periodic lubrication. Even when safety factor is satisfactory, insufficient lubrication will result in pin rotation.
- Safety factor of chain is determined by the related regulations, or by this bulletin, whichever is greater.

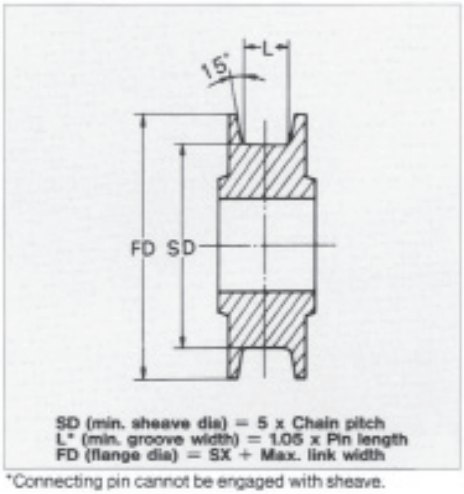
Attaching of Chains and Clevises

1.When clevise is outer link or connecting link:
Outer link connector and connecting link (standard) are used.

2.When clevise is inner link:
Inner link connector and connecting pin (with dimension "W") are used.



Sheave



SD (min. sheave dia) = 5 x Chain pitch
L* (min. groove width) = 1.05 x Pin length
FD (flange dia) = SX + Max. link width

*Connecting pin cannot be engaged with sheave.

Leaf Chain Operating Notes

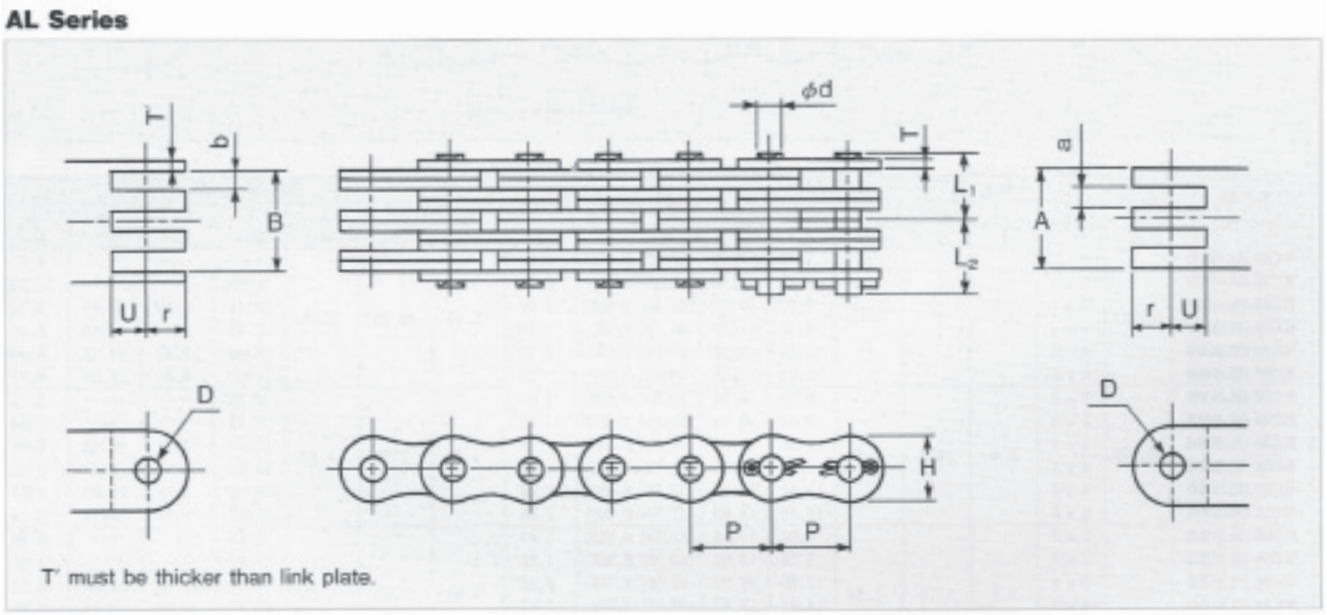
Lubricate leaf chain periodically to avoid rotation of pins and reduce wear for extended service life.

- Recommended oil: SAE30-SAE40
- Lubrication intervals: Determined to keep lubricant left between pin inner link plate.
- Lubrication method: Lubrication into keep space between link plates when chain is loosened.

Avoid use of chain in corrosive environment.

Measure chain length periodically to check for wear elongation.

- If elongation reaches its limit (3%), immediately replace chain.

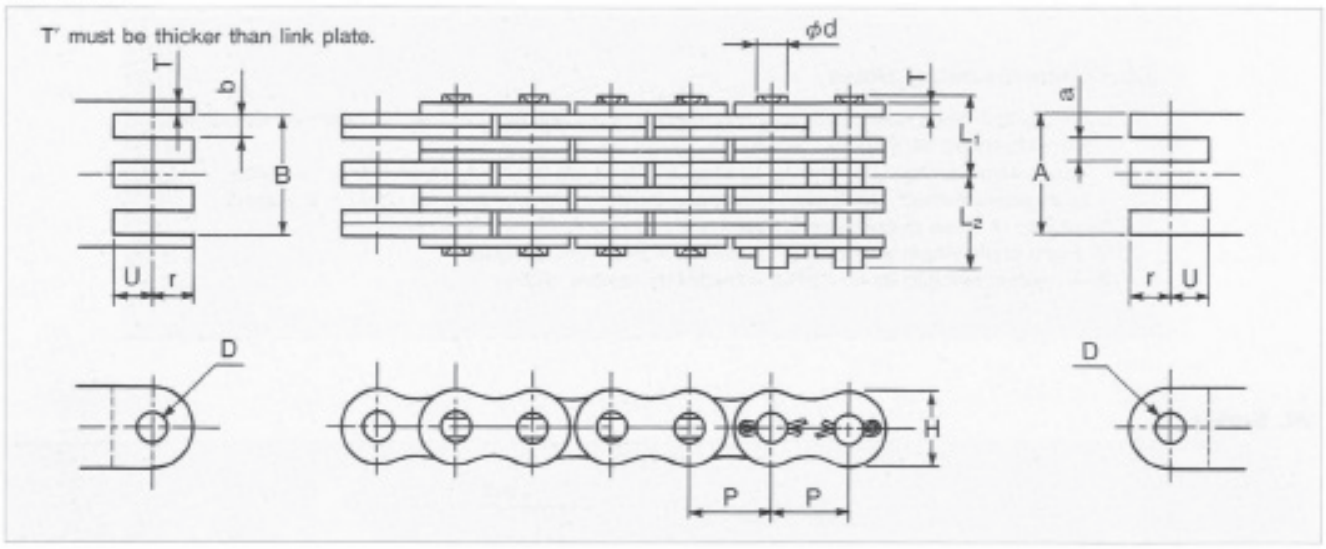


KCM Chain No.	Pitch	Plate			Pin			Min.Tensile Strength Kn(kgf)*	1-m chain weight (kg)	End Connector						
	P	Lacing	Thick-ness T	Height H	Outside diameter d	Caulked L1	Pinned L2			D Min.	r Max.	U Min.	A Max.	a Min.	B Min.	b Min.
AL544 AL566	15.875	4×4 6×6	2	12.6	5.09	9.3 13.4	11.25 15.35	54.9(5,600) 82.4(8,400)	1.18 1.76	5.11	7.92	7.14	12.50 20.97	– 4.44	12.91 21.38	4.44
AL644 AL666	19.05	4×4 6×6	2.4	15	5.96	11.15 16.13	13.85 18.83	76.5(7,800) 114.7(11,700)	1.70 2.53	5.98	9.53	8.56	14.69 24.65	5.23	15.19 25.15	5.23
AL844 AL866	25.40	4×4 6×6	3.2	19.7	7.94	14.43 20.93	17.53 24.35	129.4(13,200) 194.2(19,800)	2.92 4.35	7.96	12.7	11.43	19.80 33.20	7	20.40 33.80	7.00
AL1266	38.10	4×4 6×6	4.8	30	11.11	31.9	35.3	423.6(43,200)	9.99	11.14	19.05	17.14	49.10	10.3	49.90	10.3

NB - Also stocking KCM AL688

Dimensions (Millimeters)

BL Series



KCM Chain No.	Pitch	Plate			Pin			Min.Tensile Strength Kn(kgf)"	1-m chain weight (kg)	End Connector						
	P	Lacing	Thick-ness T	Height H	Outside diameter d	Caulked L1	Pinned L2			D Min.	r Max.	U Min.	A Max.	a Min.	B Min.	b Min.
BL434 BL466	12.7	3×4 6x6	2.00	11.7	5.09	8.27 13.40	10.23 15.35	35.30(3,600) 70.60(7,200)	1.02 1.72	5.12	6.35	6.35	10.41 21.00	2.29 4.41	10.67 21.35	4.32 4.41
BL523 BL534 BL546 BL566	15.875	2×3 3×4 4×6 6x6	2.4	14.6	5.96	7.42 9.92 13.62 16.10	10.13 12.60 16.33 18.80	39.20(4,000) 58.80(6,000) 78.50(8,000) 117.70(12,000)"	1.13 1.56 2.22 2.66	5.98	7.92	7.92	7.13 12.18 19.52 24.57	– 2.62 5.26 5.16	– 12.48 20.03 24.98	7.76 5.05 7.64 5.16
BL623 BL634 BL644 BL646	19.05	2×3 3×4 4×4 4×6	3.2	17.5	7.94	9.55 12.80 14.42 17.67	12.65 15.90 17.53 20.78	63.70(6,500) 95.60(9,750) 127.50(13,000) 127.50(13,000)	1.82 2.52 2.87 3.57	7.96	9.53	9.53	9.67 16.50 19.85 26.43	– 3.60 6.95 7.09	– 16.88 20.35 27.07	10.31 6.83 6.95 10.31
BL823 BL834 BL844 BL846 BL866	25.4	2×3 3×4 4×4 4×6 6x6	4	23	9.54	12.45 16.55 18.60 22.70 26.80	15.40 19.50 21.55 25.65 29.75	103.00(10,500) 103.00(10,500) 154.90(15,800) 205.90(21,000) 308.50(31,500)	2.97 4.11 4.68 5.82 6.56	9.56	12.7	12.7	11.97 20.40 24.54 32.68 41.10	– 4.44 8.58 8.74 8.58	– 20.85 25.14 33.44 41.70	12.73 8.43 8.59 12.73 8.58
BL1034 BL1046 BL1066	31.75	3×4 4×6 6x6	4.8	28.9	11.11	19.65 27.00 31.90	23.05 30.40 35.30	215.70(22,000) 282.40(28,800) 423.60(43,200)	6.17 8.78 10.52	11.14	15.88	15.88	24.40 39.07 49.15	5.30 10.43 10.25"	24.93 25.11 39.96	10.08 15.20 10.25
BL1234 BL1246	38.1	3×4 4×6	5.6	35	12.71	23.00 31.62	27.00 35.63	299.10(30,500) 372.70(38,000)	8.71 12.37	12.74	19.05	19.05	28.35 45.96	6.22 12.26	29.30 46.98	11.87 17.87

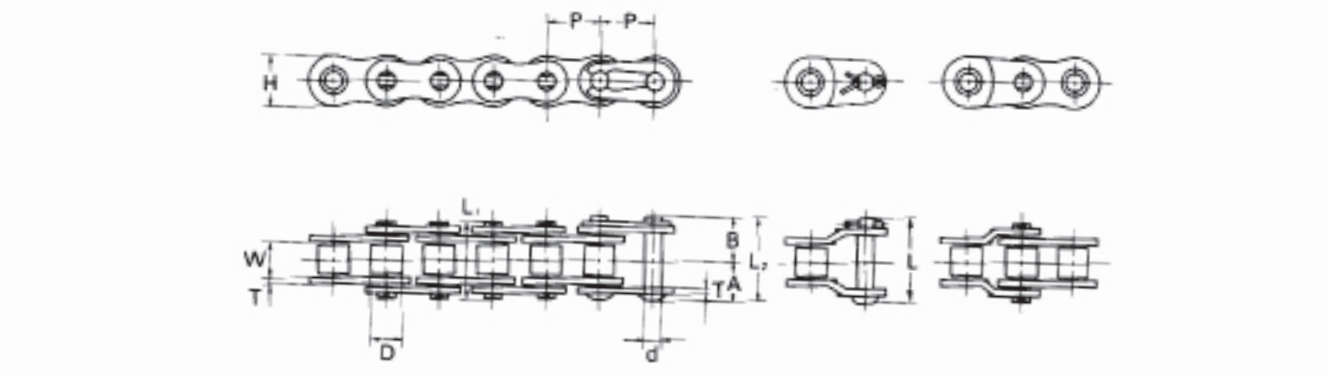
NB - Also Stocking KCM BL532

Dimensions (Millimeters)

Motorcycle Chain

The KCM motorcycle chains are developed to improve fatigue strength and wear resistance, and manufactures under stringent quality control.

Semi-standard roller chain has a narrower width (L1 and L2), and smaller size than those of standard type.
The semi-standard is suited for use in limited space.

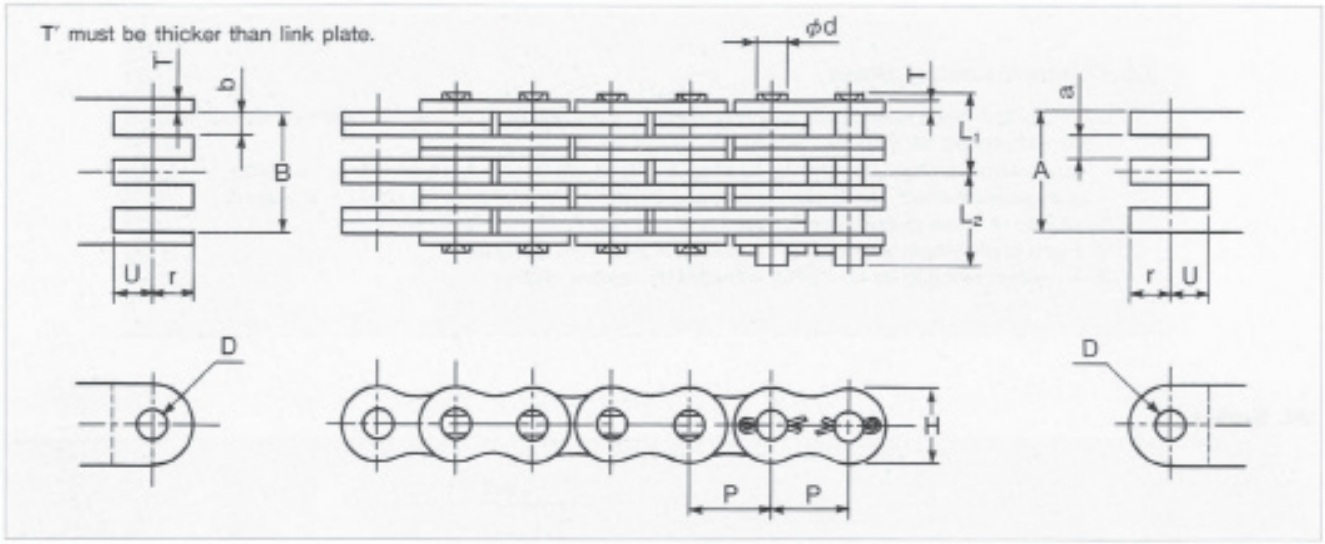


KCM Chain No.	Pitch P	Width between Inner Plates W	Roller Dia. D	PIN				Link Plate		Average Tensila strength kgf KN (kgf)	Maximum Allowable Load KN (kgf)	Approx weight (kg/m)
				diameter d	B	(A+A) L1	(A+B) L1	Thickness T	Heights H			
410	12.70	3.40	7.75	3.64	6.05	9.30	10.70	1.0	9.5	1 000 (9.81)	-	0.28
415	12.70	4.76	7.75	3.64	6.90	11.00	12.40	1.1	9.9	9.81(1,000)	2.16(220)	0.34
415 S	12.70	4.80	7.77	3.97	7.90	12.80	14.30	1.5	11.7	1,850(18.1)	380(3,73)	0.51
420	12.70	6.35	7.77	3.97	8.70	14.40	15.90	1.5	11.7	1,850(18.1)	380(3,73)	0.55
428	12.70	7.95	8.5	4.51	9.55	16.10	17.60	1.5	11.7	1,900(18.6)	400(3,92)	0.64
520	15.875	6.35	10.16	5.09	9.95	16.95	18.40	2.00	14.6	3,050(29.9)	650(6.37)	0.89
525	15.875	7.95	10.16	5.09	10.75	18.55	20.00	2.00	14.6	3,050(29.9)	650(6.37)	0.95
530	15.875	9.53	10.16	5.09	11.60	20.3	21.75	2.00	14.6	3,050(29.9)	650(6.37)	1.01
428 H	12.70	7.95	8.5	4.51	10.55	18.1	19.60	2.00	11.7	2,300(22.6)	450(4,41)	0.77
520 H	15.875	6.35	10.16	5.09	10.75	18.55	20.00	2.4	14.6	3,700(36.3)	740(7.26)	1.03
525 H	15.875	7.95	10.16	5.09	11.55	20.15	21.60	2.4	14.6	3,700(36.3)	740(7.26)	1.07
530 H	15.875	9.53	10.16	5.09	12.45	21.95	23.40	2.4	14.6	3,700(36.3)	740(7.26)	1.15
630	19.05	9.53	11.91	5.96	12.65	22.30	23.80	2.4	17.5	4,200 (41.19)	900 (8.83)	1.37

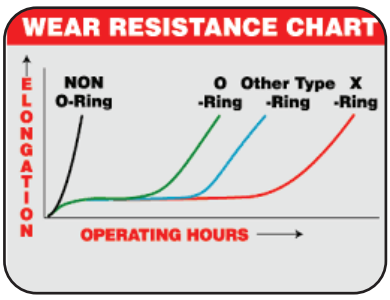
Dimensions (Millimeters)

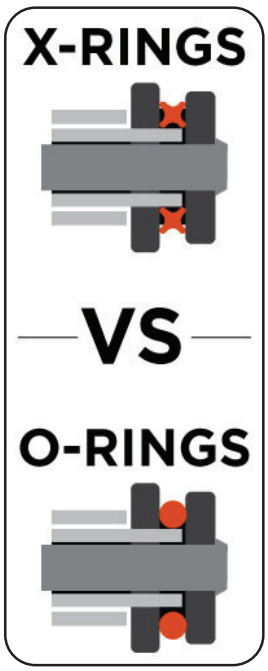
X describes the shape of the ring. Instead of having an O shape it now has an X shape. This means that when pressed between the chain plates, it no longer has a flattened O ring shape but instead has two smaller faces touching either plate in an X shape. This gives you the same great sealing and durability but now with very low friction.

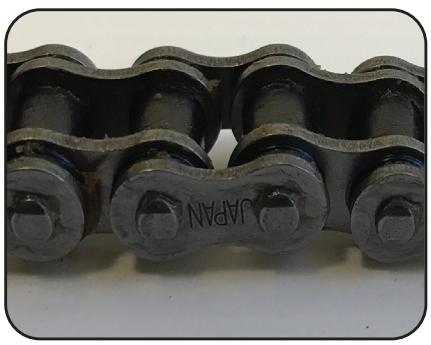
BL Series



KCM Chain No.	Pitch P	Width between Inner Plates W	Roller Dia. D	PIN			Link Plate		Transversion pitch C	Approx. Weight (kg/m)	Links of Dia. 1 unit
				Diameter d	L2	Offset L	Thickness T	Heights H			
08B-1	12.7	7.75	8.51	4.45	18.05	19.2	1.6	11.7	13.92	0.65	240
10B-1	15.875	9.65	10.16	5.08	20.15	21.5	1.5	14.6	16.59	0.91	192
12B-1	19.05 1	11.68	12.07	5.72	23.60	26.30	1.8	16	19.46	1.24	160
16B-1	25.4	17.02	15.88	8.28	38.10	41.45	4.0 (3.2)	19.7	31.88	2.62	120



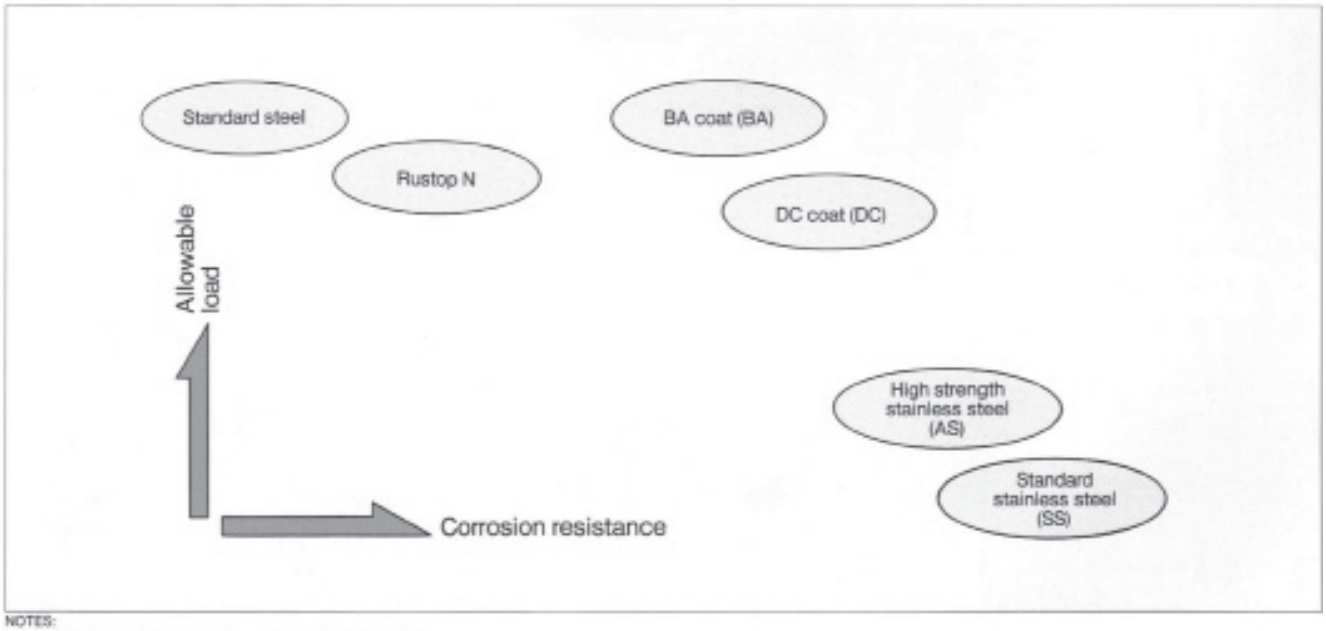




Nickel Plated Chain

KCM Chain No.	Max Allowable Load of Surface-Treated Chain			Max Allowable Load of SS Chains		Max. Allowable Load of std SS Chain kgf (N)
	Itstop 'N' kgf(N)	DC coat 'DC' kgf(N)	B coat 'BA' kgf(N)	Standard 'SS' kgf(N)	AS' kgf(N)	
40N	310(3.04)	280(2.75)	370(3.63)	45(0.44)	70(0.69)	370(3.63)
50N	550(5.39)	450(4.41)	650(6.37)	70(0.65)	105(1.03)	650(6.37)
60N	740(7.26)	640(6.28)	900(8.83)	105(1.03)	160(1.57)	900(8.83)
80N	1,300(12.70)	1,090(10.69)	1,500(14.71)	180(1.77)	270(2.65)	1,500(14.71)
2050N	450(4.41)	450(4.41)	450(4.41)	70(0.69)	105(1.03)	450(4.41)
2050N	640(6.28)	640(6.28)	640(6.28)	105(1.03)	160(1.57)	640(6.28)
2060HN	640(6.28)	640(6.28)	640(6.28)	105(1.03)	160(1.57)	640(6.28)
2080HN	1,090(10.69)	1,090(10.69)	1,090(10.69)	180(1.77)	270(2.65)	1,090(10.69)

Dimensions (Millimeters)



NOTES:
1.This chart is graphical presentation, not showing actual ratios.
2.Corrosion resistance varies depending on operating conditions.

Surface-treated Chains (N), (DC) and (BA)

These surface –treated chains have attractive appearance and increased corrosion resistance.
Select the optimum type from the surface-treated chains to suit your application .

Rustop: N

All parts are plated with special nickel.

- Attractive nickel-plated appearance and corrosion resistance
- Maximum allowable load: About 15 % lower than that of standard steel chain (see next page)
- Operating range: −10˚C to +60˚C
- Usable instead of most steel chains and chains with attachments
- When ordering, please put a suffix "N" to chain No.

DC Coat (DC)

Special film is baked on surface. Matte silver white finish.

- Corrosion resistance second to stainless steel chain
- Usable even when subject to seawater
- Maximum allowable load: About 25% lower than that of standard steel chain (see next page)
- Even if protective film is peeled off, corrosion resistance is almost unaffected.
- Ordinary operating temperature range of −10˚C to +150˚C corrosion resistance of protective film is not changed until about 250˚C.
- Usable instead of most steel chains and chains with attachments
- When ordering, please put a suffix "DC" to chain No.

BA Coat (BA)

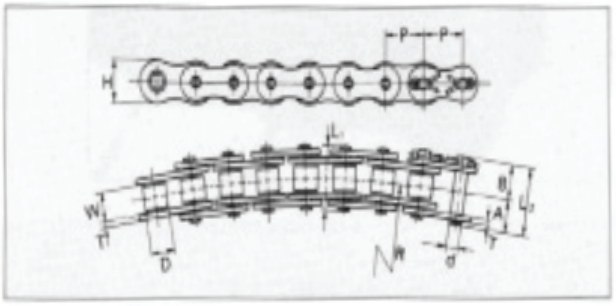
Special mechanical surface treatment. Matte dark gray finish.

- Corrosion resistance superior to rustop chain (N).
- Usable even when subject to seawater
- Maximum allowable load is the same as that of standard steel chain (see next page)
- Protective film has higher peeling resistance than that of DC coat chain
- Ordinary operating temperature range of −10˚C to +150˚C
- Usable instead of most steel chains and chains with attachments
- When ordering, please add suffix "BA" to chain No.

Safety Precautions: Do not use surface-treated chain if chain directly contacts food or abrasion particles are mixed into food.

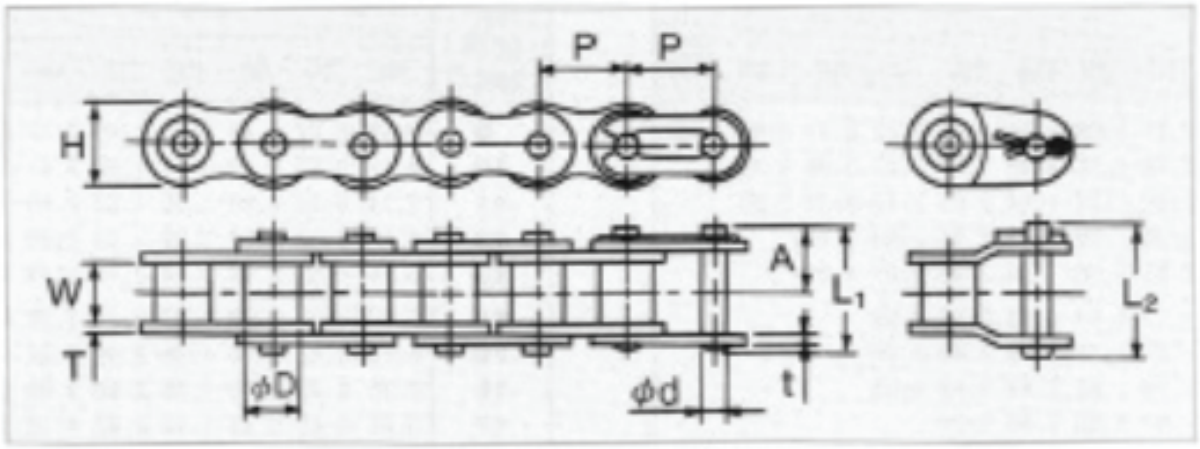
Side Bow Chain

The side bow chain may be curved for curved movement, using standard sprockets. This chain can also be used with attachments to form a curved conveyor.



KCM Chain No.	Pitch P	Width between Inner Plates W	Roller Dia. D	PIN					Link Plate		Average Tensila strength kgf KN (kgf)	Maximum Allowable Load KN (kgf)	Approx weight (kg/m)	Links of 1 Unit
				diameter d	A	B	(A+A) L1	(A+B) L1	Thick-ness T	Heights H				
40 SB	12.70	7.95	7.95	3.97	8.02	9.53	16.06	17.55	1.5	12.0	1,800(18.1)	370(3.63)	0.72	240
50 SB	15.875	9.53	10.16	5.09	10.15	11.60	20.30	21.75	2.0	14.5	3,050(29.9)	650(6.37)	1.20	192
60 SB	19.05	12.70	11.91	5.96	12.65	14.15	25.30	26.80	2.4	17.5	4,200(40.7)	900(8.83)	1.78	160

Dimensions (Millimeters)



KCM Chain No.	Pitch P	Width between Inner Plates W	Roller Dia. D	PIN				Link Plate			Average Tensila strength kgf KN (kgf)	Maximum Allowable Load KN (kgf)	Approx weight (kg/m)	Links of 1 Unit
				diameter d	A	(A+A) L1	(A+B) L2	Thickness T	Thickness t	Width H				
40 SL	12.7	7.95	7.95	3.97	9.53	17.55	18.95	1.5	1.5	11.7	1,350(13.2)	230(2.25)	0.58	240
50 SL	15.875	9.53	10.16	5.09	11.60	21.75	23.00	2.0	2.0	14.6	2,100(20.6)	360(3.52)	0.97	192
60 SL	19.05	12.70	11.91	5.96	14.15	26.8	29.45	2.4	2.4	17.5	3,200(31.4)	540(5.28)	1.41	160

Dimensions (Millimeters)

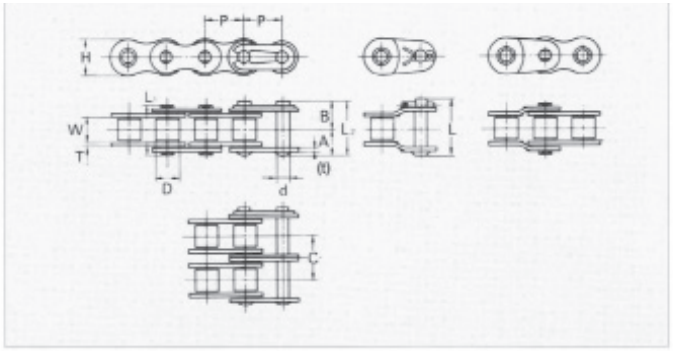
Operating Notes to NL and SL Chains

- In dusty environment, there is a possibility that premature wear can occur. If the chain is exposed to water, oil impregnated in bushing, will come out, thus promoting wear.
- If oil comes out completely from bushing, rapid wear is caused, shortening service life.

All KCM stainless steel (SS) chains are made of SUS304 (18 CR/8 Nil) austenite steel for use in operating environments requiring high thermal resistance (-20°C to 400°C), corrosion resistance and cleanliness. They can also be fitted with attachments for conveying purposes.

The chains are made of martensite and precipitation hardened stainless steel are available too.

Note: SUS304 stainless steel is almost non-magnetic, which is almost nil magnetic property equivalent to that of the air. The KCM stainless steel roller chains have slight magnetic property as a result of cold manufacturing.



JIS B1801 Stainless Roller Chains

KCM Chain No.	Pitch P	Width between Inner Plates W	Roller Dia. D	PIN						Link Plate		Transversion pitch C	Maximum Allowable Load KN (kgf)	Approx weight (kg/m)	Links of 1 Unit
				diameter d	A	B	(A+A) L1	(A+B) L2	Offset L	Thick-ness T	Width H				
25 SS	6.35	3.18	3.30	2.31	3.82	4.83	7.65	8.65	–	0.75	5.8	6.4	0.12(12)	0.14	480
35 SS	9.525	4.78	5.08	3.59	5.77	7.13	11.55	12.9	13.85	1.25	8.8	10.1	0.26(27)	0.33	320
40 SS 40 SS-2	12.70	7.95	7.92	3.97	8.07 15.27	9.58 16.78	16.15 30.55	17.65 32.05	19.05 33.45	1.5	11.7	14.4	0.44(45) 0.76(77)	0.63 1.19	240
50 SS	15.875	9.53	10.16	5.09	10.20	11.6	20.4	21.8	23.05	2.0	14.6	18.1	0.69(70)	1.04	192
60 SS 60 SS-2	19.05	12.70	11.91	5.96	12.70 24.10	14.2 25.60	25.4 48.20	26.9 49.70	29.55 52.35	2.4	17.5	22.8	1.03(105) 1.76(179)	1.5 2.95	160
80 SS	25.40	15.88	15.88	7.94	16.15	19.25	32.3	35.4	37.1	3.2	23	29.3	1.77(180)	2.62	120

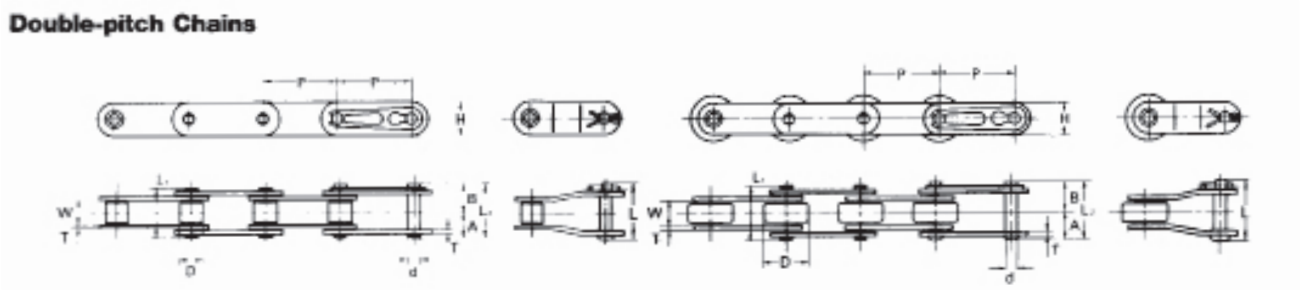
Dimensions (Millimeters)

ISO-B Stainless Roller Chains

KCM Chain No.	Pitch P	Width between Inner Plates W	Roller Dia. D	PIN						Link Plate		Transversion pitch C	Maximum Allowable Load KN (kgf)	Approx weight (kg/m)	Links of 1 Unit
				diameter d	A	B	(A+A) L1	(A+B) L2	Offset L	Thickness T	Width H				
05B SS	8	3	5	2.31	3.82	4.83	7.65	8.65	-	0.75	7.1	5.64	12 (0.12)	0.18	626
06B SS 06B SS-2	9.525	5.72	6.35	3.28	6.1 11.22	7.6 12.73	12.20 22.45	13.70 23.95	15.15 25.40	1.3(1.0)	8.1	10.24	27 (0.26) 46 (0.45)	0.39 0.77	320
08B SS 08B SS-2	12.70	7.75	8.51	4.45	8.17 15.12	9.58 16.53	16.35 30.25	17.75 31.65	19.30 33.20	1.5	11.7	13.92	45 (0.44) 77 (0.76)	0.65 1.25	240
10B SS 10B SS-2	15.875	9.65	10.16	5.08	9.58 17.87	11.02 19.33	19.15 35.75	20.60 37.20	21.95 38.55	1.65	14.6	16.59	70 (0.70) 119 (1.17)	0.94 1.84	192
12B SS	19.05	11.68	12.07	5.72	11.05	12.55	22.10	23.60	26.30	1.8	16.0	19.46	105 (1.00)	1.25	160
16B SS	25.40	17.02	15.58	8.28	17.6	20.7	35.20	38.30	41.65	4.0(3.2)	19.7	31.88	180 (1.77)	2.63	120

Dimensions (Millimeters)

Double-pitch Chains



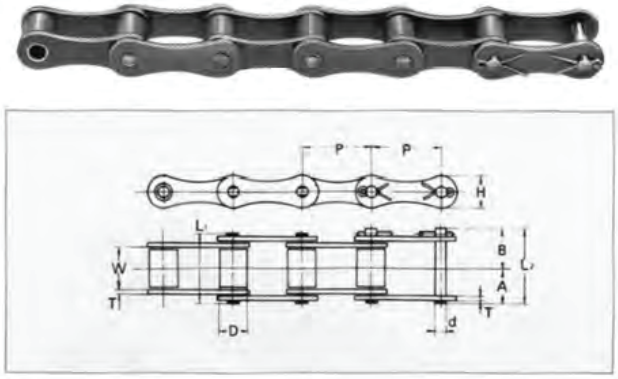
KCM Chain No.	Pitch P	Width between Inner Plates W	Roller Dia. D	PIN						Link Plate		Max. Allowable Load kN (kgf)	Approx. Weight (kg/m)	Links of Dia. 1 unit
				Diameter d	A	B	(A+A) L1	(A+B) L1	Offset L	Thick-ness T	Height H			
C2040 SS C2042 SS	25.40	7.95	7.92 15.88	3.97	8.07	10.28	16.15	18.35	19.05	1.5	11.7	45(0.44)	0.49 0.83	120
C2050 SS C2052 SS	31.75	9.53	10.16 19.05	5.09	10.17	12.13	20.35	22.30	23.05	2.0	14.6	70(0.69)	0.83 1.28	96
C2060H SS C2062H SS	38.10	12.70	11.91 22.23	5.96	14.35	17.05	28.76	31.40	32.85	3.2	17.5	105(1.03)	1.46 2.14	80
C2080H SS C2082H SS	50.8	15.88	15.88 28.58	7.94	17.80	20.90	35.60	38.70	40.40	4.0	23.0	180(1.77)	2.44 3.50	60

Dimensions (Millimeters)

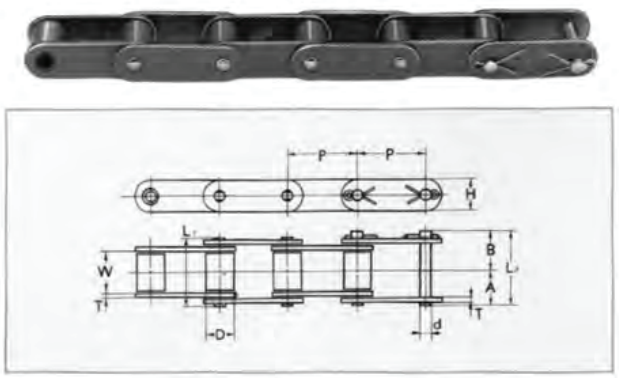
A & CA Type Roller Chain

The KCM A and CA type roller chain are mainly employed for power transmission over relative long shaft to shaft distance and used with attachments, especially in large-sized farm machines.

A Type



CA Type



KCM Chain No.	Pitch P	Width between Inner Plates W	Roller Dia. D	PIN						Link Plate		Max. Allowable Load kN (kgf)	Approx. Weight (kg/m)	Links of Dia. 1 unit
				Diameter d	A	B	(A+A) L1	(A+B) L1	Offset L	Thick-ness T	Height H			
KCM 40 F	12.70	7.95	7.95	3.97	8.02	9.53	16.06	17.55	1.5	12.0	1,800(18.1)	370(3.63)	0.72	240
KCM 50 F	15.875	9.53	10.16	5.09	10.15	11.60	20.30	21.75	2.0	14.5	3,050(29.9)	650(6.37)	1.20	192
KCM 60 F	19.05	12.70	11.91	5.96	12.65	14.15	25.30	26.80	2.4	17.5	4,200(40.7)	900(8.83)	1.78	160
KCM 80 F	25.4	15.88	15.88	7.94	16.07	19.18	32.15	35.25	3.2	23.0	7,400(72.6)	1,500(4.71)	2.97	120
KCM 100 F	31.75	19.05	19.05	9.54	20.10	23.05	40.20	43.15	4.0	28.9	11,500(113.3)	2,300(22.56)	4.57	96
KCM 120 F	38.10	25.40	22.23	11.11	25.20	28.60	50.40	53.80	4.8	35.0	16,000(156.4)	3,100(30.40)	6.64	80

KCM Chain No.	Pitch P	Width between Inner Plates W	Roller Dia. D	PIN						Link Plate		Max. Allowable Load kN (kgf)	Approx. Weight (kg/m)	Links of Dia. 1 unit
				Diameter d	A	B	(A+A) L1	(A+B) L1	Offset L	Thick-ness T	Height H			
"KCM CA550 KCM CA557 KCM CA620"	"41.40 41.40 42.01"	"20.40 20.40 25.20"	"16.66 17.78 17.68"	"7.13 8.00 7.13"	"17.0 18.7 20.5"	"20.55 21.55 24.05"	"34.0 37.4 41.0"	"37.55 40.25 44.55"	"2.6 3.1 3.1"	"19.0 22.0 19.0"	"4,350 (42.7) 6,200(60.8) 5,200(51.0)"	"620(6.08) 880(8.63) 740(7.26)"	"1.86 2.41 2.28"	240

⚠ CAUTIONS (For Safe Operation)

- Always wear (proper) clothing and protective equipment (safety goggles and (proper) shoes) appropriate to the job.
- Pay attention to safety of work crew and surrounding workers.
- Follow the related labor safety regulations.
- Before starting the work, make sure to turn power off, and avoid accidental power-on. Also, be careful that clothing or part of body is not caught by a chain, sprocket, or peripheral equipment during work.
- Clean work area, and work in safe environment.
- Do not stand or walk under lifting equipment.
- Before transferring a chain, be sure to secure it firmly.

Adjusting Chain Length (Number of Links)

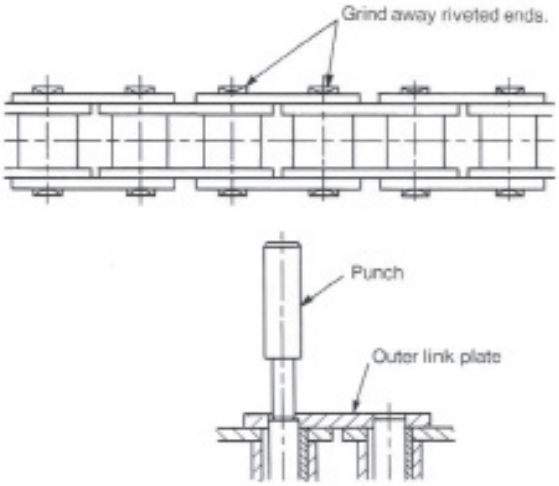
1.To shorten a chain to an appropriate length, use a proper jig, and employ a method appropriate to the structure of a chain.
It is recommended to use an exclusive jig.

2.To shorten a riveted chain, grind away riveted ends of a pair of rivets in the same link (on the same side).

3.Place a punch at ground end of a rivet, and strike a punch with a hammer. Be careful to hit two pins alternately.
If pin is withdrawn without grinding off riveted end, a chain will be damaged.
Grind away riveted ends.

4.After withdrawing pins, check to see if bushings are set correctly. If bushings are protruded, smooth power transmission cannot be achieved or strength of a chain is reduced.

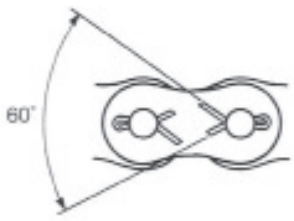
5.Do not reuse the removed parts.

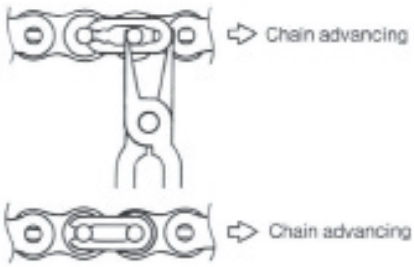


Connection (Installation to Equipment)

1.Confirm that sprocket shafts are parallel and level, and misalignment of sprockets is within tolerance.
2.Insert a connecting link between both ends (inner links) of a chain. In this case, this connection can be easily made when a chain is engaged with sprockets.
3.When inserting a connecting link, it is important that split pin hole or clip groove is exposed over a connecting link.
4.Install a split pin and clip.

- Open ends of split pin at 60° as shown.
- Install a clip in direction opposite to chain advancing.





- **Use genuine split pins or a clip.**
- **Note that connecting link will be disengaged in case of improper installation. Causing injury to people or equipment damage.**

Proper slack "S" is determined by the following equation.

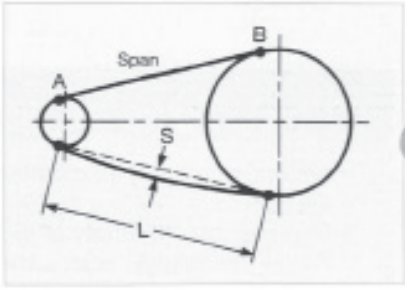
$S = 0.02L$

where, L is span

Adjust shaft-to-shaft distance to set proper slack "S".

In the following cases, determine slack "S" by the equation of $S \leq 0.01L$.

- Vertical arrangement
- Upper side of chain is slackened.
- Shaft-to-shaft distance exceeds 50 times pitch.
- Vibration or impact is present.
- Chain starts and stops frequently.
- Forward/reverse movements are repeated frequently.
- Speed change ratio exceeds 7:1.



Proper shaft-to-shaft distance is 30 to 50 times pitch.

⚠ CAUTIONS (Remanufacturing and additional manfacturing are prohibited.)

⊘ Remanufacturing and additional manufacturing of chain and related parts are prohibited. Otherwise, this will lead to chain failure. If remanufacturing or additional manufacturing is necessary, contact us.

- Electric plating will lead to brittle breakage.
- Welding of heat-treated chain will cause cracks or sacrifice strength.
- Annealing of heat-treated chain will reduce strength of part.
- Enlargement of connecting link hole and reduction in connecting pin diameter will reduce strength.

2.Operation

Check Items Before Operation

- Before operation, check if the following items are correctly set and safety cover is installed.
- If abnormal noise is caused during operation, immediately stop operation, and find cause of trouble and remedy.

Check items	Description
Engagement	Check if sprocket is engaged correctly and slack is proper.
Link connection	Check if links are connected correctly and parts are firmly seated.
Interference	Check if there is any part or equipment that interferes with chain or any part that will be shattered.
Lubricant	Check if lubrication is proper.
Safety cover	Check if proper safety cover is installed.
Peripheral equipment	Check if peripheral equipment is installed.

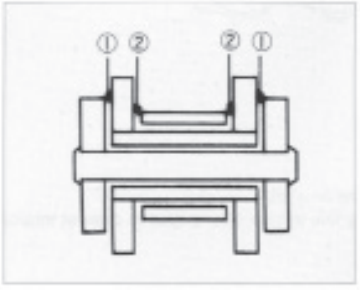
Lubrication

Roller chain lubricated with oil or grease will splash at the start of operation. To avoid splashing of lubricant on clothing and skin, stand an appropriate distance away upon start up.

- Insufficient lubrication of chain will promote wear of pins and bushings due to dry friction. This will result in elongation of chain and poor performance of chain. To ensure service life of chain, choose the right lubricant and lubrication method to meet operating requirements. For correct chain selection when no lubrication is allowed, contact us or our dealer.

Lubricating Points:

①Clearances between inner and outer links
(to avoid elongation of chain)
②Clearances between rollers and inner links
(to reduce wear of bushings and rollers, to avoid their breakage, and to suppress noise)



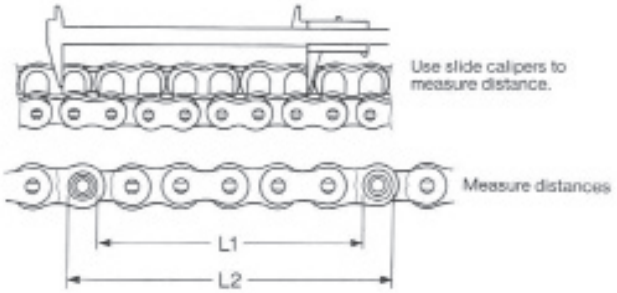
Inspection and maintenance are required to avoid trouble and keep power transmission ability.

Inspection Items and measures to Trouble

Inspection Items	Measures to Troubles
Harmful flaw or rust	Harmful flaw or rust will reduce strength. Early replacement is recommended.
Slack of chain	Adjust shaft-to-shaft distance if slack is improper. If it is found, by measuring of elongation, that service life of chain is expired, change chain
Rotation of pin (incorrect caulking position)	Possible cause is overloading. Review operating conditions. Do not use a chain with a bent pin.
Uneven wear of roller	Possible cause is poor rotation of rollers. Find cause of trouble. Change chain.
Insufficient movement of chain	Review power transmission conditions and lubrication method.
Lubrication of chain	Lubricate by correct lubrication method.

Elongation Measuring Method and Chain Replacement Timing

1.Measuring Chain Elongation



- Measure distances L1 and L2 with chain lightly loaded.
- Measure distance over 6 to 10 links to reduce measuring errors.
- Elongation of chain is determined by the following equation.

$$\text{Chain length} = \frac{L1 + L2}{2}$$

$$\text{Reference chain length} = \text{Pitch} \times \text{Number of links measured}$$

$$\text{Elongation (\%)} = \frac{\text{Chain length} - \text{Reference chain length}}{\text{Reference length}} \times 100$$

2.Chain Replacement Timing

Guideline for chain replacement, based on elongation of chain, is listed below.

Number of large sprocket teeth	Elongation (%)
60 or fewer	1.5
61 – 80	1.2
81 – 100	1.0
101 or more	0.8

- Listed data is applicable when take-up is possible, or when equipped with tensioner or idler.
- Shaft-to-shaft distance is fixed, guideline for elongation is 0.5% to 0.7%.
- When changing a chain, inspect sprockets.
  Worn-out sprocket will adversely affect chain, performance.

NOTE: Service life of chains varies depending on number of sprocket teeth, lubrication, operating environment, and other conditions, even though they are the same dimensions and type.

⚠ CAUTIONS

1. Do not replace the damaged parts of a chain with new ones. In this case, change the whole chain. Also, do not install the used connecting link and parts to a new chain.
2. Do not adhere acid or alkaline liquid and highly volatile solvent to chain and sprockets, and do not use them for cleaning. If acid or alkaline liquid is accidentally adhered to chain, replace a chain with a new one. Adherence of acid or alkaline liquid will lead to brittle breakage.
   Use kerosene for cleaning. After cleaning, dry kerosene and apply lubricant sufficiently.

- Specifications in this bulletin are described, on condition of normal use in ordinary operating environment (−10°C to +60°C).
- For more details, contact us or our dealers.

Lubrication is of prime importance for roller chain because it greatly influences its service life, especially in modern high-speed chain drives. Therefore, the use of highly efficient lubrication is required.

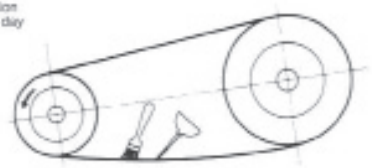
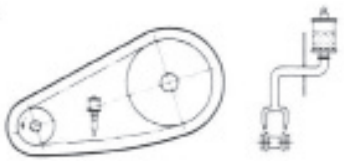
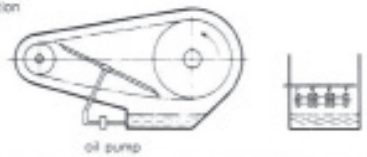
Effect of lubrication

When lubricant is applied clearances among pin, bush and roller, oil film is formed to prevent wear on parts and serve as a cushion, and absorbs heat generated in chain.
Recommended lubricant is high-quality mineral oil.

Recommended Lubricants

Lubrication method	A - B				C			
Temp (℃) / KCM chain NO.	−10 ~ 0	0 ~ 40	40 ~ 50	50 ~ 60	−10 ~ 0	0 ~ 40	40 ~ 50	50 ~ 60
KCM25 − 50	SAE10W	SAE20W	SAE30	SAE40	SAE10W	SAE20W	SAE30	SAE40
KCM60 ~ 80	SAE20W	SAE30	SAE40	SAE50				
KCM100					SAE20W	SAE30	SAE40	SAE50
KCM120以上	SAE30	SAE40	SAE50					

Lubrication Methods (These also appear in Power Transmission Capacity tables)

Lubrication method	Illustration	Lubrication intervals and Lubricant amount	Remarks
A	Manual lubrication once a day 	Periodic lubrication using oil feeder or brush, at least on full roller	Feed lubricant to chain while turning it slowly. Here, continuously apply oil 3 to 4 times on full roller chain length. Also, take care that your hand or cloth is not caught by chain drive. At start of lubrication, be careful that excessive oil will not splash.
	Drip lubrication 	Supply oil at 5 to 30 oil drops per minute.	It is recommended to provide simple casing against oil splash.
B	Oil bath lubrication 	Chain is submerged in oil at depth of 10mm.	Be careful to completely clean inside oil container before use to remove foreign matter such as dirt. Also, pay attention to oil temperature.
	Rotating disc lubrication 	Rotating disc splashes oil on roller chain. Disc submerging depth is about 20mm, and its circumferential speed is 200m/min or higher.	
C	Forced circulation lubrication  oil pump	It is required to maintain proper oil amount to avoid overheating.	Be careful to completely clean inside oil container before use to remove foreign matter such as dirt.