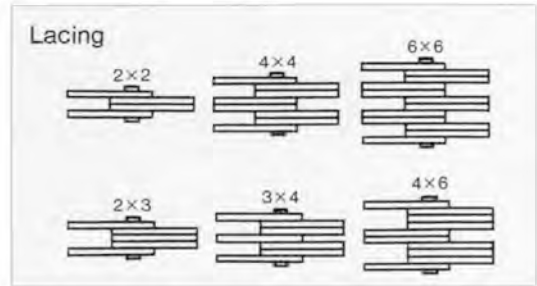


# Leaf Chain Selection



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 (For 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.

$$\text{Working load} \times \frac{\text{Use coefficient}}{\text{(Table 1)}} \times \frac{\text{Safety factor}}{\text{(Table 2)}} \leq \text{Min. tensile strength}$$

**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 factor	
		2 x 2, 3 x 4	4 x 6
BL type	1000 times/day	8 or more	9 or more
	10 times/day	8 or more	9 or more
AL type	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.

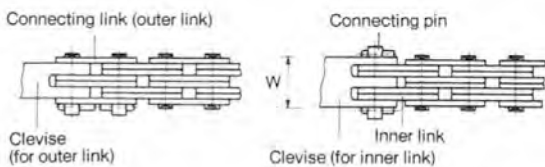
## Attaching of Chains and Clevises

### 1. When clevis is outer link or connecting link:

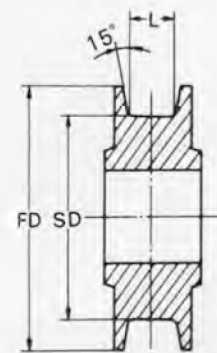
Outer link connector and connecting link (standard) are used.

### 2. When clevis is inner link:

Inner link connector and connecting pin (with dimension "W") are used.



## Sheave



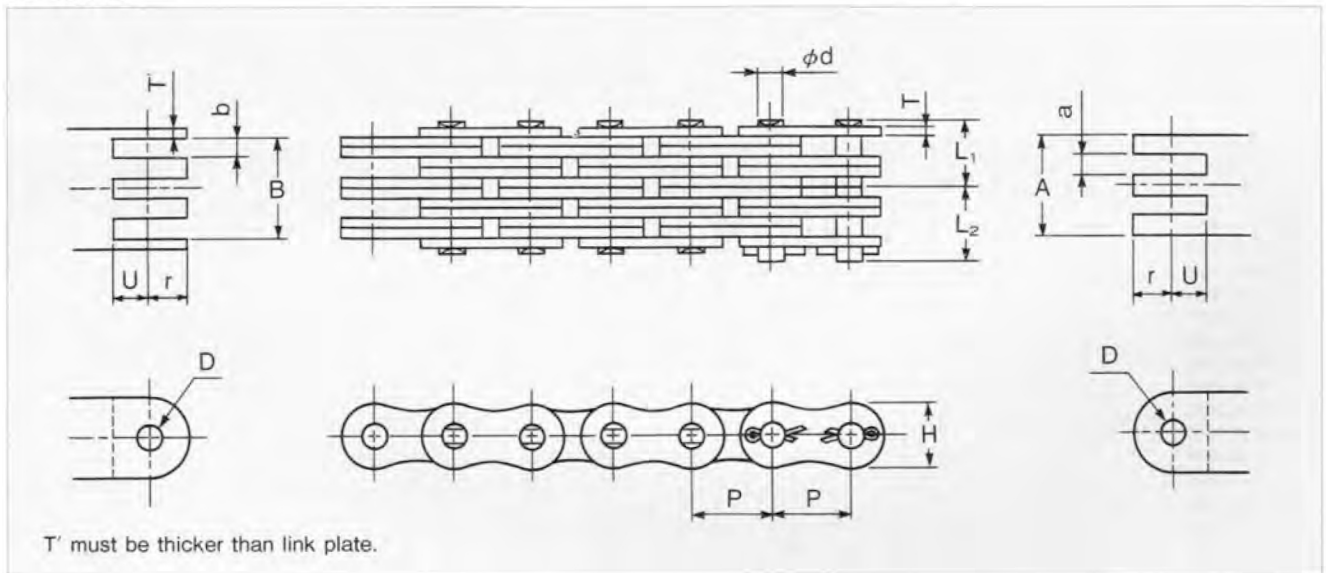
SD (min. sheave dia) = 5 x Chain pitch  
 L\* (min. groove width) = 1.05 x Pin length  
 FD (flange dia) = SX + Max. link width

\*Connecting pin cannot be engaged with sheave.

## Leaf Chain Operating Notes

- Lubricate leaf chain periodically to avoid rotation of pin 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.

## AL Series



K.C.M chain No.	Pitch p	Plate			Pin			Min. tensile kN (kgf)	l-m chain (kg)	End connector						
		Lacing	Thickness T	Width H	OD $\phi d$	Caulked $L_1$	Pinned $L_2$			D Min	r Max	U Min	A Max	a Min	B Min	b Min
<b>KCM AL422</b>	12.70	2 x 2	1.5	10.1	3.97	3.93	6.13	16.7(1,700)	0.34	4.00	6.35	5.72	3.04	—	—	3.39
<b>KCM AL444</b>		4 x 4				6.98	9.18	33.3(3,400)	0.68				9.47	9.82		
<b>KCM AL466</b>		6 x 6				10.05	12.25	50.0(5,100)	1.03				15.90	16.25		
<b>KCM AL522</b>	15.875	2 x 2	2.0	12.6	5.09	5.2	7.15	27.5(2,800)	0.61	5.12	7.94	7.14	4.03	—	—	4.44
<b>KCM AL544</b>		4 x 4				9.3	11.25	54.9(5,600)	1.18				12.50	12.91		
<b>KCM AL566</b>		6 x 6				13.4	15.35	82.4(8,400)	1.76				20.97	21.38		
<b>KCM AL644</b>	19.05	4 x 4	2.4	15.0	5.96	11.15	13.85	76.5(7,800)	1.70	5.98	9.53	8.56	14.69	5.23	15.19	5.23
<b>KCM AL666</b>		6 x 6				16.13	18.83	114.7(11,700)	2.53				24.65	25.15		
<b>KCM AL844</b>		4 x 4				14.43	17.53	129.4(13,200)	2.92				19.80	20.40		
<b>KCM AL866</b>	25.40	6 x 6	3.2	19.7	7.94	20.93	24.03	194.2(19,800)	4.35	7.96	12.70	11.43	33.20	7.00	33.30	7.00
<b>KCM AL1044</b>		4 x 4				18.6	21.55	196.1(20,000)	4.65				24.49	25.19		
<b>KCM AL1066</b>		6 x 6				26.8	29.75	294.2(30,000)	6.94				41.05	41.75		
<b>KCM AL1244</b>	38.10	4 x 4	4.8	30.0	11.11	22.1	25.5	282.4(28,000)	6.70	11.14	19.05	17.14	29.30	10.30	30.10	10.30
<b>KCM AL1266</b>		6 x 6				31.9	35.3	423.6(43,200)	9.99				49.10	49.90		
<b>KCM AL1444</b>		4 x 4				25.88	29.88	372.7(38,000)	9.48				34.46	35.38		
<b>KCM AL1466</b>	44.45	6 x 6	5.6	34.9	12.71	37.38	41.38	559.0(57,000)	14.17	12.74	22.23	20.02	57.74	12.10	58.66	12.10
<b>KCM AL1644</b>		4 x 4				29.55	34.25	470.7(48,000)	12.26				39.09	40.11		
<b>KCM AL1666</b>		6 x 6				42.75	47.45	706.1(72,000)	18.32				65.49	66.51		

NOTES:

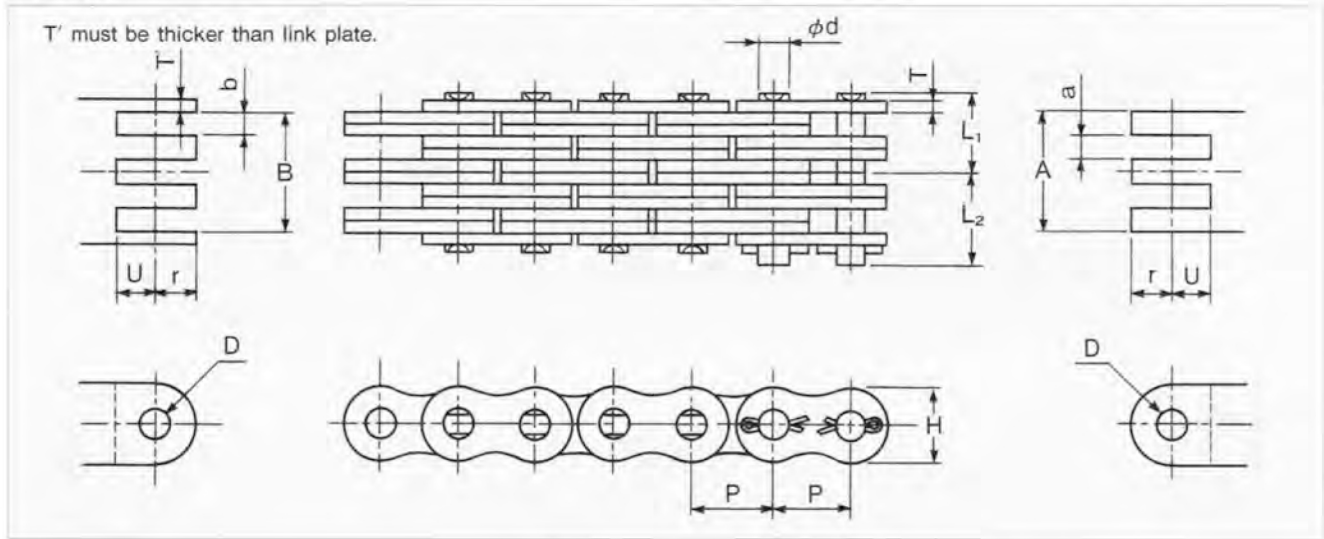
1.Dimension "U" excludes rounded area.

2.It is required that end connector is made of alloy steel (SCM435, etc.), and properly heat-treated to hardness of HRC40-45.

# Leaf Chain (BL Series)



## BL Series



K.C.M chain No.	Pitch P	Plate		Pin			Min. tensile kN (kgf)	l-m chain (kg)	End connector							
		Lacing	Thickness T	Width H	OD φd	Caulked L <sub>1</sub>			Pinned L <sub>2</sub>	D Min	r Max	U Min	A Max	a Min	B Min	b Min
KCM BL422	12.7	2 x 2	2.0	11.7	5.09	5.20	7.15	23.50( 2,400)	0.59	5.12	6.35	6.35	4.06	—	—	4.41
KCM BL423		2 x 3				6.22	8.18	23.50( 2,400)	0.73				6.09	—	—	6.53
KCM BL434		3 x 4				8.27	10.23	35.30( 3,600)	1.02				10.41	2.29	10.67	4.32
KCM BL444		4 x 4				9.30	11.25	47.10( 4,800)	1.16				12.53	4.41	12.88	4.41
KCM BL446		4 x 6				11.35	13.30	47.10( 4,800)	1.44				16.68	4.50	17.12	6.53
KCM BL466		6 x 6				13.40	15.35	70.60( 7,200)	1.72				21.00	4.41	21.35	4.41
KCM BL522	15.875	2 x 2	2.4	14.6	5.96	6.20	8.90	39.20( 4,000)	0.91	5.98	7.92	7.92	4.75	—	—	5.16
KCM BL523		2 x 3				7.42	10.13	39.20( 4,000)	1.13				7.13	—	—	7.64
KCM BL534		3 x 4				9.90	12.60	58.80( 6,000)	1.56				12.18	2.68	12.48	5.05
KCM BL544		4 x 4				11.15	13.85	78.50( 8,000)	1.78				14.66	5.16	15.07	5.16
KCM BL546		4 x 6				13.62	16.33	78.50( 8,000)	2.22				19.52	5.26	20.03	7.64
KCM BL566		6 x 6				16.10	18.80	117.70(12,000)	2.66				24.57	5.16	24.98	5.16
KCM BL622	19.05	2 x 2	3.2	17.5	7.94	7.92	11.03	63.70( 6,500)	1.47	7.96	9.53	9.53	6.45	—	—	6.96
KCM BL623		2 x 3				9.55	12.65	63.70( 6,500)	1.82				9.67	—	—	10.31
KCM BL634		3 x 4				12.80	15.90	95.60( 9,750)	2.52				16.50	3.60	16.88	6.83
KCM BL644		4 x 4				14.42	17.53	127.50(13,000)	2.87				19.85	6.95	20.35	6.95
KCM BL646		4 x 6				17.67	20.78	127.50(13,000)	3.57				26.43	7.09	27.07	10.31
KCM BL666		6 x 6				20.92	24.03	191.20(19,500)	4.27				33.25	6.95	33.75	6.95
KCM BL822	25.4	2 x 2	4.0	23.0	9.54	10.40	13.35	103.00(10,500)	2.40	9.56	12.70	12.70	7.98	—	—	8.59
KCM BL823		2 x 3				12.45	15.40	103.00(10,500)	2.97				11.97	—	—	12.73
KCM BL834		3 x 4				16.55	19.50	154.90(15,800)	4.11				20.40	4.44	20.85	8.43
KCM BL844		4 x 4				18.60	21.55	205.90(21,000)	4.68				24.54	8.58	25.14	8.58
KCM BL846		4 x 6				22.70	25.65	205.90(21,000)	5.82				32.68	8.74	33.44	12.73
KCM BL866		6 x 6				26.80	29.75	308.90(31,500)	6.96				41.10	8.58	41.70	8.58
KCM BL1022	31.75	2 x 2	4.8	28.9	11.11	12.30	15.70	141.20(14,400)	3.56	11.14	15.88	15.88	9.55	—	—	10.26
KCM BL1023		2 x 3				14.75	18.15	141.20(14,400)	4.43				14.32	—	—	15.21
KCM BL1034		3 x 4				19.65	23.05	215.70(22,000)	6.17				24.40	5.30	24.93	10.08
KCM BL1044		4 x 4				22.10	25.50	282.40(28,800)	7.04				29.35	10.25	30.05	10.25
KCM BL1046		4 x 6				27.00	30.40	282.40(28,800)	8.78				39.07	10.43	39.95	15.20
KCM BL1066		6 x 6				31.90	35.30	423.60(43,200)	10.52				49.15	10.25	49.85	10.25
KCM BL1222	38.1	2 x 2	5.6	35.0	12.71	14.37	18.38	186.30(19,000)	5.15	12.74	19.05	19.05	11.24	—	—	12.05
KCM BL1223		2 x 3				17.25	21.25	186.30(19,000)	6.35				16.85	—	—	17.87
KCM BL1234		3 x 4				23.00	27.00	299.10(30,500)	8.71				28.70	6.22	29.30	11.84
KCM BL1244		4 x 4				25.87	29.88	372.70(38,000)	9.91				34.52	12.04	35.32	12.04
KCM BL1246		4 x 6				31.62	35.63	372.70(38,000)	12.37				45.96	12.26	46.98	17.87
KCM BL1266		6 x 6				37.37	41.38	559.00(57,000)	14.77				57.80	12.04	58.60	12.04
KCM BL1422	44.45	2 x 2	6.4	40.7	14.29	16.35	21.05	235.40(24,000)	6.69	14.31	22.23	22.23	12.74	—	—	13.66
KCM BL1423		2 x 3				19.65	24.35	235.40(24,000)	8.29				19.12	—	—	20.26
KCM BL1434		3 x 4				26.25	30.95	387.40(39,500)	11.50				32.54	7.06	33.23	13.43
KCM BL1444		4 x 4				29.55	34.25	470.70(48,000)	13.10				39.14	13.66	40.06	13.66
KCM BL1446		4 x 6				36.15	40.85	470.70(48,000)	16.40				52.12	13.88	53.26	20.26
KCM BL1466		6 x 6				42.75	47.45	706.10(72,000)	19.60				65.54	13.66	66.46	13.66

NOTES:

KCM CHAIN

Finer Power Transmissions P/L