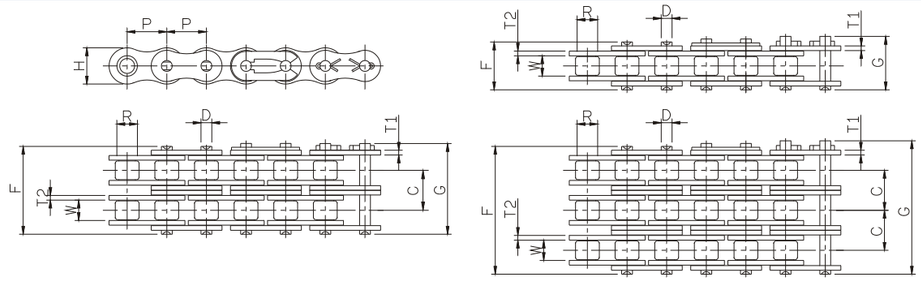
Standard Roller Chains

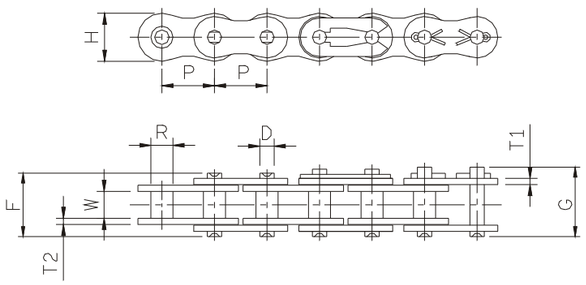
ANSI STANDARD ROLLER CHAIN



	CHAIN NO.	Pitch P inch	Pitch P mm	Width W (min)	Roller Dia R(max)	Plate Height H(max)	Plate Thickness T1	Plate Thickness T2	Pin Dia D(max)	Pin Length F(max)	Pin Length G(max)	Transverse Pitch C	Ultimate Strength kgf(min)	Approx Weight kg/m
*	25-1	1/4"	6.35	3.10	3.30	6.02	0.75	0.75	2.31	9.1	11.6	---	357	0.14
*	25-2	1/4"	6.35	3.10	3.30	6.02	0.75	0.75	2.31	15.5	18.0	6.40	714	0.26
*	25-3	1/4"	6.35	3.10	3.30	6.02	0.75	0.75	2.31	21.8	24.3	6.40	1071	0.40
*	35-1	3/8"	9.525	4.68	5.08	9.05	1.25	1.25	3.60	13.2	16.5	---	806	0.33
*	35-2	3/8"	9.525	4.68	5.08	9.05	1.25	1.25	3.60	23.4	26.7	10.10	1612	0.69
*	35-3	3/8"	9.525	4.68	5.08	9.05	1.25	1.25	3.60	33.5	36.8	10.10	2418	1.05
	41	1/2"	12.70	6.25	7.77	9.91	1.25	1.25	3.60	14.0	16.0	---	684	0.41
	40-1	1/2"	12.70	7.85	7.92	12.07	1.50	1.50	3.98	17.8	21.7	---	1418	0.63
	40-2	1/2"	12.70	7.85	7.92	12.07	1.50	1.50	3.98	32.3	36.2	14.40	2837	1.19
	40-3	1/2"	12.70	7.85	7.92	12.07	1.50	1.50	3.98	46.7	50.6	14.40	4255	1.77
	50-1	5/8"	15.875	9.40	10.16	15.09	2.00	2.00	5.09	21.8	25.9	---	2224	1.01
	50-2	5/8"	15.875	9.40	10.16	15.09	2.00	2.00	5.09	39.9	44.0	18.10	4449	2.04
	50-3	5/8"	15.875	9.40	10.16	15.09	2.00	2.00	5.09	57.9	62.0	18.10	6673	3.05
	60-1	3/4"	19.05	12.57	11.91	18.10	2.40	2.40	5.96	26.9	31.5	---	3194	1.44
	60-2	3/4"	19.05	12.57	11.91	18.10	2.40	2.40	5.96	49.8	54.4	22.80	6388	3.03
	60-3	3/4"	19.05	12.57	11.91	18.10	2.40	2.40	5.96	72.6	77.2	22.80	9582	4.50
	80-1	1"	25.40	15.75	15.88	24.13	3.20	3.20	7.94	33.5	38.9	---	5673	2.40
	80-2	1"	25.40	15.75	15.88	24.13	3.20	3.20	7.94	62.7	68.1	29.30	11347	5.26
	80-3	1"	25.40	15.75	15.88	24.13	3.20	3.20	7.94	91.9	97.3	29.30	17020	7.80
	100-1	1-1/4"	31.75	18.90	19.05	30.17	4.00	4.00	9.54	41.1	47.2	---	8878	3.74
	100-2	1-1/4"	31.75	18.90	19.05	30.17	4.00	4.00	9.54	77.0	83.1	35.80	17755	7.51
	100-3	1-1/4"	31.75	18.90	19.05	30.17	4.00	4.00	9.54	113.0	119.1	35.80	26633	11.20
	120-1	1-1/2"	38.10	25.22	22.23	36.20	4.80	4.80	11.11	50.8	57.4	---	12755	6.18
	120-2	1-1/2"	38.10	25.22	22.23	36.20	4.80	4.80	11.11	96.3	102.9	45.40	25510	12.25
	120-3	1-1/2"	38.10	25.22	22.23	36.20	4.80	4.80	11.11	141.7	148.3	45.40	38265	18.30
	140-1	1-3/4"	44.45	25.22	25.40	42.23	5.60	5.60	12.71	54.9	62.3	---	17347	7.49
	140-2	1-3/4"	44.45	25.22	25.40	42.23	5.60	5.60	12.71	103.6	111.0	48.90	34694	14.83
	140-3	1-3/4"	44.45	25.22	25.40	42.23	5.60	5.60	12.71	152.4	159.8	48.90	52041	22.20
	160-1	2"	50.80	31.55	28.58	48.26	6.40	6.40	14.29	65.5	73.4	---	22755	10.10
	160-2	2"	50.80	31.55	28.58	48.26	6.40	6.40	14.29	124.2	132.1	58.50	45510	20.04
	160-3	2"	50.80	31.55	28.58	48.26	6.40	6.40	14.29	182.9	190.8	58.50	68265	30.02
	180-1	2-1/4"	57.15	35.48	35.71	54.30	7.10	7.10	17.46	73.9	83.0	---	28673	13.40
	180-2	2-1/4"	57.15	35.48	35.71	54.30	7.10	7.10	17.46	140.0	149.1	65.84	57347	26.20
	180-3	2-1/4"	57.15	35.48	35.71	54.30	7.10	7.10	17.46	206.0	215.1	65.84	86020	38.10
	200-1	2-1/2"	63.50	37.85	39.68	60.33	8.00	8.00	19.85	80.3	90.5	---	35408	16.50
	200-2	2-1/2"	63.50	37.85	39.68	60.33	8.00	8.00	19.85	151.9	162.1	71.60	70816	32.70
	200-3	2-1/2"	63.50	37.85	39.68	60.33	8.00	8.00	19.85	223.5	233.7	71.60	106224	49.05
	240-1	3"	76.20	47.35	47.63	72.40	9.50	9.50	23.81	95.5	106.0	---	51020	24.20
	240-2	3"	76.20	47.35	47.63	72.40	9.50	9.50	23.81	183.4	193.9	87.80	102041	47.80
	240-3	3"	76.20	47.35	47.63	72.40	9.50	9.50	23.81	271.3	281.8	87.80	153061	71.10

***Rollerless chain, R indicates bushing diameter.**

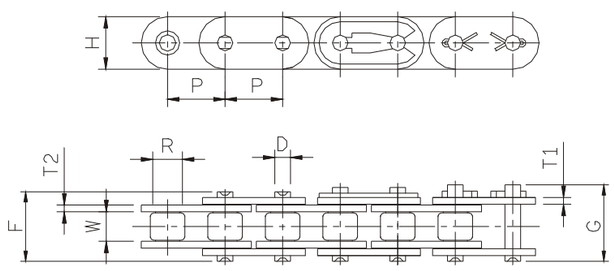
ROLLERLESS CHAIN



CHAIN NO.	Pitch P		Width W	Bush Dia	Plate Height	Plate Thickness		Pin Dia	Pin Length		Ultimate Strength	Approx Weight
	inch	mm	(min)	R	H(max)	T1	T2	D(max)	F(max)	G(max)	kgf(min)	kg/m
45-1	1/2"	12.70	7.85	5.60	12.07	1.50	1.50	3.98	17.8	21.7	1418	0.53
55-1	5/8"	15.875	9.40	7.00	15.09	2.00	2.00	5.09	21.8	25.9	2224	0.83
65-1	3/4"	19.05	12.57	8.10	18.10	2.40	2.40	5.96	26.9	31.5	3194	1.20
85-1	1"	25.40	15.75	11.30	24.13	3.20	3.20	7.94	33.5	38.9	5673	2.20
105-1	1-1/4"	31.75	18.90	13.45	30.17	4.00	4.00	9.54	41.1	47.2	8878	3.30
125-1	1-1/2"	38.10	25.22	15.85	36.20	4.80	4.80	11.11	50.8	57.4	12755	4.82
145-1	1-3/4"	44.45	25.22	18.00	42.23	5.60	5.60	12.71	54.9	62.3	17347	7.35
165-1	2"	50.80	31.55	20.15	48.26	6.40	6.40	14.29	65.5	73.4	22755	9.42

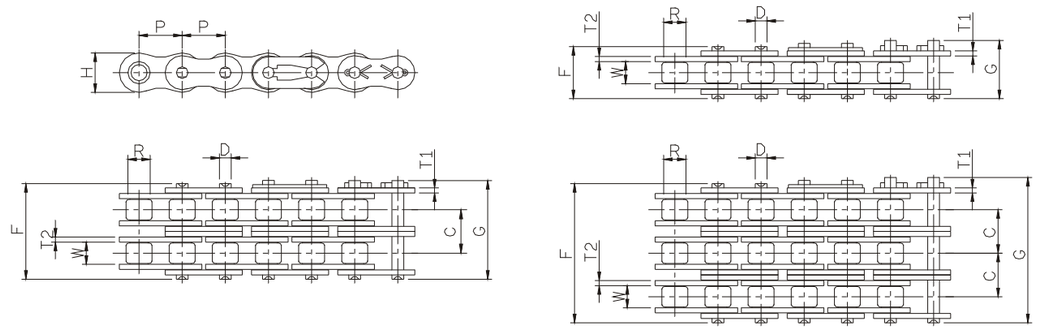
Rollerless-Chain, R indicates bushing diameter.

STRAIGHT LINK PLATE CHAIN



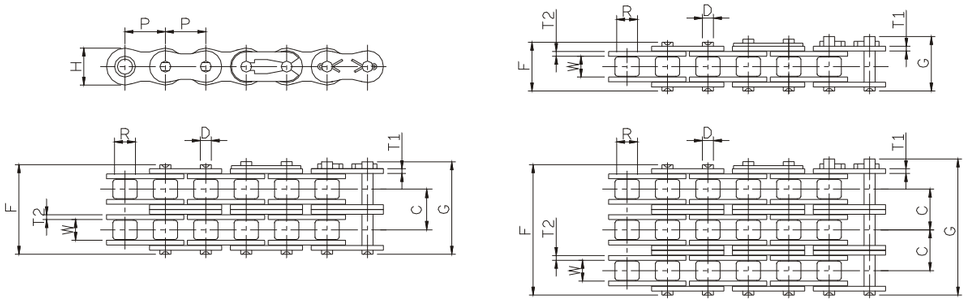
CHAIN NO.	Pitch P		Width W	Roller Dia	Plate Height	Plate Thickness		Pin Dia	Pin Length		Ultimate Strength	Approx Weight
	inch	mm	(min)	R(max)	H(max)	T1	T2	D(max)	F(max)	G(max)	kgf(min)	kg/m
40F	1/2"	12.70	7.85	7.92	12.07	1.50	1.50	3.98	17.8	21.7	1418	0.65
50F	5/8"	15.875	9.40	10.16	15.09	2.00	2.00	5.09	21.8	25.9	2224	1.03
60F	3/4"	19.05	12.57	11.91	18.10	2.40	2.40	5.96	26.9	31.5	3194	1.46
80F	1"	25.40	15.75	15.88	24.13	3.20	3.20	7.94	33.5	38.9	5673	2.44
100F	1-1/4"	31.75	18.90	19.05	30.17	4.00	4.00	9.54	41.1	47.2	8878	4.31

HEAVY DUTY CHAIN



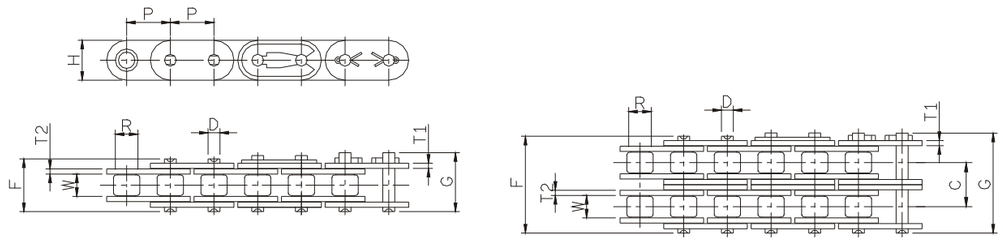
CHAIN NO.	Pitch P		Width W	Roller Dia	Plate Height	Plate Thickness		Pin Dia	Pin Length		Transverse Pitch	Ultimate Strength	Approx Weight
	inch	mm	(min)	R(max)	H(max)	T1	T2	D(max)	F(max)	G(max)	C	kgf(min)	kg/m
25H	1/4"	6.35	3.10	3.30	6.02	1.00	1.00	2.31	9.1	11.6	---	489	0.16
50H	5/8"	15.875	9.40	10.16	15.09	2.40	2.40	5.09	23.1	27.5	---	2224	1.12
50H-2	5/8"	15.875	9.40	10.16	15.09	2.40	2.40	5.09	42.8	47.2	19.70	4449	2.25
60H	3/4"	19.05	12.57	11.91	18.10	3.20	3.20	5.96	30.2	34.8	---	3194	1.81
60H-2	3/4"	19.05	12.57	11.91	18.10	3.20	3.20	5.96	56.3	60.9	26.10	6388	3.57
60H-3	3/4"	19.05	12.57	11.91	18.10	3.20	3.20	5.96	82.4	87.0	26.10	9582	5.16
80H	1"	25.40	15.75	15.88	24.13	4.00	4.00	7.94	37.4	42.8	---	5673	2.95
80H-2	1"	25.40	15.75	15.88	24.13	4.00	4.00	7.94	70.0	75.4	32.60	11347	5.85
80H-3	1"	25.40	15.75	15.88	24.13	4.00	4.00	7.94	102.6	108.0	32.60	17020	8.32
100H	1-1/4"	31.75	18.90	19.05	30.17	4.80	4.80	9.54	44.5	50.6	---	8878	4.45
100H-2	1-1/4"	31.75	18.90	19.05	30.17	4.80	4.80	9.54	83.6	89.7	39.10	17755	8.34
100H-3	1-1/4"	31.75	18.90	19.05	30.17	4.80	4.80	9.54	122.7	128.8	39.10	26633	12.03
120H	1-1/2"	38.10	25.22	22.23	36.20	5.60	5.60	11.11	55.0	61.6	---	12755	6.78
120H-2	1-1/2"	38.10	25.22	22.23	36.20	5.60	5.60	11.11	103.9	110.5	48.90	25510	13.45
120H-3	1-1/2"	38.10	25.22	22.23	36.20	5.60	5.60	11.11	152.8	159.4	48.90	38265	20.13
140H	1-3/4"	44.45	25.22	25.40	42.23	6.40	6.40	12.71	59.0	66.4	---	17347	8.12
140H-2	1-3/4"	44.45	25.22	25.40	42.23	6.40	6.40	12.71	111.2	118.6	52.20	34694	16.10
140H-3	1-3/4"	44.45	25.22	25.40	42.23	6.40	6.40	12.71	163.4	170.8	52.20	52041	24.02
160H	2"	50.80	31.55	28.58	48.26	7.10	7.10	14.29	69.4	77.3	---	22755	10.87
160H-2	2"	50.80	31.55	28.58	48.26	7.10	7.10	14.29	131.3	139.2	61.90	45510	20.85
160H-3	2"	50.80	31.55	28.58	48.26	7.10	7.10	14.29	193.2	201.1	61.90	68265	30.83
180H	2-1/4"	57.15	35.48	35.71	54.30	8.00	8.00	17.46	77.3	86.4	---	28673	15.20
180H-2	2-1/4"	57.15	35.48	35.71	54.30	8.00	8.00	17.46	146.5	155.6	69.20	57347	30.10
180H-3	2-1/4"	57.15	35.48	35.71	54.30	8.00	8.00	17.46	215.7	224.8	69.20	86020	45.00
200H	2-1/2"	63.50	37.85	39.68	60.33	9.50	9.50	19.85	87.1	97.3	---	35408	17.80
200H-2	2-1/2"	63.50	37.85	39.68	60.33	9.50	9.50	19.85	165.4	175.6	78.30	70816	35.20
200H-3	2-1/2"	63.50	37.85	39.68	60.33	9.50	9.50	19.85	243.7	253.9	78.30	106224	52.50

ISO " B " ROLLER CHAIN



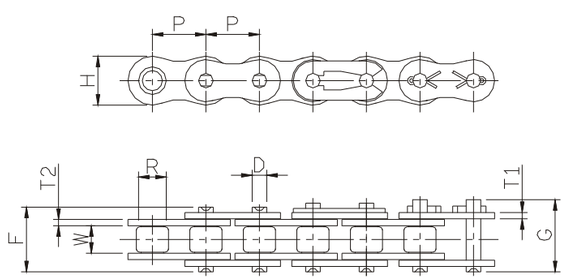
CHAIN NO.	Pitch P inch	Pitch P mm	Width W (min)	Roller Dia R(max)	Plate Height H(max)	Plate Thickness T1	Plate Thickness T2	Pin Dia D(max)	Pin Length F(max)	Pin Length G(max)	Transverse Pitch C	Ultimate Strength kgf(min)	Approx Weight kg/m
05B-1	0.315"	8.00	3.00	5.00	7.11	0.75	0.75	2.31	8.6	11.7	---	449	0.16
05B-2	0.315"	8.00	3.00	5.00	7.11	0.75	0.75	2.31	14.3	17.4	5.64	796	0.30
06B-1	0.375"	9.525	5.72	6.35	8.26	1.00	1.30	3.28	13.5	16.8	---	908	0.39
06B-2	0.375"	9.525	5.72	6.35	8.26	1.00	1.30	3.28	23.8	27.1	10.24	1724	0.74
06B-3	0.375"	9.525	5.72	6.35	8.26	1.00	1.30	3.28	34.0	37.3	10.24	2541	1.09
08B-1	0.5"	12.70	7.75	8.51	11.81	1.50	1.50	4.45	17.0	20.9	---	1816	0.65
08B-2	0.5"	12.70	7.75	8.51	11.81	1.50	1.50	4.45	31.0	34.9	13.92	3173	1.30
08B-3	0.5"	12.70	7.75	8.51	11.81	1.50	1.50	4.45	44.9	48.8	13.92	4541	1.92
10B-1	0.625"	15.875	9.65	10.16	14.73	1.50	1.50	5.08	19.6	23.7	---	2265	0.92
10B-2	0.625"	15.875	9.65	10.16	14.73	1.50	1.50	5.08	36.2	40.3	16.59	4541	1.68
10B-3	0.625"	15.875	9.65	10.16	14.73	1.50	1.50	5.08	52.8	56.9	16.59	6806	2.62
12B-1	0.75"	19.05	11.68	12.07	16.13	1.70	1.80	5.72	22.7	27.3	---	2949	1.24
12B-2	0.75"	19.05	11.68	12.07	16.13	1.70	1.80	5.72	42.2	46.8	19.46	5898	2.28
12B-3	0.75"	19.05	11.68	12.07	16.13	1.70	1.80	5.72	61.7	66.3	19.46	8847	3.55
16B-1	1"	25.40	17.02	15.88	21.08	3.20	4.00	8.28	36.1	41.5	---	6122	2.65
16B-2	1"	25.40	17.02	15.88	21.08	3.20	4.00	8.28	68.0	73.4	31.88	10816	5.25
16B-3	1"	25.40	17.02	15.88	21.08	3.20	4.00	8.28	99.9	105.3	31.88	16327	7.86
20B-1	1.25"	31.75	19.56	19.05	26.42	3.50	4.50	10.19	43.2	49.3	---	9694	3.85
20B-2	1.25"	31.75	19.56	19.05	26.42	3.50	4.50	10.19	79.7	85.8	36.45	17347	7.65
20B-3	1.25"	31.75	19.56	19.05	26.42	3.50	4.50	10.19	116.1	122.2	36.45	25510	11.45
24B-1	1.5"	38.10	25.40	25.40	33.40	5.20	6.00	14.63	53.4	60.0	---	16327	7.60
24B-2	1.5"	38.10	25.40	25.40	33.40	5.20	6.00	14.63	101.8	108.4	48.36	28571	14.80
24B-3	1.5"	38.10	25.40	25.40	33.40	5.20	6.00	14.63	150.2	156.8	48.36	43367	21.90
28B-1	1.75"	44.45	30.99	27.94	37.08	6.30	7.50	15.90	65.1	72.5	---	20408	9.05
28B-2	1.75"	44.45	30.99	27.94	37.08	6.30	7.50	15.90	124.7	132.1	59.56	36735	17.12
28B-3	1.75"	44.45	30.99	27.94	37.08	6.30	7.50	15.90	184.3	191.7	59.56	54082	25.61
32B-1	2"	50.80	30.99	29.21	42.29	6.30	7.10	17.81	67.4	75.3	---	25510	10.63
32B-2	2"	50.80	30.99	29.21	42.29	6.30	7.10	17.81	126.0	133.9	58.55	45918	20.85
32B-3	2"	50.80	30.99	29.21	42.29	6.30	7.10	17.81	184.5	192.4	58.55	68367	31.57
40B-1	2.5"	63.50	38.10	39.37	52.96	8.00	8.50	22.89	82.6	92.8	---	36224	16.25
40B-2	2.5"	63.50	38.10	39.37	52.96	8.00	8.50	22.89	154.9	165.1	72.29	64286	31.86
40B-3	2.5"	63.50	38.10	39.37	52.96	8.00	8.50	22.89	227.2	237.4	72.29	96939	48.14
48B-1	3"	76.20	45.72	48.26	63.88	10.0	12.1	29.24	99.1	109.6	---	57143	25.05
48B-2	3"	76.20	45.72	48.26	63.88	10.0	12.1	29.24	190.4	200.9	91.21	102041	49.83
48B-3	3"	76.20	45.72	48.26	63.88	10.0	12.1	29.24	281.6	292.1	91.21	153061	75.07

ISO " B " STRAIGHT LINK PLATE CHAIN



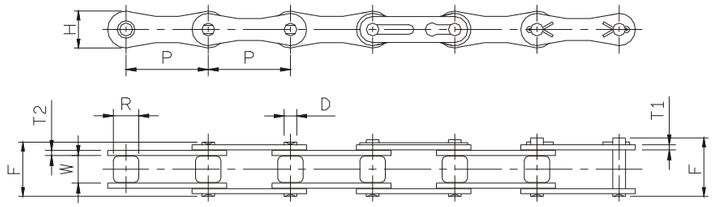
CHAIN NO.	Pitch P inch	Pitch P mm	Width W (min)	Roller Dia R(max)	Plate Height H(max)	Plate Thickness T1	Plate Thickness T2	Pin Dia D(max)	Pin Length F(max)	Pin Length G(max)	Transverse Pitch C	Ultimate Strength kgf(min)	Approx Weight kg/m
06B	0.375"	9.525	5.72	6.35	8.26	1.00	1.30	3.28	13.5	16.8	---	908	0.39
06B-2	0.375"	9.525	5.72	6.35	8.26	1.00	1.30	3.28	23.8	27.1	10.24	1724	0.74
08BF	0.5"	12.70	7.75	8.51	11.81	1.50	1.50	4.45	17.0	20.9	---	1816	0.75
08BF-2	0.5"	12.70	7.75	8.51	11.81	1.50	1.50	4.45	31.0	34.9	13.92	3173	1.50
10BF	0.625"	15.875	9.65	10.16	14.73	1.50	1.50	5.08	19.6	23.7	---	2265	1.00
10BF-2	0.625"	15.875	9.65	10.16	14.73	1.50	1.50	5.08	36.2	40.3	16.59	4541	1.85
12BF	0.75"	19.05	11.68	12.07	16.13	1.70	1.80	5.72	22.7	27.3	---	2949	1.29
12BF-2	0.75"	19.05	11.68	12.07	16.13	1.70	1.80	5.72	42.2	46.8	19.46	5898	2.38
16BGL(24)	1"	25.40	17.02	15.88	24.13	3.20	4.00	8.28	36.1	41.5	---	6122	3.30
16BGL(24)-2	1"	25.40	17.02	15.88	24.13	3.20	4.00	8.28	68.0	73.4	31.88	10816	6.55
16BF	1"	25.40	17.02	15.88	21.08	3.20	4.00	8.28	36.1	41.5	---	6122	2.70
16BF-2	1"	25.40	17.02	15.88	21.08	3.20	4.00	8.28	68.0	73.4	31.88	10816	5.35
20BF	1.25"	31.75	19.56	19.05	26.42	3.50	4.50	10.19	43.2	49.3	---	9694	4.25
20BF-2	1.25"	31.75	19.56	19.05	26.42	3.50	4.50	10.19	79.7	85.8	36.45	17347	8.45
24BF	1.5"	38.10	25.40	25.40	33.40	5.20	6.00	14.63	53.4	60.0	---	16327	8.20
24BF-2	1.5"	38.10	25.40	25.40	33.40	5.20	6.00	14.63	101.8	108.4	48.36	28571	16.0

ISO " B " HEAVY DUTY CHAIN

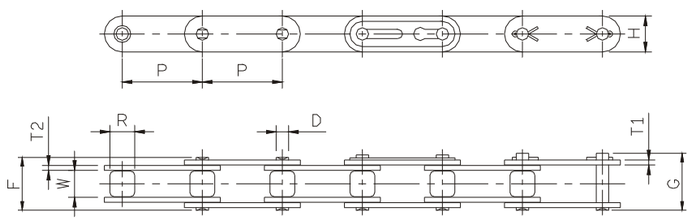


CHAIN NO.	Pitch P inch	Pitch P mm	Width W (min)	Roller Dia R(max)	Plate Height H(max)	Plate Thickness T1	Plate Thickness T2	Pin Dia D(max)	Pin Length F(max)	Pin Length G(max)	Ultimate Strength kgf(ave.)	Approx Weight kg/m
06BH	0.375"	9.525	5.72	6.35	8.26	1.30	1.50	3.28	15.1	18.4	1250	0.45
08BH	0.5"	12.70	7.75	8.51	12.20	2.00	2.00	4.45	19.2	23.2	2400	0.85
10BH	0.625"	15.875	9.65	10.16	14.73	2.00	2.00	5.08	20.6	24.7	3100	1.01
12BH	0.75"	19.05	11.68	12.07	16.13	2.40	2.40	6.12	25.1	29.7	4500	1.42

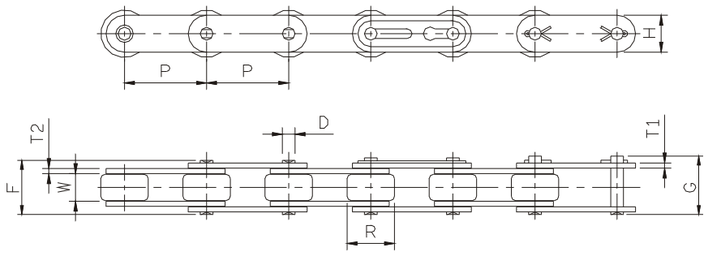
DOUBLE PITCH ROLLER CHAIN



CHAIN NO.	Pitch P		Width W	Roller Dia	Plate Height	Plate Thickness		Pin Dia	Pin Length		Ultimate Strength	Approx Weight
	inch	mm	(min)	R(max)	H(max)	T1	T2	D(max)	F(max)	G(max)	kgf(min)	kg/m
A2040	1"	25.40	7.85	7.92	12.0	1.50	1.50	3.98	17.8	21.7	1418	0.40
A2050	1-1/4"	31.75	9.40	10.16	15.0	2.00	2.00	5.09	21.8	25.9	2224	0.66
A2060	1-1/2"	38.10	12.57	11.91	18.1	2.40	2.40	5.96	26.9	31.5	3194	0.93



CHAIN NO.	Pitch P		Width W	Roller Dia	Plate Height	Plate Thickness		Pin Dia	Pin Length		Ultimate Strength	Approx Weight
	inch	mm	(min)	R(max)	H(max)	T1	T2	D(max)	F(max)	G(max)	kgf(min)	kg/m
C2040	1"	25.40	7.85	7.92	12.0	1.50	1.50	3.98	17.8	21.7	1418	0.49
C2050	1-1/4"	31.75	9.40	10.16	15.0	2.00	2.00	5.09	21.8	25.9	2224	0.84
C2060H	1-1/2"	38.10	12.57	11.91	18.0	3.20	3.20	5.96	30.2	34.8	3194	1.45
C2080H	2"	50.80	15.75	15.88	24.1	4.00	4.00	7.94	37.4	42.8	5673	2.41
C2100H	2-1/2"	63.50	18.90	19.05	30.1	4.80	4.80	9.54	44.5	50.6	8878	3.50
C2120H	3"	76.20	25.22	22.23	36.2	5.60	5.60	11.11	55.0	61.6	12755	6.00



CHAIN NO.	Pitch P		Width W	Roller Dia	Plate Height	Plate Thickness		Pin Dia	Pin Length		Ultimate Strength	Approx Weight
	inch	mm	(min)	R(max)	H(max)	T1	T2	D(max)	F(max)	G(max)	kgf(min)	kg/m
C2042	1"	25.40	7.85	15.88	12.0	1.50	1.50	3.98	17.8	21.7	1418	0.86
C2052	1-1/4"	31.75	9.40	19.05	15.0	2.00	2.00	5.09	21.8	25.9	2224	1.32
C2062H	1-1/2"	38.10	12.57	22.23	18.0	3.20	3.20	5.96	30.2	34.8	3194	2.17
C2082H	2"	50.80	15.75	28.58	24.1	4.00	4.00	7.94	37.4	42.8	5673	2.87
C2102H	2-1/2"	63.50	18.90	39.67	30.1	4.80	4.80	9.54	44.5	50.6	8878	4.68
C2122H	3"	76.20	25.22	44.45	36.2	5.60	5.60	11.11	55.0	61.6	12755	8.00

TECHNICAL DATA-ROLLER CHAINS

POINTS FOR SELECTION

Points in selecting sprockets relative to chains.

SELECTION OF SMALL SPROCKETS

1) Select smaller pitch chains (multistrand chains when horsepower rating is great) so as to have the increased number of sprockets teeth when smooth, quiet transmission and compactness in chain drives are desired.
2) Employ small sprockets with over 13 teeth for smooth chain-sprocket engagement and long chain life. For low speed and light load, about 9 teeth sprockets can be used.
3) Limit RPM of sprockets to a recommendable ratio of 7:1. Maximum speed ratio will be 10:1.

MAXIMUM ALLOWABLE SHAFT DIAMETER

Check each referenced page to see if the calculated shaft diameter is allowable for the selected driving sprocket.

Maximum shaft diameters in each relative page show values for hub diameters of versatile sprockets available from stock.

Maximum allowable hub diameter for each size is listed below.

Calculate an allowable hub diameter on the basis of common mechanical calculations.

SELECTION OF LARGE SPROCKETS

Select the number of teeth on large sprocket by multiplying the number of teeth on selected small sprocket by the seed ratio. The number of teeth, however, should be limited to 120 teeth. For more than 120 teeth, double purchase is recommended.

BASIC EQUATIONS FOR CHAIN SELECTION

1) L [No. of link] = Number of pitches of chain

$$= \frac{N_1 + N_2}{2} + 2C + \frac{\left(\frac{N_2 - N_1}{6.28}\right)^2}{C}$$

*Any fraction of L is counted as one pitch.

2) C [No. of link] = Center distance in pitches

$$= \frac{1}{8}\left\{2L - N_1 - N_2 + \sqrt{(2L - N_1 - N_2)^2 - \frac{8}{9.86}(N_2 - N_1)^2}\right\}$$

3) D [mm] = Shaft Dia.

$$= \sqrt[3]{5.1 \cdot To/\tau} = 154\sqrt[3]{HP/(\tau \cdot n)}$$

or

$$= 4.1\sqrt[4]{To} = 120\sqrt[4]{HP/n}$$

*Use large value

HP [HP] = Required power
N [-] = No. of sprocket teeth
N_1 [-] = No. of small sprocket teeth
N_2 [-] = No. of large sprocket teeth
n [rpm] = rpm of sprocket
P [inches] = Chain pitch
To [mm . kgf] = Torsional moment
τ [kg/mm^2] = Shearing stress

ATMOSPHERIC CONSIDERATION

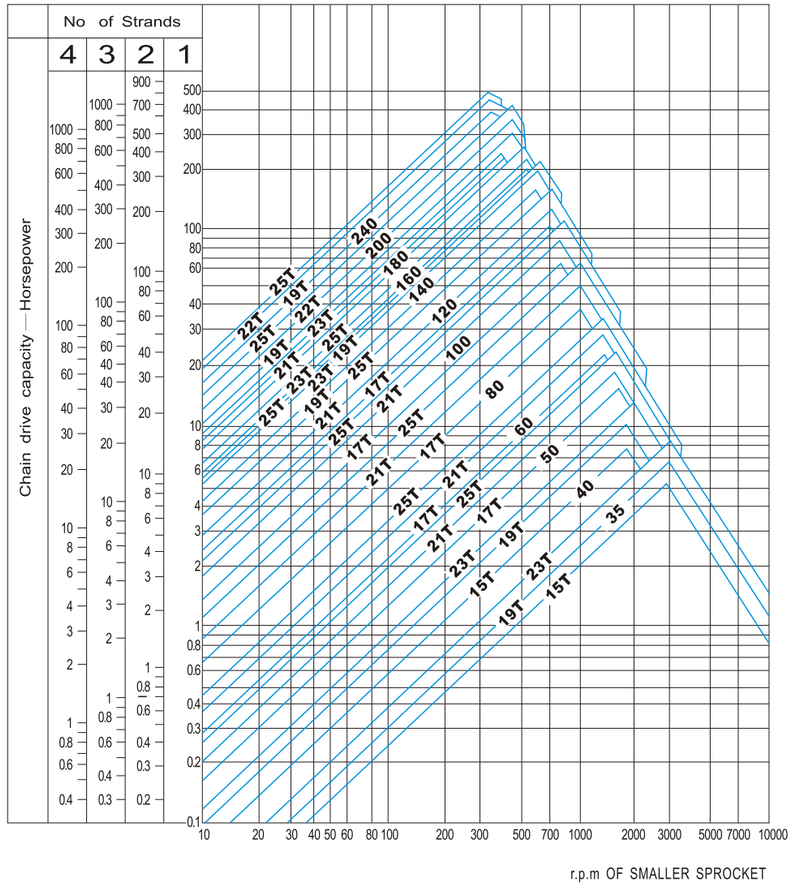
1) Ambient temperature range of standard carbon steel chain : -10˚C~60˚C
2) Ambient temperature range of stainless steel chain (SUS304) : -20˚C~400˚C

MAXIMUM ALLOWABLE HUB DIAMETER

CHAIN NO.	Pitch (inches)	No. of Sprocket Teeth																					
		11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
25	1/4	15	17	19	21	23	25	27	29	31	33	35	37	39	41	43	45	47	49	51	53	55	57
35	3/8	22	25	28	31	35	38	41	44	47	50	53	56	59	62	65	68	71	74	77	80	83	86
40(41)	1/2	30	34	38	42	46	50	54	59	63	67	71	75	79	83	87	91	95	99	103	107	111	115
50	5/8	37	43	48	53	58	63	68	73	79	84	89	94	99	104	109	114	119	124	129	134	139	145
60	3/4	45	51	57	64	70	76	82	88	94	100	107	113	119	125	131	137	143	149	155	161	168	174
80	1	60	69	77	85	93	102	110	118	126	134	142	150	159	167	175	183	191	199	207	215	224	232
100	1 1/4	76	86	96	107	117	127	137	148	158	168	178	188	199	209	219	229	239	249	259	270	280	290
120	1 1/2	91	103	116	128	140	153	165	177	189	202	214	226	238	251	263	275	287	299	311	324	336	348
140	1 3/4	106	121	135	150	164	178	193	207	221	235	250	264	278	292	307	321	335	349	364	378	392	406
160	2	121	138	155	171	187	204	220	237	253	269	285	302	318	334	351	367	383	399	416	432	448	464
180	2 1/4	137	155	174	192	211	229	248	266	248	302	321	339	358	376	394	411	430	448	466	484	503	521
200	2 1/2	152	173	193	214	235	255	275	296	316	337	357	377	398	418	438	459	479	499	520	540	560	580
240	3	183	207	232	257	282	306	331	355	380	404	429	453	477	502	526	551	575	599	624	648	672	697

TECHNICAL DATA-ROLLER CHAINS

ROLLER CHAIN QUICK SELECTION CHART



• CONCISE SELECTION DATA

CHAIN NO.	Standard(ANSI)		Each Series		
	Max. Allowable Load	Ave. Ultimate Strength	Ave. Ultimate Strength		
			(V)	H	HE (HV)
35	220	1050			
40	370	1850			
50	650	3100			
60	900	4400	5000	4400	5300
80	1500	7800	8000	8000	9300
100	2300	11800	12400	12000	13500
120	3100	15500	18000	16000	18300
140	4100	20500	23000	20500	23000
160	5400	27500	30000	27500	30000
180	6200	36000		36000	
200	7300	48000		52000	
240	10100	68500			

(unit : kgf)

f_1 : SERVICE FACTOR

Driven Load Condition	Intermal Combustion Engine with Hydraulic Drive	Intermal Combustion Engine with Mechanical Drive	Electric motor or Turbine
Uniform Smooth	1.0	1.2	1.0
Moderate Shock	1.2	1.4	1.3
Heavy Shock	1.4	1.7	1.5

f_3 : SPEED FACTOR

Chain Speed	f_3
50ft/min.	1.0
50 ~ 100ft/min.	1.2
100 ~ 160ft/min.	1.4

f_4 : SAFETY FACTOR

Chain Speed	f_4
80ft/min.	7≦
80 ~ 160 ft/min.	8≦

LUBRICATION

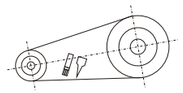
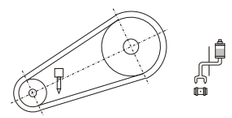
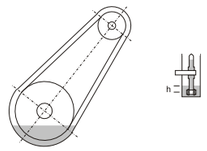
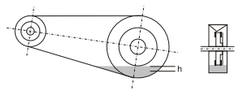
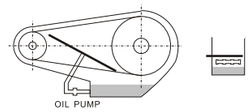
Proper lubrication of roller chains is a very important factor in getting their best possible performance and longer life-time. No matter how well a transmission system is designed, if it is not properly lubricated, its service life will be shortened.

Abrasion between the pin and bushing causes roller chains to stretch. Therefore, the parts should be well lubricated. The gap between the pin-link plate and roller-link plate on the slack side of the chain should be filled with lubricant. The oil forms a film which minimizes wear of the pin and bushing, thus increasing the chain service life. It also reduces noises and acts as coolant when chain runs at high speeds.

POINTS OF LUBRICATION

1) Fill and change oil periodically.
2) Generally, heavy oil and grease are not suitable as a lubricant.
3) Avoid mix of oil with another kind or other maker's.
4) Adequate lubrication quantity is also essential for a chain's longer service life.

Method and amount of lubrication

TYPE	Method		Amount
A		Apply oil with a brush or spout can aiming at clearance between pins and roller links on the slack side of chain in operate.	Periodically to keep chain joints from drying(generally about every 8 hours)
		Drip lubrication Use simple casing and apply oil drops from a drip cup.	At a rate of 5 to 20 drops per minute for each strand of chain, the highest the speed the more the drops per minute.
B		Oil bath lubrication Chain runs through an oil reservoir kept in leak-Proof casing.	Too much oil kept in reservir (if h dimension is too high) can generate heatinoil and deteriorate it quality, therefore oil level should be kept in such a way as to maintain h dimension to be about 6 to 12mm.
		Slinger disc lubrication Oil disc mounted on lower sprocket picks up oil from the oil reservoir kept in leak-proof casing and splashes it on chain. Disc should run at rim speed of more than 200 meters per minute. If chain eidth exceeds 125mm, oil disc should be used on both sides of chain.	Oil level should be kept lower than chain lowest point to maintain h dimension to be about 12 to 25 mm.
C		Forced lubrication Oil pump in used to force continuous spray of oil after cooling to chain within a leak-proof casing. No. of spray oil holes should be N+1 if the number of chain strand is N.	

In all types of lubrication, roller chain should be cleaned periodically using light oil or gasoline. In order to see if lubrication is performed satisfactorily, remove chain from drive and check its pin and bushing. If pin and bushing show flaking or being colored to red or dark brown, poor lubrication generally exists.

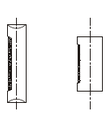
RECOMMENDED OIL

Only high quality oil should be used to lubricate the roller chain. Neither heavy oil nor grease is suitable. The viscosity of the oil used will depend on the chain size, chain speed and ambient temperature. The lubricants recommended for specific temperature ranges are given in the following table :

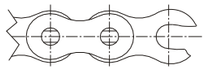
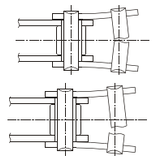
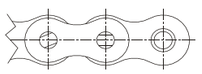
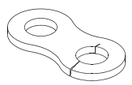
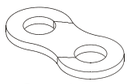
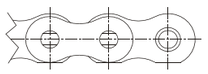
Chain No.	Temperature [℃]							
	-10~0	0~40	40~50	50~60	-10~0	0~40	40~50	50~60
Lubrication Type	TYPE A.B				TYPE C			
50 or less	SAE 10	SAE 20	SAE 30	SAE 40	SAE 10	SAE 20	SAE 30	SAE 40
60 ~ 80	SAE 20	SAE 30	SAE 40	SAE 50	SAE 10	SAE 20	SAE 30	SAE 40
100	SAE 20	SAE 30	SAE 40	SAE 50	SAE 20	SAE 30	SAE 40	SAE 50
120 or more	SAE 30	SAE 40	SAE 50	SAE 50	SAE 20	SAE 30	SAE 40	SAE 50

TROUBLE SHOOTING HINTS

Possible caused of troubles are summarized below. The solution hints are answers to trouble-free operations and optimum drives you would need.

Problem	Possible Causes	Suggested Remedy
Excessive Noise	● Mis-alignment of sprockets ● Too little or too much slack ● Chain obstruction ● Loose chain guard or bearing ● Inadequate lubrication or non-lubrication ● Chain pitch size too large	● Re-align sprockets and shafts ● Adjust centers or take-up ● Inspect and remove obstruction ● Tighten bolts and check bearings ● Lubricate properly ● Check chain drive recommendation
Chain Vibration	● Excessive chain slack ● Center distance too long ● Stiff links	● Adjust chain tensioner ● Install idler ● Lubricate or replace chain
Wear inside link plate and one side of sprocket teeth	● Mis-alignment	● Realign sprockets and shafts ● Replace chain and sprockets if necessary
 Pin Bushing Galling	● Overload ● Inadequate lubrication	● Proper lubrication ● Replace chain when elongation exceeds functional limits

TROUBLE SHOOTING HINTS

Problem	Possible Causes	Suggested Remedy
Chain gets stiff	● Inadequate lubrication ● Corrosion ● Excessive load ● Mis-alignment	● Clean and establish correct lubrication ● Replace with anti-corrosion chain ● Reduce load or replace with suitable strength chain ● Re-align sprockets and shafts
Chain climb sprockets	● Excessive chain slack ● Inadequate lubrication ● Overload	● Install tensioner if necessary ● Reduce load or replace with suitable strength chain
 Fractured Plate	● Extreme overload	● Inspect the drive to determine the cause of high load
 Broken Pins	● Extreme overload	● Inspect the drive to determine the cause of high load
 Broken Offset Link Pins	● Overload	● One-pitch offset-links are not recommended ● Redesign drive using a higher capacity chain
 Turn Pins	● Overload ● Inadequate lubrication	● Replace chain as soon as possible ● Reduce shock load or install stronger chain ● Lubricate properly
 Fatigue Failure	● Extreme overload	● Inspect the drive to determine the cause of high load ● Redesign drive using a higher capacity chain
 Cracking	● Stress corrosion cracking	● Protect the chain from corrosion ● Install anti-corrosive chains
 Broken Rollers	● Foreign material between chain and sprocket tooth ● Fatigue failure	● Shield drive from foreign matter ● Redesign chain speed and load
 Worn Plates	● Bottom of plates worn due to rubbing on guides	● Chain should be replaced when wear over 5% of the plates heigh