TRABAJO PRÁCTICO - EM_CADENAS

PREGUNTA 1

$H_S = k_S \cdot H_{nom.}$

El factor de servicio k_S se determina de la tabla 1 del catálogo en la página 15:

Input Power: Electrical motor or turbine.

Driven equipment: Conveyors (not uniformly loaded or fed).

$k_S = 1{,}3$

$H_S = 1{,}3 \cdot 15\,HP = \boxed{19{,}5\,HP}$

se obtiene el nro ANSI tomando en cuenta la restricción de un solo ranal, la potencia de selección y las rpm de la rueda menor.

Se obtiene del chart C (pag. 15) del catálogo: **ANSI 60**

$$\boxed{p = \frac{1''}{8} \cdot 6 = \frac{3}{4}'' = 19{,}05\,mm}$$

PREGUNTA 2

Se determina $\boxed{z_1 = 21}$ (900 rpm; 20,9 HP, Tabla pag. 27: Ratings).

* Se pudo haber tomado 900 rpm y 19,8 HP > 19,5 HP pero se busca que z_1 sea impar.

$k_1 \cdot H_{tab.}$

↳ Factor de corrección por nº de ranales. igual a 1.

La lubricación es tipo "B"

El paso de dientes en el piñón y la corona ha de ser el mismo e igual al paso p de la cadena.

Luego ha de ser. $\frac{z_1}{\pi D_1} = \frac{z_2}{\pi D_2} = p^{-1} \longrightarrow \frac{z_1}{z_2} = \frac{D_1}{D_2} = \frac{n_2}{n_1} = \frac{1}{k}$.

Luego: $z_2 = k z_1 = \frac{900\,rpm}{235\,rpm} \cdot 21 = 3{,}85 \times 21 = 80{,}4 \longrightarrow \boxed{z_2 = 80}$

PREGUNTA 3

$$d_1 = \frac{p}{\sin(\pi/z_1)} = \frac{3/4''}{\sin(\pi/21)} = \boxed{5{,}032''}$$

PREGUNTA 4. $d_2 = \frac{p}{\sin(\pi/z_2)} = \frac{3/4"}{\sin(\pi/80)} = \boxed{19,104"}$

PREGUNTA 5 El valor sugerido por la bibliografía es de 40 eslabones.

Luego: $e = 40p = \underbrace{40 \cdot 0,75"}_{Cp.} = \boxed{30"}$

$$L_p = 2C_p P + p\frac{z_1+z_2}{2} + \frac{p(z_2-z_1)^2}{4\pi^2 C_p} \rightarrow L_p = 2C_p + \frac{z_1+z_2}{2} + \frac{(z_2-z_1)^2}{4\pi^2 C_p}$$

$$L_p = 2\times 40 + \frac{80+21}{2} + \frac{(80-21)^2}{4\pi^2 \times 40} = 132,70 \text{ eslabones.}$$

Se adopta $\boxed{L_p = 132 \text{ eslabones.}}$

PREGUNTA 6.

$L_p \cdot p = L = 132 \cdot 0,75" = \boxed{99"}$

PREGUNTA 7. (ya se había determinado que era tipo B).

PREGUNTA 8. $180/z_2 = \underbrace{\text{sen}^{-1}(p/d_2)}_{} \rightarrow z_2 = \frac{\pi}{\text{sen}^{-1}(p/d_2)} = \frac{\pi}{\text{sen}^{-1}(0,75"/16,54")}$

$z_2 = 69,24 \rightarrow$ se toma 68. para cumplir con el criterio de que z_2 sea par.

$z_1 = z_2/i = 68/\left(\frac{900 \text{ rpm}}{235 \text{ rpm}}\right) = 17,75 \rightarrow$ se adopta $\boxed{z_1 = 17}$ (impar).

$z_2 = z_1 \cdot i = 17\left(\frac{900 \text{ rpm}}{235 \text{ rpm}}\right) = 65,12 \rightarrow \boxed{z_2 = 66 \text{ (par)}}$ PREGUNTA 9

PREGUNTA 10. Para ANSI 60 en la tabla de Ratings. se obtiene.

$H_{tab} = 16,7$ HP. (900 rpm y 17 dientes de la rueda chica).

Vemos que si se usa un solo ranal sea $k_1 = 1$ y $k_1 H_{tab} = 16,7$ HP.

Luego: $k_1 H_{tab} < k_s H_{nom} = 19,5$ HP. Luego no es suficiente un solo ranal. se adoptan dos ranales en su lugar. Con lo que pasa a ser $k_1 = 1,7$

$k_1 \cdot H_{tab} = 1,7 \cdot 16,7$ HP $= \boxed{28,39 \text{ HP} > k_s \cdot H_{nom}}$

PREGUNTA 11. $d_1 = \frac{P}{\sin 180/z_1} = \frac{0{,}75''}{\sin\left(\frac{180}{17}\right)} = 4{,}082''$.

$d_1 = 103{,}67$ mm.

PREGUNTA 12. $d_2 = \frac{P}{\sin\left(\frac{180}{z_2}\right)} = \frac{0{,}75''}{\sin\left(\frac{180}{66}\right)} = 15{,}76'' = 400{,}36$ mm

PREGUNTA 13. Adoptamos $C_p = 40$

$$L_p = 2C_p + \frac{z_1+z_2}{2} + \frac{(z_2-z_1)^2}{4\pi^2 C_p}$$

$$L_p = 2\times 40 + \frac{17+66}{2} + \frac{(66-17)^2}{4\pi^2\times 40} = 123{,}02.$$

para evitar el uso del eslabón intermedio imponemos una cantidad par de eslabones. Luego se adopta $L_p = 124$.

PREGUNTA 14.

$L = L_p \times p = 124 \times 0{,}75'' = 93'' = 2362{,}2$ mm

PREGUNTA 15. Se determina lubricación tipo B. (ratings ANSI 60) con 900 rpm y $z_1 = 17$.

PREGUNTA 16. $z_1 = 11$ (impar) Ratings ANSI 80 $ksHn\,om = 23{,}0$ HP.

$$z_2 = \frac{900\text{ rpm}}{235\text{ rpm}} \cdot z_1 = 42{,}13 \longrightarrow \text{Adoptamos } z_2 = 42$$

Ahora recién uno se percata de que también debe ser $d_2 < 420$ mm. Con esta limitación calculamos z_2 máximo.

$$d_2 = \frac{P}{\text{sen}(180/z_2)} \longrightarrow 180/z_2 = \text{sen}^{-1}(P/d_2) \longrightarrow z_2 = \frac{180}{\text{sen}^{-1}(P/d_2)}$$

$$z_2 < \frac{180}{\text{sen}^{-1}[1''/(420/25{,}4)'']} = 51{,}92 \longrightarrow \text{tomamos } z_2 = 50$$

$z_1 = z_2/i = z_2 \cdot 235/900 = 13{,}05$.

$z_1 = 13$

de la tabla de Ratings-ANSI 80 con $Z_1 = 13$ y rpm = 900 se obtiene $H_{tab} = 29,1$ HP $\longrightarrow$ luego. $k_1 = 1$ (un solo ranal)

Sin embargo hay que notar nuevamente que era suficiente con un piñón de 11 dientes y una corona de 42 dientes y un ranal, cumpliendose la imposición de $d_2 < 420$ mm.

PREGUNTA 17 (se respondió en el análisis anterior)

PREGUNTA 18. $d_1 = \dfrac{1''}{\sin(180/13)} = 4,18'' = 106,14$ mm.

PREGUNTA 19: $d_2 = \dfrac{1''}{\sin(180/50)} = 15,93'' = 404,52$ mm.

PREGUNTA 20. tomamos nuevamente $C_p = 40$ eslabones.

$$L_p = 2C_p + \frac{Z_1+Z_2}{2} + \frac{(Z_2-Z_1)^2}{4\pi^2 C_p} = 2\times 40 + \frac{13+50}{2} + \frac{(50-13)^2}{4\pi^2 \times 40}$$

$L_p = 112,37 \longrightarrow$ **$L_p = 112$**

PREGUNTA 21: $L_p \cdot p = 112 \times 1'' =$ **$112'' = 2854,12$ mm**

PREGUNTA 22: Se determina de la tabla de Ratings.

PREGUNTA 23: $H_s = k_s \cdot H_{nom} = 1,6 \times 2\,kW = 3,2\,kW \cdot \dfrac{HP}{0,746\,kW}$

$H_s = 4,29$ HP

ANSI 60 (chart C- 100 rpm small sprocket - 2 strands).

$p = 3/4''$

PREGUNTA 24. La capacidad de la rueda chica ha de ser entonces.

$k_1 H_{tab} > H_{nom} k_s \longrightarrow H_{tab} > \dfrac{H_{nom} k_s}{k_1} = 4,29\,HP / 1,7$

$H_{tab} > 2,52$ HP.

$Z_1 = 19$ (100 rpm - $H_{tab} = 2,60$ HP) $\longrightarrow$ Ratings. ANSI 60.

$i = \dfrac{N_1}{n_2} = \dfrac{100\text{ rpm}}{68\text{ rpm}} = 1,47 \longrightarrow Z_2 = Z_1 \cdot i = 27,94$

$Z_2 = 28$.

PREGUNTA 25: $d_1 = \frac{0,75''}{\sin\left(\frac{180}{19}\right)} = 4,56'' = 115,74\ mm$

PREGUNTA 26: $d_2 = \frac{0,75''}{\sin\left(\frac{180}{28}\right)} = 6,70'' = 170,14\ mm$

PREGUNTA 27: Tomando $C_p = 40$.

$L_p = 2x40 + \frac{19+28}{2} + \frac{(28-19)^2}{4\pi^2 x\, 40} = 103,55 \longrightarrow$ 104 eslabones

PREGUNTA 28: $pL_p = 0,75'' \times 104 = 78'' = 1981,2\ mm$

PREGUNTA 29: Tipo A (Ratings ANSI 60 - $Z_1 = 19$ - 100 rpm).

PREGUNTA 30: Supongo que lo que se pregunta es: Cual es la capacidad de transmisión de potencia del mando?.
Porque en sí, el mando debe ser capaz de transmitir 2kW de potencia del accionamiento a la carga. y en ese sentido la potencia del motor no cambia.

Si se conserva todo pero se usan 3 canales, entonces la capacidad de transmisión del mando es de: $\underbrace{2,5}_{k_1 \rightarrow \text{Factor por multiple strands. (3 strands)}} x.\ 2,60\ HP = 6,5\ HP$

Considerando entonces aderai el Factor de servicio de 1,6.
Sera $H_{nom} = 6,5\ HP / 1,6 = 4,0625\ HP$

PREGUNTA 31: $K_s = 1,3$ (Tabla 1 - Input Power (electrical motor) - ball Mill).

$H_s = K_s \cdot H_{nom} = 30\ Hp \cdot 1,3 = 39\ HP$, ANSI 100 (300 rpm - 2 strands - 39 HP - chart C).

$P = \frac{10''}{8} = 1\ 1/4''$

PREGUNTA 32: $H_{tas} = K_s \cdot H_{nom} / K_1 = 39\ HP / 1,7 = 22,94\ HP$.

$Z_1 = 15$ (300 rpm - 24,2 HP - Ratings ANSI 100)

$i = n_1/n_2 = 300\ rpm / 120\ rpm = 2,5 \longrightarrow Z_2 = i Z_1 = 37,5 \rightarrow Z_2 = 38$

PREGUNTA 33: $d_1 = \frac{1\ 1/4''}{\sin\left(\frac{180}{15}\right)} = 6{,}012'' = 152{,}71\ mm$

PREGUNTA 34: $d_2 = \frac{1\ 1/4''}{\sin\left(\frac{180}{38}\right)} = 15{,}14'' = 384{,}48\ mm$

PREGUNTA 35: $L_p = 2x30 + \frac{15+38}{2} + \frac{(38-15)^2}{4\pi^2 x\ 30} = 86{,}95$

$L_p \rightarrow$ 86 eslabones.

PREGUNTA 36: $p x L_p = 86 x\ 1\ 1/4'' = 107{,}5'' = 2730{,}5\ mm.$

PREGUNTA 37 Tipo B (se determina de la tabla de Ratings ANSI 100).

PREGUNTA 38. La potencia de selección siguiendo da 39 HP.

ANSI 80 (39 HP - 3 strands - 300 rpm)

P = 1"

$\rightarrow k_1$: Factor por múltiples ranuras (3)

PREGUNTA 39. $H_{tab} > 39\ HP / 2{,}5 = 15{,}6\ HP.$

$Z_1 = 19$ (300 rpm - 16,3 HP - ANSI 80 ratings)

$i = 300/120 = 2{,}5 \longrightarrow Z_2 = Z_1 \cdot i = 47{,}5 = Z_2 \rightarrow Z_2 = 48$

PREGUNTA 40. $d_1 = \frac{1''}{\sin(180/19)} = 6{,}076'' = 154{,}32\ mm$

PREGUNTA 41 $d_2 = \frac{1''}{\sin(180/48)} = 15{,}29'' = 388{,}36\ mm$

PREGUNTA 42. $L_p = 2x30 + \frac{19+48}{2} + \frac{(48-19)^2}{4\pi^2 x 30} = 94{,}21$

$L_p = 94$ eslabones.

PREGUNTA 43: $L = 94'' = 2387{,}6\ mm$

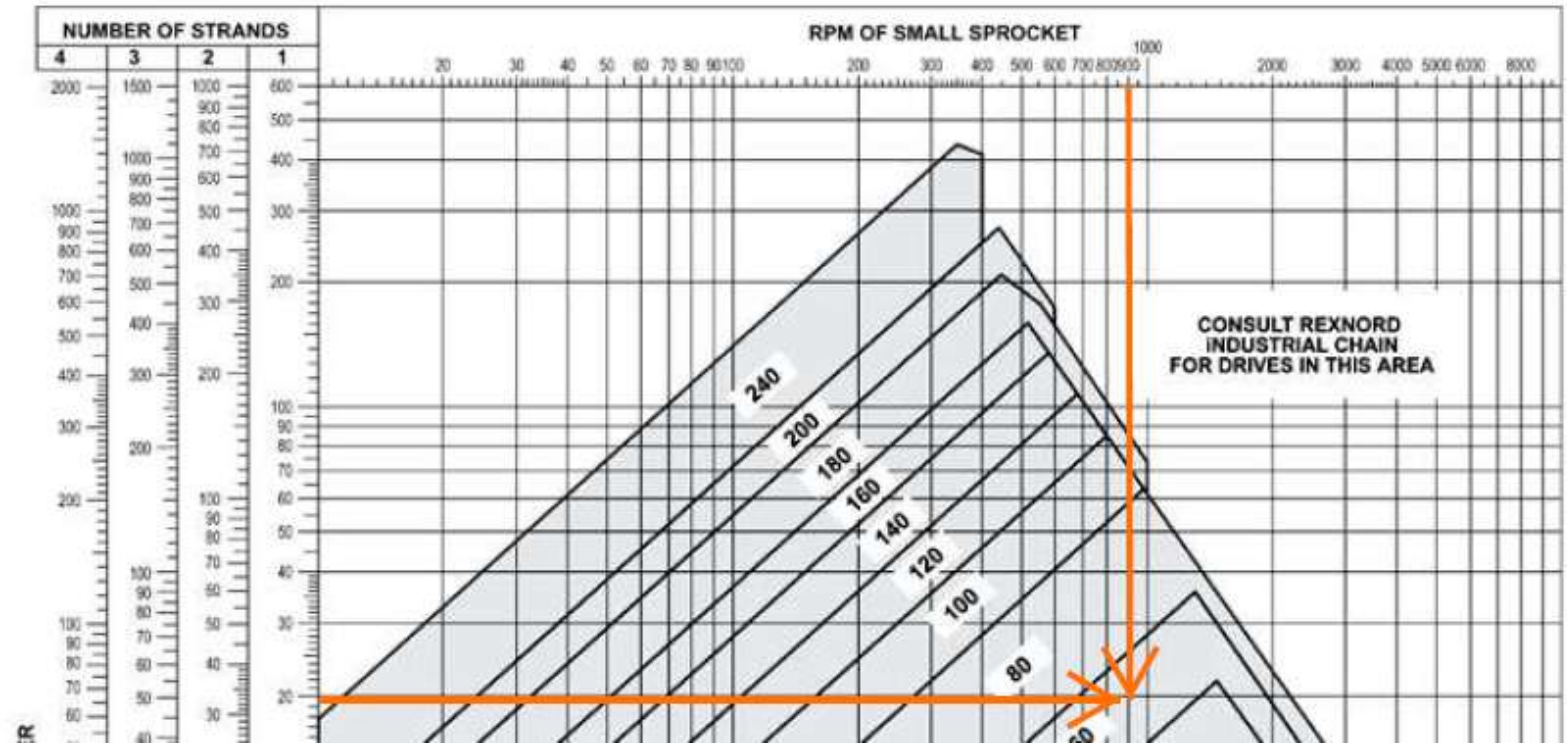
PREGUNTA 44: $\longrightarrow$ Se determinó de la tabla de Ratings para ANSI 80 (Tipo B)

Table 1 Service factors

Driven equipment	Service factors		
	Input power		
	Internal combustion engine with hydraulic drive	Electric motor or turbine	Internal combustion engine with mechanical drive
Agitators, liquid stock	1.0	1.0	1.2
Beaters	1.2	1.3	1.4
Blowers, centrifugal	1.0	1.0	1.2
Boat propellers	1.4	1.5	1.7
Compressors			
centrifugal	1.2	1.3	1.4
reciprocating, 3 or more cylinders	1.2	1.3	1.4
reciprocating, singular, 2 cylinders	1.4	1.5	1.7
Conveyors			
uniformly loaded or fed	1.0	1.0	1.2
not uniformly loaded or fed	1.2	1.3	1.4
reciprocating	1.4	1.5	1.7

Drive Engineering Chart

Chart C Trail selection of standard roller chains

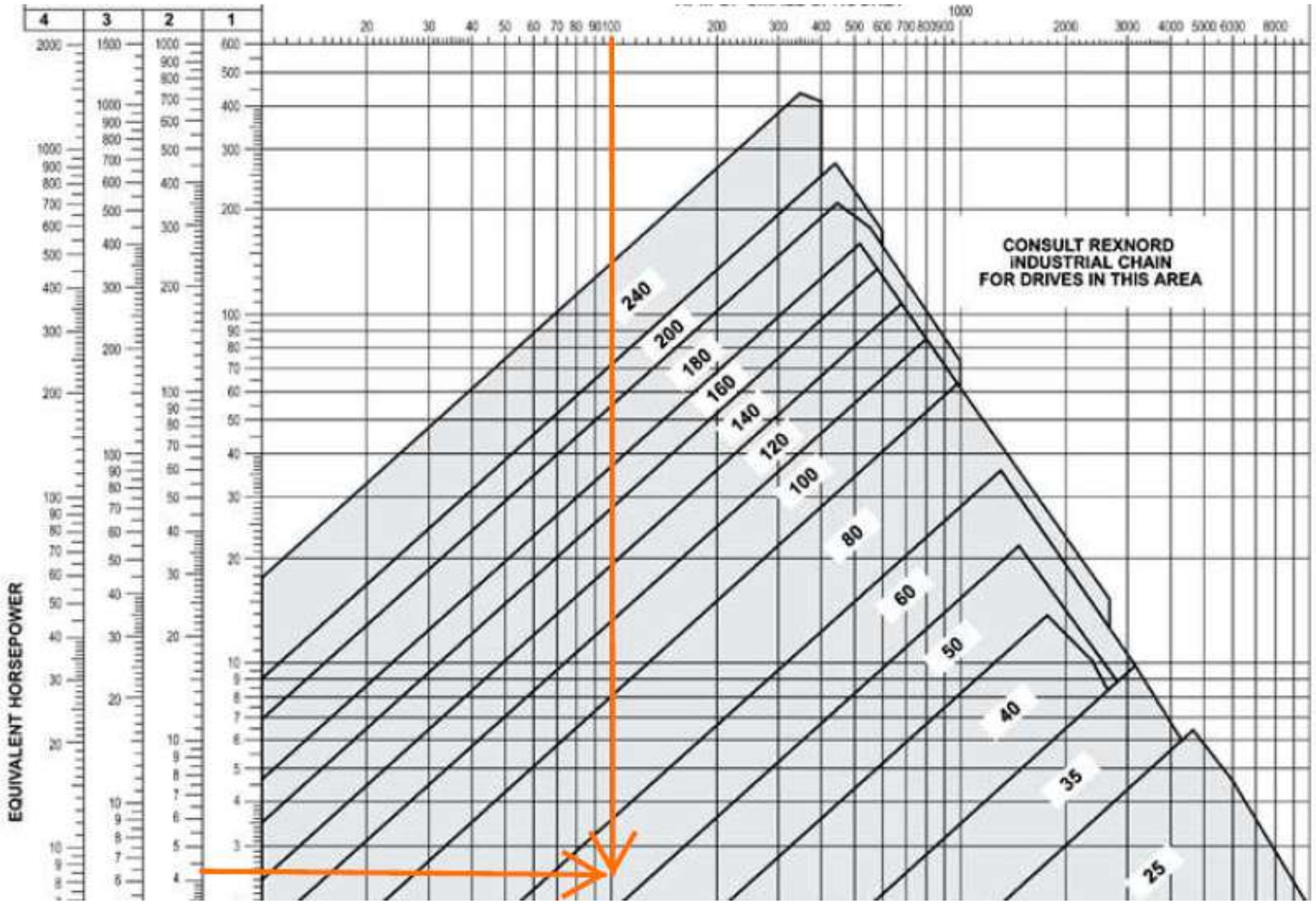


Number of teeth, in small sprocket	Maximum bore inches	Horsepower for single strand chain ▲													
		RPM of small sprocket													
		25	50	100	200	300	500	700	900	1000	1100	1200	1400	1600	180
11	1.250	0.41	0.77	1.44	2.69	3.87	6.13	8.30	10.4	11.4	12.5	11.9	9.4	7.70	6.4
12	1.344	0.45	0.85	1.58	2.95	4.25	6.74	9.12	11.4	12.6	13.7	13.5	10.7	8.77	7.3
13	1.500	0.50	0.92	1.73	3.22	4.64	7.34	9.94	12.5	13.7	14.9	15.2	12.1	9.89	8.2
14	1.750	0.54	1.00	1.87	3.49	5.02	7.96	10.8	13.5	14.8	16.2	17.0	13.5	11.1	9.2
15	1.938	0.58	1.08	2.01	3.76	5.41	8.57	11.6	14.5	16.0	17.4	18.8	15.0	12.3	10.
16	2.125	0.62	1.16	2.16	4.03	5.80	9.19	12.4	15.6	17.1	18.7	20.2	16.5	13.5	11.
17	2.313	0.66	1.24	2.31	4.30	6.20	9.81	13.3	16.7	18.3	19.9	21.6	18.1	14.8	12.
18	2.500	0.70	1.31	2.45	4.58	6.59	10.4	14.1	17.7	19.5	21.2	22.9	19.7	16.1	13.
19	2.688	0.75	1.39	2.60	4.85	6.99	11.1	15.0	18.8	20.6	22.5	24.3	21.4	17.5	14.
20	2.813	0.79	1.47	2.75	5.13	7.38	11.7	15.8	19.8	21.8	23.8	25.7	23.1	18.9	15.
21	3.063	0.83	1.55	2.90	5.40	7.78	12.3	16.7	20.9	23.0	25.1	27.1	24.8	20.3	17.
22	3.250	0.87	1.63	3.05	5.68	8.19	13.0	17.5	22.0	24.2	26.4	28.5	26.6	21.8	18.
23	3.438	0.92	1.71	3.19	5.96	8.59	13.6	18.4	23.1	25.4	27.7	29.9	28.4	23.3	19.
24	3.625	0.96	1.79	3.35	6.24	8.99	14.2	19.3	24.2	26.6	29.0	31.3	30.3	24.8	20.
25	3.750	1.00	1.87	3.50	6.52	9.40	14.9	20.1	25.3	27.8	30.3	32.7	32.2	26.4	22.
28	4.188	1.13	2.12	3.95	7.37	10.6	16.8	22.8	28.5	31.4	34.2	37.0	38.2	31.3	26.
30	4.500	1.22	2.28	4.26	7.94	11.4	18.1	24.5	30.8	33.8	36.8	39.8	42.4	34.7	29.
32	4.750	1.31	2.45	4.56	8.52	12.3	19.4	26.3	33.0	36.3	39.5	42.7	46.7	38.2	32.
35	5.500	1.44	2.69	5.03	9.38	13.5	21.4	29.0	36.3	39.9	43.5	47.1	53.4	43.7	36.
40	6.250	1.67	3.11	5.81	10.8	15.6	24.7	33.5	42.0	46.1	50.3	54.4	62.5	53.4	44.
Lubrication type ■		A				B									C

Number of teeth, in small sprocket	Maximum bore inches	Horsepower for single strand chain ▲													
		RPM of small sprocket													
		25	50	100	200	300	500	700	900	1000	1100	1200	1400	1600	1800
11	1.250	0.41	0.77	1.44	2.69	3.87	6.13	8.30	10.4	11.4	12.5	11.9	9.4	7.70	6.45
12	1.344	0.45	0.85	1.58	2.95	4.25	6.74	9.12	11.4	12.6	13.7	13.5	10.7	8.77	7.35
13	1.500	0.50	0.92	1.73	3.22	4.64	7.34	9.94	12.5	13.7	14.9	15.2	12.1	9.89	8.29
14	1.750	0.54	1.00	1.87	3.49	5.02	7.96	10.8	13.5	14.8	16.2	17.0	13.5	11.1	9.26
15	1.938	0.58	1.08	2.01	3.76	5.41	8.57	11.6	14.5	16.0	17.4	18.8	15.0	12.3	10.3
16	2.125	0.62	1.16	2.16	4.03	5.80	9.19	12.4	15.6	17.1	18.7	20.2	16.5	13.5	11.3
17	2.313	0.66	1.24	2.31	4.30	6.20	9.81	13.2	16.7	18.3	19.9	21.6	18.1	14.8	12.4
18	2.500	0.70	1.31	2.45	4.58	6.59	10.4	14.1	17.7	19.5	21.2	22.9	19.7	16.1	13.5
19	2.688	0.75	1.39	2.60	4.85	6.99	11.1	15.0	18.8	20.6	22.5	24.3	21.4	17.5	14.6
20	2.813	0.79	1.47	2.75	5.13	7.38	11.7	15.8	19.8	21.8	23.8	25.7	23.1	18.9	15.8
21	3.063	0.83	1.55	2.90	5.40	7.78	12.3	16.7	20.9	23.0	25.1	27.1	24.8	20.3	17.0
22	3.250	0.87	1.63	3.05	5.68	8.19	13.0	17.5	22.0	24.2	26.4	28.5	26.6	21.8	18.2
23	3.438	0.92	1.71	3.19	5.96	8.59	13.6	18.4	23.1	25.4	27.7	29.9	28.4	23.3	19.5
24	3.625	0.96	1.79	3.35	6.24	8.99	14.2	19.3	24.2	26.6	29.0	31.3	30.3	24.8	20.8
25	3.750	1.00	1.87	3.50	6.52	9.40	14.9	20.1	25.3	27.8	30.3	32.7	32.2	26.4	22.1
28	4.188	1.13	2.12	3.95	7.37	10.6	16.8	22.8	28.5	31.4	34.2	37.0	38.2	31.3	26.2
30	4.500	1.22	2.28	4.26	7.94	11.4	18.1	24.5	30.8	33.8	36.8	39.8	42.4	34.7	29.1
32	4.750	1.31	2.45	4.56	8.52	12.3	19.4	26.3	33.0	36.3	39.5	42.7	46.7	38.2	32.0
35	5.500	1.44	2.69	5.03	9.38	13.5	21.4	29.0	36.3	39.9	43.5	47.1	53.4	43.7	36.6
40	6.250	1.67	3.11	5.81	10.8	15.6	24.7	33.5	42.0	46.1	50.3	54.4	62.5	53.4	44.7
Lubrication type ■		A		B					C						

Ratings

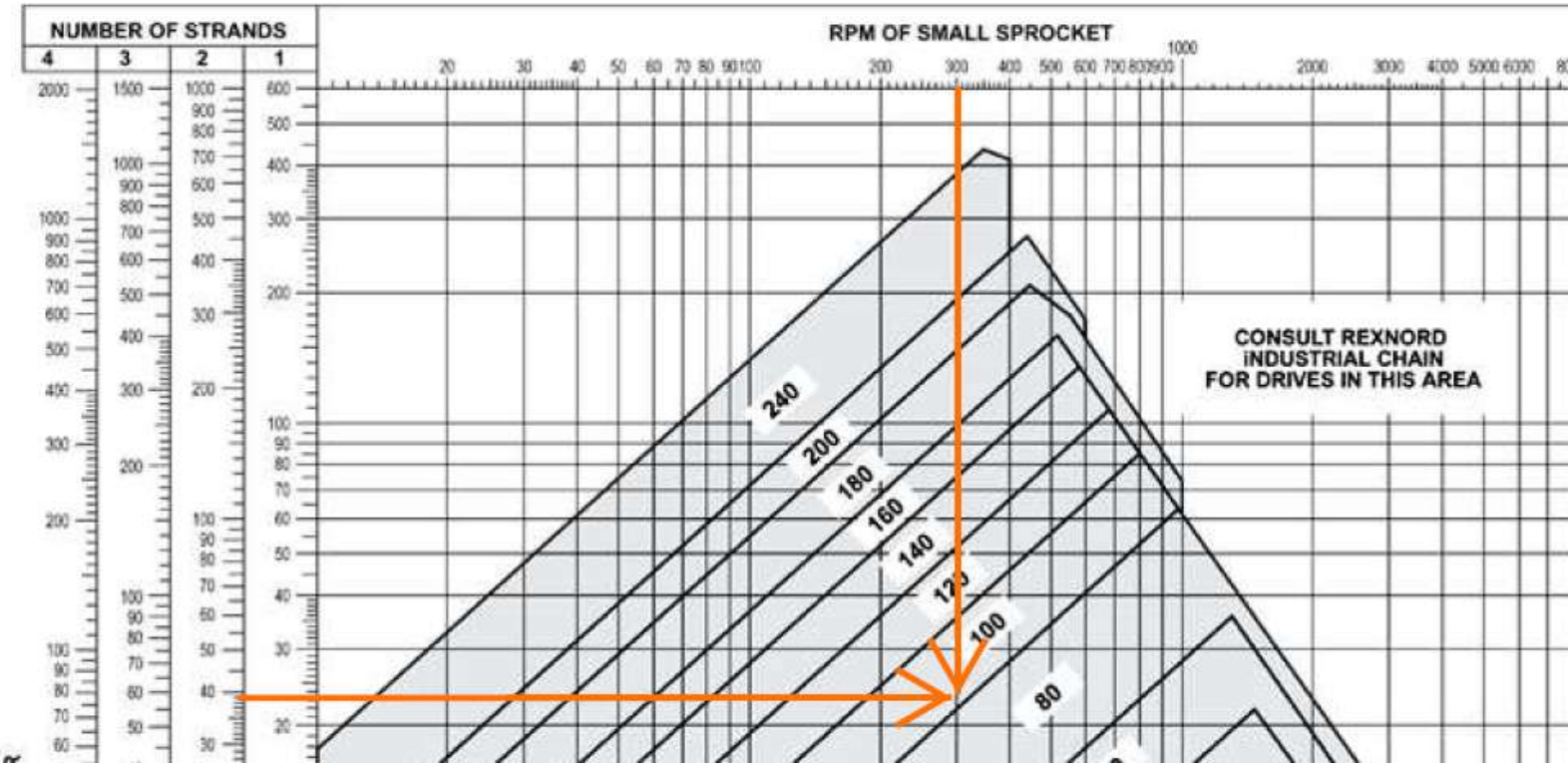
Number of teeth, in small sprocket	Maximum bore inches	Horsepower for single strand chain ▲														
		RPM of small sprocket														
		25	50	100	200	300	400	500	700	900	1000	1200	1400	1600	1800	20
11	1.625	0.97	1.80	3.36	6.28	9.04	11.7	14.3	19.4	23.0	19.6	14.9	11.8	9.69	8.12	6.
12	1.750	1.06	1.98	3.69	6.89	9.93	12.9	15.7	21.3	26.2	22.3	17.0	13.5	11.0	9.25	7.
13	2.000	1.16	2.16	4.03	7.52	10.8	14.0	17.1	23.2	29.1	25.2	19.2	15.2	12.5	10.4	8.
14	2.250	1.25	2.34	4.36	8.14	11.7	15.2	18.6	25.1	31.5	28.2	21.4	17.0	13.9	11.7	9.
15	2.563	1.35	2.52	4.70	8.77	12.6	16.4	20.0	27.1	34.0	31.2	23.8	18.9	15.4	12.9	1
16	2.875	1.45	2.70	5.04	9.41	13.5	17.6	21.5	29.0	36.4	34.4	26.2	20.8	17.0	14.2	12
17	3.125	1.55	2.88	5.38	10.0	14.5	18.7	22.9	31.0	38.9	37.7	28.7	22.7	18.6	15.6	13
18	3.375	1.64	3.07	5.72	10.7	15.4	19.9	24.4	33.0	41.4	41.1	31.2	24.8	20.3	17.0	14
19	3.688	1.74	3.25	6.07	11.3	16.3	21.1	25.8	35.0	43.8	44.5	33.9	26.9	22.0	18.4	15
20	3.813	1.84	3.44	6.41	12.0	17.2	22.3	27.3	37.0	46.3	48.1	36.6	29.0	23.8	19.9	17
21	4.125	1.94	3.62	6.76	12.6	18.2	23.5	28.8	39.0	48.9	51.7	39.4	31.2	25.6	21.4	18
22	4.438	2.04	3.81	7.11	13.3	19.1	24.8	30.3	41.0	51.4	55.5	42.2	33.5	27.4	23.0	19
23	4.625	2.14	4.00	7.46	13.9	20.1	26.0	31.8	43.0	53.9	59.3	45.1	35.8	29.3	24.6	21
24	4.688	2.24	4.19	7.81	14.6	21.0	27.2	33.2	45.0	56.4	62.0	48.1	38.2	31.2	26.2	22
25	4.750	2.34	4.37	8.16	15.2	21.9	28.4	34.7	47.0	59.0	64.8	51.1	40.6	33.2	27.8	23
28	5.375	2.65	4.94	9.23	17.2	24.8	32.1	39.3	53.2	66.7	73.3	60.6	48.1	39.4	33.0	28
30	5.750	2.85	5.33	9.94	18.5	26.7	34.6	42.3	57.3	71.8	78.9	67.2	53.3	43.6	36.6	31
32	6.313	3.06	5.71	10.7	19.9	28.6	37.1	45.4	61.4	77.0	84.6	74.0	58.7	48.1	40.3	34
35	7.750	3.37	6.29	11.7	21.9	31.6	40.9	50.0	67.6	84.8	93.3	84.7	67.2	55.0	46.1	39
40	9.375	3.89	7.27	13.6	25.3	36.4	47.2	57.7	78.1	99.01	108	103	82.1	67.2	56.3	48
Lubrication type ■		A			B									C		


4
3
2
1
EQUIVALENT HORSEPOWER
CONSULT REXNORD
INDUSTRIAL CHAIN
FOR DRIVES IN THIS AREA
240
200
180
160
140
120
100
80
60
50
40
35
25

Ratings

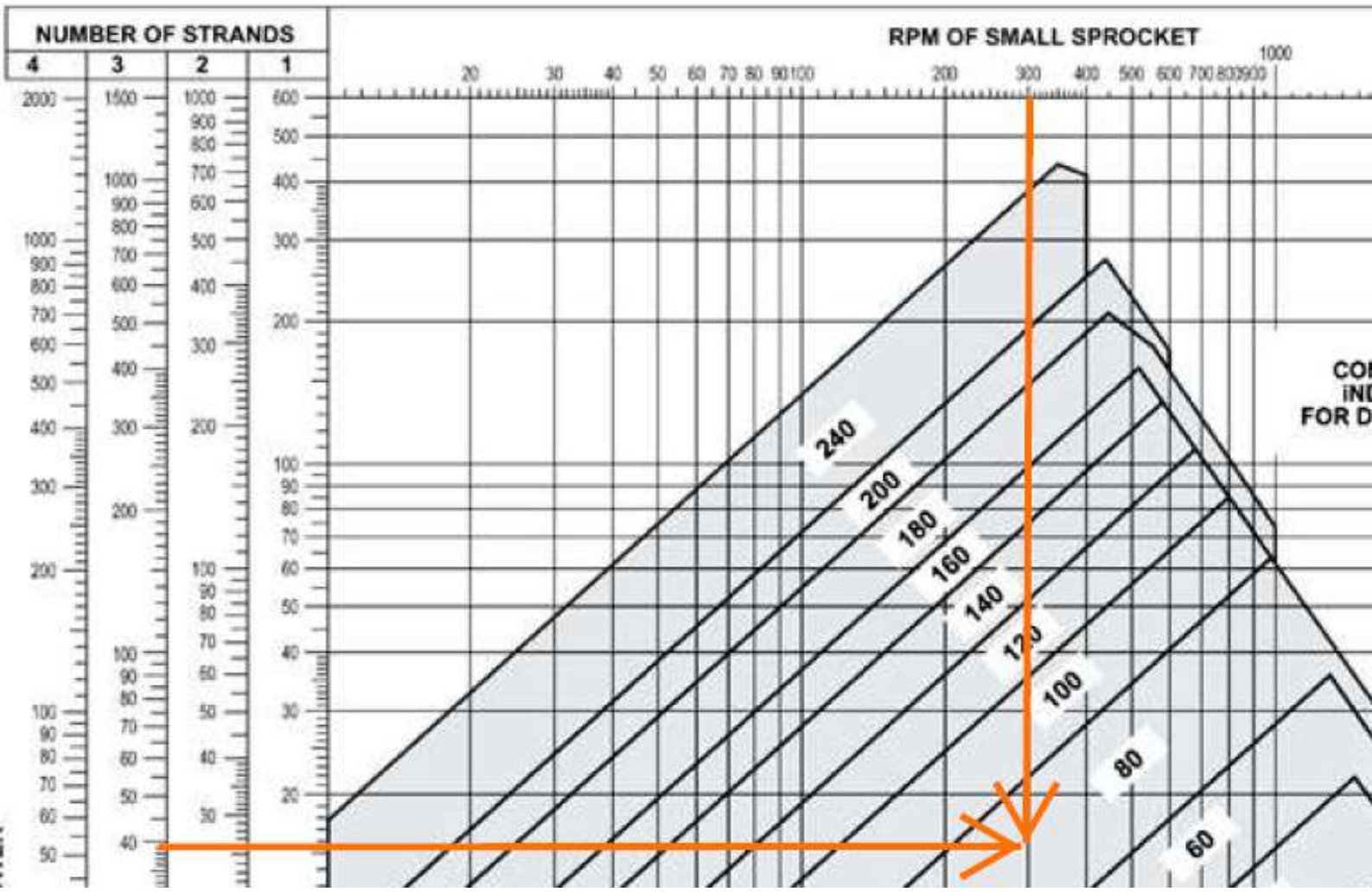
Number of teeth, in small sprocket	Maximum bore inches	Horsepower for single strand chai												
		RPM of small sprocket												
		25	50	100	200	300	500	700	900	1000	1100	1200	1400	160
11	1.250	0.41	0.77	1.44	2.69	3.87	6.13	8.30	10.4	11.4	12.5	11.9	9.4	7.7
12	1.344	0.45	0.85	1.58	2.95	4.25	6.74	9.12	11.4	12.6	13.7	13.5	10.7	8.7
13	1.500	0.50	0.92	1.73	3.22	4.64	7.34	9.94	12.5	13.7	14.9	15.2	12.1	9.8
14	1.750	0.54	1.00	1.87	3.49	5.02	7.96	10.8	13.5	14.8	16.2	17.0	13.5	11.
15	1.938	0.58	1.08	2.01	3.76	5.41	8.57	11.6	14.5	16.0	17.4	18.8	15.0	12.
16	2.125	0.62	1.16	2.16	4.03	5.80	9.19	12.4	15.6	17.1	18.7	20.2	16.5	13.
17	2.313	0.66	1.24	2.31	4.30	6.20	9.81	13.3	16.7	18.3	19.9	21.6	18.1	14.
18	2.500	0.70	1.31	2.45	4.58	6.59	10.4	14.1	17.7	19.5	21.2	22.9	19.7	16.
19	2.688	0.75	1.39	2.60	4.85	6.99	11.1	15.0	18.8	20.6	22.5	24.3	21.4	17.
20	2.813	0.79	1.47	2.75	5.13	7.38	11.7	15.8	19.8	21.8	23.8	25.7	23.1	18.
21	3.063	0.83	1.55	2.90	5.40	7.78	12.3	16.7	20.9	23.0	25.1	27.1	24.8	20.
22	3.250	0.87	1.63	3.05	5.68	8.19	13.0	17.5	22.0	24.2	26.4	28.5	26.6	21.
23	3.438	0.92	1.71	3.19	5.96	8.59	13.6	18.4	23.1	25.4	27.7	29.9	28.4	23.
24	3.625	0.96	1.79	3.35	6.24	8.99	14.2	19.3	24.2	26.6	29.0	31.3	30.3	24.
25	3.750	1.00	1.87	3.50	6.52	9.40	14.9	20.1	25.3	27.8	30.3	32.7	32.2	26.
28	4.188	1.13	2.12	3.95	7.37	10.6	16.8	22.8	28.5	31.4	34.2	37.0	38.2	31.
30	4.500	1.22	2.28	4.26	7.94	11.4	18.1	24.5	30.8	33.8	36.8	39.8	42.4	34.
32	4.750	1.31	2.45	4.56	8.52	12.3	19.4	26.3	33.0	36.3	39.5	42.7	46.7	38.
35	5.500	1.44	2.69	5.03	9.38	13.5	21.4	29.0	36.3	39.9	43.5	47.1	53.4	43.
40	6.250	1.67	3.11	5.81	10.8	15.6	24.7	33.5	42.0	46.1	50.3	54.4	62.5	53.
Lubrication type ■		A		B										

Driven equipment	Service factors	
	Input power	
	Internal combustion engine with hydraulic drive	Electric motor or turbine
Agitators, liquid stock	1.0	1.0
Beaters	1.2	1.3
Blowers, centrifugal	1.0	1.0
Boat propellers	1.4	1.5
Compressors		
centrifugal	1.2	1.3
reciprocating, 3 or more cylinders	1.2	1.3
reciprocating, singular, 2 cylinders	1.4	1.5
Conveyors		
uniformly loaded or fed	1.0	1.0
not uniformly loaded or fed	1.2	1.3
reciprocating	1.4	1.5
Cookers, cereal	1.0	1.0
Crushers	1.4	1.5
Elevators, bucket		
uniformly loaded or fed	1.0	1.0
not uniformly loaded or fed	1.2	1.3
Fans, centrifugal	1.0	1.0
Feeders		
rotary table	1.0	1.0
apron, belt, screw, rotary vane	1.2	1.3
reciprocating	1.4	1.5


NUMBER OF STRANDS
4
3
2
1
RPM OF SMALL SPROCKET
20
30
40
50
60
70
80
90
100
200
300
400
500
600
700
800
900
1000
2000
3000
4000
5000
6000
CONSULT REXNORD
INDUSTRIAL CHAIN
FOR DRIVES IN THIS AREA
240
200
180
160
140
120
100
80

Ratings

Number of teeth, in small sprocket	Maximum bore inches	Horsepower for single strand chain ▲													
		RPM of small sprocket													
		25	50	100	200	300	400	500	600	700	800	900	1000	1200	1400
11	2.000	1.85	3.45	6.44	12.0	17.3	22.4	27.4	32.3	37.1	32.8	27.5	23.4	17.8	14.2
12	2.250	2.03	3.79	7.08	13.2	19.0	24.6	30.1	35.5	40.8	37.3	31.3	26.7	20.3	16.1
13	2.500	2.22	4.13	7.72	14.4	20.7	26.9	32.8	38.7	44.5	42.1	35.3	30.1	22.9	18.2
14	2.813	2.40	4.48	8.36	15.6	22.5	29.1	35.6	41.9	48.2	47.0	39.4	33.7	25.6	20.3
15	3.250	2.59	4.83	9.01	16.8	24.2	31.4	38.3	45.2	51.9	52.2	43.7	37.3	28.4	22.5
16	3.500	2.77	5.17	9.66	18.0	26.0	33.6	41.1	48.4	55.6	57.5	48.2	41.1	31.3	24.8
17	3.813	2.96	5.52	10.3	19.2	27.7	35.9	43.9	51.7	59.4	63.0	52.8	45.0	34.3	27.2
18	4.188	3.15	5.88	11.0	20.5	29.5	38.2	46.7	55.0	62.3	68.6	57.5	49.1	37.3	29.6
19	4.563	3.34	6.23	11.6	21.7	31.2	40.5	49.5	58.3	67.0	74.4	62.3	53.2	40.5	32.1
20	4.875	3.53	6.58	12.3	22.9	33.0	42.8	52.3	61.6	70.8	79.8	67.3	57.5	43.7	34.7
21	5.250	3.72	6.94	13.0	24.2	34.8	45.1	55.1	65.0	74.6	84.2	72.4	61.8	47.0	37.3
22	5.625	3.91	7.30	13.6	25.4	36.6	47.4	58.0	68.3	78.5	88.5	77.7	66.3	50.4	40.0
23	5.813	4.10	7.66	14.3	26.7	38.4	49.8	60.8	71.7	82.3	92.8	83.0	70.9	53.9	42.8
24	6.000	4.30	8.02	15.0	27.9	40.2	52.1	63.7	75.0	86.2	97.2	88.5	75.6	57.5	45.6
25	6.125	4.49	8.38	15.6	29.2	42.0	54.4	66.6	78.4	90.1	102	94.1	80.3	61.1	48.5
28	7.000	5.07	9.47	17.7	33.0	47.5	61.5	75.2	88.6	102	115	112	95.2	72.4	57.5
30	7.625	5.47	10.2	19.0	35.5	51.2	66.3	81.0	95.5	110	124	124	106	80.3	63.7
32	8.250	5.86	10.9	20.4	38.1	54.91	71.1	86.9	102	118	133	136	116	88.5	70.2
35	9.125	6.46	12.0	22.5	42.0	60.4	78.3	95.7	113	130	146	156	133	101	80.3
40	-	7.46	13.9	26.0	48.5	69.8	90.4	111	130	150	169	188	163	124	98.1
Lubrication type ■		A		B										C	


NUMBER OF STRANDS
4
3
2
1
RPM OF SMALL SPROCKET
20
30
40
50
60
70
80
90
100
200
300
400
500
600
700
800
900
1000
240
200
180
160
140
100
80
60

Number of teeth, in small sprocket	Maximum bore inches	Horsepower for single strand chain ▲													
		RPM of small sprocket													
		25	50	100	200	300	400	500	700	900	1000	1200	1400	1600	18(
11	1.625	0.97	1.80	3.36	6.28	9.04	11.7	14.3	19.4	23.0	19.6	14.9	11.8	9.69	8.1
12	1.750	1.06	1.98	3.69	6.89	9.93	12.9	15.7	21.3	26.2	22.3	17.0	13.5	11.0	9.2
13	2.000	1.16	2.16	4.03	7.52	10.8	14.0	17.1	23.2	29.1	25.2	19.2	15.2	12.5	10
14	2.250	1.25	2.34	4.36	8.14	11.7	15.2	18.6	25.1	31.5	28.2	21.4	17.0	13.9	11
15	2.563	1.35	2.52	4.70	8.77	12.6	16.4	20.0	27.1	34.0	31.2	23.8	18.9	15.4	12
16	2.875	1.45	2.70	5.04	9.41	13.5	17.6	21.5	29.0	36.4	34.4	26.2	20.8	17.0	14
17	3.125	1.55	2.88	5.38	10.0	14.5	18.7	22.9	31.0	38.9	37.7	28.7	22.7	18.6	15
18	3.375	1.64	3.07	5.72	10.7	15.4	19.9	24.4	33.0	41.4	41.1	31.2	24.8	20.3	17
19	3.688	1.74	3.25	6.07	11.3	16.3	21.1	25.8	35.0	43.8	44.5	33.9	26.9	22.0	18
20	3.813	1.84	3.44	6.41	12.0	17.2	22.3	27.3	37.0	46.3	48.1	36.6	29.0	23.8	19
21	4.125	1.94	3.62	6.76	12.6	18.2	23.5	28.8	39.0	48.9	51.7	39.4	31.2	25.6	21
22	4.438	2.04	3.81	7.11	13.3	19.1	24.8	30.3	41.0	51.4	55.5	42.2	33.5	27.4	23
23	4.625	2.14	4.00	7.46	13.9	20.1	26.0	31.8	43.0	53.9	59.3	45.1	35.8	29.3	24
24	4.688	2.24	4.19	7.81	14.6	21.0	27.2	33.2	45.0	56.4	62.0	48.1	38.2	31.2	26
25	4.750	2.34	4.37	8.16	15.2	21.9	28.4	34.7	47.0	59.0	64.8	51.1	40.6	33.2	27
28	5.375	2.65	4.94	9.23	17.2	24.8	32.1	39.3	53.2	66.7	73.3	60.6	48.1	39.4	33
30	5.750	2.85	5.33	9.94	18.5	26.7	34.6	42.3	57.3	71.8	78.9	67.2	53.3	43.6	36
32	6.313	3.06	5.71	10.7	19.9	28.6	37.1	45.4	61.4	77.0	84.6	74.0	58.7	48.1	40
35	7.750	3.37	6.29	11.7	21.9	31.6	40.9	50.0	67.6	84.8	93.3	84.7	67.2	55.0	46
40	9.375	3.89	7.27	13.6	25.3	36.4	47.2	57.7	78.1	99.01	108	103	82.1	67.2	56
Lubrication type ■		A			B										C