Selection of Roller Chain

It is important to select the most suitable roller chains and sprockets for the job by careful study of power transmission requirements. The following basic factors should be considered when selecting roller chains for transmission needs through there may be other factors.

ATMOSPHERIC CONSIDERATION

The input power ratings appearing on the pages of 93 to 107, have been worked out under the following conditions.

1) To be driven in normal atmosphereof -10°F to 60°C free from ill effect of abrasive dust, corrosive gas, high humidity etc.

2) Sprockets should be aligned and mounted on parallel horizontal shafts.

3) Recommended method of lubrication and recommended kind of lubricant should be used.

4) Should be driven at even load or small load variations.

Power rating of multiple strand chain is not simply calculable by multiplying the power rating of one strand by the number of strand because of uneven load distribution onto each strand. So, multiple strand factor should be used for expected service life.
A service life of 15,000 hrs, can be expected when chain length is 100 pitches and the above conditions are met.

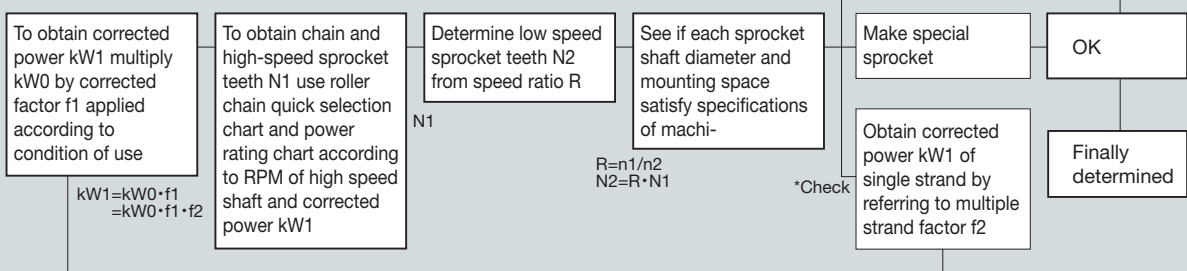## POINT IN SELECTION ROLLER CHAIN AND SPROCKET

The following factors must be taken into consideration in selecting proper chain drive, depending on chain speed-normal or low speed. Also correction factors should be used, fully grasping the conditions of use.

a) Driven machine

b) Type of load: smooth light or heavy shock

c) Source of power

d) kW to be transmitted [kW0:kW]

e) RPM and diameter of high speed shaft[n1:rpm]

f) RPM and diameter of low speed shaft[n2:rpm]

g) Center distance of shaft [m]

h) Chain-driving speed [S:m/min]

SELECTION PROCEDURE ACCORDING TO CHAIN SPEED

IN CASE OF NORMAL SPEED

S=50~250m/min

To obtain corrected power kW1 multiply kW0 by corrected factor f1 applied according to condition of use

$$kW1=kW0 \cdot f1$$
$$=kW0 \cdot f1 \cdot f2$$

To obtain chain and high-speed sprocket teeth N1 use roller chain quick selection chart and power rating chart according to RPM of high speed shaft and corrected power kW1

N1

Determine low speed sprocket teeth N2 from speed ratio R

$$R=n1/n2$$
$$N2=R \cdot N1$$

See if each sprocket shaft diameter and mounting space satisfy specifications of machi-

*Check

Make special sprocket

Obtain corrected power kW1 of single strand by referring to multiple strand factor f2

OK

Finally determined

Economical sprockets for general industrial use are recommended except when special sprockets are made due to unavoidable circumstances.

IN CASE OF LOW SPEED

S=Less than 50m/min.
Divided into two cases depending on chain driving conditions.

1) For low speed drive with few stops and starts, make the chain selection in a way to satisfy the following formula: T×f1×f3≦Max. allowable chain load.

2) For low speed drive with frequent stops and starts. T×f1×f3×f4≦Ave. ultimate strength. Select the chain by substituting the values of chain speed and max working load into formulas (1)&(2), after chain selected tentatively in the general way.

N1[-]=Number of teeth on small sprocket.
N2[-]=Number of teeth on large sprocket.
P [mm]=Chain pitch

S [m/min]=Chain speed
$$=N1 \cdot P \cdot n1/1000$$
T [kN]=Max. working load.
$$=60 \times kW0/S$$