

U.S. TSUBAKI ENGINEERING INFORMATION & CHAIN SELECTION

MATERIALS OF COMPONENT PARTS

	Link Plate	Pin	Bushing	Roller
304 (SS)	AISI304	AISI304	AISI304	AISI304
316 (NS)	AISI316	AISI316	AISI316	AISI316
600 (AS)	AISI304	600 Series HT*	600 Series HT*	600 Series HT*

*PH: Precipitation-Hardened
 600 Series includes 17-4PH, 17-7PH, 17-8PH and 13-7PH. Each has comparable corrosion resistance.
 †On double pitch oversized rollers, the roller material will be AISI304.

PERFORMANCE OF ANTI-CORROSIVE CHAINS

	Corrosion Resistance	Temperature Resistance	Magnetism	Wear Resistance
NP Chain	Acceptable for outdoor and decorative applications	14°F~140°F (Never use below -4°F or over 300°F)	Magnetic	Excellent
NEPTUNE® Chain	Excellent for outdoors, exposure to rain, and seawater	14°F~302°F	Magnetic	Excellent
AS Series	Good for general acid, alkali and water	-40°F~750°F (Never use over 930°F)	Magnetic	Good
SS Series	Good for general acid, alkali and water	-40°F~750°F (Never use below -270°F or over 1300°F)	Slightly magnetic due to cold forming of parts	Fair
NS Series	Superior to SS & AS	-40°F~750°F (Never use below -420°F or over 1500°F)	Non-magnetic	Fair

CHAIN SELECTION

General selection is based on bearing pressure between the pin and bushing. Anti-corrosive roller chains are normally intended to be used at slow speed without lubrication. Chain selection should be made based on the bearing pressure as shown below.

	Maximum Allowable Bearing Pressure Between Pin and Bushing	Maximum Operating Speed
AS Series	2,130 psi	230 ft./min.
SS Series	1,420 psi	230 ft./min.
NS Series	1,420 psi	230 ft./min.

Chain selection can be made using the following formula.

$$\boxed{\text{Maximum Chain Tension}} \times \boxed{\text{Service Factor}} \times \boxed{\text{Speed Coefficient}} \times \boxed{\text{Temperature Factor}} \leq \boxed{\text{Maximum Allowable Load}}$$

Maximum allowable load or maximum bearing pressure as shown above can be doubled only when chain is used in group "1" of the "Corrosion Resistance Guide" on page A-60 and properly lubricated.

MAXIMUM ALLOWABLE LOAD

The chain's maximum allowable load can be obtained by the formula:
(Maximum allowable bearing pressure) • (Bearing area between pin and bushing).

	AS Series	SS Series	NS Series
RS25	—	26 lbs.	26 lbs.
RS35	90 lbs.	60 lbs.	60 lbs.
RS40	150 lbs.	99 lbs.	99 lbs.
RS50	231 lbs.	154 lbs.	154 lbs.
RS60	346 lbs.	231 lbs.	231 lbs.
RS80	596 lbs.	397 lbs.	397 lbs.
RS100	—	573 lbs.	573 lbs.

SERVICE FACTOR

Type of Impact	Service Factor
Smooth transmission	1.0
Transmission with some impact	1.3
Transmission with large impact	1.5

SPEED COEFFICIENT

Chain Speed	Speed Coefficient
0 ~ 50 ft./min.	1.0
50 ~ 100 ft./min.	1.2
100 ~ 160 ft./min.	1.4
160 ~ 230 ft./min.	1.6

TEMPERATURE FACTOR*

Temperature	AS Series	SS Series	NS Series
~ -270°F	X	X	X
-270°F ~ -40°F	X	1.0	1.0
-40°F ~ 750°F	1.0	1.0	1.0
750°F ~ 930°F *	1.8	1.2	1.0
930°F ~ 1,100°F *	X	1.5	1.2
1,100°F ~ 1,300°F *	X	1.8	1.5
1,300°F ~ 1,500°F*	X	X	2.0
1,500°F ~ *	X	X	X

X: Not suggested.

* Use in temperatures exceeding 750°F requires increased clearances to accommodate thermal expansion. Consult U.S. Tsubaki prior to ordering.