DIAMOND®
CHAIN COMPANY

DIAMOND® INFINITY™ SAPPHIRE®

Roller Chain Wear Gauge Instructions

1) As a safety precaution – shut off power and lock out gears and sprockets before attempting to measure chain wear.

2) Determine the pitch of the chain. This is typically stamped on the outer linkplates of the chain. It can also be determined by measuring the distance from the center of one pin to the center of the next pin. Refer to the Diamond Chain product catalog for a list of ANSI standard chain models and correlating pitch measurements or visit www.diamondchain.com.

3) For reliable linear measurement, a taught span of chain must be used. Using slack chain will result in inaccurate measurements.

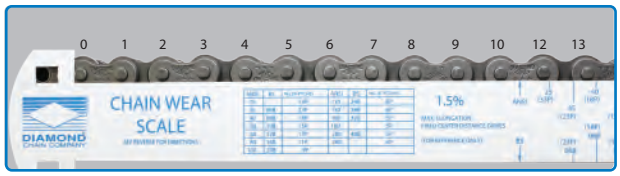
4) Choose either a 1.5% or 3% wear elongation limit to check your span of chain. Each percentage correlates to a different side of the scale. The maximum allowable wear elongation is typically 3% for most industrial applications, depending upon sprocket design. In drives having fixed center distances, chains running in parallel, or where smoother operation is required, chain wear should be limited to approximately 1.5%.
Example: Using ASME/ANSI # 60 roller chain, 13 pitches would measure 9.75 inches for nominal length (13 pitches x .75 pitch).
A maximum wear calculation of 3% would be 1.03 x 9.75 or 10.0425 inches. A maximum wear calculation of 1.5% would be 1.015 x 9.75 or 9.896 inches.

5) Refer to the table on the wear gauge for the number of pitches to inspect. The more pitches (pins) included in the measurement provides a more true representation of the average amount of wear distributed throughout the chain.
Example: For ASME/ANSI # 60 roller chain, 13 pitches will be measured.

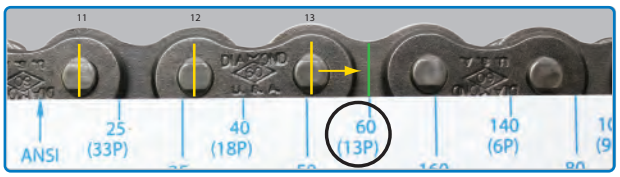
ANSI	BS	NO. OF PITCHES	ANSI	BS	NO. OF PITCHES
25		33P	120	24B	8P
35	06B	23P	140	28B	6P
40	08B	18P	160	32B	5P
50	10B	15P	180		5P
60	12B	13P	200	40B	5P
80	16B	11P	240		4P
100	20B	9P			

6) Place the inside corner of the wear scale around one pin, using that pin as "0", your starting point.

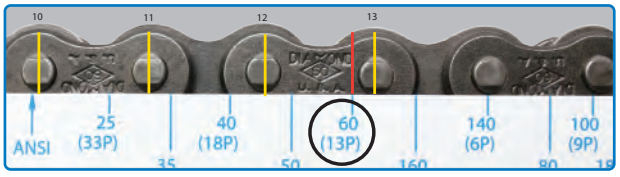
7) Starting at "0" count the number of pins/pitches to be measured for your chain's length.
Example: Count from zero to 13 for ASME/ANSI # 60 roller chain.



8) If the center of the indicated pin does not reach the wear line for the corresponding chain size, the chain has not reached the wear limit.
Example: For ASME/ANSI # 60 roller chain, if the center of the 13th pin does not reach the # 60 wear mark, the chain remains usable.



9) If the center of the indicated pin is at or beyond the indicated line, the chain is worn to the wear limit (1.5% or 3%, depending on the scale used) and could be replaced.
Example: For ASME/ANSI # 60 roller chain, if the center of the 13th pin reaches or exceeds the # 60 wear mark, the chain is ready to be replaced.

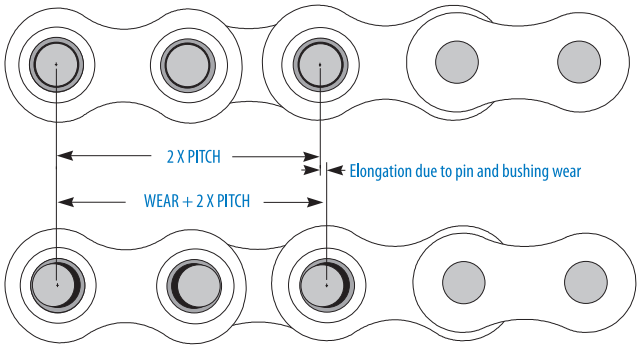


NOTHING OUTLASTS A DIAMOND.®

Roller Chain Wear

Chain does not "stretch" – elongation is caused when material is removed from the pins and bushings.

The individual joints in a roller chain articulate as they enter and leave the sprockets. This articulation results in wear on the pins and bushings. As material is worn away from these surfaces the chain will gradually elongate.



Elongation Control

Elongation is normal and may be minimized by proper lubrication and drive maintenance. The rate of wear is dependent upon the relationship between the load and the amount of bearing area between pin and bushing, the material and surface condition of the bearing surfaces, the adequacy of lubrication, and the frequency and degree of articulation between pins and bushings. The latter is determined by the quantity of sprockets in the drive, their speeds, the number of teeth, and the length of the chain in pitches.

Check Chain Wear

Roller chains should be replaced when worn (elongated beyond 3%) or when the chain rollers begin to "ride high" near the tips of the teeth on relatively large sprockets. Do not connect or splice a new section to a worn chain. Do not continue to run a chain worn in excess of 3% (or less in some applications), the chain will not engage the sprockets properly and increased damage to the sprockets may occur.

Chain Wear Elongation Limits

ANSI Chain No.	Chain Pitch		Measured Length				
			Pitches	Nominal		At 3% Wear	
	in	mm		in	mm	in	mm
25	.250	6.35	48	12.00	305	12.375	314
35	.375	9.52	32	12.00	305	12.375	314
41	.500	12.70	24	12.00	305	12.375	314
40	.500	12.70	24	12.00	305	12.375	314
50	.625	15.88	20	12.50	318	12.875	327
60	.750	19.05	16	12.00	305	12.375	314
80	1.000	25.40	12	12.00	305	12.375	314
100	1.250	31.75	20	25.00	635	25.750	654
120	1.500	38.10	16	24.00	610	24.719	628
140	1.750	44.45	14	24.50	622	25.250	641
160	2.000	50.80	12	24.00	610	24.719	628
180	2.250	57.15	12	27.00	686	27.812	706
200	2.500	63.50	10	25.00	635	25.750	654
240	3.000	76.20	8	24.00	610	24.719	628

For a free roller chain wear gauge please contact Diamond Chain at marketing@diamondchain.com

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