



CEMA CONVEYOR CHAIN SECTION

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ENGINEERING CLASS AND ROLLER CHAINS

There is a difference

For most of us, our initial recognition of chain came with our first bicycle. Here we witnessed the application of a chain and sprocket to transfer power from our legs through a simple mechanism to move the bicycle forward. This basic function of using chain to transfer power from one energy source to another exists in many applications.

Although roller and engineering class chains carry the same generic name, there is a vast difference in design, construction, and applications between these two products. Roller Chains are primarily used for the transmission of power, while engineering class chains are most often used for the movement of materials. There are some exceptions but the rule to remember is: Roller Chains for power transmission and Engineering class chains for material handling. Each of these product lines have precise design features to achieve these functions efficiently and at low cost.

Roller chains are highly standardized and use a universal code for the identification of the product. This code is based upon the use of the number 80 equals a 1" pitch. Following this simple coding system, a number 80RC means the chain has a one-inch pitch. By a simple process, we can identify the pitch of a roller chain by its relationship to the number 80. For example, a $\frac{3}{4}$ inch pitch would become a number 60RC because 60 is $\frac{3}{4}$ of 80. A half-inch pitch becomes a number 40RC, etc. Thus, each chain size can be identified by this simple numbering system regardless of the manufacturer or country of origin.

There is no standard numbering system for engineering class chains. Instead, each manufacturer uses his own system to identify his product. This lack of universal numbering system was a deliberate attempt by some manufacturers to control the after market of replacement products where their chain was on the original installation. There has been agreement on pitch and dimensional sizes but a customer who wants to compare value must refer to a catalog or interchange list. Even then, the question of manufacturing controls, steels used, heat treatment processes and dimensional controls is left unanswered.

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We should remember that the most common use of engineering class chains is the movement of material rather than the transmission of power. Thus, the typical application will usually require a much longer run of chain, usually at a slower speed, in very poor operating conditions where the loads are very high. These conditions make it essential that the chains are designed for the conditions found on the job.

Since operating conditions vary so much from application to application, engineering class chains are generally designed for a specific industry. Chains used in the cement industry are engineered to operate in the hot, dusty environment in those operations. Similarly, products have been specifically designed for sewage, forest products, mining, construction, automotive, asphalt, sugar and a multitude of other industries. Thus, a major difference between the classes of chain is engineering class chains are made for a specific industry while roller chains are designed for universal applications in all industries.

Roller chains are designed for the transmission of power. The typical application is a drive mechanism where the chain transmits power from an energy source through a series of sprockets and a speed reducer to the usage point. The chain operates under ideal conditions where good lubrication is present, at a relatively high speed. The selection process for the roller chain drive is relatively simple because the process has become so standardized.

Other than carrying the same generic name, "chain", there are very few similarities between the two products. We use the name to describe the number of products from necklaces, to tow chains, to tire chains, and even to the ball and chains used to secure prisoners. The bicycle chain properly fits the description of a roller chain but is quite different in design and function from an engineering class chain.