



# V80 BELT MATCHING

## > Introduction

Many applications consist of a multi-belt drive where more than one belt is used to transmit the horsepower required. The Rubber Manufacturers Association (RMA) Standard IP-20 and IP-22 specify permissible length variations for a set of classical or narrow industrial V-belts. For example, all belts up to 63 inches in a set must not vary more than 0.15 inch from the longest to the shortest belt. If they do, the load will not be evenly distributed and belts will wear out faster.

the same cross-section and construction. V80 belts are:

- Hi-Power® – A, B, C, D, E
- Super HC® – 3VX, 5VX, 5V, and 8V
- Tri-Power® – AX, BX, CX

Some industrial belt types are still grouped by the ‘old’ match number system which involves numbers printed on the individual belts; each number representing a measured belt length range. These numbers are grouped in sequential order for matching according to length. The longer the belt length, the larger the sequential number range.

Belt	Gates Length Tolerance (in.) (Approx.)	RMA Length Tolerance (in.)	Center Distance (in.)	Sag (in.)
3VX500	0.14	0.15	21.50	1.07
3VX750	0.28	0.30	32.80	1.86
5VX1600	0.42	0.45	67.40	3.27
5VX2500	0.42	0.45	105.00	4.07
5V3350	0.55	0.60	142.40	5.43
8V4000	0.70	0.75	179.30	6.87

Note: These calculations use a 1:1 speed ratio and are approximate.

Gates innovated a change in 1980. Belt molds were re-machined, manufacturing procedures redesigned, new measuring devices developed, and closer attention paid to manufacturing variability through statistical process control (SPC). The Gates V80 matching program produces classical and narrow product with tighter-than-RMA tolerances. All belts in this system are in the same tolerance range. Any V80 belt of a given length runs with any other V80 belt of

## > Catenary Effect

Some long V80 belts may appear to hang unevenly when installed. It is quite normal for belts within RMA tolerances to create noticeable differences in deflection. This “sag” is commonly called the “catenary effect” which is a curve made by a cord of uniform weight suspended between two points. Extensive field tests prove that this has virtually no effect on either drive performance or the belts’ ability to equally share the load. If sag is noticeable, the drive should be installed with normal “run-in” procedure.

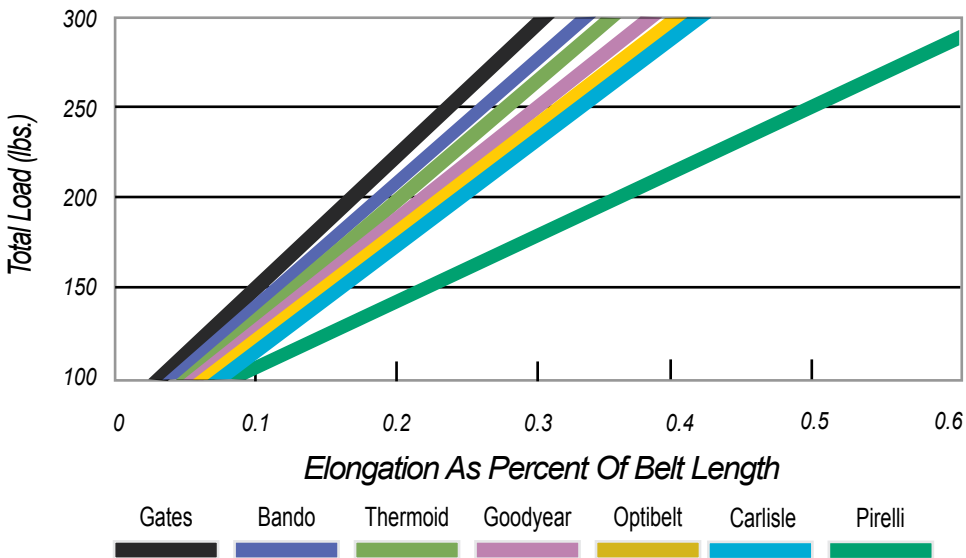
A “run-in” process consists of starting the drive, letting it run under full load, and then stopping, checking, and retensioning to recommended values. Running the belt under full load allows the belt to seat into the grooves. The run-in time for most tension

decay to take place as a result of belt seating and initial elongation can be 15 minutes to 48 hours depending upon the severity of the application. A more severe application will take a shorter amount of run-in time under full load conditions than a less severe one. Belt sag will be even less noticeable after proper run-in procedure.

## ➤ Less Stretch, More Savings!

Gates belts in the V80 program are made with high-modulus, thermally active polyester tensile cords that exhibit extremely low stretch. That translates into reduced maintenance time and greater cost savings to you.

Though some of our competitors' belts appear to be the same length on a drive, they are made with low- to medium-modulus tensile members. These belts will continue stretching through use and require frequent retensioning and/or replacement. The chart below further illustrates the difference between Gates V80 matched belts and competitive belts.



*All tests conducted on an Instron Universal Testing Machine to measure tensile elongation or belt modulus.*

