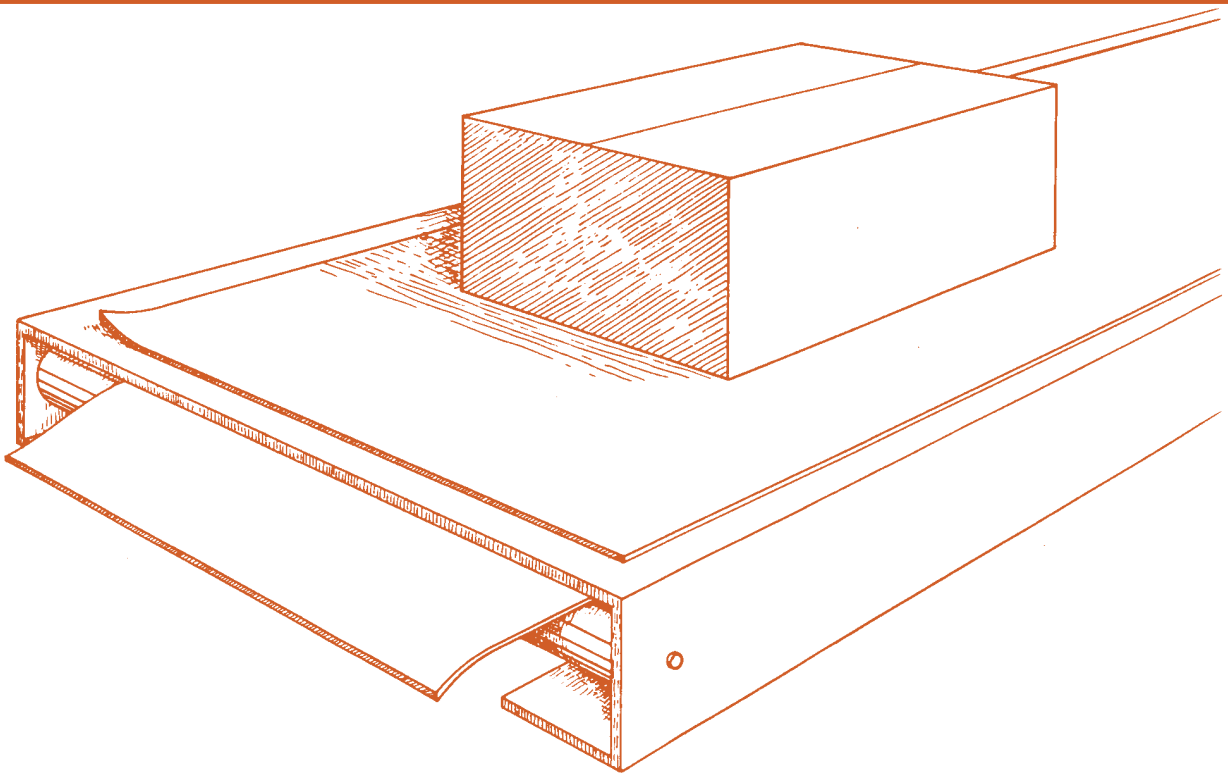


# CEMA STANDARD NO. 402-2003



**ANSI / CEMA 402-2003 (R2015)**  
**Reaffirmation of ANSI/CEMA 402-2003**  
**( Approved January, 2015)**

## BELT CONVEYORS



## Unit Handling Conveyors



**Conveyor Equipment  
Manufacturers Association**

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## FOREWORD

Belt conveyors--conveyors which use a belt as a carrying medium--are used for the controlled movement of a great variety of regular or irregular shaped loads, from light and fragile to heavy and rugged unit loads.

The path may be horizontal, inclined or declined, limited only by the stability of the load and the strength of the conveyor components.

Belt conveyors can be operated at the speed best suited for the work being performed. They can be used as a pacesetter for assembly operations, for transportation, or as a timing medium for integrated handling systems.

The purpose of this work is to establish certain minimum standards for use in the design and application of unit handling belt conveyors. For additional information relating to definitions and selection of common components, see current edition of ANSI/CEMA Standard No. 102, Conveyor Terms and Definitions and ANSI/CEMA Standard No. 401, Roller Conveyors - Non-Powered.

The illustrations throughout this book are schematic in nature and represent the general nature of a particular device. The illustrations are not intended to represent the recommended safety configurations since guarding has been omitted to permit clarity in showing the operational characteristics of the device. Refer to the current editions of ANSI/ASME B20.1, Safety Standard for Conveyors and Related Equipment; ANSI/ASME B15.1, Safety Standard for Mechanical Power Transmission Apparatus; and ANSI Z244.1, American National Safety Standards for Lock-out/Tag-out of Energy Sources - Minimum Safety Requirements; Title 29, Code of Federal Regulations (29 C.F.R.) Part 1910.147, The Control of Hazardous Energy (lock-out/tag-out); Title 29, Code of Federal Regulations (29 C.F.R.) Part 1910 Subpart O, Machinery and Machine Guarding. Consult ASME or ANSI for the latest editions.

In 2003 edition, Terms and Definitions have been, expanded, regrouped for ease of understanding, and revised to conform with those in ANSI/CEMA standard No.102 "Conveyor Terms and Definitions". A new section on Pulley Terms and Definitions has been added.

Shaft Calculations have been removed from this standard and replaced with reference to ANSI/CEMA Standard B105.1 "Specifications for Welded Steel Conveyor Pulleys with Compression Type Hubs". This will insure that the standard remains current even if there are changes to B105.1. As a result, the section on shaft size determination and its associated charts have been removed. The previous 15 formulas are now 11.

A "G" term was added to account for an Acceleration Factor in the Roller and Slider Bed formulas. Friction Factors ( $F_r$  and  $F_s$ ) for Roller and Slider Bed formulas have also been added. The formulas have been rewritten to include the Acceleration and Friction Factors.

Four Examples of the application of the data in the Standard are presented to the reader. These examples walk the reader though the entire measurement, analysis, and calculation process.

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