

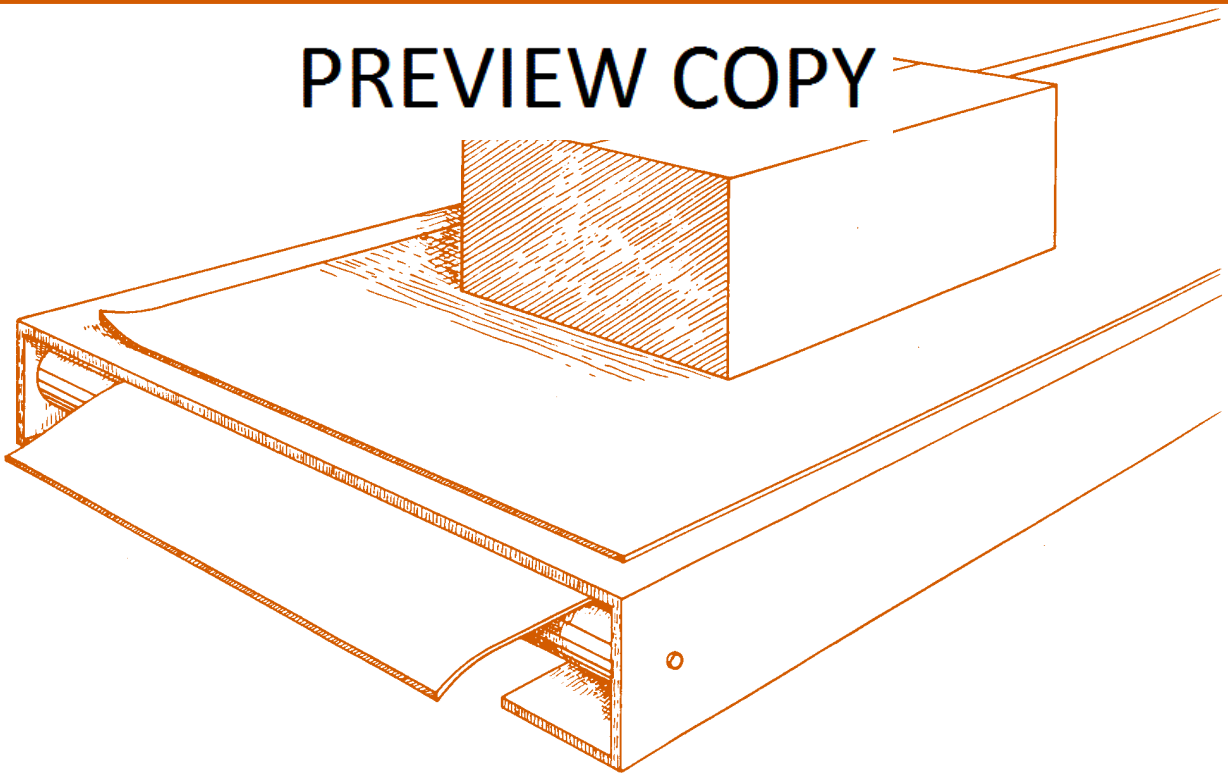
CEMA STANDARD NO. 402-2003



ANSI / CEMA 402-2003(R2009)
Reaffirmation of ANSI/CEMA 402-2003
(Approved January 22, 2009)

BELT CONVEYORS

PREVIEW COPY



Unit Handling Conveyors



Conveyor Equipment
Manufacturers Association

ISBN 978-1-891171-246

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 CEMA Standard No. 102, *Conveyor Terms and Definitions* and 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 Lockout/Tagout of Energy Sources - Minimum Safety Requirements*; Title 29, Code of Federal Regulations (29 C.F.R.) Part 1910.147, *The Control of Hazardous Energy (lockout/tagout)*; 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.

Grateful acknowledgment is expressed to the Rubber Manufacturers Association for assistance given in preparation of the section on belting.

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**Note - CEMA Has Reaffirmed the 2003 Edition.
This 2009 Edition is Identical to the 2003 Edition**

SUMMARY OF CHANGES IN 2003 EDITION

All drawings have been cleaned up and enhanced for clarity where necessary.

Section 1: Definitions

Terms and Definitions have been, expanded, regrouped for ease of understanding, and revised to conform with those in ANSI/CEMA 102 "Conveyor Terms and Definitions". A new section on Pulley Terms and Definitions has been added.

Section 2: Application

Essentially unchanged except for page, table, and figure references.

Section 3: Technical Data

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 through the entire measurement, analysis, and calculation process.

**CEMA Standard No. 402-2009
Reviewed by
Unit Handling Section
of the
CEMA Engineering Conference**