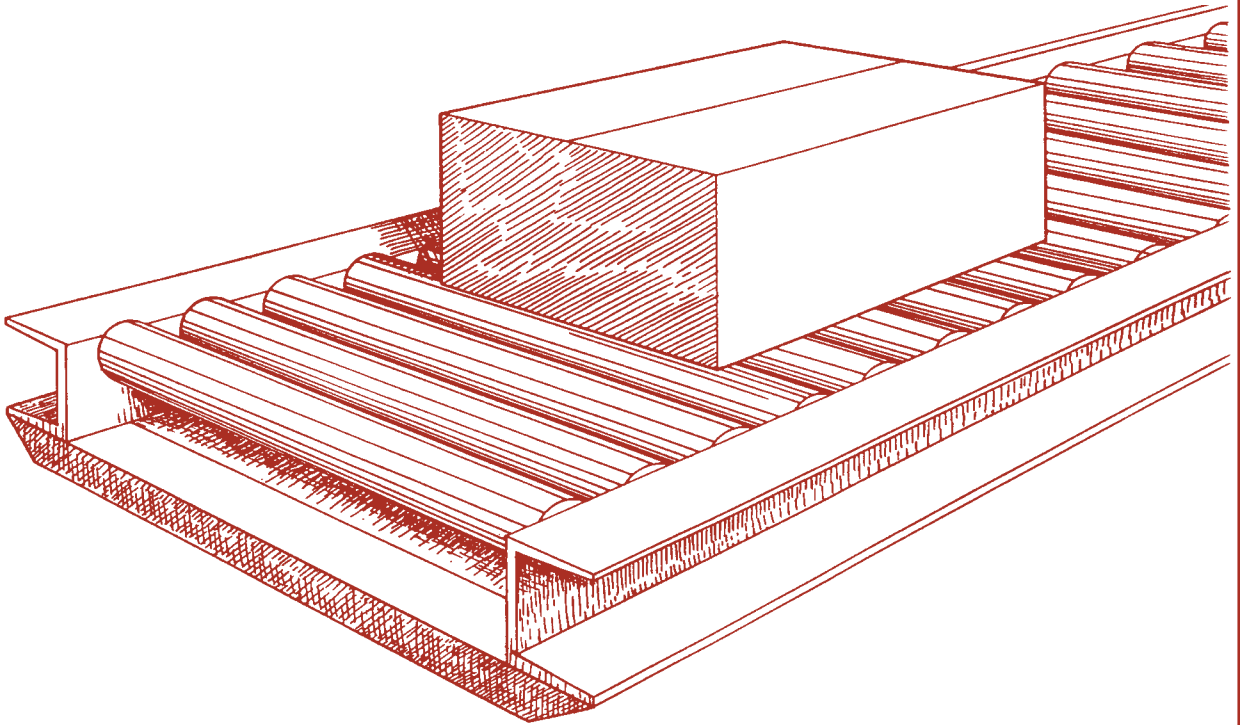


CEMA STANDARD NO. 401-2003



ANSI / CEMA 401-2003 (R2015)
Reaffirmation of ANSI/CEMA 401-2003
(Approved January 28, 2015)

ROLLER CONVEYORS - NON POWERED



Unit Handling Conveyors



Conveyor Equipment
Manufacturers Association

ISBN 978-1-891171-23-9

DISCLAIMER

The information provided herein is advisory only.

These recommendations provided by CEMA are general in nature and are not intended as a substitute for professional advice. Users should seek the advice, supervision and/or consultation of qualified engineers, safety consultants, and other qualified professionals.

Any use of this publication, or any information contained herein, or any other CEMA publication is made with agreement and understanding that the user and the user's company assume full responsibility for the designs, safety, specifications, suitability and adequacy of any conveyor system, system component, mechanical or electrical device designed or manufactured using this information.

The user and user's company understand and agree that CEMA, its member companies, its officers, agents and employees are not and shall not be liable in any manner under any theory of liability to anyone for reliance on or use of these recommendations. The user and the user's companies agree to release, hold harmless and indemnify and defend CEMA, its member companies, successors, assigns, officers, agents and employees from any and all claims of liability, costs, fees (including attorney's fees), or damages arising in any way out of the use of this information.

CEMA and its member companies, successors, assigns, officers, agents and employees make no representations or warranties whatsoever, either expressed or implied, about the information contained here to, representations or warranties that the information and recommendations contained herein conform to any federal, state or local laws, regulations, guidelines or ordinances.

Conveyor Equipment Manufacturers Association
5672 Strand Ct., Suite 2
Naples, Florida 34110-3314
www.cemanet.org
Copyright © 2015

FOREWORD

During the past century roller conveyors have developed from the original wooden rollers, with steel pins on the ends rotating in a frame, to the present day all metal construction with anti-friction bearings.

The first attempt to establish a standard method of evaluating the merits of the various sizes and designs being offered in the marketplace was the 1962 edition of ANSI/CEMA Standard No. 401.

The purpose of this work is to establish certain minimum standards of comparison for use by concerns which specify, manufacture, and use non-powered roller conveyors.

For additional information relating to definitions and selection of common components, see the latest edition of the following publications: ANSI/CEMA Standard No. 102, Conveyor Terms and Definitions; ANSI/CEMA Standard No. 402, Belt Conveyors; ANSI/CEMA Standard No. 403, Belt Driven Live Roller Conveyors; ANSI/CEMA Standard No. 404, Chain Driven Live Roller Conveyors; ANSI/CEMA Standard No. 405, Slat Conveyors; and ANSI/CEMA Standard No. 406, Lineshaft Driven Live Roller Conveyors.

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, all drawings were cleaned up and enhanced, Foreword was updated to include new Safety References, A Safety Notice regarding Industry Standard Safety Labels was added, Terms and Definitions have been edited to conform with those in ANSI/CEMA Standard No. 102 "Conveyor Terms and Definitions".

TABLE OF CONTENTS

		Page
Sections		
1	Definitions	1
2	Applications	3
	Use of Roller Conveyors	3
	Conveyability	3
	System Layout	3
	Component Specifications	
3	Bearings for Conveyor Rollers	8
	General	8
	Basic Conveyor Bearing Load Rating	8
	Rating Life	9
	Load/Life Relation	9
	Service Life	9
	Equivalent Radical Load	10
	Use of Precision or Semi-Precision Bearings in Conveyor Rollers	10
	Use of Plastic Ball or Journal Bearing in Conveyor Rollers	11
4	Technical Data	16
	Roller and shaft Deflection	16
	Calculation of Frame Rail Load Ratings	17
	Properties of Common Hexagon Shaft	19
	Properties of Common Round Shaft	19