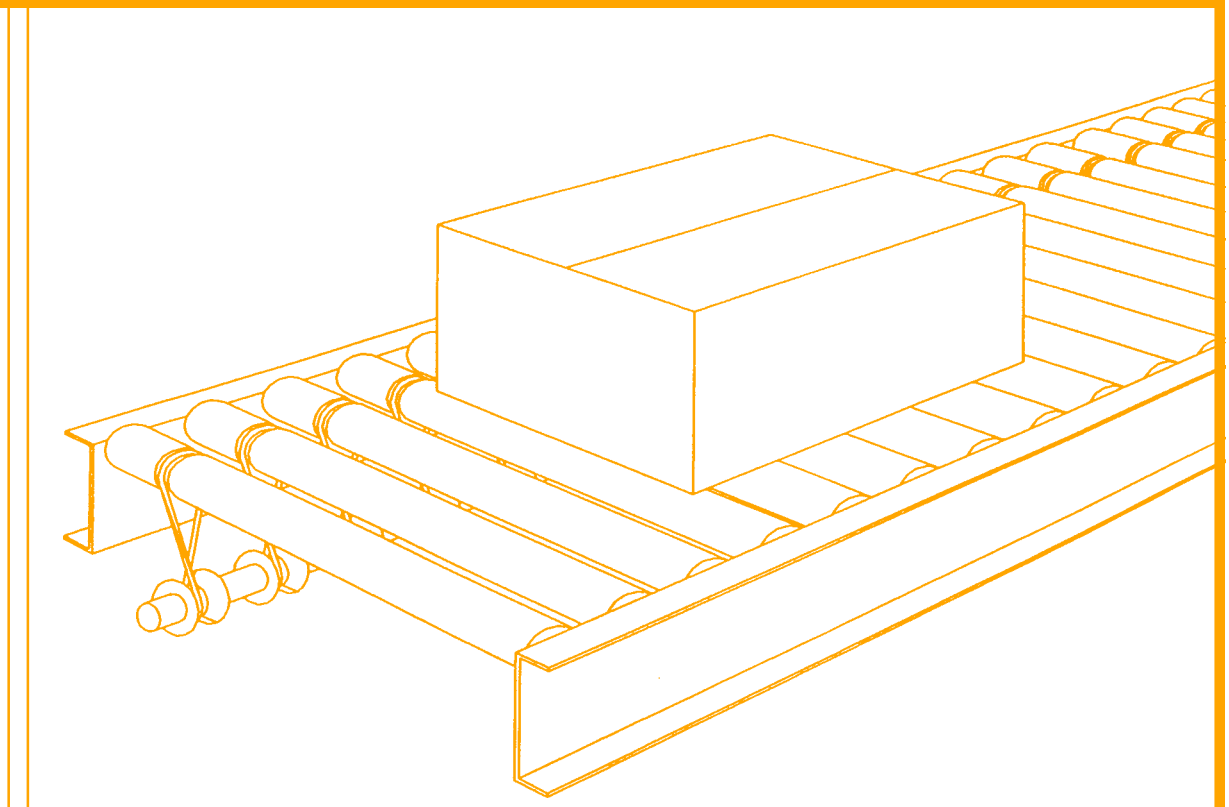
CEMA STANDARD NO. 406-2003

ANSI / CEMA 406-2003 (R2009)
Reaffirmation of ANSI/CEMA 406-2003
(Approved January 22, 2009)

LINESHAFT DRIVEN LIVE ROLLER CONVEYORS

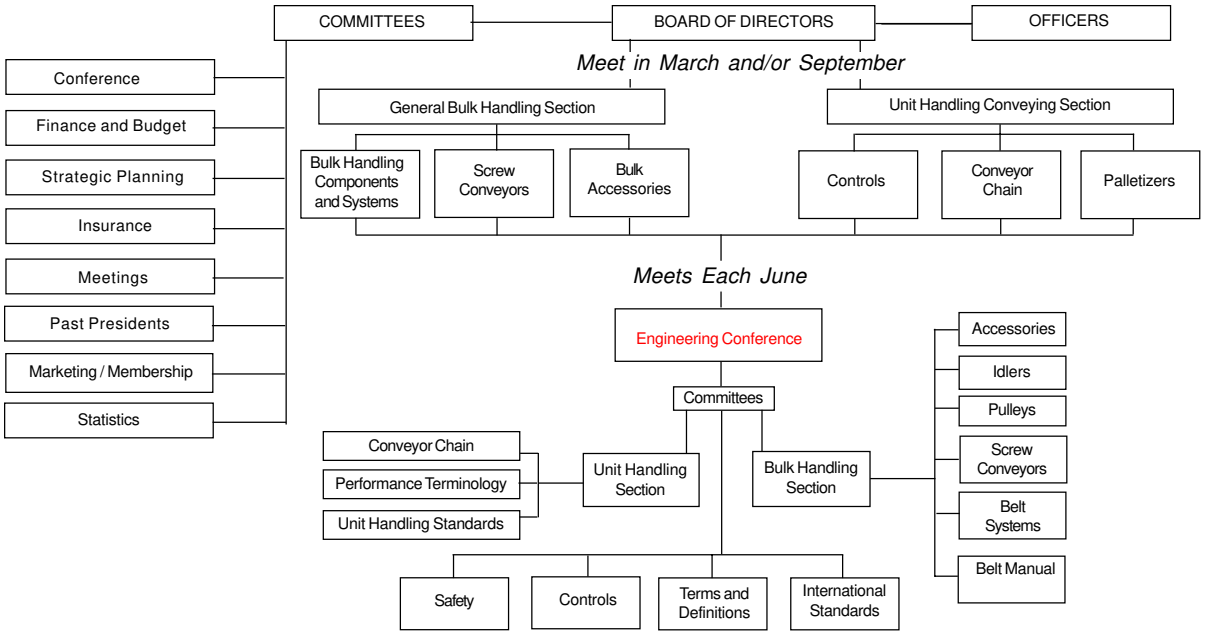


Unit Handling Conveyors

Conveyor Equipment Manufacturers Association

ISBN 978-1-891171-34-5

CEMA ORGANIZATIONAL CHART



For Information on Company Membership
visit the CEMA Web Site at
http://www.cemanet.org

SAFETY NOTICE

The Conveyor Equipment Manufacturers Association has developed Industry Standard Safety Labels for use on the conveying equipment of its member companies.

The purpose of the labels is to identify common and uncommon hazards, conditions, and unsafe practices which can injure, or cause the death of, the unwary or inattentive person who is working at or around conveying equipment.

The labels are available for sale to member companies and non-member companies.

A full description of the labels, their purpose, and guidelines on where to place the labels on typical equipment, has been published in CEMA's *Safety Label Brochure* No. 201. The Brochure is available for purchase by members and non-members of the Association. Safety Labels and Safety Label Placement Guidelines, originally published in the Brochure, are also available free on the CEMA Web Site at http://www.cemanet.org/CEMA_Safety_Pg.htm

PLEASE NOTE: Should any of the safety labels supplied by the equipment manufacturer become unreadable for any reason, the equipment USER is then responsible for replacement and location of these safety labels.

Replacement labels and placement guidelines can be obtained by contacting your equipment supplier or CEMA.

DISCLAIMER

The information provided in this document is advisory only. These recommendations are provided by CEMA in the interest of promoting safety in the work place. These recommendations are general in nature and are not intended as a substitute for a thorough safety program. Users should seek the advise, supervision or consultation of qualified engineers or other safety professionals. Any use of this document, the information contained herein, or any other CEMA publication may only be made with the agreement and understanding that the user and the user's company assume full responsibility for the design, safety, specifications, suitability and adequacy of the system component, or mechanical or electrical device designed or manufactured using this information. The user and the user's company understand and agree that CEMA, its member companies, its officers, agents and employees shall not be liable in any manner under any theory of liability for the user or user's reliance on these recommendations. The users and the user's company agree to release, hold harmless and indemnify 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 express or implied, about the information contained in this document, including, but not limited to, representations or warranties that the information and recommendations contained herein conform to any federal, state or local laws, regulations, guidelines or ordinances.

FOREWORD

Lineshaft Driven Live Roller (Lineshaft Conveyors) - Conveyors with rollers powered by drive belts from a rotating shaft used to move unit loads of varying sizes and shapes.

The path is usually level, however slight inclines or declines are permitted depending upon the unit load being handled, the belt tension and the drive friction between the drive belt, spool and rotating lineshaft.

Lineshaft conveyor can be operated at the speed best suited for the work being performed. They are used to accumulate, transport, merge, diverge, and sort unit loads.

The purpose of this document is to establish nomenclature and application guidelines for use in manufacturing and applying lineshaft driven live roller conveyor.

For additional information relating to definitions and selection of common components, see the latest edition of the following publications: CEMA Standard No. 102, *Conveyor Terms and Definitions*; CEMA Standard No. 401, Roller Conveyors - Non Powered; CEMA Standard No. 402, *Belt Conveyors*; CEMA Standard No. 403, *Belt Driven Live Roller Conveyors*; CEMA Standard No. 404, *Chain Driven Live Roller Conveyors;* and CEMA Standard No. 405, *Slat 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 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.

TABLE OF CONTENTS

CONVEYOR EQUIPMENT MANUFACTURERS ASSOCIATION
6724 Lone Oak Blvd
Naples, Florida 34109
Web Site: http://www.cemanet.org

ISBN 1-891171-41-0
PDF Version of
ISBN 1-891171-10-0

SECTION 1

TERMS AND DEFINITIONS

For general definitions, see also CEMA Publication 102, Conveyor Terms and Definitions and CEMA Publication 110, Electrical Terms and Definitions.

ACCESSORY (LINESHAFT) - A device which receives power from and contributes to the horsepower requirement of the lineshaft.

CARRYING ROLLER - The conveyor roller upon which the object being transported is supported. (See Fig. 1, Page 4)

COEFFICIENT OF FRICTION - A numerical expression of the ratio between the force of contact existing between two surfaces and the resistant force tending to oppose the motion of one with respect to the other. The coefficient of friction is used in determining the power necessary to drive a machine, or to determine the maximum angle of inclination for a conveyor.

CONVEYOR WIDTH - In unit handling, the dimension inside to inside of frame rails. Other abbreviations used are: "BF" - between frame, "BB" - back to back, "IF" - inside frame. (See Fig. 1, Page 4).

COUPLER CHAIN - A chain, plastic or metal, which performs the function of connecting one sprocket to an adjacent sprocket. (See Fig. 2 , Page 4).

COUPLER SPROCKET - A sprocket located at the extreme end of a lineshaft positioned to allow connecting to a second sprocket on a second lineshaft by using a coupler chain. (See Fig. 1 & 2, Page 4).

COUPLER - A mechanical device which connects segments of the lineshaft.

CROSS TIE - Structural member which is assembled or welded between two side channels or rails of a conveyor bed section. (See Fig. 1, Page 4).

DRIVE - An assembly of mechanical, electrical, and structural components to provide motive power to lineshaft.

DRIVE BELT - An endless round belt manufactured from elastic material, typically urethane, connecting spools to carrying rollers for transmitting motive power from spools to carrying rollers. (See Fig. 1, Page 4).

DRIVE SPROCKET - The sprocket which propels the chain or synchronous belt.

DRIVEN SPROCKET - The sprocket which is propelled by the chain or synchronous belt.

DWELL STATION - That portion in an intermediate length of live roller conveyor upon which objects may be held for processing or other purposes.

FRAME - The structure which supports the machinery components of a conveyor (See Fig. 1, Page 4).