

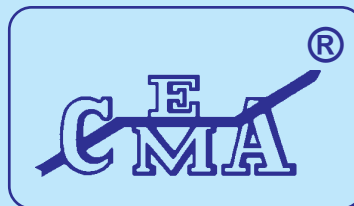
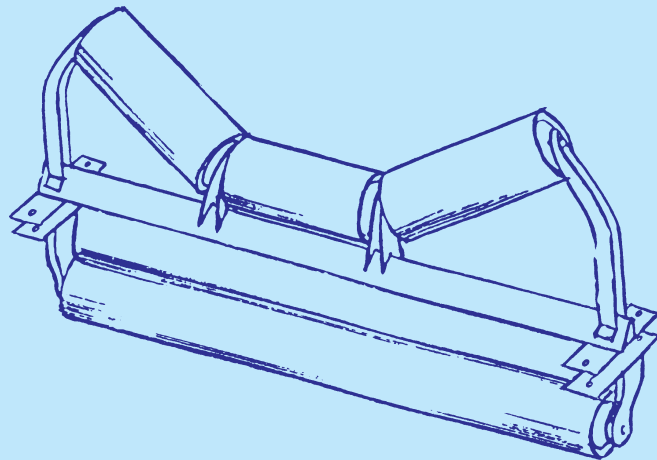
**CEMA  
STANDARD  
NO. 502-2004**

Revision of  
CEMA Standard 502-2001

PREVIEW COPY

**Bulk Material Belt Conveyor  
Troughing and Return Idlers**

**Selection and Dimensions**



**CONVEYOR EQUIPMENT MANUFACTURERS ASSOCIATION**

ISBN 1-891171-52-6

# Bulk Material Belt Conveyor T roughing and Return Idlers - Selection and Dimensions

## FOREWORD

This standard has been established to provide uniformity of clearance and mounting dimensions among the various manufacturers of conveyor belt troughing idler and return rolls.

This standard assures the users of conveyor idlers interchangeability of complete idler assemblies but does not restrict the manufacturer, who has complete freedom to design all parts of the idler according to its best engineering judgment.

The various idlers are separated into nine different classes according to load ratings and roll diameters. There are some overlaps because of wide variation in idler construction. All manufacturers must specify into which class their particular designs fall.

It is hoped this standardization will eliminate requests for special idler designs. Conformance with this standard will provide better designs at lower cost.

The 1998 edition added technical data for expanded belt widths on CEMA C, D, and E Rollers and Returns and the tables have all been reformatted to make the material easier to access.

The 2001 edition has added technical data for CEMA C, D, and E Picking Idlers, Live Shaft Idler Dimensions and Load Capacities for Rubber Disc and Steel Tube Designs, and has modified the Idler Selection Procedures to include Impact Idler Selection.

### **This 2004 edition has:**

- 1. Reformatted the tables for CEMA Class B,C,D, and E T roughing Idlers, Picking Idlers, and Return Idlers for easier reference.**
- 2. Redrawn the Idler Diagrams to conform with the revised tables.**
- 3. Added CEMA Class F Idlers.**

Prepared by  
The Idler Committee  
of the  
CEMA Engineering Conference

### **CONVEYOR EQUIPMENT MANUFACTURERS ASSOCIATION**

6724 Lone Oak Blvd  
Naples, Florida 34109  
(239) 514-3441  
Fax: (239) 514-3441  
E-Mail: [cema@cemanet.org](mailto:cema@cemanet.org)  
Web Site: <http://www.cemanet.org>

Standard No. 502 - Copyright 2004

Printed in the U.S.A.

ISBN 1-891171-53-4



**CONVEYOR EQUIPMENT MANUFACTURERS ASSOCIATION  
(CEMA)**

**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 the 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 the 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 herein, 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.

END

## IDLER NOMENCLATURE

This standard provides uniform dimensional and load capacity information for several idler types as follow:

- Troughing Idlers, with equal length rolls.
- Picking Idlers, with unequal length rolls.
- Return Idlers, with a dingle steel roll but typicaally available with rubber discs.
- V Return Idlers, with a pair of steel rolls but typically available with rubber discs.
- Live Shaft Idlers with steel or rubber surfaces.

Nomenclature and selection methods have been developed to provide a realistic and versatile means of classifying idlers. The Idler classifications and historic series are tabulated below.

| CEMA Class | Former Series                        | Roll Diameter | Belt Width      | Description |
|------------|--------------------------------------|---------------|-----------------|-------------|
| A4         | STANDARD WITHDRAWN - OCTOBER 1, 1996 |               |                 | Light Duty  |
| A5         | STANDARD WITHDRAWN - OCTOBER 1, 1996 |               |                 | Light Duty  |
| B4         | II                                   | 4"            | 18" through 48" | Light Duty  |
| B5         | II                                   | 5"            | 18" through 48" | Light Duty  |
| C4         | III                                  | 4"            | 18" through 60" |             |
| C6         | III                                  | 5"            | 18" through 60" |             |
| C6         | IV                                   | 6"            | 24" through 60" |             |
| D5         | None                                 | 5"            | 24" through 72" | Medium Duty |
| D6         | None                                 | 6"            | 24" through 72" |             |
| E6         | V                                    | 6"            | 36" through 96" | Heavy Duty  |
| E7         | VI                                   | 7"            | 36" through 96" |             |
| F6         | New                                  | 6"            | 60" through 96" | Heavy Duty  |
| F7         | New                                  | 7"            | 60" through 96" |             |
| F8         | New                                  | 8"            | 60" through 96" |             |

## TABLE OF CONTENTS

| Idler Designation                                    | Type of Angle                | Page |
|--|------------------------------|------|
| CEMA B4, B5  | Troughing 20° 35° 45°        | 2    |
| CEMA C4, C5, C6                                      | Troughing 20° 35° 45°        | 3    |
| CEMA D5, D6  | Troughing 20° 35° 45°        | 4    |
| CEMA E6, E7  | Troughing 20° 35° 45°        | 5    |
| CEMA F6, F7, F8                                      | Troughing 20° 35° 45°        | 6    |
| CEMA C4, B5  | Flat Return                  | 7    |
| CEMA C4, C5, C6                                      | Flat and V Returns 10° & 15° | 8    |
| CEMA D5, D6  | Flat and V Returns 10° & 15° | 9    |
| CEMA E6, E7  | Flat and V Returns 10° & 15° | 10   |
| CEMA F6, F7  | Flat Return                  | 11   |
| CEMA C4, C5, C6                                      | Picking 20°                  | 12   |
| CEMA D5, D6  | Picking 20°                  | 12   |
| CEMA E6, E7  | Picking 20°                  | 12   |
| CEMA Live Shaft Idler Dimensions and Load Capacities |                              | 13   |
| Rubber Disc and Steel Tube Designs                   |                              | 13   |
| CEMA Belt Scale Idler Standard                       |                              | 14   |
| Selection of Idlers                                  |                              | 15   |
| Idler Selection Procedure                            |                              | 17   |
| Load Ratings and Capacities Tables                   |                              | 24   |
| Example: Idler Selection                             |                              | 25   |
| Conversion Factors to SI - Metric Units              |                              | 29   |