



# 7400 Ultimate Series CE End Drive Conveyors

Installation, Maintenance and Parts Manual



Flat Belt Conveyor



DORNER MFG. CORP. P.O. Box 20 • 975 Cottonwood Ave. Hartland, WI 53029-0020 USA INSIDE THE USA TEL: 1-800-397-8664 FAX: 1-800-369-2440 OUTSIDE THE USA TEL: 262-367-7600 FAX: 262-367-5827

For other service manuals visit our website at: www.dorner.com/service\_manuals.asp

## **Table of Contents**

Warnings - General Safety	3	
Product Description	4	
Specifications	5	
Flat Belt 7400 Series Conveyor		
Cleated Belt 7400 Series Conveyor		
Flat Belt 7400 Series LPZ Conveyor		
Cleated Belt 7400 Series LPZ Conveyor	5	
Conveyor Supports		
Specifications		
Installation		
Required Tools		
Recommended Installation Sequence		
Conveyors Longer than 3048 mm		
LPZ Conveyors		
Knuckles		
Belt		
Guides		
All Conveyors		
Stand Installation		
	10	
· · · · · · · · · · · · · · · · · · ·	10	S
	10	
	11	
	12	
	13	
Belt Installation	13	
	15	
	16	
	16	
	16	
	16	
	16	
	16	
	17	
	17	
Buointanon	17	
, ,	17	
······································	17	
	17	
	17	1
Conveyor Belt Replacement	18	I

Conveyors with Guides	18
Standard Belts	18
Replacing a Section of Belt	
Replacing the Entire Belt	
Specialty Intralox 1100 Series Belts	19
Replacing a Section of Belt	19
Replacing the Entire Belt	19
Specialty Intralox 1600 Series Belts	20
Replacing a Section of Belt	
Replacing the Entire Belt	
Conveyor Belt Tensioning	
Sprocket and Puck Removal	21
A - Drive Sprocket Removal	22
B - Idler Puck Removal	
Reassembling Tail Assembly	
Tip Up Idler Tail	
Drive Tail	
Bearing Replacement	
LPZ Knuckles	
Wearstrips and Belt Returns	
Service Parts	
Drive End Components	28
Tip Up Tension End	
Nose Bar Tip Up Tension End	
Upper Knuckle for 5° - 15°	
Upper Knuckle for $30^\circ - 60^\circ$	33
Upper Knuckle for $30^{\circ} - 60^{\circ}$ Lower Knuckle for $5^{\circ} - 15^{\circ}$	34
Lower Knuckle for $30^\circ - 60^\circ$	35
Conveyor Frame and Extension	
76 mm High Sides	
Cleated 25 mm Guides	
Cleated 76 mm Guides	
Flat Belt Returns	
Cleated Belt Returns	
Flat Belt	
Cleated Belt	
Ordering a Replacement Chain	
Belt Removal Tool	-1 /1
Service Parts	
NOTES	
Return Policy	

## Introduction

### CAUTION

Some illustrations may show guards removed. DO NOT operate equipment without guards.

Upon receipt of shipment:

- Compare shipment with packing slip. Contact factory regarding discrepancies.
- Inspect packages for shipping damage. Contact carrier regarding damage. Accessories may be shipped loose.
- See accessory instructions for installation.

The Dorner Limited Warranty applies.

A

Dorner AquaPruf conveyors are covered by Patent Numbers 7,207,435, 7,246,697, 7,383,944, additional patent pending applications, and corresponding patents in other countries.

### NOTE

Proper conveyor application, cleaning, and sanitation are the responsibility of the end user.

Dorner reserves the right to make changes at any time without notice or obligation.

Dorner has convenient, pre-configured kits of Key Service Parts for all conveyor products. These time saving kits are easy to order, designed for fast installation, and guarantee you will have what you need when you need it. Key Parts and Kits are marked in the Service Parts section of this manual with the Performance Parts Kits logo  $\square$ .

Intralox is a registered trademark of Laitram L.L.C. in the United States and / or other countries.

#### 7400 Ultimate Series CE End Drive Conveyors

## Warnings - General Safety



## **Product Description**

Refer to (Figure 1) for typical conveyor components.

## **Typical Components**

Conveyor 1 2 Belt (Flat Belt Shown) 3 Return 4 Support Stands Drive End 5 6 Tension End (5) 2 6 (4)

Figure 1

4

## **Specifications**





### **Cleated Belt 7400 Series LPZ Conveyor**



## Specifications

### **Conveyor Supports**

**Maximum Distances:** 

- 1 = 914 mm
- 2 = 2438 mm\*\*
- 3 = 914 mm
- \*\* For conveyors longer than 3.05 m, install support at frame joint.



Figure 2

## Specifications

Conveyor Width Reference (WW)	06 – 36 in 02 increments
Conveyor Belt Width	152 mm (6") – 914 mm (36") in 51 mm (2") increments
Maximum Conveyor Load	97 kg / m <sup>2</sup> (20 lb / ft <sup>2</sup> ) with a maximum of 4882 kg / m <sup>2</sup> (1000 lb / ft <sup>2</sup> )
Belt Travel	305 mm (12") per revolution of pulley
Maximum Belt Speed	71 m / minute (233 ft / minute)
Belt Take-up	51 mm (2")
Conveyor Length Reference (LLL)	036 – 999 in 001 increments
Conveyor Length	914 mm (36") – 25.4 m (999") in 25 mm (1") increments
LPZ Section Lengths (LLL)	024 – 252 in 001 increments
LPZ Section Length	610 mm (24") – 6401 mm (252") in 25 mm (1") increments
Total LPZ Conveyor Length	(L1 +L2 + L3) = Maximum 11.6 m (38') long conveyor

### IMPORTANT

Maximum conveyor loads are based on:

- Non-accumulating product
- Product moving toward gearmotor
- Conveyor being mounted horizontally
- Conveyor being located in a dry environment
- Conveyor equipped with standard belt only

### **CAUTION**

Dorner recommends cleaning all the "food zones" prior to placing conveyor into service. Ensure adequate access is provided for cleaning and servicing equipment so that the required level of hygiene can be maintained.

### NOTE

Proper conveyor application, cleaning, and sanitation are the responsibility of the end user.

Conveyor MUST be mounted straight, flat, and level within confines of conveyor. Use a level (Figure 3, item 1), during setup.



Figure 3

### **Required Tools**

- 17 mm wrench (for hexagonal head fasteners)
- 4 mm hex wrench (for bearing shaft assembly fasteners)
- Level
- Torque wrench

# Recommended Installation Sequence

- 1. Attach the stands to the conveyor. Refer to "Stand Installation" on page 9.
- 2. Attach the tail assemblies to the frame. Refer to "Tail Assembly Installation" on page 10.
- 3. Attach the lifters, if applicable. Refer to "Lifter Installation" on page 12.
- 4. Install the gearmotor, if applicable. Refer to the "7400 Series Drive Package Installation, Maintenance and Parts Manual."

- 5. Attach the wear strips. Refer to "Wear Strip Installation" on page 13.
- 6. Install the belt. Refer to "Belt Installation" on page 13.
- 7. Attach the belt returns. Refer to "Belt Return Installation" on page 15.
- 8. Attach any guides / accessories. Refer to the "Service Parts" section starting on page 28.

### Conveyors Longer than 3048 mm

Typical Connection Components (Figure 4).

- 1 M10 x 1.5 mm hex head cap screws (x4)
- 2 Connector hex rods (x2)
- 3 Conveyor frame
- 4 O-rings (x8)



1. Locate the section number sequence etched on each section of frame (**Figure 5**, item 1).



#### Figure 5

2. Position the frame sections in the correct order.

#### 

Avoid damage to O-rings. Be careful not to pinch or cut them.

 Connect the frame sections by bolting the hex post connectors (Figure 6, item 1) between frame sections. Be sure O-rings are seated properly on hex post and hex screws prior to tightening of screws to avoid damage to O-rings.





## LPZ Conveyors

### Knuckles

1. Attach upper knuckle (Figure 7, item 1) to frame (Figure 7, item 2) with hex rods (Figure 7, item 3) and bolts (Figure 7, item 4).



Figure 7

2. Install wear strips (Figure 7, item 5).

 Attach lower knuckle (Figure 8, item 1) to frame (Figure 8, item 2) with hex rods (Figure 8, item 3) and bolts (Figure 8, item 4).



Figure 8

4. Install wear strips (Figure 8, item 5).

#### Belt

1. Slide belt (**Figure 9, item 1**) over knuckles on top of the wear strips.



Figure 9

#### Guides

1. Slide guides (**Figure 10, item 1**) on to the knuckle frame, and secure with pull pins (**Figure 10, item 2**).



#### Figure 10

- 2. Install return guides and secure with pull pin (Figure 10, item 3).
- 3. Slide guides (**Figure 11, item 1**) onto lower knuckle frame, and secure with pull pins (**Figure 11, item 2**).



Figure 11

### **All Conveyors**

### **Stand Installation**

Typical Stand Components (Figure 12).

- 1 Conveyor frame
- 2 Stand
- 3 M10 1.5 x 16 mm hex head cap screws (x4)



Figure 12

- 1. Position the stands on a flat, level surface.
- 2. Attach the stands to the frame (Figure 13).



Figure 133. Tighten hex screws (Figure 13, item 1).

### **Tail Assembly Installation**

#### **Drive Tail**

Typical Drive Tail Components (Figure 14)

- 1 Drive tail assembly
- 2 Pull pin (x2)
- 3 Conveyor frame



Figure 14

1. Slide the bearing shafts (**Figure 15, item 1**) into the take up blocks (**Figure 15, item 2**).

3. Insert the pull pins (Figure 16, item 1).



Figure 16

#### Tip Up Idler Tail

Typical Tip Up Idler Tail Components (Figure 17).

- 1 Tip up tail assembly
- 2 Pull pin (x2)
- 3 Tip up shaft
- 4 Key stops (x2)



Figure 17



Figure 15

2. Install the drive package, if applicable. Refer to the "7400 Series Drive Package Installation, Maintenance and Parts Manual."

1. Slide the tip up shaft (**Figure 18, item 1**) through the designated slots in the frame.



#### Figure 18

2. Attach the key stops (**Figure 19, item 1**) to the tip up shaft (**Figure 19, item 2**). The rounded end of the key stop should be facing the tail.



Figure 19

3. Slide the bearing shafts (Figure 20, item 1) into the holes in the tip up shaft (Figure 20, item 2).



Figure 20

### NOTE

Do not insert the pull pins on the tension end of the conveyor until the belt has been installed.

#### Nose Bar Tip Up Tail

Typical Nose Bar Tip Up Tail Components (Figure 21).

- 1 Tip up tail assembly
- 2 Pull pin (x2)
- 3 Tip up shaft
- 4 Key stops (x2)





#### Figure 21

1. Slide the tip up shaft (**Figure 22, item 1**) through the designated slots in the frame.



Figure 22

2. Attach the key stops (**Figure 23, item 1**) to the tip up shaft (**Figure 23, item 2**). The rounded end of the key stop should face the tail.



Figure 23

3. Attach nose bar idler shaft hands (Figure 24, item 1) to the tip up shaft (Figure 24, item 2).



Figure 24

4. Attach the nose bar transfer post (Figure 25, item 1) to the nose bar idler shaft hands (Figure 25, item 2).



Figure 25

5. Ensure that the nose bar pucks (**Figure 26, item 1**) are in line with the conveyor frame (**Figure 26, item 2**).



Figure 26

### NOTE

Do not insert the pull pins on the tension end of the conveyor until the belt has been installed.

### Lifter Installation

Typical Lifter Components (Figure 27).

- 1 Belt lift pivot bar
- 2 Lifter bars
- 3 Belt lift handle
- 4 M8 1.25 x 16 mm hex head cap screw



1. Slide the belt lift pivot bar (**Figure 28, item 1**) through the designated holes in the frame. The pins on the pivot bar should be located to the inside of the frame side rails.



Figure 28

- 2. Attach the lifter bars (**Figure 28, item 2**) to the belt lift pivot bar (**Figure 28, item 1**). Make sure the hooked ends of the lifter bars are facing down when resting against the frame.
- 3. Attach the lifter handle (**Figure 28, item 3**) to the belt lift pivot rod.

### Wear Strip Installation

Typical Wear Strip Components (Figure 29).



Figure 29

1. Position the wear strips (Figure 30, item 1) on the frame.



Figure 30

2. Make sure the wear strips are situated securely in the frame slots (**Figure 30, item 2**).

### **Belt Installation**

Typical Belt Components (Figure 31).

- 1 Chain belt
- 2 Belt rod



Figure 31

13

1. Position the belt on the conveyor frame (**Figure 32**).



Figure 32

- 2. Wrap the belt around the conveyor, making sure the sprocket teeth have engaged the belt.
- 3. Bring the ends of the belt together (**Figure 33**).





4. Insert the belt rod (Figure 34, item 1).





- 5. Push the belt rod in as far as possible.
- 6. Lightly tap the head of the rod with a hammer until it snaps into position.

7. Extend the tension end to remove excess slack in the belt (Figure 35). Reference (Figure 40).



Figure 35

8. Insert the pull pins (**Figure 36, item 1**) on the tension end of the conveyor.



#### Figure 36

9. If no more travel is available, remove one or more belt links to take up the tension. Refer to "Standard Belts: Replacing a Section of Belt" on page 18.

#### **Belt Return Installation**

Typical Belt Return Components (Figure 37).

- 1 Return shaft
- 2 Chain return shoe



#### Figure 37

1. Attach the chain return shoes (Figure 38, item 1) to the return shaft (Figure 38, item 2).



Figure 38

2. Slide the return shaft (**Figure 39, item 1**) up and through the large slot (**Figure 39, item 2**) in the frame (picture shown without the belt or wear strips).



Figure 39

- 3. Push up on the return shaft (**Figure 39, item 1**) and slide the notched end of the shaft through the small slot on the opposite side of the frame.
- 4. Check belt sag by measuring from the top of the return (Figure 40). Belt sag sh
- 5. ould not exceed 102 mm (4"). Follow steps 7 9 in the "Belt Installation" section on page 13 to remove slack from the belt.



Figure 40



## **Required Tools**

- 17 mm wrench (or adjustable wrench)
- 4 mm hex wrench (for bearing shaft assembly fasteners)
- 3 mm hex wrench
- Punch and hammer (to remove belt rod)

## Checklist

- Keep service parts on hand. Refer to the "Service Parts" section starting on page 28 for recommendations.
- Replace any worn or damaged parts.

## Cleaning

### NOTE

Proper conveyor application, cleaning, and sanitation are the responsibility of the end user.

#### 

Dorner recommends cleaning all the "food zones" prior to placing conveyor into service. Ensure adequate access is provided for cleaning and servicing equipment so that the required level of hygiene can be maintained.

### **Routine Cleaning**



Dorner recommends cleaning the inside and the outside of the conveyor on a daily basis. Refer to the following steps to access the inside of the conveyor.

#### Standard Conveyors

 Remove the guides, if applicable, by removing the pull pins (Figure 41, item 1) that connect the guide (Figure 41, item 2) to the frame.



Figure 41

2. Tip up idler tail assembly (Figure 42).



Figure 42

3. Lift up on the belt (**Figure 43**).



Figure 43

#### **Conveyors with Tip Up Tails and Lifters**

- Remove the guides, if applicable, by removing the pull pins (Figure 41, item 1) that connect the guide (Figure 41, item 2) to the frame.
- Use the lifter handle (Figure 44, item 1) to raise the lifters (Figure 44, item 2) and raise the tip up tail (Figure 44, item 3).



Figure 44



DO NOT submerge or soak bearing assemblies. This will reduce the life of the bearing.

### **Periodic Cleaning**

Dorner recommends complete disassembly of the conveyor periodically for thorough cleaning.

For conveyor disassembly and reassembly instructions:

- Refer to "Conveyor Belt Replacement" on page 18.
- Refer to "Sprocket and Puck Removal" on page 21.
- Refer to "Reassembling Tail Assembly" on page 24.

### Lubrication

### **Conveyor Bearings**

Conveyor bearing lubrication is required. Dorner recommends using an H-1 food grade grease.

### NOTE

Although bearings are sealed, re-greasing is recommended to increase bearing life. An H-1 food grade grease is recommended. The frequency of bearing re-greasing is dependent upon the application in which the conveyor is being used. Frequency of regreasing will increase with the frequency of conveyor washing.

 Add grease to the bearing using the zerk fitting (Figure 45, item 1) on the exterior of the bearing shaft assembly.



Figure 45

2. Replace the bearings if they become worn.

### Wearstrips and Belt Returns

Replace the wearstrips and belt returns if they become worn. For wearstrip and belt return installation instructions:

- Refer to "Wear Strip Installation" on page 13.
- Refer to "Belt Return Installation" on page 15.

### Maintaining the Conveyor Belt

#### Troubleshooting

#### NOTE

Visit www.dorner.com for complete list of troubleshooting solutions.

Inspect conveyor belt for:

- · Surface cuts or wear
- Skipping

Damage to belt links or rods, surface cuts and / or wear indicate:

- Sharp or heavy parts impacting belt
- Jammed parts
- Accumulated dirt
- Foreign material inside the conveyor
- Improperly positioned accessories

Skipping indicates:

- Excessive load on belt
- Worn sprockets or impacted dirt on drive pulley

Damage to belt links or rods indicate:

- Excessive load on belt
- Dirt impacted on sprockets
- Excessive or improper side loading
- Improperly positioned accessories

### **Conveyor Belt Replacement**



### **Conveyors with Guides**

1. Remove the pull pins (Figure 46, item 1) that connect the guide (Figure 46, item 2) to the frame.



Figure 46

2. Remove the guide (Figure 47, item 1).



Figure 47

 Follow the belt replacement procedures described in "Standard Belts" on page 18, "Specialty Intralox 1100 Series Belts" on page 19, or "Specialty Intralox 1600 Series Belts" on page 20.

#### **Standard Belts**

#### **Replacing a Section of Belt**

1. Tip up idler tail assembly (Figure 48).



Figure 48

#### 

Secure the retaining head side of the belt prior to removing a belt rod in order to prevent damaging the belt.

2. Secure the retaining head side of the belt. Use the belt removal tool (**Figure 49, item 1**) for 1" pitch belts. For all other belts, position the section of belt so that it is braced by the flanged puck (**Figure 49, item 2**).



Figure 49

18

3. Use a punch and hammer to push the belt rod out by striking the rod end opposite the retaining head (**Figure 50**).



Figure 50

- 4. Remove the belt rods on both sides of the section of belt being replaced.
- 5. Replace the old section with a new section of belt.

**A** CAUTION

DO NOT reuse belt rods that are damaged or show signs of wear.

#### **Replacing the Entire Belt**

1. Remove the belt returns by pushing up on the return shaft (**Figure 51, item 1**) and sliding it through the large hole (**Figure 51, item 2**) in the frame.



Figure 51

- 2. Lower the opposite end of the return shaft (**Figure 51, item 1**) and slide it out of the frame.
- Follow steps 1 3 in "Standard Belts: Replacing a Section of Belt" on page 18.
- 4. Remove the belt.
- 5. Replace the damaged or worn belt. Refer to "Belt Installation" on page 13 and "Belt Return Installation" on page 15.

#### **Specialty Intralox 1100 Series Belts**

#### **Replacing a Section of Belt**

1. Place the edge of a flat head screwdriver between the the two belt links and turn clockwise (**Figure 52**).



Figure 52

2. Use a second belt rod of the same size to push on the opposite end of the belt rod. (Figure 53).



#### Figure 53

- 3. Remove the belt rods on both sides of the section of belt being replaced.
- 4. Replace the old section with a new section of belt.

#### 

DO NOT reuse belt rods that are damaged or show signs of wear.

#### **Replacing the Entire Belt**

1. Remove the belt returns by pushing up on the return shaft (**Figure 54, item 1**) and sliding it through the large hole (**Figure 54, item 2**) in the frame.



Figure 54

- Lower the opposite end of the return shaft (Figure 54, item 1) and slide it out of the frame.
- 3. Follow steps 1 2 in "Specialty Intralox 1100 Series Belts: Replacing a Section of Belt" on page 19.
- 4. Remove the belt.
- Replace the damaged or worn belt. Refer to "Belt Installation" on page 13 and "Belt Return Installation" page 15.

### **Specialty Intralox 1600 Series Belts**

#### **Replacing a Section of Belt**

- 1. Lift up on the belt to gain access to the underside
- 2. Use a flat head screwdriver to raise the end of the belt rod above the retention lip (**Figure 55**).



Figure 55

3. Remove the bet rod by gripping the end with a set of pliers and pulling (**Figure 56**).



#### Figure 56

- 4. Remove the belt rods on both sides of the section of belt being replaced.
- 5. Replace the old section with a new section of belt.

### CAUTION

DO NOT reuse belt rods that are damaged or show signs of wear.

#### **Replacing the Entire Belt**

1. Remove the belt returns by pushing up on the return shaft (**Figure 57, item 1**) and sliding it through the large hole (**Figure 57, item 2**) in the frame.



#### Figure 57

- 2. Lower the opposite end of the return shaft (Figure 57, item 1) and slide it out of the frame.
- Follow steps 1 2 in "Specialty Intralox 1600 Series Belts: Replacing a Section of Belt" on page page 20.
- 4. Remove the belt.
- Replace the damaged or worn belt. Refer to "Belt Installation" on page 13 and "Belt Return Installation" page 15.

20

### **Conveyor Belt Tensioning**



Belt sag should not exceed 102 mm from the top of the returns.

1. Remove both pull pins (**Figure 58, item 1**). Place tip up idler tail in the down position (**Figure 58, item 2**).



Figure 58

2. Extend the idler tail to the next groove (Figure 58, item 3) on the bearing shaft.

3. Continue extending the tension end until the belt is sufficiently tight (**Figure 59**). Reference figure 32.



Figure 59

- 4. Reinsert the pull pins.
- 5. If no more travel is available, remove one or more belt links to take up the tension. Refer to "Replacing a Section of Belt" on page 18.

### **Sprocket and Puck Removal**



- 1. Remove the conveyor belt to access the sprockets / pucks. Refer to "Conveyor Belt Replacement" on page 18.
- 2. Remove the desired sprocket / puck by following these instructions:
- A Drive Sprocket Removal
- B Idler Puck Removal

A - Drive Sprocket Removal



1. Remove the plastic cap on the end of the motor and remove the socket head screw (**Figure 60, item 1**) and the bore plug (**Figure 60, item 2**).



Figure 60

- Remove the lower gearhead mounting bar (Figure 61, item 1) from the motor mounting bracket (Figure 61, item 2). Remove spacer (Figure 61, item 3).
- Remove the upper gearhead mounting bar (Figure 61, item 4) from the motor mounting bracket (Figure 61, item 2).



Figure 61

4. Slide the gearmotor (Figure 62, item 1) off of the drive spindle (Figure 62, item 2).



Figure 62

5. Remove the drive spindle key (**Figure 63, item 1**) from the drive spindle keyway (**Figure 63, item 2**).



Figure 63

6. Remove the pull pin (Figure 64, item 1).



Figure 64

22

7. Slide the drive tail assembly out of the take up blocks (**Figure 65**).



Figure 65

- 8. Slide the motor support bracket (Figure 65, item 1) off the drive spindle (Figure 65, item 2).
- 9. Remove the sprockets (Figure 65, item 3).

#### **B** - Idler Puck Removal

- 1. Remove the pull pins from take up blocks (Figure 64).
- 2. Slide the idler tail assembly (Figure 66, item 1) out of the take up blocks (Figure 66, item 2).



Figure 66

3. Remove the bearing cover (Figure 67, item 1).



Figure 67

4. Use a hex wrench (**Figure 68, item 1**) to loosen the bearing shaft assembly fasteners (**Figure 68, item 2**).



Figure 68

 Slide off bearing shaft assembly (Figure 69, item 1), washer (Figure 69, item 3), O-ring (Figure 69, item 4), and flanged puck (Figure 69, item 5) off of the idler shaft (Figure 69, item 2).



Figure 69

6. Remove the guard bar (Figure 70, item 1).



*Figure 70* Remove the pucks (Figure 70, item 2).

#### 7400 Ultimate Series CE End Drive Conveyors

7.

### **Reassembling Tail Assembly**

Refer to the "Service Parts" section starting on page 28 for complete diagrams and lists of all tail assembly components.

### Tip Up Idler Tail

- 1. Place the idler puck (**Figure 71, item 1**) at the center of the bent retaining bar (**Figure 71, item 2**).
- Slide the idler puck onto the idler shaft (Figure 71, item 3). Make sure to center the idler puck.



Figure 71

3. Attach flanged pucks (Figure 72, item 5), the O-rings (Figure 72, item 4), the washers (Figure 72, item 3), and the bearing shaft assemblies (Figure 72, item 1) onto the idler shaft (Figure 72, item 2).



Figure 72

4. Attach the guard bar (Figure 73, item 1).





 Use a hex wrench(Figure 74, item 1) to tighten the bearing shaft fasteners (Figure 74, item 2) to 6 N•m (54 in•lbs). Check after 24 hours of conveyor use.



*Figure 74* Attach the bearing covers. Reference (**Figure 67**).

6.

#### **Drive Tail**

 Attach a flanged puck (Figure 75, item 1), an O-ring (Figure 75, item 4), a washer (Figure 75, item 5) and a bearing shaft assembly (Figure 75, item 2) to the supporter end of the drive spindle.



Figure 75

- 2. Slide the first sprocket (**Figure 75, item 3**) onto the drive spindle.
- 3. Insert the sprocket alignment bar (Figure 76, item 1) into the first sprocket (Figure 76, item 2) resting it up against the flanged puck (Figure 76, item 3). Position the first sprocket with the notch in the sprocket alignment bar.



Figure 76

4. Install the remaining sprockets (**Figure 77, item 1**) making sure to position each sprocket with the next available notch (**Figure 77, item 2**) in the sprocket alignment bar.



Figure 77

5. Install a flanged puck (**Figure 78, item 2**) onto spindle shaft. Install O-ring (**Figure 78, item 1**) onto spindle in groove provided.



Figure 78

6. Install washer (Figure 79, item 1) onto spindle shaft.



Figure 79

7. Slide the retaining ring (**Figure 80, item 1**) onto the drive spindle. Leave a slight gap between ring and washer to allow flanged puck to spin freely.



Figure 80

- 8. Tighten the retainer ring fastener using a hex wrench (Figure 80, item 2).
- 9. Slide the second bearing shaft assembly, or the motor mount bracket (**Figure 81, item 1**), onto the longer end of the drive spindle (**Figure 81, item 2**).



Figure 81

 Attach the guard bar (Figure 82, item 1) to the bearing / motor mount bracket shafts (Figure 82, item 2).



Figure 82

 Use a hex wrench (Figure 83, item 1) to tighten the bearing shaft fasteners (Figure 83, item 2) to 6 N•m (54 in•lbs). Check after 24 hours of conveyor use.



Figure 83

12. Attach the bearing covers.

### **Bearing Replacement**

- 1. Secure the bearing shaft in the take up blocks.
- 2. Insert the rod end of a second bearing shaft through the bearing (**Figure 84**).



Figure 84

- 3. Apply lateral pressure to the rod until the bearing comes loose.
- 4. Remove the worn or damaged bearing (Figure 85).



#### Figure 85

5. Replace the bearing. Reference (**Figure 67**).

### NOTE

When inserting the new bearing, make sure the anti-rotation notch (Figure 85, item 1) on the bearing lines up with the groove inside the housing (Figure 85, item 2).

### **LPZ Knuckles**

#### Wearstrips and Belt Returns

Replace the wearstrips and belt returns if they become worn.

For wearstrip and belt return installation instructions:

- For wearstrips, replace as needed, making sure wear strips are situated securely in the frame slots.
- For Belt returns, Refer to "Belt Return Installation" on page 15.

### NOTE

For replacement parts other than those shown in this section, contact an authorized Dorner Service Center or the factory. Key Service Parts and Kits are identified by the Performance Parts Kits logo \_\_\_\_\_. Dorner recommends keeping these parts on hand.

### **Drive End Components**



Item	Part Number	Description
1	807-1454	Bearing Cover
2	500078	Shaft Assembly with Bearing
3	517201	Flanged Puck
4	807-1444	Sprocket for Standard 1.00" Pitch Belt
	807-1446	Sprocket for Specialty Intralox .60" Pitch Belt
	807-1445	Sprocket for Specialty Intralox 1.00" Pitch Belt
5	5296 <u>WW</u>	Drive Spindle for Standard Belt
	5298 <u>WW</u>	Drive Spindle for Specialty Intralox Belt

Item	Part Number	Description
6	5160 <u>WW</u>	Sprocket Alignment Bar for Standard 1.00" Pitch Belt
	5163 <u>WW</u>	Sprocket Alignment Bar for Specialty Intralox .60" Pitch Belt
	5164 <u>WW</u>	Sprocket Alignment Bar for Specialty Intralox 1.00" Pitch Belt
7	912-111SS	Square Key .25 x 2.50"
8 *	500078	Shaft Assembly with Bearing
9	5154 <u>WW</u>	Guard Bar Shaft
10	501381	Washer
11	807-1588	O-Ring
12	501188	Guard Bar
13	501676	Pin Assembly
14	802-162	Bearing

Item	Part Number	Description	
15	74DDU25- <u>WW</u>	Drive Spindle Kit when Conveyor is ordered with a Dorner Gearmotor Mounting Package for Standard 1.00" Pitch Belt (Includes Items 1, 3, 4, 10, 11 and 14)	
	74DDU16- <u>WW</u>	Drive Spindle Kit when Conveyor is ordered with a Dorner Gearmotor Mounting Package for Specialty Intralox 1.00" Pitch Belt (Includes Items 1, 3, 4, 10, 11 and 14)	
	74DDU11- <u>WW</u>	Drive Spindle Kit when Conveyor is ordered with a Dorner Gearmotor Mounting Package for Specialty Intralox .60" Pitch Belt (Includes Items 1, 3, 4, 10, 11 and 14)	
	74DCU25- <u>WW</u>	Drive Spindle Kit when Conveyor is ordered without a Dorner Gearmotor Mounting Package for Standard 1.00" Pitch Belt (Includes Items 1, 3, 4, 10, 11 and 14)	
	74DCU16- <u>WW</u>	Drive Spindle Kit when Conveyor is ordered without a Dorner Gearmotor Mounting Package for Specialty Intralox 1.00" Pitch Belt (Includes Items 1, 3, 4, 10, 11 and 14)	
	74DCU11- <u>WW</u>	Drive Spindle Kit when Conveyor is ordered without a Dorner Gearmotor Mounting Package for Specialty Intralox .60" Pitch Belt (Includes Items 1, 3, 4, 10, 11 and 14)	
<u>WW</u> =	Conveyor width ref	: 06 - 36 in 02 increments	
moun	* When the conveyor is ordered with a Dorner gearmotor mounting package the shaft assembly is replaced with a gearmotor mounting bracket.		

Sprocket Quantity (Item 4)	
Width	Sprocket Quantity
152 mm (6")	2
203 mm (8")	2
254 mm (10")	3
305 mm (12")	3
356 mm (14")	4
406 mm (16")	4
457 mm (18")	5
508 mm (20")	5
559 mm (22")	6
610 mm (24")	6
660 mm (26")	7
711 mm (28")	7
762 mm (30")	8
813 mm (32")	8
864 mm (34")	9
914 mm (36")	9

## Tip Up Tension End



Item	Part Number	Description
1	807-1454	Bearing Cover
2	500079	Shaft Assembly with Bearing
3	5172 <u>WW</u>	Flanged Puck, Idler Tail for Standard Belt
	5173 <u>WW</u>	Flanged Puck, Idler Tail for Specialty Intralox Belt
4	501189	Idler Puck
5	5156 <u>WW</u>	Idler Shaft
6	5157 <u>WW</u>	Bent Retaining Bar for Standard Belt
	5167 <u>WW</u>	Bent Retaining Bar for Specialty Intralox Belt
7	501188	Guard Bar
8	5154 <u>WW</u>	Guard Bar Shaft
9	501381	Washer
10	807-1588	O-Ring
11	501184	Key Stop
12	5182 <u>WW</u>	Tip Up Shaft Assembly
13	501488	Pin Assembly
14	802-162	Bearing
15	501681	Idler Shaft Sleeve

ltem	Part Number	Description
16	74UI- <u>WW</u>	Idler Spindle Kit for Standard Belt (Includes Items 1, 3, 4, 10 and 14)
	74UIS- <u>WW</u>	Idler Spindle Kit for Specialty Intralox Belt (Includes Items 1, 3, 4, 10 and 14)
17	74UIT- <u>WW</u>	Idler Tail Kit for Standard Belt (Includes Items 1 through 10, 13 and 14)
	74UITS- <u>WW</u>	Idler Tail Kit for Specialty Intralox Belt (Includes Items 1 through 10, 13 and 14)
WW = Conveyor width ref: 06 - 36 in 02 increments		

## Nose Bar Tip Up Tension End



Item	Part Number	Description
1	500490	Nose Bar Tracking Puck
2	500278	Nose Bar Puck
3	5056 <u>WW</u>	.5" Pitch Nose Bar Wear Strip
	5058 <u>WW</u>	1" Pitch Nose Bar Wear Strip
4	5176 <u>WW</u>	Nose Bar Transfer Post for Standard Belt
	5177 <u>WW</u>	Nose Bar Transfer Post for Specialty Intralox Belt
5	500487	Nose Bar Idler Shaft Left Hand
6	500488	Nose Bar Idler Shaft Right Hand

ltem	Part Number	Description
7	501184	Key Stop
8	5182 <u>WW</u>	Tip Up Shaft Assembly
9	501488	Pin Assembly
10	74UNB5- <u>WW</u>	.5" Nose Bar Kit, for Standard Belt (Includes Items 1 through 3)
11	74UNBT5- <u>WW</u>	.5" Nose Bar Tail Kit, for Standard Belt (Includes Items 1 through 6 and 9)
WW = Conveyor width ref: 06 - 36 in 02 increments		

## Upper Knuckle for 5° - 15°



Item	Part Number	Description
1	5236 <u>WW</u>	Frame Assembly for 5° Knuckle
	5237 <u>WW</u>	Frame Assembly for 10° Knuckle
	5238 <u>WW</u>	Frame Assembly for 15° Knuckle
2	501695- <u>AA</u>	Wear Strips for 5° - 15° Knuckle
3	501893- <u>AA</u>	38 mm Hold Down Guide for 5° - 15° Knuckle Right Hand 6"-16" wide
	501685- <u>AA</u>	38 mm Hold Down Guide for 5° - 15° Knuckle Right Hand 18"-24" wide
	501883- <u>AA</u>	76 mm Hold Down Guide for 5° - 15° Knuckle Right Hand 6"-16" wide
	501684- <u>AA</u>	76 mm Hold Down Guide for 5° - 15° Knuckle Right Hand 18"-24" wide
4	501699- <u>AA</u>	38 mm Hold Down Guide for 5° - 15° Knuckle Left Hand 6"-16" wide
	501687- <u>AA</u>	38 mm Hold Down Guide for 5° - 15° Knuckle Left Hand 18"-24" wide
	501698- <u>AA</u>	76 mm Hold Down Guide for $5^{\circ}$ - $15^{\circ}$ Knuckle Left Hand 6"-16" wide
	501686- <u>AA</u>	76 mm Hold Down Guide for 5° - 15° Knuckle Left Hand 18"-24" wide

Item	Part Number	Description		
5	501676	Pull Pin		
6	500196	Return Shaft		
7	500075	Return Shoe		
8	74UKL- <u>WW</u> -	Upper Knuckle Kit		
•	<u>AA</u>	(Includes Items 2 and 7)		
<u>WW</u> = Conveyor width ref: 06 - 24 in 02 increments				
$\underline{AA} = A$	Angle 05, 10 or <sup>-</sup>	15		

32

## Upper Knuckle for 30° - 60°



Item	Part Number	Description
1	5239 <u>WW</u>	Frame Assembly for 30° Knuckle
	5240 <u>WW</u>	Frame Assembly for 45° Knuckle
	5241 <u>WW</u>	Frame Assembly for 60° Knuckle
2	501693- <u>AA</u>	Wear Strips for 30° - 60° Knuckle
3	501697- <u>AA</u>	38 mm Hold Down Guide for 30° Knuckle
	501879- <u>AA</u>	76 mm Hold Down Guide for 30° Knuckle

Item	Part Number	Description			
4	807-1553	Pull Pin			
5	501683 Return Guide				
6	74UKH- <u>WW</u> - <u>AA</u>	Upper Knuckle Kit (Includes Items 2 and 5)			
<u>WW</u> =	WW = Conveyor width ref: 06 - 24 in 02 increments				
$\underline{AA} = A$	Angle 30, 45 or 6	0			

## Lower Knuckle for 5° - 15°



Item	Part Number	Description
1	5230 <u>WW</u>	Frame Assembly for 5° Knuckle
	5231 <u>WW</u>	Frame Assembly for 10° Knuckle
	5232 <u>WW</u>	Frame Assembly for 15° Knuckle
2	501694- <u>AA</u>	Wear Strips for 5° - 15° Knuckle
3	501692- <u>AA</u>	38 mm Hold Down Guide for 5° - 15° Knuckle 6"-16" wide
	501974- <u>AA</u>	38 mm Hold Down Guide for 5° - 15° Knuckle 18"-24" wide
	501878- <u>AA</u>	76 mm Hold Down Guide for 5° - 15° Knuckle 6"-16" wide
	501973- <u>AA</u>	76 mm Hold Down Guide for 5° - 15° Knuckle 18"-24" wide

Item	Part Number	Description			
4	501676	Pull Pin			
5	74LKL- <u>WW-AA</u>	Lower Knuckle Kit (Includes Item 2)			
<u>WW</u> =	<u>WW</u> = Conveyor width ref: 06 - 24 in 02 increments				
<u>AA</u> = /	Angle 05, 10 or 15				

## Lower Knuckle for 30° - 60°



Item	Part Number	Description
1	5233 <u>WW</u>	Frame Assembly for 30° Knuckle
	5234 <u>WW</u>	Frame Assembly for 45° Knuckle
	5235 <u>WW</u>	Frame Assembly for 60° Knuckle
2	501691- <u>AA</u>	Wear Strips for 30° - 60° Knuckle
3	501692- <u>AA</u>	38 mm Hold Down Guide for 30° - 60° Knuckle
	501878- <u>AA</u>	76 mm Hold Down Guide for 30° - 60° Knuckle

Item	Part Number	Description			
4	501676	Pin Assembly			
5	74LKH- <u>WW-AA</u>	Lower Knuckle Kit (Includes Item 2)			
<u>WW</u> =	WW = Conveyor width ref: 06 - 24 in 02 increments				
<u>AA</u> = .	Angle 30, 45 or 60				

## **Conveyor Frame and Extension**



Item	Part Number	Description
1		Consult Factory for Frame Part Number
2	501800- <u>LLL</u>	Straight Wear Strip
3	501190	Hex Post Connector
4	961016MSS	Hex Head Cap Screw M10-1.5 x 16mm
5	807-1616	O-Ring
<u>LLL</u> =	Conveyor lengt	h ref: 036 - 999 in 001 increments

	Wear Strip Quantity (Item 2)								
		Conveyor Length ( <u>LLL</u> )							
							733-	853-	
		132	252	372	492	612	732	852	999
	06	2	4	6	8	10	12	14	16
	08	2	4	6	8	10	12	14	16
	10	3	6	9	12	15	18	21	24
	12	3	6	9	12	15	18	21	24
<u>(۲</u>	14	3	6	9	12	15	18	21	24
WN	16	4	8	12	16	20	24	28	32
th (	18	4	8	12	16	20	24	28	32
Vid	20	5	10	15	20	25	30	35	40
or V	22	5	10	15	20	25	30	35	40
Conveyor Width ( <u>WW</u> )	24	5	10	15	20	25	30	35	40
NUC	26	6	12	18	24	30	36	42	48
ŏ	28	6	12	18	24	30	36	42	48
	30	6	12	18	24	30	36	42	48
]	32	7	14	21	28	35	42	49	56
	34	7	14	21	28	35	42	49	56
	36	8	16	24	32	40	48	56	64

## 76 mm High Sides

5	4		4		ide Sections For 3' - 11' Conveyors For 12' - 21' Conveyors For 22' - 31' Conveyors ber of guiding sections increases every 10'.
Item	Part Number	Description		Part Number	Description
Item 1	503501- LLLLL	Right Hand High Side Guide	4	503401- <u>LLLLL</u>	Square End High Side Guide
	503501-		4 - <u>LLLLL</u>	503401- <u>LLLLL</u> = Guide Length	

## **Cleated 25 mm Guides**



Item	Part Number	Description		Item	Part Number	Description
1	502401- <u>LLLLL</u>	25 mm Cleated Right Hand Guide		3	501676	Pin Assembly
		(6" - 16" wide conveyors)		4	502301- <u>LLLLL</u>	25 mm Cleated Guide Square End
	502402- <u>LLLLL</u>	25 mm Cleated Right Hand Guide				(6" - 16" wide conveyors)
		(18" - 24" wide conveyors)			502302- <u>LLLLL</u>	25 mm Cleated Guide Square End
2	502501- <u>LLLLL</u>	25 mm Cleated Left Hand Guide				(18" - 24" wide conveyors)
		(6" - 16" wide conveyors)		LLLLL	<u></u> = Guide Length	in inches with 2 decimal places.
	502502- <u>LLLLL</u>	LL 25 mm Cleated Left Hand Guide		Exam	ple: Guide Lengt	h = 95.25" <u>LLLLL</u> = 09525
		(18" - 24" wide conveyors)				

38

### **Cleated 76 mm Guides**



Item	Part Number	Description
1	502701- LLLLL	76 mm Cleated Right Hand Guide (6" - 16" wide conveyors)
	502702- <u>LLLLL</u>	76 mm Cleated Right Hand Guide (18" - 24" wide conveyors)
2	502801- <u>LLLLL</u>	76 mm Cleated Left Hand Guide (6" - 16" wide conveyors)
	502802- LLLLL	76 mm Cleated Left Hand Guide (18" - 24" wide conveyors)

Item	Part Number	Description		
3	501676	Pin Assembly		
4	502601- LLLLL	76 mm Cleated Guide Square End (6" - 16" wide conveyors)		
	502602- <u>LLLLL</u>	76 mm Cleated Guide Square End (18" - 24" wide conveyors)		
LLLLL	LLLLL = Guide Length in inches with 2 decimal places.			
Examp	Example: Guide Length = 95.25" LLLLL = 09525			

### **Flat Belt Returns**



nem		Description			
1	5032 <u>WW</u>	Return Shaft	3	74R- <u>WW</u>	Chain Support Kit (Includes Ite
2	500075	Chain Return Shoe			
			<u>WW</u> =	Conveyor width	n ref: 06 - 36 in 02 increments

### **Cleated Belt Returns**



Item	Part Number	Description	Item	Part Number	Description
1	500196	Cleated Return Shaft	3	74CR	Chain Support Kit (Includes Item 2)
2	500075	Chain Return Shoe			

### Flat Belt



### **Cleated Belt**

1 74 <u>BB-WW-SS</u> Cleated Belt Chain Repair Kit (Includes 1 cleat centered on a cleat spacing length of chain and assembly pins)   BB = Chain Reference Number		Cleated Belt	Chain Kit
1 74 <u>BB-WW-SS</u> Cleated Belt Chain Repair Kit (Includes 1 cleat centered on a cleat spacing length of chain and assembly pins)   BB = Chain Reference Number	5		
1 74 <u>BB-WW-SS</u> Cleated Belt Chain Repair Kit (Includes 1 cleat centered on a cleat spacing length of chain and assembly pins)   BB = Chain Reference Number	5		
1 74 <u>BB-WW-SS</u> Cleated Belt Chain Repair Kit (Includes 1 cleat centered on a cleat spacing length of chain and assembly pins)   BB = Chain Reference Number	~		
1 74 <u>BB-WW-SS</u> Cleated Belt Chain Repair Kit (Includes 1 cleat centered on a cleat spacing length of chain and assembly pins)   BB = Chain Reference Number		13	S at 1 1
1 74 <u>BB-WW-SS</u> Cleated Belt Chain Repair Kit (Includes 1 cleat centered on a cleat spacing length of chain and assembly pins)   BB = Chain Reference Number			
1 74 <u>BB-WW-SS</u> Cleated Belt Chain Repair Kit (Includes 1 cleat centered on a cleat spacing length of chain and assembly pins)   BB = Chain Reference Number	-	1	5 5 6
1 74 <u>BB-WW-SS</u> Cleated Belt Chain Repair Kit (Includes 1 cleat centered on a cleat spacing length of chain and assembly pins)   BB = Chain Reference Number			5 5 5
SS (Includes 1 cleat centered on a cleat spacing length of chain and assembly pins)   BB = Chain Reference Number			
spacing length of chain and assembly pins)   BB = Chain Reference Number	Item	Part Number	Description
BB = Chain Reference Number			Cleated Belt Chain Repair Kit
BB = Chain Reference Number		74 <u>BB-WW</u> -	Cleated Belt Chain Repair Kit (Includes 1 cleat centered on a cleat
	1	74 <u>BB-WW</u> -	Cleated Belt Chain Repair Kit (Includes 1 cleat centered on a cleat spacing length of chain and
	1	74 <u>BB-WW</u> -	Cleated Belt Chain Repair Kit (Includes 1 cleat centered on a cleat spacing length of chain and
<u>WW</u> = Conveyor width ref: 06 - 36 in 02 increments	1	74 <u>BB-WW</u> - <u>SS</u>	Cleated Belt Chain Repair Kit (Includes 1 cleat centered on a cleat spacing length of chain and assembly pins)

#### <u>SS</u> = Cleat Spacing

### **Ordering a Replacement Chain**

Determine the length of chain required for the conveyor and round up to the nearest foot length. Order the proper number of chain repair kits (1' long each) for your conveyor. Dorner will ship chain kits that are of a reasonable length fully assembled.

#### Example:

Overall chain length = 42' 5'' (rounded up = 43')

Order: Qty (43) of 74<u>BB-WW</u>

 $\underline{BB} = Chain reference number$ 

 $\underline{WW} =$ Conveyor width ref: 06-36 in 02 increments

### **Belt Removal Tool**



Item	Part Number	Description
1	500582	Tool Rod Removal for 1" Pitch Flush Grid Belt
	500494	Tool Rod Removal for 1/2" Pitch Flush Grid Belt

### **Configuring Conveyor Part Number**



### Flat Belt Conveyor

Refer to the model number on the conveyor frame (**Figure 86**). From the model number, determine conveyor width (<u>WW</u>), length (<u>LLL</u>), drive stand location (<u>S</u>), idler stand location (<u>S</u>), cleaning options (<u>C</u>), drive/pulley type (<u>D</u>), profile (<u>G</u>) and belt material (<u>BB</u>).

#### Example: 7UM12072CC111MA

7400 Ultimate Series end drive, flat belt conveyor, 305mm (12") wide x 1829mm (72") long, stands located 457 mm (18") from each end, frame cutout cleaning option, side drive with standard pulleys on each end, low side profiles, and MA belt material.

### **Cleated Belt Conveyor**

Refer to the model number on the conveyor frame (**Figure 86**). From the model number, determine conveyor width (<u>WW</u>), length (<u>LLL</u>), drive stand location (<u>S</u>), idler stand location (<u>S</u>), cleaning options (<u>C</u>), cleated belt material (<u>BB</u>) and cleat spacing (<u>SS</u>).

#### Example: 7UM12072CC1NA10

7400 Ultimate Series end drive, cleated belt conveyor, 305 mm (12") wide x 1829 mm (72") long, stands located 457 mm (18") from each end, frame cutout cleaning option, NA cleated belt material, side drive with standard pulleys on each end, and 10 link spacing for cleats.

## NOTES

## **Return Policy**

Returns must have prior written factory authorization or they will not be accepted. Items that are returned to Dorner without authorization will not be credited nor returned to the original sender. When calling for authorization, please have the following information ready for the Dorner factory representative or your local distributor: 1. Name and address of customer. 2. Dorner part number(s) of item(s) being returned. 3. Reason for return. 4. Customer's original order number used when ordering the item(s). 5. Dorner or distributor invoice number. A representative will discuss action to be taken on the returned items and provide a Returned Goods Authorization number for reference. There will be a return charge on all new undamaged items returned for credit where Dorner was not at fault. Dorner is not responsible for return freight on such items. Conveyors and conveyor accessories 30% Standard catalog conveyors MPB Series, cleated and specialty belt conveyors 50% 7400 & 7600 Series conveyors non-returnable items Engineered special products case by case Drives and accessories 30% Sanitary stand supports non-returnable items Parts Standard stock parts 30% MPB, cleated and specialty belts non-returnable items Returns will not be accepted after 60 days from original invoice date. The return charge covers inspection, cleaning, disassembly, disposal and reissuing of components to inventory. If a replacement is needed prior to evaluation of returned item, a purchase order must be issued. Credit (if any) is issued only after return and evaluation is complete.

Dorner has representatives throughout the world. Contact Dorner for the name of your local representative. Our Technical Sales, Catalog Sales and Service Teams will gladly help with your questions on Dorner products.

For a copy of Dorner's Warranty, contact factory, distributor, service center or visit our website at www.dorner.com.

For replacement parts, contact an authorized Dorner Service Center or the factory.



Dorner Mfg. Corp. reserves the right to change or discontinue products without notice. All products and services are covered in accordance with our standard warranty. All rights reserved. © Dorner Mfg. Corp. 2008 DORNER MFG. CORP. 975 Cottonwood Ave., PO Box 20 Hartland, WI 53029-0020 USA USA TEL 1-800-397-8664 (USA) FAX 1-800-369-2440 (USA) Internet: www.dorner.com

Outside the USA: TEL 1-262-367-7600 FAX 1-262-367-5827