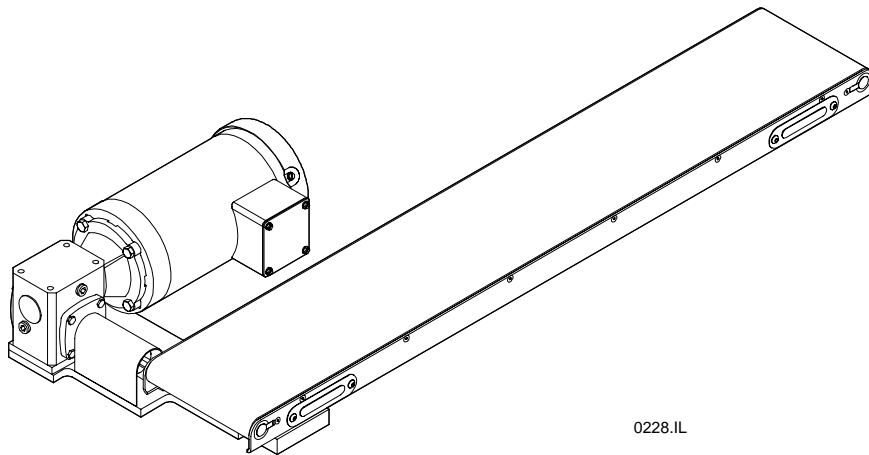


# **DORNER<sup>®</sup>**

## **4100 Series Conveyors**

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### **Parts, Assembly & Maintenance Manual**



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# Table of Contents

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<b>Safe Practices</b> .....	3
<b>Foreword</b> .....	3
<b>Installation Instructions</b> .....	3
<b>Maintenance</b>	
Lubrication .....	4 and 5
Conveyor Belts .....	5
Oil Filled Gear Reducers .....	5
Tension Pin/Return Roller Assemblies .....	5
<b>Component Replacement and Adjustments</b>	
Conveyor Repair Preparations .....	6
Conveyor Belt Tensioning Procedure (Tension Pin Assembly Replacement/Adjustment) .....	6 and 7
Return Belt Roller Replacement .....	7
Conveyor Belt Replacement .....	7
Outboard Drive Shaft Replacement .....	8
Spindle Removal .....	9
Spindle Bearing Replacement .....	9 and 10
Spindle Installation .....	10 and 11
Timing Belt Tension Adjustment .....	12
Conveyor Frame Repair .....	12
<b>Troubleshooting Guide</b>	
Bearings .....	13
Gearmotors .....	13
Conveyor Belt .....	14
Timing Belt .....	15
<b>Lubrication Records</b> .....	15
<b>Replacement Parts</b>	
Conveyor Components .....	16 and 17
Conveyor Size, Style and Profile Reference .....	18
Conveyor Frame, Bedplate and Belt Replacement Part Numbers ..	19
Top Gearmotor Mounting Package .....	20 and 21
Bottom Gearmotor Mounting Package .....	22 and 23
Side Gearmotor Mounting Package .....	24
Gearmotors .....	25
<b>Accessories</b>	
Hex to Round Adapter .....	26
Standard Motor Bracket Assembly .....	26
Block Mounting Bracket for Reversing, 90° or Support Block .....	27
Support Block .....	27
Conveyor Drive Components .....	27
Reversing Block Assembly .....	28
90° Block Assembly .....	28
Center Drive Block Assembly – Solid Couplings .....	29
Center Drive Block Assembly – Flexible Couplings .....	30
<b>Tool Kit</b> .....	31
<b>Part Number Index</b> .....	32, 33 and 34

## **WARNING**

When conveyors are used as part of a multiple conveyor system, check for potential pinch points and other mechanical hazards before start-up of the system. The double wiper option may be required when using a reversible drive.



**Caution:** Because Dorner Mfg. Corp. cannot control the physical installation and applications of multiple conveyor systems, taking protective measures is the responsibility of the user.



**Caution:** The safety alert symbol is used to alert you to potential hazards.



**Caution:** Never operate equipment without guards or other protective devices in place.



**Caution:** To prevent injury, make sure all electricity has been disconnected before you perform any maintenance, make any adjustments or replace any components.

## Foreword

### General Information

By following the lubrication, maintenance and adjustment instructions in this manual, you will prolong the life of your conveyor and maintain its maximum efficiency.

When ordering replacement parts, always give the model and order number. These numbers are stamped on nameplate label, located on the side of the conveyor frame. Record the numbers below for ready reference.

Model Number \_\_\_\_\_

Order Number \_\_\_\_\_

Within this manual, if there is a letter in parenthesis in the text, it is referring to an item in a specified figure. Numbers in parenthesis will be followed with a page number and refer to the parts illustrations.

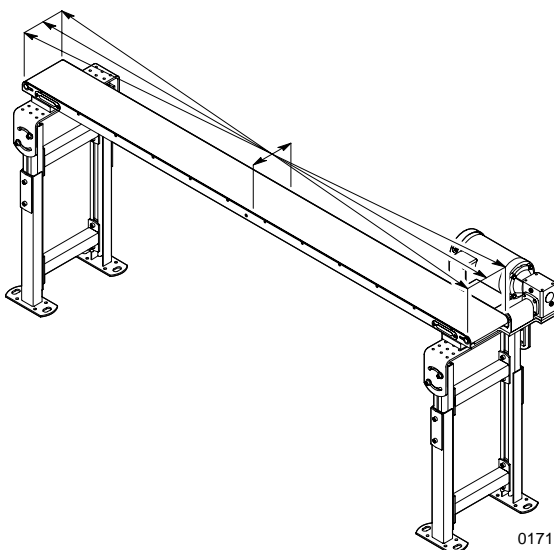
*All information in this publication is based on the product information available at time of approval for printing.*

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

*For pictorial clarity, some Illustrations and Figures in this manual may show guards or other protective devices open or removed. Under no circumstances should the conveyor be operated without these devices securely in place.*

## Installation Instructions

Figure 1



**Caution:** Do not bend or twist the frame when mounting the conveyor.

1. Use Dorner stands and compatible mounting hardware or mounting provided by the user to mount conveyor securely.
2. The conveyor must be mounted straight, flat and level within the confines of the conveyor. Use a straight edge and a level for set up. Refer to Figure 1.
3. Refer to the Mounting Package views on pages 20, 22 and 24 to attach the gearmotor. Locate the gearmotor so the drive spindle pulls the belt whenever possible.

# Maintenance

## Lubrication

### Spindle Bearings



**Caution:** When lubricating spindle bearings, use a conventional hand grease gun, with a maximum of one pump per application, unless otherwise specified. *Do not over-lubricate.* To prevent damage to the bearing, do not use a power grease gun. This creates pressure that may unseat the bearing.

**Note:** Spindles/Pulleys on 1" and 2" (25 mm and 44 mm) wide conveyors use shielded ball bearings and do not require lubrication.

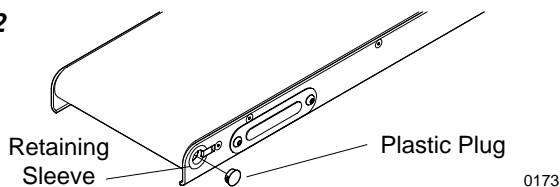
Use Dornier Red Grease 14 oz. cartridge, part number 829-002, or 14 oz. can, part number 829-003. Lubricate spindle bearings every 750 hours or more frequently depending on operating conditions.



**Caution:** To prevent injury, make sure all electrical power has been disconnected before you perform any maintenance.

All non-driven positions have a plastic plug (Figure 2) installed into the ends of the spindle retaining sleeves to keep out dust and debris. Use a small flat screwdriver to remove this plug.

Figure 2

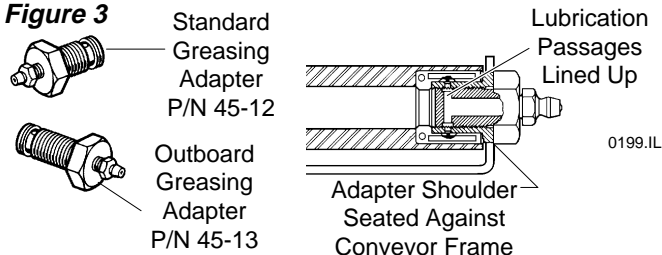


### Non-driven Positions - 3" (70 mm) and Wider Conveyors

1. Install Dornier greasing adapter, part number ☆45-12 (Figure 3).

For Top and Bottom Mounting Packages without through shaft greasing, use optional greasing adapter, part number 45-13.

Figure 3



2. Make sure the adapter shoulder is seated against the conveyor frame. Proper seating assures alignment of the internal lubrication passages.

☆ - Part of Tool Kit, Part Number 4500, See page 31.

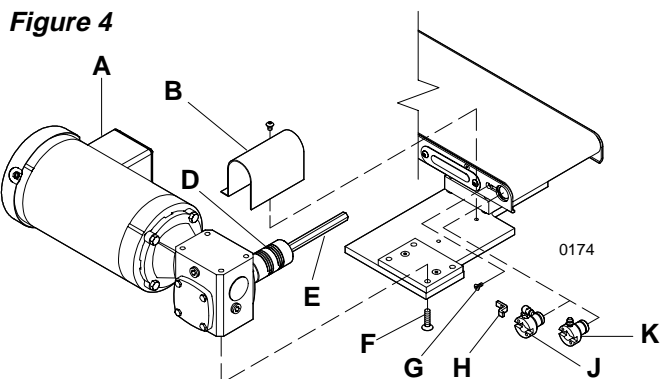
3. When lubrication is finished, the grease adapter can be left in place or can be replaced with the plastic plug (Figure 2).

### Driven Positions - 3" (70 mm) and Wider Conveyors

#### Conveyors with Side Mounting Package using a Standard Greasing Adapter - Figure 4

1. Remove the coupling guard (B, Figure 4) to access the drive shaft (E) and flex coupling (D).
2. After removing screws (F), slide the gearmotor (A)/flex coupling (D)/hex drive shaft (E) assembly from the conveyor.
3. Install greasing adapter part number ☆45-12 (Figure 3).
4. Make sure the adapter shoulder is seated against the conveyor frame. Proper seating assures alignment of the internal lubrication passages.
5. Remove the greasing adapter, and reverse steps 1 and 2.

#### Conveyors with Side Mounting Package using an Optional Greasing Adapter - Figure 4



If optional greasing retaining sleeve is already installed, lubricate spindle bearing through the grease fitting. If there is not enough clearance for the grease gun, remove coupling guard (B, Figure 4).

The following procedure is recommended for installation of the optional greasing retaining sleeve.

1. Follow steps 1 and 2 in the "Conveyors with Side Mounting Package using a Standard Greasing Adapter" section.
2. Carefully start to remove flat head screw (G) securing the spindle retaining sleeve retainer clip (H) on the drive side of the conveyor. As you loosen the screw, press in on it so that the retainer clip tips out of the sleeve. Then grip the retainer clip before fully removing the screw. Set the screw aside for future use and discard the retainer clip.

## Lubrication (continued) Spindle Bearings (continued)

### Driven Positions - 3" (70 mm) and Wider Conveyors (continued)

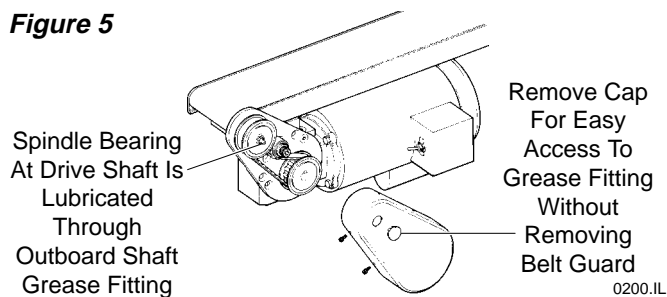
#### Conveyors with Side Mounting Package using an Optional Greasing Adapter (continued) - Figure 4

3. Replace the original spindle retaining sleeve with one of the permanent optional greasing retaining sleeves, (J), part number 618898, or (K), part number 622223. These retaining sleeves have grease fittings to allow greasing the spindle without removing the drive parts (See step 2 in the previous section).
4. Make sure the adapter shoulder is seated against the conveyor frame. Refer to "Spindle Installation – Procedure on page 10, for sleeve installation instructions. Secure in place with new retainer clip (H) and flat head screw (G) removed in step 2.
5. If removed, replace the coupling guard (B, Figure 4).

#### Conveyors with Top or Bottom Mounting Package - Figure 5

1. Lubricate the spindle bearing on the drive side through the outboard drive shaft grease fitting (Figure 5).
2. Remove the cap from the drive belt guard. This allows access to the grease fitting without removing timing belt guard.

Figure 5



3. When lubricating the spindle bearings for the first time the outboard shaft assembly must be filled with grease before the bearings will get any lubrication. Use a maximum of two pumps. *Do not over-lubricate.*
4. When lubricating any of the spindle bearings anytime after the initial lubrication use a maximum of one pump per application. *Do not over-lubricate.*

## Conveyor Belts Inspection

Inspect the conveyor belt for:

- Surface cuts or wear;
- Tracking problems;
- Worn edges;
- Stalling or slipping;

- Stretching or breaking;
- Belts that walk to one side;
- Non-uniform movement of the conveyor belt;
- Lines or rough edges on belt;

## Problem Identification

Belts that walk to one side indicate:

- Twisted or damaged conveyor frame;
- Dirt accumulating on the outside diameter of the spindles;
- Side load on belt;
- Improper load/unload of parts on conveyor;

Non-uniform movement indicates:

- Belt slippage due to inadequate conveyor belt or timing belt tension.
- Belt slippage due to excessive load on conveyor belt.
- Intermittent jam or drive train problems. When a problem is identified, perform corrective maintenance on the conveyor.

Lines or rough edges on belt could indicate:

- Jammed part;
- Accumulated dirt in wipers;
- Foreign material inside the conveyor;
- Improper position of accessories.

**Note:** Refer to Troubleshooting Guide on page 13.

## Cleaning



**Caution:** Do not use belt cleaners that contain alcohol, acetone, MEK or other harsh chemicals.

For most belts use Dorner Belt Cleaner, part number 625619, or equivalent. Mild soap and water may also be used. Do not soak the belt.

Due to the texture of woven polyester and black anti-static belts, use a small semi-stiff bristle brush, similar to a vegetable brush, to improve cleaning.

## Oil Filled Gear Reducers

Use Dorner gear oil part number 605625 or equivalent, and top off as specified by the manufacturer.

## Tension Pin/Return Belt Roller Assembly

Unless adverse operating conditions warrant, the needle bearings in the tension pin/return belt roller assembly, need to be repacked only during times of repair or major conveyor cleaning. Repack with the same lubricant used for spindles.

# Component Replacement and Adjustments

## Conveyor Repair Preparations

Use Dorner Tool Kit Part Number 4500 for proper maintenance. Follow instructions accompanying the tool kit. Refer to page 31 for Parts List and Illustration.

### Checklist

To avoid costly delays in repair, use the following checklist:

- Have complete spindle assemblies, replacement belts, tension pin/return belt roller assemblies, drive components, gearmotors and fasteners in stock and ready for use.
- Inspect the entire conveyor while it is disassembled.
- Thoroughly clean the conveyor inside and outside during repair. Remove any impacted dirt from the knurls on the outside diameter of the spindle.
- Replace all worn and damaged parts.
- Check all bearings for smooth operation.
- Check oil level in gear reducers, if applicable. Refer to gear reducer manufacturers instructions for maintenance and lubrication.
- Make sure the bottom wiper is installed on the discharge end of the conveyor. Conveyors with reversing drives may require a wiper on both ends.
- To minimize downtime when multiple conveyors of the same size are used, stock a complete conveyor that can be exchanged for the damaged conveyor. The damaged conveyor can then be repaired as needed.
- Check all fasteners for tightness.

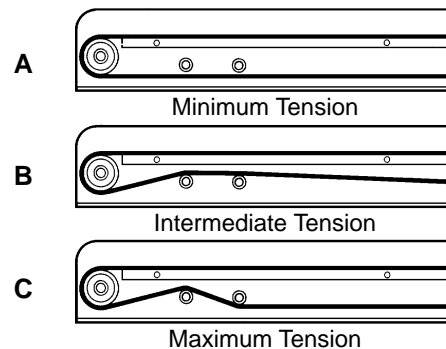
## Conveyor Belt Tensioning Procedure (Tension Pin Assembly Replacement/Adjustment)

### Tension Pin Removal

1. Remove tension pin covers on both sides at the drive end of the conveyor.
2. Place a 3/32" hex key wrench in screw on one end of the tension pin assembly.
3. Use a second 3/32" hex key wrench, at the opposite end of the pin to loosen the screw. Back the screw out approximately 3/16".
4. Push on the loose screw with a finger while backing the other screw out approximately 3/16".
5. Slide the tension pin assembly to the large opening and remove it from the frame.

**Note: Tension pin assemblies are found at bottom wiper end of the conveyor. Additional tension can be achieved by installing a second set of tension pins on opposite end of the conveyor.**

**Figure 6**



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### Tension Pin Installation and Adjustment

Before installing the tension pin assemblies, decide how much belt tension is needed. There are three different settings (A, B or C, Figure 6) for the tension adjustment.

**Minimum Tension (A)** - This is the way the tension is set at the factory when a new belt is installed. Both tension pin assemblies are installed above the return belt.

**Intermediate Tension (B)** - Install both tension pin assemblies under the return belt.

**Maximum Tension (C)** - Install a tension pin assembly under the return belt and secure in the countersink closest to the end of the frame. Install the second tension pin assembly above the return belt and secure in the other countersink.

1. Insert the tension pin assembly into conveyor frame through large opening.
2. Slide the assembly along the slot until the screws line up with the countersink on the slot.
3. Reverse steps 1 through 4 from the "Removal" section. Make sure that the flat head screws are properly seated in the countersink in the slot on the frame.

# Component Replacement and Adjustments

## Conveyor Belt Tensioning Procedure (continued)

### Tension Pin Bearing Replacement

Use a 3/16" diameter rod inserted through the tension pin tube to lightly tap the bearing out of the opposite end, or return to factory for repair or replacement. Carefully press a new bearing into the tension pin tube.

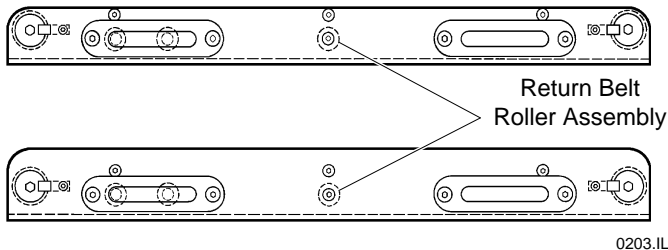
### Return Belt Roller Replacement

The return belt roller assembly (Figure 7) is identical to the tension pin assembly. On conveyors longer than 2', the return belt roller assembly keeps the conveyor return belt off the bottom of the frame. Conveyors measuring 3' through 8' long have one return belt roller. Conveyors measuring 9' through 12' long have two return belt rollers.

#### Removal

1. To gain access for removal, you must remove the spindles, bedplate and belt. Refer to "Conveyor Belt Replacement – Removal" section.
2. Remove the return belt roller assembly, by removing the flat head screws on both ends of the shaft using a 3/32" hex key wrench. Lift the assembly out of the frame.

Figure 7



#### Installation

To replace return belt roller bearings, refer to "Conveyor Belt Tensioning Procedure – Tension Pin Bearing Replacement".

1. To install the return belt roller assembly, line up the holes in the end of the shaft, with the countersink holes in the frame. Install the flat head screws, making sure that the screws are centered in the countersink hole.
2. Complete conveyor assembly by following "Conveyor Belt Replacement – Installation" section.

## Conveyor Belt Replacement

#### Removal

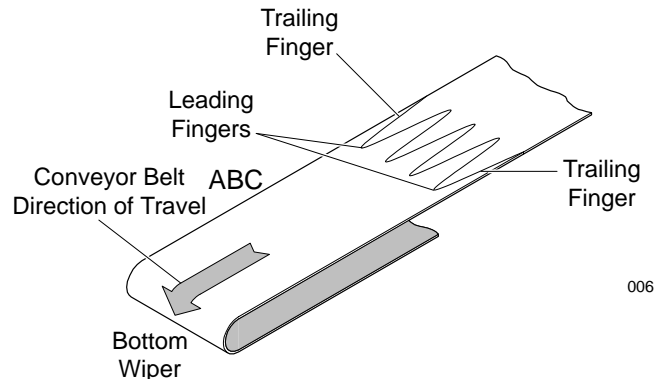
Before removing the belt, you must remove the spindles and tension pin assemblies. Refer to the appropriate sections for removal instructions.

1. Remove the screws which attach the bedplate to the conveyor frame.
2. Lift the belt with the bedplate out of the conveyor frame.

#### Installation

1. Make sure the flat head screws holding the bottom wiper in place are flush with or below the surface of the bottom wiper. Approximately 8 in/lbs of torque.
2. Place the belt inside the frame. Orient the belt so the belt splice leading finger (Figure 8) points in the direction of travel and trailing finger is as shown. Belt must run in this orientation toward the bottom wiper

Figure 8

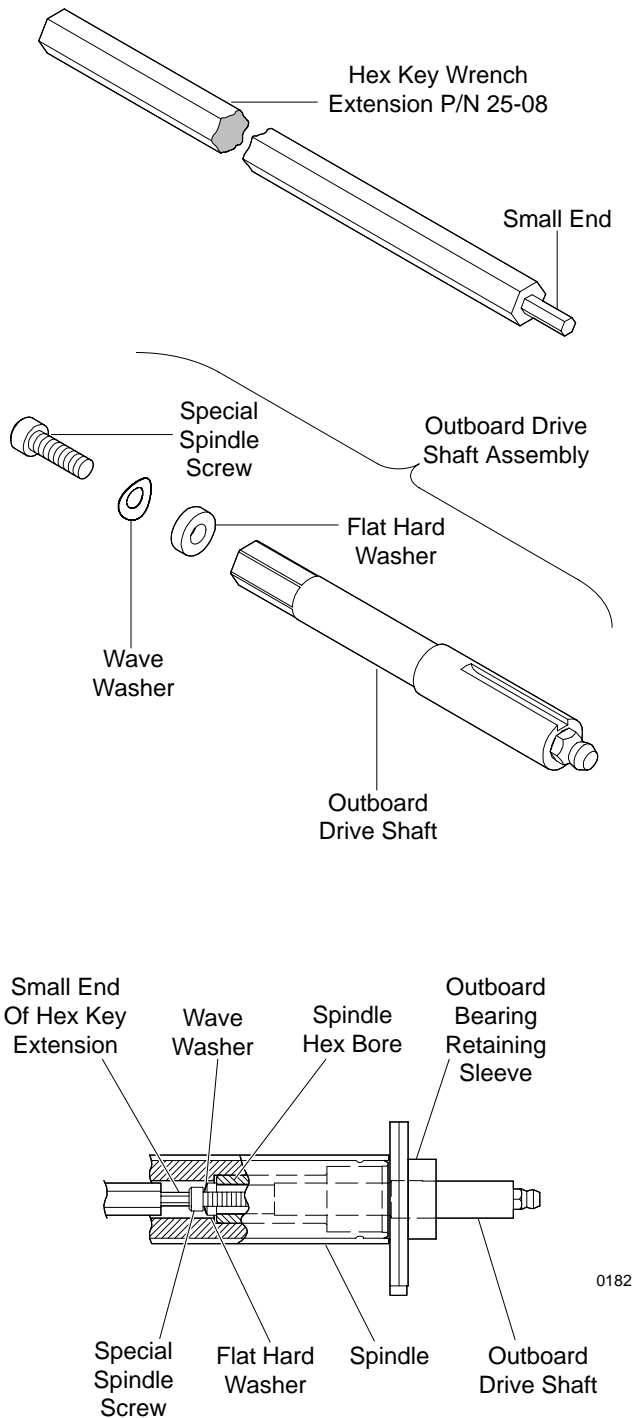


3. Place the bedplate inside the belt loop. Align the holes in the bedplate with the holes in the conveyor frame.
4. Install the screws removed in step 1 of the "Removal" section. Tighten the screws to approximately 14 in/lbs torque.
5. Complete conveyor assembly by installing drive/idler spindles and tension pin assemblies.

# Component Replacement and Adjustments

## Outboard Drive Shaft Replacement

Figure 9



### Removal

Removal of the outboard drive shaft assembly (Figure 9) requires use of Dorner hex key wrench extension tool, part number ☆25-08.

1. Insert the small end of hex key wrench extension tool into the spindle end opposite the outboard drive shaft and remove special spindle screw and washers.
2. Pull the outboard drive shaft out from the outboard bearing retaining sleeve.



**Caution:** Key way has sharp edges.

### Installation

For outboard drive shaft assembly (Figure 9) installation, the spindle may have to be turned around. The hex bore is off center on spindles for conveyors measuring 5" (127 mm) and wider.

Conveyor Width	Insert Shaft at Spindle End
1" (25 mm) – 4" (95 mm)	Either
5" (127 mm) and wider	Closest to hex bore

Install the outboard bearing retaining sleeve in the desired drive location. Refer to "Spindle Installation – Procedure" on page 10. Be sure the spindle hex bore (Figure 9) is properly located as indicated in the previous chart.

If the spindle needs to be turned around refer to the "Spindle Removal" on page 9 and "Spindle Installation" on page 10.

1. Push the outboard drive shaft (Figure 9) into the outboard bearing retaining sleeve.
2. Place the wave washer, then the flat hard washer onto the special spindle screw. Turn the screw/washer set into the outboard drive shaft using the small end of hex key wrench extension tool. Tighten to approximately 20 in/lb. Backing off the screw exactly 1/2 turn (180°) puts the proper tension on the wave washer.

☆ - Part of Tool Kit, Part Number 4500, See page 31.



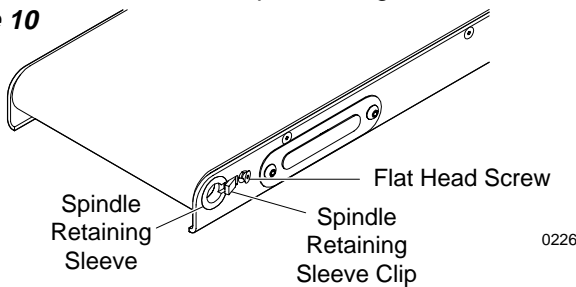
# Component Replacement and Adjustments

## Spindle Removal

### Procedure

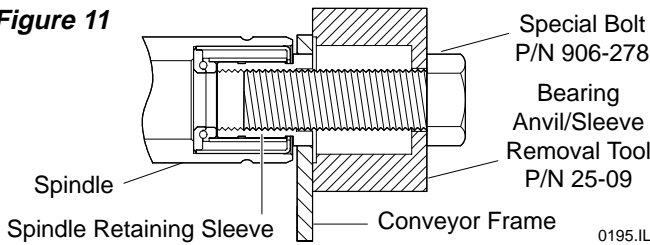
1. Remove the tension pin assemblies. Refer to "Conveyor Belt Tensioning Procedure – Tension Pin Removal" on page 6.
2. Carefully start to remove flat head screw (Figure 10) securing the spindle retaining sleeve retaining clip on one side of the conveyor. As you loosen the screw, press in on it so that it tips the retaining clip out of the sleeve. Then grip the retainer clip before fully removing the screw.
3. Remove retaining sleeves. If retaining sleeves are frozen, continue with steps 4 through 8.

**Figure 10**



4. Position the bearing anvil/sleeve removal tool (Figure 11), part number ☆25-09, over the retaining sleeve.

**Figure 11**



5. Insert the special threaded bolt, part number ☆906-278, through the bearing anvil/sleeve removal tool and into the retaining sleeve.
6. Tighten the bolt until the retaining sleeve is free of the spindle and frame.
7. Remove the retaining sleeve from the bolt and repeat for the other side.
8. Remove spindle from the belt loop.

## Spindle Bearing Replacement

### Bearing Removal

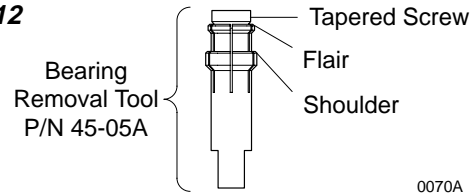
Bearings in the spindles on the 1" (25 mm) – 2" (44 mm) wide conveyors cannot be replaced. If the bearings are worn, the entire spindle must be replaced. See Items 24 and 25 on page 17 for the proper part number.

Bearings in spindles for 3" (70 mm) and wider conveyors can be removed with Dorner Bearing Removal Tool (Figure 12), part number ☆45-05A.

☆ - Part of Tool Kit, Part Number 4500, See page 31.

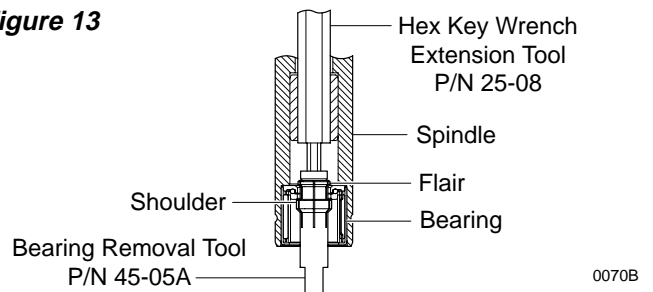
1. Make sure that the flair on the bearing removal tool is completely closed. If it is slightly open it may not fit into the bearing (Figure 13). Use the hex key wrench extension tool, part number ☆25-08 and loosen the tapered screw (Figure 12) while compressing the flair inward to make sure that the puller is completely closed.

**Figure 12**



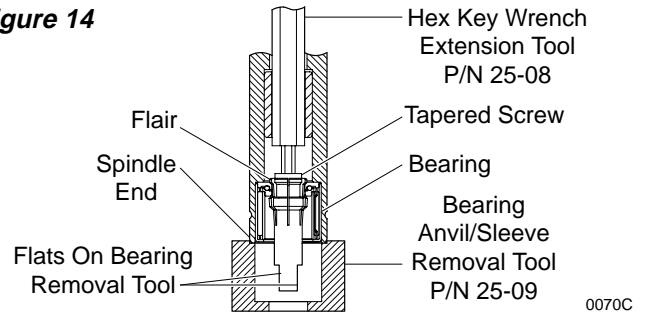
2. Insert bearing removal tool (Figure 13) into the spindle through bearing. Make sure that the flair slips past bearing cup and seats against shoulder.

**Figure 13**



3. While holding the hex key wrench extension tool (Figure 14), part number ☆25-08, rotate bearing removal tool using flats to tighten the bearing removal tool's tapered screw until the flair of the tool is completely spread open behind the bearing.

**Figure 14**



4. Support spindle end with bearing anvil/sleeve removal tool, part number ☆25-09. Using an arbor press or drill press, press bearing out of the spindle into bearing anvil/sleeve removal tool.

If an arbor press is not available, remove the bearing by lightly tapping on the end of the hex key wrench extension tool.



**Caution:** Heavy tapping or hammering will damage the hex key wrench extension tool and/or bearing.

# Component Replacement and Adjustments

## Spindle Bearing Replacement (continued)

### Bearing Installation

The most important thing to keep in mind when installing bearings is **ALIGNMENT**. Bearing insertion tool (Figure 15), part number ☆25-10, should be used to properly install spindle bearings.

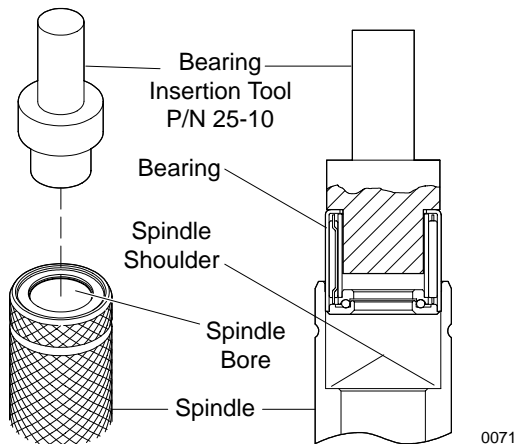
Use the following procedure to install spindle bearings.

1. Hold the spindle in an upright position with "V" block or other means. Support the bottom end of spindle on a flat surface.
2. With an arbor press or drill press, align bearing insertion tool with spindle bore.
3. Slide bearing onto the bearing insertion tool.



**Caution:** Keep bearings and spindle aligned when installing. Misalignment tilts the bearing and may result in bearing damage.

Figure 15



4. Press bearing firmly and slowly into spindle until it bottoms out on spindle shoulder. If bearing fits too loosely in the spindle bore or if the bore is out of round, the spindle must be replaced.

## Spindle Installation

**Note:** The hex bore is off center on spindles 5" (127 mm) and wider. When the spindle is used with a top or bottom mounting package, the hex bore must be located towards the drive side. On conveyors equipped with a motion monitor sensor switch (or when installing the sensor switch), the hex bore must be located towards the switch side of the conveyor.

### Procedure

Position first spindle (Figure 16) inside the belt loop on the wiper end of the conveyor frame. Align the spindle bore with the frame opening. Install a retaining sleeve through the frame and into each side of the spindle. Secure the retaining sleeves in place with the retainer clips.

#### 1" (25 mm) – 3" (70 mm) Wide Spindles

1. Place the second spindle assembly into position on the opposite end of the conveyor frame. Insert sleeve arbor tool, part number ☆45-02.
2. Using the sleeve arbor tool as a lever, align the opposite spindle bore with the conveyor frame opening.
3. Insert retaining sleeve through the frame and into the spindle. Push in until the inside surface of the retaining sleeve shoulder touches the outside of the frame. Do not push the shoulder of the retaining sleeve into the frame opening at this time. See Figure 16.
4. Remove the sleeve arbor tool and insert it into the opposite side of the conveyor, through the retaining sleeve just installed.
5. Using the sleeve arbor tool as a lever, align the opposite spindle bore with the conveyor frame opening.

☆- Part of Tool Kit, Part Number 4500, See page 31.

# Component Replacement and Adjustments

## Spindle Installation (continued)

### Procedure (continued)

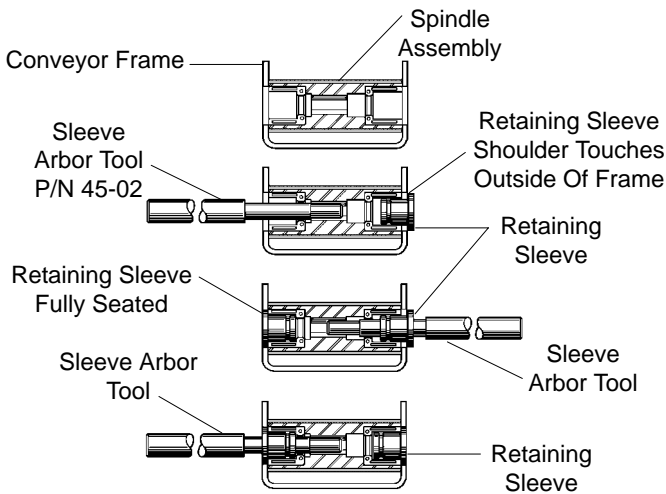
6. Insert retaining sleeve through the frame and into the spindle. Push in until the retaining sleeve is all the way into position. See Figure 16.
7. Remove the sleeve arbor tool and insert it into the original side of the conveyor and again using the tool as a lever, push the retaining sleeve fully into position.



**Caution:** Do not strike retaining sleeve with hammer or any other tool when installing. Inspect frame bore for damage or out of roundness if retaining sleeve does not slide easily into place. Frames with worn holes should be replaced. **Do not install 4" (95 mm) and wider spindle with sleeve arbor tool.**

Figure 16

### 1" (25 mm) – 3" (70 mm) Wide Spindles Only



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### 4" (95 mm) – 12" (305 mm) Wide Spindles

**Note:** The hex bore is off center on spindles 5" (127 mm) and wider. When the spindle is used with a top or bottom mounting package, the hex bore must be located towards the drive side. On conveyors equipped with a motion monitor sensor switch (or when installing the sensor switch), the hex bore must be located towards the switch side of the conveyor.

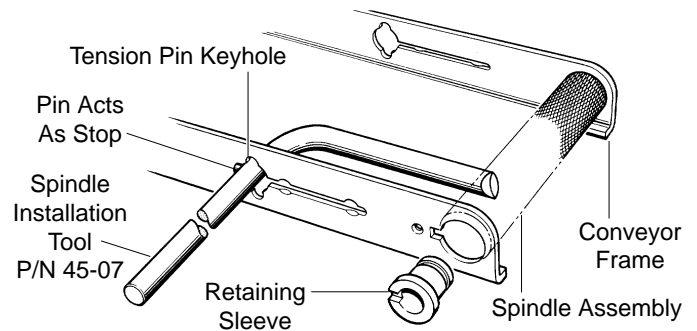
Installation of 4" (95 mm) – 12" (305 mm) wide spindles is identical to 1" (25 mm) – 3" (70 mm) wide spindle except that the spindle installation tool (Figure 17), part number ☆45-07, is used. This tool is inserted through the tension pin keyholes as shown.

The protruding pin acts as a stop against the conveyor frame while using the spindle installation tool as a lever against the spindle assembly to align the spindle bore with the opening in the conveyor frame.

The spindle installation tool should be used alternately on each side of the conveyor, just as the sleeve arbor tool was used for 1" (25 mm) – 3" (70 mm) wide spindles.

Figure 17

### 4" (95 mm) – 12" (305 mm) Wide Spindle Only



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☆ - Part of Tool Kit, Part Number 4500, See page 31.

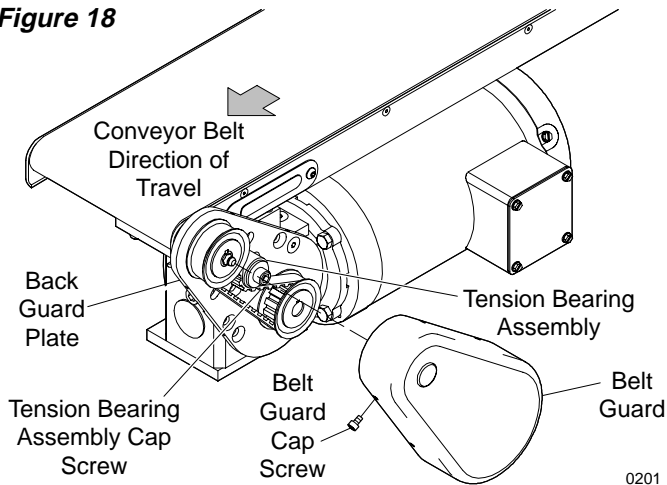
# Component Replacement and Adjustments

## Timing Belt Tension Adjustment

### Top and Bottom Mounting Packages

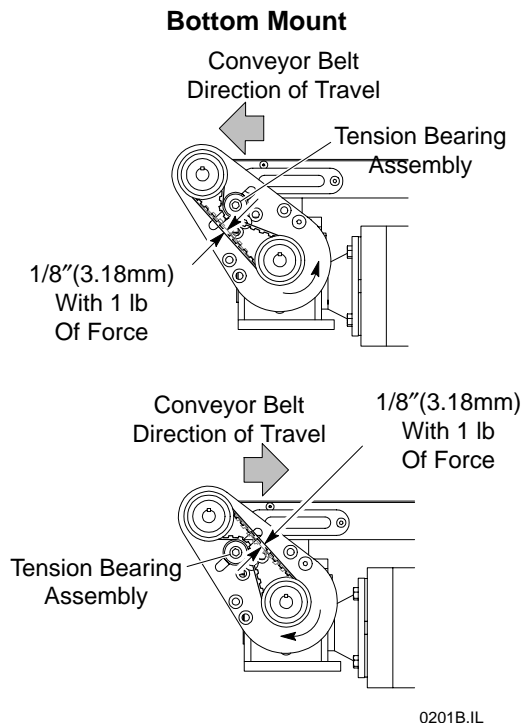
1. Disconnect power.
2. Remove the screws, (Figure 18) securing the belt guard to the back guard plate. Remove the belt guard.

**Figure 18**



3. Check the timing belt for wear. Replace if worn.
4. Before making any adjustments to the timing belt tension, determine the conveyor belt direction of travel (Figures 18 and 19) and make sure the tensioning roller assembly is positioned on the slack side of the timing belt.

**Figure 19**



5. Loosen the cap screw securing the tensioning bearing assembly to the back guard plate.
6. As a starting point for the tensioning process, slide the tensioning bearing assembly against the timing belt until deflection of the timing belt is 1/8" with 1 lb of force.

If necessary, continue to slide the tensioning bearing assembly against the timing belt until the belt is tensioned so as to prevent jumping of teeth under the most severe conditions which the drive will encounter.



**Caution:** Over tensioning the timing belt may cause reduced belt life or bearing and drive damage.

7. After the timing belt is properly adjusted re-tighten the tensioning bearing assembly cap screw.
8. Reattach the belt guard to the back guard plate using belt guard screws.

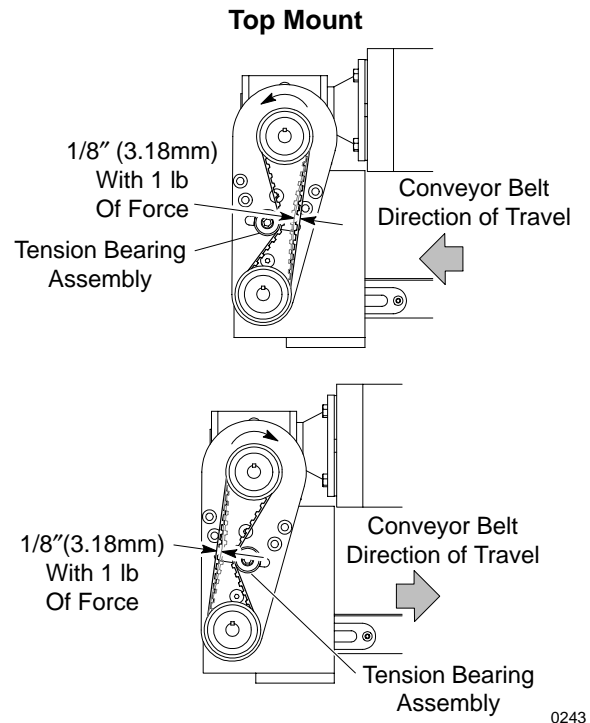
## Conveyor Frame Repair

### Spindle Retaining Sleeve Holes

Frames with worn holes should be replaced.

### Bends, Bows and Twist

Check conveyor mounting. Attempt to straighten damaged frame. After re-assembly, if the conveyor belt does not track properly, replace the frame or return to factory for assessment.



## Bearings

Problem	Possible Cause	Solution
Bearing failure	Grit getting into bearing.	Side wipers and bottom wiper may be needed along with increased frequency of lubrication.
	Solvent getting into bearings.	Same as above. Keep greasing adapters in retaining sleeves. Install guards and tilt conveyor to reduce amount of solvent on conveyor.
	Drive shaft misaligned or excessive side force on shaft and couplings.	Be sure spindle, sleeves and bearings are correctly installed and shaft is aligned. Flexible or Universal couplings may be required.
	Excessive heat in application.	Increase frequency of lubrication.
	Damage due to improper reassembly.	Use tool kit for proper reassembly.
Bearing seize.	Grit getting into bearings. Failure to lubricate bearings periodically.	Lubricate bearings periodically.

## Gearmotors

Problem	Possible Cause	Solution
Motor cuts out intermittently.	Overloading.	Check conveyor load. Use torque wrench to determine input torque. Check for guides or accessories rubbing on belt. Check belt tracking.
	Improper cooling.	Check motor operation and ambient temperature.
Motor running hot. (above 170°F (77°C).  <b>Note:</b> 1/3 hp Baldor normally runs at 170°F(77°C).	Overloading.	Check amp draw, replace motor, reduce conveyor load.
	Jammed part.	Remove jam.
	Incorrect voltage/wiring.	Check wiring diagram. Replace motor or change wiring. <b>Caution: Remove power before attempting to rewire.</b>
	Improper cooling.	Reduce excessive ambient temperature.
Conveyor runs in wrong direction.	Improper wiring.	Check wiring diagram. <b>Caution: Remove power before attempting to rewire.</b>
Oil leaking from gearbox.	Broken seal.	Contact manufacturer for replacement parts or Dorner for further information. Contact Dorner for new gearbox.
	Oil vent plug installed below oil level.	Reinstall vent plug well above oil level.
	Oil level too high.	See instructions for gearbox oil capacity.
	Failure to install vent plug.	Contact Dorner to locate a manufacturer's service representative or to order a new gear reducer.

# Troubleshooting Guide

## Conveyor Belt

Problem	Possible Cause	Solution
Belt slipping.	Belt is too loose. <b>Note: Belt may have stretched. See Belt Stretching below.</b>	Adjust belt tension with tension pins. Additional pins may be installed on other end of the conveyor. If belt is still loose, replace belt.
	Dirt impacted in knurl on end of driven spindle.	Clean spindle.
	Knurl worn on spindle.	Replace spindle.
	Excessive weight on conveyor. <b>Note: May be a combination of drive “pushing” belt or magnets too strong for application.</b>	Reduce weight on conveyor by reducing production rate, or increasing belt speed.
	Drive is “pushing” belt. <b>Note: May be a combination of this and excessive weight on conveyor.</b>	Move drive to discharge end of conveyor.
	Magnets too strong for application.	Increase belt speed or replace magnetic bedplate.
	Debris wedged in belt path or in conveyor.	Clean conveyor and install chute and/or wipers.
Belt stretching.	Solvent or chemical reaction with belt.	Remove solvent or try a different belt material. Test solvent with belt sample. <b>Note: Belt type conveyor may not be applicable.</b>
	Belt repeatedly stalled, causing spindle to wear or “burn” in to backside of belt.	Replace belt and identify reason for stalling.
Cuts on belt surface.	Parts getting caught in bottom wiper	Replace wiper.
	Bottom wiper is damaged, missing or on wrong end of the conveyor.	Replace wiper. <b>Note: Conveyor should run toward bottom wiper.</b>
	Parts getting under belt. Wiper shears top surface leaving marks in belt surface.	High sides, side wipers or side deflectors may be needed.
	Side wipers damaged or missing, allowing material to get under belt.	Replace or add wipers as needed.
	Sharp parts penetrating belt surface.	Install baffle to reduce energy of falling part.
	Bottom wiper screw loose.	Adjust as necessary.
Worn belt edges.	Debris impacted on spindles can cause belt tracking problems.	Clean spindles. Correct source of contamination. See Belt Tracking Incorrectly.
	Belt tracking incorrectly.	Refer to Belt Tracking Incorrectly.
Belt breaking at splice.	Solvent or chemical reaction with belt.	Remove solvent or try a different belt material. Test solvent with belt sample. <b>Note: Belt type conveyor may not be applicable.</b>
Belt tracking incorrectly.	Spindles not seated in frame correctly.	Inspect spindles and/or sleeves. Reposition spindles or reinstall sleeves if necessary. Check that retainer clips are properly in place.
	Frame misalignment. <b>Note: Frame mounting surface maybe misaligned.</b>	Frame mounting must be straight and in the same plane. Remount conveyor. Check with a level.
	Frame distortion due to damage.	Repair or replace frame and/or bedplate. Check with a straight edge.
	Side force being applied to belt.	Check for jammed part or mechanical pusher force on belt.

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# Troubleshooting Guide

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## Timing Belt

Problem	Possible Cause	Solution
Intermittent conveyor belt travel.	Timing belt is too loose.	Adjust belt tension. Refer to "Timing Belt Tension Adjustment", page 12.
	Worn or damaged timing (drive) belt.	Replace defective timing belt.

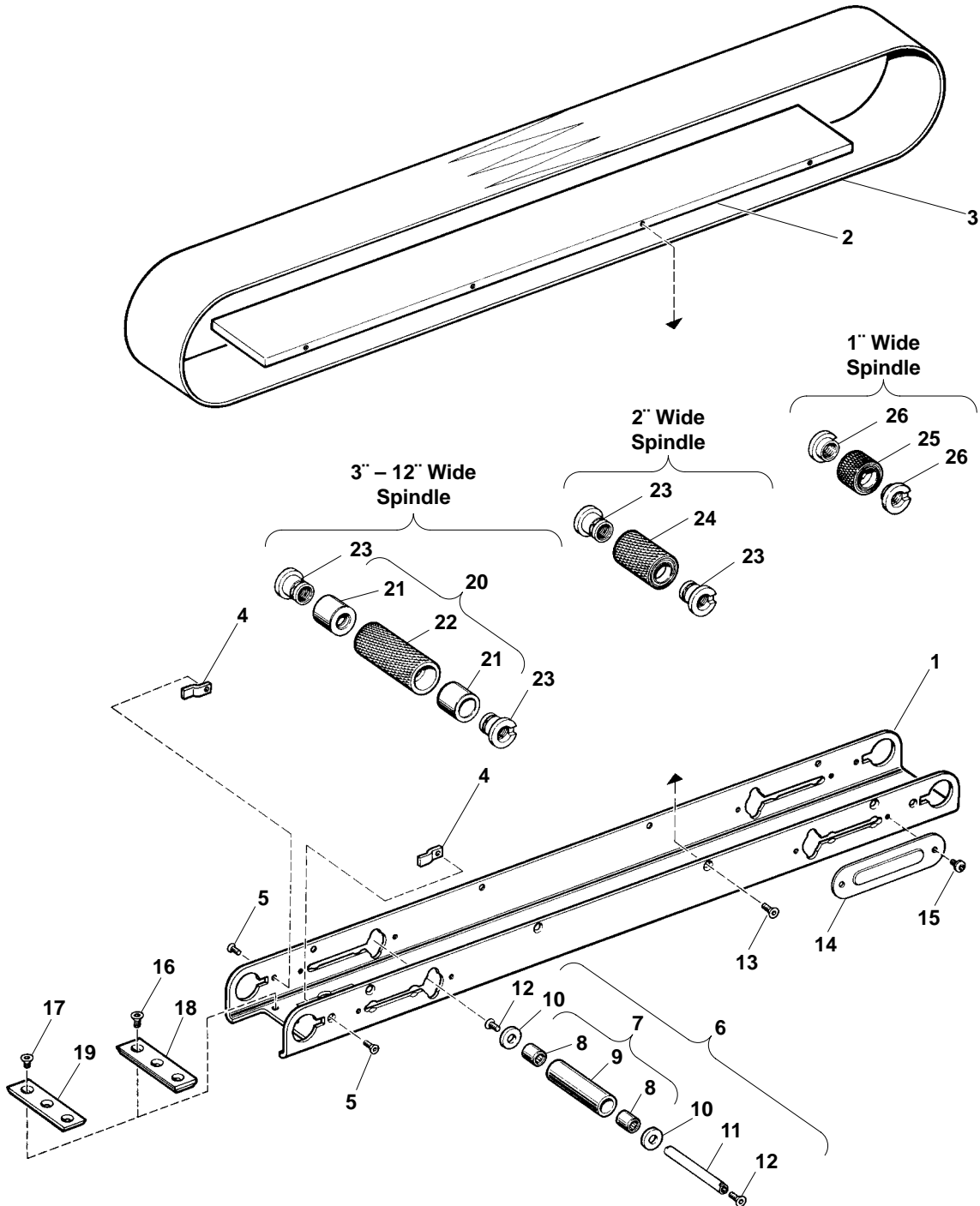
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## Lubrication Records

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Date	Hours Used	Lubrication	Remarks

## Conveyor Components



0206.IL

Nominal Conveyor Widths are listed in Inches.

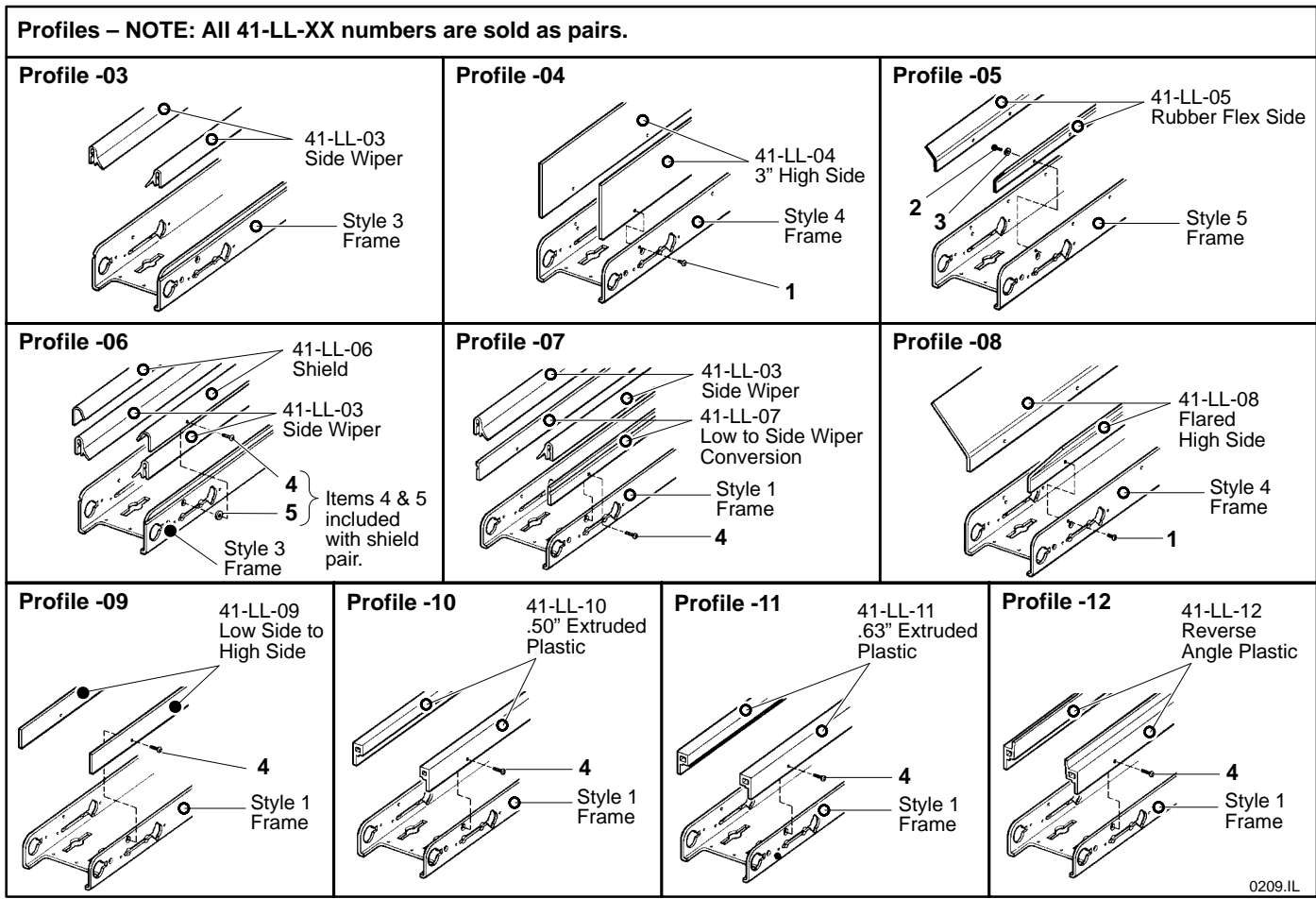
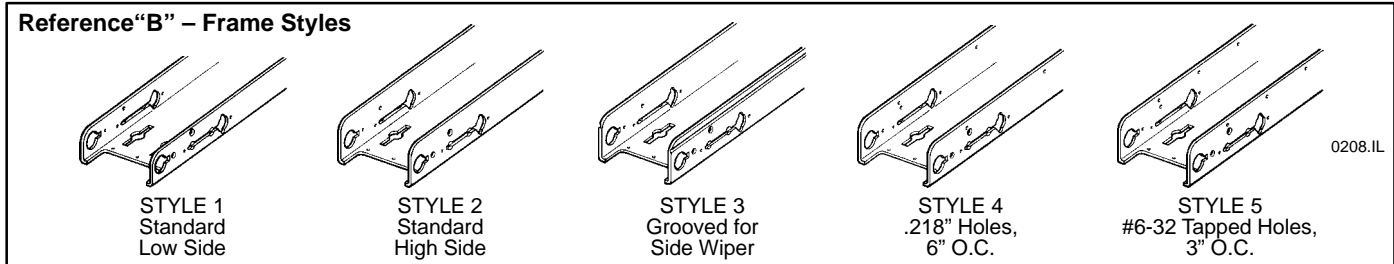
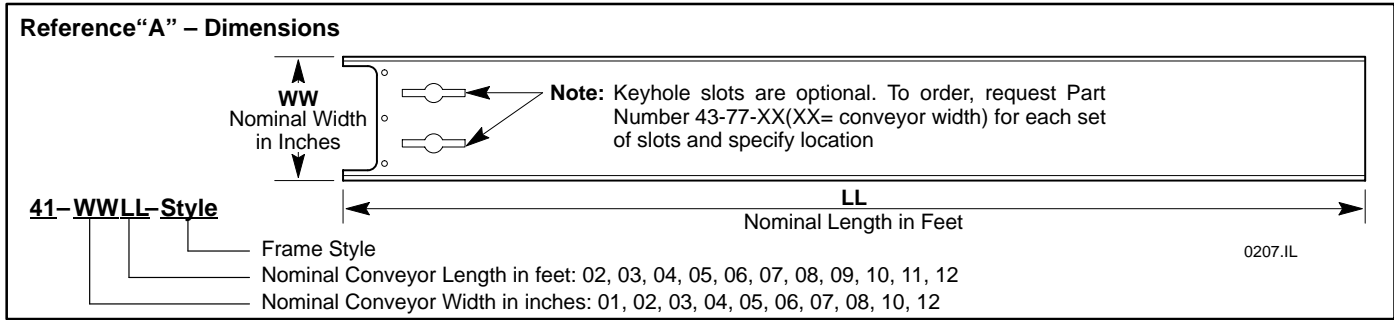


Nominal Conveyor Widths are listed in Inches.

Item	Description	Part No.	Item	Description	Part No.	
1	Conveyor Frame	Pages 18 & 19	13	Flat Head Screw, #8-32 x .38" (#6 Head)	903-060	
2	Bedplate	Page 19	14	Tension Pin Cover	41-22	
3	Conveyor Belt	Page 19	15	Button Head Cap Screw, #10-32 x .25"	901-104	
4	Retainer Clip	41-08	16	Flat Head Cap Screw, #10-32 x .31"	903-105	
5	Flat Head Cap Screw, #6-32 x .38"	903-037	17	Flat Head Cap Screw, #10-32 x .19"	903-102	
6	Tension Pin Assembly (Includes Items 7 through 12)		18	Bottom Wiper, .22" Thick (Used with belt types /01, /02, /03, /05 and /07)		
	(1")	41-1-21		(1")	41-1-50	
	(2")	41-2-21		(2")	41-2-50	
	(3")	41-3-21		(3")	41-3-50	
	(4")	41-4-21		(4")	41-4-50	
	(5")	41-5-21		(5")	41-5-50	
	(6")	41-6-21		(6")	41-6-50	
	(7")	41-7-21		(7")	41-7-50	
	(8")	41-8-21		(8")	41-8-50	
	(10")	41-10-21		(10")	41-10-50	
	(12")	41-12-21		(12")	41-12-50	
7	Tension Pin Tube Assembly (Includes Items 8 and 9)		19	Bottom Bar, .11" Thick (Used with belt types /04, /06 and all Clipper® Splice Belts)		
	(1")	41-1-17		(1")	41-1-51	
	(2")	41-2-17		(2")	41-2-51	
	(3")	41-3-17		(3")	41-3-51	
	(4")	41-4-17		(4")	41-4-51	
	(5")	41-5-17		(5")	41-5-51	
	(6")	41-6-17		(6")	41-6-51	
	(7")	41-7-17		(7")	41-7-51	
	(8")	41-8-17		(8")	41-8-51	
	(10")	41-10-17		(10")	41-10-51	
	(12")	41-12-17		(12")	41-12-51	
8	Tension Pin Bearing	802-021	20	Spindle Assembly (Includes Items 21 and 22)		
9	Tension Pin Tube (No Bearings)			(3")	21-3-34	
	(1")	41-1-15		(4")	21-4-34	
	(2")	41-2-15		(5")	21-5-34	
	(3")	41-3-15		(6")	21-6-34	
	(4")	41-4-15		(7")	21-7-34	
	(5")	41-5-15		(8")	21-8-34	
	(6")	41-6-15		(10")	21-10-34	
	(7")	41-7-15		(12")	21-12-34	
	(8")	41-8-15		21	Radial Thrust Bearing	21-33
	(10")	41-10-15	22	Spindle		
	(12")	41-12-15		(3")	21-3-28	
10	Thrust Washer	41-18		(4")	21-4-28	
11	Tension Pin Shaft			(5")	21-5-28	
	(1")	41-1-19		(6")	21-6-28	
	(2")	41-2-19		(7")	21-7-28	
	(3")	41-3-19		(8")	21-8-28	
	(4")	41-4-19		(10")	21-10-28	
	(5")	41-5-19		(12")	21-12-28	
	(6")	41-6-19	23	Spindle Retaining Sleeve (2" – 12")	41-35	
	(7")	41-7-19	24	Spindle Assembly (2")	21-2-34	
	(8")	41-8-19	25	Spindle Assembly (1")	41-31	
	(10")	41-10-19	26	Spindle Retaining Sleeve (1")	41-32	
	(12")	41-12-19	27	Plastic Plug (Not Illustrated Here. See Figure 2 on page 4)	807-784	
12	Flat Head Cap Screw, #8-32 x .38"	903-059				

**Note:** On 3' through 8' long conveyors, one return belt roller is used under belt to prevent belt sag. On 9' through 12' long conveyors two return belt rollers are used. These parts are identical to the Tension Pin Assembly, Item Number 6.

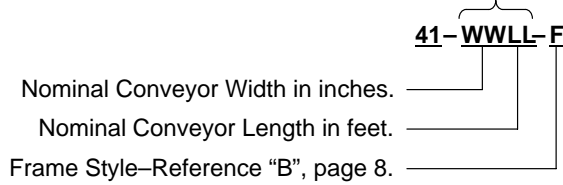
## Conveyor Size, Style and Profile Reference



Item	Description	Part No.	Item	Description	Part No.
1	Button Head Cap Screw, #8-32 x .25" . . . . .	901-056	4	Button Head Cap Screw, #8-32 x .50" . . . . .	901-062
2	Button Head Cap Screw, #6-32 x .38" . . . . .	901-037	5	Flat Washer, #8 . . . . .	911-004
3	Flat Washer, #6 . . . . .	911-003			

**Frame Replacement Part Number**

See Reference "A" page 8.

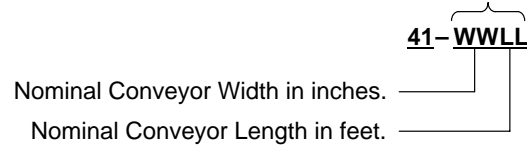


**EXAMPLE:** Replacement frame for a 5" wide x 4' long side wiper profile conveyor would be Part Number 41-0504-3.

**Note:** For vacuum, stainless steel or specially modified conveyor frames, contact factory with model and order numbers for replacement information. If Keyhole Slot Option is desired, use additional Part Number 43-77-XX (XX = Nominal Conveyor Width) for each set of slots and specify location.

**Bedplate Replacement Part Number**

See Reference "A" page 8.

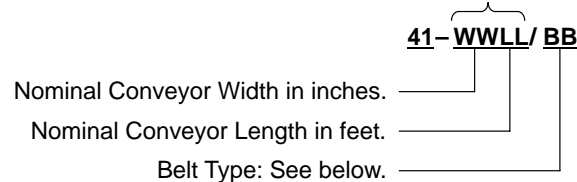


**EXAMPLE:** Replacement bedplate for 3" wide x 2' long conveyor would be Part Number 41-0302

**Note:** For vacuum, stainless steel or bedplates for specially modified conveyor frames, contact factory with model and order numbers for replacement information.

**Belt Replacement Part Number**

See Reference "A" page 8.



**EXAMPLE:** #2 Standard Urethane replacement belt for a 4" wide x 8' long conveyor would be Part Number 41-0408/02.

**Note:** All belts include a thermally welded finger splice\*. If Clipper® spliced belt is required, add a "-C" suffix

**EXAMPLE:** Part No 41-0408/02-C

**Note:** For replacement belting on vacuum and specially modified conveyors, contact factory with model and order numbers for replacement information.

**Belt Type – BB**

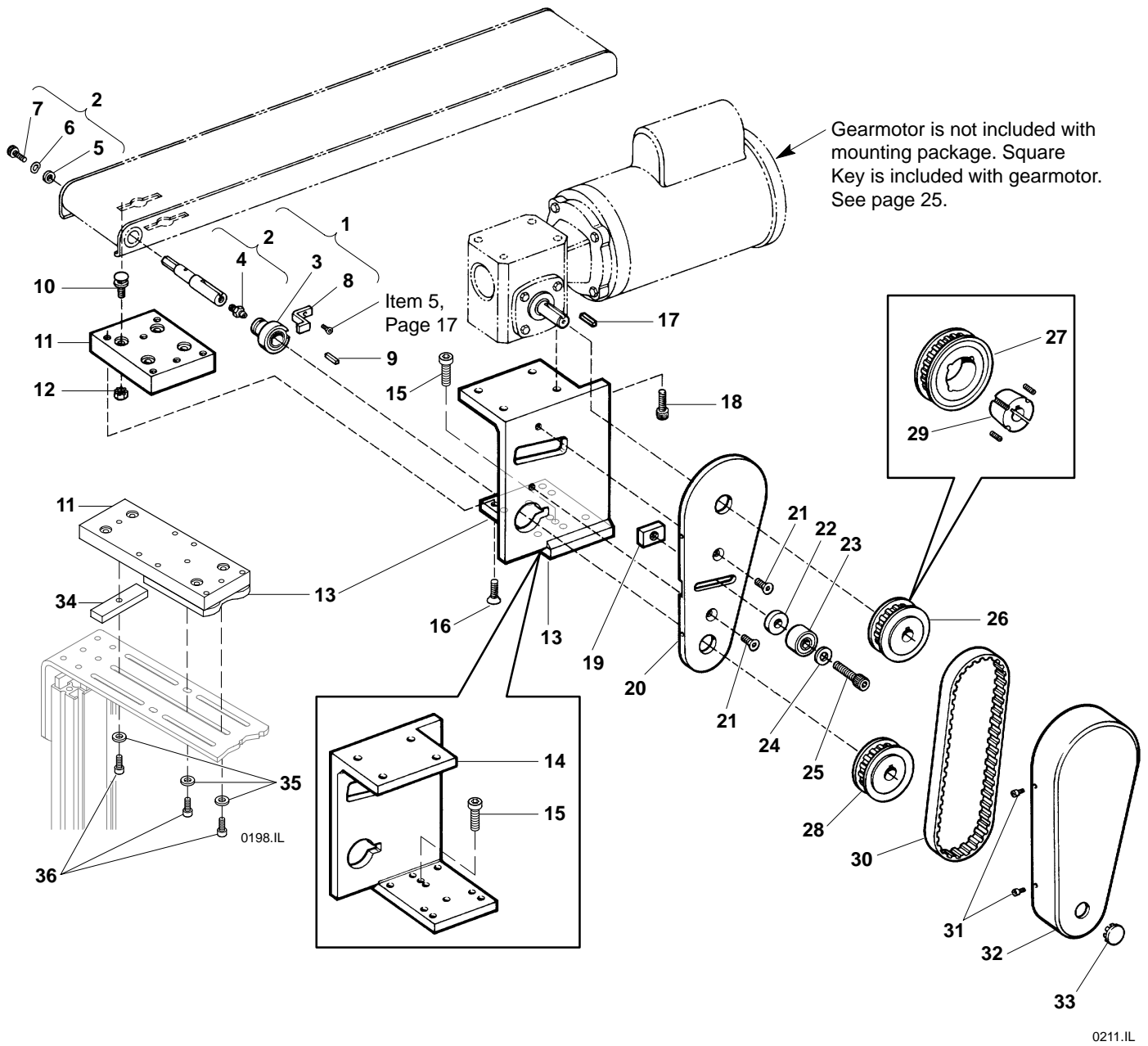
- /01 Accumulator Top FDA Approved** 80-90 Durometer surface hardness. Products may be accumulated on the low friction surface of this belt. Maximum part temperature is 176°F (80°C). Smooth, thermally welded zig-zag splice\*. Belt thickness about 0.063" (1.6 mm).
- /02 Standard Urethane** 75-85 Durometer surface hardness. **This is our standard belting**, very durable and works well in most applications. Maximum part temperature is 212°F (100°C). Smooth, thermally welded zig-zag splice\*. Belt thickness about .071" (1.8 mm).
- /03 Soft Urethane FDA Approved** 70-80 Durometer surface hardness. This belt provides more surface friction than /01 or /02 and is more resistant to chemicals. Maximum part temperature is 176°F (80°C). Smooth, thermally welded zig-zag splice\*. Belt thickness about 0.063" (1.6 mm).
- /04 Gray Friction Belt** This belt provides a high degree of surface traction when clean and dry. It can be used to convey parts up inclines or in other applications where parts must not slide on the belt surface. This belt should not be used with very small or sharp parts. Maximum part temperature is 158°F (70°C). Smooth, thermally welded zig-zag splice\*. Belt thickness about 0.083" (2.1 mm).

- /05 Woven Polyester Belt** Offers advantages in low friction product accumulation. Maximum part temperature is 212°F (100°C). Smooth, thermally welded zig-zag splice\*. Belt thickness about 0.047" (1.2 mm).
- /06 Black Anti-Static Belt** Is a carbon impregnated polyester belt used where an anti-static/conductive belt is required. Belt should be tested per application for resistance to ground. Maximum part temperature is 230°F (110°C). Smooth, thermally welded zig-zag splice\*. Belt thickness about 0.063" (1.6 mm).
- /07 Heat Resistant Belt** This belt resists product temperatures up to 358°F (180°C). Smooth, thermally welded zig-zag splice\*. Belt thickness about 0.051" (1.3 mm).

**Important:** If switching from Belt Types /01, /02, /03, /05 or /07 to Belt Types /04 or /06 you must remove the original Bottom Wiper, Item 18 and replace it with a new Bottom Bar, Item 19 on pages NO TAG and 17.

\* Thermal splice is standard. Clipper® splice is available upon request. A thinner bottom bar must be used with any belt spliced with a wire clipper.

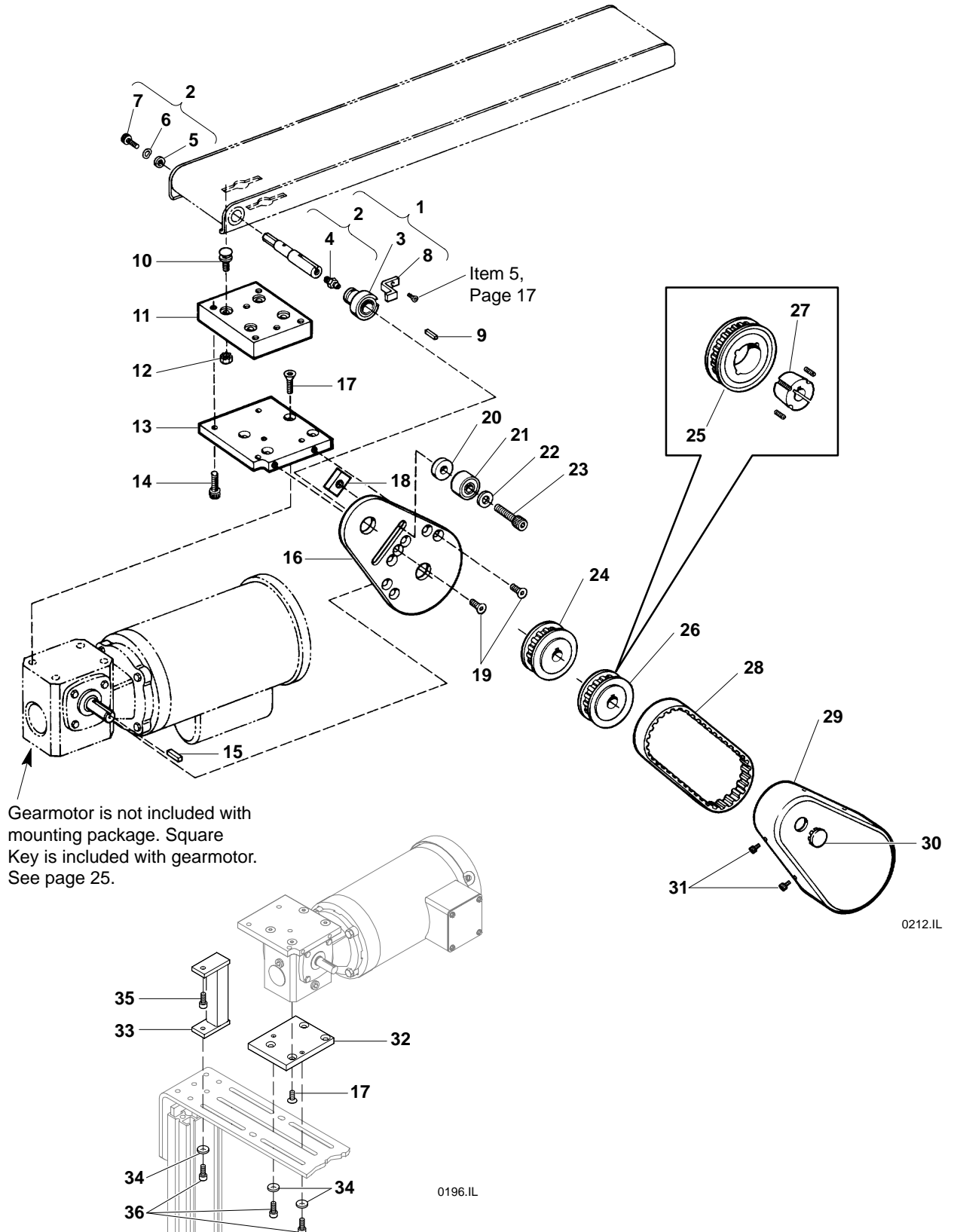
## 4307 & 4308 Top Mounting Package



Nominal Conveyor Widths are listed in " (mm).

Item	Description	Part No.	Item	Description	Part No.
1	Adapter Assembly (Includes Items 2, 3 and 8)		25	Socket Head Cap Screw, 5/16-18 x 1.50" . . . .	902-186
	(1") . . . . .	43-38-01	26	Drive Pulley, 10 Tooth, 0.50" Bore . . . . (4307)	603395
	(2") . . . . .	43-38-02		Drive Pulley, 10 Tooth, 0.63" Bore . . . . (4308)	605231
	(3") . . . . .	43-38-03		Drive Pulley, 12 Tooth, 0.50" Bore . . . . (4307)	603394
	(4" - 12") . . . . .	43-38-04		Drive Pulley, 12 Tooth, 0.63" Bore . . . . (4308)	604783
2	Drive Shaft Assembly			Drive Pulley, 14 Tooth, 0.50" Bore . . . . (4307)	605219
	(Includes Items 5, 6 and 7)			Drive Pulley, 14 Tooth, 0.63" Bore . . . . (4308)	606276
	(1") . . . . .	43-38-1-05		Drive Pulley, 16 Tooth, 0.50" Bore . . . . (4307)	605222
	(2") . . . . .	23-38-2-12		Drive Pulley, 16 Tooth, 0.63" Bore . . . . (4308)	611978
	Drive Shaft Assembly			Drive Pulley, 17 Tooth, 0.50" Bore . . . . (4307)	607779
	(Includes Items 4, 5, 6 and 7)			Drive Pulley, 17 Tooth, 0.63" Bore . . . . (4308)	611979
	(3") . . . . .	23-38-3-15		Drive Pulley, 19 Tooth, 0.50" Bore . . . . (4307)	611987
	(4" - 12") . . . . .	23-38-4-16		Drive Pulley, 19 Tooth, 0.63" Bore . . . . (4308)	611988
3	Bearing Retaining Sleeve			Drive Pulley, 21 Tooth, 0.50" Bore . . . . (4307)	607778
	(1") . . . . .	43-38-1-11		Drive Pulley, 21 Tooth, 0.63" Bore . . . . (4308)	611980
	(2" - 12") . . . . .	43-38-2-18	27	Drive Pulley, 18 Tooth, Taper Lock®-TL1108 .	811-101
4	Straight Grease Fitting (3" - 12") . . . . .	810-138		Drive Pulley, 20 Tooth, Taper Lock®-TL1008 .	811-103
5	Flat Hard Washer, #10 . . . . .	43-38-06		Drive Pulley, 22 Tooth, Taper Lock®-TL1108 .	811-115
6	Curved Spring Washer, #10 . . . . .	807-247		Drive Pulley, 24 Tooth, Taper Lock®-TL1210 .	611933
7	Nylok® Socket Head Cap Screw, #10-32x.63"	902-902		Drive Pulley, 26 Tooth, Taper Lock® . . . . .	611934
8	Retaining Sleeve Retainer Clip . . . . .	43-38-08		Drive Pulley, 28 Tooth, Taper Lock®-TL1610 .	611935
9	Square Key, 1/8" x .63" . . . . .	912-052		Drive Pulley, 30 Tooth, Taper Lock®-TL1610 .	611936
10	Flat Washer Bolt . . . . .	613602P	28	Driven Pulley, 10 Tooth, 0.50" Bore . . . . .	603395
11	Spacer Block			Driven Pulley, 12 Tooth, 0.50" Bore . . . . .	603394
	(1") . . . . .	609476		Driven Pulley, 14 Tooth, 0.50" Bore . . . . .	605219
	(2" and 3") . . . . .	609478		Driven Pulley, 16 Tooth, 0.50" Bore . . . . .	605222
	(4") . . . . .	609479	29	Taper Lock® Bushing-TL1008, 0.50" .. (4307)	811-109
	(5") . . . . .	609480		Taper Lock® Bushing-TL1008, 0.63" .. (4308)	811-108
	(6") . . . . .	609481		Taper Lock® Bushing-TL1108, 0.50" .. (4307)	811-165
	(7") . . . . .	609482		Taper Lock® Bushing-TL1108, 0.63" .. (4308)	811-166
	(8") . . . . .	609483		Taper Lock® Bushing-TL1210, 0.50" .. (4307)	611929
	(10") . . . . .	609484		Taper Lock® Bushing-TL1210, 0.63" .. (4308)	611930
	(12") . . . . .	609485		Taper Lock® Bushing-TL1610, 0.50" .. (4307)	611931
12	Hex Head Locknut, 1/4-20 . . . . .	910-126		Taper Lock® Bushing-TL1610, 0.63" .. (4308)	611932
13	Right Hand Drive Mounting Bracket . . . (4307)	611833	30	Timing Belt, 16.50" Long . . . . .	814-044
	Right Hand Drive Mounting Bracket . . . (4308)	611834		Timing Belt, 17.25" Long . . . . .	814-053
14	Left Hand Drive Mounting Bracket . . . . (4307)	609866		Timing Belt, 17.63" Long . . . . .	814-054
	Left Hand Drive Mounting Bracket . . . . (4308)	609756		Timing Belt, 18.75" Long . . . . .	814-022
15	Socket Head Cap Screw, 1/4-20 x 1.00", (1") .	902-136		Timing Belt, 19.50" Long . . . . .	814-051
16	Flat Head Cap Screw, 1/4-20 x 1.00" . . . . .	903-140		Timing Belt, 21" Long . . . . .	814-023
17	Square Key, 1/8" x 0.63" . . . . . (4307)	912-052		Timing Belt, 21.75" Long . . . . .	814-055
	Square Key, 3/16" x 0.63" . . . . . (4308)	912-077	31	Socket Head Cap Screw, #8-32 x 0.25" . . . . .	902-054
18	Socket Head Cap Screw, 1/4-20 x 0.75" (4307)	902-132	32	Top Drive Guard . . . . .	200377
	Socket Head Cap Screw, 5/16-18 x 0.75"(4308)	902-179	33	Plastic Plug . . . . .	807-226
19	Tensioning Bearing Nut . . . . .	609424	34	Spacer Block (8" - 12") . . . . . (4307)	618998
20	Back Guard Plate . . . . .	200381		Spacer Block (8" - 12") . . . . . (4308)	621508
21	Flat Head Cap Screw, 1/4-20 x 0.63" . . . . .	903-134	35	Hard Washer . . . . .	605279
22	Tensioning Bearing Spacer . . . . .	609425	36	Socket Head Cap Screw, 1/4-20 x 1.25" . . . . .	902-138
23	Tensioning Bearing . . . . .	802-046			
24	Flat Washer, SAE . . . . .	911-008			

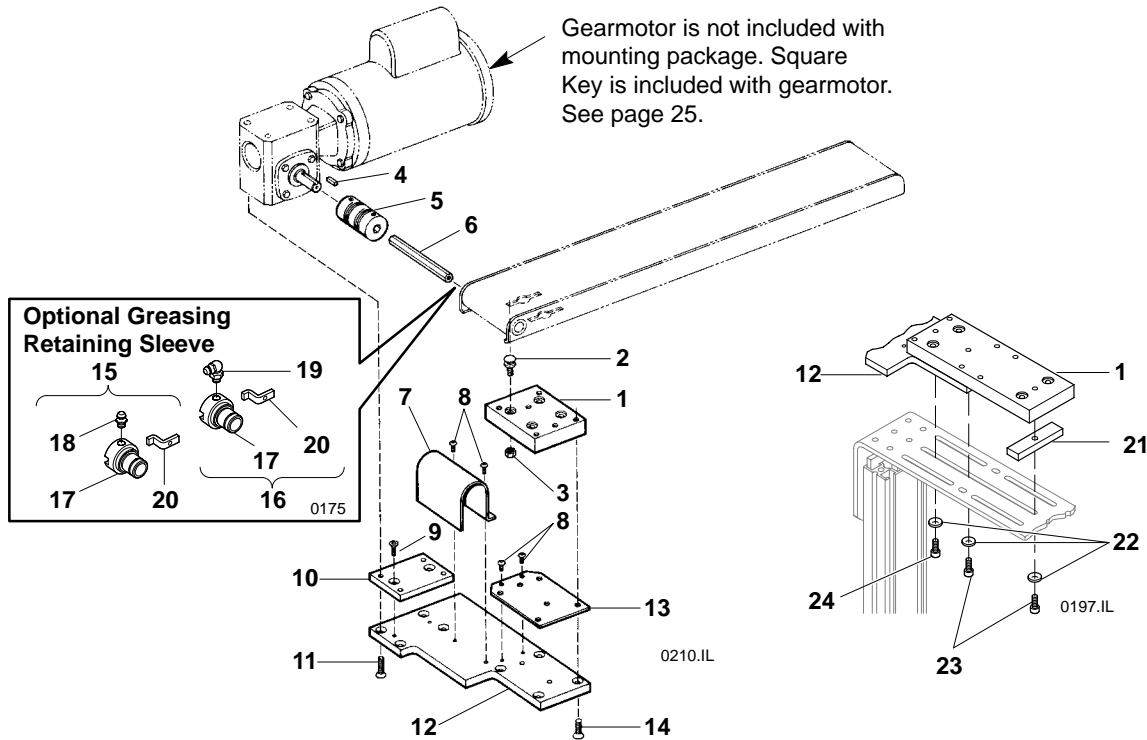
## 4309 & 4310 Bottom Mounting Package



Nominal Conveyor Widths are listed in Inches(mm).

Item	Description	Part No.	Item	Description	Part No.
1	Adapter Assembly (Includes Items 2, 3 and 8)		21	Tensioning Bearing	802-046
	(1")	43-38-01	22	Flat Washer, SAE	911-008
	(2")	43-38-02	23	Socket Head Cap Screw, 5/16-18 x 1.50"	902-186
	(3")	43-38-03	24	Driven Pulley, 10 Tooth, 0.50" Bore	603395
	(4" - 12")	43-38-04		Driven Pulley, 12 Tooth, 0.50" Bore	603394
2	Drive Shaft Assembly			Driven Pulley, 14 Tooth, 0.50" Bore	605219
	(Includes Items 5, 6 and 7)			Driven Pulley, 16 Tooth, .50" Bore	605222
	(1")	43-38-1-05	25	Drive Pulley, 18 Tooth, Taper Lock®-TL1108	811-101
	(2")	23-38-2-12		Drive Pulley, 20 Tooth, Taper Lock®-TL1008	811-103
	Drive Shaft Assembly			Drive Pulley, 22 Tooth, Taper Lock®-TL1108	811-115
	(Includes Items 4, 5, 6 and 7)			Drive Pulley, 24 Tooth, Taper Lock®-TL1210	611933
	(3")	23-38-3-15		Drive Pulley, 26 Tooth, Taper Lock®	611934
	(4" - 12")	23-38-4-16		Drive Pulley, 28 Tooth, Taper Lock®-TL1610	611935
3	Bearing Retaining Sleeve			Drive Pulley, 30 Tooth, Taper Lock®-TL1610	611936
	(1")	43-38-1-11	26	Drive Pulley, 12 Tooth, 0.50" Bore	603394
	(2" - 12")	43-38-2-18		Drive Pulley, 12 Tooth, 0.63" Bore	604783
4	Straight Grease Fitting (3" - 12")	810-138		Drive Pulley, 14 Tooth, 0.50" Bore	605219
5	Flat Hard Washer, #10	43-38-06		Drive Pulley, 14 Tooth, 0.63" Bore	606276
6	Curved Spring Washer, #10	807-247		Drive Pulley, 16 Tooth, 0.50" Bore	605222
7	Nylok® Socket Head Cap Screw, #10-32x0.63"	902-902		Drive Pulley, 16 Tooth, 0.63" Bore	611978
8	Retaining Sleeve Retainer Clip	43-38-08		Drive Pulley, 17 Tooth, 0.50" Bore	607779
9	Square Key, 1/8" x 0.63"	912-052		Drive Pulley, 17 Tooth, 0.63" Bore	611979
10	Flat Washer Bolt	613602P		Drive Pulley, 19 Tooth, 0.50" Bore	611987
11	Spacer Block			Drive Pulley, 19 Tooth, 0.63" Bore	611988
	(1")	(4309) 609476		Drive Pulley, 21 Tooth, 0.50" Bore	607778
	(1")	(4310) 609489	27	Drive Pulley, 21 Tooth, 0.63" Bore	611980
	(2" and 3")	(4309) 609478		Taper Lock® Bushing-TL1008, 0.50"	811-109
	(2" and 3")	(4310) 609490		Taper Lock® Bushing-TL1008, 0.63"	811-108
	(4")	(4309) 609479		Taper Lock® Bushing-TL1108, 0.50"	811-165
	(4")	(4310) 609491		Taper Lock® Bushing-TL1108, 0.63"	811-166
	(5")	609480		Taper Lock® Bushing-TL1210, 0.50"	611929
	(6")	609481		Taper Lock® Bushing-TL1210, 0.63"	611930
	(7")	609482		Taper Lock® Bushing-TL1610, 0.50"	611931
	(8")	609483		Taper Lock® Bushing-TL1610, 0.63"	611932
	(10")	609484	28	Timing Belt, 16.50" Long	814-044
	(12")	609485		Timing Belt, 17.25" Long	814-053
12	Hex Flanged Locknut, 1/4-20	910-126		Timing Belt, 17.63" Long	814-054
13	Drive Mounting Plate	(4309) 609423		Timing Belt, 18.75" Long	814-022
	Drive Mounting Plate	(4310) 609762		Timing Belt, 15" Long	814-021
14	Socket Head Cap Screw, 1/4-20 x 1.00"	902-136		Timing Belt, 15.75" Long	814-052
15	Square Key, 1/8" x 0.63"	(4309) 912-052	29	Bottom Drive Guard	200376
	Square Key, 3/16" x 0.63"	(4310) 912-077	30	Plastic Plug	807-226
16	Back Guard Plate	200375	31	Socket Head Cap Screw, #8-32 x 0.25"	902-054
17	Flat Head Cap Screw, 1/4-20 x 0.75"	(4309) 903-136	32	Stand Adapting Plate	(4309) 200063
	Flat Head Cap Screw, 5/16-18 x 0.75"	(4310) 903-183		Stand Adapting Plate	(4310) 200064
18	Tensioning Bearing Nut	609424	33	Support Assembly (8" - 12")	(4309) 667999
19	Flat Head Cap Screw, 1/4-20 x 0.63"	903-134		Support Assembly (8" - 12")	(4310) 669344
20	Tensioning Bearing Spacer	609425	34	Hard Washer	605279
			35	Socket Head Cap Screw, 1/4-20 x 0.50"	902-128
			36	Socket Head Cap Screw, 1/4-20 x 0.63"	902-130

## 4305 & 4306 Side Mounting Package (Nominal Conveyor Widths are listed in Inches.)



Item	Description	Part No.	Item	Description	Part No.
1	Spacer Block		9	Flat Head Cap Screw, #10-32 x 0.63" . (4305)	903-110
	(1")	609486	10	Mounting Spacer Block . . . . . (4305)	610065
	(2")	609487	11	Flat Head Cap Screw, 1/4-20 x 1.00" . (4305)	903-140
	(3")	609488		Flat Head Cap Screw, 5/16-18 x 0.75" (4306)	903-183
	(4")	609479	12	Mounting Plate (1" & 2") . . . . . (4305)	610068
	(5")	609480		Mounting Plate (1" & 2") . . . . . (4306)	610070
	(6")	609481		Mounting Plate (3") . . . . . (4305)	610069
	(7")	609482		Mounting Plate (3") . . . . . (4306)	609989
	(8")	609483		Mounting Plate (4" - 12") . . . . . (4305)	610063
	(10")	609484		Mounting Plate (4" - 12") . . . . . (4306)	610064
	(12")	609485	13	Spacer Shim (1" & 2") . . . . . (4306)	609990
2	Flat Washer Bolt . . . . .	613602P		Spacer Shim (3") . . . . . (4306)	609991
3	Hex Flanged Locknut, 1/4-20 . . . . .	910-126		Spacer Shim (4" - 12") . . . . . (4306)	610066
4	Square Key, 1/8" x 0.63" . . . . . (4305)	912-052	14	Flat Head Cap Screw, 1/4-20 x 0.75" . . . . .	903-136
	Square Key, 3/16" x 0.63" . . . . . (4306)	912-077	15	Greasing Retaining Sleeve Assembly with Straight Fitting (Optional) (Includes Items 17, 18 and 20) . . . . .	622223
5	Flex Coupling, 0.50" Bore . . . . . (4305)	23-27	16	Greasing Retaining Sleeve Assembly with 90° Fitting (Optional) (Includes Items 17, 19 and 20) . . . . .	618898
	Flex Coupling, 0.63" Bore . . . . . (4306)	23-28	17	Retaining Sleeve/Grease . . . . .	622224
6	Hex Drive Shaft		18	Straight Grease Fitting . . . . .	810-138
	(1")	616301	19	90° Grease Fitting . . . . .	810-139
	(2")	616302	20	Retaining Sleeve Retainer Clip . . . . .	43-38-08
	(3")	616303	21	Spacer Block (8" - 12") . . . . . (4305)	618998
	(4")	616304		Spacer Block (8" - 12") . . . . . (4306)	621508
	(5")	616305	22	Hard Washer . . . . .	605279
	(6")	616306	23	Socket Head Cap Screw, 1/4-20 x 1.25" . . . . .	902-138
	(7")	616307	24	Socket Head Cap Screw, 1/4-20 x 0.75" (1 & 2")	902-132
	(8")	616308		Socket Head Cap Screw, 1/4-20 x 1.25" (3 to 12")	902-138
	(10")	616310			
	(12")	616312			
7	Coupling Guard . . . . . (4305)	200379			
	Coupling Guard . . . . . (4306)	200380			
8	Button Head Cap Screw, #10-32 x 0.25" . . . . .	901-104			



**Fixed Speed Gearmotor**

.33 HP, totally enclosed, fan cooled, 0.50" (12.7 mm) diameter output shaft.  
**Single Phase Motor** equipped with switch, cord and overload protection, 115V, 60HZ.  
**Three Phase Motor** is not equipped with switch or cord, 208-230/460V, 50/60HZ.

Illustration	Item	Description	Part No.
<p>42 CZ Face Flange</p> <p>0.50" (12.7 mm) Diameter Output Shaft</p> <p>0159</p>	1	Electric Motor, Single Phase	22-4114
		Electric Motor, Single Phase, Reversing	22-4114-R
		Electric Motor, Three Phase	22-4434
	2	Gear Reducer, 5:1 Ratio	22-005R-4
		Gear Reducer, 7.5:1 Ratio	22-007R-4
	Gear Reducer, 10:1 Ratio	22-010R-4	
	Gear Reducer, 15:1 Ratio	22-015R-4	
	Gear Reducer, 20:1 Ratio	22-020R-4	
	Gear Reducer, 25:1 Ratio	22-025R-4	
	Gear Reducer, 30:1 Ratio	22-030R-4	
	Gear Reducer, 40:1 Ratio	22-040R-4	
	Gear Reducer, 50:1 Ratio	22-050R-4	
	Gear Reducer, 60:1 Ratio	22-060R-4	
	3	Hex Head Bolt, 1/4-20 x .75" (Supplied with Reducer)	906-002
	4	Key, 1/8" x .63" (Supplied with Reducer)	912-052
	5	Key, 1/8" x .75" (Supplied with Motor)	912-053

**Variable Speed Gearmotor**

.33 HP, totally enclosed, non-ventilated D.C. motor, equipped with switch, cord and controller. Input voltage: 115V, 50/60HZ, single phase, 0.63" (16 mm) diameter output shaft.

Illustration	Item	Description	Part No.
<p>56 C Face Flange</p> <p>0.63" (16 mm) Diameter Output Shaft</p> <p>0161</p>	1	Electric Motor	22-3115-7
		Electric Motor, Reversing	22-3115-7R
	2	Gear Reducer, 5:1 Ratio	22-005R-5
		Gear Reducer, 7.5:1 Ratio	22-007R-5
		Gear Reducer, 10:1 Ratio	22-010R-5
		Gear Reducer, 15:1 Ratio	22-015R-5
		Gear Reducer, 20:1 Ratio	22-020R-5
		Gear Reducer, 25:1 Ratio	22-025R-5
		Gear Reducer, 30:1 Ratio	22-030R-5
		Gear Reducer, 40:1 Ratio	22-040R-5
		Gear Reducer, 50:1 Ratio	22-050R-5
		Gear Reducer, 60:1 Ratio	22-060R-5
		3	Hex Head Bolt, 3/8-16 x 1.00" (Supplied with Reducer)
	4	Key, 3/16" x 1.00" (Supplied with Reducer and Motor)	912-080

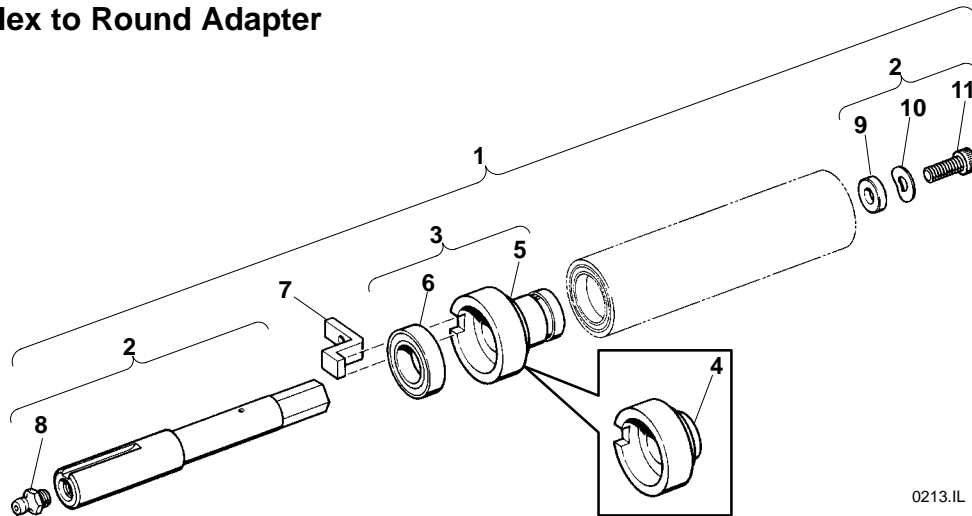
**Air Gearmotor**

0.63" (16 mm) diameter output shaft.

Illustration	Item	Description	Part No.	
<p>56 C Face Flange</p> <p>0.63" (16 mm) Diameter Output Shaft</p> <p>0163.IL</p>	1	Air Motor	22-0005-8	
	2	Gear Reducer, 5:1 Ratio	22-005R-5	
		Gear Reducer, 7.5:1 Ratio	22-007R-5	
		Gear Reducer, 10:1 Ratio	22-010R-5	
		Gear Reducer, 15:1 Ratio	22-015R-5	
		Gear Reducer, 20:1 Ratio	22-020R-5	
		Gear Reducer, 25:1 Ratio	22-025R-5	
		Gear Reducer, 30:1 Ratio	22-030R-5	
		Gear Reducer, 40:1 Ratio	22-040R-5	
		Gear Reducer, 50:1 Ratio	22-050R-5	
		Gear Reducer, 60:1 Ratio	22-060R-5	
		3	Hex Head Bolt, 3/8-16 x 1.00" (Supplied with Reducer)	906-125
		4	Key, 3/16" x 1.00" (Supplied with Reducer and Motor)	912-080
	5	Bracket and Nut	810-148	
	6	Filter/Regulator/Lubricator Unit	810-146	
	7	Muffler	810-055	

**Note:** All Gear Reducers illustrated above are RIGHT HAND models.  
 Left Hand and Double Output Shaft Models are available.

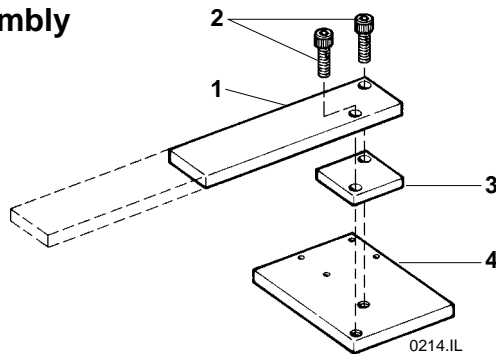
## Hex to Round Adapter



0213.IL

Item	Description	Part No.	Item	Description	Part No.
1	Adapter Assembly (Includes Items 2, 3 and 7)		3	Bearing Retaining Sleeve Assembly 1" (25 mm)	43-38-1-11
	1" (25 mm) .....	43-38-01		(Includes Items 4 and 6) .....	
	2" (44 mm) .....	43-38-02		Bearing Retaining Sleeve Assembly 2" (44	43-38-2-18
	3" (70 mm) .....	43-38-03		mm) - 1" (305 mm)	
4" (95 mm) - 12" (305 mm) .....	43-38-04	(Includes Items 5 and 6) .....			
2	Drive Shaft Assembly		4	Bearing Retaining Sleeve 1" (25 mm) .....	43-38-1-10
	(Includes Items 9, 10 and 11)		5	Bearing Retaining Sleeve	
	1" (25 mm) .....	43-38-1-05	2" (44 mm) - 12" (305 mm) .....	43-38-2-17	
	2" (44 mm) .....	23-38-2-12	6	Spindle Bearing .....	802-036
Drive Shaft Assembly			7	Retaining Sleeve Retainer Clip .....	43-38-08
(Includes Items 8, 9, 10 and 11)			8	Straight Grease Fitting	
3" (70 mm) .....			3" (70 mm) - 12" (305 mm) .....	810-138	
4" (95 mm) - 12" (305 mm) .....			9	Flat Hard Washer, #10 .....	43-38-06
			10	Curved Spring Washer, #10 .....	807-247
			11	Nylok® Socket Head Cap Screw,	
			#10-32x0.63" .....	902-902	

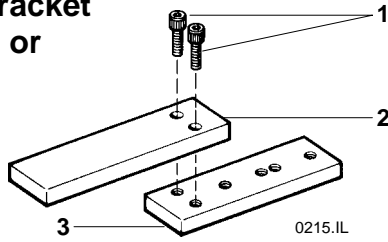
## Standard Motor Bracket Assembly



0214.IL

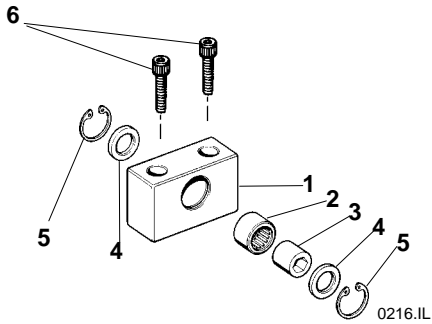
Item	Description	Part No.	Item	Description	Part No.	
1	Bracket Arm		3	Spacer Plate (0.50" Motor Shaft) .....	43-20-06	
	12" Long .....	43-20-05		Spacer Plate (0.63" Motor Shaft) .....	43-21-06	
	18" Long .....	43-22-05	4	Motor Base (0.50" Motor Shaft) .....	43-20-07	
2	Socket Head Cap Screw, 1/2-13 x 1.50"	902-279	Motor Base (0.63" Motor Shaft) .....			43-21-07
	(0.50" Motor Shaft) .....					
Socket Head Cap Screw, 1/2-13 x 1.75"						
(0.63" Motor Shaft) .....			902-280			

**Block Mounting Bracket for Reversing, 90° or Support Block**



Item	Description	Part No.
1	Socket Head Cap Screw, 3/8-16 x 1.00" . . . . .	902-229
2	Bracket Arm . . . . .	43-37-03
3	Block Base Plate . . . . .	43-37-04

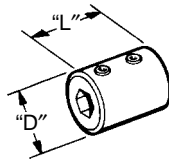
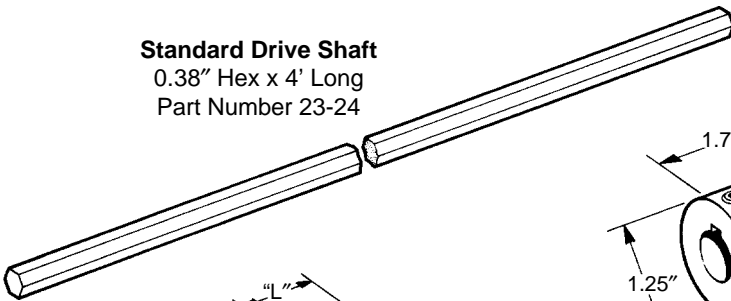
**Support Block**



Item	Description	Part No.
1	Support Block Body . . . . .	43-33-01
2	Roller Bearing . . . . .	802-045
3	Shaft Support Race . . . . .	43-33-03
4	Nylon Thrust Washer . . . . .	43-33-04
5	Retaining Ring . . . . .	915-227
6	Socket Head Cap Screw, 3/8-16 x 2.00" . . . . .	902-237

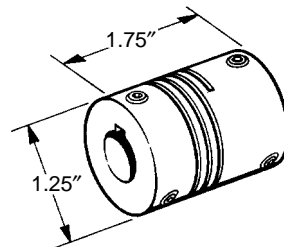
**Conveyor Drive Components**

**Standard Drive Shaft**  
0.38" Hex x 4' Long  
Part Number 23-24

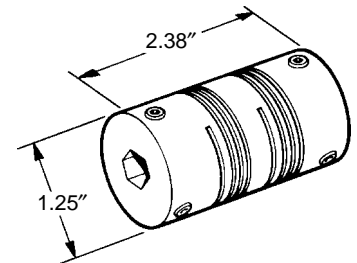


**Solid Coupling**

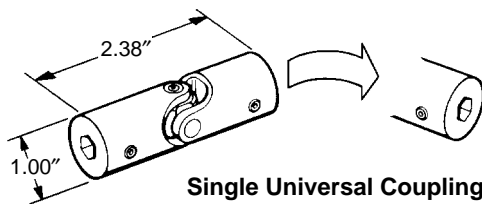
Part Number	Bore Size	Diameter x Length
23-25	0.38" x 0.50"	1.00" x 2.00"
23-26	0.38" x 0.63"	1.25" x 2.00"
23-31	0.38" x 0.38" Hex	1.00" x 1.25"



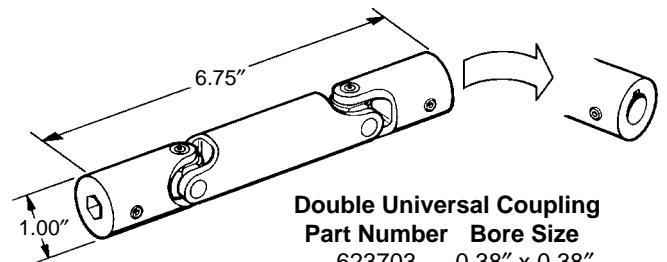
**Flexible Coupling**  
Part Number Bore Size  
807-143 0.38" x 0.50"



**Flexible Coupling**  
Part Number Bore Size  
23-27 0.38" x 0.50"  
43-27-9 0.38" x 15 mm  
43-28 0.38" x 0.63"  
610724 0.50" x 0.50"



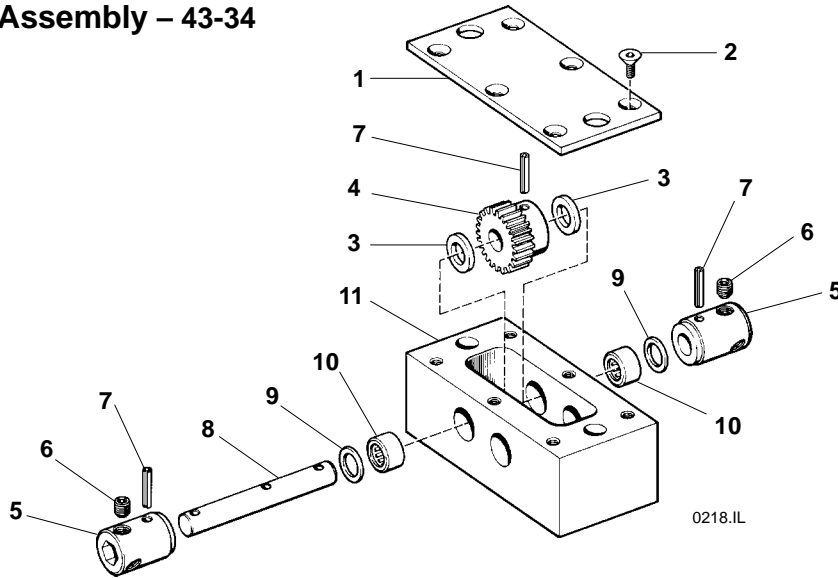
**Single Universal Coupling**  
Part Number Bore Size  
23-32 0.38" x 0.38"  
601923 0.38" x 0.50"  
601924 0.38" x 0.63"



**Double Universal Coupling**  
Part Number Bore Size  
623703 0.38" x 0.38"  
601922 0.38" x 15 mm  
23-29 0.38" x 0.50"  
23-30 0.38" x 0.63"

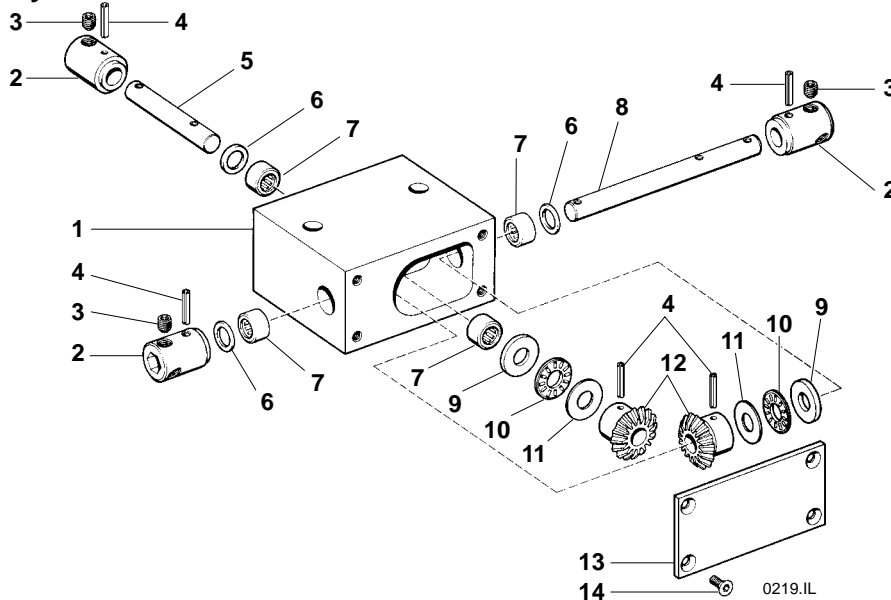
0217.IL

## Reversing Block Assembly – 43-34



Item	Description	Part No.	Item	Description	Part No.
1	Cover	43-34-01	7	Roll Pin, 1/8 x 0.63"	913-355
2	Flat Head Cap Screw, #8-32 x 0.38"	903-059	8	Gear Shaft	43-34-08
3	Nylon Thrust Washer	43-34-03	9	"O" Ring	605604
4	Spur Gear	43-34-04	10	Roller Bearing	802-044
5	Coupling (Includes Item 6)	43-34-05	11	Reversing Block Body	43-34-11
6	Socket Head Set Screw, 1/4-28 x 0.19"	907-140			

## 90° Block Assembly – 43-35



Item	Description	Part No.	Item	Description	Part No.
1	90° Block Body	43-35-01	8	Long Gear Shaft	43-35-08
2	Coupling (Includes Item 3)	43-34-05	9	Thrust Washer	802-025
3	Socket Head Set Screw, 1/4-28 x 0.19"	907-140	10	Thrust Bearing	802-026
4	Roll Pin, 1/8 x 0.63"	913-355	11	Thrust Washer	802-024
5	Short Gear Shaft	43-35-05	12	Miter Gear	43-35-12
6	"O" Ring	605604	13	Cover	43-35-13
7	Roller Bearing	802-044	14	Flat Head Cap Screw, #8-32 x 0.38"	903-059

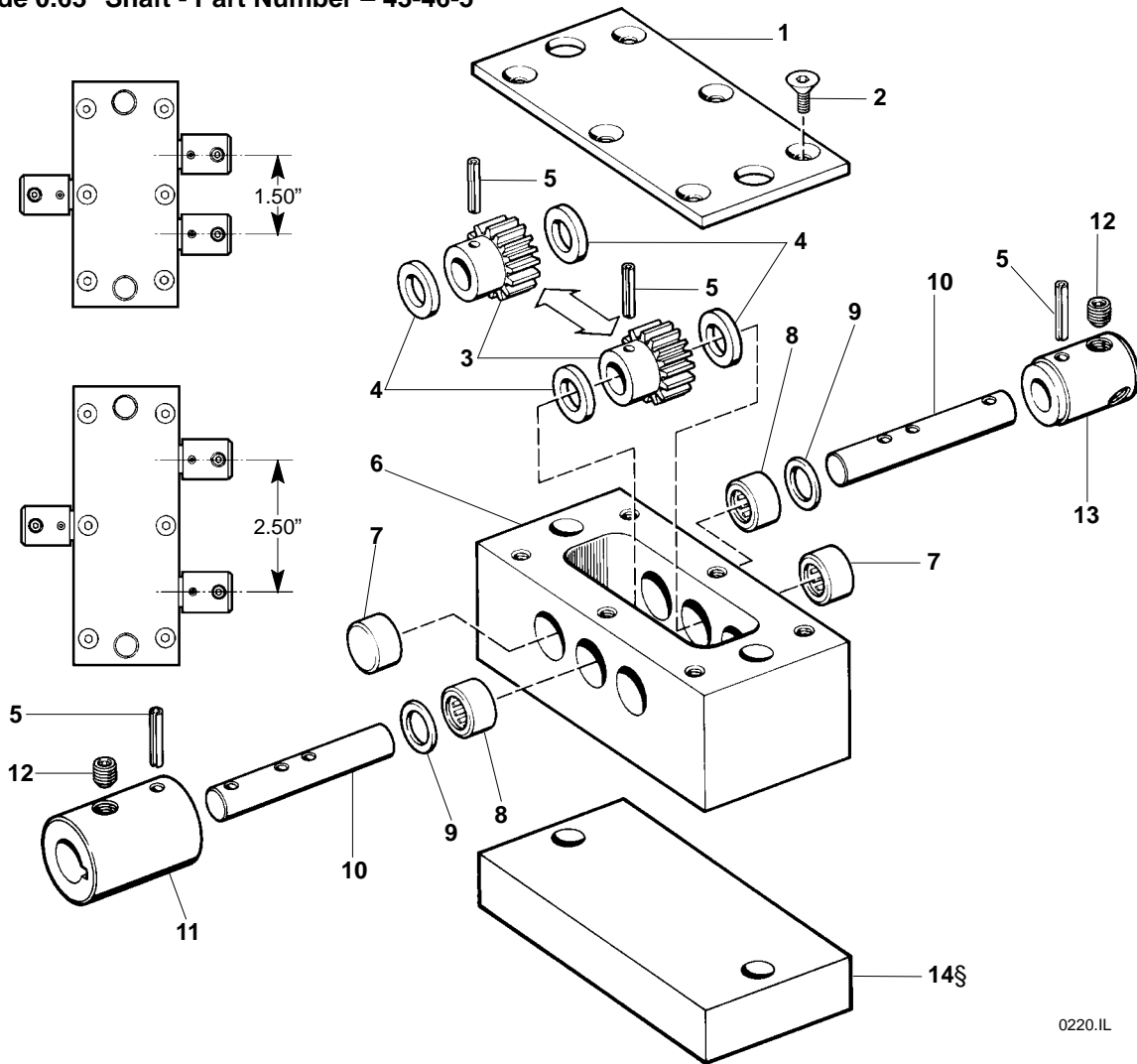
**Center Drive Block Assembly – Solid Couplings**

Standard 0.50" Shaft - Part Number – 43-36-4

Wide 0.50" Shaft - Part Number – 43-46-4

Standard 0.63" Shaft - Part Number – 43-36-5

Wide 0.63" Shaft - Part Number – 43-46-5



0220.IL

Item	Description	Part No.	Item	Description	Part No.
1	Cover (Standard Drive Block)	43-34-01	9	"O" Ring	605604
	Cover (Wide Drive Block)	43-46-01	10	Shaft	43-36-10
2	Flat Head Cap Screw, #8-32 x 0.38"	903-059	11	Coupling, 0.50" Bore (To Motor Shaft)	43-36-04-11
3	Spur Gear (Standard Drive Block)	43-36-03		(Includes Item 12)	
	Spur Gear (Wide Drive Block)	43-46-03		Coupling, 0.63" Bore (To Motor Shaft)	43-36-05-11
4	Nylon Thrust Washer	43-34-03		(Includes Item 12)	
5	Roll Pin, 1/8 x 0.63"	913-355	12	Socket Head Set Screw, 1/4-28 x 0.19"	907-140
6	Center Drive Block Body	43-36-06	13	Coupling (Hex Drive Shaft) (Includes Item 12)	43-34-05
	(Standard Drive Block)		14§	Standard Drive Block Spacer, 0.406" Thick	607646
	Center Drive Block Body (Wide Drive Block)	43-46-06		Standard Drive Block Spacer, 0.812" Thick	607647
7	Roller Bearing (Closed End)	802-049		Standard Drive Block Spacer, 0.75" Thick	618469
8	Roller Bearing	802-044			

§ - This Item is not part of the Center Drive Block Assembly. Must be ordered separately.

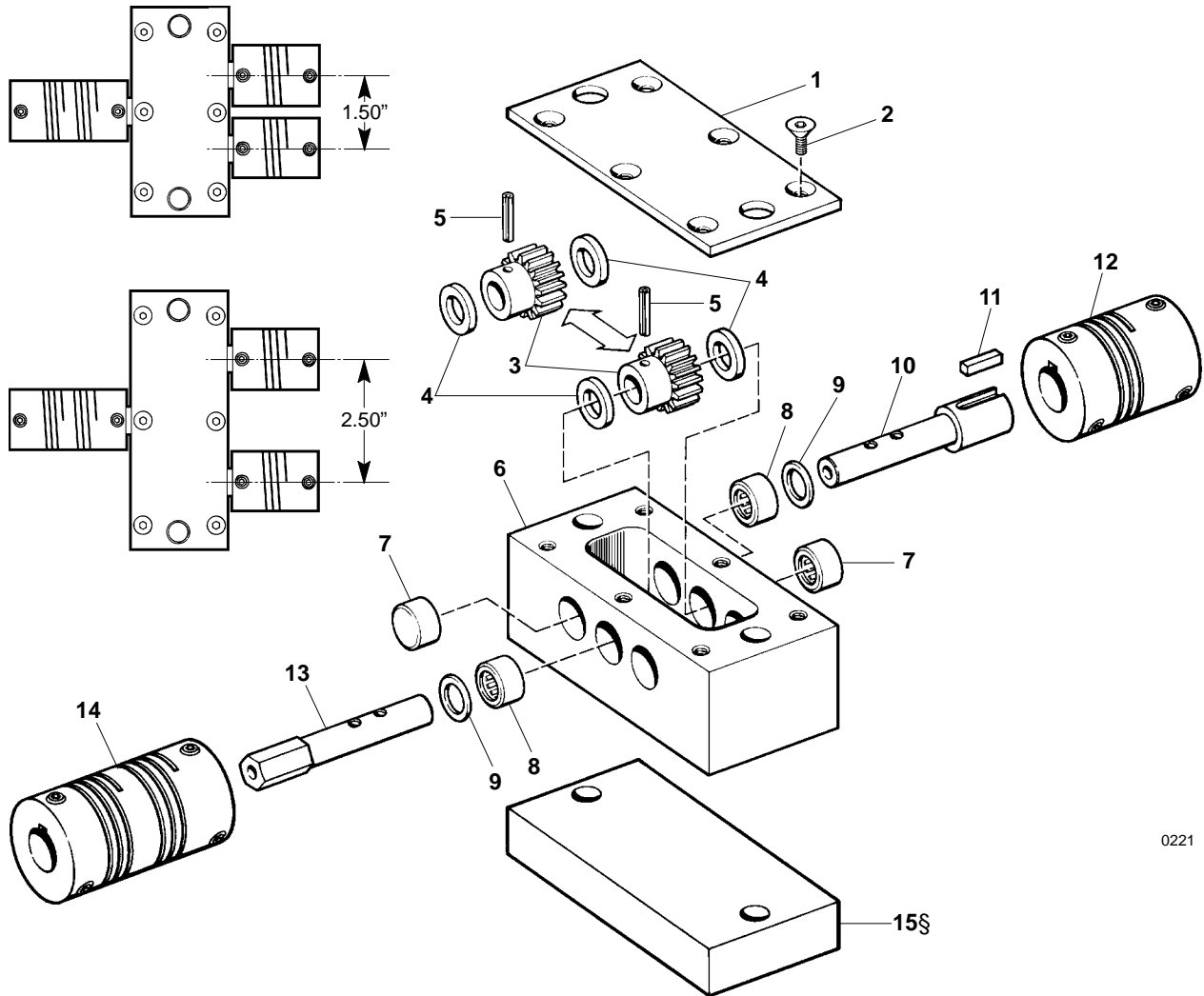
## Center Drive Block Assembly – Flexible Couplings

Standard 0.50" Shaft - Part Number – 43-36-6

Wide 0.50" Shaft - Part Number – 43-46-6

Standard 0.63" Shaft - Part Number – 43-36-7

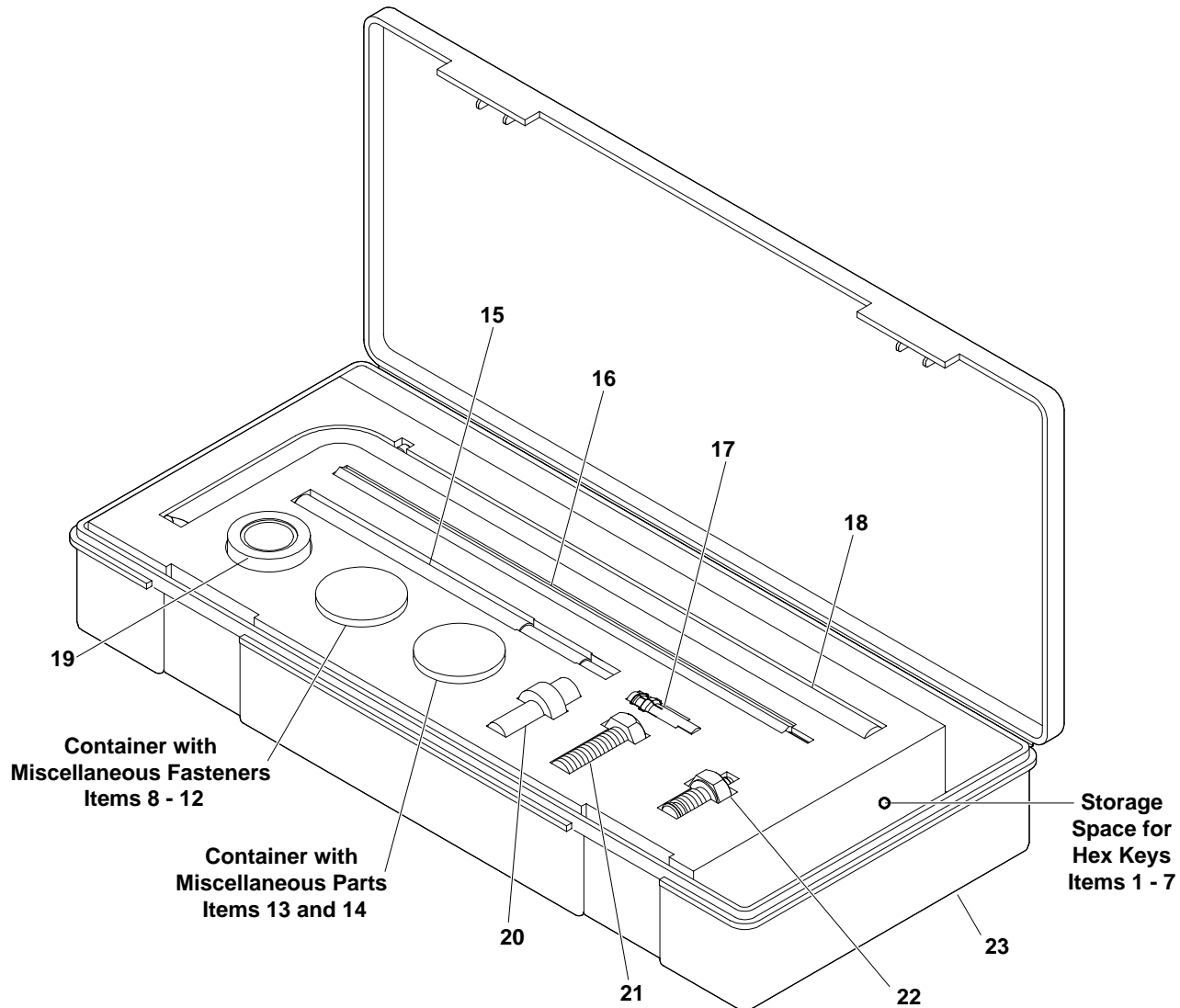
Wide 0.63" Shaft - Part Number – 43-46-7



0221

Item	Description	Part No.	Item	Description	Part No.
1	Cover (Standard Drive Block) . . . . .	43-34-01	9	"O" Ring . . . . .	605604
	Cover (Wide Drive Block) . . . . .	43-46-01	10	Keyed Drive Shaft . . . . .	43-04-009
2	Flat Head Cap Screw, #8-32 x 0.38" . . . . .	903-059	11	Square Key, 1/8" x 0.50" . . . . .	912-051
3	Spur Gear (Standard Drive Block) . . . . .	43-36-03	12	Flexible Coupling, 1.75" Long, 0.38" Hex Output . . . . .	807-143
	Spur Gear (Wide Drive Block) . . . . .	43-46-03	13	Shaft . . . . .	43-04-008
4	Nylon Thrust Washer . . . . .	43-34-03	14	Flexible Coupling, 2.38" Long, 0.50" Input Shaft Flexible Coupling, 2.38" Long, 0.63" Input Shaft	43-27 43-28
5	Roll Pin, 1/8 x 0.63" . . . . .	913-355	15§	Standard Drive Block Spacer, 0.406" Thick . . . . .	607646
6	Center Drive Block Body (Standard Drive Block) . . . . .	43-36-06		Standard Drive Block Spacer, 0.812" Thick . . . . .	607647
	Center Drive Block Body (Wide Drive Block) . . . . .	43-46-06		Standard Drive Block Spacer, 0.75" Thick . . . . .	618469
7	Roller Bearing (Closed End) . . . . .	802-049			
8	Roller Bearing . . . . .	802-044			

§ - This Item is not part of the Center Drive Block Assembly. Must be ordered separately.



0227

Item	Quantity	Description	Part Number	Item	Quantity	Description	Part Number
1	2	Hex Key, 5/64" Long Arm	807-516	12	4	Flat Head Cap Screw #10-32 x 0.31"	903-105
2	3	Hex Key, 3/32" Long Arm	807-517	13	12	Retainer Clip	41-08
3	1	Hex Key, 1/8" Long Arm	807-518	14	4	Outdoor Drive Shaft Retainer Clip	43-38-08
4	2	Hex Key, 9/64" Long Arm	807-524	15	1	Sleeve Arbor Tool	45-02
5	1	Hex Key, 5/32" Long Arm	807-526	16	1	Hex Key Extension Tool 2 - 12" (44 - 610mm)	25-08
6	2	Hex Key, 3/16" 5mm Long Arm	807-520	17	1	Bearing Removal Tool	45-05A
7	1	Hex Key, 1/4" Long Arm	807-521	18	1	Spindle Pulley Installation Tool	45-07
8	4	Button Head Cap Screw, #10-32 x 0.25"	901-104	19	1	Bearing Anvil/Sleeve Removal Tool	25-09
9	4	Socket Head Cap Screw, #8-32 x 0.25"	902-054	20	1	Bearing Insertion Tool	25-10
10	16	Flat Head Cap Screw #6-32 x 0.38"	903-037	21	1	Bolt, Special Threaded	906-278
11	16	Special Flat Head Cap Screw #8-32 x 0.38" (#6 Head)	903-060	22	1	Greasing Adapter	45-12
				23	1	Tool Box 4500M--ENG	656951

# Part Number Index

Part #	Page	Part #	Page	Part #	Page
200063	23	23-30	27	41-6-17	17
200064	23	23-31	27	41-6-19	17
200375	23	23-32	27	41-6-21	17
200376	23	23-38-2-12	21, 23, 26	41-6-50	17
200377	21	23-38-3-15	21, 23, 26	41-6-51	17
200379	24	23-38-4-16	21, 23, 26	41-7-15	17
200380	24	25-08	8, 10, 31	41-7-17	17
200381	21	25-09	9, 10, 31	41-7-19	17
21-2-34	17	25-10	10, 31	41-7-21	17
21-3-28	17	41-08	17, 31	41-7-50	17
21-3-34	17	41-1-15	17	41-7-51	17
21-4-28	17	41-1-17	17	41-8-15	17
21-4-34	17	41-1-19	17	41-8-17	17
21-5-28	17	41-1-21	17	41-8-19	17
21-5-34	17	41-1-50	17	41-8-21	17
21-6-28	17	41-1-51	17	41-8-50	17
21-6-34	17	41-10-15	17	41-8-51	17
21-7-28	17	41-10-17	17	43-04-008	30
21-7-34	17	41-10-19	17	43-04-009	30
21-8-28	17	41-10-21	17	43-20-05	26
21-8-34	17	41-10-50	17	43-20-06	26
21-10-28	17	41-10-51	17	43-20-07	26
21-10-34	17	41-12-15	17	43-21-06	26
21-12-28	17	41-12-17	17	43-21-07	26
21-12-34	17	41-12-19	17	43-22-05	26
21-33	17	41-12-21	17	43-27-9	27
22-0005-8	25	41-12-50	17	43-33-01	27
22-005R-4	25	41-12-51	17	43-33-03	27
22-005R-5	25	41-18	17	43-33-04	27
22-007R-4	25	41-2-15	17	43-34	28
22-007R-5	25	41-2-17	17	43-34-01	28, 29, 30
22-010R-4	25	41-2-19	17	43-34-03	28, 29, 30
22-010R-5	25	41-2-21	17	43-34-04	28
22-015R-4	25	41-2-50	17	43-34-05	28, 29
22-015R-5	25	41-2-51	17	43-34-08	28
22-020R-4	25	41-22	17	43-34-11	28
22-020R-5	25	41-3-15	17	43-35	28
22-025R-4	25	41-3-17	17	43-35-01	28
22-025R-5	25	41-3-19	17	43-35-05	28
22-030R-4	25	41-3-21	17	43-35-08	28
22-030R-5	25	41-3-50	17	43-35-12	28
22-040R-4	25	41-3-51	17	43-35-13	28
22-040R-5	25	41-31	17	43-36-03	29, 30
22-050R-4	25	41-32	17	43-36-04-11	29
22-050R-5	25	41-35	17	43-36-05-11	29
22-060R-4	25	41-4-15	17	43-36-06	29, 30
22-060R-5	25	41-4-17	17	43-36-10	29
22-3115-7	25	41-4-19	17	43-36-4	29
22-3115-7R	25	41-4-21	17	43-36-5	29
22-4114	25	41-4-50	17	43-36-6	30
22-4114-R	25	41-4-51	17	43-36-7	30
22-4434	25	41-5-15	17	43-37-03	27
23-24	27	41-5-17	17	43-37-04	27
23-25	27	41-5-19	17	43-38-01	21, 23, 26
23-26	27	41-5-21	17	43-38-02	21, 23, 26
23-27	24, 27, 30	41-5-50	17	43-38-03	21, 23, 26
23-28	24, 27, 30	41-5-51	17	43-38-04	21, 23, 26
23-29	27	41-6-15	17	43-38-06	21, 23, 26



# Part Number Index

Part #	Page	Part #	Page	Part #	Page
43-38-08	21, 23, 24, 26, 31	609990	24	807-247	21, 23, 26
43-38-1-05	21, 23, 26	609991	24	807-516	31
43-38-1-10	26	610063	24	807-517	31
43-38-1-11	21, 23, 26	610064	24	807-518	31
43-38-2-17	26	610065	24	807-520	31
43-38-2-18	21, 23, 26	610066	24	807-521	31
43-46-01	29, 30	610068	24	807-524	31
43-46-03	29, 30	610069	24	807-526	31
43-46-06	29, 30	610070	24	807-784	17
43-46-4	29	610724	27	810-055	25
43-46-5	29	611833	21	810-138	21, 23, 24, 26
43-46-6	30	611834	21	810-139	24
43-46-7	30	611929	21, 23	810-146	25
45-02	11, 31	611930	21, 23	810-148	25
45-05A	10, 31	611931	21, 23	811-101	21, 23
45-07	9, 11, 31	611932	21, 23	811-103	21, 23
45-12	4, 31	611933	21, 23	811-108	21, 23
45-13	4	611934	21, 23	811-109	21, 23
4500	4, 6, 8, 9, 10, 11, 31	611935	21, 23	811-115	21, 23
601922	27	611936	21, 23	811-165	21, 23
601923	27	611978	21, 23	811-166	21, 23
601924	27	611979	21, 23	814-021	23
603394	21, 23	611980	21, 23	814-022	21, 23
603395	21, 23	611987	21, 23	814-023	21
604783	21, 23	611988	21, 23	814-044	21, 23
605219	21, 23	613602P	21, 23, 24	814-051	21
605222	21, 23	616301	24	814-052	23
605231	21	616302	24	814-053	21, 23
605279	21, 23, 24	616303	24	814-054	21, 23
605604	28, 29, 30	616304	24	814-055	21
605625	5	616305	24	829-002	4
606276	21, 23	616306	24	829-003	4
607646	29, 30	616307	24	901-037	18
607647	29, 30	616308	24	901-056	18
607778	21, 23	616310	24	901-062	18
607779	21, 23	616312	24	901-104	17, 24, 31
609423	23	618469	29, 30	902-054	21, 23, 31
609424	21, 23	618898	4, 24	902-128	23
609425	21, 23	618998	21, 24	902-130	23
609476	21, 23	621508	21, 24	902-132	21
609478	21, 23	622223	4, 24	902-136	21, 23
609479	21, 23, 24	622224	24	902-138	21, 24
609480	21, 23, 24	623703	27	902-179	21
609481	21, 23, 24	625619	5	902-186	21, 23
609482	21, 23, 24	656951	31	902-229	27
609483	21, 23, 24	667999	23	902-237	27
609484	21, 23, 24	669344	23	902-279	26
609485	21, 23, 24	802-021	17	902-280	26
609486	24	802-024	28	902-902	21, 23, 26
609487	24	802-025	28	903-037	17, 31
609488	24	802-026	28	903-059	17
609489	23	802-036	26	903-060	17, 28, 29, 30, 31
609490	23	802-044	28, 29, 30	903-102	17
609491	23	802-045	27	903-105	17, 31
609756	21	802-046	21, 23	903-110	24
609762	23	802-049	29, 30	903-134	21, 23
609866	21	807-143	27, 30	903-136	23, 24
609989	24	807-226	21, 23	903-140	21, 24

---

# Part Number Index

---

<b>Part #</b>	<b>Page</b>
903-183 .....	<b>23, 24</b>
906-002 .....	<b>25</b>
906-125 .....	<b>25</b>
906-278 .....	<b>9, 31</b>
907-140 .....	<b>28, 29</b>
910-126 .....	<b>21, 23, 24</b>
911-003 .....	<b>18</b>
911-004 .....	<b>18</b>
911-008 .....	<b>21, 23</b>
912-051 .....	<b>30</b>
912-055 .....	<b>21, 23, 24, 25</b>
912-053 .....	<b>25</b>
912-077 .....	<b>21, 23, 24</b>
912-080 .....	<b>25</b>
913-355 .....	<b>28, 29, 30</b>
915-227 .....	<b>27</b>

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## RETURN POLICY

No returns will be accepted without prior written factory authorization. When calling for authorization, please have the following information ready for the Dornier Factory representative or your local distributor:

1. Name and address of customer.
2. Item(s) being returned.
3. Reason for return.
4. Customer's original order number used when ordering the item(s).
5. Dornier or distributor invoice number.

A representative will discuss action to be taken on the Returned items and provide a Returned Goods Authorization Number to reference.

There will be a 15% restocking charge on all new items returned for credit where Dornier was not at fault. These will not be accepted after 60 days from original invoice date. The restocking charge covers inspection, cleaning, disassembly, and reissuing 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.

- Dornier has representatives throughout the world. Feel free to contact Dornier for the name of your local representative. Our technical sales and service staff will gladly help with your questions on Dornier products.

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

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