

**2100, 4100, 6100 Series
Top Mount Drive Package
for Standard Load 90° Industrial 60 Hz Gearmotors**





Table of Contents



| | | | |
|---------------------------------|---|---|----|
| Warnings – General Safety | 2 | Preventative Maintenance & Adjustment | 7 |
| Introduction | 2 | Required Tools | 7 |
| Product Description | 3 | Timing Belt Tensioning | 7 |
| Specifications | 3 | Timing Belt Replacement | 7 |
| Installation | 5 | Drive or Driven Pulley Replacement | 8 |
| Required Tools | 5 | Gear Reducer Replacement | 8 |
| Mounting | 5 | Motor Replacement | 10 |
| | | Service Parts | 11 |
| | | Return Policy | 12 |

Warnings – General Safety



| | | |
|---|----------------|---|
|  | WARNING |  |
| <p>The safety alert symbol, black triangle with white exclamation, is used to alert you to potential personal injury hazards.</p> | | |



| | | |
|---|---|----------------|
|  |  | WARNING |
| <p>Gearmotors may be HOT. DO NOT TOUCH Gearmotors.</p> | | |

| | | |
|--|---|---------------|
|  |  | DANGER |
| <p>Climbing, sitting, walking or riding on conveyor will cause severe injury. KEEP OFF CONVEYORS.</p> | | |

| | | |
|---|---|----------------|
|  |  | WARNING |
| <p>Exposed moving parts can cause severe injury. REPLACE ALL GUARDS BEFORE RUNNING CONVEYOR.</p> | | |

| | | |
|---|---|---------------|
|  |  | DANGER |
| <p>Do NOT OPERATE CONVEYORS IN AN EXPLOSIVE ENVIRONMENT.</p> | | |

| | | |
|--|--|----------------|
|  |  | WARNING |
| <p>Exposed moving parts can cause severe injury. LOCK OUT POWER before removing guards or performing maintenance.</p> | | |

| | | |
|--|---|----------------|
|  |  | WARNING |
| <p>Dorner cannot control the physical installation and application of conveyors. Taking protective measures is the responsibility of the user. When conveyors are used in conjunction with other equipment or as part of a multiple conveyor system, CHECK FOR POTENTIAL PINCH POINTS and other mechanical hazards before system start-up.</p> | | |

Introduction

IMPORTANT: 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.

Dorner 2100 Series conveyors are covered by the following patent numbers: 5131529, 5174435, and corresponding patents and patent applications in other countries.

Dorner 4100 Series conveyors are covered by patent number 3923148 and corresponding patents and patent applications in other countries.

Dorner 6100 Series conveyors are covered by patent number 5174435 and corresponding patents and patent applications in other countries.

Dorner's Limited Warranty applies.

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

Product Description

Refer to Figure 1 for typical components.

| Typical Components | |
|--------------------|-----------------------|
| A | Conveyor |
| B | Mounting Bracket |
| C | Gearmotor |
| D | Timing Belt Tensioner |
| E | Cover |
| F | Timing Belt |
| G | Drive Pulley |
| H | Driven Pulley |

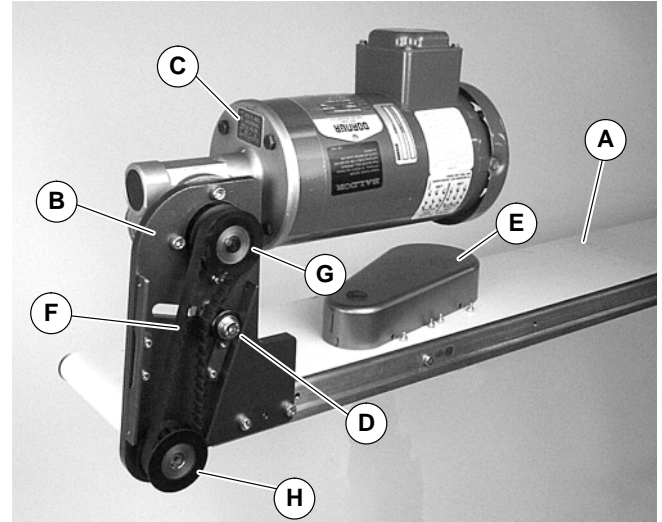


Figure 1

Specifications

Gearmotor Mounting Package Models:

Example:

| | | | | | | | | | | |
|----------|----------|----------|----------|----------|-----------|----------|----------|-----------|-----------|---|
| 2 | M | T | H | S | WW | A | - | 32 | 32 | |
| | | | | | | | | | | Driven Pulley (see Table 2 & 3) |
| | | | | | | | | | | Drive Pulley (see Table 2 & 3) |
| | | | | | | | | | | Belt Type: - = flat belt, A through J = cleated belt |
| | | | | | | | | | | Mount Position = A, B, C or D (see detail to the right) |
| | | | | | | | | | | Conveyor Width Reference* |
| | | | | | | | | | | Gearmotor Type = Standard Load, Industrial |
| | | | | | | | | | | Output Shaft Type = 90° Industrial |
| | | | | | | | | | | Mount Style = Top Mount |
| | | | | | | | | | | Language Code = U.S. English |
| | | | | | | | | | | 2 = 2100 Series Conveyor |
| | | | | | | | | | | 4 = 4100 Series Conveyor |
| | | | | | | | | | | 6 = 6100 Series Conveyor |

* See "Ordering and Specifications" Catalog for details.

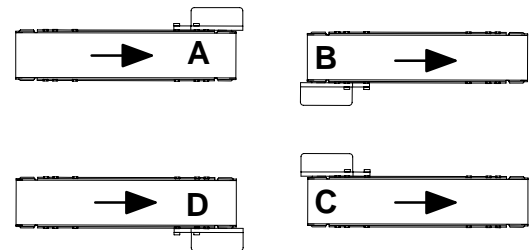


Table 1: Gearmotor Specifications

| | Single Phase | Three Phase | DC Variable Speed |
|------------------|------------------------------|---------------------------|-------------------|
| Output Power | 0.25 hp (0.19 kw) | | |
| Input Voltage | 115 Volts A.C. | 208 to 230/460 Volts A.C. | 130 Volts D.C. |
| Input Frequency | 60 Hz | | N/A |
| Input Current | 5.0 Amperes | 1.2 /0.6 Amperes | 2.2 Amperes |
| Motor RPM | 1725 | | 2500 |
| Gearmotor Ratios | 5:1, 10:1, 20:1, 40:1, 60:1 | | |
| Frame Size | NEMA 42 CZ | | |
| Motor Type | Totally Enclosed, Fan-cooled | | |

Specifications

Table 2: Belt Speeds for Standard Load Fixed Speed 90° 60 Hz Gearmotors

| Gearmotors | | Belt Speed | | Drive Pulley | Driven Pulley |
|-----------------|-----|------------|-------|--------------|---------------|
| Part Number | RPM | ft/min | M/min | | |
| 32M060HL4(vp)FN | 29 | 5 | 1.5 | 19 | 32 |
| 32M060HL4(vp)FN | 29 | 8 | 2.4 | 32 | 32 |
| 32M040HL4(vp)FN | 43 | 12 | 3.7 | 32 | 32 |
| 32M040HL4(vp)FN | 43 | 18 | 5.5 | 48 | 32 |
| 32M020HL4(vp)FN | 86 | 25 | 7.6 | 32 | 32 |
| 32M020HL4(vp)FN | 86 | 37 | 11.3 | 48 | 32 |
| 32M010HL4(vp)FN | 173 | 49 | 14.9 | 32 | 32 |
| 32M010HL4(vp)FN | 173 | 74 | 22.6 | 48 | 32 |
| 32M005HL4(vp)FN | 345 | 99 | 30.3 | 32 | 32 |
| 32M005HL4(vp)FN | 345 | 145 | 45.1 | 48 | 32 |
| 32M005HL4(vp)FN | 345 | 169 | 51.5 | 48 | 28 |
| 32M005HL4(vp)FN | 345 | 197 | 60 | 44 | 22 |
| 32M005HL4(vp)FN | 345 | 215 | 65 | 48 | 22 |
| 32M005HL4(vp)FN | 345 | 249 | 76 | 48 | 19 |

(vp) = voltage and phase

11 = 115 V, 1-phase

23 = 208–230/460 V, 3-phase

Table 3: Belt Speeds for Standard Load Variable Speed 90° DC Gearmotors

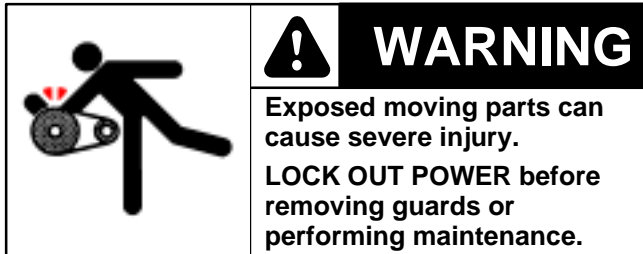
| Gearmotors | | | | Belt Speed | | Drive Pulley | Driven Pulley |
|---------------|-----|-------|------|------------|-----------|--------------|---------------|
| Part Number | RPM | In–lb | N–m | ft/min | M/min | | |
| 32M060HLD3DEN | 42 | 198 | 22.4 | 0.8 – 7.0 | 0.3 – 2.2 | 19 | 32 |
| 32M060HLD3DEN | 42 | 198 | 22.4 | 1.4 – 12 | 0.4 – 3.6 | 32 | 32 |
| 32M040HLD3DEN | 63 | 163 | 18.4 | 2.1 – 18 | 0.7 – 5.4 | 32 | 32 |
| 32M020HLD3DEN | 125 | 98 | 11.1 | 4.3 – 36 | 1.3 – 11 | 32 | 32 |
| 32M010HLD3DEN | 250 | 54 | 6.1 | 9.0 – 71 | 2.6 – 22 | 32 | 32 |
| 32M005HLD3DEN | 500 | 28 | 3.2 | 17 – 143 | 5.2 – 43 | 32 | 32 |
| 32M005HLD3DEN | 500 | 28 | 3.2 | 26 – 214 | 7.8 – 65 | 48 | 32 |
| 32M005HLD3DEN | 500 | 28 | 3.2 | 24 – 245 | 9.0 – 75 | 48 | 28 |

NOTE: For belt speed other than those listed, contact factory for details.

Required Tools

- Hex key wrenches:
2 mm, 2.5 mm, 3 mm, 5 mm
- Straight edge
- Torque wrench

Mounting



| Installation Component List | |
|-----------------------------|----------------------------|
| I | Top Mount Assembly |
| J | Drive Pulley |
| K | Cover |
| L | M4 Socket Head Screws (4x) |
| M | Driven Pulley |
| N | Key |
| O | M6 Socket Head Screws (2x) |
| P | Timing Belt |

1. Typical components (Figure 2)

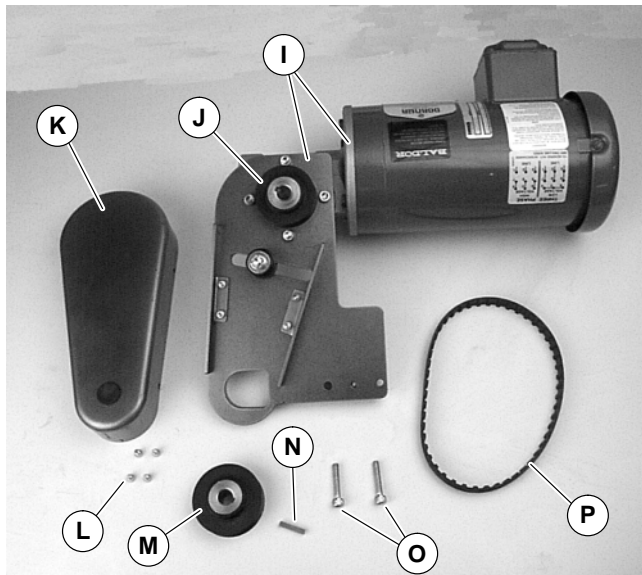


Figure 2

NOTE: Gearmotor may be operated in positions 1, 2 or 3 (Figure 3). Operating in position 2 may require additional support. Contact factory for details.

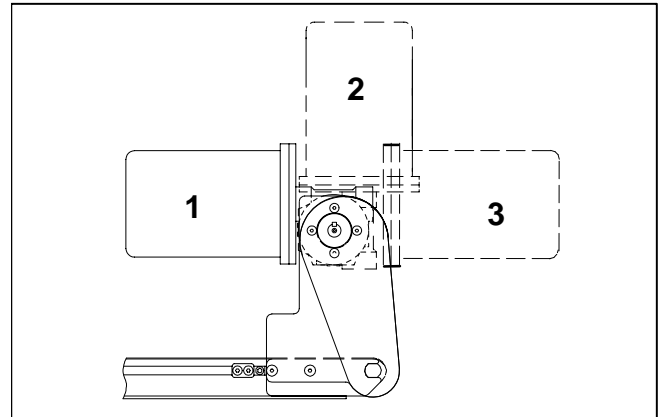


Figure 3

2. If required, change gearmotor position by removing four (4) screws (Q of Figure 4). Rotate gearmotor to other position and replace screws (Q). Tighten to 103 in-lb (12 Nm).

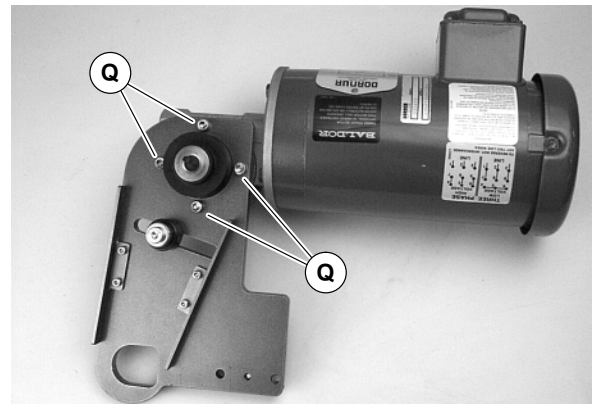


Figure 4

NOTE: 6100 conveyor shown, 2100 & 4100 similar.

3. Locate drive output shaft (R of Figure 5) and remove two (2) screws (S).

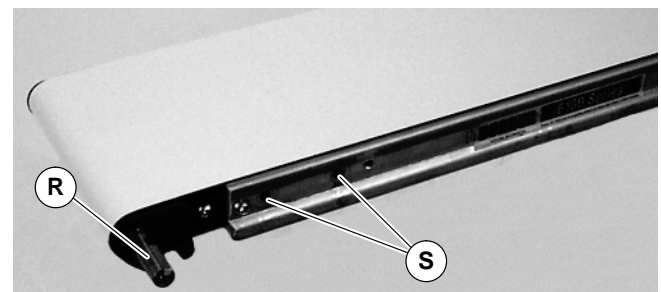


Figure 5

Installation

4. Attach mount assembly (I of Figure 6) with screws (O). Tighten to 80 in-lb (9 Nm).

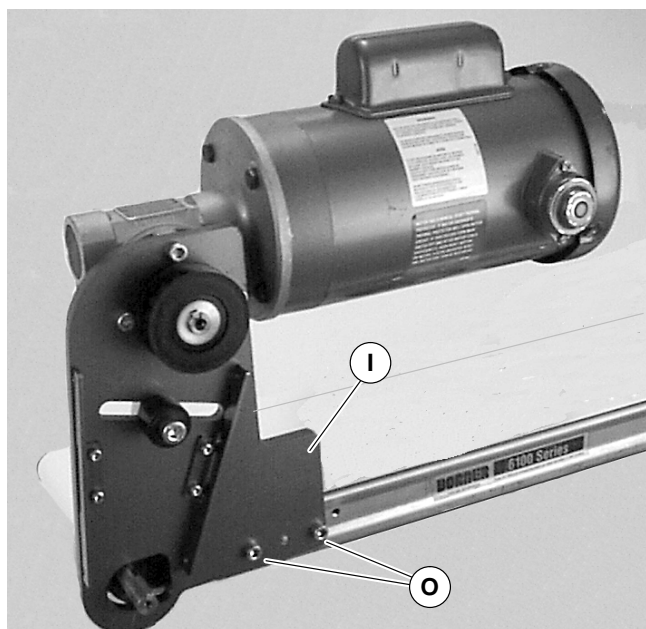
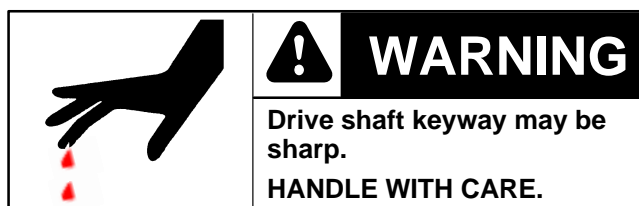


Figure 6



5. Install key (N of Figure 7).

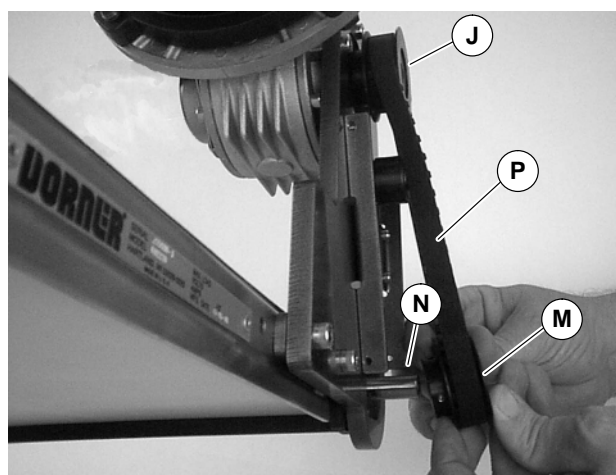


Figure 7

6. Wrap timing belt (P) around driven pulley (M) and drive pulley (J). Install driven pulley (M) onto conveyor shaft.

7. Using a straight edge (T of Figure 8), align driven pulley (M) with drive pulley (J). Tighten driven pulley set screws (U).

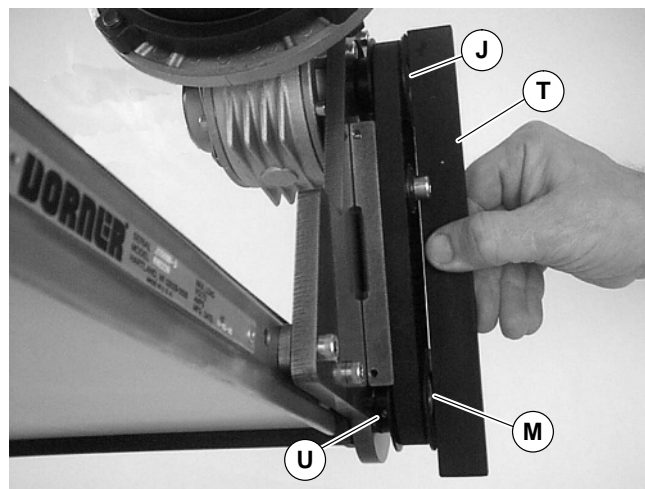


Figure 8

8. Depending on conveyor belt travel (direction 1 or 2), locate timing belt tensioner (V of Figure 9) as shown. Tension timing belt to obtain 0.125" (3 mm) deflection for 1.0 lb (456 grams) of force at timing belt mid-point (W). Tighten tensioner screw to 103 in-lb (12 Nm).

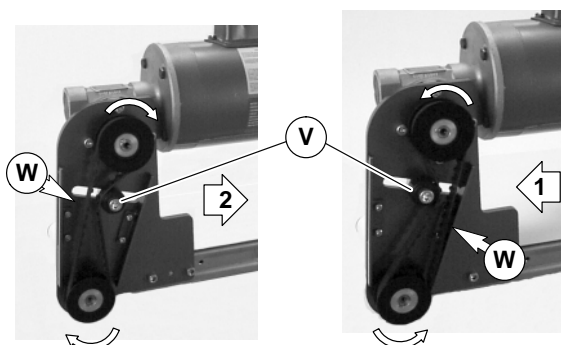


Figure 9

9. Install cover (K of Figure 10) with four (4) screws (L). Tighten to 35 in-lb (4 Nm).

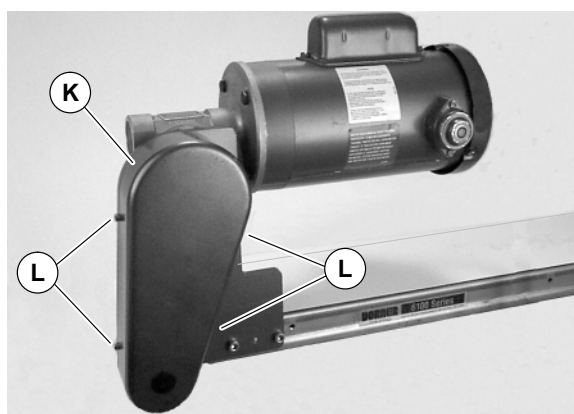


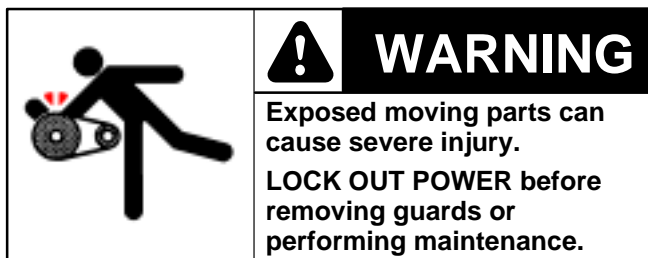
Figure 10

Preventive Maintenance and Adjustment

Required Tools

- Hex key wrenches
 - 2 mm, 2.5 mm, 3 mm & 5 mm
- Adjustable wrench (for hexagon head screws)
- Straight edge
- Torque wrench

Timing Belt Tensioning



1. Remove four (4) screws (L of Figure 10) and remove cover (K).
2. Loosen tensioner (V of Figure 11).

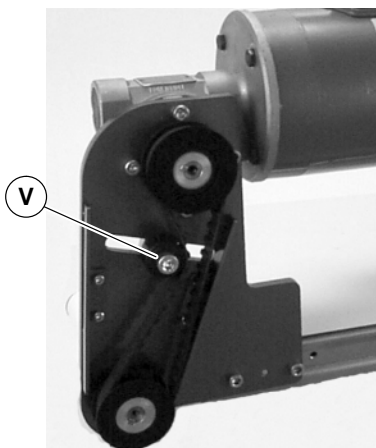
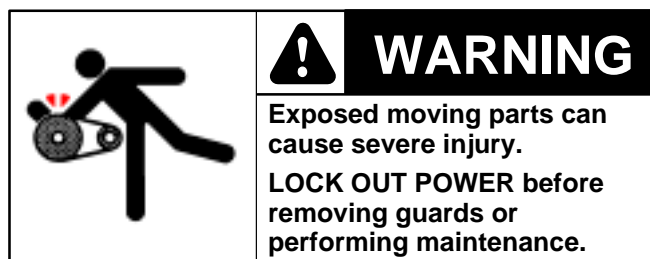


Figure 11

3. Depending on conveyor belt travel (direction 1 or 2), locate timing belt tensioner (V of Figure 9) as shown. Tension timing belt to obtain 0.125" (3 mm) deflection for 1.0 lb (456 grams) of force at timing belt mid-point (W). Tighten tensioner screw to 103 in-lb (12 Nm).
4. Install cover (K of Figure 10) with four (4) screws (L). Tighten to 35 in-lb (4 Nm).

Timing Belt Replacement



1. Remove four (4) screws (L of Figure 10) and remove cover (K).
2. Loosen tensioner (V of Figure 11).
3. Remove timing belt (P of Figure 12).

NOTE: If timing belt does not slide over pulley flange, loosen driven pulley set screws (U of Figure 12) and remove pulley with belt(). For re-installation, see steps 6 and 7 on page 6.

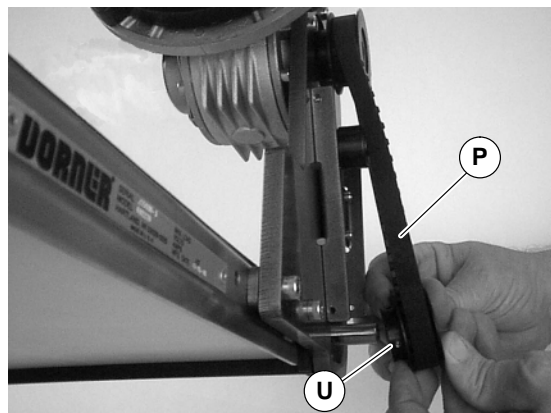
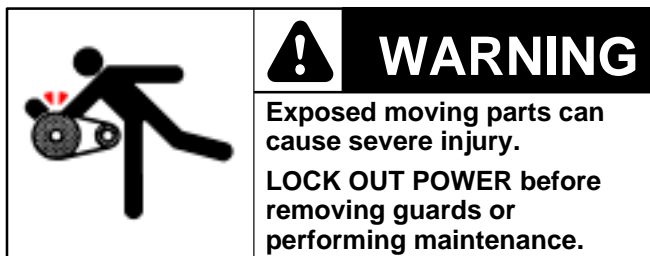


Figure 12

4. Install new timing belt.
5. Depending on conveyor belt travel (direction 1 or 2), locate timing belt tensioner (V of Figure 9) as shown. Tension timing belt to obtain 0.125" (3 mm) deflection for 1.0 lb (456 grams) of force at timing belt mid-point (W). Tighten tensioner screw to 103 in-lb (12 Nm).
6. Install cover (K of Figure 10) with four (4) screws (L). Tighten to 35 in-lb (4 Nm).

Preventive Maintenance and Adjustment

Drive or Driven Pulley Replacement

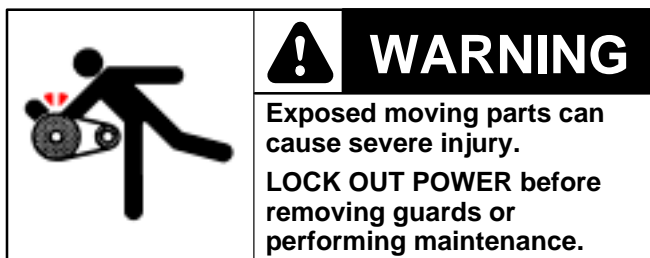


1. Complete steps 1 through 3 of “Timing Belt Replacement” section on page 7.
2. Loosen set screws and remove drive or driven pulley.

NOTE: If drive pulley (J of Figure 13) is replaced, wrap timing belt around drive pulley and complete step 3.

3. Complete steps 6 through 9 of “Installation” section on page 6.

Gear Reducer Replacement



1. Remove four (4) screws (L of Figure 10) and remove cover (K).
2. Loosen tensioner (V of Figure 11).
3. Loosen drive pulley set screws (X of Figure 13). Remove drive pulley (J) and timing belt (P).

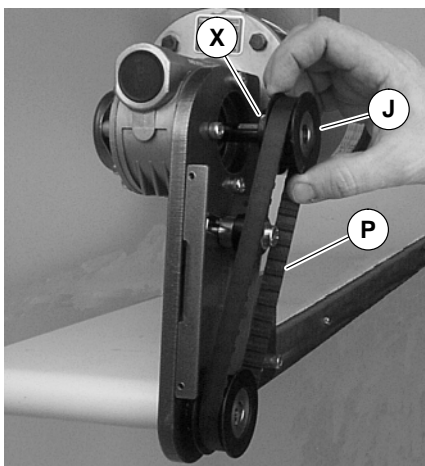


Figure 13

4. Remove four (4) gear reducer mounting screws (Q of Figure 14). Remove gearmotor.

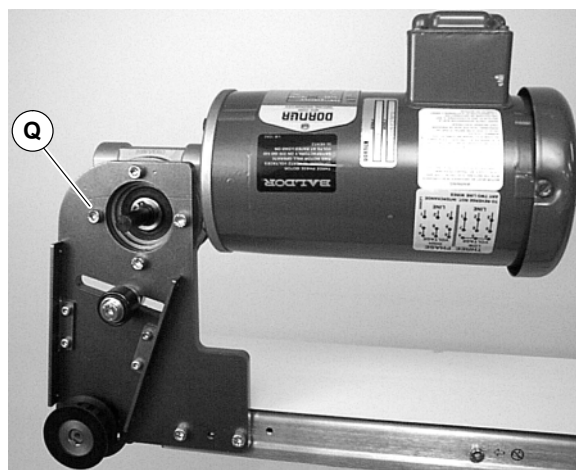


Figure 14

5. Remove four screws (Y of Figure 15). Detach motor (Z) from gear reducer (AA). Retain motor output shaft key (AB).

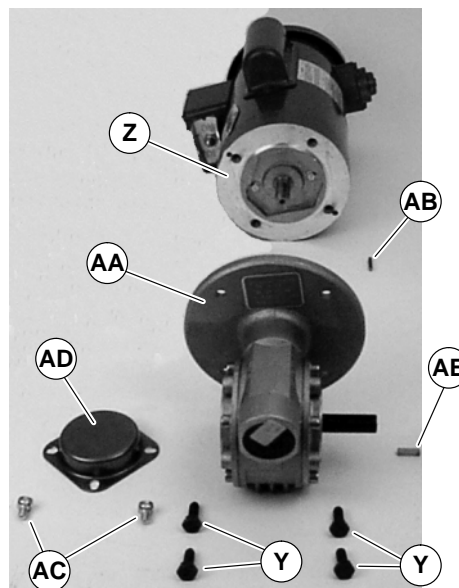


Figure 15

6. Remove two (2) screws (AC) and detach output shaft cover (AD).
7. Remove gear reducer output shaft key (AE).

Preventive Maintenance and Adjustment

8. Loosen six (6) set screws (AF of Figure 16). Remove drive shaft (AG) and key (AH).

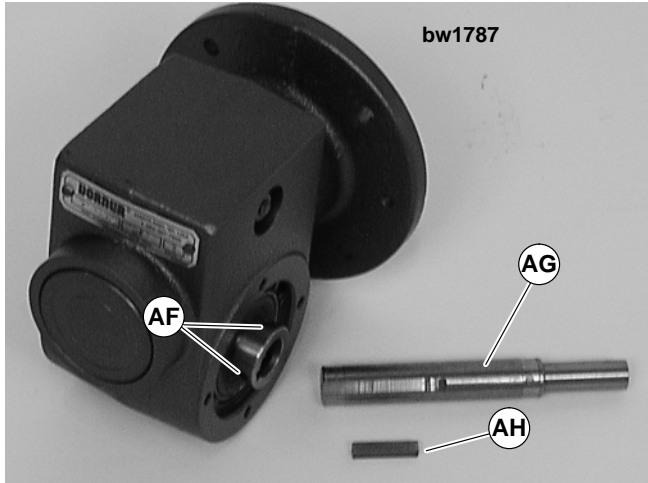


Figure 16

9. Apply grease (AI of Figure 17) to shaft.

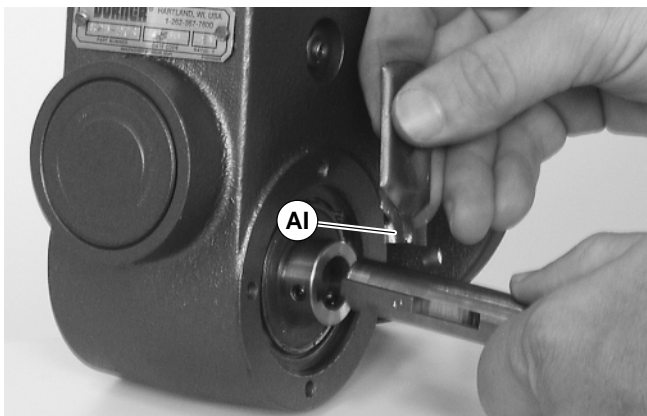


Figure 17

10. Replace the original shaft components into new gear reducer (see Figure 16).

IMPORTANT: Be extremely careful when coupling motor to gear reducer. Avoid misalignment and forcing the connection causing possible permanent gear reducer seal damage.

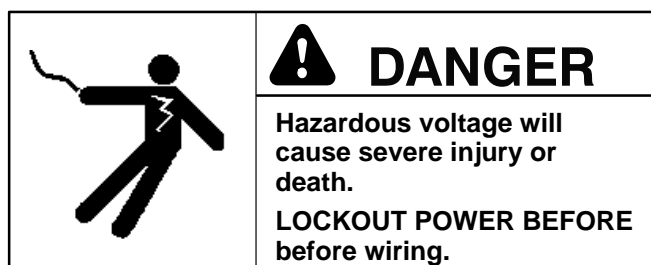
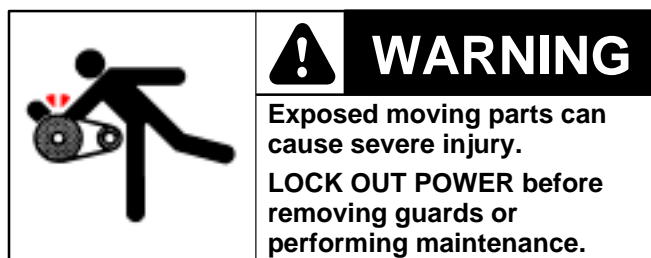
11. With key (J of Figure 15) in keyway, slide motor (Z) and gear reducer (AA) together. Install screws (Y) and tighten.
12. Install gearmotor to mounting bracket and tighten screws (Q of Figure 14) to 103 in-lb (12 Nm).

NOTE: Drive pulley (J of Figure 13) is removed. Wrap timing belt around drive pulley and complete step 13.

13. Complete steps 6 through 9 of “Installation” section on page 6.

Preventive Maintenance and Adjustment

Motor Replacement



1. For single phase motor, unplug power cord from outlet.
2. For three phase motor:
 - a. Loosen terminal box screws (AJ of Figure 18) and remove cover (AK).

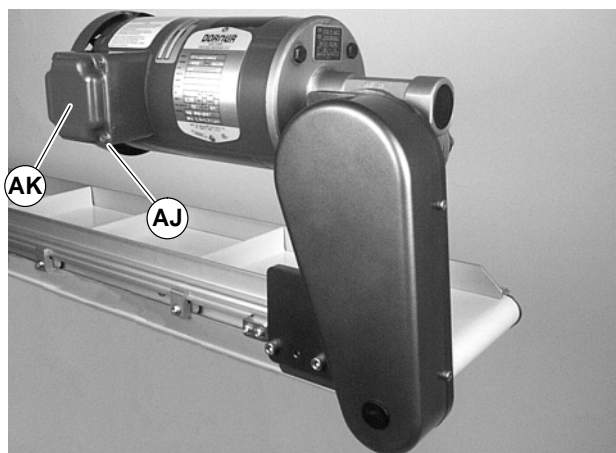


Figure 18

- b. Record wire colors connecting to wires 1, 2 and 3. Loosen wire nuts and remove wires 1, 2 and 3.
 - c. Loosen cord grip and remove cord.
3. For DC variable speed motor, unplug motor cord at disconnect (AL of Figure 19).

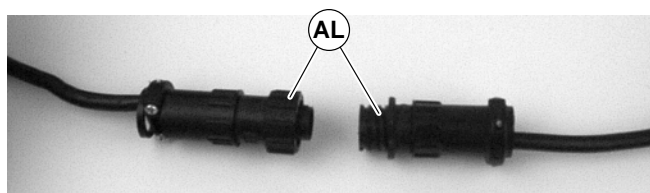


Figure 19

4. Remove four screws (Y of Figure 20). Detach motor (Z) from gear reducer (AA). Retain motor output shaft key (AB).

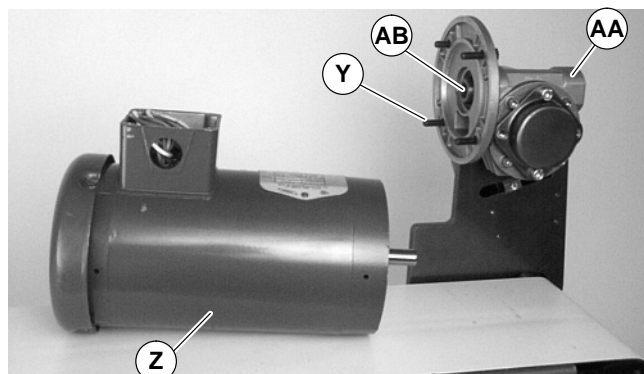


Figure 20

IMPORTANT: Be extremely careful when coupling motor to gear reducer. Avoid misalignment and forcing the connection causing possible permanent gear reducer seal damage.

5. With key (AB of Figure 21) in keyway, slide motor and gear reducer together. Install screws (Y) and tighten.

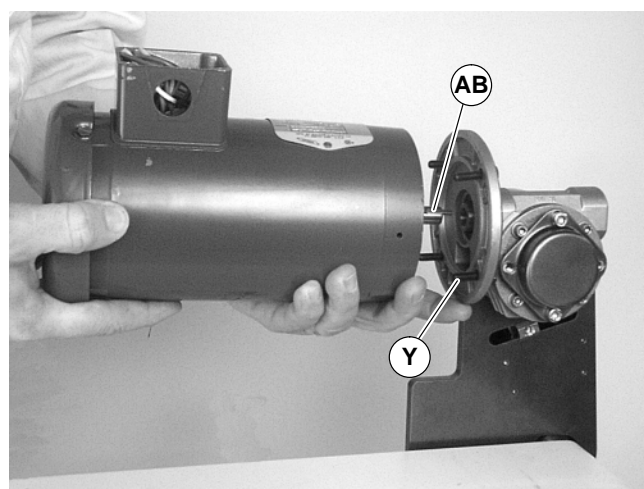


Figure 21

6. Replace wiring:

- For a single phase motor, reverse step 1 on this page.
- For a three phase motor, reverse step 2, on this page.
- For a DC variable speed motor, reverse step 3 on this page.

NOTE: For replacement parts other than those shown on this page, contact an authorized Dorner Service Center or the factory.

| Item | Part No. | Part Description |
|------|----------|---|
| 1 | 826-328 | Motor, 0.25 hp (0.19 Kw) 115/230 Volts, 60 Hz, 1-Phase |
| | 826-337 | Motor, 0.25 hp (0.19 Kw) 115/230 Volts, 60 Hz, 1-Phase with Reversing |
| | 826-330 | Motor, 0.25 hp (0.19 Kw) 208-230/460 Volts, 60 Hz, 3-Phase |
| | 826-332 | Motor, 0.25 hp (0.19 Kw) 130 Volts DC |
| 2 | 32M005HL | Gear Reducer, 5:1, 42 CZ |
| | 32M010HL | Gear Reducer, 10:1, 42 CZ |
| | 32M020HL | Gear Reducer, 20:1, 42 CZ |
| | 32M040HL | Gear Reducer, 40:1, 42 CZ |
| | 32M060HL | Gear Reducer, 60:1, 42 CZ |
| 3 | 814-104 | Timing Belt, 15mm W x 450mm L |
| | 814-105 | Timing Belt, 15mm W x 460mm L |
| | 814-065 | Timing Belt, 15mm W x 475mm L |
| | 814-101 | Timing Belt, 15mm W x 500mm L |
| | 814-108 | Timing Belt, 15mm W x 520mm L |
| | 814-064 | Timing Belt, 15mm W x 535mm L |
| | 814-099 | Timing Belt, 15mm W x 565mm L |
| 4 | 802-046 | Tensioner Bearing |
| 5 | 450365MP | Driven Pulley, 19Tooth |
| | 450366MP | Driven Pulley, 22Tooth |
| | 450367MP | Driven Pulley, 28Tooth |
| | 450368MP | Driven Pulley, 32Tooth |
| 6 | 980422M | Square Key, 4 mm x 22 mm (2x) |
| 7 | 450365MP | Drive Pulley, 19Tooth |
| | 450366MP | Drive Pulley, 22Tooth |
| | 450367MP | Drive Pulley, 28Tooth |
| | 450368MP | Drive Pulley, 32Tooth |
| | 450369MP | Drive Pulley, 44Tooth |
| | 450370MP | Drive Pulley, 48Tooth |
| | 450371MP | Drive Pulley, 60Tooth |
| 8 | 450444M | Gear Reducer Shaft |
| 9 | 912-084 | Key, Square, 0.188" x 1.5" L |

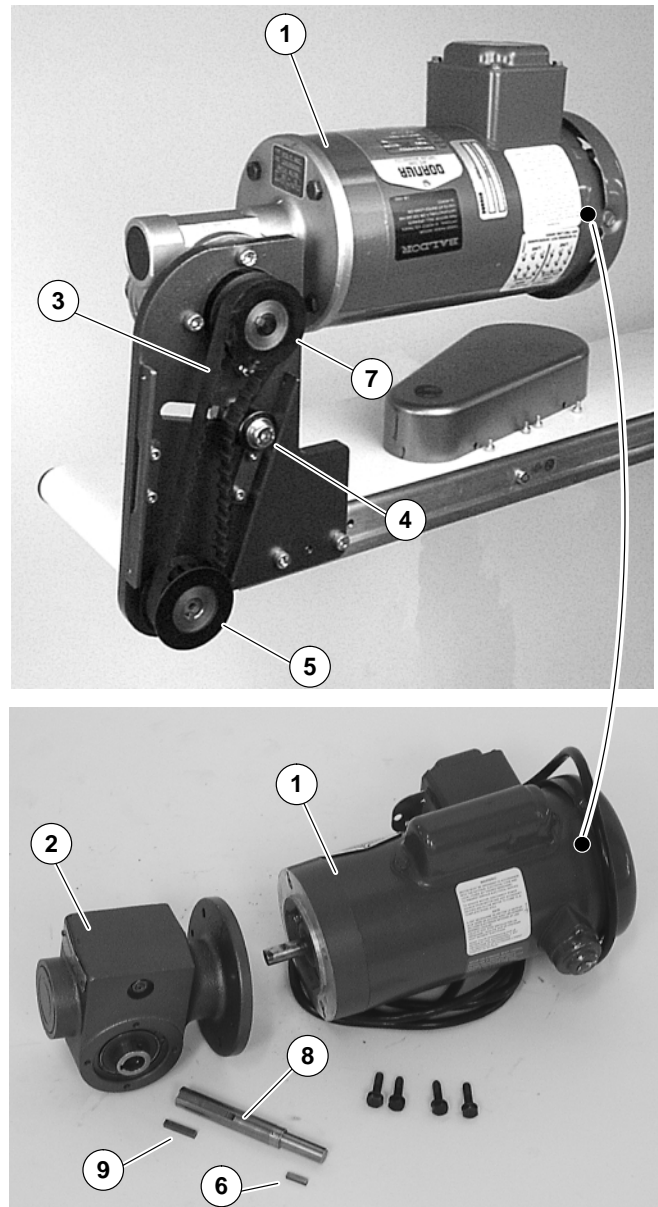


Figure 22

Return Policy

No returns will be accepted without prior written factory authorization. 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. 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 to reference.

There will be a 15% restocking charge on all new items returned for credit where Dorner 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.

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

For a copy of Dorner's Limited 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[®]

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. 2000

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)

Outside the USA:

TEL 1-262-367-7600, FAX 1-262-367-5827

DORNER

Arnold-Sommerfeld-Ring 2
D-52499 Baesweiler

Germany

TEL (02401) 80 52 90

FAX (02401) 80 52 93

Internet: www.dorner.com