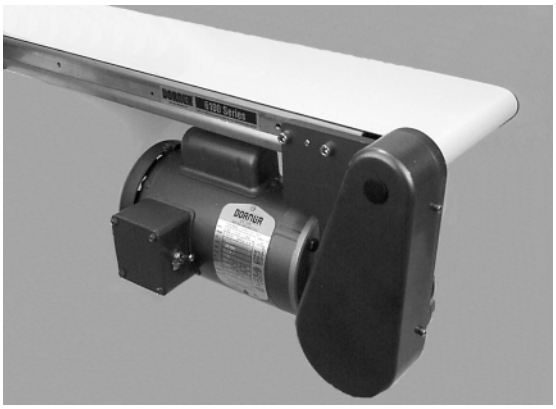
DORNER®

Set-up, Operation & Maintenance Manual

2100, 4100, 6100 Series
Bottom Mount Drive Package
for Standard Load 90˚ Industrial 60 Hz Gearmotors



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Warnings – General Safety

WARNING

The safety alert symbol, black triangle with white exclamation, is used to alert you to potential personal injury hazards.

DANGER

Climbing, sitting, walking or riding on conveyor will cause severe injury.

KEEP OFF CONVEYORS.

DANGER

Do NOT OPERATE CONVEYORS IN AN EXPLOSIVE ENVIRONMENT.

WARNING

Exposed moving parts can cause severe injury.

LOCK OUT POWER before removing guards or performing maintenance.

WARNING

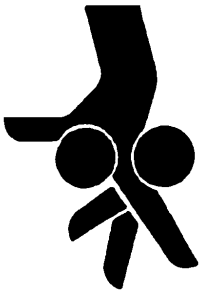
Gearmotors may be HOT.

DO NOT TOUCH Gearmotors.

WARNING

Exposed moving parts can cause severe injury.

REPLACE ALL GUARDS BEFORE RUNNING CONVEYOR.



WARNING

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.

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

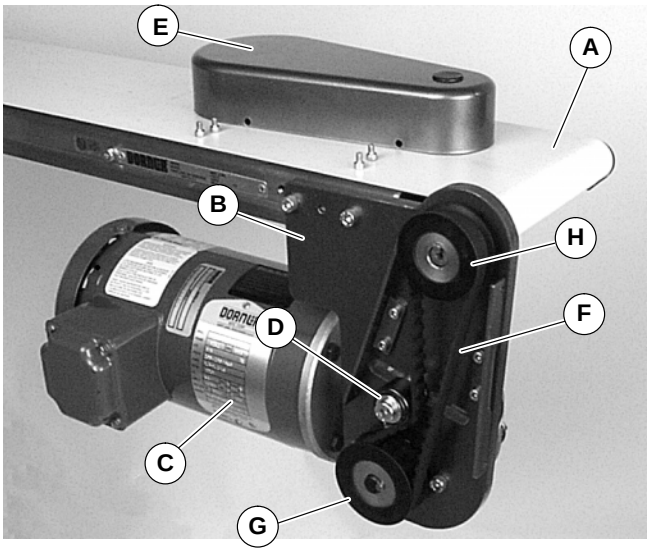


Figure 1

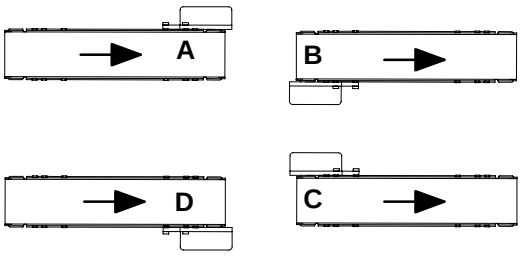
Specifications

Gearmotor Mounting Package Models:

Example:

2 M B 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 = Bottom 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	29 – 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

WARNING

Exposed moving parts can cause severe injury.

LOCK OUT POWER before removing guards or performing maintenance.

Installation Component List	
I	Bottom 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

NOTE: Gearmotor position on Flat Belt conveyor shown below left (Figure 2). Gearmotor position on Cleated Belt conveyor shown below right (Figure 2).

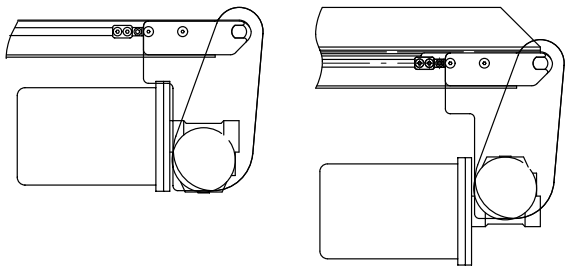


Figure 2

1. Typical components (Figure 3)

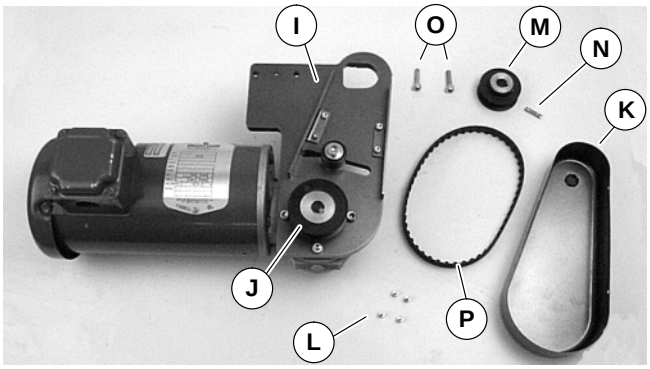


Figure 3

NOTE: Flat belt mounting package shown above (Figure 3), cleated belt mounting package similar.

NOTE: Gearmotor may be operated in positions 1, 3 or 4 (Figure 4). Operating in position 4 may require additional support. Contact factory for details.

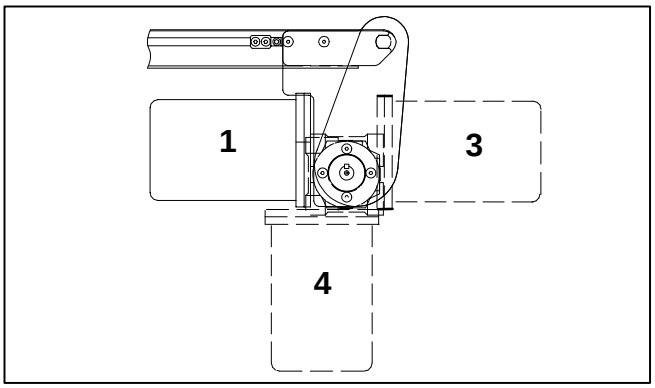


Figure 4

2. If required, change gearmotor position by removing four (4) screws (Q of Figure 5). Rotate gearmotor to other position and replace screws (Q). Tighten to 103 in-lb (12 Nm).

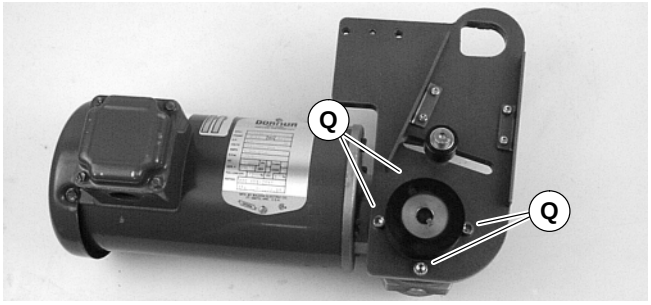


Figure 5

NOTE: 6100 conveyor shown, 2100 & 4100 similar.

3. Locate drive output shaft (R of Figure 6) and remove two (2) screws (S).

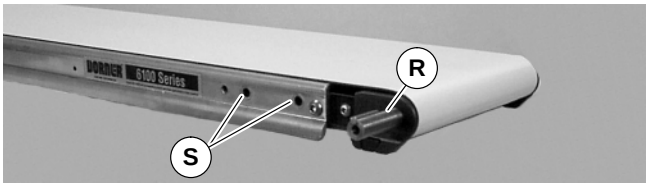


Figure 6

4. Attach mounting assembly (I of Figure 7) with screws (O). Tighten to 80 in-lb (9 Nm).

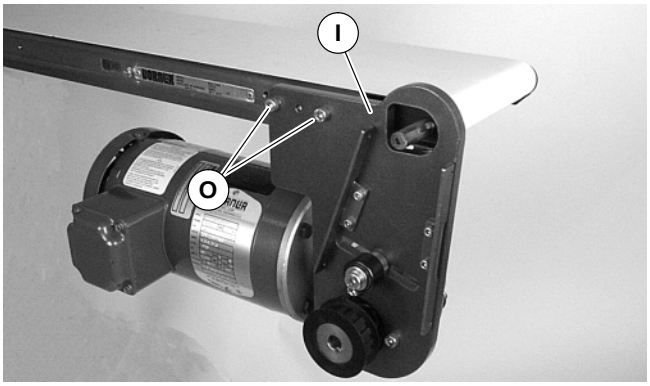


Figure 7

5. Install key (N of Figure 8).

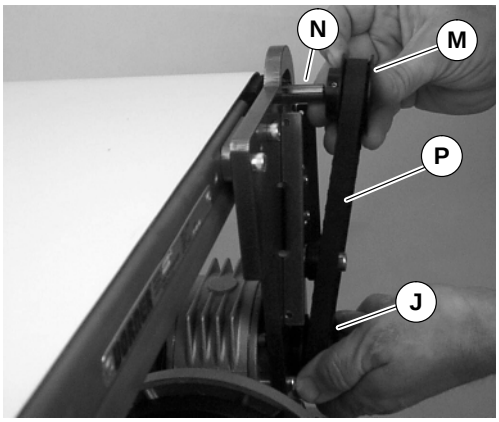


Figure 8

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 9), align driven pulley (M) with drive pulley (J). Tighten driven pulley set screws (U).

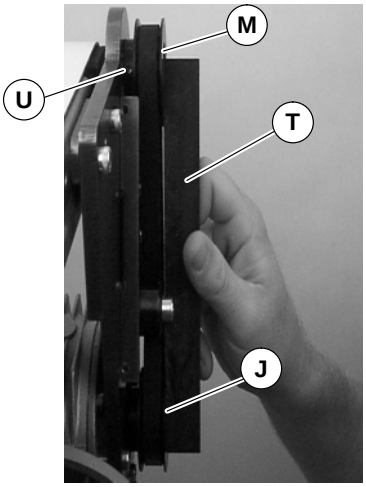


Figure 9

8. Depending on conveyor belt travel (direction 1 or 2), locate timing belt tensioner (V of Figure 10) 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).

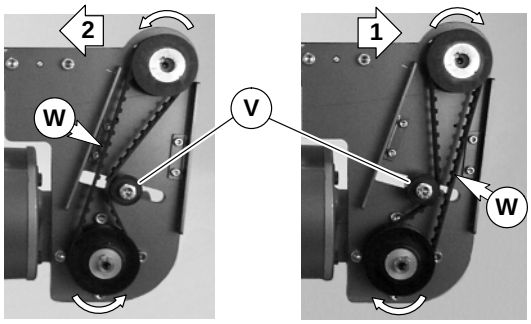


Figure 10

9. Install cover (K of Figure 11) with four (4) screws (L). Tighten to 35 in-lb (4 Nm).

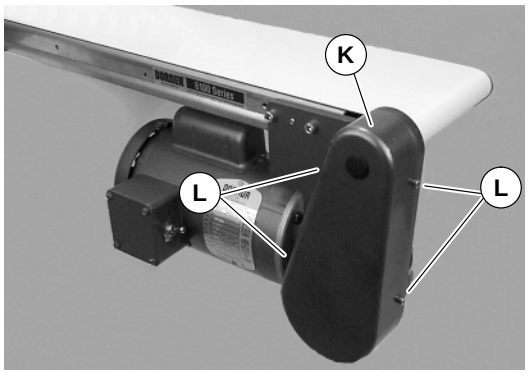


Figure 11

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

WARNING

Exposed moving parts can cause severe injury.

LOCK OUT POWER before removing guards or performing maintenance.

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

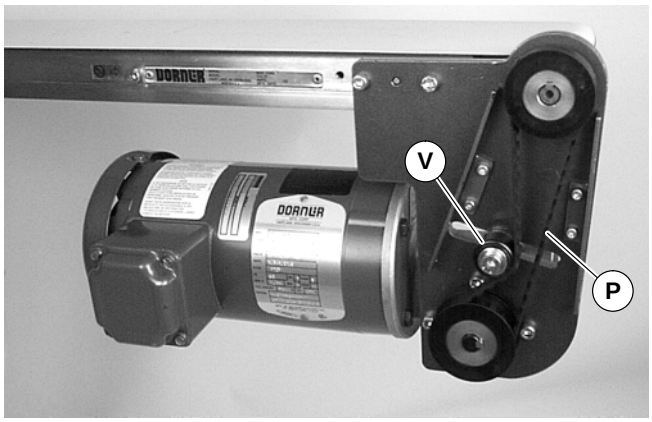


Figure 12

3. Depending on conveyor belt travel (direction 1 or 2), locate timing belt tensioner (V of Figure 10) 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 11) with four (4) screws (L). Tighten to 35 in-lb (4 Nm).

Timing Belt Replacement

WARNING

Exposed moving parts can cause severe injury.

LOCK OUT POWER before removing guards or performing maintenance.

1. Remove four (4) screws (L of Figure 11) and remove cover (K).
2. Loosen tensioner (V of Figure 12).
3. Remove timing belt (P of Figure 13).

NOTE: If timing belt does not slide over pulley flange, loosen driven pulley set screws (U of Figure 13) and remove pulley with belt (P). For re-installation, see steps 6 and 7 on page 6.

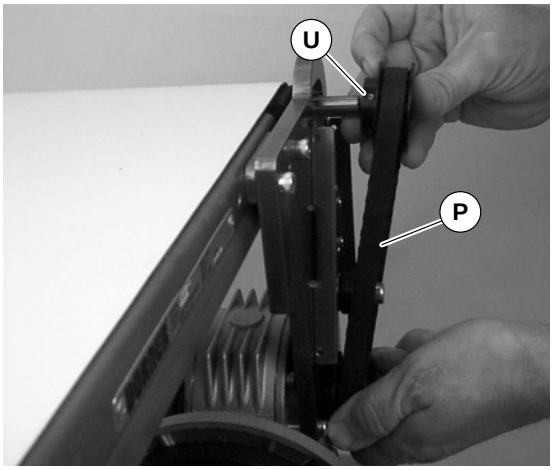


Figure 13

4. Install new timing belt.
5. Depending on conveyor belt travel (direction 1 or 2), locate timing belt tensioner (V of Figure 10) 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 11) with four (4) screws (L). Tighten to 35 in-lb (4 Nm).

Drive or Driven Pulley Replacement

WARNING

Exposed moving parts can cause severe injury.

LOCK OUT POWER before removing guards or performing maintenance.

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 14) 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

WARNING

Exposed moving parts can cause severe injury.

LOCK OUT POWER before removing guards or performing maintenance.

1. Remove four (4) screws (L of Figure 11) and remove cover (K).
2. Loosen tensioner (V of Figure 12).
3. Loosen drive pulley set screws (X of Figure 14). Remove drive pulley (J) and timing belt (P).

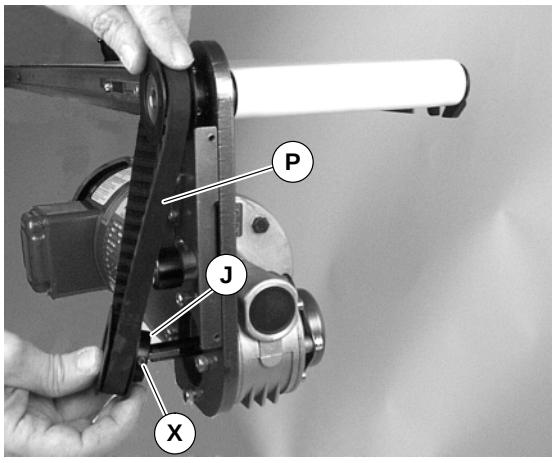


Figure 14

4. Remove four (4) gear reducer mounting screws (Q of Figure 15). Remove gearmotor.

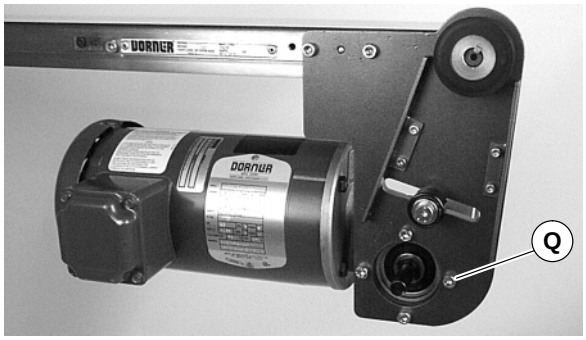


Figure 15

5. Remove four screws (Y of Figure 16). Detach motor (Z) from gear reducer (AA). Retain motor output shaft key (AB).

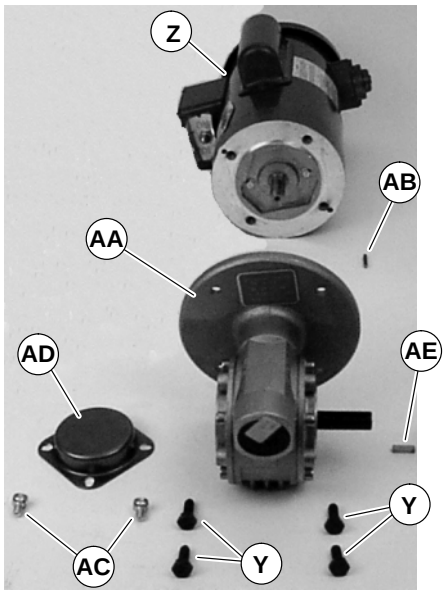


Figure 16

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

8. Loosen six (6) set screws (AF of Figure 17). Remove drive shaft (AG) and key (AH).

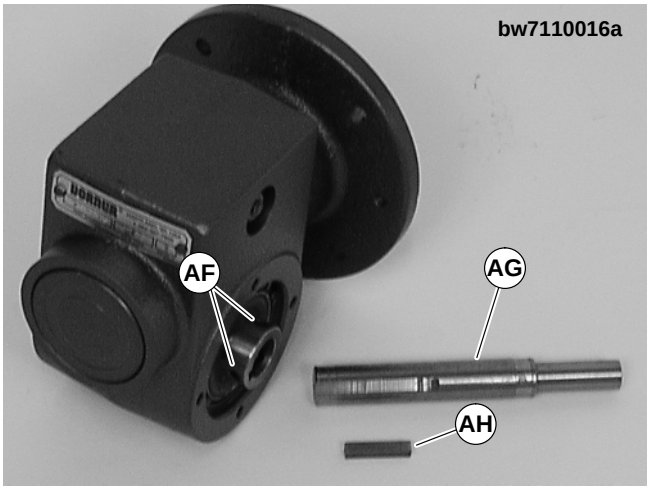


Figure 17

9. Apply grease (AI of Figure 18) to shaft.

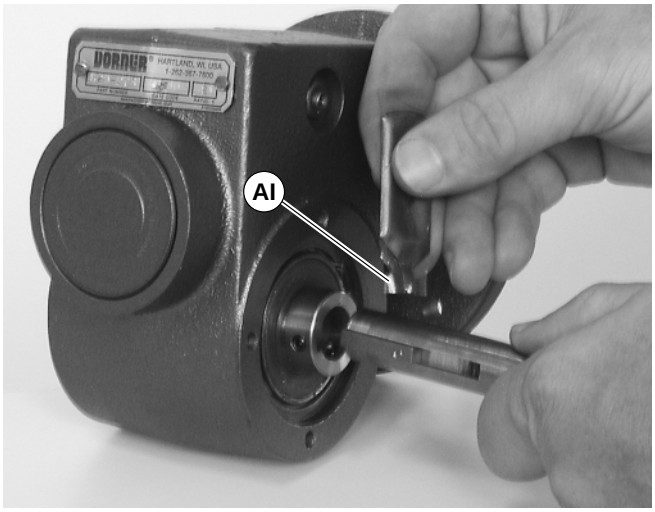


Figure 18

10. Replace the original shaft components into new gear reducer (see Figure 17). Tighten set screws (AF) to 26 in-lb (3 Nm).

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 16) in keyway, slide motor (Z) and gear reducer (AA) together. Install screws (Y) and tighten.

NOTE: Gearmotor position on Flat Belt conveyor shown below left (Figure 19). Gearmotor position on Cleated Belt conveyor shown below right (Figure 19).

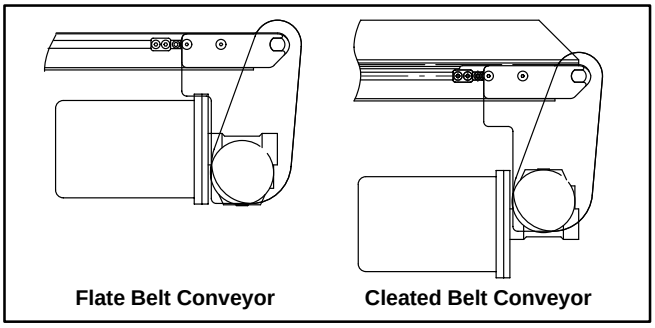


Figure 19

12. Install gearmotor to mounting bracket and tighten screws (Q of Figure 15) to 103 in-lb (12 Nm).

NOTE: Drive pulley (J of Figure 14) is removed. Wrap timing belt around drive pulley and complete step 13.

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

Motor Replacement

WARNING

Exposed moving parts can cause severe injury.

LOCK OUT POWER before removing guards or performing maintenance.

DANGER

Hazardous voltage will cause severe injury or death.

LOCKOUT POWER BEFORE before wiring.

1. For single phase motor, unplug power cord from outlet.
2. For three phase motor:

   a. Loosen terminal box screws (AJ of Figure 20) and remove cover (AK).

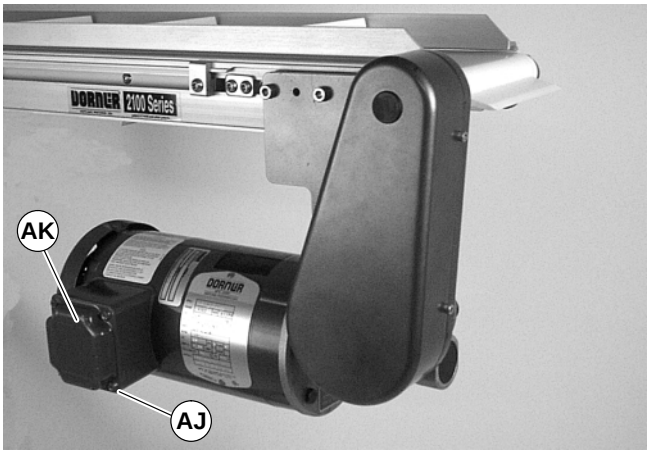


Figure 20

   b. Record wire colors on terminals 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 21).

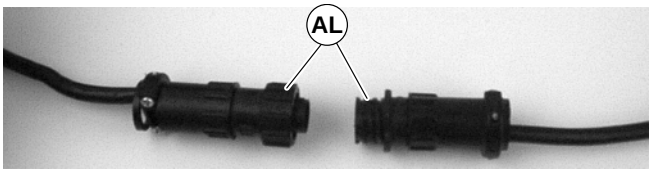


Figure 21

4. Remove four screws (Y of Figure 22). Detach motor (Z) from gear reducer (AA). Retain motor output shaft key (AB).

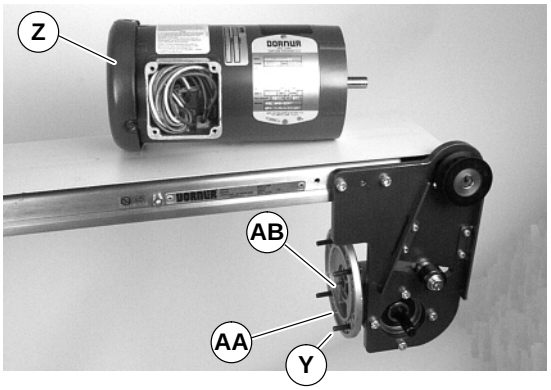


Figure 22

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 23) in keyway, slide motor and gear reducer together. Install screws (Y) and tighten.

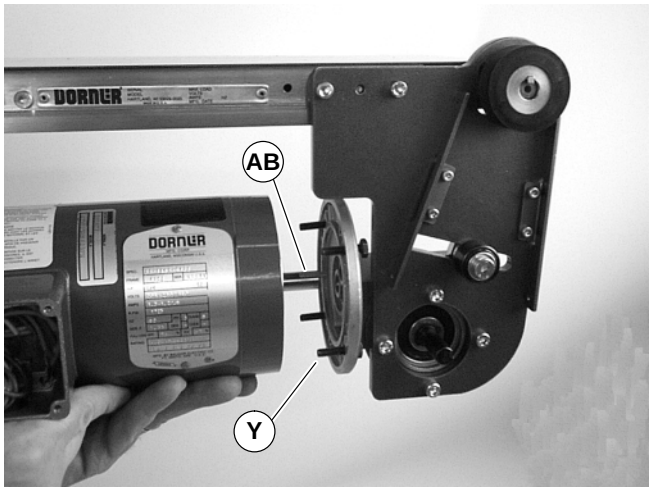


Figure 23

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
	814-112	Timing Belt, 15mm W x 495mm 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

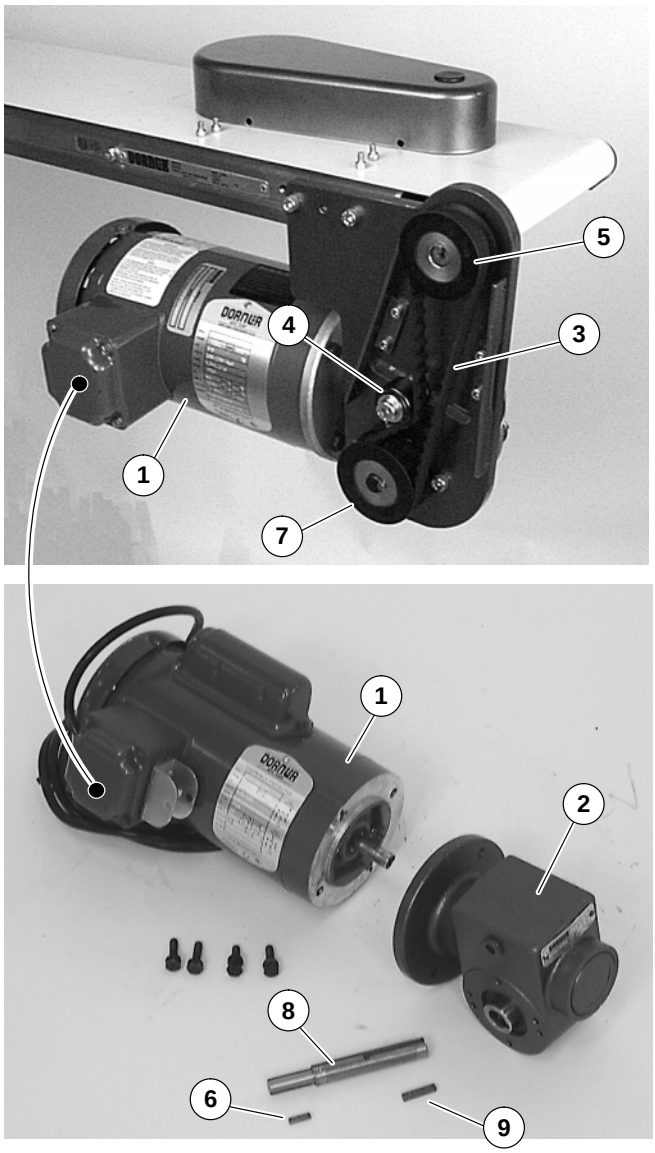


Figure 24

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.

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