

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



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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>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>		

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

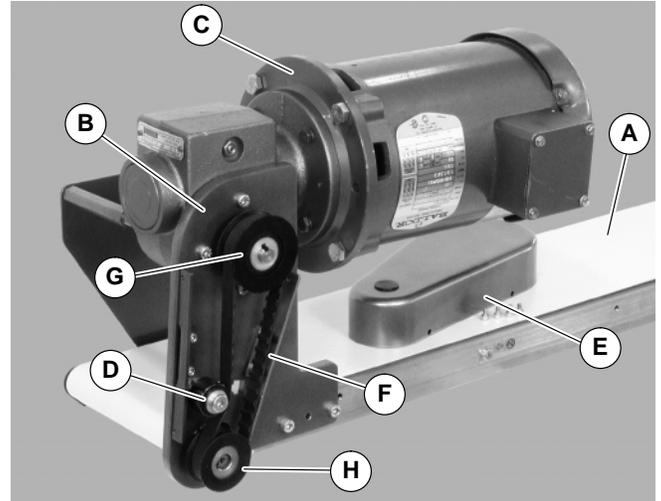


Figure 1

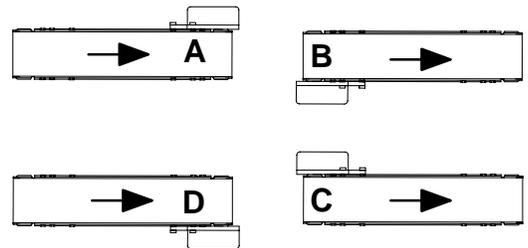
Specifications

Gearmotor Mounting Package Models:

Example:

2 M T H H W W A - 32 32

- Driven Pulley (see Tables 2, 3 & 4)
- Drive Pulley (see Tables 2, 3 & 4)
- 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 = Heavy 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	VFD Variable Speed
Output Power	0.50 hp (0.37 kw)			
Input Voltage	115 VAC	208–230 / 460 VAC	90 VDC	230 VAC
Input Frequency	60 Hz		N/A	10 – 60 Hz
Input Current	7.4 Amperes	2.1 – 2/1 Amperes	5.0 Amperes	1.6 Amperes
Motor RPM	1725		2500	1725
Gearmotor Ratios	5:1, 10:1, 20:1, 40:1, 60:1			
Frame Size	NEMA 56C			
Motor Type	Totally enclosed, Fan-cooled			

Specifications

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

Gearmotors				Belt Speed		Drive Pulley	Driven Pulley
Part Number	RPM	In-lb	N-m	Ft/min	M/min		
32M060HS4(vp)FN	29	226	25.5	5	1.5	19	32
32M060HS4(vp)FN	29	226	25.5	8	2.4	32	32
32M040HS4(vp)FN	43	247	27.9	12	3.7	32	32
32M040HS4(vp)FN	43	247	27.9	18	5.5	48	32
32M020HS4(vp)FN	86	248	27.9	25	7.6	32	32
32M020HS4(vp)FN	86	248	27.9	37	11.3	48	32
32M010HS4(vp)FN	173	156	17.6	49	14.9	32	32
32M010HS4(vp)FN	173	156	17.6	74	22.6	48	32
32M005HS4(vp)FN	345	81	9.1	99	30.3	32	32
32M005HS4(vp)FN	345	81	9.1	145	45.1	48	32
32M005HS4(vp)FN	345	81	9.1	169	51.5	48	28
32M005HS4(vp)FN	345	81	9.1	197	60	44	22
32M005HS4(vp)FN	345	81	9.1	215	65	48	22
32M005HS4(vp)FN	345	81	9.1	249	76	48	19

(vp) = voltage and phase (n) = reversing capability
 11 = 115 V, 1-phase N = no reversing switch
 23 = 208-230/460 V, 3-phase R = with reversing switch
 (115V, 1 phase only)

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

Gearmotors				Belt Speed		Drive Pulley	Driven Pulley
Part Number	RPM	In-lb	N-m	Ft/min	M/min		
32M060HSD9DEN	42	198	22.4	0.8 – 7.0	0.3 – 2.2	19	32
32M060HSD9DEN	42	198	22.4	1.4 – 12	0.4 – 3.6	32	32
32M040HSD9DEN	63	215	24.3	2.1 – 18	0.7 – 5.4	32	32
32M020HSD9DEN	125	196	22.1	4.3 – 36	1.3 – 11	32	32
32M010HSD9DEN	250	108	12.2	9.0 – 71	2.6 – 22	32	32
32M005HSD9DEN	500	56	6.3	17 – 143	5.2 – 43	32	32
32M005HSD9DEN	500	56	6.3	26 – 214	7.8 – 65	48	32
32M005HSD9DEN	500	56	6.3	29 – 245	9.0 – 75	48	28

Table 4: Belt Speeds for Heavy Load Variable Speed 90° VFD Gearmotors

Gearmotors				Belt Speed		Drive Pulley	Driven Pulley
Part Number	RPM	In-lb	N-m	Ft/min	M/min		
32M060HS423EN	29	226	25.5	0.5 – 5.0	0.1 – 1.5	19	32
32M060HS423EN	29	226	25.5	0.8 – 8.2	0.3 – 2.5	32	32
32M040HS423EN	43	247	27.9	1.2 – 12	0.4 – 3.8	32	32
32M020HS423EN	86	248	27.9	2.5 – 25	0.8 – 7.5	32	32
32M010HS423EN	173	156	17.6	4.9 – 49	1.5 – 15	32	32
32M005HS423EN	345	81	9.1	9.9 – 99	3.0 – 30	32	32
32M005HS423EN	345	81	9.1	14 – 148	4.5 – 45	48	32
32M005HS423EN	345	81	9.1	19 – 197	6.0 – 60	44	22
32M005HS423EN	345	81	9.1	24 – 249	7.6 – 76	48	19

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
Q	Support Plate Spacer
R	Support Plate
S	M6 Hex-Post Screws (2x)
T	Hex Posts (2x)
U	M6 Support Plate Screws (2x)
V	Support Tubes (2x, for 2" & 3" conveyors only)

1. Typical components (Figure 2)

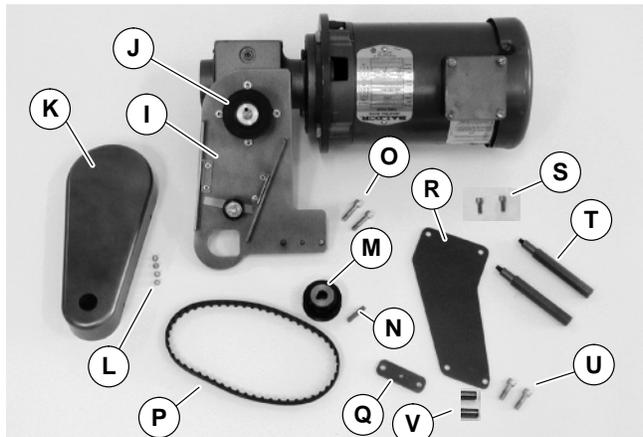


Figure 2

NOTE: Support Plate Spacer (Q of Figure 2) required for 2" & 3" wide conveyors only.

NOTE: 4100 conveyors do not include items Q through U of Figure 2.

NOTE: Gearmotor may be operated in positions 1, 2 or 3 (Figure 3).

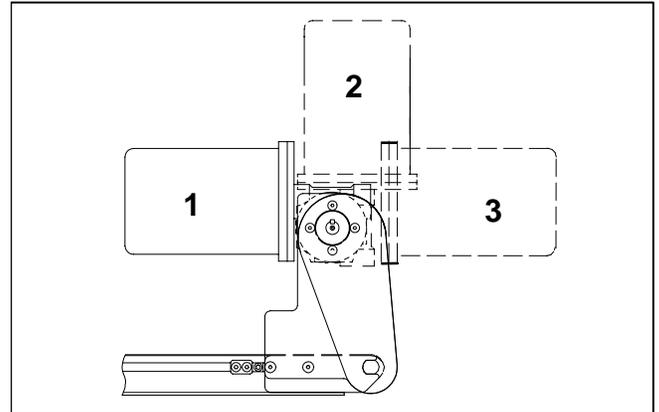


Figure 3

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

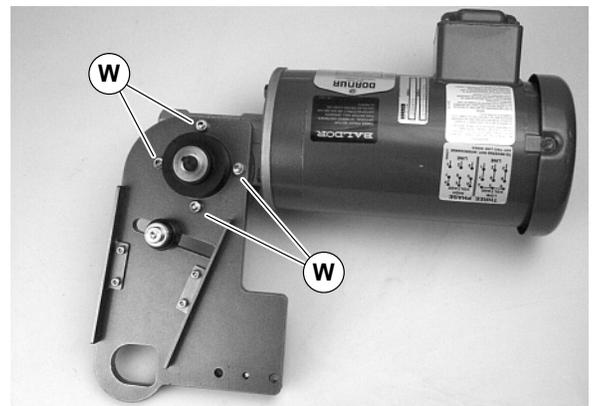


Figure 4

NOTE: 6100 conveyor shown, 2100 & 4100 similar.

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



Figure 5

Installation

- Attach mount assembly (I of Figure 6) with screws (O). Tighten to 80 in-lb (9 Nm). For 4100 conveyors, proceed to step 7.

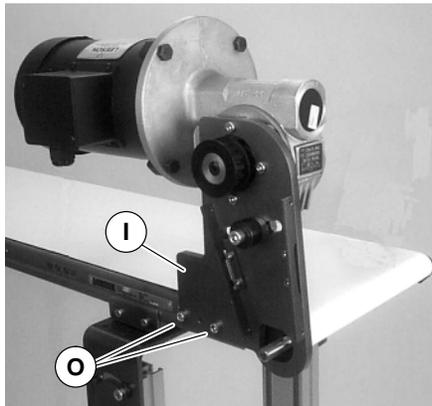


Figure 6

- On side opposite drive output shaft, remove two (2) screws (Z of Figure 7).

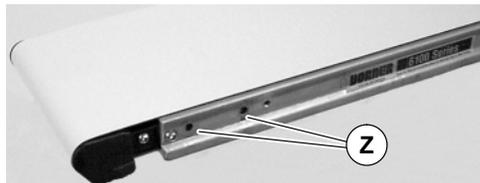


Figure 7

For 2" & 3" Wide Conveyors

- Install hex posts (T of Figure 8). Attach wide end of support plate (R) to hex posts with screws (S). Attach narrow end of support plate to conveyor, using spacers (V) and screws (U). Tighten screws to 80 in-lb (9 Nm).

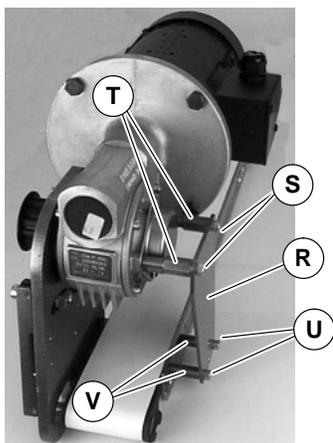


Figure 8

For 4"-and-Wider Conveyors

- Install hex posts (T of Figure 9). Attach wide end of support plate (R) to hex posts with screws (S). Attach narrow end of support plate to conveyor, using spacer (Q) and screws (U). Tighten screws to 80 in-lb (9 Nm).

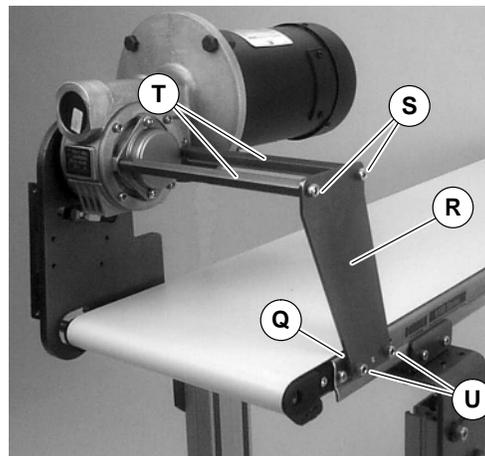


Figure 9



- Install key (N of Figure 10).

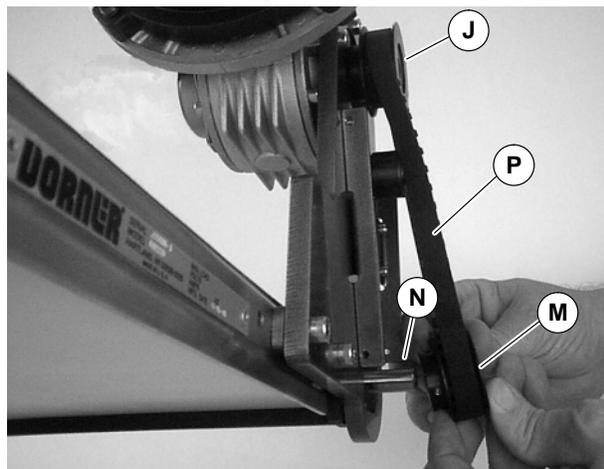


Figure 10

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

9. Using a straight edge (AA of Figure 11), align driven pulley (M) with drive pulley (J). Tighten driven pulley set screws (AB).

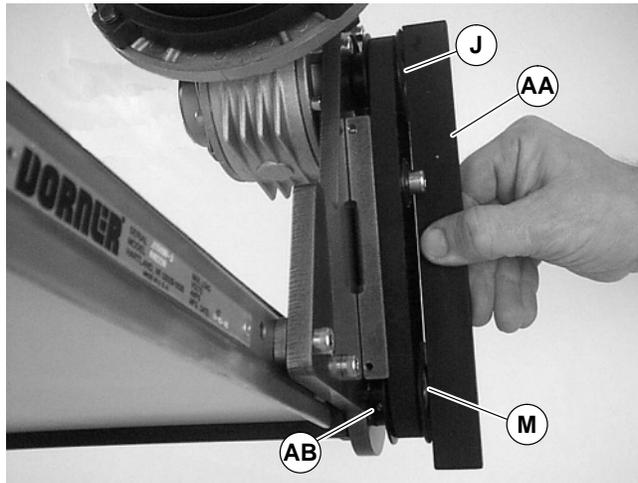


Figure 11

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

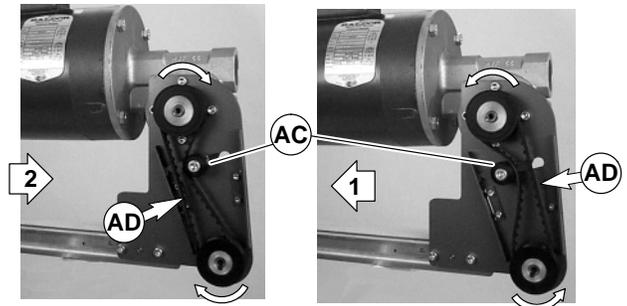


Figure 12

11. Install cover (K of Figure 13) with four (4) screws (L). Tighten to 35 in-lb (4 Nm).

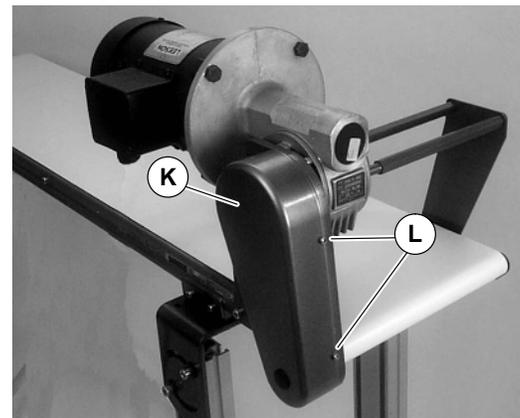


Figure 13

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

		<h2>WARNING</h2>
	<p>Exposed moving parts can cause severe injury. LOCK OUT POWER before removing guards or performing maintenance.</p>	

1. Remove four (4) screws (L of Figure 13) and remove cover (K).
2. Loosen tensioner (AC of Figure 14).

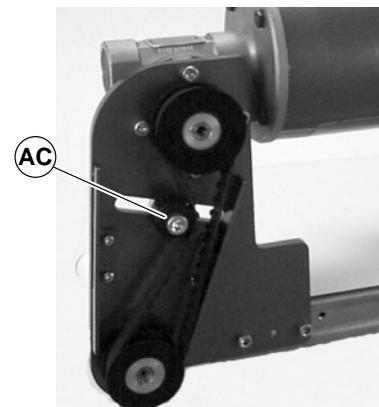
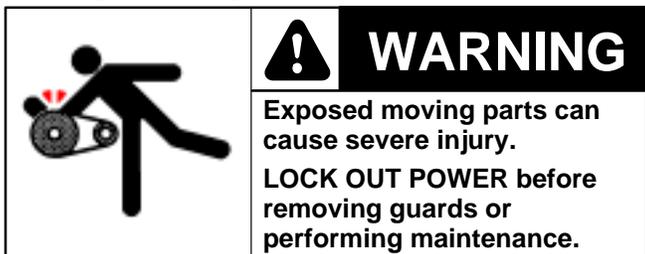


Figure 14

3. Depending on direction of conveyor belt travel (1 or 2 of Figure 12), position belt tensioner (AC) as shown. Tension belt to obtain 0.125" (3 mm) deflection for 1.0 lb (456 grams) of force at belt mid-point (AD). Tighten tensioner screw to 103 in-lb (12 Nm).
4. Install cover (K of Figure 13) with four (4) screws (L). Tighten to 35 in-lb (4 Nm).

Preventive Maintenance and Adjustment

Timing Belt Replacement



1. Remove four (4) screws (L of Figure 13) and remove cover (K).
2. Loosen tensioner (AC of Figure 14).
3. Remove timing belt (P of Figure 15).

NOTE: If timing belt does not slide over pulley flange, loosen driven pulley set screws (AB of Figure 15) and remove pulley with belt (P). For re-installation, see steps 8 and 9 beginning on page 6.

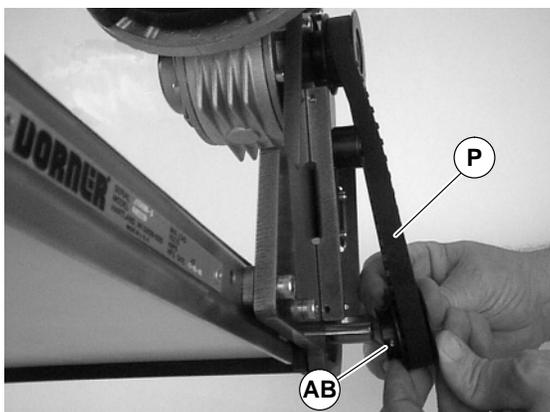


Figure 15

4. Install new timing belt.
5. Depending on direction of conveyor belt travel (1 or 2 of Figure 12), position belt tensioner (AC) as shown. Tension belt to obtain 0.125" (3 mm) deflection for 1.0 lb (456 grams) of force at belt mid-point (AD). Tighten tensioner screw to 103 in-lb (12 Nm).
6. Install cover (K of Figure 13) with four (4) screws (L). Tighten to 35 in-lb (4 Nm).

Drive or Driven Pulley Replacement

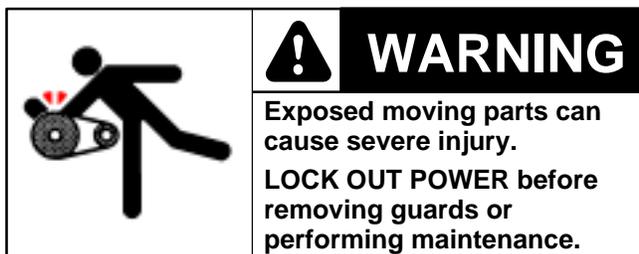


1. Complete steps 1 through 3 of "Timing Belt Replacement" section on this page.
2. Loosen set screws and remove drive or driven pulley.

NOTE: If drive pulley (J of Figure 16) is replaced, wrap timing belt around drive pulley and complete step 3.

3. Complete steps 8 through 11 of "Installation" section beginning on page 6.

Gear Reducer Replacement



1. Remove four (4) screws (L of Figure 13) and remove cover (K).
2. Loosen tensioner (AC of Figure 14).
3. Loosen drive pulley set screws (AE of Figure 16). Remove drive pulley (J) and timing belt (P).

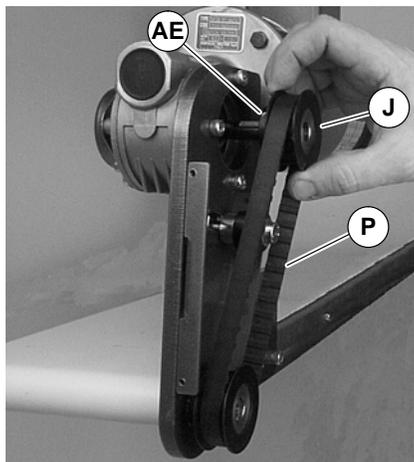


Figure 16

Preventive Maintenance and Adjustment

4. Remove screws (S & U of Figure 17) and remove support plate (R) and spacer (Q). Remove hex posts (T).

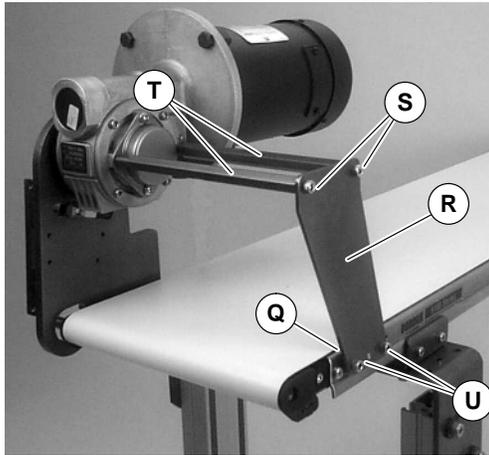


Figure 17

5. Remove four (4) gear reducer mounting screws (AF of Figure 18). Remove gearmotor.



Figure 18

6. Remove four screws (AG of Figure 19). Detach motor (AH) from gear reducer (AI). Retain motor output shaft key (AJ).

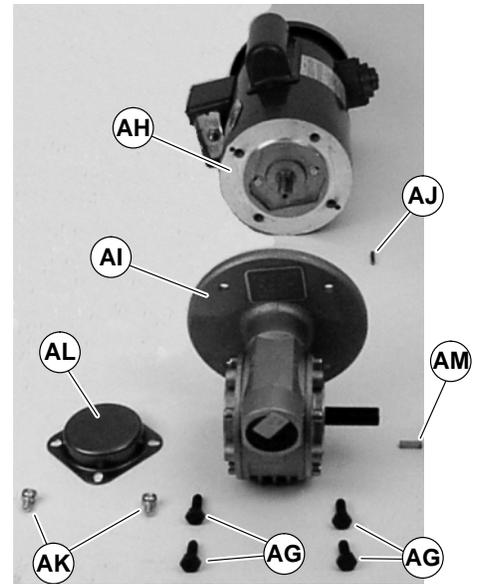


Figure 19

7. Remove two (2) screws (AK) and detach output shaft cover (AL).
8. Remove gear reducer output shaft key (AM).
9. Loosen six (6) set screws (AN of Figure 20). Remove drive shaft (AO) and key (AP).

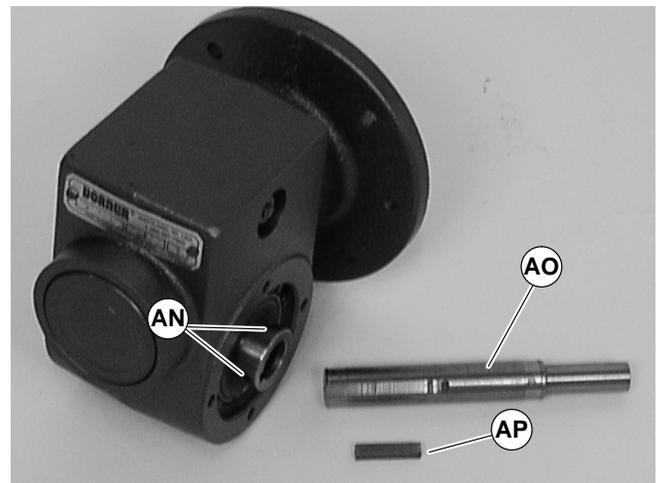


Figure 20

Preventive Maintenance and Adjustment

10. Apply grease (AQ of Figure 21) to shaft.

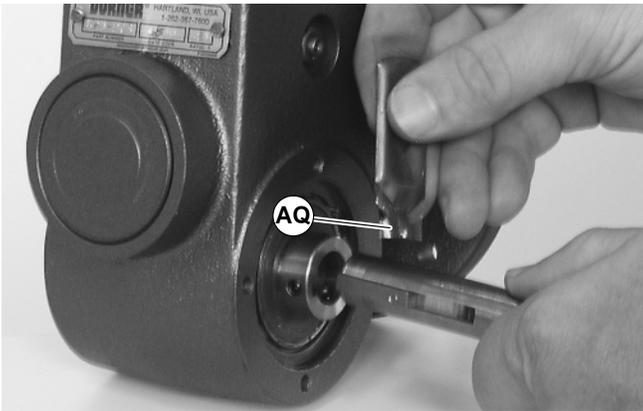


Figure 21

11. Replace the original shaft components into new gear reducer (see 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.

12. With key (AJ of Figure 19) in keyway, slide motor (AH) and gear reducer (AI) together. Install screws (AG) and tighten.

13. Reverse steps 4 and 5 on page 9.

NOTE: Drive pulley (J of Figure 16) is removed. Wrap timing belt around drive pulley and complete step 14.

14. Complete steps 8 through 11 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 wiring.

1. For single phase motor, unplug power cord from outlet.
2. For three phase and VFD variable speed motor:
 - a. Remove terminal box screws (AR of Figure 22) and remove cover (AS).



Figure 22

- 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.

Preventive Maintenance and Adjustment

3. For DC variable speed motor, unplug motor cord at disconnect (AT of Figure 23).

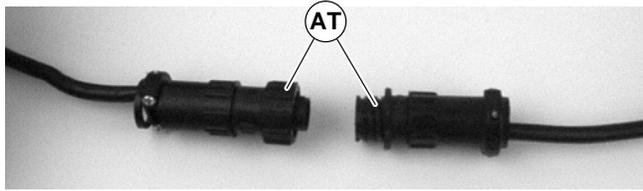


Figure 23

4. Remove four screws (AG of Figure 24). Detach motor (AH) from gear reducer (AI). Retain motor output shaft key (AJ).

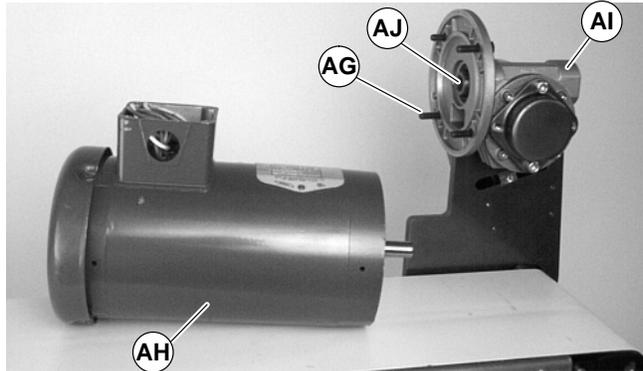


Figure 24

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 (AJ of Figure 25) in keyway, slide motor and gear reducer together. Install screws (AG) and tighten.

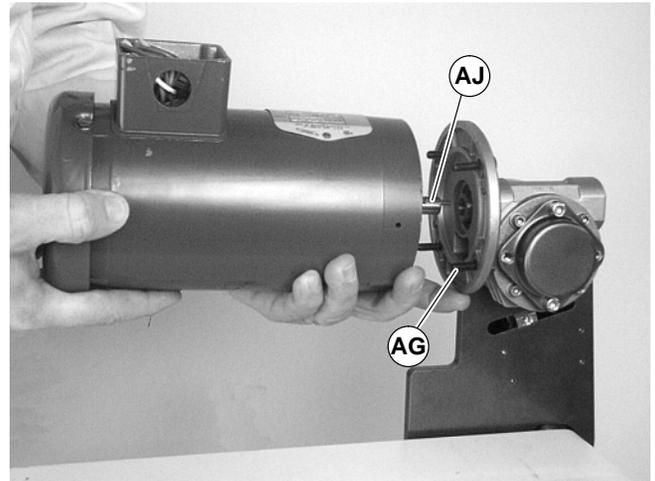


Figure 25

6. Replace wiring:

- For a single phase motor, reverse step 1 on page 10.
- For a three phase and VFD variable speed motor, reverse step 2, on page 10.
- For a DC variable speed motor, reverse step 3 on this page.

Service Parts

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	826-017	Motor, 0.5 hp (0.37 Kw) 115/230 Volts, 60 Hz, 1-Phase
	826-025	Motor, 0.5 hp (0.37 Kw) 208-230/460 Volts, 60 Hz, 3-Phase
	826-333	Motor, 0.5 hp (0.37 Kw) 90 Volts DC
	826-249	Motor, 0.5 hp (0.37 Kw) 230V, 10-60Hz, Inverter Duty, 3 Phase
2	32M005HS	Gear Reducer, 5:1, 56C
	32M010HS	Gear Reducer, 10:1, 56C
	32M020HS	Gear Reducer, 20:1, 56C
	32M040HS	Gear Reducer, 40:1, 56C
	32M060HS	Gear Reducer, 60:1, 56C
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

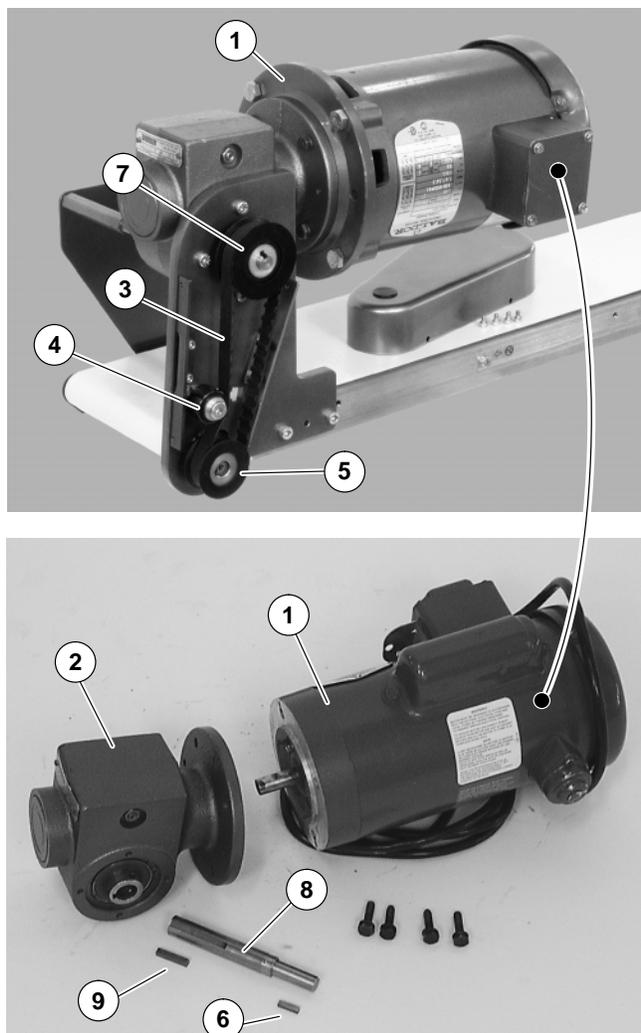


Figure 26

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

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