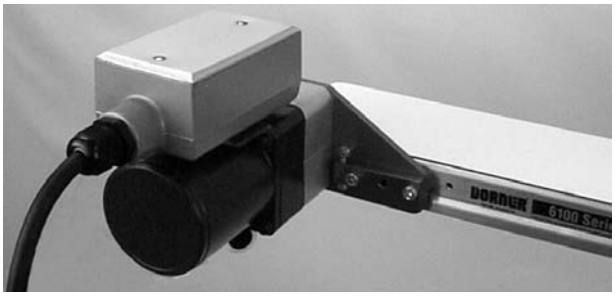
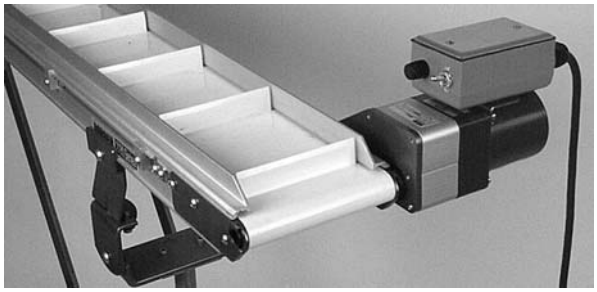
2100, 2200, 4100, 6200, MPB Series Side Mount Drive Package for Light Load 60 Hz Gearmotors

Installation, Maintenance & Parts Manual





DORNER MFG. CORP.
P.O. Box 20 • 975 Cottonwood Ave.
Hartland, WI 53029-0020 USA

INSIDE THE USA
TEL: 1-800-397-8664
FAX: 1-800-369-2440

OUTSIDE THE USA
TEL: 262-367-7600
FAX: 262-367-5827

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

851-264 Rev. I

Table of Contents

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: 5,131,529, 5,174,435, and corresponding patents and patent applications in other countries.

Dorner 4100 Series conveyors are covered by patent number 3,923,148, 5,131,529 and corresponding patents and patent applications in other countries.

Dorner 2200 Series conveyors are covered by patent number 5,174,435, 6,422,382 and corresponding patents and patent applications in other countries.

Dorner 6200 Series conveyors are covered by patent number 6,685,009, 5,174,435, 6,109,427, 6,298,981 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.

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

⚠ 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.

⚠ DANGER

Hazardous voltage will cause severe injury or death.

LOCKOUT POWER BEFORE WIRING.

⚠ WARNING

Gearmotors may be HOT.

DO NOT TOUCH Gearmotors.

⚠ WARNING

Exposed moving parts can cause severe injury..

LOCK OUT POWER before removing guards or performing maintenance.

⚠ 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 startup.

Product Description

Refer to **Figure 1** for typical conveyor components.

1	Conveyor
2	Cover
3	Belt Tensioner
4	Gearmotor
5	Drive Pulley
6	Driven Pulley
7	Mounting Bracket
8	Timing Belt

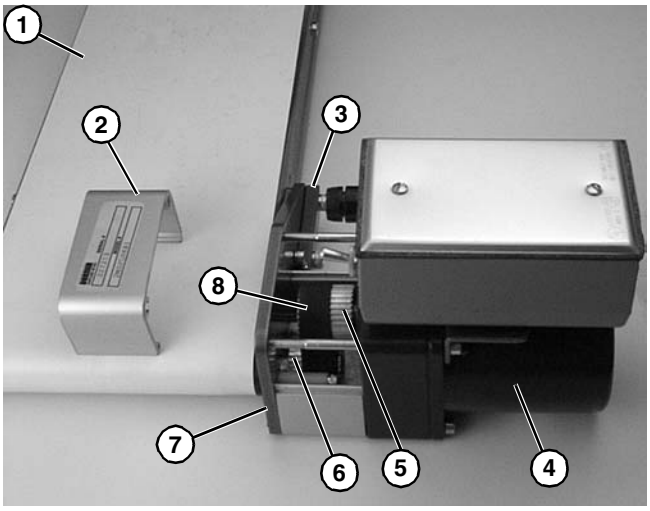
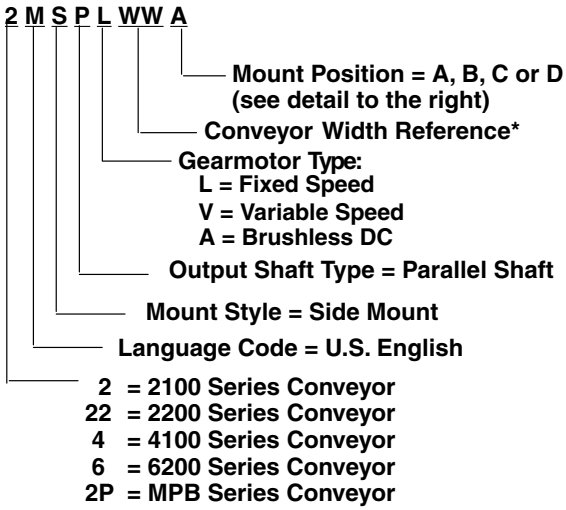
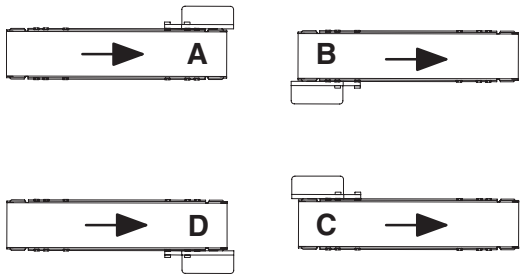


Figure 1

Gearmotor Mounting Package Models:

Example:





*** See "Ordering and Specifications" Catalog for details.**

* See Ordering and Specifications Catalog for details.

Table 1: Gearmotor Specifications

	DC Variable Speed	Single Phase	Brushless DC
Output Power	0.06 hp (0.04 kw)	0.03 hp (0.025 kw)	0.083 hp (0.06 kw)
Input Voltage	130 Volts D.C.	115 Volts A.C.	*115/230 Volts D.C.
Input Frequency	N/A	60 Hz	60 Hz
Full Load Amperes	0.48 Amperes	0.49 Amperes	4.5/1.5 Amperes
Gearmotor Ratios	18:1 and 60:1	15:1 and 36:1	15:1, 20:1 and 50:1

* Controller Inputs

Table 2: RPM/Torque for Light Load Fixed Speed Parallel Shaft 60 Hz Gearmotors

Gearmotors			
Part Number	**RPM**	**In-lb**	**N-m**
62M036PL411FN	42	36	4.1
62M015PL411FN	100	15	1.7

Table 3: RPM/Torque for Light Load Variable Speed Parallel Shaft DC Gearmotors

Gearmotors			
Part Number	**RPM**	**In-lb**	**N-m**
62M060PLD3DEN	5-42	65	7.4
62M018PLD3DEN	17-139	21	2.4

Specifications

Table 4: RPM/Torque for Light Load Brushless DC Gearmotors

Gearmotors*				
Part Number	**Gear Ratio**	**RPM**	**In-lb**	**N-m**
62M050PLBDDEN	50:1	2-60	76	8.6
62M020PLBDDEN	20:1	5-150	31	3.6
62M015PLBDDEN	15:1	7-200	23	2.7

* 130VDC

NOTE

8 – 24 in (203 – 610 mm) wide conveyors with light load drives should be limited to 96 in (2438 mm) length.

NOTE

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

Table 5: Conveyor Belt Speed Factor

Series	Ft/revolution	M/revolution
2200 / 2300	0.350	0.107
2100 / 4100 / 6100 / 6200	0.278	0.085
2200 MPB	0.590	0.180
2200 Precision Move	0.394	0.120
2200 / 2300 Modular Belt	0.394	0.120

Belt Speed Calculation:

How to Calculate Belt Speed

1. Determine gearmotor RPM from tables 2-4.
2. Determine conveyor speed factor using table 5. Based on your conveyor type, select the appropriate factor.
3. Calculate belt speed:

Example: Belt Speed = Gearmotor RPM (tables 2-4) x Conveyor Speed Factor (table 5)

2200 Series light load variable speed 60:1 gearmotor.

Gearmotor =	62M060PLD3DEN	= 5 - 42 RPM
Speed Factor =	2200 Series	= 0.350 ft/min per RPM
Minimum Belt Speed =	5 x 0.350	= 1.8 Ft/min
Maximum Belt Speed =	42 x 0.350	= 14.7 Ft/min

Required Tools

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

Mounting

⚠ WARNING

Exposed moving parts can cause severe injury.

LOCK OUT POWER before removing guards or performing maintenance.

Installation Component List:

1	Top Cover
2	Side Mount Assembly
3	Tensioner Bar
4	Driven Pulley
5	Timing Belt
6	Key
7	M6 Socket Head Screws (2x)

4. Typical components **(Figure 2)**

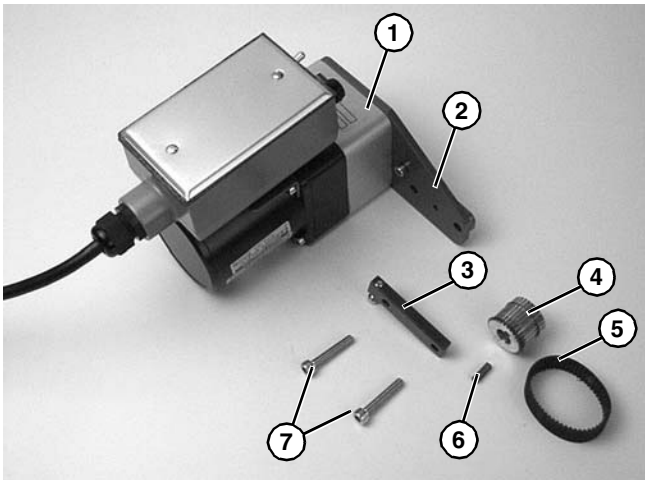


Figure 2

NOTE

6100 conveyor shown, 2100 & 4100 similar.

5. Locate drive output shaft and remove two (2) screws **(Figure 3, item 1)**.

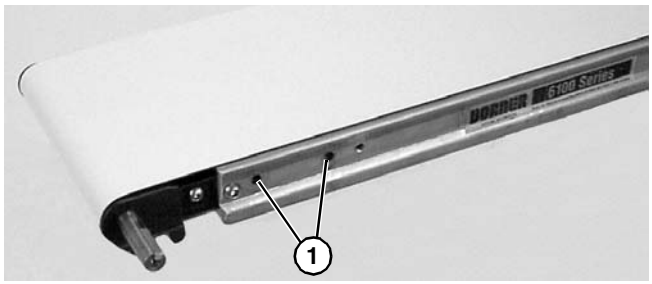


Figure 3

6. Loosen four (4) screws **(Figure 4, item 1)**. Detach mounting bracket **(Figure 4, item 2)**.

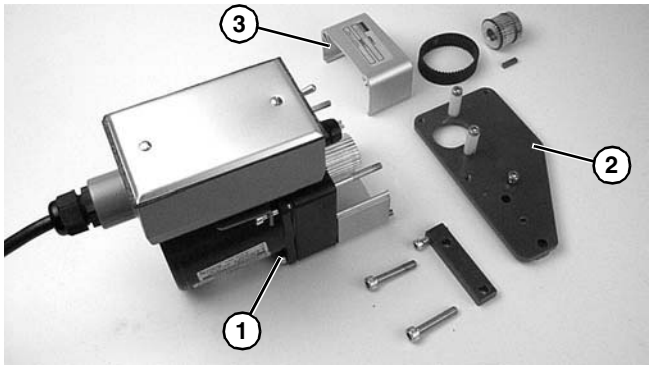


Figure 4

7. Remove two (2) top screws **(Figure 4, item 1)** and remove top cover **(Figure 4, item 3)**.

8. Attach mounting bracket **(Figure 5, item 1)** and tensioner bar **(Figure 5, item 2)** with screws **(Figure 5, item 3)**. Hand-tighten screws **(Figure 5, item 3)**.

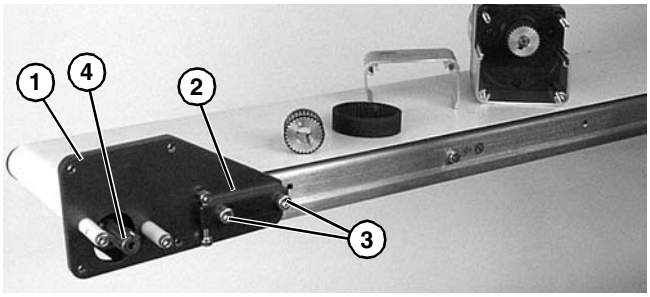


Figure 5

⚠ WARNING

Drive shaft keyway may be sharp.
HANDLE WITH CARE.

9. Install key **(Figure 5, item 4)**.
10. Install driven pulley **(Figure 6, item 1)**. Tighten two (2) set screws to 33 in-lb (3.7 Nm).

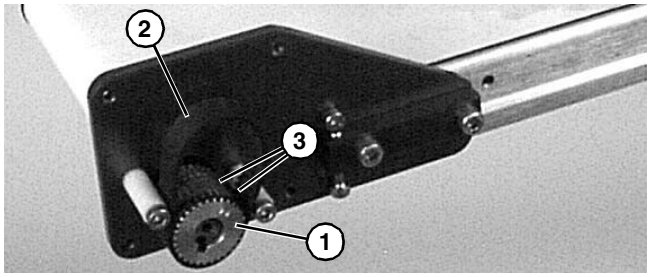


Figure 6

11. Place timing belt **(Figure 6, item 2)** over driven pulley **(Figure 6, item 1)** and between belt flanges **(Figure 6, item 3)**.
12. Insert gearmotor drive pulley into timing belt. Mount assembly with two (2) bottom screws **(Figure 7, item 1)**. Tighten to 45 in-lb (5 Nm).

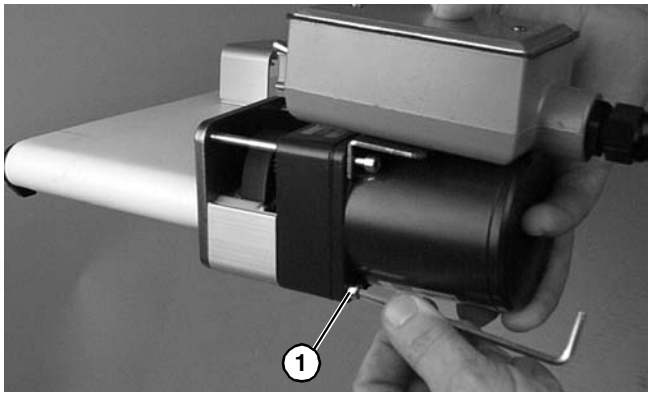


Figure 7

13. Insert top cover **(Figure 8, item 1)** into bottom cover. Attach top cover with two (2) top screws **(Figure 8, item 2)**. Tighten to 45 in-lb (5 Nm).

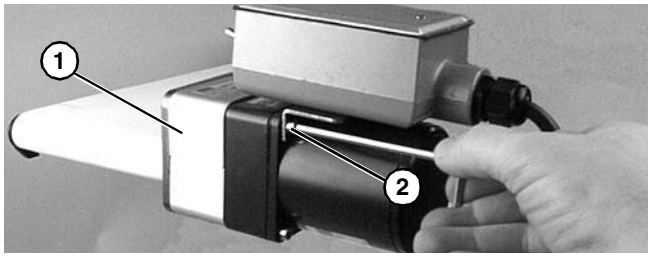


Figure 8

14. Tighten timing belt tensioner screw **(Figure 9, item 1)** to 15 in-lb (1.7 Nm).

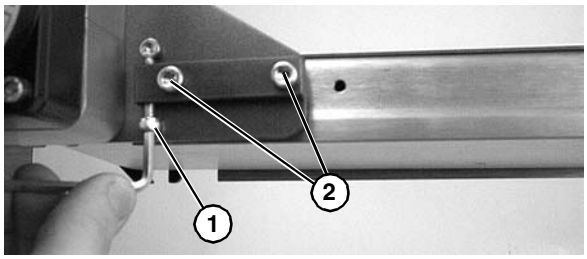


Figure 9

15. Tighten screws **(Figure 9, item 2)** to 80 in-lb (9 Nm).

Required Tools

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

Timing Belt Tensioning

⚠ WARNING

Exposed moving parts can cause severe injury.

LOCK OUT POWER before removing guards or performing maintenance.

1. Loosen two (2) screws **(Figure 10, item 1)**. Tighten timing belt tensioner screw **(Figure 10, item 2)** to 15 in-lb (1.7 Nm).

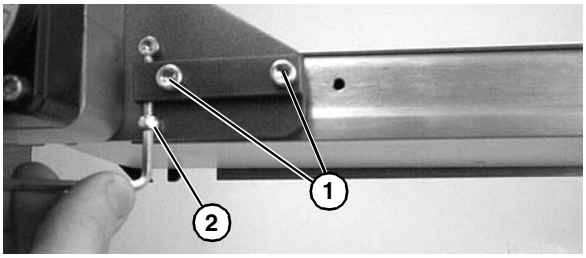


Figure 10

2. Tighten screws **(Figure 10, item 1)** to 80 in-lb (9 Nm).

Timing Belt Replacement

⚠ WARNING

Exposed moving parts can cause severe injury.

LOCK OUT POWER before removing guards or performing maintenance.

1. Loosen two (2) screws **(Figure 10, item 1)**.
2. Loosen timing belt tensioner screw **(Figure 10, item 2)**.
3. Remove four (4) screws **(Figure 11, item 1)**. Remove gearmotor **(Figure 11, item 2)** and top cover **(Figure 11, item 3)**.

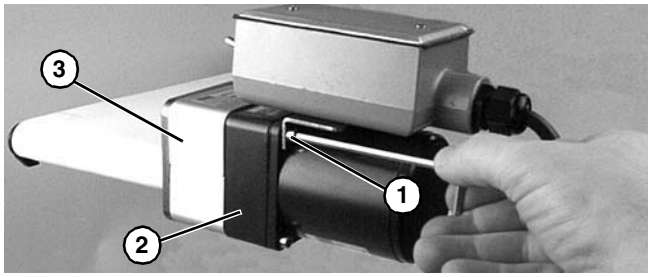


Figure 11

4. Remove old timing belt **(Figure 12, item 1)**.

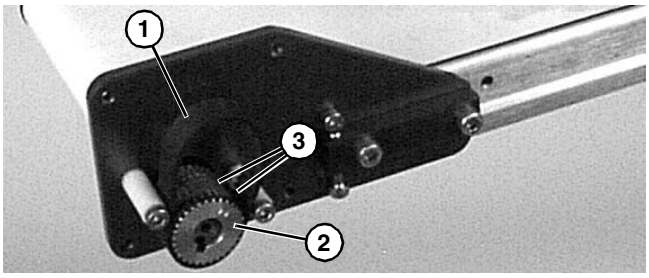


Figure 12

5. Place new timing belt **(Figure 12, item 1)** over driven pulley **(Figure 12, item 2)** and between belt flanges **(Figure 12, item 3)**.
6. Insert gearmotor drive pulley into timing belt. Mount assembly with two (2) bottom screws **(Figure 13, item 1)**. Tighten to 45 in-lb (5 Nm).

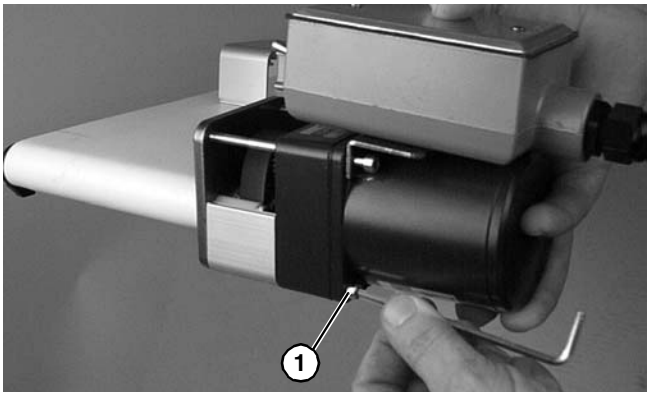


Figure 13

7. Insert top cover **(Figure 11, item 2)** into bottom cover. Mount assembly with two (2) top screws **(Figure 11, item 1)**. Tighten to 45 in-lb (5 Nm).
8. Tighten timing belt tensioner screw **(Figure 10, item 2)** to 15 in-lb (1.7 Nm)
9. Tighten screws **(Figure 10, item 1)** to 80 in-lb (9 Nm).

Preventive Maintenance and Adjustment

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 4 of "Timing Belt Replacement" section on page 9.
2. Loosen set screws **(Figure 14, item 1)** and remove driven pulley **(Figure 14, item 2)** or drive pulley **(Figure 14, item 3)**.

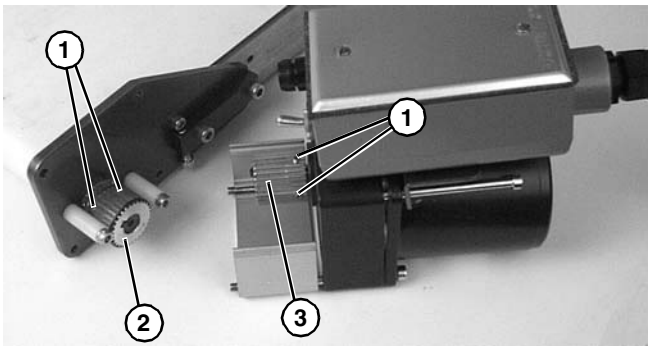


Figure 14

3. Replace drive or driven pulley. Tighten set screws to 33 in-lb (3.7 Nm).
4. Complete steps 5 through 9 of "Timing Belt Replacement" section beginning on page 9.

Gearmotor 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.

Single Phase Motor

1. Unplug power cord from outlet.

DC Variable Speed Motor

1. For DC variable speed motor, unplug cord at disconnect **(Figure 15, item 1)**.

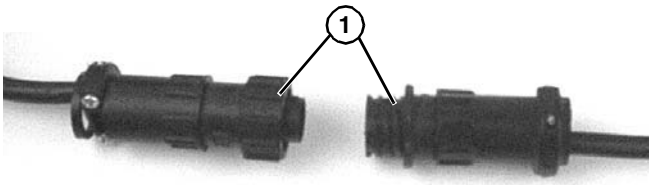


Figure 15

Brushless DC Motor

1. Twist covers **(Figure 16, item 1)** apart.

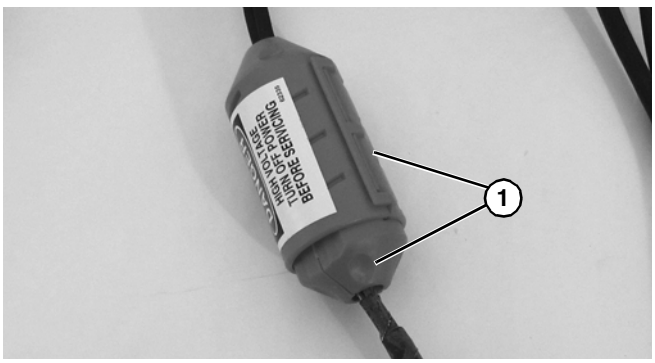


Figure 16

2. Remove outer cord cover **(Figure 17, item 1)** from inner cord cover **(Figure 17, item 2)**.

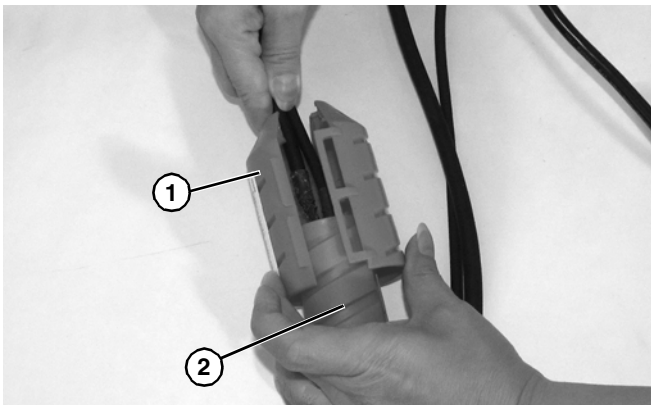


Figure 17

3. Open inner cord cover **(Figure 18, item 1)**.

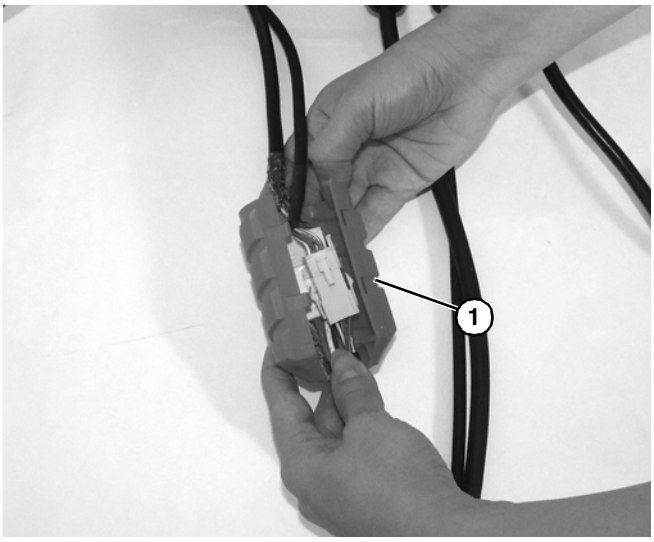


Figure 18

4. Unplug motor cord connectors **(Figure 19, item 1)** and signal cable connectors **(Figure 19, item 2)**.

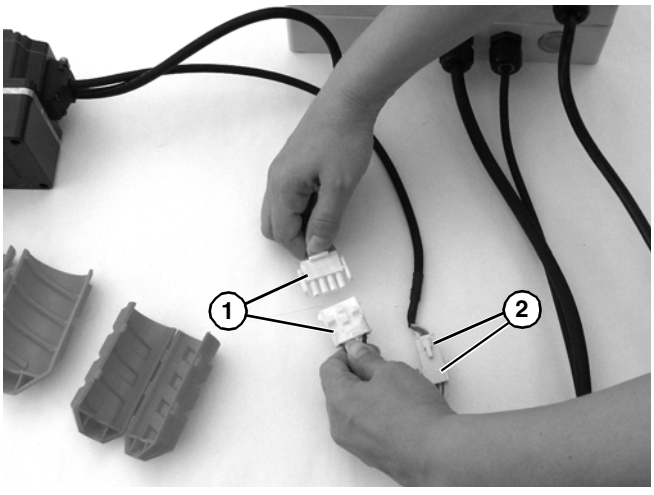


Figure 19

All Models

1. Remove four (4) screws **(Figure 20, item 1)**. Remove gearmotor **(Figure 20, item 2)** and top cover **(Figure 20, item 3)**.

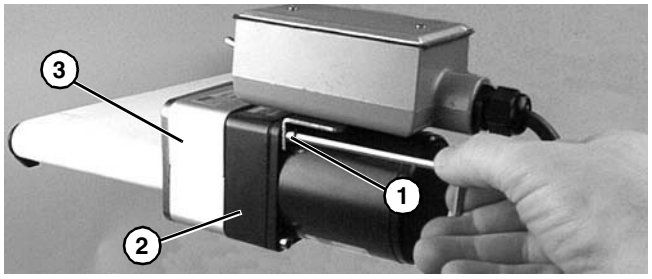


Figure 20

2. Loosen set screws **(Figure 21, item 1)** and remove drive pulley **(Figure 21, item 2)**.

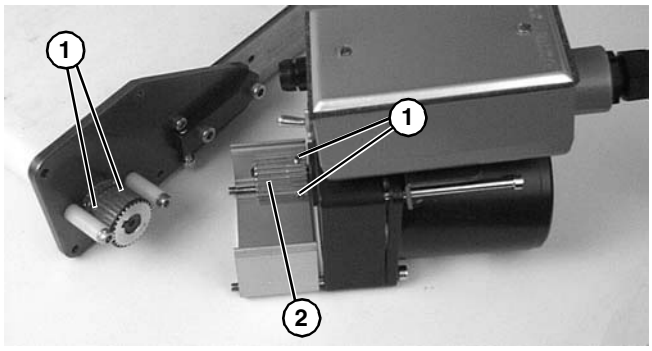


Figure 21

3. Replace drive pulley **(Figure 21, item 2)** on new gearmotor and tighten set screws **(Figure 21, item 1)** to 33 in-lb (3.7 Nm).
4. Complete steps 5 through 9 of "Timing Belt Replacement" section beginning on page 9.
5. Replace wiring:

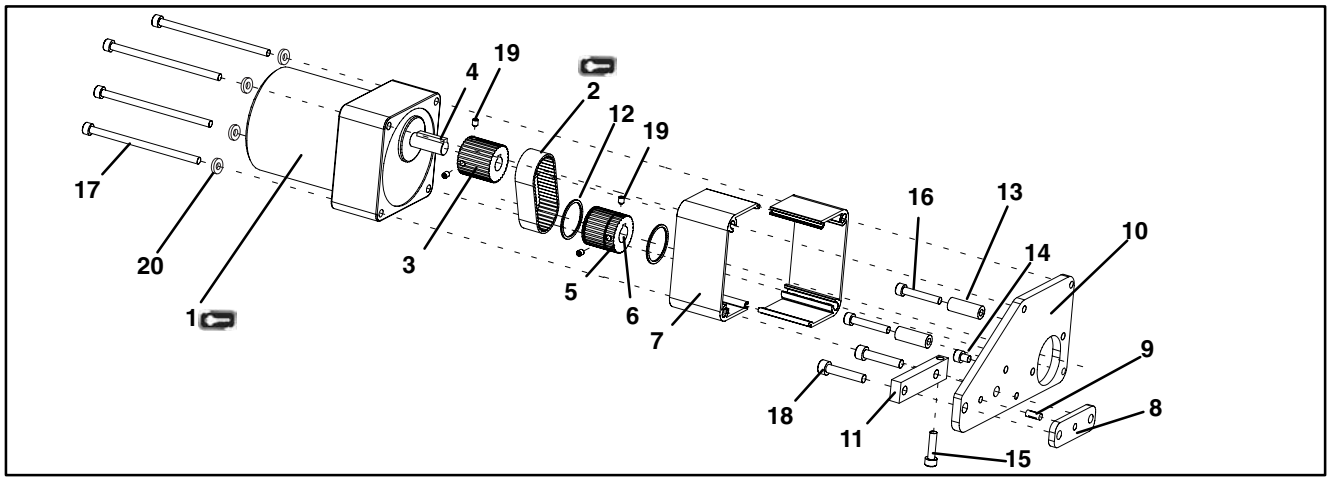
- For a single phase motor, reverse step 1 in "Single Phase Motor" on page 10.
- For a DC variable speed motor, reverse step 1 on "DC Variable Speed Motor" on page 10.
- For a brushless motor, reverse steps 1-2 on "Brushless DC Motor" on page 10.

Service Parts

2100, 2200, 4100, 6200 and MPB Series Side Mount Drive Package

NOTE

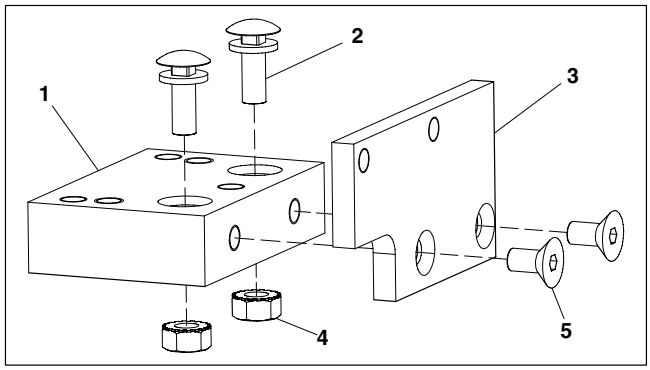
For replacement parts other than those shown in this section, contact an authorized Dorner Service Center or the factory. Key Service Parts and Kits are identified by the Performance Parts Kits logo. Dorner recommends keeping these parts on hand.

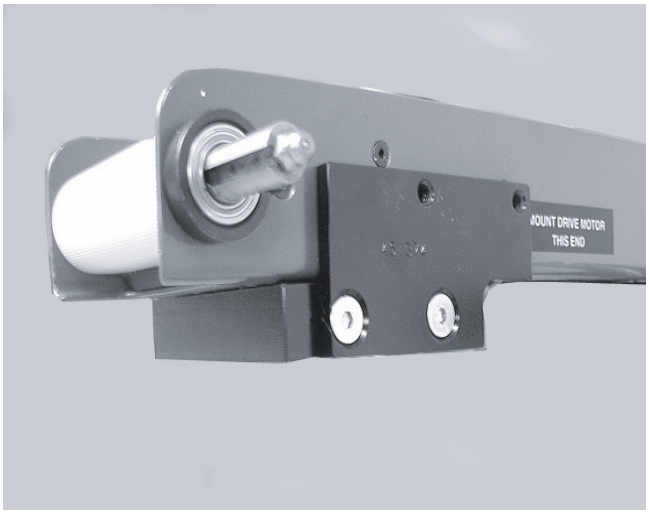


Item	Part No.	Part Description
1	62M036PL411FN	Gearmotor, 0.03 hp, 115 Volts, 42 RPM, 60 Hz, 1-Phase, 36:1
	62M015PL411FN	Gearmotor, 0.03 hp, 115 Volts, 100 RPM, 60 Hz, 1-Phase, 15:1
	62M060PLD3DEN	Gearmotor, 0.06 hp, 130 Volts, 42 RPM, DC, 60:1
	62M018PLD3DEN	Gearmotor, 0.06 hp, 130 Volts, 139 RPM, DC, 18:1
	62M036PL423FN	Gearmotor, 0.03 hp, 230 Volts, 42 RPM, 60 Hz, 3-Phase, 36:1
	62M015PL423FN	Gearmotor, 0.03 hp, 230 Volts, 100 RPM, 60 Hz, 3-Phase, 15:1
	62M036PL423EN	Gearmotor, 0.03 hp, 230 Volts, 7-42 RPM, 60 Hz, 3-Phase, 36:1
	62M015PL423EN	Gearmotor, 0.03 hp, 230 Volts, 17-100 RPM, 60 Hz, 3-Phase, 15:1
	62M050PLBDDEN	Gearmotor, 0.083 hp, 60 RPM, Brushless DC, 50:1
	62M020PLBDDEN	Gearmotor, 0.083 hp, 150 RPM, Brushless DC, 20:1
	62M015PLBDDEN	Gearmotor, 0.083 hp, 200 RPM, Brushless DC, 15:1
2	814-088	Timing Belt, 3mm x 15mm (159mm long)
	814-089	Timing Belt, 3mm x 15mm (179mm long)
3	450078M	Drive Pulley, 1/2" Bore
	450076M	Drive Pulley, 10mm Bore
4	912-052	Key, 1/8" x 5/8", 1/2" Bore
	980422M	Key, 4mm x 22mm, 10mm Bore
5	450077M	Driven Pulley, 12 mm Bore
6	980422M	Driven Pulley Key, 4 mm x 22 mm

Item	Part No.	Part Description
7	450087	Guard, Half, Light Duty Side Drive
8	450027M	Drive Spacer, Metric
	450377M	Drive Spacer (4100 Only)
9	807-952	Groove Pin
10	450084M	Plate, Side Drice LD
	450083M	Plate, Side Drice LD (6200 Only)
11	450088M	Tensioning Bar, Side Drive
12	807-954	Spiral Retaining Ring
13	807-973	Nylon Spacer
14	920506M	Socket Head Screw M5x6mm
15	920525M	Socket Head Screw M5x25mm
16	920530M	Socket Head Screw M5x30mm
17	920500M	Socket Head Screw M5x100mm
	920590M	Socket Head Screw M5x90mm
	920460M	Socket Head Screw M4x60mm
18	920635M	Socket Head Screw M6x25mm
19	970405M	Cup Set Screw M4x5mm
20	807-1172	Washer

4100 Series Adapter Package





Adapter package attached to a 4100 series conveyor.

Item	Part Number	Description
1	609486	Mounting Block 1” (25mm)
	609487	Mounting Block 2” (51mm)
	609488	Mounting Block 3” (76mm)
	609479	Mounting Block 4” (102mm)
	609480	Mounting Block 5” (127mm)
	609481	Mounting Block 6” (152mm)
	609482	Mounting Block 7” (178mm)
	609483	Mounting Block 8” (203mm)
	609484	Mounting Block 10” (254mm)
	609485	Mounting Block 12” (305mm)
2	613602P	Bolt & Flat Washer Assembly
3	450374	Drive Adapter Plate
4	910-126	Hex Nut with Lock Washer
5	930612M	Flat Head Screw, M6 x 12mm

Return Policy

Returns must have prior written factory authorization or they will not be accepted. Items that are returned to Dorner without authorization will not be credited nor returned to the original sender. When calling for authorization, please have the following information ready for the Dorner factory representative or your local distributor:

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

A representative will discuss action to be taken on the returned items and provide a Returned Goods Authorization (RMA) number for reference. RMA will automatically close 30 days after being issued. To get credit, items must be new and undamaged. There will be a return charge on all items returned for credit, where Dorner was not at fault. It is the customer's responsibility to prevent damage during return shipping. Damaged or modified items will not be accepted. The customer is responsible for return freight.

Conveyors and conveyor accessories

Standard catalog conveyors	30%
MPB, 7200, 7300 Series, cleated and specialty belt	50%
AquaGard & AquaPruf Series conveyors	non-returnable items
Engineered to order products	case by case
Drives and accessories	30%
Sanitary stand supports	non-returnable items

Parts

Standard stock parts	30%
Plastic chain, cleated and specialty belts	non-returnable items

Returns will not be accepted after 60 days from original invoice date. The return charge covers inspection, cleaning, disassembly, disposal and reissuing of components to inventory. If a replacement is needed prior to evaluation of returned item, a purchase order must be issued. Credit (if any) is issued only after return and evaluation is complete.

Dorner has representatives throughout the world. Contact Dorner for the name of your local representative. Our Customer Service Team will gladly help with your questions on Dorner products.

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

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

DORNER MFG. CORP.
975 Cottonwood Ave., PO Box 20
Hartland, WI 53029-0020 USA
TEL 1-800-397-8664 (USA)
FAX 1-800-369-2440 (USA)
Internet: www.dorner.com

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