



# 2200 and 2300 Series Side Mount Drive Package for Heavy Load & Brushless DC 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:  
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## 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's Limited Warranty applies.

Dorner 2200 & 2300 series conveyors are covered by Patent Numbers 5,174,435, 6,298,981, 6,422,382 and corresponding patents and patent applications in other countries.

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.

# 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

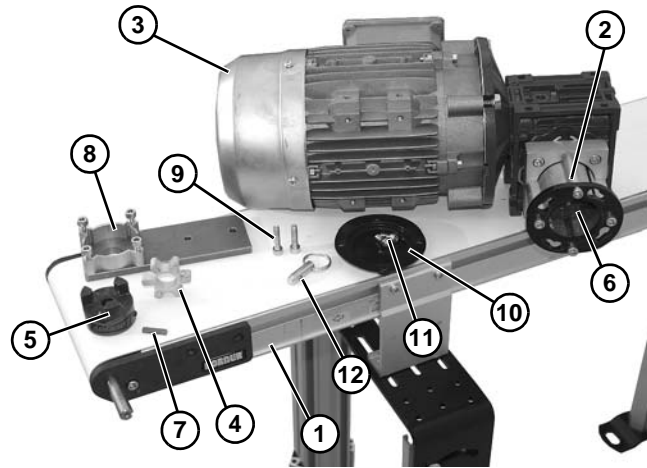


Dorner cannot control the physical installation and application of conveyors. Taking protective measures is the responsibility of the user.  
When conveyors are used in conjunction with other equipment or as part of a multiple conveyor system, **CHECK FOR POTENTIAL PINCH POINTS** and other mechanical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

# Product Description

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

- |    |  |
|----|--|
| 1  | Conveyor                                   |
| 2  | Gearmotor Mounting Package                 |
| 3  | Gearmotor Assembly                         |
| 4  | Spider Web Bushing                         |
| 5  | Shaft Coupling Half, Three Jaw             |
| 6  | Coupling Half, Three Jaw                   |
| 7  | Key, Coupling                              |
| 8  | Drive Plate and Short Drive Guard Assembly |
| 9  | Drive Plate Screws                         |
| 10 | Cover                                      |
| 11 | Screws, Cover                              |
| 12 | Pin, Quick Release                         |



**Figure 1**

# Specifications

## Gearmotor Mounting Package Models:

Example:

22 M S E H A

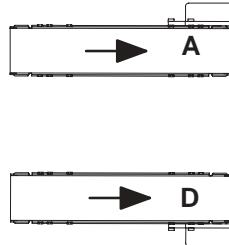
Mount Position = A or D  
(see detail to the right)

Gearmotor Type: H = Heavy Load  
B = Brushless DC

Output Shaft Type: E = 90° Industrial  
P = Parallel Shaft (for Brushless  
DC Motors Only)

Mount Style = Side Mount

Language Code: M = U.S. English  
U = CE English



## Table 1: 60 Hz Gearmotor Specifications

	Heavy Load Gearmotor				Brushless DC
	Single- Phase	Three Phase	VFD Variable Speed	DC Variable Speed	
Output Power	0.5 hp (0.37 kw)				0.25 hp (0.19 kw)
Input Voltage	115VAC	208 – 230/460 VAC	230 VAC	90VDC	*115/230 Volts D.C.
Input Frequency	60Hz		10 – 60Hz	N/A	60 Hz
Input Current (Amperes)	7.4	2.1 – 2/1	1.6	5.0	8.8 / 3.4 Amperes
Gearmotor Ratios	5:1, 10:1, 20:1, 40:1, 60:1				10:1, 20:1, 50:1
Frame Size	NEMA 56C				
Motor Type	Totally enclosed, Fan cooled				Totally enclosed, Non-ventilated

\* Controller Inputs

2200 and 2300 Series Side Mount Drive Package for Heavy Load & Brushless DC Gearmotors

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

Part Number	Heavy Load Gearmotors			Belt Speed	
	RPM	In-lb	N-m	Ft/min	M/min
32M060ES4(vp)F(n)	29	319	36	10	3.0
32M040ES4(vp)F(n)	43	378	42.7	15	4.6
32M020ES4(vp)F(n)	86	285	32.2	30	9.1
32M010ES4(vp)F(n)	173	153	17.3	61	18.6
32M005ES4(vp)F(n)	345	80	9	121	36.9

(vp) = voltage and phase

(n) = Reversing Capability

11 = 115 V, 1-phase

23 = 208 – 230/460 V, 3-phase

**Table 3: Belt Speeds for Variable Speed 90° 60 Hz Gearmotors**

Part Number	Heavy Load Gearmotors			Belt Speed	
	RPM	In-lb	N-m	Ft/min	M/min
32M060HSD9DEN	42	198	22.4	1.8 - 15.0	0.5 - 4.5
32M040HSD9DEN	63	215	24.3	2.6 - 22.0	0.8 - 6.7
32M020HSD9DEN	125	196	22.1	5.3 - 44.0	1.6 - 13.0
32M010HSD9DEN	250	108	12.2	10.0 - 88.0	3.2 - 27.0
32M005HSD9DEN	500	56	6.3	20.0 - 172	6.4 - 54.0

**Table 4: Belt Speeds for Fixed Speed 90° 60 Hz VFD Gearmotors**

Part Number	Heavy Load Gearmotors			Belt Speed	
	RPM	In-lb	N-m	Ft/min	M/min
32M060ES423EN	29	319	36	1.2 - 10.0	0.4 - 3.1
32M040ES423EN	43	378	42.7	1.8 - 15.0	0.6 - 4.6
32M020ES423EN	86	285	32.2	3.6 - 30.0	1.1 - 9.2
32M010ES423EN	173	153	17.3	7.0 - 61.0	2.2 - 18.0
32M005ES423EN	345	80	9	14.0 - 121.0	4.4 - 37.0

**Table 5: RPM/Torque for Brushless DC Gearmotors**

Gearmotors				
Part Number	Gear Ratio	RPM	In-lb	N-m
62M050PSBDDEN	50:1	2-60	240	28
62M020PSBDDEN	20:1	5-150	103	11.7
62M010PSBDDEN	10:1	10-300	52	5.9

**NOTE**


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

# Installation

## Required Tools

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

## Mounting

<b>⚠ WARNING</b>

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

### Installation Component List:

1	Conveyor
2	Gearmotor Mounting Package
3	Gearmotor Assembly
4	Spider Web Bushing
5	Shaft Coupling Half, Three Jaw
6	Coupling Half, Three Jaw
7	Key, Coupling
8	Mounting Plate, Coupling
9	Mounting Plate Screws
10	Cover
11	Screws, Cover
12	Pin, Quick Release

1. Typical components (Figure 2).

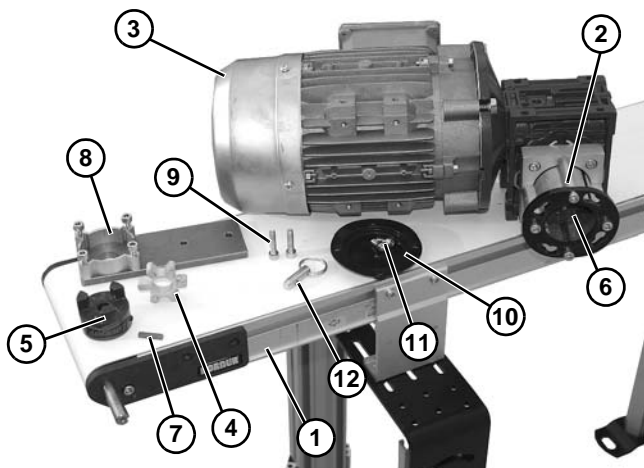


Figure 2

2. Remove two M6x25 socket head screws (Figure 3, item 1).

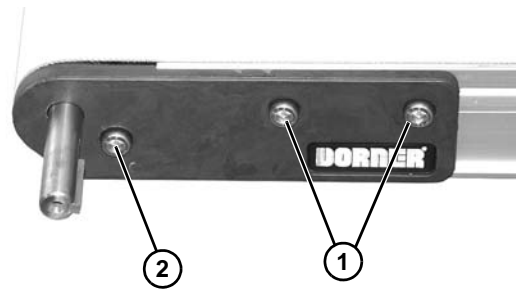


Figure 3

3. Install M6x8 socket head screw (Figure 3, item 2) and washer.
4. Install coupling mounting plate (Figure 4, item 1) with two M6x25 socket head screws (Figure 4, item 2). Tighten screws to 60 in-lb (7 Nm).

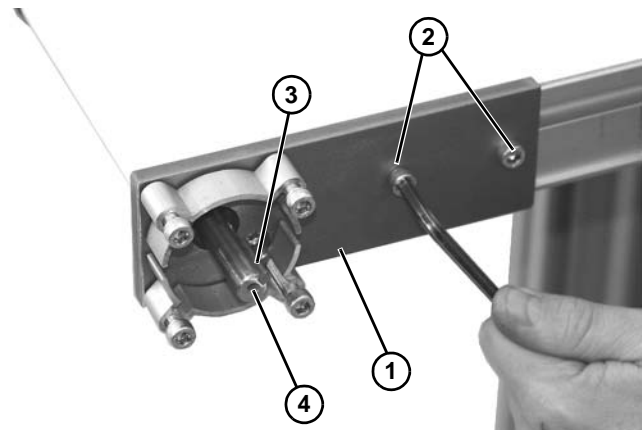


Figure 4

5. Making sure key (Figure 4, item 3) is installed in slot in gear reducer output shaft assembly (Figure 4, item 4).
6. Install three jaw coupling (Figure 5, item 1) onto shaft (Figure 5, item 2).

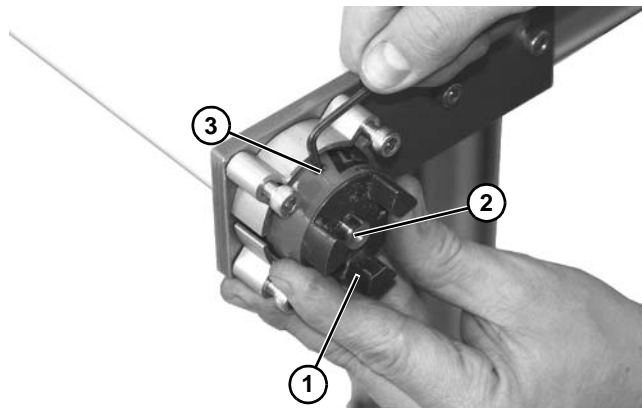
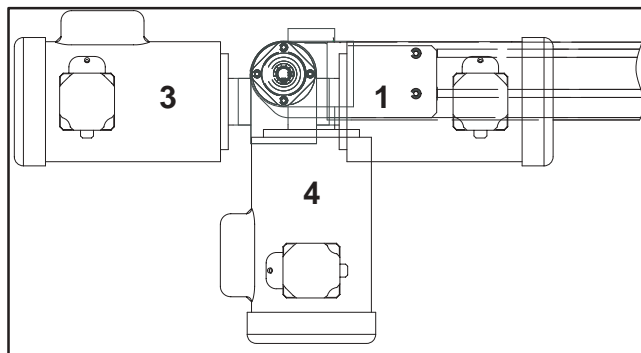


Figure 5

7. Be certain three jaw coupling is fully on shaft and secure position with set screw (Figure 5, item 3).

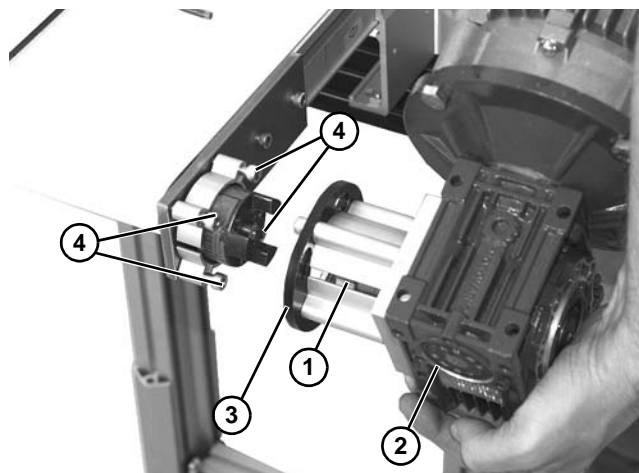
## NOTE

Gearmotor may be operated in positions 1, 3 or 4 (Figure 6).



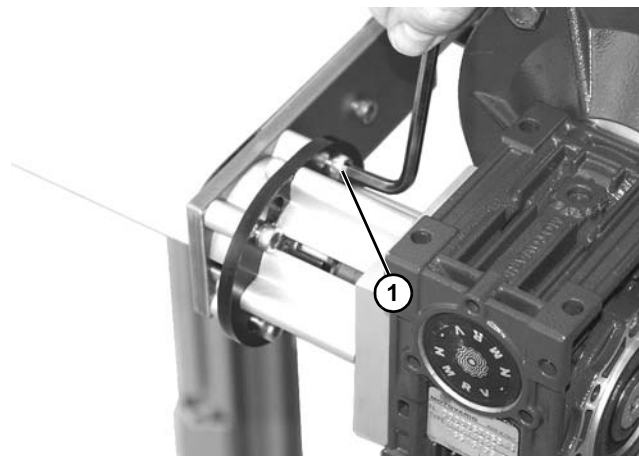
**Figure 6**

8. Install spider bushing (Figure 7, item 1) in mating female portion of three jaw coupling on gearmotor assembly (Figure 7, item 2).



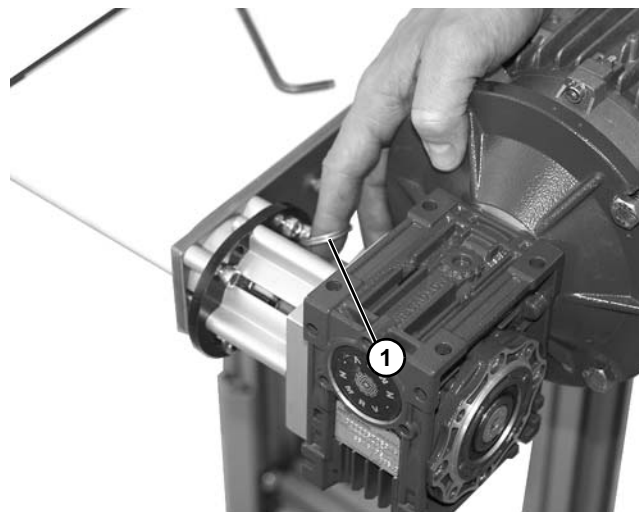
**Figure 7**

9. Slide and pivot gearmotor and gearmotor mounting ring (Figure 7, item 3) onto four M6x30 mounting screws (Figure 7, item 4) (through slots in gearmotor bracket).
10. Tighten four M6x30 mounting screws (Figure 8, item 1) to 60 in-lb (7 Nm).



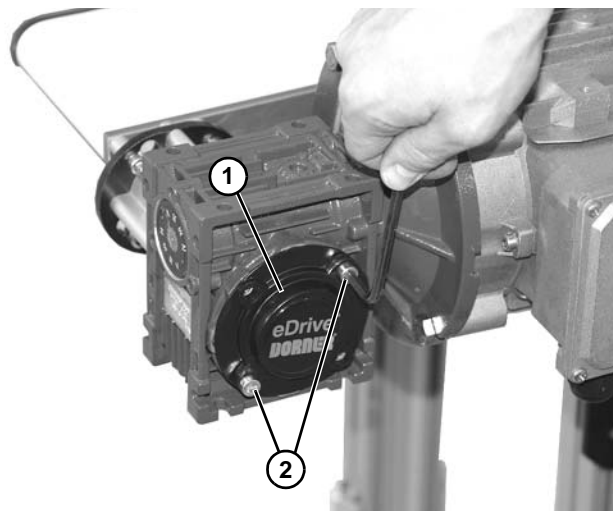
**Figure 8**

11. Install quick release pin (Figure 9, item 1).



**Figure 9**

12. Install cover (Figure 10, item 1) and two M6x12 socket head screws (Figure 10, item 2). Tighten screws to 60 in-lb (7 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

## Gear Reducer Replacement

### ⚠ WARNING



Exposed moving parts can cause severe injury.  
**LOCK OUT POWER** before removing guards or performing maintenance.

### ⚠ WARNING

Gearmotor can rotate and fall off, causing injury.  
**Support the gearmotor** prior to removal.

1. Remove quick release pin (Figure 11, item 1).

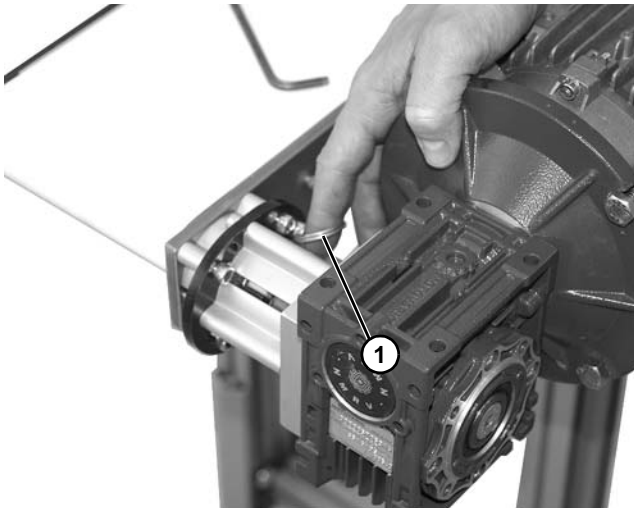


Figure 11

2. Loosen four M6x30 mounting screws (Figure 12, item 1).

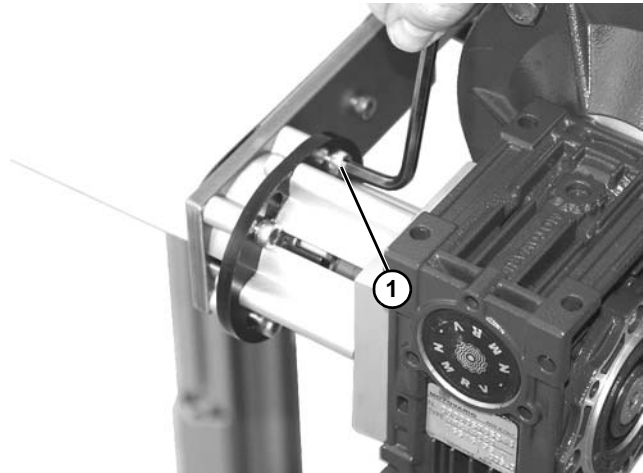


Figure 12

3. Rotate and remove gearmotor and gearmotor mounting ring (Figure 13, item 1) from four M6x30 mounting screws (Figure 13, item 2) (through slots in gearmotor bracket) and remove entire gearmotor assembly from conveyor.

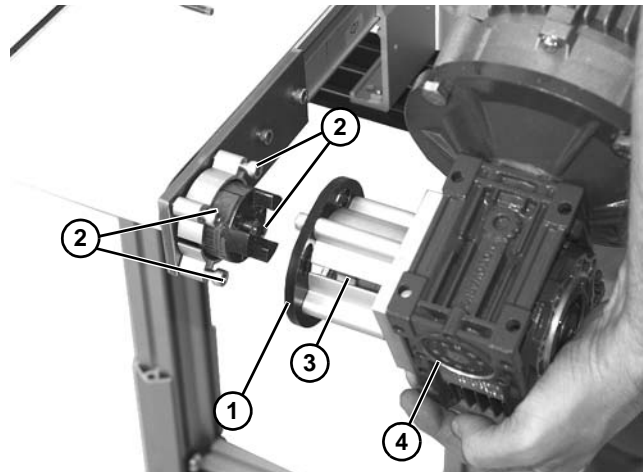


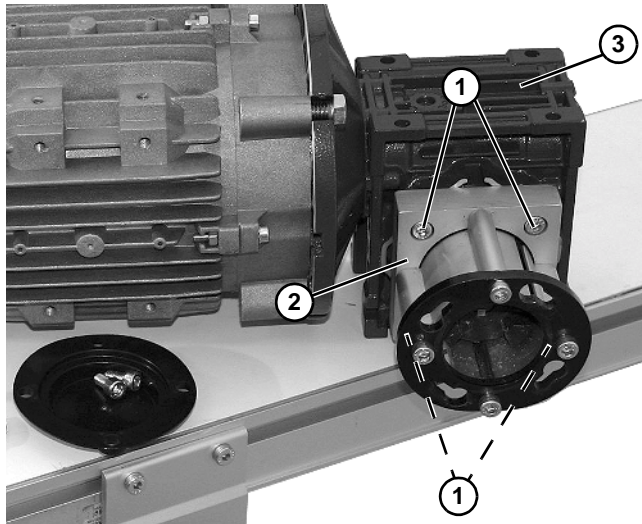
Figure 13

4. Remove spider bushing (Figure 13, item 3) from mating female portion of three jaw coupling on gearmotor assembly (Figure 13, item 4).



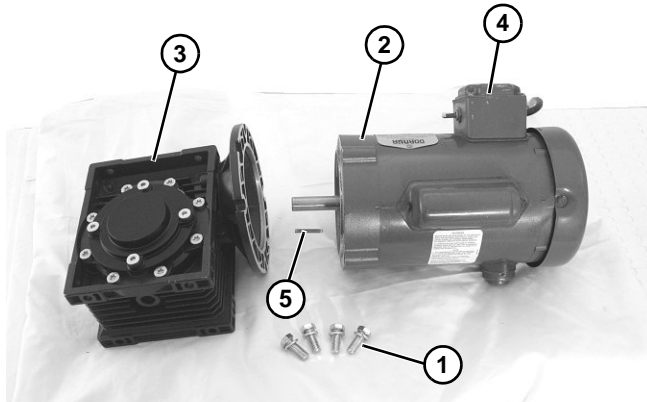
# Preventive Maintenance and Adjustment

- Remove four M6x20 socket head screws (**Figure 14, item 1**) and remove spacer plate (**Figure 14, item 2**) assembly from gearmotor (**Figure 14, item 3**).



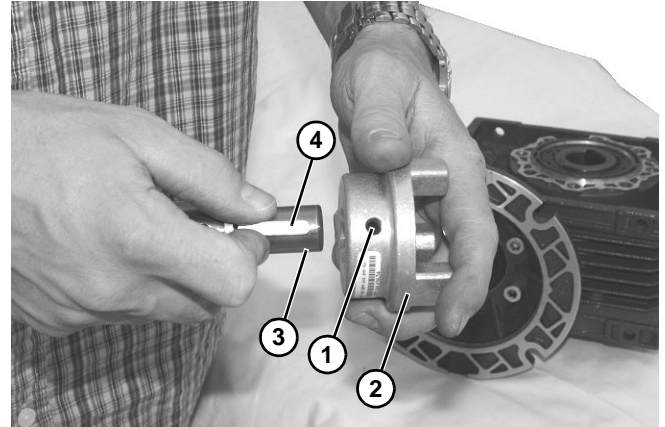
**Figure 14**

- Remove four screws (**Figure 15, item 1**). Detach motor (**Figure 15, item 2**) from gear reducer (**Figure 15, item 3**), making note of position of switch (**Figure 15, item 4**) for reassembly. Retain motor output shaft key (**Figure 15, item 5**).



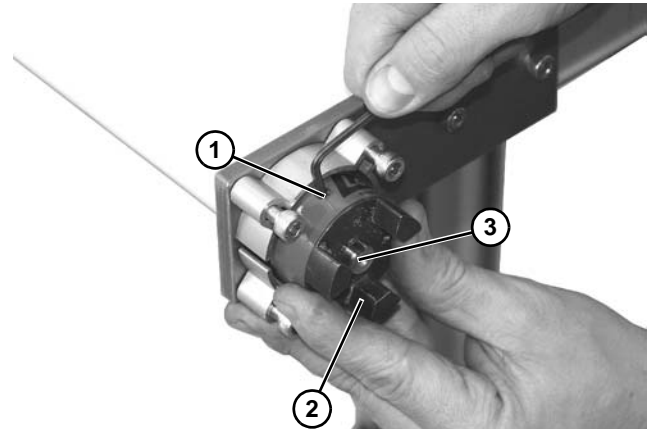
**Figure 15**

- Inspect gear reducer output shaft assembly for wear or damage. If necessary, loosen set screw (**Figure 16, item 1**) and remove 3 jaw coupling (**Figure 16, item 2**) from gear reducer output shaft (**Figure 16, item 3**).



**Figure 16**

- Loosen set screw (**Figure 17, item 1**), and remove three jaw coupling (**Figure 17, item 2**) from shaft (**Figure 17, item 3**).



**Figure 17**

- Remove key from in slot in gear reducer output shaft assembly (**Figure 16, item 4**). Install new components for shaft reverse of removal. Tighten set screw (**Figure 16, item 1**) to 35 in-lb (4 Nm).


## IMPORTANT


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

- With key (**Figure 15, item 5**) in keyway, slide motor (**Figure 15, item 2**) and gear reducer (**Figure 15, item 3**) together, noting where position of switch (**Figure 15, item 4**) will be during installation on conveyor.
- Install screws (**Figure 15, item 1**) and tighten to 60 in-lb (7 Nm).
- Complete steps 7 through 12 of “Mounting” on page 6.

# Preventive Maintenance and Adjustment

## Motor Replacement

<b>⚠ WARNING</b>

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

<b>⚠ DANGER</b>

Hazardous voltage will cause severe injury or death. <b>LOCK OUT POWER BEFORE WIRING.</b>

## Single Phase Motor

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

## Three Phase Motor

1. Loosen terminal box screws (Figure 18, item 1) and remove cover (Figure 18, item 2).

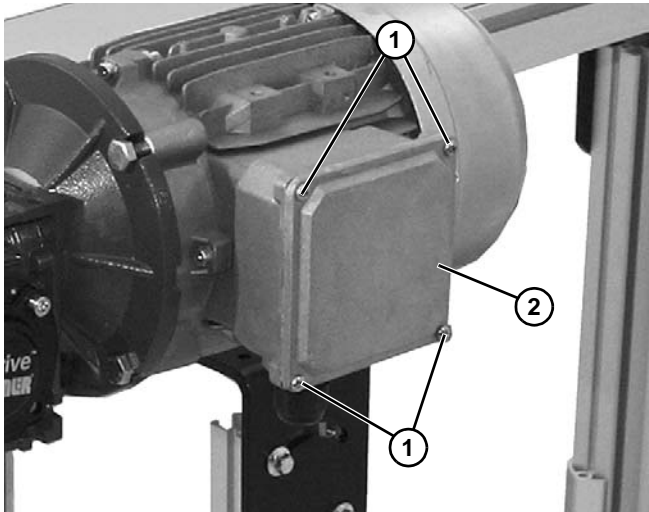


Figure 18

2. Record wire colors on terminals 1, 2 and 3. Loosen wire nuts and remove wires 1, 2 and 3.
3. Loosen cord grip and remove cord.

## DC Variable Speed Motor

1. For DC variable speed motor, unplug motor cord at disconnect (Figure 19, item 1).

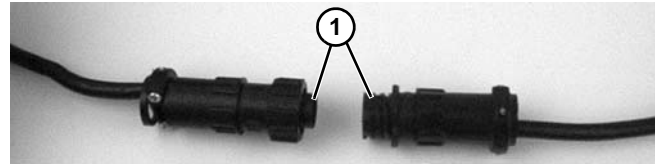


Figure 19

## All Models

1. Remove four (4) screws (Figure 20, item 1). Detach motor (Figure 20, item 2) from gear reducer (Figure 20, item 3). Retain motor output shaft key (Figure 20, item 4).

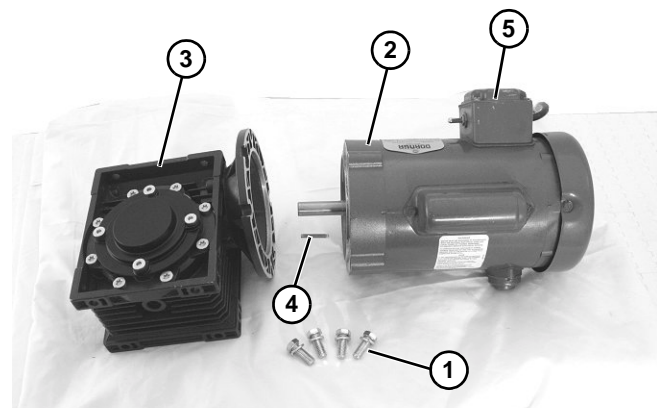


Figure 20

## IMPORTANT

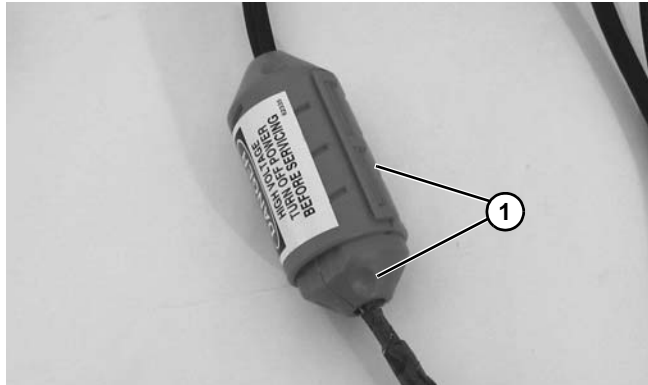
*Be extremely careful when coupling motor to gear reducer. Avoid misalignment and forcing the connection causing possible permanent gear reducer seal damage.*

2. With key (Figure 20, item 4) in keyway, slide motor (Figure 20, item 2) and gear reducer (Figure 20, item 3) together, noting where position of switch (Figure 20, item 5) will be during installation on conveyor.
3. Install screws (Figure 20, item 1) and tighten to 60 in-lb (7 Nm).

# Preventive Maintenance and Adjustment

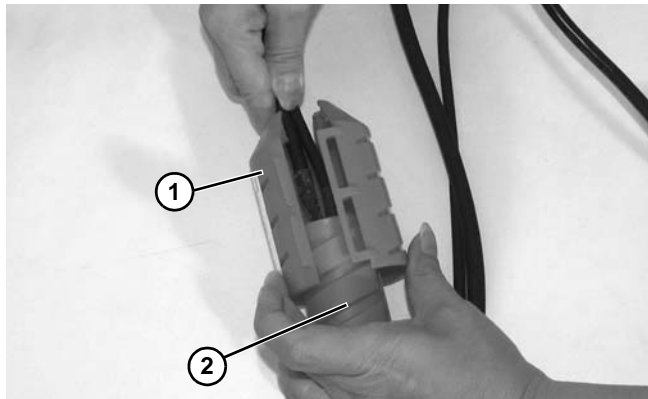
## Brushless Motor

1. Twist covers (**Figure 21, item 1**) apart.



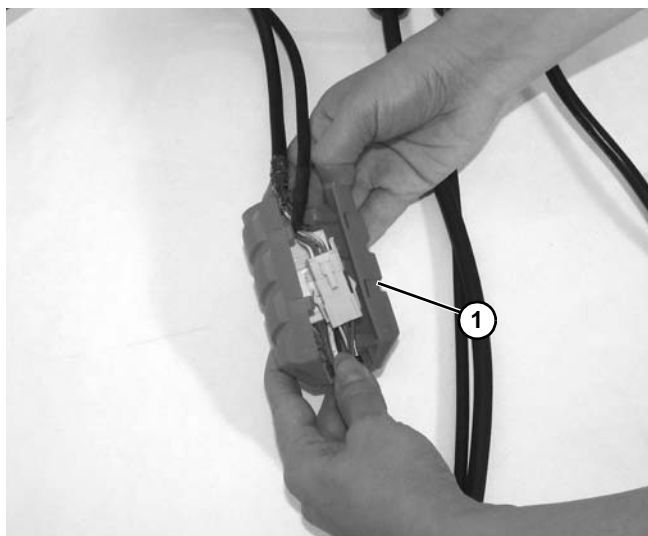
**Figure 21**

2. Remove outer cord cover (**Figure 22, item 1**) from inner cord cover (**Figure 22, item 2**).



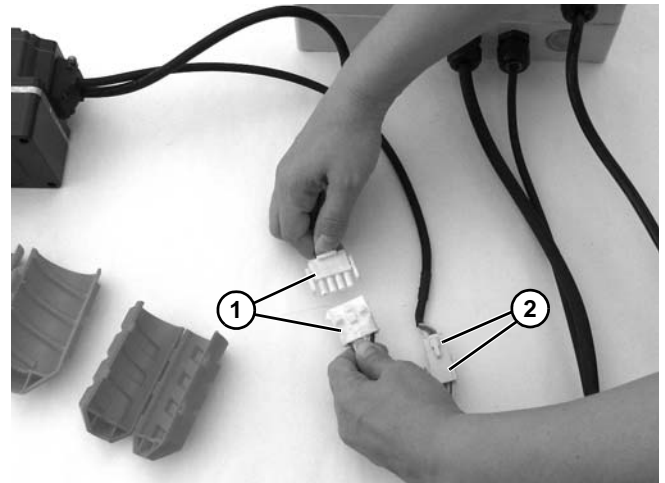
**Figure 22**

3. Open inner cord cover (**Figure 23, item 1**).



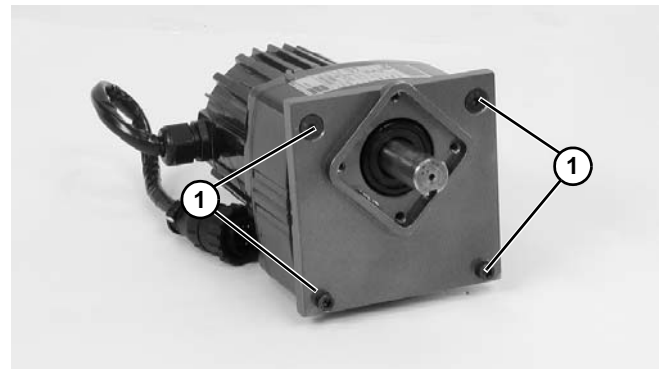
**Figure 23**

4. Unplug motor cord connectors (**Figure 24, item 1**) and signal cable connectors (**Figure 24, item 2**).



**Figure 24**

5. Remove four (4) adapter plate screws (**Figure 25, item 1**). Remove adapter plate.



**Figure 25**

6. Install new gearmotor to adapter plate and mounting bracket. Tighten screws (**Figure 25, item 1**) to 103 in-lb (12 Nm).


## Replace Wiring

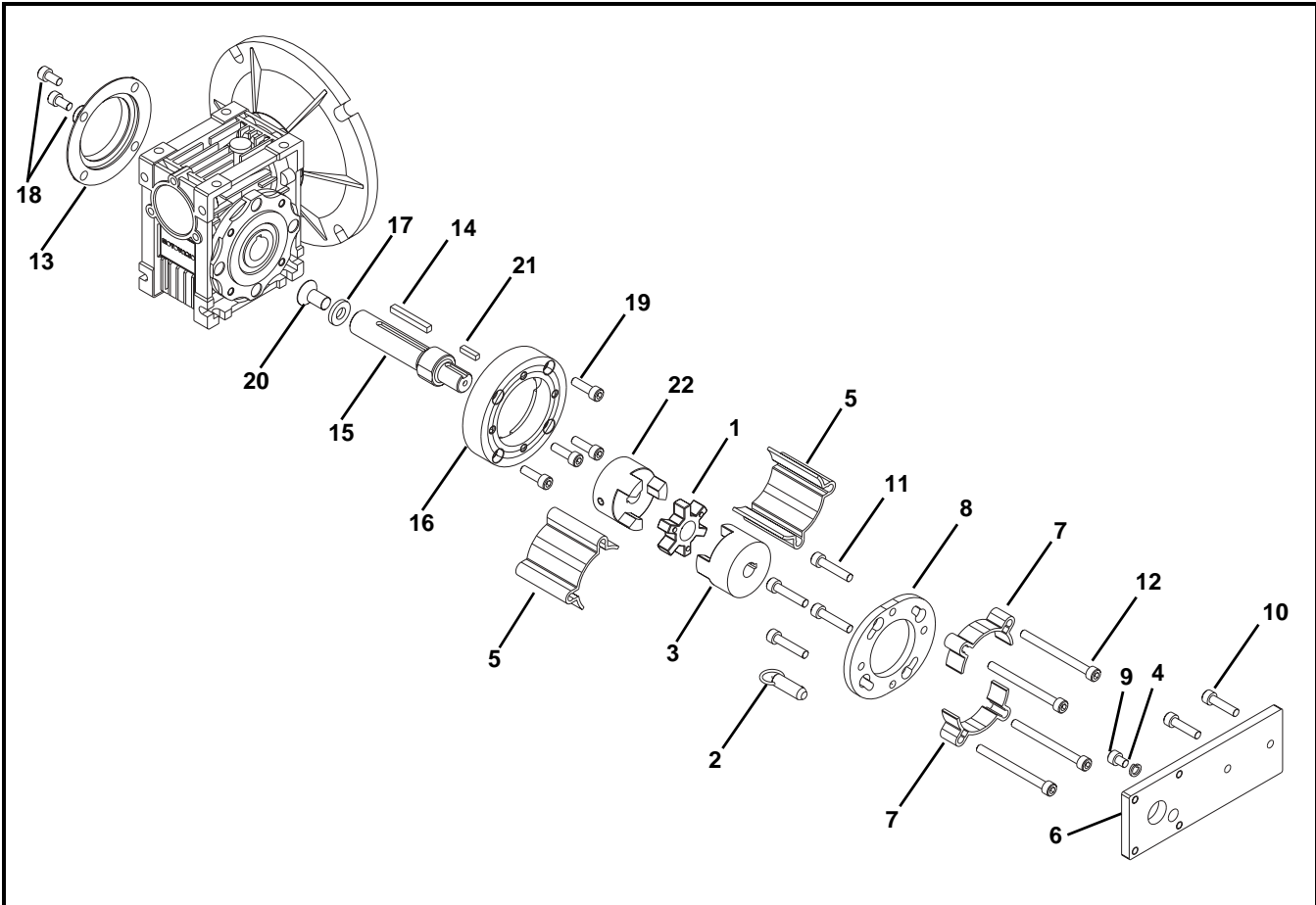
- For a single phase motor, reverse step 1 in “Single Phase Motor” on page 10.
- For a three phase or VFD variable speed motor, reverse step 2 in “Three Phase Motor” on page 10.
- For a DC variable speed motor, reverse step 3 in “DC Variable Speed Motor” on page 10.
- For a brushless motor, reverse steps 1-2 on “Brushless Motor” on page 11.

# Service Parts

## Side Mount Drive Package for Heavy Load 90° Gearmotors

### NOTE

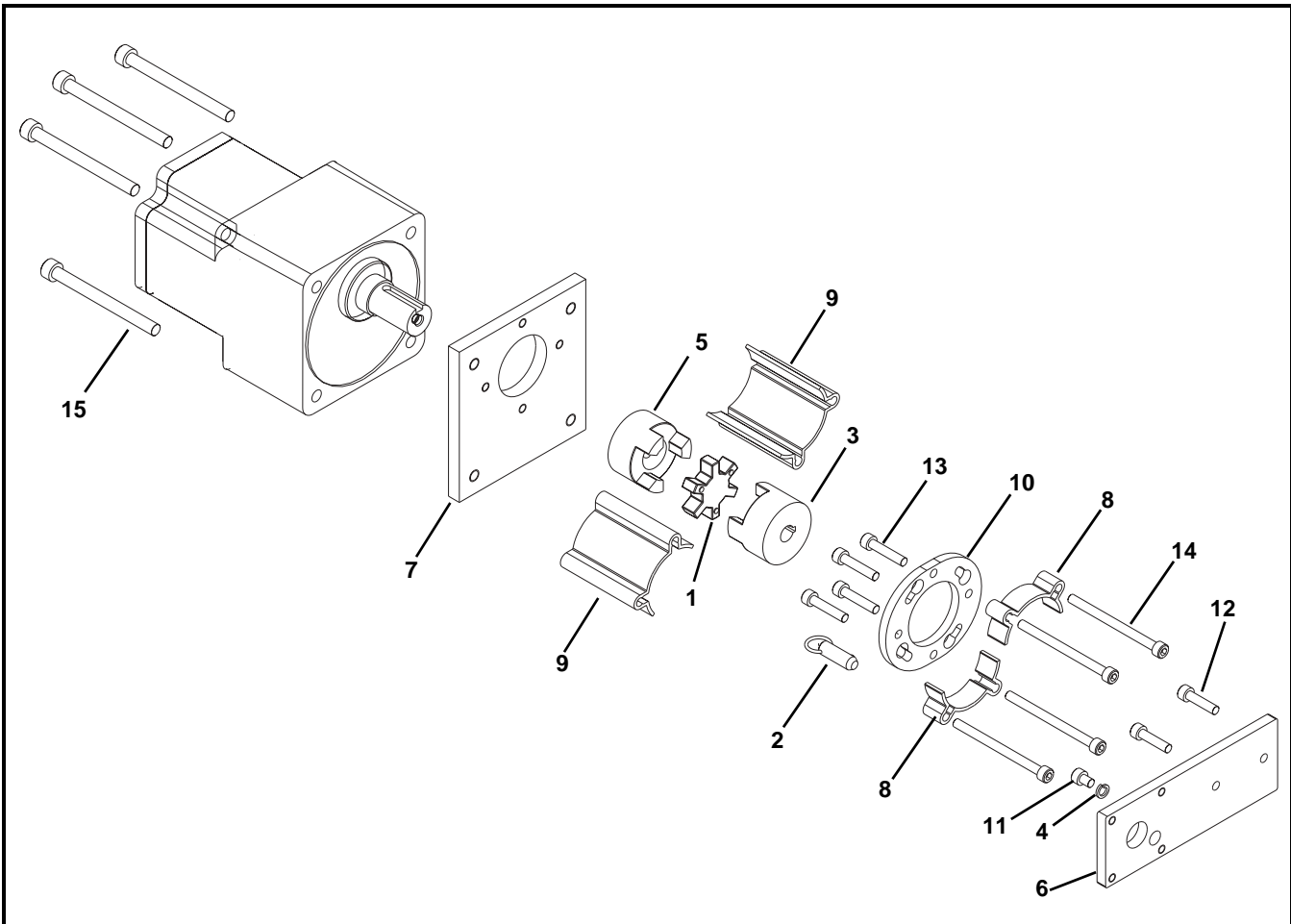
For replacement parts other than those shown in this section, contact an authorized Dorner Service Center or the factory. Key Service Parts and Kits are identified by the Performance Parts Kits logo . Dorner recommends keeping these parts on hand.



Item	Part Number	Description
1	807-1143	3-Jaw Spider
2	807-1169	Quick Release Pin
3	807-1566	3 Jaw Coupling
4	807-2092	Lock Washer
5	202359	Long Side Drive Guard (x2)
6	202454	Drive Plate
7	301092	Short Side Drive Guard (x2)
8	301094	Mounting Ring
9	920608M	Socket Head Screw, M6-1.00 x 8 mm
10	920625M	Socket Head Screw, M6-1.00 x 25 mm
11	920630M	Socket Head Screw, M6-1.00 x 30 mm
12	920670M	Socket Head Screw, M6-1.00 x 70 mm
13	807-2059	Cover (for 42CZ C Face Gearmotors)
	807-2016	Cover (for 56 C Face and IEC Gearmotors)
14	912-084	Square Key, 0.188 x 1.50 (for 42CZ and 56 C Face Gearmotors)
	980636M	Key (for IEC Gearmotors)
15	202273	Output Shaft (for 42CZ C Face Gearmotors)
	350120	Output Shaft (for 56 C Face Gearmotors)
	350134	Output Shaft (for IEC Gearmotors)
16	400026	Spacer Ring (for 42CZ C Face Gearmotors)
	350115	Adapter Ring (for 56 C Face and IEC Gearmotors)
17	605280P	Washer (for 42CZ C Face Gearmotors)
18	920612M	Socket Head Screw, M6-1.00 x 12 mm
19	920620M	Socket Head Screw, M6-1.00 x 20 mm (for 56 C Face and IEC Gearmotors)
20	920893M	Low Head Cap Screw, M8-1.25 x 16 mm (for 42CZ C Face Gearmotors)
	931020M	Flat Head Screw, M10-0.50 x 20 mm (for 56 C Face and IEC Gearmotors)
21	980416M	Square Key, 4 mm x 16 mm (for 42CZ and 56 C Face Gearmotors)
	912-077	Key (for IEC Gearmotors)
22	807-1566	3 Jaw Coupling, 12 mm (for 42CZ and 56 C Face Gearmotors)
	807-1141	3 Jaw Coupling, 5/8" (for IEC Gearmotors)

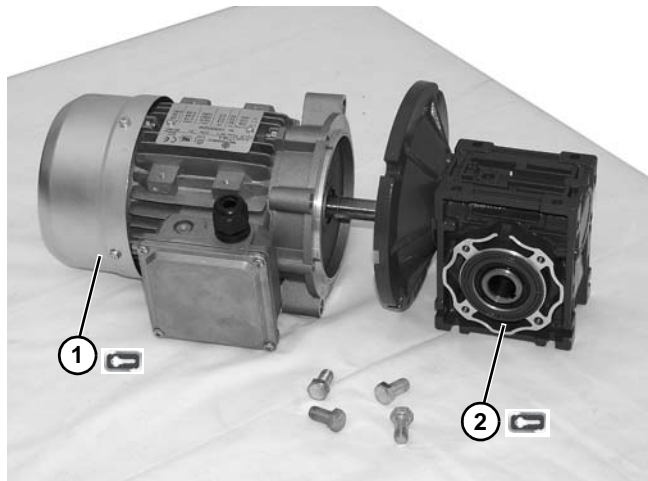
# Service Parts

## Side Mount Drive Package for Brushless DC Gearmotors



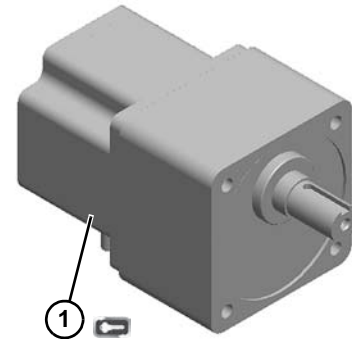
Item	Part Number	Description
1	807-1143	3-Jaw Spider
2	807-1169	Quick Release Pin
3	807-1566	3 Jaw Coupling (x2)
4	807-2092	Lock Washer
5	807-2170	3 Jaw Coupling, 1.75 Dia x 22 mm
6	202454	Drive Plate
7	202629	Adapter Plate
8	301092	Short Side Drive Guard (x2)
9	301093	Long Side Drive Guard (x2)
10	301094	Mounting Ring
11	920608M	Socket Head Screw, M6-1.00 x 8 mm
12	920625M	Socket Head Screw, M6-1.00 x 25 mm
13	920630M	Socket Head Screw, M6-1.00 x 30 mm
14	920680M	Socket Head Screw, M6-1.00 x 80 mm
15	920890M	Socket Head Screw, M8-1.25 x 90 mm

## Heavy Load 90° Gearmotors



Item	Part Number	Description
1	62MES411FN	Motor, 0.25HP, (0.19 Kw), 115/230 Volts, 60 Hz, 1-Phase
	62MES423FN	Motor, 0.25HP, (0.19 Kw), 208-230/460 Volts, 60 Hz, 3-Phase
	62MSD3DEN	Motor, 0.25HP, (0.19 Kw), 130 VDC
	62MEH423FN	Motor, 0.50HP, (0.37 Kw), 115/230 Volts, 60 Hz, 1-Phase
	32MEH423FN	Motor, 0.50HP, (0.37 Kw), 208-230/460 Volts, 60 Hz, 3-Phase
	62MHD9DEN	Motor, 0.50HP, (0.37 Kw), 90 VDC
	32MES423EN	Motor, 0.50HP, (0.37 Kw), 230 Volts, 3-Phase Inverter Duty
	2	32M005EL
32M010EL		Gear Reducer, 10:1, NEMA 42 CZ
32M020EL		Gear Reducer, 20:1, NEMA 42 CZ
32M040EL		Gear Reducer, 40:1, NEMA 42 CZ
32M060EL		Gear Reducer, 60:1, NEMA 42 CZ
32M005ES		Gear Reducer, 5:1, 56C
32M010ES		Gear Reducer, 10:1, 56C
32M020ES		Gear Reducer, 20:1, 56C
32M040ES		Gear Reducer, 40:1, 56C
32M060ES		Gear Reducer, 60:1, 56C

## Brushless DC Gearmotors



Item	Part Number	Description
1	62M050PSBDDEN	Motor, 0.25hp (0.19Kw), 60 RPM, Brushless DC
	62M020PSBDDEN	Motor, 0.25hp (0.19Kw), 150 RPM, Brushless DC
	62M010PSBDDEN	Motor, 0.25hp (0.19Kw), 300 RPM, Brushless DC

# 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.


Product Type									
Standard Products									Engineered to order parts
Product Line	Conveyors	Gearmotors & Mounting Packages	Support Stands	Accessories	Spare Parts (non-belt)	Spare Belts - Standard Flat Fabric	Spare Belts - Cleated & Specialty Fabric	Spare Belts - Plastic Chain	All equipment and parts
1100	30% return fee for all products except: 50% return fee for conveyors with modular belt, cleated belt or specialty belts						non-returnable		case-by-case
2200									
2200 Modular Belt									
2200 Precision Move									
2300									
2300 Modular Belt									
3200									
3200 LPZ									
3200 Precision Move									
4100									
5200									
5300									
6200									
Controls									
7200 / 7300	50% return fee for all products								
7350	non-returnable								
7360									
7400									
7600									

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](http://www.dorner.com).

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

 <p>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. 2013</p>	<p><b>DORNER MFG. CORP.</b>            975 Cottonwood Ave., PO Box 20            Hartland, WI 53029-0020 USA            TEL 1-800-397-8664 (USA)            FAX 1-800-369-2440 (USA)            Internet: <a href="http://www.dorner.com">www.dorner.com</a></p>	<p>Outside the USA:            TEL 1-262-367-7600            FAX 1-262-367-58277</p>
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