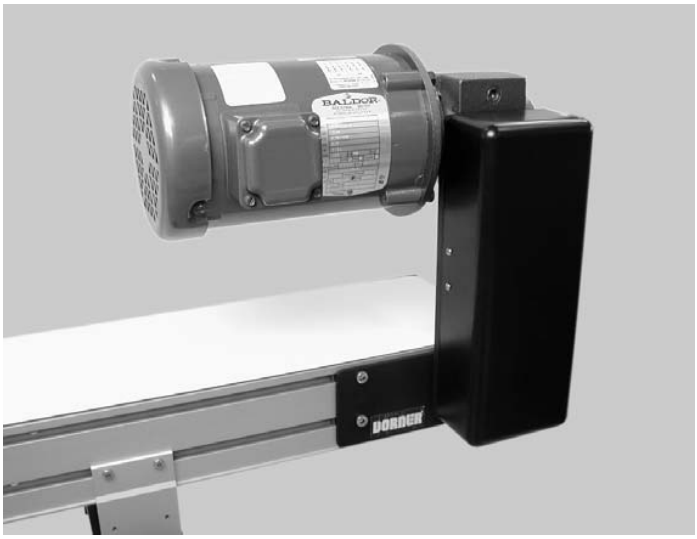
3200 & 5200 Series Top Mount 90° Drive Package for Light & Standard Load 60 Hz Gearmotors

Installation, Maintenance & Parts Manual



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851-530 Rev. E

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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 3200 Series conveyors are covered by patent numbers 5156260, 5156261, 5203447, 5265714 and patent applications in other countries.

Dorner 3200 Series conveyors are covered by patent numbers 5156260, 5156261, 5203447, 5265714, 6871737, 6910571, 6971509, and patent applications in other countries.

Dorner LPZ Series conveyors are covered by patent numbers 5156260, 5156261, 5203447, 5265714, 5875883 and patent applications in other countries.

Dorner 5200 Series conveyors have patents pending.

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.

⚠ 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 components.

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

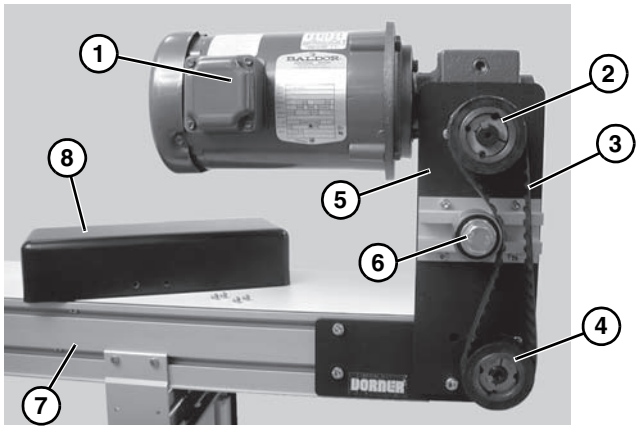


Figure 1

Specifications

Gearmotor Mounting Package Models:

Example:

32 M T H S A – 16 16

- **Driven Pulley (see Table 2, 3 & 4)**
- **Drive Pulley (see Table 2, 3 & 4)**
- **Belt Type (– = flat belt, A through J = cleated belt)**
- **Mount Position = A, B, C or D (see detail to the right)**
- **Gearmotor Type: S = Standard Load, L = Light Load**
- **Output Shaft Type = 90° Industrial**
- **Mount Style = Top Mount**
- **Language Code = U.S. English**
- **Product Series: 32 = 3200 Series, 52 = 5200 Series**

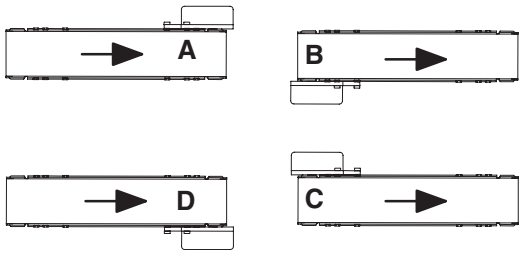


Table 1: Gearmotor Specifications

Item	Light Load Gearmotor			Standard Load Gearmotor			
	Single-Phase	Three Phase	DC Variable Speed	Single-Phase	Three Phase	VFD Variable Speed	DC Variable Speed
Output Power	0.25 hp (0.19 kw)			0.5 hp (0.37 kw)			
Input Voltage	115VAC	208 – 230/ 460 VAC	130VDC	115VAC	208 – 230/ 460 VAC	230 VAC	90VDC
Input Frequency	60Hz		N/A	60Hz		10 – 60Hz	N/A
Input Current (Amperes)	5.0	1.2/0.6	2.2	7.4	2.1 – 2/1	1.6	5.0
Gearmotor Ratios	5:1, 10:1, 20:1, 40:1, 60:1			5:1, 10:1, 20:1, 40:1, 60:1			
Frame Size	NEMA 42CZ			NEMA 56C			
Motor Type	Totally enclosed, Fan cooled			Totally enclosed, Fan cooled			

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

Light Load Gearmotors				Standard Load Gearmotors				Belt Speed		Drive Pulley	Driven Pulley
Part Number	RPM	In-lb	N-m	Part Number	RPM	In-lb	N-m	Ft/min	M/min		
32M060HL4(vp)FN	29	226	25.5	32M060HS4(vp)FN	29	226	25.5	23	7.0	16	16
32M040HL4(vp)FN	43	237	26.8	32M040HS4(vp)FN	43	247	27.9	34	10.4	16	16
32M040HL4(vp)FN	43	237	26.8	32M040HS4(vp)FN	43	247	27.9	52	15.8	24	16
32M020HL4(vp)FN	86	142	16	32M020HS4(vp)FN	86	248	27.9	69	21.0	16	16
32M020HL4(vp)FN	86	142	16	32M020HS4(vp)FN	86	248	27.9	103	31.4	24	16
32M010HL4(vp)FN	173	78	8.8	32M010HS4(vp)FN	173	156	17.6	137	41.8	16	16
32M010HL4(vp)FN	173	78	8.8	32M010HS4(vp)FN	173	156	17.6	172	52.4	20	16
32M010HL4(vp)FN	173	78	8.8	32M010HS4(vp)FN	173	156	17.6	206	62.8	24	16
N/A	N/A	N/A	N/A	32M005HS4(vp)FN	345	81	9.1	275	83.8	16	16
N/A	N/A	N/A	N/A	32M005HS4(vp)FN	345	81	9.1	343	104.5	20	16
N/A	N/A	N/A	N/A	32M005HS4(vp)FN	345	81	9.1	412	125.6	24	16

(vp) = voltage and phase

23 = 208 – 230/460 V, 3-phase

11 = 115 V, 1-phase

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

Light Load Gearmotors				Standard Load Gearmotors				Belt Speed		Drive Pulley	Driven Pulley
Part Number	RPM	In-lb	N-m	Part Number	RPM	In-lb	N-m	Ft/min	M/min		
32M060HLD3DEN	42	198	22.4	32M060HSD9DEN	42	198	22.4	4.0 – 33	1.2 – 10	16	+9-
32M040HLD3DEN	63	163	18.4	32M040HSD9DEN	63	215	24.3	6.0 – 50	1.8 – 15	16	16
32M040HLD3DEN	63	163	18.4	32M040HSD9DEN	63	215	24.3	9.0 – 75	2.7 – 23	24	16
32M020HLD3DEN	125	98	11.1	32M020HSD9DEN	125	196	22.1	12 – 100	3.6 – 30	16	16
32M020HLD3DEN	125	98	11.1	32M020HSD9DEN	125	196	22.1	18 – 150	5.5 – 45	24	16
32M010HLD3DEN	250	54	6.1	32M010HSD9DEN	250	108	12.2	24 – 200	7.3 – 61	16	16
32M010HLD3DEN	250	54	6.1	32M010HSD9DEN	250	108	12.2	30 – 250	9.1 – 76	20	16
32M010HLD3DEN	250	54	6.1	32M010HSD9DEN	250	108	12.2	36 – 300	11 – 92	24	16

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

Standard Load Gearmotors				Belt Speed		Drive Pulley	Driven Pulley
Part Number	RPM	In-lb	N-m	Ft/min	M/min		
32M060HS423EN	29	226	25.5	2.3 – 22.9	0.7 – 7.0	16	16
32M040HS423EN	43	247	27.9	3.4 – 34.3	1.0 – 10.5	16	16
32M040HS423EN	43	247	27.9	5.1 – 51.5	1.6 – 15.7	24	16
32M020HS423EN	86	248	27.9	6.9 – 68.6	2.1 – 20.9	16	16
32M020HS423EN	86	248	27.9	10.3 – 103.0	3.1 – 31.4	24	16
32M010HS423EN	173	156	17.6	13.7 – 137.3	4.2 – 41.9	16	16
32M010HS423EN	173	156	17.6	17.2 – 171.6	5.2 – 52.3	20	16
32M010HS423EN	173	156	17.6	20.6 – 205.9	6.3 – 62.8	24	16
32M005HS423EN	345	81	9.1	27.5 – 274.6	8.4 – 83.7	16	16
32M005HS423EN	345	81	9.1	34.3 – 343.2	10.5 – 104.6	20	16
32M005HS423EN	345	81	9.1	41.2 – 411.9	12.6 – 125.6	24	16

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
- 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:

1	Timing Belt
2	M6 Socket Head Screws (4x)
3	M8 Socket Head Screws (2x)
4	Driven Pulley
5	Key
6	M4 Socket Head Screws (4x)
7	Cover
8	Top Mount Assembly
9	Drive Pulley

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

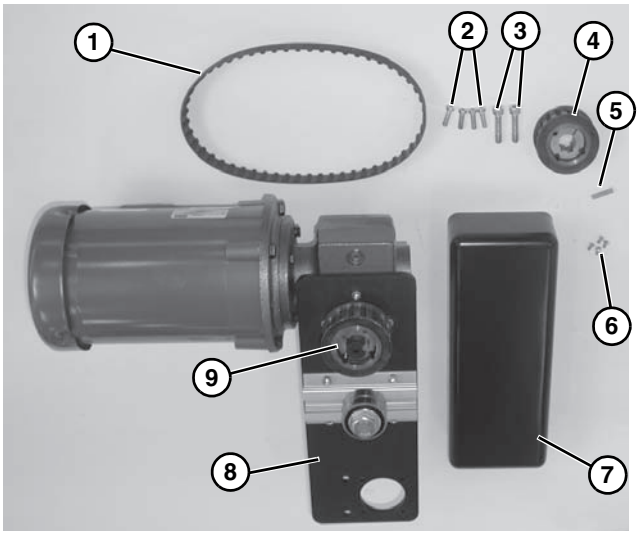


Figure 2

NOTE

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

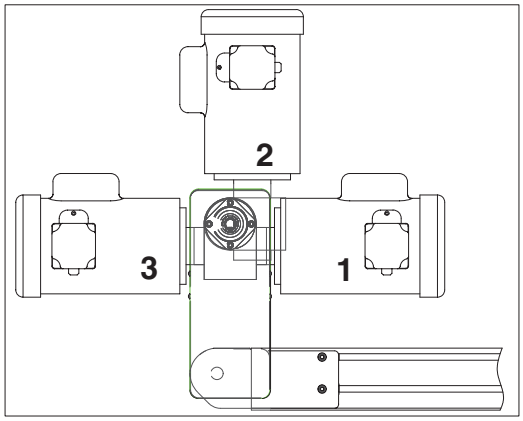


Figure 3

2. If required, change gearmotor position by removing four (4) screws **(Figure 4, item 1)**. Rotate gearmotor to other position and replace screws. Tighten to 110 in-lb (12 Nm).

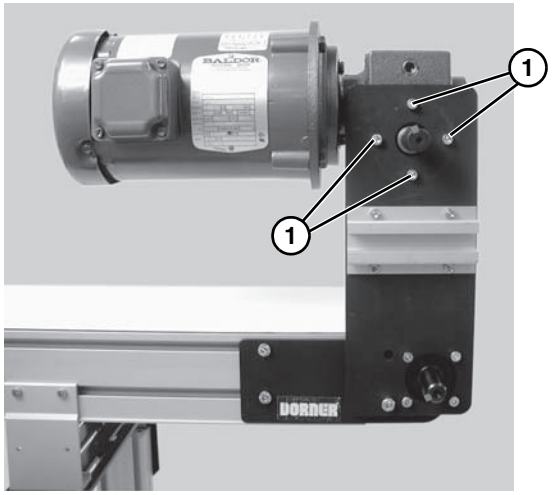


Figure 4

3. Locate drive output shaft **(Figure 5, item 1)**. Remove two (2) M8 screws **(Figure 5, item 2)** and four (4) M6 screws **(Figure 5, item 3)** and discard.

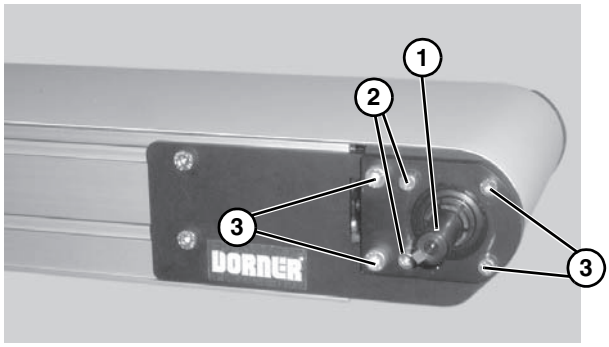


Figure 5

4. Attach mount assembly **(Figure 6, item 1)** with two (2) M8 screws **(Figure 6, item 2)** and four (4) M6 screws **(Figure 6, item 3)**. Tighten M6 screws to 146 in–lbs (16.5 N–m) and M8 screws to 288 in–lbs (32.5 N–m).

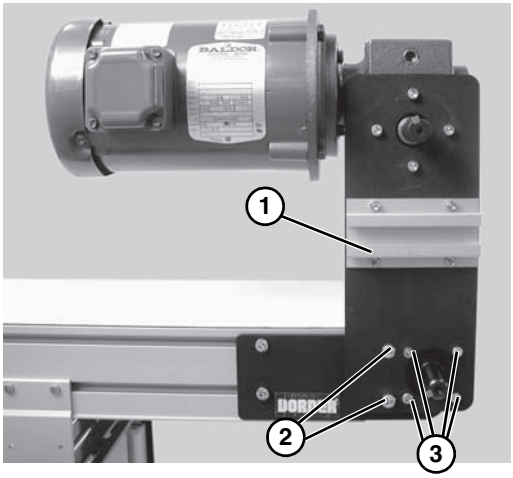


Figure 6

⚠ WARNING

Drive shaft keyway may be sharp.
HANDLE WITH CARE.

5. Install key **(Figure 7, item 1)**.

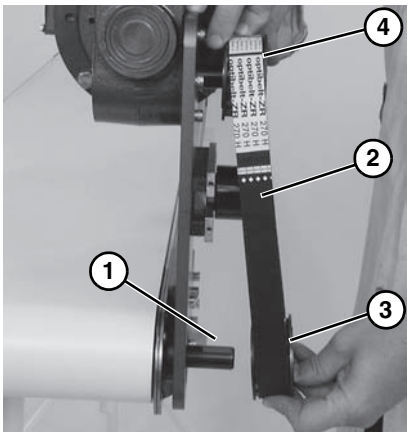


Figure 7

6. Wrap timing belt **(Figure 7, item 2)** around driven pulley **(Figure 7, item 3)** and drive pulley **(Figure 7, item 4)**. Install driven pulley onto conveyor shaft.
7. Using a straight edge **(Figure 8, item 1)**, align driven pulley **(Figure 8, item 2)** with drive pulley **(Figure 8, item 3)**.

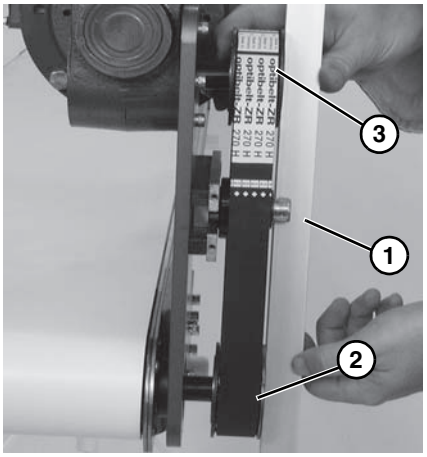


Figure 8

8. Tighten driven pulley taper-lock screws **(Figure 9, item 1)**.

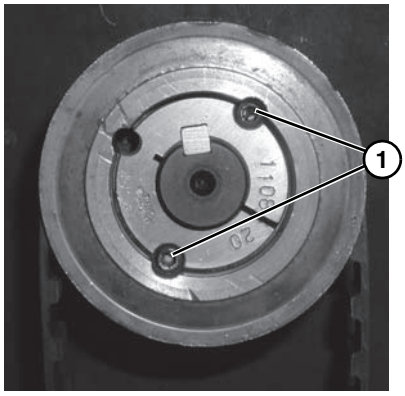


Figure 9

9. Depending on conveyor belt travel (direction A or B), locate timing belt tensioner **(Figure 10, item 1)** as shown. Tension timing belt to obtain 1/8" (3 mm) deflection for 6 lb (3 Kg) of force at timing belt mid-point **(Figure 10, item 2)**. Tighten tensioner screw to 110 in-lb (12 Nm).

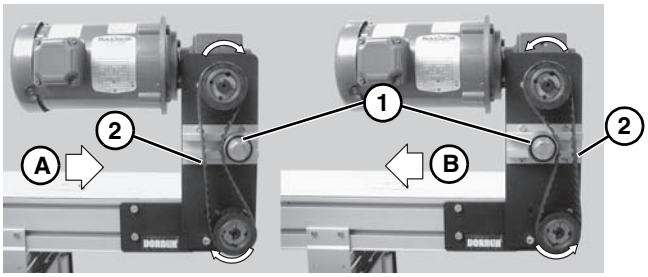


Figure 10

10. Install cover **(Figure 11, item 1)** with four (4) screws **(Figure 11, item 2)**. Tighten screws to 35 in-lb (4 Nm).

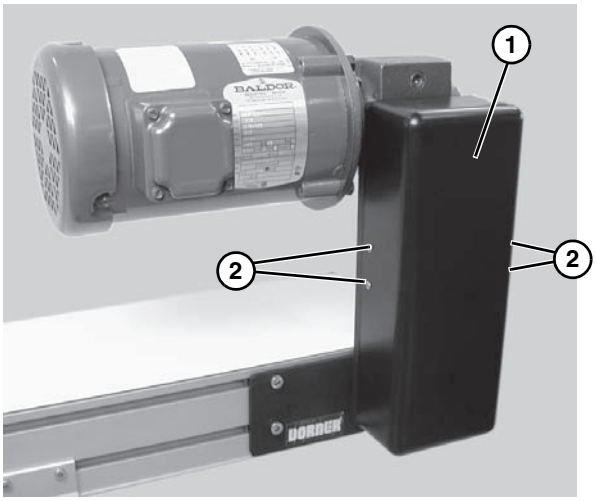


Figure 11

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 **(Figure 11, item 2)** and remove cover **(Figure 11, item 1)**.
2. Loosen tensioner **(Figure 12, item 1)**.

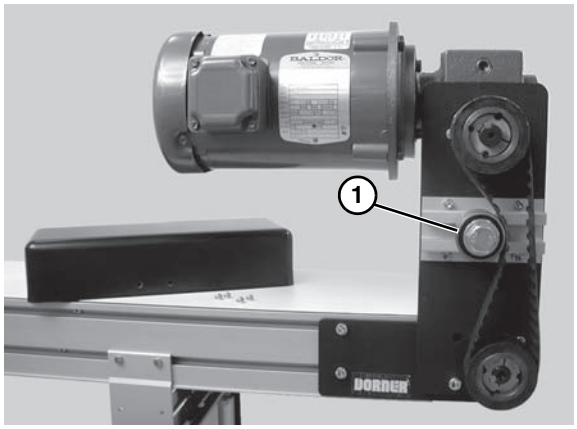


Figure 12

3. Depending on conveyor belt travel (direction A or B), locate timing belt tensioner **(Figure 10, item 1)** as shown. Tension timing belt to obtain 1/8" (3 mm) deflection for 6 lb (3 Kg) of force at timing belt mid-point **(Figure 10, item 2)**. Tighten tensioner screw to 110 in-lb (12 Nm).
4. Install cover **(Figure 11, item 1)** with four (4) screws **(Figure 11, item 2)**. Tighten screws 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 **(Figure 11, item 2)** and remove cover **(Figure 11, item 1)**.
2. Loosen tensioner **(Figure 12, item 1)**.
3. Remove timing belt **(Figure 13, item 1)**.

NOTE

*If timing belt does not slide over pulley flange, loosen driven pulley taper-lock screws (Figure 13, item **2)** and remove pulley with belt (Figure 13, item **1)**. For re-installation, see steps 6 through 8 on page 7.*

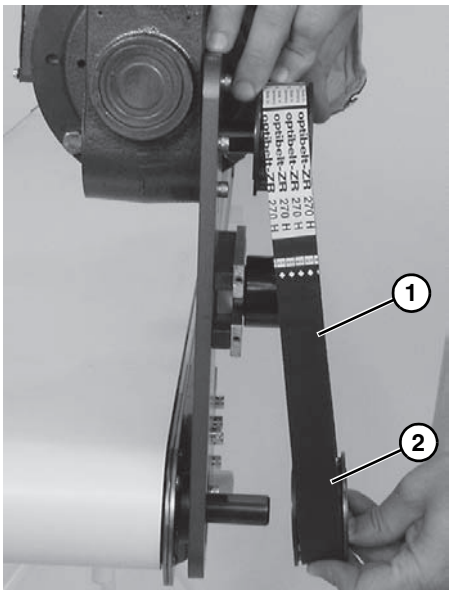


Figure 13

4. Install new timing belt.
5. Depending on conveyor belt travel (direction A or B), locate timing belt tensioner **(Figure 10, item 1)** as shown. Tension timing belt to obtain 1/8" (3 mm) deflection for 6 lb (3 Kg) of force at timing belt mid-point **(Figure 10, item 2)**. Tighten tensioner screw to 110 in-lb (12 Nm).
6. Install cover **(Figure 11, item 1)** with four (4) screws **(Figure 11, item 2)**. Tighten screws 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 9.
2. Remove taper-lock screws **(Figure 14, item 1)**. Insert one (1) of taper lock screws in remaining hole **(Figure 14, item 2)**. Tighten screw until pulley is loose. Remove pulley and taper hub assembly.

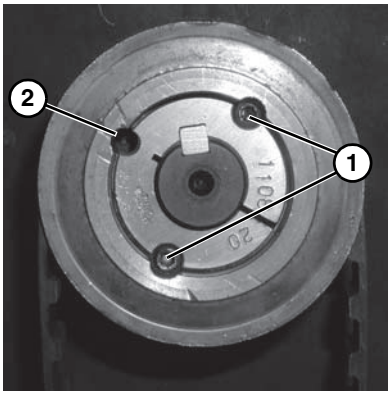


Figure 14

NOTE

*If drive pulley **(Figure 17, item 1)** is replaced, wrap timing belt around drive pulley and complete step 3.*

3. Complete steps 6 through 10 of “Installation” section starting on page 7.

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 **(Figure 11, item 2)** and remove cover **(Figure 11, item 1)**.
2. Loosen M10 shaft locking screw **(Figure 15, item 1)**.

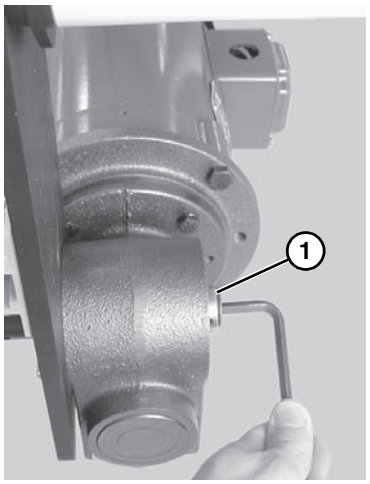


Figure 15

3. Loosen tensioner **(Figure 12, item 1)**.
4. Loosen taper-lock screws **(Figure 16, item 1)** and remove drive pulley: Insert one (1) of taper lock screws in remaining hole **(Figure 16, item 2)**. Tighten screw until pulley is loose.

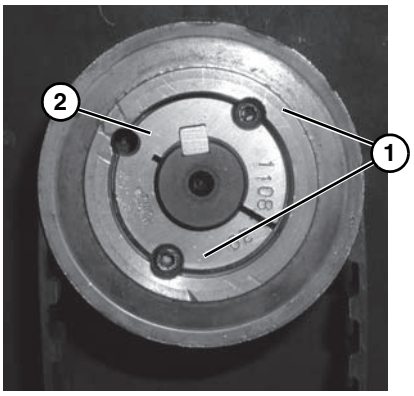


Figure 16

5. Remove drive pulley **(Figure 17, item 1)**, taper hub assembly **(Figure 17, item 2)**, and timing belt **(Figure 17, item 3)**.

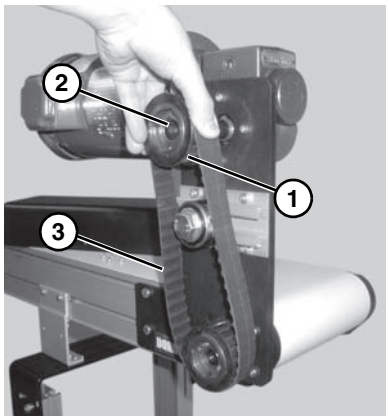


Figure 17

6. Remove four (4) gear reducer mounting screws **(Figure 18, item 1)**. Remove gearmotor.

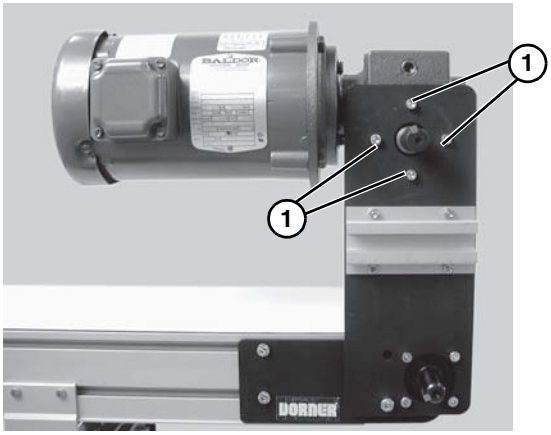


Figure 18

7. Remove four screws **(Figure 19, item 1)**. Detach motor **(Figure 19, item 2)** from gear reducer **(Figure 19, item 3)**. Retain motor output shaft key **(Figure 19, item 4)**.

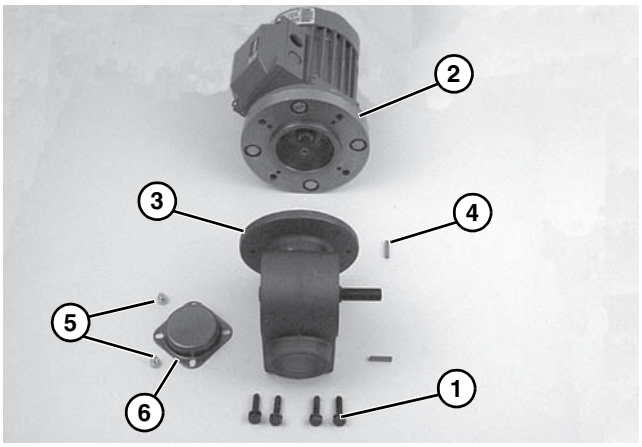


Figure 19

8. Remove two (2) screws **(Figure 19, item 5)** and detach output shaft cover **(Figure 19, item 6)**.
9. Remove M10 shaft locking screw **(Figure 20, item 1)**, remove gear reducer output shaft **(Figure 20, item 2)** and key **(Figure 20, item 3)**.

NOTE

*Output shaft **(Figure 20, item 2)** is held in Gear Reducer with a tapered press fit. Removal may require use of an arbor press.*

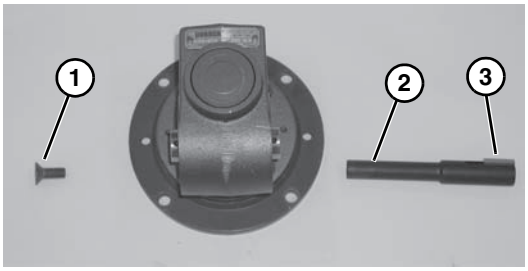


Figure 20

10. Insert the new shaft with key **(Figure 20, item 3)** into new gear reducer. Tighten M10 shaft locking screw **(Figure 20, item 1)** to 300 in–lbs (34 N–m).

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 **(Figure 19, item 4)** in keyway, slide motor **(Figure 19, item 2)** and gear reducer **(Figure 19, item 3)** together. Install screws **(Figure 19, item 1)** and tighten.
12. Install gearmotor to mounting bracket and tighten screws **(Figure 18, item 1)** to 110 in-lb (12 Nm).

NOTE

*Drive pulley **(Figure 17, item 1)** is removed. Wrap timing belt around drive pulley and complete step 13.*

13. Complete steps 6 through 10 of “Installation” section starting on page 7.

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.

LOCK OUT POWER BEFORE WIRING.

1. For single phase motor, unplug power cord from outlet.
2. For three phase and VFD variable speed motor:
   a. Loosen terminal box screws **(Figure 21, item 1)** and remove cover **(Figure 21, item 2)**.

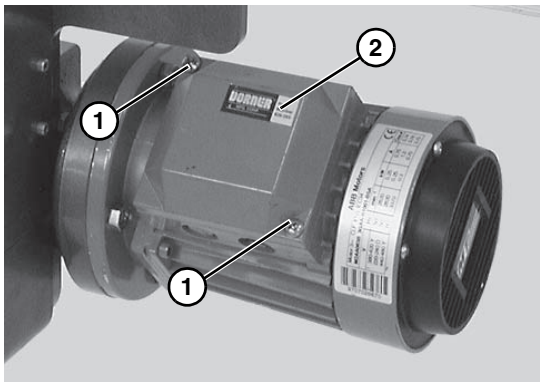


Figure 21

   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 (Figure 22, item **1)**.

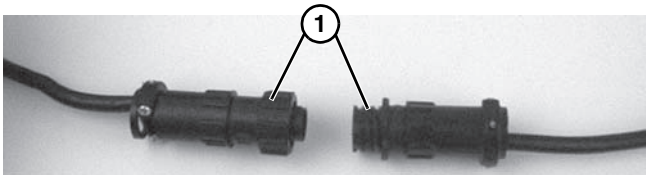


Figure 22

4. Remove four (4) screws **(Figure 23, item 1)**. Detach motor **(Figure 23, item 2)** from gear reducer **(Figure 23, item 3)**. Retain motor output shaft key **(Figure 23, item 4)**.

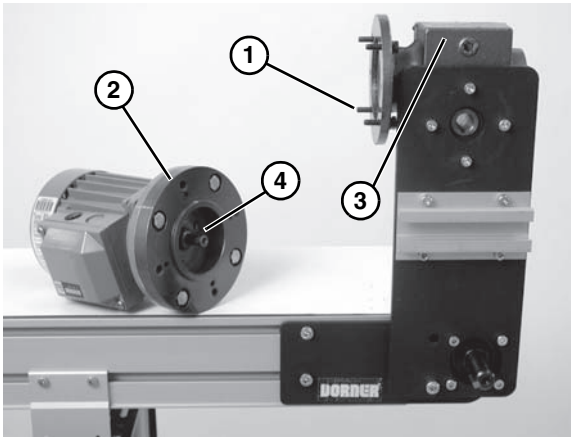


Figure 23

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 **(Figure 24, item 1)** in keyway, slide motor **(Figure 24, item 2)** and gear reducer together. Install screws **(Figure 24, item 3)** and tighten.

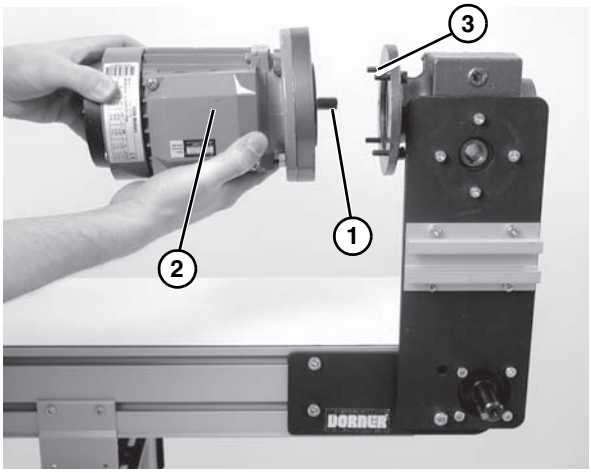


Figure 24

6. Replace wiring:

- For a single phase motor, reverse step 1 on page 12.
- For a three phase or VFD variable speed motor, reverse step 2 on page 12.
- For a DC variable speed motor, reverse step 3 on page 12.

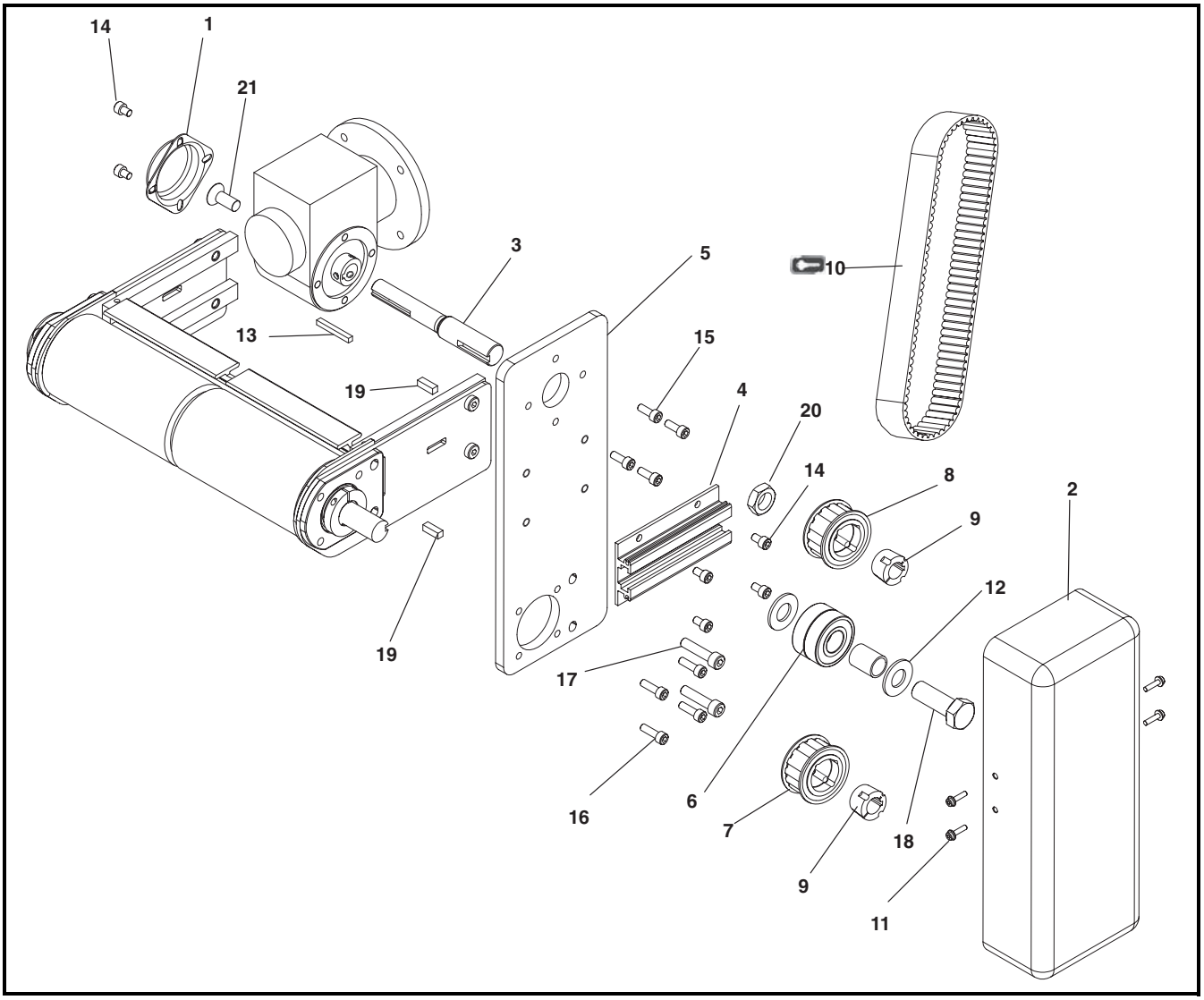
Notes

Service Parts

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.

Top Mount Drive Package for 90° Industrial Gearmotors



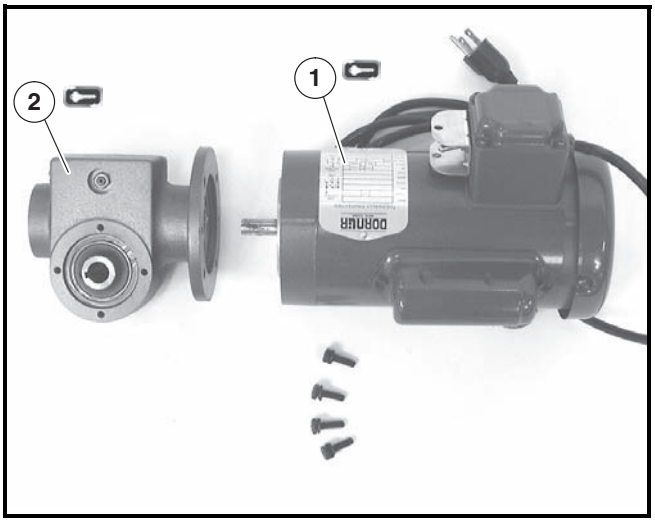
Item	Part Number	Description
1	300139	Bearing Shaft Cover
2	300871	Drive Cover
3	301146	Grove Gearhead Output Shaft
4	301076	Drive Tensioner Slide
5	301151	Mounting Plate
6	301153	Tensioner Bearing Assy
7	811–133	Driven Pulley, 14 Tooth, Taper Lock TL1108
	811–126	Driven Pulley, 16 Tooth, Taper Lock TL1108

Item	Part Number	Description
8	811–133	Drive Pulley, 14 Tooth, Taper Lock TL1108
	811–126	Drive Pulley, 16 Tooth, Taper Lock TL1108
	811–127	Drive Pulley, 18 Tooth, Taper Lock TL1210
	811–135	Drive Pulley, 20 Tooth, Taper Lock TL1210
	811–136	Drive Pulley, 22 Tooth, Taper Lock TL1610
	811–137	Drive Pulley, 24 Tooth, Taper Lock TL1610

Item	Part Number	Description
9	811–288	Taper Lock Bushing, 20 MM, TL1108
	811–289	Taper Lock Bushing, 20 MM, TL1210
	811–290	Taper Lock Bushing, 20 MM, TL1610
10	814-125	Timing Belt, 1.0” W x 25.5” L
	814–059	Timing Belt, 1.0” W x 27.0” L
	814–060	Timing Belt, 1.0” W x 28.0” L
	814-079	Timing Belt, 1.0” W x 30.0” L
11	920483M	Flanged Socket Head Screw, M4 x 16 mm
12	911–013	Flat Washer

Item	Part Number	Description
13	912–084	Square Key
14	920608M	Socket Head Screw, M6 x 8 mm
15	920618M	Socket Head Screw, M6 x 18 mm
16	920622M	Socket Head Screw, M6 x 22 mm
17	920835M	Socket Head Screw, M8 x 35 mm
18	961645M	Socket Head Screw, M16 x 45 mm
19	980630M	Square Key
20	991610M	Hex Jam Nut, M16
21	931025M	Flat Head Screw, M10 x 25 mm

90° Industrial Gearmotors



Item	Part No.	Description
1	62MS411FN	Motor, 0.25hp (0.19Kw), 115/230 Volts, 60 Hz, 1-Phase
	62MS411FR	Motor, 0.25hp (0.19Kw), 115/230 Volts, 60 Hz, 1-Phase with Reversing
	62MS423	Motor, 0.25hp (0.19Kw), 208–230/460 Volts, 60 Hz, 3-Phase
	22MSD3DEN	Motor, 0.25hp (0.19Kw), 130 VDC
	62MH411FN	Motor, 0.5hp (0.37Kw), 115/230 Volts, 60Hz, 1–Phase
	62MH423	Motor, 0.5hp (0.37Kw) 208–230/460 Volts, 60Hz, 3 Phase
	62MHD9DEN	Motor, 0.5hp (0.37Kw), 90 VDC
	32MS423EN	Motor, 0.5hp (0.37Kw), 230 Volts, 3 Phase Inverter Duty
	32MHD9DEN	Motor, 0.75 hp, (0.56Kw), 90 VDC
2	32M005HL	Gear Reducer, 5:1, NEMA 42CZ
	32M010HL	Gear Reducer, 10:1, NEMA 42CZ
	32M020HL	Gear Reducer, 20:1, NEMA 42CZ
	32M040HL	Gear Reducer, 40:1, NEMA 42CZ
	32M060HL	Gear Reducer, 60:1, NEMA 42CZ
	32M005HS	Gear Reducer, 5:1, NEMA 56C
	32M010HS	Gear Reducer, 10:1, NEMA 56C
	32M020HS	Gear Reducer, 20:1, NEMA 56C
	32M040HS	Gear Reducer, 40:1, NEMA 56C
	32M060HS	Gear Reducer, 60:1, NEMA 56C
	32M010HH	Gear Reducer, 10:1, 140 TC

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.

A representative will discuss action to be taken on the returned items and provide a Returned Goods Authorization number for reference.

There will be a return charge on all new undamaged items returned for credit where Dorner was not at fault. Dorner is not responsible for return freight on such items.

Conveyors and conveyor accessories	
Standard catalog conveyors	30%
MPB Series, cleated and specialty belt conveyors	50%
7400 & 7600 Series conveyors	non-returnable items
Engineered special products	case by case
Drives and accessories	30%
Sanitary stand supports	non-returnable items
Parts	
Standard stock parts	30%
MPB, 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 Technical Sales, Catalog Sales and Service Teams 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.

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