ENGINEERING MANUAL

Multiple Technologies Supported | Simple Pre-Configured Applications | Ready To Run Out Of The Box

MOTORS AND CONTROLLERS

An Application Guide for Providing a Complete Conveyor Solution

DORNER®

MOVE FAST. MOVE SMART.

MOTORS & CONTROLLERS

Selecting the Right Gearmotor and Controller

Step 1: Use application information provided within this manual to help narrow down motor styles and controllers available to perform the application

Step 2: Refer to the specific conveyor's engineering manual to size the appropriate motor

Step 3: Select a controller to match both the motor selection and application

Step 4: Add in any additional accessories to complete your application

Standard Conveyor Applications

	Single Phase Gearmotors	Three Phase Gearmotors with Manual Motor Starters	AC Gearmotors with				DC Gearmotors with Basic DC Controllers	Brushless DC Gearmotor with Brushless DC Controllers	Servo Gearmotors with Servo Controllers**
			Basic VFD Controllers	Full Featured VFD Controllers	Remote Basic VFD Controllers*	Remote Full Featured VFD Controllers*			
Fixed Speed/Always On	✓	✓							
Manual On/Off at Controller	✓	✓	✓	✓	✓	✓	✓	✓	✓
Variable Speed			✓	✓	✓	✓	✓	✓	✓
Remote On/Off From Other Machine* **				✓	✓	✓	✓	✓	✓
Remote On/Off From Dorner Accessories					✓	✓			✓
Manual Speed Control at Controller			✓	✓	✓	✓	✓	✓	✓
Remote Speed Control From Other Machine* **				✓		✓		✓	✓
Min/Max Speed Limits			✓	✓	✓	✓	✓		✓
Acceleration/Deceleration Control			✓	✓	✓	✓	✓	✓	✓
Indexing						✓		✓	✓
Accurate Positioning									✓

* See Remote VFD Applications for detailed uses
** See Servo Applications for detailed uses
*** User must wire and/or program per instructions

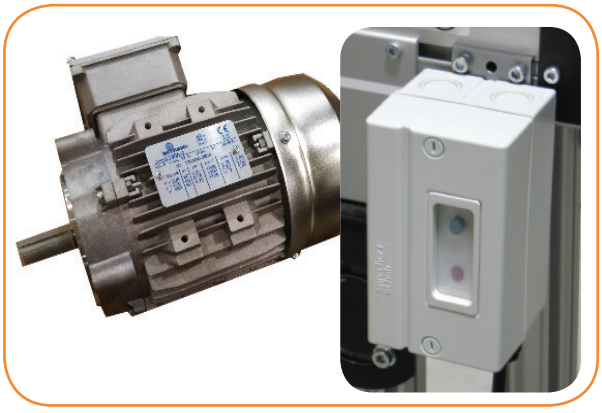
CONTENTS

MOTORS & CONTROLLERS

Note: Motor sizes and mounting packages differ by product line. For that reason this guide provides an overview of motor technology only. For detailed motor specs please consult the individual product lines engineering manual

MOTORS & CONTROLLERS

Dorner supports a wide arrange of motor technology to cover a variety of applications.



AC Fixed Speed

- Industrial and sanitary solutions available
- Standard NEMA or IEC frame sizes to match regional needs
- Up to 6 indexes per minute
- Multiple power options supported including
  - 115 VAC, 60 Hz, single-phase
  - 230 VAC, 50 Hz, single-phase
  - 230 VAC, 50/60 Hz, three-phase
  - 460 VAC, 50/60, Hz three-phase
  - 575 VAC, 60 Hz, three-phase
- Built in overload protection, On/Off switch, and power cord with 115 VAC, single-phase units
- Optional manual motor starters available for other units (technical specs on pg. 12)

AC Variable Speed

- Industrial and sanitary solutions available
- Standard NEMA or IEC frame sizes to match regional needs
- Multiple motor power options available including
  - 230 VAC, 50/60 Hz, three-phase
  - 460 VAC, 50/60, Hz three-phase
  - 575 VAC, 60 Hz, three-phase
- Controllers available:
  - Basic VFD controllers (technical specs on pg. 14)
  - Full Featured VFD controllers (technical specs on pg. 14)
  - Dorner Remote VFD includes motor cord with quick disconnect (Convenient applications on pg. 8 and technical specs on pg. 16)
- Indexing options available with up to 60 indexes per minute
- Pre-wired to controller when purchased together

MOTORS & CONTROLLERS

DC Variable Speed

- Industrial and sanitary solutions available
- Cost effective variable speed solution
- Two standard power options including 90 VDC and 130 VDC
- Includes motor cords with quick disconnect
- Basic DC controllers available (technical specs on pg. 18)

Brushless DC (BLDC) Variable Speed & Indexing

- Industrial solutions available
- Continuous duty rated
- No maintenance (no brushes to replace)
- Twice the load capacity compared to same size 3 phase motors
- Small compact footprint
- Quiet operation
- Greater application flexibility with larger speed range (30:1 turn down ratio)
- Closed loop controlled for greater indexing performance
- Up to 60 indexes per minute
- Includes motor cords with quick disconnect
- Board level and full featured controllers available (technical spec on pg. 19)

Servo Indexing

- Available on Dorner's Precision Move conveyors
- Brushless DC servo motor
- Closed loop controlled for greater indexing performances
- Up to 100 indexes per minute
- Precision movement up to ±0.020 inches
- Programmable index methods and profiles
- Includes motor cords with quick disconnect
- Stand alone and remote controlled Servo controllers available (convenient applications on pg. 10 and technical specs on pg. 21)

Basic Controllers

- Available for AC and DC motor technologies
- Equipped with power cord for convenient 115 VAC, 60 Hz, single-phase power
- NEMA 1 enclosures
- UL listed, CE Marked, and RoHS compliant drives available
- All mounting hardware provided to mount easily on the conveyor frame or stands
- Basic controller capabilities:
  - On/Off switch
  - Optional Forward/Reverse switch
  - Manual conveyor speed potentiometer
  - Internal acceleration and deceleration settings

Full Featured Controllers

- Available for AC and BLDC motor technologies
- Input power options include:
  - 115 VAC, 60 Hz, single-phase
  - 230 VAC, 50 Hz, single-phase
  - 230 VAC, 50/60 Hz, three-phase
  - 460 VAC, 50/60, Hz three-phase
- NEMA 1 and NEMA 4X options available
- UL listed, CE Marked, and RoHS compliant drives available
- All mounting hardware provided to mount easily on the conveyor frame or stands
- Full feature controller capabilities:
  - Digital display and HMI settings
  - On/Off switch
  - Forward/Reverse switch
  - Manual conveyor speed
  - Acceleration and deceleration settings
  - Remote On/Off
  - Remote speed control

MOTORS & CONTROLLERS

Remote VFD Controllers

- Compatible with VFD rated AC motor technologies
- Modular input devices to easily build conveyor applications
- Quick disconnect input devices require no wiring or wire termination
- Basic and Full Featured control options available
- Input power options include:
  - 115 VAC, 60 Hz, single-phase
  - 230 VAC, 50 Hz, single-phase
  - 230 VAC, 50/60 Hz, three-phase
  - 460 VAC, 50/60, Hz three-phase
- NEMA 1 and NEMA 12 enclosures
- All mounting hardware provided to mount easily on the conveyor frame or stands
- Up to 60 indexes per minute with indexing gearmotor
- Remote VFD controller capabilities:
  - Stand-alone application control
  - Capable of adding up to 3 input devices
  - Remote On/Off along with accessories capable
  - Remote speed control (Full feature only)

Servo Controllers

- Available on Servo motors
- Includes motor cords with quick disconnect
- Available in 115 VAC and 230 VAC, 50/60 Hz, single phase
- NEMA 12 enclosure
- UL listed, CE marked, and RoHS compliant drive and components
- Intuitive graphical user interface for easy programming
- Spreadsheet-like position programming
- Real time performance feedback software
- Click of a button auto-tuning and wizard tuning per applications
- Multiple homing options
- Servo controller capabilities:
  - Up to 100 indexes per minute
  - Accurate positioning
  - Multiple profile location and speed programs
  - Stand-alone and remote controlled packages

REMOTE VFD APPLICATIONS

Remote VFD Controllers provide hundreds of stand-alone applications to meet material handling needs. Some of the most common applications are explained here. See the controller manual for additional details.

Remote On/Off From Other Machine

- An external signal from a PLC or other relay control device triggers the conveyor to move forward or reverse

Components needed:

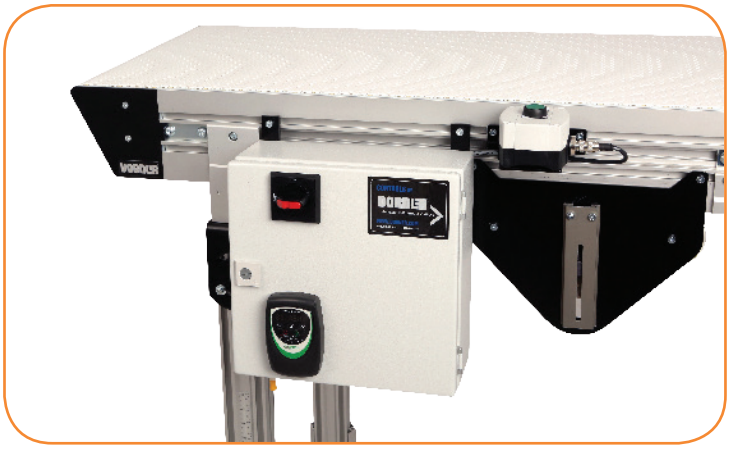
- Remote Basic VFD or Remote Full Featured VFD
- A signal from an external source such as a PLC

Remote On/Off From a Control Stop Kit

- Conveyor runs when a remotely located Push/Pull switch is in the up position and will stop when the switch is pressed. ***Note:*** power is still supplied to the controller regardless of Push/Pull switch state.

Components needed:

- Remote Basic VFD or Remote Full Featured VFD
- Control Stop Kit



Remote Jog Control from a Push Button

- Conveyor runs forward when a remotely located push button is pressed
- A remotely located Control Stop Kit can be added to the Remote Full Featured VFD to act as a remote On/Off signal. In this case, the conveyor will only move when both the Push/Pull button is in the up position and stop when the Push Button is pressed. ***Note:*** power is still supplied to the controller regardless of Push/Pull switch state

Components needed:

- Remote Basic VFD or Remote Full Featured VFD
- Push Button Kit
- Optional Control Stop Kit (requires Remote Full Featured VFD)

Time Based Indexing via a Push Button

- Conveyor indexes for a user programmable set period of time when a button is pressed
- A remotely located Control Stop Kit can be added to the Remote Full Featured VFD to act as a remote On/Off signal. In this case, the conveyor will only move when both the Push/Pull button is in the up position and stop when the Push Button is pressed. ***Note:*** power is still supplied to the controller regardless of Push Pull switch state

Components needed:

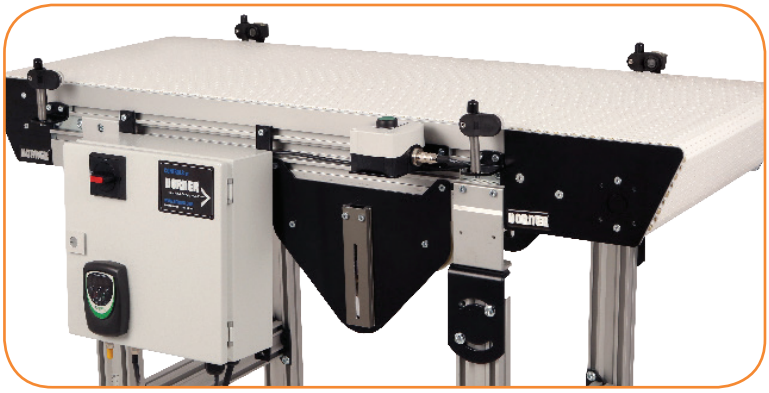
- Remote Full Featured VFD
- Push Button Kit
- Optional Control Stop Kit

End Stop with Photo Eye

- Conveyor runs until a photo eye is blocked
- A remotely located Push Button Kit can be added to run the conveyor regardless of whether the End Stop Photo Eye is blocked or not
- A remotely located Control Stop Kit can be added to the Remote Full Featured VFD to act as a remote On/Off signal. In this case, the conveyor will only move when both the Push/Pull button is in the up position and stop when the Push Button is pressed. ***Note:*** power is still supplied to the controller regardless of Push Pull switch state

Components needed:

- Remote Basic VFD or Remote Full Featured VFD
- Photo Eye Kit
- Optional Push Button Kit
- Optional Control Stop Kit (requires Remote Full Featured VFD)



Run with Blocked Photo Eye and End Stop with Photo Eye

- Conveyor runs when the first photo eye is blocked
  - On/Off time delays can be set by the user
- An End Stop Photo Eye will stop all motion regardless of first photo eye state
- An optional remotely located Push Button Kit can be added to override either the Run with Blocked Photo Eye or the End Stop Photo Eye

Components needed:

- Remote Full Featured VFD
- Photo Eye Kit (2x)
- Optional Push Button Kit

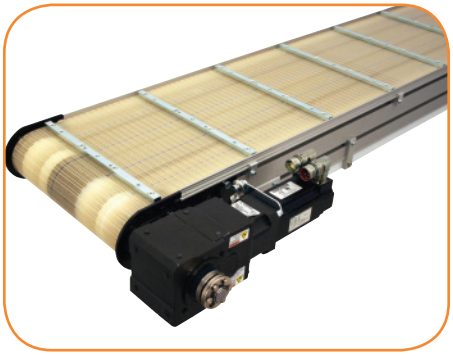
Run with blocked Photo Eye

- A conveyor runs as long as the photo eye is blocked
- Time based indexing can be triggered when the photo eye is blocked with On/Off time delays in the Remote Full Featured VFD
- An optional remotely located Push Button Kit can be added to run the conveyor regardless of whether the Photo Eye is blocked or not
- A remotely located Control Stop Kit can be added to the Remote Full Featured VFD to act as a remote On/Off signal. In this case, the conveyor will only move when both the Push/Pull button is in the up position and stop when the Push Button is pressed. ***Note:*** power is still supplied to the controller regardless of Push/Pull switch state

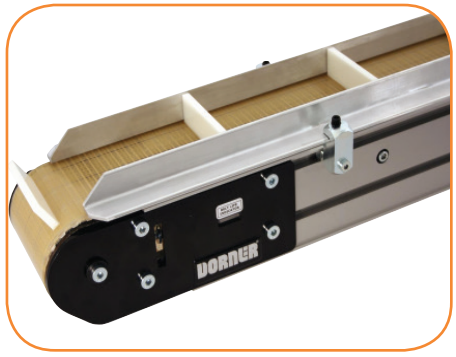
Components needed:

- Remote Basic VFD or Remote Full Featured VFD
- Photo Eye Kit
- Optional Push Button Kit
- Optional Control Stop Kit (requires Remote Full Featured VFD)

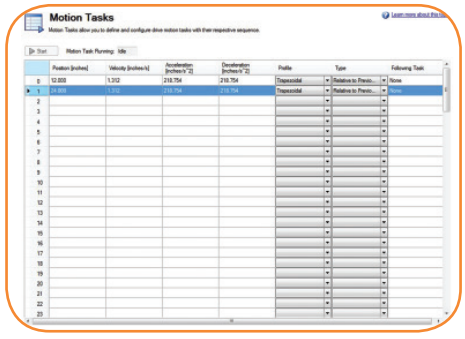
Dorner Servo control systems provides a simple turn-key control with an easy to use graphical user interface to program your motion tasks. The following overviews some of the basic concepts behind servo control and provides common conveyor type movements.



Servo Controlled Fixture Conveyor



Accurate Cleat Indexing



Spreadsheet like Position Programming

Examples of Servo Controlled Conveyor Capabilities:

Absolute Indexing
- Used when treating a conveyor as a moving tabletop
- Conveyor moves a fixed distance from the home position when a button is pressed or a remote signal is sent

Incremental Indexing—Auto Cycle
- Typical conveyor type movement used when motion is expected to continue infinitely in one direction
- Conveyor moves a fixed distance from either the last stopping point or the last targeted stopping point when a button is pressed or a remote signal is sent
- System automatically repeats after a user programmable amount of time

Electronic Gearing
- Conveyor can follow another conveyor just as if they were linked with a timing belt
- An encoder needs to be attached to the followed or master conveyor
- Only available for the Remote Servo Controller

Multi– Task Select
- Any 8 pre-programmed moves can be selected remotely through discrete I/O
- Great for multiuse conveyors
- Only available for the Remote Servo Controller

Incremental Indexing
- Typical conveyor type movement used when motion is expected to continue infinitely in one direction
- Conveyor moves a fixed distance from either the last stopping point or the last targeted stopping point when a button is pressed or a remote signal is sent

Registration Indexing
- Used for part detection when parts enter the system at unknown rates or when cleats are used on a conveyor
- Conveyor moves until a photo eye detects a cleat, fixture, or edge of a part
- Move starts with the push of a button or a remote signal

Remote Jog Run
- Can be added to any application for additional conveyor control
- Conveyor runs as long as the jog input is on

Photo Eye Homing Available
- Ensure your conveyor is in the proper starting position by using a Dorner Photo Eye kit to home the conveyor

MOTORS & CONTROLLERS

Can't find a pre-defined application to fit your needs? From additional sensors or accessories to complete system integration, Dorner's Engineered Solutions Group can create a custom design to meet your requirements.

Custom panels for almost any application

- Multiple drives in one enclosure
- Easy integration of other sensors and devices
- HMI programming
- Stainless steel enclosures

Examples of Custom Engineered Solutions:

Pull Cord E-Stops

Part spacing through multiple servo integration

Part Counting

Encoder integration

Manual Motor Starters

Manual motor starts manual electronic disconnects that provide motor overload protection and are required by the National Electric Code (NEC) for safe motor operation.

- Includes mounting hardware

Regulatory Approvals

Illustration **A**

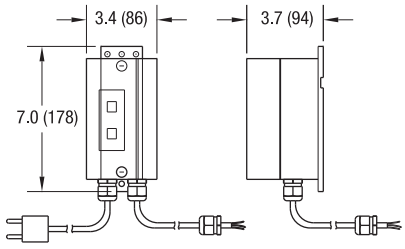


Illustration **B**

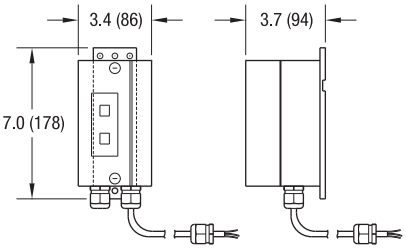


Chart B Manual Motor Starter (Washdown Capable)

- Nema 4X Plastic Enclosure
- Stainless Steel mounting hardware
- IP 66
- Start/Stop Switch
- Lock out tag out capable
- Includes wiring to Motor
- Power to Starter by others
- No plug/cord set included

Part Number	In Volts	In Phase	Hz	FLA	Illustration
74MM11F	115	1	60	6.3 - 10	C
74MM21D	208-230	1	60	2.5 - 3.9	C
74MM23A	208-230	3	60	0.63 - 0.99	C
74MM23B	208-230	3	60	1.0 - 1.59	C
74MM23C	208-230	3	60	1.6 - 2.4	C
74MM23D	208-230	3	60	2.5 - 3.9	C
74MM23E	208-230	3	60	4.0 - 6.3	C
74MM43A	460	3	60	1.6 - 2.4	C
74MM43B	460	3	60	2.5 - 3.9	C
74MM43C	460	3	60	0.63 - 0.99	C
74MM43D	460	3	60	1.0 - 1.59	C

Illustration **C**

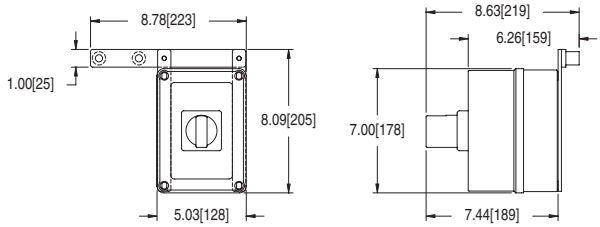


Chart H CE

- 230V, 1 phase includes cord, plug & starter
- 230/400 Volts, 3 phase wiring to starter by others
- Wiring between motor and starter provided when ordered together
- 50 Hz

Part Number	In Volts	In Phase	Amp Range	Illustration
62(c)M21H	230	1	0.25 - .04	A
62(c)M23H	230	3	0.16 - 0.25	B
62(c)M43H	400	3	0.1 - 0.16	B

Chart I 230/400V 50Hz to 2.5 amp

- 230 Volts, 1 phase includes cord, plug and starter
- 230/400 Volts, 3 phase wiring to starter by others
- Wiring between motor and starter provided when ordered together
- 50 Hz

Part Number	In Volts	In Phase	Amp Range	Illustration
62(c)M21T	230	1	1.6 - 2.5	A
62(c)M23T	230	3	1.0 - 1.6	B
62(c)M43T	400	3	0.63 - 1.0	B

Chart J 230/400V 50 Hz to 4 amp

- 230 Volts, 1 phase includes cord, plug and starter
- 230/400V, 3 phase wiring to starter by others
- Wiring between motor and starter provided when ordered together
- 50 Hz

Part Number	In Volts	In Phase	Amp Range	Illustration
62(c)M21J	230	1	2.5 - 4.0	A
62(c)M23J	230	3	1.6 - 2.5	B
62(c)M43J	400	3	1.0 - 1.6	B

Chart K 230/400 V, 50 Hz, 2.5 to 6.3 amp

- 230/400 Volts, 3 phase wiring to starter by others
- Wiring between motor and starter provided when ordered together
- 50 Hz

Part Number	In Volts	In Phase	Amp Range	Illustration
62(c)M23K	230	3	4.0 - 6.3	B
62(c)M43K	400	3	2.5 - 4.0	B

CE **Note:** When buying a gearmotor only without the starter, the customer must supply their own on/off switch and motor overload protection to comply with NEC and CE safety directive.

FLA = Full Load Amperes **(c)** = Electrical Configuration **G** = CE German **F** = CE French **U** = CE Great Britain **Note:** Dimensions = in (mm)

Manual Motor Starters *Continued*

Chart L — 230/460V 60 Hz to 1.6 amp

- 230/460 Volts, 3 phase wiring to starter by others
- Wiring between motor and starter provided when ordered together
- 60 Hz

Part Number	In Volts	In Phase	Amp Range	Illustration
62MM23L	230	3	1.0 - 1.6	B
62MM43L	460	3	0.4 - .63	B
62MM23H	230	3	0.16 - .25	B

Chart M — 230/460V 60Hz to 2.5 amp

- 230/460 Volts, 3 phase wiring to starter by others
- Wiring between motor and starter provided when ordered together
- 60 Hz

Part Number	In Volts	In Phase	Amp Range	Illustration
62MM23M	208–230	3	1.6 - 2.5	B
62MM43M	460	3	1.0 - 1.6	B

Chart P — 230/460V 60Hz to 4 amp

- 230/460 Volts, 3 phase wiring to starter by others
- Wiring between motor and starter provided when ordered together
- 60 Hz

Part Number	In Volts	In Phase	Amp Range	Illustration
62MM23U	208–230	3	2.5 - 4.0	B
62MM43P	460	3	1.6 - 2.5	B

Chart Q — 230/460V 60Hz to 6.3 amp

- 230/460 Volts, 3 phase wiring to starter by others
- Wiring between motor and starter provided when ordered together
- 60 Hz

Part Number	In Volts	In Phase	Amp Range	Illustration
62MM23Q	208–230	3	4.0 - 6.3	B
62MM43Q	460	3	2.5 - 4.0	B

Chart R — 230/400 V, 50 Hz, 1.0 to 4.0 amp

- 230/400 Volts, 3 phase wiring to starter by others
- Wiring between motor and starter provided when ordered together
- 50 Hz

Part Number	In Volts	In Phase	Amp Range	Illustration
62(c)M23R	230	3	2.5 - 4.0	B
62(c)M43R	400	3	1.0 - 1.6	B

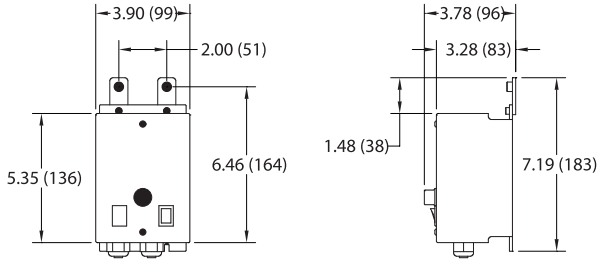
* = See FLA from motor charts **Note:** Dimensions = in (mm)

VFD Variable Speed Controllers

Basic, Full Featured, and Remote Controllers will offer control right at the side of your conveyor. Full featured controllers have the added benefit of being remotely controlled by a PLC while remote controllers offer control through Dorner's remote accessories. All controllers will offer motor overload protection when sized appropriately with the motor.

Chart E — Basic VFD Controller

- Variable frequency drive
- Aluminum back plate with plastic enclosure
- Lighted On/Off switch
- Speed potentiometer
- Forward/Stop/Reverse switch (22MV1122BR)
- Includes motor cord and power cord
- Includes mounting brackets and hardware
- UL listed and RoHS compliant

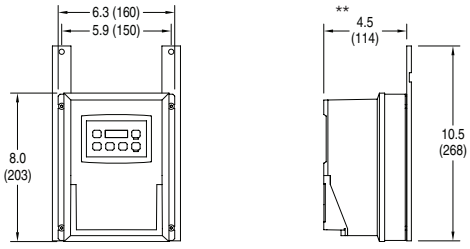


Regulatory Approvals

Part Number	Input Volts	Input Phase	Input Hz	Output Volts	Output Phase	Max Kw*	Max Amps	Reversing
22MV1122B	115	1	60	230	3	0.5	2.4	No
22MV1122BR	115	1	60	230	3	0.5	2.4	Yes

Chart D — Full Feature VFD Controller

- Full feature VFD control
- NEMA 4 enclosure
- Digital display
- Keypad with Start/Stop, Forward/Reverse and speed variations
- Includes cord to motor
- Power to controller by others
- 62MV1122 includes line cord to controller
- Mounting hardware



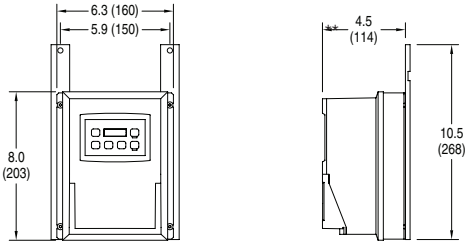
Regulatory Approvals

Part Number	Input Volts	Input Phase	Input Hz	Output Volts	Output Phase	Max Hp	Output Amps*	Reversing
32MV1122	115	1	60	230	3	0.5	2.2	Yes
32MV2122	230	1	60	230	3	0.5	2.2	Yes
32MV1121	115	1	60	230	3	1.0	4.0	Yes
32MV2121	230	1	60	230	3	1.0	4.0	Yes
32MV2127	230	1	60	230	3	2.0	6.8	Yes
32MV2322	230	3	60	230	3	0.5	2.2	Yes
32MV2327	230	3	60	230	3	2.0	6.8	Yes
32MV4341	460	3	60	460	3	1.0	2.0	Yes
32MV4347	460	3	60	460	3	2.0	3.4	Yes

** Controls greater than or equal to 1 Hp are 6.31 in (160 mm) deep

Chart B — VFD Controller, Full CE Compliance

- VFD control
- IP 65 enclosure
- EMC filter
- Variable speed
- Mounting hardware
- Line cord and motor cord
- Motor cord only on 460V



Regulatory Approvals

Part Number	Input Volts	Input Phase	Input Hz	Output Volts	Output Phase	Max Kw*	Max Amps	Reversing
62UV2121	230	1	50	230	3	0.75	4.2	Yes
62UV4341	400	3	50	400	3	0.75	2.1	Yes
62UV2127	230	1	50	230	3	1.50	6.8	Yes
62UV4347	400	3	50	400	3	1.50	3.4	Yes

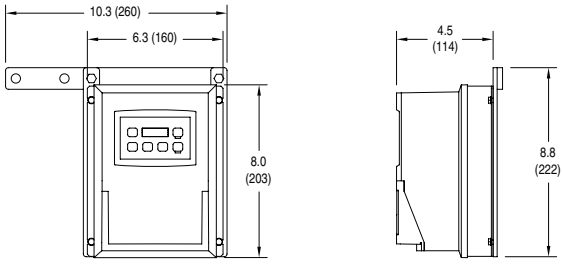
In order for this drive to meet full CE requirements for European application a separate CE approve RFI filter must be installed. Product shown in chart B above have this filter pre-installed and are recommended for use in the European Union. ** Controls greater than or equal to 1 Hp are 6.31 in (160 mm) deep

* = See FLA from motor charts **Note:** Dimensions = in (mm)

VFD Variable Speed Controllers *Continued*

Chart A — Full Featured VFD (Washdown Capable)

- Variable Frequency Drive
- IP 65 plastic enclosure
- Stainless steel mounting hardware
- Digital display
- Keypad with Start/Stop and speed variation
- Includes cord to motor
- Power to controller by others



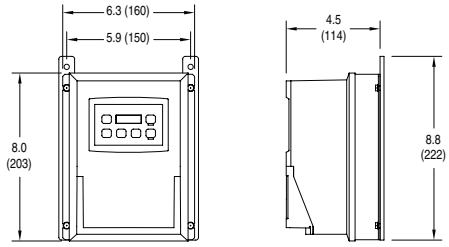
Regulatory Approvals

Part Number	Input			Output		Max Hp	Max Amps	Reversing
	Volts	Phase	Hz	Volts	Phase			
76MV1122S	115	1	60	230	3	0.5	2.2	Yes
76MV2322S	230	3	60	230	3	0.5	2.2	Yes
76MV1121S	115	1	60	230	3	1.0	4.0	Yes
76MV2121S	230	1	60	230	3	1.0	4.0	Yes
76MV4341S	460	3	60	460	3	1.0	2.0	Yes
76MV2127S	230	1	60	230	3	2.0	6.8	Yes
76MV2327S	230	3	60	230	3	2.0	6.8	Yes
76MV4347S	460	3	60	460	3	2.0	3.4	Yes

** Controls greater than or equal to 1 Hp are 6.31 in (160 mm) deep

Chart B — VFD Controller, Full CE Compliant (Washdown Capable)

- VFD control
- IP 65 plastic enclosure
- EMC filter
- Digital display
- Stainless steel mounting hardware
- Includes cord to motor
- Power to controller by others



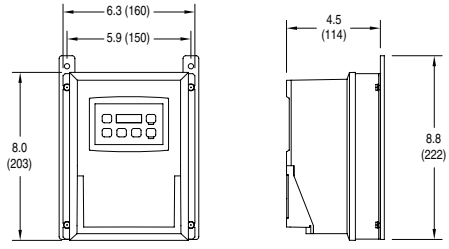
Regulatory Approvals

Part Number	Input Volts	Input Phase	Input Hz	Output Volts	Out Phase	Max kW	Max Amps	Reversing
72UV2121S	230	1	50	230	3	0.37	4.0	Yes
72UV4341S	400	3	50	400	3	0.74	2.0	Yes

In order for this drive to meet full CE requirements for European application a separate CE approve RFI filter must be installed. Product shown in chart B above have this filter pre-installed and are recommended for use in the European Union. ** Controls greater than or equal to 1 Hp are 6.31 in (160 mm) deep

Chart G — Full Featured VFD Controller (Washdown Capable)

- VFD control
- Nema 4X Plastic Enclosure
- Stainless steel mounting hardware and fasteners
- Digital display
- Keypad with Start/Stop, Forward/Reverse and speed variation
- Includes cord to motor
- Power to controller by others



Regulatory Approvals

Part Number	Input Volts	Input Phase	Input Hz	Output Volts	Out Phase	Max Hp	Output Amp Range*	Reversing
72MV1124S	115	1	60	230	3	0.5	0.7 - 2.4	Yes
72MV2124S	230	1	60	230	3	0.5	0.7 - 2.4	Yes
72MV1122S	115	1	60	230	3	0.5	0.7 - 2.4	Yes
72MV2322S	230	3	60	230	3	0.5	0.7 - 2.4	Yes

* See FLA from motor charts

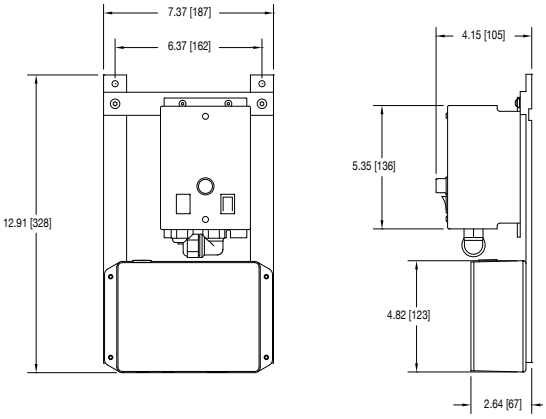
= Washdown **FLA =** Full Load Amperes

Some motors and gear reducers may normally operate hot to the touch. Consult factory for specific operating temperatures. Note: Dimensions = in (mm)

Remote Basic VFD

Specifications

- Variable frequency drive
- 0.5 HP, 2.4 Amp output
- 115V single phase input voltage
- 230V three phase output
- Motor overload protection
- Nema 1 enclosure
- Quick disconnect motor cord
- Quick disconnect plug for control devices
- Internal terminals for hardwired PLC or machine interface

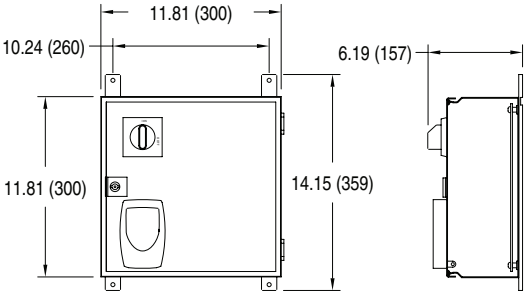


Part Number	Input Volts	Input Phase	Input Hz	Output Volts	Max Hp	Max Amps
75M-V1-3211-05B	115	1	60	230	0.5	2.4

Remote Full Featured VFD

Specifications

- Variable frequency drive
- 115V/230V single phase input voltage
- 230V/460V three phase input voltage
- Motor overload protection
- Lockout/Tagout disconnect
- Nema 12 enclosure
- Operator interface panel
- Quick disconnect motor cord
- Quick disconnect plug for control devices
- Internal terminals for hardwired PLC or machine interface



Part Number	Input Volts	Input Phase	Input Hz	Output Volts	Max Hp	Max Amps
75M-V2-3211-05	115	1	60	230	1	4.0
75M-V2-3211-10	115	1	60	230	1.5	5.2
75M-V2-3232-10	230	1 or 3	60	230	1.5	5.2
75M-V2-3232-20	230	1 or 3	60	230	2	7.0
75M-V2-3434-10	460	3	60	460	1.5	2.8
75M-V2-3434-20	460	3	60	460	2	3.8

Indexing with Remote Full Featured VFD

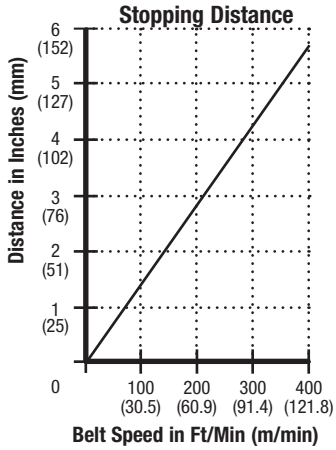
Motor Specifications

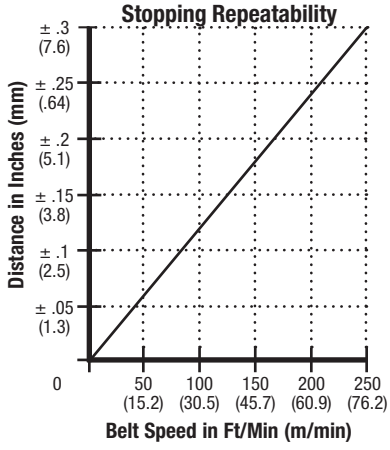
- Electronic indexing
- Up to 60 indexes per minute
- Requires run signal
- Low inertia motor
- Adjustable acceleration/deceleration
- Compatible with 2200 and 3200 Series standard load gearmotor mounting packages
- Utilizes standard variable frequency drive controller and accessory kits
- Pre-wired motor and AC line cords

Controller Specifications

- Variable frequency drive
- 115V single phase input voltage
- 230V three phase input voltage
- 230V three phase output
- Motor overload protection
- Nema 12 Enclosure
- Operator interface panel
- Quick disconnect motor cord
- Two input locations for control devices
- Quick disconnect plug for control devices
- Lockout/Tagout provided

Part Number	Input Volts	Input Phase	Input Hz	Output Volts	Max HP	Max Amps
75M-V2-3211-05E	115	1	60	230	1.0	4.0
75M-V2-3232-10E	230	1 or 3	60	230	1.5	5.2
75M-V2-3434-10E	460	3	60	460	1.5	2.8



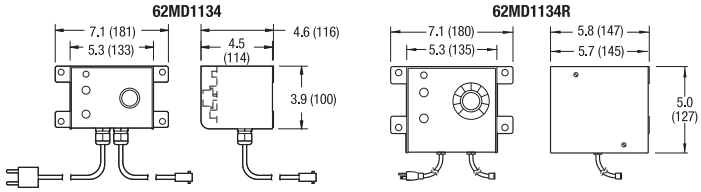


DC Variable Speed Controllers

Basic type controllers that offer control of your conveyor right at the side of the conveyor. All controllers will offer overload protection when sized appropriately with the motor.

Chart A

- PWM DC control
- Nema 1 enclosure
- Line cord and motor cord
- On/Off switch for 62MD1134
- Forward/Off/Reverse switch for 62MD1134R
- Speed potentiometer
- Mounting hardware

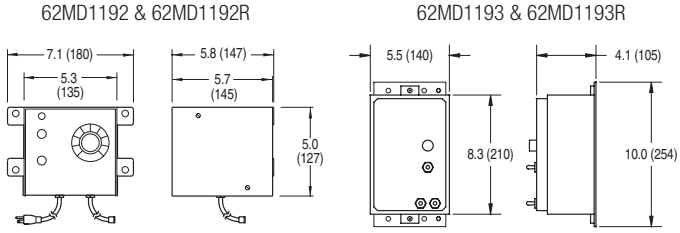


Regulatory Approvals

Part Number	Input Volts	Input Phase	Input Hz	Output Volts	Max Amps*	Reversing
62MD1134	115	1	60	130VDC	3.2	No
62MD1134R	115	1	60	130VDC	5.0	Yes

Chart C — Brush-Type DC Controller

- PWM DC control
- NEMA 1 enclosure
- Line cord and motor cord
- On/Off switch for 62MD1192 and 62MD1193
- Forward/Off/Reverse switch for 62MD1192R and 62MD1193R
- Speed potentiometer
- Mounting hardware



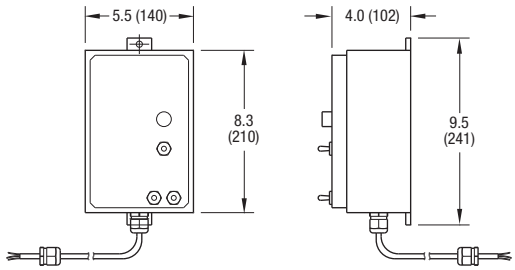
Regulatory Approvals

RoHS

Part Number	Input Volts	Input Phase	Input Hz	Output Volts	Max Amps*	Reversing
62MD1192	115	1	60	90VDC	5.0	No
62MD1192R	115	1	60	90VDC	5.0	Yes
62MD1193	115	1	60	90VDC	7.5	No
62MD1193R	115	1	60	90VDC	7.5	Yes

Chart F — (Washdown Capable)

- SCR DC control
- Nema 4X enclosure
- FDA white epoxy painted enclosure
- Forward/Brake/Reverse switch
- Jog/Run switch
- Speed potentiometer
- Includes cord to motor
- Power to controller by others
- Stainless steel mounting hardware



Regulatory Approvals

Part Number	Input Volts	Input Phase	Input Hz	Max Hp	Max Amps*	Reversing
62MD11915	115	1	60	1	10.2	Yes

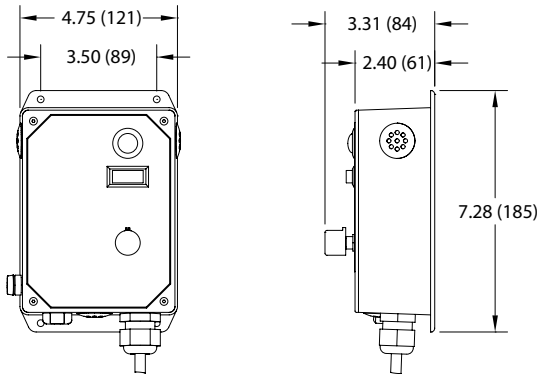
* = See FLA from motor charts **Note:** Dimensions = in (mm)

1100 Series BLDC Controllers

Matching the appropriate brushless DC controller to the brushless DC motor allows you to take full advantage of the motor feedback. Dorner controllers are paired to the motor for simple and fast set-up.

Chart A — Full Feature

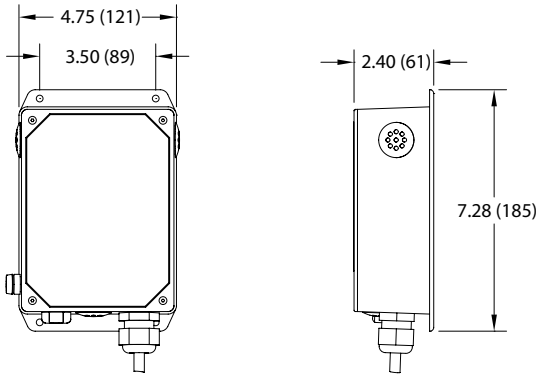
- Brushless DC
- Nema 1 enclosure
- Includes power cord and motor terminal
- On/Off switch
- Speed potentiometer
- Forward/Reverse switch



Part Number	Input Volts	Input Phase	Input Hz	Max Input Amps	Output	Max Watts	Reversing
11M11BD-F	115	1	60	1.0	BDC	30	Yes

Chart B — Remote Signal

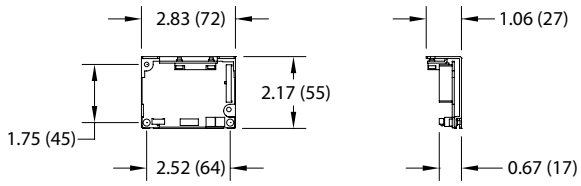
- Brushless DC
- Nema 1 enclosure
- Includes power cord and motor terminal
- Access hole with strain relief for remote signal wiring
- Remote speed setting
- Remote indexing (up to 60 times/min)
- Remote Forward/Reverse



Part Number	Input Volts	Input Phase	Input Hz	Max Input Amps	Output	Max Watts	Reversing
11M11BD-R	115	1	60	1.0	BDC	30	Yes

Chart C — Board Level

- Brushless DC
- Open board controller
- Includes motor terminal
- 24VDC
- All wiring, enclosure and overloads by others



Regulatory Approvals

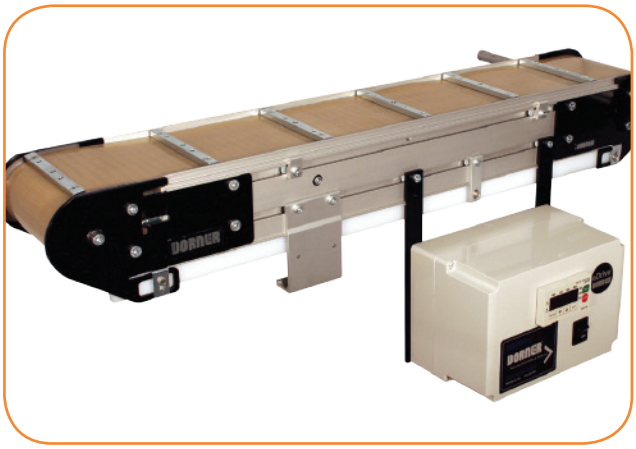
c UL us
CE
RoHS

Part Number	Input Volts	Input Phase	Input Hz	Rated Input Amps	Max Input Amps	Output	Max Watts	Reversing
11M2DBD-B	24VDC	N/A	N/A	2.1	3.7	BDC	30	Yes

Note: Dimensions = in (mm)

Due to the wide variety of drive set ups and applications, point of installation guarding is the responsibility of the end user.

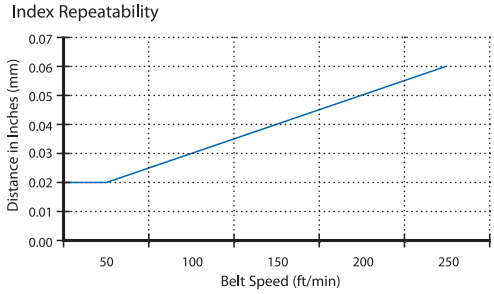
2200 & 3200 Series BLDC Variable Speed and Indexing Controllers



Specifications

Brushless DC gearmotors provide an accurate cost effective alternative to Servo indexing.

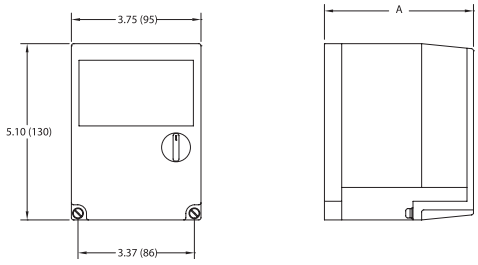
- All brushless DC gearmotors and controllers are indexing capable
- Up to 60 indexes per minute
- Minimum acceleration or deceleration time = 0.2 seconds
- Requires dry contact On/Off signal



Board Level Driver

Chart G Brushless DC Controller

- Closed loop brushless DC with hall effect feedback
- Panel mountable enclosure
- Digital keypad and display
- Programmable speed, acceleration and deceleration
- Remote On/Off and speed capable
- All wiring and by others



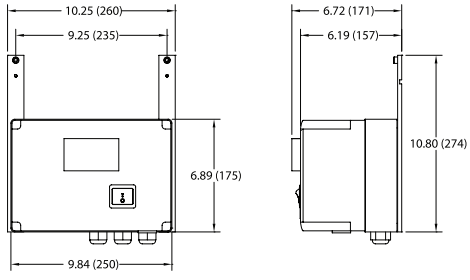
Regulatory Approvals

Part Number	Input Volts	Input Phase	Input Hz	Max Input Amps	Output	Max Watts	Reversing	"A" Dimensions
63MBD11B60BL	115	1	60	4.5	BDC	60	Yes	3.31 (84)
63MBD11B200BL	115	1	60	8.8	BDC	200	Yes	4.33 (110)

Full Feature Variable Speed Controllers

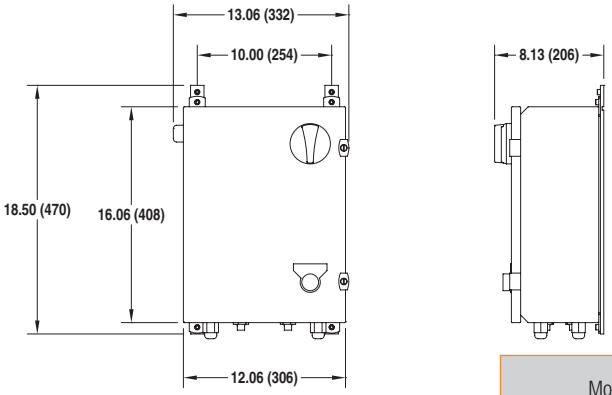
Chart F Brushless DC Controller

- Closed loop brushless DC with hall effect feedback
- Nema 1 plastic enclosure
- Digital keypad and display
- Programmable speed, acceleration and deceleration
- Remote On/Off and speed capable with wire access hole in enclosure provided
- Includes motor cord with quick disconnect and power cord (single phase only)
- Includes mounting brackets and hardware



Part Number	Input Volts	Input Phase	Input Hz	Max Input Amps	Output	Max Watts	Reversing
63MBD11B60	115	1	60	4.5	BDC	60	Yes
63MBD23B60	230	3	60	1.5	BDC	60	Yes
63MBD11B200	115	1	60	8.8	BDC	200	Yes
63MBD23B200	230	3	60	3.4	BDC	200	Yes

Precision Move Servo Motor Indexers

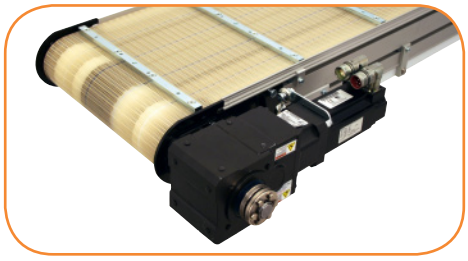


Specifications

- Quick disconnect motor and feedback connections
- Graphical user interface and icons make programming easy
- Spreadsheet-like position programming
- Real time performance feedback software
- Click of a button auto-tuning and wizard tuning per application
- Multiple homing options
- Kollmorgen AKD Series Control
- 1100 watts capacity
- (2) Input voltage options:
  - 115 Volt Single Phase input
  - 230 Volt Single Phase input
- UL listed, CE marked and RoHS compliant drive and components
- UL Labeled Controller Package
- Housed in a Nema 12 enclosure
- Includes high voltage fusing and low voltage power supply
- Quick disconnect motor cabling
- Quick disconnect sensor locations

Model	Part Number	Input Volts	Input Phase	Input Hz	Cont. Amps	Peak Amps	Cont. Watts
115V Stand Alone*	75M-S1-11-3	115	1	60	3	9	1100
115V External Control	75M-S2-11-3	115	1	60	3	9	1100
230V Stand Alone*	75M-S1-21-3	230	1	60	3	9	1100
230V External Control	75M-S2-21-3	230	1	60	3	9	1100

Compatible Servo Motors Available



** Note: For Stand Alone Control Applications, Enable / Index Kit (75M-EN-1) is recommended.*

See page 24 for details.

Due to the wide variety of conveyor and stand options along with possible configurations, stability of the final setup is the responsibility of the end user.

2200 Series Gearmotor Compatibility

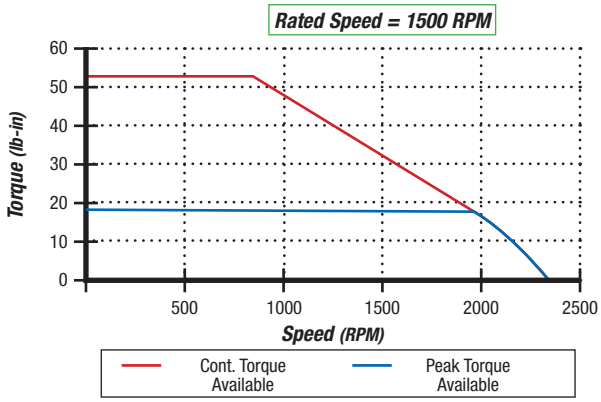
Part Number	Controller Voltage	Max Belt Speed (Ft/min)		Min Belt Speed (Ft/min)	Torque (in-lb)	RPM
		Bottom Mount	Flush Mount			
22M004PR2B1KW	115V input 230V input	166 276	253 420	10 10	79 79	325 625

3200 Series Gearmotor Compatibility

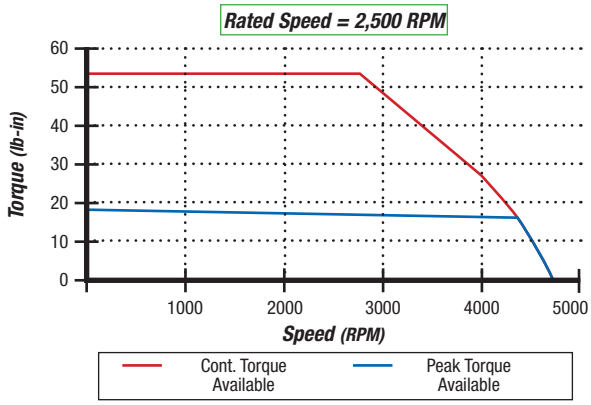
Part Number	Ratio	Rated Torque (in-lb)	Rated RPM @115V	Rated RPM @230V	Motor Mfg.
32M008HR2B1KW	8:1	130	187	312	Kollmorgen AKM Series

Precision Move Servo Motor / Control Torque Curves

Motor Only with 115V Control



Motor Only with 230V Control



Precision Move Servo Motor Performance Data

Accuracy:

- 2200 Series: Index consistency = ±0.040"
- 3200 Series: Index consistency = ±0.020"

Maximum Speed (Velocity):

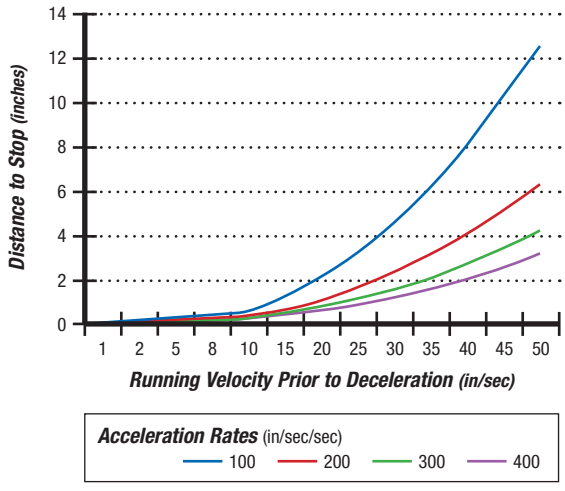
- 2200 Series: 300 ft/min = 60 in/sec
- 3200 Series: 260 ft/min = 52 in/sec

Maximum Acceleration Rate: 200 in/sec/sec

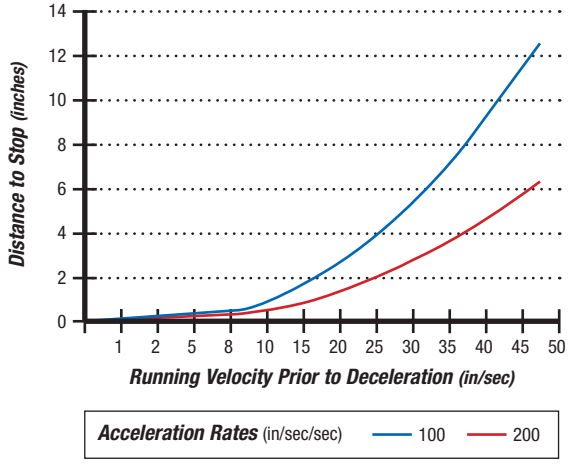
Maximum Deceleration Rate: 400 in/sec/sec

Maximum Index Rate: 100 indexes per minute (0.6 sec total cycle; 0.2 sec accel, 0.2 sec dwell, 0.2 sec decel)

Minimum Distance for Slow Down / Deceleration



Minimum Distance for Speed Up / Acceleration



Due to the wide variety of conveyor and stand options along with possible configurations, stability of the final setup is the responsibility of the end user.

Dorner control accessories are designed to help you commission your system quickly and easily without complicated wiring or wire termination. All Dorner accessories that are designed for Remote VFD and Servo control units have M12 type connections. Simply decide on the application, choose your controller, and add in the appropriate accessories.

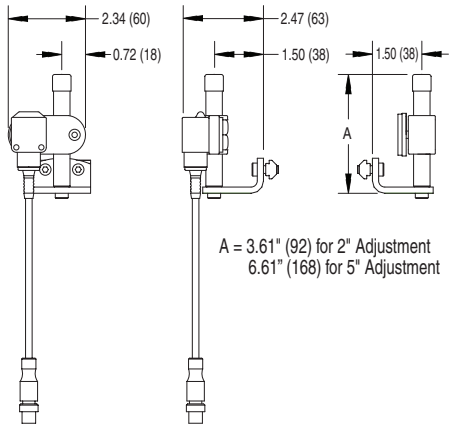
Photo Eye Kits

Not compatible with Brushless DC Controllers

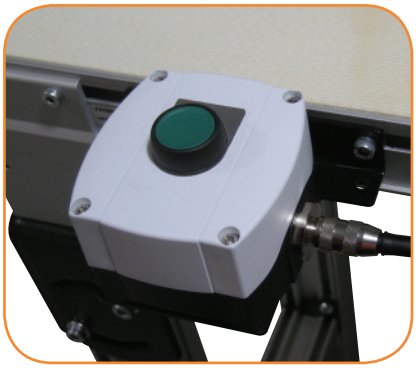
Specifications

- Compatible with Dorner Remote VFD and Servo Controllers
- 24V DC Retro Reflective Sensor
- Quick disconnect plug
- Includes reflector and mounting
- Fully adjustable mount for 2200/3200 Series conveyors
- 2" and 5" adjustment height ranges

Part Number	Description
75M-PE-1 75M-PE-2	2" height adjustment 5" height adjustment



Jog Push Button Kit

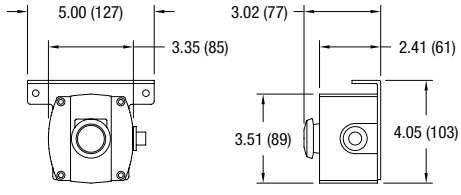


Not compatible with Brushless DC Controllers

Specifications

- Compatible with Dorner Remote VFD Controllers
- Plastic Nema 12 enclosure
- Quick disconnect receptacle
- Mounting for 2200/3200 and Support Stands
- Horizontal or vertical mount

Part Number	75M-JG-1



Horizontal Mount

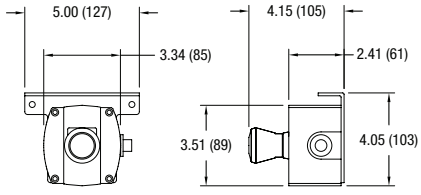
Control Stop Kit

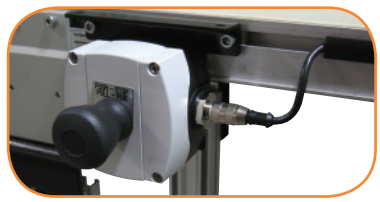
Not compatible with Brushless DC Controllers

Specifications

- Compatible with Dorner Remote VFD Controllers
- Push to stop/pull to start maintained push button
- Plastic Nema 12 enclosure
- Quick disconnect receptacle
- Mounting for 2200/3200 and Support Stands
- Horizontal or vertical mount

Part Number	75M-CS-1



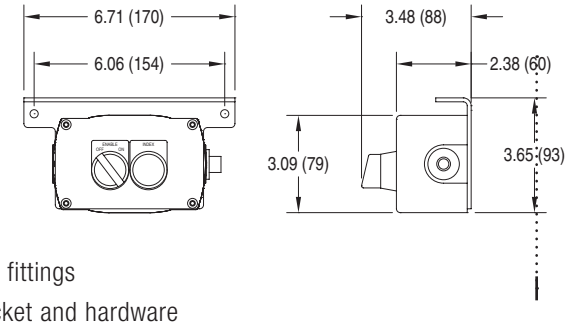


Horizontal Mount

Stand Alone Servo Control – Enable / Index Kit

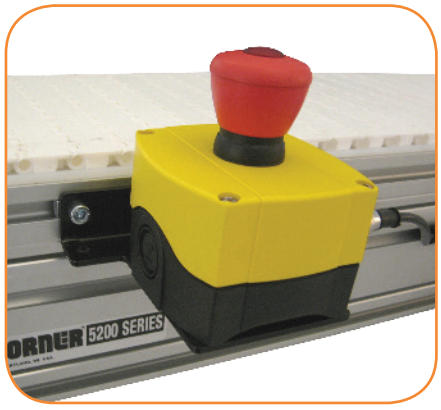
Specifications

- For use with stand alone servo motor controls
- Contains servo enable on/off and index initiate button
- Quick disconnect cable fittings
- Includes mounting bracket and hardware



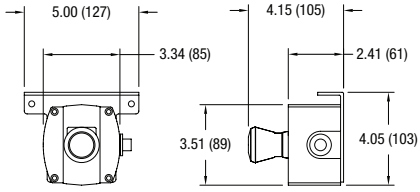
Part Number	75M-EN-1

Servo Control – Emergency Stop Kit



Specifications

- For use with both stand alone and external control servos motor controls
- Plastic Nema 12 Enclosure
- Quick disconnect cable fittings
- Horizontal or vertical mount
- Includes mounting bracket and hard-ware



Part Number	Description
75M-ES-2	Non-Lighted E-Stop Kit

Linking Cable Kits

Specifications

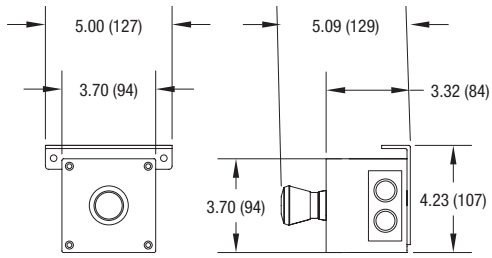
- Quick disconnect cable for all control devices
- 2 meter and 5 meter lengths
- Includes mounting hardware for T-slots

Part Number	Description
75M-LC-1	6 ft (1.83 m) cable
75M-LC-2	15 ft (4.57 m) cable

In-Line Cord Emergency Stop Kit

Specifications

- Push to stop/pull to start push button
- Plastic Nema 12 enclosure
- 115V single phase
- 1/2 hp (0.37 kW) and smaller motors
- Includes power and outlet cords
- Mounting for 2200/3200 and Support Stands
- Horizontal or vertical mount

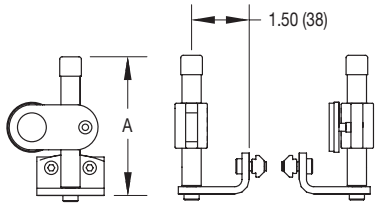


Part Number	75M-ES-1

Photo Eye Bracket Kits

Specifications

- Standard mounting for 18mm barrel/nose mount photo-eyes
- Reflective version includes reflector
- Through beam mount version
- Fully adjustable mount for 2200/3200 Series conveyors
- 2" and 5" adjustment height ranges



A = 3.61" (92) for 2" Adjustment
6.61" (168) for 5" Adjustment

Part Number	Photo Eye Mount Type	Adjustment Height
75M-PM-1	Reflective	2"
75M-PM-2	Reflective	5"
75M-PM-3	Through Beam	2"
75M-PM-4	Through Beam	5"
75M-PM-5	Convergence	2"
75M-PM-6	Convergence	5"

Manual Motor Starter Lockout/Tagout Kit

Specifications

- Can be added to any manual motor starter.
- Provide capability to add lock or tag to motor switch for safe conveyer maintenance.

Part Number	75M-LT-1

Motion Sensing Switch

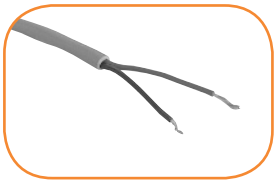
Dorner's motion sensors are used in pressroom, injection molding, packaging or any application where it is critical to know the conveyor belt is running while your machine is operating. Dorner's motion sensor switch monitors your conveyor and provides a dry contact "belt running" signal to your machine control, PC or PLC.

Specifications

- Low profile, compact design
- Magnetic reed switch offers reliable operation in harsh industrial environments
- Dry contact signal for easy control interface. Provides one pulse per conveyor pulley revolution
- Several connector styles available to fit a variety of standard control receptacles
- For 2200, 2300 and 6200 Series conveyors (not compatible with 3200, 2200 Modular Belt, or 2200 Precision Move)
- Requires Motion Sensor magnet option on conveyor idler roller

Connector Options:

Sensor Switch with Wire Connector



- Includes switch assembly and 12' (3.7 m) cord

Sensor Switch with Banana Plug Connector

- Includes switch assembly and 12' (3.7 m) cord
- Use with Motion Monitor Control Box

Part Number	Description
64-02-00	Flying Leads Sensor Switch, 2200, 2300 and 6200 Series
64-02-01	Banana Plug Sensor Switch, 2200, 2300 and 6200 Series

Motion Sensor Magnet

Part Number	Description
64-03I	Sensor Switch Magnet, 2200, 2300 and 6200 Series, Installed in conveyor idler pulley

Magnetic Reed Switch Specifications

• Voltage (switching)	200 Vdc. Maximum 140 Vac. (RMS) Maximum
• Current (switching) (carrying)	1.0 Amps. Maximum 2.5 Amps. Maximum
• Watts	15 Watts Maximum
• Resistance (initial contact) (insulation)	0.100 Ohms Maximum 10E6 M Ohms
• Switch Response Time (including bounce)	0.5 milliseconds
• Switching Speed	1 kHz Maximum

Regulatory Approvals:

CE	CE Marking on a product is a manufacturer's declaration that the product complies with the essential requirements of the relevant European health, safety and environmental protection legislation, in practice by the Product Directives. CE Marking on a product ensures the free movement of the product within the European Union (EU).
RoHS	This directive restricts (with exceptions) the use of six hazardous materials in the manufacture of various types of electronic and electrical equipment. It is closely linked with the Waste Electrical and Electronic Equipment Directive (WEEE) 2002/96/EC which sets collection, recycling and recovery targets for electrical goods and is part of a legislative initiative to solve the problem of huge amounts of toxic e-waste.
	The UL Recognized Component mark is for products intended to be installed in another device, system or end product. This Recognized Component Mark is for the United States only. When a complete product or system containing UL Recognized Components is evaluated, the end product evaluation process can be streamlined.
c US	The UL Recognized Component mark is for products intended to be installed in another device, system or end product. This Recognized Component Mark is for the United States and Canada. When a complete product or system containing UL Recognized Components is evaluated, the end-product evaluation process can be streamlined.
	CSA International (Canadian Standards Association), is a provider of product testing and certification services for electrical, mechanical, plumbing, gas and a variety of other products. Recognized in the U.S., Canada and around the world, CSA certification marks indicate that a product, process or service has been tested to a Canadian or U.S. standard and it meets the requirements of an applicable CSA standard or another recognized document used as a basis for certification.
c UL US	The UL Listing Mark means UL found that representative product samples met UL's safety requirements. These requirements are primarily based on UL's own published standards for safety. The C-UL-US Mark indicates compliance with both Canadian and U.S. requirements. The products with this type of mark have been evaluated to Canadian safety requirements and U.S. safety requirements.

At Dorner we make it our mission to provide you with a system that you can depend on to move your product from point A to point B with precision and speed. It's that commitment and history of proven excellence that has made the Dorner Brand a recognized leader in precision conveyors for nearly 50 years. With our complete line of customizable conveyor systems we have the perfect solution for you!

1X Series

The 1X Series Line is designed for small part handling and transfers where space is a premium.

1X Series Family:

- Flat Belt

- Aluminum Frame
- Widths to 10"
- Loads to 15 lbs
- Speeds up to 80 fpm

2X Series

The 2X Series Line is engineered for small to medium sized parts, precision applications and flexible layouts.

2X Series Family:

- Flat Belt
- Cleated Belt
- Modular Belt
- Precision Move - Timing Belt
- SmartFlex® - Flexible Chain

- Aluminum Frame
- Widths to 24"
- Loads to 200 lbs
- Speeds up to 400 fpm
- Curves
- Inclines & Declines

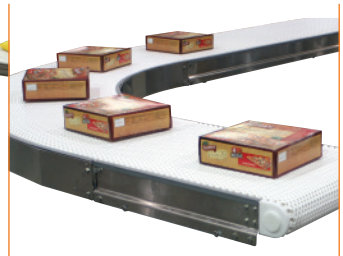
3X Series

The 3X Series Line is designed for medium to heavy sized parts, precision applications, bulk handling and flexible layouts.

3X Series Family:

- Flat Belt
- Cleated Belt
- Modular Belt
- Flexible Chain
- Precision Move - Timing Belt

- Aluminum Frame
- Widths to 60"
- Loads to 1000 lbs
- Speeds up to 600 fpm
- Curves
- Z-Frame Elevators



7X Series

The 7X Series Stainless Steel Line is engineered for small to heavy product requiring various levels of sanitary design and flexible layouts.

7X Series Family:
AquaPruf® + AquaGard®

- Flat Belt
- Cleated Belt
- Modular Belt
- Flexible Chain

- Stainless Steel Frame
- Widths to 60"
- Loads to 750 lbs
- Speeds up to 400 fpm
- Curves
- Z-Frame Elevators

NEED SOMETHING DIFFERENT?

DORNER'S ENGINEERED SOLUTIONS GROUP PROVIDES EXACTLY WHAT YOU NEED FOR YOUR SPECIFIC APPLICATION. FROM MODIFIED STANDARD CONVEYORS TO COMPLETE CUSTOM DESIGNS.

LOOKING FOR AFTER SALE SUPPORT?

DORNER'S SERVICES TEAM PROVIDES COMPLETE SUPPORT FROM REPLACEMENT PARTS TO INSTALLATION AND MAINTENANCE SERVICES.

10 YEAR WARRANTY DORNER

DORNER® MOVE FAST. MOVE SMART.

DORNER MFG. CORP.
PO Box 20 • 975 Cottonwood Ave.
Hartland, WI 53029 USA

INSIDE THE USA
TEL: 800.397.8664
FAX: 800.369.2440

OUTSIDE THE USA
TEL: 262.367.7600
FAX: 262.367.5827

www.dorner.com
info@dorner.com