

**Ajusto-Spede® Controllers**

**MODEL 4000 CONTROLLERS**



**Description**

The Model 4000 Dynamatic® Analog controller is a complete controller on one printed circuit board. Input is 115 VAC, CT., 1 phase, 50/60 Hz. Output is 4.3 Amp, 45 VDC. It is available for use with Dynamatic® Air-Cooled Drives, rated .25 through 20 horsepower. This controller has a power relay and several "on-board" modifications as standard. They are speed and torque control, fixed and spring set braking and linear acceleration. An on-board 4-element DIPswitch programs these modifications. Optional field

modifications are available (one per controller) either factory installed or to be added later in the field as required. They include brake circuits, cascade, follower circuits, jogging, threading, torque/speed control, current limit, dancer and Mutuatrol®. These additional boards are simply added by the use of standoffs and a ribbon connector with plug. The controller is available in a NEMA 13 oil-tight enclosure with operator's elements or as an open panel mounting without operator's elements.

Features	Customer Benefits
Linear acceleration circuit, adjustable from 3 to 90 seconds.	Provides soft starts.
Closed loop control keeps drive output speed within 0.5% for load changes from 0 to 100%.	Accurate speed control.
0.5% speed regulation is standard.	Ensures consistent operation.
On-board selectable programmable modifications.	Application versatility.
Small wall mount enclosure is complete with operator's elements or panel mount.	Easy controllers to understand, install, operate and maintain.
Loss of reference protection.	Prevents runaway speeds.
Short circuit and ground fault protection by fused input.	Isolates controller components from short circuits.
Transient suppression by input suppressor.	Prevents controller damage due to transient spikes.
Long Life.	Controllers are built to give long, reliable, low cost life in diverse applications.

**Ajusto-Spede<sup>®</sup> Controllers**

**Model 4000 Controllers**

**Specifications**

<p><b>4000 Controller</b></p>	<p>Units used with</p> <p>Horsepower range</p> <p>Input power, maximum</p> <p>Output power, maximum</p> <p>Speed regulation, no load to full load change</p> <p>Enclosures</p> <p>Built-in modifications</p> <p>Field modifications (1 per unit)</p> <p>Operator devices (on controller)</p> <p>Closed loop speed control</p> <p>Controller protective features</p> <p>Line regulation for +/-10% input line voltage change</p> <p>Thermal drift per degree C</p> <p>Minimum regulated speed range</p> <p>Maximum ambient</p> <p>Standards</p>	<p>Fractional HP Drives AS-14 - 25 Drives AT-140 -250</p> <p>.25 - 20 HP - Standard</p> <p>115 VAC -10%, +20%, Center Tapped (CT), 1 phase, 50/60 Hz, 460 VA</p> <p>45 VDC, 4.3 Amps, 194 watts</p> <p>0.5% Standard</p> <p>NEMA 13 - Standard, panel mount - Optional</p> <p>Linear acceleration, fixed braking, torque control</p> <p>Brake circuits, cascade, follower circuits, jogging, threading, torque/speed control, current limit, dancer and Mutuatrol<sup>®</sup> - Optional</p> <p>Start and Stop pushbuttons and Run Speed potentiometer - Standard</p> <p>Standard</p> <p>Input fuses, low line voltage, line transients, isolated signal circuits, output over-current</p> <p>+/-0.1%</p> <p>+/-0.05%</p> <p>50 RPM</p> <p>104° F (40° C) enclosed 149° F (65° C) panel mount</p> <p>CSA approved</p>
-------------------------------	--	---

**Ajusto-Spede<sup>®</sup> Controllers**

**Ordering Information**

**Completely Assembled Controllers**

The Model 4000 Controller is supplied as a panel-mounted controller or in a NEMA 13 enclosure. A power relay with a set of NO contacts, wired to a terminal strip for customer use, is a standard feature. The input power to the controller is provided either by a motor winding in the drive or a separate 115 VAC, CT input transformer. The Model 4000 controller has the operator controls mounted on the cover of the enclosure. Separate operator's stations can be found on Page 117 for panel mount controllers. The modified controllers below include the basic speed controller and mounting of the modification board. The controllers below are completely assembled. For applications where downtime is critical, spare modification board part numbers are also supplied on the next page.

A complete NEMA 13 enclosed controller consists of a NEMA 13 Enclosure with cover and, when applicable, a modification board. The base is an enclosure containing the basic printed circuit board. The cover includes oil-tight operator's elements when required. **NOTE: MODIFIED CONTROLLERS INCLUDE THE BASIC SPEED CONTROLLER**

**4000 Controller Selection Table**

Description	Complete Controllers & Modifications	
	Open Panel Mount	NEMA 13 Enclosure
	Part Number	Part Number
Basic Speed Controller	15-000533-1001	15-000551-1001
Main Control – PCB Only – <b>Unassembled</b>	<b>Not Panel Mounted</b>	15-000530-1005
<b>Modified Controllers:</b>		
Accel/Decel, Linear	15-000533-1025	15-000551-1025
Accel/Decel, Linear & Separately Adjustable Jog	15-000533-1025	15-000551-1026
Braking, Adjustable	15-000533-1002	15-000551-1002
Braking, Adjustable & Jog at Run Speed	15-000533-1004	15-000551-1004
Cascade, Man/Auto	15-000533-1008	15-000551-1008
Dancer Position (Potentiometer sold separately (See Page 114))	15-000533-1016	15-000551-1016
Dancer Position & Mutuatrol	15-000537-1001	NA
Follower, Instrument Signal, Man/Auto		
a. Ratio pot internal	15-000533-1010	15-000551-1010
b. Ratio pot external	15-000533-1011	15-000551-1011
Follower, Tachometer, Man/Auto	15-000533-1009	15-000551-1009
Jog at Run Speed	15-000533-1003	15-000551-1003
Jog, Separately Adjustable	15-000533-1005	15-000551-1005
Mutuatrol	15-000533-1017	15-000551-1017
Mutuatrol & Jog at Run Speed	15-000533-1018	15-000551-1018
Threading		
a. Thread pot internal	15-000533-1006	15-000551-1006
b. Thread pot external	15-000533-1007	15-000551-1007
Torque Control	15-000533-1012	15-000551-1012
Torque/Speed Control	15-000533-1013	15-000551-1013
Torque Limit (includes 15-203-3 Current Transformer)	15-000533-1014	15-000551-1014
Torque Limit & Jog at Run Speed	15-000533-1015	15-000551-1015
Blank Cover Control	NA	15-000551-1030

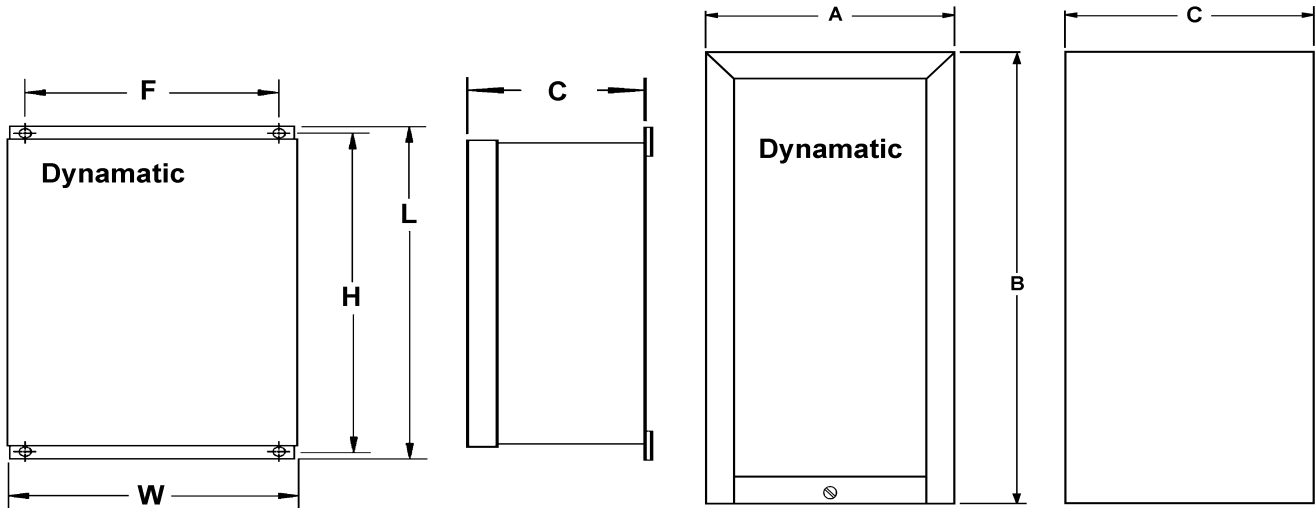
**Ajusto-Spede® Controllers**  
**Ordering Information**

**Spare Modification Boards Selection Table**

Description	Modification Board Part Number
Basic Speed Controller	--
Accel/Decel, Linear	15-000446-1004
Accel/Decel & Adjustable Jog	15-000446-1004
Braking, Adjustable	15-000444-1004
Braking, Adjustable & Jog at Run Speed	15-000444-1004
Cascade, Man/Auto	15-000444-1003
Dancer Position (order Dancer Pot, No.15-393-715)	15-000444-1007
Follower, Instrument Signal, Man/Auto	
a. Ratio pot internal	15-000446-1005
b. Ratio pot external	15-000446-1005
Follower, Tachometer, Man/Auto	15-000444-1001
Jog at Run Speed	NA
Jog, Separately Adjustable	15-000444-1003
Mutuatrol	15-000446-1002
Mutuatrol & Jog at Run Speed	15-000446-1002
Threading	
a. Thread Pot Internal	15-000444-1003
b. Thread Pot External	15-000444-1003
Torque Control	NA
Torque/Speed Control	15-000444-1005
Torque Limit (includes a 15-203-3 Current Transformer)	15-000445-1001
Torque Limit & Jog at Run Speed	15-000445-1001
Blank Cover Controller	--

**Ajusto-Spede<sup>®</sup> Controllers**

**Models 4000, 4050, DSI-700 and Mark III Enclosure Outline Drawings**



**MODEL 4000, 4050 & DSI-600  
WALL MOUNTING  
NEMA 13**

**MODEL MARK III (GENERAL PURPOSE)  
WALL MOUNTING (SIZES 1 THROUGH 9)  
FREE STANDING (SIZE 10)**

**Controller Enclosures**

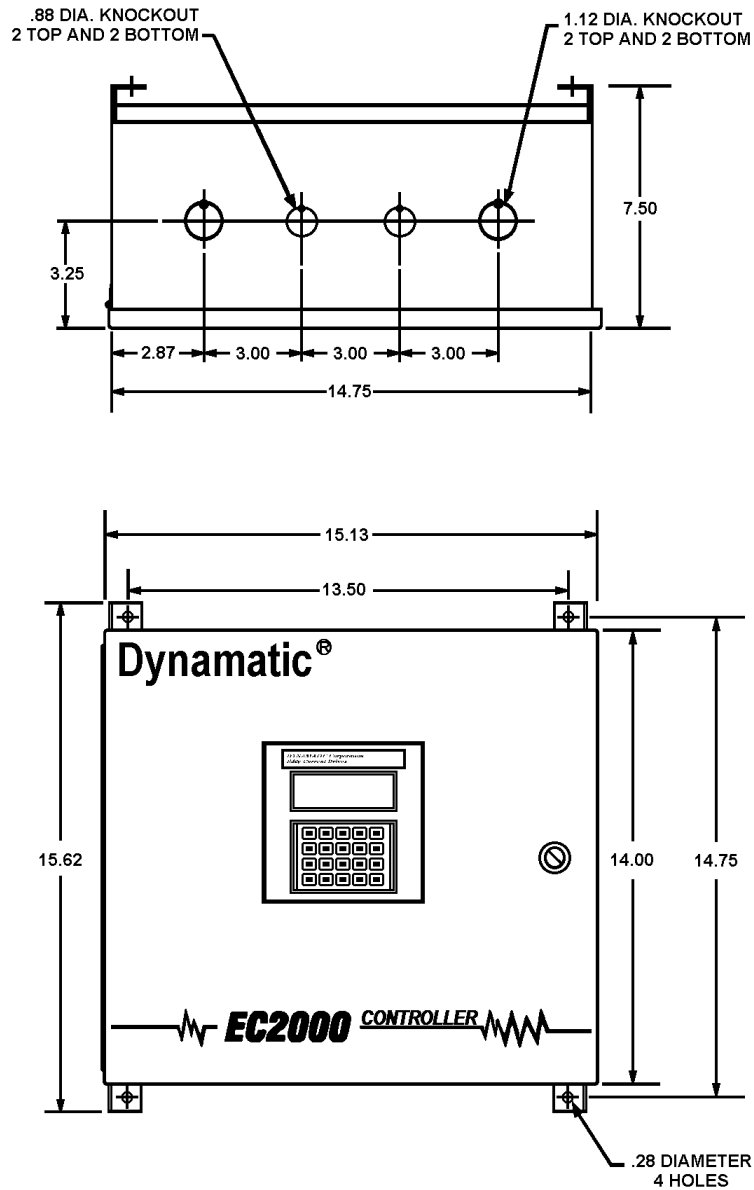
Model	Type/Size Controller	A	B	C	F	H	L	W	Weight (Lbs.) ❶
4000	Panel Mount NEMA 13	--	--	--	--	--	--	--	5
		--	--	5.00	8.00	12.25	12.75	10.25	8
4050	Panel Mount NEMA 1	--	--	--	--	--	--	--	6
		--	--	6.00	12.00	16.25	16.75	14.25	16
DSI-700	Panel Mount NEMA 13	--	--	--	--	--	--	--	5
		--	--	5.00	8.00	12.25	12.75	10.25	8
Mark III	1, 2, 5	9.50	18.56	9.50	--	--	--	--	60
	3, 4, 6, 7	22.16	23.09	12.00	--	--	--	--	140
	8	24.00	25.00	14.25	--	--	--	--	300
	9	30.00	40.00	14.25	--	--	--	--	320
	10	36.00	52.00	14.25	--	--	--	--	640

❶ Approximate shipping weights

DIMENSIONS ARE IN INCHES

**Ajusto-Spede<sup>®</sup> Controllers**

**Model EC-2000 Enclosure Outline Drawings**



31-606-3 B

DIMENSIONS ARE IN INCHES



DRIVE SOURCE INTERNATIONAL, INC.

1-800-548-2169

www.dynamatic.com

World's leading manufacturer of Eddy Current drives, brakes and controls

7900 Durand Avenue, Bldg. 3  
Sturtevant, Wisconsin, U.S.A. 53177  
Tel: 262-554-7977 Fax: 262-554-7041  
Toll Free: 1-800-548-2169  
E-Mail: sales@dynamatic.com

## DSI - STANDARD TERMS AND CONDITIONS OF SALE

### 1. PRICE BOOKS

Price books are intended only as sources of general information. They are not to be construed as quotations or as representations that products described therein are available, or will be made available for immediate delivery.

### 2. QUOTATIONS

Seller may make quotations verbally or in writing. Verbal quotations shall expire automatically unless Seller receives Buyer's purchase order number on the day the quotation is made. Written quotations shall expire automatically unless Seller receives Buyer's written purchase order within 15 days after the date appearing on the quotation. No quotation is to operate as an offer to sell but only as a description of products. Accordingly, even prior to its expiration date, any quotation is subject to change by Seller at any time upon verbal or written notice to Buyer. All quotations are deemed to incorporate Seller's Standard Terms and Conditions of Sale.

### 3. ACCEPTANCE OF PURCHASE ORDERS.

Notwithstanding any contrary language contained in Buyer's purchase order, each purchase order shall be subject to acceptance by an authorized employee of Seller's plant, and each purchase and sale transaction shall be governed exclusively by these Standard Terms and Conditions of Sale. Seller reserves the right at any time before delivery and payment to correct clerical, stenographic or other errors in quotations, purchase orders or acknowledgments.

### 4. PRICE POLICY

Regardless of prices set forth in quotations, acknowledgments or elsewhere, Buyer shall pay a purchase price as follows:

- (a) For the following products: Fractional Horsepower Adjusto-Spede®, AC Motors, renewal parts and service, Buyer shall pay Seller's published prices in effect on the date when shipment is made or service performed.
- (b) For all other products, Buyer shall pay a purchase price equal to the smaller of: (a) Seller's published prices in effect on the date when shipment is made or (b) the prices set forth in Seller's acknowledgment increased by 1% for each month or fraction thereof that elapses between the date when the acknowledgment is mailed from Seller's factory to Buyer (designated as the "Issue Date" on the acknowledgment) and the date when shipment is made or the date for which shipment was originally scheduled (as stated on the acknowledgment) by Seller, whichever occurs sooner. However, in the event that shipment is originally scheduled to occur in excess of 12 months after Issue Date, Buyer shall pay Seller's published prices in effect on the date when shipment is made; and in any case where shipment is delayed beyond Seller's originally scheduled date for shipment by Buyer's actions or at Buyer's request,

Buyer shall pay escalation charges based on the revised delivery schedule.

### 5. MINIMUM BILLING

The minimum billing for each purchase order shall be \$100.00 net.

### 6. TAXES

Any and all sales, use, personal property or other excise taxes which the Seller may be required to pay or collect, including first destination taxes, will be added to each invoice and shall be payable by Buyer on the same terms as the purchase price unless the Buyer has furnished the Seller a tax exemption certificate acceptable to the taxing authority.

### 7. PAYMENT TERMS

Payment terms shall be net 30 days except for International orders, which will be cash in advance. However, on orders of \$100,000.00 or more and having delivery schedule 6 months or longer from date of order, the payment terms shall be as specified by Seller at time of quotation.

### 8. SHIPPING TERMS

Except as otherwise agreed, Seller shall be entitled to select carrier and make delivery in more than one shipment, in which event Buyer shall pay separately for each partial shipment.

All shipments shall be made F.O.B. point of shipment. Seller shall prepay freight (UPS shipments only), which shall be billed to Buyer as a separate item on the product invoice at Seller's standard rates applicable to the destination, or at Buyer's option, shipment shall be made freight collect. All truck shipments shall be made freight collect, unless otherwise agreed.

### 9. PACKAGING

At no additional charge, all products shall be packaged for domestic shipment in accordance with Seller's standard specifications. Additional charge shall be made if Buyer specifies special domestic packaging, packaging in accordance with government or military standards, overseas packaging or other special packaging. Refer to Seller's plant, nearest sales office or representative for further information.

### 10. TITLE AND RISK OF LOSS

Risk of loss in transit shall be borne entirely by Buyer at all times after the products are delivered to the carrier for shipment. However, title to the products and right to stop delivery in transit shall remain with Seller until Seller receives payment in full.

### 11. DELAYS OR DEFAULT IN DELIVERY

Seller shall have no liability to Buyer, and Buyer shall not be entitled to cancel any purchase order, for Seller's delay or default in delivery due to strikes, secondary boycotts, riots,



wars, accidents, fires, floods, explosions, vandalism, government embargoes, priorities or regulations, shortages of labor, fuel, materials, supplies, power or transportation facilities, or other similar or dissimilar causes beyond Seller's reasonable control. Under no circumstances shall Seller have any liability for penalties or consequential damages of any kind resulting in whole or in part from Seller's delay in delivering, or failure to deliver, any products ordered by Buyer.

#### **12. CHANGES TO ORDERS IN PROCESS**

There shall be a charge for any and all changes in specification after an order is in process, based on the status of the order at the time the change is made. The additional charge shall be a minimum of \$50 net per item when engineering has not been started or is not required and a minimum of \$100 net per item when re-engineering is required. The additional charge shall be in addition to any change in the price of the product resulting from the change in specification. The order "Issue Date" will be moved forward to the date of the change and shipment will be rescheduled in accordance with the then current lead times. Buyer shall pay escalation charges based on the new "Issue Date" and scheduled shipping date as defined in paragraph B.

#### **13. CANCELLATION**

After Seller accepts Buyer's purchase order by faxing Seller's written acknowledgment, Buyer's cancellation of any order or portion thereof may be accomplished only upon (i) Seller's receipt of written cancellation notice at Seller's plant (cancellation notice by telephone will be deemed only as authorization for Seller temporarily to suspend performance on Buyer's order pending written confirmation of cancellation) and ii) Buyer's payment of the following cancellation charges:

Notwithstanding anything to the contrary contained herein, the minimum cancellation charges for products shall be 50% per line item or 50% per complete order.

With respect to all costs and expenses described above, Seller shall provide such substantiating documentation as Buyer may reasonably request, and Seller's computations, thus documented, and shall be conclusive and binding between the parties. With respect to all canceled products, materials and supplies described above, Seller shall, upon payment of the applicable cancellation charges, make such disposition as Buyer may specify in writing within 30 calendar days after Seller notifies Buyer of the applicable cancellation charges. Buyer's failure to so specify within said 30-day period shall constitute Buyer's authorization for Seller to make such disposition as Seller chooses with no further obligation to Buyer.

#### **14. PATENT INFRINGEMENT**

With respect to all products manufactured to Buyer's design, Buyer shall indemnify and hold Seller harmless from and against any and all loss, cost, expense, claims, demands, suits and judgments resulting from actual or alleged patent infringements. With respect to all other products sold by Seller, Seller shall defend any suit or proceeding brought against Buyer on a claim that such a product, or any part thereof when employed in the manner intended by Seller, infringes any U.S. patent, provided that Seller is notified promptly in writing and given all necessary information, assistance and authority to defend same. Seller shall pay all damages and costs awarded against Buyer as a result thereof. If the court finds such an infringement, and the use

of any product, in the manner intended by Seller is enjoined, Seller shall at its sole expense, at Buyer's option (a) procure for Buyer the right to continue using said product, (b) replace said product with a non-infringing product, (c) modify said product so that it becomes non-infringing or (d) remove said product and refund its purchase price and transportation and installation costs. Seller shall have no further liability for actual or alleged patent infringement except as provided herein.

#### **15. PRODUCT WARRANTY AND DISCLAIMER**

Seller warrants to Buyer, subject to the limitations, conditions and disclaimers stated herein, that all new products manufactured by Seller shall be free from defect in material and workmanship and shall deliver their rated output as indicated on the nameplates for a period of one (1) year from the date of shipment to the Buyer. Buyer must notify Seller in writing of defect or failure to deliver rated output within the applicable warranty period and give Seller the opportunity to determine that the defect or failure exists. Buyer shall, at Buyer's expense, make each allegedly defective product available for Seller's inspection at Buyer's place of business or, at Seller's option, return each such product to Sellers plant or service center as designated by Seller, freight both ways to be paid by Buyer. No products shall be returned to Seller's plant or service center except in accordance with Seller's prior written instructions. Determination of any defect is made at Seller's sole discretion and Seller's decision is final. To remedy any defect, the Seller may at its option, repair, rebuild or replace the defective component or complete product, using new or re-manufactured components or complete product. In any case the repaired, rebuilt or replaced product shall be warranted hereunder for the then non-expired portion of the original warranty period. Seller's sole obligation to Buyer, and Buyer's sole remedy against Seller, for any breach of this warranty shall be Seller's obligation to repair or replace the product as provided herein or, at Seller's option, to repay, upon return of the defective product, the price paid for such product by Buyer.

Any tampering, misuse, mis-application, and/or improper installation of the product by Buyer or Buyer's representatives may void warranty. Additionally, any service/repair work performed by any personnel not pre-authorized by Seller to perform the service/repair work will void warranty. Products sold by Seller, but not manufactured by Seller, shall be warranted as to defects in material and workmanship consistent with the warranty policy of the original manufacturer of the products. In no event shall Seller have any liability for incidental or consequential damages of any kind resulting from a breach of this warranty. THIS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EITHER EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY FOR MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

#### **16. RETURNS**

No products shall be returned to Seller, whether for inspection, repair, replacement or any other reason, without prior written consent from Seller's plant, sales office or representative

*Revised April 12, 2018*