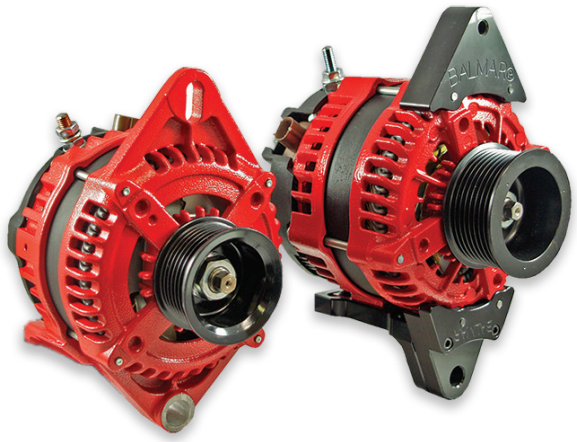
BALMAR®
WWW.BALMAR.NET
DC CHARGING SOLUTIONS

# AT-Series Alternators

## Designed for Recreational Applications

- **165A or 200A in a Small Case Package**
- **Up to 125A at Idle Speeds**
- **25% More Efficient**
- **Dual Fan Cooling, High Airflow Frame**
- **Maximum RPM: 12,000**
- **Ideal for Large Battery Banks**



**AT ("Advanced Technology") Series Alternators** from Balmar bring together the latest innovations in alternator design to deliver incredible charging power in a compact, Marine-friendly package.

**Advanced Hairpin Stator**

**Traditional S-Wound Stator**

**AT-Series Alternators** feature a unique hairpin-wound stator design which uses densely wound square copper wire to generate exceptional output in the smallest possible area. Hairpin-wound stators feature 96 slots - compared to 36 slots in a traditional S-wound stator – allowing the hairpin-wound stator to develop superior electromagnetic energy and efficiency superior to other traditional stator designs.

**AT-Series Alternators** also feature a dozen 50A capacity, externally mounted avalanche diodes, dual internal fans, and massive heat sinking designed to ensure essential cooling under high load demands. Scaled to fit in most original position installations, AT-Series Alternators are available in all four common mounting styles. See the charts on pages 4 & 5 for complete alternator dimensions.

The AT Alternator may require a Tachometer Signal Stabilizer (Part No. 15-TSS) if your current tachometer is not adjustable. AT-Series Alternators should only be used in Dual Vee or Multi-Groove Serpentine belt configurations. Balmar's growing range of Altmount Serpentine Pulley Conversion Kits support all AT-Series Alternators.

| AT-Series Output | Power Take Off | Mounting | Individual Alternator Part Number(1)(3) | Alternator Kit with Max Charge Regulator(2) | Altmount® Pulley Kit Required? |
|---|---|---|---|---|---|
| 165 A | 5.2 HP | 1-2" Spindle | AT-SF-165-XX | AT-SF-165-XX-KIT | Yes, If DV or Serpentine is Not Present |
| | | 3.15" Saddle | AT-DF-165-XX | AT-DF-165-XX-KIT | |
| 200 A | 6.0 HP | 1-2" Spindle | AT-SF-200-XX | AT-SF-200-XX-KIT | |
| | | 3.15" Saddle | AT-DF-200-XX | AT-DF-200-XX-KIT | |
| | | 4" Saddle | AT-DF4-200-XX | AT-DF4-200-XX-KIT | |

(1) "XX" Pulley Designations: "DV" = 1/2" Dual Vee, "K6" = K6 Serpentine, "J10" = J10 Serpentine.
(2) Kit Includes AT-Series Alternator, Max Charge Regulator (MC-614-H) and Temperature Sensors (MC-TS-A, MC-TS-B).
(3) The AT-Series Alternator may require a Tachometer Signal Stabilizer (Part No. 15-TSS) if our current tach is not adjustable.

## How to Select the Correct Balmar Charging System for Your Vessel

### Step 1: Determine your Electrical Load

All your device loads and expected duty cycles will clarify your expected daily battery discharge requirements. Add a safety factor.

### Step 2: Identify your Battery Bank Technology and Capacity

How many batteries are in your bank and what is the total storage capacity?
What type of batteries are employed? (Different technologies require different charging programs)

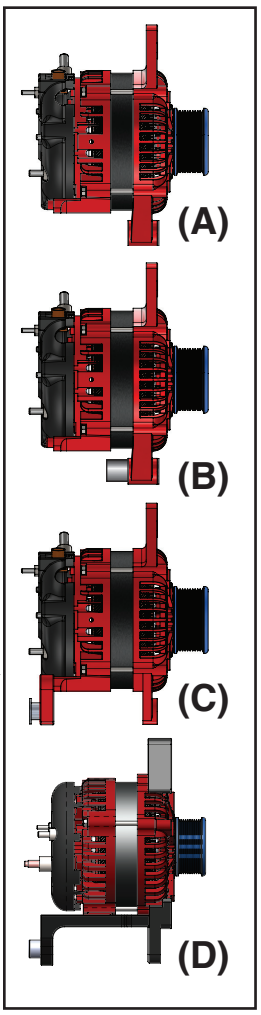
### Step 3: Select your Alternator Output

The correct charging load depends on the battery technology and capacity.
For example, an AGM battery can accept a 40% charge load, so a 300Ah bank of AGMs can accept 120A of charging from the alternator. Therefore you could utilize a 120A alternator to charge your bank as quickly as possible.

### Step 4: Identify the Alternator Mounting Style Present on your Engine

The most common mounting styles are shown to the right:

| | | |
|---|---|---|
| **(A)** 1" Single Foot (Spindle Mount) | "Motorola Style" | Balmar AT-SF Series |
| **(B)** 2" Single Foot (Spindle Mount) | "Delco Style" | Balmar AT-SF Series |
| **(C)** 3.15" Dual Foot (Saddle Mount) | "Hitachi Style" | Balmar AT-DF Series |
| **(D)** 4" Dual Foot (Saddle Mount) | "J-180 Style" | Balmar AT-DF4 Series |




### Step 5: Determine your Belt and Pulley Requirements

An AltMount® belt/pulley conversion kit may be required to handle your alternator Power Take-Off ("PTO") load.

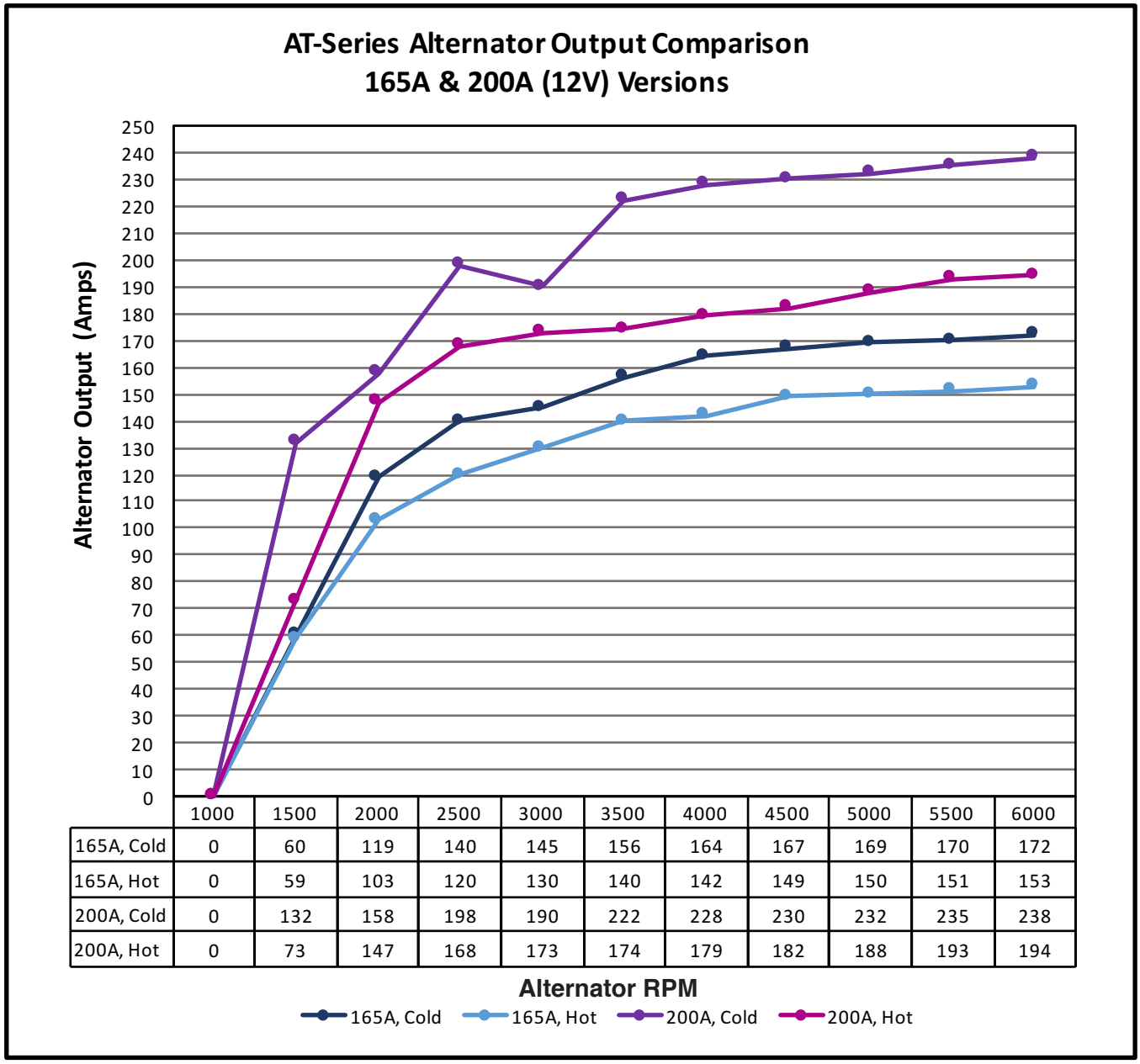
***Detailed toolsets for calculating loads and selecting the appropriate charging system for your vessel are available in the Balmar Catalog or at www.balmar.net***

## AT-Series Alternator Specifications

| | |
|---|---|
| **Alternator Style:** Small Case, Positive Field Excitation (P-Type) | **Positive Output:** Threaded Stud<br>Stud Dimensions: (AT-165: M6-1.0) (AT-200: M8-1.25) |
| **Regulation:** External P-Type (MC-614) | **Lamp Output:** D+ (low voltage / low current)<br>Stud Dimensions: (AT-165: M6-1.0) (AT-200: M6-1.0) |
| **Cooling:** Dual Internal Fans | **Grounding:** Dedicated Terminal (Case Isolated)<br>Stud Dimensions: M8 x 1.25" |
| **Bearings:** Sealed Bearings, Heavy Duty Radial (front & rear) | **AC/Stator Output:** 16 Poles. Stator Output Wire included in Pigtail Plug. |
| **Case Construction:** Ventilated Cast Aluminum<br>High Impact Plastic Rear Cover | **Internal Voltage Regulation:** 14.1 Volts (12V systems)<br>Internal Regulation to be Available in 2016 |
| **Finish:** Red Powder Coat | **Diodes +/-:** 6 Positive, 6 Negative; 50A Rated |
| **Tensioning Arm Mount:** 0.88" (22.4mm) Vertical Slot | **Low RPM Cut-In:** 1,320 rpm<br>Max Alternator RPM: 12,000 rpm |
| **Mounting Foot Bore:** AT-DF & AT-DF4-Series: 10mm<br>AT-SF-Series 1 inch: ½", AT-SF-Series 2 inch: 3/8" | **Normal Operating Temperature:** 180 °F / 82° C<br>Max Operating Temperature: 225° F / 108° C |
| **Mounting Styles:** AT-SF Series: 1" or 2" Single Foot (Spindle)<br>AT-DF Series: 3.15" Dual Foot (Saddle)<br>AT-DF4 Series: 4" Dual Foot (Saddle) - 200A Version Only | **Ignition Protection Ratings:** USCG Title 33, ISO J1187, CE, SAE 8846 |

## AT-Series Output Curves

Alternator output is dependent on a number of factors: battery condition and capacity, wire size, engine horsepower and engine RPM, battery temperature and alternator temperature. Of these factors, alternator speed and temperatures are the most important. The following graph describes alternator output based on two temperature levels (ambient (26° C) and hot (90° C). Test voltages are set at 13.5V.

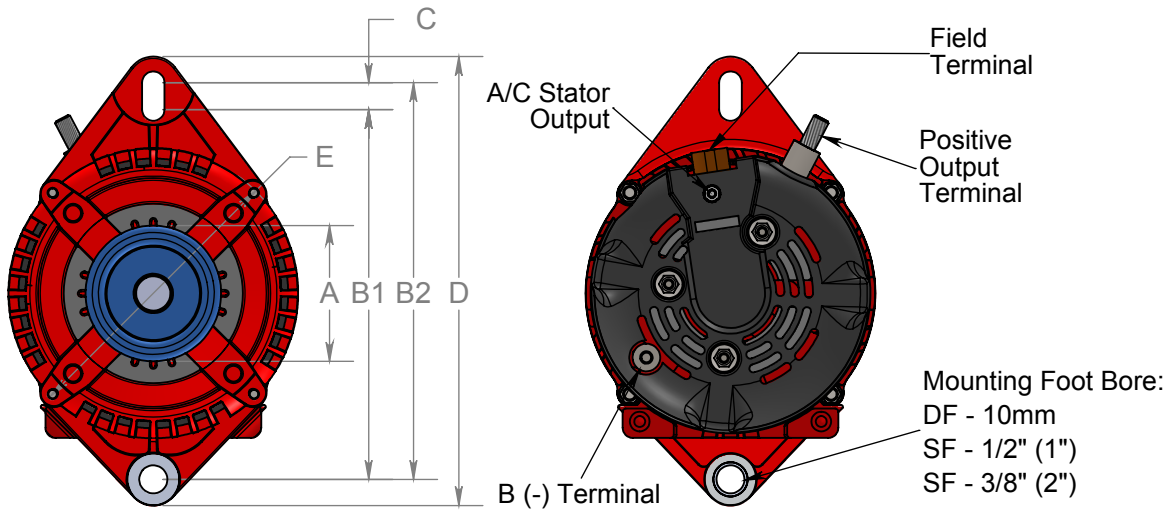



| | 1000 | 1500 | 2000 | 2500 | 3000 | 3500 | 4000 | 4500 | 5000 | 5500 | 6000 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 165A, Cold | 0 | 60 | 119 | 140 | 145 | 156 | 164 | 167 | 169 | 170 | 172 |
| 165A, Hot | 0 | 59 | 103 | 120 | 130 | 140 | 142 | 149 | 150 | 151 | 153 |
| 200A, Cold | 0 | 132 | 158 | 198 | 190 | 222 | 228 | 230 | 232 | 235 | 238 |
| 200A, Hot | 0 | 73 | 147 | 168 | 173 | 174 | 179 | 182 | 188 | 193 | 194 |

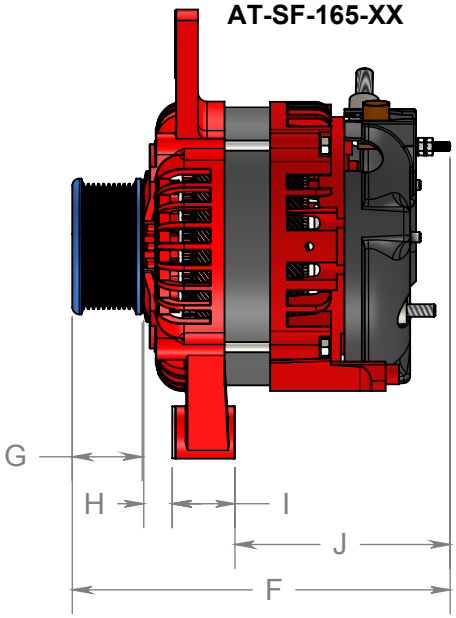

Balmar AT-Series Alternators and Charging Kits provide maximum charging power in a small case package suitable for installation in most small-to-medium sized diesel engines and most GM-based 4.3L to 8.1L gasoline engines.

***Utilize the Balmar product configurator at www.balmar.net to locate a solution for your engine.***

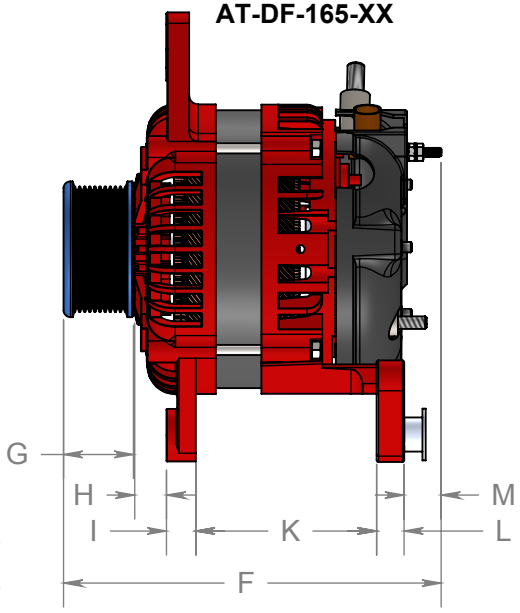
# AT-165-Series Dimensions




**AT-SF-165-XX**




**AT-DF-165-XX**

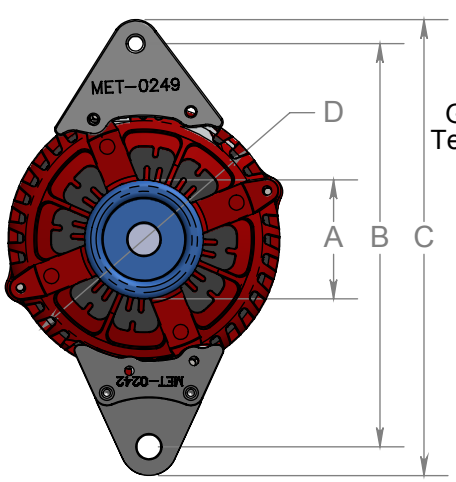


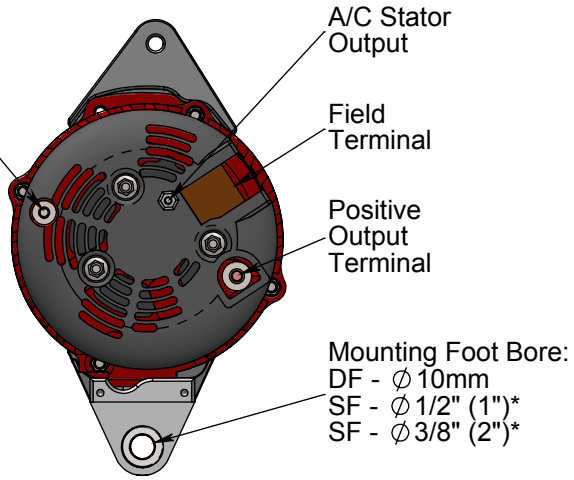

| ITEM | DESCRIPTION | IN. | mm |
|---|---|---|---|
| A | Dual Vee (DV) Pulley Dia. | 3.20 | 81 |
| | K6 (Serpentine) Pulley Dia. | 3.00 | 76 |
| | J10 (Serpentine) Pulley Dia. | 2.47 | 62 |
| B1 | Mounting Hole-to-Slot | 6.74 | 171 |
| B2 | Mounting Hole-to-Slot | 7.23 | 183 |
| C | Slot Length (Bolt Centers) | .50 | 12 |
| D | Over-all Height | 8.18 | 208 |
| E | Case Diameter | 5.28 | 134 |
| F | Over-all Length w/ DV Pulley | 7.1 | 180 |
| | Over-all Length w/ K6 Pulley | 6.78 | 172 |
| | Over-all Length w/ J10 Pulley | 6.74 | 169 |

| ITEM | DESCRIPTION | IN. | mm |
|---|---|---|---|
| G | DV Pulley Width | 1.49 | 38 |
| | K6 Pulley Width | 1.18 | 30 |
| | J10 Pulley Width | 1.14 | 29 |
| H | Case Front to Foot Front | .52 | 13 |
| I | Foot Thickness (SF) | 1.14 | 29 |
| | Foot Thickness (DF) | .53 | 13 |
| J | Foot to Stator Output | 3.94 | 100 |
| K | DF Saddle Width | 3.30 | 84 |
| L | Foot Thickness | .50 | .12 |
| M | Foot to Statot Output | .68 | 17 |

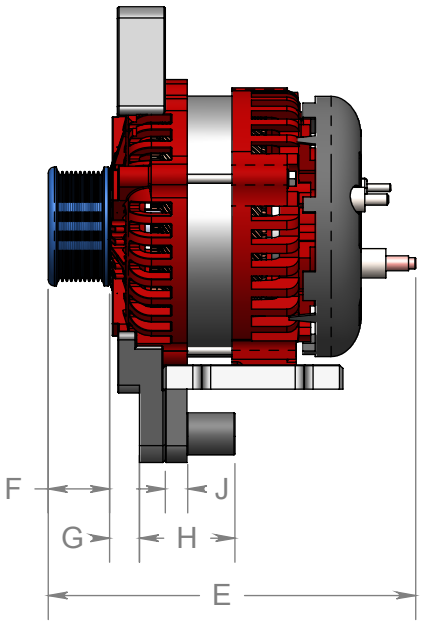
Dimensions are approximate and for reference only. Contact Balmar Technical Support if further details are required.

# AT-200-Series Dimensions

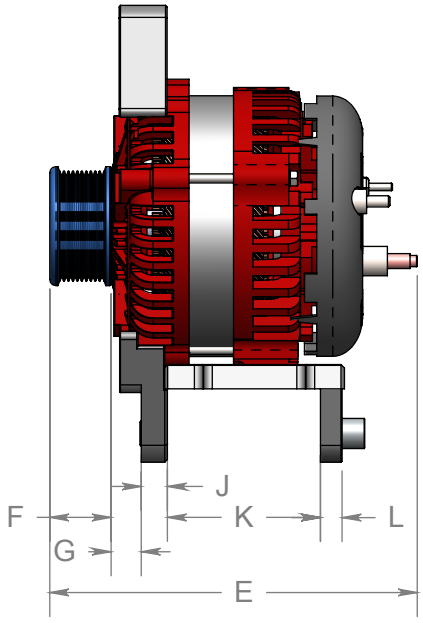


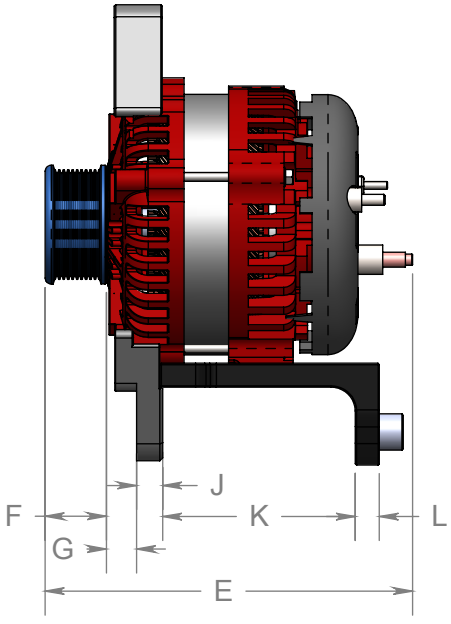

**AT-SF-200-XX**




**AT-DF-200-XX**




**AT-DF4-200-XX**




| ITEM | DESCRIPTION | IN. | mm |
|---|---|---|---|
| A | Dual Vee (DV) Pulley Dia. | 3.20 | 81 |
| | K6 (Serpentine) Pulley Dia. | 3.00 | 76 |
| | J10 (Serpentine) Pulley Dia. | 2.47 | 62 |
| B | Mounting Hole-to-Hole | 8.40 | 213 |
| C | Over-all Height | 9.50 | 241 |
| D | Case Diameter | 5.66 | 148 |
| E | Over-all Length w/ DV Pulley | 6.70 | 170 |
| | Over-all Length w/ K6 Pulley | 6.40 | 163 |
| | Over-all Length w/ J10 Pulley | 6.35 | 161 |
| F | DV Pulley Width | 1.49 | 38 |
| | K6 Pulley Width | 1.18 | 30 |
| | J10 Pulley Width | 1.14 | 29 |

| ITEM | DESCRIPTION | IN. | mm |
|---|---|---|---|
| G | Case Front to Foot Front | .60 | 15 |
| H | Foot Thickness (w/o spacer) | 1.00 | 25 |
| | Foot Thickness (w/ spacer) | 2.00 | 51 |
| I | Foot to Stator Output | 3.44 | 87 |
| J | Foot Thickness | .50 | 13 |
| K | DF Saddle Width | 3.18 | 81 |
| | DF4 Saddle Width | 4.00 | 102 |
| L | Rear Foot Thickness | .50 | 13 |
| M | DF Rear Foot to Stator Output | 1.25 | 32 |
| | DF4 Rear Foot to Stator Output | .375 | 10 |

Dimensions are approximate and for reference only. Contact Balmar Technical Support if further details are required.