

## ROTRON® Transportation

Pumps & Motors Catalog

Brushless sealless pumps Brushless DC motors SAE J1939 CAN functionality Long life up to 60,000 Maintenance-free design

METRO



### Partner With AMETEK Dynamic Fluid Solutions (DFS) To...

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#### Differentiate

... your bus, truck, off-road and rail equipment using the highest quality motors and pumps that provide heavy-duty, yet light weight and compact designs, CAN functionality, long life and much more.



#### Customize

... your vehicles' air- and other fluidmoving solutions, working side by side DFS engineers who know the dynamics of fluid and have hundreds of years of cumulative experience.



#### **Save Time**

... by running performance tests and rapid prototyping and more through the DFS state-of-the-art engineering laboratory.



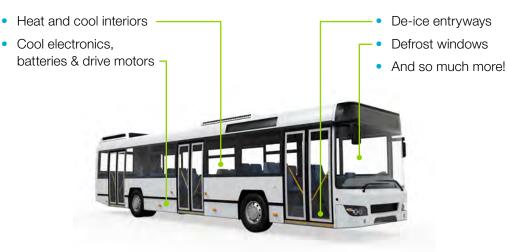
... to heavy-duty transportation pumps and motors that are Buy America Compliant.

### Differentiate Your End Products With ROTRON® Transportation

- Brushless sealless pumps
- Brushless DC motors
- SAE J1939 CAN functionality
- Long life up to 60,000 hours
- Maintenance-free design

AMETEK DFS also manufactures a full line of brushless DC fans and impeller style blowers.

### **Our Engineers Can Customize Your Airand Other Fluid-Moving Solutions to...**





Helping

Fleet Owners....







Increase Service Time, Revenues & Profits



### ROTRON<sup>®</sup> Transportation

Pumps	SLP Sealless Pump with Brushless DC Motor					
	<b>47 Frame</b> Sealless Pump with Brushless DC Motor					
	64 Frame Sealless Pump with Brushless DC Motor 6					
	Sealless Pumps with 3 <sup>n</sup> Brushless DC Motors 15 GPM					
	12 GPM					
Motors	64 Frame Brushless DC Motor					
	64 Frame Condenser and Evaporator Motors For Coach A/C Systems					
	47 Frame Brushless DC Motor					



## SLP



# Sealless Pump with Brushless DC Motor 40,000 Hour Design Life

### ROTRON® Transportation

**DYNAMIC FLUID SOLUTIONS** 

#### **Operation Features**

- 18-32 VDC voltage range
- –40 to 95°C operating fluid temperature
- –40 to 95°C storage temperature
- Weight 6.7 lb
- Over-temperature protection
- Soft start
- Current overload protection
- Over-voltage protection
- Under-voltage detection
- Locked-rotor protection
- Reverse polarity protection
- Transient voltage protection
- 40,000-hour design life for pump and motor

#### Pump

- Sealless design for life
- Pump electro-magnetically coupled
- Bronze/stainless-steel impeller
- Cast aluminum pump casing

#### Motor

- Efficient brushless DC motor
- Alumina ceramic and tungsten carbide bearing surfaces
- Environmentally sealed (IP67)

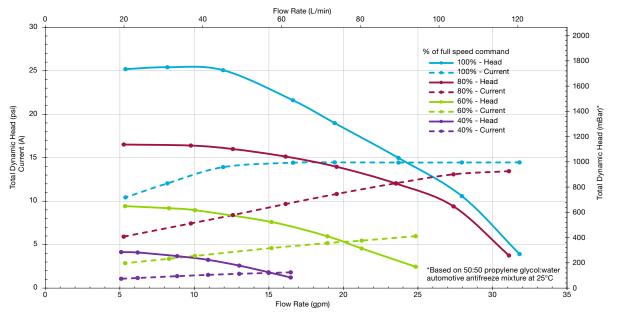
#### Options

- CAN communication (SAE J1939)
- Custom pump outlet discharge orientation
- Lead exit orientation
- PEEK bearings



### Performance

### Speed control via J1939 CAN

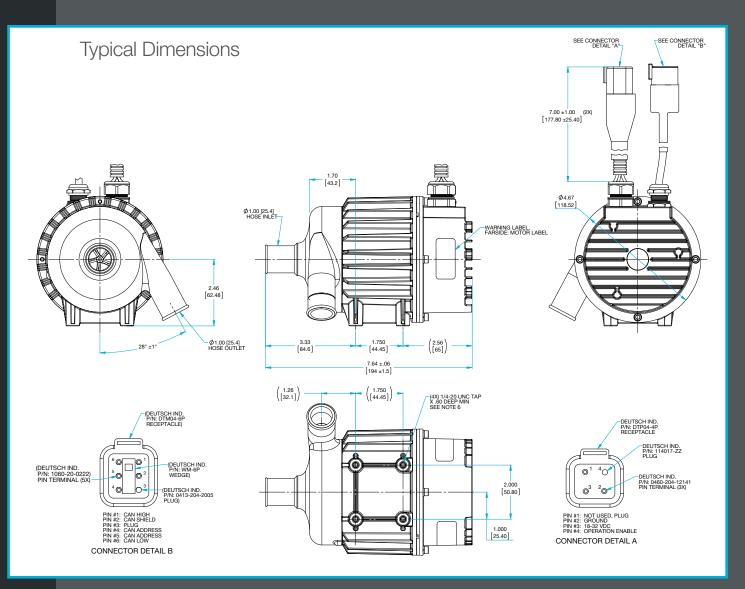




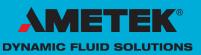


# Sealless Pump with Brushless DC Motor 40,000 Hour Design Life

ROTRON<sup>®</sup> Transportation



<sup>•</sup> Pin out configurations vary.



### Sealless Pump with Brushless DC Motor 60,000 Hour Design Life/18 Gallon



#### Pump

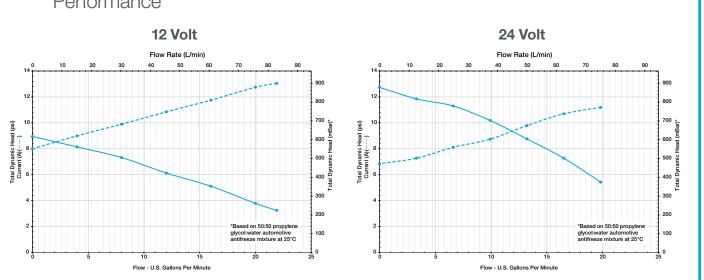
- Sealless design is leak proof; pump is magnetically coupled to the motor
- Motor is removable from pump without draining system
- Environmentally resistant to hot-water spray, salt, fog, shock and vibration
- Cast brass pump designed for heavy-duty applications

#### Motor

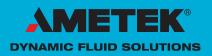
- 12 and 24 VDC models available
- Electronically Commutated DC (ECDC<sup>™</sup>) motor design provides for maintenance-free operation by eliminating brush motor failures and brush maintenance
- Rare-earth magnets provide high efficiency and low current draw
- "O" ring sealed for harsh operating environment



- Reverse polarity and surge protected
- Heavy-duty construction required for transit bus and construction equipment
- · Available with or without baseplate and connectors



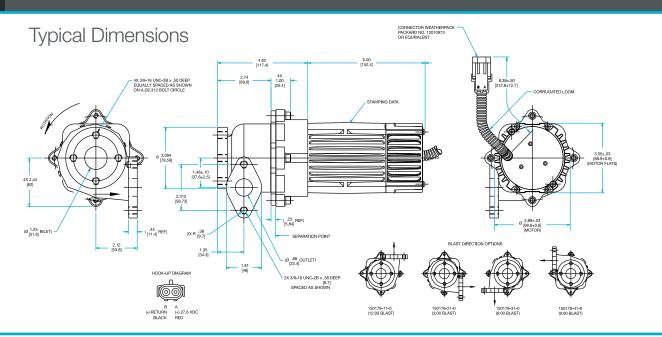
### Performance

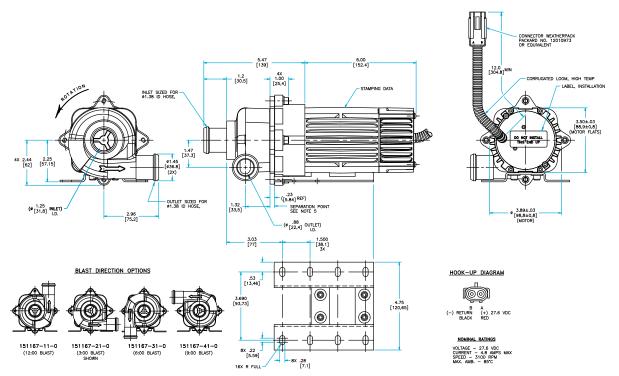


### Sealless Pump with Brushless DC Motor

60,000 Hour Design Life/18 Gallon

ROTRON<sup>®</sup> Transportation

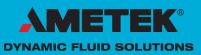




- Motor design characteristics are based on an operating environment of 85°C.
- Approximate typical weight: 15.0 lbs.

This document is for informational purposes only and should not be considered as a binding description of the products or their performance in all applications. Actual performance will vary depending on the operating environment and application.

To learn more, visit AMETEKDFS.com/LeakProofPumps



Transportation

### Sealless Pump with Brushless DC Motor 60,000 Hour Design Life/26 Gallon

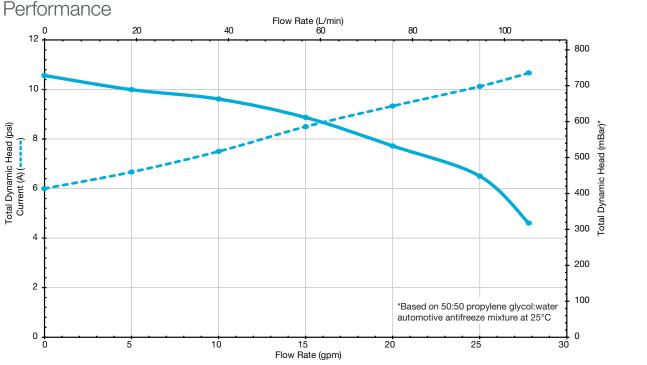
#### Pump

- Sealless design is leak proof; pump is magnetically coupled to motor
- Motor is removable from pump without draining system
- Environmentally resistant to hot-water spray, salt, fog, shock, and vibration
- Cast brass pump designed for heavy-duty applications

#### Motor

- 24 VDC model only ٠
- Motor design provides for maintenance-free operation by eliminating brush motor failures and brush maintenance
- · Rare-earth magnets provide high efficiency and low current draw
- "O" ring sealed for harsh operating environment
- Reverse polarity and surge protected
- Heavy-duty construction required for transit bus and construction equipment





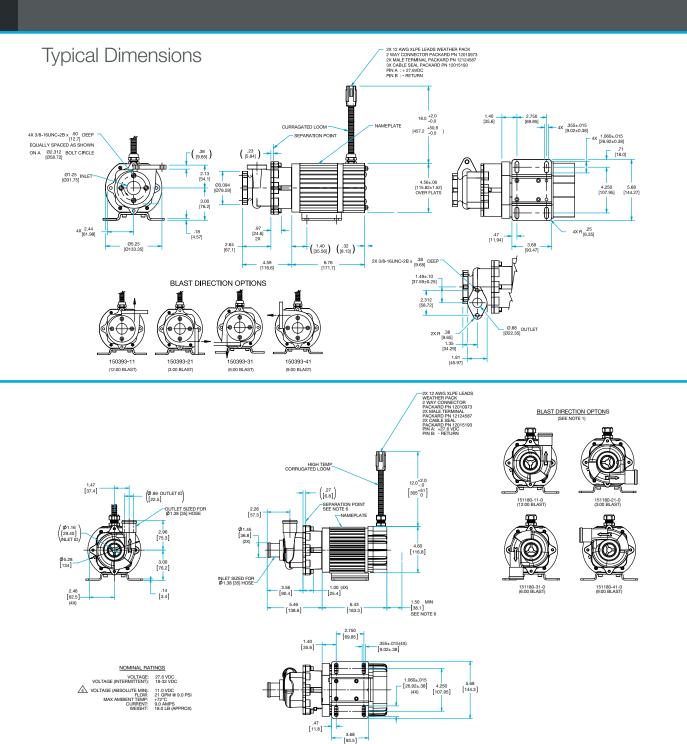
To learn more, visit AMETEKDFS.com/LeakProofPumps



### Sealless Pump with Brushless DC Motor

60,000 Hour Design Life/26 Gallon

ROTRON<sup>®</sup> Transportation



- Motor design characteristics are based on an operating environment of 85°C.
- Approximate typical weight: 25.0 lbs.

### **Sealless Pump with 3" Motor**

### **15 GPM** 40,000 Hour Design Life/15 Gallon

#### Pump

- Sealless design is leak proof; pump is magnetically coupled
- Motor is removable from pump without draining system
- Environmentally resistant to hot-water spray, salt, fog, shock and vibration
- Cast brass pump designed for heavy-duty applications

#### Motor

- Efficient brushless DC motor
- Electronically Commutated DC (ECDC<sup>™</sup>) motor design provides for maintenance-free operation
- "O" ring sealed for harsh operating environment
- Designed for bus and on- and off-highway applications

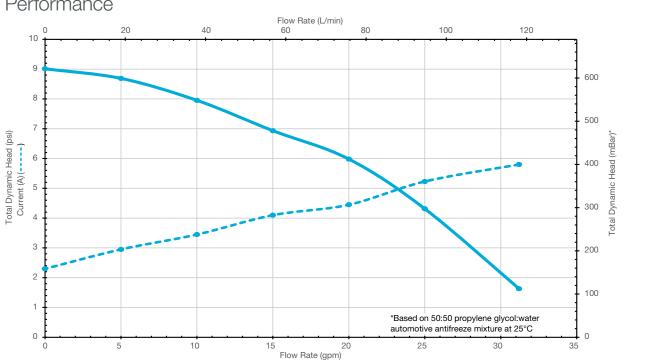


DYNAMIC FLUID SOLUTIONS

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#### Options

- Variable speed control
- Pump outlet discharge orientation
- Baseplate versions
- Hose barb versions



#### Performance

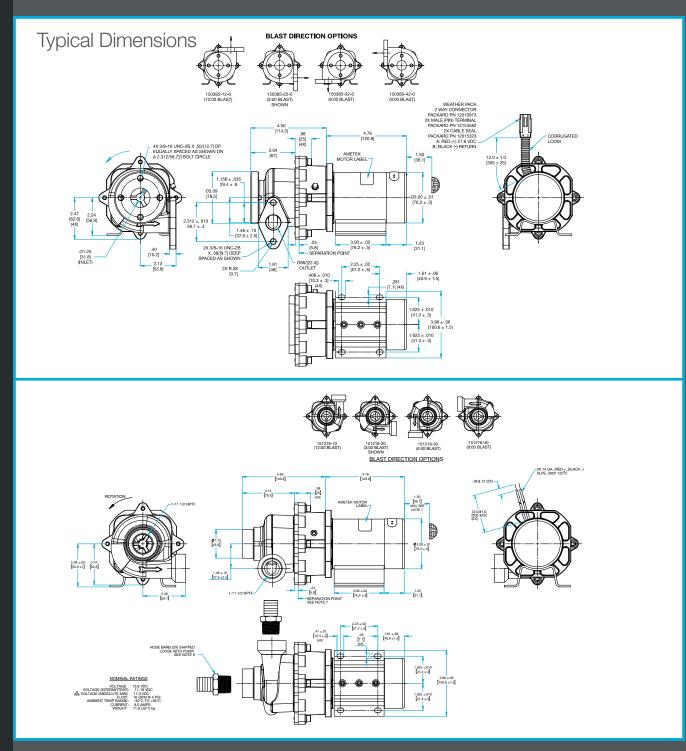
### **Sealless Pump with 3" Motor**



### 15 GPM

40,000 Hour Design Life/15 Gallon





- Motor design characteristics based on an operating environment of 85°C.
- Approximate typical weight 10 lbs.

## Sealless Pump with 3" Motor AMETEK

### 12 GPM 40,000 Hour Design Life/12 Gallon



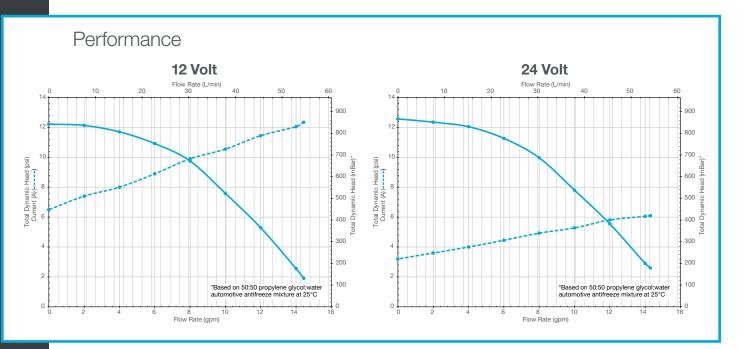
#### Pump

- Sealless design is leak proof; pump is magnetically coupled to motor
- Motor is removable from pump without draining system
- Environmentally resistant to hot-water spray, salt, fog, shock, and vibration

#### Motor

- 12 VDC and 24 VDC models available
- Variable speed version available
- Electronically Commutated DC (ECDC<sup>™</sup>) motor design provides for maintenance-free operation by eliminating brush motor failures and brush maintenance
- Rare-earth magnets provide high efficiency and low current draw
- "O" ring sealed for harsh operating environment
- Medium-duty construction required for transit bus and construction equipment



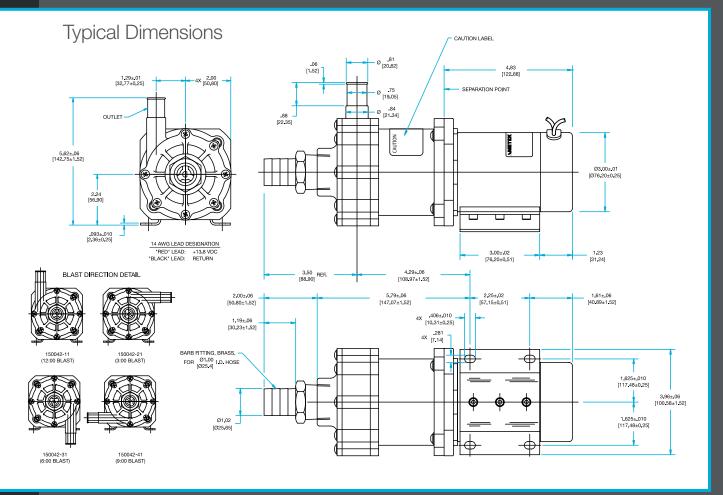


### **Sealless Pump with 3" Motor**

### 12 GPM 40,000 Hour Design Life/12 Gallon



DYNAMIC FLUID SOLUTIONS



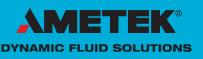
- Motor design characteristics are based on an operating environment of 85°C.
- Approximate typical weight: 8.0 lbs.

### Brushless DC Motor 60,000 Hour Design Life

The 64 Frame, Electronically Commutated DC (ECDC<sup>™</sup>) motor series is a long-life, brushless DC motor system for fans, blowers, pumps, and compressors up to 1.25 horsepower.

#### **Features**

- ECDC<sup>™</sup> motor design provides maintenance-free operation by eliminating brush motor failures and brush and commutator maintenance
- Rare-earth magnets provide high torque/weight ratio
- Wide range of voltage inputs of 12, 24, 37, and 74 VDC
- "O" ring sealed for harsh operating environments
- Reverse polarity and voltage surge protected

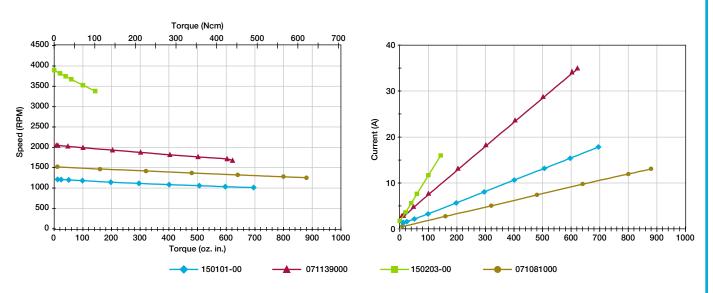






#### Options

- Custom shaft and mounting configurations (foot and face)
- Winding variations to meet exact speed/torque/ voltage point
- Drop-in replacement motor design for existing brush motors
- Available for OEM and retrofit applications
- Complete blowers, fans, and pumps available



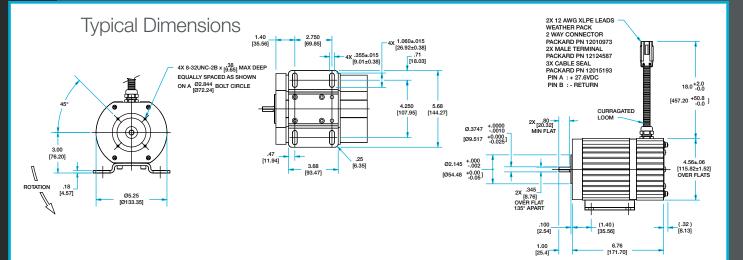
#### Performance

### Brushless DC Motor 60,000 Hour Design Life



**1ETE** 

**DYNAMIC FLUID SOLUTIONS** 



 Motor design characteristics are based on an operating environment of 85°C.

Voltage Input         Volts DC         27.6         27.6         36.0         74.0           Voltage Range         Volts DC         18-32         18-32         24-40         50-80           No Load Speed, Nominal         RPM         3900         2050         1220         1525           No Load Current, Nominal         Amps         1.7         2.5         1.3         0.5           Stall Torque, Theoretical         OzIn.         150         625         700         900           Continuous Torque         OzIn.         75         400         500         800           Continuous Torque, Nominal         RPM         3600         1825         1050         1250           Current @ Torque, Nominal         RPM         3600         1825         1050         1250           Current @ Torque, Nominal         Amps         9.0         23.5         13.2         12           Continuous Power, Max.         Watts Out         200         542         400         765           Torque Constant         V/k RPM         7.08         13.46         29.51         48.52           Voltage Constant         V / k RPM         7.08         13.46         29.51         48.52           Wo			Part Numbers			
Voltage RangeVolts DC18-3218-3224-4050-80No Load Speed, NominalRPM3900205012201525No Load Current, NominalAmps1.72.51.30.5Stall Torque, TheoreticalOzIn.150625700900Ncm1064411494636Continuous TorqueOzIn.75400500800Ncm53282353565Speed @ Torque, NominalRPM3600182510501250Current @ Torque, NominalAmps9.023.513.212Continuous Power, Max.Watts Out200542400765Horsepower0.270.730.541.00Torque ConstantOzin. / Amp9.5718.2039.9065.61Ncm / Amp6.7612.8628.1846.33Voltage ConstantV / k RPM7.0813.4629.5148.52Voltage Constant°C72707085Motor Length ("L" above)Inches7.0810.3610.12513.34MeightLbs.18232629kg8.1610.4311.7913.15Shaft Length ("S" above)Inches12.51.682.16mm25,463,542,6754,861.642.44MeightInches0.3750.6250.50.7497Meight Diameter ("D" abo	Motor Data	Unit of Measure	150203-00	071139000	150101-00	071081000
No Load Speed, Nominal No Load Current, Nominal         RPM         3900         2050         1220         1525           No Load Current, Nominal Stall Torque, Theoretical         Amps         1.7         2.5         1.3         0.5           Stall Torque, Theoretical Continuous Torque         Ncm         106         441         494         636           Continuous Torque Continuous Torque         OzIn.         75         400         500         800           Speed @ Torque, Nominal         RPM         3600         1825         1050         1250           Current @ Torque, Nominal         RPM         3600         1825         1050         1250           Current @ Torque, Nominal         RPM         3600         1825         1050         1250           Current @ Torque, Nominal         Amps         9.0         23.5         13.2         12           Continuous Power, Max.         Watts Out         200         542         400         765           Torque Constant         Ozin. / Amp         9.57         18.20         39.90         65.61           Ncm / Amp         6.76         12.86         28.18         46.33           Voltage Constant         °C         72         70         70         <	Voltage Input	Volts DC	27.6	27.6	36.0	74.0
No Load Current, Nominal Stall Torque, Theoretical         Amps         1.7         2.5         1.3         0.5           Stall Torque, Theoretical         Ncm         150         625         700         900           Continuous Torque         OzIn.         75         400         500         800           Continuous Torque         Ncm         53         282         353         565           Speed @ Torque, Nominal         RPM         3600         1825         1050         1250           Current @ Torque, Nominal         Amps         9.0         23.5         13.2         12           Continuous Power, Max.         Watts Out         200         542         400         765           Horsepower         0.27         0.73         0.54         1.00           Ozin. / Amp         9.57         18.20         39.90         65.61           Ncm / Amp         6.76         12.86         28.18         46.33           Voltage Constant         V / k RPM         7.08         13.46         29.51         48.52           Voltage Constant         °C         72         70         70         85           Motor Length ("L" above)         Inches         7.08         10.125 <td>Voltage Range</td> <td>Volts DC</td> <td>18–32</td> <td>18–32</td> <td>24–40</td> <td>50–80</td>	Voltage Range	Volts DC	18–32	18–32	24–40	50–80
Stall Torque, Theoretical         OzIn.         150         625         700         900           Ncm         106         441         494         636           Continuous Torque         OzIn.         75         400         500         800           Speed @ Torque, Nominal         RPM         3600         1825         1050         1250           Current @ Torque, Nominal         Amps         9.0         23.5         13.2         12           Continuous Power, Max.         Watts Out         200         542         400         765           Torque Constant         Watts Out         200         542         400         765           Torque Constant         Ozin. / Amp         9.57         18.20         39.90         65.61           Ncm / Amp         6.76         12.86         28.18         46.33           Voltage Constant         V / k RPM         7.08         13.46         29.51         48.52           Motor Length ("L" above)         Mnches         7.08         10.125         13.34           Mtor Length ("L" above)         Mnches         1.08         263,14         257,18         338,83           Meight         Inches         1         2.5	No Load Speed, Nominal	RPM	3900	2050	1220	1525
Stall Torque, Theoretical Continuous Torque         Ncm         106         441         494         636           Continuous Torque         OzIn.         75         400         500         800           Speed @ Torque, Nominal         Ncm         53         282         353         565           Speed @ Torque, Nominal         RPM         3600         1825         1050         1250           Current @ Torque, Nominal         Amps         9.0         23.5         13.2         12           Continuous Power, Max.         Watts Out         200         542         400         765           Torque Constant         Ozin. / Amp         9.57         18.20         39.90         65.61           Ncm / Amp         6.76         12.86         28.18         46.33           Voltage Constant         V / k RPM         7.08         13.46         29.51         48.52           Voltage Constant         °C         72         70         70         85           Motor Length ("L" above)         Inches         7.08         10.36         10.125         13.34           Meight         kg         8.16         10.43         11.79         13.15           Shaft Length ("S" above)	No Load Current, Nominal	Amps	1.7	2.5	1.3	0.5
Ncm         106         441         494         636           Continuous Torque         QzIn.         75         400         500         800           Ncm         53         282         353         565           Speed @ Torque, Nominal         RPM         3600         1825         1050         1250           Current @ Torque, Nominal         Amps         9.0         23.5         13.2         12           Continuous Power, Max.         Watts Out         200         542         400         765           Torque Constant         More Amp         9.57         18.20         39.90         65.61           Ncm / Amp         6.76         12.86         28.18         46.33           Voltage Constant         V / k RPM         7.08         13.46         29.51         48.52           Voltage Constant         °C         72         70         70         85           Motor Length ("L" above)         Inches         7.08         10.36         10.125         13.34           Meight         Lbs.         18         23         26         29         13.46           Motor Length ("L" above)         Inches         1.08         10.36         10.125	Otall Targua, Theoretical	OzIn.	150	625	700	900
Continuous Torque         Ncm         53         282         353         565           Speed @ Torque, Nominal         RPM         3600         1825         1050         1250           Current @ Torque, Nominal         Amps         9.0         23.5         13.2         12           Continuous Power, Max.         Watts Out         200         542         400         765           Horsepower         0.27         0.73         0.54         1.00           Torque Constant         Ozin. / Amp         9.57         18.20         39.90         65.61           Ncm / Amp         6.76         12.86         28.18         46.33           Voltage Constant         V / k RPM         7.08         13.46         29.51         48.52           Voltage Constant         V / rad / sec         0.0676         0.1286         0.2818         0.4634           Ambient Temperature, Max.         °C         72         70         70         85           Motor Length ("L" above)         Inches         7.08         10.125         13.34           Motor Length ("L" above)         Ibs.         18         23         26         29           Motor Length ("S" above)         Inches         1	Stall Torque, Theoretical	Ncm	106	441	494	636
Ncm         53         282         353         565           Speed @ Torque, Nominal         RPM         3600         1825         1050         1250           Current @ Torque, Nominal         Amps         9.0         23.5         13.2         12           Continuous Power, Max.         Watts Out         200         542         400         765           Horsepower         0.27         0.73         0.54         1.00           Torque Constant         Ozin. / Amp         9.57         18.20         39.90         65.61           Ncm / Amp         6.76         12.86         28.18         46.33           Voltage Constant         V / k RPM         7.08         13.46         29.51         48.52           Voltage Constant         °V / k RPM         7.08         10.26         0.2818         0.4634           Ambient Temperature, Max.         °C         72         70         70         85           Motor Length ("L" above)         Inches         7.08         10.125         13.34           Motor Length ("L" above)         Lbs.         18         23         26         29           Motor Length ("L" above)         Inches         10.4         11.79         13.15	Continuo la Tarqua	OzIn.	75	400	500	800
Current @ Torque, Nominal         Amps         9.0         23.5         13.2         12           Continuous Power, Max.         Watts Out         200         542         400         765           Horsepower         0.27         0.73         0.54         1.00           Torque Constant         Morsepower         0.27         0.73         0.54         1.00           Torque Constant         Ozin. / Amp         9.57         18.20         39.90         65.61           Ncm / Amp         6.76         12.86         28.18         46.33           Voltage Constant         V / k RPM         7.08         13.46         29.51         48.52           V/rad / sec         0.0676         0.1286         0.2818         0.4634           Ambient Temperature, Max.         °C         72         70         70         85           Motor Length ("L" above)         Inches         7.08         10.36         10.125         13.34           Weight         Lbs.         18         23         26         29           kg         8.16         10.43         11.79         13.15           Shaft Length ("S" above)         Inches         1         2.5         1.68         2.16	Continuous forque	Ncm	53	282	353	565
Continuous Power, Max.         Watts Out         200         542         400         765           Horsepower         0.27         0.73         0.54         1.00           Torque Constant         OZin. / Amp         9.57         18.20         39.90         65.61           Ncm / Amp         6.76         12.86         28.18         46.33           Voltage Constant         V / k RPM         7.08         13.46         29.51         48.52           Voltage Constant         V / k RPM         7.08         0.1286         0.2818         0.4634           Ambient Temperature, Max.         °C         72         70         70         85           Motor Length ("L" above)         Inches         7.08         10.36         10.125         13.34           Meight         Kg         8.16         10.34         257.18         338,83           Weight         Kg         8.16         10.43         11.79         13.15           Shaft Length ("S" above)         Inches         1         2.5         1.68         2.16           Mm         25,4         63,5         42,67         54,86           Shaft Diameter ("D" above)         Inches         0.375         0.625         0	Speed @ Torque, Nominal	RPM	3600	1825	1050	1250
Continuous Power, Max.         Horsepower         0.27         0.73         0.54         1.00           Torque Constant         OZin. / Amp         9.57         18.20         39.90         65.61           Ncm / Amp         6.76         12.86         28.18         46.33           Voltage Constant         V / k RPM         7.08         13.46         29.51         48.52           Voltage Constant         V / rad / sec         0.0676         0.1286         0.2818         0.4634           Ambient Temperature, Max.         °C         72         70         70         85           Motor Length ("L" above)         Inches         7.08         10.36         10.125         13.34           Meight         Lbs.         18         23         26         29           Weight         Kg         8.16         10.43         11.79         13.15           Shaft Length ("S" above)         Inches         1         2.5         1.68         2.16           Mmm         25,4         63,5         42,67         54,86           Shaft Length ("S" above)         Inches         0.375         0.625         0.5         0.7497           Shaft Diameter ("D" above)         Inches         0.375	Current @ Torque, Nominal	Amps	9.0	23.5	13.2	12
Horsepower         0.27         0.73         0.54         1.00           Torque Constant         Ozin. / Amp         9.57         18.20         39.90         65.61           Ncm / Amp         6.76         12.86         28.18         46.33           Voltage Constant         V / k RPM         7.08         13.46         29.51         48.52           Voltage Constant         V / rad / sec         0.0676         0.1286         0.2818         0.4634           Ambient Temperature, Max.         °C         72         70         70         85           Motor Length ("L" above)         Inches         7.08         10.36         10.125         13.34           Weight         Lbs.         18         23         26         29           Kg         8.16         10.43         11.79         13.15           Shaft Length ("S" above)         Inches         1         2.5         1.68         2.16           Mmm         25,4         63,5         42,67         54,86           Shaft Length ("S" above)         Inches         0.375         0.625         0.5         0.7497           Shaft Length ("S" above)         Inches         0.375         0.625         0.5         0.74	Continuous Dower Mov	Watts Out	200	542	400	765
Torque Constant         Ncm / Amp         6.76         12.86         28.18         46.33           Voltage Constant         V / k RPM         7.08         13.46         29.51         48.52           Voltage Constant         V / rad / sec         0.0676         0.1286         0.2818         0.4634           Ambient Temperature, Max.         °C         72         70         70         85           Motor Length ("L" above)         Inches         7.08         10.36         10.125         13.34           Motor Length ("L" above)         Inches         7.08         10.36         10.125         13.34           Motor Length ("L" above)         Inches         18         23         26         29           Meight         Ibs.         18         23         26         29           Meight         Kg         8.16         10.43         11.79         13.15           Shaft Length ("S" above)         Inches         1         2.5         1.68         2.16           Shaft Diameter ("D" above)         Inches         0.375         0.625         0.5         0.7497           Shaft Configuration         Inches         0.375         15.88         12.7         19.04           Shaf	Continuous Power, Max.	Horsepower	0.27	0.73	0.54	1.00
Ncm / Amp         6.76         12.86         28.18         46.33           Voltage Constant         V / k RPM         7.08         13.46         29.51         48.52           Voltage Constant         V / rad / sec         0.0676         0.1286         0.2818         0.4634           Ambient Temperature, Max.         °C         72         70         70         85           Motor Length ("L" above)         Inches         7.08         10.36         10.125         13.34           Motor Length ("L" above)         Inches         7.08         10.36         265,14         257,18         338,83           Weight         Lbs.         18         23         26         29           Kg         8.16         10.43         11.79         13.15           Shaft Length ("S" above)         Inches         1         2.5         1.68         2.16           Mmm         25,4         63,5         42,67         54,86           Shaft Diameter ("D" above)         Inches         0.375         0.625         0.5         0.7497           Shaft Configuration         Inches         0.375         0.625         0.5         0.7497           Shaft Configuration         Mmm         9,53	Targua Capatant	Oz.–in. / Amp	9.57	18.20	39.90	65.61
Voltage Constant         V / rad / sec         0.0676         0.1286         0.2818         0.4634           Ambient Temperature, Max.         °C         72         70         70         85           Motor Length ("L" above)         Inches         7.08         10.36         10.125         13.34           Motor Length ("L" above)         mm         179,83         263,14         257,18         338,83           Weight         Lbs.         18         23         26         29           Kg         8.16         10.43         11.79         13.15           Shaft Length ("S" above)         Inches         1         2.5         1.68         2.16           mm         25,4         63,5         42,67         54,86           Shaft Diameter ("D" above)         mm         253         0.625         0.5         0.7497           Shaft Configuration         mm         9,53         15,88         12.7         19,04           Shaft Configuration         Viewed Lead Exit End         CW         CW         CCW         CCW	Torque Constant	Ncm / Amp	6.76	12.86	28.18	46.33
V/rad/sec         0.0676         0.1286         0.2818         0.4634           Ambient Temperature, Max.         °C         72         70         70         85           Motor Length ("L" above)         Inches         7.08         10.36         10.125         13.34           Motor Length ("L" above)         Inches         7.08         263,14         257,18         338,83           Weight         Ibs.         18         23         26         29           kg         8.16         10.43         11.79         13.15           Shaft Length ("S" above)         Inches         1         2.5         1.68         2.16           mm         25,4         63,5         42,67         54,86           Shaft Diameter ("D" above)         Inches         0.375         0.625         0.5         0.7497           Shaft Configuration         mm         9,53         15,88         12.7         19,04           Shaft Configuration         Viewed Lead Exit End         CW         CCW         CCW	Valtage Constant	V / k RPM	7.08	13.46	29.51	48.52
Motor Length ("L" above)         Inches         7.08         10.36         10.125         13.34           Motor Length ("L" above)         Inches         7.08         10.36         10.125         13.34           Motor Length ("L" above)         mm         179,83         263,14         257,18         338,83           Weight         Lbs.         18         23         26         29           Kg         8.16         10.43         11.79         13.15           Shaft Length ("S" above)         Inches         1         2.5         1.68         2.16           mm         25,4         63,5         42,67         54,86           Shaft Diameter ("D" above)         Inches         0.375         0.625         0.5         0.7497           Shaft Configuration         mm         9,53         15,88         12.7         19,04           Shaft Configuration         Viewed Lead Exit End         CW         CCW         CCW	vollage Constant	V / rad / sec	0.0676	0.1286	0.2818	0.4634
Motor Length ("L" above)         mm         179,83         263,14         257,18         338,83           Weight         Lbs.         18         23         26         29           kg         8.16         10.43         11.79         13.15           Shaft Length ("S" above)         Inches         1         2.5         1.68         2.16           Shaft Length ("S" above)         Inches         1         2.5         1.68         2.16           Shaft Length ("D" above)         Inches         0.375         0.625         0.5         0.7497           Shaft Diameter ("D" above)         mm         9,53         15,88         12.7         19,04           Shaft Configuration         Viewed Lead Exit End         CW         CCW         CCW	Ambient Temperature, Max.	O°	72	70	70	85
Imm         179,83         263,14         257,18         338,83           Weight         Lbs.         18         23         26         29           kg         8.16         10.43         11.79         13.15           Shaft Length ("S" above)         Inches         1         2.5         1.68         2.16           mm         25,4         63,5         42,67         54,86           Shaft Diameter ("D" above)         Inches         0.375         0.625         0.5         0.7497           Shaft Configuration         mm         9,53         15,88         12.7         19,04           Rotation         Viewed Lead Exit End         CW         CCW         CCW	Motor Longth ("L" abovo)	Inches	7.08	10.36	10.125	13.34
Weight         kg         8.16         10.43         11.79         13.15           Shaft Length ("S" above)         Inches         1         2.5         1.68         2.16           Mm         25,4         63,5         42,67         54,86           Shaft Diameter ("D" above)         Inches         0.375         0.625         0.5         0.7497           Shaft Configuration         Mm         9,53         15,88         12.7         19,04           Shaft Configuration         Viewed Lead Exit End         CW         CCW         CCW		mm	179,83	263,14	257,18	338,83
kg         8.16         10.43         11.79         13.15           Shaft Length ("S" above)         Inches         1         2.5         1.68         2.16           Mm         25,4         63,5         42,67         54,86           Shaft Diameter ("D" above)         Inches         0.375         0.625         0.5         0.7497           Shaft Configuration         Mm         9,53         15,88         12.7         19,04           Rotation         Viewed Lead Exit End         CW         CW         CCW         CCW	Woight	Lbs.	18	23	26	29
Shaft Length ("S" above)         mm         25,4         63,5         42,67         54,86           Shaft Diameter ("D" above)         Inches         0.375         0.625         0.5         0.7497           Mm         9,53         15,88         12.7         19,04           Shaft Configuration         Single         Single         Single         Single           Rotation         Viewed Lead Exit End         CW         CCW         CCW	veignt	kg	8.16	10.43	11.79	13.15
Inches         0.375         0.625         42,67         54,86           Shaft Diameter ("D" above)         Inches         0.375         0.625         0.5         0.7497           Mm         9,53         15,88         12.7         19,04           Shaft Configuration         Single         Single         Single         Single         Single           Rotation         Viewed Lead Exit End         CW         CCW         CCW         CCW		Inches	1	2.5	1.68	2.16
Shaft Diameter ("D" above)mm9,5315,8812.719,04Shaft ConfigurationSingleSingleSingleSingleSingleRotationViewed Lead Exit EndCWCWCCWCCW	Shart Leriyti ( S above)	mm	25,4	63,5	42,67	54,86
mm9,5315,8812.719,04Shaft ConfigurationSingleSingleSingleSingleRotationViewed Lead Exit EndCWCWCCW	Shaft Diamator ("D" aboua)	Inches	0.375	0.625	0.5	0.7497
Rotation Viewed Lead Exit End CW CW CCW CCW		mm	9,53	15,88	12.7	19,04
	Shaft Configuration		Single	Single	Single	Single
	Rotation	Viewed Lead Exit End	CW	CW	CCW	CCW
Speeds 1 2 1 1	Speeds		1	2	1	1

This document is for informational purposes only and should not be considered as a binding description of the products or their performance in all applications. Actual performance will vary depending on the operatin environment and application.

5°C ambient mounted on 12 in.  $\times$  12 in.  $\times$  1/2 in. aluminum sink



### Condenser and Evaporator Motors For Coach A/C Systems

ROTRON<sup>®</sup> Transportation

60,000 Hour Brushless DC Motors for OEM and Field Upgrade Applications

ROTRON<sup>®</sup> 64 frame brushless DC motors are designed for 60,000-hour operating life and have been built to meet the original OEM specifications for new and existing coach field replacement applications. These motors are designed to directly replace OEM brush motors.

- 27.6 VDC brushless DC microprocessor controlled design
- Field proven and qualified in most major OEM applications
- Drop-in replacement for most existing brush motor applications, up to 2.2 HP
- Environmentally sealed design with O-rings and shaft seals for harsh environments
- Electronically protected design includes:
  - Current limiting soft start
  - Reverse polarity protection
  - Locked rotor (stall) protection
  - Over temperature protection
- Custom shaft and mounting configurations available
- Custom motor performance design variations available to meet existing or new design applications.
- Complete field replacement/upgrade kits are available from coach manufacturers



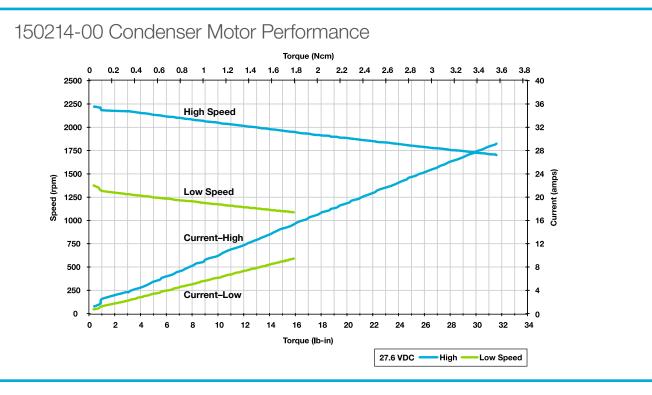
150215-00 150355-00 Evaporator Motors

### Condenser and Evaporator Motors For Coach A/C Systems

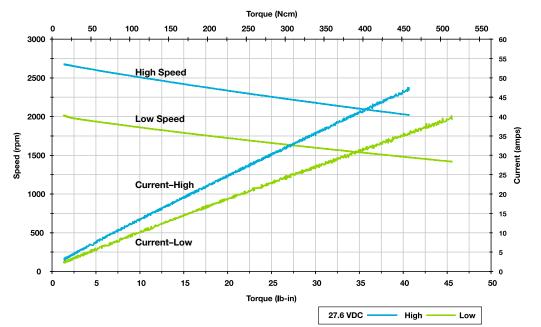
ROTRON® Transportation

**DYNAMIC FLUID SOLUT** 

60,000 Hour Brushless DC Motors for OEM and Field Upgrade Applications



151140-00 Condenser Motor Performance

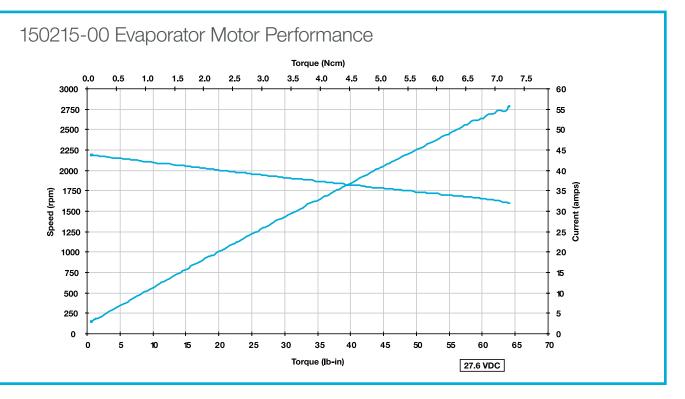


### Condenser and Evaporator Motors For Coach A/C Systems

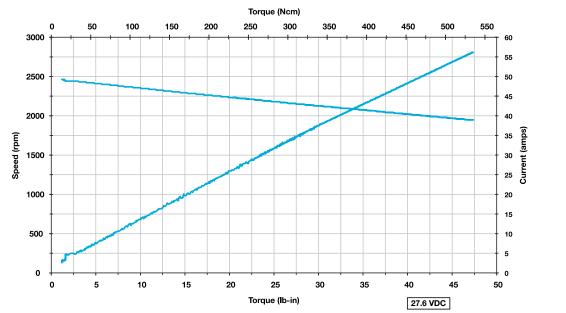


**DYNAMIC FLUID SOLUT** 

60,000 Hour Brushless DC Motors for OEM and Field Upgrade Applications







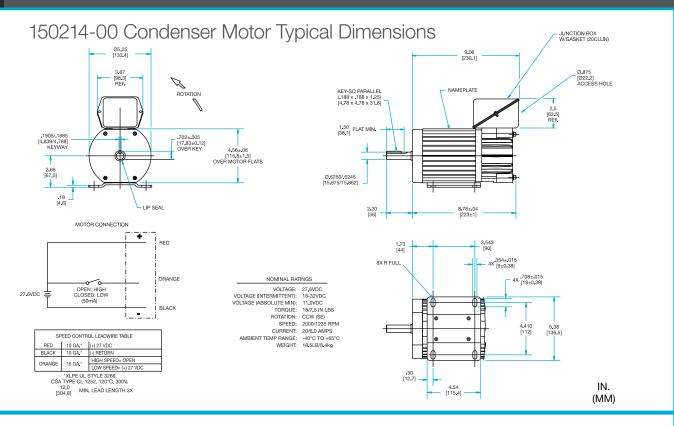
### Condenser and Evaporator Motors For Coach A/C Systems

ROTRON<sup>®</sup> Transportation

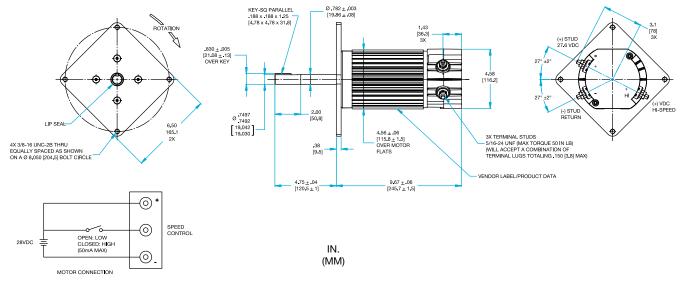
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**DYNAMIC FLUID SOLUTIONS** 

60,000 Hour Brushless DC Motors for OEM and Field Upgrade Applications



151140-00 Condenser Motor Typical Dimensions



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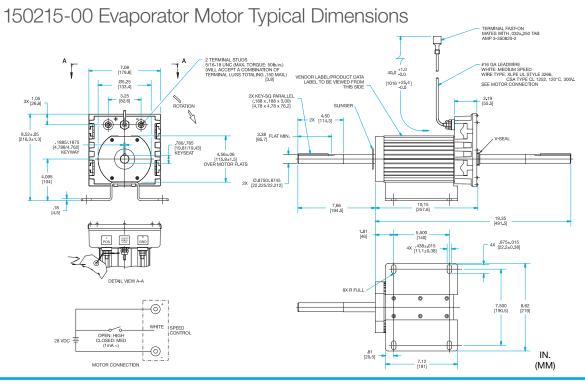
To learn more, visit <u>AMETEKDFS.com/LeakProofPumps</u>

### Condenser and Evaporator Motors For Coach A/C Systems

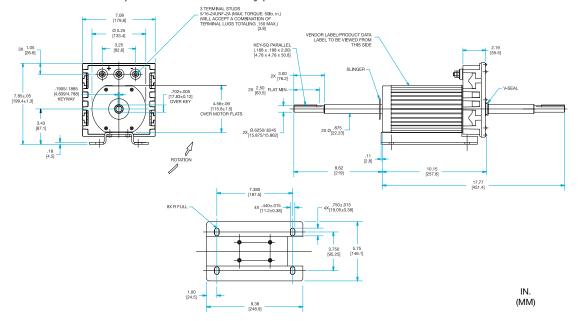
ROTRON<sup>®</sup> Transportation

DYNAMIC FLUID SOLUTIONS

60,000 Hour Brushless DC Motors for OEM and Field Upgrade Applications



150355-00 Evaporator Motor Typical Dimensions





### Condenser and Evaporator Motors For Coach A/C Systems

ROTRON<sup>®</sup> Transportation

60,000 Hour Brushless DC Motors for OEM and Field Upgrade Applications

	Unit of	Condenser Motor Part Numbers		Evaporator Motor Part Numbers		
Motor Data	Measure	150214-00	151140-00	150215-00	150355-00	
Voltage Input	Volts DC	27.6	27.6	27.6	27.6	
Voltage Range	Volts DC	18–32	18–32	18–32	18–32	
Speed(s)	#	2	2	2	2	
Torque	In – Lbs.	18/7.5	24/16	54/36	32/21	
Speed	RPM	2000/1235	2340/1160	1700/1400	2800/2340	
Rotation	CCW/CW	CCW (SE)	CCW (SE)	CW (Electronics End)	CW (Electronics End)	
Current	Amps	20/6	30/5	52/26.5	45/25	
Weight	Lbs./Kg	18.6/8.4	21.8/9.9	29.6/13.5	28.8/13.1	
Ambient Temperature	°C	–40 to –65	–40 to –65	–40 to –65	–40 to –65	

• Motor design characteristics are based on an operating environment of 65°C.



### **Brushless DC Motor** 60,000 Hour Design Life

The 47 Frame, Electronically Commutated DC (ECDC<sup>™</sup>) motor series is a long-life brushless DC motor system for fans, blowers, pumps, and compressors up to .5 horsepower.

#### **Features**

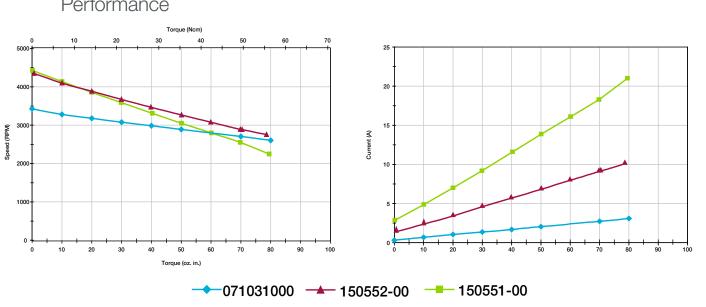
- ECDC<sup>™</sup> motor design provides maintenance-free operation by eliminating brush motor failures and brush and commutator maintenance
- Rare-earth magnets provide high torque/ weight ratio
- Integral electronics provides simple two-wire, DC operation (reverse polarity protected)
- Wide range of voltage inputs of 12, 24, 37, and 74
- 4H system for standard performance
- 3F system for high performance in a small package



**DYNAMIC FLUID SOLUTIONS** 

#### **Options**

- Custom shaft and mounting configurations (foot and face)
- "O" ring sealed motor for harsh operating environments
- MS connectors
- Winding variations to meet exact speed/torque/voltage point
- Bi-directional operation
- Speeds up to 10,000 rpm



### Performance



### Brushless DC Motor 60,000 Hour Design Life



METEK®

#### **Typical Dimensions** , f t f CONNECTOR WEATHERPACK PACKARD NO. 12010973 OR EQUIVALENT CORRUGATED LOOM .100 [2.54] Ø2.145<sup>+.000</sup> STAMPING DATA [54.48 +0 0.05 ] 8.38±.50 [212.9±12.7] 2X .345 FLATS [8.76] SPACED 135° APART ALLAN . ALA ALA 0 3.50±.03 [88,9±0,8] (MOTOR FLATS) \*D\* \_ I 4X #8-32 UNC-2B x 35/[8,9] MIN FULL THREAD EQUALLY SPACED AS SHOWN ON A Ø2.844/[72.24] BOLT CIRCLE 2X .80 (FLATS) [20.3] HOOK-UP DIAGRAM П 3.89±03 Ø [98,8±0,8] (MOTOR) 100 A (+) 27.6 VDC RED (-) RETURN BLACK

 Motor design characteristics are based on an operating environment of 85°C.

		Part Numbers		
Motor Data	Unit of Measure	150551-00	150552-00	071031000
Voltage Input	Volts DC	13.8	27.6	74
Voltage Range	Volts DC	9–16	18–32	50–80
No Load Speed, Nominal	RPM	4425	4350	3425
No Load Current, Nominal	Amps	2.5	1.4	0.3
Stall Torque, Theoretical	OzIn.	160	210	334
Stall Torque, Theoretical	Ncm	113	148	236
Continuous Taraus	OzIn.	30	30	50
Continuous Torque	Ncm	21	21	35
Speed @ Torque, Nominal	RPM	3575	3675	2900
Current @ Torque, Nominal	Amps	9.5	4.5	2.0
Continuous Power, Max.	Watts Out	80	82	108
Continuous Power, Max.	Horsepower	0.11	0.11	0.14
Torque Constant	Oz.–In. / Amp	4.41	8.58	29.21
Torque Constant	Ncm / Amp	3.11	6.06	19.1
Voltago Constant	V/k/RPM	3.12	6.34	21.61
Voltage Constant	V / rad / sec	0.0298	0.0606	0.2063
Ambient Temperature, Max.	Degrees C	85	85	55
Motor Length ("L" above)	Inches	6.00	6.00	6.68
WOULENGUI ( L'ADOVE)	mm	152,40	152,40	169,67
Weight	Lbs	7.3	7.3	8
vveigrit	kg	3.3	3.3	3.6
Shaft Length ("S" above)	Inches	1	1	1.65
Shall Length ( S above)	mm	25,4	25,4	41,91
Shaft Diameter ("D" above)	Inches	0.375	0.375	0.312
Shar Diameter (D above)	mm	9,52	9,52	7,925
Shaft Configuration		Single	Single	Single
Rotation	Viewed Lead Exit End	CW	CW	CCW
Speeds		1	1	1

## **3" Brushless DC Motor**

### 40,000 Hour Design Life



**Brushless Motor** 

 Electronically Commutated DC (ECDC<sup>™</sup>) motor eliminates "brush" motor failures while offering extended life

#### Life Cycle Cost Savings

 Motor design life of 40,000 hours eliminates additional motor cost and labor intensive maintenance expense of brush motor designs

#### Interchangeable

 3.0 inch outside motor diameter and standard
 2-wire electrical hookup allows complete interchangeability with brush motor counterparts

#### Rugged

• Environmentally resistant design offers protection from hot-water spray, rain, humidity, salt, fog, shock, and vibration

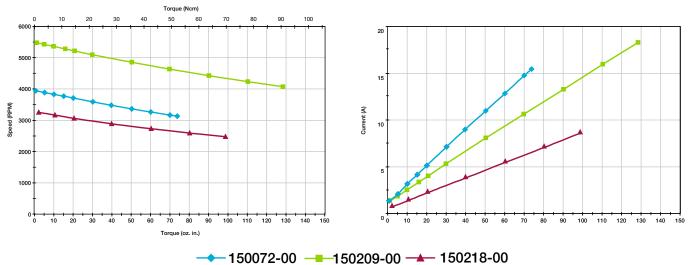
#### "Smart" Motor Controls

- Multi-speed and variable speed operation
- Current limit
- Locked-rotor protection
- Reverse polarity
   protection
- Over temperature shut off
- Transient over-voltage protection
- Soft start input



#### **Multi-Purpose Use**

- A/C evaporator and condenser motors and blowers
- Heater motors and blowers
- Defroster motors and blowers
- Coolant pumps
- Radiator cooling fans



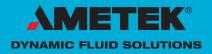
Performance

To learn more, visit AMETEKDFS.com/LeakProofPumps



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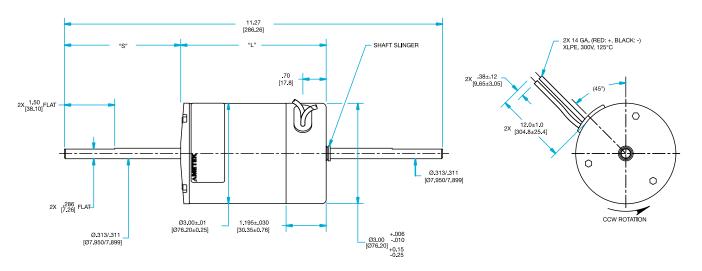
## **3" Brushless DC Motor**



### 40,000 Hour Design Life



Typical Dimensions



		Part Numbers		
Motor Data	Unit of Measure	150072-00	150209-00	150218-00
Voltage Input	Volts DC	13.8	27.6	27.6
Voltage Range	Volts DC	11–16	18–32	18–32
No Load Speed, Nominal	RPM	3950	5475	3250
No Load Current, Nominal	Amps	1.3	1.0	0.7
Otall Targua, Theoretical	OzIn.	75	130	140
Stall Torque, Theoretical	Ncm	53	92	99
Continuous Torque	OzIn.	45	90	55
Continuous Torque	Ncm	32	64	39
Speed @ Torque, Nominal	RPM	3425	4450	2750
Current @ Torque, Nominal	Amps	10.0	13.0	5.0
Cartinua Davia Mari	Watts Out	170	300	113
Continuous Power, Max.	Horsepower	0.23	0.40	0.15
Torreus Constant	Oz.–In. / Amp	4.72	6.82	11.48
Torque Constant	Ncm / Amp	3.34	4.81	8.11
Valta as Constant	V/k/RPM	3.49	5.04	8.49
Voltage Constant	V / rad / sec	0.0334	0.0481	0.0811
Ambient Temperature, Max.	°C	85	85	70
Matar Langth ("L" abova)	Inches	5.065	4.335	4.175
Motor Length ("L" above)	mm	128,65	110,11	106,05
\M/sight	Oz	80	57	52
Weight	Grams	2300	1616	1474
Shoft Longth ("S" above)	Inches	1.142	3.47	2
Shaft Length ("S" above)	mm	29	88,14	50,8
Shaft Configuration		Single	Dual	Single
Rotation	Viewed Lead Exit End	CCW	CCW	CW
Speeds		1	1	2

## About AMETEK Dynamic Fluid Solutions (DFS)

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For more than 100 years, **AMETEK DFS** has helped OEMs differentiate their products by developing robust, flexible and durable blowers, motors and pumps under the brand names: Lamb<sup>®</sup>, Prestolite Motors<sup>™</sup>. Windjammer<sup>®</sup>, Nautilair<sup>®</sup> and ROTRON<sup>®</sup>.

Our engineering experts understand technical challenges and can provide OEMs so much more than an off-the-shelf part. We are a true technology partner, offering customizable and collaborative fluidmoving solutions.

AMETEK DFS has worldwide sales representative support, research facilities and three manufacturing sites in the United States, China and Mexico. The company is headquartered in Kent, OH, which is also home to a state-of-the-art-engineering laboratory that helps customers expedite agency certifications, performance testing, prototyping and more.

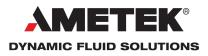
AMETEK DFS is a business unit of AMETEK, Inc., a leading global manufacturer of electronic instruments and electromechanical devices with annual sales of more than \$5 billion.

#### About ROTRON<sup>®</sup> Transportation Pumps and Motors

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For more than 75 years, AMETEK DFS has designed and manufactured **ROTRON®** brushless sealless pumps and brushless DC motors for heavy-duty transportation OEMs building trucks, buses, locomotives, light rail equipment, off-road vehicles and more.

Our ROTRON<sup>®</sup> transportation products offer long life up to 60,000 hours, CAN J1939 functionality and maintenance-free designs. The fluid-moving technologies can be customized to OEM specs and are **Buy America Compliant**.



To learn more, visit <u>AMETEKDFS.com/LeakProofPumps</u>