# 東元低壓半密型WPI泵浦用馬達

## MODEL： AMRCED

HIGH THRUST SOLIDSHAFT PUMP MOTORS
LOW VOLTAGE SQUIRREL CAGE
FRAME SIZE： 213VP ~ 405VP

DWG NO.
**31057D67626**
REV. 04

# SPECIFICATION TABLE

HIGH THRUST SOLIDSHAFT PUMP MOTORS
LOW VOLTAGE SQUIRREL CAGE

MODEL
**AMRCED**

| ITEM | | STANDARD SPECIFICATION |
|---|---|---|
| RATING | Kind of Motors | Squirrel Cage Induction Motors ( SCIM ),VHS,WPI |
| | Design Standards | NEMA MG-1, EPAct Efficiency / Premium Efficiency |
| | Voltages | 230V / 460V ( 208V De-Rating Operation ) , 460V , 575V. |
| | Frequency | 60Hz. |
| | Output Range | 3HP ~ 150HP. |
| | R.P.M. (Syn.) | 3600 R.P.M. , 1800 R.P.M. And 1200 R.P.M. ( 2 , 4 And 6 Poles ). |
| | Time Duty | Continuous , S.F. 1.15 . |
| | Frame Size | 213VP ~ 405VP. |
| | Protection Enclosure | Open, Drip Proof ( IP22 ), NEMA Weather-Protected Type Ⅰ( WP Ⅰ ). |
| | Cooling Method | Self Ventilated, Interior Cooling ( IC 01 ). |
| | Mounting | Flange Mounting ( IM3011 ). |
| | High Thrust Load | As PERFORMANCE DATA |
| APPLICATION | Power Conditions | Voltage：±10%, Frequency：±5%, And ±10% Max. Of Combined Voltage And Frequency, But Frequency Variation Does Not Exceed ±5%. |
| | Designed Primarily | For Deep Well Turbine Pump. |
| | Environment Conditions | Place：Non-Hazardous , Ambient Temperature：-15℃ ~ 40℃, Relative Humidity：Less Than 80%RH ( Non-Condensation ), Altitude：Less Than 3,300ft. |
| | Operating Conditions | Direct Coupling, Suitable for Fluid Duty Only. |
| | Direction of Rotation | Counter-Clock-Wise ( View From Top Side ). |
| | Method of Starting | Full Voltage Direct-On-Line or VFD or - △ Starting<br>12 Leads , With Solderless Lug Terminal for 7.5HP and Up ,<br>9 Leads for the Others. |
| PERFORMANCE | Test Procedure | IEEE-112 Method-B and Full Voltage Measuring Starting Performance. |
| | Temperature Rise | Not to Exceed 90℃ for S.F. 1.15 or 80℃ for S.F. 1.0 By Resistance Method. |
| | Over Speed | 125% Syn. R.P.M. for Two Min. ( 2,4, Poles ) ;<br>150% Syn. R.P.M. for Two Min. ( 6 Pole ) . |
| | Over Torque | 160% Rated Torque for 15 Sec. |

# PERFORMANCE DATA

HIGH THRUST HOLLOWSHAFT PUMP MOTORS
LOW VOLTAGE SQUIRREL CAGE

MODEL
**AMRCED**

NEMA Premium

## WP I, NEMA T-FRAME, DESIGN - B, CLASS F, 40℃ AMBIENT, CONTINUOUS DUTY, S.F. 1.15 3φ 230/460V 60HZ

## TYPICAL PERFORMANCE ( 230V )

| HP | FULL LOAD RPM | FRAME SIZE | EFFICIENCY(%) FULL LOAD NOM. | EFFICIENCY(%) FULL LOAD MIN. | EFFICIENCY(%) 3/4 LOAD NOM. | EFFICIENCY(%) 1/2 LOAD NOM. | POWER FACTOR(%) FULL LOAD | POWER FACTOR(%) 3/4 LOAD | POWER FACTOR(%) 1/2 LOAD | CURRENT FULL LOAD (A) | CURRENT LOCKED ROTOR (A) | TORQUE FULL LOAD lb-ft | TORQUE LOCKED ROTOR %FLT | TORQUE PULL UP %FLT | TORQUE BREAK DOWN %FLT | ROTOR $WK^2$ $lb\text{-}ft^2$ | DOWN THRUST lbs | NEMA CODE LETTER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 1175 | 213VP | 88.5 | 86.5 | 89.0 | 87.0 | 69.0 | 60.0 | 46.0 | 9.20 | 64 | 13.40 | 185 | 165 | 315 | 0.640 | 2950 | K |
| 5 | 1165 | 215VP | 89.5 | 87.5 | 90.0 | 89.0 | 73.0 | 65.0 | 51.5 | 14.3 | 92 | 22.53 | 165 | 145 | 285 | 0.842 | 2950 | J |
| 7.5 | 1755 | 213VP | 91.0 | 89.5 | 91.5 | 91.0 | 81.0 | 76.0 | 64.5 | 19.1 | 127 | 22.44 | 220 | 175 | 260 | 0.667 | 2600 | H |
| | 1170 | 254VP | 90.2 | 88.5 | 88.5 | 87.0 | 77.0 | 70.0 | 56.5 | 20.2 | 127 | 33.65 | 250 | 200 | 260 | 2.148 | 3850 | H |
| 10 | 3505 | 213VP | 89.5 | 87.5 | 91.0 | 90.5 | 85.5 | 82.0 | 74.0 | 24.5 | 162 | 14.98 | 200 | 170 | 250 | 0.408 | 2000 | H |
| | 1755 | 215VP | 91.7 | 90.2 | 92.0 | 92.0 | 84.0 | 79.0 | 68.5 | 24.3 | 162 | 29.92 | 235 | 175 | 280 | 0.916 | 2600 | H |
| | 1165 | 256VP | 91.7 | 90.2 | 90.0 | 89.5 | 79.5 | 73.5 | 61.0 | 25.7 | 162 | 45.07 | 230 | 180 | 240 | 2.859 | 3850 | H |
| 15 | 3500 | 215VP | 90.2 | 88.5 | 92.0 | 91.5 | 87.0 | 84.0 | 75.5 | 35.8 | 232 | 22.50 | 245 | 210 | 295 | 0.507 | 2000 | G |
| | 1770 | 254VP | 93.0 | 91.7 | 93.0 | 93.0 | 83.0 | 79.5 | 70.0 | 36.4 | 232 | 44.49 | 160 | 120 | 240 | 1.862 | 3350 | G |
| | 1175 | 284VP | 91.7 | 90.2 | 92.5 | 92.0 | 80.0 | 76.0 | 65.5 | 38.3 | 232 | 67.02 | 210 | 160 | 220 | 5.778 | 3850 | G |
| 20 | 3525 | 254VP | 91.0 | 89.5 | 92.5 | 92.0 | 90.0 | 88.0 | 82.0 | 45.7 | 290 | 29.79 | 175 | 135 | 225 | 0.933 | 2700 | G |
| | 1770 | 256VP | 93.0 | 91.7 | 93.0 | 93.0 | 83.0 | 79.0 | 69.0 | 48.5 | 290 | 59.32 | 160 | 120 | 240 | 2.174 | 3350 | G |
| | 1175 | 286VP | 92.4 | 91.0 | 94.0 | 93.5 | 81.5 | 77.5 | 67.0 | 49.7 | 290 | 89.36 | 225 | 175 | 225 | 8.309 | 3850 | G |
| 25 | 3530 | 256VP | 91.7 | 90.2 | 92.0 | 92.0 | 91.0 | 90.0 | 85.0 | 56.1 | 365 | 37.18 | 210 | 155 | 250 | 1.213 | 2700 | G |
| | 1765 | 284VP | 93.6 | 92.4 | 93.5 | 93.0 | 85.0 | 82.0 | 74.0 | 58.8 | 365 | 74.36 | 210 | 165 | 235 | 3.713 | 3350 | G |
| | 1180 | 324VP | 93.0 | 91.7 | 93.6 | 94.1 | 83.0 | 80.5 | 73.0 | 60.6 | 365 | 111.23 | 210 | 170 | 215 | 9.898 | 6000 | G |
| 30 | 3540 | 284VP | 91.7 | 90.2 | 93.0 | 93.0 | 90.0 | 88.0 | 83.0 | 68.1 | 435 | 44.49 | 180 | 135 | 220 | 1.588 | 2700 | G |
| | 1770 | 286VP | 94.1 | 93.0 | 94.0 | 94.0 | 86.0 | 82.5 | 74.5 | 69.4 | 435 | 88.99 | 230 | 175 | 245 | 4.397 | 3350 | G |
| | 1180 | 326VP | 93.6 | 92.4 | 94.5 | 94.5 | 83.5 | 81.5 | 74.5 | 71.9 | 435 | 133.48 | 205 | 170 | 215 | 12.372 | 6000 | G |
| 40 | 3535 | 286VP | 92.4 | 91.0 | 93.0 | 92.5 | 90.5 | 89.0 | 85.0 | 89.6 | 580 | 59.41 | 190 | 145 | 225 | 1.921 | 2700 | G |
| | 1770 | 324VP | 94.1 | 93.0 | 94.5 | 94.1 | 86.0 | 84.5 | 78.5 | 92.6 | 580 | 118.65 | 220 | 165 | 215 | 6.862 | 5700 | G |
| | 1180 | 364VP | 94.1 | 93.0 | 94.5 | 94.1 | 87.0 | 84.0 | 77.0 | 91.5 | 580 | 177.97 | 215 | 175 | 235 | 16.557 | 6600 | G |
| 50 | 3555 | 324VP | 93.0 | 91.7 | 93.6 | 93.6 | 90.0 | 89.0 | 86.0 | 112 | 725 | 73.84 | 190 | 160 | 250 | 2.908 | 4600 | G |
| | 1775 | 326VP | 94.5 | 93.6 | 94.5 | 95.0 | 85.0 | 83.5 | 78.0 | 117 | 725 | 147.89 | 220 | 175 | 205 | 8.624 | 5700 | G |
| | 1180 | 365VP | 94.1 | 93.0 | 94.5 | 94.1 | 86.0 | 83.0 | 75.0 | 116 | 725 | 222.46 | 225 | 180 | 235 | 18.626 | 6600 | G |
| 60 | 3555 | 326VP | 93.6 | 92.4 | 94.1 | 93.6 | 90.0 | 90.0 | 87.0 | 133 | 870 | 88.61 | 190 | 160 | 260 | 3.590 | 4600 | G |
| | 1780 | 364VP | 95.0 | 94.1 | 95.0 | 94.5 | 85.0 | 82.0 | 74.0 | 139 | 870 | 176.97 | 195 | 170 | 245 | 10.761 | 6000 | G |
| | 1180 | 404VP | 94.5 | 93.6 | 95.0 | 95.4 | 85.5 | 83.5 | 76.5 | 139 | 870 | 266.96 | 200 | 180 | 225 | 24.881 | 9000 | G |
| 75 | 3555 | 364VP | 93.6 | 92.4 | 94.5 | 93.6 | 90.5 | 89.0 | 83.0 | 166 | 1085 | 110.76 | 160 | 150 | 250 | 5.870 | 5000 | G |
| | 1780 | 365VP | 95.0 | 94.1 | 95.0 | 95.0 | 86.0 | 84.0 | 77.0 | 172 | 1085 | 221.21 | 180 | 155 | 225 | 11.740 | 6000 | G |
| | 1180 | 405VP | 94.5 | 93.6 | 95.0 | 94.5 | 86.5 | 85.5 | 79.0 | 172 | 1085 | 333.70 | 220 | 200 | 250 | 31.371 | 9000 | G |
| 100 | 3555 | 365VP | 93.6 | 92.4 | 94.5 | 94.5 | 90.5 | 88.0 | 84.0 | 221 | 1450 | 147.68 | 160 | 150 | 280 | 7.044 | 5000 | G |
| | 1780 | 404VP | 95.4 | 94.5 | 95.8 | 95.4 | 85.5 | 83.5 | 76.0 | 230 | 1450 | 294.95 | 220 | 165 | 210 | 20.623 | 7900 | G |
| 125 | 3560 | 404VP | 94.1 | 93.0 | 94.1 | 94.1 | 90.5 | 87.5 | 83.0 | 275 | 1815 | 184.34 | 140 | 120 | 250 | 8.379 | 5000 | G |
| | 1780 | 405VP | 95.4 | 94.5 | 95.8 | 95.4 | 84.5 | 82.0 | 74.5 | 290 | 1815 | 368.69 | 225 | 165 | 205 | 24.060 | 7900 | G |
| 150 | 3560 | 405VP | 94.1 | 93.0 | 94.5 | 94.5 | 90.5 | 89.0 | 83.5 | 330 | 2170 | 221.21 | 140 | 120 | 250 | 9.976 | 5000 | G |

NOTE :

1. The above are typical values based on test according to ANSI／IEEE standard 112 method B.
2. Breakdown & locked rotor torques are shown as average expected values.
3. Efficiency, power factor, speed and torque are the same for other voltages.
   Current values vary inversely with voltage.
4. Thrust load losses are not considered in declared efficiency .
5. Tolerance can be considered according to the NEMA MG1-12 & IEC 60034-1.
6. Thrust load losses are estimated as follows : ( According to NEMA standard MG1-12.7 2003 ).

| FRAME SIZE | 2 P | 4, 6 P | FRAME SIZE | 2 P | 4, 6 P |
|---|---|---|---|---|---|
| 213VP ~ 215VP | 0.0076 | 0.0076 | 324VP ~ 326VP | 0.0132 | 0.0132 |
| 254VP ~ 256VP | 0.0083 | 0.0083 | 364VP ~ 365VP | 0.0132 | 0.0132 |
| 284VP ~ 286VP | 0.0090 | 0.0090 | 404VP ~ 405VP | 0.0146 | 0.0166 |

UNIT : LOSS HP / 100 RPM / 1000 LB THRUST

7. Reducing the thrust load will increase bearing life as follows :

| % THRUST | 100 | 82 | 74 | 64 | 58 | 53 |
|---|---|---|---|---|---|---|
| Min. Life ( Hrs ) | 8800 | 15000 | 20000 | 30000 | 40000 | 50000 |

8. For frame size 324TP to 365TP 175% of standard thrust load are acceptable under made-to-order
9. Data are subject to change without notice.

# OUTLINE DIMENSIONS SHEET

MODEL **AMRCED**

## HIGH THRUST SOLIDSHAFT PUMP MOTORS
## FRAME SIZE 213VP ~ 286VP

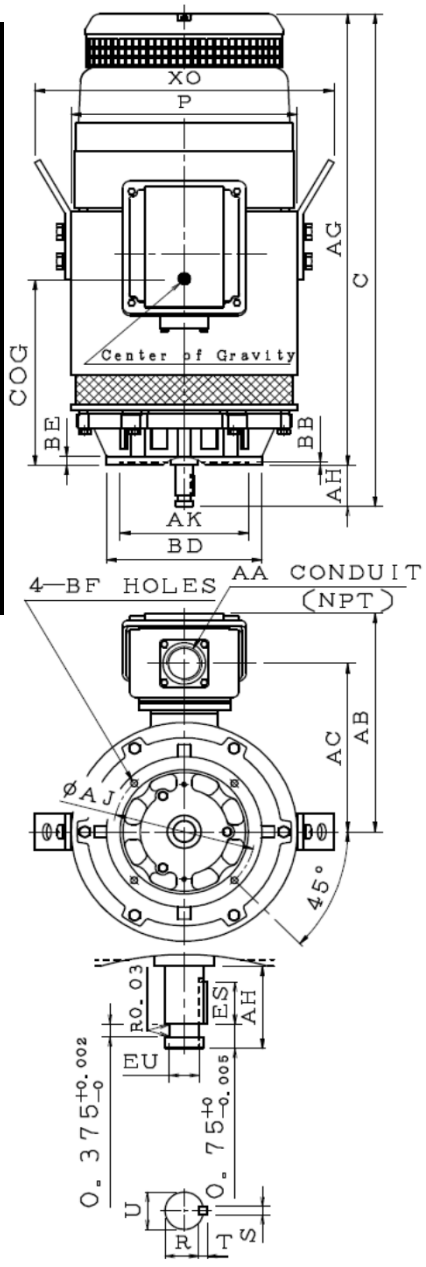
Vertical, Weather Protected Type Ⅰ ( WP Ⅰ ), Squirrel - Cage Rotor.

Dimension in inches

| Output (HP) | | | FRAME | Mounting | | | | | | AG | AH | C | P | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2P | 4P | 6P | SIZE | AJ | AK | BB | BD | BE | BF | | | | | |
| 10<br>15 | 7.5<br>10 | 3<br>5 | 213VP<br>215VP | 9.125 | 8.25 | 0.22 | 10.00 | 0.589 | 0.44 | 22.32 | 2.75 | 25.07 | 10.74 | 0.986 |
| 20<br>25 | 15<br>20 | 7.5<br>10 | 254VP<br>256VP | 9.125 | 8.25 | 0.25 | 10.00 | 0.589 | 0.44 | 26.91 | 2.75 | 29.66 | 12.95 | 0.986 |
| 30<br>40 | 25<br>30 | 15<br>20 | 284VP<br>286VP | 9.125 | 8.25 | 0.25 | 10.00 | 0.585 | 0.44 | 28.25 | 2.75 | 31.00 | 14.53 | 0.986 |

| FRAME | XO | Key | | | Shaft Extension | | Terminal Housing | | | Bearings | | APPROX. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SIZE | | ES | S | T | EU | U | AA | AB | AC | LOWER END | UPPER END | WEIGHT lbs |
| 213VP<br>215VP | 13.47 | 1.28 | 0.25 | 0.25 | 0.875 | 1.125 | 1" | 10.12 | 7.680 | 6209ZZC3 | 7310B | 201<br>213 |
| 254VP<br>256VP | 17.68 | 1.28 | 0.25 | 0.25 | 0.875 | 1.125 | 1 1/4" | 11.30 | 8.858 | 6309ZZC3 | 7311B | 309<br>330 |
| 284VP<br>286VP | 19.25 | 1.28 | 0.25 | 0.25 | 0.875 | 1.125 | 1 1/2" | 14.58 | 11.18 | 6311ZZC3 | 7312B | 425<br>465 |

| FRAME SIZE | COG | RCF |
|---|---|---|
| 213VP<br>215VP | 9.84 | 121.6<br>118.1 |
| 254VP<br>256VP | 11.81 | 94.9<br>91.7 |
| 284VP<br>286VP | 12.61 | 79.9<br>76.4 |




Note :

1.Dimension AK Tolerance : +0.003 inches , -0 inches ,

2. Dimension U Tolerance : +0 inches , -0.0005 inches ,

3. Dimension R Tolerance : +0 inches , -0.015 inches .

4. Dimension EU Tolerance : +0 inches , -0.005 inches .

5. Dimension AH Tolerance : +0.031 inches , -0.031 inches .

6. Face Runout and Permissible Eccentricity of Mounting Rabbet 0.007 inches .

7. Permissible Shaft Runout 0.002 inches Indicator Reading .

# OUTLINE DIMENSIONS SHEET

HIGH THRUST SOLIDSHAFT PUMP MOTORS
FRAME SIZE 324VP ~ 405VP

MODEL
**AMRCED**

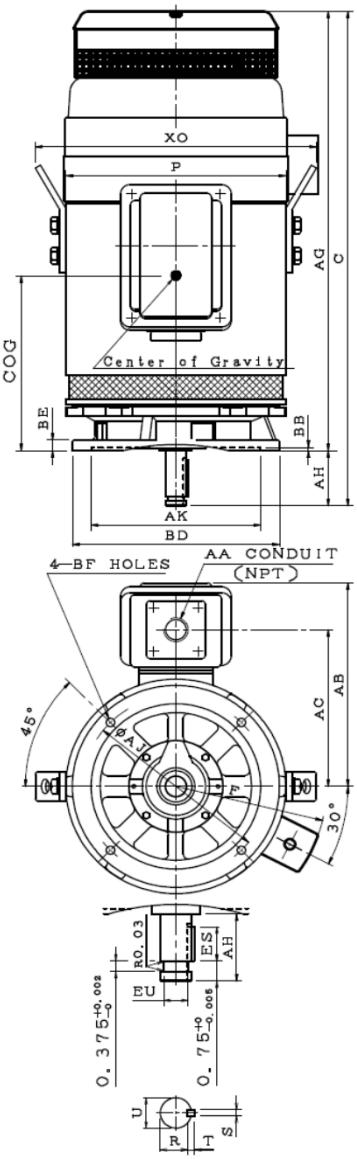
## Vertical, Weather Protected Type Ⅰ ( WP Ⅰ ), Squirrel - Cage Rotor.

Dimension in inches

| Output (HP) | | | FRAME | Mounting | | | | | | AG | AH | C | F | P | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2P | 4P | 6P | SIZE | AJ | AK | BB | BD | BE | BF | | | | | | |
| 50<br>60 | 40<br>50 | 25<br>30 | 324VP<br>326VP | 14.75 | 13.5 | 0.28 | 16.5 | 0.80 | 0.69 | 32.71 | 4.5 | 37.21 | 10.73 | 16.14 | 1.416 |
| 75<br>100 | 60<br>75 | 40<br>50 | 364VP<br>365VP | 14.75 | 13.5 | 0.28 | 16.5 | 0.88 | 0.69 | 35.89 | 4.5 | 40.39 | 12.01 | 17.52 | 1.416 |
| 125<br>150 | 100<br>125 | 60<br>75 | 404VP<br>405VP | 14.75 | 13.5 | 0.28 | 16.5 | 1.01 | 0.69 | 42.32 | 4.5 | 46.82 | 12.99 | 19.69 | 1.416 |

| FRAME SIZE | XO | Key | | | Shaft Extension | | Terminal Housing | | | Bearings | | APPROX. WEIGHT lbs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ES | S | T | EU | U | AA | AB | AC | LOWER END | UPPER END | |
| 324VP<br>326VP | 20.87 | 3.03 | 0.375 | 0.375 | 1.250 | 1.625 | 3" | 14.72 | 11.30 | 6312C3 | * 7220B | 634<br>689 |
| 364VP<br>365VP | 22.40 | 3.03 | 0.375 | 0.375 | 1.250 | 1.625 | 3" | 16.81 | 12.80 | 6313C3 | * 7222B | 791<br>877 |
| 404VP<br>405VP 2 Pole | 24.88 | 3.03 | 0.375 | 0.375 | 1.250 | 1.625 | 3" | 19.41 | 14.76 | 6315C3 | * 7222B | 1094<br>1158 |
| 404VP<br>405VP 4,6 Poles | 24.88 | 3.03 | 0.375 | 0.375 | 1.250 | 1.625 | 3" | 19.41 | 14.76 | 6315C3 | * 7322B | 1133<br>1239 |

| FRAME SIZE | COG | RCF |
|---|---|---|
| 324VP<br>326VP | 14.17 | 81.3<br>78.1 |
| 364VP<br>365VP | 14.8 | 72.1<br>68.4 |
| 404VP<br>405VP | 16.93 | 59.6<br>56.0 |




Note :

1. Dimension AK Tolerance : +0.005 inches , -0 inches.
2. Dimension U Tolerance : +0 inches , -0.0005 inches.
3. Dimension R Tolerance : +0 inches , -0.015 inches.
4. Dimension EU Tolerance : +0 inches , -0.005 inches.
5. Dimension AH Tolerance : +0.031 inches , -0.031 inches.
6. Face Runout and Permissible Eccentricity of Mounting Rabbet 0.007 inches.
7. Permissible Shaft Runout 0.002 inches Indicator Reading.
8. *Marked Bearings is Oil Lubricated , The Other is Grease Lubricated.