

High-Voltage TEFC Pump Motors

AFHCED Series



TECO 

together, we empower the Future 



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High-Voltage TEFC Pump Motor

Designed for demanding vertical pump applications, the AFHC series high-voltage TEFC motors deliver exceptional reliability, premium efficiency, and superior thrust-handling capability.

Built in accordance with NEMA MG-1 standards, these squirrel-cage induction motors are specifically engineered for vertical pump systems, including deep well turbine pumps.

Featuring a totally enclosed fan-cooled (TEFC) construction and a robust mechanical design, the AFHC series ensures reliable operation in harsh outdoor environments. The high-thrust bearing system provides stable performance under heavy axial loads, while the premium efficiency design reduces energy consumption across a wide operating range.

Compatible with across-the-line, reduced voltage starting, and VFD operation, the AFHC series offers maximum flexibility for modern pump system integration

- High Thrust Capacity for Reliable Vertical Pump Operation
- Premium Efficiency for Reduced Energy Consumption
- Rugged TEFC Construction for Harsh Environment Protection

Reasons for AFHC series



Premium
Efficiency
Design



High Thrust
Bearing
System



TEFC
IP55
Enclosure



Medium
Voltage
Flexibility



VPI
Insulation
System



VFD
Compatible
Operation



Industries & Applications

■ Deep Well
&
Vertical Turbine Pumps



Water Supply
&
Municipal Infrastructure



Industrial Process
&
Cooling Water Applications



Irrigation
&
Water Transfer Systems



Product Information

R A T I N G	Kind of Motors	Squirrel-Cage Induction Motor (SCIM), VSS, TEFC
	Design Standard	NEMA MG-1, Premium Efficiency
	Voltages	2300V / 4000V, 4160V
	Frequency	60 Hz
	Output Range	200 ~ 1000HP
	R.P.M	1800 ~ 900 RPM (4 ~ 8 Pole)
	Time Duty	Continuous S.F. 1.15 or S.F. 1.0 (S1, MCR) VFD: Continuous S.F. 1.0 (S1, MCR)
	Frame Size	5009 ~ 5810
	Protection Enclosure	Totally Enclosed (IP55)
	Cooling Method	Self External Fan, Surface Cooling (IC 411)
	Mounting	Flange Mounting (IM3011)
A P P L I C A T I O N	Power Condition	Voltage: $\pm 10\%$ Frequency: $\pm 5\%$ Combined variation: max $\pm 10\%$ (frequency $\leq \pm 5\%$)
	Designed Primarily	For deep well turbine pump
	Environment Conditions	Outdoor, non-hazardous, CSA Class I, Div. 2, Group B, C, D T3 (Option)
	Ambient Temperature	-15°C ~ 40°C
	Relative Humidity	Less than 90% RH (non-condensation)
	Altitude	Less Than 3,300 FT
	Drive Method	Direct coupling
	Direction of Rotation	Counter-clockwise (viewed from top)
	Method of Starting	DOL / Y- Δ Starting / VFD
C O N S T R U C T I O N	Dimensions	AS DWG
	Frame	High grade cast iron
	Flange Bracket	Cast Iron or Steel Plate Fabricated
	Upper Bracket	Cast Iron or Steel Plate Fabricated (including oil tank)
	Internal Fan	Cast Iron or Steel Plate Fabricated
	External Fan	Standard: Aluminum Alloy Optional: Integral Cast Bronze

C O N S T R U C T I O N	Fan Cover	Steel plate fabricated
	Vertical Splash Cover	Cast Aluminum or Steel Plate Fabricated
	Shaft	Carbon Steel or Chrome-Molybdenum Steel Cylindrical single extension with keyway and key
	Thrust Bearing (upper)	Spherical Roller Thrust Bearing
	Guide Bearing (lower)	Bracket mounting, vacuum de-gassed high-quality deep-groove ball bearing with regrease provision
	Lubricant	Thrust Bearing: Turbine Oil Guide Bearing: Mineral Oil / Polyurea-thickened grease (Mobil Polyrex EM)
	Shaft opening shield	Metal flinger at flange bracket end
	Terminal Housing	Steel plate, larger size, threaded for external conduit entrance
	Lead Terminal	3 or 6 leads, with solderless lug terminals
	Iron Core	High-grade, insulated, cold-rolled electro-magnetic steel plate
	Stator Winding	Mica insulated formed wound coil
	Stator Insulation	Class F insulation system
	Varnish Treatment	VPI treatment of solventless epoxy varnish
	Rotor Winding	Squirrel-cage, aluminum conductor with end-ring and wafer blades integrally cast or copper rotor
	Painting	Alkyd resin with rust-proof base + polyurethane topcoat Blue-gray (Munsell 7.5B 3.5/0.5)
	Nameplate	Stainless steel plate
	Bolt Thread	ISO metric system
P E R F O R M A N C E	Grounding Terminal	Provided inside terminal housing and on flange bracket
	Test Procedure	IEEE-112 Method-B and Method-F
	Temperature Rise	Sinusoidal Power: $\leq 80^{\circ}\text{C}$ (S.F.1.0), $\leq 105^{\circ}\text{C}$ (S.F.1.15) Inverter Source: $\leq 105^{\circ}\text{C}$ (S.F.1.0)
	Over Speed	$\leq 200\text{HP}$: 125% RPM (4P), 150% RPM (6P & 8P) $\geq 201\text{HP}$: 125% RPM (4P and slower)
	Speed Range	Variable torque : 10 : 1, constant torque : 3 : 1
	Over Torque	160% rated torque for 15 sec

Performance Data AFHCED - 2300V 60Hz

HP	Full Load RPM	Frame Size (EGV)	Efficiency				Power Factor			Current		Torque			Rotor WR ² lb-ft ²	Down Thrust LBS	Approx. Rotor Weight LBS	Approx. Weight LBS	Reed Freq. Hz
			Full Load %		3/4 Load Nom.	1/2 Load Nom.	Full Load %	3/4 Load %	1/2 Load %	Full Load A	Locked Rotor A	Full Load lb-ft	Locked Rotor &FLT	Break Down %FLT					
			Nom.	Min.															
200	1185	5009	94.5	93.6	94.5	93.6	76.0	70.4	58.4	52	316	887	90	210	119	20700	770	3960	45
	886	5009	93.6	92.4	93.6	93.0	73.7	68.7	57.6	54	316	1186	100	200	140	23500	847	4100	44
250	1779	5009	95.0	94.1	94.5	93.6	86.0	83.4	76.3	57	395	738	110	230	127	17800	825	4010	44
	1185	5009	95.0	94.1	95.0	94.5	80.0	76.4	67.3	61	395	1108	90	200	150	20600	891	4220	44
	885	5009	94.1	93.0	94.1	94.1	74.8	70.6	60.4	66	395	1484	100	200	171	23300	1012	4440	43
300	1779	5009	95.0	94.1	94.5	93.6	86.0	83.4	76.3	68	474	886	120	220	141	17800	880	4170	44
	1184	5009	95.0	94.1	95.0	94.5	80.0	76.0	66.3	73	474	1331	90	200	164	20500	935	4360	43
	886	5011	94.1	93.0	94.1	93.6	74.3	69.3	58.3	80	474	1779	110	200	210	25500	1144	4840	36
350	1784	5009	95.0	94.1	94.5	94.1	87.0	84.6	77.8	79	554	1031	110	210	152	17700	913	4270	43
	1183	5009	95.0	94.1	95.0	95.0	79.0	75.0	65.1	87	554	1554	110	200	181	20500	1001	4520	43
	885	5011	94.1	93.0	94.1	94.1	75.3	70.9	60.5	92	554	2078	90	2000	245	25300	1320	5160	35
400	1784	5011	95.0	94.1	95.0	94.1	87.0	84.6	77.8	90	633	1178	120	220	175	17600	1045	4570	37
	1185	5011	95.0	94.1	95.0	95.0	80.0	76.6	67.7	98	633	1773	110	200	223	21600	1199	4990	36
	889	5011※	94.1	93.0	94.1	93.6	81.6	77.7	68.2	97	633	2364	110	230	302	25100	1540	5350	35
450	1782	5011	95.0	94.1	95.0	94.5	88.0	86.2	80.5	100	712	1327	120	210	190	17500	1089	4690	36
	1185	5011	95.0	94.1	95.0	94.5	80.0	75.9	66.1	110	712	1995	100	200	236	21600	1254	5120	35
	888	5810※	94.1	93.0	93.6	93.0	76.8	71.1	59.3	116	712	2662	100	210	348	24700	1837	6780	33
500	1782	5011	95.0	94.1	95.0	95.4	87.0	84.9	78.6	113	791	1474	130	220	207	17400	1155	4850	36
	1187	5011※	95.0	94.1	95.0	94.5	82.5	78.5	68.6	119	791	2213	110	230	236	21300	1474	5320	35
	888	5810※	94.1	93.0	93.6	93.0	77.8	72.5	60.9	127	791	2958	100	210	418	24400	2046	7260	32
600	1783	5011※	95.4	94.5	95.4	94.5	87.0	84.9	78.6	135	949	1768	100	200	227	17400	1232	5250	35
	1186	5810※	95.0	94.1	95.0	94.5	82.3	78.5	68.8	143	949	2658	100	230	385	20900	1848	6900	33
	888	5810※	94.1	93.0	94.1	93.0	78.2	72.9	61.5	152	949	3549	100	200	467	24300	2189	7620	31
700	1784	5810※	95.4	94.5	95.4	94.5	85.9	83.4	76.1	159	1107	2061	100	200	300	17000	1463	7460	33
	1186	5810※	95.0	94.1	95.0	94.5	83.3	80.0	71.1	165	1107	3101	110	230	458	20700	2057	7420	32
	888	5810※	94.1	93.0	94.1	93.6	75.9	70.2	58.2	183	1107	4141	100	220	537	24100	2343	8090	31
800	1785	5810※	95.4	94.5	95.4	95.0	85.8	84.1	78.1	182	1265	2354	100	200	228	16800	1606	6690	32
900	1785	5810※	95.4	94.5	95.4	95.0	86.0	83.8	77.1	205	1423	2649	110	210	280	16700	1716	7210	32
1000	1785	5810※	95.4	94.5	95.4	95.0	85.7	82.8	74.7	229	1581	2943	100	210	298	16700	1760	7450	32

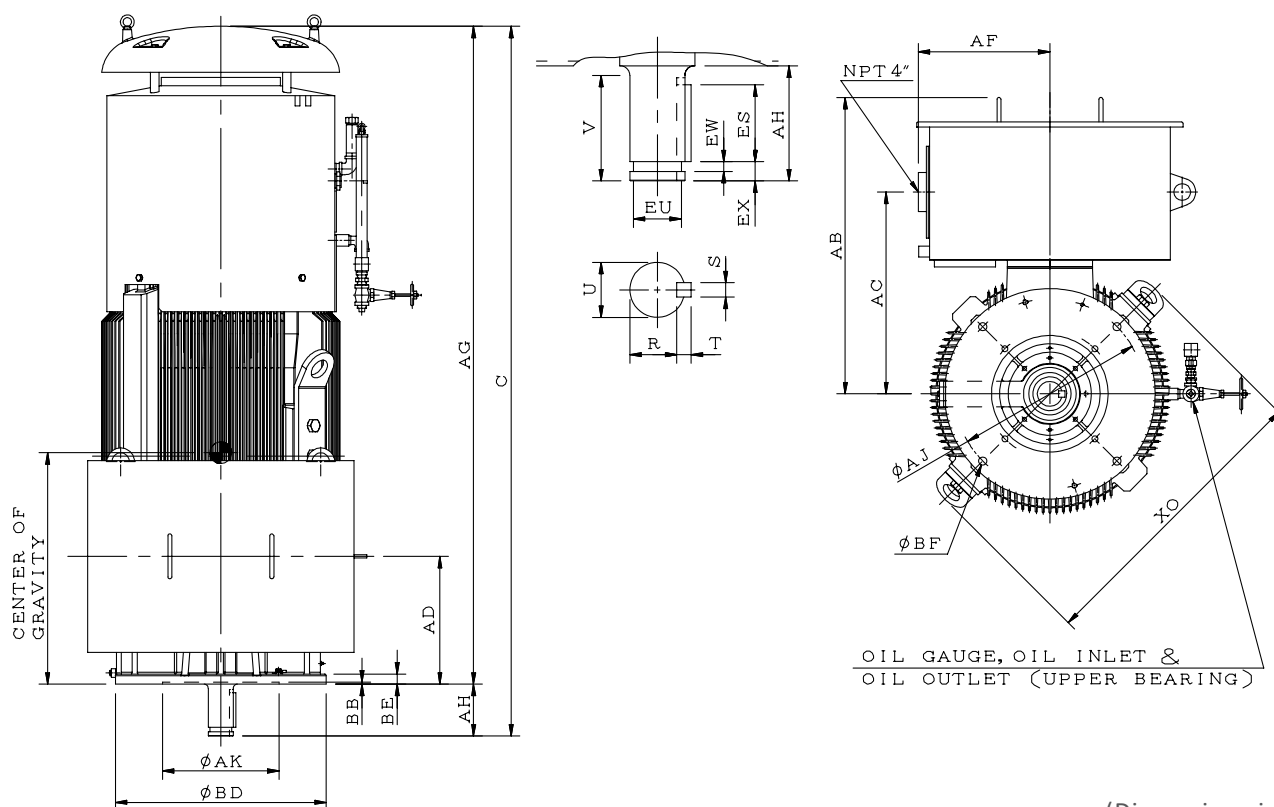
NOTE:

- 1.THE ABOVE VALUES ARE TYPICAL RESULTS BASED ON TESTS CONDUCTED IN ACCORDANCE WITH ANSI / IEEE STANDARD 112 METHOD B.
- 2.BREAKDOWN TORQUE AND LOCKED-ROTOR TORQUE ARE PRESENTED AS AVERAGE EXPECTED VALUES.
- 3.EFFICIENCY, POWER FACTOR, SPEED, AND TORQUE REMAIN THE SAME FOR OTHER VOLTAGE RATINGS, WHILE CURRENT VARIES INVERSELY WITH VOLTAGE.
- 4.THE DECLARED EFFICIENCY DOES NOT TAKE INTO ACCOUNT THRUST LOAD LOSSES.
- 5.TOLERANCES ARE IN ACCORDANCE WITH NEMA MG1-12.8 AND IEC 34-1.

6. REDUCING THRUST LOAD WILL INCREASE BEARING LIFE, AS SHOWN BELOW:

Spherical roller thrust bearing	Thrust(%)	100	84	75	64	57
	Bearing life(Hrs.)	30000	50000	70000	110000	150000

7. "※" INDICATES A COPPER ROTOR; WITHOUT "※" INDICATES AN ALUMINUM ROTOR.
8. DATA SUBJECT TO CHANGE WITHOUT NOTICE



(Dimensions in inches)

FRAME SIZE (EGV)	MOUNTING						
	BD	AK	AJ	BF	QTY. OF BF HOLES	BB	BE
5000	20.00	13.50	14.75	0.69	4	0.25	1.18
	*24.50	13.50	14.75	0.69			
			22.00	0.94			
	30.50	22.00	26.00	0.81			

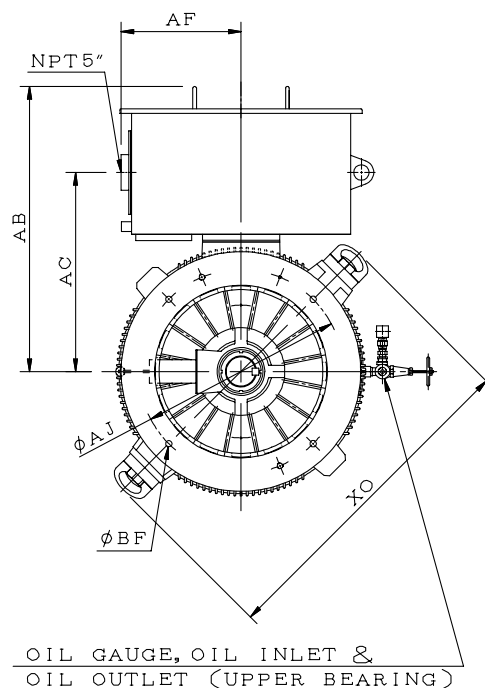
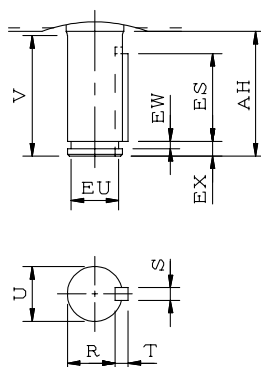
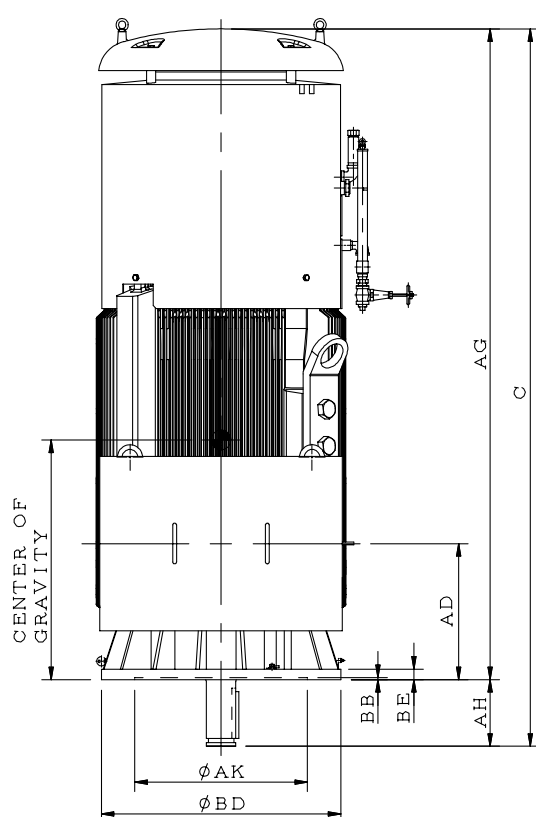
UPPER BEARING		LOWER BEARING
4P	6 & 8P	
29326 +6024	29330 +6028	6220C3

FRAME SIZE (EGV)	U	AH	V	R	EU	EW	EX	ES	S	T	XO
5000	2.875	6.00	5.50	2.450	2.500	0.500	1.000	4.00	0.750	0.750	34.47

FRAME SIZE (EGV)	TERMINAL HOUSING				AG			C			CENTER OF GRAVITY
	AB	AC	AD	AF	4P	6P	8P	4P	6P	8P	
5000	34.34	23.40	14.80	15.26	68.35	68.35	69.72	74.35	74.35	75.72	22.9
					76.22	78.19	78.19	82.22	84.19	84.19	26.8

NOTE: 1. DIMENSION AK TOLERANCE: +0.005 INCH, -0.000 INCH
2. DIMENSION U TOLERANCE: +0.000 INCH, -0.001 INCH
3. DIMENSION R TOLERANCE: +0.000 INCH, -0.015 INCH
4. DIMENSION EU TOLERANCE: +0.000 INCH, -0.010 INCH
5. DIMENSION AH TOLERANCE: +0.06 INCH, -0.06 INCH
6. DIMENSION EW TOLERANCE: +0.003 INCH, -0.000 INCH
7. DIMENSION EX TOLERANCE: +0.000 INCH, -0.010 INCH
8. USABLE SHAFT LENGTH FOR V
9. WITH BALL TYPE NON-REVERSE RATCHET MECHANISM

Outline Dimension Sheet AFHCED - Frame 5810



(Dimensions in inches)

FRAME SIZE (EGV)	MOUNTING						
	BD	AK	AJ	BF	QTY. OF BF HOLES	BB	BE
5800	24.50	13.50	14.75	0.69	4	0.25	1.38
			22.00	0.94	4		
	*30.50	22.00	26.00	0.81	4		
	36.00	26.00	32.00	1.00	8		

UPPER BEARING		LOWER BEARING
4P	6 & 8P	
29326 +6024	29330 +6028	6320C3

FRAME SIZE (EGV)	U	AH	V	R	EU	EW	EX	ES	S	T	XO
5800	3.750	8.50	8.00	3.261	3.250	0.500	1.000	6.00	0.875	0.875	42.52

FRAME SIZE (EGV)	TERMINAL HOUSING				AG			C			CENTER OF GRAVITY
	AB	AC	AD	AF	4P	6P	8P	4P	6P	8P	
5810	36.31	25.35	17.32	15.26	82.87	82.87	82.87	91.37	91.37	91.37	30.5

- NOTE: 1. TOLERANCE ON AK DIMENSION
13.50~22.00 INCHES: +0.005 INCH, -0.000 INCH
26.00 INCH: +0.007 INCH, -0.000 INCH
2. DIMENSION U TOLERANCE: +0.000 INCH, -0.001 INCH
3. DIMENSION R TOLERANCE: +0.000 INCH, -0.015 INCH
4. DIMENSION EU TOLERANCE: +0.000 INCH, -0.010 INCH
5. DIMENSION AH TOLERANCE: +0.06 INCH, -0.06 INCH
6. DIMENSION EW TOLERANCE: +0.003 INCH, -0.000 INCH
7. DIMENSION EX TOLERANCE: +0.000 INCH, -0.010 INCH
8. USABLE SHAFT LENGTH FOR V
9. WITH BALL TYPE NON-REVERSE RATCHET MECHANISM





For more information,
please visit TECO website.