

# Crusher Duty

Three Phase Motor

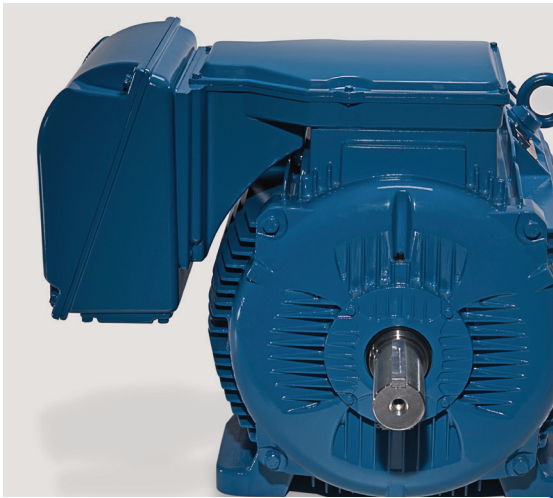
- Rugged
- Energy saving
- Increased productivity
- Extended lifetime
- Lower maintenance





## Crusher Duty 3-Phase Motor Efficiency and reliability for industry

The WEG W22 Crusher Duty motor has been redesigned for even higher performance and energy efficiency, and increased locked rotor and breakdown torques for easier starting and greater overloads. Designed to meet the demanding requirements of the rock crushing industry, the Crusher Duty motor comes standard with 4140 high strength shafts and heavy duty roller bearings. This motor complies or exceeds EISA 2016 regulations. Compliment your WEG Crusher Duty motor with our TPH2 Starter to complete your solution!

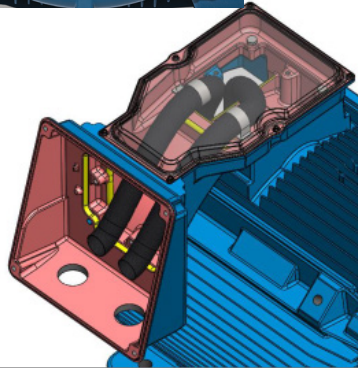


### Terminal box

Increased internal space making connections more accessible to the user resulting in an easier cable handling and connection.

Terminal box can be mounted on top, left or right side of the motor using the same frame on the 447T and larger motors. Top mounting is optional on smaller frames.

New internal lead sleeving protects leads in high vibration applications.

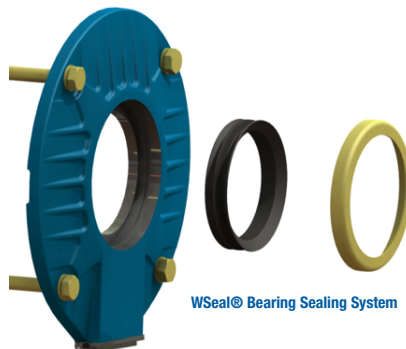
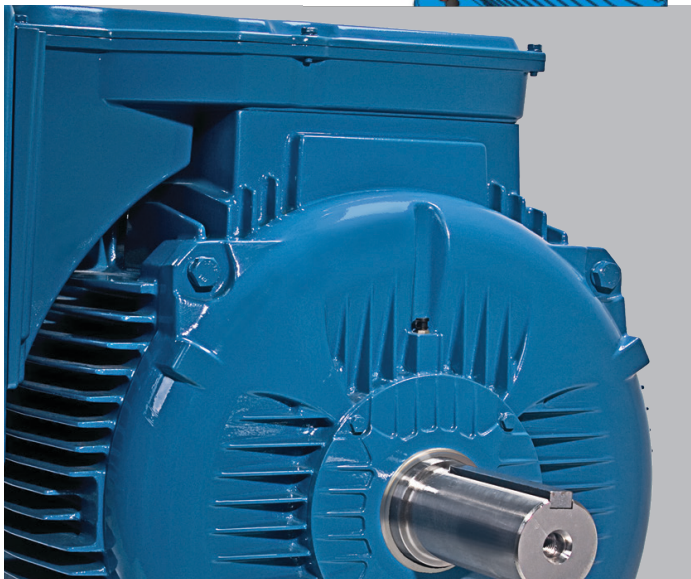


### Oversized Roller Bearings

All WEG Crusher Duty Motors have oversized NU series roller bearings for long life under heavy belt loads.

### Exclusive WSeal® bearing sealing system

Extends motor lifetime when operating in aggressive environments by protecting the motor against water and dust guaranteeing proper degree of protection. Frames 586/7 and larger utilize a brass labyrinth Taconite Seal.



WSeal® Bearing Sealing System



Taconite Labyrinth Seal



## Lower total operational costs

A product that can operate most of its designed lifetime consuming the minimum possible energy, with high levels of reliability, generating the maximum value to the user – this is what is behind the W22 design.

## Energy saving

Costs of energy correspond to approximately 90% of total operational costs throughout a motor's lifetime. Acquisition, installation and maintenance cost are the other 10%. W22 Crusher Duty motors now have the highest efficiencies in the industry guaranteeing energy savings and reduced payback time.



### Frame

Motor feet are solid providing a more resistant structure against vibration. The frame design has points that can be used as provisions for vibration sensors as a standard feature.

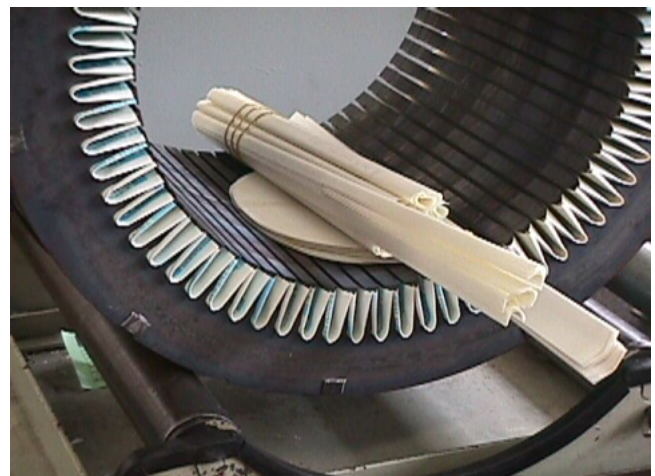
Benefits from the W22 frame design:

- Motor temperature reduction
- Eyebolts repositioned - easier handling in the application.
- Provision for vibration sensors - frame and endshields with provisions 90° displaced according to maintenance technical recommendations. Easier and more reliable vibration analysis.
- Solid feet - Enhanced reliability when operating on high vibration applications and also provide easier alignment on installation.

## Built to last

W22 motors are built using high quality FC-200 cast iron from WEG's own foundries, assuring maximum durability and high performance in aggressive conditions. The new fan cover design provides great impact resistance. Additionally the endshields have been designed for a better bearing heat dissipation and structural rigidity. Protected by our WEG coatings high performance paint system capable of passing a 240hr ASTM 117B salt fog chamber test.

## Stator core utilizing C4 coated Low loss Silicon Steel



Premium Electrical Steel for improved efficiency, reliability and reparability, C4 coated silicon steel can withstand burnout oven temperature of 500°C (932F) minimum, to insure motors can be rebuilt to original performance.

## Inverter Duty applications Exceed NEMA MG1 Part 31

The exclusive WISE insulation system used on the W22 increases winding dielectric resistance, thus allowing VFD operation up to 575V without requiring further modification, resulting in flexibility and extended motor lifetime. Utilizing class H magnet wire and varnish the system exceeds class F requirements. Frame L449T-588/9 include insulated Opposite Drive end bearing hub as standard. Stock Mod option available on smaller frames.

*\* Voltages above 575 V, please contact our nearest sales office.*



# Severe Duty – Three-Phase Motors – Crusher Duty TEFC - NEMA Premium

HP	RPM	NEMA Frame	NEMA Premium/EISA 2016 Compliant	Approx. Weight	FL. Eff	"C" Dim.	List Price
50	900	404/5T	<a href="#">05009ET3EKD404T-W22*</a>	1483	93	39.73	<b>\$17,648</b>
60	900	404/5T	<a href="#">06009ET3EKD405T-W22*</a>	1591	93	39.73	<b>\$20,443</b>
75	900	444/5T	<a href="#">07509ET3GKD444T-W22</a>	2143	93.6	45.157	<b>\$23,334</b>
100	1800	404/5T	<a href="#">10018ET3ERB405T-W22*</a>	1298	95.4	39.73	<b>\$11,689</b>
	1800		<a href="#">10018ET3GRB405T-W22<sup>2</sup></a>	1286	95.4	39.73	<b>\$11,689</b>
	1200	444/5T	<a href="#">10012ET3GRB444T-W22</a>	1901	95	45.157	<b>\$15,631</b>
	900	444/5T	<a href="#">10009ET3GKD445T-W22</a>	2566	94.1	45.157	<b>\$26,988</b>
125	1800	444/5T	<a href="#">12518ET3GRB444T-W22</a>	1866	95.4	45.157	<b>\$14,748</b>
	1200	444/5T	<a href="#">12512ET3GRB445T-W22</a>	2038	95	45.157	<b>\$17,947</b>
	900	445/7T	<a href="#">12509ET3GKD447T-W22</a>	2644	94.5	48.701	<b>\$28,175</b>
150	1800	444/5T	<a href="#">15018ET3GRB445T-W22<sup>2</sup></a>	1935	95.8	45.157	<b>\$17,420</b>
	1200	445/7T	<a href="#">15012ET3GRB447T-W22</a>	2502	95.8	48.701	<b>\$20,639</b>
	900	445/7T	<a href="#">15009ET3GKD447T-W22</a>	2903	94.5	48.701	<b>\$30,677</b>
200	1800	445/7T	<a href="#">20018ET3GRB447T-W22<sup>2</sup></a>	2346	96.2	48.701	<b>\$21,098</b>
	1200	504/5Z	<a href="#">20012ET3GKD505Z-W22<sup>1,2</sup></a>	3301	95.8	55.09	<b>\$25,133</b>
	1200	445/7T	<a href="#">20012ET3GRB447T-W22</a>	2722	95.8	48.701	<b>\$25,133</b>
	900	447/9T	<a href="#">20009ET3GKD449T-W22</a>	3628	95	56.338	<b>\$49,899</b>
250	1800	445/7T	<a href="#">25018ET3GKD447T-W22<sup>2</sup></a>	2993	96.2	56.338	<b>\$26,716</b>
	1800	504/5Z	<a href="#">25018ET3GKD505Z-W22<sup>1</sup></a>	3242	96.2	55.09	<b>\$26,716</b>
	1200	447/9T	<a href="#">25012ET3GKD449T-W22</a>	3684	95.8	56.338	<b>\$35,555</b>
	1200	586/7Z	<a href="#">25012ET3GKD580Z-W22<sup>1,2</sup></a>	4670	95.8	61.902	<b>\$39,631</b>
	900	586/7	<a href="#">25009ET3GKD586/7-W22</a>	5128	95.8	61.902	<b>\$56,168</b>
300	1800	447/9T	<a href="#">30018ET3GKD449T-W22</a>	3600	96.2	56.338	<b>\$31,384</b>
	1800	586/7Z	<a href="#">30018ET3GKD580Z-W22<sup>1,2</sup></a>	4348	96.2	61.902	<b>\$39,112</b>
	1200	447/9T	<a href="#">30012ET3GKD449T-W22</a>	4433	95.8	56.338	<b>\$38,437</b>
	1200	586/7Z	<a href="#">30012ET3GKD580Z-W22<sup>1,2</sup></a>	4936	95.8	61.902	<b>\$44,301</b>
	1200	586/7	<a href="#">30012ET3GKD586/7-W22</a>	4925	95.8	61.902	<b>\$44,301</b>
	900	586/7	<a href="#">30009ET3GKD586/7-W22</a>	5696	95.8	61.902	<b>\$58,655</b>
350	1800	447/9T	<a href="#">35018ET3GKD449T-W22</a>	3811	96.2	56.338	<b>\$36,517</b>
	1800	586/7Z	<a href="#">35018ET3GKD580Z-W22<sup>1</sup></a>	4567	96.2	61.902	<b>\$41,230</b>
	1200	586/7Z	<a href="#">35012ET3GKD580Z-W22<sup>1</sup></a>	5240	95.8	61.902	<b>\$50,250</b>
	900	586/7	<a href="#">35009ET3GKD586/7-W22</a>	5983	95.8	61.902	<b>\$64,873</b>
400	1800	586/7Z	<a href="#">40018ET3GKD580Z-W22<sup>1,2</sup></a>	4799	96.2	61.902	<b>\$45,805</b>
	1200	586/7Z	<a href="#">40012ET3GKD580Z-W22<sup>1,2</sup></a>	5533	96.2	61.902	<b>\$58,210</b>
	1200	586/7	<a href="#">40012ET3GKD586/7-W22</a>	5605	96.2	61.902	<b>\$56,201</b>
450	1800	586/7Z	<a href="#">45018ET3GKD580Z-W22<sup>1</sup></a>	5045	96.2	61.902	<b>\$48,053</b>
	1800	586/7	<a href="#">45018ET3GKD586/7-W22</a>	5416	96.2	61.902	<b>\$48,053</b>
	1200	586/7Z	<a href="#">45012ET3GKD580Z-W22<sup>1</sup></a>	5724	96.2	61.902	<b>\$63,251</b>
500	1800	586/7Z	<a href="#">50018ET3GKD580Z-W22<sup>1</sup></a>	5388	96.2	61.902	<b>\$51,611</b>
	1200	586/7Z	<a href="#">50012ET3GKD580Z-W22<sup>1</sup></a>	5894	96.2	61.902	<b>\$65,962</b>

All voltages 460V unless indicated by \*

\* = 230/460V

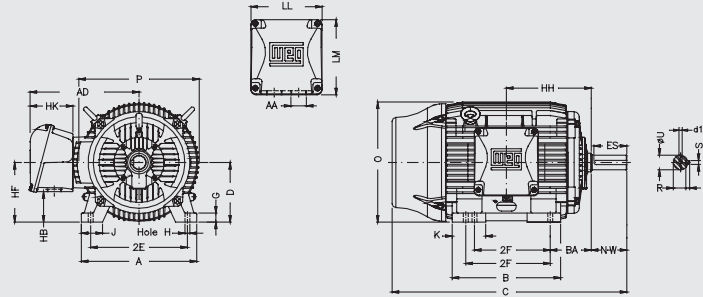
1) Z indicates oversized shaft and bearings

2) Model also available in 575V

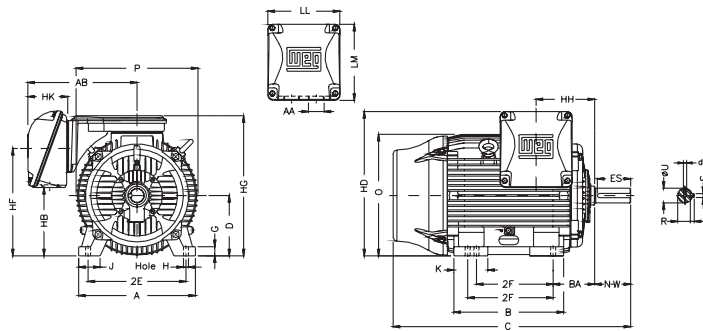


# 15. Mechanical data

## Frames 364 to 444/5T



## Frames 445/7T to 586/7T



Frame	Mounting				A	B	C	D	G	J	O	K	P	T	Keyway			Shaft Extension											
	2E	2F	H	BA											S	R	ES	N-W	U										
-															-	-	-	-	-										
364/5T	14.016	11.260/12.244	0.660	5.875	17.165	16.220	-	9.000	1.480	3.150	17.957	4.921	17.914	-	0.625	2.019	4.330	5.874	2.375										
-							34.251									-	-	-	-	-									
404/5T	15.984	12.244/13.740	0.810	6.625	19.921	18.386	39.730	10.000	1.811	3.937	19.566	5.669	19.134	-	0.750	2.449	5.512	7.250	2.875										
-																					-	-	-	-	-				
444/5T	18.000	14.500/16.500		7.500	21.929	31.535	20.315	44.950	11.000	1.630	4.331	22.795	5.866		23.583	4.620	0.875	2.880	7.087	8.500	3.375								
445/7TZ		16.500/20.000					23.897	51.826		1.654							1.000	3.312	8.661	11.625	3.875								
445/7T		20.000/25.000					59.463	6.692		0.875							2.880	7.087	8.500	3.375									
447/9TZ							56.338	1.000		3.312							8.661	11.625	3.875										
447/9T		20.000/25.000					60.306	0.875		2.880							7.087	8.500	3.375										
L447/9TZ							57.181	1.000		3.312							8.661	11.625	3.875										
L447/9T		20.000/25.000					54.095	0.875		2.880							7.087	8.500	3.375										
504/5TZ		20.000					16.000/18.000	1.250		8.500							24.724	24.449	55.09	12.500	2.146	4.724	25.425	7.228	25.866	4.880	1.000	3.312	8.661
504/5T			54.095											0.875					3.134								8.661	10.630	3.625
586/7TZ		23.000	22.000/25.000				1.181	10.000		29.528				29.921			61.902	14.500	2.492	5.512	28.985	9.055	28.977	5.590	1.000	3.312	8.661	11.625	4.375
586/7T	61.902			1.000	3.312	8.661			11.625		3.875																		

Frame	Terminal Box									d1	Bearings		
	AB	HB	HF	HG	HH	HK	LL	LM	AA		D.E.	N.D.E.	
-													
364/5T	16.378	4.055	-	-	12.362	6.378	9.646	10.119	NPT 3"	UNC 3/4"-10	NU314 C3	6314 C3	
-		5.040			14.213								NU316 C3
404/5T		15.748			5.787								-
444/5T	18.386	5.394	15.748	5.787	11.811	11.890	2xNPT 3"	NU319 C3	6316 C3				
445/7TZ	20.670	12.598	20.724	26.850	11.803	6.968		14.646	15.040		NU322 C3	6314 C3	
445/7T											NU319 C3	6316 C3	
447/9TZ	23.071	11.417	20.551	28.236	11.500	8.464		15.906	17.244		NU322 C3	6314 C3	
447/9T											NU322 C3	6319 C3	
L447/9TZ	20.670	15.275	24.291	29.409	10.394	6.968		14.646	15.040		NU322 C3	6319 C3	
L447/9T											NU322 C3	6314 C3	
504/5TZ	23.977	17.322	26.182	33.346	13.386	8.464		15.906	17.244	UNC 7/8"-9	NU322 C3	6314 C3	
504/5T											NU319 C3	6316 C3	
586/7TZ	23.977	17.322	26.182	33.346	13.386	8.464		15.906	17.244	UNC 7/8"-9	NU324 C3	6314 C3	
586/7T							NU322 C3				6319 C3		

## Crusher Duty® Soft Starters TPH2 Series



The WEG TPH2 Series of Crusher Duty® soft starters are designed to conquer the most demanding AC motor starting applications. While surpassing the highest starting torque requirements, the protective NEMA 4/12 enclosure makes the TPH2 Crusher Duty® soft starters ideal for the harsh industrial environments, even in wash down locations. Including as standard an AC3 full HP rated bypass contactor and motor overload relay, emergency direct-on-line starting is available at the flip of a switch while still providing full motor protection. Power lugs make motor connections safe and easy. The WEG TPH2 starters are built to complement the ruggedness and reliability of WEG motors, providing a complete and cost effective AC motor starting and protection solution.

### Standard Features

- Rated 500% for Crusher Duty® applications.
- NEMA 4/12 WEG Blue enclosure. Suitable for dusty, wet or outdoor applications.
- Narrow design requires less space. Legs eliminate difficult wall mounting.
- Protective barriers over 460V and 120V terminals.
- Circuit breaker with door mounted operator provides built-in short circuit protection and power disconnect.
- Full HP rated bypass contactor (AC3) with thermal overload relay and emergency start switch inside the enclosure (Softstart-Off-Across the Line) can be used in the event of Soft starter failure.
- Full soft starter protection during both start and bypass provides full protection from over/under current, supply and motor phase fault, phase unbalance, overtemp and over current.
- Keypad and full sized operator controls on cover with steel frame NEMA-4 window and cover over keypad. All parameter changes are through the cover-mounted keypad. Dust and water stay out of the enclosure. Monitoring of current, voltage, kVA and kW can be done from the outside.
- Terminations for remote start-stop furnished - no need to trace control circuit for additional power lines.
- 250VA 120V service receptacle - Power up meters, lights, and small tools without additional power lines.
- Modular multiple subpanel design. Ease of field modification or component replacement.

# Crusher Duty® Soft Starters

## TPH2 - NEMA 4/12 Enclosure

Motor Volts	Motor HP	Starter AMPS	Catalog Number	Application Dimensions (in.) H x W x D	App. Shpg. Wt. (lbs.)	List Price
460V	INPUT POWER SUPPLY: THREE PHASE					
	100	130	<a href="#">TPH2100KD0000</a>	54 x 36 x 18	442	\$14,605
	150	205	<a href="#">TPH2150KD0000</a>	54 x 36 x 18	470	\$17,014
	200	255	<a href="#">TPH2200KD0000</a>	66 x 36 x 18	608	\$20,938
	250	312	<a href="#">TPH2250KD0000</a>	66 x 36 x 18	628	\$22,300
	300	365	<a href="#">TPH2300KD0000</a>	78 x 36 x 18	770	\$27,946
	350	412	<a href="#">TPH2350KD0000</a>	78 x 36 x 18	855	\$30,293
	400	480	<a href="#">TPH2400KD0000</a>	78 x 36 x 18	855	\$34,357
	500	604	<a href="#">TPH2500KD0000</a>	78 x 36 x 18	875	\$43,756

\*\* Includes 6" Legs

Note: 1) For other technical data please refer to WEG product manual.  
2) Contact WEG for 230V, 380V, 575V and any other non-standard voltage





WEG Electric Corp. offers the following products, and more! With a full range of IEC/NEMA Global Certifications and a full line of products, WEG can supply the right solution for your needs anywhere in the world. To learn more about WEG's products and solutions or to locate a Distributor near you, please call **1-800-ASK-4WEG** or visit **www.weg.net/us**.

**Low Voltage Motors,  
Single and 3-Phase, 1/8 – 700HP**

- General Purpose Motors
- Explosion Proof Motors
- Crusher Duty Motors
- IEC Tru-Metric Motors
- Pump Motors including JP/JM
- P-Base Pump Motors
- Oil Well Pumping Motors
- Pool & Spa Motors
- Brake Motors
- Compressor Duty Motors
- Farm Duty Motors
- Poultry Fan Motors
- Auger Drive Motors
- IEEE 841 Motors
- Stainless Steel Wash Down Motors
- Saw Arbor Motors
- Cooling Tower Motors
- Commercial HVAC Motors
- Pad Mounted Motors
- Vector Duty Motors

**Large Electric Motors**

- Low Voltage 3-phase motors up to 2,500HP
- Motors up to 70,000HP and 13,200V
- Wound Rotor Systems (including starters) up to 70,000HP and 13,200V
- Synchronous Motors up to 70,000HP and 13,200V
- Explosion proof motors (Ex-d) up to 1,500kW and 11kV
- Ex-n, Ex-e, Ex-p motors

**Variable Frequency Drives**

- Low Voltage 1/4 to 2500HP, 230V – 480V
- Medium Voltage 500-8000HP
- Multi-pump systems
- NEMA 4X
- Dynamic braking resistors
- Line and load reactors
- Plug and play technology
- Network communications: Profibus-DP, DeviceNet, Modbus-RTU
- PLC functions integrated
- Complete line of options and accessories

**Soft Starters**

- 3-1500HP
- Oriented start-up
- Built-in bypass contactor
- Universal source voltage (230-575V, 50/60Hz)
- Network communications: Profibus-DP, DeviceNet, Modbus-RTU
- Complete Line of options and accessories
- MV Soft-starter 3.3kV, 4.16kV: up to 3500HP, Withdrawable Power Stacks, & 8x PT100 Temperature monitoring

**Controls**

- Mini – Contactors
- IEC Contactors
- Thermal Overload Relays
- Manual Motor Protectors
- Molded Case Circuit Breakers
- Smart Relays
- Enclosed Starters: combination & non-combination,
- Pushbuttons & Pilot Lights
- Timing & Motor Protection Relays
- Terminal Blocks

**Custom Panels**

- Custom configured to your specification.
- NEMA 1, 12, 3R, 4 and 4X cabinets
- Quick delivery of preconfigured drives and soft starters
- UL 508 certified
- Low Voltage (230-460)
- Made in the U.S.A.

**Generators**

- Brushless Synchronous Generators for diesel gen-sets up to 4,200kVA
- Hydro-generators up to 25,000kVA
- Turbo-generators up to 62,500kVA

**Power Transformers**

- Built and engineered in North America
- Voltages < 500kV
- Ratings 5-300MVA
- Station class, oil filled, round core, copper windings
- Special configurations and designs available!
- Ask your WEG Sales Representative for details.
- Designed, built, and engineered to ANSI standards.

**Custom Solution Package Sales**

- WEG can package any of its products for ease of sale! Enjoy a single point of contact for the entire package of products and assistance from quote through after-sales support. Ask your WEG Sales Representative for details.



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