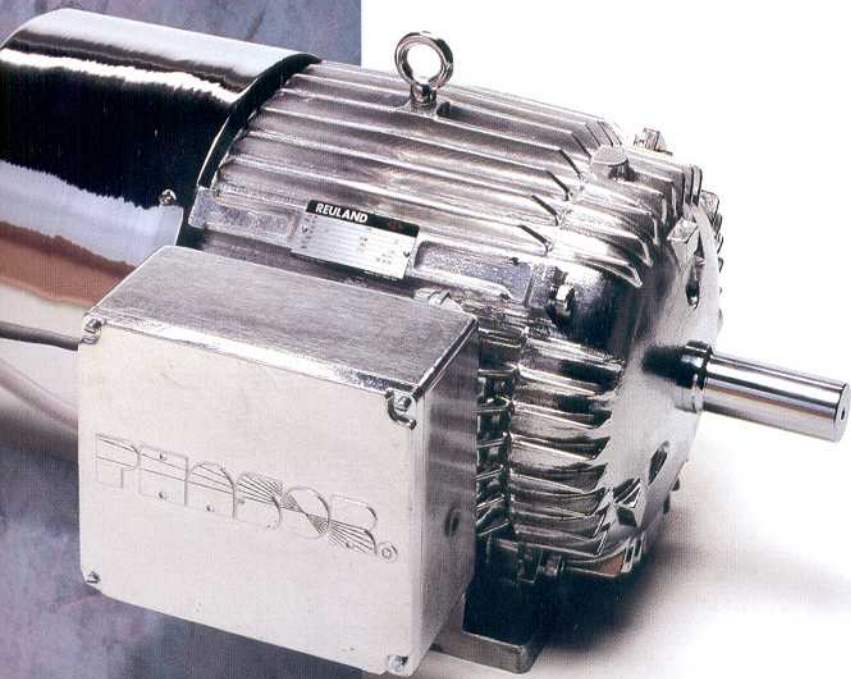
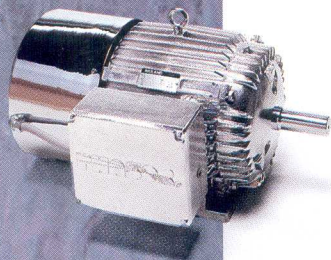




The PhasorTM Vector Motor

The first motor designed specifically for flux vector drives.

REULAND ELECTRIC
 THE POWER DRIVE PEOPLE



Phasor™ motors meet the full range of flux vector capabilities

Reuland Electric's Phasor™ flux vector motor out-lasts and out-performs any other vector motor on the market.

The reason is simple. "Off the shelf" Design B motors were never designed for vector drives. At best, they give adequate performance at line voltage and rated frequency. At worst, they fail when required to perform outside their limited capabilities — which causes costly down time and frequent repairs.

Each built-to-order Phasor motor, on the other hand, is specifically designed to meet the full range of vector drive capabilities. Each:

- Supplies full torque at zero speed
- Operates over the total vector spectrum of 1,000:1 speed ranges
- Offers speeds above 8,000 rpm
- Includes Class H insulation

Phasor flux vector motors are easy to install because they come in standard NEMA frames. So you don't have to add a new gear box or make costly alterations.

However, if you require IEC, Metric or non-NEMA frames, Reuland Electric has the flexibility to build these frames to your specifications.



Each Phasor vector motor is individually hand-built to your exact specifications for optimum long-term performance.

Phasor vector motors eliminate thermal problems

Design B motors have difficulties operating at low vector drive speeds. Often engineers must add auxiliary cooling to handle increased internal temperatures.

The Phasor vector motor takes that problem off your shoulders. Thermal characteristics engineered into the Phasor vector motor enable it to work efficiently at very low and very high speeds. So you don't have to buy costly add-ons to meet your needs.

Phasor motors have flexibility built in

The Phasor flux vector motor is compatible with all your electrical, mechanical and operational requirements. The Phasor vector motor:

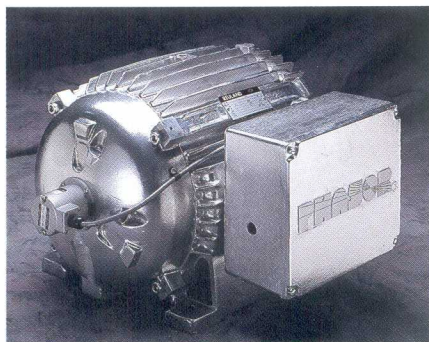
- Has a minimum lock rotor value of 190% of full-load rating
- Offers acceleration torques from 240% up to 700% above full-load values
- Insulates temperatures up to 170°C
- Offers a totally enclosed non-ventilated (TENV) enclosure for 60-minute duty applications and is auxiliary cooled for continuous duty
- Features a pulse generator standard for improved closed loop control
- Reduces audible electrical noise by suppressing fifth and seventh harmonics
- Separates terminal box with terminal strip for feedback unit
- Offers three-phase blower units (single phase unit optional)

Reuland Electric custom designs each Phasor motor to meet your current specifications, to easily retrofit existing configurations and to accommodate any future standard characteristics.

Phasor motors are a complete package of standard features

Unlike most Design B motors, the Phasor flux vector motor's standard features include everything you need, so there are no "surprise" costs and no additional lead times. These features include:

- Thermal sensors to compensate for characteristic changes
- Standard auxiliary cooling blowers that force cool air in and hot air out (unlike TEFC motors that only take hot air out)
- Electrical characteristics that reduce low noise at the highest available torque
- Special start configurations to optimize operating vector controls



Encoders on Phasor vector motors enable them to respond instantly to specific instructions from vector drives.

Reuland Electric also offers a complete turnkey package

For optimum results, Reuland Electric offers a complete turnkey package in which the Phasor motor is exactly configured with a vector drive to ensure a perfect fit.

This turnkey approach is your guarantee that all design parameters work flawlessly together for long life and trouble-free operations.

Moreover, Reuland Electric takes total responsibility for your turnkey system, so you never get the runaround. All it takes is one phone call to Reuland Electric for additional service or assistance.

The Reuland Electric guarantee

Like all Reuland Electric motors, our Phasor motors are built to run for at least a decade. So you don't incur costly down time. You don't need to stock replacement parts, and you don't pay to replace the motor again and again.

Instead, your system will work to your satisfaction from day one.

So whether you buy the Phasor motor separately or as a turnkey package, you'll get the vector motor you want with the specifications you need — on time.

And, Reuland Electric backs every motor with a full one-year warranty.

Reuland Electric.

Handcrafting motors for over 50 years

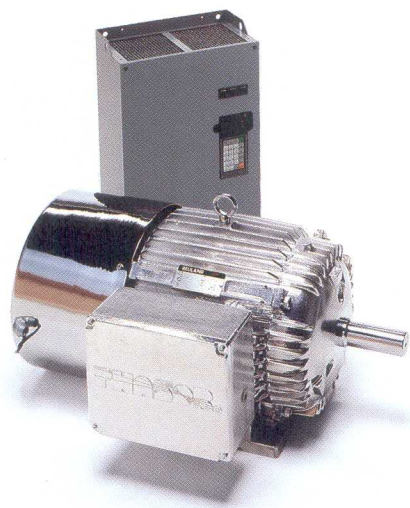
At Reuland Electric, we've been building motors for over 50 years. Our motors are a combination of painstaking craftsmanship and cutting-edge technology. Each is individually built by hand to fit your designs, your specifications, your needs.

We are dedicated to building the best motors on earth. This dedication to craftsmanship is why a Phasor vector motor is guaranteed to out-perform and out-last any other vector motor on the market. Period.

For more information, please call our Sales Engineering Department at (818) 964-6411.

Characteristics

Characteristic	Flux Vector Design
Constant Torque Range:	1000:1 60 Hz & Below 4000:1 400 Hz & Below
Constant Horsepower Range:	13:1 Available
Maximum Torque Through-out Speed Range:	Locked Rotor Value
Torque at 0 Speed:	Locked Rotor Value
Speed Regulation:	Better than 0.01% with Closed Loop Control
Positioning Accuracy:	$\pm 0.25^\circ$ Based on Closed Loop Control
RPM Accuracy:	0.01% up to Rated Full Load
Power Factor:	Near Motor Design at All Speeds
Efficiency:	Near Motor Design at All Speeds
Torque vs. Current:	Maintains Constant Relationship



Reuland Electric offers the Phasor vector motor alone or configured with a vector drive as a complete turnkey package.

Specifications

Standard Features	Optional Features
• NEMA frame • Integral mounted encoder • Speeds to 8,000 rpm • Class H insulation • Forced air cooling (TENV 60-minute duty) • Voltages to 600 VAC • Fractional to 300 hp • Closed loop control • Footed or face mount • Special dynamic balance • Cast aluminum construction	• Special shafts • Special castings • C, D, P/base or DIN flange • Super H insulation • Speeds above 8,000 rpm • Sealed leads and bearings • Special casting treatments • Precision bearings and balance • Holding brakes • Low inertia designs • Custom designs

Comparison of Phasor and Design B Motors

Feature	Phasor motor	Design B motor
Specifically built for flux vector drives	YES	NO
Speeds over 8,000 rpm	YES	NO
1,000:1 speed range	YES	NO
Continuous full torque at 0 speed	YES	NO
Breakdown torques greater than 280%	YES	NO
Rapid acceleration and deceleration	YES	NO
Thermal sensors	YES	NO
Forced air cooled for continuous duty down to 0 speed	YES	NO
Low electrical noise	YES	NO
Available in TENV for 60-minute duty cycle applications	YES	NO
Pulse generator to improve closed loop control	YES	NO
Comes complete with no add-ons	YES	NO
Hand-built to order	YES	NO
Cast aluminum NEMA, non-NEMA, Metric or IEC frames	YES	NO
Guaranteed to work perfectly with flux vector drive from Day 1	YES	NO

Frame Assignment Chart

HP	FRAME	213	215	254	256	284	286	324	326	364	365	404	405	444	445	449
2																
3																
5																
7.5																
10																
15																
20																
25																
30																
40																
50																
60																
75																
100																
150																
200																
300																

4 POLE ONLY
 6 POLE ONLY
 BOTH 4 & 6 POLE

