

## NEWSLETTER ISSUE 2, 3 November 2006

### Electric Motors — REPAIR Vs NEW



Once motors fall below a certain size, they are not economical to repair. That size will typically be around 15 kW, as easy as that sounds, this applies to standard motors only, specials such as extended shafts & inch frame motors are not easily replaced and generally only repairable.

Motors are inherently reliable but like all machines, electric motors wear out or fail at some stage. When this happens, you need to choose between replacement and repairing.

When motors fail, organizations must act quickly to get them running again. The decisions you make when a motor fails can significantly impact on the future reliability and efficiency of your equipment.

Regardless of whether you have one or hundreds of electric motors operating in your business, you should establish a motor inventory. Having the right information on hand when a failure occurs will enable you to manage and minimise in service equipment failure and reduce downtime and operating costs - all in the best interests of your organization.

The decision to repair or replace should be predominantly a financial one.

While repairing the motor may require fewer initial costs (but longer down times) than purchasing a new motor, the total operating costs of the repaired motor may be significantly higher depending on the:

- Down time
- Cause of failure
- Age of your motor
- Ability of your repairer
- Annual operating hours of the motor
- Overall efficiency of the motor after repair.



A new motor is likely to last longer and have a longer warranty. It is common practice to rewind an electric motor several times throughout its operational life.

Each time a motor is rewound the efficiency is reduced by up to 3% depending on quality of rewinder. As a result, a large proportion of motors in Australia operate at a lower efficiency than their nameplate efficiency. For example, a 3% efficiency reduction in a 30kW motor would add \$150 to the operating cost each year (based on an 80% load, 3,000 operating hours per year, 10 cents per kWh).

The best solution if your motor burns out may be to look at your loading needs and the purchase of a new motor to match that load.

Royce Cross Agencies strives to help customers make the right decision, we offer both a rewind / overhaul service and the new motor stock holding. This means you get the Best of both worlds. We assess and deliver.....

### Single Phase Electric Motors



Compressor Motors, Cement Mixer Motors, Air-Conditioning Motors, Standard Auger Motors, Motors for Lathes, Motors for Drill Presses, Fan Motors, Air Movement Motors, Flange Mount Motors, Air-conditioning motors, Pumps, compressors, concrete mixers, food mixers, fans, mechanical movement and machine tools.

The B56 frame motors brings together advanced electrical and mechanical design features with a highly versatile and adaptable product. It is available in a rolled steel shell construction. Supply connections are offered as loose leads, motor mounted terminal box or terminals provided in the motor end shield. Motors can be foot mounted to Nema 56 frame dimensions, resilient base mounted, d-flange or c-face flange mounted. Shaft extensions can be provided in mild or stainless steel. An additional option of a no-volt release operation is available, which is particularly suitable for machine tool applications.

Sizes 0.25kw—7.5kw, 2 & 4 pole.

Accessories including with On/Off switches, Thermal Overloads, Plugs and Leads are available.



Royce Cross offers single phase motors for nearly every application. Contact us today for a quote on your requirements.

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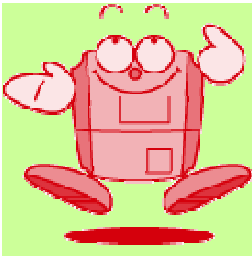
RXM Series 3 Cast  
 Iron Three Phase  
 Electric Motors



Brake Motors



## Monthly Featured Product



VF-S11 is a compact TOSHIBA drive designed for powerful performance in wide ranging applications. It is a sensorless vector control drive providing high torque throughout the speed range.

Available in two types - 1Ph, 240V input (0.4-2.2kW) and 3Ph, 415V input (0.75-15kW), VF-S11 drives are universally accepted for most industrial applications.

### FEATURES:

- \* Sensorless Vector Control Drive
- \* Ultra-Compact size
- \* Removable Terminal Board
- \* Built-in RFI filter (A Class)
- \* Suitable for >50°C Ambient Temperature
- \* On-board potentiometer for speed setting
- \* Easy to set and operate
- \* Profibus & DeviceNet options
- \* Remote control key-pad option
- \* CE, UL and C-Tick compliant

### APPLICATIONS:

- \* Conveyors
- \* Mixers
- \* Pump
- \* Fans/blowers
- \* Agitators
- \* Packaging Machines etc



**Geared Motors**

[Inverters for 480Volt single phase power supply to 15kw](#)



[Stainless Enclosures](#)



[Symcom Motor Management & Protection Units.](#)



[Toshiba Programmable Logic Controllers](#)



[Toshiba Soft Starters](#)

**Hazardous Location Motors**

**2 Speed Motors**

**Slide Rails**

**Starters and Control**

**Pulleys and Sprockets**

**Rewinding and Repairs**

**Electric Motor Spare Parts and Accessories**

**Direct On Line Starters**

**Contactors**

## Monthly News — MEPS 2 has arrived!

### WHAT IS MEPS ?

Minimum Energy Performance Standards (MEPS) are agreed energy efficiency levels for various capacity motors based on a joint Australian/New Zealand standard. MEPS applies to manufacturers and importers of three-phase cage induction motors with output ratings from 0.73kW and up to but not including 185Kw with rated voltages up to 1100 Vac.

The introduction of a reliable performance rating systems and uniform standards of performance for motors are important steps towards achieving energy and greenhouse gas emissions savings, operating cost savings, increased reliability and longevity of equipment.

In simple terms, the new regulations applicable from April 1st 2006 restrict import of motors to only those meeting, or exceeding, the applicable MEPS efficiency figures. Combined with a mandatory national energy efficiency labeling system "High Efficiency", MEPS will make a significant impact on energy use and business costs.

### Why has the Australian Government introduced MEPS?

Around seventy percent of electricity used in the industrial sector is utilised via electric motor drives. There are significant potential energy efficiency savings to be made in this area. MEPS will improve the energy efficiency of appliances and equipment, particularly overcoming situations where the purchaser is not responsible for ongoing energy operating costs.

A modest boost in the energy efficiency of electric motors and drive systems in use across Australia can lead to very significant savings in energy costs to the consumer, and a potential decrease in greenhouse gas emissions from power generation.

There are estimated to be about 1.7 million large, three-phase electric motors in use within the 0.75 to 150 kW range across the country. These motors collectively consume about 40 TWh (terrawatt/hours) of electricity per annum. The related greenhouse gas emissions from the generation of this much electrical power translates to about 40 million tonnes of CO<sub>2</sub> equivalent (CO<sub>2</sub>e) per annum, or about 26% of Australia's total CO<sub>2</sub>e emissions from electricity generation.

The introduction of Minimum Energy Performance Standards (MEPS) for electric motors will improve average motor efficiency by removing inefficient motors from the market place.

Australia's major trading partners now have or are progressing towards mandatory MEPS for three phase electric motors including Taiwan, China, USA, Canada, Thailand and soon Malaysia.

In general, the USA and Canadian MEPS levels implemented in 1997 were considered the basis for MEPS proposed for Australia for three phase electric motors to be introduced in 2006. These were chosen after detailed comparison of testing methods showed that these levels were achievable and that they were the most stringent currently in force or proposed by our major trading partners. These levels are also broadly equivalent to European Efficiency Level 1 for 2 and 4 pole motors and are currently specified as the "High Efficiency" levels in the 2001 standard for 2 and 4 pole motors.

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**What makes an electric motor a 'HIGH EFFICIENCY' motor?**

The efficiency of an electric motor is the ratio of mechanical power output to the electrical power input. This may be expressed as a percentage figure. A figure for efficiency of a given motor is derived from results of standardised testing.

Electric motors are mostly efficient machines, especially the larger motors in the 100 kW to 150 kW range with typical efficiencies of 90% to 96%. The 'smaller' 0.75 to 1.5 kW motors are typically less efficient with measured efficiencies as low as 70% or 80%.

A 'high efficiency' motor is a subjective description for motors presently available. In general terms, 'high efficiency' describes a motor that features design, materials, and manufacturing techniques, which result in a higher measurable efficiency. These types of motors generally have better availability, longer insulation and bearing lives, lower waste heat output, less vibration and increased reliability.

For more information [click here](#)

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**History**



Michael Faraday

Most people would say that they don't see an electric motor every day, like they do a light bulb or a telephone. That is because electric motors aren't like that. They are simpler things that are found within many appliances. A motor's purpose is to turn electrical energy into mechanical energy. It takes electricity and turns it into energy that can be used by us.

An electric Motor uses magnetism and electric currents to work. There are two different kinds of motors, Alternate Current (AC) and Direct Current. (DC) Motors. These kinds of motors use the same parts as a basic electric motor, only using two different kinds of current.

Motors began with electromagnets. IN 1831, Michael Faraday succeeded in building the first electric motor. Joseph Henry was working with motors at that time. Henry and Faraday are both credited with building the first experimental electric motors. In 1837, Charles Grafton Page worked on improving the electric motor and created a model of his own. In 1887, Nikola Tesla introduced the Alternate Current (AC) motor. All other motors up to that time had been using direct current. Now, alternate current motors are easier to use than direct current ones.

Today, motors are used everywhere. They are used in cars and many household appliances. Even though many people don't recognize what all it does, the electric motor has become a very useful invention.



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