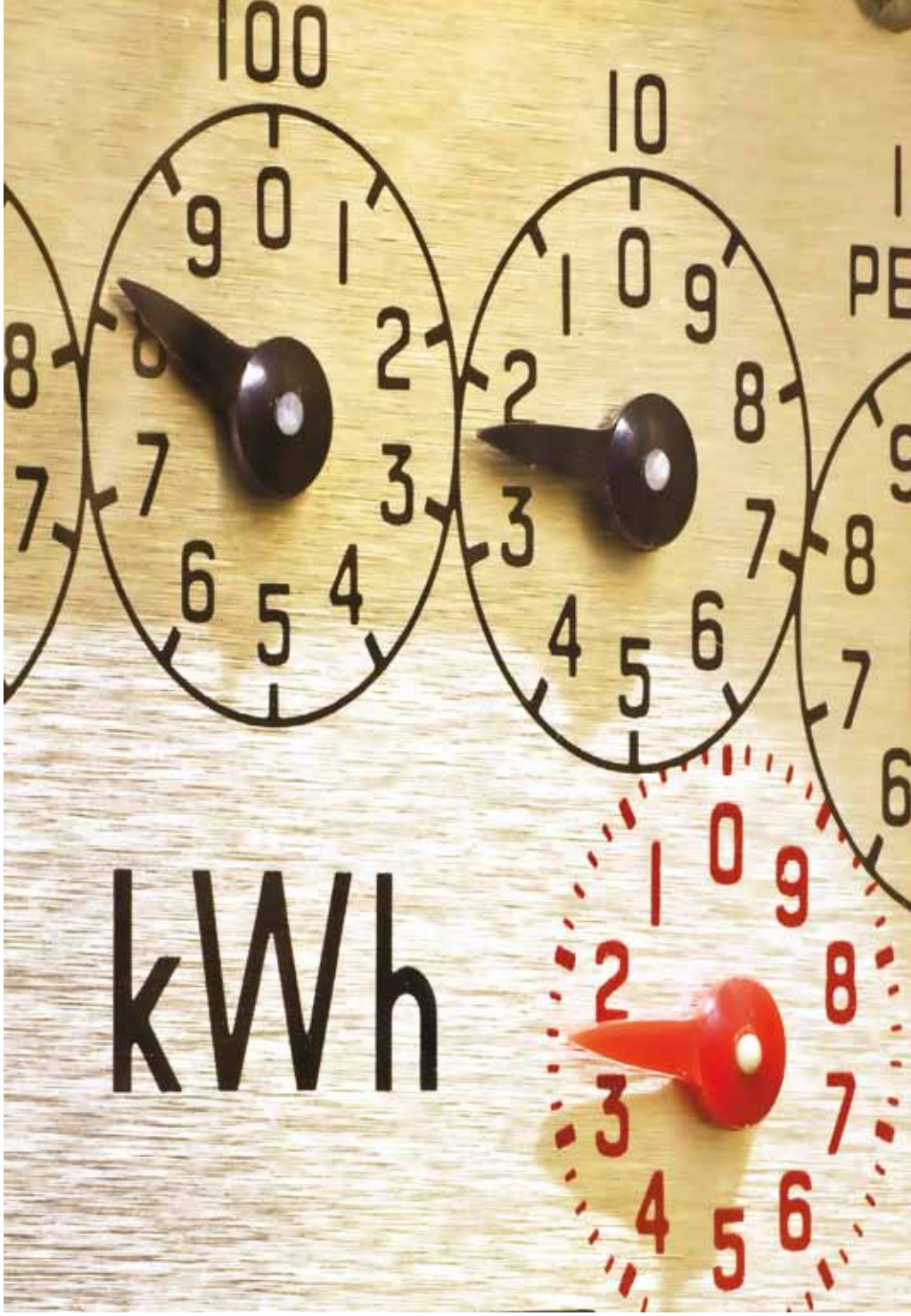
aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding



Energy Saving Technologies for Motor-Driven Systems

Variable Speed Drive Solutions

Parker

ENGINEERING YOUR SUCCESS.

Parker Hannifin - the global leader in motion and control technologies

A world class player on a local stage

Global Product Design

Parker Hannifin has more than 40 years experience in the design and manufacturing of drives, controls, motors and mechanical products. With dedicated global product development teams, Parker draws on industry-leading technological leadership and experience from engineering teams in Europe, North America and Asia.

Local Application Expertise

Parker has local engineering resources committed to adapting and applying our current products and technologies to best fit our customers' needs.

Manufacturing to Meet Our Customers' Needs

Parker is committed to meeting the increasing service demands that our customers require to succeed in the global industrial market. Parker's manufacturing teams seek continuous improvement through the implementation of lean manufacturing methods throughout the process. We measure ourselves on meeting our customers' expectations of quality and delivery, not just our own. In order to meet these expectations, Parker operates and continues to invest in our manufacturing facilities in Europe, North America and Asia.

Worldwide Manufacturing Locations

Europe
Littlehampton, United Kingdom
Dijon, France
Offenburg, Germany
Milan, Italy

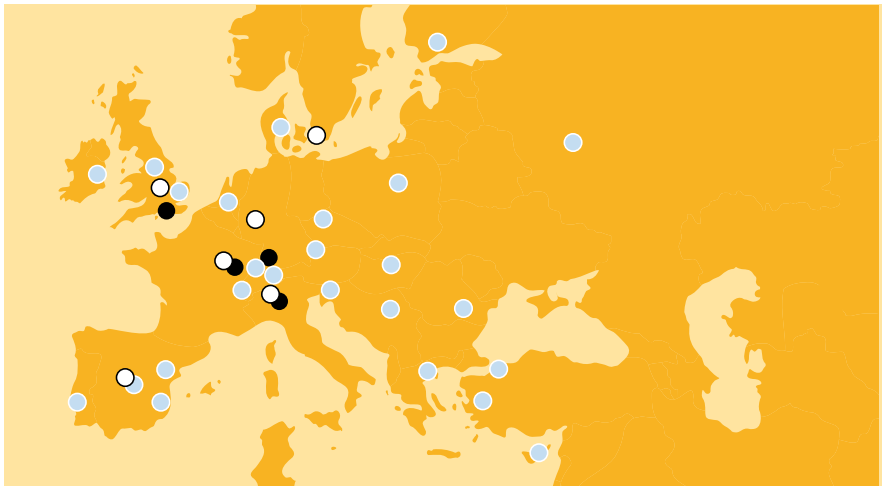
Asia
Shanghai, China
Chennai, India

North America
Rohnert Park, California
Irwin, Pennsylvania
Wadsworth, Ohio
Port Washington, New York
New Ulm, Minnesota

Local Manufacturing and Support in Europe

Parker provides sales assistance and local technical support through a **network of dedicated sales teams** and **authorized technical distributors** throughout Europe.

For contact information, please refer to the Sales Offices on the back cover of this document or visit www.parker.com



● Manufacturing ○ Parker Sales Offices ● Distributors

Together, we can reduce your energy usage and save you money

Reduce your energy consumption with Parker SSD's variable speed drive solutions

Pumps and fans :

Savings up to

50%

Extruders, mixers, crushers :

Savings up to

20%

Sectional process lines :

Savings up to

35%

Hoisting and conveying :

Savings up to

35%

With over thirty years experience in the design and manufacture of drive modules and systems, Parker has the expertise to work with you to identify areas of potential energy saving and to propose individual solutions to help you match your energy consumption to the actual needs of your process and business.

In addition to the high quality and reliability of its products, Parker SSD also offers a range of value-added services such as energy audits, commissioning and maintenance contracts. When it comes to improving energy efficiency, Parker SSD's proven track record gained across a wide range of industries speaks volumes.

Whether you're looking for a fully engineered turn-key solution, or help with a specific aspect of your energy usage, Parker SSD has the necessary competencies to compliment and assist your own team throughout all stages of your projects, from the initial energy audit to startup and throughout its operating life.

Parker, your partner on the road towards energy efficiency

Energy monitoring and individually tailored solutions

Using portable measuring and recording equipment, our highly qualified and experienced applications engineers conduct a comprehensive energy audit of your installations without having to interrupt their operation.

The detailed energy audit enables our engineers to gather data relating to:

- Phase current
- Phase voltage
- Energy consumption (kW)
- Power factor

Evaluating the period for return on investment (ROI)

With the aid of sophisticated tools and the work of our highly qualified engineers, Parker SSD is able to provide the answer to the often posed question: “How long will it take to deliver a return on my investment?”

On the basis of the physical data recorded during the energy audit, Parker SSD is able to evaluate your actual potential for energy saving, allowing the payback period and therefore ROI to be calculated based on your actual operating cycles.

Installation, service and training

As well as delivering effective, efficient solutions adapted to your specific needs, we are keen to ensure that the performance of our products continue to meet your expectations throughout their life.

To this end, we have a 24/7, 365 day telephone support line manned by a team of experienced application engineers providing comprehensive help and assistance with all aspects of maintaining the performance of your drive systems.

Parker SSD also offers a whole host of on-site services and maintenance contracts, designed to ensure the maximum possible lifespan of your installations is achieved.

For maximum effectiveness, Parker SSD can also train your teams to enable them to maintain and support your installed products. Training programs and courses are run throughout the year at our training facilities and can be adapted to the specific requirements of your business, or even delivered on-site.

Financial help in making the change to energy saving technologies

Enhanced capital allowance scheme for energy saving technologies

You may think that making the change to more energy-efficient products is likely to be expensive. The reality is that although these technologies may have a higher upfront investment cost than other less-efficient technologies, they will start delivering energy savings from day one. Payback times of less than 18 months are not uncommon and in some cases this has been reduced to under 6 months.

If that in itself is not compelling enough to convince you to make the change to more energy-efficient technologies, there are a number of added incentives provided the Carbon Trust to encourage you to switch.

Enhanced Capital Allowance Scheme (ECA) for energy saving technologies

Set up in 2001 as an independant company by Government, the Carbon Trust is leading the drive towards a low carbon economy with advice and initiatives aimed at removing obstacles to adopting energy-efficient technologies.

The ECA scheme encourages businesses to invest in energy saving plant or equipment by allowing them to write off 100% of the capital cost of equipment against taxable profits in the year of purchase.

CARBON TRUST

Making business sense of climate change

Energy Technologies List (ETL)

Qualified for Energy Technology List
www.eca.gov.uk
Authorised User No. 00092

The ETL contains a wide-range of differing energy saving technologies that have been assessed and meet the requirements of the energy technology criteria list. This ensures that listed items meet the requirements of the ECA scheme and businesses may claim 100% first-year capital allowance.

As a licensed manufacturer of energy saving technologies, Parker SSD Drives has the right to display the ETL symbol in connection with its ETL listed products. This demonstrates our continued commitment to our customers and to meeting the challenges of meeting climate change through energy-efficiency.

Parker

Energy saving solutions for pumps and fans

Save energy through speed control

Pumps and fans are widely used throughout industry. Estimates are that many of these are as much as 20% oversized for the application they are used for. When operated at a constant speed, a significant amount of the power consumed is wasted, costing your company considerable amounts of money.

Matching process demands by controlling the speed of pumps and fans means that the motor will always operate at the optimal speed to deliver just the right amount of air or fluid. Therefore the energy consumption is reduced. **Savings of up to 50% can be achieved with payback in less than 18 months in many cases.**

Speed control = Savings

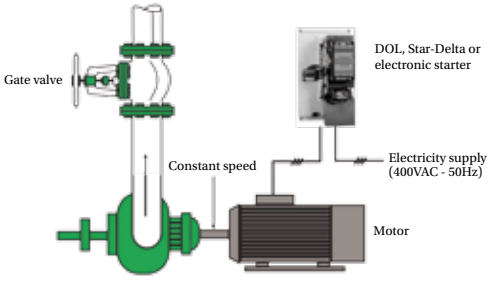
- Up to 50% energy savings
- Improved power factor
- Reduced maintenance
- Quieter operation
- Increased service life
- Reduced carbon footprint

Improved power factor and service life

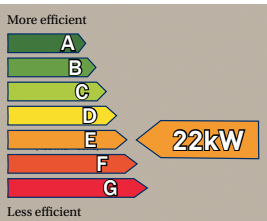
Pumps and fans that operate at maximum speed continously will inevitably have shortler life spans and be subject to unnecessary wear and tear. Variable speed drives can help to prevent this while also reducing energy consumption and improving the power factor of your installations.

In addition to the increased lifespan of your system, you'll also see significant savings with maintenance and repair bills and a noticeable reduction in noise pollution.

Control by flow regulation - motor run at maximum speed



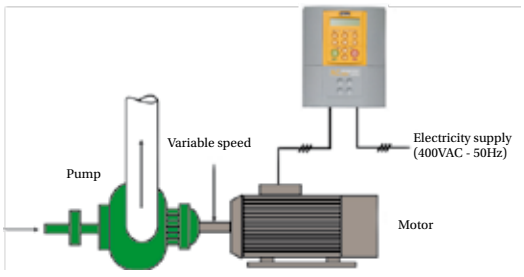
- Constant speed
- Power consumption higher than needed
- Poor power factor
- Higher energy costs



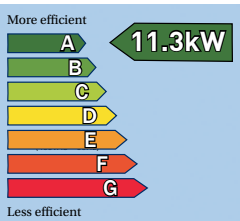
£15,418 / Yr

= 22kW x 8760h x £0.08/kWh

Control by Parker variable speed drive



- Variable speed
- Power consumption is matched to load
- Improved power factor
- Reduced energy costs



£7,919 / Yr

= 11.3kW x 8760h x £0.08/kWh

AC650V variable speed drive

Ratings 0.25kW - 110kW

The AC650V range of variable speed drives have been designed to provide simple no-fuss speed control of standard three phase AC induction motors from 0.25kW to 110kW. Thanks to its sensorless flux vector technology, the AC650V provides exceptional control at lower speeds, accurate speed regulation of variable loads and high starting torques for high inertia systems.

With a range of pre-programmed on-board macros, the AC650V is extremely quick to setup and easy to operate in any application.

With a variety of communications options and mounting arrangements, the AC650V is easily integrated into any environment. Optional EMC filters, fitted as standard up to 7.5kW ensure compatability with current EMC regulations.

Features

- Ready to install “Fastpack” solutions available
- Communications options allowing integration in building management systems
- Simple parameter setting and adjustment

Technical specification

• **Power rating**	0.25kW to 110 kW
• **Voltage range**	220-240Vac ±10% single phase 380-460Vac ±10% three phase 50-60Hz ±5%
• **Output frequency**	0-240Hz
• **Operating temperature**	0-40°C
• **Enclosure**	Colour RAL7032 IP 54 (IP 55) Dimensions 300x300x210 or 400x300x210 mm Natural ventilation
• **Operator controls**	Drive or door mounted 4 character back-lit display. Password protectable.

Total annual energy saving = £7,499

Energy saving solutions for extruders

Save energy by removing gearboxes and adopting a direct-drive solution

Parker torque motors are permanent magnet brushless servo motors, specially designed to replace DC or induction motor and gearbox combinations in extruder applications.

Designed to deliver high torque at low speed without any additional mechanical transmission systems, their usage results in more compact, more efficient, quieter and virtually maintenance free drives systems.

Example of energy saving

Removal of the gearbox has an immediate impact on the overall installation's efficiency, resulting in significant energy savings.

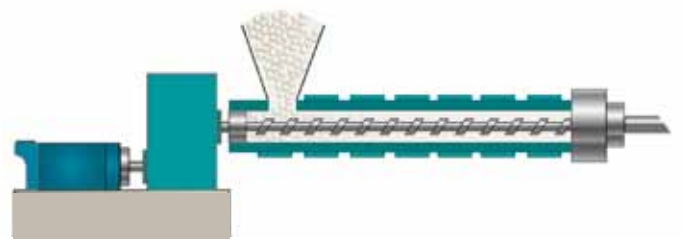
Example:
- 100 kW extruder
- 7200 h annual operating period
- Energy cost : £0.08/kWh

= 100kW x 7200h x 0.08/kWh

Overall efficiency improvement due to the installation of a torque motor: 10%

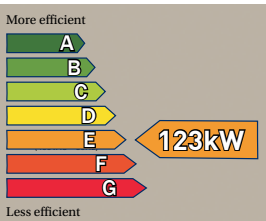
Annual saving : **£5,760**

Conventional DC or induction motor with gearbox



Parker torque motor without gearbox

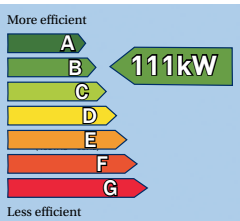
- Gearbox required
- Significant mechanical losses
- Lower power output 0.91 x 0.91 = 0.81
- Higher energy usage



£71,111 / Yr

= 100kW / 0.81 x 7200h x £0.08/kWh

- No gearbox needed
- No mechanical losses
- Higher power output 0.91
- Lower energy usage



£64,000 / Yr

= 100kW / 0.9 x 7200h x £0.08/kWh

Torque motors TMW

Torque range 1,200 to 22,100 Nm

More than just motors, Parker torque motors are complete and ready-to-use “direct drive” systems, specially designed with a number of innovative and industry specific features to fully and effectively respond to the exacting needs of the plastics and rubber machine builders and end-users.

Delivering torques up to 22,100 N.m, at speeds ranging from 50 to 500 rpm, Parker torque motors represent the perfect alternative to gearbox based systems for extruder applications of powers up to 320kW.

Features

- No mechanical transmission elements
- No mechanical losses
- Virtually maintenance free
- Silent operation

Technical specification

• **Torque range**	1200 – 22100 N.m (water-cooled)
• **Shaft heights**	200, 315 or 400 mm
• **Rated voltage**	400 VAC and 480 VAC
• **Speed**	50 – 500 rpm (size dependant) - Field weakening operating up to 1.2xn_{rated} - Other speeds available on request
• **Cooling**	Water jacket as standard - Natural ventilation with derating (consult us)
• **Mounting**	IMB3
• **IP rating**	IP 54
• **Thermal protection**	1 x KTY sensor and 2 x PTC probes - Temperature alarm as default
• **Shaft end**	Hollow shaft with keyway as standard - Customized interfaces available on request
• **Thrust bearing**	SKF 294__E as standard
• **Feedback sensor**	EnDat encoder as standard Hollow shaft direct EnDat encoder (option) Resolver (option)

Total annual energy saving = £7,111

Energy saving hydraulic solutions

Improved efficiency in hydraulic systems with electronic control technologies

In any variable industrial process such as one involving a hydraulic pump, an unregulated motor running at maximum speed is wasting energy.
Reducing the motor speed during low demand times can achieve significant energy savings. By using Parker SSD's variable speed drive technology, instant savings can be made.

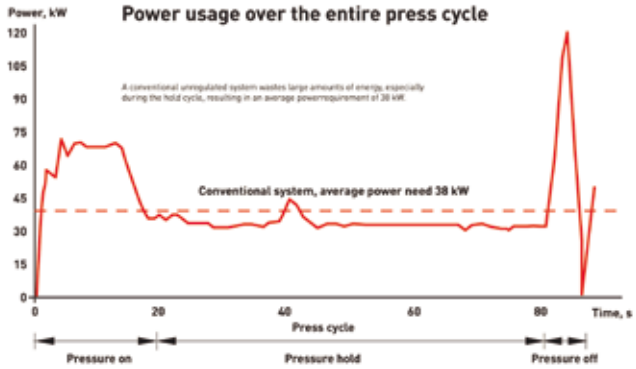
By automatically adapting the pump's speed to match changes in demand, Parker's variable speed drives are the perfect addition to any hydraulic system.

Example of energy saving

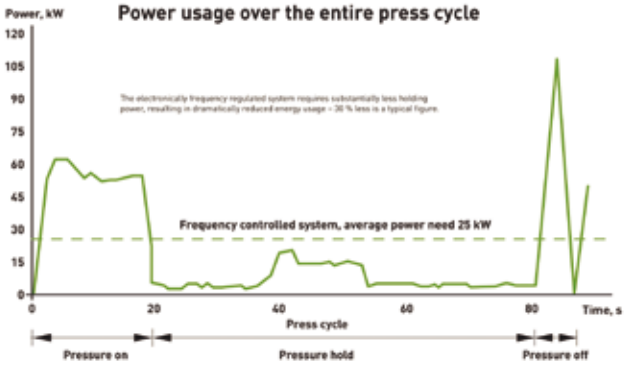
Tests run on a hydraulic press system clearly show that substantial savings on energy is possible using the Parker AC650V variable speed drive. The results in this case was an average power need of just 25kW compared to 38kW using an unregulated pump, over the entire press cycle.

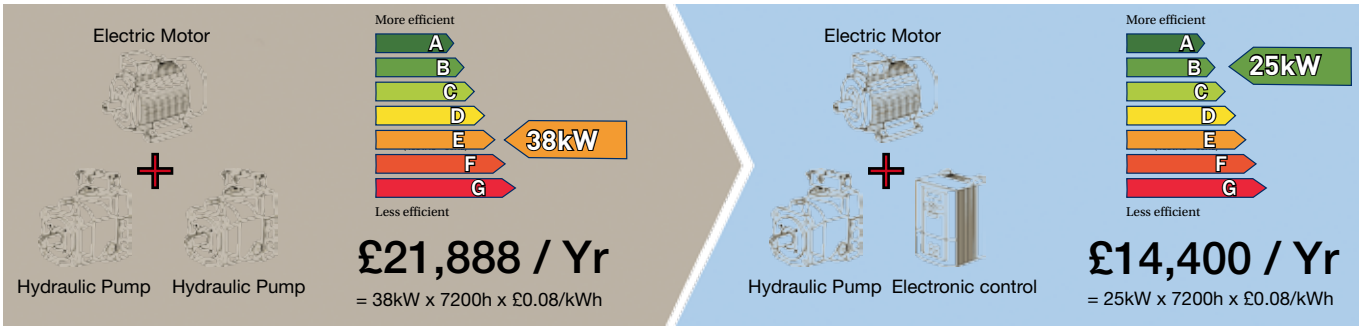
Parker supports you in the design and implementation of frequency controlled hydraulic systems through all stages - initial planning, measuring existing equipment, rebuild and startup.

Conventional hydraulic system



Frequency controlled hydraulic system





Energy saving frequency inverters

Power range 0.25kW to 110kW

Features

- Power ranges up to 110kW
- Meets international standards UL/cUL, CE,EMC, etc.
- Simple installation
- Easy to use
- Easy change of parameters
- Easy start-up
- Compact
- Removable operator station

Benefits with Parker AC650V	- From a financial point of view	- From a technical point of view
Selection of system components	• Standard motors can be used • Energy saving frequency drive • Standard pumps can be used	• Works with 50/60Hz supply • Works with 230-500Vac supplies • Works with any motor speed
Smooth acceleration / braking	• Longer motor service life • Less strain on the hydraulics and other components • Less strain on the oil	• No power surges • No pressure surges (cavitation)
Higher efficiency	• Savings on energy consumption • Reduced CO_2 emissions	• Reduced peak power need • Reduced need for cooling
Compact dimensions	• Fewer, lighter and smaller parts • Takes up less space	• Reduced hydraulic oil volume • Smaller pumps & coolers needed
Reduced noise levels	• Less need for noise protection • Improved work environment	• Reduced motor shaft rotations • Smoothed resonant frequencies
Integrated concept	• Less external hardware • Simple customisation	• Fieldbus options (Profibus, CAN) • System visualisation
Frequency control	• Higher efficiency • Cost-optimised component selection • Increased productivity through higher motor speed	• Volume flow that meets the exact needs of the application, for constant speed pumps across a wide range. • Simple process diagnostics

Total annual energy saving = £7,488

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Brochure HA500786 March 2009

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Printed in England. HA500786
Issue 2 September 2010