



**INDUSTRIAL  
CONTROL DIRECT**  
A B&D Industrial Company

**High Quality / Low Prices**



## AC Variable Speed Drives for Industry 0.37-710kW (0.5-950HP)



The drive for **perfection**



## The drive for perfection

We put more in, so you get more out...

- Better diagnostics - easy to programme in many languages
- Quicker response to dynamic load changes
- Connection to the latest industrial fieldbus systems



**1984**  
VL series: First miniature 3Ø analogue drive



**1986**  
CUB VC150: First low cost analogue 1Ø drive



**1987**  
VL 11-22



**1988**  
CD Mk1: First digital 3Ø inverter with RS485 comms



**2010**  
VXG



**2007**  
VXR



**2004**  
CUB:  
1Ø and  
3Ø series

# IMO Jaguar

**After twenty five years, IMO Jaguar AC variable speed drives continue to deliver innovation and efficiency worldwide.**

The product of twenty five years continuous innovation, today's range of variable speed drives, comprises single and three phase CUB and VXR series from 0.4kW and VXG series up to 710kW, which remains at the forefront of frequency inverter technology.

Today the Jaguar variable speed drive is helping engineers bring significant energy saving, greater efficiency, reliability and performance to their daily operations. The Jaguar drive is being used 24 hours a day, 7 days a week, 365 days a year, worldwide, in applications ranging from simple fans or pumps through to the most demanding and complex machines.

The Jaguar range of drives is allowing engineers to control the speed of their electric motors and pumps with even more accuracy and efficiency. This is resulting in better reliability, as the life of the motor or pump can be extended due to less wear and tear, providing overall improved performance on older more unreliable systems.

The energy saving a Jaguar variable speed drive delivers by controlling the speed of a pump or fan during quieter periods could be significant. As awareness of energy saving has increased IMO has used its twenty five years of inverter technology experience to develop its 5 Stage Pentagon Plan, delivering an unrivalled solution to your energy saving needs.

Just as important, with all this experience behind us, our engineers have the edge in application expertise and sheer drive know-how to help, without hassle, customers achieve their optimum solution. Boasting the largest stock of AC drives in the country, backed as always by our unique five year guarantee, IMO is the only manufacturer in the world to underwrite your energy saving.



**IMO Jaguar. The technology... the support... the drive.**



**1989**  
CUB VCD series:  
First 1Ø digital  
inverter

**1990**  
CD 11-30

**1991**  
DX and CD  
45-90 HVAC

**1992**  
CDS and  
CD MK2

**1993**  
Dinverter:  
First DIN rail  
mountable  
micro drive

**1994**  
DXE: First  
sensorless  
vector control  
system

**1995**  
VX: Torque  
Vector  
series

The only inverter in the world to underwrite  
your **Energy Saving!**



**2003**  
TE: IP54  
and LE:  
Lift/hoist  
specific

**2002**  
Over 5 million  
installed world-wide

**2001**  
VXSM

**2000**  
VXM and CUB CM:  
First closed loop  
Dynamic Torque  
Vector Jaguar

**1998**  
Common  
fieldbus  
options

**1997**  
CUB C

**1996**  
VXS: Compact low cost  
Torque Vector series



# Which is the right Jaguar Drive for you?



From our market leading CUB, VXR and VXG range of drives with varying functionality and power, IMO has the right frequency inverter to meet the needs of your application, whatever it might be. From a simple small pump or fan through to the most complex large scale hoists, you can be assured that IMO has the drive and the knowledge to meet your application needs.

The IMO CUB features a full range of functions, a compact body, simple operation, wide model variations and global compatibility. It will meet the needs of higher performance machines and equipment such as conveyors, fans, pumps, centrifugal separators and food processing machines, as well as the needs of system integration, energy saving, labour saving and total cost reduction.

With an extended range of functions, the IMO VXR features connectivity, compact body, wide model variations and global compatibility. The VXR with Dynamic Torque Vector Control sets new standards for vector controlled drives. It will meet the needs of high performance machines and equipment such as pumps, fans, conveyors, material handling machines, packaging, special machines and textile machines.

The high performance VXG, multi function inverter. boasts state-of-the-art technology, with control performance that has evolved to a new dimension. Control methods now include: PG Vector control, sensorless vector control, dynamic torque vector control and V/F Control. It meets the need of the most demanding drives applications such as hoisting, packaging, material handling, wood, textile and process machinery.

The IMO Jaguar range is ready to answer your needs, providing the highest performance levels in the industry and redefining the common sense of general-purpose inverters.

## CUB applications include...



- ◀ Small Fans & Pumps
- Woodworking Machines ▶
- ◀ Small Conveyors



## VXR applications include...



- ◀ Fans
- Conveyors ▶
- ▼ Mixers



- ▲ Dosing Pumps
- Chairlifts ▶
- ▼ Palletisers



- Food Processing ▼
- ◀ Shrink Wrappers
- Small Industrial Refrigerators ▶



## VXG applications include...



- ◀ Fans
- Textile Machines ▶
- ▼ Extruders



- ▲ Hoists
- Washing Machines ▶
- ▼ Fillers / Cappers



- Compressors ▼
- ◀ Crushers
- Baggage Conveyors ▶



# IMO Jaguar: saving energy... and money!

As the awareness of Energy Saving has increased, IMO has used its 25 years of inverter technology experience to develop its “5 Stage Pentagon Plan” delivering an unrivalled solution to your energy saving needs.



What are the 5 stages of the IMO Pentagon Plan?



**1. Why should you care about energy saving and its affect on your business?**

Lowering energy usage is a global issue that has been proven to mitigate climate change and increased carbon emissions and lower your operating costs!



**2. How can the IMO Jaguar range of inverters help lower your energy costs?**

A single IMO Jaguar Inverter can deliver significant energy savings and cost reductions by controlling the speed of equipment that is traditionally “dampened” such as a fan or pump.



**3. What could your potential energy savings be and how can you afford them?**

Energy saving products can start providing payback as soon as they have been installed and these savings can be substantial. IMO offers a comprehensive JAGSAVER review of your application to evaluate these savings and works closely with you to identify the best financing solution, including the option of 0% financing from the Carbon Trust.



**4. Can IMO prove that this technology really delivers energy savings?**

Yes. IMO has many examples of customer applications that have generated savings, some as high as €1000 per day.



**5. What do you need to do next?**

Make a difference to your company by taking the action of reducing your energy consumption and lowering your daily energy bills. Contact IMO for a free JAGSAVER review.

The IMO Pentagon Plan is supported by IMO’s position as the only inverter manufacturer in the world to underwrite your energy savings for a minimum of 5 years.





Climate change can be defined as “A regional change in temperature and weather patterns.” Current scientific evidence indicates a noticeable link between climate change over the last century and the increased burning of fossil fuels.

### What is being done and is your business already being effected?

Climate change is recognised as a global problem and nations are working across the world to reduce their greenhouse gas emissions by 5.2% by 2012. The UK’s target is 34% (1990 emission levels) by 2020 and will increase to 42% if international agreement is secured.

The UK is affected by the Climate Change Levy which came into effect on 1st April 2001. This applies to energy used in the non-domestic sector (industry, commerce and the public sector).

### How can an inverter make a difference?

With unstable energy prices that have increased significantly in recent years due to supply worries, it makes sense for industry to focus on applications that are the largest users of electricity. Fans and Pumps make up a significant portion of electric motor applications in industry estimated to be in excess of 50%.

When specifying a new motor, it is common for engineers to specify one that is more than capable of doing the job in the worst circumstances.

A Centrifugal Fan or Pump is one example of where this theory is usually applied. On such variable torque applications, torque (current) varies with the square of the speed and power in proportion to the cube of the speed, often referred to as “Cube Law”. However, speed reduction is usually achieved by “damping”, akin to slowing a car by braking without releasing the accelerator.

By using an inverter to electronically reduce the speed of the fan or pump and applying Cube Law, the power actually reduces by the cube of the speed change. It follows that a 20% reduction in speed equates to a 50% reduction in power.



### What is a Jaguar Drive?

With energy saving payback points typically varying between 12 and 18 months, the IMO Jaguar’s unique FIVE year warranty makes it the only inverter in the world that actually underwrites your energy cost savings.

IMO define the Jaguar Inverter as a product with over 25 years continuous innovation putting you in total control of your motor performance, operation and output.

- IMO Jaguar Inverter sizes:
- Jaguar Cub 0.4kW to 4.0kW
  - Jaguar VXR 0.4kW to 15kW
  - Jaguar VXG 0.37kW to 710kW

Company: IMO Precision Controls		Application name: Jaguar VXM	
Fill in the 'green' boxes for the current or estimated flow rates to get a potential annual cost saving when using IMO Jaguar VSD. Savings are shown against six existing Flow Control options			
Days per week =	5	SELECT EXISTING FLOW CONTROL SYSTEM TO BE REPLACED (enter '1' in the box to indicate current control)	
Weeks per year =	52	Output Damper (or Valve)	34421 kWh/yr
Flow Rate	Hours per day	Flow Damper	29293 kWh/yr
20		Flow Guide Valve	13608 kWh/yr
25		Flow Throttle	3588 kWh/yr
30		Edly Current Coupling	18328 kWh/yr
35		Constant flow - no control	32370.6 kWh/yr
40			
45			
50			
55			
60			
65			
70			
75			
80	12		
85			
90			
95			
100			
Motor size (kW)	30	Cost of Inverter (£)	5000
Power Elec. Cost (£/kWh)	0.075	Cost of Installation (£)	500
		TOTAL RETROFIT COST	£ 2,450
		ENERGY SAVINGS per YEAR	£1,721
		SAVINGS per YEAR	£1,721
		PAYBACK PERIOD	1.4 Years

An IMO engineer is able to offer you our free energy review, using IMO’s JAGSAVER estimator application software. Once complete, your potential energy savings can be quickly identified.

### What savings can you make?

As an example we have taken a typical 75kW motor on a pumping application running 12 hours a day, 350 days per year with a utility rate of 7.5p per kWh.

$$100\% \text{ Speed} = 75\text{kW} \times (1.00) \text{ cubed} \times 12 \text{ hours} \times 350\text{days} \times \pounds 0.075 = \pounds 23,625$$

$$80\% \text{ Speed} = 75\text{kW} \times (0.8) \text{ cubed} \times 12 \text{ hours} \times 350\text{days} \times \pounds 0.075 = \pounds 12,096$$

**This provides the user with a saving of: = £11,529 or 51% and a payback period within 7 months using a Jaguar Inverter.**

### How can you afford it?

Energy savings offered by IMO Jaguar Inverters often means that capital investment is paid back within months. IMO will work with you and other departments within your business to access and complete the finance process.

Energy Efficiency Loans from the Carbon Trust are a cost effective way to replace or upgrade your existing equipment to more energy efficient standards. This delivers immediate benefits in carbon emission reduction and cost savings. If your spend is less than £500,000 on your energy, you could be eligible for an interest free loan from the Carbon Trust.

IMO can provide you with full details of Carbon Trust interest-free loans and assist you through the process of applying for a loan that can range from £3,000 to £400,000 with a repayment period of up to 4 years.

ECAs ( Enhanced Capital Allowances) further reduce the costs of installing qualifying plant equipment. You will find IMO Jaguar on the Qualifying Technologies List ETL at [www.eca.gov.uk](http://www.eca.gov.uk).

For companies that do not qualify, a range of other financial packages are available from IMO that will assist you with your cash flow and enhance your business competitiveness.

### Does the technology work?

One of many examples of IMO enabling manufacturers to fight back against the rapidly rising cost of energy was our work with an Italian manufacturer of paper bleaching agents. The company is now benefiting from savings of €1000 per day in production costs following the installation of 8 – 280kW IMO Jaguar Inverters to grinding mixers at its plant in North West Italy.



Each of the mixing vessels is equipped with a vertically mounted 250kW/400v/4-pole motor, which drives the grinding paddles through reduction gearboxes. These motors are controlled by IMO Jaguar energy-saving inverters.

Working closely with IMO, a local system builder installed the 8- IMO Jaguar VXM280K Inverters.

The result is the original mixers operate at a reduced inverter/motor frequency of approximately 42Hz. This cut in running speed and motor current maintains production quality and provides savings in the order of €1000 per day in production costs.

### Now what do you need to do?

Call us now to discuss your energy projects and thoughts. We are ready and waiting to work with you directly to address these issues and to help reduce your costs.

# IMO Jaguar VXG high performance drives

3Ø: 0.37-710kW (0.5-950HP)



## Key Features

- User configurable 'quick-start' menu
- IP20 side-by-side mounting (IP40 option kit)
- Integrated EMC filter (EN61800-3 2004 cat C3)
- PLC logic type function
- RoHS, CE, UL/cUL compliant
- V/F, Torque Vector and closed loop control
- Loss-of-command signal detection
- 200% starting torque between 0.3-5Hz.
- Improved open-loop low-speed stability
- Safety input: digital input to enable/disable the IGBT devices of the inverter output stage
- Mechanical brake control output - torque generated
- PID thermistor input
- Input and Output phase-loss protection
- Life time / service due alarm output
- Thermostatically operated long-life cooling fans (designed to operate for 10 years at 40°C)
- Optional Keypad with mini USB port.
- Standard multi-function back-lit keypad with parameter copy mode
- Encoder feedback (closed-loop) and shaft-synchronizing options
- Synchronous (Permanent Magnet) motor options
- Internal brake chopper up to 22kW (30-110kW upon request)

**The Jaguar VXG is the next generation of inverter technology, taking over from the market leading VXM. It has been designed specifically to be a high performance, multifunctional inverter, that can answer the needs of today's most demanding applications.**

The VXG represents a sensorless vector controlled drive and includes true closed-loop vector control when used with encoder feedback. With ratings ranging from 0.4kW to 710kW, this makes the VXG a high performance AC Drive boasting advanced EMC friendly technology suitable for the most demanding applications.

These applications range from presses, hoists, mixers and crushers to fans and pumps. Unlike other inverters currently on the market, the Jaguar series generates low electro-magnetic noise, which is associated with interference of other sensitive equipment. It has been carefully designed using soft switching techniques for both the power devices and the switch mode power supply devices, resulting in potentially troublesome emissions being greatly reduced.

The VXG features improved performance by providing a selection of control methods including: PG vector control, sensorless vector control, dynamic torque vector control and V/F control as well as improved performance of current response and speed response (vector control).



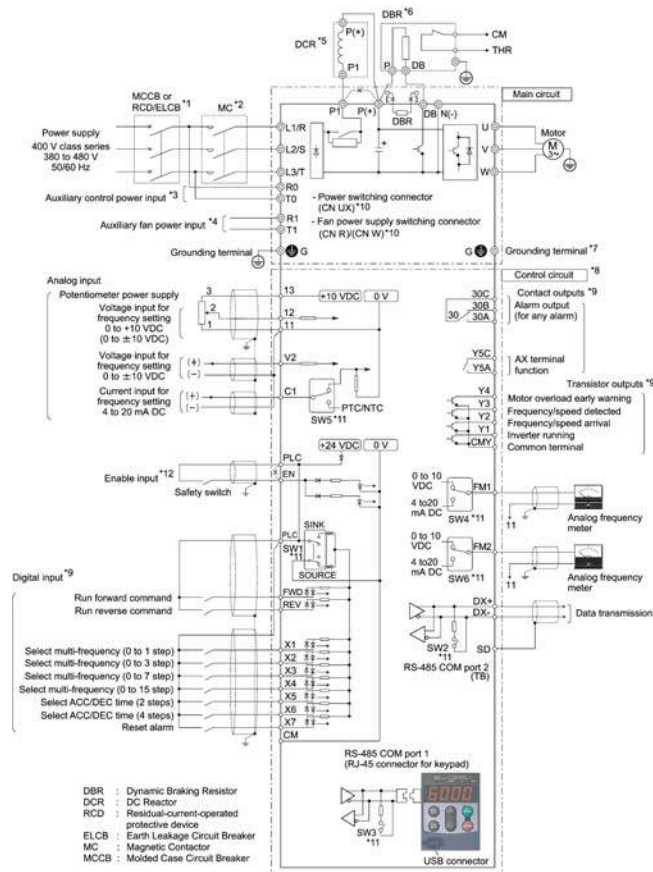


# Options & Ordering



3 Phase								
Output Frequency	0.5 - 500Hz							
Overload Capacity	150% for 60 secs - 200% for 3 secs							
Power Supply Voltage	3 phase, 380-480V, -15% / +10%							
Starting Torque	200% / 0.3Hz							
PWM Switching Frequency	0.75kHz - 16kHz							
Enclosure	IP20							
Communications	RS485 / Modbus RTU (Standard), Profibus, DeviceNet, CC-Link, CANopen (Option Cards)							
Dynamic Braking	Inbuilt upto 22kW							
EMC	Cat 3		Integrated					
Motor Power (kW/HP)	C.T Rating	V.T. Rating	Dim	C.T. Rating	V.T. Rating	Dim	Dim	
0.4/0.5			VXG1A5-4E	1A	55/75	75/100	VXG150AL-4E	7E
0.75/1			VXG2A5-4E	1B	75/100	90/125	VXG176AL-4E	8E
1.5/2.2			VXG3A7-4E	2B	90/125	110/150	VXG210AL-4E	9F
2.2/3			VXG5.5A-4E	2B	110/150	132/200	VXG253AL-4E	9F
4/5			VXG9A-4E	2B	132/200	160/250	VXG304AL-4E	10G
5.5/7.5	7.5/10		VXG16A5L-4E	3C	160/250	200/300	VXG377AL-4E	10G
7.5/10	11/15		VXG23AL-4E	3C	200/300	220/350	VXG415AL-4E	11G
11/15	15/20		VXG30A5L-4E	3C	220/350	280/450	VXG520AL-4E	11G
15/20	18.5/25		VXG37AL-4E	4C	280/450	315/500	VXG650L-4E	12H
18.5/25	22/30		VXG45AL-4E	4C	315/500	355/470	VXG740AL-4E	12H
22/30	30/40		VXG60AL-4E	4C	355/470	400/600	VXG840AL-4E	13H
30/40	37/50		VXG75AL-4E	5D	400/600	500/700	VXG960AL-4E	13H
37/50	45/60		VXG91AL-4E	5D	500/700	630/900	VXG1170AL-4E	14I
45/60	55/75		VXG112AL-4E	6E	630/900	710/950	VXG1370AL-4E	14I

## Power & Control connections



## Dimensions

H	W	Depth	a	b	c	d	e	f	g	h	i
260	110	1	132	145							
260	150	2		145							
260	220	3			195						
400	250	4			195						
550	326	5				225					
615	361	6					270				
675	361	7					270				
740	361	8					270				
740	536	9						315			
1000	536	10							360		
1000	680	11							360		
1400	680	12								440	
1400	880	13								440	
1550	1550	14									500

## Accessories



Braking Unit →



← Additional VXG Keypad

Turn to accessories page for the complete range.