



## MGV Series

High-Speed Motors for Test Rigs



ENGINEERING YOUR SUCCESS.



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# 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.

#### Electromechanical Worldwide Manufacturing Locations

##### Europe

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

##### Asia

Wuxi, China  
Jangan, Korea  
Chennai, India

##### North America

Rohnert Park, California  
Irwin, Pennsylvania  
Charlotte, North Carolina  
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Offenburg, Germany

#### 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](http://www.parker.com)



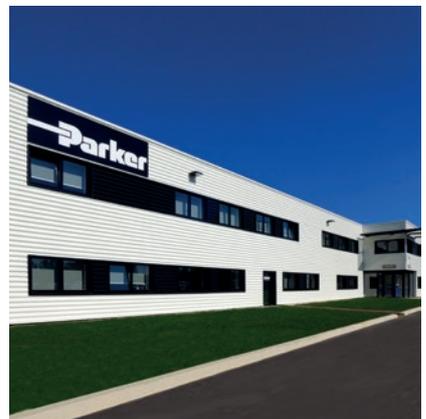
Milan, Italy



Littlehampton, UK



Filderstadt, Germany



Dijon, France

# High-Speed Motors for Test Rigs - MGV

## Overview

### Description

The MGV motors are brushless synchronous servomotors with permanent magnets specially designed for applications that require high speeds and low inertias.

For qualification process MGV motors can be used in many automotive or aeronautical component test rigs (diesel engine, starters, pumps, alternators, gearboxes...).

Highly responsive with exceptional dynamic performance, MGV motors are ideally suited to the needs of simulation testing: speed in urban cycle or motor racing, speed acyclism of an internal combustion engine, etc...



### Advantages

- High maximum speeds avoid the need for mechanical gearing
- Low inertia allows very fast acceleration/deceleration
- Constant power operation (field weakening mode) above nominal speed removes the requirement to oversize the drive
- Water cooling ensures compact size and low noise operation
- High dynamic capabilities allow the operating conditions of the tested product to be accurately reproduced
- Compactness

### Features

- Feet mounting (B3) or feet and flange (B34)
- Mechanical interface
  - Solid smooth shaft
  - Flange with pilot
  - Feet with thread holes for easy lifting in the operation of alignment
- 2 pole resolver feedback sensor
- Steel or ceramic bearings depending on speed
- Thermal protection by 1 PTC probe and 1 KTY84-130 sensor
- 2 thread holes (on the front and the rear) for bearing temperature measurement
- 2 thread holes (on the front and the rear) for vibration measurement
- Terminal box for power connection and connector for feedback sensor

### Technical Characteristics - Overview

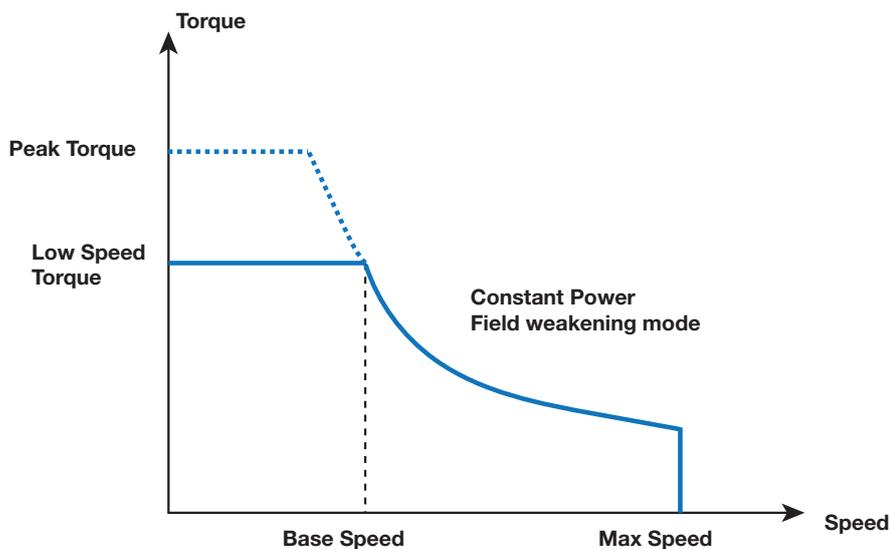
<b>Power</b>	Up to 500 kW
<b>Speed</b>	Up to 45 000 min <sup>-1</sup>
<b>Continuous torque</b>	Up to 1 500 Nm
<b>Peak torque</b>	Up to 2 700 Nm
<b>Inertia</b>	From 8.9 up to 10 400 kg.cm <sup>2</sup>
<b>Protection degree</b>	IP40
<b>Operating temperature</b>	0 °C to 40 °C
<b>Cooling method</b>	Water cooled
<b>Supply voltage</b>	400 VAC
<b>Stator winding isolation</b>	Class F in accordance with EN60034-1
<b>Rotor balancing</b>	G1 class
<b>Painting</b>	Black RAL9005

**Note:** the motors are designed for horizontal operation. In case of vertical installation, please contact us.

### Applications

- Engine testing
  - Lorries
  - Cars
  - Motorbikes
- Components testing
  - Gearboxes
  - Differentials
  - Bearings
  - Belts
  - Starters
  - Alternators
  - Pumps

## Technical Data



Motor	S1 Power Ps1	Max. Speed with steel bearings	Max. Speed with ceramic bearings	Max. Speed with X-life bearings	Max. Frequency	Low speed torque Mo	Low speed Current Io	Peak Torque M peak	Peak Current I peak	Base Speed Nb	Moment of Inertia J	Polarity
	[kW]	[min <sup>-1</sup> ]	[min <sup>-1</sup> ]	[min <sup>-1</sup> ]	[Hz]	[Nm]	[Arms]	[Nm]	[Arms]	[min <sup>-1</sup> ]	[kgm <sup>2</sup> ]	-
MGV430BAI	15.7	26 000	33 000	45 000	1500	6.8	35	11	78.1	22000	0.00089	4
MGV635CAD	25	18 500	25 000	30 000	1500	20	49,4	30	74.3	11900	0.00352	6
MGV840CAD	63	14 300	18 000	24 000	1200	58	123	100	227	10400	0.0186	6
MGV860CBD	94	14 300	18 000	24 000	1200	120	136	170	202	7500	0.0264	6
MGV950CAX	175	11 700	16 000	20 000	1000	200	454	300	821	8350	0.063	6
MGV966DAX	250	-	-	8 000	533	520	505	900	982	4600	0.076	8
MGVA50DAX	260	9 200	12 000	-	800	440	558	600	798	5600	0.292	8
MGVA50DBY	290	9 200	12 000	-	800	570	560	800	870	4820	0.292	8
MGVB40HAA	350	5 000	8 000	-	1067	1000	722	1800	1410	3350	0.84	16
MGVB50HBS	500	5 000	8 000	-	1067	1500	1010	2700	1900	3200	1.04	16

# Complete Solution

## Drive Engineered Solutions

### Description

The single AC890PX-M with modular architecture covers a power range from 110 to 400kW according to the power supply voltage and frequency 380 to 690V / 45-65Hz (refer to 890PX-M manual). For higher power we offer a System Solution using 890PX-M in multi-stack configuration.

In addition, MGV motors benefit from the use of field-weakening which enable them to deliver high torque at low speed as well as constant power from nominal up to maximum speed. This removes the need to oversize the drive.

By partnering with Parker to undertake the design, build, programming and commissioning of your motor control system, you can be assured that every aspect of the design, from environmental considerations through component selection to mounting of products has been carefully considered and allowed for.



### Benefits

- Ultra-compact drive
- Low-maintenance ensures maximum machine availability and productivity
- Total flexibility for easy integration
- 4Q version available with THDI < 10%
- Active Front-End (AFE) version - energy regeneration with low harmonic distortion < 3%

Motor	AC890 drive	S1 power	Max. Speed with Steel bearings	Max. Speed with Ceramic bearings	Max. Speed with X-life bearings	Low speed Torque	Peak Torque
		PS1	Nmax	Nmax	Nmax	Mo	Mpeak
		[kW]	[min <sup>-1</sup> ]	[min <sup>-1</sup> ]	[min <sup>-1</sup> ]	[Nm]	[Nm]
MGV430BAI	890SD-522450D	15.7	26 000	30 000	-	6.8	7.2
MGV635CAD	890SD-432730E	25	18 500	20 000	-	20	29.5
MGV840CAD	890SD-433105F	63	14 300	18 000	20 000	58	59.5
MGV860CBD	890PXSA-43215M	94	11 600	-	-	120	161
MGV860CBD	890PXSA-43215M*	94	14 300	18 000	20 000	120	161
MGV950CAX	890PXSA-43480M	170	11 700	16 000	20 000	193	193
MGV966DAX	890PXSA-43580M	250	-	-	8 000	520	535
MGVA50DAX	890PXSA-43580M	240	9 200	11 800	-	412	412
MGVA50DBY	890PXSA-43580M	270	9 200	-	-	535	535
MGVB40HAA	2 x 890PXSA-43420M	350	5 000	7 000	-	1000	1080
MGVB50HBS	3 x 890PXSA-43580M	500	5 000	6 200	-	1500	2000

\* used with additional Over Voltage Protection Module to limit the DC-link voltage at the inverter when a fault occurs by short-circuiting the motor terminals.

# Complete Solution

## Water Chiller for Precision Cooling

### Description

Extremely compact and easy to use, Hyperchill Plus is designed for safe and reliable operation in the most varied working conditions, providing a precise and accurate control of the process fluid temperature. The availability of a wide range of accessories and options makes Hyperchill Plus a very flexible solution that fits the needs of all industrial applications.

Cooling Capacity: 1.7 to 23.6 kW

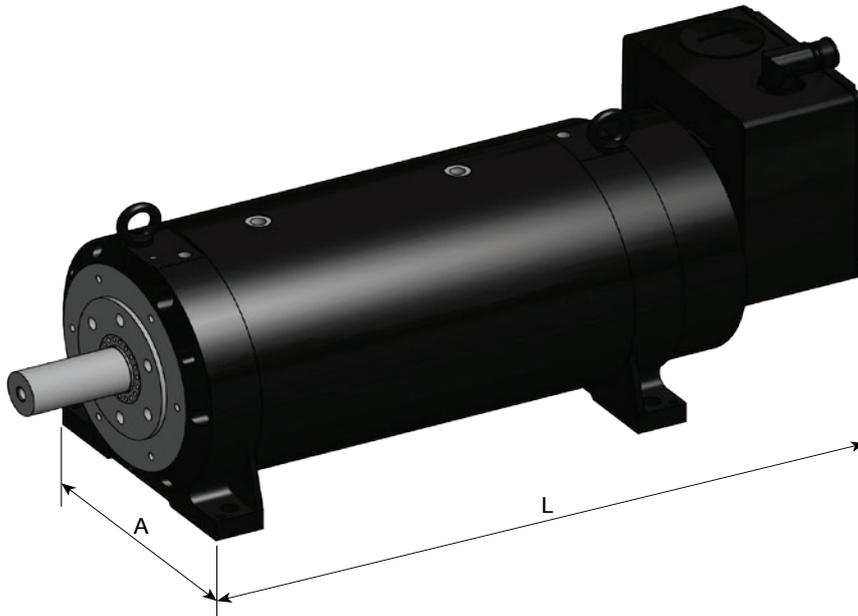


### Benefits

- A complete integrated solution from a single supplier
- Because of its compact design the Hyperchill Plus provides a space saving and easy to install solution
- The non-ferrous hydraulic circuit maintains the quality of the coolant ensuring stable working conditions and decreasing maintenance costs.
- One Hyperchill Plus is able to cool several MGV motors

Motor	Water flow necessary for cooling (with water + 30% glycol)	Maxi drop pressure @ nominal water flow in the motor	Motor power losses at max speed and continuous operation	Hyperchill Plus with single pump 5 bar : P5 option (mandatory)
	[l/min]	[bars]	[kW]	-
MGV430BAI	3.3	3 maxi	1.6	ICEP003-WASP5T0xxxxxx1
MGV635CAD	5.6		2.5	ICEP003-WASP5T0xxxxxx1
MGV840CAD	11		4.3	ICEP005-WATP5T0xxxxxx1
MGV860CBD	17		6.8	ICEP007-WATP5T0xxxxxx1
MGV950CAX	18		7	ICEP010-WATP5T0xxxxxx1
MGV966DAX	28		11.7	ICEP014-WATP5T0xxxxxx1
MGVA50DAX	28		12	ICEP014-WATP5T0xxxxxx1
MGVA50DBY	28		12	ICEP014-WATP5T0xxxxxx1
MGVB40HAA	40		14	ICEP020-WATP5T0xxxxxx1
MGVB50HBS	50		20	ICEP024-WATP5T0xxxxxx1

## Dimensions



Motor	Dimensions [mm]				Weight [kg]
	A	L	Shaft Height	Shaft diameter x length	
MGV430	150	407	80	24 x 50	35
MGV635	160	469	90	32 x 58	55
MGV840	220	572	112	38 x 80	115
MGV860	220	647	112	38 x 80	135
MGV950	290	788	160	48 x 110	270
MGV966	290	881	160	48 x 110	300
MGVA50	312	895	160	65 x 140	395
MGVB40	410	910	200	75 x 140	650
MGVB50	410	1050	200	75 x 140	740

## Order Code

### MGV Series

	1	2	3	4	5	6	7	8	9
Order example	<b>MGV</b>	<b>840</b>	<b>CAD</b>	<b>A</b>	<b>B3</b>	<b>L</b>	<b>R</b>	<b>6</b>	<b>000</b>

<b>1</b>	<b>Product series</b>	
	<b>MGV</b>	Water cooling high speed motors
<b>2</b>	<b>Motor Size</b>	
	<b>430</b>	In relation with the diameter and length of the motor.
	<b>635</b>	of the motor.
	<b>840</b>	see "Technical Data"
	...	
<b>3</b>	<b>Torque/Speed characteristics</b>	
	<b>BAI</b>	see "Technical Data"
	<b>CAF</b>	
	...	
<b>4</b>	<b>Feedback sensor</b>	
	<b>A</b>	Resolver
<b>5</b>	<b>Mounting</b>	
	<b>B3</b>	Horizontal, Foot mounting (standard)
<b>6</b>	<b>Design</b>	
	<b>L</b>	High speed design (steel balls)
	<b>H</b>	Very high speed design (ceramic balls)
	<b>X</b>	Ultra high speed design (X-Life bearing)
<b>7</b>	<b>Fix Code</b>	
	<b>R</b>	
<b>8</b>	<b>Electrical connection</b>	
	<b>6</b>	Terminal box (standard)
<b>9</b>	<b>Mechanical option</b>	
	<b>000</b>	Standard motor



# Parker's Motion & Control Technologies

At Parker, we're guided by a relentless drive to help our customers become more productive and achieve higher levels of profitability by engineering the best systems for their requirements. It means looking at customer applications from many angles to find new ways to create value. Whatever the motion and control technology need, Parker has the experience, breadth of product and global reach to consistently deliver. No company knows more about motion and control technology than Parker. For further info call 00800 27 27 5374



## Aerospace Key Markets

Aftermarket services  
Commercial transports  
Engines  
General & business aviation  
Helicopters  
Launch vehicles  
Military aircraft  
Missiles  
Power generation  
Regional transports  
Unmanned aerial vehicles

## Key Products

Control systems & actuation products  
Engine systems & components  
Fluid conveyance systems & components  
Fluid metering, delivery & atomization devices  
Fuel systems & components  
Fuel tank inerting systems  
Hydraulic systems & components  
Thermal management  
Wheels & brakes



## Climate Control Key Markets

Agriculture  
Air conditioning  
Construction Machinery  
Food & beverage  
Industrial machinery  
Life sciences  
Oil & gas  
Precision cooling  
Process  
Refrigeration  
Transportation

## Key Products

Accumulators  
Advanced actuators  
CO<sub>2</sub> controls  
Electronic controllers  
Filter driers  
Hand shut-off valves  
Heat exchangers  
Hose & fittings  
Pressure regulating valves  
Refrigerant distributors  
Safety relief valves  
Smart pumps  
Solenoid valves  
Thermostatic expansion valves



## Electromechanical Key Markets

Aerospace  
Factory automation  
Life science & medical  
Machine tools  
Packaging machinery  
Paper machinery  
Plastics machinery & converting  
Primary metals  
Semiconductor & electronics  
Textile  
Wire & cable

## Key Products

AC/DC drives & systems  
Electric actuators, gantry robots & slides  
Electrohydraulic actuation systems  
Electromechanical actuation systems  
Human machine interface  
Linear motors  
Stepper motors, servo motors, drives & controls  
Structural extrusions



## Filtration Key Markets

Aerospace  
Food & beverage  
Industrial plant & equipment  
Life sciences  
Marine  
Mobile equipment  
Oil & gas  
Power generation & renewable energy  
Process  
Transportation  
Water Purification

## Key Products

Analytical gas generators  
Compressed air filters & dryers  
Engine air, coolant, fuel & oil filtration systems  
Fluid condition monitoring systems  
Hydraulic & lubrication filters  
Hydrogen, nitrogen & zero air generators  
Instrumentation filters  
Membrane & fiber filters  
Microfiltration  
Sterile air filtration  
Water desalination & purification filters & systems



## Fluid & Gas Handling

### Key Markets

Aerial lift  
Agriculture  
Bulk chemical handling  
Construction machinery  
Food & beverage  
Fuel & gas delivery  
Industrial machinery  
Life sciences  
Marine  
Mining  
Mobile  
Oil & gas  
Renewable energy  
Transportation

### Key Products

Check valves  
Connectors for low pressure fluid conveyance  
Deep sea umbilicals  
Diagnostic equipment  
Hose couplings  
Industrial hose  
Mooring systems & power cables  
PTFE hose & tubing  
Quick couplings  
Rubber & thermoplastic hose  
Tube fittings & adapters  
Tubing & plastic fittings



## Hydraulics

### Key Markets

Aerial lift  
Agriculture  
Alternative energy  
Construction machinery  
Forestry  
Industrial machinery  
Machine tools  
Marine  
Material handling  
Mining  
Oil & gas  
Power generation  
Refuse vehicles  
Renewable energy  
Truck hydraulics  
Turf equipment

### Key Products

Accumulators  
Cartridge valves  
Electrohydraulic actuators  
Human machine interfaces  
Hybrid drives  
Hydraulic cylinders  
Hydraulic motors & pumps  
Hydraulic systems  
Hydraulic valves & controls  
Hydrostatic steering  
Integrated hydraulic circuits  
Power take-offs  
Power units  
Rotary actuators  
Sensors



## Pneumatics

### Key Markets

Aerospace  
Conveyor & material handling  
Factory automation  
Life science & medical  
Machine tools  
Packaging machinery  
Transportation & automotive

### Key Products

Air preparation  
Brass fittings & valves  
Manifolds  
Pneumatic accessories  
Pneumatic actuators & grippers  
Pneumatic valves & controls  
Quick disconnects  
Rotary actuators  
Rubber & thermoplastic hose & couplings  
Structural extrusions  
Thermoplastic tubing & fittings  
Vacuum generators, cups & sensors



## Process Control

### Key Markets

Alternative fuels  
Biopharmaceuticals  
Chemical & refining  
Food & beverage  
Marine & shipbuilding  
Medical & dental  
Microelectronics  
Nuclear Power  
Offshore oil exploration  
Oil & gas  
Pharmaceuticals  
Power generation  
Pulp & paper  
Steel  
Water/wastewater

### Key Products

Analytical Instruments  
Analytical sample conditioning products & systems  
Chemical injection fittings & valves  
Fluoropolymer chemical delivery fittings, valves & pumps  
High purity gas delivery fittings, valves, regulators & digital flow controllers  
Industrial mass flow meters/ controllers  
Permanent no-weld tube fittings  
Precision industrial regulators & flow controllers  
Process control double block & bleeds  
Process control fittings, valves, regulators & manifold valves



## Sealing & Shielding

### Key Markets

Aerospace  
Chemical processing  
Consumer  
Fluid power  
General industrial  
Information technology  
Life sciences  
Microelectronics  
Military  
Oil & gas  
Power generation  
Renewable energy  
Telecommunications  
Transportation

### Key Products

Dynamic seals  
Elastomeric o-rings  
Electro-medical instrument design & assembly  
EMI shielding  
Extruded & precision-cut, fabricated elastomeric seals  
High temperature metal seals  
Homogeneous & inserted elastomeric shapes  
Medical device fabrication & assembly  
Metal & plastic retained composite seals  
Shielded optical windows  
Silicone tubing & extrusions  
Thermal management  
Vibration dampening

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### US Product Information Centre

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