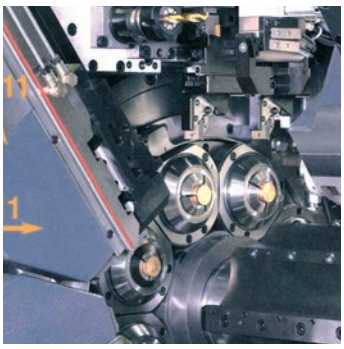
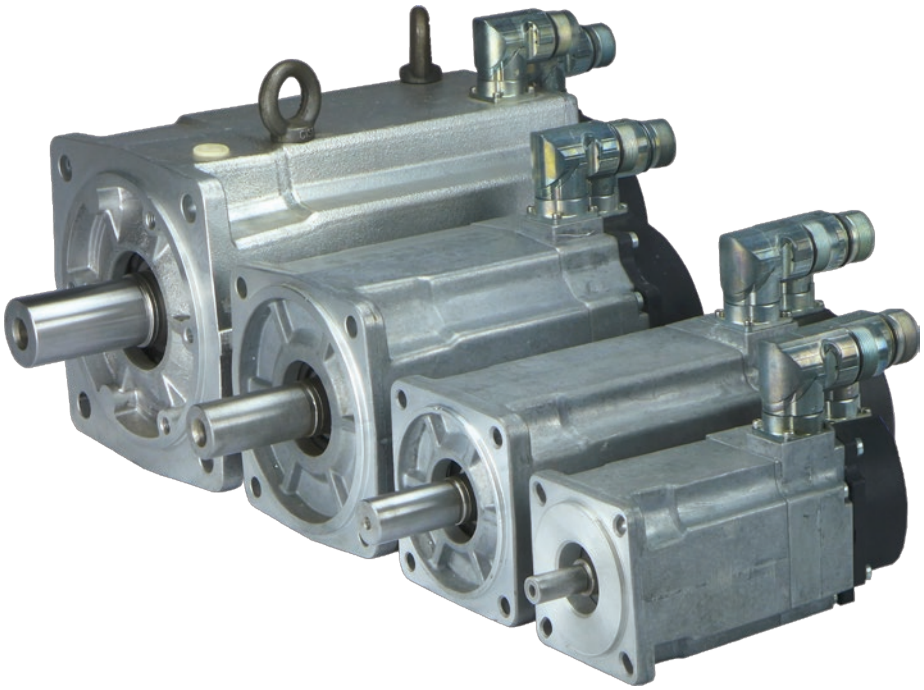
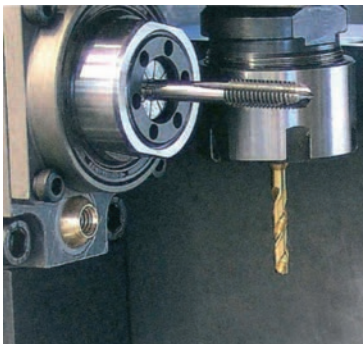


- aerospace
- climate control
- electromechanical
- filtration
- fluid & gas handling
- hydraulics
- pneumatics
- process control
- sealing & shielding



NV Series

High Speed Servo Motor



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- This document and other information from Parker-Hannifin Corporation, its subsidiaries and authorized distributors provide product or system options for further investigation by users having technical expertise.
- The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from Parker or its subsidiaries or authorized distributors.
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High Speed Servo Motor - NV Series

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
New Ulm, Minnesota

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

Milan, Italy

Littlehampton, UK

Filderstadt, Germany

Dijon, France

High Speed Servo Motor - NV Series

Overview

Description

The NV series is a range of compact servomotors specially designed for high speed operation.
NV motors are balanced with high accuracy to minimize the level of vibration and to increase their service life, making them particularly suitable for auxiliary spindle applications on machine tools. NV motors feature high dynamic performance and torque densities, while taking advantage of a large variety of options and customization possibilities.
Available in kit version on request

Advantages

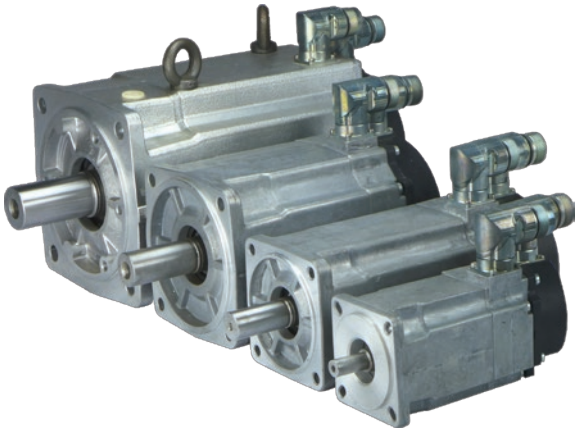
- **High-Speed capabilities, precise and accurate positioning, high dynamic performance**
- **Compact and robust**
- **Design flexibility**

Application

- Special Machines
- Tooling Machines
- Test Benches
- Sprayers
- Centrifuges

Features

- Mounting
  - Flange with clearance holes
- Mechanical interface
  - Solid smooth shaft
- Feedback sensor
  - 2 pole resolver (standard)
  - Absolute encoders: Hiperface (option)
  - Without sensor (option)
- Connections
  - Connectors (standard)
  - Cables (option)
  - Terminal box (fan cooled motors)
- Options
  - Thermal protection (PTC, KTY)



Technical Characteristics - Overview

Motor type	Synchronous permanent magnet servomotors
Poles number	10
Voltage supply	230 VAC or 400 VAC
Power range	0.7...11 kW
Torque range	0.4...11.5 Nm
Speed range	7000...17 000 min^{-1}
Ingress protection level (IEC60034-5)	• IP64 (standard) • IP65 (option) • IP67 (on request)
Cooling method	• Natural ventilation (standard) • Fan cooling (NV860V) • Water cooled up to 60 kW (on request)
Temperature class (IEC60034-1)	Class F

Technical Data

Model	Size	Stall [1]		Nominal [1]				Peak [1] Torque	Inertia No brake	Ke [2] [3]	Kt [2] [3]
		Torque	Current	Power	Torque	Speed	Current				
		T_0 [Nm]	I_0 [A]	P_n [kW]	T_n [Nm]	n [min^{-1}]	I_n [A]	T_{max} [Nm]	J [$kgmm^2$]	Ke [Vs]	Kt [Nm/A_{rms}]
230VAC power supply - single or three-phased											
NV310EAW	71	0.9	5.13	0.73	0.41	17 000	2.78	1.8	73.4	11.1	0.175
400 VAC power supply - three-phased											
NV420EAI	91.5	1.9	5.25	1.4	0.95	14 000	2.78	2.87	290	22.1	0.362
NV430EAH	91.5	2.5	5.63	1.5	1.3	11 000	3.48	3.78	426	28	0.444
NV620EAJ	121	3.5	9.86	1.8	1.6	11 000	5.02	5.42	900	23.8	0.355
NV630EAI	121	5.5	11.1	2.0	1.9	10 000	4.34	8.51	1300	31.7	0.497
NV820EAN	155	7.6	14.7	3.1	3.3	9 000	7.73	11.5	3100	34.5	0.517
NV840EAJ	155	13.5	19.4	5.5	6.6	8 000	10.5	20.4	5700	43.8	0.697
NV860EAE	155	18.5	28.3	7.3	9.9	7 000	16.3	27.9	8400	41.3	0.653
400 VAC power supply - three-phased - fan cooled											
NV860VAC	155	30	57	11	11.5	9 000	23.7	37	8400	33	0.526

[1] Data referred to motor mounted on aluminium flange: 400 x 400 x 12 mm, Temperature <40 °C near motor's flange. Stall torques refer to motor turning at 100 min^{-1}
[2] Data measured at 20 °C. When "hot" consider -0.09 %/K derating
[3] Manufacturing tolerance data ±10 %

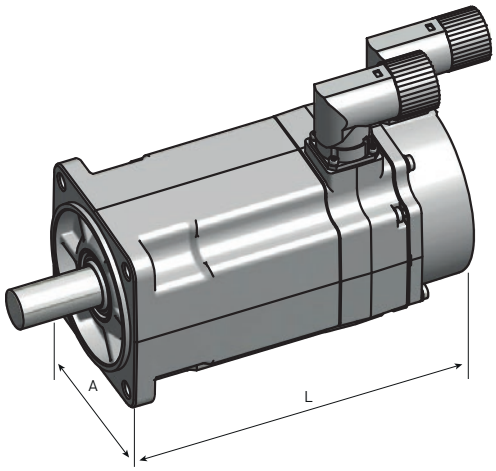
Drive Association

Motor	Associated Drive Sizes			
	PSD1	Compax3	AC890	AC30
230VAC power supply - single or three-phased				
NV310EAW	PSD1SW1300…[1]	C3S063V2… [2]	890SD-231700B0-B00-1A500 [2]	-
400 VAC power supply - three-phased				
NV420EAI	PSD1MW1400… [1]	C3S075V4… [2]	890SD-532100B0-B00-1A500 [2]	31V-4D0008
NV430EAH	PSD1MW1400… [1]	C3S075V4…	890SD-532100B0-B00-1A500	31V-4D0008
NV620EAJ	PSD1MW1600… [1]	C3S150V4…	890SD-532160B0-B00-1A500	31V-4D0012
NV630EAI	PSD1MW1600… [1]	C3S150V4…	890SD-532160B0-B00-1A500	31V-4E0016
NV820EAN	PSD1MW1600… [1]	C3S150V4…	890SD-53216SB0-B00-1A500	31V-4E0023
NV840EAJ	PSD1MW1800… [1]	C3S300V4…	890SD-532240C0-B00-1A500	31V-4F0032
NV860EAE	PSD1MW1800…	C3S300V4…	890SD-532240C0-B00-1A500	31V-4G0045
400 VAC power supply - three-phased - fan cooled				
NV860VAC	-	C3H090V4…	890SD-532590D0-B00-1A500	31V-4H0105

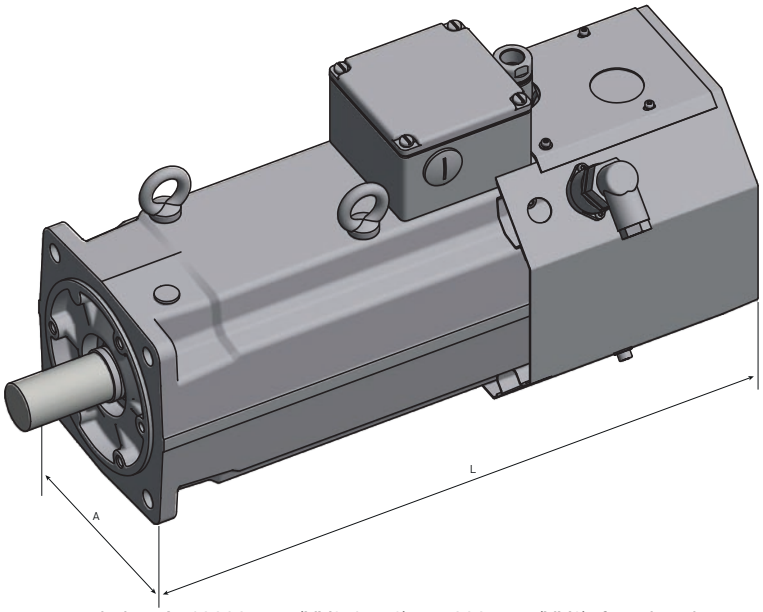
[1] max. speed: 7 200 min^{-1}
[2] max. speed: 12 000 min^{-1}

Dimensions (resolver version)

Motor	A	Mounting Flange centering / interaxis hole	Shaft diameter x length	L	Weight	Fr* [N]	Fa* [N]
	[mm]	[mm]	[mm]	[mm]	[kg]		
NV310	71	60 / 75-80	11 x 23	147	2	170	70
NV420	91.5	80 / 100	19 x 40	175	3.7	380	30
NV430	91.5	80 / 100	19 x 40	200	4.6	395	35
NV620	121	110 / 130	24 x 50	181	6.9	380	180
NV630	121	110 / 130	24 x 50	210	8.8	400	190
NV820	155	130 / 165	32 x 58	200	13	950	50
NV840	155	130 / 165	32 x 58	260	20	1050	80
NV860	155	130 / 165	32 x 58	320	27	1100	100



Motor	A	Mounting Flange centering / interaxis hole	Shaft diameter x length	L	Weight	Fr* [N]	Fa* [N]
	[mm]	[mm]	[mm]	[mm]	[kg]		
NV860V	185	130 / 165	32 x 58	424	30.5	1100	100



* Fr and Fa not cumulative: At 10000 rpm (NV3,4 et 6) or 5000 rpm (NV8), for a bearing servicing life of 20 000h.
At maximum speed, no axial load should be applied on motor's shaft, under penalty of shortening the servicing life.

Options

Feedback Sensors

2 poles resolver - option A

- Accuracy: ±10' max
- Transformation ratio: 0.5 ±5 %
- Max. operating speed: 17 000 min^{-1}
- Working temperature range: -55...+155 °C

Single turn / Multiturn absolute encoder HIPERFACE SKS/SKM 36 - option R/S

- Number of sine/cosine periods per revolution: 128
- Absolute position per revolution: 4096 (12 bits)
- Number of absolutely encodable revolutions: 4096 (SKM36)
- Max. operating speed SKS36: 12 000 min^{-1}
- Max. operating speed SKM36: 9000 min^{-1}
- Working temperature range: -20...+110 °C

Single turn / Multiturn absolute encoder HIPERFACE DSL SIL2 EKS/EKM36 - option P/Q

- Absolute position per revolution: 262 144 (18 bits)
- Number of absolutely encodable revolutions: 4096 (EKM36)
- Max. operating speed EKS36: 12 000 min^{-1}
- Max. operating speed EKM36: 9 000 min^{-1}
- Working temperature range: -20...+115 °C

Order Code

NV Series

	1	2	3	4	5	6	7
Order example	**NV310E**	**A**	**R**	**7**	**0**	**0**	**0**

1	**Motor type**	
	NV310E **NV420E** **NV430E** **...** **NV860V**	see table "Technical Data"
2	**Feedback sensor**	
	A	2 pole resolver (standard) Max. speed 17 000 min^{-1}
	R	HIPERFACE encoder 128 ppr SKS36 Max. speed 12 000 min^{-1}
	S	Absolute multi-turn HIPERFACE encoder 128 ppr SKM36 Max. speed 9000 min^{-1}
	P	Absolute single-turn HIPERFACE DSL SIL2 encoder EKS36 Max. speed 12 000 min^{-1}
	Q	Absolute multi-turn HIPERFACE DSL SIL2 encoder EKM36 Max. speed 9 000 min^{-1}
3	**Painting**	
	R	Unpainted (standard)
	B	Black mat (on request)
4	**Connections / Ventilation**	
	1	Shielded cables / No
	7	Connectors (standard) / No
	9	Terminal boxes / Yes
5	**Thermal protection**	
	0	Without protection (standard)
	1	PTC on power connector
	A	PTC on sensor connector
	C	KTY on sensor connector
6	**Protection degree**	
	0	IP64 (standard)
	1	IP65
7	**Fix code**	
	0	

Cables

Motor cable

Drive	Cable reference [1]	
	Current ≤ 15 A	Current ≤ 21 A
With or without brake		
Compax3	CC3UP1F1R0xxx	CC3UP2F1R0xxx
AC890	CS4UP1F1R0xxx	CS4UP2F1R0xxx
With or without brake & thermal sensor		
Compax3	CC3UQ1F1R0xxx	CC3UQ2F1R0xxx
AC890	CS4UQ1F1R0xxx	CS4UQ2F1R0xxx
With or without brake & Hiperface DSL encoder		
PSD1	CP1UD1F1R0xxx	CP1UD2F1R0xxx

Feedback cable

Drive	Cable reference [1]	
	Resolver	Hiperface encoder
Compax3	CC3UA1F1R0xxx	CC3UR1F1R0xxx
AC890	CS4UA1F1R0xxx	-

(*) The 3 last digits indicate cable length in meters ±5 %max
For non-standard length cable with length different from: 1/2/3/4/5/10/15/20/25/30/40/50 m please contact us.
Example CC3UP1F1R0015: power cable, length = 15 m.

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_2 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
Electrohydrostatic 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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