



**MOTION CONTROL**

**SERVO MOTOR SOLUTIONS FOR**

# **AUTONOMOUS GUIDED VEHICLES**



## **COMPLETE SOLUTIONS**

Our Motion Control group excels at designing AGV motors and drive systems that offer innovative technology along with long-lasting quality. We have designed customized AGV solutions for some of the biggest names in distribution. You can depend on our products to provide the energy efficiency and longevity you require.

060 / 089 / 142 Frames  
FOR PAYLOADS UP TO 2000KG

**Nidec**  
—All for dreams

## GROWING DEMANDS

Across all industries, e-commerce and the medical sector, a huge rise in demand for automation, logistics and material handling is being seen.

With requirements such as space, improved efficiency & performance, rapid response and a reduction in waste, companies are turning to automation and investing in mobile robots to achieve these goals.

## SPACE IS AT A PREMIUM

Space-saving designs within the mobile robot will translate into reduced weight for the overall unit, which in turn, reduces the time required between charging.

**Our AGV kit solutions are perfect for designs with space constraints. The highly efficient and reliable in-wheel gearbox design gives a very compact combination with minimal weight.**

**Each kit will come with 2 motors, fitted with integrated gearboxes and mounted with industry-standard AGV wheels, along with the control drive and cables to give you everything needed to make a mobile robot. This ensures less time for you in sourcing multiple components and giving a more rapid development of individual solutions.**

## FULL CONTROL

Compared to traditional 1 motor and 1 drive offerings, our AGV kit solutions offer simpler integration, maintenance, smooth and precise motion control and lower costs by using a single drive to operate 2 motors at the same time.

Ideal for applications such as:-

- AGV's & AMR's
- Small Electric Vehicles
- Terrestrial and Underwater Robotic Vehicles
- Hazardous Material Handling Robots
- Balancing Robots

## QUICK REFERENCE TABLE

	AGV 060		AGV 089		AGV 142	
Speed (m/s)	2.8		2.8		2.0	
Acceleration (m/s <sup>2</sup> ) <sup>1</sup>	2		1.5		0.5	
Max Payload (kg) <sup>2</sup>	500		1000		2000	
Max Gearbox Torque (Nm) <sup>3</sup>	70		70		180	
Voltages	24	48	24	48	24	48
Recommended Drive	SBL2360		FBL2360		GBL2660	
Wheel Size (mm)	156.4		156.4		202.8	

<sup>1</sup> Calculated using two drive wheels per AGV solution.

<sup>2</sup> Based on 0.25m/s<sup>2</sup> acceleration.

<sup>3</sup> Max torque for 20,000 hours of operation.

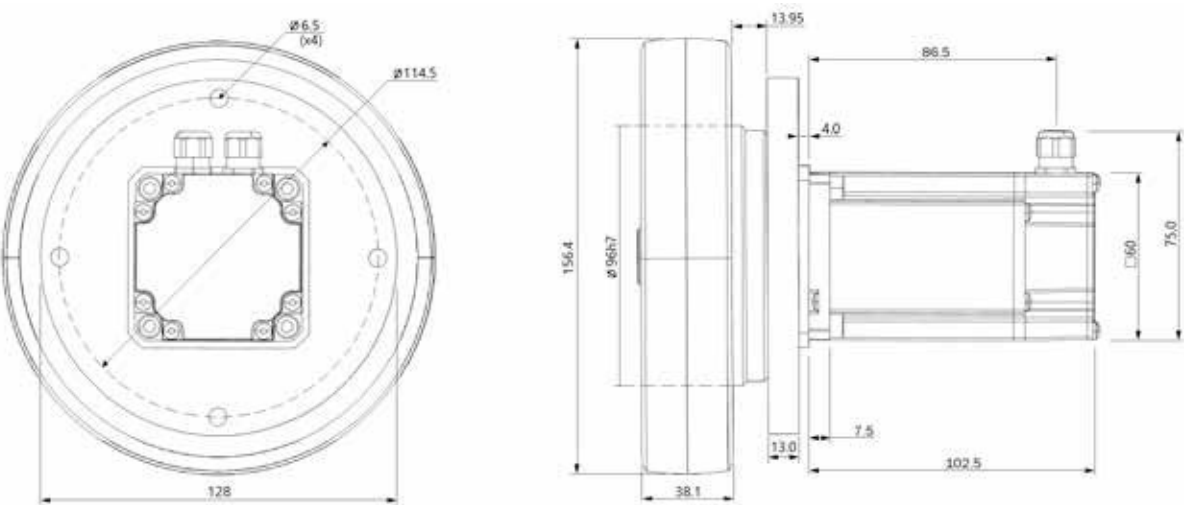


500KG PAYLOAD SOLUTION

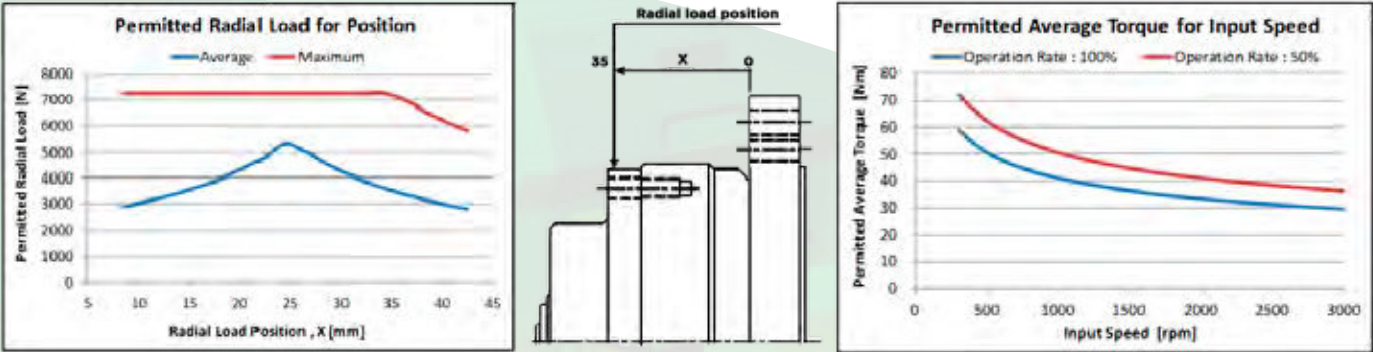
AGV 060



MOTOR INC. WHEEL DIMENSIONS



RADIAL LOAD GRAPHS



These charts refer to both the AGV 060 and the AGV 089 solution.

ORDERING INFORMATION

Solution Order Code	Voltage	Speeds	Brake	Drive Type	IP Rating
AGV060LB300	48V	2.4 m/s	NO	CANbus	54
AGV060AB150	24V	1.2 m/s	NO	CANbus	54

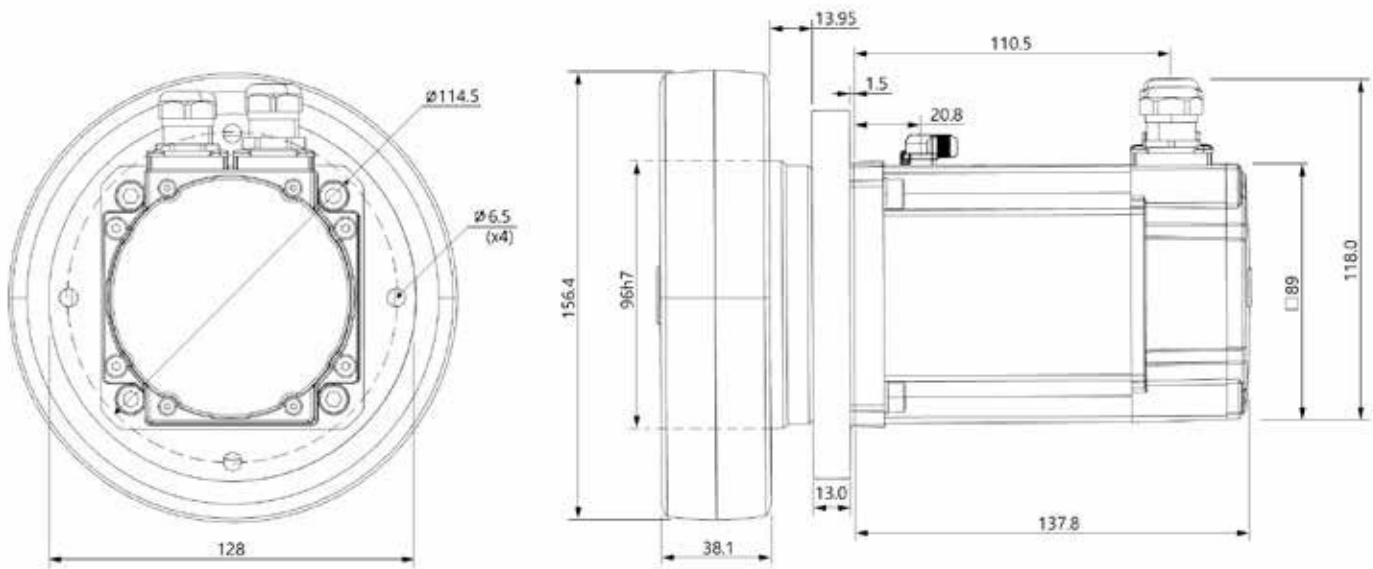
For braked solutions, please [contact us](#).

1000KG PAYLOAD SOLUTION

AGV 089



MOTOR INC. WHEEL DIMENSIONS



RADIAL LOAD GRAPHS

Please refer to charts on page 4.

ORDERING INFORMATION

Solution Order Code	Voltage	Speeds	Brake	Drive Type <sup>1</sup>	IP Rating
AGV089LA300	48V	2.4 m/s	NO	CANbus	54
AGV089LA30X	48V	2.4 m/s	YES	CANbus	54
AGV089LA150	48V	1.2 m/s	NO	CANbus	54
AGV089LA15X	48V	1.2 m/s	YES	CANbus	54
AGV089AA150	24V	1.2 m/s	NO	CANbus	54
AGV089AA15X	24V	1.2 m/s	YES	CANbus	54

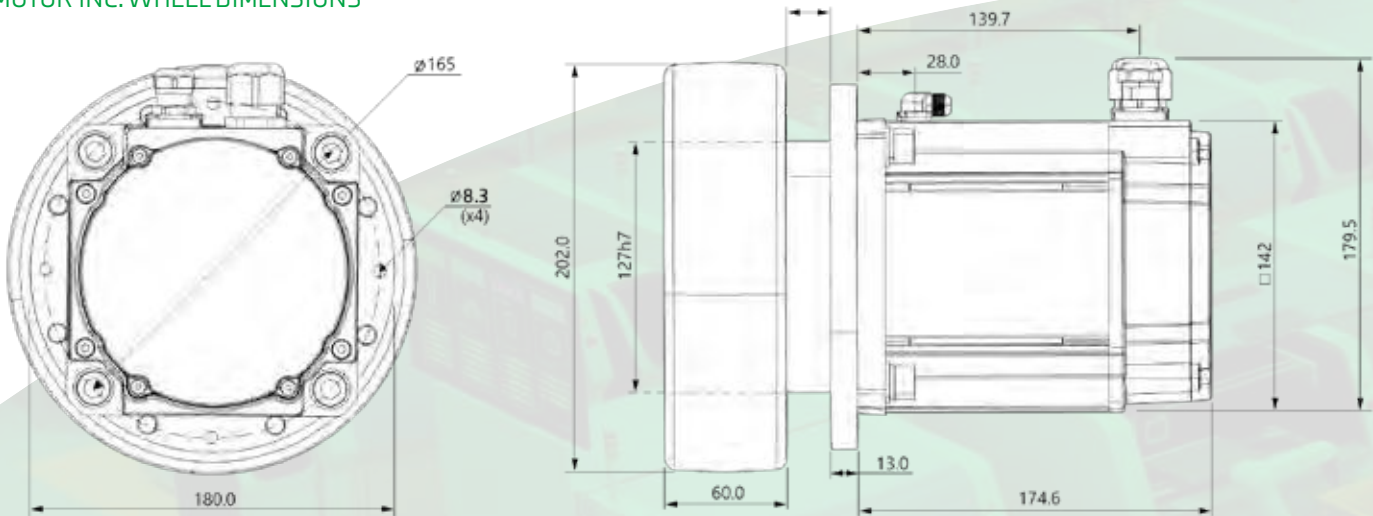
<sup>1</sup> If you require an Ethernet drive type then add an 'E' to the end of the order code. e.g. AGV089LA300E

2000KG PAYLOAD SOLUTION

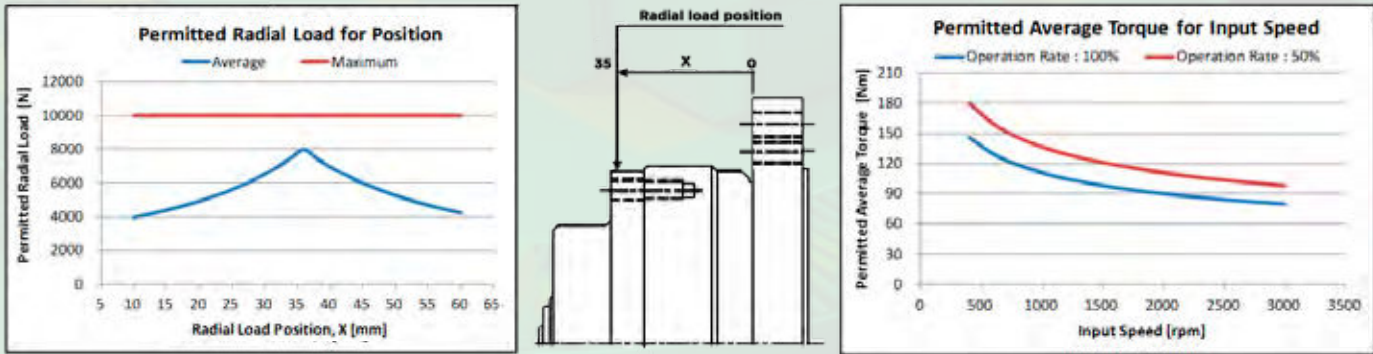
AGV 142



MOTOR INC. WHEEL DIMENSIONS



RADIAL LOAD GRAPHS



ORDERING INFORMATION

Solution Order Code	Voltage	Speeds	Brake	Drive Type <sup>1</sup>	IP Rating
AGV142LA200	48V	2.4 m/s	NO	CANbus	54
AGV142LA20X	48V	2.4 m/s	YES	CANbus	54

<sup>1</sup> If you require an Ethernet drive type then add an 'E' to the end of the order code. e.g. AGV142LA200E

MECHANICAL SPECIFICATIONS

DUAL DRIVE CHARACTERISTICS

Our Medium Power Dual Channel, Motor Controllers, have advanced core technology, multiple connectivity options and scripting support. Up to 2 x 180A. Conduction cooling plate with ABS plastic cover. Supports trapezoidal commutation and sinusoidal mode with field oriented control.

Drive Type	CH	Amps /CH	Volts	STO	Ethernet
SBL2360T	2	30	60	YES	NO
FBL2360T	2	60	60	YES	NO
FBL2360TE	2	60	60	YES	YES
GBL2660	2	180	60	NO	NO
GBL2660E	2	180	60	NO	YES <sup>1</sup>

<sup>1</sup> STO available, pending certification.

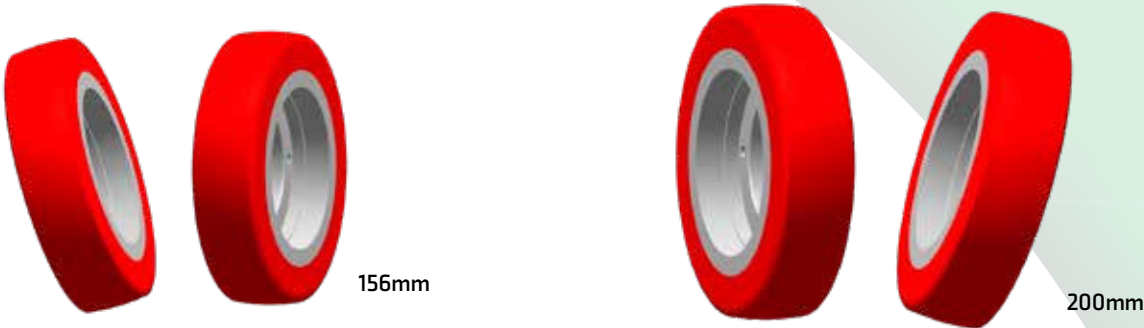


BRAKE CHARACTERISTICS - SPRING APPLIED

Frame Size	Supply Voltage (V)	Power (W)	Torque (Nm)	Release Time (ms)	Maximum Backlash (°)
AGV 089	24	15	4	30	3
AGV 142	24	17.5	16	64	0.38

AGV WHEEL CHARACTERISTICS

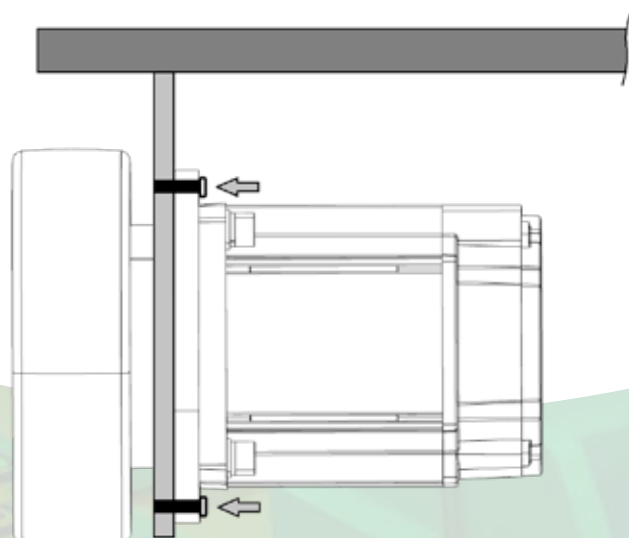
Material: AL Alloy  
Type: Rubber 75+5 Shore A (Thermoset Castable Polyester Based MDI Polyurethane).  
Finish: Red, adhesion to meet ASTM D-3359 3B.





## MECHANICAL SPECIFICATIONS

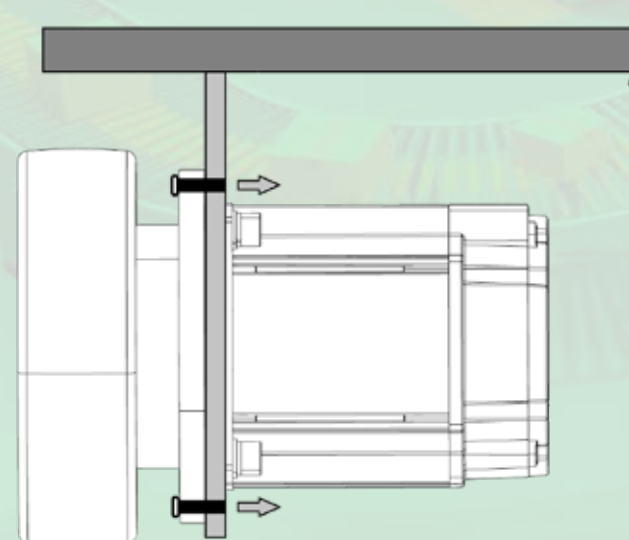
### AGV SOLUTIONS MOUNTING OPTIONS



INTERNAL MOUNT



Mounted from inside the AGV, the bolts go through the motor mounting plate from the rear and attach to the inside of the AGV body. Take care in leaving enough clearance between the AGV motor wheel and the AGV body.



EXTERNAL MOUNT



Mounted from outside the AGV, the bolts go through the motor mounting plate from the front and attach to the outside of the AGV body. This does not affect the clearance between the AGV motor wheel and the AGV body.

AGV SOLUTION MOUNTING	
MOTOR FRAME	MOUNTING PLATE THROUGH HOLE
AGV 060	Ø6.5
AGV 089	Ø6.5
AGV 142	Ø8.3

AGV WHEEL MOUNTING		
MOTOR FRAME	MOUNTING BOLT	TORQUE (Nm)
AGV 060	M5 x 25	5.7
AGV 089	M5 X 25	5.7
AGV 142	M8 X 25	23.0

## ELECTRICAL SPECIFICATIONS

### MOTOR CONNECTIONS

#### SIGNAL

Pin	Colour	Function	Pin	Colour	Function
1	RED	POWER	7	YELLOW	CH A
2	GREEN	HALL A	8	-	-
3	BROWN	HALL B	9	BLUE	CH B
4	WHITE	HALL C	10	-	-
5	BLACK	GROUND	11	-	-
6	-	-	12	-	-



Signal connection: 500mm flying lead, M16 gland.

AWG PVC wire, insulated in ULAWM 2725 PCV jacket, screened, 12-Way Molex connector 43025-1200.

#### POWER

Pin	Colour	Function
1	ORANGE	U
2	RED	V
3	YELLOW	W
4	GREEN/YELLOW	EARTH

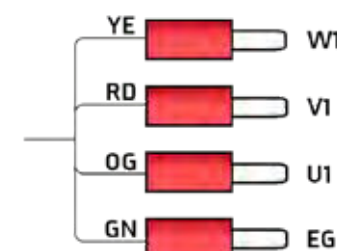
Motor Frame	Connection	
	Gland Size*	Output Type
AGV 060	M10	Ferrules
AGV 089	M16-M20	Spade
AGV 142	PG21	Ring

\* Dependant on winding speed & voltage.

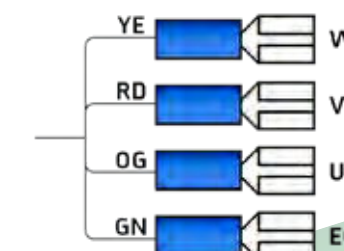
Power connection: 500mm flying lead.

AWG UL1330 wire, with polyolefin heat-shrink sleeve, with Ferrules, Spade connectors or M6 Ring terminals (as per images below), fitted to lead wires.

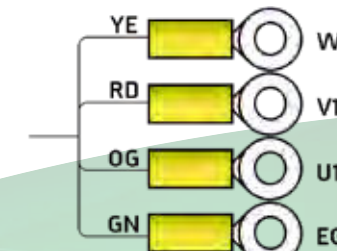
#### SBLxxxx



#### FBLxxxx

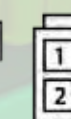
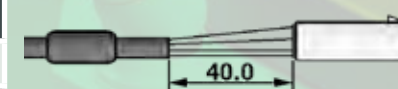


#### GBLxxx



#### BRAKE

Pin	Colour	Function
1	WHITE	+VE
2	BLACK	-VE



Brake connection: 500mm flying lead.

AWG PCV wire, insulated, 2-Way Molex connector 39-01-3029.

# ELECTRICAL SPECIFICATIONS

## MOTOR FEEDBACK SPECIFICATION

AGV 060



Incremental Encoder - 1024ppr, MPS Sensor Chip, Push-Pull Comms.

AGV 089 / AGV 142

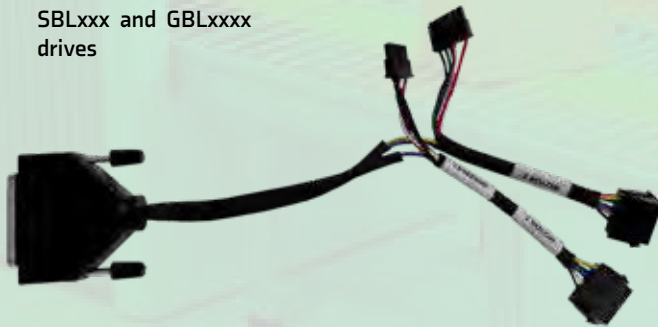


R35i (CJ) Incremental Encoder - 4096ppr, 5PP, Single Ended Push-Pull Comms.

\*SiL2 safety option available on request.

## DRIVE CONTROL SPLITTER CABLES

SBLxxx and GBLxxxx drives



FBLxxx drives



Splitter cables are 285mm in length.

For detailed datasheets, configuration files and more information on all of the solutions, please [contact us](#).



All for dreams

#1 for advanced motor and drive technology

Nidec Corporation is a global manufacturer of electric motors and drives. Founded in 1973, Nidec has worldwide operations and a workforce of more than 110,000 who develop, manufacture and install motors, drives and control systems in industrial plants, automobiles, home appliances, office equipment and information technology.



**110,000**  
EMPLOYEES  
WORLDWIDE



**\$13.7B**  
GROUP  
TURNOVER



**70+**  
COUNTRIES



**230+**  
COMPANIES

# **Nidec**

## **MOTION CONTROL**

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