

Compact, flexible and powerful.

The wheel hub gear for Automated Guided Vehicles (AGVs).



Compact, flexible and powerful - product features at a glance

Standard equipment

Compact design

thanks to integration of planetary gearbox in impeller

High radial loads

thanks to direct transfer of force to vehicle frame

Long lifetime and low noise level

thanks to separation of torque and radial load

Proven technology

thanks to established and consistent design

Short delivery times and high efficiency

thanks to platform setup (NG250 | NG500 | NG750)

Maintenance-friendly design

e.g., thanks to easily exchangeable wheels



Optional equipment

Completely customized drive systems

incl. motor, brake, encoder and controller

Individual motor adaptation

through specially adapted stub shaft and motor bolt circle

Protection against intake of debris

e.g. thanks to brush seal

Adaptation of the polyurethane impeller

- Individual materials
- Further wheel sizes
- Special wheels and profiles (pneumatic tire, outdoor profile, etc.)

Compliance with international standards

Protection class IP67, UL-certification, ATEX-certification



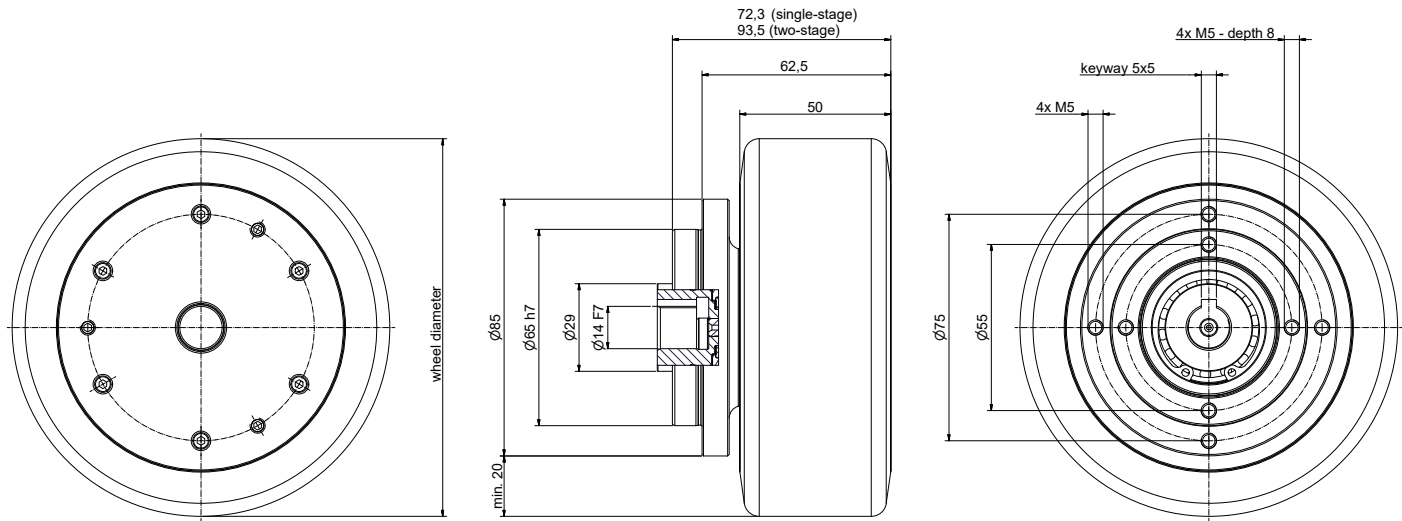
Providing Industry Expertise & Creativity.

For decades, Framo Morat has specialized in gear components and intelligent drive systems for intralogistics and with a wide product range, supplies the five market segments of automated guided vehicles, warehouse systems, industrial trucks and continuous conveyors, as well as cranes and lifting gear (classifications of the German VDMA industry association).

To mention just a few of them: **platform hub gears** or **fully integrated wheel hub drives** for automated guided vehicles, **rotor shafts** for electric motors of industrial trucks, **Compacta series gear motors** for gate drives in automated high-bay warehouses or customer-specific drive systems for electric high-lift trucks based on our proprietary **speeroX** gears.



Hub gearbox NG250 - Technical data



Hub gearbox NG250 • Power table

Typ	Wheel-Ø ^{*1} [mm]	Wheel width [mm]	Protection class	Max. wheel load ^{*2} [kg]
NG250	125	50	IP54	250

Differing values must be considered and evaluated separately

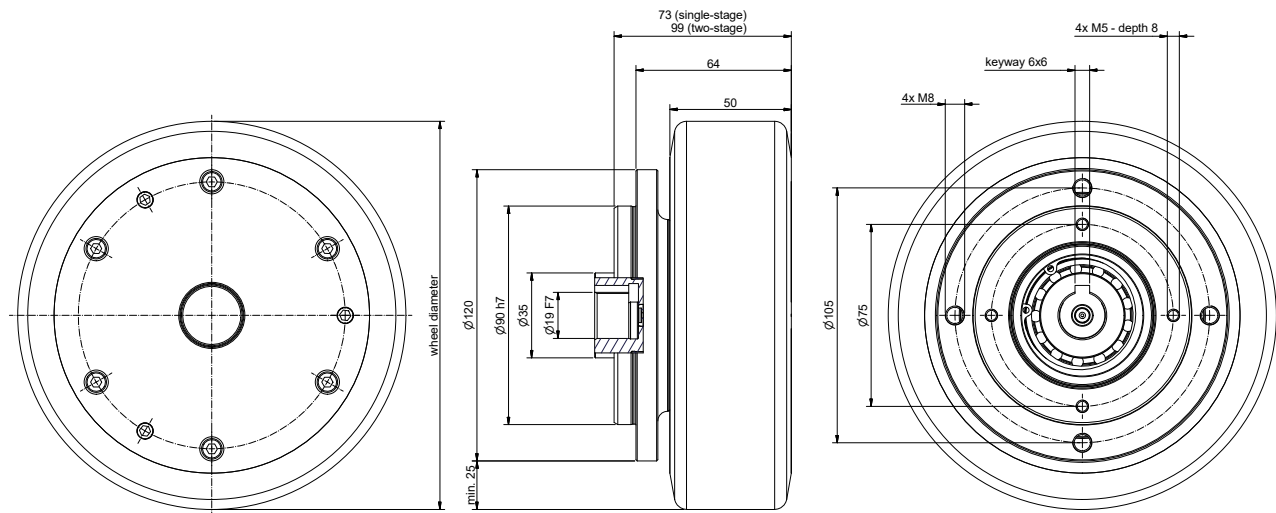
^{*1} Further wheel sizes > 125 mm available on request
^{*2} Load specifications of the wheel manufacturers may differ

Ratio	Stage	Nominal torque ^{*1} output [Nm]	Max. Acceleration torque ^{*2} T _{2B} [Nm]	Emergency stop torque ^{*3} T _{2NOT} [Nm]	Efficiency [%]	Nominal speed ^{*1} output [rpm] - [km/h]	Nominal torque ^{*1} input [Ncm]	Nominal speed ^{*1} input [rpm]	No-load torque [Nm]	Weigth [kg]	Noise level ^{*4} [db(A)]
4	1	11	22	33	90	250, 5,9	299	1000	<0,45	3,8	<60
5		9	18	27	90	200, 4,7	196				
8		9	18	27	90	125, 2,9	122				
16	2	11	22	33	85	187,5, 4,4	81	3000	<0,15	4,5	<55
20		11	22	33	85	150, 3,5	65				
32		11	22	33	85	93,8, 2,2	40				

Differing values must be considered and evaluated separately

^{*1} Nominal values refer to 30,000 hours of service life under constant-load conditions
^{*2} Max. 1000 cycles per hour. Acceleration torque proportion <5% of the total operating time
^{*3} Max. 1000 cycles over the gear service life
^{*4} Volume levels were evaluated at a distance of 1 meter on the test bench
^{*5} Compatible motor flanges are available upon request

Hub gearbox NG500 - Technical data



Hub gearbox NG500 • Power table

Typ	Wheel-Ø ^{*1} [mm]	Wheel width [mm]	Protection class	Max. wheel load ^{*2} [kg]
NG500	160	50	IP54	500

Differing values must be considered and evaluated separately

^{*1} Further wheel sizes > 150 mm available on request

^{*2} Load specifications of the wheel manufacturers may differ

Ratio	Stage	Nominal torque ^{*1} output [Nm]	Max. Acceleration torque ^{*2} T _{2B} [Nm]	Emergency stop torque ^{*3} T _{2NOT} [Nm]	Efficiency [%]	Nominal speed ^{*1} output [rpm] - [km/h]		Nominal torque ^{*1} input [Ncm]	Nominal speed ^{*1} input [rpm]	No-load torque [Nm]	Weigth [kg]	Noise level ^{*4} [db(A)]
4	1	21	42	63	90	250	7,5	571	1000	<0,45	5,9	<60
5		16	32	48	90	200	6,0	348				
8		18	36	54	90	125	3,8	245				
16	2	21	42	63	85	187,5	5,7	154	3000	<0,15	6,9	<55
20		21	42	63	85	150	4,5	124				
32		21	42	63	85	93,8	2,8	77				

Differing values must be considered and evaluated separately

^{*1} Nominal values refer to 30,000 hours of service life under constant-load conditions

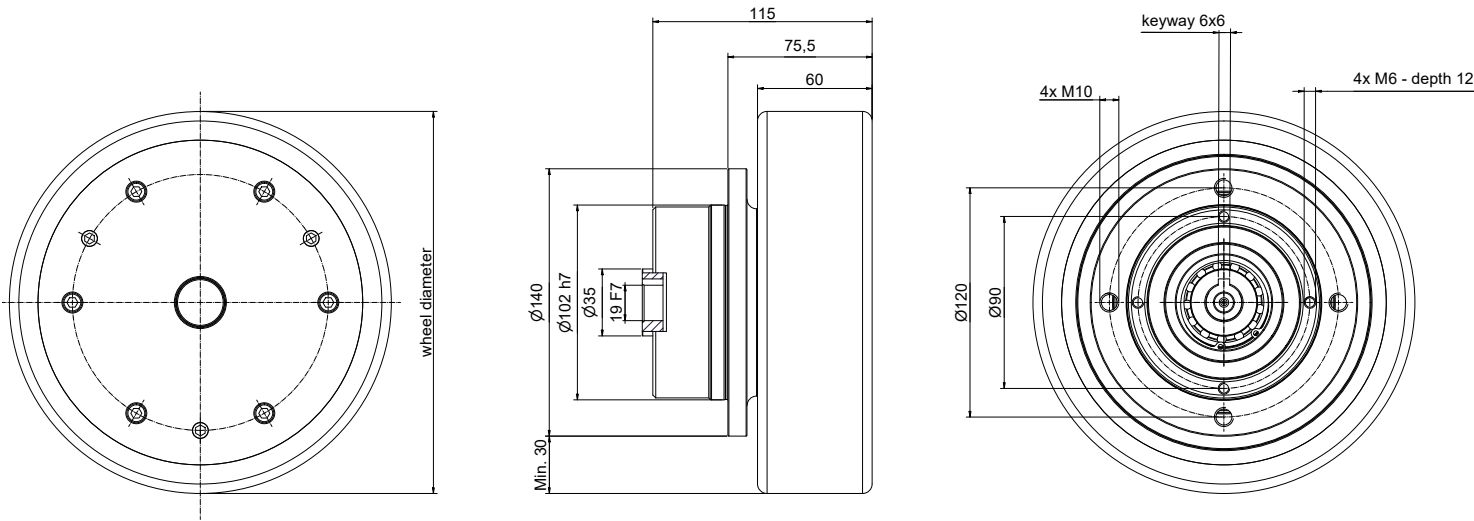
^{*2} Max. 1000 cycles per hour. Acceleration torque proportion <5% of the total operating time

^{*5} Compatible motor flanges are available upon request

^{*3} Max. 1000 cycles over the gear service life

^{*4} Volume levels were evaluated at a distance of 1 meter on the test bench

Hub gearbox NG750 - Technical data



Hub gearbox NG750 • Power table

Typ	Wheel-Ø ^{*1} [mm]	Wheel width [mm]	Protection class	Max. wheel load ^{*2} [kg]
NG750	200	60	IP54	750

Differing values must be considered and evaluated separately

^{*1} Further wheel sizes > 200 mm available on request
^{*2} Load specifications of the wheel manufacturers may differ

Ratio	Stage	Nominal torque ^{*1} output [Nm]	Max. Acceleration torque ^{*2} T ₂₈ [Nm]	Emergency stop torque ^{*3} T _{2NOT} [Nm]	Efficiency [%]	Nominal speed ^{*1} output [rpm] - [km/h]		Nominal torque ^{*1} input [Ncm]	Nominal speed ^{*1} input [rpm]	No-load torque [Nm]	Weigth [kg]	Noise level ^{*4} [db(A)]
8	1	41	82	123	90	125	4,7	5,69	1000	0,55	11	60
16	2	48	96	144	85	187,5	7,1	3,53	3000	0,25	12,5	55
32		48	96	144	85	93,8	3,5	1,76				

Differing values must be considered and evaluated separately

^{*1} Nominal values refer to 30,000 hours of service life under constant-load conditions
^{*2} Max. 1000 cycles per hour. Acceleration torque proportion <5% of the total operating time
^{*3} Max. 1000 cycles over the gear service life
^{*4} Volume levels were evaluated at a distance of 1 meter on the test bench

Wheel hub gears - standard sizes and custom versions

Hub gearbox NG250

- Max. load capacity 250 kg
- Standard wheel size 125 mm
- Total gear length 62,5 mm



Hub gearbox NG500

- Max. load capacity 500 kg
- Standard wheel size 160 mm
- Total gear length 64 mm



NEW: Hub gearbox NG750

- Max. load capacity 750 kg
- Standard wheel size 200 mm
- Total gear length 75,5 mm



Custom engineered solutions

- Individual radial load
- Application-specific interfaces (motor and impeller)



What can we do for you?

We are glad to be personally there for you and look forward to common challenges and projects.



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With unattended operation around the clock, automated guided vehicles (AGVs) in warehouses, parcel distribution centers, and production halls ensure maximum profitability and reliability. Hub gears from Framo Morat prove their value as wheel drives for AGVs due to their compact design, the optimized arrangement of both the bearings and the drive and output shafts—ideal for confined spaces.

NEW: In addition to the NG250 and NG500, the NG750 expands the platform with a radial load capacity of up to 750 kg. Designed for AGVs and AMRs, this solution offers versatile gear ratios, easy wheel replacement, and a service life of up to 30,000 hours. Customer-specific adaptations, such as brush seals or timing belts, are available.

You benefit from:

- More than 110 years of expertise in designing and developing custom drive components & complete systems
- Project specific choice of materials (metals, thermoplastics or combinations of both) according to your requirements regarding quality, weight, smooth operation or lifetime
- All process steps from a single source

Wheel hub gears from Framo Morat - the driving force of intralogistics



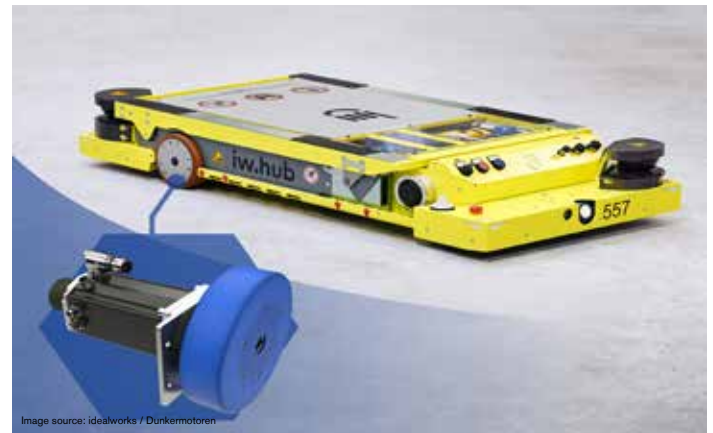
The RNA250 wheel hub drives provide powerful and reliable propulsion for the fully autonomous Adlatus CR700 cleaning robot. With a compact design, a two-stage gearbox, and a load capacity of up to 250 kg per wheel, they are designed for continuous operation in demanding environments.



With its innovative dual-runner system, Filica is setting new standards in pallet transport. Framo Morat's ultra-compact drive units deliver exceptional efficiency, handling loads of up to 800 kg at speeds of 1.2 m/s. The system's omnidirectional control and unique pass-through function enable seamless maneuverability, optimizing warehouse automation and ensuring a smooth, efficient material flow.



The KNAPP Open Shuttle relies on Framo Morat's NG500 hub gear and the BG 75 BLDC motor from Dunkermotoren. With a 160 mm wheel diameter, high load capacity, and optimized gear kinematics, the drive unit ensures powerful acceleration, precise maneuvering, and a reliable material flow.



The iw.hub from idealworks, developed in collaboration with Dunkermotoren, leverages Framo Morat's high-performance hub gears for maximum efficiency. With a load capacity of 1,000 kg and a speed of 2.2 m/s, this autonomous underslung AMR ensures precise and reliable material flow. Its compact design and exceptional maneuverability make the iw.hub the ideal solution for in-house transport of pallets and mesh boxes.



Combining Local Expertise & Global Presence.

Since our founding in 1912, we have been developing and manufacturing innovative drive solutions from both metals and plastics, leveraging our expertise across various market segments. Today, the Franz Morat Group is a globally operating manufacturer of high-quality gear and drive solutions for a wide range of industries and applications. The corporate group, with approximately 700 employees, includes subsidiaries in the USA, Turkey, Poland, and Mexico.



Two Specialists, One Strong Group

The Franz Morat Group consists of two companies: Framo Morat is the expert in industrial applications, while F. Morat specializes in the automotive industry. What unites them is their extensive development expertise, high level of vertical integration, and unique ability to design and manufacture components from both plastic and metal in perfect synergy.

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