Large Hoisting for cranes

A wide range of products & solutions to guarantee crane productivity

LEROY-SOMER™

Nidec
All for dreams

70 years of expertise in Crane & Hoist Solutions

Nidec Leroy-Somer, operates globally providing unparalleled motor, brake, gear and drive technologies, local technical expertise, engineering & manufacturing resources, and round-the-clock customer care in a wide range of industries including large crane hoist solutions.

Whether industrial, tower or port cranes, permanently located or mobile, they have specific challenges relating to their environment, application and the load they hoist. To address these challenges, we offer compact and flexible solutions with the power and control required to lift and lower materials and goods efficiently and safely.

70 years of experience

and numerous references such as a *famous bridge in France, the highest tower in Dubai or Hydroelectric centrals in China* allow us to be a one stop source to meet all your expectations.

industrial footprint

Our motor and drive systems maximize the automation, speed and reliability of your cranes and material handling equipment. They are also provided with 2 years of warranty and all the required worldwide certifications. In addition, our global footprint provides you peace of mind local customer service.

We know your challenges

What is hoisting?

Handling equipment is key at all levels of economic activity, whether industrial or commercial.

We find it during the material and product production phases, but it is also essential during transport operations.

As a result, the design and the aim of this equipment are extremely varied and depend on the materials and products to be moved as well as the hoisting mode chosen.

Among them, suspended load lifting equipment is covered by a large range of devices of all sizes, available by type, to meet different lifting needs.

Most of this equipment is now equipped with electric motors with or without brakes and, grouped under three distinct applications: tower cranes, construction cranes and port cranes.

For vertical lifting of heavy and bulky freely suspended loads, lifting equipment (or hoists) work in conjunction with overhead cranes and workstation cranes.

Their lifting capacity depends on their construction. Their movement is directed by an operator, either manually or using a wired console or wireless controls.

The most important requirements are to benefit from safe, precise and performant movements in all circumstances.

Safety, efficiency, reliability & productivity

Efficiency & safety

Heavy lifting equipment offers many advantages.

By their height positioning, in a specific area and with progressive operation, the distance between the load and the operator is secured, which considerably limits the risks of maneuvering and handling.

Lifting equipment also relieves the load on operators, reducing fatigue and the risk of injury.

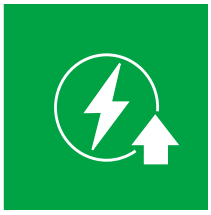
Performances

Automated systems can operate smoothly, quickly, and position a load precisely at the defined location.

This saves time on handling operations and improves productivity.

Additional productivity gains are possible by increasing winch speeds.

Adapting the controlled speed to the load increases operating cycles and therefore increases performance.



Productivity

The possibility of offering different ranges of motor efficiency (up to IE5) or dimensioning and optimizing the motor to the characteristics of the winch allow to reduce the energy consumption of the equipment.

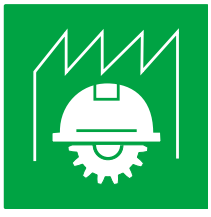
To increase energy saving gains, the addition of an electronic controller will limit the maximum electrical power required for lifting operation without affecting no-load and low load working speeds. A motor and drive association offers optimized operation.

Maintenance & reliability

Lifting equipment requires less maintenance compared to other lifting devices.

The use of electronics reduces stress on mechanical parts, thus reducing wear and equipment failure.

The various sensors and options give information to the winches to prevent the risk of breakage and anticipate the maintenance.



Suspended loads are lifted with a hook, a sling, or a gripping tool such as clamp, spreader & bucket.
The capacity, called WLL (Working Load Limit), is defined by the maximum load that the device can move safely.

In our fields of activity, we consider that “heavy load lifting” applies to the safe force (WLL):

- **24 tons for a tower crane**
- **30 tons for an overhead crane**
- **40 tons for a port crane**

Heavy load lifting equipment can be found in various environments, both indoors and outdoors, in a healthy or usually aggressive environment (dust, salt, high temperature, etc).

Slings

Hook

Bucket clamps

Spreader

Clamps

Grapple

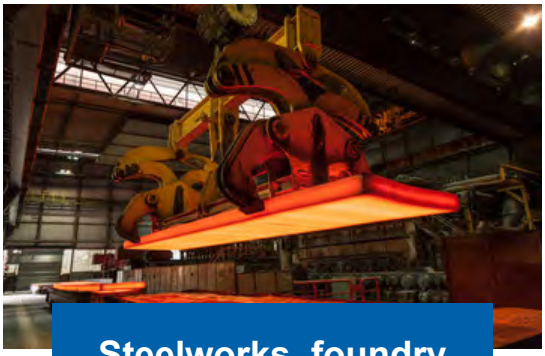
Large hoisting can be found in a large variety of applications

Tower crane

Overhead crane

Port crane

	Tower crane	Port crane	Overhead crane
Container & bulk		✓	✓
Warehouse & factory			✓
Waste treatment			✓
Automotive & machinery construction			✓
Steelwork & foundry			✓
Construction site	✓		✓
Marine & shipyard	✓	✓	✓



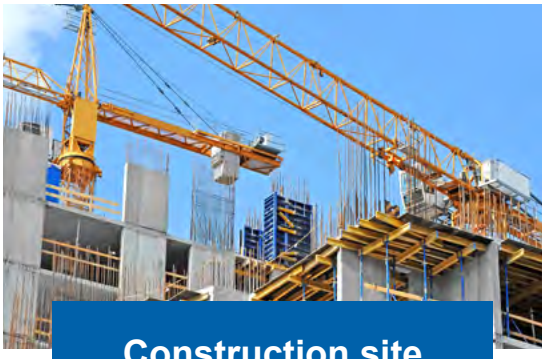
Steelworks, foundry

Marine & shipyard

Waste treatment

Automotive and machinery

Warehouses, factories



Construction site

Container & bulk

Large hoisting dedicated motor PLSES IP23

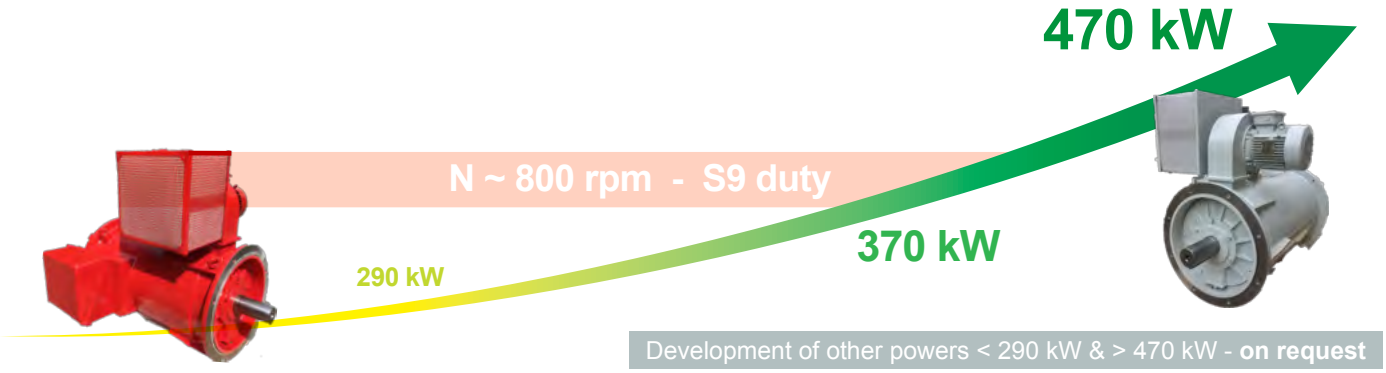
LIGHT - RELIABLE - HIGH PERFORMANCES

We have designed a dedicated large hoisting motor fully optimized for all your application requirements

Main advantages

- Increased productivity thanks to an extended speed range
- Reduced maintenance cost and time helped with a large period of bearings regreasing
- Dimensional space controlled with the aeraulics optimized for the application
- The special radial forced ventilation ensures to reach the performances of the motor and heating
- Lightened & compact solution for better adaptability to the client environment
- Improved torque & speed in hoisting thanks to low inertia
- Optimized machine sizing offering ideal starting torque
- AC motor solutions for the replacement of DC motors, avoiding maintenance of commutator and brushes

POWER RANGE IP 23 - PLSES series



Development of other powers < 290 kW & > 470 kW - **on request**

Perfect mix of application-specific features developed into one solution

- Better adaptation of the motor & drive association to the load with maximum torque = 4,1 x Rated Torque
- Accessible acceleration time < 2 sec
- Low inertia rotor to increase speed at constant power
- Lower temperature rise: T° rise class B on drive (with ambient T° at 45°C)
- IE3 efficiency class
- Improved thermal reserve
- Insulation class H of winding
- Very low heating on end shields: < 30°K on inverter duty

	IP23 PLSES series main characteristics		
Rated power	**290 kW**	**370 kW**	**470 kW**
Frame size	315L	355L	355L
Polarity/rated speed	4 poles/887 rpm	4 poles/949 rpm	4 poles/975 rpm
Voltage/frequency	440VD/30Hz	400VD/32Hz	660VD/33Hz
Rated torque	3122 Nm	3723 Nm	4604 Nm
Maximum Torque	12815 Nm	17042 Nm	19751 Nm
Rated current on drive	490 A	705 A	520 A
Inertia	4,41 kg.m²	7,62 kg.m²	8,56 kg.m²

Main options

- Insulated bearings at DE and NDE side
- Shaft grounding ring
- B5 mounting position with flange incorporated into the frame housing
- PT100 probes in winding
- Painting finish C4H, adapted to sea salt environment
- Reinforced encoder: heavy duty encoder
- Double impregnation of winding
- Reinforced winding insulation
- Earth straps and earth bar

Additional safety with our hoist brake motors

SAFETY – RELIABILITY – PRODUCTIVITY

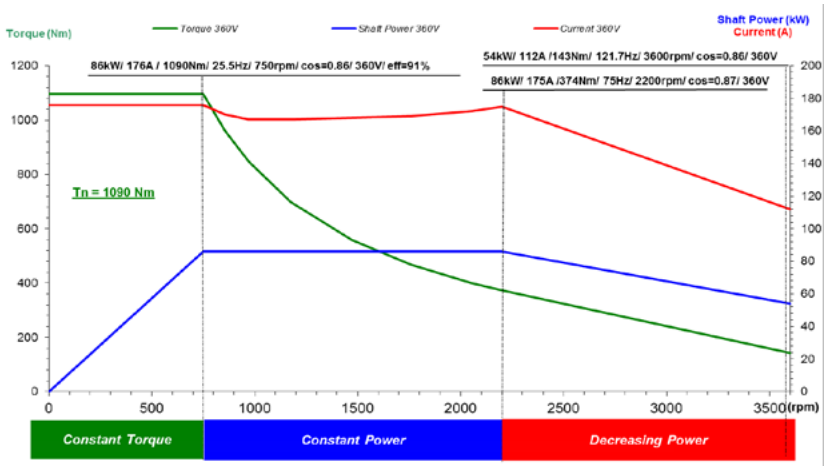
To guarantee safe working conditions and efficient operational standards, we have manufactured a brake motor range with dedicated hoist features.

Reliability

- Encoder reinforced for high temperature up to 120°C and shock vibration to operate in harsh environment
- Sizing improvement thanks to low inertia of the IP23 motors
- Insulation reinforced of the winding for inverter duty and increase lifecycle

Productivity

- Flux weakening to increase the speed range
- Optimized electrical design to reach high performance of the crane (Working Load Limit)
- Capability to stop the load at a speed up to 3,600 rpm



Safety

- High dynamic and static brake torque
- Lifetime test qualification for braking torque and mechanical parts by test: 2 million cycles
- Brake components traceability

IP55 aluminium or cast iron frame/housing

Frame size	Pu S1	Pu S3 60%		Brake Type
	Self ventilated IC 411	Self ventilated IC 411	Forced ventilated IC416	
280 S	75	90	100	FCPL76H/1D
280 M	90	110	120	FCPL76H/1D
315 S	110	140	155	FCPL76H/1D
315 M	132	145	160	FCPL76H/1D
315 LA	160	165	180	FCPL76H/1D
315 LB	200	230	240	FCPL76H/2D

IP23 aluminium frame/housing

Frame size	Pu S1	Pu S3 60%		Brake Type
	Self ventilated IC 411	Self ventilated IC 411	Forced ventilated IC416	
250 S	75	95	105	FCPL76H/1D
250 M	90	110	120	FCPL76H/1D
280 SG	110	150	170	FCPL76H/1D
280 MG	132	180	200	FCPL76H/1D
315 S	160	200	220	FCPL76H/1D
315 M	200	215	240	FCPL76H/2D
315L	250	280	310	FCPL76H/2D

Square housing motors IP23 CPLS IC06 forced ventilated with very low inertia

Frame size	Power range	J	Brake Type	Constant Power range
CPLS 200	100-200 kW	0.7 - 1.58 kg.m²	FCPL76H/1D	> 2.5 nominal speed
CPLS 250	230-355 kW	2.65 - 4.92 kg.m²	FCPL76H/2D	

Essential brake features

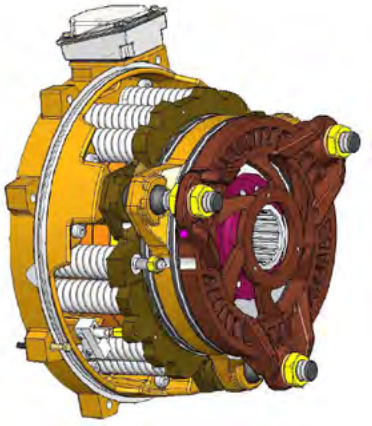
Options

- Brake release indicator
- Brake wear lining indicator
- Thermistor
- Space heaters
- IP56 heavy duty environment
- High corrosion resistance
- Booster
- Hand release lever

Associated brake range

FCPL brake Home design

Brake type	Torque (Nm)
FCPL76H/1D	1000
	1250
	1500
	1875
	2000
	2500
FCPL76H/2D	2000
	2500
	3000
	3750
	4000
	5000



Global portfolio for your crane

AC induction IMfinity® motor platform

LS
Non IE
Aluminium IP55
Frame size 56 up to 225 mm
2, 4 & 6 poles
0.09 up to 45 kW

LSES
IE3
Aluminium IP55
Frame size 80 up to 315 mm
2, 4 & 6 poles
0.75 up to 200 kW

FLSES
IE3 - IE4
Cast iron IP55
Frame size 80 up to 450 mm
2, 4 & 6 poles
0.75 up to 900 kW

PLSES
IE3
ODP / IP23
Frame size 225 up to 450 mm
2, 4 & 6 poles
55 up to 900 kW

LC
IE3
Liquid cooled / IP55
Frame size 315 up to 500 mm
2, 4 & 6 poles
150 up to 1,500 kW

AC induction motor

CPLS
Aluminium IP23
Frame size 132 up to 250 mm
7.5 up to 560 kW
Speed up to 6,000 rpm

Dyneo+ Synchro reluctant motor with permanent magnets

LSHRM
Aluminium IP55
Frame size 132 - 315 mm
11 - 355 kW
up to 6,000 rpm

PLSHRM
Open drip proof / IP23
Frame size 315 mm
380 – 500 kW
up to 4,500 rpm

FLSHRM
Cast iron IP55
Frame size 280 - 355 mm
75 - 355 kW
up to 3,000 rpm

Geared motors

Compabloc
up to 14,500 Nm

Orthobloc
up to 23,000 Nm

Manubloc
up to 14,500 Nm

OLS
up to 18,000 N.m

Brake motors

FFB
0.12 - 15 kW
4.5 up to 200 N.m

FCPL
11 - 400 kW
160 up to 5,000 N.m

Drives

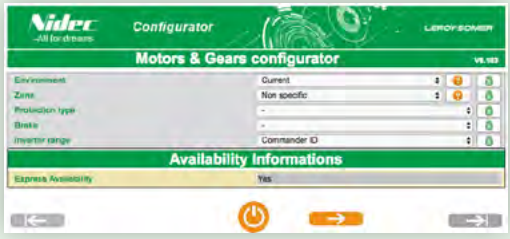
Unidrive M
0.25 - 2.8 MW

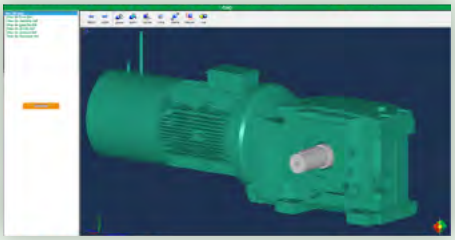
Powerdrive MD Smart
45 kW - 2.8 MW

Commander ID300
Integrated drive
0.25 - 7.5 kW

Configurator

An online tool to assist you in the selection of motors, break motors or geared motors combined with variable speed drives.





Count on our Expertise from diagnostics to turnkey Solutions & Maintenance

OEM and System integrator partnerships

• Deliver unique customer-specific value that can be sustained and leveraged, resulting in profitable growth

• Align with our customers' globalization to jointly develop products & solutions from small scale custom-designed solutions such as mechanically adapted products or standard products fitted with tailored options to suit application requirements, up to developing new product designs (e.g. unique drives, motors or cabinet layouts)

Bring new technology and designs to market quickly with reduced time and effort, by providing

- core crane control technology, that can be customized for new designs
- customer equipment for testing and training
- technically detailed proven success stories
- technical support with dedicated engineers

Scalable solution executed at local level

- Dedicated team to design, manage and implement global Automation Solutions projects, including all technical aspects & system components
- Retrofit project management especially the electrical parts to reduce modernization costs and minimize completion time while offering industry leading performance, communication and programming capabilities
- Customized solution: standard core, globally deployed with knowledge of local practices
- Optimization of:
  - resources with efficient knowledge sharing & reduced development time
  - quality: tested & qualified applications along with maximized functionality/performance

Installation & Commissioning

- Accredited personnel ensure reliability and safety of equipment
- Installation in compliance with local technical regulations and safety standards
- On site commissioning
- Extended system guarantee
- Installation and maintenance

After Sales & Spare parts

- Emergency services: 24/7 telephone and web support, onsite technical assistance
- Express round-the-clock delivery of replacement products or spare parts and urgent repairs
- Capabilities for ongoing maintenance work (replacement, retrofit and upgrades)
- Maintenance contracts on equipment

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