



SkyMotion™ 400 Machine

SkyRise® system

Otis SkyMotion™ machines optimize Permanent Magnet (PM) motor technology and variable frequency drive technology to provide the ultimate in high-rise building elevator propulsion.

Higher energy efficiency

The SkyMotion 400 machine uses permanent magnet motor technology, resulting in increased efficiency and near unity power factor. This significantly decreases energy consumption and operating costs and lowers heat release in the machine room.

A conventional asynchronous machine (induction motor) requires an additional electric current to create the rotor magnetic field. This current represents 6-10% of the total current used by the machine to generate torque, leading to increased losses. In a PM machine, the permanent magnets provide a constant magnetic field, thus decreasing the electric current requirements and motor losses.

Smaller footprint

By design, the power density of a PM motor is higher than induction motors, thus reducing weight and volume. This provides for a smaller footprint and machine room space savings. Weight savings and reduced size enable easier and faster installation.

High reliability

The SkyMotion 400 machine utilizes a compact low-noise disc brake designed to meet the most stringent of codes and provides built-in Uncontrolled Car Movement and Ascending Car Overspeed (ACO) protection as required by ASME 17.1, EN81 1 and GB-7588. The SkyMotion machine technology uses an encoder with no wearable parts, along with fully encapsulated electronics. Otis provides high-capacity bearings with oil bath lubrication that extends the life of the machines.

Advanced control

Using advanced field-oriented vector control drives, the SkyMotion 400 machine ensures optimal velocity profile control and smooth operation for greater passenger comfort. The compact rotor design reduces rotational inertia, enabling smoother and faster acceleration, which is of great importance in high-rise and high-traffic buildings.



Max Duty Load	5,000 kg
Maximum Speed	15 m/s
Maximum Rise	400m
Maximum Starts per Hour	240 starts/hour 66 starts/hour, 67% Elevator Duty (Shuttle)
Motor Type	AC Permanent Magnet Synchronous
Power (rated)	455 kW
Ventilation Type	Variable-Speed Fan/Forced Ventilation
Insulation	Class F
Protection	IP21
Traction Sheave Diameter	1110 mm
Roping	1:1
Ropes	22.4/22.0 mm x 12
Type of Traction	Single Wrap (SWT)
Sheave Shaft Load	410 kN
Brake Type	Disk
Ambient Temperature Range	5°C-40°C
Ambient Humidity	Up to 95% non- condensing RH
Overall Dimensions	(L x W x H) 1,850 mm x 1,760 mm x 1,895 mm
Machine Weight	9,210 kg

Designed for high-traffic and high-rise applications, the SkyMotion 400 machine provides optimal energy efficiency with reduced size compared with power induction motor technology.

Energy-efficient

50%

less energy loss than conventional induction machines

95%

rated efficiency in a compact package

Smaller footprint

50%

Up to 50% smaller footprint than conventional machines

50%

Up to 50% less weight than conventional machines resulting in lower construction costs

High reliability

High-reliability, compact design disc braking system provides ample clamping power with low noise actuation

Long life

High-capacity bearings with oil lubrication extend the life of the machine. Variable-speed cooling fan and proven brake design, enhancing performance.

