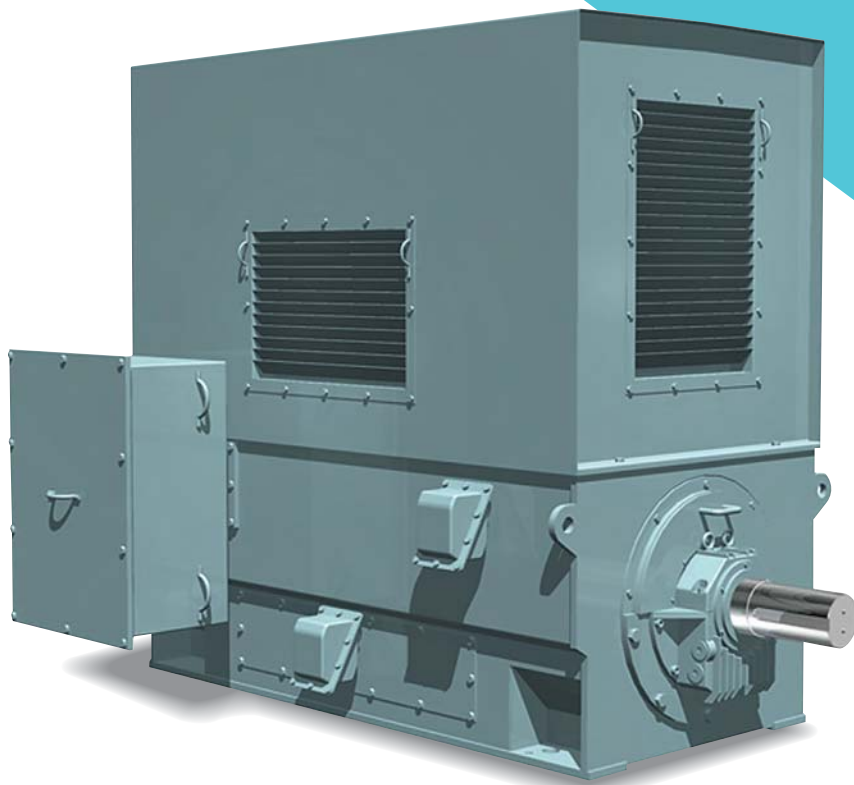


TMEiC
We drive industry

High-voltage motors

21-L Series

New Drive Generation for
Capacity Applications



21-L series: Combining over 100 years of experience with innovative new technology makes the 21-L series the right choice for the demanding needs of today's industry.

Superior electrical performance, unsurpassed reliability

The **21-ML** series three-phase high-voltage motors are at the leading edge of motor technology.

- Designs up to 18,500 kW (25,000 hp)
- Wide variety of enclosures
- Rugged, high quality fabricated steel construction
- Frame sizes from 450 mm ~ 900 mm
- Designed to meet worldwide standards

Features/Benefits:

Excellent Electrical Performance

- Higher efficiency
- Higher power factor
- Superior starting characteristics

Unique Modular Construction

- Easy motor enclosure conversion:
ODP, WP1, WP2, CACA (TEAAC), CACW (TEWAC)

New compact design derived through

- Extensive electrical magnetic field analysis
- Heat transfer analysis
- Improved ventilation

Lower noise & less vibration

- Advanced techniques in core/frame construction

Advanced VPI insulation system

- Can withstand higher surge

Excellent Quality Control

- Low operating and maintenance costs
- High reliability
- Extended re-greasing intervals

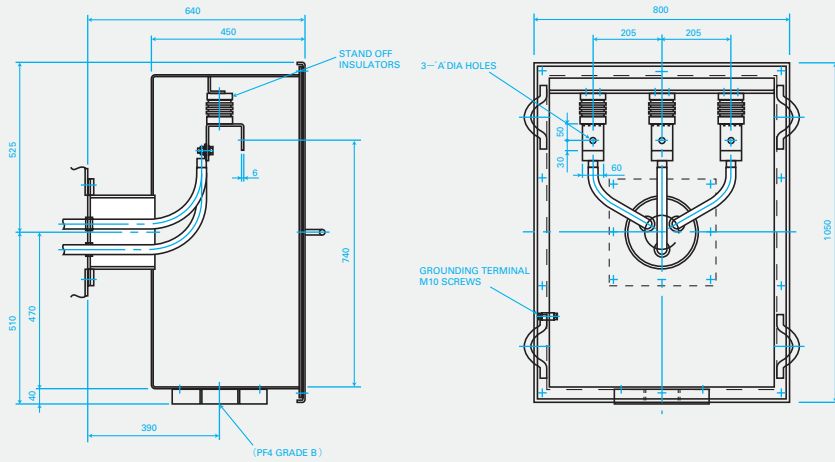
Designed for all applications and industries

Compatible with Variable Frequency Drive Applications

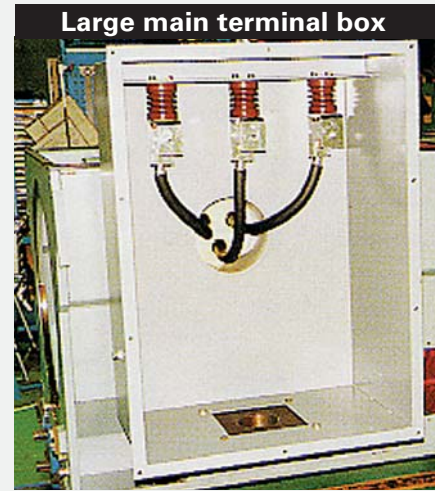
Fabricated copper bar rotor construction

Main terminal box

Drawing

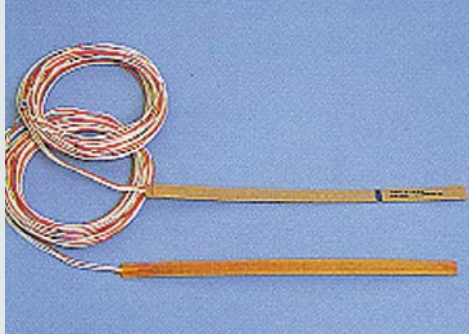


P. No.	A Dimensions
1	12
2	15
3	28



Accessories

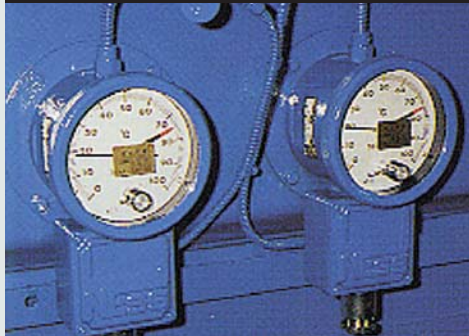
RTD's



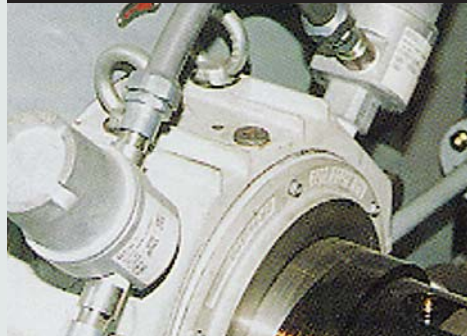
Space Heaters



Dial thermometer



Vibration detector



Features of 21-L Series Motors

Reliability & Easy Operation/Maintenance

Main terminal box

NEMA Type II terminal box is standard. Boxes designed for surge protection and/or differential CT's are readily available.
Standard main terminal box is rotatable every 90°.
Adequate space below main terminal box for cable connection.

Stator core

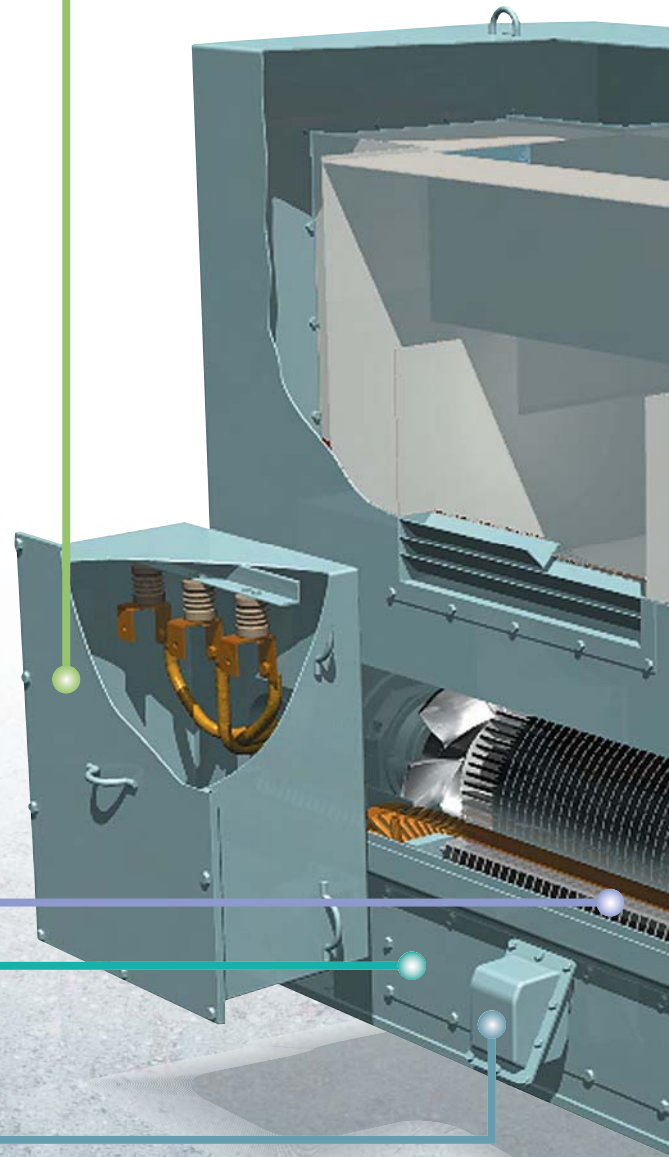
High grade electrical steel with low magnetic losses.
Stator assembly is easily removed from the stator frame when necessary.

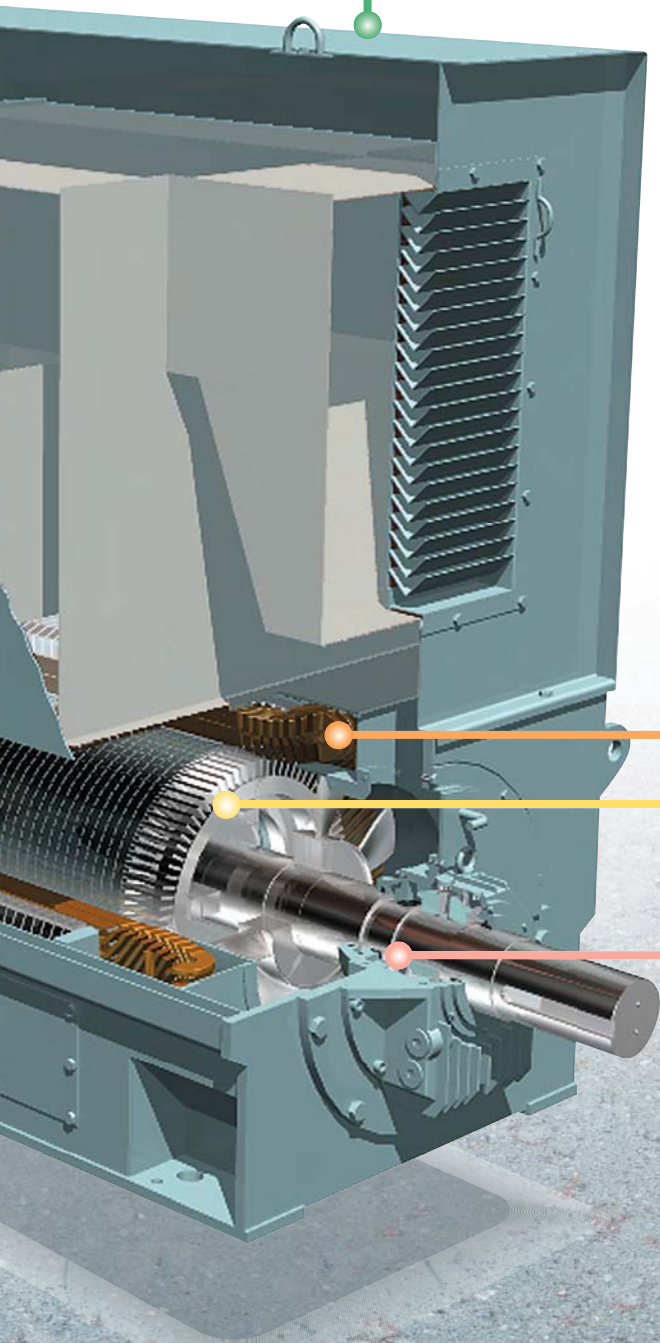
Frame

Increased rigidity of stator frame and lower vibration are achieved through frequency analysis.

Auxiliary terminal box

Modular arrangement for accessory connections allows flexibility with standardized mechanical construction.





Air housing

NEMA Type II top hood construction prevents intrusion of rain water and foreign matter.

IP 55 protection is standard on CACA and CACW type motors.

Stator coil

Utilizes a highly reliable, vacuum pressurized impregnation (VPI) insulation system providing firmly-fixed coil ends and the ability to withstand most environments.

Rotor

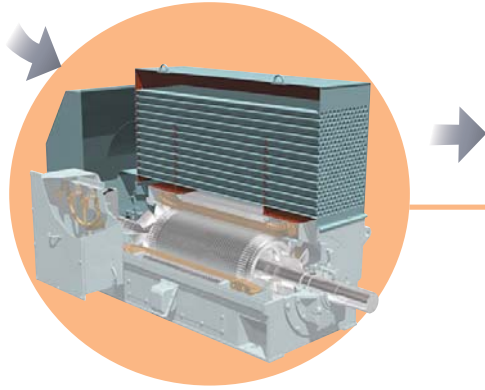
Copper rotor bars are shaped to provide excellent torque characteristics and mechanical strength and are fixed firmly in the slots.

Bearing

Antifriction and sleeve bearings are easily maintainable, with an improved lubrication system.

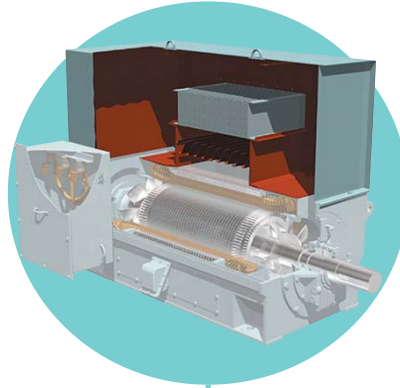
Enclosure of 21-L Series Motors

Output: 50 Hz 450 ~ 16,500 KW (600 ~ 22,000 HP)
60 Hz 450 ~ 18,500 KW (600 ~ 25,000 HP)
Voltage: 2,300 V ~ 13,800 V
Insulation Class: F Class
Standards: IEC, NEMA, BS, AS ...



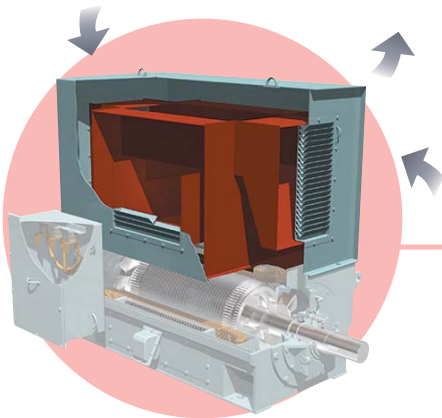
Totally-Enclosed Air-Water-Cooled Type (CACW)

This type of motor (IP44/P55, IC81W) is especially useful in a location where low noise operation is required or where it is desired to remove heat from the motor. The motor accommodates an air-to-water heat exchanger in the air housing in the upper part of the motor. A drain in the air housing protects the motor from damage caused by water leakage.



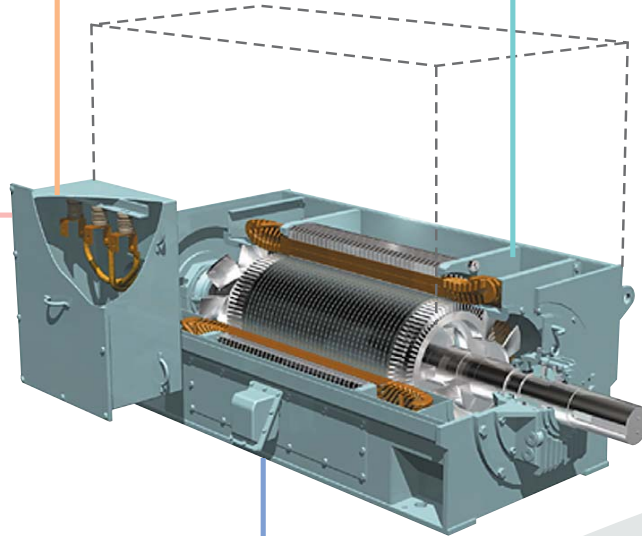
Totally-enclosed Fan-cooled Type (CACA)

In an environment containing corrosive or harmful gas, a totally-enclosed fan-cooled motor (IP44/IP55, IC611) is generally used. The external fan mounted on the opposite drive end directs fresh air into the pipes of the air housing located on the upper part of the motor. The pipes constitute a heat exchanger in which fresh air passing through cools the hot air.



NEMA Weather-protected Type-II

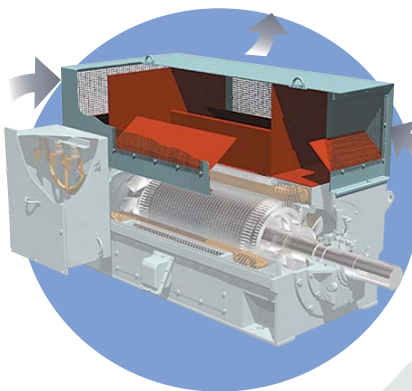
This motor (IP24W, IC01) is designed for outdoor operation. The air housing is in accordance with NEMA WP-II, and features three right-angled turns for air intake. Air velocity in one section falls below 3 m/sec (600 ft/min.), trapping water, dust, and foreign materials. A section is provided that allows air to pass through without being forced into the motor.



Fundamental

IC01, IC61 and IC81W per IEC Standard construction are available by changing the top hood.

The main terminal box can be rotated through 90° angles, and is large enough for easy cable connection. A shaft current protection insulator at the non-drive end bearing for a 450 frame and sleeve bearing machine is included as standard.

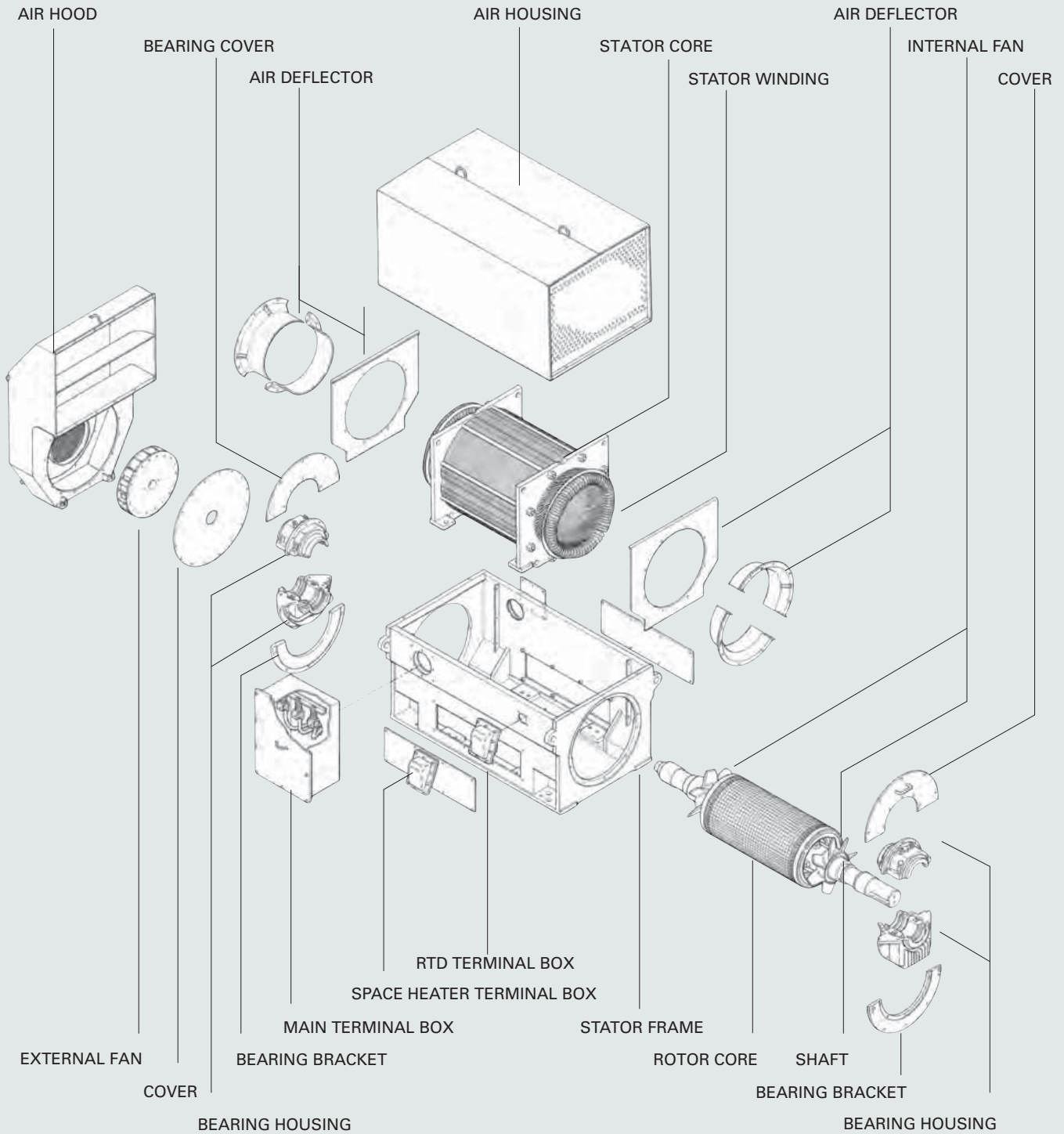


Drip Proof Type

A drip-proof type motor (IP22, IC01) is a common choice for a well-ventilated room. Cooling air intake and hot air exhaust windows are located at the top of the hood.

Ducts are covered with a separate braid inside, and screens outside, to prevent intrusion of water drips and other foreign materials into the motor (NEMA WP-I requirements).

21-L Series in detail





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