

NorPower 5000

LV switchgear



Customised power distribution
and automation solutions
for every need.



NorPower 5000 LV switchgear

NorPower 5000 is a versatile cubicle switchgear system that can be configured for switchboards with rated currents of up to 5,000 A. The system has been short-circuit and internal arc tested and is type-approved in accordance with the SFS-EN 61439 standard, ensuring safety, reliability and high performance even in demanding operating conditions.

Versatile and safe technical solutions

NorPower 5000 is a modular system that offers solutions for all types of applications. It can be configured, for example, for:

- main switchboards for data centres
- motor control centres for the process industry with cassette-type feeders
- process control centres for power plants with bus-controlled switchgear
- customer-specific row-mounted cabinets for machine control
- main switchboards for building power distribution
- main switchboards for substations
- DC distribution boards
- automation control centres

The type-tested NorPower 5000 switchgear is reliable and safe

- The assemblies are manufactured in accordance with the latest EN, IEC and SFS standards, with electrical safety fully taken into account
- Type-tested switchgear assembly in accordance with EN 61439 (SGS Fimko)
- Short-circuit and internal arc tested
- All switchgear assemblies are inspected in accordance with a comprehensive ISO 9001 quality management system and the EN 61439 standard

Easy to install and maintain

- versatile and personnel-safe solutions for installation and cabling
- very spacious connection compartments, including the cable trench
- possibility for thermal imaging through the roof
- as standard, cables are supplied with terminals in accordance with the wiring diagrams: bi-metal connectors for aluminium cables and bolted connector sets for copper cables

Design is a key part of a successful delivery process. Norelco's customers benefit from industry-leading expertise in bid calculation, switchgear selection, comparison of technical solutions, and detailed engineering design of switchgear assemblies. All metal parts of Norelco's compartment switchboards are of our own design and manufacture. Many connectors and flanges are also our own products, developed based on user needs. Components are selected from the product ranges of well-known Western manufacturers to ensure reliability and long service life.

Technical information

- multiple frame depths and cubicle widths
- fixed or withdrawable motor feeders
- fused or non-fused systems
- aluminium or copper busbar systems
- enclosure classes for indoor use or splashing-water-proof environments
- single-sided or double-sided switchgear assemblies
- internal form of separation up to Form 4b
- power factor correction systems can be integrated into the switchgear to optimise site cabling
- L- or U-shaped switchgear layouts
- possibility for special designs and dimensions
- predictive condition monitoring based on condition sensors and diagnostics

Frame structure

Only high-quality materials are used in the structure of the NorPower 5000 compartment-type switchgear. The switchgear assemblies are built using bolted joints from modular standard components. All visible surfaces undergo a multi-stage surface treatment and are finished with epoxy powder coating.

The standard colour is Norelco white (RAL 9016), with the plinth and header strip in black (RAL 9011). Special colours can also be supplied using the same powder coating technology.

The key structural features include:

- a profile-based frame structure that is both robust and visually refined
- structural components manufactured from materials resistant to weather variations and corrosion; the base material is hot-dip galvanised steel sheet with a heavy 275 g/m² zinc coating
- in the event of an internal arc fault, pressure is safely relieved through pressure relief flaps located in the roof
- equipment compartments, busbar systems and cable trenches are separated from one another by steel partitions and steel drop guards
- the internal degree of protection of the switchgear can be implemented up to IP20 even with the door open, allowing safe maintenance work on live switchgear
- a plinth (50 mm) is always included as standard

Incoming supply

The incoming supply of the NorPower 5000 compartment-type switchgear can be arranged from the top or bottom, using a NorBus 5000 busbar bridge or cable connection. When using a five-bar system with a four-pole PEN supply, the N/PE separation is preassembled at the factory in the incoming section.

As standard for rated currents $I_n \geq 1250$ A, earthing balls for portable earthing devices are provided where a separate earthing switch is not used. In critical installations, arc protection relays are often employed to minimise the effects of a possible internal arc fault.

Terminals

The switchgear is equipped with screw-type or crimp terminals for copper or aluminium cables in accordance with the order documentation. As a primary solution, a PE busbar located in the cable trench is used for protective earth conductors; it is fitted with quick-connect terminals and can be isolated from the PE circuit for measurement purposes. Alternatively, terminals for N and PE conductors can be installed for each outgoing feeder.

Cable entries

The switchgear is always supplied with the required number of cable entry plates for incoming and outgoing cables. In special cases, EMC-shielded cable entry plates made of conductive rubber can be used. Cable entries can be routed via the cable trench or directly into the lowest or highest unit of the cubicle.

Enclosure and connection compartments

The frame essentially consists of three separate compartments, which are separated from each other by metallic partitions and steel drop guards: equipment compartments, busbar enclosures and cable trenches. Thanks to the metal-enclosed structure, any damage in a fault situation is confined to a limited area, allowing the switchgear to be repaired quickly.

Pass-throughs between cubicles and compartments are implemented via insulating flanges, enabling Form 4 separation within the switchgear.

The connection compartments and cable routing paths are spacious, and the overall solutions are designed for ease of installation. The frame modules are assembled using C-profile rails, providing numerous fixing points in the cable trenches for items such as arc-fault clamps.

Field cabling can be routed into the switchgear either from the bottom or from the top. All side frames and intermediate frames are reliably bonded to the PE busbar. If required, the roof and base plates can be equipped with C-cut cable entry plates, cable terminations or membrane seals.

Busbar systems and busbar bridges

The busbar systems are normally manufactured from E-AlMgSi aluminium busbars. If required, the switchgear can also be supplied with copper busbars. The busbars are always enclosed in their own compartment, and connections are made using reliable bolted joints.

The main busbar system can be located either in the lower or upper section of the switchgear. Our production also includes customised NorBus 5000 busbar bridges.

Doors and latches

In NorPower 5000 switchgear, the door opening angle is approximately 180 degrees. The hinges are metallic light-alloy hinges. Doors are supplied as standard with single-point locking. Several latch options are available, such as hand-operated latches, triangular-key latches or latches operated with a master-key system.

Other structural components

The switchgear features ducting for internal arc pressure relief. In the event of a fault, the pressure is safely discharged through pressure relief flaps towards the rear upper section of the switchgear. NorPower 5000 is always supplied with a robust plinth made of steel sheet profiles and fixing lugs, enabling the switchgear to be securely anchored to the floor.

The busbar systems are manufactured from either aluminium or copper. Horizontal and vertical busbars are implemented as single, double or triple arrangements. All outgoing feeder cubicles are typically equipped with vertical busbars. The busbar systems are always installed in a separate, metal-enclosed busbar compartment that is touch-protected.

The switchgear is equipped with the required cable trenches featuring plenty of C-rails for cable fixing accessories. Installing field cables into the switchgear is straightforward, as ample connection space is provided, including within the outgoing feeder units.

Versatile configuration options

The configuration options of the NorPower 5000 compartment-type switchgear are virtually unlimited. The switchgear can be implemented either with individual feeder units or as a centrally configured assembly. The basic options for outgoing feeder units include fixed and withdrawable feeders.

The switchgear can also incorporate a wide range of automation solutions, such as inverter-driven feeders, centralised or decentralised control systems, intelligent bus-connected motor feeders, and power factor correction.

Fixed feeder units

Fixed feeders provide a cost-effective and safe solution when power distribution can be interrupted for maintenance purposes and when high currents are required. For high-power components, a fixed feeder is often the most practical option, as it enables reliable and robust mounting of components with as few connections as possible.

The switchgear can be configured as single-sided or double-sided. A sufficiently flexible and practical solution is often achieved by using cubicle-specific front-mounted equipment combined with fixed feeder units. This allows, for example, one cubicle to be de-energised and maintenance work carried out without disrupting the operation of other cubicles. The units are separated from each other by steel drop guards.

Withdrawable feeder units (cassettes)

Cassettes are the optimal solution in terms of process availability and maintainability when every second of downtime is costly and/or when space is limited. A withdrawable (cassette-type) feeder unit can be replaced quickly even while the rest of the switchgear remains energised, enabling maximum continuity of operation.

Functional testing and predictive maintenance are easy to perform, and space savings of up to 30–50% can be achieved compared to fixed feeders.

A withdrawable unit can include motor feeders up to 132 kW, and a single cubicle can simultaneously accommodate both withdrawable and fixed units. The main power and control connectors of the withdrawable unit are self-aligning, ensuring reliable connection. The main and control cables are prewired at the factory to terminal blocks located in the cable trench.

The unit is equipped with a mechanical interlock that prevents the unit from being opened when the main switch is in the I (ON) position. The unit is released by turning the main switch to the 0 (OFF) position, after which it can be pulled along guide rails into a de-energised isolating position.

By releasing the isolating lever, the unit can be completely withdrawn in a de-energised state. The cassette compartment meets IP20 degree of protection when the cassette is not in place.

Withdrawable units are fitted with sturdy, ergonomic pull handles for easy handling. There are five different cassette sizes, suitable for motor feeders of various ratings depending on motor power and the type of protection (fused or non-fused).

The internal configuration of the cassettes is project-specific, but the connector locations always remain the same, ensuring easy interchangeability and simplified reordering of additional cassettes.

In intelligent motor feeders, thermal overload relays are replaced by bus-connected and controllable devices that are connected, for example, to a PROFIBUS or Modbus network. In the switchgear's internal communication bus, the installation and operating instructions of the bus components are taken into account.

For withdrawable units, cable connections are located in the cable trenches, while for fixed feeders they are located within the feeder units themselves. Intelligent motor feeders can be pre-parameterised at the factory, which significantly speeds up commissioning. This also provides benefits for maintenance and predictive maintenance. An intelligent motor feeder can also be installed in a withdrawable feeder unit.

NorPower 5000 cassettes are configured in accordance with project specifications using a variety of control and indication devices. In intelligent motor feeders, for example Siemens SIMOCODE devices connected to a PROFIBUS network can be used. The Norelco NACB power factor correction system can be integrated into the compartment-type switchgear, eliminating the need for separate interconnecting cabling between cabinets on site.

CASSETTE SIZES	
width × height	max. current
150*200 mm	32A
250*200 mm	50A
500*200 mm	100A
500*400 mm	250A
750*400 mm	400A

Inverters

The installation of inverters and soft starters within the switchgear is straightforward. Based on the heat losses of the equipment, the required airflow is calculated and implemented using Norelco's proprietary ventilation duct solutions. To minimise EMC interference from the devices, solutions such as EMC-shielded cables and EMC cable entry plates can be used.

Automation systems

Automation systems can be implemented using either centralised or decentralised control logic. In both cases, Norelco's own automation concept is applied, defining all aspects related to installation and operation, such as earthing, cable ducts, cabling, control voltages, and related requirements.

Power factor correction systems

Norelco's capacitor banks and detuned capacitor banks can be implemented as separate systems or conveniently integrated into the compartment-type switchgear. This reduces installation costs and simplifies commissioning on site. The power factor correction systems are equipped with an intelligent microprocessor-controlled regulator that does not require separate commissioning at the site.

Predictive condition monitoring and intelligent diagnostics

The switchgear can be equipped with predictive condition monitoring and diagnostic monitoring, providing real-time visibility into the actual condition of the equipment. The system collects data from field sensors such as temperature and humidity sensors, as well as particle sensors for the detection of combustion gases, enabling risks to be identified even before visible smoke occurs. In addition, data is gathered from key components such as circuit breakers, analysers and intelligent motor feeders.

Based on the collected data, users receive a clear and up-to-date overview of the condition of the equipment and any potential maintenance needs. Deviations can be addressed proactively, and maintenance can be planned in advance—before unexpected downtime occurs.

The information produced by the system can be integrated into the customer's existing monitoring or maintenance systems, or alternatively utilised through Norelco's own user interface, designed specifically for maintenance and lifecycle management. The equipment can also be fitted with a local beacon indicator, providing a clear visual status signal to show whether everything is operating normally or not.

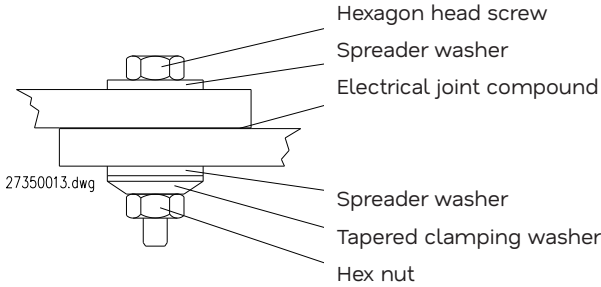
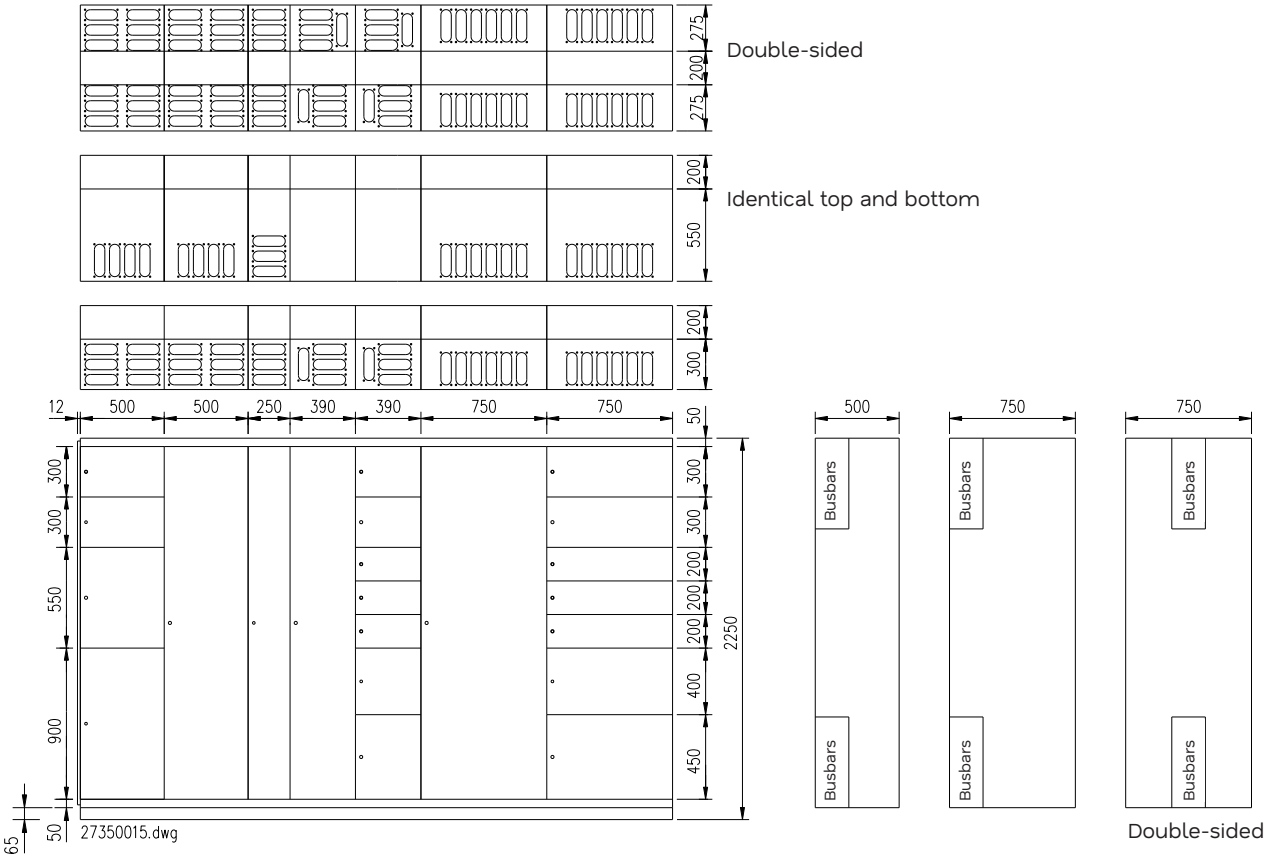
Technical specifications

NorPower 5000		
STANDARDS		
Type approvals		Type approval in accordance with SFS-EN 61439-1 and SFS-EN 61439-2
Standards and regulations		SFS-EN 61439-1, IEC 61439-1, SFS-EN 61439-2, IEC 61439-2; VDE0660 TEIL 500/0.4/94+Bbl2; SFS 6000
Additional standards		PSK 1801, where required
ELECTRICAL DATA		
Rated voltage Un		400 - 690 VAC
Rated current In	Main busbars	400-5000A
	Vertical busbars	400-5000A
Short-circuit withstand strength	Icw (1s)	max. 100kA, 1s
	Ipk	max. 220kA
Internal arc withstand		50kA, 725V, 0.3s
AC test voltage		2000V
MECHANICAL DATA		
Degree of protection (IP rating)		IEC 529: IP20...IP54
Protection class		Protection class I
Material		-Structural components are made of hot-dip galvanised steel sheet -Busbars are manufactured from E-AlMgSi aluminium or copper
Standard colour		-Doors and side panels: white, RAL 9016 -Plinth and top header strip: black, RAL 9011
Surface treatment		Multi-stage pre-treatment and epoxy powder coating
Coating thickness		minimum 80 µm
Thermal imaging		Possible via the roof or from behind front working covers
Door opening angle		n. 180 °
Ambient temperature 24h average max		+35 °C
short-time max		+40 °C

Frame module system dimensions

FRAME MODULE SYSTEM	Withdrawable	Fixed
	units	units
Frame height (mm)	2230	2230
Plinth height (mm)	50 mm, included	50 mm, included
Depth modules		
500mm	-	X
600mm	-	x
750mm	X	X
1000mm	X	X
750mm, double-sided	-	X
1000mm, double-sided	X	X
Width modules		
250mm	X	X
390mm	-	X
500mm	X	X
600mm	X	X
750mm	X	X
1000mm	-	X
Height modules		
150mm	-	X
200mm	X	X
250mm	-	X
300mm	-	X
350mm	-	X
400mm	X	X
450mm	-	X
550mm	-	X
600mm	-	X
750mm	-	X
850mm	-	X
900mm	-	X
1200mm	-	X
1800mm	-	-
2050mm	-	X
Cable trench width modules		
250mm	X	X
390mm	X	X

Illustration of the modular system



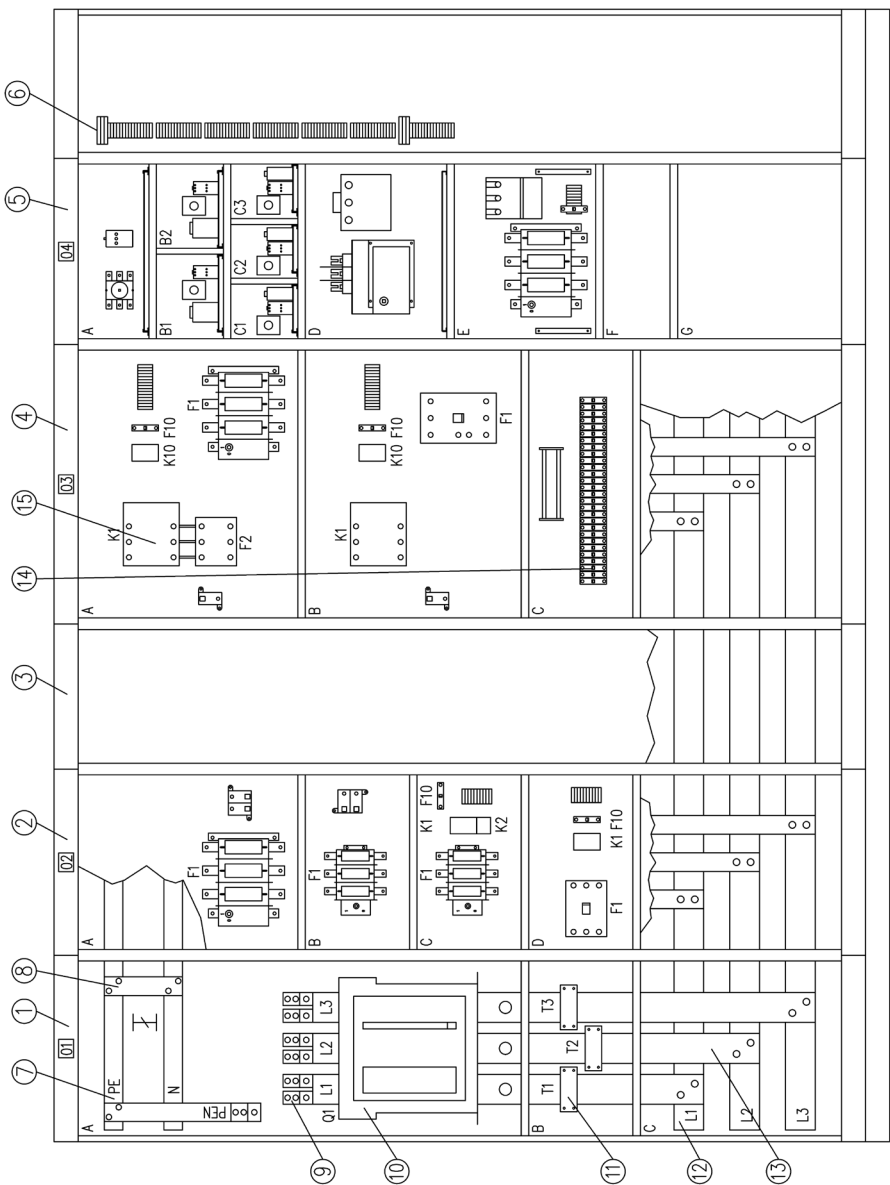


Image illustrates some of the basic structures and features of the NorPower 5000 compartment-type switchgear with the doors and protective covers open.

1. Incoming cubicle
2. Outgoing feeder cubicle with switch-fuse units and compact circuit breakers
3. Cabling cubicle for incoming and outgoing cables, with ample connection space
4. Outgoing feeder cubicle with motor feeders: 1 with a switch-fuse unit and 1 with a compact circuit breaker
5. Outgoing feeder cubicle with withdrawable and removable feeders; a 500 mm cubicle can also include 250 mm wide units
6. Terminal blocks for withdrawable and removable units are located in the cabling section; a vertical PE busbar can also be provided if required
7. PE and N busbar systems extending across the full width of the switchgear; the auxiliary voltage busbar can also be located in the same compartment
8. N/PE connection, also clearly marked on the cover
9. Incoming cable terminals
10. Main switch, e.g. a withdrawable air circuit breaker
11. Current transformers
12. Main busbar system (Al or Cu), located either at the top or bottom of the switchgear and housed in a completely separate, steel-enclosed compartment
13. Connection from the vertical busbars to components via flexible busbars or cables
14. Miniature circuit breakers in their own dedicated compartment
15. Contactor and thermal overload relay
16. Back plates, fitted with perforated back panels where required

Basic structure of the switchgear: door level

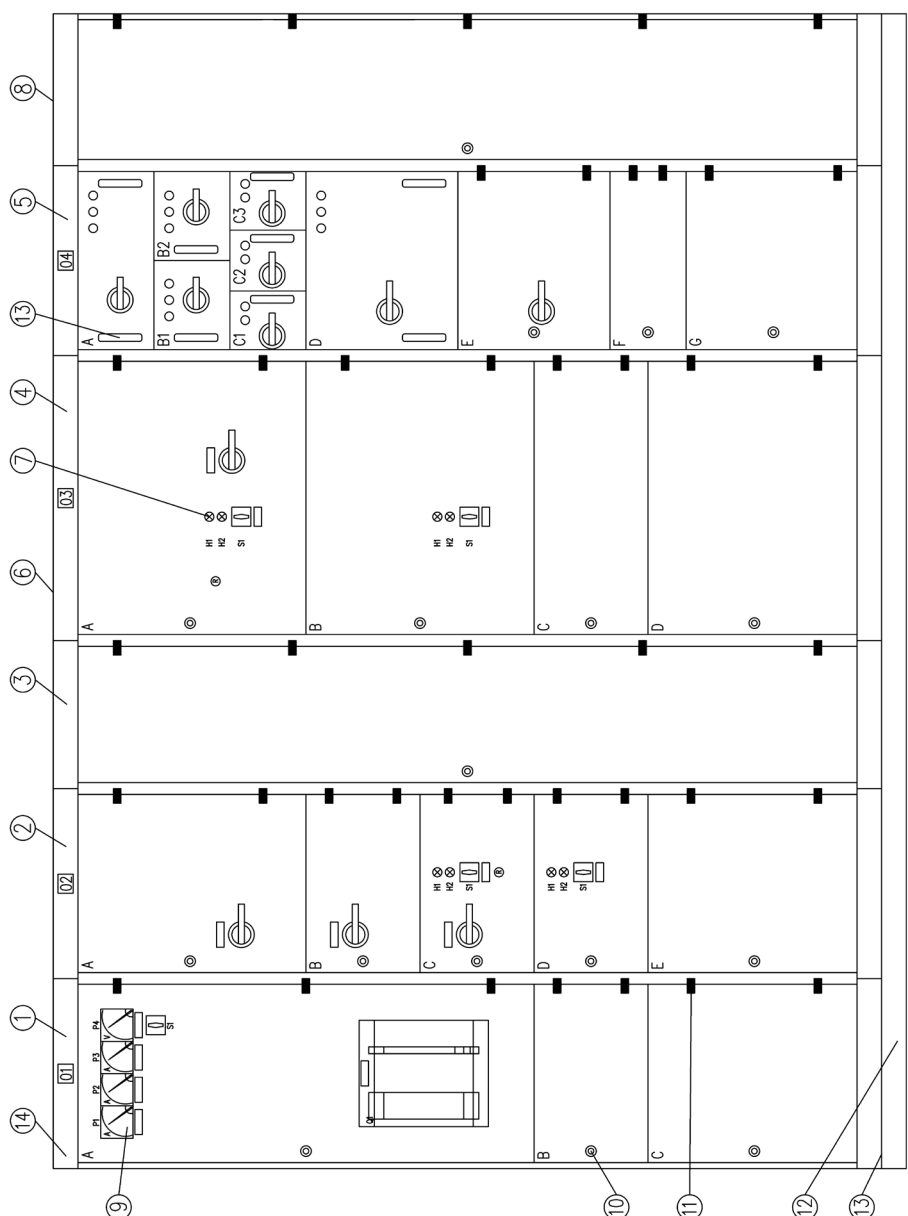


Image illustrates some of the basic structures and features of the NorPower 5000 compartment-type switchgear with the doors closed.

1. Incoming cubicle width 500 mm, comprising one 1200 mm unit, one 300 mm unit and one 550 mm unit
2. Outgoing feeder cubicle with fixed feeders, width 500 mm, comprising one 600 mm unit, three 300 mm units and one 550 mm unit
3. Cabling cubicle for incoming and outgoing cables, width 390 mm
4. Outgoing feeder cubicle with motor feeder units, width 750 mm, comprising two 600 mm units, one 300 mm unit and one 550 mm unit
5. Outgoing feeder cubicle with withdrawable and removable units, comprising two 400 mm units, two 200 mm units (width 500 mm), four 200 mm units (width 250 mm), and one 450 mm unit
6. Pressure relief flaps, allowing pressure to be safely released upwards
7. Indicator lights and cam switches (M-0-A)
8. Cable entry plates and seals for outgoing cables (top and bottom)
9. Ammeter and voltmeter with a 7-position cam switch
10. Door locking mechanism operating from a single point with a hand-operated or tool-operated latch (on larger doors, the latch engages at three points)
11. Reliable metallic light-alloy hinges
12. Plinth
13. Base plates
14. Structure manufactured from hot-dip galvanised steel, with all visible parts finished with epoxy powder coating

Fixed standard feeder units

Rated voltage 400 V, fused system				
Connection type	Max. power kW	Front-mounted device	Space dimensions h x w (mm)	Alternative space h x w (mm)
Direct	<4	Plug fuse 25A	200 x 390	200 x 500
	5-15	switch-fuse 63A	250 x 390	200 x 500
	18,5	switch-fuse 63A	300 x 500	250 x 750
	22-45	switch-fuse 125A	300 x 500	
	55-75	switch-fuse 250A	450 x 500	450 x 750
	90	switch-fuse 250A	550 x 750	
	110-132	switch-fuse 400A	550 x 750	
	160	switch-fuse 630A	600 x 750	
	200-250	switch-fuse 630A	900 x 750	
Reversing	<4	Plug fuse 25A	300 x 390	200 x 750
	5-15	switch-fuse 63A	300 x 390	200 x 750
	18,5	switch-fuse 63A	400 x 500	
	22	switch-fuse 125A	400 x 500	
Y/Δ starter	<18,5	switch-fuse 63A	400 x 500	200 x 750

Rated voltage 690 V, fused system				
Connection type	Max. power kW	Front-mounted device	Space dimensions h x w (mm)	Alternative space h x w (mm)
Direct	<18,5	switch-fuse 63A	250 x 390	200 x 500
	22	switch-fuse 63A	300 x 500	250 x 750
	30-45	switch-fuse 125A	300 x 500	
	55	switch-fuse 125A	400 x 500	
	75-90	switch-fuse 250A	450 x 500	450 x 750
	110-160	switch-fuse 250A	550 x 750	
	200-250	switch-fuse 400A	600 x 750	
	315	switch-fuse 630A	900 x 750	
	355-450	switch-fuse 630A	1200 x 750	
Reversing	<18,5	switch-fuse 63A	300 x 390	200 x 750
	22	switch-fuse 63A	400 x 500	
Y/Δ starter	<22	switch-fuse 63A	400 x 500	200 x 750

Withdrawable standard feeder units

VOLTAGE 400 V, FUSED			
Connection	Max power kW	I max A	Size h x w mm
Direct	<11kW	50	200x250
	15-22	100	200x500
	30-45	160	200x500
	55-75	250	400x500
	90-132	400	400x750
Reversing	<11kW	50	200x250
	15-22	100	200x500
Y/Δ starter	<18.5	100	200x500
VOLTAGE 400 V, NON-FUSED			
Direct	<5.5kW	32	200x150
	<11kW	50	200x250
	15-22	100	200x500
	30-45	160	200x500
	55-75	400	400x500
	90-132	400	400x750
Reversing	<5.5	32	200x150
	<11	50	200x250
	15-22	100	200x500
Y/Δ starter	<18.5	100	200x500

VOLTAGE 690 V, FUSED			
Connection	Max power kW	I max A	Size h x w mm
Direct	<11	50	200x250
	15-22	100	200x500
	30-45	160	200x500
	55-90	250	400x500
	110-160	400	400x750
Reversing	<11	50	200x250
	15-22	100	200x500
Y/Δ starter	<18,5	100	200x500
VOLTAGE 690 V, NON-FUSED			
Direct	<5.5	32	200x150
	<11	50	200x250
	15-22	100	200x500
	30-45	160	200x500
	55-90	250	400x500
	110-160	400	400x750
Reversing	<1.1	32	200x150
	<11	50	200x250
	15-22	100	200x500
Y/Δ starter	<18.5	100	200x500

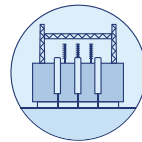
High-quality power distribution and automation systems for every project

We offer a comprehensive range of products and lifecycle services across all areas of power distribution. With professional expertise, we serve all our customer segments and help build, develop and maintain reliable systems. From a single trusted partner, you receive efficient power distribution systems and fully programmed automation solutions.



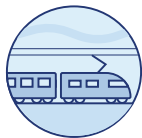
Construction

An extensive product range and expert services for building electrification.



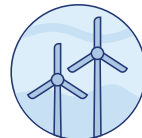
Energy

Power distribution and automation systems optimised for demanding environments.



Infrastructure

We deliver sustainable and smart power distribution for society's critical needs.



Renewable energy

We contribute to the sustainable electrification of the world through visionary solutions.



Industry

Industrial power distribution and automation systems for process control.



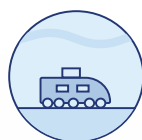
Data centers

Versatile products and systems with reliability built in as standard.



Marine industry

Reliable marine power distribution and automation systems backed by decades of experience.



Defence industry

High-quality control and automation systems.

**Products and services
throughout the entire lifecycle.**



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