

JSB-2

7.2kV Medium Voltage Switchboard



Superior Compact Reliable

7.2kV Medium Voltage Switchboard

JSB-2

-Superior- (Latest State of the Art Technology)

- Based on JRCS's wide experience of developing and producing switchboards for the marine industry, the JSB-2 has been designed using the latest advanced technology and provides a specification of 7.2kV with a short circuit capacity of 25kA as standard. A short circuit capacity of 40kA is available as optional.
- Equipped with a remote control & monitoring system interface, plant intelligence is easily developed.

-Compact- (Significant Downsizing)

- As a result of complete re-examination of all areas of the traditional medium voltage switchboard, JRCS has successfully achieved significant structural downsizing.
- This significant downsizing provides major space saving opportunities.

-Reliability- (Maximum Safety and Reliability)

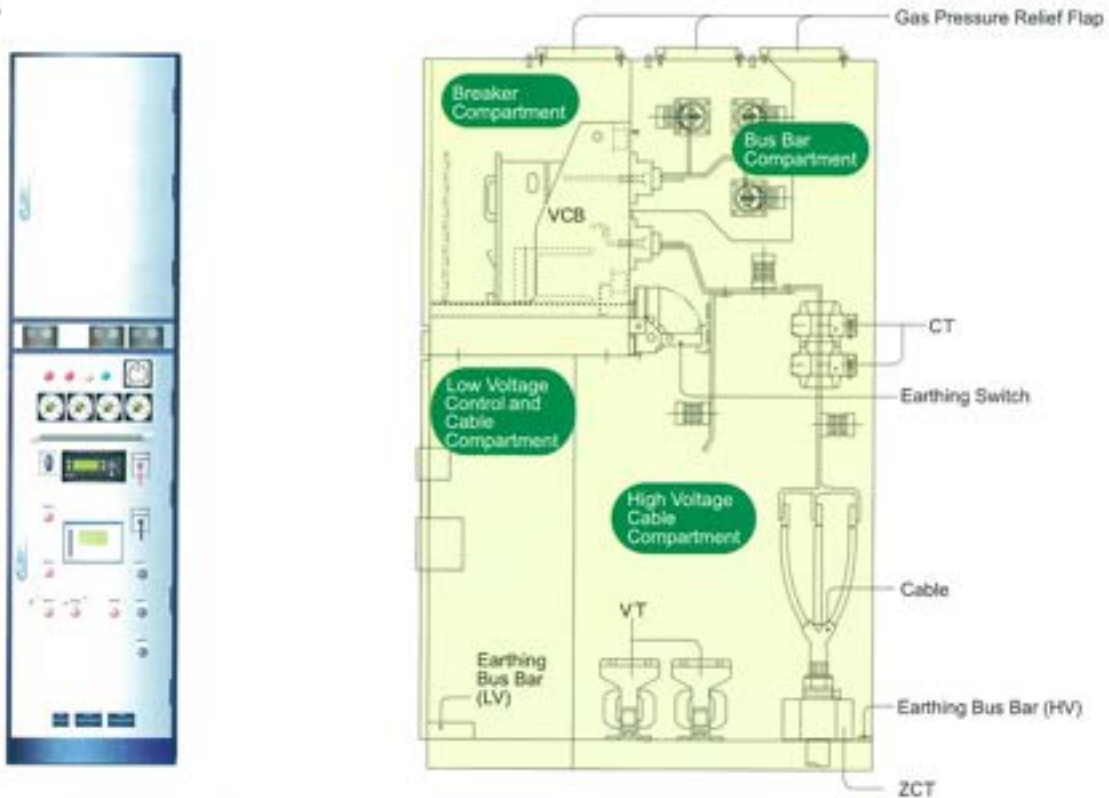
- The JSB-2 is fitted with an Earthing Switch and Mechanical Interlocks with VCB as standard for maintenance purpose.
Operation is accessible from the front panel and inside panel for enhanced safety.
- Electromagnetic locking can be provided for all doors with exclusive key locking for nominated engineer access only.
- Insulation levels are set at 28kV (AC12kV power system is applicable) thereby providing high durability against harsh marine environments and suitability for Insulated Neutral Power System applications.
- Gas Pressure Relief Flaps fitted in the top of the cubicle are to minimize potential damage in case of any accidents such as arcing etc. Additionally, Gas Pressure Relief Ducts can be installed as optional.
- Removable insulating protection covers can be installed on the bus bar connections as optional.



Structure

The JSB-2 is a metal-enclosed type switchboard, which successfully provides the combinations of major space saving by downsizing, latest HV technology, and improved structural strength.

The JSB-2 comprises of the Breaker Compartment, Main Bus Bar Compartment, High Voltage Cable Compartment, Low Voltage Control and Cable Compartment, which are separated by metal plates, thereby providing enhanced safety features.



Marine Classification Approvals

The JSB-2 has been type-approved and is compliant with the requirements of the leading Classification Societies. In addition, the JSB2 has been fully tested (such as internal arc fault tests) to meet the IEC Standards.



DNV, ABS, LR and BV

Interlock System

The JSB-2 interlock system is in compliance with IEC 62271-200 so that the front of the High Voltage Compartment cannot be opened without closing the earthing switch. All interlock operations are accessible from the front door.

- 1) Open the Circuit breaker.



- 2) Open the VCB withdrawal handle slot cover and turn the VCB handle unit. VCB is isolated at the test position.



- 3) Open the earthing switch handle slot cover and turn the handle to close the earthing switch.



- 4) The door cannot be opened until the breaker is isolated and the earthing switch is set to the charge position.



- 5) The rear door of the HV Cable Compartment can be opened by the key retained inside the Breaker Compartment.

VCB (Vacuum Circuit Breaker)

● Adoption of Low Surge Type VCB

High voltage electrical equipment will not be subjected to burnout damage due to high surge voltage since the advanced technological design of the VCB minimizes any surge voltage during the VCB opening.

● Configuration of metal shutters for enhanced safety and reliability

Independent mechanism of source / load side shutters, which can be padlocked during maintenance.

Safety Shutter opened at service position



Safety Shutter closed at drawn-out position



● Application of earthing switch with making capacity

Making peak current of up to 65kA is ensured by the spring method.

Closing Earthing Switch



● Operator emergency trip mechanism mounted on the panel surface

Mechanical trip of circuit breakers is possible in case of the control source failure.



● Application of control circuit adapter enabling automatic connection

Implementation of a mechanical interlock for auxiliary circuits enhances the safety level.



● Ratings and Specification of VCB

Type	HS2006Y-06 Mf-EZS	HS2006Y-06 Mf-ELZS	HS2006Y-12 Mf-EZS	HS2506Y-06 Mf-EZS	HS2506Y-12 Mf-EZS
Rated voltage (kV)	7.2				
Rated normal current (A)	630		1250	630	1250
Rated short-circuit breaking current (kA)	20			25	
Rated short-time withstand current (1s) (kA)	20			25	
Rated peak withstand current (kA)	52			65	
Rated insulation level	Power frequency (kV)	60			
	Lightning impulse (kV)	20			
Rated frequency (Hz)	50/60				
Rated supply voltage of closing and opening devices (V)	100, 110, 200, 220 DC/AC If AC is required for trip control power, install a capacitor trip device separately.				
Opening time (s)	0.03				
Closing time at no-load (s)	0.04				
Rated operating sequence	O-3min-CO-3min-CO O-0.3s-CO-3min-CO or CO-15s-CO				
Number of mechanical operations	10,000				
Vacuum interrupter	Standard	Low surge	Standard		
Auxiliary contact	4a + 4b Closing capacity : DC100/200V : 5/3A, AC100/200V : 20/10A				
Position detection limit switch	Service position 2c + Test position 2c Making/breaking capacity (at inductive load) : 100-250V AC/DC 2A (NC contact) and 1.5A (NO contact)				
Trip coil disconnection monitor function	Provided (Terminal No.7)				
Standard	IEC 62271-100				
Earthing switch	Rated peak withstand current : 52kA or 65kA				

● Switchgear Standard for Marine Use Certified for VCB (HS2006Y 7.2kV 20kA)

LR, NK and ABS certified.



Safety & Maintenance

● Bus Bar Protection Cover (Option)

The bus bars are insulated with the halogen free insulating protection tube to prevent electrical shock and short circuit. In addition, the removable insulation covers can be installed on the jointed parts.



● High Voltage Cable Compartment

The generator and load side engine power cable are connected in the High Voltage Cable Compartment. The other equipment such as VT and CT etc. are also installed in this compartment.



● Earthing Bus Bar

A copper Earthing Bus Bar is provided at the bottom of the High Voltage Cable Compartment.



● Inspection Window (Option)

An inspection window installed in the High Voltage Cable Compartment allows visual examination to detect any internal problem.



● Low Voltage Control and Cable Compartment

The terminal blocks for each control cable connecting the external equipment and low voltage control equipment are installed in this compartment.

The higher level arrangement for the VCB Compartment contributes to more space being available for the Low Voltage Cable Compartment and the easy connection of external control cables.



● Gas Pressure Relief Flaps

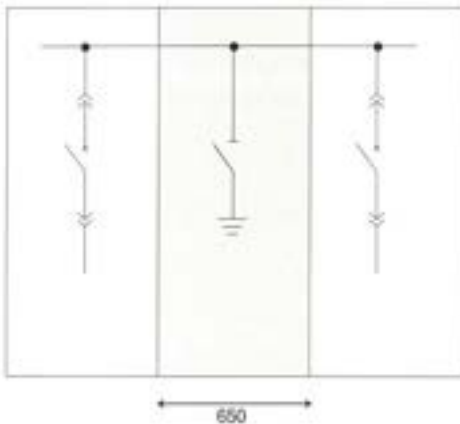
The Gas Pressure Relief Flaps are provided in the top of the cubicle to release gases which occur at the time of an arc explosion.



Maintenance Tools

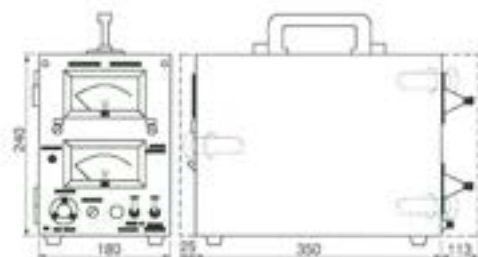
● Main Bus Bar Earthing Switch (Option)

The earthing system provided for each breaker can be also used for the main bus bar. If for added safety a main bus bar earthing switch is fitted, 650mm wide panel will be necessary.



● Vacuum Checker (Standard)

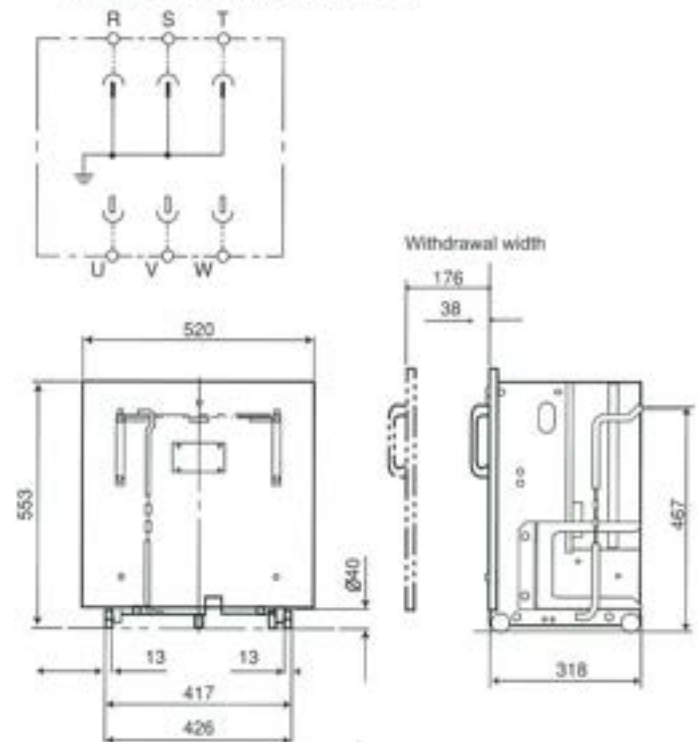
The vacuum checker is a withstand voltage tester which is provided to check the state of the vacuum in the bulb.



● Earthing Devices (Standard)

Earthing devices are provided for earthing of the main bus bar.

The main bus bar can be earthed automatically by drawing out the VCB connected to the main bus bar and installing the earthing devices into its position.



● Lifter

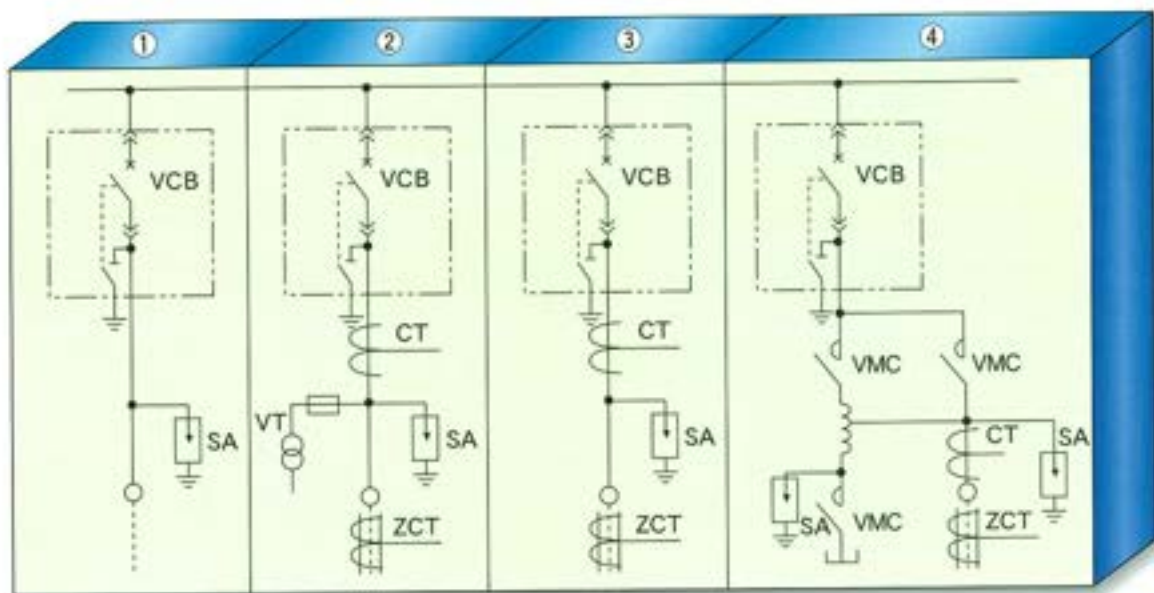
The lifter is used for when the drawn-out VCB is removed from the panel and moved to another location. Modifications on the dimensions of the lifter can be modified depending on the dimensions' limits of any room.

Standard Specification

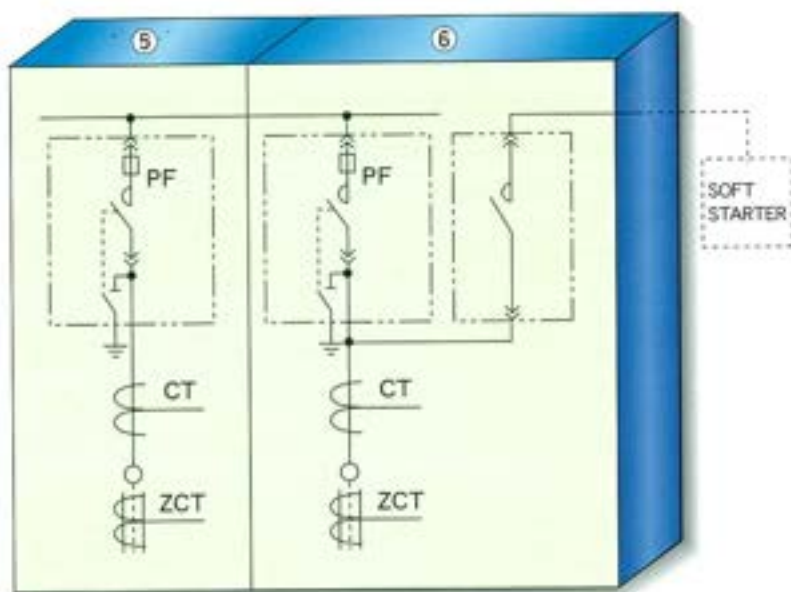
Height	2300mm
Width	850mm
Depth	1250mm



Example



SAs (surge absorber) are installed in 630AF VCB.



Application Example of VCB and VMC

Type	VCB			VMC
	630A	1250A	2000A	200A / 400A
① BUS-TIE PANEL		●	●	
② GENERATOR PANEL	●	●		
③ FEEDER PANEL	●	●		
④ AUTO TRANSFORMER	●			● (fixed type)
⑤ MOTOR PANEL	●	●		●
⑥ SOFT START MOTOR PANEL				●

Specification & Ratings

Type	JSB-2
Structure	Metal-enclosed type
Rated Insulation Voltage	AC 7.2kV
Rated Operating Voltage	AC 6.6kV
Rated Frequency	50/60Hz
Applicable Standard	JEM IEC 62271-200 (IEC 60092-508)
Applicable Classification Society	NK, LR, ABS, DNV, BV
Ambient Temperature	-10°C~45°C (Option : 50°C)
Bus Bar Rated Capacity	Maximum : 2000A
Bus Bar Short-circuit Capacity	25kA/1sec (Option 40kA/1sec)
Degree of Protection	IP42 (Option : IP43)

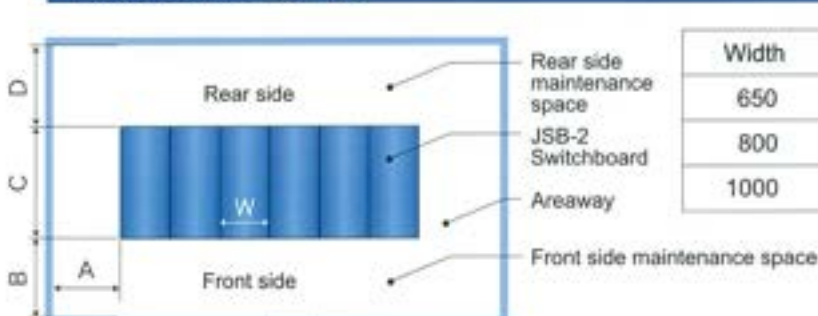
Standard Dimensions



Type	Rated Voltage (kV)	Rated Short-time Current(kA)	VCB Rated Current (A)	Dimensions (mm)		
				W 1)	D	H
JSB-2	7.2	2.5	630	650	1500	2400 2)
			1250			
			2000	700		

1) 2000A frame will not be applicable for IEC 62271-200. 2) The fixing angle 100mm will be supplied separately.

Installation Arrangement



Width	Height	A	B	C	D
650	≥ 3100	≥ 800	≥ 1800	≥ 1500	≥ 800
800					≥ 800
1000					≥ 1000

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