

3-phase Automatic Voltage Stabilizer

30kVA ~ 3000kVA

USER'S GUIDE

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Overview

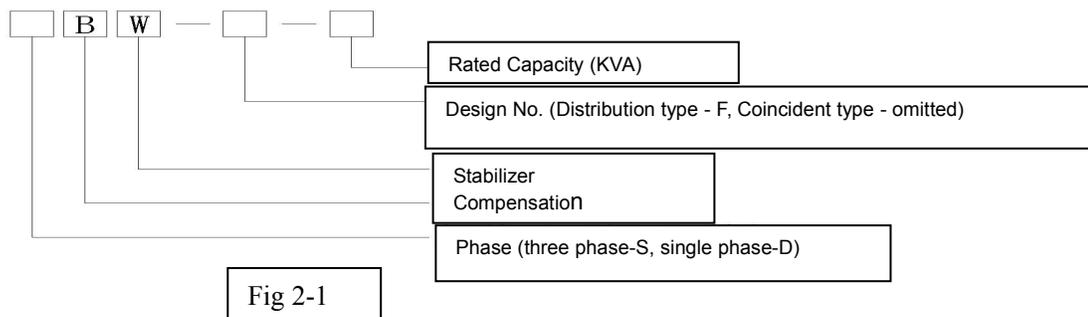
This series of products have the advantages of large capacity, high efficiency, no waveform distortion, stable voltage regulation, wide application load, can withstand transient overload, long-term continuous operation, manual and automatic switching, and over pressure, undervoltage, overcurrent, phase sequence, automatic protection of mechanical failures and other devices, as well as small size, light weight, easy to use and install, reliable operation and so on. Can be widely used in industrial, agricultural, transportation, post and telecommunications, military, railways, research and culture and other fields of large-scale mechanical and electrical equipment, metal processing equipment, elevator medical equipment, computer room computer control equipment, embroidery light textile equipment, air conditioning, radio and television and household appliances lighting and other places that need to be regulated.

It consists of a three-phase (single-phase) compensation transformer, a three-phase (single-phase) voltage regulator transformer, a transmission mechanism, a brush contact system, a control system, and a cabinet. The surface of the three-phase voltage transformer's cylindrical winding is ground. Processing, insulating paint, smooth conductor surface. In order to brush well contact, transmission mechanism consists of servo motor and worm gear, worm, sprocket, chain; brush contact system structure is reasonable and reliable, to ensure the brush pressure. Box closed cabinet type, small size, good heat dissipation. The position of the detection instrument is indicated and the indication is accurate, the control system adopts integrated circuit (microcomputer control), which has strong control ability, perfect protection function, convenient adjustment, stability and reliability.

Model, Parameters & Specifications

1. Model

The series voltage stabilizer representation method is shown in Fig.



2. Parameters

(1) Rated capacity rating (kVA)

30, 50, 60, 80, 100, 120, 150, 180, 200, 250, 300, 350, 400, 500, 600, 800, 1000,.....

The stabilizer's rated output capacity should be chosen from the following values (kVA)

30, 50, 60, 80, 100, 120, 150, 180, 200, 250, 300, 350, 400, 500, 600, 800, 1000,.....

(2) Rated voltage level

Stabilizer rated output voltage

Single phase: 220V

Three-phase: line voltage 380V or phase voltage 220 (400V, 415V, 480V or other voltages can be customized)

(3) Rated frequency

Regulated rated frequency is 50/60Hz

When other frequencies are selected, they shall meet the requirements of GB1980 or be agreed upon by the user and our company.

3. Specification

Model	Capacity (kVA)	Output current (A)	Dimension(A*B*C) (mm)	Cabinets
SBW-30KVA	30	45.6	550*880*1180	Single cabinet
SBW-50KVA	50	76.0	550*880*1180	
SBW-60KVA	60	91.2	550*880*1180	
SBW-80KVA	80	122	600*980*1230	
SBW-100KVA	100	152	600*980*1230	
SBW-120KVA	120	182	600*980*1230	
SBW-150KVA	150	228	650*1030*1280	
SBW-180KVA	180	273	650*1030*1280	
SBW-200KVA	200	304	650*1030*1280	
SBW-250KVA	250	380	800*1100*1800	
SBW-300KVA	300	456	800*1100*1800	
SBW-350KVA	350	532	800*1100*1800	
SBW-400KVA	400	608	1100*1250*2000	
SBW-450KVA	450	684	1100*1250*2000	
SBW-500KVA	500	760	1100*1250*2000	
SBW-600KVA	600	912	1100*1250*2000	
SBW-F-30KVA	30	45.6	The specific size is based on the user's requirements and the actual object	Single cabinet
SBW-F-50KVA	50	76.0		
SBW-F-60KVA	60	91.2		
SBW-F-80KVA	80	122		
SBW-F-100KVA	100	152		
SBW-F-120KVA	120	182		
SBW-F-150KVA	150	228		
SBW-F-180KVA	180	273		
SBW-F-200KVA	200	304		
SBW-F-250KVA	250	380		
SBW-F-300KVA	300	456		
SBW-F-350KVA	350	532		
SBW-F-400KVA	400	608		
SBW-F-450KVA	450	684		
SBW-F-500KVA				
SBW-F-600KVA	600	912		
SBW-F-800KVA	800	1216		
SBW-F-1000KVA	1000	1519		Three cabinets
SBW-F-1200KVA	1200	1823		Four cabinets
SBW-F-1400KVA	1400	2127		
SBW-F-1600KVA	1600	2431		
SBW-F-1800KVA	1800	2735		
SBW-F-2500KVA	2500	3798		
SBW-F-3000KVA	3000	4558		
DBW-30KVA	30	136	550*880*1180	Single cabinet
DBW-40KVA	40	182	550*880*1180	Single cabinet

DBW-50KVA	50	227	550*880*1180	
DBW-60KVA	60	273	550*880*1180	
DBW-80KVA	80	364	600*980*1230	
DBW-100KVA	100	455	600*980*1230	
DBW-120KVA	120	545	600*980*1230	
DBW-150KVA	150	682	650*1030*1280	
DBW-180KVA	180	818	650*1030*1280	
DBW-200KVA	200	909	650*1030*1280	

The above specifications are for reference only. For details, please contact our technical staff.

Working Condition

1. Environmental conditions:

- (1). Altitude $\leq 1000\text{m}$
- (2). Ambient temperature: $-15\text{ }^{\circ}\text{C} \sim +40\text{ }^{\circ}\text{C}$, daily average temperature $<+30\text{ }^{\circ}\text{C}$, annual average temperature $<+25\text{ }^{\circ}\text{C}$, temperature change rate $<5\text{K/h}$;
- (3). Relative humidity: 15% to 90% (20°C);
- (4). The place of operation shall be free of conductive or explosive dust, no serious corrosion of metals or destruction of insulating gases, vapors, chemical deposits, dust or dirt;
- (5). The installation site should be free from severe vibration or bumps.

2. AC input power conditions:

- (1). The input voltage allowable fluctuation range is recommended to be selected from the following values: $\pm 15\%$, $\pm 20\%$, $\pm 25\%$, $\pm 30\%$ (normally $\pm 15\%$, other input voltage ranges can be customized, and the user must specify when ordering);
- (2). Input voltage frequency fluctuation should not exceed 2%;
- (3). The three-phase voltage asymmetry should not exceed 5%;
- (4). The relative harmonic content of the AC voltage waveform should not exceed 10%.

Note: Any special use conditions that do not meet the above requirements should be determined by the user and the company through consultation.

Technical Characteristics

1. Voltage regulation accuracy: 2~5% adjustable, factory setting is 2%;
2. Regulator time: $\leq 1.5S$ (input voltage changes by 10% relative to the rated step);
3. Effectiveness

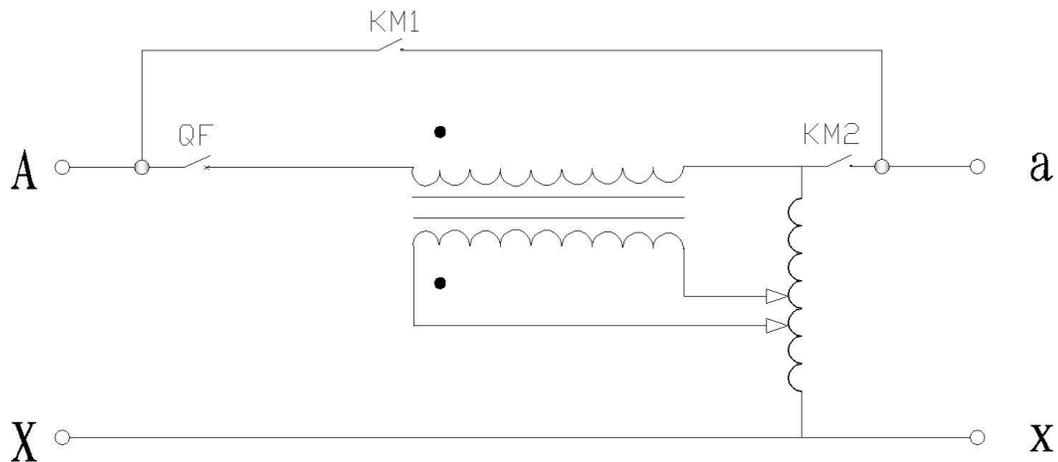
Rated capacity (kVA)	Effectiveness(%)
30~60	≥ 97
>50~120	≥ 98
>150~3000	≥ 98.5

4. Protection: Overvoltage, overcurrent, undervoltage, delay output, phase loss, phase sequence protection and mechanical fault protection;
5. Waveform distortion: no additional waveform distortion;
6. Brush life: the number of automatic adjustment should not be less than 10,000 times, brush wear $\leq 1mm$;
7. Long-term, continuous unattended work;
8. Powered on automatically or manually selected;
9. Easy to switch voltage and power supply
10. Insulation resistance: $\geq 100M\Omega$ (at ambient temperature of $20\pm 5^{\circ}C$ and relative humidity of 90%)
11. Power frequency withstand voltage: The power frequency sinusoidal voltage 2000V lasts for 60 seconds without breakdown and flashover;
12. Overload capacity:

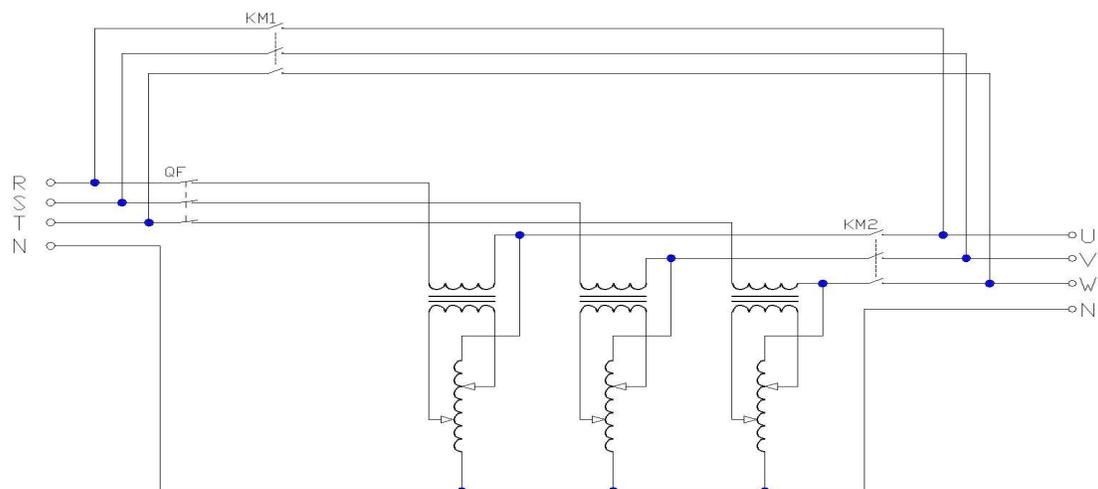
Overcurrent (%)	Duration (min)
20	≥ 60
40	≥ 15
60	≥ 5

Working Principle

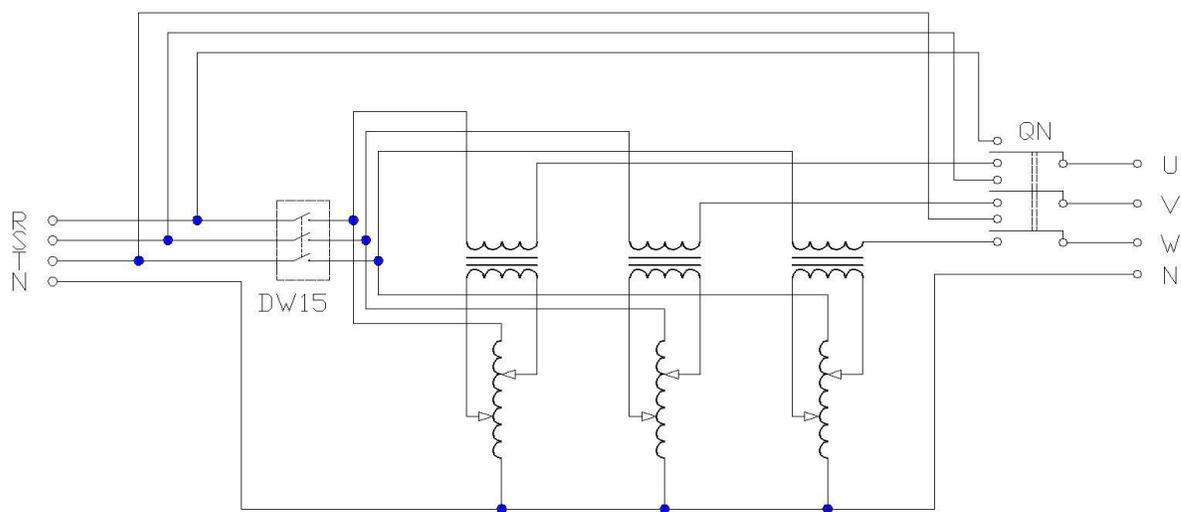
The voltage stabilizer is composed of a voltage regulator circuit, a control circuit and a servo motor. When the input voltage or load changes, the control circuit performs sampling, comparison, and amplification, and then drives the servo motor to rotate so that the position of the voltage regulator brush is changed. The coil turns ratio is automatically adjusted to maintain the output voltage stability. Larger voltage stabilizers also use the principle of voltage compensation.



DBW-30KVA~DBW-200KVA



SBW-30KVA ~ SBW-200KVA



SBW-250KVA ~ SBW-3000KVA

Shape and Function



SBW-30KVA~SBW-200KVA



SBW-250KVA~SBW-600KVA

Use and Maintenance

1. Check before power on

- (1). Check the shell, meter, switch, indicator, button, terminal, etc. without falling off damage;
- (2). Random accessories are complete;
- (3). Brushes and contact pressure regulators have smooth surfaces and no cracks or damage to brushes.

2. Wiring

- (1). Determine whether the power supply voltage and the required voltage of the load equipment match the voltage of the equipment;
- (2). The power supply is connected to the input terminal. The load is connected to the output terminal. The yellow, green, and red busbars are connected to the three phases in order. The three phases cannot be confused. The neutral wire is connected to the terminal marked with "N", and the neutral wire must be connected properly. Otherwise, the regulator will not work properly and damage the machine (single phase voltage regulator wiring is shown on the terminal cover);
- (3). Regardless of single-phase or three-phase stabilizers, no-load power testing must be performed before normal use. After all input and output lines are connected, turn off the power switch of the load (usage appliance), turn on the regulator, and check that the output voltage meets the requirements, and then turn on the power switch of the load.

3. Safety Issues

- (1). When the regulated power supply is powered on, do not arbitrarily disassemble the regulated power supply or pull the regulated power supply input/output connection to prevent electric shock or other electrical safety accidents.
- (2). The input and output connections of the power supply must be laid out reasonably to prevent tripping and tearing, resulting in leakage accidents;
- (3). The regulated power supply must be reliably grounded. The user is responsible for the electric shock or human injury caused by the operation of the ungrounded cable.
- (4). The ground wire of the stabilized power supply cannot be connected to public facilities such as heating pipes, water supply pipes, gas pipes, etc., so as to avoid infringement of the rights of third parties or causing harm;
- (5). The input and output wires of the regulated power supply should be inspected periodically to avoid loosening or falling off, thus affecting the normal use of the regulated power supply and the safety of the power supply;
- (6). The connection of the voltage stabilizer must be matched to the specified connection line capable of carrying sufficient current capacity;
- (7). Regulators should be handled with care, avoiding severe vibration during operation;
- (8). Non-professionals, please do not disassemble the regulated power supply or repair the regulated power supply.

4. Maintain

According to different use environments, there are great differences in the maintenance cycle. It is recommended that the regulator be maintained for a maximum of 3 months. During maintenance, it should be noted that the input power must be off or disconnected.

- (1). Observe whether the cooling fan and transmission mechanism of the regulator are operating normally. Each mechanical transmission component must be regularly added with lubricating oil;
- (2). Carefully clean all parts, especially brushes, bare parts of the regulator, remove dust and dirt;
- (3). Check whether there are any looseness in the internal components and thread ends. For areas with poor connection or poor contact, it must be fastened and handled in time;
- (4). Replace the worn or damaged brushes in time and find faulty or damaged components to be repaired or replaced in time;
- (5). Use a period of time (usually 2 to 3 months) to adjust the tightness of the chain.

5. Troubleshooting

Fault Phenomenon	Causes	Solutions
Master switch trip	Excessive load Lack of protection; Broken line Overpressure protection	Check if the load is too large; Check if the incoming call is missing; Check the zero line for open circuit; Reclose the switch and check if the input voltage exceeds the input voltage range by 10%. If it exceeds the normal range.
Output voltage is too low	Input voltage is too low; Drive mechanism stuck; Control failure	Check if the input voltage is lower than the rated input voltage; Notify agents or manufacturers; Notify agents or manufacturers;
Output voltage is too high	Input voltage is too high; Drive mechanism stuck; Control failure	Check if the input voltage is higher the rated input voltage; Notify agents or manufacturers; Notify agents or manufacturers;
Regulator sparks	Pressure regulator brush bad contact	Refinish the surface of the regulator with No.O paper; Check if the components of the brush are free and the spring pressure is sufficient.
Regulator smoke	Internal components are badly damaged	Stop the operation immediately and notify the agent or manufacturer.

Tips: If the regulator fails and you cannot eliminate it, you can't stop the power supply to the back-end equipment; please contact our company

Order Instructions

1. Ordering should indicate the product model, capacity, frequency, input voltage range, output voltage accuracy, inlet and outlet methods, and product dimensions;
2. For the extremely unbalanced power supply location of the three-phase grid (referring to the three-phase voltage deviation of more than 10%), in order to ensure the voltage regulator accuracy, please select the SBW-F series voltage regulator;
3. If there are other special requirements, please contact our technical staff.

After-sale Service

1. This series of regulators is free for one year warranty, free of material fees, maintenance fees (except normal operations). Outside the warranty period, provide free technical services and charge for damaged materials as appropriate;
2. For special use places such as coal and tunnels, due to the presence of gas vapor, chemical deposits, dust, dirt, and other explosive and corrosive media that affect the voltage insulation of the regulator, the quality of the product is guaranteed. We only provide paid services;
3. For special needs, please contact our technical staff directly.



1. Professionals only
2. All technical parameters, model specifications, etc. referred to in this manual are subject to change without notice.