
补偿式稳压电源

Compensated Regulated Power Supply

使用说明书

USER'S GUIDE

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概 述

Overview

本系列产品于其他形式稳压器相比较具有容量大、效率高、无波形畸变、电压调节平稳，适用负载广泛、能承受瞬时超载，可长期连续工作，手动、自动随意切换，并设有过压、欠压、过流、相序、机械故障自动保护等装置、以及体积小、重量轻、使用安装方便，运行可靠等特点。可广泛应用于工业、农业、交通、邮电、军事、铁路、科研文化等领域的大型机电设备、金属加工设备、电梯医疗器械、微机机房电脑控制设备、刺绣轻纺设备、空调广播电视及家用电器照明等一切需要稳压的场所。

它由三相（单相）补偿变压器、三相（单相）调压变压器、传动机构、电刷接触系统、控制系统和箱体等组成，三相调压变压器圆筒式绕组表面经磨光加工，去绝缘漆、呈光滑的导体面。以便于电刷良好接触；传动机构由伺服电机和蜗轮、蜗杆、链轮、链条组成；电刷接触系统结构合理可靠、以保证电刷压力；箱体采用封闭柜式，体积小，散热好，检测仪表位置注明，指示准确；控制系统采用集成电路，（微机控制），控制能力强、保护功能完善，调节方便、稳定可靠。

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.

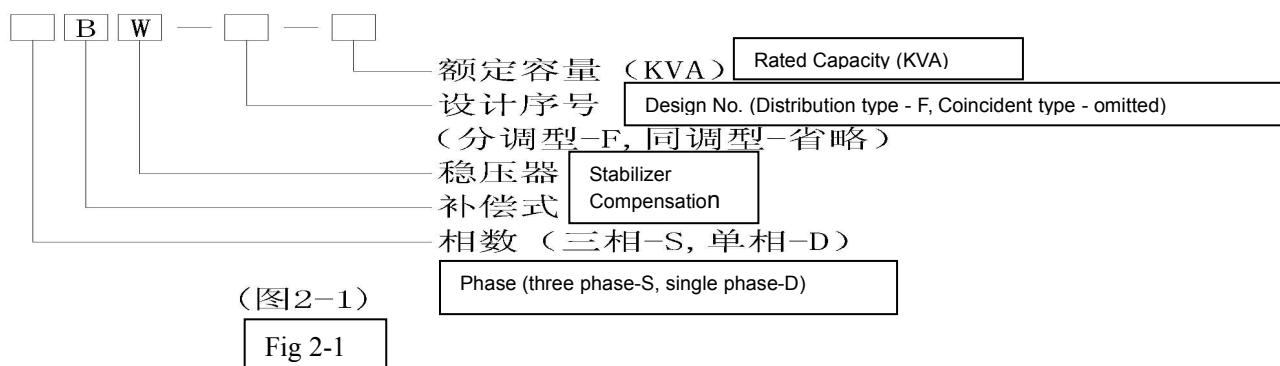
It consists of a three-phase (single-phase) compensation transformer, a three-phase (single-phase) voltage regulator transformer, a transmission mechanism, a brush contact system, a control system, and a cabinet. The surface of the three-phase voltage transformer's cylindrical winding is ground. Processing, 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.

型号、基本参数及规格 Model, Parameters & Specifications

1、型号 Model

本系列稳压器表示方法如图（2-1）所示：

The series voltage regulator representation method is shown in Fig. (2-1):



2、基本参数 Parameters

（1）、额定容量等级

Rated capacity rating

稳压器额定输出容量应在下列数值中选取（kVA）

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

The regulator'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）、额定电压等级

Rated voltage level

稳压器额定输出电压

Regulator rated output voltage

单相：220V

Single phase: 220V

三相：线电压 380V 或相电压 220V

Three-phase: line voltage 380V or phase voltage 220V

如上述等级不能满足使用时，应由用户与我司协议商定。

If the above grade can not meet the needs of use, it should be agreed by the user and our company.

(3)、额定频率

Rated frequency

稳压额定频率为 50/60Hz

Regulated rated frequency is 50/60Hz

选用其他频率时，应符合 GB1980 的规定或应由用户与我司协议规定。

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

3、规格

Specification

型号 Model	容量 (kVA) Capacity (kVA)	输出电流 (A) Output current (A)	尺寸(宽*深*高) (mm) Dimension(A*B*C) (mm)	柜数 Cabinets
SBW-30KVA	30	45.6	550*880*1180	单柜 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	单柜 Single cabinet
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	具体尺寸以用户要求 及实物为准 The specific size is based on the user's requirements and the actual object	单柜 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		

DBW、SBW 系列单、三相全自动补偿式电力稳压电源

SBW-F-500KVA	500	760		三柜 Three cabinets
SBW-F-600KVA	600	912		
SBW-F-800KVA	800	1216		
SBW-F-1000KVA	1000	1519		
SBW-F-1200KVA	1200	1823		
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	单柜 Single cabinet
DBW-40KVA	40	182	550*880*1180	
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	

以上规格尺寸仅供参考，具体细则请与我公司技术人员联系。

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

使用条件 Working Condition

1、环境条件:

Environmental conditions:

(1)、海拔高度不超过 1000m;

Altitude $\leq$ 1000m

(2)、环境温度: $-15^{\circ}\text{C} \sim +40^{\circ}\text{C}$, 日平均温度 $< +30^{\circ}\text{C}$, 年平均气温 $< +25^{\circ}\text{C}$, 温度变化率 $< 5\text{K/h}$;

Ambient temperature: $-15^{\circ}\text{C} \sim +40^{\circ}\text{C}$, daily average temperature $< +30^{\circ}\text{C}$, annual average temperature $< +25^{\circ}\text{C}$, temperature change rate $< 5\text{K/h}$;

(3)、相对湿度: 15%~90% (20°C);

Relative humidity: 15% to 90% (20°C);

(4)、运行地点应无导电或爆炸尘埃, 无严重腐蚀金属或破坏绝缘的气体、蒸汽、化学沉积、灰尘或污垢;

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)、安装场所应无严重震动或颠簸。

The installation site should be free from severe vibration or bumps.

2、交流输入电源条件:

AC input power conditions:

(1)、输入电压允许波动范围推荐在下列数值中选取: $\pm 15\%$, $\pm 20\%$, $\pm 25\% \pm 30\%$ (常规为 $\pm 15\%$, 其他输入电压范围可定做, 用户订货时需说明);

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)、输入电压频率波动应不超过 2%;

Input voltage frequency fluctuation should not exceed 2%;

(3)、三相电压不对称度应不大于 5%;

The three-phase voltage asymmetry should not exceed 5%;

(4)、交流电压波形的相对谐波含量应不超过 10%。

The relative harmonic content of the AC voltage waveform should not exceed 10%.

注: 凡不符合上述规定的特殊使用条件, 应由使用单位和我司协商确定。

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

技 术 特 性

Technical Characteristics

1、稳压精度：2~5%可调，出厂设置为 2%；

Voltage regulation accuracy: 2~5% adjustable, factory setting is 2%;

2、稳压时间：≤1.5S(输入电压相对于额定值阶跃变化 10%);

Regulator time: ≤1.5S(input voltage changes by 10% relative to the rated step);

3、效率：

Effectiveness

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

4、保护：具有过压、过流、欠压、延时输出、缺相、相序保护及机械故障保护；

Protection: Overvoltage, overcurrent, undervoltage, delay output, phase loss, phase sequence protection and mechanical fault protection;

5、波形失真：无附加波形失真；

Waveform distortion: no additional waveform distortion;

6、电刷寿命：自动调整次数应不低于 10000 次，电刷磨损≤1mm；

Brush life: the number of automatic adjustment should not be less than 10,000 times, brush wear ≤ 1mm;

7、可长期、连续无人值守工作；

Long-term, continuous unattended work;

8、上电自动启动或人工启动可选择；

Powered on automatically or manually selected;

9、稳压、市电方便切换；

Easy to switch voltage and power supply

10、绝缘电阻：≥100MΩ(环境温度为 20±5℃和相对湿度为 90%情况下)

Insulation resistance: ≥100MΩ (at ambient temperature of 20±5℃ and relative humidity of 90%)

11、工频耐压:工频正弦电压 2000V 历时 60S 无击穿和闪络现象；

Power frequency withstand voltage: The power frequency sinusoidal voltage 2000V lasts for 60 seconds without breakdown and flashover;

12、过载能力：

Overload capacity:

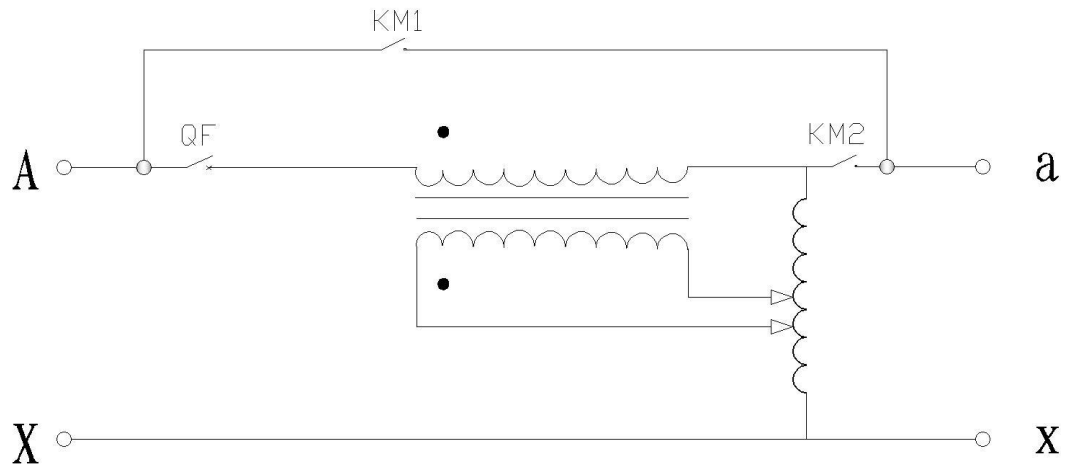
过载电流 (%) Overcurrent (%)	持续时间 (min) Duration (min)
20	≥60
40	≥15
60	≥5

工 作 原 理

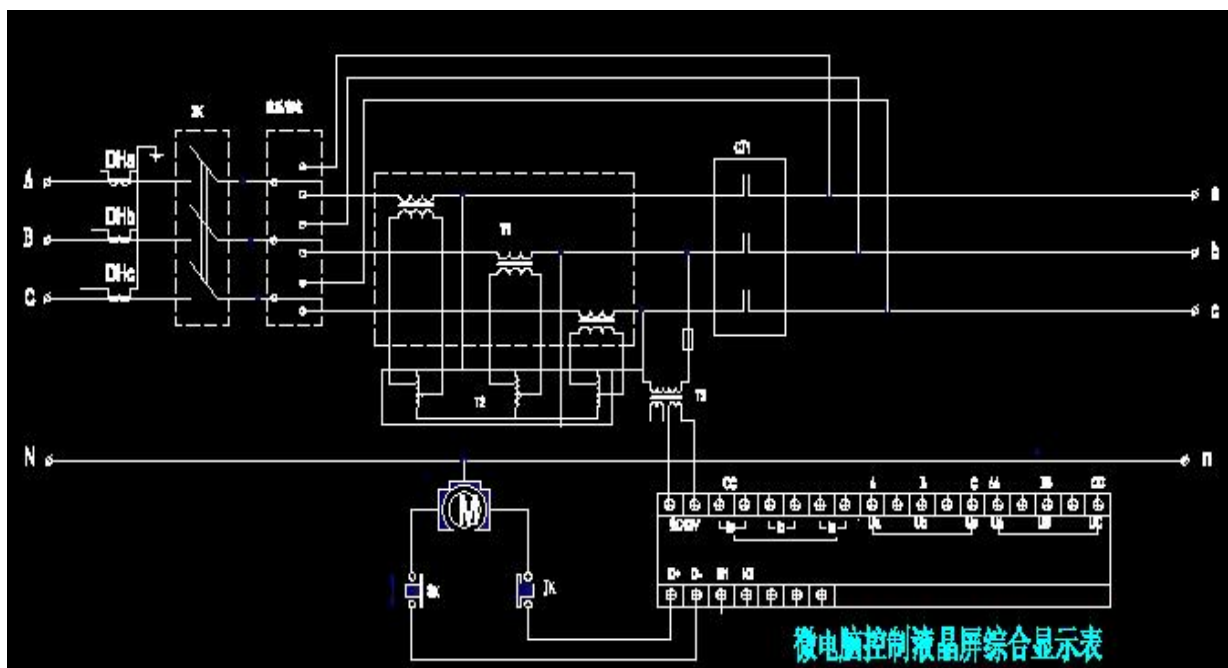
Working Principle

稳压器由调压电路、控制电路及伺服电机等组成，当输入电压或负载变化时，控制电路进行取样、比较、放大，然后驱动伺服电机转动，使调压器电刷的位置改变，通过自动调整线圈匝数比，从而保持输出电压的稳定。容量较大的稳压器，还采用电压补偿的原理工作。

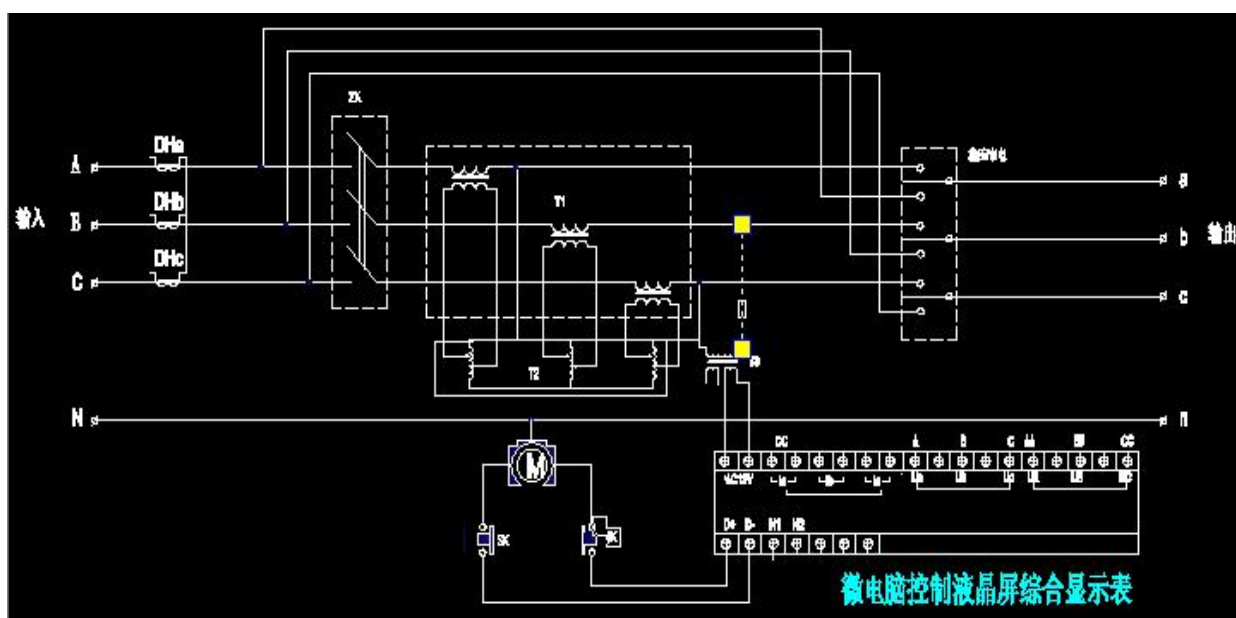
The voltage regulator is composed of a voltage regulator circuit, a control circuit and a servo motor. When the input voltage or load changes, the control circuit performs sampling, comparison, and amplification, and then drives the servo motor to rotate so that the position of the voltage regulator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



DBW-30KVA~DBW-200KVA原理图



SBW-30KVA~SBW-400KVA原理图



SBW-400KVA~SBW-3000KVA原理图

外形及功能

Shape and Function



- 1、输入电压指示
Input Voltage Indication
- 2、电流指示 Current Indication
- 3、输出电压指示
Output Voltage Indication
- 4、缺相指示
Lack of Instructions
- 5、欠压指示
Undervoltage Indication
- 6、过压指示
Over Pressure Indication
- 7、过流指示
Over-current Indication
- 8、手动显示
Manual Display
- 9、自动显示
Automatic Display

SBW-30KVA~SBW-400KVA

使用及维修 Use and Maintenance

1、通电前检查

Check before power on

(1)、检查外壳、电表、开关、指示灯、按钮、接线端子等无脱落损坏;

Check the shell, meter, switch, indicator, button, terminal, etc. without falling off damage;

(2)、随机附件齐全;

Random accessories are complete;

(3)、电刷与接触调压器的磨面光滑, 电刷无裂缝与损坏。

Brushes and contact pressure regulators have smooth surfaces and no cracks or damage to brushes.

2、接线

Wiring

(1)、确定电源电压及负载设备所需电压是否与本设备电压匹配;

Determine whether the power supply voltage and the required voltage of the load equipment match the voltage of the equipment;

(2)、电源接到输入接线端, 负载接到输出接线端, 并按母线颜色黄、绿、红依次分别接在三相上, 三相不可错乱。中线接到标有“N”的接线端上, 中线务必接好, 否则稳压器将无法正常工作, 并且损坏本机(单相稳压器接线按端子盖板上的图示);

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)、无论是单相或三相稳压器, 在正常使用前必须进行空载通电测试。在接好所有输入输出线后, 应先关掉负载(用电器)的电源开关, 再开启稳压器, 检查输出电压符合所需后, 再开启负载的电源开关。

Regardless of single-phase or three-phase regulators, 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、安全事宜

Safety Issues

(1)、稳压电源在通电启动时, 请勿随意拆开稳压电源或拨拉稳压电源输入输出连线, 以防触电或其它电气安全事故;

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)、稳压电源输入输出连线一定要布置合理,防止踩踏磨破,造成漏电事故;
The input and output connections of the power supply must be laid out reasonably to prevent trampling and tearing, resulting in leakage accidents;

(3)、稳压电源一定要可靠接地,因不接地线运行而造成的触电或人体伤害,由用户自行负责;

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)、稳压电源的地线不能接在暖气管道、供水管道、燃气管道等公益设施上,以免侵犯第三方权利或造成危害;

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)、应定期检查稳压电源的输入和输出连线,以免松动或脱落,从而影响稳压电源的正常使用和用电安全;

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)、稳压器的连接线的选配必须达到规定能承载足够的电流容量的连接线;
The connection of the voltage regulator must be matched to the specified connection line capable of carrying sufficient current capacity;

(7)、稳压器应轻拿轻放,在工作的时候避免剧烈振动;

Regulators should be handled with care, avoiding severe vibration during operation;

(8)、非专业人员请不要拆开稳压电源或对稳压电源进行维修。

Non-professionals, please do not disassemble the regulated power supply or repair the regulated power supply.

4、维护

Maintain

根据不同的使用环境,维护周期有较大的差异性。建议最长3个月对稳压器进行一次维护,维护时应注意,输入电源必须处于关闭或断开状态。

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)、观察稳压器的冷却风扇和传动机构是否运行正常,各机械传动部件,必须定期添加润滑油;

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)、仔细清扫各部件,特别是电刷,调压器的裸露部分,去除灰尘,污垢;
Carefully clean all parts, especially brushes, bare parts of the regulator, remove dust and dirt;

(3)、检查内部各部件和线头是否有松动现象,对于有连接不牢或接触不良的地方,必须及时紧固和处理;

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) 及时更换磨损严重或损坏的电刷，发现有故障或损坏的元器件及时维修或更换；

Replace the worn or damaged brushes in time and find faulty or damaged components to be repaired or replaced in time;

(5)、使用一段时间（一般为2~3个月），调整链条的松紧。

Use a period of time (usually 2 to 3 months) to adjust the tightness of the chain.

5、故障排除

Troubleshooting

故障现象 Fault Phenomenon	原因 Causes	处理方法 Solutions
总开关跳闸 Master switch trip	负荷过大; Excessive load 缺相保护; Lack of protection; 断零线; Broken line 超压保护; Overpressure protection	检查负荷是否过大; Check if the load is too large; 检查输入端来电是否缺相; Check if the incoming call is missing; 检查零线是否断路; Check the zero line for open circuit; 重新合闸，检查输入电压是否超过输入电压范围 10%，若超过属正常现象。 Reclose the switch and check if the input voltage exceeds the input voltage range by 10%. If it exceeds the normal range.
输出电压过低 Output voltage is too low	输入电压过低; Input voltage is too low; 传动机构卡死; Drive mechanism stuck; 控制失效; Control failure	检查输入电压是否低于额定输入电压; Check if the input voltage is lower than the rated input voltage; 通知代理商或厂家; Notify agents or manufacturers; 通知代理商或厂家; Notify agents or manufacturers;
输出电压过高 Output voltage is too high	输入电压过高; Input voltage is too high; 传动机构卡死; Drive mechanism stuck; 控制失效; Control failure	检查输入电压是否超过额定输入电压; Check if the input voltage is higher the rated input voltage; 通知代理商或厂家; Notify agents or manufacturers; 通知代理商或厂家; Notify agents or manufacturers;
稳压器有火花 Regulator sparks	调压器碳刷接触不良 Pressure regulator brush bad contact	用O号砂纸将调压器表面重新磨光; Refinish the surface of the regulator with No.O paper; 检查碳刷的组件是否活动自如，弹簧压力是否足 够。 Check if the components of the brush are free and the spring pressure is sufficient.
稳压器冒烟 Regulator smoke	内部元件严重损坏 Internal components are badly damaged	立即停止运行，通知代理商或厂家。 Stop the operation immediately and notify the agent or manufacturer.

友情提示：若稳压器出现故障，你无法排除时，又不能停止给后端设备供电时；请联系我公司。

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.

订 货 须 知

Order Instructions

1、订货应说明产品型号、容量、频率、输入电压范围、输出电压精度、进出线方式以及产品外形尺寸；

Ordering should indicate the product model, capacity, frequency, input voltage range, output voltage accuracy, inlet and outlet methods, and product dimensions;

2、针对三相电网极不平衡的用电场所（指三相电压偏差10%以上），为保证稳压器的稳压精度，请选择SBW-F系列稳压器；

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、如有其他特殊要求，请与我司技术人员联系。

If there are other special requirements, please contact our technical staff.

售 后 服 务

After-sale Service

1、本系列稳压器实行一年内免费保修，免收材料费、维修费（非正常操作除外）。保修期外，免费提供技术服务，对损坏材料酌情收费；

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、对于煤炭，隧道等特殊使用场所，因存在影响稳压器绝缘的气体蒸汽，化学沉积，灰尘，污垢及其他爆炸性和腐蚀性介质，产品的质量保修，我司只提供有偿服务；

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、特殊需要时，请直接与我司技术人员联系。

For special needs, please contact our technical staff directly.

1、严禁非专业人员带电操作；

Professionals only

2、本说明书所涉及的各项技术参数，型号规格等如有变更，请恕不另行通知。

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