光伏、风电箱式升压站

SOLAR PHOTOVOLTAIC AND WIND POWER STEP-UP SUBSTATION

产品概述
Product Overview

伴随着社会经济的不断发展，绿色环保逐步成为当今世界的主题，同时风力发电和太阳能光伏发电市场的蓬勃发展，也带动了新能源发电用箱式变电站市场的快速发展。我公司生产的10kV、35kV光伏、风力发电用变压器和预装式变电站消化吸收了国内外的先进技术，结合国内的市场需求自行开发的系列产品。该系列产品是将变压器部分、高压部分、低压部分及电源变压器等辅助设备配置在一个公用外壳内并通过型式试验的一种成套变电站。该结构产品融合了欧变与美变的优点，是针对风电、光电的特殊性专门设计的新型升压设备，具有成套性强、便于安装、施工周期短、运行费用低、结构强度高、防腐性能强、环保节能等优点。

With the continuous development of social economy, the conception of environment friendly has gradually become more and more popular currently. Wind power and solar photovoltaic power market is booming, leading to the rapid development of substation for new energy power market. QRE has digested and absorded the advanced technology at home and abroad, and self-designed and self-developed the 10kV 35kV solar photovoltaic and wind power transformer and prefabricated substation combined with the domestic market demand. This series of product is a whole set of substation including transformer, HV part, LV part and other auxiliary equipment in a common enclosure passed the type test. The structure of product combines the advantages of European style substation and American style substation. It's new step up equipment specially designed for the particularity with the advantages of strong complete set, easy for installation, short construction period, low operating cost, high structural strength, excellent anticorrosive property, environment friendly and so on.

产品特点
Product Features

光伏、风电箱式升压站，系统布局合理、紧凑，包括低压进线柜、变压器及高压出线柜三部分，分别独立安装在三个隔室内，呈“目”字型或者“L”字型布置，功能完善，维护方便；低压室内设置远动装置及电源变压器，实现箱变的远动控制及箱变自供电，满足光伏、风力发电系统需求。

The solar photovoltaic and wind power step up substations with its compact and reasonable system layout, including LV incoming cubicle, transformer and HV incoming cubicle which are independently installed in three compartments, are arranged into coupled "F" type or "L" type, fully featured and easily maintained. The LV compartment is equipped with remote device and power supply transformer to realize the remote control and self power supply, meeting the need of system of solar photovoltaic and wind power.

1、光伏、风力发电用预装式升压站包括低压进线柜、变压器及高压出线柜三部分，分别独立安装在三个隔室内，呈“目”字型布置，低压室内设置远动装置及电源变压器，实现箱变的远动控制及箱变自供电。35kV高压开关的隔离刀与熔断器组合电器分室放置，解决了一般开关更换熔断器或灭弧室需要停电整条线路的问题。

1、The solar photovoltaic and wind power step up prefabricated substations include LV incoming cubicle, transformer and HV incoming cubicle which are independently installed in three compartments, are arranged into coupled “F” type. The LV compartment is equipped with remote device and power supply transformer to realize the remote control and self power supply. 35kV HV switch-disconnectors and fuse-combination units placed in two different rooms solves the problem that when to replace the switch, fuse or arc-chute, the whole line need to be shut down.

2、光伏、风力发电用组合式升压站包括低压进线柜、变压器及安装在变压器油箱内的高压负荷开关、熔断器等元器件组成，箱变整体呈“L”和“目”字型布置，低压室内设置远动装置及电源变压器，实现箱变的远动控制及箱变自供电。由于无变压器室，整机的占地面积相对小，整机成本较低，用户投资减少。

3、采用变压器散热片敞开式安装时，实现了完全自然通风散热性能，节约了大量的因强迫通风带来的电能损失，也杜绝了因风扇性能不可靠而容易超温跳闸的缺陷；也实现了带电体完全密封在箱变内，解决了防尘问题。

4、“五防”功能齐全，操作维护方便，根据需要可满足雨天检修维护的要求。

2、The solar photovoltaic and wind power step up pad-mounted substations includes the LV incoming cubicle, transformer and the HV load switch and fuse installed inside the transformer tank. The arrangement of the whole set is divided into "L" type and coupled "F" type. The LV compartment is equipped with remote device and power supply transformer to realize the remote control and self power supply. As there is no transformer room, the whole set covers relatively less area, less cost and reduces the investment of user.

3、Adoptd the radiator installed in open, achieved the heat dissipating performance of fully air natural ventilation which saves the power loss caused by air forced ventilation, avoids the defect of over temperature trip caused by the unreliable performance of fans in air forced ventilation, makes all the live parts fully sealed in the substation, and realizes the dust-proof.

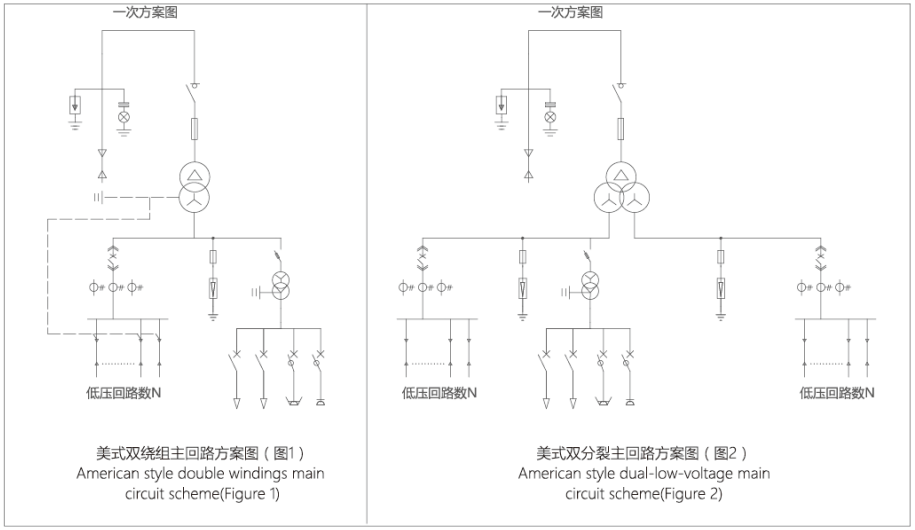
4、"Five proof" functions completed, easy to make operation and maintenance, meeting the requirement of check and maintenance in rainy days.

型号说明
Model Coding

Z G S □—(Z)·□ □ / □—□

- 低压额定电压(kV) LV Rated Volatge
- 高压额定电压(kV) HV Rated Voltage
- 变压器额定容量(kVA) Rated Capacity
- “G”光伏发电用 G: Solar Photovoltaic Power
- “F”风力发电用 F: Wind Power
- “Z”高压终端接线 Z: HV Terminal Connected
- 损耗水平代号 Loss Level Code
- “S”三相 S: Three-Phase
- 共箱式 Shared Enclosure
- 组合 Combined

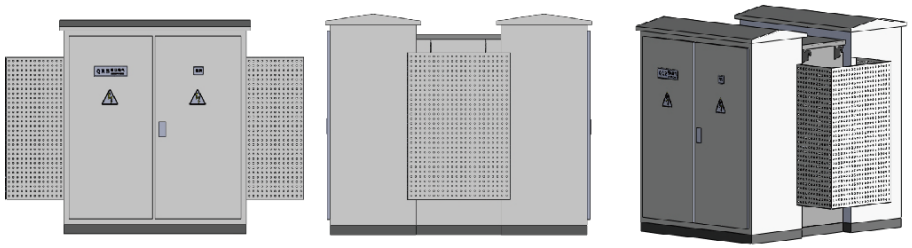
方案图
Schematic Diagram



美式双绕组主回路方案图（图1）
American style double windings main circuit scheme(Figure 1)

美式双分裂主回路方案图（图2）
American style dual-low-voltage main circuit scheme(Figure 2)

外形图
Outline Drawing



主要技术参数
Technical Parameters

箱变名称 Description of Pad-mounted transformer	变压器型号 Model	电压组合 Voltage		空载损耗 No load loss (kW)	负载损耗 Load loss (kW)	空载电流 No load current (%)	短路阻抗 Short-circuit impedance (%)	油重 Oil weight (kg)
		高压(kV) H.V	低压(kV) L.V					
10kV风力发电用组合式变压器 10kV wind power combined transformer	ZGS11-Z·F-630/10	10 10.5	0.69	0.810	6.20	0.60	4.5	1270
	ZGS11-Z·F-800/10			0.570	6.20	0.60	4.5	1270
	ZGS11-Z·F-1000/10			0.980	7.50	0.60	4.5	1350
	ZGS11-Z·F-1250/10			0.700	7.50	0.60	4.5	1350
	ZGS11-Z·F-1600/10			1.15	10.3	0.60	4.5	1470
	ZGS11-Z·F-2000/10			0.830	10.3	0.60	4.5	1470
	ZGS11-Z·F-2500/10			1.36	12.0	0.50	4.5	1510
	ZGS13-Z·F-630/10			0.970	12.0	0.50	4.5	1510
	ZGS13-Z·F-800/10			1.64	14.5	0.50	4.5	1790
	ZGS13-Z·F-1000/10			1.17	14.5	0.50	4.5	1790
	ZGS13-Z·F-1250/10			1.94	18.3	0.40	5.0	1830
	ZGS13-Z·F-1600/10			1.38	18.3	0.40	5.0	1830
	ZGS13-Z·F-2000/10			2.29	21.2	0.40	5.0	1980
	ZGS13-Z·F-2500/10			1.63	21.2	0.40	5.0	1980
35kV风力发电用组合式变压器 35kV wind power combined transformer	ZGS11-Z·F-630/35	35 38.5	0.69	0.830	7.86	0.65	6.5	1380
	ZGS11-Z·F-800/35			0.980	9.40	0.65	6.5	1480
	ZGS11-Z·F-1000/35			1.15	11.5	0.65	6.5	1600
	ZGS11-Z·F-1250/35			1.40	13.9	0.60	6.5	1710
	ZGS11-Z·F-1600/35			1.69	16.6	0.60	6.5	1920
	ZGS11-Z·F-2000/35			1.99	19.7	0.55	6.5	2010
	ZGS11-Z·F-2500/35			2.36	23.2	0.55	6.5	2130
	ZGS13-Z·F-630/35			0.665	7.86	0.65	6.5	1380
	ZGS13-Z·F-800/35			0.790	9.40	0.65	6.5	1480
	ZGS13-Z·F-1000/35			0.92	11.5	0.65	6.5	1600
	ZGS13-Z·F-1250/35			1.12	13.9	0.60	6.5	1710
	ZGS13-Z·F-1600/35			1.35	16.6	0.60	6.5	1920
	ZGS13-Z·F-2000/35			1.59	19.7	0.55	6.5	2010
	ZGS13-Z·F-2500/35			1.89	23.2	0.55	6.5	2130

箱变名称 Description of Pad-mounted transformer	变压器型号 Model	电压组合 Voltage		空载损耗 No load loss (kW)	负载损耗 Load loss (kW)	空载电流 No load current (%)	短路阻抗 Short-circuit impedance (%)	油重 Oil weight (kg)
		高压(kV) H.V	低压(kV) L.V					
10kV光伏发电用组合式变压器 10kV photovoltaic power combined transformer	ZGS11-Z·G-630/10	10 10.5	0.315 0.315×2 0.48 0.48×2 0.5 0.5×2	0.810	6.20	0.60	4.5	1270
	ZGS11-Z·G-800/10			0.980	7.50	0.60	4.5	1350
	ZGS11-Z·G-1000/10			1.15	10.3	0.60	4.5	1470
	ZGS11-Z·G-1250/10			1.36	12.0	0.50	4.5	1510
	ZGS11-Z·G-1600/10			1.64	14.5	0.50	4.5	1790
	ZGS11-Z·G-2000/10			1.94	18.3	0.40	5.0	1830
	ZGS11-Z·G-2500/10			2.29	21.2	0.40	5.0	1980
	ZGS13-Z·G-630/10			0.570	6.20	0.60	4.5	1270
	ZGS13-Z·G-800/10			0.700	7.50	0.60	4.5	1350
	ZGS13-Z·G-1000/10			0.830	10.3	0.60	4.5	1470
	ZGS13-Z·G-1250/10			0.970	12.0	0.50	4.5	1510
	ZGS13-Z·G-1600/10			1.17	14.5	0.50	4.5	1790
	ZGS13-Z·G-2000/10			1.38	18.3	0.40	5.0	1830
	ZGS13-Z·G-2500/10			1.63	21.2	0.40	5.0	1980
35kV光伏发电用组合式变压器 35kV photovoltaic power combined transformer	ZGS11-Z·G-630/35	35 38.5	0.315 0.315×2 0.48 0.48×2 0.5 0.5×2	0.810	7.86	0.65	6.5	1380
	ZGS11-Z·G-800/35			0.980	9.40	0.65	6.5	1480
	ZGS11-Z·G-1000/35			1.15	11.5	0.65	6.5	1600
	ZGS11-Z·G-1250/35			1.40	13.9	0.60	6.5	1710
	ZGS11-Z·G-1600/35			1.69	16.6	0.60	6.5	1920
	ZGS11-Z·G-2000/35			1.99	19.7	0.55	6.5	2010
	ZGS11-Z·G-2500/35			2.36	23.2	0.55	6.5	2130
	ZGS13-Z·G-630/35			0.665	7.86	0.65	6.5	1380
	ZGS13-Z·G-800/35			0.780	9.40	0.65	6.5	1480
	ZGS13-Z·G-1000/35			0.920	11.5	0.65	6.5	1600
	ZGS13-Z·G-1250/35			1.12	13.9	0.60	6.5	1710
	ZGS13-Z·G-1600/35			1.35	16.6	0.60	6.5	1920
	ZGS13-Z·G-2000/35			1.59	19.7	0.55	6.5	2010
	ZGS13-Z·G-2500/35			1.89	23.2	0.55	6.5	2130

型号说明
Model Coding

Y □ B —□ / □—□

- 变压器额定容量(kVA) Rated Capacity
- 低压额定电压(kV) LV Rated Volatge
- 高压额定电压(kV) HV Rated Voltage
- 变电站 Substation
- "G"光伏发电用 G: Solar Photovoltaic Power
- "F"风力发电用 F: Wind Power
- 预装式 Prefabricated Type

选型说明
Type Selection Instruction

1、设备外壳部分：根据用户需要可采用钢板外壳、不锈钢外壳等；

2、设备高压部分：根据用户需要预装式变电站可采用全绝缘、半绝缘、真空负荷开关、固体绝缘环网柜等；

3、设备变压器部分：根据用户需要预装式变电站可采用油浸式变压器、干式变压器；组合式变压器只能为油浸式变压器。

4、设备低压回路：用户可根据实际需要进行配置，确定方案；

5、设备外形布置：外形布置可根据方案的不同，进行合理的、优化的布置方案，通常分为变压器敞开式和变压器全封闭两种型式。

1、Metal enclosure and stainless steel enclosure can be choosed by customer's requirements.

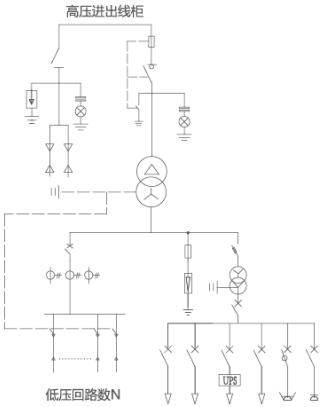
2、Fully insulation, semi-insulation, vacuum load switch, solid insulation ring, etc. can be selected as H.V parts of transformer parts according to the customer's requirements.

3、Oil-immersed transformer, Dry type transformer and Amorphous alloy transformer can be selected as per customer's requirements. The combined transformer can only be oil immersed transformer.

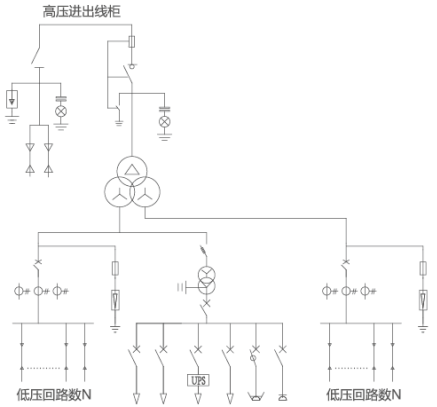
4、L.V circuit can be changed as per customer's requirements.

5、The outline arrangement can be reasonablly optimized according to different solutions, usually divided into open type and fully sealed type.

方案图
Schematic Diagram



欧式双绕裂主回路方案图（图3）
European style double windings main circuit scheme (Figure 3)



欧式双分裂主回路方案图（图4）
European style dual-low-voltage main circuit scheme(Figure 4)

主要技术参数
Technical Parameters

箱变名称 Description of Pad-mounted transformer	箱变型号 Model of Pad-mounted transformer	变压器型号 Model	电压组合 Voltage		空载损耗 No load loss (kW)	负载损耗 Load loss (kW)	空载电流 No load current (%)	短路阻抗 Short-circuit impedance (%)
			高压(kV) H.V	低压(kV) L.V				
10kV风力发电用预装式变电站 10kV wind power prefabricated substation	YFB-12/0.69-□	S11-M-630/10	10 10.5	0.69	0.810	6.20	0.60	4.5
		S13-M-630/10			0.570	6.20	0.60	4.5
		SCB10-630/10			1.30	6.50	0.85	6.0
		SCB11-630/10			1.17	6.50	0.85	6.0
		S11-M-800/10			0.980	7.50	0.60	4.5
		S13-M-800/10			0.700	7.50	0.60	4.5
		SCB10-800/10			1.52	7.59	0.85	6.0
		SCB11-800/10			1.37	7.59	0.85	6.0
		S11-M-1000/10			1.15	10.3	0.60	4.5
		S13-M-1000/10			0.830	10.3	0.60	4.5
		SCB10-1000/10			1.77	8.86	0.85	6.0
		SCB11-1000/10			1.59	8.86	0.85	6.0
		S11-M-1250/10			1.36	12.0	0.50	4.5
		S13-M-1250/10			0.970	12.0	0.50	4.5
		SCB10-1250/10			2.09	10.6	0.85	6.0
		SCB11-1250/10			1.88	10.6	0.85	6.0
		S11-M-1600/10			1.64	14.5	0.50	4.5
		S13-M-1600/10			1.17	14.5	0.50	4.5
		SCB10-1600/10			2.45	12.8	0.85	6.0
		SCB11-1600/10			2.21	12.8	0.85	6.0
		S11-M-2000/10			1.94	18.3	0.40	5.0
		S13-M-2000/10			1.38	18.3	0.40	5.0
		SCB10-2000/10			3.05	15.7	0.7	6.0
		SCB11-2000/10			2.75	15.7	0.7	6.0
		S11-M-2500/10			2.29	21.2	0.40	5.0
		S13-M-2500/10			1.63	21.2	0.40	5.0
		SCB10-2500/10			3.60	18.6	0.7	6.0
		SCB11-2500/10			3.24	18.6	0.7	6.0

箱变名称 Description of Pad-mounted transformer	箱变型号 Model of Pad-mounted transformer	变压器型号 Model	电压组合 Voltage		空载损耗 No load loss (kW)	负载损耗 Load loss (kW)	空载电流 No load current (%)	短路阻抗 Short-circuit impedance (%)
			高压(kV) H.V	低压(kV) L.V				
35kV风力发电用预装式变电站 35kV wind power prefabricated substatio	YFB-40.5/0.69-□	S11-M-630/35	35 38.5	0.69	0.830	7.86	0.65	6.5
		S13-M-630/35			0.665	7.86	0.65	6.5
		SCB10-630/35			1.86	8.46	1.0	6.0
		SCB11-630/35			1.67	8.46	1.0	6.0
		S11-M-800/35			0.980	9.40	0.65	6.5
		S13-M-800/35			0.780	9.40	0.65	6.5
		SCB10-800/35			2.16	10.1	1.0	6.0
		SCB11-800/35			1.94	10.1	1.0	6.0
		S11-M-1000/35			1.15	11.5	0.65	6.5
		S13-M-1000/35			0.920	11.5	0.65	6.5
		SCB10-1000/35			2.43	11.4	0.75	6.0
		SCB11-1000/35			2.19	11.4	0.75	6.0
		S11-M-1250/35			1.40	13.9	0.60	6.5
		S13-M-1250/35			1.12	13.9	0.60	6.5
		SCB10-1250/35			2.83	14.0	0.75	6.0
		SCB11-1250/35			2.55	14.0	0.75	6.0
		S11-M-1600/35			1.69	16.6	0.60	6.5
		S13-M-1600/35			1.35	16.6	0.60	6.5
		SCB10-1600/35			3.24	16.9	0.75	6.0
		SCB11-1600/35			2.92	16.9	0.75	6.0
		S11-M-2000/35			1.99	19.7	0.55	6.5
		S13-M-2000/35			1.59	19.7	0.55	6.5
		SCB10-2000/35			3.82	20.0	0.75	6.0
		SCB11-2000/35			3.44	20.0	0.75	6.0
		S11-M-2500/35			2.36	23.2	0.55	6.5
		S13-M-2500/35			1.89	23.2	0.55	6.5
		SCB10-2500/35			4.45	24.0	0.75	6.0
		SCB11-2500/35			4.01	24.0	0.75	6.0

箱变名称 Description of Pad-mounted transformer	箱变型号 Model of Pad-mounted transformer	变压器型号 Model	电压组合 Voltage		空载损耗 No load loss (kW)	负载损耗 Load loss (kW)	空载电流 No load current (%)	短路阻抗 Short-circuit impedance (%)
			高压(kV) H.V	低压(kV) L.V				
10kV光伏发电用预装式变电站 10kV photovoltaic power prefabricated substation	YGB-12/□-□	S11-M-630/10	10 10.5	0.315 0.315×2 0.48 0.48×2 0.5 0.5×2	0.810	6.20	0.60	4.5
		S13-M-630/10			0.570	6.20	0.60	4.5
		SCB10-630/10			1.30	6.50	0.85	6.0
		SCB11-630/10			1.17	6.50	0.85	6.0
		S11-M-800/10			0.980	7.50	0.60	4.5
		S13-M-800/10			0.700	7.50	0.60	4.5
		SCB10-800/10			1.52	7.59	0.85	6.0
		SCB11-800/10			1.37	7.59	0.85	6.0
		S11-M-1000/10			1.15	10.3	0.60	4.5
		S13-M-1000/10			0.830	10.3	0.60	4.5
		SCB10-1000/10			1.77	8.86	0.85	6.0
		SCB11-1000/10			1.59	8.86	0.85	6.0
		S11-M-1250/10			1.36	12.0	0.50	4.5
		S13-M-1250/10			0.970	12.0	0.50	4.5
		SCB10-1250/10			2.09	10.6	0.85	6.0
		SCB11-1250/10			1.88	10.6	0.85	6.0
		S11-M-1600/10			1.64	14.5	0.50	4.5
		S13-M-1600/10			1.17	14.5	0.50	4.5
		SCB10-1600/10			2.45	12.8	0.85	6.0
		SCB11-1600/10			2.21	12.8	0.85	6.0
		S11-M-2000/10			1.94	18.3	0.40	5.0
		S13-M-2000/10			1.38	18.3	0.40	5.0
		SCB10-2000/10			3.05	15.7	0.7	6.0
		SCB11-2000/10			2.75	15.7	0.7	6.0
		S11-M-2500/10			2.29	21.2	0.40	5.0
		S13-M-2500/10			1.63	21.2	0.40	5.0
		SCB10-2500/10			3.60	18.6	0.7	6.0
		SCB11-2500/10			3.24	18.6	0.7	6.0

箱变名称 Description of Pad-mounted transformer	箱变型号 Model of Pad-mounted transformer	变压器型号 Model	电压组合 Voltage		空载损耗 No load loss (kW)	负载损耗 Load loss (kW)	空载电流 No load current (%)	短路阻抗 Short-circuit impedance (%)
			高压(kV) H.V	低压(kV) L.V				
35kV光伏发电用预装式变电站 35kV photovoltaic power prefabricated substation	YGB-40.5/□-□	S11-M-630/35	35 38.5	0.315 0.315×2 0.48 0.48×2 0.5 0.5×2	0.830	7.86	0.65	6.5
		S13-M-630/35			0.665	7.86	0.65	6.5
		SCB10-630/35			1.86	8.46	1.0	6.0
		SCB11-630/35			1.67	8.46	1.0	6.0
		S11-M-800/35			0.980	9.40	0.65	6.5
		S13-M-800/35			0.780	9.40	0.65	6.5
		SCB10-800/35			2.16	10.1	1.0	6.0
		SCB11-800/35			1.94	10.1	1.0	6.0
		S11-M-1000/35			1.15	11.5	0.65	6.5
		S13-M-1000/35			0.920	11.5	0.65	6.5
		SCB10-1000/35			2.43	11.4	0.75	6.0
		SCB11-1000/35			2.19	11.4	0.75	6.0
		S11-M-1250/35			1.40	13.9	0.60	6.5
		S13-M-1250/35			1.12	13.9	0.60	6.5
		SCB10-1250/35			2.83	14.0	0.75	6.0
		SCB11-1250/35			2.55	14.0	0.75	6.0
		S11-M-1600/35			1.69	16.6	0.60	6.5
		S13-M-1600/35			1.35	16.6	0.60	6.5
		SCB10-1600/35			3.24	16.9	0.75	6.0
		SCB11-1600/35			2.92	16.9	0.75	6.0
		S11-M-2000/35			1.99	19.7	0.55	6.5
		S13-M-2000/35			1.59	19.7	0.55	6.5
		SCB10-2000/35			3.82	20.0	0.75	6.0
		SCB11-2000/35			3.44	20.0	0.75	6.0
		S11-M-2500/35			2.36	23.2	0.55	6.5
		S13-M-2500/35			1.89	23.2	0.55	6.5
		SCB10-2500/35			4.45	24.0	0.75	6.0
		SCB11-2500/35			4.01	24.0	0.75	6.0

13型目前无国家标准，如有颁布，按国家标准执行。

There is no national standard for model 13 at present, if enacted, in accordance with the national standards.