



在本使用说明书中，我们将叙述与广州数控设备有限公司研发制造的隔离变压器相关的事项。限于篇幅限制及产品具体使用等原因，不可能对所有不必做和/或不能做的操作进行详细的叙述。因此，本使用说明书中没有特别指明的事项均视为“不可能”或“不允许”进行的操作。



本使用说明书的版权，归广州数控设备有限公司所有，任何单位与个人进行出版或复印均属于非法行为，广州数控设备有限公司将保留追究其法律责任的权利。

前 言

尊敬的客户：

**对您惠顾选用广州数控设备有限公司研发制造的隔离变压器（简称
变压器）产品，本公司深感荣幸并深表感谢！**

为保证变压器产品的安全、正常与有效运行工作，请您务必
在安装、使用产品前仔细阅读本使用说明书。

安全注意事项与安全责任



连接及操作不当，将引起意外事故！

使用操作之前，请务必仔细阅读本使用说明书！

- 1 在正常气候条件下，用 1000V 兆欧表测量变压器输入与输出绕组以及绕组对外壳的绝缘电阻，其值应不小于 20 MΩ。
- 2 确保保护接地连接牢固可靠。
- 3 变压器运行中，切勿接触外壳及引接线。
- 4 具有相应资格的人员，才能调整、维护变压器。
- 5 用户对产品的任何改动本公司将不承担任何责任，产品的保修单将因此作废。

所有规格和设计如有变化，本公司恕不另行通知。

安全 责任

制造者的安全责任

- 制造者应对所提供的变压器及随行供应的附件在设计和结构上已消除和/或控制的危险负责。
- 制造者应对所提供的变压器及随行供应的附件的安全负责。
- 制造者应对提供给使用者的使用信息和建议负责。

使用者的安全责任

- 使用者应通过变压器安全操作的学习和培训，并熟悉和掌握安全操作的内容。
- 使用者应对自己增加、变换或修改原变压器、附件后的安全及造成的危险负责。
- 使用者应对未按使用手册的规定操作、调整、维护、安装和贮运产品造成的危险负责。

本手册由最终用户收藏。

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诚挚的感谢您——

在使用广州数控设备有限公司的产品时，对我们的友好支持！

一 适用范围

本说明书适用于本公司研发制造的额定容量在 40kVA 及以下、电压等级为 380V/400/415V 隔离变压器的运输、仓储保管、安装、使用及维护。

二 产品特点

- 2.1 节能低噪，采用 F 级专用树脂浸漆，增加了变压器的耐热性，使得变压器更加节能，运行时更加平稳宁静。
- 2.2 可靠性高，结构合理，性能指标完全符合现行国家标准规定。
- 2.3 环保无污染，具有耐热性，防潮性，稳定性，低温性和无毒性。
- 2.4 维护简单。

三 产品用途

该系列产品可广泛用于各类数控机床设备,以及需要特殊电压的各类工业用电设施等额定频率为 50Hz 或 60Hz, 40kVA 及以下的低压输配电场所,是一种隔离抗干扰的理想电源。

四 使用条件

- 4.1 海拔不应超过 1000m 。
- 4.2 环境温度在-10°C ~ 40°C的范围内。
- 4.3 空气相对湿度 $\leq 90\%$ (无凝露) 。
- 4.4 电源稳态电压值为: $(0.9 \sim 1.1) \times$ 额定电压值 , 且电源电压波形近似于正弦波。
- 4.5 安装场所无明显污秽。
- 4.6 变压器的前后, 左右及顶部至少留有 65mm 间隙空间供其散热。并且最好不要与其它发热量大的电器挨着排布。
- 4.7 本产品自身无短路保护装置, 因此外部电路必须配有短路保护装置 (比如 DZ108-20 断路器) ,建议断路器最大电流为变压器额定输入电流的 1.1~1.2 倍。
- 4.8 户内使用, 并且本产品为内置式。若 BS630A、BS1000A 不选配防护箱, 则应需内置使用。

五 技术规格

5.1 变压器电压等级为 380V 时的基本参数见表 1, 电压等级为 400V/415V 时的基本参数表 2。

表 1

项 目	规 格								
	BS1000A	BS630A	BS400	BS300	BS200	BS120A	BS120	BD120	BD80
额定容量 (kVA)	10	6.3	4	3	2	1.2	0.8	1.0	0.6
额定输入电压 (V)	380	380	380	380	380	380	380	380	380
额定输入电流 (A)	15.9	9.9	6.3	4.8	3.2	1.9	1.3	2.8	1.8
额定输出电压 (V)	220	220	220	220	220	220	220	220	220
额定输出电流 (A)	26.3	16.5	10.5	7.87	5.25	3.15	2.2	4.7	3.1
额定频率 (Hz)	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60
额定功率因数	0.98	0.98	0.99	0.99	0.99	0.99	0.99	0.99	0.99
连接组	Y/d	Y/d	Y/d	Y/d	Y/d	Y/d	Y/d		
短路电压 (%)	2.2	2	3.6	5.6	4	4.5	4.5		
效率 (%)	96.8	97.5	95.5	94.5	94	93	93	93	91
绝缘等级	F	F	F	F	F	F	F	F	F
重量 (kg)	96	55	42	31	18	17.5	13.3	13.2	9.7

表 2

项 目	规 格								
	BS1000A	BS630A	BS400	BS300	BS200	BS120A	BS120	BD120	BD80
额定容量 (kVA)	10	6.3	4	3	2	1.2	0.8	1.0	0.6
额定输入电压 (V)	400/415	400/415	400/415	400/415	400/415	400/415	400/415	400/415	400/415
额定输入电流 (A)	13.9/14.4	9/9.3	5.7/5.9	4.3/4.5	2.9/3	1.8/1.9	1.2/1.2	2.5/2.6	1.5/1.6
额定输出电压 (V)	220	220	220	220	220	220	220	220	220
额定输出电流 (A)	26.2	16.5	10.5	7.9	5.3	3.2	2.1	4.7	3.1
额定频率 (Hz)	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60
额定功率因数	0.98	0.98	0.99	0.99	0.99	0.99	0.99	0.99	0.99
连接组	Y/d	Y/d	Y/d	Y/d	Y/d	Y/d	Y/d		
短路电压 (%)	2.2	2	3.6	5.6	4	4.5	4.5		
效率 (%)	96.8	97.5	95.5	94.5	94	93	93	93	91
绝缘等级	F	F	F	F	F	F	F	F	F
重量 (kg)	96	55	42	31	18	17.5	13.3	13.2	9.7

5.2 变压器外形尺寸见表 3，外形图见图 1~图 3。

表 3

项 目		规 格								
		BS1000A	BS630A	BS400	BS300	BS200	BS120A	BS120	BD120	BD80
外形 尺寸 (mm)	A	380	300	250	250	220	220	180	125	180
	B1	—	—	—	—	—	—	70	58	58
	B2	175	130	97	97	85	85	—	—	—
	C	15	20	28	28	25	25	55	33.5	33.5
	D	220	202	189	174	147	142	146	153	128
	E	184	164	157	142	117	112	106	118	93
	F	18	19	16	16	15	15	20	17.5	17.5
	G	290	242	193	178	151	146	150		
	H	323	251	227	212	193	193	158	180	180
	L	292	227	208	193	174	174	140	158.5	158.5
N $\times\Phi$ Z	6 $\times\Phi$ 9	6 $\times\Phi$ 9	6 $\times\Phi$ 7	6 $\times\Phi$ 7	6 $\times\Phi$ 7	6 $\times\Phi$ 7	4 $\times\Phi$ 6	6 $\times\Phi$ 7	6 $\times\Phi$ 7	
防护箱 外形尺寸 (mm)	R	458	371	—	—	—	—	—	—	—
	S	398	377	—	—	—	—	—	—	—
	T	437	387	—	—	—	—	—	—	—

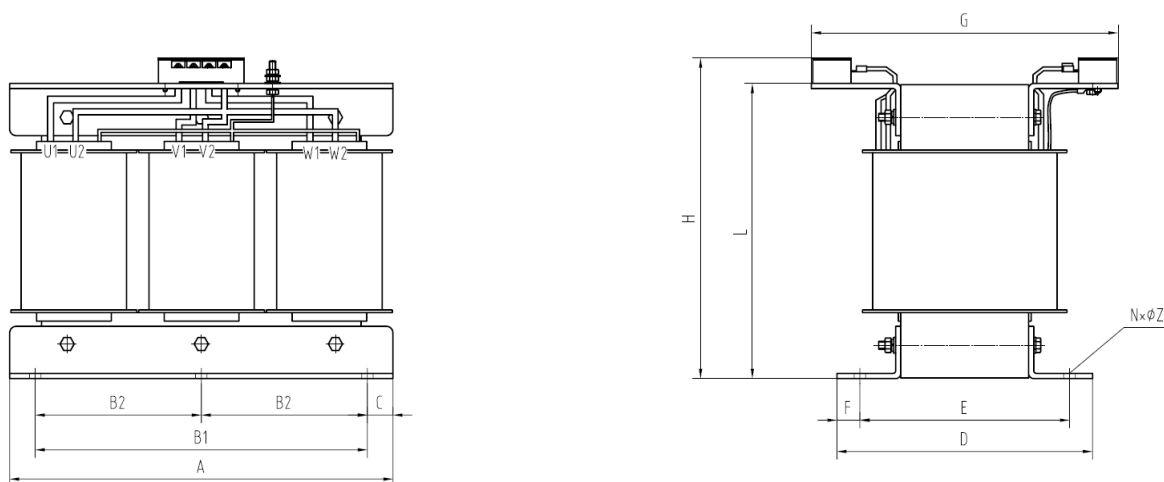


图 1 BS 三相隔离变压器外形尺寸

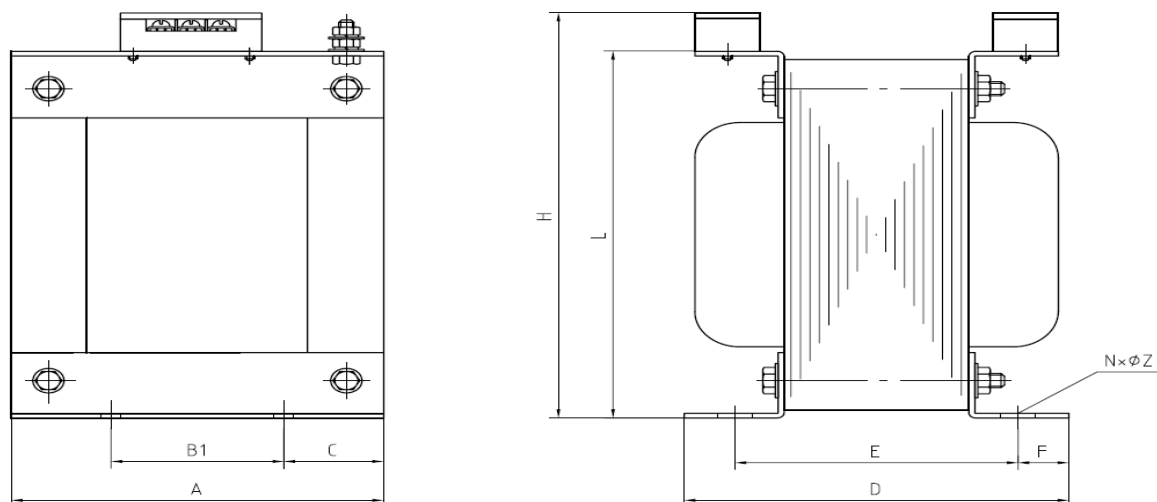


图 2 BD 单相隔离变压器外形尺寸

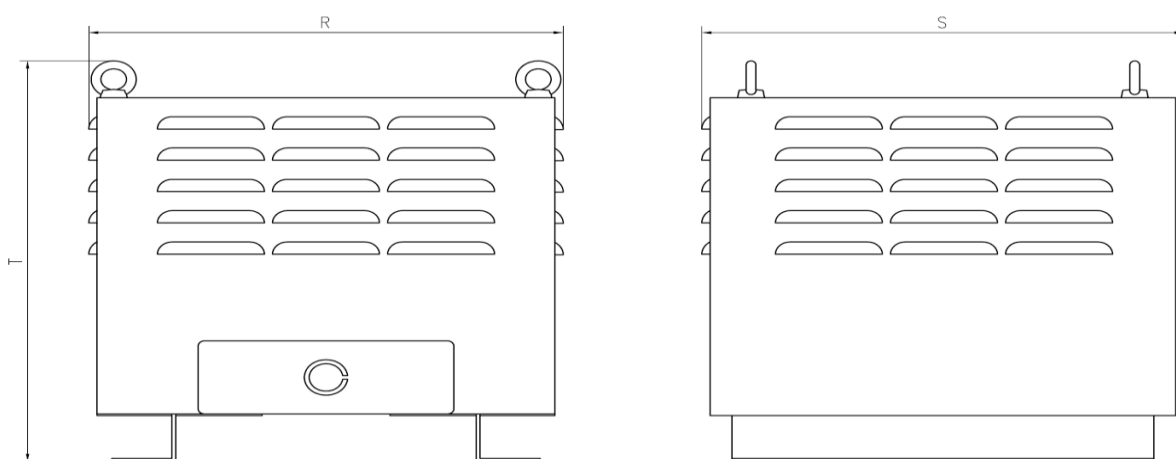


图 3 防护箱外形尺寸

六 安装，使用与维护

- 6.1 根据负载所需的电压电流值，选择合适的变压器，容量和最大输出电流选择不当容易造成变压器的烧毁。
- 6.2 电源电压应符合变压器铭牌上的输入电压。

- 6.3 变压器必须有良好接地，从电源接至变压器，变压器接至负载的导线和导线端与接头应接触良好，并能通过变压器的额定电流。**
- 6.4 有外箱时，先确认变压器满足 6.3 条要求，机箱也必须接地良好，再封闭机箱，使用过程中不得打开机箱，以保证安全。**
- 6.5 使用时不得超载。**
- 6.6 应定期检查变压器使用情况（如发热情况，电压是否在正常使用范围，电流是否正常）。**
- 6.7 发现异常情况应立即停止使用，排除故障后再继续使用。**



This user manual describes all proceedings concerning the operations of this isolation transformer in detail as much as possible. However, it is impractical to give particular descriptions for all unnecessary or unallowable operations due to the manual text limit, product specific applications and other causes. And therefore, the proceedings not indicated herein should be considered impractical or unallowable.



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Preface

Dear Customers:

We are deeply honored and grateful for you using the insulation transformer (or transformer) manufactured by GSK!

In order to guarantee the safety, normal and effective operation, it is necessary to carefully read this manual before installing and using this product.

Safety Precaution and Responsibility



Unexpected accident may cause when incorrect connection and operation are performed!

It is important to carefully read this manual before operating!

- 1 In the normal ambient condition, measure the input, output winding of transformer and the winding for the insulation resistance of enclosure by 1000V megameter, and its value should be more than 20 MΩ.**
- 2 Ensure that the protective grounding connection is fixed.**
- 3 Never touch the enclosure and connection wiring when the transformer is being performed.**
- 4 Only the person who owned the corresponding qualified can adjust and maintain the transformer.**
- 5 Any change of this product that we will not undertake any responsibilities, and the warranty sheet will therefore be void.**

All specifications and designs herein are subject to change without further notice.

Security Responsibility

Security responsibility of the manufacturer

- Manufacturer should take responsibility for the design and structure danger of the transformer and the accessories which have been eliminated and/or controlled.
- Manufacturer should take responsibility for the security of the transformer and accessories.
- Manufacturer should take responsibility for the offered information and suggestions for the user.

Security responsibility of the users

- User should know and understand about the contents of security operations by learning and training the security operations of the transformer.
- User should take responsibility for the security and danger because of increasing, changing or modifying the original transformer or accessories by themselves.
- User should take responsibility for the danger without following the operations, maintenances, installations and storages described in the manual.

This manual is reserved by final user.

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Your Excellency——

**We are full of heartfelt gratitude to you for supporting us in
the use of GSK's products.**

I Application Range

This manual is applied to the transportation of the rated capacity under 40kVA and below, the isolation transformer with 380V/400/415V voltage level, the storage, the installation, the usage and maintenance.

II Production Characters

- 2.1 Energy saving and low noise, use the dedicated resin-painting by the F-level, increase the thermal-resistance of transformer, so that save more energy for the transformer and more stable when it is operated.**
- 2.2 High reliability, reasonable structure; the capacity index is absolutely accord to the rules of current national standards.**
- 2.3 Environmental protection and pollution-free, and it owns thermal-resistance, moisture-proof, stability, low-temperature and non-toxicity.**
- 2.4 Simple maintenance.**

III Production Application

The series products can be widely used for various CNC equipments, as well as the rated frequency 50Hz or 60Hz of industry electricity facilities based upon the special voltage and the distribution site of low voltage under 40kVA; it is also regarded as an idea power of insulation and anti-interference.

IV Use Condition

- 4.1 The altitude should be less than 1000m.
- 4.2 Ambient temperature should be within $-10^{\circ}\text{C} \sim 40^{\circ}\text{C}$.
- 4.3 Relative air humidity $\leq 90\%$ (No condensation) .
- 4.4 Power steady-state voltage value: $(0.9 \sim 1.1) \times$ rated voltage value, and the power voltage wave is approximate to the sine wave.
- 4.5 There is no obvious dirtiness in the installation place.
- 4.6 It is necessary to keep at least 65mm clearance between front and back, right and left and the top sides for its heat radiation. Do not close to the appliances that with large heat.
- 4.7 There is no short-cut protective equipment of this product, therefore the external circuit should be equipped with a short-cut protective equipment (for example: DZ108-20 breaker). It is suggested that the top current of the breaker is the 1.1~1.2 times of the rated input current of transformer.
- 4.8 It is used in house only, and the product is built-in. if the BS630A and BS1000A are not adopted with the protective cabinet, the built-in should be used therefore.

V Technical Specification

5.1 Refer to the basement parameter table 1 when the transformer voltage level is 380V, and table 2 for that the voltage level is 400V/415V.

Table 1

Item	Spec.								
	BS1000A	BS630A	BS400	BS300	BS200	BS120A	BS120	BD120	BD80
Rated capacity (kVA)	10	6.3	4	3	2	1.2	0.8	1.0	0.6
Rated input voltage (V)	380	380	380	380	380	380	380	380	380
Rated input current (A)	15.9	9.9	6.3	4.8	3.2	1.9	1.3	2.8	1.8
Rated output voltage (V)	220	220	220	220	220	220	220	220	220
Rated output current (A)	26.3	16.5	10.5	7.87	5.25	3.15	2.2	4.7	3.1
Rated frequency (Hz)	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60
Rated power factor	0.98	0.98	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Connection group	Y/d	Y/d	Y/d	Y/d	Y/d	Y/d	Y/d		
Short-circuit voltage (%)	2.2	2	3.6	5.6	4	4.5	4.5		
Efficiency (%)	96.8	97.5	95.5	94.5	94	93	93	93	91
Insulation Level	F	F	F	F	F	F	F	F	F
Weight (kg)	96	55	42	31	18	17.5	13.3	13.2	9.7

Table 2

Item	Spec.								
	BS1000A	BS630A	BS400	BS300	BS200	BS120A	BS120	BD120	BD80
Rated capacity (kVA)	10	6.3	4	3	2	1.2	0.8	1.0	0.6
Rated input voltage (V)	400/415	400/415	400/415	400/415	400/415	400/415	400/415	400/415	400/415
Rated input current (A)	13.9/14.4	9/9.3	5.7/5.9	4.3/4.5	2.9/3	1.8/1.9	1.2/1.2	2.5/2.6	1.5/1.6
Rated output voltage (V)	220	220	220	220	220	220	220	220	220
Rated output current (A)	26.2	16.5	10.5	7.9	5.3	3.2	2.1	4.7	3.1
Rated frequency (Hz)	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60
Rated power factor	0.98	0.98	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Connection group	Y/d	Y/d	Y/d	Y/d	Y/d	Y/d	Y/d		
Short-circuit voltage (%)	2.2	2	3.6	5.6	4	4.5	4.5		
Efficiency (%)	96.8	97.5	95.5	94.5	94	93	93	93	91
Insulation Level	F	F	F	F	F	F	F	F	F
Weight (kg)	96	55	42	31	18	17.5	13.3	13.2	9.7

5.2 Refer to the table 3 for appearance dimension of transformer, and refer to the Fig.1 ~ Fig. 3 for appearance diagram.

Table 3

Item		Spec.								
		BS1000A	BS630A	BS400	BS300	BS200	BS120A	BS120	BD120	BD80
Appearance dimension (mm)	A	380	300	250	250	220	220	180	125	180
	B1	—	—	—	—	—	—	70	58	58
	B2	175	130	97	97	85	85	—	—	—
	C	15	20	28	28	25	25	55	33.5	33.5
	D	220	202	189	174	147	142	146	153	128
	E	184	164	157	142	117	112	106	118	93
	F	18	19	16	16	15	15	20	17.5	17.5
	G	290	242	193	178	151	146	150		
	H	323	251	227	212	193	193	158	180	180
	L	292	227	208	193	174	174	140	158.5	158.5
N×Z	6×Φ9	6×Φ9	6×Φ7	6×Φ7	6×Φ7	6×Φ7	4×Φ6	6×Φ7	6×Φ7	
Appearance dimension of protection cabinet (mm)	R	458	371	—	—	—	—	—	—	—
	S	398	377	—	—	—	—	—	—	—
	T	437	387	—	—	—	—	—	—	—

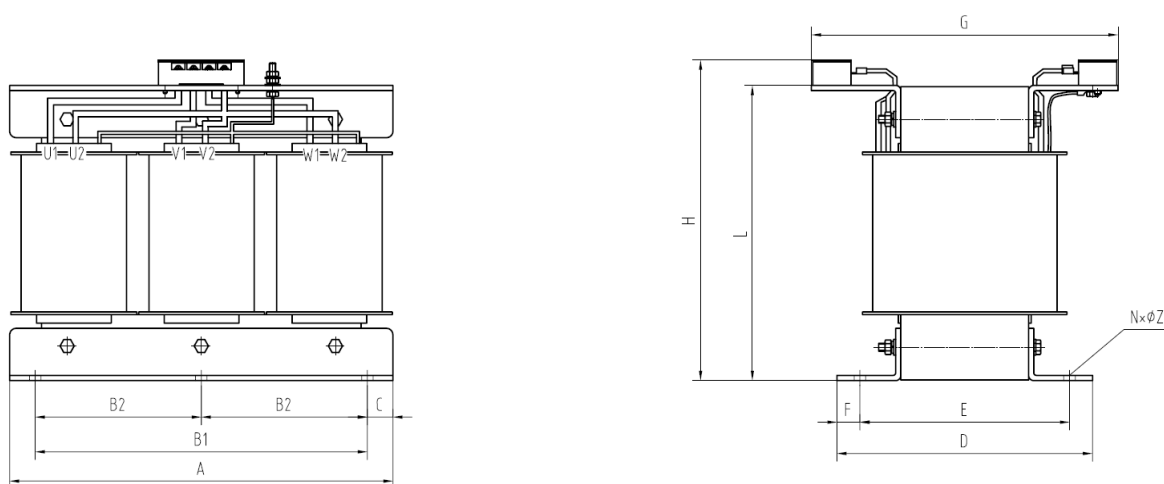


Fig. 1 Appearance dimension of BS three-phase insulation transformer

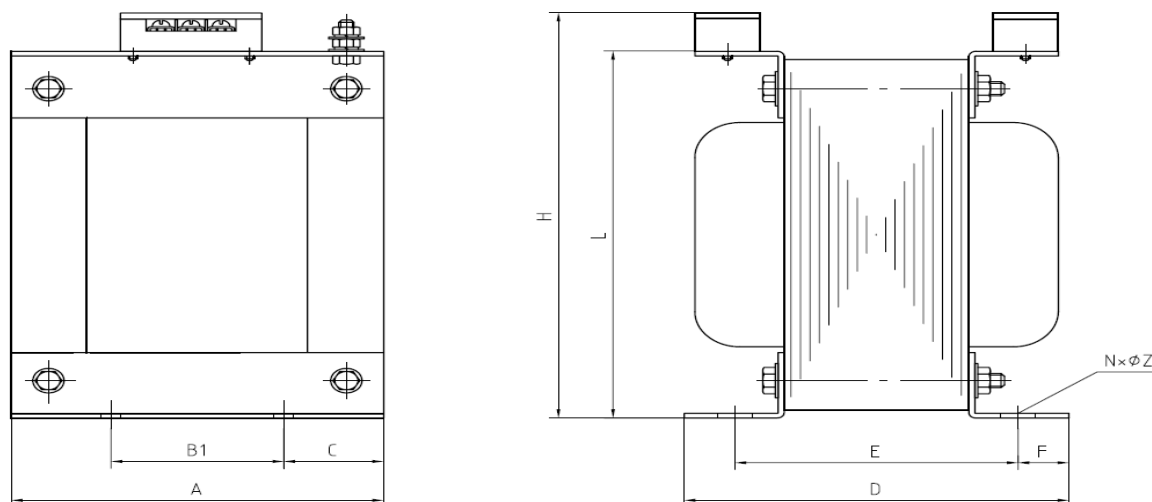


Fig. 2 Appearance dimension of BD single-phase insulation transformer

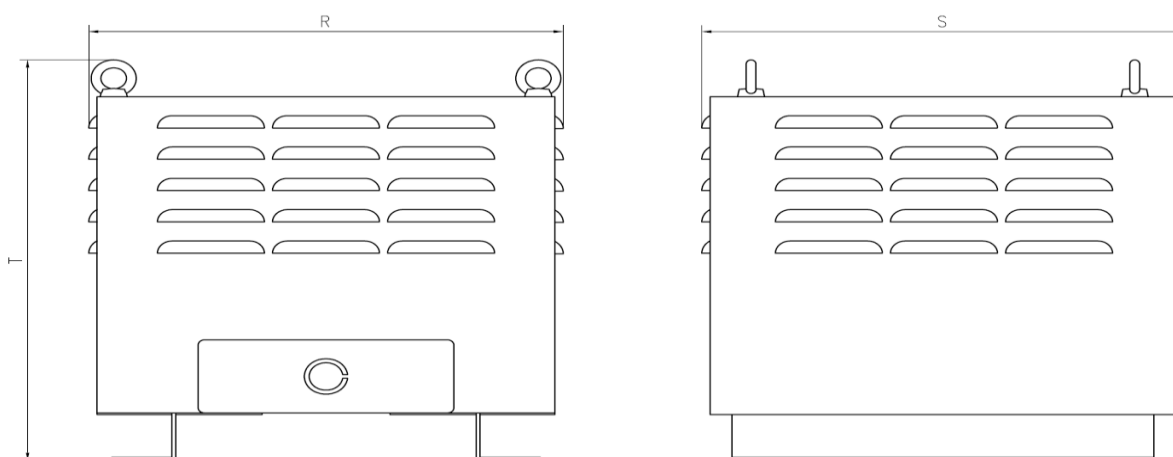


Fig3. Appearance dimension of protection cabinet

VI Installation, Usage and Maintenance

- 6.1 To select a suitable transformer based upon the desired voltage current value of loading; the incorrect selection of capacity and top output current may cause burn down of transformer.**
- 6.2 The power's voltage should be accord to the input voltage on the nameplate of transformer.**

- 6.3 The transformer should be grounded well from the power to the transformer; the wire-leading and wire end connected the transformer to loading should be connected well with the plug, which should be passed the rated current of the transformer.**
- 6.4 Firstly confirm that the transformer meets the requirements of Section 6.3; the cabinet should also be grounded well and then close the cabinet; in order to guarantee the safety, do not open the cabinet during using.**
- 6.5 Do not overload when using.**
- 6.6 Periodically inspect the usage of transformer (for example: the heat, whether the voltage and current are normal).**
- 6.7 It should be immediately stopped to use it when abnormality occurs, and then use it again after the fault is eliminated.**