User Manual

1. General

1.1 Scope of Application

BK, BKC, JMB, JBK, SG, ZSG, SBK series control transformer (hereinafter referred to as transformer) is suitable for circuit with voltage up to 500V AC50~60Hz, it's mainly used as control device for machine tool and power supply for local light and indicator.

1.2 Standard: JB5555-91, Q/ZTB02-1995, JB/T9646

2. Normal Work & Installation Condition

The transformer can work normally under conditions as follows:

2.1 Altitude: ≤2500m;

2.2 Ambient temperature:

a. Minimum temperature shall not be lower than -25℃;

b. See table 1 for maximum air temperature of different altitudes

Table 1 maximum air temperature of different altitudes comparison table

Altitude h(m)	h ≤ 1000	1000<h ≤ 1500m	1500m<h ≤ 2000m	2000m<h ≤ 2500m
Maximum medium temperature	40℃	37.5℃	35℃	32.5℃

2.3 Relative humidity: maximum monthly average relative humidity at wettest month shall be 90%, and the minimum monthly average temperature shall be -25℃ in this month.

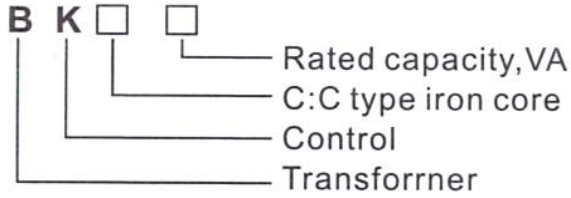
2.4 In place of no intense vibration and shock;

2.5 In medium of no explosion risk, and there should be neither sufficient gas corrosive to metal and destructive to insulation nor conductive dust;

2.6 In place of no invasion from rain and snow.

3 Model & Basic Parameter

3.1 Model and description:



3.2 Rated duty

The transformer is suitable for long-term duty under rated load.

3.3 Structure

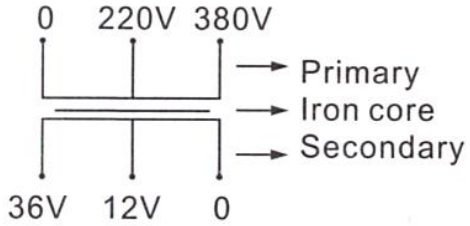
3.3.1 The transformer is classified into different specifications according to its capacity and voltage rating, generally its open type transformer with single phase multiple windings and separate primary and secondary winding.

3.3.1.1 BK series transformer owns shell type iron core laminated with silicon steel sheet; BKC series uses C type iron core.

3.3.1.2 The transformer generally uses multi-layer multi-winding coil, and there are two types of secondary winding: one is lighting winding providing voltage required by local light, and the other is control winding providing voltage required by machine device of mac hine tool. If one transformer owns both "control" and "lighting" windings, then the two windings are used for winding separately.

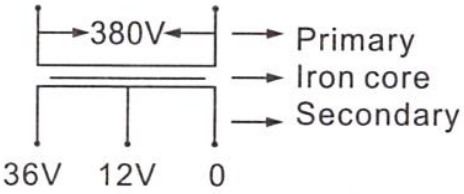
3.3.1.4 When transformer only owns one primary winding, it's capable of entire rated capacity. If there are multiple secondary windings, then each winding

shall be responsible for relevant load according to distributed capacity. See fig. 3, 4 for form.
Fig. 1 example: BK (BKC)-100 series, capacity 100VA, input380V 220V, output 36V 12V



In fig. 1, as there are center taps on both primary and secondary winding wires, the capable maximum current of winding is specified, the primary current $I1=\frac{Pe}{Umax1}=\frac{100VA}{380V}=0.26A$, that means no matter the input is 220V or 380V, primary current is not allowed to exceed 0.25A, so in case of 220V input, the total output capacity is $220V\times0.26A=58VA$, and secondary current $I2=\frac{28VA}{36V}$ 1.6A, in case of 380V input, the total capacity still is 100VA, and the secondary current I2 is $\frac{100VA}{36V}=2.7A$. That means the total current of secondary load shall not exceed 1.6A in case of 220V input and it doesn't exceed 2.7A in case of 380V input.

Fig. 2 example BK(BKC)-100 series, capacity 100VA, input 380V, output 36V 12V



In fig 2, there's center tap only for output side, therefore When maximum output voltage (36V) is 12= $\frac{Pe}{Umax2}=\frac{100VA}{380V}=2.7A$,separately used, it can achieve maximum capacity (100VA), and the total secondary current is , and the current is also 2.7A when 12V is used separately, that means no matter the output voltage is used separately or together, the total current of load shall not exceed secondary current of transformer.

Fig. 3 example BK (BKC)-100 series, capacity100VA, input 380V, output 36V.

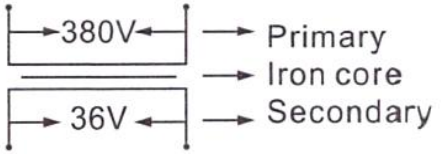
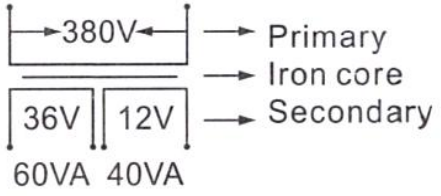


Fig. 3 there's only one secondary winding without center tap, so output voltage (36V) can undertake maximum capacity (100VA); that means when transformer only owns one primary winding, it can undertake total capacity of transformer and the load can achieve rated capacity.

Fig. 4 example BK (BKC-)100 series, capacity 100VA, input 380V, output 36V 12V



In fig. 4, as there's only one primary winding and two separate secondary windings, and capacity of each secondary winding is distributed, then each secondary winding can undertake relevant rated distributed

capacity as shown in figure: 36V is capable of 60VA and 12V is capable of 40VA.

3.4 Transformer primary and secondary voltage can be selected according to table 2.

3.5 Outline and installation size

See fig. 5 and table 2 for outline and installation size of BK series control transformer.

See fig. 6 and table 3 for outline and installation size of BKC series control transformer.

See fig. 7 and table 4 for outline size of SBK(SG) series three phase dry type transformer

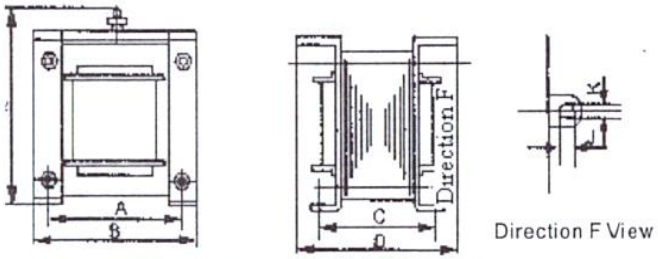


Fig. 5 BK series Product Outline

Table 2

Model	Primary voltage (V)	Secondary voltage (V)	Installation size (A×C)	Mounting hole (A×C)	Outline size (B×D×E)
BK-25	220, 380 or determined as per user's requirement	6.3 12 24 36 110 127 220 380 or determined as per user's requirement	62.5×46	5×7	80×75×83
BK-50			70×60	6×8	88×86×93
BK-100			84×64	6×8	105×97×110
BK-150			84×75	6×8	105×105×110
BK-200			84×86	6×8	105×115×110
BK-250			102×88	6×10	120×125×135
BK-300			100×92	6×10	135×138×150
BK-400			110×103	7×10	135×140×150
BK-500			100×107	7×10	153×146×160
BK-700			126×106	7×10	153×66×160
BK-1000			126×126	7×10	153×66×160
BK-1500			135×150	6×10	180×200×190
BK-2000			155×160	8×10	200×250×220
BK-3000			155×190	8×10	200×280×220
BK-5000			200×190	8×11	230×300×260

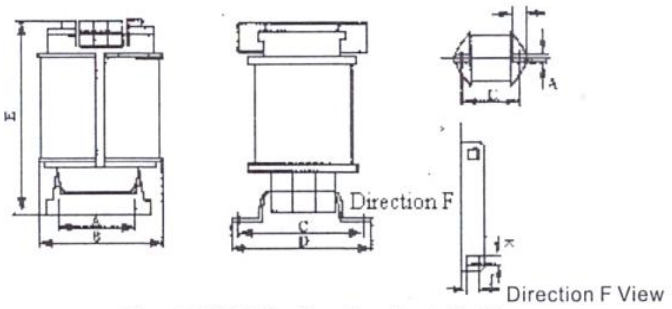


Fig. 6 BKC Series Product Outline

Table 3 BKC series control transformer outline and in stallation size

Model	Installation size		Mounyinh holr(K×J)	Outline size		
	A	C		B	D	E
BKC-25		65	4×6	80	60	85
BKC-50	50	63	4×6	80	75	100
BKC-100	56	78	6×11	96	85	105
BKC-150	56	80	6×11	97	86	122
BKC-200	77	77	6×11	102	95	136
BKC-250	77	77	6×11	102	95	136

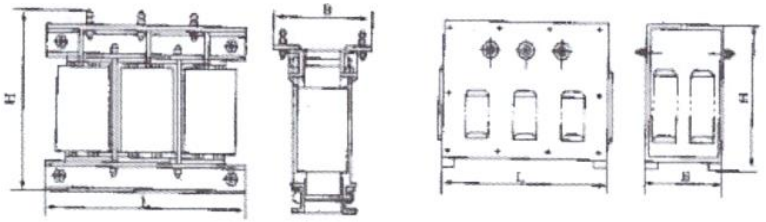


Fig. 7 SBK (SG) series three phase dry type transformer outline size

Table 4

Rated capacity (KVA)	Open type L×B×H	Protective type L×B×H
0.5	250×165×205	280×290×240
1	250×180×220	280×290×240
1.5	250×185×220	320×310×265
2	250×190×210	320×310×265

3	250×220×265	380×350×300
1	350×225×285	380×350×310
5	350×225×285	380×350×310
7	390×240×335	450×410×450
8	455×290×360	510×445×490
10	455×290×360	510×445×490
15	455×295×400	650×470×540
20	560×295×440	700×460×540
25	560×315×435	700×475×540
30	660×315×435	700×475×540
40	640×350×460	900×600×715
50	810×390×510	920×640×715
60	810×390×510	920×640×715
100	840×460×800	990×780×870
150	960×560×900	1110×800×980
200	1060×700×1000	1210×860×110

4. Operation Instruction

4.1 unpack the packing box, take out the user manual and product and carefully read the user manual for correct operation.
4.2 Before use, check whether the circuit voltage is rated voltage, and the allowable error is ±5%; stabilized power supply shall be provided if the voltage exceed allowable error.
4.3 Fix the transformer at proper position to guarantee no effect from vibration and corrosion.
4.4 It can be powered on for use only after the wiring is checked without error.

5. Cautions

5.1 Before purchase, first estimate the total capacity of electric appliance and refer to fig. 1 and 4 to choose transformer of surplus capacity.
5.2 When transformer of multi-tap voltage is used, maximum voltage is capable of maximum rated capacity, and capacity of rest tap voltage shall reduce according to proportion to maximum voltage; and when two groups of voltage are used together, the total load current shall not exceed primary current of transformer.
5.3 Before use, carefully check whether the data on nameplate and attached instruction meets requirement, and it can be installed and used after check.
5.4 After power on, it's normal if the iron core and coil of transformer heat up (temperature rise ≤80℃), if the temperature rise exceeds 80℃ even there's smoking, cut off power supply switch at once, check capacity of all electrical appliance and make adjustment.
5.5 During transportation, avoid impact and damp; and please pay attention to maintenance in used.

6 After-Sales Service

The guarantee period of transformer for lighting is one year since purchase date, user can contact our mainte nance department (agency) with sales invoice or guarantee card for any quality problem within guarantee period, and we will provide you a satisfactory solution.

7 Notes for Placing Order

Use shall specify following items when placing order:
(1) Basic model, specification, capacity and quantity of transformer;
(2) Primary and secondary voltage of transformer;
(3) When secondary voltage is required, it's best to provide capacity distribution for each voltage, or refer to fig. 1-4 to select proper product.
(4) Outline and installation size are only for reference, user shall specify when placing order if special size is required.
Note: our company can design and manufacture as per user's special requirement.

8. Attached Document

(1) One copy of user manual;
(2) One copy of certificate of conformity