

223800

江苏省 宿迁市

宿迁经济技术开发区南京路4019号

江苏韩电电器有限公司

Q A Manager 或其他UL相關負責人



Q A Manager
JIANGSU HANDIAN ELECTRIC APPLIANCE CO., LTD
NO. 4019, NANJING ROAD, SUQIAN NATIONA
SUQIAN
JIANGSU 223800 CHINA

Date: 2019/09/13
Subscriber: None
PartySite: 2326303
File No: SA44289
Project No: 19SR5200720
PD No: 19050678
Type: R
PO Number:

Subject: **Initial Production Inspection**

PLEASE NOTE: YOU ARE NOT AUTHORIZED TO SHIP ANY PRODUCTS BEARING ANY UL MARKS UNTIL THE INITIAL PRODUCTION INSPECTION HAS BEEN SUCCESSFULLY CONDUCTED BY THE UL FIELD REPRESENTATIVE.

An Initial Production Inspection (IPI) is an inspection that must be conducted prior to the first shipment of products bearing the UL Mark. This is to ensure that products being manufactured are in accordance with UL's requirements including the Follow-Up Service Procedure. After the UL Representative has verified compliance of your product(s), authorization will be granted for shipment of product(s) bearing the appropriate UL Marks as denoted in the Procedure.

Inspections at your plant will be conducted under the supervision of LAKER HU, UL INSPECTION CENTER NANJING, CHINA NATIONAL IMPORT & EXPORT, COMMODITIES INSPECTION CORP,

1 BAIXIA RD, 8TH FL, NANJING, JIANGSU, China, 210001., PHONE: 25-5234-5767, FAX: 25-5234-5769, EMAIL:UL.InspectionCenter521@ul.com

Marks as needed may be obtained from UL LABEL CENTER GUANGZHOU, ROOM 3006-3007, TIMES PROPERTY CENTER, NO 410 DONGFENG RD MIDDLE, GUANGZHOU, GUANGDONG, China, 510030. PHONE: 208-348-7088, FAX: 208-348-7088, EMAIL: LABELCENTER.GUZ@UL.COM, ATTN: T WEN

Please file revised pages and illustrations in place of material of like identity. New material should be filed in its proper numerical order.

NOTE: Follow-Up Service Procedure revisions DO NOT include Cover Pages, Test Records and Conclusion Pages. Report revisions DO NOT include Authorization Pages, Indices, Section General Pages and Appendixes.

Please review this material and report any inaccuracies to QIAN NA CHEN (EXT. 0), referring to the above Project and/or PD Numbers.

This material is provided on behalf of UL LLC(UL) or any authorized licensee of UL.

SUZ File

UL INSPECTION CENTER 521

Production Date: UNKNOWN
Contact: Hunter Chen
Phone: 86-15968023089
EMail: hunter@cnkeg.com

ADDENDUM TO TRANSMITTAL LETTER

Q A Manager
JIANGSU HANDIAN ELECTRIC APPLIANCE CO., LTD
NO. 4019, NANJING ROAD, SUQIAN NATIONA
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The following material resulting from the investigation under the above numbers is enclosed.

Issue

Date Vol Sec Pages

Revised Date

 1 Revised Authorization Page(s)
2015/01/27 1 Add New Manufacturer

2019/09/09

"Manufacturer Party Site # 2326303 was added."

Follow-Up Service Procedure

DO NOT DISCARD THIS PAGE

It is important to keep UL Procedures and Test Reports up-to-date as new or revised pages are received. Correct maintenance will decrease the amount of time the UL Representative spends when visiting your facility.

UL LLC offers MyHome @UL, a dedicated website providing secure access to online tools and databases that can help simplify your compliance activities. You can customize your personal MyHome @UL page to include the content needed most, including timely information about certification updates and links to other Web sites you visit regularly. Visit <http://my.home.ul.com/> to sign up today!

PAGES (in content order)	FUNCTION	HOW TO UPDATE
Authorization Page	Displays the Product Category, the type of Follow-Up Service (Type R=Reexamination / Type L=Label), the File Number and the Volume Number associated with each Applicant's, Manufacturer's and Listee's company name and address.	Replace existing page by matching the UL File Number and Volume Number. Discard the older page (refer to "Issued" or "Revised" date).
Addendum to Authorization Page*	Lists the additional names and addresses of manufacturing locations, when multiple locations exist	Replace existing page by matching the UL File Number and Volume Number. Discard the older page (refer to "Issued" or "Revised" date).
Listing Mark Data (LMD), Classification Mark Data (CMD) or Recognized Component Mark Data (RCMD) Pages* #	Used only for products covered under Type R Service. Displays the correct LMD, CMD, or RCMD Mark, the Control Number for Listed and Classified categories and additional information regarding minimum size, application, procurement, and any other optional markings, in addition to the UL Mark.	Replace existing page by matching the UL File Number and Volume Number. Discard the older page (refer to "Issued" or "Revised" date).
Multiple Listing (ML) Correlation Sheet*	Correlates product model numbers between those products made by a Manufacturer for the Basic Applicant and those supplied to another company, the Multiple Listee.	Replace, add or delete page(s) with most current "Issued" or "Revised" date.
Index*	Catalogs the contents of the Procedure by some logical means, i.e. Section Number, Report Reference Number, or Issue Date.	Replace present page by matching the UL File Number, Volume Number, Page Number and most current "Revised" date.
Appendices* # (App.)	Contains instructions for the Manufacturer and UL Representative concerning specific responsibilities and required periodic tests. May also outline tests to be conducted on samples to be forwarded to UL's facilities.	Replace present page by matching the UL File Number, Volume Number, Appendix letter (eg. App. A), Page Number and most current "Revised" date.
	Standardized Appendix Pages are the same for all manufacturers within a particular product category.	Replace present page by matching the Appendix letter (eg. App. A), Page Number and most current "Revised" date.
Follow-Up Inspection Instructions (FUII) Pages*	Contains information similar to that in the Appendices. FUII Pages are issued as part of the Procedure when a UL Standard is used in conjunction with the Procedure, and are the same for all manufacturers within a particular category.	Replace present pages by matching the Page Number and most current "Issued" or "Revised" date.
Section General* # (Sec. Gen.)	Contains description, requirements, identifications and/or specifications that are common to all products covered by the entire volume and supplements the information provided in the Description Section.	Replace present page by matching the UL File Number, Volume Number, Page Number and most current "Revised" date.
Description, or Section (Sec.)*	Contains the specific description of one or more products or systems. This includes written text supplemented by photographs, drawings, etc., as necessary, to define features that affect compliance with the applicable requirements.	Replace present page by matching the UL File Number, Volume Number, Section Number, Page Number and most current "Issued" date.

* The above page(s) may not appear in all UL Follow-Up Service Procedures; UL's Conformity Assessment Services staff determines their inclusion.

These pages are combined in the **Generic Inspection Instructions** for International Style Reports, identified, as example by Vol. X1, X2, etc.

PLEASE NOTIFY YOUR LOCAL UL OFFICE OF ANY CHANGES IN CONTACT NAME, COMPANY NAME OR ADDRESS, SO THIS MATERIAL AND IMPORTANT INFORMATION CONTINUES TO BE DELIVERED TO YOUR FACILITY WITHOUT INTERRUPTION.



File SA44289

Vol 1

Auth. Page 1

Issued: 2015-01-28

Revised: 2019-09-12

FOLLOW-UP SERVICE PROCEDURE
(TYPE R)

HOUSEHOLD REFRIGERATORS AND FREEZERS
(SHZZ,SHZZ7)

Manufacturer: SEE ADDENDUM FOR MANUFACTURER LOCATIONS

Applicant: 1202231 (Party Site)
NINGBO HAN DIAN ELECTRIC APPLIANCE CO LTD
East Guanhaiwei Industrial Zone, CiXi
Ningbo
Zhejiang 315314 CHINA

Listee: 1202231 (Party Site)
SAME AS APPLICANT

Use of the Mark

This Follow-Up Service Procedure authorizes the above Manufacturer(s) to use the marking specified by UL LLC, or any authorized licensee of UL LLC, including the UL Contracting Party, only on products when constructed, tested and found to be in compliance with the requirements of this Follow-Up Service Procedure and in accordance with the terms of the applicable service agreement with UL Contracting Party. The UL Contracting Party for Follow-Up Services is listed in the addendum to this Follow-Up Service Procedure ("UL Contracting Party"). UL Contracting Party and UL LLC are referred to jointly herein as "UL."

It is the responsibility of the Applicant, Manufacturer(s), and Listee/Classified Co. to make sure that only the products meeting the aforementioned requirements bear the authorized Marks of UL LLC, or any authorized licensee of UL LLC.

Additional Responsibilities

Additional responsibilities, duties and requirements for the Applicant and Manufacturers are defined under Additional Resources at the following web-site: <http://www.ul.com/fus> . Manufacturers without Internet access may obtain the current version of these documents from their local UL customer service representative or UL field representative. For assistance, or to obtain a paper copy of these documents or the Follow-Up Service Terms referenced below, please contact UL's Customer Service at <http://www.ul.com/aboutul/locations/> , select a location and enter your request, or call the number listed for that location.

Acceptance of Follow-Up Services

The Applicant and the specified Manufacturer(s) and any Listee/Classified Co. in this Follow-Up Service Procedure must agree to receive Follow-Up Services from UL Contracting Party. If your applicable service agreement is a Global Services Agreement ("GSA"), the Applicant, the specified Manufacturer(s) and any Listee/Classified Co. will be bound to a Service Agreement for Follow-Up Services upon the earliest by any Subscriber of a) use of the prescribed UL Mark, b) acceptance of the factory inspection, or c) payment of the Follow-Up Service fees. The Service Agreement incorporates such GSA, this Follow-Up Service Procedure and the Follow-Up Service Terms which can be accessed by clicking the following link: <http://services.ul.com/fus-service-terms>. In all other events, Follow-Up Services will be governed by and incorporate the terms of your applicable service agreement and this Follow-Up Service Procedure.

Use and Ownership of the Follow-Up Service Procedure

This Follow-Up Service Procedure, and any subsequent revisions, is the property of UL and is not transferable. This Follow-Up Service Procedure contains confidential information for use only by the Applicant, the specified Manufacturer(s), and representatives of UL and is not to be used for any other purpose. It is provided to the Subscribers with the understanding that it is not to be copied, either wholly or in part unless specifically allowed, and that it will be returned to UL, upon request.

Definition of Terms

Capitalized terms used but not defined herein have the meanings set forth in the GSA and the applicable Service Terms or any other applicable UL service agreement.

No Third Party Liability

UL shall not incur any obligation or liability for any loss, expense or damages, including incidental, consequential or punitive damages arising out of or in connection with the use or reliance upon this Follow-Up Service Procedure to anyone other than the above Manufacturer(s) as provided in the agreement between UL LLC or an authorized licensee of UL LLC, including UL Contracting Party, and the Manufacturer(s).

Certification Body

UL LLC has signed below solely in its capacity as the certification body to indicate that this Follow-Up Service Procedure fulfills the requirements for certification documentation issued by the certification body.

Bruce A. Mahrenholz
Director
Conformity Assessment Programs (CPO)
UL LLC

LOCATION

1202231 (Party Site)
NINGBO HAN DIAN ELECTRIC APPLIANCE CO LTD
East Guanhaiwei Industrial Zone, CiXi
Ningbo
Zhejiang 315314 CHINA

Factory ID: NONE
UL Contracting Party for above site is: UL GmbH

2326303 (Party Site)
Jiangsu Handian Electric Appliance Co., Ltd
No. 4019, Nanjing Road, SuQian National Economic And Technological

Development Area

Suqian
Jiangsu 223800 CHINA

Factory ID: JKEG
UL Contracting Party for above site is: UL GmbH

Listing Mark Data Page

(FILE IMMEDIATELY AFTER AUTHORIZATION PAGE)

LISTING MARK

The Listing Mark consists of four elements placed in close proximity and shall appear on Listed products only.

The word "LISTED" shall be in either the four or six o'clock position with respect to the UL symbol (see example below). Minimum size of the Listing Mark is not specified, as long as it is legible. The minimum height of the registered trademark symbol ® shall be 3/64 of an inch. When the overall diameter of the UL symbol is less than 3/8 of an inch, the trademark symbol may be omitted if it is not legible. Camera-ready artwork and relative proportions are available online at www.ul.com.



XXXX = The control number assigned by UL, . SA44289

The product identity is: "HOUSEHOLD REFRIGERATOR," "ACCESSORY FOR HOUSEHOLD REFRIGERATOR," "HOUSEHOLD FREEZER" or "ACCESSORY FOR HOUSEHOLD FREEZER."

For rebuilt products, the word "REBUILT," "REMANUFACTURED" or "RECONDITIONED" precedes the product identity.

The product identity may appear elsewhere on the product when the other three elements are directly and permanently applied to the product by stamping, molding, ink-stamping, silk screening or similar process or part of the nameplate that includes the rating or the catalog or model designation.

A separable Listing Mark (not part of a nameplate and in the form of decals, stickers or labels) shall always include the four elements.

PROCUREMENT

The manufacturer may reproduce the Mark or obtain it from an authorized label supplier. Authorized label suppliers can be found online at www.ul.com.

(FILE IMMEDIATELY AFTER AUTHORIZATION PAGE)

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The Canadian/US symbol shall be used if both Canadian and US coverage is authorized (see example below).



The Canadian symbol shall be used if only Canadian coverage is authorized (see example below).



XXXX = The control number assigned by UL, . SA44289

The product identity is: "HOUSEHOLD REFRIGERATOR," "ACCESSORY FOR HOUSEHOLD REFRIGERATOR," "HOUSEHOLD FREEZER" or "ACCESSORY FOR HOUSEHOLD FREEZER."

For rebuilt products, the word "REBUILT," "REMANUFACTURED" or "RECONDITIONED" precedes the product identity.

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INDEX

Type & Model Number(s)	Section		Date		Requirements Evaluated to (US and/or CN)
Household refrigerator, Models KS-91R, KS-48R, KS-71R, KS-123R, KS-71R1, NN8HO, NPGCA, NPGB9, NPYYD, NPYYA, NPYYN, NPYX9, NPYY0, NPYX7.	1		2015-01-27		US, CN
Household freezer, Models KS-35F,	2		2015-09-30		US, CN
Household refrigerator-freezer, Models HRB10N2AGV, HRB10N2BGS, HRB10N2BGV, HRB10N2BGB, HRB10N2BGW, HRB10N2CGV, HRB10N2CGW.	3		2015-10-29		US, CN
Household freezer, Models BD-100, BD-155, BD-200	4		2015-12-31		US, CN
Household refrigerator, Model KS-158R, KS-91R	5		2017-10-26		US, CN
Household refrigerator, Models KD-93F, NPWHI, NPYXX, NPYXU	6		2017-11-25		US, CN

APPENDIX A

PRODUCT COVERED:

Household refrigerators.

MANUFACTURER AND PRODUCTION TESTS:

LEAKAGE TEST

The manufacturer shall conduct a Leakage Test on each Listed unit at not less than the minimum test pressures tabulated below or the marked nameplate design pressure, whichever are greater.

Exception: If the final assembly is completed with telescoped tubing joints which are sealed with silver solder or brazing or joined by flare fittings, the leakage tests on the complete system may be at not less than the tabulated low-side pressure providing the high-side assembly is individually subjected to the high-side leakage test indicated.

Refrigerant Employed	Minimum Leakage Test Pressure, psig	
	High Side	Low Side
R600a	250	88

PRODUCTION LINE DIELECTRIC WITHSTAND TEST

The manufacturer shall conduct a Dielectric Withstand Test upon each Listed Unit. A 60 Hz potential as indicated below shall be applied between high-voltage live parts and dead-metal parts for a period of one minute, except that the time of application of the potential may be reduced to one second if the value of the test potential is 120 percent of the value shown.

- A. 1000 V for units rated 250 V or less.
- B. 1000 V plus twice the rated voltage for units rated over 250 V.

For units employing low-voltage circuits, the test is to be conducted with the low-voltage circuit connected to the cabinet, chassis, or other dead metal parts so that the potential which is applied between the high-voltage live parts and dead-metal parts will simultaneously be applied between high-voltage live parts and low-voltage circuits.

If the unit employs components such as a solid-state control which can be damaged by the dielectric(s) potential, the test may be conducted before the component is electrical connected. However, a random sampling of each day's production is to be tested with the components electrically connected to assure compliance.

PRODUCTION LINE GROUNDING CONTINUITY TEST

The manufacturer shall test each unit which has power supply cord to assure electric continuity between the device (chassis or frame) and the grounding blade of the attachment-plug cap.

An indicating device such as an ohmmeter, low-voltage battery-buzzer combination, or equipment, may be employed in the test.

Results - A grounding continuity shall be observed on each unit.

ASBESTOS MATERIALS:

These products do not employ any asbestos materials.

LIQUID-FILLED CAPACITORS:

These products do not employ any liquid-filled capacitors.

GENERAL

PRODUCT COVERED:

Household refrigerators and freezers as described in all the following sections.

GENERAL:

Installation and operating instructions are provided with each unit. Installation requirements are as described in each individual section.

CORROSION PROTECTION:

All ferrous metal parts used to support or retain electrical components in position are protected against corrosion by metallic or nonmetallic coatings, such as plating or painting.

All ferrous metal parts used as enclosures or to support or retain electrical components in position in a unit for outdoor use are formed of Recognized (DTHW2) G90U steel or G60U steel with one coat of paint. All refrigerant containing components and tubing formed of steel are protected against corrosion by metallic or nonmetallic coatings, such as plating or painting.

Method of Joining - All tubing and refrigerant containing components are joined by means of brazing, soldering or SAE forged flare type fittings.

Copper-aluminum transition joints (if employed) are taped, painted, covered by heat shrink tubing, or otherwise similarly sealed to prevent galvanic corrosion.

ELECTRICAL SPACINGS:

Except where noted in the individual sections, the spacings between uninsulated live parts of opposite polarity and between uninsulated live parts and dead-metal parts are not less than 1/8 in. through air, 1/4 in. over-surface, and 1/4 in. to the enclosure.

Spacing at Oil-Filled Run Capacitor - The minimum spacing from terminals with wiring to live or dead-metal parts or enclosure in a direction perpendicular to the capacitor cover is 9/16 in. (14.3 mm).

NAMEPLATE AND MARKING MATERIAL:

Unless otherwise noted in the individual sections, the nameplate is constructed of aluminum or steel secured to the unit by metal screws or metal rivets or is a Recognized (PGDQ2), (PGJI2) (PGGU2) Marking and Labeling System, secured to an appropriate surface material as indicated in the RCD.

The nameplate is located such that it is visible and legible without requiring the use of tools for removal of panels, covers, etc.

INTERCONNECTING TUBING:

All tubing of the refrigeration system shall be copper or steel wall thickness not less than indicated in the following table.

Outside diameter, Inches mm	Copper		
	Protected (+) Inches (mm)	Unprotected Inches (mm)	Steel Inches (mm)
1/4 (6.4)	0.0245 (0.622)	0.0265 (0.673)	0.025 (0.64)
5/16 (7.9)	0.0245 (0.622)	0.0265 (0.673)	0.025 (0.64)
3/8 (9.5)	0.0245 (0.622)	0.0265 (0.673)	0.025 (0.64)
1/2 (12.7)	0.0245 (0.622)	0.0285 (0.724)	0.025 (0.64)
5/8 (15.9)	0.0315 (0.800)	0.0315 (0.800)	0.032 (0.81)
3/4 (19.1)	0.0315 (0.800)	0.0385 (0.978)	0.032 (0.81)
7/8 (22.2)	0.0410 (1.041)	0.0410 (1.041)	0.046 (1.17)
1 (25.4)	0.0460 (1.168)	0.0460 (1.168)	-

(+) Within the product.

Nominal wall thickness of tubing will have to be greater than the thickness indicated to maintain the minimum wall thickness.

WIRING:

General - Except as noted in individual reports, all wiring is Recognized (AVLV2), (ZKLU2), (ZPFW2) appliance wiring material or is Listed. If not AWM, wires or cords shall be Type AC, ACL, ACT, FFH-2, TF, TFF, TFN, TFFN, SF-2, SFF-2. RH, RHH, RHW, THW, XHHW, MTW, THW-MTW, THWN, PF, PFF, PGF, PGFF, TW, S, SE, SO, SOO, ST, STO, STOO, SJ, SJE, SJO, SJOO, SJT, SJTO, SJTOO, SP-3, SPE-3, and SPT-3. All wiring, unless otherwise specified, is suitable for a minimum of 300 V. It is installed and positively routed in such a manner that it will not be immersed in water and is not subject to mechanical damage due to contact with sharp edges or abrasive surfaces.

BONDING FOR GROUNDING:

All units shall have provision for the grounding of all exposed or accessible noncurrent-carrying metal parts that are likely to become energized and that may be contacted by the user or by service personnel during service operations likely to be performed when the refrigerator is energized.

Uninsulated metal parts, such as cabinets, electrical enclosures, motor frames and mounting brackets, controller mounting brackets, heater element sheaths, capacitors and other electrical components, interconnecting tubing, and piping, valves and plumbing accessories, and refrigerant-containing parts are to be bonded for grounding if they may be contacted by the user or service personnel.

Exception: The following metal parts need not be grounded:

- A. Adhesive-attached metal-foil markings, screws, handles, and the like, that are located on the outside of enclosures or cabinets and isolated from electrical components or wiring by grounded metal parts so that they are not likely to become energized.
- B. Isolated metal parts, such as motor controller magnet frames and armatures or small assembly screws that are positively separated from wiring and uninsulated live parts.
- C. Cabinets, panels, and covers that do not enclose uninsulated live parts if wiring is positively separated from the cabinet, panel, or cover so that such parts are not likely to become energized.
- D. Panels and covers that are insulated from electrical components and wiring by an insulating barrier of vulcanized fiber, varnished cloth, phenolic composition, or similar materials not less than 0.028 in. (0.71 mm) thick and secured in place.

The bonding is achieved in the following manner:

- A. Bonding with screws:
 - 1. Two or more screws that fasten the parts together.
 - 2. Parts fastened together by one screw. Two full threads of the screw must be in contact with the metal.
 - 3. If surface of metal under screwheads is painted, a toothed lock washer or toothed surface under the screwhead penetrates the paint.
- B. Brazing or welding.
- C. Bonding by one or more bolts. Contact with metal is provided as described in Item A, Subitem 3.
- D. Forced metal-to-metal contact, i.e. interlocking, swaging, percussion welding, spot-welding, etc.
- E. Metal-to-metal contact bonding with the use of multiple bearing pin-type (piano-cover) hinge.
- F. Bonding through rigid or flexible steel conduit with Listed electrical fittings. Locknuts used on the conduit shall penetrate any paint or insulated coating on the surface of the part to which the conduit is connected.
- G. Copper grounding conductors, as follows:
 - Except as indicated in the individual Reports, all bonding conductors are No. 18 AWG conductor with green colored insulation terminating in eyelet type connectors at each end.
- H. Other methods, as noted in the individual Sections.

DATE CODE:

All units are marked with a date of manufacture. The information may be in code and shall be located on or near the nameplate. Details as follows:

The year and month of manufacturer are marked on the unit nameplate.

COMMON COMPONENTS:

The following is a description of the components which are common to all or virtually all of the Reports within the volume.

All units employ Classified (SLGV) refrigerant as designated in the individual Reports.

ASBESTOS:

No asbestos of any kind is employed in these units unless noted in the individual sections.

TRADEMARK DESIGNATION:

The following trademark, trade name, or File Number may be used to identify products described in this Procedure.

Haier



DESCRIPTION

PRODUCT COVERED:

USL, CNL Household refrigerator, Model KS-91R, KS-48R, KS-71R, KS-123R, KS-71R1, NN8HO, NPGCA, NPGB9, **NPYYD, NPYYA, NPYYN, NPYX9, NPYX0, NPYX7.**

GENERAL:

The model covered by this Report is intended for free-standing in household use. Defrost is accomplished manually or semi-automatically. During semi-automatic defrost, the defrost cycle is manually initiated and automatically terminated, with automatic resumption of normal refrigeration at the conclusion of defrost operation. Manual initiation is realized by pressing the small shaft on main shaft of the thermostat.

The model employs Refrigerant R-600a (flammable refrigerant, classified as Class 3 "Higher Flammability" by ASHRAE34) and was evaluated following additional requirements of Supplement SA of UL 250. The cooling system is considered a protected cooling system.

TECHNICAL CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE'S USE):

For Models: All except Model KS-48R (Equipped with compressor, model L22C5L)

Products designated USL have been investigated using requirements contained in the Standard for Household Refrigerators and Freezers, UL250, Tenth Edition.

Products designated CNL have been investigated using requirements contained in Standard for Refrigeration Equipment, CAN/CSA C22.2 No. 63-93, Fourth Edition.

For Model: KS-48R (Equipped with compressor, model L22C5L only)

Products designated USL have been investigated using requirements contained in the Standard for UL 60335-1:11 SAFETY OF HOUSEHOLD AND SIMILAR APPLIANCES, PART 1: GENERAL REQUIREMENTS - Edition 5 and UL 60335-2-24 SAFETY REQUIREMENTS FOR HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES, PART 2: PARTICULAR REQUIREMENTS FOR REFRIGERATING APPLIANCES, ICE-CREAM APPLIANCES AND ICE-MAKERS - Edition 2.

Products designated CNL have been investigated using requirements contained in Standard for CSA C22.2 NO. 60335-1-11 SAFETY OF HOUSEHOLD AND SIMILAR APPLIANCES, PART 1: GENERAL REQUIREMENTS - Edition 5 and CSA C22.2 NO. 60335-2-24 SAFETY REQUIREMENTS FOR HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES, PART 2: PARTICULAR REQUIREMENTS FOR REFRIGERATING APPLIANCES, ICE-CREAM APPLIANCES AND ICE-MAKERS - Edition 2.

RATINGS:

See MARKING.

INSTRUCTIONS:

Each unit is provided with installation and operating instructions.

The instructions include the following wording regarding the use of extension cords (+): Do not use an extension cord, or similar words.

(+) - Cord connected units only.

MODEL DIFFERENCES:

Model KS-71R1 is identical to KS-71R except for cabinet door.

Model NN8HO is identical to KS-48R.

Model NPGCA is identical to model KS-71R1 except for model designation.

Model NPGB9 is identical to model KS-91R except for model designation.

Model NPYYD is identical to model KS-48R except for model designation.

Model NPYYA is identical to model KS-48R except for model designation.

Model NPYYN is identical to model KS-71R1 except for model designation.

Model NPYX9 is identical to model KS-71R1 except for model designation.

Model NPYY0 is identical to model KS-91R except for model designation.

Model NPYX7 is identical to model KS-91R except for model designation.

CONSTRUCTION DETAILS:

Electrical Spacings - Unless otherwise noted in this Report, the spacings between uninsulated live parts of opposite polarity and between uninsulated live parts and dead-metal parts are not less than 1/8 in. through air, 1/4 in. oversurface, and 1/4 in. to the enclosure.

10 MARKING:

10-5 Nameplate Marking Recognized (PGDQ2,8 or PGJI2, 8)

Model	KS-91R	KS-48R	KS-71R	KS-123R
Material				
Manufacturer	Various			
Recognized Designation	Various			
Location	Inside cabinet			
Secured By	Adhesive			
Listee Name	NINGBO HANDIAN ELECTRIC APPLIANCE CO., LTD			
Refrigerant				
- Type	R600a	R600a	R600a	R600a
- Amount	0.74 oz (21g)	0.63 oz (18g)	0.74 oz (21g)	0.81 oz (23g)
Design Pressure				
High Side, psig	250	218	218	218
Low Side, psig	88	58	58	58
Electrical Rating				
V	115	115	115	115
A -	1.0	0.6	1.0	0.8
Frequency, Hz	60	60	60	60

10 MARKING - (Cont'd)

10-5 Nameplate Marking Recognized (PGDQ2,8 or PGJI2, 8)

Model	KS-48R - Alternate	KS-71R1			
Material					
Manufacturer	Various				
Recognized Designation	Various				
Location	Inside cabinet				
Secured By	Adhesive				
Listee Name	NINGBO HANDIAN ELECTRIC APPLIANCE CO., LTD				
Refrigerant					
- Type	R600a	R600a			
- Amount	0.63 oz (18g)	0.74 oz (21g)			
Design Pressure					
High Side, psig	218	218			
Low Side, psig	58	58			
Electrical Rating					
V	115	115			
A -	0.6	1.0			
Frequency, Hz	60	60			

10-10 Special Marking

A. Type or Material	
Manufacturer	Various
Recognized Designation	Various
Location	Unit Rear, above machine compartment
Quote Marking	
1) DANGER - Risk Of Fire Or Explosion. Flammable Refrigerant Used. Do Not Use Mechanical Devices To Defrost Refrigerator. Do Not Puncture Refrigerant Tubing. 2) ☐ DANGER - Risk Of Fire Or Explosion. Flammable Refrigerant Used. To Be Repaired Only By Trained Service Personnel. Do Not Puncture Refrigerant Tubing.  3) ☐ CAUTION - Risk Of Fire Or Explosion. Flammable Refrigerant Used. Consult Repair Manual/Owner's Guide Before Attempting To Service This Product. All Safety Precautions Must be Followed. 4) ☐ CAUTION - Risk Of Fire Or Explosion. Dispose Of Property In Accordance With Federal Or Local Regulations. Flammable Refrigerant Used. 5) ☐ CAUTION - Risk Of Fire Or Explosion Due To Puncture Of Refrigerant Tubing; Follow Handling Instructions Carefully. Flammable Refrigerant Used.	

*

B. Type or Material

Location

A process tube on a compressor.

Quote Marking

A process tube on a compressor shall be painted or colored red, Pantone® Matching System (PMS) No. 185. The Color mark shall extend at least 2.5 cm (1 inch) from the compressor.

C. Type or Material

Manufacturer

Various

Recognized Designation

Various

Location

Shipping Carton

Quote Marking

CAUTION - Risk Of Fire Or Explosion Due To Puncture Of Refrigerant Tubing; Follow Handling Instructions Carefully. Flammable Refrigerant Used.

*

D. Type or Material

Models

KS-48R

Manufacturer

Various

Recognized Designation

Various

Location

Unit Rear

Quote Marking

The type of flammable insulation blowing gas - CYCLOPENTANE.

Comments: The height of the letters used for the marking of the type of flammable insulation blowing gas shall be at least 40 mm.

20 ENCLOSURES:

20-5 Ultimate Enclosure

Model	KS-91R	KS-48R	KS-71R	KS-123R
Approximate Physical Size (including door), H x W x D, mm.	831 x	501 x	676 x	831 x
	490 x	470 x	445 x	524 x
	445	445	470	532

20-10 Unit Base (cabinet base)

Model	All
Material	Steel
Thickness, mm.	Min. 0.4
Corrosion Protection (Method)	GALVANIZED OR PAINT COATING
Bonding for Grounding (Method)	Screw-connected with machine compartment base

20-15 Machine compartment base

Model	All
Material	Steel
Thickness, mm.	Min. 0.8
Corrosion Protection (Method)	GALVANIZED
Bonding for Grounding (Method)	Grounded by the power cord

20-20 Unit Sides/Top/Machine Compartment Top

Model	All
Material	Steel
Thickness, mm.	Min. 0.25
Corrosion Protection (Method)	Galvanized or Paint Coating
Bonding for Grounding (Method)	Screw-connected with unit base.

20-25 Unit Rear

Model	KS-91R	KS-48R	KS-71R	KS-123R
Material	Steel			
Thickness, mm.	Min. 0.25			
Compressor Compartment Opening H x W, mm.	210 x 370	195 x 375	195 x 375	230 x 450
Corrosion Protection (Method)	Galvanized or Paint Coating			
Bonding for Grounding (Method)	Incorporate with unit sides			

20-30 Cabinet Liner

Model	All
Material	Polymeric, see Section 30 for details.
Bonding for Grounding (Method)	Not required

20-35 Unit Doors

Model	All
Material	Steel
Thickness, mm.	Min. 0.4
Corrosion Protection (Method)	Paint or Pre-painted

20-40 Cabinet Door Liner

Model	All
Material (+)	Polymeric, see Section 30 for details.
Bonding for Grounding (Method)	Not required

20-50 Door Hinges

Model

All

Top and Bottom Hinge

See Ill. 2 for details

20-60 Control Enclosure

Model

KS-91R **KS-48R** **KS-71R** **KS-123R**

Location

Located at top of unit inside
cabinet

Material (+)

Polymeric, see Section 30 for
details.

Physical Size, L x W x H, mm

108 x	95 x 70	50 x 70	150 x
74 x50	x 92	x 95	50 x
			70

Thickness, mm.

2.5

Method of Securement

Screwed to unit cabinet by 1 screw

Components Within

Thermostat

20-65 Freezer/Fresh Food Compartment Assembly

*Model

KS-91R**KS-48R, KS-71R, KS-123R**

A. Freezer Compartment Cover

Location

Cover the evaporator in front

Material

Polymeric, see Section 30 for details.

Method of Securement

Pivot on cabinet liner and thermostat enclosure

Model**KS-91R**

B. Drip Tray

See Ill. 3 for details for KS-91R

Location

Beneath the evaporator in fresh food compartment

Material

Polymeric, see Section 30 for details.

Method of Securement

Integral guides formed in the cabinet and on the controller enclosure.

20-70 Lamp Guard

Model**KS-123R****Location****Located at top of unit inside cabinet****No. of Lamp Guard:****1****Material +****Polymeric, see Section 30 for details****Dimension, W x L x H, mm****59x82x53****Thickness, mm. +****2.0****Method of Securement****Secured to Cabinet Liner by screws****Components Within****LED and lamp holder**

30 NONMETALLIC COMPONENTS:

Model	All
Cabinet Liner, Door Liner (Vacuum Formed)	Recognized (QMFZ2)
Manufacturer	Various
Material Designation	Various
Thickness, mm. (minimum) +	1.5
*Flammability Classification (minimum)	HB

+ - Minimum thickness of sheet stock before forming.

*Model	KS-91R
Thermostat Enclosure, Control Enclosure	Recognized (QMFZ2)
Manufacturer	Chi Mei Corporation (E56070)
Material Designation	PA-765 or PA-765A
Thickness, mm. (minimum)	2.0
Flammability Classification (minimum)	5VA

*

30 NONMETALLIC COMPONENTS:

Model	KS-48R, KS-71R, KS-123R
Thermostat Enclosure, Control Enclosure	Recognized (QMFZ2)
Manufacturer	NINGBO LG YONGXING CHEMICAL CO LTD (E203955)
Material Designation	LUPOY ER5001RF(#)
Thickness, mm. (minimum)	3.0
Flammability Classification (minimum)	5VA
Model	All
Crisper, Door Shelves, Freezer Compartment Cover, Drip Tray	Recognized (QMFZ2)
Manufacturer	Various
Material Designation	Various
Flammability Classification (minimum)	HB
Model	KS-123R
Lamp Guard	Recognized (QMFZ2)
Manufacturer	CHI MEI CORPORATION (E56070)
Material Designation	PH-872A
Thickness, mm. (minimum)	2.5
Flammability Classification	V-0

30-5 Isolation From Ignition Sources

Model

All

All units wiring is Recognized (AVLV2, AVLV8 or CSA Certified) and rated VW-1, FT-1 or Listed SJT (rated FT-1 or FT-2) power cord. All wiring is routed and secured within the machine compartment or the cabinet liner. All wire splices are totally insulated and there are no exposed live parts. There are no open coils or exposed high voltage parts.

40 - REFRIGERATION SYSTEM:

40-5 Condenser

Model	KS-91R
Manufacturer	CHANGZHOU RONGWEI
Corrosion Protection (Method)	Paint
Bonding for Grounding (Method)	Grounded through tubing to the compressor
Type of Construction	Continuous Tubing (See Ill.4 for details)
Tubing Material	Steel
Tubing OD, mm.	4
Tubing Wall Thickness, mm.	0.5
Total Tube Length, mm.	Approximate 5410
Design pressure, psig	250

40-10 Evaporator

Model	KS-91R
Manufacturer	NINGBO ZHENGXIN
Corrosion Protection (Method)	Paint
Mounting (Method)	Screws
Bonding for Grounding (Method)	Grounded through tubing to the compressor
Type of Construction	Tube on plate
Plate Material	Plastic
Plate Thickness, mm.	0.1
Tubing Material	Aluminum
Tubing OD, mm.	N/A
Tubing Wall Thickness, mm.	0.6
Design pressure, psig	88
Other Dimensions	See Ill. 5 for details

40 - REFRIGERATION SYSTEM:

40-5 Condenser

Model	KS-48R, KS-71R, KS-123R
Manufacturer	NINGBO SHUBO ELECTRIC CO LTD
Corrosion Protection (Method)	Paint
Bonding for Grounding (Method)	Grounded through tubing to the compressor
Type of Construction	Continuous Tubing
Tubing Material	Steel
Tubing OD, mm.	4
Tubing Wall Thickness, mm.	0.5
Total Tube Length, mm.	2500-3600
Design pressure, psig	218

40-10 Evaporator

Model	KS-48R, KS-71R, KS-123R
Manufacturer	NINGBO SHUBO ELECTRIC CO LTD
Corrosion Protection (Method)	Paint
Mounting (Method)	Screws
Bonding for Grounding (Method)	Grounded through tubing to the compressor
Type of Construction	Tube on plate
Plate Material	Steel
Plate Thickness, mm.	0.1
Tubing Material	Steel
Tubing OD, mm.	11
Tubing Wall Thickness, mm.	0.2
Design pressure, psig	58

40-15 Pressure Relief

Model	All
Means Provided	Soldered or Brazed Joint
Location	All tube connections

40-20 Drier/Filter

Model	All
Manufacturer	CIXI JIASHENG CO., LTD
Cat. No. (SMGT, SMGT7)	N/A
Material	Copper
Length, mm.	85
OD, mm.	19
Wall Thickness, mm.	Min. 0.5
Design pressure, psig	250
Location	Machine compartment, near compressor
Corrosion Protection (Method)	Inherent
Other Dimensions	See Ill. 6 for details

40-25 Interconnecting Tubing

Model

All

Material

Copper

Outside Diameter, in.	Minimum Wall Thickness, in.
1/4, 5/16, 3/8, 1/2	0.0245
5/8, 3/4	0.0315
7/8	0.0410

40-30 Refrigerant Control

Model	All
Capillary Tube - No. Provided	1
Material	Copper
* ID, mm.	1.8
*Wall Thickness, mm.	0.6
Length, mm.	2000~2800

40-35 Refrigeration System Joints

Model

All

Method of Joining

Soldered

50 MOTOR - COMPRESSOR ASSEMBLY:

50-5 Compressor

Recognized (SLIS2)

*Model

KS-91R

Manufacturer

Jiangsu Baixue Electric Appliances
Co., Ltd

Designation

VY35R00A

Electrical Rating

Volts

115

RLA (Not for Inspector Use)

0.78

LRA

6.0

Phase

1

Cycle

60

Bonding for Grounding (Method)

No. 18 AWG green colored ground wire from compressor terminal block to unit base. Each end of the ground wire is secured with a closed eyelet and screw with nut. Eyelets on painted surfaces are provided with serrated-head washers to break the paint.

Overload Protector

External, Recognized (YFZW2)

Manufacturer

Hang Zhou Star Shuaier Electric
Appliance Co., Ltd(E213160)

Designation

DRB21N61A1

Location

Compressor Terminal Enclosure

Comments

This model was evaluated according to IEC 60079-15 for ignition protection.

Compressor Start Assist Device

Recognized (SDFY2)

Type

PTC Type

Manufacturer

Hang Zhou Star Shuaier Electric
Appliance Co., Ltd. (E232371)

Designation

QP2-4R7

Location

Compressor Terminal Enclosure

[x] Part of Recognized motor-compressor assembly.

50 MOTOR - COMPRESSOR ASSEMBLY:

50-5 Compressor

Recognized (SLIS2)

Model	KS-48R
Manufacturer	Huangshi Dongbei Electrical Appliance Co., Ltd. (SA12805)
Designation	DG40BY1A
Electrical Rating	
Volts	110-127
RLA (Not for Inspector Use)	0.7
LRA	4.2
Phase	1
Cycle	60
Bonding for Grounding (Method)	No. 18 AWG green colored ground wire from compressor terminal block to unit base. Each end of the ground wire is secured with a closed eyelet and screw with nut. Eyelets on painted surfaces are provided with serrated-head washers to break the paint.
Overload Protector	External
Manufacturer	CHANGSHU TIANYIN ELECTROMECHANICAL CO LTD
Designation	ZHB60-120P4.7+
Location	Compressor Terminal Enclosure
Comments	This model was evaluated according to IEC 60079-15 for ignition protection.
+ - TIANYIN models ZHB60-120P4.7 is a combination motor start and thermal protector devices.	
Alternate	
Overload Protector	External
Manufacturer	HANG ZHOU STAR SHUAIER ELECTRIC APPLIANCE CO LTD
Designation	DRB21N61A
Location	Compressor Terminal Enclosure
Comments	This model was evaluated according to IEC 60079-15 for ignition protection.
Compressor Start Assist Device	Recognized (SDFY2)
Type	PTC Type
Manufacturer	HANG ZHOU STAR SHUAIER ELECTRIC APPLIANCE CO LTD
Designation	QP2-4R7
Location	Compressor Terminal Enclosure

*[x] Part of Recognized motor-compressor assembly.

50 MOTOR - COMPRESSOR ASSEMBLY:

50-5 Compressor

Recognized (SLIS2)

Model

KS-48R (Alternate) KS-71R1

Manufacturer

JINGZHOU TIANKE REFRIGERATION CO LTD
(SA34011)

Designation

QD35C5

Electrical Rating

Volts

115

RLA (Not for Inspector Use)

0.65

LRA

2.8

Phase

1

Cycle

60

Bonding for Grounding (Method)

No. 18 AWG green colored ground wire from compressor terminal block to unit base. Each end of the ground wire is secured with a closed eyelet and screw with nut. Eyelets on painted surfaces are provided with serrated-head washers to break the paint.

Overload Protector

External

Manufacturer

GUANGZHOU SENBAO ELECTRICAL APPLIANCES
CO LTD

Designation

BT35-120A61D3

Location

Compressor Terminal Enclosure

Comments

This model was evaluated according to IEC 60079-15 for ignition protection.

Compressor Start Assist Device

Recognized (SDFY2)

Type

PTC Type

Manufacturer

GUANGZHOU SENBAO ELECTRICAL APPLIANCES
CO LTD

Designation

QP2-4.7

Location

Compressor Terminal Enclosure

[x] Part of Recognized motor-compressor assembly.

50 MOTOR - COMPRESSOR ASSEMBLY:

50-5 Compressor

Recognized (SLIS2)

Model

KS-48R

Manufacturer

Huayi Compressor (jingzhou) Co Ltd
(SA13324)

Designation

L22C5L

Electrical Rating

Volts

110-120

RLA (Not for Inspector Use)

0.58

LRA

2.7

Phase

1

Cycle

60

Bonding for Grounding (Method)

No. 18 AWG green colored ground wire from compressor terminal block to unit base. Each end of the ground wire is secured with a closed eyelet and screw with nut. Eyelets on painted surfaces are provided with serrated-head washers to break the paint.

Overload Protector

External

Manufacturer

GUANGZHOU SENBAO ELECTRICAL APPLIANCES
CO LTD

Designation

BT35-120A61D3

Location

Compressor Terminal Enclosure

Comments

This model was evaluated according to IEC 60079-15 for ignition protection.

Compressor Start Assist Device

Recognized (SDFY2)

Type

PTC Type

Manufacturer

GUANGZHOU SENBAO ELECTRICAL APPLIANCES
CO LTD

Designation

QP2-4.7

Location

Compressor Terminal Enclosure

[x] Part of Recognized motor-compressor assembly.

50 MOTOR - COMPRESSOR ASSEMBLY:

50-5 Compressor

Recognized (SLIS2)

Model	KS-71R
Manufacturer	Jiangsu Baixue Electric Appliances Co., Ltd
Designation	VY35R00A
Electrical Rating	
Volts	115
RLA (Not for Inspector Use)	0.78
LRA	6.0
Phase	1
Cycle	60
Bonding for Grounding (Method)	No. 18 AWG green colored ground wire from compressor terminal block to unit base. Each end of the ground wire is secured with a closed eyelet and screw with nut. Eyelets on painted surfaces are provided with serrated-head washers to break the paint.
Overload Protector	External, Recognized (YFZW2)
Manufacturer	Hang Zhou Star Shuaier Electric Appliance Co., Ltd(E213160)
Designation	DRB21N61A1
Location	Compressor Terminal Enclosure
Comments	This model was evaluated according to IEC 60079-15 for ignition protection.
Compressor Start Assist Device	Recognized (SDFY2)
Type	PTC Type
Manufacturer	Hang Zhou Star Shuaier Electric Appliance Co., Ltd. (E232371)
Designation	QP2-4R7
Location	Compressor Terminal Enclosure

[x] Part of Recognized motor-compressor assembly.

50 MOTOR - COMPRESSOR ASSEMBLY:

50-5 Compressor

Recognized (SLIS2)

Model	KS-123R
Manufacturer	Huangshi Dongbei Electrical Appliance Co., Ltd.
Designation	AG60BY2
Electrical Rating	
Volts	110-120
RLA (Not for Inspector Use)	0.7
LRA	4.5
Phase	1
Cycle	60
Bonding for Grounding (Method)	No. 18 AWG green colored ground wire from compressor terminal block to unit base. Each end of the ground wire is secured with a closed eyelet and screw with nut. Eyelets on painted surfaces are provided with serrated-head washers to break the paint.
Overload Protector	External
Manufacturer	CHANGSHU TIANYIN ELECTROMECHANICAL CO LTD
Designation	ZHB54-120P4.7+
Location	Compressor Terminal Enclosure
Comments	This model was evaluated according to IEC 60079-15 for ignition protection.

+ - TIANYIN models ZHB54-120P4.7 is a combination motor start and thermal protector devices.

[x] Part of Recognized motor-compressor assembly.

70 ELECTRICAL COMPONENTS:

70-5 Temperature Controller (manually defrost) Recognized (SDFY2,8)

Model	All
Use (Loads Controlled)	Compressor
Manufacturer	JIUJIANG HENG TONG AUTOCONTROL DEVICE CO., LTD (E225669)
*Designation	WPF24 Series WDF24 Series
Electrical Rating, V ac, FLA, LRA	125/6/36
Location (Physical)	Inside refrigerator compartment and within thermostat enclosure
Mounting	Screws to thermostat enclosure.
Bonding for Grounding (Method)	A green/yellow ground wire is secured to the thermostat mounting plate and to the grounding terminal of the compressor.
Marked Switch Positions	0,1,2,3,4,5,6,7
Comments	This model was evaluated according to IEC 60079-15 for ignition protection.

70-10 LED Modules Recognized (OOQA2)

Model	KS-123R
Number	1
Manufacturer	NINGBO PINLIANG LIGHTING CO LTD (E480906)
Recognized Model No.	PL-E12-SL-001
No. of LED	0-6
Ratings	120V, 60Hz, 19mA, 1.4W
Location	In the fresh food compartment
Mounting	Snap-fit into Lampholder

Note: The screw shell is connected to the grounded side of the power supply.

70-30 Door Switches

Recognized (WOYR2, 8)

Model	KS-123R
Use (Loads Controlled)	Lamps
Manufacturer	ZHEJIANG CHANGDECHENG ELECTRIC APPLIANCES CO LTD (E239938)
Designation	HC-050K.4
Rating	125V , 60Hz, 5A
Location (Physical)	Cabinet Liner (Fresh Food Compartment)
Mounting	Rectangular switch is snap-fitted into rectangular opening
Comments	This model was evaluated according to IEC 60079-15 for ignition protection.

Recognized (SEVS2)

70-35 Lampholder

Model	KS-123R
Manufacturer	ZHEJIANG CHANGDECHENG ELECTRIC APPLIANCES CO LTD (E350599)
Designation	E12-3 E12-1
Rating	125V, 75W
Location	In the fresh food compartment
Mounting	Snap-fit into Temperature Controller Enclosure
Prevented from turning by:	Lamp cover

Note: The screw shell is connected to the grounded side of the power supply.

80 INTERNAL WIRING:

80-5 - Types

All wiring is minimum No. 18 AWG(+) Recognized (AVLV2,8) or CSA certified appliance wiring material rated VW-1 and FT-1 or Listed cords. Wiring is rated minimum 300V, 90C with 0.8mm thick insulation. Wiring which is color-coded green or green with one or more yellow stripes is employed on grounding conductors only.

80-10 - Wiring Methods

All wiring is installed and positively routed in such a manner that it is not subject to mechanical damage due to contact with sharp edges, abrasive surfaces, vibrating or moving parts. Exposed lengths of ripped parallel conductors do not exceed 3 in.

Wiring which is completely enclosed within steel conduit, metal raceways, metallic tubing, cabinet walls, or other separate electrical enclosures employs 2/64 in. thick (minimum) electrical insulation unless specified differently in this Report.

Wiring which is not completely enclosed as specified above employs 4/64 in. thick (minimum) electrical insulation unless specified differently in this Report.

Cords or appliance wiring material employed in the refrigerated compartment has 4/64 in. thick (minimum) electrical insulation and is located or protected so as not to be subjected to contact by product containers, removable shelves, and the like.

Green or green with yellow stripe wire may be employed only as grounding conductors. Splices are not employed in grounding conductors unless otherwise noted in the Report.

Holes for the passage of wires or cords through walls, panels or barriers have smooth, rounded surfaces or are provided with smoothly rounded bushings.

All splices are mechanically secured to a fixed member or located in a separate enclosure.

Unless otherwise noted all wires terminate in quick-connect or eyelet type materials.

Wiring is connected in such a way as to ensure proper polarity will be maintained throughout unit, cord, and attachment plug.

Wiring diagrams shown in ILL.

See Ill.8 for details

Model

All

90 SUPPLY CONNECTIONS:

90-5 Cord Connected Unit

Model	All
Power Supply Cord Set	Listed
Type	SE, SO, SOO, ST, STO, STOO, SJ, SJE, SJO, SJOO, SJT, SJTO, SJTOO, SP-3, SPE-3, SPT-3
Size, AWG	18
Attachment Plug Rating, V, A	125V, 15A
Strain Relief Means	Supply cord is pressed between a two-piece plastic clamp that is secured to the cabinet base by two screws.
Cord Length, ft	5 (1.5m) minimum, 10 (3.0m) maximum
Grounding Conductor Color	Green With or Without Yellow Stripes
Securement of Grounding Conductor	
Location	On the Unit base
Means	Screw, See Fig.5 for details

100 SHELVING AND DRAWERS:

100-5 Shelves

*Model

All

A.	Location	Cabinet Upper	Cabinet Lower
	Material	Glass	
	Manufacturer	Jiangsu zhongke ruiteng Co.,ltd	
	Dimensions, mm. (D x W), Approximate	250 x 373	180 x 373
	Thickness, mm.	4.0	4.0
	*No. of Shelves	N/A	N/A
	Method of Support	Integral guides formed in the cabinet liner	
	Method of Restraint	Plastic stud on back of shelf	

100-10 Crisper- Optional

*Model

All

Location	Bottom of unit cabinet
Material	Plastic, see Section 30 for details
Dimensions, mm. (D x W x H) Approximate	132 x 355 x 205
Thickness, mm.	3.5

100-6 Door Rack As Shelf

*Model

All

A.	Location	Upper Part of Door liner
	Dimensions, mm. (H x W x D)	44 x 95 x 333
	Number	1
B.	Location	Middle Part of Door liner
	Dimensions, mm. (H x W x D)	44 x 95 x 333
	Number	1
C.	Location	Bottom Part of Door liner
	Dimensions, mm. (H x W x D)	44 x 95 x 333
	Number	1
D.	Location	Bottom Part of Door liner
	Dimensions, mm. (H x W x D)	44 x 245 x 333
	Number	1
E.	Location	Bottom Part of Door liner
	Dimensions, mm. (H x W x D)	44 x 245 x 145
	Number	1

INDEX OF FIGURES

Fig.	Description
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4	Compressor compartment construction overview
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2	Door Hinge
3	Drip Tray
4	Condenser
5	Evaporator
6	Drier/Filter
7	IEC 60079-15 (for Group II A gases or the flammable refrigerant) Certificate of compressor overload protector model DRB21N61A1 and DRB21N61A
8	Wiring diagram
9	Enclosure of thermostat
10	IEC 60079-15 (for Group II A gases or the flammable refrigerant) Certificate of compressor overload protector model ZHB54-120P4.7
11	IEC 60079-15 (for Group II A gases or the flammable refrigerant) Certificate of thermostat model WD Series
12	IEC 60079-15 (for Group II A gases or the flammable refrigerant) Certificate of door switch model HC-050K.4
13	IEC 60079-15 (for Group II A gases or the flammable refrigerant) Certificate of thermostat model WP and WPF Series
14	IEC 60079-15 (for Group II A gases or the flammable refrigerant) Certificate of compressor overload protector model BT*-***D*



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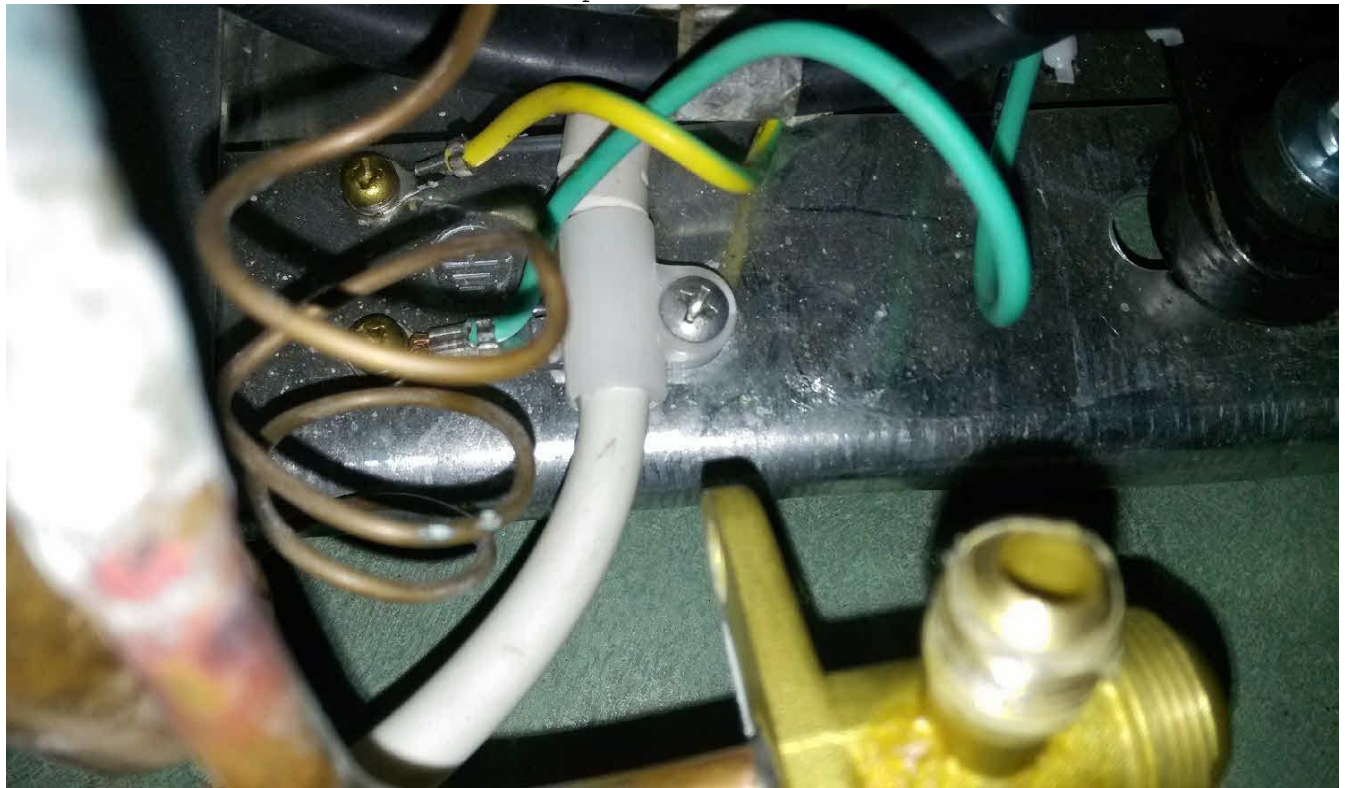
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N151275113



N151275114



N151275115

User Manual

Model Number: KS-91R

REFRIGERATOR

BEFORE USE, PLEASE READ AND FOLLOW ALL SAFETY RULES AND OPERATING INSTRUCTIONS.

KS-91R

Dear customers,

Thank you for purchasing our product. In order to ensure your safety and achieve the best using effect, please read this instruction manual carefully.

Before you start:

- Read all the instructions before using. Keep this manual for future reference.
- **Warning:** Never try to use this appliance for applications or in a way which is not described in the instruction, otherwise severe hazards may occur.
- Do not use the appliance in a dusty environment or in an explosive atmosphere (flammable gases, vapors, vapors from organic solvents).
- This appliance is intended for HOUSEHOLD USE ONLY and not for commercial or industrial use.

General safety advice

- Keep the appliance out of reach for children! Do not allow children to play with appliance.

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

Children should be supervised to ensure that they do not play with the appliance.

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

- Unplug the appliance from outlet when not in use, before putting on or taking off parts, before cleaning.
- Make sure to place the plug all the way into socket when connecting your appliance.
- Insert the plug into a single grounded socket.

- Never use the appliance in place where combustible and inflammable materials are kept.
- For safety reason, be sure to repair or replace parts at an authorized service dealers.
- If the supply cord is damaged, it must be replaced by a special cord or assembly available from the manufacturer or its services agent.
- The motor is permanently lubricated and will require no oil.
- The appliance must be positioned so that the plug is accessible.
- Please according to local regulations regarding disposal of the appliance for its flammable blowing gas. Before you scrap the appliance, please take off the doors to prevent children trapped.
- WARNING – Keep ventilation openings, in the appliance enclosure or in the built-in structure, clear of obstruction.
- WARNING – Do not use mechanical devices or other means to accelerate the defrosting process, other than those recommended by the manufacturer.
- WARNING – Do not damage the refrigerant circuit.
- WARNING – Do not use electrical appliances inside the food storage compartments of the appliance, unless they are of the type recommended by the manufacturer.

Warning: If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or a similarly qualified person in order to avoid a hazard.

The refrigerator should use the extension cords.

DANGER: Risk of child entrapment. Before you throw away your old refrigerator:

Take off the doors

Leave the shelves in place so that children may not easily climb inside.

This appliance is intended to be used in household and similar applications such as

- staff kitchen areas in shops, offices and other working environments;
- farm houses and by clients in hotels, motels and other residential type environments;
- bed and breakfast type environments;
- catering and similar non-retail applications.

I. Tips and Hints

1. Fresh foods such as fish and meat can be frozen to maintain freshness, and keep the nutrients in the food.
2. Food should be wrapped in aluminum foil, or some other type of airtight packing.
3. Do not allow frozen food in freezer to touch foods just placed into freezer. It can damage the food.
4. Frozen foods from the store should be placed in the freezer promptly, so they do not thaw.
5. Never place fresh vegetables and fruits into the freezer as they can get freezer burn.

II. Caution Of Safety

1. Individual single-phase socket must be used. It should be reliably connected to a grounding wire.

Caution: Do not connect grounding wire to a water or gas pipe.

2. No storing strong base, strong acid, organic solvent and corrosive goods together with food.
3. Do not pour water directly onto the freezer, which may cause declining of insulation and corrosiveness.
4. When the refrigerator will no be used for a long time, disconnect the power cord then clean it. Please examine the wiring circuit before using it.
5. Refer to the Trouble Shooting references when the unit is facing some problems. Do not attempt to solve the problem on your own, please refer to certified technician only.
6. When handling, moving and use the refrigerator, please be care of the refrigerant tubing, it should not be damaged.

III. Caution for using.

1. Unpack all packages before using the refrigerator. Do not topple it over more than 60° while moving it. Even though it can be moved slowly with the universal wheels under its base, the wheels were not meant for uneven ground usage which may damage it and other parts if used vigorously.
2. Place the freezer at your desired place and do not operate it for at least 1 hour. The refrigerator should be installed in the environment of good ventilation, cool and dry. Avoid placing it nearby heat generating equipment and under direct sunlight. When installing, the universal wheels should be padded firmly so as to avoid excess vibration and noise.
3. After 1 hour the refrigerator should be run empty upon initial operation. Please turn the thermostat knob to 7 and food can be stored just after 4 hours of initial running. Food must occupy 1/3 of the storage area and evenly arranged. They must be wrapped in plastic bags to obtain the original freshness and taste.

4. Temperature can be adjusted by using the thermostat. Clock wised turning will decrease the temperature whilst anti-clockwise to increase. Figures shown indicate the temperature level: 3-5 for normal, 0 for stop running and 6 for continuously running.

Caution: No 7 can only be used if the foods need to be frozen quickly.

5. Do not frequently open and shut the refrigerator door to avoid lost of cooling effect and to save energy.
6. The surface and inside of the refrigerator should be kept clean at all time to avoid body rust.
7. Generally, clean the refrigerator after every 30-45 days of usage. Please use soft cloth moistened in neutral soapsuds or detergent.

Caution: Please unplug the power cord before cleaning the unit.

Warranty Information

The manufacturer provides warranty in accordance with the legislation of the customer's own country of residence, with a minimum of 1 year (Germany: 2 years), starting from the date on which the appliance is sold to the end user.

The warranty only covers defects in material or workmanship.

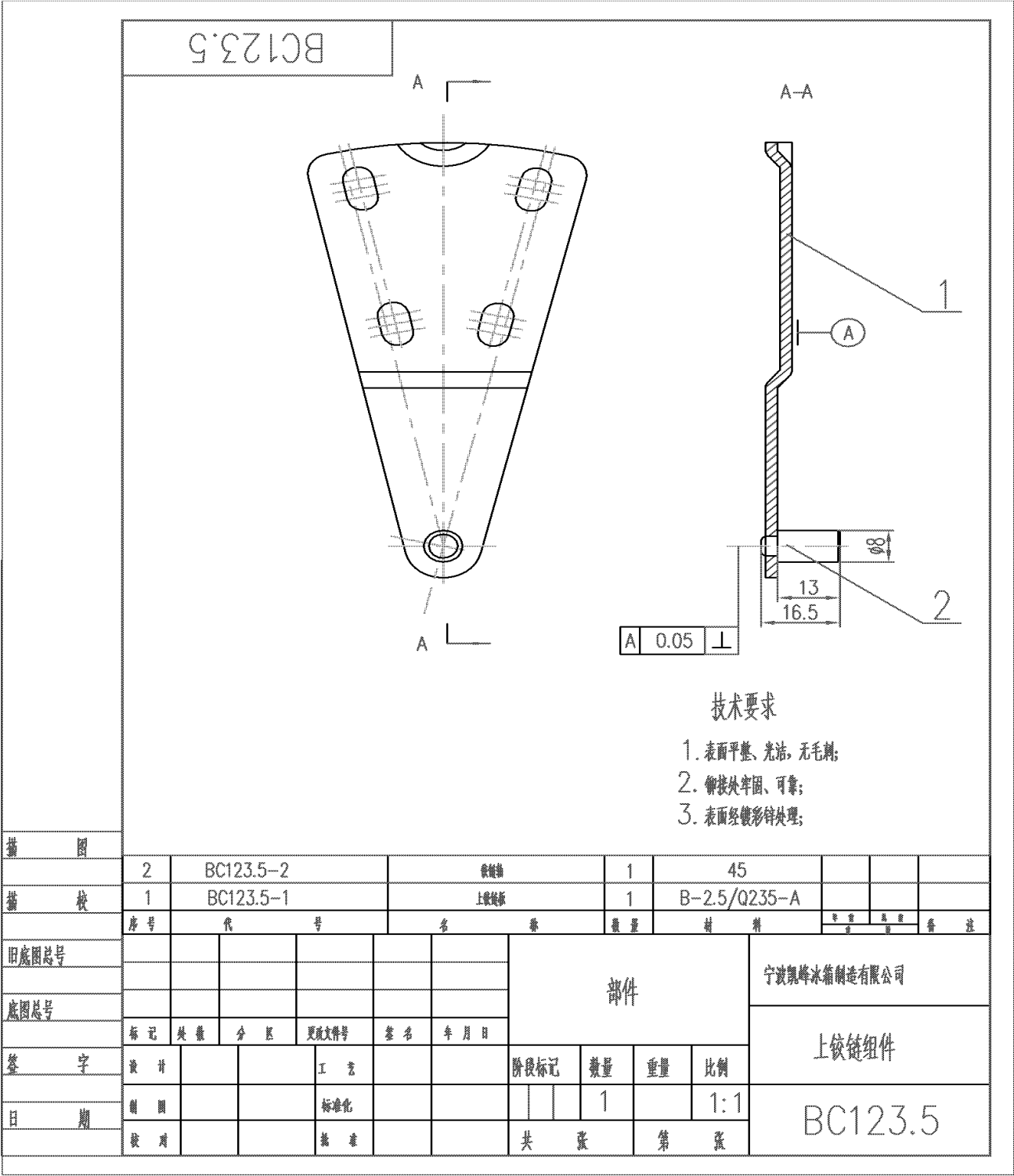
The repairs under warranty may only be carried out by an authorized service centre. When making a claim under the warranty, the original bill of purchase (with purchase date) must be submitted.

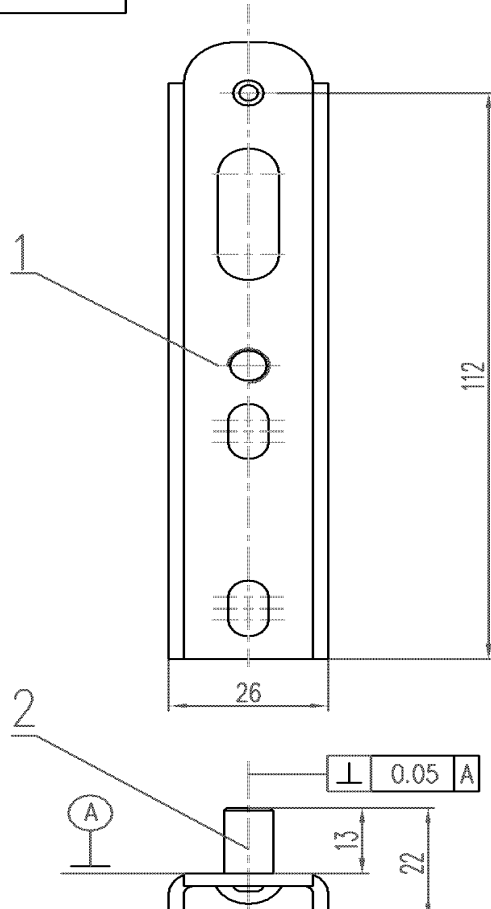
The warranty will not apply in cases of:

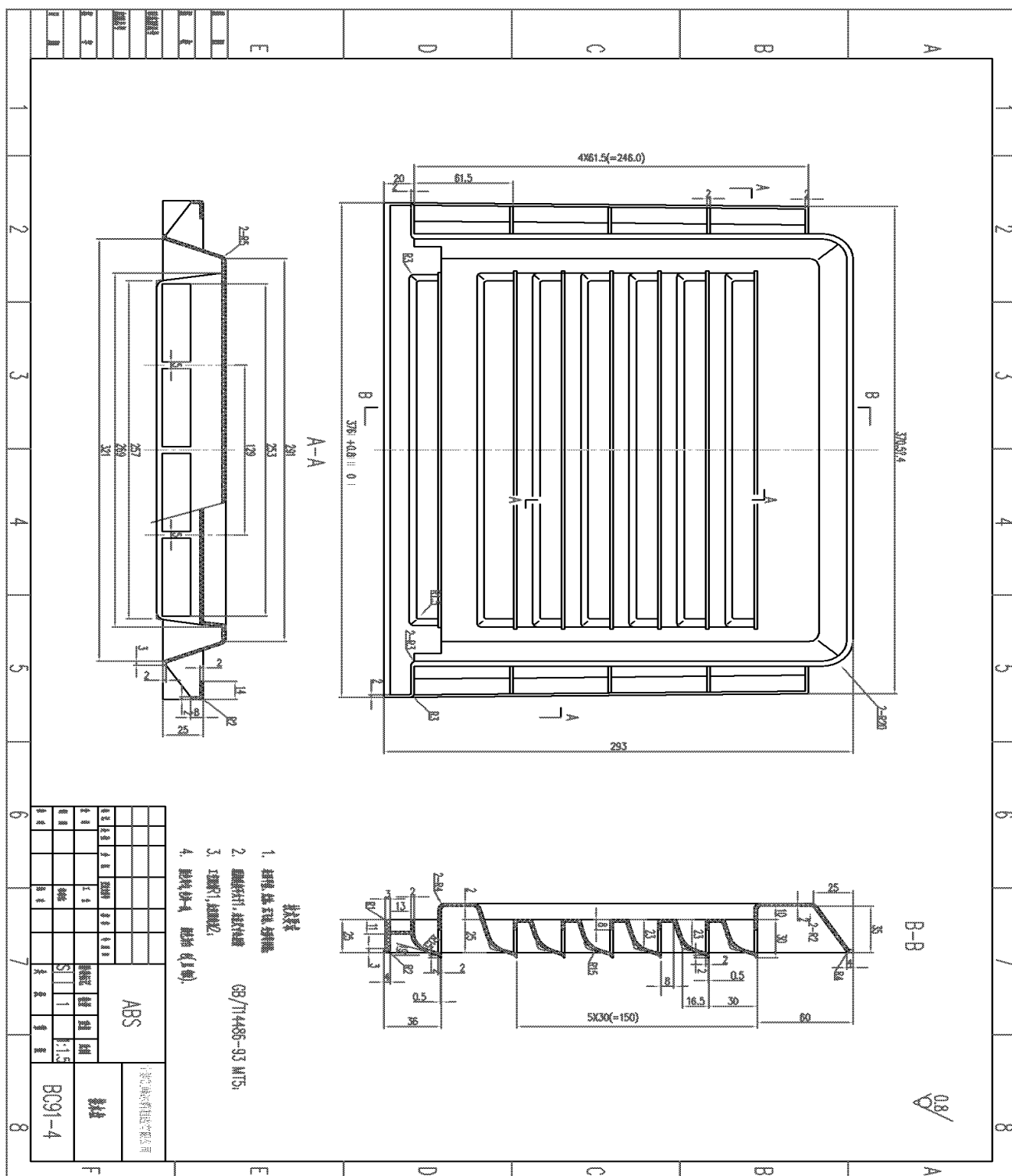
- Normal wear and tear
- Incorrect use, e.g. overloading of the appliance, use of non-approved accessories
- Use of force, damage caused by external influences
- Damage caused by non-observance of the user manual, e.g. connection to an unsuitable mains supply or non-compliance with the installation instructions
- Partially or completely dismantled appliances

Correct Disposal of this product

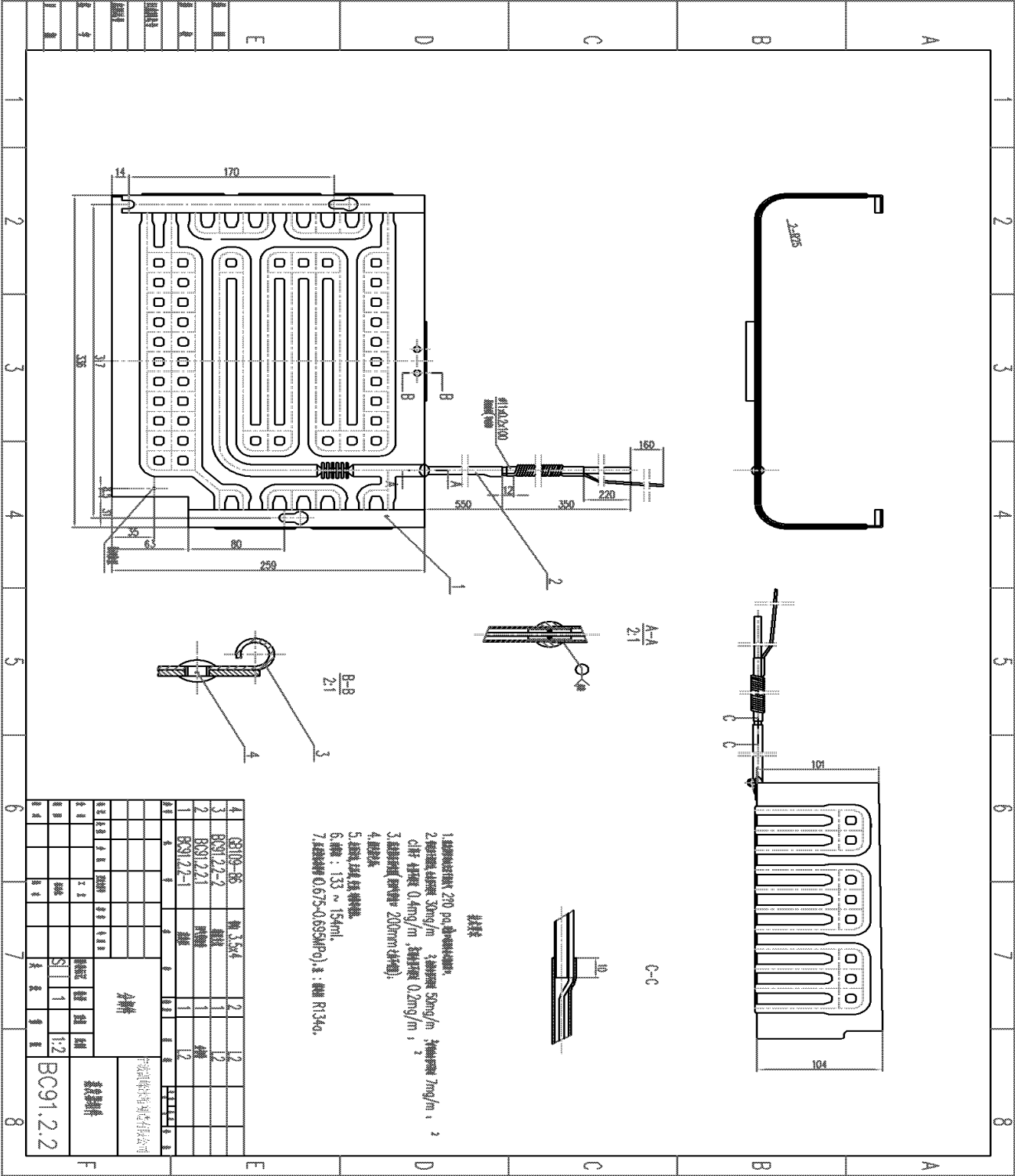
This marking indicates that this product should not be disposed with other household wastes throughout the EU. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmental safe recycling.



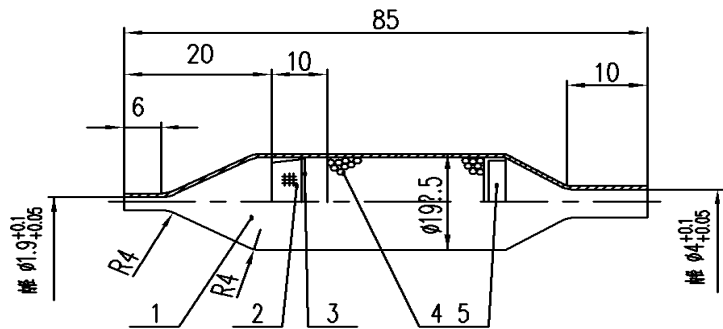
BC123.8  技术要求 1. 表面平整、光洁，无毛刺； 2. 铆接处牢固、可靠； 3. 表面镀锌；													
描 图													
描 数	2	BC123.5-2	门轴	1	45				备用				
	1	BC123.8-1	下铰链板	1	Q235-A								
旧底图总号					部 件				宁波凯峰冰箱制造有限公司				
底图总号													
	标 记	处 数	分 区	更改文件号					签 名	年 月 日	下铰链组件		
签 字	设 计			工 艺			阶段标记	数 量	重 量	比 例			
日 期	制 图			标 准 化				1		1:1			
	校 对			批 准			共 张		第 张				
BC123.8													



N151275139



N151275143



技术要求

1. 端口无毛刺。
2. 分子筛预吸附 $\leq 1.5\%$, 氯离子 $\leq 0.3\text{mg/m}^2$, 矿物油 $\leq 4\text{mg/m}$.
3. 表面光洁, 无明显裂纹, 夹杂, 水渍, 斑点, 油污等缺陷。
4. 挡网深度以分子筛为限。
5. 适用于R134a、R600a制冷剂。
6. 筛网座与器体装配采用缩径工艺。
7. 其它各项技术要求符合GB/T23135—2008 电冰箱分子筛过滤器要求。

描 图	5			挡	1	H62 Ø0.35						
	4			分子筛	5g	XH-9						
	3			阻流	11	H62 Ø0.35						
	2			筛网	1	1Cr18Ni9 200#N						
描 装	1			器体	1	T2Y Ø19±.5						
	序 号	代 号		名 称		数 量	材 料		单 重	总 重	备 注	
旧底图总号							分子筛过滤器			宁波韩电电器有限公司		
底图总号												
	标 记	处 数	分 区	更改文件号	签 名	年 月 日					过滤器	
签 字	设 计			工 艺			阶段标记	数量	重量	比例		
	制 图			标准化			S		1			1:1
日 期	校 对			批 准			共 1 张		第 1 张			

IBExU Institut für Sicherheitstechnik GmbH

An-Institut der Technischen Universität Bergakademie Freiberg

**REPORT****IB-07-8-021****about the experimental testing of enclosed-break devices
(Translation)*****Temperature controller type DRB series***Freiberg, 22 May 2007
Hi/Diet/LehDipl.-Ing. (FH) Hille
Editor

This document consists of:

6 pages text
2 Annexes

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für Geräte und Schutzsysteme zur bestimmungsgemäßen
Verwendung in explosionsgefährdeten Bereichen
im Sinne von RL 94/9/EG
„Benannte Stelle“ (EU-Kenn-Nr. 0637)

N151275148

REPORT**IB-07-8-021****about the experimental testing of enclosed-break devices****1 Order**

The VDE Prüf- und Zertifizierungsinstitut in 63069 Offenbach (GERMANY) engaged with the letter 5001300-4510-0004/83602 of 26 February 2007 the IBExU Institut für Sicherheitstechnik GmbH with the experimental testing of the Temperature controller type DRB series in explosive atmosphere regarding the proof of type of protection enclosed-break devices according to IEC/EN 60079-15:2005, paragraph 33.4.

2 Test item

Temperature controller

- | | |
|------------------------------|--------------------------|
| - Type: | DRB series |
| - Voltage: | 250 V |
| - Current: | max. 14 A |
| - cos phi: | 0.6 |
| - Service temperature range: | -20 °C up to max. 150 °C |

3 Test documents

- Letter 5001300-4510-0004/83602 of the customer of 26 February 2007
- EN 60079-15:2005 (complies with IEC 60079-15:2005, ed. 3)
- 7 pieces of Temperature controller type DRB-42V61A1

The test items were delivered to IBExU on 01 March 2007.

4 Test execution**4.1 Objectives**

It was the task to examine experimentally the ignition safety (the non-ignition of an explosive atmosphere) of the Temperature controllers for gases and vapors of the Group IIA with the parameters specified under chapter 2.

The bases of the test are the requirements in IEC/EN 60079-15:2005, Paragraph 33.4, for enclosed-break devices.

In the context of these examinations there was not the task to check the constructive requirements for apparatus in type of protection "n" (apparatus for zone 2) for the compliance with IEC/EN 60079-15.

4.2 Description of the test item

The Temperature controllers serve for the protection of motor compressors at refrigerating appliances. A special black plastic base serves as support part of the functional parts, a plastic lid is pressed in on the top side. Inside is a bimetal contact bridge and below is a heating element. At one side of the plastic case a plug contact 6.3 mm is led to the outside and on the lid is a second contact as a socket. Heating element and bimetal plate are connected with the motor winding in row. All gaps were sealed with glue.

The free internal volume of the switch chamber is less than 20 cm³ (about 1 cm³). The enclosures of the test samples were equipped with a thread and a hose connection. So it was possible to fill the switch chamber with the test gas. A second bore hole with hose connection serves for the discharge of the test gas during the purging and also for the uptake of the thermocouple.

4.3 Requirements in IEC/EN 60079-15:2005

Enclosed-break devices are devices, which incorporate electrical contacts that are made and broken. These devices will withstand an internal explosion of the flammable gas or vapor which may enter it without suffering damage and without communicating the internal explosion to the external flammable gas or vapor.

Before the tests any removable seals have to be removed. Any remaining non-metallic parts will have been subjected to the conditioning test described in paragraph 33.3.2. These parts have to be stored continuously for four weeks in an ambience of 90 % relative humidity and at a temperature of 10 K above the maximum temperature in rated service. In case of a maximum service temperature above 85 °C the period of four weeks specified above will be replaced by a period of two weeks at 95 °C and 90 % relative humidity followed by a period of two weeks at a temperature of 10 K above the maximum temperature in rated service. After that, a storage for 24 hrs at a temperature of 5 K below the minimal ambient temperature shall be carried out.

Then the test of the enclosed-break devices according to paragraph 33.4.3 will be carried out. The explosive gas atmosphere fixed for the Group IIA, IIB or IIC has to be ignited inside the device by the operation of the enclosed contacts when connected to the maximum rated source of energy, power and load in terms of voltage, current, frequency and power factor.

A make and break test shall be repeated 10 times with a fresh gas mixture for each test.

After the test the device shall show no visible signs of damage; no external ignition shall occur and there shall be no failure to clear the arc when the switch contacts are opened.

03

4.4 Description of the test equipment

The test equipment is schematically shown in annex 1 of this report. It consists of the following equipment and means of work:

Explosion chamber

The explosion chamber essentially consists of a cylindrical container (Piacryl) with a bursting foil mounted on the top. The volume amounts 18 dm³. In the base plate and at the cylinder are introduced and sealed the instrument leads and the supply lines.

Conditioning of the test gas mixture

The explosive gas atmosphere required for the Group IIA (6.5 % $\pm$ 0.5 % ethylene, 93.5 % $\pm$ 0.5 % air) was processed in the explosion chamber by volumetric gas conditioning. Dosage equipment with Digital Mass Flow Controllers served for this.

The homogeneous mixture conditioning was ensured by flushing the explosion chamber and the test item with the explosive gas/air mixture. The burning gas quota (ethylene) in the explosion chamber was checked in addition for the maintenance of the permissible tolerance with gas interferometer according to Rayleigh-Haber-Löwe.

Measuring device for electrical parameters

The predefined electrical load of the switching contacts was made by switching on ohmic resistors and inductances in the AC circuit.

With a Wide Band Power Analyzer D 6100 (manufacturer: Norma) the required parameters current, voltage and power factor were measured during the examining operation and registered with an 8-channel recorder type LR 8100 (manufacturer: YOKOGAWA). The ignition in the test item was perceived acoustically and recorded by the temperature rise by means of a thermocouple. For that, a thermocouple was introduced into the tube connection at the test item after the mixture conditioning. The temperature course was recorded with the recorder LR 8100.

Test of thermal endurance

The test of thermal endurance occurs in conditioning and refrigeration cabinets which are also used for the thermal endurance tests according to EN 60079-0.

All used measuring instruments are included in the Quality Management System of IBEXU certified according to ISO 9001. They are checked in regular intervals.

4.5 Test procedure and results

4.5.1 Test of thermal endurance

According to IEC/EN 60079-15, 33.3.2 the test samples were stored for two weeks at 95 °C heat and 90 % rel. humidity, two weeks at 160 °C heat as well as for 24 hrs at -25 °C cold. No damages were noticed at the following visual examination.

04

4.5.2 Pre-test

Before the ignition tests specified in IEC/EN 60079-15 were carried out it had to be made sure that the appearing switching spark in the case can be considered as an effective ignition source for the test gas. To this, pre-tests were carried out at a Temperature controller, whose enclosure was opened.

At the test parameters 250 V AC, 14 A and $\cos \varphi$ 0.6 the ignition of the explosive gas mixture caused by the break spark could be proved (see Annex 2.1).

4.5.3 Type test

The tests were carried out on 02 May 07. In accordance with IEC/EN 60079-15, 33.4.3.2 eleven tests have to be carried out with a sample, which has the most adverse dimensions permitted by the construction drawings. There are no statements regarding the gaps of the test samples. To make sure the test results, four test samples were included into the test program.

The respective Temperature controller (originally closed) to be tested was put into the explosion chamber. The specified explosive gas atmosphere required for the Group IIA (6.5 ± 0.5) % ethylene/air mixture was processed in the explosion chamber and in the enclosure of the test item.

The contacts of the Temperature controller were operated with the preset test parameters. The ignition of the explosive gas atmosphere inside the test item occurred by the break spark.

The test results are summarised in the table. For some tests the test parameters are recorded in the annexes 2.2 and 2.5.

Test sample	Tests	Electrical parameters			Ignition of the explosive atmosphere	
		U [V]	I [A]	cos φ	Inside the test item	outside
1 a	2	250	14	0.6	yes	no
1 b	1	250	14	0.6	yes	no
1 c	1	250	14	0.6	yes	no
2	11	250	14	0.6	yes	no
3	11	250	14	0.6	yes	no
4	11	250	14	0.6	yes	no

Only two respectively one ignition tests could be carried out with test samples 1a, 1b and 1c, because the Temperature controller did not work then any more.

At none of the ignition tests the explosion triggered in the enclosure of the Temperature controllers was transferred to the outer explosive atmosphere. No damages were noticed at the case.

5 Summary

It was noticed with the examinations that the Temperature controller type DRB series at the conditions mentioned under 2 has the ignition safety (the non-ignition of an explosive atmosphere) fixed in IEC/EN 60079-15:2005 according to type of protection enclosed-break device for gases and vapors of the Group IIA. The explosions triggered inside the switching chamber by the break spark did not ignite the explosive mixture surrounding the device.

The assessment of the constructive design of the Temperature controllers regarding to the compliance with the requirements of IEC/EN60079-15 for apparatus of the type of protection "n" (apparatus for zone 2) was not object of these examinations.

The test result exclusively refers to the Temperature controller type DRB series specified under chapter 2.

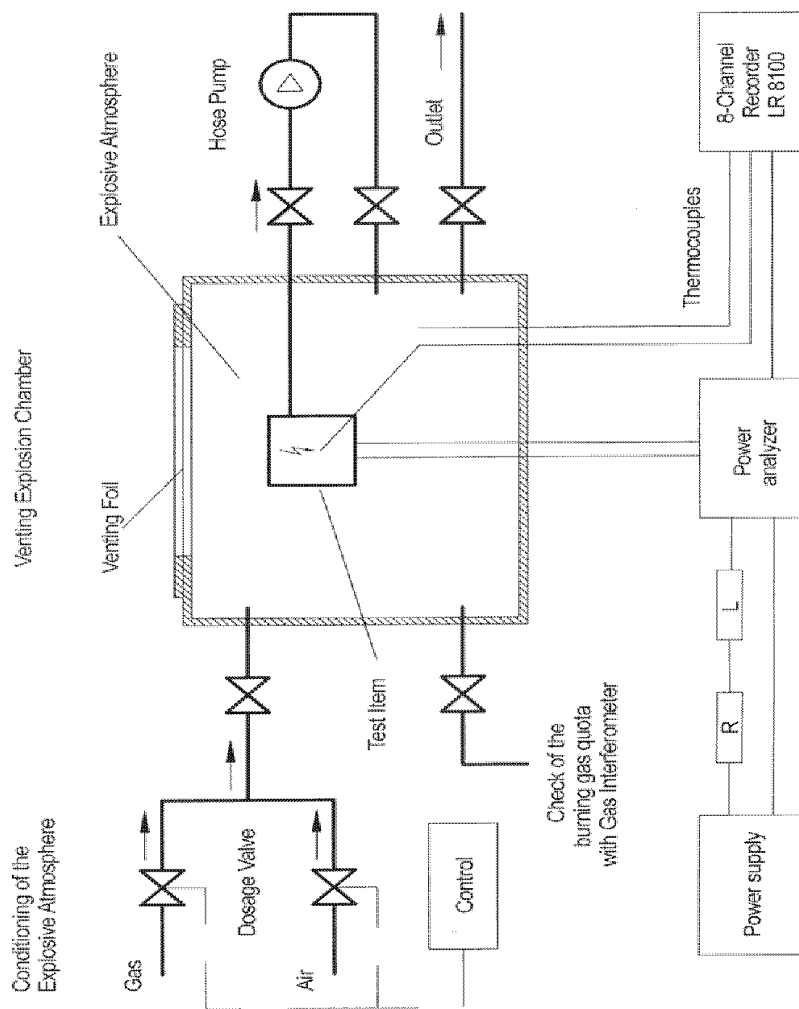
Annexes

Annex 1	Schematic setup of the test equipment
Annex 2	Representation of the test parameters (4 sheets)

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Annex 1 to report IB-07-8-021

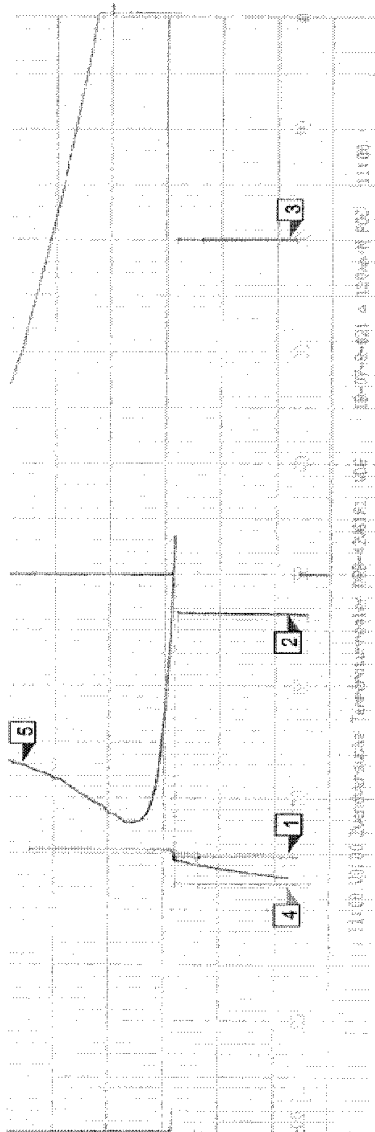
Annex 1: Schematic setup of the test equipment

N151275148

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Annex 2, Page 1 to report IB-07-8-021

Test parameters Pre-test

Recorder speed: 5 sec/Sct.

Range 0 ... 1000 V
Range 0 ... 30 A
Range 1 cap. ... 0 ... 1 ind.
Range 0 ... 100 °C
Range 0 ... 100 °C

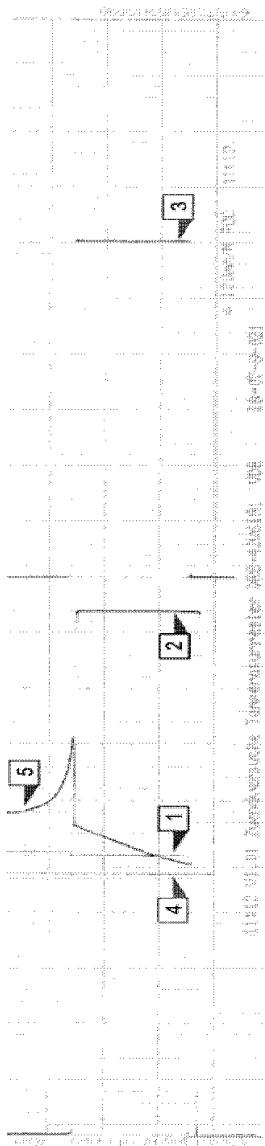
Remarks:

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Annex 2, Page 2 to report IB-07-8-021

Test parameters Test No. 1.01

Recorder speed: 5 sec/Sec.

- 1 - Voltage
- 2 - Current
- 3 - Power factor
- 4 - Temperature test chamber
- 5 - Temperature test item

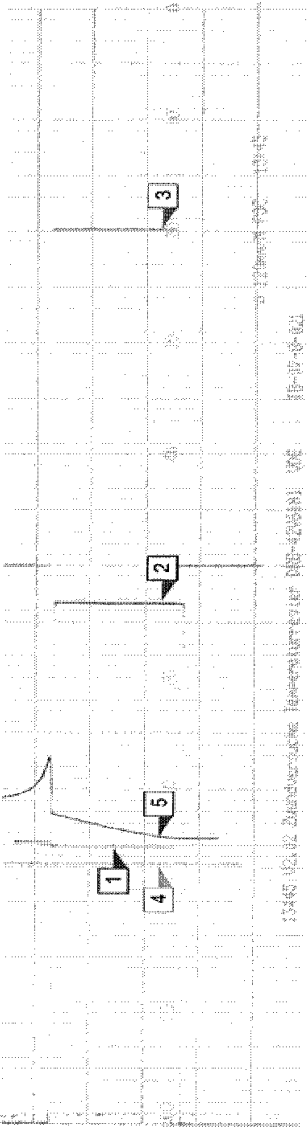
Remarks:

Range 0 ... 1000 V
Range 0 ... 30 A
Range 1_{cap} ... 0 ... 1_{ind}
Range 0 ... 100 °C
Range 0 ... 100 °C

N151275148

Annex 2, Page 3 to report IB-07-8-021

Test parameters Test No. 2.02



Recorder speed: 5 sec/Sec.

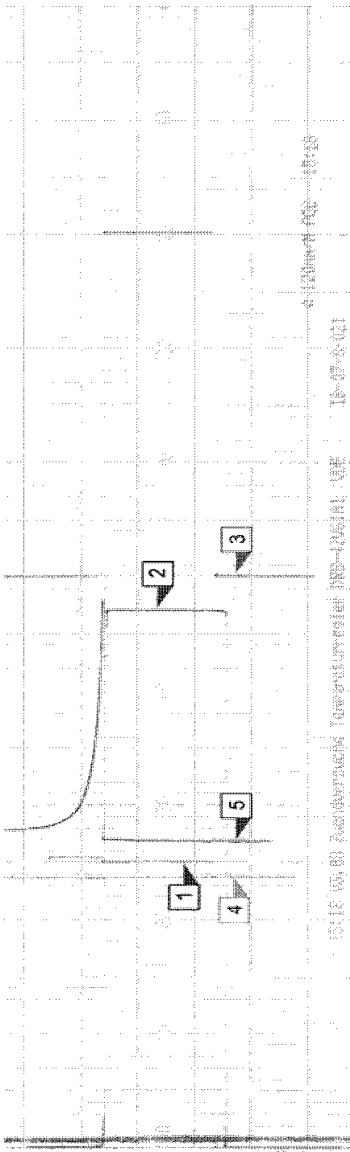
Remarks:

- 1 - Voltage
- 2 - Current
- 3 - Power factor
- 4 - Temperature test chamber
- 5 - Temperature test item

- Range 0 ... 1000 V
- Range 0 ... 30 A
- Range 1_{cap} ... 0 ... 1_{ind}
- Range 0 ... 100 °C
- Range 0 ... 100 °C

Annex 2, Page 4 to report IB-07-8-021

Test parameters Test No. 3.08



Recorder speed: 5 sec/Sct.

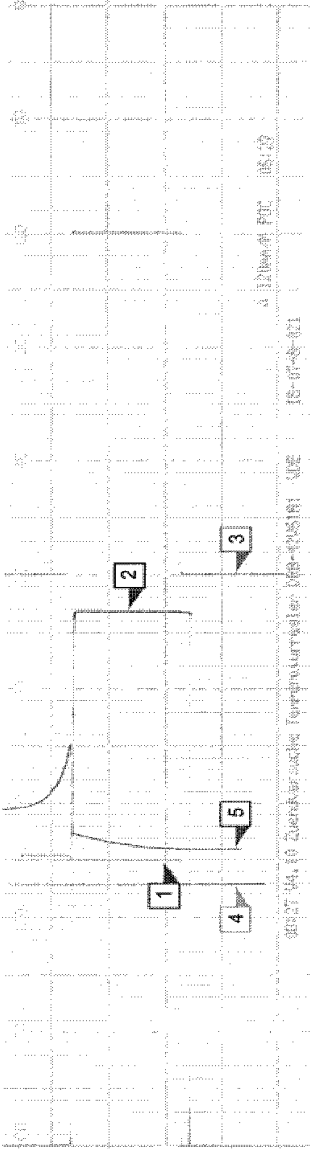
- 1 - Voltage
- 2 - Current
- 3 - Power factor
- 4 - Temperature test chamber
- 5 - Temperature test item

Range 0 ... 1000 V
Range 0 ... 30 A
Range 1_{cap} ... 0 ... 1_{ind}
Range 0 ... 100 °C
Range 0 ... 100 °C

Remarks:

Annex 2, Page 5 to report IB-07-8-021

Test parameters Test No. 4.10



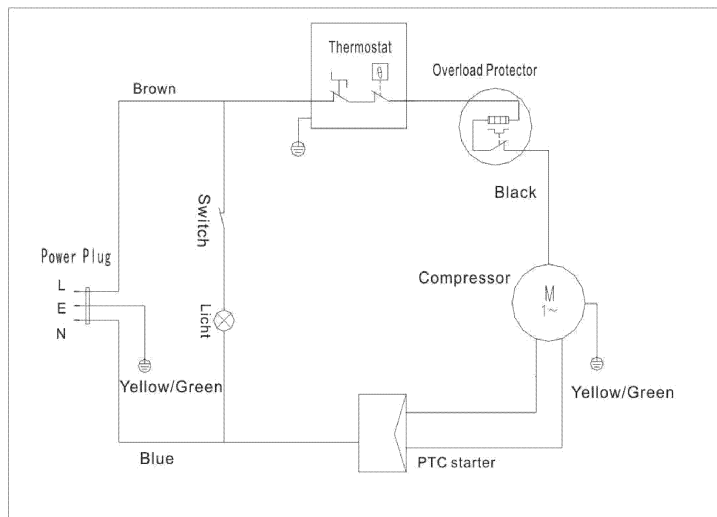
Recorder speed: 5 sec/Sct.

- Range 0 ... 1000 V
- Range 0 ... 30 A
- Range 1_{exp} ... 0 ... 1_{ind}
- Range 0 ... 100 °C
- Range 0 ... 100 °C

- 1 - Voltage
- 2 - Current
- 3 - Power factor
- 4 - Temperature test chamber
- 5 - Temperature test item

Remarks:

Refrigerator



SPECIFICATIONS

Model	KS-91R
RATED VOLTAGE	115V~
RATED FREQUENCY	60Hz
RATED CURRENT	1.0A
REFRIGERANT/AMOUNT	R600a/21g

N151275150

N151275153

VDE Prüf- und Zertifizierungsinstitut**ZEICHENGENEHMIGUNG
MARKS APPROVAL**

Changshu Tianyin Electromechanical
Co. Ltd.
No.8 Yingbin Road, Xingang Town
215513 CHANGSHU
Jiangsu
CHINA

ist berechtigt für ihr Produkt /
is authorized to use for their product

Motorstartrelais, elektrisch betrieben
Motor starting relay, electrically operated

Das hier abgebildete markenrechtlich geschützten Zeichen
für die ab Blatt 2 aufgeführten Typen zu benutzen /
the legally protected Marks as shown below for the types referred to on page 2 ff.



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Tested and certified according to

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DIN EN 60730-2-13 (VDE 0631-2-13):2008-06; EN 60730-2-10:2007

VDE Prüf- und Zertifizierungsinstitut GmbH
VDE Testing and Certification Institute
Zertifizierungsstelle / Certification

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Blatt 1

Certificate No.

Page

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Offenbach, 2011-09-13

(letzte Änderung/updated 2011-12-08)

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40033314 2

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CHANGSHU, Jiangsu, CHINA

Aktenzeichen / File ref.
5006507-4510-0008 / 157687 / FG31 / BAU

letzte Änderung / updated Datum / Date
2011-12-08 2011-09-13

Dieses Blatt gilt nur in Verbindung mit Blatt 1 des Zeichengenehmigungsausweises Nr. 40033314
This supplement is only valid in conjunction with page 1 of the Certificate No. 40033314.

Motorstartrelais, elektrisch betrieben
Motor starting relay, electrically operated

Typ(en) / Type(s):

ZH**

Zweck des RS
Purpose of control

Motorstartrelais PTC / Motorprotector Kombination
Motor starting relay PTC / motor protector combination

Nennspannung
Rated voltage

AC 110/250 V

Nennstrom
Rated current

15 A, cos phi 0,6 (Ein- und Ausschalten, blockierter Motor),
Motorprotector:
max. 12 A (Einschaltstrom), Anschluss 1/2 - 3

Rated current

15 A, p.f. 0,6 (making and breaking, locked rotor current),
Motor protector:
max. 12 A (inrush current), Terminal 1/2 - 3

Merkmale der automatischen
Wirkungsweise
Features of automatic action

1.C / 3.C

Anzahl der automatischen
Zyklen
Number of automatic cycles

10.000 (Motorprotector)
10.000 (motor protector)

Temperaturgrenzen des
Schaltkopfes
Temperature limits of the
switch head

Tmin 0°C; Tmax 130°C

Konstruktion

eingebautes RS mit PTC-Thermistor /
integriertes RS
incorporated control with PTC-thermistor /
integrated RS

Fortsetzung siehe Blatt 3 /
continued on page 3

VDE Prüf- und Zertifizierungsinstitut GmbH * Testing and Certification Institute

Marianenstrasse 25, D-50669 Köln

Phone + 49 (0) 22 63 06-0
Telefax + 49 (0) 22 63 06-655

N161445055

**VDE Prüf- und Zertifizierungsinstitut
Zeichengenehmigung**Ausweis-Nr. / Blatt /
Certificate No. page
40033314 3Name und Sitz des Genehmigungs-Inhabers / Name and registered seat of the Certificate holder
Changshu Tianyin Electromechanical Co. Ltd., No.8 Yingbin Road, Xingang Town, 215513
CHANGSHU, Jiangsu, CHINAAktenzeichen / File ref.
5006507-4510-0008 / 157687 / FG31 / BAUletzte Änderung / updated Datum / Date
2011-12-08 2011-09-13Dieses Blatt gilt nur in Verbindung mit Blatt 1 des Zeichengenehmigungsausweises Nr. 40033314.
*This supplement is only valid in conjunction with page 1 of the Certificate No. 40033314.*Verschmutzungsgrad 2
*Degree of pollution*Überspannungskategorie II
*Overvoltage category*Anschluss Flachstecker 6,3x0,8 mm, 4,8x0,8 mm; Pinanschlüsse
*Type of terminal tabs 6,3 x 0,8mm, 4,8x0,8 mm; pin terminations*Kriechstromfestigkeit Siehe Anlage 2
*Tracking resistance See appendix 2*Glühdrahtprüfung (GWT) Siehe Anlage 2
*Glow-wire test (GWT) See appendix 2*Weitere Angaben siehe Anlage 1 + 2
Further information see appendix

Anmerkung Zum Einbau in Geräte der Schutzklasse I.

Die Beurteilung der Anschlüsse zum Verdichter und Motorprotector muss bei der Prüfung des Haushaltgerätes erfolgen.

Geprüft als umschlossene Schalteinrichtung nach IEC / EN 60079-15:2005, Abschnitt 33.4, Gruppe IIA.

Integrierter Motorprotector geprüft nach EN 60730-2-4:2007

Fortsetzung siehe Blatt 4 /
continued on page 4

VDE Prüf- und Zertifizierungsinstitut GmbH * Testing and Certification Institute

Mittelstrasse 28, D-61062 Offenbach

Phone + 49 (0) 69 83 06-0
Telefax + 49 (0) 69 83 06-885

N161445055

EC Declaration of Conformity

Issuer's name and address:

Changshu Tianyin Electromechanical
Co. Ltd.
No.8 Yingbin Road, Xingang Town
215513 CHANGSHU
Jiangsu
CHINA

Product:

Motor starting relay, electrically operated

Type designation:

ZH* *

The designated product is in conformity with the European Directive:

2006/95/EC**"Council Directive on the harmonization of the laws of the Member States relating to electrical equipment designed for use within certain voltage limits".**

The technical documentation and full compliance with the standards listed below proves the conformity of the product with the requirements of the above-mentioned EC Directive:

DIN EN 60730-1 (VDE 0631-1):2009-06; EN 60730-1:2000+ A1+ A12+ A13+ A14+ A16+ A2:2008
DIN EN 60730-2-10 (VDE 0631-2-10):2008-06; EN 60730-2-10:2007

The VDE Testing and Certification Institute (EU Identification No.0366), Merianstr. 28, 63069 Offenbach (Germany), has tested and certified the product.

Last two digits of the year in which the CE marking was affixed:

Certificate No.
File Reference

40033314
5006507-4510-0008 / 157687 / FG31 / BAU

.....
(Place, Date).....
(Legally binding signature of the issuer)

N161445055

**VDE Prüf- und Zertifizierungsinstitut
Zeichengenehmigung**Ausweis-Nr. /
Certificate No. 40033314
Beiblatt /
SupplementName und Sitz des Genehmigungs-Inhabers / *Name and registered seat of the Certificate holder*
Changshu Tianyin Electromechanical Co., Ltd., No.8 Yingbin Road, Xingang Town, 215513
CHANGSHU, Jiangsu, CHINAAktenzeichen / *File ref.*

5006507-4510-0008 / 157687 / FG31 / BAU

letzte Änderung / *updated* Datum / *Date*

2011-12-08

2011-09-13

Dieses Beiblatt ist Bestandteil des Zeichengenehmigungsausweises Nr. 40033314.

*This supplement is part of the Certificate No. 40033314.***Motorstartrelais, elektrisch betrieben
Motor starting relay, electrically operated**

Fertigungsstätte(n)

*Place(s) of manufacture*Referenz/Reference
30002843Changshu Tianyin Electromechanical
Co. Ltd.
No.8 Yingbin Road, Xingang Town
215513 CHANGSHU
Jiangsu
CHINAVDE Prüf- und Zertifizierungsinstitut GmbH
VDE Testing and Certification Institute
Fachgebiet FG31
Section FG31

N161445055



防爆电气设备 防爆合格证

编 号: CNEx13.4305X

制 造 单 位	九江恒通自动控制器有限公司
产 品 名 称	地址: 九江市开发区城西港区港兴路 18 号 防爆温度控制器
型 号 规 格	WDF 250VAC 50/60HZ 5A
防 爆 标 志	Ex nC IIA T1 Gc
产 品 标 准	HTQBEx-2011
总 装 图 号	LB11-IIT

经对上述产品图样及技术文件的审查和样品检验, 确认符合下列标准:
IEC60079-0: 2007 爆炸性环境 第 0 部分: 设备 通用要求
IEC60079-15: 2010 爆炸性环境 第 15 部分: 由“n”型保护的设备

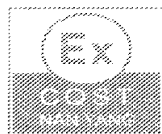
记 事

1. 该产品适用于制冷剂为 R600a 的电冰箱中。
2. 防爆温度控制器安装后插脚应有可靠防护, 满足 IP54 要求。

本证有效期 2013 年 12 月 30 日至 2018 年 12 月 29 日

颁发日期 2013 年 12 月 30 日

中 心 主 任



国家防爆电气产品质量监督检验中心

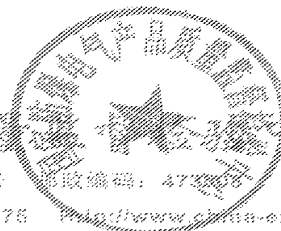
地址: 中国河南省南阳市仲梁北路 20 号

电话: 0377-63258364

传真: 0377-63206176

邮政编码: 473008

Email: www.cnma-ex.com



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N161445056



国家防爆

Electrical Apparatus for Explosive Atmospheres

CERTIFICATE OF CONFORMITY

Cer. No.: CNEx11.3493X

Manufacturer Zhejiang Changdecheng Electric Appliances Co., Ltd.
(East-town Zone, Hongqiao, Yueqing, Zhejiang, China)

Name of Product Explosion-proof Door Switch

Type of Product HC-050K.4 250V AC 2.5A/125V AC 5A

Marking Ex nC II A T1 Gc

Standard Q/CDC.004-2011

Drawing No. 5399-3603130300

The drawings, technical documents and the samples are verified and certified according to standard(s) for safety as below:
IEC60079-0:2007 Explosive atmospheres - Part 0: Equipment-General requirements
IEC60079-15:2010 Explosive atmospheres - Part 15: Equipment protection by type of protection "n"

Note

1. The certificate covers the following products:
HC-050K.4, HC-050K.5, 250V AC 2.5A/125V AC 5A
Ex marking: Ex nC II A T1 Gc
2. This product was applied to the refrigerator which refrigeration is R600a.

Valid Date Form December 14, 2011 to December 13, 2016

Issue Date December 14, 2011

Director



CHINA NATIONAL QUALITY SUPERVISION AND TEST CENTRE
FOR EXPLOSION PROTECTED ELECTRICAL PRODUCTS

Address: No.20 North Zhongjing Rd, Nanyang, Henan(473008), P.R.China
Tel: 0377-63258564 Fax: 0377-63208175 [Http://www.china-ex.com](http://www.china-ex.com)

Note: This certificate is only valid for the products which identify with the sample(s) tested and verified. Holder(s) of this certificate have the responsibility to ensure the products complying with relevant standard(s).

登陆网站 输入数码 查询真伪 0742 0773 2074 0081 查询方式: www.china-ex.com

N161445057



防爆电气设备 防爆合格证

编 号: CNEx13.4303X

制造单位	九江恒通自动控制器有限公司
产品名称	地址: 九江市开发区城西区港区港兴路 18 号 防爆温度控制器
型号规格	WP 250VAC 50/60Hz 6A
防爆标志	Ex nC IIA T1 Gc
产品标准	HTQBEx-2011
总装图号	LB12-HT

经对上述产品图样及技术文件的审查和样品检验, 确认符合下列标准:

IEC60079-0: 2007 爆炸性环境 第 0 部分: 设备 通用要求

IEC60079-15: 2010 爆炸性环境 第 15 部分: 由“n”型保护的设

记 事

1. 本证书可代表产品:

WP 250VAC 50/60Hz 6A、WPF 250VAC 50/60Hz 6A,
防爆标志: Ex nC IIA T1 Gc。

2. 该产品适用于制冷剂为 R600a 的电冰箱中。

3. 防爆温度控制器安装后插脚应有可靠防护, 满足 IP54 要求。

本证有效期

2013 年 12 月 30 日至 2018 年 12 月 29 日

颁发日期

2013 年 12 月 30 日

中心主任



国家防爆电气产品质量监督检验中心

地址: 中国河南省南阳市仲景北路20号 邮政编码: 473005

电话: 0377-63258564 传真: 0377-63208175 Http://www.china-ex.com



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IBEXU Institut für Sicherheitstechnik GmbH

An-Institut der Technischen Universität Bergakademie Freiberg

R E P O R T**IB-14-8-055**

about the experimental testing of enclosed-break devices

*Motor protectors**type DRB***A*/BT*-***D* and DRB***B*/BT*-***G**

(Translation)

Freiberg, 03 September 2014
Hl/Diet/LehDipl.-Ing. (FH) Hille
EditorThis document consists of:
7 pages text
2 Annexes

This document may only be distributed in its entirety. Extractions from this document require the written consent of the IBEXU GmbH. In case of dispute, the German text shall prevail.

C161936308

IBEXU Institut für Sicherheitstechnik GmbH
Fuchsmühlengeweg 7, D - 09599 Freiberg
Tel.: (0 37 31) 38 05-0 Fax: (0 37 31) 2 36 50
E-Mail: post@ibexu.de, <http://www.ibexu.de>**Prüflaborium und Zertifizierungsstelle**
für Geräte und Schutzsysteme zur bestimmungsgemäßen
Verwendung in explosionsgefährdeten Bereichen
nach DIN EN ISO 9001 (Rev. 01/2013)
"Benannte Stelle" (EU-Kenn-Nr. 0637)

IBEXU

Institut für Sicherheitstechnik GmbH

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REPORT

IB-14-8-055

about the experimental testing of enclosed-break devices

1

Order

VDE Global Services Guangzhou in China engaged with e-mail of 23 April 2014 the IBExU Institut für Sicherheitstechnik GmbH with the experimental testing of the Motor protectors type DRB***A*/BT*-*D* and DRB***B*/BT*-*G* in explosive atmosphere regarding the proof of type of protection enclosed-break devices according to IEC/EN 60079-15:2010, paragraph 22.4.

2

Test item

Motor protectors type DRB***A*/BT*-*D* and DRB***B*/BT*-*G*

Manufacturer:

Guangzhou Senbao Electrical Appliances Co., Ltd.

Enclosure material:

Phenolic EA 5555J (Shanghai European-Asian Synthetic Material)

Enclosure colour:

black

Cover material:

PBT 4308G20 (Jiangyin Jihua New Material Co.Ltd.)

Cover colour:

white

Voltage:

250 V AC

Current:

14 A or 18 A

Power factor:

0.7 or 0.95

Service temperature range:

0 °C up to 155 °C

3

Test documents

Quotation AN-14-9-207 of 02 April 2014

Order with E-Mail of 23 April 2014

Order confirmation with letter of 23 April 2014

Declaration of the manufacturer of 15 April 2014

VDE certificate No. 40017545 of 27 April 06 with add. of 16 July 2012

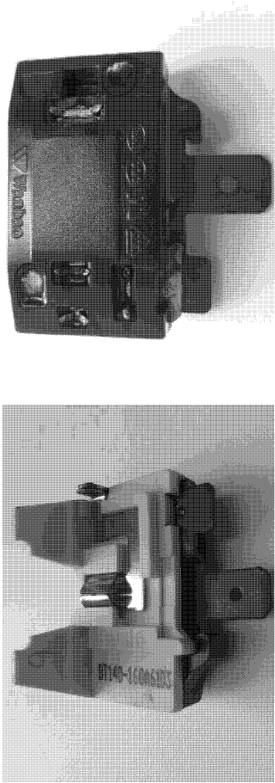
EN 60079-15:2010 (complies with IEC 60079-15:2010, ed. 4)

6 Motor protectors type BT140-160A61D3 (EXel 274/14)

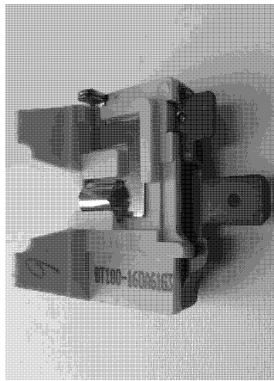
6 Motor protectors type BT180-160A61G3 (EXel 275/14)

The test items were delivered to IBExU on 22 May 2014.

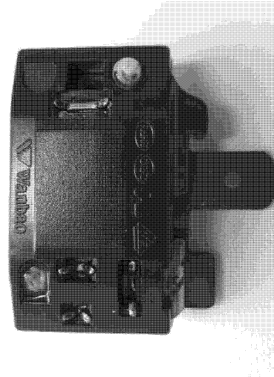
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IBExU		Institut für Sicherheitstechnik GmbH
4 Test execution		IB-14-8-055 Page 3
4.1 Objectives		
It was the task to execute the experimental testing for enclosed-break devices for Group IIA required in IEC/EN 60335-2-24, Annex CC on the Motor protectors with the parameters specified under chapter 2. Basis of the test are the requirements in IEC/EN 60079-15, paragraph 22.4.		
In the context of these examinations there was not the task to check the constructive requirements for apparatus in type of protection "n" (apparatus for zone 2) for the compliance with IEC/EN 60079-15.		
4.2 Description of the test item		
The Motor protectors are thermally acting motor protection devices for hermetically and semi-hermetically enclosed motor-compressors. A special black plastic base serves as support part of the functional parts of the motor protectors. Inside is a bimetal contact bridge. The enclosure is closed by a second, white moulded part, which is heat-sealed via two plastic pins. Both enclosure parts are forming a circulating gap, which is glued. The terminal contacts are led to the outside as a 6.3 mm plug contact and as a socket.		
The free internal volume of the switch chamber is less than 20 cm³ (about 1 cm³).		
		Motor protector type BT140-160A61D3

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Motor protector type BT180-160A61G3



The enclosures of the test samples were equipped with a hose connection via a borehole. So it was possible to fill the switch chamber with the test gas and it served also for the uptake of the thermocouple.

4.3 Requirements in IEC/EN 60079-15

Enclosed-break devices are devices, which incorporate electrical contacts that are made and broken. These devices will withstand an internal explosion of the flammable gas or vapor which may enter it without suffering damage and without communicating the internal explosion to the external flammable gas or vapor.

Before the tests any removable seals have to be removed. Any remaining non-metallic parts have to be subjected to the conditioning test described in paragraph 22.3.1. These parts have to be stored continuously for 672 (+30/-0) hrs in an ambience of (90±5) % relative humidity and at a temperature of (10±2) K above the maximum temperature in rated service. In case of a maximum service temperature above 85 °C the above specified storage of 672 (+30/-0) hrs will be replaced by a storage period of 336 (+30/-0) hrs at (95±2) °C and (90±5) % relative humidity followed by a period of 336 (+30/-0) hrs at a temperature of (10±2) K above the maximum temperature in rated service. After that, a storage for 24 hrs at a temperature of 5 K below the minimal ambient temperature shall be carried out according to EN 60079-0, 26.9.

Then the test of the enclosed-break devices according to paragraph 22.4.3 will be carried out. The explosive gas atmosphere fixed for the Group IIA, IIB or IIC has to be ignited inside the device by the operation of the enclosed contacts when connected to the maximum rated source of energy, power and load in terms of voltage, current, frequency and power factor.

A make and break test shall be repeated 10 times with a fresh gas mixture for each test. After the test, the device shall show no visible signs of damage; no external ignition shall occur and there shall be no failure to clear the arc when the switch contacts are opened.

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Institut für Sicherheitstechnik GmbH

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4.4 Description of the test equipment

The test equipment is schematically shown in annex 1 of this report. It consists of the following equipment and means of work:

Test of thermal endurance

The test of thermal endurance to heat and cold occurs in conditioning cabinets, which are also used for the thermal endurance tests according to EN 60079-0.

Explosion chamber

The explosion chamber essentially consists of a cylindrical container (Placryl) with a bursting foil mounted on the top. The volume amounts 18 dm³. In the base plate and on the cylinder are introduced and sealed the instrument leads and the supply lines.

Conditioning of the test gas mixture

The explosive gas atmosphere required for the Group IIA (6.5 % ± 0.5 % Ethylene, 93.5 % ± 0.5 % air) was processed in the explosion chamber by volumetric gas conditioning. Dosage equipment with Digital Mass Flow Controllers served for this.

The homogeneous mixture conditioning was ensured by flushing the explosion chamber and the test item with the explosive gas/air mixture. The combustible gas quota (Ethylene) in the explosion chamber was checked in addition for the maintenance of the permissible tolerance with a gas interferometer according to Rayleigh-Haber-Löwe (PM 0301).

Measuring device for electrical parameters

The predefined electrical load of the switching contacts was made by switching on ohmic resistors and inductances in the AC circuit.

With a measuring transmitter (PM 0458; PM 0459; PM 0475) the required parameters current, voltage and power factor were measured during the examining operation and registered with the data acquisition device MW100 (manufacturer: YOKOGAWA, PM 0542/0635).

The ignition in the test item was perceived acoustically and recorded by the temperature rise by means of a thermocouple. For that, a thermocouple was introduced into the tube connection on the test item after the mixture conditioning. The temperature course was recorded with the recorder.

All used measuring instruments are included in the Quality Management System of IBExU certified according to ISO 9001. They are checked in regular intervals.

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Institut für Sicherheitstechnik GmbH

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4.5 Test procedure and results

4.5.1 *Test of thermal endurance*

According to IEC/EN 60079-15, 22.3.1 and a maximum service temperature of +155 °C the test samples were stored 336 (^{+30/-0}) hrs at +95 °C heat and 90 % rel. humidity, following 336 (^{+30/-0}) hrs at +165 °C heat as well as for 24 hrs at -5 °C cold.

No damages at the test samples were noticed at the following visual inspection.

4.5.2 *Pre-test*

Before the ignition tests specified in IEC/EN 60079-15 were carried out it had to be made sure that the appearing switching spark in the case can be considered as an effective ignition source for the test gas. To this, pre-tests were carried out at a Motor protector, at which the cover was removed.

At the test parameters 250 V AC, 14 A and cos φ 0.7 the ignition of the explosive gas mixture caused by the break spark could be proved (see Annex 2.1).

4.5.3 *Type test*

The tests were carried out from 23 until 30 July 2014. In accordance with IEC/EN 60079-15, 22.4.3.2 eleven tests have to be carried out with a sample, which has the most adverse dimensions permitted by the construction drawings. There are no statements regarding the gaps of the test samples. To make sure the test results, four test samples per type were included in the test program.

The Motor protector (originally closed) to be tested was put into the explosion chamber. The specified explosive gas atmosphere required for the Group IIA (6.5 ± 0.5) % Ethylene/air mixture was processed in the explosion chamber and in the enclosure of the test item.

The contacts of the Motor protectors were operated with the preset test parameters. The ignition of the explosive gas atmosphere inside the test item occurred by the break spark.

The test results are summarised in the table. For some tests the test parameters are recorded in the annexes 2.2 up to 2.9.

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Institut für Sicherheitstechnik GmbH

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Test sample	Tests	Electrical parameters			Ignition of the explosive atmosphere	
		U [V]	I [A]	cos φ	inside the test item	outside
		BT140-160A61D3				
1	11	250	14	0.7	yes	no
2	11	250	14	0.7	yes	no
3	11	250	14	0.7	yes	no
4	11	250	14	0.7	yes	no
BT180-160A61G3						
2	11	250	18	0.95	yes	no
3	11	250	18	0.95	yes	no
4	11	250	18	0.95	yes	no
5	11	250	18	0.95	yes	no

At none of the ignition tests the explosion triggered in the enclosure of the Motor protector was transferred to the outer explosive atmosphere.

5Summary

The Motor protectors type DRB***A*/BT***D* and DRB***B*/BT***G* at the conditions mentioned under 2 were subjected to the experimental tests for enclosed-break devices according to IEC/EN 60079-15:2010, paragraph 22.4. They passed the tests for gases and vapors of the Group IIA. The explosions triggered inside the switching chamber by the break spark did not ignite the explosive mixture surrounding the device.

The assessment of the constructive design of the Motor protectors regarding the compliance with the requirements of IEC/EN 60079-15 for apparatus of the type of protection "n" (apparatus for zone 2) was not object of these examinations.

The test result refers exclusively to the Motor protectors specified under chapter 2.

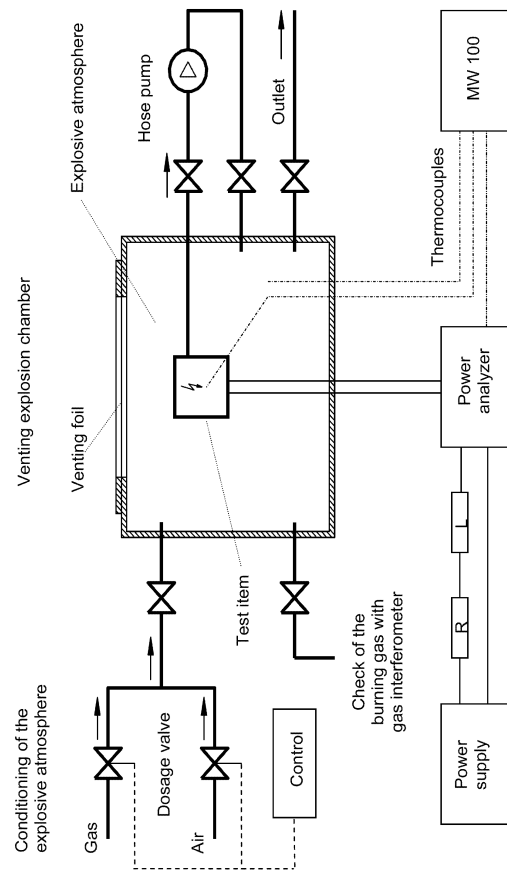
Annexes

Annex 1Schematic setup of the test equipment

Annex 2Representation of the test parameters (9 Sheet)

C161936308

Annex 1: Schematic setup of the test equipment



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Annex 2, Sheet 01 to report IB-14-8-055

Test parameter for test sample 00 Test No.01

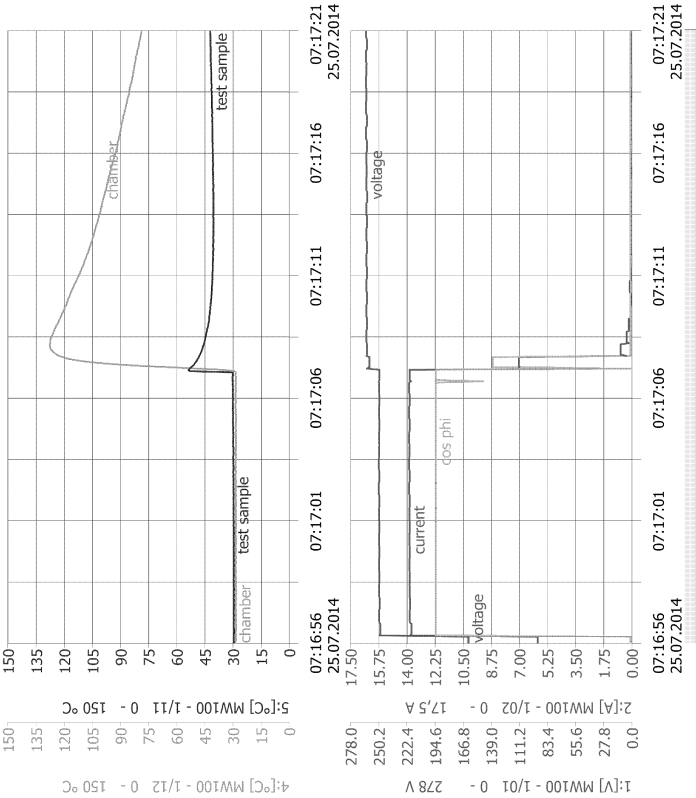
Order-No.:IB-14-8-055Meas. device:MW100

Customer:VDE Global Services GuangzhouPM-Nr.:PM 0542

Test item:Motor protectorAC-Messumformer

Type:BT140-160A61D3PM-Nr.:PM 0458; 0459; 0475

Test sample No.:Ex.el.:274-14



1	01	[V]	voltage	0 -	278 V
2	02	[A]	current	0 -	17,5 A
3	10	[_]	cos phi	0 -	1
4	12	[°C]	chamber	0 -	150 °C
5	11	[°C]	test sample	0 -	150 °C

C161936308

Annex 2, Sheet 02 to report IB-14-8-055

Test parameter for test sample 01 Test No.08

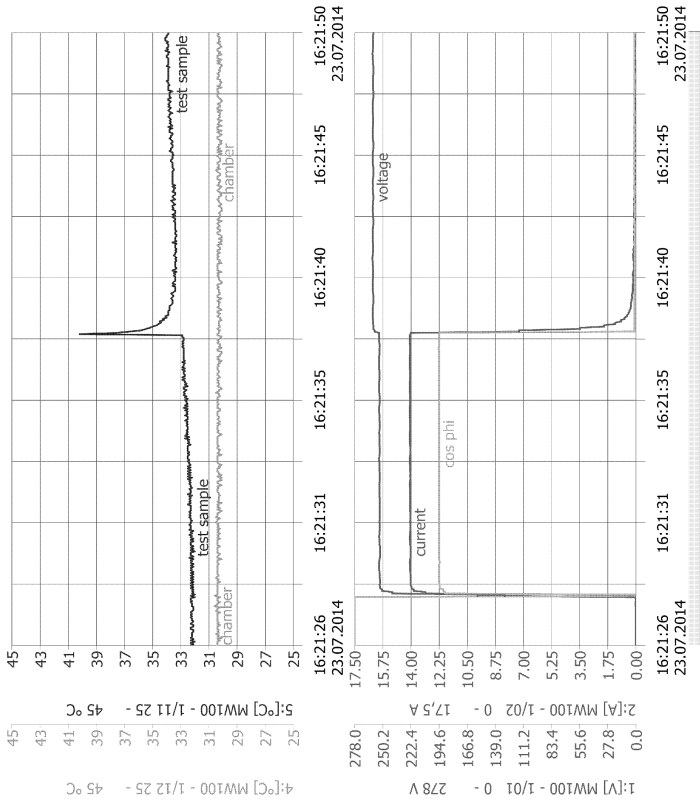
Order-No.:IB-14-8-055Meas. device:MW100

Customer:VDE Global Services GuangzhouPM-Nr.:PM 0542

Test item:Motor protectorAC-Messumformer

Type:BT140-160A61D3PM-Nr.:PM 0458; 0459; 0475

Test sample No.:Ex.el.:274-14



1	01	[V]	voltage	0 -	278 V
2	02	[A]	current	0 -	17,5 A
3	10	[]	cos phi	0 -	1
4	12	[°C]	chamber	25 -	45 °C
5	11	[°C]	test sample	25 -	45 °C

C161936308

Annex 2, Sheet 03 to report IB-14-8-055

Test parameter for test sample 02 Test No. 10

Order-No.: IB-14-8-055

Customer: VDE Global Services Guangzhou

Test item: Motor protector

Type: BT140-160A61D3

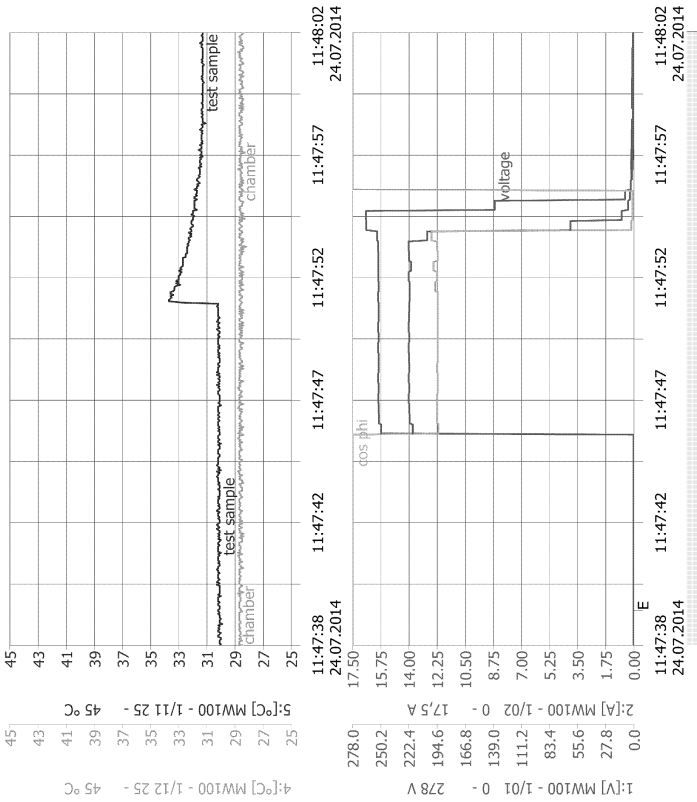
Test sample No.: Ex.el.:274-14

Meas. device: MW100

PM-Nr.: PM 0542

Meas. device: AC-Messumformer

PM-Nr.: PM 0458; 0459; 0475



1	01	[V]	voltage	0 -	278 V
2	02	[A]	current	0 -	17,5 A
3	10	[]	cos phi	0 -	1
4	12	[°C]	chamber	25 -	45 °C
5	11	[°C]	test sample	25 -	45 °C

C161936308

Annex 2, Sheet 04 to report IB-14-8-055

Test parameter for test sample 03 Test No.08

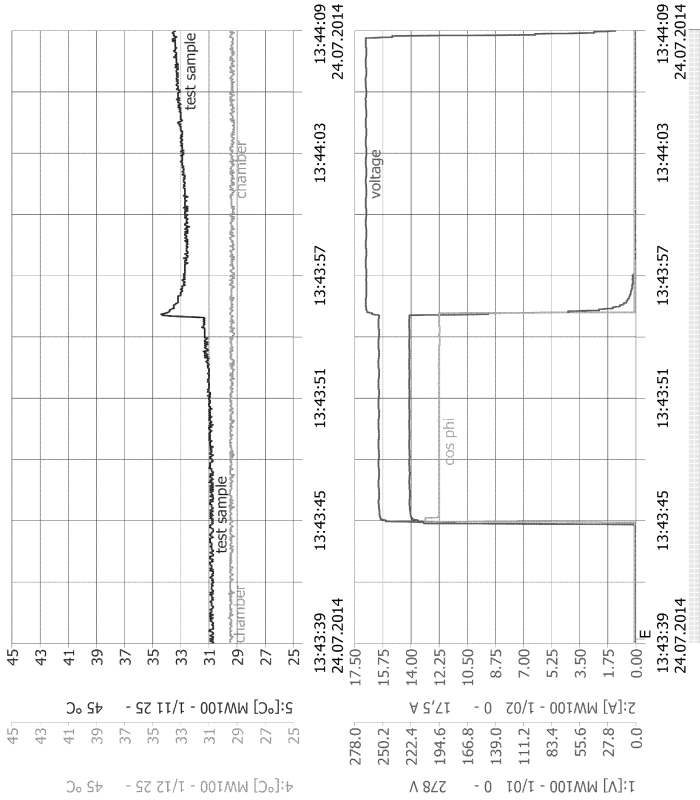
Order-No.:IB-14-8-055Meas. device:MW100

Customer:VDE Global Services GuangzhouPM-Nr.:PM 0542

Test item:Motor protectorAC-Messumformer

Type:BT140-160A61D3PM-Nr.:PM 0458; 0459; 0475

Test sample No.:Ex.el.:274-14



1	01	[V]	voltage	0 -	278 V
2	02	[A]	current	0 -	17,5 A
3	10	[]	cos phi	0 -	1
4	12	[°C]	chamber	25 -	45 °C
5	11	[°C]	test sample	25 -	45 °C

C161936308

Annex 2, Sheet 05 to report IB-14-8-055

Test parameter for test sample 04 Test No. 10

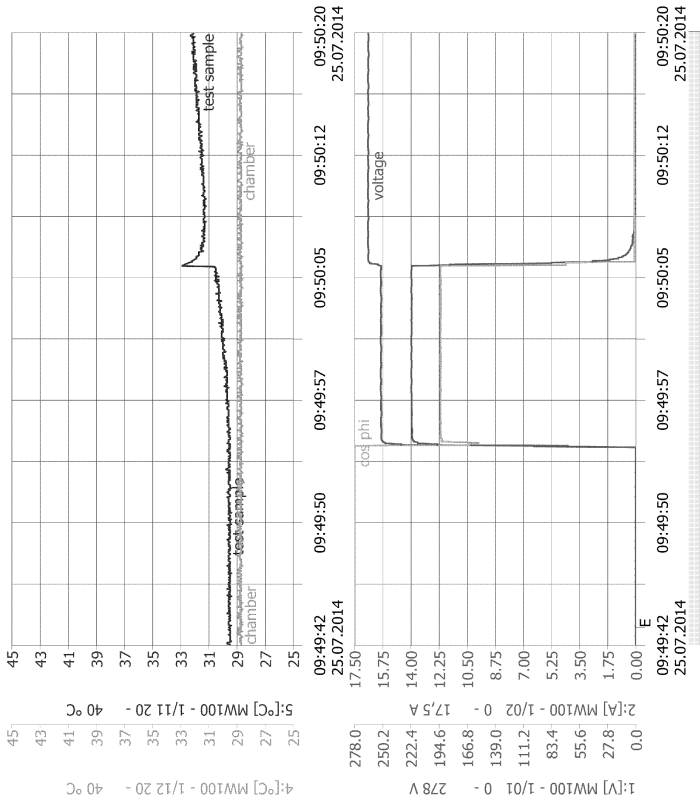
Order-No.:IB-14-8-055Meas. device:MW100

Customer:VDE Global Services GuangzhouPM-Nr.:PM 0542

Test item:Motor protectorAC-Messumformer

Type:BT140-160A61D3PM-Nr.:PM 0458; 0459; 0475

Test sample No.:Ex.el.:274-14



1	01	[V]	voltage	0 -	278 V
2	02	[A]	current	0 -	17,5 A
3	10	[]	cos phi	0 -	1
4	12	[°C]	chamber	20 -	40 °C
5	11	[°C]	test sample	20 -	40 °C

C161936308

Annex 2, Sheet 06 to report IB-14-8-055

Test parameter for test sample 02 Test No.07

Order-No.: IB-14-8-055

Customer: VDE Global Services Guangzhou

Test item: Motor protector

Type: BT180-160A61G3

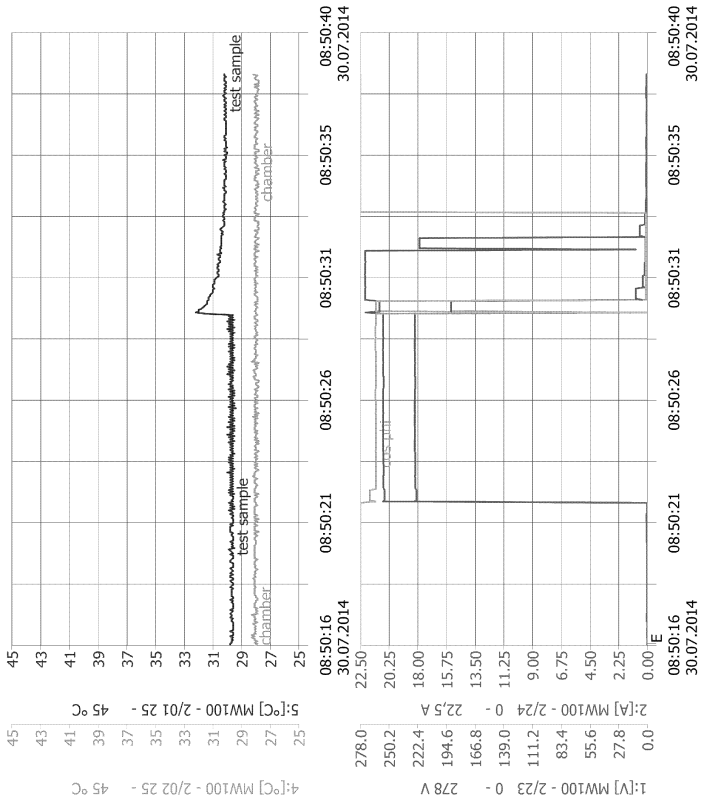
Test sample No.: Ex.el.:275-14

Meas. device: MW100

PM-Nr.: PM 0635

Meas. device: AC-Messumformer

PM-Nr.: PM 0458; 0459; 0475



1	23	[V]	voltage	0 -	278 V
2	24	[A]	current	0 -	22.5 A
3	25	[]	cos phi	0 -	1
4	02	[°C]	chamber	25 -	45 °C
5	01	[°C]	test sample	25 -	45 °C

C161936308

Annex 2, Sheet 07 to report IB-14-8-055

Test parameter for test sample 03 Test No.04

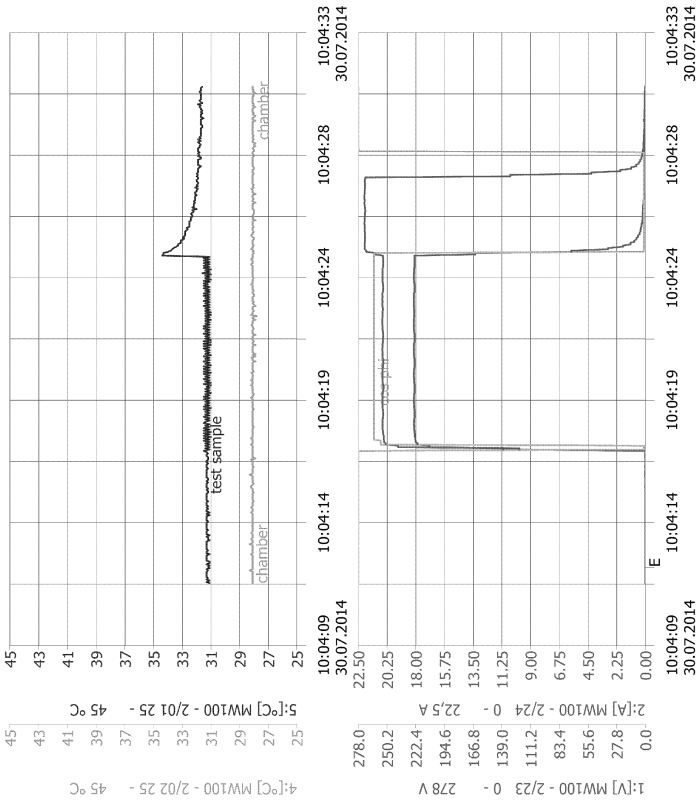
Order-No.:IB-14-8-055Meas. device:MW100

Customer:VDE Global Services GuangzhouPM-Nr.:PM 0635

Test item:Motor protectorAC-Messumformer

Type:BT180-160A61G3PM-Nr.:PM 0458; 0459; 0475

Test sample No.:Ex.el.:275-14



1	23	[V]	voltage	0 -	278 V
2	24	[A]	current	0 -	22.5 A
3	25	[]	cos phi	0 -	1
4	02	[°C]	chamber	25 -	45 °C
5	01	[°C]	test sample	25 -	45 °C

C161936308

Annex 2, Sheet 08 to report IB-14-8-055

Test parameter for test sample 04 Test No. 11

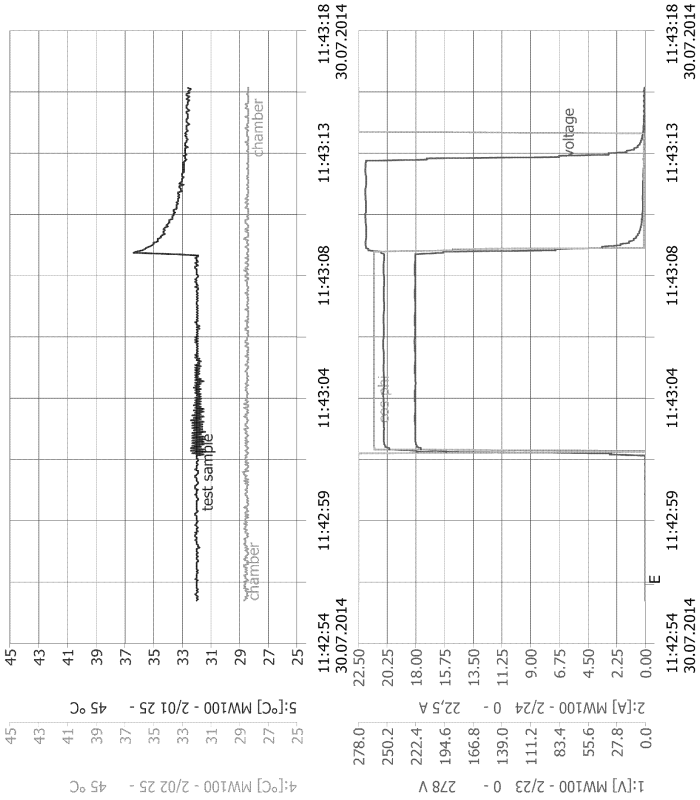
Order-No.:IB-14-8-055Meas. device:MW100

Customer:VDE Global Services GuangzhouPM-Nr.:PM 0635

Test item:Motor protectorAC-Messumformer

Type:BT180-160A61G3PM-Nr.:PM 0458; 0459; 0475

Test sample No.:Ex.el.:275-14



1	23	[V]	voltage	0 -	278 V
2	24	[A]	current	0 -	22,5 A
3	25	[°C]	cos phi	0 -	1
4	02	[°C]	chamber	25 -	45 °C
5	01	[°C]	test sample	25 -	45 °C

C161936308

DESCRIPTION

PRODUCT COVERED:

USL, CNL Freestanding type household freezer, Models KS-35F

GENERAL:

The model covered by this Report is intended for freestanding in household use. Defrost is accomplished manually.

The model employs Refrigerant R-600a (flammable refrigerant, classified as Class 3 "Higher Flammability" by ASHRAE34) and was evaluated following additional requirements of Supplement SA of UL 250. The cooling system is considered a protected cooling system.

TECHNICAL CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE'S USE):

Products designated USL have been investigated using requirements contained in the Standard for Household Refrigerators and Freezers, UL250, Tenth Edition.

Products designated CNL have been investigated using requirements contained in Standard for Refrigeration Equipment, CAN/CSA C22.2 No. 63-93, Fourth Edition.

RATINGS:

See MARKING.

INSTRUCTIONS:

Each unit is provided with installation and operating instructions.

The instructions include the following wording regarding the use of extension cords (+): Do not use an extension cord, or similar words.

(+) - Cord connected units only.

CONSTRUCTION DETAILS:

Electrical Spacings - Unless otherwise noted in this Report, the spacings between uninsulated live parts of opposite polarity and between uninsulated live parts and dead-metal parts are not less than 1/8 in. through air, 1/4 in. oversurface, and 1/4 in. to the enclosure.

10 MARKING:

10-5 Nameplate Marking	Recognized (PGDQ2,8 or PGJI2, 8)
Model	KS-35F
Material	
Manufacturer	Various
Recognized Designation	Various
Location	Inside cabinet
Secured By	Adhesive
Listee Name	Ningbo HANDiAn ELECTRIC APPLIANCE Co., Ltd
Refrigerant	
- Type	R600a
- Amount	1.13 oz (32g)
Design Pressure	
High Side, psig	218
Low Side, psig	88
Electrical Rating	
V	115
A -	1.0
Frequency, Hz	60

10-10 Special Marking

A. Type or Material

Manufacturer	Various
Recognized Designation	Various
Location	Unit Rear, above machine compartment
Quote Marking	

1) ☐ DANGER - Risk Of Fire Or Explosion. Flammable Refrigerant Used. To Be Repaired Only By Trained Service Personnel. Do Not Puncture Refrigerant Tubing.



2) ☐ CAUTION - Risk Of Fire Or Explosion. Flammable Refrigerant Used. Consult Repair Manual/Owner's Guide Before Attempting To Service This Product. All Safety Precautions Must be Followed.

3) ☐ CAUTION - Risk Of Fire Or Explosion. Dispose Of Property In Accordance With Federal Or Local Regulations. Flammable Refrigerant Used.

4) ☐ CAUTION - Risk Of Fire Or Explosion Due To Puncture Of Refrigerant Tubing; Follow Handling Instructions Carefully. Flammable Refrigerant Used.

Comments	The markings shall be in letters no less than 3.2 mm high;
	The perpendicular height of the triangle containing the "Caution, risk of fire" sign shall be at least 15 mm.

B. Type or Material

Location	A process tube on a compressor.
Quote Marking	

A process tube on a compressor shall be painted or colored red, Pantone® Matching System (PMS) No. 185. The Color mark shall extend at least 2.5 cm (1 inch) from the compressor.

C. Type or Material

Manufacturer	Various
Recognized Designation	Various
Location	Shipping Carton
Quote Marking	

CAUTION - Risk Of Fire Or Explosion Due To Puncture Of Refrigerant Tubing; Follow Handling Instructions Carefully. Flammable Refrigerant Used.

Comments	The markings shall be in letters no less than 3.2 mm high.
----------	--

20 ENCLOSURES:

20-5 Ultimate Enclosure

Model	KS-35F
Approximate Physical Size (including door), H x W x D, mm.	490 x 500 x 430

20-10 Unit Base (cabinet base)

Model	KS-35F
Material	Steel
Thickness, mm.	Min. 0.4
Corrosion Protection (Method)	Galvanized or Paint Coating
Bonding for Grounding (Method)	Screw-connected with machine compartment base

20-15 Machine compartment base

Model	KS-35F
Material	Steel
Thickness, mm.	Min. 0.8
Corrosion Protection (Method)	Galvanized
Bonding for Grounding (Method)	Grounded by the power cord

20-20 Unit Sides/Top/Machine Compartment Top/ Machine Compartment Sides

Model	KS-35F
Material	Steel
Thickness, mm.	Min. 0.25
Corrosion Protection (Method)	Galvanized or Paint Coating
Bonding for Grounding (Method)	Screw-connected with unit base.

20-25 Unit Rear

Model	KS-35F
Material	Steel
Thickness, mm.	Min. 0.25
Compressor Compartment Opening H x W, mm.	180 x 450
Corrosion Protection (Method)	Galvanized or Paint Coating
Bonding for Grounding (Method)	Incorporate with unit sides

20-30 Cabinet Liner

Model	KS-35F
Material	Polymeric, see Item 30 for details.
Bonding for Grounding (Method)	Not required

20-35 Unit Doors

Model	KS-35F
Material	Steel
Thickness, mm.	Min. 0.4
Corrosion Protection (Method)	Paint or Pre-painted

20-40 Cabinet Door Liner

Model	KS-35F
Material (+)	Polymeric, see Item 30 for details.
Bonding for Grounding (Method)	Not required

20-50 Door Hinges

Model

KS-35F

Top and Bottom Hinge

See Ill. 1 for details

20-60 Control Enclosure

Model

KS-35F

Location

Located at below the rear of unit
outside cabinet

Material (+)

Polymeric, see Item 30 for details.

Physical Size, L x W x H, mm

70 x 40 x 100

Thickness, mm.

2.5

Method of Securement

Screwed with unit rear by 2 screw

Components Within

Thermostat

20-65 Freezer Compartment Assembly

Model

KS-35F, see Fig. 1

A. Freezer Compartment Cover

Location

Cover the evaporator in front

Material

Polymeric, see Item 30 for details.

Method of Securement

Pivot on cabinet liner

30 NONMETALLIC COMPONENTS:

Model	KS-35F
Cabinet Liner, Door Liner (Vacuum Formed)	Recognized (QMFZ2)
Manufacturer	Various
Material Designation	Various
Thickness, mm. (minimum) +	1.6
Flammability Classification (minimum)	HB

+ - Minimum thickness of sheet stock before forming.

Model	KS-35F
Thermostat Enclosure, Control Enclosure	Recognized (QMFZ2)
Manufacturer	NINGBO LG YONGXING CHEMICAL CO LTD (E203955)
Material Designation	LUPOY ER5001RF(#)
Thickness, mm. (minimum)	3.0
Flammability Classification (minimum)	5VA

30-5 Isolation From Ignition Sources

Model	KS-35F
-------	--------

All units wiring is Recognized (AVLV2, AVLV8 or CSA Certified) and rated VW-1, FT-1 or Listed SJT (rated FT-1 or FT-2) power cord. All wiring is routed and secured within the machine compartment or the cabinet liner. All wire splices are totally insulated and there are no exposed live parts. There are no open coils or exposed high voltage parts.

40 - REFRIGERATION SYSTEM:

40-5 Condenser

Model	KS-35F
Manufacturer	NINGBO SHUBO ELECTRIC CO LTD
Corrosion Protection (Method)	Paint
Bonding for Grounding (Method)	Grounded through tubing to the compressor
Type of Construction	Continuous Tubing (See Ill.2 for details)
Tubing Material	Steel
Tubing OD, mm.	4
Tubing Wall Thickness, mm.	0.5
Total Tube Length, mm.	Approximate 3065
Design pressure, psig	218

40-10 Evaporator

Model	KS-35F
Manufacturer	NINGBO SHUBO ELECTRIC CO LTD
Corrosion Protection (Method)	Paint
Mounting (Method)	Adhesive by aluminum foil tape
Bonding for Grounding (Method)	Grounded through tubing to the compressor
Type of Construction	Continuous Tubing
Tubing Material	Aluminum
Tubing OD, mm.	7.5
Tubing Wall Thickness, mm.	0.4
Design pressure, psig	88
Other Dimensions	See Ill. 3 for details

40-15 Pressure Relief

Model	KS-35F
Means Provided	Soldered or Brazed Joint
Location	All tube connections

40-20 Drier/Filter

Model	KS-35F
Manufacturer	Cixi Jiasheng Electric Appliance Co., Ltd.
Cat. No. (SMGT, SMGT7)	N/A
Material	Copper
Length, mm.	85
OD, mm.	18.5
Wall Thickness, mm.	Min. 0.9
Design pressure, psig	870
Location	High side of refrigeration system
Corrosion Protection (Method)	Inherent
Other Dimensions	See Ill. 4 for details

40-25 Interconnecting Tubing

Model KS-35F

Material

Copper

Outside Diameter, in.	Minimum Wall Thickness, in.
1/4, 5/16, 3/8, 1/2	0.0245
5/8, 3/4	0.0315
7/8	0.0410

40-30 Refrigerant Control

Model KS-35F

Capillary Tube - No. Provided 1

Material Copper

OD, mm. 1.8

Wall Thickness, mm. 0.63

Length, mm. 170

40-35 Refrigeration System Joints

Model KS-35F

Method of Joining Soldered

50 MOTOR - COMPRESSOR ASSEMBLY:

50-5 Compressor

Recognized (SLIS2)

Model	KS-35F
Manufacturer	Huangshi Dongbei Electrical Appliance Co., Ltd.
Designation	AG60BY2
Electrical Rating	
Volts	110-120
RLA (Not for Inspector Use)	0.7
LRA	4.5
Phase	1
Cycle	60
Bonding for Grounding (Method)	No. 18 AWG green colored ground wire from compressor terminal block to unit base. Each end of the ground wire is secured with a closed eyelet and screw with nut. Eyelets on painted surfaces are provided with serrated-head washers to break the paint.
Overload Protector	External
Manufacturer	CHANGSHU TIANYIN ELECTROMECHANICAL CO LTD
Designation	ZHB54-120P4.7+
Location	Compressor Terminal Enclosure
Comments	This model was evaluated according to IEC 60079-15 for ignition protection.

+ - TIANYIN models ZHB54-120P4.7 is a combination motor start and thermal protector devices.

[x] Part of Recognized motor-compressor assembly.

70 ELECTRICAL COMPONENTS:

70-5 Temperature Controller (manually defrost) Recognized (SDFY2,8)

Model	KS-35F
Use (Loads Controlled)	Compressor
Manufacturer	JIUJIANG HENGTONG AUTO CONTROL DEVICE CO., LTD(E225669)
Designation	WD,WD-K,WP,WP-K
Electrical Rating, V ac, FLA, LRA	125/6/36
Location (Physical)	Inside machine compartment and within thermostat enclosure
Mounting	Screws to thermostat enclosure.
Bonding for Grounding (Method)	A green/yellow ground wire is secured to the thermostat mounting plate and to the grounding terminal of the compressor.
Marked Switch Positions	0,1,2,3,4,5,6,7

80 INTERNAL WIRING:

80-5 - Types

All wiring is minimum No. 18 AWG(+) Recognized (AVLV2,8) or CSA certified appliance wiring material rated VW-1 and FT-1 or Listed cords. Wiring is rated minimum 300V, 90C with 0.8mm thick insulation. Wiring which is color-coded green or green with one or more yellow stripes is employed on grounding conductors only.

80-10 - Wiring Methods

All wiring is installed and positively routed in such a manner that it is not subject to mechanical damage due to contact with sharp edges, abrasive surfaces, vibrating or moving parts. Exposed lengths of ripped parallel conductors do not exceed 3 in.

Wiring which is completely enclosed within steel conduit, metal raceways, metallic tubing, cabinet walls, or other separate electrical enclosures employs 2/64 in. thick (minimum) electrical insulation unless specified differently in this Report.

Wiring which is not completely enclosed as specified above employs 4/64 in. thick (minimum) electrical insulation unless specified differently in this Report.

Cords or appliance wiring material employed in the refrigerated compartment has 4/64 in. thick (minimum) electrical insulation and is located or protected so as not to be subjected to contact by product containers, removable shelves, and the like.

Green or green with yellow stripe wire may be employed only as grounding conductors. Splices are not employed in grounding conductors unless otherwise noted in the Report.

Holes for the passage of wires or cords through walls, panels or barriers have smooth, rounded surfaces or are provided with smoothly rounded bushings.

All splices are mechanically secured to a fixed member or located in a separate enclosure.

Unless otherwise noted all wires terminate in quick-connect or eyelet type materials.

Wiring is connected in such a way as to ensure proper polarity will be maintained throughout unit, cord, and attachment plug.

Wiring diagrams shown in ILL.

See Ill.5 for details

Model

KS-35F

90 SUPPLY CONNECTIONS:

90-5 Cord Connected Unit

Model	KS-35F
Power Supply Cord Set	Listed
Type	SJT
Size, AWG	18
Attachment Plug Rating, V, A	125V, 15
Strain Relief Means	Metal clamp, minimum 0.5 mm thick and 9.0 mm wide with hemmed edges and screwed on rear of unit.
Cord Length, ft	5 Minimum, 10 Maximum
Grounding Conductor Color	Green With or Without Yellow Stripes
Securement of Grounding Conductor	Secured to the bottom by screws
Location	Unit base.
Means	Unit base in machine compartment

INDEX OF FIGURES

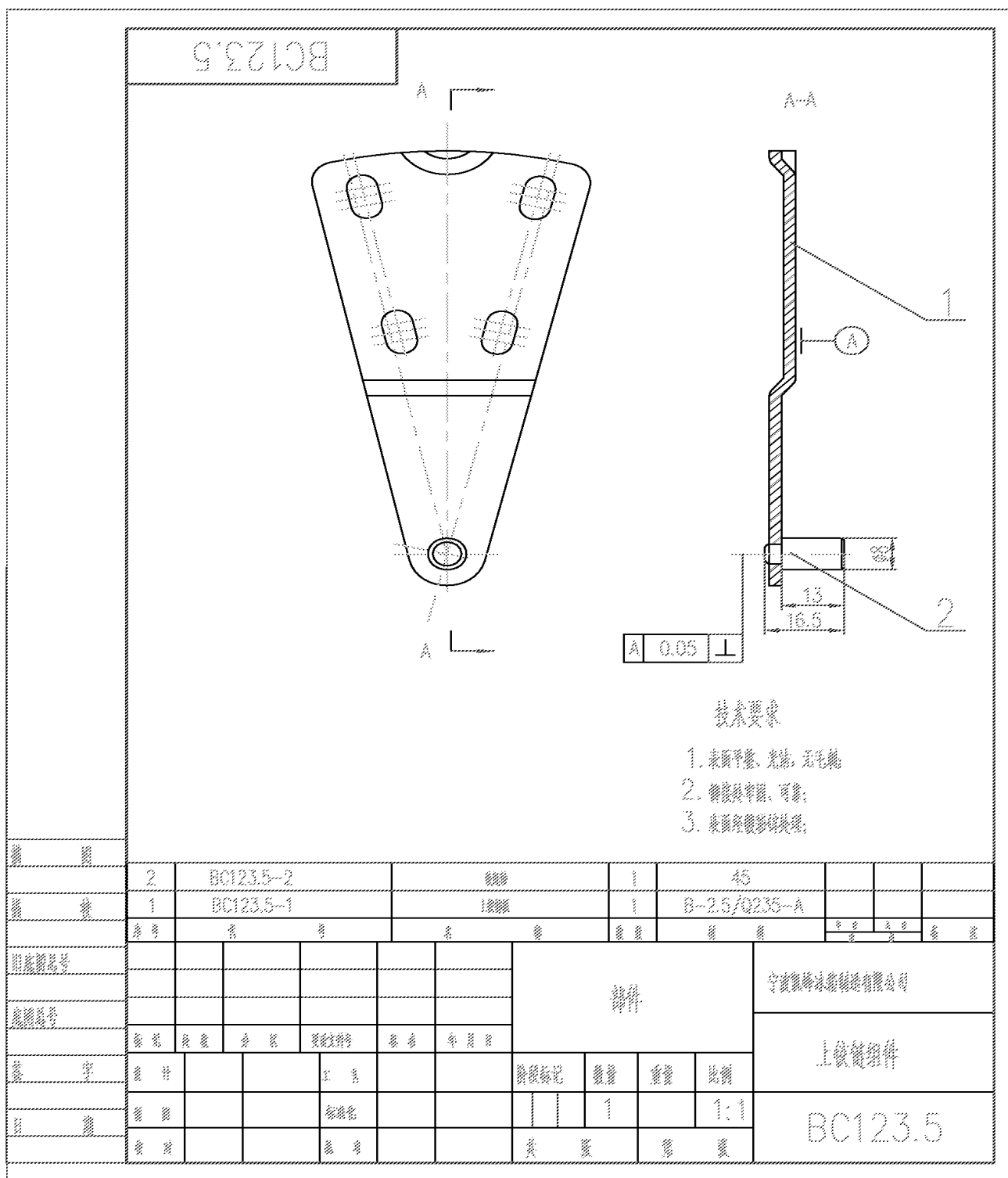
Fig.	Description
1	Freezer Compartment Assembly view

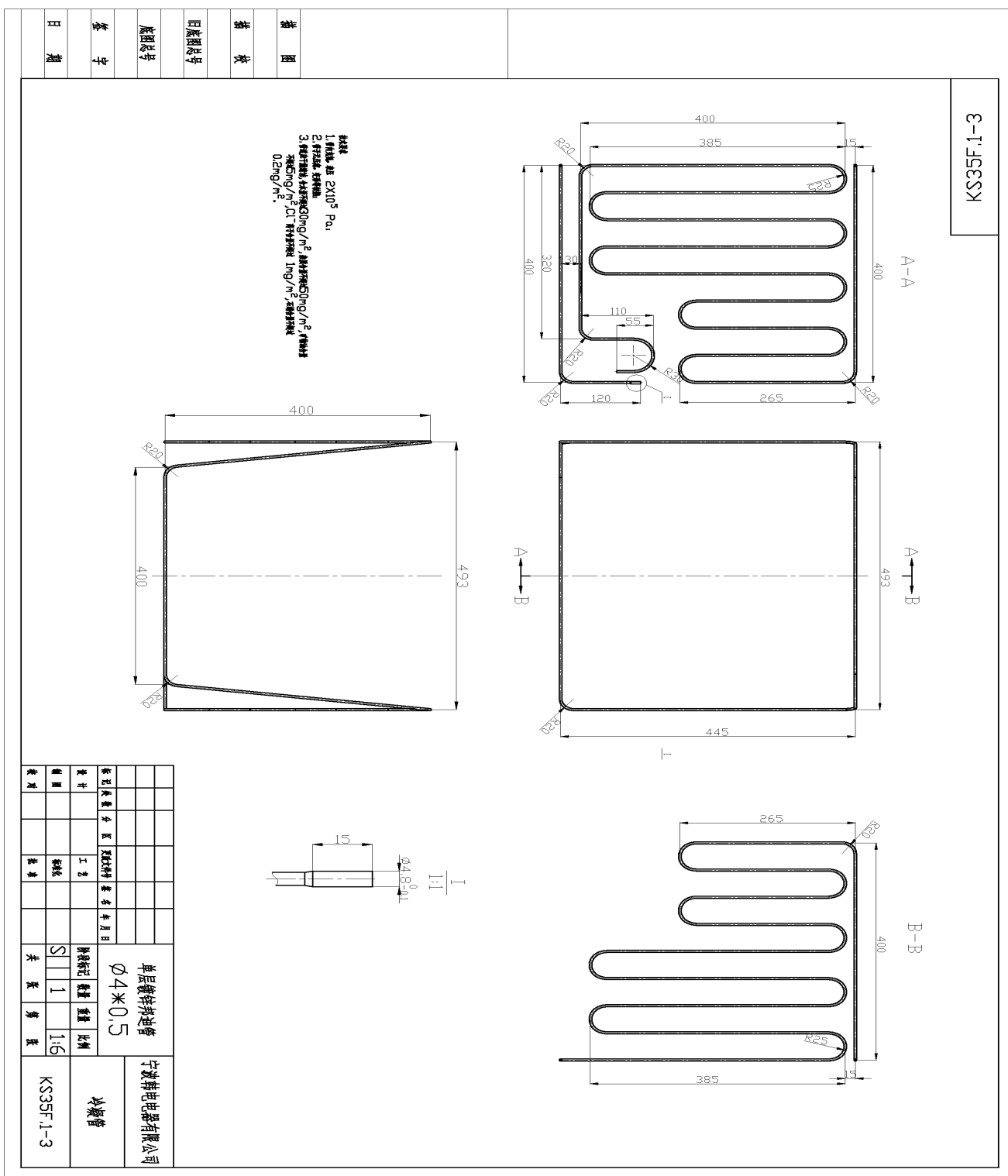
INDEX OF ILLUSTRATIONS

Ill.	Description
1	Door Hinge
1A	Door Hinge
2	Condenser
3	Evaporator
4	Drier/Filter
5	Wiring diagram
6	IEC 60079-15 (for Group II A gases or the flammable refrigerant) Certificate of compressor overload protector model ZH series
7	IEC 60079-15 (for Group II A gases or the flammable refrigerant) Certificate of thermostat model WD series

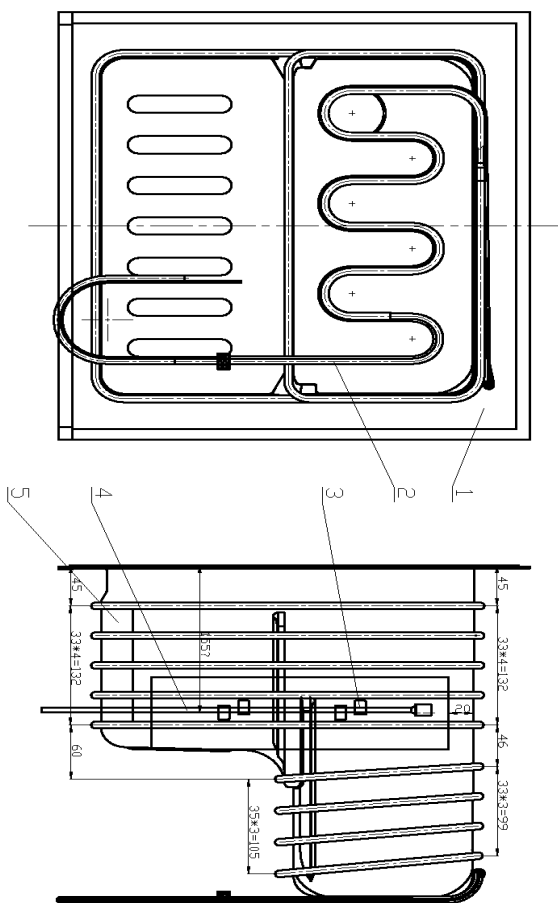


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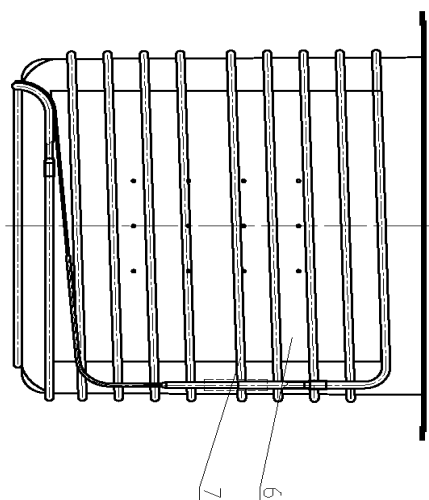


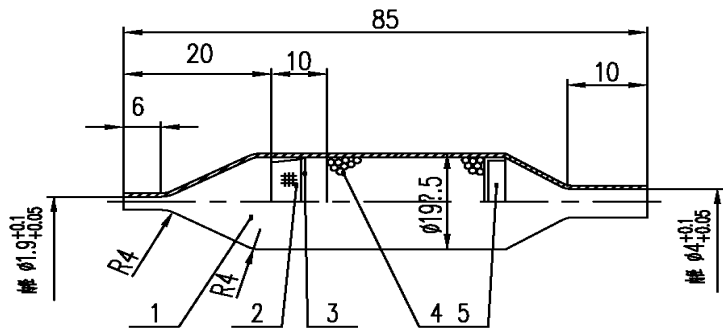


KS35F.1.1



- [illegible]

[illegible]

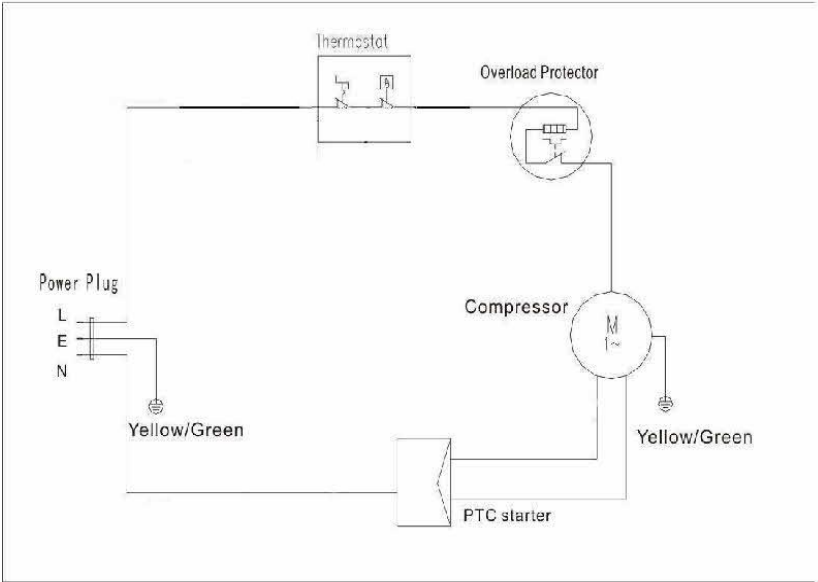


技术要求

- 1. 端口无毛刺。
- 2. 分子筛预吸附 $\leq 1.5\%$, 氯离子 $\leq 0.3\text{mg/m}^2$, 矿物油 $\leq 4\text{mg/m}^2$ 。
- 3. 表面光洁, 无明显裂纹, 夹杂, 水渍, 斑点, 油污等缺陷。
- 4. 挡网深度以分子筛为限。
- 5. 适用于R134a、R600a制冷剂。
- 6. 筛网座与器体装配采用缩径工艺。
- 7. 其它各项技术要求符合GB/T23135—2008电冰箱分子筛过滤器要求。

插图	5			挡网	1	H62 80.35			
	4			分子筛	5g	XH-9			
	3			筛网	11	H62 80.35			
	2			筛网	1	1Cr18Ni9 200目/N			
	1			器体	1	T2Y 19±0.5			
插图	序号	代号	名称	数量	材料	单重	总重	备注	
旧底图总号								分子筛过滤器	
底图总号									
签字	设计	数量	分区	更改文件号	签名	年月日	阶段标记	数量	重量
日期	制图			标准化			S	1	1:1
	校对			数准			共 1 张	第 1 张	
							过滤器		

Refrigerator



TECHNICAL DATA	
Model	KS-35F
RATED VOLTAGE	115 V~
RATED FREQUENCY	60Hz
RATED CURRENT	0.6A
REFRIGERANT/AMOUNT	R600a/16g

Ningbo Han Dian Electric Appliance Co., Ltd.

N151399757

VDE Prüf- und Zertifizierungsinstitut**ZEICHENGENEHMIGUNG
MARKS APPROVAL**

Changshu Tianyin Electromechanical
Co. Ltd.
No.8 Yingbin Road, Xingang Town
215513 CHANGSHU
Jiangsu
CHINA

ist berechtigt für ihr Produkt /
is authorized to use for their product

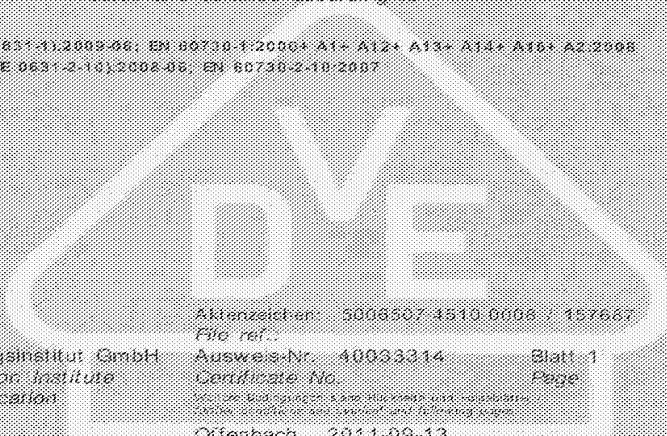
Motorstartrelais, elektrisch betrieben
Motor starting relay, electrically operated

Das hier abgebildete markenrechtlich geschützten Zeichen
für die ab Blatt 2 aufgeführten Typen zu benutzen /
the legally protected Marks as shown below for the types referred to on page 2 ff.



Gepprüft und zertifiziert nach /
Tested and certified according to

DIN EN 60730-1 (VDE 0631-1):2009-06; EN 60730-1:2006+ A1+ A12+ A13+ A14+ A16+ A2:2008
DIN EN 60730-2-13 (VDE 0631-2-13):2008-06; EN 60730-2-10:2007



VDE Prüf- und Zertifizierungsinstitut GmbH
VDE Testing and Certification Institute
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Blatt 1

Certificate No.

Page

Bitte den und rechten Seite Rückseite mit quadratischer
Marken-Zertifikats- und Kennung lesen

Offenbach, 2011-09-13

(letzte Änderung/updated 2011-12-08)

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VDE



N151399758

VDE Prüf- und Zertifizierungsinstitut
Zeichengenehmigung

Ausweis-Nr. / Blatt /
Certificate No. / page
40033314 2

Name und Sitz des Genehmigungs-Inhabers / Name and registered seat of the Certificate holder
Changshu Tianyin Electromechanical Co. Ltd., No.8 Yingbin Road, Xingang Town, 215513
CHANGSHU, Jiangsu, CHINA

Aktenzeichen / File ref.
5006507-4510-0008 / 157687 / FG31 / BAU

letzte Änderung / updated Datum / Date
2011-12-08 2011-09-13

Dieses Blatt gilt nur in Verbindung mit Blatt 1 des Zeichengenehmigungsausweises Nr. 40033314
This supplement is only valid in conjunction with page 1 of the Certificate No. 40033314.

Motorstartrelais, elektrisch betrieben
Motor starting relay, electrically operated

Typ(en) / Type(s):

ZH**

Zweck des RS
Purpose of control

Motorstartrelais PTC / Motorprotector Kombination
Motor starting relay PTC / motor protector combination

Nennspannung
Rated voltage

AC 110/250 V

Nennstrom
Rated current

15 A, cos phi 0,6 (Ein- und Ausschalten, blockierter Motor),
Motorprotector:
max. 12 A (Einschaltstrom), Anschluss 1/2 - 3

Rated current

15 A, p.f. 0,6 (making and breaking, locked rotor current),
Motor protector:
max. 12 A (inrush current), Terminal 1/2 - 3

Merkmale der automatischen
Wirkungsweise
Features of automatic action

1.C / 3.C

Anzahl der automatischen
Zyklen
Number of automatic cycles

10.000 (Motorprotector)
10.000 (motor protector)

Temperaturgrenzen des
Schaltkopfes
Temperature limits of the
switch head

Tmin 0°C; Tmax 130°C

Konstruktion

eingebautes RS mit PTC-Thermistor /
integriertes RS
incorporated control with PTC-thermistor /
integrated RS

Fortsetzung siehe Blatt 3 /
continued on page 3

VDE Prüf- und Zertifizierungsinstitut GmbH * Testing and Certification Institute

Marienstrasse 25, D-50559 Essenbach

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Telefax + 49 (0) 58 53 06-555

N151399758

**VDE Prüf- und Zertifizierungsinstitut
Zeichengenehmigung**Ausweis-Nr. / Blatt /
Certificate No. page
40033314 3Name und Sitz des Genehmigungs-Inhabers / Name and registered seat of the Certificate holder
Changshu Tianyin Electromechanical Co. Ltd., No.8 Yingbin Road, Xingang Town, 215513
CHANGSHU, Jiangsu, CHINAAktenzeichen / File ref.
5006507-4510-0008 / 157687 / FG31 / BAUletzte Änderung / updated Datum / Date
2011-12-08 2011-09-13Dieses Blatt gilt nur in Verbindung mit Blatt 1 des Zeichengenehmigungsausweises Nr. 40033314
*This supplement is only valid in conjunction with page 1 of the Certificate No. 40033314.*Verschmutzungsgrad 2
*Degree of pollution*Überspannungskategorie II
*Overvoltage category*Anschluss Flachstecker 6,3x0,8 mm, 4,8x0,8 mm; Pinanschlüsse
*Type of terminal tabs 6,3 x 0,8mm, 4,8x0,8 mm; pin terminations*Kriechstromfestigkeit Siehe Anlage 2
*Tracking resistance See appendix 2*Glühdrahtprüfung (GWT) Siehe Anlage 2
*Glow-wire test (GWT) See appendix 2*Weitere Angaben siehe Anlage 1 + 2
Further information see appendix

Anmerkung Zum Einbau in Geräte der Schutzklasse I.

Die Beurteilung der Anschlüsse zum Verdichter und Motorprotector muss bei der Prüfung des Haushaltgerätes erfolgen.

Geprüft als umschlossene Schalteinrichtung nach IEC / EN 60079-15:2005, Abschnitt 33.4, Gruppe IIA.

Integrierter Motorprotector geprüft nach EN 60730-2-4:2007

Fortsetzung siehe Blatt 4 /
continued on page 4

VDE Prüf- und Zertifizierungsinstitut GmbH * Testing and Certification Institute

Mittelstrasse 28, D-61062 Offenbach

Phone + 49 (0) 69 83 06-0
Telefax + 49 (0) 69 83 06-885

N151399758

EC Declaration of Conformity

Issuer's name and address:

Changshu Tianyin Electromechanical
Co. Ltd.
No.8 Yingbin Road, Xingang Town
215513 CHANGSHU
Jiangsu
CHINA

Product:

Motor starting relay, electrically operated

Type designation:

ZH* *

The designated product is in conformity with the European Directive:

2006/95/EC**"Council Directive on the harmonization of the laws of the Member States relating to electrical equipment designed for use within certain voltage limits".**

The technical documentation and full compliance with the standards listed below proves the conformity of the product with the requirements of the above-mentioned EC Directive:

DIN EN 60730-1 (VDE 0631-1):2009-06; EN 60730-1:2000+ A1+ A12+ A13+ A14+ A16+ A2:2008
DIN EN 60730-2-10 (VDE 0631-2-10):2008-06; EN 60730-2-10:2007

The VDE Testing and Certification Institute (EU Identification No.0366), Merianstr. 28, 63069 Offenbach (Germany), has tested and certified the product.

Last two digits of the year in which the CE marking was affixed:

Certificate No.
File Reference

40033314
5006507-4510-0008 / 157687 / FG31 / BAU

.....
(Place, Date).....
(Legally binding signature of the issuer)

N151399758

**VDE Prüf- und Zertifizierungsinstitut
Zeichengenehmigung**Ausweis-Nr. /
Certificate No. 40033314
Beiblatt /
SupplementName und Sitz des Genehmigungs-Inhabers / *Name and registered seat of the Certificate holder*
Changshu Tianyin Electromechanical Co., Ltd., No.8 Yingbin Road, Xingang Town, 215513
CHANGSHU, Jiangsu, CHINAAktenzeichen / *File ref.*
5008507-4510-0008 / 157687 / FG31 / BAUletzte Änderung / *updated* Datum / *Date*
2011-12-08 2011-09-13Dieses Beiblatt ist Bestandteil des Zeichengenehmigungsausweises Nr. 40033314.
*This supplement is part of the Certificate No. 40033314.***Motorstartrelais, elektrisch betrieben
Motor starting relay, electrically operated**Fertigungsstätte(n)
*Place(s) of manufacture*Referenz/Reference 30002843
Changshu Tianyin Electromechanical
Co., Ltd.
No.8 Yingbin Road, Xingang Town
215513 CHANGSHU
Jiangsu
CHINAVDE Prüf- und Zertifizierungsinstitut GmbH
VDE Testing and Certification Institute
Fachgebiet FG31
Section FG31

N151399758



防爆电气设备 防爆合格证

编 号: CNEx13.4305X

制 造 单 位	九江恒通自动控制器有限公司
产 品 名 称	地址: 九江市开发区城西港区港兴路 18 号 防爆温度控制器
型 号 规 格	WDF 250VAC 50/60HZ 5A
防 爆 标 志	Ex nC IIA T1 Gc
产 品 标 准	HTQBEx-2011
总 装 图 号	LB11-IIT

经对上述产品图样及技术文件的审查和样品检验, 确认符合下列标准:
IEC60079-0: 2007 爆炸性环境 第 0 部分: 设备 通用要求
IEC60079-15: 2010 爆炸性环境 第 15 部分: 由“n”型保护的设备

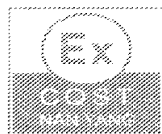
记 事

1. 该产品适用于制冷剂为 R600a 的电冰箱中。
2. 防爆温度控制器安装后插脚应有可靠防护, 满足 IP54 要求。

本证有效期 2013 年 12 月 30 日至 2018 年 12 月 29 日

颁发日期 2013 年 12 月 30 日

中 心 主 任



国家防爆电气产品质量监督检验中心

地址: 中国河南省南阳市仲梁北路 20 号

邮政编码: 473008

电话: 0377-63258364 传真: 0377-63206176

Email: www.cnma-ex.com

注: 本证书仅对经认可文件和样品一致的产品有效

登陆网站输入数据 查询真伪

6276 4550 0312 3634

查询方式: www.cnma-ex.com

N151399759

DESCRIPTION

PRODUCT COVERED:

*USL, CNL **Recessed** type household refrigerator-freezer, Models HRB10N2AGV, HRB10N2BGS, HRB10N2BGV, HRB10N2BGB, HRB10N2BGW, HRB10N2CGV, HRB10N2CGW.

MODEL DIFFERENCES:

Model HRB10N2BGS, HRB10N2BGV, HRB10N2BGB, HRB10N2BGW, HRB10N2CGV, HRB10N2CGW are similar to model HRB10N2AGV, except for the color of the enclosure.

GENERAL:

*This is **recessed**, cord-connected refrigerator intended for use as household refrigerator. It has automatic electric defrost heater and intended for indoor use.

These units employ automatic defrost through defrost timer, the defrost cycle will initiate while the compressor runs continuously for 12 hours, the compressor will stop and fans will not stop during defrost period; The defrost cycle will terminate while the temperature of temperature limiter reaches 12 degree C.

* The model employs Refrigerant R-600a (flammable refrigerant, classified as Class 3 "Higher Flammability" by ASHRAE34) and was evaluated following additional requirements of Supplement SA of UL 250. The cooling system is considered a **unprotected** cooling system.

TECHNICAL CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE'S USE):

Products designated USL have been investigated using requirements contained in the Standard for Household Refrigerators and Freezers, UL 250.

Products designated CNL have been investigated using requirements contained in Standard for Refrigeration Equipment, CAN/CSA C22.2 No. 63-93.

RATINGS:

See MARKING.

INSTRUCTIONS:

Each unit is provided with installation and operating instructions.

The instructions include the following wording regarding the use of extension cords (+): Do not use an extension cord, or similar words.

(+) - Cord connected units only.

CONSTRUCTION DETAILS:

Electrical Spacings - Unless otherwise noted in this Report, the spacings between uninsulated live parts of opposite polarity and between uninsulated live parts and dead-metal parts are not less than 1/8 in. through air, 1/4 in. oversurface, and 1/4 in. to the enclosure.

10 MARKING:

10-5 Nameplate Marking

Recognized (PGDQ2)

*Model	All
Material	
Manufacturer	Various
Recognized Designation	Various
Location	Cabinet Rear
Secured By	Adhesive backing
Listee Name	NINGBO HANDIAN ELECTRIC APPLIANCE CO., LTD
Refrigerant	
- Type	R600a
* - Amount	1.48 oz (42g)
Design Pressure	
High Side, psig	362.6
Low Side, psig	127.6
Electrical Rating	
V	115
A - (Refrigeration) (Total)	1.6
Frequency, Hz	60

10-10 Special Marking

*Model

ALL

A. Type or Material

Manufacturer	See Section General
Recognized Designation	See Section General
Location	On nameplate or separate paper label

* Quote Marking

B. Type or Material

Manufacturer	See Section General
Recognized Designation	See Section General
Location	Unit side, above machine compartment

Quote Marking

a) ☐ DANGER - Risk Of Fire or Explosion. Flammable Refrigerant Used. Do Not Use Mechanical Devices To Defrost Refrigerator. Do Not Puncture Refrigerant Tubing.

b) ☐ DANGER - Risk Of Fire Or Explosion. Flammable Refrigerant Used. To Be Repaired Only By Trained Service Personnel. Do Not Puncture Refrigerant Tubing.



c) ☐ CAUTION - Risk Of Fire Or Explosion. Flammable Refrigerant Used. Consult Repair Manual/Owner's Guide Before Attempting To Service This Product. All Safety Precautions Must be Followed.

d) ☐ CAUTION - Risk Of Fire Or Explosion. Dispose Of Property In Accordance With Federal Or Local Regulations. Flammable Refrigerant Used.

e) ☐ CAUTION - Risk Of Fire Or Explosion Due To Puncture Of Refrigerant Tubing; Follow Handling Instructions Carefully. Flammable Refrigerant Used.

C. Type or Material

Manufacturer	See Section General
Recognized Designation	See Section General
Location	Shipping carton

Quote Marking

CAUTION - Risk Of Fire Or Explosion Due To Puncture Of Refrigerant Tubing; Follow Handling Instructions Carefully. Flammable Refrigerant Used.

20 ENCLOSURES:

20-5 Ultimate Enclosure

*Model

ALLApproximate Physical Size (including
door), H x W x D, mm.

1950 x 600 x 570

20-10 Unit Base

*Model

ALL

Material

Steel

Thickness, mm.

Minimum 0.4

Corrosion Protection (Method)

Zinc Coated

Bonding for Grounding (Method)

Screw-connected with machine
compartment base

20-15 Unit Sides/Top

*Model

ALL

Material

Steel

Thickness, mm.

Minimum 0.4

Corrosion Protection (Method)

Zinc Coated

Bonding for Grounding (Method)

Screw-connected with unit base

20-20 Unit Rear

*Model	ALL
Material	Steel
Thickness, mm.	Minimum 0.3
Compressor Compartment Opening H x W, mm.	250 x 500
Corrosion Protection (Method)	Zinc Coated
Bonding for Grounding (Method)	Screw-connected with unit base

20-25 Cabinet Liner/ Door Liner

*Model	ALL
Material +	Polymeric, See Section 30 for details
Thickness, mm. +	2

20-30 Unit Doors

*Model	ALL
Material	Steel
Thickness, mm.	0.5
Corrosion Protection (Method)	Zinc Coated
Bonding for Grounding (Method)	Secured to Unit Side by Door Hinges

+ - If polymeric, see Section 30 for details.

Issued: 2015-10-29

20-35 Door Hinges

See ILLS. 1 and 1A

20-40 Door Latching Device

Recognized (SROT2)

*Model

ALL

Type

Magnetic Gasket

+ - If polymeric, see Section 30 for details.

20-45 Drip Pan

*Model	ALL
Location	Inside Machine Compartment, upon the shell of Compressor
Material +	Polymeric, see Section 30 for details
Dimension, W x D x H, mm	282x120x80
Thickness, mm. +	2.0
Method of Securement	Secured to Compressor by screws.
Comments	The drip pan is not flat to make sure the water flows along the intended side of it when overflow.

20-50 Evaporator Fan Guard

*Model	ALL
Location	Inside freezer food compartment
Material +	Polymeric, see Section 30 for details
Overall Dimension, W x H, mm	12 x12
Thickness, mm.	2.0
Openings, Number and Size	6 and 22 mm x 90mm
Method of Securement	Secured to Cabinet Liner by screws

20-55 Evaporator Fan Motor Enclosure (Freezer Food Compartment)

*Model	ALL
Location	Between Evaporator Fan Guard and Cabinet Liner
Material +	Polymeric, see Section 30 for details
Thickness, mm.	2.0
Method of Securement	Integrally molded with Evaporator Fan Guard and brackets.
Component within	Evaporator Fan Motor

+ - If polymeric, see Section 30 for details.

20-60 Temperature Controller Enclosure

*Model	ALL
Location	In fresh food compartment
Material +	Polymeric, see Section 30 for details
Dimension, W x D x H, mm	135x59x53
Thickness, mm. +	2
Method of Securement	Secured to Cabinet Liner by screws
Component within	Thermostat

20-65 Lamp Guard

*Model	ALL
Location	In fresh food compartment
No. of Lamp Guard:	1
Material +	Polymeric, see Section 30 for details
Dimension, W x L x H, mm	59x82x53
Thickness, mm. +	2.0
Method of Securement	Secured to Cabinet Liner by screws
Components Within	LED and lamp holder

20-70 Defrost Timer Control Box

*Model	ALL
Location	In machine compartment
Material +	Polymeric, see Section 30 for details
Cover Dimension, W x D x H, mm	90x13x190
Housing Dimension, W x D x H, mm	80x37x140
Thickness, mm. +	2.0
Method of Securement	Secured to Unlit rear by screws.
Component within	Defrost Timer and wirings

+ - If polymeric, see Section 30 for details.

20-75 Capacitor Enclosure

*Model	ALL
Material	Steel
Overall Dimension, Lx W x H, mm	35 x 35 x 60
Thickness, mm	0.5
Corrosion Protection (Method)	Galvanized or Painted
Method of Securement	Secured to the bottom by screws
Bonding for Grounding (Method)	Screwed to machine compartment.

30 NONMETALLIC COMPONENTS:

*Model

ALL

Cabinet/Door Liner (Vacuum Formed)

Recognized (QMFZ2)

Manufacturer

Various

Material Designation

Various

Thickness, mm. (minimum) +

1.6

Flammability Classification

HB

Evaporator Fan Motor Enclosure

Recognized (QMFZ2)

Manufacturer

NINGBO LG YONGXING CHEMICAL CO LTD
(E203955)

Material Designation

LUPOY ER5001RF(#)

Thickness, mm. (minimum)

3.0

Flammability Classification (minimum)

5VA

+ - Minimum thickness of sheet stock before forming.

*Model

ALL

Temperature Controller Enclosure

Manufacturer

NINGBO LG YONGXING CHEMICAL CO LTD
(E203955)

Material Designation

LUPOY ER5001RF(#)

Thickness, mm. (minimum)

3.0

Flammability Classification

5VA

Lamp Guard

Recognized (QMFZ2)

Manufacturer

CHI MEI CORPORATION (E56070)

Material Designation

PH-872A

Thickness, mm. (minimum)

2.5

Flammability Classification

V-0

Defrost Timer Control Box

Recognized (QMFZ2)

Manufacturer

NINGBO LG YONGXING CHEMICAL CO LTD
(E203955)

Material Designation

LUPOY ER5001RF(#)

Thickness, mm. (minimum)

3.0

Flammability Classification

5VA

Drip Pan

Recognized (QMFZ2)

Manufacturer

CHI MEI CORPORATION (E56070)

Material Designation

PH-879

Thickness, mm. (minimum)

1.5

Flammability Classification (minimum)

V-0

+ - Minimum thickness of sheet stock before forming.

30-5 Isolation From Ignition Sources

*Model

ALL

All units wiring is Recognized (AVLV2, AVLV8 or CSA Certified) and rated VW-1, FT-1 or Listed SJT (rated FT-1 or FT-2) power cord. All wiring is routed and secured within the machine compartment or the cabinet liner. All wire splices are totally insulated and there are no exposed live parts. There are no open coils or exposed high voltage parts.

40 REFRIGERATION SYSTEM:

40-5 Condenser

Recognized (SLSV2)

*Model

ALL

Manufacturer

Ningbo Shubo Electric CO., LTD

Recognized Designation

BCD302W.8

Corrosion Protection (Method)

Galvanized or Painted

Mounting (Method)

Secured to Unlit rear by screws

Bonding for Grounding (Method)

Through tubing to compressor

*Type of Construction

[Wire on tube]

Physical Size, W x H, mm.

478 x 1430

Number of Passes

24

Tubing Material

Steel

Tubing OD, mm.

4.7

Tubing Wall Thickness, mm. +

0.7

Total Tube Length, mm.

12672

+ - Not required if a Recognized Component.

40-10 Evaporator

Recognized (SLSV2)

*Model

ALL

Manufacturer

Ningbo Shubo Electric CO., LTD

Recognized Designation

BCD302W.5a

Corrosion Protection (Method)

Painted

Mounting (Method)

Secured to cabinet liner by screws

Bonding for Grounding (Method)

Through tubing to compressor

Type of Construction

[Fin on tube] ~~[Tube on plate] ~~[Roll bond]~~~~

Fin on Tube

Number of Tubes High

273

Number of Tubes Deep

60

Physical Size, Finned Section, mm.

285 x 310 x 60

Tubing Material

Aluminum

Tubing OD, mm.

6

Tubing Wall Thickness, mm. +

0.5

Roll bond

Recognized Designation

BCD302W.1.3a

Corrosion Protection (Method)

Painted

Mounting (Method)

Secured to cabinet liner by screws

Bonding for Grounding (Method)

Through tubing to compressor

Size of Plate, W x H x D, mm.
(After Forming)

450 x 1150 x11

Material

Aluminum

Tubing OD, mm.

6

Wall Thickness, mm. +

0.5

+ - Information required if not a Recognized Component

40-15 Pressure Relief

*Model

ALL

Means Provided

Soldered or Brazed Joint

Location

Refrigeration Tubing

40-20 [Drier] ~~[Filter and Strainer]~~
~~[Accumulator]~~

*Model

ALL

Manufacturer

Cixi Jiasheng Electric Appliance
Co., Ltd.

Material

Copper

Length, mm.

100

OD, mm.

18.5

Wall Thickness, mm. +

0.9

Location

High side of refrigeration system

Corrosion Protection (Method)

Inherent

40-25 Interconnecting Tubing

*Model

ALL

Material

Copper

Outside Diameter, in.	Minimum Wall Thickness, in.
1/4, 5/16, 3/8, 1/2	0.0245
5/8, 3/4	0.0315
7/8	0.0410

40-30 Refrigerant Control

*Model

ALL

Capillary Tube - No. Provided

1

Material

Copper

OD, mm.

1.8

Wall Thickness, mm.

0.55

Length, mm.

2000

40-35 Refrigeration System Joints

*Model

ALL

Method of Joining

Soldered or brazed connections

50 MOTOR - COMPRESSOR ASSEMBLY:

50-5 Compressor

Recognized (SLIS2)

*Model

ALL

Manufacturer

WANBAO GROUP COMPRESSOR CO LTD

Designation

ETB90U6

Electrical Rating

Volts

115

RLA (Not for Inspector Use)

1.3

LRA

24.7

Phase

1

Cycle

60

Bonding for Grounding (Method)

Minimum No. 18 AWG wire screwed or
plugged onto compressor and machine
compartment Base.

Overload Protector(+)

~~[Internal]~~ [External] +

Manufacturer

GUANGZHOU SENBAO ELECTRICAL APPLIANCES
CO LTD (E218930)

Designation

BT140-120

Location

Compressor Terminal Enclosure

Comments

This model was evaluated according to
IEC 60079-15 for ignition protection.

Compressor Start Assist Device (+)

Type

PTC Type

Manufacturer

Changshu Tianyin Electromechanical
Co., Ltd (SA33532)

Designation

TY-QZ-007

Location

Compressor Terminal Enclosure

Run Capacitor (+)

(CZDS2, 8)

Type

Dry Type

Manufacturer

Various

Designation

Various

Rating, uF, V

8, 250

Location

Machine Compartment, unit base.

(+) - Part of Recognized motor-compressor assembly.

60 FAN MOTOR ASSEMBLY:

60-5 Evaporator Fan Motor

*Model	ALL
No. Provided	1
Manufacturer	JIANGSU WILLTORN TECH CO LTD
Recognized Designation	ZYD-2J-6.5
Rating	115V, 60Hz, 6.5W
Recognized	XEIT2, 8
Overheating Protection (Not for Inspector Use)	Impedance Protection
Burnout Tested by Motor Manufacturer?	No
Mounting	Secured to the Evaporator Fan Motor Enclosure by screws.
Comments	This model motor is no need to do the Burnout Test for Impedance Protected Motor as described in UL 250, Sections 9.13 because it is enclosed by 5V material.

60-10 Evaporator Fan Blade

*Model	ALL
Diameter, mm:	100
No. of Blades:	4
Method of securement	Pressed onto the motor shaft.

70 ELECTRICAL COMPONENTS:

70-5 Thermostat Recognized (SDFY2, 8)

*Model	ALL
Use (Loads Controlled)	Compressor
Manufacturer	JIUJIANG HENGTONG AUTO CONTROL DEVICE CO., LTD(E225669)
Designation	WD Series
Rating, FLA/LRA/V ac	6/36/125
Location	In the fresh food compartment
Mounting	Snap-fit into Temperature Controller Enclosure
Marked Switch Positions	0,1,2,3,4,5,6,7
Comments	This model was evaluated according to IEC 60079-15 for ignition protection.

70-10 Electric Defrost Heater Recognized (UBJY2)

*Model	ALL
Manufacturer	Anhui Anze Electric Inc (E351617)
Sheath Material/Thickness, mm.	SUS304, SUS310S, SUS321, SUS316L, Nickel Alloy 800, Nickel Alloy 840/0.5
Designation	RGQX
Rating V/W	140
Total Length, mm	600
OD., mm.	6.6
Heater Terminals	
Type	Rubber
Location	Mounted to the left side of evaporator
Comments:	Maximum Watt density is 5.0 W/cm2; Heater Element Protection located under evaporator and protected by an aluminum barrier
Securement Means:	Snap fit to the heater bracket

70-15 Heater Over-temperature Controls

A:

*Model	ALL
Type	Automatic Temperature Regulating Thermostat
Recognized	XAPX2, 8
Use (Loads Controlled)	Defrost Heater
Manufacturer	DONGGUAN KAINYI ELECTRONIC SCI & TECH CO LTD (E343948)
Designation	KI31-012-B3-125V 16A
*Ratings, FLA/Vac	125V 16A
Location	Above the Evaporator
Mounting	Tied to Evaporator

B:

*Model	ALL	
Type	Thermal Cutoff	
Recognized	XCMQ2, 8	
Number	1	
Manufacturer	AUPO ELECTRONICS LTD (E140847)	THERM-O-DISC INC, SUB OF EMERSON ELECTRIC CO (E40667)
Recognized Model No.	BF73	G4A01077C
Opening Temperature, °C	73	77
Rating (V ac, A)	250, 10	120, 14
Location	Above the Evaporator	
Mounting	Tied to Evaporator	

70-20 Defrost Timer

Recognized (SDFY2, 8)

*Model

ALL

Use (Loads Controlled)

Electric Defrost Heater

Manufacturer

SONXIE (ZHENJIANG) ELECTRIC CO LTD (E188801)

Designation

DBZF series

Rating

10A, 100-120V, 50/60Hz

Location

above machine compartment

Mounting

Secured to Defrost Timer Enclosure by screws

Defrost Cycle

12 hours

Comments

This model was evaluated according to IEC 60079-15 for ignition protection.

70-25 LED Modules

Recognized (OOQA2)

*Model

ALL

Number

1

Manufacturer

CHUANDONG MAGNETIC ELECTRONIC CO LTD
(E349336)NINGBO PINLIANG
LIGHTING CO LTD
(E480906)Recognized
Model No.

Models 520ABXDEFG

Models 521ABXDEFG

PL-E12-SL-001

No. of LED

0-6

Ratings

120V, 60Hz, 10mA, 1.0 W

120V, 60Hz, 12mA, 1.4W

120V, 60Hz, 19mA, 1.4W

Location

In the fresh food compartment

Mounting

Snap-fit into Lampholder

Note: The screw shell is connected to the grounded side of the power supply.

70-30 Door Switches

Recognized(WOYR2, 8)

*Model

ALL

Use (Loads Controlled)

Lamps

Manufacturer

ZHEJIANG CHANGDECHENG ELECTRIC APPLIANCES CO
LTD (E239938)

Designation

HC-050K.5

HC-050K.4

Rating

125V , 60Hz, 5A

Location (Physical)

Cabinet Liner (Fresh Food Compartment)

Mounting

Rectangular switch is snap-fitted into
rectangular opening

Comments

This model was evaluated according to IEC
60079-15 for ignition protection.

70-35 Lampholder

Recognized (SEVS2)

*Model

ALL

Manufacturer

ZHEJIANG CHANGDECHENG ELECTRIC
APPLIANCES CO LTD (E350599)

Designation

E12-3

E12-1

Rating

125V, 75W

Location

In the fresh food compartment

Mounting

Snap-fit into Temperature Controller
Enclosure

Prevented from turning by:

Lamp cover

Note: The screw shell is connected to the grounded side of the power supply.

80 INTERNAL WIRING:

80-5 Types

Recognized (AVLV2) appliance wiring material(1), Listed cords or Listed insulated wiring as described below. Wiring which is color-coded green or green with one or more yellow stripes is employed on grounding conductors only.

*Model

ALL

Key No.	Wire Type (2)	Wire Style No. (3)	Minimum Wire Size AWG	Insulation (4)		
				Minimum Wall Thickness, mm.	Minimum Temperature Rating, °C	Minimum Rating, V
1	AWM	1015	18	1.6	105	300

- (1) Acceptable for refrigeration use.
- (2) Appliance wiring material, cord type or Listed wire type.
- (3) Applies only to Recognized appliance wiring material.
- (4) Information on the voltage and temperature ratings for the insulation of wiring that has a marked National Electrical Code Type designation need not be provided.
- (+) Integral with Recognized fan motor.

80-10 Wiring Methods

All wiring is installed and positively routed in such a manner that it is not subject to mechanical damage due to contact with sharp edges, abrasive surfaces, vibrating or moving parts. Exposed lengths of ripped parallel conductors do not exceed 3 in.

Wiring which is completely enclosed within steel conduit, metal raceways, metallic tubing, cabinet walls, or other separate electrical enclosures employs 2/64 in. thick (minimum) electrical insulation unless specified differently in this Report.

Wiring which is not completely enclosed as specified above employs 4/64 in. thick (minimum) electrical insulation unless specified differently in this Report.

Cords or appliance wiring material employed in the refrigerated compartment has 4/64 in. thick (minimum) electrical insulation and is located or protected so as not to be subjected to contact by product containers, removable shelves, and the like.

Green or green with yellow stripe wire may be employed only as grounding conductors. Splices are not employed in grounding conductors unless otherwise noted in the Report.

Holes for the passage of wires or cords through walls, panels or barriers have smooth, rounded surfaces or are provided with smoothly rounded bushings.

All splices are mechanically secured to a fixed member or located in a separate enclosure.

Unless otherwise noted all wires terminate in quick-connect or eyelet type materials.

Wiring diagrams shown in

ILL5

*Model

ALL

*Model

ALL

Wiring is employed as follows:

No. From Previous Page	Specify the electrical components connected to the wiring described		Specify all details of wire routing including locations and types of clamps, means of isolating from combustible materials, Recognized splice and wire connecting lead terminations, etc.
Key No.	From	To	Details
1/2	Power Supply Cord	Compressor, Capacitor	Machine compartment. Wiring is tied to prevent movement.
1/2	Defrost Timer	Compressor	Connected by Harness Connector and secured in the Defrost Timer Control Box.
1/2	Thermostat	Compressor	Wire routed through Thermal Insulation (recessed in cabinet liner) and tied to prevent movement.
1/2	Defrost Timer	Defrost Heater	Wire routed through Thermal Insulation (recessed in cabinet liner), Connected by Harness Connector and tied to prevent movement.
1/2	Defrost timer	Evaporator	Machine compartment. Wiring is tied to prevent movement.
1/2	Switch	LED	Wire routed through Thermal Insulation from lamp switch to LED, connected by Harness Connector and secured inside Lamp Guard.
1/2	Harness Connector	Evaporator Fan Motor	Routed through Thermal Insulation to fan motor and securely tied completed away from moving blades and from openings in Evaporator Fan Guard.

90 SUPPLY CONNECTIONS:

90-5 Cord Connected Unit

*Model	ALL
Power Supply Cord Set	Listed
Type	SJT
Size, AWG	18
Attachment Plug Rating, V, A	125V, 15
Strain Relief Means	Metal clamp, minimum 0.5 mm thick and 9.0 mm wide with hemmed edges and screwed on rear of unit.
Cord Length, ft	5 Minimum, 10 Maximum
Grounding Conductor Color	Green With or Without Yellow Stripes
Securement of Grounding Conductor	Secured to the bottom by screws
Location	Unit base.
Means	Unit base in machine compartment

100 SHELVING AND DRAWERS:

100-5 Shelves

*Model

ALL

A. Location

Fresh Food Compartment

Material

Glass Shelf

Dimensions, (L x W), mm.

500x300

Glass Thickness, mm.

4

Frame Thickness, Minimum, mm.

2

No. of Shelves

4

Method of Support

Cabinet liner

Method of Restraint

Snap fit to cabinet liner supporters

Note - ANSI Z97.1 glass is available in three categories, Class A, B, or C.
Any Class is acceptable.

100-10 Drawers

*Model

ALL

Location

Fresh Food Compartment

Material

Polymeric

Dimensions, mm. (D x W x H)

165x480x320

Thickness, mm.

3

No. of Drawers

1

Method of Support

Mounted to cabinet liner

Method of Restraint

NA

100-10 Drawers

*Model	ALL
Location	Freezer Food Compartment
Material	Polymeric
Dimensions, mm. (D x W x H)	210x420x208
Thickness, mm.	3
No. of Drawers	3
Method of Support	Mounted to cabinet liner
Method of Restraint	NA

100-15 Door Shelves

*Model	ALL
A. Location	Fresh Food Compartment
Dimensions, mm. (D x W)	113 x 465
Thickness, mm.	3
Number	3

INDEX OF FIGURES

Fig.	Description
1	Displays front view of model HRB10N2AGV
2	Fresh food Compartment Assembly view
3	Freezer Compartment Assembly view

INDEX OF ILLUSTRATIONS

Ill.	Description
1	Door Hinge
1A	Door Hinge
2	Condenser
3	Evaporator in freezer compartment
3A	Evaporator in fresh food compartment
4	Drier/Filter
5	Wiring diagram
6	IEC 60079-15 (for Group II A gases or the flammable refrigerant) Certificate of compressor overload protector model BT140-120
7	IEC 60079-15 (for Group II A gases or the flammable refrigerant) Certificate of thermostat model WD and
8	WDF Series
	IEC 60079-15 (for Group II A gases or the flammable refrigerant) Certificate of defrost timer model DBZ
*9	Series
	IEC 60079-15 (for Group II A gases or the flammable refrigerant) Certificate of door switch model HC-050K.4 and HC-050K.5



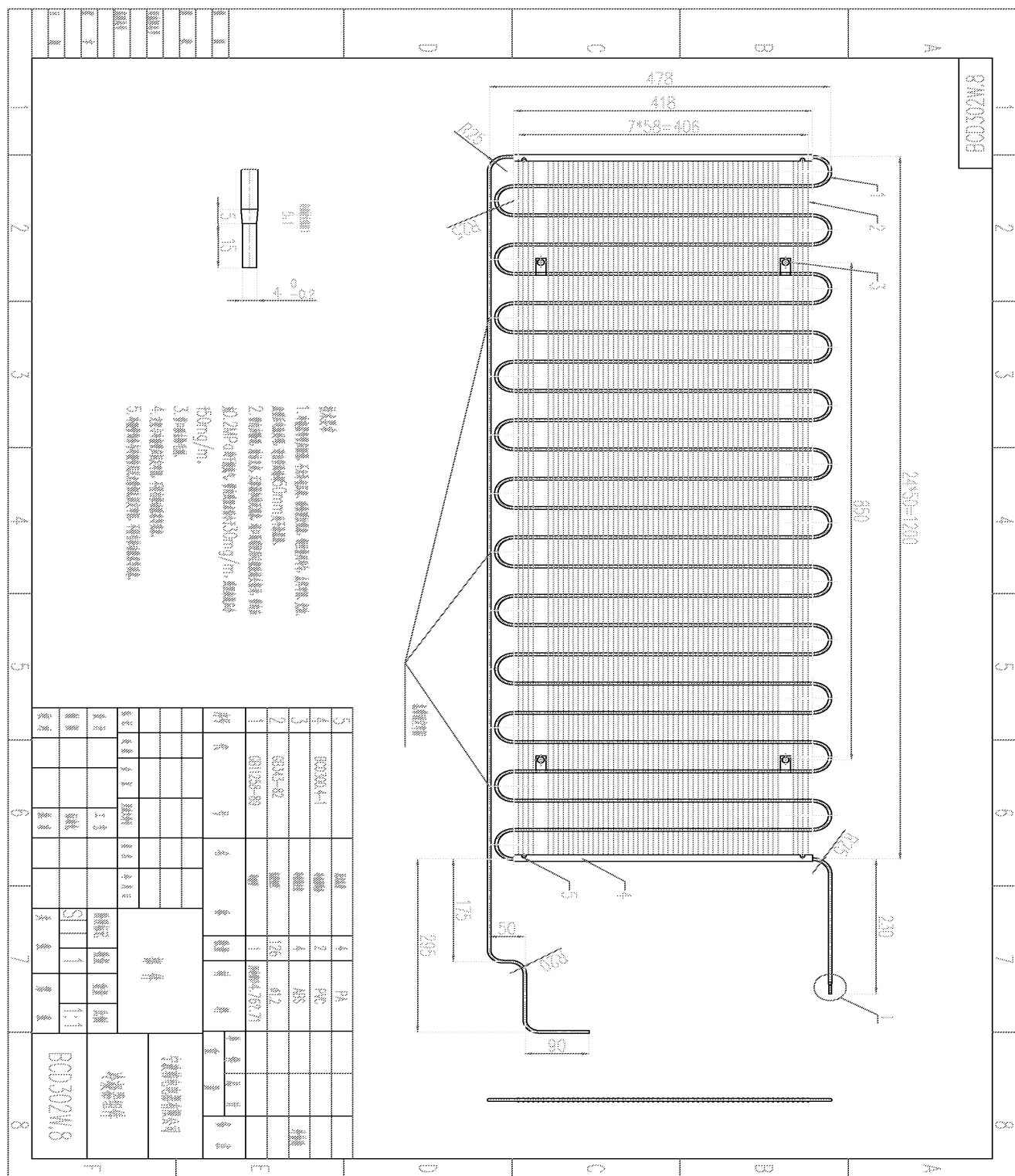
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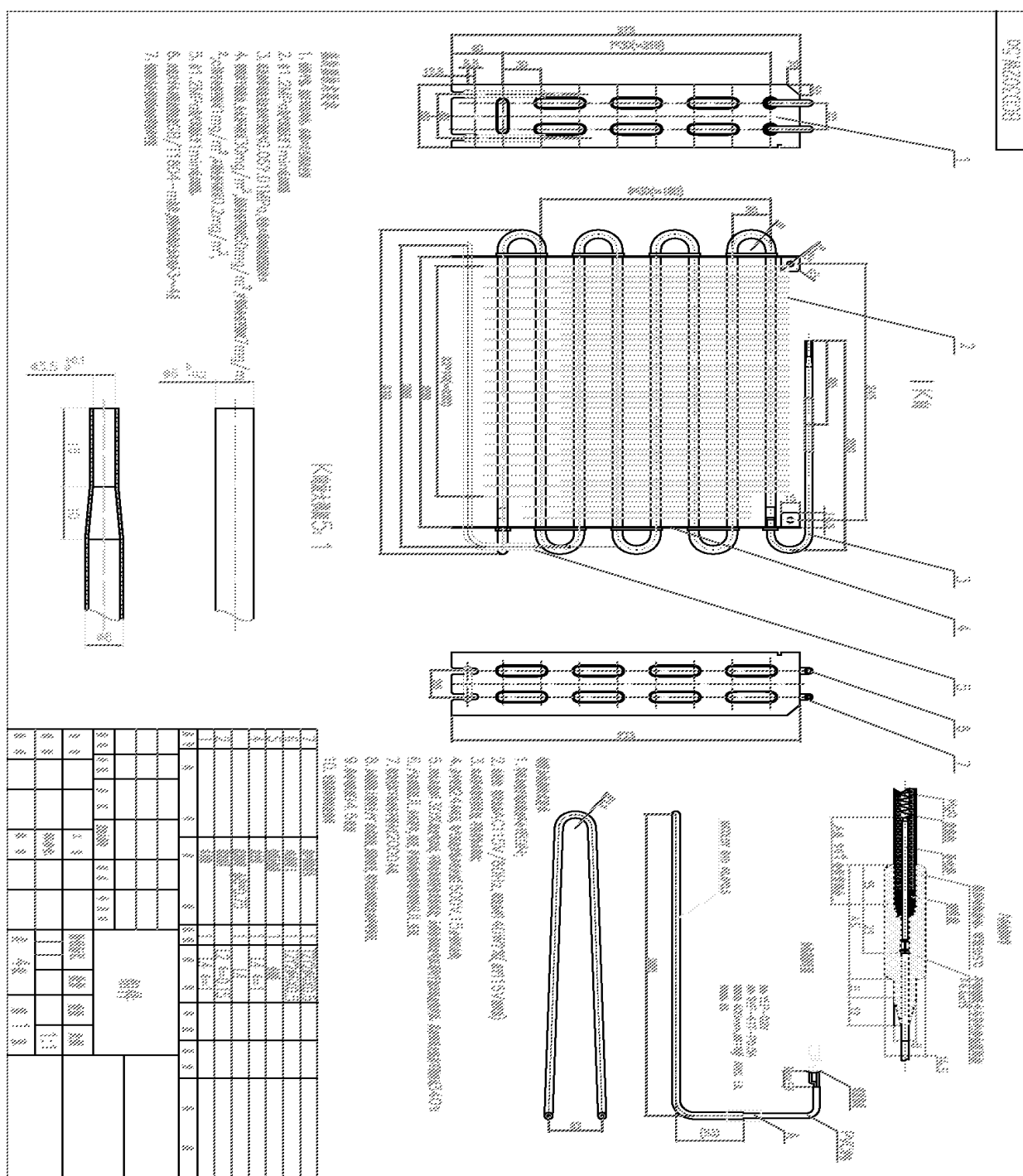
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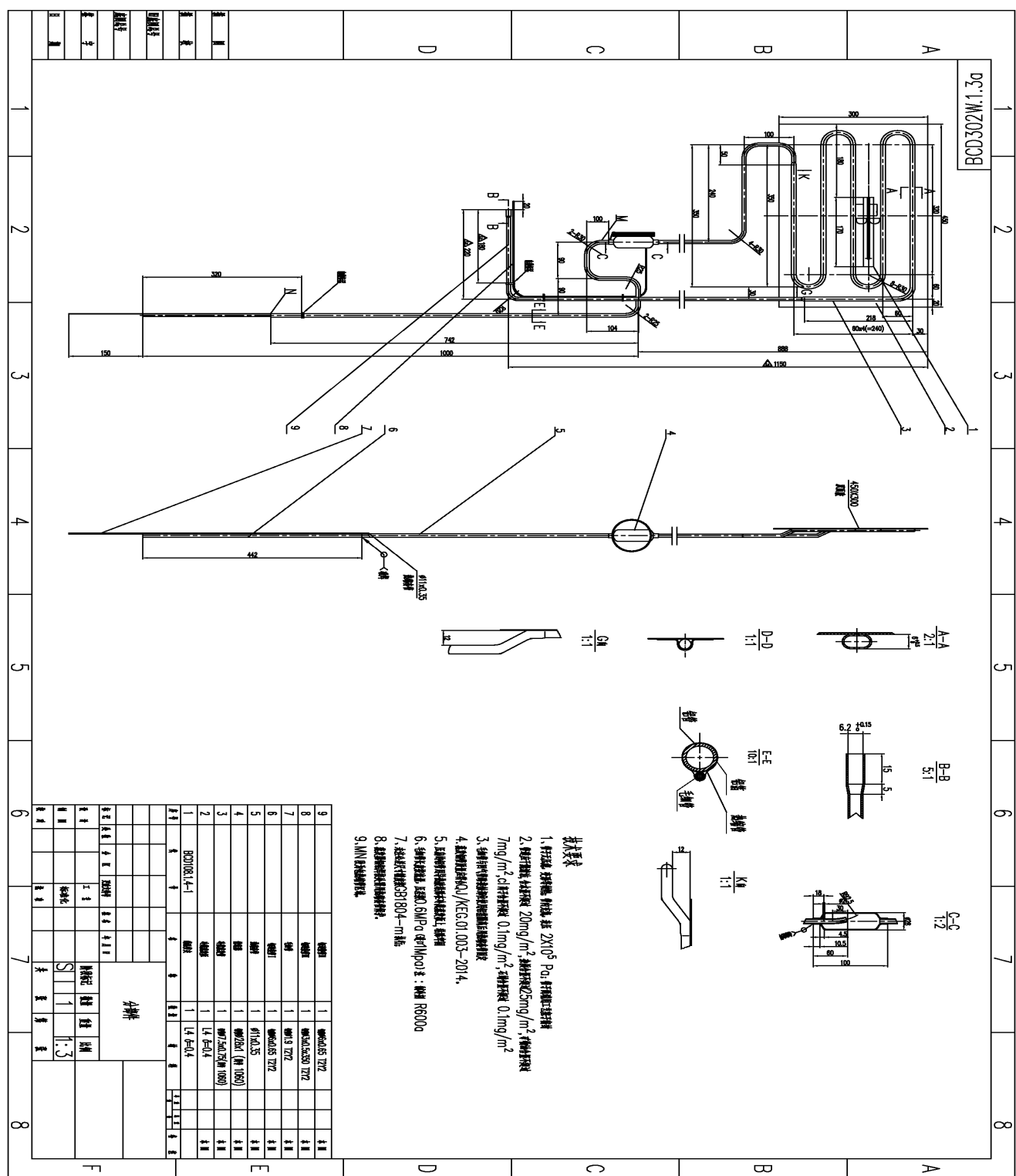
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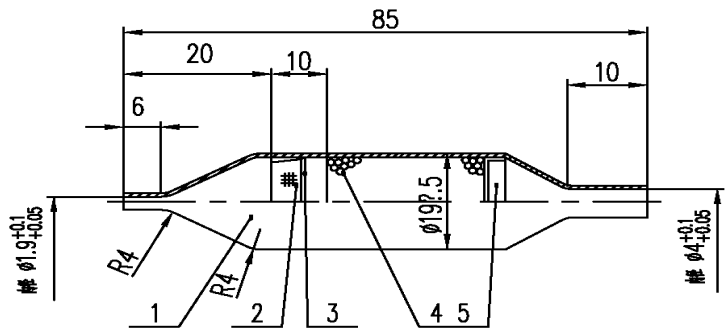
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F150237919



F150237920



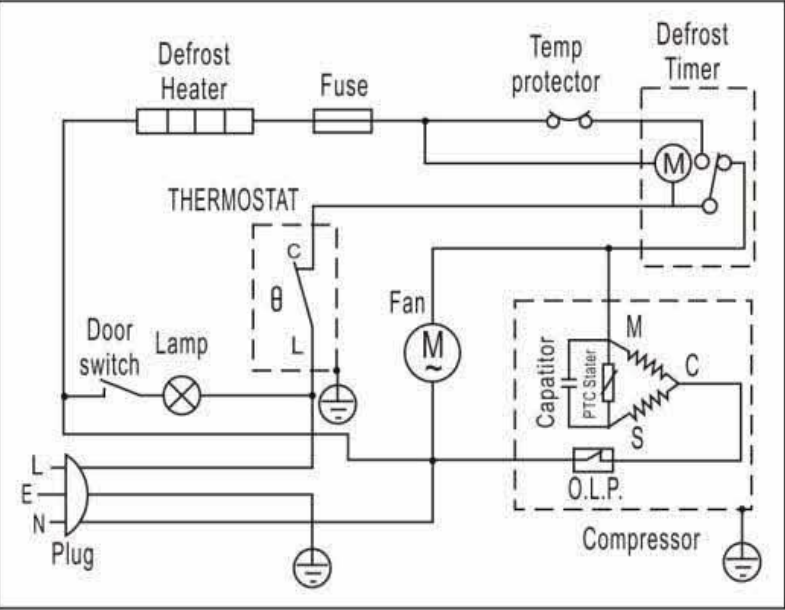
技术要求

1. 端口无毛刺。
2. 分子筛预吸附 $\leq 1.5\%$, 氯离子 $\leq 0.3\text{mg/m}^2$, 矿物油 $\leq 4\text{mg/m}^2$ 。
3. 表面光洁, 无明显裂纹, 夹杂, 水渍, 斑点, 油污等缺陷。
4. 挡网深度以分子筛为限。
5. 适用于R134a、R600a制冷剂。
6. 筛网座与器体装配采用缩径工艺。
7. 其它各项技术要求符合GB/T23135—2008电冰箱分子筛过滤器要求。

插 图	5				挡 网	1	H62 80.35								
	4				分 筛	5g	XH-9								
	3				筛 网	11	H62 80.35								
	2				筛 网	1	1Cr18Ni9 200目/N								
插 校	1				器 体	1	T2Y φ19±.5								
	序 号	代 号			名 称	数 量	材 料		单 重	总 重	备 注				
旧底图总号							分子筛过滤器				宁波韩电电器有限公司				
底图总号															
	标 记	外 数	分 区	更改文件号	签 名	年 月 日	过滤器								
签 字	设 计			工 艺								阶段标记	数量	重量	比例
	制 图			标 准 化								S		1	
日 期	校 对			数 准			共 1 张		第 1 张						

Haier Refrigerator-Freezer





SPECIFICATIONS	
MODEL	HRB1 ON2BGS
RATED VOLTAGE	115V~
RATED FREQUENCY	60Hz
INSULATION BLOWING GAS	C ₂ H ₁₀
REFRIGERANT/AMOUNT	R600a/42g
RATED CURRENT	1.6A
LOW SIDE	0.88MPa
HIGH SIDE	2.5MPa

Minimum Installation Clearance

Sides: 1/4" , Back: 4" , Top: Open

Ningbo Han Dian Electric Appliance Co., Ltd.

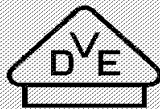
VDE Prüf- und Zertifizierungsinstitut**ZEICHENGENEHMIGUNG
MARKS APPROVAL**

Guangzhou Senbao
Electrical Appliances Co., Ltd.
No. 2 Donghua Road, Donghu Anzhi Section
Huashan Town, Huadu Distr.
510880 GUANGZHOU CITY
CHINA

ist berechtigt, für ihr Produkt /
is authorized to use for their product

**Motorschutzeinrichtung für hermetisch und halbhermetisch
gekapselte Motorverdichter, thermisch
Motor protector for motor-compressors of hermetic and
semi-hermetic type, thermal**

die hier abgebildeten markenrechtlich geschützten Zeichen
für die ab Blatt 2 aufgeführten Typen zu benutzen /
the legally protected Marks as shown below for the types referred to on page 2 ff.



Geprüft und zertifiziert nach /
Tested and certified according to

DIN EN 60730-1 (VDE 0631-1):2009-06; EN 60730-1:2000+ A1+ A12+ A13+ A14+ A16+ A2
DIN EN 60730-2-4 (VDE 0631-2-4):2008-08; EN 60730-2-4:2007

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VDE Testing and Certification Institute
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Aktenzeichen: 2488700-4510-0005 / 169407
File ref.:

Ausweis-Nr. 40017545 Blatt 1
Certificate No. Page

Weitere Bedingungen siehe Rückseite und Folgeblätter /
further conditions see overleaf and following pages

Offenbach, 2006-04-27
(letzte Änderung/updated 2012-07-16)

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Zeichengenehmigung

Ausweis-Nr. / Blatt /
Certificate No. page
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Huashan Town, Huadu Distr., 510880 GUANGZHOU CITY, Guangdong, CHINA

Aktenzeichen / *File ref.*
2488700-4510-0005 / 169407 / FG31 / BAU

letzte Änderung / *updated* Datum / *Date*
2012-07-16 2006-04-27

Dieses Blatt gilt nur in Verbindung mit Blatt 1 des Zeichengenehmigungsausweises Nr. 40017545
This supplement is only valid in conjunction with page 1 of the Certificate No. 40017545.

Motorschutzeinrichtung für hermetisch und halbhermetisch
gekapselte Motorverdichter, thermisch
Motor protector for motor-compressors of hermetic and
semi-hermetic type, thermal

Typ(en) / *Type(s)*:

- 1) DRB* ** A*
- 2) BT* - * ** D*
- 3) DRB* ** B*
- 4) BT* - * ** G*

Zweck des RS *Purpose of control* Thermisch wirkende Motor-Schutzeinrichtung
Thermal motor protector

Bemessungsspannung *Rated voltage* AC 250 V

Bemessungsstrom *Rated current* 1) und 2) 14A cos phi 0,7 (induktive Last)
3) und 4) 18A cos phi 0,95 (ohmsche Last)
1) and 2) 14A p. f. 0,7 (inductive load)
3) and 4) 18A p. f. 0,95 (resistive load)

Merkmale der automatischen *3.C*
Wirkungsweise
Features of automatic action

Anzahl der automatischen *1) und 2) 10.000*
Zyklen *3) und 4) 5.000*
Number of automatic cycles *1) and 2) 10.000*
3) and 4) 5.000

Schutz gegen elektrischen *zum Einbau in Geräte der Schutzklasse I*
Schlag *for incorporation in Class I equipment*
Protection against electric shock

Temperaturgrenzen des *Tmin 0°C ; Tmax 155°C*
Schaltkopfes
Temperature limits of the switch head

Fortsetzung siehe Blatt 3 /
continued on page 3

VDE Prüf- und Zertifizierungsinstitut GmbH * Testing and Certification Institute

Merianstrasse 28, D-63069 Offenbach

Phone + 49 (0) 69 83 06-0
Telefax + 49 (0) 69 83 06-555

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This supplement is only valid in conjunction with page 1 of the Certificate No. 40017545.

Konstruktion <i>Construction</i>	integriertes RS <i>integrated control</i>
Fühlerart <i>Kind of sensing element</i>	Bimetall <i>bimetal</i>
Verschmutzungsgrad <i>Degree of pollution</i>	2
Überspannungskategorie <i>Overvoltage category</i>	II
Anschluss <i>Type of terminal</i>	Pin und Flachstecker 6,3 x 0,8 mm; 4,8 x 0,8 mm; blankes Messing <i>Pin and tabs 6,3 x 0,8 mm; 4,8 x 0,8 mm; pure brass</i>
Schalterart <i>Contact configuration</i>	einpoliger Öffner <i>SPST n.c.</i>
Kriechstromfestigkeit <i>Tracking resistance</i>	siehe Anlage 2 <i>see appendix 2</i>
Glühdrahtprüfung (GWT) <i>Glow-wire test (GWT)</i>	siehe Anlage 2 <i>see appendix 2</i>
Weitere Angaben siehe Anlage <i>Further information see appendix</i>	1 + 2

Fortsetzung siehe Blatt 4 /
continued on page 4

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This supplement is only valid in conjunction with page 1 of the Certificate No. 40017545.

Anmerkung

1. Die Beurteilung der Anschlüsse zum Verdichter muss bei der Prüfung des Haushaltgerätes erfolgen.

2. Geprüft als umschlossene Schalteinrichtung nach IEC/EN 60079-15:2005, Abschnitt 33.4, Gruppe IIA, mit 18 A und folgenden Kunststoffen: siehe Anlage Nr. 2

3. Typ BT und DRB sind konstruktiv gleich, aber mit alternativer Typenbezeichnung.

Remark

1. *The assessment of the connections to the compressor has to be done during the evaluation of the household appliance.*

2. *Tested as enclosed-break device according to IEC/EN 60079-15:2005, Clause 33.4, Group IIA, at 18 A and following plastics: see appendix No. 2*

3. *Type BT and DRB are of the same construction but with alternative type designation.*

Dieser Zeichengenehmigungs-Ausweis bildet eine Grundlage für die EG-Konformitätserklärung und CE-Kennzeichnung durch den Hersteller oder dessen Bevollmächtigten und bescheinigt die Konformität mit den grundlegenden Schutzanforderungen der **EG-Niederspannungsrichtlinie 2006/95/EG** mit ihren Änderungen.

This Marks Approval is a basis for the EC Declaration of Conformity and the CE Marking by the manufacturer or his agent and proves the conformity with the essential safety requirements of the EC Low-Voltage Directive 2006/95/EC including amendments.

VDE Prüf- und Zertifizierungsinstitut GmbH
VDE Testing and Certification Institute
Fachgebiet FG31
Section FG31

VDE Prüf- und Zertifizierungsinstitut GmbH * Testing and Certification Institute

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Zeichengenehmigung**Ausweis-Nr. / Beiblatt /
Certificate No. Supplement
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Huashan Town, Huadu Distr., 510880 GUANGZHOU CITY, Guangdong, CHINAAktenzeichen / *File ref.*
2488700-4510-0005 / 169407 / FG31 / BAUletzte Änderung / *updated* Datum / *Date*
2012-07-16 2006-04-27Dieses Beiblatt ist Bestandteil des Zeichengenehmigungsausweises Nr. 40017545.
*This supplement is part of the Certificate No. 40017545.***Motorschutzeinrichtung für hermetisch und halbhermetisch
gekapselte Motorverdichter, thermisch
*Motor protector for motor-compressors of hermetic and
semi-hermetic type, thermal*****Fertigungsstätte(n)
*Place(s) of manufacture***

Referenz/ <i>Reference</i>	Guangzhou Senbao
30005555	Electrical Appliances Co., Ltd.
	No. 2 Donghua Road, Donghu Anzhi Section
	Huashan Town, Huadu Distr.
	510880 GUANGZHOU CITY
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	CHINA

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Genehmigung zum Benutzen des auf Seite 1 abgebildeten markenrechtlich geschützten Zeichens des VDE:

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Produkte, die das Biozid Dimethylfumarat (DMF) enthalten, dürfen gemäß der Kommissionsentscheidung 2009/251/EG nicht mehr in den Verkehr gebracht oder auf dem Markt bereitgestellt werden.

Der VDE-Zeichengenehmigungsausweis wird ausschließlich auf der ersten Seite unterzeichnet.

Approval to use the legally protected Mark of the VDE as shown on the first page:

Basis for the use are the general terms and conditions of the VDE Testing and Certification Institute (www.vde.com\terms-institute). The right to use the mark is granted only to the mentioned company with the named places of manufacture and the listed products with the related type references. The place of manufacture shall be equipped in a way that a constant manufacturing of the certified construction is assured.

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Products containing the biocide dimethylfumarate (DMF) may not be marketed or made available on the EC market according to the Commission Decision 2009/251/EC.

The approval is solely signed on the first page.

F150237923



防爆电气设备 防爆合格证

编 号: CNEx13.4305X

制 造 单 位	九江恒通自动控制器有限公司
产 品 名 称	地址: 九江市开发区城西港区港兴路 18 号 防爆温度控制器
型 号 规 格	WDF 250VAC 50/60HZ 5A
防 爆 标 志	Ex nC IIA T1 Gc
产 品 标 准	HTQBEx-2011
总 装 图 号	LB11-IIT

经对上述产品图样及技术文件的审查和样品检验, 确认符合下列标准:
IEC60079-0: 2007 爆炸性环境 第 0 部分: 设备 通用要求
IEC60079-15: 2010 爆炸性环境 第 15 部分: 由“n”型保护的设备

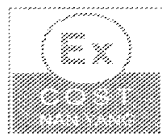
记 事

1. 该产品适用于制冷剂为 R600a 的电冰箱中。
2. 防爆温度控制器安装后插脚应有可靠防护, 满足 IP54 要求。

本证有效期 2013 年 12 月 30 日至 2018 年 12 月 29 日

颁发日期 2013 年 12 月 30 日

中 心 主 任



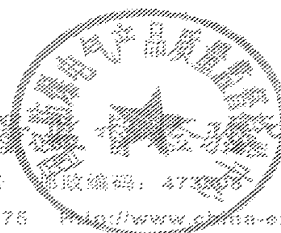
国家防爆电气产品质量监督检验中心

地址: 中国河南省南阳市仲梁北路 20 号

电话: 0377-63258364

传真: 0377-63206175

邮政编码: 473008

Email: www.cnma-ex.com

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国家防爆

防爆电气设备

防爆合格证

编号: CNEx10. 2753X

制造厂家 镇江市松协电器有限公司
(镇江市丹徒区长岗)

产品名称 化霜定时器

型号规格 DBZF 230V 8A

防爆标志 ExnCIIAT5

产品标准 XZ/J03-02-2008

总装图号 SDFJCW0101

经对上述产品图样及技术文件的审查和样品检验, 确认符合下列标准:
GB3836.8-2003《爆炸性气体环境用电气设备 第8部分: "n"型电气设备》

记 事

1. 本产品适用于制冷剂为 R600a 的制冷设备中。

2. 代表产品:

DBZF 100-127V 10A; 250-250V 8A; ExnCIIAT5

本证有效期 2010年12月10日至2015年12月9日

颁发日期 2010年12月10日

中心主任



国家防爆电气产品质量监督检验中心

地址: 中国河南省南阳市仲景北路20号 邮政编码: 473008

电话: 0377-63258564 传真: 0377-63208175 Http://www.china-ex.com

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国家防爆

Electrical Apparatus for Explosive Atmospheres

CERTIFICATE OF CONFORMITY

Cer. No.: CNEx11.3493X

Manufacturer Zhejiang Changdecheng Electric Appliances Co., Ltd.
(East-town Zone, Hongqiao, Yueqing, Zhejiang, China)

Name of Product Explosion-proof Door Switch

Type of Product HC-050K.4 250V AC 2.5A/125V AC 5A

Marking Ex nC II A T1 Gc

Standard Q/CDC.004-2011

Drawing No. 5399-3603130300

The drawings, technical documents and the samples are verified and certified according to standard(s) for safety as below:
IEC60079-0:2007 Explosive atmospheres - Part 0: Equipment-General requirements
IEC60079-15:2010 Explosive atmospheres - Part 15: Equipment protection by type of protection "n"

Note

1. The certificate covers the following products:
HC-050K.4, HC-050K.5, 250V AC 2.5A/125V AC 5A
Ex marking: Ex nC II A T1 Gc
2. This product was applied to the refrigerator which refrigeration is R600a.

Valid Date Form December 14, 2011 to December 13, 2016

Issue Date December 14, 2011

Director



CHINA NATIONAL QUALITY SUPERVISION AND TEST CENTRE
FOR EXPLOSION PROTECTED ELECTRICAL PRODUCTS

Address: No.20 North Zhongjing Rd, Nanyang, Henan(473008), P.R.China
Tel: 0377-63258564 Fax: 0377-63208175 [Http://www.china-ex.com](http://www.china-ex.com)

Note: This certificate is only valid for the products which identify with the sample(s) tested and verified. Holder(s) of this certificate have the responsibility to ensure the products complying with relevant standard(s).

登陆网站 输入数码 查询真伪 0742 0773 2074 0081 查询方式: www.china-ex.com

F150237926

DESCRIPTION

PRODUCT COVERED:

USL, CNL Free standing type household freezer, Models BD-100, BD-155, BD-200.

GENERAL:

These units are cord-connected household chest-type freezers. No automated defrost systems are employed.

The model employs Refrigerant R-600a (flammable refrigerant, classified as Class 3 "Higher Flammability" by ASHRAE34) and was evaluated following additional requirements of Supplement SA of UL 250. The cooling system is considered a protected cooling system.

TECHNICAL CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE'S USE):

Products designated USL have been investigated using requirements contained in the Standard for Household Refrigerators and Freezers, UL250, Tenth Edition.

Products designated CNL have been investigated using requirements contained in Standard for Refrigeration Equipment, CAN/CSA C22.2 No. 63-93, Fourth Edition.

RATINGS:

See MARKING.

INSTRUCTIONS:

Each unit is provided with installation and operating instructions.

The instructions include the following wording regarding the use of extension cords (+): Do not use an extension cord, or similar words.

(+) - Cord connected units only.

CONSTRUCTION DETAILS:

Electrical Spacings - Unless otherwise noted in this Report, the spacings between uninsulated live parts of opposite polarity and between uninsulated live parts and dead-metal parts are not less than 1/8 in. through air, 1/4 in. oversurface, and 1/4 in. to the enclosure.

10

MARKING:

and Report

10-5 Nameplate Marking

Recognized (PGDQ2,8)

Model	BD-100	BD-155	BD-200
Material			
Manufacturer	Various		
Recognized Designation	Various		
Location	Unit rear		
Secured By	Adhesive Rear of unit		
Listee Name	NINGBO HANDIAN ELECTRIC APPLIANCE CO., LTD		
Refrigerant			
- Type	R600a		
- Amount	1.52 oz (43g)	1.90 oz (54 g)	2.01 oz (57 g)
Design Pressure (Optional)			
High Side, psig	218		
Low Side, psig	58		
Electrical Rating			
V	115		
A -	0.9	0.95	0.95
(Refrigeration) (Total)			
Frequency, Hz	60		

10-10 Special Marking

A. Type or Material

Manufacturer	Various
Recognized Designation	Various
Location	Unit Rear, above machine compartment
Quote Marking	

1) ☐ DANGER - Risk Of Fire Or Explosion. Flammable Refrigerant Used. To Be Repaired Only By Trained Service Personnel. Do Not Puncture Refrigerant Tubing.



2) ☐ CAUTION - Risk Of Fire Or Explosion. Flammable Refrigerant Used. Consult Repair Manual/Owner's Guide Before Attempting To Service This Product. All Safety Precautions Must be Followed.

3) ☐ CAUTION - Risk Of Fire Or Explosion. Dispose Of Property In Accordance With Federal Or Local Regulations. Flammable Refrigerant Used.

4) ☐ CAUTION - Risk Of Fire Or Explosion Due To Puncture Of Refrigerant Tubing; Follow Handling Instructions Carefully. Flammable Refrigerant Used.

Comments	The markings shall be in letters no less than 3.2 mm high;
	The perpendicular height of the triangle containing the "Caution, risk of fire" sign shall be at least 15 mm.

B. Type or Material

Location	A process tube on a compressor.
Quote Marking	

A process tube on a compressor shall be painted or colored red, Pantone® Matching System (PMS) No. 185. The Color mark shall extend at least 2.5 cm (1 inch) from the compressor.

C. Type or Material

Manufacturer	Various
Recognized Designation	Various
Location	Shipping Carton
Quote Marking	

CAUTION - Risk Of Fire Or Explosion Due To Puncture Of Refrigerant Tubing; Follow Handling Instructions Carefully. Flammable Refrigerant Used.

Comments	The markings shall be in letters no less than 3.2 mm high.
----------	---

20 ENCLOSURES:

20-5 Ultimate Enclosure

Model	BD-100	BD-155	BD-200
Approximate Physical Size	835 x 632 x	835 x 822 x	835 x 1012 x
(including door), H x W x D, mm	565	565	565

20-10 Unit Base

Model	All
Material	Steel
Thickness, mm	0.4
Corrosion Protection (Method)	Galvanized
Bonding for Grounding (Method)	Screws connected to compartment base.

20-15 Compressor compartment base

Model	All
Material	Steel
Thickness, mm	0.5
Corrosion Protection (Method)	Galvanized
Bonding for Grounding (Method)	Mechanical screw connected to the grounding conductor of the Power Supply cord.

20-20 Unit Sides

Model	All
Material	Sheet Steel
Thickness, mm	0.5
Corrosion Protection (Method)	Painted or coated
Bonding for Grounding (Method)	Bonding to compressor compartment base by self-trapped screws.

20-25 Unit Rear

Model	All
Material	Sheet Steel
Thickness, mm	0.5
Corrosion Protection (Method)	Painted or coated
Bonding for Grounding (Method)	Bonding to compressor compartment base by self-trapped screws. Integral part of cabinet side.

20-30 Cabinet Liner

Model	All
Material	Embossed Aluminum foil
Thickness, mm	0.38
Corrosion Protection (Method)	Inherent
Bonding for Grounding (Method)	Not applicable

20-35 Unit Doors

Model	All
Material	Sheet Steel
Thickness, mm	0.5
Corrosion Protection (Method)	Painted or coated
Bonding for Grounding (Method)	Not applicable

20-40 Cabinet Door Liner

Model	All
Material +	Polymeric
Thickness, mm +	2.0
Bonding for Grounding (Method)	Not applicable

20-45 Door Hinges

Model	All
Material	Steel
Dimension	See Ill.1 for detail
Comments	Right side hinge has a counterweight spring and left side does not have.

20-50 Door Latching Device

Model	All
Type	Magnetic gasket
Manufacturer	Various

+ - If polymeric, see Section 30 for details.

20-55 Compressor Compartment Guard

Model	BD-155	BD-100	BD-200
Material	Mesh steel sheet		
Thickness, mm	0.5		
Compressor Compartment Opening W x D, mm	380x170		
Corrosion Protection (Method)	Painted or coated		
Securement & Bonding for Grounding (Method)	By 4 self screws to unit side.		

20-60 Thermostat Enclosure

Model	All
Location	Inside of compressor compartment
Material +	Polymeric
Physical Size, L x W x H, mm	140 x 80
Thickness, mm.	2.5
Method of Securement	Bundle to thermostat with tie cord.
Bonding for Grounding (Method)	Not applicable
Components Within	Thermostat

20-65 Thermostat Installation Panel

Model	All
Location	Front side of unit
Material +	Polymeric
Thickness, mm +	2.0
Method of Securement	Secured to the unit front by three tabs.
Bonding for Grounding (Method)	Not applicable

+ - If polymeric, see Section 30 for details.

30 NONMETALLIC COMPONENTS:

Model	All
Cabinet Door Liner (Vacuum Formed)	Recognized (QMFZ2)
Manufacturer	Various
Material Designation	ABS
Flammability Classification (minimum)	HB
Thermostat Enclosure /Thermostat Installation Panel	Recognized (QMFZ2,8)
Manufacturer	NINGBO LG YONGXING CHEMICAL CO LTD (E203955)
Material Designation	LUPOY ER5001RF(#)
Thickness, mm (minimum) (+)	3.0
Flammability Classification (minimum)	5VA
Doorframe, Door Hinge Enclosure	Recognized (QMFZ2,8)
Manufacturer	Various
Material Designation	Various
Flammability Classification (minimum)	HB

(+) - Minimum thickness of sheet stock before forming.

30-5 Isolation From Ignition Sources

Model

All

All units wiring is Recognized (AVLV2, AVLV8 or CSA Certified) and rated VW-1, FT-1 or Listed SJT (rated FT-1 or FT-2) power cord. All wiring is routed and secured within the machine compartment or the cabinet liner. All wire splices are totally insulated and there are no exposed live parts. There are no open coils or exposed high voltage parts.

40 REFRIGERATION SYSTEM:

40-5 Condenser

Model	BD-100	BD-155	BD-200
Manufacturer	NINGBO SHUBO ELECTRIC CO LTD		
Corrosion Protection (Method)	Galvanized		
Mounting (Method)	Adhere to the unit sides by aluminum foil.		
Bonding for Grounding (Method)	Through refrigerant tubing to compressor.		
Type of Construction	Tube		
Tube on Plate			
Physical Size, W x H, mm	1250x580	1440x580	1630x580
Plate Material	Steel		
Plate Thickness, mm	0.5		
Tubing Material	Iron		
Tubing OD, mm	4		
Tubing Wall Thickness, mm	0.5		
Total Tube Length, mm	15000-20000		

40-10 Evaporator

Model	BD-100	BD-155	BD-200
Manufacturer	NINGBO SHUBO ELECTRIC CO LTD		
Corrosion Protection (Method)	Galvanized		
Mounting (Method)	Adhere to the unit sides by aluminum foil.		
Bonding for Grounding (Method)	Through refrigerant tubing to compressor.		
Type of Construction	Tube		
Physical Size, L, mm (Before Forming)	16000-25000		
Physical Size, W x H x D, mm (After Forming)	635 x 524 x 677	824 x 524 x 677	1060x 585 x 677
Tubing Material	Aluminum		
Tubing OD, mm	7.5		
Tubing Wall Thickness, mm	0.75		
Total Tube Length, mm	16000-25000		

40-15 Pressure Relief

Model	All
Means Provided	Soldered or Brazed Joint
Location	All tube connections

40-20 Drier/Filter

Model	All
Manufacturer	CIXI JIASHENG CO., LTD
Cat. No. (SMGT, SMGT7)	N/A
Material	Copper
Length, mm.	100
OD, mm.	19
Wall Thickness, mm.	Min. 0.5
Design pressure, psig	250
Location	Machine compartment, near compressor
Corrosion Protection (Method)	Inherent
Other Dimensions	See Ill. 2 for details

40-25 Interconnecting Tubing

Model

All

Material

Copper

Outside Diameter, in.	Minimum Wall Thickness, in.
1/4, 5/16, 3/8, 1/2	0.0245
5/8, 3/4	0.0315
7/8	0.0410

40-30 Refrigerant Control

Model

All

Capillary Tube - No. Provided

1

Material

Copper

ID, mm.

1.8

Wall Thickness, mm.

0.55

Length, mm.

2450

40-35 Refrigeration System Joints

Model

All

Method of Joining

Soldered

50 MOTOR - COMPRESSOR ASSEMBLY:

50-5 Compressor	Recognized (SLIS2, 8)
Model	BD-100
*Manufacturer	Jiangsu Baixue Electric Appliances Co Ltd(SA13327)
Designation	KY51R16G
Electrical Rating	
Volts	115
RLA (Not for Inspector Use)	1
LRA	4.4
Phase	1
Cycle	60
Bonding for Grounding (Method)	No. 18 AWG green colored ground wire from compressor terminal block to unit base. Each end of the ground wire is secured with a closed eyelet and screw with nut. Eyelets on painted surfaces are provided with serrated-head washers to break the paint.
Overload Protector +	External
Manufacturer	HANG ZHOU STAR SHUAIER ELECTRIC APPLIANCE CO., LTD(E213160)
Designation	DRB21N61A1
Location	Compressor Terminal Enclosure
Comments	This model was evaluated according to IEC 60079-15 for ignition protection.
Compressor Start Assist Device	Recognized (SDFY2)
Type	PTC Type
Manufacturer	Hang Zhou Star Shuaier Electric Appliance Co., Ltd. (E232371)
Designation	QP2-4R7
Location	Compressor Terminal Enclosure

+ - Part of Recognized motor-compressor assembly.

50 MOTOR - COMPRESSOR ASSEMBLY:

50-5 Compressor

Recognized (SLIS2, 8)

Model

BD-155

*Manufacturer

Jiangsu Baixue Electric Appliances Co
Ltd(SA13327)

Designation

KY61R16G

Electrical Rating

Volts

115

RLA (Not for Inspector Use)

1

LRA

5.9

Phase

1

Cycle

60

Bonding for Grounding (Method)

No. 18 AWG green colored ground wire from compressor terminal block to unit base. Each end of the ground wire is secured with a closed eyelet and screw with nut. Eyelets on painted surfaces are provided with serrated-head washers to break the paint.

Overload Protector +

External

Manufacturer

HANG ZHOU STAR SHUAIER ELECTRIC
APPLIANCE CO., LTD(E213160)

Designation

DRB27N61A1

Location

Compressor Terminal Enclosure

Comments

This model was evaluated according to IEC 60079-15 for ignition protection.

Compressor Start Assist Device

Recognized (SDFY2)

Type

PTC Type

Manufacturer

Hang Zhou Star Shuaier Electric
Appliance Co., Ltd. (E232371)

Designation

QP2-4R7

Location

Compressor Terminal Enclosure

+ - Part of Recognized motor-compressor assembly.

50 MOTOR - COMPRESSOR ASSEMBLY:

50-5 Compressor

Recognized (SLIS2, 8)

Model

BD-200

*Manufacturer

Jiangsu Baixue Electric Appliances Co
Ltd(SA13327)

Designation

KY71C16V

Electrical Rating

Volts

115

RLA (Not for Inspector Use)

0.8

LRA

7.5

Phase

1

Cycle

60

Bonding for Grounding (Method)

No. 18 AWG green colored ground wire from compressor terminal block to unit base. Each end of the ground wire is secured with a closed eyelet and screw with nut. Eyelets on painted surfaces are provided with serrated-head washers to break the paint.

Overload Protector +
Manufacturer

External

HANG ZHOU STAR SHUAIER ELECTRIC
APPLIANCE CO., LTD(E213160)

Designation

DRB28N61A1

Location

Compressor Terminal Enclosure

Comments

This model was evaluated according to IEC 60079-15 for ignition protection.

Compressor Start Assist Device
Type

Recognized (SDFY2)

PTC Type

Manufacturer

Hang Zhou Star Shuaier Electric
Appliance Co., Ltd. (E232371)

Designation

QP2-4R7

Location

Compressor Terminal Enclosure

+ - Part of Recognized motor-compressor assembly.

50-10 Run Capacitor

Recognized (CZDS2,8)

Model

BD-200

Compressor

KY71C16V

Manufacturer

Various

Model designation

Various

Type

Dry

Rating

10μF 250V

Location

Compressor Compartment Base

Securement

Secured by a self-tapped Screw and a tab

70 ELECTRICAL COMPONENTS:

70-5 Temperature Controller

Model

Use (Loads Controlled)

Manufacturer

Designation

Electrical Rating, V ac, FLA, LRA

Location (Physical)

Mounting

Bonding for Grounding (Method)

Marked Switch Positions

Comments

Recognized (SDFY2,8)

All

Compressor

JIUJIANG HENGTONG AUTOCONTROL DEVICE
CO., LTD(E225669)**WPF31 Series****WDF31 Series**

125/6/36

Inside refrigerator compartment and
within thermostat enclosure

Screws to thermostat enclosure.

A green/yellow ground wire is secured
to the thermostat mounting plate and
to the grounding terminal of the
compressor.

0,1,2,3,4,5,6,7

This model was evaluated according to
IEC 60079-15 for ignition protection.

70-10 Power Indicator Led (Optional)

Model	All
Manufacturer	Various
Designation	Various
No.	1
Rating	115 V ac
Resistance, $K\Omega$, W	68, 0.15

80 INTERNAL WIRING:

80-5 - Types

All wiring is minimum No. 18 AWG(+) Recognized (AVLV2,8) or CSA certified appliance wiring material rated VW-1 and FT-1 or Listed cords. Wiring is rated minimum 300V, 90C with 0.8mm thick insulation. Wiring which is color-coded green or green with one or more yellow stripes is employed on grounding conductors only.

80-10 - Wiring Methods

All wiring is installed and positively routed in such a manner that it is not subject to mechanical damage due to contact with sharp edges, abrasive surfaces, vibrating or moving parts. Exposed lengths of ripped parallel conductors do not exceed 3 in.

Wiring which is completely enclosed within steel conduit, metal raceways, metallic tubing, cabinet walls, or other separate electrical enclosures employs 2/64 in. thick (minimum) electrical insulation unless specified differently in this Report.

Wiring which is not completely enclosed as specified above employs 4/64 in. thick (minimum) electrical insulation unless specified differently in this Report.

Cords or appliance wiring material employed in the refrigerated compartment has 4/64 in. thick (minimum) electrical insulation and is located or protected so as not to be subjected to contact by product containers, removable shelves, and the like.

Green or green with yellow stripe wire may be employed only as grounding conductors. Splices are not employed in grounding conductors unless otherwise noted in the Report.

Holes for the passage of wires or cords through walls, panels or barriers have smooth, rounded surfaces or are provided with smoothly rounded bushings.

All splices are mechanically secured to a fixed member or located in a separate enclosure.

Unless otherwise noted all wires terminate in quick-connect or eyelet type materials.

Wiring is connected in such a way as to ensure proper polarity will be maintained throughout unit, cord, and attachment plug.

Wiring diagrams shown in ILL.

See Ill.3 for details

Model

All

90 SUPPLY CONNECTIONS:

90-5 Cord Connected Unit

Model	All
Power Supply Cord Set	Listed
Type	SE, SO, SOO, ST, STO, STOO, SJ, SJE, SJO, SJOO, SJT, SJTO, SJTOO, SP-3, SPE-3, SPT-3
Size, AWG	18
Attachment Plug Rating, V, A	125V, 15A
Strain Relief Means	Supply cord is pressed between a two-piece plastic clamp that is secured to the cabinet base by two screws.
Cord Length, ft	5 (1.5m) minimum, 10 (3.0m) maximum
Grounding Conductor Color	Green With or Without Yellow Stripes
Securement of Grounding Conductor	
Location	On the Unit base
Means	Screw

100 SHELIVING AND DRAWERS:

100-5 Basket (optional)

Model

All

A. Location

Inside freezing compartment

Material

Painting Steel

INDEX OF ILLUSTRATIONS

Ill.	Description
1	Door hinge
2	Drier
3	Wiring Diagram and Nameplate
4	Evaporator Drawing of BD-100
5	Condenser Drawing of BD-100
6	IEC 60079-15 (for Group II A gases or the flammable refrigerant) Certificate of compressor overload protector model DRB series
7	IEC 60079-15 (for Group II A gases or the flammable refrigerant) Certificate of Thermostat model WD series
8	IEC 60079-15 (for Group II A gases or the flammable refrigerant) Certificate of Thermostat model WP and WPF series

INDEX OF FIGURES

Figure	Description
1	Shows Overall View of model BD-100

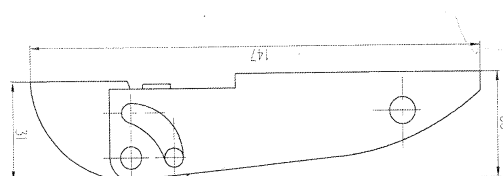
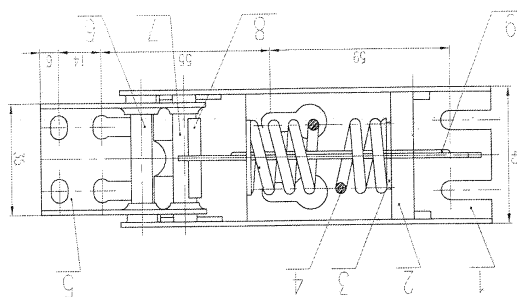


N161445116

And Report

姓名	性别	年龄	民族	籍贯	出生地	文化程度	职业	婚姻状况	健康状况	宗教信仰	政治面貌	社会关系	其他
1	男	25	汉族	湖南	湖南	高中	教师	已婚	健康	无	中共党员	无	无
2	女	22	汉族	湖南	湖南	初中	工人	未婚	健康	无	共青团员	无	无
3	男	28	汉族	湖南	湖南	大学	医生	已婚	健康	无	中共党员	无	无
4	女	24	汉族	湖南	湖南	高中	护士	已婚	健康	无	共青团员	无	无
5	男	26	汉族	湖南	湖南	大学	工程师	已婚	健康	无	中共党员	无	无
6	女	23	汉族	湖南	湖南	初中	工人	未婚	健康	无	共青团员	无	无
7	男	27	汉族	湖南	湖南	高中	教师	已婚	健康	无	中共党员	无	无
8	女	21	汉族	湖南	湖南	初中	工人	未婚	健康	无	共青团员	无	无
9	男	29	汉族	湖南	湖南	大学	医生	已婚	健康	无	中共党员	无	无
10	女	25	汉族	湖南	湖南	高中	护士	已婚	健康	无	共青团员	无	无

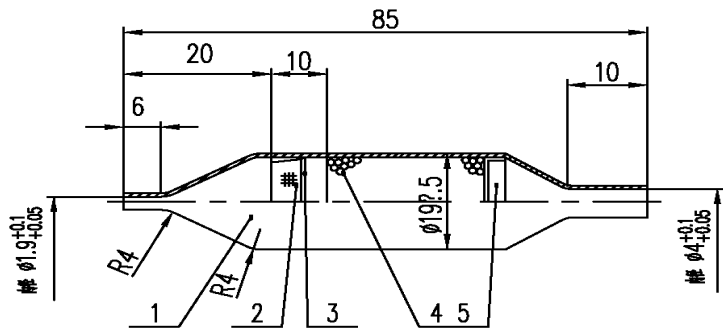
3.5	3.2	A
BD155	BD100	



- [illegible]

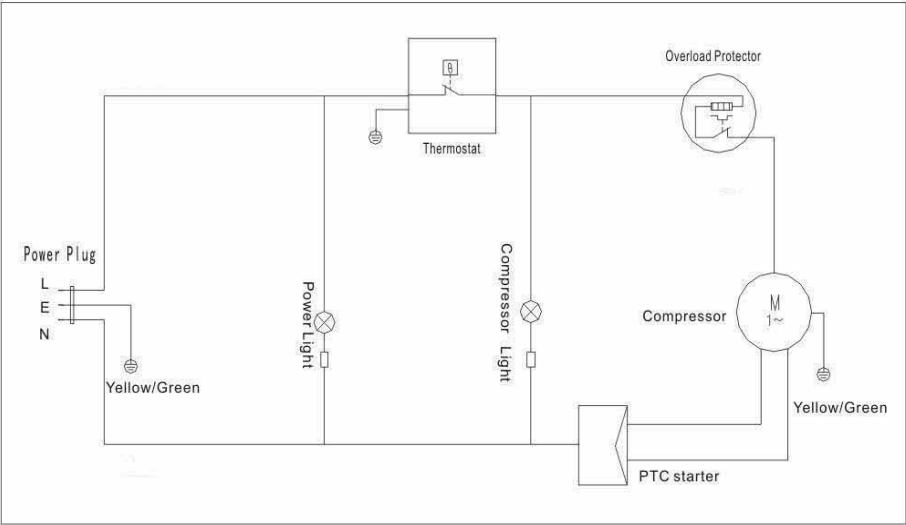
技术需求

BD100~155.10



描 图	5			挡	1	H62 80.35				
	4			分子筛	5g	XH-9				
	3			筛	11	H62 80.35				
	2			筛	1	1Cr18Ni9 200目/N				
描 校	1			器	1	T2Y φ19±.5				
序 号		代 号		名 称		数 量	材 料	单 重	总 重	备 注
旧底图总号							分子筛过滤器			宁波韩电电器有限公司
底图总号										
		标 记	尺 寸	分 区	更改文件号	签 名	年 月 日	过滤器		
签 字		设 计			工 艺					
		制 图			标 准 化					
日 期		校 对			数 准					
							阶 段 标 记	数 量	重 量	比 例
							S	1		1:1
							共 1 张	第 1 张		

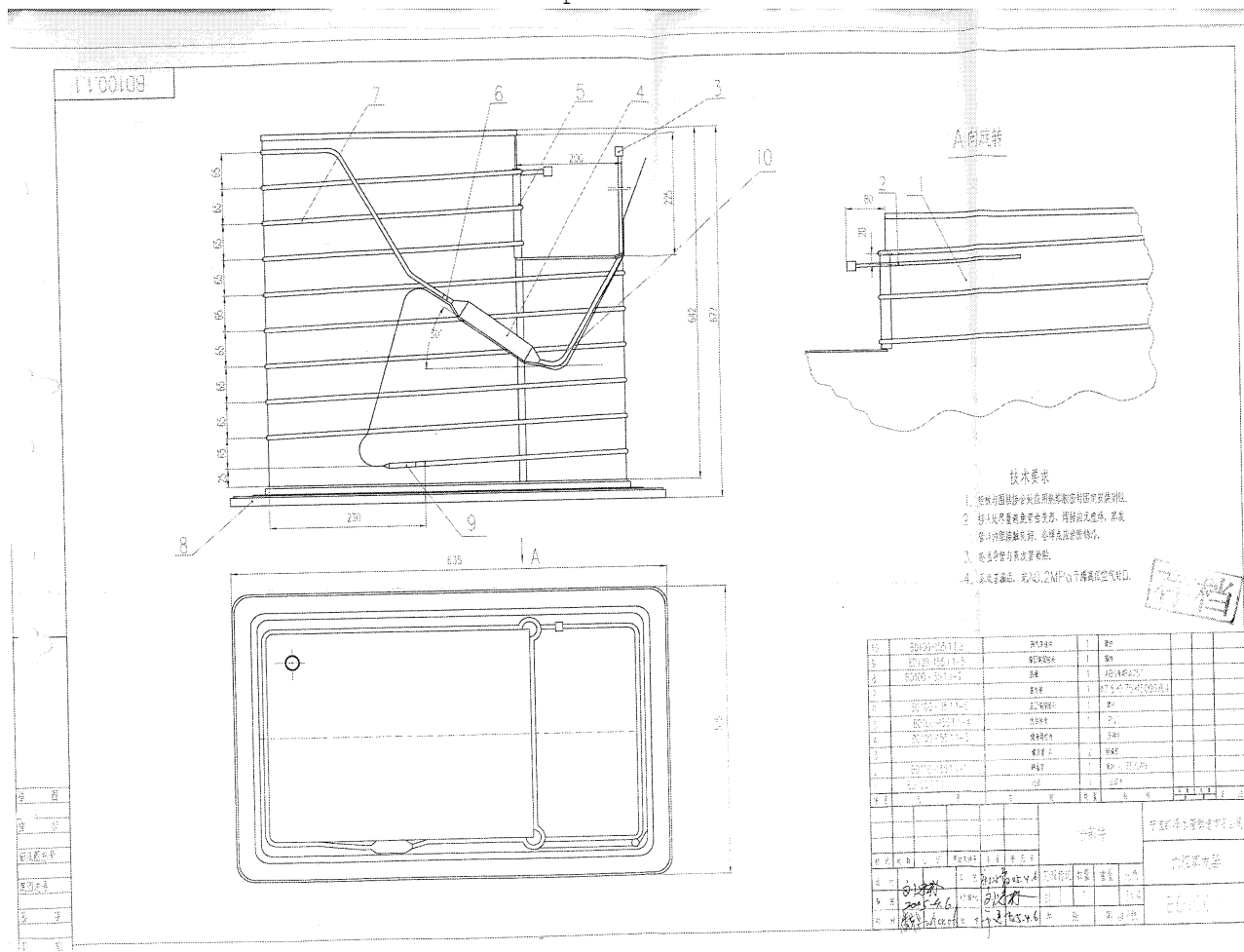
Chest Freezer



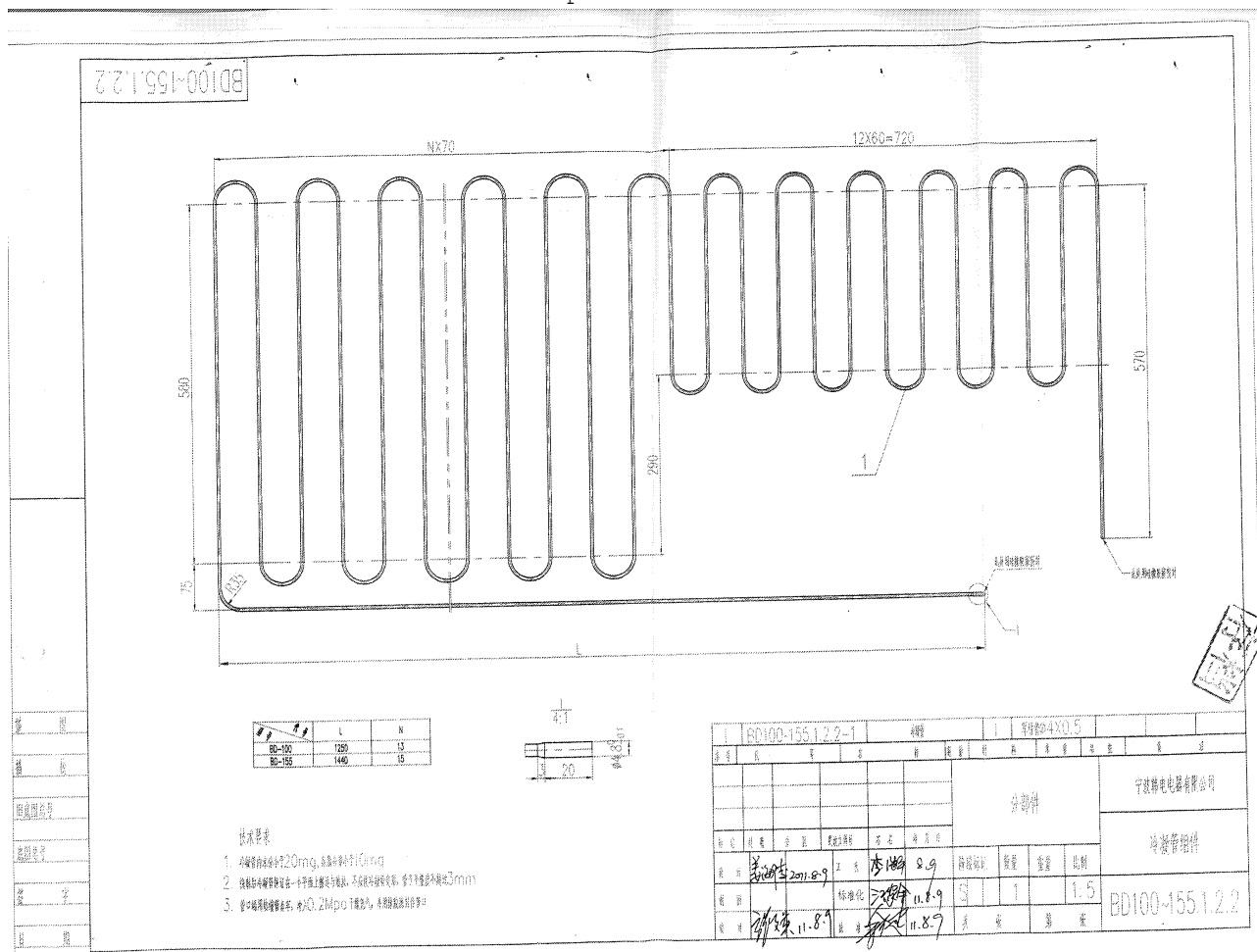
SPECIFICATIONS	
MODEL	BD-100
RATED VOLTAGE	115 V~
RATED FREQUENCY	60Hz
RATED CURRENT	0.90A
REFRIGERANT/AMOUNT	R600a/43g
INSULATION BLOWING GAS	C5H10
HIGH SIDE	1.5MPa
LOW SIDE	0.4MPa

NINGBO HANDIAN ELECTRIC APPLIANCE CO., LTD

N161445130



N161445131



N161445132

**REPORT****IB-06-8-090****about the experimental testing of enclosed-break devices*****Motor protector type DRB-B series*****(Translation)**Freiberg, 15 January 2007
Hi/Lieb/Leh
Dipl.-Ing. (FH) Hille
Editor

This document consists of:

6 Pages text
2 Annexes

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R E P O R T**IB-06-8-090****about the experimental testing of enclosed-break devices
(Translation)****1 Order**

The VDE Prüf- und Zertifizierungsinstitut in 63069 Offenbach (GERMANY) engaged with the letter of 22 November 2006 the IBExU Institut für Sicherheitstechnik GmbH with the experimental testing of the Motor protector type DRB-B series in explosive atmosphere regarding the proof of type of protection "enclosed-break devices" according to IEC/EN 60079-15:2005, paragraph 33.4.

2 Test item

Motor protector	
- Type:	DRB-B series
- Voltage:	250 V
- Current:	max. 20 A
- cos phi:	0.6
- Service temperature range:	-20 °C up to max. 160 °C

3 Test documents

- Letter 5001300-4510-0003/81174 of the customer of 22 November 2006
- EN 60079-15:2005 (complies with IEC 60079-15:2005, ed. 3)
- 8 pieces of Motor protector type DRB-B200-160

The test items were delivered to IBExU on 24 November 2006.

4 Test execution**4.1 Objectives**

It was the task to examine experimentally the ignition safety (the non-ignition of an explosive atmosphere) of the Motor protector for gases and vapors of the Group IIA with the parameters specified under chapter 2.

The bases of the test are the requirements in IEC/EN 60079-15: 2005, paragraph 33.4 for enclosed-break devices.

In the context of these examinations there was not the task to check the constructive requirements for apparatus in type of protection "n" (apparatus for zone 2) for the compliance with IEC/EN 60079-15.

4.2 Description of the test item

The Motor protectors serve for the protection of motor compressors at cooling equipment. A special black plastic base serves as support part of the functional parts of the Motor Protectors. On the top is glued in a plastic lid. Inside is a bimetal contact bridge and below is a heating element. On the back side of the enclosure two plug contacts are led to the outside. Heating element and bimetal plate are connected with the motor winding in row.

The free internal volume of the switch chamber is less than 20 cm³ (about 1 cm³). The enclosure of the test item was equipped with a thread and a hose connection. So it was possible to fill the switch chamber with the test gas. A second bore hole with hose connection serves for the discharge of the test gas during the purging and also for the uptake of the thermocouple.

4.3 Requirements in IEC/EN 60079-15:2005

Enclosed-break devices are devices, which incorporate electrical contacts that are made and broken. These devices will withstand an internal explosion of the flammable gas or vapor which may enter it without suffering damage and without communicating the internal explosion to the external flammable gas or vapor.

Before the tests any removable seals have to be removed. Any remaining non-metallic parts will have been subjected to the conditioning test described in paragraph 33.3.2. These parts have to be stored continuously for four weeks in an ambience of 90 % relative humidity and at a temperature of 10 K above the maximum temperature in rated service. In case of a maximum service temperature above 85 °C the period of four weeks specified above will be replaced by a period of two weeks at 95 °C and 90 % relative humidity followed by a period of two weeks at a temperature of 10 K above the maximum temperature in rated service. After that, a storage for 24 hrs at a temperature of 5 K below the minimal ambient temperature shall be carried out.

Then the test of the enclosed-break devices according to paragraph 33.4.3 will be carried out. The explosive gas atmosphere fixed for the Group IIA, IIB or IIC has to be ignited inside the device by the operation of the enclosed contacts when connected to the maximum rated source of energy, power and load in terms of voltage, current, frequency and power factor.

A make and break test shall be repeated 10 times with a fresh gas mixture for each test.

After the test the device shall show no visible signs of damage; no external ignition shall occur and there shall be no failure to clear the arc when the switch contacts are opened.

4.4 Description of the test equipment

The test equipment is schematically shown in annex 1 of this report. It consists of the following equipment and means of work:

Explosion chamber

The explosion chamber essentially consists of a cylindrical container (Piacryl) with a bursting foil mounted on the top. The volume amounts 18 dm³.

In the base plate and at the cylinder are introduced and sealed the instrument leads and the supply lines.

Conditioning of the test gas mixture

The explosive gas atmosphere required for the Group IIA (6.5 % ± 0.5 % Ethylene, 93.5 % ± 0.5 % air) was processed in the explosion chamber by volumetric gas conditioning. Dosage equipment with Digital Mass Flow Controllers served for this.

The homogeneous mixture conditioning was ensured by flushing the explosion chamber and the test item with the explosive gas/air mixture. The burning gas quota (Ethylene) in the explosion chamber was checked in addition for the maintenance of the permissible tolerance with gas interferometer according to Rayleigh-Haber-Löwe.

Measuring device for electrical parameters

The predefined electrical load of the switching contacts was made by switching on ohmic resistors and inductances in the AC circuit.

With a Wide Band Power Analyzer D 6100 (manufacturer: Norma) the required parameters current, voltage and power factor were measured during the examining operation and registered with an 8-channel recorder type LR 8100 (manufacturer: YOKOGAWA). The ignition in the test item was perceived acoustically and recorded by the temperature rise by means of a thermocouple. For that, a thermocouple was introduced into the tube connection at the test item after the mixture conditioning. The temperature course was recorded with the recorder LR 8100.

Test of thermal endurance

The test of thermal endurance occurs in conditioning and refrigeration cabinets which are also used for the thermal endurance tests according to EN 60079-0.

All used measuring instruments are included in the Quality Management System of IBExU certified according to ISO 9001. They are checked in regular intervals.

4.5 Test procedure and results

The tests were carried out substitutionally for the complete series DRB-B on the type with maximum current and maximum switch temperature (type DRB-B200-160).

4.5.1 *Test of thermal endurance*

According to IEC/EN 60079-15, 33.3.2 the test samples were stored for two weeks at 95 °C heat and 90 % rel. humidity, two weeks at 170 °C as well as for 24 hrs at -25 °C cold. No damages could be noticed at the following visual examination.

4.5.2 *Pre-test*

Before the ignition tests specified in IEC/EN 60079-15 were carried out it had to be made sure that the appearing switching spark in the case can be considered as an effective ignition source for the test gas. To this, pre-tests were carried out at a Motor protector, whose enclosure was opened.

At the test parameters 250 V AC, 20.0 A and $\cos \varphi$ 0.6 the ignition of the explosive gas mixture caused by the break spark could be proved (see Annex 2.1).

4.5.3 *Type test*

The tests were carried out on 11 and 12 January 2007. In accordance with IEC/EN 60079-15, 33.4.3.2 eleven tests have to be carried out with a sample, which have the most adverse dimensions permitted by the construction drawings. There are no statements regarding the gaps of the test samples. To make sure the test results, four test samples were included into the test program.

The respective Motor protector (originally closed) to be tested was put into the explosion chamber. The specified explosive gas atmosphere required for the Group IIA (6.5 ± 0.5) % ethylene/air mixture was processed in the explosion chamber and in the enclosure of the test item.

The contacts of the Motor protectors were operated with the preset test parameters. The ignition of the explosive gas atmosphere inside the test item occurred by the break spark.

The test results are summarised in the table. For some tests the test parameters are recorded in the annexes 2.2 up to 2.5.

Test sample	Tests	Electrical parameters			Ignition of the explosive atmosphere	
		U [V]	I [A]	cos φ	Inside the test item	outside
1	11	250	20.0	0.6	yes	no
2	11	250	20.0	0.6	yes	no
3	11	250	20.0	0.6	yes	no
4	11	250	20.0	0.6	yes	no

At none of the ignition tests the explosion triggered in the enclosure of the Motor protector was transferred to the outer explosive atmosphere. No damages were noticed at the case.

5 Summary

It was noticed with the examinations that the Motor protector type DRB-B series at the conditions mentioned under 2 has the ignition safety (the non-ignition of an explosive atmosphere) fixed in IEC/EN 60079-15:2005 according to type of protection enclosed-break device for gases and vapors of the Group IIA. The explosions triggered inside the switching chamber by the break spark occurred no external ignitions of the outer explosive atmosphere.

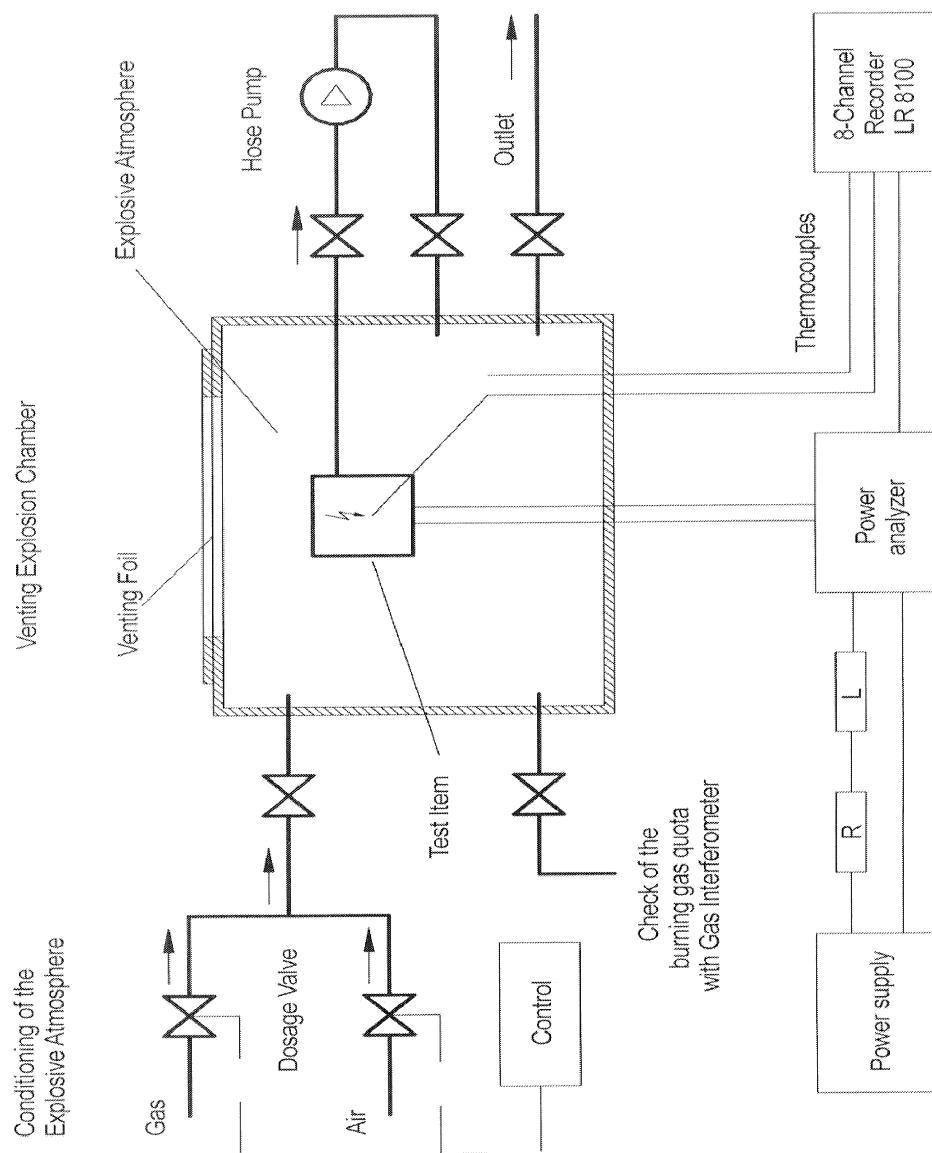
The assessment of the constructive design of the Motor protector regarding to the compliance with the requirements of IEC/EN60079-15 for apparatus of the type of protection "n" (apparatus for zone 2) was not object of these examinations.

The test result exclusively refers to the Motor protector specified under chapter 2 type DRB-B series.

Annexes

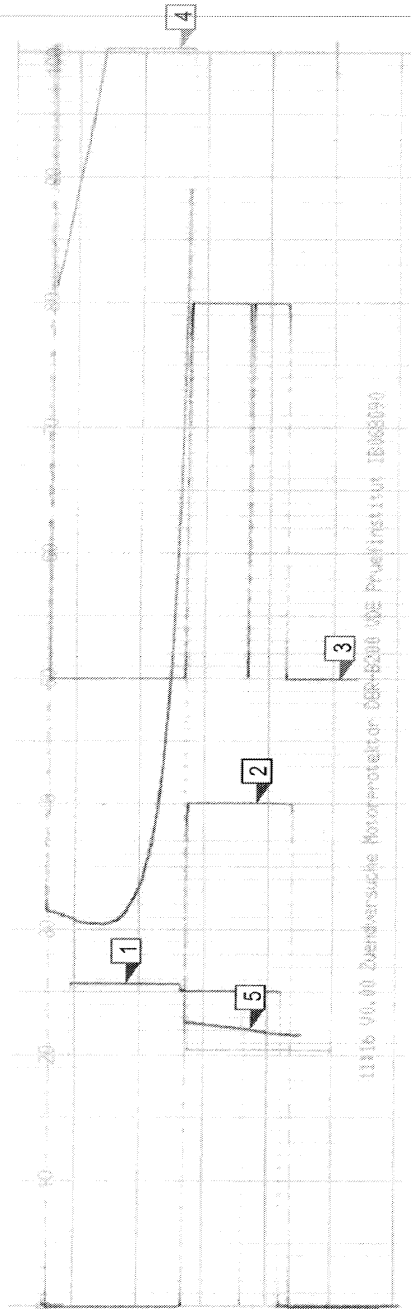
Annex 1	Schematic setup of the test equipment
Annex 2	Representation of the test parameters (5 sheets)

Annex 1: Schematic setup of the test equipment



N161445133

Test parameters Pre-test



- Remarks:
- 1 - Voltage
 - 2 - Current
 - 3 - Power factor
 - 4 - Temperature test chamber
 - 5 - Temperature test item

Test parameters Test No. 1.01

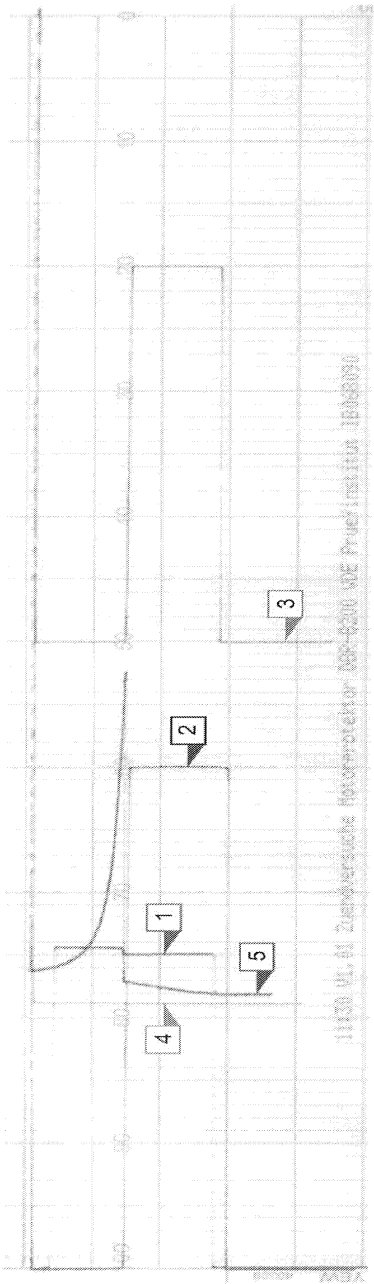


Chart speed: 5 s/scale part

Range 0 ... 1000 V
Range 0 ... 50 A
Range 1_{cap.} ... 0 ... 1_{ind.}
Range 0 ... 100 °C
Range 0 ... 100 °C

- 1 - Voltage
2 - Current
3 - Power factor
4 - Temperature test chamber
5 - Temperature test item

Remarks:

IBEXU

Institut für Sicherheitstechnik GmbH
Annex 2, sheet 3 to report IB-06-8-090

Test parameters Test No. 2.03

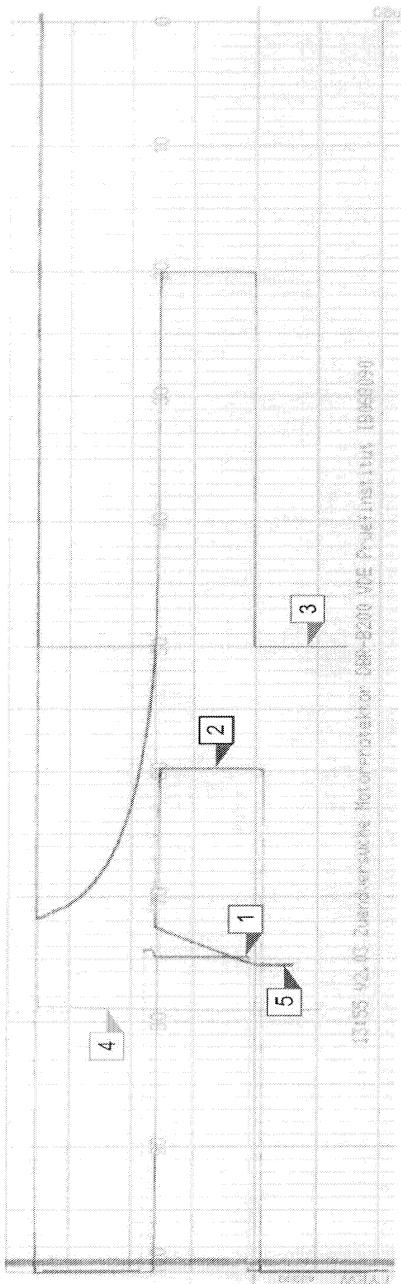


Chart speed: 5 s/scale part

Range 0 ... 1000 V
Range 0 ... 50 A
Range 1_{cap} ... 0 ... 1_{ind}
Range 0 ... 100 °C
Range 0 ... 100 °C

1 - Voltage
2 - Current
3 - Power factor
4 - Temperature test chamber
5 - Temperature test item

Remarks:

IBEXU

Institut für Sicherheitstechnik GmbH

Annex 2, sheet 4 to report IB-06-8-090

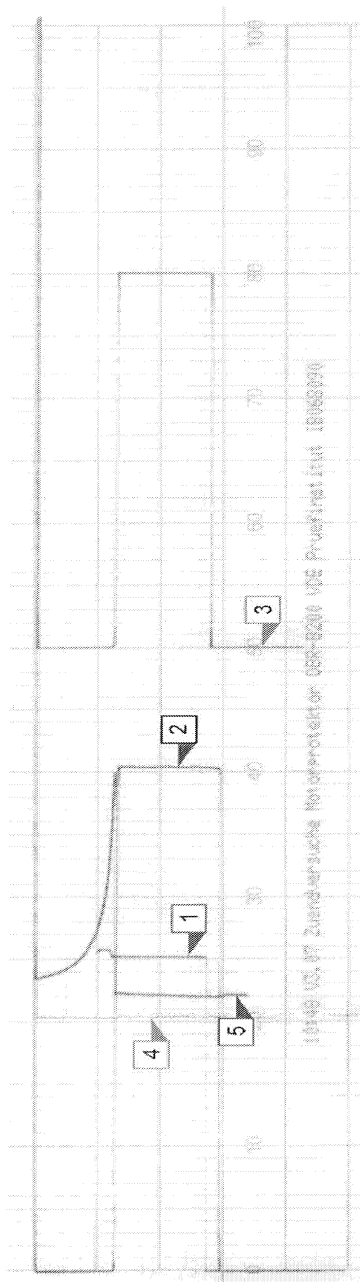
Test parameters Test No. 3.07

Chart speed: 5 s/scale part

Remarks:

- 1 - Voltage
- 2 - Current
- 3 - Power factor
- 4 - Temperature test chamber
- 5 - Temperature test item

- Range 0 ... 1000 V
- Range 0 ... 50 A
- Range 1_{cap.} ... 0 ... 1_{ind.}
- Range 0 ... 100 °C
- Range 0 ... 100 °C

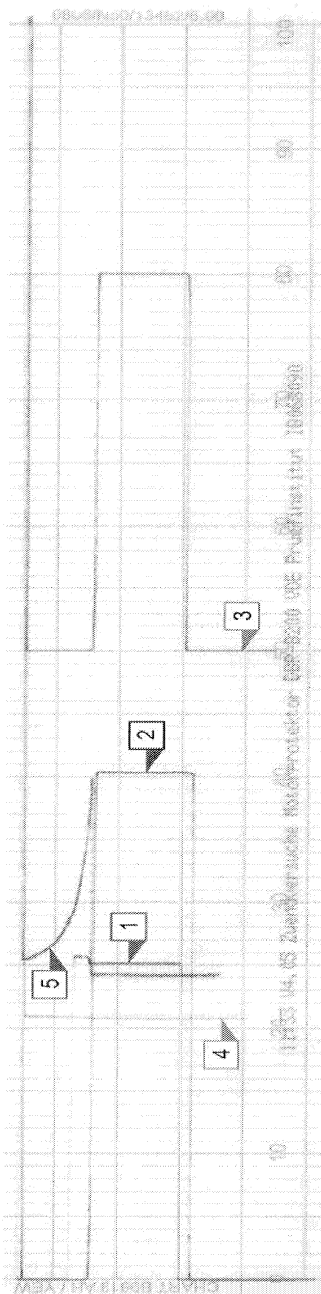
N161445133

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Annex 2, sheet 5 to report IB-06-8-090

Test parameters Test No. 4.08



Remarks:

- 1 - Voltage
- 2 - Current
- 3 - Power factor
- 4 - Temperature test chamber
- 5 - Temperature test item

Chart speed: 5 s/scale part

Range 0 ... 1000 V
Range 0 ... 50 A
Range 1 ... 0 ... 1 ind.
Range 0 ... 100 °C
Range 0 ... 100 °C

N161445133



防爆电气设备 防爆合格证

编 号: CNEx13.4305X

制 造 单 位	九江恒通自动控制器有限公司
产 品 名 称	地址: 九江市开发区城西港区港兴路 18 号 防爆温度控制器
型 号 规 格	WDF 250VAC 50/60HZ 5A
防 爆 标 志	Ex nC IIA T1 Gc
产 品 标 准	HTQBEx-2011
总 装 图 号	LB11-IIT

经对上述产品图样及技术文件的审查和样品检验, 确认符合下列标准:
IEC60079-0: 2007 爆炸性环境 第 0 部分: 设备 通用要求
IEC60079-15: 2010 爆炸性环境 第 15 部分: 由“n”型保护的设备

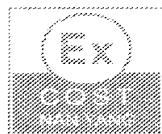
记 事

1. 该产品适用于制冷剂为 R600a 的电冰箱中。
2. 防爆温度控制器安装后插脚应有可靠防护, 满足 IP54 要求。

本证有效期 2013 年 12 月 30 日至 2018 年 12 月 29 日

颁发日期 2013 年 12 月 30 日

中 心 主 任



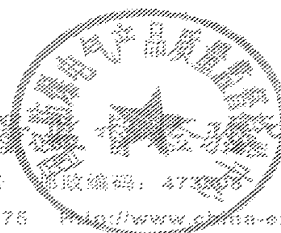
国家防爆电气产品质量监督检验中心

地址: 中国河南省南阳市仲梁北路 20 号

电话: 0377-63258364

传真: 0377-63206176

邮政编码: 473008

Email: www.cnma-ex.com

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N161445134



防爆电气设备 防爆合格证

编 号: CNEx13.4303X

制造单位	九江恒通自动控制器有限公司
产品名称	地址: 九江市开发区城西区港区港兴路 18 号 防爆温度控制器
型号规格	WP 250VAC 50/60Hz 6A
防爆标志	Ex nC IIA T1 Gc
产品标准	HTQBEx-2011
总装图号	LB12-HT

经对上述产品图样及技术文件的审查和样品检验, 确认符合下列标准:

IEC60079-0: 2007 爆炸性环境 第 0 部分: 设备 通用要求

IEC60079-15: 2010 爆炸性环境 第 15 部分: 由“n”型保护的设

记 事

1. 本证书可代表产品:

WP 250VAC 50/60Hz 6A、WPF 250VAC 50/60Hz 6A,
防爆标志: Ex nC IIA T1 Gc。

2. 该产品适用于制冷剂为 R600a 的电冰箱中。

3. 防爆温度控制器安装后插脚应有可靠防护, 满足 IP54 要求。

本证有效期

2013 年 12 月 30 日至 2018 年 12 月 29 日

颁发日期

2013 年 12 月 30 日

中心主任



国家防爆电气产品质量监督检验中心

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C161855531

DESCRIPTION

PRODUCT COVERED:

USL, CNL Household refrigerator, Model KS-158R, **KS-91R**.

GENERAL:

The model covered by this Report is intended for free-standing in household use. Defrost is accomplished manually or semi-automatically. During semi-automatic defrost, the defrost cycle is manually initiated and automatically terminated, with automatic resumption of normal refrigeration at the conclusion of defrost operation. Manual initiation is realized by pressing the small shaft on main shaft of the thermostat.

Refrigeration tubing or other devices through which the refrigerant is intended to be serviced shall be painted or colored red, Pantone® Matching System (PMS) No. 185. This color shall be present at all places where service puncturing or otherwise creating an opening in the refrigerant circuit might be expected. In the case of a process tube on a compressor, the color mark shall extend at least 2.5 cm (1 inch) from the compressor.

TECHNICAL CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE'S USE):

USL - Products designated USL have been investigated using requirements contained in the Standard for Household and Similar Electrical Appliances, Part 2: Particular Requirements for Refrigerating Appliances, Ice-Cream Appliances and Ice-Makers, UL 60335-2-24, and for Safety of Household and Similar Electrical Appliances, Part 1: General Requirements, UL 60335-1.

CNL - Products designated CNL have been investigated using requirements contained in Standard for Household and Similar Electrical Appliances, Part 2: Particular Requirements for Refrigerating Appliances, Ice-Cream Appliances and Ice-Makers, CAN/CSA-22.2 No.60335-2-24-06, and for Safety of Household and Similar Electrical Appliances, Part 1: General Requirements, CAN/CSA-22.2 No.60335-1-11.

RATINGS:

See MARKING.

MODEL DIFFERENCES:

Only a model

INSTRUCTIONS:

Each unit is provided with installation and operating instructions, refer to ILL. 1.

The instructions include the following wording regarding the use of extension cords: Do not use extension cords or ungrounded (two prong) adapters.

The instructions shall state the substance of the following:

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

Children should be supervised to ensure that they do not play with the appliance.

If the SUPPLY CORD is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified person in order to avoid a hazard.

A child entrapment warning statement shall be included in either the operating instructions or in a use and care manual provided with each refrigerator and shall include the following or equivalent wording:

* Take off the doors

* Leave the shelves in place so that children may not easily climb inside.

For models which use FLAMMABLE REFRIGERANTS, the instructions shall include information pertaining to the installation, handling, servicing and disposal of the appliance. The instructions shall also include the substance of the warnings listed below.

- WARNING: Keep ventilation openings, in the appliance enclosure or in the built-in structure, clear of obstruction.

- WARNING: Do not use mechanical devices or other means to accelerate the defrosting process, other than those recommended by the manufacturer.

- WARNING: Do not damage the refrigerant circuit.

- WARNING: Do not use electrical appliances inside the food storage compartments of the appliance, unless they are of the type recommended by the manufacturer.

For appliances which use flammable insulation blowing gases, the instructions shall include information regarding disposal of the appliance.

10 MARKING:

10-5 Nameplate Marking

Recognized (PGDQ2, 8)

Model KS-158R

Material

Manufacturer

See Sec. Gen.

Recognized Designation

See Sec. Gen.

Location

Unit Rear or side

Secured By

Adhesive

Listee Name

See cover page

Refrigerant

- Type

R600a

- Amount, oz (g)

1.06 (30)

Design Pressure

High Side, psig (Not required)

363

Low Side, psig (Not required)

127

Electrical Rating

V

115

A - (Refrigeration) (Total)

2.0

Frequency, Hz

60

Note (for reference only)

@1

Note	Condenser	Evaporator	Capillary	Compressor
@1	ILL. 3	ILL. 2	Cap1	L48C5L

10 MARKING:

10-5 Nameplate Marking

Recognized (PGDQ2, 8)

Model

KS-91R

Material

Manufacturer

See Sec. Gen.

Recognized Designation

See Sec. Gen.

Location

Unit Rear or side

Secured By

Adhesive

Listee Name

See cover page

Refrigerant

- Type

R600a

- Amount, oz (g)

0.74 (21)

Design Pressure

High Side, psig (Not required)

250

Low Side, psig (Not required)

88

Electrical Rating

V

115

A - (Refrigeration) (Total)

1.0

Frequency, Hz

60

Note (for reference only)

@2

Note	Condenser	Evaporator	Capillary	Compressor
@2	ILL. 3A	ILL. 2A	Cap1	VY35R16G

10-10 Special Marking

Model	KS-158R
A. Type or Material	Printed
Location	Adjacent to the lamp cover
Quote Marking	10 W Max or equivalent
Model	All
B. Type or Material	Same as nameplate or mold on unit rear
Manufacturer	See Sec. Gen.
Recognized Designation	See Sec. Gen.
Location	Unit Rear
Quote Marking	C-PANTANE
Comments	Letter size not less than 16.2 mm in height

Model	All models employed with refrigerant R600a	
C.	Type or Material	Same as nameplate
	Manufacturer	See Sec. Gen.
	Recognized Designation	See Sec. Gen.
	Location	Near the evaporator
	Quote Marking	DANGER - Risk Of Fire Or Explosion. Flammable Refrigerant Used. Do Not Use Mechanical Devices To Defrost Refrigerator. Do Not Puncture Refrigerant Tubing.
Comments		letters no less than 6.4 mm high
D.	Type or Material	Same as nameplate
	Manufacturer	See Sec. Gen.
	Recognized Designation	See Sec. Gen.
	Location	On the unit back, near compressor compartment
	Quote Marking	DANGER - Risk Of Fire Or Explosion. Flammable Refrigerant Used. To Be Repaired Only By Trained Service Personnel. Do Not Puncture Refrigerant Tubing. CAUTION - Risk Of Fire Or Explosion. Flammable Refrigerant Used. Consult Repair Manual/Owner's Guide Before Attempting To Service This Product. All Safety Precautions Must be Followed.
Comments		letters no less than 6.4 mm high
Model	All models employed with refrigerant R600a	
E.	Type or Material	Same as nameplate
	Manufacturer	See Sec. Gen.
	Recognized Designation	See Sec. Gen.
	Location	On the unit back, near compressor compartment
	Quote Marking	CAUTION - Risk Of Fire Or Explosion. Dispose Of Property In Accordance With Federal Or Local Regulations. Flammable Refrigerant Used.
Comments		letters no less than 6.4 mm high

10-10 Special Marking (CONT'D)

F.	Type or Material	Same as nameplate
	Manufacturer	See Sec. Gen.
	Recognized Designation	See Sec. Gen.
	Location	On the unit back, near compressor compartment and shipping carton
	Quote Marking	CAUTION - Risk Of Fire Or Explosion Due To Puncture Of Refrigerant Tubing; Follow Handling Instructions Carefully. Flammable Refrigerant Used.
	Comments	letters no less than 6.4 mm high
G.	Type or Material	Same as nameplate
	Manufacturer	See Sec. Gen.
	Recognized Designation	See Sec. Gen.
	Location	On the unit back, near compressor compartment
	Quote Marking	
	Comments	Sign shall be at least 16.2 mm high.
H.	Type or Material	Same as nameplate
	Manufacturer	See Sec. Gen.
	Recognized Designation	See Sec. Gen.
	Location	On the unit back, near compressor compartment
	Quote Marking	R600a
	Comments	Letters no less than 16.2 mm high.
I.	Type or Material	Printed or coated
	Location	Compressor process tube
	Comments	Compressor process tube shall be printed in red, Pantone® Matching System (PMS) No. 185

20 ENCLOSURES:

20-5 Ultimate Enclosure

Model	KS-158R	KS-91R
Approximate Physical Size (including door), H x W x D, mm	865 x 596 x 593	831 x 490 x 445

20-10 Unit Base and Compressor Compartment Top

*Model	KS-158R	KS-91R
Material	Steel	Steel
Thickness, mm	Min. 0.25	Min. 0.4
Corrosion Protection (Method)	Galvanized OR PANT COATEING	
Bonding for Grounding (Method)	Screw-connected with machine compartment base	

20-15 Compressor Compartment Base

Model	All
Material	Steel
Thickness, mm	Min. 0.8
Corrosion Protection (Method)	GALVANIZED
Bonding for Grounding (Method)	Grounded by the power cord

20-20 Unit Sides and Top/Compartment Top

Model	All
Material	Steel
Thickness, mm	Min. 0.25
Corrosion Protection (Method)	Galvanized or Paint Coating
Bonding for Grounding (Method)	Screw-connected with unit base.
comment	Unit sides and unit top is molded in an integrated body

20-25 Unit Rear

Model	KS-158R	KS-91R
Material	Steel	Steel
Thickness, mm	Min. 0.25	Min. 0.25
Compressor Compartment Opening H x W, mm	202 x 520	210 x 370
Corrosion Protection (Method)	Galvanized or Paint Coating	
Bonding for Grounding (Method)	Incorporate with unit sides	

20-30 Cabinet Liner

Model	All
Material	Plastic, See Item 30 for details

20-35 Unit Doors

Model	KS-158R, KS-91R
Material	Steel
Thickness, mm	Min. 0.4
Corrosion Protection (Method)	Paint or Pre-painted
Bonding for Grounding (Method)	Not required

20-40 Cabinet Door Liner

Model	KS-158R, KS-91R
Material	Plastic, See Item 30 for details

20-50 Door Hinges

Model	KS-158R	KS091R
Top and Bottom Hinge	See Ill. 4 for details	See Ill. 4A for details

20-55 Door Latching Device

*Model	All
Type	magnetic gasket
Comments	Around the unit door

20-60 Control Enclosure

Model	KS-158R	KS-91R
Location	Left of Cabinet Liner, See Fig.4	Located at top of unit inside cabinet
Material	Plastic, See Item 30 for details	
Physical Size, L x W x H, mm	215 x 55 x 57	108 x 74 x 50
Method of Securement	By tabs and screw	Secured to unit cabinet by 1 screw
Openings	One, protected by Lamp Guard	None
Components Within	Thermostat, Lamp holder, Lamp	Thermostat
Illustration NO.	ILL. 5	ILL. 5A

20-65 Condensate water tray

Model	KS-158R	
Location	Compressor Compartment Top, above compressor	
Material	Plastic, See Item 30 for details	
Method of Securement	by screws to machine compartment	
Illustration NO.	ILL. 6	

20-70 Lamp Guard

Model	KS-158R
Location	Located at left of unit inside cabinet
No. of Lamp Guard:	1
Material +	Polymeric, see Section 30 for details
Dimension, W x L x H, mm	55x86x55
Thickness, mm. +	2.5
Method of Securement	Secured to Cabinet Liner by screws
Components Within	lamp holder
Illustration NO.	ILL. 12

20-75 Condenser Fan Motor Bracket

Model	KS-158R
Location	Located at Compressor Compartment
No. of Motor Bracket:	1
Material +	Polymeric, see Section 30 for details
Dimension, W x L x H, mm	162x77.5x203
Thickness, mm. +	2.0
Method of Securement	Secured to base and top of Compressor Compartment by screws
Illustration NO.	ILL. 13

20-80 Drip tray

Model	KS-91R	
Location	Beneath the evaporator in fresh food compartment	
Material	Plastic, See Item 30 for details	
Method of Securement	Integral guides formed in the cabinet and on the controller enclosure	
Illustration NO.	ILL. 6A	

30 NONMETALLIC COMPONENTS:

Model	KS-158R, KS-91R
Cabinet Liner (Vacuum Formed)	Recognized (QMFZ2)
Manufacturer	Various
Material Designation	Various
Thickness, mm (minimum) +	1.5
Flammability Classification (minimum)	HB
Cabinet Door Liner (Vacuum Formed)	Recognized (QMFZ2)
Manufacturer	Various
Material Designation	Various
Thickness, mm (minimum) +	1.5
Flammability Classification (minimum)	HB
Control Enclosure	Recognized (QMFZ2)
Manufacturer	Chi Mei Corporation (E56070)
Material Designation	PA-765 or PA-765A
Thickness, mm (minimum)	2.0
Flammability Classification (minimum)	5VB

+ - Minimum thickness of sheet stock before forming.

Model	KS-158R
Lamp guard	Recognized (QMFZ2)
Manufacturer	CHI MEI CORPORATION (E56070)
Material Designation	PH-872A
Thickness, mm (minimum)	2.5
Flammability Classification (minimum)	V-0
Condensate water tray, Drip tray	Recognized (QMFZ2)
Manufacturer	Various
Material Designation	Various
Thickness, mm (minimum)	1.2
Flammability Classification (minimum)	HB

+ - Minimum thickness of sheet stock before forming.

Model**KS-158R**

Condenser fan bracket

Recognized (QMFZ2)

Manufacturer

Chi Mei Corporation (E56070)

Material Designation

PA-765 or PA-765A

Thickness, mm (minimum)

2.0

Flammability Classification
(minimum)

5VB

30-5 Isolation From Ignition Sources

Model

All

All units wiring is Recognized (AVLV2, AVLV8 or CSA Certified) and rated VW-1, FT-1 or Listed SJT (rated FT-1 or FT-2) power cord. All wiring is routed and secured within the machine compartment or the cabinet liner. All wire splices are totally insulated and there are no exposed live parts. There are no open coils or exposed high voltage parts.

40 REFRIGERATION SYSTEM:

40-5 Condenser

Model	KS-158R
Manufacturer	CHANGZHOU RONGWEI
Corrosion Protection (Method)	Galvanized
Mounting (Method)	Secured by aluminum adhesive tapes to the sides of the Unit and foamed in place
Bonding for Grounding (Method)	Through tubing to compressor
Type of Construction	
Tube on Plate	
Plate Material	See Unit Sides and Top
Tubing Material	Galvanized steel
Tubing OD, mm	4.76
Tubing Wall Thickness, mm	0.71
Total Tube Length, mm	Approximate 8900
Illustration No.	ILL. 3
Test Pressure, MPa	9.7

40-10 Evaporator

Model	KS-158R
Manufacturer	See cover page
Corrosion Protection (Method)	Inherent
Mounting (Method)	Secured by screws to the liner.
Bonding for Grounding (Method)	Through tubing to compressor
Type of Construction	Roll bond
Material	Aluminum
Thickness, mm	1.0
Size, mm	383 x 523
Illustration No.	ILL. 2
Test Pressure, MPa	3.7

40 REFRIGERATION SYSTEM:

40-5 Condenser

Model	KS-91R
Manufacturer	CHANGZHOU RONGWEI
Corrosion Protection (Method)	Painted
Bonding for Grounding (Method)	Through tubing to compressor
Type of Construction	Continuous tubing
Tubing Material	Steel
Tubing OD, mm	4
Tubing Wall Thickness, mm	0.5
Total Tube Length, mm	Approximate 5410
Illustration No.	ILL. 3a
Design Pressure, psig	250

40-10 Evaporator

Model	KS-91R
Manufacturer	NINGBO ZHENGXIN
Corrosion Protection (Method)	Painted
Mounting (Method)	Secured by screws to the liner.
Bonding for Grounding (Method)	Through tubing to compressor
Type of Construction	Tube on plate
Plate Material	Plastic
Plate thickness, mm	0.1
Tubing Material	Aluminum
Tubing Wall Thickness, mm	0.6
Illustration No.	ILL. 2a
Design Pressure, psig	88

40-15 Pressure Relief

Model	KS-158R, KS-91R
Means Provided	Soldered or Brazed Joint
Location	Refrigeration tubing joints

40-20 Drier

Model	KS-158R	KS-91R
Manufacturer	See cover page	CIXI JIASHENG CO., LTD
Material	Copper	
Length, mm	100	85
OD, mm	19	19
Wall Thickness, mm	0.5	
Location	In Machine Compartment, near the compressor	
Corrosion Protection (Method)	Inherent	
Illustration No.	ILL. 7	ILL. 7a
Tested strength, MPa	9.7	14.9

40-30 Refrigerant Control

Model	KS-158R	KS-91R
Capillary Tube - No. Provided	1	
Material	Copper	
ID, mm	1.9	1.8
Wall Thickness, mm	0.6	0.6
Length, mm	2200	2000
Capillary No. (For reference only)	Cap 1	

40-35 Refrigeration System Joints

Model	KS-158R, KS-91R
*Method of Joining	Brazed Joint

Note: Copper-aluminum transition joints are painted to prevent galvanic corrosion.

50 MOTOR - COMPRESSOR ASSEMBLY:

50-5 Compressor	Recognized (SLIS2)
Model	KS-158R
Manufacturer	Huayi Compressor (jingzhou) Co Ltd (SA13324)
Designation	L48C5L
Electrical Rating	
Volts	115
RLA (Not for Inspector Use)	1.44
LRA	6.0
Phase	1
Cycle	60
Bonding for Grounding (Method)	Through a bonding conductor with a screw to Machine Compartment
Overload Protector (YFZW2, 8)	External+
Manufacturer	Hang Zhou Star Shuaier Electric Appliance Co., Ltd (E213160)
Designation	DRB19P61A1
Location	Compressor Terminal Enclosure
Note	For Certificates of IEC 60079-15, please refer to ILL. 8
Compressor Start Assist Device+	Recognized (SDFY2, 8)
Type	PTC Type
Manufacturer	GUANGZHOU SENBAO ELECTRICAL APPLIANCES CO LTD (SA233078)
Designation	QP2-4.7 (QP2-4.7G12, the Model name used by the applicant)
Location	Compressor Terminal Enclosure
+ Part of Recognized motor-compressor assembly.	

50 MOTOR - COMPRESSOR ASSEMBLY:

50-5 Compressor	Recognized (SLIS2)
Model	KS-91R
Manufacturer	JIANGSU BAIXUE ELECTRIC APPLIANCES CO LTD (SA13327)
Designation	VY35R16G
Electrical Rating	
Volts	115
RLA (Not for Inspector Use)	0.65
LRA	3.5
Phase	1
Cycle	60
Bonding for Grounding (Method)	Through a bonding conductor with a screw to Machine Compartment
Overload Protector (YFZW2, 8)	External+
Manufacturer	Hang Zhou Star Shuaier Electric Appliance Co., Ltd (E213160)
Designation	DRB18B61A1
Location	Compressor Terminal Enclosure
Note	For Certificates of IEC 60079-15, please refer to ILL. 8A
Compressor Start Assist Device+	Recognized (SDFY2, 8)
Type	PTC Type
Manufacturer	HANGZHOU STAR SHUAIER ELECTRIC APPLIANCE CO., LTD (E232371)
Designation	QP2-4R7
Location	Compressor Terminal Enclosure

+ Part of Recognized motor-compressor assembly.

60-05 Condenser Fan Motor- Recognized (XEIT2, 8)

*Model	KS-158R
Manufacturer	JIANGSU WILLTORN TECH CO LTD (E479445)
Designation	ZYD-2J-6.5SF
Ratings	115 Vac, 60 Hz, 6.5 W, Class A
Protection	Impedance protected
Leads	No. 18 AWG, Type 1015 / TEW, each lead wire is protected with a PVC sleeving.
Mounting	The fan Screw mounted to a Fan bracket which is measured 162 mm by 203 mm with a 110 mm dia. opening for the fan blades.
Note	Motor is enclosed by rear cover of the compressor compartment and is not accessible from the outside.

70 ELECTRICAL COMPONENTS:

70-5 Temperature Controller
(Thermostat)

Recognized (SDFY2) (XAPX2)

Model	KS-158R, KS-91R
Use (Loads Controlled)	Compressor
Manufacturer	JIUJIANG HENG TONG AUTOCONTROL DEVICE CO LTD (E225669)
Designation	WPF24 series, WDF24 series
Rating, V ac, FLA, LRA	125/6/36
Location (Physical)	Inside refrigerator compartment and within thermostat enclosure
Mounting	Screws to thermostat enclosure.
Bonding for Grounding (Method)	A green/yellow ground wire is secured to the thermostat mounting plate and to the grounding terminal of the compressor.
Marked Switch Positions	0,1,2,3,4,5,6,7
Note	Located in ungrounded side of power supply
Comments	This model was evaluated according to IEC 60079-15 for ignition protection.

Note: For Thermostat's Certificates of IEC 60079-15, please refer to ILL. 9.

70 ELECTRICAL COMPONENTS:

70-5 Temperature Controller
(Thermostat)

Recognized (SDFY2) (XAPX2)

Model	KS-91R
Use (Loads Controlled)	Compressor
Manufacturer	CHANGZHOU THERMOSTER ELECTRICAL APPLIANCE CO LTD (E188259)
Designation	WPF24 series, WDF24 series
Rating, V ac, FLA, LRA	125/6/36
Location (Physical)	Inside refrigerator compartment and within thermostat enclosure
Mounting	Screws to thermostat enclosure.
Bonding for Grounding (Method)	A green/yellow ground wire is secured to the thermostat mounting plate and to the grounding terminal of the compressor.
Marked Switch Positions	0,1,2,3,4,5,6,7
Note	Located in ungrounded side of power supply
Comments	This model was evaluated according to IEC 60079-15 for ignition protection.

Note: For Thermostat's Certificates of IEC 60079-15, please refer to ILL. 9A, 9B.

70-10 Switches - Recognized (WOYR2, 8)

Model	KS-158R
Use (Loads Controlled)	Lamp
Manufacturer	ZHEJIANG CHANGDECHENG ELECTRIC APPLIANCES CO LTD (E239938)
Designation	HC-050K.4
Rating	125V , 60Hz, 5A
Location (Physical)	Cabinet Liner (Fresh Food Compartment)
Mounting	Rectangular switch is snap-fitted into rectangular opening
Note	Located in the ungrounded side of power supply

Note: For Switch's Certificates of IEC 60079-15, please refer to ILL. 10.

70-15 Lamp holder Recognized (SEVS2)

Model	KS-158R
Manufacturer	ZHEJIANG CHANGDECHENG ELECTRIC APPLIANCES CO LTD (E350599)
Designation	E12-3,E12-1
Rating	125V,75W
Location	In the fresh food compartment
Mounting	Snap-fit into Temperature Controller Enclosure
Prevented from turning by:	Snap-fit into Temperature controller

Note: The screw shell is connected to the grounded side of the power supply.

For Lampholder's Certificates of IEC 60079-15, please refer to ILL. 11.

80 INTERNAL WIRING:

80-5 Types

Recognized (AVLV2) appliance wiring material(1), Listed cords or Listed insulated wiring as described below. Wiring which is color-coded green or green with one or more yellow stripes is employed on grounding conductors only.

Model

All

Key No.	Wire Type (2)	Wire Style No. (3)	Minimum Wire Size AWG (5)	Insulation (4)		
				Minimum Wall Thickness, mm	Minimum Temperature Rating, °C	Minimum Rating, V
1	AWM	1015	18	0.8	105	300

- (1) Acceptable for refrigeration use.
- (2) Appliance wiring material, cord type or Listed wire type.
- (3) Applies only to Recognized appliance wiring material.
- (4) Information on the voltage and temperature ratings for the insulation of wiring that has a marked National Electrical Code Type designation need not be provided.
- (5) **The minimum size of Lead wire for lamp assembly is 20 AWG.**

80-10 Wiring Methods

All wiring is installed and positively routed in such a manner that it is not subject to mechanical damage due to contact with sharp edges, abrasive surfaces, vibrating or moving parts. Exposed lengths of ripped parallel conductors do not exceed 3 mm

Wiring which is completely enclosed within steel conduit, metal raceways, metallic tubing, cabinet walls, or other separate electrical enclosures employs 2/64 mm thick (minimum) electrical insulation unless specified differently in this Report.

Wiring which is not completely enclosed as specified above employs 4/64 mm thick (minimum) electrical insulation unless specified differently in this Report.

Cords or appliance wiring material employed in the refrigerated compartment has 4/64 mm thick (minimum) electrical insulation and is located or protected so as not to be subjected to contact by product containers, removable shelves, and the like.

Green or green with yellow stripe wire may be employed only as grounding conductors. Splices are not employed in grounding conductors unless otherwise noted in the Report.

Holes for the passage of wires or cords through walls, panels or barriers have smooth, rounded surfaces or are provided with smoothly rounded bushings.

All splices are mechanically secured to a fixed member or located in a separate enclosure.

Unless otherwise noted all wires terminate in quick-connect or eyelet type materials.

Wiring diagrams shown in

ILL.14, **ILL.14a**

Model

KS-158R, **KS-91R**

Model

All

Wiring is employed as follows:

No. From Previous Page	Specify the electrical components connected to the wiring described		Specify all details of wire routing including locations and types of clamps, means of isolating from combustible materials, Recognized splice and wire connecting lead terminations, etc.
Key No.	From	To	Details
1	Power supply cord	Compressor	All splices employ recognized connectors and are insulated. The wire connector was located in Compressor Terminal Enclosure
1	Compressor	Thermostat , lamp	Routed within cabinet liner, all splices employ recognized connectors and are insulated. Wiring was enclosed by recognized insulation tube which at least 1mm thick.
1	Thermostat	lamp switch	Routed within cabinet liner, all splices employ recognized connectors and are insulated.
1	Lamp Switch	Lamp	Routed within cabinet liner, all splices employ recognized connectors and are insulated.

90 SUPPLY CONNECTIONS:

90-5 Cord Connected Unit

Model	KS-158R, KS-91R
Power Supply Cord Set	Listed
Type	SE, SO, SOO, ST, STO, STOO, SJ, SJE, SJO, SJOO, SJT, SJTO, SJTOO, SP-3, SPE-3, SPT-3
Size, AWG	18
Attachment Plug Rating, V, A	125, 15
Strain Relief Means	Supply cord is pressed between a two-piece plastic clamp that is secured to the cabinet base by two screws.
Cord Length, ft	5 Minimum, 10 Maximum
Grounding Conductor Color	Green With or Without Yellow Stripes
Securement of Grounding Conductor	
Location	On the Unit base
Means	Screw, See Fig.5 for details

100 SHELVING AND DRAWERS:

100-5 Shelves

Model	KS-158R
A. Location	Refrigeration Compartment
Material	Glass
Dimensions, mm (D x W)	345 x 507
Thickness, mm	4.0
No. of Shelves	1
Method of Support	Support on both sides by Unit Cabinet liner
Method of Restraint	By slot on the end of both sides
Illustration No.	ILL. 15
Model	KS-158R
B. Location	Refrigeration Compartment
Material	Glass
Dimensions, mm (D x W)	223 x 502
No. of Shelves	1
Method of Support	Support on both sides by Unit Cabinet liner
Method of Restraint	Not required
Illustration No.	ILL. 16
Comments	Served as drawer cover

100 SHELVING AND DRAWERS:

100-5 Shelves

Model	KS-91R	
A. Location	Cabinet Upper	Cabinet Lower
Material	Glass	
Manufacturer	Jiangsu Zhongke Ruiteng Co., Ltd	
Dimensions, mm (D x W)	250 x 373	180 x 373
Thickness, mm	4.0	4.0
No. of Shelves	N/A	
Method of Support	Integral guides formed in the cabinet liner	
Method of Restraint	Plastic stud on back of shelf	

100-6 Crisper- Optional

*Model	KS-91R
Location	Bottom of unit cabinet
Material	Plastic, see Section 30 for details
Dimensions, mm. (D x W x H)	132 x 355 x 205
Approximate	
Thickness, mm.	3.5

100-10 Drawers

Model	KS-158R
Location	Bottom of Refrigeration Compartment
Material	Plastic
Number	1
Method of Support	Lie on the bottom of Refrigeration Compartment
Method of Restraint	Not required
Comments	Optional, may be not provided
Dimensions, mm. (D x W x H) Approximate.	506 x 219 x 195
Illustration No.	ILL. 17

100-20 Door Shelves

Model	KS-158R
A. Location	Refrigeration Compartment Door
Comment	Door liner is used

100-20 Door Rack As Shelf

*Model	KS-91R
A. Location	Upper Part of Door liner
Dimensions, mm. (H x W x D)	44 x 95 x 333
Number	1
B. Location	Middle Part of Door liner
Dimensions, mm. (H x W x D)	44 x 95 x 333
Number	1
C. Location	Bottom Part of Door liner
Dimensions, mm. (H x W x D)	44 x 95 x 333
Number	1
D. Location	Bottom Part of Door liner
Dimensions, mm. (H x W x D)	44 x 245 x 333
Number	1
E. Location	Bottom Part of Door liner
Dimensions, mm. (H x W x D)	44 x 245 x 145
Number	1

Figure Index

Fig. No.	Comments
1	Unit Front
2	Unit Rear
3	Unit Front with door open
4	Unit of Control Enclosure
5	Unit of compressor compartment

Comment: the figures of model KS-91R refer to SA44289-20150127-Fig.1, Fig.2, Fig.3, Fig.4 and Fig.5.

Illustration Index

Ill. No.	Comments
1	Instruction Manual of model KS-158R
2	Evaporator of model KS-158R
2a	Evaporator of model KS-91R
3	Condenser of model KS-158R
3a	Condenser of model KS-91R
4	Door Hinges of model KS-158R
4a	Door Hinges of model KS-91R
5	Control Enclosure of model KS-158R
5a	Control enclosure of model KS-91R
6	Condensate water tray of model KS-158R
6a	Drip Tray of model KS-91R
7	Drier of model KS-158R
7a	Drier/filter of model KS-91R
8	IEC 60079-15 certificate for OLP of compressor model L48C5L
8a	IEC 60079-15 certificate for OLP of compressor model VY35R16G
9, 9a, 9b	IEC 60079-15 certificate for Thermostat
10	IEC 60079-15 certificate for Switches
11	IEC 60079-15 certificate for lamp holder
12	Lamp guard of model KS-158R
13	Condenser Fan motor bracket
14	Wiring Diagram of model KS-158R
14a	Marking label and Wiring Diagram of model KS-91R
15	Shelf A
16	Shelf B
17	Drawer of model KS-158R











User Manual

Model Number:

KS-158R

Refrigerator

BEFORE USE, PLEASE READ AND FOLLOW ALL SAFETY RULES AND OPERATING INSTRUCTIONS.

Dear customers,

Thank you for purchasing our product. In order to ensure your safety and achieve the best using effect, please read this instruction manual carefully.

Before you start:

- Read all the instructions before using. Keep this manual for future reference.
- Warning: Never try to use this appliance for applications or in a way which is not described in the instruction, otherwise severe hazards may occur.
- Do not use the appliance in a dusty environment or in an explosive atmosphere (flammable gases, vapors, vapors from organic solvents).
- This appliance is intended for HOUSEHOLD USE ONLY and not for commercial or industrial use.

General safety advice

IMPORTANT SAFETY INSTRUCTIONS



To reduce the risk of fire, electrical shock, or injury follow these basic precautions when using your refrigerator

- 1) **WARNING----DANGER:** Never allow children to play with, operate, or crawl inside the refrigerator. Risk of child entrapment. Before you throw away your old refrigerator or freezer:
 - Take off the doors
 - Leave the shelves in place so that children may not easily climb inside.

This warning is not for EUROPEAN market:

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

Children should be supervised to ensure that they do not play with the appliance.

Do not use extension cords or ungrounded (two prong) adapters with this appliance. If the power cord is too short, have a qualified electrician install an outlet near the appliance. Use of an extension can negatively affect the unit's performance.



This warning is only for EUROPEAN market only:

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

- Unplug the appliance from outlet when not in use, before putting on or taking off parts, before cleaning.
- Make sure to place the plug all the way into socket when connecting your appliance.
- Insert the plug into a single grounded socket.
- Never use the appliance in place where combustible and inflammable materials are kept.
- For safety reason, be sure to repair or replace parts at an authorized service dealers.
- If the supply cord is damaged, it must be replaced by a special cord or assembly available from the manufacturer or its services agent.
- The motor is permanently lubricated and will require no oil.
- The appliance must be positioned so that the plug is accessible.
- Please according to local regulations regarding disposal of the appliance for its flammable blowing gas. Before you scrap the appliance, please take off the doors to prevent children trapped.

This appliance is intended to be used in household and similar applications such as

- staff kitchen areas in shops, offices and other working environments;
- farm houses and by clients in hotels, motels and other residential type environments;
- bed and breakfast type environments;
- catering and similar non-retail applications.

I. Tips and Hints

1. Fresh foods such as fish and meat can be frozen to maintain freshness, and keep the nutrients in the food.
2. Food should be wrapped in aluminum foil, or some other type of airtight packing.
3. Do not allow frozen food in freezer to touch foods just placed into freezer. It can damage the food.
4. Frozen foods from the store should be placed in the freezer promptly, so they do not thaw.
5. Never place fresh vegetables and fruits into the freezer as they can get freezer burn.

II. Caution Of Safety

1. Individual single-phase socket must be used. It should be reliably connected to a grounding wire.

Caution: Do not connect grounding wire to a water or gas pipe.

2. no storing strong base, strong acid, organic solvent and corrosive goods together with food.
3. Do not pour water directly onto the freezer, which may cause declining of insulation and corrosiveness.
4. When the refrigerator will no be used for a long time, disconnect the power cord then clean it. Please examine the wiring circuit before using it.
5. refer to the Trouble Shooting references when the unit is facing some problems. Do not attempt to solve the problem on your own, please refer to certified technician only.

III. Caution for using.

1. Unpack all packages before using the refrigerator. Do not topple it over more than 60° while moving it. Even though it can be moved slowly with the universal wheels under its base, the wheels were not meant for uneven ground usage which may damage it and other parts if used vigorously.
2. Place the freezer at your desired place and do not operate it for at least 1 hour. The refrigerator should be installed in the environment of good ventilation, cool and dry. Avoid placing it nearby heat generating equipment and under direct sunlight. When installing, the universal wheels should be padded firmly so as to avoid excess vibration and noise.
3. After 1 hour the refrigerator should be run empty upon initial operation. Please turn the thermostat knob to 7 and food can be stored just after 4 hours of initial running. Food must occupy 1/3 of the storage area and evenly arranged. They must be wrapped in plastic bags to obtain the original freshness and taste.

4. Temperature can be adjusted by using the thermostat. Clock wise turning will decrease the temperature whilst anti-clockwise to increase. Figures shown indicate the temperature level: 3-5 for normal, 0 for stop running and 6 for continuously running.

Caution: No 7 can only be used if the foods need to be frozen quickly.

5. Do not frequently open and shut the refrigerator door to avoid lost of cooling effect and to save energy.
6. The surface and inside of the refrigerator should be kept clean at all time to avoid body rust.
7. Generally, clean the refrigerator after every 30-45 days of usage. Please use soft cloth moistened in neutral soapsuds or detergent.

Caution: Please unplug the power cord before cleaning the unit.

Warranty Information

The manufacturer provides warranty in accordance with the legislation of the customer's own country of residence, with a minimum of 1 year (Germany: 2 years), starting from the date on which the appliance is sold to the end user.

The warranty only covers defects in material or workmanship.

The repairs under warranty may only be carried out by an authorized service centre. When making a claim under the warranty, the original bill of purchase (with purchase date) must be submitted.

The warranty will not apply in cases of:

- Normal wear and tear
- Incorrect use, e.g. overloading of the appliance, use of non-approved accessories
- Use of force, damage caused by external influences
- Damage caused by non-observance of the user manual, e.g. connection to an unsuitable mains supply or non-compliance with the installation instructions
- Partially or completely dismantled appliances

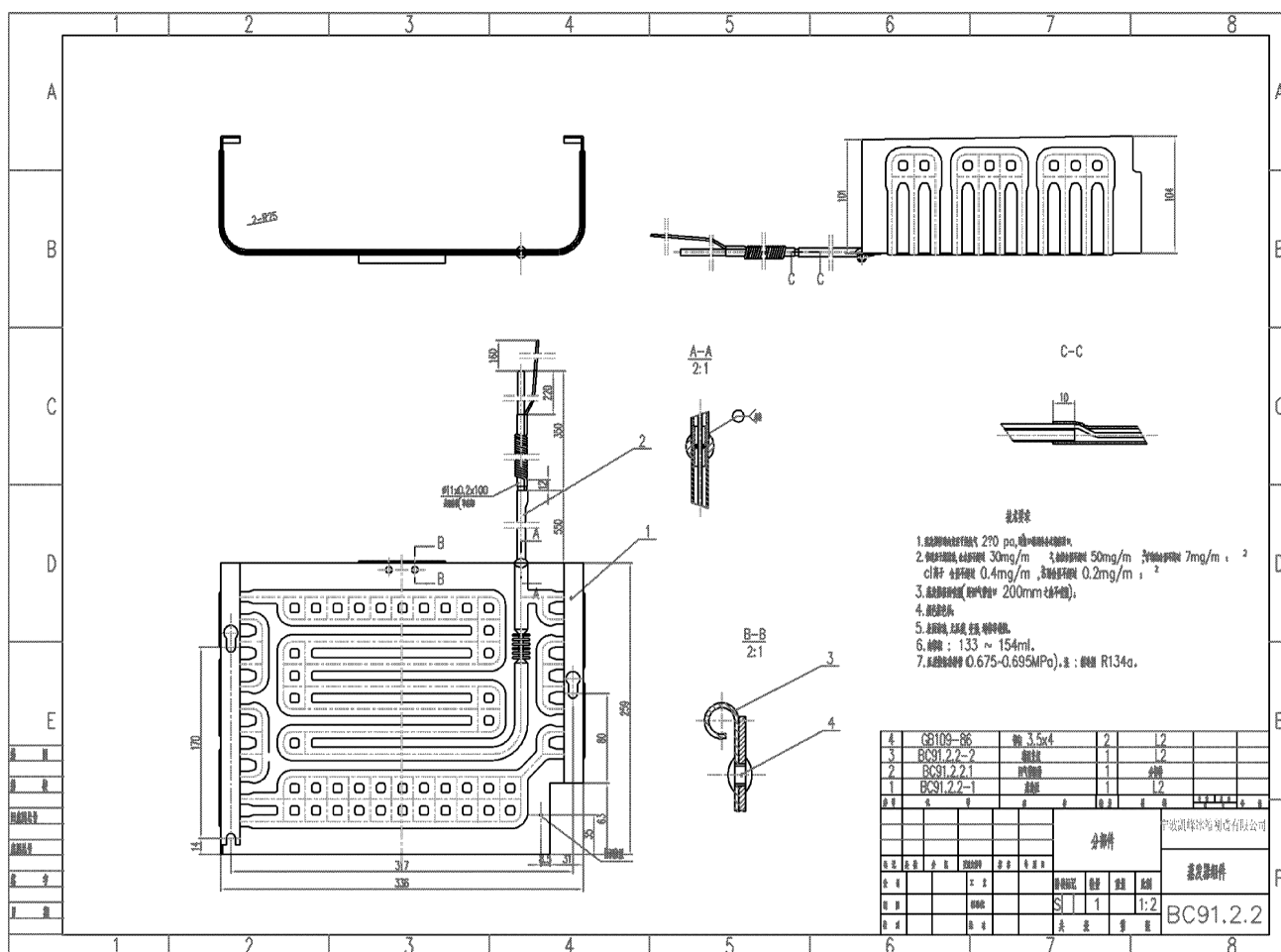
Correct Disposal of this product

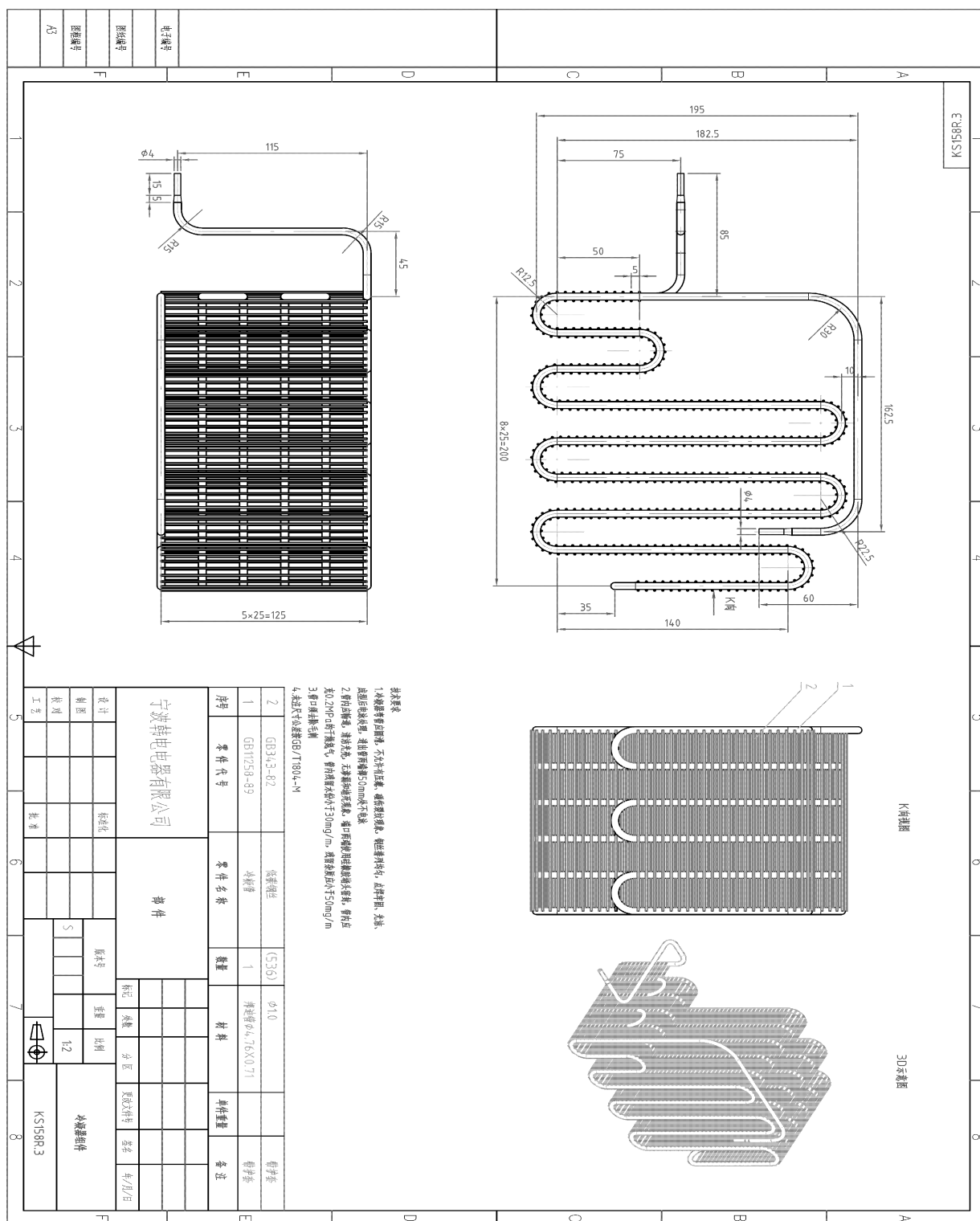


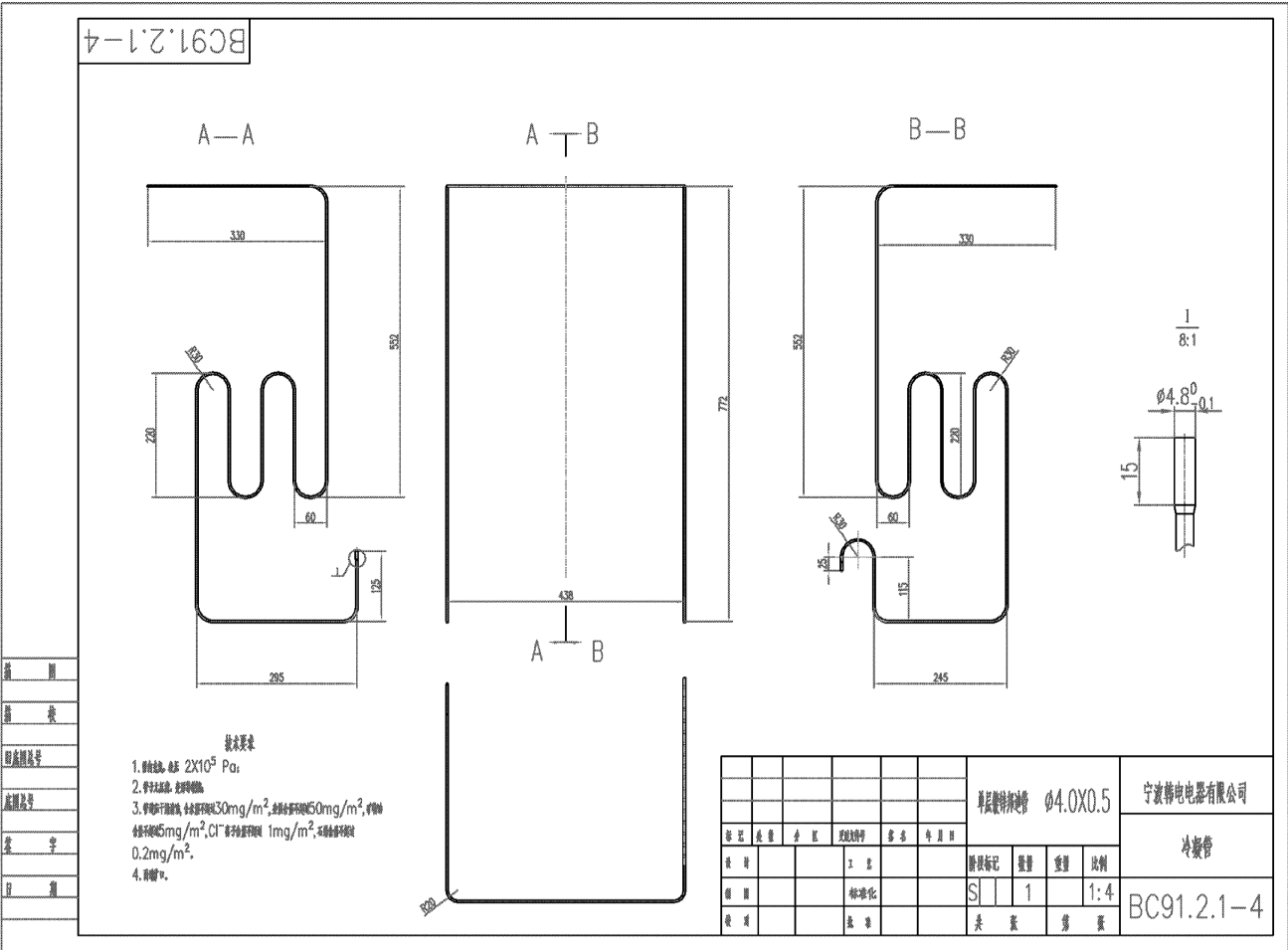
This marking indicates that this product should not be disposed with other household wastes throughout the EU. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmental safe recycling.

Ningbo Han Dian Electric Appliance Co., Ltd.

East Guanhaiwei Industrial Zone, Cixi, Ningbo, 315314 P.R. China







BC123.5

技术要求

1. 表面平整、光洁，无毛刺；
2. 铆接处牢固、可靠；
3. 表面经镀铬处理；

图号	2	BC123.5-2	名称	1	45			
材料	1	BC123.5-1	上盖板	1	B-2.5/Q235-A			
比例								
制图								
审核								
批准								
日期								

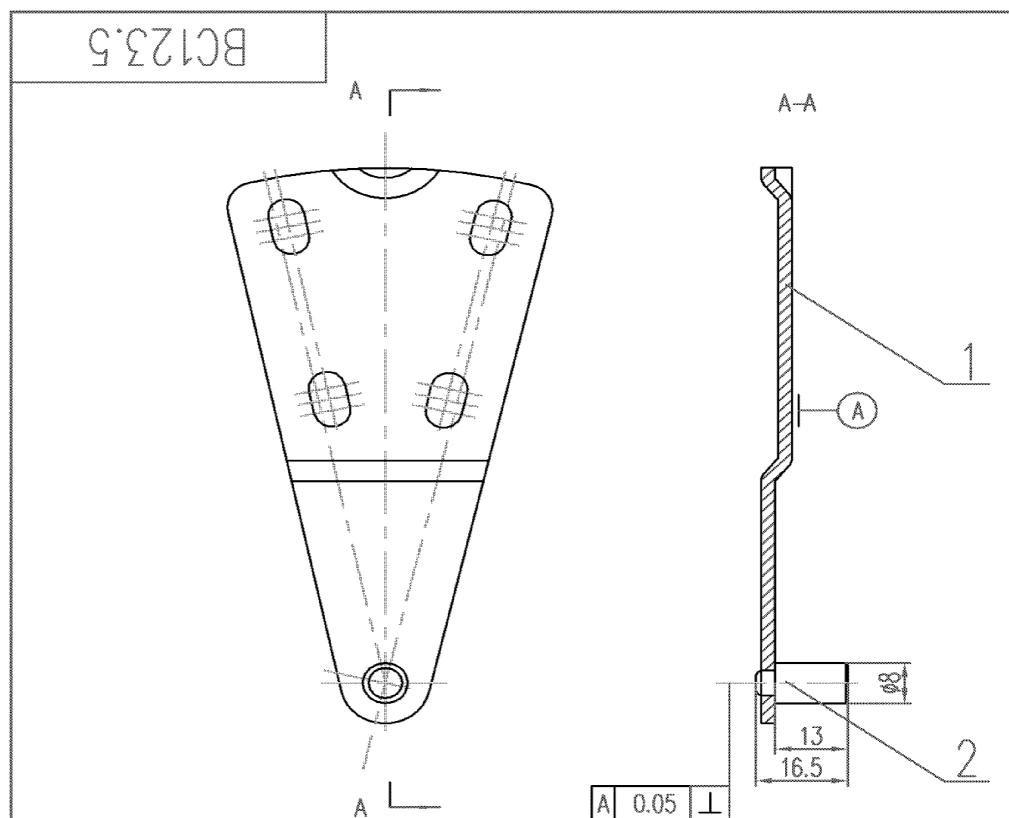
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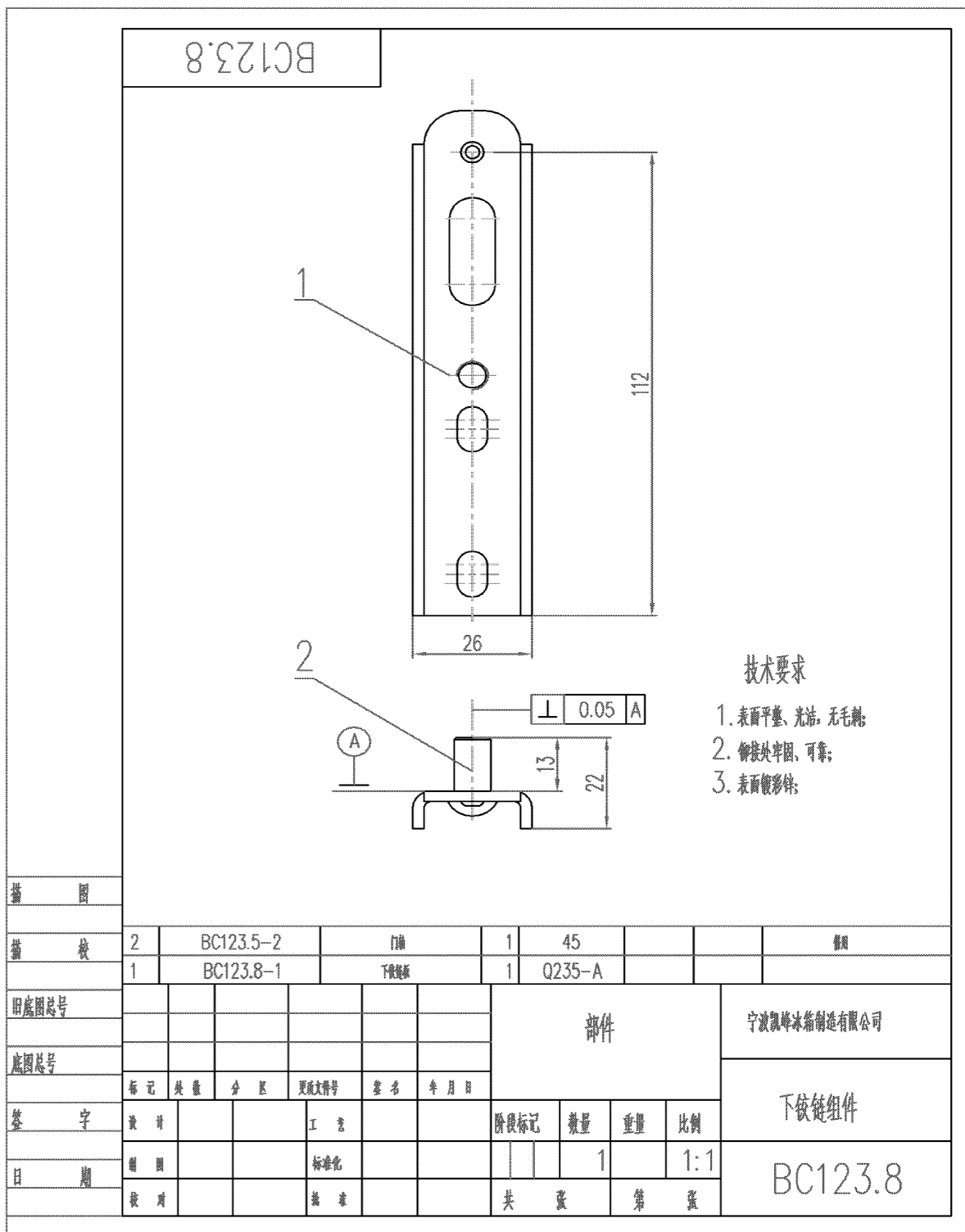
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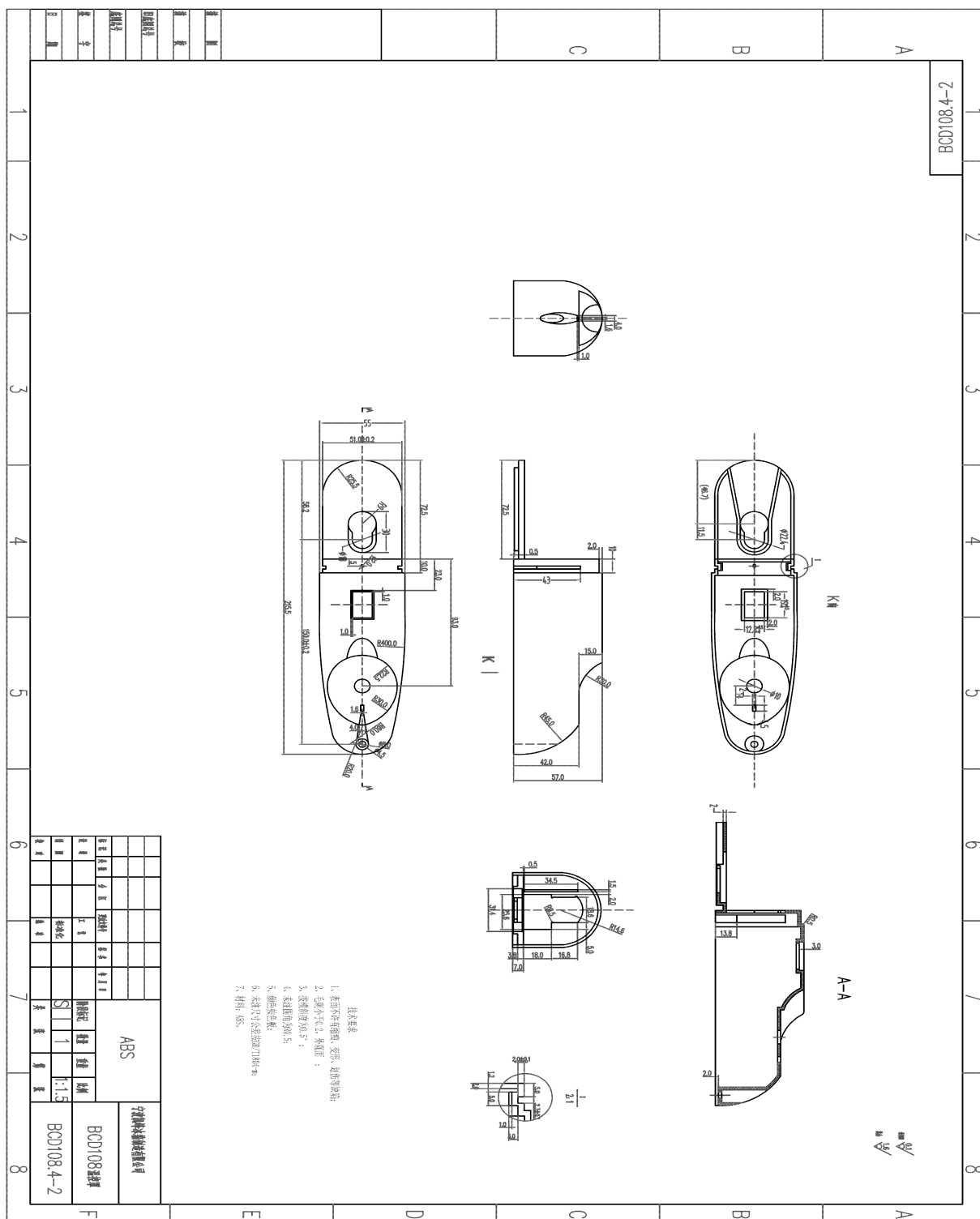
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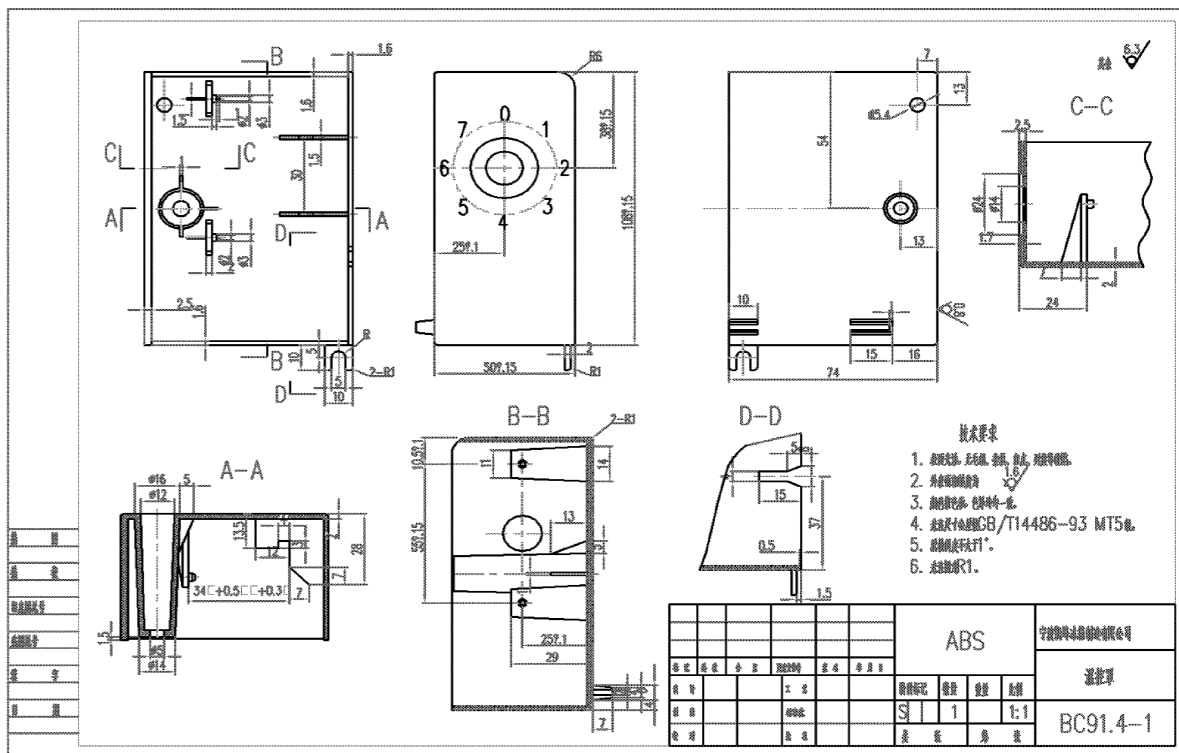
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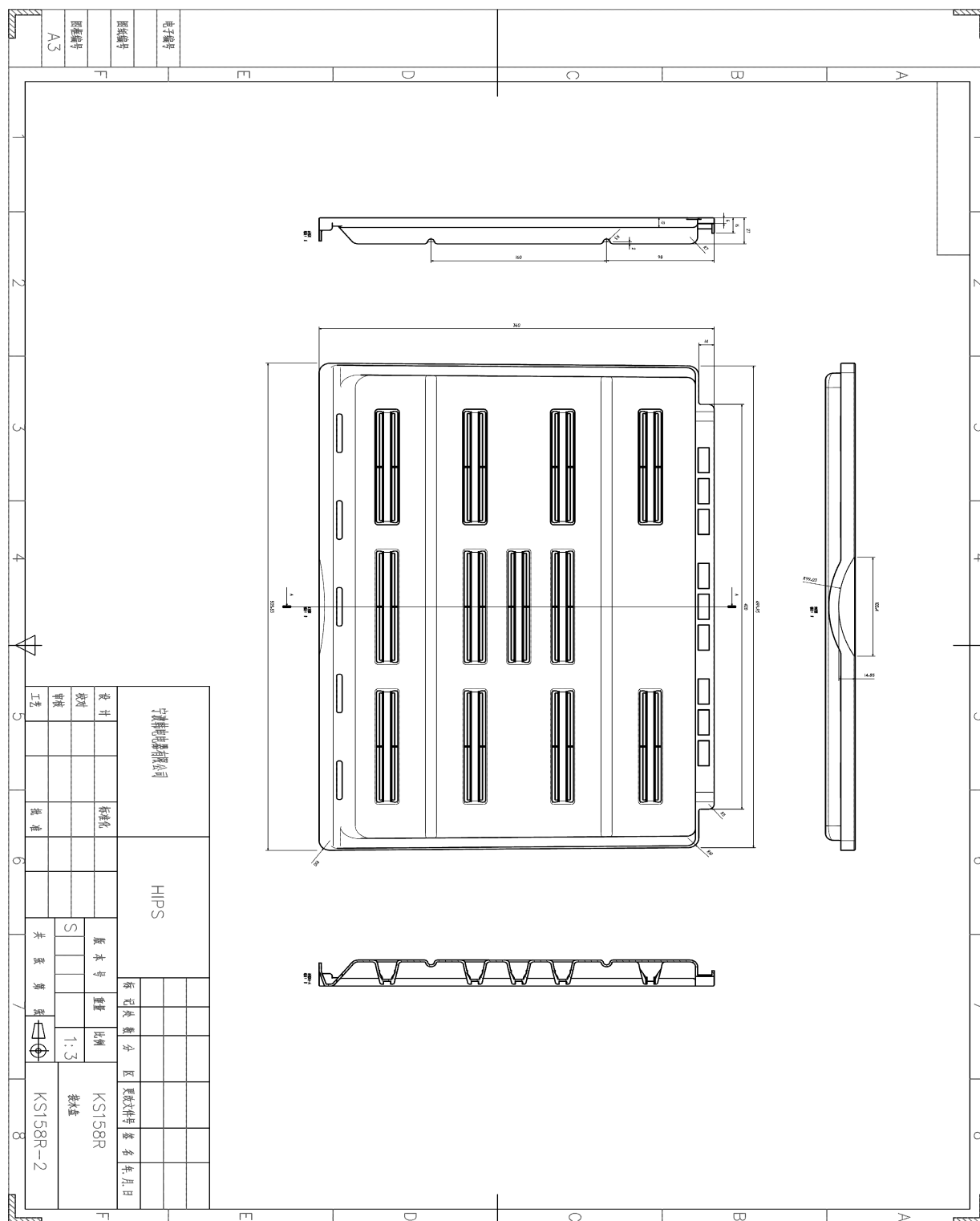


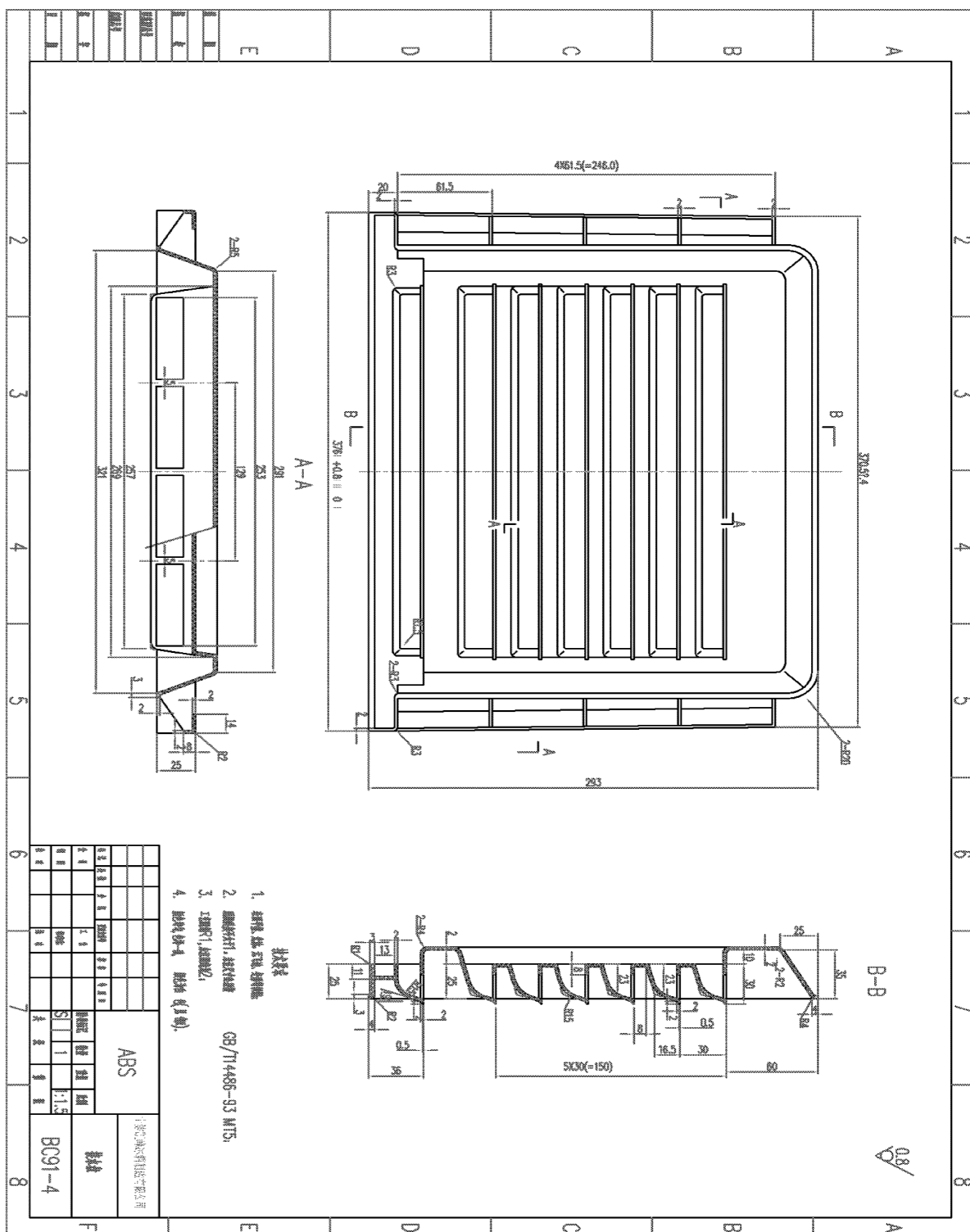
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描 线	1	BC123.5-1			上铁链板		1	B-2.5/Q235-A				
	序 号	代 号			名 称		数 量	材 料		备 注		
田底图总号						部 件	宁波凯峰冰箱制造有限公司					
底图总号												
	标 记	处 数	分 区	更改文件号	签 名	年 月 日	上铁链组件					
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	校 对			描 迹			共 张	第 张				



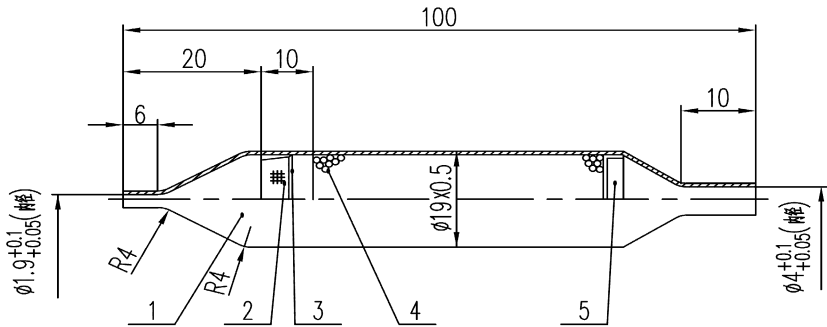








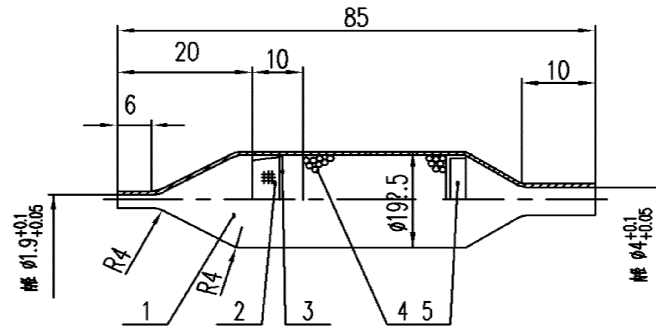
KS-158R



技术要求

- 1. 端口无毛刺。
- 2. 分子筛预吸附 $\leq 1.5\%$, 氯离子 $\leq 0.3\text{mg}/\text{m}^2$, 矿物油 $\leq 4\text{mg}/\text{m}^2$ 。
- 3. 表面光洁, 无明显裂纹, 夹杂, 水渍, 斑点, 油污等缺陷。
- 4. 挡网深度以分子筛为限。
- 5. 适用R134a、R600a制冷剂。
- 6. 筛网座与器体装配采用缩径工艺。
- 7. 其它各项技术要求符合GB/T23135-2008电冰箱分子筛过滤器要求。

描 图	5			挡网	1	H62 $\phi 0.35$				
	4			分子筛	10g	XH-9				
	3			网座	11	H62 $\phi 0.35$				
	2			筛网	1	1Cr18Ni9 200目/N				
描 校	1			器体	1	T2Y $\phi 19 \times 0.5$				
序号代 号名 称数 量材 料单 重总 重备 注										
旧底图总号							部件			
底图总号										
	标 记	外 数	分 区	更改文件号	签 名	年 月 日	过滤器			
签 字	设 计			工 艺						
	制 图			标 准 化			阶段标记	数量	重量	比例
日 期							S	1		1:1
	校 对			批 准			共 1 张	第 1 张		KS-158R



技术要求

1. 端口无毛刺。
2. 分子筛预吸附 $\leq 1.5\%$, 氟离子 $\leq 0.3\text{mg}/\text{m}^2$, 矿物油 $\leq 4\text{mg}/\text{m}^2$ 。
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5. 适用于R134a、R600a制冷剂。
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7. 其它各项技术要求符合GB/T23135-2008电冰箱分子筛过滤器要求。

描 图	5			挡网	1	H62 80.35					
	4			分子筛	5g	XH-9					
	3			筛网	11	H62 80.35					
	2			筛网	1	1Cr18Ni9 200#N					
描 校	1			筛网	1	T2Y 19±0.5					
	序号	代 号		名 称		数 量	材 料	单 重	总 重	备 注	
旧底图总号						分子筛过滤器				宁波韩电电器有限公司	
底图总号											
	标 记	类 别	分 区	更改文件号	签 名	年 月 日	过滤器				
签 字	设 计			工 艺							阶段标记
日 期	制 图			标准			S		1		1:1
	校 对			描 绘			共 1 张		第 1 张		

IBExU Institut für Sicherheitstechnik GmbHAn-Institut der Technischen Universität Bergakademie Freiberg

R E P O R T**IB-11-8-107****about the experimental testing of enclosed-break devices*****Motor protector type DRB***

(Translation)

Freiberg, 10 November 2011
Hi/Diet/LehDipl.-Ing. (FH) Hille
Editor

This document consists of:

7 pages text
2 Annexes

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E-Mail: post@ibexu.de, <http://www.ibexu.de>**Prüflaboratorium und Zertifizierungsstelle**
für Geräte und Schutzsysteme zur bestimmungsgemäßen
Verwendung in explosionsgefährdeten Bereichen
im Sinne von RL 94/9/EG (ATEX 100a)
"Benannte Stelle" (EU-Kenn-Nr. 0637)

REPORT**IB-11-8-107****about the experimental testing of enclosed-break devices****1 Order**

VDE Prüf- und Zertifizierungsinstitut in 63069 Offenbach (GERMANY) engaged with the letter 5001300-4510-0004/148374 FG31/mlh-wah of 27 September 2011 the IBExU Institut für Sicherheitstechnik GmbH with the experimental testing of the Motor protectors type DRB in explosive atmosphere regarding the proof of type of protection enclosed-break devices according to IEC/EN 60079-15:2010, paragraph 22.4.

2 Test item

Motor protector

- Type:	DRB		
- Manufacturer:	Hang Zhou Star Shuaier Electric Appliance Co. Ltd		
- Material:			
Base:	Phenolic 25378	Phenolic EA5555J	
Cover:	PET2550GN	PET FR530	PET4308-G20
- Voltage:	120 V AC	250 V AC	
- Current:	45 A	20 A	
- cos phi:	0.6		
- Service temperature range:	0 °C up to 160 °C		

3 Test documents

- Order with letter 5001300-4510-0004/148374 FG31/mlh-wah of 27 September 2011
- VDE-Kurzprüfschein No. 5001300-4510-0004/148374 „Temperaturbeständigkeitstest nach Abs. 22.3.1“ of 26 September 2011
- EN 60079-15:2010 (complies with IEC 60079-15:2010, ed. 4)
- 5 pieces of Motor protectors type DRB40X61A1 (1) (Test sample-No. EXel 473/11)
- 5 pieces of Motor protectors type DRB40X61A1 (4) (Test sample-No. EXel 474/11)
- 5 pieces of Motor protectors type DRB40X61B1 (5) (Test sample-No. EXel 475/11)
- 5 pieces of Motor protectors type DRB40X61B1 (8) (Test sample-No. EXel 476/11)
- 5 pieces of Motor protectors type DRB40X61A1 (13) (Test sample-No. EXel 477/11)
- 5 pieces of Motor protectors type DRB40X61A1 (14) (Test sample-No. EXel 478/11)
- 5 pieces of Motor protectors type DRB40X61B1 (15) (Test sample-No. EXel 479/11)
- 5 pieces of Motor protectors type DRB40X61B1 (16) (Test sample-No. EXel 480/11)
- 5 pieces of Motor protectors type DRB40X61A1 (17) (Test sample-No. EXel 481/11)
- 5 pieces of Motor protectors type DRB40X61A1 (18) (Test sample-No. EXel 482/11)
- 5 pieces of Motor protectors type DRB40X61B1 (19) (Test sample-No. EXel 483/11)
- 5 pieces of Motor protectors type DRB40X61A1 (20) (Test sample-No. EXel 484/11)

The test items were delivered to IBExU on 29 September 2011.

4 Test execution

4.1 Objectives

It was the task to examine experimentally the ignition safety (the non-ignition of an explosive atmosphere) of the Motor protectors for gases and vapors of the Group IIA with the parameters specified under chapter 2.

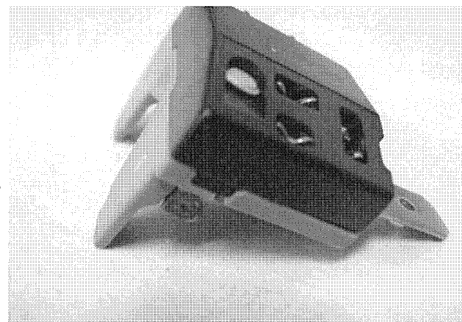
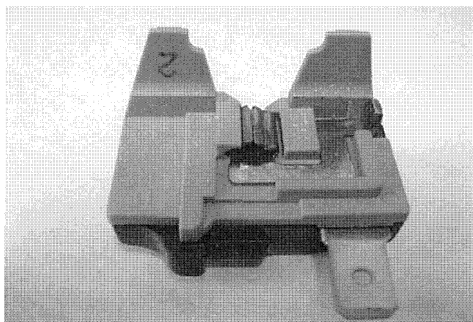
Basis of the test are the requirements in IEC/EN 60079-15, Paragraph 22.4 for enclosed-break devices.

In the context of these examinations there was not the task to check the constructive requirements for apparatus in type of protection "n" (apparatus for zone 2) for the compliance with IEC/EN 60079-15.

4.2 Description of the test item

The Motor protector serves for the protection of motor compressors at refrigerating appliances. A special black plastic base serves as support part of the functional parts of the Motor protectors. Inside is a bimetal contact bridge. The enclosure is closed by a second, white moulded part, which is heat-sealed via two plastic pins. Both enclosure parts form a circulating gap, which is glued with a brown plastic resin. All other gaps are also closed with the same plastic resin. The terminal contacts are led to the outside as a 6.3 mm plug contact and as a socket.

The free internal volume of the switch chamber is less than 20 cm³ (about 1 cm³).



Motor protector type DRB40X61A1 (1) PM1-2

The enclosures of the test samples were equipped with a hose connection via a borehole. It serves to purge the switch chamber with the test gas and also for the uptake of the thermocouple.

4.3 Requirements in IEC/EN 60079-15

An enclosed-break device is a device incorporating electrical contacts that are made and broken. These devices will withstand an internal explosion of the flammable gas or vapor which may enter it without suffering damage and without communicating the internal explosion to the external flammable gas or vapour.

Before the tests any removable seals have to be removed. Any remaining non-metallic parts have to be subjected to the conditioning test described in paragraph 22.3.1. These parts have to be stored continuously for 672 ($+30/-0$) hrs in an ambience of (90 ± 5) % relative humidity and at a temperature of (10 ± 2) K above the maximum temperature in rated service.

In case of a maximum service temperature above 85 °C the above specified storage of 672 ($+30/-0$) hrs will be replaced by a period of 336 ($+30/-0$) hrs at a temperature of (95 ± 2) °C and (90 ± 5) % relative humidity followed by a period of 336 ($+30/-0$) hrs at a temperature of (10 ± 2) K above the maximum temperature in rated service. After that, a storage for 24 hrs at a temperature of 5 K below the minimal ambient temperature shall be carried out according to EN 60079-0, 26.9.

Then the test of the enclosed-break devices according to paragraph 22.4.3 will be carried out. The explosive gas atmosphere fixed for the Group IIA, IIB or IIC has to be ignited inside the device by the operation of the enclosed contacts when connected to the maximum rated source of energy, power and load in terms of voltage, current, frequency and power factor.

A make and break test shall be repeated 10 times with a fresh gas mixture for each test. After the test, the device shall show no visible signs of damage; no external ignition shall occur and there shall be no failure to clear the arc when the switch contacts are opened.

4.4 Description of the test equipment

The test equipment is schematically shown in annex 1 of this report. It consists of the following equipment and means of work:

Explosion chamber

The explosion chamber essentially consists of a cylindrical container (Piacryl) with a bursting foil mounted on the top. The volume amounts 18 dm³.

In the base plate and on the cylinder are introduced and sealed the instrument leads and the supply lines.

Conditioning of the test gas mixture

The explosive gas atmosphere required for the Group IIA ($6.5\% \pm 0.5\%$ Ethylene, $93.5\% \pm 0.5\%$ air) was processed in the explosion chamber by volumetric gas conditioning. Dosage equipment with Digital Mass Flow Controllers served for this.

The homogeneous mixture conditioning was ensured by flushing the explosion chamber and the test item with the explosive gas/air mixture. The combustible gas quota (Ethylene) in the explosion chamber was checked in addition for the maintenance of the permissible tolerance with a gas interferometer according to Rayleigh-Haber-Löwe (PM 0301).

Measuring device for electrical parameters

The predefined electrical load of the switching contacts was made by switching on ohmic resistors and inductances in the AC circuit.

With a Wide Band Power Analyzer D 6133 M (manufacturer: Norma, PM 0010) the required parameters current, voltage and power factor were measured during the test and registered with the data acquisition device MW100 (manufacturer: YOKOGAWA, PM 0542).

The ignition in the test item was perceived acoustically and recorded by the temperature rise by means of a thermocouple. For that, a thermocouple was introduced into the tube connection on the test item after the mixture conditioning. The temperature course was recorded with the recorder.

Test of thermal endurance

The test of thermal endurance was carried out by the VDE Prüf- und Zertifizierungsinstitut.

All used measuring instruments are included in the Quality Management System of IBExU certified according to ISO 9001. They are checked in regular intervals.

4.5 Test procedure and results

4.5.1 Test of thermal endurance

The test of thermal endurance was carried out by the VDE Prüf- und Zertifizierungsinstitut. According to IEC/EN 60079-15, 22.3.1 the test samples were stored for 336 ($^{+30}_{-0}$) hrs at 95 °C heat and 90 % rel. humidity, 336 ($^{+30}_{-0}$) hrs at 170 °C as well as 24 hrs at -10 °C cold (see VDE-Kurzprüfschein).

4.5.2 Pre-test

Before the ignition tests specified in IEC/EN 60079-15 were carried out it had to be made sure that the appearing switching spark in the case can be considered as an effective ignition source for the test gas. To this, pre-tests were carried out at a Motor protector (Test sample 1-5), whose enclosure was opened.

At the test parameters 250 V AC, 15 A and $\cos \varphi$ 0.6 the ignition of the explosive gas mixture caused by the break spark could be proved (see Annex 2.1).

4.5.3 Type test

The tests were carried out from 11 October until 18 October 2011. In accordance with IEC/EN 60079-15, 22.4.3.2 eleven tests have to be carried out with a sample, which has the most adverse dimensions permitted by the construction drawings. There are no statements regarding the gaps of the test samples. To make sure the test results, two test samples per material combination were included in the test program.

The respective Motor protector (originally closed) to be tested was put into the explosion chamber. The specified explosive gas atmosphere required for the Group IIA (6.5 ± 0.5) % Ethylene/air mixture was processed in the explosion chamber and in the enclosure of the test item.

The contacts of the Motor protectors were operated with the preset test parameters. The ignition of the explosive gas atmosphere inside the test item occurred by the break spark.

The test results are summarised in the table. For some tests the test parameters are recorded in the annexes 2.2 up to 2.13.

Test sample	Material		Cap.	Tests	Electric Parameters			Ignition of the explosive atmosphere	
	Base	Cover			U [V]	I [A]	cos φ	Inside the test item	outside
1-1	Phenolic 25378	PET2550 GN-30	low	11	250	15	0.6	yes	no
4-1	Phenolic EA5555J		low	11	250	15	0.6	yes	no
5-1	Phenolic 25378		high	11	250	15	0.6	yes	no
8-1	Phenolic EA5555J		high	11	250	15	0.6	yes	no
13-1	Phenolic 25378	PETFR 530	low	11	250	15	0.6	yes	no
14-1	Phenolic EA5555J		low	11	250	15	0.6	yes	no
15-1	Phenolic 25378		high	11	250	15	0.6	yes	no
16-1	Phenolic EA5555J		high	11	250	15	0.6	yes	no
17-1	Phenolic 25378	PBT4308-G20	low	11	250	15	0.6	yes	no
18-1	Phenolic EA5555J		low	11	250	15	0.6	yes	no
19-1	Phenolic 25378		high	11	250	15	0.6	yes	no
20-1	Phenolic EA5555J		high	11	250	15	0.6	yes	no

At none of the test samples the explosion triggered in the enclosure of the Motor protector was transferred to the outer explosive atmosphere.

5 Summary

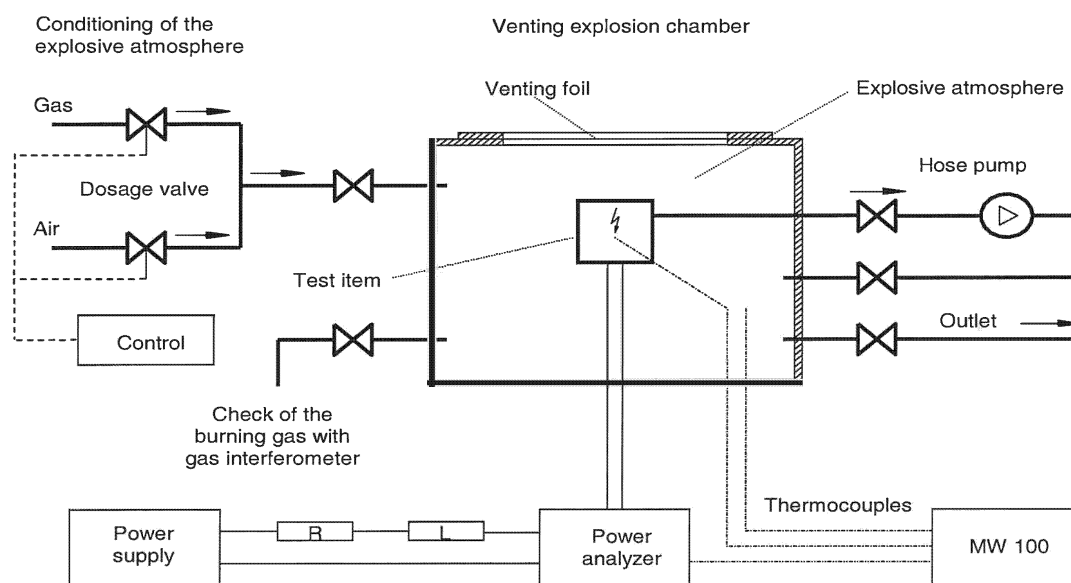
It was noticed with the tests that the Motor protector type DRB at the conditions mentioned under 2 has the ignition safety (the non-ignition of an explosive atmosphere) fixed in IEC/EN 60079-15:2010 according to type of protection enclosed-break device for gases and vapors of the Group IIA. The explosions triggered inside the switching chamber by the break spark did not ignite the explosive mixture surrounding the device.

The assessment of the constructive design of the Motor protector regarding the compliance with the requirements of IEC/EN 60079-15 for apparatus of the type of protection "n" (apparatus for zone 2) was not object of these examinations.

The test result refers exclusively to the Motor protector specified under chapter 2.

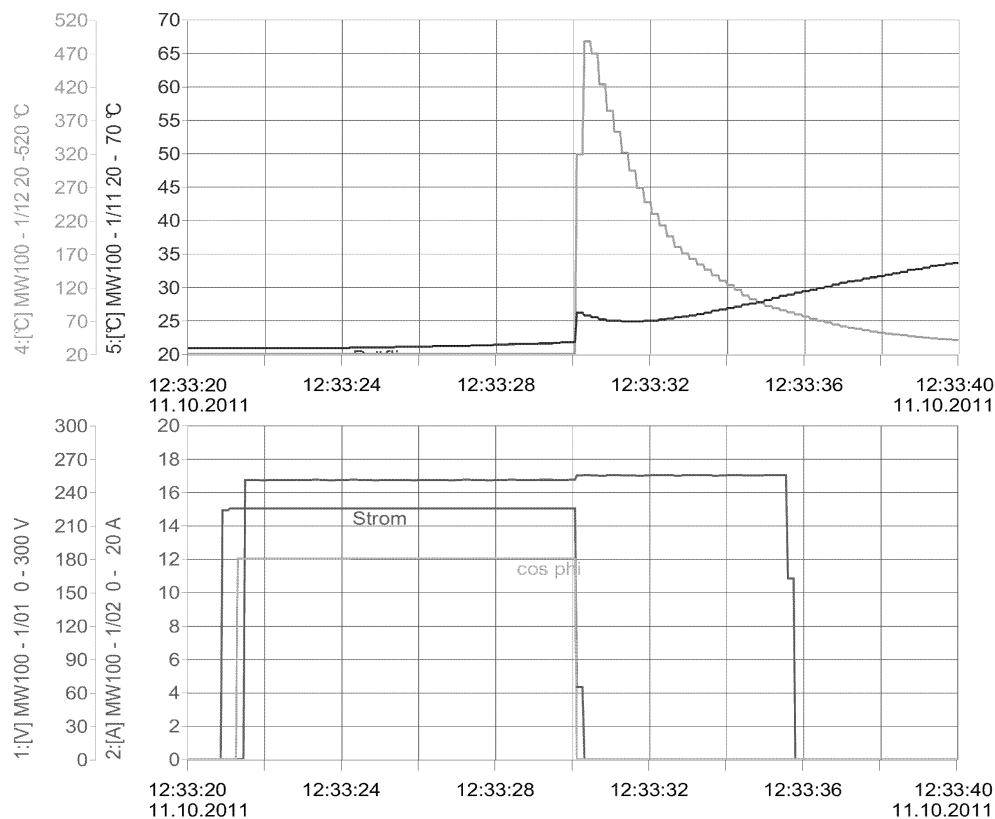
Annexes

Annex 1	Schematic setup of the test equipment
Annex 2	Representation of the test parameters (13 Sheet)

Annex 1: Schematic setup of the test equipment

Versuchsparameter PM 1-5 Versuch Nr. 01

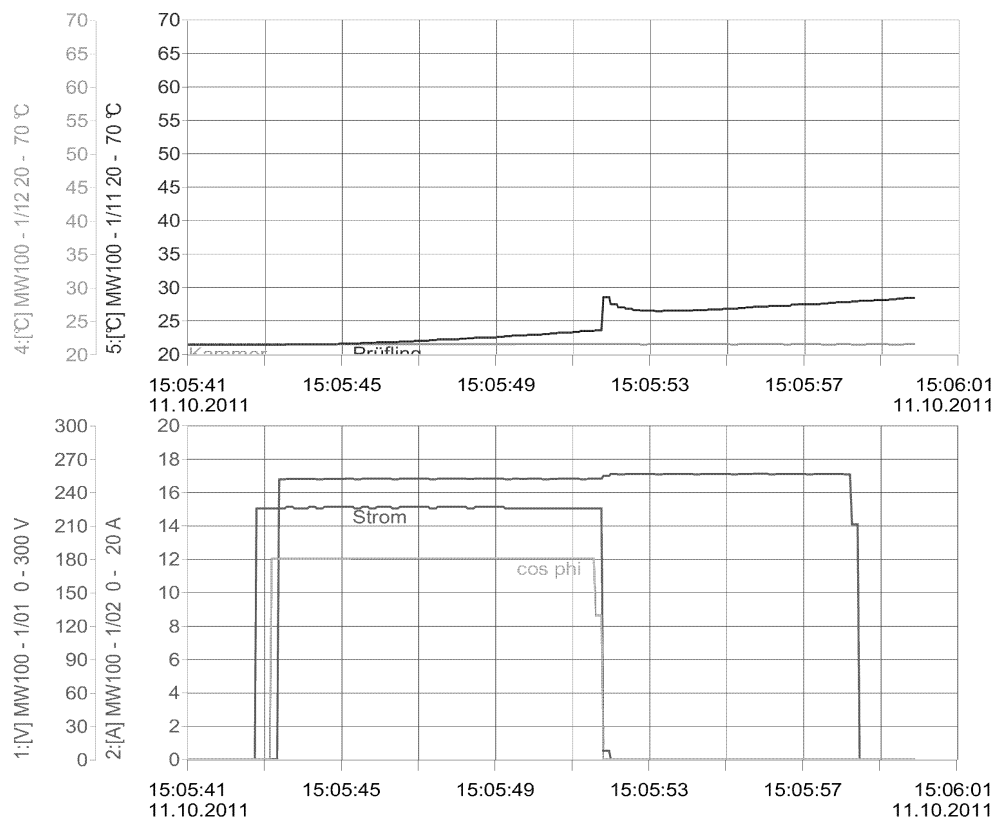
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Prüfgegenstand:	Motorprotektor	Messgerät:	Power Analyser D 6100
Typ:	DRB40X61A1 (1)	PM-Nr.:	PM 0010
Prüfmuster-Nr.:	Ex.el. 473-11		



— 1	01	[V]	Spannung	0 - 300 V
— 2	02	[A]	Strom	0 - 20 A
— 3	10	[]	cos phi	0 - 1
— 4	12	[°C]	Kammer	20 - 520 °C
— 5	11	[°C]	Prüfling	20 - 70 °C

Versuchsparameter PM 1-1 Versuch Nr. 11

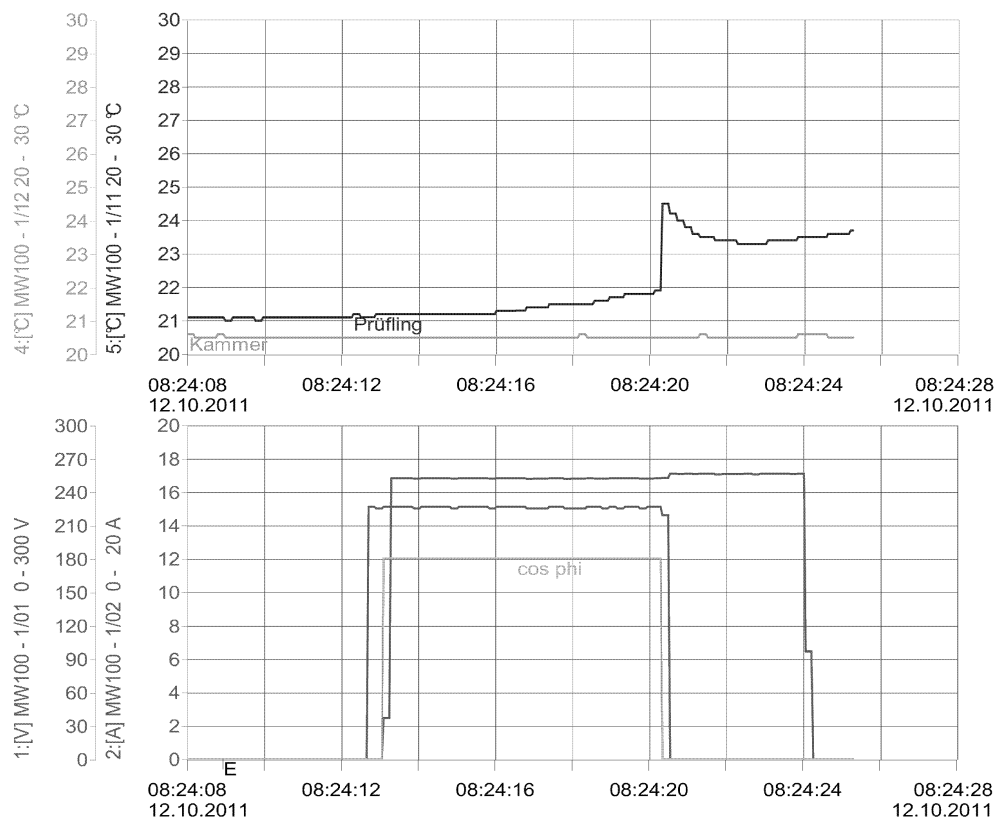
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Prüfgegenstand:	Motorprotector	Messgerät:	Power Analyser D 6100
Typ:	DRB40X61A1 (1)	PM-Nr.:	PM 0010
Prüfmuster-Nr.:	Ex.el. 473-11		



— 1	01	[V]	Spannung	0 - 300 V
— 2	02	[A]	Strom	0 - 20 A
— 3	10	[]	cos phi	0 - 1
— 4	12	[°C]	Kammer	20 - 70 °C
— 5	11	[°C]	Prüfling	20 - 70 °C

Versuchsparameter PM 4-1 Versuch Nr. 11

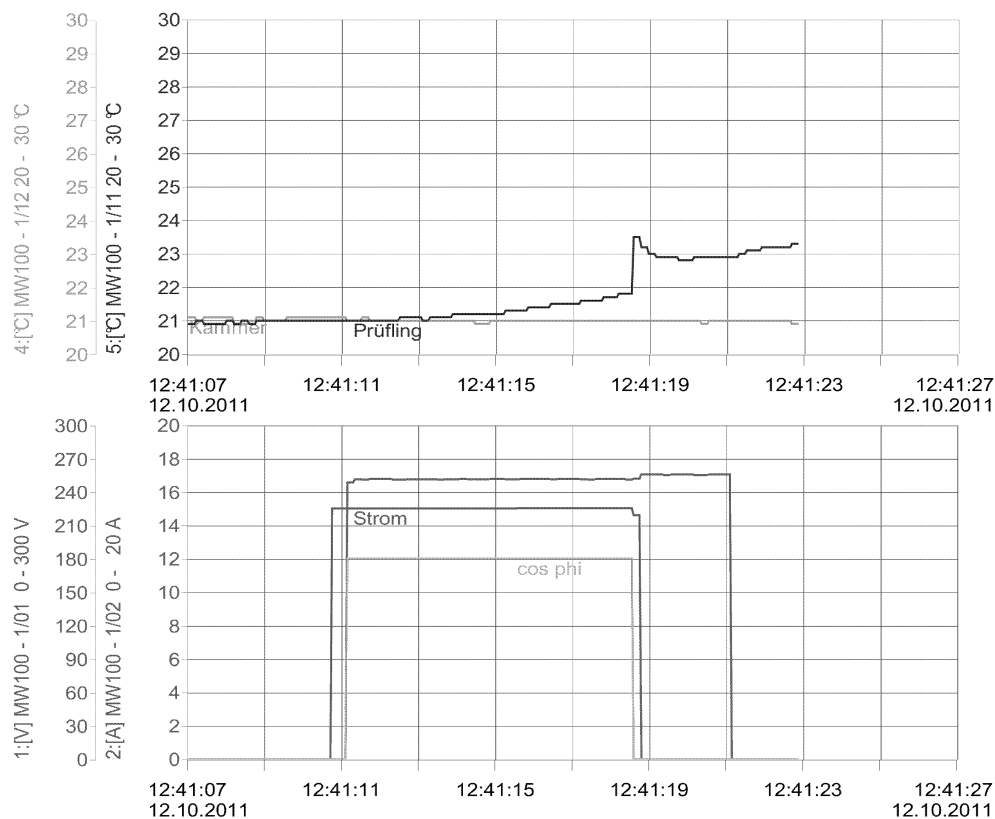
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Prüfgegenstand:	Motorprotector	Messgerät:	Power Analyser D 6100
Typ:	DRB40X61A1 (4)	PM-Nr.:	PM 0010
Prüfmuster-Nr.:	Ex.el. 474-11		



— 1	01	[V]	Spannung	0 - 300 V
— 2	02	[A]	Strom	0 - 20 A
— 3	10	[]	cos phi	0 - 1
— 4	12	[°C]	Kammer	20 - 30 °C
— 5	11	[°C]	Prüfling	20 - 30 °C

Versuchsparameter PM 5-1 Versuch Nr. 07

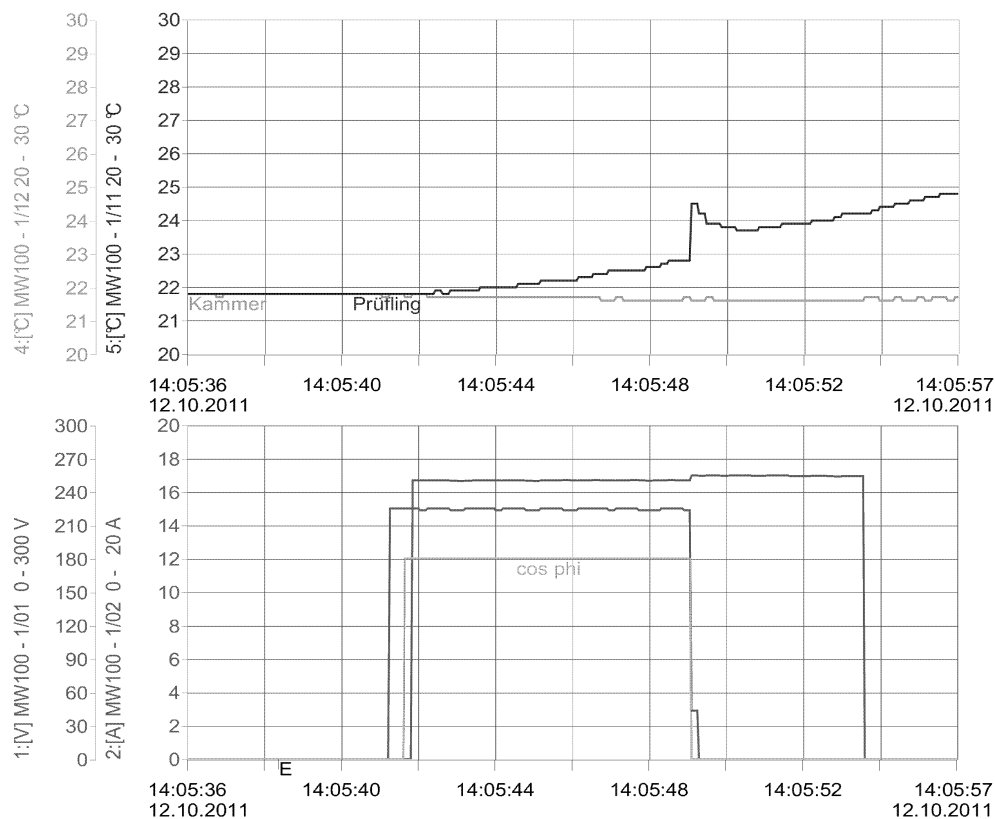
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Prüfgegenstand:	Motorprotector	Messgerät:	Power Analyser D 6100
Typ:	DRB40X61B1 (5)	PM-Nr.:	PM 0010
Prüfmuster-Nr.:	Ex.el. 475-11		



— 1	01	[V]	Spannung	0 - 300 V
— 2	02	[A]	Strom	0 - 20 A
— 3	10	[]	cos phi	0 - 1
— 4	12	[°C]	Kammer	20 - 30 °C
— 5	11	[°C]	Prüfling	20 - 30 °C

Versuchsparameter PM 8-1 Versuch Nr. 06

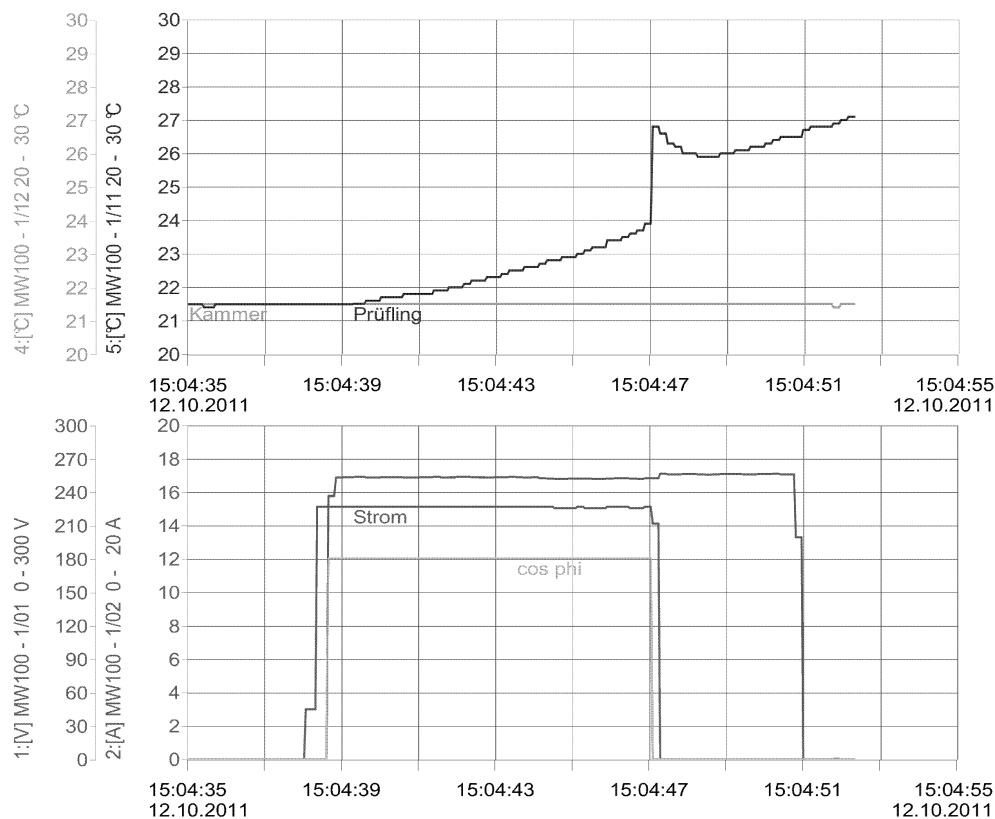
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Prüfgegenstand:	Motorprotector	Messgerät:	Power Analyser D 6100
Typ:	DRB40X61B1 (8)	PM-Nr.:	PM 0010
Prüfmuster-Nr.:	Ex.el. 476-11		



1	01	[V]	Spannung	0 - 300 V
2	02	[A]	Strom	0 - 20 A
3	10	[]	cos phi	0 - 1
4	12	[°C]	Kammer	20 - 30 °C
5	11	[°C]	Prüfling	20 - 30 °C

Versuchsparameter PM 13-1 Versuch Nr. 01

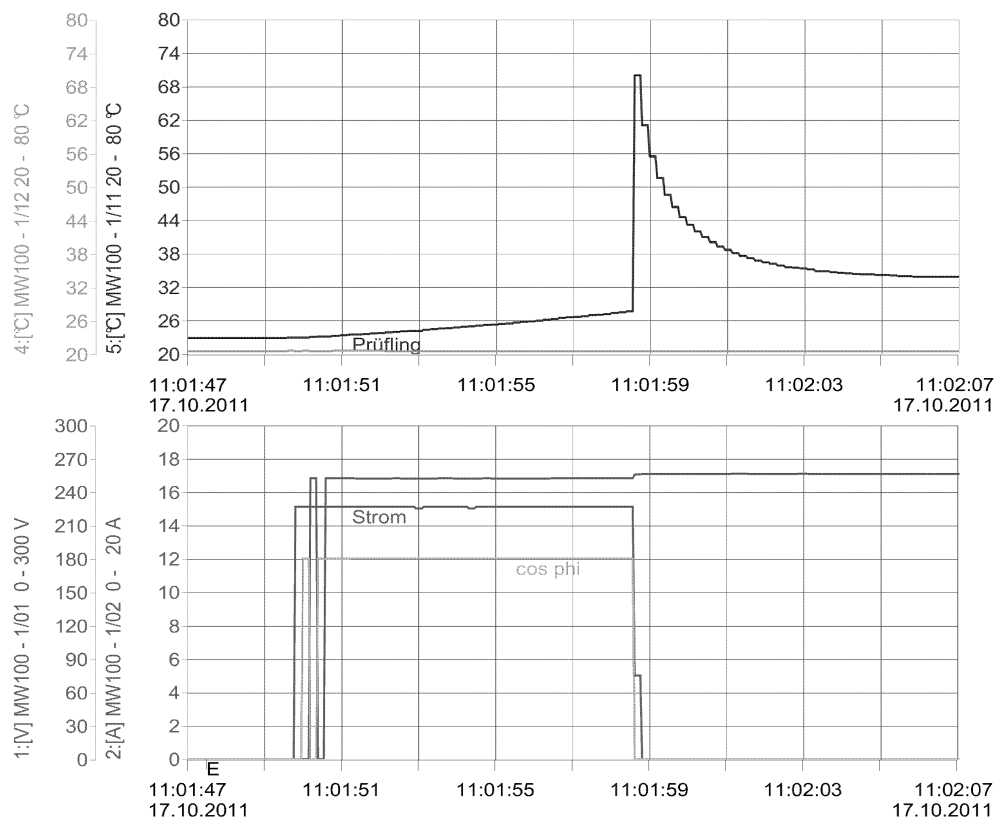
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Prüfgegenstand:	Motorprotektor	Messgerät:	Power Analyser D 6100
Typ:	DRB40X61A1 (13)	PM-Nr.:	PM 0010
Prüfmuster-Nr.:	Ex.el. 477-11		



1	01	[V]	Spannung	0 - 300 V
2	02	[A]	Strom	0 - 20 A
3	10	[]	cos phi	0 - 1
4	12	[°C]	Kammer	20 - 30 °C
5	11	[°C]	Prüfling	20 - 30 °C

Versuchsparameter PM 14-1 Versuch Nr. 05

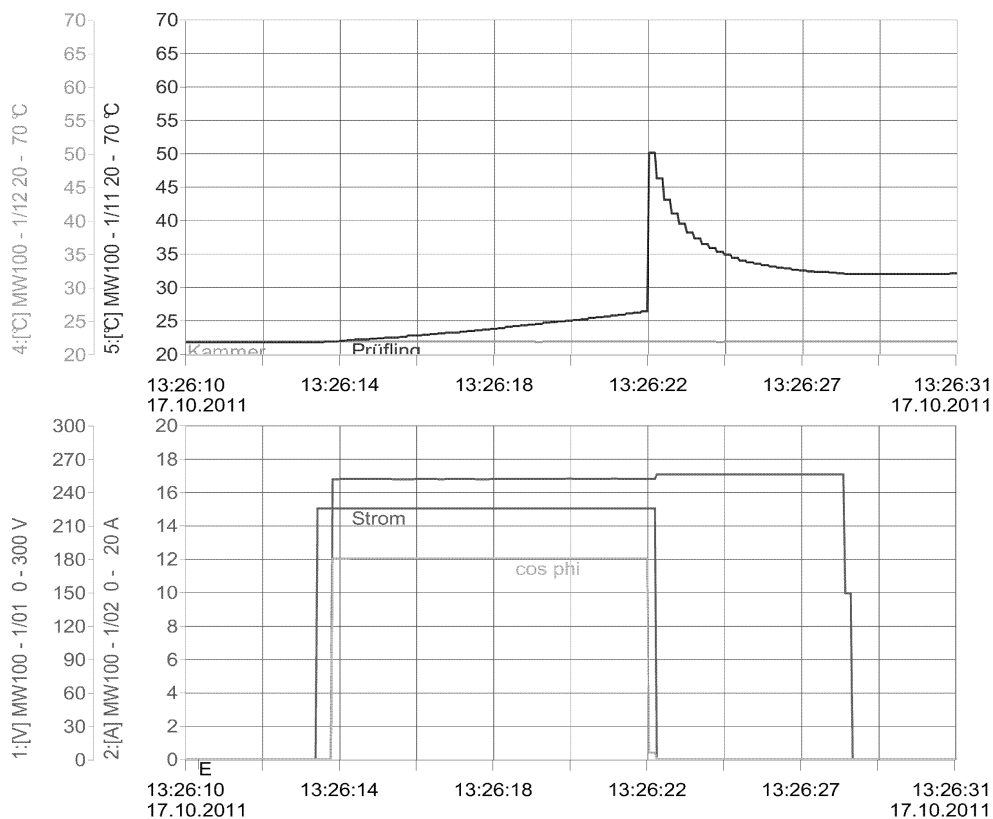
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Prüfgegenstand:	Motorprotector	Messgerät:	Power Analyser D 6100
Typ:	DRB40X61A1 (14)	PM-Nr.:	PM 0010
Prüfmuster-Nr.:	Ex.el. 478-11		



— 1	01	[V]	Spannung	0 - 300 V
— 2	02	[A]	Strom	0 - 20 A
— 3	10	[]	cos phi	0 - 1
— 4	12	[°C]	Kammer	20 - 80 °C
— 5	11	[°C]	Prüfling	20 - 80 °C

Versuchsparameter PM 15-1 Versuch Nr. 07

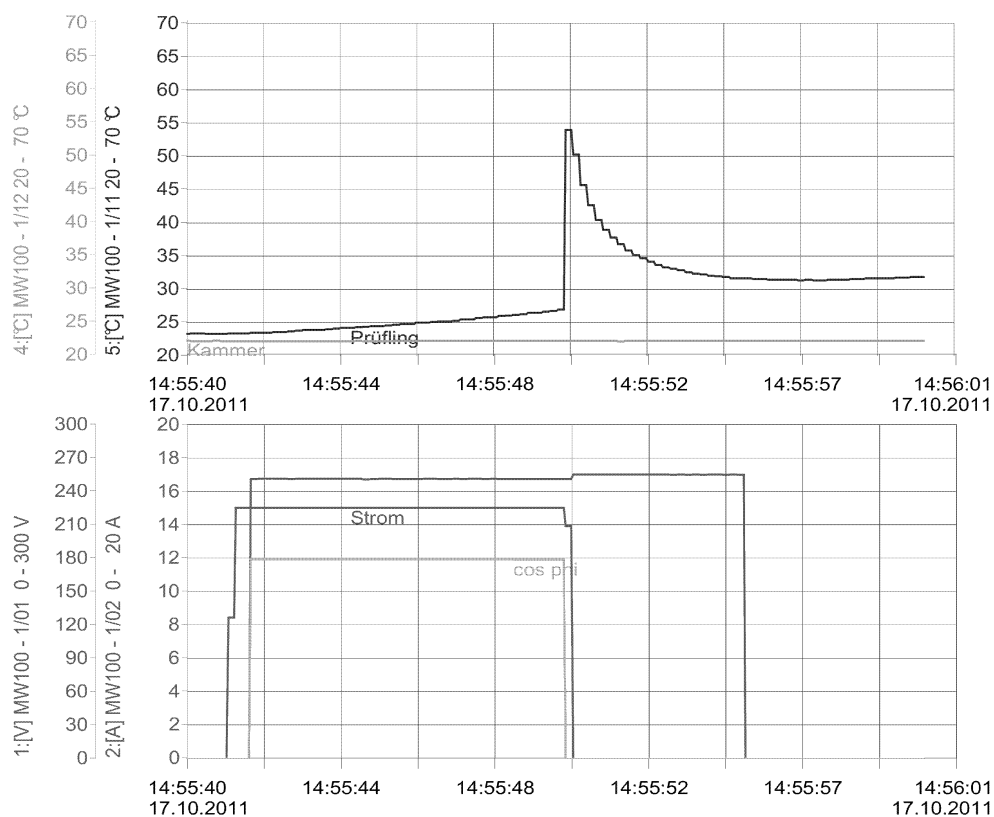
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Auftraggeber:	VDE Prüf- und Zertifizierungsinstitut	PM-Nr.:	PM 0542
Prüfgegenstand:	Motorprotector	Messgerät:	Power Analyser D 6100
Typ:	DRB40X61B1 (15)	PM-Nr.:	PM 0010
Prüfmuster-Nr.:	Ex.el. 479-11		



1	01	[V]	Spannung	0 - 300 V
2	02	[A]	Strom	0 - 20 A
3	10	[]	cos phi	0 - 1
4	12	[°C]	Kammer	20 - 70 °C
5	11	[°C]	Prüfling	20 - 70 °C

Versuchsparameter PM 16-1 Versuch Nr. 06

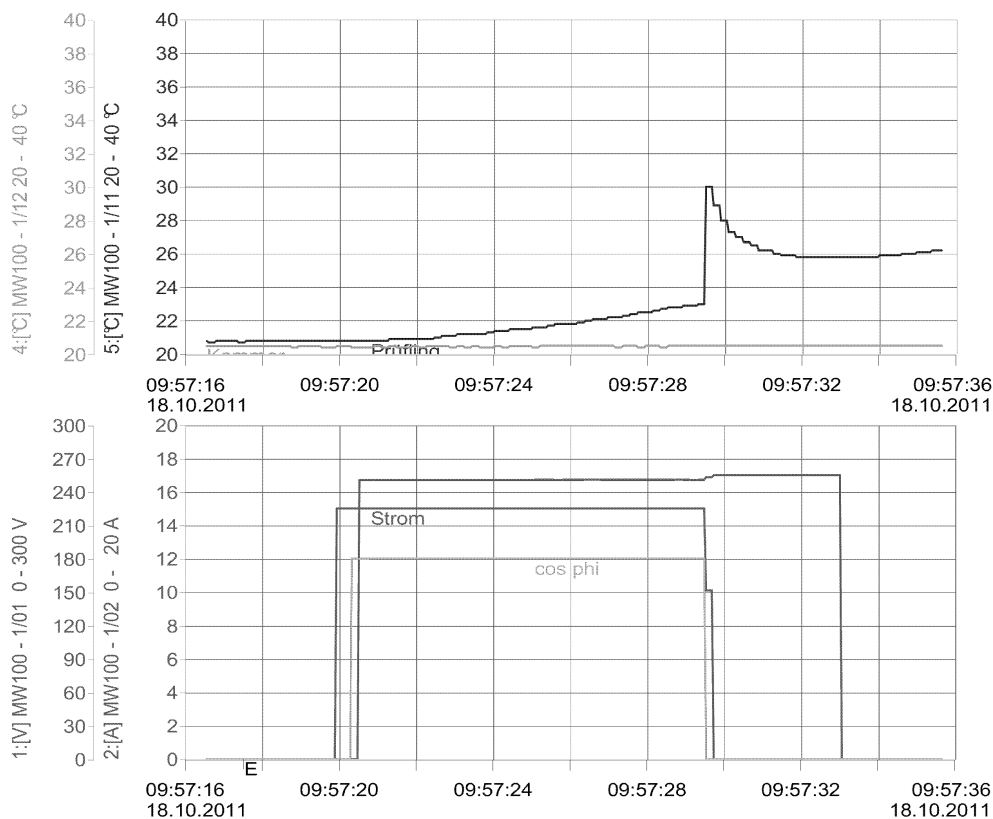
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Auftraggeber:	VDE Prüf- und Zertifizierungsinstitut	PM-Nr.:	PM 0542
Prüfgegenstand:	Motorprotektor	Messgerät:	Power Analyser D 6100
Typ:	DRB40X61B1 (16)	PM-Nr.:	PM 0010
Prüfmuster-Nr.:	Ex.el. 480-11		



— 1	01	[V]	Spannung	0 - 300 V
— 2	02	[A]	Strom	0 - 20 A
— 3	10	[]	cos phi	0 - 1
— 4	12	[°C]	Kammer	20 - 70 °C
— 5	11	[°C]	Prüfling	20 - 70 °C

Versuchsparameter PM 17-1 Versuch Nr. 09

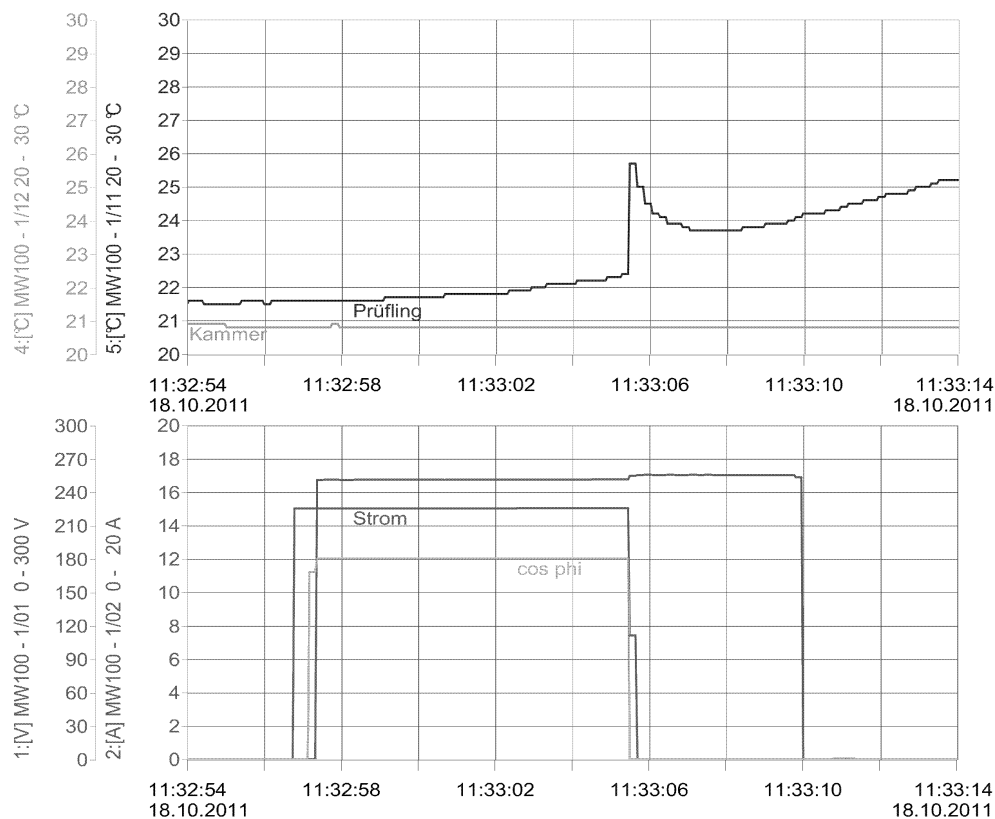
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Auftraggeber:	VDE Prüf- und Zertifizierungsinstitut	PM-Nr.:	PM 0542
Prüfgegenstand:	Motorprotector	Messgerät:	Power Analyser D 6100
Typ:	DRB40X61A1 (17)	PM-Nr.:	PM 0010
Prüfmuster-Nr.:	Ex.el. 481-11		



— 1	01	[V]	Spannung	0 - 300 V
— 2	02	[A]	Strom	0 - 20 A
— 3	10	[]	cos phi	0 - 1
— 4	12	[°C]	Kammer	20 - 40 °C
— 5	11	[°C]	Prüfling	20 - 40 °C

Versuchsparameter PM 18-1 Versuch Nr. 07

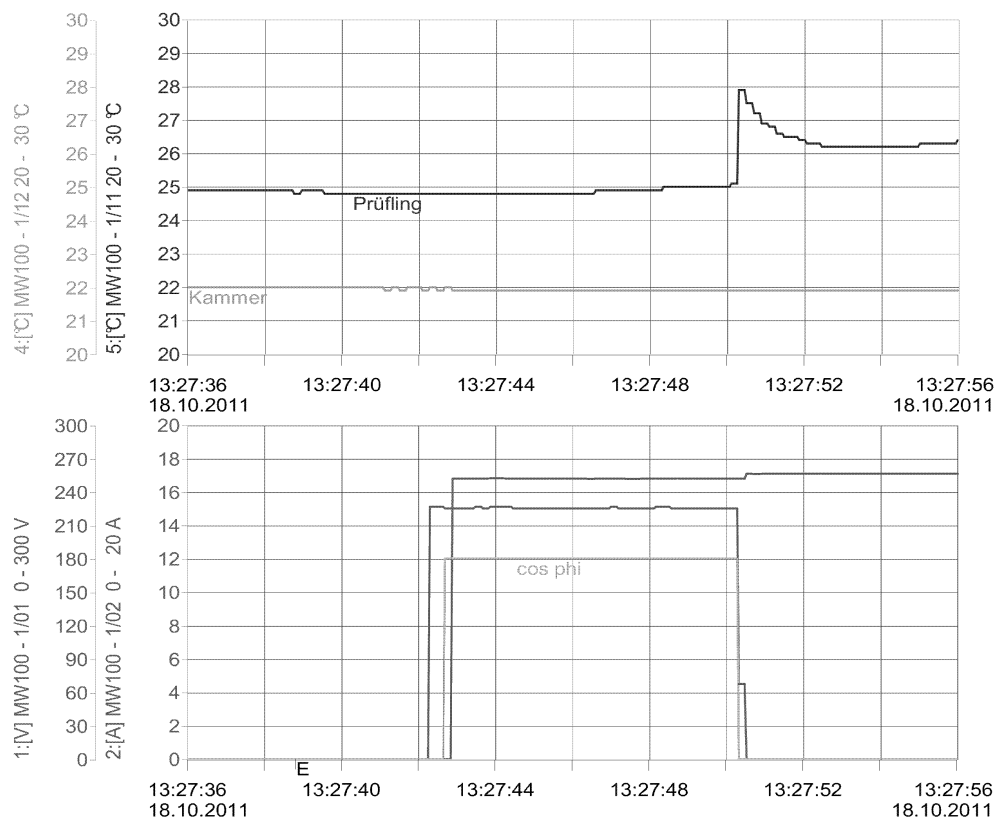
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Auftraggeber:	VDE Prüf- und Zertifizierinstitut	PM-Nr.:	PM 0542
Prüfgegenstand:	Motorprotector	Messgerät:	Power Analyser D 6100
Typ:	DRB40X61A1 (18)	PM-Nr.:	PM 0010
Prüfmuster-Nr.:	Ex.el. 482-11		



— 1	01	[V]	Spannung	0 - 300 V
— 2	02	[A]	Strom	0 - 20 A
— 3	10	[]	cos phi	0 - 1
— 4	12	[°C]	Kammer	20 - 30 °C
— 5	11	[°C]	Prüfling	20 - 30 °C

Versuchsparameter PM 19-1 Versuch Nr. 04

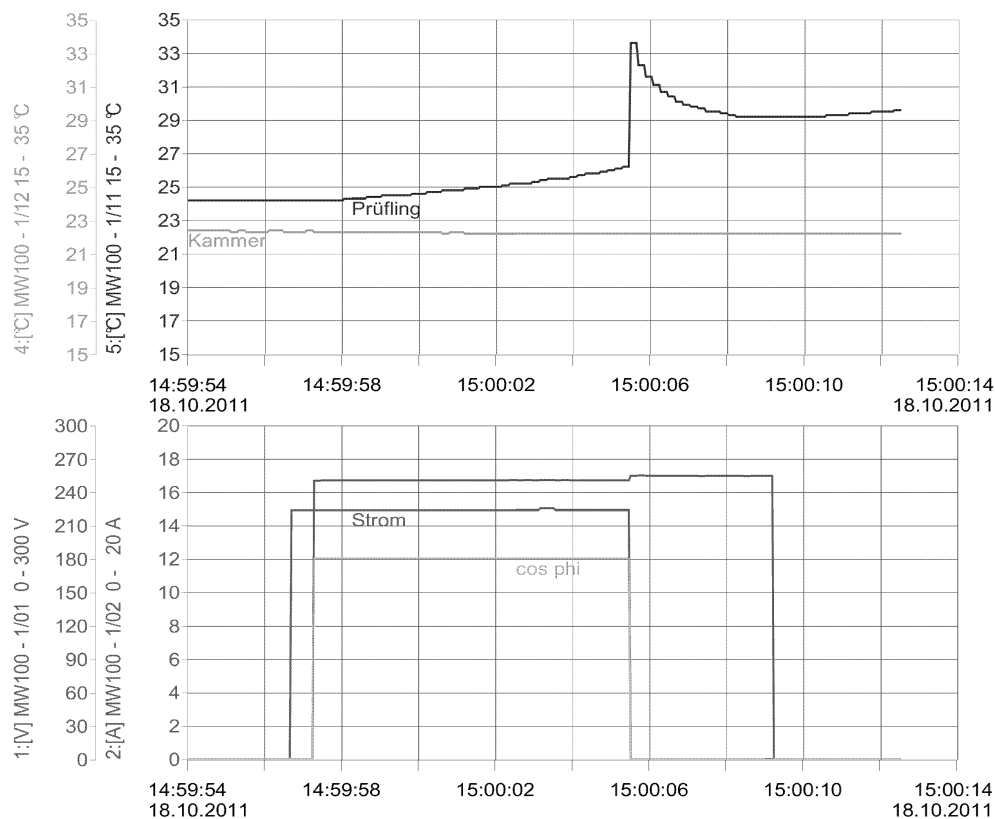
Auftrag-Nr.:	IB-11-8-107	Messgerät:	MW100
Auftraggeber:	VDE Prüf- und Zertifizierungsinstitut	PM-Nr.:	PM 0542
Prüfgegenstand:	Motorprotector	Messgerät:	Power Analyser D 6100
Typ:	DRB40X61B1 (19)	PM-Nr.:	PM 0010
Prüfmuster-Nr.:	Ex.el. 483-11		



— 1	01	[V]	Spannung	0 - 300 V
— 2	02	[A]	Strom	0 - 20 A
— 3	10	[]	cos phi	0 - 1
— 4	12	[°C]	Kammer	20 - 30 °C
— 5	11	[°C]	Prüfling	20 - 30 °C

Versuchsparameter PM 20-1 Versuch Nr. 02

Auftrag-Nr.:	IB-11-8-107	Messgerät:	MW100
Auftraggeber:	VDE Prüf- und Zertifizierungsinstitut	PM-Nr.:	PM 0542
Prüfgegenstand:	Motorprotector	Messgerät:	Power Analyser D 6100
Typ:	DRB40X61A1 (20)	PM-Nr.:	PM 0010
Prüfmuster-Nr.:	Ex.el. 484-11		



1	01	[V]	Spannung	0 - 300 V
2	02	[A]	Strom	0 - 20 A
3	10	[]	cos phi	0 - 1
4	12	[°C]	Kammer	15 - 35 °C
5	11	[°C]	Prüfling	15 - 35 °C

REPORT**IB-07-8-021****about the experimental testing of enclosed-break devices****1 Order**

The VDE Prüf- und Zertifizierungsinstitut in 63069 Offenbach (GERMANY) engaged with the letter 5001300-4510-0004/83602 of 26 February 2007 the IBExU Institut für Sicherheitstechnik GmbH with the experimental testing of the Temperature controller type DRB series in explosive atmosphere regarding the proof of type of protection enclosed-break devices according to IEC/EN 60079-15:2005, paragraph 33.4.

2 Test item

Temperature controller

- Type: DRB series
- Voltage: 250 V
- Current: max. 14 A
- cos phi: 0.6
- Service temperature range: -20 °C up to max. 150 °C

3 Test documents

- Letter 5001300-4510-0004/83602 of the customer of 26 February 2007
- EN 60079-15:2005 (complies with IEC 60079-15:2005, ed. 3)
- 7 pieces of Temperature controller type DRB-42V61A1

The test items were delivered to IBExU on 01 March 2007.

4 Test execution**4.1 Objectives**

It was the task to examine experimentally the ignition safety (the non-ignition of an explosive atmosphere) of the Temperature controllers for gases and vapors of the Group IIA with the parameters specified under chapter 2.

The bases of the test are the requirements in IEC/EN 60079-15:2005, Paragraph 33.4, for enclosed-break devices.

In the context of these examinations there was not the task to check the constructive requirements for apparatus in type of protection "n" (apparatus for zone 2) for the compliance with IEC/EN 60079-15.

4.2 Description of the test item

The Temperature controllers serve for the protection of motor compressors at refrigerating appliances. A special black plastic base serves as support part of the functional parts, a plastic lid is pressed in on the top side. Inside is a bimetal contact bridge and below is a heating element. At one side of the plastic case a plug contact 6.3 mm is led to the outside and on the lid is a second contact as a socket. Heating element and bimetal plate are connected with the motor winding in row. All gaps were sealed with glue.

The free internal volume of the switch chamber is less than 20 cm³ (about 1 cm³). The enclosures of the test samples were equipped with a thread and a hose connection. So it was possible to fill the switch chamber with the test gas. A second bore hole with hose connection serves for the discharge of the test gas during the purging and also for the uptake of the thermocouple.

4.3 Requirements in IEC/EN 60079-15:2005

Enclosed-break devices are devices, which incorporate electrical contacts that are made and broken. These devices will withstand an internal explosion of the flammable gas or vapor which may enter it without suffering damage and without communicating the internal explosion to the external flammable gas or vapor.

Before the tests any removable seals have to be removed. Any remaining non-metallic parts will have been subjected to the conditioning test described in paragraph 33.3.2. These parts have to be stored continuously for four weeks in an ambience of 90 % relative humidity and at a temperature of 10 K above the maximum temperature in rated service. In case of a maximum service temperature above 85 °C the period of four weeks specified above will be replaced by a period of two weeks at 95 °C and 90 % relative humidity followed by a period of two weeks at a temperature of 10 K above the maximum temperature in rated service. After that, a storage for 24 hrs at a temperature of 5 K below the minimal ambient temperature shall be carried out.

Then the test of the enclosed-break devices according to paragraph 33.4.3 will be carried out. The explosive gas atmosphere fixed for the Group IIA, IIB or IIC has to be ignited inside the device by the operation of the enclosed contacts when connected to the maximum rated source of energy, power and load in terms of voltage, current, frequency and power factor.

A make and break test shall be repeated 10 times with a fresh gas mixture for each test.

After the test the device shall show no visible signs of damage; no external ignition shall occur and there shall be no failure to clear the arc when the switch contacts are opened.

4.4 Description of the test equipment

The test equipment is schematically shown in annex 1 of this report. It consists of the following equipment and means of work:

Explosion chamber

The explosion chamber essentially consists of a cylindrical container (Piacryl) with a bursting foil mounted on the top. The volume amounts 18 dm³. In the base plate and at the cylinder are introduced and sealed the instrument leads and the supply lines.

Conditioning of the test gas mixture

The explosive gas atmosphere required for the Group IIA (6.5 % ± 0.5 % ethylene, 93.5 % ± 0.5 % air) was processed in the explosion chamber by volumetric gas conditioning. Dosage equipment with Digital Mass Flow Controllers served for this.

The homogeneous mixture conditioning was ensured by flushing the explosion chamber and the test item with the explosive gas/air mixture. The burning gas quota (ethylene) in the explosion chamber was checked in addition for the maintenance of the permissible tolerance with gas interferometer according to Rayleigh-Haber-Löwe.

Measuring device for electrical parameters

The predefined electrical load of the switching contacts was made by switching on ohmic resistors and inductances in the AC circuit.

With a Wide Band Power Analyzer D 6100 (manufacturer: Norma) the required parameters current, voltage and power factor were measured during the examining operation and registered with an 8-channel recorder type LR 8100 (manufacturer: YOKOGAWA). The ignition in the test item was perceived acoustically and recorded by the temperature rise by means of a thermocouple. For that, a thermocouple was introduced into the tube connection at the test item after the mixture conditioning. The temperature course was recorded with the recorder LR 8100.

Test of thermal endurance

The test of thermal endurance occurs in conditioning and refrigeration cabinets which are also used for the thermal endurance tests according to EN 60079-0.

All used measuring instruments are included in the Quality Management System of IBExU certified according to ISO 9001. They are checked in regular intervals.

4.5 Test procedure and results

4.5.1 Test of thermal endurance

According to IEC/EN 60079-15, 33.3.2 the test samples were stored for two weeks at 95 °C heat and 90 % rel. humidity, two weeks at 160 °C heat as well as for 24 hrs at -25 °C cold. No damages were noticed at the following visual examination.

4.5.2 Pre-test

Before the ignition tests specified in IEC/EN 60079-15 were carried out it had to be made sure that the appearing switching spark in the case can be considered as an effective ignition source for the test gas. To this, pre-tests were carried out at a Temperature controller, whose enclosure was opened.

At the test parameters 250 V AC, 14 A and $\cos \varphi$ 0.6 the ignition of the explosive gas mixture caused by the break spark could be proved (see Annex 2.1).

4.5.3 Type test

The tests were carried out on 02 May 07. In accordance with IEC/EN 60079-15, 33.4.3.2 eleven tests have to be carried out with a sample, which has the most adverse dimensions permitted by the construction drawings. There are no statements regarding the gaps of the test samples. To make sure the test results, four test samples were included into the test program.

The respective Temperature controller (originally closed) to be tested was put into the explosion chamber. The specified explosive gas atmosphere required for the Group IIA (6.5 ± 0.5) % ethylene/air mixture was processed in the explosion chamber and in the enclosure of the test item.

The contacts of the Temperature controller were operated with the preset test parameters. The ignition of the explosive gas atmosphere inside the test item occurred by the break spark.

The test results are summarised in the table. For some tests the test parameters are recorded in the annexes 2.2 and 2.5.



Test sample	Tests	Electrical parameters			Ignition of the explosive atmosphere	
		U [V]	I [A]	cos φ	Inside the test item	outside
1 a	2	250	14	0.6	yes	no
1 b	1	250	14	0.6	yes	no
1 c	1	250	14	0.6	yes	no
2	11	250	14	0.6	yes	no
3	11	250	14	0.6	yes	no
4	11	250	14	0.6	yes	no

Only two respectively one ignition tests could be carried out with test samples 1a, 1b and 1c, because the Temperature controller did not work then any more.

At none of the ignition tests the explosion triggered in the enclosure of the Temperature controllers was transferred to the outer explosive atmosphere. No damages were noticed at the case.

5 Summary

It was noticed with the examinations that the Temperature controller type DRB series at the conditions mentioned under 2 has the ignition safety (the non-ignition of an explosive atmosphere) fixed in IEC/EN 60079-15:2005 according to type of protection enclosed-break device for gases and vapors of the Group IIA. The explosions triggered inside the switching chamber by the break spark did not ignite the explosive mixture surrounding the device.

The assessment of the constructive design of the Temperature controllers regarding to the compliance with the requirements of IEC/EN60079-15 for apparatus of the type of protection "n" (apparatus for zone 2) was not object of these examinations.

The test result exclusively refers to the Temperature controller type DRB series specified under chapter 2.

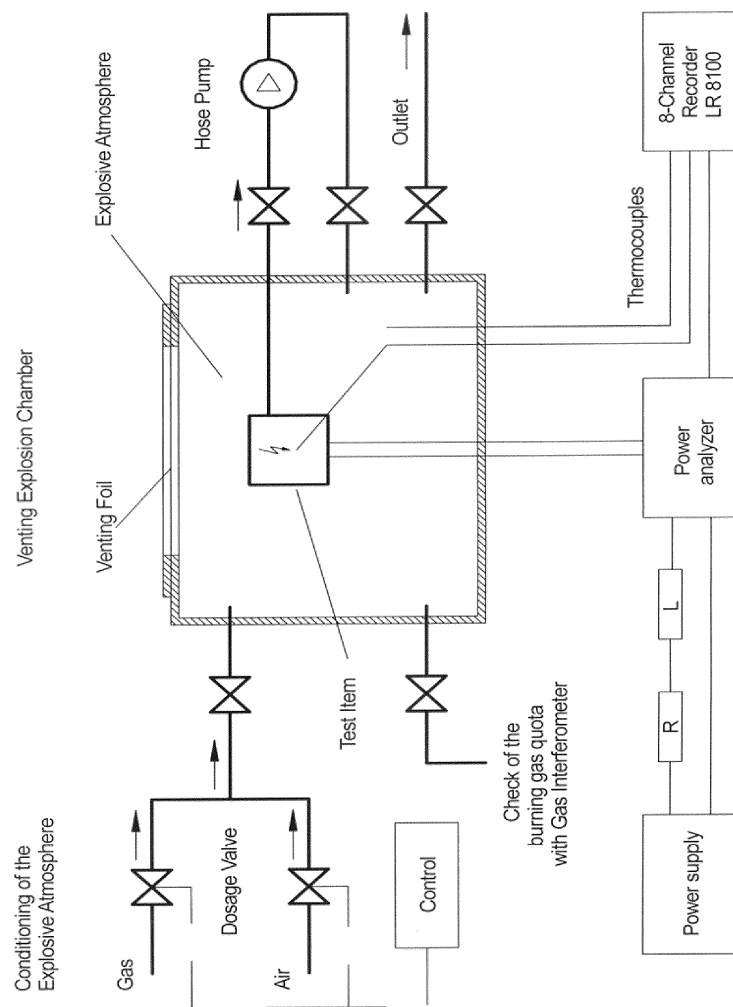
Annexes

Annex 1	Schematic setup of the test equipment
Annex 2	Representation of the test parameters (4 sheets)

IBExU

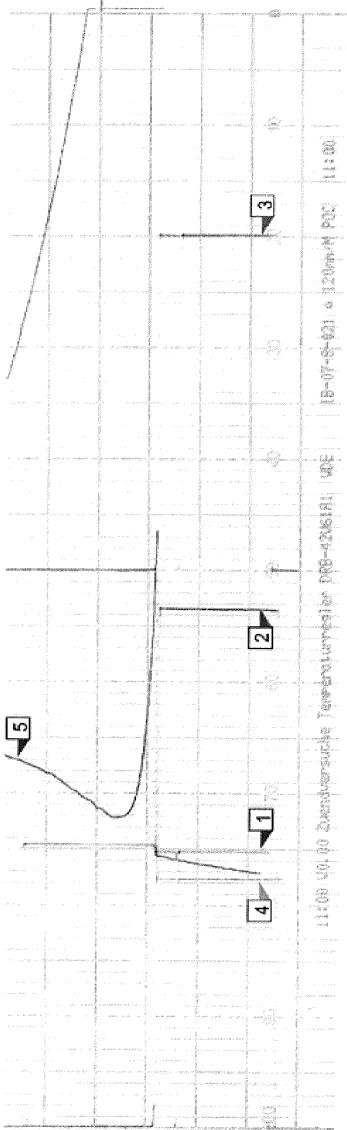
Institut für Sicherheitstechnik GmbH

Annex 1 to report IB-07-8-021

Annex 1: Schematic setup of the test equipment

Annex 2, Page 1 to report IB-07-8-021

Test parameters Pre-test



- Remarks:
- 1 - Voltage
 - 2 - Current
 - 3 - Power factor
 - 4 - Temperature test chamber
 - 5 - Temperature test item

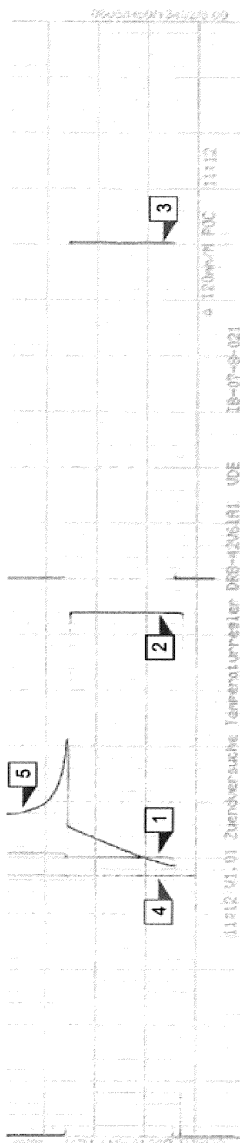
Recorder speed: 5 sec/Sct.

- Range 0 ... 1000 V
- Range 0 ... 30 A
- Range 1 cap ... 0 ... 1 ind.
- Range 0 ... 100 °C
- Range 0 ... 100 °C

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Institut für Sicherheitstechnik GmbH

Annex 2, Page 2 to report IB-07-8-021

Test parameters Test No. 1.01**Remarks:**

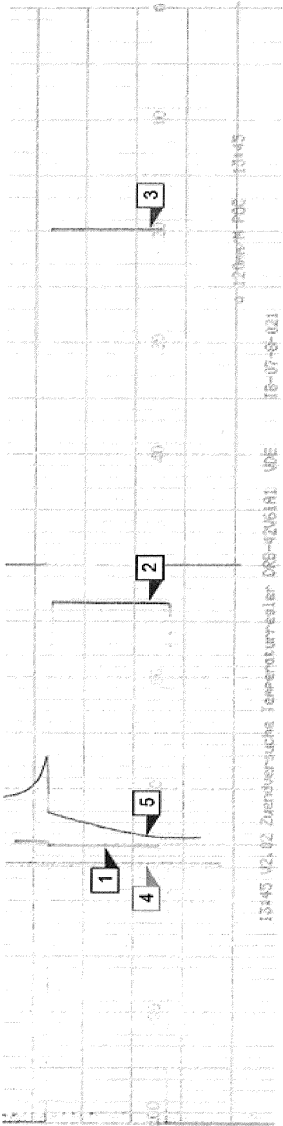
- 1 - Voltage
- 2 - Current
- 3 - Power factor
- 4 - Temperature test chamber
- 5 - Temperature test item

Recorder speed: 5 sec/Sct.

- Range 0 ... 1000 V
- Range 0 ... 30 A
- Range 1_{exp} ... 0 ... 1_{ind}
- Range 0 ... 100 °C
- Range 0 ... 100 °C

Annex 2, Page 3 to report IB-07-8-021

Test parameters Test No. 2.02



Remarks:

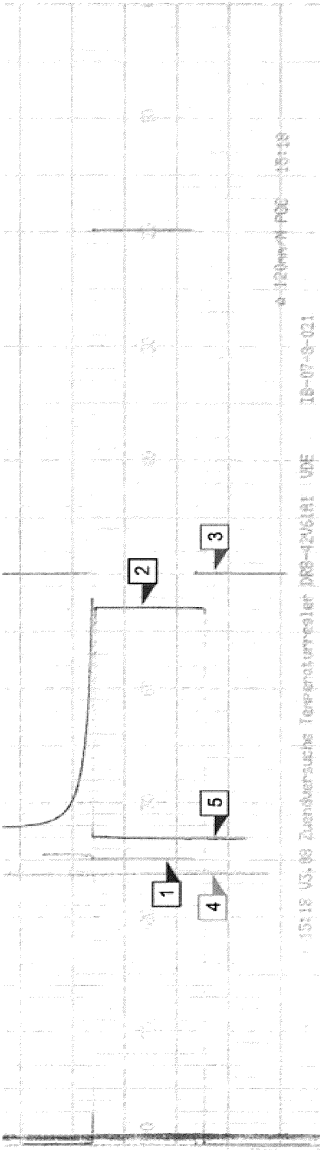
- 1 - Voltage
- 2 - Current
- 3 - Power factor
- 4 - Temperature test chamber
- 5 - Temperature test item

Recorder speed: 5 sec/Sct.

- Range 0 ... 1000 V
- Range 0 ... 30 A
- Range 1_{cap} ... 0 ... 1_{ind}
- Range 0 ... 100 °C
- Range 0 ... 100 °C

Annex 2, Page 4 to report IB-07-8-021

Test parameters Test No. 3.08



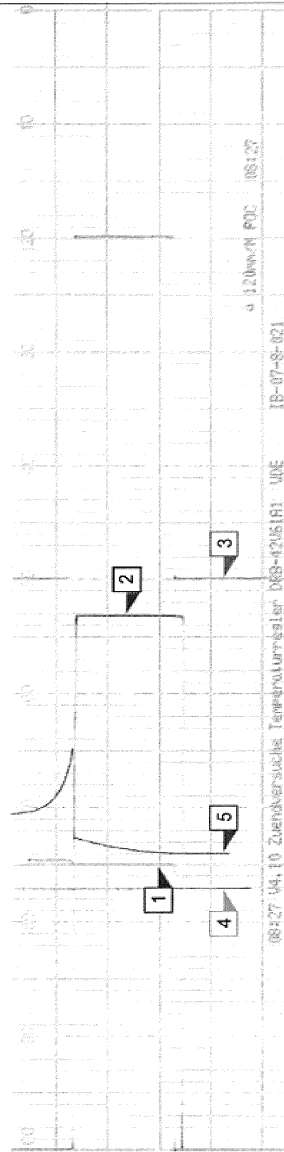
- Remarks:
- 1 - Voltage
 - 2 - Current
 - 3 - Power factor
 - 4 - Temperature test chamber
 - 5 - Temperature test item

Recorder speed: 5 sec/Sct.

- Range 0 ... 1000 V
- Range 0 ... 30 A
- Range 1_{cap} ... 0 ... 1_{ind}
- Range 0 ... 100 °C
- Range 0 ... 100 °C

Annex 2, Page 5 to report IB-07-8-021

Test parameters Test No. 4.10



Recorder speed: 5 sec/Sct.

- Remarks:
- 1 - Voltage
 - 2 - Current
 - 3 - Power factor
 - 4 - Temperature test chamber
 - 5 - Temperature test item

- Range 0 ... 1000 V
- Range 0 ... 30 A
- Range 1_{cap} ... 0 ... 1_{ind}
- Range 0 ... 100 °C
- Range 0 ... 100 °C



防爆电气设备 防爆合格证

编 号: CNEx13.4305X

制 造 单 位 九江恒通自动控制器有限公司
地址: 九江市开发区城西港区港兴路 18 号
产 品 名 称 防爆温度控制器
型 号 规 格 WDF 250VAC 50/60HZ 5A
防 爆 标 志 Ex nC IIA T1 Gc
产 品 标 准 HTQBEx-2011
总 装 图 号 LB11-HT

经对上述产品图样及技术文件的审查和样品检验, 确认符合下列标准:
IEC60079-0: 2007 爆炸性环境 第 0 部分: 设备 通用要求
IEC60079-15: 2010 爆炸性环境 第 15 部分: 由“n”型保护的设

记 事 1. 该产品适用于制冷剂为 R600a 的电冰箱中。
2. 防爆温度控制器安装后插脚应有可靠防护, 满足 IP54 要求。

本证有效期 2013 年 12 月 30 日至 2018 年 12 月 29 日

颁发日期 2013 年 12 月 30 日

中 心 主 任



国家防爆电气产品质量监督检验中心

地址: 中国河南省南阳市仲景北路20号

邮政编码: 473003

电话: 0377-63258564

传真: 0377-63208175

Http://www.china-ex.com

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国家防爆

防爆电气设备
防爆合格证

编号: CNEx13.0199X

制造单位	常州西玛特电器有限公司 (常州新北区春江镇魏村新华村)
产品名称	防爆压力式温度控制器
型号规格	WDFE 250V AC 6A
防爆标志	Ex nC II A T1 Gc
产品标准	Q/3204 BPH 005-2012
总装图号	WD.02

经对上述产品图样及技术文件的审查和样品检验, 确认符合下列标准:
IEC60079-0: 2007《爆炸性环境 第0部分: 设备 通用要求》
IEC60079-15: 2010《爆炸性环境 第15部分: “n”型保护的设

记 事 本产品适用于 R600a 制冷剂系列电冰箱。

本证有效期 2013 年 1 月 26 日至 2018 年 1 月 25 日

颁发日期 2013 年 1 月 26 日

中心主任



国家防爆电气产品质量监督检验中心

地址: 中国河南省南阳市仲景北路20号 邮政编码: 473008

电话: 0377-63258564 传真: 0377-63208175 Http://www.china-ex.com



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C E R T I F I C A T E
of Conformity

Registration No.: AK 50365587 0001

Report No.: 15090828 000

Holder: Changzhou Huishang Electric Co., Ltd.
No. 99, Xinsi Road, Xinbei District
Changzhou, Jiangsu Province
P.R. China

Product: Temperature Control
Temperature controller used in refrigerator

Identification: Type Designation: WD/WP Series
(Changzhou Huishang Electric Co., Ltd. (Logo))

Serial No.: N/A

Remark: Refer to test report GC 15090828 for details.
(Test specification: IEC/EN 60079-15: 2010, 5.1, 6.5.1,
22.3.1.1, 22.4.3.1, 22.4.3.2)

Tested acc. to: IEC 60079-15:2010

The certificate of conformity refers to the above mentioned product. This is to certify that the specimen is in conformity with the assessment requirement mentioned above. This certificate does not imply assessment of the production of the product and does not permit the use of a TÜV Rheinland mark of conformity.

Date 29.11.2016



TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg



TÜVRheinland®

Changzhou Huishang Electric Co.,
Ltd.

Date : 29/11/2016

Our ref. : QXY 01

Your ref.:

No. 99, Xinsi Road, Xinbei District
Changzhou, Jiangsu Province
P.R. China

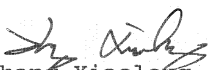
Ref : AK Certificate of Conformity

Type of Equipment : Temperature controller used in refrigerator
Model Designation : See Certificate
Certificate No. : AK 50365587 0001
Report No. : 15090828 000

Dear Ladies and Gentlemen,

With kind regards,

Certification Body


Zhang Xiaolong

Enclosure





防爆电气设备 防爆合格证

编号: CNEx15.3951X

制造单位	常州汇商电器有限公司 (江苏省常州市新北区新四路 99 号)
产品名称	防爆压力式温度控制器
型号规格	WD 250VAC 6A
防爆标志	Ex nC IIA T1 Gc
产品标准	Q/HS001-2015
总装图号	WD-001

经对上述产品图样及技术文件的审查和样品检验, 确认符合下列标准:
GB3836.1-2010 《爆炸性环境 第 1 部分: 设备 通用要求》
GB3836.8-2014 《爆炸性环境 第 8 部分: 由“n”型保护的的设备》

记 事

1. 本证书可代表产品: 防爆标志: Ex nC IIA T1 Gc。
WD 250VAC 6A、WP 250VAC 6A。
2. 该产品适用于制冷剂为 R600a 的电冰箱中。
3. 本产品使用时应保证温度控制器接线插脚与外部设备连接时的插拔力不小于 15N。

本证有效期 2015 年 12 月 12 日至 2020 年 12 月 11 日

颁发日期 2015 年 12 月 12 日

中心主任



国家防爆电气产品质量监督检验中心

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电话: 0377-63258564 传真: 0377-63208175 Http://www.china-ex.com



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国家防爆

防爆电气设备
防爆合格证

编号: CNEx13.0199X

制造单位	常州西玛特电器有限公司 (常州新北区春江镇魏村新华村)
产品名称	防爆压力式温度控制器
型号规格	WDF 250V AC 6A
防爆标志	Ex nC IIA T1 Gc
产品标准	Q/3204 BPH 005-2012
总装图号	WD.02

经对上述产品图样及技术文件的审查和样品检验, 确认符合下列标准:
IEC60079-0: 2007《爆炸性环境 第0部分: 设备 通用要求》
IEC60079-15: 2010《爆炸性环境 第15部分: “n”型保护的装置》

记 事 本产品适用于 R600a 制冷剂系列电冰箱。

本证有效期 2015 年 1 月 26 日至 2020 年 1 月 25 日

颁发日期 2015 年 1 月 26 日

中心主任



国家防爆电气产品质量监督检验中心

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电话: 0377-63258564 传真: 0377-63208175 Http://www.china-ex.com



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国家防爆

防爆电气设备
防爆合格证

编号: CNEx13.0201X

制造单位	常州西玛特电器有限公司 (常州新北区春江镇魏村新华村)
产品名称	防爆压力式温度控制器
型号规格	WPF 250V AC 6A
防爆标志	Ex nC II A T1 Gc
产品标准	Q/3204 BPH 005-2012
总装图号	WP.02

经对上述产品图样及技术文件的审查和样品检验, 确认符合下列标准:
IEC60079-0: 2007《爆炸性环境 第0部分: 设备 通用要求》
IEC60079-15: 2010《爆炸性环境 第15部分: “n”型保护的的设备》

记 事

- 1、本证可代表产品:
WPF、WSFE、250V AC、6A、Ex nC II A T1 Gc。
- 2、本产品适用于 R600a 制冷剂系列电冰箱。

本证有效期 2015 年 1 月 26 日至 2020 年 1 月 25 日

颁发日期 2015 年 1 月 26 日

中心主任



国家防爆电气产品质量监督检验中心

地址: 中国河南省南阳市仲景北路20号 邮政编码: 473008

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国家防爆

Electrical Apparatus for Explosive Atmospheres
CERTIFICATE OF CONFORMITY

Cer. No.: CNEx11.3493X

Manufacturer Zhejiang Changdecheng Electric Appliances Co., Ltd.
(East-town Zone, Hongqiao, Yueqing, Zhejiang, China)

Name of Product Explosion-proof Door Switch

Type of Product HC-050K.4 250V AC 2.5A/125V AC 5A

Marking Ex nC II A T1 Gc

Standard Q/CDC.004-2011

Drawing No. 5399-3603130300

The drawings, technical documents and the samples are verified and certified according to standard(s) for safety as below:

IEC60079-0:2007 Explosive atmospheres - Part 0: Equipment-General requirements
IEC60079-15:2010 Explosive atmospheres - Part 15: Equipment protection by type of protection "n"

- Note**
1. The certificate covers the following products:
HC-050K.4, HC-050K.5, 250V AC 2.5A/125V AC 5A
Ex marking: Ex nC II A T1 Gc
 2. This product was applied to the refrigerator which refrigeration is R600a.

Valid Date Form December 14, 2011 to December 13, 2016

Issue Date December 14, 2011

Director



**CHINA NATIONAL QUALITY SUPERVISION AND TEST CENTRE
FOR EXPLOSION PROTECTED ELECTRICAL PRODUCTS**

Address: No.20 North Zhongjing Rd, Nanyang, Henan(473008), P.R.China
Tel: 0377-63258564 Fax: 0377-63208175 Http://www.china-ex.com



Note: This certificate is only valid for the products which identify with the sample(s) tested and verified. Holder(s) of this certificate have the responsibility to ensure the products complying with relevant standard(s).

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防爆电气设备 防爆合格证

编号: CNEx16.2597X

制造单位 浙江昌德成电器有限公司
(浙江省乐清市虹桥镇东工业区(钱家洋))
产品名称 防爆门灯开关
型号规格 HC-050K.4 250V AC 2.5A/125V AC 5A
防爆标志 Ex nC II AT1 Gc
产品标准 Q/CDC.004-2016
总装图号 5399-3603130300

经对上述产品图样及技术文件的审查和样品检验, 确认符合下列标准:
GB3836.1-2010《爆炸性环境 第1部分: 设备 通用要求》
GB3836.8-2014《爆炸性环境 第8部分: 由“n”型保护的 设备》

记 事 1、本证可代表产品: 防爆标志: Ex nC II AT1 Gc
HC-050K.4, HC-050K.5, 250V AC 2.5A/125V AC 5A。
2、本产品适用于 R600a 制冷剂系列电冰箱。

本证有效期 2016 年 8 月 19 日至 2021 年 8 月 18 日

颁发日期 2016 年 8 月 19 日

中心主任



国家防爆电气产品质量监督检验中心

地址: 中国河南省南阳市仲景北路20号 邮政编码: 473008

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Electrical Apparatus for Explosive Atmospheres

CERTIFICATE OF CONFORMITY

Cert. No.: CNEx 14.3155X

Manufacturer SHENZHEN GOODPAL ELECTRONICS CO.,LTD
(Address: C Rm,28/F, 3th Building, Scientific R &D Garden of Chinese Technology Developing Institute, South 1th Road of Hi & New-Tech Zone, Shenzhen, P.R.China)

Name of Product Push switch

Type of Product P29 250VAC 6A

Marking Ex nC IIA T1 Gc

Standard Q/BR 02-2014

Drawing No. P29-00.00

The drawings, technical documents and the samples are verified and certified according to standard(s) for safety as below:

IEC 60079-0: 2011 Explosive atmospheres - Part 0: Equipment - General requirements

IEC 60079-15: 2010 Explosive atmospheres - Part 15: Equipment protection by type of protection 'n'

- Note**
1. This product is applicable to the refrigerator series with coolant R600a.
 2. This certification also covers the following models:
Ex-marking: Ex nC IIA T1 Gc
P29, 250VAC, 6A, 250VAC, 2.5A.

Valid Date From Nov 26, 2014 to Nov 25, 2019

Issue Date Nov. 26, 2014

Director



CHINA NATIONAL QUALITY SUPERVISION AND TEST CENTRE
FOR EXPLOSION PROTECTED ELECTRICAL PRODUCTS

Address: No.20 North Zhongjing Rd, Nanyang, Henan(473008), P.R.China

Tel: 0377-63258564 Fax: 0377-63208175 [Http://www.china-ex.com](http://www.china-ex.com)

Note: This certificate is only valid for the products which identify with the sample(s) tested and verified. Holder(s) of this certificate have the responsibility to ensure the products complying with relevant standard(s).

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Electrical Apparatus for Explosive Atmospheres
CERTIFICATE OF CONFORMITY

Cer. No.: CNEx14.2665X

Manufacturer Zhejiang Changdecheng Electric Appliances Co.,Ltd.
(Add: East-town Zone,Hongqiao,Yueqing,Zhejiang,China)

Name of Product Explosion-proof Door Switch

Type of Product E12-3 E12-1

Marking Ex nC IIA T1 Gc

Standard Q/CDC.002-2014

Drawing No.

The drawings, technical documents and the samples are verified and certified according to standard(s) for safety as below:

IEC60079-0: 2007 Explosive atmospheres – Part 0: Equipment–General requirements.

IEC60079-15: 2010 Explosive atmospheres – Part 15: Equipment protection by type of protection "n".

Note This product can be used only in Refrigerator that adopt R600a as refrigerant.

Valid Date From October 28, 2014 to October 27, 2019

Issue Date October 28, 2014

Director



**CHINA NATIONAL QUALITY SUPERVISION AND TEST CENTRE
FOR EXPLOSION PROTECTED ELECTRICAL PRODUCTS**

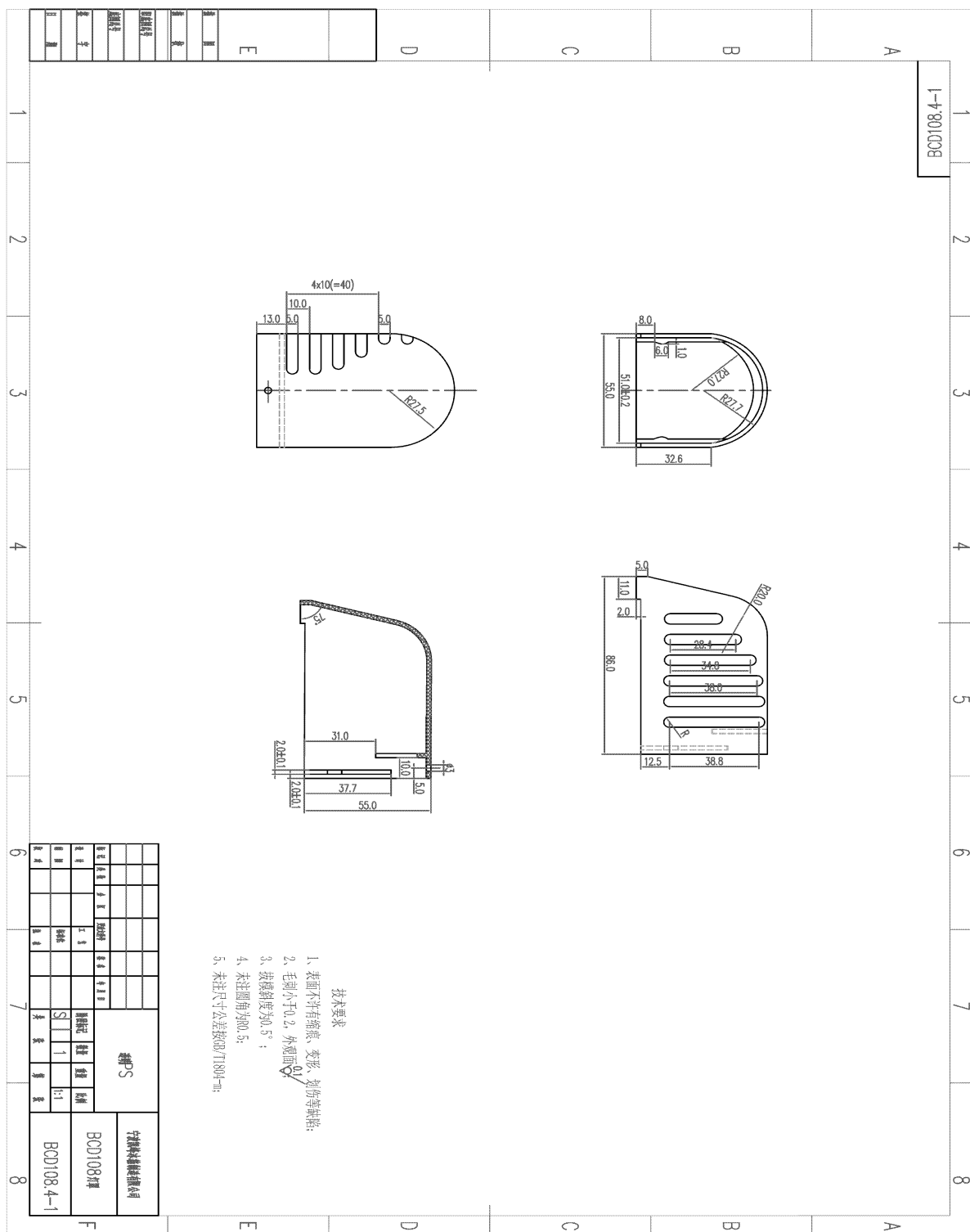
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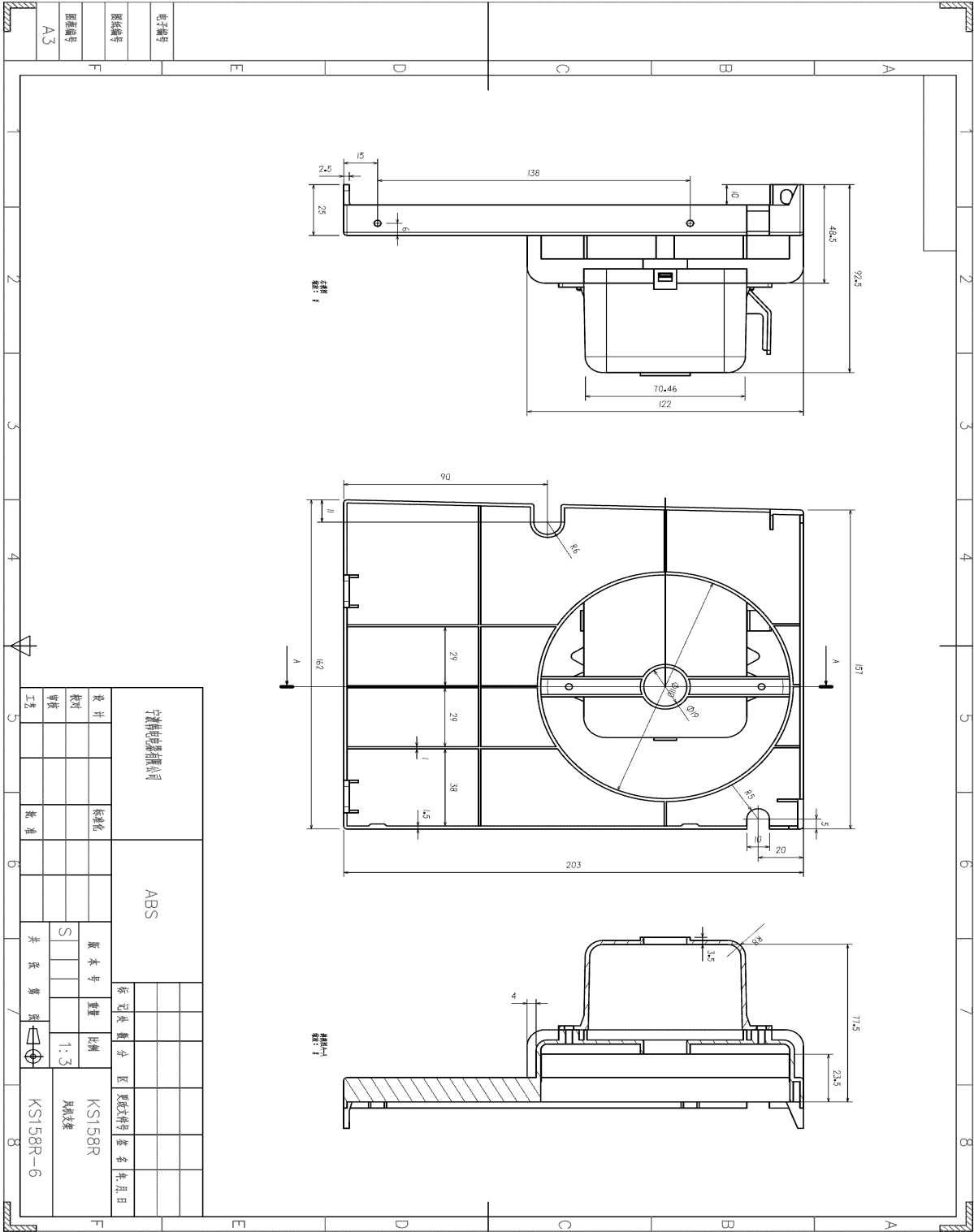
Tel: 0377-63258564 Fax: 0377-63208175 Http://www.china-ex.com



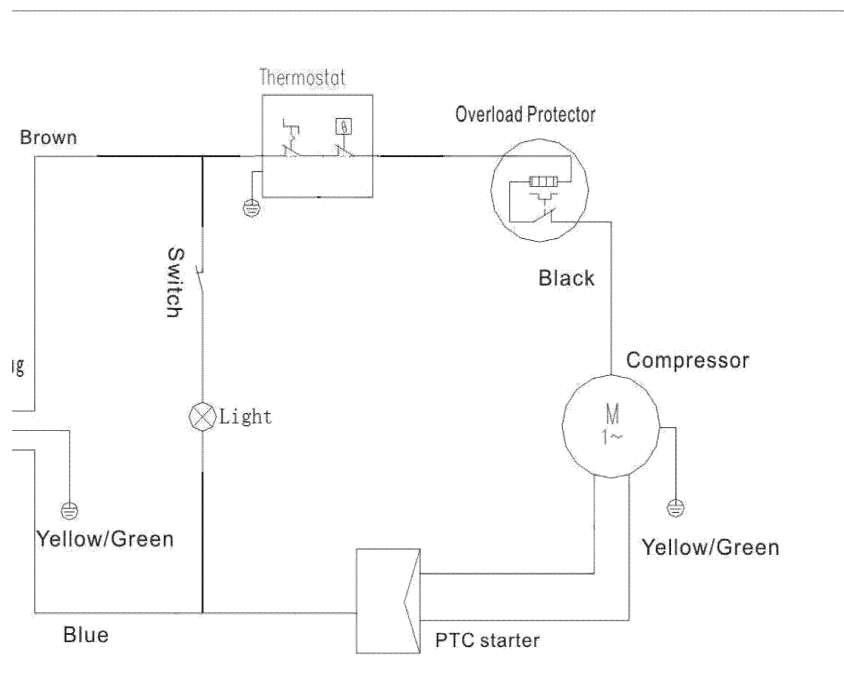
Note: This certificate is only valid for the products which identify with the sample(s) tested and verified. Holder(s) of this certificate have the responsibility to ensure the products complying with relevant standard(s).

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Refrigerator

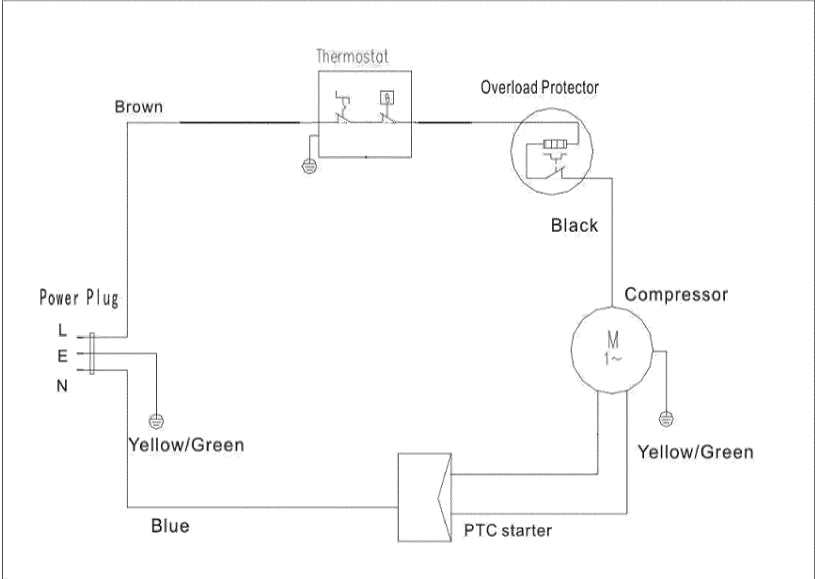


TECHNICAL DATA

Model	KS-158R
RATED VOLTAGE	115 V~
RATED FREQUENCY	60Hz
RATED CURRENT	2.0A
REFRIGERANT/AMOUNT	R600a/3
INSULATION BLOWING GAS	C ₅ H ₁₀
HIGH SIDE	2.5MPa
LOW SIDE	0.88MPa

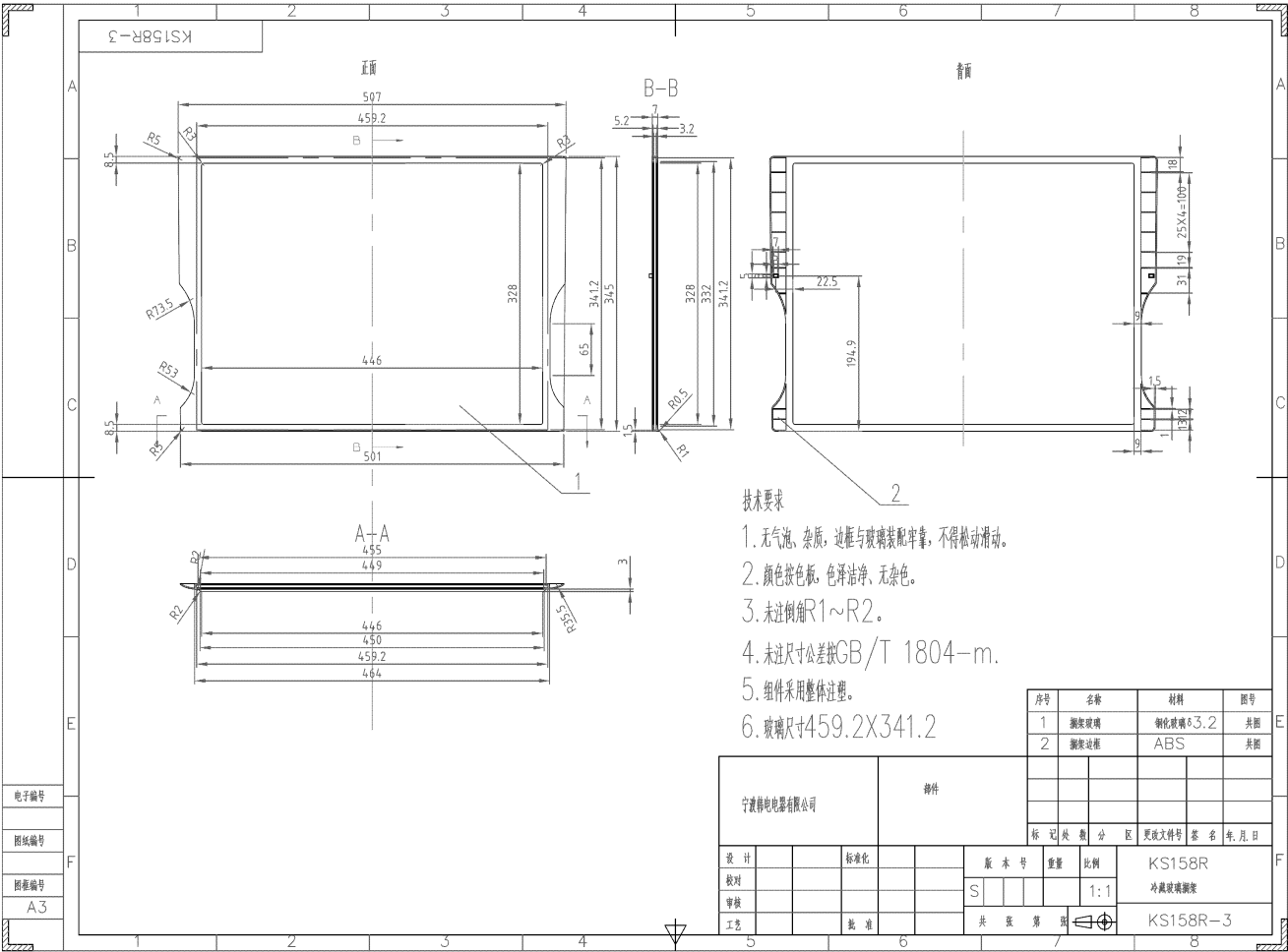
Handian Electric Appliance Co., Ltd.

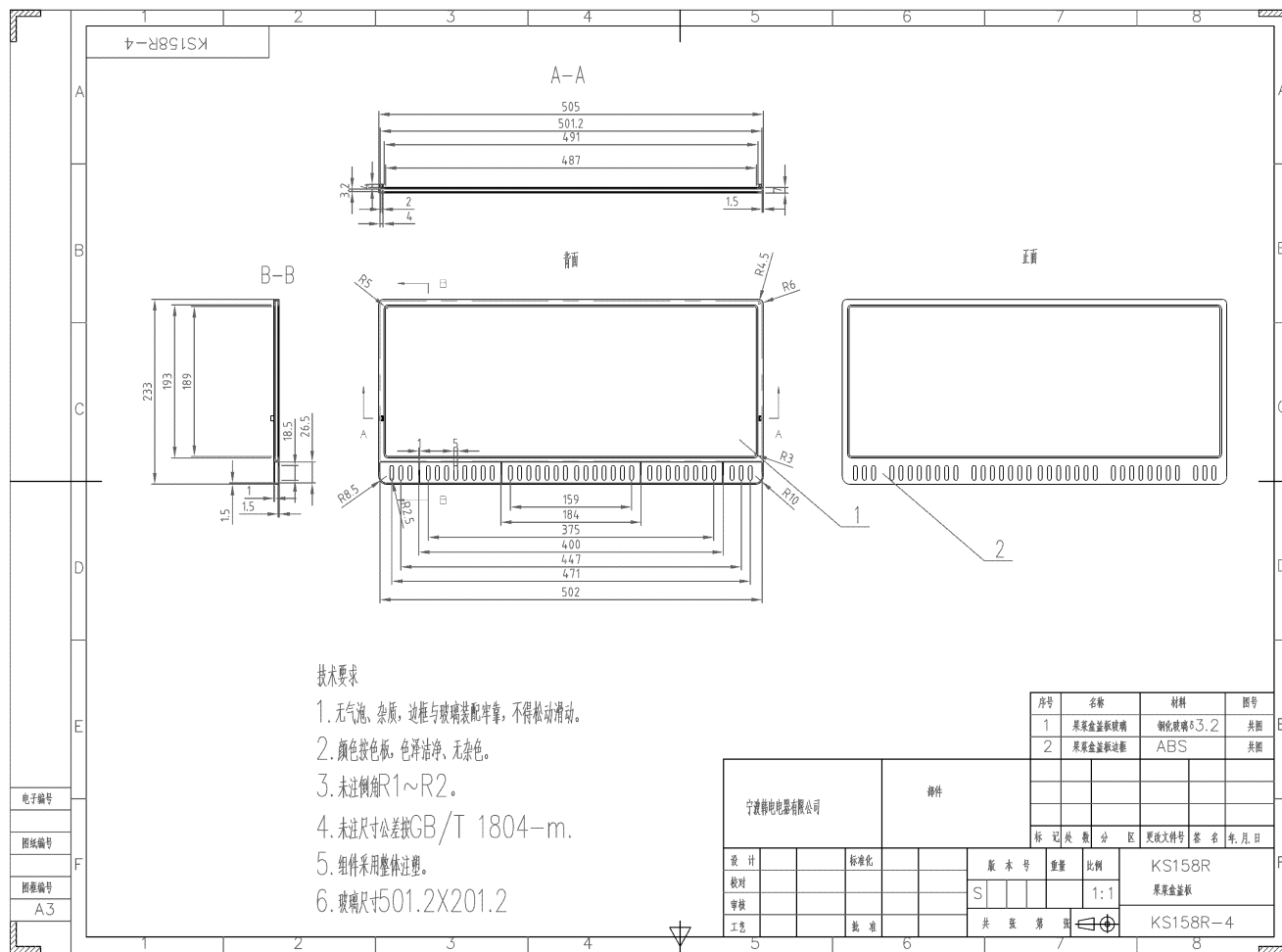
Refrigerator



TECHNICAL DATA	
Model	KS-91R
RATED VOLTAGE	115 V~
RATED FREQUENCY	60Hz
RATED CURRENT	1.0A
REFRIGERANT/AMOUNT	R600a/21g
INSULATION BLOWING GAS	C ₅ H ₁₀
HIGH SIDE	1.5MPa
LOW SIDE	0.2MPa

Ningbo HanDian Electric Appliance Co.,Ltd.





The drawing includes three views of the GPS device: a front view (top), a side view (middle), and a top view (bottom). The front view shows a rectangular device with a width of 86mm and a height of 100mm. The side view shows a depth of 20mm. The top view shows a rectangular shape with dimensions 86mm by 100mm, with a 10mm wide section on the right side. The title block is located in the bottom right corner and contains the following information:

设计		校核		审核		工艺		标准		版本		比例		更改文件号		签名		年月日	
S										1:1		1:1		KS158R		果森鑫			
共		张		第		张		图		KS158R-5									

DESCRIPTION

PRODUCT COVERED:

USL, CNL Household Refrigerator-freezer **Models** KD-93F, NPWHI, NPYXX, NPYXU.

GENERAL:

The model is cord-connected household Refrigerator-freezer, No automated defrost systems are employed. The model employs Refrigerant R-600a (flammable refrigerant, classified as Class3 "Higher Flammability" by ASHRAE34). The volume of the Refrigeration compartment is 63.6L and the volume of the freezer compartment is 25.2L.

TECHNICAL CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE'S USE):

USL - Products designated USL have been investigated using requirements contained in the Standard for Safety of Household and Similar Electrical Appliances, Part 1: General Requirements, UL 60335-1, and for Household and Similar Electrical Appliances, Part 2: Particular Requirements for Refrigerating Appliances, Ice-Cream Appliances and Ice-Makers, UL 60335-2-24.

CNL - Products designated CNL have been investigated using requirements contained in Standard for Safety of Household and Similar Electrical Appliances, Part 1: General Requirements, CAN/CSA-22.2 No.60335-1:11, and for Household and Similar Electrical Appliances, Part 2: Particular Requirements for Refrigerating Appliances, Ice-Cream Appliances and Ice-Makers, CAN/CSA-22.2 No.60335-2-24-06.

RATINGS:

See MARKING.

INSTRUCTIONS:

Instructions shall be provided with the appliance so that the appliance can be used safely. If it is necessary to take precautions during user maintenance, appropriate details shall be given. Refer to ILL. 1 for details.

The instruction shall provide the following information.

1. This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
Children should be supervised to ensure that they do not play with the appliance.
2. If the SUPPLY CORD is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified person in order to avoid a hazard.
3. A child entrapment warning statement shall be included in either the operating instructions or in a use and care manual provided with each refrigerator and shall include the following or equivalent wording:
*Take off the doors
*Leave the shelves in place so that children may not easily climb inside.
4. For appliances which use flammable insulation blowing gases, the instructions shall regarding disposal of the appliance.
5. For appliances which use flammable refrigerants, the instructions the instructions shall include information pertaining to the installation, handling, servicing and disposal of the appliance.
6. For models used with Refrigerant R600a, the instruction shall provide following warning.
 - WARNING: Keep ventilation openings, in the appliance enclosure or in the built-in structure, clear of obstruction.
 - WARNING: Do not damage the refrigerant circuit.
 - WARNING: Do not use electrical appliances inside the food storage compartments of the appliance, unless they are of the type recommended by the manufacturer.
7. The instructions include the following wording or equivalent regarding the use of extension cords: Do not use extension cords or ungrounded (two prong) adapters.

For units to be sold in Canada, instruction shall be in English and French.

MODEL DIFFERENCES:

Model NPWHI is identical to model KD-93F except for model designation.

Model NPYXX is identical to model KD-93F except for model designation.

Model NPYXU is identical to model KD-93F except for model designation.

CONSTRUCTION DETAILS:

10 MARKING:

10-5 Nameplate Marking	Recognized (PGDQ2,8)
Model	KD-93F
Material	
Manufacturer	See Sec. Gen.
Recognized Designation	See Sec. Gen.
Location	Unit Rear or unit sides or side of Refrigeration compartment cabinet liner
Secured By	Adhesive
Listee Name	See Cover Page
Refrigerant	
- Type	R600a
- Amount, g	34
Design Pressure	
High Side, psig (Not required)	362.5
Low Side, psig (Not required)	127.6
Electrical Rating	
V	115
A - (Refrigeration) (Total)	2.0
Frequency, Hz	60
Date Code	Year and Week

Models above assembled with the following refrigeration system:

Nameplate footnote	Compressor	Cond. ILL.	Evap. ILL.	Capillary Code No.
@1	VY53R16B	3	4	CT1

10-10 Special Marking

Model		KD-93F
1A.	Type or Material	Same as nameplate or mold on rear cabinet
	Manufacturer	See Sec. Gen.
	Recognized Designation	See Sec. Gen.
	Location	Unit side
	Quote Marking	Cyclopentane
	Marking Letter Size	Min. 16.2 mm in height
Model		KD-93F
2A.	Type or Material	Same as nameplate or mold on unit rear
	Manufacturer	See Sec. Gen.
	Recognized Designation	See Sec. Gen.
	Location	Near any evaporator can be contacted by the consumer
	Quote Marking	DANGER - Risk Of Fire Or Explosion. Flammable Refrigerant Used. Do Not Use Mechanical Devices To Defrost Refrigerator. Do Not Puncture Refrigerant Tubing.
	Marking Letter Size	Min. 6.4 mm in height
	Special Comments	This marking is optional for models which the evaporator cannot be contacted by consumer.
2B.	Type or Material	Same as nameplate or mold on unit rear
	Manufacturer	See Sec. Gen.
	Recognized Designation	See Sec. Gen.
	Location	Unit Rear, near the machine compartment
	Quote Marking	DANGER - Risk Of Fire Or Explosion. Flammable Refrigerant Used. To Be Repaired Only By Trained Service Personnel. Do Not Puncture Refrigerant Tubing.
	Marking Letter Size	Min. 6.4 mm in height
2C.	Type or Material	Same as nameplate or mold on unit rear
	Manufacturer	See Sec. Gen.
	Recognized Designation	See Sec. Gen.
	Location	Unit Rear, near the machine compartment
	Quote Marking or equivalent	CAUTION - Risk Of Fire Or Explosion. Flammable Refrigerant Used. Consult Repair Manual/Owner's Guide Before Attempting To Service This Product. All Safety Precautions Must be Followed.
	Marking Letter Size	Min. 6.4 mm in height

10-10 Special Marking (Cont'd)

Model	KD-93F
2D. Type or Material	Same as nameplate or mold on unit rear
Manufacturer	See Sec. Gen.
Recognized Designation	See Sec. Gen.
Location	Unit Rear, near the machine compartment
Quote Marking	CAUTION - Risk Of Fire Or Explosion. Dispose Of Properly In Accordance With The Applicable Federal Or Local Regulations. Flammable Refrigerant Used.
Marking Letter Size	Min. 6.4 mm in height
2E. Type or Material	Same as nameplate or mold on unit rear
Manufacturer	See Sec. Gen.
Recognized Designation	See Sec. Gen.
Location	Near any exposed refrigerant tubing
Quote Marking	CAUTION - Risk Of Fire Or Explosion Due To Puncture Of Refrigerant Tubing; Follow Handling Instructions Carefully. Flammable Refrigerant Used.
Marking Letter Size	Min. 6.4 mm in height
2F. Type or Material	Same as nameplate
Manufacturer	See Sec. Gen.
Recognized Designation	See Sec. Gen.
Location	Unit Rear, near the machine compartment
Quote Marking or equivalent	
Marking Letter Size	Min. 16.2 mm in height
2G. Type or Material	Painted or colored
Location	Refrigeration service tube
Marking	Refrigeration tubing or other devices through which the refrigerant is intended to be serviced shall be painted or colored red, Pantone® Matching System (PMS) No. 185. This color shall be present at all places where service puncturing or otherwise creating an opening in the refrigerant circuit might be expected. In the case of a process tube on a compressor, the color mark shall extend at least 2.5 cm (1 inch) from the compressor.

20 ENCLOSURES:

20-5 Ultimate Enclosure

Model	KD-93F
Approximate Physical Size (including door), H x W x D, mm	834 x 475 x 535

20-10 Unit Base

Model	All
Material	Steel
Thickness, mm.	Minimum 0.4
Corrosion Protection (Method)	Zinc Coated
Bonding for Grounding (Method)	Screw-connected with machine compartment base

20-15 Unit Sides/Top

Model	All
Material	Steel
Thickness, mm.	Minimum 0.4
Corrosion Protection (Method)	Painted
Bonding for Grounding (Method)	Screw-connected with unit base.

20-20 Compressor Support Plate

Model	All
Material	Steel
Minimum Thickness, mm	Minimum 1.0
Corrosion Protection (Method)	Painted or Zinc Coated
Bonding for Grounding (Method)	By grounding wiring of the power supply cord.
Marking	Protective earth symbol shall be adjutant to the earthing terminal

20-25 Unit Rear

Model	KD-93F
Material	Steel
Thickness, mm	Minimum 0.25
Compressor Compartment Opening H x W, mm	203 x 410
Corrosion Protection (Method)	Zinc Coated
Bonding for Grounding (Method)	By screws or rivets to Compressor Compartment Sides

20-30 Cabinet Liner

Model	All
Material	Polymeric, See Section 30 for details

20-35 Unit Doors

Model	All
Material	Steel
Thickness, mm	2
Corrosion Protection (Method)	Painted
Bonding for Grounding (Method)	Not Required

20-40 Cabinet Door Liner

Model	KD-93F
Material	Polymeric, See Section 30 for details

20-45 Door Hinges

See ILL.2 for detail.

20-50 Compressor Compartment Sides

Model	All
Material	Steel
Thickness, mm	Minimum 0.25
Corrosion Protection (Method)	Zinc Coated
Bonding for Grounding (Method)	By screws or bolts or rivets to Unit Sides

20-55 Door Latching Device

Model	KD-93F
Type	Magnetic gasket
Comments	Around Freezer and refrigerator Compartment door.

20-60 Thermostat Box

Model	KD-93F
Location	In fresh food compartment
Material	Polymeric, See Section 30 for details
Method of Securement	Secured to Cabinet Liner by screws
Components Within	thermostat and lampholder
Comments	See FIG.6 for details

20-65 Drip Pan

Model	ALL
Location	Inside Machine Compartment, above Compressor
Material	Polymeric, see Section 30 for details
Dimension, W x D x H, mm	230 x 100 x 53
Thickness, mm. +	2.0
Method of Securement	Clipped on the compressor by buckle.
Comments	The drip pan is not flat to make sure the water flows along the intended side of it when overflow.

20-70 Lamp Guard

Model	KD-93F
Location	In fresh food compartment
No. Of Lamp Guard:	1
Material	Polymeric, see Section 30 for details
Dimension, W x L x H, mm	59x82x53
Thickness, mm. +	2.0
Method of Securement	Secured to Thermostat Box by screw and tab
Components Within	Lampholder
Comments	See ILL.12 for details

30 NONMETALLIC COMPONENTS:

Model	KD-93F
Cabinet Liner (Vacuum Formed)	Recognized (QMFZ2)
Manufacturer	Various
Material Designation	ABS
Thickness, mm. (minimum) +	1.5
Flammability Classification (minimum)	HB
Door Liner (Vacuum Formed)	Recognized (QMFZ2)
Manufacturer	Various
Material Designation	Various
Thickness, mm. (minimum) +	1.0
Flammability Classification (minimum)	HB
Thermostat Box body	Recognized (QMFZ2)
Manufacturer	Chi Mei Corporation (E56070)
Material Designation	PA-765
Thickness, mm (minimum)	2.0
Flammability Classification (minimum)	5VB

+ - Minimum thickness of sheet stock before forming.

30 NONMETALLIC COMPONENTS (CON'T) :

Model	KD-93F
Door Shelves, Freezer Compartment Cover, Drip Pan	Recognized (QMFZ2)
Manufacturer	Various
Material Designation	Various
Flammability Classification (minimum)	HB
Model	KD-93F
Lamp Guard	Recognized (QMFZ2)
Manufacturer	CHI MEI CORPORATION (E56070)
Material Designation	PH-879
Thickness, mm. (minimum)	2.0
Flammability Classification	V-0

30-5 Isolation From Ignition Sources

Model	All
-------	-----

All units wiring is Recognized (AVLV2, AVLV8 or CSA Certified) and rated VW-1, FT-1 or Listed SJT (rated FT-1 or FT-2) power cord. All wiring is routed and secured within the machine compartment or the cabinet liner. All wiring connectors shall be recognized with suitable rating. All wire splices are totally insulated and there are no exposed live parts. There are no open coils or exposed high voltage parts.

40 REFRIGERATION SYSTEM:

40-5 Condenser

Recognized

Model	KD-93F	
Manufacturer	CHENGHONG Electric Co., Ltd	
Corrosion Protection (Method)	Galvanization	
Mounting (Method)	Supported by the cabinet liner bracket and embedded in the foam material	
Bonding for Grounding (Method)	Through tubing to compressor	
Type of Construction	Tube on plate	
Tube on plate	Unit Left Side	Unit Right Side
Physical Size, mm	705*420	705*420
Plate Material	Steel	
Plate Thickness, mm	0.5	
Tubing Material	Galvanized steel	
Tubing OD, mm	4	
Tubing Wall Thickness, mm	0.5	
Total Tube Length, mm	10100	
Comments	See ILL. 3 for details	

+ - Information required if not a Recognized Component

40-10 Evaporator

Recognized (SLSV2)

Model	KD-93F	
Manufacturer	CHENGYUAN Electric Co., Ltd	
Corrosion Protection (Method)	Inherent	
Mounting (Method)	Supported by the cabinet liner bracket and Embedded in the foam material	
Bonding for Grounding (Method)	Through tubing to compressor	
Type of Construction	Tube on plate	
Tubing Material	Aluminum	
Tubing OD, mm	7.5	
Tubing Wall Thickness, mm	0.75	
Total Tube Length, mm	4100	
Comments	See ILL. 4 for details.	

+ - Not required if a Recognized Component.

40-15 Pressure Relief

Model	KD-93F
Means Provided	Soldered or Brazed Joint
Location	Refrigeration tubing joints

40-20 Drier

Model	KD-93F
Material	Copper
Length, mm.	85
OD, mm.	16
Wall Thickness, mm	0.5
Location	Machine Compartment
Corrosion Protection (Method)	Inherent

40-25 Refrigerant Control

Model	KD-93F
Capillary Tube - No. Provided	1
Material	Copper
OD, mm	1.9
Wall Thickness, mm	0.55
Length, mm	2000
Capillary Tubing Code (Not for inspector use)	CT1

40-30 Refrigeration System Joints

Model	KD-93F
Method of Joining	Soldered or Brazed Joint
	Refrigeration tubing joints

Note: Copper-aluminum transition joints are painted or enclosed by sleeve to prevent galvanic corrosion.

50 MOTOR - COMPRESSOR ASSEMBLY:

50-5 Compressor

Recognized (SLIS2, 8)

Model

KD-93F

Manufacturer

JIANGSU BAIXUE ELECTRIC APPLIANCES CO
LTD(SA13327)

Designation

VY53R16B

Electrical Rating

Volts

115

RLA (Not for Inspector Use)

0.9

LRA

5.4

Phase

1

Cycle

60

Bonding for Grounding (Method)

No. 18 AWG green colored ground wire
from compressor terminal block to unit
base. Each end of the ground wire is
secured with a closed eyelet and screw
with nut. Eyelets on painted surfaces
are provided with serrated-head
washers to break the paint

Overload Protector

External, Recognized (YFZW2, 8)

Manufacturer

Hangzhou Star Shuaier (E213160)

Designation

DRB21N61A1

Location

Compressor Terminal Enclosure

Special Comments (Not for Inspector
Use)The OLP complies with IEC 60079-15,
Group IIA used. See ILL. 7.

Compressor Start Assist Device+

Recognized (SDFY2, 8)

Model

KD-93F

Type

PTC

Manufacturer

HANGZHOU STAR SHUAIER ELECTRIC
APPLIANCE CO.,LTD (E232371)

Designation

QP2-4R7

Location

Compressor Terminal Enclosure

70 ELECTRICAL COMPONENTS:

70-5 Temperature Controller

Recognized (SDFY2, 8)

Model	KD-93F
Use (Loads Controlled)	Compressor
Manufacturer	JIUJIANG HENG TONG AUTO CONTROL DEVICE CO., LTD (E225669)
Designation	WDF series
Rating, FLA/LRA/V ac	6A/36A/125V
Location (Physical)	In the fresh food compartment
Mounting	Screws to thermostat enclosure.
Bonding for Grounding (Method)	A green/yellow ground wire is secured to the thermostat mounting plate and to the grounding terminal of the compressor.
Special Comments	This model complies with IEC 60079-15. See ILL. 9

Note: Located in ungrounded side of power supply

70-25 Lamp holder

Recognized (SEVS2, 8)

Model	KD-93F
Manufacturer	ZHEJIANG CHANGDECHENG ELECTRIC APPLIANCES CO LTD (E350559)
Designation	E12-1, E12-3
Rating	125V, 75W
Location	In the fresh food compartment
Mounting	Snap-fit into Temperature Controller Enclosure
Prevented from turning by:	By retaining groove
	This model complies with IEC 60079-15. (See ILL. 10)

70-30 Door Switches

Recognized (WOYR2, 8)

Model	KD-93F
Use (Loads Controlled)	Lamps
Manufacturer	ZHEJIANG CHANGDECHENG ELECTRIC APPLIANCES CO LTD (E239938)
Designation	HC-050K.4
Rating	125V , 60Hz, 5A
Location (Physical)	Cabinet Liner (Fresh Food Compartment)
Mounting	Rectangular switch is snap-fitted into rectangular opening
Comments	The switch complies with IEC 60079-15. (See ILL. 8).

80 INTERNAL WIRING:

80-5 Types

Recognized (AVLV2) appliance wiring material(1), Listed cords or Listed insulated wiring as described below. Wiring which is color-coded green or green with one or more yellow stripes is employed on grounding conductors only.

Model

All

Key No.	Wire Type (2)	Wire Style No. (3)	Minimum Wire Size AWG	Insulation (4)		
				Minimum Wall Thickness, mm	Minimum Temperature Rating, °C	Minimum Rating, V
1	AWM	1015	18	0.79	105	600
2	AWM	1007	18	2.0	80	300

- (1) Acceptable for refrigeration use.
- (2) Appliance wiring material, cord type or Listed wire type.
- (3) Applies only to Recognized appliance wiring material.
- (4) Information on the voltage and temperature ratings for the insulation of wiring that has a marked National Electrical Code Type designation need not be provided.
- (+) Integral with Recognized fan motor.

80-10 Wiring Methods

All wiring is installed and positively routed in such a manner that it is not subject to mechanical damage due to contact with sharp edges, abrasive surfaces, vibrating or moving parts. Exposed lengths of ripped parallel conductors do not exceed 3 mm.

Wiring, wiring connectors which are accessible without tools shall be protected with supplementary electrical insulation. 1 mm thick (minimum) electrical insulation is required unless specified differently in this Report.

Supplementary tubing used as electrical insulation as mentioned as above shall be secured on both ends by positive means. (cable tie, heat shrink, etc.)

All wiring connectors shall be Recognized with suitable rating and enclose live part totally.

Green or green with yellow stripe wire may be employed only as grounding conductors. Splices are not employed in grounding conductors unless otherwise noted in the Report.

Holes for the passage of wires or cords through walls, panels or barriers have smooth, rounded surfaces or are provided with smoothly rounded bushings.

All splices are mechanically secured to a fixed member or located in a separate enclosure.

Unless otherwise noted all wires terminate in quick-connect or eyelet type materials.

Wiring diagrams shown in ILL.

5

Model

KD-93

80-10 Wiring Methods (CONT'D)

Model

All

Wiring is employed as follows:

No. From Previous Page	Specify the electrical components connected to the wiring described		Specify all details of wire routing including locations and types of clamps, means of isolating from combustible materials, Recognized splice and wire connecting lead terminations, etc.
Key No.	From	To	Details
1	Power supply cord	Compressor	Wiring located in machine compartment shall be enclosed by supplementary insulation (YDPU2, 8, Rated 1mm thick minimum, VW-1, 600V minimum).
2	Compressor	Lamp	Routed within cabinet liner. Wiring located in machine compartment and evaporator compartment shall be enclosed by supplementary insulation (YDPU2, 8, Rated 1mm thick minimum, VW-1, 600V minimum).
2	Compressor	Temperature control	Routed within cabinet liner. Wiring located in machine compartment and evaporator compartment shall be enclosed by supplementary insulation (YDPU2, 8, Rated 1mm thick minimum, VW-1, 600V minimum).

90 SUPPLY CONNECTIONS:

90-5 Cord Connected Unit

Model	KD-93F
Power Supply Cord Set	Listed ELBZ, 7
Type	SJT
Size, AWG	18
Attachment Plug Rating, V, A	125V,15A
Strain Relief Means	Supply cord is pressed between a two-piece plastic clamp that is secured to the cabinet base by two screws. refer to ILL.11 for dimension
Cord Length, ft	5 Minimum, 10 Maximum
Grounding Conductor Color	Green With or Without Yellow Stripes
Securement of Grounding Conductor	
Location	Compressor Support Plate
Means	By screw and ring

100 SHELVING AND DRAWERS:

100-5 Shelves

Model

KD-93F

A. Location

Refrigeration Compartment

Material

Glass

Glass

Dimensions, mm. (D x W), Approximate

391x280

391x180

Thickness, mm.

3.2

3.2

No. of Shelves

1

1

Method of Support

Integral guides formed in the cabinet liner

Method of Restraint

By slot on the end of both sides

100-10 Crisper drawer - Optional

Model

All

Location

Bottom of unit cabinet

Material

Plastic, see Section 30 for details

Dimensions, mm. (D x W x H)
Approximate

160x394x200

Thickness, mm.

2.0

No. of Drawers

1

Method of Support (If Cantilever
Shelves See 100-15)Direct support on the bottom of
Freezer Food Compartment

Method of Restraint

N/A

Figure Index

Fig. No.	Comments
1	Unit Front
2	Unit Front with door open
3	Unit Rear
4	Unit Upper
5	Unit Left
6	Control Box
7	Compressor terminal cover
8	Machine Compartment

Illustration Index

ILL. No.	Comments
1	Instruction Manual
2	Door Hinges
3	Condenser
4	Evaporator
5	Wiring Diagram and Nameplate
6	Exploded View
7	IEC 60079-15 (for Group IIA gases or the flammable refrigerant) Certificate of compressor overload protector model DRB21N61A1
8	IEC 60079-15 (for the flammable refrigerant R600a) Certificate of Switch
9	IEC 60079-15 (for the flammable refrigerant R600a) Certificate of Thermostat
10	IEC 60079-15 (for the flammable refrigerant R600a) Certificate of lamp holder
11	Strain Relief Device
12	Lamp guard



C172055599



C172055600



C172055601



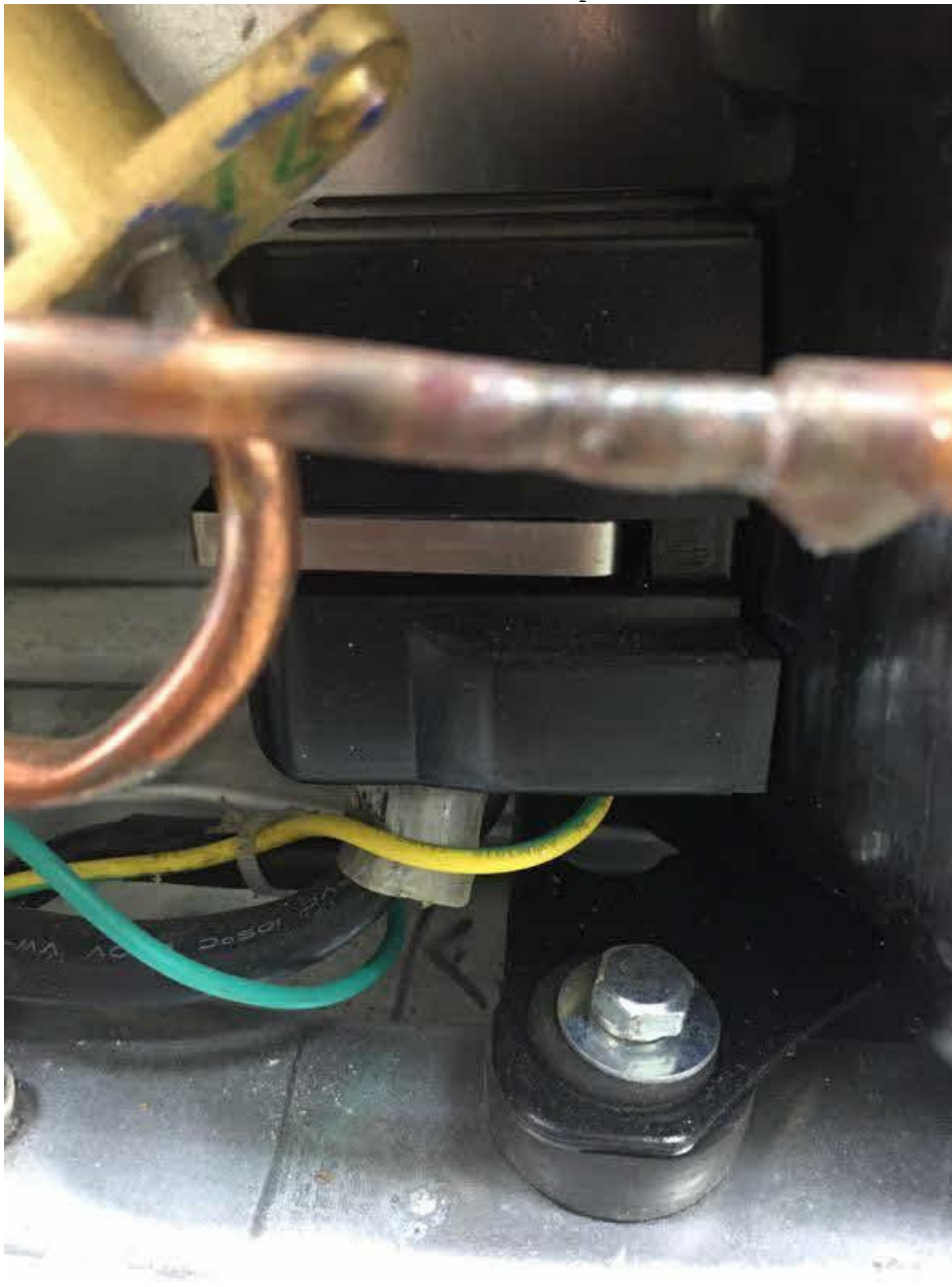
C172055602



C172055603



C172055604



C172055605



C172055606

User Manual

Model Number:

KD-93F

Refrigerator-Freezer

BEFORE USE, PLEASE READ AND FOLLOW ALL SAFETY RULES AND OPERATING INSTRUCTIONS.

Dear customers,

Thank you for purchasing our product. In order to ensure your safety and achieve the best using effect, please read this instruction manual carefully.

Before you start:

- Read all the instructions before using. Keep this manual for future reference.
- Warning: Never try to use this appliance for applications or in a way which is not described in the instruction, otherwise severe hazards may occur.
- Do not use the appliance in a dusty environment or in an explosive atmosphere (flammable gases, vapors, vapors from organic solvents).
- This appliance is intended for HOUSEHOLD USE ONLY and not for commercial or industrial use.

General safety advice

- Keep the appliance out of reach for children! Do not allow children to play with appliance.

This warning is not for EUROPEAN market:

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

Children should be supervised to ensure that they do not play with the appliance.

This warning is only for EUROPEAN market only:

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

- Unplug the appliance from outlet when not in use, before putting on or taking off parts, before cleaning.
- Make sure to place the plug all the way into socket when connecting your appliance.
- Insert the plug into a single grounded socket.
- Never use the appliance in place where combustible and inflammable materials are kept.
- For safety reason, be sure to repair or replace parts at an authorized service dealers.

- If the supply cord is damaged, it must be replaced by a special cord or assembly available from the manufacturer or its services agent.
- The motor is permanently lubricated and will require no oil.
- The appliance must be positioned so that the plug is accessible.
- Please according to local regulations regarding disposal of the appliance for its flammable blowing gas. Before you scrap the appliance, please take off the doors to prevent children trapped.

This appliance is intended to be used in household and similar applications such as

- staff kitchen areas in shops, offices and other working environments;
- farm houses and by clients in hotels, motels and other residential type environments;
- bed and breakfast type environments;
- catering and similar non-retail applications.

Leave the shelves in place so that children may not easily climb inside.

- WARNING: Keep ventilation openings, in the appliance enclosure or in the built-in structure, clear of obstruction.
- WARNING: Do not use mechanical devices or other means to accelerate the defrosting process, other than those recommended by the manufacturer
- WARNING: Do not damage the refrigerant circuit.
- WARNING: Do not damage the refrigerant circuit.

Do not use extension cords or ungrounded (two prong) adapter

I. Tips and Hints

1. Fresh foods such as fish and meat can be frozen to maintain freshness, and keep the nutrients in the food
2. Food should be wrapped in aluminum foil, or some other type of airtight packing.
3. Do not allow frozen food in freezer to touch foods just placed into freezer. It can damage the food.
4. Frozen foods from the store should be placed in the freezer promptly, so they do not thaw.
5. Never place fresh vegetables and fruits into the freezer as they can get freezer burn.

II. Caution Of Safety

1. Individual single-phase socket must be used. It should be reliably connected to a grounding wire.

Caution: Do not connect grounding wire to a water or gas pipe.

2. no storing strong base, strong acid, organic solvent and corrosive goods together with food.
3. Do not pour water directly onto the freezer, which may cause declining of insulation and corrosiveness.
4. When the refrigerator will no be used for a long time, disconnect the power cord then clean it. Please examine the wiring circuit before using it.
5. refer to the Trouble Shooting references when the unit is facing some problems. Do not attempt to solve the problem on your own, please refer to certified technician only.

III. Caution for using.

1. Unpack all packages before using the refrigerator. Do not topple it over more than 60° while moving it. Even though it can be moved slowly with the universal wheels under its base, the wheels were not meant for uneven ground usage which may damage it and other parts if used vigorously.
2. Place the freezer at your desired place and do not operate it for at least 1 hour. The refrigerator should be installed in the environment of good ventilation, cool and dry. Avoid placing it nearby heat generating equipment and under direct sunlight. When installing, the universal wheels should be padded firmly so as to avoid excess vibration and noise.
3. After 1 hour the refrigerator should be run empty upon initial operation. Please turn the thermostat knob to 7 and food can be stored just after 4 hours of initial running. Food must occupy 1/3 of the storage area and evenly arranged. They must be wrapped in plastic bags to obtain the original freshness and taste.

4. Temperature can be adjusted by using the thermostat. Clock wise turning will decrease the temperature whilst anti-clockwise to increase. Figures shown indicate the temperature level: 3-5 for normal, 0 for stop running and 6 for continuously running.

Caution: No 7 can only be used if the foods need to be frozen quickly.

5. Do not frequently open and shut the refrigerator door to avoid lost of cooling effect and to save energy.

6. The surface and inside of the refrigerator should be kept clean at all time to avoid body rust.

7. Generally, clean the refrigerator after every 30-45 days of usage. Please use soft cloth moistened in neutral soapsuds or detergent.

Caution: Please unplug the power cord before cleaning the unit.

The lamp cannot be replaced by the user or anyother people .

Warranty Information

The manufacturer provides warranty in accordance with the legislation of the customer's own country of residence, with a minimum of 1 year (Germany: 2 years), starting from the date on which the appliance is sold to the end user.

The warranty only covers defects in material or workmanship.

The repairs under warranty may only be carried out by an authorized service centre.

When making a claim under the warranty, the original bill of purchase (with purchase date) must be submitted.

The warranty will not apply in cases of:

- Normal wear and tear
- Incorrect use, e.g. overloading of the appliance, use of non-approved accessories
- Use of force, damage caused by external influences

- Damage caused by non-observance of the user manual, e.g. connection to an unsuitable mains supply or non-compliance with the installation instructions
- Partially or completely dismantled appliances

Correct Disposal of this product

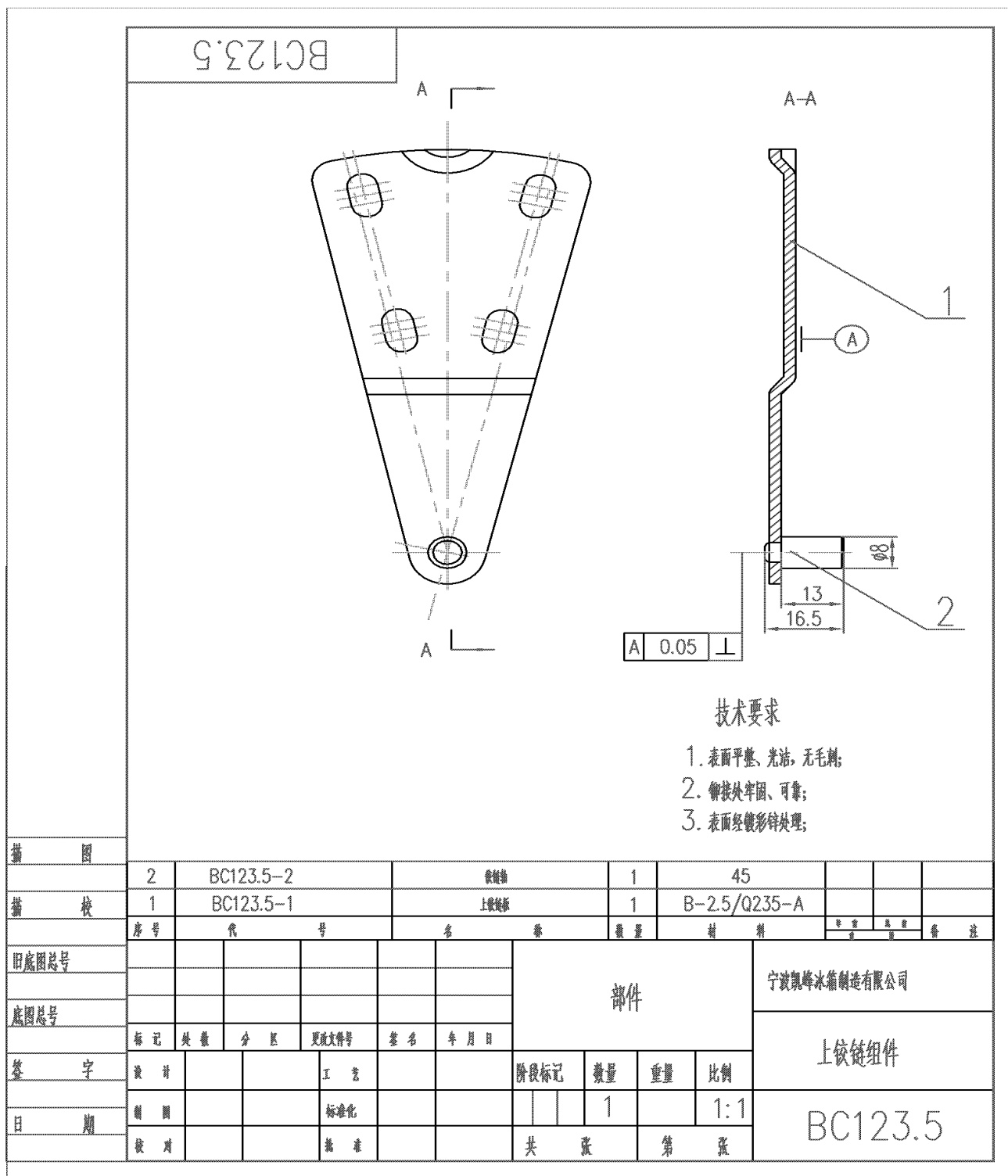
This marking indicates that this product should not be disposed with other household wastes. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmental safe recycling.

1. Old appliances still have some residual value. An environmentally friendly method of disposal will ensure that valuable raw materials can be recovered and used again.
2. The refrigerant used in your appliance and insulation materials requires special disposal procedures. Ensure that none of the pipes on the back of the appliance are damaged prior to disposal. Up to date information concerning options for disposing of your old appliance and packaging from the new one can be obtained from your local council office.

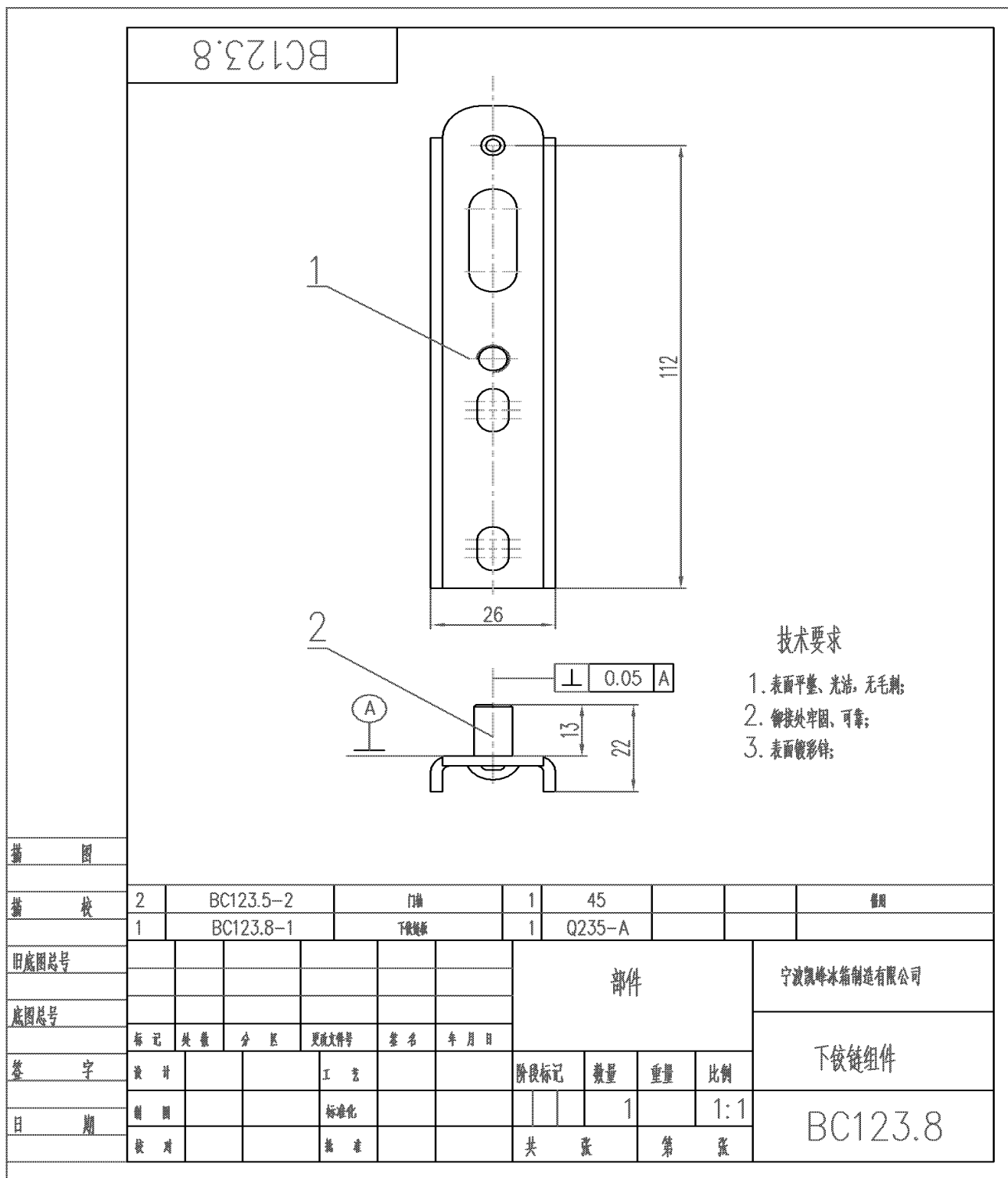
Service:

If you have any problems, please address the website www.kaifeng.com, and contact with KEG service.

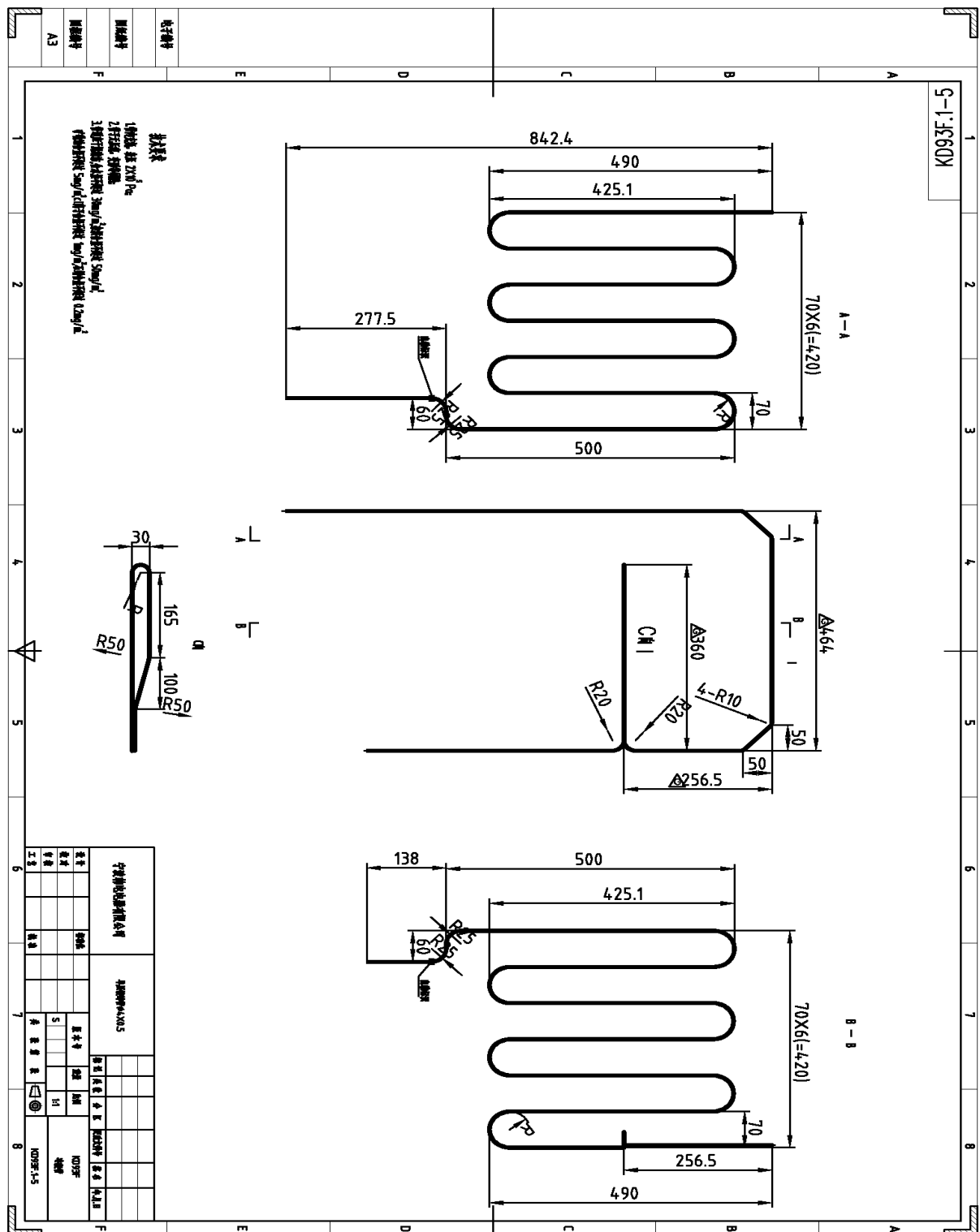
Ningbo Han Dian Electric Appliance Co., Ltd.
East Guanhaiwei Industrial Zone, Cixi, Ningbo, 315314 P.R. China



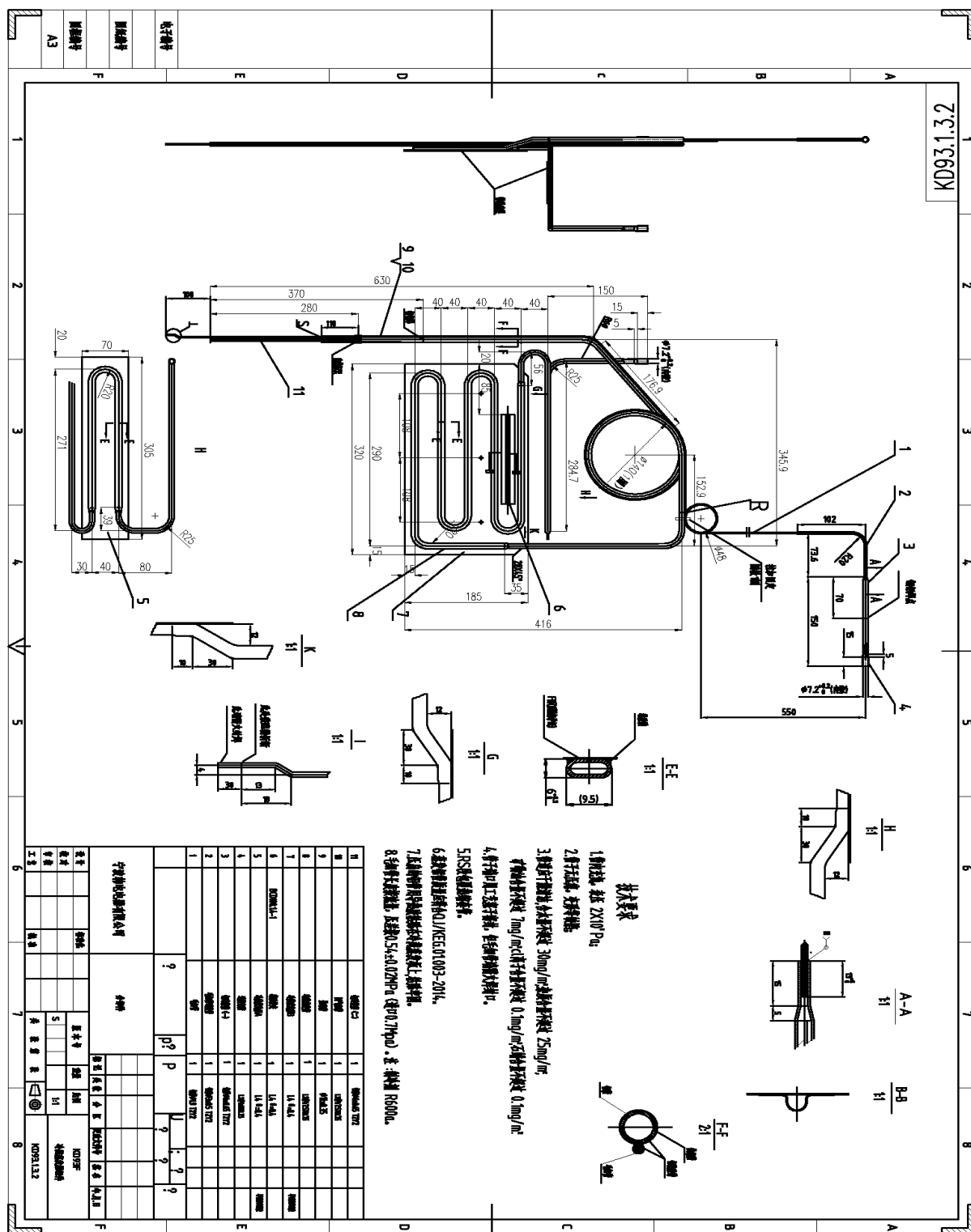
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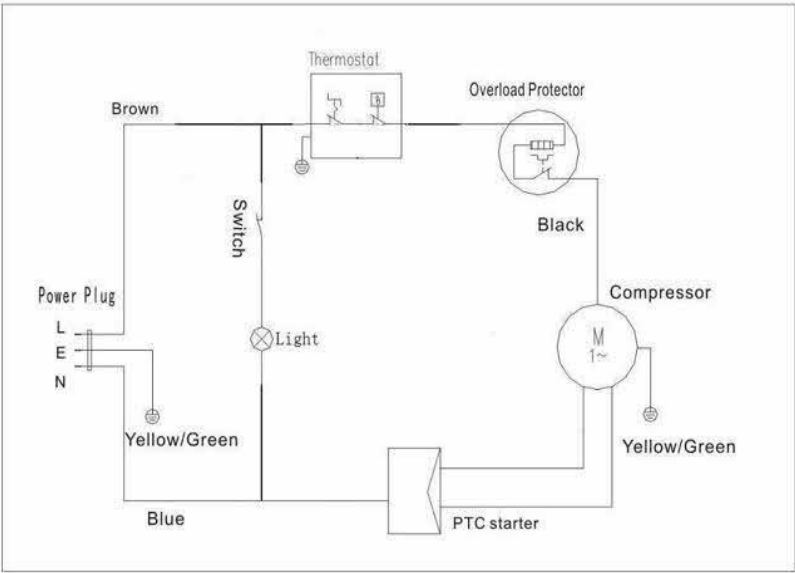


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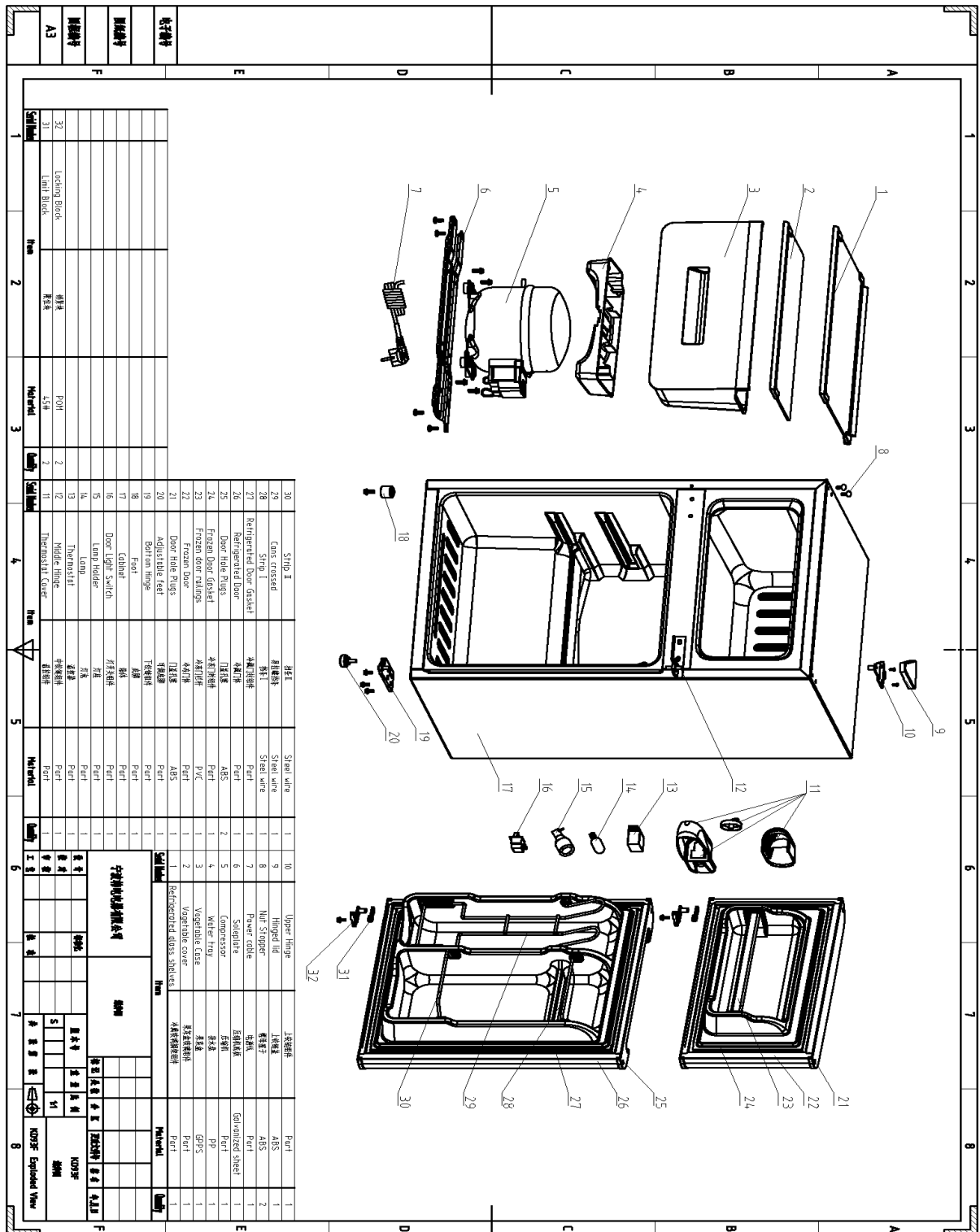
Refrigerator-Freezer



TECHNICAL DATA	
MODEL	KD-93F
RATED VOLTAGE	115~
RATED FREQUENCY	60Hz
RATED CURRENT	2.0A
THE MAXIMUM RATED WATTAGE OF LAMP	10W
REFRIGERANT/AMOUNT	R600a/34g
INSULATION BLOWING GAS	C5H10
HIGH SIDE	2.5MPa
LOW SIDE	0.88MPa
MANUFACYURE DATE	YYYY/XX

Ningbo HanDian Electric Appliance Co., Ltd.

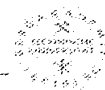
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IBEXU Institut für Sicherheitstechnik GmbH

An-Institut der Technischen Universität Bergakademie Freiberg

**REPORT****IB-07-8-022****about the experimental testing of enclosed-break devices
(Translation)*****Temperature controller type DRB series***Freiberg, 22 May 2007
Hi/Diet/LehDipl.-Ing. (FH) Hille
Editor

This document consists of:

6 pages text
2 Annexes

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Prüflaboratorium und Zertifizierungsstelle
für Geräte und Schutzsysteme zur bestimmungsgemäßen
Verwendung in explosionsgefährdeten Bereichen
nach DIN EN 61519-23
„Benannte Stelle“ (EU-Kenn-Nr. 0837)

C172055616

REPORT**IB-07-8-022****about the experimental testing of enclosed-break devices****1 Order**

The VDE Prüf- und Zertifizierungsinstitut in 63069 Offenbach (GERMANY) engaged with the letter 5001300-4510-0004/83602 of 26 February 2007 the IBEXU Institut für Sicherheitstechnik GmbH with the experimental testing of the Temperature controller type DRB series in explosive atmosphere regarding the proof of type of protection enclosed-break devices according to IEC/EN 60079-15:2005, paragraph 33.4.

2 Test item

Temperature controller

- Type: DRB series
- Voltage: 120 V
- Current: max. 20 A
- cos phi: 0.6
- Service temperature range: -20 °C up to max. 150 °C

3 Test documents

- Letter 5001300-4510-0004/83602 of the customer of 26 February 2007
- EN 60079-15:2005 (complies with IEC 60079-15:2005, ed. 3)
- 7 pieces of Temperature controller type DRB-42V61A1

The test items were delivered to IBEXU on 01 March 2007.

4 Test execution**4.1 Objectives**

It was the task to examine experimentally the ignition safety (the non-ignition of an explosive atmosphere) of the Temperature controllers for gases and vapors of the Group IIA with the parameters specified under chapter 2.

The bases of the test are the requirements in IEC/EN 60079-15:2005, Paragraph 33.4, for enclosed-break devices.

In the context of these examinations there was not the task to check the constructive requirements for apparatus in type of protection "n" (apparatus for zone 2) for the compliance with IEC/EN 60079-15.

4.2 Description of the test item

The Temperature controllers serve for the protection of motor compressors at refrigerating appliances. A special black plastic base serves as support part of the functional parts, a plastic lid is pressed in on the top side. Inside is a bimetal contact bridge and below is a heating element. At one side of the plastic case a plug contact 6.3 mm is led to the outside and on the lid is a second contact as a socket. Heating element and bimetal plate are connected with the motor winding in row. All gaps were sealed with glue.

The free internal volume of the switch chamber is less than 20 cm³ (about 1 cm³). The enclosures of the test samples were equipped with a thread and a hose connection. So it was possible to fill the switch chamber with the test gas. A second bore hole with hose connection serves for the discharge of the test gas during the purging and also for the uptake of the thermocouple.

4.3 Requirements in IEC/EN 60079-15:2005

Enclosed-break devices are devices, which incorporate electrical contacts that are made and broken. These devices will withstand an internal explosion of the flammable gas or vapor which may enter it without suffering damage and without communicating the internal explosion to the external flammable gas or vapor.

Before the tests any removable seals have to be removed. Any remaining non-metallic parts will have been subjected to the conditioning test described in paragraph 33.3.2. These parts have to be stored continuously for four weeks in an ambience of 90 % relative humidity and at a temperature of 10 K above the maximum temperature in rated service. In case of a maximum service temperature above 85 °C the period of four weeks specified above will be replaced by a period of two weeks at 95 °C and 90 % relative humidity followed by a period of two weeks at a temperature of 10 K above the maximum temperature in rated service. After that, a storage for 24 hrs at a temperature of 5 K below the minimal ambient temperature shall be carried out.

Then the test of the enclosed-break devices according to paragraph 33.4.3 will be carried out. The explosive gas atmosphere fixed for the Group IIA, IIB or IIC has to be ignited inside the device by the operation of the enclosed contacts when connected to the maximum rated source of energy, power and load in terms of voltage, current, frequency and power factor.

A make and break test shall be repeated 10 times with a fresh gas mixture for each test.

After the test the device shall show no visible signs of damage; no external ignition shall occur and there shall be no failure to clear the arc when the switch contacts are opened.

03

4.4 Description of the test equipment

The test equipment is schematically shown in annex 1 of this report. It consists of the following equipment and means of work:

Explosion chamber

The explosion chamber essentially consists of a cylindrical container (Piacryl) with a bursting foil mounted on the top. The volume amounts 18 dm³. In the base plate and at the cylinder are introduced and sealed the instrument leads and the supply lines.

Conditioning of the test gas mixture

The explosive gas atmosphere required for the Group IIA (6.5 % $\pm$ 0.5 % ethylene, 93.5 % $\pm$ 0.5 % air) was processed in the explosion chamber by volumetric gas conditioning. Dosage equipment with Digital Mass Flow Controllers served for this.

The homogeneous mixture conditioning was ensured by flushing the explosion chamber and the test item with the explosive gas/air mixture. The burning gas quota (ethylene) in the explosion chamber was checked in addition for the maintenance of the permissible tolerance with gas interferometer according to Rayleigh-Haber-Löwe.

Measuring device for electrical parameters

The predefined electrical load of the switching contacts was made by switching on ohmic resistors and inductances in the AC circuit.

With a Wide Band Power Analyzer D 6100 (manufacturer: Norma) the required parameters current, voltage and power factor were measured during the examining operation and registered with an 8-channel recorder type LR 8100 (manufacturer: YOKOGAWA). The ignition in the test item was perceived acoustically and recorded by the temperature rise by means of a thermocouple. For that, a thermocouple was introduced into the tube connection at the test item after the mixture conditioning. The temperature course was recorded with the recorder LR 8100.

Test of thermal endurance

The test of thermal endurance occurs in conditioning and refrigeration cabinets which are also used for the thermal endurance tests according to EN 60079-0.

All used measuring instruments are included in the Quality Management System of IBEXU certified according to ISO 9001. They are checked in regular intervals.

4.5 Test procedure and results

4.5.1 Test of thermal endurance

According to IEC/EN 60079-15, 33.3.2 the test samples were stored for two weeks at 95 °C heat and 90 % rel. humidity, two weeks at 160 °C heat as well as for 24 hrs at -25 °C cold. No damages were noticed at the following visual examination.

4.5.2 Pre-test

Before the ignition tests specified in IEC/EN 60079-15 were carried out it had to be made sure that the appearing switching spark in the case can be considered as an effective ignition source for the test gas. To this, pre-tests were carried out at a Temperature controller, whose enclosure was opened.

At the test parameters 120 V AC, 20A and $\cos \varphi$ 0.6 the ignition of the explosive gas mixture caused by the break spark could be proved (see Annex 2.1).

4.5.3 Type test

The tests were carried out on 02 May 07. In accordance with IEC/EN 60079-15, 33.4.3.2 eleven tests have to be carried out with a sample, which has the most adverse dimensions permitted by the construction drawings. There are no statements regarding the gaps of the test samples. To make sure the test results, four test samples were included into the test program.

The respective Temperature controller (originally closed) to be tested was put into the explosion chamber. The specified explosive gas atmosphere required for the Group IIA (6.5 ± 0.5) % ethylene/air mixture was processed in the explosion chamber and in the enclosure of the test item.

The contacts of the Temperature controller were operated with the preset test parameters. The ignition of the explosive gas atmosphere inside the test item occurred by the break spark.

The test results are summarised in the table. For some tests the test parameters are recorded in the annexes 2.2 and 2.5.

Test sample	Tests	Electrical parameters			Ignition of the explosive atmosphere	
		U [V]	I [A]	cos φ	Inside the test item	outside
1 a	2	120	14	0.6	yes	no
1 b	1	120	14	0.6	yes	no
1 c	1	120	14	0.6	yes	no
2	11	120	14	0.6	yes	no
3	11	120	14	0.6	yes	no
4	11	120	14	0.6	yes	no

Only two respectively one ignition tests could be carried out with test samples 1a, 1b and 1c, because the Temperature controller did not work then any more.

At none of the ignition tests the explosion triggered in the enclosure of the Temperature controllers was transferred to the outer explosive atmosphere. No damages were noticed at the case.

5 Summary

It was noticed with the examinations that the Temperature controller type DRB series at the conditions mentioned under 2 has the ignition safety (the non-ignition of an explosive atmosphere) fixed in IEC/EN 60079-15:2005 according to type of protection enclosed-break device for gases and vapors of the Group IIA. The explosions triggered inside the switching chamber by the break spark did not ignite the explosive mixture surrounding the device.

The assessment of the constructive design of the Temperature controllers regarding to the compliance with the requirements of IEC/EN 60079-15 for apparatus of the type of protection "n" (apparatus for zone 2) was not object of these examinations.

The test result exclusively refers to the Temperature controller type DRB series specified under chapter 2.

Annexes

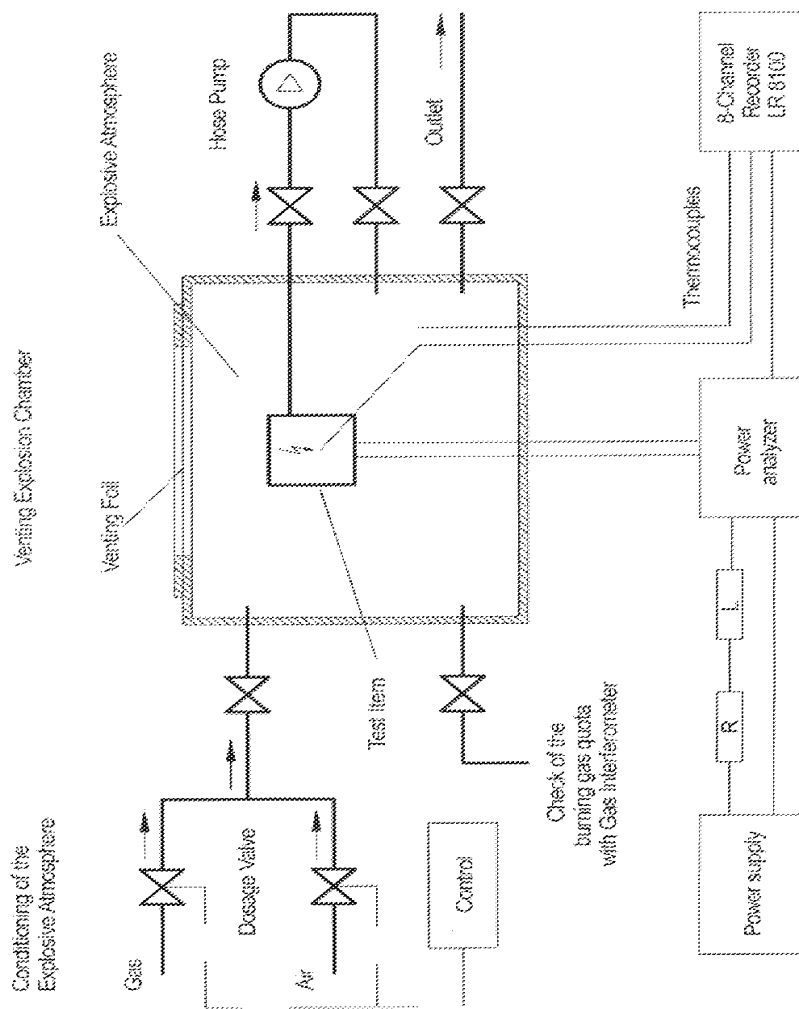
Annex 1	Schematic setup of the test equipment
Annex 2	Representation of the test parameters (4 sheets)

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Annex 1 to report IS-07-8-021

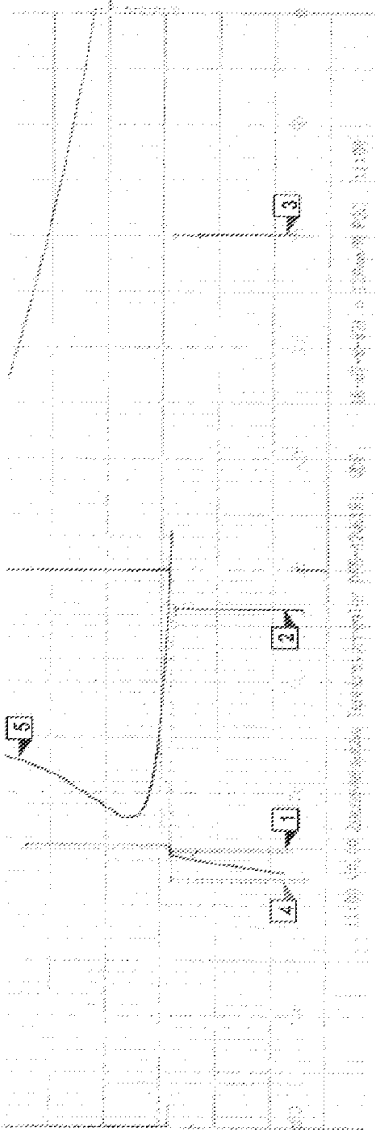
Annex 1: Schematic setup of the test equipment



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Annex 2, Page 1 to report IS-07-8-021

Test parameters Pre-test



Recorder speed: 5 sec/Sec.

- Range 0 ... 1000 V
- Range 0 ... 30 A
- Range 1 sec ... 0 ... 1 sec
- Range 0 ... 100 °C
- Range 0 ... 100 °C

- 1 - Voltage
- 2 - Current
- 3 - Power factor
- 4 - Temperature test chamber
- 5 - Temperature test item

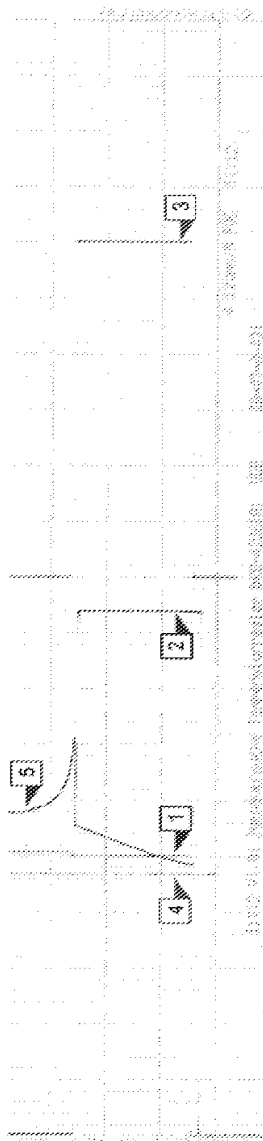
Remarks:

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Annex 2, Page 2 to report IB-07-8-021

Test parameters Test No. 1.01



Recorder speed: 5 sec/Sec.

Range 0 ... 1000 V
Range 0 ... 30 A
Range 1_{exp} ... 0 ... 1_{ind}
Range 0 ... 100 °C
Range 0 ... 100 °C

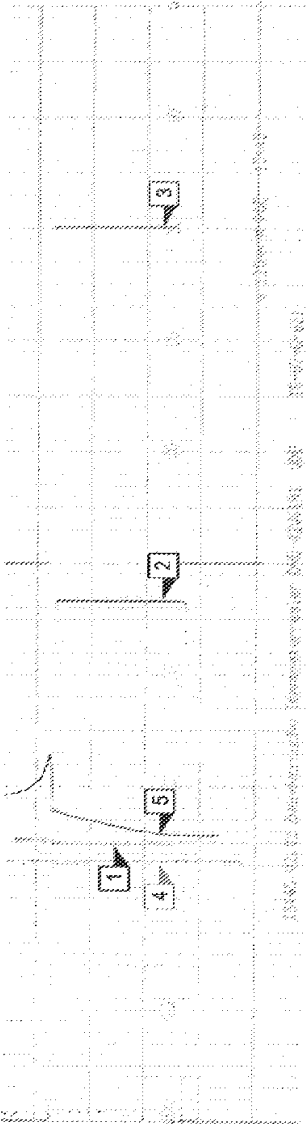
1 - Voltage
2 - Current
3 - Power factor
4 - Temperature test chamber
5 - Temperature test item

Remarks:

C172055616

Annex 2, Page 3 to report IB-07-8-021

Test parameters Test No. 2.02



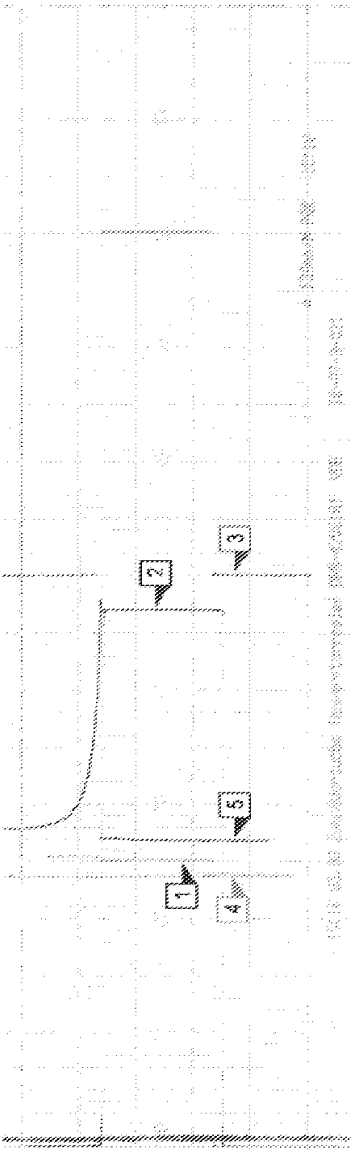
Recorder speed: 5 sec/Std.

- Remarks:
- 1 - Voltage
 - 2 - Current
 - 3 - Power factor
 - 4 - Temperature test chamber
 - 5 - Temperature test item

- Range 0 ... 1000 V
- Range 0 ... 30 A
- Range 1 ... 0 ... 1 sec
- Range 0 ... 100 °C
- Range 0 ... 100 °C

Annex 2, Page 4 to report IS-07-8-021

Test parameters Test No. 3.08



Recorder speed: 5 sec/Sct.

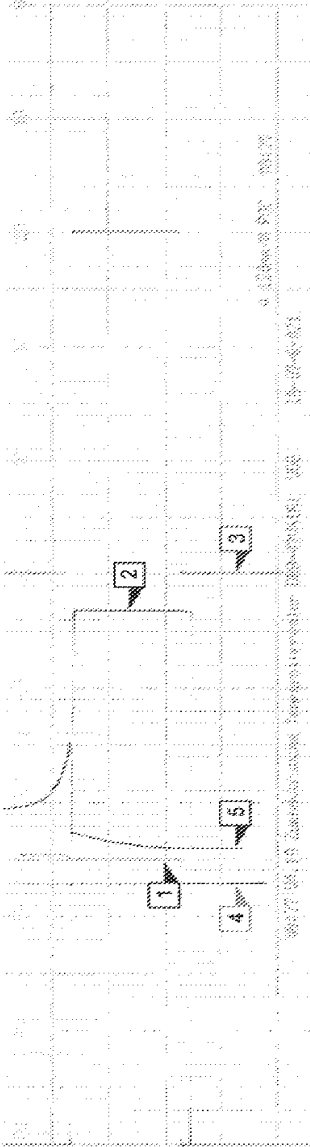
- 1 - Voltage
- 2 - Current
- 3 - Power factor
- 4 - Temperature test chamber
- 5 - Temperature test item

Range 0 ... 1000 V
Range 0 ... 30 A
Range 1 sec ... 0 ... 1 sec
Range 0 ... 100 °C
Range 0 ... 100 °C

Remarks:

Annex 2, Page 5 to report IE-07-8-021

Test parameters Test No. 4.10



Recorder speed: 5 sec/Sec.

- 1 - Voltage
- 2 - Current
- 3 - Power factor
- 4 - Temperature test chamber
- 5 - Temperature test item

- Range 0 ... 1000 V
- Range 0 ... 30 A
- Range 1 ... 0 ... 1_{nd}
- Range 0 ... 100 °C
- Range 0 ... 100 °C

Remarks:

12
13
14



国家防爆

Electrical Apparatus for Explosive Atmospheres

CERTIFICATE OF CONFORMITY

Cer. No.: CNEx14.2665X

Manufacturer Zhejiang Changdecheng Electric Appliances Co., Ltd.
(Add: East-town Zone, Hongqiao, Yueqing, Zhejiang, China)

Name of Product Explosion-proof Door Switch

Type of Product HC-056K.4 250VAC 0.5A 2.5A 125VAC

Marking Ex nC IIA T1 Gc

Standard Q/CDC.002-2014

Drawing No. HC-056K-00

The drawings, technical documents and the samples are verified and certified according to standard(s) for safety as below:

IEC60079-0: 2007 Explosive atmospheres – Part 0: Equipment – General requirements.

IEC60079-15: 2010 Explosive atmospheres – Part 15: Equipment protection by type of protection "n".

Note This product can be used only in Refrigerator that adopt R600a as refrigerant.

Valid Date From October 28, 2014 to October 27, 2019

Issue Date October 28, 2014

Director



CHINA NATIONAL QUALITY SUPERVISION AND TEST CENTRE
FOR EXPLOSION PROTECTED ELECTRICAL PRODUCTS

Address: No.20 North Zhongjing Rd, Nanyang, Henan(473008), P.R.China

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Note: This certificate is only valid for the products which identify with the sample(s) tested and verified. Holder(s) of this certificate have the responsibility to ensure the products complying with relevant standard(s).

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C172055617



防爆电气设备 防爆合格证

编号: CNEx13.4339X

制造单位 九江恒通自动控制器有限公司
地址: 九江市开发区城西港区洪兴路18号
产品名称 防爆温度控制器
型号规格 WDF 125VAC 50/60HZ 6A
防爆标志 Ex nC IIA T1 Gc
产品标准 HTQBEx-2011
总装图号 LB11-HT

经对上述产品图样及技术文件的审查和样品检验, 确认符合下列标准:

IEC60079-0: 2007 爆炸性环境 第0部分: 设备 通用要求

IEC60079-15: 2010 爆炸性环境 第15部分: 由“n”型保护的设备

记 事
1. 该产品适用于制冷剂为 R600a 的电冰箱中。
2. 防爆温度控制器安装后插脚应有可靠防护, 满足 IP54 要求。

本证有效期 2013 年 12 月 30 日至 2018 年 12 月 29 日

颁发日期 2013 年 12 月 30 日

中心主任



国家防爆电气产品质量监督检验中心

地址: 中国河南省南阳市仲景北路20号 邮政编码: 473008

电话: 0377-63258564 传真: 0377-63208175 Http://www.china-ex.com

注: 本证书仅对与认可文件和样品一致的产品有效。 登陆网站 输入数据 查询真伪

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C172055618



Electrical Apparatus for Explosive Atmospheres
CERTIFICATE OF CONFORMITY

Csr No.: CNEx 14-2665X

Manufacturer Zhejiang Changdeheng Electric Appliances Co., Ltd.
(Add: East-tower Zone Hongqiao, Yuyao, Ningbo, China)

Name of Product Explosion-proof Door Switch

Type of Product EI2-3 EI2-1

Marking Ex nC IIA T1 Gc

Standard Q/CDHC 002-2014

Drawing No.

The drawings, technical documents and the samples are verified and certified according to standard(s) for safety as below:

IEC60079-0: 2007 Explosive atmospheres -- Part 0: Equipment-General requirements.
IEC60079-15: 2010 Explosive atmospheres -- Part 15: Equipment protection by type of protection "n".

Note This product can be used only in Refrigerator that adopt R600a as refrigerant.

Valid Date From October 28, 2014 to October 27, 2019

Issue Date October 28, 2014

Director

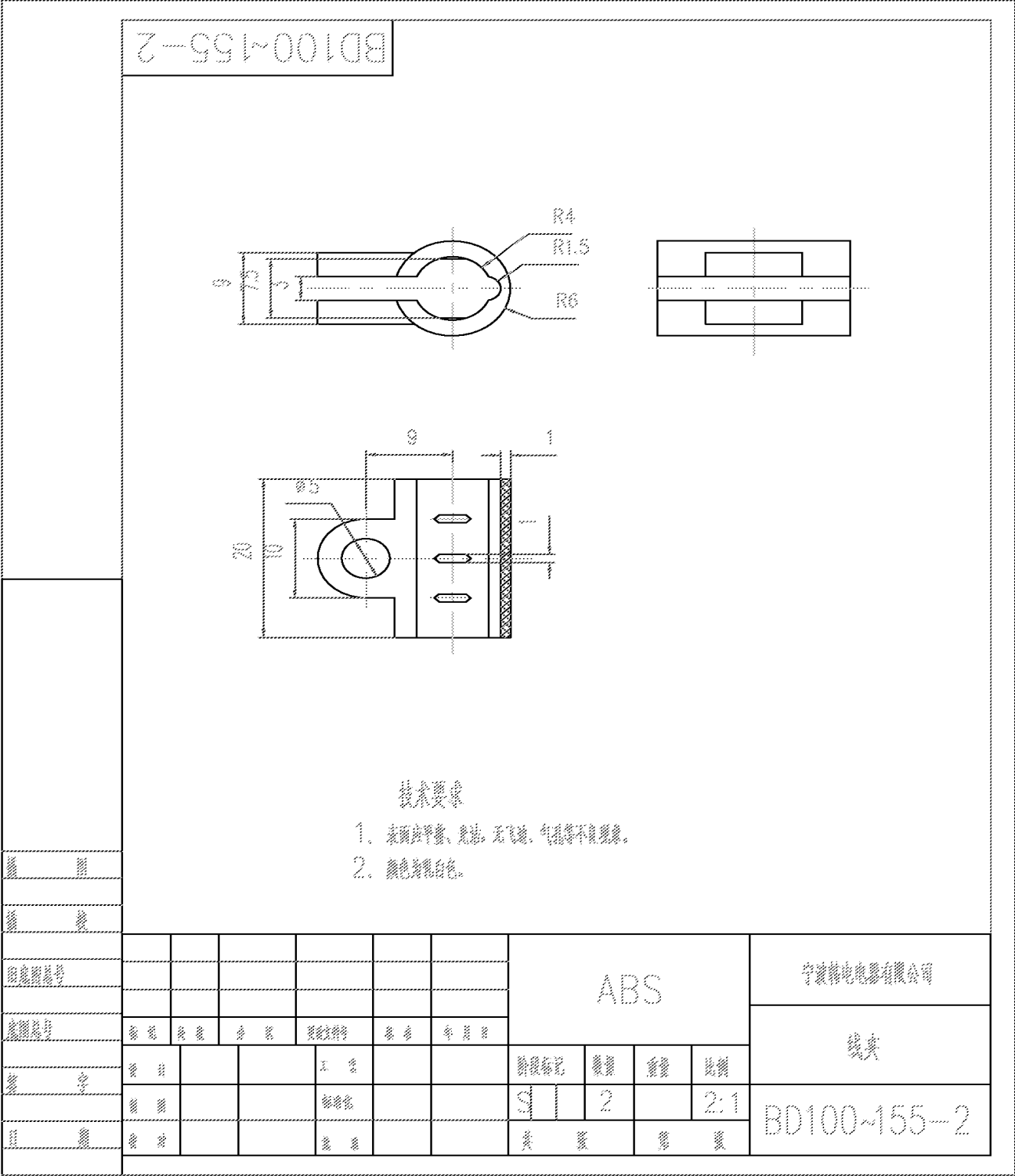


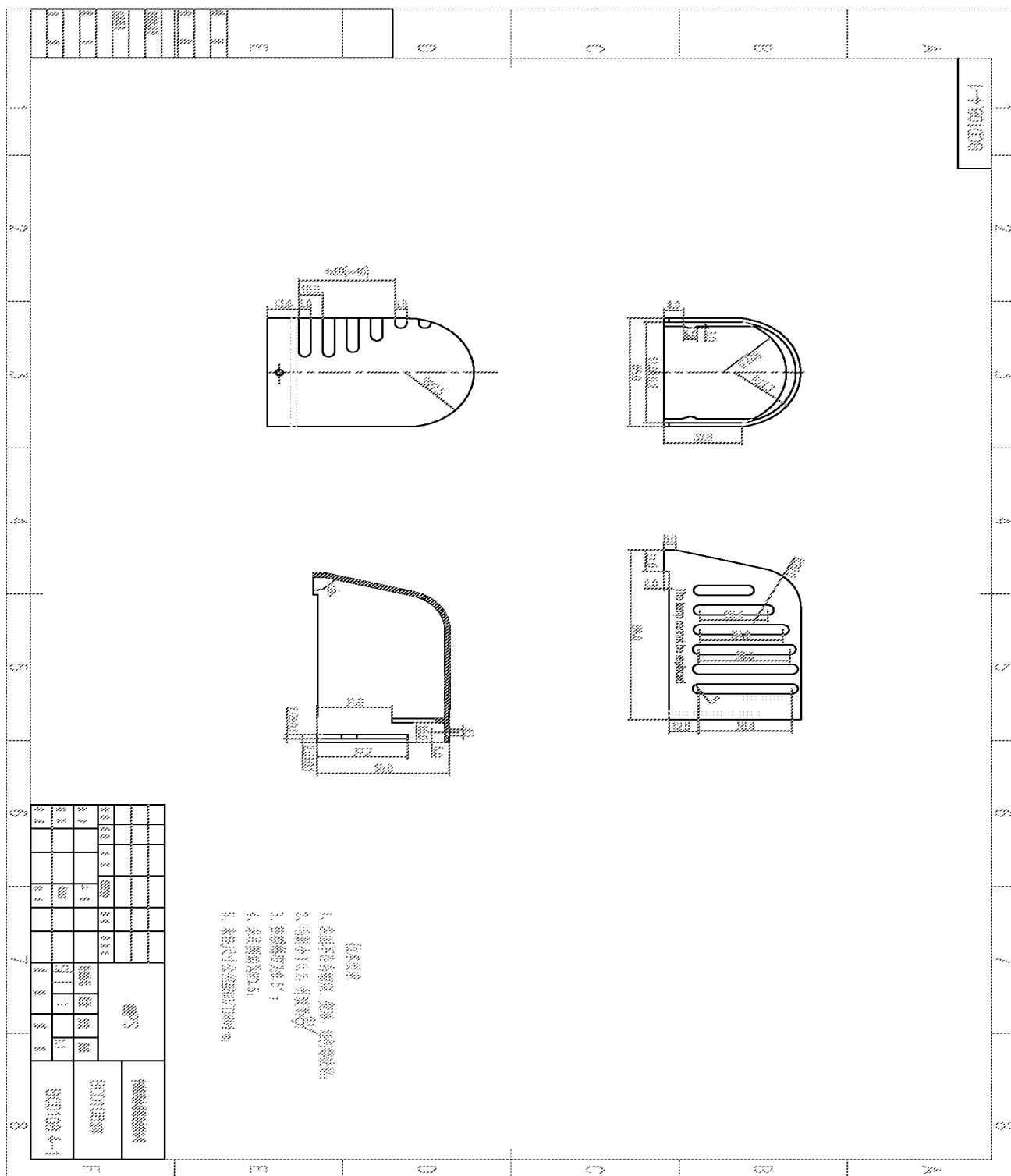
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备注: 本证书仅对经本中心检测合格并认证的样品有效。持证人应确保产品符合相关标准的要求。
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C172055619





C172055610