

D1CS系列消防排油烟耐高温三相异步电动机

D1CS series

**Smoke exhaust high-temperature resistant electric motor**



大连达尔马电机有限公司  
Dalian Dalmo Electric Motor Co.,Ltd.



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## 企业简介

大连达尔马电机有限公司于1966年6月建厂，是国家机械工业部定点生产中小型电机的专业厂，原为国家二级企业和中型企业，1993年跨入“中国500家最大电气器材制造企业”的行列中。

多年来，大连达尔马电机有限公司始终坚持“质量第一”、“以优取胜”的宗旨，强化现场管理，严格工艺纪律，建立和运行产品质量保证体系，使产品质量稳定可靠。生产的Y系列三相异步电动机(以下简称“电动机”)有36个品种获机电部优质产品奖，26个品种获大连市优质产品奖的称号。公司主要产品有：YX3、YE2高效率电动机、YE3超高效电动机、YZR起重冶金电动机、YD、YZP、YTP、YP系列变频调速电动机、YGP辊道变频调速电动机、YKK高压电动机(6KV, 10KV)、D1CS消防排烟电动机、YEJ电磁制动电动机、YD系列变极多速电动机、Y系列、Y2系列及“达尔马”品牌D1系列(H63~355)电动机等300多个规格。年生产能力达240万千瓦，出口创汇超过千万美元。顾客遍及国内多数省、市，并出口到东南亚、拉美、非洲、欧洲等几十个国家和地区。继1995年在东北电机行业中首家通过ISO9002质量认证后，又通过了ISO9001质量认证、国家CCC认证、CQC认证及欧盟CE认证，并成为大连市质量信得过企业和高新技术企业，并获得辽宁省名牌产品的殊荣。

## Our Company

Dalian Dalmo Electric Motor Co., Ltd. was founded in June 1966, is one of the designated motor manufacturers of the Ministry of Mechanical Industry of PRC. As a national grade-two and medium-sized enterprise, the company lists on "TOP 500 Chinese Largest Electric Appliance Manufacturers" in 1993.

Adhering to the tenet of "Quality the first, excellent oriented", the company strengthens management and continuously updates technique and design, sets up strict quality control system. Y series 3-phase motors with 36 branches types are titled as "Quality Medal of the Ministry of National Mechanical Industry", another 26 types were awarded "Dalian Quality Product Medal" by Dalian city government.

Main products such as YX3 series high efficiency motor, YE3 ultra efficiency motor, YZR hoist and metallurgy electric motor, YD, YZP, YTP, YP series frequency regulating speed motor, YGP series rolling way frequency adjustable speed motor, YKK high-voltage (6KV, 10KV) motor, D1CS series high temperature resistant motor, YEJ electric-magnetic brake motor, D1+series motor, YEJ series electromagnetic-brake motor, YD series multi-speeds electric motor, Y, Y2 and D1 series 3-phase asynchronous motor, etc. Annual output 2.4 million KWs, export revenue exceeds \$10million. The products are sold to over ten provinces and cities in China, the products exports to Southeast Asia, South America, Africa, and Europe, etc.

## 1. 产品概述 Product summary

D1CS排烟电机是D1C系列一般用途三相异步电动机的派生产品。是根据工程要求而特殊设计的，该系列电机具有体积小、重量轻、噪音低、振动小、运行温升低、性能优良、控制系统简单等特点。在通常情况下，可以作为一般用途电机驱动风机等，长期连续运行；在非常情况下，如周围环境温度达到280℃时，仍能可靠运行30分钟以上。D1CS电机与风机配套，可广泛使用于隧道、宾馆、高层公寓等场所作为通风排烟装置。

D1CS电机分为单速、单绕组双速、双绕组双速三个系列，机座号范围为80~355，额定输出功率为0.11~315kW。有三种标准电:380V, 400V, 415V和两种标准频: 50Hz/60Hz可供选择。

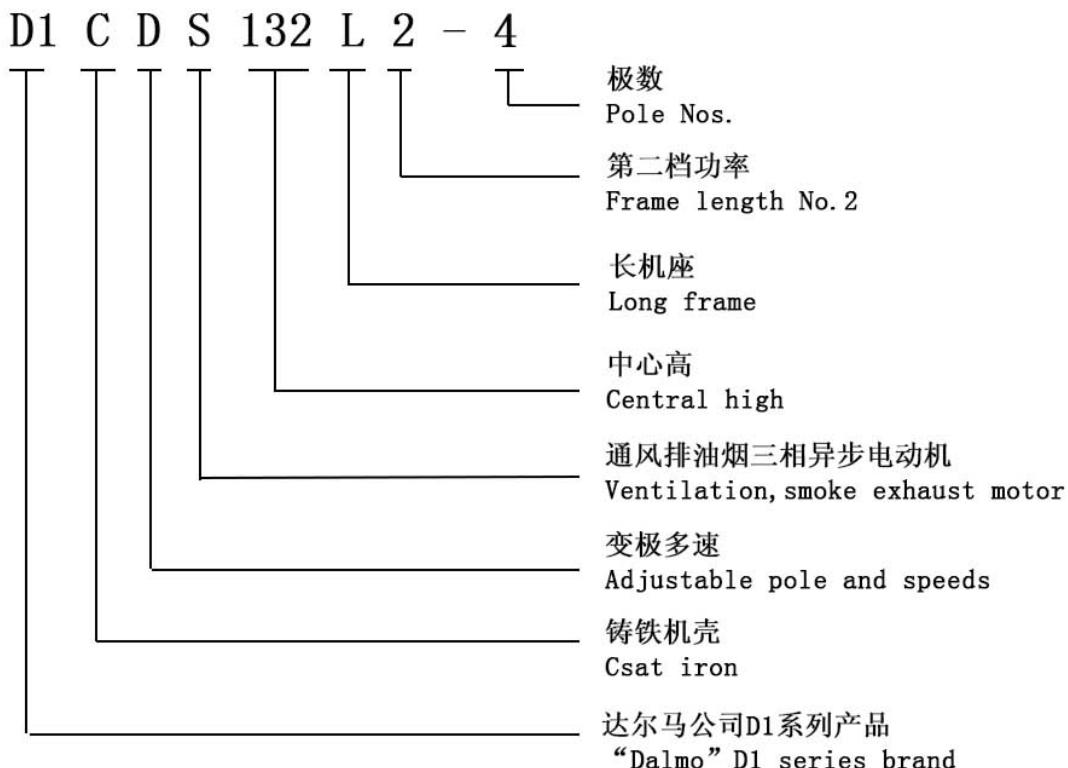
D1CS电机的型号含义举例如下：

D1CS is a derived series electric motor which is designed especially for engineering and projects which requires the motors to be small size、light、low noise、low vibration and low temperature rise with better performance and easy control structure. In normal conditions the motor provides general performance continuously with a low temperature rise, such as driving a blower etc. In subnormal conditions such as working in environment with temperature above 280℃, the motor can still works for more than half an hour. Fitting with blowers, the motor can be widely used for ventilation in tunnel projects, hotels, mansions, other constructions where ventilation is needed.

D1CS series electric motor has 3 series: one speed motor, individual winding with two-speed、two separative windings with two speed, frame from 80~355, rated output 0.11~315kW.

Voltage: 380V, 400V, 450V, Rated frequency: 50HZ/60HZ.

Below is an example of D1CS series electric motor's types:





## 产品概述 Product summary

D1CS电机的外壳防护等级为IP55或更高，绝缘等级为H级，冷却方法为IC410（全封闭自冷式）或IC411（全封闭扇冷式），结构及安装型式通常为IMB3型（卧式，用底脚安装），IMB5型（立式，用法兰安装），IMV1型（立式，轴伸朝下，用法兰安装）。当然，也可以生产其他安装形式。

D1CDS是有级变速的消防通风排烟用三相异步电动机，分为单绕组双速和双绕组双速以及双绕组三、四速，这样不仅具有普通多速电动机功率接近的特点还有特殊多速电动机功率差值很大的优点，从而可达到与负载的合理匹配，这对简化变速系统、节约能源和节省费用有很大的意义。

Protection degree of D1CS high temperature motor is IP55 or even higher, insulation class H, cooling method IC411, D1CS series high temperature electric motor adopts protection IP55 or even higher, insulation class H, cooling method Ic410, totally enclosed fan-cooled (TEFC) or IC411 totally enclosed forced ventilation, structure adopt IMB3(horizontal frame with feet)、IMB5(vertical frame with flange)、IMV1(vertical frame with flange downward), and other arrangement like IMB35、IMV3, etc.

D1CDS series is smoke and fume exhaust ventilation motor which can provides adjustable and multi-speeds like individual winding with 2 speeds、two windings with 2 speeds、and two windings with 3 or 4 speeds, thus this series motor owns the advantage of equal output comparing with the general motor, as well as the distinct output difference the special multi-speeds motor provides, so it can meet various loading conditions, this makes it easy for the speed adjusting system and achieve result of energy conservation.

## 2. 安全警告 Warning

D1CS电机是按驱动工业通风机械或集中通风设备而设计的。它的旋转部件和带电端子都存在一定的危险。因此，最重要的是，D1CS电机只能由专业电工或机电技术人员来安装和维护，以免对设备或建筑造成破坏，甚至危及人身安全。

如果您对D1CS电机有任何顾虑或疑问，请不要安装，更不要冒然试运行，而应与本公司的服务机构联系并取得建议和帮助。

对于不具备资格人员安装、维护或不按本说明书使用D1CS电机而导致的任何事故，本公司将不负任何责任。

### Warning:

D1CS motor is specially designed for ventilation on machinery equipment or central ventilation system, there may be danger in the rotation parts or in the terminal parts on power. Most important: the D1CS motor can be installed and maintained only by professional person to avoid mistake operation causing damage to the motor、equipment and surroundings, even injure the body.

In case that you have any question or wondering about D1CS motor, please do not install or operate it, we suggest that you connect Dalmo's servicing office for help.

Dalmo will not be responsible for any damage caused by operation by unqualified person.

### 3. 使用条件

Working conditions



3.1 D1CS电机在下列条件下能可靠地长期连续运行：

- a) 海拔不超过1000米；
- b) 环境空气温度：-15~+40℃；
- c) 最湿月月平均最高相对湿度为90%，同时该月月平均最低温度不高于25℃；
- d) 有一般的砂尘；
- e) 有喷溅水（但水中不含酸、碱等腐蚀性物质）；
- f) 电源电压在额定电压的95%~105%范围内；
- g) 电源频率在额定频率的98%~102%范围内。

#### 3.1 Working conditions:

- a), Not over 1000 meters higher than the sea level.
- b), Surrounding temperature: -15~+40℃.
- c), Humidity: Average Max humidity 90% in the humidity months, average monthly Max lowing temperature not over 25℃.
- d), Dust in ordinary level.
- e), There's jet water containing no acid, soda corrosive materials).
- f), Voltage between 95%~105% of the rated voltage.
- g), Frequency between 98%~102% of the rated frequency.

### 4. 订货须知

订货时你需要提供以下信息

- a) 产品型号
- b) 额定功率（当采用Y-△启动器启动时，须声明）
- c) 同步转速
- d) 电压、频率
- e) 安装结构形式
- f) 绝缘等级和防护等级
- g) 通风排烟电机的引出线长度

### 4. Order notice

You must provide the following information when ordering:

- a), Type of motor
- b), Rated output (specify "Y-△" starter if necessary)
- c), Synchronous speed
- d), Voltage and frequency
- e), Structure and arrangement
- f), Insulation class and protection degree.



## 5. 验收

Buyer' s inspection

5. 1当接到您所订购的电机时, 请作如下检查:

- a) 我们的送货通知单或包装箱上对电机的描述是否与您的订货清单一致;
- b) 电机铭牌上标明的数据是否符合您的要求;
- c) 电机是否有任何影响质量的锈斑、异物等缺陷;
- d) 所有电机轴伸上应有一个塑料制轴伸保护套。对机座号160及以上的电机, 还可能附有一个轴伸夹紧装置。拆除该装置后可检查电机轴伸上是否有锈迹, 也请用人力转动电机转子检查其旋转是否平稳或是否有有害杂音。

5. 2如果发现任何缺陷, 请与本公司服务机构联系, 并请提供如下信息:

- a) 您的订货单编号以及发货单的详细情况;
- b) 电机铭牌上的所有数据;
- c) 对缺陷的详细描述。

### 5. Buyer' s inspection

5. 1 Check the motor following below instructions when you received the motor:

- a), If the seller' s delivery note or the motor description on the package are correct with the motor you ordered.
- b), If the data or specification in the nameplate meet your requirement.
- c), If there' s corrosion or foreign materials on the motor which may lead possible quality defect.
- d), All motor shafts end are covered with plastic protection covers. The motor is equipped with shaft clipping device from frame 160 and above, please check if there' s corrosion or dust on the shaft after unpack the package. Please also rotate the shaft and see if it can run freely without subnormal sound.

5. 2 Please contact with Dalmo' s service center and provide with the following information when the buyer find defect on the motor:

- a), Your order details and the delivery notification.
- b), All data on the motor nameplate.
- c), Detail description about defection.

## 6. 安装

Installation

### 6. 1安装时对通风的考虑

D1CS电机本身的冷却方式一般为IC410(全封闭自冷式), 它是借助风机进风口的气流来冷却的。这类型电机只能与风机叶轮用轴安装, 若是IC411冷却方式(全封闭扇冷式)且与风机同轴安装, 应注意使风机气流方向与电机风扇产生的气流方向一致(即从电机的风扇端流向主轴伸端); 若用皮带传动风机, 则只能使用IC411型电动机, 且电动机周围应留有不小于电机中心高的二分之一的空间, 以利电机通风散热。

### 6. 1 Cooling method and arrangement

General cooling method of D1CS motor is IC410(totally enclosed self cooled), the motor is cooled by the inlet air from the blower which is equipped with the motor, but if the cooling method is IC411(totally enclosed fan cooled), the motor is equipped with the blower, pay attention that the air flow direction must be same with the motor fan rounding direction(from the fan end to the driving shaft end), in case the blower must be driven with a belt, the motor' s cooling type must be IC411, at least half of the space from the central of the motor must be remained for the motor' s ventilation.

## 6. 2 安装方式

6. 2. 1 通常，D1CS电机只能按订货合同或电机铭牌上标明的结构及安装型式代号（IM\*\*）的规定进行安装。但必须注意，电机的轴伸不能直接承受除联轴器或皮带轮以外的外加重量，所以风机叶轮的重量必须由其自身的轴承承担，否则，可能引起电机轴伸或轴承的损坏。

6. 2. 2 D1CS电机端盖的轴承室内装有内包骨架唇形密封圈，用以防止沿电机转轴进水。该密封圈是易损件，当电机运行一定时间后，可能影响其密封效果。所以对立式轴伸朝上安装的电机，当有轴向淋水可能时，请加装防淋装置，或每运行半年后，更换该密封圈。

## 6. 3 安装前的准备

6. 3. 1 请认真核对电机铭牌上标明的内容是否与实际所需相符。

6. 3. 2 对存放一年以上，装有开式轴承的电机，在使用前请查看轴承润滑脂是否变质。若发现变质情况，则应清洗轴承并更换润滑脂。

6. 3. 3 用500伏级兆欧表测量定子绕组对地（机壳）和绕组各相之间的绝缘电阻，其值应不低于（1）式所求得的数值，否则，应对定子绕组进行干燥处理，直至绝缘电阻符合要求。若绝缘电阻为零，则可能是绕组已有短路故障，应排除故障后再测量。

$$R = \frac{U_N}{1000} \quad \dots \dots \dots \quad (1)$$

式中：R绝缘电阻，兆欧；  
Un电机额定电压，伏。

干燥处理方法：

- a) 用大约为电机额定电压20%的三相交流电使电机空载运行；
- b) 用烘烤或其他加热方法，但应保证电机绕组温度不超过180℃。

### 6.2 Mode of installation

6.2.1 Generally, D1CS motor is installed according sales contract or specifications in the nameplate (IM\*\*). Warning: The motor's shaft can't be load with aditional weight directly except the shaft coupling or the belt, so the weight of cooling blower's fan must be on the blower's bearing to avoid damage to the motor shaft or bearings.

6.2.2 Bearing house of D1CS motor is sealed by lip sealing ring to prevent the motor shaft from the water , the sealing ring is easily wearing part, when motor works for a certain period, the bearing sealing becomes loosen, especially for vertical motor working under jetting water, water-proof device is necessary, the sealing ring must be replaced after working for half a year.

### 6.3 Works before installation

6.3.1 Make sure if the data or specification in the nameplate meet your requirement.

6.3.2 For motor with opening bearings with storage over one year, it's recommended to check and replace the bearing grease if it has been deteriorate.

6.3.3 Check resistance between winding and the frame (earthen resistance), winding and winding, the value must be low than value from formula (1), otherwise the windings must be kept drying treatment till the resistancet value is correct. If the resistance value is zero, that shows certain winding or windings are short circuit, and re-treatment must be made.

R: insulation resistant Meg Ohm

U<sub>n</sub>: rated motor voltage

Dry treatment method:

- a), Keep the motor ran at 20% rated voltage in no load condition.

## 电机安装方式 Installation

6. 3. 4 仔细检查电机各零件是否良好，紧固件是否松动或缺失。用手转动电机轴伸，观察转动是否灵活，否则，应采取措施消除缺陷。

6. 3. 5 机座号100及以上的D1CS电机上都装有一个或两个吊环螺钉以便吊运，但这些螺钉仅仅是为吊运电机之用，而不包括风机等配套设备。

### 6. 4 机械安装与调整

6. 4. 1 应确保电机安装在坚实的地基、底座或刚性的支架上，应避免外来振动对电机的干扰。

6. 4. 2 电机应采用机械性能为8级或8级以上紧固件与底座或支架等安装构件可靠固定，并有防松措施。建议在安装并调整到位后在电机底脚和法兰与安装构件上加带螺尾的定位销进行定位。

6. 4. 3 D1CS电机可以用联轴器或三角皮带与风机联接，我们建议联轴器或皮带轮的轴孔公差用H7。所有电机的轴伸端部都有一个螺孔，可用来帮助安装联轴器或皮带轮。采用一个螺栓、一个大垫圈（或垫板）以及一个螺母即可将联轴器或皮带轮压靠轴伸肩。当使用联轴器传动时，我们建议采用柔性联轴器。应该认真调整使得电机轴线与风机叶轮轴线重合，否则，可能导致轴伸和轴承损坏。也要注意确保不致因两半联轴器的拉压而引起轴承承受轴向力，因为这样会大大缩短轴承的寿命。当使用皮带传动时，应注意使电机轴线与风机轴线平行，且皮带中心线应与电机轴线垂直。对于4千瓦以上的2极电机和30千瓦以上的4极电机，我们建议不要采用皮带传动方式。

6. 3. 4 Check and make sure if the all parts of the motor are fine and fasten, if there are loosen or missing parts. Rotate the motor shaft and see if it can run freely, otherwise, measures must be made to settle the defect.

6. 3. 5 Motor frame size H100 and down has one or two eyebolts on top frame, they are arranged for the transportation and installation, not for the use of blower and other accessory equipment.

### 6.4 Mechanic installation and adjustment

6. 4. 1 Ensure that the motor must be installed on substantial and steady foundation, end-bracket or rigid holder to avoid vibration.

6. 4. 2 The motor must be installed to the end-bracket or the holder with fasten parts at fasten degree 8 or above, and anti-loosen treatment must be made. It's recommended that the locking-key to be placed between motor feet, flange and fasten device.

6. 4. 3 D1CS motor can be equipped with the blower with shaft coupling or belt, allowed diameter tolerance of the coupling and belt-roller hole is H7. All motor shaft ends has threaded hole for loading coupling or belt roller by using a bolt and nut, a big washer.

Flexible coupling is recommended to be used, to be carefully adjust the motor's position to ensure the motor and the blower are in the same central line, otherwise may lead the shaft and bearing damaged, at the same time, must note: to be ensure that the bearings should be avoid shaft's directional pulling caused by the coupling which may reduce the life of bearings.

When using belt, pay attention that the motor's shaft central line must be parallel with the blower central line, and the belt central line must be vertical to the motor's shaft central line.

It's not recommended to use belt for motors 4.0kW 2 pole and downward, 30kW 4 pole downward.

## 6.5 电气连接

6.5.1 D1CS电机都带有一个接线盒。按订货要求，接线盒可以是在电机定子上安装就位的，也可以是单独提供的。在电机铭牌上或接线盒内有接线指示图。

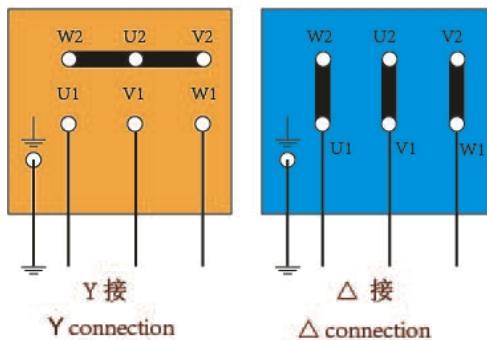
6.5.2 已安装就位的接线盒内，电机绕组的引接电缆也已联接到位，用户可按铭牌上标明的接法和接线指示图与外接电源电缆相联接，单速D1CS电机接线见图1。对于D1CDS多速电机按绕组可分为单绕组多速和双绕组多速，提供给用户的接线头数量有6头或9头两种，因此，D1CDS多速电机的接线方式有多种，请以铭牌上或线盒内标签上标明的接法为准，并提请注意，接线图中空置的接线端子切不可用连接片与其它端子短接。常用的D1CDS多速电机的接法见图2~图4。

### 6.5 Connection

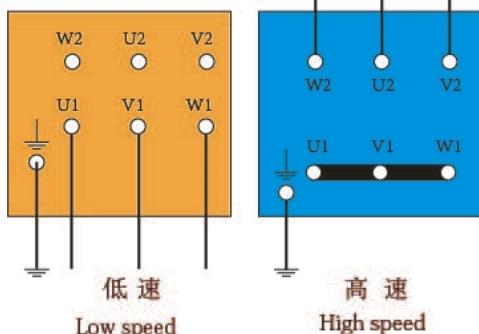
6.5.1 Series D1CS high temperature motor has one terminal-box, this terminal-box can be fit with the motor; there is also another added terminal-box which is provided separatively. There's connecting diagram in the terminal-box or in the nameplate.

6.5.2 For the fixed terminal-box D1CS motor, the winding's outlet power wire terminals are already fixed with the terminal board, customer may connect the motor according connection diagram in the nameplate or terminal-box, connecting method of one speed motor, please see Fig. 1. D1CDS multi-speeds motor contains multi-speeds single winding and multi-speeds two windings, 6 terminals or 9 terminals, so D1CDS motor has several connecting methods, please check with the nameplate or terminal box. Please note: the remaining terminals are left for special connection, and can not be connected with other terminals. See Fig 2~Fig4. (connecting diagram).

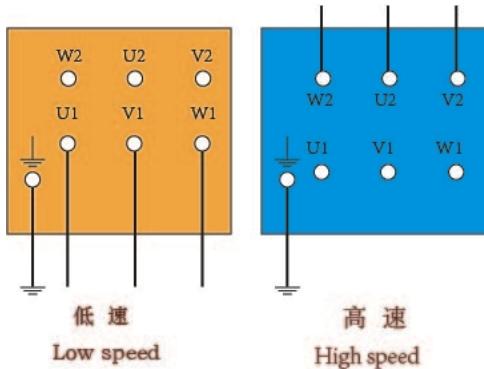
单速D1CS电动机接线图 fig.1  
Connection of one speed D1CS motor



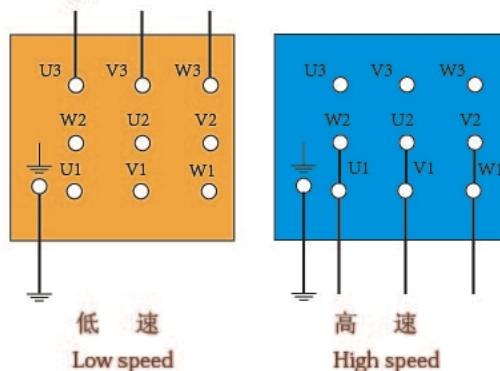
单绕组双速D1CDS电动机接线图 Fig. 2  
Connection of 2-speeds motor with single windings



带两个独立绕组的双速电动机接线图 Fig. 3  
Connection of 2-speeds motor with 2 separate windings



双绕组9出线头双速电动机接线图 Fig. 4  
Connection of 2-speeds motor with 2 separate windings, 9 terminals



6.5.3 单独提供接线盒的电机上，有一根长约1米的引接电缆。请根据需要将接线盒安装到位，再将引接电缆从接线盒底部引入，接线端标志将引接电缆的接线端头与接线板对应的接线柱妥善联接（见图5），再按5.5.2要求与电源联接。

6.5.4 电机的机壳上和接线盒内都设有接地标志和接地螺栓，为防触电伤人，接地螺栓应可靠接地。

6.5.5 当电源相序A、B、C分别与接线柱标志U1、V1、W1相对应时，从主轴伸端视之，电动机将顺时针方向旋转（特殊要求时除外）。更换任意两接线位置，电动机转向则相反。

对于变极多速电动机，只能严格按接线指示图接线，对定子绕组仅仅引出6个接线头的多速电机，不能采用Y—△起动器起动，所以当需要Y—△起动的多速电机时，应在订货时说明。如有疑问，请与本公司联系。

6.5.6 电气联接时，所有螺母都应拧紧，但也不可用力过大，以免损坏接线板。我们推荐的紧固力矩如表1。

6.5.7 D1CS电机接线盒上有一个或两个供与电缆软管联结的出线螺孔，其螺纹规格见表2。在电动机出厂时，出线孔均用密封装置或螺塞封住。对暂不使用的出线孔请仍然照旧密封。

6.5.3 About one meter long power wire is available on the motor with another added separative terminal-box. Please fit the terminal-box on the required position, then lead the power wire into the terminal-box from below, please connect the terminals on the power wire to the terminals on the terminal board according connecting marks (see Fig 5), connect power according stipulation 6.5.2.

6.5.4 There's earth marks and earth terminal on the motor frame or in the motor terminal-box, the earth terminal must be well placed to avoid any possible disaster to the body.

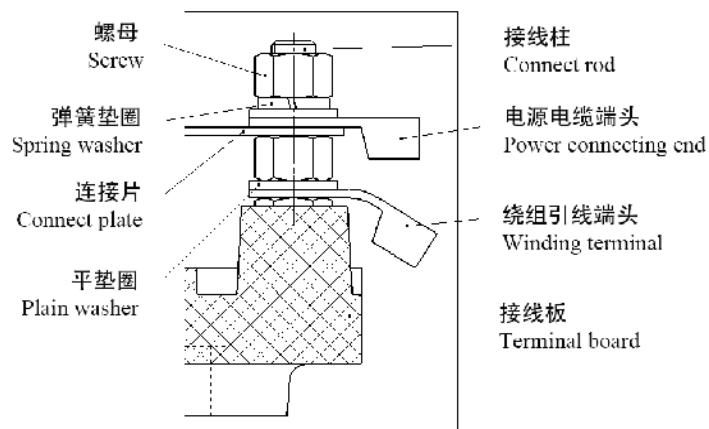


图5 Fig.5

6.5.5 When the power phase A, B, C is connected respectively with the terminal marks U1, V1, W1, the motor runs in clockwise facing from the driving end, and will run in anti-clockwise when connecting in the inverse turn.

For multi-speed motor, the connection must obey the connection illustration strictly, it's prohibited that "star/delta" starter is applied for multi-speed motor which has 6 terminals, when you order multi-speed motor with "star/delta" starter, contact with Dalmo office.

6.5.6 During connecting, all the screws and nuts must be fasten and tighten enough in a proper way without damaging the terminal board, recommended fasten tighten torque are shown in table 1.

6.5.7 There are one or two cable glands on terminal-box for inlet of power wire, threaded cable gland types are shown in table 2. All the cable glands are closed for delivery, please keep the cable gland closed if not to be used when installing.

表1:接线柱螺栓型号 Table 1: Terminal rod thread type

接线柱螺纹规格 Terminal rod thread type		M5	M6	M8	M10	M12	M16
紧固力矩 Tight torque N.M	Mini.	1.8	3	8	10	20	60
	Max.	2.5	4	9	17	30	73

表2: 接线盒螺纹型号 Table 2: Cable gland types

机座号 Frame	螺 纹 规 格		
	欧洲通用米制 Metric	中国通用米制 National	PG孔 PG
80~90	M25×1.5	M24×1.5	PG16
100~132	M32×1.5	M30×2	PG21
160~180	M40×1.5	M36×2	PG29
200~225	M50×1.5	M48×2	PG36
250~280	M63×1.5	M64×2	PG42
315	*	M64×2	PG48
355		M72×2	

注: 对80~280机座号, 如无特殊要求, 本公司均按PG孔提供。

Note: All motors are provided with PG from H80-280 if no special request.

\* 对315~355机座号, 如用户有要求, 可制成2-M63×1.5或2-M64×2或2-PG48螺孔或按用户要求的螺纹制作。

\* PG size of 2-M63×1.5, 2-M64×2, 2-PG48 are available for motor 315~355 in customer's request, or totally conforms to the customer's request.



## 7. 启动电机

7. 1 电动机安装前应空载试运行，以检验电机是否在运输中有损坏和旋转方向是否符合要求。如果是运输中损坏请与本公司联系，如果转向不对，请切断电源，将接线盒内电源电缆的任意两个接头互换位置即可。

7. 2 由于风机可认为是软起动，所以一般情况下，D1CS电机可以满压起动。为了降低起动电流，大功率电机应降压起动。但应注意，电动机的转矩与电源电压的平方成正比，电压降低过多时，有可能使起动时间过长或者不能达到满速要求，甚至导致电动机烧毁。

对于 $\Delta$ 接法的单速电动机可采取Y— $\Delta$ 起动，此时起动转矩约为直接起动时的三分之一。

7. 3 D1CS电机在冷状态下，允许连续起动两次；一般地说，在热状态下，只允许起动一次。如果电动机运行温度较低，在热状态下起动一次后，若能确认电动机定子绕组的温度尚未超过H级绝缘的允许温度（180℃）时，仍可再次起动。否则，应待电动机定子绕组冷却到该温度后，方可再次起动。正常的D1CS电机，平均每小时可起动六次。

7. 4 应对电动机的所有联轴器、皮带、皮带轮等运动部件加装妥善的永久性防护，防止电动机运转时其所附紧固件的“飞逸”或意外接触造成伤害。

## 7. Starting motor

7. 1 The motor must run in no load condition before works normally to check if there's damage or sub-normal running condition occurred during transportation, If the running direction is incorrect, please keep the power off, then try to change the connecting method in inverse way, if there's still the problems, please contact Dalmo company.

7. 2 Normally, the blower is started in a soft mode, so D1CS motor can started with full rated voltage, but big output motor should be started from low voltage. The starting torque which is in proportion with square of the power voltage, too low starting voltage may result in too long starting time, and can not reach the top speed, this even can burn the motor.

One speed motor with “delta” connecting method can apply “star/delta” starting method, in this case the starting torque is one third comparing with direct starting.

7. 3, Allowed initial starting times of D1CS motor is two, and one time staring during working period, during the state of low motor temperature, after one time starting, it's permit to start for the second time in case the windings temperature is not higher than 180℃, otherwise, the second start should be only be made after the winding temperature reaches 180℃. Six starts per hour can be made for D1CS motor.

7. 4 Protection measures must be made against all the rolling parts like coupling、belt、belt roller, etc., to prevent any damaging body.

## 8. 电机的维护

8. 1 为了保证电动机的正常运行和防止故障发生，电动机要定期检查和维护。当发生不良情况时，要及时消除，否则，会影响电机的正常运行，甚至缩短电机寿命。通常检查项目包括：润滑和通风是否良好，电机表面是否有污物或灰尘，传动用皮带、皮带轮或联轴器是否正常，各密封部位是否正常，各部位紧固件是否松动，保护接地是否可靠等。

8. 2 电动机正常运行期间，请按表4规定的时间间隔对轴承加注润滑脂。

8. 3 在正常运行条件下，电机每运行10000小时后或发现轴承异常情况时，应对轴承进行检查、维护。

**D1CS电机用的润滑脂为使用温度280℃以上的润滑脂，更换时请特别注意。**

# D1CS系列单速、双速消防通风排烟用三相异步电动机

## D1CS series multi-speed smoke exhaust ventilation electric motor

### 8. Maintenance

8.1 Motor must be checked and maintained properly to guarantee safety working without failure. Subnormal must be checked and to be settled in time, otherwise, this will effect motor working and reduce the life of the motor. General checking items includes: Lubrication and ventilation condition, if there is dust or contamination on surface of the motor, if the coupling, the belt or the belt roller is fine, if every sealing parts are fine, if all the tighten parts are tight, if the earth is properly made.

8.2 Please add grease periodically to the bearings according table 4.

8.3 Under normal conditions the bearings must be checked and maintained after every 10000 working hours, especially subnormal occurs.

For opening bearing, please use petrol clean the remained grease in the bearing and then replace with new grease; for the motor with oil filler, please replace oil with greaser; for totally enclosed bearing (ZZ), no re-grease though the whole service life.

8.4 如果发现轴承损坏，应用相同型号的轴承进行更换，并请注意所用润滑脂牌号符合要求。轴承型号见表4。

8.5 为了防止灰尘和水沿着转轴与轴承盖间的间隙侵入电机内部，在轴承室内各装有一个（无外扇电机的非轴伸端没有）内包骨架唇形密封圈（规格见表4）。该密封圈是易损件，在每次检修电机时，建议予以更换，更换时，请给唇口（轴孔处）涂抹相应的润滑脂，并注意唇口朝外。

8.4 The same type of bearing is replaced with the worn bearing, and the bearing grease must conforms to the standard. Bearing types are shown in table 4.

8.5 There are sealing ring are to be fitted inside the bearing room to prevent the motor from dust and water into the body, see table 4.

8.6 在一般情况下，请不要随意拆开电机。如果为了维修需要拆开时，拆装过程中请特别注意如下几点：

8.6.1 拆开之前，务必切断电源，以防触电。

8.6.2 拆卸联轴器、皮带轮或轴承时，应采用专用工具，不可锤击敲打，以免造成轴伸弯曲变形或损坏轴承。

8.6.3 要拆开电机时，拧下轴承盖、端盖联接用螺栓（钉），一般端盖即可卸下。

8.6.4 拆卸过程中千万注意，不得损坏定子绕组的绝缘。

8.6.5 装配时，端盖、轴承盖止口需涂防锈油。

8.6.6 各部位橡胶密封垫需安装正确，并应压紧，若密封垫老化变硬，请用耐热橡胶制作更换。

8.6 Please do not detach the motor, if detaching is necessary, please follow these steps:

8.6.1 Before detaching, please do turn off the power firstly.

8.6.2 Using appropriate tools to detach the coupling, belt roller or bearing, it's prohibited to use a hammer to strike, to avoid bending the shaft or damaging the bearing.

8.6.3 Remove the bearing cap, take off the screws and nuts on the end cover and frame.

8.6.4 Note: During detaching, do not damage the windings.

8.6.5 Anti-corrosion oil must be painted to the contacting surface of the end cover、the bearing cap when reassembling.

8.6.6 The sealing gauges in every parts must be fitted tight and properly, if it's worn please replace it.

### 9. 故障处理

电动机的可能故障及排除方法见表8。

Failure settlement  
See table 8.



## 10. 储存与运输 Storage transportation

10. 1 电动机应贮存于清洁、阴凉干燥的库房内，并且库房内不应有酸、碱或其他腐蚀性的气体。  
10. 2 贮存和运输中，电动机不可倒置，搬运中，应防止撞击轴伸和风扇罩。  
10. 3 注意保护轴伸表面和铭牌。

10. 1 The motor must be kept in dry, vent and clean warehouse where there is no acid, no soda and other corrosive gas.  
10. 2 The motor is not allowed to be placed inverse during storage and transportation, no bumping or striking to the shaft and fan cover is allowed.  
10. 3 Be careful to protect the shaft-end surface and the nameplate.

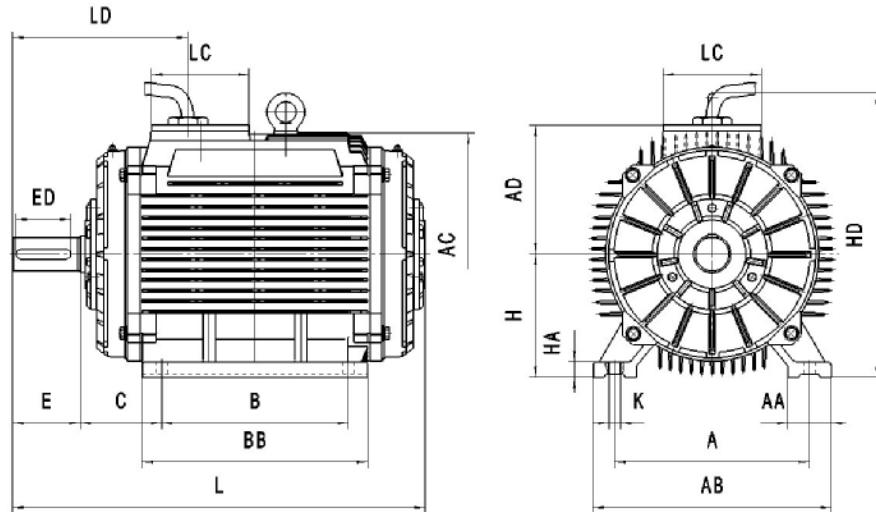
## 11. 其它 Others

11. 1 D1CS系列单速通风排烟三相异步电动机基本技术参数见表5。  
11. 2 D1CDS系列通风排烟用的单绕组双速三相异步电动机的基本参数见表6。  
11. 3 D1CDS系列通风排烟用的双绕组双速三相异步电动机的基本参数见表7。  
11. 4 表5、表6、表7中的数据供订货时参考，如表中的数据不适合用户的要求，本公司也可按用户的要求提供，具体事宜请与本公司联系。本公司对表中的数据保留修改权。

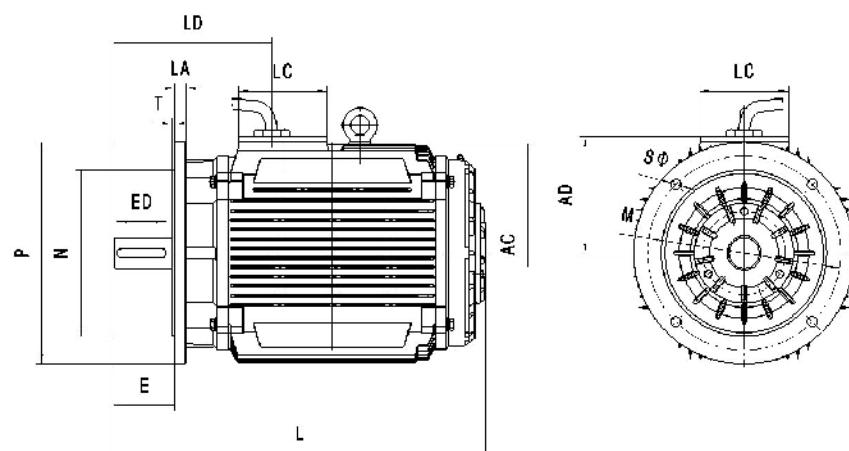
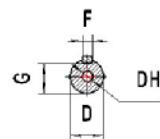
11. 1 Technical specification and data of D1CS series motor with one speed are shown in Table 3.  
11. 2 Technical specification and data of D1CS series motor with two speeds and one separative winding are shown in Table 4.  
11. 3 Technical specification and data of D1CDS series motor with single winding and two speed are shown in Table 4.  
11. 4 Technical specification of D1CDS series two windings two speed motor are shown in Table 7.

All data are for the customer reference when ordering, in case there are different requirement, please contact with Dalmo company. Dalmo reserves the right for edition and reversion of any technical specification, data, information specified in this catalogue.

## IMB3 (卧式) Horizontal



## IMB5 (立式) Vertical



## IMB35 (立/卧式) Vertical / Horizontal

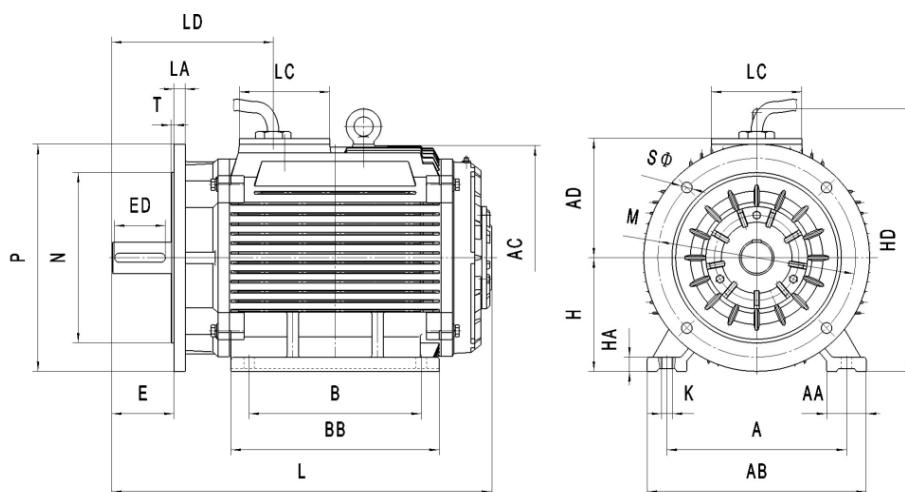




表5: D1CS单速三相异步电动机基本参数

Table 5: D1CS series one speed electric motor technical specification

电机型号 Type	2极 Pole		4极 Pole		6极 Pole		8极 Pole	
	额定功率 kW	转速 rpm	额定功率 kW	转速 rpm	额定功率 kW	转速 rpm	额定功率 kW	转速 rpm
D1CS 712	0.55	2830	0.37	1370				
D1CS 801	0.75		0.55		0.37			
D1CS 802	1.1		0.75		0.55			
D1CS 90S	1.5		1.1		0.75		0.37	
D1CS 90L	2.2		1.5		1.1		0.55	
D1CS 100L1			2.2				0.75	
D1CS 100L2	3	2850	3				1.1	
D1CS 112M	4	2870	4	1430	2.2	935	1.5	
D1CS 132S	5.5		5.5		3		2.2	
D1CS 132M1					4			
D1CS 132M2	7.5	2900	7.5	1445	5.5	960	3	710
D1CS 160M1	11				7.5		4	
D1CS 160M2	15		11	1460			5.5	
D1CS 160L	18.5		15				7.5	
D1CS 180M	22	2945	18.5		11			
D1CS 180L			22	1470	15	975	11	
D1CS 200L1	30	2955			18.5			
D1CS 200L2	37	2960	30	1475	22	980	15	730
D1CS 225S			37				18.5	
D1CS 225M	45	2960	45		30	980	22	735
D1CS 250M	55	2970	55		37			
D1CS 280S	75		75		45			
D1CS 280M	90		90		55			
D1CS 315S	110		110		75			
D1CS 315M	132		132		90			
D1CS 315L1	160		160		110			
D1CS 315L2	200		200		132			
D1CS 355M	250		250	1488	160			
D1CS 355L1	280	2983	280		200			
D1CS 355L2	315	2985	315	1490	250			743



表7: D1CDS系列双绕组双速三相异步电动机的基本参数

机座号 Frame	轴径 Shaft Dia. mm	6/8极 Pole		4/8极 Pole		4/6极 Pole		2/4极 Pole		
		功率 kw	转速 RPM	功率 kw	转速 RPM	功率 kw	转速 RPM	功率 kw	转速 RPM	
801	19			0.37	1405	0.37	1390	0.55	2810	
				0.11	690	0.11	910	0.11	1405	
				0.55	1400	0.55	1390	0.75	2800	
				0.15	696	0.15	905	0.15	1400	
90S	24	0.37	920	0.75	1410	0.75	1400	1.1	2820	
		0.11	690	0.25	685	0.22	910	0.2	1410	
90L		0.55	920	1.1	1390	1.0	1390	1.5	2780	
		0.15	690	0.3	685	0.03	910	0.25	1390	
100L1	28	0.75	940	1.5	1415	1.3	1400	2.2	2830	
		0.2	700	0.5	690	0.5	925	0.37	1415	
100L2		1.1	940	2.2	1425	2.0	1410	3.0	2850	
		0.37	700	0.6	695	0.6	930	0.55	1425	
112M		1.5	950	3.0	1440	3.0	1430	4.0	2880	
		0.55	710	0.75	695	0.8	930	0.75	1440	
132S	38	3.0	970	4.0	1445	4.0	1430	5.5	2890	
		1.1	720	1.1	720	1.1	940	0.9	1445	
132M		4.0	970	5.5	1445	5.0	1435	7.5	2890	
		1.5	720	1.5	710	1.25	940	1.3	1445	
160M	42	5.5	970	7.5	1450	7.0	1460	11	2920	
		1.5	730	2.2	725	2.0	960	2.2	1460	
160L		5.5	970	11	1460	10	1455	15	2910	
		2.2	730	3.5	725	3.0	965	3.0	1455	
180M	48	7.5	970	15	1470	13	1470	18.5	2940	
		3.0	730	4.0	735	4.0	960	4.0	1470	
180L		11	970	18.5	1470	15	1470	22	2940	
		2.2	730	5.0	735	4.5	980	5.5	1470	
200L	55	15	980	22	1470	18.5	1475	30	2950	
		3.0	735	6.0	735	5.5	980	7.5	1475	
225S	60	18.5	980	30	1480	22	1465	37	2960	
		5.5	740	7.5	740	7.0	965	9.0	1480	
225M		22	980	37	1480	27	1480	45	2960	
		7.5	740	10	740	8.0	980	11	1480	
250M1		25	980	45	1480	34	1480	55	2960	
		9.0	740	12	740	10	985	13.5	1480	
250M2		27	980	47	1480	45	1485	75	2960	
		10	740	13	740	15	980	18.5	1480	
280S	75	30	980	55	1488	45	1480	75	2976	
		11	740	15	740	15	985	18.5	1488	
280M1		35	980	75	1490	60	1485	90	2970	
		13	740	20	740	18	965	22	1485	
280M2		37	980	77	1490	66	1490	110	2980	
		15	740	22	740	20	980	27	1490	
315S	80	40	985	90	1490	66	1490	110	2976	
		15	740	22	740	20	960	27	1488	
315M		45	985	110	1490	80	1490	132	2980	
		18.5	740	27	740	25	985	33	1490	
315L1	90	50	985	125	1490	95	1490	160	2980	
		22	740	30	740	30	960	37	1490	
315L2		55	985	140	1490	110	1400	200	2980	
		27	740	35	740	35	980	45	1490	

表8: 故障及处理 Failure and treatment

序号 Item	故 障 现 象 Subnormal phenomenon	可 能 原 因 Possible reason	解 决 措 施 Treatment
1	通电后, 电动机不转并有嗡嗡声 Do not run after power is on, and there's sub-normal sound.	一相开路 certain phase is broken	找出断相处并联结之 connect the short-circuit winding
2	电动机运转时有嗡嗡声并且过热 high temperature and subnormal sound	负载太大 over loading	减轻负载 decrease loading
3	熔断器烧断 fuse frequently breakdown	1) 相间短路 phase short-circuit 2) 负载太大 over loading 3) 电源电压过低 low voltage	1) 修理定子绕组 repair the winding 2) 减轻负载 decrease loading 3) 升高电压 rise the voltage
4	三相电流不平衡 current imbalanced	1) 定子绕组有短路 winding short-circuit 2) 接线错误 error connection	1) 修理定子绕组 repaire the winding 2) 改正接线 correct connection
5	绕组过热 winding too hot	1) 负载太大 over loading 2) 电源电压过高或过低 too high or too low voltage	1) 降低负载 decrease loading 2) 将电压调至额定值 rise the voltage to rated value
6	绝缘电阻低 insulation resistant too low	定子绕组脏污或受潮 stator winding stained or damped	清洁并干燥绕组 clean and dry the winding
7	轴承过热 bearing too hot	1) 润滑脂过多或不足 too much or too less grease 2) 润滑脂变质 grease deteriorate 3) 轴承受损或变坏 bearing damaged or defect	1) 减少或增加润滑脂 decrease or increase grease 2) 清洗轴承, 更换润滑脂 clean the bearing,replace grease 3) 更换轴承 replace bearing
8	轴承噪声大 bearing noise too big	1) 轴承受损或变坏 bearing damaged 2) 润滑脂变质 grease deteriorate 3) 固定端盖或轴承盖的螺栓未拧紧或松紧不一致 screw or nut are loosen	1) 更换轴承 replace bearing 2) 清洗轴承, 更换润滑脂 clean the bearing,replace grease 3) 重新调整螺栓并拧紧 adjust end-cover screw or nut and tighten them
9	振动大 big vibration	1) 基础固定不良或刚性不足 foundation not steady or rigid 2) 电动机与被拖动机械轴线不一致 motor and driven central is not in the same line 3) 轴承损伤或有缺陷 bearing damaged or defect	1) 加固基础 consolidate the foundation 2) 调整轴线 adjust the central line 3) 更换轴承 replace bearing
10	转矩太小, 负载时达不到额定转速 too small torque, rated speed failure when loading	1) 电压过低 too low voltage 2) 转子绕组断条 rotor winding breakdown	1) 提高电压到额定值 rise the voltage to rated value 2) 更换转子 replace the rotor



大连达尔马电机荣誉出品- D1CS系列耐高温电机

Dalmo's famous brand product- D1C series electric high-temperature electric motor

进入二十世纪，中国的基础建设和房地产业发展迅速，建筑领域突飞猛进，交通设施，城市建设、乡村改造，房地产建设是中国经济发展的必经之路，如何使得自己的产品能够更好的满足市场需求，并拥有自己的技术和制作优势，这是达尔马人更多考虑的问题。通过多年的市场考察，达尔马公司意识到：耐高温驱动行业目前还是电力机械行业的一个空白，所以，公司制定了D1CS系列专门应用于满足高温行业及空调领域的系列产品。

In the twenty century, China achieved the fast development of real estate and basic instruction. Transportation, city instruction and building of new village are the first step. How to make the electric motor to meet this market requirement with sole property of Dalmo technoleedge and production, Dalmo has realized this: high temperature electric motor is a potentially market point, so the company make long term design and production for this series high-temperature electric motor.

D1CS系列耐高温三相异步电动机在国内及国际市场取得了巨大的市场回报。目前，本公司生产的该系列产品广泛应用于国内许多制造、能源及建设领域。本公司产品应经被如下国内建工，特别是以上海地铁、重庆高速、云南高速隧道、八达岭隧道等国内知名工程指定为独家专用产品，因而，在国内高温电机领域，大连达尔马电机是迄今为止生产耐高温电机最多、涉足领域最广、历史最悠久的生产企业，是中国生产耐高温电机之父。

D1CS Series electric motor has achieved big market demand in both local and overseas market. This series electric motor are widely used in manufacturing, sources and architecture. The products are appointed as the sole product by following famous objects such as Shanghai Subway, Chongqing expressway, Yunnan expressway tunnel, Badaling tunnel, etc. So, up to now, Dalmo D1CS high temperature motor own the position of the top amount, widest regions, longest history, and the creator of China high temperature motor.

目前，公司已经完成了与意大利Fiment 公司、以色列的Getter Group Yarom Division 完成了该系列及相关系列电机的采购合同，并已经开始批量生产。

Dalmo is cooperating with Fiment (Italy) and the Getter Group Yarom Division (Israel), and has began the production of D1CS motor.

本公司D1CS耐高温电机被下列国内工程所用：

Dalmo's D1CS high temperature motor was used by the following objects:

连江县瑶头隧道

Yaotou tunnel Lianjiang county

辽宁阜朝高速牛梁河隧道

Niuliang river highway tunnel Fuxin Liaoning

福建官头岭隧道改造 Guantou mountain tunnel fujian

广东鹤山彩虹岭隧道

Rainbow mountain tunnel Heshan Guangtong

福建温福铁路隧道 Wenfu railway tunnel Fujian

重庆渝怀线金洞隧道

Golden hole tunnel Chongqing

广东武广客运专线 Guangtong Wuguang passenger line

越南隧道

Vietnam tunnel

尼泊尔隧道

Napel tunnel

湖南常张高速隧道

Changzhang highway Hunan

河北隆化喇嘛梁隧道

Lamaliang tunnel Longhua Hebei

京珠粤北段韶关隧道改造

Rebuilding of north part of Jing-Zhu-Yue high way

四川平武水电站

Pingwu Hydropower Station Sichuan

江西黄常高速隧道

Huangchang highway tunnel Jiangxi

柬埔寨隧道

国内主要配套单位名录  
Cooperation partners



中国一汽  
China Motor Group



鞍钢股份有限公司  
Anshan Steel Company Group



北方重工集团有限公司  
North Heavy Industrial Group



本溪钢铁(集团)有限责任公司  
Benxi Steel Corporation Group Ltd.



大连宝峰机器有限责任公司  
Dalian Baofeng Machinery Company Ltd.



大连机床集团有限责任公司  
Dalian Lathe Company Ltd.



东北特钢有限责任公司  
North-east Special Steel Company Ltd.



沈阳鼓风机集团有限公司  
Shenyang Blower Company Group Ltd.



大连双龙泵业有限公司  
Dalian Shuanglong Blower Company Ltd.



沈阳机床集团有限公司  
Shenyang Lathe Group Ltd.



中国第一重型机械集团公司  
China No.1 Heavy Machinery Corporation Group

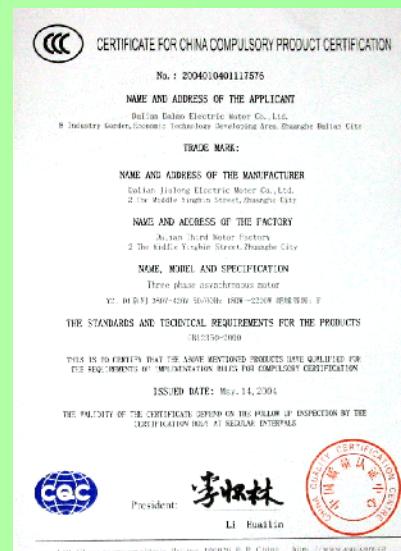
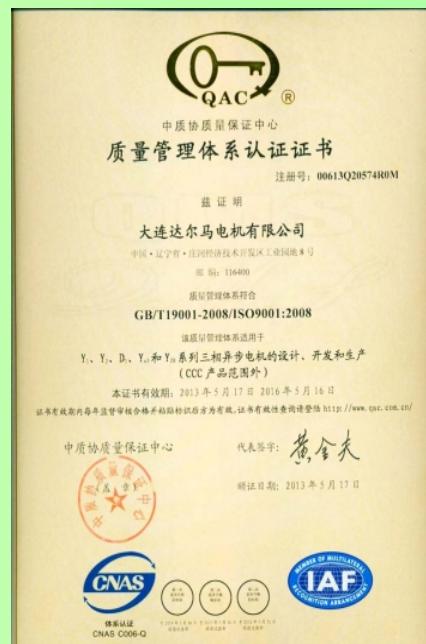


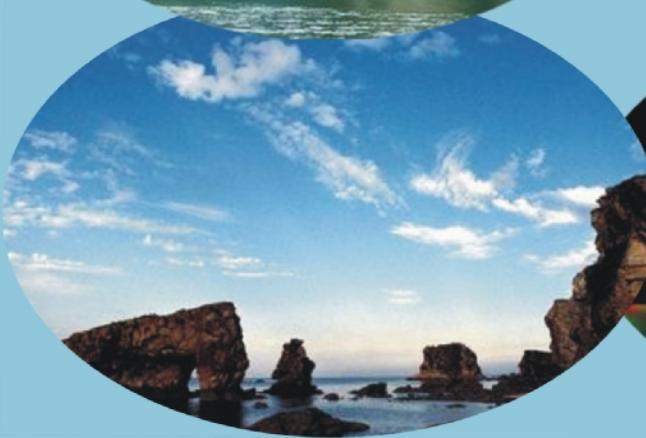
浙江亿利达风机有限公司  
Zhejiang Yilida Blower Company Ltd.

# D1CS系列单速、双速消防通风排烟用三相异步电动机 D1CS series multi-speed smoke exhaust ventilation electric motor



## 公司资质与证书 Certification





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$$R = \frac{U_N}{1000} \quad \dots \dots \dots (1)$$

