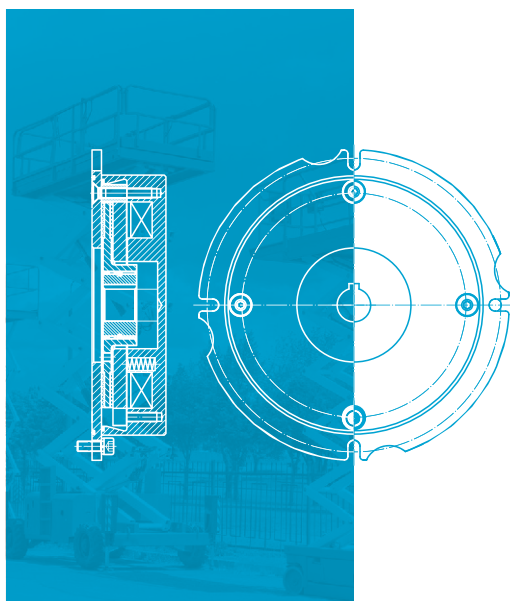




稳定的电磁制动器就选瑞迪

Need stable brakes choose REACH



高空作业平台电磁制动器

E/M Brakes for Aerial Work Platform



稳定的电磁制动器
就选瑞迪

Need stable brakes **choose REACH**

TABLE OF CONTENTS

目录

01

品牌介绍

INTRODUCTION

关于瑞迪 ▶ P 01

ABOUT REACH

瑞迪优势 ▶ P 02

ADVANTAGES

02

卓越瑞迪

EXCELLENT REACH

证书 ▶ P 03

CERTIFICATES

知识产权 ▶ P 04

INTELLECTUAL PROPERTY

荣誉 ▶ P 04

HONORS

03

技术路线

TECHNICAL ROUTE

臂式高空作业平台电磁制动器 ▶ P 07

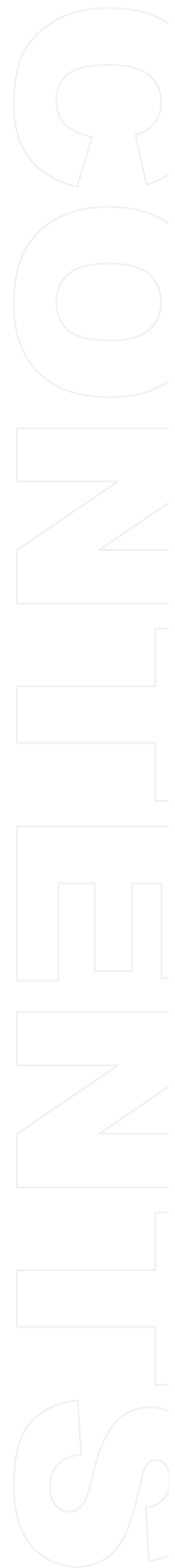
E/M Brakes for Boom Aerial Work Platform

剪叉式高空作业平台电磁制动器 ▶ P 08

E/M Brakes for Scissor Aerial Work Platform

安装使用说明 ▶ P 09

Installation Instructions





使命

MISSION

持续创新，促进世界变得更好！

Keep innovating for a better world!



宗旨

Objective

聚焦智能制造

实现合作伙伴、员工与企业共赢！

Dedicated to achieving a win-win for partners, staff and the company!



愿景

VISION

成为全球客户首选品牌！

Become the top brand for global customers!



核心价值观

CORE VALUES

开放 品质 价值

Core values

Open Quality Value

About REACH

关于瑞迪

成都瑞迪智驱科技股份有限公司，业务和技术源于1996年的瑞迪实业。我司致力于制动、减速、传动三大系统，产品包括制动器、谐波减速机、胀套、联轴器、同步轮等。

瑞迪集研发、生产、销售于一体，并控股瑞迪佳源、眉山瑞通、荷兰J.M.S.三家子公司。产品面向国内外销售，远销欧、美、日等30多个发达国家和地区，获得了客户广泛认可，与全球多家知名企业建立了战略合作。

REACH MACHINERY CO., LTD. with its business and technology from REACH MACHINERY ENTERPRISE since 1996, is dedicated to the Braking System, Reducing System and Transmission System. Main products are brakes, harmonic reducers, locking devices and couplings, etc.

The company integrates R&D, manufacturing and sales, and holds three subsidiaries: REACH JIAYUAN, REACH RUITONG, and J.M.S. in the Netherlands. Our products are sold both at home and abroad, exported over 30 countries and regions such as Europe, the United States, and Japan, etc. and have gained extensive recognition from our customers. We have established strategic partnerships with many well-known companies around the world.



瑞迪优势

REACH ADVANTAGES

五大核心竞争力

Five core competitiveness

• 材料维度 Materials

自主研发核心摩擦材料，确保材料精准符合制动器的性能需求。

Independent-developed core friction materials accurately meet the performance requirements of the brakes.

• 品控维度 Quality Control

标准化作业，超过**100道**质量控制点，**14项**自动检测，确保产品质量稳定。

Standardized operations, with over 100 quality-control points and 14 automatic inspections to guarantee the stable quality.

• 工艺维度 Process

自动化生产和在线检测工艺，保障产品质量稳定。
Automatic production and online inspection processes to guarantee the stable quality.

• 试验维度 Testing

1000万次静态寿命测试，**1000次**急停测试，确保产品性能稳定。

10,000,000 times static lifetime test and 1,000 times emergency stop test to guarantee the stable performance.

• 产品维度 Product

每一种产品经过严格的型式实验和设计验证，确保产品的稳定。

Strict type-examination and design verification to guarantee product stability.

八大技术亮点

Eight technical highlights

电磁方案 设计技术

Electromagnetic solution design technology

精密机械 加工技术

Precision machining technology

摩擦片原材料配方的 自主研发和精密 制作技术

Independent-developed friction plate formula and precision production technology

保障客户稳定 运营的管理及 服务技术

Professional management and service to guarantee customer stable operations

性能测试技术

Performance testing technology

信息化管理技术

Information management technology

深入了解市场、客户 需求的管理技术

Experienced management for in-depth understanding of market and customer needs

对市场分析、趋势 洞察、研判的技术

Market analysis, trend insight and judgment technology

卓越瑞迪

EXCELLENT REACH

证书

CERTIFICATES

专注于为客户提供安全稳定的制动器，瑞迪智驱搭建了IATF16949、ISO9001、ISO14001体系。产品通过了CE、UL、RoHS和REACH等认证。

Focus on providing customers with safe and stable brakes, REACH MACHINERY CO., LTD. has established IATF16949, ISO9001, and ISO14001 management systems. The products have been certified with CE, UL, RoHS, REACH, etc.



IATF 16949



ISO 9001



ISO 14001



CE



UL



RoHS



REACH

知识产权

INTELLECTUAL
PROPERTY

13

授权发明专利

Authorized invention
patent

46

授权实用新型专利

Authorized utility model
patent

2

外观专利

Design patent

9

软件著作权

Software copyright

3

科技成果奖

Science and Technology
Achievement Award

截至2023年8月25日
As of August 25, 2023

荣誉

HONORS

- 专精特新“小巨人”企业
- 国家高新技术企业
- 国家“十二五”科技支撑项目
- 行业标杆大客户复购率达到90%以上
- National Specialized and Innovative “Little Giant” Enterprise
- National High-Tech Enterprise
- National Science & Technology “12th Five-Year Plan” Support Project
- Over 90% repurchase rate by industry benchmark customers

瑞迪智驱始终坚持以技术为驱动力，不断发展壮大。

REACH MACHINERY always adheres to technology as the driving force and continues to grow and expand.



技术路线

TECHNICAL ROUTE

高空作业平台电磁制动器

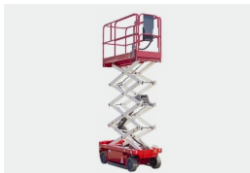
E/M Brakes for Aerial Work Platform

高空作业平台专用制动器是一种弹簧加压的干式摩擦电磁制动器（通电释放，断电制动）。产品结构紧凑，小体积，大扭矩，可用于驻车和紧急制动。此款制动器采用双电压PWM控制，减小整车功耗，延长制动器使用寿命。广泛应用于臂式和剪叉式高空作业平台。

The Brake for aerial working platform is a type of spring-loaded dry friction electromagnetic brake (Release when power-on, Brake when power-off). It has a compact structure, small size, high torque, and can be used for parking and emergency braking. The brake uses dual-voltage PWM control to reduce the overall vehicle power consumption and extend the brake's service life, and widely used in boom and scissor aerial work platforms.

稳定的电磁制动器
就选瑞迪

Need stable brakes choose REACH



工作原理

WORKING PRINCIPLE

瑞迪弹簧加压电磁安全制动器是单片式制动器，有两个摩擦面，轴通过平键与花键套联接，花键套通过花键与转子联接。

当定子断电时，弹簧所产生的力作用在衔铁上，将轴带动旋转的转子紧紧夹在衔铁与盖板之间，从而产生制动力矩。此时，在衔铁与定子之间会产生一个间隙Z。

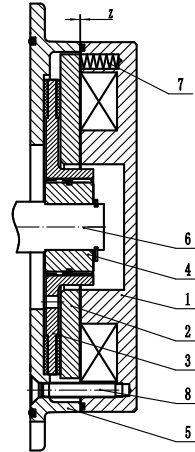
当需要放松制动时，定子接通直流电，所产生的磁场吸引衔铁向定子移动，衔铁移动时压缩弹簧，此时转子被松开，制动解除。

REACH spring-applied electromagnetic brake is a single-disk brake with two friction surfaces. The motor shaft is connected with the spline hub via flat key surfaces. The spline hub is connected with Rotor through spline.

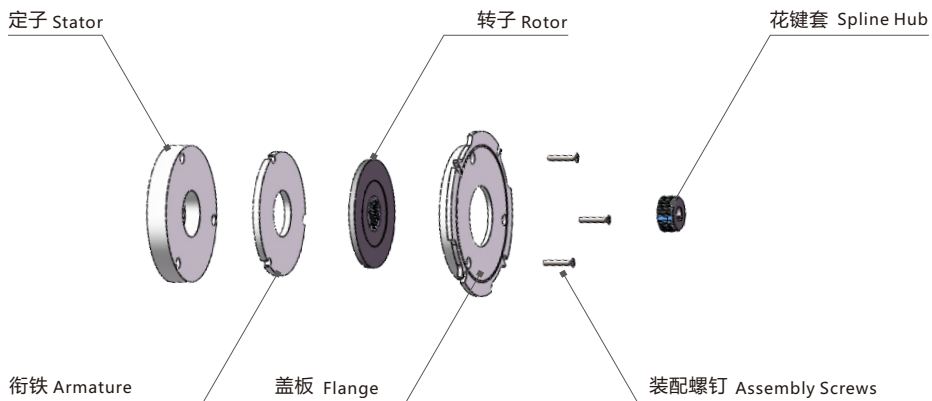
When stator is powered off, the spring generates forces upon armature, then the Rotor will be clamped between armature and flange to generate braking torque. At that time, a gap Z is created between armature and stator.

When brakes need to be released, the stator should be connected DC power, then the armature will move to the stator by electromagnetic force. At that time, the armature presses the spring while moving and the Rotor are released to disengage the brake.

- | | |
|--------|-------------------|
| 1 定子 | 1 Stator |
| 2 衔铁 | 2 Armature |
| 3 转子 | 3 Rotor |
| 4 花键套 | 4 Spline Hub |
| 5 盖板 | 5 Flange |
| 6 轴 | 6 Shaft |
| 7 弹簧 | 7 Spring |
| 8 装配螺钉 | 8 Assembly Screws |
| Z 间隙 | Z Air Gap |



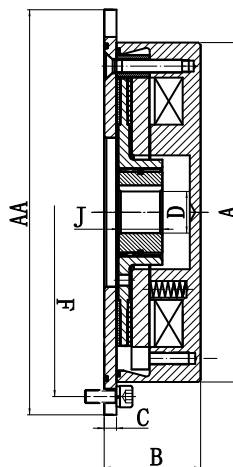
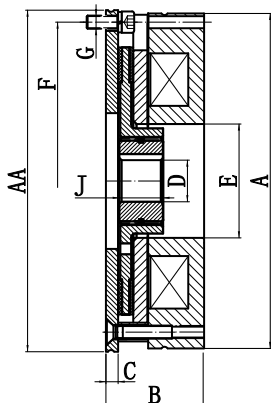
产品结构 Product Structure



臂式高空作业平台电磁制动器

E/M Brakes for Boom Aerial Work Platform

- ◉ 结构紧凑，满足安装空间有限的需求；
 - ◉ 双电压PWM控制制动器，减小整车功耗，延长制动器寿命；
 - ◉ 防护等级可选，最高可达IP67；
 - ◉ 手动释放功能可选，实现无电时也可移动车辆；
 - ◉ 先进的摩擦材料，保证极端环境，高转速和高冲击能量的应用；
 - ◉ 摩擦片材料具有不粘连特性，适应寒冷的室外环境；
 - ◉ 耐腐设计可选，最高可达耐中性盐雾500小时。
- ◉ Compact structure to meet limited installation space requirements;
 - ◉ Dual-voltage PWM control of the brake for a longer lifespan;
 - ◉ Optional protection levels (MAX. IP67) ;
 - ◉ Optional hand-release for moving the vehicle when no power;
 - ◉ Advanced friction materials to ensure high speeds, high impact energy applications in extreme environments;
 - ◉ Non-adhesive friction materials. Suitable for cold outdoor environments;
 - ◉ Optional corrosion-resistant design, with max. resistance: 500 hours of neutral salt spray test.



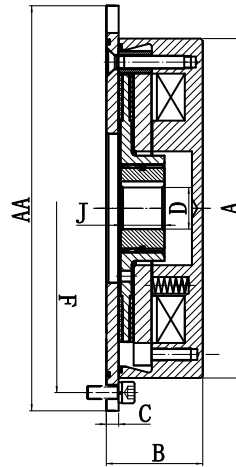
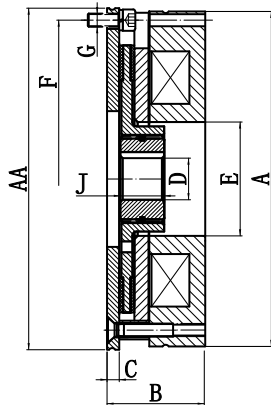
型号 Model	REB0512	REB0514	REB0516	REB0512C	REB0514C	REB0516C
静扭矩 Static torque	46/55/60/70/85	90/110/120/150	90/95/110/120/150	46/60/70/85/95/120	90/110/120/150	90/95/110/120/150/200
A	153	175	197	153/155	173	185
B	43/44.4	61	45.5	34/40/43/44/45/57.4	60	43
C	5.6	—	8.3	5.6/7/7.5	—	7
D	19/19.05/20/24/25	25/30	20/25/30	19/19.05/20/24/25	20/24/25/30	19/20/25/30
J	20/25	30	16.8	20/25/30	30	20/30
E	50/52	60	—	—	—	—
F	132/145/168.3/175	152	181	168.3/175	150	196
G	3*M6	3*M8	3*M6	4*M6	4*M8	4*M6
AA	156/185	175	197	185	173	205
手动释放 Hand release	可选 Available					

可联系我们进行定制化设计 Customized designs are available, please contact our specialists.

剪叉式高空作业平台电磁制动器

E/M Brakes for Scissor Aerial Work Platform

- 结构紧凑，满足安装空间有限的需求。
 - 可选的双电压PWM控制制动器，减小整车功耗，延长制动器寿命。
 - 手动释放功能可选，实现无电时也可移动车辆。
 - 先进的摩擦材料，保证极端环境，高转速和高冲击能量的应用。
 - 摩擦片材料具有不粘连特性，适应寒冷的室外环境。
- Compact structure to meet limited installation space requirements;
 - Dual-voltage PWM control of the brake for a longer lifespan;
 - Optional hand-release for moving the vehicle when no power;
 - Advanced friction materials to ensure high speeds, high impact energy applications in extreme environments;
 - Non-adhesive friction materials making it suitable for cold outdoor environments



型号 Model	REB0504	REB0506	REB0510	REB0506C	REB0508C	REB0510C
静扭矩 Static torque	2/3/4/6	4/6/8/10	15/20/25/30	4/6/8/10	10/12/15/18/20	15/20/25/30
A	58/60.4	83/84	117	89.5/97	112	127/130
B	28/32	30	26.7/29.7/31/33	43.7/45	48	31/32.4/44/45
C	3.5	2.7	1.7/3.5	—	—	4.9
D	8/12	10/12/15	15/20	10/12/15	12/15/20	15/20
J	6	13.5	15/16	13.2/18	20	9/16/20
E	15	31	34/42	—	—	—
F	38/68	72	107/108	72	90	112/142
G	3*M4	3*M4/4*M4	3*M5	3*M4/4*M4	3*M4	4*M4/4*M6
AA	60.4/75	83/84	117/124	89.5/97	112	125/133
手动释放 Hand release	可选 Available					

可联系我们进行定制化设计 Customized designs are available, please contact our specialists.

安装使用说明

Installation Instructions

安装注意事项 Installation Notes

- ⦿ 此款制动器使用软质材料，在安装过程中应避免敲击，掉落或过于用力，否则可能导致制动器出现划痕或变形而影响使用，请在安装过程中加以注意。
- ⦿ This brake uses soft materials. When installation, please avoid tapping, dropping, or exerting excessive force, or it may cause scratches or deformation of the brake.
- ⦿ 扭矩扳手使用前应校正，安装螺钉均要求采用螺纹专用胶进行固定。在对螺钉进行涂抹胶水时，请注意不要涂抹到转子表面。
- ⦿ Before using the torque wrench, it should be calibrated, and mounting screws are required to be fixed with special thread glue. When applying adhesive to the screws, be careful to avoid the rotor surface.
- ⦿ 制动器的安装精度不好，可能会造成制动器在运转时发出噪音，请注意控制其容许值(单位：mm)
- ⦿ Poor installation accuracy of the brake may cause noise during working. Please pay attention to the tolerance. (unit:mm)

详见图1。

See Figure 1.

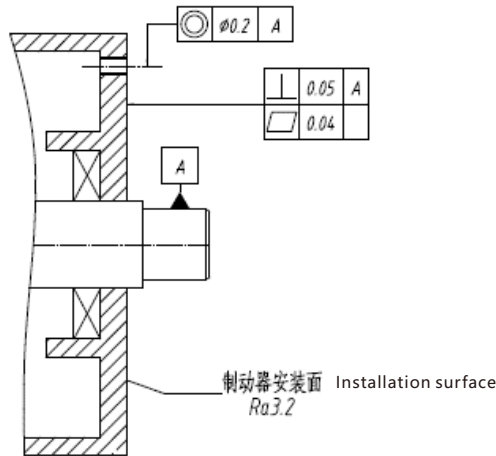


图1 制动器安装配合精度要求

Figure 1 Requirements for brake installation accuracy

使用注意事项 Cautions

- ⦿ **电源电压波动**
电压过度波动将影响制动器的性能发挥，因此制动器的使用电压控制在额定电压的 $\pm 10\%$ 的范围内，并要求平滑无干扰。
- ⦿ **Power supply voltage fluctuation**
Excessive voltage fluctuations will affect the performance of the brake, so it is required to control the voltage for the brake within $\pm 10\%$ of the rated voltage. And ensure smooth and interference-free operation.

◉ 摩擦面

本产品为干式制动器，如果摩擦片粘上油或水等，将造成扭矩下降，请注意此类的保护。

◉ 适用环境

使用环境温度：-20°C ~ +60°C；

环境湿度要求：85%RH以下，不结露、冻结；

空气要求：无腐蚀性气体、无易燃易爆气体的通风换气良好、少粉尘的环境；

在超出此范围时，请向本公司咨询。

◉ 间隙调整

此款制动器在出厂时工作间隙已经调整好，使用时无需再进行调整。间隙不合适时可能会导致制动器无法正常工作。

◉ 扭矩性能

三个月未使用的制动器扭矩值会略有下降，使用前应适当磨合以保证扭矩达额定值（磨合参数请向本公司咨询）。

◉ Friction Surface

Since this product is a dry type brake, be careful to protect the friction pads from oil or water, etc., as this may cause a drop in torque.

◉ Usage Environment

Ambient temperature: -20°C ~ +60°C;

Ambient Humidity Requirements: Below 85%RH, no condensation or freezing;

Air Requirements: no corrosive gases, no flammable or explosive gases, well ventilated and less dusty environment;

In case of exceeding this range, please consult us.

◉ Air Gap Adjustment

The working air gap of this brake is adjusted at the factory, and there is no need for further adjustments when use. Inappropriate air gap may cause the brake to not work properly.

◉ Torque Performance

The brake's torque value may experience a slight decrease after three months of non-use. Proper breaking-in is necessary before use to ensure the torque (please consult us for breaking-in parameters).

保养与维护 Care and Maintenance

- ◉ 长时间在高湿的环境中使用，要防止生锈，在吸合有锈面会影响使用。
- ◉ 摩擦面不得用手直接接触，不得有油污，否则不能达到最大扭矩。
- ◉ 一般适用环境温度为-20°C~+60°C；用户特殊要求除外。
- ◉ 请定期检查。检查项目有：开关动作是否正常；有无噪音发出；有无异常发热；摩擦部位和回转部分有无异物，油污等混入；摩擦部位的间隙是否合适；电压是否正常。

- ◉ When used in a high-humidity environment for an extended period, it is necessary to prevent rust. Rust on the surface will affect performance.
- ◉ Do not touch the friction surface with your hands, and ensure there is no oil contamination, or the maximum torque cannot be achieved.
- ◉ The general applicable ambient temperature: -20°C ~ +60°C; Except for special requirement.
- ◉ Regular inspection are necessary. Inspection items: switch operation, unusual noises, abnormal heat, foreign objects or oil in friction and rotary parts, voltage etc.

对于使用本公司产品而发生的各种失效现象，本公司愿意和用户共同进行原因分析，属产品质量问题，请保存完整的失效件，予以退换。凡是出现下列情况之一无论产生何种后果，本公司均不承担责任：

- A. 不按照规定要求进行拆卸和安装，破坏出厂螺纹骑缝漆。
- B. 不使用扭矩扳手安装螺钉，过大螺钉预紧力造成间隙变小产生噪音，脱离不干净造成摩擦生热烧毁制动器。
- C. 由于电机等非本公司制动器部件失效而引起的制动器失效。
- D. 保存不当、受潮、锈蚀或超过保存期而未作检验。

For the problems when using, we are willing to collaborate with the users to analyze the reasons. If it is our quality issue, please keep the parts and we we have after-sales service. But we shall not be held responsible in consequences of any of the following situations:

- A. Failure to disassemble and install as required, damaging the factory-applied thread seam paint.
- B. Failure to use a torque wrench to install screws, excessive screw pre-tightening force will result in less air gap which will cause noise and improper disengagement, and lead to friction heating to burn the brake.
- C. Brake failure not because our brake itself.
- D. Improper storage, exposure to moisture, corrosion, or storage beyond the recommended shelf life without inspection.

产品选型

Model Selection

保持负载所需的转矩分析 Analysis Of The Required Torque For Keeping The Load

$$T = T_{lmax} \times K \text{ [N} \cdot \text{m]}$$

- ⊙ T_{lmax} : 最大负载转矩 [N·m]
- ⊙ T_{lmax} : Max load torque [N·m]
- ⊙ K: 安全系数 (参阅下表)
- ⊙ K: Security coefficient (see table below)

负载状态 Load status	系数 Coefficient
低惯量·负载变动小 Low inertia. Low load change	1.5
普通惯量的一般使用 Normal inertia for normal use	2
大惯量·负载变动大 High inertia. High load change	>3

特殊尺寸 Special Size

- ⊙ 需要选择能使由上述算式计算出的转矩 T 满足以下算式的制动器尺寸。
- ⊙ Use the Torque T which is calculated based on above equation to meet the brake measurement in below equation.
- $TS > T \text{ [N} \cdot \text{m]}$
- ⊙ Ts: 制动器静摩擦转矩 [N·m]
- ⊙ Ts: the brake's static friction torque [N·m]

做功分析 Power Output Analysis

- 考虑以保持为目的的制动器时，制动仅限于紧急情况下。
- When considering brakes for holding, braking should be limited to emergency situations.
- 通过以下算式计算紧急制动 1 次的制动做功 E_b ，并确认该计算结果充分小。
- Calculate the brake work E_b for one emergency braking operation using the following formula, and confirm that the calculation result is sufficiently small
- 于所选制动器的允许制动做功 $E_{ba\ell}$ 。
- The allowable brake power output for the selected brake $E_{ba\ell}$.

$$E_b = \frac{J \times n^2}{182} \times \frac{T_b}{T_b \pm T_{\ell\max}} [J]$$

- J: 负载侧的转动惯量合计 [kg·m²]
- J: Rotation inertia sum on the load side [kg·m²]
- n: 转速 [min⁻¹]
- n: Rotation speed [min⁻¹]
- T_b: 制动器转矩 [N·m]
- T_b: Brake torque [N·m]
- T_{ℓmax}: 最大负载转矩 [N·m]
- T_{ℓmax}: Max. load torque [N·m]
- 最大负载转矩 T_{ℓmax} 的符号在负载朝帮助制动的方向动作时为 + (正)，朝妨碍的方向动作时为 - (负)。
- The symbol of the max. load torque T_{ℓmax} is + when the load is aiding the brake, - when the load is hindering the brake.

$$E_b \ll E_{ba\ell} [J]$$

动作次数分析 Brake Frequency Analysis

- 进行紧急制动时的总制动次数（寿命）L 通过以下算式计算，需要确认是否满足要求的规格。
- The total brake times(life) L can be calculated using below equation, need to check if the item can meet requirements.

$$L = \frac{E_T}{E_b} [\text{次}]$$

- E_T: 总制动做功 [J]
- E_T: Total brake power output [J]
- 虽然根据使用环境会有所不同，但紧急制动频率请控制在 1 分钟 1 次左右。1 次制动做功 E_b 超过允许制动做功 $E_{ba\ell}$ 的 70% 以上时，紧急制动后，请等待制动器充分冷却再使用。
- Though operation conditions may vary, the emergency brake should be less than about once per minute. if the one time brake power output E_b is bigger than 70% of $E_{ba\ell}$, then after emergency brake, the brake has to be fully cooling down before operation again.



www.reachgroup.cn

Hotline: 400-090-7210 +86 28 85752912

Add: 四川省成都市双流区西航港大道中四段909号

Add.: NO.909 Middle Section 4, West Airport Ave, Southwest Airport Economic Development Zone, Shuangliu District, Chengdu, Sichuan Province, China.

版本号: ZH-20230926
