



易卡朋

轨道交通领域用电碳制品

Electrical Carbon for Rail Transit



四川易卡朋科技有限公司
Sichuan ECC Sciencetech Co., Ltd

易卡朋科技简介

四川易卡朋科技有限公司（原成都易卡朋电碳有限公司）成立于2016年，是一家专业从事电碳产品研发与制造的国家高新技术企业，在成都、雅安、自贡分别建成了研发和生产基地。同时与德国SGL、GERKEN以及PANTRAC公司建立了长期友好的战略合作联盟，按照欧洲标准和国家铁路标准生产，方便快捷地为国内外客户提供国际一流的高品质电碳产品。

主要产品

- *碳滑板、导电靴：用于高铁动车、电力机车、地铁、市域轻轨等轨道交通领域所用受电弓碳滑板、包括用于第三轨、单轨、无轨电车、无人驾驶轻轨以及行车等
 - *接地碳刷：用于高铁动车、电力机车的接地装置中
 - *轮缘润滑器、轮缘润滑块：用于高铁动车、电力机车的轮缘润滑系统
 - *风电碳刷、刷架：风力发电机碳刷、接地碳刷、防雷碳刷、变桨碳刷
 - *工业电机碳刷、刷架：用于火电、水电以及核电等行业
 - *导电触头、导电滑块：用于工业自动化装备系统
- 2016年9月，公司获得了ISO9001:2008质量体系认证
2020年6月，取得环境管理体系ISO14001:2015认证取得职业健康安全管理体系ISO45001:2018认证

请浏览我们的网址www.ecc-carbon.com

Company profile of ECC

Sichuan ECC Carborn (formerly Chengdu ECC Carbon) was established in 2016, is a national high-tech enterprise specializing in the research and development and manufacture of electric carbon products, and has built R&D and production bases in Chengdu, Ya'an and Zigong respectively. At the same time, it has established a long-term friendly strategic cooperation alliance with German SGL, GERKEN and PANTRAC companies, and produces according to European standards and national railway standards, so as to provide world-class high-quality electric carbon products for domestic and foreign customers conveniently and quickly.

Main products :

- various carbon brushes for industrial DC motors and power generators for wind turbine, thermal power, hydroelectric and nuclear power
- carbon current collectors for pantograph of rail transportation including the conductive shoes be used for the 3rd rail, mono-rail, trolley bus, compute driving light rail and cane
- carbon brushes for grounding device of EMU, electric locomotive and subway
- carbon contacts for industrial assembly line
- Lubrication bars for wheel flange

ECC have been certified with ISO 9001 :2008 since Sept. 2016. ISO14001: 2015, ISO45001: 2018 since Sept. 2020
Kindly view our web page at www.ecc-carbon.com





轨道交通领域用的电碳制品包括：

- 1) 为行车提供动力的受电弓用碳滑板(包括用于高铁动车、电力机车、地铁轻轨、三轨、单轨、矿山机车、无轨电车、空铁、行车和磁悬浮机车)
- 2) 排除残余电流的接地装置用接地碳刷
- 3) 老式的电力机车及内燃机车牵引电机用碳刷
- 4) 为减轻车轮与铁轨磨损的轮缘润滑棒

Following electrical carbon items have been used in rail transit:

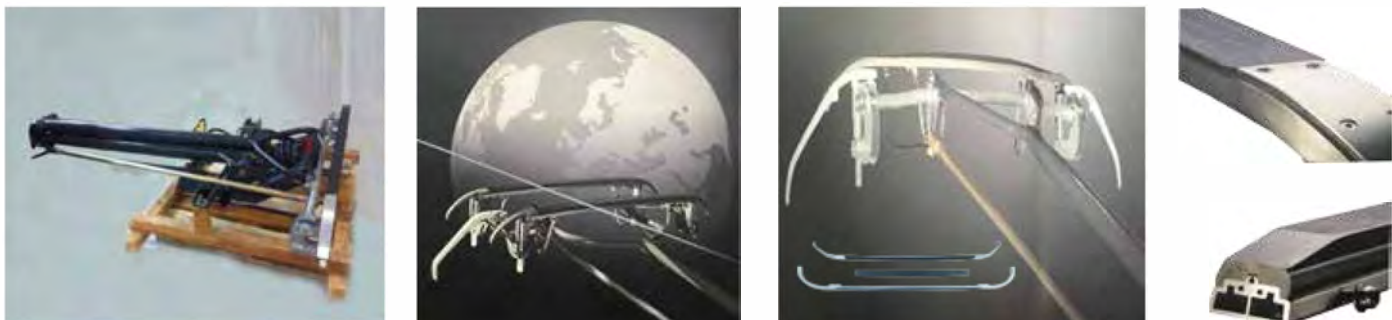
- 1) Carbon current collector for pantograph which supply power for the train-set includes been used for EMU, locomotive, 3rd rail, mono rail, mine locomotive, trolley bus, sky train, travelling crane and maglev train etc.
- 2) Grounding carbon brush for elimination of residual current in ERD (Earthing Return Device)
- 3) Carbon brush for traction motor in those old types of electric or diesel locomotive
- 4) lubrication bar for wheel flange which may reduce the wear between the wheel and the track



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高铁、电力机车及地铁受电弓用碳滑板

Carbon current collector for pantograph which supply power for the train-set includes been used for EMU, locomotive and subway

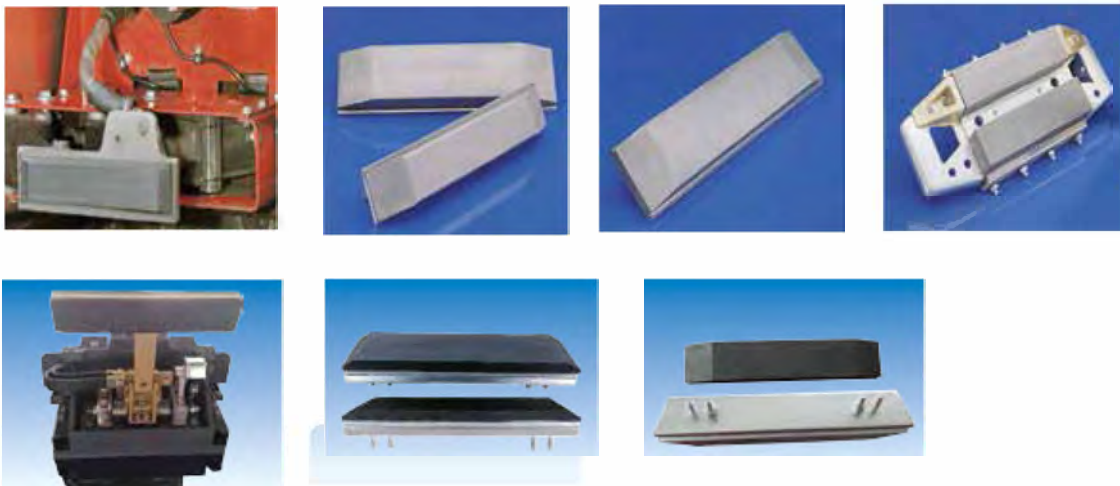


第三轨用碳滑板

Carbon current collector for 3rd rail

第三轨用碳滑板其金属托的材料和结构设计类似于架空线的碳滑板，但额外提供了机械安全装置以防机车侧面地跳动。为了使用稳定及节省成本，电镀过的金属板或是铝板被广泛采用，在有些线路上也有采用黄铜或是紫铜的。

Designs and carrier materials of third rail collector carbons are similar to collectors for overhead lines. Additional mechanical safety devices are provided for protection against lateral bumps. For reasons of stability and costs galvanized sheet steel and aluminium carriers have widely gained acceptance. In certain cases brass or copper carriers may also be used.



单轨用粉末冶金滑板

Powder metallurgy collector for mono rail



无轨电车用碳滑块

Carbon current collector for trolley buses



空铁接地用碳滑板

Carbon current collector for grounding device of sky train



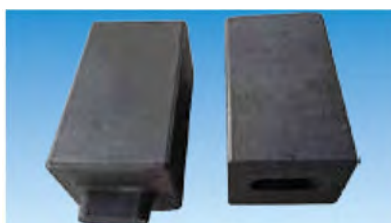
无人驾驶轻轨用导电靴

Carbon conductive shoe for unpiloted light rail



轮缘润滑棒

lubrication bar for wheel flange



牵引电机用碳刷

Carbon brush for traction motor



接地装置及所用碳刷

Carbon brush for grounding device



易卡朋科技公司制造的碳滑板的优势在于客户能从其可靠的性能及低的单位磨损成本中获益。

- 牌号EHP72, EHP72C, 磨损低
- 对于高或极高电流负荷, 采用无铅金属浸渍 (如EHP72C)
- 铝托和碳滑板之间采用导电胶粘接
- 导电胶能耐300℃高温
- 碳滑板要经过短路电流的测试
- 可靠的自动降弓保护系统
- 可靠的质量控制体系

Advantage of ECC Carbon's Carbon Current Collectors

your benefit: Reliability and low Life-Cycle-Cost

- Low wear of the carbon material and the overhead wire
- Lead free metallized carbon grades for high and very high current load (RHEHP72C)
- Bond between Al-carrier and carbon profile is by an electrically conductive glue
- Bond is heat-resisting up to 300℃
- Tested with short circuit current
- Reliable Automatic-Dropping-Device system
- Reliable – Quality Control System



紧凑致密的碳滑板

Compact and Solid Carbon Current Collector

成品碳滑板的典型性能参数

Typical performance data

- 粘接牢固，机械和电气性能优越
- 粘接剪切强度 $>5\text{N/mm}^2$
- 耐温 250°C （额定值），可耐 300°C （ ≤ 1 分钟）
- 短路电流负载可达 30KA
- 铝托和碳滑板之间的接触电阻
 - $<1\text{m}\Omega$ （纯碳滑板）
 - $<0.5\text{m}\Omega$ （浸金属碳滑板）
- Mechanical and electrical high strength bond
- Shear strength of the bond: $> 5\text{ N/mm}^2$
- Temperature resistance up to 250°C (rated value), up to 300°C ($\leq 1\text{ min.}$)
- Short- circuit current load up to 30 kA
- Contact resistance between carbon profile/Al-carrier
 - $< 1,0\text{ m}\Omega$ (plain carbon)
 - $< 0,5\text{ m}\Omega$ (metallized carbon)



碳滑板不同的结构设计

Designs of complete collectors



夹紧型碳滑板 Clamped carbon current collector

用钢或者铜板作为支承托的材料，用铆钉，螺栓或是法兰将碳条夹紧。其最大弯曲负荷能达1500N，该种碳滑板主要用于传统形式的受电弓。

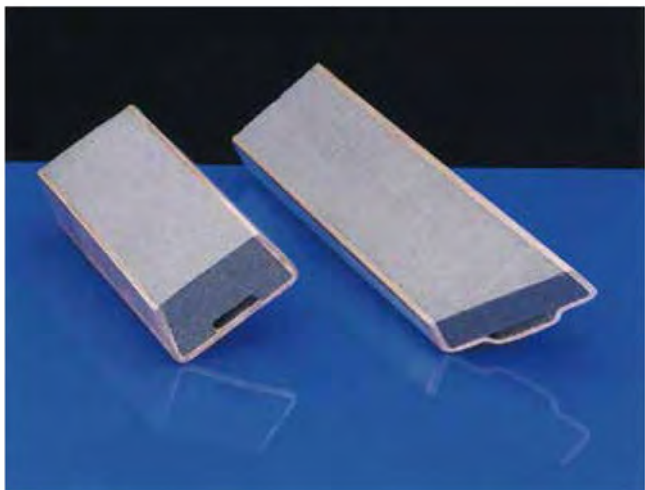
Steel or copper sheet is used as carrier material. Clamping joints by rivets, screws or flanges. Maximum bending load is 1.500N. This type of current collector is mainly used with traditional pantographs.



焊接型碳滑板 Soldered carbon current collector

用钢或者铜板作为支承托的材料，将其与碳条焊接在一起，这样的碳滑板其碳与金属的接触电阻比较低，主要用于机械和电气负荷高的线路，其弯曲负荷可达3000N。

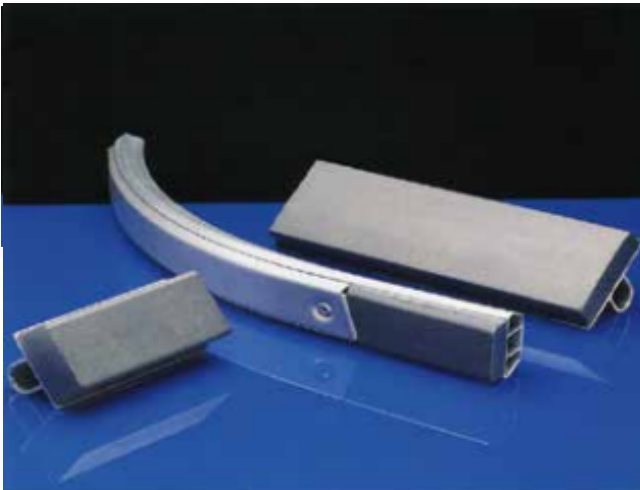
Steel or copper sheet in different profiles is used as carrier material and soldered up with the carbon current collector. These collectors have a low transition resistance between the carbon and carrier. Their main application is on higher mechanical and electrical loads. A bending load of up to 3.000N is permissible.



复合型碳滑板 Composite carbon current collector

这是一种特殊设计的碳滑板，不同于其它的碳滑板，它的两个侧面铜托的高度与碳条工作面等高的并参与导电。通常这种碳滑板用于机械和电气负荷很高的线路。

This current collector is a special design. Unlike the other designs here the carbon current collector is covered right up to the contact surface by a copper shell, essentially taking over the drawing of current. This type of collector is used for applications with very high electrical and mechanical demands.



粘接型碳滑板 Bonded carbon current collector

用不同形式的铝托与碳条粘接在一起但要确保其导电性。铝托具有良好的空气动力性能且重量轻。铝托底部多槽的设计确保了机械稳定性，其弯曲强度可达3500N。这种耐腐蚀形式的碳滑板主要用于现代轻轨和高速铁路。

Various aluminium profiles are used as carriers, which are then bonded with the carbon current collector, ensuring electrical conductivity. By using aluminium profiles good aerodynamic properties and low weight solutions are possible. The multiple chamber system ensures higher mechanical stability, allowing a maximum bending strength of 3.500N. Main application for this corrosion resistant collector is on modern light railways and high speed railways.

易卡朋受电弓用碳滑板牌号及技术参数 ECC carbon strip grades and technical parameters for pantographs

牌号 Grade	密度 Density g/cm ³	电阻率 S.E.R μ Ω m	洛氏硬度 Rockwell Hardness	抗折强度 Flexural Strength Mpa	金属含量 Max. Metal Content	电流密度 Current Load A/mm	主要用途 Main Applications
ECH22	1.7	38	80 (HRB5/150)	35	0	4-6	无轨电车 Trolleybus
ECH23	1.68	40	75 (HRB 5/150)	30	0	4-6	无轨电车 Trolleybus
ECH68	1.68	38	75 (HRB 5/150)	30	0	4-6	干线机车 Main-line locomotive
ECH71	1.71	35	80 (HRB 5/150)	33	0	5-8	城轨机车 Urban rail locomotive
ECH73	1.73	30	85 (HRB 5/150)	35	0	5-8	大电流城轨机车 Heavy current urban rail locomotive
ECHX68	1.68	38	80 (HRB 5/150)	30	0	5-8	动车及机车 EMU and Locomotive
ECHS71	1.71	34	85 (HRB 5/150)	30	0	5-8	动车及机车 EMU and Locomotive
ECHP72	1.73	34	95 (HRB 5/150)	37	0	6-8	动车及机车 EMU and Locomotive
ECH23C	2.2	12	90 (HRB 5/150)	50	30	10-12	无轨电车 Trolleybus
ECH68C	2.5	4	115 (HRB 5/150)	65	40	12-16	大电流城轨机车 Heavy current urban rail locomotive
ECHX68C	2.6	4	110 (HRB 5/150)	65	45	12-16	大电流城轨机车 Heavy current urban rail locomotive
ECH71C	2.3	5	110 (HRB 5/150)	60	35	12-14	干线机车 Main-line locomotive
ECHS71C	2.2	5	110 (HRB 5/150)	60	30	12-15	动车及地铁 EMU and Subway Train
ECHP72C	2.3	5	110 (HRB 5/150)	65	35	12-15	动车及地铁 EMU and Subway Train
ECHP72B	2.4	8	115 (HRB 5/150)	65	40	16-20	动车及地铁 EMU and Subway Train
ECF80	8	0.2	95 (HRB 5/150)	110	80	25-30	粉末冶金滑板, 用于城轨的单轨和三轨机车 powder metallurgical collector be used in monorail and third rail
ECF85	8.3	0.15	100 (HRB 5/150)	120	85	25-30	粉末冶金滑板, 用于城轨的单轨和三轨机车 powder metallurgical collector be used in monorail and third rail

轨道交通用接地碳刷牌号及技术参数 Grounded carbon brush grades and technical parameters for rail transit

牌号 Grade	密度 Density g/cm ³	电阻率 S.E.R μ Ω m	洛氏硬度 Rockwell Hardness	肖氏硬度 Shore Hardness	抗折强度 Flexural Strength Mpa	电机圆周转速 Peripheral Speed m/s	电流密度 Current Load A/cm ²
RC87	5.2	0.1	60 HR10/60	N/A	55	25	18
B80	5.2	0.07	N/A	20	95	30	25



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牌号 Grade	密度 Density g/cm ³	电阻率 S.E.R μ Ω m	洛氏硬度 Rockwell Hardness HRB 5/150	抗折强度 Flexural Strength Mpa	金属含量 Max. Metal Content %	电流密度 Current Load A/mm	碳滑板平均使用寿命 (万公里) Average Life Time of Carbon Stripe in 10,000 KM
RH84	1.73	34	95	37	0	6-8	1) Metro地铁10-50 (22mm thick厚度) 2) Locomotive火车14-15 (22mm thick厚度) 3) EMU高铁22-29 (22mm thick厚度)
RH84M6	2.4	12	115	65	25	9-12	Metro地铁8-23 (22 mm thick厚度)
RH84M8	2.4	3.5	120	65	28	12-15	1) Metro地铁6-20 (22mm thick 厚度) 2) EMU高铁30-50 (22 mm thick厚度)
RH83M6	2.8	7	110	85	40	12-15	1) Metro地铁6-10 (22 mm thick厚度) 2) Locomotive火车12-14 (22 mm thick厚度) 3) EMU高铁6-10 (18 mm thick厚度)
RH83M8	2.7	3	86	72	36	16-20	1) Metro地铁7-12 (22 mm thick厚度) 2) Locomotive火车12-14 (22 mm thick厚度) 3) EMU高铁6-10 (18 mm thick厚度)
RH85M6	3.4	4	110	95	53	16-20	Metro地铁6-10 (22 mm thick厚度)
RH85M8	3.2	2	85	70	50	20-27	Metro地铁7-12 (22 mm thick厚度)
RH86M6	3.3	3.5	102	75	55	16-20	EMU高铁6-10 (18 mm thick厚度)

牌号 Grade	密度 Density g/cm ³	电阻率 S.E.R μ Ω m	洛氏硬度 Rockwell Hardness	抗折强度 Flexural Strength Mpa	电机圆周转速 Peripheral Speed m/s	电流密度 Current Load A/cm ²	主要用途 Main Applications
ECE30	1.58	40	87 (10/60)	21	35	10	牵引电机、汽轮发电机的高速励磁机、轧钢电动机、交流整流子电动机和其它换向困难的直流电机 for traction motors, turbonator's exciter, steel rolling motor, AC commutator motor and other DC motors with difficult commutation
ECE31	1.62	50	92 (10/100)	20	50	12	
ECE35	1.67	54	85 (10/100)	24	45	12	
ECE36	1.7	59	90 (10/100)	26	40	12	
ECE37	1.57	62	90 (10/100)	23	45	12	换向优异、成膜性好, 适用于各型机车、船舶等牵引电机 excellent in commutation, Good film-forming, Applicable for all kinds of traction motors of locomotive and ship
ECE31R	1.65	48	90 (10/100)	25	50	12	
ECE35R	1.73	52	100 (10/100)	31	45	12	
ECE36R	1.62	56	86 (10/100)	20	40	12	
ECE37R	1.75	60	103 (10/100)	35	40	12	机车、矿山牵引电机 for traction motors of locomotive and mine

牌号 Grade	密度 Density g/cm ³	电阻率 S.E.R μ Ω m	洛氏硬度 Rockwell Hardness	肖氏硬度 Shore Hardness	抗折强度 Flexural Strength Mpa	电机圆周转速 Peripheral Speed m/s	电流密度 Current Load A/cm ²	主要用途 Main Applications
E33	1.62	57	105 HR10/100	N/A	22	60	12	交流牵引电机, 无斩波控制的直流牵引电机, 柴油直流电机, 火车发电机, 辅助电机 AC traction motor, DC without chopper control, DC motor for diesel electric trains, train generator, auxiliary motor
E34	1.66	32	90 HR10/100	N/A	26	60	12	可控硅牵引电机, 直流牵引电机, 无或有斩波控制的直流牵引电机, 无轨电车及矿山机车牵引电机 Thyristor controlled motor, DC traction motor with and without chopper control, traction motor for trolleybus, mining and industrial railway
RE59N1	1.67	49	75 HR10/150	N/A	24	56	12	交流牵引电机, 可控硅牵引电机, 直流牵引电机, 火车发电机, 无斩波控制的直流牵引电机, 无轨电车及矿山机车牵引电机, 火车发电机, 辅助电机 AC and DC traction motor, thyristor controlled motor, DC without chopper control, train generator, traction motor for trolleybus, mining and industrial railway
E31	1.6	48	N/A	70	27.6	40	12	交流牵引电机 AC traction motor
E37	1.6	43	N/A	75	33.8	40	10	有斩波控制直流牵引电机, 柴油直流电机 DC with chopper control, DC motor for diesel electric train
E45	1.55	59	N/A	55	22.8	45	12.5	无斩波控制的直流牵引电机, 无轨电车及矿山机车牵引电机, 火车发电机, 辅助电机 DC without chopper control, traction motor for trolleybus, mining and industrial railway, train generator, auxiliary motor
6677	1.6	76	N/A	65	16.5	40	12.5	可控硅牵引电机, 直流牵引电机, 城际交通有或无斩波控制牵引电机 thyristor controlled motor, DC traction motor, DC with and without chopper control traction motor

无人驾驶轻轨用ECF98导电靴技术参数

Data sheet of ECF98 conductive shoe for driverless light rail

牌号 Grade	密度 Density g/cm ³	电阻率 S.E.R μ Ω m	肖氏硬度 Shore Hardness	抗折强度 Flexural Strength Mpa	圆周转速 Peripheral Speed m/s	电流密度 Current Load A/cm ²
ECF98	5.8	0.01	30	67	30	25

轮轨交通用 ECV75 轮缘润滑棒技术参数

Data sheet of ECV75 lubrication bar for wheel flange

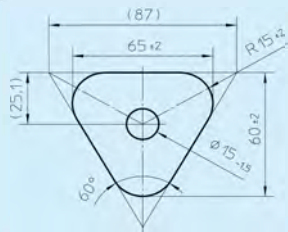
牌号 Grade	密度 Density g/cm ³	摩擦系数 Coefficient of friction	肖氏硬度 Shore Hardness	抗折强度 Flexural Strength Mpa	抗压强度 Compressive Strength Mpa	开口气孔率 Open Porosity %
ECV75	1.73	0.25	55	15	32	19

该轮缘润滑棒的测试磨损量为5mm/10000KM左右
Tested wear rate as 5mm/10000KM

易卡朋公司采用的碳条的标准截面尺寸

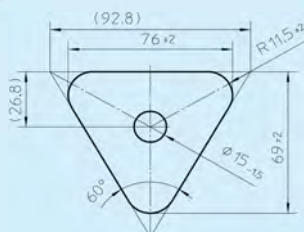
Standard cross-sectional dimensions of carbon bars

03A



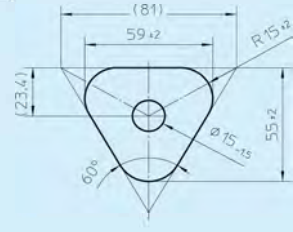
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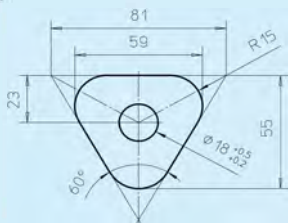
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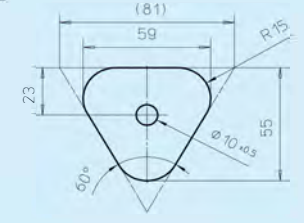
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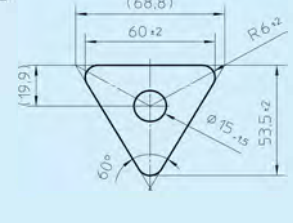
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03E



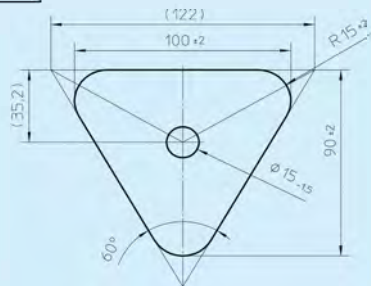
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03F



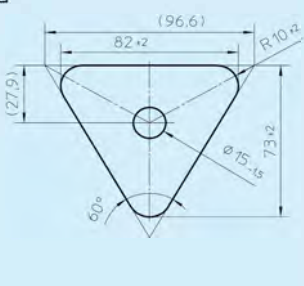
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03G



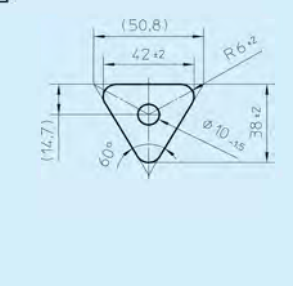
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03H



07.40.0035.01 (8273/16)

03J

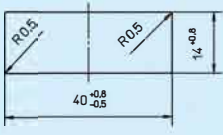
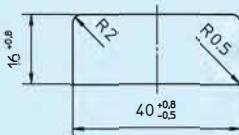
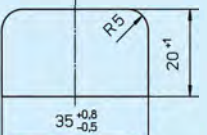
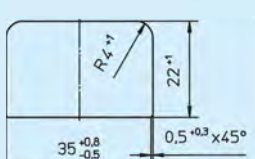
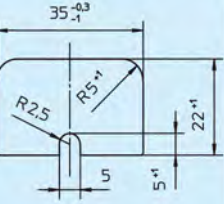
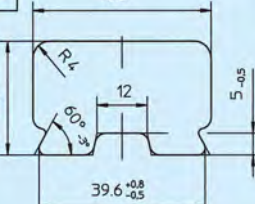
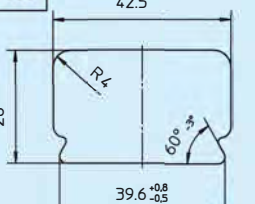
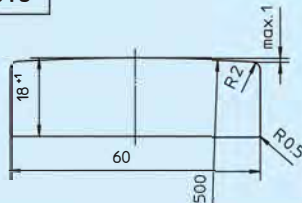
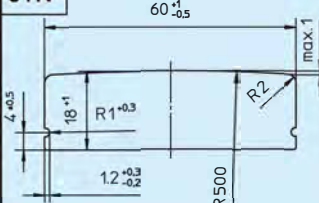
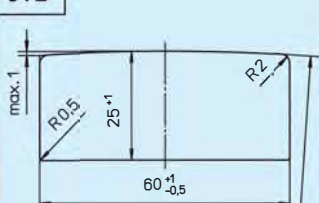
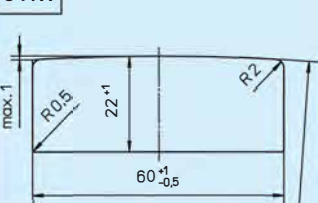
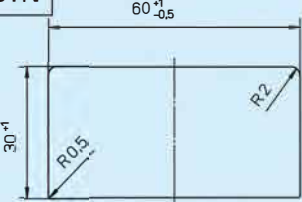
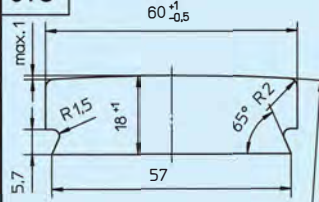
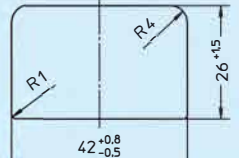
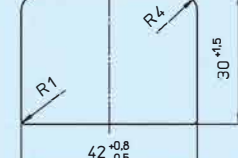
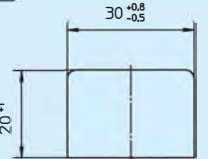
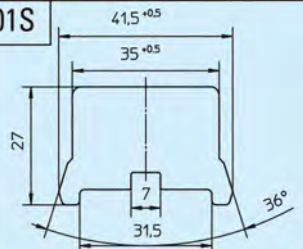
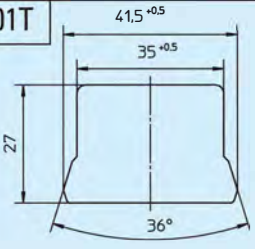


07.40.0070.00 (4238/10)

04A 07.40.0006.01 (3525)	04B 07.40.0006.04 (4425)	04C 07.40.0006.06 (3630)
04E 07.40.0018.00 (3525/N)	04F 07.40.0019.00 (3923/N)	04G 07.40.0100.00 (3020)
04H 07.40.0063.00 (-)	04J 07.40.0004.08 (6432/1)	04K 07.40.0012.01 (4223/1)
04L 07.40.0012.03 (4223/3)	04M 07.40.0012.05 (4223/5)	

易卡朋公司采用的碳条的标准截面尺寸

Standard cross-sectional dimensions of carbon bars

01A  07.40.0048.01 (4014)	01B  07.40.0048.04 (4016)	01C  07.40.0066.00 (3520)	01D  07.40.0066.01 (3520/1)
01E  07.40.0066.02 (3522) 07.410470~	01F  07.40.0066.04/05 (3522/N)	01G  07.40.0080.00 (4226)	01H  07.40.0080.01 (4226/1)
01J  07.40.0099.00 (6018)	01K  07.40.0099.02 (6018/1)	01L  07.40.0099.03 (6026)	01M  07.40.0099.04 (6022)
01N  07.40.0099.05 (6030) (07.410377.xx)	01O  07.40.0099.06 (6018/2)	01P  07.40.0102.00 (4226/2) 07.410450~	01Q  07.40.0103.00 (4230)
01R  07.40.0104.00 (3020/1)	01S  07.40.0106.00 (4227/1) (07.410510.xx)	01T  07.40.0107.00 (4227/2)	01U  07.40.0099.07 (6532) (07.410515.xx)

02A 07.40.0027.02 (2418)	02B 07.40.0027.03 (2619/1)	02C 07.40.0027.04 (2818)	02D 07.40.0027.07 (2816)
02E 07.40.0027.08 (2416/1)	02F 07.40.0027.10 (2019)	02G 07.40.0027.11 (2921)	02H 07.40.0027.14 (2818/1)
02J 07.40.0027.15 (2616)	02K 07.40.0078.00 (3027)	02L 07.40.0030.03 (2616/1)	02M 07.40.0030.04 (3015/2)
02N 07.40.0030.06 (2616/2)	02Q 07.40.0082.01 (4020/1)	02R 07.40.0097.00 (4024/N)	02S 07.40.0097.01 (4824/N)
02T 07.40.0098.00 (2624/N)			

影响碳滑板磨损的因素

Influences on wear rates

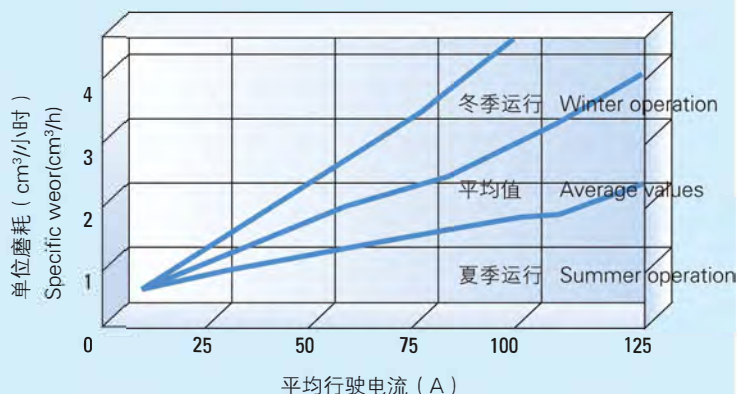
电气和机械因素是导致碳滑板磨损的两大主要原因，具体表现为：

- 电流负荷 / 刹车时的反冲电流
- 机车的运行速度
- 受电弓及碳滑板的结构形式（阻尼，重量）
- 电流类型（直流或是交流，灭电弧装置）
- 接触线网的状况（悬挂，绝缘连接，接触表面）
- 铁轨的状况 / 路基
- 天气条件（霜冻，下雨，结冰，雾气，湿气）
- 以上这些因素主要影响碳滑板的电气磨损而对其机械磨损则影响不大。

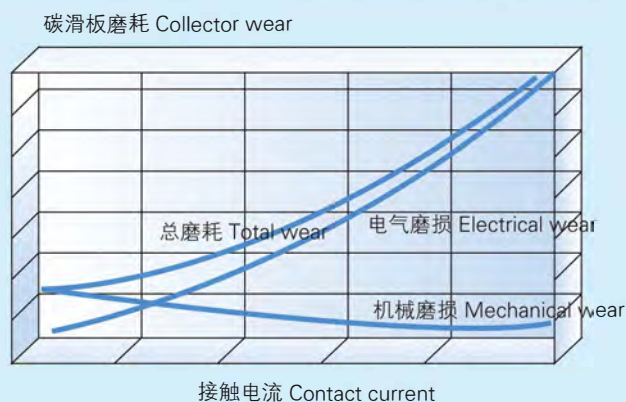
Electrical and mechanical influences are of prime importance for wear rates of carbon collectors.

- current load/recirculation of brake current
- speed of vehicle
- pantograph and carbon collector construction (damping, weight)
- kind of current (DC or AC/arc extinguishing)
- condition of contact wire (suspension, isolation link, contact surface)
- track profile/roadbed
- climatic (frost, rain, freezing fog, humidity)
- These influences lead mainly to electrical and only slightly to mechanical wear of the carbon collector.

图表1 季节因素对碳滑板的单位磨损
Seasonal influences on specific wear of carbon current collectors



图表2 在恒定车速下接触电流与碳滑板磨损的关系
Ratio of contact current and wear of current collectors at constant speed



安全使用碳滑指南

Instructions for safe operation of our Carbon Current Collectors(CCC)

碳滑板可长期安全存放

- 碳滑板要储存在干燥，无碰撞和震动的地方

碳滑板的安装指南

- 请检查碳滑板自身的标注
- 请使用扭矩扳手安装
- 若碳滑板自身无扭矩标注，请参考以下旋紧螺母值

每个螺栓的强度级别都标注在相关的图上

ADD系统中使用的螺栓是不会自行松动的（有遗失保证）

更换指南

- 当碳滑板的剩余高度小于4-5 mm时，就要考虑更换了（从碳条的上边缘测量至铝托）
- 在对受电弓作日常的检查时，也要对碳滑板作声响检查。用一个100克重的榔头或是一个开口的扳手敲击碳条，若是发出迟钝或是不延续的声音，则碳滑板就需要更换并作彻底的检查。
- 若碳滑板出现了崩边（如图1所示），可用一粗糙的锉刀打磨一下并可继续使用
- 若碳滑板出现大的崩边角（大于如图4所示），则应更换，若崩边的同时还出现了裂纹，则应立即更换
- 若碳滑板出现了裂纹（如图2所示），则应立即更换以防被腐蚀的风险
- 若碳滑板出现了细裂纹且裂纹贯通到了铝托，同时还出现了电弧损耗（如图3所示），则应立即更换，若其只是出现了细裂纹但没有出现任何电弧损耗，则可继续使用。

Instructions for safe storage

- CCC are to be stored dry and shock protected.

Installation guide:

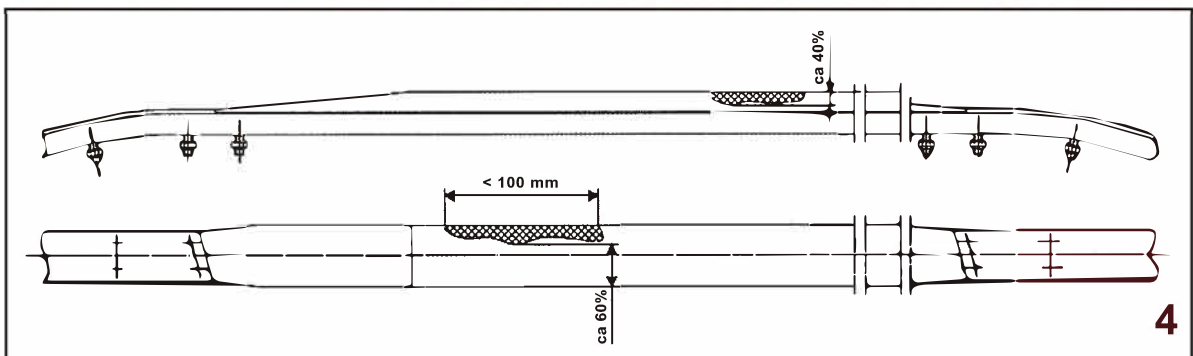
- Please check for instructions indicated on CCC itself.
- Please use only calibrated torque control wrenches for installation.
- Should there be no instructions indicated on CCC, please refer to following tightening of threaded nuts: Strength class of each bolt is indicated on related drawing.

Bolts for ADD-System (red marking) may not be self-adjusted (loss of warranty)

Replacement guide

- Replacement should be arranged at residual height of carbon of less than 4-5 mm(measured from upper edge of carbon socket).
- While performing routine pantograph inspection, CCC should be subject to a sound-check. This is to be performed by bashing carbon, using a 100 g hammer or an open end wrench (SW15-17). Upon indicating a dull and on-lingering sound, CCC is to be replaced and to be checked thoroughly.
- CCC's subject to chipped edges (picture 1), can be continued to be used after slight planing, using a rough file.
- CCC's subject to larger chip-offs and broken edges (larger than shown in picture 4) are to be replaced. CCC's subject to chip-offs and cracking at the same time are to be replaced and no longer to be used as well either.
- CCC's subject to cracks (as shown on picture 2) are to be replaced and no longer used, due to risk of corrosion.
- CCC's subject to hairline cracks which lead all the way down to carbon socket and electrical damage at the same time (see picture 3), are to be replaced and no longer to be used. CCC's subject to smaller hairline cracks and without any electrical damage may be kept in use.

强度级别 / 螺栓 Strength class / Thread bolt	A2-70	8.8
M6	5 Nm	7 Nm
M8	13 Nm	18 Nm



正确选用碳滑板问卷表



易卡朋

客户名称

受流方式 ☐顶置 ☐第三轨 ☐上☐下☐侧

接触网电压 V ☐DC直流 ☐AC交流

网压变化范围 V

每列车的受电弓数量 每架受电弓上的碳滑板数

接触网根数 刚性网☐ 柔性网☐ 接触网的截面积 m²

接触网的材质 额定静态压力 N

受电弓制造商及型号

列车运行速度 Max最大速度Km/h 设计时速Km/h

每架弓上的电流载荷 额定电流A 最大短时电流A

启动电流A 停车电流A

碳条 截面尺寸 宽度mm 厚度mm

长度mm 底部弧度 mm

碳滑板牌号

材质 纯碳☐ 浸金属 ☐ 碳纤维☐

金属托 总长度mm 厚度 mm

碳滑板安装

一体化弓角 是☐ADD自动降弓保护装置 是☐ 防电弧设计 有☐
不是☐ 不是☐ 没有☐

碳条与金属托的连接方式 粘接☐ 焊接 ☐ 铆接 ☐ 螺栓 ☐

备注

本样本的编写是基于我们目前所掌握的知识，其目的是为客户大致介绍我们的产品及其用途。故不应该将所介绍的特定用途的某种产品的技术参数视作其合格与否的保证值。



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