## 高压限流熔断器的使用导则 Operation guide for H.V. Current-limiting fuse

**熔断器额定电压的选择 Selection of rated voltage for fuse**

熔断器的额定电压与电网电压相符　限流熔断器一般不宜降低电压使用．以避免熔断体截断电流时，产生的过电压超过电网允许的2.5倍工作电压

1.一般用三相电路的熔断器其额定电压按相应额定线电压选择；

2.用于单相系统熔断器，其额定电压按最高相电压的115%选择；

3.用于三相中性点绝缘系统或谐振接地系统时，因系统可能发生所谓双接地故障，即一个故障点在电源侧而另一个在负载侧，且不同相　此时熔断器的额定电压应按最高线电压选择

4.用于三相中性点直接接地或经阻抗中性点接地系统时，按最高线电压选择

Rated voltage of fuse should accord with mains voltage.Generally current-limiting fuse can't be used under declining voltage,to avoid the circumstance of produced over voltage exceeding 2.5 times of electric network's allowed working voltage when fuse link cutting off the current.

1.Rated voltage of general fuses with three-phase circuit should be chosen according to the corresponding rated wire voltage.

2.Fuses used in single-phase system,its rated voltage should be of 115% of max phase voltage.

3.When used in three-phase neutral point insulation system or resonance earthed system, as double earth fault may occur to the system,i. E.one fault point is at power side while the other at load side, and the phase is different.Now the rated voltage of fuse should be chosen according to max wire voltage.

4.When used in three-phase neutral point direct earth or the earthed system by impedance neutral point, to choose according to max wire voltage.

**熔断件额定电流的选择 Selection of rated current for fusing piece**

1.熔断件熔断管的额定电流应大于或等于熔体的额定电流；

2.熔断件的额定电流应为负载长期工作电流 1.25 倍；

3.熔断器安装在三相封闭的柜体中，或单只装在绝缘浇注的筒内，或三相装在不封闭的柜体中时，皆要考虑适当降低容量使用..

1.Rated current of fusing piece and fusing tube should not less than the rated current of melt.

2. Rated current of fusing piece should be 1.25 times of load long-term working current.

3.Fuses are installed in the three-phase sealed cabinet,or singly installed into the insulation poured canister, or three-phase in unsealed cabinet,proper capacity decline to use should be considered.

**熔断器开断电流的选择 Selection of breaking current for fuse**

根据熔断器的保护作用，其最大开断电流不小于被保护电路的最大短路电流，最小熔化电流应不大于被保护电路的最小短路电流.

According to the protection function of fuse,its max breaking current should not less than max short circuit current of the circuit of protected electrical equipment,min melting current should not more than the min short circuit current of protected circuit.

## 熔断器的保存和检查 Storage and inspection for fuse

1.熔断器应储存在干燥合适的场所

2.对摔落过的或受振动的熔断器在使用前应进行检验（直流电阻、零部件是否完好）..

3.放置久的熔断器出厂/出库时应进行再次检查其电阻值，

1.Fuses should be kept in dry and proper place.

2.Check the have been fallen and vibrated fuses before using(whether DC resistance and components are in good condition).

3.Re-check its resistance value of fuses stored for a long time when leaving factory/sending out of warehouse.

## 熔断器的安装及更换 Installation and replacement for fuse

1.安装熔断器时，应紧固所有的零件，防止接触部分在正常运行时过热。

2.对三相安装的熔断件，即使一支动作，其他两支均应更换，因为其它两支虽未损坏，但已接近动作点，已到了易损坏的程度。

3.在更换动作过的熔断件时，应在动作10分钟后更换。如果在熔断件动作后发现管内有烟雾泄出或有噪声现象时，不应更换熔断件，需待熔断件与电源隔离后才允许更换。

4.对装在靠供电设备或带电导体附近时，应满足安全条例的规定。

5.熔断器不能安装在有严重振动、灰尘、污染、潮湿的场所。

1.Tightly fix all components to avoid overheating for contact parts when installing fuses.

2.For fuses of three-phase installation,although one acts,another two all should be replaced.As the two though haven't been damaged,approach acting point and have reached the easy-damaging extent.

3.Replacement of an acted fusing piece should be done in 10 min after its action.If smoke leakage or noise occurs in the tube after fusing piece action, the fuse piece can be replaced only after it is out of the circuit.

4.More consideration should be taken when the fuse installed near power supply equipment or energized conductor.

5.Fuses can't be installed in a place with severe vibration,dust,pollution and dampness.

## 熔断器的运输 Transportation for fuse

熔断器在运输途中，要严格防止振动、跌落、碰撞现象。对发生上述情况，要进行性能测试后再予使用。

Try to avoid vibration,falling,impact during the transportation for fuse.If the above conditions occur,do test thoroughly before it is used.

## 订货须知 Ordering notice

1.用户应提出熔断器的额定电压、额定电流、开断电流、保护对象等。

2.用户需要样本上没有介绍的熔断器时，请提出工作电压、工作电流、开断能力、外型尺寸等。我们可以按照您的要求设计产品。

1.User should point out the rated voltage, rated current, breaking current and protective object of fuse.

2.Please feel free to contact us for your special requirement beyond our catalogue.

# W型电动机保护用高分断能力高压限流熔断器
# H.V HRC current-limiting fuses type W for motor protection

## 用途 Applications

W型电动机保护用高分断能力高压限流熔断器适用于交流50Hz、额定电压3.6～10KV、额定电流400A（3.6KV）、224A（7.2KV）及以下的电力系统中，作为高压电动机及其他电力设备的过载或短路保护用；也可与负荷开关、真空接触器等配合使用。

本高压熔断器符合国家GB15166.2标准和国际电工委IEC60282-1标准以及英国BS标准。

H.V HRC current-limiting fuses type W for motor protection is mainly used in AC 50Hz, rated voltage 3.6~10kV, rated current up to 400A(3.6kV), 224A(7.2kV) circuit for protecting motor and power equipment from overload and short-circuit. It can also be used with load switch, vacuum contact

It conforms to IEC60282-1, BS and GB15166.2.

## 结构特点 Design Features

W型高压熔断器采用插入式和母线式两种结构。具有安装体积小、接触可靠和更换方便的特点；火药式撞击器并联于由纯银片制成并旋绕的熔体，与经化学处理过的高纯度石英砂一起密封于熔管内；熔管采用耐高温的高强度氧化铝瓷制成。在线路发生故障时，熔体熔化，在熔体出现电弧瞬间，撞击器的与熔体并联的高电阻金属丝立即熔断，点燃火药产生高气压将撞击器迅速弹出，推动连锁电器触头，自动切换电路或发出熔断讯号。本高压熔断器具有耐震动、分断能力高、动作快、保护特性好等优点。

W type H.V HRC current-limiting fuses has two installation:bus-bar installation and insert installation.It is small in volume,reliable in connection. The power striker parallels to the fuse element made from pure silver.They are sealed in the fuse tube filled with chemically treated high-purity quartz sand. The fuse tube is made from heat resistant,high duty ceramic or epoxy glass.When fault circuit happens.the fuse link melts, the high-resistant metal wire paralleling to fuse links melts immediatedly at the appearance of the arc, and the striker jumps out to push the chained equipment contact,signaling the melting or automatically cutting the circuit.W type H.V HRC current-limiting fuses has many merits as high current-limiting ability,high breaking capacity,quick and punctual in action,reliable in performance.

## 型号含义 Mode And Implication

国外型号 Cross-reference：

W □ □ □ □ - □

- 额定电压（KV）Rated voltage
- 连接形式O为单管　$O_2$为双管 $O_3$为三管
  Installaiton:O-single tube $O_2$-dual-tube $O_3$为三管
- 撞击器：N 无 H有撞击器
  Striker：N-without striker H-with striker
- 熔断件长度 Length：F=254 N=403mm
- 熔断件直径 Diameter：D=51mm F、K=76mm
- 电动机保护 Used in open air

部颁型号Department Model:

X R N M 1 - □

- 额定电压（KV）Rated voltage
- 设计序号 Design code
- 电动机保护 Motor protection
- 户内使用 Indoor used
- 熔断器 Fuse
- 限流式 Current-limiting

## 基本数据 Basic Data

| 序号 No. | 型号 Models 国外 Foreign | 型号 Models 部颁 Department | 额定电压 Rated voltage（KV） | 熔体额定电流 Rated current of the fuse links（A） | 额定开断电流 Rated breaking current（KA） | 外形尺寸（mm）（见图1.3～1.4） Dimensions(mm)(See fig.1.3~1.4) ΦD | 外形尺寸（mm）（见图1.3～1.4） Dimensions(mm)(See fig.1.3~1.4) L | 重量 Weight（Kg） |
|---|---|---|---|---|---|---|---|---|
| G0030 | WDF.O | XRNM1 | 3.6 | 50,63,80,100,125 | 50 | 51 | 254 | 1.4 |
| G0031 | WFF.O | XRNM1 | 3.6 | 125,160,200 | 50 | 76 | 254 | 2.8 |
| G0032 | WKF.O | XRNM1 | 3.6 | 250,315,355,400 | 50 | 76 | 254 | 2.8 |
| G0033 | WFN.O | XRNM1 | 7.2 | 25,31.5,40,50,63,80,100,125,160 | 40 | 76 | 403 | 4.15 |
| G0034 | WKN.O | XRNM1 | 7.2 | 200,224 | 40 | 76 | 403 | 4.15 |
| G0035 | | XRNM1 | 10 | 25,31.5,40,50,63,80,100,125,160,200,224 | 40 | 76 | 600 | 5.26 |

注：在规定的使用条件下，熔断器最小开断电流为熔断器额定电流的2.5～3倍。
7.2KV>224A为双管
3.6KV>400A为双管

Notes:Under stipulated condition,min.breaking current of fuses could be as high as 2.5~3 times than rated current.
7.2KV fuse link of 224A or above have a dual-tube body
3.6KV fuse link of 400A or above have a dual-tube body

W型电动机保护用插入式熔断器外形尺寸（mm）
Dimension of motor protection fuse type W for busbar installation（mm）

| 序号 No. | 尺寸 Dimensions 代号Code / 型号 Model | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|
| G0036 | WFF.O | 390 | 312 | 209 | 340 | 140 | 246 |
| G0037 | WKF.O | 390 | 312 | 209 | 340 | 140 | 246 |
| G0038 | WFN.O | 500 | 461 | 358 | 150 | 160 | 266 |
| G0039 | WKN.O | 500 | 461 | 358 | 150 | 160 | 266 |
| G0040 | XRNM1 | 690 | 659 | 555 | 350 | 160 | 266 |

## W型电动机保护用限流熔断器的选择 Selection for W type motor current-limiting fuse

在全电压启动时，熔断器的额定电流≈电动机满载电流的2倍；在其它方式启动时，熔断器的额定电流≈电动机满载电流的1.5倍。用于直接启动的电动机其熔断器额定电流的选择按下列公式选择：

When started with full voltage,Rated current≈twice of loaded motor current; When started under other circumstances,rated current≈1.5 times of loaded motor current.For directly started motor,fuses of proper rated current should be selected according to the following formula;

$$Iy=N \cdot I_{\circ} \cdot \Phi$$

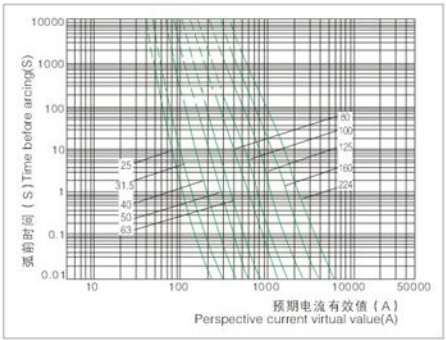
式中：Iy—— 在启动时间内的电流值 starting current
N—— 启动电流与满载电流之比，通常N≈6 Ratio of starting current and loaded current,usually N≈6
In—— 电动机满载电流 loaded motor current
Φ—— 综合系数，按下列表选取 comprehensive coefficient,see the table below

| Φ综合系数值 comprehensive coefficient | | | | |
|---|---|---|---|---|
| 每小时启动次数 Start times | 2 | 4 | 8 | 16 |
| Φ | 1.7 | 1.9 | 2.1 | 2.3 |

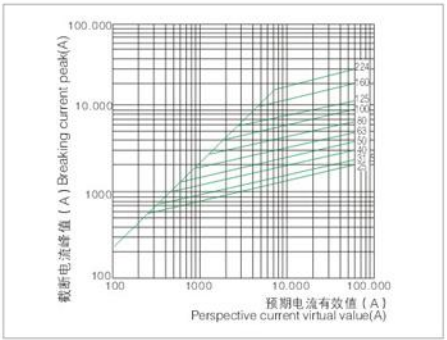
将启动时间对应的Iy值的点绘制在时间-电流特性曲线上，点对应的曲线或靠近这一点右边的曲线即是所选用的熔断器，熔断器额定电流应该大于1.3倍电动机的满载电流。

Refer to time-current characteristic diagram for selection of proper H.V.fuse link,Rated current of fuse link should be 1.3 times than loaded motor current.

## 特性曲线 Characteristics Curve

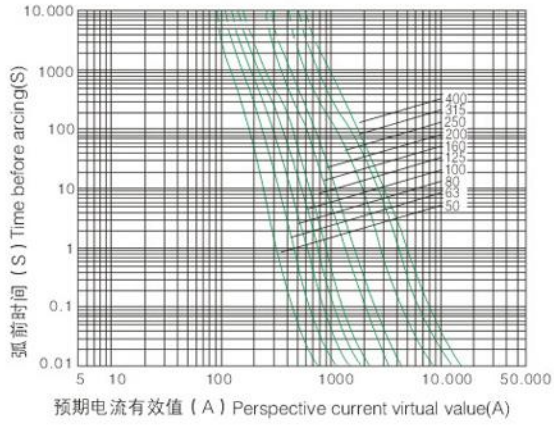



XRNM1型10KV熔断件时间-电流特性
Time-current characteristics of 10KV fuse links type XRNM1

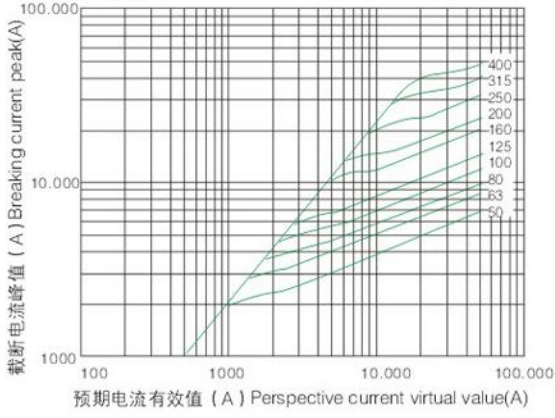



XRNM1型10KV熔断件截断电流特性
Cut-off current characteristics of 10KV fuse links type XRNM1

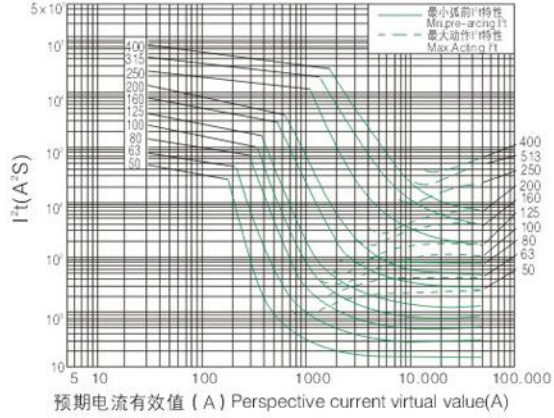
## 特性曲线 Characteristics Curve




3.6KV熔断件时间-电流特性 Time-current characteristics of 3.6KV fuse links

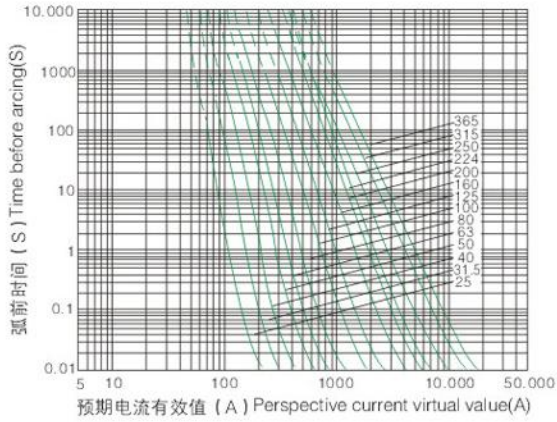



3.6KV熔断件截断电流特性 Cut-off current characteristics of 3.6KV fuse links

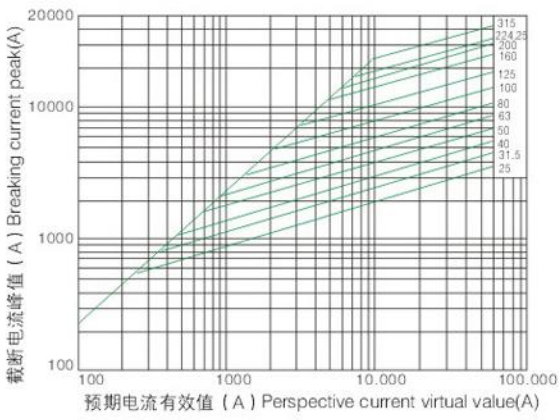



3.6KV熔断件$I^2t$特性 $I^2t$ characteristics of 3.6KV fuse links

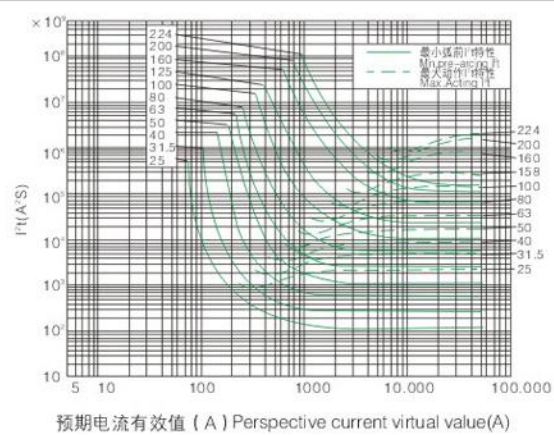
## 特性曲线 Characteristics Curve




7.2KV熔断件时间-电流特性 Time-current characteristics of 7.2KV fuse links



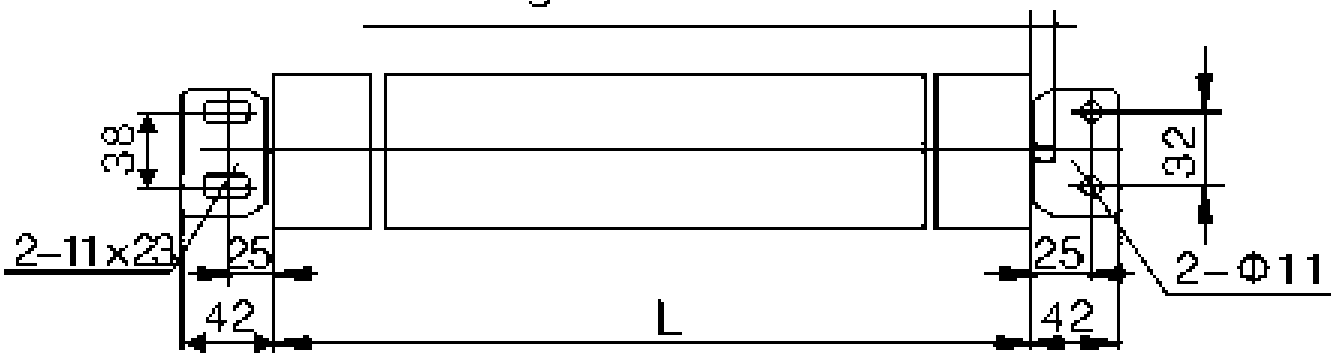

7.2KV熔断件截断电流特性 Cut-off current characteristics of 7.2KV fuse links

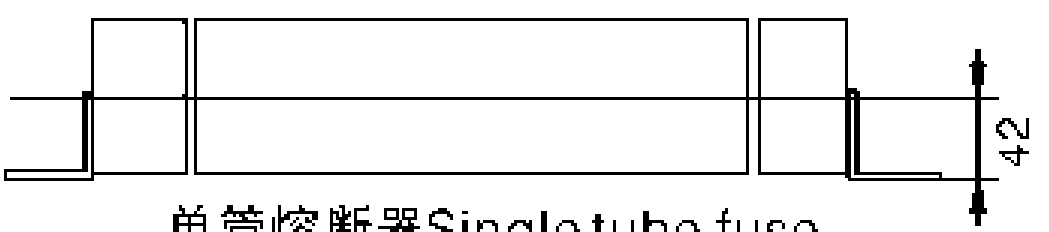


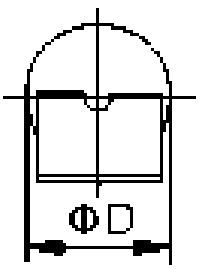

7.2KV熔断件$I^2$.t特性 $I^2$.t characteristics of 7.2KV fuse links

撞针动作后长度10-16mm

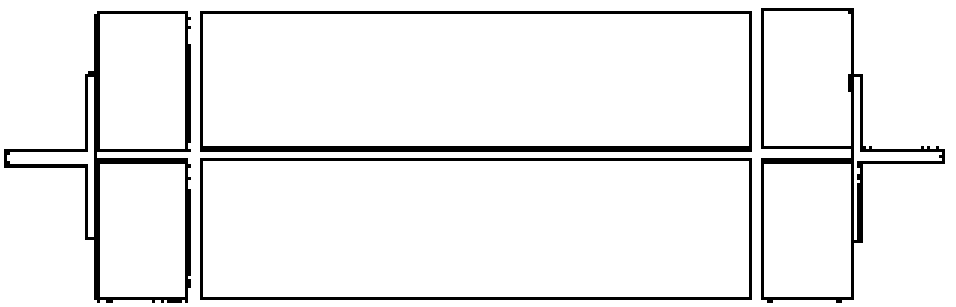
The length of the striker is 10-16mm after action

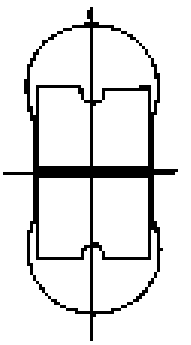


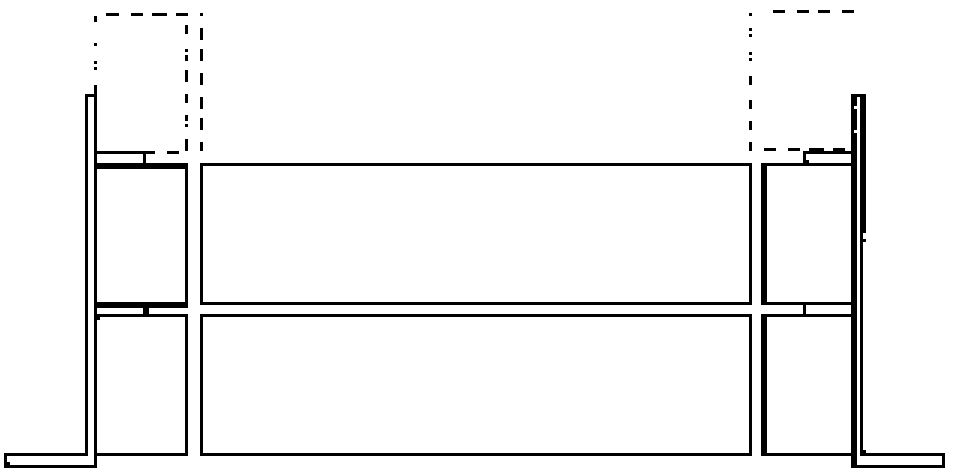



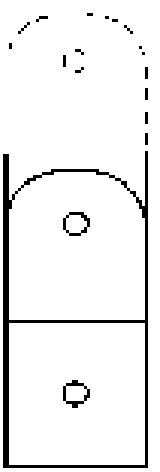

单管熔断器Single tube fuse





双管熔断器Dual-tube fuses





三管熔断器Tri-tube fuses

母线式熔断器

Fuses busbar installation