

## 电力电缆 Power Cables

### 1 产品概述 Brief Introduction



#### 1.1 产品说明 Introduction to product

通常意义的电缆选型就是选择合适的电缆和型号。

电缆型号规定了电缆的导体、绝缘、屏蔽、护层等结构，以及额定电压；而电缆的规格则表示电缆的芯数和导体截面。

为确保我公司向您提供的电缆可以在您的输电线路系统中安全可靠地长期运行，请您务必全面仔细地考虑以下几个方面因素之后，再选择合适的电缆型号和规格。

Generally, cable model selection means to choose the appropriate cable and model.

Cable model specifies the cable structure of conductor, insulation, shield, sheath etc. And rated voltage; however, the specification of cable indicates the core and section area of conductor. To ensure the cable supplied by us can operate reliably for a long time in transmission line, please read the following items fully and carefully before selection the appropriate model and specifications.

#### 1.2 额定电压 $U_0/U$ 和电网系统 Rated voltage $U_0/U$ and power system

电缆额定电压应根据电网系统的特点选择，表1是电网对电缆的要求，我国大部分35kV电网均采用B类的消弧线圈接地系统，110kV及以上高压、超高压电网则A类的直接接地系统。

Rated voltage of cable should be selected according to the features of power system. Table 1 is the requirements of cable to power network, most 35kV power networks adopt the grounding system of arc-quenching coil of B type; direct grounding system is for 110kV above and HV, extra HV power network.

表1电缆和电网系统的关系

Table 1 The relationship between cable and power system

电缆 Cable		适用电网系统 Adequate power system						
类别 Type	额定电压 Rated voltage $U_0/U$ (kV)	类别 Category	接地系统 Grounding system	常用系统电压 Normal system voltage	供电回路 Power circuit	允许电缆电容电流 $I_c$ Allowable cable capacitive current $I_c$		
						35kV	10kV	6kV
1	1.8/3, 3.6/6, 6/10, 8.7/15, 12/20, 21/35	A类(中性点有效接地系统) A type (Effective grounding system of neutral point)	直接接地 Direct grounding 小电阻接地 Small resistance grounding	110kV及以上 110kV above 35kV及以下 35kV below	双回路 Double circuit			
2	0.6/1, 6/6, 8.7/10 26/35	B类(中性点非有效接地系统) B type (Non-effective grounding system of neutral point)	消弧线圈接地 Arc-quenching coil grounding 不接地 No grounding	35kV及以下 35kV below	单回路 Single circuit	> 10A ≤ 10A	> 20A ≤ 20A	> 30A ≤ 30A

# 电线电缆类



$$I_c = U_0 \omega CL = 2 \pi f U_0 CL = 314 U_0 CL \quad (U_0 \text{ 单位为 V, } C \text{ 为 F/m, } L \text{ 为电缆长度米})$$

$$I_c = U_0 \omega CL = 2 \pi f U_0 CL = 314 U_0 CL \quad (U_0 \text{ unit is V, } C \text{ is F/m, } L \text{ is cable length/m})$$

## 1.3 电缆载流量 Allowed current rating of cable

电缆规格即导体截面的大小，决定了电缆在同等运行条件下的载流量。本手册给出了各种型号规格的交联电缆在特定运行环境条件下的载流量，用户选择电缆规格时还应将此载流量换算到实际运行环境下的载流量。

此外，用户还应考虑紧急过载负荷的大小和持续时间。  
Cable specification is the size of conductor section. It determines the current rating under the same operation condition. The manual gives the current rating of cross-link cable for each kinds of specification under special operation condition. The current rating shall be converted into the one under real operation condition by customer when choosing cable specification.  
Furthermore, the customer shall take the size of emergency over load and continuous time.

## 1.4 选择导体截面的大小还应符合系统发生短路故障时的短路电流的要求，否则会出现电缆导体烧毁的现象。短路电流的大小与短路时间密切相关。

Choosing the size of conductor section shall meet the requirements of short circuit in trouble when system is in short circuit, otherwise, the phenomony of cable conductor will burn. The size of short circuit has close relationship with the time of short circuit.

## 1.5 要考虑电缆的运行成本选择经济电流密度

Operation cost is considered—selection economic current density

电缆导体本身是一个电阻，运行时要消耗电能发热，即线路损耗。选择电缆规格越大，导体(直)交流电阻越小，线损越小，运行成本越低；但电缆价格越高线路投资越大。综合考虑这些因素后的经济电流密度计算公式较为复杂，我们在这里只是提醒用户注意。一般要求  $S \geq I_m / J_0$  ( $I_m$  为电缆最大工作电流A,  $J_0$  为经济电流密度A/mm<sup>2</sup>)。

Cable conductor itself is a resistance, which will consume power to generate heat, i.e. line loss. The bigger the cable specification is, the smaller line loss and the operation cost is; however, the higher the cable price, the bigger the line investment. It is complex for considering the density calculation formula of economic current after taking the factors into consideration. We are here just to remind the customer. Generally, the requirement is  $S = I_m / J_0$  ( $I_m$  is Max. working current A,  $J_0$  is economic current density A/mm<sup>2</sup>).

## 1.6 金属屏蔽短路电流 Short current of metal shield

按GB/T12706-2002标准规定，我公司常规中压交联电缆( $U_0$ 为21kV和26kV，截面为500mm<sup>2</sup>及以上除外)均采用铜带屏蔽，其屏蔽截面S=层数 宽度 厚度， $U_0$ 为21kV和26kV，截面为500mm<sup>2</sup>及以上电缆金属屏蔽应采用铜丝屏蔽结构。铜带屏蔽电缆通常只适于短路电流不太大的非有效接地系统。

如果您的电网系统短路电流较大在(如电阻接地系统)，要求屏蔽截面较大，则请您务必注明采用铜丝屏蔽及要求的屏蔽面积。

Normal MV cross-link cable of our company ( $U_0$  is 21kV and 26kV, section is 500mm<sup>2</sup> and above is not concluded) all adopt bronze shield, the shield section  $S = \text{No. of layer} \times \text{width} \times \text{thickness}$ ,  $U_0$  is 21kV and 26kV, the metal shield of cable of section is 500mm<sup>2</sup> and above should take the structure of copper wires shield. Copper tape shield cable is generally used in non-effective grounding system of small short circuit current.

If the short circuit current of your power system is larger (take resistance grounding system for example), the shield section is required larger, then you must note that the required shield area of shield.

## 1.7 电力系统均对线路电压降有规定，电流通过电缆线路，均将产生一定的电压降 $\Delta U = I R$ ，I为线路工作电流，R为线路长度电缆交流电阻。要求 $\Delta U$ 应小于系统规定的最大压降(如高低压电动机 路为5%U，室内工作照明线路为2.5%U，室外工作照明线路为4%U等，高压 路可不考虑)。

Power system has specifications on line voltage, certain voltage drop will occur when current passes cable line  $\Delta U = I R$ , where I is line working voltage; R is AC resistance of cable for line length.  $\Delta U$  shall be lower the Max. voltage drop made by system ( if HV & LV motor circuit is 5%U, working lighting line is 2.5%U inside room, outside working lighting line is 4%U et, HV circuit can not be considered).

# ELECTRIC WIRES & CABLE

## 2 产品简介 Brief Introduction of Product

### 2.1 产品说明 Introduction to product

电力电缆用于输配电系统中，广泛应用于电力、建筑、工矿、冶金、石油化工、交通等部门。是输配电系统中重要组成部分，传输和分配大容量的电流。本公司生产的1~35kV塑料绝缘电力电缆，其性能完全符合GB/T12706-2002和IEC60502-1997标准。由其衍生的阻燃、低烟无卤阻燃、低烟低卤阻燃、耐火、耐寒、防水型电力电缆，更是形成系列化、专业化，其中阻燃型电力电缆有A、B、C三类阻燃等级。A类阻燃电缆采用了新型的阻燃结构，不仅电性能完全符合国家标准要求，而且成束燃烧试验也完全达到GB/T19666-2005成束阻燃性能要求中A类。耐火型电力电缆整体性能优良可靠，其耐火性能符合GB/T19666-2005耐火性能要求。低烟无卤、低烟低卤阻燃型电力电缆无卤性能和低烟性能分别符合GB/T19666-2005无卤性能要求和低烟性能要求。

Power cable is widely used in the departments of electricity, construction, industrial & mining, metallurgy, petrochemicals and communication in transmission and distribution. It is an important part in power system, which conveys and distributes high power current. The features of 1 ~ 35kV plastic insulating power cable, made by our company, meet totally with the standards of GB/T12706-2002 and IEC60502-1997. Derives from flame-retardant, low smoke no-halogen flame-retardant, fire-resistant, hardy and waterproof type, forms series and specialization, among which flame-retardant type has A, B and C levels. A type flame-retardant cable adopts new structure, not only electric feature totally agree with the requirements of national standards, but also bundle burning test reaches the requirement of A type GB/T19666-2005 "The requirement of Bundle flame-retardant Features" Fire-resistant type power cable is reliable in whole features, the features of fire-resistant agree with "The Requirement of Fire-resistant Features" GB/T19666-2005. The features of low smoke & no-halogen, low smoke & low halogen flame-retardant type flame-retardant power cable meets with "The Requirement of No-halogen Features" and "The Requirement of Low Smoke Features".

### 2.2 35kV及以下交联聚乙烯绝缘电力电缆

35kV and below Cross-linked Polyethylene Insulated Power Cable

执行标准 Executive standards:

本标准按照GB/T12706-2002《额定电压1kV( $U_m=1.2$  kV)到35kV( $U_m=40.5$  kV)挤包绝缘电力电缆及附件》设计制造。

The product is designed and made by GB/T12706-2002 "Cables with Extruded Insulation and their accessories for Rated Voltage 1kV( $U_m=1.2$  kV)to 35kV( $U_m=40.5$  kV)".

### 2.2.1 型号及名称 Model and Name

表2 型号和名称 Table 2 Model and name

型号 Model	名称 Name
YJV YJLV	铜芯或铝芯交联聚乙烯绝缘聚氯乙烯护套电力电缆 Cu or Al Conductor XLPE Insulated PVC Sheathed Power Cable
YJY YJLY	铜芯或铝芯交联聚乙烯绝缘聚乙烯护套电力电缆 Cu or Al Coconductor XLPE Insulated PE Sheathed Power Cable
YJV22 YJLV22	铜芯或铝芯交联聚乙烯绝缘聚氯乙烯护套钢带铠装电力电缆 Cu or Al Conductor XLPE Insulated PVC Sheathed St.Tape Armor Power Cable
YJV23 YJLV23	铜芯或铝芯交联聚乙烯绝缘聚乙烯护套钢带铠装电力电缆 Cu or Al Conductor XLPE Insulated PE Sheathed St.Tape Armor Power Cable
YJV32 YJLV32	铜芯或铝芯交联聚乙烯绝缘聚氯乙烯护套细钢丝铠装电力电缆 Cu or Al Conductor XLPE Insulated PVC Sheathed thin st. Wire Armor Power Cable
YJV42 YJLV42	铜芯或铝芯交联聚乙烯绝缘聚氯乙烯护套粗钢丝铠装电力电缆 Cu or Al Conductor XLPE Insulated PVC Sheathed thick st. Wire Armor Power Cable
YJV33 YJLV33	铜芯或铝芯交联聚乙烯绝缘聚乙烯护套细钢丝铠装电力电缆 Cu or Al XLPE Insulated PVC Sheathed thin st. Wire Armor Power Cable
YJV43 YJLV43	铜芯或铝芯交联聚乙烯绝缘聚乙烯护套粗钢丝铠装电力电缆 Cu or Al Core XLPE Insulated PVC Sheathed Thick st. Wire Armor Power Cable
N-YJV	铜芯交联聚乙烯绝缘聚氯乙烯护套耐火电力电缆 Cu Conductor XLPE Insulated PVC Sheathed Fire-resistant Power Cable

# 电线电缆类

型号 Model	名称 Name
N-YJV22	铜芯交联聚乙烯绝缘聚氯乙烯护套钢带铠装耐火电力电缆 Cu Conductor XLPE Insulated PVC Sheathed St.Tape Armor Fire-resistant Power Cable
N-YJV23	铜芯交联聚乙烯绝缘聚乙烯护套钢带铠装耐火电力电缆 Cu XLPE Insulated PE Sheathed St.Tape Armor Fire-resistant Power Cable
Z-YJV Z-YJLV	铜芯或铝芯交联聚乙烯绝缘聚氯乙烯护套阻燃电力电缆 Cu or Al XLPE Insulated PVC Sheathed flame-retardant Power Cable
Z-YJV22 Z-YJLV22	铜芯或铝芯交联聚乙烯绝缘聚氯乙烯护套钢带铠装阻燃电力电缆 Cu or Al XLPE Insulated PVC Sheathed st.Tape Armor flame-retardant Power Cable
Z-YJV32 Z-YJLV32	铜芯或铝芯交联聚乙烯绝缘聚氯乙烯护套细钢丝铠装阻燃电力电缆 Cu or Al XLPE Insulated PVC Sheathed Thin st. Wire flame-retardant Power Cable
Z-YJV42 Z-YJLV42	铜芯或铝芯交联聚乙烯绝缘聚氯乙烯护套粗钢丝铠装阻燃电力电缆 Cu or Al XLPE Insulated PVC Sheathed Thick st. Wire flame-retardant Power Cable
DDZ-YJV DDZ-YJLV	铜芯或铝芯交联聚乙烯绝缘聚氯乙烯护套低烟低卤阻燃电力电缆 Cu or Al XLPE Insulated PVC Sheathed Low Smoke & Halogen flame-retardant Power Cable
DDZ-YJV22 DDZ-YJLV22	铜芯或铝芯交联聚乙烯绝缘聚氯乙烯护套钢带铠装低烟低卤阻燃电力电缆 Cu or Al XLPE Insulated PVC Sheathed st.Tape Armor Low Smoke & Halogen flame-retardant Power Cable
DDZ-YJV32 DDZ-YJLV32	铜芯或铝芯交联聚乙烯绝缘细聚氯乙烯护套钢丝铠装低烟低卤阻燃电力电缆 Cu or Al XLPE Insulated PVC Sheathed thin st. Wire Armor Low Smoke & Halogen flame-retardant Power Cable
DDZ-YJV42 DDZ-YJLV42	铜芯或铝芯交联聚乙烯绝缘聚氯乙烯护套粗钢丝铠装低烟低卤阻燃电力电缆 Cu or Al XLPE Insulated PVC Sheathed Thick Wire Armor Low Smoke & Halogen flame-retardant Power Cable
WDZ-YJY WDZ-YJLY	铜芯或铝芯交联聚乙烯绝缘聚烯烃护套低烟无卤阻燃电力电缆 Cu or Al XLPE Insulated Polyolefin Sheathed Low Smoke No-halogen flame-retardant Power Cable
WDZ-YJY23 WDZ-YJLY23	铜芯或铝芯交联聚乙烯绝缘聚烯烃护套钢带铠装低烟无卤阻燃电力电缆 Cu or Al XLPE Insulated Polyolefin Sheathed St.Tape Armor Low Smoke No-halogen flame-retardant Power Cable
WDZ-YJY33 WDZ-YJLY33	铜芯或铝芯交联聚乙烯绝缘聚烯烃护套细钢丝铠装低烟无卤阻燃电力电缆 Cu or Al XLPE Insulated Polyolefin Sheathed Thin Wire Armor Low Smoke No-halogen flame-retardant Power Cable
WDZ-YJY43 WDZ-YJLY43	铜芯或铝芯交联聚乙烯绝缘聚烯烃护套粗钢丝铠装低烟无卤阻燃电力电缆 Cu or Al XLPE Insulated Polyolefin Sheathed Thick st. Wire Armor Low Smoke No-halogen flame-retardant Power Cable

## 型号说明 Model Explanation

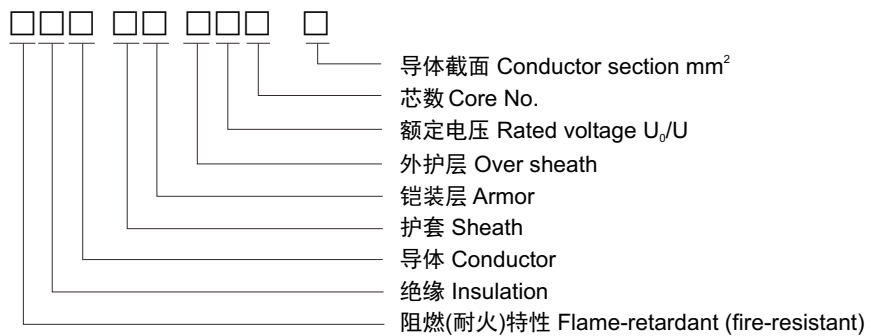


表3型号说明 Table 3 Model explanation

项目 Items	代号 Code	说明 Notes
	(省略)(omitted)	非阻燃 Non flame-retardant
阻燃特性 Flame- retardant	Z	阻燃, 分 A、B、C flame- retardant, into A,B,C
	WD	低烟无卤 Low smoke, no-halogen
	DD	低烟低卤 Low smoke, low halogen
耐火特性 Fire-resistant	N	耐火 Fire resistant
绝缘 Insulation	YJ	交联聚乙烯 XLPE
导体 Conductor	T(省略)(Omitted)	铜芯 Cu. core
	L	铝芯 Al. core
	V	聚氯乙烯 PVC
护套或内护套 Sheath or inner sheath		聚烯烃 Polyolefin
	Y	聚乙烯 PE

# ELECTRIC WIRES & CABLE

续上表 continue the above table

项目 Items	代号 Code	说明 Notes
铠装层 Armor	2	钢带铠装 St. tape armor
	3	细钢丝铠装 Thin St. wire armor
	4	粗钢丝铠装 Thick St. wire armor
外护层 Outer covering	2	聚氯乙烯 PVC
	3	聚乙烯 PE

## 2.2.2 使用特性 Operation features

2.2.2.1 额定电压 $U_0/U$ 分为0.6/1kV、1.8/3 kV、3.6/6 kV、6/6 kV、6/10 kV、8.7/10 kV、8.7/15 kV、12/20 kV、18/30 kV、21/35 kV、26/35 kV

Rated voltage  $U_0/U$  is divided into 0.6/1kV, 1.8/3 kV, 3.6/6 kV, 6/6 kV, 6/10 kV, 8.7/10 kV, 8.7/15 kV, 12/20 kV, 18/30 kV, 21/35 kV, 26/35 kV

2.2.2.2 正常运行时导体最高温度为90°C，短路时(最长持续时间不超过5S)电缆导体的最高温度不超过250°C。

Max. temperature of conductor is 90°C in normal operation, Max. temperature of cable conductor does not overpass 250°C in short circuit (Max. continuous time is not over 5s).

2.2.2.3 导体直流电阻符合GB/T3956-1997的规定。

Dc resistance of conductor is in line with the specification of GB/T3956-1997.

2.2.2.4 安装时的环境温度应不低于0°C，最小弯曲半径见表4。

Surrounding temperature is not below than 0°C, Min. bending radius refers to table 4.

表4 最小弯曲半径 Table 4 Max. bending diameter

项目 Items	单芯电缆 Single core cable		多芯电缆 MultiPle core cable	
	无铠装 No armor	有铠装 With armor	无铠装 No armor	有铠装 With armor
安装时电缆最小弯曲半径 Min.bending radius of cable in fitting	20D	15D	15D	12D
靠近连接盒和终端电缆的最小弯曲半径 Min. Bending radius of close with connection box and terminal cable	15D	12D	12D	10D

注：D—电缆外径 Notes: D—Outer diameter of cable

2.2.2.5 电缆敷设不受落差限制。Cable laying is not limited by the fall.

2.2.2.6 AC 交流电压试验 Voltage testing:

$U_0$ 为0.6~1.8kV电力电缆对应工频试验电压为 $2.5U_0+2kV$ ，5min不击穿。

$U_0$  is for 0.6~1.8kV power cable, corresponding power frequency is  $2.5U_0+2kV$ , no puncture within 5 min.

$U_0$ 为3.6~18kV电力电缆对应工频试验电压为 $3.5U_0$ ，5min不击穿。

$U_0$  is for 3.6~18kV power cable, corresponding power frequency is  $3.5U_0$ , no puncture within 5 min.

$U_0$ 为21~26kV电力电缆对应工频试验电压为 $2.5U_0$ ，30min或 $3.5U_0$ ，5min不击穿。

$U_0$  is for 21~26kV power cable, corresponding power frequency is  $2.5U_0$  no puncture with,30min. Or  $3.5 U_0$ , no puncture within 5 min.

2.2.2.7 局部放电试验：1.73  $U_0$ 下放电量不大于10pC。

Partial discharge test: discharging is not over 10pC under 1.73  $U_0$ .

2.2.2.8 阻燃特性 Flame-retardant

阻燃性能符合GB/T19666-2005表4 成束阻燃性能要求的规定。

Flame-retardant feature talies with the specifications of bundle Inflamm-retardant in table 4 GB/T 19666-2005.

低烟无卤性能符合GB/T19666-2005表6 无卤性能要求和表7 低烟性能要求的规定。

Low smoke and no-halogen feature talies with the requirement of GB/T19666-2005 no-halogen in able 6 and that of low smoke in table 7.

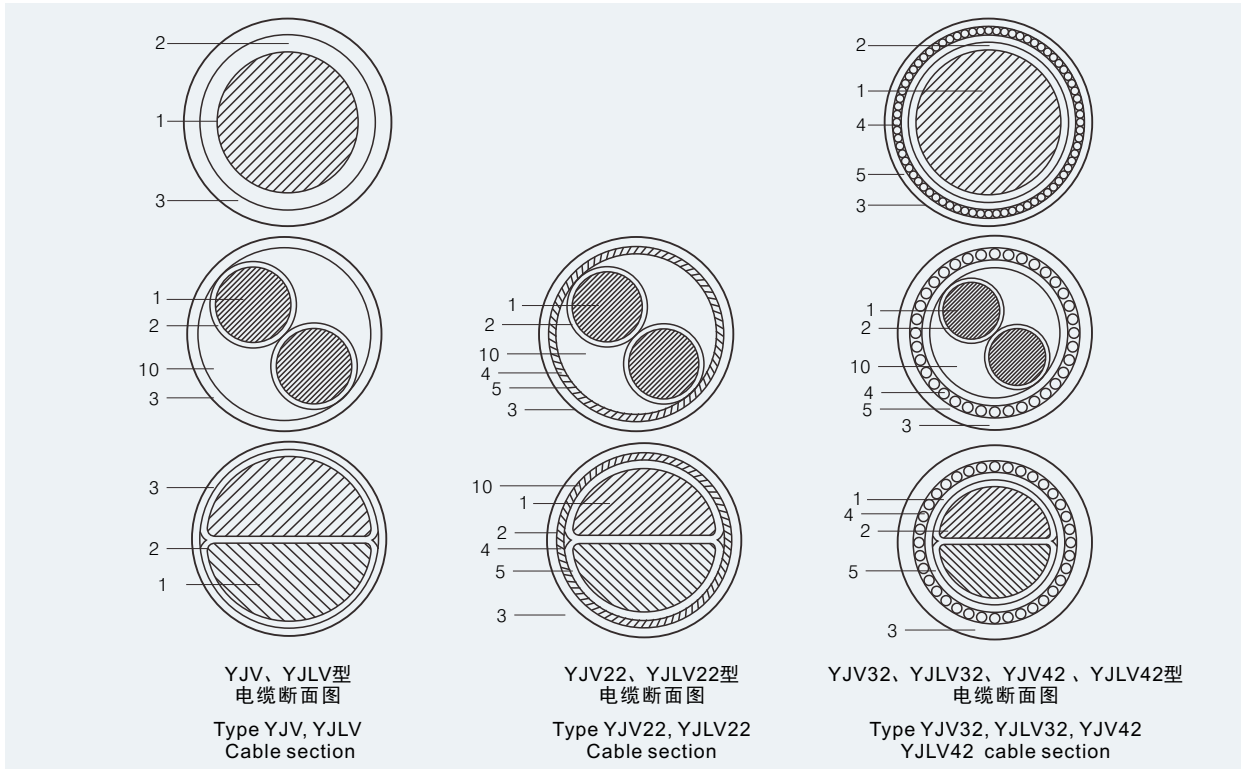
2.2.2.9 耐火特性 Fire-resistant

耐火特性符合GB/T19666-2005表5 耐火性能要求的规定。

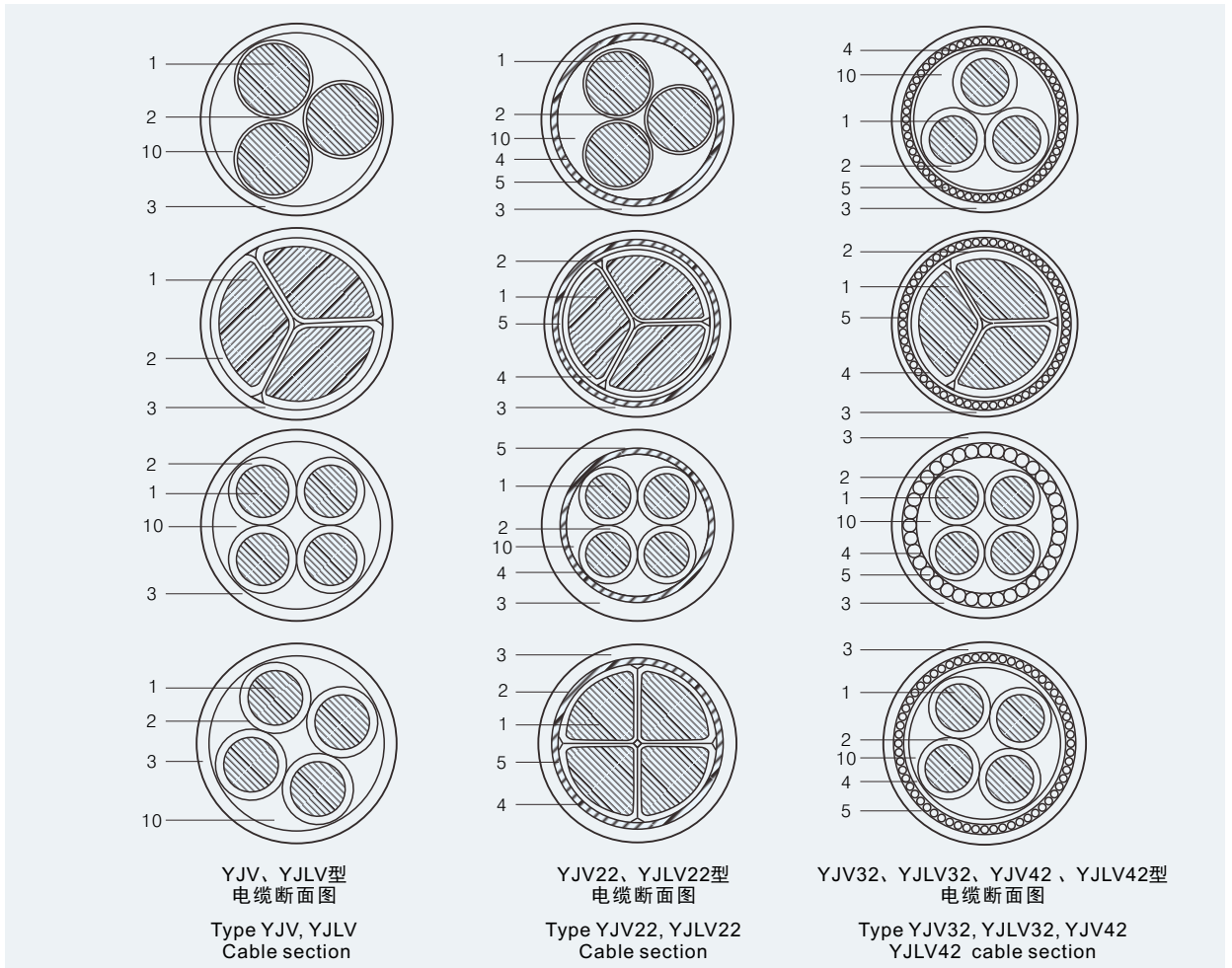
Fire resistant talies with the specifications of GB/T19666-2005 in table 5.

# 电线电缆类

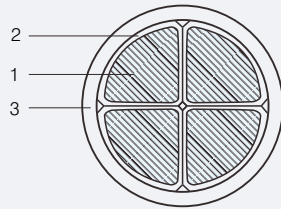
## 2.2.3 电缆结构图 Diagram of cable structure



## 2.2.4 电缆结构图 Diagram of cable structure

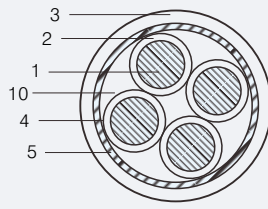


# ELECTRIC WIRES & CABLE



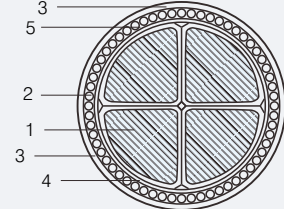
YJV, YJLV型  
电缆断面图

Type YJV, YJLV  
Cable section



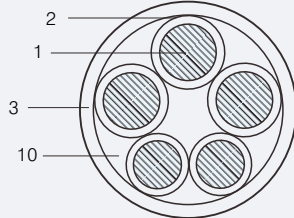
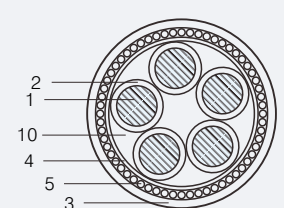
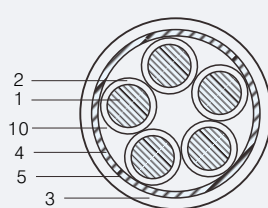
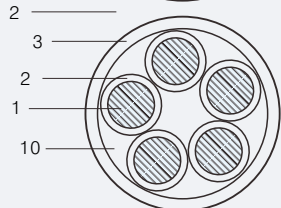
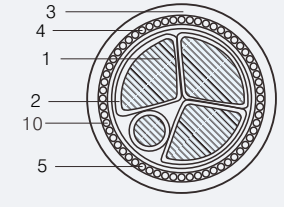
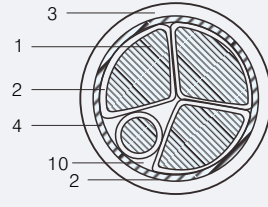
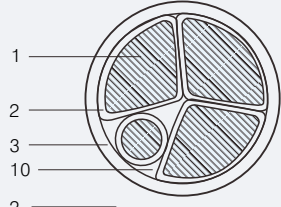
YJV22, YJLV22型  
电缆断面图

Type YJV22, YJLV22  
Cable section



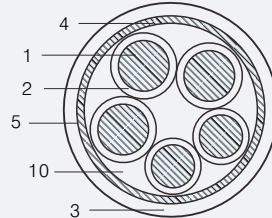
YJV32, YJLV32, YJV42, YJLV42型  
电缆断面图

Type YJV32, YJLV32, YJV42  
YJLV42 cable section



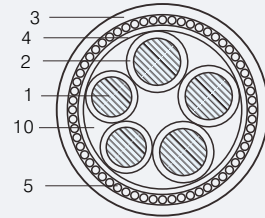
YJV, YJLV型  
电缆断面图

Type YJV, YJLV  
Cable section



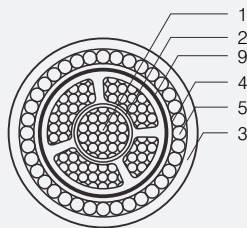
YJV22, YJLV22型  
电缆断面图

Type YJV22, YJLV22  
Cable section



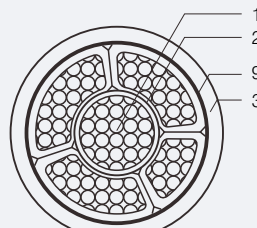
YJV32, YJLV32, YJV42, YJLV42型  
电缆断面图

Type YJV32, YJLV32, YJV42  
YJLV42 cable section



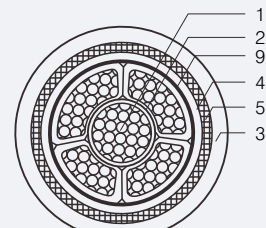
VV32, VLV32, YJV32, YJLV32  
VV42, VLV42, YJV42, YJLV42型  
电缆断面图

Type VV32, VLV32, YJV32, YJLV32  
VV42, VLV42, YJV42, YJLV42  
Cable section



VV, VLV, YJV, YJLV型  
电缆断面图

Type VV, VLV, YJV, YJLV  
Cable section

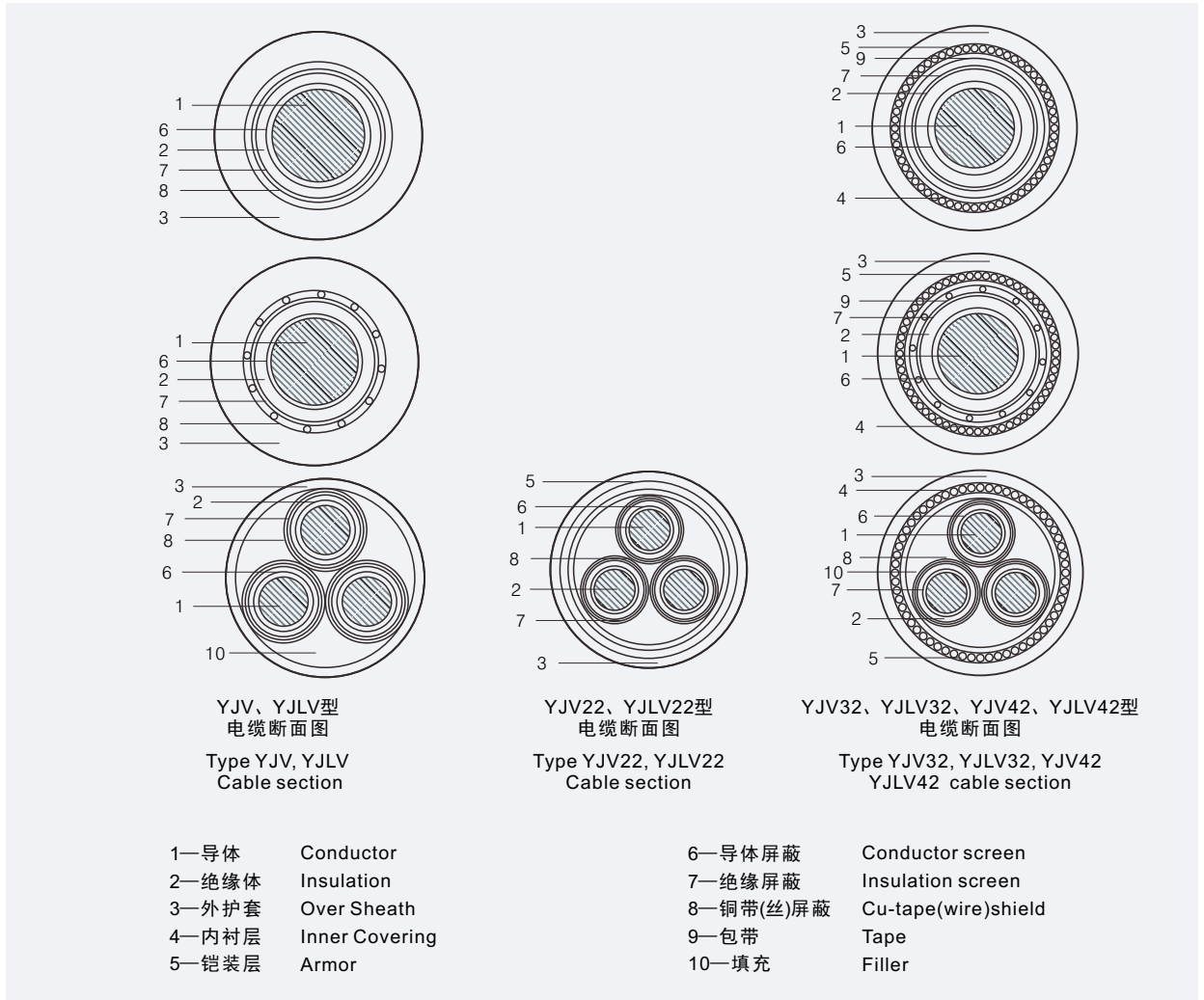


VV22, VLV22, YJV22, YJLV22型  
电缆断面图

Type VV22, VLV22, YJV22, YJLV22  
cable section

# 电线电缆类

## 2.2.5 电缆结构图 Diagram of cable structure



## 2.2.6 交联聚乙烯绝缘电力电缆生产范围 Scope of XLPE power cable

表5 生产范围 Table 5 Manufacturing scope

型号 Model	芯数 Core No.	额定电压 Rated voltage kV				
		0.6/1	6/6	6/10	8.7/10	8.7/15
		导体标称截面 Nominal section of conductor mm <sup>2</sup>				
YJV YJLV YJY YJLY		1.5~800				
YJV22 YJLV22 YJV23 YJLV23	1	10~800	25~630	25~630	50~630	50~630
YJV32 YJLV32 YJV33 YJLV33		10~800				
YJV42 YJLV42 YJV43 YJLV43		—				
YJV YJLV YJY YJLY		1.5~300				
YJV22 YJLV22 YJV23 YJLV23	3	1.5~300	25~500	25~500	50~500	50~500
YJV32 YJLV32 YJV33 YJLV33		4~300				
YJV42 YJLV42 YJV43 YJLV43		4~300				
YJV YJLV YJY YJLY		1.5~300				
YJV22 YJLV22 YJV23 YJLV23	2	1.5~300	---	---	---	---
YJV32 YJLV32 YJV33 YJLV33		4~300				
YJV42 YJLV42 YJV43 YJLV43		10~300				
YJV YJLV YJY YJLY		1.5~300				
YJV22 YJLV22 YJV23 YJLV23	3+1	1.5~300	---	---	---	---
YJV32 YJLV32 YJV33 YJLV33		4~300				
YJV42 YJLV42 YJV43 YJLV43		4~300				



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型号 Model	芯数 Core No.	额定电压 Rated voltage kV					
		0.6/1	6/6	6/10	8.7/10	8.7/15	21/35
		导体标称截面 Nominal section of conductor mm <sup>2</sup>					
YJV YJLV YJY YJLY		1.5~300					
YJV22 YJLV22 YJV23 YJLV23	4	1.5~300					
YJV32 YJLV32 YJV33 YJLV33		4~300					
YJV42 YJLV42 YJV43 YJLV43		4~300					
YJV YJLV YJY YJLY		1.5~300					
YJV22 YJLV22 YJV23 YJLV23	3+2	1.5~300					
YJV32 YJLV32 YJV33 YJLV33		4~300					
YJV42 YJLV42 YJV43 YJLV43		4~300					
YJV YJLV YJY YJLY		1.5~300					
YJV22 YJLV22 YJV23 YJLV23	4+1	1.5~300					
YJV32 YJLV32 YJV33 YJLV33		4~300					
YJV42 YJLV42 YJV43 YJLV43		4~300					
YJV YJLV YJY YJLY		1.5~300					
YJV22 YJLV22 YJV23 YJLV23	5	1.5~300					
YJV32 YJLV32 YJV33 YJLV33		4~300					
YJV42 YJLV42 YJV43 YJLV43		4~300					
YJV YJLV YJY YJLY		1.5~300					

## 2.2.7 电缆结构及主要技术参数 Cable structure and its main technical parameter

### 2.2.7.1 导体应符合GB/T 3956-1997要求。

Conductor shall agree with the requirement of GB/T 3956-1997.

#### 2.2.7.1.1 导体结构采用的最少单线根数和直流电阻见表6。

Min. single wire and DC resistance adopted by conductor.

表6 导体结构和直流电阻 Table 6 Conductor structure and DC resistance

标称截面 Norm. section mm <sup>2</sup>	第二种导体中最少单线根数 Min. single wire in second conductor				20°C直流电阻Ω/km不大于 DC resistance Ω/km 20°C ≤		
	非紧压圆型 No-pinch round	紧压圆型 Compacted round		紧压扇型 Compacted sector		铜Cu.	铝Al.
		铜Cu.	铝Al.	铜Cu.	铝Al.	铜Cu.	铝Al.
1.5	1	—	—	—	—	12.1	—
2.5	1	—	—	—	—	7.41	12.1
4	1	—	—	—	—	4.61	7.41
6	1	—	—	—	—	3.08	4.61
10	7	—	—	—	—	1.83	3.08
16	7	6	6	—	—	1.15	1.91
25	7	6	6	—	—	0.727	1.20
35	7	6	6	—	—	0.524	0.868
50	19	6	6	6	6	0.387	0.641
70	19	12	12	12	12	0.268	0.443
95	19	15	15	15	15	0.193	0.320
120	37	18	15	18	15	0.153	0.253
150	37	18	15	18	15	0.124	0.206
185	37	30	30	30	30	0.0991	0.164
240	61	34	30	34	30	0.0754	0.125
300	61	34	30	34	30	0.0601	0.100
400	61	53	53	—	—	0.0470	0.0778
500	61	53	53	—	—	0.0366	0.0605
630	91	53	53	—	—	0.0283	0.0469

### 2.2.7.2 绝缘及屏蔽 Insulation and Screen

各电压等级的绝缘标称厚度和屏蔽结构如下表7。

Normal insulation thickness and screen in each voltage level refers to the following table 7.

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表7 绝缘及屏蔽 Table 7 Insulation and screen

标称截面 Norm. section mm <sup>2</sup>	绝缘标称厚度 Mormal insulation thickness mm							屏蔽类型及结构 Screen type & structure	
	0.6/1	1.8/3	3.6/6	6/6 6/10	8.7/10 8.7/15	21/35	26/35	1.8/3	3.6/6~26/35
1.5	0.7	—	—	—	—	—	—		
2.5	0.7	—	—	—	—	—	—		
4	0.7	—	—	—	—	—	—		
6	0.7	—	—	—	—	—	—		
10	0.7	2.0	2.5	—	—	—	—		
16	0.7	2.0	2.5	3.4	—	—	—		
25	0.9	2.0	2.5	3.4	4.5	—	—		
35	0.9	2.0	2.5	3.4	4.5	—	—		
50	1.0	2.0	2.5	3.4	4.5	9.3	10.5	铜丝或铜带的 分相屏蔽或统 包屏蔽 Phase or all screen of brass wires or Cu. tape	1.导体屏蔽+绝缘+绝缘屏蔽(多 芯电缆带标志色条), 三层共挤。 2. 金属屏蔽 (1)通常为铜带分相屏蔽U <sub>0</sub> 为21kV 和26kV, 截面为500mm <sup>2</sup> 及以上 除外), 用户特殊要求采用铜丝 屏蔽。 (2)U <sub>0</sub> 为21kV和26kV, 截面为 500mm <sup>2</sup> 及以上电缆金属屏蔽应 采用铜丝屏蔽1.Conductor screen + insulation + insulation screen (tips with cable), 3 layers co-extruded. 2. Metal screen ① Cu. Tape is phase screen, U <sub>0</sub> is 21kV, 26kV. Section is 500mm <sup>2</sup> and above), special requiremnt adopts brass wires screen. ② U <sub>0</sub> is 21kV, 26kV. Section is 500mm <sup>2</sup> and above), special requiremnt adopts brass wires screen.
70	1.1	2.0	2.5	3.4	4.5	9.3	10.5		
95	1.1	2.0	2.5	3.4	4.5	9.3	10.5		
120	1.2	2.0	2.5	3.4	4.5	9.3	10.5		
150	1.4	2.0	2.5	3.4	4.5	9.3	10.5		
185	1.6	2.0	2.5	3.4	4.5	9.3	10.5		
240	1.7	2.0	2.5	3.4	4.5	9.3	10.5		
300	1.8	2.0	2.5	3.4	4.5	9.3	10.5		
400	2.0	2.0	3.0	3.4	4.5	9.3	10.5		
500	2.2	2.2	3.2	3.4	4.5	9.3	10.5		
630	2.4	2.4	3.2	3.4	4.5	9.3	10.5		

## 2.2.8 检验和试验 Check and test

### 2.2.8.1 电缆导体直流电阻试验(例行试验)

导体直流电阻折算成20°C时的值应不大于表6中规定。

DC resistance test of cable conductor (routine test)

DC resistance of conductor converts into values smaller than the specifications in table 6.

### 2.2.8.2 电缆交流电压试验(例行试验)

成品电缆在室温下应能承受按表8规定进行的50HZ交流电压试验。(单芯电缆应在室温水里浸1小时, 然后在导体和水之间加试验电压)如用直流电压试验, 则所加电压应为表8工频电压值的2.4倍, 但建议不要直流电压试验。

AC voltage test of cable (routine test)

Cable of finished product can withstand AC voltage test 50Hz in table 8 (single-core cable dips in water of room temperature for 1 hour, then add testing voltage between conductor and water).

The voltage added shall be 2.4 times than the values of power frequency voltage in table 8 if adopting DC voltage test, however DC voltage test is not suggested.

表8 交流电压试验 Table 8 AC voltage test

额定电压 Rated voltage U <sub>0</sub> (kV)	0.6	1.8	3.6	6	8.7	21	26	21	26
试验电压 U Testing voltage U(kV)	3.5	6.5	12.5	21	30.5	73.5	91	53	65
试验加压时间 Time added in testing(min.)	5							30	

### 2.2.8.3 额定电压U<sub>0</sub>为3.6kV及以上电缆的局部放电试验(例行试验)

在1.73 U<sub>0</sub>电压下局部放电量不超过10pC。

Rated voltage U<sub>0</sub> is partial discharge test of cable from 3.6kV and above (routine test).

Partial discharge does not overpass 10pC under voltage of 1.73 U<sub>0</sub>.

### 2.2.8.4 XLPE绝缘热延伸试验(抽样试验)

XLPE insulation hot set test (sampling test)

表9 绝缘热延伸试验 Table 9 Insulation hot set test

热延伸试验 Hot set test	试验条件 Test condition	试验温度 Test temperature ( °C)	200
		载荷时间 Load time (min)	15
		机械应力 Mechanical stress (N/cm <sup>2</sup> )	20
	负载下允许最大伸长率 Allowable extending rate under load (%)		≤175
	冷却后最大永久伸长率 Max. eternal extending rate after cooling (%)		≤15

### 2.2.8.5 电缆绝缘线芯四小时交流电压试验(抽样试验)

将去掉外护套的绝缘线芯试样在室温水里浸1小时, 然后在导体和水之间施加表10规定工频电压并连续保持4小时, 其绝缘不击穿。

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4 hours AC voltage testing for cable insulation core (sampling test)

Dip the insulation core removed outer covering for 1 hour, then apply power frequency voltage in Table 10 between conductor and water, holding on for 4 hours, the insulation don't break.

表10 4小时交流电压试验 Table 10 AC voltage test for 4 hours

额定电压 Rated voltage $U_0$ (kV)	0.6	1.8	3.6	6	8.7	21	36
试验电压U Testing voltage U(kV)	2.4	7.2	14.4	24	34.8	84	104
试验加压时间 Time added in testing(min.)	4	4	4	4	4	4	4

## 2.2.9电缆参考外径及重量 Reference outer dia. and weight of cable

在表11~32给出最常用的YJV、YJLV、YJV22、YJLV22及YJV32、YJLV32型号电缆的参考外径及重量，供用户在储运、安装时参考。所有这些数据，均不属于标准考核的技术参数，不作验收内容。

The reference outer diameter and weight of common used cable type, such as YJV, YJLV, YJV22, YJLV22 and YJV32, YJLV32 are listed in table 11~32. All data are not technical parameter checked by standard, and not checked as contents.

表11 0.6/1 kV 单芯 Table 11 0.6/1 kV single core

芯数 Core No.	截面 section area mm <sup>2</sup>	外径 Outer diameter mm			重量 Weight kg/km					
		YJV,YJLV	YJV22,YJLV22	YJV32,YJLV32	YJV	YJLV	YJV22	YJLV22	YJV32	YJLV32
1	1.5	6.0	—	—	45	36	—	—	—	—
1	2.5	6.5	—	—	57	42	—	—	—	—
1	4	7.0	—	—	76	51	—	—	—	—
1	6	7.7	—	—	107	73	—	—	—	—
1	10	9.0	13.0	14.6	156	95	282	221	381	298
1	16	10.0	14.0	15.7	218	122	354	258	478	348
1	25	11.3	15.3	17.1	315	163	466	314	629	424
1	35	12.4	16.4	18.4	411	200	576	365	778	493
1	50	14.1	18.1	20.3	541	254	723	437	976	590
1	70	15.9	19.9	22.3	746	333	951	537	1284	725
1	95	17.4	21.4	24.0	993	419	1217	642	1643	867
1	120	19.4	23.2	26.0	1238	517	1473	753	1989	1017
1	150	21.6	25.2	28.2	1524	633	1772	881	2392	1189
1	185	23.6	27.2	30.5	1880	768	2151	1038	2904	1401
1	240	26.2	29.8	33.4	2434	970	2731	1268	3687	1712
1	300	28.8	32.2	36.1	3017	1183	3327	1493	4491	2016
1	400	32.6	36.2	40.5	3834	1494	4198	1858	5667	2508
1	500	36.2	41.0	45.9	4868	1875	5651	2658	7629	3588

表12 0.6/1 kV 2芯 Table 12 0.6/1 kV 2 cores

芯数 Core No.	截面 section area mm <sup>2</sup>	外径 Outer diameter mm			重量 Weight kg/km					
		YJV,YJLV	YJV22,YJLV22	YJV32,YJLV32	YJV	YJLV	YJV22	YJLV22	YJV32	YJLV32
2	1.5	10.0	13.2	—	124	—	243	—	—	—
2	2.5	10.8	14.0	—	155	124	280	250	—	—
2	4	11.7	14.9	20.1	197	148	329	281	368	315
2	6	12.7	15.9	21.5	250	179	389	320	436	358
2	10	15.3	18.5	25.0	369	246	538	417	603	467
2	16	17.5	20.7	27.9	519	322	692	498	775	558
2	25	20.0	23.2	31.3	738	433	931	625	1043	700
2	35	22.2	25.4	34.3	962	537	1166	740	1306	829
2	50	25.6	28.8	38.9	1274	699	1484	908	1662	1017
2	70	29.2	32.8	44.3	1752	921	1999	1169	2239	1309
2	95	32.6	36.0	48.6	2343	1188	2581	1426	2891	1597
2	120	37.0	41.6	56.2	2966	1518	3572	2124	4001	2379
2	150	41.2	46.2	62.4	3650	1860	4333	2543	4853	2848
2	185	45.4	50.6	68.3	4512	2276	5251	3015	5881	3377
2	240	50.6	56.0	75.6	5812	2871	6610	3669	7403	4109
2	300	55.8	61.0	82.4	7193	3506	7989	4302	8948	4818

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表13 0.6/1 kV 3芯 Table 13 0.6/1 kV 3 cores

芯数 Core No.	截面 section area mm <sup>2</sup>	外径 Outer diameter mm			重量 Weight kg/km					
		YJV,YJLV	YJV22,YJLV22	YJV32,YJLV32	YJV	YJLV	YJV22	YJLV22	YJV32	YJLV32
3	1.5	10.4	13.6	—	148	—	268	—	—	—
3	2.5	11.3	14.5	—	188	142	315	—	—	—
3	4	12.3	15.5	17.4	245	172	379	308	512	416
3	6	13.4	16.6	18.6	316	211	459	355	620	479
3	10	16.2	19.4	21.7	475	290	647	464	873	626
3	16	18.5	21.7	24.3	679	384	854	563	1153	760
3	25	21.3	24.5	27.4	993	527	1182	723	1596	976
3	35	19.4	22.6	25.3	1192	556	1398	762	1887	1029
3	50	22.9	26.3	29.5	1574	713	1823	962	2461	1299
3	70	26.0	29.4	32.9	2190	948	2471	1229	3336	1659
3	95	28.9	33.7	37.7	2947	1220	3581	1854	4834	2503
3	120	33.5	38.5	43.1	3708	1543	4436	2271	5989	3066
3	150	37.4	42.2	47.3	4572	1895	5359	2682	7235	3621
3	185	41.2	46.4	52.0	5685	2341	6581	3237	8884	4370
3	240	45.5	50.9	57.0	7367	2969	8360	3962	11286	5349
3	300	50.5	56.1	62.8	9185	3671	10287	4773	13887	6444

表14 0.6/1 kV 4芯 Table 14 0.6/1 kV 4 cores

芯数 Core No.	截面 section area mm <sup>2</sup>	外径 Outer diameter mm			重量 Weight kg/km					
		YJV,YJLV	YJV22,YJLV22	YJV32,YJLV32	YJV	YJLV	YJV22	YJLV22	YJV32	YJLV32
4	1.5	11.2	14.4	—	174	—	302	—	—	—
4	2.5	12.1	15.3	—	225	165	362	302	—	—
4	4	13.3	16.5	18.5	298	201	442	347	597	468
4	6	14.5	17.7	19.8	390	249	545	406	736	548
4	10	17.6	20.8	23.3	593	346	781	537	1054	725
4	16	20.2	23.4	26.2	857	464	1047	659	1413	890
4	25	23.3	26.5	29.7	1265	644	1469	857	1983	1157
4	35	22.8	26.2	29.3	1563	715	1813	965	2448	1303
4	50	26.2	29.6	33.2	2085	937	2359	1212	3185	1636
4	70	29.2	34.0	38.1	2897	1241	3526	1870	4760	2525
4	95	33.8	38.8	43.5	3916	1613	4659	2356	6290	3181
4	120	38.3	43.1	48.3	4915	2029	5711	2824	7710	3812
4	150	41.8	47.0	52.6	6035	2466	6938	3368	9366	4547
4	185	46.2	51.6	57.8	7515	3056	8527	4068	11511	5492
4	240	52.1	57.7	64.6	9737	3873	10896	5031	14710	6792
4	300	57.7	63.5	71.1	12105	4754	13403	6052	18094	8170

表15 0.6/1 kV 5芯 表15 0.6/1 kV 5 cores

芯数 Core No.	截面 section area mm <sup>2</sup>	外径 Outer diameter mm			重量 Weight kg/km					
		YJV,YJLV	YJV22,YJLV22	YJV32,YJLV32	YJV	YJLV	YJV22	YJLV22	YJV32	YJLV32
5	1.5	12.0	15.2	—	203	—	338	—	—	—
5	2.5	13.1	16.3	—	266	190	409	334	—	—
5	4	14.3	17.5	19.6	355	234	509	389	687	525
5	6	15.7	18.9	21.2	468	292	632	459	853	620
5	10	19.2	22.4	25.1	717	408	916	612	1237	826
5	16	22.1	25.3	28.3	1043	552	1245	760	1681	1026
5	25	25.5	28.7	32.1	1549	772	1762	997	2379	1346
5	35	28.5	31.9	35.7	2056	977	2287	1228	3087	1658
5	50	27.5	30.9	34.6	203	1119	2843	1408	3838	1901
5	70	31.2	36.0	40.3	2554	1516	4249	2178	5736	2940
5	95	35.6	40.4	45.2	3586	1981	5610	2732	7574	3688
5	120	39.2	44.4	49.7	4859	2464	6912	3303	9331	4459
5	150	43.8	49.2	55.1	6072	3020	8435	3974	11387	5365
5	185	49.0	54.6	61.2	7482	3786	10427	4853	14076	6552
5	240	54.1	60.1	67.3	9360	4767	13326	5995	17990	8093
5	300	59.5	65.7	73.6	12098	5835	16394	7205	22132	9727

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表16 0.6/1 kV 3+1芯 Table 16 0.6/1 kV 3+1 cores

芯数 Core No.	截面 section area mm <sup>2</sup>	外径 Outer diameter mm			重量 Weight kg/km					
		YJV,YJLV	YJV22,YJLV22	YJV32,YJLV32	YJV	YJLV	YJV22	YJLV22	YJV32	YJLV32
3	2.5+1 1.5	12.1	15.3	17.1	212	—	346	—	—	—
3	4+1 2.5	13.3	16.5	18.5	279	192	422	335	570	452
3	6+1 4	14.5	17.7	19.8	366	236	517	389	698	525
3	10+1 6	17.6	20.8	23.3	544	324	721	503	973	679
3	16+1 10	20.2	23.4	26.2	788	431	981	629	1324	849
3	25+1 16	23.3	26.5	29.7	1155	591	1360	803	1836	1084
3	35+1 16	24.0	27.2	30.5	1312	676	1633	900	2205	1215
3	50+1 25	27.1	30.3	33.9	1705	844	2141	1127	2890	1521
3	70+1 35	30.8	34.0	38.1	2338	1096	2890	1436	3902	1939
3	95+1 50	35.2	39.6	44.4	3147	1420	4180	2166	5643	2924
3	120+1 70	38.8	43.4	48.6	3934	1769	5250	2671	7088	3606
3	150+1 70	43.2	48.0	53.8	4793	2116	6189	3098	8355	4182
3	185+1 95	48.4	53.4	59.8	5996	2652	7685	3766	10375	5084
3	240+1 120	53.5	58.7	65.7	7704	3305	9751	4631	13164	6252
3	300+1 150	58.9	64.3	72.0	9625	4112	11998	5593	16197	7551

表17 0.6/1 kV 4+1芯 Table 17 0.6/1 kV 4+1 cores

芯数 Core No.	截面 section area mm <sup>2</sup>	外径 Outer diameter mm			重量 Weight kg/km					
		YJV,YJLV	YJV22,YJLV22	YJV32,YJLV32	YJV	YJLV	YJV22	YJLV22	YJV32	YJLV32
4	2.5+1 1.5	12.6	15.8	—	251	—	388	—	—	—
4	4+1 2.5	13.8	17.0	19	335	224	483	372	652	502
4	6+1 4	15.2	18.4	21	445	279	602	439	813	593
4	10+1 6	18.7	21.9	25	673	391	867	589	1170	795
4	16+1 10	21.6	24.8	28	983	528	1178	729	1590	984
4	25+1 16	25.0	28.2	32	1455	736	1664	955	2246	1289
4	35+1 16	26.5	29.9	33	1877	916	2105	1160	2842	1566
4	50+1 25	25.9	29.3	33	2128	980	2630	1329	3551	1794
4	70+1 35	28.9	33.7	38	2965	1308	3926	2057	5300	2777
4	95+1 50	33.7	38.5	43	4020	1717	5166	2577	6974	3479
4	120+1 70	38.0	43.2	48	5037	2150	6441	3140	8695	4239
4	150+1 70	41.7	47.1	53	6171	2602	7701	3719	10396	5021
4	185+1 95	46.1	51.7	58	7700	3241	9568	4533	12917	6120
4	240+1 120	52.0	58.0	65	9947	4083	12165	5578	16423	7530
4	300+1 150	57.6	63.8	71	12353	5002	14933	6690	20160	9032

表18 0.6/1 kV 3+2芯 Table 18 0.6/1 kV 3+2 cores

芯数 Core No.	截面 section area mm <sup>2</sup>	外径 Outer diameter mm			重量 Weight kg/km					
		YJV,YJLV	YJV22,YJLV22	YJV32,YJLV32	YJV	YJLV	YJV22	YJLV22	YJV32	YJLV32
3	2.5+2 1.5	12.3	15.5	—	238	—	372	—	502	—
3	4+2 2.5	13.5	16.7	18.7	318	215	462	360	624	486
3	6+2 4	14.9	18.1	20.3	423	269	576	424	778	572
3	10+2 6	18.4	21.6	24.2	632	376	824	572	1112	772
3	16+2 10	21.3	24.5	27.4	925	506	1118	705	1509	952
3	25+2 16	24.7	27.9	31.2	1364	702	1572	919	2122	1241
3	35+2 16	26.2	29.6	33.2	1692	848	1930	1101	2606	1486
3	50+2 25	25.6	29.0	32.5	1716	855	2418	1252	3264	1690
3	70+2 35	28.6	33.4	37.4	2367	1125	3611	1945	4875	2626
3	95+2 50	33.4	38.2	42.8	3201	1474	4726	2425	6380	3274
3	120+2 70	37.7	42.9	48.0	4014	1849	5971	2978	8061	4020
3	150+2 70	41.4	46.8	52.4	4887	2210	6969	3464	9408	4676
3	185+2 95	45.8	51.4	57.6	6081	2737	8727	4232	11781	5713
3	240+2 120	51.7	57.7	64.6	7828	3429	10970	5128	14810	6923
3	300+2 150	57.3	63.5	71.1	9710	4197	13416	6119	18112	8261

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表19 3.6/6 kV 1芯 Table 19 3.6/6 kV 1 cores

芯数 Core No.	截面 section area mm <sup>2</sup>	外径 Outer diameter mm			重量 Weight kg/km					
		YJV,YJLV	YJV22,YJLV22	YJV32,YJLV32	YJV	YJLV	YJV22	YJLV22	YJV32	YJLV32
1	25	17.0	20.5	23.0	582	427	806	651	1088	879
1	35	19.0	22.5	25.2	720	503	1008	791	1361	1068
1	50	21.0	24.5	27.4	856	546	1145	835	1546	1127
1	70	23.0	27.5	30.8	1080	646	1454	1020	1963	1377
1	95	25.0	29.0	32.5	1350	761	1747	1158	2358	1563
1	120	26.0	29.5	33.0	1610	866	1700	956	2295	1291
1	150	27.0	30.5	34.2	1920	990	2030	1100	2741	1485
1	185	29.0	33.5	37.5	2290	1143	2390	1243	3227	1678
1	240	32.0	36.5	40.9	2850	1362	2960	1472	3996	1987
1	300	35.0	39.5	44.2	3480	1620	3570	1710	4820	2309

表20 3.6/6 kV 3芯 Table 20 3.6/6 kV 3 cores

芯数 Core No.	截面 section area mm <sup>2</sup>	外径 Outer diameter mm			重量 Weight kg/km					
		YJV,YJLV	YJV22,YJLV22	YJV32,YJLV32	YJV	YJLV	YJV22	YJLV22	YJV32	YJLV32
3	25	37.0	42.0	47.0	1750	1285	2760	2295	3726	3098
3	35	39.0	44.0	49.3	2130	1479	3210	2559	4334	3455
3	50	42.0	47.0	52.6	3670	2740	3830	2900	5171	3915
3	70	46.0	51.0	57.1	3390	2088	4650	3348	6278	4520
3	95	50.0	55.0	61.6	4250	2483	5630	3863	7601	5215
3	120	53.0	58.0	65.0	5090	2858	6550	4318	8843	5829
3	150	57.0	62.0	69.4	6120	3330	7650	4860	10328	6561
3	185	60.0	66.0	73.9	7270	3829	8890	5449	12002	7356
3	240	66.0	71.0	79.5	8090	3626	10860	6396	14661	8635
3	300	72.0	78.0	87.4	11200	5620	11320	5740	15282	7749

表21 6/6 (10)kV 1芯 Table 21 6/6 (10)kV 1 cores

芯数 Core No.	截面 section area mm <sup>2</sup>	外径 Outer diameter mm			重量 Weight kg/km					
		YJV,YJLV	YJV22,YJLV22	YJV32,YJLV32	YJV	YJLV	YJV22	YJLV22	YJV32	YJLV32
1	25	20.4	22.5	25.2	601	449	863	708	1165	708
1	35	21.5	24.5	27.4	716	505	1036	819	1399	819
1	50	23.1	26.5	29.7	872	586	1244	934	1679	934
1	70	24.7	28.5	31.9	1099	686	1575	1141	2126	1141
1	95	26.4	30.0	33.6	1923	1349	1863	1274	2515	1274
1	120	28.0	32.0	35.8	1546	826	2145	1401	2896	1401
1	150	29.8	34.0	38.1	1939	1048	2496	1566	3370	1566
1	185	31.4	35.0	39.2	2305	1193	2894	1747	3907	1747
1	240	33.8	38.0	42.6	2885	1421	3728	2240	5033	2240
1	300	36.2	41.0	45.9	3492	1658	4335	2475	5852	2475

表22 6/6 (10)kV 3芯 Table 22 6/6 (10)kV 3 cores

芯数 Core No.	截面 section area mm <sup>2</sup>	外径 Outer diameter mm			重量 Weight kg/km					
		YJV,YJLV	YJV22,YJLV22	YJV32,YJLV32	YJV	YJLV	YJV22	YJLV22	YJV32	YJLV32
3	25	41.2	46.2	51.7	1927	1468	2883	2424	4092	3632
3	35	43.8	48.8	54.7	2314	1676	3313	2675	4629	3993
3	50	47.0	52.2	58.5	2802	1938	3871	3007	5296	4429
3	70	50.9	56.1	62.8	3568	2322	4761	3515	6333	5015
3	95	54.3	59.5	66.6	4449	2717	5749	4017	7430	5710
3	120	58.0	63.4	71.0	5291	3119	6036	3864	8495	6284
3	150	61.6	67.2	75.3	6229	3544	7705	5020	9598	6910
3	185	65.3	70.9	79.4	7415	4061	8992	5638	11073	7710
3	240	70.5	76.3	85.5	9259	4847	11007	6594	14009	9698
3	300	75.4	81.6	91.4	11156	5626	13064	7534	16329	10818

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表23 8.7/10 (15)kV 1芯 Table 23 8.7/10 (15)kV 1 core

芯数 Core No.	截面 section area mm <sup>2</sup>	外径 Outer diameter mm			重量 Weight kg/km					
		YJV,YJLV	YJV22,YJLV22	YJV32,YJLV32	YJV	YJLV	YJV22	YJLV22	YJV32	YJLV32
1	25	22.8	26.0	29.1	694	542	985	830	1330	1121
1	35	23.9	27.5	30.8	813	601	1152	935	1555	1262
1	50	25.5	28.5	31.9	975	688	1377	1067	1859	1440
1	70	27.1	30.0	33.6	1208	795	1720	1286	2322	1736
1	95	28.6	32.0	35.8	1486	911	2018	1429	2724	1929
1	120	30.4	33.0	37.0	1760	1039	2310	1566	3119	2114
1	150	32.0	35.0	39.2	2052	1162	2669	1739	3603	2348
1	185	33.6	37.0	41.4	2424	1312	3065	1918	4138	2589
1	240	36.2	39.0	43.7	3028	1565	3917	2429	5288	3279
1	300	38.4	41.5	46.5	3627	1793	4542	2682	6132	3621

表24 8.7/10 (15)kV 3芯 Table 24 8.7/10 (15)kV 3 cores

芯数 Core No.	截面 section area mm <sup>2</sup>	外径 Outer diameter mm			重量 Weight kg/km					
		YJV,YJLV	YJV22,YJLV22	YJV32,YJLV32	YJV	YJLV	YJV22	YJLV22	YJV32	YJLV32
3	25	46.4	51.6	57.8	2259	1800	3398	2939	4587	3968
3	35	49.0	54.2	60.7	2664	2026	3924	3286	5297	4436
3	50	52.2	57.4	64.3	3175	2311	4516	3652	6097	4930
3	70	55.8	61.4	68.8	3939	2693	5423	4177	7321	5639
3	95	59.3	65.1	72.9	4847	3115	6382	4650	8616	6278
3	120	62.9	68.7	76.9	5707	3536	7331	5159	9897	6965
3	150	66.6	72.6	81.3	6674	3989	8424	5739	11372	7748
3	185	70.3	76.5	85.7	7884	4530	9763	6409	13180	8652
3	240	75.4	81.8	91.6	9755	5344	11803	7391	15934	9978
3	300	80.6	88.2	98.8	11726	6196	14757	9227	19922	12456

表25 12/20kV 1芯 Table 25 12/20kV 1 core

芯数 Core No.	截面 section area mm <sup>2</sup>	外径 Outer diameter mm			重量 Weight kg/km					
		YJV,YJLV	YJV22,YJLV22	YJV32,YJLV32	YJV	YJLV	YJV22	YJLV22	YJV32	YJLV32
1	35	26.1	28.6	32.0	910	698	81244	1029	1679	1389
1	50	27.5	29.9	33.5	1065	779	1414	1124	1909	1517
1	70	29.3	31.6	35.4	1316	902	1679	1263	2267	1705
1	95	30.8	33.4	37.4	1598	1024	2001	1424	2701	1922
1	120	32.6	35.0	39.2	1879	1159	2297	1572	3101	2122
1	150	34.2	37.8	42.3	2177	1287	2983	2084	4027	2813
1	185	36.0	39.6	44.4	2570	1458	3416	2294	4612	3097
1	240	38.2	42.0	47.0	3150	1687	4092	2604	5524	3515
1	300	40.6	44.6	50.0	3774	1940	4810	2943	6494	3973

表26 12/20kV 3芯 Table 26 12/20kV 3 cores

芯数 Core No.	截面 section area mm <sup>2</sup>	外径 Outer diameter mm			重量 Weight kg/km					
		YJV,YJLV	YJV22,YJLV22	YJV32,YJLV32	YJV	YJLV	YJV22	YJLV22	YJV32	YJLV32
3	35	53.5	58.9	66.0	2995	2357	4330	3692	5846	4984
3	50	56.7	62.3	69.8	3525	2661	4965	4102	6703	5538
3	70	60.4	66.2	74.1	4315	3069	5878	4632	7935	6253
3	95	64.0	69.8	78.2	5267	3535	6917	5184	9338	6998
3	120	67.7	73.7	82.5	6156	3985	7932	5760	10708	7776
3	150	71.3	77.3	86.6	7140	4455	9007	6322	12159	8535
3	185	75.0	81.0	90.7	8373	5019	10336	6982	13954	9426
3	240	80.1	87.7	98.2	10278	5866	13286	8874	17936	11980
3	300	85.1	93.1	104.3	12243	6713	15519	9989	20951	13485

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表27 18/30kV 1芯 Table 27 18/30kV 1 core

芯数 Core No.	截面 section area mm <sup>2</sup>	外径 Outer diameter mm			重量 Weight kg/km					
		YJV,YJLV	YJV22,YJLV22	YJV32,YJLV32	YJV	YJLV	YJV22	YJLV22	YJV32	YJLV32
1	50	31.9	35.3	39.5	1362	1072	1769	1479	2388	1997
1	70	33.6	38.4	43.0	1621	1204	2427	2010	3276	2714
1	95	35.4	40.0	44.8	1936	1360	2764	2187	3731	2952
1	120	36.8	41.6	46.6	2212	1486	3091	2366	4173	3194
1	150	38.6	43.4	48.6	2552	1653	3472	2573	4687	3474
1	185	40.2	45.2	50.6	2943	1821	3923	2801	5296	3781
1	240	42.6	47.6	53.3	3586	2098	4621	3133	6238	4230
1	300	45.0	50.0	56.0	4249	2382	5340	3473	7209	4689

表28 18/30kV 3芯 Table 28 18/30kV 3 cores

芯数 Core No.	截面 section area mm <sup>2</sup>	外径 Outer diameter mm			重量 Weight kg/km					
		YJV,YJLV	YJV22,YJLV22	YJV32,YJLV32	YJV	YJLV	YJV22	YJLV22	YJV32	YJLV32
3	50	67.4	73.4	82.2	4679	3804	6620	5745	8937	7756
3	70	71.3	77.5	86.8	5562	4305	7651	6394	10329	8632
3	95	75.0	82.6	92.5	6572	4832	9696	7956	13090	10741
3	120	78.4	86.0	96.3	7535	5347	10796	8608	14575	11621
3	150	82.1	89.9	100.7	8626	5914	12083	9371	16312	12651
3	185	85.7	93.5	104.7	9923	6538	13527	10142	18261	13692
3	240	90.7	98.9	110.8	11967	7478	15874	11386	21430	15371
3	300	95.8	104.2	116.7	14111	8482	18283	12654	24682	17083

表29 21/35kV 1芯 Table 29 21/35kV 1 core

芯数 Core No.	截面 section area mm <sup>2</sup>	外径 Outer diameter mm			重量 Weight kg/km					
		YJV,YJLV	YJV22,YJLV22	YJV32,YJLV32	YJV	YJLV	YJV22	YJLV22	YJV32	YJLV32
1	50	34.7	39.3	44.0	1532	1241	2343	2053	3163	2772
1	70	36.4	41.2	46.1	1798	1381	2668	2251	3602	3039
1	95	38.2	43.0	48.2	2122	1545	3033	2456	4095	3316
1	120	39.6	44.6	50.0	2403	1678	3368	2643	4547	3568
1	150	41.4	46.2	51.7	2752	1853	3736	2837	5044	3830
1	185	43.0	48.0	53.8	3150	2028	4194	3072	5662	4147
1	240	45.4	50.6	56.7	3804	2316	4928	3440	6653	4644
1	300	47.8	52.8	59.1	4477	2611	5633	3767	7605	5085
1	400	51.2	56.4	63.2	5527	3059	6790	4322	9167	5835
1	500	56.8	62.4	69.9	6863	3853	8320	5310	11232	7169

表30 21/35kV 3芯 Table 30 21/35kV 3 cores

芯数 Core No.	截面 section area mm <sup>2</sup>	外径 Outer diameter mm			重量 Weight kg/km					
		YJV,YJLV	YJV22,YJLV22	YJV32,YJLV32	YJV	YJLV	YJV22	YJLV22	YJV32	YJLV32
3	50	73.5	79.7	89.3	5320	4445	7471	6596	10086	8905
3	70	77.3	85.1	95.3	6229	4972	9489	8232	12810	11113
3	95	81.0	89.0	99.7	7269	5530	10726	8986	14480	12131
3	120	84.2	92.2	103.3	8223	6035	11812	9624	15946	12992
3	150	88.1	96.1	107.6	9384	6672	13134	10422	17731	14070
3	185	91.7	99.7	111.7	10711	7326	14610	11225	19724	15154
3	240	96.7	105.1	117.7	12796	8307	17007	12519	22959	16901
3	300	101.8	110.4	123.6	14983	9354	19465	13836	26278	18679



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表31 26/35kV 1芯 Table 31 26/35kV 1 core

芯数 Core No.	截面 section area mm <sup>2</sup>	外径 Outer diameter mm			重量 Weight kg/km					
		YJV,YJLV	YJV22,YJLV22	YJV32,YJLV32	YJV	YJLV	YJV22	YJLV22	YJV32	YJLV32
1	50	39.1	42.1	47.2	1684	1394	2591	2301	3498	3106
1	70	40.7	43.8	49.1	1974	1558	2904	2487	3920	3357
1	95	42.4	45.6	51.1	2287	1710	3276	2699	4423	3644
1	120	44.0	47.2	52.9	2593	1868	3618	2893	4884	3906
1	150	45.8	49.0	54.9	2929	2030	4016	3117	5422	4208
1	185	47.6	50.8	56.9	3354	2232	4484	3362	6053	4539
1	240	49.8	53.0	59.4	4018	2530	5179	3691	6992	4983
1	300	52.2	55.6	62.3	4679	2813	5945	4079	8026	5507
1	400	55.6	59.0	66.1	5741	3273	7090	4622	9572	6240
1	500	59.4	65.0	72.8	7111	4101	8632	5622	11653	7590

表32 26/35kV 3芯 Table 32 26/35kV 3 cores

芯数 Core No.	截面 section area mm <sup>2</sup>	外径 Outer diameter mm			重量 Weight kg/km					
		YJV,YJLV	YJV22,YJLV22	YJV32,YJLV32	YJV	YJLV	YJV22	YJLV22	YJV32	YJLV32
3	50	79.0	86.8	97.2	5953	5078	9281	8406	12529	11348
3	70	82.9	90.9	101.8	6898	5642	10432	9537	14083	12875
3	95	86.6	94.8	106.2	7968	6228	11703	10342	15799	13962
3	120	89.8	98.0	109.8	8947	6759	12816	11021	17302	14878
3	150	93.5	101.9	114.1	10095	7384	14171	11869	19131	16023
3	185	97.3	105.5	118.2	11494	8109	15678	12720	21165	17172
3	240	102.3	110.9	124.2	13617	9129	18121	14083	24463	19012
3	300	107.4	116.2	130.1	15845	10216	20625	15469	27844	20883

## 2.2.10 交联聚乙烯绝缘电力电缆连续负荷载流量及短路电流

Continuous load current rating and short circuit current of XLPE insulated power cable

2.2.10.1 本手册提供了依据IEC-287(1982-1991)计算所得交联聚乙烯绝缘电力电缆在特定环境条件下连续负荷(负荷因数100%)载流量参考基准。电缆在实际运行环境条件下的载流量,须按下述表33~36修正系数予以修正。

Reference benchmark of current rating is supplied according to IEC-287 (1982-1991) for XLPE insulated power cable under special condition of continuous load (load factor 100%) in this manual. The current rating of cable under real operation condition must be corrected as factors in table 33~36.

表33 不同空气温度下载流量修正系数

Table 33 Correct factors of current rating under different air temperature

导体工作温度 Working temp. of conductor °C	空气温度 Air temperature °C								
	10	15	20	25	30	35	40	45	50
90	1.26	1.22	1.18	1.14	1.09	1.04	1.00	0.94	0.89

表34 不同土壤温度下载流量修正系数

Table 34 Correct factors of current rating under different soil temperature

导体工作温度 Working temp. of conductor °C	土壤温度 Soil temperature °C					
	10	15	20	25	30	35
90	1.11	1.07	1.04	1.00	0.96	0.92

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表35 不同土壤热阻系数的载流量修正系数

Table 35 Correct factors of current rating under different soil thermal factor









电压 Voltage(kV)	截面 Section area(mm <sup>2</sup> )	土壤热阻系数 Soil thermal factor (k.m/W)				
		0.8	1.0	1.2	1.5	2.0
0.6/1~6/6	≤35	1.06	1.00	0.95	0.88	0.80
	50~150	1.08	1.00	0.94	0.87	0.77
	≥185	1.09	1.00	0.93	0.85	0.76
6/10~8.7/15	≤35	1.05	1.00	0.95	0.89	0.80
	50~150	1.06	1.00	0.94	0.88	0.79
	≥185	1.07	1.00	0.93	0.86	0.77
12/20~26/35	≤95	1.05	1.00	0.95	0.90	0.82
	≥120	1.06	1.20	0.94	0.83	0.80

注：本表修正系数仅适于载流量表中未发生水分迁移土壤热阻系数  $\rho_w$  栏下的载流量的修正。

Note: the table is used only for the correction of current rating, under the column of soil thermal factor where water change has not happened.

表36 空气中电缆(电线)并列敷设时载流量修正系数

Table 36 Correct factors of current rating for cable (wire) parallel laying

电缆排列 cable arrangement	$\frac{e}{D_c}$ =(值 value)	修正系数 correct factor	
多芯电缆 multiple cores cable		<0.5	0.89
	○ ○ ○	<0.75	0.84
单芯电缆 single core cable		<1.0	0.93
		<1.5	0.92
多芯电缆 multiple cores cable	○	<1.9~1.5	0.99
	○	<1.4~1.0	0.97
	○	<0.5	0.90
	○	4~3	0.99
	○	2.9~2.0	0.97
	○	1.9~1.0	0.94
多芯电缆组 multiple cores cable group		3.9~3.0	0.99
		2.9~2.0	0.98
		1.9~1.0	0.96
		<0.5	0.88
多芯电缆靠墙敷设 multiple cores laying by wall		<0.5	0.93

注：单芯电缆组以载流量表中三角形排列下的载流量为基准。

Notes: Single core group takes the current rating quantity of tri-angle arrangement as benchmark in the table.

## 2.2.10.2 电缆连续负载流量

### Continuous load current rating quantity of cable

说明 Notes:

1. 铠装电缆YJV22、YJLV22、YJV32、YJLV32、YJV23、YJLV23、YJV33、YJLV33的连续负载流量分别比相应结构无铠同规格电缆的载流量小3~10A，本手册未列出铠装电缆载流量，请用户据此估算。

Continuous load current rating quantity of armor cable YJV22, YJLV22, YJV32, YJLV32, YJV23, YJLV23, YJV33, YJLV33 is smaller 3~10A than that without armor with the same specifications, the manual does not give the current rating quantity of armor cable, the customer can make calculation by this.

2. 以下各表中，单芯电缆扁平形排列方式，相邻电缆中心轴间距离等于电缆外径的2倍。

In the following table, flat arrangement of single core cable and the distance between central axis of neighboring cable equals 2 times than outer diameter of cable.

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表37 0.6/1kV~1.8/3kV交联聚乙烯绝缘电力电缆允许持续载流量 (A)  
Table 37 Allowable continuous current rating quantity of 0.6/1kV~1.8/3kV for XLPE insulated power cable

型号 Model	YJV,YJLV,YJY,YJLY				YJV,YJLV,YJY,YJLY							
芯数 Core No.	2,3,3+1,3+2,4+1,5 芯 cores				单芯 Single sore							
敷设 Laying	空气中 In air				土壤中 In soil							
单芯电缆排列方式 Arrangement of single core cable	空气中 In air				土壤中 In soil							
线芯材质 Material of core	铜 Cu	铝 Al	铜 Cu	铝 Al	铜 Cu	铝 Al	铜 Cu	铝 Al	铜 Cu	铝 Al	铜 Cu	铝 Al
标称截面 Norm.section mm <sup>2</sup>	1.5	20	/	31	/	26	/	32	/	33	/	35
	2.5	27	21	41	32	34	26	42	33	43	32	46
	4	35	28	53	42	44	35	56	44	56	42	59
	6	45	36	66	54	56	45	70	57	70	54	74
	10	63	49	90	69	77	59	97	75	94	69	99
	16	84	65	117	91	100	78	125	99	120	90	128
	25	113	88	151	117	130	100	165	125	155	115	164
	35	139	108	181	140	160	125	200	155	185	135	197
	50	161	125	210	163	195	150	245	190	220	165	232
	70	204	158	257	200	245	190	305	240	270	200	285
	95	252	195	310	240	300	230	375	290	320	240	342
	120	291	226	351	273	349	270	435	340	365	275	388
	150	333	258	393	305	400	310	500	390	410	310	436
	185	385	299	445	346	465	360	580	450	465	355	496
	240	457	356	516	402	550	430	685	535	540	410	577
	300	527	410	583	454	635	495	795	615	610	465	654
	400	600	475	645	510	745	590	930	730	695	535	749
	500	—	—	—	—	860	685	1080	850	780	610	858
630	—	—	—	—	990	800	1250	1000	880	695	981	
环境温度 Surrounding temp.(°C)	40				25				40			
线芯最高工作温度 Max. temp. of core(°C)	90											

表38 3.6/6kV~12/20kV交联聚乙烯绝缘电力电缆允许持续载流量 (A)  
Table 38 Allowable continuous current rating quantity of 3.6/6kV~12/20kV XLPE insulated power cable

型号 Model	YJV,YJLV,YJY,YJLY				YJV,YJLV,YJY,YJLY							
芯数 Core No.	3芯 cores				单芯 Single sore							
敷设 Laying	空气中 In air				土壤中 In soil							
单芯电缆排列方式 Arrangement of single core cable	空气中 In air				土壤中 In soil							
线芯材质 Material of core	铜 Cu	铝 Al	铜 Cu	铝 Al	铜 Cu	铝 Al	铜 Cu	铝 Al	铜 Cu	铝 Al	铜 Cu	铝 Al
标称截面 Norm.section mm <sup>2</sup>	25	120	90	125	100	140	110	165	130	150	115	160
	35	140	110	155	120	170	135	205	155	180	135	190
	50	165	130	180	140	205	160	245	190	215	160	225
	70	210	165	220	170	260	200	305	235	265	200	275
	95	255	200	265	210	315	240	370	290	315	240	330
	120	290	225	300	235	360	280	430	335	360	270	375
	150	330	255	340	260	410	320	490	380	405	305	425
	185	375	295	380	300	470	365	560	435	455	345	480
	240	435	345	435	345	555	435	665	515	530	400	555
	300	493	390	485	390	640	500	765	595	595	455	630
	400	565	450	520	440	745	585	890	695	680	520	725
500	—	—	—	—	855	680	1030	810	765	595	825	
环境温度 Surrounding temp.(°C)	40				25				40			
线芯最高工作温度 Max. temp. of core(°C)	90											

# 电线电缆类

表39 18/30kV~26/35kV交联聚乙烯绝缘电力电缆允许持续载流量 (A)

Table 39 Allowable continuous current rating quantity of 18/30kV~26/35kV XLPE insulated power cable

型号 Model	YJV,YJLV,YJY,YJLY				YJV,YJLV,YJY,YJLY											
芯数 Core No.	3芯 cores				单芯 Single sore											
敷设 Laying	空气中 In air				土壤中 In soil											
单芯电缆排列方式 Arrangement of single core cable	空气中 In air				土壤中 In soil											
线芯材质 Material of core	铜 Cu		铝 Al		铜 Cu		铝 Al		铜 Cu		铝 Al					
标称截面 Norm.section mm <sup>2</sup>	50	185	145	200	170	220	170	245	190	215	165	225	175			
	70	230	190	250	190	270	210	305	235	265	200	275	215			
	95	280	215	300	230	330	255	370	285	315	240	330	255			
	120	310	240	330	255	375	290	425	330	360	270	375	290			
	150	360	280	380	295	425	330	485	375	400	305	420	325			
	185	400	310	425	330	485	380	555	430	455	345	475	370			
	240	470	365	490	380	560	435	650	505	525	400	555	430			
	300	540	430	555	435	650	510	745	580	595	455	630	490			
	400	610	485	625	500	760	595	870	680	680	525	720	565			
	500	—	—	—	—	875	690	1000	790	775	600	825	645			
630	—	—	—	—	1000	800	1160	920	875	685	940	740				
环境温度 Surrounding temp.(°C)	40				25				40				25			
线芯最高工作温度 Max. temp. of core(°C)	90															

## 2.2.10.3 短路电流 Short circuit current

### 2.2.10.3.1 导体的允许短路电流 Allowable short circuit current of conductor

表40 铜铝导体短路电流(kA)(短路时间1秒)

Table 40 Short circuit current of Cu & Al conductor(kA)(short circuit time 1s)

导体截面 Conductor section area mm <sup>2</sup>	铜 Cu					铝 Al				
	短路起始温度 Initial temp. of short circuit					短路起始温度 Initial temp. of short circuit				
	35	50	65	80	90	35	50	65	80	90
10	1.81	1.73	1.64	1.57	1.51	1.19	1.13	1.00	1.03	0.986
16	2.87	2.74	2.60	2.49	2.39	1.88	1.80	1.71	1.63	1.56
25	4.45	4.24	4.03	3.85	3.69	2.91	2.78	2.65	2.52	2.42
35	6.20	5.91	5.62	5.37	5.15	4.06	3.88	3.70	3.52	3.37
50	8.81	8.40	7.98	7.62	7.31	5.77	5.51	5.25	5.00	4.79
70	12.30	11.7	11.1	10.6	10.2	8.04	7.69	7.33	6.97	6.68
95	16.60	15.8	15.0	14.4	13.8	10.9	10.4	9.9	9.42	9.03
120	20.90	19.9	19.0	18.1	17.4	13.7	13.1	12.5	11.9	11.4
150	26.10	24.9	23.7	22.6	21.7	17.1	16.3	15.6	14.8	14.2
185	32.10	30.6	29.1	27.8	26.7	21.1	20.1	19.2	18.2	17.5
240	41.60	39.7	37.7	36.0	34.6	27.3	26.0	24.8	23.6	22.6
300	51.90	49.5	47.1	44.9	43.1	34.0	32.5	31.0	29.5	28.2
400	69.10	65.9	62.2	59.8	57.4	45.2	43.2	41.2	39.2	37.6
500	86.40	82.3	78.3	74.7	71.7	56.6	54.0	51.5	49.0	47.0
630	107.0	102.0	96.9	92.5	88.8	70.0	66.9	63.8	60.6	58.0
$I_k = I_k$	$I_k$ 秒钟短路电流	I11秒钟短路电流				$I_k$ 秒钟短路电流				
$I_k = I_k$	$I_k$ s short circuit current	I11 short circuit current				$I_k$ short circuit current				

### 2.2.10.3.2 金属屏蔽/金属护套允许短路电流(单位:kV)

Allowable short circuit current of metal shield/metal sheath(unit:kV)

表41 35 kV及以下铜带屏蔽电缆 Table 41 35 kV and below Cu tape shield cable

导体标称截面 Conductor nominal section area mm <sup>2</sup>	回路 Circuit		
	1	2	3
单芯电缆 Single core cable	0.204a	0.173a	0.141a
三芯单芯电缆 3 cores single core cable	0.248a	0.194a	0.158a

注：表中a铜带屏蔽有效截面(mm<sup>2</sup>) Notes: a- Effective section of Cu tape shield(mm<sup>2</sup>)

# ELECTRIC WIRES & CABLE

## 2.3 0.6/1kV聚氯乙烯绝缘电力电缆 0.6/1kV PVC Insulated Power Cable

执行标准 Executive standards

本标准按照GB/T12706-2002《额定电压1kV(Um=1.2 kV)到35kV(Um=40.5 kV)挤包绝缘电力电缆及附件》设计制造。

The product is designed and made by GB/T12706-2002《Cables with Extruded Insulation and their Accessories for Rated Voltage 1kV(Um=1.2 kV)to 35kV(Um=40.5 kV)》

### 2.3.1 型号及名称 Model and It's Name

表42 型号和名称 Table 42 Model and Designation

型号 Model	名称 Name	适用场合 Application places
VV VLV	聚氯乙烯绝缘聚氯乙烯护套电力电缆 PVC Insulated PVC Sheathed Power Cable	
VY VLY	聚氯乙烯绝缘聚乙烯护套电力电缆 PVC Insulated PE Sheathed Power Cable	敷设在室内、隧道、电缆沟及管道中，电缆不能承受外力作用。耐火电缆适用于防火要求高的场所。
Z-VV Z-VLV	聚氯乙烯绝缘聚氯乙烯护套阻燃电力电缆 PVC Insulated PVC Sheathed flame-retardant Power Cable	Laying in room, tunnel, cable trench and pipes. Cable doesn't withstand outer action. Fire-resistant cable is used for places with high requirements.
DDZA-VV DDZA-VLV	聚氯乙烯绝缘聚氯乙烯护套低烟低卤阻燃电力电缆 PVC Insulated PVC Sheathed Low Smoke & Halogen flame-retardant Power Cable	
N-VV	聚氯乙烯绝缘聚氯乙烯护套耐火电力电缆 PVC Insulated PVC Sheathed Fire-resistant Power Cable	
VV22 VLV22	聚氯乙烯绝缘聚氯乙烯护套钢带铠装电力电缆 PVC Insulated PVC Sheathed St. Tape Armored Power Cable	
Z-VV22 Z-VLV22	聚氯乙烯绝缘聚氯乙烯护套钢带铠装阻燃电力电缆 PVC Insulated PVC Sheathed St. Tape Armored Fire-resistant Power Cable	敷设在地下，电缆能承受外力作用，但不能承受大的拉力。阻燃电缆适用于要求阻燃的场所。耐火电缆适用于防火要求高的场所。
DDZA-VV22 DDZA VLV22	聚氯乙烯绝缘聚氯乙烯护套钢带铠装低烟低卤阻燃电力电缆 PVC Insulated PVC Sheathed St. Tape Armored Low Smoke & Halogen flame-retardant Power Cable	Laying under earth, cable can withstand outer action, but can not withstand large pulling. Flame-retardant cable is used for places with requirement. fire-resistant cable is for place with requirement.
N-VV22	聚氯乙烯绝缘聚氯乙烯护套钢带铠装耐火电力电缆 PVC Insulated PVC Sheathed St. Tape Armor Fire-resistant Power Cable	
VV23 VLV23	聚氯乙烯绝缘聚乙烯护套钢带铠装电力电缆 PVC Insulated PE Sheathed St. Tape Armored Power Cable	
VV32 VLV32	聚氯乙烯绝缘聚氯乙烯护套细钢丝铠装电力电缆 PVC Insulated PVC Sheathed Thin st. Wires Armored Power Cable	
Z-VV32 Z-VLV32	聚氯乙烯绝缘聚氯乙烯护套细钢丝铠装阻燃电力电缆 PVC Insulated PVC Sheathed Thin st. Wires Armored flame-retardant Power Cable	敷设在室内，矿井及水中，电缆能承受外力作用和相当的拉力。阻燃电缆适用于要求阻燃的场所。耐火电缆适用于防火要求高的场所。
N-VV32	聚氯乙烯绝缘聚氯乙烯护套细钢丝铠装耐火电力电缆 PVC Insulated PVC Sheathed Thin st. Wires Armored Fire-resistant Power Cable	Laying in room, mine and water, which can withstand outer action and pulling. Flame-retardant cable is for places with requirement. Fire-resistant cable is for places with requirement.
VV33 VLV33	聚氯乙烯绝缘聚乙烯护套细钢丝铠装电力电缆 PVC Insulated PE Sheathed Thin st. Wires Armored Power Cable	
VV42 VLV42	聚氯乙烯绝缘聚氯乙烯护套粗钢丝铠装电力电缆 PVC Insulated PVC Sheathed thick st. Wires Armored Power Cable	
Z-VV42 Z-VLV42	聚氯乙烯绝缘聚氯乙烯护套粗钢丝铠装阻燃电力电缆 PVC Insulated PVC Sheathed Thick st. Wires Armored flame-retardant Power Cable	
N-VV42	聚氯乙烯绝缘聚氯乙烯护套粗钢丝铠装耐火电力电缆 PVC Insulated PVC Sheathed Thick st. Wires Armored Fire-resistant Power Cable	

# 电线电缆类

型号说明 Model Explanation

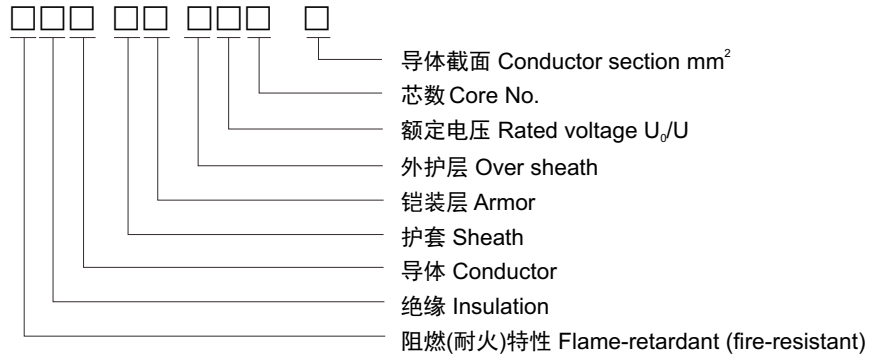


表43型号说明 Table 43 Model explanation

项目 Items	代号 Code (省略)(omitted)	说明 Notes
阻燃特性 Flame- retardant	Z	非阻燃 Non flame-retardant
	WD	阻燃, 分 A、B、C Flame- retardant, into A,B,C
	DD	低烟无卤 Low smoke, no-halogen
耐火特性 Fire-resistant	N	低烟低卤 Low smoke, low halogen
绝缘 Insulation	V	耐火 Fire resistant
导体 Conductor	T(省略)(Omitted)	聚氯乙烯 PVC
	L	铜芯 Cu. core
	V	铝芯 Al. core
护套或内护套 Sheath or inner sheath	V	聚氯乙烯 PVC
	Y	聚烯烃 Polyolefin
		聚乙烯 PE
铠装层 Armor	2	带铠装 With armor
	3	细钢丝铠装 thin St. wire armor
	4	粗钢丝铠装 thick St. wire armor
外护层 Outer covering	2	聚氯乙烯 PVC
	3	聚乙烯 PE

### 2.3.2规格 Specifications

表44 规格 Table 44 Specification

型号 Model	芯数 Core No.	截面 Section area mm <sup>2</sup>	
		铜Cu	铝Al
VV,VLV,Z-VV,Z-VLV,VV22VV32,VV42, VLV22,VLV32,VLV42,N-VV22,N-VV32, N-VV42,Z-VV22,Z-VV32,Z-VV42, Z-VLV22,Z-VLV32,Z-VLV42	1		
	2		
	3	1.5~400	6~300
	3+1	2.5~300	
VV,VLV,Z-VV,Z-VLV,VV22,VV32,VV42,VLV22, VLV32,VLV42,N-VV22,N-VV32,N-VV42,Z-VV22, Z-VV32,Z-VV42,Z-VLV22,Z-VLV32,Z-VLV42	4		
	5	1.5~400	6~300
	4+1	2.5~300	
	3+2		

### 2.3.3 使用特性 Operation Features

2.3.3.1 额定电压U<sub>0</sub>/U为0.6/1kV。 Rated voltage U<sub>0</sub>/U is 0.6/1kV.

2.3.3.2 正常运行时导体最高温度为70℃，短路时(最长持续时间不超过5s)电缆导体的最高温度不超过160℃。  
Max.temperature of conductor is 70℃ in normal operation (Max.continuous time ≤5s,that for cable conductor does not overpass 160℃. .

2.3.3.3 导体直流电阻符合GB/T3956-1997的规定。

DC resistance of conductor agree with the specifications of GB/T3956-1997.

2.3.3.4 安装时的环境温度应不低于0℃，最小弯曲半径。

Surrounding temperature shall not lower than 0℃ in installing, Min. bending radius refers to table 45.

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表45 最小弯曲半径 Table 45 Max. bending radius

项目 Items	单芯电缆 Single core cable		多芯电缆 Multiple core cable	
	无铠装 No armor	有铠装 With armor	无铠装 No armor	有铠装 With armor
安装时电缆最小弯曲半径 Min. bending radius of cable in fitting	20D	15D	15D	12D
靠近连接盒和终端电缆的最小弯曲半径 Min. Bending radius of close with connection box and terminal cable	15D	12D	12D	10D

注：D—电缆外径 Notes: D—Outer diameter of cable

2.3.3.5 电缆敷设不受落差限制。Cable laying is not limited by the fall.

2.3.3.6 AC 交流电压试验 Voltage testing:

工频试验电压为 $2.5U_0+2kV$ ，5min不击穿。AC voltage is  $2.5U_0+2kV$ , no puncture within 5 min.

2.3.3.7 阻燃特性 Flame-retardant

阻燃性能符合GB/T19666-2005表4 成束阻燃性能要求的规定。

Flame-retardent agree with the specification of bundle feature for GB/T19666-2005 in table 4.

低烟低卤性能符合GB/T19666-2005表6 无卤性能要求和表7 低烟性能要求的规定。

Low smoke and low halogen feature agree with the requirement of GB/T19666-2005 in table 6 and the specifications in table 7.

2.3.3.8 耐火特性 Fire-resistant

耐火特性符合GB/T19666-2005表5 耐火性能要求的规定。

Fire resistant talies with the specifications of GB/T19666-2005 fire resistant in table 5.

2.3.4 聚氯乙烯绝缘电力电缆生产范围 Manufacturing scope of PVC insulated power cable

表46 生产范围 Table 46 Manufacturing scope

		导体标称截面 Conductor nominal section area mm <sup>2</sup>
VV VLV VY VLY	1	1.5~400
VV22 VLV22 VV23 VLV23		10~400
VV32 VLV32 VV33 VLV33		10~400
VV42 VLV42 VV43 VLV43		
VV VLV VY VLY	3	1.5~300
VV22 VLV22 VV23 VLV23		1.5~300
VV32 VLV32 VV33 VLV33		4~300
VV42 VLV42 VV43 VLV43		4~300
VV VLV VY VLY	2	1.5~300
VV22 VLV22 VV23 VLV23		1.5~300
VV32 VLV32 VV33 VLV33		4~300
VV42 VLV42 VV43 VLV43		10~300
VV VLV VY VLY	3+1	1.5~300
VV22 VLV22 VV23 VLV23		1.5~300
VV32 VLV32 VV33 VLV33		4~300
VV42 VLV42 VV43 VLV43		4~300
VV VLV VY VLY	4	1.5~300
VV22 VLV22 VV23 VLV23		1.5~300
VV32 VLV32 VV33 VLV33		4~300
VV42 VLV42 VV43 VLV43		4~300
VV VLV VY VLY	3+2	1.5~300
VV22 VLV22 VV23 VLV23		1.5~300
VV32 VLV32 VV33 VLV33		4~300
VV42 VLV42 VV43 VLV43		4~300
VV VLV VY VLY	4+1	1.5~300
VV22 VLV22 VV23 VLV23		1.5~300
VV32 VLV32 VV33 VLV33		4~300
VV42 VLV42 VV43 VLV43		4~300
VV VLV VY VLY	5	1.5~300
VV22 VLV22 VV23 VLV23		1.5~300
VV32 VLV32 VV33 VLV33		4~300
VV42 VLV42 VV43 VLV43		4~300

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## 2.3.5 电缆结构及技术参数 Cable structure and technical parameter

2.3.5.1 导体应符合GB/T 3956-1997要求。Conductor should agree with the requirement of GB/T 3956-1997.

2.3.5.1.1 导体结构采用的最少单线根数和直流电阻。

Min. single wire and DC resistance adopted by conductor structure.

表47 导体结构和直流电阻 Table 47 Conductor structure and DC resistance

标称截面 Norm. section area mm <sup>2</sup>	第二种导体中最少单线根数 Min.single wire in second conductor						20℃直流电阻 Ω/km 不大于DC resistance Ω/km 20℃≤	
	非紧压圆型 No-pinch round	紧压圆型 Pinch round		紧压扇型 Pinch sector		铜Cu.	铝Al.	
		铜Cu.	铝Al.	铜Cu.	铝Al.			
1.5	1	—	—	—	—	12.1	—	
2.5	1	—	—	—	—	7.41	12.1	
4	1	—	—	—	—	4.61	7.41	
6	1	—	—	—	—	3.08	4.61	
10	7	—	—	—	—	1.83	3.08	
16	7	6	6	—	—	1.15	1.91	
25	7	6	6	—	—	0.727	1.20	
35	7	6	6	—	—	0.524	0.868	
50	19	6	6	6	6	0.387	0.641	
70	19	12	12	12	12	0.268	0.443	
95	19	15	15	15	15	0.193	0.320	
120	37	18	15	18	15	0.153	0.253	
150	37	18	15	18	15	0.124	0.206	
185	37	30	30	30	30	0.0991	0.164	
240	61	34	30	34	30	0.0754	0.125	
300	61	34	30	34	30	0.0601	0.100	
400	61	53	53	53	53	0.0470	0.0778	

### 2.3.5.1.2 绝缘及屏蔽 Insulation and Screen

各电压等级的绝缘标称厚度和屏蔽结构如下表

Normal insulation thickness and screen in each voltage level refers to the following table.

表48 绝缘 Table 48 Insulation

标称截面 Nominal section area mm <sup>2</sup>	绝缘标称厚度 Nominal insulation thickness mm
1.5, 2.5	0.8
4, 6, 10, 16	1.0
25, 35	1.2
50, 70	1.4
95, 120	1.6
150	1.8
185	2.0
240	2.2
300	2.4
400	2.6

### 2.3.6 检验和试验 Check and test

#### 2.3.6.1 电缆导体直流电阻试验(例行试验)

DC resistance test of cable conductor (routine test)

导体直流电阻折算成20℃时的值应不大于表6中规定。

DC resistance of conductor converts into values smaller than the specifications in table 6.

#### 2.3.6.2 电缆交流电压试验(例行试验)

AC voltage test of cable (routine test)

成品电缆在室温下应能承受3.5 kV进行的50Hz交流电压试验。(单芯电缆应在室温水里浸1小时，然后在导体和水之间加试验电压)。

Cable of finished product can withstand AC voltage test 50Hz in 3.5kV (single-core cable dips in Water of room temperature for 1 hour, then add testing voltage between conductor and water).

如用直流电压试验，则所加电压应为工频电压值的2.4倍，但建议不要直流电压试验。

The voltage added shall be 2.4 times than the values of power frequency voltage in table 8 if adopting DC voltage test, however DC voltage test is not suggested.

#### 2.3.6.3 电缆绝缘线芯四小时交流电压试验(抽样试验)

AC voltage test of cable insulation wire core 4 hours (sampling test)



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将去掉外护套的绝缘线芯试样在室温温水中浸1小时，然后在导体和水之间施加2.4 kV工频电压并连续保持4小时，其绝缘不击穿。

Dip the insulation wire core removed outer covering in water for 1 hours, then apply 2.4kV power frequency voltage between conductor and water and hold on for 4 hours continuously, it's insulation does not break.

## 2.3.7 电缆参考外径及重量 Reference external diameter and weight of cable

在表48~55给出最常用的VV、VLV、VV22、VLV22及VV32、VLV32型号电缆的参考外径及重量，供用户在储运、安装时参考。所有这些数据，均不属于标准考核的技术参数，不作验收内容。

The reference external diameter and weight of common used cable type, such as VV, VLV, VV22, VLV22 and VV32, VLV32 are listed in table 48~55. All data are not technical parameter checked by standard, and not checked as contents.

表49 单芯 Table 49 Single core

芯数 Core No.	截面 section area mm <sup>2</sup>	外径 Outer diameter mm			重量 Weight kg/km					
		VV、VLV	VV22、VLV22	VV32、VLV32	VV	VLV	VV22	VLV22	VV32	VLV32
1	1.5	6.6	—	—	55	—	—	—	—	—
1	2.5	7.0	—	—	68	53	—	—	—	—
1	4	7.9	—	—	92	69	—	—	—	—
1	6	8.4	—	—	115	81	—	—	—	—
1	10	9.7	12.9	14.4	165	105	293	233	396	315
1	16	10.7	13.9	15.6	229	133	371	274	501	370
1	25	12.0	15.2	17.0	329	177	486	334	656	451
1	35	13.1	16.3	18.3	427	216	598	386	807	521
1	50	14.9	18.1	20.3	565	278	757	470	1022	635
1	70	16.5	19.7	22.1	768	355	979	566	1322	764
1	95	18.6	21.8	24.4	1042	467	1278	703	1725	949
1	120	20.2	23.4	26.2	1275	555	1530	810	2066	1094
1	150	22.4	25.6	28.7	1569	678	1850	959	2498	1295
1	185	24.6	27.8	31.1	1946	834	2253	1140	3042	1539
1	240	27.4	30.6	34.3	2520	1057	2860	1397	3861	1886
1	300	30.2	33.4	37.4	3127	1293	3500	1666	4725	2249
1	400	34.0	38.4	43.0	3966	1626	4742	2402	6402	3243

表50 2芯 Table 50 2 core

芯数 Core No.	截面 section area mm <sup>2</sup>	外径 Outer diameter mm			重量 Weight kg/km					
		VV、VLV	VV22、VLV22	VV32、VLV32	VV	VLV	VV22	VLV22	VV32	VLV32
2	1.5	10.6	13.8	—	123	—	259	—	—	—
2	2.5	11.4	14.6	—	152	122	297	267	—	—
2	4	13.1	16.3	18.3	209	161	375	327	506	441
2	6	14.1	17.3	19.4	260	191	439	369	593	498
2	10	16.7	18.5	20.7	375	253	585	463	790	625
2	16	18.9	20.7	23.2	518	324	754	560	1018	756
2	25	21.4	23.2	26.0	738	432	1004	698	1355	942
2	35	23.6	25.4	28.4	953	528	1246	821	1682	1108
2	50	27.2	28.8	32.3	1261	686	1612	1036	2176	1399
2	70	30.6	32.8	36.7	1717	886	2109	1278	2847	1725
2	95	34.6	36.0	40.3	2312	1157	3136	1981	4234	2674
2	120	38.6	41.6	46.6	2845	1397	3760	2312	5076	3121
2	150	42.8	46.2	51.7	3495	1704	4528	2738	6113	3696
2	185	47.2	50.6	56.7	4338	2102	5496	3260	7420	4401
2	240	52.8	56.0	62.7	5611	2670	6927	3986	9351	5381
2	300	58.2	61.0	68.3	6937	3251	7989	4302	10785	5808

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表51 3芯 Table 51 3 core

芯数 Core No.	截面 section area mm <sup>2</sup>	外径 Outer diameter mm			重量 Weight kg/km					
		VV、VLV	VV22、VLV22	VV32、VLV32	VV	VLV	VV22	VLV22	VV32	VLV32
3	1.5	11.1	14.3	—	149	—	290	—	—	—
3	2.5	11.9	15.1	—	188	143	340	295	—	—
3	4	13.8	17.0	19.0	263	192	438	366	591	494
3	6	14.9	18.1	20.3	334	230	523	418	706	564
3	10	17.7	20.9	23.4	491	308	713	530	963	716
3	16	20.0	23.2	26.0	691	400	941	650	1270	878
3	25	22.8	26.0	29.1	1002	543	1285	826	1735	1115
3	35	20.9	24.1	27.0	1260	624	1521	885	2053	1195
3	50	24.6	28.2	31.6	1687	826	2017	1156	2723	1561
3	70	27.4	30.8	34.5	2321	1079	2672	1430	3607	1931
3	95	31.2	34.8	39.0	3159	1432	3571	1845	4821	2491
3	120	35.4	40.4	45.2	3904	1739	4762	2597	6429	3506
3	150	39.1	44.3	49.6	4804	2127	5768	3091	7787	4173
3	185	43.1	48.5	54.3	5978	2634	7059	3715	9530	5015
3	240	47.8	53.4	59.8	7748	3350	8964	4566	12101	6164
3	300	53.2	59.0	66.1	9672	4159	11049	5536	14916	7474

表52 4芯 Table 52 4 core

芯数 Core No.	截面 section area mm <sup>2</sup>	外径 Outer diameter mm			重量 Weight kg/km					
		VV、VLV	VV22、VLV22	VV32、VLV32	VV	VLV	VV22	VLV22	VV32	VLV32
4	1.5	11.9	15.1	—	178	—	330	—	—	—
4	2.5	12.9	16.1	—	229	169	392	332	—	—
4	4	15.0	18.2	66.1	325	230	514	418	694	564
4	6	16.2	19.4	20.4	417	278	621	482	838	651
4	10	19.3	22.5	21.7	619	376	861	617	1162	833
4	16	21.9	25.1	25.2	880	492	1153	765	1557	1033
4	25	25.0	28.2	28.1	1287	675	1598	986	2157	1331
4	35	24.3	27.5	31.6	1644	796	1946	1098	2627	1482
4	50	27.9	31.3	30.8	2204	1056	2563	1415	3460	1910
4	70	30.7	33.9	35.1	3032	1375	3408	1752	4601	2365
4	95	36.2	41.0	38.0	4154	1851	5011	2709	6765	3657
4	120	40.3	45.1	45.9	5123	2236	6073	3187	8199	4302
4	150	43.8	48.8	50.5	6290	2721	7344	3775	9914	5096
4	185	48.2	53.4	54.7	7835	3376	9013	4555	12168	6149
4	240	54.5	59.9	59.8	10176	4311	11530	5666	15566	7649
4	300	60.6	66.2	67.1	12693	5342	14225	6874	19204	9280

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表53 5芯 Table 53 5 core

芯数 Core No.	截面 section area mm <sup>2</sup>	外径 Outer diameter mm			重量 Weight kg/km					
		VV、VLV	VV22、VLV22	VV32、VLV32	VV	VLV	VV22	VLV22	VV32	VLV32
5	1.5	12.8	16.0	—	209	—	372	—	—	—
5	2.5	13.9	17.1	—	271	196	446	372	—	—
5	4	16.2	19.4	21.7	389	270	593	474	801	640
5	6	17.6	20.8	23.3	503	329	724	550	977	743
5	10	21.1	24.3	27.2	752	448	1015	711	1370	960
5	16	24.0	27.2	30.5	1074	590	1372	888	1852	1199
5	25	27.4	30.8	34.5	1580	815	1933	1168	2610	1577
5	35	30.6	34.0	38.1	2090	1027	2483	1419	3352	1916
5	50	29.4	32.8	36.7	2733	1299	3109	1674	4197	2260
5	70	32.9	36.3	40.7	3761	1691	4179	2109	5642	2847
5	95	38.0	43.0	48.2	5126	2248	6042	3164	8157	4271
5	120	41.2	46.6	52.2	6285	2677	7319	3710	9881	5009
5	150	45.8	51.4	57.6	7763	3302	8929	4468	12054	6032
5	185	51.0	56.8	63.6	9690	4116	11009	5436	14862	7339
5	240	56.5	62.5	70.0	12549	5218	14032	6701	18943	9046
5	300	62.6	68.8	77.1	15669	6480	17336	8147	23404	10998

表54 3+1芯 Table 54 3+1 cores

芯数 Core No.	截面 section area mm <sup>2</sup>	外径 Outer diameter mm			重量 Weight kg/km					
		VV、VLV	VV22、VLV22	VV32、VLV32	VV	VLV	VV22	VLV22	VV32	VLV32
3	2.5+1 1.5	12.4	15.6	—	209	—	366	—	—	—
3	4+1 2.5	14.5	17.7	19.8	287	201	470	369	635	498
3	6+1 4	15.7	18.9	21.2	392	264	590	440	797	594
3	10+1 6	18.8	22.0	24.6	558	341	794	548	1072	740
3	16+1 10	21.4	24.6	27.6	809	457	1076	683	1453	922
3	25+1 16	24.5	27.7	31.0	1188	632	1492	856	2014	1156
3	35+1 16	23.8	27.0	30.2	1419	686	1715	952	2315	1285
3	50+1 25	27.4	31.8	35.6	1907	894	2256	1212	3046	1636
3	70+1 35	30.0	34.8	39.0	2649	1195	3060	1564	4131	2111
3	95+1 50	35.5	40.7	45.6	3561	1547	4443	2387	5998	3222
3	120+1 70	39.6	44.8	50.2	4550	1971	5529	2908	7464	3926
3	150+1 70	43.1	48.5	54.3	5369	2279	6455	3322	8714	4485
3	185+1 95	47.5	53.1	59.5	6786	2866	7999	4021	10799	5428
3	240+1 120	53.8	59.6	66.8	8754	3634	10149	4957	13701	6692
3	300+1 150	59.9	66.1	74.0	10916	4510	12524	6003	16907	8104

表55 4+1芯 Table 55 4+1 cores

芯数 Core No.	截面 section area mm <sup>2</sup>	外径 Outer diameter mm			重量 Weight kg/km					
		VV、VLV	VV22、VLV22	VV32、VLV32	VV	VLV	VV22	VLV22	VV32	VLV32
4	2.5+1 1.5	13.4	16.6	—	254	—	398	—	—	—
4	4+1 2.5	15.7	18.9	21.2	366	255	533	407	720	549
4	6+1 4	17.1	20.3	22.7	482	319	663	478	895	645
4	10+1 6	20.6	23.8	26.7	703	425	919	612	1241	826
4	16+1 10	23.5	26.7	29.9	1011	562	1256	766	1696	1034
4	25+1 16	26.9	30.1	33.7	1504	795	1783	994	2407	1342
4	35+1 16	30.1	33.3	37.3	1926	982	2236	1211	3019	1635
4	50+1 25	28.7	32.3	36.2	2479	1179	3088	1758	4169	2373
4	70+1 35	32.4	36.0	40.3	3426	1557	4093	2183	5526	2947
4	95+1 50	37.5	41.5	46.5	4669	2079	5459	2828	7370	3818
4	120+1 70	40.7	44.9	50.3	5797	2496	6715	3373	9065	4554
4	150+1 70	45.3	49.7	55.7	6982	3000	8003	3979	10804	5372
4	185+1 95	50.3	55.1	61.7	8776	3741	9936	4843	13414	6538
4	240+1 120	56.0	60.8	68.1	11340	4754	12601	5943	17011	8023
4	300+1 150	61.9	67.1	75.2	14147	5904	15548	7184	20990	9698

# 电线电缆类

表56 3+2芯 Table 56 3+2 cores

芯数 Core No.	截面 section area mm <sup>2</sup>	外径 Outer diameter mm			重量 Weight kg/km					
		VV、VLV	VV22、VLV22	VV32、VLV32	VV	VLV	VV22	VLV22	VV32	VLV32
3	2.5+2 1.5	13.1	16.3	—	244	—	385	—	—	—
3	4+2 2.5	15.4	18.6	20.8	345	243	509	392	687	529
3	6+2 4	16.8	20.0	22.4	460	307	637	463	860	625
3	10+2 6	20.3	23.5	26.3	660	408	872	591	1177	798
3	16+2 10	23.2	26.4	29.6	950	537	1192	739	1609	998
3	25+2 16	26.6	29.8	33.4	1409	756	1685	952	2275	1285
3	35+2 16	29.8	34.2	38.3	1731	901	2047	1138	2763	1536
3	50+2 25	28.4	33.2	37.2	2257	1091	2870	1663	3875	2245
3	70+2 35	31.9	36.9	41.3	3073	1407	3749	2042	5061	2757
3	95+2 50	37.0	42.6	47.7	4174	1874	4994	2652	6742	3580
3	120+2 70	40.4	46.0	51.5	5298	2305	6229	3195	8409	4313
3	150+2 70	45.0	50.8	56.9	6209	2704	7244	3698	9779	4992
3	185+2 95	50.0	56.0	62.7	7886	3391	9037	4484	12200	6053
3	240+2 120	55.7	62.1	69.6	10126	4284	11410	5498	15404	7422
3	300+2 150	61.6	68.4	76.6	12575	5277	13999	6621	18899	8938

## 2.3.8 聚氯乙烯绝缘电力电缆连续负载流量 Continuous load current rating quantity of PVC insulated power cable

### 2.3.8.1 聚氯乙烯电力电缆敷设运行条件 Laying operation condition of PVC power cable

#### 2.3.8.1.1 在空气中敷设 Laying in air.

2.3.8.1.1.1 单芯电缆平行敷设中心距离：185mm<sup>2</sup>及以下为电缆直径的2倍，240mm<sup>2</sup>及以上为90mm。

Central distance of single core cable parallel laying: it's 90mm for cable of  $\geq 240\text{mm}^2$ .

2.3.8.1.1.2 周围环境温度40℃。Surrounding temperature is 40℃.

2.3.8.1.1.3 导电线芯最高允许温度：70℃

Allowable Max. temperature of core:70℃

2.3.8.1.1.4 不同空气温度下载流量修正系数。

Correct factor of current rating under different air temperature

表57 不同空气温度下载流量修正系数

Table 57 Current rating factor for different air temperature

环境温度 Surrounding temperature °C	空气温度 Air temperature °C				
	20	25	35	40	45
校正系数 Correct factor	1.12	1.06	0.94	0.87	0.79

#### 2.3.8.1.2 在土壤中敷设 Laying in soil

2.3.8.1.2.1 单芯电缆不接触敷设时，中心距离为电缆直径的2倍。

The central distance is 2 times than cable diameter when single core cable doesn't touch the laying.

2.3.8.1.2.2 周围环境温度25℃。Surrounding temperature is 25℃

2.3.8.1.2.3 导电线芯最高允许温度：70℃ Allowable Max. temperature of core:70℃

2.3.8.1.2.4 土壤热阻系数：1.0℃ k.m/W。Thermal resistance factor of soil: 1.0℃ k.m/W

2.3.8.1.2.5 直埋深度：0.7m。Buried depth: 0.7m

2.3.8.1.2.6 不同空气温度下载流量修正系数。

Current rating factor for different air temperature refers to following table.

表58 不同土壤温度下载流量修正系数

Table 58 Current rating factor for different air temperature

环境温度 Surrounding temperature °C	空气温度 Air temperature °C			
	15	20	30	35
校正系数 Correct factor	1.11	1.05	0.94	0.88

# ELECTRIC WIRES & CABLE

## 2.3.8.2 电缆连续负载流量 Continuous load current rating of cable

说明 Notes:



铠装电缆VV22、VLV22、VV32、VLV32、VV23、VLV23、VV33、VLV33的连续负载流量分别比相应结构无铠同规格电缆的载流量小3~10A，本手册未列出铠装电缆载流量，请用户据此估算。

Continuous load current chopping quantity of armor cable VV22, VLV22, VV32, VLV32, VV23, VLV23, VV33, VLV33 is smaller 3~10A than that without armor with the same specifications, the manual does not give the current chopping quantity of armor cable, the customer can make calculation up this.

### 2.3.8.2.1 空气中敷设长期连续负荷条件下允许载流量

Allowable current rating in air laying under continuous load conditions

表59 空气中允许载流量 (A) Table 59 Allowable current chopping quantity in air



型号 Model	VV, VLV, VY, VLY						VV, VLV, VY, VLY			
芯数 Core No.	2芯 cores		3芯cores,4 cores, 3+1 cores		5芯cores,4+1cores, 3+2cores		单芯 Single sore			
单芯电缆排列方式 Arrangement of single core cable										
线芯材质 Material of core	铜 Cu	铝 Al	铜 Cu	铝 Al	铜 Cu	铝 Al	铜 Cu	铝 Al	铜 Cu	铝 Al
1.5	20	/	13	/	—	/	23	/	26	/
2.5	26	21	—	17	—	17	30	23	33	26
4	37	28	30	23	31	23	39	30	44	34
6	44	37	37	30	38	31	49	40	56	45
10	61	48	53	40	54	41	68	52	77	59
16	82	63	69	54	70	55	89	69	101	78
25	104	81	89	69	91	70	113	89	128	102
35	127	96	109	85	111	87	142	108	161	123
50	155	121	132	104	135	106	170	132	193	150
70	190	150	167	132	170	135	216	165	246	187
95	242	190	213	161	217	164	264	203	299	230
120	282	219	242	190	247	194	307	236	348	268
150	322	247	282	219	288	223	353	274	401	311
185	368	288	322	247	328	252	406	316	460	358
240	—	—	385	299	393	305	481	372	546	422
300	—	—	431	339	440	346	552	429	626	486
400	—	—	—	—	—	—	652	509	738	578
500	—	—	—	—	—	—	754	595	856	674
630	—	—	—	—	—	—	868	698	984	791
800	—	—	—	—	—	—	1001	811	1134	920

### 2.3.8.2.2 直埋敷设长期连续负荷条件下允许载流量

Allowable current rating of buried laying in long and continuous load condition

# 电线电缆类

表60 土壤中允许载流量 (A) Table 60 Allowable current rating in soil

型号 Model	VV, VLV, VY, VLY						VV, VLV, VY, VY					
芯数 Core No.	2芯 cores		3芯cores,4 cores, 3+1 cores		5芯cores,4+1cores, 3+2cores		单芯 Single sore					
单芯电缆排列方式 Arrangement of single core cable												
线芯材质 Material of core	铜 Cu	铝 Al	铜 Cu	铝 Al	铜 Cu	铝 Al	铜 Cu	铝 Al	铜 Cu	铝 Al	铜 Cu	铝 Al
1.5	26	/	22	/	22	/	24	/	27	/		
2.5	34	26	29	23	30	23	31	25	35	28		
4	44	35	38	30	39	31	40	32	46	36		
6	56	45	47	39	48	40	50	41	57	47		
10	76	59	65	50	66	51	68	52	77	60		
16	100	77	84	65	86	66	86	68	98	77		
25	125	100	110	84	112	85	111	86	126	98		
35	155	120	130	100	133	102	131	103	149	116		
50	185	145	155	120	158	122	160	123	181	140		
70	230	175	195	150	199	153	197	152	223	172		
95	275	210	230	185	235	189	234	180	265	205		
120	310	245	260	205	265	209	267	205	302	233		
150	350	275	300	230	306	235	299	234	339	265		
185	395	310	335	260	341	265	340	262	386	298		
240	—	—	390	300	398	306	394	308	446	349		
300	—	—	435	340	340	347	447	349	507	395		
400	—	—	—	—	—	—	513	402	581	456		
500	—	—	—	—	—	—	582	459	660	521		
630	—	—	—	—	—	—	664	529	753	560		
800	—	—	—	—	—	—	746	603	846	684		

标称截面  
Norm.section  
mm<sup>2</sup>