Ducab دوكاب

دوكاب باوربلاس كابلات الطاقة ذات الجهد المتوسط
Ducab Powerplus MEDIUM VOLTAGE CABLES

حلول متقدمة للكابلات من خلال التقنية والابداع
Advanced Cable Solutions Through Technology and Innovation

BICC

Contents

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INTRODUCTION

Ducab is the leading manufacturer of electric cables in the Middle East. Established in 1979, the company is owned by the Governments of Dubai and Abu Dhabi. Ducab is based in Jebel Ali, however to keep pace with the steady growth of the region, Ducab opened a second factory in Abu Dhabi in 2005. This state of the art facility doubles the production capacity enabling Ducab to better service its customers.

This catalogue provides working information on Ducab's complete range of **Ducab Powerplus** Cables rated up to 33 kV. Separate catalogues are available for Ducab's range of Control and Auxiliary Cables, Wiring Cables, **Ducab Smokemaster** LSF Cables and XLPE Low Voltage Cables.

This brochure contains technical information covering the **Ducab Powerplus** range of XLPE insulated medium voltage cables rated up to U0/U = 18/30kV i.e., equivalent to 33kV rating of the British Standards. The applicable standards are IEC 60502-2 and BS 6622.

The **Ducab Powerplus** cable range includes copper and aluminium conductors in a range of voltages with a choice of single or three core armoured and unarmoured, a range of sheathing, screening, taping and armouring options. To locate particular voltages and cable designs and eliminate errors a look-up guide has been included (see pages 6 & 7). This acts as a guide to the cable data for the **Ducab Powerplus** range of cables set out in pages 8 - 57.

Technical Data is covered in pages 58 - 65. Cable handling instructions appear in pages 66 - 67.

The cable designs in this brochure are to IEC 60502-2 and in most parts to BS 6622. Ducab can also supply a range of alternative designs to meet more specialised customer needs including water blocking, **Ducab Smokemaster** to BS 7835 and enhanced fire performance. Alternative sheathing materials and colours can also be manufactured along with cables to individual customer specifications.

"Ducab Connect" range of cable components and accessories for medium voltage cables are also available on request. For "Ducab Connect" product range for MV cable please contact, Telephone : (971-4) 808 2500, Fax : (971-4) 808 2599.

Quality

Where Quality is a Way of Life

The definition of quality in Ducab goes far beyond the conformance of product to specified requirements. Ducab is committed to providing the customer with total quality excellence of product and service that fully meets expectations and is superior in value to that which can be obtained elsewhere.

Since its inception, Ducab has an unrivaled reputation for quality in the region. For many years the company has worked to raise quality awareness in Dubai and throughout the Gulf. The company's Quality Management System was certified to ISO 9001 in 1995 and upgraded in 2002 to the new, more stringent ISO 9001 : 2000 standard by BASEC (British Approval Service for Cables), a reputed UKAS accredited certification body specialising in the cable industry. Ducab was the first cable company in the Middle East to achieve this distinction.

In 1997, Ducab became the first manufacturing company in the Middle East to obtain the ISO 14001 environmental certification.

Ducab is also the only cable manufacturer in the Middle East to obtain product type approval of a range ofl ow voltage cables to British Standards by BASEC (The British Approvals Service for Cables). This approval is only awarded to manufacturers who meet the requirements of BS EN ISO 9000 Quality Management Standard and certified by BASEC.

Ducab cables have been type tested in reputed external laboratories like KEMA, The Netherlands; BRE, UK; CPRI, India, etc. Ducab is proud to hold Lloyd's approval for various product range.

Quality Assurance

Ducab's quality management system is certified for conformance to ISO 9001 Standard by BASEC.

Ducab's medium voltage cables have been accepted as world class following the type testing and certification of several products by the KEMA High Voltage Laboratory in the Netherlands. Type testing included the requirements of the IEC 60502-2 standard and some of the stringent provisions of BS 6622: 1999 standard. 11kV and 33kV cables tested by KEMA consistently exhibited discharge-free characteristics. These cables also withstood Basic Impulse Levels of 95kV and 195kV respectively as against 75kV and 175kV specified in IEC 60502-2.

Ducab's high voltage test facility includes modern, highly sensitive partial discharge test equipment, situated in a fully screened room. For materials and in-process cable tests, well-equipped laboratories, manned by experienced and trained personnel are available. A separate cable fire test facility exists for IEC 60332 Pt. 3, smoke density and other tests.

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Cable Selection

It is essential that any design of a cable system selected for a particular project or a distribution system is suitable for its intended use. Choice needs to be based on a range of factors including installation specifications, local regulations and the required performance characteristics, some of which are shown below:

- normal current load
- maximum fault current and its duration under fault conditions
- voltage grade
- subsoil conditions for underground installations e.g., presence of water, soil temperature and thermal resistivity, possible attack of rodents, termites etc.
- cable fire performance requirements
- compatibility with an existing distribution system

In the tables in the next section, cable constructions and performance features correspond to IEC 60502-2 Standard and Ducab's in-house quality norms.

Cable Design and Construction

Conductors

The conductors of all Ducab's HV and MV cables, both copper and aluminium, with the exception of very large sizes of 800sq mm and above, are all HCC $^{+}$ ™ design.

These are highly compacted and concentric conductors and offer the following advantages:

* Smaller overall size

* Smoother conductor/conducting screen interface

Conductors of 800 sq mm and above, are plain stranded and wrapped with penetration resistant semi-conductive tape prior to passage through the triple extrusion line.

All conductors comply with the requirements of IEC 60228, Class 2.

Conductor Screen

This is a layer of crosslinkable semi-conducting compound extruded directly over the conductor during the XLPE insulation extrusion.

Insulation

All Ducab's MV and HV cables feature DFI ™ XLPE insulation which is virtually discharge free, ensuring a long and trouble-free service life.

The insulation is extruded and dry cured to meet the requirements of the standards and/or customer specification. A high degree of concentricity is assured through the use of x-ray monitoring device during extrusion. The XLPE insulation is capable of operation continuously at 90˚C.

Insulation Screen

This is a layer of cross-linkable semi-conducting compound extruded directly over the insulation at the same time when the conductor screen and XLPE insulation are extruded. This semi-conducting screen is cold strippable but fully bonded screens may be provided, if specified.

Cable Selection

Metallic Screen

The metallic screen can be a helically applied copper tape or a number of copper wires applied with a lay or a combination of tape and wires applied over the semi-conducting screen. The metallic screen provides the earth fault current path and it is of a cross section designed as per customer's performance specification.

In case of three core cables, phase identification tapes (red/yellow/blue) are generally longitudinally applied under the metallic screen.

Laying up

In the case of three core cables, the three cores identified as red, yellow and blue are laid up together with polypropylene string fillers at the interstices between the three cores. A binder e.g., polyester tape is wrapped round the assembly to form a compact circular cable during this process.

Bedding Sheath

Black polyvinyl chloride (PVC) or Polyethylene (PE) Compound is extruded over the laid up 3 core cable or on the screened single core cables.

Armouring

This process is not applicable if an unarmoured cable is specified. If armour is required, then following variations are possible:

- **Single Core Cables:**

Aluminium armour wires applied all round the cable with a lay.

- **Three Core Cables:**

a) Galvanised Steel Wires applied all round the cable with a lay.

b) Galvanised Steel Tapes applied helically to provide coverage all round the cable.

Oversheath

This is an extruded layer of black PVC (Type ST2) or PE (Type ST 3 or ST7) as required by customer specification. The oversheath has an embossed legend in two or more lines appropriate for the cable.

Special Features

The cable as a whole or its specific cores or other design elements can vary in a number of ways to meet specific customer needs. The following are some examples, and by no means an exhaustive list of special features possible:

- Longitudinal and radial water blocking of conductors, cores or complete cable.
- Extra water-tree retardant XLPE insulation
- Lead sheath construction
- PVC oversheath with:
  - a) reduced flame propagation (RP) and low HCL (LHCL) emission properties
  - b) anti-termite properties
- **Ducab Smokemaster™** Low Smoke and Fume construction using zero-halogen bedding and oversheath
- Oversheath of red colour with sulphide-resistant and/or UV resistant properties
- Graphite coated oversheath
- Embossed legend as per customer specification
- Metre length marking

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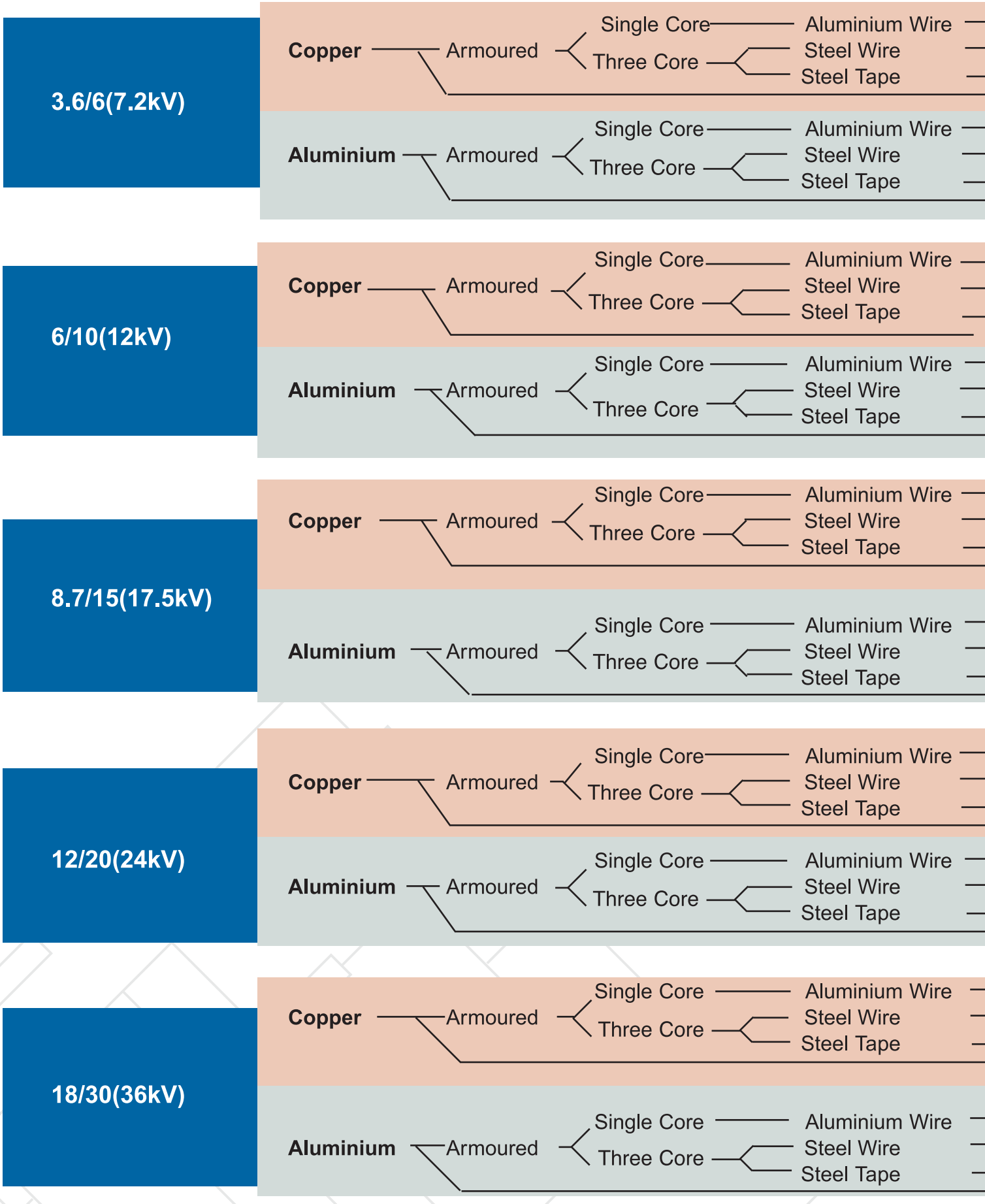
Cable Data

The following data sheets cover a range of cables based on the IEC Specification 60502-2. Cables to other specifications and with special features such as lead sheaths, water swelling fillers, water blocking tapes and graphite coatings can also be supplied.

For all cables the maximum conductor operating temperature is 90˚C and the limiting conductor temperature after short circuit is 250˚C.

To locate a cable of a specific voltage rating and design, please refer to the look-up table on pages 6 & 7.

Look-up Table



دوکاب باوربلاس

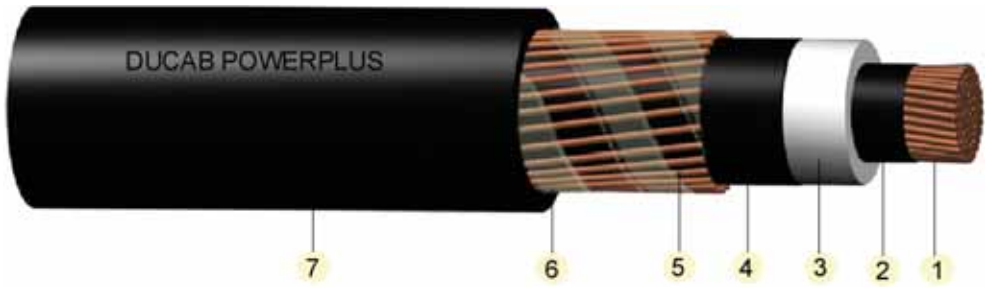
Table 1

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7	26.6	29.8	33.6	37.6
Weight of Conductor (Approx)	Kg/Km	420	605	839	1056	1297	1629	2141	2686	3421	4335	5585	7346	9160
Insulation Thickness (Nominal)	mm	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.8	3	3.2	3.2	3.2	3.2
Outersheath Thickness (Nominal)	mm	1.6	1.6	1.7	1.7	1.8	1.8	1.9	2	2.1	2.2	2.3	2.5	2.6
Approximate Overall Diameter	mm	20.0	21.5	23.5	25.0	26.5	28.0	31.0	33.5	37.5	41.0	44.5	48.5	52.5
Approximate Cable Weight	Kg/Km	800	1050	1370	1600	1910	2280	2930	3630	4530	5680	7080	8610	10500
Standard Drum Length	m	500	500	500	500	500	500	500	500	500	500	400	300	250
Minimum Bending Radius of Cable (during installation)	mm	396	428	464	494	526	560	614	668	744	814	882	964	1042
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.387	0.268	0.193	0.153	0.124	0.0991	0.0754	0.0601	0.047	0.0366	0.0283	0.0221	0.0176
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.494	0.342	0.247	0.196	0.159	0.127	0.098	0.079	0.063	0.05	0.0405	0.039	0.029
Approximate Reactance at 50 Hertz	ohm/Km	0.12	0.12	0.11	0.11	0.10	0.10	0.10	0.09	0.09	0.09	0.09	0.08	0.08
Approximate Impedance at 50 Hertz	ohm/Km	0.51	0.36	0.27	0.22	0.19	0.16	0.14	0.12	0.11	0.10	0.096	0.092	0.086
Approximate Capacitance of Cable	µf/Km	0.34	0.38	0.43	0.47	0.51	0.56	0.61	0.63	0.65	0.69	0.73	0.79	0.85
Approx. Charging Current per phase at Uo = 3.6kV and f = 50Hz	mA/m	0.38	0.43	0.49	0.53	0.58	0.63	0.69	0.71	0.74	0.78	0.83	0.84	0.96
Sustained Current Ratings														
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid in trefoil touching	A	196	240	285	320	365	409	472	534	605	668	739	819	890
2. Drawn into Ducts, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	200	240	285	320	356	392	449	498	543	605	668	739	810
3. Laid in Air in trefoil touching, Ambient Temp. 35˚ C	A	217	262	331	382	432	497	589	681	773	865	1021	1168	1288
One Second Short Circuit Current Rating of Conductor	kA	7.15	10.01	13.60	17.20	21.50	26.50	34.30	42.90	57.20	71.50	90.10	115	143

For all cables the maximum conductor operating temperature is 90˚C and limiting conductor temperature after short circuit is 250˚C.
Longer drum lengths are available to specific customer requirements.

3.6/6 (7.2)kV

Single Core Copper Conductors XLPE Insulated to IEC 60502-2 Unarmoured



1.HCC+ ™ Copper Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper wire screen
6. Tape binder
7. Outer sheath

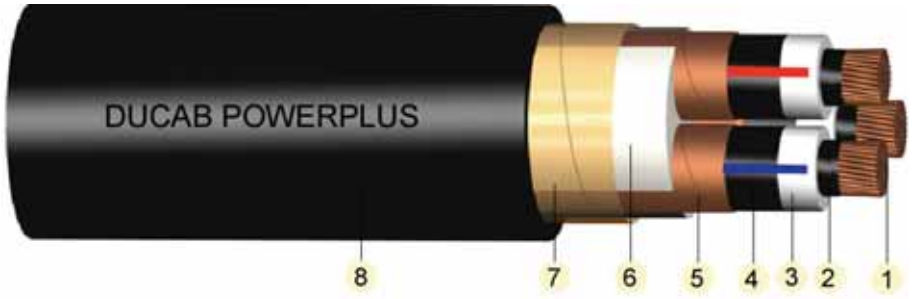
Table 2

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7
Weight of Conductor (Approx)	Kg/Km	1281	1845	2558	3219	3954	4966	6526	8187	10428
Insulation Thickness (Nominal)	mm	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.8	3
Outersheath Thickness (Nominal)	mm	2.2	2.3	2.5	2.6	2.7	2.8	3	3.1	3.4
Approximate Overall Diameter	mm	40.5	44.0	48.0	51.0	54.5	58.0	64.0	70.0	78.0
Approximate Cable Weight	Kg/Km	2620	3350	4250	5090	6040	7220	9130	11360	14160
Standard Drum Length	m	500	500	500	500	500	500	400	300	250
Minimum Bending Radius of Cable (during installation)	mm	605	656	716	764	815	870	957	1047	1169
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.387	0.268	0.193	0.153	0.124	0.0991	0.0754	0.0601	0.047
Maximum AC resistance of Conductor at 90˚C	ohm/Km	0.493	0.343	0.247	0.196	0.159	0.128	0.099	0.080	0.064
Approximate Reactance at 50 Hertz	ohm/Km	0.11	0.10	0.10	0.09	0.09	0.09	0.09	0.08	0.08
Approximate Impedance at 50 Hertz	ohm/Km	0.5	0.36	0.26	0.22	0.18	0.15	0.13	0.12	0.1
Maximum Equivalent Star Capacitance of Cable	µf/Km	0.34	0.38	0.43	0.47	0.51	0.56	0.61	0.63	0.65
Approx. Charging Current per phase at Uo = 3.6kV and f = 50Hz	mA/m	0.38	0.43	0.49	0.53	0.58	0.63	0.69	0.71	0.74
Sustained Current Ratings										
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	198	241	283	321	358	406	462	510	566
2. Drawn into Ducts, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	170	202	241	273	312	349	401	443	500
3. Laid Singly in Air, Ambient Temp. 35˚ C	A	210	258	316	359	412	469	545	622	708
One Second Short Circuit Current Rating of Conductor	kA	7.15	10.01	13.60	17.20	21.50	26.50	34.30	42.90	57.20

For all cables the maximum conductor operating temperature is 90˚C and limiting conductor temperature after short circuit is 250˚C.
Longer drum lengths are available to specific customer requirements.

3.6/6 (7.2)kV

Three Core Copper Conductors XLPE Insulated to IEC 60502-2 Unarmoured



1.HCC+ ™ Copper Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper tape screen
6. Fillers
7. Tape binder
8. Outer sheath

Table 3

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7	26.6	29.8	33.6	37.6
Weight of Conductor (Approx)	Kg/Km	420	605	839	1056	1297	1629	2141	2686	3421	4335	5585	7346	9160
Insulation Thickness (Nominal)	mm	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.8	3	3.2	3.2	3.2	3.2
Separation Sheath Thickness	mm	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.4	1.4	1.5
Armour Wire Diameter (Nominal)	mm	1.6	1.6	1.6	1.6	1.6	2	2	2	2	2.5	2.5	2.5	2.5
Outersheath Thickness (Nominal)	mm	1.8	1.8	1.9	1.9	2	2	2.1	2.2	2.3	2.5	2.6	2.7	2.9
Approximate Overall Diameter	mm	26.0	28.0	29.5	31.0	32.5	35.0	37.5	40.5	44.0	49.0	52.5	57.0	61.0
Approximate Cable Weight	Kg/Km	1100	1400	1750	2000	2300	2800	3450	4200	5100	6450	8000	10000	12090
Standard Drum Length	m	500	500	500	500	500	500	500	500	500	500	400	300	250
Minimum Bending Radius of Cable (during installation)	mm	387	417	438	461	485	522	563	605	660	732	786	849	915
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.387	0.268	0.193	0.153	0.124	0.0991	0.0754	0.0601	0.047	0.0366	0.0283	0.0221	0.0176
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.494	0.342	0.247	0.196	0.159	0.128	0.098	0.079	0.063	0.050	0.041	0.038	0.029
Approximate Reactance at 50 Hertz	ohm/Km	0.13	0.13	0.12	0.11	0.11	0.11	0.11	0.10	0.10	0.10	0.10	0.09	0.09
Approximate Impedance at 50 Hertz	ohm/Km	0.51	0.36	0.27	0.22	0.19	0.16	0.14	0.12	0.11	0.10	0.096	0.092	0.086
Approximate Capacitance of Cable	µf/Km	0.34	0.38	0.43	0.47	0.51	0.56	0.61	0.63	0.65	0.69	0.73	0.79	0.85
Approx. Charging Current per phase at Uo = 3.6kV and f = 50Hz	mA/m	0.38	0.43	0.49	0.53	0.58	0.63	0.69	0.71	0.74	0.78	0.83	0.89	0.96
Sustained Current Ratings														
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid in trefoil touching	A	196	240	285	320	365	405	463	516	579	632	676	721	765
2. Drawn into Ducts, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	196	231	271	303	334	365	418	445	472	507	552	587	614
3. Laid in Air in trefoil touching, Ambient Temp. 35˚ C	A	230	285	345	396	451	506	598	681	773	856	957	1049	1132
One Second Short Circuit Current Rating of Conductor	kA	7.15	10.01	13.60	17.20	21.50	26.50	34.30	42.90	57.20	71.50	90.10	115	143

FOR ALL CABLES THE MAXIMUM CONDUCTOR OPERATING TEMPERATURE IS 90˚C AND LIMITING CONDUCTOR TEMPERATURE AFTER SHORT CIRCUIT IS 250˚C.
LONGER DRUM LENGTHS ARE AVAILABLE TO SPECIFIC CUSTOMER REQUIREMENTS.

3.6/6 (7.2)kV

Single Core Copper Conductors XLPE Insulated to IEC 60502-2 Aluminium Wire Armoured

1.HCC+ ™ Copper Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper tape screen
6. Bedding
7. Aluminium Armour
8. Outer sheath

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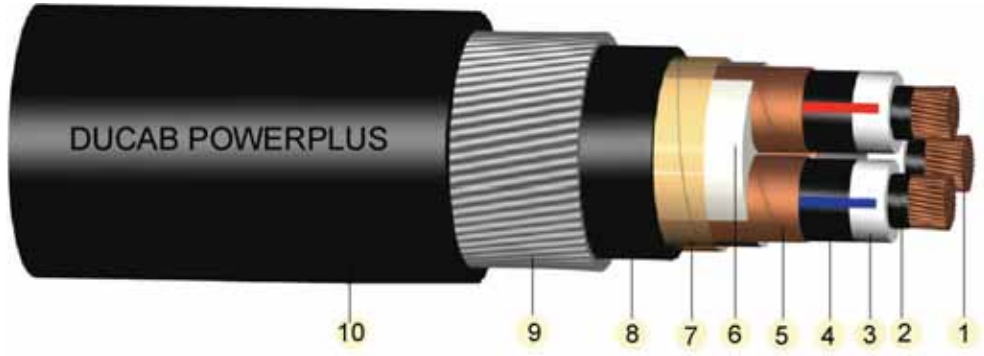
Table 4

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7
Weight of Conductor (Approx)	Kg/Km	1281	1845	2558	3219	3954	4966	6526	8187	10428
Insulation Thickness (Nominal)	mm	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.8	3
Separation Sheath Thickness	mm	1.3	1.4	1.4	1.5	1.6	1.6	1.7	1.8	2
Armour Wire Diameter (Nominal)	mm	2.5	2.5	2.5	2.5	2.5	2.5	2.5	3.15	3.15
Outersheath Thickness (Nominal)	mm	2.5	2.6	2.7	2.8	2.9	3.1	3.3	3.5	3.8
Approximate Overall Diameter	mm	49.0	52.5	56.5	60.0	63.5	67.0	73.0	81.0	89.0
Approximate Cable Weight	Kg/Km	4700	5600	6700	7700	8800	10400	13500	16000	19300
Standard Drum Length	m	500	500	500	400	400	300	250	250	250
Minimum Bending Radius of Cable (during installation)	mm	583	626	676	715	758	804	876	967	1068
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.387	0.268	0.193	0.153	0.124	0.0991	0.0754	0.0601	0.047
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.493	0.343	0.247	0.196	0.159	0.128	0.099	0.080	0.064
Approximate Reactance at 50 Hertz	ohm/Km	0.11	0.10	0.10	0.09	0.09	0.09	0.09	0.08	0.08
Approximate Impedance at 50 Hertz	ohm/Km	0.5	0.36	0.26	0.22	0.18	0.15	0.13	0.12	0.1
Approximate Capacitance of Cable	µf/Km	0.34	0.38	0.43	0.47	0.51	0.56	0.61	0.63	0.65
Approx. Charging Current per phase at Uo = 3.6kV and f = 50Hz	mA/m	0.38	0.43	0.49	0.53	0.58	0.63	0.69	0.71	0.74
Sustained Current Ratings										
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	187	227	267	303	338	383	436	481	534
2. Drawn into ducts, Ground Temp. = 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	161	191	227	258	294	329	378	418	472
3. Laid singly in Air, Ambient Temp. 35˚ C	A	203	248	304	345	396	451	524	598	681
One Second Short Circuit Current Rating of Conductor	kA	7.15	10.01	13.60	17.20	21.50	26.50	34.30	42.90	57.20

For all cables the maximum conductor operating temperature is 90˚C and limiting conductor temperature after short circuit is 250˚C.
Longer drum lengths are available to specific customer requirements.

3.6/6 (7.2)kV Three Core Copper Conductors XLPE Insulated to IEC 60502-2 Steel Wire Armoured



1.HCC+ ™ Copper Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper tape screen
6. Fillers
7. Tape binder
8. Bedding
9. Galvanised steel wire armour
10. Outer sheath

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Table 5

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7
Weight of Conductor (Approx)	Kg/Km	1281	1845	2558	3219	3954	4966	6526	8187	10428
Insulation Thickness (Nominal)	mm	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.8	3
Separation Sheath Thickness	mm	1.3	1.4	1.4	1.5	1.6	1.6	1.7	1.8	2
Steel Tape Thickness (Nominal)	mm	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.8
Outersheath Thickness (Nominal)	mm	2.4	2.5	2.7	2.8	2.9	3	3.2	3.4	3.7
Approximate Overall Diameter	mm	47.0	50.5	54.5	58.0	61.5	65.5	71.5	77.5	86.0
Approximate Cable Weight	Kg/Km	3650	4500	5590	6510	7690	9000	11210	14010	18330
Standard Drum Length	m	500	500	500	500	500	400	300	300	200
Minimum Bending Radius of Cable (during installation)	mm	560	604	652	692	736	781	853	928	1028
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.387	0.268	0.193	0.153	0.124	0.0991	0.0754	0.0601	0.047
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.493	0.343	0.247	0.196	0.159	0.128	0.099	0.080	0.064
Approximate Reactance at 50 Hertz	ohm/Km	0.11	0.10	0.10	0.09	0.09	0.09	0.09	0.08	0.08
Approximate Impedance at 50 Hertz	ohm/Km	0.50	0.36	0.26	0.22	0.18	0.15	0.13	0.12	0.10
Approximate Capacitance of Cable	µf/Km	0.34	0.38	0.43	0.47	0.51	0.56	0.61	0.63	0.65
Approx. Charging Current per phase at Uo = 3.6kV and f = 50Hz	mA/m	0.38	0.43	0.49	0.53	0.58	0.63	0.69	0.71	0.74
Sustained Current Ratings										
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	187	227	267	303	338	383	436	481	534
2. Drawn into Ducts, Ground Temp. = 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	161	191	227	258	294	329	378	418	472
3. Laid singly in Air, Ambient Temp. 35˚ C	A	203	248	304	345	396	451	524	598	681
One Second Short Circuit Current Rating of Conductor	kA	7.15	10.01	13.60	17.20	21.50	26.50	34.30	42.90	57.20

For all cables the maximum conductor operating temperature is 90˚C and limiting conductor temperature after short circuit is 250˚C.
Longer drum lengths are available to specific customer requirements.

3.6/6 (7.2)kV

Three Core
Copper Conductors
XLPE Insulated to
IEC 60502-2
Steel Tape Armoured

1.HCC+ ™ Copper Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper tape screen
6. Fillers
7. Tape binder
8. Bedding
9. Galvanised steel tape armour
10. Outer sheath

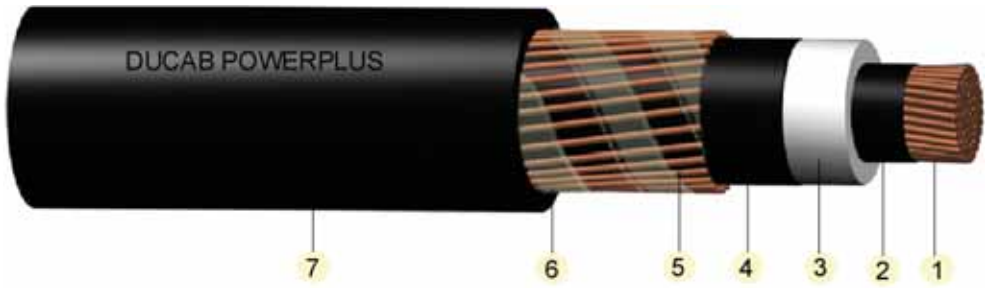
Table 6

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7	26.6	29.8	33.6	37.6
Weight of Conductor (Approx)	Kg/Km	420	605	839	1056	1297	1629	2141	2686	3421	4335	5585	7346	9160
Insulation Thickness (Nominal)	mm	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Outersheath Thickness (Nominal)	mm	1.6	1.7	1.7	1.8	1.8	1.9	2	2	2.1	2.2	2.3	2.5	2.6
Approximate Overall Diameter	mm	22.0	23.5	25.5	27.0	28.5	30.0	32.5	35.0	38.0	41.5	44.5	49.0	53.0
Approximate Cable Weight	Kg/Km	900	1150	1470	1730	2040	2460	3070	3710	4600	5690	7150	8650	10530
Standard Drum Length	m	500	500	500	500	500	500	500	500	500	500	500	400	300
Minimum Bending Radius of Cable (during installation)	mm	434	466	502	532	564	598	648	694	760	822	890	972	1056
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.387	0.268	0.193	0.153	0.124	0.0991	0.0754	0.0601	0.047	0.0366	0.0283	0.0221	0.0176
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.494	0.342	0.247	0.196	0.159	0.128	0.098	0.079	0.063	0.050	0.041	0.039	0.029
Approximate Reactance at 50 Hertz	ohm/Km	0.13	0.12	0.11	0.11	0.11	0.10	0.10	0.10	0.09	0.09	0.09	0.08	0.08
Approximate Impedance at 50 Hertz	ohm/Km	0.51	0.36	0.27	0.22	0.19	0.16	0.14	0.12	0.11	0.10	0.10	0.09	0.09
Approximate Capacitance of Cable	µf/Km	0.25	0.29	0.35	0.38	0.41	0.47	0.51	0.54	0.58	0.66	0.74	0.78	0.8
Approx. Charging Current per phase at Uo = 6kV and f = 50Hz	mA/m	0.47	0.55	0.66	0.72	0.77	0.89	0.96	1.0	1.1	1.2	1.4	1.5	1.5
Sustained Current Ratings														
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid in trefoil touching	A	196	240	285	320	365	409	472	534	605	668	739	819	890
2. Drawn into Ducts, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	200	240	285	320	356	392	449	498	543	605	668	739	810
3. Laid in Air in trefoil touching, Ambient Temp. 35˚ C	A	217	262	331	382	432	497	589	681	773	865	1021	1168	1288
One Second Short Circuit Current Rating of Conductor	kA	7.15	10.01	13.60	17.20	21.50	26.50	34.30	42.90	57.20	71.50	90.10	115	143

For all cables the maximum conductor operating temperature is 90˚C and limiting conductor temperature after short circuit is 250˚C.
Longer drum lengths are available to specific customer requirements.

6/10 (12)kV

Single Core Copper Conductors XLPE Insulated to IEC 60502-2 Unarmoured



1.HCC+ ™ Copper Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper wire screen
6. Tape binder
7. Outer sheath

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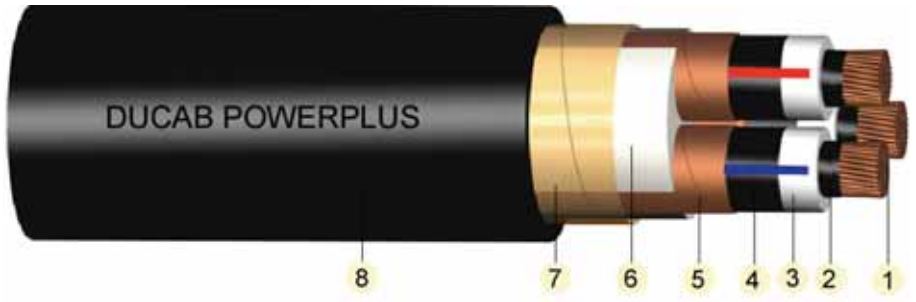
Table 7

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7
Weight of Conductor (Approx)	Kg/Km	1281	1845	2558	3219	3954	4966	6526	8187	10428
Insulation Thickness (Nominal)	mm	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Outersheath Thickness (Nominal)	mm	2.4	2.5	2.6	2.7	2.8	2.9	3.1	3.2	3.5
Approximate Overall Diameter	mm	45.0	48.5	52.5	55.5	59.0	62.5	68.0	73.0	80.5
Approximate Cable Weight	Kg/Km	3230	4070	5090	6080	7070	8400	10570	12790	14290
Standard Drum Length	m	500	500	500	500	500	500	400	300	250
Minimum Bending Radius of Cable (during installation)	mm	671	726	782	831	882	938	1017	1094	1202
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.387	0.268	0.193	0.153	0.124	0.0991	0.0754	0.0601	0.047
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.493	0.342	0.247	0.196	0.159	0.128	0.098	0.080	0.064
Approximate Reactance at 50 Hertz	ohm/Km	0.11	0.11	0.10	0.10	0.09	0.09	0.09	0.09	0.08
Approximate Impedance at 50 Hertz	ohm/Km	0.51	0.36	0.27	0.22	0.18	0.16	0.13	0.12	0.10
Approximate Capacitance of Cable	µf/Km	0.25	0.29	0.35	0.38	0.41	0.47	0.51	0.54	0.58
Approx. Charging Current per phase at Uo = 6kV and f = 50Hz	mA/m	0.47	0.55	0.66	0.72	0.77	0.89	0.96	1.0	1.1
Sustained Current Ratings										
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	198	241	283	321	358	406	462	510	566
2. Drawn into Ducts, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	170	202	241	273	312	349	401	443	500
3. Laid singly in Air, Ambient Temp. 35˚ C	A	210	258	316	359	412	469	545	622	708
One Second Short Circuit Current Rating of Conductor	kA	7.15	10.01	13.60	17.20	21.50	26.50	34.30	42.90	57.20

For all cables the maximum conductor operating temperature is 90˚C and limiting conductor temperature after short circuit is 250˚C.
Longer drum lengths are available to specific customer requirements.

6/10 (12) kV

Three Core Copper Conductors XLPE Insulated to IEC 60502-2 Unarmoured



1.HCC+ ™ Copper Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper tape screen
6. Fillers
7. Tape binder
8. Outer sheath

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Table 8

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7	26.6	29.8	33.6	37.6
Weight of Conductor (Approx)	Kg/Km	420	605	839	1056	1297	1629	2141	2686	3421	4335	5585	7346	9160
Insulation Thickness (Nominal)	mm	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Separation Sheath Thickness	mm	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.4	1.4	1.5
Armour Wire Diameter (Nominal)	mm	1.6	1.6	1.6	1.6	1.6	2	2	2	2	2.5	2.5	2.5	2.5
Outersheath Thickness (Nominal)	mm	1.8	1.8	1.9	1.9	2	2	2.1	2.2	2.3	2.5	2.6	2.7	2.9
Approximate Overall Diameter	mm	28.0	29.5	31.5	33.0	35.5	37.0	39.5	41.5	46.5	49.5	53.0	57.0	61.5
Approximate Cable Weight	Kg/Km	1200	1600	1950	2270	2690	3100	3800	4500	5650	6910	8560	10070	12120
Standard Drum Length	m	500	500	500	500	500	500	500	500	500	500	400	300	250
Minimum Bending Radius of Cable (during installation)	mm	416	440	467	489	527	552	568	623	692	738	792	855	921
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.387	0.268	0.193	0.153	0.124	0.0991	0.0754	0.0601	0.047	0.0366	0.0283	0.0221	0.0176
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.493	0.342	0.246	0.196	0.160	0.127	0.098	0.079	0.063	0.050	0.041	0.039	0.029
Approximate Reactance at 50 Hertz	ohm/Km	0.14	0.13	0.12	0.12	0.12	0.11	0.11	0.10	0.10	0.10	0.10	0.09	0.09
Approximate Impedance at 50 Hertz	ohm/Km	0.51	0.37	0.27	0.23	0.20	0.17	0.15	0.13	0.12	0.11	0.10	0.10	0.091
Approximate Capacitance of Cable	µf/Km	0.25	0.29	0.35	0.38	0.41	0.47	0.51	0.54	0.58	0.66	0.74	0.78	0.80
Approx. Charging Current per phase at Uo = 6kV and f = 50Hz	mA/m	0.47	0.55	0.66	0.72	0.77	0.89	0.96	1.0	1.1	1.2	1.4	1.5	1.5
Sustained Current Ratings														
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid in trefoil touching	A	196	240	285	320	365	405	463	516	579	632	676	721	765
2. Drawn into Ducts, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	196	231	271	303	334	365	418	445	472	507	552	587	614
3. Laid in Air in trefoil touching, Ambient Temp. 35˚ C	A	230	285	345	396	451	506	598	681	773	856	957	1049	1132
One Second Short Circuit Current Rating of Conductor	kA	7.15	10.01	13.60	17.20	21.50	26.50	34.30	42.90	57.20	71.50	90.10	115	143

FOR ALL CABLES THE MAXIMUM CONDUCTOR OPERATING TEMPERATURE IS 90˚C AND LIMITING CONDUCTOR TEMPERATURE AFTER SHORT CIRCUIT IS 250˚C.
LONGER DRUM LENGTHS ARE AVAILABLE TO SPECIFIC CUSTOMER REQUIREMENTS.

6/10 (12)kV

Single Core Copper Conductors XLPE Insulated to IEC 60502-2 Aluminium Wire Armoured

1.HCC+ ™ Copper Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper tape screen
6. Bedding
7. Aluminium Armour
8. Outer sheath

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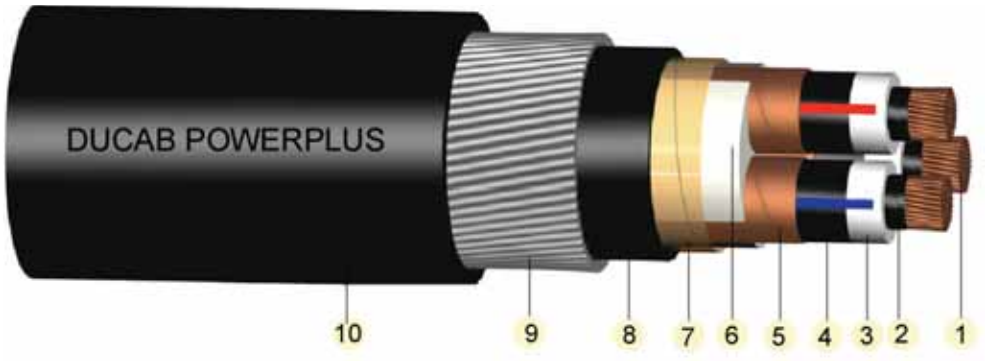
Table 9

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7
Weight of Conductor (Approx)	Kg/Km	1281	1845	2558	3219	3954	4966	6526	8187	10428
Insulation Thickness (Nominal)	mm	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Separation Sheath Thickness	mm	1.4	1.4	1.5	1.6	1.6	1.7	1.8	1.9	2
Armour Wire Diameter (Nominal)	mm	2.5	2.5	2.5	2.5	2.5	2.5	3.15	3.15	3.15
Outersheath Thickness (Nominal)	mm	2.6	2.7	2.9	3	3.1	3.2	3.4	3.6	3.8
Approximate Overall Diameter	mm	53.0	56.5	61.0	64.0	67.5	71.5	79.0	83.5	91.0
Approximate Cable Weight	Kg/Km	5250	6250	7350	8500	9550	11000	14250	16600	19750
Standard Drum Length	m	500	500	500	400	300	300	250	200	200
Minimum Bending Radius of Cable (during installation)	mm	636	678	727	768	810	857	940	1002	1092
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.387	0.268	0.193	0.153	0.124	0.0991	0.0754	0.0601	0.047
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.493	0.342	0.247	0.196	0.159	0.128	0.098	0.078	0.064
Approximate Reactance at 50 Hertz	ohm/Km	0.11	0.11	0.10	0.10	0.09	0.09	0.09	0.09	0.08
Approximate Impedance at 50 Hertz	ohm/Km	0.51	0.36	0.27	0.22	0.18	0.16	0.13	0.12	0.10
Approximate Capacitance of Cable	µf/Km	0.25	0.29	0.35	0.38	0.41	0.47	0.51	0.54	0.58
Approx. Charging Current per phase at Uo = 6kV and f = 50Hz	mA/m	0.47	0.55	0.66	0.72	0.77	0.89	0.96	1.0	1.1
Sustained Current Ratings										
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	187	227	267	303	338	383	436	481	534
2. Drawn into ducts, Ground Temp. = 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	161	191	227	258	294	329	378	418	472
3. Laid singly in Air, Ambient Temp. 35˚ C	A	203	248	304	345	396	451	524	598	681
One Second Short Circuit Current Rating of Conductor	kA	7.15	10.01	13.60	17.20	21.50	26.50	34.30	42.90	57.20

For all cables the maximum conductor operating temperature is 90˚C and limiting conductor temperature after short circuit is 250˚C.
Longer drum lengths are available to specific customer requirements.

6/10 (12)kV

Three Core
Copper Conductors
XLPE Insulated to
IEC 60502-2
Steel Wire Armoured



1.HCC+ ™ Copper Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper tape screen
6. Fillers
7. Tape binder
8. Bedding
9. Galvanised steel wire armour
10. Outer sheath

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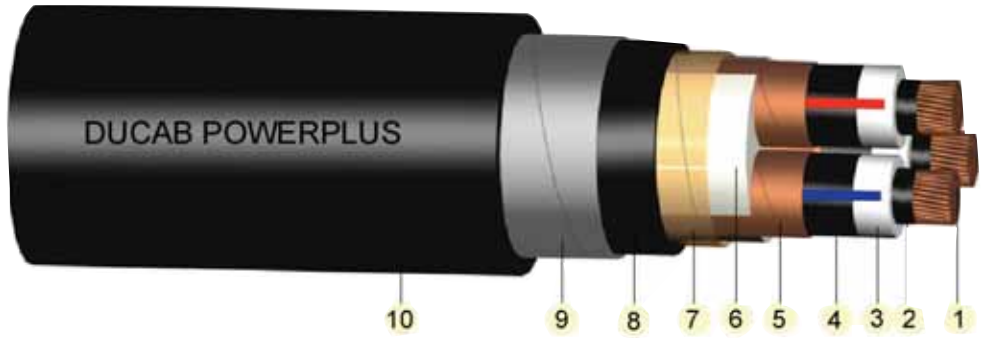
Table 10

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7
Weight of Conductor (Approx)	Kg/Km	1281	1845	2558	3219	3954	4966	6526	8187	10428
Insulation Thickness (Nominal)	mm	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Separation Sheath Thickness	mm	1.4	1.4	1.5	1.6	1.6	1.7	1.8	1.9	2
Steel Tape Thickness (Nominal)	mm	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.8
Outersheath Thickness (Nominal)	mm	2.6	2.7	2.8	2.9	3	3.1	3.3	3.5	3.7
Approximate Overall Diameter	mm	51.0	55.0	59.0	62.0	66.0	70.0	75.0	80.5	88.0
Approximate Cable Weight	Kg/Km	4050	4910	6010	7030	8120	9530	11810	14190	18680
Standard Drum Length	m	500	500	500	500	400	400	300	250	200
Minimum Bending Radius of Cable (during installation)	mm	612	655	704	744	787	833	899	962	1051
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.387	0.268	0.193	0.153	0.124	0.0991	0.0754	0.0601	0.047
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.493	0.342	0.247	0.196	0.159	0.128	0.098	0.078	0.064
Approximate Reactance at 50 Hertz	ohm/Km	0.11	0.11	0.10	0.10	0.09	0.09	0.09	0.08	0.064
Approximate Impedance at 50 Hertz	ohm/Km	0.51	0.36	0.27	0.22	0.18	0.16	0.13	0.12	0.10
Approximate Capacitance of Cable	µf/Km	0.25	0.29	0.35	0.38	0.41	0.47	0.51	0.54	0.58
Approx. Charging Current per phase at Uo = 6kV and f = 50Hz	mA/m	0.47	0.55	0.66	0.72	0.77	0.89	0.96	1.0	1.1
Sustained Current Ratings										
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	187	227	267	303	338	383	436	481	534
2. Drawn into Ducts, Ground Temp. = 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	161	191	227	258	294	329	378	418	472
3. Laid singly in Air, Ambient Temp. 35˚ C	A	203	248	304	345	396	451	524	598	681
One Second Short Circuit Current Rating of Conductor	kA	7.15	10.01	13.60	17.20	21.50	26.50	34.30	42.90	57.20

FOR ALL CABLES THE MAXIMUM CONDUCTOR OPERATING TEMPERATURE IS 90˚C AND LIMITING CONDUCTOR TEMPERATURE AFTER SHORT CIRCUIT IS 250˚C.
LONGER DRUM LENGTHS ARE AVAILABLE TO SPECIFIC CUSTOMER REQUIREMENTS.

6/10 (12)kV

Three Core
Copper Conductors
XLPE Insulated to IEC 60502-2
Steel Tape Armoured



1. HCC+ ™ Copper Conductor
2. Semiconductive conductor screen
3. DFI™ XLPE Insulation
4. Semiconductive insulation screen
5. Copper tape screen
6. Fillers
7. Tape binder
8. Bedding
9. Galvanised steel tape armour
10. Outer sheath

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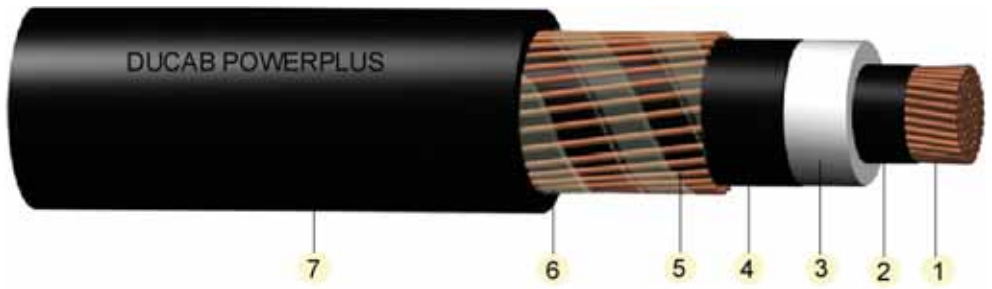
Table 11

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7	26.6	29.8	33.6	37.6
Weight of Conductor (Approx)	Kg/Km	420	605	839	1056	1297	1629	2141	2686	3421	4335	5585	7346	9160
Insulation Thickness (Nominal)	mm	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Outersheath Thickness (Nominal)	mm	1.8	1.8	1.8	1.9	1.9	2	2	2.1	2.2	2.3	2.4	2.5	2.7
Approximate Overall Diameter	mm	24.5	26.0	27.5	29.0	31.0	32.5	35.0	37.5	40.5	43.5	47.0	51.0	55.5
Approximate Cable Weight	Kg/Km	990	1270	1580	1850	2210	2620	3210	3870	4790	5880	7350	8830	10760
Standard Drum Length	m	500	500	500	500	500	500	500	500	500	500	500	400	300
Minimum Bending Radius of Cable (during installation)	mm	482	514	550	580	612	645	696	742	808	870	938	1020	1106
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.387	0.268	0.193	0.153	0.124	0.0991	0.0754	0.0601	0.047	0.0366	0.0283	0.0221	0.0176
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.494	0.342	0.247	0.196	0.159	0.128	0.098	0.079	0.063	0.051	0.041	0.040	0.030
Approximate Reactance at 50 Hertz	ohm/Km	0.13	0.13	0.12	0.11	0.11	0.11	0.10	0.10	0.10	0.09	0.09	0.09	0.08
Approximate Impedance at 50 Hertz	ohm/Km	0.51	0.36	0.27	0.23	0.19	0.17	0.14	0.13	0.12	0.11	0.099	0.096	0.091
Approximate Capacitance of Cable	µf/Km	0.22	0.25	0.28	0.31	0.33	0.36	0.41	0.44	0.49	0.54	0.59	0.68	0.72
Approx. Charging Current per phase at Uo = 8.7kV and f = 50Hz	mA/m	0.60	0.68	0.77	0.85	0.90	1.0	1.1	1.2	1.3	1.5	1.6	1.9	2.0
Sustained Current Ratings														
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid in trefoil touching	A	196	240	285	320	365	409	472	534	605	668	739	819	890
2. Drawn into Ducts, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	200	240	285	320	356	392	449	498	543	605	668	739	810
3. Laid in Air in trefoil touching, Ambient Temp. 35˚ C	A	217	262	331	382	432	497	589	681	773	865	1021	1168	1288
One Second Short Circuit Current Rating of Conductor	kA	7.15	10.01	13.60	17.20	21.50	26.50	34.30	42.90	57.20	71.50	90.10	115	143

For all cables the maximum conductor operating temperature is 90˚C and limiting conductor temperature after short circuit is 250˚C.
Longer drum lengths are available to specific customer requirements.

8.7/15 (17.5)kV

Single Core
Copper Conductors
XLPE Insulated to
IEC 60502-2
Unarmoured



1.HCC+ ™ Copper Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper wire screen
6. Tape binder
7. Outer sheath

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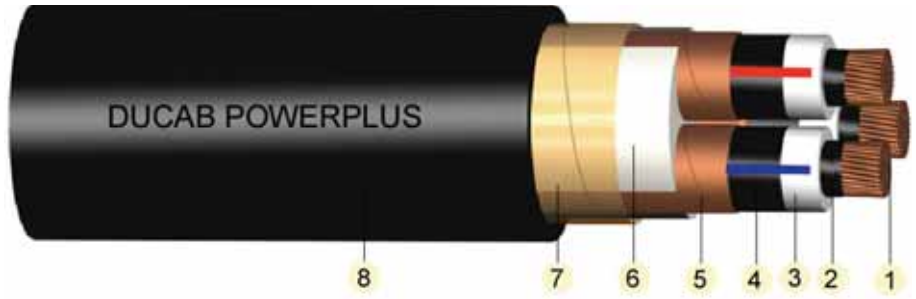
Table 12

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7
Weight of Conductor (Approx)	Kg/Km	1281	1845	2558	3219	3954	4966	6526	8187	10428
Insulation Thickness (Nominal)	mm	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Outersheath Thickness (Nominal)	mm	2.5	2.6	2.8	2.9	3	3.1	3.2	3.4	3.6
Approximate Overall Diameter	mm	50.0	53.5	57.5	60.5	64.0	68.0	73.0	78.0	85.5
Approximate Cable Weight	Kg/Km	2400	3130	4050	4910	5830	7090	9050	11030	14980
Standard Drum Length	m	500	500	500	500	500	400	300	300	250
Minimum Bending Radius of Cable (during installation)	mm	749	800	858	908	959	1014	1094	1170	1277
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.387	0.268	0.193	0.153	0.124	0.0991	0.0754	0.0601	0.047
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.493	0.342	0.247	0.196	0.159	0.128	0.098	0.079	0.064
Approximate Reactance at 50 Hertz	ohm/Km	0.12	0.11	0.11	0.10	0.10	0.10	0.09	0.09	0.09
Approximate Impedance at 50 Hertz	ohm/Km	0.51	0.36	0.27	0.22	0.19	0.16	0.14	0.12	0.11
Approximate Capacitance of Cable	µf/Km	0.22	0.25	0.28	0.31	0.33	0.36	0.41	0.44	0.49
Approx. Charging Current per phase at Uo = 8.7kV and f = 50Hz	mA/m	0.60	0.68	0.77	0.85	0.90	1.0	1.1	1.2	1.3
Sustained Current Ratings										
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	198	241	283	321	358	406	462	510	566
2. Drawn into Ducts, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	170	202	241	273	312	349	401	443	500
3. Laid singly in Air, Ambient Temp. 35˚ C	A	210	258	316	359	412	469	545	622	708
One Second Short Circuit Current Rating of Conductor	kA	7.15	10.01	13.60	17.20	21.50	26.50	34.30	42.90	57.20

For all cables the maximum conductor operating temperature is 90˚C and limiting conductor temperature after short circuit is 250˚C.
Longer drum lengths are available to specific customer requirements.

8.7/15 (17.5)kV

Three Core
Copper Conductors
XLPE Insulated to IEC 60502-2
Unarmoured



1.HCC+ ™ Copper Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper tape screen
6. Fillers
7. Tape binder
8. Outer sheath

Table 13

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7	26.6	29.8	33.6	37.6
Weight of Conductor (Approx)	Kg/Km	420	605	839	1056	1297	1629	2141	2686	3421	4335	5585	7346	9160
Insulation Thickness (Nominal)	mm	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Separation Sheath Thickness	mm	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.4	1.5	1.6
Armour Wire Diameter (Nominal)	mm	1.6	1.6	2	2	2	2	2	2	2.5	2.5	2.5	2.5	2.5
Outersheath Thickness (Nominal)	mm	1.9	2	2	2.1	2.1	2.2	2.3	2.3	2.5	2.6	2.7	2.8	3
Approximate Overall Diameter	mm	30.5	32.0	34.5	36.0	37.5	39.5	42.0	44.0	48.5	52.0	55.5	59.5	64.0
Approximate Cable Weight	Kg/Km	1400	1650	2050	2400	2750	3300	3850	4450	5500	6750	8250	10350	12450
Standard Drum Length	m	500	500	500	500	500	500	500	500	500	500	400	300	300
Minimum Bending Radius of Cable (during installation)	mm	452	476	515	537	561	587	624	660	728	776	828	893	959
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.387	0.268	0.193	0.153	0.124	0.0991	0.0754	0.0601	0.047	0.0366	0.0283	0.0221	0.0176
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.494	0.342	0.247	0.196	0.159	0.127	0.098	0.078	0.063	0.050	0.041	0.039	0.029
Approximate Reactance at 50 Hertz	ohm/Km	0.14	0.14	0.13	0.12	0.12	0.12	0.11	0.11	0.11	0.10	0.10	0.09	0.09
Approximate Impedance at 50 Hertz	ohm/Km	0.51	0.36	0.27	0.20	0.19	0.16	0.14	0.13	0.11	0.11	0.11	0.09	0.09
Approximate Capacitance of Cable	µf/Km	0.22	0.25	0.28	0.31	0.33	0.36	0.41	0.44	0.49	0.54	0.59	0.68	0.72
Approx. Charging Current per phase at Uo = 8.7kV and f = 50Hz	mA/m	0.60	0.68	0.77	0.85	0.90	1.0	1.1	1.2	1.3	1.5	1.6	1.9	2.0
Sustained Current Ratings														
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid in trefoil touching	A	196	240	285	320	365	405	463	516	579	632	676	721	765
2. Drawn into Ducts, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	196	231	271	303	334	365	418	445	472	507	552	587	614
3. Laid in Air in trefoil touching, Ambient Temp. 35˚ C	A	230	285	345	396	451	506	598	681	773	856	957	1049	1132
One Second Short Circuit Current Rating of Conductor	kA	7.15	10.01	13.60	17.20	21.50	26.50	34.30	42.90	57.20	71.50	90.10	115	143

FOR ALL CABLES THE MAXIMUM CONDUCTOR OPERATING TEMPERATURE IS 90˚C AND LIMITING CONDUCTOR TEMPERATURE AFTER SHORT CIRCUIT IS 250˚C.
LONGER DRUM LENGTHS ARE AVAILABLE TO SPECIFIC CUSTOMER REQUIREMENTS.

8.7/15 (17.5)kV

Single Core Copper Conductors XLPE Insulated to IEC 60502-2 Aluminium Wire Armoured

1.HCC+ ™ Copper Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper tape screen
6. Bedding
7. Aluminium Armour
8. Outer sheath

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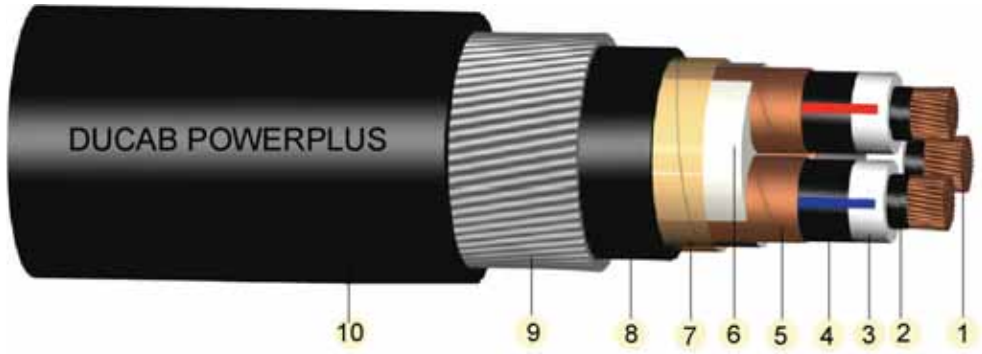
Table 14

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7
Weight of Conductor (Approx)	Kg/Km	1281	1845	2558	3219	3954	4966	6526	8187	10428
Insulation Thickness (Nominal)	mm	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Separation Sheath Thickness	mm	1.5	1.5	1.6	1.7	1.7	1.8	1.9	2	2.1
Armour Wire Diameter (Nominal)	mm	2.5	2.5	2.5	2.5	2.5	3.15	3.15	3.15	3.15
Outersheath Thickness (Nominal)	mm	2.8	2.9	3	3.2	3.3	3.4	3.6	3.8	4
Approximate Overall Diameter	mm	58.5	62.0	66.0	69.5	73.0	78.0	84.0	89.0	97.0
Approximate Cable Weight	Kg/Km	5950	6950	8150	9150	11190	12750	15000	17450	20800
Standard Drum Length	m	500	500	400	400	300	250	250	200	200
Minimum Bending Radius of Cable (during installation)	mm	698	742	791	832	874	936	1003	1066	1154
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.387	0.268	0.193	0.153	0.124	0.0991	0.0754	0.0601	0.047
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.493	0.342	0.247	0.196	0.159	0.128	0.098	0.079	0.064
Approximate Reactance at 50 Hertz	ohm/Km	0.12	0.11	0.11	0.10	0.10	0.10	0.09	0.09	0.09
Approximate Impedance at 50 Hertz	ohm/Km	0.51	0.36	0.27	0.22	0.19	0.16	0.14	0.12	0.11
Approximate Capacitance of Cable	µf/Km	0.22	0.25	0.28	0.31	0.33	0.36	0.41	0.44	0.49
Approx. Charging Current per phase at Uo = 8.7kV and f = 50Hz	mA/m	0.60	0.68	0.77	0.85	0.90	1.0	1.1	1.2	1.3
Sustained Current Ratings										
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	187	227	267	303	338	383	436	481	534
2. Drawn into ducts, Ground Temp. = 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	161	191	227	258	294	329	378	418	472
3. Laid singly in Air, Ambient Temp. 35˚ C	A	203	248	304	345	396	451	524	598	681
One Second Short Circuit Current Rating of Conductor	kA	7.15	10.01	13.60	17.20	21.50	26.50	34.30	42.90	57.20

FOR ALL CABLES THE MAXIMUM CONDUCTOR OPERATING TEMPERATURE IS 90˚C AND LIMITING CONDUCTOR TEMPERATURE AFTER SHORT CIRCUIT IS 250˚C
LONGER DRUM LENGTHS ARE AVAILABLE TO SPECIFIC CUSTOMER REQUIREMENTS.

8.7/15 (17.5)kV

Three Core
Copper Conductors
XLPE Insulated to
IEC 60502-2
Steel Wire Armoured



1.HCC+ ™ Copper Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper tape screen
6. Fillers
7. Tape binder
8. Bedding
9. Galvanised steel wire armour
10. Outer sheath

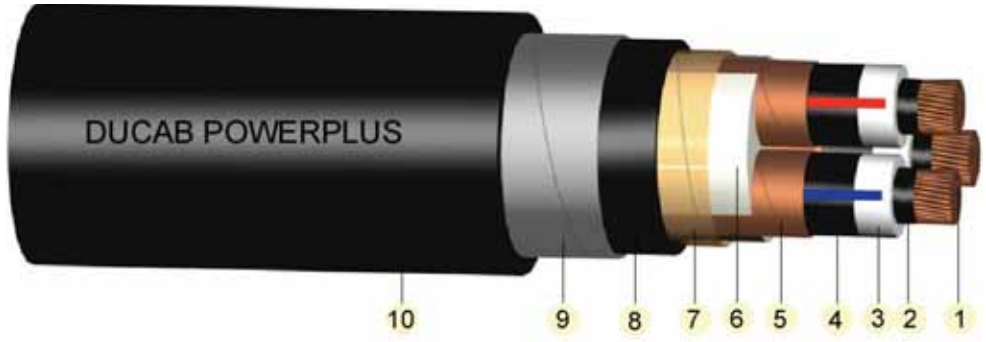
Table 15

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7
Weight of Conductor (Approx)	Kg/Km	1281	1845	2558	3219	3954	4966	6526	8187	10428
Insulation Thickness (Nominal)	mm	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Separation Sheath Thickness	mm	1.5	1.05	1.6	1.7	1.7	1.8	1.9	2	2.1
Steel Tape Thickness (Nominal)	mm	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.8	0.8
Outersheath Thickness (Nominal)	mm	2.7	2.9	3	3.1	3.2	3.3	3.5	3.6	3.9
Approximate Overall Diameter	mm	56.5	60.0	64.0	67.5	71.0	75.0	80.5	85.5	93.0
Approximate Cable Weight	Kg/Km	4650	5510	6620	7660	8780	10320	12580	16010	19720
Standard Drum Length	m	500	500	500	500	400	300	300	250	200
Minimum Bending Radius of Cable (during installation)	mm	676	719	768	808	851	896	962	1026	1115
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.387	0.268	0.193	0.153	0.124	0.0991	0.0754	0.0601	0.047
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.493	0.342	0.247	0.196	0.159	0.128	0.098	0.079	0.064
Approximate Reactance at 50 Hertz	ohm/Km	0.12	0.11	0.11	0.10	0.10	0.10	0.09	0.09	0.09
Approximate Impedance at 50 Hertz	ohm/Km	0.51	0.36	0.27	0.22	0.19	0.16	0.14	0.12	0.11
Approximate Capacitance of Cable	µf/Km	0.22	0.25	0.28	0.31	0.33	0.36	0.41	0.44	0.49
Approx. Charging Current per phase at Uo = 8.7kV and f = 50Hz	mA/m	0.60	0.68	0.77	0.85	0.90	1.0	1.1	1.2	1.3
Sustained Current Ratings										
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	187	227	267	303	338	383	436	481	534
2. Drawn into Ducts, Ground Temp. = 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	161	191	227	258	294	329	378	418	472
3. Laid singly in Air, Ambient Temp. 35˚ C	A	203	248	304	345	396	451	524	598	681
One Second Short Circuit Current Rating of Conductor	kA	7.15	10.01	13.60	17.20	21.50	26.50	34.30	42.90	57.20

For all cables the maximum conductor operating temperature is 90˚C and limiting conductor temperature after short circuit is 250˚C.
Longer drum lengths are available to specific customer requirements.

8.7/15 (17.5)kV

Three Core
Copper Conductors
XLPE Insulated
to IEC 60502-2
Steel Tape Armoured



1.HCC+ ™ Copper Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper tape screen
6. Fillers
7. Tape binder
8. Bedding
9. Galvanised steel tape armour
10. Outer sheath

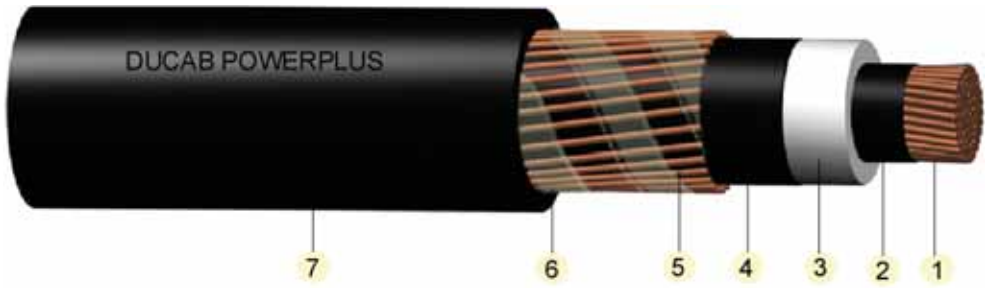
Table 16

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7	26.6	29.8	33.6	37.6
Weight of Conductor (Approx)	Kg/Km	420	605	839	1056	1297	1629	2141	2686	3421	4335	5585	7346	9160
Insulation Thickness (Nominal)	mm	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Outersheath Thickness (Nominal)	mm	1.8	1.8	1.9	1.9	2	2	2.1	2.2	2.3	2.4	2.5	2.6	2.7
Approximate Overall Diameter	mm	26.3	27.9	29.7	31.2	32.8	34.5	36.9	39.3	42.6	45.7	49.1	53.1	57.4
Approximate Cable Weight	Kg/Km	1100	1380	1690	2030	2370	2750	3350	4060	4910	6170	7690	9040	10950
Standard Drum Length	m	500	500	500	500	500	500	500	500	500	500	500	400	300
Minimum Bending Radius of Cable (during installation)	mm	526	558	594	624	656	690	738	786	852	914	962	1062	1148
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.387	0.268	0.193	0.153	0.124	0.0991	0.0754	0.0601	0.047	0.0366	0.0283	0.0221	0.0176
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.494	0.342	0.247	0.196	0.159	0.128	0.098	0.079	0.063	0.051	0.041	0.040	0.030
Approximate Reactance at 50 Hertz	ohm/Km	0.14	0.13	0.12	0.12	0.12	0.11	0.11	0.10	0.10	0.10	0.10	0.09	0.09
Approximate Impedance at 50 Hertz	ohm/Km	0.51	0.37	0.28	0.23	0.20	0.17	0.15	0.13	0.12	0.11	0.10	0.10	0.09
Approximate Capacitance of Cable	µf/Km	0.18	0.21	0.23	0.25	0.27	0.29	0.32	0.35	0.39	0.43	0.48	0.53	0.58
Approx. Charging Current per phase at Uo = 12kV and F = 50Hz	mA/m	0.68	0.79	0.87	0.94	1.0	1.1	1.2	1.3	1.5	1.6	1.8	2.0	2.2
Sustained Current Ratings														
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid in trefoil touching	A	196	240	285	320	365	409	472	534	614	676	757	828	899
2. Drawn into Ducts, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	200	240	285	320	360	396	463	507	561	623	694	757	819
3. Laid in Air in trefoil touching, Ambient Temp. 35˚ C	A	225	276	331	391	446	506	598	681	782	902	1040	1178	1306
One Second Short Circuit Current Rating of Conductor	kA	7.15	10.01	13.60	17.20	21.50	26.50	34.30	42.90	57.20	71.50	90.10	115	143

For all cables the maximum conductor operating temperature is 90˚C and limiting conductor temperature after short circuit is 250˚C.
Longer drum lengths are available to specific customer requirements.

12/20 (24)kV

Single Core
Copper Conductors
XLPE Insulated to
IEC 60502-2
Unarmoured



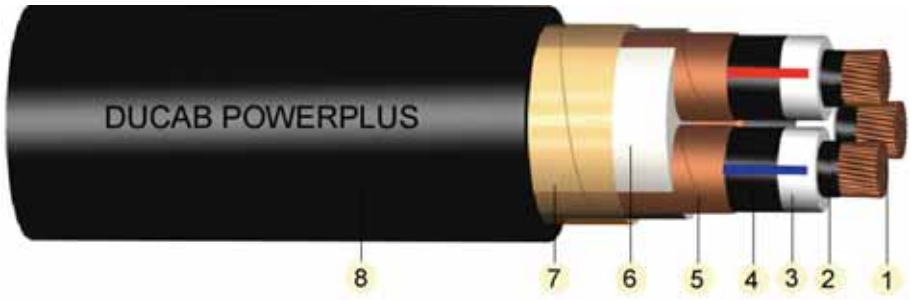
1.HCC+ ™ Copper Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper wire screen
6. Tape binder
7. Outer sheath

Table 17

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7
Weight of Conductor (Approx)	Kg/Km	1281	1845	2558	3219	3954	4966	6526	8187	10428
Insulation Thickness (Nominal)	mm	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Outersheath Thickness (Nominal)	mm	2.7	2.8	2.9	3	3.1	3.2	3.4	3.5	3.8
Approximate Overall Diameter	mm	54.5	58.0	62.0	65.5	68.5	72.5	77.5	83.0	89.0
Approximate Cable Weight	Kg/Km	4100	5010	6080	7090	8210	9620	11830	14140	15700
Standard Drum Length	m	500	500	500	500	500	400	300	300	200
Minimum Bending Radius of Cable (during installation)	mm	818	869	929	977	1028	1083	1163	1239	1346
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.387	0.268	0.193	0.153	0.124	0.0991	0.0754	0.0601	0.047
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.493	0.342	0.247	0.196	0.159	0.128	0.098	0.079	0.063
Approximate Reactance at 50 Hertz	ohm/Km	0.12	0.12	0.11	0.11	0.10	0.10	0.10	0.09	0.09
Approximate Impedance at 50 Hertz	ohm/Km	0.51	0.36	0.27	0.22	0.19	0.16	0.14	0.12	0.11
Approximate Capacitance of Cable	µf/Km	0.18	0.21	0.23	0.25	0.27	0.29	0.32	0.35	0.39
Approx. Charging Current per phase at Uo = 12kV and F = 50Hz	mA/m	0.68	0.79	0.87	0.94	1.0	1.1	1.2	1.3	1.5
Sustained Current Ratings										
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	198	241	279	316	354	396	453	500	557
2. Drawn into Ducts, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	175	212	245	283	316	358	406	453	510
3. Laid singly in Air, Ambient Temp. 35˚ C	A	215	263	316	364	412	469	545	622	708
One Second Short Circuit Current Rating of Conductor	kA	7.15	10.01	13.60	17.20	21.50	26.50	34.30	42.90	57.20

For all cables the maximum conductor operating temperature is 90˚C and limiting conductor temperature after short circuit is 250˚C.
Longer drum lengths are available to specific customer requirements.

12/20 (24)kV
Three Core
Copper Conductors
XLPE Insulated to
IEC 60502-2
Unarmoured



1.HCC+ ™ Copper Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper tape screen
6. Fillers
7. Tape binder
8. Outer sheath

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Table 18

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7	26.6	29.8	33.6	37.6
Weight of Conductor (Approx)	Kg/Km	420	605	839	1056	1297	1629	2141	2686	3421	4335	5585	7346	9160
Insulation Thickness (Nominal)	mm	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Separation Sheath Thickness	mm	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.4	1.5	1.5	1.6
Armour Wire Diameter (Nominal)	mm	1.6	2	2	2	2	2	2	2.5	2.5	2.5	2.5	2.5	2.5
Outersheath Thickness (Nominal)	mm	2	2.1	2.1	2.2	2.2	2.3	2.3	2.4	2.6	2.7	2.8	2.9	3
Approximate Overall Diameter	mm	32.5	35.0	36.5	38.0	39.5	41.5	44.0	47.5	51.0	54.0	57.5	62.0	66.5
Approximate Cable Weight	Kg/Km	1500	1800	2200	2500	2850	3250	4000	4800	5750	7500	8450	10600	12690
Standard Drum Length	m	500	500	500	500	500	500	500	500	500	500	400	300	300
Minimum Bending Radius of Cable (during installation)	mm	483	519	548	570	593	618	657	710	761	809	863	926	992
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.387	0.268	0.193	0.153	0.124	0.0991	0.0754	0.0601	0.047	0.0366	0.0283	0.0221	0.0176
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.494	0.342	0.247	0.196	0.159	0.127	0.098	0.079	0.063	0.050	0.040	0.039	0.029
Approximate Reactance at 50 Hertz	ohm/Km	0.15	0.14	0.13	0.13	0.12	0.12	0.12	0.11	0.11	0.11	0.10	0.10	0.09
Approximate Impedance at 50 Hertz	ohm/Km	0.52	0.37	0.28	0.23	0.2	0.17	0.15	0.14	0.12	0.12	0.11	0.10	0.10
Approximate Capacitance of Cable	µf/Km	0.18	0.21	0.23	0.25	0.27	0.29	0.32	0.35	0.39	0.43	0.48	0.53	0.58
Approx. Charging Current per phase at Uo = 12kV and F = 50Hz	mA/m	0.68	0.79	0.87	0.94	1.0	1.1	1.2	1.3	1.5	1.6	1.8	2.0	2.2
Sustained Current Ratings														
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid in trefoil touching	A	196	240	285	320	365	401	454	507	570	623	676	721	765
2. Drawn into Ducts, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	187	231	271	303	329	356	401	436	472	507	543	596	614
3. Laid in Air in trefoil touching, Ambient Temp. 35˚ C	A	239	294	350	405	451	515	598	672	764	865	966	1049	1132
One Second Short Circuit Current Rating of Conductor	kA	7.15	10.01	13.60	17.20	21.50	26.50	34.30	42.90	57.20	71.50	90.10	115	143

FOR ALL CABLES THE MAXIMUM CONDUCTOR OPERATING TEMPERATURE IS 90˚C AND LIMITING CONDUCTOR TEMPERATURE AFTER SHORT CIRCUIT IS 250˚C.
LONGER DRUM LENGTHS ARE AVAILABLE TO SPECIFIC CUSTOMER REQUIREMENTS.

12/20 (24)kV

Single Core
Copper Conductors
XLPE Insulated to IEC 60502-2
Aluminium Wire Armoured

1.HCC+ ™ Copper Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper tape screen
6. Bedding
7. Aluminium Armour
8. Outer sheath

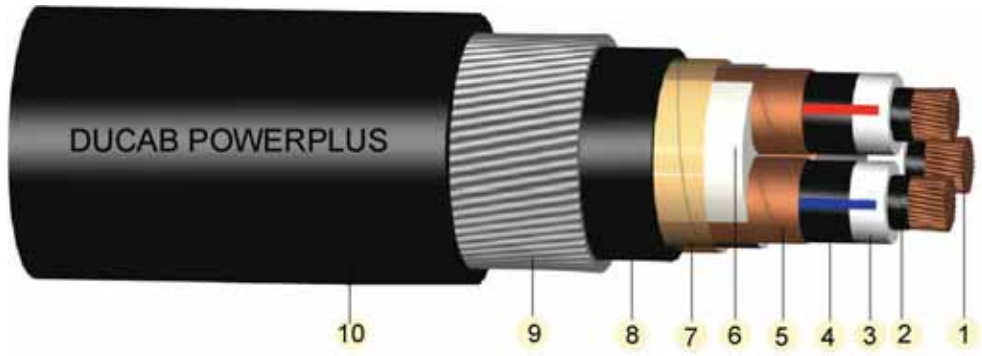
Table 19

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7
Weight of Conductor (Approx)	Kg/Km	1281	1845	2558	3219	3954	4966	6526	8187	10428
Insulation Thickness (Nominal)	mm	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Separation Sheath Thickness	mm	1.6	1.6	1.7	1.7	1.8	1.9	2	2.1	2.2
Armour Wire Diameter (Nominal)	mm	2.5	2.5	2.5	3.15	3.15	3.15	3.15	3.15	3.15
Outersheath Thickness (Nominal)	mm	3	3.1	3.2	3.4	3.5	3.6	3.8	3.9	4.2
Approximate Overall Diameter	mm	63.5	67.0	71.0	75.5	79.0	83.0	88.5	94.0	101.5
Approximate Cable Weight	Kg/Km	6550	7550	8750	10700	11900	13500	15800	18300	21700
Standard Drum Length	m	500	400	300	300	300	250	200	200	200
Minimum Bending Radius of Cable (during installation)	mm	757	799	848	906	948	995	1061	1123	1213
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.387	0.268	0.193	0.153	0.124	0.0991	0.0754	0.0601	0.047
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.493	0.342	0.247	0.196	0.159	0.127	0.098	0.079	0.063
Approximate Reactance at 50 Hertz	ohm/Km	0.12	0.12	0.11	0.11	0.10	0.10	0.10	0.09	0.09
Approximate Impedance at 50 Hertz	ohm/Km	0.51	0.36	0.27	0.22	0.19	0.16	0.14	0.12	0.11
Approximate Capacitance of Cable	µf/Km	0.18	0.21	0.23	0.25	0.27	0.29	0.32	0.35	0.39
Approx. Charging Current per phase at Uo = 12kV and F = 50Hz	mA/m	0.68	0.79	0.87	0.94	1.0	1.1	1.2	1.3	1.5
Sustained Current Ratings										
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	187	227	263	298	334	374	427	472	525
2. Drawn into ducts, Ground Temp. = 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	165	200	231	267	298	338	383	427	481
3. Laid singly in Air, Ambient Temp. 35˚ C	A	207	253	304	350	396	451	524	598	681
One Second Short Circuit Current Rating of Conductor	kA	7.15	10.01	13.60	17.20	21.50	26.50	34.30	42.90	57.20

For all cables the maximum conductor operating temperature is 90˚C and limiting conductor temperature after short circuit is 250˚C.
Longer drum lengths are available to specific customer requirements.

12/20 (24)kV

Three Core
Copper Conductors
XLPE Insulated
to IEC 60502-2
Steel Wire Armoured



1.HCC+ ™ Copper Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper tape screen
6. Fillers
7. Tape binder
8. Bedding
9. Galvanised steel wire armour
10. Outer sheath

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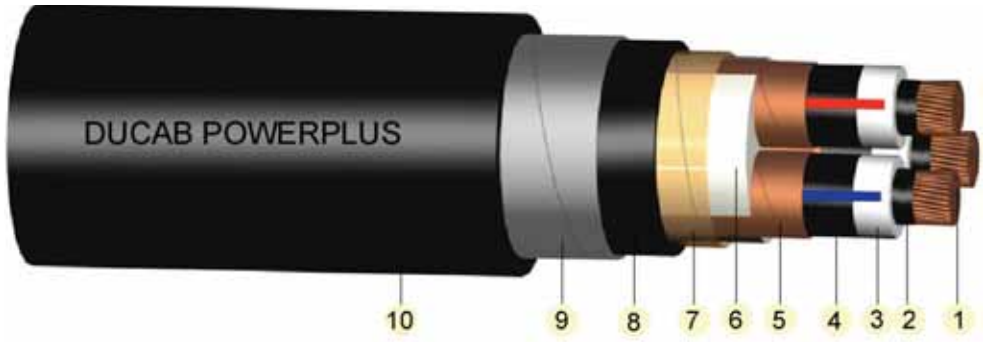
Table 20

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7
Weight of Conductor (Approx)	Kg/Km	1281	1845	2558	3219	3954	4966	6526	8187	10428
Insulation Thickness (Nominal)	mm	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Separation Sheath Thickness	mm	1.6	1.6	1.7	1.7	1.8	1.9	2	2.1	2.2
Steel Tape Thickness (Nominal)	mm	0.5	0.5	0.5	0.5	0.5	0.5	0.8	0.8	0.8
Outersheath Thickness (Nominal)	mm	2.9	3	3.1	3.2	3.4	3.5	3.6	3.8	4
Approximate Overall Diameter	mm	61.5	65.0	69.0	72.5	78.5	80.0	85.5	90.5	98.0
Approximate Cable Weight	Kg/Km	5120	6090	7180	8250	9510	11020	14150	16590	20690
Standard Drum Length	m	500	500	500	400	400	300	250	200	200
Minimum Bending Radius of Cable (during installation)	mm	734	778	826	866	910	955	1021	1085	1174
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.387	0.268	0.193	0.153	0.124	0.0991	0.0754	0.0601	0.047
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.493	0.342	0.247	0.196	0.159	0.127	0.098	0.079	0.063
Approximate Reactance at 50 Hertz	ohm/Km	0.12	0.12	0.11	0.11	0.10	0.10	0.10	0.09	0.09
Approximate Impedance at 50 Hertz	ohm/Km	0.51	0.36	0.27	0.22	0.19	0.16	0.14	0.12	0.11
Approximate Capacitance of Cable	µf/Km	0.18	0.21	0.23	0.25	0.27	0.29	0.32	0.35	0.39
Approx. Charging Current per phase at Uo = 12kV and F = 50Hz	mA/m	0.68	0.79	0.87	0.94	1.0	1.1	1.2	1.3	1.5
Sustained Current Ratings										
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	187	227	263	298	334	374	427	472	525
2. Drawn into Ducts, Ground Temp. = 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	165	200	231	267	298	338	383	427	481
3. Laid singly in Air, Ambient Temp. 35˚ C	A	207	253	304	350	396	451	524	598	681
One Second Short Circuit Current Rating of Conductor	kA	7.15	10.01	13.60	17.20	21.50	26.50	34.30	42.90	57.20

For all cables the maximum conductor operating temperature is 90˚C and limiting conductor temperature after short circuit is 250˚C.
Longer drum lengths are available to specific customer requirements.

12/20 (24)kV

Three Core Copper Conductors XLPE Insulated to IEC 60502-2 Steel Tape Armoured



1.HCC+ ™ Copper Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper tape screen
6. Fillers
7. Tape binder
8. Bedding
9. Galvanised steel tape armour
10. Outer sheath

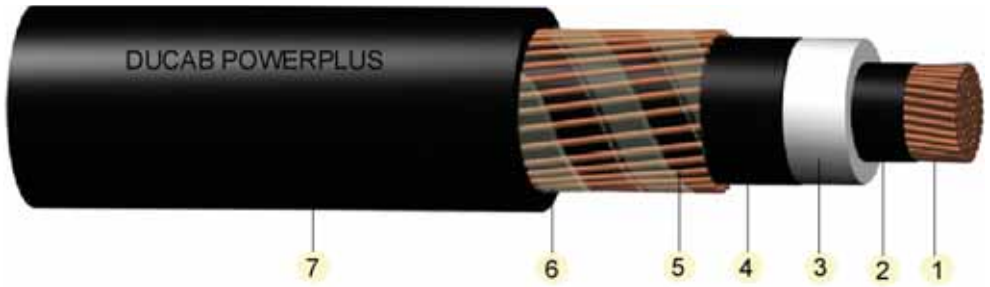
Table 21

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7	26.6	29.8	33.6	37.6
Weight of Conductor (Approx)	Kg/Km	420	605	839	1056	1297	1629	2141	2686	3421	4335	5585	7346	9160
Insulation Thickness (Nominal)	mm	8	8	8	8	8	8	8	8	8	8	8	8	8
Outersheath Thickness (Nominal)	mm	2	2	2.1	2.1	2.2	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9
Approximate Overall Diameter	mm	32.0	33.5	35.0	36.5	38.5	40.0	42.5	45.0	48.0	51.0	54.5	58.5	63.0
Approximate Cable Weight	Kg/Km	1410	1680	2030	2310	2690	3080	3730	4460	5380	6610	8170	9570	11520
Standard Drum Length	m	500	500	500	500	500	500	500	500	500	500	500	400	300
Minimum Bending Radius of Cable (during installation)	mm	632	664	700	730	762	796	846	892	958	1020	1088	1170	1254
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.387	0.268	0.193	0.153	0.124	0.0991	0.0754	0.0601	0.047	0.0366	0.0283	0.0221	0.0176
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.494	0.342	0.247	0.196	0.159	0.127	0.098	0.079	0.063	0.050	0.041	0.039	0.029
Approximate Reactance at 50 Hertz	ohm/Km	0.15	0.14	0.14	0.13	0.13	0.12	0.12	0.11	0.11	0.10	0.10	0.10	0.09
Approximate Impedance at 50 Hertz	ohm/Km	0.51	0.37	0.28	0.24	0.2	0.18	0.15	0.14	0.13	0.12	0.11	0.10	0.10
Approximate Capacitance of Cable	µf/Km	0.14	0.16	0.18	0.19	0.2	0.22	0.24	0.26	0.29	0.32	0.35	0.4	0.44
Approx. Charging Current per phase at Uo = 18kV and F = 50Hz	mA/m	0.79	0.9	1.0	1.1	1.1	1.2	1.4	1.5	1.6	1.8	2.0	2.3	2.5
Sustained Current Ratings														
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid in trefoil touching	A	196	240	285	320	365	409	472	534	614	676	757	828	899
2. Drawn into Ducts, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	200	240	285	320	360	396	463	507	561	623	694	757	819
3. Laid in Air in trefoil touching, Ambient Temp. 35˚ C	A	225	276	331	391	446	506	598	681	782	902	1040	1187	1316
One Second Short Circuit Current Rating of Conductor	kA	7.15	10.01	13.60	17.20	21.50	26.50	34.30	42.90	57.20	71.50	90.10	115	143

For all cables the maximum conductor operating temperature is 90˚C and limiting conductor temperature after short circuit is 250˚C.
Longer drum lengths are available to specific customer requirements.

18/30 (36)kV

Single Core
Copper Conductors
XLPE Insulated
to IEC 60502-2
Unarmoured



1.HCC+ ™ Copper Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper wire screen
6. Tape binder
7. Outer sheath

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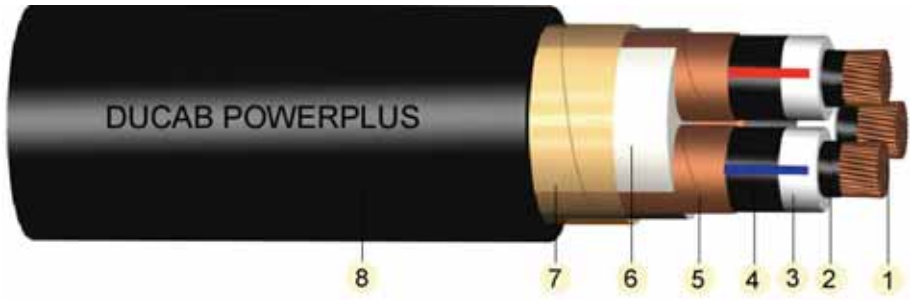
Table 22

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7
Weight of Conductor (Approx)	Kg/Km	1281	1845	2558	3219	3954	4966	6526	8187	10428
Insulation Thickness (Nominal)	mm	8	8	8	8	8	8	8	8	8
Outersheath Thickness (Nominal)	mm	3.1	3.2	3.3	3.4	3.5	3.6	3.8	3.9	4.2
Approximate Overall Diameter	mm	66.0	69.5	73.5	77.0	80.5	84.0	89.5	94.5	101.5
Approximate Cable Weight	Kg/Km	5380	6410	7590	8650	9760	11210	13530	15930	17370
Standard Drum Length	m	500	500	500	500	500	500	250	200	200
Minimum Bending Radius of Cable (during installation)	mm	1320	1390	1468	1532	1602	1676	1782	1882	2026
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.387	0.268	0.193	0.153	0.124	0.0991	0.0754	0.0601	0.047
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.493	0.342	0.247	0.196	0.159	0.127	0.098	0.079	0.063
Approximate Reactance at 50 Hertz	ohm/Km	0.14	0.13	0.12	0.12	0.11	0.11	0.11	0.10	0.10
Approximate Impedance at 50 Hertz	ohm/Km	0.51	0.37	0.28	0.23	0.2	0.17	0.14	0.13	0.12
Approximate Capacitance of Cable	µf/Km	0.14	0.16	0.18	0.19	0.2	0.22	0.24	0.26	0.29
Approx. Charging Current per phase at Uo = 18kV and F = 50Hz	mA/m	0.79	0.90	1.0	1.1	1.1	1.2	1.4	1.5	1.6
Sustained Current Ratings										
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	198	241	283	321	358	406	462	510	566
2. Drawn into Ducts, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	170	202	241	273	312	349	401	443	500
3. Laid singly in Air, Ambient Temp. 35˚ C	A	210	258	316	359	412	469	545	622	708
One Second Short Circuit Current Rating of Conductor	kA	7.15	10.01	13.60	17.20	21.50	26.50	34.30	42.90	57.20

For all cables the maximum conductor operating temperature is 90˚C and limiting conductor temperature after short circuit is 250˚C.
Longer drum lengths are available to specific customer requirements.

18/30 (36)kV

Three Core Copper Conductors XLPE Insulated to IEC 60502-2 Unarmoured



1.HCC+ ™ Copper Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper tape screen
6. Fillers
7. Tape binder
8. Outer sheath

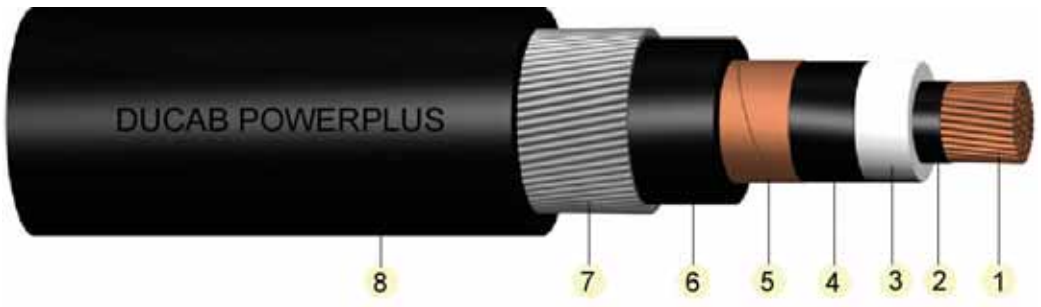
Table 23

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7	26.6	29.8	33.6	37.6
Weight of Conductor (Approx)	Kg/Km	420	605	839	1056	1297	1629	2141	2686	3421	4335	5585	7346	9160
Insulation Thickness (Nominal)	mm	8	8	8	8	8	8	8	8	8	8	8	8	8
Separation Sheath Thickness	mm	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.4	1.4	1.5	1.6	1.6	1.7
Armour Wire Diameter (Nominal)	mm	2	2	2	2	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Outersheath Thickness (Nominal)	mm	2.2	2.2	2.3	2.3	2.4	2.5	2.6	2.6	2.7	2.85	2.9	3.1	3.2
Approximate Overall Diameter	mm	38.5	40.0	42.0	44.0	46.5	48.0	50.5	53.0	56.5	59.5	63.0	67.5	72.0
Approximate Cable Weight	Kg/Km	2030	2270	2640	3000	3500	3900	4600	5300	6400	7700	9150	11350	13750
Standard Drum Length	m	500	500	500	500	500	500	500	500	500	500	300	250	200
Minimum Bending Radius of Cable (during installation)	mm	576	599	627	651	692	719	756	792	845	893	945	1008	1076
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.387	0.268	0.193	0.153	0.124	0.0991	0.0754	0.0601	0.047	0.0366	0.0283	0.0221	0.0176
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.494	0.342	0.247	0.196	0.159	0.128	0.098	0.079	0.063	0.050	0.041	0.039	0.029
Approximate Reactance at 50 Hertz	ohm/Km	0.16	0.15	0.14	0.14	0.13	0.13	0.12	0.12	0.11	0.11	0.11	0.09	0.09
Approximate Impedance at 50 Hertz	ohm/Km	0.52	0.37	0.28	0.24	0.21	0.18	0.16	0.14	0.13	0.12	0.11	0.10	0.09
Approximate Capacitance of Cable	µf/Km	0.14	0.16	0.18	0.19	0.2	0.22	0.24	0.26	0.29	0.32	0.35	0.4	0.44
Approx. Charging Current per phase at Uo = 18kV and F = 50Hz	mA/m	0.79	0.9	1.0	1.1	1.1	1.2	1.4	1.5	1.6	1.8	2.0	2.3	2.5
Sustained Current Ratings														
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid in trefoil touching	A	196	240	285	320	365	401	454	507	570	623	676	721	765
2. Drawn into Ducts, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	187	231	267	303	329	356	401	436	472	507	543	596	623
3. Laid in Air in trefoil touching, Ambient Temp. 35˚ C	A	207	254	305	360	411	466	550	626	719	829	956	1092	1210
One Second Short Circuit Current Rating of Conductor	kA	7.15	10.01	13.60	17.20	21.50	26.50	34.30	42.90	57.20	71.50	90.10	115	143

FOR ALL CABLES THE MAXIMUM CONDUCTOR OPERATING TEMPERATURE IS 90˚C AND LIMITING CONDUCTOR TEMPERATURE AFTER SHORT CIRCUIT IS 250˚C.
LONGER DRUM LENGTHS ARE AVAILABLE TO SPECIFIC CUSTOMER REQUIREMENTS.

18/30 (36)kV

Single Core Copper Conductors XLPE Insulated to IEC 60502-2 Aluminium Wire Armoured



1.HCC+ ™ Copper Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper tape screen
6. Bedding
7. Aluminium Armour
8. Outer sheath

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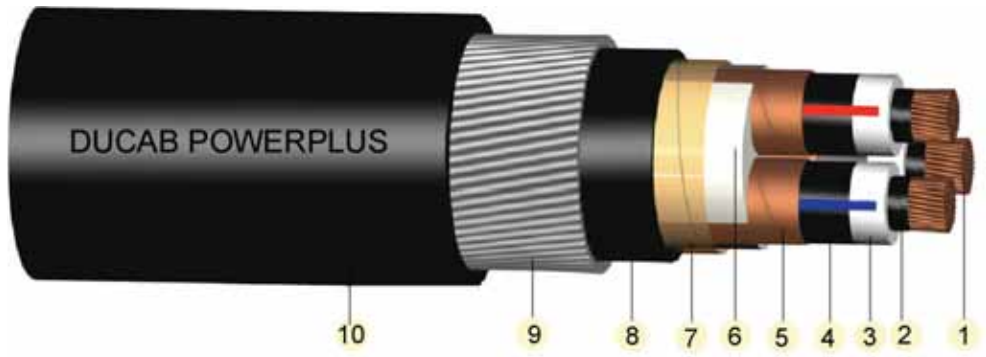
Table 24

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7
Weight of Conductor (Approx)	Kg/Km	1281	1845	2558	3219	3954	4966	6526	8187	10428
Insulation Thickness (Nominal)	mm	8	8	8	8	8	8	8	8	8
Separation Sheath Thickness	mm	1.8	1.8	1.9	2	2	2.1	2.2	2.3	2.4
Armour Wire Diameter (Nominal)	mm	3.15	3.15	3.15	3.15	3.15	3.15	3.15	3.15	3.15
Outersheath Thickness (Nominal)	mm	3.4	3.5	3.6	3.7	3.9	4	4.1	4.3	4.5
Approximate Overall Diameter	mm	76.5	80.0	84.5	87.5	91.5	95.0	100.5	106.0	113.5
Approximate Cable Weight	Kg/Km	9540	10300	11700	12900	14100	16100	18300	21500	25730
Standard Drum Length	m	300	300	300	250	250	200	200	200	200
Minimum Bending Radius of Cable (during installation)	mm	918	960	1009	1050	1093	1139	1205	1267	1357
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.387	0.268	0.193	0.153	0.124	0.0991	0.0754	0.0601	0.047
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.493	0.342	0.247	0.196	0.159	0.127	0.098	0.079	0.063
Approximate Reactance at 50 Hertz	ohm/Km	0.14	0.13	0.12	0.12	0.11	0.11	0.11	0.10	0.10
Approximate Impedance at 50 Hertz	ohm/Km	0.51	0.37	0.28	0.23	0.2	0.17	0.14	0.13	0.12
Approximate Capacitance of Cable	µf/Km	0.14	0.16	0.18	0.19	0.2	0.22	0.24	0.26	0.29
Approx. Charging Current per phase at Uo = 18kV and F = 50Hz	mA/m	0.79	0.90	1.0	1.1	1.1	1.2	1.4	1.5	1.6
Sustained Current Ratings										
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	187	227	267	303	338	383	436	481	534
2. Drawn into ducts, Ground Temp. = 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	160	191	227	258	294	329	378	418	472
3. Laid singly in Air, Ambient Temp. 35˚ C	A	202	248	304	345	396	451	524	598	681
One Second Short Circuit Current Rating of Conductor	kA	7.15	10.01	13.60	17.20	21.50	26.50	34.30	42.90	57.20

For all cables the maximum conductor operating temperature is 90˚C and limiting conductor temperature after short circuit is 250˚C.
Longer drum lengths are available to specific customer requirements.

18/30 (36)kV

Three Core
Copper Conductors
XLPE Insulated
to IEC 60502-2
Steel Wire Armoured



1.HCC+ ™ Copper Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper tape screen
6. Fillers
7. Tape binder
8. Bedding
9. Galvanised steel wire armour
10. Outer sheath

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Table 25

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7
Weight of Conductor (Approx)	Kg/Km	1281	1845	2558	3219	3954	4966	6526	8187	10428
Insulation Thickness (Nominal)	mm	8	8	8	8	8	8	8	8	8
Separation Sheath Thickness	mm	1.8	1.8	1.9	2	2	2.1	2.2	2.3	2.4
Steel Tape Thickness (Nominal)	mm	0.5	0.5	0.5	0.8	0.8	0.8	0.8	0.8	0.8
Outersheath Thickness (Nominal)	mm	3.3	3.4	3.5	3.6	3.7	3.8	4	4.1	4.4
Approximate Overall Diameter	mm	73.5	77.0	81.0	84.5	88.0	92.0	97.5	102.5	109.5
Approximate Cable Weight	Kg/Km	6580	7670	8910	10910	12140	13720	16170	18710	23080
Standard Drum Length	m	500	400	300	300	300	250	200	200	200
Minimum Bending Radius of Cable (during installation)	mm	878	922	971	1010	1054	1099	1166	1226	1313
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.387	0.268	0.193	0.153	0.124	0.0991	0.0754	0.0601	0.047
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.493	0.342	0.247	0.196	0.159	0.127	0.098	0.079	0.063
Approximate Reactance at 50 Hertz	ohm/Km	0.14	0.13	0.12	0.12	0.11	0.11	0.11	0.10	0.10
Approximate Impedance at 50 Hertz	ohm/Km	0.51	0.37	0.28	0.23	0.20	0.17	0.14	0.13	0.12
Approximate Capacitance of Cable	µf/Km	0.14	0.16	0.18	0.19	0.20	0.22	0.24	0.26	0.29
Approx. Charging Current per phase at Uo = 18kV and F = 50Hz	mA/m	0.79	0.90	1.0	1.1	1.1	1.2	1.4	1.5	1.6
Sustained Current Ratings										
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	187	227	267	303	338	383	436	481	534
2. Drawn into Ducts, Ground Temp. = 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	160	191	227	258	294	329	378	416	472
3. Laid singly in Air, Ambient Temp. 35˚ C	A	202	248	304	345	396	451	524	598	681
One Second Short Circuit Current Rating of Conductor	kA	7.15	10.01	13.60	17.20	21.50	26.50	34.30	42.90	57.20

For all cables the maximum conductor operating temperature is 90˚C and limiting conductor temperature after short circuit is 250˚C.
Longer drum lengths are available to specific customer requirements.

18/30 (36)kV

Three Core
Copper Conductors
XLPE Insulated
to IEC 60502-2
Steel Tape Armoured

1.HCC⁺ ™ Copper Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper tape screen
6. Fillers
7. Tape binder
8. Bedding
9. Galvanised steel tape armour
10. Outer sheath

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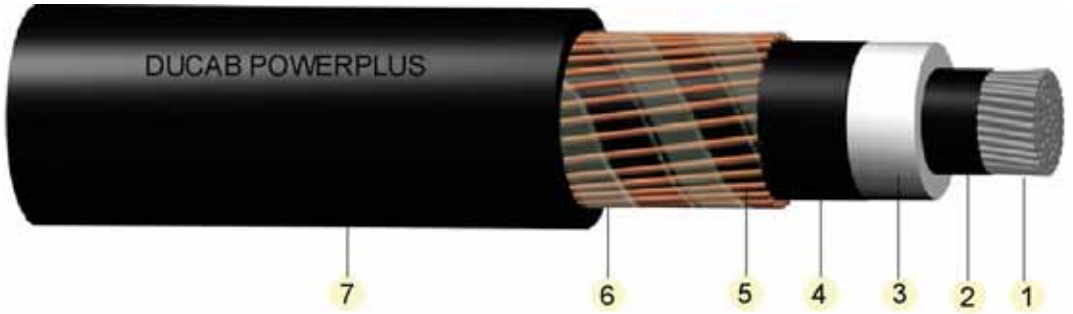
Table 26

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7	26.6	29.8	33.6	37.6
Weight of Conductor (Approx)	Kg/Km	125	180	250	313	386	486	637	800	1024	1318	1672	2231	2745
Insulation Thickness (Nominal)	mm	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.8	3	3.2	3.2	3.2	3.2
Outersheath Thickness (Nominal)	mm	1.6	1.6	1.7	1.7	1.8	1.8	1.9	2	2.1	2.2	2.3	2.5	2.6
Approximate Overall Diameter	mm	20.0	21.5	23.5	25.0	26.5	28.0	31.0	33.5	37.5	41.0	44.5	48.5	52.5
Approximate Cable Weight	Kg/Km	510	630	790	860	1000	1140	1430	1720	2140	2550	3110	3690	4090
Standard Drum Length	m	500	500	500	500	500	500	500	500	500	500	500	400	300
Minimum Bending Radius of Cable (during installation)	mm	396	428	464	494	526	560	614	668	744	814	882	964	1042
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.641	0.443	0.32	0.253	0.206	0.164	0.125	0.1	0.0778	0.0605	0.0469	0.0367	0.0291
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.822	0.568	0.411	0.325	0.265	0.211	0.162	0.13	0.102	0.080	0.064	0.051	0.043
Approximate Reactance at 50 Hertz	ohm/Km	0.12	0.12	0.11	0.11	0.10	0.10	0.10	0.09	0.09	0.09	0.09	0.08	0.08
Approximate Impedance at 50 Hertz	ohm/Km	0.83	0.58	0.43	0.34	0.29	0.24	0.19	0.16	0.14	0.13	0.11	0.1	0.091
Approximate Capacitance of Cable	µf/Km	0.34	0.38	0.43	0.47	0.51	0.56	0.61	0.63	0.65	0.69	0.73	0.79	0.85
Approx. Charging Current per phase at Uo = 3.6kV and F = 50Hz	mA/m	0.38	0.43	0.49	0.53	0.58	0.63	0.69	0.71	0.74	0.78	0.83	0.89	0.96
Sustained Current Ratings														
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid in trefoil touching	A	151	187	223	249	285	320	369	423	481	543	605	685	757
2. Drawn into Ducts, Ground Temperature = 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	156	191	227	254	280	312	360	405	454	507	570	632	703
3. Laid in Air in trefoil touching, Ambient Temp. 35˚ C	A	166	207	258	294	336	391	460	534	616	727	837	975	1095
One Second Short Circuit Current Rating of Conductor	kA	4.70	6.58	8.93	11.30	14.10	17.40	22.60	28.20	37.60	47.00	59.20	75.20	94.00

For all cables the maximum conductor operating temperature is 90˚C and limiting conductor temperature after short circuit is 250˚C.
Longer drum lengths are available to specific customer requirements.

3.6/6 (7.2)kV

**Single Core
Aluminium Conductors
XLPE Insulated
to IEC 60502-2
Unarmoured**



1.HCC+ ™ Aluminium Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper wire screen
6. Tape binder
7. Outer sheath

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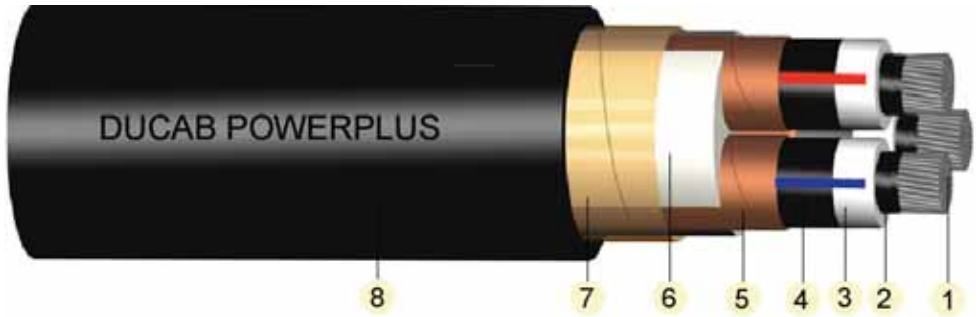
Table 27

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7
Weight of Conductor (Approx)	Kg/Km	381	549	762	955	1177	1482	1942	2439	3122
Insulation Thickness (Nominal)	mm	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.8	3
Outersheath Thickness (Nominal)	mm	2.2	2.3	2.5	2.6	2.7	2.8	3	3.1	3.4
Approximate Overall Diameter	mm	40.5	44.0	48.0	51.0	54.5	58.0	64.0	70.0	78.0
Approximate Cable Weight	Kg/Km	1720	2060	2460	2830	3270	3740	4550	5620	6860
Standard Drum Length	m	500	500	500	500	500	500	400	300	250
Minimum Bending Radius of Cable (during installation)	mm	605	656	716	764	815	870	957	1047	1169
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.641	0.443	0.32	0.253	0.206	0.164	0.125	0.100	0.0778
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.822	0.568	0.411	0.325	0.265	0.211	0.162	0.130	0.102
Approximate Reactance at 50 Hertz	ohm/Km	0.10	0.10	0.09	0.09	0.09	0.09	0.08	0.08	0.08
Approximate Impedance at 50 Hertz	ohm/Km	0.83	0.58	0.42	0.34	0.28	0.23	0.18	0.15	0.13
Approximate Capacitance of Cable	µf/Km	0.34	0.38	0.43	0.47	0.51	0.56	0.61	0.63	0.65
Approx. Charging Current per phase at Uo = 3.6kV and F = 50Hz	mA/m	0.38	0.43	0.49	0.53	0.58	0.63	0.69	0.71	0.74
Sustained Current Ratings										
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	151	184	217	250	283	316	358	410	462
2. Drawn into Ducts, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	127	156	189	212	241	274	316	354	406
3. Laid singly in Air, Ambient Temp. 35˚ C	A	163	201	239	282	316	368	431	488	565
One Second Short Circuit Current Rating of Conductor	kA	4.70	6.58	8.93	11.30	14.10	17.40	22.60	28.20	37.60

For all cables the maximum conductor operating temperature is 90˚C and limiting conductor temperature after short circuit is 250˚C.
Longer drum lengths are available to specific customer requirements.

3.6/6 (7.2)kV

Three Core
Aluminium Conductors
XLPE Insulated
to IEC 60502-2
Unarmoured



1.HCC+ ™ Aluminium Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper tape screen
6. Fillers
7. Tape binder
8. Outer sheath

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Table 28

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7	26.6	29.8	33.6	37.6
Weight of Conductor (Approx)	Kg/Km	125	180	250	313	386	486	637	800	1024	1318	1672	2231	2745
Insulation Thickness (Nominal)	mm	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.8	3	3.2	3.2	3.2	3.2
Separation Sheath Thickness	mm	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.4	1.4	1.5
Armour Wire Diameter (Nominal)	mm	1.6	1.6	1.6	1.6	1.6	2	2	2	2	2.5	2.5	2.5	2.5
Outersheath Thickness (Nominal)	mm	1.8	1.8	1.9	1.9	2	2	2.1	2.2	2.3	2.5	2.6	2.7	2.9
Approximate Overall Diameter	mm	26.0	28.0	29.5	31.0	32.5	35.0	37.5	40.5	44.0	49.0	52.5	57.0	61.0
Approximate Cable Weight	Kg/Km	810	980	1170	1260	1390	1660	1950	2320	2710	3440	4090	4890	5680
Standard Drum Length	m	500	500	500	500	500	500	500	500	500	500	400	300	250
Minimum Bending Radius of Cable (during installation)	mm	387	417	438	461	485	522	563	605	660	732	786	849	915
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.641	0.443	0.32	0.253	0.206	0.164	0.125	0.1	0.0778	0.0605	0.0469	0.0367	0.0291
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.822	0.568	0.411	0.325	0.265	0.211	0.162	0.13	0.102	0.080	0.064	0.051	0.043
Approximate Reactance at 50 Hertz	ohm/Km	0.13	0.12	0.12	0.11	0.11	0.11	0.10	0.10	0.10	0.10	0.10	0.09	0.09
Approximate Impedance at 50 Hertz	ohm/Km	0.83	0.58	0.43	0.29	0.24	0.19	0.16	0.14	0.13	0.13	0.11	0.10	0.09
Approximate Capacitance of Cable	µf/Km	0.34	0.38	0.43	0.47	0.51	0.56	0.61	0.63	0.65	0.69	0.73	0.79	0.85
Approx. Charging Current per phase at Uo = 3.6kV and F = 50Hz	mA/m	0.38	0.43	0.49	0.53	0.58	0.63	0.69	0.71	0.74	0.78	0.83	0.89	0.96
Sustained Current Ratings														
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid in trefoil touching	A	151	187	223	249	280	316	360	405	454	507	570	623	676
2. Drawn into Ducts, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	151	187	218	245	267	298	338	374	405	445	490	525	570
3. Laid in Air in trefoil touching, Ambient Temp. 35˚ C	A	179	221	271	327	350	400	469	534	616	708	810	902	994
One Second Short Circuit Current Rating of Conductor	kA	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60	47.00	59.22	75.20	94.00

For all cables the maximum conductor operating temperature is 90˚C and limiting conductor temperature after short circuit is 250˚C.
Longer drum lengths are available to specific customer requirements.

3.6/6 (7.2)kV

Single Core Aluminium Conductors XLPE Insulated to IEC 60502-2 Aluminium Wire Armoured

1.HCC+ ™ Aluminium Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper tape screen
6. Bedding
7. Aluminium armour
8. Outer sheath

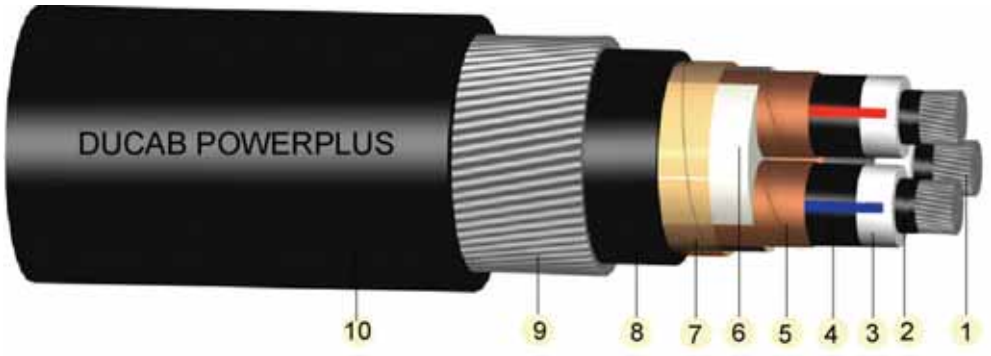
Table 29

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7
Weight of Conductor (Approx)	Kg/Km	381	549	762	955	1177	1482	1942	2439	3122
Insulation Thickness (Nominal)	mm	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.8	3
Separation Sheath Thickness	mm	1.3	1.4	1.4	1.5	1.6	1.6	1.7	1.8	2
Armour Wire Diameter (Nominal)	mm	2.5	2.5	2.5	2.5	2.5	2.5	2.5	3.15	3.15
Outersheath Thickness (Nominal)	mm	2.5	2.6	2.7	2.8	2.9	3.1	3.3	3.5	3.8
Approximate Overall Diameter	mm	49.0	52.5	56.5	60.0	63.5	67.5	73.5	81.0	89.0
Approximate Cable Weight	Kg/Km	3800	4310	4910	5440	6030	6920	8920	10360	12000
Standard Drum Length	m	500	500	500	400	400	300	250	250	250
Minimum Bending Radius of Cable (during installation)	mm	583	626	676	715	758	804	876	967	1068
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.641	0.443	0.32	0.253	0.206	0.164	0.125	0.100	0.0778
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.822	0.568	0.411	0.325	0.265	0.211	0.162	0.130	0.102
Approximate Reactance at 50 Hertz	ohm/Km	0.10	0.10	0.10	0.10	0.09	0.09	0.08	0.08	0.08
Approximate Impedance at 50 Hertz	ohm/Km	0.83	0.58	0.42	0.34	0.28	0.23	0.18	0.15	0.13
Approximate Capacitance of Cable	µf/Km	0.34	0.38	0.43	0.47	0.51	0.56	0.61	0.63	0.65
Approx. Charging Current per phase at Uo = 3.6kV and F = 50Hz	mA/m	0.38	0.43	0.49	0.53	0.58	0.63	0.69	0.71	0.74
Sustained Current Ratings										
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	142	174	205	236	267	298	338	387	436
2. Drawn into ducts, Ground Temp. = 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	120	147	178	200	227	258	298	334	383
3. Laid Singly in Air, Ambient Temp. 35˚ C	A	156	193	230	271	304	354	414	469	543
One Second Short Circuit Current Rating of Conductor	kA	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60

FOR ALL CABLES THE MAXIMUM CONDUCTOR OPERATING TEMPERATURE IS 90˚C AND LIMITING CONDUCTOR TEMPERATURE AFTER SHORT CIRCUIT IS 250˚C.
LONGER DRUM LENGTHS ARE AVAILABLE TO SPECIFIC CUSTOMER REQUIREMENTS.

3.6/6 (7.2)kV

Three Core
Aluminium Conductors
XLPE Insulated
to IEC 60502-2
Steel Wire Armoured



1.HCC+ ™ Aluminium Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper tape screen
6. Fillers
7. Tape binder
8. Bedding
9. Galvanised steel wire armour
10. Outer sheath

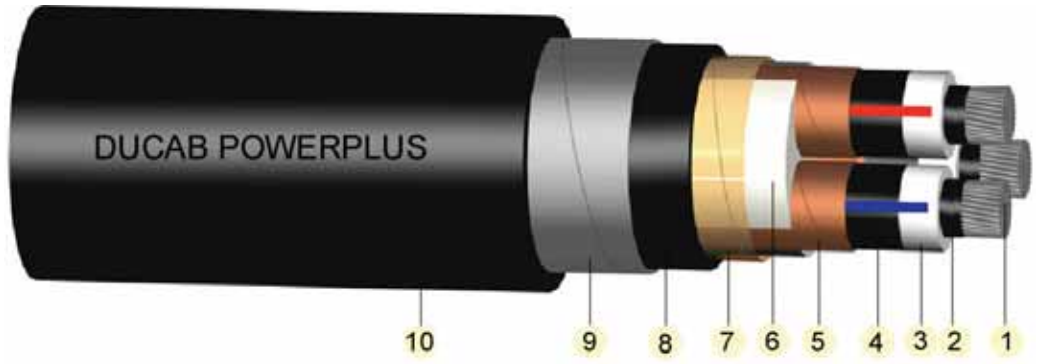
Table 30

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7
Weight of Conductor (Approx)	Kg/Km	381	549	762	955	1177	1482	1942	2439	3122
Insulation Thickness (Nominal)	mm	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.8	3
Separation Sheath Thickness	mm	1.3	1.4	1.4	1.5	1.6	1.6	1.7	1.8	2
Steel Tape Thickness (Nominal)	mm	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.8
Outersheath Thickness (Nominal)	mm	2.4	2.5	2.7	2.8	2.9	3	3.2	3.4	3.7
Approximate Overall Diameter	mm	47.0	50.5	54.5	58.0	61.5	65.5	71.5	77.5	86.0
Approximate Cable Weight	Kg/Km	2750	3210	3800	4250	4920	5520	6630	8270	11030
Standard Drum Length	m	500	500	500	400	400	300	250	250	250
Minimum Bending Radius of Cable (during installation)	mm	560	604	652	692	736	781	853	928	1028
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.641	0.443	0.32	0.253	0.206	0.164	0.125	0.100	0.0778
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.822	0.568	0.411	0.325	0.265	0.211	0.162	0.130	0.102
Approximate Reactance at 50 Hertz	ohm/Km	0.10	0.10	0.09	0.09	0.09	0.09	0.08	0.08	0.08
Approximate Impedance at 50 Hertz	ohm/Km	0.83	0.58	0.42	0.34	0.28	0.23	0.18	0.15	0.13
Approximate Capacitance of Cable	µf/Km	0.34	0.38	0.43	0.47	0.51	0.56	0.61	0.63	0.65
Approx. Charging Current per phase at Uo = 3.6kV and F = 50Hz	mA/m	0.38	0.43	0.49	0.53	0.58	0.63	0.69	0.71	0.74
Sustained Current Ratings										
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	142	174	205	236	267	298	338	387	436
2. Drawn into Ducts, Ground Temp. = 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	120	147	178	200	227	258	298	334	383
3. Laid singly in Air, Ambient Temp. 35˚ C	A	156	193	230	271	304	354	414	469	543
One Second Short Circuit Current Rating of Conductor	kA	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60

For all cables the maximum conductor operating temperature is 90˚C and limiting conductor temperature after short circuit is 250˚C.
Longer drum lengths are available to specific customer requirements.

3.6/6 (7.2)kV

Three Core
Aluminium Conductors
XLPE Insulated
to IEC 60502-2
Steel Tape Armoured



1.HCC+ ™ Aluminium Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper tape screen
6. Fillers
7. Tape binder
8. Bedding
9. Galvanised steel tape armour
10. Outer sheath

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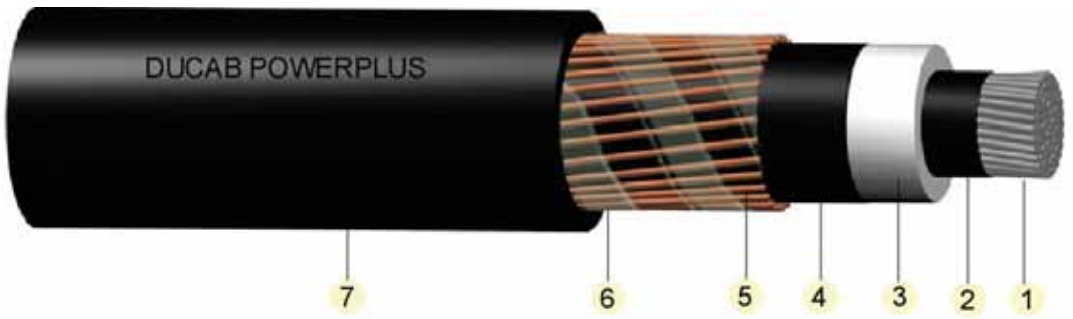
Table 31

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7	26.6	29.8	33.6	37.6
Weight of Conductor (Approx)	Kg/Km	125	180	250	313	386	486	637	800	1024	1318	1672	2231	2745
Insulation Thickness (Nominal)	mm	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Outersheath Thickness (Nominal)	mm	1.6	1.7	1.7	1.8	1.8	1.9	2	2	2.1	2.2	2.3	2.5	2.6
Approximate Overall Diameter	mm	22.0	23.5	25.5	27.0	28.5	30.0	32.5	35.0	38.0	41.5	44.5	49.0	53.0
Approximate Cable Weight	Kg/Km	610	730	890	990	1130	1320	1570	1830	2210	2720	3360	3540	4120
Standard Drum Length	m	500	500	500	500	500	500	500	500	500	500	500	400	300
Minimum Bending Radius of Cable (during installation)	mm	434	466	502	532	564	598	648	694	760	822	890	972	1056
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.641	0.443	0.32	0.253	0.206	0.164	0.125	0.1	0.0778	0.0605	0.0469	0.0367	0.0291
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.822	0.568	0.411	0.325	0.265	0.211	0.162	0.13	0.102	0.080	0.064	0.051	0.043
Approximate Reactance at 50 Hertz	ohm/Km	0.13	0.12	0.11	0.11	0.11	0.10	0.10	0.10	0.09	0.09	0.09	0.08	0.08
Approximate Impedance at 50 Hertz	ohm/Km	0.83	0.58	0.43	0.34	0.29	0.23	0.19	0.16	0.14	0.12	0.11	0.10	0.09
Approximate Capacitance of Cable	µf/Km	0.25	0.29	0.35	0.38	0.41	0.47	0.51	0.54	0.58	0.66	0.74	0.78	0.80
Approx. Charging Current per phase at Uo = 6kV and f = 50Hz	mA/m	0.47	0.55	0.66	0.72	0.77	0.89	0.96	1.0	1.1	1.2	1.4	1.5	1.5
Sustained Current Ratings														
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid in trefoil touching	A	151	187	223	249	285	320	369	423	481	543	605	685	757
2. Drawn into Ducts, Ground Temp. = 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	156	191	227	254	280	312	360	405	454	507	570	632	703
3. Laid in Air in trefoil touching, Ambient Temp. 35˚ C	A	166	207	258	294	336	391	460	534	616	727	837	975	1095
One Second Short Circuit Current Rating of Conductor	kA	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60	47.00	59.22	75.20	94.00

For all cables the maximum conductor operating temperature is 90˚C and limiting conductor temperature after short circuit is 250˚C.
Longer drum lengths are available to specific customer requirements.

6/10 (12)kV

Single Core Aluminium Conductors XLPE Insulated to IEC 60502-2 Unarmoured



1.HCC+ ™ Aluminium Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper wire screen
6. Tape binder
7. Outer sheath

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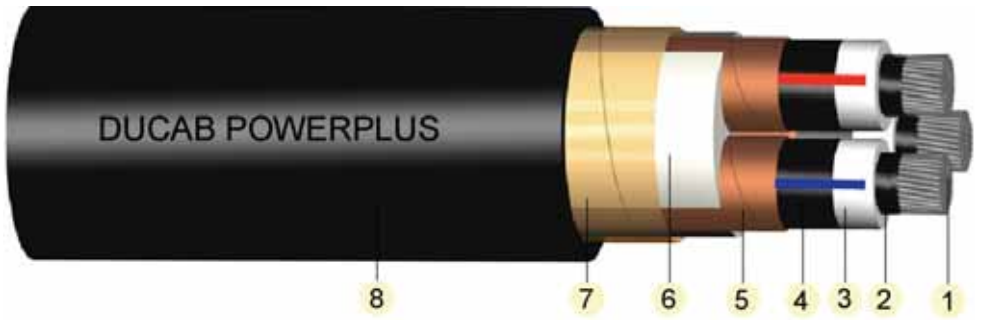
Table 32

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7
Weight of Conductor (Approx)	Kg/Km	381	549	762	955	1177	1482	1942	2439	3122
Insulation Thickness (Nominal)	mm	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Outersheath Thickness (Nominal)	mm	2.4	2.5	2.6	2.7	2.8	2.9	3.1	3.2	3.5
Approximate Overall Diameter	mm	45.0	48.5	52.5	55.5	59.0	62.5	68.0	73.0	80.5
Approximate Cable Weight	Kg/Km	2330	2780	3300	3820	4300	4920	5990	7050	6990
Standard Drum Length	m	500	500	500	500	500	500	400	300	250
Minimum Bending Radius of Cable (during installation)	mm	671	723	782	831	882	938	1017	1094	1202
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.641	0.443	0.32	0.253	0.206	0.164	0.125	0.100	0.0778
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.822	0.568	0.41	0.325	0.265	0.211	0.161	0.130	0.102
Approximate Reactance at 50 Hertz	ohm/Km	0.11	0.11	0.10	0.10	0.09	0.09	0.09	0.09	0.08
Approximate Impedance at 50 Hertz	ohm/Km	0.83	0.58	0.43	0.34	0.29	0.23	0.19	0.16	0.14
Approximate Capacitance of Cable	µf/Km	0.25	0.29	0.35	0.38	0.41	0.47	0.51	0.54	0.58
Approx. Charging Current per phase at Uo = 6kV and f = 50Hz	mA/m	0.47	0.55	0.66	0.72	0.77	0.89	0.96	1.0	1.1
Sustained Current Ratings										
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	151	184	217	250	283	316	358	410	462
2. Drawn into Ducts, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	127	156	189	212	241	274	316	354	406
3. Laid singly in Air, Ambient Temp. 35˚ C	A	163	201	239	282	316	368	431	488	565
One Second Short Circuit Current Rating of Conductor	kA	4.70	6.58	8.93	11.30	14.10	17.40	22.60	28.20	37.60

For all cables the maximum conductor operating temperature is 90˚C and limiting conductor temperature after short circuit is 250˚C.
Longer drum lengths are available to specific customer requirements.

6/10 (12)kV

Three Core
Aluminium Conductors
XLPE Insulated
to IEC 60502-2
Unarmoured



1.HCC+ ™ Aluminium Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper tape screen
6. Fillers
7. Tape binder
8. Outer sheath

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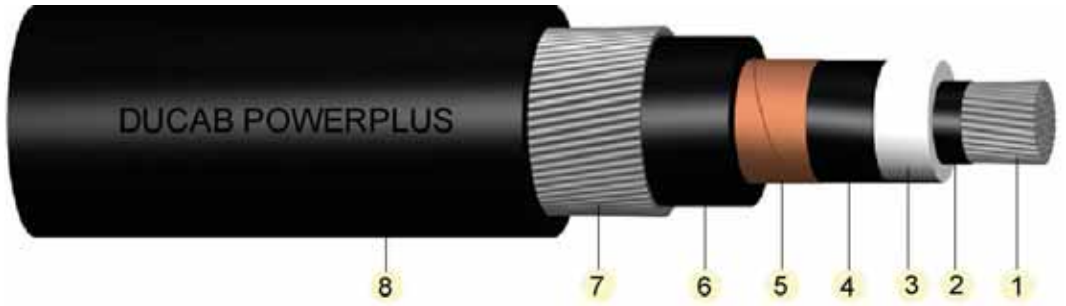
Table 33

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7	26.6	29.8	33.6	37.6
Weight of Conductor (Approx)	Kg/Km	125	180	250	313	386	486	637	800	1024	1318	1672	2231	2745
Insulation Thickness (Nominal)	mm	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Separation Sheath Thickness	mm	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.4	1.4	1.5
Armour Wire Diameter (Nominal)	mm	1.6	1.6	1.6	1.6	2	2	2	2	2.5	2.5	2.5	2.5	2.5
Outersheath Thickness (Nominal)	mm	1.8	1.9	1.9	2	2.1	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.9
Approximate Overall Diameter	mm	28.0	29.5	31.5	33.0	35.5	37.0	39.5	41.5	46.5	49.5	53.0	57.5	61.5
Approximate Cable Weight	Kg/Km	910	1180	1370	1530	1780	1960	2300	2620	3260	3900	4650	4960	5710
Standard Drum Length	m	500	500	500	500	500	500	500	500	500	500	400	300	300
Minimum Bending Radius of Cable (during installation)	mm	416	440	467	489	527	552	588	623	692	738	792	855	921
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.641	0.443	0.32	0.253	0.206	0.164	0.125	0.100	0.0778	0.0605	0.0469	0.0367	0.0291
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.822	0.568	0.411	0.325	0.265	0.211	0.162	0.13	0.102	0.080	0.064	0.051	0.043
Approximate Reactance at 50 Hertz	ohm/Km	0.14	0.13	0.12	0.12	0.12	0.11	0.11	0.10	0.10	0.10	0.10	0.09	0.09
Approximate Impedance at 50 Hertz	ohm/Km	0.83	0.58	0.43	0.34	0.29	0.23	0.19	0.16	0.14	0.12	0.11	0.10	0.10
Approximate Capacitance of Cable	µf/Km	0.25	0.29	0.35	0.38	0.41	0.47	0.51	0.54	0.58	0.66	0.74	0.78	0.80
Approx. Charging Current per phase at Uo = 6kV and f = 50Hz	mA/m	0.47	0.55	0.66	0.72	0.77	0.89	0.96	1.0	1.1	1.2	1.4	1.5	1.5
Sustained Current Ratings														
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid in trefoil touching	A	151	187	223	249	280	316	360	405	454	507	570	623	676
2. Drawn into Ducts, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	151	187	218	245	267	298	338	374	405	445	490	525	570
3. Laid in Air in trefoil touching, Ambient Temp. 35˚ C	A	179	221	271	327	350	400	469	534	616	708	810	902	994
One Second Short Circuit Current Rating of Conductor	kA	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60	47.00	59.22	75.20	94.00

FOR ALL CABLES THE MAXIMUM CONDUCTOR OPERATING TEMPERATURE IS 90˚C AND LIMITING CONDUCTOR TEMPERATURE AFTER SHORT CIRCUIT IS 250˚C.
LONGER DRUM LENGTHS ARE AVAILABLE TO SPECIFIC CUSTOMER REQUIREMENTS.

6/10 (12)kV

Single Core Aluminium Conductors XLPE Insulated to IEC 60502-2 Aluminium Wire Armoured



1.HCC+ ™ Aluminium Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper tape screen
6. Bedding
7. Aluminium armour
8. Outer sheath

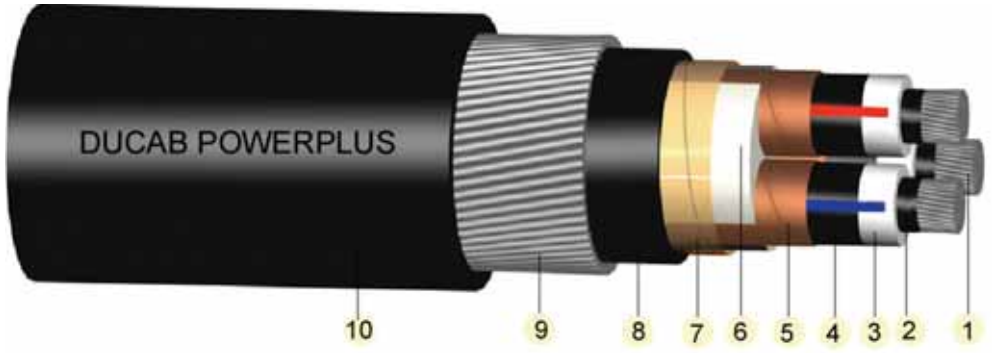
Table 34

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7
Weight of Conductor (Approx)	Kg/Km	381	549	762	955	1177	1482	1942	2439	3122
Insulation Thickness (Nominal)	mm	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Separation Sheath Thickness	mm	1.4	1.4	1.5	1.6	1.6	1.7	1.8	1.9	2
Armour Wire Diameter (Nominal)	mm	2.5	2.5	2.5	2.5	2.5	2.5	3.15	3.15	3.15
Outersheath Thickness (Nominal)	mm	2.6	2.7	2.9	3	3.1	3.2	3.4	3.6	3.8
Approximate Overall Diameter	mm	53.0	56.5	61.0	64.0	67.5	71.5	78.5	83.5	91.0
Approximate Cable Weight	Kg/Km	4350	4960	5360	6240	6780	7520	9670	10860	12450
Standard Drum Length	m	500	500	500	400	300	300	250	200	200
Minimum Bending Radius of Cable (during installation)	mm	636	678	727	768	810	857	940	1002	1092
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.641	0.443	0.32	0.253	0.206	0.164	0.125	0.100	0.0778
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.822	0.568	0.411	0.325	0.265	0.211	0.162	0.130	0.102
Approximate Reactance at 50 Hertz	ohm/Km	0.11	0.11	0.10	0.10	0.09	0.09	0.09	0.09	0.08
Approximate Impedance at 50 Hertz	ohm/Km	0.83	0.58	0.43	0.34	0.29	0.23	0.19	0.16	0.14
Approximate Capacitance of Cable	µf/Km	0.25	0.29	0.35	0.38	0.41	0.47	0.51	0.54	0.58
Approx. Charging Current per phase at Uo = 6kV and f = 50Hz	mA/m	0.47	0.55	0.66	0.72	0.77	0.89	0.96	1.0	1.1
Sustained Current Ratings										
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	142	174	205	236	267	298	338	387	436
2. Drawn into ducts, Ground Temp. = 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	120	147	178	200	227	258	298	334	383
3. Laid singly in Air, Ambient Temp. 35˚ C	A	156	193	230	271	304	354	414	469	543
One Second Short Circuit Current Rating of Conductor	kA	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60

For all cables the maximum conductor operating temperature is 90˚C and limiting conductor temperature after short circuit is 250˚C.
Longer drum lengths are available to specific customer requirements.

6/10 (12)kV

Three Core
Aluminium Conductors
XLPE Insulated
to IEC 60502-2
Steel Wire Armoured



1.HCC+ ™ Aluminium Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper tape screen
6. Fillers
7. Tape binder
8. Bedding
9. Galvanised steel wire armour
10. Outer sheath

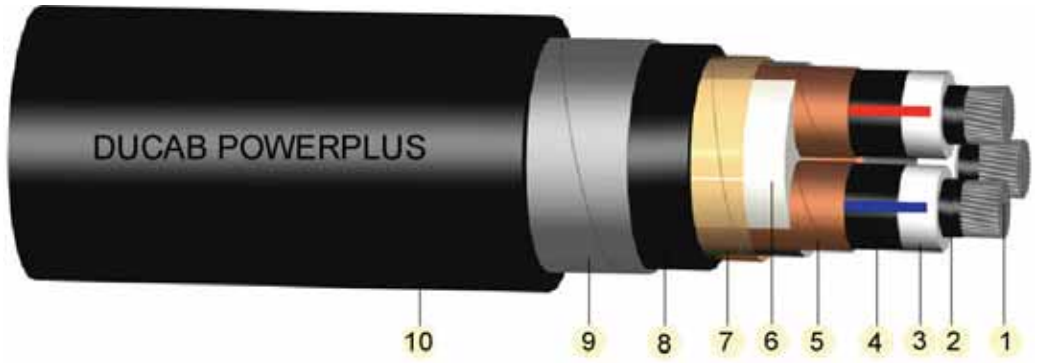
Table 35

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7
Weight of Conductor (Approx)	Kg/Km	381	549	762	955	1177	1482	1942	2439	3122
Insulation Thickness (Nominal)	mm	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Separation Sheath Thickness	mm	1.4	1.4	1.5	1.6	1.6	1.7	1.8	1.9	2
Steel Tape Thickness (Nominal)	mm	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.8
Outersheath Thickness (Nominal)	mm	2.6	2.7	2.8	2.9	3	3.1	3.3	3.5	3.7
Approximate Overall Diameter	mm	51.0	55.0	59.0	62.0	66.0	69.5	75.0	80.5	88.0
Approximate Cable Weight	Kg/Km	3150	3620	4220	4770	5350	6050	7230	8450	11380
Standard Drum Length	m	500	500	500	500	400	400	300	250	200
Minimum Bending Radius of Cable (during installation)	mm	612	655	704	744	787	833	899	962	1051
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.641	0.443	0.32	0.253	0.206	0.164	0.125	0.100	0.0778
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.822	0.568	0.411	0.325	0.265	0.211	0.162	0.130	0.102
Approximate Reactance at 50 Hertz	ohm/Km	0.11	0.11	0.10	0.10	0.09	0.09	0.09	0.09	0.08
Approximate Impedance at 50 Hertz	ohm/Km	0.83	0.58	0.43	0.34	0.29	0.23	0.19	0.16	0.14
Approximate Capacitance of Cable	µf/Km	0.25	0.29	0.35	0.38	0.41	0.47	0.51	0.54	0.58
Approx. Charging Current per phase at Uo = 6kV and f = 50Hz	mA/m	0.47	0.55	0.66	0.72	0.77	0.89	0.96	1.0	1.1
Sustained Current Ratings										
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	142	174	205	236	267	298	338	387	436
2. Drawn into Ducts, Ground Temp. = 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	120	147	178	200	227	258	298	334	383
3. Laid singly in Air, Ambient Temp. 35˚ C	A	156	193	230	271	304	354	414	469	543
One Second Short Circuit Current Rating of Conductor	kA	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60

For all cables the maximum conductor operating temperature is 90˚C and limiting conductor temperature after short circuit is 250˚C.
Longer drum lengths are available to specific customer requirements.

6/10 (12)kV

Three Core
Aluminium Conductors
XLPE Insulated
to IEC 60502-2
Steel Tape Armoured



1. HCC+ ™ Aluminium Conductor
2. Semiconductive conductor screen
3. DFI™ XLPE Insulation
4. Semiconductive insulation screen
5. Copper tape screen
6. Fillers
7. Tape binder
8. Bedding
9. Galvanised steel tape armour
10. Outer sheath

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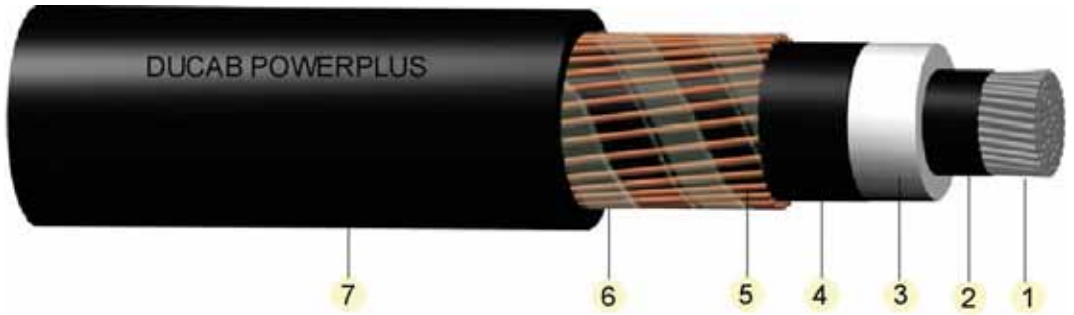
Table 36

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7	26.6	29.8	33.6	37.6
Weight of Conductor (Approx)	Kg/Km	125	180	250	313	386	486	637	800	1024	1318	1672	2231	2745
Insulation Thickness (Nominal)	mm	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Outersheath Thickness (Nominal)	mm	1.8	1.8	1.8	1.9	1.9	2	2	2.1	2.2	2.3	2.4	2.5	2.7
Approximate Overall Diameter	mm	24.5	26.0	27.5	29.0	31.0	32.5	35.0	37.5	40.5	43.5	47.0	51.0	55.5
Approximate Cable Weight	Kg/Km	700	850	1000	1110	1300	1480	1710	1990	2400	2870	3440	3720	4350
Standard Drum Length	m	500	500	500	500	500	500	500	500	500	500	500	400	300
Minimum Bending Radius of Cable (during installation)	mm	482	514	550	580	612	646	696	742	808	870	938	1020	1106
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.641	0.443	0.32	0.253	0.206	0.164	0.125	0.100	0.0778	0.0605	0.0469	0.0367	0.0291
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.822	0.568	0.411	0.325	0.265	0.211	0.162	0.130	0.102	0.080	0.064	0.051	0.043
Approximate Reactance at 50 Hertz	ohm/Km	0.13	0.13	0.12	0.11	0.11	0.11	0.10	0.10	0.10	0.09	0.09	0.09	0.08
Approximate Impedance at 50 Hertz	ohm/Km	0.83	0.58	0.43	0.34	0.29	0.23	0.19	0.16	0.14	0.12	0.11	0.10	0.09
Approximate Capacitance of Cable	µf/Km	0.22	0.25	0.28	0.31	0.33	0.36	0.41	0.44	0.49	0.54	0.59	0.68	0.72
Approx. Charging Current per phase at Uo = 8.7kV and f = 50Hz	mA/m	0.60	0.68	0.77	0.85	0.90	1.0	1.1	1.2	1.3	1.5	1.6	1.9	2.0
Sustained Current Ratings														
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid in trefoil touching	A	151	187	223	249	285	320	369	423	481	543	605	685	757
2. Drawn into Ducts, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	156	191	227	254	280	312	360	405	454	507	570	632	703
3. Laid in Air in trefoil touching, Ambient Temp. 35˚ C	A	166	207	258	294	336	391	460	534	616	727	837	975	1095
One Second Short Circuit Current Rating of Conductor	kA	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60	47.00	59.22	75.20	94.00

FOR ALL CABLES THE MAXIMUM CONDUCTOR OPERATING TEMPERATURE IS 90˚C AND LIMITING CONDUCTOR TEMPERATURE AFTER SHORT CIRCUIT IS 250˚C.
LONGER DRUM LENGTHS ARE AVAILABLE TO SPECIFIC CUSTOMER REQUIREMENTS.

8.7/15 (17.5)kV

Single Core Aluminium Conductors XLPE Insulated to IEC 60502-2 Unarmoured



1.HCC+ ™ Aluminium Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper wire screen
6. Tape binder
7. Outer sheath

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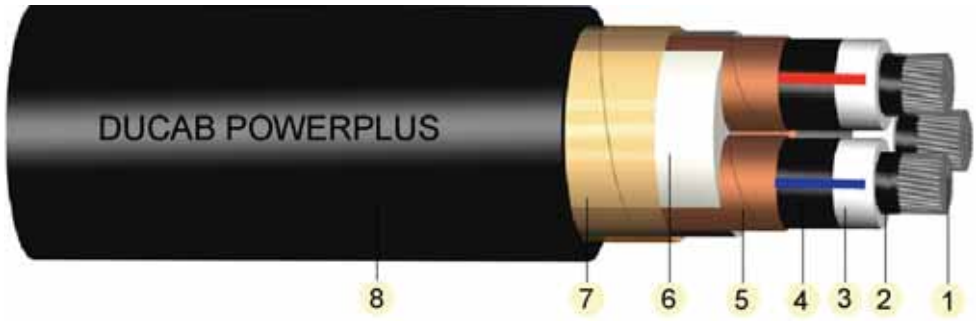
Table 37

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7
Weight of Conductor (Approx)	Kg/Km	381	549	762	955	1177	1482	1942	2439	3122
Insulation Thickness (Nominal)	mm	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Outersheath Thickness (Nominal)	mm	2.5	2.6	2.8	2.9	3	3.1	3.2	3.4	3.6
Approximate Overall Diameter	mm	50.0	53.5	57.5	60.5	64.0	68.0	73.0	78.0	85.5
Approximate Cable Weight	Kg/Km	1500	1840	2260	2650	3060	3610	4470	5290	7680
Standard Drum Length	m	500	500	500	500	500	400	300	300	250
Minimum Bending Radius of Cable (during installation)	mm	749	800	858	908	959	1014	1094	1170	1277
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.641	0.443	0.32	0.253	0.206	0.164	0.125	0.100	0.0778
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.822	0.568	0.411	0.325	0.265	0.211	0.162	0.130	0.102
Approximate Reactance at 50 Hertz	ohm/Km	0.12	0.11	0.11	0.10	0.10	0.10	0.09	0.09	0.09
Approximate Impedance at 50 Hertz	ohm/Km	0.83	0.58	0.43	0.34	0.29	0.23	0.19	0.16	0.14
Approximate Capacitance of Cable	µf/Km	0.22	0.25	0.28	0.31	0.33	0.36	0.41	0.44	0.49
Approx. Charging Current per phase at Uo = 8.7kV and f = 50Hz	mA/m	0.60	0.68	0.77	0.85	0.90	1.0	1.1	1.2	1.3
Sustained Current Ratings										
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	151	184	217	250	283	316	358	410	462
2. Drawn into Ducts, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	127	156	189	212	241	274	316	354	406
3. Laid singly in Air, Ambient Temp. 35˚ C	A	163	201	239	282	316	368	431	488	565
One Second Short Circuit Current Rating of Conductor	kA	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60

FOR ALL CABLES THE MAXIMUM CONDUCTOR OPERATING TEMPERATURE IS 90˚C AND LIMITING CONDUCTOR TEMPERATURE AFTER SHORT CIRCUIT IS 250˚C.
LONGER DRUM LENGTHS ARE AVAILABLE TO SPECIFIC CUSTOMER REQUIREMENTS.

8.7/15 (17.5)kV

Three Core
Aluminium Conductors
XLPE Insulated
to IEC 60502-2
Unarmoured



1.HCC+ ™ Aluminium Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper tape screen
6. Fillers
7. Tape binder
8. Outer sheath

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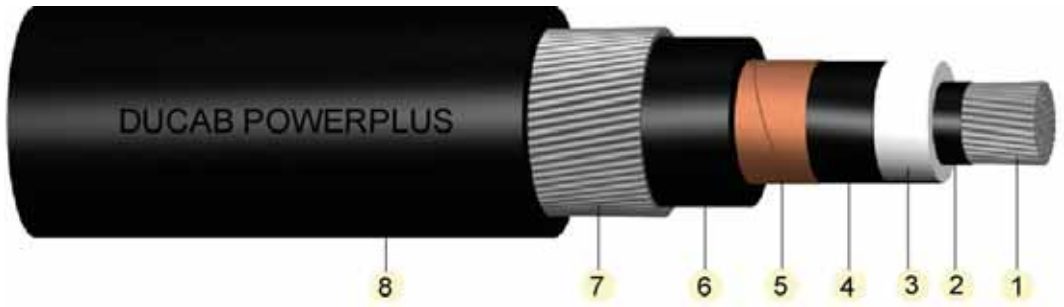
Table 38

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7	26.6	29.8	33.6	37.6
Weight of Conductor (Approx)	Kg/Km	125	180	250	313	386	486	637	800	1024	1318	1672	2231	2745
Insulation Thickness (Nominal)	mm	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Separation Sheath Thickness	mm	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.4	1.5	1.6
Armour Wire Diameter (Nominal)	mm	1.6	1.6	2	2	2	2	2	2	2.5	2.5	2.5	2.5	2.5
Outersheath Thickness (Nominal)	mm	1.9	2	2	2.1	2.1	2.2	2.3	2.3	2.5	2.6	2.7	2.8	3
Approximate Overall Diameter	mm	30.5	32.0	34.5	36.0	37.5	39.5	42.0	44.0	48.5	52.0	55.5	59.5	64.0
Approximate Cable Weight	Kg/Km	1110	1230	1470	1660	1840	1960	2350	2570	3110	3740	4340	5240	6040
Standard Drum Length	m	500	500	500	500	500	500	500	500	500	500	400	300	300
Minimum Bending Radius of Cable (during installation)	mm	452	476	515	537	561	587	624	660	728	776	828	893	959
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.641	0.443	0.32	0.253	0.206	0.164	0.125	0.100	0.0778	0.0605	0.0469	0.0367	0.0291
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.822	0.568	0.411	0.325	0.265	0.211	0.162	0.13	0.102	0.080	0.064	0.051	0.043
Approximate Reactance at 50 Hertz	ohm/Km	0.14	0.13	0.13	0.12	0.12	0.12	0.11	0.11	0.11	0.10	0.10	0.09	0.09
Approximate Impedance at 50 Hertz	ohm/Km	0.83	0.58	0.43	0.34	0.29	0.23	0.19	0.16	0.14	0.12	0.11	0.10	0.10
Approximate Capacitance of Cable	µf/Km	0.22	0.25	0.28	0.31	0.33	0.36	0.41	0.44	0.49	0.54	0.59	0.68	0.72
Approx. Charging Current per phase at Uo = 8.7kV and f = 50Hz	mA/m	0.60	0.68	0.77	0.85	0.90	1.0	1.1	1.2	1.3	1.5	1.6	1.9	2.0
Sustained Current Ratings														
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid in trefoil touching	A	151	187	223	249	280	316	360	405	454	507	570	623	676
2. Drawn into Ducts, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	151	187	218	245	267	298	338	374	405	445	490	525	570
3. Laid in Air in trefoil touching, Ambient Temp. 35˚ C	A	179	221	271	327	350	400	469	534	616	708	810	902	994
One Second Short Circuit Current Rating of Conductor	kA	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37 60	47.00	59.22	75.20	94.00

For all cables the maximum conductor operating temperature is 90˚C and limiting conductor temperature after short circuit is 250˚C.
Longer drum lengths are available to specific customer requirements.

8.7/15 (17.5)kV

Single Core Aluminium Conductors XLPE Insulated to IEC 60502-2 Aluminium Wire Armoured



1.HCC+ ™ Aluminium Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper tape screen
6. Bedding
7. Aluminium armour
8. Outer sheath

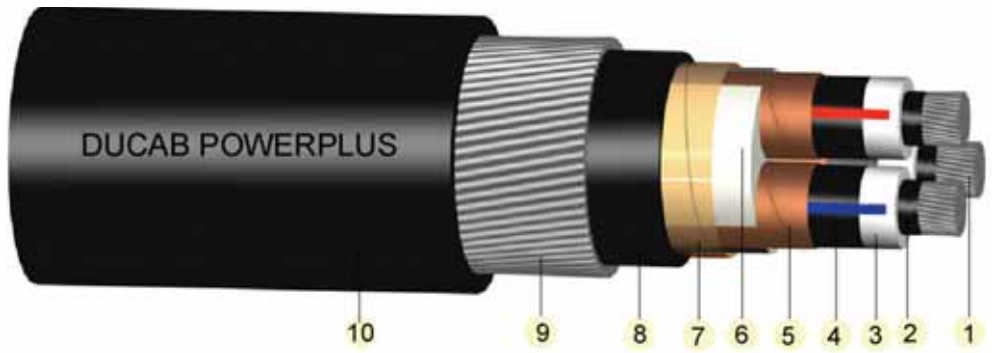
Table 39

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7
Weight of Conductor (Approx)	Kg/Km	381	549	762	955	1177	1482	1942	2439	3122
Insulation Thickness (Nominal)	mm	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Separation Sheath Thickness	mm	1.5	1.5	1.6	1.7	1.7	1.8	1.9	2	2.1
Armour Wire Diameter (Nominal)	mm	2.5	2.5	2.5	2.5	2.5	3.15	3.15	3.15	3.15
Outersheath Thickness (Nominal)	mm	2.8	2.9	3	3.2	3.3	3.4	3.6	3.8	4
Approximate Overall Diameter	mm	58.5	62.0	66.0	69.5	73.0	78.5	84.0	89.0	96.5
Approximate Cable Weight	Kg/Km	5050	5660	6360	6890	8420	9270	10420	11710	13500
Standard Drum Length	m	500	500	400	400	300	250	250	200	200
Minimum Bending Radius of Cable (during installation)	mm	698	742	791	832	874	936	1003	1066	1154
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.641	0.443	0.32	0.253	0.206	0.164	0.125	0.100	0.0778
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.822	0.568	0.411	0.325	0.265	0.211	0.162	0.130	0.102
Approximate Reactance at 50 Hertz	ohm/Km	0.12	0.11	0.11	0.10	0.10	0.010	0.09	0.09	0.09
Approximate Impedance at 50 Hertz	ohm/Km	0.83	0.58	0.43	0.34	0.29	0.23	0.19	0.16	0.14
Approximate Capacitance of Cable	µf/Km	0.22	0.25	0.28	0.31	0.33	0.36	0.41	0.44	0.49
Approx. Charging Current per phase at Uo = 8.7kV and f = 50Hz	mA/m	0.60	0.68	0.77	0.85	0.90	1.0	1.1	1.2	1.3
Sustained Current Ratings										
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	142	174	205	236	267	298	338	387	436
2. Drawn into ducts, Ground Temp. = 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	120	147	178	200	227	258	298	334	383
3. Laid singly in Air, Ambient Temp. 35˚ C	A	156	193	230	271	304	354	414	469	543
One Second Short Circuit Current Rating of Conductor	kA	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60

For all cables the maximum conductor operating temperature is 90˚C and limiting conductor temperature after short circuit is 250˚C.
Longer drum lengths are available to specific customer requirements.

8.7/15 (17.5)kV

Three Core
Aluminium Conductors
XLPE Insulated
to IEC 60502-2
Steel Wire Armoured



1.HCC+ ™ Aluminium Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper tape screen
6. Fillers
7. Tape binder
8. Bedding
9. Galvanised steel wire armour
10. Outer sheath

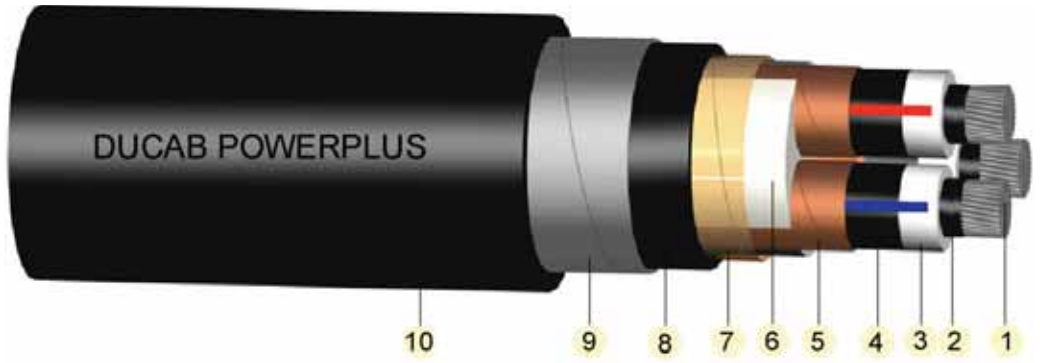
Table 40

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7
Weight of Conductor (Approx)	Kg/Km	381	549	762	955	1177	1482	1942	2439	3122
Insulation Thickness (Nominal)	mm	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Separation Sheath Thickness	mm	1.5	1.5	1.6	1.7	1.7	1.8	1.9	2	2.1
Steel Tape Thickness (Nominal)	mm	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.8	0.8
Outersheath Thickness (Nominal)	mm	2.7	2.9	3	3.1	3.2	3.3	3.5	3.6	3.9
Approximate Overall Diameter	mm	56.5	60.0	64.0	67.5	71.0	75.0	80.5	85.5	93.0
Approximate Cable Weight	Kg/Km	3750	4220	4830	5400	6010	6840	8000	10270	12420
Standard Drum Length	m	500	500	500	500	400	300	300	250	200
Minimum Bending Radius of Cable (during installation)	mm	676	719	768	808	851	896	962	1026	1115
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.641	0.443	0.32	0.253	0.206	0.164	0.125	0.100	0.0778
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.822	0.568	0.411	0.325	0.265	0.211	0.162	0.130	0.102
Approximate Reactance at 50 Hertz	ohm/Km	0.12	0.11	0.11	0.10	0.10	0.10	0.09	0.09	0.09
Approximate Impedance at 50 Hertz	ohm/Km	0.83	0.58	0.43	0.34	0.29	0.23	0.19	0.16	0.14
Approximate Capacitance of Cable	µf/Km	0.22	0.25	0.28	0.31	0.33	0.36	0.41	0.44	0.49
Approx. Charging Current per phase at Uo = 8.7kV and f = 50Hz	mA/m	0.60	0.68	0.77	0.85	0.90	1.0	1.1	1.2	1.3
Sustained Current Ratings										
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	142	174	205	236	267	298	338	387	436
2. Drawn into ducts, Ground Temp. = 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	120	147	178	200	227	258	298	334	383
3. Laid singly in Air, Ambient Temp. 35˚ C	A	156	193	230	271	304	354	414	469	543
One Second Short Circuit Current Rating of Conductor	kA	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60

For all cables the maximum conductor operating temperature is 90˚C and limiting conductor temperature after short circuit is 250˚C.
Longer drum lengths are available to specific customer requirements.

8.7/15 (17.5)kV

Three Core
Aluminium Conductors
XLPE Insulated
to IEC 60502-2
Steel Tape Armoured



1.HCC+ ™ Aluminium Conductor
2.Semiconductive conductor screen
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7. Tape binder
8. Bedding
9. Galvanised steel tape armour
10. Outer sheath

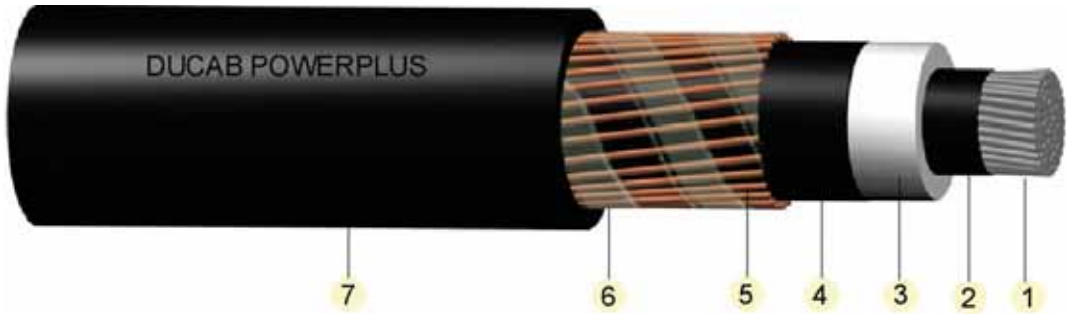
Table 41

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7	26.6	29.8	33.6	37.6
Weight of Conductor (Approx)	Kg/Km	125	180	250	313	386	486	637	800	1024	1318	1672	2231	2745
Insulation Thickness (Nominal)	mm	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Outersheath Thickness (Nominal)	mm	1.8	1.8	1.9	1.9	2	2	2.1	2.2	2.3	2.4	2.5	2.6	2.7
Approximate Overall Diameter	mm	26.5	28.0	30.0	31.5	33.0	34.5	37.0	39.5	43.0	46.0	49.5	53.5	57.5
Approximate Cable Weight	Kg/Km	810	960	1110	1250	1450	1610	1850	2110	2520	3000	3600	3930	4540
Standard Drum Length	m	500	500	500	500	500	500	500	500	500	500	500	400	300
Minimum Bending Radius of Cable (during installation)	mm	526	558	594	624	656	690	738	786	852	914	982	1062	1148
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.641	0.443	0.32	0.253	0.206	0.164	0.125	0.100	0.0778	0.0605	0.0469	0.0367	0.0291
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.822	0.568	0.411	0.325	0.265	0.211	0.162	0.130	0.102	0.080	0.064	0.051	0.043
Approximate Reactance at 50 Hertz	ohm/Km	0.14	0.13	0.12	0.12	0.12	0.11	0.11	0.10	0.10	0.10	0.10	0.09	0.09
Approximate Impedance at 50 Hertz	ohm/Km	0.83	0.58	0.43	0.34	0.29	0.23	0.19	0.16	0.14	0.12	0.11	0.10	0.10
Approximate Capacitance of Cable	µf/Km	0.18	0.21	0.23	0.25	0.27	0.29	0.32	0.35	0.39	0.43	0.48	0.53	0.58
Approx. Charging Current per phase at Uo = 12kV and F = 50Hz	mA/m	0.68	0.79	0.87	0.94	1.0	1.1	1.2	1.3	1.5	1.6	1.8	2.0	2.2
Sustained Current Ratings														
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid in trefoil touching	A	151	187	223	249	285	320	369	423	490	543	614	685	765
2. Drawn into Ducts, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	156	187	223	249	285	369	409	463	507	579	685	712	703
3. Laid in Air in trefoil touching, Ambient Temp. 35˚ C	A	175	216	258	304	345	396	469	534	626	727	846	975	1113
One Second Short Circuit Current Rating of Conductor	kA	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60	47.00	59.22	75.20	94.00

For all cables the maximum conductor operating temperature is 90˚C and limiting conductor temperature after short circuit is 250˚C.
Longer drum lengths are available to specific customer requirements.

12/20 (24)kV

Single Core Aluminium Conductors XLPE Insulated to IEC 60502-2 Unarmoured



1.HCC+ ™ Aluminium Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper wire screen
6. Tape binder
7. Outer sheath

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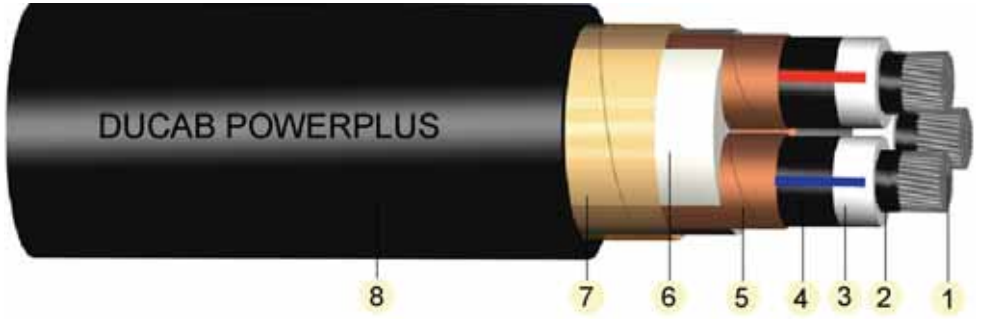
Table 42

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7
Weight of Conductor (Approx)	Kg/Km	381	549	762	955	1177	1482	1942	2439	3122
Insulation Thickness (Nominal)	mm	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Outersheath Thickness (Nominal)	mm	2.7	2.8	2.9	3	3.1	3.2	3.4	3.5	3.8
Approximate Overall Diameter	mm	54.5	58.0	62.0	65.5	68.5	72.5	77.5	83.0	90.0
Approximate Cable Weight	Kg/Km	3200	3720	4290	4830	5440	6140	7250	8400	9630
Standard Drum Length	m	500	500	500	500	500	400	300	300	200
Minimum Bending Radius of Cable (during installation)	mm	818	869	929	977	1028	1083	1163	1239	1346
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.641	0.443	0.32	0.253	0.206	0.164	0.125	0.100	0.0778
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.822	0.568	0.411	0.325	0.265	0.211	0.162	0.130	0.102
Approximate Reactance at 50 Hertz	ohm/Km	0.12	0.12	0.11	0.11	0.10	0.10	0.10	0.09	0.09
Approximate Impedance at 50 Hertz	ohm/Km	0.83	0.58	0.43	0.34	0.29	0.23	0.19	0.16	0.14
Approximate Capacitance of Cable	µf/Km	0.18	0.21	0.23	0.25	0.27	0.29	0.32	0.35	0.39
Approx. Charging Current per phase at Uo = 12kV and F = 50Hz	mA/m	0.68	0.79	0.87	0.94	1.0	1.1	1.2	1.3	1.5
Sustained Current Ratings										
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	151	184	217	245	274	311	358	401	453
2. Drawn into Ducts, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	132	160	193	222	250	283	325	363	410
3. Laid singly in Air, Ambient Temp. 35˚ C	A	167	206	249	287	321	373	440	498	574
One Second Short Circuit Current Rating of Conductor	kA	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60

For all cables the maximum conductor operating temperature is 90˚C and limiting conductor temperature after short circuit is 250˚C.
Longer drum lengths are available to specific customer requirements.

12/20 (24)kV

Three Core Aluminium Conductors XLPE Insulated to IEC 60502-2 Unarmoured



1.HCC+ ™ Aluminium Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper tape screen
6. Fillers
7. Tape binder
8. Outer sheath

Table 43

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7	26.6	29.8	33.6	37.6
Weight of Conductor (Approx)	Kg/Km	125	180	250	313	386	486	637	800	1024	1318	1672	2231	2745
Insulation Thickness (Nominal)	mm	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Separation Sheath Thickness	mm	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.4	1.5	1.5	1.6
Armour Wire Diameter (Nominal)	mm	1.6	2	2	2	2	2	2	2.5	2.5	2.5	2.5	2.5	2.5
Outersheath Thickness (Nominal)	mm	2	2.1	2.1	2.2	2.2	2.3	2.3	2.4	2.6	2.7	2.8	2.9	3
Approximate Overall Diameter	mm	32.5	35.0	36.5	38.0	.9.5	41.5	44.0	47.5	51.0	54.0	57.5	62.0	66.5
Approximate Cable Weight	Kg/Km	1210	1380	1620	1760	1940	2110	2500	2920	3360	3990	4540	5490	6280
Standard Drum Length	m	500	500	500	500	500	500	500	500	500	500	400	300	300
Minimum Bending Radius of Cable (during installation)	mm	483	519	548	570	593	618	657	710	761	809	863	926	992
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.641	0.443	0.32	0.253	0.206	0.164	0.125	0.100	0.0778	0.0605	0.0469	0.0367	0.0291
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.822	0.568	0.411	0.325	0.265	0.211	0.162	0.130	0.102	0.080	0.064	0.051	0.043
Approximate Reactance at 50 Hertz	ohm/Km	0.15	0.14	0.13	0.13	0.12	0.12	0.11	0.11	0.11	0.10	0.10	0.10	0.09
Approximate Impedance at 50 Hertz	ohm/Km	0.83	0.58	0.43	0.34	0.29	0.23	0.19	0.16	0.14	0.13	0.12	0.12	0.11
Approximate Capacitance of Cable	µf/Km	0.18	0.21	0.23	0.25	0.27	0.29	0.32	0.35	0.39	0.43	0.48	0.53	0.58
Approx. Charging Current per phase at Uo = 12kV and F = 50Hz	mA/m	0.68	0.79	0.87	0.94	1.0	1.1	1.2	1.3	1.5	1.6	1.8	2.0	2.2
Sustained Current Ratings														
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid in trefoil touching	A	151	187	218	249	276	312	360	401	454	507	570	623	676
2. Drawn into Ducts, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	151	182	218	245	267	298	338	369	409	454	498	534	570
3. Laid in Air in trefoil touching, Ambient Temp. 35˚ C	A	184	225	271	313	354	405	469	534	616	708	810	902	994
One Second Short Circuit Current Rating of Conductor	kA	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60	47.00	59.22	75.20	94.00

For all cables the maximum conductor operating temperature is 90˚C and limiting conductor temperature after short circuit is 250˚C.
Longer drum lengths are available to specific customer requirements.

12/20 (24)kV

Single Core Aluminium Conductors XLPE Insulated to IEC 60502-2 Aluminium Wire Armoured

1.HCC+ ™ Aluminium Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper tape screen
6. Bedding
7. Aluminium armour
8. Outer sheath

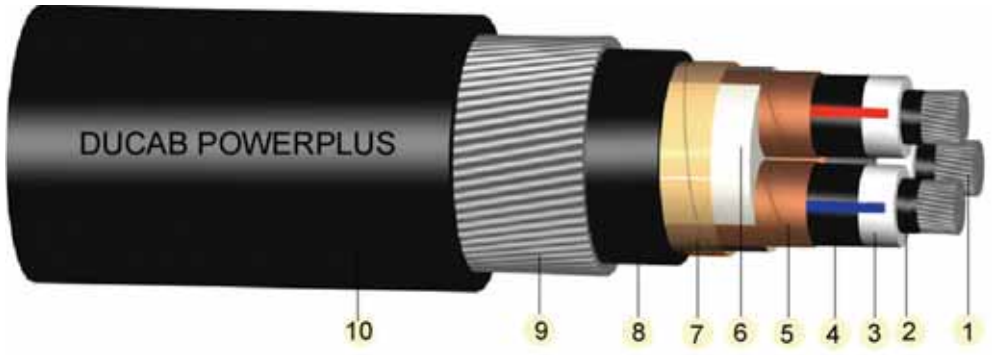
Table 44

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7
Weight of Conductor (Approx)	Kg/Km	381	549	762	955	1177	1482	1942	2439	3122
Insulation Thickness (Nominal)	mm	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Separation Sheath Thickness	mm	1.6	1.6	1.7	1.7	1.8	1.9	2	2.1	2.2
Armour Wire Diameter (Nominal)	mm	2.5	2.5	2.5	3.15	3.15	3.15	3.15	3.15	3.15
Outersheath Thickness (Nominal)	mm	3	3.1	3.2	3.4	3.5	3.6	3.8	3.9	4.2
Approximate Overall Diameter	mm	63.5	67.0	71.0	75.5	79.0	83.0	89.0	94.0	101.5
Approximate Cable Weight	Kg/Km	5650	6260	6960	8440	9130	10020	11220	12560	14400
Standard Drum Length	m	500	400	300	300	300	250	200	200	200
Minimum Bending Radius of Cable (during installation)	mm	757	799	848	906	948	995	1061	1123	1213
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.641	0.443	0.32	0.253	0.206	0.164	0.125	0.100	0.0778
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.822	0.568	0.411	0.325	0.265	0.211	0.162	0.130	0.102
Approximate Reactance at 50 Hertz	ohm/Km	0.12	0.12	0.11	0.11	0.10	0.10	0.10	0.09	0.09
Approximate Impedance at 50 Hertz	ohm/Km	0.83	0.58	0.43	0.34	0.29	0.23	0.19	0.16	0.14
Approximate Capacitance of Cable	µf/Km	0.18	0.21	0.23	0.25	0.27	0.29	0.32	0.35	0.39
Approx. Charging Current per phase at Uo = 12kV and F = 50Hz	mA/m	0.68	0.79	0.87	0.94	1.0	1.1	1.2	1.3	1.5
Sustained Current Ratings										
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	142	174	205	231	258	294	338	378	427
2. Drawn into ducts, Ground Temp. = 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	124	151	182	209	236	267	307	343	387
3. Laid singly in Air, Ambient Temp. 35˚ C	A	161	198	239	276	308	359	423	478	552
One Second Short Circuit Current Rating of Conductor	kA	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60

For all cables the maximum conductor operating temperature is 90˚C and limiting conductor temperature after short circuit is 250˚C.
Longer drum lengths are available to specific customer requirements.

12/20 (24)kV

Three Core
Aluminium Conductors
XLPE Insulated
to IEC 60502-2
Steel Wire Armoured



1.HCC+ ™ Aluminium Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper tape screen
6. Fillers
7. Tape binder
8. Bedding
9. Galvanised steel wire armour
10. Outer sheath

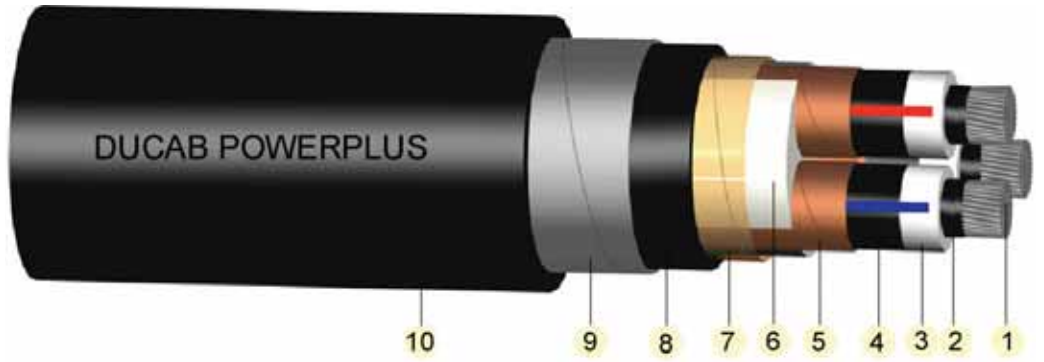
Table 45

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7
Weight of Conductor (Approx)	Kg/Km	381	549	762	955	1177	1482	1942	2439	3122
Insulation Thickness (Nominal)	mm	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Separation Sheath Thickness	mm	1.6	1.6	1.7	1.7	1.8	1.9	2	2.1	2.2
Steel Tape Thickness (Nominal)	mm	0.5	0.5	0.5	0.5	0.5	0.5	0.8	0.8	0.8
Outersheath Thickness (Nominal)	mm	2.9	3	3.1	3.2	3.4	3.5	3.6	3.8	4
Approximate Overall Diameter	mm	61.5	65.0	69.0	72.5	76.0	80.0	85.5	90.5	98.0
Approximate Cable Weight	Kg/Km	4220	4800	5390	5990	6740	7540	9570	10850	13390
Standard Drum Length	m	500	500	500	400	400	300	250	200	200
Minimum Bending Radius of Cable (during installation)	mm	734	778	826	866	910	955	1021	1085	1174
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.641	0.443	0.32	0.253	0.206	0.164	0.125	0.100	0.0778
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.822	0.568	0.411	0.325	0.265	0.211	0.162	0.130	0.102
Approximate Reactance at 50 Hertz	ohm/Km	0.12	0.12	0.11	0.11	0.10	0.10	0.10	0.09	0.09
Approximate Impedance at 50 Hertz	ohm/Km	0.83	0.58	0.43	0.34	0.29	0.23	0.19	0.16	0.14
Approximate Capacitance of Cable	µf/Km	0.18	0.21	0.23	0.25	0.27	0.29	0.32	0.35	0.39
Approx. Charging Current per phase at Uo = 12kV and F = 50Hz	mA/m	0.68	0.79	0.87	0.94	1.0	1.1	1.2	1.3	1.5
Sustained Current Ratings										
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	142	174	205	231	258	294	338	378	427
2. Drawn into Ducts, Ground Temp. = 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	125	151	182	209	236	267	307	343	387
3. Laid singly in Air, Ambient Temp. 35˚ C	A	161	198	239	276	308	359	423	478	552
One Second Short Circuit Current Rating of Conductor	kA	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60

FOR ALL CABLES THE MAXIMUM CONDUCTOR OPERATING TEMPERATURE IS 90˚C AND LIMITING CONDUCTOR TEMPERATURE AFTER SHORT CIRCUIT IS 250˚C.
LONGER DRUM LENGTHS ARE AVAILABLE TO SPECIFIC CUSTOMER REQUIREMENTS.

12/20 (24)kV

Three Core
Aluminium Conductors
XLPE Insulated
to IEC 60502-2
Steel Tape Armoured



1.HCC+ ™ Aluminium Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper tape screen
6. Fillers
7. Tape binder
8. Bedding
9. Galvanised steel tape armour
10. Outer sheath

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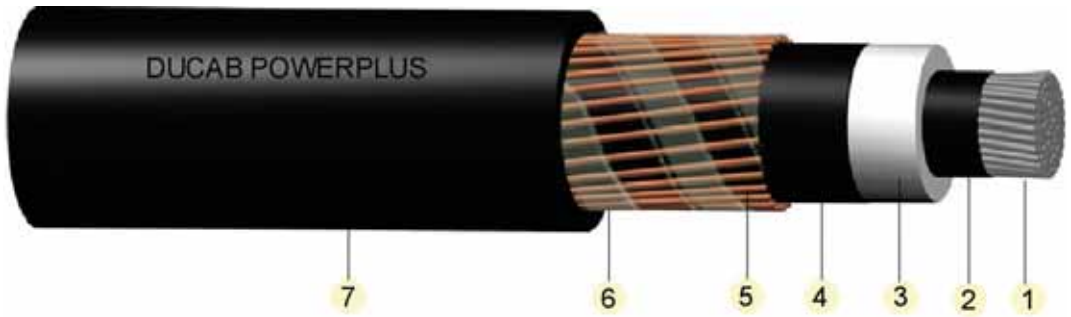
Table 46

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7	26.6	29.8	33.6	37.6
Weight of Conductor (Approx)	Kg/Km	125	180	250	313	386	486	637	800	1024	1318	1672	2231	2745
Insulation Thickness (Nominal)	mm	8	8	8	8	8	8	8	8	8	8	8	8	8
Outersheath Thickness (Nominal)	mm	2	2	2.1	2.1	2.2	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9
Approximate Overall Diameter	mm	32.0	33.5	35.0	36.5	38.5	40.0	42.5	45.0	48.0	51.0	54.5	58.5	63.0
Approximate Cable Weight	Kg/Km	1120	1260	1450	1570	1780	1940	2230	2580	2990	3600	4270	4460	5110
Standard Drum Length	m	500	500	500	500	500	500	500	500	500	500	500	400	300
Minimum Bending Radius of Cable (during installation)	mm	632	664	700	730	762	796	846	892	958	1020	1088	1170	1254
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.641	0.443	0.32	0.253	0.206	0.164	0.125	0.100	0.0778	0.0605	0.0469	0.0367	0.0291
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.822	0.568	0.411	0.325	0.265	0.211	0.161	0.129	0.101	0.080	0.063	0.051	0.042
Approximate Reactance at 50 Hertz	ohm/Km	0.15	0.14	0.14	0.13	0.13	0.12	0.12	0.11	0.11	0.10	0.10	0.10	0.09
Approximate Impedance at 50 Hertz	ohm/Km	0.83	0.59	0.43	0.35	0.29	0.24	0.2	0.17	0.15	0.13	0.12	0.11	0.10
Approximate Capacitance of Cable	µf/Km	0.14	0.16	0.18	0.19	0.20	0.22	0.24	0.26	0.29	0.32	0.35	0.40	0.44
Approx. Charging Current per phase at Uo = 18kV and F = 50Hz	mA/m	0.79	0.9	1.0	1.1	1.1	1.2	1.4	1.5	1.6	1.8	2.0	2.3	2.5
Sustained Current Ratings														
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid in trefoil touching	A	151	187	223	249	285	320	369	423	490	543	614	694	765
2. Drawn into Ducts, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	156	182	218	245	267	298	338	369	409	454	498	534	570
3. Laid in Air in trefoil touching, Ambient Temp. 35˚ C	A	175	216	258	304	345	396	469	534	626	727	846	984	1113
One Second Short Circuit Current Rating of Conductor	kA	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60	47.00	59.22	75.20	94.00

FOR ALL CABLES THE MAXIMUM CONDUCTOR OPERATING TEMPERATURE IS 90˚C AND LIMITING CONDUCTOR TEMPERATURE AFTER SHORT CIRCUIT IS 250˚C.
LONGER DRUM LENGTHS ARE AVAILABLE TO SPECIFIC CUSTOMER REQUIREMENTS.

18/30 (36)kV

Single Core Aluminium Conductors XLPE Insulated to IEC 60502-2 Unarmoured



1.HCC+ ™ Aluminium Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper wire screen
6. Tape binder
7. Outer sheath

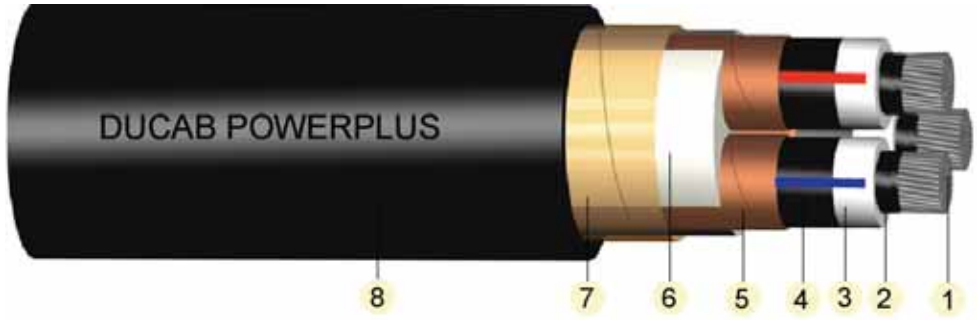
Table 47

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7
Weight of Conductor (Approx)	Kg/Km	381	549	762	955	1177	1482	1942	2439	3122
Insulation Thickness (Nominal)	mm	8	8	8	8	8	8	8	8	8
Outersheath Thickness (Nominal)	mm	3.1	3.2	3.3	3.4	3.5	3.6	3.8	3.9	4.2
Approximate Overall Diameter	mm	66	69.5	73.4	76.6	80.1	83.8	89.1	94.1	101.3
Approximate Cable Weight	Kg/Km	4480	5120	5800	6390	6990	7730	8950	10190	10070
Standard Drum Length	m	500	500	500	500	500	500	250	200	200
Minimum Bending Radius of Cable (during installation)	mm	990	1043	1101	1149	1202	1257	1337	1412	1520
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.641	0.443	0.32	0.253	0.206	0.164	0.125	0.1	0.0778
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.822	0.568	0.411	0.325	0.265	0.211	0.162	0.13	0.102
Approximate Reactance at 50 Hertz	ohm/Km	0.136	0.128	0.122	0.117	0.114	0.11	0.106	0.102	0.098
Approximate Impedance at 50 Hertz	ohm/Km	0.83	0.58	0.43	0.34	0.29	0.24	0.19	0.16	0.14
Approximate Capacitance of Cable	µf/Km	0.14	0.16	0.18	0.19	0.2	0.22	0.24	0.26	0.29
Approx. Charging Current per phase at Uo = 18kV and F = 50Hz	mA/m	0.79	0.90	1.0	1.1	1.1	1.2	1.4	1.5	1.6
Sustained Current Ratings										
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	151	184	217	245	274	311	358	401	453
2. Drawn into Ducts, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	132	160	193	222	250	283	325	363	410
3. Laid singly in Air, Ambient Temp. 35˚ C	A	167	206	249	287	321	373	440	498	574
One Second Short Circuit Current Rating of Conductor	kA	4.7	6.58	8.93	11.28	14.1	17.39	22.56	28.2	37.6

For all cables the maximum conductor operating temperature is 90˚C and limiting conductor temperature after short circuit is 250˚C.
Longer drum lengths are available to specific customer requirements.

18/30 (36)kV

Three Core
Aluminium Conductors
XLPE Insulated
to IEC 60502-2
Unarmoured



1.HCC+ ™ Aluminium Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper tape screen
6. Fillers
7. Tape binder
8. Outer sheath

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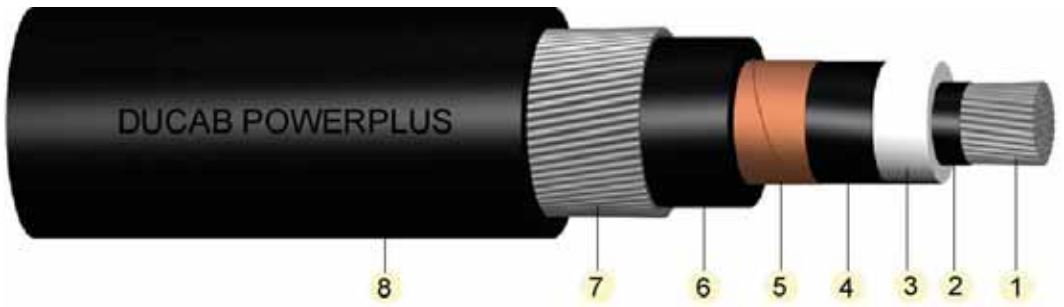
Table 48

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400	500	630	800	1000
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7	26.6	29.8	33.6	37.6
Weight of Conductor (Approx)	Kg/Km	125	180	250	313	386	486	637	800	1024	1318	1672	2231	2745
Insulation Thickness (Nominal)	mm	8	8	8	8	8	8	8	8	8	8	8	8	8
Separation Sheath Thickness	mm	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.4	1.4	1.5	1.6	1.6	1.7
Armour Wire Diameter (Nominal)	mm	2	2	2	2	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Outersheath Thickness (Nominal)	mm	2.2	2.2	2.3	2.3	2.4	2.5	2.6	2.6	2.7	2.85	2.9	3.1	3.2
Approximate Overall Diameter	mm	38.5	40.0	42.0	43.5	46.5	48.0	50.5	53.0	56.5	59.5	63.5	67.5	72.0
Approximate Cable Weight	Kg/Km	1740	1850	2060	2260	2590	2760	3100	3420	4000	4690	5240	6240	7340
Standard Drum Length	m	500	500	500	500	500	500	500	500	500	500	300	250	200
Minimum Bending Radius of Cable (during installation)	mm	576	599	627	651	692	719	756	792	845	893	945	1008	1076
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.641	0.443	0.32	0.253	0.206	0.164	0.125	0.100	0.0778	0.0605	0.0469	0.0367	0.0291
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.822	0.568	0.411	0.325	0.265	0.211	0.162	0.130	0.102	0.080	0.064	0.051	0.043
Approximate Reactance at 50 Hertz	ohm/Km	0.16	0.15	0.14	0.13	0.13	0.13	0.12	0.12	0.11	0.11	0.11	0.10	0.10
Approximate Impedance at 50 Hertz	ohm/Km	0.84	0.59	0.43	0.35	0.3	0.25	0.2	0.17	0.15	0.14	0.12	0.11	0.10
Approximate Capacitance of Cable	µf/Km	0.14	0.16	0.18	0.19	0.2	0.22	0.24	0.26	0.29	0.32	0.35	0.4	0.44
Approx. Charging Current per phase at Uo = 18kV and F = 50Hz	mA/m	0.79	0.9	1.0	1.1	1.1	1.2	1.4	1.5	1.6	1.8	2.0	2.3	2.5
Sustained Current Ratings														
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid in trefoil touching	A	151	187	218	249	276	312	360	401	454	507	570	623	676
2. Drawn into Ducts, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	151	182	218	245	267	298	338	369	409	454	498	534	570
3. Laid in Air in trefoil touching, Ambient Temp. 35˚ C	A	184	225	271	313	354	405	469	534	616	708	810	902	994
One Second Short Circuit Current Rating of Conductor	kA	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60	47.00	59.22	75.20	94.00

For all cables the maximum conductor operating temperature is 90˚C and limiting conductor temperature after short circuit is 250˚C.
Longer drum lengths are available to specific customer requirements.

18/30 (36)kV

Single Core
Aluminium Conductors
XLPE Insulated
to IEC 60502-2
Aluminium Wire
Armoured



1.HCC+ ™ Aluminium Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper tape screen
6. Bedding
7. Aluminium armour
8. Outer sheath

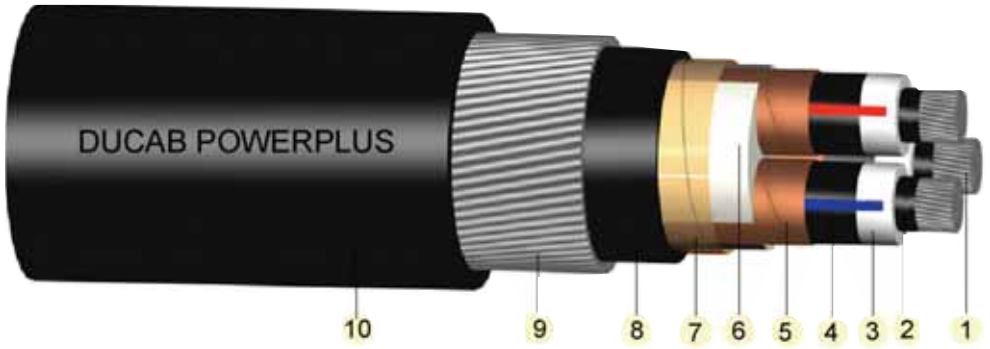
Table 49

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7
Weight of Conductor (Approx)	Kg/Km	381	549	762	955	1177	1482	1942	2439	3122
Insulation Thickness (Nominal)	mm	8	8	8	8	8	8	8	8	8
Separation Sheath Thickness	mm	1.8	1.8	1.9	2	2	2.1	2.2	2.3	2.4
Armour Wire Diameter (Nominal)	mm	3.15	3.15	3.15	3.15	3.15	3.15	3.15	3.15	3.15
Outersheath Thickness (Nominal)	mm	3.4	3.5	3.6	3.7	3.9	4	4.1	4.3	4.5
Approximate Overall Diameter	mm	76.5	80.0	84.5	87.5	91.5	95.0	100.5	106.0	113.5
Approximate Cable Weight	Kg/Km	8640	9010	9910	10640	11330	12620	13720	15760	18430
Standard Drum Length	m	300	300	300	250	250	200	200	200	200
Minimum Bending Radius of Cable (during installation)	mm	918	960	1009	1050	1093	1139	1205	1267	1357
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.641	0.443	0.32	0.253	0.206	0.164	0.125	0.100	0.0778
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.822	0.568	0.41	0.324	0.265	0.211	0.161	0.129	0.102
Approximate Reactance at 50 Hertz	ohm/Km	0.14	0.13	0.12	0.12	0.11	0.11	0.10	0.10	0.10
Approximate Impedance at 50 Hertz	ohm/Km	0.83	0.58	0.43	0.34	0.29	0.24	0.19	0.16	0.14
Approximate Capacitance of Cable	µf/Km	0.14	0.16	0.18	0.19	0.2	0.22	0.24	0.26	0.29
Approx. Charging Current per phase at Uo = 18kV and F = 50Hz	mA/m	0.79	0.90	1.0	1.1	1.1	1.2	1.4	1.5	1.6
Sustained Current Ratings										
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	142	174	205	231	258	294	338	378	427
2. Drawn into ducts, Ground Temp. = 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	125	151	182	209	236	267	307	343	387
3. Laid singly in Air, Ambient Temp. 35˚ C	A	161	198	239	276	308	359	423	478	552
One Second Short Circuit Current Rating of Conductor	kA	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60

For all cables the maximum conductor operating temperature is 90˚C and limiting conductor temperature after short circuit is 250˚C.
Longer drum lengths are available to specific customer requirements.

18/30 (36)kV

Three Core
Aluminium Conductors
XLPE Insulated
to IEC 60502-2
Steel Wire Armoured



1.HCC+ ™ Aluminium Conductor
2.Semiconductive conductor screen
3.DFI™ XLPE Insulation
4.Semiconductive insulation screen
5.Copper tape screen
6. Fillers
7. Tape binder
8. Bedding
9. Galvanised steel wire armour
10. Outer sheath

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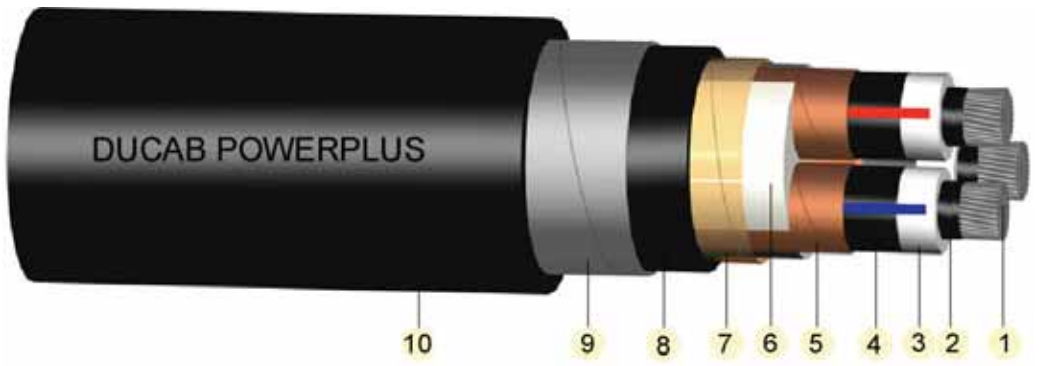
Table 50

Nominal Area of Conductor	mm²	50	70	95	120	150	185	240	300	400
Conductor Diameter (Max)	mm	8.4	9.9	11.6	13	14.5	16.1	18.4	20.6	23.7
Weight of Conductor (Approx)	Kg/Km	381	549	762	955	1177	1482	1942	2439	3122
Insulation Thickness (Nominal)	mm	8	8	8	8	8	8	8	8	8
Separation Sheath Thickness	mm	1.8	1.8	1.9	2	2	2.1	2.2	2.3	2.4
Steel Tape Thickness (Nominal)	mm	0.5	0.5	0.5	0.8	0.8	0.8	0.8	0.8	0.8
Outersheath Thickness (Nominal)	mm	3.3	3.4	3.5	3.6	3.7	3.8	4	4.1	4.4
Approximate Overall Diameter	mm	735.5	77.0	81.0	84.5	88.0	92.0	97.5	102.5	109.5
Approximate Cable Weight	Kg/Km	5680	6380	7120	8650	9370	10240	11590	12970	15780
Standard Drum Length	m	500	400	300	300	300	250	200	200	200
Minimum Bending Radius of Cable (during installation)	mm	878	922	971	1010	1054	1099	1166	1229	1313
Maximum DC resistance of Conductor at 20˚C	ohm/Km	0.641	0.443	0.32	0.253	0.206	0.164	0.125	0.100	0.0778
Approximate AC resistance of Conductor at 90˚C	ohm/Km	0.822	0.568	0.41	0.324	0.265	0.211	0.161	0.129	0.102
Approximate Reactance at 50 Hertz	ohm/Km	0.14	0.13	0.12	0.12	0.11	0.11	0.10	0.10	0.10
Approximate Impedance at 50 Hertz	ohm/Km	0.83	0.58	0.43	0.34	0.29	0.24	0.19	0.16	0.14
Approximate Capacitance of Cable	µf/Km	0.14	0.16	0.18	0.19	020	0.22	0.24	0.26	0.29
Approx. Charging Current per phase at Uo = 18kV and F = 50Hz	mA/m	0.79	0.90	1.0	1.1	1.1	1.2	1.4	1.5	1.6
Sustained Current Ratings										
1. Laid Direct, Ground Temp. 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	142	174	205	231	258	294	338	378	427
2. Drawn into Ducts, Ground Temp. = 30˚C & g =1.2˚C m/W, depth of laying = 0.8m, laid singly	A	125	151	182	209	236	267	307	343	387
3. Laid singly in Air, Ambient Temp. 35˚ C	A	161	198	239	276	308	359	423	478	552
One Second Short Circuit Current Rating of Conductor	kA	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60

For all cables the maximum conductor operating temperature is 90˚C and limiting conductor temperature after short circuit is 250˚C.
Longer drum lengths are available to specific customer requirements.

18/30 (36)kV

Three Core
Aluminium Conductors
XLPE Insulated
to IEC 60502-2
Steel Tape Armoured



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Technical Data

Current Ratings and Rating Factors

The current ratings of copper and aluminium conductor cables stated in the tables in this catalogue are based on the IEC 287 Publication, assuming continuous conductor operating temperature of 90˚C, for cables laid underground or in air, or drawn through ducts.

These ratings are applicable for conditions defined in the tables and derating factors need to be applied in case of variations in:

- Ambient temperature
- Ground temperature
- Depth of buried cable
- Thermal resistivity of soil
- Multiple circuits and their configuration

Appropriate tables for derating factors are provided in the latter part of this catalogue.

Short Circuit Ratings

The short circuit rating graphs given in this catalogue assume final conductor temperature of 250˚C rising from 90˚C i.e., in a fully loaded condition. It is therefore necessary that accessories used with the cables are also capable of operation at these values of fault current and temperature.

The tables also indicate the specific short circuit fault current rating for a duration of one second for each cable size and type. When the fault duration (t) is different, then the appropriate rating may be obtained by multiplying the 1 second rating by the factor $1/\sqrt{t}$.

Short circuit forces should be taken into account when single core cables are installed touching each other. Cleating and strapping should be such that repulsive forces that occur under short circuit conditions are contained.

Installation

Cables described in this publication are suitable for laying direct in ground, in air or drawn through ducts. Special construction features are needed when sustained wet conditions prevail in the ground.

Cable pulling forces have to be limited according to the total conductor cross section area (A) in mm^2 and the maximum may be limited to A x 50 Newtons for copper and A x 30 Newtons for aluminium.

Cable bending radii are recommended as follows:

	Minimum Bending Radius	
	During installation	Controlled bending
Single core unarmoured	20D	15D
Single core armoured	15D	12D
Three core unarmoured	15D	12D
Three core armoured	12D	10D

D is overall cable diameter.

Voltage Tests After Installation

The following test levels are recommended for cables immediately after installation.

Cable Voltage Designation	15 min. D.C. Voltage Test
kV	kV
3.6/6	15
6/10	25
8.7/15	37
12/20	50
18/30	76

Repeated voltage tests of an installation, particularly with cables in service for more than 5 years can be detrimental and hence not recommended. If unavoidable, 50% of above voltages may be applied for tests.

Rating Factors

Cables laid direct in ground

Table 51

Variation in Ground Temperature

Ground temperature° C	15	20	25	30	35	40	45
Cable Type All Cables	Rating factor						
	1.11	1.08	1.04	1.00	0.96	0.91	0.87

Table 52 Rating factors for depth of laying (to centre of cable or trefoil group of cables)

Depth of laying m	3.6/6kV to 18/30kV cables	
	Up to 300mm²	Above 300mm²
0.50	-	-
0.60	-	-
0.80	1.00	1.00
1.00	0.98	0.97
1.25	0.96	0.95
1.50	0.95	0.94
1.75	0.94	0.92
2.00	0.92	0.90
2.50	0.91	0.89
3.00 or more	0.90	0.88

Table 53 Rating factors for variation in thermal resistivity of soil (Average values)

Size of cables mm²	Soil thermal resistivity in K.m./W						
	0.8	0.9	1.0	1.5	2.0	2.5	3.0
Single core							
50	1.15	1.11	1.07	0.91	0.81	0.73	0.68
70	1.16	1.12	1.07	0.91	0.81	0.73	0.68
95	1.16	1.12	1.07	0.91	0.81	0.73	0.68
120	1.16	1.12	1.07	0.91	0.81	0.73	0.68
150	1.17	1.12	1.07	0.91	0.81	0.73	0.68
185	1.17	1.12	1.07	0.91	0.81	0.73	0.68
240	1.17	1.12	1.07	0.91	0.80	0.73	0.68
300	1.18	1.12	1.07	0.91	0.80	0.73	0.68
400	1.18	1.12	1.07	0.91	0.80	0.73	0.67
500	1.18	1.12	1.07	0.91	0.80	0.73	0.67
630	1.18	1.12	1.07	0.91	0.80	0.73	0.67
800	1.18	1.12	1.07	0.91	0.80	0.72	0.66
1000	1.18	1.12	1.07	0.91	0.80	0.72	0.66
Multicore							
50	1.13	1.09	1.06	0.92	0.83	0.76	0.71
70	1.14	1.09	1.06	0.92	0.83	0.75	0.70
95	1.14	1.09	1.06	0.92	0.83	0.75	0.70
120	1.14	1.10	1.06	0.92	0.82	0.75	0.69
150	1.14	1.10	1.06	0.92	0.82	0.75	0.69
185	1.14	1.10	1.06	0.92	0.82	0.74	0.69
240	1.15	1.10	1.07	0.92	0.81	0.74	0.69
300	1.15	1.10	1.07	0.92	0.81	0.74	0.69
400	1.15	1.10	1.07	0.92	0.81	0.74	0.69

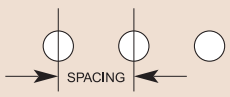
Group Rating Factors

Table 54 GROUP RATING FACTORS FOR CIRCUITS OF THREE SINGLE CORE CABLES IN TREFOIL AND LAID FLAT TOUCHING, HORIZONTAL FORMATION (AVERAGE VALUES)

						
	Number of Circuits	Spacing of Circuits				
		Touching +				
		Trefoil	Laid flat	0.15 m*	0.30 m	0.45 m	0.60 m
3.6/6 to 12/20kV cables	2 3 4 5 6	0.78 0.66 0.59 0.55 0.52	0.81 0.68 0.62 0.58 0.55	0.81 0.71 0.65 0.61 0.58	0.85 0.76 0.72 0.68 0.66	0.88 0.80 0.76 0.73 0.72	0.90 0.83 0.80 0.77 0.76
18/30kV cables	2 3 4 5 6	0.79 0.67 0.62 0.57 0.54	0.81 0.70 0.65 0.60 0.57	0.81 0.71 0.65 0.60 0.57	0.85 0.76 0.72 0.68 0.66	0.88 0.80 0.76 0.73 0.72	0.90 0.83 0.80 0.77 0.76

**** This configuration, at 0.15m spacing, may not be practical for the larger size cables.***

Table 55 GROUP RATING FACTORS FOR MULTICORE CABLES IN HORIZONTAL FORMATION

					
	Number of Cables in Group	Spacing			
		Touching	0.15 m	0.30 m	0.45 m	0.60 m
3.6/6 to 12/20kV cables	2 3 4 5 6	0.80 0.68 0.62 0.57 0.55	0.85 0.75 0.70 0.66 0.63	0.89 0.80 0.77 0.73 0.71	0.90 0.84 0.80 0.78 0.76	0.92 0.86 0.84 0.81 0.80
18/30kV cables	2 3 4 5 6	0.80 0.70 0.64 0.59 0.56	0.83 0.73 0.68 0.63 0.60	0.87 0.78 0.74 0.70 0.68	0.89 0.82 0.78 0.75 0.74	0.91 0.85 0.82 0.79 0.78

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Cables installed in single way ducts:

The term 'ducts' applies to single earthenware, fibre or plastic pipes.

Table 56 VARIATION IN GROUND TEMPERATURE

Ground temperature° C	15	20	25	30	35	40	45
Cable Type All Cables	Rating factor						
	1.11	1.08	1.04	1.00	0.96	0.91	0.87

Table 57 RATING FACTORS FOR DEPTH OF LAYING (TO CENTRE OF CABLE OR TREFOIL GROUP OF CABLES)

Depth of laying m	3.6/6kV to 18/30kV cables	
	Up to 300mm²	Above 300mm²
0.50	-	-
0.60	-	-
0.80	1.00	1.00
1.00	0.98	0.99
1.25	0.95	0.97
1.50	0.93	0.96
1.75	0.92	0.95
2.00	0.90	0.94
2.50	0.89	0.93
3.00 or more	0.88	0.92

Table 58 RATING FACTORS FOR VARIATION IN THERMAL RESISTIVITY OF SOIL (AVERAGE VALUES)

Size of cables mm²	Soil thermal resistivity in K.m./W						
	0.8	0.9	1.0	1.5	2.0	2.5	3.0
Single core							
50	1.08	1.06	1.04	0.94	0.87	0.82	0.77
70	1.09	1.06	1.04	0.94	0.87	0.81	0.76
95	1.09	1.06	1.04	0.94	0.87	0.81	0.76
120	1.10	1.07	1.04	0.94	0.86	0.80	0.75
150	1.10	1.07	1.04	0.94	0.86	0.80	0.75
185	1.10	1.07	1.04	0.93	0.86	0.79	0.75
240	1.11	1.07	1.04	0.93	0.86	0.79	0.74
300	1.11	1.08	1.05	0.93	0.85	0.79	0.74
400	1.11	1.08	1.05	0.93	0.85	0.78	0.73
500	1.11	1.08	1.05	0.93	0.85	0.78	0.73
630	1.12	1.08	1.05	0.93	0.84	0.78	0.72
800	1.12	1.09	1.05	0.93	0.84	0.77	0.72
1000	1.13	1.09	1.05	0.92	0.84	0.77	0.71
Multicore							
50	1.05	1.03	1.02	0.96	0.91	0.87	0.83
70	1.05	1.04	1.02	0.96	0.91	0.86	0.82
95	1.06	1.04	1.02	0.96	0.91	0.86	0.82
120	1.06	1.04	1.03	0.95	0.90	0.85	0.81
150	1.06	1.04	1.03	0.95	0.90	0.85	0.80
185	1.07	1.05	1.03	0.95	0.89	0.84	0.80
240	1.07	1.05	1.03	0.95	0.89	0.84	0.79
300	1.07	1.05	1.03	0.95	0.88	0.83	0.78
400	1.07	1.05	1.03	0.95	0.88	0.83	0.78

Group Rating Factors

Table 59 GROUP RATING FACTORS FOR SINGLE CORE CABLES IN TREFOIL SINGLE WAY DUCTS, HORIZONTAL FORMATION (AVERAGE VALUES)

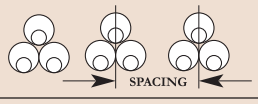
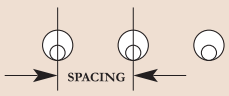
				
	Number of Circuits	Spacing		
		Touching	0.45 m	0.60 m
3.6/6 to 12/20 kV Cables	2 3 4 5 6	0.85 0.75 0.70 0.67 0.64	0.88 0.80 0.76 0.73 0.71	0.90 0.83 0.80 0.77 0.76
18/30kV Cables	2 3 4 5 6	0.85 0.76 0.71 0.67 0.65	0.88 0.80 0.76 0.73 0.71	0.90 0.83 0.80 0.77 0.76

Table 60 GROUP RATING FACTORS FOR MULTICORE CABLES IN SINGLE WAY DUCTS, HORIZONTAL FORMATION (AVERAGE VALUES)

					
	Number of Ducts in Ground	Spacing			
		Touching	0.30 m	0.45 m	0.60 m
3.6/6 to 12/20kV cables	2 3 4 5 6	0.88 0.80 0.75 0.71 0.69	0.91 0.84 0.81 0.77 0.75	0.93 0.87 0.84 0.82 0.80	0.94 0.89 0.87 0.85 0.84
18/30kV cables	2 3 4 5 6	0.87 0.78 0.73 0.69 0.67	0.89 0.82 0.78 0.75 0.73	0.92 0.85 0.82 0.79 0.78	0.93 0.87 0.85 0.83 0.82

دوكاب باوربـــــلاس

Group Rating Factors

Cables installed in free air:

All the ratings for cables run in air are based upon the assumption that they are shielded from direct sunlight and without restriction of ventilation.

Table 61 **VARIATION IN AIR TEMPERATURE**

Ambient temperature° C	25	30	35	40	45	50	55
Cable Type	**Rating factor**						
All Types	1.09	1.04	1.00	0.95	0.90	0.85	0.80

Effect of grouping cables: No reduction in rating is necessary where there is free circulation of air around the circuits provided that:

1. The horizontal clearance between circuits is not less than twice the overall diameter of an individual cable.
2. The vertical clearance between circuits is not less than four times the diameter of an individual cable.
3. If the number of circuits exceeds three, they are installed in a horizontal plane.

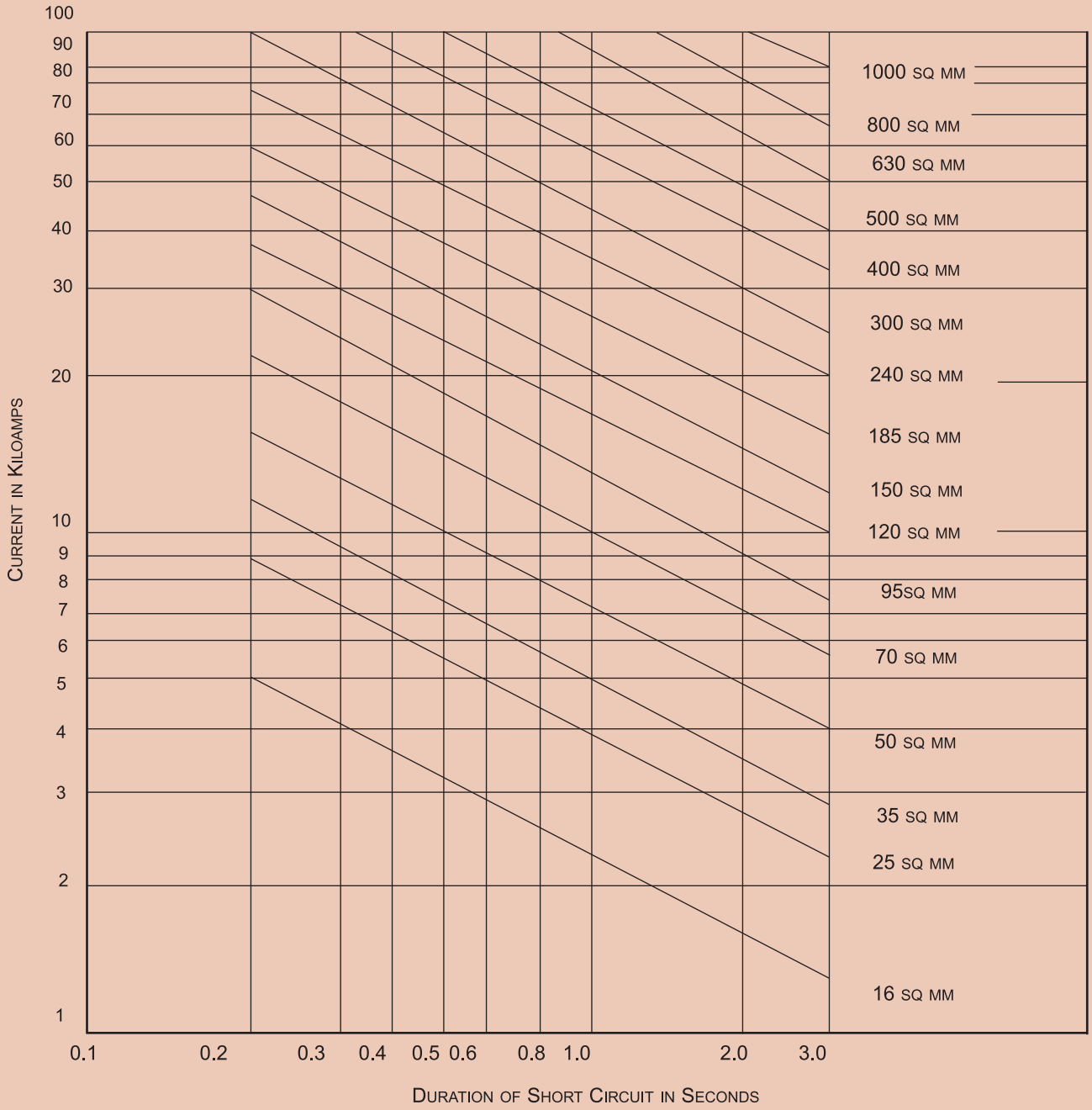
Copper Screen for single core unarmoured cables:

It is common practice to provide copper screen of minimum cross-sectional area (as indicated below) for single core unarmoured cables, unless specific earth fault requirements of the system govern the same. In the latter case, it is advisable to design the copper screen to carry the specified earth fault current.

Table 62

Conductor cross section mm^2	**Screen Area** mm^2
50 - 120	16
150 - 300	25
400 and above	35

Short Circuit Rating - Copper Conductor



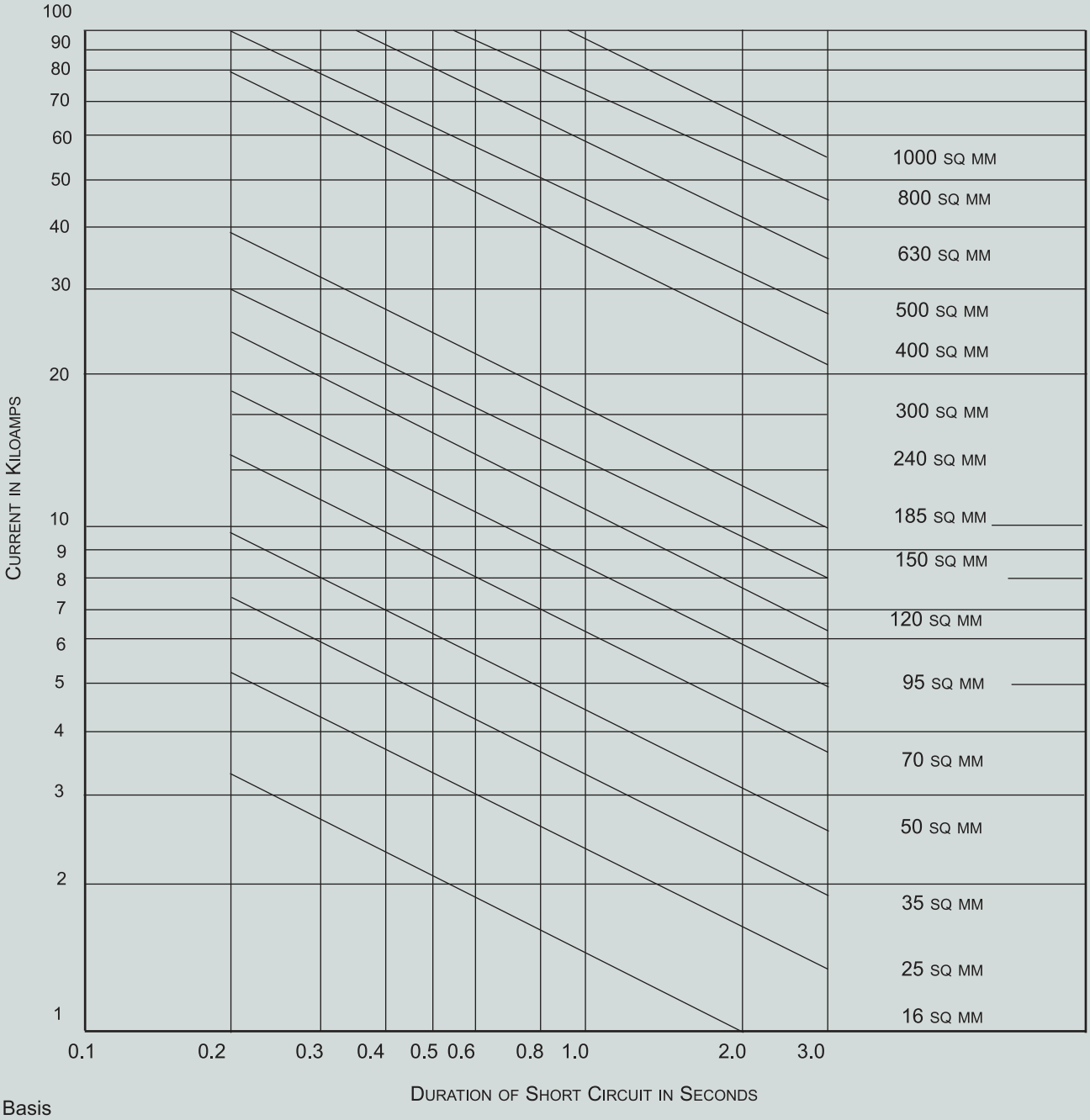
Basis

1. Cable fully loaded at start of short circuit.
(Conductor temperature: 90˚C)
2. Conductor temperature at end of short circuit: 250˚C

Note:

It should be ensured that the accessories associated with the cable are also capable of operation at these values of fault current and temperature.

Short Circuit Rating - Aluminium Conductor



Basis

1. Cable fully loaded at start of short circuit.
(Conductor temperature: 90˚C)
2. Conductor temperature at end of short circuit: 250˚C

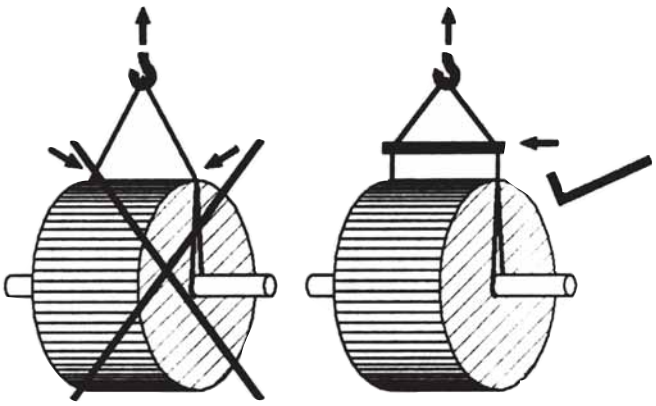
Note:

It should be ensured that the accessories associated with the cable are also capable of operation at these values of fault current and temperature.

Cable Drum Handling

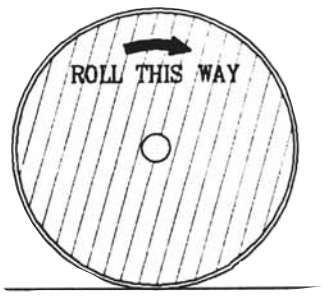
Ducab Medium Voltage cables should be installed by trained personnel in accordance with good engineering practices, recognised codes of practice, statutory local requirements, IEE wiring regulations and where relevant, in accordance with any specific instructions issued by the company. Cables are often supplied in heavy cable drums and handling these drums can constitute a safety hazard. In particular, dangers may arise during the removal of steel binding straps and during the removal of retaining battens and timbers which may expose projecting nails.

For detailed information, refer to Ducab's Drum Handling Instructions Catalogue.



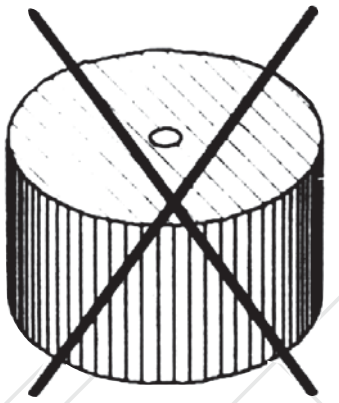
رفع بكرات الكابلات بواسطة الرافعة

LIFTING CABLE DRUMS BY CRANE



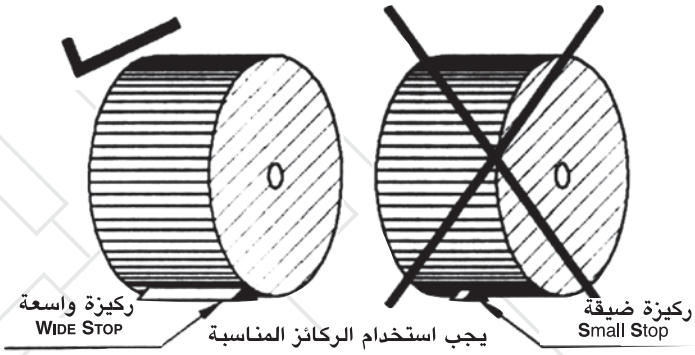
دحرج البكرة باتجاه السهم

ROLL THE DRUM SHOWN IN THE DIRECTION OF THE ARROW



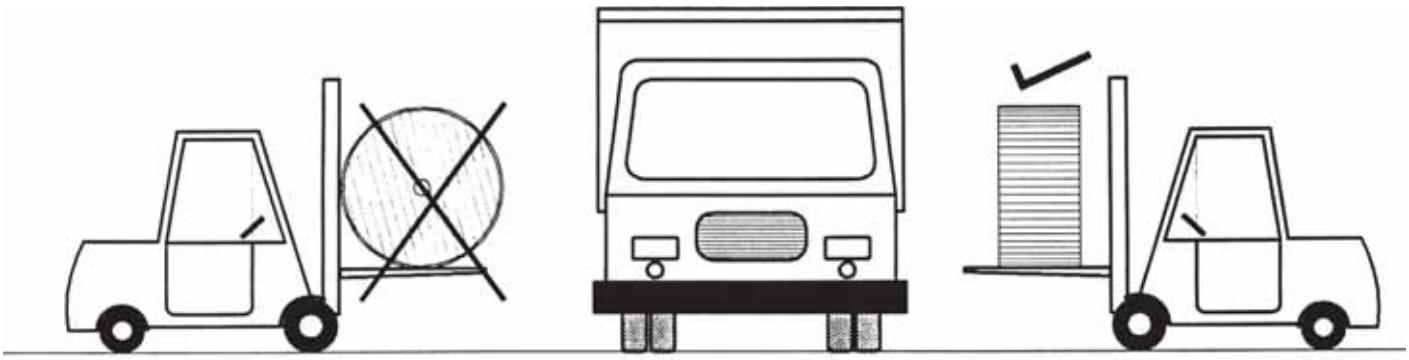
لاتضع البكرات على جوانبها

DO NOT LAY DRUMS ON THEIR FLANGES



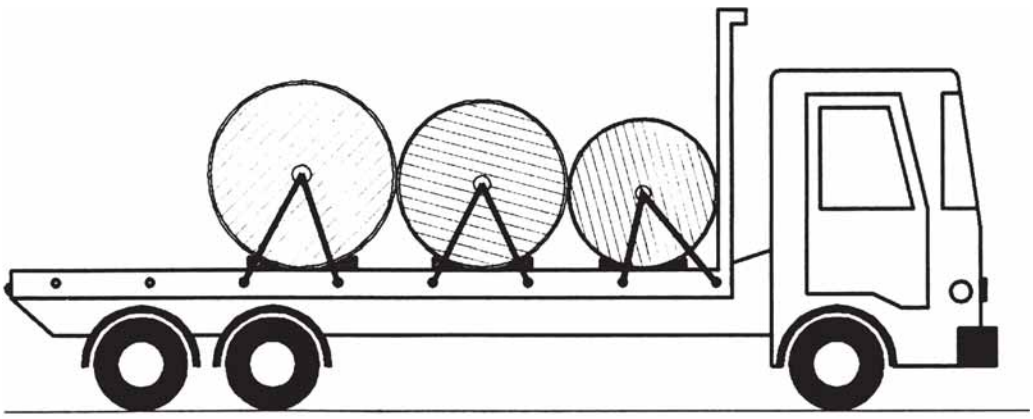
يجب استخدام الركائز المناسبة لمنع البكرات من التدحرج

USE PROPER STOPS TO PREVENT DRUMS ROLLING



الطريقة السليمةلرفع البكرات على ظهر مركبة الرفع الشوكي

LIFT DRUMS ON FORK TRUCKS CORRECTLY



يجب تثبيت البكرات بالطريقة الصحيحة قبل نقلها

SECURE DRUMS ADEQUATELY BEFORE TRANSPORTATION

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