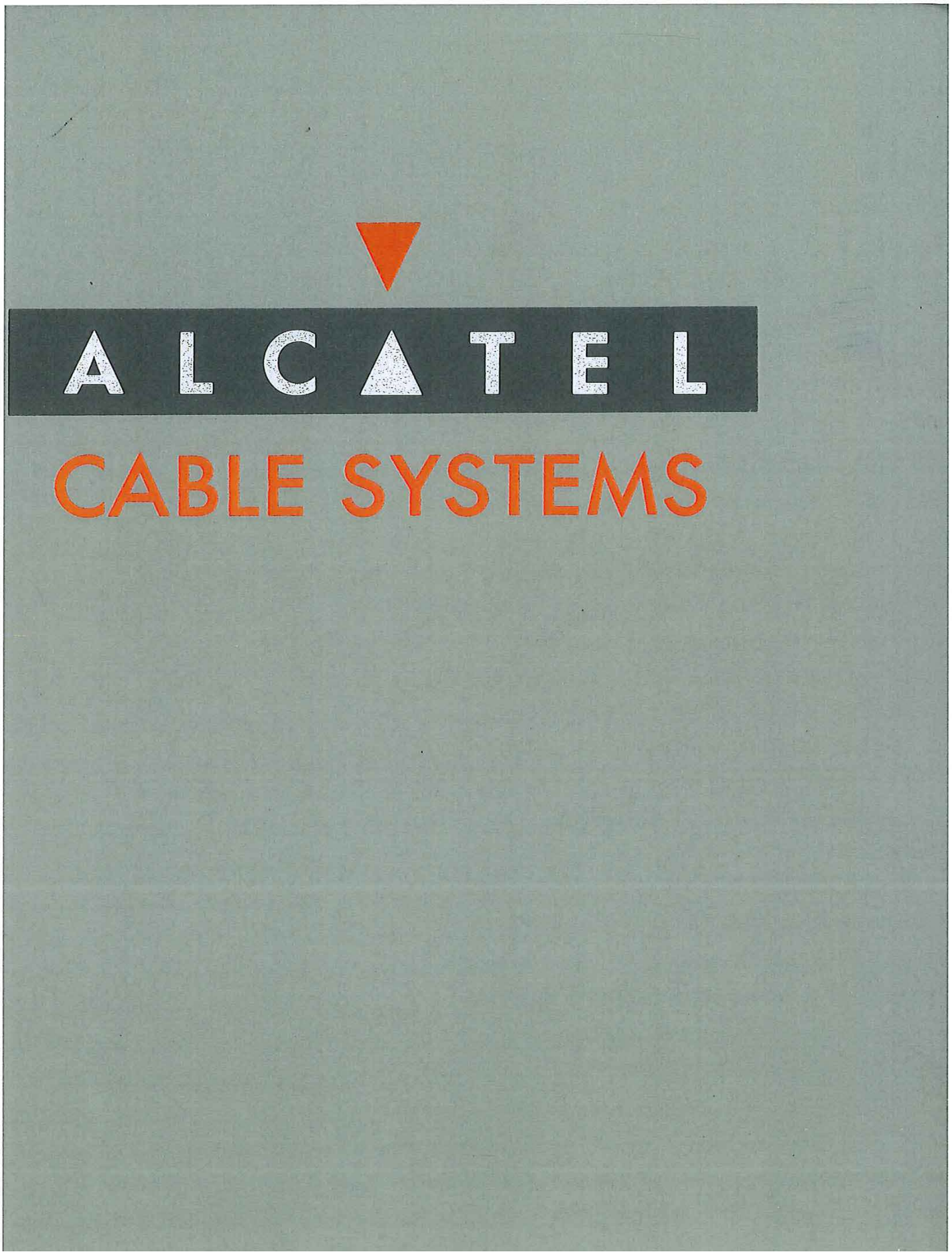


CommScope Exhibit 1038

ALCATEL
Cable Systems Group

P.O. Box 39
Claremont, NC 28610-0039
(704) 459-9787
Fax: (704) 459-9787 Ext. 307
Telex: 754214

Dear Customer:

This Alcatel Cable Systems product catalogue is our response to many of our valued customers for updated product literature.

You have been selected by your Alcatel sales representative to receive this catalogue for your reference. This convenient resource provides you with complete and current product information on all Alcatel Cable Systems products. If there are others in your organization that need their personal copy, please notify your Alcatel representative.

Periodically we will send you updates, catalogue additions, and other special information that will help us service you and your company. To insure you receive your updates, please complete and mail the return card in the cover pocket.

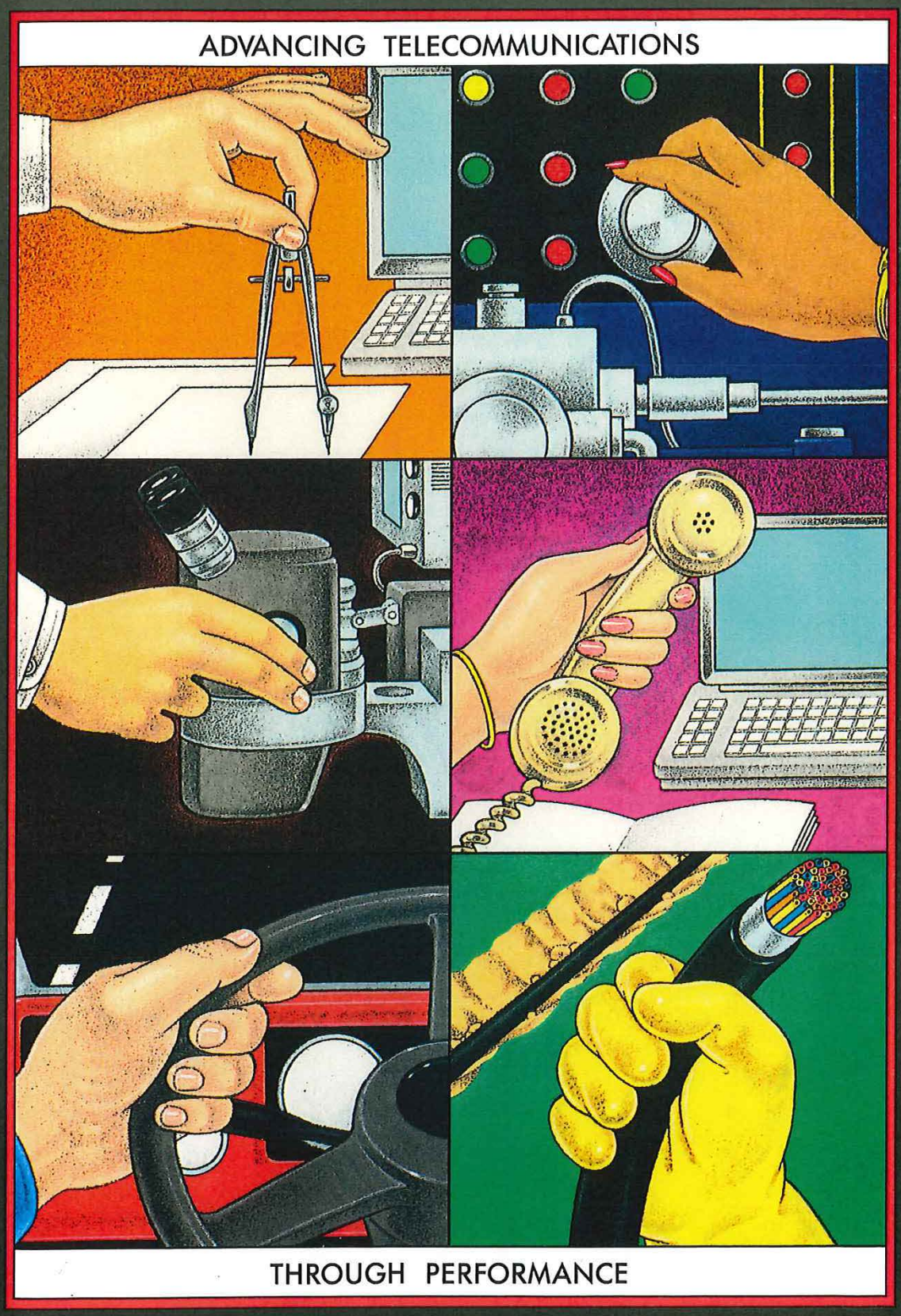
We appreciate the opportunity to be of service.

Sincerely,

John C. Nelson

John C. Nelson
Marketing Manager

JCN/vfm



ALCATEL

CABLE SYSTEMS GROUP

ADVANCING TELECOMMUNICATIONS THROUGH PERFORMANCE

People committed to outstanding performance—performance in products, performance in service and performance in industry leadership. This sets Alcatel Cable Systems apart from other producers of fiber optic and copper telecommunications cables and accessories.

A Company Structured For Performance

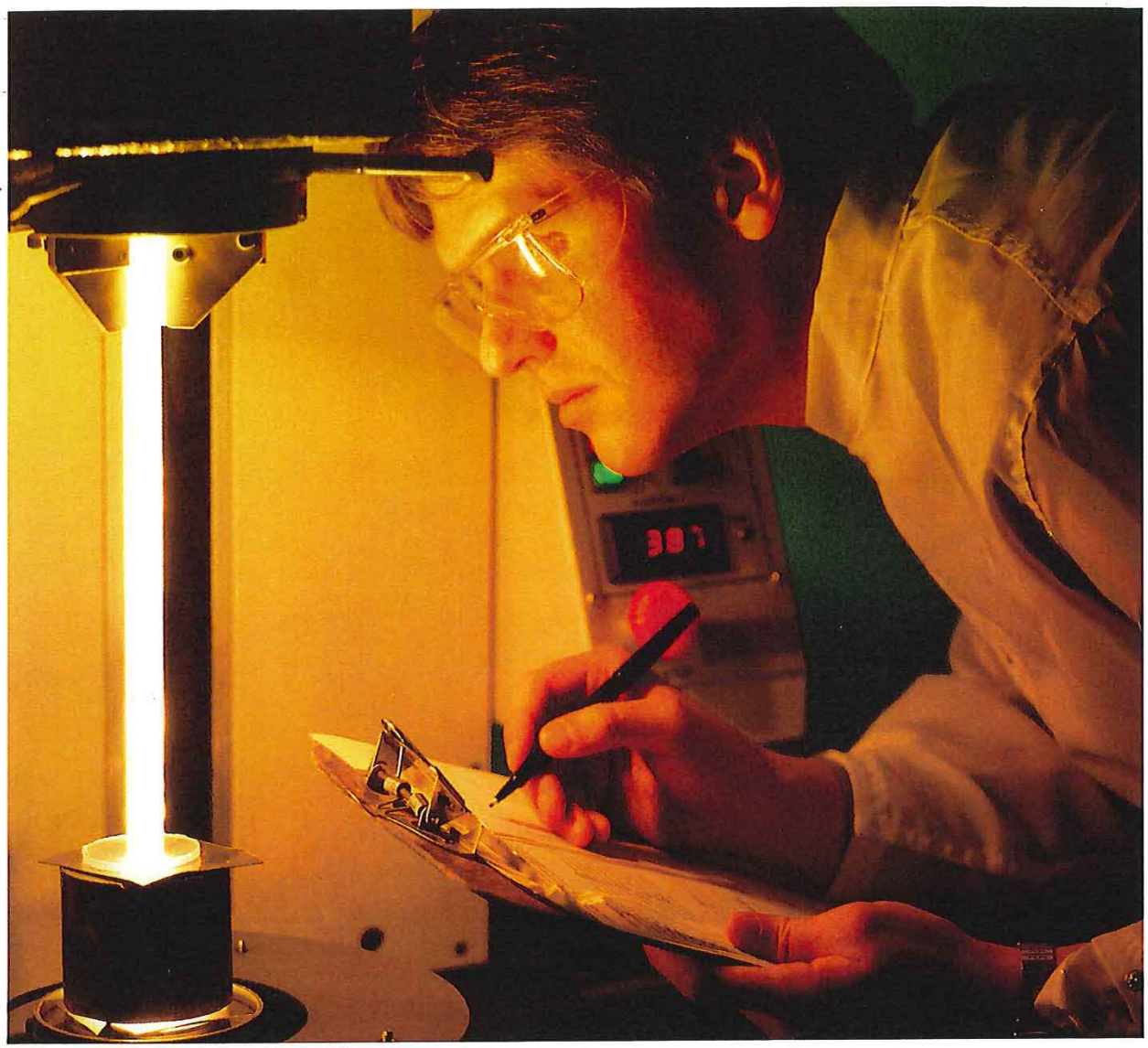
Our name is relatively new, but we are an integral part of one of the world's leaders in communications—Alcatel n.v. of Belgium. On January 1, 1987, this major new force in world telecommunications was formed by the fusion of the telecommunications activities of Paris-based Compagnie Generale d'Electricite SA (CGE) and New York's ITT Corporation. The merger created a worldwide network with the massive resources and technical expertise that will enable us to push the "state-of-the-art" through new boundaries well into the next century. In addition to Cable Systems, Alcatel North America includes Network Systems, Radio Frequency Systems and Speciality Cable.

Even though Alcatel Cable Systems is a new name in the communications industry, we are not a new company. Parts of our organization can trace their roots back more than a century to the early days of Phelps Dodge Corporation, since the acquisition of that company's copper telephone cable, antenna and broadcast products business in 1983 marked our founding.



Cable Systems processes millions of pounds of copper every month in manufacturing telecommunications cable.

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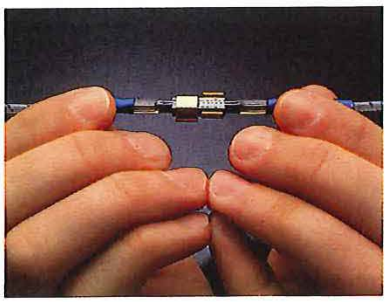
Commitment to research and the opportunity to transfer technology between worldwide groups enable us to be on the leading edge of telecommunications technology.

Companies that have been integrated into our operations over the years include Celwave, ITT-Valtec and Ericsson's outside plant cable business.

Performance Through Product Innovation

Alcatel Cable Systems' capabilities for continued product innovation are derived from the technical expertise within our group, our commitment to Research and Development, and our unique opportunities for the transfer of technology from other resources within Alcatel NA and Alcatel n.v.

Cable Systems alone has more than 50 professionals, including 25 graduate engineers, conducting research on fiber technologies, cable development, electro-optic components and military fiber optic systems. In addition to our product development teams, on some projects we work closely with other Alcatel NA groups and their hundreds of Research and Development professionals. An example is the development of advanced solutions for extension of fiber optic networks to subscriber locations.



Our wide array of optical products, such as the Light-Ray™ 12 fiber connector, helps set us apart from others in the industry.

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Alcatel Cable Systems is one of the only fiber optic cable manufacturers in the nation that controls quality through producing its own optical fiber.



Products That Deliver Performance

The individual companies that have been merged into Alcatel Cable Systems and their stable employee base have enabled us to enlarge our range of product offerings. From five production facilities and two distribution centers, we supply copper and fiber optic products and systems to the telecommunications industry and military customers. Our organization is committed to offering a quality product unmatched by any other supplier in the industry today.

Copper Cable - We produce a complete range of plastic insulated copper telephone cables in pair counts from 2 to 4,200. Over 30 standard cable types make us the choice for telephone cables for aerial, duct and direct buried installations. Our copper cable manufacturing facilities can produce more than 45 billion conductor feet, or 8.5 million miles of conductor, each year.

Optical Products - Cable Systems produces both single-mode and multimode fibers used in a wide range of optical cables that are designed to insure stable operating characteristics and performance. Our optical fiber cables are manufactured in armored and non-armored designs having either steel or dielectric central strength members and with or without Kevlar®. We also provide related components and hardware, such as the Light-Ray™ 12 fiber connector, pigtails, LEDs, and couplers.

Total Quality Means Performance

Our goal is to provide a total quality system. Each Alcatel Cable Systems employee strives for error-free performance through "Management by Prevention." If errors occur, we initiate corrective action to eliminate the cause and prevent the recurrence. We recognize that our employees are our most valuable resource. They are the key to building a total quality organization that is more effective, responsive and successful in meeting customer requirements than anyone else in the industry. Not only do our employees understand who our customers are and what they require, it is each employee's personal responsibility to see that the customers' requirements are met on time, every time.



Commitment to satisfying customer requirements is evident in the responsiveness of Alcatel Cable Systems employees, who are assisted by our automated information network.

Customer Service Demonstrates Performance

Since those we serve are our top priority, Cable Systems has established an extensive network of customer service centers and an experienced sales organization to assure our customers we will meet their needs and expectations. In addition to direct sales and customer service, our organization provides extensive technical assistance to customers, including customer engineering, a full range of field services and customer training. Further, by utilizing our own fleet of trucks, Cable Systems can deliver products to the job site—assuring proper transportation and on-time delivery.

Cable Systems has taken other significant steps to make sure we meet the needs of our customers. We have kept our sales and marketing organizational structure as flat as possible to respond quickly in every situation: delivery, price quotes and engineering. We also have made top management part of the regular customer-contact process, which has helped us build long-standing relationships with customers based on trust and communication.

Our commitment is to satisfy customer requirements through excellence in performance and relentless quality improvement. At Alcatel Cable Systems, we are advancing the telecommunications industry by our state-of-the-art technology, dedication to our products, and advanced customer relation systems. We offer quality and service unmatched by any in the industry. Let Alcatel Cable Systems help you meet tomorrow's challenge in the world of telecommunications today.



Assuring total quality is a goal made possible through dedicated employees who take responsibility for understanding and meeting customer requirements.

Manufacturing Sites and Customer Service Locations

Headquarters

Customer Service, Technical Assistance, Sales

100 Penny Road
P.O. Box 39
Claremont, NC 28610-0039
704-459-9787 Telex 754214

Customer Service Locations

4298 Memorial Drive
Decatur, GA 30032
404-292-3222

7999 Randell Drive
P.O. Box 182
Denison, TX 75020
214-893-6706

941 N. Plum Grove Rd., Suite B
Schaumburg, IL 60173
312-843-8670

2812 Asbury Place
Greensboro, NC 27408
919-288-1111

P.O. Box 1520
Longwood, FL 32750
407-831-3180

5231 E. Memorial Dr., Suite 195
Stone Mountain, GA 30083
404-981-1438

195 Londontowne Drive
Pittsburgh, PA 15226
412-481-1120

P.O. Box 4405
Overland Park, KS 66204
913-541-7500

Manufacturing Sites

100 Penny Road
Claremont, North Carolina 28610



1300 West Park Road
Elizabethtown, Kentucky 42701



300 South Edgar Street
Fordyce, Arkansas 71742



7635 Plantation Road
Roanoke, Virginia 24019



2801 Anaconda Road
Tarboro, North Carolina 27886



Alcatel Network Systems

Headquarters:
3128 Smoketree Court
Raleigh, NC 27604
800-877-6060
In Canada 514-436-6225

Date Founded:
Formed as a result of the merger of ITT Network Systems Division, Lynch Communications, Inc., Citcom Systems, Inc., and CIT-Alcatel, Alcatel Network Systems offers over 65 years of combined experience in the U.S. telecommunications marketplace.

Area of Business:
Telecommunications, Transmission and Switching Products

Product Offerings:
Alcatel Network Systems is a full-line supplier of transmission and switching products to the Bell and independent telephone companies, specialized common carriers, Fortune 1000 and government throughout the United States and Canada. The equipment portfolio consists of the following product groups:

- PCM Channel Banks/Trunk Carrier Systems
- Digital Loop Carrier Subscriber Systems
- T1 Span Equipment
- Multiplexers
- Facility Test Equipment
- Network Interface Equipment
- Fiber Optic Terminating Equipment
- Digital Cross-Connect and Switching Equipment

Milestones:
Alcatel Network Systems is a predominant supplier of T1 span systems and trunk carrier equipment to the U.S. telephony market. Over one million channels of D448 trunk carriers are now installed in the U.S. In addition, Alcatel Network Systems' S300 digital loop carrier system is standard in two Bell operating companies. The 1218 Digital Loop Carrier system offers a unique digital interface with existing digital switches via the TR8 port. This TR8 (Bellcore TR-TSY-000008) interface is an industry first.

Distribution:
Alcatel Network Systems products are sold through a direct sales force and distributors.

Alcatel Transcom

Headquarters:
1170 E. Main Road
Portsmouth, RI 02871
800-556-7364 or
401-683-3000 (in RI)

Date Founded:
Founded as Transcom in December, 1986, when acquired by Alcatel n.v.

Area of Business:
Telecommunications
Transmission Products

Product Offerings:
Alcatel Transcom is a full-line supplier of telecommunications transmission products to the Bell and independent telephone companies, specialized common carriers, Fortune 1000 and government throughout the United States and Canada. The equipment portfolio consists of the following product groups:

- DFT4* (Digital Facilities Terminal) channel units, common units, and test equipment for D4 systems
- D4 Channel Bank System
- DFT96 channel units for SLC** 96 systems
- DFT5*** Automated Digital Terminal Systems
- MFT (Metallic Facilities Terminal) voice frequency (VF) equipment
- NCTE (Network Channel Terminating Equipment) VF and signaling modules
- Loop magnetics, electronics and accessories for subscriber loops

Milestones:
Alcatel Transcom is one of the largest suppliers of D4-compatible plug products with over one million plug-ins presently installed in the BOCs. The DFT5 Automated Digital Terminal System (ADTS) product is the first intelligent D4-based ADTS system to be purchased and installed by the BOCs. In addition, the company has introduced a family of Carrier Serving Area (CSA) plug-ins for SLC-96 systems that offer significant cost savings and maintenance advantages.

Distribution:
The company is represented in the marketplace by the Alcatel Network Systems/Transcom sales organization headquartered in Raleigh, North Carolina.

*DFT4 is a registered trademark of Alcatel Transcom. **SLC is a registered trademark of AT&T. ***DFT5 is a registered trademark of Alcatel Transcom.

Alcatel Cable Systems

Headquarters:
100 Penny Road
P.O. Box 39
Claremont, NC 28610

Date Founded:
This group was created through a series of acquisitions and mergers of leading U.S. telecommunications transmission products companies. The chronology includes:

1983 - Celwave Technologies, Inc., acquired Phelps Dodge Communications Corp.

1985 - Celwave Technologies merged into Celwave Systems, Inc.

1987 - Alcatel Cable Systems was formed from Celwave Systems, Inc., and ITT/Valtec.

1988 - Alcatel NA purchased the U.S. copper outside plant cable and fiber optic cable capabilities of Ericsson, Inc.

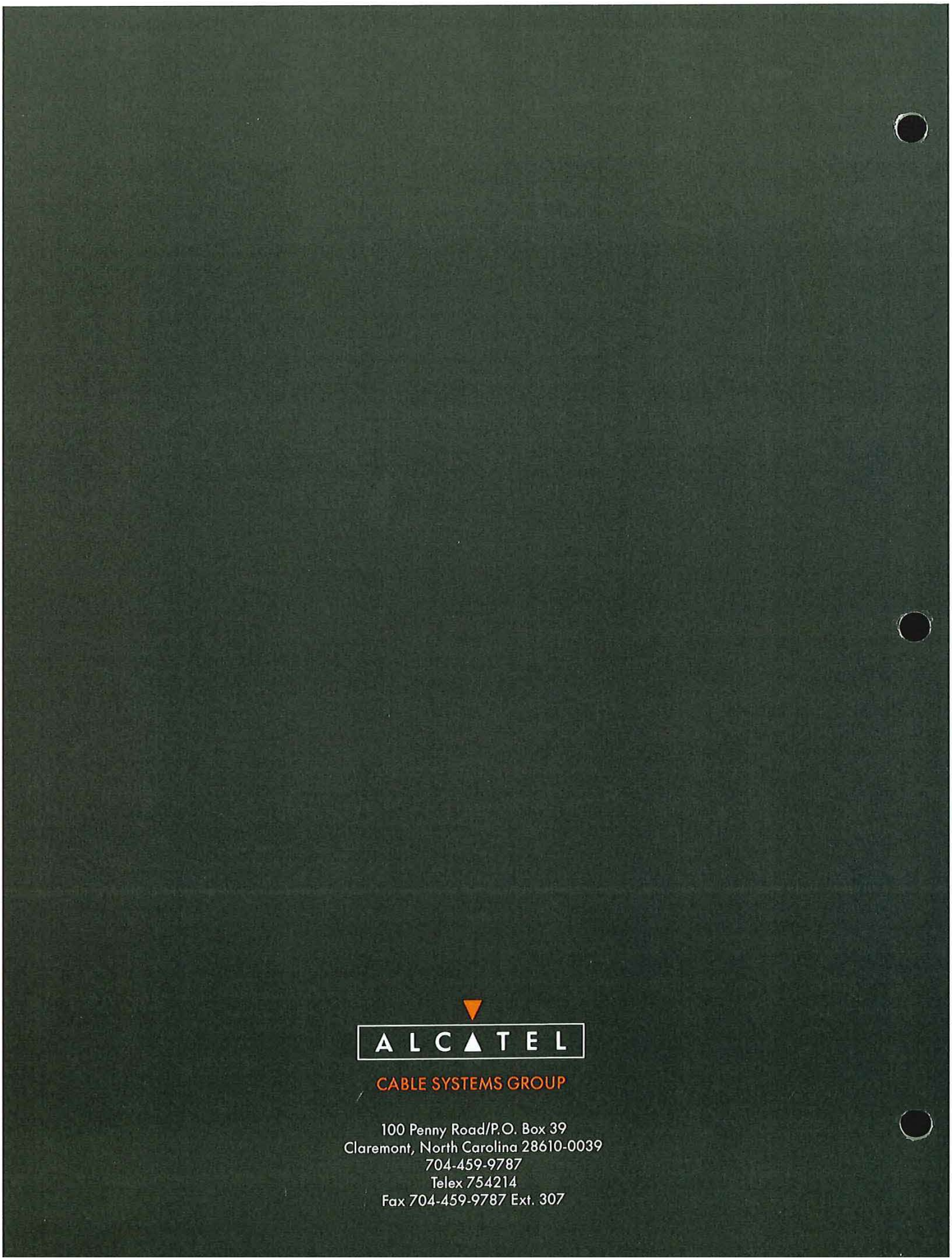
Area of Business:
Telecommunications
Transmission Products

Product Offerings:
The product lines listed are supported by extensive R&D investment dedicated to product development, improvements and cost reductions. Cable Systems product offerings include:

- Copper Cable
- Fiber Optic Cable
- Optical Fiber (SM and MM)
- Fiber to the Home Systems
- Pocket Shaver™ Fiber Access Tool
- Hardware and Accessories
- Submarine Cable
- Fiber Optic Couplers, LEDs and Connectors
- Installation and Support Services
- FOG-M, Fiber Optic Guided Missile Systems

Milestones:
Dr. Charles Kao of ITT first identified fiber optics as a telecommunications medium. ITT and Valtec were forerunners in the development of manufacturing processes for fiber optic cables. Celwave's history includes over 140 years in the production of copper communications cable.

Distribution:
Alcatel Cable Systems markets its products directly to the RBOCs and telecommunications holding companies. Sales are also made through stocking distributors and telecommunications supply houses.


ALCATEL
CABLE SYSTEMS GROUP
100 Penny Road/P.O. Box 39
Claremont, North Carolina 28610-0039
704-459-9787
Telex 754214
Fax 704-459-9787 Ext. 307

EBWS—Film Coated Aluminum Shield
EDWS—Copper Shield
EXWS—Alloy 194 or Copper Clad Stainless Steel Shield

Cable Construction

CONDUCTORS: Solid bare annealed copper. Sizes 19, 22, 24 and 26 AWG. (.9, .64, .5 and .4mm).

INSULATION: Individual copper conductors insulated with a color coded high density polyethylene or a color coded polypropylene.

TWISTED PAIRS: Insulated conductors twisted to form pairs with varying lays to minimize crosstalk and meet capacitance unbalance limitations.

CABLE ASSEMBLY: Cables 25 pair and less are assembled in concentric layers to form a cylindrical core. Cables having 37 pair and more are assembled from concentrically formed units with not more than 25 pair per unit, which may be cabled into 50 pair super or 100 pair super quad units, which are cabled to form the complete cylindrical core assembly. The core separator is a plastic coated 0.004" (.101mm) aluminum screen which is placed in such a manner as to separate one-half of the core in an "S" configuration and electrically separate the cable into two compartments.

MOISTURE RESISTANCE: To the cable core is applied a moisture-resisting compound which completely coats each insulated conductor and fills the interstices between pairs and units.

CABLE CORE COVERING: A non-hygroscopic core wrap is applied over the assembled core which furnishes mechanical as well as high dielectric protection between shielding and individual conductors.

FLOODING COMPOUND: A flooding compound is applied to fill all the depressions of the corrugations over and under the shield unless the shield is bonded to the jacket, in which case, flooding compound is applied under the shield only.

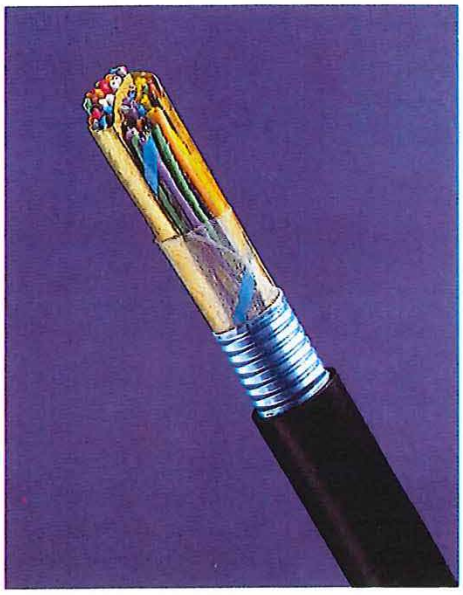
SHIELD: Type EBWS: Electrically continuous, .008" (.203mm) corrugated aluminum shielding tape applied longitudinally with a polyethylene film fused and chemically bonded to both sides.

Type EDWS: Electrically continuous, .005" (.127mm) corrugated copper shielding tape applied longitudinally.

Type EXWS: Electrically continuous, corrugated Alloy 194 or Copper Clad stainless steel shielding tape applied longitudinally. Shield thickness in accordance with REA Requirements.

JACKET: Virgin, black, high molecular weight, linear low density or medium density polyethylene.

IDENTIFICATION AND LENGTH MARKING: Manufacturer's identification, year of manufacture, gauge, pair count, and cable type surface marked on jacket at two-foot intervals. Sequentially numbered length markings are located at alternate two-foot (610mm) intervals.



Application:

Exchange Area
High Frequency Applications
Duct or Direct Burial Installations
Filled Screened Core
REA Specification No. PE-39

*For 19 and 22 AWG conductors, the maximum average shall not exceed 150 pf/kf (492 pf/km).

Average Mutual Capacitance at 1000 Hz

Total No. of Pairs	Microfarads/Mile	Microfarads/Km
6 and 12	.083 ± .007	0.052 ± .004
over 12	.083 ± .004	0.052 ± .002

Conductor Size AWG	Conductor Size mm	Minimum Insulation Resistance at 73°F MEGOHM— mile	km	Nominal Attenuation @68°F 1KHz db/mile	1KHz db/km	150KHz db/mile	150KHz db/km	772KHz db/mile	772KHz db/km	Maximum Conductor Resistance 68°F OHMS/ kf	km	Resistance Unbalance Maximum Average %	Individual Pair %	Dielectric Strength DC Potential—Volts Minimum CDR. TO CDR.	CDR. TO GROUND
19	0.9	1,000	1,600	1.28	.80	6.4	3.98	13.8	8.58	8.7	28.5	1.5	4.0	7,000	15,000
22	0.64	1,000	1,600	1.82	1.13	9.2	5.72	19.9	12.37	17.4	57.1	1.5	4.0	5,000	15,000
24	0.5	1,000	1,600	2.32	1.44	12.1	7.52	24.8	15.41	27.5	90.2	1.5	5.0	4,000	15,000
26	0.4	1,000	1,600	2.92	1.82	17.6	10.94	31.4	19.51	44.0	144.4	2.0	5.0	2,800	15,000

Near End Crosstalk Requirements

Minimum near end crosstalk loss, the mean minus the standard deviation (M-S) at a test frequency of 772 KHz.

	Pair Size	M-S db
within unit	12	72
	18	76
between units	25	78
	50 and above	84

Far End Crosstalk Requirements

RMS output-to-output far-end crosstalk loss not less than 73 db/kf (67.8 db/km) at a test frequency of 150 KHz.

Capacitance Unbalance Pair-to-Pair

Pair	Maximum Individual pf/kf	Maximum Individual pf/km	Maximum RMS pf/kf	Maximum RMS pf/km
Less than 12	100	181	—	—
12 and larger	—	—	25	45.3

Capacitance Unbalance Pair-to-Ground

Pair	Maximum Individual pf/kf	Maximum Individual pf/km	Maximum Average* pf/kf	Maximum Average* pf/km
Less than 12	800	2625	—	—
12 and larger	800	2625	175	574

P.O. Box 39
Claremont, NC 28610-0039
(704) 459-9787

ALCATEL
CABLE SYSTEMS GROUP

CommScope Exhibit 1038

EBWS—Film Coated Aluminum Shield
EDWS—Copper Shield
EXWS—Alloy 194 or Copper Clad Stainless Steel Shield

Exchange Area
High Frequency Applications
Duct or Direct Burial Installations
Filled Screened Core
REA Specification No. PE-39

No. of Pairs	Nominal O.D. (inch)	(mm)	Standard Reel Length (feet)	(m)	Reel* Design	Approx. Cable Weight (lbs/kf)	(kg/km)
26 AWG (0.4mm)							
12	0.439	11.2	5000	1524	R-34	82	122
18	0.493	12.5	5000	1524	R-38	104	155
25	0.541	13.7	5000	1524	R-40	132	196
37	0.613	15.6	5000	1524	R-44	175	261
50	0.678	17.2	5000	1524	R-44	218	326
75	0.783	19.9	5000	1524	R-52	300	448
100	0.882	22.4	5000	1524	R-52	384	573
150	0.980	24.9	5000	1524	R-59	508	757
200	1.096	27.8	5000	1524	R-63	649	968
300	1.291	32.8	5000	1524	R-74	927	1382
400	1.465	37.2	2500	762	R-63	1207	1799
24 AWG (0.5mm)							
12	0.495	12.6	5000	1524	R-38	108	161
18	0.559	14.2	5000	1524	R-40	143	214
25	0.621	15.8	5000	1524	R-44	181	270
37	0.710	18.0	5000	1524	R-50	244	363
50	0.792	20.1	5000	1524	R-52	309	461
75	0.933	23.7	5000	1524	R-55	438	653
100	1.052	26.7	5000	1524	R-63	564	841
150	1.187	30.1	5000	1524	R-70	764	1139
200	1.345	34.2	5000	1524	R-74	992	1480
300	1.623	41.2	2500	762	R-67	1454	2169
400	1.841	46.8	2500	762	R-74	1897	2828
900	2.653	67.4	800	244	R-80	4076	6079

No. of Pairs	Nominal O.D. (inch)	(mm)	Standard Reel Length (feet)	(m)	Reel* Design	Approx. Cable Weight (lbs/kf)	(kg/km)
22 AWG (0.64mm)							
12	0.570	14.5	5000	1524	R-40	149	222
18	0.651	16.5	5000	1524	R-44	200	298
25	0.730	18.5	5000	1524	R-50	258	385
37	0.843	21.4	5000	1524	R-52	355	530
50	0.965	24.5	5000	1524	R-59	467	696
75	1.130	28.7	5000	1524	R-67	658	981
100	1.270	32.3	5000	1524	R-70	844	1259
150	1.449	36.8	2500	762	R-63	1162	1733
200	1.666	42.3	2500	762	R-70	1535	2290
300	1.989	50.5	1250	381	R-63	2231	3328
400	2.271	57.7	1250	381	R-74	2935	4376
19 AWG (0.9mm)							
12	0.718	18.2	5000	1524	R-50	250	372
18	0.833	21.2	5000	1524	R-52	347	517
25	0.963	24.5	5000	1524	R-59	467	696
37	1.122	28.5	5000	1524	R-67	651	970
50	1.267	32.2	5000	1524	R-70	844	1258
75	1.520	38.6	2500	762	R-63	1229	1832
100	1.745	44.3	2500	762	R-70	1619	2414
150	2.036	51.7	2500	762	R-85	2294	3421
200	2.326	59.1	1250	381	R-74	3016	4498

Note: The above information is approximate and subject to normal manufacturing tolerance.

*Refer to reel specification page.

P.O. Box 39
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(704) 459-9787

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CABLE SYSTEMS GROUP

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Cable Construction

CONDUCTORS: Solid bare annealed copper. Sizes 19, 22, 24 and 26 AWG (.9, .64, .5 and .4mm).

INSULATION: Individual copper conductors insulated with a color coded, high density polyethylene or a color coded polypropylene.

TWISTED PAIRS: Insulated conductors twisted to form pairs with varying lays to minimize crosstalk and meet capacitance unbalance limitations.

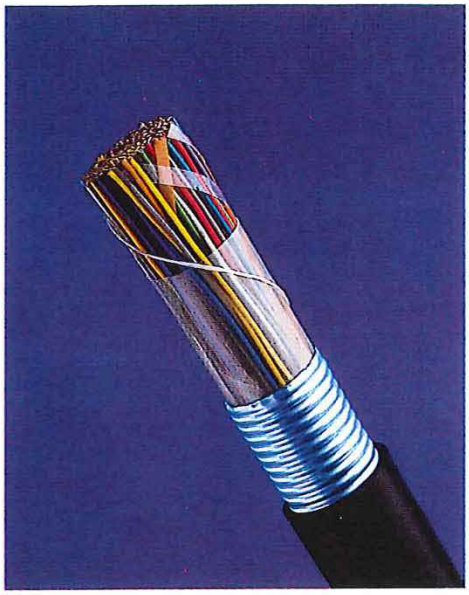
CABLE ASSEMBLY: Cables 25 pair and less are assembled in concentric layers to form a cylindrical core. Cables having 37 pair and more are assembled from concentrically formed units with not more than 25 pair per unit, which may be cabled into 50 pair super or 100 pair super quad units, which are cabled to form the complete cylindrical core assembly.

CABLE CORE COVERING: A non-hygroscopic core wrap is applied over the assembled core which furnishes mechanical as well as high dielectric protection between shielding and individual conductors.

SHIELD: Type GEF: Electrically continuous, .008" (0.203mm) corrugated aluminum shielding tape applied longitudinally with a polyethylene film fused and chemically bonded to both sides.

JACKET: Virgin, black, high molecular weight, linear low density or medium density polyethylene.

IDENTIFICATION, LENGTH MARKING: Manufacturer's identification, year of manufacture, gauge, pair count, and cable type surface marked on jacket at two-foot (610mm) intervals. Sequentially numbered length markings are located at alternate two-foot (610mm) intervals.



Application:
Exchange Area
Aerial or Duct Installation
Air Core
REA Specification No. PE-22

Average Mutual Capacitance at 1000 Hz

Total No. of Pairs	Microfarads/Mile	Microfarads/Km
6 and 12	.083 ± .007	0.052 ± .004
over 12	.083 ± .004	0.052 ± .002

Conductor Size AWG	Conductor Size mm	Minimum Insulation Resistance at 73°F MEGOHM— mile	Minimum Insulation Resistance at 73°F MEGOHM— km	Nominal Attenuation @68°F 1KHz db/mile	1KHz db/km	150KHz db/mile	150KHz db/km	772KHz db/mile	772KHz db/km	Maximum Conductor Resistance 68°F OHMS/ kf	Maximum Conductor Resistance 68°F OHMS/ km	Resistance Unbalance Maximum Average %	Resistance Unbalance Maximum Individual Pair %	Dielectric Strength DC Potential—Volts Minimum CDR. TO CDR.	Dielectric Strength DC Potential—Volts Minimum CDR. TO GROUND
19	0.9	10,000	16,000	1.28	.80	7.1	4.40	16.8	10.40	8.7	28.5	1.5	4.0	4,500	10,000
22	0.64	10,000	16,000	1.82	1.13	10.0	6.20	23.6	14.63	17.4	57.1	1.5	4.0	3,600	10,000
24	0.5	10,000	16,000	2.32	1.44	13.4	8.31	29.8	18.52	27.5	90.2	1.5	5.0	3,000	10,000
26	0.4	10,000	16,000	2.92	1.82	18.3	11.35	36.3	22.50	44.0	144.3	2.0	5.0	2,400	10,000

Near End Crosstalk Requirements

			M-S db
Minimum near end crosstalk loss, the mean minus the standard deviation (M-S) at a test frequency of 772 KHz.	within unit	12 and 13 pair	56
		18 and 25 pair	60
	between units	Adjacent 13 pair or less	65
		Adjacent 25 pair	66
		Non-adjacent (all)	81

Far End Crosstalk Requirements

RMS output-to-output far-end crosstalk loss not less than 73 db/kf (67.8 db/km) at a test frequency of 150 KHz.

Capacitance Unbalance Pair-to-Pair

Pair	Maximum Individual pf/kf	Maximum Individual pf/km	Maximum RMS pf/kf	Maximum RMS pf/km
Less than 12	100	181	—	—
12 and larger	—	—	25	45.3

Capacitance Unbalance Pair-to-Ground

Pair	Maximum Individual pf/kf	Maximum Individual pf/km	Maximum Average* pf/kf	Maximum Average* pf/km
Less than 12	800	2625	—	—
12 and larger	800	2625	175	574

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ALCATEL CABLE SYSTEMS GROUP

CommScope Exhibit 1038

GEF—Film Coated Aluminum Shield

Exchange Area
Aerial or Duct Installation
Air Core
REA Specification No. PE-22

No. of Pairs	Nominal O.D. (inch)	(mm)	Standard Reel Length (feet)	(m)	Reel* Design	Approx. Cable Weight (lbs/kf)	(kg/km)
26 AWG (0.4mm)							
12	0.352	8.9	5000	1524	R-29	55	82
18	0.391	9.9	5000	1524	R-34	70	105
25	0.428	10.9	5000	1524	R-34	87	130
37	0.482	12.2	5000	1524	R-38	116	173
50	0.531	13.5	5000	1524	R-38	145	217
75	0.610	15.5	5000	1524	R-44	200	298
100	0.677	17.2	5000	1524	R-44	254	379
150	0.789	20.0	5000	1524	R-52	357	532
200	0.893	22.7	5000	1524	R-52	463	691
300	1.061	26.9	5000	1524	R-63	670	1000
400	1.194	30.3	2500	762	R-52	869	1296
600	1.434	36.4	2500	762	R-63	1281	1910
900	1.756	44.6	1250	381	R-55	1907	2844
1200	1.982	50.3	1250	381	R-63	2478	3696
1500	2.200	55.9	1250	381	R-67	3077	4590
1800	2.384	60.6	1250	381	R-80	3656	5452
2100	2.573	65.4	1250	381	R-85	4263	6357
2400	2.730	69.3	1250	381	R-84	4839	7217
24 AWG (0.5mm)							
6	0.335	8.5	5000	1524	R-29	48	72
12	0.399	10.1	5000	1524	R-34	73	109
18	0.448	11.4	5000	1524	R-38	96	143
25	0.496	12.6	5000	1524	R-38	122	181
37	0.565	14.4	5000	1524	R-40	165	246
50	0.627	15.9	5000	1524	R-44	210	313
75	0.728	18.5	5000	1524	R-50	294	438
100	0.813	20.7	5000	1524	R-52	377	562
150	0.965	24.5	5000	1524	R-59	540	806
200	1.095	27.8	2500	762	R-52	706	1053
300	1.302	33.1	2500	762	R-55	1024	1527
400	1.482	37.6	2500	762	R-63	1343	2003
600	1.814	46.1	1250	381	R-59	2006	2992
900	2.173	55.2	1250	381	R-67	2944	4390
1200	2.487	63.2	1250	381	R-80	3885	5794
1500	2.746	69.7	1000	305	R-85	4800	7159
1800	2.980	75.7	1000	305	R-84	5713	8520

No. of Pairs	Nominal O.D. (inch)	(mm)	Standard Reel Length (feet)	(m)	Reel* Design	Approx. Cable Weight (lbs/kf)	(kg/km)
22 AWG (0.64mm)							
3	0.357	9.1	5000	1524	R-29	51	76
6	0.416	10.6	5000	1524	R-34	73	109
12	0.500	12.7	5000	1524	R-38	112	167
18	0.525	13.3	5000	1524	R-38	136	203
25	0.586	14.9	5000	1524	R-40	175	261
37	0.674	17.1	5000	1524	R-44	241	359
50	0.755	19.2	5000	1524	R-50	310	462
75	0.894	22.7	5000	1524	R-52	444	662
100	1.003	25.5	5000	1524	R-59	572	853
150	1.196	30.4	2500	762	R-52	830	1238
200	1.366	34.7	2500	762	R-59	1093	1631
300	1.660	42.2	2500	762	R-70	1612	2405
400	1.890	48.0	1250	381	R-59	2119	3160
600	2.272	57.7	1250	381	R-74	3126	4662
900	2.733	69.4	1250	381	R-84	4611	6876
1200	3.111	79.0	1250	381	R-94	6058	9035
19 AWG (0.9mm)							
3	0.380	9.7	5000	1524	R-29	64	95
6	0.463	11.8	5000	1524	R-38	101	150
12	0.580	14.7	5000	1524	R-40	169	253
18	0.670	17.0	5000	1524	R-44	234	349
25	0.758	19.3	5000	1524	R-50	309	460
37	0.893	22.7	5000	1524	R-52	437	651
50	1.007	25.6	5000	1524	R-59	569	849
75	1.201	30.5	2500	762	R-52	827	1233
100	1.372	34.8	2500	762	R-59	1088	1623
150	1.667	42.3	2500	762	R-70	1605	2393
200	1.894	48.1	1250	381	R-59	2104	3138
300	2.284	58.0	1250	381	R-74	3106	4632
400	2.606	66.2	1250	381	R-85	4094	6106

Note: The above information is approximate and subject to normal manufacturing tolerance.

*Refer to reel specification page.

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ALCATEL
CABLE SYSTEMS GROUP

CommScope Exhibit 1038

Cable Systems Group Catalogue
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Pg. #	Product Type	Name
	Copper Cable - Independent	
100.01	Aircore-Aerial or Duct	GEF
101.01	Aircore-Aerial Figure "8"	GFF
102.01	Filled Core-Duct or Direct Burial	GEBW, EDW, EXW
103.01	Filled Core-Double Jacket	DEBW, DEDW, DEXW
104.01	Filled Core-CACSP Sheath	CACW
105.01	Filled Screen Core-T1 Systems	EBWS, EDWS, EXWS
106.01	Filled Foam Skin-Duct or Direct Burial	FSBW, FSDW, FSXW
107.01	Filled Foam Skin-CACSP Sheath	FSYW
108.01	Filled Buried Distribution Wire	DDW, DFW
109.01	Filled Buried Service Wire	BSW
	Copper Cable - Bell	
200.01	Aircore PIC Alpeth	BHBA, BHAA, BKMA, BKTA
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202.01	Aircore PIC Bonded PASP	BHBH, BHAH, BKMH, BKTH
203.01	Aircore Self-support	BHBS, BHAS, BKMS, BKTS
204.01	Underground Foam Skin PIC	DCMZ, DCTZ
205.01	Filled ASP	AFBW, AFAW, AFMW, AFTW
206.01	Filled ASP with Outer Protection	AFBW-UM, AFAW-UM, AFMW-UM, AFTW-UM
207.01	Filled Screen ASP	KFAW, KGAW, KFAW-UM, KGAW-UM
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303.01	Armored	NAM, NRM
304.01	Self-support Figure 8	NFM, NBM
305.01	Submarine	
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400.01	Light-Ray Splice	
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600.01	Reels	
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Copper Cable
—Independent

Cable Construction

CONDUCTORS: Solid bare annealed copper. Sizes 19, 22, 24 and 26 AWG. (.9, .64, .5 and .4mm).

INSULATION: Individual copper conductors insulated with a color coded high density polyethylene or a color coded polypropylene.

TWISTED PAIRS: Insulated conductors twisted to form pairs with varying lays to minimize crosstalk and meet capacitance unbalance limitations.

CABLE ASSEMBLY: Cables 25 pair and less are assembled in concentric layers to form a cylindrical core. Cables having 37 pair and more are assembled from concentrically formed units with not more than 25 pair per unit, which may be cabled into 50 pair super or 100 pair super quad units, which are cabled to form the complete cylindrical core assembly.

CABLE CORE COVERING: A non-hygroscopic core wrap is applied over the assembled core which furnishes mechanical as well as high dielectric protection between shielding and individual conductors.

SHIELD: Type GFF: Electrically continuous, .008" (.203mm) corrugated aluminum shielding tape applied longitudinally with a polyethylene film fused and chemically bonded to both sides.

GALVANIZED STEEL SUPPORT STRAND: Shielded core laid parallel to a compound filled ¼" - 7/.080" (6.35mm-7/2.032mm) EHS.

JACKET AND MESSENGER: Virgin, black, high molecular weight, linear low density or medium density polyethylene jacket extruded simultaneously over the shielded core and support strand to form a figure "8" cross section.

IDENTIFICATION AND LENGTH MARKING: Manufacturer's identification, year of manufacture, gauge, pair count, and cable type surface marked on jacket at two-foot intervals. Sequentially numbered length markings are located at alternate two-foot (610mm) intervals.



Application:
Exchange Area
Aerial Installations
Air Core
REA Specification No. PE-38

* For 19 and 22 AWG conductors, the maximum average shall not exceed 150 pf/kf (492 pf/km).

Average Mutual Capacitance at 1000 Hz		
Total No. of Pairs	Microfarads/Mile	Microfarads/Km
6 and 12	.083 ± .007	0.052 ± .004
over 12	.083 ± .004	0.052 ± .002

Conductor Size AWG	Conductor Size mm	Minimum Insulation Resistance at 73°F MEGOHM— mile	Minimum Insulation Resistance at 73°F MEGOHM— km	Nominal Attenuation @68°F 1KHz db/mile	1KHz db/km	150KHz db/mile	150KHz db/km	772KHz db/mile	772KHz db/km	Maximum Conductor Resistance 68°F OHMS/ kf	Maximum Conductor Resistance 68°F OHMS/ km	Resistance Unbalance Maximum Average %	Resistance Unbalance Maximum Individual Pair %	Dielectric Strength DC Potential—Volts Minimum CDR. TO CDR.	Dielectric Strength DC Potential—Volts Minimum CDR. TO GROUND
19	0.9	10,000	16,000	1.28	.80	7.1	4.40	16.8	10.40	8.7	28.5	1.5	4.0	4,500	10,000
22	0.64	10,000	16,000	1.82	1.13	10.0	6.20	23.6	14.63	17.4	57.1	1.5	4.0	3,600	10,000
24	0.5	10,000	16,000	2.32	1.44	13.4	8.31	29.8	18.52	27.5	90.2	1.5	5.0	3,000	10,000
26	0.4	10,000	16,000	2.92	1.82	18.3	11.35	36.3	22.50	44.0	144.3	2.0	5.0	2,400	10,000

Near End Crosstalk Requirements			M-S db
Minimum near end crosstalk loss, the mean minus the standard deviation (M-S) at a test frequency of 772 KHz.	within unit	12 and 13 pair	56
		18 and 25 pair	60
	between units	Adjacent 13 pair or less	65
		Adjacent 25 pair	66
		Non-adjacent (all)	81

Far End Crosstalk Requirements
RMS output-to-output far-end crosstalk loss not less than 73 db/kf (67.8 db/km) at a test frequency of 150 KHz.

Capacitance Unbalance Pair-to-Pair				
Pair	Maximum Individual pf/kf	Maximum Individual pf/km	Maximum RMS pf/kf	Maximum RMS pf/km
Less than 12	100	181	—	—
12 and larger	—	—	25	45.3

Capacitance Unbalance Pair-to-Ground				
Pair	Maximum Individual pf/kf	Maximum Individual pf/km	Maximum Average* pf/kf	Maximum Average* pf/km
Less than 12	800	2625	—	—
12 and larger	800	2625	175	574

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ALCATEL
CABLE SYSTEMS GROUP

GFF—Film Coated Aluminum Shield

Exchange Area
Aerial Installations
Air Core
REA Specification No. PE-38

No. of Pairs	Nominal** O.D. (inch)	(mm)	Standard Reel Length (feet)	(m)	Reel* Design	Approx. Cable Weight (lbs/kf)	(kg/km)
26 AWG (0.4mm)							
12	0.372	9.4	5000	1524	R-40	209	312
18	0.411	10.4	5000	1524	R-44	225	336
25	0.448	11.4	5000	1524	R-44	243	362
37	0.502	12.8	5000	1524	R-50	272	406
50	0.551	14.0	5000	1524	R-50	302	451
75	0.630	16.0	5000	1524	R-52	358	534
100	0.697	17.7	5000	1524	R-55	413	615
150	0.809	20.5	5000	1524	R-59	517	771
200	0.913	23.2	5000	1524	R-63	625	931
300	1.075	27.3	2500	762	R-55	830	1238
24 AWG (0.5mm)							
6	0.355	9.0	5000	1524	R-38	203	302
12	0.419	10.6	5000	1524	R-44	229	341
18	0.468	11.9	5000	1524	R-44	252	376
25	0.516	13.1	5000	1524	R-50	278	415
37	0.585	14.9	5000	1524	R-52	322	481
50	0.647	16.4	5000	1524	R-52	368	549
75	0.748	19.0	5000	1524	R-55	453	676
100	0.833	21.2	5000	1524	R-59	537	801
150	0.985	25.0	5000	1524	R-67	703	1048
200	1.109	28.2	2500	762	R-55	866	1291
300	1.326	33.7	2500	762	R-63	1194	1781

No. of Pairs	Nominal** O.D. (inch)	(mm)	Standard Reel Length (feet)	(m)	Reel* Design	Approx. Cable Weight (lbs/kf)	(kg/km)
22 AWG (0.64mm)							
3	0.340	8.6	5000	1524	R-38	198	295
6	0.399	10.1	5000	1524	R-44	219	327
12	0.481	12.2	5000	1524	R-50	257	384
18	0.545	13.8	5000	1524	R-50	293	436
25	0.606	15.4	5000	1524	R-52	333	496
37	0.694	17.6	5000	1524	R-55	399	596
50	0.775	19.7	5000	1524	R-59	470	700
75	0.914	23.2	5000	1524	R-63	605	903
100	1.025	26.0	2500	762	R-55	736	1098
150	1.214	30.8	2500	762	R-59	994	1482
200	1.380	35.1	2500	762	R-67	1256	1872
19 AWG (0.9mm)							
3	0.400	10.2	5000	1524	R-44	219	327
6	0.483	12.3	5000	1524	R-50	257	383
12	0.600	15.2	5000	1524	R-52	327	488
18	0.690	17.5	5000	1524	R-55	393	586
25	0.778	19.8	5000	1524	R-59	468	699
37	0.913	23.2	5000	1524	R-63	598	892
50	1.029	26.1	5000	1524	R-70	734	1094
75	1.221	31.0	2500	762	R-59	992	1480
100	1.386	35.2	2500	762	R-67	1251	1865

Note 1: The above information is approximate and subject to normal manufacturing tolerance.
Note 2: 26 AWG Figure "8" cable is not covered by REA Specification No. PE-38.

*Refer to reel specification page.
**Measured over jacket core.

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ALCATEL
CABLE SYSTEMS GROUP

CommScope Exhibit 1038

GEBW—Film Coated Aluminum Shield
EDW—Copper Shield
EXW—Alloy 194 or Copper Clad Stainless Steel Shield

Cable Construction

CONDUCTORS: Solid bare annealed copper. Sizes 19, 22, 24 and 26 AWG. (.9, .64, .5 and .4mm).

INSULATION: Individual copper conductors insulated with a color coded high density polyethylene or a color coded polypropylene.

TWISTED PAIRS: Insulated conductors twisted to form pairs with varying lays to minimize crosstalk and meet capacitance unbalance limitations.

CABLE ASSEMBLY: Cables 25 pair and less are assembled in concentric layers to form a cylindrical core. Cables having 37 pair and more are assembled from concentrically formed units with not more than 25 pair per unit, which may be cabled into 50 pair super or 100 pair super quad units, which are cabled to form the complete cylindrical core assembly.

MOISTURE RESISTANCE: To the cable core is applied a moisture-resisting compound which completely coats each insulated conductor and fills the interstices between pairs and units.

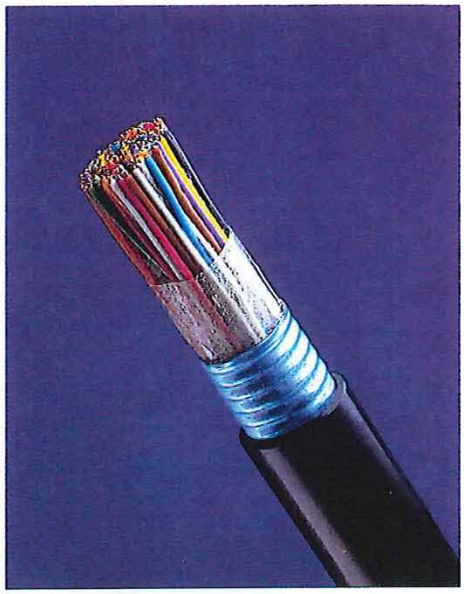
CABLE CORE COVERING: A non-hygroscopic core wrap is applied over the assembled core which furnishes mechanical as well as high dielectric protection between shielding and individual conductors.

FLOODING COMPOUND: A flooding compound is applied to fill all the depressions of the corrugations over and under the shield unless the shield is bonded to the jacket, in which case, flooding compound is applied under the shield only.

SHIELD: Type GEBW: Electrically continuous, .008" (.203mm) corrugated aluminum shielding tape applied longitudinally with a polyethylene film fused and chemically bonded to both sides.
Type EDW: Electrically continuous, .005" (.127mm) corrugated copper shielding tape applied longitudinally.
Type EXW: Electrically continuous, corrugated Alloy 194 or Copper Clad stainless steel shielding tape applied longitudinally. Shield thickness in accordance with REA requirements.

JACKET: Virgin, black, high molecular weight, linear low density or medium density polyethylene.

IDENTIFICATION AND LENGTH MARKING: Manufacturer's identification, year of manufacture, gauge, pair count, and cable type surface marked on jacket at two-foot intervals. Sequentially numbered length markings are located at alternate two-foot (610mm) intervals.



Application:
Exchange Area
Duct or Direct Burial Installations
Filled Core
REA Specification No. PE-39

*For 19 and 22 AWG conductors, the maximum average shall not exceed 150 pf/kf (492 pf/km).

Average Mutual Capacitance at 1000 Hz

Total No. of Pairs	Microfarads/Mile	Microfarads/Km
6 and 12	.083 ± .007	0.052 ± .004
over 12	.083 ± .004	0.052 ± .002

Conductor Size AWG	mm	Minimum Insulation Resistance at 73°F MEGOHM— mile	km	Nominal Attenuation @68°F 1KHz db/mile	db/km	150KHz db/mile	db/km	772KHz db/mile	db/km	Maximum Conductor Resistance 68°F OHMS/ kf	km	Resistance Unbalance Maximum Average %	Individual Pair %	Dielectric Strength DC Potential—Volts Minimum CDR. TO CDR.	CDR. TO GROUND
19	0.9	1,000	1,600	1.28	.80	6.4	3.98	13.8	8.58	8.7	28.5	1.5	4.0	7,000	15,000
22	0.64	1,000	1,600	1.82	1.13	9.2	5.72	19.9	12.37	17.4	57.1	1.5	4.0	5,000	15,000
24	0.5	1,000	1,600	2.32	1.44	12.1	7.52	24.8	15.41	27.5	90.2	1.5	5.0	4,000	15,000
26	0.4	1,000	1,600	2.92	1.82	17.6	10.94	31.4	19.51	44.0	144.4	2.0	5.0	2,800	15,000

Near End Crosstalk Requirements

Minimum near end crosstalk loss, the mean minus the standard deviation (M-S) at a test frequency of 772 KHz.

		M-S db
within unit	12 and 13 pair	56
	18 and 25 pair	60
between units	Adjacent 13 pair or less	65
	Adjacent 25 pair	66
	Non-adjacent (all)	81

Far End Crosstalk Requirements

RMS output-to-output far-end crosstalk loss not less than 73 db/kf (67.8 db/km) at a test frequency of 150 KHz.

Capacitance Unbalance Pair-to-Pair

Pair	Maximum Individual pf/kf	Maximum Individual pf/km	Maximum RMS pf/kf	Maximum RMS pf/km
Less than 12	100	181	—	—
12 and larger	—	—	25	45.3

Capacitance Unbalance Pair-to-Ground

Pair	Maximum Individual pf/kf	Maximum Individual pf/km	Maximum Average* pf/kf	Maximum Average* pf/km
Less than 12	800	2625	—	—
12 and larger	800	2625	175	574

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ALCATEL CABLE SYSTEMS GROUP

CommScope Exhibit 1038

GEBW—Film Coated Aluminum Shield
EDW—Copper Shield
EXW—Alloy 194 or Copper Clad Stainless Steel Shield

Exchange Area
Duct or Direct Burial Installations
Filled Core
REA Specification No. PE-39

No. of Pairs	Nominal O.D. (inch)	(mm)	Standard Reel Length (feet)	(m)	Reel* Design	Approx. Cable Weight (lbs/kf)	(kg/km)
26 AWG (0.4mm)							
6	0.330	8.4	5000	1524	R-29	47	70
12	0.392	10.0	5000	1524	R-34	70	104
18	0.440	11.2	5000	1524	R-34	91	135
25	0.486	12.3	5000	1524	R-38	114	169
37	0.553	14.0	5000	1524	R-40	152	227
50	0.613	15.6	5000	1524	R-44	192	286
75	0.711	18.1	5000	1524	R-50	266	397
100	0.793	20.1	5000	1524	R-52	338	504
150	0.951	24.2	5000	1524	R-55	491	732
200	1.067	27.1	5000	1524	R-63	630	940
300	1.276	32.4	5000	1524	R-70	914	1364
400	1.441	36.6	2500	762	R-63	1185	1767
600	1.764	44.8	2500	762	R-70	1773	2644
900	2.114	53.7	1250	381	R-63	2590	3863
1200	2.468	62.7	1250	381	R-80	3471	5177
1500	2.727	69.3	1250	381	R-84	4280	6383
1800	2.961	75.2	1000	305	R-84	5086	7585
2100	3.176	80.7	1000	305	R-88	5888	8781
2400	3.341	85.1	1000	305	R-108	6894	10257
24 AWG (0.5mm)							
3	0.330	8.4	5000	1524	R-29	54	80
6	0.371	9.4	5000	1524	R-29	61	91
12	0.451	11.5	5000	1524	R-38	95	141
18	0.512	13.0	5000	1524	R-38	126	189
25	0.571	14.5	5000	1524	R-40	162	241
37	0.656	16.7	5000	1524	R-44	220	329
50	0.733	18.6	5000	1524	R-50	282	420
75	0.867	22.0	5000	1524	R-52	402	600
100	0.982	24.9	5000	1524	R-59	521	777
150	1.158	29.4	5000	1524	R-67	743	1108
200	1.321	33.6	5000	1524	R-74	972	1450
300	1.599	40.6	2500	762	R-67	1431	2134
400	1.827	46.4	2500	762	R-74	1881	2805
600	2.191	55.7	1250	381	R-67	2756	4110
900	2.640	67.1	1250	381	R-85	4055	6047
1200	3.091	78.5	1000	305	R-88	5461	8144
1500	3.421	86.9	1000	305	R-96	6751	10069

No. of Pairs	Nominal O.D. (inch)	(mm)	Standard Reel Length (feet)	(m)	Reel* Design	Approx. Cable Weight (lbs/kf)	(kg/km)
22 AWG (0.64mm)							
3	0.351	8.9	5000	1524	R-29	54	80
6	0.422	10.7	5000	1524	R-34	82	122
12	0.522	13.3	5000	1524	R-38	132	197
18	0.599	15.2	5000	1524	R-40	180	268
25	0.674	17.1	5000	1524	R-44	233	348
37	0.781	19.8	5000	1524	R-52	323	482
50	0.889	22.6	5000	1524	R-52	423	631
75	1.056	26.8	5000	1524	R-63	608	907
100	1.189	30.2	5000	1524	R-70	784	1169
150	1.419	36.0	2500	762	R-63	1136	1694
200	1.660	42.2	2500	762	R-70	1530	2282
300	1.987	50.5	1250	381	R-63	2229	3324
400	2.270	57.7	1250	381	R-74	2933	4374
600	2.714	68.9	1250	381	R-84	4287	6393
900	3.259	82.8	1250	381	R-100	6290	9381
19 AWG (0.9mm)							
3	0.429	10.9	5000	1524	R-34	84	125
6	0.532	13.5	5000	1524	R-38	136	202
12	0.678	17.2	5000	1524	R-44	232	346
18	0.789	20.0	5000	1524	R-52	324	483
25	0.908	23.1	5000	1524	R-55	434	648
37	1.074	27.3	5000	1524	R-63	618	921
50	1.216	30.9	5000	1524	R-70	806	1202
75	1.453	36.9	2500	762	R-63	1168	1742
100	1.699	43.2	2500	762	R-70	1573	2346
150	2.024	51.4	2500	762	R-85	2279	3398
200	2.325	59.1	1250	381	R-74	3016	4498
300	2.782	70.7	1250	381	R-84	4400	6562

Note: The above information is approximate and subject to normal manufacturing tolerance.

*Refer to reel specification page.

P.O. Box 39
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(704) 459-9787

ALCATEL
CABLE SYSTEMS GROUP

CommScope Exhibit 1038

DEBW—Film Coated Aluminum Shield
DEDW—Copper Shield
DEXW—Alloy 194 or Copper Clad Stainless Steel Shield

Cable Construction

CONDUCTORS: Solid bare annealed copper. Sizes 19, 22, 24 and 26 AWG. (.9, .64, .5 and .4mm).

INSULATION: Individual copper conductors insulated with a color coded high density polyethylene or a color coded polypropylene.

TWISTED PAIRS: Insulated conductors twisted to form pairs with varying lays to minimize crosstalk and meet capacitance unbalance limitations.

CABLE ASSEMBLY: Cables 25 pair and less are assembled in concentric layers to form a cylindrical core. Cables having 37 pair and more are assembled from concentrically formed units with not more than 25 pair per unit, which may be cabled into 50 pair super or 100 pair super quad units, which are cabled to form the complete cylindrical core assembly.

MOISTURE RESISTANCE: To the cable core is applied a moisture-resisting compound which completely coats each insulated conductor and fills the interstices between pairs and units.

CABLE CORE COVERING: A non-hygroscopic core wrap is applied over the assembled core which furnishes mechanical as well as high dielectric protection between shielding and individual conductors.

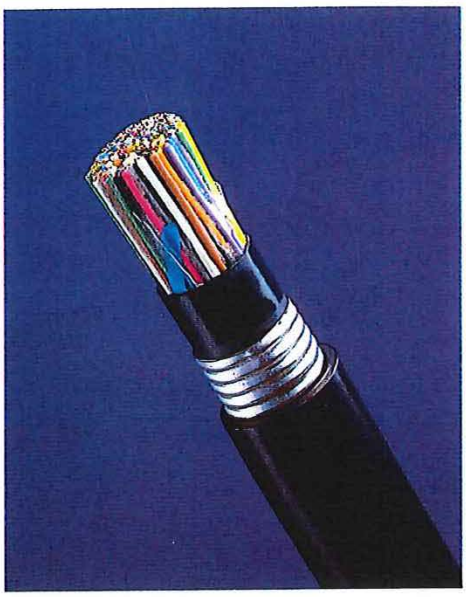
FLOODING COMPOUND: Additional moisture-resisting compound is applied between the cable core covering and the inner jacket.

INNER JACKET: Virgin, black, high-molecular weight, linear low density or medium density polyethylene. A rip cord is longitudinally applied under the inner jacket for slitting.

SHIELD: Type DEBW: Electrically continuous, .008" (.203mm) corrugated aluminum shielding tape applied longitudinally with a polyethylene film fused and chemically bonded to both sides.
Type DEDW: Electrically continuous, .005" (.127mm) corrugated copper shielding tape applied longitudinally.
Type DEXW: Electrically continuous, corrugated Alloy 194 or Copper Clad stainless steel shielding tape applied longitudinally. Shield thickness in accordance with REA requirements.

JACKET: Virgin, black, high molecular weight, linear low density or medium density polyethylene.

IDENTIFICATION AND LENGTH MARKING: Manufacturer's identification, year of manufacture, gauge, pair count, and cable type surface marked on jacket at two-foot intervals. Sequentially numbered length markings are located at alternate two-foot (610mm) intervals.



Application:
Exchange Area
Direct Burial Installations
Double Jacketed-Filled Core

Average Mutual Capacitance at 1000 Hz		
Total No. of Pairs	Microfarads/Mile	Microfarads/Km
6 and 12	.083 ± .007	0.052 ± .004
over 12	.083 ± .004	0.052 ± .002

Conductor Size AWG	mm	Minimum Insulation Resistance at 73°F MEGOHM— mile	km	Nominal Attenuation @68°F 1KHz db/mile	db/km	150KHz db/mile	db/km	772KHz db/mile	db/km	Maximum Conductor Resistance 68°F OHMS/ kf	km	Resistance Unbalance Maximum Average %	Individual Pair %	Dielectric Strength DC Potential—Volts Minimum CDR. TO CDR.	CDR. TO GROUND
19	0.9	1,000	1,600	1.28	.80	6.4	3.98	13.8	8.58	8.7	28.5	1.5	4.0	7,000	20,000
22	0.64	1,000	1,600	1.82	1.13	9.2	5.72	19.9	12.37	17.4	57.1	1.5	4.0	5,000	20,000
24	0.5	1,000	1,600	2.32	1.44	12.1	7.52	24.8	15.41	27.5	90.2	1.5	5.0	4,000	20,000
26	0.4	1,000	1,600	2.92	1.82	17.6	10.94	31.4	19.51	44.0	144.4	2.0	5.0	2,800	20,000

* For 19 and 22 AWG conductors, the maximum average shall not exceed 150 pf/kf (492 pf/km).

Near End Crosstalk Requirements			M-S db
Minimum near end crosstalk loss, the mean minus the standard deviation (M-S) at a test frequency of 772 KHz.	within unit	12 and 13 pair	56
		18 and 25 pair	60
	between units	Adjacent 13 pair or less	65
		Adjacent 25 pair	66
		Non-adjacent (all)	81

Far End Crosstalk Requirements
RMS output-to-output far-end crosstalk loss not less than 73 db/kf (67.8 db/km) at a test frequency of 150 KHz.

Capacitance Unbalance Pair-to-Pair				
Pair	Maximum Individual pf/kf	pf/km	Maximum RMS pf/kf	pf/km
Less than 12	100	181	—	—
12 and larger	—	—	25	45.3

Capacitance Unbalance Pair-to-Ground				
Pair	Maximum Individual pf/kf	pf/km	Maximum Average* pf/kf	pf/km
Less than 12	800	2625	—	—
12 and larger	800	2625	175	574

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ALCATEL CABLE SYSTEMS GROUP

CommScope Exhibit 1038

DEBW—Film Coated Aluminum Shield
DEDW—Copper Shield
DEXW—Alloy 194 or Copper Clad Stainless Steel Shield

Exchange Area
Direct Burial Installations
Double Jacketed-Filled Core

No. of Pairs	Nominal O.D. (inch)	(mm)	Standard Reel Length (feet)	(m)	Reel* Design	Approx. Cable Weight (lbs/kf)	(kg/km)
26 AWG (0.4mm)							
6	0.380	9.7	5000	1524	R-29	56	84
12	0.442	11.2	5000	1524	R-34	80	120
18	0.490	12.4	5000	1524	R-38	102	152
25	0.536	13.6	5000	1524	R-40	126	188
37	0.613	15.6	5000	1524	R-44	170	254
50	0.673	17.1	5000	1524	R-44	212	316
75	0.771	19.6	5000	1524	R-50	289	431
100	0.863	21.9	5000	1524	R-52	367	548
150	1.020	25.9	5000	1524	R-59	525	784
200	1.136	28.9	5000	1524	R-67	669	997
300	1.331	33.8	5000	1524	R-74	948	1414
400	1.511	38.4	2500	762	R-63	1238	1847
600	1.818	46.2	2500	762	R-74	1811	2700
900	2.183	55.4	1250	381	R-67	2655	3960
1200	2.559	65.0	1250	381	R-85	3582	5341
1500	2.818	71.6	1000	305	R-84	4402	6565
1800	3.049	77.4	1000	305	R-88	5290	7872
24 AWG (0.5mm)							
6	0.421	10.7	5000	1524	R-34	71	106
12	0.501	12.7	5000	1524	R-38	107	159
18	0.562	14.3	5000	1524	R-40	140	208
25	0.621	15.8	5000	1524	R-44	176	262
37	0.716	18.2	5000	1524	R-50	241	360
50	0.793	20.1	5000	1524	R-52	305	455
75	0.927	23.5	5000	1524	R-55	427	637
100	1.051	26.7	5000	1524	R-63	555	828
150	1.227	31.2	5000	1524	R-70	784	1169
200	1.391	35.3	2500	762	R-59	1020	1521
300	1.659	42.1	2500	762	R-70	1471	2194
400	1.881	47.8	2500	762	R-74	1920	2863
600	2.260	57.4	1250	381	R-74	2823	4210
900	2.713	68.9	1000	305	R-85	4142	6177
1200	3.164	80.4	1000	305	R-88	5562	8295
1500	3.583	91.1	1000	305	R-100	6996	10411

No. of Pairs	Nominal O.D. (inch)	(mm)	Standard Reel Length (feet)	(m)	Reel* Design	Approx. Cable Weight (lbs/kf)	(kg/km)
22 AWG (0.64mm)							
3	0.401	10.2	5000	1524	R-34	64	95
6	0.472	12.0	5000	1524	R-38	93	138
12	0.572	14.5	5000	1524	R-40	145	217
18	0.649	16.5	5000	1524	R-44	195	290
25	0.724	18.4	5000	1524	R-50	250	372
37	0.841	21.4	5000	1524	R-52	349	520
50	0.949	24.1	5000	1524	R-55	449	669
75	1.125	28.6	5000	1524	R-67	644	961
100	1.258	32.0	2500	762	R-55	824	1229
150	1.495	38.0	2500	762	R-63	1192	1777
200	1.702	43.2	2500	762	R-70	1552	2315
300	2.029	51.5	1250	381	R-63	2255	3363
400	2.321	59.0	1250	381	R-74	2976	4438
600	2.787	70.8	1000	305	R-85	4375	6525
19 AWG (0.9mm)							
3	0.479	12.2	5000	1524	R-38	95	142
6	0.582	14.8	5000	1524	R-40	149	223
12	0.728	18.5	5000	1524	R-50	248	370
18	0.839	21.3	5000	1524	R-52	344	513
25	0.958	24.3	5000	1524	R-59	453	675
37	1.143	29.0	5000	1524	R-67	654	976
50	1.285	32.6	2500	762	R-55	846	1262
75	1.549	39.3	2500	762	R-63	1234	1841
100	1.741	44.2	1250	381	R-55	1593	2376
150	2.076	52.7	1250	381	R-63	2319	3458
200	2.376	60.4	1250	381	R-80	3060	4563
300	2.942	74.7	1250	381	R-94	4656	6929

Note: The above information is approximate and subject to normal manufacturing tolerance.

*Refer to reel specification page.

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(704) 459-9787

ALCATEL
CABLE SYSTEMS GROUP

CommScope Exhibit 1038

CACW—Film Coated Aluminum Shield/ Film Coated Steel Armor

Cable Construction

CONDUCTORS: Solid bare annealed copper. Sizes 19, 22, 24 and 26 AWG. (.9, .64, .5 and .4mm).

INSULATION: Individual copper conductors insulated with a color coded high density polyethylene or a color coded polypropylene.

TWISTED PAIRS: Insulated conductors twisted to form pairs with varying lays to minimize crosstalk and meet capacitance unbalance limitations.

CABLE ASSEMBLY: Cables 25 pair and less are assembled in concentric layers to form a cylindrical core. Cables having 37 pair and more are assembled from concentrically formed units with not more than 25 pair per unit, which may be cabled into 50 pair super or 100 pair super quad units, which are cabled to form the complete cylindrical core assembly.

MOISTURE RESISTANCE: To the cable core is applied a moisture-resisting compound which completely coats each insulated conductor and fills the interstices between pairs and units.

CABLE CORE COVERING: A non-hygroscopic core wrap is applied over the assembled core which furnishes mechanical as well as high dielectric protection between shielding and individual conductors.

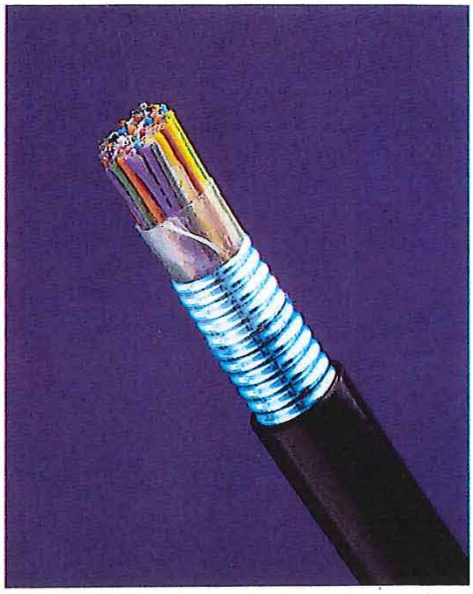
FLOODING COMPOUND: A flooding compound is applied to fill all the depressions of the corrugations and all voids over and under the shield and armor unless the armor is bonded to the jacket, in which case there is no flooding compound applied over the armor.

SHIELD: Electrically continuous, .008" (.203mm) corrugated aluminum shielding tape applied longitudinally with a gap. A polyethylene film is fused and chemically bonded to both sides of the aluminum.
Also available in uncoated aluminum tape (not REA listed).

ARMOR: An electrically continuous, .006" (.152mm) corrugated steel tape applied longitudinally with an overlap. A polyethylene film is fused and chemically bonded to both sides of the steel.
Also available in uncoated steel tape (type GSPW, not REA listed).

JACKET: Virgin, black, high molecular weight, linear low density or medium density polyethylene.

IDENTIFICATION AND LENGTH MARKING: Manufacturer's identification, year of manufacture, gauge, pair count, and cable type surface marked on jacket at two-foot intervals. Sequentially numbered length markings are located at alternate two-foot (610mm) intervals.



Application:
Exchange Area
Duct or Direct Burial Installations
Filled Core
REA Specification No. PE-39

Average Mutual Capacitance at 1000 Hz																	
Total No. of Pairs								Microfarads/Mile				Microfarads/Km					
6 and 12								.083 ± .007				0.052 ± .004					
over 12								.083 ± .004				0.052 ± .002					
Conductor Size		Minimum Insulation Resistance at 73°F MEGOHM—		Nominal Attenuation @68°F						Maximum Conductor Resistance 68°F OHMS/		Resistance Unbalance Maximum		Dielectric Strength DC Potential—Volts Minimum			
				1KHz		150KHz		772KHz					Individual				
AWG	mm	mile	km	db/mile	db/km	db/mile	db/km	db/mile	db/km	kf	km	Average %	Pair %	CDR. TO CDR.		CDR. TO GROUND	
19	0.9	1,000	1,600	1.28	.80	6.4	3.98	13.8	8.58	8.7	28.5	1.5	4.0	7,000		15,000	
22	0.64	1,000	1,600	1.82	1.13	9.2	5.72	19.9	12.37	17.4	57.1	1.5	4.0	5,000		15,000	
24	0.5	1,000	1,600	2.32	1.44	12.1	7.52	24.8	15.41	27.5	90.2	1.5	5.0	4,000		15,000	
26	0.4	1,000	1,600	2.92	1.82	17.6	10.94	31.4	19.51	44.0	144.4	2.0	5.0	2,800		15,000	

Near End Crosstalk Requirements			M-S db
Minimum near end crosstalk loss, the mean minus the standard deviation (M-S) at a test frequency of 772 KHz.	within unit	12 and 13 pair	56
		18 and 25 pair	60
	between units	Adjacent 13 pair or less	65
		Adjacent 25 pair	66
		Non-adjacent (all)	81

Far End Crosstalk Requirements
RMS output-to-output far-end crosstalk loss not less than 73 db/kf (67.8 db/km) at a test frequency of 150 KHz.

Capacitance Unbalance Pair-to-Pair				
	Maximum Individual		Maximum RMS	
Pair	pf/kf	pf/km	pf/kf	pf/km
Less than 12	100	181	—	—
12 and larger	—	—	25	45.3

Capacitance Unbalance Pair-to-Ground				
	Maximum Individual		Maximum Average*	
Pair	pf/kf	pf/km	pf/kf	pf/km
Less than 12	800	2625	—	—
12 and larger	800	2625	175	574

*For 19 and 22 AWG conductors, the maximum average shall not exceed 150 pf/kf (492 pf/km).

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ALCATEL
CABLE SYSTEMS GROUP

CommScope Exhibit 1038

CACW—Film Coated Aluminum Shield/
Film Coated Steel Armor

Exchange Area
Duct or Direct Burial Installations
Filled Core
REA Specification No. PE-39

No. of Pairs	Nominal O.D. (inch)	(mm)	Standard Reel Length (feet)	(m)	Reel* Design	Approx. Cable Weight (lbs/kf)	(kg/km)
26 AWG (0.4mm)							
18	0.470	11.9	5000	1524	R-38	120	179
25	0.516	13.1	5000	1524	R-38	146	218
37	0.583	14.8	5000	1524	R-40	190	284
50	0.643	16.3	5000	1524	R-44	235	350
75	0.741	18.8	5000	1524	R-50	317	472
100	0.823	20.9	5000	1524	R-52	400	596
150	0.970	24.6	5000	1524	R-59	557	831
200	1.086	27.6	5000	1524	R-63	705	1051
300	1.291	32.8	5000	1524	R-74	999	1489
400	1.465	37.2	2500	762	R-63	1290	1924
600	1.778	45.2	2500	762	R-70	1895	2827
900	2.133	54.2	1250	381	R-67	2745	4094
1200	2.499	63.5	1250	381	R-80	3673	5477
1500	2.758	70.1	1250	381	R-84	4504	6717
1800	2.992	76.0	1000	305	R-84	5330	7950
2100	3.207	81.5	1000	305	R-94	6152	9174
2400	3.377	85.8	1000	305	R-96	6974	10379
24 AWG (0.5mm)							
6	0.401	10.2	5000	1524	R-34	85	127
12	0.481	12.2	5000	1524	R-38	125	187
18	0.542	13.8	5000	1524	R-40	162	241
25	0.601	15.3	5000	1524	R-44	201	300
37	0.686	17.4	5000	1524	R-50	266	397
50	0.763	19.4	5000	1524	R-50	334	498
75	0.887	22.5	5000	1524	R-52	463	691
100	1.001	25.4	5000	1524	R-59	589	878
150	1.187	30.1	5000	1524	R-70	831	1239
200	1.345	34.2	5000	1524	R-74	1069	1594
300	1.603	40.7	2500	762	R-67	1535	2289
400	1.841	46.8	2500	762	R-74	2007	2994
600	2.210	56.1	1250	381	R-67	2917	4350
900	2.653	67.4	1250	381	R-85	4240	6324
1200	3.044	77.3	1000	305	R-88	5613	8353
1500	3.363	85.4	1000	305	R-96	6916	10293

No. of Pairs	Nominal O.D. (inch)	(mm)	Standard Reel Length (feet)	(m)	Reel* Design	Approx. Cable Weight (lbs/kf)	(kg/km)
22 AWG (0.64mm)							
3	0.381	9.7	5000	1524	R-29	77	115
6	0.452	11.5	5000	1524	R-38	110	163
12	0.552	14.0	5000	1524	R-40	168	250
18	0.629	16.0	5000	1524	R-44	222	330
25	0.704	17.9	5000	1524	R-50	281	419
37	0.811	20.6	5000	1524	R-52	380	567
50	0.909	23.1	5000	1524	R-55	486	724
75	1.075	27.3	5000	1524	R-63	683	1018
100	1.218	30.9	5000	1524	R-70	874	1304
150	1.449	36.8	2500	762	R-63	1245	1857
200	1.646	41.8	2500	762	R-67	1617	2412
300	1.989	50.5	1250	381	R-63	2353	3509
400	2.271	57.7	1250	381	R-74	3073	4582
600	2.787	70.8	1250	381	R-88	4608	6858
900	3.338	84.8	1250	381	R-104	6715	9994
19 AWG (0.9mm)							
3	0.459	11.7	5000	1524	R-38	113	168
6	0.562	14.3	5000	1524	R-40	172	257
12	0.708	18.0	5000	1524	R-50	280	417
18	0.819	20.8	5000	1524	R-52	382	570
25	0.928	23.6	5000	1524	R-55	498	743
37	1.103	28.0	5000	1524	R-63	700	1043
50	1.245	31.6	5000	1524	R-70	898	1339
75	1.483	37.7	2500	762	R-63	1286	1918
100	1.685	42.8	2500	762	R-70	1663	2480
150	2.036	51.7	2500	762	R-85	2418	3606
200	2.326	59.1	1250	381	R-74	3160	4712

Note: The above information is approximate and subject to normal manufacturing tolerance.

*Refer to reel specification page.

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ALCATEL
CABLE SYSTEMS GROUP

CommScope Exhibit 1038

FSBW—Film Coated Aluminum Shield
FSDW—Copper Shield
FSXW—Alloy 194 or Copper Clad Stainless Steel Shield

Cable Construction

CONDUCTORS: Solid bare annealed copper. Sizes 19, 22, 24 and 26 AWG (.9, .64, .5 and .4mm).

INSULATION: Individual copper conductors are insulated with a dual extruded cellular inner layer and a color coded solid outer layer of high density polyethylene or polypropylene.

TWISTED PAIRS: Insulated conductors twisted to form pairs with varying lays to minimize crosstalk and meet capacitance unbalance limitations.

CABLE ASSEMBLY: Cables 25 pair and less are assembled in concentric layers to form a cylindrical core. Cables having 37 pair and more are assembled from concentrically formed units with not more than 25 pair per unit, which may be cabled into 50 pair super or 100 pair super quad units, which are cabled to form the complete cylindrical core assembly.

MOISTURE RESISTANCE: To the cable core is applied a moisture-resisting compound which completely coats each insulated conductor and fills the interstices between pairs and units.

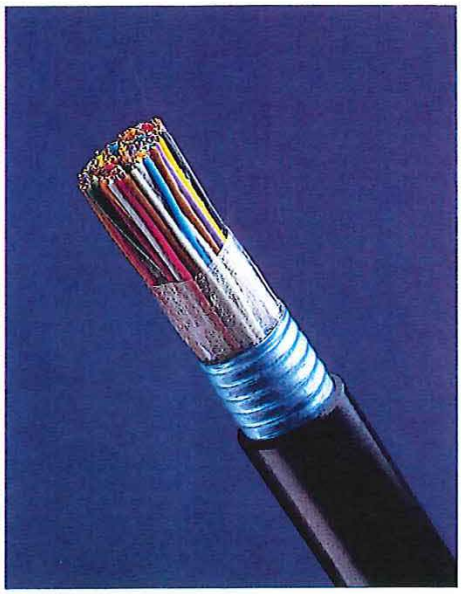
CORE COVERING: A non-hygroscopic core wrap is applied over the assembled core which furnishes mechanical as well as high dielectric protection between shielding and individual conductors.

FLOODING COMPOUND: A flooding compound is applied to fill all the depressions of the corrugations over and under the shields unless the shield is bonded to the jacket, in which case, flooding compound is applied under the shield only.

SHIELD: Type FSBW: Electrically continuous, .008" (.203mm) corrugated aluminum shielding tape applied longitudinally with a polyethylene film fused and chemically bonded to both sides.
Type FSDW: Electrically continuous, .005" (.127mm) corrugated copper shielding tape applied longitudinally.
Type FSXW: Electrically continuous corrugated alloy 194 or copper clad stainless steel shielding tape applied longitudinally. Shield thickness in accordance with REA requirements.

JACKET: Virgin, black, high molecular weight, linear low density or medium density polyethylene.

IDENTIFICATION AND LENGTH MARKING: Manufacturer's identification, year of manufacture, gauge, pair count, and cable type surface marked on jacket at two-foot (610mm) intervals. Sequentially numbered length markings are located at alternate two-foot (610mm) intervals.



Application:

Exchange Area
Duct or Direct Burial Installations
Filled Core
REA Specification No. PE-89

Average Mutual Capacitance at 1000 Hz

Total No. of Pairs	Microfarads/Mile	Microfarads/Km
6 and 12	.083 ± .007	0.052 ± .004
over 12	.083 ± .004	0.052 ± .002

Conductor Size AWG	Conductor Size mm	Minimum Insulation Resistance at 73°F MEGOHM— mile	mile km	Nominal Attenuation @68°F 1KHz db/mile	1KHz db/km	150KHz db/mile	150KHz db/km	772KHz db/mile	772KHz db/km	Maximum Conductor Resistance 68°F OHMS/ kf	OHMS/ km	Resistance Unbalance Maximum Average %	Individual Pair %	Dielectric Strength DC Potential—Volts Minimum CDR. TO CDR.	CDR. TO GROUND
19	0.9	1,000	1,600	1.28	.80	7.1	4.4	16.8	10.4	8.7	28.5	1.5	4.0	4,500	15,000
22	0.64	1,000	1,600	1.82	1.13	10.0	6.2	23.6	14.6	17.4	57.1	1.5	4.0	3,600	15,000
24	0.5	1,000	1,600	2.32	1.44	13.4	8.3	29.8	18.5	27.5	90.2	1.5	5.0	3,000	15,000
26	0.4	1,000	1,600	2.92	1.82	18.3	11.4	36.3	22.5	44.0	144.4	2.0	5.0	2,400	15,000

Near End Crosstalk Requirements — M-S db

Minimum near end crosstalk loss, the mean minus the standard deviation (M-S) at a test frequency of 772 KHz.

within unit	12 and 13 pair	56
	18 and 25 pair	60
between units	Adjacent 13 pair or less	65
	Adjacent 25 pair	66
	Non-adjacent (all)	81

Far End Crosstalk Requirements

RMS output-to-output far-end crosstalk loss not less than 73 db/kf (67.8 db/km) at a test frequency of 150 KHz.

Capacitance Unbalance Pair-to-Pair

Pair	Maximum Individual pf/kf	Maximum Individual pf/km	Maximum RMS pf/kf	Maximum RMS pf/km
Less than 12	100	181	—	—
12 and larger	—	—	25	45.3

Capacitance Unbalance Pair-to-Ground

Pair	Maximum Individual pf/kf	Maximum Individual pf/km	Maximum RMS pf/kf	Maximum RMS pf/km
Less than 12	800	2625	—	—
12 and larger	800	2625	175	574

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ALCATEL CABLE SYSTEMS GROUP

CommScope Exhibit 1038

FSBW—Film Coated Aluminum Shield
FSDW—Copper Shield
FSXW—Alloy 194 or Copper Clad Stainless Steel Shield

Exchange Area
Duct or Direct Burial Installations
Filled Core
REA Specification No. PE-89

No. of Pairs	Nominal O.D. (inch)	(mm)	Standard Reel Length (feet)	(m)	Reel* Design	Approx. Cable Weight (lbs/kf)	(kg/km)
26 AWG (0.4mm)							
6	0.311	7.9	5000	1524	R-29	42	63
12	0.365	9.3	5000	1524	R-29	62	92
18	0.407	10.3	5000	1524	R-34	80	119
25	0.447	11.4	5000	1524	R-38	100	149
37	0.515	13.1	5000	1524	R-38	136	203
50	0.568	14.4	5000	1524	R-40	171	254
75	0.654	16.6	5000	1524	R-44	235	350
100	0.725	18.4	5000	1524	R-50	297	443
150	0.846	21.5	5000	1524	R-52	419	625
200	0.966	24.5	5000	1524	R-59	550	820
300	1.137	28.9	5000	1524	R-67	785	1171
400	1.280	32.5	2500	762	R-55	1017	1516
600	1.550	39.4	2500	762	R-67	1508	2248
900	1.853	47.1	1250	381	R-59	2201	3283
1200	2.183	55.4	1250	381	R-67	2979	4442
1500	2.409	61.2	1250	381	R-80	3673	5477
1800	2.626	66.7	1250	381	R-85	4383	6536
2100	2.814	71.5	1250	381	R-88	5071	7563
2400	2.989	75.9	1250	381	R-94	5758	8588
2700	3.154	80.1	1000	305	R-88	6446	9613
3000	3.310	84.1	1000	305	R-94	7130	10633
3300	3.373	85.7	1000	305	R-100	8019	11934
3600	3.509	89.1	1000	305	R-100	8058	12658
24 AWG (0.5mm)							
3	0.298	7.6	5000	1524	R-30	38	57
6	0.347	8.8	5000	1524	R-29	55	81
12	0.416	10.6	5000	1524	R-34	84	125
18	0.469	11.9	5000	1524	R-38	111	165
25	0.531	13.5	5000	1524	R-38	144	214
37	0.605	15.4	5000	1524	R-44	194	290
50	0.672	17.1	5000	1524	R-44	247	368
75	0.781	19.8	5000	1524	R-52	346	516
100	0.882	22.4	5000	1524	R-52	448	668
150	1.044	26.5	5000	1524	R-63	643	959
200	1.174	29.8	5000	1524	R-67	830	1238
300	1.400	35.6	2500	762	R-63	1205	1797
400	1.603	40.7	2500	762	R-67	1589	2369
600	1.917	48.7	1250	381	R-59	2328	3471
900	2.310	58.7	1250	381	R-74	3429	5114
1200	2.721	69.1	1250	381	R-84	4647	6930
1500	3.009	76.4	1000	305	R-88	5744	8566
1800	3.270	83.1	1000	305	R-94	6838	10198
2100	3.510	89.2	1000	305	R-100	7928	11824
2400	3.650	92.7	1000	305	R-100	9029	13433

No. of Pairs	Nominal O.D. (inch)	(mm)	Standard Reel Length (feet)	(m)	Reel* Design	Approx. Cable Weight (lbs/kf)	(kg/km)
22 AWG (0.64mm)							
3	0.329	8.4	5000	1524	R-29	48	72
6	0.391	9.9	5000	1524	R-34	72	108
12	0.479	12.2	5000	1524	R-38	116	173
18	0.556	14.1	5000	1524	R-40	159	238
25	0.622	15.8	5000	1524	R-44	206	307
37	0.715	18.2	5000	1524	R-50	283	421
50	0.801	20.3	5000	1524	R-52	365	544
75	0.948	24.1	5000	1524	R-55	522	779
100	1.073	27.3	5000	1524	R-63	679	1012
150	1.267	32.2	2500	762	R-55	974	1452
200	1.440	36.6	2500	762	R-63	1274	1900
300	1.743	44.3	1250	381	R-55	1880	2804
400	1.974	50.1	1250	381	R-63	2456	3662
600	2.380	60.5	1250	381	R-80	3626	5408
900	2.868	72.8	1250	381	R-94	5349	7977
1200	3.373	85.7	1250	381	R-108	7247	10808
1500	3.585	91.1	1000	305	R-100	8321	13124
1800	3.896	99.0	1000	305	R-108	10526	15660
19 AWG (0.9mm)							
3	0.398	10.1	5000	1524	R-34	74	110
6	0.488	12.4	5000	1524	R-38	118	176
12	0.626	15.9	5000	1524	R-44	204	304
18	0.724	18.4	5000	1524	R-50	283	422
25	0.820	20.8	5000	1524	R-52	373	557
37	0.975	24.8	5000	1524	R-59	535	798
50	1.100	27.9	5000	1524	R-63	695	1037
75	1.300	33.0	2500	762	R-55	999	1489
100	1.478	37.5	2500	762	R-63	1306	1947
150	1.789	45.4	2500	762	R-70	1927	2874
200	2.028	51.5	1250	381	R-63	2517	3753
300	2.457	62.4	1250	381	R-80	3728	5560
400	2.795	71.0	1250	381	R-88	4892	7296
600	3.389	86.1	1250	381	R-100	7641	11368

Note: The above information is approximate and subject to normal manufacturing tolerance.

*Refer to reel specification page.

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ALCATEL
CABLE SYSTEMS GROUP

CommScope Exhibit 1038

FSYW—Film Coated Aluminum Shield/ Film Coated Steel Armor

Cable Construction

CONDUCTORS: Solid bare annealed copper. Sizes 19, 22, 24 and 26 AWG. (.9, .64, .5 and .4mm).

INSULATION: Individual copper conductors are insulated with a dual extruded cellular inner layer and a color coded solid outer layer of high density polyethylene or polypropylene.

TWISTED PAIRS: Insulated conductors twisted to form pairs with varying lays to minimize crosstalk and meet capacitance unbalance limitations.

CABLE ASSEMBLY: Cables 25 pair and less are assembled in concentric layers to form a cylindrical core. Cables having 37 pair and more are assembled from concentrically formed units with not more than 25 pair per unit, which may be cabled into 50 pair super or 100 pair super quad units, which are cabled to form the complete cylindrical core assembly.

MOISTURE RESISTANCE: To the cable core is applied a moisture-resisting compound which completely coats each insulated conductor and fills the interstices between pairs and units.

CORE COVERING: A non-hygroscopic core wrap is applied over the assembled core which furnishes mechanical as well as high dielectric protection between shielding and individual conductors.

FLOODING COMPOUND: A flooding compound is applied to fill all the depressions of the corrugations and all voids over and under the shield and armor unless the armor is bonded to the jacket, in which case there is no flooding compound applied over the armor.

SHIELD: Electrically continuous, .008" (.203mm) corrugated aluminum shielding tape applied longitudinally with a gap. A polyethylene film is fused and chemically bonded to both sides of the aluminum.

ARMOR: An electrically continuous, .006" (.152mm) corrugated steel tape is applied longitudinally with an overlap. A polyethylene film is fused and chemically bonded to both sides of the steel.

JACKET: Virgin, black, high molecular weight, linear low density or medium density polyethylene.

IDENTIFICATION AND LENGTH MARKING: Manufacturer's identification, year of manufacture, gauge, pair count, and cable type surface marked on jacket at two-foot intervals. Sequentially numbered length markings are located at alternate two-foot (610mm) intervals.



Application:
Exchange Area
Duct or Direct Burial Installations
Filled Core
REA Specification No. PE-89

Average Mutual Capacitance at 1000 Hz

Total No. of Pairs	Microfarads/Mile	Microfarads/Km
6 and 12	.083 ± .007	0.052 ± .004
over 12	.083 ± .004	0.052 ± .002

Conductor Size AWG	Conductor Size mm	Minimum Insulation Resistance at 73°F MEGOHM— mile	Minimum Insulation Resistance at 73°F MEGOHM— km	Nominal Attenuation @68°F 1KHz db/mile	1KHz db/km	150KHz db/mile	150KHz db/km	772KHz db/mile	772KHz db/km	Maximum Conductor Resistance 68°F OHMS/ kf	OHMS/ km	Resistance Unbalance Maximum Average %	Resistance Unbalance Maximum Individual Pair %	Dielectric Strength DC Potential—Volts Minimum CDR. TO CDR.	Dielectric Strength DC Potential—Volts Minimum CDR. TO GROUND
19	0.9	1,000	1,600	1.28	.80	7.1	4.4	16.8	10.4	8.7	28.5	1.5	4.0	4,500	15,000
22	0.64	1,000	1,600	1.82	1.13	10.0	6.2	23.6	14.6	17.4	57.1	1.5	4.0	3,600	15,000
24	0.5	1,000	1,600	2.32	1.44	13.4	8.3	29.8	18.5	27.5	90.2	1.5	5.0	3,000	15,000
26	0.4	1,000	1,600	2.92	1.82	18.3	11.4	36.3	22.5	44.0	144.4	2.0	5.0	2,400	15,000

Near End Crosstalk Requirements

			M-S db
Minimum near end crosstalk loss, the mean minus the standard deviation (M-S) at a test frequency of 772 KHz.	within unit	12 and 13 pair	56
		18 and 25 pair	60
	between units	Adjacent 13 pair or less	65
		Adjacent 25 pair	66
		Non-adjacent (all)	81

Far End Crosstalk Requirements

RMS output-to-output far-end crosstalk loss not less than 73 db/kf (67.8 db/km) at a test frequency of 150 KHz.

Capacitance Unbalance Pair-to-Pair

Pair	Maximum Individual pf/kf	Maximum Individual pf/km	Maximum RMS pf/kf	Maximum RMS pf/km
Less than 12	100	181	—	—
12 and larger	—	—	25	45.3

Capacitance Unbalance Pair-to-Ground

Pair	Maximum Individual pf/kf	Maximum Individual pf/km	Maximum Average pf/kf	Maximum Average pf/km
Less than 12	800	2625	—	—
12 and larger	800	2625	175	574

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ALCATEL
CABLE SYSTEMS GROUP

CommScope Exhibit 1038

FSYW—Film Coated Aluminum Shield/
Film Coated Steel Armor

Exchange Area
Duct or Direct Burial Installations
Filled Core
REA Specification No. PE-89

No. of Pairs	Nominal O.D. (inch)	(mm)	Standard Reel Length (feet)	(m)	Reel* Design	Approx. Cable Weight (lbs/kf)	(kg/km)
26 AWG (0.4mm)							
6	0.341	8.7	5000	1524	R-29	63	93
12	0.395	10.0	5000	1524	R-34	86	128
18	0.437	11.1	5000	1524	R-34	106	158
25	0.477	12.1	5000	1524	R-38	129	193
37	0.545	13.8	5000	1524	R-40	171	255
50	0.598	15.2	5000	1524	R-40	210	314
75	0.684	17.4	5000	1524	R-50	281	419
100	0.755	19.2	5000	1524	R-50	348	519
150	0.876	22.3	5000	1524	R-52	484	722
200	0.986	25.0	5000	1524	R-59	618	922
300	1.167	29.6	5000	1524	R-67	872	1301
400	1.310	33.3	2500	762	R-55	1115	1662
600	1.560	39.6	2500	762	R-67	1613	2405
900	1.883	47.8	1250	381	R-59	2351	3506
1200	2.213	56.2	1250	381	R-67	3155	4705
1500	2.439	62.0	1250	381	R-80	3869	5770
1800	2.656	67.5	1250	381	R-85	4597	6855
2100	2.844	72.2	1250	381	R-88	5300	7905
2400	3.019	76.7	1250	381	R-94	6003	8953
2700	3.184	80.9	1000	305	R-88	6705	10000
3000	3.340	84.8	1000	305	R-96	7402	11038
3300	3.449	87.6	1000	305	R-96	8090	12039
24 AWG (0.5mm)							
3	0.328	8.3	5000	1524	R-29	57	85
6	0.377	9.6	5000	1524	R-29	77	114
12	0.446	11.3	5000	1524	R-34	111	166
18	0.499	12.7	5000	1524	R-38	143	213
25	0.561	14.2	5000	1524	R-40	180	269
37	0.635	16.1	5000	1524	R-44	236	352
50	0.702	17.8	5000	1524	R-50	295	439
75	0.811	20.6	5000	1524	R-52	403	601
100	0.902	22.9	5000	1524	R-55	510	760
150	1.064	27.0	5000	1524	R-63	717	1069
200	1.204	30.6	2500	762	R-52	921	1373
300	1.430	36.3	1250	381	R-52	1313	1958
400	1.613	41.0	1250	381	R-55	1699	2533
600	1.947	49.5	1250	381	R-63	2483	3702
900	2.340	59.4	1250	381	R-74	3617	5394
1200	2.751	69.9	1250	381	R-84	4869	7261
1500	3.039	77.2	1000	305	R-88	5990	8934
1800	3.300	83.8	1000	305	R-94	7107	10599
2100	3.414	86.7	1000	305	R-96	8212	12221

No. of Pairs	Nominal O.D. (inch)	(mm)	Standard Reel Length (feet)	(m)	Reel* Design	Approx. Cable Weight (lbs/kf)	(kg/km)
22 AWG (0.64mm)							
3	0.359	9.1	5000	1524	R-29	70	104
6	0.421	10.7	5000	1524	R-34	98	146
12	0.509	12.9	5000	1524	R-38	148	221
18	0.586	14.9	5000	1524	R-40	198	295
25	0.652	16.6	5000	1524	R-44	249	371
37	0.745	18.9	5000	1524	R-50	333	497
50	0.831	21.1	5000	1524	R-52	425	634
75	0.968	24.6	5000	1524	R-59	589	879
100	1.103	28.0	5000	1524	R-63	761	1135
150	1.297	32.9	2500	762	R-55	1071	1598
200	1.470	37.3	2500	762	R-63	1385	2065
300	1.773	45.0	1250	381	R-55	2020	3013
400	2.004	50.9	1250	381	R-63	2616	3901
600	2.410	61.2	1250	381	R-80	3819	5696
900	2.898	73.6	1250	381	R-94	5583	8326
1200	3.229	82.0	1250	381	R-100	7275	10827
19 AWG (0.9mm)							
3	0.428	10.9	5000	1524	R-34	100	149
6	0.518	13.2	5000	1524	R-38	152	227
12	0.656	16.7	5000	1524	R-44	247	369
18	0.754	19.2	5000	1524	R-50	334	498
25	0.850	21.6	5000	1524	R-52	436	650
37	0.995	25.3	5000	1524	R-59	603	900
50	1.130	28.7	5000	1524	R-67	779	1162
75	1.330	33.8	2500	762	R-59	1098	1638
100	1.508	38.3	2500	762	R-63	1425	2126
150	1.819	46.2	2500	762	R-74	2071	3088
200	2.058	52.3	1250	381	R-63	2681	3998
300	2.487	63.2	1250	381	R-80	3928	5858
400	2.825	71.8	1250	381	R-88	5120	7636
600	3.337	84.8	1250	381	R-108	7438	11070

Note: The above information is approximate and subject to normal manufacturing tolerance.

*Refer to reel specification page.

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ALCATEL
CABLE SYSTEMS GROUP

CommScope Exhibit 1038

DDW—Bi-Metallic Shield
DFW—Film Coated Aluminum Shield

Cable Construction

CONDUCTORS: Solid bare annealed copper. Sizes 19, 22, 24 AWG (.9, .64 and .5mm).

INSULATION: Individual copper conductors are insulated with a color coded high density polyethylene or a color coded polypropylene.

TWISTED PAIRS: Insulated conductors twisted to form pairs with varying lays (when required) to minimize crosstalk and meet capacitance unbalance limitations.

CORE ASSEMBLY: Twisted pairs assembled (when required) and bound with a non-hygroscopic binder.

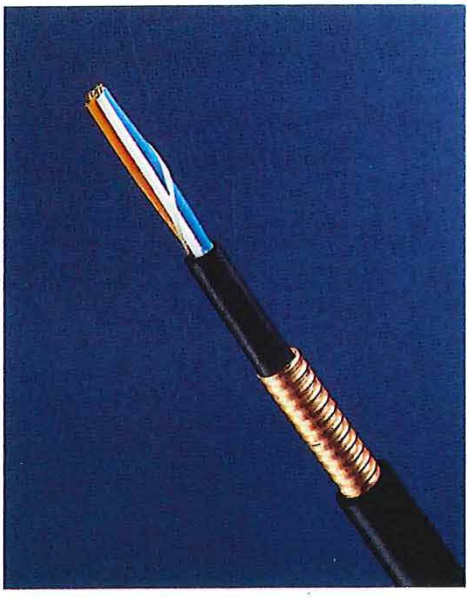
MOISTURE RESISTANCE: To the insulated conductors a moisture-resistant compound is applied which completely coats each insulated conductor and fills the interstices between pairs.

INNER JACKET: Virgin, black, high molecular weight, linear low density or medium density polyethylene.

SHIELD: Type DDW: Electrically continuous, .005" (.127mm) corrugated copper clad stainless steel shielding tape applied longitudinally.
Type DFW: Electrically continuous, .008" (.203mm) smooth or corrugated aluminum shielding tape applied longitudinally with a polyethylene film fused and chemically bonded to both sides.

JACKET: Virgin, black, high molecular weight, linear low density, medium density, or high density polyethylene.

IDENTIFICATION AND LENGTH MARKING: Manufacturer's identification, year of manufacture, gauge, pair count, and cable type surface marked on jacket at two-foot intervals. Sequentially numbered length markings are located at alternate two-foot (610mm) intervals.



Application:
Exchange Area
Buried Distribution Wire
Filled Core

Average Mutual Capacitance at 1000 Hz

Total No. of Pairs	Microfarads/Mile	Microfarads/Km
1	0.083 ± .010	.052 ± .006
2	0.083 ± .007	.052 ± .004
3-6	0.083 ± .007	.052 ± .004

Conductor Size AWG	Conductor Size mm	Minimum Insulation Resistance at 73°F MEGOHM— mile	Minimum Insulation Resistance at 73°F MEGOHM— km	Nominal Attenuation @68°F 1KHz db/mile	Nominal Attenuation @68°F 1KHz db/km	Maximum Conductor Resistance 68°F OHMS/ kf	Maximum Conductor Resistance 68°F OHMS/ km	Dielectric Strength DC Potential—Volts Minimum CDR. TO CDR.	Dielectric Strength DC Potential—Volts Minimum CDR. TO GROUND
19	0.9	1,000	1,600	1.28	.80	8.7	28.5	7,000	20,000
22	0.64	1,000	1,600	1.82	1.13	17.4	57.1	5,000	20,000
24	0.5	1,000	1,600	2.32	1.44	27.5	90.2	4,000	20,000

Far End Crosstalk Requirements

Individual loss not less than 63 db/kf (57.8 db/km) at a test frequency of 150 KHz.

Capacitance Unbalance Pair-to-Pair

Pair	Maximum Individual pf/kf	Maximum Individual pf/km
2	160	290
3-6	100	181

Capacitance Unbalance Pair-to-Ground

Pair	Maximum Individual pf/kf	Maximum Individual pf/km
1	400	1312
2	300	984
3-6	250	820

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ALCATEL
CABLE SYSTEMS GROUP

CommScope Exhibit 1038

DDW—Bi-Metallic Shield
DFW—Film Coated Aluminum Shield

Exchange Area
Buried Distribution Wire
Filled Core

No. of Pairs	Nominal O.D. (inch)	(mm)	Standard Reel Length (feet)	(m)	Reel* Design	Approx. Cable Weight (lbs/kf)	(kg/km)
DDW 19 AWG (0.9mm)							
1	0.285	7.2	5000	1524	R-30	44	65
2	0.345	8.8	5000	1524	R-30	65	96
3	0.391	9.9	5000	1524	R-34	83	124
22 AWG (0.64mm)							
2	0.281	7.1	5000	1524	R-30	43	64
3	0.313	8.0	5000	1524	R-30	53	79
6	0.384	9.8	5000	1524	R-34	82	122
24 AWG (0.5mm)							
2	0.252	6.4	5000	1524	R-30	34	51
3	0.277	7.0	5000	1524	R-30	41	61
6	0.333	8.5	5000	1524	R-30	60	90

No. of Pairs	Nominal O.D. (inch)	(mm)	Standard Reel Length (feet)	(m)	Reel* Design	Approx. Cable Weight (lbs/kf)	(kg/km)
DFW 19 AWG (0.9mm)							
1	0.275	7.0	5000	1524	R-30	35	52
2	0.335	8.5	5000	1524	R-30	54	81
3	0.381	9.7	5000	1524	R-30	71	106
22 AWG (0.64mm)							
2	0.271	6.9	5000	1524	R-30	34	51
3	0.303	7.7	5000	1524	R-30	44	65
6	0.374	9.5	5000	1524	R-30	70	104
24 AWG (0.5mm)							
2	0.242	6.1	5000	1524	R-30	27	40
3	0.267	6.8	5000	1524	R-30	33	49
6	0.323	8.2	5000	1524	R-30	51	75

Note: The above information is approximate and subject to normal manufacturing tolerance.

*Refer to reel specification page.

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ALCATEL
CABLE SYSTEMS GROUP

CommScope Exhibit 1038

Cable Construction

CONDUCTORS: Solid bare 22 AWG (0.64mm) annealed copper.

INSULATION: Individual copper conductors are insulated with a color coded high density polyethylene or a color coded polypropylene.

TWISTED PAIRS: Insulated conductors twisted to form pairs with varying lays to minimize crosstalk and meet capacitance unbalance limitations.

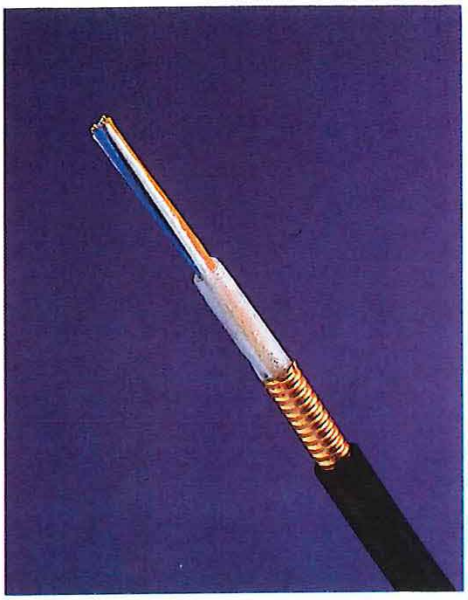
CORE ASSEMBLY: Twisted pairs assembled and bound with a non-hygroscopic binder.

MOISTURE RESISTANCE: To the insulated conductors a moisture-resistant compound is applied which completely coats each insulated conductor and fills the interstices between pairs.

SHIELD: Electrically continuous, .005" (.127mm) corrugated copper clad stainless steel shielding tape applied longitudinally.

JACKET: Virgin, black, high molecular weight, linear low density or medium density polyethylene.

IDENTIFICATION AND LENGTH MARKING: Manufacturer's identification and year of manufacture surface marked on the jacket at two-foot intervals. Sequentially numbered length markings are located at alternate two-foot (.61m) intervals.



No. of Pairs	Nominal O.D. (inch)	(mm)	Standard Reel Length (feet)	(m)	Reel Design	Approx. Cable Weight (lbs/kft)	(kg/km)
22 AWG (0.64mm)							
2	.249	6.3	5000	1524	R-30	38	57

Application:
Subscriber Drops
Buried Service Wire
Filled Core
REA Specification No. PE-86

Average Mutual Capacitance at 1000 Hz								Capacitance Unbalance Pair-to-Pair	
Total No. of Pairs				Microfarads/Mile		Microfarads/Km			Maximum Individual
2				.083 ± .007		.052 ± .004			pf/kft pf/km
Conductor Size AWG	mm	Minimum Insulation Resistance at 73°F MEGOHM mile	km	Maximum Conductor Resistance 68°F OHMS/ kft	km	Resistance Unbalance Maximum Individual Average %	Pair %	Dielectric Strength DC Potential - Volts Minimum CDR to CDR	CDR to Ground	160	290
22	0.64	1,000	1600	18.3	60.1	4.0	7.0	5,000	15,000	Capacitance Unbalance Pair-to-Ground	
										Pair	Maximum Individual pf/kft pf/km
										2	800 2625

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ALCATEL CABLE SYSTEMS GROUP

CommScope Exhibit 1038


Copper Cable
—Bell

BHBA —19 AWG
BHAA —22 AWG
BKMA—24 AWG
BKTA —26 AWG

Cable Construction

CONDUCTORS: Solid bare annealed copper. Sizes 19, 22, 24 and 26 AWG (0.9, 0.64, 0.5, and 0.4mm).

INSULATION: Individual copper conductors are insulated with a thin wall, color coded, high density polyethylene or a thin wall, color coded polypropylene.

TWISTED PAIRS: Insulated conductors twisted to form pairs with varying lays to minimize crosstalk and meet capacitance unbalance limitations.

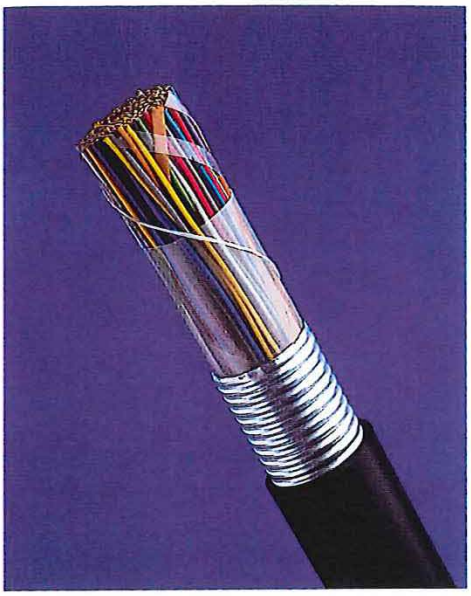
CABLE ASSEMBLY: Cables 25 pairs and less are assembled in concentric layers to form a cylindrical core. Cables having 50 pairs and more are assembled from concentrically formed units with not more than 25 pairs per unit, which may be cabled into 50 pairs super or 100 pairs super quad units, which are cabled to form the complete cylindrical core assembly.

CORE COVERING: A non-hygroscopic core wrap is applied over the assembled core which furnishes mechanical as well as high dielectric protection between shielding and individual conductors.

SHIELD: Electrically continuous, 0.008" (0.203mm) corrugated aluminum shielding tape applied longitudinally.

JACKET: Virgin, black, high molecular weight, linear low density or medium density polyethylene.

IDENTIFICATION AND LENGTH MARKING: Manufacturer's identification, year of manufacture, type of cable, gauge and pair count surface marked on jacket at two-foot intervals. Sequentially numbered length markings are located at alternate two-foot intervals.



Application:
Exchange Area
Unpressurized Aerial Installations
Aircore PIC Alpeth

Average Mutual Capacitance at 1000 Hz - 0.083 +/– 0.004 μfd/mi (0.0516 +/– 0.0025 μfd/km)

Nominal Conductor Size AWG	mm	Minimum Insulation Resistance at 68 Deg. F GIGOHM- mile	km	Maximum Average Attenuation at 68 Deg. F 772kHz dB/kft	dB/km	Maximum Resistance at 68 Deg. F OHMS/ mile	km	Resistance Unbalance Maximum Average %	Individual pair %	Dielectric Strength DC Potential Minimum - Volts CDR. TO CDR.	CDR. TO SHIELD
19	0.9	10.0	16.0	3.3	10.8	45.0	28.0	1.5	5.0	5,000	10,000
22	0.64	10.0	16.0	4.6	15.1	91.0	56.5	1.5	5.0	4,000	10,000
24	0.5	10.0	16.0	5.7	18.7	144.0	89.5	1.5	5.0	3,000	10,000
26	0.4	10.0	16.0	7.2	23.6	232.0	144.1	1.5	5.0	2,400	10,000

Near End Crosstalk Requirements at 772 kHz

P.S. WUNEXT mean (dB/kft)	47
P.S. WUNEXT worst pair (dB/kft)	42

Far End Crosstalk Requirements at 150 kHz

	19	22	24	26
P.S. ELFEXT mean (dB/kft)	65	63	63	61
P.S. ELFEXT worst pair (dB/kft)	59	57	57	57

Capacitance Unbalance Pair-to-Pair

Pair	Maximum Individual pf/kf	Maximum Individual pf/km	Maximum RMS pf/kf	Maximum RMS pf/km
12 or less	80	145	—	—
More than 12	—	—	25	45.3

Capacitance Unbalance Pair-to-Ground

Pair	Maximum Individual pf/kf	Maximum Individual pf/km	Maximum Average pf/kf	Maximum Average pf/km
12 or less	800	2625	—	—
More than 12	800	2625	175	574

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ALCATEL
CABLE SYSTEMS GROUP

CommScope Exhibit 1038

BHBA —19 AWG
BHAA —22 AWG
BKMA—24 AWG
BKTA —26 AWG

Exchange Area
Unpressurized Aerial Installations
Aircore PIC Alpeth

No. of Pairs	Nominal O.D. (inch)	(mm)	Reel Length (feet)	(m)	Reel Design	Approx. Cable Weight (lbs/kf)	(kg/km)
BKTA — 26 AWG (0.4mm)							
11	0.334	8.5	5000	1524	415	49	73
16	0.368	9.3	5000	1524	415	62	92
25	0.418	10.6	5000	1524	415	83	124
50	0.521	13.2	5000	1524	415	140	209
75	0.600	15.2	5000	1524	415	194	289
100	0.667	16.9	5000	1524	415	247	368
150	0.779	19.8	5000	1524	415	349	520
200	0.885	22.5	5000	1524	417	455	678
300	1.049	26.6	5000	1524	417	658	981
400	1.186	30.1	2500	762	417	858	1280
600	1.416	36.0	2500	762	417	1259	1877
900	1.728	43.9	1250	381	417	1868	2786
BKMA — 24 AWG (0.5mm)							
11	0.380	9.7	5000	1524	415	65	97
16	0.423	10.7	5000	1524	415	84	126
25	0.486	12.3	5000	1524	415	117	174
50	0.617	15.7	5000	1524	415	204	303
75	0.718	18.2	5000	1524	415	286	427
100	0.803	20.4	5000	1524	417	367	548
150	0.959	24.4	5000	1524	417	533	794
200	1.083	27.5	8000	2438	420	693	1034
300	1.290	32.8	5000	1524	420	1009	1504
400	1.466	37.2	4400	1341	420	1322	1972
600	1.788	45.4	2500	762	420	1969	2936
900	2.147	54.5	1250	381	420	2899	4323

No. of Pairs	Nominal O.D. (inch)	(mm)	Reel Length (feet)	(m)	Reel Design	Approx. Cable Weight (lbs/kf)	(kg/km)
BHAA — 22 AWG (0.64mm)							
11	0.439	11.2	5000	1524	415	90	135
16	0.495	12.6	5000	1524	415	119	178
25	0.576	14.6	15000	4572	417	169	252
50	0.745	18.9	15000	4572	420	302	451
75	0.886	22.5	5000	1524	417	436	649
100	0.999	25.4	10000	3048	420	565	843
150	1.188	30.2	5000	1524	420	819	1222
200	1.346	34.2	5000	1524	420	1070	1596
300	1.642	41.7	3750	1143	420	1586	2366
400	1.866	47.4	3000	914	420	2082	3105
600	2.244	57.0	2000	610	420	3076	4587
BHBA — 19 AWG (0.9mm)							
11	0.553	14.0	5000	1524	415	152	226
16	0.632	16.1	5000	1524	415	206	307
25	0.748	19.0	5000	1524	415	301	448
50	1.003	25.5	5000	1524	417	563	838
75	1.195	30.4	2500	762	417	822	1223
100	1.352	34.3	2500	762	417	1065	1585
150	1.649	41.9	2500	762	420	1578	2348
200	1.874	47.6	1250	381	417	2072	3084
300	2.254	57.3	1250	381	420	3053	4544
400	2.574	65.4	1250	381	420	4030	5998

Note: The above information is approximate and subject to normal manufacturing tolerance.

*Refer to reel specification page.

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ALCATEL
CABLE SYSTEMS GROUP

CommScope Exhibit 1038

BHBG —19 AWG
BHAG —22 AWG
BKMG—24 AWG
BKTG —26 AWG

Cable Construction

CONDUCTORS: Solid bare annealed copper. Sizes 19, 22, 24 and 26 AWG (0.9, 0.64, 0.5 and 0.4mm).

INSULATION: Individual copper conductors are insulated with a color coded, high density polyethylene or a color coded polypropylene.

TWISTED PAIRS: Insulated conductors twisted to form pairs with varying lays to minimize crosstalk and meet capacitance unbalance limitations.

CABLE ASSEMBLY: Cables 25 pair and less are assembled in concentric layers to form a cylindrical core. Cables having 50 pair and more are assembled from concentrically formed units with not more than 25 pair per unit, which may be cabled into 50 pair super or 100 pair super quad units, which are cabled to form the complete cylindrical core assembly.

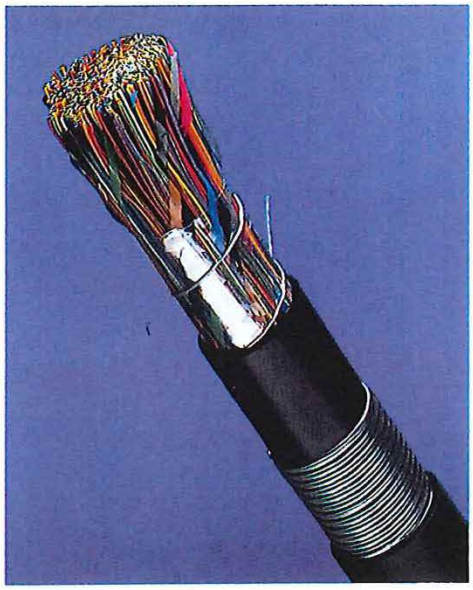
CORE COVERING: A non-hygroscopic core wrap is applied over the assembled core which furnishes mechanical as well as high dielectric protection between shielding and individual conductors.

INNER JACKET: Virgin, black, high-molecular weight, linear low or medium density polyethylene. A rip cord is applied longitudinally for slitting.

SHIELD: Electrically continuous, 0.008" (0.203mm) corrugated aluminum shielding tape applied longitudinally with an overlap.

OUTER JACKET: Virgin, black, high molecular weight, linear low density or medium density polyethylene.

IDENTIFICATION AND LENGTH MARKING: Manufacturer's identification, year of manufacture, type of cable and pair count surface marked on jacket at two-foot intervals. Sequentially numbered length markings are located at alternate two-foot intervals.



Application:
Rural Areas
Pressurized Direct Burial
and Aerial Installations
Aircore PIC PAP

Average Mutual Capacitance at 1000 Hz - 0.083 +/– 0.004 μfd/mi (0.0516 +/– 0.0025 μfd/km)

Nominal Conductor Size AWG	mm	Minimum Insulation Resistance at 68 Deg. F GIGOHM- mile	km	Maximum Average Attenuation at 68 Deg. F 772kHz dB/kft	dB/km	Maximum Resistance at 68 Deg. F OHMS/ mile	km	Resistance Unbalance Maximum Average %	Individual pair %	Dielectric Strength DC Potential Minimum - Volts CDR. TO CDR.	CDR. TO SHIELD
19	0.9	10.0	16.0	3.3	10.8	45.0	28.0	1.5	5.0	5000	20000
22	0.64	10.0	16.0	4.7	15.4	91.0	56.5	1.5	5.0	4000	20000
24	0.5	10.0	16.0	5.9	19.4	144.0	89.5	1.5	5.0	3000	20000
26	0.4	10.0	16.0	7.4	24.3	232.0	144.1	1.5	5.0	2400	20000

Near End Crosstalk Requirements at 772 kHz

P.S. WUNEXT mean (dB/kft)	47
P.S. WUNEXT worst pair (dB/kft)	42

Far End Crosstalk Requirements at 150 kHz

	19	22	24	26
P.S. ELFEXT mean (dB/kft)	65	63	63	61
P.S. ELFEXT worst pair (dB/kft)	59	57	57	57

Capacitance Unbalance Pair-to-Pair

Pair	Maximum Individual pf/kf	Maximum Individual pf/km	Maximum RMS pf/kf	Maximum RMS pf/km
12 or less	80	145	—	—
More than 12	—	—	25	45.3

Capacitance Unbalance Pair-to-Ground

Pair	Maximum Individual pf/kf	Maximum Individual pf/km	Maximum Average pf/kf	Maximum Average pf/km
12 or less	800	2625	—	—
More than 12	800	2625	175	574

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ALCATEL

CommScope Exhibit 1038

BHBG —19 AWG
BHAG —22 AWG
BKMG—24 AWG
BKTG —26 AWG

Application:
Rural Areas
Pressurized Direct Burial
and Aerial Installations
Aircore PIC PAP

No. of Pairs	Nominal O.D. (inch)	(mm)	Reel Length (feet)	(m)	Reel Design	Approx. Cable Weight (lbs/kf)	(kg/km)
BKTG — 26 AWG (0.4mm)							
25	0.520	13.2	10000	3048	417	110	164
50	0.626	15.9	10000	3048	417	174	259
75	0.709	18.0	5000	1524	417	234	348
100	0.787	20.0	5000	1524	417	295	439
150	0.909	23.1	5000	1524	420	409	609
200	1.020	25.9	5000	1524	420	527	784
300	1.185	30.1	2500	762	417	745	1109
400	1.339	34.0	2500	762	420	962	1431
600	1.583	40.2	1250	381	417	1388	2065
900	1.909	48.5	1250	381	420	2036	3030
1200	2.161	54.9	1250	381	420	2667	3968
1500	2.378	60.4	1250	381	420	3284	4887
1800	2.587	65.7	1250	381	420	3903	5808
2100	2.768	70.3	1250	381	420	4516	6720
2400	2.933	74.5	1250	381	420	5117	7614
2700	3.098	78.7	1000	305	420	5723	8516
BKMG — 24 AWG (0.5mm)							
25	0.587	14.9	10000	3048	417	149	222
50	0.720	18.3	5000	1524	417	245	365
75	0.835	21.2	5000	1524	417	339	504
100	0.921	23.4	5000	1524	420	429	638
150	1.083	27.5	5000	1524	420	611	909
200	1.209	30.7	2500	762	417	783	1165
300	1.433	36.4	2500	762	420	1128	1678
400	1.610	40.9	1250	381	420	1463	2177
600	1.949	49.5	1250	381	420	2152	3202
900	2.319	58.9	1250	381	420	3139	4671
1200	2.646	67.2	1250	381	420	4135	6153
1500	2.913	74.0	1250	381	420	5098	7586
1800	3.165	80.4	1000	305	420	6037	8983

No. of Pairs	Nominal O.D. (inch)	(mm)	Reel Length (feet)	(m)	Reel Design	Approx. Cable Weight (lbs/kf)	(kg/km)
BHAG — 22 AWG (0.64mm)							
16	0.598	15.2	5000	1524	415	151	225
25	0.681	17.3	5000	1524	415	207	308
50	0.862	21.9	5000	1524	417	355	528
75	1.008	25.6	5000	1524	420	501	745
100	1.126	28.6	5000	1524	420	641	954
150	1.319	33.5	2500	762	420	914	1360
200	1.492	37.9	2500	762	420	1184	1762
300	1.795	45.6	2500	762	420	1733	2579
400	2.035	51.7	1250	381	420	2260	3363
600	2.425	61.6	1250	381	420	3295	4903
900	2.906	73.8	1250	381	420	4826	7181
BHBG — 19 AWG (0.9mm)							
6	0.551	14.0	5000	1524	415	124	185
11	0.654	16.6	5000	1524	415	188	280
16	0.732	18.6	5000	1524	417	248	369
25	0.862	21.9	5000	1524	417	352	524
50	1.122	28.5	5000	1524	420	636	946
75	1.315	33.4	2500	762	420	907	1350
100	1.488	37.8	2500	762	420	1173	1745
150	1.787	45.4	2500	762	420	1719	2558
200	2.031	51.6	1250	381	420	2241	3335
300	2.417	61.4	1250	381	420	3267	4861

Note: The above information is approximate and subject to normal manufacturing tolerance.

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ALCATEL
CABLE SYSTEMS GROUP

CommScope Exhibit 1038

BHBH —19 AWG
BHAH —22 AWG
BKMH—24 AWG
BKTH —26 AWG

Cable Construction

CONDUCTORS: Solid bare annealed copper. Sizes 19, 22, 24 and 26 AWG (0.9, 0.64, 0.5 and 0.4mm).

INSULATION: Individual copper conductors are insulated with a color coded, high density polyethylene or a color coded polypropylene.

TWISTED PAIRS: Insulated conductors twisted to form pairs with varying lays to minimize crosstalk and meet capacitance unbalance limitations.

CABLE ASSEMBLY: Cables 25 pair and less are assembled in concentric layers to form a cylindrical core. Cables having 50 pair and more are assembled from concentrically formed units with not more than 25 pair per unit, which may be cabled into 50 pair super or 100 pair super quad units, which are cabled to form the complete cylindrical core assembly.

CORE COVERING: A non-hygroscopic core wrap is applied over the assembled core which furnishes mechanical as well as high dielectric protection between shielding and individual conductors.

INNER JACKET: Virgin, black, high-molecular weight, linear low or medium density polyethylene. A rip cord is applied longitudinally for slitting.

SHIELD: Electrically continuous, 0.008" (0.203mm) corrugated aluminum shielding tape applied longitudinally with a gap.

ARMOR/SHIELD: An electrically continuous, .006" (0.152mm) corrugated steel tape is applied longitudinally with an overlap. The steep tape is coated to facilitate bonding to the inner surface of the outer jacket.

OUTER JACKET: Virgin, black, high molecular weight, linear low density or medium density polyethylene.

IDENTIFICATION AND LENGTH MARKING: Manufacturer's identification, year of manufacture, type of cable and pair count surface marked on jacket at two-foot intervals. Sequentially numbered length markings are located at alternate two-foot intervals.



Application:
Exchange Area
Pressurized Direct Burial and Aerial Installation
Aircore PIC Bonded PASP

Average Mutual Capacitance at 1000 Hz - 0.083 +/– 0.004 μfd/mi (0.0516 +/– 0.0025 μfd/km)

Nominal Conductor Size AWG	mm	Minimum Insulation Resistance at 68 Deg. F GIGOHM- mile	km	Maximum Average Attenuation at 68 Deg. F 772kHz dB/kft	dB/km	Maximum Resistance at 68 Deg. F OHMS/ mile	km	Resistance Unbalance Maximum Average %	Individual pair %	Dielectric Strength DC Potential Minimum - Volts CDR. TO CDR.	CDR. TO SHIELD
19	0.9	10.0	16.0	3.3	10.8	45.0	28.0	1.5	5.0	5000	20000
22	0.64	10.0	16.0	4.7	15.4	91.0	56.5	1.5	5.0	4000	20000
24	0.5	10.0	16.0	5.9	19.4	144.0	89.5	1.5	5.0	3000	20000
26	0.4	10.0	16.0	7.4	24.3	232.0	144.1	1.5	5.0	2400	20000

Near End Crosstalk Requirements at 772 kHz

P.S. WUNEXT mean (dB/kft)	47
P.S. WUNEXT worst pair (dB/kft)	42

Far End Crosstalk Requirements at 150 kHz

	19	22	24	26
P.S. ELFEXT mean (dB/kft)	65	63	63	61
P.S. ELFEXT worst pair (dB/kft)	59	57	57	57

Capacitance Unbalance Pair-to-Pair

Pair	Maximum Individual pf/kf	Maximum Individual pf/km	Maximum RMS pf/kf	Maximum RMS pf/km
12 or less	80	145	—	—
More than 12	—	—	25	45.3

Capacitance Unbalance Pair-to-Ground

Pair	Maximum Individual pf/kf	Maximum Individual pf/km	Maximum Average pf/kf	Maximum Average pf/km
12 or less	800	2625	—	—
More than 12	800	2625	175	574

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ALCATEL CABLE SYSTEMS GROUP

CommScope Exhibit 1038

BHBH —19 AWG
BHAH —22 AWG
BKMH—24 AWG
BKTH —26 AWG

Application:
Exchange Area
Pressurized Direct Burial and Aerial Installation
Aircore PIC Bonded PASP

No. of Pairs	Nominal O.D. (inch)	(mm)	Reel Length (feet)	(m)	Reel Design	Approx. Cable Weight (lbs/kf)	(kg/km)
BKTH — 26 AWG (0.4mm)							
25	0.579	14.7	10000	3048	417	161	240
50	0.685	17.4	10000	3048	420	237	353
75	0.764	19.4	5000	1524	417	305	454
100	0.843	21.4	5000	1524	417	373	555
150	0.961	24.4	5000	1524	420	502	747
200	1.071	27.2	5000	1524	420	630	937
300	1.232	31.3	2500	762	417	861	1281
400	1.382	35.1	2500	762	420	1089	1620
600	1.622	41.2	1250	381	417	1532	2280
900	1.969	50.0	1250	381	420	2229	3317
1200	2.220	56.4	1250	381	420	2887	4296
1500	2.441	62.0	1250	381	420	3527	5248
1800	2.650	67.3	1250	381	420	4170	6205
2100	2.835	72.0	1250	381	420	4807	7153
2400	3.000	76.2	1250	381	420	5429	8078
2700	3.165	80.4	1000	305	420	6052	9005
BKMH — 24 AWG (0.5mm)							
25	0.642	16.3	10000	3048	417	208	310
50	0.776	19.7	5000	1524	417	319	475
75	0.890	22.6	5000	1524	417	421	626
100	0.976	24.8	5000	1524	420	525	781
150	1.130	28.7	5000	1524	420	717	1067
200	1.228	31.2	2500	762	417	899	1338
300	1.472	37.4	2500	762	420	1259	1873
400	1.654	42.0	1250	381	417	1610	2396
600	2.004	50.9	1250	381	420	2348	3494
900	2.378	60.4	1250	381	420	3377	5025
1200	2.709	68.8	1250	381	420	4410	6562
1500	2.988	75.9	1250	381	420	5406	8044
1800	3.232	82.1	1000	305	420	6378	9490
2100	3.453	87.7	1000	305	420	7341	10923
2400	3.661	93.0	800	244	420	8293	12340
2700	3.850	97.8	750	229	420	9240	13749

No. of Pairs	Nominal O.D. (inch)	(mm)	Reel Length (feet)	(m)	Reel Design	Approx. Cable Weight (lbs/kf)	(kg/km)
BHAH — 22 AWG (0.64mm)							
16	0.654	16.6	5000	1524	415	210	312
25	0.736	18.7	5000	1524	417	277	412
50	0.917	23.3	5000	1524	420	444	661
75	1.063	27.0	5000	1524	420	605	900
100	1.173	29.8	5000	1524	420	750	1116
150	1.362	34.6	2500	762	420	1038	1545
200	1.535	39.0	2500	762	420	1318	1961
300	1.850	47.0	2500	762	420	1911	2844
400	2.094	53.2	1250	381	420	2468	3672
600	2.489	63.2	1250	381	420	3546	5276
900	2.972	75.5	1250	381	420	5130	7633
BHBH — 19 AWG (0.9mm)							
6	0.606	15.4	5000	1524	415	179	266
11	0.709	18.0	5000	1524	417	254	378
16	0.791	20.1	5000	1524	417	322	479
25	0.917	23.3	5000	1524	420	442	658
50	1.173	29.8	5000	1524	420	745	1109
75	1.358	34.5	2500	762	420	1030	1533
100	1.528	38.8	2500	762	420	1307	1945
150	1.846	46.9	2500	762	420	1899	2826
200	2.091	53.1	1250	381	420	2449	3644
300	2.480	63.0	1250	381	420	3514	5229

Note: The above information is approximate and subject to normal manufacturing tolerance.

P.O. Box 39
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(704) 459-9787

ALCATEL CABLE SYSTEMS GROUP

CommScope Exhibit 1038

BHBS —19 AWG
BHAS —22 AWG
BKMS—24 AWG
BKTS —26 AWG

Cable Construction

CONDUCTORS: Solid bare annealed copper. Sizes 19, 22, 24 and 26 AWG (0.9, 0.64, 0.5 and 0.4mm).

INSULATION: Individual copper conductors insulated with a color coded, high density polyethylene or a color coded polypropylene.

TWISTED PAIRS: Insulated conductors twisted to form pairs with varying lays to minimize crosstalk and meet capacitance unbalance limitations.

CABLE ASSEMBLY: Cables 25 pair and less are assembled in concentric layers to form a cylindrical core. Cables having 50 pair and more are assembled from concentrically formed units with not more than 25 pair per unit, which may be cabled into 50 pair super or 100 pair super quad units, which are cabled to form the complete cylindrical core assembly. The cable core is undulated with an approximate sine wave configuration to obtain an excess core in the finished cable.

CORE COVERING: A non-hygroscopic core wrap is applied over the assembled core which furnishes mechanical as well as high dielectric protection between shielding and individual conductors.

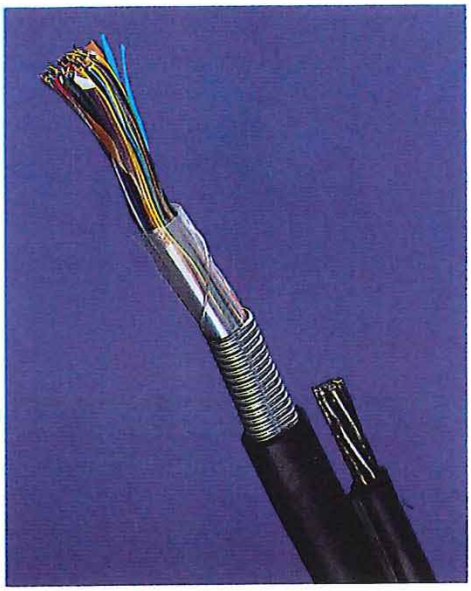
SHIELD: Electrically continuous, 0.008" (0.203mm) corrugated aluminum shielding tape applied longitudinally with an overlap.

STEEL SUPPORT STRAND: The shielded core is laid parallel to a compound filled ¼" - 7/.080" (6.35mm-7/2.032mm) EHS supporting messenger.

JACKET: Virgin, black, high molecular weight, linear low density or medium density polyethylene jacket is extruded simultaneously over the shielded core and support strand to form a figure "8" cross section.

REINFORCED SELF SUPPORT: Also available with an electrically continuous .006" (0.152mm) corrugated steel shield and outer jacket applied over the inner jacket (type BHBP, BHAP, BKMP, and BKTP).

IDENTIFICATION AND LENGTH MARKING: Manufacturer's identification, year of manufacture, type of cable and pair count surface marked on jacket at two-foot intervals. Sequentially numbered length markings are located at alternate two-foot intervals.



Application:
Exchange Area
Aerial Installation
Aircore - Figure "8"

Average Mutual Capacitance at 1000 Hz - 0.083 +/– 0.004 μfd/mi (0.0516 +/– 0.0025 μfd/km)

Nominal Conductor Size AWG	mm	Minimum Insulation Resistance at 68 Deg. F GIGOHM- mile	km	Maximum Average Attenuation at 68 Deg. F 772kHz dB/kft	dB/km	Maximum Resistance at 68 Deg. F OHMS/ mile	km	Resistance Unbalance Maximum Average %	Individual pair %	Dielectric Strength DC Potential Minimum - Volts CDR. TO CDR.	CDR. TO SHIELD
19	0.9	10.0	16.0	3.3	10.8	45.0	28.0	1.5	5.0	5000	10000
22	0.64	10.0	16.0	4.7	15.4	91.0	56.5	1.5	5.0	4000	10000
24	0.5	10.0	16.0	5.9	19.4	144.0	89.5	1.5	5.0	3000	10000
26	0.4	10.0	16.0	7.4	24.3	232.0	144.1	1.5	5.0	2400	10000

Near End Crosstalk Requirements at 772 kHz

P.S. WUNEXT mean (dB/kft)	47
P.S. WUNEXT worst pair (dB/kft)	42

Far End Crosstalk Requirements at 150 kHz

	19	22	24	26
P.S. ELFEXT mean (dB/kft)	65	63	63	61
P.S. ELFEXT worst pair (dB/kft)	59	57	57	57

Capacitance Unbalance Pair-to-Pair

Pair	Maximum Individual pf/kf	Maximum Individual pf/km	Maximum RMS pf/kf	Maximum RMS pf/km
12 or less	80	145	—	—
More than 12	—	—	25	45.3

Capacitance Unbalance Pair-to-Ground

Pair	Maximum Individual pf/kf	Maximum Individual pf/km	Maximum Average pf/kf	Maximum Average pf/km
12 or less	800	2625	—	—
More than 12	800	2625	175	574

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ALCATEL
CABLE SYSTEMS GROUP

CommScope Exhibit 1038

BHBS —19 AWG
BHAS —22 AWG
BKMS—24 AWG
BKTS —26 AWG

Application:
Exchange Area
Aerial Installation
Aircore - Figure "8"

No. of Pairs	Nominal Minor O.D. (inch)	(mm)	Reel Length (feet)	(m)	Reel Design	Approx. Cable Weight (lbs/kf)	(kg/km)
BKTS — 26 AWG (0.4mm)							
25	0.437	11.1	5000	1524	415	236	351
50	0.547	13.9	5000	1524	417	295	439
100	0.713	18.1	5000	1524	420	405	603
150	0.839	21.3	5000	1524	420	515	766
200	0.941	23.9	2500	762	417	621	924
300	1.110	28.2	1250	381	415	825	1228
BKMS — 24 AWG (0.5mm)							
25	0.504	12.8	5000	1524	417	271	403
50	0.642	16.3	5000	1524	417	359	534
75	0.756	19.2	5000	1524	420	446	664
100	0.854	21.7	5000	1524	420	533	793
150	1.008	25.6	2500	762	417	701	1043
200	1.134	28.8	2500	762	420	862	1283

No. of Pairs	Nominal Minor O.D. (inch)	(mm)	Reel Length (feet)	(m)	Reel Design	Approx. Cable Weight (lbs/kf)	(kg/km)
BHAS — 22 AWG (0.64mm)							
16	0.516	13.1	5000	1524	417	273	406
25	0.598	15.2	5000	1524	417	323	481
50	0.787	20.0	5000	1524	420	460	684
75	0.937	23.8	2500	762	417	598	890
100	1.051	26.7	2500	762	417	727	1082
BHBS — 19 AWG (0.9mm)							
6	0.469	11.9	5000	1524	415	249	371
11	0.571	14.5	5000	1524	417	305	454
16	0.654	16.6	5000	1524	417	361	537
25	0.787	20.0	5000	1524	420	457	680
50	1.047	26.6	2500	762	417	722	1074

Note 1: The major diameter is .48" (12.2mm) larger than the minor O.D.
Note 2: The above information is approximate and subject to normal manufacturing tolerance.

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ALCATEL
CABLE SYSTEMS GROUP

DCMZ—24 AWG
DCTZ —26 AWG

Cable Construction

CONDUCTORS: Solid bare annealed copper. Sizes 24 and 26 AWG (0.5 and 0.4mm).

INSULATION: Individual copper conductors are insulated with a dual extruded cellular inner layer and a color coded solid outer layer of high density polyethylene.

TWISTED PAIRS: Insulated conductors twisted to form pairs with varying lays to minimize crosstalk and meet capacitance unbalance limitations.

MOISTURE DETECTION PAIRS: A paper insulated blue-red pair and green-white pair are provided in the outer layer of each core.

CABLE ASSEMBLY: Pairs are assembled in concentric layers to form a cylindrical core. Cables having 50 pair and more are assembled from concentrically formed units with not more than 25 pair per unit, which are cabled to form the complete cylindrical core assembly.

CORE COVERING: A non-hygroscopic core wrap is applied over the assembled core which furnishes mechanical as well as high dielectric protection between shielding and individual conductors.

SHIELD: Electrically continuous, 0.008" (0.203mm) corrugated aluminum shielding tape applied longitudinally with a gap.

ARMOR/SHIELD: An electrically continuous, 0.006" (0.152mm) corrugated steel tape is applied longitudinally over the aluminum tape with an overlap. The steel tape is coated to facilitate bonding to the inner surface of the outer jacket.

OUTER JACKET: Virgin, black, high molecular weight, linear low density or medium density polyethylene.

IDENTIFICATION AND LENGTH MARKETING: Manufacturer's identification, year of manufacture, type of cable and pair count surface marked on jacket at two-foot intervals. Sequentially numbered length markings are located at alternate two-foot intervals.



Application:
Urban Exchange Areas
Underground Installations
Aircore Foamskin PIC

Average Mutual Capacitance at 1000 Hz - 0.083 +/– 0.004 μfd/mi (0.0516 +/– 0.0025 μfd/km)

Nominal Conductor Size AWG	mm	Minimum Insulation Resistance at 68 Deg. F GIGOHM- mile	km	Maximum Average Attenuation at 68 Deg. F 772kHz dB/kft	dB/km	Maximum Resistance at 68 Deg. F OHMS/ mile	km	Resistance Unbalance Maximum Average %	Individual pair %	Dielectric Strength DC Potential Minimum - Volts CDR. TO CDR.	CDR. TO SHIELD
24	0.5	1.0	1.6	6.3	20.7	144.0	89.5	1.5	5.0	1200	5000
26	0.4	1.0	1.6	7.9	25.9	232.0	144.1	1.5	5.0	1000	5000

Near End Crosstalk Requirements at 772 kHz	
P.S. WUNEXT mean (dB/kft)	47
P.S. WUNEXT worst pair (dB/kft)	42

Far End Crosstalk Requirements at 150 kHz	24	26
P.S. ELFEXT mean (dB/kft)	63	61
P.S. ELFEXT worst pair (dB/kft)	57	57

Capacitance Unbalance Pair-to-Pair

Pair	Maximum Individual pf/kf	Maximum Individual pf/km	Maximum RMS pf/kf	RMS pf/km
All	—	—	25	45.3

Capacitance Unbalance Pair-to-Ground

Pair	Maximum Individual pf/kf	Maximum Individual pf/km	Maximum Average pf/kf	Average pf/km
All	800	2625	175	574

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ALCATEL
CABLE SYSTEMS GROUP

CommScope Exhibit 1038

DCMZ—24 AWG
DCTZ —26 AWG

Application:
Urban Exchange Areas
Underground Installations
Aircore Foamskin PIC

No. of Pairs	Nominal O.D. (inch)	(mm)	Reel Length (feet)	(m)	Reel Design	Approx. Cable Weight (lbs/kf)	(kg/km)
DCTZ — 26 AWG (0.4mm)							
1200	1.921	48.8	1250	381	420	2496	3714
1500	2.118	53.8	1250	381	420	3066	4562
1800	2.291	58.2	1250	381	420	3630	5401
2100	2.465	62.6	1250	381	420	4197	6245
2400	2.618	66.5	1250	381	420	4759	7081
2700	2.756	70.0	1250	381	420	5315	7909
3000	2.902	73.7	1000	305	420	5879	8748
3600	3.154	80.1	1000	305	420	6992	10404
4200	3.382	85.9	750	229	420	8094	12044

No. of Pairs	Nominal O.D. (inch)	(mm)	Reel Length (feet)	(m)	Reel Design	Approx. Cable Weight (lbs/kf)	(kg/km)
DCMZ — 24 AWG (0.64mm)							
1200	2.327	59.1	1250	381	420	3820	5684
1500	2.579	65.5	1000	305	420	4713	7013
1800	2.799	71.1	1000	305	420	5577	8298
2100	3.008	76.4	1000	305	420	6456	9606
2400	3.197	81.2	1000	305	420	7332	10910

Note: The above information is approximate and subject to normal manufacturing tolerance.

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ALCATEL
CABLE SYSTEMS GROUP

CommScope Exhibit 1038

AFBW —19 AWG
AFAW —22 AWG
AFMW—24 AWG
AFTW —26 AWG

Cable Construction

CONDUCTORS: Solid bare annealed copper. Sizes 19, 22, 24 and 26 AWG (0.9, 0.64, 0.5 and 0.4mm).

INSULATION: Individual copper conductors are insulated with a dual extruded cellular inner layer and a color coded solid outer layer of high density polyethylene.

TWISTED PAIRS: Insulated conductors twisted to form pairs with varying lays to minimize crosstalk and meet capacitance unbalance limitations.

CABLE ASSEMBLY: Cables 25 pair and less are assembled in concentric layers to form a cylindrical core. Cables having 50 pair and more are assembled from concentrically formed units with not more than 25 pair per unit, which may be cabled into 50 pair super or 100 pair super quad units, which are cabled to form the complete cylindrical core assembly.

MOISTURE RESISTANCE: To the cable core is applied a moisture-resisting gel type filling compound which completely coats each insulated conductor and fills the interstices between pairs and units.

CORE COVERING: A non-hygroscopic core wrap is applied over the assembled core which furnishes mechanical as well as high dielectric protection between shielding and individual conductors.

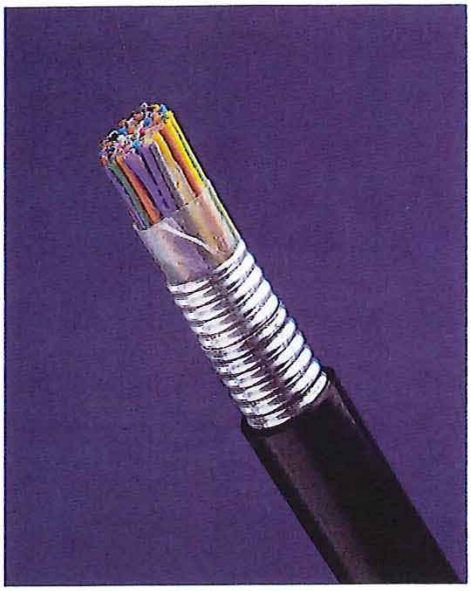
FLOODING COMPOUND: A flooding compound is applied to fill all the depressions of the corrugations under, over and between the shields.

SHIELD: Electrically continuous, 0.008" (0.203mm) corrugated aluminum shielding tape applied longitudinally with a gap.

ARMOR/SHIELD: An electrically continuous, 0.006" (0.152mm) corrugated steel tape is applied longitudinally with an overlap.

JACKET: Virgin, black, high molecular weight, linear low density or medium density polyethylene.

IDENTIFICATION AND LENGTH MARKING: Manufacturer's identification, year of manufacture, type of cable and pair count surface marked on jacket at two-foot intervals. Sequentially numbered length markings are located at alternate two-foot intervals.



Application:
Exchange Area
Duct or Direct Burial Installations
Filled Core ASP

Average Mutual Capacitance at 1000 Hz - 0.083 +/– 0.004 μfd/mi (0.0516 +/– 0.0025 μfd/km)

Nominal Conductor Size AWG	mm	Minimum Insulation Resistance at 68 Deg. F GIGOHM- mile	km	Maximum Average Attenuation at 68 Deg. F 772kHz dB/kft	dB/km	Individual Conductor Maximum Resistance at 68 Deg. F OHMS/ mile	km	Resistance Unbalance Maximum Average %	Individual pair %	Dielectric Strength DC Potential Minimum - Volts CDR. TO CDR.	CDR. TO SHIELD
19	0.9	1.0	1.6	3.2	10.5	45.0	28.0	1.5	5.0	4500	10000
22	0.64	1.0	1.6	4.5	14.8	91.0	56.5	1.5	5.0	3600	10000
24	0.5	1.0	1.6	5.6	18.4	144.0	89.5	1.5	5.0	3000	10000
26	0.4	1.0	1.6	7.0	23.0	232.0	144.1	1.5	5.0	2400	10000

Near End Crosstalk Requirements at 772 kHz

P.S. WUNEXT mean (dB/kft)	47
P.S. WUNEXT worst pair (dB/kft)	42

Far End Crosstalk Requirements at 150 kHz

	19	22	24	26
P.S. ELFEXT mean (dB/kft)	65	63	63	61
P.S. ELFEXT worst pair (dB/kft)	59	57	57	57

Capacitance Unbalance Pair-to-Pair

Pair	Maximum Individual pf/kf	Maximum Individual pf/km	Maximum RMS pf/kf	Maximum RMS pf/km
12 or less	80	145	—	—
More than 12	—	—	25	453

Capacitance Unbalance Pair-to-Ground

Pair	Maximum Individual pf/kf	Maximum Individual pf/km	Maximum Average pf/kf	Maximum Average pf/km
12 or less	800	2625	—	—
More than 12	800	2625	175	574

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ALCATEL

CommScope Exhibit 1038

AFBW —19 AWG
AFAW —22 AWG
AFMW—24 AWG
AFTW —26 AWG

Exchange Area
Duct or Direct Burial Installations
Filled Core ASP

No. of Pairs	Nominal O.D. (inch)	(mm)	Reel Length (feet)	(m)	Reel Design	Approx. Cable Weight (lbs/kf)	(kg/km)
AFTW — 26 AWG (0.4mm)							
11	0.387	9.8	15000	4572	415	81	120
16	0.424	10.8	15000	4572	415	99	147
25	0.477	12.1	15000	4572	417	128	191
37	0.545	13.8	15000	4572	417	170	253
50	0.598	15.2	15000	4572	417	208	311
75	0.684	17.4	15000	4572	420	278	415
100	0.755	19.2	15000	4572	420	345	515
150	0.876	22.3	11250	3429	420	479	715
200	0.977	24.8	11250	3429	420	608	907
300	1.158	29.4	5625	1714	420	860	1283
400	1.301	33.0	5000	1524	420	1102	1643
600	1.546	39.3	3750	1143	420	1591	2373
900	1.873	47.6	2500	762	420	2329	3473
1200	2.200	55.9	1875	571	420	3121	4654
1500	2.434	61.8	1500	457	420	3842	5730
1800	2.647	67.2	1000	305	420	4559	6799
2100	2.843	72.2	1000	305	420	5274	7865
2400	3.024	76.8	800	244	420	5985	8926
2700	3.197	81.2	800	244	420	6700	9992
3000	3.355	85.2	750	229	420	7400	11036
AFMW — 24 AWG (0.5mm)							
11	0.436	11.1	20000	6096	417	104	155
16	0.483	12.3	20000	6096	417	131	195
25	0.561	14.2	20000	6096	417	179	267
37	0.635	16.1	20000	6096	420	234	349
50	0.702	17.8	20000	6096	420	292	436
75	0.811	20.6	10000	3048	420	398	594
100	0.902	22.9	13400	4084	420	506	754
150	1.055	26.8	5000	1524	417	706	1052
200	1.195	30.4	5000	1524	420	908	1354
300	1.412	35.9	4300	1311	420	1290	1924
400	1.601	40.7	3300	1006	420	1678	2503
600	1.941	49.3	2200	671	420	2463	3674
900	2.331	59.2	1650	503	420	3587	5349
1200	2.746	69.7	1000	305	420	4834	7210
1500	3.046	77.4	800	244	420	5972	8907
1800	3.315	84.2	800	244	420	7101	10590

No. of Pairs	Nominal O.D. (inch)	(mm)	Reel Length (feet)	(m)	Reel Design	Approx. Cable Weight (lbs/kf)	(kg/km)
AFAW — 22 AWG (0.64mm)							
6	0.421	10.7	15000	4572	415	97	145
11	0.496	12.6	15000	4572	417	138	206
16	0.565	14.4	15000	4572	417	181	270
25	0.652	16.6	15000	4572	420	247	368
37	0.745	18.9	15000	4572	420	331	493
50	0.831	21.1	15000	4572	420	421	627
75	0.968	24.6	10000	3048	420	585	872
100	1.094	27.8	7500	2286	420	750	1118
150	1.288	32.7	5000	1524	420	1058	1578
200	1.452	36.9	5000	1524	420	1361	2029
300	1.759	44.7	3000	914	420	1994	2974
400	2.000	50.8	2500	762	420	2598	3874
600	2.403	61.0	1500	457	420	3790	5652
900	2.899	73.6	1000	305	420	5557	8288
1200	3.418	86.8	625	190	420	7516	11209
AFBW — 19 AWG (0.9mm)							
3	0.428	10.9	15000	4572	415	99	147
6	0.518	13.2	15000	4572	417	151	224
11	0.638	16.2	15000	4572	417	231	345
16	0.724	18.4	15000	4572	420	303	452
25	0.850	21.6	15000	4572	420	431	642
37	0.986	25.0	5000	1524	417	593	884
50	1.121	28.5	7500	2286	420	767	1144
75	1.321	33.6	5000	1524	420	1084	1617
100	1.490	37.8	3750	1143	420	1400	2088
150	1.807	45.9	2500	762	420	2046	3051
200	2.056	52.2	2500	762	420	2663	3972
300	2.472	62.8	1250	381	420	3882	5789
400	2.824	71.7	1000	305	420	5090	7591

Note: The above information is approximate and subject to normal manufacturing tolerance.

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ALCATEL
CABLE SYSTEMS GROUP

CommScope Exhibit 1038

AFBW-UM —19 AWG
AFAW-UM —22 AWG
AFMW-UM—24 AWG
AFTW-UM —26 AWG

Cable Construction

CONDUCTORS: Solid bare annealed copper. Sizes 19, 22, 24 and 26 AWG (0.9, 0.64, 0.5 and 0.4mm).

INSULATION: Individual copper conductors are insulated with a dual extruded cellular inner layer and a color coded solid outer layer of high density polyethylene.

TWISTED PAIRS: Insulated conductors twisted to form pairs with varying lays to minimize crosstalk and meet capacitance unbalance limitations.

CABLE ASSEMBLY: Cables 25 pair and less are assembled in concentric layers to form a cylindrical core. Cables having 50 pair and more are assembled from concentrically formed units with not more than 25 pair per unit, which may be cabled into 50 pair super or 100 pair super quad units, which are cabled to form the complete cylindrical core assembly.

MOISTURE RESISTANCE: To the cable core is applied a moisture-resisting gel type filling compound which completely coats each insulated conductor and fills the interstices between pairs and units.

CORE COVERING: A non-hygroscopic core wrap is applied over the assembled core which furnishes mechanical as well as high dielectric protection between shielding and individual conductors.

FLOODING COMPOUND: A flooding compoud is applied to fill all the depressions of the corrugations under, over and between the shields.

SHIELD: Electrically continuous, 0.008" (0.203mm) corrugated aluminum shielding tape applied longitudinally with a gap.

ARMOR/SHIELD: An electrically continuous, 0.006" (0.152mm) corrugated steel tape is applied longitudinally with an overlap.

JACKET: Virgin, black, high molecular weight, linear low density or medium density polyethylene.

MECHANICAL PROTECTION: An electrically continuous, 0.006" (0.152mm) corrugated steel tape is applied longitudinally with an overlap over the inner jacket. A flooding compound is applied to fill all the depressions of the corrugations under and over the shield. A virgin, black, high molecular weight, linear low density or medium density polyethylene jacket is applied over the shield.

IDENTIFICATION AND LENGTH MARKING: Manufacturer's identification, year of manufacture, type of cable and pair count surface marked on jacket at two-foot intervals. Sequentially numbered length markings are located at alternate two-foot intervals.



Application:
Exchange Area
Direct Burial Installation
Filled Core - UM Protection

Average Mutual Capacitance at 1000 Hz - 0.083 +/– 0.004 μfd/mi (0.0516 +/– 0.0025 μfd/km)

Nominal Conductor Size AWG	mm	Minimum Insulation Resistance at 68 Deg. F GIGOHM- mile	km	Maximum Average Attenuation at 68 Deg. F 772kHz dB/kft	dB/km	Individual Conductor Maximum Resistance at 68 Deg. F OHMS/ mile	km	Resistance Unbalance Maximum Average %	Individual pair %	Dielectric Strength DC Potential Minimum - Volts CDR. TO CDR.	CDR. TO SHIELD
19	0.9	1.0	1.6	3.2	10.5	45.0	28.0	1.5	5.0	4500	10000
22	0.64	1.0	1.6	4.5	14.8	91.0	56.5	1.5	5.0	3600	10000
24	0.5	1.0	1.6	5.6	18.4	144.0	89.5	1.5	5.0	3000	10000
26	0.4	1.0	1.6	7.0	23.0	232.0	144.1	1.5	5.0	2400	10000

Near End Crosstalk Requirements at 772 kHz

P.S. WUNEXT mean (dB/kft)	47
P.S. WUNEXT worst pair (dB/kft)	42

Far End Crosstalk Requirements at 150 kHz

	19	22	24	26
P.S. ELFEXT mean (dB/kft)	65	63	63	61
P.S. ELFEXT worst pair (dB/kft)	59	57	57	57

Capacitance Unbalance Pair-to-Pair

Pair	Maximum Individual pf/kf	Maximum Individual pf/km	Maximum RMS pf/kf	Maximum RMS pf/km
12 or less	80	145	—	—
More than 12	—	—	25	45.3

Capacitance Unbalance Pair-to-Ground

Pair	Maximum Individual pf/kf	Maximum Individual pf/km	Maximum Average pf/kf	Maximum Average pf/km
12 or less	800	2625	—	—
More than 12	800	2625	175	574

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ALCATEL
CABLE SYSTEMS GROUP

CommScope Exhibit 1038

AFBW-UM —19 AWG
AFAW-UM —22 AWG
AFMW-UM—24 AWG
AFTW-UM —26 AWG

Application:
Exchange Area
Direct Burial Installation
Filled Core - UM Protection

No. of Pairs	Nominal O.D. (inch)	(mm)	Reel Length (feet)	(m)	Reel Design	Approx. Cable Weight (lbs/kf)	(kg/km)
AFTW-UM — 26 AWG (0.4mm)							
25	0.689	17.5	15000	4572	420	246	366
50	0.799	20.3	15000	4572	420	346	515
100	0.969	24.6	7500	2286	420	523	778
200	1.220	31.0	5000	1524	420	851	1266
300	1.402	35.6	4500	1372	420	1195	1778
400	1.551	39.4	3750	1143	420	1440	2143
600	1.870	47.5	2500	762	420	2060	3065
900	2.189	55.6	1700	518	420	2891	4302
1200	2.461	62.5	1500	457	420	3696	5500
1500	2.709	68.8	1250	381	420	4501	6697
1800	2.921	74.2	1000	305	420	5276	7851
2100	3.118	79.2	800	244	420	6044	8993
2400	3.311	84.1	750	229	420	6823	10153
AFMW-UM — 24 AWG (0.5mm)							
25	0.752	19.1	10000	3048	417	300	446
50	0.890	22.6	10000	3048	420	443	659
100	1.118	28.4	5000	1524	417	719	1070
200	1.490	35.8	3750	1143	420	1190	1771
300	1.630	41.4	2650	808	420	1638	2437
400	1.882	47.8	2200	671	420	2135	3177
600	2.209	56.1	1500	457	420	3006	4473
900	2.610	66.3	1300	396	420	4271	6355
1200	2.949	74.9	850	259	420	5511	8200
1500	3.260	82.8	825	251	420	6779	10087

No. of Pairs	Nominal O.D. (inch)	(mm)	Reel Length (feet)	(m)	Reel Design	Approx. Cable Weight (lbs/kf)	(kg/km)
AFAW-UM — 22 AWG (0.64mm)							
11	0.701	17.8	15000	4572	420	260	387
16	0.760	19.3	15000	4572	420	309	460
25	0.839	21.3	10000	3048	420	391	582
50	1.031	26.2	7500	2286	420	604	899
75	1.189	30.2	5000	1524	420	826	1229
100	1.299	33.0	5000	1524	420	1008	1500
150	1.512	38.4	3300	1006	420	1375	2046
200	1.681	42.7	2850	869	420	1722	2562
300	2.031	51.6	2000	610	420	2480	3690
400	2.280	57.9	1750	533	420	3170	4717
600	2.701	68.6	1250	381	420	4507	6706
900	3.209	81.5	750	229	420	6467	9263
AFBW-UM — 19 AWG (0.9mm)							
6	0.720	18.3	7500	2286	417	280	417
11	0.831	21.1	7500	2286	417	382	568
16	0.929	23.6	7500	2286	417	470	699
25	1.071	27.2	7500	2286	420	622	926
50	1.382	35.1	5000	1524	420	1040	1548
75	1.559	39.6	2500	762	417	1427	2123
100	1.740	44.2	3000	914	420	1792	2666
150	2.110	53.6	2100	640	420	2593	3858
200	2.370	60.2	1500	457	420	3296	4904
300	2.791	70.9	1250	381	420	4685	6971

Note: The above information is approximate and subject to normal manufacturing tolerance.

09882M

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ALCATEL
CABLE SYSTEMS GROUP

CommScope Exhibit 1038

KFAW
KGAW
KFAW-UM
KGAW-UM

Cable Construction

CONDUCTORS: Solid bare 22 AWG (0.64mm) annealed copper.

INSULATION: Type KFAW: Individual copper conductors are insulated with a dual extruded cellular inner layer and a color coded outer layer of high density polyethylene. Type KGAW: Insulation is color coded high density polyethylene or color coded polypropylene.

TWISTED PAIRS: Insulated conductors twisted to form pairs with varying lays to minimize crosstalk and meet capacitance unbalance limitations.

CABLE ASSEMBLY: The twisted pairs are assembled into 12, 13 and 25 pair units, or into 50 pair multiunits, which are cabled to form the complete cylindrical core assembly. In addition, a designated number of service pairs are included in a service pair unit. The core separator is a plastic coated 0.004" (0.102mm) aluminum screen which is placed in such a manner as to separate one-half of the core in an "S" configuration and electrically separate the cable into two compartments.

MOISTURE RESISTANCE: To the cable core is applied a moisture-resisting gel type filling compound which completely coats each insulated conductor and fills the interstices between pairs and units.

CORE COVERING: A non-hygroscopic core wrap is applied over the assembled core which furnishes mechanical as well as high dielectric protection between shielding and individual conductors.

FLOODING COMPOUND: A flooding compound is applied to fill all the depressions of the corrugations under, over and between the shields.

SHIELD: Electrically continuous, 0.008" (0.203mm) corrugated aluminum shielding tape applied longitudinally with a gap.

ARMOR/SHIELD: An electrically continuous, 0.006" (0.152mm) corrugated steel tape is applied longitudinally with an overlap.

JACKET: Virgin, black, high molecular weight, linear low density polyethylene.

IDENTIFICATION AND LENGTH MARKING: Manufacturer's identification, year of manufacture, type of cable and pair count surface marked on jacket at two-foot intervals. Sequentially numbered length markings are located at alternate two-foot intervals.

UM PROTECTION: TYPES KFAW-UM AND KGAW-UM — An electrically continuous .006" (.152mm) corrugated steel tape is applied longitudinally with an overlap over the inner jacket and covered with a second virgin, black, high molecular weight, linear low density.



Application:
Digital Systems T1/T1C
Duct or Direct Burial Installations
Filled Screened Core

Average Mutual Capacitance at 1000 Hz - 0.083 +/– 0.004 μfd/mi (0.0516 +/– 0.0025 μfd/km)

Nominal Conductor Size AWG	mm	Minimum Insulation Resistance at 68 Deg. F GIGOHM- mile	km	Maximum Average Attenuation at 68 Deg. F 772kHz dB/kft	dB/km	Maximum Conductor Resistance at 68 Deg. F OHMS/ mile	km	Resistance Unbalance Maximum Average %	Individual pair %	Dielectric Strength DC Potential Minimum - Volts CDR. TO CDR.	CDR. TO SCREEN	CORE TO SHIELD
22	0.64	1.0	1.6	4.5	14.8	91.0	56.5	1.5	5.0	3,600	5,000	10,000

Near End Crosstalk Requirements

Between compartments
All cables shall have no pair with less than 70 dB power sum coupling loss when measured at 772 kHz and 78 dB power sum coupling loss when measured at 1600 kHz.

Far End Crosstalk Requirements at 150 kHz

P.S. ELFEXT mean (dB/kft)	63
P.S. ELFEXT worst pair (dB/kft)	57

Capacitance Unbalance Pair-to-Pair

Pair	Maximum Individual pf/kf	Maximum Individual pf/km	Maximum RMS pf/kf	Maximum RMS pf/km
12 or less	80	145	—	—
More than 12	—	—	25	45.3

Capacitance Unbalance Pair-to-Ground

Pair	Maximum Individual pf/kf	Maximum Individual pf/km	Maximum Average pf/kf	Maximum Average pf/km
12 or less	800	2625	—	—
More than 12	800	2625	175	574

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ALCATEL
CABLE SYSTEMS GROUP

CommScope Exhibit 1038

KFAW
KGAW
KFAW-UM
KGAW-UM

Digital Systems T1/T1C
Duct or Direct Burial Installations
Filled Screened Core

No. of Pairs	Nominal O.D. (inch)	(mm)	Reel Length (feet)	(m)	Reel* Design	Approx. Cable Weight (lbs/kft)	(kg/km)
KFAW							
54	0.885	22.5	7500	2286	420	467	696
106	1.150	29.2	5000	1524	420	817	1219
158	1.346	34.2	3000	914	420	1142	1704
210	1.516	38.5	3000	914	420	1469	2191
314	1.825	46.4	2000	610	420	2127	3172
418	2.071	52.6	1500	457	420	2760	4116
616	2.465	62.6	1000	305	420	3944	5882
KFAW-UM							
54	1.055	26.8	7500	2286	420	636	949
106	1.323	33.6	5000	1524	420	1036	1545
158	1.523	38.7	3000	914	420	1412	2106
210	1.726	43.8	3000	914	420	1782	2658
314	2.042	51.9	2000	610	420	2508	3741
418	2.294	58.3	1500	457	420	3200	4773
616	2.704	68.7	1000	305	420	4491	6698

No. of Pairs	Nominal O.D. (inch)	(mm)	Reel Length (feet)	(m)	Reel* Design	Approx. Cable Weight (lbs/kft)	(kg/km)
KGAW							
28	0.790	20.1	10000	3048	420	335	500
54	1.005	25.5	5000	1524	417	560	835
106	1.322	33.6	5000	1524	420	982	1465
158	1.507	38.3	2500	762	420	1335	1991
210	1.703	43.3	2500	762	420	1714	2557
314	2.056	52.2	1250	381	420	2487	3709
418	2.336	59.3	1250	381	420	3228	4815
616	2.786	70.8	1000	305	420	4620	6890
KGAW-UM							
28	.940	23.9	5000	1524	417	484	722
54	1.175	29.8	5000	1524	420	751	1120
106	1.498	38.0	2500	762	420	1235	1842
158	1.687	42.8	2500	762	420	1635	2439
210	1.917	48.7	1250	381	417	2066	3081
314	2.278	57.9	1250	381	420	2923	4360
418	2.569	65.2	1250	381	420	3739	5577
616	3.036	77.1	1000	305	420	5257	7841

Note: The above information is approximate and subject to normal manufacturing tolerance.

*Refer to reel specification page.

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ALCATEL
CABLE SYSTEMS GROUP

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Cable Construction

CONDUCTORS: Solid bare 22 AWG (0.64mm) annealed copper.

INSULATION: Individual copper conductors are insulated with a color coded, high density polyethylene or a color coded polypropylene.

TWISTED PAIRS: Insulated conductors twisted to form pairs with varying lays to minimize crosstalk and meet capacitance unbalance limitations. To eliminate split pairs, the tip conductor is the same color as the ring but with a continuous white stripe, which is an integral part of the insulation.

CORE COVERING: A non-hygroscopic core wrap is applied over the assembled core which furnishes mechanical as well as high dielectric protection between shielding and individual conductors.

MOISTURE RESISTANCE: All cable components under the shield are completely covered with a flame retardant hydrocarbon based filling compound to prevent water ingress and protect electrical integrity. Type CSWF also available with flooding compound applied over the shield to provide improved moisture and corrosion resistance.

SHIELD: A corrosion resistant, corrugated, copper-alloy shield or copper-clad stainless steel shield is applied longitudinally with an overlap for mechanical and electrical protection.

JACKET: Flame and weather resistant black PVC. A jacket slitting cord is inserted between the shield and jacket.

IDENTIFICATION AND LENGTH MARKING: Manufacturer's identification, year of manufacture, type of cable and pair count surface marked on jacket at two-foot intervals. Sequentially numbered length markings are located at alternate two-foot intervals.

PACKAGING: 2 Pair - 250 Foot Coils
700 Foot Coils
925 Foot Coils
1500 Foot Reels
3000 Foot Reels
5000 Foot Reels
8250 Foot Reels

5 Pair - 925 Foot Reels
1000 Foot Reels
3000 Foot Reels
5500 Foot Reels

PHYSICAL CHARACTERISTICS:

	2 PAIR	5 PAIR
Outside Diameter	0.27	0.34
Weight (lbs/1000 ft)	55	89
Breaking Strength (lbs)	200	275



Application:
Buried Service Wire
for Non-Gopher Areas.

09882M

Maximum Individual Mutual Capacitance at 1000 Hz											
Total No. of Pairs					Nanofarads/kft			Nanofarads/Km			
2					20.0			65.7			
Conductor Size AWG	mm	Minimum Insulation Resistance at 73° F MEGOHM kft	km	Maximum Average Attenuation at 68° F 772kHz dB/kft	dB/km	Maximum Conductor Resistance 68° F OHMS/ kft	km	Resistance Unbalance Maximum Individual Average %	Pair %	Dielectric Strength DC Potential - Volts Minimum CDR to CDR	CDR to Ground
22	0.64	5,000	1,524	4.5	14.8	17.2	56.4	1.5	5.0	10,200	10,200

Capacitance Unbalance Pair-to-Ground			Capacitance Unbalance Pair-to-Pair		
Pair	Maximum Average pf/kft	pf/km		Maximum Individual pf/kft	pf/km
2	400	1312		45.0	81.5

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ALCATEL CABLE SYSTEMS GROUP

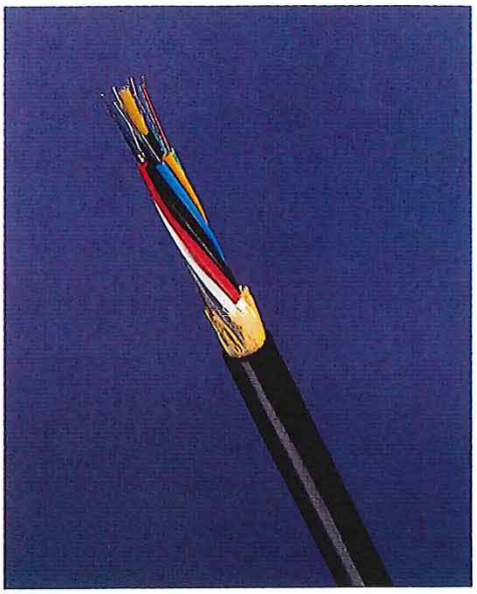
CommScope Exhibit 1038


Fiber Cable

ANM, ASM

Non-Armored Loose Tube
Yarn Reinforced
Optical Fiber Cable

300.01



Alcatel's loose tube construction insures stable optical performance by protecting the fibers in a loose buffer tube. This design is well suited for inter-office, long haul, and high density applications.

The non-armored cable design may be used in duct or aerial applications and is available with a steel or dielectric central strength member (CSM).

Features

The all dielectric design may be used in close proximity to high voltage lines and provides lightning immunity.

Available with single-mode or multimode fiber manufactured by Alcatel.

Fiber counts from 4 to 180 fibers.

Reel lengths available up to 11 km without factory splices.

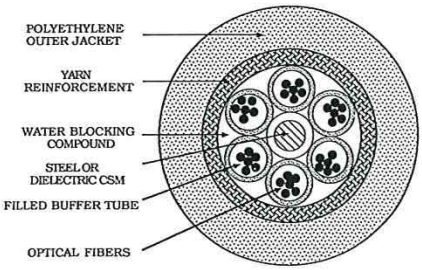
Loose buffer tube design. Multiple fibers per tube (6 or 12) minimizes the cable size.

Color coded fibers and buffer tubes allow easy identification.

Ripcord for ease of termination.

Available with copper pairs.

Meets Bellcore and REA requirements.



Construction

CENTRAL STRENGTH MEMBER (CSM): Available in solid steel or dielectric. Provides buckling resistance during bending and contraction from low temperature extremes.

OPTICAL FIBERS: Available in both single-mode or multimode. Manufactured by Alcatel or other qualified vendors. Color coded for easy identification.

BUFFER TUBE: The optical fibers are protected inside color coded, loose buffer tubes which are stranded around the CSM. The buffer tube maintains the fibers mechanical and optical integrity and protects them from the effects of cable strain, due to tensile, thermal, and vibration loads. The buffer tube is gel filled to block the ingress of water and contains 6 or 12 fibers.

FLOODING COMPOUND: Blocks the core interstices to prevent the ingress of water.

YARN REINFORCEMENT: The CSM and yarn provide the tensile strength required to keep the cable elongation to a minimum due to installation forces and expansion due to temperature.

RIPCORD: High strength cord provides easy cable entry.

OUTER JACKET: Non-reclaimed medium density polyethylene bonded to the armor. Linear low & high density available upon request.

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ALCATEL
CABLE SYSTEMS GROUP

CommScope Exhibit 1038

ANM, ASM

Non-Armored Loose Tube
Yarn Reinforced
Optical Fiber Cable

Installation

Maximum Pulling Load - 600 lbf (2700N)

Maximum Operating Load - 225 lbf (1000N)

Maximum Vertical Rise - 400 ft.

Temperature Range
Operating −40°C to +70°C
Storage −50°C to +70°C

Mechanical

Crush Resistance (between parallel plates) - 400 lbf/in

Impact Resistance (0.5 in hammer radius) - 20 times @ 2.2 lbf ft

Temperature Performance < 0.1 aver. (dB/km increase from −40°C to +70°C)

NOTE: Cable with enhanced mechanical properties are available upon customer request.

PHYSICAL

Number of Fibers	Number of Buffer Tubes	Minimum Bend Radius @ 600lb Load (in)	Minimum Bend Radius @ No Load (in)	ASM Design Steel CSM Aramid Yarn No Armor OD (in)	ASM Design Steel CSM Aramid Yarn No Armor Wt (lb/1000ft)	ANM Design Dielectric CSM Aramid Yarn No Armor OD (in)	ANM Design Dielectric CSM Aramid Yarn No Armor WT (lb/1000ft)
1 Fiber/ Tube							
4-6	4-6	8	4	.41	67	.41	60
8	8	9	5	.45	81	.45	67
10	10	10	5	.50	101	.50	84
12	12	11	6	.55	118	.55	97
6 Fibers/ Tube							
4-30	5	9	5	.45	80	.46	74
32-36	6	10	5	.49	94	.49	88
12 Fibers/ Tube							
38-60	5	10	6	.50	108	.51	101
62-72	6	11	6	.55	118	.55	113
74-84	7	12	6	.58	133	.58	127
86-96	8	12	6	.62	153	.62	146
98-108	9	13	7	.66	169	.66	163
110-120	10	14	7	.70	188	.70	182
122-132	11	15	7	.74	211	.74	203
134-144	12	15	8	.77	233	.77	225
146-156	13	16	8	.81	248	.81	233
158-168	14	17	9	.85	270	.85	250
170-180	15	18	9	.89	290	.89	271

FIBER CHARACTERISTICS

Single-mode	
Maximum Attenuation @ 1300 nm (dB/km) @ 1550 nm (dB/km)	 0.40-0.50 0.30-0.50
Maximum Dispersion 1285-1330 nm (ps/nm*km) 1550 nm (ps/nm*km)	 3.0 18.0
Mode Field Diameter (μm) 8.5 to 9.9	
Cut-off Wavelength (nm)	1130-1290
Zero Dispersion Wavelength	1310 ± 10 nm
Zero Disp. Slope (ps/nm²*km)	≤ 0.090
Core/Cladding Offset (μm)	≤ 1
Fiber Non-circularity	≤ 2%
Cladding Diameter (μm)	125 ± 2
Coating Diameter (μm)	250 ± 15
Proof Test Level (KPSI)	50

Multimode		
	50/125	62.5/125
Maximum Attenuation @ 850 nm (dB/km) @ 1300 nm (dB/km)	 2.7 - 4.0 1.0 - 2.0	 3.3 - 4.0 1. 0 - 2.0
Minimum Bandwidth @850 nm (MHz*km) @1300 nm (MHz*km)	 200 - 600 400 - 1000	 100 - 200 200 - 600
Core Diameter (μm)	50 ± 3	62.5 ± 3
Cladding Diameter (μm)	125 ± 2	125 ± 2
Numerical Aperture	0.20 ± 0.02	0.27 ± 0.02
Core Non-circularity	≤ 6%	≤ 6%
Core/Cladding Offset	≤ 6%	≤ 6%
Fiber Non-circularity	≤ 2%	≤ 2%
Coating Diameter (μm)	250 ± 15	250 ± 15
Proof Test Level (KPSI)	50	50

Fiber specifications are for fiber manufactured by Alcatel, specifications may vary for other qualified suppliers. Alcatel reserves the right to improve, enhance, or modify the cable features and specifications. Spare fibers may be used depending on requirements.
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For requirements different than those listed above, please contact our Customer Service Department.

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CABLE SYSTEMS GROUP

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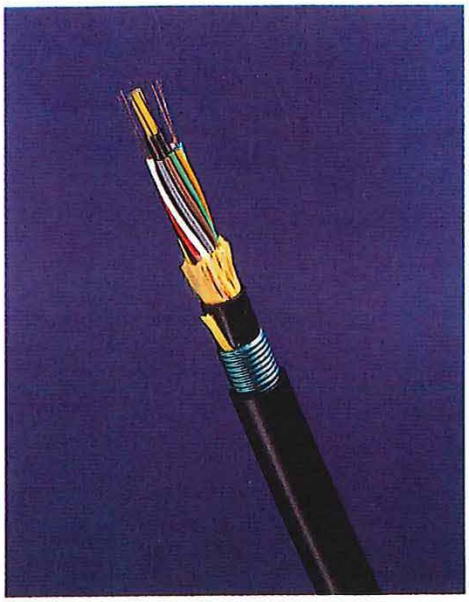
AAM, ARM

Armored Loose Tube
Yarn Reinforced
Optical Fiber Cable

Description

Alcatel's loose tube construction insures stable optical performance by protecting the fibers in a loose buffer tube. This design is well suited for inter-office, long haul, and high density applications.

The armored cable design may be used in buried, duct, or aerial applications and is available with a steel or dielectric central strength member (CSM).



Features

Available with single-mode or multimode fiber manufactured by Alcatel.
Fiber counts from 4 to 180 fibers.
Reel lengths available up to 11 km without factory splices.
Loose buffer tube design. Multiple fibers per tube (6 or 12) minimizes the cable size.
Color coded fibers and buffer tubes allow easy identification.
Ripcord for ease of termination.
Available with copper pairs.
Coated armor for corrosion resistance.
Meets Bellcore and REA requirements.

Construction

CENTRAL STRENGTH MEMBER (CSM): Available in solid steel or dielectric. Provides buckling resistance during bending and contraction from low temperature extremes.

OPTICAL FIBERS: Available in both single-mode or multimode. Manufactured by Alcatel or other qualified vendors. Color coded for easy identification.

BUFFER TUBE: The optical fibers are protected inside color coded, loose buffer tubes, which are stranded around the CSM. The buffer tube maintains the fibers mechanical and optical integrity and protects them from the effects of cable strain due to tensile, thermal, and vibration loads. The buffer tube is gel-filled to block the ingress of water and contains 6 or 12 fibers.

FLOODING COMPOUND: Blocks the core interstices to prevent the ingress of water.

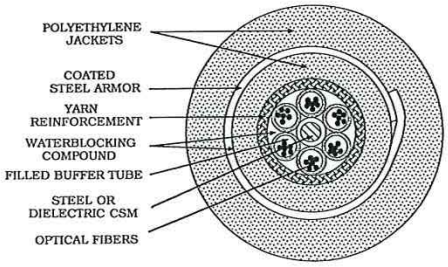
YARN REINFORCEMENT: The CSM and yarn provide the tensile strength required to keep the cable elongation to a minimum due to installation forces and expansion due to temperature.

RIPCORD: High strength cord provides easy cable entry.

INNER JACKET: Non-reclaimed medium density polyethylene.

ARMOR: A corrugated, chrome plated, copolymer coated .006" steel tape protects the cable from rodents and protrusions in buried applications. A flooding compound between the armor and inner jacket prevents the ingress of water. An armor is recommended for all direct buried applications and is optional for duct and aerial applications.

OUTER JACKET: Non-reclaimed medium density polyethylene bonded to the armor. Linear low & high density are available upon request.



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ALCATEL
CABLE SYSTEMS GROUP

CommScope Exhibit 1038

AAM, ARM

Armored Loose Tube
Yarn Reinforced
Optical Fiber Cable

Installation

Maximum Pulling Load	600 lbf (2700N)
Maximum Operation Load	225 lbf (1000N)
Maximum Vertical Rise	400 ft.
Temperature Range	
Operating	−40°C to +70°C
Storage	−50°C to +70°C

Mechanical

Crush Resistance (between parallel plates)	460 lbf/in
Impact Resistance (0.5 in hammer radius)	20 times @ 3.7 lbf ft
Temperature Performance (dB/km increase from −40°C to +70°C)	< 0.1 average

NOTE: Cable with enhanced mechanical properties are available upon customer request.

PHYSICAL

Number of Fibers	Number of Buffer Tubes	Minimum Bend Radius @ 600lb Load (in)	Minimum Bend Radius @ No Load (in)	ARM Design Steel CSM Aramid Yarn Armored OD (in)	ARM Design Steel CSM Aramid Yarn Armored Wt (lb/1000ft)	AAM Design Dielectric CSM Aramid Yarn Armored OD (in)	AAM Design Dielectric CSM Aramid Yarn Armored WT (lb/1000ft)
1 Fiber/ Tube							
4-6	4-6	11	8	.53	138	.53	128
8	8	11	8	.55	165	.55	148
10	10	12	9	.61	185	.61	165
12	12	13	10	.67	209	.67	185
6 Fibers/ Tube							
4-30	5	12	9	.57	141	.58	130
32-36	6	12	9	.60	155	.60	145
12 Fibers/ Tube							
38-60	5	13	9	.63	172	.63	164
62-72	6	14	10	.66	185	.66	177
74-84	7	14	11	.70	207	.70	200
86-96	8	15	11	.74	230	.74	221
98-108	9	16	12	.79	257	.79	244
110-120	10	17	12	.83	285	.83	268
122-132	11	17	13	.87	301	.87	293
134-144	12	18	14	.91	330	.91	319
146-156	13	19	14	.95	352	.95	340
158-168	14	20	15	.99	379	.99	368
170-180	15	21	15	1.03	410	1.03	395

FIBER CHARACTERISTICS

Single-mode	
Maximum Attenuation @ 1310 nm (dB/km) @ 1550 nm (dB/km)	 0.40-0.50 0.30-0.50
Maximum Dispersion 1285-1330 nm (ps/nm•km) 1550 nm (ps/nm•km)	 3.0 18.0
Mode Field Diameter (μm) 8.5 to 9.9	
Cut-off Wavelength (nm)	1130-1290
Zero Dispersion Wavelength	1310 ± 10 nm
Zero Dispersion Slope (ps/nm²•km)	≤ 0.090
Core/Cladding Offset (μm)	≤ 1
Fiber Non-circularity	≤ 2%
Cladding Diameter (μm)	125 ± 2
Coating Diameter (μm)	250 ± 15
Proof Test Level (KPSI)	50

Multimode		
	50/125	62.5/125
Maximum Attenuation @ 850 nm (dB/km) @ 1300 nm (dB/km)	 2.7 - 4.0 1.0 - 2.0	 3.3 - 4.0 1. 0 - 2.0
Minimum Bandwidth @850 nm (MHz•km) @1300 nm (MHz•km)	 200 - 600 400 - 1000	 100 - 200 200 - 600
Core Diameter (μm)	50 ± 3	62.5 ± 3
Cladding Diameter (μm)	125 ± 2	125 ± 2
Numerical Aperture	0.20 ± 0.02	0.27 ± 0.02
Core Non-circularity	≤ 6%	≤ 6%
Core/Cladding Offset	≤ 6%	≤ 6%
Fiber Non-circularity	≤ 2%	≤ 2%
Coating Diameter (μm)	250 ± 15	250 ± 15
Proof Test Level (KPSI)	50	50

Fiber specifications are for fiber manufactured by Alcatel, specifications may vary for other qualified suppliers. Alcatel reserves the right to improve, enhance, or modify the cable features and specifications. Spare fibers may be used depending on requirements.

09882M

For requirements different than those listed above, please contact our Customer Service Department.

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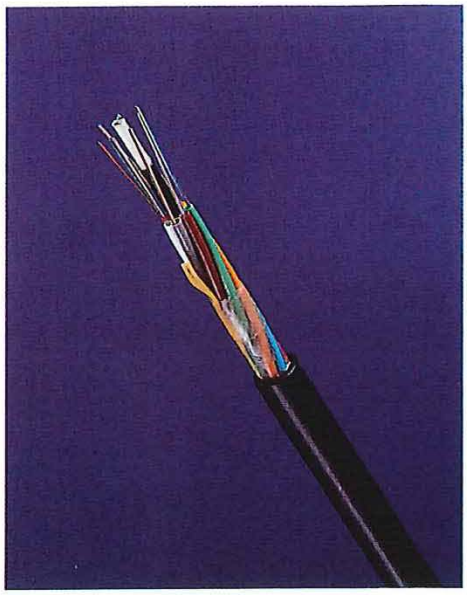
ALCATEL

CommScope Exhibit 1038

NNM, NSM

Non-Armored Loose Tube
Optical Fiber Cable

302.01



Alcatel's loose tube construction insures stable optical performance by protecting the fibers in a loose buffer tube. This design is well suited for inter-office, long haul, and high density applications.

The non-armored cable design may be used in duct or aerial applications and is available with a steel or dielectric central strength member (CSM).

Features

The all dielectric design may be used in close proximity to high voltage lines and provides lightning immunity.

Available with single-mode or multimode fiber manufactured by Alcatel.

Fiber counts from 4 to 180 fibers.

Reel lengths available up to 11 km without factory splices.

Loose buffer tube design. Multiple fibers per tube (6 or 12) minimizes the cable size.

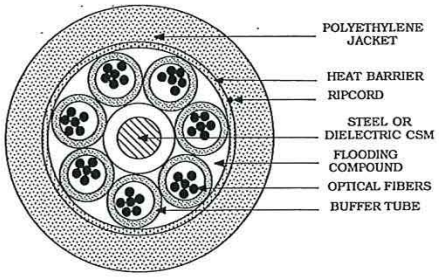
Color coded fibers and buffer tubes allow easy identification.

Ripcord for ease of termination.

Available with copper pairs.

Central strength member design permits cable entries even when the cable is subjected to the full operating load.

Meets Bellcore and REA requirements.



Construction

CENTRAL STRENGTH MEMBER (CSM): Available in solid steel or dielectric. Provides the tensile strength required to meet the maximum specified installation forces and provides buckling resistance during bending and contraction from low temperature extremes.

OPTICAL FIBERS: Available in both single-mode or multimode. Manufactured by Alcatel or other qualified vendors. Color coded for easy identification.

BUFFER TUBE: The optical fibers are protected inside color coded, loose buffer tubes, which are stranded around the CSM. The buffer tube maintains the fibers' mechanical and optical integrity and protects them from the effects of cable strain, due to tensile, thermal, and vibration loads. The buffer tube is gel-filled to block the ingress of water and contains 6 or 12 fibers.

FLOODING COMPOUND: Blocks the core interstices to prevent the ingress of water.

HEAT BARRIER: Provides a heat barrier during jacket extrusion.

RIPCORD: High strength cord provides easy cable entry.

OUTER JACKET: Non-reclaimed medium density polyethylene bonded to the armor. Linear low & high density are available upon request.

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ALCATEL
CABLE SYSTEMS GROUP

CommScope Exhibit 1038

NNM, NSM

Non-Armored Loose Tube
Optical Fiber Cable

Installation

Maximum Pulling Load	600 lbf (2700N)
Maximum Operation Load	225 lbf (1000N)
Maximum Vertical Rise	400 ft.
Temperature Range	
Operating	−40°C to +70°C
Storage	−50°C to +70°C

Mechanical

Crush Resistance (between parallel plates)	400 lbf/in
Impact Resistance (0.5 in hammer radius)	20 times @ 2.2 lbf ft
Temperature Performance (dB/km increase from −40°C to +70°C)	< 0.1 average

NOTE: Cable with enhanced mechanical properties are available upon customer request.

PHYSICAL

Number of Fibers	Number of Buffer Tubes	Minimum Bend Radius @ 600lb Load (in)	Minimum Bend Radius @ No Load (in)	NSM Design Steel CSM No Armor OD (in)	NSM Design Steel CSM No Armor Wt (lb/1000ft)	NNM Design Dielectric CSM No Armor OD (in)	NNM Design Dielectric CSM No Armor WT (lb/1000ft)
1 Fiber/ Tube							
4-6	4-6	8	7	.36	59	.40	62
6 Fibers/ Tube							
4-36	6	10	7	.44	83	.44	75
38-42	7	10	7	.48	101	.48	90
44-48	8	10	7	.52	110	.52	100
50-54	9	11	7	.56	129	.56	120
56-60	10	12	7	.59	144	.60	135
62-66	11	13	7	.63	159	.64	150
68-72	12	14	7	.67	179	.68	170
12 Fibers/ Tube							
38-72	6	9	7	.47	88	.47	94
74-84	7	10	7	.50	101	.50	111
86-96	8	11	7	.54	118	.54	127
98-108	9	12	7	.58	135	.58	145
110-120	10	12	7	.62	152	.62	161
122-132	11	13	7	.66	172	.66	182
134-144	12	14	7	.70	193	.70	203
146-156	13	15	7	.74	214	.74	225
158-168	14	16	8	.78	236	.78	247
170-180	15	16	8	.82	259	.82	270

FIBER CHARACTERISTICS

Single-mode	
Maximum Attenuation @ 1310 nm (dB/km) @ 1550 nm (dB/km)	 0.40-0.50 0.30-0.50
Maximum Dispersion 1285-1330 nm (ps/nm*km) 1550 nm (ps/nm*km)	 3.0 18.0
Mode Field Diameter (μm) 8.5 to 9.9	
Cut-off Wavelength (nm)	1130-1290
Zero Dispersion Wavelength	1310 ± 10 nm
Zero Dispersion Slope (ps/nm²*km)	≤ 0.090
Core/Cladding Offset (μm)	≤ 1
Fiber Non-circularity	≤ 2%
Cladding Diameter (μm)	125 ± 2
Coating Diameter (μm)	250 ± 15
Proof Test Level (KPSI)	50

Multimode	50/125	62.5/125
Maximum Attenuation @ 850 nm (dB/km) @ 1300 nm (dB/km)	 2.7 - 4.0 1.0 - 2.0	 3.3 - 4.0 1. 0 - 2.0
Minimum Bandwidth @850 nm (MHz*km) @1300 nm (MHz*km)	 200 - 600 400 - 1000	 100 - 200 200 - 600
Core Diameter (μm)	50 ± 3	62.5 ± 3
Cladding Diameter (μm)	125 ± 2	125 ± 2
Numerical Aperture	0.20 ± 0.02	0.27 ± 0.02
Core Non-circularity	≤ 6%	≤ 6%
Core/Cladding Offset	≤ 6%	≤ 6%
Fiber Non-circularity	≤ 2%	≤ 2%
Coating Diameter (μm)	250 ± 15	250 ± 15
Proof Test Level (KPSI)	50	50

Fiber specifications are for fiber manufactured by Alcatel, specifications may vary for other qualified suppliers. Alcatel reserves the right to improve, enhance, or modify the cable features and specifications. Spare fibers may be used depending on requirements.
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ALCATEL
CABLE SYSTEMS GROUP

CommScope Exhibit 1038

NAM, NRM

Armored Loose Tube
Optical Fiber Cable



Alcatel's loose tube construction insures stable optical performance by protecting the fibers in a loose buffer tube. This design is well suited for inter-office, long haul, and high density applications.

The armored cable design may be used in buried, duct, or aerial applications and is available with a steel or dielectric central strength member (CSM).

Features

Available with single-mode or multimode fiber manufactured by Alcatel.

Fiber counts from 4 to 180 fibers.

Reel lengths available up to 11 km without factory splices.

Loose buffer tube design. Multiple fibers per tube (6 or 12) minimizes the cable size.

Color coded fibers and buffer tubes allow easy identification.

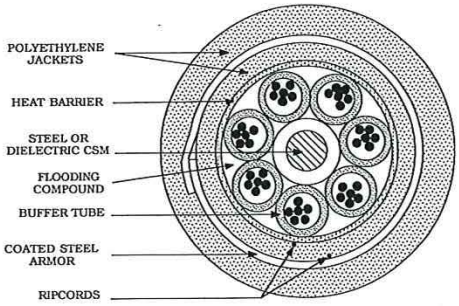
Ripcord for ease of termination.

Available with copper pairs.

Coated armor for corrosion resistance.

Central strength member design permits cable entries even when the cable is subjected to the full operating load.

Meets Bellcore and REA requirements.



Construction

CENTRAL STRENGTH MEMBER (CSM): Available in solid steel or dielectric. Provides the tensile strength required to meet the maximum specified installation forces and provides buckling resistance during bending and contraction from low temperature extremes.

OPTICAL FIBERS: Available in both single-mode or multimode. Manufactured by Alcatel or other qualified vendors. Color coded for easy identification.

BUFFER TUBE: The optical fibers are protected inside color coded, loose buffer tubes, which are stranded around the CSM. The buffer tube maintains the fibers' mechanical and optical integrity and protects them from the effects of cable strain, due to tensile, thermal, and vibration loads. The buffer tube is gel-filled to block the ingress of water and contains 6 or 12 fibers.

FLOODING COMPOUND: Blocks the core interstices to prevent the ingress of water.

HEAT BARRIER: Provides a heat barrier during jacket extrusion.

RIPCORD: High strength cord provides easy cable entry.

INNER JACKET: Non-reclaimed medium density polyethylene.

ARMOR: A corrugated, chrome plated, copolymer coated .006" steel tape protects the cable from rodents and protrusions in buried applications. A flooding compound between the armor and inner jacket prevents the ingress of water. An armor is recommended for all direct buried applications and is optional for duct and aerial applications.

OUTER JACKET: Non-reclaimed medium density polyethylene bonded to the armor. Linear low & high density are available upon request.

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ALCATEL
CABLE SYSTEMS GROUP

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NAM, NRM

Armored Loose Tube
Optical Fiber Cable

Installation

Maximum Pulling Load	600 lbf (2700N)
Maximum Operation Load	225 lbf (1000N)
Maximum Vertical Rise	400 ft.
Temperature Range	
Operating	−40°C to +70°C
Storage	−50°C to +70°C

Mechanical

Crush Resistance (between parallel plates)	460 lbf/in
Impact Resistance (0.5 in hammer radius)	20 times @ 3.7 lbf ft
Temperature Performance (dB/km increase from −40°C to +70°C)	< 0.1 average

NOTE: Cable with enhanced mechanical properties are available upon customer request.

PHYSICAL

Number of Fibers	Number of Buffer Tubes	Minimum Bend Radius @ 600lb Load (in)	Minimum Bend Radius @ No Load (in)	NRM Design Steel CSM Armored OD (in)	NRM Design Steel CSM Armored Wt (lb/1000ft)	NAM Design Dielectric CSM Armored OD (in)	NAM Design Dielectric CSM Armored WT (lb/1000ft)
1 Fiber/ Tube							
4-6	4-6	10	7	.48	116	.52	121
6 Fibers/ Tube							
4-36	6	12	9	.56	149	.56	145
38-42	7	12	9	.60	176	.60	165
44-48	8	13	10	.64	186	.64	180
50-54	9	14	10	.68	204	.68	195
56-60	10	14	11	.71	229	.71	220
62-66	11	15	11	.75	249	.75	240
68-72	12	16	12	.79	274	.79	265
12 Fibers/ Tube							
38-72	6	12	9	.58	150	.58	142
74-84	7	12	9	.61	170	.61	160
86-96	8	13	10	.65	190	.65	181
98-108	9	14	10	.69	212	.69	202
110-120	10	15	11	.73	232	.73	223
122-132	11	15	12	.77	257	.77	246
134-144	12	16	12	.81	282	.81	273
146-156	13	17	13	.85	310	.85	300
158-168	14	18	13	.89	338	.89	328
170-180	15	19	14	.93	365	.93	357

FIBER CHARACTERISTICS

Single-mode	
Maximum Attenuation @ 1310 nm (dB/km) @ 1550 nm (dB/km)	 0.40-0.50 0.30-0.50
Maximum Dispersion 1285-1330 nm (ps/nm•km) 1550 nm (ps/nm•km)	 3.0 18.0
Mode Field Diameter (μm) 8.5 to 9.9	
Cut-off Wavelength (nm)	1130-1290
Zero Dispersion Wavelength	1310 ± 10 nm
Zero Dispersion Slope (ps/nm²•km)	≤ 0.090
Core/Cladding Offset (μm)	≤ 1
Fiber Non-circularity	≤ 2%
Cladding Diameter (μm)	125 ± 2
Coating Diameter (μm)	250 ± 15
Proof Test Level (KPSI)	50

Multimode	50/125	62.5/125
Maximum Attenuation @ 850 nm (dB/km) @ 1300 nm (dB/km)	 2.7 - 4.0 1.0 - 2.0	 3.3 - 4.0 1. 0 - 2.0
Minimum Bandwidth @850 nm (MHz•km) @1300 nm (MHz•km)	 200 - 600 400 - 1000	 100 - 200 200 - 600
Core Diameter (μm)	50 ± 3	62.5 ± 3
Cladding Diameter (μm)	125 ± 2	125 ± 2
Numerical Aperture	0.20 ± 0.02	0.27 ± 0.02
Core Non-circularity	≤ 6%	≤ 6%
Core/Cladding Offset	≤ 6%	≤ 6%
Fiber Non-circularity	≤ 2%	≤ 2%
Coating Diameter (μm)	250 ± 15	250 ± 15
Proof Test Level (KPSI)	50	50

Fiber specifications are for fiber manufactured by Alcatel, specifications may vary for other qualified suppliers. Alcatel reserves the right to improve, enhance, or modify the cable features and specifications. Spare fibers may be used depending on requirements.
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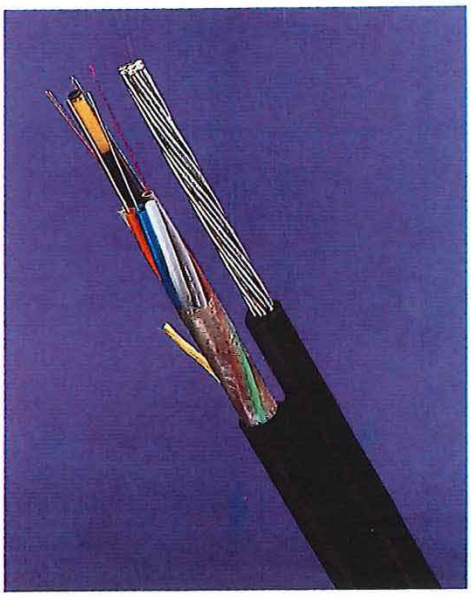
ALCATEL
CABLE SYSTEMS GROUP

CommScope Exhibit 1038

NFM, NBM

Self-Support Figure 8
Optical Fiber Cable

304.01



Description

Alcatel's self-support Figure 8 cable is ideal for aerial installations. The built-in support messenger results in time and installation costs savings. The support member is an integral part of the cable jacket; however, it is readily available for support, gripping, fastening, pulling and tensioning. Installation is fast and easy using standard Figure 8 installation methods and hardware.

Features

Self-support design.

Integral messenger provides installation time and cost savings.

Use existing Figure 8 installation methods and hardware.

Fiber counts from 4 to 144 fibers.

Loose buffer tube design. 6 and 12 fibers per tube minimizes the cable sizes.

Color coded fibers and buffer tubes allow easy identification.

Ripcord for ease of termination.

Construction

INTEGRAL MESSENGER: A flooded ¼", 7-wire, extra high strength, galvanized steel support messenger is laid parallel to the fiber optic cable core and jacketed in an integral extrusion to form a "Figure 8" configuration.

CENTRAL STRENGTH MEMBER (CSM): The dielectric CSM provides strength and buckling resistance during bending and contraction from low temperature extremes.

OPTICAL FIBERS: Manufactured by Alcatel or other qualified vendors. Color coded for easy identification.

BUFFER TUBE: The optical fibers are protected inside color coded, loose buffer tubes, which are stranded around the CSM. The buffer tube maintains the fibers' mechanical and optical integrity and protects them from the effects of cable strain due to tensile, thermal, and vibration loads. The buffer tube is gel-filled to block the ingress of water and contains 6 or 12 fibers.

FLOODING COMPOUND: Blocks the core interstices to prevent the ingress of water.

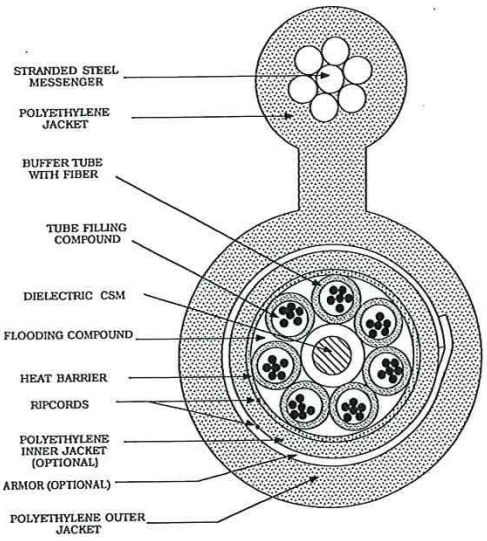
HEAT BARRIER: Provides a heat barrier during jacket extrusion.

RIP CORD: Aramid yarn provides easy cable entry.

INNER JACKET: (Armored design only): Non-reclaimed medium density polyethylene.

ARMOR (Optional): A corrugated, chrome plated, copolymer coated .006" steel tape provides additional protection from bird shot and rodents such as squirrels. A flooding compound between the armor and inner jacket prevents the ingress of water.

OUTER JACKET: Non-reclaimed medium density polyethylene. When armor is used, the outer jacket is bonded to the armor.



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NFM, NBM

Self-Support Figure 8
Optical Fiber Cable

Installation

Temperature Range
Operating −40°C to +70°C
Storage −50°C to +70°C

Loading Capabilities - Meets the loading conditions of heavy, medium, or light storm loading areas as defined in Rule 251 of the National Safety Code (NESC).

Sag and Tension Tables are available providing the recommended sag or tension required for given span lengths.

PHYSICAL

Number of Fibers	NFM Non-Armored			NBM Armored		
	Bend Radius (in)	OD (in)	Height (in)	Bend Radius (in)	OD (in)	Height (in)
6 Fibers/ Tube						
4-36	11	.57	1.03	13	.67	1.13
12 Fibers/ Tube						
38-72	11	.57	1.03	13	.67	1.13
74-84	12	.61	1.07	14	.71	1.17
86-96	13	.65	1.11	15	.76	1.22
98-108	14	.69	1.15	16	.80	1.26
110-120	15	.73	1.19	17	.84	1.30
122-132	16	.78	1.24	18	.88	1.34
134-144	16	.82	1.28	18	.92	1.38

FIBER CHARACTERISTICS

Single-mode	
Maximum Attenuation @ 1310 nm (dB/km) @ 1550 nm (dB/km)	 0.40-0.50 0.30-0.50
Maximum Dispersion 1285-1330 nm (ps/nm*km) 1550 nm (ps/nm*km)	 3.0 18.0
Mode Field Diameter (μm) 8.5 to 9.9	
Cut-off Wavelength (nm)	1130-1290
Zero Dispersion Wavelength	1310 ± 10 nm
Zero Dispersion Slope (ps/nm²*km)	≤ 0.090
Core/Cladding Offset (μm)	≤ 1
Fiber Non-circularity	≤ 2%
Cladding Diameter (μm)	125 ± 2
Coating Diameter (μm)	250 ± 15
Proof Test Level (KPSI)	50

Multimode		
	50/125	62.5/125
Maximum Attenuation @ 850 nm (dB/km) @ 1300 nm (dB/km)	 2.7 - 4.0 1.0 - 2.0	 3.3 - 4.0 1. 0 - 2.0
Minimum Bandwidth @850 nm (MHz*km) @1300 nm (MHz*km)	 200 - 600 400 - 1000	 100 - 200 200 - 600
Core Diameter (μm)	50 ± 3	62.5 ± 3
Cladding Diameter (μm)	125 ± 2	125 ± 2
Numerical Aperture	0.20 ± 0.02	0.27 ± 0.02
Core Non-circularity	≤ 6%	≤ 6%
Core/Cladding Offset	≤ 6%	≤ 6%
Fiber Non-circularity	≤ 2%	≤ 2%
Coating Diameter (μm)	250 ± 15	250 ± 15
Proof Test Level (KPSI)	50	50

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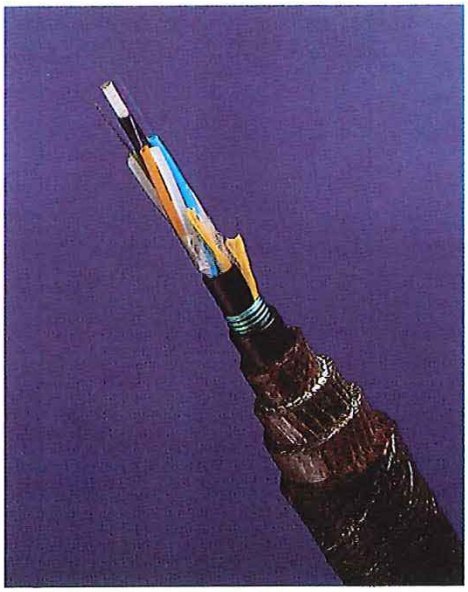
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CABLE SYSTEMS GROUP

CommScope Exhibit 1038

SUBMARINE

Optical Fiber Cable

Alcatel's submarine cable is ideal for underwater applications such as river and bay crossings. The cable is protected by two contrahelically stranded layers of steel wires followed by outer servings of jute or nylon yarns flooded with a tar/asphalt compound.



Features

Ideal for river and bay crossings.

Double armored design for protection.

Sufficient specific gravity to prevent flotation.

Loose buffer tube design. 6 and 12 fiber per tube minimizes the cable sizes.

Color coded fibers and buffer tubes allow easy identification.

Construction

CENTRAL STRENGTH MEMBER (CSM): The dielectric CSM provides buckling resistance during bending and contraction.

OPTICAL FIBERS: Manufactured by Alcatel or other qualified vendors. Color coded for easy identification.

BUFFER TUBES: The optical fibers are protected inside color coded, loose buffer tubes, which are stranded around the CSM. The buffer tube maintains the fibers' mechanical and optical integrity and protects them from the effects of cable strain, due to tensile, thermal, and vibration loads. The buffer tube is gel-filled to block the ingress of water and contains 6 or 12 fibers.

FLOODING COMPOUND: Blocks the core interstices to prevent the ingress of water.

HEAT BARRIER: Provides a heat barrier during jacket extrusion.

INNER JACKET: Non-reclaimed linear low or medium density polyethylene.

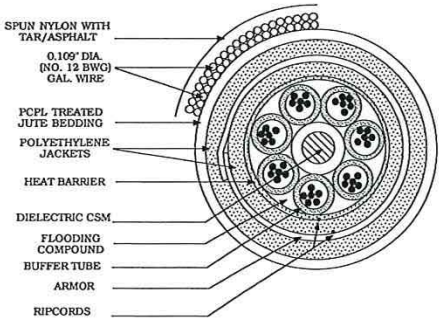
ARMOR TAPE: A corrugated, chrome plated, copolymer coated .006" steel tape. A flooding compound is applied between the armor and inner jacket to prevent the ingress of water.

SECONDARY JACKET: Non-reclaimed linear low or medium density polyethylene bonded to the armor tape.

JUTE BEDDING: A jute bedding is applied to act as a cushion for the two layers of steel wires.

STEEL WIRE ARMORING: Two layers of No. 12 BWG (.109" dia.) galvanized steel wires are contrahelically stranded to provide the necessary protection, strength, and weight to meet submarine requirements.

OUTER YARN: A nylon or jute bedding flooded with an asphalt/tar compound to bond and preserve the yarns.



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SUBMARINE
Optical Fiber Cable

PHYSICAL

Fiber Count	Bend Diameter No Tension (in)	Bend Diameter Install Tension (in)	Outside Diameter (in)	Weight (lbs/1000ft) Air	Weight (lbs/1000ft) Fresh Water	Weight (lbs/1000ft) Sea Water	Estimated Installation Tension @ 300' (lbs)	Maximum Straight Tension (lbs)
04-36	32	60	1.26	1810	1508	1469	2499	14394
38-72	32	60	1.28	1928	1607	1566	2535	15058
74-84	35	60	1.31	2005	1670	1628	2553	15267
86-96	35	60	1.35	2044	1704	1661	2560	15334
98-108	35	60	1.42	2121	1761	1716	2625	15618
110-120	36	60	1.60	2213	1838	1793	2650	15921
122-132	36	60	1.63	2763	2297	2239	2755	16317
134-144	40	60	1.65	2933	2436	2375	2798	16625

Environmental

Maximum Cross Current	2.5 ft./sec.
Maximum Water Depth	300 ft.

FIBER CHARACTERISTICS

Single-mode	
Maximum Attenuation @ 1310 nm (dB/km) @ 1550 nm (dB/km)	 0.40-0.50 0.30-0.50
Maximum Dispersion 1285-1330 nm (ps/nm*km) 1550 nm (ps/nm*km)	 3.0 18.0
Mode Field Diameter (μm) 8.5 to 9.9	
Cut-off Wavelength (nm)	1130-1290
Zero Dispersion Wavelength	1310 $\pm$ 10 nm
Zero Dispersion Slope (ps/nm^2*km)	$\leq$ 0.090
Core/Cladding Offset (μm)	$\leq$ 1
Fiber Non-circularity	$\leq$ 2%
Cladding Diameter (μm)	125 $\pm$ 2
Coating Diameter (μm)	250 $\pm$ 15
Proof Test Level (KPSI)	50

Multimode	50/125	62.5/125
Maximum Attenuation @ 850 nm (dB/km) @ 1300 nm (dB/km)	 2.7 - 4.0 1.0 - 2.0	 3.3 - 4.0 1. 0 - 2.0
Minimum Bandwidth @850 nm (MHz*km) @1300 nm (MHz*km)	 200 - 600 400 - 1000	 100 - 200 200 - 600
Core Diameter (μm)	50 $\pm$ 3	62.5 $\pm$ 2
Cladding Diameter (μm)	125 $\pm$ 2	125 $\pm$ 2
Numerical Aperture	0.20 $\pm$ 0.02	0.27 $\pm$ 0.02
Core Non-circularity	$\leq$ 6%	$\leq$ 6%
Core/Cladding Offset	$\leq$ 6%	$\leq$ 6%
Fiber Non-circularity	$\leq$ 2%	$\leq$ 2%
Coating Diameter (μm)	250 $\pm$ 15	250 $\pm$ 15
Proof Test Level (KPSI)	50	50

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ALCATEL
CABLE SYSTEMS GROUP

CommScope Exhibit 1038

LIGHT-RAY™ SPLICE

400.01

Use

Precision connection of single-mode optical fibers from one cable to another in buried, aerial, and underground applications.

Features and Benefits

FASTEST SPLICING SYSTEM
- Splices 12 fibers simultaneously
- Installation time- less than 2 minutes per fiber
- Time efficient
- Low cost

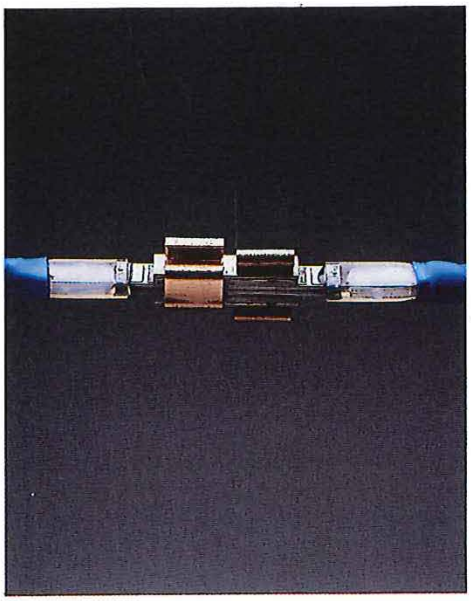
EASY TO INSTALL
- Pre-connectorized loose tube cable
- Available with pulling eyes
- Flexible spiral tubing
- Manhole compatible

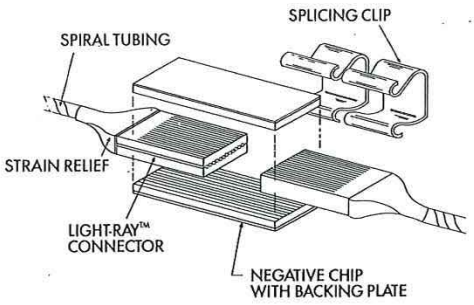
AT&T* COMPATIBLE
- Array splice
- Assembly procedures
- UCB1 closure
- Accessories and tool kits

*AT&T is a Trademark of AT&T Technologies, Inc.

PROVEN RELIABILITY
- Environmentally stable
- Strain relieved
- Consistent performance

PERMANENT BUT RE-ENTERABLE





LIGHT-RAY™ SPLICE ASSEMBLY

Assembly

The Light-Ray™ Splice consists of 12 optical fibers placed between the precision etched channels of two silicon (positive) chips, then is inserted between two silicon (negative) chips. Connectorization between Light-Rays is accomplished by alignment of the precision etched channels on the outside of the Light-Rays and the inside of the negative chips. Index matching gel is applied at the junction of Light-Rays and allowed to cure. The Light-Ray assembly is held together by the use of two metal spring clips.

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LIGHT-RAY™ SPLICE

Associated Hardware

Assembly Tool

Assembly Kit: Kit of two negative chips and two spring clips.

Index Matching Gel: RTV compound with an index matching gel.

Pulling Eye

Specifications

Material	Grooved Silicon Chips
Assembly	Factory Pre-connectorized
Optical Performance: Loss Per Splice	.45 dB Average — 1.0 dB Maximum
Operating Temperature	−40° C to +70° C
Fibers Per Connector	2 — 12
Connectors Per Cable End	1 — 8
Compatibility	*AT&T Array Splice

*AT&T is a Trademark of AT&T Technologies Inc.

The pre-connectorized cable assembly shown in Figure 1 is protected by the pulling eye assembly shown in Figure 2.

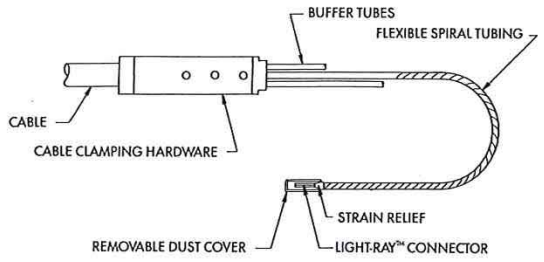


Fig. 1: CABLE ASSEMBLY

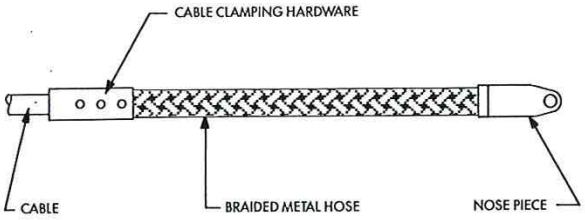


Fig. 2: PULLING EYE ASSEMBLY

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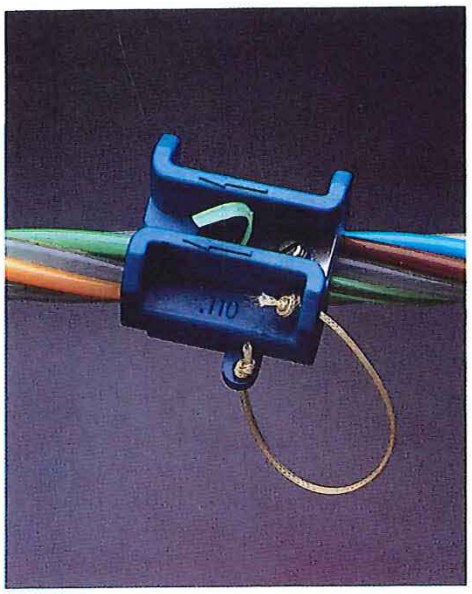
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POCKET SHAVER

401.01

Features

- A must for partial cable outages and mid span entries.
- Used with either slack or taut cable conditions.
- Reduces restoration time.
- Lowers construction and labor costs by making unplanned route junctions possible.
- Worldwide acceptance by fiber optic users and manufacturers.

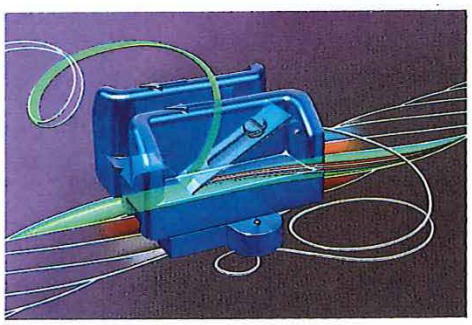


Description

The ALCATEL "pocket shaver" is a unique and innovative device designed to serve both outside plant and fiber optic system design personnel. The pocket shaver can provide easy entry into "in-service" cables for identification and access to operating or unused fibers. This capability will allow you to select individual fibers for repair or rerouting during unplanned route junctions or partial cable outages.

The "pocket shaver" is easy to use. Just set the blade depth with the included gauge and position the two-piece tool around the buffer tube. Then, just push the tool along the tube. The tool opens the tube by shaving off a section of the buffer tube, allowing access to the fibers contained inside.

The pocket shaver can be used with equal success on both slack and taut cable of continuous or reverse lay construction. When used on cables in a slack condition, the tubes can be exposed and opened, the fibers removed and the empty tubes cut away . . . leaving all fibers completely exposed and accessible. When the tool is used on taut cable, the tubes and core are left essentially undisturbed and intact. This provides greater protection for the unaccessed fibers. Because cable construction provides some slack in the lay of the buffer tubes, the tool can be positioned completely around the tube, just as it is in the slack condition. This ensures precise, accurate shaves.



Specifications

Material: High strength engineering plastic
Dimensions: 1.0" x 0.9" x .67"

Tool Sizes

ALCATEL pocket shavers are sold in kits of one, two, three or four tools and contain the following support items: a carrying case; special screwdriver; spare blades; washers and screws; and instruction manual.

*Tools are currently available from stock to fit the following industry standard buffer tube diameters.

.140 - 3.55 mm	.095 - 2.4 mm
.122 - 3.10 mm	.085 - 2.2 mm
.118 - 3.0 mm	.081 - 2.05 mm
.110 - 2.8 mm	.075 - 1.9 mm
.106 - 2.7 mm	.070 - 1.8 mm
.102 - 2.6 mm	.067 - 1.7 mm
.098 - 2.5 mm	.055 - 1.45 mm

*NOTE: To further support fiber optic cable users, ALCATEL can provide custom "pocket shaver" sizes. Please consult the factory for price and delivery.

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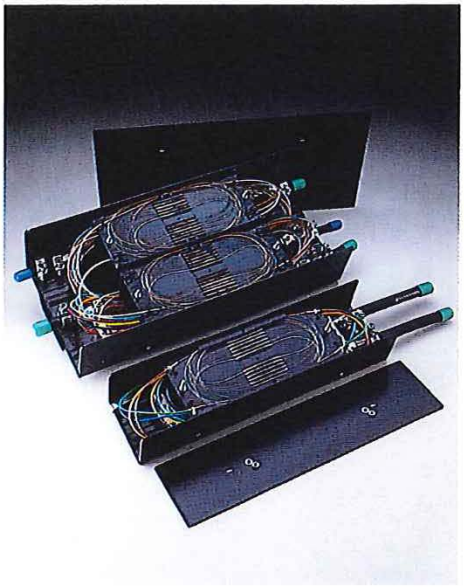
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FIELD SPLICE ORGANIZERS

Features

- Economical
- Multiple configuration capability allows fiber counts from 1 to 144.
- Simple, easy to assemble.
- Fits industry standard enclosures.
- Duct, aerial and direct burial installation.
- Field proven splice protection method.



Description

The basic component in ALCATEL'S fiber splice protection package is the splice organizer. ALCATEL has designed several splice organizers to accommodate a variety of cable designs and installation environments.

There are three organizers available for loose tube fiber optic cables. The standard organizer is designed for single-fiber-per-tube (SFPT) cables and will house up to 12 fusion splices in duct, aerial or direct buried installations.

There are two organizers available for the high fiber count multiple-fiber-per-tube (MFPT) cable. ALCATEL MFPT cables employ more than one fiber per buffer tube in order to offer high fiber densities in a compact cable design. The first MFPT organizer handles between 4 and 96 splices and the second handles between 97 and 144 fusion and/or mechanical splices.

ALCATEL loose tube organizers provide individual strain relief for each buffer tube and fiber in the cable and easy re-access to the splices in the event it is necessary. The organizers are constructed out of non-corrosive aluminum. A baked-on black polyester finish on the units provides excellent protection from the environment. The hardware in the organizer is made of stainless steel. All organizers are designed to fit into industry standard splice cases.

Local Loop Applications

In addition to the straight-through trunk cable splice, this organizer can accommodate up to a seven-way splice. In essence, the large capacity organizer provides for the strain relief and protection of the splices at the junction between a main trunk cable (up to 144 fibers) and up to seven smaller distribution cables. This multiple cable distribution capability makes the organizer well-suited to local loop applications where high speed fiber optic links connected to phone company central offices are brought directly into buildings of commercial or industrial users. As user sophistication and demand for services (especially video) grows, fiber optic local loops will be an economical way to meet ever increasing bandwidth requirements.

Assembly

ALCATEL'S splice organizers are designed for ease of assembly in the field. The cable is secured to the organizer body using aero-seal clamps. Sheath armor and steel central strength members are easily grounded using hardware provided.

Once the cable is secured and grounded the fiber buffer tubes are routed to the appropriate trays and firmly secured, allowing the spliced fiber to be stored in the tray under zero tension.

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FIELD SPLICE ORGANIZERS

Construction

Material
5052 Aluminum

Finish
Medium Gloss Black
Polyester Powder #102

Hardware
Stainless Steel

Grounding
#6 AWG bonding ribbon incorporated in unit.

Tools Needed for Assembly
3/8" can wrench
flat head screwdriver
needle nose pliers
crimp tool and die set

Specifications

1-12 FIBER(SFPT) ORGANIZER

Part Number

1-6 Fiber Organizer	HB-91006
7-12 Fiber Organizer	HB-91012

Function
Organizes and protects fibers splices within a splice closure.

Fiber Splice Capacity - 12

Dimensions (LxWxH)
16 in. x 4.5 in. x 2.5 in.
(41 cm x 11 cm x 6 cm)

Closure Compatibility
Compatible with most standard industry closures. Minimum closure length required is 20 inches.

Included with Organizer
1 splice tray per six splices (up to 2 trays)
12 brass eyelets per tray
6 glass sleeves per tray
1 split bolt connector
2 shield bond connectors

4-96 FIBER (MFPT) SPLICE ORGANIZER

Part Number

4-24 Fibers	HB-91024
23-36 Fibers	HB-91036
35-48 Fibers	HB-91048
47-60 Fibers	HB-91060
59-72 Fibers	HB-91072
71-84 Fibers	HB-91084
81-96 Fibers	HB-91096

Function
Organizes and protects fiber splices within a splice closure.

Fiber Splice Capacity - 96

Dimensions (LxWxH)
16 in. x 4.5 in. x 2.5 in.
(41 cm x 11 cm x 6 cm)
Height will vary with splice capacity.
Maximum height will be 4.75 inches.

Closure Compatability
Compatible with most standard industry closures.

Included with Organizer
1-4 splice tray per six or twelve splices (up to 8 trays)
2-4 brass eyelets per tray
6 or 12 glass sleeves per tray
1 split bolt connector
2 shield bond connectors

97-144 FIBER (MFPT) SPLICE ORGANIZER

Part Number

97-120 Fibers	HB-91120
117-144 Fibers	HB-91144

Function
Organizes and protects fiber splices within a splice closure.

Fiber Splice Capacity - 144

Dimensions (LxWxH)
18 in. x 8-3/8 in. x 5 in.
(46 cm x 21 cm x 13 cm)

Closure Compatability
Compatible with 2-Type closures or equivalent.

Included with Organizer
1 splice tray per twelve splices (up to 12 trays)
2 brass eyelets per tray
12 glass sleeves per tray
Split bolt connectors
Shield bond connectors

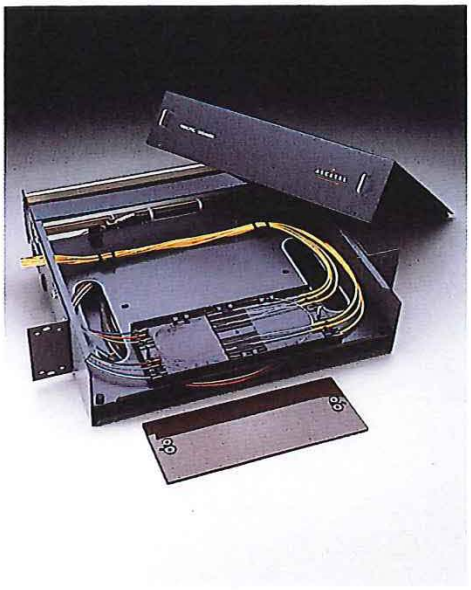
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ALCATEL

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RACK MOUNT ORGANIZER

403.01



Features

- Necessary for terminating outside plant cable
- Extendable splice trays
- Economical
- Easy to assemble
- Mounts in std. 19″ or 23″ racks
- Capable of multiple configurations
- Requires minimal rack space (3.5″)

Description

Alcatel's rack mounted fiber optic organizer is intended for applications where pre-connectorized pigtails are required. It has been designed to address a variety of situations encountered at the termination site. The functional unit can be rack mounted in standard 19″ or 23″ telephone equipment bays. The one piece front panel/cover of the organizer is removable to provide maximum space to complete the pigtailing procedure. In crowded equipment bays, the organizer assembly tray can be secured in an extended position to provide ready access to the splice trays.

The rack mounted organizer houses up to 96 fusion splices in a rugged, compact case. The organizer body is constructed out of non-corrosive aluminum with a painted gray finish to harmonize with the central office environment. All hardware in the organizer is made of stainless steel.

Up to four splice trays capable of handling single fiber per tube (SFPT) or multiple fiber per tube (MFPT) cable designs are housed in the main body. The trays provide a secure mounting point for the cable buffer tubes thus allowing storage of the spliced optical fibers under zero tension.

Type of tray used will be determined by cable design and fiber count.

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RACK MOUNT ORGANIZER

Assembly

The flexible design of the rack mounted fiber optic organizer permits easy assembly at the termination site. The optical cable enters from the rear of the cabinet and is anchored to the bottom of the unit. The cable is then dressed out to the desired length for pigtailing and a service loop easily stored under the organizer's assembly tray.

Once the cable is secured and dressed out, the cable buffer tubes are strain relieved in the splice tray with the use of brass eyelets which are crimped over the buffer tubes. Small flanges on the eyelet fit into special slots on the tray to prevent the buffer tube from sliding forward and backward. Metal retaining tabs located on either side of each groove in the tray are pinched down to firmly fix the tubes in place. The pre-connectorized pigtails are held in place with the tray tabs on the other end of the splice tray.

After the fiber channels in the cable have been spliced to the pigtails, and the splice trays have been stacked and secured to the assembly tray, the pigtails are further strain relieved before they exit the organizer by rubber cable clips located at the rear of the unit. Each clip provides strain relief for up to 12 pigtails. The pigtails are then ready for distribution to the user's terminal equipment.

Adjustable mounting brackets on the organizer allow the unit to be physically compatible with a variety of terminal equipment. By reversing the brackets, the organizer can be mounted in either 19" or 23" equipment racks. Provision has also been made to move these brackets forward or backward on the organizer to allow a 4, 5 or 6 inch equipment extension beyond the rack. This way, the organizer can be mounted flush with a variety of equipment. Because all cable and pigtails enter and exit the organizer at the rear of the unit, behind the brackets, the unit presents a neat, orderly appearance.

Every rack mounted organizer is provided with the appropriate number of splice trays, brass eyelets, glass sleeves and rubber cable slips needed for assembly.

Also available, is the body of the organizer without the splice trays. This can be used for slack pigtail storage, no-splice applications or for modification to utilize splice trays other than Alcatel's.

Specifications

Part Number

1-12 Fiber Organizer	H8006-12
13-24 Fiber Organizer	H8006-24
25-48 Fiber Organizer	H8006-48
49-72 Fiber Organizer	H8006-72
73-96 Fiber Organizer	H8006-96
No-Splice Organizer	H8006-00

Function
Organizes and protects fiber splices within an equipment rack.

Fiber Splice Capacity - 96

Dimensions (LxWxH)
16 in. x 16 in. x 3.5 in.
(40 cm x 40 cm x 9 cm)

Construction Material
Aluminum

Finish
Baked on enamel

Hardware
Stainless Steel

Mounting Requirements
Rack Mount in 19" or 23" equipment rack.
Flush mount, optional.

Included with Organizer
Splice trays*
Brass eyelets*
Glass sleeves*
Rubber Cable Clips

*not included with H-8006-00

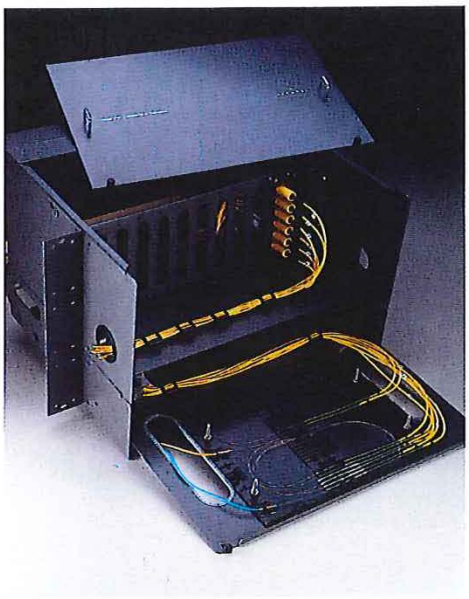
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FIBER OPTIC DISTRIBUTION TERMINAL

404.01



Features

- Quick cross-connect capability
- Economical
- Easy to assemble
- Will accept Biconic, FC, D4, SMA and other commonly used fiber optic connectors
- Bulkhead panels can be purchased separately for system upgrade
- Convenient system access point for testing and troubleshooting
- Ideal demarcation point for the separation of inside and outside plant responsibility
- Mounts easily in standard Telco equipment bays
- Can be used as an interconnect panel and splice organizer

Description

The Fiber Optic Distribution Terminal offers fiber optic cable users an efficient, flexible way to organize and protect up to 144 pigtail splices and route them, via a self-contained patch panel, to the transmission equipment. The modular distribution terminal is designed around ALCATEL'S rack mounted organizer. A specially-designed patch panel module is mounted above the organizer body and the entire assembly is enclosed in an aluminum cabinet measuring 10.5 inches high for the standard terminal and 17.5 inches high for the high capacity.

The standard patch panel designs are available with Biconic, FC, D4 and SMA bulkhead connectors or other commonly used connectors.

A major benefit of the Distribution Terminal is that it provides the user with a clear line of demarcation between inside and outside plant responsibility. The patch panel offers a convenient test point, independent of the transmission equipment, for the fiber optic cable. This allows the user to easily pinpoint problem areas and assign maintenance responsibility.

During cable cuts, the Distribution Terminal provides an access point to quickly cross-connect the systems to patch around the problem. In addition, the patch panel facilitates networking applications by providing a logical and convenient distribution site.

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FIBER OPTIC DISTRIBUTION TERMINAL

Assembly

The flexible design of the fiber optic distribution terminal permits easy assembly at the termination site. The unit is totally accessible from the front and the cabinet is designed to allow the cable to enter from the top or the bottom. For user convenience, up to 10 feet of buffer tube service loop can be easily stored under the assembly tray on the bottom of the unit. The aluminum assembly tray provides a 1.5 square foot area for splicing and can be secured in an extended position to provide ready access to the splice trays and maximum space to facilitate termination in crowded equipment bays.

The Distribution Terminal holds up to six aluminum splice trays for either single fiber per tube or multiple fiber per tube cable designs. Each of these trays is equipped to provide strain relief for up to 24 spliced fibers. The number of fibers in the user's cable will determine the number and type of splice trays provided.

After the fibers in the cable have been spliced to the pigtails, and the splice trays have been stacked and secured to the assembly tray, the pigtails are further strain relieved by rubber cable clips located at the rear of the unit.

The pigtails are then ready for distribution to the rear of the patch panel. Jumper cable connections to the pigtails are made at the front of the panel.

For biconic connectors, build-out blocks (1000C) are included with each Distribution Terminal. Build-outs with or without attenuation must be ordered separately. For all connectors other than Biconic, bulkhead feed-thru fittings must be ordered separately.

Adjustable mounting brackets on the terminal allow the unit to be physically compatible with any size equipment bay. By reversing the brackets, the Distribution Terminal can be mounted in either 19" or 23" equipment racks. Provision has also been made to move these brackets forward or backward on the terminal to allow a 4, 5 or 6 inch equipment extension beyond the rack.

Specifications

Part Number

Biconic (HT81xxx)

1-12 Fiber	HT81012 (Single Fiber/Tube)
1-24 Fiber	HT81024
25-48 Fiber	HT81048
49-72 Fiber	HT81072
73-96 Fiber	HT81096
97-120 Fiber	HT81120
121-144 Fiber	HT81144

SMA (HT82xxx)
(for all standard SMA-type connectors)

1-12 Fiber	HT82012 (Single Fiber/Tube)
1-24 Fiber	HT82024
25-48 Fiber	HT82048
49-72 Fiber	HT82072
73-96 Fiber	HT82096

FC, D3, D4 (HT83xxx)

1-12 Fiber	HT83012 (Single Fiber/Tube)
1-24 Fiber	HT83024
25-36 Fiber	HT83036
37-48 Fiber	HT83048
49-72 Fiber	HT83072

Function

Organizes and protects up to 144 pigtail splices and routes them, via a self-contained patch panel, to the transmission equipment.

Fiber Pigtail Splice Capacity - 144

Dimensions (LxWxH)

Standard 16 in. x 16 in. x 10.0 in.

High Capacity 16 in. x 16 in. x 17.5 in.

Construction

Material - Aluminum

Finish - Baked on Enamel

Hardware - Stainless Steel

Mounting Requirements

Rack mount in 19" or 23" equipment rack.

Included with Fiber Optic Distribution Terminal

Rack Mounted Organizer
Splice Trays
Brass Eyelets
Glass Sleeves
Rubber Cable Clips
Patch Panel Module
Buildout Blocks (Biconic unit only)

All units except Biconic require bulkheads to be purchased separately.

Connector Type	Bulkhead P/N
FC	H0081429
D4	H0081411
SMA	H0034664

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PATCHCORDS AND PIGTAIL CABLE

Features

- Required for interfacing optical equipment and cable.
- Single-mode and multimode cable and connectorized assemblies are available.
- Designed for reliable operation in harsh environments and over a wide temperature range.
- Flame retardant PVC outer jacket.
- Mechanically strippable fiber coating to ease splice preparation.
- Only premium optical fiber is used to insure minimum connector and splice loss.
- A wide variety of industry standard connectors are available.
- Custom lengths are available for both pigtails and patchcords.



Description

Alcatel utilizes its tight buffered simplex cable for standard pigtail and patchcord applications. This cable starts with a single fiber chosen for superior geometry characteristics. A 900 micron polyvinylchloride (PVC) buffer is extruded onto the fiber. High strength Kevlar is helically stranded around the buffered fiber to provide protection and tensile strength. The cable is provided with an outer jacket of flame retardant PVC which is extruded directly over the Kevlar. This type of construction produces a pigtail or patchcord which is both rugged and flexible. The outer jacket and Kevlar can be easily removed and the 900 micron buffer coating mechanically stripped for quick preparation of the fiber end.



To aid its customers in the termination of their fiber optic cable systems, Alcatel offers a variety of readily available single-mode and multimode pigtail/patchcord (jumper) cables in standard two, five and ten meter lengths. A pigtail cable is pre-connectorized at one end only. The other cable end is left unterminated to allow for splicing. A patchcord cable is terminated with connectors at both ends. Standard single-mode and multimode pigtail assemblies are provided with biconic, FC, D4 and ST connectors. Other industry standard connectors and custom cable lengths can be provided.



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PATCHCORDS AND PIGTAIL CABLE

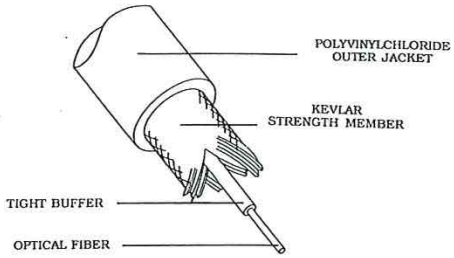
CABLE SPECIFICATIONS

Cable Size - 0.12 inches (3 mm)

Cable Weight - 6 lbs/1000 ft (9 kg/km)

Outer Jacket Color -
Multimode: Orange (50 um)
Gray (62.5 um)
Single-mode: Yellow

Operating Temperature - −20°C to +70°C



FIBER SPECIFICATIONS

Single-mode	
Maximum Attenuation @ 1310 nm (dB/km)	≤0.8
Mode Field Diameter (μm)	9.1 ± .6
Cut-off Wavelength (nm)	1130-1220
Core/Cladding Offset (μm)	≤ .5
Core Non-circularity	≤ 5%
Cladding Non-circularity	≤ 2%
Cladding Diameter (μm)	125 ± 2
Coating Diameter (μm)	900

Multimode		
	50/125	62.5/125
Maximum Attenuation @ 850 nm (dB/km) @ 1300 nm (dB/km)	 ≤ 4.0 ≤ 2.0	 ≤ 4.0 ≤ 2.0
Minimum Bandwidth @850 nm (MHz*km) @1300 nm (MHz*km)	 400 600	 150 500
Core Diameter (μm)	50 ± 3	62.5 ± 3
Cladding Diameter (μm)	125 ± 2	125 ± 2
Numerical Aperture	.20 ± 0.02	.27 ± 0.02
Core Non-circularity	≤ 6%	≤ 6%
Core/Cladding Offset (μm)	≤ 3	≤ 3
Coating Diameter (μm)	900	900

For requirements different than those listed above, please contact our Customer Service Department.

Alcatel reserves the right to improve, enhance, or modify the cable features and specifications.

ORDERING INFORMATION

PIGTAIL ASSEMBLIES	PART NUMBER
Biconic (single-mode) 2 meter length	HB65002-01
FC (single-mode) 5 meter length	HB65005-14
D4 (single-mode) 10 meter length	HB65010-03
Biconic (multimode) 2 meter length	HB66002-01
SMA (multimode) 5 meter length	HB66005-02
ST (multimode) 10 meter length	HB66010-10
PATCHCORD ASSEMBLIES	
Biconic/Biconic (single-mode) 5 meter length	HB67005-01
FC (single-mode) 5 meter length	HB67005-14
D4 (single-mode) 10 meter length	HB67010-03
ST (multimode) 10 meter length	HB68010-10
HYBRID PATCHCORD ASSEMBLIES	
ST to SMA (multimode) 10 meter length	HB68010-11
FC to D4 (multimode) 10 meter length	HB68010-16
Biconic to FC (single-mode) 10 meter length	HB67010-15

NOTE: Other connectors, hybrid assemblies and cable lengths are available. Please consult customer service with your needs. All factory installed connectors are guaranteed to induce ≤ 1.0 dB loss per mated pair.

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RAPID RESTORATION KIT

406.01

Features

- Minimum downtime
- Self-contained package

Description

In the event that an operating fiber system experiences failure as a result of cable damage, Alcatel offers a Rapid Restoration Kit containing the necessary cable, tools, and supplies to complete temporary repairs. The Rapid Restoration Kit allows the system operator to achieve operational status with minimum downtime.

The Rapid Restoration Kit is built around the Alcatel Splice Organizer and the GTE Elastomeric Splice. This mechanical splicing technique does not require epoxy, fiber polishing, a power supply or other specialized equipment for assembly. The kit can be purchased with or without 100 meters of the appropriate cable for your system.

The basic components of the Rapid Restoration Kit are:

- 100 meters of single-mode cable—optional.*
- Elastomeric Splices—to quickly splice the fibers.
- Splice Organizers—one per splice point required to protect splices.
- High Quality Scribe—to cleave fiber ends prior to splicing.
- Non-Tox Stripper (4 oz.)—a non acidic, non-toxic solvent used to strip the buffer coating off the optical fiber.
- Freon Degreaser (16 oz.)—to remove the coating residue from the fibers after stripping.
- Lint-free Wipes—to wipe the fibers.
- Coax Cable Stripper—to ring the cable buffer tubes for removal.
- Hysol Cable Grommets**—appropriate number and size to fit Type 50 and Type 51 closures.

Alcatel offers the Rapid Restoration Kit in several versions to accommodate a variety of customer situations. Packaged compactly in a portable carrying case, the Kit is available to complete temporary repairs on 6, 12, 18, 24, 36 or 48 fiber cables at two or four separate splice locations.



Description and Part Number

Restoration Kit:	With Cable	Without Cable
2 splice locations:		
6 fiber capacity kit	HB-70206	HB-71206
12 fiber capacity kit	HB-70212	HB-71212
18 fiber capacity kit	HB-70218	HB-71218
24 fiber capacity kit	HB-70224	HB-71224
36 fiber capacity kit	HB-70236	HB-71236
48 fiber capacity kit	HB-70248	HB-71248
4 splice locations:		
6 fiber capacity kit	HB-70406	HB-71406
12 fiber capacity kit	HB-70412	HB-71412
18 fiber capacity kit	HB-70418	HB-71418

*Call for availability and delivery.
**If Hysol cable grommets are not required for your application, notify customer service when placing your order.

Alcatel reserves the right to improve, enhance or modify the product features and specifications without prior notification.

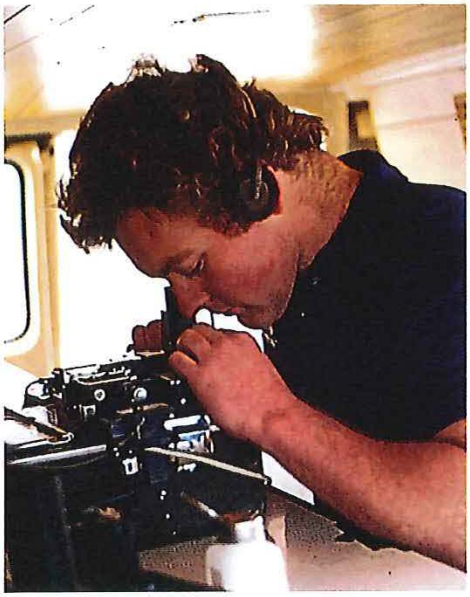
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Description

Alcatel offers a wide range of customer services such as splicing, testing, troubleshooting and technical assistance. For more information on the services listed below, please contact our customer service department at 1-704-459-9787.



Site Survey

The site survey is customized to meet individual requirements, and minimize installation problems. Alcatel will provide an experienced field engineer to inspect the proposed cable route. A survey report will be issued with recommendations which may include:

- Potential obstacles
- Cable placement plans
- Expected end-to-end loss
- Number of splice points and their location
- Splicing and termination hardware required

Installation

Alcatel can provide experienced field personnel to oversee the placement of fiber optic cable.

Splicing

Alcatel offers complete splicing services from preparation of outside plant cable to field and pigtail splicing, including documentation and final report.

- Splice preparation
- Fusion splicing
- Mechanical splicing
- Splice loss measurement and documentation
- Encapsulation

Testing

Alcatel can provide field testing of single and multimode optical fibers using state-of-the-art test equipment.

- Pre-or post installation continuity checks
- Attenuation @ 850 nm, 1300 nm, and 1550 nm
- Bandwidth @ 850 nm and/or 1300 nm
- Fault location
- Splice loss measurements

Training

Alcatel can provide training in every aspect of fiber optics, from theory, to hands on practical experience.

- Optical waveguide theory
- Installation practices
- Splice closure preparation
- Fusion and mechanical splicing
- Splice loss measurements (OTDR)
- Troubleshooting
- Emergency restorations
- End-to-end loss measurements

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CUSTOMER SERVICES

Hardware

Alcatel can supply all hardware and consumables needed for fiber optic cable splicing. Our experienced field engineers will help you select the accessories best suited for your particular application.

- Pre-connectorized
- Field splice organizers
- Rack mount organizers
- Distribution terminals
- Pigtails and patchchords (SM and MM)
- Emergency restoration kits
- Splice closures (field)
- Encapsulant
- Consumables

Pocket Shaver

Alcatel further supports your needs with the innovative Pocket Shaver. This tool allows entry into in-service cables, a must for partial cable outages and route junctions. This can save you time and money in construction, labor and materials.

- Easy to use, craft friendly
- Slack or taut cable conditions
- Designed for use with loose-tube cables
- Available sizes* include:

.055″	.098″
.067″	.102″
.070″	.106″
.075″	.110″
.081″	.122″
.085″	.118″
.095″	.140″

*Pocket Shaver sizes are determined by the type and manufacture of cable being accessed.

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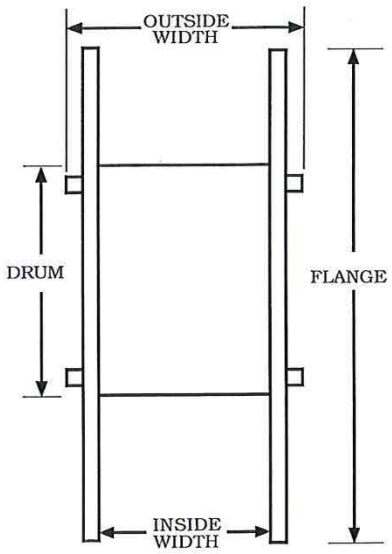
CommScope Exhibit 1038


General
Information

Wood Reel Data

Reel Designation	Flange (in)	Flange (m)	Dimensions Width Inside (in)	Inside (m)	Outside (in)	Outside (m)	Drum (in)	Drum (m)	Weight Per Reel (lbs)	(kgs)
R-29	29	.74	12.5	.32	14.75	.37	12	.30	39	18
R-30	30	.76	21	.53	23.25	.59	15	.38	45	20
R-34	34	.86	21	.53	23.75	.60	15	.38	66	30
R-38*	38	.97	27	.69	30.25	.77	20	.51	106	48
R-40	40	1.02	27	.69	30.25	.77	20	.51	114	52
R-44*	44	1.12	27	.69	30.25	.77	20	.51	130	59
R-46	46	1.17	40	1.02	43.25	1.10	24	.61	161	73
R-50*	50	1.27	27	.69	30.25	.77	20	.51	153	69
R-52	52	1.32	40	1.02	44.25	1.12	30	.76	261	118
R-55*	55	1.40	40	1.02	44.25	1.12	30	.76	290	132
R-59*	59	1.50	40	1.02	44.25	1.12	32	.81	326	148
R-63	63	1.60	40	1.02	44.25	1.12	32	.81	361	164
R-64*	64	1.63	40	1.02	44.25	1.12	34	.86	373	169
R-67*	67	1.70	40	1.02	44.25	1.12	34	.86	402	182
R-70*	70	1.78	40	1.02	44.25	1.12	34	.86	443	201
R-74	74	1.88	40	1.02	44.25	1.12	36	.91	580	263
R-78*	78	1.98	39.75	1.01	45.25	1.15	40	1.02	735	333
R-80	80	2.03	39	.99	45.25	1.15	40	1.02	770	349
R-85	85	2.16	39.75	1.01	45.25	1.15	42	1.07	854	387
R-84*	84	2.13	46	1.17	52.25	1.33	45	1.14	885	401
R-88*	88	2.24	46	1.17	52.25	1.33	48	1.22	946	429
R-94	94	2.39	46	1.17	52.25	1.33	50	1.27	1143	518
R-96*	96	2.44	46	1.17	52.25	1.33	52	1.32	1191	540
R-100	100	2.54	46	1.17	52.25	1.33	54	1.37	1360	617
R-102	102	2.59	46	1.17	52.25	1.33	56	1.42	1406	638
R-104	104	2.64	46	1.17	52.25	1.33	58	1.47	1479	671
R-108	108	2.74	46	1.17	52.25	1.33	60	1.52	1580	717

*Used for Copper and Optical Cables.



Steel Reel Data

Reel Designation	Flange (in)	Flange (m)	Dimensions Width Inside (in)	Inside (m)	Outside* (in)	Outside* (m)	Drum (in)	Drum (m)	Weight Per Reel (lbs)	(kgs)
413	48	1.22	18.0	.46	24.0	.61	30	.76	216	98
414	50	1.27	25.4	.65	31.4	.80	30	.76	250	114
415	56	1.42	25.4	.64	29.5	.75	30	.76	282	128
416	66	1.68	25.4	.65	31.6	.80	36	.91	360	164
417	78	1.98	25.4	.64	32.5	.82	42	1.07	566	257
420	84	2.13	39.8	1.01	44.5	1.13	42	1.07	782	355
487	96	2.44	44.5	1.13	52.9	1.34	42	1.07	1400	636

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ALCATEL CABLE SYSTEMS GROUP

Optical Cables/Reel Capacities (Feet)

FLANGE	38	44	50	55	59	64	67	70	78	84	88	96
TRAVERSE	27	27	27	40	40	40	40	40	39.75	46	46	46
DRUM	20	20	20	30	32	34	34	34	40	45	48	52
OUTSIDE WIDTH	30.25	30.25	30.25	44.25	44.25	44.25	44.25	44.25	45.25	52.25	52.25	52.25
CABLE OD (in)												
0.400	9749	14477	20717	29899	35673	38815	45159	51836	61439	79823	88640	107442
0.450	7260	11417	16256	23728	27428	30022	35636	40064	47923	62534	69959	83718
0.500	6216	9463	13209	19741	23008	25273	29089	33091	39828	52114	56605	68612
0.550	4882	7805	10622	15398	18218	20148	23581	27201	31627	41614	45414	55919
0.600	4163	6386	8955	13522	15128	16823	19969	22170	27167	35847	37570	46936
0.650	3540	5162	7499	11060	13355	13957	16841	18866	23297	29396	32327	39179
0.700	2997	4500	6223	9689	10969	12328	14110	15973	19909	25128	27742	33965
0.750	2519	3912	5525	8477	9645	10888	12560	14313	16921	22614	23704	29363
0.800	2098	3388	4897	7399	8466	9605	11175	11991	15203	19196	21347	25275
0.850	2004	2918	4329	6434	7410	8455	9931	10700	12782	17243	19230	22884
0.900	1652	2806	3815	5568	6461	7420	8807	9532	11432	15479	16226	20722
0.950	1585	2404	3346	5346	6204	6484	7788	8471	10206	13877	14547	18758
1.000	1286	2042	2920	4604	5390	5636	6861	7504	9089	12417	13017	15892

Optical Cables/Reel Capacities (Meters)

FLANGE	38	44	50	55	59	64	67	70	78	84	88	96
TRAVERSE	27	27	27	40	40	40	40	40	39.75	46	46	46
DRUM	20	20	20	30	32	34	34	34	40	45	48	52
OUTSIDE WIDTH	30.25	30.25	30.25	44.25	44.25	44.25	44.25	44.25	45.25	52.25	52.25	52.25
CABLE OD (in)												
0.400	2971	4412	6314	9113	10873	11830	13764	15799	18726	24329	27016	32747
0.450	2213	3480	4955	7232	8360	9150	10861	12211	14606	19059	21322	25516
0.500	1895	2884	4026	6017	7012	7703	8866	10086	12139	15884	17252	20912
0.550	1488	2379	3237	4693	5553	6141	7187	8290	9639	12683	13842	17043
0.600	1269	1946	2729	4121	4611	5127	6086	6757	8280	10926	11451	14305
0.650	1079	1573	2286	3371	4070	4254	5133	5750	7101	8959	9853	11941
0.700	913	1372	1897	2953	3343	3757	4301	4868	6068	7659	8455	10352
0.750	768	1192	1684	2584	2940	3319	3828	4362	5157	6892	7225	8949
0.800	639	1033	1493	2255	2580	2927	3406	3655	4634	5851	6506	7703
0.850	611	889	1319	1961	2258	2577	3027	3261	3896	5255	5861	6975
0.900	504	855	1163	1697	1969	2262	2684	2905	3484	4718	4945	6316
0.950	483	733	1020	1629	1891	1976	2374	2582	3111	4230	4434	5717
1.000	392	622	890	1403	1643	1718	2091	2287	2770	3785	3967	4844

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