NISHI PREFAB CABLE

SME ELECTRIC

Prefabricated Cable Catalog

Branch for Building

Branch for Tunnel

Room-Star

SME

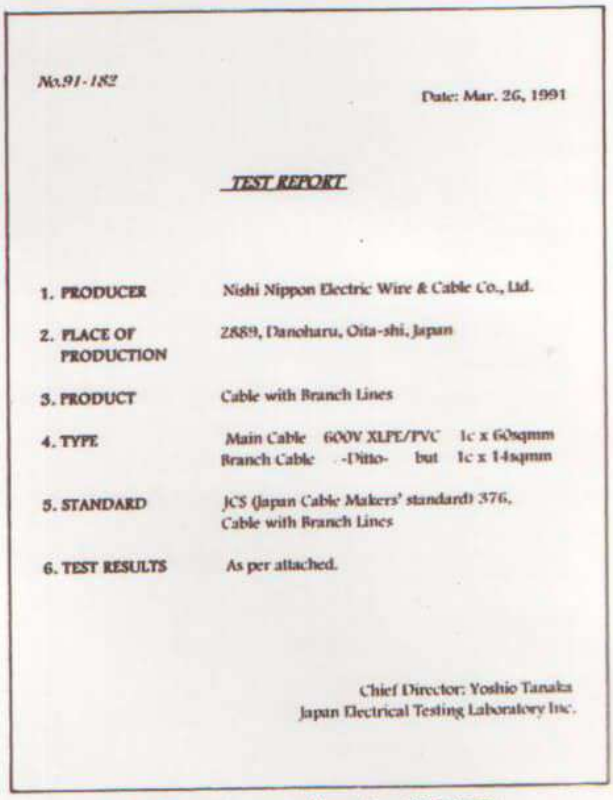
Construction and properties of molded branch joint

Branch joints of NISHI-BRANCH MV are injection-molded with PVC compound. PVC cable sheath and injection-molded PVC bond together making them airtight and waterproof. An example of a branch joint is shown in Fig. 4. Up to four branch cables are equipped at one mold section. Electrical and physical properties of molded branch joints and head supports are authorised by Japan Electrical Testing Laboratory Inc. according to JCS (Japan Cable Makers' Standard) 376: Cable with Branch Lines.

IEC Standard Cable

Main Cable	Branch Cable	Dimensions (mm)		
mm²	mm² *	d1	d2	L
35	16 – 25	44	41	105
50	16 – 35	50	44	105
70	16 – 50	50	44	105
95	16 – 50	57	50	115
120	16 – 95	69	64	140
150	16 – 120	77	64	150
185	16 – 120	77	64	150
240	16 – 185	77	64	150
300	16 – 185	62	39	122
400	25 – 240	73	47	137
500	25 – 240	73	47	137
630	25 – 240	79	52	137
800	25 – 240	79	52	137
1000	25 – 240	94	78	179

These dimensions are subject to minor modification.
*Other combinations of cable sizes are negotiable.



No.91-182

Date: Mar. 26, 1991

TEST REPORT

1. PRODUCER — Nishi Nippon Electric Wire & Cable Co., Ltd.
2. PLACE OF PRODUCTION — 2889, Danoharu, Oita-shi, Japan
3. PRODUCT — Cable with Branch Lines
4. TYPE — Main Cable 600V XLPE/PVC 1c x 60sqmm; Branch Cable -Ditto- but 1c x 14sqmm
5. STANDARD — JCS (Japan Cable Makers' standard) 376, Cable with Branch Lines
6. TEST RESULTS — As per attached.

Chief Director: Yoshio Tanaka
Japan Electrical Testing Laboratory Inc.

Test Report according to JCS 376

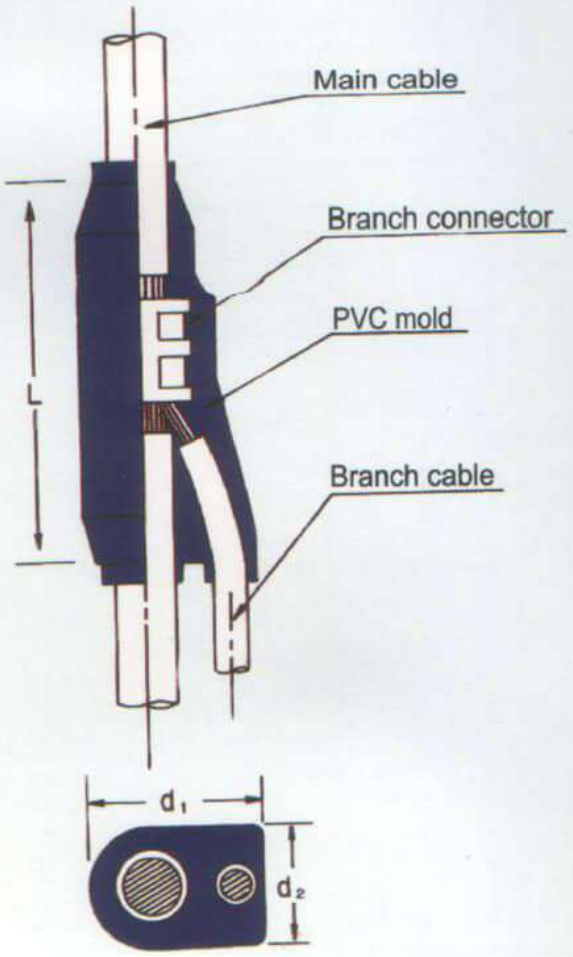


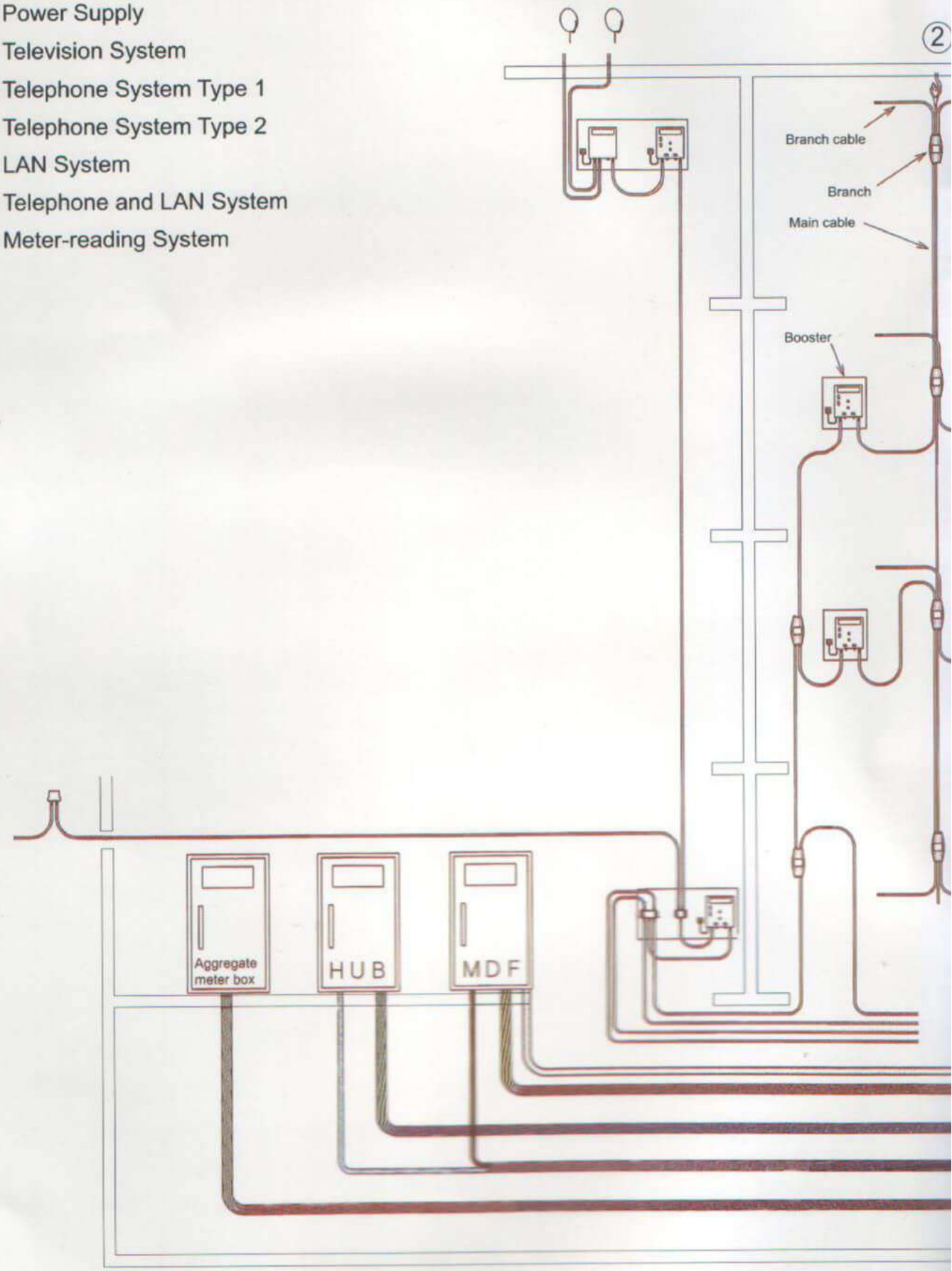
Fig. 4 Molded branch joint

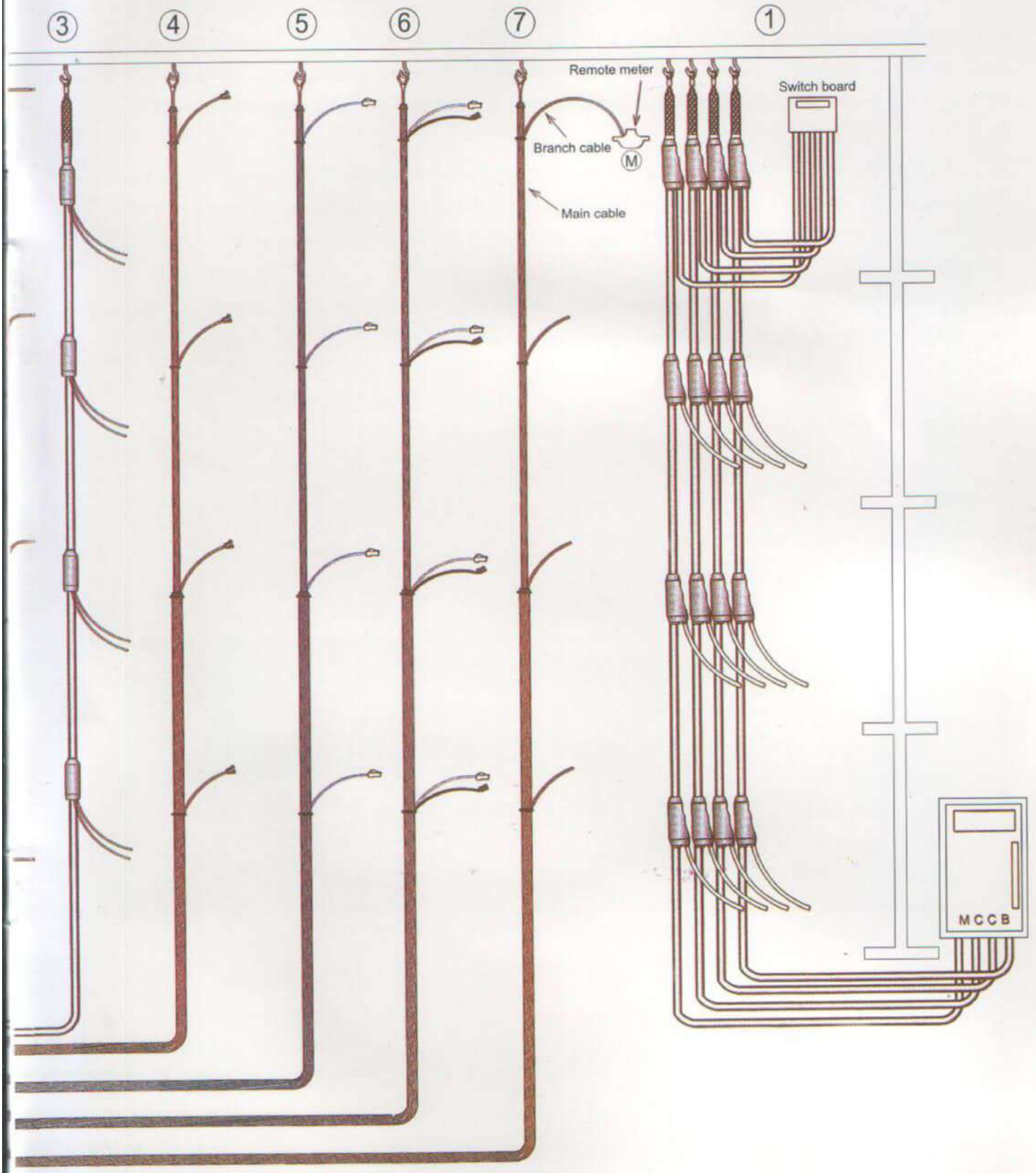
* NISHI-BRANCH MV is approved by Malaysia goverment; JBE(1P)KT 3 2726.

BRANCH SERIES FOR BUILDING

Types

① Power Supply
② Television System
③ Telephone System Type 1
④ Telephone System Type 2
⑤ LAN System
⑥ Telephone and LAN System
⑦ Meter-reading System




3
4
5
6
7
1
Remote meter
Switch board
Branch cable
M
Main cable
MCCB

NISHI BRANCH MV

There is a strong demand for dependability in electrical supply and reduction of personnel expenses at a construction site with the increase of capacity and complexity of electrical distribution in modern buildings. Furthermore. labour shortage and tight construction schedule are becoming common in big cities.

NISHI-BRANCH MV is an answer for all these problems. The NISHI-BRANCH MV is a brand of vertical main cables factory equipped with branch cables. In addition to systematic diagram, the electrical and physical quality of the NISHI-BRANCH MV is tested at a factory before shipping, then wound on a wooden drum for easy installation.

The NISHI-BRANCH MV has been widely used in Japan and all over the world. The outline of the NISHI-BRANCH MV is shown on fig. 1. Each branch joint section is airtight-molded with PVC compound.

Prime Minister's office, Putrajaya, Malaysia

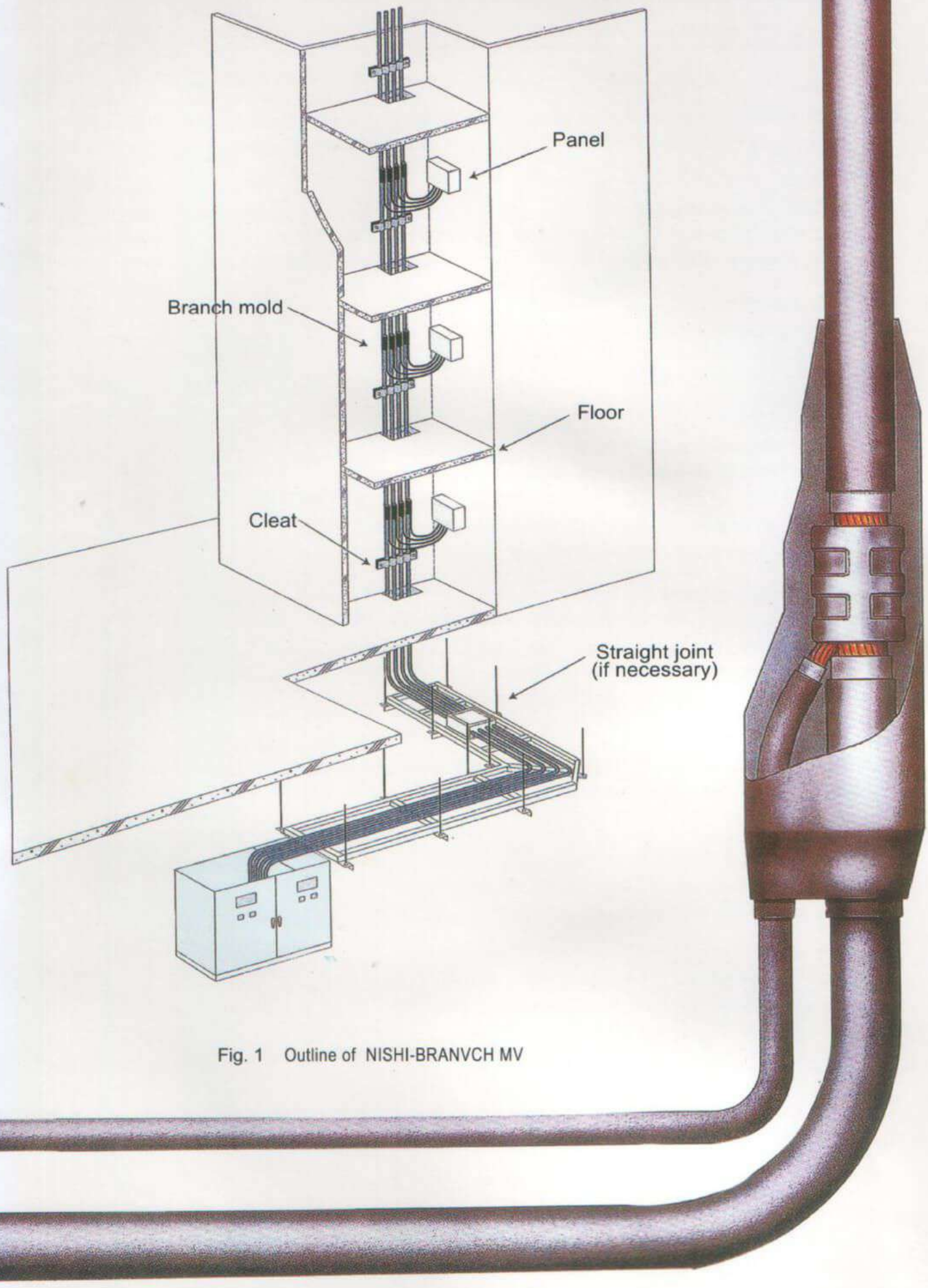


Fig. 1 Outline of NISHI-BRANVCH MV

MERITS OF NISHI-BRANCH MV

1. Economy
   Total expenses of constrution work, including personnel and material expenses, are considerably decreased because of saved manpower at the site.

2. Cutdown of construction period
   Most of the site work is carried out at the factory of NND. It saves time and labor at the site.

3. High quality
   Branch and head-support work that affect the electrical and physical properties of the system are carried out at the factory of NND under severe quality control and a well-arrange working environment.

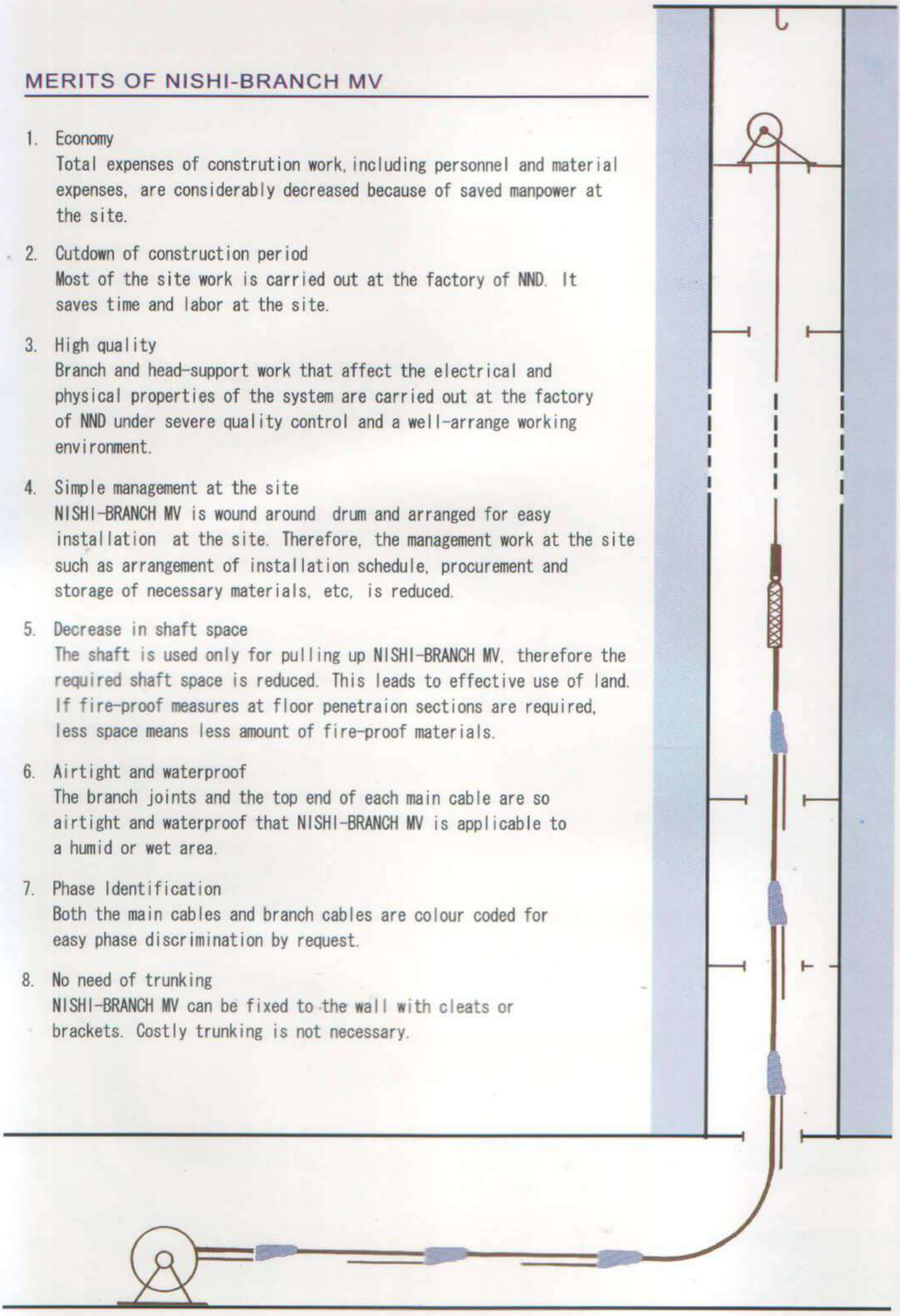
4. Simple management at the site
   NISHI-BRANCH MV is wound around drum and arranged for easy installation at the site. Therefore, the management work at the site such as arrangement of installation schedule, procurement and storage of necessary materials, etc, is reduced.

5. Decrease in shaft space
   The shaft is used only for pulling up NISHI-BRANCH MV, therefore the required shaft space is reduced. This leads to effective use of land. If fire-proof measures at floor penetraion sections are required, less space means less amount of fire-proof materials.

6. Airtight and waterproof
   The branch joints and the top end of each main cable are so airtight and waterproof that NISHI-BRANCH MV is applicable to a humid or wet area.

7. Phase Identification
   Both the main cables and branch cables are colour coded for easy phase discrimination by request.

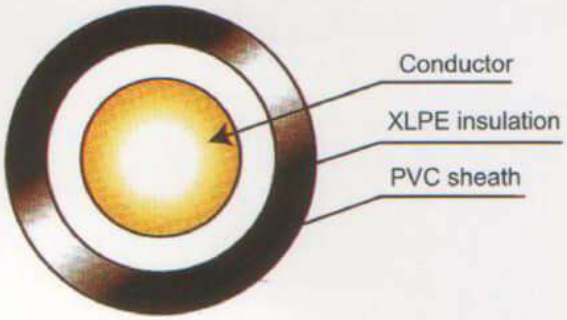
8. No need of trunking
   NISHI-BRANCH MV can be fixed to the wall with cleats or brackets. Costly trunking is not necessary.



TYPE OF CABLES

Standard main cables and branch cables are Copper Conductor XLPE insulated and PVC Sheathed 0.6/kV Single Core Cables according to IEC60502-1, and flame retardant to IEC60332-1.

Fire resistant cables and halogen-free low-smoke cables are also available.
The construction and characteristics of cables are as follows.



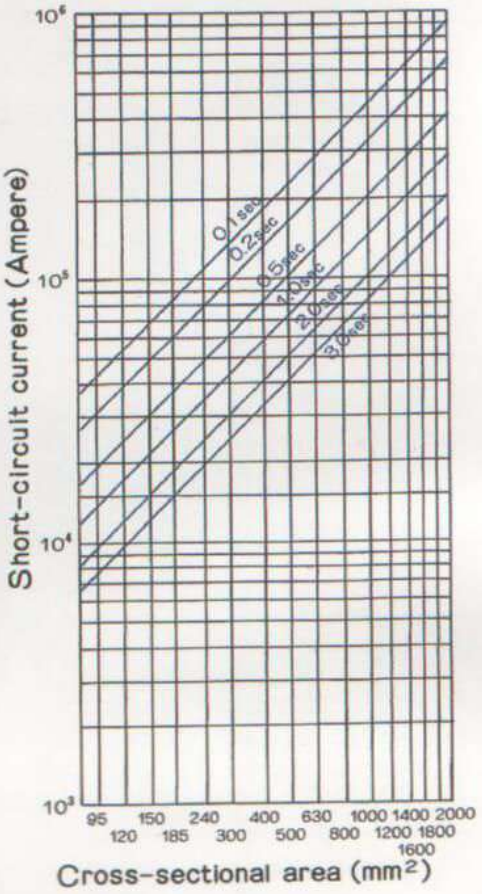
IEC STANDARD PUB. 60502-1

Conductor			Thickness of insulation (mm)	Thickness of sheath (mm)	Approx. overall diameter (mm)	Approx. Weight (Kg/Km)	A.C. test voltage (KV/5min)	Max. conductor resistance (20°C) (Ω/Km)
Size (mm^2)	Shape (No./mm)	Diameter (mm)						
6	Compact round stranded	3.12	0.7	1.4	8	100	3.5	3.08
10		4.05	0.7	1.4	9	150	3.5	1.83
16		4.7	0.7	1.4	10	215	3.5	1.15
25		5.9	0.9	1.4	11	310	3.5	0.727
35		7.0	0.9	1.4	12	410	3.5	0.524
50		8.2	1.0	1.4	13	570	3.5	0.387
70		9.7	1.1	1.4	15	770	3.5	0.268
95		11.4	1.1	1.5	17	1,030	3.5	0.193
120		12.8	1.2	1.6	19	1,280	3.5	0.153
150		14.3	1.4	1.6	21	1,590	3.3	3.124
185		15.8	1.6	1.6	23	1,950	3.5	0.0991
240		18.3	1.7	1.7	26	2,490	3.5	0.0754
300		20.5	1.8	1.8	29	3,140	3.5	0.0601
400		23.3	2.0	1.9	32	4,140	3.3	0.0470
500		26.4	2.2	2.0	36	5,140	3.5	0.0366
630		30.1	2.4	2.2	40	6,440	3.5	0.0283
800		34.8	2.6	2.3	46	8,450	3.5	0.0221
1000		39.0	2.8	2.4	51	10,600	3.5	0.0176

TECHNICAL DATA

Conductor Size	Current rating			Voltage drop Cable installation S=2D V/A · m X 10^{-3}			Voltage drop Cable installation S=D V/A · m X 10^{-3}		
	Single-core Basic (A)	4-core S=2D ρ=0.9 (A)	4-core S=D ρ=0.8 (A)	Cos θ =0.8	Cos θ =0.85	Cos θ =0.9	Cos θ =0.8	Cos θ =0.85	Cos θ =0.9
6				3.25	3.43	3.61	3.22	3.41	3.59
10	94	85	76	1.97	2.07	2.17	1.94	2.05	2.15
16	126	113	100	1.27	1.33	1.39	1.25	1.31	1.37
25	167	150	133	0.836	0.870	0.903	0.809	0.848	0.884
35	201	181	161	0.625	0.648	0.667	0.599	0.625	0.648
50	294	265	236	0.483	0.497	0.508	0.457	0.474	0.489
70	322	290	258	0.360	0.367	0.371	0.335	0.344	0.352
95	386	347	308	0.283	0.285	0.284	0.257	0.262	0.265
120	456	410	364	0.242	0.241	0.238	0.216	0.219	0.219
150	522	470	418	0.212	0.210	0.205	0.186	0.187	0.186
185	589	530	471	0.186	0.182	0.176	0.161	0.160	0.158
240	711	640	569	0.161	0.156	0.148	0.136	0.134	0.130
300	806	725	644	0.146	0.140	0.131	0.121	0.118	0.113
400	939	845	751	0.132	0.125	0.115	0.107	0.103	0.0978
500	1,089	980	871	0.121	0.114	0.104	0.0966	0.0924	0.0864
630	1,278	1,150	1,022	0.112	0.104	0.0941	0.0881	0.0835	0.0772
800	1,533	1,380	1,227	0.106	0.0981	0.0874	0.0825	0.0775	0.0710
1000	1,783	1,605	1,427	0.102	0.0934	0.0825	0.0784	0.0732	0.0665

SHORT-CIRCUIT CURRENT RATING



$$I = 224 \frac{A}{\sqrt{t}} \sqrt{\log \frac{234 + \Theta_1}{234 + \Theta_0}}$$

I = Short-circuit current (A)
A = Cross-sectional area (mm^2)
t = Short-circuit duration time (sec.)
Θ_0 = Max. continuous operating temp. : 90℃
Θ_1 = Max. temperature at short-circuit : 250℃

The current rating and the voltage drop are calculated under the following conditions.

1. Conductor temperature 90°C
2. Ambient temperature 40°C
3. Cable arrangement (single core) S=2 D

4. Power factor COS θ = 0.8

2. Ley Vd be the voltage drop.

Vd = K x I x L x Vo (V)

where I : Current (A)
L : Route lenght (m)
Vo : Voltage drop in the table (V/A.m)
K : Coefficient depending on the distribution system in the case of 3-phase, 4-line;
K= 1 : Between each phase core and the neutral core
K= $\sqrt{3}$: Between phase cores

LR Type Approval Certificate Extension

This is to certify that the validity of Type Approval Certificate No. 94/10012 for the undermetal products is extended in accordance with the relevant requirements of the 1996 Type Approval System, and is remembered as shown below.

This Certificate is issued to :

PRODUCER	Nishi Nippon Electric Wire & Cable Co., Ltd.
PLACE OF PRODUCTION	2898, Danoharu, Oita-shi, Oita-ken, Japan
DESCRIPTION	600/1000V XLPE insulated and PVC sheathed power cable
TYPE	600/1000V XLPE/PVC Conductor size: 6 to 1000 mm²

This Certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify LR of any modifications or changes to the equipment in order to obtain a valid certificate.

The Design Appraisal Document No. EPA/94/220/E attached to the original certificate forms a part of this certificate.

Particulars remain as shown on the original certificate No. 94/10012 to which this extension is to be attached.

CERTIFICATE NO.	94/10012(E1)
ISSUE DATE	28 April 1999
EXPIRY DATE	27 April 2004
SHEET	1 of 1

Lloyd's Register M. Kameda

Notice: This Extension to the LR Type Approval Certificate is subject to the terms and conditions contained/referred to in the terms and conditions stated on the original LR Type Approval Certificate.

Lloyd's Register of Shipping
Type Approval Certificate Extension
to IEC 60502-1

Top end of NISHI-BRANCH MV

The top end of the main cable is terminated with water-proof compound and a PVC cap, and reinforced with heatshrinkable EP rubber tube for permanent use after installation. NISHI-BRANCH MV holding methods during installation are the same as ordinary cables. NND offers cable grip device by request as shown in Fig.3. this device is used to support NISHI-BRNCH MV temporarily. NISHI-BRANCH MV must be permanently fixed using cable rack, cleats, brackets, etc.


CERTIFICATE OF APPROVAL

This is to certify that the Quality Management System of:

Nishi Nippon Electric Wire & Cable Co., Ltd.
Oita-shi, Oita-pref., Japan

has been approved by Lloyd's Register Quality Assurance Limited to the following Quality Management System Standards:

ISO 9001 : 1994 EN ISO 9001 : 1994 BS EN ISO 9001 : 1994
JIS Z 9901 : 1998

The Quality Management System is applicable to:

Design, development and manufacture of electric wires and cables with their accessories, and optical fiber cables with their connectors.

This certificate is valid only in association with the certificate schedule bearing the same number on which the locations applicable to this approval are listed.

Approval Certificate No: [illegible]

Original Approval: 15 March, 1996
Current Certificate: 5 February, 1999
Certificate Expiry: 28 February, 2002

on behalf of LRQA

No. Lesen : / Licence No.: PM018702

LESEN PERSIJILAN BARANGAN
Product Certification Licence

SIRIM QAS International Sdn. Bhd. dengan ini menganugerahkan kepada
SIRIM QAS International Sdn. Bhd. hereby grants to

NISHIDEN (MALAYSIA) SDN. BHD.
17, JALAN PAKU 16/6
SEKSYEN 16
40200 SHAH ALAM
SELANGOR DARUL EHSAN

Lesen untuk menggunakan Tanda Persijilan di atas barangan
a licence to use the Certification Mark on

POWER CABLES WITH EXTRUDED SOLID INSULATION

Please refer to detail in the SCHEDULE

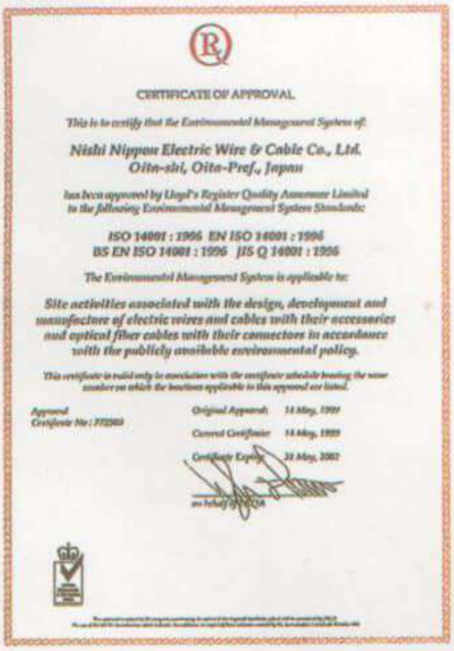
sebagai mematuhi keperluan
as complying with

MS IEC 60502-1 : 1998

Hj. Ab. Razak bin Salim
Pengarah Eksekutif
Executive Director
SIRIM QAS International Sdn. Bhd.

Dato' Dr. Mohd. Ariffin bin Hj. Aton
Pengerusi
Chairman
SIRIM QAS International Sdn. Bhd.

Tarikh Mula Persijilan : / Certified Since: 12 March 2004
Tarikh Dikeluarkan : / Issue Date: 22 December 2004
Sah Sehingga : / Valid Until: 09 December 2005
No. Siri : / Serial No.: 1418


CERTIFICATE OF APPROVAL

This is to certify that the Environmental Management System of:

Nishi Nippon Electric Wire & Cable Co., Ltd.
Oita-shi, Oita-Pref., Japan

has been approved by Lloyd's Register Quality Assurance Limited to the following Environmental Management System Standards:

ISO 14001 : 1996 EN ISO 14001 : 1996
BS EN ISO 14001 : 1996 JIS Q 14001 : 1996

The Environmental Management System is applicable to:

Site activities associated with the design, development and manufacture of electric wires and cables with their accessories and optical fiber cables with their connectors in accordance with the publicly available environmental policy.

This certificate is valid only in association with the certificate schedule bearing the same number on which the locations applicable to this approval are listed.

Approval Certificate No: [illegible]

Original Approval: 14 May, 1999
Current Certificate: 14 May, 1999
Certificate Expiry: 31 May, 2002

on behalf of LRQA


JABATAN KERJA RAYA MALAYSIA

PENDAFTARAN BARU

Tarikh: 13 Hb. Ogos 2004

NISHIDEN (MALAYSIA) SDN. BHD.
17, JALAN PAKU 16/6, SEKSYEN 16
40200 SHAH ALAM
SELANGOR

Tuan,

Perkara : HERMATIC SEALED BRANCH CABLES

Nama dan Alamat Pengeluar	Perihal Barangan	
NISHIDEN (MALAYSIA) SDN. BHD. 17, JALAN PAKU 16/6, SEKSYEN 16 40200 SHAH ALAM SELANGOR TEL: 03-55122087 FAX: 03-55121885	HERMATIC SEALED BRANCH CABLES JENAMA: NND MODEL: SEPERTI LAMPIRAN KADARAN: 600/1000V	NO. PM018702 (Sirim) TARIKH TAMAT: MS IEC 60502-1: 1998
NEGARA PERBUATAN: MALAYSIA		

Sekian, terima kasih.

"BERKHIDMAT UNTUK NEGARA & CINTAILAH BAHASA KITA"

Saya yang menurut perintah,

Pengarah Cawangan Kejuruteraan Elektrik,
b.p. Ketua Pengarah Kerja Raya,
JKR Malaysia.

ISO 9001 : Certificate of Approval
ISO 14001 : Certificate of Approval