APPLICATION FOR A TARIFF CONCESSION ORDER (TCO)

Please read carefully before completing.

1. Section 269F of the *Customs Act 1901* requires a TCO application to be in an "approved form", contain such information as the form requires, and be signed in the manner indicated in the form. **THIS IS THE APPROVED FORM FOR THE PURPOSES OF THAT BECTION. EVERY QUESTION MUST BE ANSWERED.**
2. **Applicant's obligation** - Section 269FA of the *Customs Act 1901* sets out the responsibility of an applicant for a TCO to establish to the satisfaction of the Chief Executive Officer (CEO), that on the basis of:
(a) all information that the applicant has, or can be reasonably expected to have; and
(b) all inquiries that the applicant has made, or can reasonably be expected to make;
there are reasonable grounds for asserting that the application meets the core criteria.
3. Failure to supply the information required by this form may result in rejection of the application and consequential loss of operative date.
4. Where there is insufficient space, answers may be provided by attachment, which should clearly identify the question to which the attachment relates.
5. The identity of the applicant and of the importer for whom the applicant is acting will be published in the Gazette.
6. An application will be date stamped on the day it is first received in Canberra by an officer of Customs in accordance with the instructions specified at the end of this form. Any resultant TCO comes into force **ON THAT DAY**.
7. All information about inquiries into the production of substitutable goods must relate to the date this application is lodged with Customs.
8. Further information on the Tariff Concession System (TCS) is available in Part XVA of the *Customs Act 1901*, the foreword to the Schedule of Concessional Instruments (SCI), the administrative guidelines in Volume 13 of the Australian Customs Service (ACS) Manual, or by phoning (06) 2756600.
9. Customs may require an applicant to substantiate with documentary evidence any information provided on the application form.
10. TCOs are available for use by any importer and are published in the SCI and in TAPIN. Before lodging a TCO application, check to ensure an existing TCO does not already cover the goods.

APPLICANT DETAILS

Applicant's Name	ACN
Eaton Electric Systems Pty Ltd	65000769157
Postal Address	
Locked Bag 103 Silverwater 1811	
Applicant's Reference	**Owner Code**
s47F	*1420720u*
Company Contact	**Position held**
s47F	*Shipping Officer*
Phone Number	**Facsimile Number**
s47F	*02 9317 5990*

IMPORTER DETAILS

If you are not proposing to make use of the TCO to import the goods to which the application relates into Australia on your own behalf - the identity of the importer for whom you are acting must be provided (paragraph 269F(1)(c) of the *Customs Act 1901*)

Name of Importer *(If same as Applicant, state "As above")*		
As Above		
ACN	**Owner Code**	**Importer's Reference**
Postal address		
Company Contact	**Phone Number**	**Facsimile Number**

AGENT/BROKER DETAILS *(if applicable)*

Name of Agent		
B D Kemp Trade Advisory		
CAN/ABN	Agent's Reference	
16378862326	[redacted]	
Postal address		
P O Box 447 PADSTOW 2211		
Agency Contact	Phone Number	Facsimile Number
[redacted]	[redacted]	*02 9773 1100*

DESCRIPTION OF GOODS

1. Description of the goods

This description will be used as the description of goods in a TCO, and, in accordance with section 269SJ of the Customs Act 1901, must NOT:

- *describe the goods in terms other than generic terms; or*
- *describe the goods in terms of their intended end use; or*
- *describe goods declared by the regulations to be goods to which a TCO should not extend.*

Goods are taken NOT to be described in generic terms if their description, either directly or by implication, indicates that they are goods of a particular brand or model, or that a particular part number applies to the goods.
Guidance for the drafting of TCO descriptions is contained in Volume 13, Appendix H, of the ACS Manual.

RING MAIN UNIT, fully enclosed metal housing, voltage rating of 12kV or 24kV, having all of the following:

a) circuit breaker, continuous current rating 200amps,
b) fault make load break switch disconnector, continuous current rating of 630 amps,
c) 3 phase, alternating current vacuum interrupters containing no SF_6 gas,
d) earth selector switch on busbar side of either the circuit breaker or fault make load break switch-disconnector

2. Attach technical, illustrative descriptive material and/or sample to enable a full and accurate identification of the goods the subject of the application.

3. Tariff Classification (to 8 figure subheading level) | 8 | 5 | 3 | 5 | 2 | 1 | 0 | 0 | **General Duty rate** **5%**

If a Tariff Advice for the goods has been sought or obtained, please provide TA No. or attach a copy

4. Describe ALL uses (including design uses) to which the goods can be put

The goods the subject of the application are used in for energy distribution

The goods are unsuitable for any other use

SUBSTITUTABLE GOODS

(1) Local Manufacturers' goods are substitutable when they are put, or are capable of being put, to a use that corresponds with a use (including a design use) to which the goods the subject of the application can be put (subsection 269B(1) of the Customs Act 1901). Even if not identical, locally made goods may be substitutable goods.

(2) In determining whether the uses of Australian produced goods correspond with the uses of the goods the subject of the application - it is irrelevant whether or not the goods compete with each other in any market.

(3) Applications will be rejected if they fail to provide sufficient information as to inquiries made by the applicant to establish that there are reasonable grounds for believing that no substitutable goods are produced in Australia.

5. Provide details of the nature of ALL inquiries you have undertaken in order to establish that substitutable goods are not produced in Australia in the ordinary course of business and the results of those inquiries.

The importer has attempted to source the goods locally via the Yellow Pages and industry contacts without success. The Kompass directory was searched.
No local manufacturers were identified.

6. Provide any additional information in support of discharging your responsibility to establish that there are reasonable grounds for asserting that there are no substitutable goods produced in Australia in the ordinary course of business

Competitors products are imported.

2

PRESCRIBED ORGANISATIONS

7. Have you made inquiries of a prescribed organisation to obtain advice about whether there are producers in Australia of substitutable goods?

X YES [ ] NO If YES attach a copy of advice received ISO recommendation, Kompass Direct..

Note that under subsection 269M(6) of the Customs Act 1901, the CEO may, despite section 16 of the Customs Administration Act 1985, give a copy of all, or of a part, of the application to a prescribed organisation

FOR USE OF PRESCRIBED ORGANISATION ONLY

| Prescribed Organisation's Reference

| Prescribed Organisation's Advice

8. Provide any additional information in support of your application

I, s47F | Position Held Agent

Company B D Kemp Trade Advisory

declare that:

1. To the best of my knowledge and belief the information contained in this submission is correct;
2. I have the authority to act on behalf of the company/applicant.

Signature of ~~Applicant~~/Agent /~~Broker~~ s47F date 16/4/03

NOTE: SECTION 234 OF THE CUSTOMS ACT 1901 PROVIDES THAT IT IS AN OFFENCE TO MAKE A STATEMENT TO AN OFFICER THAT IS FALSE AND MISLEADING IN MATERIAL PARTICULAR.

WHEN THIS SECTION OF THE FORM HAS BEEN COMPLETED, LODGE IT WITH CUSTOMS BY:

- posting it by prepaid post to the National Manager, Industry Branch, Australian Customs Service, Customs House, 5 Constitution Avenue, CANBERRA ACT 2601; or
- leaving it in the box provided in the foyer of Custom House Canberra; or
- sending it by facsimile to (08) 275 6376

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KOMPASS

Search Text: ring main unit | Search Type: products+servic | Region: Australia

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Search Text: ring main | Search Type: products+servic | Region: Australia | Search

Other options | Advanced | Help

Kompass categories

Folders closed (click to view all the subcategories) { # } = no. of companies

View marked Categories: 1 1-1 1

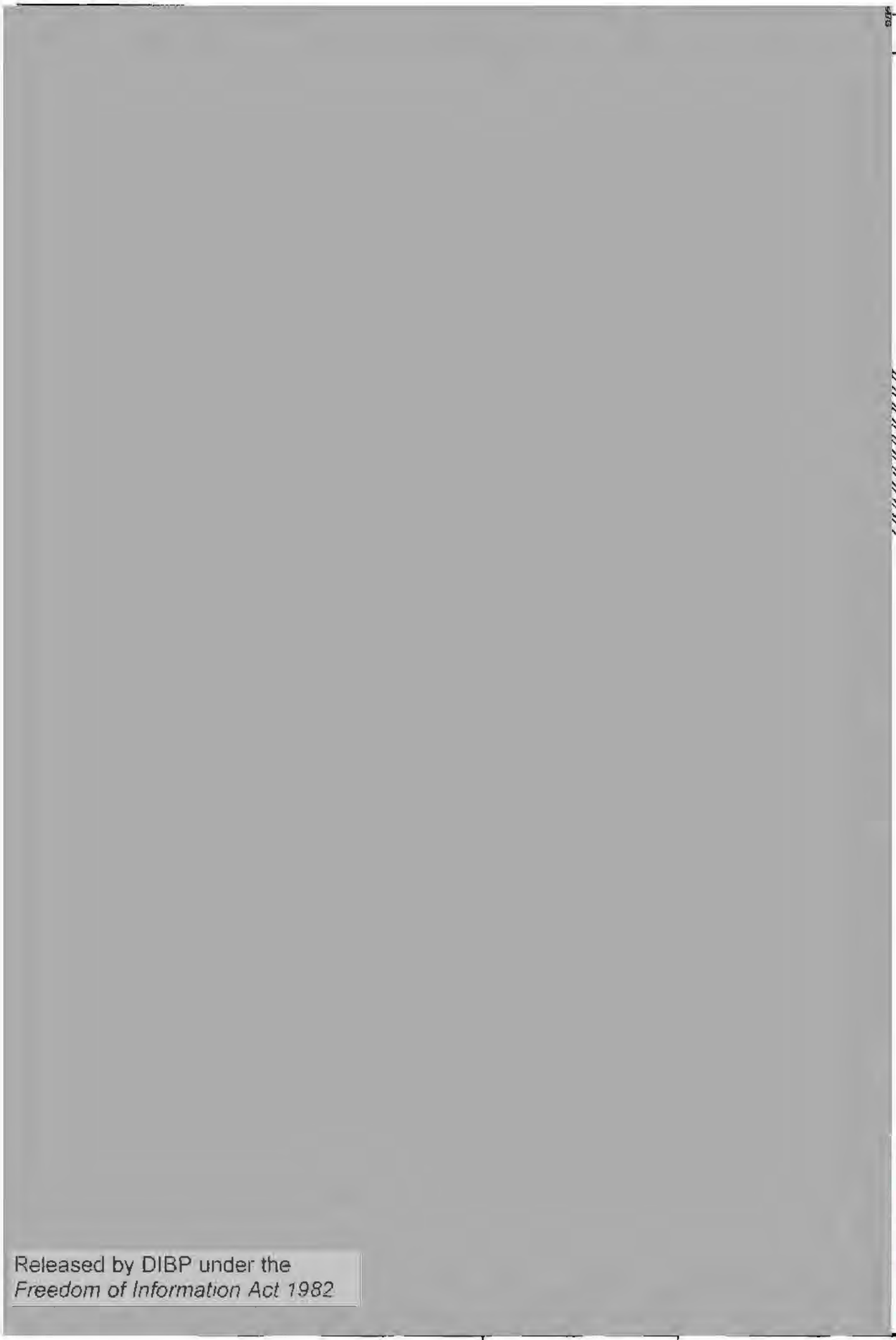
Test equipment for the electrical and electronics industries [96]

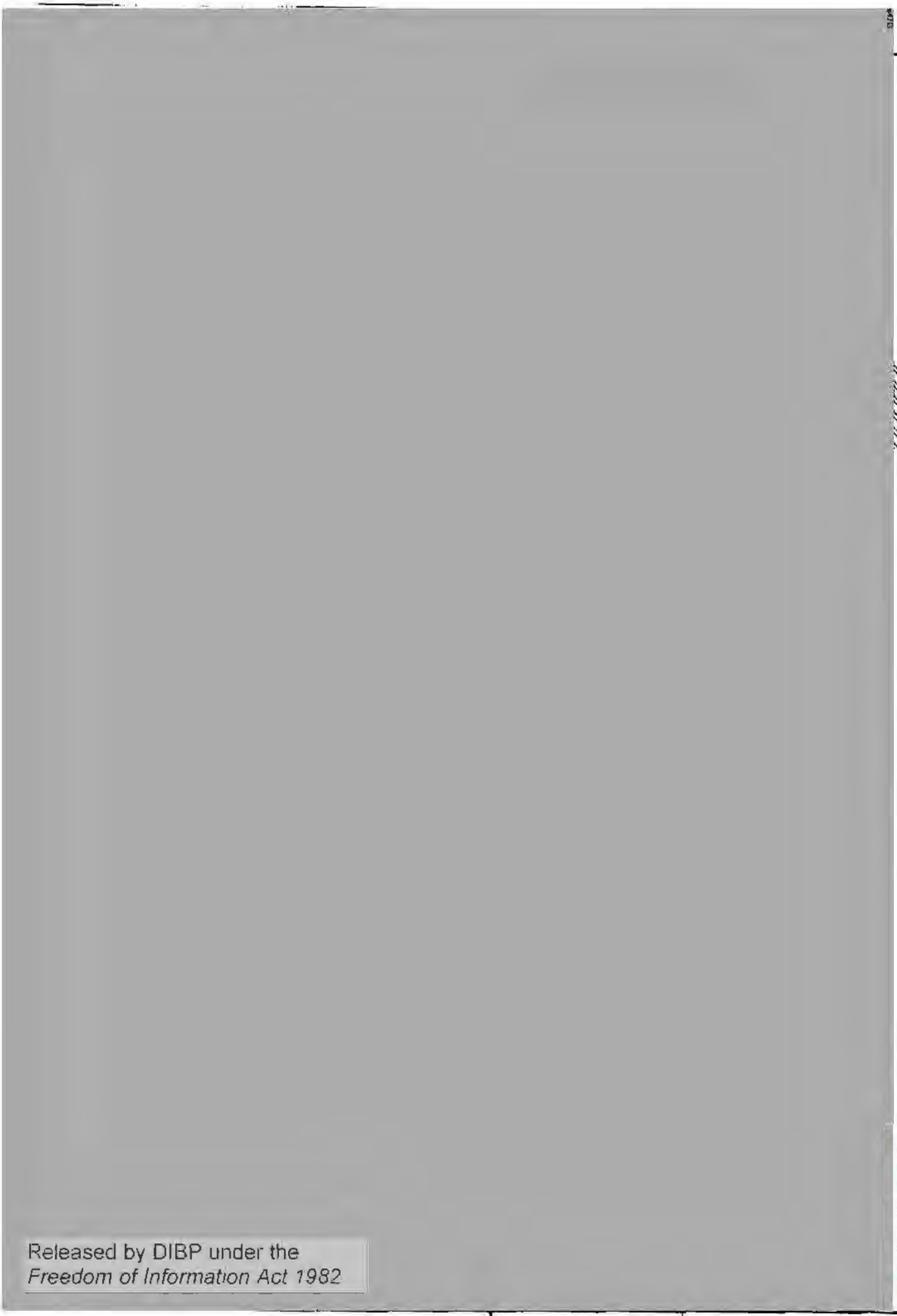
Ring main testers, plug-in type [0]

View marked Categories: 1 1-1 1

Test equipment also imported

No local suppliers of Ring main units





10

XIRIA: the smart solution

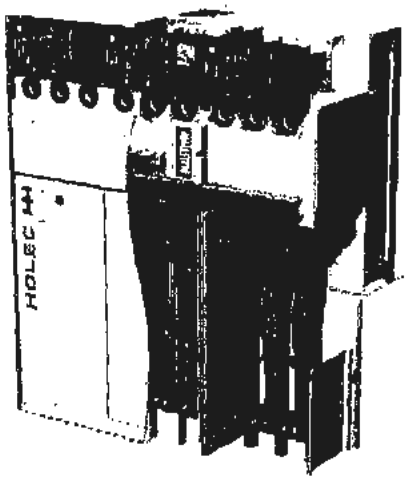
Xiria is the name of a new generation of ring main units from Holec Holland N.V.
They are characterised by their high level of operational safety and are suitable for applications up to 24kV.
Xiria units are also very compact. Xiria units can be supplied in three- or four-panel versions. Both the primar
part of the unit and the mechanisms are housed in a fully enclosed housing which protects the system again
environmental influences. There is a choice of two basic panel versions in our product range:

- A vacuum load break switch for ring cable connections
- A vacuum circuit-breaker for protecting transformers and cable connections

Both versions can be supplied in a unit in any desired combination and order.

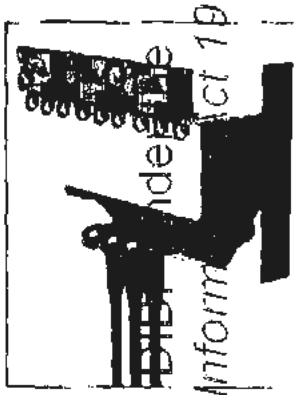
Xiria is an extremely well designed and modern system. For example, when developing the system we intentionally opted for protection in the form of a circuit-breaker combined with an electronic relay. This is a modern, safe and flexible alternative to fuse protection. In addition it also makes Xiria very easy to use in an automated distribution network.

These specific features make Xiria an easy-to-use system that responds perfectly to changing electricity distribution requirements, both now and in the future.



MAINTENANCE-FREE

All the live primary parts and mechanisms in a Xiria unit are installed in a fully enclosed housing. This prevents dust, moisture and other environmental influences from affecting the operation of the unit. The switching mechanism has been designed with a minimum number of parts, and is specifically intended for switching after a long period of inactivity – precisely the way it happens in practice. What is more, the mechanism does not use any lubricants, which also benefits its operational safety. As it is maintenance-free, Xiria significantly cuts inspection and maintenance costs without adversely affecting the operational safety of your distribution network. Which is something to look forward to in today's liberalised energy market.

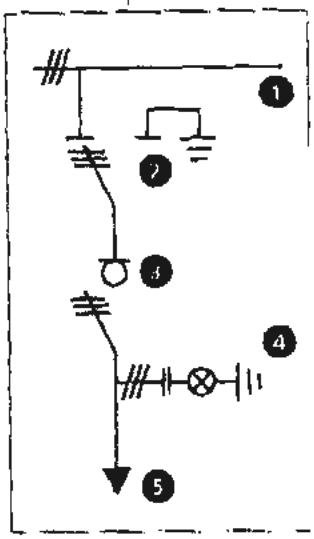


Sealed-for-life switching

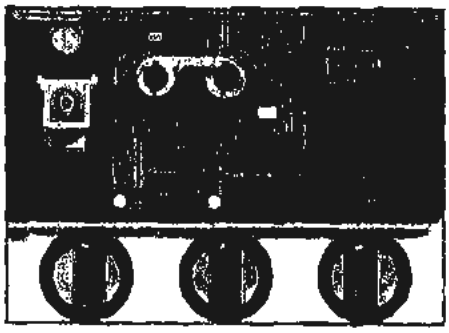
Intrinsically safe

When carrying out operational actions and work on the cables, it is vital to have unambiguous status indications. When it comes to the safety of the operating personnel, Holec leaves nothing to chance. That is why Xiria is fitted with directly visible isolation by means of inspection windows in the front which makes the isolating distance between the cable and the busbar system directly visible. A visible, short-circuit proof earthing can take place via the load break switch or circuit-breaker.

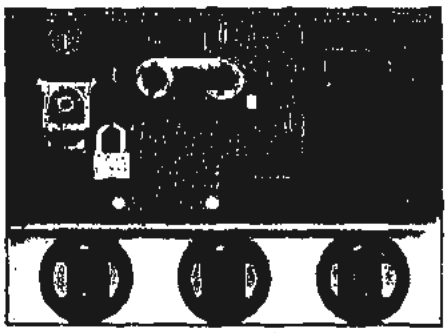
Xiria is designed with a fully enclosed metal housing combined with single-phase insulation of all primary live parts. This reduces the risk of an internal fault to an absolute minimum, thus providing a high degree of safety and availability. The KEMA-tested arc-proof housing also offers additional protection for operating personnel.



1. *Busbar system*
2. *Busbar/earth disconnector*
3. *Vacuum load break switch or circuit-breaker*
4. *Voltage detector*
5. *Cable connection*



Operating position



Earth position

Clean and green

Xiria is made exclusively of environmentally-friendly materials. The insulation medium is clean, dry air and the switching medium is vacuum. Thus Xiria responds to the demand for sustainability in energy distribution. The unit is easy to dismantle at the end of its service life as the materials used are clearly labelled and can be reused. This facilitates recycling and avoids excessive costs and environmental taxes when the unit is decommissioned.

Clear coding for recycling.

Compact

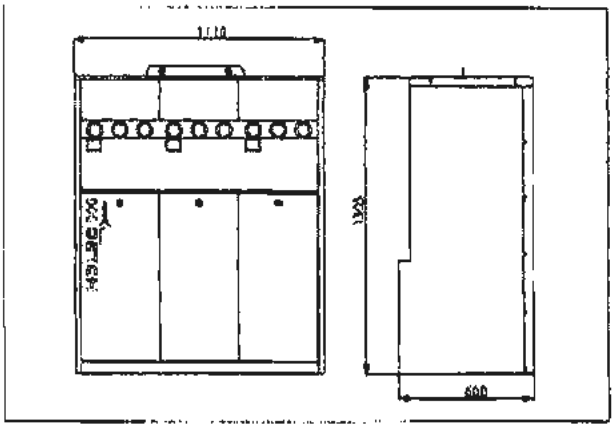
Xiria is one of the smallest ring main units of its kind. This high degree of compactness is a direct result of the combination of technologies used by Holec – electrical field control, solid insulation and the use of extremely compact vacuum interrupters. This compactness offers direct financial benefits in new buildings and when refurbishing existing transformer stations because of the minimal floor area required.

READY FOR AUTOMATED NETWORKS

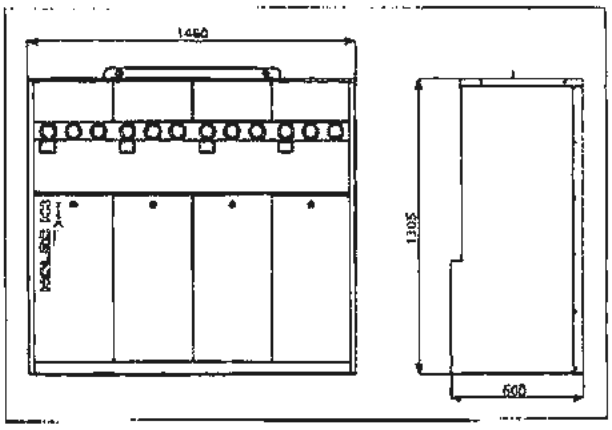
Xiria is completely ready for use in fully-automated networks. There are various options available for the system, depending on the level of remote signalling and remote control required. These options are modular, so they can be quickly and easily added in the future. In this way Xiria anticipates future developments in automation and operational control, so you can be sure that you will not be left with control, display and communication standards that are too specific or possibly even obsolete.

Easily adjustable electronic protection relay.

DIMENSIONS



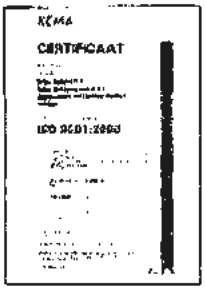
3-panel version
Sizes in mm



4-panel version
Sizes in mm

TECHNICAL DATA

General:					
Rated voltage	kV	7.2	12	17,5	24
Impulse withstand voltage	kV	60	75	95	125
Power frequency withstand voltage	kV	20	28	38	50
Rated frequency	Hz	50/60	50/60	50/60	50/60
Internal arc resistance	kA-s	20-1	20-1	16-1	16-1
Busbar system:					
Rated normal current	A	630	630	630	630
Rated short-time withstand current	kA-s	20-1	20-1	16-1	16-1
Rated peak withstand current	kA	50	50	40	40
Circuit-breaker:					
Rated normal current	A	200	200	200	200
Rated breaking current	kA	20	20	16	16
Rated short-circuit making current	kA	50	50	40	40
Rated short-time withstand current*	kA-s	20-1/0,4	20 1/0,4	16-1/0,6	16-1/0,6
Load break switch:					
Rated normal current	A	630	630	630	630
Rated mainly active load breaking current at cos. phi 0.7	A	630	630	630	630

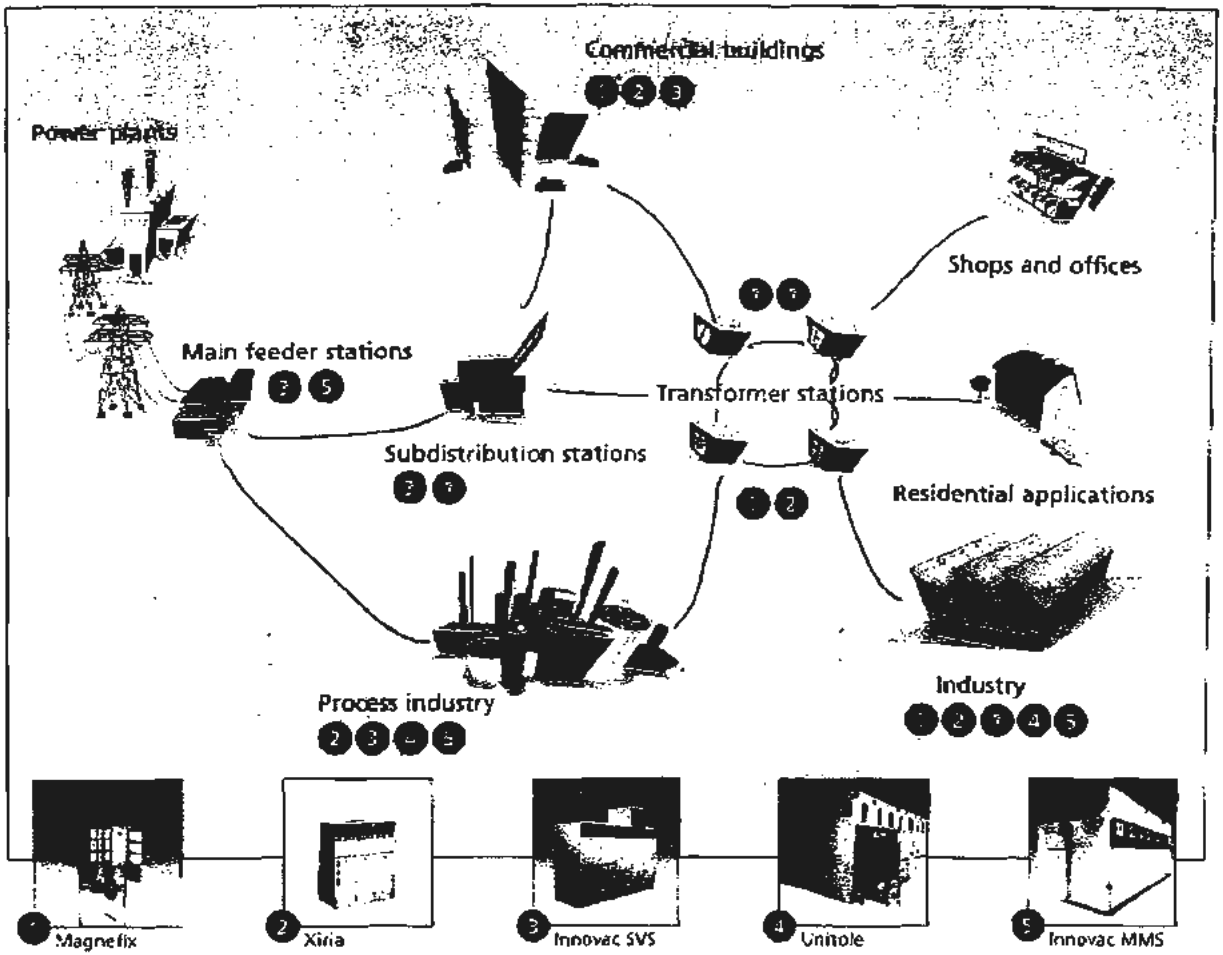


KEMA
REGISTERED QUALITY

STANDARDS

Xiria complies with the following international standards:

IEC 60694	Common specifications
IEC 60932	Severe climatic conditions
IEC 60298	Metal-enclosed switchgear and controlgear
IEC 62271-100	Circuit-breakers
IEC 60265-1	Switches
IEC 62271-102	Disconnectors and



Holec products in the energy chain – from generation to supply to the consumer.

Holec Holland N.V.

Holec produces electrical energy solutions designed to ensure a safe, reliable supply of energy. The development and production of its systems and components is based on the philosophy that they should always yield clear value-added for the customer. The products are designed in such a way that they can be fully integrated into their application. This approach enables you to achieve almost any solution you want with Holec products.

Your total partner

In addition to the products already mentioned, Holec can also provide turn-key solutions. We can call upon a large number of specialists in all the required disciplines for this purpose. Working closely together with your organisation and your selected partners, Holec can handle your entire project from start to finish. In doing so, we offer you the facilities you would expect from an experienced partner.

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AUSTRALIAN CUSTOMS SERVICE

Reply to the Chief Executive Officer

Customs House
5 Constitution Avenue
Canberra ACT 2601
email: information@customs.gov.au

Quote:

TC 0304371

Ph. 02 6275 6404
Fax. 02 6275 6376

Your Ref:Eaton

24 APR 03

Dear Sir/Madam,

APPLICATION FOR A TARIFF CONCESSION ORDER

Your application for a Tariff Concession Order, details of which are shown below, was received in this office on 16 APR 03. The TC number shown above has been allocated to your application.

Date Sent	: 16 APR 03
Applicant	: EATON ELECTRIC SYSTEMS PTY LTD
Goods	: RING MAIN UNIT
Owner Code	: 1420720A

If you have not been using the above Owner Code for this company would you please do so for future applications.

Yours faithfully,

[redacted]

Delegate of the Chief Executive Officer

B D KEMP TRADE ADVISORY
Attn: [redacted]

PO BOX 447
PADSTOW NSW 2211

B.D.Kemp Trade Advisory
33 Fewtrell Ave
Revesby Heights NSW 2212
AUSTRALIA
TEL: (02) 9773 5297
FAX: (02) 9773 1100
Email: [redacted]

FACSIMILE

To Australian Customs Service
Attn: [redacted]
Fx: 02 6275 6376

Fm: [redacted]
Fax: 02 9773 1100
Ph [redacted]

Date: 12 May 2003

Subject: Tariff Concession Application TC 0304371
Pages 1

Dear [redacted]

As discussed the proposed wording for our tariff concession application TC 0304371 should read as follows,

RING MAIN UNITS, metal housing, voltage rating of 12kV or 24kV comprising of all of the following;

a) circuit breaker;
b) load break switch disconnector;
c) 3 phase alternating current vacuum interrupters containing no SF6 gas;
d) earth selector switch.

Page 2
Australian Customs Service
attention: [redacted]

I trust this information is of assistance however should you wish to discuss this matter further please do not hesitate to on contact me on [redacted].

Regards

[redacted]

AUSTRALIAN CUSTOMS SERVICE

Reply to the Chief Executive Officer

Quote:

Customs House
5 Constitution Avenue
Canberra ACT 2601
email: information@customs.gov.au

TC 0304371

Ph. 02 6275 5802
Fax. 02 6275 6376

Your Ref:Eaton

13 MAY 03

Dear Sir/Madam,

TARIFF CONCESSION - APPLICATION ACCEPTANCE

Your application for a Tariff Concession Order (TCO) has been accepted by Customs as a valid application. The application will be published in Gazette No. TC 03/19 of 21 MAY 03. Details of the gazette notice are shown in the attachment.

Please examine the wording of the gazette notice and advise this office immediately if the wording does not accurately describe the goods for which a TCO has been sought. This is a verification of agreed wording, not an opportunity to further amend.

Yours faithfully,

[redacted]

Delegate of the Chief Executive Officer

B D KEMP TRADE ADVISORY
Attn: [redacted]

PO BOX 447
PADSTOW NSW 2211

THE TABLE

COLUMN 1 Description of Goods including the Customs Tariff Classification		COLUMN 2 Prescribed Item No. Date
8535.21.00	RING MAIN UNITS, metal housing, voltage rating of 12 kV or 24 kV comprising of ALL of the following: (a) circuit breaker, (b) load break switch disconnector, (c) 3 phase alternating current vacuum interrupters containing no SF6 gas; (d) earth selector switch Op. 16.04.03 - TC 0304371 STATED USE: Used for energy distribution Applicant: EATON ELECTRIC SYSTEMS PTY LTD SILVERWATER, NSW, 1811	50

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AUSTRALIAN CUSTOMS SERVICE

Reply to the Chief Executive Officer

Quote:

Customs House
5 Constitution Avenue
Canberra ACT 2601
email: information@customs.gov.au

TC 0304371

Ph. 02 6275 6015
Fax. 02 6275 6376

Your Ref:Eaton

11 JUL 03

Dear Sir/Madam,

TARIFF CONCESSION SYSTEM - APPLICATION SUCCESSFUL

I refer to your application for a Tariff Concession Order (TCO) lodged on 16 APR 03.

As a delegate of the Chief Executive Officer, I am satisfied that the application meets the core criteria on the basis of paragraph 269C of the Customs Act 1901 and have accordingly made a written Tariff Concession Order.

The decision to make a TCO will be published in Gazette No. TC 03/28 of 23 JUL 03.

The TCO, as detailed in the attachment, will be published in the Schedule of Concessional Instruments as soon as possible.

Yours faithfully,

[redacted]

Delegate of the Chief Executive Officer

B D KEMP TRADE ADVISORY
Attn: [redacted]

PO BOX 447
PADSTOW NSW 2211

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TARIFF CONCESSION ORDER

Under Section 269P of the Customs Act 1901, I [redacted] a delegate of the Chief Executive Officer declare that the goods specified in Column 1 of THE TABLE are goods to which the item in Part III of Schedule 4 to the Customs Tariff Act 1995 specified in Column 2 of THE TABLE applies. This Order shall have effect from APRIL 16, 2003 and continue in force until revoked under sections 269SC or 269SD of the Act, or the date, if any, specified in Colum 2.

THE TABLE

COLUMN 1 Description of Goods including the Customs Tariff Classification		COLUMN 2 Prescribed Item No. Date
8535.21.00	RING MAIN UNITS, metal housing, voltage rating of 12 kV or 24 kV comprising ALL of the following: (a) circuit breaker, (b) load break switch disconnector, (c) 3 phese alternating current vacuum interrupters containing no SF6 gas; (d) earth selector switch Op. 16.04.03 - TC 0304371	50

This is page 1 of 1 page(s) of the above Table.

Dated JULY 11, 2003

[redacted]
Delegate of the Chief Executive Officer

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s22(1)(a)(ii)

From: s47F @alwaysonline.net.au>
Sent: Wednesday, 22 January 2014 4:59 PM
To: TARCON
Subject: Application for TCO -Eaton Industries
Attachments: Eaton letter of authoritypdf.pdf; Customs ruling Decision TA_20838000 FMX .pdf; FMX UX TCO Cover Letter when lodging with ACS.pdf; Kompass Google and Australian made search detailsFMX UX.pdf; 27 Dec 2013 TCO Letter to Local Manufacturers.pdf; GE response Tariff Concession - Switchgear.pdf; Brochure 6054012BR04 Power Xpert FMX EN.pdf; Brochure Power Xpert UX EMEA EN.pdf; Eaton Form b443 completed TCO applicatioon 22 Jan 2014 .pdf

Please find attached an application for Tariff Concession Order for:

8537.20.90: SWITCHGEAR, air insulated, incorporating vacuum circuit breaker and/ or fuse contactor, having a rated voltage NOT less than 3.6 kV.

The application is lodged on behalf of our client Eaton Industries Pty Ltd. In support of the application we have enclosed technical illustrative material of the subject goods together with copies of correspondence forwarded to local manufacturers.

Our research of the Kompass database, Google and Australian made .com.au and the foregoing correspondence has not revealed any potential local manufacturers of the subject goods (details enclosed).

Should you require further information or clarification of any matter contained in our letter please contact us on s47F Mob : s47F or by email at s47F @alwaysonline.net.au.

Kind regards

s47F

Ray Papworth & Co Pty Ltd
Indirect Tax, International Trade, and Logistics Advisors
13 Arlington street
Dulwich Hill N.S.W 2203
Sydney Australia
PH : s47F
Fax : + 61 2 9572 7500
Mob : s47F
Email : s47F @alwaysonline.net.au

RAY PAPWORTH & CO PTY LTD

22 Jan 2014

Chief Executive Officer
Australian Customs Service
Tariff Concessions
Customs House
5 Constitution Ave
CANBERRA 2601

Dear Sir

Please find attached an application for Tariff Concession Order for:

8537.20.90: SWITCHGEAR, air insulated, incorporating vacuum circuit breaker and/ or fuse contactor, having a rated voltage NOT less than 3.6 kV.

The application is lodged on behalf of our client Eaton Industries Pty Ltd. In support of the application we have enclosed technical illustrative material of the subject goods together with copies of correspondence forwarded to local manufacturers.

Our research of the Kompass database, Google and Australian made .com.au foregoing correspondence has not revealed any potential local manufacturers of the subject goods (details enclosed).

Should you require further information or clarification of any matter contained in our letter please contact us on s47F ; Mob : s47F or by email at s47F @alwaysonline.net.au.

Yours faithfully
Ray Papworth & Co Pty Ltd

s47F

INTERNATIONAL TRADE AND LOGISTICS ADVISORS

CUSTOMS INDIRECT TAX AND GST CONSULTANTS.

GOVERNMENT ASSISTANCE AND GRANTS.

ABN 21 084 534 716
13 Arlington Street DULWICH HILL 2203
Telephone: s47F Fax: +61 2 9572 7500 Mobile: s47F Email: s47F @alwaysonline.net.au

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EATON
Powering Business Worldwide

Electrical Group

Eaton Industries Pty Ltd
ABN 66 103 014 571
10 Kent Road
Mascot, NSW 2020

23rd of September 2013

To: Australian Customs & Border Protection

Eaton Industries Pty Ltd ABN 66 103 014 571 (Eaton) hereby authorize s47F of Ray Papworth & Co Pty Ltd ABN , 21 084 534 716 to represent the company to Australian Customs & Border Protection(ACBPS) for the purposes of making Tariff Advice applications and applications for the grant of Tariff Concession Orders on behalf of Eaton. s47F is authorized to provide information to the ACBPS in support of such applications.

If you require information regarding the company or its import activities please in the first instance contact Ray Papworth & Co Pty Ltd, 13 Arlington St, Dulwich Hill 2203, Ph s47F, fax 61 2 9572 7500, email s47F @alwaysonline.net.au

Should you require further information or clarification of any matter in our letter please contact us.

Yours faithfully,

s47F

s47F

25/9/13

Eaton Industries Pty Ltd
10 Kent Road, Mascot
Sydney NSW 2020 Australia
Ph: s47F
Email: s47F @eaton.com

1

APPLICATION FOR TARIFF CONCESSION ORDER (TCO)

Are you aware that substitutable goods are produced in Australia in the ordinary course of business?

(a) If you are aware, based on information and your inquiries that substitutable goods are being produced in Australia in the ordinary course of business then you should not lodge an application for a TCO.

Do you need to apply for new TCO?

(b) Before lodging this application for a TCO, the applicant should determine whether a suitable TCO already exists. Information on existing TCOs is contained in the Schedule of Concessional Instruments (SCI), which is available on the Internet at **www.customs.gov.au.**

Have you verified that there are no substitutable goods produced in Australia (refer to questions 5, 6 and 7 of the form)?

(c) Section 269FA of the *Customs Act 1901* states "It is the responsibility of an applicant for a TCO to establish, to the satisfaction of the Chief Executive Officer (CEO), that, on the basis of:

(i) all information that the applicant has, or can reasonably be expected to have; and

(ii) all inquiries that the applicant has made, or can reasonably be expected to make;

there are reasonable grounds for asserting that the application meets the core criteria".

The application is taken to meet the core criteria if, on the day of lodgement of the application, **no substitutable goods** were produced in Australia in the ordinary course of business.

Completing the application

(d) Section 269F of the *Customs Act 1901* requires that a TCO application be in writing, be in an "approved form", contain such information as the form requires, and be signed in the manner indicated in the form. **This is the approved form for the purposes of that section.**

(e) Section 269F(3) states that a TCO application must contain:

14/03432

(a) a full description of the goods to which the application relates; and

(b) a statement of the tariff classification that, in the opinion of the applicant, applies to the goods; and

(c) if the applicant is not proposing to make use of the TCO to import the goods to which the application relates into Australia on the applicant's own behalf – the identity of the importer for whom the applicant is acting; and

(d) particulars of all inquiries made by the applicant (including inquiries made of prescribed organisations) to assist in establishing that there were reasonable grounds for believing that on the day on which the application was lodged, there were no producers in Australia of substitutable goods.

Question 1 to 8 must be answered

(f) Failure to supply the information required by this form will result in rejection of the application (and in the loss of operative date.)

(g) Customs and Border Protection may require an applicant to substantiate, with documentary evidence, any information provided in the application form. Customs and Border Protection may also undertake its own inquiries as allowed under section 269M.

(h) Receipt of your application will be acknowledged. Any resultant TCO will operate from the date of receipt.

(i) Where an application is accepted as being a valid application, the identity of the applicant and of the importer for whom the applicant is acting will be published in the *Commonwealth of Australia Tariff Concessions Gazette* (the Gazette).

(j) Further information on the Tariff Concession System is available in Part XVA of the *Customs Act 1901;* in relevant Australian Customs Notices (ACNs), Practice Statements and related Instructions and Guidelines on the Internet at **www.customs.gov.au**; by e-mailing **tarcon@customs.gov.au**; or by phoning the Customs and Border Protection Information Centre 1300 363 263.

(k) Attached to this form are extracts from relevant legislation. Also please refer to Australian Customs Notice 2010/03 containing advice as to what Customs and Border Protection considers to be 'reasonable inquiries', advice on conducting searches on national and international search engines and a suggested format letter that you might choose to use when contacting potential local manufacturers to determine if it produces substitutable goods.

8

APPLICANT DETAILS

Applicant's Name: Ray Papworth & Co Pty Ltd	Australian Business Number (A.B.N): 21 084 534 716
Postal Address: 13 Arlington street Dulwich Hill 2203	
Applicant's Reference: Eaton 11KV	Company Contact: s47F
Telephone Number: s47F	Position Held: s47F
Mobile Telephone Number: s47F	Email Address: s47F @alwaysonline.net.au
Facsimile Number: 02 95727500	

IMPORTER DETAILS

If same as applicant write "as above" Importer's Name: Eaton Industries Pty Ltd	Australian Business Number (A.B.N): 66 103 014 571
Postal Address: 10 Kent Rd Mascot NSW 2020	
Importer's Reference: 11 kv	Company Contact: s47F
Telephone Number: s47F	Position Held: s47F
Mobile Telephone Number:	Email Address: s47F @Eaton.com
Facsimile Number:	

AGENT/BROKER DETAILS (if applicable)

Agent's Name: same as applicant	Australian Business Number (A.B.N):
Postal Address:	
Agent's Reference:	Agency Contact:
Telephone Number:	Position Held:
Mobile Telephone Number:	Email Address:
Facsimile Number:	

Is this application intended to support an application for a concession under the Enhanced Project By-law Scheme?

☐ YES ☑ NO

1. DESCRIPTION OF GOODS

(a) The description of the goods in the application may be used as the description of the goods in the TCO (if made).

(b) The application must provide a full description of the goods, including the physical features of the various components of the goods. It must not describe the goods in terms of what they do.

(c) In accordance with section 269SJ of the Customs Act 1901, the CEO must **not** make a TCO in respect of goods:

(i) described in terms other than in generic terms; or
(ii) described in terms of their intended end use; or
(iii) declared by the regulations to be goods to which a TCO should not be extended.

Goods will be taken to be described in terms other than in generic terms if, for example, their description, either directly or by implication, indicates that they are goods of a particular brand or model, or that a particular part number applies to the goods.

(d) Guidance on the drafting of the description of goods is contained in relevant Practice Statements and/or Instructions and Guidelines on the Internet at **www.customs.gov.au.** Failure to comply with Customs and Border Protection requirements may result in rejection of the application.

Describe the goods as you would propose the wording to appear if the Tariff Concession Order is granted.

8537.20.90: SWITCHGEAR ,air insulated , incorporating vacuum circuit breaker and/ or fuse contactor ,

having a rated voltage NOT less than 3.6 kV

2. ILLUSTRATIVE MATERIAL

Attach technical and illustrative descriptive material (IDM) as well as any extracts from the relevant industry standard (if referred to in the description of the goods) and/or a sample to enable full and accurate identification of the goods the subject of the application. This application will be rejected if insufficient or inadequate IDM is provided.

Please note that simply supplying a reference to a website is not acceptable.

3. TARIFF CLASSIFICATION

(a) Identify the tariff classification (to 8 figure subheading level) 8537.20.90

(b) Identify the General Duty rate 5 %

(c) If a Tariff Advice for the goods has been sought or obtained, please provide the TA No or attach a copy. NO~ 20838000/ Decision

4. USES OF THE IMPORTED GOODS

Describe ALL uses (including design uses) to which the goods can be put.

The subject goods are designed to provide safe, reliable switching and fault protection for electrical circuits

5. Information that the applicant and importer has regarding Australian manufacturers of substitutable goods or potentially substitutable goods.

The following questions require the applicant and the importer (if a different party to the applicant) to provide details of all information that they have with regard to the presence of Australian manufacturers of substitutable goods or potentially substitutable goods.

5A APPLICANT.

In considering the goods which are the subject of this TCO application, is the applicant aware of any Australian manufacturers or producers of substitutable goods, or of potentially substitutable goods?

☐ YES ☑ NO If YES, please provide the names of these Australian manufacturers or producers.

5B - IMPORTER.

In considering the goods which are the subject of this TCO application, is the importer (as listed on page 2) aware of any Australian manufacturers or producers of substitutable goods or potentially substitutable goods?

☐ YES ☑ NO If YES, please provide the names of these Australian manufacturers or producers

5C. Please provide details of other information that the applicant and/or importer may have to assist in locating any local manufacturers.

(i) **Is the applicant and/or importer a member of a relevant industry association and, if so, what is the name of the association?**

☐ YES ☑ NO

If YES, what is the name of association/s:

(ii) **Has the applicant and/or importer attended, in the past year, any trade fairs or industry events where Australian manufacturers and producers of goods that may be substitutable have been exhibitors?**

☐ YES ☑ NO

If YES, what is/are the name/s of relevant Australian manufacturers of potentially substitutable goods that may have exhibited?

(iii) **In the past two years, has the applicant and/or importer participated in government and/or trade procurement processes (for example, tenders for made-to-order capital equipment) which might indicate the existence of Australian manufacturers or producers of goods that are substitutable, or potentially substitutable, for the goods that are the subject of this TCO application?**

☐ YES ☑ NO

If YES, describe each procurement process, and type of goods, including made-to-order capital goods, that were the subject of each procurement process and any Australian manufacturers or producers known to have participated in each procurement process?

6. INQUIRIES THAT THE APPLICANT AND/OR IMPORTER HAS MADE REGARDING LOCAL MANUFACTURERS OF SUBSTITUTABLE GOODS, OR OF POTENTIALLY SUBSTITUTABLE GOODS?

The following questions require you to provide details of all inquiries that the applicant and/or importer have made to assist the CEO in establishing that there are reasonable grounds for believing that, on the day on which the application was lodged, there were no producers or manufacturers in Australia of substitutable goods, or potentially substitutable goods.

6A - PRESCRIBED ORGANISATIONS - Prescribed organisations, such as the Industry Capability Network, are listed in Regulation 179A of Customs Regulations 1926.

Have you asked a prescribed organisation to obtain advice about whether there are manufacturers or producers in Australia of substitutable goods, or of potentially substitutable goods?

☐ YES Please attach a copy of the terms of the request and all advice received. If you have obtained a report from a prescribed organisation, you are not required to answer 6B.

☑ NO If you have not obtained a report from a prescribed organisation, you are required to answer 6B.

6B. SEARCHES OF THREE DIFFERENT DATABASES CONTAINED IN TRADE DIRECTORIES, PUBLIC SEARCH ENGINES OR WEBSITES LISTING AUSTRALIAN PRODUCTS

If you have not obtained a report from a prescribed organisation, you must make inquiries in at least three databases to locate the possible existence of Australian manufacturers or producers of goods that may be substitutable for the goods the subject of the TCO application. Examples of these databases may include trade directories such as Kompass, search engines such as Google, and websites listing Australian products such as **www.australianmade.com.au.** Please refer to ACN 2010/03 for guidance as to what Customs and Border Protection considers to be a reasonable search.

1 - Name of database: Kompass

Search terms used in database: Medium Voltage Electrical Switchgear-and Electrical Swithgear

Please attach printouts of the search results. For search engines such as Google, please supply only the first three pages.

2 - Name of database: Google

Search terms used in database: Medium Voltage Switchgear

Please attach printouts of the search results. For search engines such as Google, please supply only the first three pages.

3 - Name of database: .australianmade.com.au/

Search terms used in database: Medium Voltage Electrical Switchgear

Please attach printouts of the search results. For search engines such as Google, please supply only the first three pages.

6C. INDUSTRY ASSOCIATIONS

Has the applicant and/or importer made inquiries of industry associations in Australia representing suppliers, manufacturers of the goods that may be substitutable to those the subject of the TCO?

☐ YES Please attach a copy of the terms of the request and any response received.

☑ NO Please explain why you have not made enquiries.

Eaton advises they have been suppliers of the subject goods into the Australian market for many years and are not aware of any of any Australian manufacturers that produce in the ordinary course of business Medium Voltage Electrical Switchgear goods substitutable for those for which concession is sought

7. NOTIFICATION OF POTENTIAL AUSTRALIAN MANUFACTURES

If any of the answers to questions 5 or 6 identified any potential local manufacturers of substitutable goods, please provide details of the inquiries that you undertook to notify those local manufacturers of your application and to seek advice as to whether they believe they manufacture any substitutable goods. Please refer to Australian Customs Notice 2010/03 for a suggested format of a letter to a potential local manufacturer of substitutable goods.

Please provide a copy of your request to each business. Please provide the business names, details of the contact that you made and all responses received at the time of lodging this application.

1 - Name and address of business: The source and results of our research including any responses are attached

Please provide a copy of your request to each business. Is the copy attached? ☑ YES ☐ NO

Please provide a copy of the response provided, if any. Is their response attached? ☑ YES ☐ NO

2 - Name and address of business:

Please provide a copy of your request to each business. Is the copy attached? ☐ YES ☐ NO

Please provide a copy of the response provided, if any. Is their response attached? ☐ YES ☐ NO

3 - Name and address of business:

Please provide a copy of your request to each business. Is the copy attached? ☐ YES ☐ NO

Please provide a copy of the response provided, if any. Is their response attached? ☐ YES ☐ NO

4 - Name and address of business:

Please provide a copy of your request to each business. Is the copy attached? ☐ YES ☐ NO

Please provide a copy of the response provided, if any. Is their response attached? ☐ YES ☐ NO

8. JUSTIFICATION FOR APPLICATION

Where potential Australian producers or manufacturers have been identified in questions 5, 6 or 7, please provide details as to why you believe that they do not produce substitutable goods in Australia in the ordinary course of business.

Please refer to the attached definitions for the legislative definitions of 'core criteria', 'substitutable goods', 'goods produced in Australia' and 'the ordinary course of business'

The applicant has supplied goods of this type for many years

and is not aware of any substitutable goods available from Australian manufacturers further none of the companies revealed by

our research to be potential local manufacturers of substitutable goods has responded to our correspondence

The foregoing companies have been contacted to establish whether or not they manufacture substitutable goods in Australia.

Copies of our correspondence together with any replies are attached.

If despite our request companies have not responded to our correspondence we consider that they have no interest in this applicatio

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APPLICANT'S DECLARATION

I, s47F | Position Held s47F

Company: (if applicable) Ray Papworth & Co Pty Ltd

declare that:

1. I have the authority to act on behalf of the company/applicant;
2. To the best of my knowledge and belief the information contained in this form including any attachments is correct;
3. I have ensured that questions 1 to 8 are completed and supporting documents are provided; and
4. I agree, in submitting this form by electronic means (including facsimile) that, for the purposes of Sub-section 14(3) of the Electronic Transactions Act 1999, this application will be taken to have been lodged when it is first received by an officer of Customs and Border Protection, or if by e-mail to **tarcon@customs.gov.au**, when it is first accessed by an officer of Customs and Border Protection, as specified in Sub-Section 269F(4) of the Customs Act 1901.
5. I have read the relevant Australian Customs Notice headed Applicant's Obligations in Making a TCO application and the definitions attached to this form and understand my obligations under Section 269FA with regard to the making and processing of Tariff Concession Order applications.
6. I acknowledge that I understand that under Section 269M(6) of the *Customs Act 1901* that at any time during the period of 150 days from the gazettal day, the CEO may, for the purpose of dealing with a TCO application, and despite section 16 of the Customs Administration Act 1985, give a copy of all, or of a part, of the application to a prescribed organisation with a view to obtaining the advice of the organisation in relation to the question whether there are any producers in Australia of substitutable goods.

Signature of Applicant/Agent/Broker s47F Date: 22 / 01 / 2014

NOTE:

Section 234 of the Customs Act 1901 provides that it is an offence to make a statement to an officer that is false or misleading in a material particular.

Before lodging your form please ensure that you have attached the following:

- ☑ Attached IDM/Samples?
- ☑ Attached Local Manufacturer search results?
- ☑ Application signed & dated?
- ☑ Questions 1-8 answered?
- ☑ All enquiries requested undertaken?

When this form has been completed please lodge it with Customs and Border Protection by:

•posting it by prepaid post to:

Director
Tariff Concession Section
Trade Services Branch
Australian Customs and
Border Protection Service,
Customs House
5 Constitution Avenue
CANBERRA ACT 2601

OR

•delivering it to the ACT Regional Office located at:
Customs House, Canberra

OR

•sending it by facsimile to: (02) 6275 6376

OR

•e-mailing it to: tarcon@customs.gov.au

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FOR OFFICE USE ONLY AUSTRALIAN CUSTOMS AND BORDER PROTECTION SERVICE STAFF

269(H) Screening the Application

Is the CEO satisfied that the application complies with Section 269F?	☐ YES	☐ NO
Is the CEO satisfied that the applicant has discharged all responsibilities referred to in section 269FA?	☐ YES	☐ NO
Is the CEO aware of any producer in Australia of substitutable goods?	☐ YES	☐ NO
Are the goods on the Excluded Goods Schedule (Regulation 185)?	☐ YES	☐ NO
Does a TCO already exist for these goods?	☐ YES	☐ NO

Information for applicants - some useful definitions from the Customs Act 1901

269B Interpretation

substitutable goods, in respect of goods the subject of a TCO application or of a TCO, means goods produced in Australia that are put, or are capable of being put, to a use that corresponds with a use (including a design use) to which the goods the subject of the application or of the TCO can be put.

(3) In determining whether goods produced in Australia are put, or are capable of being put, to a use corresponding to a use to which goods the subject of a TCO, or of an application for a TCO, can be put, it is irrelevant whether or not the first mentioned goods compete with the second mentioned goods in any market.

269C Interpretation - core criteria

For the purposes of this Part, a TCO application is taken to meet the core criteria if, on the day on which the application was lodged, no substitutable goods were produced in Australia in the ordinary course of business.

269D Interpretation - goods produced in Australia

(1) For the purposes of this Part, goods, other than unmanufactured raw products, are taken to be produced in Australia if:
- (a) the goods are wholly or partly manufactured in Australia; and
- (b) not less than ¼ of the factory or works costs of the goods is represented by the sum of:
  - (i) the value of Australian labour; and
  - (ii) the value of Australian materials; and
  - (iii) the factory overhead expenses incurred in Australia in respect of the goods.

(2) For the purposes of this Part, goods are to be taken to have been partly manufactured in Australia if at least one substantial process in the manufacture of the goods was carried out in Australia.

(3) Without limiting the meaning of the expression substantial process in the manufacture of the goods, any of the following operations or any combination of those operations does not constitute such a process:
- (a) operations to preserve goods during transportation or storage;
- (b) operations to improve the packing or labelling or marketable quality of goods;
- (c) operations to prepare goods for shipment;
- (d) simple assembly operations;
- (e) operations to mix goods where the resulting product does not have different properties from those of the goods that have been mixed.

(4) For the purposes of this section, the CEO may, by instrument in writing published in the *Gazette:*
- (a) direct that the factory or works cost of goods is to be determined in a specified manner; and
- (b) direct that the value of Australian labour, the value of Australian materials or the factory overhead expenses incurred in Australia in respect of goods is to be determined in a specified manner;

and those directions have effect accordingly.

(5) The provisions of sections 48 (other than paragraphs (1)(a) and (b) and subsection (2)), 48A, 48B, 49A and 50 of the Acts *Interpretation Act 1901* apply in relation to directions given under subsection (4) as if:
- (a) references in those provisions to regulations were references to directions; and
- (b) references in those provisions to the repeal of a regulation were references to the revocation of a direction.

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269E Interpretation - the ordinary course of business

(1) For the purposes of this Part, other than section 269Q, goods (other than made-to-order capital equipment) that are substitutable goods in relation to goods the subject of a TCO application are taken to be produced in Australia in the ordinary course of business if:

(a) they have been produced in Australia in the 2 years before the application was lodged; or
(b) they have been produced, and are held in stock, in Australia; or
(c) they are produced in Australia on an intermittent basis and have been so produced in the 5 years before the application was lodged;

and a producer in Australia is prepared to accept an order to supply them.

(2) For the purposes of this Part, goods that:
(a) are substitutable goods in relation to goods the subject of a TCO application; and
(b) are made to order capital equipment;

are taken to be produced in Australia in the ordinary course of business if:
(c) a producer in Australia:
(i) has made goods requiring the same labour skills, technology and design expertise as the substitutable goods in the 2 years before the application was lodged; and
(ii) could produce the substitutable goods with existing facilities; and
(d) the producer is prepared to accept an order to supply the substitutable goods.

(3) In this section:

made-to-order capital equipment means a particular item of capital equipment:
(a) that is made in Australia on a one-off basis to meet a specific order rather than being the subject of regular or intermittent production; and
(b) that is not produced in quantities indicative of a production run.

Power Xpert® FMX metal-enclosed Single Busbar, Solid- and Air-insulated Switchgear
IEC Medium Voltage Switchgear up to 24 kV

FMX Smart, Innovative Design offers Economic and Reliable Solution

E·T·N
Powering Business Worldwide

Powering business worldwide

Eaton delivers the power inside hundreds of products that are answering the demands of today's fast changing world.

We help our customers worldwide manage the power they need for buildings, aircraft, trucks, cars, machinery and entire businesses. And we do it in a way that consumes fewer resources.

Next generation transportation

Eaton is driving the development of new technologies – from hybrid drivetrains and emission control systems to advanced engine components – that reduce fuel consumption and emissions in trucks and cars.

Higher expectations

We continue to expand our aerospace solutions and services to meet the needs of new aviation platforms, including the high-flying light jet and very light jet markets.

Building on our strengths

Our hydraulics business combines localised service and support with an innovative portfolio of fluid power solutions to answer the needs of global infrastructure projects, including locks, canals and dams.

Powering Greener Buildings and Businesses

Eaton's Electrical Group is a leading provider of power quality, distribution and control solutions that increase energy efficiency and improve power quality, safety and reliability. Our solutions offer a growing portfolio of "green" products and services, such as energy audits and real-time energy consumption monitoring. Eaton's Uninterruptible Power Supplies (UPS), variable-speed drives and lighting controls help conserve energy and increase efficiency.

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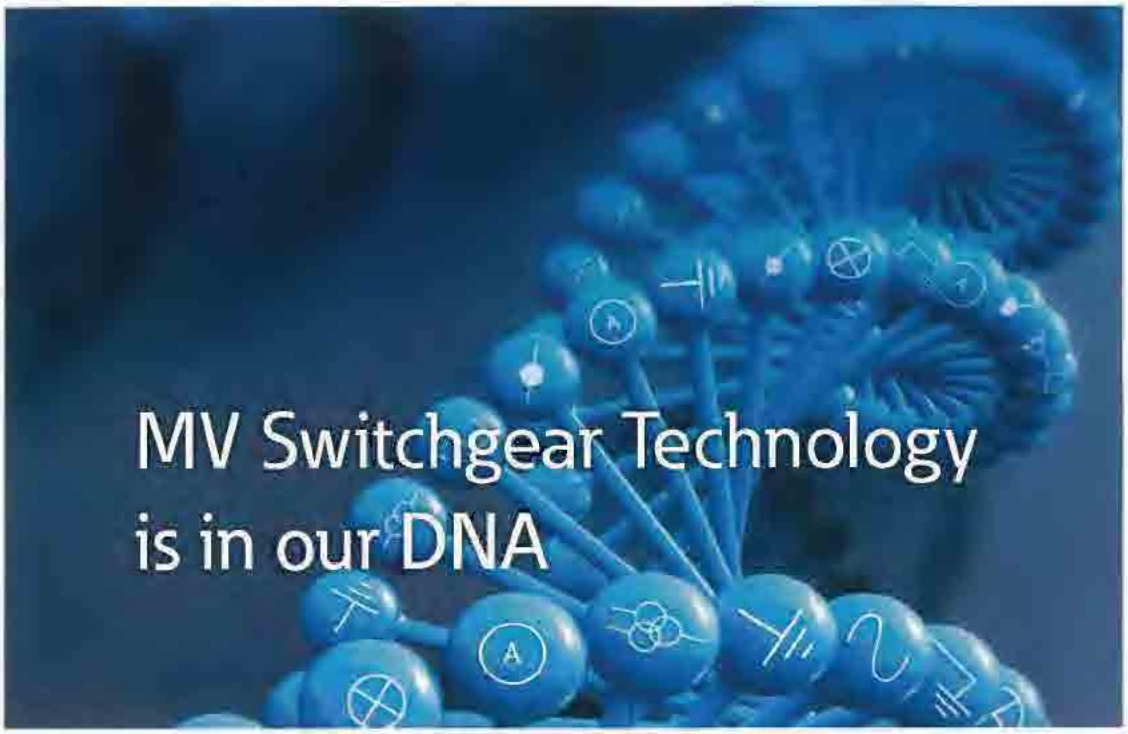


MV Switchgear Technology is in our DNA

Eaton's knowledge and understanding of industries, applications, technology and products enables us to offer customers safe, reliable and high performance solutions. We have been part of the Medium Voltage switchgear technology creation and therefore carry what's needed with us – always!

Complete MV switchgear solutions

The series of Eaton Medium Voltage systems offers switchgear and components for applications in distribution networks (main stations, substations and transformer stations) and industrial power supplies. These technically high quality systems are air- or epoxy-resin insulated and are always equipped with circuit-breakers based on proprietary vacuum interrupters.

The medium voltage switchgear systems carrying Eaton's brand are based on the use of vacuum circuit-breakers combined with solid insulation material. This is an environmentally-friendly technology in comparison with the methods used by many other suppliers, which use SF_6 as an insulation medium.

Eaton thus has a wide range of switching systems and components that offer an environmentally friendly solution for every application. Additionally, Eaton's global service network provides maximum customer support in all regions of the world.

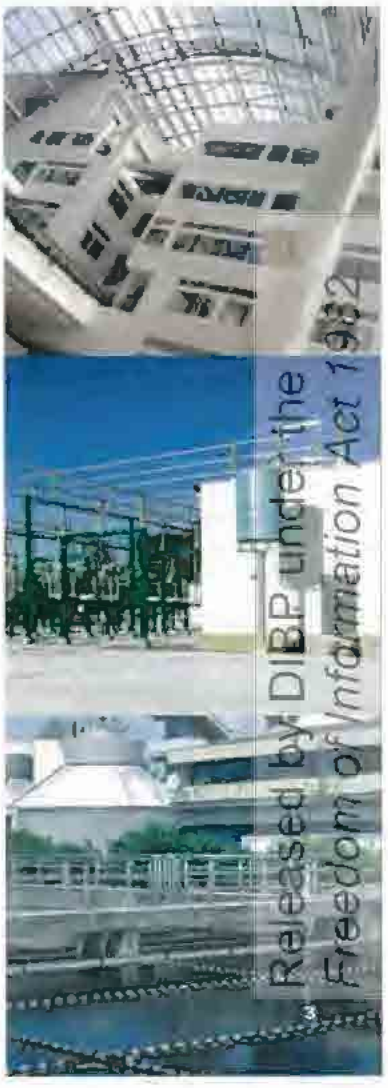
Industry leading vacuum and solid insulation technology

Through more than eighty years of innovation and experience, Eaton has developed environmentally friendly vacuum interrupters capable of reliably switching both normal load currents and high stress fault currents.

Eaton is one of the few companies in the world producing vacuum interrupters and has succeeded in developing world class products with international patents. This has been achieved through company acquisitions over the years of Westinghouse, Cutler-Hammer, MEM and Holec.

To increase the dielectric strength of the vacuum interrupter, Eaton has also designed vacuum interrupters that are encapsulated in epoxy resin material. The medium voltage IEC circuit breaker family utilizes this solid insulation technology that has been catering to a wide range of applications for more than 40 years.

Eaton's range of SF_6 free switchgear for Medium Voltage



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FMX Smart, Innovative Design offers Economic and Reliable Solution

Power Xpert® FMX is Eaton's IEC single busbar, solid- and air-insulated medium voltage switchgear system, for use up to 24 kV. The system provides reliable switching, protection, metering and distribution of electrical energy.

The modern design system uses Eaton's state of the art technology and is manufactured in accordance with the highest quality standards. Within the system our engineers have integrated Eaton core technologies, such as vacuum technology, solid insulation and electrical field control. More than a century of experience in design and production of medium voltage systems has gone into the product.
Type FMX switchgear features a reliable and compact system design, which benefits from the best practices incorporated in Eaton's current range of MV systems. The system is tested according the latest standard IEC 62271.

The system uses only environmentally friendly technology and materials. Since the type FMX system is based on vacuum technology and solid insulation, the system is the latest environmentally friendly "green" switchgear on the market.

The new system incorporates highly innovative technology, by implementing an electro-magnetic mechanism for the circuit-breaker control, and it introduces an integrated cable test facility outside of the high voltage compartment.

Complete Range up to 2000 A

The FMX comprises a complete range up to 2000 A, with metal-enclosed modular compact panels of a minimal 500 mm width. Both the 12 and 24 kV versions use the same compact housing.

FMX completes the range of Eaton medium voltage switchgear, being an extension to the successful products MMS (double busbar), Unitole (withdrawable switchgear), SVS (single busbar secondary switchgear) and Xiria (ring main unit).

In combination with Eaton's low voltage switchgear, busbar trunking, UPS products, project management and service capabilities, the FMX can be part of a state of the art, complete solution.

Application Areas

The FMX is ideally suited for applications in main feeder stations, sub-distribution stations and specific customer requirements in (process) industry, commercial and governmental buildings and infrastructure projects.
The design makes the FMX system especially suitable for applications where a reliable, safe, economic (e.g. compact) and clean (e.g. non-toxic) environment is necessary.

Some applications are:

- Utilities (main- and sub-distribution stations)
- Commercial and governmental buildings
- Infrastructure projects (tunnels, subways, airports, etc.)
- Hospitals
- Process industry
- Cement industry
- Mining industry
- Automotive industry
- Petrochemical plants
- Textile and paper industry
- Food industry
- Data centres

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Features and Benefits
(quick overview)

Safe in Use

- Compartments protected against penetration by objects
- Capacitive voltage detection system for verification of safe isolation from supply
- Operation only possible with closed cable compartment
- Logical mechanical and electrical interlocks prevent mal-operation
- Cable testing via integrated cable test facility outside high voltage compartments
- Voltage transformers can be (dis)connected from the primary circuit, with closed high voltage compartments
- Smooth contemporary design

Low Total Cost of Ownership

Low initial costs due to:

- Panels minimum 500 mm width
- Cable connection from the front (back to wall arrangement)
- Integrated arc channel with absorbers
- 12 kV and 24 kV panels in the same housing

No costs during service due to

- Robust design with a minimum number of parts (routine tested in factory)
- Long-life, using epoxy resin as insulation medium
- Maintenance-free circuit-breaker (electromagnetic mechanism and vacuum interrupters)
- No SF_6 pressure checks

Low end of life disposal cost due to

- Vacuum switching technology
- Solid insulation with air as insulating medium
- Recycling or re-use of materials

User Friendly

- Cable connection and user interfaces for operation on the frontside of the unit
- Ergonomic cable connection height of 750 mm from floor level
- Different cable cone lengths for easy cable connection
- Cable (secondary) entry points on both sides of the low voltage compartment top plate
- Secondary cable terminals positioned at a good reachable height within the low voltage compartment
- Clear and simple, straightforward operation panels
- Facility for (dis)connecting the voltage transformers, easily accessible from the front without entering the HV compartment
- Integrated cable test facility positioned on the manual operation panel

Environmentally Friendly

- Minimised number of components
- Environmentally-friendly materials used in the design
- No use of SF_6-gas for switching and insulation (green switching)
- Energy-efficient production and assembly, with environmentally friendly energy sources
- Minimal number of transition points in the primary design enables low energy loss during operation
- Only re-usable and/or recyclable materials used

Reliable and Safe in Operation

- Complete design certified in accordance with IEC
- Arc fault tested in accordance with IEC 62271-200
- Quality assurance in accordance with DIN EN 9001
- Product quality guaranteed by execution of prescribed routine tests during production
- Single pole insulated primary parts within one compartment
- Separate busbar compartment
- Integrated cable test facility
- Ferro-resonance protected voltage transformers
- Integrated (internal) arc absorbers

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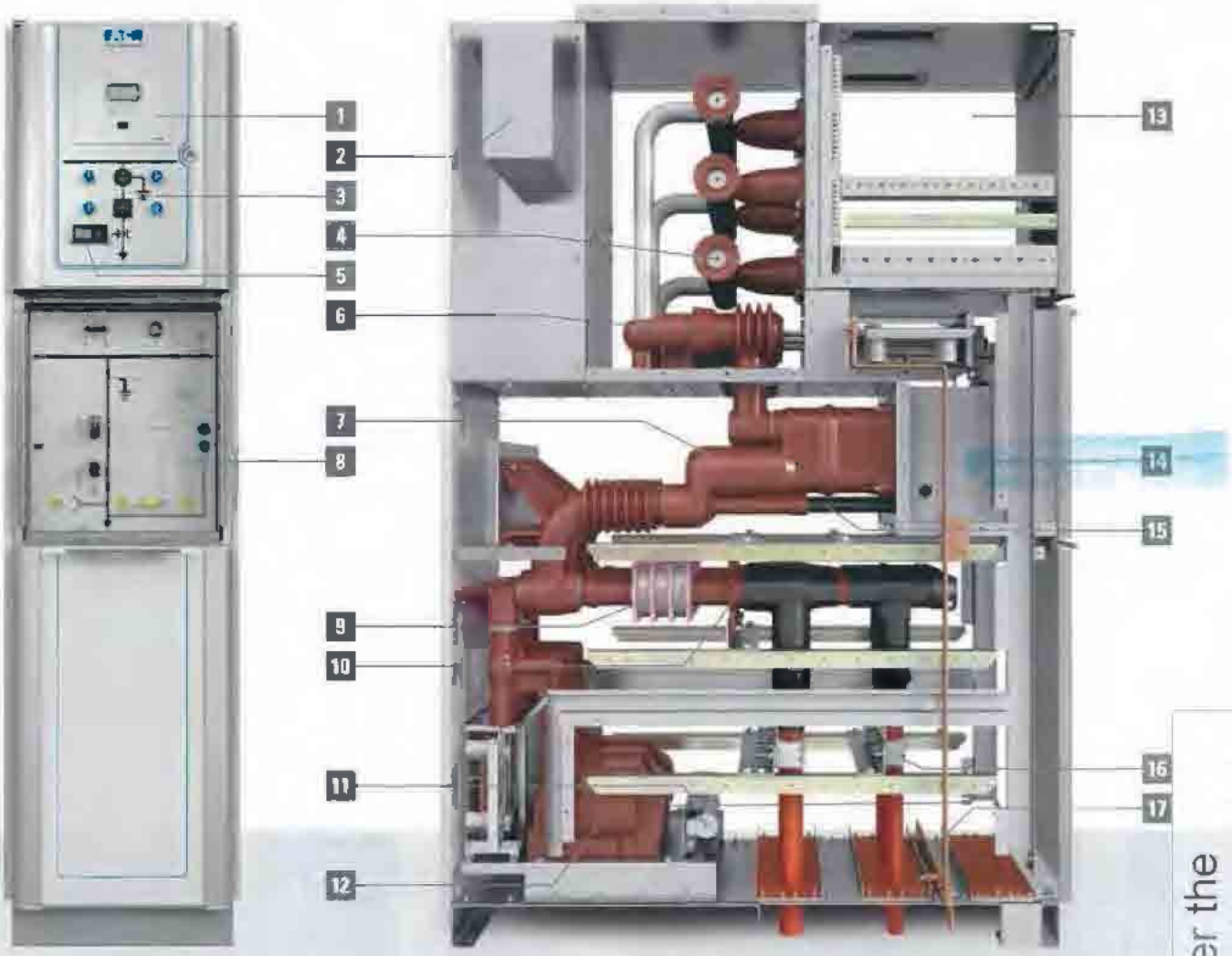
Basic Design

The FMX system is modular in construction. This ensures that any panel combination and sequence is possible.

In addition, the number of panels capable of being used in an installation is unlimited, as several sections can easily be connected. The panels in the FMX system are compact (min. 500 mm wide), resulting in considerable savings in costs and installation space.



Circuit-breaker panel (example)

1. Protection relay
2. Arc absorber
3. Mimic diagram with push buttons for operation of circuit-breaker and two-position change-over switch
4. Busbar
5. Voltage detection system
6. Two-position change-over switch
7. Vacuum interrupter
8. Manual operation panel with position indicator
9. Current transformers
10. Cable cones
11. Coil and resistor for protection against ferro-resonance
12. Voltage transformers
13. Low voltage compartment (electrical control panel)
14. Vacuum circuit-breaker with electromagnetic mechanism
15. Cable test facility
16. Cable clamps
17. Earth bar

Main Components

Vacuum circuit-breaker

The vacuum circuit-breaker uses a simple and reliable electromagnetic mechanism for operation of the vacuum interrupters. The construction of the mechanical linkage between the actuator and the drive rod of each of the three vacuum interrupters is reduced in complexity, compared to a conventional spring-charged mechanism.

Features

- Environmentally friendly vacuum interrupters
- Electromagnetic mechanism with controller
- Mechanical lever for hand-operated operation (switch off)
- Mechanical position indicator for Open / Closed position
- Auxiliary contacts for Open / Closed position

Two-position change-over switch

All panels are equipped with a change-over switch consisting of interconnected contact pins moving in the horizontal plane. Since it is mechanically interlocked, the change-over switch can only be operated when the circuit-breaker is in the open position.

Features

- Motor or manually-operated switch with two positions (Service / Earthed)
- Interconnected contact pins moving in the horizontal plane
- Contact pins epoxy resin insulated and located in the busbar compartment
- Auxiliary contacts for Service / Earthed positions
- Mechanical position indicators
- Interlocked with the vacuum circuit-breaker

Busbars

The busbars in the panel are constructed from high-quality aluminium bars of standardised cross-sections. The shape of the busbar has been designed to attain optimal electrical field control.

Features

- Busbars constructed from high-quality aluminium
- Branch of busbars made of copper or aluminium
- Aluminium parts are coated with galvanic silver layer
- Contact surfaces are treated with Penetrox
- Housed in busbar duct covering the full width of the panel
- Air insulated
- Situated in fully closed compartment complying with IP4X degree of protection

Eaton Core Technologies

Solid insulation using cast resin technology

Epoxy resin (cast resin) is used as high-quality primary solid insulation material around live parts.

By using cast resin technology for solid insulation, Eaton design engineers can shape the parts specifically for optimal insulation, robust construction and cooling purposes.

With many years of experience of design and manufacture of epoxy resin insulated components, we have learned to integrate conductors and vacuum interrupters directly into the moulding, and to make complex shapes. FMX utilises optimal field control through the special design of all primary components.

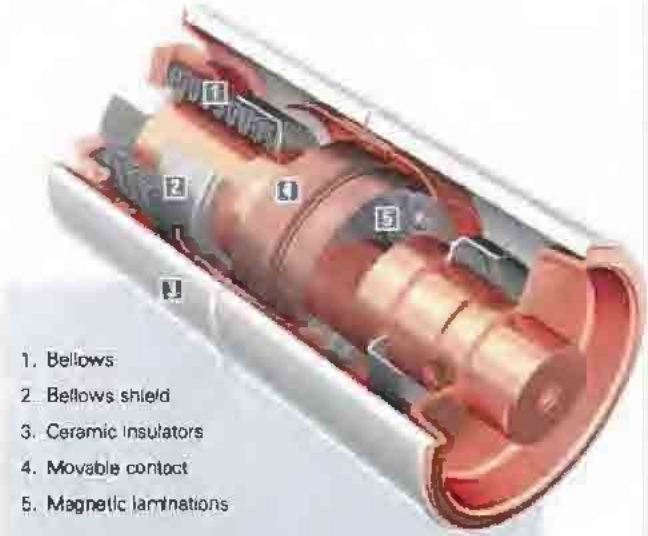
Electrical field control

With conventional shapes for primary components like busbars and conductors, the electrical field between the phases, and between phases and earth, is non-uniformly distributed. In areas with high fields, partial break-through can trigger avalanches resulting in flash-overs. In-depth knowledge of breakthrough phenomena and field steering techniques enables us to prevent flash-over completely. The result is a particularly compact design.

Vacuum technology: safe, compact and reliable

Eaton vacuum interrupters consist of a ceramic cylinder, housing a fixed and movable contact. Movement of the contact under vacuum conditions is performed by bellows. A shield surrounding the contacts prevents the insulators from becoming contaminated by metal vapour produced during current interruption. This shield also ensures good potential distribution over the insulator.

A special feature of Eaton vacuum interrupters is that a large number of parallel arcs are created between the contacts. This "diffuse discharge" is characterised by very low arc voltage and short arc times, resulting in very low arc energy. Contact wear in a vacuum interrupter is therefore virtually negligible. Vacuum interrupters are maintenance free and are certified up to 30,000 operation cycles



1. Bellows
2. Bellows shield
3. Ceramic insulators
4. Movable contact
5. Magnetic laminations

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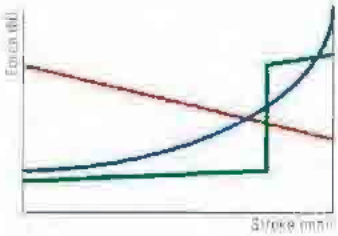
Innovative Electromagnetic Mechanism

The advantage of an electromagnetic mechanism over a conventional spring operated mechanism

To switch a vacuum interrupter effectively, the driving mechanism has to operate according to a specific force-stroke characteristic (—), see the diagram.



Force-stroke characteristics
- — as required by vacuum switch
- — as offered by a conventional spring operated mechanism
- — as offered by an electromagnetic mechanism

A conventional, spring operated mechanism has force-stroke characteristics (—) that differ greatly from the required characteristics. The required force-stroke diagram therefore has to be transferred from the spring characteristics, leading to mechanisms that require a large number of links moving at high speed.

An electromagnetic mechanism has a force-stroke diagram (—) that already resembles the force-stroke characteristic that is required for vacuum switchgear. Therefore electromagnetic mechanisms can be very simple in their construction. They consist of a minimum amount of parts and can be coupled directly to the vacuum interrupter, because of the favorable force-stroke characteristics. Due to this direct coupling maximum rigidity is reached, which is advantageous for the rate at which contact pressure is reached and the effectiveness of contact breaking.

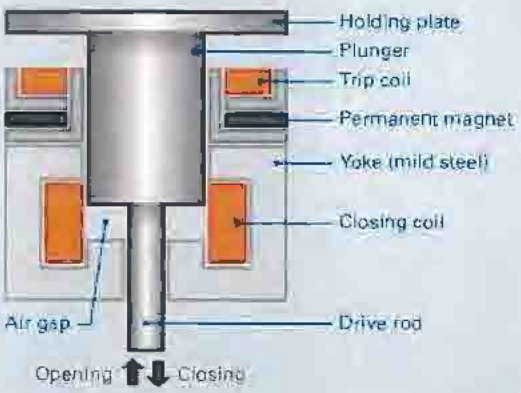
To summarise, the electro-magnetic mechanism has the following advantages:

- Superior reliability due to use of less parts and direct drive with high rigidity
- Cost effective, maintenance free and compact due to the low number of parts
- Tested for a high number of 30,000 switching cycles

Innovative Electromagnetic Mechanism in FMX switchgear

Eaton's electromagnetic mechanism is based on the idea of separating the magnetic circuits for closing, holding and opening.

The mechanism consists of a permanent magnetic actuator and the basic mechanism in which a drive rod is connected to the vacuum interrupter. The permanent actuator is mono-stable; only the closed position is maintained by permanent magnets. The end position for opening, and therefore the stroke of the actuator, can be chosen at random within certain limits. For this innovative concept, a patent has been granted.



The standard position of the plunger is in the upper position. In this position the circuit-breaker is in the open position.

Closing

To close the circuit-breaker, the closing coil is energised. The current creates a magnetic flux in the yoke, which forces the plunger down. The force on the plunger is directly proportional to this current. When the force on the plunger becomes greater than the counteracting forces of the opening spring, the closing movement starts. When closed, the drive rod is kept in position by permanent magnets.

Opening / tripping

Opening is basically a passive action: the energy stored in the contact pressure spring and the opening spring is released. The release of this energy can be occasioned by an integrated trip coil, or a mechanical lever.

Tripping (opening) the circuit-breaker is done by energising the tripping coil. By this, the magnetic flux of the permanent magnet is partly compensated. As soon as the holding force of the permanent magnet is less than that of the contact pressure spring, the plunger will move to the upper position, consequently opening the contacts in the vacuum interrupters. Due to the force in the contact pressure spring, the required energy for tripping is very low compared to closing the breaker.

Reliable and Safe in Operation

Eaton's proven technologies have been integrated in the design and development of the FMX in order to ensure that the switchgear is safe and has high operational reliability throughout its complete lifetime.

Experience and knowledge gained over many years in the areas of cast resin technology, vacuum technology and electrical field control have been implemented.

The system has been thoroughly arc fault tested according to the latest standard IEC 62271-200.

Preventing an Internal Arc

Within the FMX design, different technologies are used to prevent an internal arc.

Use of electrical field control

Engineers designed the busbar compartment and its components (e.g. busbars, conductors) based on Eaton's key technology for electrical field control. By means of special shapes and dimensions, the possibility of an internal arc is minimised.

Protected voltage transformers

Ferro-resonance causes damage to voltage transformers and consequently initiates an internal arc in the switchgear. The design prevents the voltage transformers from being affected by ferro-resonance by installing a resistor and a coil in the tertiary circuit of the voltage transformer.

Separated busbar compartment

The FMX has a separate busbar compartment to prevent an internal arc. This compartment can be classified as non-accessible and has an IP rating of IP4X.

Coupling the busbar and constructing the compartment on site will be carried out by specially trained service personnel.

Single pole insulated primary parts

All high voltage parts in accessible compartments are single pole insulated. The insulation material used for this is epoxy resin (cast resin), a high-quality material with optimal insulation characteristic resulting in minimised dimensions.

Integrated cable test facility

Internal arcs due to bad cable connections are becoming fewer, however they still occur. Therefore cables are tested before going live.

The FMX is equipped with an integrated cable test facility. This eliminates the need to remove covers and disturb cable connections therefore reducing risk of incorrect re-installations of cable connectors or covers.

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Routine tests

Various prescribed routine tests are carried out during the production of the switchgear. To assure quality, all processes are in accordance with DIN EN 9001. This means that at every stage of production the components, circuit-breakers and current transformers are inspected for correct functioning. When the entire installation has been assembled, a thorough visual inspection is carried out, together with mechanical, functional and electrical checks

Philosophy on internal arcs

Eaton always puts extra focus on creating safe switchgear for operators at all times. One of the biggest potential threats to operators is an internal arc in switchgear.

Engineers therefore did everything necessary in design and construction to prevent internal arcs, despite the fact that it is very rare for an operator to be in front (without operating) of the switchgear at exactly the same time that an internal fault occurs.

Eaton supports the philosophy that it is best to avoid internal arcs than to cure, in line with the relevant standard IEC 62271-200. Within the FMX design a double prevention philosophy is used. Firstly, the design is constructed in such a way that an internal arc is prevented. In the unlikely case that an internal arc could occur, the FMX is equipped to provide maximum safety to the operator, and to control and minimise damage to the rest of the switchgear and room.

Controlling an Internal Arc

An internal arc in switchgear causes an overpressure, together with the release of fire and smoke.

By design, vacuum and air/solid insulated switchgear has the least environmental impact after an internal arc event. The impact of an arc is twofold internal impact (in the switchgear) and external impact (in the switch room).

The overpressure created by an internal arc will, in standard switchgear, be channeled out of the switchgear by means of a pressure relief duct. This duct is normally an additional compartment to the switchgear and therefore increasing the panel dimension. As an alternative to the duct, a complicated and expensive arc channel can be installed, which guides the arc output into the switch room. The FMX is designed in such a way that both impacts are significantly reduced, and therefore in essence no complicated and costly arc channel is needed

No phase-to-phase short circuits minimises pressure

Within the FMX, all high voltage parts in accessible compartments are single pole insulated. The advantage of this single pole construction is that the only conceivable internal fault is a single-phase short circuit, e.g. due to a cable connection failure (when single-core cables are connected, as is normal practice nowadays)

Integrated compartments reduce pressure

By integrating different compartments, internal arc pressure is significantly reduced because of the volume.

For the FMX panel, cable connection, circuit-breaker and voltage transformers are integrated in one large, metal enclosed, compartment instead of individual small compartments.

The busbar compartment of the switchgear consists of one overall compartment with no extra partitions between panels.

Arc absorber reduces output impact

To minimise the impact of an internal arc in the busbar compartment, the arc is "guided" outside the panel by an arc absorber installed in the rear of the unit. A standard FMX feature is the use of an integrated arc absorber to reduce output into the switch room. By using ceramic blocks with an absorbing surface of 9 m^2 this absorber breaks up and filters gasses and fire significantly.

Safe in Use

Throughout the development of the switchgear, the safety of the operator during usage of the FMX was one of the most important criteria. Within the FMX, different features provide a safe situation for operators.

Compartments protected against penetration by objects

Within the FMX it is not possible to accidentally penetrate the switchgear with part of the body or a tool. For the latter, all high voltage compartments are rated to IP4X degree, and the low voltage compartment to IP3XD degree.

Capacitive voltage detection system for verification of safe isolation from supply

Each circuit-breaker panel within the FMX is equipped with a standard three-phase Voltage Detection System for voltage testing to IEC 61243-5. The VDS shows the operator if the panel is isolated from the supply or not.

Operation is only possible with closed cable compartment

The door of the cable compartment can only be opened when the circuit-breaker is in the earthed and padlocked position. This circuit-breaker position is maintained when the cable compartment door is removed. Also this position blocks the circuit-breaker mechanically, as well as electrically, from switching, therefore maintaining the safe earthed position whilst the door is removed. Operation of the circuit-breaker is only possible after installing the cable compartment door again.

Logical mechanical and electrical interlocks prevent incorrect operation

Mal-operation by an operator is prevented within the FMX using both mechanical and electrical interlocks. The interlocks are mechanical and electrical. For example, electrical and mechanical interlocks prevent operation of the change-over switch when the circuit-breaker is switched on. All mechanical interlocks are constructed in such a way that they directly block the mechanism.

Cable testing via integrated cable test facility (outside high voltage compartments)

Within the FMX, cable testing can be done outside dangerous high voltage compartments. Testing is done by inserting testing pins in specially designed holes in the manual operation panel. The holes are interlocked and therefore only accessible in a safe situation.

(Dis)connecting voltage transformers from the primary circuit, with closed high voltage compartments

For prevention of damage to the voltage transformers, they always have to be disconnected during cable or busbar testing. Within the FMX, (dis)connecting can be done very safely and easily via an operating mechanism situated on the manual operation panel. This ensures that operators do not have to access to dangerous high voltage compartments when (dis)connecting.

Smooth contemporary design

All compartments of the FMX are designed in such a way that the system is safe to touch from the outside. The use of a smooth and smart design prevents operators in the area of the switchgear to be injured, from moving parts or parts that stick out of the unit.

Low Total Cost of Ownership

The FMX design guarantees very low costs related to owning the switchgear during its entire lifetime.

The life-time costs can be split into initial costs, installation costs, service costs and finally, costs for disposal of the switchgear. All costs of ownership are influenced by different features of the switchgear. Within the FMX, all these features are constructed in such a way that the costs to the owner are as low as possible, of course with no concessions to the quality of the switchgear.

Low initial costs

Initial cost consist of purchase, transport, building and installation costs.

Panels of minimum 500 mm width

By using a combination of cast resin technology, electrical field control and vacuum technologies, Eaton's engineers managed to construct FMX panels with a width of minimum 500 mm. Because a typical switchgear installation normally consists of a large number of panels, this compact design significantly reduces the switch room size. The compact design also makes FMX highly flexible and economically attractive when existing installations are being replaced.

Cable connection from the front (back to wall arrangement)

Cable connection from the front is a feature that saves building costs. Due to this front connection the rear of the FMX can be installed close to the wall of a building, again reducing building cost.

Integrated arc channel with absorbers

Another standard feature that reduces the switch room is the integrated arc channel with absorber. In normal switchgear, gasses caused by an internal arc are guided out of the switchgear by means of an extra duct and arc channel connected to the switchgear. These additions require extra switch room space and consequently increasing initial building cost.

12 kV and 24 kV panels in the same housing

The 12 kV and 24 kV versions are both accommodated in the same compact housing. This means substantial savings on building costs, because the same installation can be used when the operating voltage is increased (upgrading).

Low service cost during operation

Service cost consist of maintenance, failure and consequential cost. Besides that the technical lifetime of parts or modules will determine the replacement cost of the equipment.

Robust "lean" design with the minimum number of parts

Costs during service of switchgear can be caused by damaged parts requiring replacement, or by maintenance cycles set up for critical parts that will not reach their expected lifetime if they are not serviced.

One of the design goals was to minimise the number of parts, to prevent the FMX getting damaged during the lifetime. The robust FMX construction, using only the necessary parts, is based on over a century's experience of designing and building switchgear.

Product quality guaranteed by prescribed routine testing in the factory

During production of the panels, various prescribed routine tests are carried out by specialists, making sure that the panels achieve the quality that they are designed for.

Epoxy resin insulated components as insulation medium

Practical research work on installed switchgear reveals that epoxy resin insulated components, as used within the FMX switchgear, show no signs of ageing.

Maintenance free vacuum circuit-breaker (electromagnetic mechanism and vacuum interrupter)

Spring-charged mechanisms always have a lot of moving parts that need lubricating to operate smoothly. Most of these mechanisms need a number of maintenance cycles during the lifetime of the switchgear. Within the FMX no spring-charged mechanism is used, but instead, a maintenance-free electromagnetic mechanism. This mechanism features a very simple design, with few moving parts, and needs no lubrication.

Because this mechanism can operate 30,000 switching cycles, there is in most applications, no extra investment necessary to upgrade the switchgear during its lifetime. In addition, the vacuum interrupters can easily achieve 30,000 operations.

No SF_6 pressure checks

Switchgear that uses SF_6 gas as an insulation medium has a leakage rate. To maintain the insulation level within this type of switchgear, the pressure of the SF_6 tanks must be checked and refilled on a regular basis during the unit's lifetime. With the FMX, an owner does not have to incur the extra costs involved in checking and maintaining the required insulation level. The combination of vacuum interrupters for switching, cast resin technology and clean air as the insulation medium, is environmentally friendly and maintains the same quality level during the complete lifetime of FMX.

Low end of life disposal cost

Full recycling or re-use of materials

The primary parts of the FMX have a lifetime of at least 30 years. Depending on the location where the system is installed, this lifetime can be extended. If, for whatever reason, a decision is made not to use the switchgear anymore the FMX can be fully recycled.

Next the switchgear will be dismantled and the different materials can, and will, be categorised. Because no toxic materials are used in the FMX, dismantling is a less complicated, more cost effective and environmentally friendly operation. The dismantled and categorised materials will be, depending on the material, recycled or re-used.

User Friendly

First of all requirements is a safe and reliable installation. Number two is an installation that is convenient and efficient to operate.

The second aspect does not always get the attention it deserves, but for the FMX it most certainly did. The FMX panels are designed to be user friendly and are easy to operate.

Primarily, all operations can be carried out on the front side of the panel. This means that both cable connection and user interfaces for operation are positioned at the same front side of the panel. The logically arranged, user friendly electrical operation panel, and the user interface for manual operation, enable operators to do their job as efficiently and safe as possible.

Easy and ergonomic connection of cables

Primary cables

The cable cones of the FMX are positioned on a height of 750 mm from floor level. This height makes it relatively easy for operators to connect the primary cables. There is also enough space in the cable compartment to connect the required number of cables with connectors available on the market.

In case just one cable per phase is connected, the cable cones are positioned further to the front for easy assembly.

Secondary cables

Connecting the secondary cables is carried out by entering the low voltage compartment of the FMX from the top. The low voltage cable terminals are positioned in such a way that the operator can connect the cables easily within the compartment whilst standing in front of the FMX.

Clear and simple control panels

Incorporated in the FMX are two control panels with clear and uniform mimic diagrams.

The first (electronic) operation panel is located on the door of the low voltage compartment. This panel can, based on end-user request, have different set-ups. The end-user can choose to operate the switchgear electrically via:

- a control relay or
- close / open push buttons or
- selector switches.

The second (manual) operation panel is positioned behind the door of the mid section. As standard this panel has a facility for manually operating the change-over switch. This facility can be isolated by means of a padlockable selector switch. Standard on this panel is a control handle for manually switching the circuit-breaker off. The facility for padlocking in the earthed position is also a standard feature. For padlocking the different positions on the operation panels, the most common padlocks available on the market can be used.

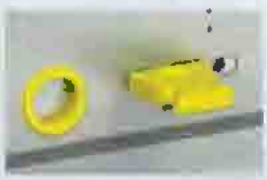
Two options on this manual operation panel are the facilities for (dis)connecting the voltage transformers and testing the cables.

Simple and safe "Primary" (dis)connection of the voltage transformers

For (dis)connecting voltage transformers from the primary circuit, access to specific compartments is normally necessary. Within the FMX, (dis)connecting the voltage transformers can be done easily from the front of the switchgear without the need to access dangerous, high voltage compartments. The cable-side voltage transformers can be (dis)connected with a facility on the manual operation panel. The busbar-side voltage transformers can be (dis)connected by a safe and user-friendly facility positioned on top of the switchgear, and accessible from the front.

Easy and safe cable testing

A special feature is introduced for cable testing. The facility allows cable testing to be carried out very easily and safely, and without making any cable connection mistakes. The facility is positioned in the lower part of the manual operation panel and interlocked to prevent access.



Environmentally friendly

Like all Eaton's other medium voltage switchgear, the FMX is designed to be an environmentally friendly product throughout the whole chain.

One of the key strategic initiatives of Eaton is to provide environmentally friendly products. Eaton realises that for this they should look at their total product chain, from design to dismantling. The optimal situation is that for each phase there is no damage to the environment and at the end, all materials can be re-used again in the same product (the Cradle-to-Cradle principle) The product chain can be divided into four main blocks. These blocks are the design (materials used) of the product, the assembly of the product, the usage phase of the product and finally the dismantling of the product.

Eaton's production plant in Hengelo (the Netherlands) acts entirely in accordance with the rules and procedures of the ISO 14001 environmental certificate during development and production processes.

Environmentally friendly design

With respect to the design of switchgear, the vision "the less number of components the better" applies. This because every part must be manufactured and therefore impacts on the environment. Next, applies the affect of different materials on the environment.

Use of minimised number of components

The FMX is designed to use the minimum of materials and resources, without affecting the strength of the system. For example, we have reduced the number of components dramatically, compared to conventional switchgear, by using an electromagnetic mechanism and integrated compartments.

Materials with no/less impact on the environment

Eaton selects materials with care. It is essential that they are safe for personnel and the environment - not just during use, but at the end of service life too.

Within the FMX a combination of solid (cast resin) insulation and air as insulation medium is used. The cast resin technology, in combination with electrical field calculations, provides a very compact, environmentally friendly design for the switchgear. As the switching medium, vacuum technology is used within the interrupters of the FMX circuit-breakers. FMX can be completely recycled at the end of its life without any problem.

No use of SF_6 gas for insuletion or switching

Within medium voltage switchgear SF_6 gas is used, because of its good insulating properties. Emissions of SF_6 gas from switchgear contribute significantly to the threat of the greenhouse effect and associated climate change. SF_6 is on the list of greenhouse gasses in the Kyoto protocol.

SF_6 is the most potent of the six main greenhouse gasses, with a Global Warming Potential (GWP) of 23,000.

In the 1980s, the Holec group, as it was then, made a fundamental choice not to use SF_6 as a switching and insulation medium for medium voltage equipment. In the 1980s, Holec had SF_6 technology available in-house. The main reason for not using any SF_6 in medium voltage equipment was the complexity of the treatment required for the toxicity of the gasses that have been in contact with an arc, and the need for additional safety measures when used in public locations such as residential areas and shopping centres.

Efficient use of materials

Besides the energy sources, special focus was placed on the efficient use of material during assembly. For example, sheet steel plates are cut with as little waste material as possible. Residual material is used within other product components.

No service checks on site

Because the FMX is designed for a lifetime of at least 30 years, the system needs no energy usage for maintenance activities during this long period. Due to the green insulation and switching technology, there is also no leakage of the SF_6-gas during its lifetime and no need for extra maintenance activities on SF_6 pressure checks.

Minimal energy loss during operation

To prevent energy loss by the system itself, the FMX uses a minimum number of primary change-over points. All the available change-over points use optimal surface contacts and by this, prevent extra energy losses over these points.

Re-use or recycling of materials

During dismantling the FMX is demounted into parts and thereafter categorized per material. Next the parts will be recycled or re-used. Because the FMX uses no SF_6, there is no loss of this gas during dismantling of the switchgear.

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Exactly how you want it

Flexible application of secondary apparatus, protection relays and substation automation

Every application of this type of system is unique, so Eaton offers a large number of different panel types and field versions. If, in due course, the end-user needs additional capacity in the form of more panels, FMX can easily be extended to the right or left. Eaton realises that end-users have their own wishes and routines with respect to the use of secondary apparatus, protection relays and substation automation within the switchgear. The need for customer specific apparatus and relays was taken into account during the development of the FMX. This resulted in a system that enables end-users to integrate apparatus according to their specification. Thanks to the large number of protection and control options, end-users will always be able to construct an FMX system that conforms exactly to your requirements.

Range of Voltage transformers

All FMX panels can be fitted with cast-resin insulated voltage transformers (of the requested transformer ratio and class) for the voltage measurement on the cable side, or on the busbar side. Both transformers can be (dis-)connected safely and easily.

Range of Current transformers

The epoxy resin insulated current transformers are of the ring core type. They are positioned around the primary conductors behind the cable cones. All common transformer ratios, outputs, rated currents and classes are possible.

Protection and Control equipment

The protection and control equipment is located in the low voltage compartment. This compartment is completely seperate and has its own access door. There is space on the door for a mimic diagrem and equipment such as protection relays, voltage detection systems, meters, etc.

The FMX is standardised for the SEG HighProtec relays series. However the FMX is adaptable for the installation of other brands.

In case more than one relay is required, the low voltage compartment can be extended.

Smart Grids

Equipment for (remote) communication between panels or automation systems can also be installed in the low voltage compartment. Having this possibility makes the system the perfect solution for current and future Smart Grid applications.

Fixed in Philosophy, Flexible in Design

The FMX switchgear is designed based on Eaton's proven fixed technology. The primary objective of this technology is to increase safety and reliability within a more compact and cost effective housing.

The advantages of a fixed design....

The fixed design contains different features that provide optimal reliability of the switchgear.

Firm connections between breaker and the overall system

Firm and simple interconnection between the breaker and the other fixed system parts (cable and busbar) ensure a robust and reliable system.

Optimal safety by fixed interlocked housing

Optimal safety is realized by integrating all primary parts into a fixed housing. Access to high voltage compartments in the switchgear are prevented by safety interlocks. Within these compartments all primary parts are sealed for live by means of epoxy resin. Operation of the switchgear is very simple and only possible when the high voltage compartments are closed. The operation panels are positioned at the front side of the switchgear and the safety interlocks provide a safe situation for the operator.

Reliable circuit-breaker

The latest design in electro-magnetic mechanism is used to control the circuit-breaker. This electromagnetic mechanism and the vacuum interrupters it operates, are both tested for 30.000 full-load operations and 100 short-circuit operations. This number of operations in combination with the simple mechanism design, requires no maintenance and exchange activities on the circuit-breaker. Moreover this maintenance-free fixed design responds to the current lack of technically skilled personnel that will become even worse in future.

Additional flexibility ... control and exchange of circuit-breakers

Despite the fact that the fixed FMX design has all the features that contribute to optimal reliability, some customers still want to have the ability to test, maintain and/or exchange the circuit-breaker very simple and quickly. To meet this market demand the FMX added this flexibility to its fixed design.

Controller for status indication of the mechanism

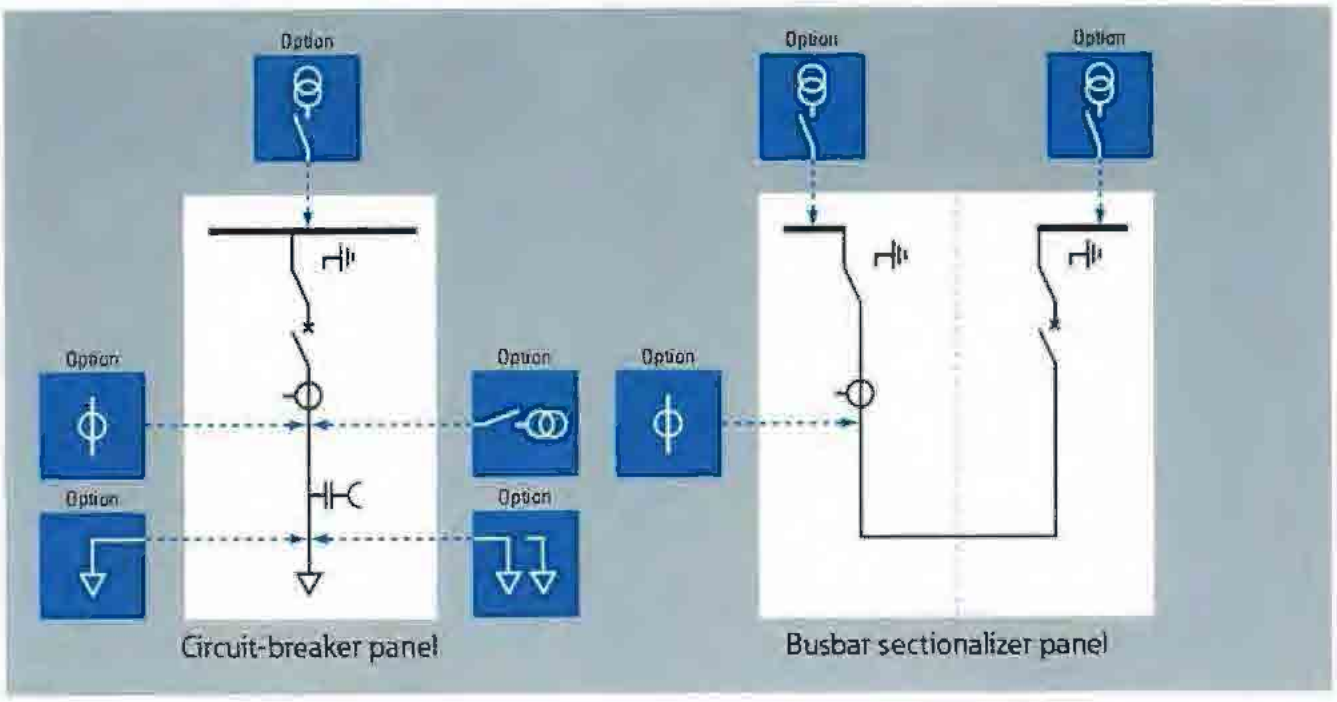
First of all the FMX is equipped with a "health check" function for testing the quality of the circuit-breaker. By means of a controller the quality of the circuit-breaker mechanism is being checked. The controller is for example checking the opening and closing circuit. The status will be presented on the manual operation panel or remote.

Easy and quick exchange of the circuit-breaker

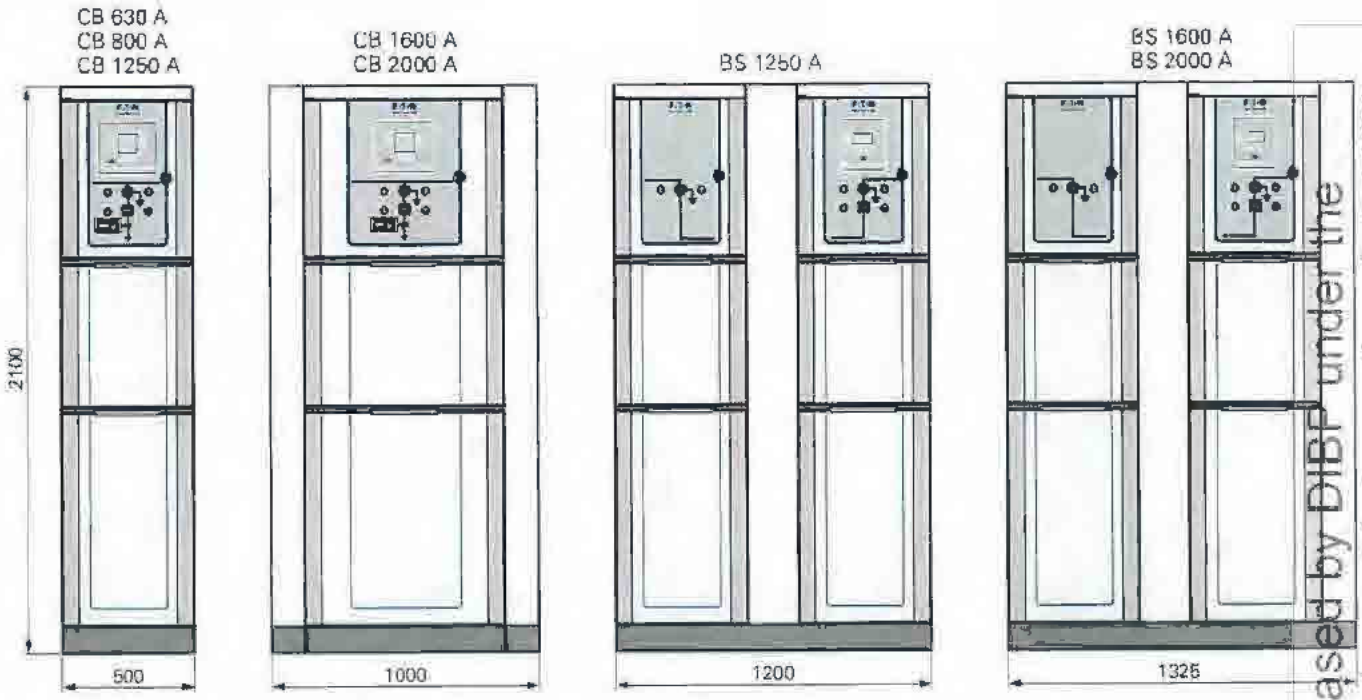
The FMX circuit-breaker can be exchanged in less than 30 minutes. Only a few steps are necessary to remove the circuit-breaker. By use of a simple tool the breaker will be moved from a horizontal to a vertical position. This procedure requires a minimal working space in front of the panel. Plugging-in a new breaker can be done in the opposite sequence with minimal effort.

Because the system is based on fixed technology the primary contacts are very simple and robust. The latter will provide that during exchange the contacts will not be damaged. During exchenge of the breaker the rest of the switchgear can stay energized and therefore minimising the impact on the grid. For optimal operator safety we have executed internal arc tests in the busbar compartment and the adjacent panels while the breaker was withdrawn.

Product Range



Dimensions (mm)



Depth: 1450 mm

Extra panel height: 500 mm for busbar side voltage transformers, 150 mm for busbar venting box, 500 mm for busbar side cooling box on 2000 A panels

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Electrical Data

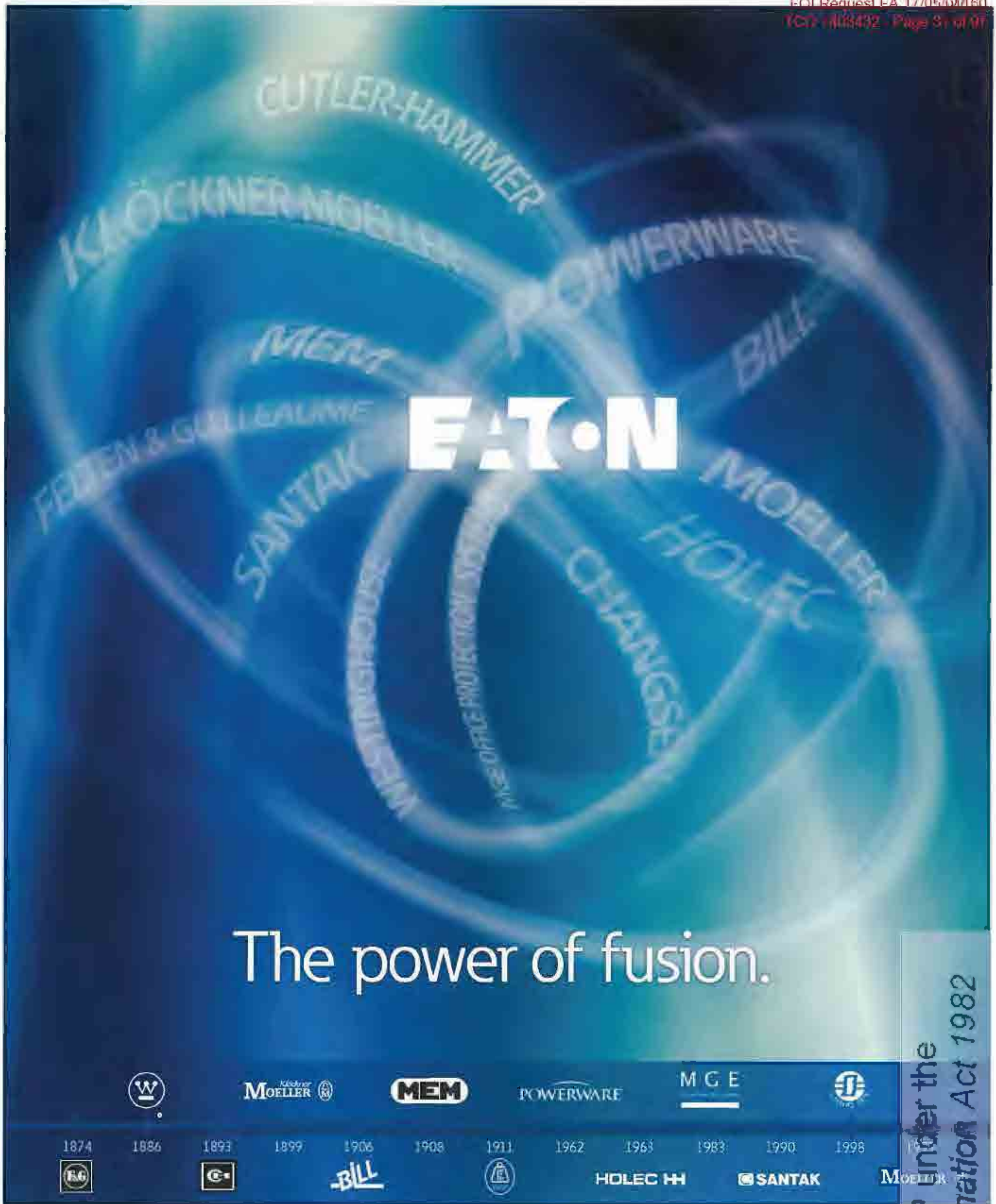
FMX switchgear system		12 kV	17.5 kV	24 kV
Rated Voltage	kV	12	17.5	24
Lightning Impulse withstand voltage	kV	75	95	125
Power frequency withstand voltage	kV	28	38	50
Rated frequency	Hz	50	50	50
Internal arc class		AFL 25 kA - 1 s	AFL 25 kA - 1 s	AFL 25 kA - 1 s
Loss of service continuity category		LSC2B	LSC2B	LSC2B
Partition class		PM	PM	PM
Earthing circuit	kA - s	25 - 3	25 - 3	25 - 3
Compartment circuit-breaker/cable		Interlock-controlled	Interlock-controlled	Interlock-controlled
Compartment busbar		Tool-based / non-accessible	Tool-based / non-accessible	Tool-based / non-accessible
Degree of protection HV compartments (optional)		IP4X	IP4X	IP4X
Degree of protection LV compartment		IP3XD	IP3XD	IP3XD
Temperature classification		Minus 5 °C indoor	Minus 5 °C indoor	Minus 5 °C indoor
Busbar system				
Rated normal current	A	2000	2000	2000
Rated short-time withstand current	kA - s	25 - 3	25 - 3	25 - 3
Rated peak withstand current	kA	63	63	63
Circuit-breaker - incoming feeder and sectionalizer				
Rated normal current	A	1250 - 1600 - 2000	1250 - 1600 - 2000	1250 - 1600 - 2000
Rated short-circuit breaking current	kA	25	25	25
Rated short-circuit making current	kA	63	63	63
Rated short-time withstand current	kA - s	25 - 3	25 - 3	25 - 3
Circuit-breaker - outgoing feeder				
Rated normal current	A	630 - 800	630 - 800	630 - 800
Rated short-circuit breaking current	kA	25	25	25
Rated short-circuit making current	kA	63	63	63
Rated short-time withstand current	kA - s	25 - 3	25 - 3	25 - 3
Class		E2, C2	E2, C2	E2, C2
Operating cycles at short-circuit current		100	100	100
Single capacitor bank switching	A	400	400	400
Mechanism				
Rated operating sequence	A	O - 0.3 s - CO - 15 s - CO	O - 0.3 s - CO - 15 s - CO	O - 0.3 s - CO - 15 s - CO
Class		M2	M2	M2
Opening time	ms	50	50	50
DC component	%	35	35	35
Closing time	ms	70	70	70
Number of operations actuator		30,000	30,000	30,000
Number of operations interrupter		30,000	30,000	30,000
Auxiliary voltage	V	24, 48, 60,110, 220 V_{DC} 110/230 V_{AC}	24, 48, 60,110, 220 V_{DC} 110/230 V_{AC}	24, 48, 60,110, 220 V_{DC} 110/230 V_{AC}
Mechanism change-over switch				
Opening time	s	< 20	< 20	< 20
Closing time	s	< 20	< 20	< 20
Number of operations change-over switch		1,000	1,000	1,000
Class		M0	M0	M0

Standards

FMX complies with the following international standards

IEC 62271-1	Common specifications
IEC 62271-100	Circuit-breakers (E2, M2, C2)
IEC 62271-102	Disconnectors and earthing switches (E2, M0)
IEC 62271-200	Metal enclosed switchgear and controlgear
IEC 60044-1	Current transformers
IEC 60044-2	Voltage transformers
IEC 60529	Degrees of protection (IP Code)
IEC 61850	Communication networks and systems in substations
IEC 61243-5	Live working - Voltage detectors - Part 5: Voltage detecting systems

KEMA



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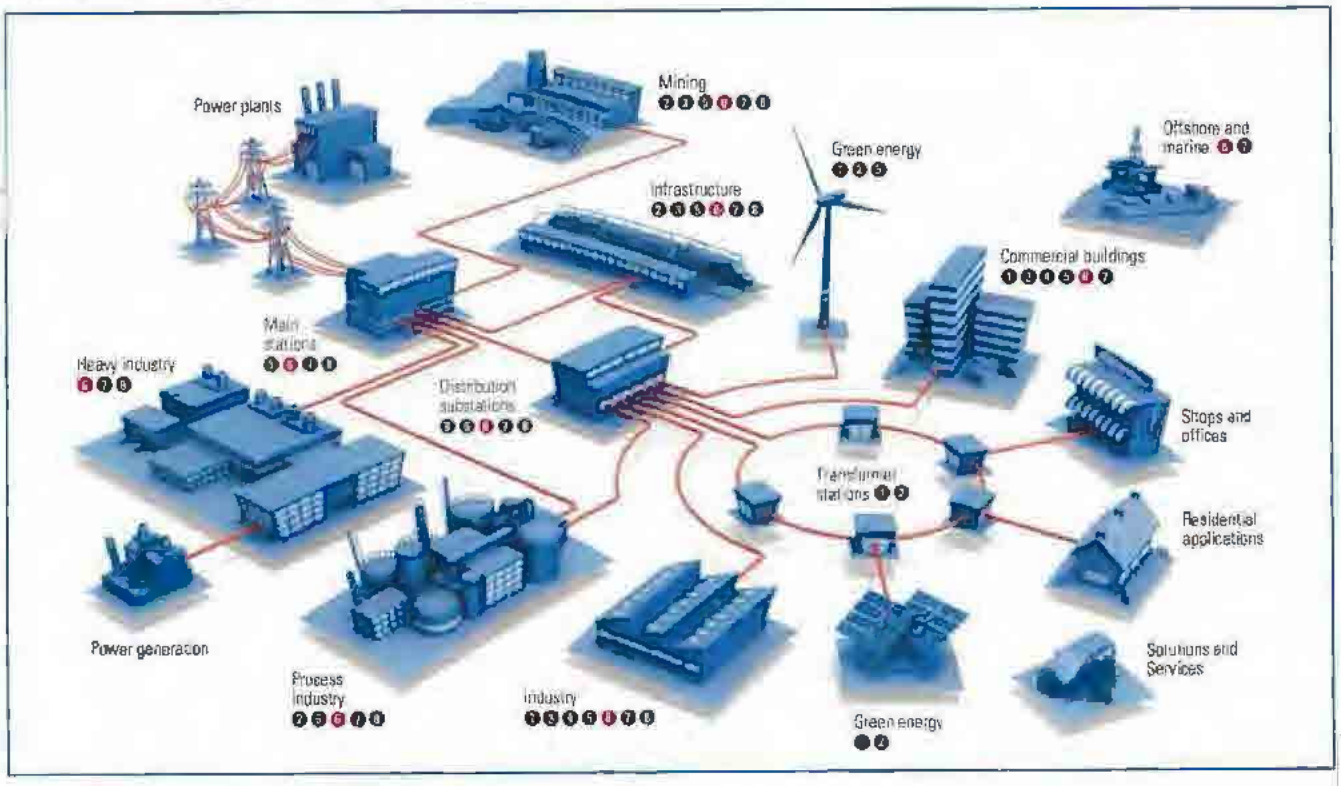
Eaton's Electrical Sector is a global leader in power distribution, power quality, control and automation, and monitoring products. When combined with Eaton's full-scale engineering services, these products provide customer-driven PowerChain™ solutions to serve the power system needs of the data center, industrial, institutional, public sector, utility, commercial, residential, IT, mission critical, alternative energy and OEM markets worldwide.

PowerChain™ solutions help enterprises achieve sustainable and competitive advantages through proactive management of the power system as a strategic, integrated asset throughout its life cycle, resulting in enhanced safety, greater reliability and energy efficiency. For more information, visit www.eaton.com/electrical

Eaton medium voltage products in the energy chain




❶ Magnefix


❷ Xiria (blocktype)


❸ Xiria E (extendable)


❹ Xiria M (metering solutions)


❺ SVS


❻ Power Xpert® FMX


❼ Power Xpert® UX


❽ MMS

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Form No. 8064012BR04
September 2012

Power Xpert® UX
IEC Medium Voltage switchgear

- Tested to IEC 62271-200
  17.5 kV up to 50 kA - 3 s
  24 kV up to 25 kA - 3 s
- Air insulated switchgear
- Internal arc classified
- LSC2B-PM

UX

Safe, reliable MV switchgear

E·T·N
Powering Business Worldwide

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Powering business worldwide

Eaton delivers the power inside hundreds of products that are answering the demands of today's fast changing world.

We help our customers worldwide manage the power they need for buildings, aircraft, trucks, cars, machinery and entire businesses. And we do it in a way that consumes fewer resources.

Next generation transportation

Eaton is driving the development of new technologies – from hybrid drivetrains and emission control systems to advanced engine components – that reduce fuel consumption and emissions in trucks and cars.

Higher expectations

We continue to expand our aerospace solutions and services to meet the needs of new aviation platforms, including the high-flying light jet and very light jet markets.

Building on our strengths

Our hydraulics business combines localised service and support with an innovative portfolio of fluid power solutions to answer the needs of global infrastructure projects, including locks, canals and dams.

Powering Greener Buildings and Businesses

Eaton's Electrical Group is a leading provider of power quality, distribution and control solutions that increase energy efficiency and improve power quality, safety and reliability. Our solutions offer a growing portfolio of "green" products and services, such as energy audits and real-time energy consumption monitoring. Eaton's Uninterruptible Power Supplies (UPS), variable-speed drives and lighting controls help conserve energy and increase efficiency.

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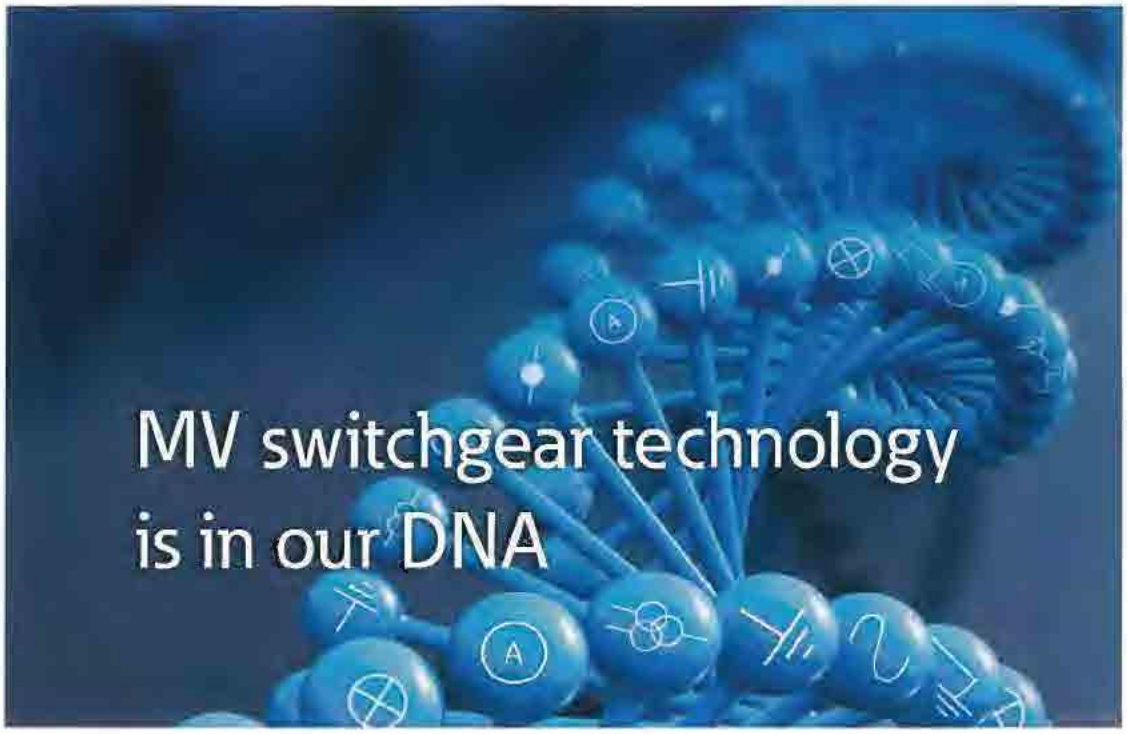


MV switchgear technology is in our DNA

Eaton Corporation is a worldwide leader in the design, manufacture, and sale of safe, reliable and high-performance medium voltage power distribution equipment in accordance with IEC, GB and ANSI standards.

Complete Global Medium Voltage Switchgear Solutions

Eaton, a premier leader in designing and manufacturing power distribution and protection equipment in the electrical industry, offers a comprehensive range of medium voltage (MV) solutions to meet the needs of virtually every application. From products that feature cutting-edge design that allow for easy access, maintenance and space savings, to arc-resistant products that enhance safety, Eaton's medium voltage solutions provide a variety of products for every need. Additionally, Eaton's global service network provides maximum customer support in all regions of the world.

As one of the few completely vertically integrated and diversified industrial manufacturers in the world, Eaton designs not only MV assemblies, but also the key components that comprise the MV solutions – from steel housing and circuit breaker compartments to vacuum interrupters, circuit breakers, bus systems and fuses.

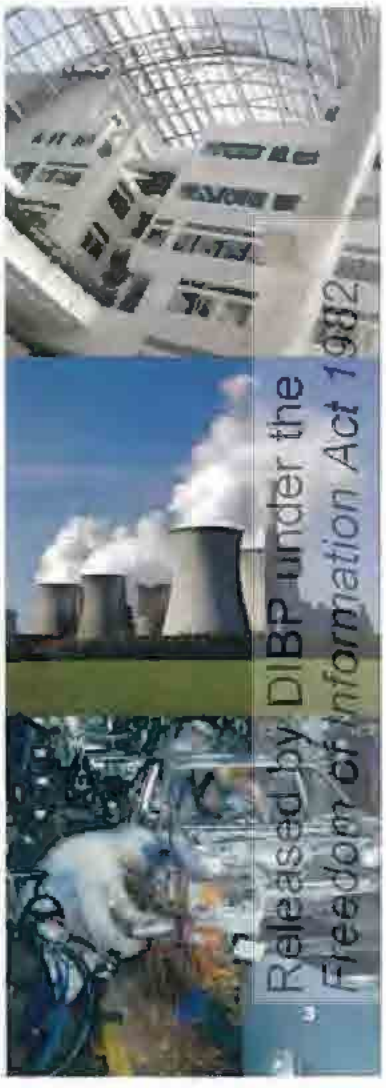
Eaton's MV heritage, strengthened by acquisitions such as Westinghouse DCBU, Cutler Hammer, MEM and Holec, has resulted in breakthrough MV technologies and numerous international patents over the years.

Part of Eaton's complete electrical PowerChain Solutions – which help businesses minimize risks while realizing greater reliability, cost efficiencies, capital utilization and safety – Eaton's medium voltage equipment meets all applicable standards and certifications such as IEC, NEMA / ANSI, GB, UL, IEEE, KEMA and CSA.

When it comes to medium voltage solutions, you can trust the one name with a long history of proven performance. Eaton.

Eaton's range of SF_6 free switchgear for Medium Voltage

An Eaton Green Solution



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UX

Safe, reliable MV switchgear with sustainability built-in

Innovative in its design, originated from the Unitole family, field-proven over forty years of vacuum circuit breaker production and fully third-party certified to IEC 62271-100 and IEC 62271-200, Eaton's new UX range of compact air insulated withdrawable Medium Voltage switchgear leads the industry in safety, reliability, performance and sustainability.

Knowledge and understanding

Eaton has over 80 years experience in the design, manufacture and application of Medium Voltage switchgear. Being at the forefront of technological advances, we pioneered the use of vacuum technology 80 years ago and introduced epoxy-resin insulation over 50 years ago. Eaton is still committed to developing, innovating and improving - as well as to reducing size and costs.

Millions of our vacuum interrupters have been in operation in every type of environment in the world, catering for the widest range of applications. It is this knowledge, understanding and experience that make Eaton the logical choice for the safe control and protection of distribution systems.

UX is particularly suited to provide control and protection for cables, transformers, capacitors and motors used across many industries. In fact UX excels anywhere that medium voltage power has to be switched, controlled and protected.

Built to the highest quality standards

UX is designed and fully third-party type-tested to the latest IEC 62271-200 standards, with full segregation by earthed metal partitions of all the major compartments, and is equipped with Eaton's very latest range of IEC vacuum circuit breakers type W-VACi - which are fully third-party type-tested in accordance with IEC 62271-100.

Using Eaton's state of the art technology and manufactured in accordance with the highest quality standards, our engineers have integrated core technologies, such as circuit breaker and mechanism design, vacuum technology, solid insulation and electrical field control to build a reliable and compact system, which benefit from the best practices incorporated in our current medium voltage range.

A complete range of compact, environmentally-friendly switchgear up to 4000 A

The system, which comprises a complete range up to 4000 A, uses only environmentally friendly technology and materials. UX is based on vacuum technology and air insulation, and is therefore the perfect alternative to environmentally harmful SF_6 gas insulated switchgear. It is also produced with fully recyclable materials ensuring that at the end of its life the product can be safely and efficiently recycled - providing a wholly sustainable solution to medium voltage switchgear applications.

Some applications are:

- Power distribution
- Water and waste water treatment
- Mining
- Commercial buildings
- Industrial facilities
- Oil and gas (on- and off-shore)
- Marine
- Airports and hospitals.

World leading technology with safety built in

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Combining advanced technology with proven engineering excellence, the UX range provides the highest safety and reliability standards without compromising competitiveness.

As pioneers in vacuum and arc-interruption technologies, further developed over 40 years, Eaton has millions of vacuum interrupters successfully operating in multiple applications worldwide. Eaton's latest vacuum circuit breaker, the W-VAC*i*, sits at the heart of UX.

Fully type-tested to latest IEC standards

The switchgear is type tested to the latest IEC 62271-200 and has third-party certification to prove internal arc containment classification of AFLR from 25 kA for 1 second and up to 40 kA for 1 second and 50 kA for 0.5 second. This means there is minimal risk of harm to personnel in the unlikely event of an internal arc in the cable compartment, vacuum circuit breaker compartment or the busbar compartment in any direction: front, rear and sides of the switchgear.

Minimal costs during service due to:

- Robust maintenance-free design with minimum number of parts
- W-VAC*i* circuit breaker has a long life of 20,000 operations without the need for active maintenance.
- Advanced vacuum interrupter contact designs prevent hot spots, create less heat and minimise electrode erosion to yield longer life.
- No SF_6 pressure checks and specialised refilling procedures

Low end of life disposal costs due to:

- Vacuum switching technology
- Air insulation
- Recycling or re-use of all materials possible
- No special decommissioning procedures necessary

User friendly

- Cable connection and user interfaces for operation on the same side of the unit
- Multiple cables per phase with standard compression lug for ease of cable connection
- Secondary cable entry points on both sides of the low voltage compartment top plate
- Secondary cable wire way runs complete over the length of the switchgear to help with inter-unit wiring.
- Secondary cable terminals positioned at a good reachable height within the low voltage compartment
- Clear and simple, straightforward operation panels combined with an active mimic diagram

Low environmental impact

Increasing global legislation concerning the use of green-house gases such as SF_6 gas and their related disposal costs, makes vacuum technology with its reliability, low maintenance, and low environmental impact the choice for now and the future.

As the world strives to reduce the amount of SF_6 gas used in all applications there is a responsibility on the users of electrical switchgear to find, where appropriate, alternatives to SF_6 gas as an insulation and switching medium. Air and solid insulation switchgear systems incorporating vacuum switching technologies are a reliable, safe and economic alternative for use in electrical systems below 36 kV and therefore should be used instead of SF_6 gas insulated systems.

Modern medium voltage switchgear employing vacuum technology together with air and epoxy resin insulation provides:

- Minimum number of parts and components
- No special requirements for the end-of-life disposal of the switchgear
- Environmentally-friendly materials used in the design
- No use of SF_6-gas for switching and insulation (green switching)
- No risk of damaging leaks of SF_6 gas or of toxic by-products
- Energy-efficient production and assembly, with environmentally friendly energy sources
- Minimal number of transition points in the primary design enables low energy loss during operation
- Only re-usable and/or recyclable materials used

Safety, reliability and performance

- Compartments are protected against penetration by objects
- Internal arc classification of AFLR provides operator safety in the unlikely event of an internal arc
- Operation only possible with the circuit breaker compartment door closed
- Logical mechanical and electrical interlocks prevent mal-operation
- Capacitive voltage detection system for verification of safe isolation from supply
- In the unlikely event of vacuum interrupter failure there is no damage to personnel and no harmful gases are emitted
- Vacuum interrupter contact erosion is negligible
- Fully encapsulated vacuum interrupters
- Fewer moving parts in the pole unit versus other arc interruption technologies

Reliable and safe in operation

- Complete design third party certified in accordance with IEC 62271-200
- Internal arc fault tested in accordance with IEC 62271- 200
- Quality assurance in accordance with ISO 9001
- Separate compartments for cable, vacuum circuit breaker and busbars
- Integrated arc chamber
- Routine tested

Low lifetime cost

Low initial costs due to:

- Compact footprint
- Cable access from front or rear
- Cable entry from either top or bottom
- Easy-access cable compartment for ease of cable connection
- Integrated arc chamber
- Back to wall configuration with front cable access

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Basic design

UX is modular in construction, ensuring that any panel combination and rating can be applied on a system.

In addition, there is no limit to the number of panels that can be used in an installation, as several sections can easily be connected together. Because the panels can be quickly assembled and connected, flexible commissioning of the switchgear is an added benefit.

1 Arc chamber

The integral arc-chamber evacuates the gasses associated with an internal arc. Optional standard parts are available to extend the arc chamber; flanges and grilles are available to exhaust the gasses outside the switchgear room.

2 Low voltage wire-way for inter panel wiring

A fully segregated metal wire-way is mounted at the top of each switchgear panel that connects together to form a continuous low voltage wire-way that runs along the entire length of the switchgear.

3 Low voltage compartment

The compartment is segregated with earthed metal partitions and has ample space for control and protection devices.

superior safety, reliability and performance

4 Busbar compartment

Busbars are totally enclosed in their own earthed metal compartment which vents into the arc chamber. Fully insulated along their entire length, the busbars are type tested for ratings up to 4000 A, 50 kA for 3 seconds. Epoxy mouldings segregate switchgear sections.

5 Vacuum circuit breaker compartment

Fully segregated by earthed metal partitions, with its own pressure relief channel into the arc chamber, the compartment provides all the safety interlocking mechanisms required for safe and reliable operation of the vacuum circuit breaker. Manual operation buttons allow for full operation of the vacuum circuit breaker from the front of the switchgear with the door fully closed. The circuit breaker is mechanically interlocked with the compartment door so that the door cannot be opened until the circuit breaker is switched Off and racked out into the Test position.

6 Automatic shutters

Individually operated automatic earthed metal shutters for both the Line (busbar) and Load (cable) connections can be padlocked in the closed position. When the breaker is in Test or Disconnect positions the shutters automatically close to prevent accidental contact with any live parts.

7 Circuit earth switch

The earth switch is operated from the front of the switchgear, with mechanical indicators to show the switch position. A window allows direct viewing of the earth switch position. The earth switch is mechanically interlocked with the circuit breaker or contactor truck such that it can only be closed when truck is in the Test/Disconnect position. The circuit earth switch can be mechanically interlocked with the cable compartment door as an additional safety measure.

8 Current transformers

Cast resin CTs are provided as standard in a wide range of ratings, with an option to use low voltage tape-wound CTs in the same location.

9 Voltage transformers

The voltage transformers are available in 3 configurations: Fixed, Withdrawable with shutters, and Withdrawable without shutters. All options are fitted with withdrawable primary fuses. The compartment door can be interlocked with the earth switch to ensure that the cables are safely earthed before the door is opened. The withdrawable option with shutters can be disconnected from the supply with the compartment door closed and with cables still live. The door can then be opened to remove the transformers safely.

10 Cable terminations

Ample cable termination provision is provided up to 8 single core cables per phase to enter the bottom of the switchgear and are terminated with compression lugs onto copper tails provided in the bottom of each panel.

11 Earth bar

An earth bar system is provided making connections to the station earth easy and effective. The earth bar system has been fault tested and runs vertically and horizontally within each panel section and is connected to the earth switch, when provided.

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Control and protection

1 Low voltage control and protection compartment

Clear to view panel with all controls and indications clearly visible and easy to operate.

2 Protection relay

Eaton has a range of preferred relay options that can be fitted as standard. However, customer specific protection relays from any manufacturer can be fitted to the compartment door.

3 Mimic diagram

Easy to understand mimic diagram of each circuit.

4 Metering with phase selector switch

Option for an ammeter and phase selector switch.

Option for voltmeter and phase selector switch.

5 Voltage detection system

Each circuit breaker panel can be equipped with an optional standard three phase voltage detection system for voltage detection to IEC 61243-5. The VDS is driven from a capacitive divider fitted within the insulators connected to the cable connection and shows the operator if the connected cable is live.

6 Circuit breaker position indicator

Breaker position indication shows the breaker in the Connected/Service or Disconnected/Test position.

7 Electrical operation with circuit breaker status indicator

Breaker Open/Closed status indicator.

Breaker Open/Closed command switch.

Optional LED indication of spring charge mechanism "Charged" status

8 Earth switch indicator

Optional LED indication of earth switch Open/Closed status.

9 Viewing windows

The circuit breaker compartment door viewing window provides visual indication of the position of the circuit breaker indicating:

- The status of the breaker
- The status of the spring-charged mechanism

The cable compartment door viewing window allows visual indication of:

- The status of the earth switch
- Inspection of the cable connections

10 Manual circuit breaker operation

Circuit breaker Open and Close buttons

11 Circuit breaker racking mechanism

Circuit breaker racking In/Out mechanism

Clear distinct operator panel for user friendly operation

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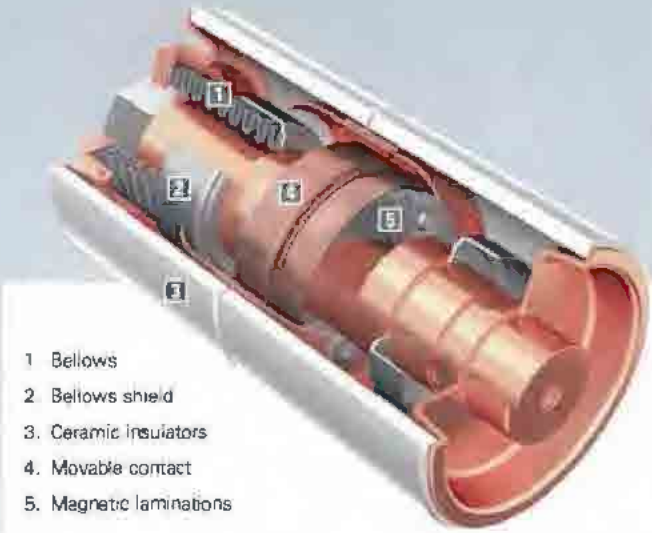
Eaton core technologies

Vacuum technology: safe, compact and reliable

Eaton's vacuum interrupters consist of a ceramic cylinder that houses fixed and movable contacts. Movement of the contact under vacuum conditions is performed by bellows. A shield surrounding the contacts prevents the insulators from becoming contaminated by any metal vapour produced during current interruption. This shield also ensures good voltage potential distribution over the insulator.

A special feature of Eaton's vacuum interrupters is the creation of a large number of parallel arcs between the contacts. This "diffuse discharge" is characterised by very low arc voltage and short arc times, resulting in very low arc energy - so contact wear in a vacuum interrupter is negligible.

Vacuum interrupters are maintenance free and are certified up to 30,000 operation cycles.



1. Bellows
2. Bellows shield
3. Ceramic insulators
4. Movable contact
5. Magnetic laminations

Solid insulation using cast-resin technology

Cast-resin is a high-quality primary insulation material. By using cast-resin for solid insulation, Eaton's design engineers can shape the parts specifically for optimal insulation, robust construction and cooling purposes.

With over 50 years of experience in the design and manufacture of cast-resin components, Eaton has determined that the best solution is to embed the conductors and vacuum interrupters directly into the moulding to form a single encapsulated pole unit (EPU).

Features

- High mechanical strength for improved durability and mechanical life of the pole unit
- Protected against adverse climatic conditions and humidity
- Protected against mechanical impact, shock and vibration
- Provides high thermal conductivity for improved temperature rating
- High electrical resistivity and creepage current resistance for improved insulation and compact design

(40)

Main components

Vacuum circuit breaker

The vacuum circuit breaker uses a simple and reliable, true two step spring charged mechanism for operation of the vacuum interrupters. The construction of the mechanical linkage between the actuator and the drive rod of each of the three vacuum interrupters is simple and effective.

Features

- Environmentally friendly vacuum interrupters totally encapsulated within pole units constructed of solid epoxy resin
- Mechanically and electrically trip-free stored energy mechanism design
- Integrated mechanical lever for manual charging operation with pushbutton control
- Spring charged indicator with contacts for remote indication of spring status
- Mechanical status indicator for Open/Closed
- Auxiliary contacts for Open/Closed position
- Position indicator for Connected/Test position within the compartment
- Auxiliary contacts for remote position indication
- Mechanically interlocked with the compartment door
- Mechanical interlock to ensure the breaker is in the open position before it can be racked-in or racked-out

Busbars

The busbar system is constructed from high-quality hard drawn copper bars of standardised cross-section.

Features

- Busbar compartment runs over the entire length of the switchboard
- Individual panel segregation between sections of the busbar chamber
- Constructed from high-quality hard-drawn copper of standard dimensions
- Fully insulated over the entire length of the switchboard
- Busbar chamber vents directly into the integral arc-chamber
- Busbar ratings up to 4000 A
- Busbar short circuit ratings up to 50 kA - 3 s

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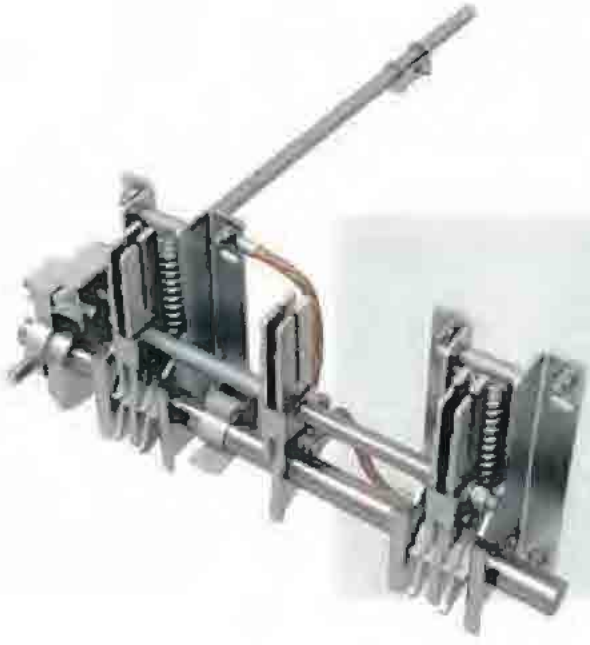
Contactor

For motor starters, transformers and capacitor banks, the UX system is available with vacuum contactor trucks. Contactors for 3.6 or 7.2 kV can be mounted on a truck together with fuses, and voltage transformers. Surge arresters can also be mounted at the cable terminals. For motor control applications up to 7.2 kV, UX incorporates the Eaton range of SL contactors. For motor starters at 12 kV please contact Eaton.

Features

- Environmentally friendly vacuum interrupters
- Ratings up to 400 amps at 6.6 kV
- Capacitor switching up to 295 amps at 6.6 kV
- Maximum interruption current of 8.5 kA
- Fuse protected up to 50 kA
- Electronic coil control for optimum control of the coil voltage and reduced watts loss means more efficient use of power and lower heat generation
- Electronic coil control allows for field selectable control voltages and drop out times
- Up to 6 auxiliary contacts in any combination of Normally Open and Normally Closed configurations
- Mechanical latch option is available with electrical unlatch signal.
- Long life with up to 1 million electrical operations and 2.5 million mechanical operations with no maintenance or adjustment required



Earth switch

All panels can be equipped with a cable earthing switch. The earth switch is mechanically interlocked with the circuit breaker so that the earth switch can only be operated when the circuit breaker is open, and withdrawn to the 'Disconnected/Test' position.

Features

- Fully fault-rated earth switch
- Operated from the front of the panel
- Auxiliary contacts for service/earthed positions
- Mechanical position indicators
- Mechanically and/or electrically interlocked with the vacuum circuit breaker

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Safe and reliable in use

Proven experience and knowledge gained by Eaton over many years in the areas of cast-resin technology, vacuum technology, arc interruption and electrical field control have been integrated in the design and development of UX - ensuring that the switchgear is safe and has high operational reliability throughout its lifetime.

Internal Arc Classification (IAC) of AFLR

While the integrity of the equipment to provide continuity of supply was a major design consideration throughout its development, the safety of the operator has also been one of the most important criteria, with a number of reassuring features built in.

All of Eaton's medium voltage systems, including UX, have been third party tested to all relevant standards, and are in accordance with IEC regulations.

Eaton has always emphasised the need to design and create safe switchgear for operators at all times.

One of the biggest potential threats to operators is an internal arc in the switchgear. The metal-clad design and the robust construction has enabled UX to successfully pass internal arcing test in accordance with IEC 62271-200 in all three primary compartments and provides an IAC rating of up to 40 kA for 1 second and 50 kA for 0.5 second.

IEC62271-200 defines the level of protection to be provided in the event of an internal arc fault being generated within the switchgear. UX has been proven by independent third-party test to provide an IAC Classification of IAC = AFLR.

A = Protection for personnel

F = Protection at the Front of the switchgear

L = Protection at the Lateral (sides) of the switchgear

R = Protection at the Rear of the switchgear

The IEC standard requires that an internal arc test is carried out in each of the power sections of the switchgear. In UX this means the cable compartment, the vacuum circuit breaker compartment, and the main busbar compartment.

The standard allows for each test to be conducted in individual switchgear panels - meaning that three separate panels can be used to prove the integrity of the design.

UX, however, has achieved IEC62271-200 with all three tests being conducted in the same panel. It is an important safety feature and indication of strength that UX passed all three required tests in the same panel.

The UX has the following IAC ratings:

12 kV and 17.5 kV:
25 kA - 1 s, 26.3 kA - 1 s, 31.5 kA - 1 s, 40 kA - 1 s and 50 kA - 0.5 s

24 kV:
25 kA - 1 s

Loss of service continuity classification

IEC62271-200 describes the extent to which the switchgear and control gear are allowed to remain operational in case access to a main compartment is necessary.

UX has the highest attainable level of Loss of Service Continuity of LSC2B.

Category LSC2B

This form allows for maximum continuity of service of the system during access to the compartments inside the switchgear - meaning that the main switching device of each functional unit of an LSC2B switchgear is fitted in its own accessible compartment. Maintenance may be performed on the main switching device without de-energizing the corresponding cable connection or the main busbars. As a consequence, in this example of LSC2B switchgear, a minimum of 3 compartments for each functional unit is necessary.

- 1 for each main switching device
- 1 for components connected to one side of a main switching device, for example, feeder circuit
- 1 for components connected to the other side of the main switching device, for example, busbars

Switchgear is classified as LSC2B when it is possible and safe to open the circuit breaker compartment when the cable and busbars are energised.

Partition classification

In addition to the IAC and the LSC classifications, IEC62271-200 defines the type of partitions required between each panel and between each functional unit within the panel.

UX employs only earthed metal partitions and therefore has the highest level of partition classification of PM.

UX switchgear is equipped with automatic earthed metal shutters. Individually operated shutters for both the Line (busbar) and Load (cable) connections can be padlocked in the closed position. When the vacuum circuit breaker is in the test or the disconnect positions the shutters will automatically close to prevent accidental contact with any live parts. For testing purposes, special shutter lifters are used to maintain the shutters in the open position. Colour coded and labelled 'Busbar' and 'Cable', the shutters are easily identified as Open or Closed.

Routine tests

In addition to the third party certified type testing programme to prove the integrity of the UX design, Eaton conducts routine tests on each vacuum interrupter, circuit breaker and switchgear panel. At a minimum these tests confirm compliance with the relevant IEC standards; however customer specific test procedures and witness of tests can be accommodated. To ensure quality, all processes are performed in accordance with ISO 9001 - at every stage of production the components, circuit breakers and current transformers are inspected for correct functioning. When the entire installation has been assembled, a thorough visual inspection is carried out, together with the required mechanical, functional and electrical checks.

Accessibility of compartments

IEC62271-200 defines the accessibility classification for each of the power sections in the switchgear. UX has the following accessibility definitions.

- Busbar:
  tool-based/non-accessible
- Circuit breaker:
  interlocked controlled
- Cable:
  tool-based or option for interlocked controlled

Ingress of foreign objects

UX has an external protection degree of IP4X as per IEC 60529 with an option of IP41 available. Internal ingress protection to IP2X is standard with an option for IP3X for more demanding applications. Separation eliminates the penetration of foreign objects and reduces the risk of accidental contact with any live parts.

Safety interlocks

For personnel safety UX is designed with a number of comprehensive mechanical interlocks to prevent unsafe operation.

- It is not possible to rack-in or rack-out a circuit breaker unless it is in the Off or Open position
- It is not possible to close a circuit breaker unless the circuit breaker is in the Connected or Test position.
- The secondary socket can only be disconnected with the circuit breaker in the test position
- Closing the circuit breaker is only possible with the secondary contacts connected.
- It is not possible to close the earth switch when the circuit breaker is in the Connected position.
- The door of the vacuum circuit breaker compartment can only be opened when the circuit beaker is in the Disconnected / Test position.
- It is only possible to rack-in or rack-out the circuit breaker when the circuit breaker door is closed.
- The cable compartment door can only be opened when the earth switch is in the Closed position
- The earth switch cannot be Opened when the cable compartment door is open.

Sustainability

Environmentally friendly

The UX is designed to be environmentally friendly throughout the life-cycle: from production, during service and at the end-of-life.

One of Eaton's key strategic initiatives is to provide environmentally friendly products. This requires examination of the total life-cycle, from design to decommissioning.

The product life-cycle can be divided into five main blocks. These blocks are

- The design
- Materials used
- The assembly
- The operational phase
- The decommissioning

Eaton's production plants act entirely in accordance with the rules and procedures of the ISO 14001 environmental certificate during development and production processes.

Environmentally friendly design

Material selection and the number of parts that are used to manufacture the UX are critical to determining how environmentally friendly the manufacturing process is.

Eaton selects its materials to ensure that they have the lowest possible impact on the environment. It is essential that they are equally safe for people - not just during use, but at the end of service life too.

Within UX and the W-VACi circuit breaker, a combination of solid (cast-resin) and air is used as insulation. The cast-resin technology, in combination with electrical field calculations, provides a very compact, environmentally friendly design for the circuit breaker and the switchgear. Because the switching medium - vacuum - is used, UX can be completely recycled at the end of its life without any issues relating to safety procedures, special handling or safe disposal.

No use of SF_6-gas for insulation or switching

From the very beginning Eaton made a fundamental choice not to use SF_6 as a switching and insulation medium for medium voltage equipment - it is on the list of greenhouse gasses in the Kyoto protocol and is the most potent of the six main greenhouse gasses, with a Global Warming Potential (GWP) of 23,000.

Some medium voltage switchgear systems use SF_6 gas as the insulating medium. Leakage of SF_6 gas from switchgear contributes significantly to the threat of the greenhouse effect and associated climate change. They also require additional safety measures and special handling requirements at the end of life.

Minimum service checks on site

UX is designed for a lifetime of at least 30 years; therefore the energy usage for maintenance activities during this long period is minimal. Due to the green insulation and switching technology, there is also no leakage of the harmful SF_6 gas during its lifetime and no need for performing extra maintenance activities on SF_6 gas pressure checks.

Minimal energy loss during operation

The number of electrical contact or changeover points within the UX system has been kept to an absolute minimum. This reduces the potential number of 'hot spots' and prevents additional energy loss associated with contact surfaces.

Energy efficient assembly

UX is produced in an energy efficient environment. Standard processes and materials are used in the design and require no special handling or manufacturing processes, thus reducing the amount of energy required to manufacture and assemble the switchgear.

Efficient use of materials

Besides the energy sources, special focus is placed on the efficient use of material during assembly. For example by using advanced nesting tools the sheet steel plates are cut with the least amount of waste, and similar principles are followed in the design and manufacture of other product components.

Re-use or recycling of materials

All materials within UX can be re-used or recycled. Because the UX uses no SF_6 gas, there is no possibility of leakage of this greenhouse gas during decommissioning the switchgear.

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Low total cost of ownership

Designed to provide at least 30 years of reliable service the UX design guarantees low overall cost of ownership when considered over the lifetime of the switchgear.

Life-time costs can be split into initial costs, costs incurred during service and finally, costs for disposal of the switchgear. All costs of ownership are influenced by different features of the switchgear provided with no concession to quality and reliability.

Low initial costs

Panel dimensions

With panel dimensions of 600 mm, 800 mm and 1000 mm with only 3 depths of panel across all ratings of 1320 mm, 1500 mm and 1550 mm, UX is one of the most compact designs of air insulated medium voltage switchgear available today. The compact design of UX allows for smaller switchrooms to be build further reducing the overall cost of installation.

Flexible cable access

The UX offers top and bottom cable entry with cable access from either front or rear. If front access is chosen it is possible to mount the UX panels flush against the wall thus reducing further the space needed in the building.

Low cost during service

Costs during service of switchgear can accumulate due to damaged parts requiring replacement, or by maintenance cycles set up for critical parts that will not reach their expected lifetime without being serviced.

Keeping this in mind during the initial design of the UX, the first design steps undertaken were to:

- Minimise the number of parts used in the construction
- Design using industry standard or readily available raw materials
- Prevent internal parts from being damaged during the lifetime of the unit.

This robust construction, using only the minimum number of parts, is based on our long experience of building switchgear. During production of the panels, routine tests are carried out by specialists, to ensure that the panels achieve the quality that they are designed for.

Minimal inspection

By designing a simple, modular, efficient, proven, low energy spring charged mechanism with the fewest possible number of parts for the vacuum circuit breaker, the maintenance requirements normally associated with this type of mechanism is dramatically reduced.

With proven reliability of up to 20,000 operations the Universal Mechanism Assembly used in the W-VACi breaker helps to provide a virtually maintenance-free circuit breaker.

Vacuum interrupter design plays an important role in the reduction of maintenance. Eaton's vacuum interrupters employ a 'diffuse discharge' design which practically eliminates contact wear. Coupled with the proven solid insulation technology Eaton employs in the manufacture of the encapsulated pole unit, the W-VACi range of vacuum circuit breakers is considered virtually maintenance free.

Switchgear that uses SF_6 gas as an insulation medium has an inherent leakage rate. To maintain an adequate insulation level within this type of switchgear, the pressure of the SF_6 gas present in the switchgear tanks must be checked and refilled on a regular basis during the unit's lifetime.

With UX the extra costs involved in checking and maintaining the required insulation level are not incurred. The combination of vacuum interrupters for switching, cast-resin technology and clean air as the insulation medium, is environmentally friendly and maintains the same quality level during the complete lifetime of UX. By not using SF_6 gas in UX, an owner is also not faced with the administration costs involved in registering the number of kilograms of SF_6 gas in the installation.

Low disposal cost

UX switchgear has a typical lifetime of at least 30 years. Depending on the location of the installation, this lifetime can be extended. If, for any reason a decision is made not to use the switchgear any further, it can be fully recycled.

When decommissioned, the switchgear can be dismantled and the different materials can either be re-used or recycled with total safety. Because no SF_6 gas is used, decommissioning is a less complicated, more cost effective and an environmentally friendly operation. There are no special precautions, tools or decommissioning methods required.

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Flexibility in design

Every application of this type of system is unique, so Eaton offers a wide range of different panel types and field versions.

If, in due course, additional capacity in the form of more panels is required, UX can easily be extended to the right or left with only minimal disruption to the supply for final connection of the busbars.

Eaton realises that customers often have their own requirements with respect to the use of protection and control components within switchgear, so the need for specific components was taken into account during product development and resulted in a basic primary design that enables customers to integrate secondary protection and control components according to their own specification requirements.

Range of voltage transformers

All UX panels can be fitted with cast-resin insulated voltage transformers, of the requested transformer ratio and class, for voltage measurement on the cable side, or on the busbar side.

The standard configuration is for a fixed voltage transformer with withdrawable fuses - although an option for truck mounted withdrawable voltage transformers is also available.

Range of current transformers

In order to provide protection and metering, the cast-resin insulated current transformers are housed in the fixed section near the feeder cable terminals. All common transformer ratios, outputs, rated currents and classes are possible. For higher current ratings above 2500 A cast-resin ring-type current transformers are used.

It is also possible, as an option, to fit low voltages wire-wound current transformers onto a screened primary conductor instead of the standard cast-resin block or ring type transformers.

Smart Grids and substation automation

Equipment for remote communication between panels or automation systems can also be installed in the low voltage compartment, making the system the perfect solution for current and future Smart Grid applications.

Protection and control equipment

The protection and control equipment is located in a completely separate low voltage compartment with its own access door. There is space on the door for a mimic diagram and for mounting equipment such as protection relays, voltage detection systems, meters, etc.

In case additional space is required, the low voltage compartment can be extended.

Standards

UX complies with the following international standards

IEC 62271-1	Common specifications
IEC 62271-100	Circuit breakers (E2, M2, C2)
IEC 62271-102	Disconnectors and earthing switches (E2, M0)
IEC 62271-200	Metal enclosed switchgear and controlgear
IEC 60044-1	Current transformers
IEC 60044-2	Voltage transformers
IEC 60529	Degrees of protection (IP Code)
IEC 61850	Communication networks and systems in substations
IEC 61243-5	Live working - voltage detectors - Part 5: voltage detecting systems

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Electrical Data

System		12 kV	17.5 kV	24 kV
Rated voltage	kV	12	17.5	24
Lightning impulse withstand voltage	kV	75	95	125
Power frequency withstand voltage	kV	28	38	50
Rated frequency	Hz	50/60	50/60	50/60
Internal arc class			AFLR	
Loss of service continuity category			LSC2B	
Partition class			PM	
Earthing circuit	kA - s	25 - 3; 26.3 - 3; 31.5 - 3; 40 - 3; 50 - 1		20 - 3; 25 - 3

Accessibility of compartments

Circuit breaker compartment		Interlock-controlled
Busbar compartment		Tool based/non-accessible
Cable compartment		Tool-based or Interlock-controlled
External degree of protection		IP4X (IP41 as an option)
Internal degree of protection		IP2X (IP3X as an option)
Installation		Indoor
Temperature classification	°C	-5 to +40
Relative humidity (max)	%	95

Busbar system

Rated normal current	A	1250, 1600, 2000, 2500, 3150, 4000 (FC [1])	1250, 2000, 2500
Rated short-time withstand current	kA - 3 s	25 / 26.3 / 31.5 / 40 / 50	20 / 25
Rated peak withstand current	kA/50 Hz	63 / 66 / 80 / 100 / 125	63 / 80
	kA/60 Hz	65 / / 82 / 104 / 130	65 / 82

Circuit breaker ratings

Rated normal current	A	630, 1250, 2000, 2500, 3150, 4000 (FC [1])	800, 1250, 2000, 2500
Rated short-circuit breaking current	kA	26.3 / 31.5 / 40 / 50	20 / 25
Rated short-circuit making current	kA	65 / 82 / 104 / 130	65 / 82
Rated short-time withstand current	kA - 3 s	26.3 / 31.5 / 40 / 50	20 / 25
Single capacitor bank switching	C2 A	400	
Multiple capacitor bank switching back to back	C1 A	400	
Class		S1, E2	
Auxiliary voltage	V	110/120/127 Vac 50/60 Hz, 208/220/240 Vac 50/60Hz, 24/48/60 Vdc, 110/125 Vdc, 220/250 Vdc	

Mechanism

Rated operating sequence	A	O 0.3s CO - 15s CO [2] O - 0.3s - CO - 180s - CO [3]
Class		M2
Number of operations		up to 20,000
Number of operations interrupter		up to 20,000

(1) FC = Fan cooled
(2) Operating sequence O 0.3s - CO - 15s - CO is available on circuit breakers rated 12, 17.5 kV up to 40 kA and up to 2000 A
(3) Operating sequence O 0.3s CO - 180s - CO is available on ALL circuit breakers rated 12 and 17.5 kV and 50 kA, and all 12 and 17,5 kV circuit breakers rated ≥ 2500 A

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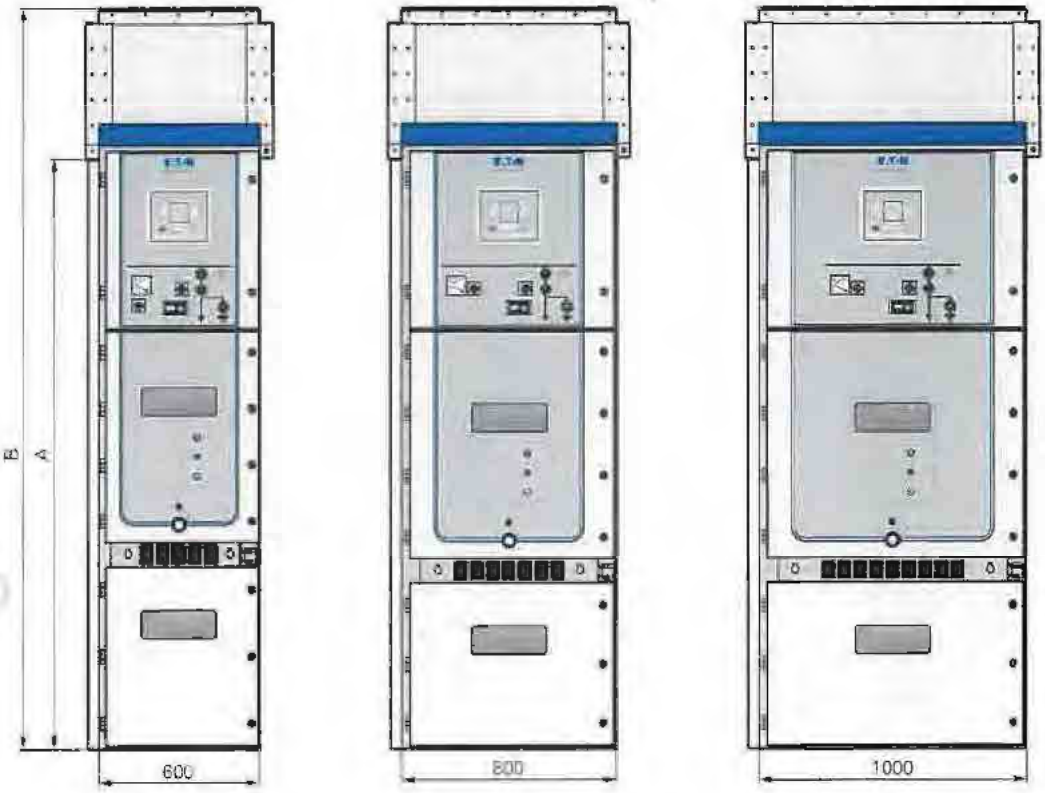
Dimensions (mm)



Panel width	600 mm	800 mm	1000 mm
12 kV and 17.5 kV			
Max. rating	**630 A / 1250 A**	**2000 A**	**3150 A / 4000 A (FC)**
Depth	1310	1310 / 1490*	1490
Height (A)	2200	2200	2200
Height including arc chamber (B)	2760	2760	2760

24 kV		
Max. rating	**800 A / 1250 A**	**2000 A / 2500 A**
Depth	1570	1570
Height (A)	2320	2320
Height including arc chamber (B)	2870	2870

*) 1500 mm for IAC classification ratings of 40 kA - 1 s and 50 kA - 0.5 s only.

Weights (kg)

Circuit breaker panel				Max weight including circuit breaker
12 kV and 17.5 kV				
UX17	25 kA	630 A	600 mm wide	860
UX17	31.5 kA	1250 A	600 mm wide	880
UX17	40 kA	2000 A	800 mm wide	1200
UX17	50 kA	2000 A	800 mm wide	1230
UX17	40 kA	3150 A	1000 mm wide	1650
UX17	50 kA	3150 A	1000 mm wide	1650
24 kV				
UX24	20 kA	800A	800 mm wide	1460
UX24	25 kA	1250 A	800 mm wide	1480
UX24	25 kA	2000 A	1000 mm wide	1820
UX24	25 kA	2500 A	1000 mm wide	1820

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Product range

The UX product range is very flexible and has a variety of circuit options that enable almost all types of application to be configured.

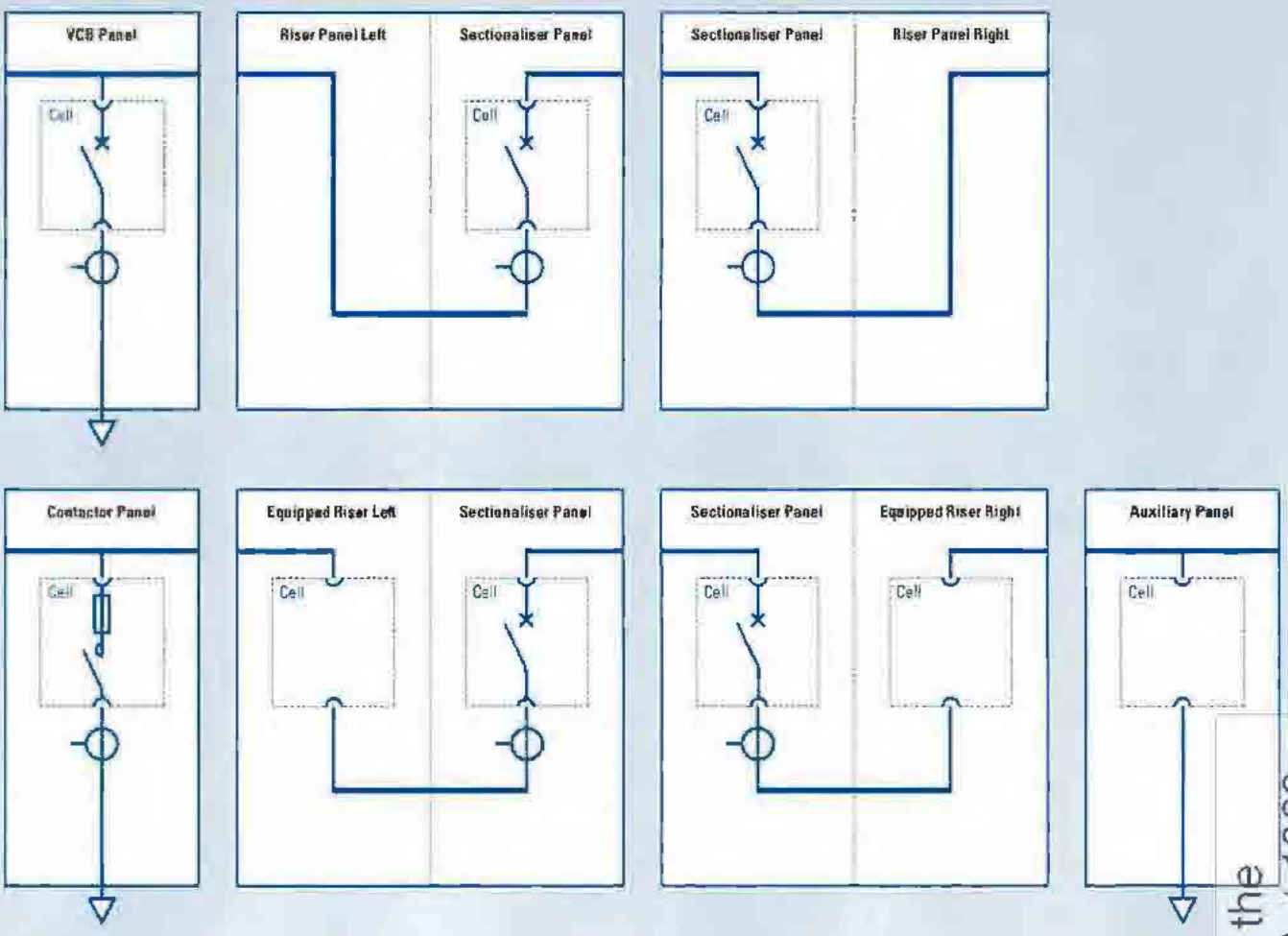
The truck design is common for all the types enabling the reconfiguration of the panel while in service.

For added configuration flexibility the Riser Panels can be fitted on either the left or the right side of the Sectionaliser Panels. Also the width of the combination of Sectionaliser and Riser Panels is kept to a minimum.

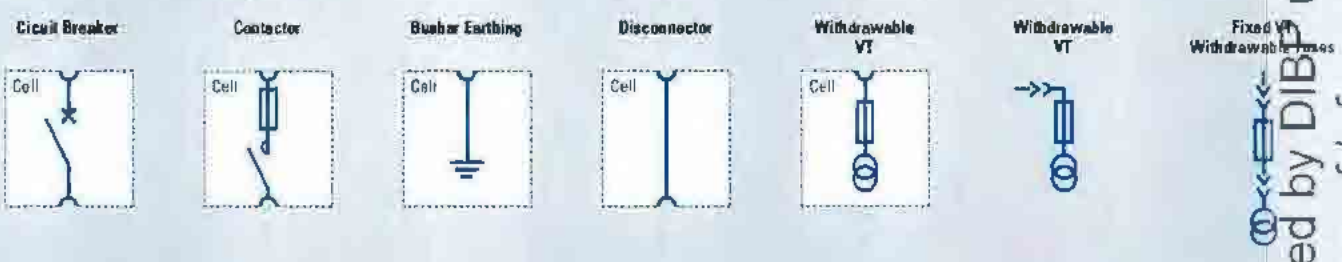
Further flexibility is provided by the Equipped Riser Panel option. In this configuration any standard equipment truck can be fitted into the Equipped Riser, offering options for busbar metering, earthing, and a disconnect truck.

A wide range of additional options are also available for mounting within the main primary compartments. The low voltage control and protection compartment also offers many options for control and indication.

Panel configurations



Truck configurations



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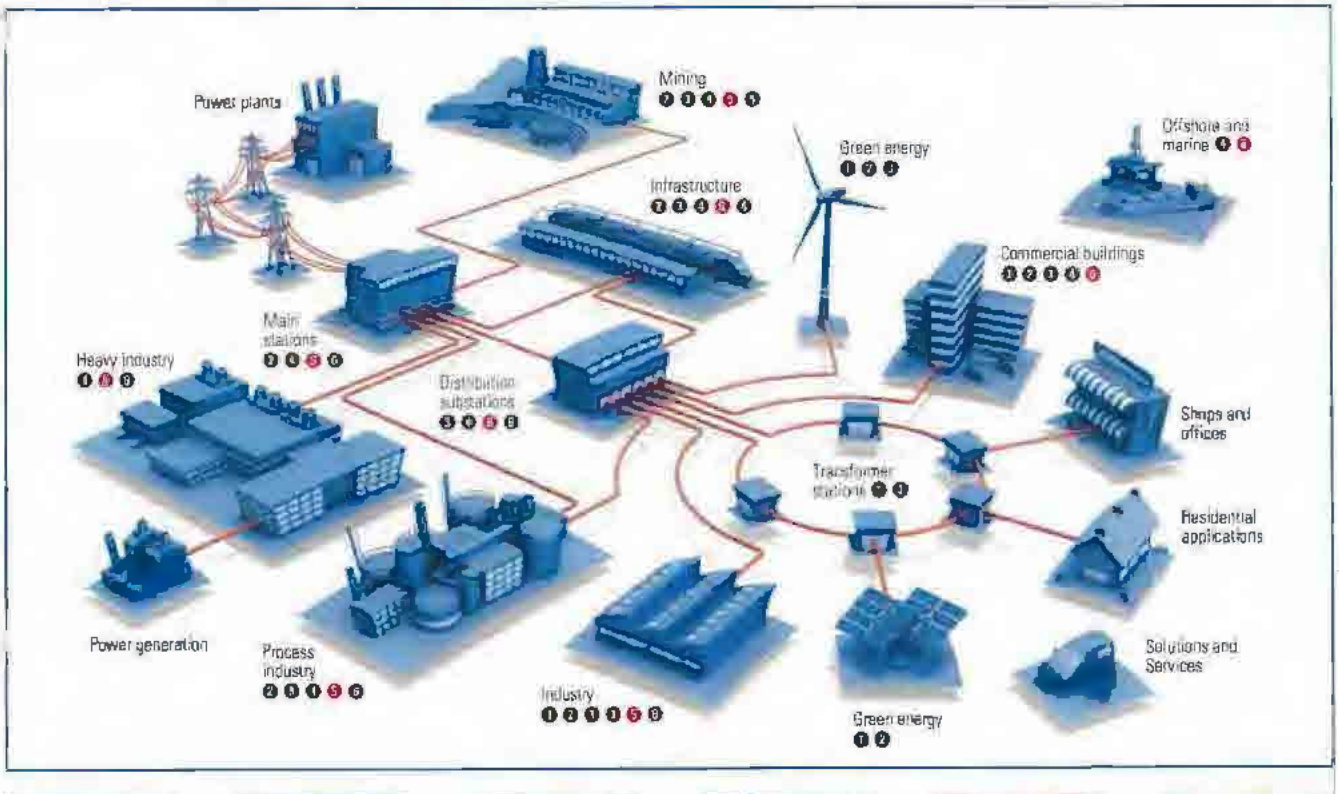

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Eaton Medium Voltage Switchgear - Power Xpert UX - YouTube

www.youtube.com/watch?v=d2vIbZPi3w
Sep 21, 2011 - Uploaded by EatonElectricalEMEA
IEC Metal-enclosed Single Busbar, Solid- and Air-insulated, Vacuum **Medium Voltage Switchgear**, up to 24 ...

MELECS: Medium-voltage switchgears
www.melecs.com/mittelspannungs-schaltanlagen.html?&L=en
Medium-voltage switchgears. Thanks to decades of experience in the development, engineering and production of factory-ready, type-tested indoor switchgears ...

Medium Voltage Switchgear on ThomasNet.com
www.thomasnet.com › Suppliers
Results 1 - 25 of 67 - Welcome to the premier industrial source for **Switchgear: Medium Voltage**. The companies featured in the following listing offer a ...

Medium voltage apparatus and switchgear
www.koncar.com/...**switchgear**/**Medium_voltage**_apparatus_and_**switchg**...
MV switchgear assemblies air (AIS) or SF6 (GIS) insulated (7,2-38 kV); LV **switchgear** MCC; Ring Main Units (12 - 24 kV); vacuum, oil-immersed and combined ...

Xiria E - Eaton Europe - Medium Voltage Switchgear
www.eaton.eu/.../**MediumVoltageSwitchgear**/**SecondarySwitchgear**/...fin...
Xiria E is the new **medium voltage switchgear** for smart grid applications. The system is characterized by its high level of operational safety. Eaton Europe.

Siemens - Medium Voltage - Meeting the call for a dependable system
www.siemens.com.au/**mv**-power-distribution
offers a **medium voltage** range including air insulated **switchgear** systems, gas insulated **switchgear** systems, and **medium voltage** components.

Medium Voltage Switchgear - Alibaba.com
www.alibaba.com/showroom/**medium-voltage-switchgear**.html
855 Products - **Medium Voltage Switchgear**, You Can Buy Various High Quality ...
medium voltage metal-clad switchgear. Min. Order: 1 Set. Supply Ability ...
Medium voltage switchgear. Min. Order: 1 Set. FOB Price: US ...

Searches related to medium voltage switchgear
medium voltage switchgear standards
medium voltage switchgear design guide
medium voltage switchgear manufacturers
medium voltage switchgear schneider
medium voltage switchgear pdf
medium voltage switchgear testing procedure
medium voltage switchgear ppt
medium voltage switchgear specification

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medium voltage switchgear

Web

Page 3 of about 1,680,000 results (0.30 seconds)

Substation Design Service - megavar.com.au
www.megavar.com.au/
Megavar offers primary & secondary **high voltage** design services.
Unit 12, 41 Sabre Drive, Port Melbourne VIC

Commissioning Engineers	Substation Testing
Partial Discharge Testing	Motor and Generator Testing

ABB Medium Voltage Products and Systems
www.abb.us/product/us/9AAC720001.aspx
ABB attends to your needs for reliable **medium voltage switchgear**, apparatus and modular systems, as well as distribution automation used in industrial, ...

Power Systems - Mitsubishi Electric
www.mitsubishielectric.com/bu/.../products/**switchgear**/mv_**switchgear**/
Medium- & Low-voltage Switchgear & Systems. **Medium-voltage Switchgear**. 7.2/12/15kV Metal-enclosed Switchgear Model MS-E. 7.2/12/15kV Metal-enclosed ...

Medium Voltage Switchgear - Eaton Europe - Power Distribution
www.eaton.dk/Denmark/Mellemspaendingsanlaeg/index.htm
Medium Voltage Switchgear: Primary Switchgear, Secondary Switchgear, Ring Main Units, Medium Voltage Vacuum Breakers, Medium Voltage Automation ...

Medium Voltage Switchgear | AZZ
www.azz.com › ... › Core Products › Switchgear and Protection
AZZ is a premier manufacturer of custom designed **medium voltage** metal-enclosed and metal-clad **switchgear** for indoor or outdoor applications with voltages ...

Handbook of Switchgears - Access Engineering from McGraw-Hill
accessengineeringlibrary.com/browse/handbook-of-**switchgears**
APPLICATION OF **MEDIUM VOLTAGE SWITCHGEAR**; 12. ENERGY METERING; 13. CONTROL AND INTERLOCKING SCHEMES FOR MEDIUM VOLTAGE ...

Hyosung Power & Industrial Systems - Medium Voltage Switchgears
www.hyosungpni.com › ... › Power Systems › Switchgears
Hyosung offers **medium voltage** SF6 GIS with rated voltage of 24~38kV, rated current of 1250~3150A and maximum rated breaking current of 40kA.

Medium Voltage Switchgear (2) – Selection of Switching Devices ...
electrical-engineering-portal.com › Technical Articles
Feb 13, 2013 - Switching devices are selected both according to their ratings and according to the switching duties to be performed, which includes the switch ...

[PDF] **Medium Voltage Switchgear** Catalog - ingeteam
www.ingeteam.com/.../PRD_314_Archivo_ptd62-**medium-voltage-switc**...
CNP metal-clad switchgears represent a dynamic base for the construction of **medium voltage switchgears** in fulfilment of energy distribution requirements ...

MV Switchgear - Schneider Electric
www.schneider-electric.com.au › Home › Products And Services
A comprehensive portfolio of products, data sheets, brochures and other downloadable files from Schneider Electric.

Medium Voltage Switchgear - EFACEC
www.efacec.pt › Homepage › Business Areas › Catalog
The **Medium Voltage Switchgear** Business Unit has over 30 years experience in the development and production of equipment for electrical and energy systems.

Searches related to medium voltage switchgear

medium voltage switchgear standards
medium voltage switchgear design guide
medium voltage switchgear manufacturers
medium voltage switchgear schneider
medium voltage switchgear pdf

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medium voltage switchgear specification

Previous 1 2 3 4 5 6 7 8 9 10 Next

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AUSTRALIAN MADE

Medium Voltage Electrical switchgear Products

Search Results for "Medium Voltage Electrical switchgear"

Search

Medium Voltage Electrical switchgear

Products

Consumer

- ☐ Electronics, Computers, Electrical & Lighting
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- ☐ Clothes & Shoes
- ☐ Jewellery & Accessories
- ☐ Furniture & Bedding
- ☐ Health & Beauty
- ☐ Homewares
- ☐ Sport & Hobbies
- ☐ Home Renovations & Maintenance
- ☐ Children & Baby
- ☐ Animal & Pet
- ☐ Gifts & Souvenirs
- ☐ Energy & Utilities
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B2B & Trade

- ☐ Electronics & Technology
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- ☐ Machinery
- ☐ Services

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Industrial Switchgear
Clipsal

Flexolex SG 2.0/3.3kV Single Flexible Switchgear Cables
Olex Australia Pty Ltd

Flexolex SG 2.0/3.3kV Single Core Flexible Switchgear Cables
Olex Australia Pty Ltd

M600 Medium Storage Bin
Carousel Services Australia

MDIV Medium Bin Divider
Carousel Services Australia

Medium Grain White Rice
OzRice

Medium Frequency Radar
ATRAD Pty Ltd

Joint Wraps (Small, Medium and Large)
Heat Wheat Products Australia

SBPC Soluble Heartworm tablets for medium dogs
Australian Contract Manufacturing

Waffle Cones - Medium Serve 12Pk / 140g NET
Altimate Foods

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- Home Renovations & Maintenance
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- Energy & Utilities
- Automotive
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B2B & Trade

- Electronics & Technology
- Materials & Equipment
- Machinery
- Services

11 results found

Industrial Switchgear
Clipsal

Flexolex SG 2.0/3.3kV Single Flexible Switchgear Cables
Olex Australia Pty Ltd

Flexolex SG 2.0/3.3kV Single Core Flexible Switchgear Cables
Olex Australia Pty Ltd

Electrical Switchboards
Dara-switchboards

Electrical Cables
Prysmian Cables & Systems

Electrical Fittings
SDI Plastics

Electrical equipment and accessories
Clipsal

Electrical Isolation System
Collridge Pty Ltd

Electrical, Electronic Cleaners and Coating/Aerosols
Richard Foot Pty Ltd

Electrical Conduit Fittings & Corrugated Conduits
Plastic Bend Fabrications Pty Ltd

Continuous Flow Electrical Water Heater (CFEWH)
MicroHeat Technologies Pty Ltd

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EKM Intellectual Property & Trade Marks

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RAY PAPWORTH & CO PTY LTD

27 December 2013

The Manager

Dear Sir

Our client has instructed us to make application on their behalf to the Australian Customs and Border Protection Service (ACBPS) for grant of a Tariff Concession Order (TCO).

The proposed wording of the Tariff Concession is:

8537.20.90: SWITCHGEAR, air insulated, incorporating vacuum circuit breaker and / or fuse contactor, having a rated voltage NOT less than 3.6 kV

If the concession is granted, imported goods meeting the terms of the foregoing wording will be rated free of customs duty on importation.

The legislation requires that the applicant request that your Company, as a potential local manufacturer, advise them whether or not you manufacture, in Australia, substitutable goods to those for which concession is sought. The specifications of the subject goods are attached. Due to statuary time limits that apply to applications, our client would appreciate your prompt reply to this inquiry.

In the event that your company claims to manufacture, in the ordinary course of business in Australia, products that are capable of being put to a use that corresponds to the subject goods, please include with your reply, details of the range price availability, technical specifications and product brochures of your Company's manufacture for our client's evaluation.

Should you require further information or clarification of any matter contained in our letter please contact us on ph s47F, fax (02) 9572 7500 or by email at s47F @alwaysonline.net.au.

Yours faithfully,
Ray Papworth & Co Pty Ltd

s47F

Encl

CUSTOMS INDIRECT TAX AND GST CONSULTANTS.

GOVERNMENT ASSISTANCE AND GRANTS.

ABN 21 084 534 716
13 Arlington Street DULWICH HILL 2203
Telephone: s47F Fax: +61 2 9572 7500 Mobile: s47F Email: s47F @lawaysonline.net.au

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DISTRIBUTION LIST

Electrical Switchgear Services
6/7 Apprentice Dr
BERKLEY VALE NSW 2261

ABB
Bapaume Road
MOORBANK NSW 2170

Schneider Electric (Australia) Pty Ltd
78 Waterloo Road
MACQUARIE PARK NSW 2113

Siemens Australia
885 Mountain Highway
BAYSWATER VIC 3153

GE Industrial Systems
125-127 Long St
SMITHFIELD NSW 2164

NHP Electrical Engineering
30-34 Day Street North
SILVERWATER NSW 2128

Clipsal Switchgear Pty Ltd
1 Clipsal Rd
MURRAY BRIDGE SA 5253

b

From: s47F (GE Energy Management)
To: s47F n@alwaysonline.net.au
Subject: Tariff Concession - Switchgear
Date: Monday, 13 January 2014 11:15:16 AM

s47F

I refer to your letter dated 27 December 2013 regarding TCO for 8537.20.90 Switchgear

I advise that GE does not manufacture products meeting this TC in Australia.

Regards

s47F r – Power Equipment
GE
Industrial Solutions

s47F

125 Long Street
Smithfield NSW 2164 Australia
GE Energy Aust. Pty Ltd

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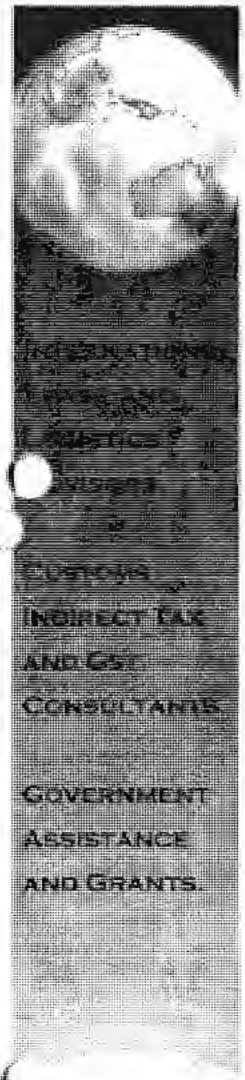
GE imagination at work

RAY PAPWORTH & CO PTY LTD

8

7 February 2014



The Manager
Mayfield Industries Pty Limited
280 Cormack Road
Wingfield, SA 5013

Dear Sir

Our client has instructed us to make application on their behalf to the Australian Customs and Border Protection Service (ACBPS) for grant of a Tariff Concession Order (TCO).

The proposed wording of the Tariff Concession is:

8537.20.90: SWITCHGEAR, air insulated, incorporating vacuum circuit breaker and / or fuse contactor, having a rated voltage NOT less than 3.6 kV

If the concession is granted, imported goods meeting the terms of the foregoing wording will be rated free of customs duty on importation.

The legislation requires that the applicant request that your Company, as a potential local manufacturer, advise them whether or not you manufacture, in Australia, substitutable goods to those for which concession is sought. The specifications of the subject goods are attached. Due to statuary time limits that apply to applications, our client would appreciate your prompt reply to this inquiry.

In the event that your company claims to manufacture, in the ordinary course of business in Australia, products that are capable of being put to a use that corresponds to the subject goods, please include with your reply, details of the range price availability, technical specifications and product brochures of your Company's manufacture for our client's evaluation.

Should you require further information or clarification of any matter contained in our letter please contact us on ph s47F, fax (02) 9572 7500 or by email at s47F @alwaysonline.net.au.

Yours faithfully,
Ray Papworth & Co Pty Ltd

s47F

Encl

ABN 21 084 534 716
13 Arlington Street DULWICH HILL 2203
Telephone: s47F Fax: +61 2 9572 7500 Mobile: s47F Email: s47F @lawaysonline.net.au

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From: TARCON
Sent: Thursday, 23 January 2014 4:49 PM
To: [redacted]
Subject: RE: Application for TCO -Eaton Industries

Good Afternoon,

We have received your TCO application on behalf of Eaton Industries.

The receipt date for this application is 23 January 2013 and TCO number is 1403432.

An acknowledgement letter will follow shortly.

Many thanks,
[redacted]
Tariff Concessions | Trade Branch
Australian Customs and Border Protection Service
P: [redacted] | F: 02 6275 6376

From: [redacted]@alwaysonline.net.au]
Sent: Wednesday, 22 January 2014 4:59 PM
To: TARCON
Subject: Application for TCO -Eaton Industries

Please find attached an application for Tariff Concession Order for:

8537.20.90: SWITCHGEAR, air insulated, incorporating vacuum circuit breaker and/ or fuse contactor, having a rated voltage NOT less than 3.6 kV.

The application is lodged on behalf of our client Eaton Industries Pty Ltd. In support of the application we have enclosed technical illustrative material of the subject goods together with copies of correspondence forwarded to local manufacturers.

Our research of the Kompass database, Google and Australian made .com.au and the foregoing correspondence has not revealed any potential local manufacturers of the subject goods (details enclosed).

Should you require further information or clarification of any matter contained in our letter please contact us on [redacted] Mob : [redacted] or by email at [redacted]@alwaysonliine.net.au.

Kind regards

[redacted]

Ray Papworth & Co Pty Ltd
Indirect Tax, International Trade, and Logistics Advisors
13 Arlington street
Dulwich Hill N.S.W 2203
Sydney Australia
PH : [redacted]
Fax : + 61 2 9572 7500

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Mob : s47F
Email : s47F @alwaysonline.net.au

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Australian Government
Australian Customs and Border Protection Service

Reply to the Chief Executive Officer

Quote: TC 1403432
Your Ref: Eaton 11KV

Australian Customs and
Border Protection Service
Customs House
5 Constitution Avenue
CANBERRA ACT 2601
Ph: (02) 6275 6666
Fax: (02) 6275 6376
Email: tarcon@customs.gov.au

31 January 2014

s47F
RAY PAPWORTH & CO. PTY. LTD.
13 ARLINGTON ST
DULWICH HILL NSW 2203

Dear s47F

TARIFF CONCESSION SYSTEM
APPLICATION ACKNOWLEDGEMENT

Your application for a Tariff Concession Order, details of which are shown below, was received in this office on 23 January 2014. The TC number TC 1403432 has been allocated to your application.

Date Received:	23 January 2014
Applicant:	EATON INDUSTRIES PTY LTD
Goods:	SWITCHGEAR
Applicant ABN/CAC	66103014571/001

Yours sincerely

s22(1)(a)(i)

for National Manager
Trade Services

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Australian Government
Australian Customs and Border Protection Service

TAPIN

Tariff Advice Application Number 20838000

Tariff Advice Details:

Previous Tariff Advice Number	0
Status	FINALISED
Changed Status	
Type	TARIFF CONCESSION ORDER ADVICE
State	NSW
Confidential	NO
Input Date	17 OCT 2013

Company and Contact Details:

Importer	EATON INDUSTRIES PTY LTD		
Importer ABN / CAC	66103014571	**CCID**	
Supplier	EATON ELECTRIC BV		
Supplier ABN / CAC		**CCID**	CCN9469747Y
Applicant	RAY PAPWORTH & CO. PTY. LTD.		
Applicant ABN / CAC	21084534716	**CCID**	
Applicant Contact Name	s47F		
Applicant Phone	s47F	**Fax**	02 95727500
Applicant Reference	FMX AND UX SERIES MV SWITCH		
Broker Box No			

Goods Details:

Goods Description DESCRIPTION OF GOODS

Both the FMX and UX series are Metal-enclosed Single Busbar, Solid- and Air-insulated Medium Voltage Switchgear, up to 24 kV. The subject goods can be used as Primary switchgear or Secondary switchgear in electrical distribution. Primary switchgear is the first stage in the process of conducting electrical power from the grid to the end user. Typically several Secondary switchgear units are linked to the primary to further distribute the electrical power around smaller scale sites depend upon user needs. The goods the subject of the Tariff Advice application are designed to provide safe, reliable switching and fault protection for electrical circuits. Both the FMX and the UX series is imported in three system voltages 12, 17.5, and 24 kV. FMX is fixed type switchgear with Electro-magnetic actuator operator. UX is withdrawable switchgear. Both are used in applications requiring Medium Voltage Primary Switchgear, up to 24 kV.

Switchgear are important nodal points in modern power distribution. Correspondingly important is their reliable functioning, a clearly defined switching behaviour according to specified parameters as well as the protection of personnel and protection against operational interruptions when an overload occurs.

IDENTIFICATION

Australian Government
Australian Customs and Border Protection Service

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TAPIN

Tariff Advice Application Number 20838000

	The subject goods in their condition as imported are presented as a range of individual machines, characterised by their suitability for use as electrical switch gear systems. To establish the specific application of the subject goods, the technical literature of the manufacturer was examined. The technical literature details the characteristics of each of the machines as a type of medium voltage electrical switch gear. An objective view of the subject goods, together with an analysis of the supporting technical information, reveal characteristics which upon informed inspection a reasonable person would conclude the subject goods are electrical switchgear for the distribution of electricity designed to international standards for providing safe, switching and the protection of electrical circuits. Eaton has attached technical material detailing the subject goods to assist the ACBPS in their identification of the subject goods. If the ACBPS 5 would prefer it more information is available at the Eaton website http://www.eaton.eu.
Claimed Tariff Classification	8537.20.90
Claimed Instrument	0908359
Claimed Schedule 4 Item	50
Claimed Reasons	Chapter 85 Notes do not exclude the subject goods. In accordance with Interpretive Rule 1, Schedule 3 - Customs Tariff Act 1995 specifies the following heading and sub-headings which describes the subject. 8535 Electrical apparatus for switching or protecting electrical circuits, or for making connections to or in electrical circuits (for example, switches, fuses, lightning arresters, voltage limiters, surge suppressors, plugs and other connectors, junction boxes), for a voltage exceeding 1000 volts: 8535.10.00 -Fuses 8535.2 -Automatic circuit breakers: 8535.30.00 -Isolating switches and make-and-break switches 8535.40 -Lightning arresters, voltage limiters and surge suppressors 8535.90.00 -Other 8537 Boards, panels, consoles, desks, cabinets and other bases, equipped with two or more apparatus of 8535 or 8536, for electric control or the distribution of electricity, including those incorporating instruments or apparatus of chapter 90, and numerical control apparatus, other than switching apparatus of 8517: 8537.20 -For a voltage exceeding 1000 V 8537.20.90 -Other Item 50 Schedule 4 Customs Tariff Act 1995 8537.20.90 SWITCHGEAR, vacuum, metalclad, having a rated voltage NOT less than 22 kV Op: 11.03.09 Dec. Date 29.05.09 - TC 0908359

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Australian Government
Australian Customs and Border Protection Service

TAPIN

Tariff Advice Application Number 20838000

A fundamental principle of Classification is that the goods must be identified in their state as imported. The subject goods are imported as complete machines. It follows that they be classified as entities.

The subject goods of this application contain as component parts, goods specified in the sub-headings to Heading 8536 but no one sub-heading describes fully the subject goods. Specifically the subject goods contain Switches, and Circuit breakers, and connectors. Subsidiary devices include voltage transformers, surge suppressors and other electrical contractors. All of these components are housed together in separate compartments in a single cabinet or housing.

The goods are designed for a specific function of electrical distribution. Tariff Heading 8537 describes cabinets containing two or more of the goods specified in Tariff Heading 8535 and providing specific function of electrical distribution.

Heading 8537 describes machinery, which contains in a single cabinet two or more goods specified in heading 8535. The subject goods have two or more components specified in Heading 8535 in a single housing.

The classification is determined by reference to the Tariff heading that accurately describes the goods. Heading 8537 provides the most accurate description of the goods. Heading 8537 specifies goods by reference to the components specified in 8535. The various sub-headings in 8537 separate machines into categories that specify use by method or industry. The subject goods are not detailed in these sub-headings so fall to sub-heading 8537.20.90.

The technical specifications attached detail that certain of the subject goods conform to the terms of TC 0908359. A TCO must be interpreted based on the normal understanding of its actual words unless there is a particular trade meaning attached to the words, as there is in this case.

In the wording of the concession, the subject goods meet the commonly understood term Switchgear. The subject goods are also characterised by Vacuum circuit breakers. Metal-clad switchgear refers to a trade understanding that the division of the switchgear panel into four compartments (busbar compartment, switching device compartment, connection compartment and low-voltage compartment), partitions between the compartments made of sheet steel, front plate made of sheet steel or insulating material. The technical literature shows the subject goods are in separate metal enclosures with metal partitions separating the 4 components units. It also shows the subject goods are supplied in a 24 kv rating.

Lodgement Details:

Lodge Date	23 OCT 2013		
Sample Provided	NO		
Illustrative Descriptive Material	YES		
Additional Info Requested	NO	**Requested on**	
Additional Info Received	NO	**Received on**	

(80)

Australian Government
Australian Customs and Border Protection Service

TAPIN

Tariff Advice Application Number 20838000

Acquittal Details:

Acquit Date	22 NOV 2013
Given Tariff Classification	8537.20.90
Given Instrument	
Given Schedule 4 Item	
Given Reasons	SPLIT CLASSIFICATION - Both the FMX and the UX series is imported in three system voltages 12, 17.5 and 24 kV. This Tariff Advice only covers those FMX and UX models with rated voltages of 12kV and 17.5kV. Detailed description of goods: FMX and UX series are Metal-enclosed Single-busbar, Solid- and Air-insulated Medium Voltage Switchgear, up to 24 kV. The subject goods can be used as Primary switchgear or Secondary switchgear in electrical distribution. Primary switchgear is the switchgear in the process of conducting electrical power from the grid to the end user. Typically several Secondary switchgear units are linked to the primary to further distribute the electrical power around smaller scale sites depend upon user needs. The goods the subject of the Tariff Advice application are designed to provide safe, reliable switching and fault protection for electrical circuits. FMX is a fixed type switchgear with Electro-Magnetic actuator operator. UX is a withdrawable switchgear. Both are used in applications requiring Medium Voltage Primary Switchgear, up to 24 kV. Identification of goods: Metal-enclosed solid and air-insulated switchgear with rated voltages of 12kV and 17.5kV for the distribution of electricity in power distribution systems. Headings considered: 8537 Headings rejected and reasons why: N/A. Appropriate heading and reasons why: 8537 vide IR1. Appropriate subheading and reasons why: 8537.20.90 vide IR6. Tariff Concession Order eligibility:

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Australian Government
Australian Customs and Border Protection Service

TAPIN

Tariff Advice Application Number 20838000

	N/A. The claimed TC 0908359 is not applicable as the rated voltages of these models are less then the 22kV specified in the TCO wording. This decision only applies to goods as detailed in this application from the supplier nominated in this application and imported by the owner nominated in this application. This decision is valid in all Australian ports for five (5) years from the date of this decision.
Decision Officer Name	s22(1)(a)(ii)
Decision Officer Phone	s22(1)(a)(ii)
Registry File Number	
Multiple Classification	MULTIPLE
Rejection Reason	

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Electrical Data

switchgear system		12 kV	17.5 kV	24 kV
Rated Voltage	kV	12	17.5	24
Lightning impulse withstand voltage	kV	75	95	125
Power frequency withstand voltage	kV	28	38	50
Rated frequency	Hz	50	50	50
Internal arc class		AFL 25 kA - 1 s	AFL 25 kA - 1 s	AFL 25 kA - 1 s
Loss of service continuity category		LSC2B	LSC2B	LSC2B
Partition class		PM	PM	PM
Earthing circuit	kA - s	25 - 3	25 - 3	25 - 3
Compartment circuit-breaker/cable		Interlock-controlled	Interlock-controlled	Interlock-controlled
Compartment busbar		Tool-based / non-accessible	Tool-based / non-accessible	Tool-based / non-accessible
Degree of protection HV compartments (optional)		IP4X	IP4X	IP4X
Degree of protection LV compartment		IP3XD	IP3XD	IP3XD
Temperature classification		Minus 5 °C indoor	Minus 5 °C indoor	Minus 5 °C indoor
Busbar system				
Rated normal current	A	2000	2000	2000
Rated short-time withstand current	kA - s	25 - 3	25 - 3	25 - 3
Rated peak withstand current	kA	63	63	63
Circuit-breaker - incoming feeder and sectionalizer				
Rated normal current	A	1250 - 1600 - 2000	1250 - 1600 - 2000	1250 - 1600 - 2000
Rated short-circuit breaking current	kA	25	25	25
Rated short-circuit making current	kA	63	63	63
Rated short-time withstand current	kA - s	25 - 3	25 - 3	25 - 3
Circuit-breaker - outgoing feeder				
Rated normal current	A	630 - 800	630 - 800	630 - 800
Rated short-circuit breaking current	kA	25	25	25
Rated short-circuit making current	kA	63	63	63
Rated short-time withstand current	kA - s	25 - 3	25 - 3	25 - 3
Class		E2, C2	E2, C2	E2, C2
Operating cycles at short-circuit current		100	100	100
Single capacitor bank switching	A	400	400	400
Mechanism				
Rated operating sequence	A	O-0.3 s-CO-15 s-CO	O-0.3 s-CO-15 s-CO	O-0.3 s-CO-15 s-C
Class		M2	M2	M2
Opening time	ms	35	35	35
DC component	%	35	35	35
Closing time	ms	70	70	70
Number of operations actuator		30,000	30,000	30,000
Number of operations interrupter		30,000	30,000	30,000
Auxiliary voltage	V	48, 60,110, 220 V_{DC} 110/230 V_{AC}	48, 60,110, 220 V_{DC} 110/230 V_{AC}	48, 60,110, 220 V_{DC} 110/230 V_{AC}
Mechanism change-over switch				
Opening time	s	24	24	24
Closing time	s	24	24	24
Number of operations change-over switch		1,000	1,000	1,000
Class		M0	M0	M0

Standards

complies with the following international standards:

IEC 62271-1	Common specifications
IEC 62271-100	Circuit-breakers (E2, M2, C2)
IEC 62271-102	Disconnectors and earthing switches (E2, M0)
IEC 62271-200	Metal enclosed switchgear and controlgear
IEC 60044-1	Current transformers
IEC 60044-2	Voltage transformers
IEC 60529	Degrees of protection (IP Code)
IEC 61850	Communication networks and systems in substations
IEC 61243-5	Live working - Voltage detectors - Part 5: Voltage detecting systems

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Fully type-tested to latest IEC standards

The switchgear is type tested to the latest IEC 62271-200 and has third-party certification to prove internal arc containment classification of AFLR from 25 kA for 1 second and up to 40 kA for 1 second and 50 kA for 0.5 second. This means there is minimal risk of harm to personnel in the unlikely event of an internal arc in the cable compartment, vacuum circuit breaker compartment or the busbar compartment in any direction: front, rear and sides of the switchgear.

Standards

compliies with the following international standards	
IEC 62271-1	Common specifications
IEC 62271-100	Circuit breakers (E2, M2, C2)
IEC 62271-102	Disconnectors and earthing switches (E2, M0)
IEC 62271-200	Metal enclosed switchgear and controlgear
IEC 60044-1	Current transformers
IEC 60044-2	Voltage transformers
IEC 60529	Degrees of protection (IP Code)
IEC 61850	Communication networks and systems in substations
IEC 61243-5	Live working - voltage detectors - Part 5: voltage detecting systems

Electrical data

System		12 kV	17.5 kV	24 kV
Rated voltage	kV	12	17.5	24
Lightning impulse withstand voltage	kV	75	95	125
Power frequency withstand voltage	kV	28	38	50
Rated frequency	Hz	50/60	50/60	50/60
Internal arc class			AFLR	
Loss of service continuity category			LSC2B	
Partition class			PM	
Earthing circuit	kA - s	25 - 3; 26.3 - 3; 31.5 - 3; 40 - 3; 50 - 1		20 - 3; 25 - 3
External degree of protection			IP4X (IP41 as an option)	
Internal degree of protection			IP2X (IP3X as an option)	
Busbar system				
Rated normal current	A	1250, 1600, 2000, 2500, 3150, 4000 (FC*)		1250, 2000, 2500
Rated short-time withstand current	kA - 3 s	25 / 26.3 / 31.5 / 40 / 50		20 / 25
Circuit-breaker ratings				
Rated normal current	A	630, 1250, 2000, 2500, 3150, 4000 (FC*)		600, 1250, 2000, 2500
Rated short-circuit breaking current	kA	25 / 26.3 / 31.5 / 40 / 50		20 / 25

*) FC = Fan Cooled.

Panel width	600 mm	600 mm	1000 mm
Max. rating 12 kV and 17.5 kV	**630 A / 1250 A**	**2000 A**	**3150 A / 4000 A (FC)**
Depth	1310	1310 / 1490*	1490
Height without Arc Chamber	2200	2200	2200
Height including Arc Chamber	2760	2760	2760
Weight (in kg)	950 / 990	1230	1850
Max. rating 24 kV		**630 A / 1250 A**	**2000 A / 2500 A**
Depth		1570	1570
Height without arc chamber		2320	2320
Height including arc chamber		2870	2870
Weight (in kg)		1460 / 1490	1820

*) 1500 mm for IAC classification ratings of 40 kA - 1 s and 50 kA - 0.5 s only.

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s22(1)(a)(ii)

From: s47F @alwaysonline.net.au>
Sent: Tuesday, 18 February 2014 4:36 PM
To: s22(1)(a)(ii)
Subject: RE: Potential Manufacturer of Switchgear [SEC=UNCLASSIFIED]

Thanks s22(1)(a)(ii)

Kind regards

s47F

Ray Papworth & Co Pty Ltd
Indirect Tax, International Trade, and Logistics Advisors
13 Arlington street
Dulwich Hill N.S.W 2203
Sydney Australia
s47F

From: s22(1)(a)(ii) @customs.gov.au]
Sent: Tuesday, 18 February 2014 4:25 PM
To: s47F
Subject: RE: Potential Manufacturer of Switchgear [SEC=UNCLASSIFIED]

Hi s47F

There is no problem with not less than 3.6kV as it is still within the range shown in the IDM. I did not realise that there were smaller than that being imported or think forward to later imports.

I will change the wording back to 3.6Kv.

Regards

s22(1)(a)(ii)

Tariff Concessions
Trade Branch
Australian Customs and
Border Protection Service

PH; s22(1)(a)(ii)
Fax: 02 6275 6376
Email: s22(1)(a)(ii) customs.gov.au

From: s47F @alwaysonline.net.au]
Sent: Tuesday, 18 February 2014 4:14 PM

(A11)

To: s22(1)(a)(ii)
Subject: RE: Potential Manufacturer of Switchgear [SEC=UNCLASSIFIED]

s22(1)(a)(ii) I understand that there are some 3.6 Kv,7.6kv as well as the 12 Kv and above units but I don't have IDM for these as they are infrequently imported
Is there a problem with not less than 3.6KV?

Kind regards

s47F

Ray Papworth & Co Pty Ltd
Indirect Tax, International Trade, and Logistics Advisors
13 Arlington street
Dulwich Hill N.S.W 2203
Sydney Australia
s47F

From: s22(1)(a)(ii) mailto:s22(1)(a)(ii) @customs.gov.au]
Sent: Tuesday, 18 February 2014 3:41 PM
To: s47F
Subject: RE: Potential Manufacturer of Switchgear [SEC=UNCLASSIFIED]

Good afternoon s47F

Thank you for your email.

I have now prepared the following wording for your possible agreement

SWITCHGEAR, air insulated, incorporating a vacuum circuit
eaker AND/OR fuse contactor, having a voltage rating capacity
NOT less than 10.6 kV

After checking the description of goods against the IDM I have amended the wording of the voltage to 10.6kW. The IDM shows only 12kW and above.

Please advise if this is incorrect.

Regards

s22(1)(a)(ii)

Tariff Concessions
Trade Branch
Australian Customs and
Border Protection Service

PH; s22(1)(a)(ii)

Fax: 02 6275 6376
Email: s22(1)(a)(ii) **@customs.gov.au**

From: s47F @alwaysonline.net.au]
Sent: Monday, 17 February 2014 3:44 PM
To: s47F
Subject: RE: Potential Manufacturer of Switchgear

Thanks s47F I will advise customs of your response

Kind regards

s47F

Ray Papworth & Co Pty Ltd
Indirect Tax, International Trade, and Logistics Advisors
13 Arlington street
Dulwich Hill N.S.W 2203
Sydney Australia
s47F

From: s47F @mayfieldindustries.com.au]
Sent: Monday, 17 February 2014 3:31 PM
To: s47F
Subject: RE: Potential Manufacturer of Switchgear

Hi s47F

On the import of most products there is an import duty applied. This is in place to protect local manufacture. Where there is no local manufacturer, a company can apply for exemption on the import duty and I believe that this is what this request or your email relates to.

Having said that we assume that you have contacted us as potential local manufacturers of MV switchgear. Please note that Mayfield are not manufacturers of this switchgear and therefore not manufacturers in the ordinary course of business of this type of equipment.

Regards s47F

From: s47F @alwaysonline.net.au]
Sent: Monday, 17 February 2014 1:49 PM
To: s47F
Subject: FW: Potential Manufacturer of Switchgear

s47F Customs have asked us again today if we have contacted you
Could you pls advise regarding the requested information below as there are statutory time limits that apply to the application process

Kind regards

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s47F

Ray Papworth & Co Pty Ltd
Indirect Tax, International Trade, and Logistics Advisors
13 Arlington street
Dulwich Hill N.S.W 2203
Sydney Australia
s47F

From: s47F @alwaysonline.net.au]
Sent: Monday, 10 February 2014 3:53 PM
To: s47F Mayfield Industries s47F @mayfieldindustries.com.au)
Subject: Potential Manufacturer of Switchgear

s47F

I spoke to s47F today from your company who suggested that I email you directly regarding this matter

We have lodged on behalf of our client, an application with Australian Customs and Border Protection seeking the grant of a Tariff concession order for certain electrical switchgear

The ACBPS has contracted us and advised us that your company may be a local manufacturer of goods the subject of the Tariff Concession application

Please find attached our letter to potential local manufacturers and illustrative descriptive material which provides details of the specifications of the goods the subject of our application for TCO to the Australian Customs and Border Protection Service.

We would appreciate it if you could advise whether or not your company manufactures in the ordinary course of business in Australia, products that are capable of being put to a use that corresponds to the subject goods? If your answer is in the affirmative could you please include with your reply, details of the range price availability, technical specifications and product brochures of your Company's manufacture for our client's evaluation.

Please contact us if you have any questions or if you require further information

Kind regards

s47F

Ray Papworth & Co Pty Ltd
Indirect Tax, International Trade, and Logistics Advisors
13 Arlington street
Dulwich Hill N.S.W 2203
Sydney Australia
s47F

This email message and any attached files may be protected information under section 16 of the Customs Administration Act 1985 (CA Act) and may also contain information that is confidential, and/or subject to legal professional privilege.

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Unsolicited commercial emails MUST NOT be sent to the originator of this email.

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Australian Government
Australian Customs and Border Protection Service

Reply to the Chief Executive Officer

Quote: TC 1403432
Your Ref:

Australian Customs and
Border Protection Service
Customs House
5 Constitution Avenue
CANBERRA ACT 2601
Ph: (02) 6275 6666
Fax: (02) 6275 6376
Email: tarcon@customs.gov.au

19 February 2014

s47F
RAY PAPWORTH & CO. PTY. LTD.
13 ARLINGTON ST
DULWICH HILL NSW 2203

Dear s47F,

TARIFF CONCESSION SYSTEM
APPLICATION ACCEPTANCE

Your application for Tariff Concession Order (TCO) Number TC 1403432 has been accepted by Customs as a valid application. The application will be published in Gazette Number TC14/08 of 26 February 2014. Details of the gazette notice are shown in the attachment.

Please examine the wording of the gazette notice and advise Customs immediately if the wording does not accurately describe the goods for which a TCO has been sought. This is a verification of agreed wording not an opportunity to further amend.

Yours sincerely,

s22(1)(a)(ii)

for National Manager
Trade Services

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Description of Goods including the Customs Tariff Classification		Schedule 4 Item Number
8537.20.90	SWITCHGEAR, air insulated, incorporating a vacuum circuit breaker AND/OR fuse contactor, having a voltage rating capacity NOT less than 3.6 kV Op. 23.01.14 - TC 1403432 Stated Use: To provide safe, reliable switching and fault protection for electrical circuits Applicant: EATON INDUSTRIES PTY LTD	50

s22(1)(a)(ii)

From: s22(1)(a)(ii)
Sent: Tuesday, 29 April 2014 2:25 PM
To: s47F
Subject: RE: TCO applications 1403432 - Switchgear and s22(1)(a)(ii) [SEC=UNCLASSIFIED]

Importance: High

http://www.customs.gov.au/webdata/resources/files/GAZETTETC14-08Dated26February2014.pdf

http://www.customs.gov.au/tariff/gazette.asp

ATTENTION s47F

(s47F

AMPCONTROL
21 OLD PUNT ROAD
TOMAGO NSW 2322

Hello s47F

Good to speak with you again recently.

The first link above will take you to our Tariff Concessions Gazette 14/08 of 26 February 2014: please see page 5, items 3 and 4, for description of goods as per the above TCO applications.

(You might let me know if item 2 is of any interest as well: though I'm afraid that this one has been made a TCO, and we would have to go for revocation).

-(; it is my understanding from our discussions that your company may produce, in the ordinary course of business, goods which are substitutable (**not identical**) for those which are subject of the above referenced applications, as delegate of the Chief Executive Officer of Customs I hereby invite you, under S269M(4) of the Customs Act, to lodge written submissions to the Australian Customs and Border Protection Service if you do have reason to oppose the making of the TCOs. Your submissions may take the form of objections as per Customs form B444.

In this regard, the second link above provides access to Objection Form B444, and general information relative to the Tariff Concessions Scheme.

On the Objection form you will note that **"Substitutable goods"** are defined in the Customs Act as **"goods produced in Australia that are put, or are capable of being put, to a use that corresponds with a use (including a design use) to which the goods the subject of the application or of the TCO can be put".**

Should you decide to lodge objections with us, please be sure to complete all fields as directed, with special care at Q6 for details of costs, working papers, extracts from accounting records. This material might include documentation such as bill of materials, invoices for raw materials, spreadsheets underpinning labour/overhead expenses, production costs etc

It is also of benefit if you would provide copies of one or two invoices dated prior to 23 January 2014 and 03 February 2014 - respectively, which are the commencement dates of these applications.

As some clients are reluctant to provide financial details, **I would also stress that all information presented to us is held, by legislation, to be commercial-in-confidence** - but it is most important that it is submitted.

To comply with relevant legislative requirements, should you decide to object to the making of the TCOs, would you please ensure material is lodged with us by close of business **Friday 16 May 2014.**

Once your paperwork is received, the applicants will be advised of the submissions and the name of your company. Where objections are lodged within 50 days from Gazettal of an application, the legislation allows for discussion between applicant and objector with a view to wording being narrowed and re-Gazetted. In a post 50 day scenario such as this, the delegate will proceed to make a decision on the basis of information on the file.

Please also be aware that once a TCO is made, it is available for use by anybody/any company. It does occur that some local manufacturers who are also importers, make a commercial decision not to object to the making of a TCO where they would be entitled to do so.

If you have any queries or issues you wish to discuss, by all means get back to me.

Best regards
s22(1)(a)(ii)

s22(1)(a)(ii)

Tariff Concessions
Trade Branch
Australian Customs and
Border Protection Service
Tel: s22(1)(a)(ii)
Fax: (02) 6275 6376
Email: s22(1)(a)(ii) @customs.gov.au

From: s47F @ampcontrolgroup.com]
Sent: Thursday, 24 April 2014 3:30 PM
To: s22(1)(a)(ii)
Subject: TCO applications

Hi s22(1)(a)(ii)

Thanks for your time on the phone.

If you forward to me the details of the switchgear etc for which a TCO is sought, I will forward on to our technical people who are best placed to judge if it will be an issue for us

Thanks

s47F

AMPCONTROL

s47F

21 Old Punt Road, Tomago NSW 2322
s47F
ampcontrolgroup.com

Ampcontrol provides a safe working environment for our workers. Stay Safe.

s22(1)(a)(ii)

From: s22(1)(a)(ii)
Sent: Tuesday, 20 May 2014 3:41 PM
To: s47F
Subject: RE: TCO applications 1403432 - Switchgear and s22(1)(a)(ii) [SEC=UNCLASSIFIED]

Thanks for getting back s47F

Tomorrow I will be finishing up for a 6 week o/seas break. If I could just have advice as to whether there is any interest or not, I can nominate (as the legislation requires) a new deadline for submissions.

Applicants are also keen for update on progress.

Thanks and best regards
Paul

s22(1)(a)(ii)

Tariff Concessions
Trade Branch
Australian Customs and
Border Protection Service
Tel: s22(1)(a)(ii)
Fax: (02) 6275 6376
Email: s22(1)(a)(ii) @customs.gov.au

From: s47F @ampcontrolgroup.com]
Sent: Tuesday, 20 May 2014 2:55 PM
To: s22(1)(a)(ii)
Subject: RE: TCO applications 1403432 - Switchgear and s22(1)(a)(ii) [SEC=UNCLASSIFIED]

Hi s22(1)(a)(ii)

Thanks for your phone messages. I have attempted to call back just now without success.

did refer your email to the relevant technical people internally but, to date, have received no response.

I will follow them up.

Regards

s47F

AMPCONTROL

s47F

21 Old Punt Road, Tomago NSW 2322
s47F
ampcontrolgroup.com

Ampcontrol provides a safe working environment for our workers. Stay Safe.

From: s47F
Sent: Tuesday, 29 April 2014 2:33 PM
To: s22(1)(a)(ii)
Subject: RE: TCO applications 1403432 - Switchgear an s22(1)(a)(ii) ; [SEC=UNCLASSIFIED]

s22(1)(a)(ii)

From: s47F @ampcontrolgroup.com>
Sent: Tuesday, 20 May 2014 4:40 PM
To: s22(1)(a)(ii)
Subject: RE: TCO applications 1403432 - Switchgear and s22(1)(a)(ii) [SEC=UNCLASSIFIED]

Hi s22(1)(a)(ii)

Thanks for your email.

I have now received feedback that Ampcontrol does not propose to lodge any objection to the relevant applications.

Thanks for thinking of us and enjoy your overseas trip.

Regards

s47F

s47F
21 Old Punt Road, Tomago NSW 2322
s47F
ampcontrolgroup.com

Ampcontrol provides a safe working environment for our workers. Stay Safe.

From: s22(1)(a)(ii) @customs.gov.au]
Sent: Tuesday, 20 May 2014 3:41 PM
To: s47F
Subject: RE: TCO applications 1403432 - Switchgear an s22(1)(a)(ii) C=UNCLASSIFIED]

Thanks for getting back s47F

Tomorrow I will be finishing up for a 6 week o/seas break. If I could just have advice as to whether there is any interest or not, I can nominate (as the legislation requires) a new deadline for submissions.

Applicants are also keen for update on progress.

Thanks and best regards
s22(1)(a)(ii)

s22(1)(a)(ii)

Tariff Concessions
Trade Branch
Australian Customs and
Border Protection Service
Tel: s22(1)(a)(ii)
Fax: (02) 6275 6376
Email: s22(1)(a)(ii) @customs.gov.au

From: s47F @ampcontrolgroup.com]
Sent: Tuesday, 20 May 2014 2:55 PM
To: s22(1)(a)(ii)
Subject: RE: TCO applications 1403432 - Switchgear an s22(1)(a)(ii) [SEC=UNCLASSIFIED]

s22(1)(a)(ii)

From: s22(1)(a)(ii)
Sent: Wednesday, 21 May 2014 11:28 AM
To: s47F @alwaysonline.net.au'
Subject: TCO Application 1403432 - Eaton Industries - Switchgear - Application successful [SEC=UNCLASSIFIED]
Attachments: TCO Application1403432 - Switchgear - Application successful.PDF

Good morning s47F

Application successful letter attached, and follows by post.

Best regards

s22(1)(a)(ii)

s22(1)(a)(ii)

Tariff Concessions
Trade Branch
Australian Customs and
Border Protection Service
Tel: s22(1)(a)(ii)
Fax: (02) 6275 6376
Email: s22(1)(a)(ii) @customs.gov.au

Australian Government
Australian Customs and Border Protection Service

Reply to the Chief Executive Officer

Quote: TC 1403432
Your Ref: Eaton 11kv

Australian Customs and
Border Protection Service
Customs House
5 Constitution Avenue
CANBERRA ACT 2601
Ph: (02) 6275 6483
Fax: (02) 6275 6376
Email: tarcon@customs.gov.au

21 May 2014

s47F
RAY PAPWORTH & CO. PTY. LTD.
13 ARLINGTON ST
DULWICH HILL NSW 2203

Dear s47F,

TARIFF CONCESSION SYSTEM
APPLICATION SUCCESSFUL

I refer to your application for Tariff Concession Order (TCO) Number TC 1403432 lodged on 23 January 2014.

As a delegate of the Chief Executive Officer I am satisfied that the application meets the core criteria on the basis of section 269C of the *Customs Act 1901* and have accordingly made a written Tariff Concession Order.

The decision to make a TCO will be published in Gazette Number TC14/20 of 28 May 2014.

The TCO, as detailed in the attachment, will also be published in the Schedule of Concessional Instruments as soon as possible.

s22(1)(a)(ii)

Delegate of the Chief Executive Officer

Description of the Particular goods including the applicable subheading of the Customs Tariff				Schedule 4 Item Last day of effect
8537.20.90	SWITCHGEAR, air insulated, incorporating a vacuum circuit breaker AND/OR fuse contactor, having a voltage rating capacity NOT less than 3.6 kV			50
	Op. 23.01.14	Dec. date 21.05.14	- TC 1403432	

s22(1)(a)(ii)

From: s47F @alwaysonline.net.au>
Sent: Friday, 25 September 2015 12:24 PM
To: TARCON
Subject: TCO application Ring main unit switchgear- Eaton Industries Pty Ltd.
Attachments: 25 september 2015 Eaton Xiria Magnefix completed TCO application1 pdf.pdf; Brochure Xiria_ENA_994135I-EN (2).zip

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: New application In

Please find attached a TCO application lodged with Dept of Immigration and Border Protection (DIBP) on behalf of our client Eaton Industries Pty Ltd.
The application seeks grant of a concession for ring main unit switchgear in terms of item 50 Schedule 4 Customs Tariff Act 1995
The completed application is lodged with a separate zip file of the IDM for the good the subject of the application.
Extracts of our research of potential local manufacturers and copies of our correspondence with those companies are also attached.
Please contact us below if the DIPB has any questions or requires further information in support of the attached application for concession.

Kind regards

15/36073

s47F

Ray Papworth & Co Pty Ltd
Indirect Tax, International Trade, and Logistics Advisors
13 Arlington street
Dulwich Hill N.S.W 2203
Sydney Australia
s47F

Australian Government
Australian Customs and Border Protection Service

APPLICATION FOR TARIFF CONCESSION ORDER (TCO)

IMPORTANT: Please read the information below carefully before completing this form.

Are you aware that substitutable goods are produced in Australia in the ordinary course of business?

(a) If you are aware, based on information and your inquiries that substitutable goods are being produced in Australia in the ordinary course of business then you should not lodge an application for a TCO.

Do you need to apply for new TCO?

(b) Before lodging this application for a TCO, the applicant should determine whether a suitable TCO already exists. Information on existing TCOs is contained in the Schedule of Concessional Instruments (SCI), which is available on the Internet at **www.customs.gov.au.**

Have you verified that there are no substitutable goods produced in Australia (refer to questions 5, 6 and 7 of the form)?

(c) Section 269FA of the *Customs Act 1901* states "It is the responsibility of an applicant for a TCO to establish, to the satisfaction of the Chief Executive Officer (CEO), that, on the basis of

(i) all information that the applicant has, or can reasonably be expected to have; and

(ii) all inquiries that the applicant has made, or can reasonably be expected to make;

there are reasonable grounds for asserting that the application meets the core criteria".

15/36373

The application is taken to meet the core criteria if, on the day of lodgement of the application, no **substitutable goods** were produced in Australia in the ordinary course of business.

Completing the application

(d) Section 269F of the *Customs Act 1901* requires that a TCO application be in writing, be in an "approved form", contain such information as the form requires, and be signed in the manner indicated in the form. **This is the approved form for the purposes of that section.**

(e) Section 269F(3) states that a TCO application must contain:

(a) a full description of the goods to which the application relates; and

(b) a statement of the tariff classification that, in the opinion of the applicant, applies to the goods; and

(c) if the applicant is not proposing to make use of the TCO to import the goods to which the application relates into Australia on the applicant's own behalf – the identity of the importer for whom the applicant is acting; and

(d) particulars of all inquiries made by the applicant (including inquiries made of prescribed organisations) to assist in establishing that there were reasonable grounds for believing that on the day on which the application was lodged, there were no producers in Australia of substitutable goods.

Question 1 to 8 must be answered

(f) Failure to supply the information required by this form will result in rejection of the application (and in the loss of operative date.)

(g) Customs and Border Protection may require an applicant to substantiate, with documentary evidence, any information provided in the application form. Customs and Border Protection may also undertake its own inquiries as allowed under section 269M.

(h) Receipt of your application will be acknowledged. Any resultant TCO will operate from the date of receipt.

(i) Where an application is accepted as being a valid application, the identity of the applicant and of the importer for whom the applicant is acting will be published in the *Commonwealth of Australia Tariff Concessions Gazette* (the Gazette).

(j) Further Information on the Tariff Concession System is available in Part XVA of the *Customs Act 1901*; in relevant Australian Customs Notices (ACNs), Practice Statements and related Instructions and Guidelines on the Internet at **www.customs.gov.au;** by e-mailing **tarcon@customs.gov.au;** or by phoning the Customs and Border Protection Information Centre 1300 363 263.

(k) Attached to this form are extracts from relevant legislation. Also please refer to Australian Customs Notice 2010/03 containing advice as to what Customs and Border Protection considers to be 'reasonable inquiries', advice on conducting searches on national and international search engines and a suggested format letter that you might choose to use when contacting potential local manufacturers to determine if it produces substitutable goods.

8

APPLICANT DETAILS

Applicant's Name:	Australian Business Number (A.B.N):
Ray Papworth & Co Pty Ltd	21 084 534 716
Postal Address: 13 Arlington street Dulwich Hill 2203 Bracken	
Applicant's Reference: Xiria Magnefix	Company Contact: s47F
Telephone Number: s47F	Position Held: s47F
Mobile Telephone Number: s47F	Email Address: s47F @alwaysonline.net.au
Facsimile Number: 02 95727500	

If the applicant (as named above) does not intend to use the TCO to import into Australia the goods the subject of the application, you must provide, in the section below, the identity of the importer for whom you are acting (refer to paragraph 296F(3)(c) of the Customs Act 1901.

IMPORTER DETAILS

If same as applicant write "as above" Importer's Name: Eaton Industries Pty Ltd	Australian Business Number (A.B.N): 66 103 014 571
Postal Address: 10 Kent Rd Mascot NSW 2020 APPLICANT	
Importer's Reference: Xiria Magnefix	Company Contact: s47F
Telephone Number: s47F	Position Held: s47F
Mobile Telephone Number:	Email Address: s47F @Eaton.com
Facsimile Number:	

AGENT/BROKER DETAILS (if applicable)

Agent's Name: same as applicant	Australian Business Number (A.B.N):
Postal Address:	
Agent's Reference:	Agency Contact:
Telephone Number:	Position Held:
Mobile Telephone Number:	Email Address:
Facsimile Number:	

Is this application intended to support an application for a concession under the Enhanced Project By-law Scheme?

☐ YES ☑ NO

1. DESCRIPTION OF GOODS

(a) The description of the goods in the application may be used as the description of the goods in the TCO (if made).

(b) The application must provide a full description of the goods, including the physical features of the various components of the goods. It must not describe the goods in terms of what they do.

(c) In accordance with section 269SJ of the Customs Act 1901, the CEO must **not** make a TCO in respect of goods:

(i) described in terms other than in generic terms; or
(ii) described in terms of their intended end use; or
(iii) declared by the regulations to be goods to which a TCO should not be extended.

Goods will be taken to be described in terms other than in generic terms if, for example, their description, either directly or by implication, indicates that they are goods of a particular brand or model, or that a particular part number applies to the goods.

(d) Guidance on the drafting of the description of goods is contained in relevant Practice Statements and/or Instructions and Guidelines on the Internet at **www.customs.gov.au**. Failure to comply with Customs and Border Protection requirements may result in rejection of the application.

Describe the goods as you would propose the wording to appear if the Tariff Concession Order is granted.

8537.20 90 Ring Main Unit Switchgear, metal enclosed and air and/ or epoxy insulated, having a rated voltage NOT less than 3.6 kV

2. ILLUSTRATIVE MATERIAL

Attach technical and illustrative descriptive material (IDM) as well as any extracts from the relevant industry standard (if referred to in the description of the goods) and/or a sample to enable full and accurate identification of the goods the subject of the application. This application will be rejected if insufficient or inadequate IDM is provided.

Please note that simply supplying a reference to a website is not acceptable.

3. TARIFF CLASSIFICATION

(a) Identify the tariff classification (to 8 figure subheading level) 8537.20.90

(b) Identify the General Duty rate 5 %

(c) If a Tariff Advice for the goods has been sought or obtained, please provide the TA No or attach a copy. TA 20868400

4. USES OF THE IMPORTED GOODS

Describe ALL uses (including design uses) to which the goods can be put.

The subject goods are Ring Main Unit switchgear designed to provide safe, reliable switching and fault protection for transformer stations and switching points in medium voltage distribution networks.

5. Information that the applicant and importer has regarding Australian manufacturers of substitutable goods or potentially substitutable goods.

The following questions require the applicant and the importer (if a different party to the applicant) to provide details of all information that they have with regard to the presence of Australian manufacturers of substitutable goods or potentially substitutable goods.

5A APPLICANT.

In considering the goods which are the subject of this TCO application, is the applicant aware of any Australian manufacturers or producers of substitutable goods, or of potentially substitutable goods?

☐ YES ☑ NO If YES, please provide the names of these Australian manufacturers or producers.

5B - IMPORTER.

In considering the goods which are the subject of this TCO application, is the importer (as listed on page 2) aware of any Australian manufacturers or producers of substitutable goods or potentially substitutable goods?

☐ YES ☑ NO If YES, please provide the names of these Australian manufacturers or producers.

5C. Please provide details of other information that the applicant and/or importer may have to assist in locating any local manufacturers.

(i) **Is the applicant and/or importer a member of a relevant industry association and, if so, what is the name of the association?**

☐ YES ☑ NO

If YES, what is the name of association/s:

(ii) **Has the applicant and/or importer attended, in the past year, any trade fairs or industry events where Australian manufacturers and producers of goods that may be substitutable have been exhibitors?**

☐ YES ☑ NO

If YES, what is/are the name/s of relevant Australian manufacturers of potentially substitutable goods that may have exhibited?

(iii) **In the past two years, has the applicant and/or importer participated in government and/or trade procurement processes (for example, tenders for made-to-order capital equipment) which might indicate the existence of Australian manufacturers or producers of goods that are substitutable, or potentially substitutable, for the goods that are the subject of this TCO application?**

☐ YES ☑ NO

If YES, describe each procurement process, and type of goods, including made-to-order capital goods, that were the subject of each procurement process and any Australian manufacturers or producers known to have participated in each procurement process?

6. INQUIRIES THAT THE APPLICANT AND/OR IMPORTER HAS MADE REGARDING LOCAL MANUFACTURERS OF SUBSTITUTABLE GOODS, OR OF POTENTIALLY SUBSTITUTABLE GOODS?

The following questions require you to provide details of all inquiries that the applicant and/or importer have made to assist the CEO in establishing that there are reasonable grounds for believing that, on the day on which the application was lodged, there were no producers or manufacturers in Australia of substitutable goods, or potentially substitutable goods.

6A - PRESCRIBED ORGANISATIONS - Prescribed organisations, such as the Industry Capability Network, are listed in Regulation 179A of Customs Regulations 1926.

Have you asked a prescribed organisation to obtain advice about whether there are manufacturers or producers in Australia of substitutable goods, or of potentially substitutable goods?

☐ YES Please attach a copy of the terms of the request and all advice received. If you have obtained a report from a prescribed organisation, you are not required to answer 6B.

☑ NO If you have not obtained a report from a prescribed organisation, you are required to answer 6B.

6B. SEARCHES OF THREE DIFFERENT DATABASES CONTAINED IN TRADE DIRECTORIES, PUBLIC SEARCH ENGINES OR WEBSITES LISTING AUSTRALIAN PRODUCTS

If you have not obtained a report from a prescribed organisation, you must make inquiries in at least three databases to locate the possible existence of Australian manufacturers or producers of goods that may be substitutable for the goods the subject of the TCO application. Examples of these databases may include trade directories such as Kompass, search engines such as Google, and websites listing Australian products such as **www.australianmade.com.au.** Please refer to ACN 2010/03 for guidance as to what Customs and Border Protection considers to be a reasonable search.

1 - Name of database: Kompass

Search terms used in database: Ring Main Unit switchgear

Please attach printouts of the search results. For search engines such as Google, please supply only the first three pages.

2 - Name of database: Google

Search terms used in database: Ring Main Unit switchgear

Please attach printouts of the search results. For search engines such as Google, please supply only the first three pages.

3 - Name of database: .australianmade.com.au/

Search terms used in database: Ring Main Unit switchgear

Please attach printouts of the search results. For search engines such as Google, please supply only the first three pages.

6C. INDUSTRY ASSOCIATIONS

Has the applicant and/or importer made inquiries of industry associations in Australia representing suppliers, manufacturers of the goods that may be substitutable to those the subject of the TCO?

☐ YES Please attach a copy of the terms of the request and any response received.

☑ NO Please explain why you have not made enquiries.

Eaton advises they have been suppliers of the subject goods into the Australian market for many years and are not aware of any of any Australian manufacturers that produce in the ordinary course of business Ring Main Unit switchgear goods substitutable for those for which concession is sought

7. NOTIFICATION OF POTENTIAL AUSTRALIAN MANUFACTURES

If any of the answers to questions 5 or 6 identified any potential local manufacturers of substitutable goods, please provide details of the inquiries that you undertook to notify those local manufacturers of your application and to seek advice as to whether they believe they manufacture any substitutable goods. Please refer to Australian Customs Notice 2010/03 for a suggested format of a letter to a potential local manufacturer of substitutable goods.

Please provide a copy of your request to each business. Please provide the business names, details of the contact that you made and all responses received at the time of lodging this application.

1 - Name and address of business: our research located 5 potential local manufacturers of substitutable goods

Please provide a copy of your request to each business. Is the copy attached? ☑ YES ☐ NO

Please provide a copy of the response provided, if any. Is their response attached? ☐ YES ☑ NO

2 - Name and address of business:

Please provide a copy of your request to each business. Is the copy attached? ☐ YES ☐ NO

Please provide a copy of the response provided, if any. Is their response attached? ☐ YES ☐ NO

3 - Name and address of business:

Please provide a copy of your request to each business. Is the copy attached? ☐ YES ☐ NO

Please provide a copy of the response provided, if any. Is their response attached? ☐ YES ☐ NO

4 - Name and address of business:

Please provide a copy of your request to each business. Is the copy attached? ☐ YES ☐ NO

Please provide a copy of the response provided, if any. Is their response attached? ☐ YES ☐ NO

8. JUSTIFICATION FOR APPLICATION

Where potential Australian producers or manufacturers have been identified in questions 5, 6 or 7, please provide details as to why you believe that they do not produce substitutable goods in Australia in the ordinary course of business.

Please refer to the attached definitions for the legislative definitions of 'core criteria', 'substitutable goods', 'goods produced in Australia' and 'the ordinary course of business'.

The applicant has supplied goods of this type for many years and is not aware of any substitutable goods available from Australian manufacturers further our research located 5 potential local manufacturers of substitutable goods

The applicant submits that the application in the absence of any evidence of potential local manufacturers of substitutable goods meets the core criteria for the grant of a Tariff Concession Order in terms of Sec 269 Customs Act 1901.

APPLICANT'S DECLARATION

I, s47F | Position Held s47F

Company: (if applicable) Ray Papworth & Co Pty Ltd

declare that:

1. I have the authority to act on behalf of the company/applicant;
2. To the best of my knowledge and belief the information contained in this form including any attachments is correct,
3. I have ensured that questions 1 to 8 are completed and supporting documents are provided; and
4. I agree, in submitting this form by electronic means (including facsimile) that, for the purposes of Sub-section 14(3) of the Electronic Transactions Act 1999, this application will be taken to have been lodged when it is first received by an officer of Customs and Border Protection, or if by e-mail to **tarcon@customs.gov.au**, when it is first accessed by an officer of Customs and Border Protection, as specified in Sub-Section 269F(4) of the Customs Act 1901.
5. I have read the relevant Australian Customs Notice headed Applicant's Obligations in Making a TCO application and the definitions attached to this form and understand my obligations under Section 269FA with regard to the making and processing of Tariff Concession Order applications.
6. I acknowledge that I understand that under Section 269M(6) of the *Customs Act 1901* that at any time during the period of 150 days from the gazettal day, the CEO may, for the purpose of dealing with a TCO application, and despite section 16 of the Customs Administration Act 1985, give a copy of all, or of a part, of the application to a prescribed organisation with a view to obtaining the advice of the organisation in relation to the question whether there are any producers in Australia of substitutable goods.

Signature of Applicant/Agent/Broker: s47F Date: 25 / 09 / 2015

NOTE:

Section 234 of the Customs Act 1901 provides that it is an offence to make a statement to an officer that is false or misleading in a material particular.

Before lodging your form please ensure that you have attached the following:

- ☑ Attached IDM/Samples?
- ☑ Attached Local Manufacturer search results?
- ☑ Application signed & dated?
- ☑ Questions 1-8 answered?
- ☑ All enquiries requested undertaken?

When this form has been completed please lodge it with Customs and Border Protection by:

•posting it by prepaid post to:

Director
Tariff Concession Section
Trade Services Branch
Australian Customs and
Border Protection Service.
Customs House
5 Constitution Avenue
CANBERRA ACT 2601

OR

•delivering it to the ACT Regional Office located at:
Customs House, Canberra

OR

•sending it by facsimile to: (02) 6275 6376

OR

•e-mailing it to: tarcon@customs.gov.au

FOR OFFICE USE ONLY AUSTRALIAN CUSTOMS AND BORDER PROTECTION SERVICE STAFF

269(H) Screening the Application

Is the CEO satisfied that the application complies with Section 269F?	☐ YES	☐ NO
Is the CEO satisfied that the applicant has discharged all responsibilities referred to in section 269FA?	☐ YES	☐ NO
Is the CEO aware of any producer in Australia of substitutable goods?	☐ YES	☐ NO
Are the goods on the Excluded Goods Schedule (Regulation 185)?	☐ YES	☐ NO
Does a TCO already exist for these goods?	☐ YES	☐ NO

Information for applicants - some useful definitions from the Customs Act 1901

269B Interpretation

substitutable goods, in respect of goods the subject of a TCO application or of a TCO, means goods produced in Australia that are put, or are capable of being put, to a use that corresponds with a use (including a design use) to which the goods the subject of the application or of the TCO can be put.

(3) In determining whether goods produced in Australia are put, or are capable of being put, to a use corresponding to a use to which goods the subject of a TCO, or of an application for a TCO, can be put, it is irrelevant whether or not the first mentioned goods compete with the second mentioned goods in any market.

269C Interpretation - core criteria

For the purposes of this Part, a TCO application is taken to meet the core criteria if, on the day on which the application was lodged, no substitutable goods were produced in Australia in the ordinary course of business.

269D Interpretation - goods produced in Australia

(1) For the purposes of this Part, goods, other than unmanufactured raw products, are taken to be produced in Australia if:
- (a) the goods are wholly or partly manufactured in Australia; and
- (b) not less than ¼ of the factory or works costs of the goods is represented by the sum of:
  - (i) the value of Australian labour; and
  - (ii) the value of Australian materials; and
  - (iii) the factory overhead expenses incurred in Australia in respect of the goods.

(2) For the purposes of this Part, goods are to be taken to have been partly manufactured in Australia if at least one substantial process in the manufacture of the goods was carried out in Australia.

(3) Without limiting the meaning of the expression substantial process in the manufacture of the goods, any of the following operations or any combination of those operations does not constitute such a process:
- (a) operations to preserve goods during transportation or storage;
- (b) operations to improve the packing or labelling or marketable quality of goods;
- (c) operations to prepare goods for shipment;
- (d) simple assembly operations;
- (e) operations to mix goods where the resulting product does not have different properties from those of the goods that have been mixed.

(4) For the purposes of this section, the CEO may, by instrument in writing published in the *Gazette*:
- (a) direct that the factory or works cost of goods is to be determined in a specified manner; and
- (b) direct that the value of Australian labour, the value of Australian materials or the factory overhead expenses incurred in Australia in respect of goods is to be determined in a specified manner;

and those directions have effect accordingly.

(5) The provisions of sections 48 (other than paragraphs (1)(a) and (b) and subsection (2)), 48A, 48B, 49A and 50 of the Acts *Interpretation Act 1901* apply in relation to directions given under subsection (4) as if:
- (a) references in those provisions to regulations were references to directions; and
- (b) references in those provisions to the repeal of a regulation were references to the revocation of a direction.

269E Interpretation - the ordinary course of business

(1) For the purposes of this Part, other than section 269Q, goods (other than made-to-order capital equipment) that are substitutable goods in relation to goods the subject of a TCO application are taken to be produced in Australia in the ordinary course of business if:

(a) they have been produced in Australia in the 2 years before the application was lodged; or
(b) they have been produced, and are held in stock, in Australia; or
(c) they are produced in Australia on an intermittent basis and have been so produced in the 5 years before the application was lodged;

and a producer in Australia is prepared to accept an order to supply them.

(2) For the purposes of this Part, goods that:

(a) are substitutable goods in relation to goods the subject of a TCO application; and
(b) are made to order capital equipment;

are taken to be produced in Australia in the ordinary course of business if:

(c) a producer in Australia:
  (i) has made goods requiring the same labour skills, technology and design expertise as the substitutable goods in the 2 years before the application was lodged; and
  (ii) could produce the substitutable goods with existing facilities; and
(d) the producer is prepared to accept an order to supply the substitutable goods.

(3) In this section:

made-to-order capital equipment means a particular item of capital equipment:

(a) that is made in Australia on a one-off basis to meet a specific order rather than being the subject of regular or intermittent production; and
(b) that is not produced in quantities indicative of a production run.

Magnefix 3.6 - 15 kV
Insulation enclosed switchgear

Magnefix

Compact switchgear for medium voltage distribution

EATON
Powering Business Worldwide

Magnefix

Magnefix is applied in, amongst other locations, decentralised transformer stations, high rise buildings, consumer connections, wind turbine connections and for the electrical supply to signalling and protection equipment along railway tracks.

'The most compact ring main unit'

Creating Solutions

Eaton's Holec brand focuses on creating power-engineering solutions assuring safe and reliable supply of electrical energy. With manufacturing subsidiaries and sales organisations world-wide, Eaton focuses on electrical distribution and power supply in both low and medium voltage ranges.

Eaton's Holec brand
The medium voltage activities of Eaton Electric B.V. are directed towards switchgear installations and components for applications in distribution networks (main and substations, transformer stations) and for industrial power supply. The switchgear systems are air or epoxy resin insulated and are in most cases equipped with circuit-breakers based on Eaton vacuum interrupters. Eaton thus offers an extensive range of switchgear systems and switchgear components, ensuring a safe and reliable distribution of electrical energy.

High level technology
Eaton has more than fifty years experience in manufacturing insulation enclosed switchgear and is recognised throughout the world as being a specialist in the field of epoxy resin based insulation technology. More than 200,000 Magnefix switchboards have been supplied to satisfied customers all over the world.

Magnefix, a timeless design
Magnefix was first introduced onto the market more than 50 years ago. Especially the smart design, safe and robust construction and easy operation have made Magnefix "timeless".

New developments are still being carried out and research into new applications and technologies is continuing unabated. Eaton's engineers are continuously working on improvements in the design and efficiency, and Magnefix users can count on maximum support and the associated service.

Magnefix in walk-in and compact type transformer stations.

The characteristics

- **Extremely compact**

Epoxy resin is not only a high quality insulating material but due to its high mechanical strength, also an excellent construction material. This combination produces a very compact design. The compact construction and full insulation enclosed design of Magnefix equipment enables it to be installed in very small spaces. This results in considerable savings in building costs.

- **Safe and reliable**

Magnefix is a fully insulation enclosed type of switchgear. All live parts are surrounded by insulating material in such a way that touching is impossible.

- **Insulation**

The primary insulation of the Magnefix system consists of epoxy resin with powdered quartz as filling material. This ensures a very low dielectric loss factor (also with high temperatures), high insulation breakdown factor, very low moisture absorption, high creepage current resistance, high mechanical strength and complete homogeneity. The cable boxes for PILC and XLPE type cables are made of synthetic materials. Magnefix switchgear is provided with double insulation at points accessible to operating personnel. This additional insulation is manufactured and tested independently of the primary insulation.

- **Protected against atmospheric and climatic influences**

The epoxy resin insulation ensures protection against atmospheric and climatic influences.
In addition, the material is vibration proof and shock proof and does not age. Magnefix is highly reliable and has a very long life-cycle.

- **Fully tested**

Each Magnefix switchboard is extensively mechanically and electrically tested before it leaves the factory.
The test procedures carried out are not only in accordance with the routine tests as specified in the relevant IEC publications, each switchboard is also subjected to additional discharge tests. Consequently, Eaton can guarantee the quality and reliability of each Magnefix switchboard supplied.

- **Earthing**

Before a cable connected to a Magnefix switchboard can be earthed, the switch caps of the unit must be removed. Only then is it possible to fit the earthing caps. The Magnefix unit can only be energized again after the earthing caps have been removed. The earthing caps are designed to make inadvertent earthing of the busbars impossible.

• **Flexible**
Magnefix switchboards have a very modular construction. Any combination can be assembled. Furthermore, various proven methods of cable connections are possible. It is also possible to connect Magnefix to other types of Eaton switchgear.

• **User friendly**
Magnefix switchboards are very easy to handle due to their low weight and small dimensions. The erection time on site is reduced to a minimum thanks to the uncomplicated cable connection. The switching speed is independent of the operating personnel and all switching operations can be carried out in a safe way. Due to the fact that the switch cap is removed when switching off, visable separation is clearly evident to the operating personnel.

• **Cost effective**
One of the most important features of Magnefix is the low price. Not only the initial price is low, the small dimensions mean that it is also possible to reduce the building costs. Furthermore, due to the very long lifecycle and low maintenance costs, the depreciation and exploitation costs are also very low. If desired, a maintenance contract can be arranged with Eaton - Electrical Services & Systems.

• **Environmental friendly materials**
When developing insulation enclosed switchgear, it is important to pay attention to the difference between the dielectric constants of epoxy resin and air, because an optimum transition between both mediums should be obtained. The epoxy resin parts are designed in such a way thet no partial discharging can occur on their surfaces. This has been achieved by optimising:

- The thickness of the insulation meterial
- The retio between the epoxy resin and the air clearances
- The shape of the epoxy resin parts
- The air circulation over the insulation surfaces.

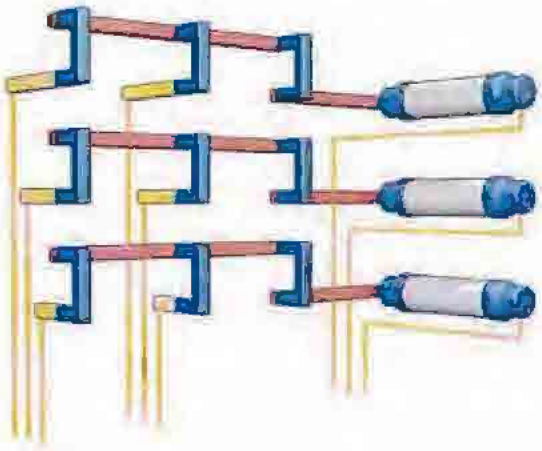
In other words, it fits in well with the surroundings. At the end of its lifecycle, the switchboard can be safely disposed of and a large number of parts can be recycled. However, the lifecycle of a Magnefix switchboard can be appreciably extended by carrying out extra maintenance.

KEMA • **Kema certified**
Magnefix switchgear has been extensively tested and certified by KEMA. The relevant test reports are available on request.

Magnefix type MD4

Construction

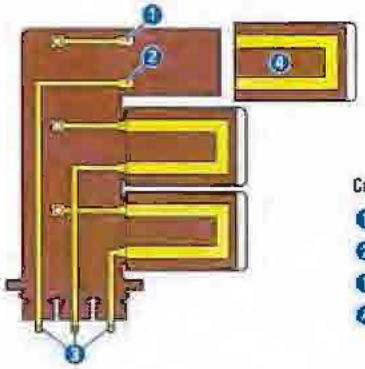
A Magnefix switchboard type MD4 usually comprises a number of cable units to which the main cables are connected (switch-disconnectors), plus one or more protected tee-off units to which the transformer cables are connected (switch-disconnectors combined with fuse-links). A cable unit consists of a fixed portion and three removable switch-caps. The fixed portion is made of epoxy resin, in which the conductors are embedded. The epoxy resin switch caps, in which the moving main and arcing contacts are located, are held in the closed position by high-strength permanent magnets. The latter are not subject to variation, so that the contacts are always MAGNEtically FIXed. The various units can be mounted on either a floor frame or a wall frame.



Arrangement of conductors in a ring-main unit

Cable units

The fixed portion of the cable unit contains three terminals to which the cables can be connected. It also contains the corresponding busbar contacts, each fitted with an arcing chamber, the fixed main and arcing contacts and the magnets and pole plates.
The arcing chambers and main and arcing contacts can be replaced when necessary.
The switch caps contain main and arcing contacts, opening springs, springs for ensuring the correct contact pressure and a ferromagnetic plate. These switches have a double break per phase.

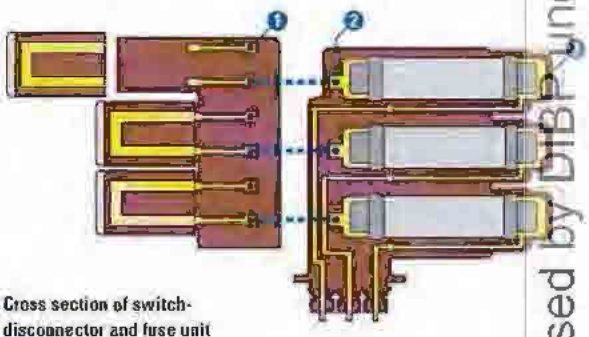


Cross-section of a cable unit

1. Busbar contact
2. Fixed main contact
3. Cable terminals
4. Switch cap with main and arcing contacts

Fuse-protected tee-off

The fuse-protected tee-off is used for connection of the transformer and consists of a switch-disconnector and a fuse unit. The switch-disconnector connects the fuse unit to the busbar system. The fuse unit consists of a fixed portion with three terminals for the cables, and three removable fuse holders. The latter are suitable for fuse-links with dimensions in accordance with DIN 43625-12kV. A mechanical interlock between the switch caps of the switch-disconnector and the fuse holders makes it impossible to fit or remove a fuse holder before the corresponding switch cap has been withdrawn. Fuse links can therefore only be fitted or removed when the protected tee-off is switched off. In addition, the contacts on the transformer side of the fuse holder are deeply recessed, so that accidental touching is impossible.



Cross section of switch-disconnector and fuse unit

1. Busbar contact
2. Fixed contact fuse unit
3. Fuse holder

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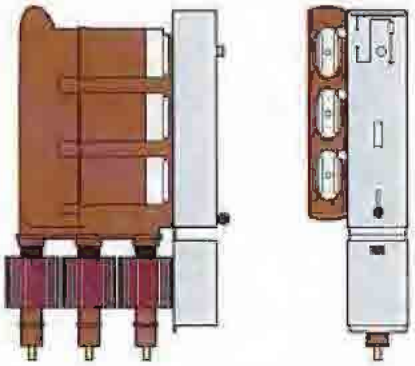
Circuit-breaker protected tee-off

This switching unit (only available in the Magnefix MD4 design) is provided with a three phase vacuum circuit-breaker with an independant operating electronic tripping function. By applying a spring mechanism and vacuum interrupters instead of fuses, the possibility is created for three phase tripping of an overload or short circuit current. The circuit-breaker is connected in series with three single phase switching caps and is suitable for automatic tripping only. Reclosing after tripping is accomplished manually by means of removing the single phase switching caps, closing the circuit-breaker via the spring mechanism and fitting the single phase switch caps again.

Magnefix type MD4 circuit-breaker protected tee-off

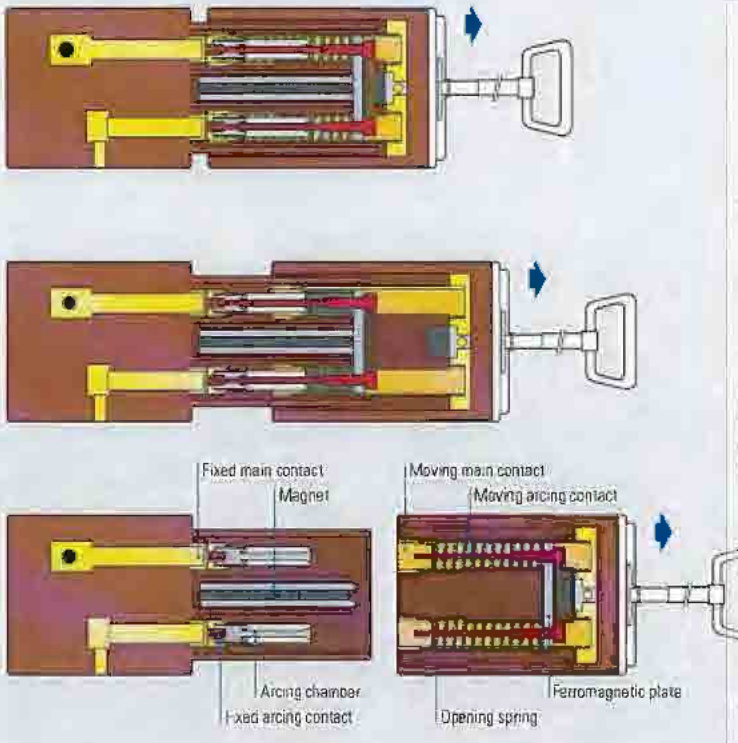


Opening/closing Magnefix type MD4

Switching

Switching of Magnefix type MD4 is accomplished by fitting or removing the switch caps with an operating handle. The switch cap is placed against the projection on the fixed portion. By pushing the handle forwards, the closing spring in the handle is charged until, at a certain pressure, the resistance of the projection is overcome and the switch cap closes at a speed independent of the operator. The main contacts make contact before the arcing contacts do.

To switch off the Magnefix type MD4, the handle has to be pulled towards the operator, so that the main contacts become disengaged. At this stage, the arcing contacts are still fixed to each other due to the fact that the ferromagnetic plate is still fixed to the magnet. When the opening springs are completely charged, the ferromagnetic plate is pulled off the magnet and the moving arcing contacts are pulled out of the arcing chamber at the required speed, once again independent of the operator.



Magnefix type MF

Construction

In principle, the construction of Magnefix type MF is similar to that of Magnefix type MD4. However, type MF can withstand higher normal currents and short-circuit currents.
Magnefix type MF comprises cable units for connection of the main cables, and fuse protected tee-offs. The various units can be mounted on either a floor frame or a wall frame.

Switching

Magnefix type MF is closed by means of an operating handle. Magnefix type MF can be switched off by lifting the grip from the locked position and pulling the switch cap firmly out of the fixed portion. The speed of both operations is independent of the operator.

Opening Magnefix type MF

Closing Magnefix type MF.

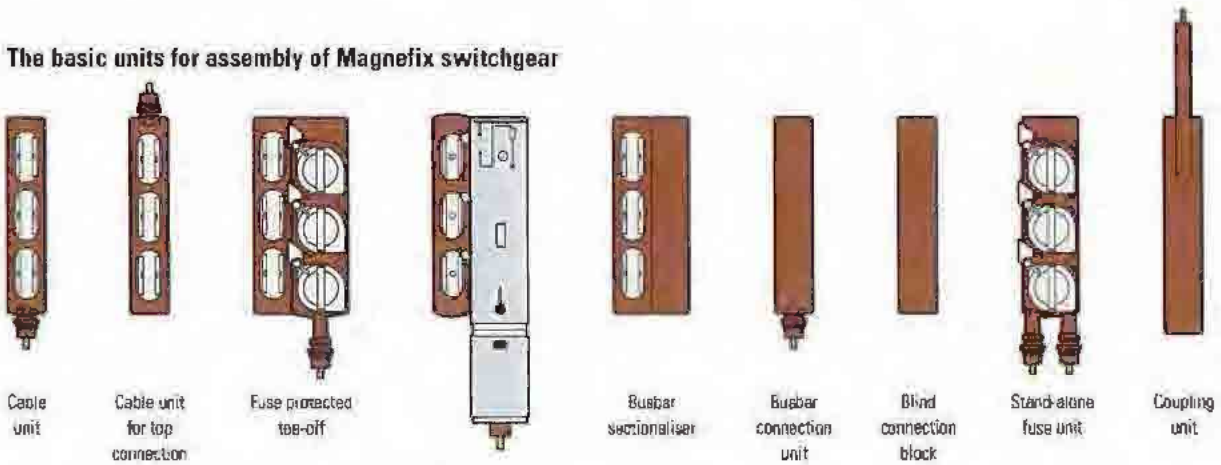
The units

Each switch unit consists of a fixed portion and three removable switch caps. The fixed portion has a protruding epoxy resin insulation collar. After they have been closed, the switch caps are completely located inside this collar. As a result, the caps are extra protected against pollution. The tee-off unit is also provided with an epoxy resin collar. When in service, the fuse holders are also completely covered by this collar. An interlock between the switch-disconnector and the fuse unit ensures that the fuse can only be changed after the switch cap has been removed.

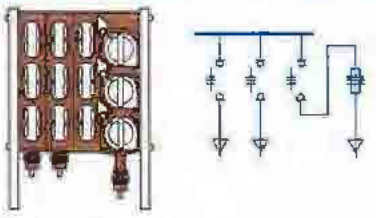
Magnefix arrangements

Assembly
It is possible to assemble switchboards with a wide variety of combinations for various applications. Tie rods ensure that the units and the insulated side plates are clamped together at the right tension. Silver plated tubular conductors- the busbar system- provide the electrical connections between the units and interconnect the busbar contacts. Each busbar connection is completely insulated, and the entire busbar system is surrounded by epoxy resin insulation.

The basic units for assembly of Magnefix switchgear



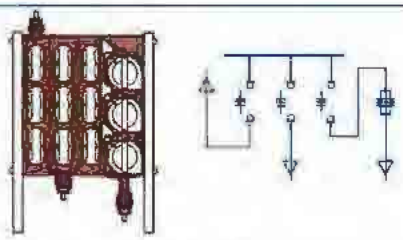
Cable unit | Cable unit for top connection | Fuse protected tee-off | Circuit-breaker protected tee-off | Busbar sectionaliser | Busbar connection unit | Blind connection block | Stand-alone fuse unit | Coupling unit



Ring main unit.

Ring main unit
This is the most common arrangement and consists of two or more cable units and fuse protected tee-offs.

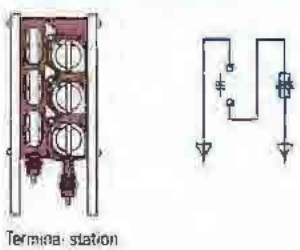
Application
Compact transformer stations and switching points in medium voltage distribution networks.



Ring main unit with top connection.

Cable unit for top connection
For connecting cables to the top side of a switchboard, a switch-disconnector as described under ring main unit, but with top terminals is available.

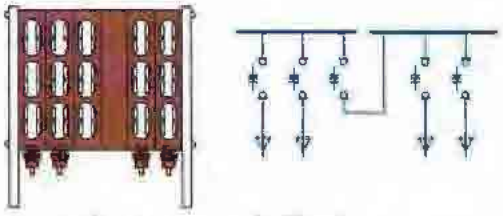
Application:
Ideally suitable for Magnefix switchboards erected on various levels of apartment buildings, office blocks etc.



Terminal station

Terminal station
This arrangement comprises a fuse protected tee-off.

Application
Transformer stations at the end of feeder cables.
For example for wind turbine connections.



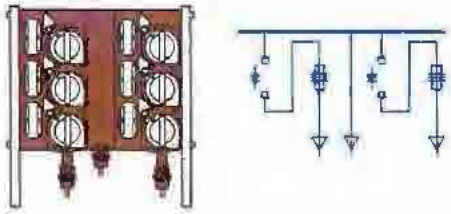
4-way switchboard with busbar sectionaliser unit.

Busbar sectionaliser unit

With a busbar sectionaliser unit, it is possible to have two sections energized independently of each other.

Application:

To isolate consumer owned supply units from the grid connection which is owned by the electricity company.



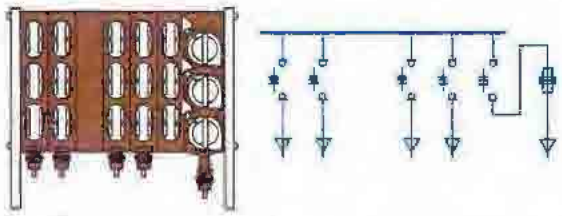
Magnefix switchboard with busbar connection unit.

Busbar connection unit

If a cable requires direct connection to the busbar system of a Magnefix switchboard, a busbar connection unit is available.

Application:

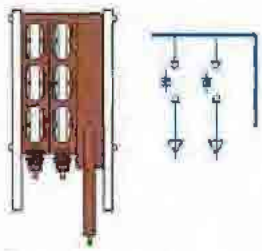
Can be used as a junction point for a cable if switching is not required.



Magnefix switchboard with blind connection block.

Blind connection block (MD4 only)

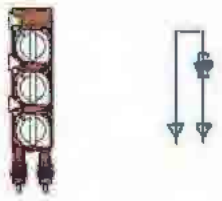
A blind connection block can be applied when more space is required between the units or when the switchboard is divided by a wall.



Switchboard with coupling unit.

Coupling unit

Coupling units can be applied to connect Magnefix switchboards to other types of Eaton switchgear.



Fuse unit with 6 cable terminals.

Fuse unit

If only a single fuse unit is required, a unit with 6 cable terminals is available.

Application

When a fuse unit is placed separate from it's switch-disconnector.

Circuit-breaker protected tee-off (MD4 only)

Switching unit provided with a three phase vacuum circuit-breaker with an independent operating electronic tripping function. By applying a spring mechanism and vacuum interrupters instead of fuses, the possibility is created for three phase tripping of an overload or short-circuit current. Switching on is accomplished single phase manually.

Application

- Protected connection of extra ring cables in existing distribution networks
- Protected connection of distribution transformers

Short-circuit indicators

Short-circuit indicators are instruments which are operated by the magnetic field of a conductor through which current is flowing and indicate that this has occured. By using short-circuit indicators, the time taken to locate faults in medium voltage networks is greatly reduced. When the current at which the indicator is set is exceeded, an orange flag appears in the window.

Two versions of this indicator are available:

Magnetic short-circuit indicator
This indicator is operated by the magnetic field caused by an overcurrent and can be reset by moving a reset magnet in front of the indicator.

MD4 switch cap with hand reset short-circuit indicator.

MF switch cap with hand reset short-circuit indicator.

Automatic reset electronic short-circuit indicator
This indicator is also operated by the magnetic field caused by an overcurrent. It has no battery but it uses the energy of the electrical field around the Magnefix switch cap. It will be automatically reset after a fault has been cleared and after the system voltage has returned. The indicator is hermetically sealed thus making it insensitive to dust and moisture.

MD4 switch cap with automatic reset electronic short-circuit indicator.

MF switch cap with automatic reset electronic short-circuit indicator.

Automatic reset electronic short-circuit indicator.

Cable connections

Cable box for paper-insulated lead-covered cables (PILC)

Armoured paper-insulated lead-covered cables are connected to cable units and fuse units by means of grease filled plastic cable boxes. These cable boxes can be supplied in various sizes up to 240 mm². They have staggered inlets, metal soldering glands or plastic glands.

Cable box for solid insulated XLPE cables

For connecting three phase or single phase solid insulated cables up to 240 mm², a so-called "dry" type cable box can be supplied. No cable grease or compound is therefore needed. When required (depending on the length of the cable connection) extra shielding can be mounted.

Single-core transformer cables

Completely prefabricated polythene insulated cables 1 x 16 mm² Cu can be ordered to any required length.

Magnefix type MF protected tee-off units are provided as standard with three openings for direct insertion of these single-core transformer cables.

Transformer connection for Magnefix type MF.

Technical data

Magnelix type		MD4			MF			
Rated values								
Voltage	kV	3.6	7.2	12	3.6	7.2	12	15
Impulse withstand voltage	kV	40/46	60/70	75/85	40/46	60/70	75/85	95/110
Power frequency withstand voltage	kV	10/12	20/23	28/32	10/12	20/23	28/32	38/45
Frequency	Hz	50-60	50-60	50-60	50-60	50-60	50-60	50-60
Busbar system								
Normal current	A	400	400	400	630	630	630	630
Short-time withstand current 1 s.	kA	14.4	14.4	14.4	20	20	20	20
Peak withstand current	kA	31	31	31	50	50	50	50
Switch-disconnector								
Normal current	A	400	400	400	450	450	450	450
Mainly active load breaking current	A	400	400	400	450	450	450	450
Short-circuit making current peak value	kA	31	31	31	50	50	50	50
Short-time withstand current 1 s.	kA	14.4	14.4	14.4	20	20	20	20
Earth fault breaking current	A	240	240	240	240	240	240	240
Cable charging breaking current	A	25	25	25	25	25	25	25
Circuit-breaker								
Normal current	A	400	400	400	-	-	-	-
Short-time withstand current 1 s.	kA	14.4	14.4	14.4	-	-	-	-
Short-circuit breaking current peak value	kA	14.4	14.4	14.4	-	-	-	-
DC component	%	20	20	20	-	-	-	-
Making current	A	-	-	-	-	-	-	-
Fuse-links								
Normal current	A	57.7	57.7	57.7	57.7	57.7	57.7	57.7

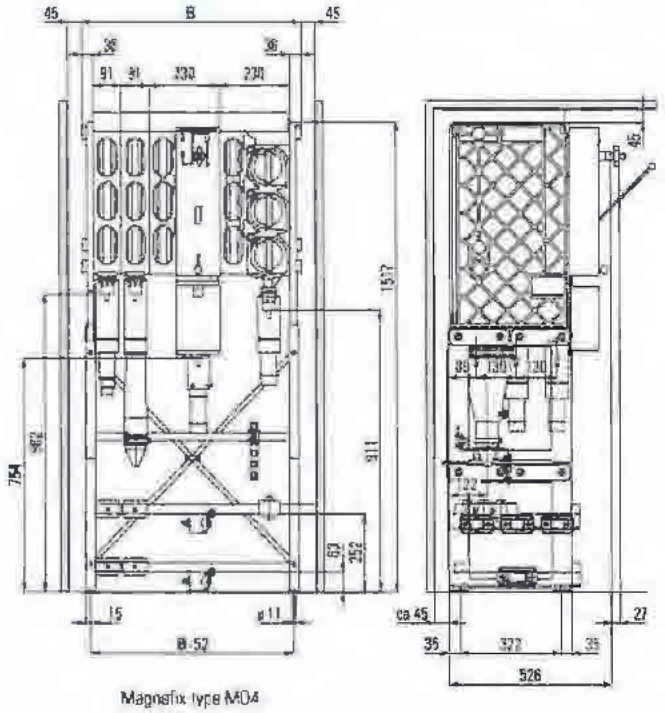
Standards

Magnefix MD4 and MF switchgear comply with the following IEC publications	
IEC60694 / IEC62271-1	Common specifications for high-voltage switchgear and controlgear standards
IEC60056 / IEC62271-100	High-voltage alternating-current circuit-breakers
IEC60129 / IEC62271-102	Alternating current disconnectors and earthing switches
IEC60265 / IEC62271-103	High-voltage switches
IEC60466 / IEC62271-201	A.C. insulation-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV
IEC60529	Degrees of protection provided by enclosures
IEC60185 / IEC60044-1	Instrument transformers - Part 1: Current transformers

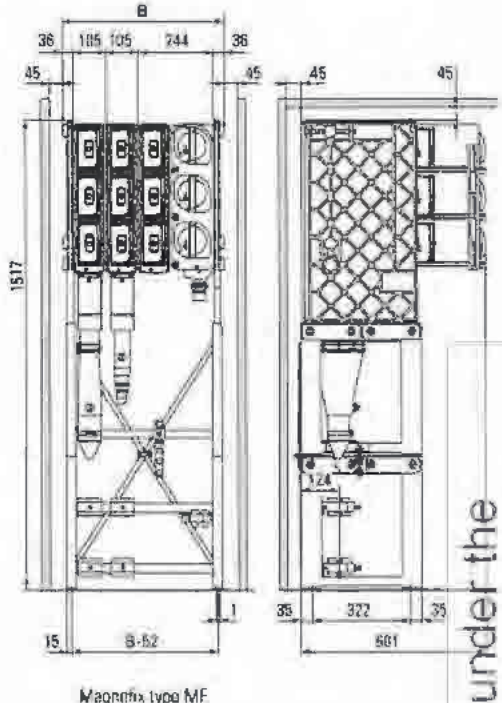
Classification according to IEC 62271-201	
Protection grade against electric shock	PA/PB1
Loss Of Service Continuity	LSC 1
Partition Class	PI
IAC	Not applicable
Degree of protection	IP 2X

Above summary gives for some subjects the old and the new standards.
Magnefix switchgear is tested according to the IEC standard as applicable at the time of the type tests.

Dimensions (mm)



Magnefix type MD4



Magnefix type MF

Dimensions (mm)	Magnefix type MD4	Magnefix type MF
Unit widths		
Cable unit	91	105
Busbar connection unit	91	105
Cable unit for top connection	91	210
Blind connection block	91	-
Busbar sectionaliser	182	210
Fuse protected tee-off	230	244
Circuit-breaker protected tee-off	230	-
Total width calculations	B = C x 91 + T x 230 + 72	B = C x 105 + T x 244 + 72

(C = number of cable units, T = number of protected tee-offs)

Accessories for Magnefix type MD 4

Device for testing and measuring cables.

Earthing device (standard).

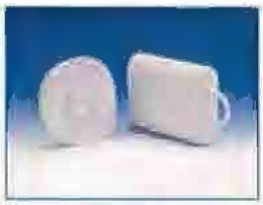
Earthing device with ball-shaped contact suitable for phase-sequence measuring.

Earthing device for transformer cable with ball-shaped contact.

Closing and opening handle.

Switch cap with hand reset short-circuit indicator.

Switch cap with automatic reset electronic short-circuit indicator.



Protection cover for protecting the contacts on the inside of the fixed portions when the switch caps or fuse holders are removed.

Tool case for maintenance.

Quick-acting earthing device for three-phase earthing.

Three-phase switching device.

Single phase voltage tester for checking whether the cables or main busbar system are energized.

Accessories for Magnefix type MF

Earthing device (standard).

Quick-acting earthing device for three-phase earthing.

Earthing device with ball-shaped contact.

Earthing device for transformer cable with ball-shaped contact.

Closing handle.

Switch cap with hand reset short-circuit indicator.

Switch cap with automatic reset electronic short-circuit indicator.

Protection covers for protecting the contacts on the inside of the fixed portions when the switch caps or fuse holders are removed.

Padlockable interlocking plate to prevent a unit from being operated when not desired.

Device for testing and measuring cables.

Single phase voltage tester for checking whether the cables or main busbar system are energized.

Eaton - advice and service

Depending on the condition of the switchgear and the site conditions, maintenance may be required. Eaton can carry out this work or train local service engineers. An extensive study has been carried out on more than one hundred distribution switchboards, as a result of which professional maintenance and test equipment has been developed. This equipment is also available for your service department. Together with the manufacturing of high quality electrical switchgear Eaton offers service and advice. Should an emergency occur, Eaton can supply new Magnefix switchgear in Europe within 24 hours.

In case of emergency:
Eaton - Electrical Services & Systems, available 24/7.
Tel.: +31 74 246 6888

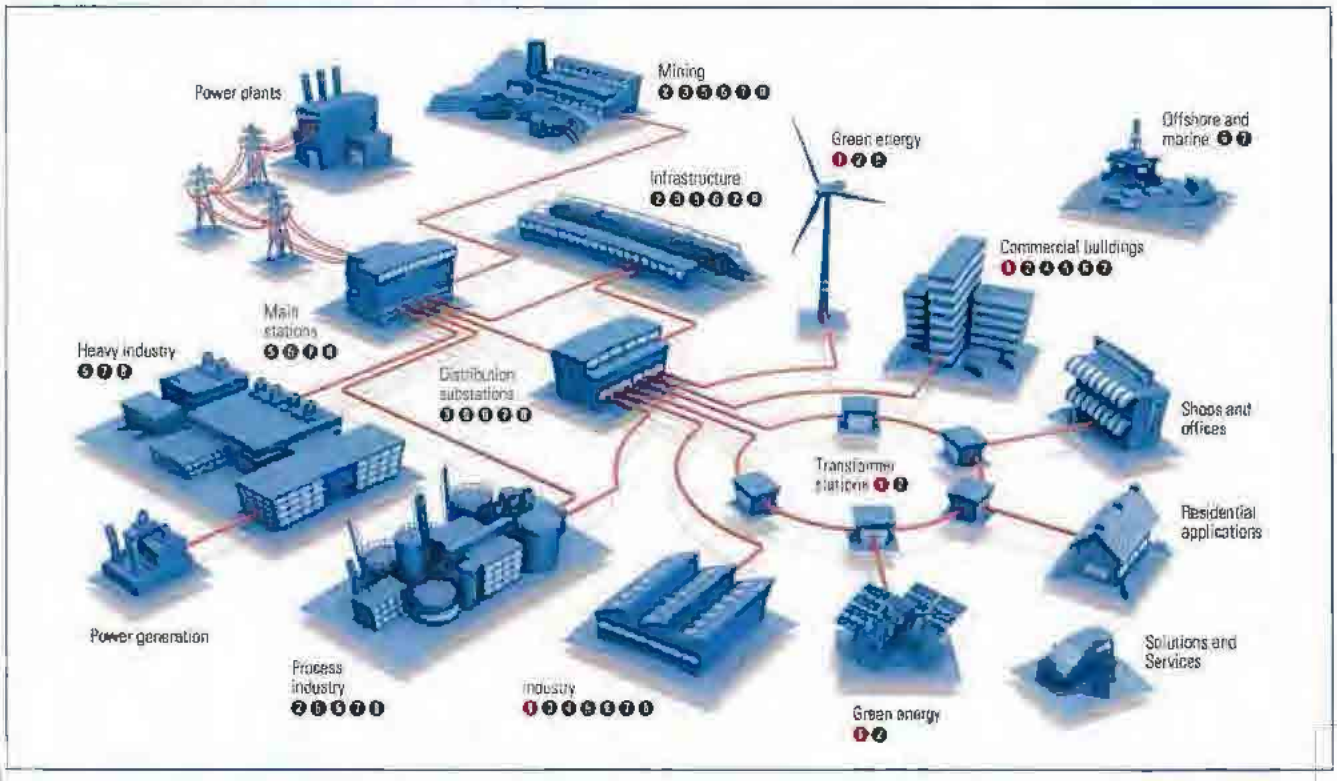
Quality

Eaton has been meeting the ISO 9001 quality assurance requirements since 1989. This quality assurance system calls for a periodic evaluation of the organizational structure, the assignment of responsibilities and the associated procedures. It also guarantees corrective action and activities when required. This keeps the quality assurance system up to standard and enables adjustments to be made and further development to take place where necessery.

Eaton's Electrical Sector is a global leader in power distribution, power quality, control and automation, and monitoring products. When combined with Eaton's full-scale engineering services, these products provide customer-driven PowerChain™ solutions to serve the power system needs of the data center, industrial, institutional, public sector, utility, commercial, residential, IT, mission critical, alternative energy and OEM markets worldwide.

PowerChain™ solutions help enterprises achieve sustainable and competitive advantages through proactive management of the power system as a strategic, integrated asset throughout its life cycle, resulting in enhanced safety, greater reliability and energy efficiency. For more information, visit www.eaton.com/electrical.

Eaton medium voltage products in the energy chain




❶ Magnefix


❷ Xiria (blocktype)


❸ Xiria E (extendable)


❹ Xiria M (metering solutions)


❺ SVS


❻ Power Xpert® FMX


❼ Power Xpert® UX


❽ MMS

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Form No. 994 089 D
May 2012

Metal-enclosed single busbar, Solid and Air-Insulated switchgear
IEC Medium Voltage Switchgear up to 24 kV

Xiria E

Extendable switchgear for distribution substations and commercial / industrial applications

E·T·N
Powering Business Worldwide

Powering business worldwide

Eaton delivers the power inside hundreds of products that are answering the demands of today's fast changing world.

We help our customers worldwide manage the power they need for buildings, aircraft, trucks, cars, machinery and entire businesses. And we do it in a way that consumes fewer resources.

Next generation transportation

Eaton is driving the development of new technologies – from hybrid drivetrains and emission control systems to advanced engine components – that reduce fuel consumption and emissions in trucks and cars.

Higher expectations

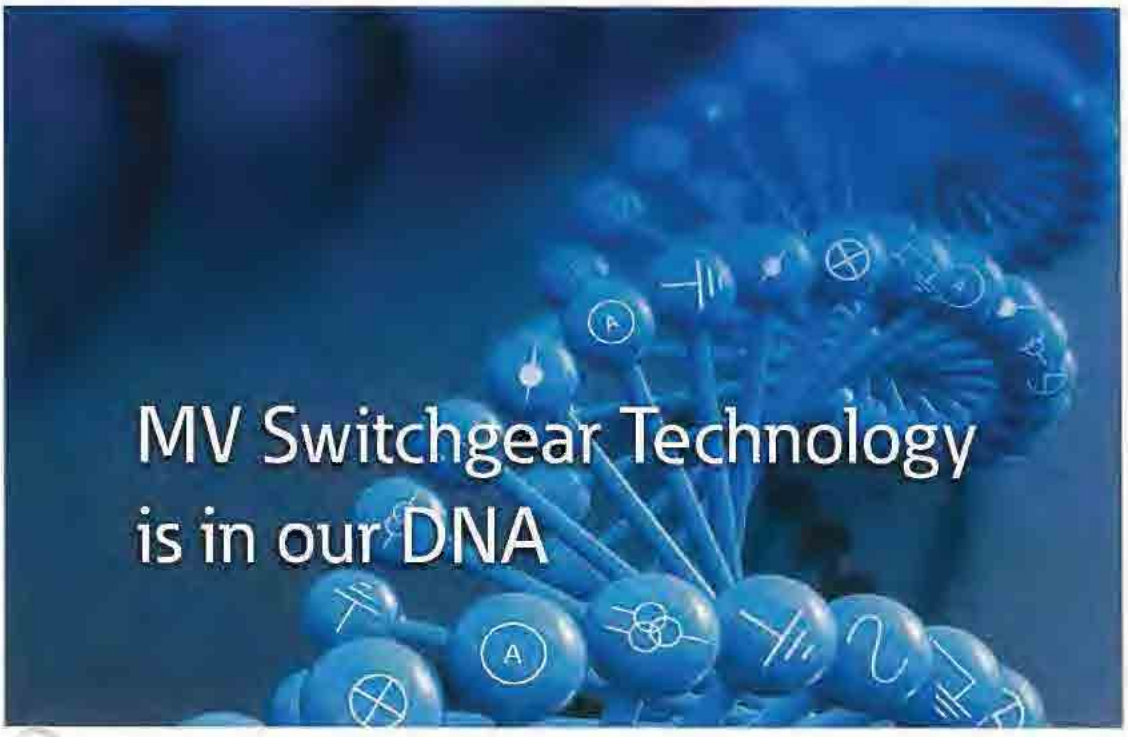
We continue to expand our aerospace solutions and services to meet the needs of new aviation platforms, including the high-flying light jet and very light jet markets.

Building on our strengths

Our hydraulics business combines localised service and support with an innovative portfolio of fluid power solutions to answer the needs of global infrastructure projects, including locks, canals and dams.

Powering Greener Buildings and Businesses

Eaton's Electrical Group is a leading provider of power quality, distribution and control solutions that increase energy efficiency and improve power quality, safety and reliability. Our solutions offer a growing portfolio of "green" products and services, such as energy audits and real-time energy consumption monitoring. Eaton's Uninterruptible Power Supplies (UPS), variable-speed drives and lighting controls help conserve energy and increase efficiency.



MV Switchgear Technology is in our DNA

Eaton's knowledge and understanding of industries, applications, technology and products enables us to offer customers safe, reliable and high performance solutions. We have been part of the Medium Voltage switchgear technology creation and therefore carry what's needed with us – always!

Complete MV switchgear solutions

The series of Eaton Medium Voltage systems offers switchgear and components for applications in distribution networks (main stations, substations and transformer stations) and industrial power supplies. These technically high quality systems are air- or epoxy-resin insulated and are always equipped with circuit-breakers based on proprietary vacuum interrupters.

The medium voltage switchgear systems carrying Eaton's brand are based on the use of vacuum circuit-breakers combined with solid insulation material. This is an environmentally-friendly technology in comparison with the methods used by many other suppliers, which use SF_6 as an insulation medium.

Eaton thus has a wide range of switching systems and components that offer an environmentally friendly solution for every application. Additionally, Eaton's global service network provides maximum customer support in all regions of the world.

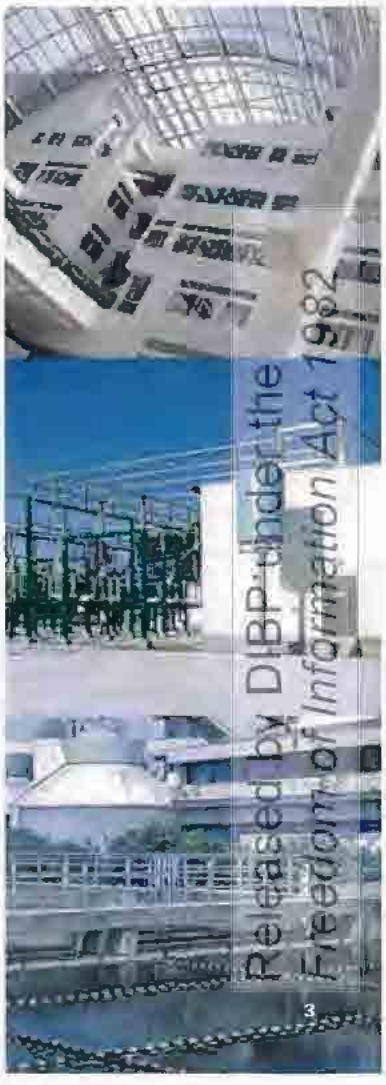
Industry leading vacuum and solid insulation technology

Through more than eighty years of innovation and experience, Eaton has developed environmentally friendly vacuum interrupters capable of reliably switching both normal load currents and high stress fault currents.

Eaton is one of the few companies in the world producing vacuum interrupters and has succeeded in developing world class products with international patents. This has been achieved through company acquisitions over the years of Westinghouse®, Cutler-Hammer®, MEM® and Holec®.

To increase the dielectric strength of the vacuum interrupter, Eaton has also designed vacuum interrupters that are encapsulated in epoxy resin material. The medium voltage IEC circuit breaker family utilizes this solid insulation technology that has been catering to a wide range of applications for more than 40 years.

Eaton's range of SF_6 free switchgear for Medium Voltage



Xiria

The Product Family

Xiria is the name of Eatons product family for a new generation of medium voltage switchgear. The Xiria family started more than a decade ago with the introduction of the Xiria ring main unit.

This ring main unit consists of a block containing three panels. Due to the quick acceptance and worldwide interest in more configurations, Eaton consequently developed a four, five and two panel block. Due to the fact that the individual units cannot be coupled and are limited in the number of panels and protection and control equipment, the single panel version was developed. This single panel version is called Xiria E. E in this case stands for Extendable.

The Xiria family includes multiple possibilities and configurations for Power consumption metering. These configurations are indicated as Xiria M-versions. M stands for metering. The transformers for power consumption metering can be either integrated into the block-type Xiria switchgear or housed in a separate metering panel. This dedicated metering panel can be integrated with both the current block type switchgear and the new single extendable panels.

Xiria
(Block type)

Xiria M
(Metering)

Xiria E
(Extendable)

The complete solution

By adding the Xiria E panel to the current range of Xiria a complete family based on the same and proven key technologies, is created. The Xiria block type system is already frequently used for transformers stations, small industries, heavy duty applications and commercial buildings. With the new Xiria E panel it is also possible to use the system in applications with higher specifications and a bigger number of panels.

Some applications are:

- Distribution substations for utilities
- Wind power plants
- Bigger industrial applications
- Hotels
- Shopping centres
- Office buildings
- Infrastructure projects (tunnels, subways, airports)
- Universities
- Hospitals
- Data centers

Xiria E

Modular Switchgear for Smart Grid Applications

Xiria E is the name of Eaton's new medium voltage switchgear for smart grid applications. The system is characterised by its high level of operational safety and suitable for applications up to 24 kV.

The Xiria E switchgear is designed around Eaton's proven vacuum interrupters, which require no maintenance and are certified for 30,000 operation cycles.

All live parts in the available panels are single pole insulated. The used materials are shaped specifically to provide optimum insulation combined with excellent thermal characteristics. In addition, the insulation is configured to provide effective control over electric fields around the used components, thereby minimizing any risk of internal arcing.

Within the Xiria E panels both the primary parts and the mechanisms are housed in a fully enclosed housing which protects the whole system against environmental influences.

The use of vacuum interrupters and solid insulation means that the Xiria E is environmentally friendly. These technologies ensure that this system is a conservational alternative to switchgear systems using Sulfur Hexafluoride (SF_6) gas for insulation. The cost of ownership is also significantly reduced, as no regular testing of gas pressure or other routine maintenance is needed and there is no high end-of-life cost associated with ultimately disposing of the equipment.

With panel dimensions of only 500 mm width and a provision for cable connection from the front, the Xiria E system is economical in its use of valuable floor space, and easy to accommodate in even the most restricted environments. For locations where there is no possibility to exhaust an internal arc into cellar, the system has the possibility to exhaust into the room. This is realized by means of a special chimney at the back side with integrated arc absorbers.

When it comes to the safety of the operating personnel the Xiria E design leaves nothing to chance. All parts are fully enclosed by an internal arc tested safe metal housing. Besides that the panels in the system are provided with direct visible indication of the integrated earthing and ON/OFF-position by means of inspection windows in the front.

Features and Benefits
(quick overview)

Safe in Use

- Visible isolation by means of inspection windows in the front
- Compartments protected against penetration of objects
- Capacitive voltage detection system for verification of safe isolation from supply
- Logical mechanical and electrical interlocks prevent formal operation
- Smooth contemporary design

Environmental Friendly

- Minimized number of components
- Environmental-friendly design with respect to the materials used
- No use of SF_6-gas for switching and insulation
- Energy efficient production and assembly with environmental energy sources
- Minimal number of transition points in primary design enable low energy loss during operation
- Only Re-usable and / or recyclable materials used

Low Total Cost of Ownership

Low initial costs due to:

- Panels with only 500 mm width
- Cable connection from the front / wall standing arrangement
- No need for external arc channel
- 12 kV and 24 kV panels in same housing

No costs during service due to:

- Robust design with minimum number of parts (routine tested in factory)
- Long-life solid insulated components as insulation medium
- Maintenance free vacuum circuit-breaker and load-break switch
- Primary parts and mechanism installed in a fully sealed for life enclosed housing
- No SF_6 pressure checks

Low end of life disposal cost due to:

- Vacuum switching technology
- Solid insulation with air as isolating medium
- Recycling or re-use of materials

User Friendly

- Cable connection and user interfaces for operation on the same front side of the panel
- Ergonomic cable connection height
- Cable (secondary) entry points on both sides of the low voltage compartment top plate
- Secondary cable terminals positioned on a good reachable place in the low voltage compartment
- Clear and simple straight-forward operation panels

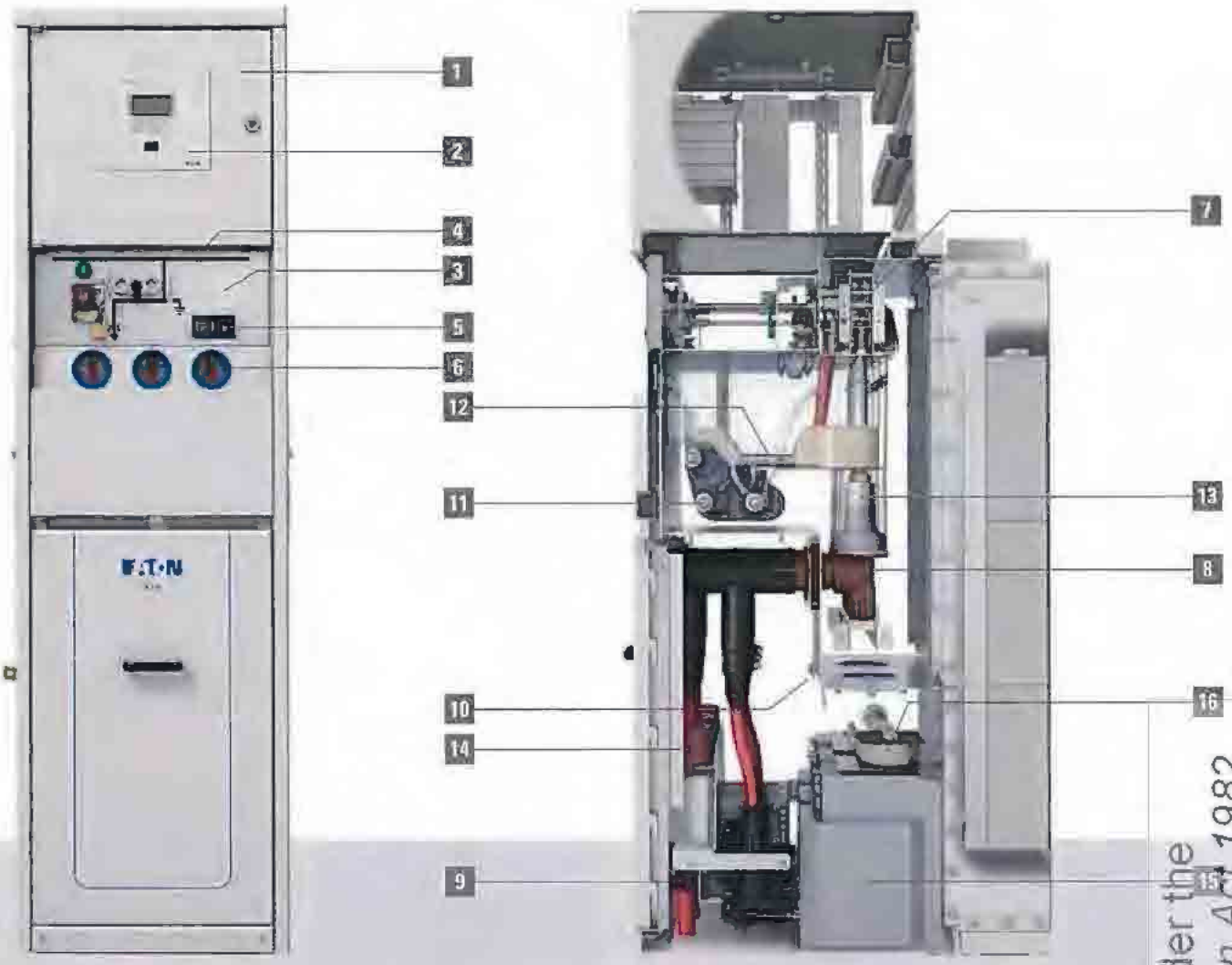
Reliable and Safe in Operation

- Complete design certified in accordance with IEC standards
- Arc fault tested according IEC 62271-200
- Quality assurance in accordance with DIN EN 9001
- Routine tested
- Single pole insulated primary parts within one compartment
- Primary parts and mechanism in sealed for life fully enclosed housing
- Protected voltage transformers

Basic Design

The Xiria E system is modular in construction. This ensures that any panel combination and sequence is possible.

In addition, the number of panels capable of being used in an installation is unlimited as several sections can easily be connected. As the panels can be quickly assembled and connected, flexible commissioning of the switchgear is possible. The panels in the Xiria E system are compact (500 mm wide), resulting in considerable savings in costs and installation space.



Circuit-breaker panel (example)

1. Low Voltage compartment
2. Protection relay
3. Control panel with operation of the circuit-breaker and change-over switch
4. Mimic diagram
5. Voltage detection system
6. Inspection window
7. Mechanism
8. Cable cones
9. Cable clamps
10. Earth bar
11. Busbar
12. Change-over switch
13. Vacuum interrupter
14. Current transformers
15. Voltage transformers
16. Coil and resistor for protection against ferroresonance

Main Components

Vacuum circuit-breaker

The vacuum circuit-breaker uses a simple and reliable spring charging mechanism for operation of the vacuum interrupters. The mechanism contains a low number of moving parts and makes no use of lubricants. It is completely housed in a sealed for life enclosure and therefore needs no maintenance.

Features

- With environmental friendly vacuum interrupters
- Simple spring charging mechanism
- No use of lubricants
- Housed in a sealed for life enclosure
- Manual or motor-operated
- Position indication by means of inspection windows and mechanical indicators
- Auxiliary contacts for Open/Closed position

2-position change-over switch

All panels are equipped with a change-over switch positioned in the same sealed for life enclosure as the circuit-breaker. The change-over switch consists of three shafts connected to the busbars or earthing points. Since it is mechanically interlocked the change-over switch can only be operated when the circuit breaker is in the open position.

Features

- Manual-operated switch with 2 positions (service / earthed)
- Maintenance free
- Housed in sealed for life enclosure
- Auxiliary contacts for service / earthed positions
- Position indication by means of inspection windows and mechanical indicators
- Mechanically interlocked with the vacuum circuit-breaker

Busbars

The busbars in the panel are housed in the same sealed for life enclosure as the circuit-breaker and change-over switch. To prevent a possible internal arc all busbars are single phase insulated.

Features

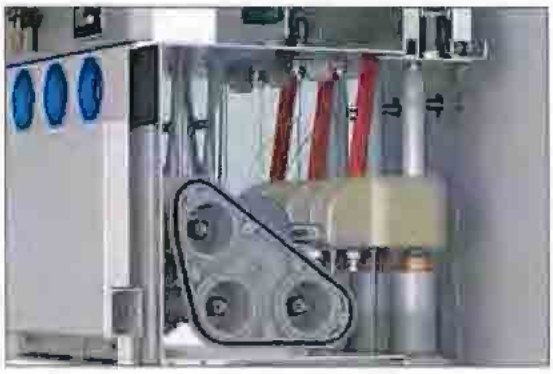
- Single phase insulated
- Air insulated
- Housed in a sealed for life enclosure
- Simple and robust construction
- Easy to couple

Eaton Core Technologies

Solid insulation

Polycarbonate and Thermo-plastic elastomer (TPE) is used as high-quality primary insulation materials around live parts.

By applying Polycarbonate and TPE for solid insulation our design engineers can shape the parts specifically for optimal insulation, robust construction and cooling purposes. In the many years of experience with design and manufacturing of insulation materials, we learned to construct smart single phase insulated constructions. Xiria utilizes optimal field control through the special design of all primary components.



Electrical field control

With conventional shapes for primary components like busbars and conductors, the electrical field between the phases and between phase and earth is non-uniformly distributed. In areas with high field, partial break-through can initiate avalanches resulting in flash-overs. In-depth knowledge about breakthrough phenomena and field steering techniques enable us to prevent flash over completely. The result is a particular compact design.

Vacuum technology: safe, compact and reliable

Eaton vacuum interrupters consist of a ceramic cylinder, housing a fixed and movable contact. Movement of the contact under vacuum conditions is facilitated by a bellow. A shield surrounding the contacts prevents the insulators from becoming contaminated by metal vapour produced during current interruption. This shield also ensures good potential distribution over the insulator.

A typical feature of Eaton vacuum interrupters is that they are characterised by very low arc voltage and short arc times, resulting in very low arc energy. Contacts wear in a vacuum interrupter is therefore virtually negligible. Vacuum interrupters are maintenance free and are certified up to 30.000 operation cycles.

Reliable and Safe in Operation

Eaton's proven technologies have been integrated in the design and development of the Xiria in order to ensure that the switchgear is safe and has high operational reliability throughout its complete lifetime.

Experience and knowledge gained over many years in the areas of cast resin technology, vacuum technology and electrical field control have been implemented.

The system has been thoroughly arc fault tested according to the latest standard IEC 62271-200.

Preventing an internal arc

Within the Xiria design there are different technologies used to prevent an open arc.

Single pole insulated primary parts

All high voltage parts are single pole insulated. The insulation materials used for this are Polycarbonate and Thermo-plastic elastomer (TPE), both high-quality materials with optimal insulation characteristic resulting in minimised dimensions.

Use of Electrical Field control

Engineers designed the whole construction of primary parts, housed in the sealed for life tank, based on Eaton's key technology for electrical field control. By means of special shapes and dimensions the possibility of an open arc is minimized.

Sealed for life fully enclosed housing

Both the primary parts of the unit and the mechanisms are housed in a fully enclosed (sealed for life) housing which protects the whole system against environmental influences and therefore makes it maintenance free. This compartment can be classified as non-accessible and has an IP degree of IP55.

Protected Voltage transformers

Ferro resonance can cause that voltage transformers are damaged and consequently initiate an internal arc in the switchgear. Our design prevents that the voltage transformers are affected by ferroresonance. A resistor and a saturable coil are installed in the tertiary circuit of the voltage transformer.

Routine tests

Various prescribed routine tests are carried out during the production of the switchgear. To assure quality, all processes are in accordance with DIN EN 9001. This means that at every stage of production the components, circuit-breakers and current transformers are inspected for correct functioning. When the entire installation has been assembled, a thorough visual inspection is carried out, together with mechanical, functional and electrical checks.

Philosophy on internal arcs

Eaton always puts extra focus on creating safe switchgear for operators at all times. One of the biggest potential threats to operators is an internal arc in switchgear.

Engineers therefore did everything necessary in design and construction to prevent internal arcs, despite the fact that it is very rare for an operator to be in front (without operating) of the switchgear at exactly the same time that an internal fault occurs.

Eaton supports the philosophy that it is best to avoid internal arcs than to cure, in line with the relevant standard IEC 62271-200. Within the Xiria design a double prevention philosophy is used. Firstly, the design is constructed in such a way that an internal arc is prevented. In the unlikely case that an internal arc could occur, the Xiria is equipped to provide maximum safety to the operator, and to control and minimise damage to the rest of the switchgear and room.

Controlling an internal arc

An internal arc in switchgear causes an overpressure supported by the release of fire and smoke.

By design, vacuum and air/solid insulated switchgear has the least environmental impact after an internal arc event. The impact of an arc is twofold: an internal impact (in the switchgear) and external impact (in the switch room).

The overpressure created by an internal arc will, in standard switchgear, be guided out of the switchgear by means of a pressure relief duct. Next to the duct a complicated and expensive arc channel may be installed, that guides the arc output outside the switch room. The Xiria design is constructed in such a way that both impacts are significantly reduced and consequently a less complicated arc channel is needed.

No phase-to-phase short circuits minimises pressure

Within the Xiria all high voltage parts are single pole insulated. The advantage of this single pole construction is that the only conceivable internal fault is a single-phase short circuit, e.g. due to a cable connection failure (when single core cables are connected, as is the normal practice nowadays).

Arc absorber reduces output impact

In case it is not possible to vent into the cable cellar or into an adjacent room, the Xiria design offers the possibility to safely vent into the switch room. In this case a special arc chimney is installed at the backside of the panel. This arc chimney contains integrated arc absorbers that break and filter gasses and fire significantly.

Safe in Use

The Xiria design contains some special features that guarantee the operator to work safely with the different panel types.

What you see is what you get!

Visible isolation by means of inspection windows in the front

When carrying out operational actions and work on the cables, it is vital to have unambiguous status indications. When it comes to safety of the operating personnel Eaton leaves nothing to chance. That is why the Xiria design is fitted with directly visible isolation by means of inspection windows in the front which makes the isolating distance between the cable and busbar system directly visible. A visible, short-circuit proof earthing can take place via the load-break switch or circuit-breaker.

Earth position

Operating position

Capacitive voltage detection system for verification of safe isolation from supply

Each panel type within the Xiria family is equipped with a standard three-phase Voltage Detection System for voltage testing to IEC 61243-5. The VDS shows the operator if the panel is isolated from supply or not.

Logical mechanical and electrical interlocks prevent mal operation

Within the Xiria design mis-operation by an operator is prevented by using different interlocks. The interlocks are mechanical and electrical. For example electrical and mechanical interlocks prevent to operate the change-over switch when the circuit-breaker is switched on. All mechanical interlocks are constructed in such a way that they directly block the mechanism.

Switching to service position is only possible with closed cable compartment

The door of the cable compartment can only be standard opened when the circuit-breaker is in the earthed position. After the door is removed it is possible to switch off the circuit-breaker for cable testing. Next switching on to service position is only possible with the door positioned back again.

Compartments protected against penetration of objects

Within the Xiria design it is also not possible to accidentally penetrate the switchgear by part of a body or a tool.

For the latter all high voltage compartments have an IP55 degree.

Smooth temporary design

All compartments of the Xiria panels are designed in such a way that the system is safe to touch from the outside. By using a smooth and smart design it is not possible for the operator to injure himself by moving parts or parts that stick out of the switchgear when moving in front of the switchgear.

Low Total Cost of Ownership

The Xiria design guarantees very low costs related to owning the switchgear during its entire lifetime.

The life-time costs can be split in the initial costs, installation cost, service cost and finally, costs for disposal of the switchgear.

All costs of owning the switchgear are influenced by different features of the switchgear. Within Xiria all these features are constructed in such a way that the costs for the owner are as low as possible of course with no concessions to the quality of the switchgear.

Low initial costs

Initial costs consist of purchase, transport, building and installation costs.

Panel width only 500 mm

By using a combination of solid insulation technology, electrical field control and vacuum technologies, Eaton's engineers managed to construct Xiria E panels with a width of maximum 500 mm. Because a typical switchgear installation normally consists of a large number of panels, this compact design significantly reduces the switch room size. The compact design also makes Xiria E highly flexible and economically attractive when existing installations are being replaced.

Cable connection from the front (back-to-wall arrangement)

Cable connection from the front is a feature that saves building costs. Due to this front connection the rear of the Xiria E can be installed close to the wall of a building, again reducing building cost.

12 kV and 24 kV panels in same housing

The 12 kV and 24 kV versions are both accommodated in the same compact housing. This means substantial savings on building costs because the same switchroom can be used when the operating voltage is increased (upgrading).

Arc chimney with integrated arc absorbers

A standard option (in case there is no possibility to vent down or backwards) that reduces the switchroom dimension is the Xiria arc chimney with integrated arc absorbers. In normal switchgear, gasses caused by an internal arc are guided out of the switchroom by means of an extra duct and arc channel connected to the switchgear. These additions require extra switch room space and consequently increasing initial building cost.

Low service cost during operation

Service cost consists of maintenance, failure and consequential cost. Besides that the technical lifetime of parts or modules will determine the replacement cost of the equipment.

Robust "lean" design with minimum number of parts

Costs during service of a switchgear can be caused by damaged parts requiring replacement, or by maintenance parts that will not reach their expected lifetime if they are not serviced.

Within the Xiria design a minimal number of components are used. This robust design with only the necessary parts is designed based on experience of building switchgear for more than a century.

No SF_6-gas pressure checks

Switchgear that uses SF_6-gas as an insulation medium has a leakage rate. To maintain the isolation level within this type of switchgear, the pressure of the SF_6 tanks must be checked and refilled on a regular basis during the unit's lifetime. Within the Xiria, an owner does not have to incur the extra costs involved in checking and maintaining the required insulation level. The combination of vacuum interrupters for switching, solid insulation and clean air as the insulation medium, is environmentally friendly and maintains the same quality level during the complete lifetime of Xiria.

Primary parts and mechanism installed in a fully sealed for live enclosed housing

The biggest influence on the quality of the primary and moving parts in switchgear, has the environment in and outside the switchroom. These environmental influences could in the end cause damage to the switchgear that should be repaired. To prevent any environmental influence on the most critical parts in the Xiria, all of these parts are housed in a fully sealed for live enclosure (IP55).

Product quality guaranteed by prescribed routine testing in the factory

During production of the panels, various prescribed routine tests are carried out by specialists, making sure that the panels achieve the quality that they are designed for.

Low end of life disposal cost

Full recycling or re-use of materials

The primary parts of the Xiria have a lifetime of at least 30 years. Depending on the location where the system is installed the lifetime can be extended. If for what reason the decision is made not to use the switchgear anymore the Xiria can be handed over to Eaton again. Next the switchgear will be dismantled and the different materials can, and will, be categorised. Because no toxic materials are used in the Xiria, dismantling is a less complicated, more cost effective and environmentally friendly operation. The dismantled and categorised materials will be, depending on the material, recycled or re-used.

User friendly

First of all requirements is a safe and reliable installation. Number two is an installation that is convenient and efficient to operate.

The second aspect does not always get the attention it deserves, but for Xiria most certainly did. The Xiria panels are designed to be user friendly and are easy to operate.

Primarily, all operations can be carried out on the front side of the panel. This means that both cable connection and user interface for operation are positioned at the same front side of the panel. The logically arranged control panel enable operators to do their job as efficiently and safe as possible.

Easy and ergonomic connection of cables

Primary cables

The cable cones of Xiria are positioned on a height of 700 mm from floor level. This height makes it relatively easy for operators to connect the primary cables. There is also enough space in the cable compartment to connect the required number of cables with connectors available on the market.

Secondary cables

Connecting the secondary cables is carried out by entering the low voltage compartment of the Xiria E from the top. The low voltage cable terminals are positioned in such a way that the operator can connect the cables easily within the compartment whilst standing in front of the Xiria E.

Clear and simple control panel

The control panel on the Xiria is positioned on a convenient height for the operator. It is directly connected to the mechanism.

The mechanism is a hand operated or hand/motor operated spring charged mechanism, connected to the vacuum interrupters and the change-over switch. It is operated via two rotating shafts on the front provided with the necessary mechanical interlocks to avoid wrong operation. For example an interlock is built-in that prevents operation of the change-over switch when the circuit-breaker or load-break switch is in the ON-position. Another standard feature on the control panel is the padlocking of the earthed position. For padlocking the position, the most common padlocks available in the market can be used.

Manual operation of the switchgear is achieved with one operating handle. This handle can be used for switching the circuit-breaker, load-break switch and change-over switch. Operation is done by inserting the handle in the access holes in the front. In case a motor-operated circuit-breaker is requested a push button will be installed in the control panel for achieving this function.

The mechanism is provided with viewing windows on the front for direct visual indication of the earthed position of the change-over switch and the ON/OFF-position of the main vacuum interrupter. The front operating panel is also provided with a black and white single line intuitive mimic, showing the positions of the vacuum interrupter and the Earth/Busbar position of the change-over switch.

Each panel is provided with a voltage detector mounted on the front. It is connected via internal wiring to capacitive sensors inside the cable connection cones. It shows the presence of the primary voltage on all three phases of the primary cables connected to the panel.

In case advanced protection and control equipment is requested, the low voltage compartment positioned on top of the panel, will house these

Environmentally friendly

Like all Eaton's other medium voltage switchgear, Xiria is designed to be an environmentally friendly product throughout the whole chain.

One of the key strategic initiatives of Eaton is to provide environmentally friendly products. Eaton realises that for this they should look at their total product chain, from design to dismantling. The optimal situation is that for each phase there is no damage to the environment and at the end, all materials can be re-used again in the same product (the Cradle-to-Cradle principle). The product chain can be divided into four main blocks. These blocks are the design (materials used) of the product, the assembly of the product, the usage phase of the product and finally the dismantling of the product.

Eaton's production plant in Hengelo (the Netherlands) acts entirely in accordance with the rules and procedures of ISO 14001 environmental certificate during development and production processes.

Environmentally friendly design

With respect to the design of switchgear, the vision "the less number of components the better" applies. This because every part must be manufactured and therefore impacts on the environment. Next, applies the affect of different materials on the environment.

Use of minimised number of components

Xiria is designed to use the minimum of materials and resources, without affecting the strength of the system. For example, Eaton reduced the number of components dramatically, compared to conventional switchgear, by using an simple spring charging mechanism and integrated compartments. This also ensures straight forward assembly with low labour cost.

Materials with no/less impect on the environment

Eaton selects materials with care. It is essential that they are safe for personnel and the environment - not just during use, but at the end of service life too.

Within Xiria a combination of solid (cast resin) insulation and air as insulation medium is used. The solid insulation technology, in combination with electrical field calculations, provides a very compact, environmentally friendly design for the switchgear. As the switching medium, vacuum technology is used within the interrupters of the Xiria circuit-breakers. Xiria can be completely recycled at the end of its life without any problem.

No use of SF_6 gas for insulation or switching

Within medium voltage switchgear SF_6-gas is being used, because of its good insulating properties. Emissions of SF_6-gas from switchgear contribute significantly to the threat of the greenhouse effect and associated climate change. SF_6 is on the list of greenhouse gasses in the Kyoto protocol.

SF_6 is the most potent of the six main greenhouse gasses, with a Global Warming Potential (GWP) of 23,000.

In the 1980s, the Holec group, as it was then, made a fundamental choice not to use SF_6 as a switching and insulation medium for medium voltage equipment. In the 1980s, Holec had SF_6 technology available in-house. The main reason for not using any SF_6 in medium voltage equipment was the complexity of the treatment required for the toxicity of the gasses that have been in contact with an arc, and the need for additional safety measures when used in public locations such as residential areas and shopping centres.

Efficient use of materials

Besides the energy sources, special focus was placed on the efficient use of material during assembly. For example, sheet steel plates are cut with as little waste material as possible. Residual material is used within other product components.

No service checks on site

Because Xiria is designed for a lifetime of at least 30 years, the system needs no energy usage for maintenance activities during this long period. Due to the green insulation and switching technology, there is also no leakage of the SF_6-gas during its lifetime and no need for extra maintenance activities on SF_6 pressure checks.

Minimal energy loss during operation

To prevent energy loss by the system itself, Xiria uses a minimum number of primary change-over points. All the available change-over points use optimal surface contacts and by this, prevent extra energy losses over these points.

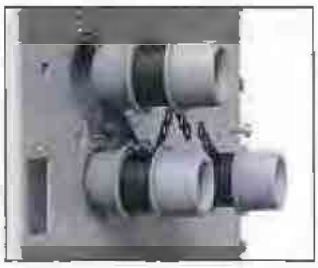
Re-use or recycling of materials

During dismantling Xiria switchgear is demounted into parts and thereafter categorized per material. Next the parts will be recycled or re-used. Because Xiria uses no SF_6 there is no loss of this gas during dismantling of the switchgear.

Exactly how you want it

Simple configuration, coupling and extension

Every application of this type of system is unique, so Eaton offers a large number of different panel types and field versions. If, in due course, the end-user needs additional capacity in the form of more panels, Xiria E can easily be extended to the right or left.



Flexible application of secondary apparatus, protection relays and substation automation

Eaton realises that end-users have their own direction with respect to the use of secondary apparatus, protection relays and substation automation within the switchgear. The need for customer specific apparatus and relays was taken into account during the development of the Xiria E. This resulted in a system that enables end-users to integrate apparatus according to their specification. Thanks to the large number of protection and control options, end-users will always be able to construct an Xiria E system that conforms exactly to your requirements.

Range of Voltage transformers

All Xiria E panels can be fitted with cast-resin insulated voltage transformers (of the requested transformer ratio and class) for the voltage measurement on the cable side, or on the busbar side. Both transformers can be (dis-)connected safely and easily.

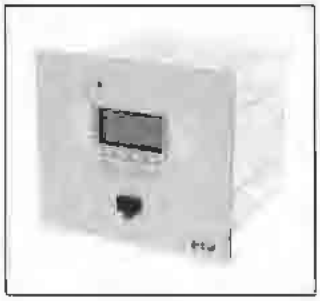
Range of Current transformers

The epoxy resin insulated current transformers are of the ring core type. They are positioned around the primary conductors behind the cable cones or around the primary cables. All common transformer ratios, outputs, rated currents and classes are possible.

Protection and Control equipment

The protection and control equipment is located in the low voltage compartment. This compartment is completely separate and has its own access door. There is space on the door for equipment such as protection relays, test plugs, meters, etc.

The Xirie E is standardised for the Eaton relays series. However the Xiria E is adaptable for the installation of other brands. In case more than one relay is required, the low voltage compartment can be extended.

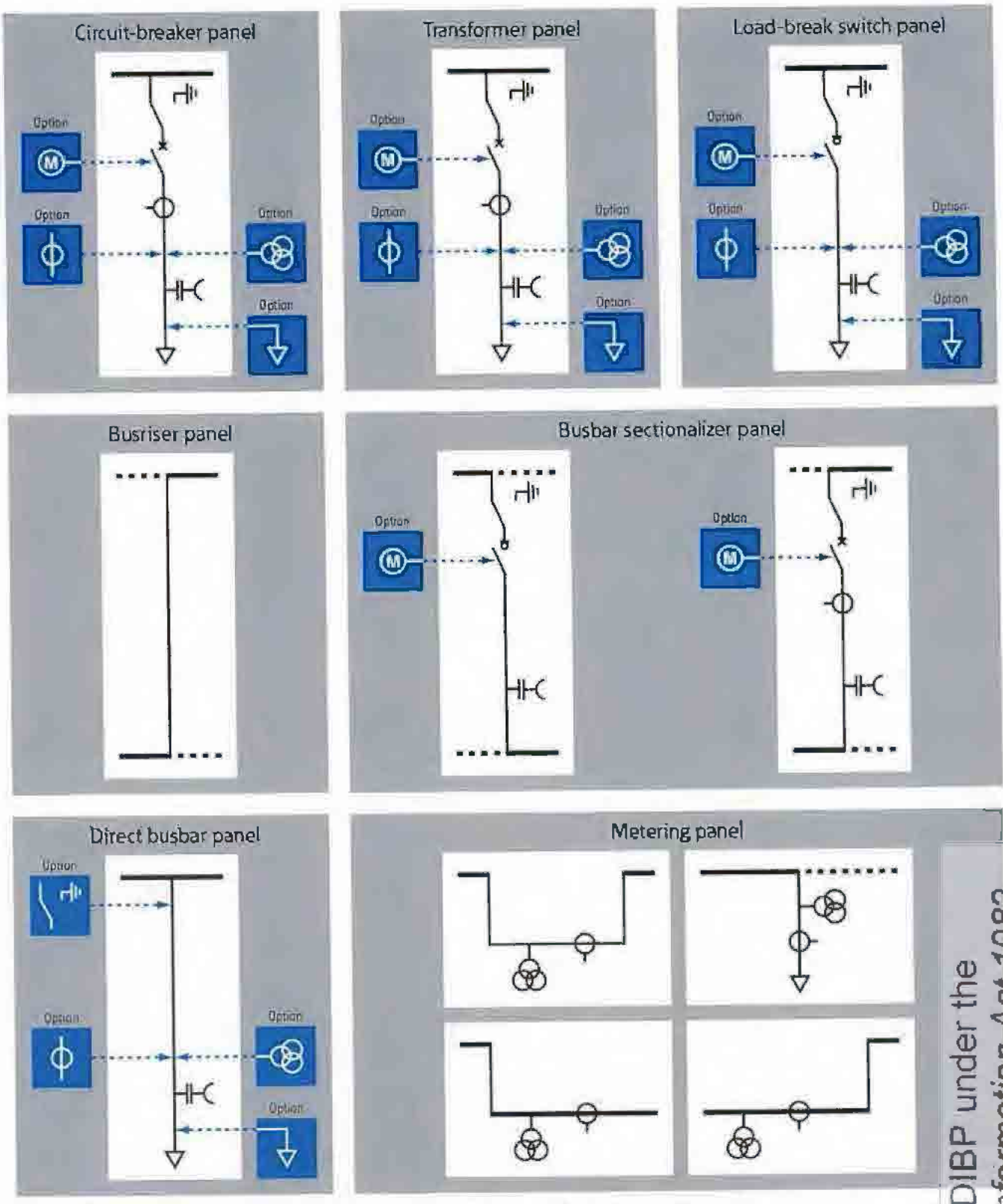


Smart Grids

Equipment for (remote or local) communication between panels or automation systems can also be installed in the low voltage compartment. For instance an Eaton remote terminal unit (RTU) can be applied. Having this possibility makes the system the perfect solution for current and future Smart Grid applications.

Eaton remote terminal unit (RTU).

Product Range



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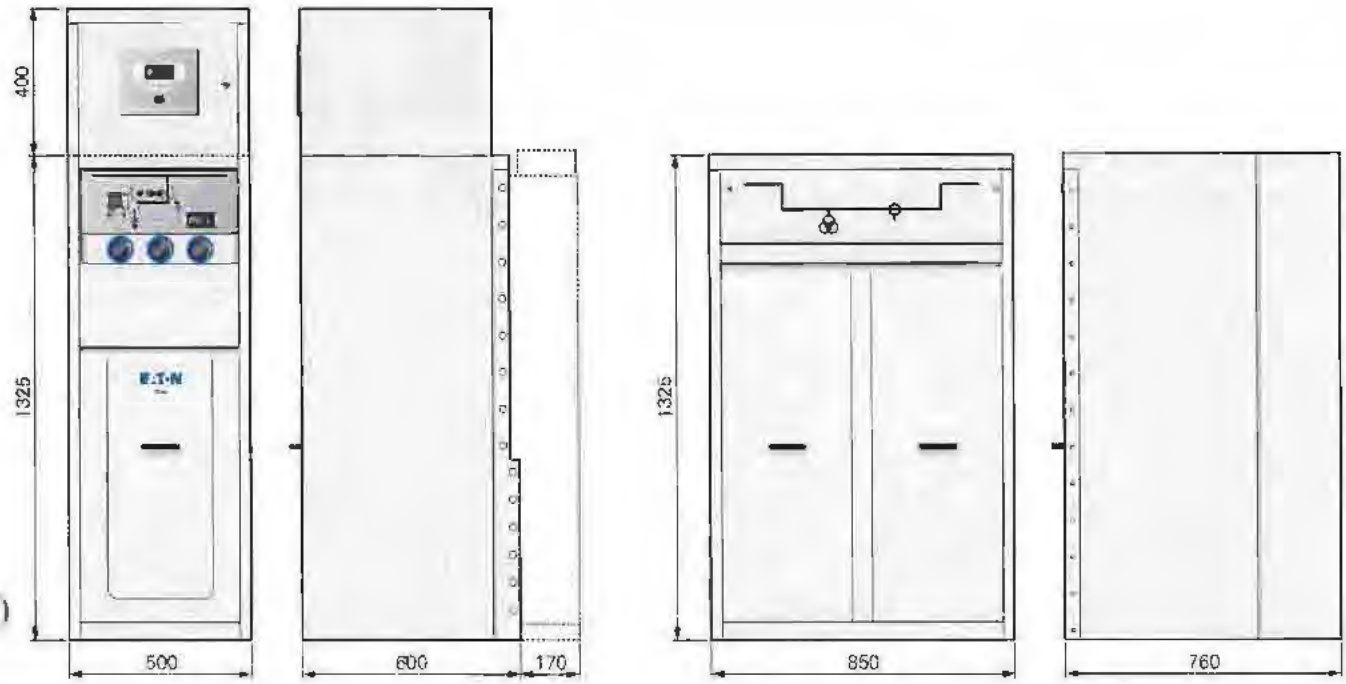
Dimensions (mm)



Circuit-breaker panel
Transformer panel
Load-break switch panel
Busriser panel
Busbar sectionaliser panel
Direct busbar panel

Metering panel

Standards

Xiria E complies with the following international standards

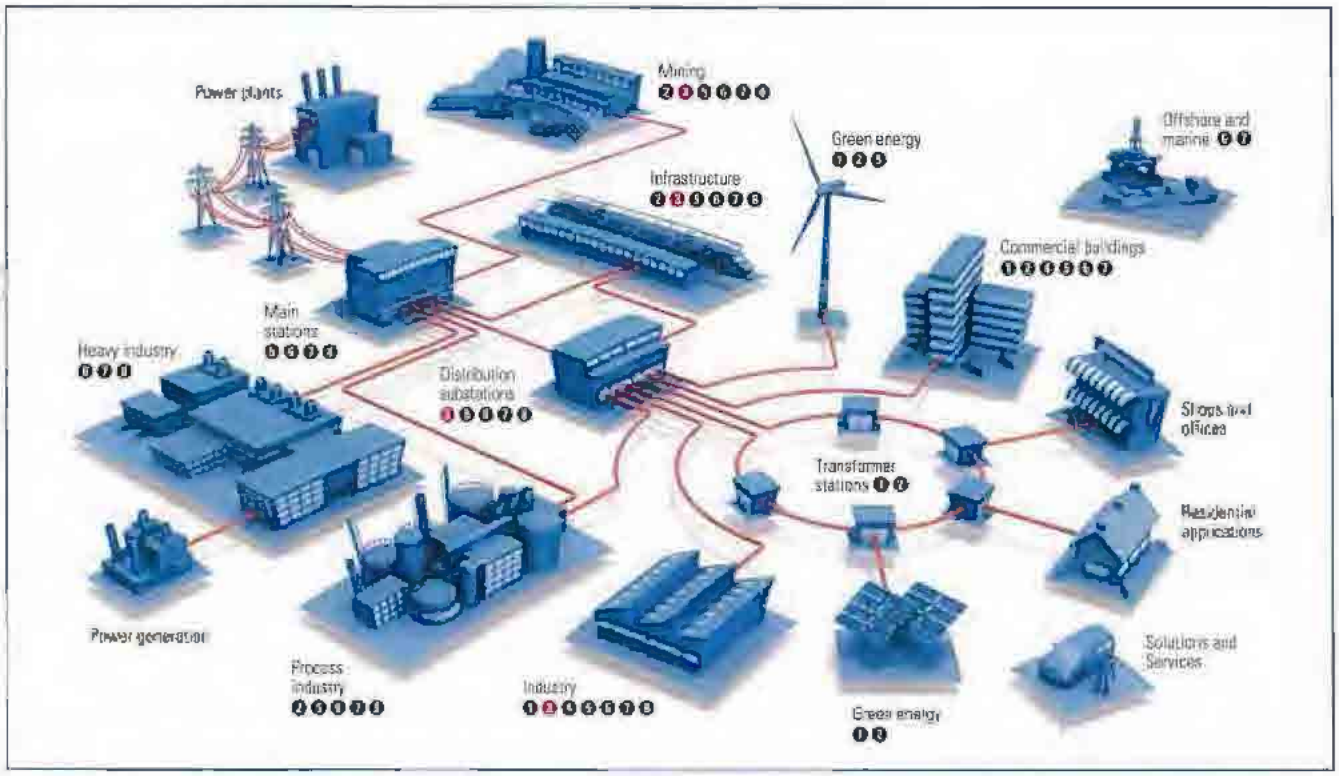
IEC 62271-1	Common specifications for high-voltage switchgear and control gear standards
IEC 62271-100	High-voltage alternating-current circuit-breakers
IEC 62271-102	Alternating current disconnectors and earthing switches
IEC 62271-103	High-voltage switches
IEC 62271-200	A.C. metal-enclosed switchgear and control gear for rated voltages above 1 kV and up to and including 52 kV
IEC 62271-304	Additional requirements for enclosed switchgear and control gear from 1 kV to 72.5 kV to be used in severe climatic conditions
IEC 60529	Degrees of protection provided by enclosures
IEC 60044-1	Instrument transformers - Part 1: Current transformers
IEC 60044-2	Instrument transformers - Part 2: Inductive voltage transformers
EN 50181	Plug-in type bushings above 1 kV up to 36 kV
ISO 9001-2000	Quality
ISO 14001	Environmental management

Electrical Data

General		3.6 kV	7.2 kV	12 kV	17.5 kV	24 kV
Rated voltage	kV	3.6	7.2	12	17.5	24
Impulse withstand voltage	kV	40	60	75 / 95	95	125
Power frequency withstand voltage	kV-1m	10	20	28 / 38 / 42	38	50
Rated frequency	Hz	50/60	50/60	50/60	50/60	50/60
Loss of service continuity		LSC2B	LSC2B	LSC2B	LSC2B	LSC2B
Partition class		PM	PM	PM	PM	PM
Internal Arc Classification (IAC)		AFL	AFL	AFL	AFL	AFL
Internal arc resistance	kA - s	20 - 1	20 - 1	20 - 1	20 - 1	20 - 1
Internal arc resistance with absorber	kA - s	16 - 1	16 - 1	16 - 1	16 - 1	16 - 1
Internal arc resistance cable compartment	kA - s	16 - 1	16 - 1	16 - 1	16 - 1	16 - 1
Internal arc resistance cable comp. alternative	kA - s	20 - 1	20 - 1	20 - 1	20 - 1	20 - 1
Degree of protection in service		IP31D	IP31D	IP31D	IP31D	IP31D
Degree of protection with doors/covers open		IP2X	IP2X	IP2X	IP2X	IP2X
Ambient air temperature range	°C	-25 +40	-25 +40	-25 +40	-25 +40	-25 +40
Busbar system						
Rated normal current	A	630	630	630	630	630
Rated short-time withstand current	kA - s	20 - 1	20 - 1	20 - 1	20 - 1	20 - 1
Rated short time withstand current alternative	kA - s	20 - 3	20 - 3	20 - 3	20 - 3	20 - 3
Rated peak withstand current	kA	50	50	50	50	50
Load break switches						
Rated normal current	A	630	630	630	630	630
Rated active load break current	A	630	630	630	630	630
Rated short-circuit making current	kA	50	50	50	50	50
Rated short-time withstand current	kA - s	20 - 1	20 - 1	20 - 1	20 - 1	20 - 1
Rated short-time withstand current alternative	kA - s	20 - 3	20 - 3	20 - 3	20 - 3	20 - 3
Rated Cable Charging Breaking Current	A	31.5	31.5	31.5	31.5	31.5
Mechanical Endurance Class		M2 5000 x	M2 5000 x	M2 5000 x	M2 5000 x	M2 5000 x
Mechanical Endurance Class as Earth Switch		M0	M0	M0	M0	M0
Mechanical Endurance Class Disconnector		M0	M0	M0	M0	M0
Electrical Endurance Class		E3	E3	E3	E3	E3
Electrical Endurance Class as Earth Switch		E2	E2	E2	E2	E2
Circuit-breakers						
Rated normal current	A	630	630	630	630	630
Rated breaking current	kA	20	20	20	20	20
Rated short-circuit making current	kA	50	50	50	50	50
Rated Capacitive Switching Current Class		C2	C2	C2	C2	C2
Rated Cable Charging Breaking Current	A	31.5	31.5	31.5	31.5	31.5
DC Time Constant	msec	45	45	45	45	45
DC Component	%	<20	<20	<20	<20	<20
Mechanical Endurance Class		M1	M1	M1	M1	M1
Mechanical Endurance Class as Earth Switch		M1	M1	M1	M1	M1
Mechanical Endurance Class Disconnector		M0	M0	M0	M0	M0
Electrical Endurance Class		E2	E2	E2	E2	E2
Rated short-time withstand current	kA - s	20 - 1	20 - 1	20 - 1	20 - 1	20 - 1
Rated short-time withstand current alternative	kA - s	20 - 3	20 - 3	20 - 3	20 - 3	20 - 3
Minimum tripping time	msec	80	80	80	80	80
Mechanism type		O - 3 min - CO - 3 min - CO				
Transformer panel						
Rated normal current	A	200	200	200	200	200
Rated breaking current	kA	20	20	20	20	20
Rated short-circuit making current	kA	50	50	50	50	50
Rated Capacitive Switching Current Class		C2	C2	C2	C2	C2
Rated Cable Charging Breaking Current	A	31.5	31.5	31.5	31.5	31.5
DC Time Constant	msec	45	45	45	45	45
DC Component	%	<20	<20	<20	<20	<20
Mechanical Endurance Class		M1	M1	M1	M1	M1
Mechanical Endurance Class as Earth Switch		M1	M1	M1	M1	M1
Mechanical Endurance Class Disconnector		M0	M0	M0	M0	M0
Electrical Endurance Class		E2	E2	E2	E2	E2
Rated short-time withstand current	kA - s	20 - 1	20 - 1	20 - 1	20 - 1	20 - 1
Rated short-time withstand current alternative	kA - s	20 - 3	20 - 3	20 - 3	20 - 3	20 - 3
Minimum tripping time	msec	80	80	80	80	80
Mechanism type		O - 3 min - CO - 3 min - CO				

Eaton's electrical business is a global leader with expertise in power distribution and circuit protection; backup power protection; control and automation; lighting and security; structural solutions and wiring devices; solutions for harsh and hazardous environments; and engineering services. Eaton is positioned through its global solutions to answer today's most critical electrical power management challenges.

Eaton medium voltage products in the energy chain



❶ Magnefix

❷ Xiria (blocktype)

❸ Xiria E (extendable)

❹ Xiria M (metering solutions)

❺ SVS

❻ Power Xpert® FMX

❼ Power Xpert® UX

❽ MMS

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EATON
Powering Business Worldwide

Form No. BR02200010U_05
March 2015

Xiria
24 kV Ring Main Unit in IEC and ENATS 41-36 design

Xiria

the smart solution

- High operational safety
- Maintenance-free
- Safe visible earthing and position indication
- Environmentally friendly
- Compact
- Suitable for remote control
- Vacuum technology

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Vacuum technology: safe, compact and reliable

Eaton vacuum interrupters consist of a ceramic cylinder, housing a fixed and movable contact. Movement of the contact under vacuum conditions is facilitated by a bellow. A shield surrounding the contacts prevents the insulators from becoming contaminated by metal vapour produced during current interruption. This shield also ensures good potential distribution over the insulator.

A typical feature of Eaton vacuum interrupters is that they are characterised by very low arc voltage and short arc times, resulting in very low arc energy. Contacts wear in a vacuum interrupter is therefore virtually negligible. Vacuum interrupters are maintenance free and are certified up to 30,000 operation cycles.

Xiria: the smart solution

Xiria is the name of a new generation of ring main units from Eaton. They are characterised by their high level of operational safety and are suitable for applications up to 24 kV, meeting the requirements of IEC and ENATS 41-36. Xiria units are also very compact. Xiria units can be supplied in two-, three-, four- or five-panel versions. Both the primary part of the unit and the mechanisms are housed in a fully enclosed housing which protects the system against environmental influences.

There is a choice of two basic panel versions in our product range:

- A vacuum load break switch for ring cable connections.
- A vacuum circuit-breaker for protecting transformers and cable connections.

Both versions can be supplied in a unit in any desired combination and order.

Xiria is an extremely well designed and modern system. For example, when developing the system we intentionally opted for protection in the form of a circuit-breaker combined with an electronic relay. This is a modern, safe and flexible alternative to fuse protection. In addition it also makes Xiria very easy to use in an automated distribution network. These specific features make Xiria an easy-to-use system that responds perfectly to changing electricity distribution requirements, both now and in the future.

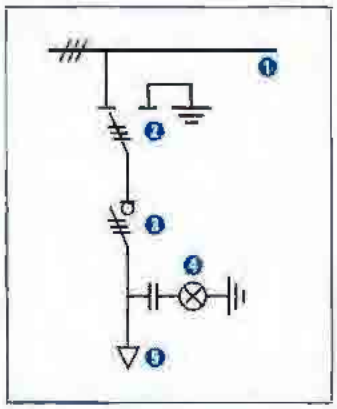
Maintenance-free

All the live primary parts and mechanisms in a Xiria unit are installed in a fully enclosed housing. This prevents dust, moisture and other environmental influences from affecting the operation of the unit. The switching mechanism has been designed with a minimum number of parts, and is specifically intended for switching after a long period of inactivity – precisely the way it happens in practice. What is more, the mechanism does not use any lubricants, which also benefits its operational safety. As it is maintenance-free, Xiria significantly cuts inspection and maintenance costs without adversely affecting the operational safety of your distribution network. Which is something to look forward to in today's liberalised energy market.

Sealed-for-life housing.

Intrinsically safe

When carrying out operational actions and work on the cables, it is vital to have unambiguous status indications. When it comes to the safety of the operating personnel, Eaton leaves nothing to chance. That is why Xiria is fitted with inspection windows in the front which makes the isolating distance between the cable and the busbar system and the ON-OFF position of the vacuum interrupters directly visible. A visible, short-circuit proof earthing can take place via the load break switch or circuit-breaker.
Xiria is designed with a fully enclosed metal housing combined with single-phase insulation of all primary live parts. This reduces the risk of an internal fault to an absolute minimum, thus providing a high degree of safety and availability. The housing is internal arc proof, tested by KEMA, and meets the requirements for use in transformer stations according to ENATS 41-36. This design offers additional protection for operating personnel.



Single line diagram
1. Busbar system
2. Busbar/earth disconnector
3. Vacuum load break switch or circuit-breaker
4. Voltage detector
5. Cable connection

Operating position.

Earthed and locked position.

Developments in electricity distribution

Electrical energy has become an indispensable part of modern society. Having a reliable, continuous supply of energy is becoming more and more important every day. From the point of view of energy companies and industry, this means that the distribution network has to meet ever more stringent demands. It goes without saying that safety and operational reliability play a major role.
As a result of the liberalisation of the energy market and the effect that this is having on the market, electricity is becoming an increasingly commercial product, with all that that entails. So when a distribution network is set

Compact

Xiria is one of the smallest ring main units of its kind. This high degree of compactness is a direct result of the combination of technologies used by Eaton – electrical field control, solid insulation and the use of extremely compact vacuum interrupters. This compactness offers direct financial benefits in new buildings and when refurbishing existing transformer stations because of the minimal floor area required.

Compact design.

Remote control

Xiria is completely ready for use in fully remote controlled networks. There are various options available for the system, depending on the level of remote signalling and remote control required. These options are modular, so they can be quickly and easily added in the future. In this way Xiria anticipates future developments in automation and operational control, so you can be sure that you will not be left with control, display and communication standards that are too specific or possibly even obsolete.

Easily adjustable electronic protection relay.

Clean and green

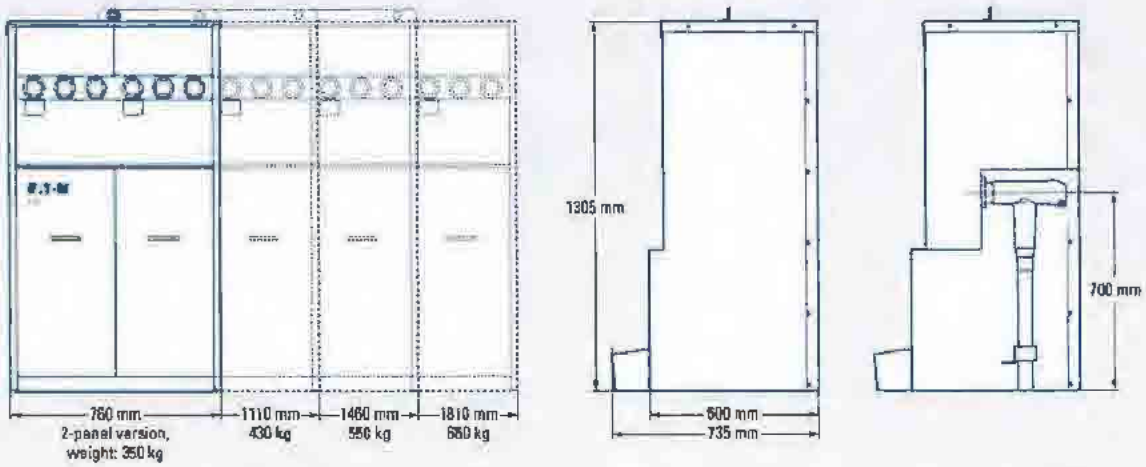
Xiria is made exclusively of environmentally-friendly materials. The insulation medium is clean, dry air and the switching medium is vacuum. Thus Xiria responds to the demand for sustainability in energy distribution. The unit is easy to dismantle at the end of its service life as the materials used are clearly labelled and can be reused. This facilitates recycling and avoids excessive costs and environmental taxes when the unit is decommissioned.

Clear coding for recycling

Xiria units can be used in compact transformer stations for energy distribution and in accessible stations in utilities and industry. They are also ideal for use in decentralised power generation systems such as wind farms.

up, far more attention is paid to the total costs over the life span of the network than before. The maintenance-free Xiria system is Eaton's response to this.
Sustainability and environmental friendliness are becoming more and more important in the choice of switch materials. Eaton has taken this criterion as a starting point for the design of its new generation of ring main units - both in terms of production and during the entire service life of the unit, including the reuse of the materials used.
Based on these developments, Eaton has launched Xiria, a system that responds to present and future developments in the liberalised energy market.

Dimensions (mm)



Technical data

Xiria			
General			
Rated voltage	kV	12	24
Impulse withstand voltage	kV	95	125
Power frequency withstand voltage	kV	28	50
Rated frequency	Hz	50/60	50/60
Internal arc resistance (AF)	kA-s	20-1	20-1
Degree of protection		IP31D	IP31D
Busbar system			
Rated normal current	A	630	630
Rated short-time withstand current	kA-s	20-3	20-3
Rated peak withstand current	kA	50	50
Circuit-breaker			
Rated normal current	A	200/500	200/500
Rated breaking current	kA	20	20
Rated short-circuit making current	kA	50	50
Rated short-time withstand current	kA-s	20-3	20-3
Protection		WIB1 / WIC1 / TLF	WIB1 / WIC1 / TLF
Load break switch			
Rated normal current	A	630	630
Rated short-circuit making current	kA	50	50
Rated short-time withstand current	kA-s	20-3	20-3

Xiria complies with the following standards	
ENATS 41-36 nr. 1040	Distribution switchgear
IEC 62271-1	Common specifications
IEC 62271-200	Metal-enclosed switchgear and controlgear
IEC 62271-304	Severe climatic conditions
IEC 62271-100	Circuit-breakers (M1/E2)
IEC 62271-103	Switches (M1/E3)
IEC 62271-102	Disconnector/Earthing switch (M0)
IEC 62271-102	Earthing via vacuum bottle (E2)
IEC 60529	Degree of protection
IEC 61869-2	Current transformers
IEC 61869-3	Voltage transformers
EN 50181	Cable cones

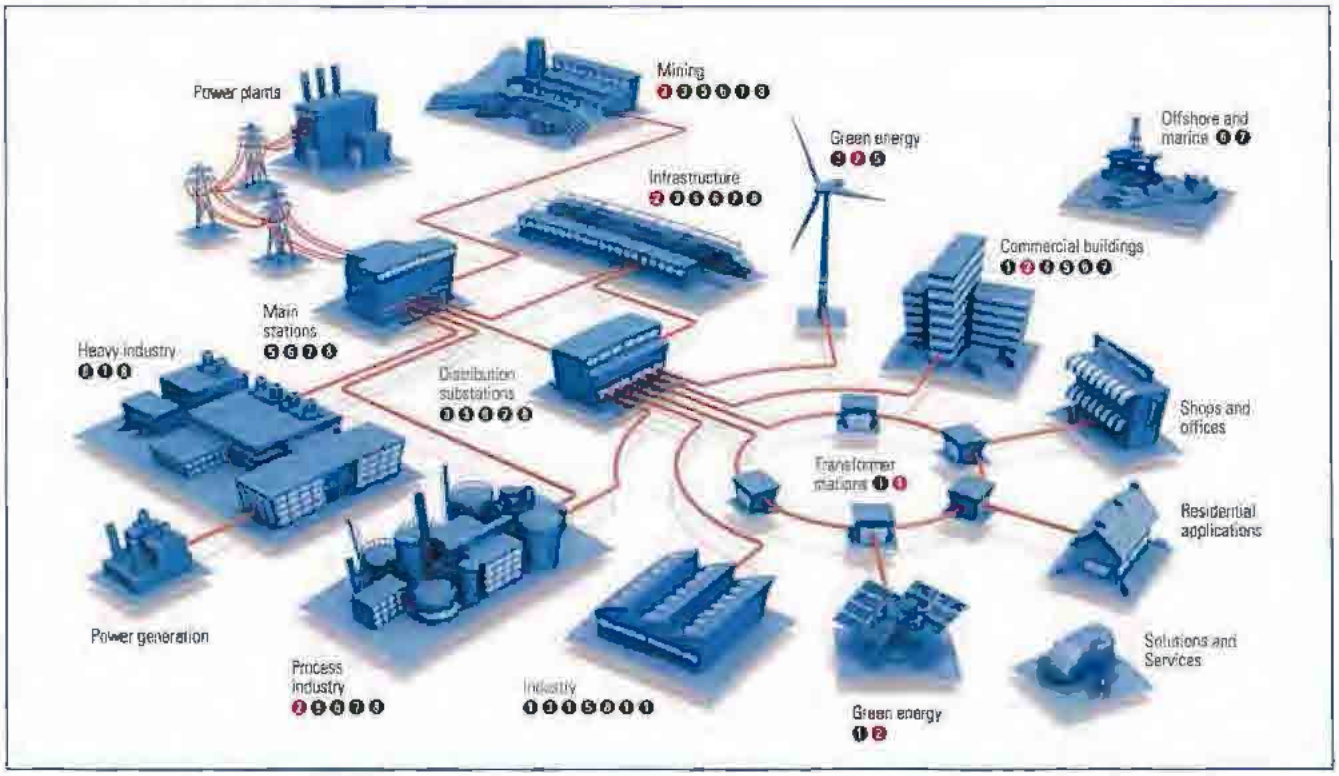
Classification according to IEC 62271-200	
Loss of Service Continuity	LSC 2B
Partition Class	PM
Internal arc	IAC AF 20 kA-1 s

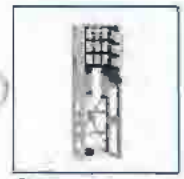
KEMA

52

Eaton's electrical business is a global leader with expertise in power distribution and circuit protection; backup power protection; control and automation; lighting and security; structural solutions and wiring devices; solutions for harsh and hazardous environments; and engineering services. Eaton is positioned through its global solutions to answer today's most critical electrical power management challenges.

Eaton medium voltage products in the energy chain




❶ Magnefix


❷ Xiria (blocktype)


❸ Xiria E (extendable)


❹ Xiria M (metering solutions)


❺ SVS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❼ Power Xpert® UX


❽ MMS

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United Kingdom

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Fax: +44(0)8700 540 333
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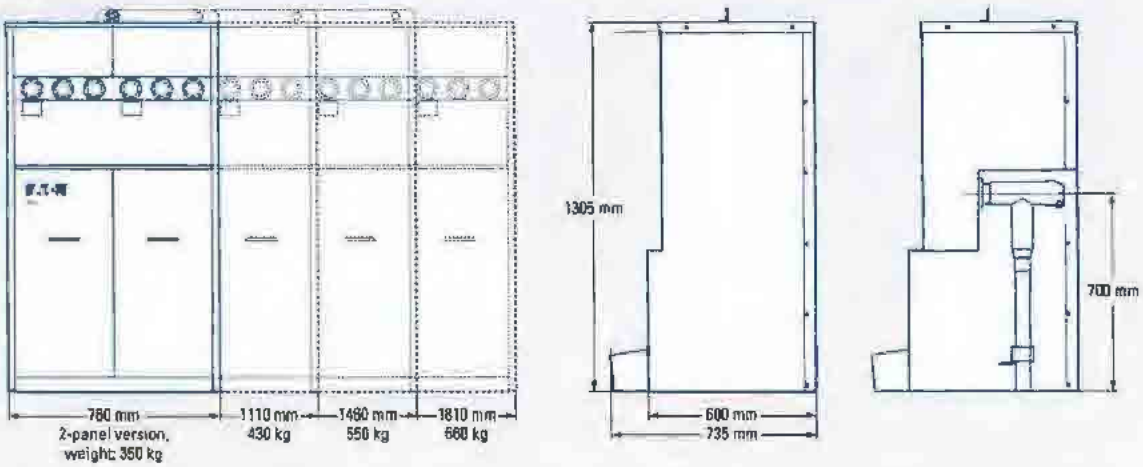

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KEMA

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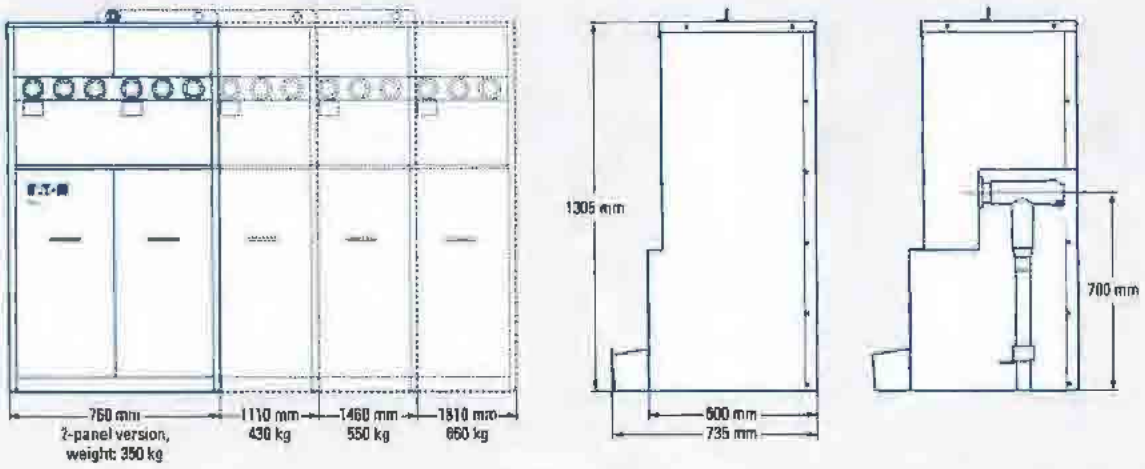

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Partition Class	PM
Internal arc	IAC AF 20 kA-1 s

KEMA

Technical data

Magnefix type		MD4			ME			
Rated values								
Voltage	kV	3.6	7.2	12	3.6	7.2	12	15
Impulse withstand voltage	kV	40/46	60/70	75/85	40/46	60/70	75/85	95/110
Power frequency withstand voltage	kV	10/12	20/23	28/32	10/12	20/23	28/32	38/45
Frequency	Hz	50-60	50-60	50-60	50-60	50-60	50-60	50-60
Busbar system								
Normal current	A	400	400	400	630	630	630	630
Short-time withstand current 1 s.	kA	14.4	14.4	14.4	20	20	20	20
Peak withstand current	kA	31	31	31	50	50	50	50
Switch-disconnector								
Normal current	A	400	400	400	450	450	450	450
Mainly active load breaking current	A	400	400	400	450	450	450	450
Short-circuit making current peak value	kA	31	31	31	50	50	50	50
Short-time withstand current 1 s.	kA	14.4	14.4	14.4	20	20	20	20
Earth fault breaking current	A	240	240	240	240	240	240	240
Cable charging breaking current	A	25	25	25	25	25	25	25
Circuit-breaker								
Normal current	A	400	400	400	-	-	-	-
Short-time withstand current 1 s.	kA	14.4	14.4	14.4	-	-	-	-
Short-circuit breaking current peak value	kA	14.4	14.4	14.4	-	-	-	-
DC component	%	20	20	20	-	-	-	-
Making current	A	-	-	-	-	-	-	-
Fuse-links								
Normal current	A	57.7	57.7	57.7	57.7	57.7	57.7	57.7

33

Ring Main Unit Switchgear,

10 Result(s)

FILTERS

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- Company by Name (0)
- Executives and contacts (0)

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- From 10 to 19 (22)
- From 20 to 49 (53)
- From 50 to 99 (26)
- From 100 to 249 (29)
- From 250 to 499 (11)
- From 500 to 999 (8)
- From 1000 to 4999 (12)
- More than 5000 (12)

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(/c/easysat-comunicaciones-s-l/es1212835/)

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Torrejón de Ardoz, Spain

DISTREL EC SCHUBICHT GMBH (/C/DISTREL EC-...

(/c/distrelec-schuricht-gmbh/de601018/) **Switchgear**, domestic ... **Switchgear**, industrial ... Telephone **switchgear** and accessories ... Gauges, differential ... (/c/distrelec-schuricht-gmbh/de601018/)

Bremen, Germany

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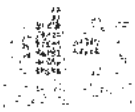
(/c/up-networks-caraibe/fr8599640/) Telephone **main** exchange enhancement systems, electronic ... Telephone **switchgear** and accessories ... Outside broadcasting... (/c/up-networks-caraibe/fr8599640/)

97229, France



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Wiki: Connection to the **MV** utility distribution network

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ABB Medium Voltage Products and Systems - ABB in Australia
www.abb**australia**.com.au/product/us/9AAC720001.aspx%7C0 ▾ ABB Ltd ▾
ABB attends to your needs for reliable **medium voltage switchgear**, apparatus and ... with safe, reliable and smart technologies for the distribution of **electricity**.

[PDF] Technology Past, Present & Future for Medium Voltage ...
https://www.engineers**australia**.org.au/.../SWGR%20S... ▾ Engineers Australia ▾
Sep 10, 2009 - ... **Switchgear**. Kazuhiro Matsuo. 2009 Lecture Program of the Joint **Electrical**. Institutions Sydney Engineers **Australia**, IEEE, IET ... **Electrical** Institutions Sydney. **Medium Voltage**; up to 84kV Vacuum **Switchgear** Application.

RPS Switchgear - where power and protection combine to ...
www.rps**switchgear**.com.au/ ▾
RPS **Switchgear** Limited have further developed and tested the "LM" **medium voltage switchgear** range to include Circuit Breakers, Motor Starters, Disconnectors and ... In addition, as an

electrical distribution specialist, RPS **Switchgear** ...

Lucy Switchgear - Adapt Australia
www.adaptaust.com.au/Suppliers/Lucy_**Switchgear**.html
Lucy **Switchgear** provides switching and protection solutions for **electrical** distribution systems. Our technology is at the cutting edge of **Medium Voltage** ...

Medium and High Voltage (MV/HV) Power Distribution ...
www.delta**electrics**.com.au/.../**medium**-and-high-**voltage**-mv-hv-power-d...
The Siemens **medium voltage** range includes air insulated **switchgear** systems for ... Commercial Builders and Developers; NT Department of Health; **Australian** ... MV switchboard along with the other **electrical** and ancillary services required.

Electrical Switchgear - Switchgear Components, Medium ...
www.upeplglobal.com/**electrical-switchgear**.html
Manufacturer and Exporter of **Electrical Switchgear**, **Switchgear** Components, Control **Switchgear** and **Medium Voltage Switchgear** offered by Universal Power ...

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GSL Electronics

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- Energy & Utilities
- Food & Beverage
- Furniture & Bedding
- Gifts & Souvenirs
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- Home Entertainment
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- Homewares
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GSL Electronics

GSL Linear Voltage Reducers
GSL Electronics

GSL Voltage Doublers
GSL Electronics

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Low Voltage Battery Isolators
GSL Electronics

Electrical Equipment
Coast Electrical Industries Pty Ltd

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- ⊞ ☐ Furniture & Bedding
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RAY PAPWORTH & CO PTY LTD

INTERNATIONAL TRADE AND LOGISTICS ADVISORS

CUSTOMS INDIRECT TAX AND GST CONSULTANTS.

GOVERNMENT ASSISTANCE AND GRANTS.

14 September 2015

The Manager

Dear Sir

Our client has instructed us to make application on their behalf to the Australian Customs Service (ACS) for grant of a Tariff Concession Order (TCO).

The proposed wording of the Tariff Concession is:

8537.20.90 Ring Main Unit Switchgear, metal enclosed and air and/ or epoxy insulated, having a rated voltage NOT less than 3.6 kV

If the concession is granted, imported goods meeting the terms of the foregoing wording will be rated free of customs duty on importation.

The legislation requires that the applicant request that your company as a potential local manufacturer advise them whether or not you manufacture in Australia substitutable goods to those for which concession is sought. The specifications of the subject goods are attached. Due to statuary time limits that apply to applications, our client would appreciate your prompt reply to the inquiry.

In the event that your company claims to manufacture in the ordinary course of business in Australia, products that are capable of being put to a use that corresponds to the subject goods, please include with your reply details of the range price availability, technical specifications and product brochures of your company's manufacture for our client's evaluation.

Should you require further information or clarification of any matter contained in our letter please contact us on ph s47F, fax (02) 9572 7500 or by email at s47F @alwaysonline.net.au.

Yours faithfully,
Ray Papworth & Co Pty Ltd

s47F

Encl

ABN 21 084 534 716
13 Arlington Street DULWICH HILL 2203
Telephone: s47F Fax: +61 2 9572 7500 Mobile: s47F Email: s47F @lawaysonline.net.au

DISTRIBUTION LIST

1: Electrical Switchgear Services

6/7 Apprentice Dr Berkeley Vale NSW 2261

2 : ABB
Bapaume Road
Moorebank
2170
New South Wales
Australia

3: SCHNEIDER ELECTRIC (AUSTRALIA) PTY LTD

78 Waterloo Road
MACQUARIE PARK, NSW
Australia 2113

4: Siemens Australia
885 Mountain Highway
Bayswater, Victoria 3153
Australia

5: GE INDUSTRIAL SYSTEMS
125-127 Long St
Smithfield Nsw 2164 NSW
Australia

6:NHP Electrical Engineering
30-34 Day Street North
Silverwater, New South Wales 2128

7: Clipsal Switchgear Pty Ltd

1 Clipsal Rd
Murray Bridge SA
Australia 5253

Australian Government
Australian Customs and Border Protection Service

TAPIN

Tariff Advice Application Number 20868400

Tariff Advice Details:

Previous Tariff Advice Number	0
Status	FINALISED
Changed Status	
Type	TARIFF CONCESSION ORDER ADVICE
State	VIC
Confidential	NO
Input Date	05 DEC 2013

Company and Contact Details:

Importer	EATON INDUSTRIES PTY LTD		
Importer ABN / CAC	66103014571	**CCID**	
Supplier	EATON ELECTRIC BV		
Supplier ABN / CAC		**CCID**	CCN9469747Y
Applicant	RAY PAPWORTH & CO. PTY. LTD.		
Applicant ABN / CAC	21084534716	**CCID**	
Applicant Contact Name	s47F		
Applicant Phone	s47F	**Fax**	0297527500
Applicant Reference			
Broker Box No			

Goods Details:

Goods Description	Xiria series are Ring Main Units being Metal-enclosed Single Busbar, Solid- and Air-insulated Switchgear, up to 24 kV containing Vacuum circuit breakers,load break switch disconnectors, 3 phase alternating current vacuum interrupters,and earth selector switch, for the protection of electrical circuits in electrical distribution.
Claimed Tariff Classification	8535.21.00
Claimed Instrument	0304371
Claimed Schedule 4 Item	50
Claimed Reasons	HEADING 8535 ELECTRICAL APPARATUS FOR SWITCHING OR PROTECTING ELECTRICAL CIRCUITS, OR FOR MAKING CONNECTIONS TO OR IN ELECTRICAL CIRCUITS (FOR EXAMPLE, SWITCHES, FUSES, LIGHTNING ARRESTERS, VOLTAGE LIMITERS, SURGE SUPPRESSORS, PLUGS AND OTHER CONNECTORS, JUNCTION BOXES), FOR A VOLTAGE EXCEEDING 1 000 VOLTS: Sub headings 85.35 8535.10.00 Fuses : 8535.2 | Automatic circuit breakers

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TAPIN

Tariff Advice Application Number 20868400

8535.21.00 26 No | For a voltage of less than 72.5 kV 3

8537 BOARDS, PANELS, CONSOLES, DESKS, CABINETS AND OTHER BASES, EQUIPPED WITH TWO OR MORE APPARATUS OF 8535 OR 8536, FOR ELECTRIC CONTROL OR THE DISTRIBUTION OF ELECTRICITY, INCLUDING THOSE INCORPORATING INSTRUMENTS OR APPARATUS OF CHAPTER 90, AND NUMERICAL CONTROL APPARATUS, OTHER THAN SWITCHING APPARATUS OF 8517:

Sub headings 85.37

8537.10: For a voltage not exceeding 1 000 V:

8537.10.90 (19) No Other

Tariff concession order goods that a tariff concession order, under Part XVA of the Customs Act 1901, declares are goods to which this item applies

RING MAIN UNITS, metal housing, voltage rating of 12 kV or 24 kV

comprising ALL of the following:

(a) circuit breaker,

(b) load break switch disconnector,

(c) 3 phase alternating current vacuum interrupters containing

no SF6 gas;

(d) earth selector switch

Op. 16.04.03 Dec. date 11.07.03 - TC 0304371

Lodgement Details:

Lodge Date	17 JAN 2014		
Sample Provided	NO		
Illustrative Descriptive Material	YES		
Additional Info Requested	NO	**Requested on**	
Additional Info Received	NO	**Received on**	

Acquittal Details:

Acquit Date	21 JAN 2014
Given Tariff Classification	8537.20.90
Given Instrument	
Given Schedule 4 Item	
Given Reasons	Detailed description of goods The Xiria switchgear system is a Ring Main Unit for switching application in 12 kV and 24 kV distribution networks. It comprises metal-clad switchgear with a cabinet-like metal enclosure suitable for indoor installations. The Xiria switchgear Ring Main Unit contains the following:

Australian Government
Australian Customs and Border Protection Service

TAPIN

Tariff Advice Application Number 20868400

- vacuum circuit breakers
- load break switch disconnector
- 3 phase alternating current vacuum interrupters containing no SF6 gas
- earth selector switch

Identification of goods

The Xiria Ring Main Unit is an air insulated switchgear having a voltage rated 12 kV or 24 kV. Goods are deemed to be a cabinet equipped with two or more apparatus of 8535, being circuit breakers and switches

Headings considered

8535 - "electrical apparatus for switching or protecting electrical circuits, or for making connection to or in electrical circuits ...)"

8537 - "boards, panels, consoles, desks, cabinets and other bases, equipped with two or more apparatus of 8535 or 8536 ...)"

Headings rejected

8535 Exc Ir1 as goods are a cabinet containing switches and circuit breakers. HSEN 85.35 provides guidance

Appropriate heading and reasons why

8537 - Inc IR1 TOH as more than one item of 8535 is combined in a cabinet. HSEN 85.35 provides guidance

Appropriate sub-heading and reason why

8537.20.90 Inc. IR1 and IR6 as per TOSH as goods are not programmable controllers

TARIFF CONCESSION ELIGIBILTY:

TC 0304371 - RING MAIN UNITS, metal housing, voltage rating of 12 kV or 24 kV comprising AL of the following:

(a) circuit breaker

(b) load break switch disconnector

(c) 3 phase alternating current vacuum interrupters containing no SF6 gas

(d) earth selector switch

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Australian Customs and Border Protection Service

TAPIN

Tariff Advice Application Number 20868400

A TC is applicable if:

- the imported goods are classified to the same tariff classification as that to which the TC is keyed; and

- the imported goods fall within the description of goods specified in the TC

TC 0304371 does not apply because it is keyed to a different Tariff Classification heading

This decision only applies to goods as detailed in this application from the supplier nominated in this application and imported by the owner nominated in this application. This decision is valid in all Australian ports for five (5) years from the date of this decision

This tariff advice indicates the classification of the goods described and only applies if those goods are imported as one shipment. Should the goods not be imported as a whole or in the

configuration described then this Tariff Advice does not apply. Goods, which are sub assemblies, parts or components of the goods described, are to be separately classified when they are separately imported.

Decision Officer Name	s22(1)(a)(ii)
Decision Officer Phone	1800 053 016
Registry File Number	
Multiple Classification	NO
Rejection Reason	

s22(1)(a)(ii)

From: s22(1)(a)(ii)
Sent: Friday, 25 September 2015 2:06 PM
To: s47F @alwaysonline.net.au'
Subject: RE: TCO application Ring main unit switchgear- Eaton Industries Pty Ltd. [SEC=UNCLASSIFIED]

Good Afternoon s47F

We have received your TCO Application on behalf of Eaton Industries Pty Ltd

The receipt date is today the 25th of September 2015 and the TCO Number is 15/36373

Regards
s22(1)(a)(ii)
Tariff Concessions Officer
Industry Assistance Section
Trade Branch, Trade Customs and Industry Policy Division Policy Group
Department of Immigration and Border Protection Level 4 Orange Building
5 Chan Street Belconnen Act 2617 Ph s22(1)(a)(ii) Fax 02 6198 7203
Email: s22(1)(a)(ii) @border.gov.au

From: s47F @alwaysonline.net.au]
Sent: Friday, 25 September 2015 12:24 PM
To: TARCON
Subject: TCO application Ring main unit switchgear- Eaton Industries Pty Ltd.

Please find attached a TCO application lodged with Dept of Immigration and Border Protection (DIBP) on behalf of our client Eaton Industries Pty Ltd.
The application seeks grant of a concession for ring main unit switchgear in terms of item 50 Schedule 4 Customs Tariff Act 1995
The completed application is lodged with a separate zip file of the IDM for the good the subject of the application.
Extracts of our research of potential local manufacturers and copies of our correspondence with those companies are also attached.
Please contact us below if the DIPB has any questions or requires further information in support of the attached application for concession.

Kind regards

s47F

Ray Papworth & Co Pty Ltd
Indirect Tax, International Trade, and Logistics Advisors
13 Arlington street
Dulwich Hill N.S.W 2203
Sydney Australia
s47F

s22(1)(a)(ii)

From: s47F @alwaysonline.net.au>
Sent: Monday, 19 October 2015 10:50
To: s22(1)(a)(ii)
Subject: RE: TCO 1536373 [SEC=UNCLASSIFIED]

s22(1)(a)
Our client Eaton advise that they have no objection to the proposed Department of Immigration and Border Protection changes(below) to the wording for TC application 1536373.
Please contact me if you have any further questions

Kind regards

s47F

Ray Papworth & Co Pty Ltd
Indirect Tax, International Trade, and Logistics Advisors
Arlington street
Dulwich Hill N.S.W 2203
Sydney Australia
s47F

From: s22(1)(a)(ii) @border.gov.au]
Sent: Friday, October 16, 2015 5:13 PM
To: s47F @alwaysonline.net.au' s47F @alwaysonline.net.au>
Subject: TCO 1536373 [SEC=UNCLASSIFIED]

Refer to your Tariff Concession Order (TCO) application 1536373. Please find below the proposed Tariff Concession Order (TCO) wording changes as follows:

SWITCHGEAR, RING MAIN UNIT, metal enclosed, air AND/OR epoxy insulated, having a rated voltage NOT less than 3.6 kV
Op. 25.09.15 - TC 1536373

Stated Use:
To provide safe, reliable switching and fault protection for transformer stations and switching points in voltage distribution networks

Could you please let me know if you agree or disagree with the above proposed TCO wording changes.

If you have any enquiries please contact me on telephone number 02 6198 7826.

Kind regards,

s22(1)(a)(ii)

Trade Analyst Industry Assistance | Traveller, Customs and Industry Policy Division | Department of Immigration and Border Protection
Tel. No. s22(1)(a)(ii) | Fax No. 02 6198 7203 | * Email s22(1)(a)(ii) @border.gov.au

Australian Government
Department of Immigration and Border Protection

Quote: TC 1536373
Your Ref: Xiria Magnefix

21 October 2015

s47F
RAY PAPWORTH & CO PTY LTD
13 ARLINGTON ST
DULWICH HILL NSW 2203

Dear s47F,

TARIFF CONCESSION SYSTEM
APPLICATION ACCEPTANCE

Your application for Tariff Concession Order (TCO) Number TC 1536373 has been accepted as a valid application. The application will be published in Gazette Number TC15/42 of 28 October 2015. Details of the gazette notice are shown in the attachment.

Please examine the wording of the gazette notice and advise Industry Assistance Section immediately if the wording does not accurately describe the goods for which a TCO has been sought. This is a verification of agreed wording not an opportunity to further amend.

If you require any further information please contact s22(1)(a)(ii) on s22(1)(a)(ii) or email s22(1)(a)(ii) @border.gov.au

Yours sincerely,

s22(1)(a)(ii)

Delegate of the Comptroller-General of Customs

Description of Goods including the Customs Tariff Classification		Schedule 4 Item Number
8537.20.90	SWITCHGEAR, RING MAIN UNIT, metal enclosed, air AND/OR epoxy insulated, having a rated voltage NOT less than 3.6 kV Op. 25.09.15 - TC 1536373 Stated Use: To provide safe, reliable switching and fault protection for transformer stations and switching points in voltage distribution networks Applicant: EATON INDUSTRIES PTY LTD	50

Australian Government
Department of Immigration and Border Protection

21 October 2015

Manager
NOJA Power Switchgear
16 Archimedes Pl
Murarrie Qld 4172

Dear Sir/Madam,

TARIFF CONCESSION SYSTEM

NOTIFICATION OF APPLICATION

An application has been made for a Tariff Concession Order (TCO) as described in the attachment.

The Tariff Concession System allows for a concessional rate of Customs duty where it can be established that on the day on which the application was lodged, no substitutable goods were produced in Australia in the ordinary course of business.

To allow for comments by local manufacturers, all applications for Tariff Concession Orders are published in the Commonwealth Gazette. In this instance, the Department of Immigration and Border Protection (DIBP) is bringing to your attention Gazette No. TC 15/42 *on 28 October 2015,* in which a description of the goods in the attachment will be published.

In accordance with section 269M of the *Customs Act 1901* you are invited to lodge a submission objecting to the making of this TCO if you consider that you have any reasons to oppose the making of the TCO.

Objections to Tariff Concession Orders by local manufacturers must be submitted on an approved form. As required by legislation, your submission must be lodged with DIBP in accordance with the methods of lodgement specified on the approved form no later than 15 December 2015.

If you have any enquiries please contact me on telephone number s22(1)(a)(ii).

Yours sincerely
s22(1)(a)(ii)

Delegate of the Comptroller General of Customs

99

Australian Government

Department of Immigration and Border Protection

Reply to Comptroller General of Customs

Quote: TC 1536373
Your Ref: Xiria Magnefix

Department of Immigration & Border Protection
PO Box 25
Belconnen ACT 2616
Ph: (02) s22(1)(a)(ii)
Fax: (02) 6198 7203
Email: tarcon@border.gov.au

21 December 2015

s47F
RAY PAPWORTH & CO. PTY. LTD.
13 ARLINGTON ST
DULWICH HILL NSW 2203

Dear s47F,

TARIFF CONCESSION SYSTEM
APPLICATION SUCCESSFUL

I refer to your application for Tariff Concession Order (TCO) Number TC 1536373 lodged on 25 September 2015.

As a delegate of Comptroller-General of Customs I am satisfied that the application meets the core criteria on the basis of section 269C of the *Customs Act 1901* and have accordingly made a written Tariff Concession Order.

The decision to make a TCO will be published in Gazette Number TC15/50 of 23 December 2015.

The TCO, as detailed in the attachment, will also be published in the Schedule of Concessional Instruments as soon as possible.

Yours sincerely,

s22(1)(a)(ii)

Delegate of the Comptroller-General of Customs

Description of the Particular goods including the applicable subheading of the Customs Tariff	Schedule 4 Item Last day of effect
8537.20.90 SWITCHGEAR, RING MAIN UNIT, metal enclosed, air AND/OR epoxy insulated, having a rated voltage NOT less than 3.6 kV Op. 25.09.15 Dec. date 21.12.15 - TC 1536373	50