

## CONNECTING TECHNOLOGY FOR FLEXIBLE ALUMINUM CABLES



In partnership with



**amokabel**



# Connecting Solutions

## A young dynamic company

Founded in 1981, MECATRACTION quickly grew both in the domestic and export markets. We are based in Pompadour, France, in premises of more than 9000 m<sup>2</sup>. MECATRACTION designs, develops and produces a complete range of components for industrial electrical connections. Our subsidiary CEGERS TOOLS adds an extensive range of tools and accessories.

## MECATRACTION is a subsidiary of the SICAME Group

The SICAME Group is specialized in accessories for the transport and the transmission of electrical power.



## Your best partner in the high-tech sector

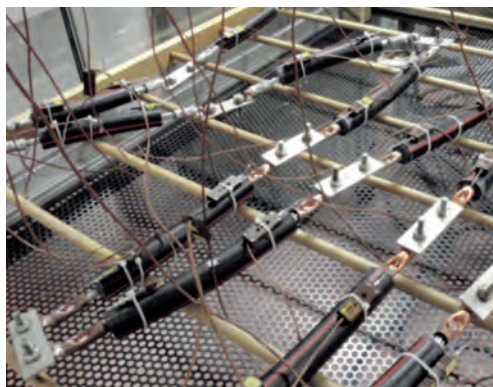
MECATRACTION has forged a position for itself in many sectors of industry that demand know-how, precision and efficiency through the quality of our products and our capacity for innovation. These sectors include the rail, automotive, aeronautic, space, nuclear, renewable energies, shipbuilding and defence industries.

## High means of production

The manufacturing of components for electrical connections requires a production apparatus both modern and extremely flexible.

## Research & Development

Our Research & Development department is composed of multi-disciplinary teams who combine creativity and reactivity. Our knowledge of the requirements of various fields of activity such as railway, aeronautics, automotive or renewable energies enables us to offer original and strong solutions allowing to anticipate. Our research teams can rely on the capacity of our laboratory to investigate new technical solutions helping us in anticipating the needs of our customers. Thus, our connections meet the permanent evolutions of the conductors in the most severe applications.



## A crimping specialist

MECATRACTION has acquired a great experience in crimping techniques in order to obtain connections of high characteristics thanks to different associations.



# APPROVED CERTIFICATES

MECATRACTION has obtained the certificate of authorization for a connecting system using DBI lugs established on 2018-04-24.

**DNV GL**

**TYPE APPROVAL CERTIFICATE**

Certificate No:  
**TAE00002GJ**  
Revision No:  
**1**

**This is to certify:**  
**That the Termination and Joint for Cable**

with type designation(s)  
**DBI 95 - Studhole M8/M10/M12/M14 and M16 Termination for aluminum power cable,  
DBI 120 - Studhole M8/M10/M12/M14 and M16 Termination for aluminum power cable,  
DBI 150 - Studhole M10/M12/M14 and M16 Termination for aluminum power cable**

Issued to  
**amo specialkabel AB  
ALSTERMO, Sweden**

is found to comply with  
**DNV GL rules for classification – Ships, offshore units, and high speed and light craft**

**Application :**  
**Special terminations for Aluminum power cables.**

**Products approved by this certificate are accepted for installation on all vessel DNV GL.**

Issued at **Høvik** on **2018-05-30**

This Certificate is valid until **2023-05-29**.  
DNV GL local station: **Malmö**

Approval Engineer: **Ivar Bull**

for **DNV GL**  
Digitally Signed By: **Andreas Kristoffe**  
Location: **DNV GL Høvik, Norway**  
**Andreas Kristoffe**  
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render the validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

Form code: TA 251      Revision: 2016-12      www.dnvgl.com  
© DNV GL 2014. DNV GL and the Horizon Graphic are trademarks of DNV GL.



**DNVGL.COM/AF**

IEC 61238- 1 class A tested

Job Id: **262.1-027056-1**  
Certificate No: **TAE00002GJ**  
Revision No: **1**

**Name and place of manufacturer**  
DNVGL Id: 10604393

**Product description**  
Cable lugs made of tinned copper specially designed for use with aluminium conductors.  
Lugs contain a grid and are supplied with contact grease.

Approval covers cross sections 95mm<sup>2</sup>, 120mm<sup>2</sup> and 150mm<sup>2</sup>.

**Application/Limitation**  
Cable lugs approved for cables AMOKABEL TEXIIline Power ALUFLEX or Power EMC ALUFLEX or Power EMC VFD ALUFLEX with aluminium conductors, ref. DNV GL TA certificates TAE00002V2 and TAE00002GK.

Terminations to be installed according to manufacturers instructions.  
Press to be performed with approved press tool and correct die size.  
Heat shrink tubing with melt glue shall cover cable sheath and pressed termination to prevent ingress of moisture.

**Type Approval documentation**  
Data sheet.  
Test reports: Mecatraction report RQ 1437752 Rev B. dated September 25 - 2015  
Mecatraction report RQ 1537850 Rev A. dated September 13 - 2017

**Tests carried out**

	Release	General description	Limitation
DNVGL-CP-0409	2017-10	Terminal lugs for LV power cables with aluminum conductors	
IEC 61238-1	2003-05	Compression and mechanical connectors for power cables for rated voltages up to 30kV (Um=36kV). Part 1: Test methods and requirements	Short circuit test Class A
DNVGL-CG-0339	2016-11	Environmental test specification for electrical, electronic and programmable equipment and systems	Relevant part as per CP-0409 table 1

**Marking of product**  
Type designation and cross sectional area.  
Die size to be embossed on lug during press.

**Periodical assessment**  
The scope of the periodical assessment is to verify that the conditions stipulated for the Type approval are complied with and that no alterations are made to the product design or choice of materials.

The main elements of the assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Routine Tests (RT) checked (if not available tests according to RT shall be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensuring traceability between manufacturer's product type marking and Type Approval Certificate.

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate. END OF CERTIFICATE

Form code: TA 251      Revision: 2016-12      www.dnvgl.com      Page 2 of 2

DNV GL is a global quality assurance and risk management company. DNV GL provides classification, technical assurance, software and independent expert advisory services to the maritime, oil & gas, power and renewables industries. DNV GL also provide certification.

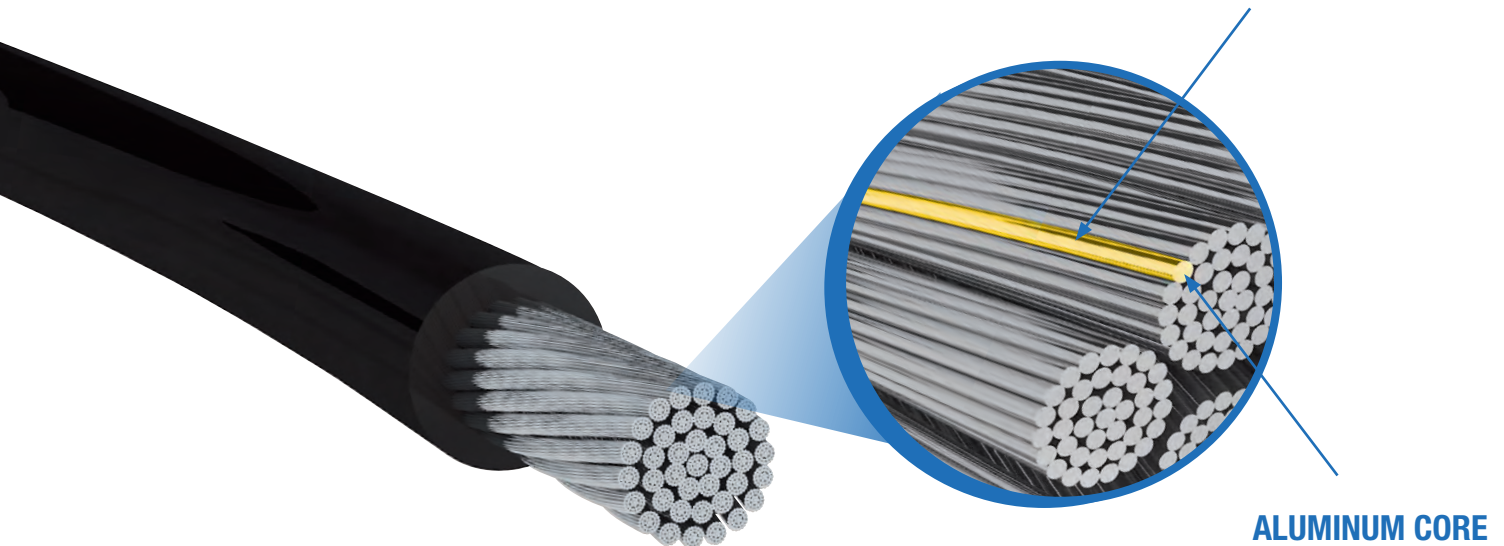


# THE SPECIFICITY OF FLEXIBLE CABLES IN ALUMINUM

The crimping of aluminum cables is made difficult by the very rapid formation of an insulating oxide layer around each strand of the cable that does not allow good conductivity.

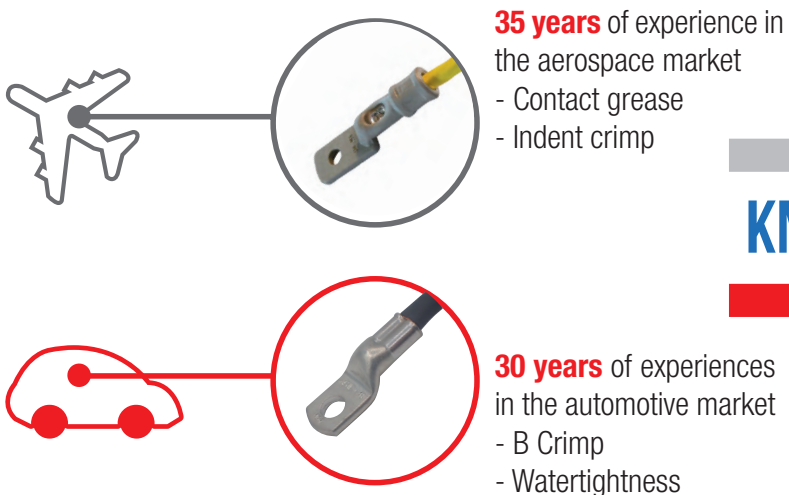
Oxide thickness: 1-10  $\mu\text{m}$   
Oxide formation time: <1s

NATURAL ALUMINUM  
OXIDE LAYER



It is therefore necessary to break this layer of oxide to allow reliable electrical contact.

## CRIMPING KNOW-HOW



KNOW-HOW

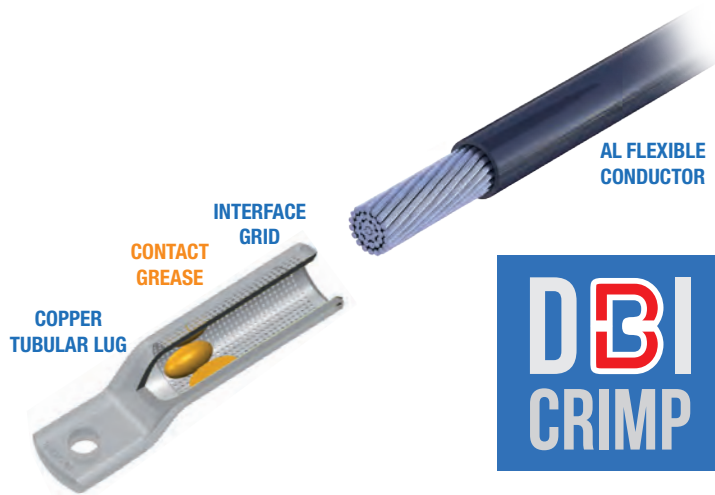


# A PATENTED SOLUTION

The DBI solution combines a special « DBI terminal » associated to an innovative « DBI crimp »:

« DBI Terminal »: a copper tubular lug equipped with an interface grid and contact grease.

« DBI crimp »: includes a deep indent shape and two B shapes (one on each side), acting in single crimping step.



« DBI crimp » creates elongation of the conductor inducing a high deformation of the strands.

« DBI crimp » breaks alumina layer and creates a reliable electrical contact with durability ensured by the grease.



## CONVENTIONAL CRIMPING PROCESS

1



Stripping

2



Single crimp operation

3



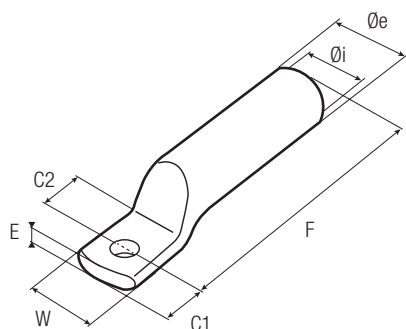
Heatshrink protection






Scan to see the video presentation of DBI

SICAME GROUP

# DBI TERMINAL RANGE



 mm²	Item code	Part No.		 Ø mm	E	W	Øi	Øe	C1	C2	F
95	7350840	<b>DBI95-8</b>	15	8	4.3	24.5	15.9	20.8	13.0	18.0	84.0
	7350850	<b>DBI95-10</b>	15	10	4.3	24.5	15.9	20.8	13.0	18.0	84.0
	7350860	<b>DBI95-12</b>	15	12	4.3	24.5	15.9	20.8	13.0	18.0	84.0
120	7350890	<b>DBI120-8</b>	15	8	5.2	24.5	17.6	22.8	13.0	18.0	86.0
	7350900	<b>DBI120-10</b>	15	10	5.2	24.5	17.6	22.8	13.0	18.0	86.0
	7350910	<b>DBI120-12</b>	15	12	5.2	24.5	17.6	22.8	13.0	18.0	86.0
150	7350940	<b>DBI150-8</b>	10	8	5.8	29.0	21.3	27.2	13.0	18.0	102.0
	7350950	<b>DBI150-10</b>	10	10	5.8	29.0	21.3	27.2	13.0	18.0	102.0
	7350960	<b>DBI150-12</b>	10	12	5.8	29.0	21.3	27.2	13.0	18.0	102.0
	7350970	<b>DBI150-14</b>	10	14	5.8	29.0	21.3	27.2	15.5	20.5	104.5
	7350980	<b>DBI150-16</b>	10	16	5.8	29.0	21.3	27.2	15.5	20.5	104.5

# HEAT SHRINK TUBING


Suitable for DBI 95, 120 and 150 terminals.

Item code	Part No.		L	Øi
7469350	<b>GTMA40-12BKL130</b>	10	130	40



# CRIMPING DIES SET

Compatible with SH450J hydraulic compression head.

Item code	Part No.		TERMINAL TYPE
7510629	<b>H45DBI95-520</b>	1	<b>DBI95</b>
7510630	<b>H45DBI120-585</b>	1	<b>DBI120</b>
7510631	<b>H45DBI150-715</b>	1	<b>DBI150</b>



Nominal cross section  
in Aluminum core nominal  
cross section



Stud hole diameter



Packaging

Unless otherwise stated, all dimensions are in millimeters

# CRIMPING TOOLING

## Hydraulic compression head

Single action.

- Output force: 540 kN under 850 bar
- Size: 260 x 135 x 115 mm
- Weight: 9.8 kg



Item  
code

7515045

Part  
No.

SH450J

## Metallic carry case

For 1 crimping head  
and up to 4 diesets



Item  
code

7515047

Part  
No.

CMSH450

## SH450 connectable hydraulic compression head kit

Kit composition:

- Hydraulic compression head PN : SH450J
- Metallic carry case PN : CMSH450

Item  
code

7515046

Part  
No.

SH450JCM



## Electro-hydraulic pump

Single action. Wire remote control. Operating energy : Li-Ion battery  
or 110-230 VAC adapter EU plug (included).

- Nominal output pressure : 850 bar
- Size: h285 x 255 x 185 mm
- Flow rate : 0.7-1 L/minute
- Weight: 6.5 kg
- Oil tank: 0.65 L



Item  
code

7515120

Part  
No.

SVEPT20-520J

## Metallic carry case



Item  
code

7515026

Part  
No.

CMSPT20

## Hydraulic hose with push-pull couplers CEJN115



Item  
code

7510210

Part  
No.

SF30J

## SVEPT20-520 portable and compact electro-hydraulic pump kit

Kit composition:

- Electro-hydraulic pump PN : SVEPT20-520J
- Metallic carry case PN : CMSPT20
- Hydraulic hose PN : SF30J

Item  
code

7515121

Part  
No.

SVEPT20-520JCM



Nominal cross section  
in Aluminum core nominal  
cross section



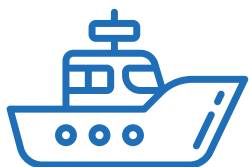
Stud hole diameter



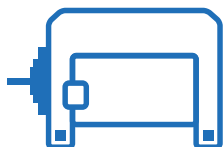
Packaging

Unless otherwise stated, all dimensions are in millimeters

# APPLICATIONS



OFFSHORE VESSEL SUPPORT



PROPULSION SYSTEM

## DBI TECHNOLOGY IS PRESENT ON ENERGY OBSERVER

[www.energy-observer.org](http://www.energy-observer.org)



MECATRACTION

ZA Les Hauts de Chignac - 19230 POMPADOUR - FRANCE

Phone : +33 (0)5 55 73 89 89 - Fax : +33 (0)5 55 73 32 21 - Email : [info@mecatraction.com](mailto:info@mecatraction.com)

[www.mecatraction.com](http://www.mecatraction.com)



SICAME GROUP