



Mining And Surface Certification (Pty) Ltd

2015/021934/07



Certificate Number: MASC M/11-123X

Issue: 9 October 2017

Expire: 9 October 2020

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IA – CERTIFICATE

(Annual review required by MASC covered by an additional letter)
(Revision 2- Update & Review)

IN TERMS OF REGULATION 21.17.2 OF THE MINERALS ACT (INCORPORATION THE MINE HEALTH AND SAFETY ACT) AND REGULATION 9 (1) OF THE ELECTRICAL MACHINERY REGULATIONS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT

Ex – Type Examination

Certificate number:

Equipment:

Serial No:

Applicant:

Address:

MASC M/11-123X

Solenoids / Coils Type A (CT500131), Type B (CT500130),
Type C (CT500166) and Type D (CT500167)

(See "Conditions of Certification")

NAUTITECH MINING SYSTEMS PTY LTD

Unit 3/9 Parkard Avenue

Castle Hill

2154

NSW

Australia

Manufacturer:

Address:

NAUTITECH MINING SYSTEMS PTY LTD

Unit 3/9 Parkard Avenue

Castle Hill

2154

NSW

Australia

DESCRIPTION:

Type A: Heui pump solenoid coil (CT500131) and heatsink assembly

Description

The Nautitech Type A Heui pump solenoid coil is for use with Caterpillar C7 engines and other equivalent engines. It is part of an electronic fuel injection system for diesel engines that allows the engine to operate more efficiently and with reduced noise, emissions and fuel consumption. The system is suitable for operation of the engine in Group I/IIB Zone 1.

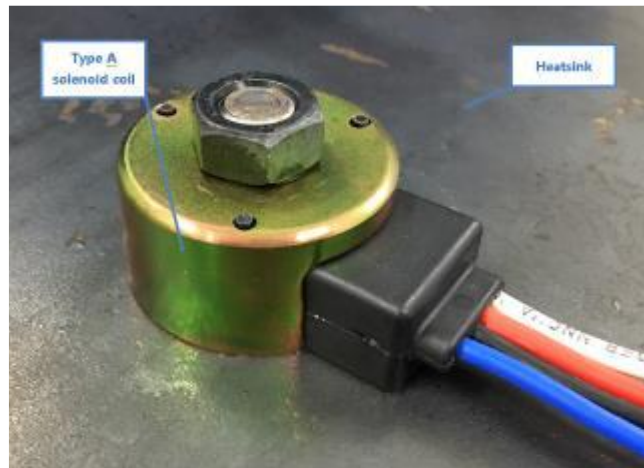
/ . Type B...

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Solenoids / Coils Type A (CT500131), Type B (CT500130),
Type C (CT500166) and Type D (CT500167)
(Revision 2- Update & Review)

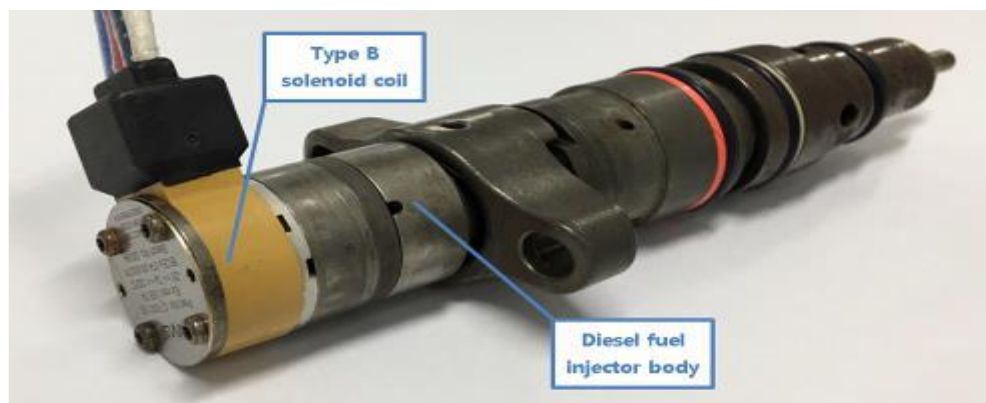
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Type B injector solenoid coil (CT500130) and injector body assembly

Description

The Nautitech Type B injector solenoid coil is for use with the diesel fuel injectors of Caterpillar C7 engines and other equivalent engines. It is part of an electronic fuel injection system for diesel engines that allows the engine to operate more efficiently and with reduced noise, emissions and fuel consumption. The system is suitable for operation of the engine in Group I/IIB Zone 1.



Type C injector solenoid coil (CT500166) and injector body assembly

Description

The Nautitech Type C injector solenoid coil is for use with the diesel fuel injectors of Cummins QSB engines and other equivalent engines. It is part of an electronic fuel injection system for diesel engines that allows the engine to operate more efficiently and with reduced noise, emissions and fuel consumption. The system is suitable for operation of the engine in Group I Zone 1.

/.Type D...

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Type C (CT500166) and Type D (CT500167)
(Revision 2- Update & Review)

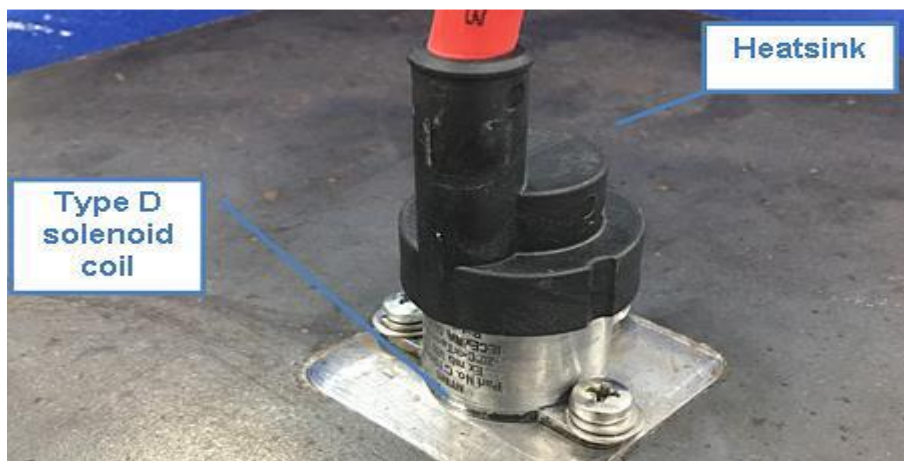
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Type D fuel pressure regulator solenoid coil (CT500167) and heatsink assembly

Description

The Nautitech Type D fuel pressure regulator solenoid coil is for use with Cummins QSB engines and other equivalent engines. It is part of an electronic fuel injection system for diesel engines that allows the engine to operate more efficiently and with reduced noise, emissions and fuel consumption. The system is suitable for operation of the engine in Group I Zone 1



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Details of Certificate changes:

The Type E (CT500168) Has been removed from this issue of the certificate.

The type C and Type D coils have been extensively tested for operation at higher power levels. This testing was performed on blocks of steel that simulated the engine block. This has then translated into a higher assigned power level and ambient for the Type C and D coils.
In this certificate issue, Type C and Type D coils are now restricted to Group I only.

MARKING

TUV marking remains applicable.

The following MASC Certificate number (IA number) should be additionally applied to the unit.

I.A. No: MASC M/11-123X

COMPLIANCE:

The unit / system as described above and in MASC letter 11-123 is hereby certified "Explosion Protected"

Type A: Ex mb I/IIB T4, $-20^{\circ}\text{C} \leq T_a \leq 100^{\circ}\text{C}$.

Type B, Ex mb I/IIB T4 $-20^{\circ}\text{C} \leq T_a \leq 120^{\circ}\text{C}$.

Type C, Ex mb I $0^{\circ}\text{C} \leq T_a \leq 110^{\circ}\text{C}$ and

Type D, Ex mb I $0^{\circ}\text{C} \leq T_a \leq 90^{\circ}\text{C}$

and is suitable for use in hazardous locations as stated below and as tested, assessed and inspected in accordance with the relevant requirements of SANS/IEC Standards:

The evaluation was conducted according to the requirements of:

- i. SANS 60079-0: 2007 Ed 5 "General requirements"
- ii. SANS 60079-18: 2004 Ed 2.0 "Construction, test and marking of type of protection 'm' electrical apparatus"

Location	Zone 1	Underground (incl. coal dust).
Hazard Frequency	---	Intermittent as could occur under normal operating conditions in hazardous area
Environment	Group I	Methane and coal dust
Limiting Temperature	150°C	Mining
Ambient Temperature	As above	

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The use of apparatus in hazardous locations is subject to the following provisions as applicable, which shall be adhered to:

- i) SANS 10086 requirements;
- ii) Any conditions mentioned in the above report;
- iii) Codes of Practice enforced in terms of Regulations 21.17.2 of Minerals Act, by Chief Inspector of Mines;
- iv) Any restrictions and conditions enforced by Chief Inspectors of Mines, Principal Inspector (Group I equipment) of Chief Inspector of Factories (Group II equipment);
- v) Any relevant requirements of the MHS Act or the OHS Act.

CONDITIONS OF MANUFACTURE

The TUV conditions remain applicable as follow:

1. Production units shall be visually examined as required by clause 9.1 of IEC 60079-18: 2004 (Ed 2.0)
2. It is a condition of certification that each production unit must be dielectric strength tested between the coil and the external surface area of the equipment, using 15000Vac for 1s or 1800Vac for at least 100ms, without any breakdown or arcing occurring.
3. The equipment must comply with the constructional requirements of the applicable industrial safety standard.
4. The use of the equipment to adverse service conditions are not covered by the certification and must be separately considered.

SPECIAL CONDITIONS FOR SAFE USE ("X") – (Issue 3 of certificate IECEx ITA 09.0007X)

1. The types A, B, C coils may only be used inside a suitable metallic IP54 enclosure that can withstand the relevant impact as per IEC 60079-0:2007 (Ed5). (The enclosure shall be suitable for its intended application).
2. The Type A coil is limited to a maximum input power and voltage of 1W and 250V DC respectively.
3. The Type B coil is limited to a maximum input power and voltage of 0.3W and 250V DC respectively.
4. The flying lead(s) must be terminated by means of an acceptable explosion protection technique, e.g. flameproof or increased safety. The flying leads from the coil, extending into a cable from the coil, must be installed to prevent inadvertent stress on the flying leads / insulated conductors, e.g. by means of a compression gland on the cable sheath or mechanically securing the cable by other means (should the sheath form an integral part of the IP rating / mechanical integrity at the cable entry, the 90°C cable sheath rating should be considered at the cable entry position).
5. The parts to which the equipment may be connected may not exceed the ambient temperature rating of the equipment.
6. Solenoids/Coil Type D may only be utilized in a position where it is not subject to impact or direct sunlight.

/I. The Type C...

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7. The Type C solenoids/coils are limited to a maximum input power and voltage of 4.7W and 250V DC respectively.
8. The Type D solenoid/coil is limited to a maximum input power and voltage of 17.5W and 250V DC respectively.
9. The use of the equipment to adverse service conditions are not covered by the certification and must be separately considered.

CONDITIONS OF CERTIFICATION:

1. This Certificate remains valid based on a three yearly review covered by an official MASC letter.
2. The apparatus should be additionally marked with the MASC marking details above.
3. This approval only covers the equipment as certified above and does not include any scheduled additions or variations/amendments/new issues to the certificate(s), made after the above date.
4. The equipment does not need to be re-tested when used on the conditions and with such restrictions as prescribed by TUV and in this approval.
5. The TUV certification must remain valid.
6. The extent of the requirements in the ARP 0108 (or regulations) and SANS 10108 on the certification of the equipment must remain unchanged.
7. The Ex quality assurance notification for the equipment must remain valid.



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TECHNICAL SPECIALIST

Mining And Surface Certification

This document is issued based on Mining And Surface Certification's Standard Contract terms and conditions available on request.

While every endeavour is made to ensure that a test / assessment is representative and accurately performed, and that a report is accurate in the quoted results and conclusions drawn from the test / assessment, MASC or its members/employees shall in no way be liable for any error made in carrying out the test / assessment or for any erroneous statement, whether in fact or in opinion, contained in a report issued pursuant to a test / assessment.

MASC takes no responsibility for any non-conformances, exclusions or any results / assessments not in compliance with the standards. By marking the equipment in accordance with the documentation / standard, the manufacturer attests on his own responsibility that the equipment has been constructed in accordance with the applicable requirements of the relevant standards and that the routine verifications and routine tests have been successfully completed and the product complies with the documentation and standard(s).

This document is only for use and application in South Africa. It is issued based on National interpretations and accepted practises.

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