New South Wales
Department of Mineral Resources
Accredited Assessing Authority MDA-A2508

COAL MINES REGULATION ACT, 1982
NOTICE OF APPROVAL

Approval No: MDA	**Ex ib 14079**
File Number:	**C95/0002**
Date of Issue:	**4/1/1995**

It is hereby notified that the Chief Inspector of Coal Mines, pursuant to the provisions of Clause 6 of the Coal Mines Regulation (Approval of Items) Regulation, 1984, and for the purposes of Clause 27 of the Coal Mines Regulation (Electrical - Underground Mines) Regulation, 1984, hereby approves of the apparatus listed herein as being in compliance with the requirements of, and for the purposes of the said Clause 27.

The nominated apparatus may be used in any part of a Coal or Shale Mine in New South Wales subject to compliance with the requirements of this Approval and the requirements of the Coal Mines Regulation Act, 1982, as amended.

Apparatus:	Pre Start Warning System
Type Designation:	PSW
Category (Clause 27):	Explosion Protected
Sub Category:	Intrinsically Safe

This Approval is issued to:

Name: Bramco Electronics

Address: 47 Orlando Road LAMBTON NSW 2299

It is the responsibility of the Approval holder to ensure that the above apparatus is manufactured, tested and supplied in accordance with the requirements of this approval, including the Approval Schedule.

This approval does not in any way reduce the need for manufacturers to comply with the Occupational Health and Safety Act No. 20, 1983, Section (18) Division 1 Part III.

K.J. Fisher
Coordinator, Approvals and Certification
Londonderry Occupational Safety Centre
for The Chief Inspector of Coal Mines

Minerals & Energy House, PO Box 536, St Leonards, NSW 2065, Australia
Telephone:(02)901 8888 Facsimile:(02)901 8777

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Department of Mineral Resources
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COAL MINES REGULATION ACT, 1982
APPROVAL SCHEDULE

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APPARATUS

The Pre Start Warning System Type PSW is designed to provide audible and visual indication of the imminent starting or movement of machinery . The system consists of:

a. A Power Supply Unit, located in safe area which provides operating power to the Control Unit and remote Audio/Visual Units as well as a charging DC supply to the rechargeable batteries contained in the remote Audio/Visual Units.

b. A Pre Start Warning Unit which accepts input from segregated potential-free switch or relay contacts and initiates operation of the audible/visual alarm. The Pre Start Warning Unit may be supplied in two forms as follows:

Form 1: Mounted together with the Power Supply Unit in a safe area and operated from a non-intrinsically safe supply.In this form the unit provides a segregated potential-free relay contact for interfacing to the intrinsically safe portions of the system.

Form 2: Mounted in the hazardous area remote from the Power Supply Unit and electrically connected to the intrinsically safe output. Where necessary a Driver Relay Card, located in a safe area, is utilised to allow interfacing between the Control Unit and non-intrinsically safe control circuits located in the safe area.

c. Audio/Visual Units located in the hazardous area

d. Interconnecting Cable.

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DRAWINGS

Drawing No	Title	Issue	Date
SD000100	Pre Start Warning System Schematic Form 1	D	3/1/95
SD000200	Pre Start Warning System Schematic Form 1	D	3/1/95
SD0003	Pre Start Warning PCB Block Diagram	A	23/8/93
SD000500	CPM! Enclosure Mounting Details	A	16/12/94
SD000501	CPM1 Enclosure Base Wiring Details	C	3/1/95
SD000502	CPM1 Enclosure Typical Wiring Details	-	22/4/94
1494209	Pre Start Warning Unit Model PSW Plug In Base Details	0	24/8/93
1494210	Pre Start Warning Unit Model PSW Plug In Assembly Details	0	24/8/93
A000101	Intrinsically Safe Pre Start Warning Unit Cross Sectional View	E	16/12/94
A000102	Intrinsically Safe Pre Start Warning Unit Isometric View	G	3/1/95
B000301	Schematic and Layout Bramco Modifications to Floyd Bell Inc Sounder	B	16/12/94
B000101	IS Battery	E	12/12/94
B700001	Pre Start Warning Flasher/Charger	D	9/8/94
B700002	Pre Start Warning Flasher/Charger Schematic	A	4/4/94
B7000A.BOM	Bill of Materials Pre Start Warning Flasher/Charger PCB	-	8/8/94
B000201	LED Flasher	A	19/4/94
B702400	Power Supply Card Schematic	-	5/4/94
B702401	Power Supply Card PCB Detail	A	8/8/94
B7024A.BOM	Bill of Materials Power Supply Card (PSC)	-	2/9/94
B702500	Driver Relay Card Schematic (PSW)	A	5/4/94
B702501	Driver Relay Card PCB Detail	A	8/8/94
B7025A.BOM	Bill of Materials Driver Relay Card (PSW)	-	11/8/94
B702600	Pre Start Warning PCB Schematic	-	5/4/94
B702601	Pre Start Warning Card PCB Detail	A	9/8/94
B7026A.BOM	Bill of Materials Pre Start Warning PCB	-	11/8/94
T001000	Transformer Printed Circuit Board - Mounted Details	0	2/4/94

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Date of Issue:	**4/1/1995**

APPROVAL CONDITIONS
This Approval is issued subject to the following conditions:

1. The Approval holder shall ensure that the nominated apparatus is supplied in accordance with the requirements of the Occupational Health and Safety Act No. 20, 1983, Section (18) Division 1, Part III.

2. A copy of the relevant Approval documents, as well as written Certification that the apparatus supplied is in accordance with the Approval requirements, shall be provided with each item supplied to a Coal or Shale Mine in New South Wales.

3. There shall be no variation in the materials, design or construction of the apparatus as defined in the Drawings nominated above without the prior approval of the Chief Inspector of Coal Mines.

4. Any repair to the apparatus that may affect its explosion protected properties shall be carried out only at a workshop registered for the purpose. Unauthorised alterations, substitutions or repairs will render this Approval null and void.

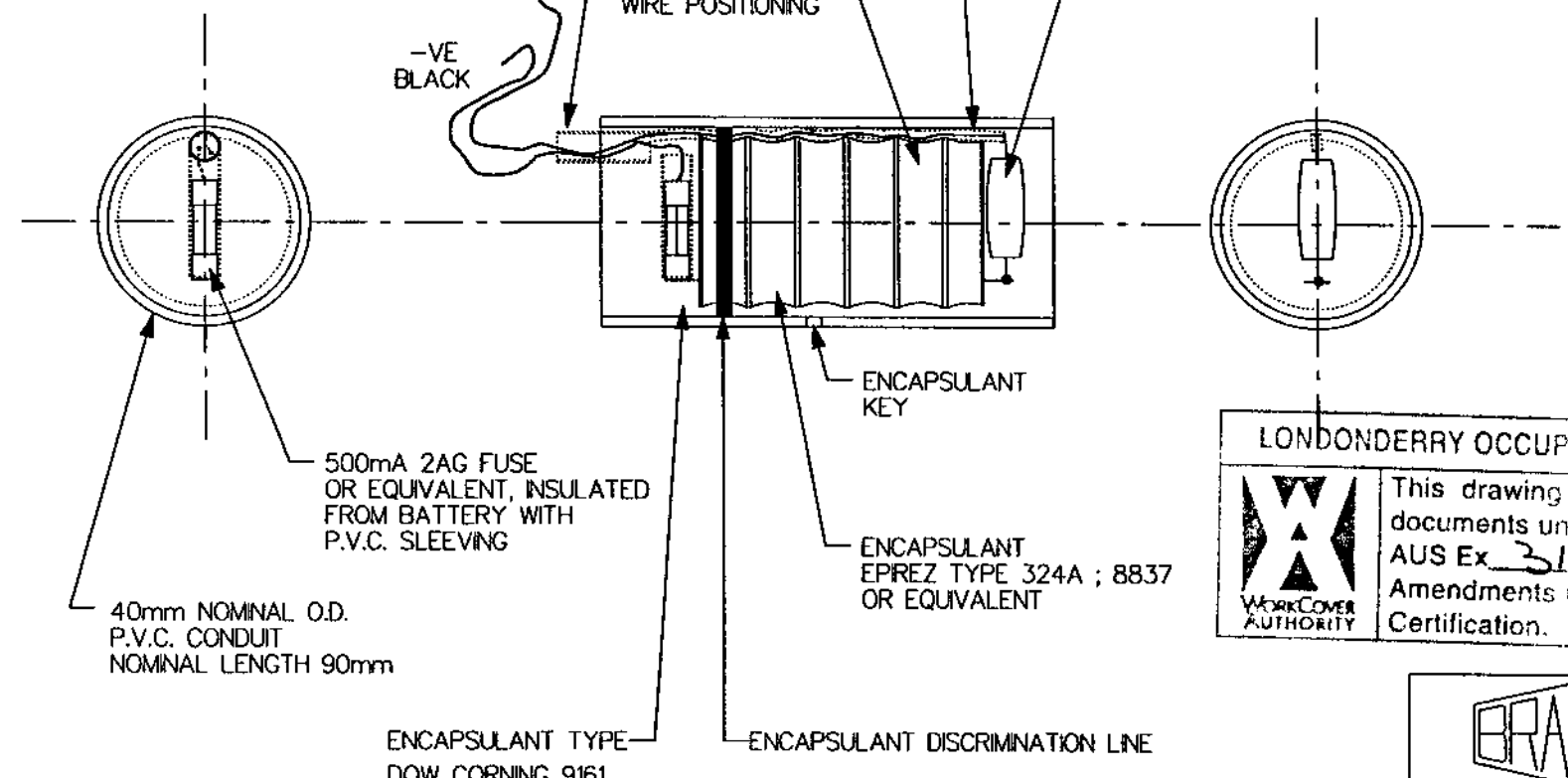
5. The electrical parameters of any intrinsically safe cable used with the system shall not exceed the following values:

Maximum Capacitance (C_{max})	=	2.2 μF
Maximum Inductance (L_{max})	=	2.4 mH
Maximum L/R Ratio	=	93.8 μH/Ω

6. The battery fitted to the Audio/Visual Unit shall not be removed nor replaced whilst the equipment is located in a hazardous area.

7. The start signal input of the Pre Start Warning Unit shall be connected only to a segregated potential-free switch or relay contact.

Minerals & Energy House. PO Box 536, St Leonards, NSW 2065, Australia
Telephone:(02)901 8888 Facsimile:(02)901 8777



CSIRA APPROVAL DOCUMENT
FILE No: C95/0002 DATE: 4/1/95
SIGNED: K. Jacobs (MDA-A2508)
ACCREDITED ASSESSING AUTHORITY

BRAMCO ELECTRONICS
7.2V I.S. RECHARGEABLE BATTERY
TYPE CL/BATT/TEL(AUST)
AS 1829
Ex ia I
MDA xxxx

LABEL DETAIL

Size Approx. 70mm x 40mm
Fixed to External Surface of Battery.
Label to be Screen Printed onto Self Adhesive (Permanent) PVC

LONDONDERRY OCCUPATIONAL SAFETY CENTRE

WorkCover Authority

This drawing forms part of certification documents under Certificate Number AUS Ex 3135X
Amendments require Supplementary Certification.

BRAMCO ELECTRONICS
47 Orlando Road
LAMBTON 2299
New South Wales
Ph: (049) 52 5366
Fax: (049) 52 4600

DRAWING TITLE	DRN.	R.B.J.	DATE	12/12/94
INTRINSICALLY SAFE RECHARGEABLE BATTERY SECTIONAL LAYOUT	CKD.	T.C.W.	APPD	T.C.W.
	DRAWING NUMBER			REV.
	B[illegible]101			E

DRAWING NOT TO SCALE

New South Wales
Department of Mineral Resources
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COAL MINES REGULATION ACT, 1982
APPROVAL SCHEDULE

Approval No: MDA	**Ex ib 14079**
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8. Where utilised in a hazardous area the Pre Start Warning Unit shall be housed within an enclosure satisfying the requirements of clause 2.4 of AS 2380.7 and providing a Degree of Protection at least equivalent to IP54.

9. The equipment shall not be used to directly control the starting of an electric motor driven installation the inadvertent starting of which may give rise to a dangerous condition

MARKING OF APPARATUS
The Approval Number, manufacturers name or mark and the apparatus Type Designation shall be inscribed in a durable manner and in a prominent position on each item of apparatus.

K. J. Fisher

K.J. Fisher
Coordinator, Approvals and Certification
Londonderry Occupational Safety Centre
for Chief Inspector of Coal Mines

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Telephone:(02)901 8888 Facsimile:(02)901 8777

Reference 94/6789

WORKCOVER AUTHORITY

QUALITY SYSTEM AS3902.ISO9002

The Manager,
Bramco Electronics
47 Orlando Road
LAMBTON NSW 2299

Attention: Mr Tim Willis

4 January, 1995

Dear Sir,

re: CERTIFICATION OF ELECTRICAL EQUIPMENT FOR HAZARDOUS AREAS

Apparatus: Pre-Start Warning System Type: PSW
Certificate No: Ex: 3135X

I refer to your application for certification of the above apparatus under the provisions of the Standards Australia Hazardous Area Certification Scheme.

Please find enclosed the relevant certification documents and drawings.

Yours faithfully,

K. J. Fisher

K.J. Fisher,
Coordinator, Approvals and Certification,
Londonderry Occupational Safety Centre

encl.

cc. (with copy of certification documents)
The Manager,
Quality Assurance Services,
PO Box 1055,
STRATHFIELD NSW 2135 216
Attention: Mr Roy Jacobi

RECEIVED
10 JAN 1995
Ans'd.....

LONDONDERRY OCCUPATIONAL SAFETY CENTRE, 132 Londonderry Road Londonderry NSW 2753
Phone: (047) 244 900 Toll Free (008) 02 4205 Fax (047) 244 999 New South Wales Government

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Certificate of Conformity

Certificate No. Ex: 3135X

Issue 0: Original Issue 4/1/1995

Issue 1:

e of Expiry: 4/1/2005

Certificate Holder:
Bramco Electronics
47 Orlando Road
LAMBTON NSW 2299

Electrical Equipment: Pre-Start Warning System Type PSW

Type of Protection and Marking Code:

Power Supply:	Ex (ib) I Safe Area
PSW Unit (Form 2):	Ex ib I 150°C Class I Zone 0
Audio/Visual Unit:	Ex ib I 150°C IP55 Class I Zone 0

nufactured By:
Bramco Electronics
47 Orlando Road
LAMBTON NSW 2299

Issued by:

WorkCover Authority

Londonderry Occupational Safety Centre

132 Londonderry Road LONDONDERRY NSW 2753
Phone: (047) 244 900 Fax: (047) 244 999

STANDARDS AUSTRALIA

Standards Australia Quality Assurance Services Pty Limited A.C.N. 050 611 642

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

This certificate is granted subject to the conditions as set out in Standards Australia Miscellaneous Publication MP 69 and the Procedures (Doc Q7134) of the scheme.

The electrical equipment and any acceptable variation to it specified in the schedule to this certificate and the identified documents, was found to comply with the following standards:

AS 2380.1-1989 Electrical Equipment for Explosive Atmospheres-Explosion-protection Techniques - General Requirements
AS 2380.7-1987 Electrical Equipment for Explosive Atmospheres-Explosion-protection Techniques - Intrinsic Safety i
AS 1939-1990 Degrees of Protection Provided by Enclosures of Electrical Equipment (IP Code)

The equipment listed has successfully met the examination and test requirements as recorded in

Test Report No: SIMTARS NI930030

File Reference: LOSC 94/6789

K. J. Fisher
Signed for and on behalf of issuing authority

Coordinator, Approvals + Certification
Position

4/1/1995
Date of issue

This certificate and schedule may not be reproduced except in full.

This certificate is not transferable and remains the property of Standards Australia Quality Assurance Services and must be returned in the event of its being revoked or not renewed.

Issued by:

WORKCOVER AUTHORITY

Londonderry Occupational Safety Centre

132 Londonderry Road LONDONDERRY NSW 2753
Phone: (047) 244 900 Fax: (047) 244 999

Schedule

Certificate No. Ex: 3135X Issue: 0 Date of Issue: 4/1/1995

Equipment: The Pre Start Warning System Type PSW is designed to provide audible and visual indication of the imminent starting or movement of machinery . The system consists of:

a. A Power Supply Unit, located in safe area which provides operating power to the Control Unit and remote Audio/Visual Units as well as a charging DC supply to the rechargeable batteries contained in the remote Audio/Visual Units.

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c. Audio/Visual Units located in the hazardous area

d. Interconnecting Cable.

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Certification of
EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Addendum to Certificate No. 3135X

Conditions of Certification:

1. The equipment has been assessed as a 'System' and accordingly the flowing cable parameters must be taken into account during installation:

Maximum Capacitance (C_{max})	=	2.2 μF
Maximum Inductance (L_{max})	=	2.4 mH
Maximum L/R Ratio	=	93.8 μH/Ω

2. The battery fitted to the Audio/Visual Unit shall not be removed nor replaced whilst the equipment is located in a hazardous area.

3. The start signal input of the Pre Start Warning Unit shall be connected only to a segregated potential-free switch or relay contact.

4. Where utilised in a hazardous area the Pre Start Warning Unit shall be housed within an enclosure satisfying the requirements of clause 2.4 of AS 2380.7 and providing a Degree of Protection at least equivalent to IP54.

5. The equipment shall not be used to directly control the starting of an electric motor driven installation the inadvertent starting of which may give rise to a dangerous condition

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STANDARDS AUSTRALIA

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Addendum to Certificate No. 3135X

Drawing Schedule

Drawing No.	Drawing Title	Revision No.	Drawn/ Revision Date
SD000100	Pre Start Warning System Schematic Form 1	D	3/1/95
SD000200	Pre Start Warning System Schematic Form 1	D	3/1/95
SD0003	Pre Start Warning PCB Block Diagram	A	23/8/93
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B700002	Pre Start Warning Flasher/Charger Schematic	A	4/4/94
B7000A.BOM	Bill of Materials Pre Start Warning Flasher/Charger PCB	-	8/8/94
B000201	LED Flasher	A	19/4/94
B702400	Power Supply Card Schematic	-	5/4/94
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B7024A.BOM	Bill of Materials Power Supply Card (PSC)	-	2/9/94
B702500	Driver Relay Card Schematic (PSW)	A	5/4/94
B702501	Driver Relay Card PCB Detail	A	8/8/94
B7025A.BOM	Bill of Materials Driver Relay Card (PSW)	-	11/8/94
B702600	Pre Start Warning PCB Schematic	-	5/4/94
)2601	Pre Start Warning Card PCB Detail	A	9/8/94
.026A.BOM	Bill of Materials Pre Start Warning PCB	-	11/8/94
T001000	Transformer Printed Circuit Board - Mounted Details	0	2/4/94

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