



TYPE EXAMINATION CERTIFICATE

**Equipment Intended for use in Potentially Explosive Atmospheres
Directive 94/9/EC**

Type Examination Certificate Number : **BAS00ATEX3119X**

Equipment: **W-DA71-180 AND W-DF80-180 CAGE INDUCTION MOTORS**

Manufacturer: **INVENSYS BROOK CROMPTON**

Address: **St Thomas Road, Huddersfield, HD1 3LJ**

This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

The Electrical Equipment Certification Service certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment of Category 3 intended for use in potentially explosive atmospheres given in Annex II to European Union Directive 94/9/EC of 23 March 1994.

The examination and test results are recorded in confidential Report N°

00(C)0451 dated 25 October 2000

Compliance with the Essential Health and Safety Requirements has been assessed by reference to:

EN 50021: 1999

except in respect of those requirements listed at item 18 of the Schedule.

If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

This TYPE EXAMINATION CERTIFICATE relates only to the design of the specified equipment, and not to specific items of equipment subsequently manufactured.

The marking of the equipment shall include the following:-



EEx nA II T3

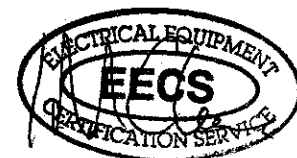
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File No: EECS 0165/03/024

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.



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Harpur Hill, Buxton, Derbyshire. SK17 9JN. United Kingdom
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I M CLEARE
DIRECTOR
30 October 2000



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Schedule

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TYPE EXAMINATION CERTIFICATE N° BAS00ATEX3119X

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Description of Equipment

A range of cage induction motors with shaft centre heights from 71 mm to 180 mm made from either cast iron (80 mm to 180 mm only) or aluminium (71 mm to 180 mm).

The motors are of totally enclosed construction and are fully described in the drawings listed in this report and on the certificate. Motors are rated for S1 duty within the limits of Class 'F' or Class 'H' insulation when connected to a 3 phase supply up to 100 Hz and 800 volts maximum having a symmetry not worse than that defined in IEC 60034-1 clause 6.2.11. The air gap must be sufficient for the maximum rotational speed of the motor. Class 'H' insulation may be used with adjusted outputs provided that the temperature class T3 is not exceeded.

The motors may be supplied for horizontal, vertical or pad mounting. In the case of machines supplied for vertical (shaft down) mounting, a sheet steel drip proof cover is fitted to prevent foreign bodies falling into the fan inlet.

Polarity and Multi speed

Motors of higher pole numbers than listed in the drawings may be manufactured. Multi-speed machines, either multi-winding or tapped winding may be manufactured in a frame having mechanical dimensions associated with any of its pole numbers providing that the air gap is not less than that appropriate to the lowest pole number.

Rotor Construction

The rotor laminations are held on the mandrel whilst the aluminium bars and short circuiting rings are pressure die cast to form an integral rotor. The complete core and cage assembly is then either pressed or shrunk onto the shaft.

Rotor dynamic balancing is achieved by either subtracting weight by drilling the rotor core or by adding washers to integral balance pips or to the rotor blades.

Fan Cover

A sheet steel fan cover is fitted as standard to cast iron motors but this may be replaced by either cast iron or nylon 6.

A nylon 6 fan cover is fitted as standard on aluminium motors but this may be replaced by sheet steel. An additional sheet steel cover is provided for impact protection on certain frames and on all vertically (shaft down) mounted motors.

Plastic fan covers are only used within an ambient range of 0°C to 50°C.

Cooling Fans

The cooling fans may be either plastic (polypropylene or nylon 6) or metal (cast iron or aluminium).



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Plastic fans are secured radially with a key and axially by a circlip. Metal fans are additionally secured by a grub screw which may or may not have a lock nut. Fans with peripheral speeds greater than 50 ms^{-1} must always be metal.

Plastic fans are only used within an ambient range of 0°C to 50°C .

Terminal Boxes

The various terminal boxes allowable on this range of motors are fully described in the certified drawings.

Cast iron motors W-DF 80-180 may be fitted with cast iron or aluminium terminal boxes and lids of the same material. Frame sizes up to 90 may use an aluminium terminal box with a sheet steel lid.

Aluminium motors up to frame size W-DA 90 use an aluminium terminal box with a sheet steel lid. Larger frame sizes use cast aluminium terminal boxes and lids.

Neoprene or neoprene-bonded cork gaskets are used between the terminal box and the body and the terminal box and the lid. The gasket between the box and the lid is adhered to the lid.

Terminal boxes may be mounted directly to the motor frame, using an adaptor plate if necessary or remotely according to Drawing No. Y08AC010/0 provided certified Brook Crompton terminal boxes and boards are used. Terminal enclosure size may be increased to the next size in the range if required.

Terminal Boards

Component approved terminal boards covered by BASEEFA Certificate No. Ex 89C3051U are used with creepage and clearances meeting or exceeding the requirements of EN 50021: 1999 for a rated voltage of 800 volts. The only exception to this is when an oversize terminal box is required for a W-DF 160 or 180 motor in which case the terminal box / board arrangement shown on drawing no. Y42AC001/0 is used. The creepage and clearance distances for this arrangement satisfy the requirements of EN 50021 for the rated voltage.

The certification drawings specify which boards can be used with which terminal boxes for each motor frame size.

Loose Leads

The motors may be supplied with loose leads fitted with crimp connections as described on drawing no. Y08AC012/0.



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Auxiliary Connections

Auxiliary connections may be made using Klippon BK2 terminals covered by certificate BAS98ATEX3084U which can be mounted within the main terminal boxes in the positions shown on the certification drawings. Alternatively, when a cast iron terminal box is used, an auxiliary terminal box shown on drawing no. Y08AC011/0 may be used containing Klippon BK3 or BK4 terminals also covered by certificate BAS98ATEX3084U.

Auxiliaries

The motors may be fitted with thermistors and anti-condensation heaters.

Thermistors may be embedded into each phase or cemented to the periphery of the winding overhang. They may be fitted singularly or in multiples. Extension leads, if required, are insulated with class F sleeving and secured to windings.

Anti condensation heaters type RCH/E manufactured by Resistance Heating Technology and covered by certificate BAS00ATEX2103U may be fitted by Invensys Brook Crompton in accordance with the instructions provided by the heater manufacturer and special conditions listed on the certificate.

Ambient Temperature

The motors are designed for use in an ambient temperature range from -20°C to 40°C. This may be extended to -55°C to 60°C by making suitable design and material changes. In this case the certification plate described on drawings D02MC002 and A39MC002 will be marked accordingly.

Air Stream Rated Motors

Motors may be air stream rated, with four mounting pads on the frame periphery, without mounting feet and the external fan cowl omitted. The minimum air velocity required along the surface of the motor is indicated on the motor rating and nameplate label.

Air Gap Inspection Holes

Three equally spaced holes in the drive end may be provided to check the air gaps. The holes are fitted with steel screws and copper sealing washers.

Enhanced Corrosion Protection

All internal surfaces may be corrosion protected with a paint/varnish layer.

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Special Conditions For Safe Use

1. Before using a motor with a plastic external cooling fan, the resistance of the material to any solvent vapour which is likely to be present should be ascertained. Exposure to the vapours of certain solvents may cause swelling of the fan material, thus allowing the fan to become loose on the shaft and the motor to overheat.
2. The supply lead insulation must be suitably rated for the supply.
3. All supply connections must be made with insulated crimped lugs. Additional heat shrink sleeving must be fitted over the lugs in case the integrity of the insulation is damaged during crimping.
4. There must be no loose conductor strands after the supply leads have been connected.
5. All terminal screws, supply and auxiliary, must be tightened fully whether in use or not.
6. Embedded temperature detectors must be connected to earth during high voltage tests of the stator windings.
7. All drain and inspection plugs must be replaced and sealed immediately after use.
8. When anti-condensation heaters are fitted, unless it is specifically indicated on the motor data plate that they remain energised whilst the motor is energised, the supply to the heaters must be interlocked so that it cannot be connected whilst the motor is running.
9. Any unused cable entries shall be blanked using suitably approved cable blanks.
10. When the machine is used on an inverter derived supply the supply must be automatically tripped when detectors in the windings indicate a temperature of 160°C.

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Essential Health and Safety Requirements

All requirements are covered by compliance with EN 50021: 1999.

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DRAWINGS

Number	Issue	Date	Description
Y08AC007	0	25/4/00	General assembly
Y08AC008	0	25/4/00	Running clearances
Y08AC009	0	24/4/00	Al & Fe terminal boxes
W37AC003	0	25/4/00	Al box 100-180
D06AC003	0	25/4/00	Al box 71-90
Y42AC001	0	26/9/00	Fe oversize box 160-180



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Number	Issue	Date	Description
Y08AC015	0	21/6/00	Heater and thermistor details
Y08AC010	0	25/4/00	Remote terminal box
Y08AC011	0	25/4/00	Auxiliary terminal box
Y08AC012	0	25/4/00	Crimped loose leads
D02MC002	0	25/4/00	Nameplate
A39MC002	0	25/4/00	Nameplate

VARIATION ONE

Allow for the inclusion of alternative sealing arrangements as defined in the scheduled drawing listed below.

DRAWING

Number	Issue	Date	Description
* Y08AC016	0	08/07/00	General assembly dust proof motors

* This drawing is used in common with certificates BAS00ATEX2205X and BAS00ATEX3206X held with file EECS 0165/03/025

This certificate may only be reproduced in its entirety and without any change, schedule included.

BASEEFA List Keywords
23PHIMOT



1 **SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE**

2 **Equipment or Protective System Intended for use
in Potentially explosive atmospheres
Directive 94/9/EC**

3 Supplementary EC-Type Examination Certificate Number: **BAS00ATEX3119X/1**

4 Equipment or Protective System: **W-DA71-180 AND W-DF80-180 CAGE INDUCTION
MOTORS**

5 Manufacturer: **INVENSYS BROOK CROMPTON**

6 Address: **St Thomas Road, Huddersfield, HD1 3LJ**

7 This supplementary certificate extends EC-Type Examination Certificate No. BAS00ATEX3119X to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said Certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This Supplementary Certificate shall be held with the original Certificate.

This certificate may only be reproduced in its entirety and without any change, schedule included.

File No: EECS 0165/03/024

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hp I M CLEARE
DIRECTOR
2 May 2001



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14 **SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE N° BAS00ATEX3119X/1**

Description of the Variation to the Equipment or Protective System

VARIATION ONE

To allow the use of plastic cooling fans, either:-

(a) A natural (white) conductive polypropylene Type Novolen 2300 manufactured by Targor Polypropylene, to be used between T_{amb} -30°C to +60°C, see BASEEFA Test Report 00(T)6101, dated 6.3.01, held on EECS File No. 0245/44/004, or;

OR

(b) A black Nylon 6 Grade BF13BK manufactured by Warwick Polymers UK, to be used between T_{amb} -20°C to +60°C, see BASEEFA Test Report 00(T)6101, dated 6.3.01.

Special Conditions For Safe Use

As per the original schedule No. 1, with the addition of the following:-

1. Motors fitted with fans of type (a) shall not be used below -30°C, and those fitted with fans of type (b) shall not be used below -20°C.

Essential Health and Safety Requirements

As per the original schedule.

DRAWING

Number	Issue	Date	Description
Y08AC007/1	1	19.04.01	General Assembly W-DA71-180 and W-DF80-180

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1 **SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE**

2 **Equipment or Protective System Intended for use
in Potentially explosive atmospheres
Directive 94/9/EC**

3 Supplementary EC-Type Examination Certificate Number: **BAS00ATEX3119X/2**

4 Equipment or Protective System: **W-DA71-180 AND W-DF80-180 CAGE INDUCTION
MOTORS**

5 Manufacturer: **INVENSYS BROOK CROMPTON**

6 Address: **St Thomas Road, Huddersfield, HD1 3LJ**

7 This supplementary certificate extends EC-Type Examination Certificate No. BAS00ATEX3119X to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said Certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This Supplementary Certificate shall be held with the original Certificate.

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File No: EECS 0165/03/024

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I M CLEARE
DIRECTOR
8 November 2001



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14 **SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE N° BAS00ATEX3119X/2**

Description of the Variation to the Equipment or Protective System

VARIATION 2.1

To allow the use of a PTFE bearing isolator in place of the labyrinth seal.

Report No.

None.

Special Conditions For Safe Use

As per the original schedule, subsequent variations and also:

When a PTFE bearing isolator is fitted the shaft temperature at this point must not go outside the range -40°C to 120°C.

Essential Health and Safety Requirements

As per the original certificate.

DRAWINGS

None.

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1 SUPPLEMENTARY TYPE EXAMINATION CERTIFICATE

**2 Equipment Intended for use in Potentially Explosive Atmospheres
Directive 94/9/EC**

3 Supplementary Type Examination Certificate Number: BAS00ATEX3119X/3

4 Equipment: W-DA71-180 AND W-DF80-180 CAGE INDUCTION MOTORS

5 Manufacturer: BROOK CROMPTON

6 Address: St Thomas Road, Huddersfield, HD1 3LJ

7 This supplementary certificate extends Type Examination Certificate No. BAS00ATEX3119X to apply to equipment designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This supplementary certificate shall be held with the original certificate.

The original certificate was issued by The Electrical Equipment Certification Service, which retains responsibility for its original documentation. Baseefa (2001) Ltd. is responsible only for the additional work relating to this supplementary certificate and any other supplementary certificate it has issued.

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Baseefa (2001) Ltd. Customer Reference No. 0165

Project File No. 03/0170

This certificate is granted subject to the general terms and conditions of Baseefa (2001) Ltd. It does not necessarily indicate that the equipment may be used in particular industries or circumstances.

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R S SINCLAIR
DIRECTOR
On behalf of
Baseefa (2001) Ltd.



Schedule

15 Description of the variation to the Equipment

Variation 3.1

To extend the certificate to cover the NEMA equivalent frame sizes indicated in the table below.

Frame Designation	
Metric	NEMA Equivalent
71	N/A
80	56
90	143, 145
100	N/A
112	182, 184
132	213, 215
160	254, 256
180	284, 286

The design of the motors is unchanged.

16 Report Number

None

17 Special Conditions for Safe Use

None additional to those listed previously

18 Essential Health and Safety Requirements

Compliance with the Essential Health and Safety Requirements is not affected by this variation.

19 Drawings and Documents

None

1 **SUPPLEMENTARY TYPE EXAMINATION CERTIFICATE**

2 **Equipment Intended for use in Potentially Explosive Atmospheres
Directive 94/9/EC**

3 Supplementary Type Examination Certificate Number: **BAS00ATEX3119X/4**

4 Equipment: **W-DA71-180 and W-DF80-180 Cage Induction Motors**

5 Manufacturer: **Fabryka Silnikow Elektrycznych "Tamel" SA**

6 Address: **Ul. Elektyczna 6, 33-100, Tarnow, Poland**

7 This supplementary certificate extends Type Examination Certificate No. BAS00ATEX3119X to apply to equipment designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

8 Item 9 of the original Certificate is replaced by "Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0:2009 EN 60079-15:2005

except in respect of those requirements listed at item 18 of the Schedule."

9 The marking of the equipment has changed from the original Certificate and shall include the following:

⊕II 3G Ex nA IIC T3 Gc (Tamb -*°C to +*°C) * See equipment description

This certificate shall be held with the original certificate and may only be reproduced in its entirety, without any change, schedule included.

Baseefa Customer Reference No. 5233

Project File No. 09/0448

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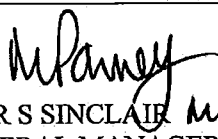
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P R S SINCLAIR
GENERAL MANAGER

On behalf of SGS Baseefa Limited

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Schedule

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Certificate Number BAS00ATEX3119X/4

15 Description of the variation to the Equipment

Variation 4.1

To include an alternative external fan material.

Variation 4.2

To include alternative gasket materials.

Variation 4.3

To include an additional motor type WP-DF90-180.

Variation 4.4

To assess the equipment against the requirements of EN 60079-0:2009 and EN 60079-15:2005.

The motors can be fitted with the following ATEX component certified parts;

Manufacturer	Description / Type	Certificate Number
Weidmuller	Terminal Block BK	SIRA01ATEX3247U
	Terminal Block MK	SIRA01ATEX3248U
TAMEL	Terminal Board	BAS01ATEX2273U
ATB Motorentchnik GmbH	Terminal Type KM	PTB99ATEX3105U
Resistance Technology Limited	Anti-condensation Heater Type RCH	BAS00ATEX2103U

Provision is also made for fitting other ATEX equipment certified auxiliary items which are not the subject of this certification. The manufacturer shall ensure that this equipment is suitably certified for its intended use and will take into account any specific conditions of use when incorporating them into the series of motors.

16 Report Number

09(C)0448

17 Specific Conditions of Use

The following conditions are included additional to those listed previously.

1. Cable entry devices, adaptors or reducers and blanking plugs used on the motor frames must be suitably ATEX equipment certified and maintain the IP rating of the enclosure.
2. The external fans must not be exposed to temperatures above the following;
Polyamide +81°C
Tarnamid +50°C
Starflam +105°C.

18 Essential Health and Safety Requirements

Compliance with the Essential Health and Safety Requirements is not affected by this variation.

19 Drawings and Documents

Number	Sheet	Issue	Date	Description
W37AC003	1 of 1	3	16-12-10	Certification Drawing for W-DA100L – W-DA180M/L Terminal Box and Boards
D06AC003	1 of 1	3	16-12-10	Drawing showing Details of D71-90 Aluminium Terminal Box
Y08AC007	1 of 1	5	04-03-11	Typical Arrangement of W-DA 71-180 & W-DF 80-180 (Detachable Foot Motors)
Y08AC008	1 of 1	1	15-09-09	Drawing showing all Running Clearances for W-DA 71-180 & W-DF 80-180
Y08AC009	1 of 1	3	16-12-10	Drawing showing W-DF 80-180 Cast Iron alternatively Aluminium Rectangular Split Terminal Boxes with Board mounted pillars
Y08AC010	1 of 1	2	24-02-10	Typical Arrangement showing Terminal Box Remote mounting
Y08AC011	1 of 1	2	25-02-10	Details of W-DA71-180 & W-DF80-180 Cast Iron Auxiliary Terminal Box to be fitted to Cast Iron Boxes
Y08AC012	1 of 1	2	25-02-10	Drawing showing Dimensions for Insulated Crimp Sizes for W-DA71-180 & W-DF80-180 Frame Loose Lead Motors
Y08AC015	1 of 1	1	25-02-10	Anti-Condensation Heaters & Thermistor details for W-DA71-180 & W-DF80-180
Y08AC018	1 of 1	1	16-05-2011	Drawing showing alternative W-DF80-180 Cast Iron Terminal Box
Y08AC019	1 of 1	2	16-05-11	Drawing showing W-DF 80-180 Cast Iron alternatively Aluminium Rectangular Split Terminal Boxes with Terminal Board Platform
Y42AC001	1 of 1	1	25-02-10	Terminal Arrangement of W-DE200LX Terminal Box and Board. For use on W-DA or W-DF160/180.
D02MP085	1 of 1	3	10.02.10	Nameplate 1473 Ex nA
A39MP115	1 of 1	3	10.02.10	Nameplate 1471 Ex nA
2W20T0436	1 of 1	-	11.2010	Maximum size cable entries for Ex e & Ex nA 80-180 motors size

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Certificate Number BAS00ATEX3119X/5

15 **Description of the variation to the Equipment**

Variation 5.1

To include alternative Nitrile (NBR) and Styrene-butadiene (SBR) rubber terminal box gasket materials.

Variation 5.2

To include an alternative component certified terminal board, as detailed below;

Manufacturer	Description / Type	Certificate Number(s)
PPUH "EL-BUD" Zbigniew Banas	Terminal board / plate	KDB06ATEX150U

Variation 5.3

To include additional types of auxiliary terminal boxes.

Variation 5.4

To assess the equipment against the requirements of EN 60079-0:2012 and EN 60079-15:2010.

16 **Report Number**

13(C)0930

17 **Specific Conditions of Use**

Additional to those listed previously.

1. The following terminal box gasket materials must not be exposed to temperatures outside the following ranges;
Nitrile (NBR) -10°C to +80°C.
Styrene-butadiene (SBR) -20°C to +60°C.

18 **Essential Health and Safety Requirements**

Compliance with the Essential Health and Safety Requirements is not affected by this variation.

19 **Drawings and Documents**

Number	Sheet	Issue	Date	Description
Y08AC007	1 of 1	6	13-03-13	Typical Arrangement of W-DA 71-180 & W-DF 80-180 (Detachable Foot Motors)
Y08AC008	1 of 1	2	06.2014	Drawing showing all Running Clearances for W-DA 71-180 & W-DF 80-180
Y08AC015	1 of 1	2	20.03.14	Anti-Condensation Heaters & Thermistor details for W-DA71-180 & W-DF80-180
Y42AC001	1 of 1	2	09.2014	Terminal Arrangement of W-DE200LX Terminal Box and Board. For use on W-DA or W-DF160/180.
D02MP085	1 of 1	4	05.03.15	Nameplate 1473 Ex nA
A39MP115	1 of 1	4	03.2015	Nameplate 1471 Ex nA

Number	Sheet	Issue	Date	Description
0S20T0034	1 of 1	-	06.2014	Drawing showing W-DF 80-180 Cast Iron Auxiliary Terminal Box
2P22T0936	1 of 1	-	02-06-14	Anti-condensation Heater & Thermistor details for W-DA71-180 & W-DF80-180 Auxiliary Terminal Box
3P22T1919	1 of 1	-	03-07-14	Details of W-DF112-180 Cast Iron Auxiliary Terminal Box