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TYPE ASSESSMENT AND TEST REPORT No.: XPL/11694/10.1126 REV 1

ZEST ELECTRIC MOTORS (PTY) LTD
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MARSHALLTOWN
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Your Reference: PO 101155
Enquiries: D.Maree
Date: 17 May 2012
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Revision 1

SQUIRREL CAGE INDUCTION MOTOR

1. SCOPE

The examination, testing and certification of the equipment as mentioned below for compliance with the following standards:

SANS 60079-0: 2005 Ed 3 IEC 60079-0: 2004 Ed 4	"Electrical apparatus for explosive gas atmospheres, Part 0: General requirements"
SANS 60079-1: 2004 Ed 3 IEC 60079-1: 2003 Ed 5	"Electrical apparatus for explosive gas atmospheres, Part 1: Flameproof enclosures 'd' "

2. ASSESSMENT & CERTIFICATION REQUIRED

Environment: Gas : Group IIA
Temperature : 200°C
Zone : Hazardous locations for Surface.

3. PRODUCT DESCRIPTION

Manufacturer : WEG
Type of Product : Squirrel Cage Induction Motor
Model : Ex 61G
Voltage : 220
Amperage : 6.20
Duty cycle : S1
RPM : 1470
Kilowatt : 0.55kW
Frame size : Ex61G
Insulation Class : H
Serial Number(s) : 10798329

Manufacturer : WEG
 Type of Product : Squirrel Cage Induction Motor
 Model : Ex 61G
 Voltage : 220V
 Amperage : 5.45A
 RPM : 1445
 Kilowatt : 0.75kW
 Frame size : Ex61G
 Insulation Class : B
 Serial Number(s) : Prototype

Tests done by CSA under their test report No: LR 50962-9 was found to be satisfactory. The documentation submitted was evaluated against the requirements of the national standard to determine if the testing that was conducted on the motor was sufficient.

Induction motors, squirrel cage, continuous duty, Types EXM, EXT, EPM, XPM and XPT for hazardous locations are described below. See Appendix "A" for details of typical characteristics.

The motors and terminal boxes are constructed of cast iron and bolted together. The gaps were measured on the samples and found to be between 0.0015 in and 0.003 in, generally, on non-moving mating parts well within the required dimensions.

Note: Induction motors, squirrel cage, continuous duty Class B insulation, 50/60Hz TEFC, temperature code T3C, Type EXM, fame 61G, rated 1/3 through 1 hp, 230V max, 1 ph, 4-pole; Type EXT, fame 61G, rated 1/2 through 1 hp, 600V max, 3 ph, 4-pole; Type XPM, fame 56, rated 1/4 through 1 hp, 230V max, 1 ph, 4-pole; Type XPT, fame 56, rated 1/4 through 1 hp, 600V max, 3 ph, 4-pole.

4. ASSESSMENT AND TEST RESULTS

The VERDICT is designated by one of the following:

C = Complied with the Requirement

NA = Requirement is Not Applicable to this Equipment

IEC 60079-0: 2004 Ed 4			
SANS 60079-0:2005 Ed 3			
Clause	Description	VERDICT	
		Comply	N/A
1	Scope	X	X
2	Normative references	X	X
3	Terms and definitions	X	X
4	Apparatus grouping and temperature classification	X	X
5.1.1	Ambient temperatures	X	
The motor was intended for use in an ambient temperature range of -20°C to 40°C.			
5.1.2	External source of heating or cooling		X
None specified.			

IEC 60079-0: 2004 Ed 4			
SANS 60079-0:2005 Ed 3			
Clause	Description	VERDICT	
		Comply	N/A
5.2	Service temperature	X	
Tests done by CSA under their test report No: LR 50962-9 was found to be satisfactory.			
5.3	Maximum surface temperature		
5.3.1	Determination of maximum surface temperature	X	
5.3.2	Limitation of maximum surface temperature		
5.3.2.1	Group I electrical apparatus		X
5.3.2.2	Group II electrical apparatus	X	
Tests done by CSA under their test report No: LR 50962-9 was found to be satisfactory.			
5.4	Surface temperature and ignition temperature	X	
Tests done by CSA under their test report No: LR 50962-9 was found to be satisfactory.			
5.5	Small component temperature		X
This is not a requirement by IEC/SANS 60079-1.			
6	Requirements for all apparatus		
6.1	General	X	
Tests done by CSA under their test report No: LR 50962-9 was found to be satisfactory.			
6.2	Mechanical strength of apparatus	X	
Refer to clause 26.4 for type testing.			
6.3	Opening Times		X
None fitted.			
6.4	Circulating currents	X	
Tests done by CSA under their test report No: LR 50962-9 was found to be satisfactory.			
6.5	Gasket Retention	X	
Tests done by CSA under their test report No: LR 50962-9 was found to be satisfactory.			
7	Non-metallic enclosures and non-metallic parts of enclosures		
7.1	General		
7.1.1	Applicability		X
Tests done by CSA under their test report No: LR 50962-9 was found to be satisfactory.			
7.1.2	Specification of materials		X

IEC 60079-0: 2004 Ed 4			
SANS 60079-0:2005 Ed 3			
Clause	Description	VERDICT	
		Comply	N/A
7.1.3	Plastic materials		X
7.2	Thermal endurance		X
	Electrostatic charges on external non-metallic materials of enclosures		
7.3.1	Applicability		X
7.3.2	Avoidance of a build-up of electrostatic charge		X
7.4	Threaded holes		X
8	Enclosures containing light metals		
8.1	Material composition		
8.1.1	Group I		X
Tests done by CSA under their test report No: LR 50962-9 was found to be satisfactory.			
8.1.2	Group II		X
8.2	Threaded holes		X
9	Fasteners		
9.1	General	X	
Tests done by CSA under their test report No: LR 50962-9 was found to be satisfactory.			
9.2	Special Fasteners	X	
9.3	Holes for special fasteners		
9.3.1	Thread engagement	X	
9.3.2	Tolerance & Clearance	X	
9.3.3	Hexagon socket set screws	X	
10	Interlocking devices		X
None used.			
11	Bushings		X
None used.			
12	Materials used for cementing		X
None used.			
13	Ex components		
13.1	General		X

IEC 60079-0: 2004 Ed 4											
SANS 60079-0:2005 Ed 3											
Clause	Description	VERDICT									
		Comply	N/A								
The motor is not certified as an Ex component.											
13.2	Mounting internal to apparatus		X								
13.3	Mounting external to apparatus		X								
14	Connection facilities and terminal compartments										
14.1	General	X									
Tests done by CSA under their test report No: LR 50962-9 was found to be satisfactory.											
14.2	Connection space	X									
14.3	Type of protection	X									
14.4	Creepage and Clearance		X								
15	Connection facilities for earthing or bonding conductors										
15.1	Internal	X									
Tests done by CSA under their test report No: LR 50962-9 was found to be satisfactory.											
15.2	External		X								
15.3	Apparatus not requiring earthing	X									
The size of the internal earth cable shall be as stated in this table.											
<table border="1"> <thead> <tr> <th>Cross-sectional area of phase conductors, S mm²</th> <th>Minimum cross-sectional area of the corresponding protective conductor, S_p mm²</th> </tr> </thead> <tbody> <tr> <td>S ≤ 16</td> <td>S</td> </tr> <tr> <td>16 < S ≤ 35</td> <td>16</td> </tr> <tr> <td>S > 35</td> <td>0.5 S</td> </tr> </tbody> </table>				Cross-sectional area of phase conductors, S mm ²	Minimum cross-sectional area of the corresponding protective conductor, S _p mm ²	S ≤ 16	S	16 < S ≤ 35	16	S > 35	0.5 S
Cross-sectional area of phase conductors, S mm ²	Minimum cross-sectional area of the corresponding protective conductor, S _p mm ²										
S ≤ 16	S										
16 < S ≤ 35	16										
S > 35	0.5 S										
External earth connectors shall have a protective conductor of at least 4mm ² .											
15.4	Size of conductor connection	X									
15.5	Protection against corrosion	X									
15.6	Secureness	X									
16	Entries into enclosures										
16.1	General	X									
Tests done by CSA under their test report No: LR 50962-9 was found to be satisfactory.											

IEC 60079-0: 2004 Ed 4			
SANS 60079-0:2005 Ed 3			
Clause	Description	VERDICT	
		Comply	N/A
16.2	Identification of entries	X	
16.3	Cable glands		X
16.4	Blanking elements		X
16.5	Conductor temperature		X
17	Supplementary requirements for rotating electrical machines		
17.1	Fans and fan hoods	X	
Tests done by CSA under their test report No: LR 50962-9 was found to be satisfactory.			
17.2	Ventilation openings for external fans	X	
17.3	Construction and mounting of the ventilating systems	X	
17.4	Clearances for the ventilating system	X	
17.5	Materials for external fans and fan hoods	X	
17.6	Equipotential bonding conductors	X	
18	Supplementary requirements for switchgear		
18.1	Flammable dielectric		X
18.2	Disconnectors		X
18.3	Group I – Provision for locking		X
18.4	Doors and covers		X
19	Supplementary requirements for fuses		
None used.			
20	Supplementary requirements for plugs and sockets		
21.1	Interlocking		X
None used.			
21.2	Energized plugs		X
21	Supplementary requirements for luminaires		
21.1	General		X
None used.			
21.2	Covers		X
21.3	Special lamps		X
22	Supplementary requirements for caplights and handlights.		

IEC 60079-0: 2004 Ed 4			
SANS 60079-0:2005 Ed 3			
Clause	Description	VERDICT	
		Comply	N/A
22.1	Group I caplights and handlights		X
22.2	Group II caplights and handlights		X
23	Apparatus incorporating cells and batteries		X
23.1	Batteries		X
23.2	Cell types		X
23.3	Cells in a battery		X
23.4	Ratings of batteries		X
23.5	Mixture of cells		X
23.6	Interchangeability		X
23.7	Charging of primary batteries		X
23.8	Leakage		X
23.9	Connections		X
23.10	Orientation		X
23.11	Replacement of cells or batteries		X
24	Documentation	X	
Adequate documentation was supplied by Zest Electric Motors (Pty) Ltd.			
25	Compliance of prototype or sample with documents	X	
The motor was evaluated against the documents and was found to comply.			
26	Type Tests		
26.1	General	X	
Tests done by CSA under their test report No: LR 50962-9 was found to be satisfactory.			
26.2	Test configuration	X	
26.3	Tests in explosive test mixtures	X	
Tests done by CSA under their test report No: LR 50962-9 was found to be satisfactory.			
26.4	Tests of enclosures		
26.4.1	Order of tests		
26.4.1.1	Metallic enclosures, metallic parts of enclosures and glass of parts of	X	
26.4.1.2	Non-metallic enclosures or non-metallic parts of enclosures		
26.4.1.2.1	Group I electrical apparatus		X

IEC 60079-0: 2004 Ed 4			
SANS 60079-0:2005 Ed 3			
Clause	Description	VERDICT	
		Comply	N/A
None used.			
26.4.1.2.2	Group II electrical apparatus		X
26.4.2	Resistance to impact		X
26.4.3	Drop test		X
26.4.4	Acceptance criteria		X
26.4.5	Degree of protection (IP) by enclosures		
26.4.5.1	Test procedure		X
26.4.5.2	Acceptance criteria		X
26.5	Thermal tests		
26.5.1	Temperature measurement	X	
Tests done by CSA under their test report No: LR 50962-9 was found to be satisfactory.			
26.5.2	Thermal shock test		X
No glass parts fitted.			
26.5.3	Small component ignition test		
26.5.3.1	General		X
This is not a requirement by IEC/SANS 60079-1.			
26.5.3.2	Procedure		X
26.5.3.3	Acceptance criteria		X
26.6	Torque test for bushings		
26.6.1	Test procedure		X
None fitted.			
26.6.2	Acceptance criteria		X
26.7	Non-metallic enclosures or non-metallic parts of enclosures		
26.7.1	General		X
26.7.2	Temperatures during tests		X
26.8	Thermal endurance to heat		X
26.9	Thermal endurance to cold		X
26.10	Resistance to light		

IEC 60079-0: 2004 Ed 4			
SANS 60079-0:2005 Ed 3			
Clause	Description	VERDICT	
		Comply	N/A
26.10.1	Applicability		X
26.10.2	Test procedure		X
26.10.3	Acceptance criteria		X
26.11	Resistance to chemical agents for Group I electrical apparatus		X
26.12	Earth continuity		X
26.13	Surface resistance test of parts of enclosures of non-metallic materials		X
26.14	Charging tests		
26.14.1	Introduction		X
26.14.2	Principle of the test		X
26.14.3	Samples and apparatus		X
26.14.4	Ambient conditions		X
26.14.5	Conditioning		X
26.14.6	Determination of the most efficient charging method		
26.14.6.1	Method A: Rubbing with a pure polyamide cloth (Figure 6)		X
26.14.6.2	Method B: Rubbing with a cotton cloth		X
26.14.6.3	Method C: Charging by influence with a d.c. high-voltage power supply		X
26.14.7	Assessment of discharge		X
26.15	Measurement of capacitance		
26.15.1	Test procedure		X
26.15.2	Acceptance criteria		X
27	Routine verifications and tests	X	
Refer to clause 16 of IEC/SANS 60079-1 for the requirements.			
28	Manufacturer's responsibility		
28.1	Certificate	X	
It is the manufacturer's responsibility to supply installation instructions with each unit offered for sale.			
28.2	Responsibility for marking	X	
It is the manufacturer's responsibility that the electrical apparatus shall be marked on the main part, in a visible place. This marking shall be legible and durable, taking into account possible chemical corrosion.			
29	Marking	X	

IEC 60079-0: 2004 Ed 4			
SANS 60079-0:2005 Ed 3			
Clause	Description	VERDICT	
		Comply	N/A
A drawing was submitted by the manufacturer that shows the method of attachment of the label and all relevant detail were supplied. Refer to clause 5 of this report.			
29.1	Location	X	
29.2	General	X	
29.3	Different types of protection	X	
29.4	Order of marking	X	
29.5	Ex components		X
29.6	Small apparatus and Ex components		X
29.7	Extremely small apparatus and Ex components		X
29.8	Warning markings	X	
29.9	Cells and batteries		X
29.10	Examples of marking	X	
30	Instructions		
30.1	General	X	
The manufacturer's installation instructions satisfied the requirements of this clause.			
30.2	Cells and batteries		X
None used.			
Annex A — Ex cable glands			
A.1	General		X
Only approved cable glands may be used.			
A.2	Constructional requirements		X
A.2.1	Cable sealing		X
A.2.2	Materials		
A.2.2.1	Exposed parts		X
A.2.2.2	Elastomeric sealing rings		X
A.2.2.3	Filling compounds		X
A.2.3	Clamping		
A.2.3.1	General		X
A.2.3.2	Group II cable glands		X

IEC 60079-0: 2004 Ed 4			
SANS 60079-0:2005 Ed 3			
Clause	Description	VERDICT	
		Comply	N/A
A.2.4	Lead-in of cable		
A.2.4.1	Sharp edges		X
A.2.4.2	Point of entry		X
A.2.5	Release by a tool		X
A.2.6	Fixing		X
A.2.7	Degree of protection		X
A.3	Type tests		
A.3.1	Test of clamping of non-armoured and braided cables		
A.3.1.1	Cable glands with clamping by the sealing ring		X
A.3.1.2	Cable glands with clamping by filling compound		X
A.3.1.3	Cable glands with clamping by means of a clamping device		X
A.3.1.4	Tensile test		X
A.3.1.5	Mechanical strength		X
A.3.2	Tests of clamping of armoured cables		
A.3.2.1	Tests of clamping where the armourings are clamped by a device within the gland		X
A.3.2.1.1	Tensile test		X
A.3.2.1.2	Mechanical strength		X
A.3.2.2	Tests of clamping where the armourings are not clamped by a device within		X
A.3.3	Ageing test for material used for elastomeric sealing rings		X
A.3.4	Type test for resistance to impact		X
A.3.5	Test for degree of protection (IP) of cable glands		X
A.4	Marking		
A.4.1	Marking of cable entries		X
A.4.2	Marking of cable-sealing rings		X
	Annex B		X
The motor was not certified as an Ex component.			

SANS 60079-1: 2004 Ed 3 IEC 60079-1: 2003 Ed 5			
Clause	Description	VERDICT	
		Comply	N/A
1	Scope	X	X
2	Normative references	X	X
3	Terms and definitions	X	X
4	Apparatus grouping and temperature classification	X	X
5	Flameproof joints	X	
5.1	General requirements	X	
Tests done by CSA under their test report No: LR 50962-9 was found to be satisfactory.			
5.2	Non-threaded joints		
5.2.1	Width of joints (<i>L</i>)	X	
Tests done by CSA under their test report No: LR 50962-9 was found to be satisfactory.			
5.2.2	Gap (i)	X	
Tests done by CSA under their test report No: LR 50962-9 was found to be satisfactory.			
5.2.3	Spigot joints	X	
Tests done by CSA under their test report No: LR 50962-9 was found to be satisfactory.			
5.2.4	Holes in joint surfaces	X	
Tests done by CSA under their test report No: LR 50962-9 was found to be satisfactory.			
5.2.4.1	Flanged joints with holes outside the enclosure (see Figures 3 and 5)		X
5.2.4.2	Flanged joints with holes inside the enclosure (see Figure 4)	X	
5.2.4.3	Spigot joints where, to the edges of the holes, the joint consists of a cylindrical part and a plane part (see Figure 6)	X	
5.2.4.4	Spigot joints where, to the edges of the holes, the joint consists only of the plane part (see Figures 7 and 8), in so far as plane joints are permitted (see 5.2.7)		X
5.2.5	Conical joints		X
5.2.6	Joints with partial cylindrical surfaces (not permitted for Group IIC)		X
5.2.7	Additional requirements for joints of electrical apparatus of Group IIC		X
5.2.8	Serrated joints		X
5.3	Threaded joints	X	
Tests done by CSA under their test report No: LR 50962-9 was found to be satisfactory.			

SANS 60079-1: 2004 Ed 3 IEC 60079-1: 2003 Ed 5			
Clause	Description	VERDICT	
		Comply	N/A
5.4	Gaskets (including O-rings)	X	
5.5	Apparatus using capillaries		X
6	Cemented joints		X
7	Operating rods		X
8	Supplementary requirements for shafts and bearings	X	
8.1	Joints of shafts	X	
The DE joint was of a cylindrical type.			
8.1.1	Cylindrical joints	X	
The grooves were not taken into consideration when the length of the path was measured. As stated in the documentation supplied by the manufacturer the minimum radial clearance on the joint is 0.05mm.			
8.1.2	Labyrinth joints		X
8.1.3	Joints with floating glands		X
8.2	Bearings	X	
8.2.1	Sleeve Bearings		X
8.2.2	Rolling-element bearings	X	
As stated on the manufacturers drawing the maximum radial clearance is 0.05mm.			
9	Light-transmitting parts		X
10	Breathing and draining devices which form part of a flameproof enclosure		X
None used.			
10.1	Openings for breathing or draining		X
10.2	Composition limits		X
10.3	Dimensions		X
10.4	Elements with measurable paths		X
10.5	Elements with non-measurable paths		X
10.6	Removable devices		X
10.7	Mounting arrangements of the elements		X
10.8	Mechanical strength		X
10.9	Breathing devices and draining devices when used as Ex components		X
10.9.1	Mounting arrangements of the elements and components		X

SANS 60079-1: 2004 Ed 3 IEC 60079-1: 2003 Ed 5			
Clause	Description	VERDICT	
		Comply	N/A
10.9.2	Type tests for breathing and draining devices used as Ex components		X
10.9.2.1	Test of the ability of the breathing and draining device to withstand pressure		X
10.9.2.1.1	Test procedure		X
10.9.2.1.2	Acceptance criteria		X
10.9.2.2	Thermal tests		X
10.9.2.2.1	Test procedure		X
10.9.2.2.2	Acceptance criteria		X
10.9.2.3	Test for non-transmission of an internal ignition		X
10.9.2.3.1	Test procedure		X
10.9.2.3.2	Acceptance criteria		X
10.9.3	Marking		X
10.9.4	Component certificate		X
11	Fasteners, associated holes and closing devices	X	
11.1	Type of fastener	X	
Tests done by CSA under their test report No: LR 50962-9 was found to be satisfactory.			
11.2	Plastic material or light alloys		X
11.3	Yield stress	X	
11.4	Studs	X	
11.5	Fasteners through walls		X
11.6	Blind holes	X	
11.7	Screws into blind holes	X	
11.8	Closing of through holes		X
11.9	Closure of apparatus and compliance of blanking elements		X
11.9.1	Closing device removable from outside		X
11.9.2	Tool used to remove closing device		X
11.9.3	Special removal technique		X
11.10	Separate fastening arrangements for threaded doors/covers		X
12	Materials and mechanical strength of enclosures – Materials inside the enclosures	X	

SANS 60079-1: 2004 Ed 3 IEC 60079-1: 2003 Ed 5			
Clause	Description	VERDICT	
		Comply	N/A
12.1	Tests prescribed by Clauses 14 to 16	X	
12.2	Assembly of multiple flameproof enclosures		X
Tests done by CSA under their test report No: LR 50962-9 was found to be satisfactory.			
12.3	Intercommunicating enclosure compartments	X	
12.4	Use of cast iron		X
12.5	Use of liquids		X
12.6	Insulating materials for Group I apparatus	X	
13	Entries for flameproof enclosures	X	
Tests done by CSA under their test report No: LR 50962-9 was found to be satisfactory.			
13.1	Cable glands	X	
13.2	Conduit sealing devices		X
13.2.1	Permitted for Group II only		X
13.2.2	Requirements for sealing device		X
13.3	Plugs and sockets and cable couplers		X
13.3.1	Construction & mounting		X
13.3.2	Flameproof joints of contact parts		X
13.3.3	Flameproof properties in the event of internal explosion		X
13.3.4	Exemption & warning label		X
13.4	Bushings		X
13.4.1	Flameproof & cemented joints		X
13.4.2	Bushings outside flameproof enclosures		X
13.4.3	Bushings specific to a flameproof enclosures		X
13.4.4	Bushings not specific to a flameproof enclosures		X
14	Verification and tests	X	
Tests done by CSA under their test report No: LR 50962-9 was found to be satisfactory.			
15	Type tests Test sequence & test method	X	

SANS 60079-1: 2004 Ed 3 IEC 60079-1: 2003 Ed 5			
Clause	Description	VERDICT	
		Comply	N/A
The tests was conducted in the following order: 1) Dimensional test 2) Mechanical tests as described in clause 23.4.3 of IEC/SANS 60079-0 3) Reference pressure test in accordance with clause 15.1.2 4) Overpressure test in accordance with clause 15.1.3 5) Test for non-transmission of an internal ignition Clause 15.2			
15.1	Tests of ability of the enclosure to withstand pressure		
15.1.1	General	X	
15.1.2	Determination of explosion pressure (reference pressure)	X	
Tests done by CSA under their test report No: LR 50962-9 was found to be satisfactory.			
15.1.2.1	Test procedure	X	
Tests done by CSA under their test report No: LR 50962-9 was found to be satisfactory.			
15.1.2.2	Rotating electrical machines	X	
Tests done by CSA under their test report No: LR 50962-9 was found to be satisfactory.			
15.1.2.3	Pressure-piling	X	
Tests done by CSA under their test report No: LR 50962-9 was found to be satisfactory.			
15.1.2.4	Apparatus intended for use in a single gas		X
15.1.3	Overpressure test	X	
15.1.3.1	Overpressure test - First method (static)		X
Tests done by CSA under their test report No: LR 50962-9 was found to be satisfactory.			
15.1.3.2	Overpressure test - second method (dynamic)	X	
Tests done by CSA under their test report No: LR 50962-9 was found to be satisfactory.			
15.2	Test for non-transmission of an internal ignition	X	
15.2.1	Electrical apparatus of Groups I, IIA and IIB		
15.2.1.1	Test gap and test gas	X	
Tests done by CSA under their test report No: LR 50962-9 was found to be satisfactory.			
15.2.1.2	Increasing of gaps for test		X
15.2.1.3	Number of tests and acceptance criterion	X	
A total of five tests were conducted.			
15.2.2	Electrical apparatus of Group IIC		X
15.2.2.1	First method		X
15.2.2.2	Second method		X

SANS 60079-1: 2004 Ed 3 IEC 60079-1: 2003 Ed 5			
Clause	Description	VERDICT	
		Comply	N/A
15.2.2.3	Single constructions		X
15.3	(Reserved for future use)		X
15.4	Tests of flameproof enclosures with breathing and draining devices		X
None used.			
15.4.1	Tests of ability of the enclosure to withstand pressure		X
15.4.1.1	Replacement of breathing and draining devices		X
15.4.1.2	Over pressure test		X
15.4.2	Thermal tests		X
15.4.2.1	Test procedure		X
15.4.2.2	Acceptance criterion		X
15.4.3	Tests for non-transmission of an internal ignition		X
15.4.3.1	Test procedure		X
15.4.3.2	Non-transmission test for breathing and draining devices		X
15.4.3.2.1	Method A		X
15.4.3.2.2	Method B		X
15.4.3.3	Acceptance criterion		X
16	Routine tests		
16.1	General	X	
16.1.1	Routine overpressure test – first method	X	
Tests done by CSA under their test report No: LR 50962-9 was found to be satisfactory.			
16.1.2	Routine test – second method	X	
Tests done by CSA under their test report No: LR 50962-9 was found to be satisfactory.			
16.1.3	Routine test – empty enclosure & parts of enclosure	X	
The routine tests must be conducted on an empty enclosure.			
16.2	Routine tests – where not required		X
16.3	Cable glands		X
Only approved glands must be used.			
16.4	Blanking elements		X

SANS 60079-1: 2004 Ed 3 IEC 60079-1: 2003 Ed 5			
Clause	Description	VERDICT	
		Comply	N/A
Only approved blanking elements must used.			
16.5	Conductor temperature	X	
17	Supplementary requirements for switchgear		X
18	Supplementary requirements for lamp holders and lamp caps		X
19	Supplementary requirements for non-metallic enclosures and non-metallic parts of enclosures		X
Annex A	Additional requirements for crimped ribbon elements of breathing and draining devices		X
Annex B	Additional requirements for elements, with non-measurable paths, of breathing and draining devices		X
Annex C	Additional requirements for flameproof cable glands, Ex blanking elements, and Ex threaded adaptors		X
ANNEX D	Empty flameproof enclosures as Ex components		X
ANNEX E	Cells and batteries used in flameproof "d" enclosures		X

5. MARKING

The following (or similar) information had to be clearly and permanently marked on all unit(s) covered by this report:

Zest Electric Motors (Pty) Ltd
Squirrel Cage Induction Motor
 Manufacturer : WEG
 Type of Product : Squirrel Cage Induction Motor
 Model : Ex 61G
 Voltage : 220
 Amperage : 6.20
 Duty cycle : S1
 RPM : 1470
 Kilowatt : 0.55kW
 Frame size : Ex61G
 Insulation Class : H
 Serial No (s) : ----
 Ex d IIA T3
 IA Number : M-XPL/10.1126

Zest Electric Motors (Pty) Ltd
Squirrel Cage Induction Motor
Manufacturer : WEG
Type of Product : Squirrel Cage Induction Motor
Model : Ex 61G
Voltage : 220V
Amperage : 5.45A
RPM : 1445
Kilowatt : 0.75kW
Frame size : Ex61G
Insulation Class : B
Serial No (s) : ----
Ex d IIA T3
IA Number : M-XPL/10.1126

6. DOCUMENTATION

The following documents were provided as part of the approval:

No	Type	Description/Identification
1	CSA Specifications:	No: C22.2 No. 100-04 No: C22.2 No. 145-M1986 No: C22.2 No. 30-M1986 No: C22.2 No. 25-1966 No: C22.2 No. 0.5-1982
2	CSA test report	No: LR 50962-9
3	WEG Drawing	No: W0002120 No: V2000335

7. CONDITIONS

7.1 SPECIAL CONDITIONS OF USE (X)

None

7.2 CONDITIONS OF MANUFACTURE

Refer to Clause 28 of IEC/SANS 60079-0.

8. CONCLUSION

The sample(s) as described in Paragraph 3 above have COMPLIED with the requirements as set out in Paragraph 1.

The approved explosion protection rating of the equipment is: **Ex d IIA T3**
Inspection Authority Certificate Number: **S-XPL/10.1126**

9. VALIDITY

This report covers only the unit described in Paragraph 3 of this report. Other identical units will only be covered by:

- a. additional approvals covering all serial numbers, or
- b. approval of certified equipment under a product certification scheme accepted by the Department of Minerals and Resources and/or the Department of Labour as relevant.

This type approval report remains valid unless modifications are made to the equipment without obtaining prior approval.

Responsible Testing Officer:



D Maree
SANAS Technical Signatory

Reviewed by:



JJ Joubert
SANAS Technical Signatory

EXPLOLABS EXPLOSION PREVENTION SERVICES

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Explolabs (Pty) Ltd shall not be liable for any losses or damages sustained on account of any failure or omission to properly perform our duties in terms of any contract undertaken by us. This disclaimer is immutable and automatically incorporated in any contract undertaken by us, notwithstanding anything to the contrary, save for the express written waiver of our managing director. The contents of electronic reports/certificates cannot be guaranteed. Original certification documents will be kept on file at Explolabs (Pty) Ltd

Reg No: 1999/027771/07

Government Approved Test Laboratory
(Previously AIA)

T0104

APPROVED/ACCREDITED TEST LABORATORY
(previously referred to as Approved Inspection Authority)
IN TERMS OF:

ARP 0108: "REGULATORY REQUIREMENTS FOR EXPLOSION PROTECTION APPARATUS"

IA CERTIFICATE

ZEST ELECTRIC MOTORS (PTY) LTD
PO BOX 61106
MARSHALLTOWN
2107

Issued: 17 May 2012
*Expire: 20 May 2021
Page 1 of 3
REVISION 1

Equipment : Squirrel Cage Induction Motor
Type/Model : Ex 61G
Manufacturer : WEG
Serial No : all serial numbers of equipment covered by a valid report, or accepted product certification mark.

Supplied by
Zest Electric Motors (Pty) Ltd
Identified by Inspection Authority number
S-XPL/10.1126

And as described in the Explolabs test report number XPL/11694/10.1126 is hereby certified "Explosion Protected **Ex d IIA T3**, having been examined and inspected in accordance with the relevant requirements of South African Standards.

SANS 60079-0: 2009 Ed 4 IEC 60079-0: 2007 Ed 5	"Explosive atmospheres, Part 0: Equipment - General requirements"
SANS 60079-1: 2004 Ed 3 IEC 60079-1: 2003 Ed 5	"Electrical apparatus for explosive gas atmospheres, Part 1: Flameproof enclosures 'd' "

Locations	Zone 1	Gas: Underground
Environment	Group IIA	Propane
Frequency		Intermittent as could occur under normal operation
Limiting Temperature	T3	200 °C

This certification indicates compliance with R21.17.2 of the Mine Health and Safety Act and/or EMR 8(1) of the Occupational Health and Safety Act, provided that the apparatus is used as relevant in accordance with:

- i) SANS 10086 requirements and SANS 61241-10 requirements as applicable;
- ii) Any conditions mentioned in the above report;
- iii) Any relevant requirements and codes of practice enforced in terms of the Mine Health and Safety Act or Occupational Health and Safety Act; and
- iv) Any restrictions and conditions enforced by the Chief Inspector of Mines or the Principal Inspector or the Chief Inspector: Occupational Health and Safety.
- v) *-New equipment may only be presented for sale between the "Issued" and "Expire" dates.

1. GENERAL

Tests done by CSA under their test report No: LR 50962-9 was found to be satisfactory. The documentation submitted was evaluated against the requirements of the national standard to determine if the testing that was conducted on the motor was sufficient.

Induction motors, squirrel cage, continuous duty, Types EXM, EXT, EPM, XPM and XPT for hazardous locations are described below. See Appendix "A" for details of typical characteristics.

The motors and terminal boxes are constructed of cast iron and bolted together. The gaps were measured on the samples and found to be between 0.0015 in and 0.003 in, generally, on non-moving mating parts well within the required dimensions.

Note: Induction motors, squirrel cage, continuous duty Class B insulation, 50/60Hz TEFC, temperature code T3C, Type EXM, fame 61G, rated 1/3 through 1 hp, 230V max, 1 ph, 4-pole; Type EXT, fame 61G, rated 1/2 through 1 hp, 600V max, 3 ph, 4-pole; Type XPM, fame 56, rated 1/4 through 1 hp, 230V max, 1 ph, 4-pole; Type XPT, fame 56, rated 1/4 through 1 hp, 600V max, 3 ph, 4-pole.

2. SPECIAL CONDITIONS OF USE (X)

None

3. MARKING

The following (or similar) information have to be clearly and permanently marked on all units covered by this report:

Zest Electric Motors (Pty) Ltd**Squirrel Cage Induction Motor**

Manufacturer : WEG
Type of Product : Squirrel Cage Induction Motor
Model : Ex 61G
Voltage : 220
Amperage : 6.20
Duty cycle : S1
RPM : 1470
Kilowatt : 0.55kW
Frame size : Ex61G
Insulation Class : H
Serial No (s) : ----
Ex d IIA T3
IA Number : M-XPL/10.1126

Zest Electric Motors (Pty) Ltd**Squirrel Cage Induction Motor**

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Ex d IIA T3
IA Number : M-XPL/10.1126

Responsible Testing Officer:



D Maree
SANAS Technical Signatory

Reviewed by:



JJ Joubert
SANAS Technical Signatory