

सीएसआईआर- केन्द्रीय खनन एवं ईंधन अनुसंधान संस्थान

(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद)
बरवा रोड, धनबाद - 826015, झारखण्ड, भारत



CSIR-Central Institute of Mining & Fuel Research

(Council of Scientific & Industrial Research)
Barwa Road, Dhanbad - 826015, Jharkhand, India

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SPEED POST/COURIER SERVICE

Test & Assessment Report No.: IN/CIMFR/TR20/ 195

Dated: 17 January, 2020

ID No. 143/19

LIR No.: TC596220000000202F

TC CODE NO. PES/87 I/19-20

To
M/S. KESHKAMAT & COMPANY
9/129, ADARSH NAGAR, PRABHADEVI,
MUMBAI - 400 030

Subject: Type Examination Certificate along with test assessment report of Flameproof cum Weatherproof Junction Box, in cast aluminium Alloy LM-6 construction designated by Model: KKJB/19E, Cat. No.: KK/JB/60/E as per IS/IEC 60079-1:2014 for use in Gas Group: IIB, EPL Gb atmosphere.

- (Test Report)

Your Ref. Appli. No.: KK/CIMFR/19/10

Dated: 07/07/2019

Dear Sir,

Please find the enclosed Type Examination Certificate along with test assessment report of the above sample submitted by you.

This Institute reserves the right to review, amend or withdraw this "Test Report" at any time, if considered necessary in the interest of safety.

Charges of Rs. 41,194/- (Rupees Forty one Thousand One Hundred Ninety four Only) including applicable service tax involved towards the testing have been adjusted against the advance deposit made by you.

Kindly arrange to collect the sample within 90 days from the date of receipt of this letter failing which CIMFR would dispose of the samples by public auction without any further NOTICE to you.

Kindly acknowledge the receipt.

Thanking you.

Yours faithfully,

S. K. Mondal
15/01/2020

(S. K. MONDAL)

HOS

TESTING CELL

Encl: As above.

1. Test assessment report in Four copies
2. Type Examination Certificate

Copy to: 1. Head, Flameproof & equipment Safety
2. Bill section



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Barwa Road, Dhanbad-826018, Jharkhand, India



NABL Certificate No.: TC-6962

ज्वालासह एवं उपकरण सुरक्षा / FLAMEPROOF & EQUIPMENT SAFETY

परीक्षण प्रमाण पत्र / TEST CERTIFICATE

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FORMAT NO.: (CIMFR: DQM: FLP02: F-01:REV-01)

(Flameproof & Equipment Safety)

Equipment ID No.: 143/19

ULR No.: TC59622000000202F

Code No. FES/87 I/19-20

Test & Assessment Report No.: IN/CIMFR/TR20/ 195

Dated: 17 January, 2020

Application Ref. No.: KK/CIMFR/19/10

Dated: 07/07/2019

- Applicant : M/S. KESHKAMAT & COMPANY
9/129, ADARSH NAGAR, PRABHADEVI,
MUMBAI - 400 030
- Manufacturer : Same as above
- Equipment : Flameproof cum Weatherproof Junction Box.
- Designated by : Model: KKJB/19E, Cat. No.: KK/JB/60/E.
- Type of protection : Ex d for Gas Group : IIB EPL Gb.
- Electrical ratings : Rated 240V AC/250V DC, 100Watt (max.)
- Temperature Class : T6
- Degree of Ingress Protection : IP-66
- Material of Construction : Cast aluminium Alloy LM-6 construction. Refer drawing for material thickness at different locations of the enclosure.
- Description of the equipment: Flameproof cum Weatherproof Junction Box.

Description	Volume in cc		Min. Wall Thickness (mm)	Nos. & Size of Bolts/Fasteners
	Gross	Net		
Single Enclosure	970	150	7mm	8 Nos. M8x33mm long Allen cap HD screw.

B. Glass details		Max no. of aperture on cover
Nil		NIL.

11. Nature of Flameproof Joint: Type of joints and gaps (Spigot joint, Threaded joint, Cylindrical joint for Gas Gr. IIB)

Sr. No	Location of flamepath	Type of Joint	Min. length of flamepath (in mm)		Max. gap (in mm)/no. of threads (pitch)	
			Req.	Spec.	Req.	Spec.
1.	Between single enclosure body and cover.	Flanged joint	L=12.5	L=12.5	0.20	0.15

बी. प्रसर

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परीक्षण रिपोर्ट / TEST REPORT



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FORMAT NO.: (CIMFR: DQM: FLP02: P-01:REV-01)

(Flameproof & Equipment Safety)

Equipment ID No.: 143/19 ULR No.: TC59622000000202F Code No. FEGS/87 I/19-20

Max. No. & size of external/exit cable entries: Maximum threaded entry is provided for attachment of certified and approved FLP/WP double compression type cable glands as follows.

Sr. No.	Max. Size of Cable Entries	Nos. of Cable entries provided in test sample			
		Side - A	Side - B	Side - C	Side - D
1	M20X1.5P (L = 14mm, T=8nos.)	01	01	---	---
2	M25X1.5P (L = 14mm, T=8nos.)	01	01	---	---

12. Name plate and warning inscription: The name-cum-warning inscription plate and rating plate made of Brass/SS is permanently fixed on the cover of enclosure by hammer driven rivets. The warning inscription shall read as "ISOLATE SUPPLY BEFORE OPENING".

13. Drawing: The unit is designed and constructed as flameproof and weatherproof in accordance with the following drawing conforming to the requirements of IS/IEC 60079-0:2011, IS/IEC 60079-1: 2014 & IS/IEC 60529: 2001 (Reaffirmed 2014).

Sl. No.	Drg. No.	Title	Rev.	Sheet	Date
1.	KK/2B/2019/20/E	FLAMEPROOF CUM WEATHERPROOF JUNCTION BOX	0	1 of 4 To 4 of 4	05/05/2019

14. Any other relevant information:

- As per Clause 4.2 Note - 2 of IS/IEC 60079-0:2011 the equipment mark IIB is suitable for application requiring IIA equipment.
- The material of construction of the enclosure may be CI/MS/SS instead of die cast aluminum alloy LM-6 construction.
- Equal and equivalent medium class fit NPT threads conforming to requirements of ANSI/ASME B1.20.1 may be used instead of metric threads conforming to ISO 965-1 & 965-3 as per Clause No. 5.3 & 13 of IS/IEC 60079-1:2014.

15. Declaration by the Applicant/Manufacturer:

- As to standards with which the equipment complies in respect of:
 - Electrical equipment for Potentially Explosive atmosphere - General requirements: IS/IEC 60079-0: 2011
 - As to flameproof protection IS/IEC 60079-1: 2014
 - Ingress protection as per IS/IEC 60529: 2001(Reaffirmed 2014)

(ii) Composition of the material construction of enclosure as declared by the manufacturer: Composition of cast aluminum alloy purported to be forming the material of construction of the enclosure having less than 7.5% in total of Magnesium, Titanium and Zirconium. Copper composition must be limited to 60% if copper alloys are used as enclosure material.

However no sample of the alloy was drawn from the prototype enclosure for verifying its chemical composition declared by the manufacturer.

वी.प्रसन्न

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ज्वालासह एवं उपकरण सुरक्षा / FLAMEPROOF & EQUIPMENT SAFETY

परीक्षण रिपोर्ट / TEST REPORT



पूरा प्रति

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FORMAT NO.: (CIMFR: DQM: FLP02: F-01:REV-01)

(Flameproof & Equipment Safety)

Equipment ID No.: 143/19

ULR No.: TC59622000000202F

Code No. FES/87 1/19-20

16. Documents Submitted :

- Application form
- Drawings
- Prototype/test sample

17. Compliance of prototype or sample with documents: The test sample of electrical equipment submitted for the type tests complies with the manufacturers documents referred above.

18. Condition of sample on receipt: Good

Note: CSIR-CIMFR has however not checked and tested the compliance of the equipment to any standard other than the above standards.

SCOPE OF THE TEST CERTIFICATE

The Test Certificate issued by CIMFR certifies that the equipment has been found to comply with the definition of flameproof cum weatherproof EQUIPMENT contained in the relevant Standard specifications. They do not vouch for the quality of the equipment in any other respect. The present test report pertains to the sample received only.

This Institute reserves the right to review, amend or withdraw this Test Report at any time if considered necessary in the interest of safety.

बी प्रसाद

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(Flameproof & Equipment Safety)

Equipment ID No.: 143/19

ULR No.: TC59622000000202F

Code No. PES/87 1/19-20

Test & Assessment Report No.: IN/CIMFR/TR20/195

Dated: 17 January, 2020

REPORT OF TEST

Date of Test: 28/08/2019

Test Equipment Used:

(1) Impact test setup, (2) IP test setup, (3) T- class test setup, (4) Computer, Kistler Piezo Electric Transducer and Charge Amplifier for conducting Explosion Pressure Tests, (5) Overpressure Test Setup, (6) Non-transmission of internal ignition test setup.

Result #A: Tests as per IS/IEC 60079-0: 2011:

Type Tests			
Clause	Tests	Remarks	Results (Complies, P- Pass, NA-Not Applicable, F-Fail) References
1	Scope		Complies
2	Normative references		Complies
3	Terms and definitions		Complies
4	Equipment grouping and temperature classification	Gas Group: IIB, EPL Gb.	Complies
5	Temperatures		
5.1.1	Ambient temperature	-20°C to 40°C Amb.	Complies
6	Requirements for all electrical Equipment		Complies
6.6	Electromagnetic and ultrasonic energy radiating equipment		NA
7	Non-metallic enclosures and non-metallic parts of enclosures		NA
7.2	Thermal Endurance		NA
8	Metallic Enclosure and metallic parts of enclosure	Cast aluminium Alloy LM-6 construction (as declared by applicant)	Complies
9	Fasteners	(as declared by applicant)	Complies
10	Interlocking devices		NA
11	Bushings		NA
12	Materials used for cementing		NA
13	Ex components		NA
14	Connection facilities and terminal compartments		NA
15	Connection facilities for earthing or bonding conductors		Complies
16	Entries into enclosures		Complies
17	Supplementary requirements for rotating electrical machines		NA

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Equipment ID No.: 143/19

ULR No.: TC596220000000202F

Code No. FES/87.1/19-20

18	Supplementary requirements for switchgear		NA
19	Supplementary requirements for fuses		NA
20	Supplementary requirements for plugs and sockets		NA
21	Supplementary requirements for luminaries		NA
22	Supplementary requirements for caplights and handlights		NA
23	Equipment incorporating cells and batteries		NA
24	Documentation		Complies
25	Compliance of prototype or sample with documents		Complies
26	Type tests		Complies
26.3	Tests in explosive mixtures:		
26.3	Tests for Flameproof (Ex 'd') protection	Verification for Compliance to Ex 'db' requirements as per IS/IEC 60079-1: 2014	P/As per Result #B
26.4	Test of enclosures		
26.4.2	Test for resistance to Impact		P/As per Result #A1
26.4.3/2	Drop test		NA
6.4.4		(Not a handheld equipment or portable device)	
26.4.5	Tests for the Degree of protection IP		
26.4.5	IP of equipment	IP-66 Ability to prevent ingress of dust & water - as per IS/IEC 60529:2001 (Reaffirmed 2014)	P/As per Result #A3
26.5	Thermal tests		
26.5.1	Temperature measurement		P/As per Result #A2
26.5.2	Thermal shock test - for glass parts		NA
26.6	Torque test for bushings		NA
26.7	Tests for non-metallic enclosures or of non-metallic parts of encl.		
26.8	Thermal endurance to heat		NA
26.9	Thermal endurance to cold		NA
26.10	Resistance to light		NA
26.11	Resistance to chemical agents for Gr. I		NA (Only applicable for Gr. I equipment)
26.12	Earth continuity test via non-metallic enclosure		NA
26.13	Surface resistance test of parts of enclosures of Non metallic materials		NA
26.14	Charging test		NA
26.15	Measurement of Capacitance		NA
27	Routine verification and tests	Manufacturer's responsibility: Compliance to prototype of the product and physical measurement of gap and flamepath and hydraulic test at the pressure given in Result#B2 for every sample.	
28	Manufacturer's responsibility	Conformity of the equipment to the applicable standards	Complies
29	Marking		Ex d IIB T6 Gb

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KWJB/19E 5

[Continuation Sheet]

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ज्वालासह एवं उपकरण सुरक्षा / FLAMEPROOF & EQUIPMENT SAFETY

परीक्षण रिपोर्ट / TEST REPORT



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(Flameproof & Equipment Safety)

Equipment ID No.: 143/19

ULR No.: TC59622000000202F

Code No. FES/87 1/19-20

30	Instructions	Instruction related to use, installation, maintenance, adjustment to be provided by the manufacturer along with the equipment.
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Result#A1: 1kg hard mass of hardened steel allowed to fall vertically on the surface of the enclosure to create impact energy for Gr. II equipment. No significant damage was observed.

Result#A2: The surface temperature rise classification of the above apparatus has been determined by injecting 90% of rated current supply (240V) in the terminal mounted inside the enclosure and the surface temperature classification is considered as T6 at maximum ambient temperature of 40°C.

Result#A3: IP-Protection: Neoprene 'O' ring gasket (Ø4mm thick) is provided at the end of joint for weatherproof IP-66 degree of protection. Tests have been conducted as per IS/IEC 60529:2001 as tabulated below for IP-66 degree of protection.

Sl. No	Type Tests			Results
1.	Dust Test (First Numeral 6)	Clause 13.4 & 13.6	No dust had accumulated inside the enclosure in harmful quantity.	Pass
2.	Water Test (Second Numeral 6)	Clause 14.2.6	No significant water had accumulated inside the enclosure in harmful quantity.	Pass

वी.प्रसाद

KKJR/19E (6)

[Continuation Sheet]

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(Flameproof & Equipment Safety)

Equipment ID No.: 143/19

ULR No.: TCS9622000000202F

Code No. FES/87 I/19-20

Result #1: Tests in explosive mixtures: Tests for type of protection Ex db as per IS/IEC 60079-1:2014.

Type Tests			
Clause No.	Description and relevant tests	Remarks	Results (Complies, P- Pass, NA-Not Applicable, F-Fail) References
1	Scope		Complies
2	Normative references		Complies
3	Terms and definitions		Complies
4	Level of protection (Equipment Protection Level, EPL)	Gas Group IIB, EPL Gb	Complies
5	Flameproof joints	Flange joint	Complies
6	Sealed joints		
6.1	Cemented joints		NA
6.1.2	Mechanical strength:		Complies
7	Operating rods		NA
8	Supplementary requirements for shafts and bearings		NA
9	Light transmitting parts		NA
10	Breathing and draining devices which form part of a flameproof enclosure		NA
11	Fasteners and openings	as declared by applicant	Complies
12	Materials	Cast aluminium Alloy LM-6 construction	Complies
13	Entries for flameproof enclosures		Complies
14	Verification and tests		Complies
15	Type Tests		
15.1	General		Complies
15.2	Tests of ability of the enclosure to withstand pressure		
15.2.1	General		Complies
15.2.2	Determination of Explosion Pressure (Reference Pressure)		P/As per Result #B1
15.2.3	Overpressure Test		P/As per Result #B2
15.3	Test for non-transmission of an internal ignition		
15.3.1	General		Complies
15.3.2	Electrical equipment of Groups IIB		P/As per Result #B3
15.3.3	Electrical equipment of Group IIC		NA
15.4	Tests of flameproof enclosures with breathing and draining devices		
15.4.1	General		NA
16	Routine tests	To be conducted by the manufacturer As per Result #B2	Complies
17	Switchgear for Group I		NA
18	Lamp holders and lamp caps		NA
19	Non-metallic enclosures and non-metallic parts of enclosures		

वी.प्रमर

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 (Flameproof & Equipment Safety)

Equipment ID No.: 143/19 ULR No.: TC596220000000202F Code No.: FES/87 1/19-20

19.1	General		NA
19.2	Resistance to tracking and creepage distances on internal surfaces of the enclosure walls		NA
19.3	Requirements for type test		NA
19.4	Test of erosion by flame		NA
20	Marking	Ex d IIB T6 Gb	
20.2	Caution and warning markings	"ISOLATE SUPPLY BEFORE OPENING"	
21	Instruction	The manufacturer shall supply instruction manual regarding the equipment	Complies

Result # B1: Determination of Explosion pressure (Reference Pressure Test) *:

Gas mixture: Test with 8% Ethylene in air.

No. of Tests: 3 nos. test with single enclosure.

Test Condition: Enclosure fitted with component and tested as per clause 15.2.2.2

Type of Test	Gas Group	Gas Mixture % in Air		No. of Tests	
Preliminary Test (reference pressure)	IIB	8% Ethylene in air		Three	
Test Ref. No.	Ignition	Gauge Position	Max. Pressure in Bar	Time of Pressure rise in millisecond	Remark
Single Enclosure					
PPM/1431901	Body	Body	5.00	11.70	No evidence of distress
PPM/1431902	Body	Body	4.68	12.36	-do-
PPM/1431903	Body	Body	4.68	12.78	-do-

*Results shown for the pressure time curve (enclosed) are the highest recorded value obtained in the test.

Result #B2: Overpressure Test (Static Method): Hydraulic pressure test is conducted as per Cl. 15.2.3.2 of IS/IEC 60079-1: 2014.

Enclosure	Test reference nos.	Over pressure (kg/cm ²) maintained for 10 sec.	Remark
Single Enclosure	OPM/1431904	8.0 kg/cm ²	No damage or deformation

Result #B3: Test for Non transmission of internal ignition:

Gas Mixture: Test with 37% Hydrogen in air for Gas Gr. IIB

No. of Tests: 5 nos. tests with Single enclosure.

Test Condition: Table 12 and 15.3.2.1 (No precompression required)

Name of Enclosure	Test Ref. Nos.	Gas Group	Gas Mixture % in Air	No. of Test	Result
Single Enclosure	EIT/1431905 to EIT/1431909	IIB	37 % Hydrogen	Five	Pass

की-प्रमाण

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Barwa Road, Dhanbad - 826015, Jharkhand, India

ID Number:

143/19

Test Date:

28/08/2019

Manufacturer Details:

M/S KESHIKAMAT & COMPANY

Manufacturer Address:

MUMBAI - 400 30

Model / Type:

MODEL NO. : KKJB/19E

Category No.:

CAT. NO. : KK/JB/60/E

Gas:

ETHYLENE

Gas Group:

IIB

Equipment Details:

FLP/WP JUNCTION BOX

Enclosure Details:

SINGLE ENCLOSURE

Serial / Badge No.:

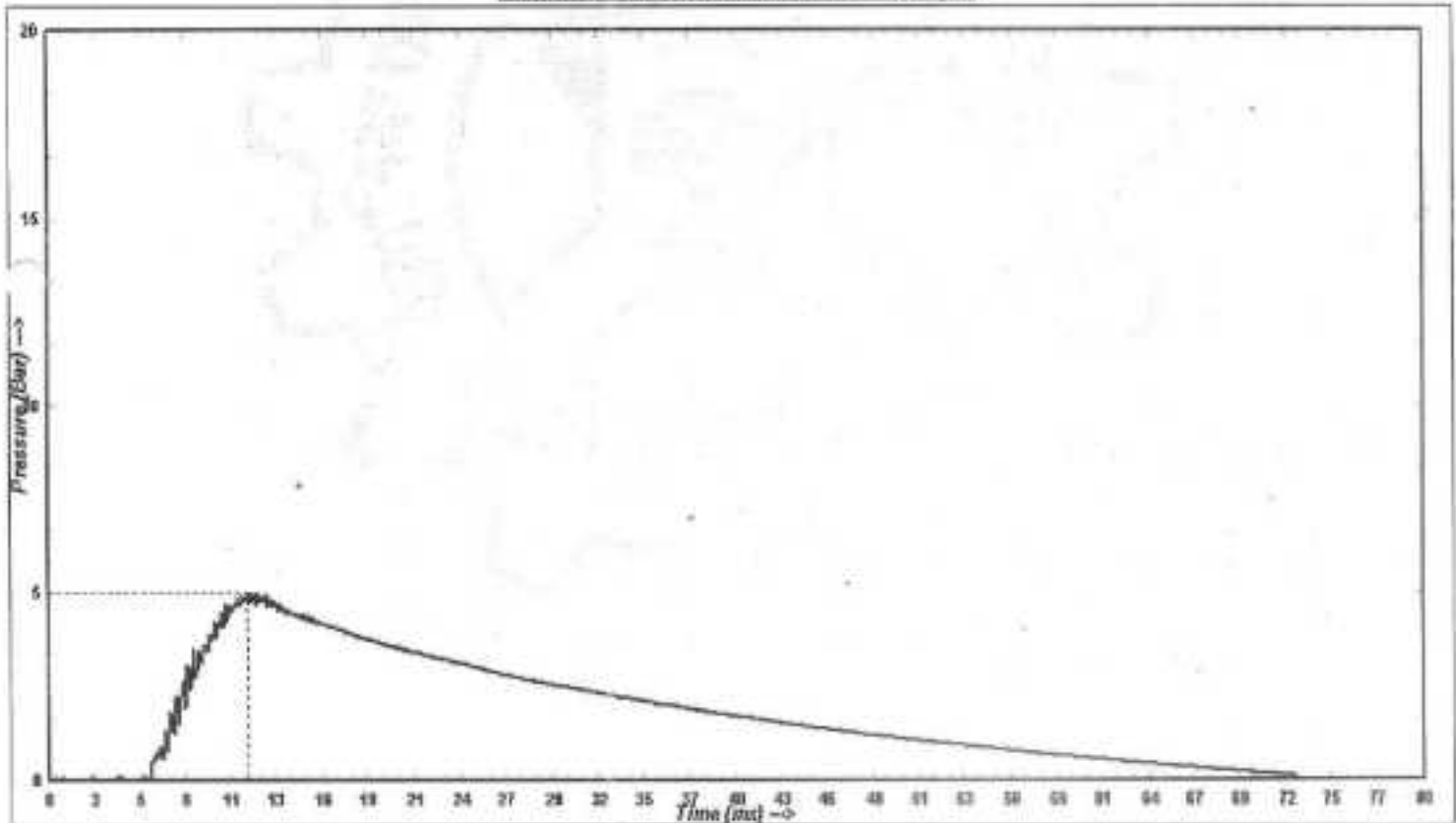
NA

Peak Pressure:

5 Bar at 11.7 ms

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Explosion Pressure vs Time Graph



बी. प्रसाद

(Testing Officer)

15/09/2020
15/09/2020

(Discipline Head)

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(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद) / (Council of Scientific & Industrial Research)

बरवा रोड, धनबाद - 826015, झारखण्ड, भारत / Barwa Road, Dhanbad - 826015, Jharkhand, India

ज्वालासह एवं उपकरण सुरक्षा / FLAMEPROOF & EQUIPMENT SAFETY

परीक्षण रिपोर्ट / TEST REPORT



ORIGINAL COPY

FORMAT NO.: (CIMFR: DQM: FLP02: F-01:REV-01)

(Flameproof & Equipment Safety)

Equipment ID No.: 143/19

ULR No.: TC59622000000202F

Code No. FES/871/19-20

CONCLUSION: The Flameproof cum Weatherproof Junction Box, in cast aluminium Alloy LM-6 construction designated by Model: KKJB/19E, Cat. No.: KK/JB/60/E meets the test requirements for flameproofness as per IS/IEC 60079-1: 2014, general requirements as per IS/IEC 60079-0: 2011, weatherproof (IP-66 degree) as per IS/IEC 60529:2001 (Reaffirmed 2014). Hence, the above mentioned equipment may be used in Gas Group: IIB Category EFL Gb atmosphere.

Reported By

बी. प्रसाद

(PRASAD BHUKYA)

Scientist

Dated: 15 January, 2020

Flameproof & Equipment Safety

CSIR - Central Institute of Mining & Fuel Research,

Barwa Road, Dhanbad - 826 015,

(Jharkhand) India

Checked & Approved By

(A. K. SINGH) 15/01/2020

Chief Scientist & HOS

Flameproof & Equipment Safety



सीएसआईआर-केन्द्रीय खन एवं ईंधन अनुसंधान संस्थान
CSIR-Central Institute of Mining and Fuel Research
(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद)
(Council of Scientific & Industrial Research)
बरवा रोड, धनबाद-826015, झारखण्ड, भारत
Barwa Road, Dhanbad-826015, Jharkhand, India



NABL Certificate No.: TC-5962

ज्वालासह एवं उपकरण सुरक्षा / FLAMEPROOF & EQUIPMENT SAFETY
परीक्षण प्रमाण पत्र / TEST CERTIFICATE

TYPE EXAMINATION CERTIFICATE

FORMAT NO.: (CIMFR: DQM: FLP02: F-01: REV-01)
(Flameproof & Equipment Safety)

Certificate No.: CMF 20 INEX 0085
ULR No.: TC596219000000202F

Dated: 14/01/2020
(Issue No. 0)

1. Applicant : M/S. KESHKAMAT & COMPANY
9/129, ADARSH NAGAR, PRAHHADEVI,
MUMBAI - 400 030
2. Manufacturer : Same as above
3. Equipment : Flameproof cum Weatherproof Junction Box.
4. Designated by : Model: KKJB/19E, Cat. No.: KK/JB/60/E.
5. Type of protection : Ex d for Gas Group IIB EPL Gb.
6. Marking : Ex d IIB T6 Gb
7. Material of construction : Cast aluminium Alloy LM-6 construction

This certificate is issued as verification that a sample/documentation was assessed and found to comply with the IS/IEC Standard listed below. This certificate relates to only design and construction of the equipment. It does not cover requirement related to manufacturing process and usage.

8. Standard: The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

- IS/IEC 60079-0:2011 Explosive atmospheres - Part 0: General requirements.
IS/IEC 60079-1:2014 Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d".

This type test certificate does not indicate compliance with electrical safety and performance requirements other than those expressly included in the standards listed above.

9. Degree of ingress protection: IP-66 as per IS IEC 60529:2001 (Reaffirmed 2014)

10. Test & Assessment Reports: A sample(s) & documents of the equipment listed have successfully met the examination and test requirements as recorded in IN/CIMFR/TR20/195 Dated: 17 January, 2020.



सीएसआईआर-केन्द्रीय खनन एवं ईंधन अनुसंधान संस्थान

CSIR-Central Institute of Mining and Fuel Research

(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद)

(Council of Scientific & Industrial Research)

बरवा रोड, धनबाद - 826005, झारखण्ड, भारत

Barwa Road, Dhanbad - 826005, Jharkhand, India

ज्वालासह एवं उपकरण सुरक्षा / FLAMEPROOF & EQUIPMENT SAFETY

परीक्षण प्रमाण पत्र / TEST CERTIFICATE



NABL, Certificate No.: TC-5962

TYPE EXAMINATION CERTIFICATE

Certificate No.: CMF 20 INEX 0085

Dated: 14/01/2020

SCHEDULE

11. Description of equipment: Flameproof cum Weatherproof Junction Box, in cast aluminium Alloy LM-6 construction designated by Model: KKJB/19E, Cat. No.: KK/JB/60/E.

Enclosure Type	Volume (in cc), Gross/ Nett.		Dimension (mm) LxBxH	Max. no. of aperture on cover	Rating/ Temp. Class
Single Enclosure	970	150	100x100x70mm	Nil	T6

12. Drawing and documents:

Sl. No.	Dwg. No.	Title	Rev.	Sheet No.	Date
1.	KK/JB/2019/20/E	FLAMEPROOF CUM WEATHERPROOF JUNCTION BOX	0	1 of 4 To 4 of 4	05/05/2019

13. Routine Testing: A routine overpressure test in accordance with IS IEC: 60079-1:2014 clause 16 shall be carried out at a pressure of 8 Kg/cm² for a period of at least 10 seconds and test results must be recorded. The overpressure test shall be considered satisfactory, if no permanent deformation or damage invalidating type of protection is observed. The joints shall in no place have been permanently enlarged and no leakage through the walls of the enclosure is observed.

14. Specific conditions of use: Not Applicable

15. Details of certificate changes (for issue 1 and above): Not Applicable.

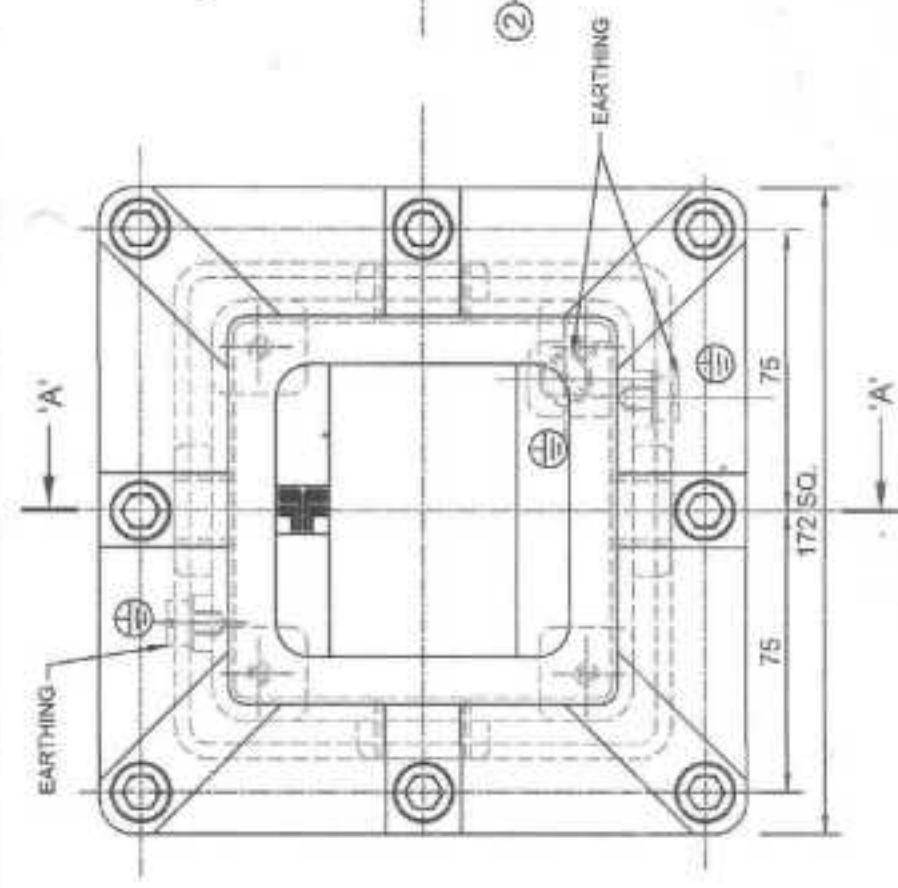
16. Additional Information: Not Applicable

17. History: Not Applicable

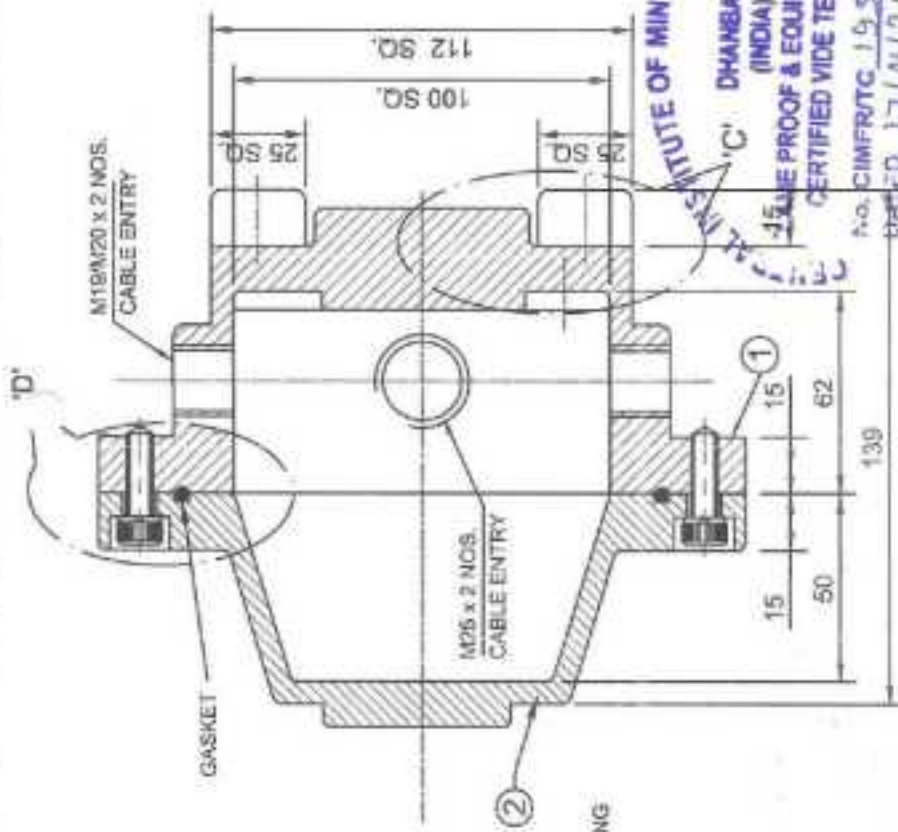
Approved & issued on behalf of CSIR-CIMFR


(Dr. A. K. Singh)
Chief Scientist & HOS

This Institute reserves the right to review, amend or withdraw this Type Examination certificate at any time if considered necessary in the interest of safety.

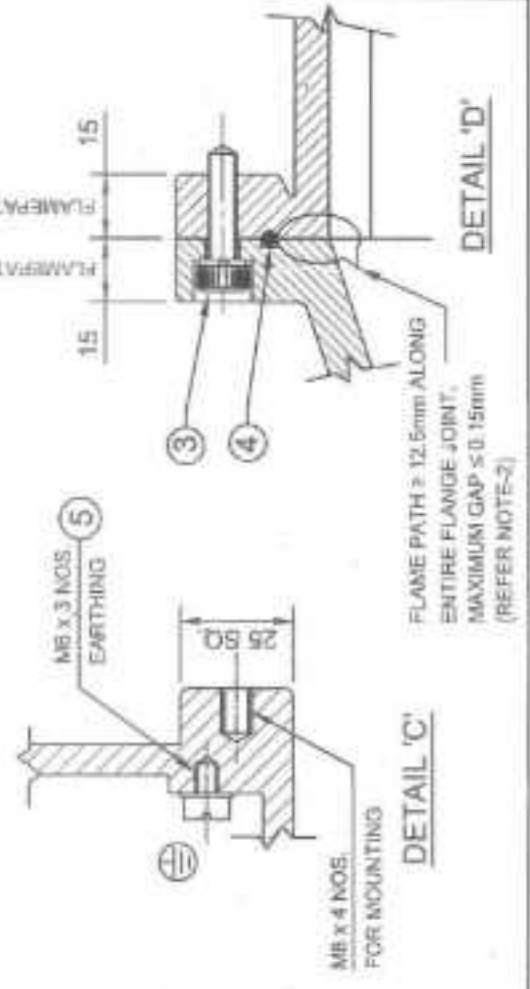


FRONT VIEW



SECTIONAL SIDE VIEW

SECTION A-A



DETAIL 'C'

DETAIL 'D'

INSTITUTE OF MINING & FUEL RESEARCH
DHANBAD
(INDIA)
FLAME PROOF & EQUIPMENT SAFETY
CERTIFIED VIDE TEST REPORT
 No. CIMFRITG.195
 dated 17/01/2020

REV. NO.	05.05.2018	REV. DATE	ORIGINAL	APPRO.
SCALE		DIM	mm	N.T.E.
DOU.	GA	CHECKED	ENGINEER	
DRAWN		CHECKED	ENGINEER	
Keshkamat & Company DELHI - 400 030				
TITLE: FLAMEPROOF CUM WEATHERPROOF JUNCTION BOX (FOR GAS GROUP - II B ZONE-1)				
MODEL: KKJB/19E				
AS PER: IS/IEC: 60079-1 (2014) IS/IEC: 60079-0 (2011) IS/IEC: 60529 (2001)				
CAT. NO. KKJB/60/E				SHEET 1 OF 4
DRG. NO. KKJB/2019/20/E				SIZE B

ALL DIMENSIONS ARE IN mm.
 TOLERANCE IN OVERALL DIMENSIONS +1/-0.10mm,
 EXCEPT FOR FLAME PATH & GAP

KKJB/19E 03

NOTE DETAILS:-

FLAMEPROOF CUM WEATHERPROOF JUNCTION BOX FOR CCTV SYSTEM IS MADE AS PER SPECIFICATIONS GIVEN BELOW:

- MATERIAL OF CONSTRUCTION - IS LWB THE COMBINATION IS AS GIVEN BELOW.
 COPPER = 0.1% MAX., MAGNESIUM = 0.1%, IRON = 0.6%,
 ZINC = 0.1% MAX., LEAD = 0.1% MAX., MANGANESE = 0.5% MAX.,
 NICKEL = 0.1% MAX., SILICON = 10 TO 13%, TITANIUM = 0.2% MAX.,
 TIN = 0.05% MAX., ALUMINIUM = 85 TO 88% MAX., DIFFERENCE VARIATION.
 THE CONSTRUCTION MATERIAL CAN BE S.S.
 MAGNESIUM CONTENT NOT MORE THAN 6% IN TOTAL OF MAGNESIUM AND TITANIUM BY MASS.
 SURFACE FINISH - 8.3 MICRONS.
- 12.5mm IS MAINTAINED AS FLAME PATH ALONG THE FLANGE / SURFACE JOINTS AND THE CLEARANCE BETWEEN BODY AND COVER IS $\leq 0.15\text{mm}$.
 NEOPRENE 'O' RING / GASKET IS PROVIDED ON THE FLANGE PORTIONS FOR WEATHERPROOFING.
 THESE ARE ONLY SUPPLEMENT AND DO NOT FORM PART OF FLAMEPROOF JOINTS. ANY DISPLACEMENT/ CHANGE OF THE GASKET WILL NOT HAMPER FLAMEPROOFNESS OF THE EQUIPMENT.
- THE MATERIAL THICKNESS AT THE BOTTOM AND AROUND THE TAPPED HOLES AND BLIND HOLES IS 5mm.
- THE ALLEN HEAD SCREWS/BOLTS USED HAVE MINIMUM YIELD STRENGTH = 340 NMM².
- ONE INSIDE AND TWO OUTSIDE EARTHING SCREWS ARE PROVIDED (SIZE M8 x 10).
 THE EARTHING OF THE J.B IS DONE AT INSIDE AND OUTSIDE AS SHOWN.
 THE SCREWS HAVE FIRM THREADS AND NON CORROSIVE BONDING.
 EARTHING CONDUCTOR USED SHALL BE 4mm ϕ EXTERNALLY.
- NAME PLATE AND WARNING PLATES MADE OF S.S. MATERIAL ARE PROVIDED (MATERIAL ARE PROVIDED AS PER REQUIREMENT OF MINING & FUEL RESEARCH DHANBAD (INDIA) FLAME PROOF & EQUIPMENT SAFETY CERTIFIED VIDE TEST REPORT No. CIMFR/TC 195 DATED 17/01/2020)
 ARE FIXED WITH HAMMER DRIVE RIVETS.
- MAX. CABLE ENTRY PORTS AS UNDER
 1. SIZE M20 x 1.5 PITCH = 2 CABLE ENTRIES OR
 2. SIZE M25 x 1.5 PITCH = 2 CABLE ENTRIES.
- WALL THICKNESS IS MAINTAINED = 7mm MIN.
- HYDRO TEST PROCEDURE DETAILS:
 STATIC PRESSURE = 10 Kg/cm² OR 1.5 TIMES TEST PRESSURE WHICHEVER IS GREATER.
 INGRESS PROTECTION = IP : 6667.

MODEL	SIZE	TOTAL VOLUME C.C.	EFFECTIVE ACTUAL VOLUME C.C.
J.B.19E	100 x 100 x 70	970 C.C.	5158 C.C.

- TOTAL VOLUME : VOLUME OF THE JUNCTION BOX FROM INSIDE J.B IN C.C. (CUBIC CENTIMETER)
 EFFECTIVE ACTUAL VOLUME : VOLUME LEFT AFTER KEEPING EQUIPMENT / SWITCHES / WIRES ETC. INSIDE THE JUNCTION BOX. JB IN C.C.
 TEMPERATURE CLASS = TE.
- MINIMUM THICKNESS AROUND ALL HOLES FOR BOLT / SCREW $\leq 5\text{mm}$.
- MAXIMUM WIDTH / GAP OF THE FLANGED PORTION OF THE FLANGE / SURFACE JOINT $\leq 0.15\text{mm}$.
- THE TERMINATIONS ARE PROVIDED ON THE TERMINAL BLOCK AS THIS IS A DIRECT CABLE ENTRY IN TO THE J.B. TERMINATION OF EQUIPMENT AND OUTGOING ARE DONE ON THIS TERMINAL BLOCK ONLY.
- THE NEOPRENE GASKET IS 4mm 'O' RING ENDLESS IS USED FOR IP : 6667 PROTECTION.
 THE GASKET IS EVENLY COMPRESSED TO FIT BETWEN THE COVER AND BODY.
 GASKET RING WILL BE RETAINED WITH COVER.

- DEPTH OF THREAD : 1.5 D BOLT ENGAGEMENT IS MAINTAINED AS PER REQUIREMENT OF IS STANDARD.
- PITCH BETWEEN TWO CABLE O/L AND ENTRY $\leq 55\text{mm}$. AS SHOWN IN THE DRAWING.
- TOLERANCE FOR ALL THREADS - AS PER IS / ISO 965, 1-3.
- ELECTRICAL RATING : 240 V AC / 240 V DC AND MAX. POWER UP TO 50 WATTS.
- ALL FASTENERS ARE OF STAINLESS STEEL EXCEPT EARTHING
 AS PER IS:2614 / IS:1367 WITH RELEVANT AMENDMENTS.

BILL OF MATERIAL

SER. NO.	DESCRIPTION	MATERIAL	QTY.	REMARKS
1	MAIN BODY	LWB	1	
2	COVER	LWB	1	
3	ALLEN CAP HD SCREW / BOLTS WITH SPRING WASHERS	LWB	8	M3x5 L
4	O' RING/GASKET	NEOPRENE	1	O4 ENDLESS
5	CHEESE HEAD SCREW WITH SPRING WASHERS FOR EARTHING	BRASS	3	M5x19 L
6	NAME PLATE	S.S.	1	
7	WARNING PLATE	S.S.	1	
8	TERMINAL BLOCK	CHANNEL CLIP-ON CONNECTOR	1	NON TERMINATING WIRE / CABLE

ALL DIMENSIONS ARE IN mm
 TOLERANCE IN OVERALL DIMENSIONS $\pm 0.10\text{mm}$.
 EXCEPT FOR FLAME PATH & GAP

TITLE: FLAMEPROOF CUM WEATHERPROOF JUNCTION BOX (FOR GAS GROUP - II B ZONE-1)
MODEL: KKJB/19E
AS PER: IS/IEC: 60079-1 (2014) IS/IEC: 60079-0 (2011) IS/IEC: 60529 (2001)
CAT.NO. KK/JB/60/E
DWG. NO. KK/JB/2019/20/E
SHEET 3 OF 4
SIZE B

REV. NO.	05.06.2019	DESCRIPTION	ORIGINAL	APPRO.
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Keshkamat & Company
 SURMERA - 400 013

 KESHKAMAT & COMPANY W/129, ADARSH NAGAR, PRABHADEVI, MUMBAI-400 030, INDIA	
TYPE : FLAMEPROOF CUM WEATHERPROOF JUNCTION BOX FOR CCTV SYSTEM EX "II" II B TB (+20" C TO +40" C) IP-65, TB	MODEL : KKJB/19E
CAT NO. : KKJB/60/E	SRL NO. :
DRG. NO. : KK/JB/2019/20/E	AS PER : IS/IEC: 60079-1 (2014) IS/IEC: 60079-0 (2011) IS/IEC: 60529 (2001)
CIMFR CERT. NO. :	IS/IEC: 60529 (2001)
ISOLATE SUPPLY BEFORE OPENING	

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NAME PLATE
(ITEM NO. 6)

 WARNING ISOLATE SUPPLY BEFORE OPENING

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WARNING PLATE
(ITEM NO. 7)

CENTRAL INSTITUTE OF MINING & FUEL RESEARCH
 DHANBAD (INDIA)
 FLAME PROOF & EQUIPMENT SAFETY
 CERTIFIED WIDE TEST REPORT
 No. CIMFR/TC 195
 DATED 17/01/2020

 S. Testing Officer

ALL DIMENSIONS ARE IN mm.
TOLERANCE IN OVERALL DIMENSIONS ± 10 mm.
EXCEPT FOR FLAME PATH & GAP

REV. NO.	REV. DATE	CHANGE	APPD.								
0	05.05.2019	ORIGINAL									
<table border="1"> <tr> <td></td> <td>DOC. GA</td> <td>DIM mm</td> <td>SCALE N.T.S.</td> </tr> <tr> <td>DRAWN <i>Seemson</i></td> <td>CHECKED <i>[Signature]</i></td> <td colspan="2">ENGINEER <i>[Signature]</i></td> </tr> </table>					DOC. GA	DIM mm	SCALE N.T.S.	DRAWN <i>Seemson</i>	CHECKED <i>[Signature]</i>	ENGINEER <i>[Signature]</i>	
	DOC. GA	DIM mm	SCALE N.T.S.								
DRAWN <i>Seemson</i>	CHECKED <i>[Signature]</i>	ENGINEER <i>[Signature]</i>									

TITLE: FLAMEPROOF CUM WEATHERPROOF JUNCTION BOX (FOR GAS GROUP - II B ZONE-1)	
MODEL :	KKJB/19E
AS PER :	IS/IEC: 60079-1 (2014) IS/IEC: 60079-0 (2011) IS/IEC: 60529 (2001)
CAT NO.	KK/JB/60/E
DRG. NO.	KK/JB/2019/20/E

KKJB/19E (17)