

[13]

**Schedule**

[14] **EU-Type Examination Certificate Number: TI16ATEX 671-3 X**

[15] Description of Equipment or protective system:

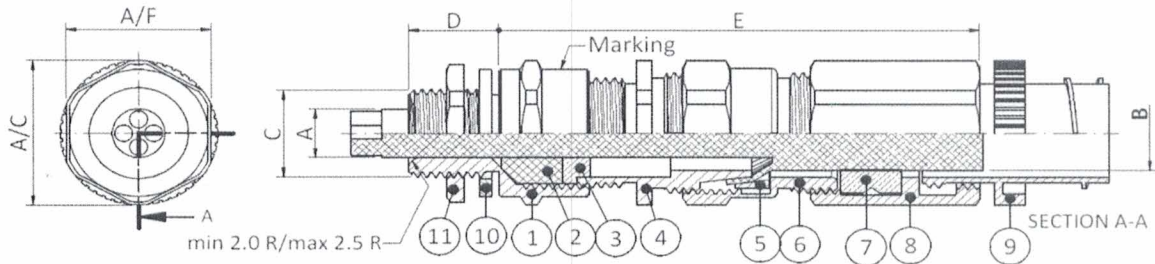
Akshar E1FWFC, E1FXFC, E1FWRM, E1FXRM, E1FWRF, E1FXRF types Cable Glands are for Indoor and Outdoor use in the appropriate Hazardous Areas with armored cable. They provide flameproof seal on the cable inner sheath and environmental seal on the cable outer sheath with environmental protection to IP66. They are suitable for normal industrial environmental of temperature, humidity and vibration.

Cable Gland confirm to following Standards for Group II and III, Category 2 for Zone 1 & 2 and Category 2 for Zone 21 & 22, for ambient temperature range  $-60^{\circ}\text{C} \leq T_a \leq +125^{\circ}\text{C}$ :

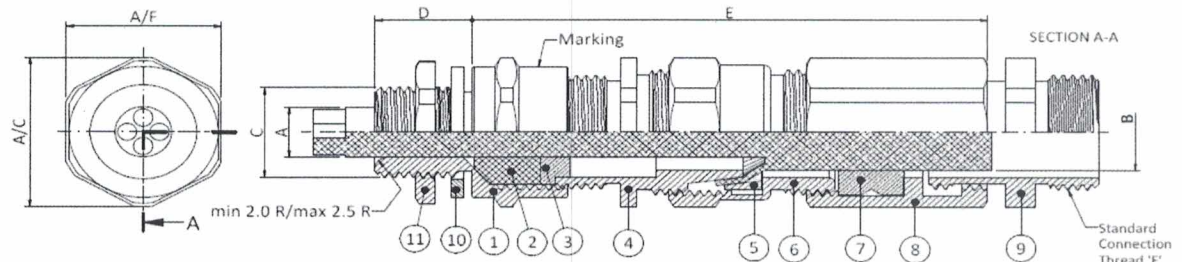
EN 60079-0: 2012+A11:2013, EN 60079-1: 2014, EN 60079-31: 2014

Cable gland selection:

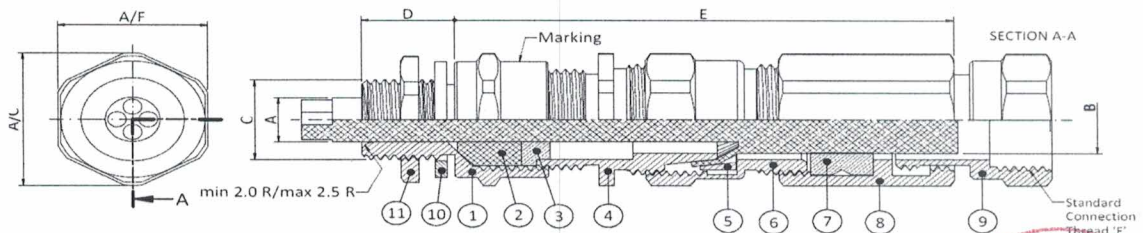
**E1FFC**



**E1FRM**



**E1FRF**



* Cable Gland Size	Standard Entry Thread "C"				Entry Thread Length		Entry Thread "C" Option		Armoured Wire Diameter				Cable Diameter				Standard Connection Thread "F"			Body, Seal Nut		Protrusion Length "E"	Torque (Nm)
	Metric	NPT/BSP	ET	PG	Length "D"	NPT	Metric	NPT	for W type		for X type		Bedding Dia A		Overall Dia B		Metric	NPT	BSP (G)	Across Flat	Across Corner		
									Min	Max	Min	Max	Min	Max	Min	Max				A/F	A/C		
20s16	M20x1.5	1/2"	3/4"	PG 11	15.00	15.00	M25x1.5	3/4"	0.90	0.90	0.30	1.00	3.10	8.60	6.10	13.10	M20x1.5	1/2"	1/2"	24.00	26.20	76.25	35
20s	M20x1.5	1/2"	3/4"	PG 13.5	15.00	15.00	M25x1.5	3/4"	0.90	1.25	0.30	1.00	6.20	11.70	9.50	15.90	M20x1.5	1/2"	1/2"	24.00	26.20	75.00	35
20	M20x1.5	1/2"	3/4"	PG 16	15.00	15.00	M25x1.5	3/4"	0.90	1.25	0.40	1.00	6.50	13.90	12.50	20.90	M20x1.5	1/2"	1/2"	30.00	33.00	74.50	35
25	M25x1.5	3/4"	1"	PG 21	15.00	15.00	M32x1.5	1"	1.25	1.60	0.40	1.20	11.30	19.90	19.90	26.20	M25x1.5	3/4"	3/4"	36.00	39.20	91.50	45
32	M32x1.5	1"	1.1/4"	PG 29	15.00	15.00	M40x1.5	1.1/4"	1.60	2.00	0.40	1.20	17.00	26.20	23.70	33.90	M32x1.5	1"	1"	46.00	50.60	93.75	55
40	M40x1.5	1.1/4"	1.1/2"	PG 36	15.00	15.00	M50x1.5	1.1/2"	1.60	2.00	0.40	1.60	23.60	32.10	27.90	40.40	M40x1.5	1.1/4"	1.1/4"	55.00	60.00	95.50	65
50s	M50x1.5	1.1/2"	2"	PG 36	15.00	15.00	M63x1.5	2"	2.00	2.50	0.40	1.60	31.50	38.20	35.20	46.70	M50x1.5	1.1/2"	1.1/2"	60.00	65.00	96.00	80
50	M50x1.5	2"	2"	PG 42	15.00	15.00	M63x1.5	2.1/2"	2.00	2.50	0.60	1.60	35.80	44.00	40.40	53.00	M50x1.5	1.1/2"	1.1/2"	70.00	75.00	97.00	80
63s	M63x1.5	2"	2.1/2"	PG 48	15.00	15.00	M75x1.5	2.1/2"	2.00	2.50	0.60	1.60	41.70	50.00	45.60	59.40	M63x1.5	2"	2"	75.00	80.00	98.35	95
63	M63x1.5	2.1/2"	2.1/2"	-	15.00	15.00	M75x1.5	3"	2.00	2.50	0.60	1.60	47.50	56.00	54.60	65.80	M63x1.5	2"	2"	80.00	85.00	101.75	95
75s	M75x1.5	2.1/2"	3"	-	15.00	15.00	M90x1.5	3"	2.00	2.50	0.60	1.60	55.00	62.00	59.00	72.00	M75x1.5	2.1/2"	2.1/2"	90.00	95.00	106.85	110
75	M75x1.5	3"	3"	-	15.00	15.00	M90x1.5	3.1/2"	2.50	3.00	0.60	1.60	62.00	68.00	66.70	78.40	M75x1.5	2.1/2"	2.1/2"	100.00	110.00	112.00	110
90	M90x1.5	3.1/2"	3.1/2"	-	18.00	18.00	M100x1.5	4"	3.00	3.50	0.80	1.60	67.00	79.00	76.20	90.30	M90x1.5	3"	3"	112.00	122.00	140.50	150

Material of cable gland:

CHEMICAL COMPOSITION OF MATERIAL																
Material : Brass CW614N or Brass CW617N or Brass EN12165																
Elements	Cu	Zn	Pb	Sn	Fe	Mn	Ni	Al	Si	P	Cd	Sb	Be	Zr	Ti	Mg
Min	57.00	36.00	2.50	-	0	0	0	0	0	0	0	0	0	0	0	0
Max	59.00	39.50	3.50	0.30	0.30	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Material : Stainless Steel 316L																
Elements	C	Mn	Si	P	S	Cr	Mo	Ni	N							
Max	0.03	2.00	0.75	0.045	0.03	18.00	3.00	14.00	0.10							
Min	0.0	0.0	0.0	0.0	0.0	16.00	2.00	10.00	0.0							

[16] Report Number:

Inspection report No: 671/5/2016-3

Final Test Report No: 671/5/2016-3

[17] Special conditions for safe use:

1. The Cable Entries are only suitable for fixed installations.
2. Cable must be effectively clamped from pulling and twisting.
3. Cable Glands shall not be used in enclosure where the temperatures at the point of entry /mounting are outside the range of -60°C to + 125°C.
4. The glands should only be used with substantially round cables and tightened to the rated torque with Torque wrenches.
5. Install in accordance with requirements of EN60079-14.
6. The cable glands are provided with a sealing ring with an axial sealing height of at least 5 mm. With reference to the clearance groove, the end-user should ensure that at least five complete turns of the connector thread are made. In order to guarantee a screw depth of 8 mm, the enclosure should have a wall thickness of min. 10 mm ; if <10 mm, then if necessary, use a washer when cable entries are attached to the pressure-resistant enclosure.
7. In the case of NPT connecting threads, the end-user must ensure that the necessary IP protection is guaranteed; this can be done using a suitable thread sealing agent.
8. Installation should not be carried out under live conditions.

[18] Essential Health and Safety Requirements:

Covered by the standards listed at item 9.



This certificate may only be reproduced in its entirety and change, schedule included.

Page 3 of 4 of Certificate No. TI16ATEX 671-3 X

[19] Drawings and Documents:

Number	Sheet	Issue	Date	Description
Ex-E1FW/X	1 of 1	REV No. 0	05/04/2016	E1FW/X Conduit Cable Gland
IM/E1FWFC	7 pages	REV No. 00	12/04/2016	Installation Manual E1FWFC/E1FXFC
IM/E1FWRF	7 pages	REV No. 00	12/04/2016	Installation Manual E1FWRF/E1FXRF
IM/E1FWRM	7 pages	REV No. 00	12/04/2016	Installation Manual E1FWRM/E1FXRM

Technická inšpekcia, a.s.  
 Trnavská cesta 56  
 821 01 Bratislava, Slovakia  
 e-mail: [tisr@tisr.sk](mailto:tisr@tisr.sk)  
 web: [www.tisr.sk](http://www.tisr.sk)  
 Tel.: +421 2 49208 100



Bratislava, May 10<sup>th</sup>, 2016

*[Signature]*  
 Ing. Dušan Konický  
 General Director

Identification code:  
NB - 1354

TECHNICKÁ INŠPEKCIA, a.s.  
Trnavská cesta 56  
821 01 Bratislava 1  
Slovak Republic



Date: 10.05.2016

Number of pages: 6  
Number of annexes: 2

## FINAL TEST REPORT ON EU TYPE-EXAMINATION OF PRODUCT

Number of test report: **671/5/2016-3**

Product:	<b>CABLE GLAND</b>
Type:	<b>E1FWFC, E1FXFC, E1FWRM, E1FXRM, E1FWRF, E1FXRF</b>
KP code:	--
Manufacturer:	<b>AKSHAR BRASS INDUSTRIES</b>
Manufacture place:	4027, GIDC, Phase-III, Jamnagar-361 004, Gujarat, India
Applicant/customer:	Target Conformity Management Services, 865, Sector 41A, Chandigarh, India
Date of application receipt:	17.03.2016
Number of taken pieces of sample:	4
Performed by:	Ing. Ján Vencel
Approved by:	Ing. Rudolf Dušanič, PhD

Distribution list:

1 x – applicant,  
1 x – Technická inšpekcia, a.s. (USTI).

# 1. GENERAL PROVISIONS

Technická inšpekcia, a.s., Bratislava, Slovak Republic (hereinafter "TI"), NB – 1354 submits this final test report from conformity assessment as the supporting report for issuance on EU-Type Examination Certificate of equipment or protective system according to annex III of European directive 2014/34/EU on equipment and protective systems intended for use in potentially explosive atmospheres (hereinafter "product"):

**CABLE GLAND, Type: E1FWFC, E1FXFC, E1FWRM, E1FXRM, E1FWRF, E1FXRF**

## 1.1. Particulars necessary to identify the approved type:

CABLE GLAND, Type: E1FWFC, E1FXFC, E1FWRM, E1FXRM, E1FWRF, E1FXRF

## 1.2 Basic technical data:

**Name: CABLE GLAND**

**Type: E1FWFC, E1FXFC, E1FWRM, E1FXRM, E1FWRF, E1FXRF**

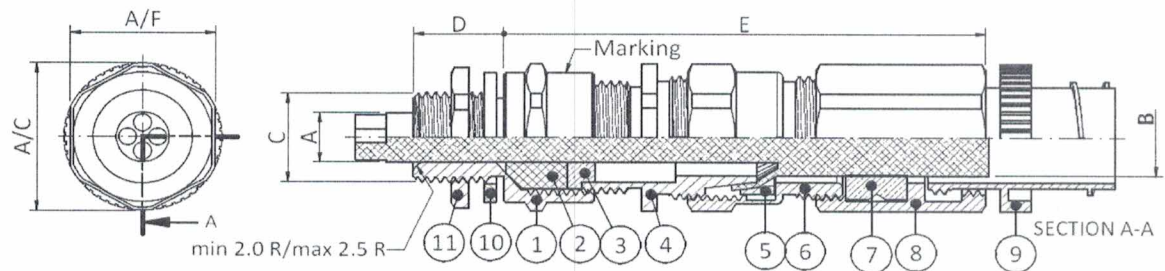
Akshar E1FWFC, E1FXFC, E1FWRM, E1FXRM, E1FWRF, E1FXRF types Cable Glands are for Indoor and Outdoor use in the appropriate Hazardous Areas with armored cable. They provide flameproof seal on the cable inner sheath and environmental seal on the cable outer sheath with environmental protection to IP66. They are suitable for normal industrial environmental of temperature, humidity and vibration.

Cable Gland conform to following Standards for Group II and III, Category 2 for Zone 1 & 2 and Category 2 for Zone 21 & 22, for ambient temperature range  $-60^{\circ}\text{C} \leq T_a \leq +125^{\circ}\text{C}$ :

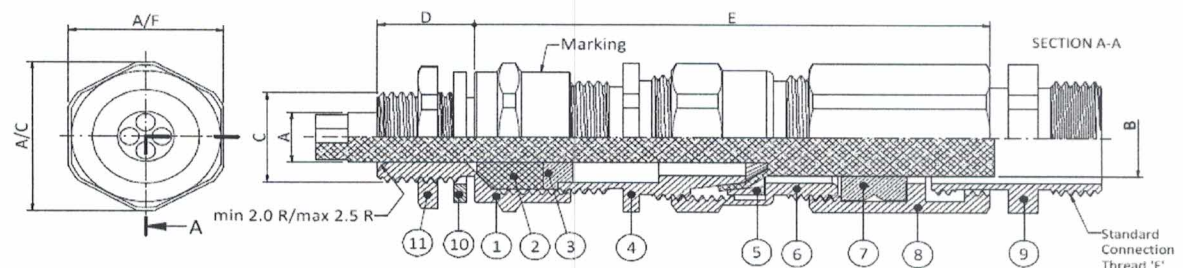
EN 60079-0: 2012+A11:2013, EN 60079-1: 2014, EN 60079-31: 2014

Cable gland selection:

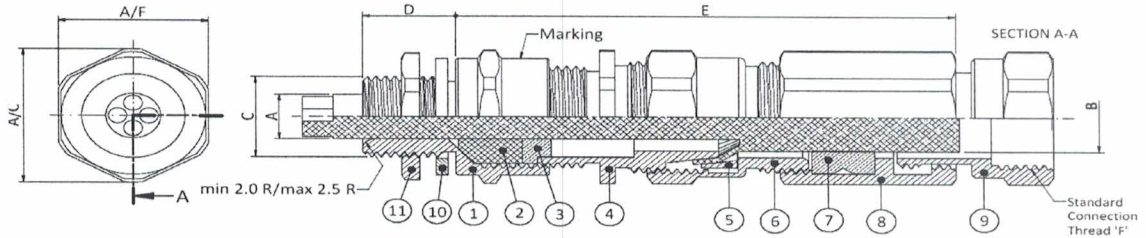
### E1FFC



### E1FRM



# E1FRF



* Cable Gland Size	Standard Entry Thread "C"				Entry Thread Length		Entry Thread "C"		Armoured Wire Diameter				Cable Diameter				Standard Connection Thread "F"			Body, Seal Nut		Torque (Nm)	
	Metric	NPT/BSP	ET	PG	Length "D"	NPT	Option		for W type		for X type		Bedding Dia A		Overall Dia B		Metric	NPT	BSP (G)	Across Flat A/F	Across Corner A/C		Length "E"
							Metric	NPT	Min	Max	Min	Max	Min	Max	Min	Max							
20s16	M20x1.5	1/2"	3/4"	PG 11	15.00	15.00	M25x1.5	3/4"	0.90	0.90	0.30	1.00	3.10	8.60	6.10	13.10	M20x1.5	1/2"	1/2"	24.00	26.20	76.25	35
20s	M20x1.5	1/2"	3/4"	PG 13.5	15.00	15.00	M25x1.5	3/4"	0.90	1.25	0.30	1.00	6.20	11.70	9.50	15.90	M20x1.5	1/2"	1/2"	24.00	26.20	75.00	35
20	M20x1.5	1/2"	3/4"	PG 16	15.00	15.00	M25x1.5	3/4"	0.90	1.25	0.40	1.00	6.50	13.90	12.50	20.90	M20x1.5	1/2"	1/2"	30.00	33.00	74.50	35
25	M25x1.5	3/4"	1"	PG 21	15.00	15.00	M32x1.5	1"	1.25	1.60	0.40	1.20	11.30	19.90	19.90	26.20	M25x1.5	3/4"	3/4"	36.00	39.20	91.50	45
32	M32x1.5	1"	1.1/4"	PG 29	15.00	15.00	M40x1.5	1.1/4"	1.60	2.00	0.40	1.20	17.00	26.20	23.70	33.90	M32x1.5	1"	1"	46.00	50.60	93.75	55
40	M40x1.5	1.1/4"	1.1/2"	PG 36	15.00	15.00	M50x1.5	1.1/2"	1.60	2.00	0.40	1.60	23.60	32.10	27.90	40.40	M40x1.5	1.1/4"	1.1/4"	55.00	60.00	95.50	65
50s	M50x1.5	1.1/2"	2"	PG 36	15.00	15.00	M63x1.5	2"	2.00	2.50	0.40	1.60	31.50	38.20	35.20	46.70	M50x1.5	1.1/2"	1.1/2"	60.00	65.00	96.00	80
50	M50x1.5	2"	2"	PG 42	15.00	15.00	M63x1.5	2.1/2"	2.00	2.50	0.60	1.60	35.80	44.00	40.40	53.00	M50x1.5	1.1/2"	1.1/2"	70.00	75.00	97.00	80
63	M63x1.5	2"	2.1/2"	PG 48	15.00	15.00	M75x1.5	2.1/2"	2.00	2.50	0.60	1.60	41.70	50.00	45.60	59.40	M63x1.5	2"	2"	75.00	80.00	98.35	95
63	M63x1.5	2.1/2"	2.1/2"	-	15.00	15.00	M75x1.5	3"	2.00	2.50	0.60	1.60	47.50	56.00	54.60	65.80	M63x1.5	2"	2"	80.00	85.00	101.75	95
75s	M75x1.5	2.1/2"	3"	-	15.00	15.00	M90x1.5	3"	2.00	2.50	0.60	1.60	55.00	62.00	59.00	72.00	M75x1.5	2.1/2"	2.1/2"	90.00	95.00	106.85	110
75	M75x1.5	3"	3"	-	15.00	15.00	M90x1.5	3.1/2"	2.50	3.00	0.60	1.60	62.00	68.00	66.70	78.40	M75x1.5	2.1/2"	2.1/2"	100.00	110.00	112.00	110
90	M90x1.5	3.1/2"	3.1/2"	-	18.00	18.00	M100x1.5	4"	3.00	3.50	0.80	1.60	67.00	79.00	76.20	90.30	M90x1.5	3"	3"	112.00	122.00	140.50	150

Material of cable gland:

CHEMICAL COMPOSITION OF MATERIAL																
Material : Brass CW614N or Brass CW617N or Brass EN12165																
Elements	Cu	Zn	Pb	Sn	Fe	Mn	Ni	Al	Si	P	Cd	Sb	Be	Zr	Ti	Mg
Min	57.00	36.00	2.50	-	0	0	0	0	0	0	0	0	0	0	0	0
Max	59.00	39.50	3.50	0.30	0.30	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Material : Stainless Steel 316L																
Elements	C	Mn	Si	P	S	Cr	Mo	Ni	N							
Max	0.03	2.00	0.75	0.045	0.03	18.00	3.00	14.00	0.10							
Min	0.0	0.0	0.0	0.0	0.0	16.00	2.00	10.00	0.0							

Marking:


**II 2 GD**      **Ex db IIC Gb**      **- 60°C ≤ Tamb ≤ 125°C**  
**Ex tb IIIC Db IP66**      **- 60°C ≤ Tamb ≤ 125°C**

Special conditions for safe use:

- The Cable Entries are only suitable for fixed installations.
- Cable must be effectively clamped from pulling and twisting.
- Cable Glands shall not be used in enclosure where the temperatures at the point of entry /mounting are outside the range of -60°C to + 125°C.
- The glands should only be used with substantially round cables and tightened to the RATED torque with Torque wrenches.
- Install in accordance with requirements of EN60079-14.
- The cable glands are provided with a sealing ring with an axial sealing height of at least 5 mm. With reference to the clearance groove, the end-user should ensure that at least five complete turns of the connector thread are made. In order to guarantee a screw depth of 8 mm, the enclosure should

have a wall thickness of min. 10 mm ; if <10 mm, then if necessary, use a washer when cable entries are attached to the pressure-resistant enclosure.

- In the case of NPT connecting threads, the end-user must ensure that the necessary IP protection is guaranteed; this can be done using a suitable thread sealing agent.
- Installation should not be carried out under live conditions.

## **2. TEST PROCEDURES AND FINDINGS**

### **2.1 Selection of a sample**

The sample in amount of four pieces (Test report No. CIMFR/TC/P/63 issued by Central Institute of Mining & Fuel Research, India ) represents the products compatible with the type: E1FWFC, E1FXFC, E1FWRM, E1FXRM, E1FWRF, E1FXRF

### **2.2 Scope of certification**

According to request the conformity assessment of the product has been carried out pursuant to § 12 par. 3 letter b) of the Act no. 264/1999 Coll. on technical requirements for products and on conformity assessment and on change and amendment of some Acts in the wording of later provisions and pursuant to annex III of European directive 2014/34/EU on equipment and protective systems intended for use in potentially explosive atmospheres.

The product has been assessed from the following aspects:

- safety of product.

### **2.3 Place and method of test performance, measurements, assessment and evaluation**

TI have performed the appropriate checks and tests necessary to check whether the solutions adopted by the manufactures of the product meet the requirements of annex II of European directive 2014/34/EU on equipment and protective systems intended for use in potentially explosive atmospheres, which ensure the safety of product.

Inspectors of TI Mr. Ján Vencel has carried out tests and measurement related to the safety of the product at the manufacturer AKSHAR BRASS INDUSTRIES, 4027, GIDC, Phase-III, Jamnagar-361 004, Gujarat, India. All results have been assessed and evaluated in TI Central Office Bratislava in the framework of EU-type assessment of the product.

Range of checks and tests:

- Annex III (module B) to European directive 2014/34/EU
- Verification that the sample of this type is in conformity with the submitted technical documentation and with the technical requirements for safety according to the European directive 2014/34/EU.
- Manufacturer shall perform the routine test prescribed at clause 27 of the EN 60079-0 standard.

### **2.4 Essential standards applied including related standards and regulations**

- Annex III (module B) to European directive 2014/34/EU
- EN 60079-0:2012/A11:2013 Explosive atmospheres Part 0: Equipment. General requirements.
- EN 60079-1:2014 Explosive atmospheres. Part 1: Equipment protection by flameproof enclosure "d"
- EN 60079-31:2014 Explosive atmospheres. Part 31: Equipment dust ignition protection by enclosure "t"

### **3. RESULTS OF CERTIFICATION**

#### **3.1 Review of test results, measurements, findings**

Review of test results, measurements and findings is given in Inspection Report no. 671/5/2016-3.

#### **3.2 Results of assessment**

By the comparison of the test of the sample of product the conformity of properties of the product type have been determined according to Annex III of the Directive 2014/34/EU and EN 60079-0:2012/A11:2013, EN 60079-1:2014, EN 60079-31:2014 which are related to the product.

The satisfactory results and findings are elaborated in the Inspection Report no. 671/5/2016-3 on EU-type examination of the product dated May 10<sup>th</sup>, 2016. The Inspection Report has been elaborated by Mr. Ján Vencel – inspector for electrical equipment TI, NB – 1354.

The Inspection Report is deposited at TI Central Office and it is in Annex of this document.

### **4. CONCLUSIONS**

From results of assessment evaluation which are given in part 3 of this Final Report, implies that the conformity of the product type properties with the specified technical requirements and other legal regulations relating to the product have been found.

Based of findings, TI NB-1354 declares, that type of the product meets the relevant requirements.

Based on above given findings, TI NB-1354, Trnavská cesta 56, 821 01 Bratislava, Slovenská republika will issue EU-Type Examination Certificate.

#### **Certificate validity conditions:**

The manufacturer of the product shall inform TI NB–1354 on any modification although of small extent, which on approved product have performed or he plan to perform including changes and modifications which have not been given in original technical documentation.

The manufacturer of the product shall keep along with technical documentation also copies of EU-Type Examination Certificate and their amendments minimally for ten years after finalisation of product manufacturing.

If manufacturer of product is not able to fulfil the duty to keep technical documentation, this duty shall lie on person who places product at Community market.

#### **Used materials:**

- Drawing No. Ex-E1FW/X, REV No. 0, dated 05/04/2016 for Cable Gland Type: E1FWFC, E1FXFC, E1FWRM, E1FXRM, E1FWRF, E1FXRF
- Installation Manual IM/E1FWFC, REV No. 00, dated 12/04/2016
- Installation Manual IM/E1FWRF, REV No. 00, dated 12/04/2016
- Installation Manual IM/E1FWRM, REV No. 00, dated 12/04/2016
- Laboratory test report No. CIMFR/TC/P/63 dated 13.04.2012 from Central Institute of Mining and Fuel Research, India
- Akshar Brass Industries Declaration for E1FWFC, E1FXFC, E1FWRM, E1FXRM, E1FWRF, E1FXRF Cable Gland
- Data sheet for Silicone Rubber Compounds from ShinEtsu, Japan
- Test report No. 3013/2016-17 from Attuned Polymers Laboratories dated 23/4/2016



- Data sheet for Nylon 6/6 from Plastic Products, Inc.
- Akshar Brass Industries Tensile Testing report dated 01/04/2016
- Akshar Brass Industries Torque Test report dated 12/04/2016
- Akshar Brass Industries Hydrobar Pressure Test report dated 13/04/2016
- Certificate of analysis Stainless Steel SS 316L dated 10/04/2016
- Akshar Brass Industries analysis CW614N dated 19/04/2016
- Draft of EU Declaration of Conformity

**Annexes:**

1. Inspection Report according to the EN ISO/IEC 17020 no.: 671/5/2016-3
2. Draft proposal for EU TYPE-EXAMINATION CERTIFICATE no.: TI16ATEX 671-3 X

Prepared by: Ing. Ján Vencel

.....

Approved by: Ing. Rudolf Dušanič, PhD.,

.....

Based on evaluation of submitted technical documentation given in this FINAL TEST REPORT on EU type-examination of product the "EU-TYPE EXAMINATION CERTIFICATE no. TI16ATEX 671-3 X" will be issued.

Date: May 10<sup>th</sup>, 2016

Ing. Dušan Konický  
General Director