THE NETHERLANDS
(N E D E R L A N D)

E4

COMMUNICATION

Concerning [1]:

- ~~approval granted~~
- approval extended
- ~~approval refused~~
- ~~approval withdrawn~~
- ~~production definitively discontinued~~

of a type of ~~CNG~~/LNG component pursuant to Regulation number 110.

Approval number: E4*110R05/00*0399*06

1. ~~CNG~~/LNG component considered:

   - ~~Container(s) or cylinder(s)~~ [1]
   - ~~Tank(s) or vessel(s)~~ [1]
   - ~~CNG accumulator(s)~~ [1]
   - ~~Pressure indicator~~ [1]
   - ~~Pressure relief valve~~ [1]
   - ~~Automatic valve(s)~~ [1]
   - ~~Excess flow valve~~ [1]
   - ~~Gas-tight housing~~ [1]
   - ~~Pressure regulator(s)~~ [1]
   - ~~Non-return valve(s) or check valve(s)~~ [1]
   - ~~Pressure relief device (PRD)(temperature triggered)~~ [1]
   - ~~Manual valve~~ [1]
   - ~~Flexible fuel lines~~ [1]
   - ~~Filling unit or receptacle~~ [1]
   - ~~Gas injector(s)~~ [1]
   - ~~CNG Compressor~~ [1]
   - ~~Gas flow adjuster~~ [1]
   - ~~Gas/air mixer~~ [1]
   - ~~Electronic control unit~~ [1]
   - ~~Pressure and temperature sensor(s)~~ [1]
   - ~~CNG filter(s)~~ [1]
   - ~~PRD (pressure triggered)~~ [1]
   - ~~Fuel rail~~ [1]
   - ~~Heat exchanger(s)/vaporizer(s)~~ [1]
   - ~~Natural gas detector(s)~~ [1]

P.O. Box 777
2700 AT Zoetermeer
The Netherlands

Tel. + 31 79 345 83 02
E-mail typeapproval@rdw.nl
www.rdw.nl

Type-approval Department

- ~~LNG filling receptacle(s)~~ (1)
- ~~LNG pressure control regulator(s)~~ (1)
- ~~LNG pressure and/or temperature sensor(s)~~ (1)
- ~~LNG manual valve(s)~~ (1)
- ~~LNG automatic valve(s)~~ (1)
- ~~LNG non-return valve(s)~~ (1)
- ~~LNG pressure relief valve(s)~~ (1)
- LNG excess flow valve(s) (1)
- ~~LNG fuel pump(s)~~ (1)
-

2.	Trade name or mark	:	LNG Excess Flow Valve NG303 series
3.	Manufacturer's name and address	:	Engineered Controls International LLC 100 RegO Drive 27244 Elon, North Carolina United States of America
4.	If applicable, name and address of manufacturer's representative	:	N.A.
5.	Submitted for approval on	:	11-05-2015
6.	Technical service responsible for conducting approval tests	:	Kiwa Nederland B.V. P.O. Box 137 7300 AC Apeldoorn The Netherlands
7.	Date of report issued by that service	:	01-02-2023
8.	Number of report issued by that service	:	150201368_P000277091
9.	Approval	:	~~granted~~/~~refused~~/extended/~~withdrawn~~ (1)
10.	Reason(s) of extension (if applicable)	:	The currently homologated LNG Excess Flow Valve NG303 series is updated to the latest Revision of the ECE Regulation 110
11.	Place	:	Zoetermeer
12.	Date	:	13 February 2023
13.	Signature	:	

14. The documents filed with the application or extension of approval can be obtained upon request.

(1) Strike out what does not apply.

ADDENDUM

1. Additional information concerning the type approval of a type of ~~CNG~~/LNG components pursuant to Regulation number 110.

1.1.	Natural Gas Storage System	
1.1.1.	Container(s) or cylinder(s) (for CNG system)	
1.1.1.1.	Dimensions	:
1.1.1.2.	Material	:
1.1.2.	Tank(s) or vessel(s) (for LNG system)	
1.1.2.1.	Capacity	:
1.1.2.2.	Material	:
1.1.3.	CNG accumulator	
1.1.3.1.	Dimensions	:
1.1.3.2.	Material	:
1.1.3.3.	Capacity	:
1.2.	Pressure indicator	
1.2.1.	Working pressure(s) (2)	:
1.2.2.	Material	:
1.3.	Pressure relief valve (discharge valve)	
1.3.1.	Working pressure(s) (2)	:
1.3.2.	Material	:
1.4.	Automatic valve(s)	
1.4.1.	Working pressure(s) (2)	:
1.4.2.	Material	:
1.5.	Excess flow valve	
1.5.1.	Working pressure(s) (2)	:
1.5.2.	Material	:
1.6.	Gas-tight housing	
1.6.1.	Working pressure(s) (2)	:
1.6.2.	Material	:
1.7.	Pressure regulator(s)	
1.7.1.	Working pressure(s) (2)	:
1.7.2.	Material	:
1.8.	Non-return valve(s) or check valve(s)	
1.8.1.	Working pressure(s) (2)	:
1.8.2.	Material	:
1.9.	Pressure relief device (temperature triggered)	
1.9.1.	Working pressure(s) (2)	:
1.9.2.	Material	:
1.10.	Manual valve	
1.10.1.	Working pressure(s) (2)	:
1.10.2.	Material	:

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RDW

1.11.	Flexible fuel lines	
1.11.1.	Working pressure(s) [2]	:
1.11.2.	Material	:
1.12.	Filling unit or receptacle	
1.12.1.	Working pressure(s) [2]	:
1.12.2.	Material	:
1.13.	Gas injector(s)	
1.13.1.	Working pressure(s) [2]	:
1.13.2.	Material	:
1.14.	Gas flow adjuster	
1.14.1.	Working pressure(s) [2]	:
1.14.2.	Material	:
1.15.	Gas/air mixer	
1.15.1.	Working pressure(s) [2]	:
1.15.2.	Material	:
1.16.	Electronic control unit	
1.16.1.	Basic software principles	:
1.17.	Pressure and temperature sensor(s)	
1.17.1.	Working pressure(s) [2]	:
1.17.2.	Material	:
1.18.	CNG filter(s)	
1.18.1.	Working pressure(s) [2]	:
1.18.2.	Material	:
1.19.	PRD (pressure triggered)	
1.19.1.	Working pressure(s) [2]	:
1.19.2.	Material	:
1.20.	Fuel rail(s)	
1.20.1.	Working pressure(s) [2]	:
1.20.2.	Material	:
1.21.	Heat Exchanger(s)/Vaporizer(s)	
1.21.1.	Working pressure(s) [2]	:
1.21.2.	Material	:
1.22.	Natural gas detector(s)	
1.22.1.	Working pressure(s) [2]	:
1.22.2.	Material	:
1.23.	LNG filling receptacle(s)	
1.23.1.	Working pressure(s) [2]	:
1.23.2.	Material	:
1.24.	LNG pressure control regulator(s)	
1.24.1.	Working pressure(s) [2]	:
1.24.2.	Material	:

1.25.	LNG pressure and/or temperature sensor(s)		
1.25.1.	Working pressure(s) [2]	:	
1.25.2.	Material	:	
1.26.	LNG manual valve(s)		
1.26.1.	Working pressure(s) [2]	:	
1.26.2.	Material	:	
1.27.	LNG automatic valve(s)		
1.27.1.	Working pressure(s) [2]	:	
1.27.2.	Material	:	
1.28.	LNG non-return valve(s)		
1.28.1.	Working pressure(s) [2]	:	
1.28.2.	Material	:	
1.29.	LNG pressure relief valve(s)		
1.29.1.	Working pressure(s) [2]	:	
1.29.2.	Material	:	
1.30.	LNG excess flow valve(s)		
1.30.1.	Working pressure(s) [2]	:	4.0 MPa (40Bar)
1.30.2.	Material	:	See report 150201368 and its extensions
1.31.	LNG fuel pump(s)		
1.31.1.	Working pressure(s) [2]	:	
1.31.2.	Material	:	
1.32	CNG Compressor		
1.32.1.	Working pressure(s) [2]	:	
1.32.2.	Material	:	

[2] Specify the tolerance

Report 150201368_P000277091
01-02-2023

Test report

LNG Excess Flow Valve NG303 series

Applicant

Engineered Controls International, LLC
100 RegO Drive 27244
Elon, North Carolina
United States of America

Trust
Quality
Progress

www.kiwaenergy.com

Contents

TEST REPORT
LNG Excess Flow Valve NG303 series

In accordance with ECE R110

Report number	**:**	**150201368**
Job reference	**:**	**P000277091**
Date of issue	:	01-02-2023
Total number of pages	:	14 (including appendices)
Testing laboratory	**:**	**KIWA Nederland B.V.**
Testing location/address	:	Wilmersdorf 50 7327 AC Apeldoorn The Netherlands
Applicant's name	**:**	**Engineered Controls International, LLC**
Address	:	100 RegO Drive 27244 Elon, North Carolina United States of America
Manufacturers location	**:**	**Engineered Controls International, LLC**
Address	:	100 RegO Drive 27244 Elon, North Carolina United States of America
Scope	**:**	Testing of LNG Excess Flow Valve NG303 series regarding the requirements as derived from the below mentioned Test specifications.
Test specifications	**:**	
Standards	:	Regulation 110 Addendum 109: Regulation No. 110 Revision 6 - Amendment 4 05 series of amendments– Date of entry into force: 22 June 2022
Non-standard test method	:	N.A.
Component description	**:**	LNG Excess Flow Valve NG303 series
Manufacturer	:	Engineered Controls International, LLC
Trade Mark	:	RegO Products
Model/Type reference	:	LNG Excess Flow Valve NG303 series (a full overview can be found in chapter 2: Description of the product)

Sample number(s)	:	N.A.
Intake date sample(s)	:	N.A.
Date(s) of testing	:	N.A.

Remarks : N.A.

Summary : Complies with the requirements as far as identified in the attached test- and result sheets.

Tested by : Eric Harmsen
(name + signature)

Reviewed by : Regina Adelmann
(name + signature)

1 Summary of testing

On request of Engineered Controls International, LLC the items as mentioned under Test item description are tested according to the Test specifications (see page 3 of this report).

Based on the product(s) information the test plan is not subject to any special interpretations or modifications.

The following modifications are made to the LNG Excess Flow Valve NG303 series

- The currently homologated LNG Excess Flow Valve NG303 series is updated to the latest Revision of the ECE Regulation 110

As a result, no tests are carried out

Notes

- The described test results are only valid for the tested materials and objects.
- RDW designation number for E4 and e4: RDWT-CAC-04
- KBA designation number for E1 and e1: KBA-P00033-12

2 Description of the product

The information below is based on the test results on the models under testing and the information of the manufacturer.

LNG Excess Flow Valve NG303 series

Approval number(s)	:	E4*110R05/00*0399*06
Marking number(s)	:	E4-110R-050399 “L”
Manufacturer	:	Engineered Controls International, LLC
Brand names:		RegO Products
Type(s)	:	Excess Flow Valve NG303Sxx (stainless steel) Excess Flow Valve NG303xx (brass) A list of all types can be find in table 1 on this page
Working pressure:		4.0 MPa (40 bar)
Classification	:	Class 5
Temperature range	:	-162°C up to 85°C
Material(s)	:	see drawings

Types (Brass)	**Types (Stainless steel)**
NG303B	NG303S
NG303B1A	NG303S1A
NG303B1B	NG303S1B
NG303B3	NG303S3
NG303B3A	NG303S3A
NG303B3B	NG303S3B
NG303BM270	NG303SM270
NG303BM27A	NG303SM27A
NG303BM27B	NG303SM27B
NG303BN030	NG303SN030
NG303BN03A	NG303SN03A
NG303BN03B	NG303SN03B
	NG303S3F3

3 Report history

Report number	**:**	**150201368**
Project number	**:**	**150201368**
Approval number	:	E4-110R-010399-L
Report date	:	11-05-2015
Author	:	Regina Adelmann
Description	:	Initial report LNG Excess flow valve NG303

Report number	**:**	**150201368**
Project number	**:**	**150502199**
Approval number	:	E4-110R-010399-L
Report date	:	16-12-2015
Author	:	Henry Rooks
Description	:	Extension 01 The following modifications are included: - The LNG Excess flow valve NG303 series are extended with the new NG303 brass version.

Report number	**:**	**150201368**
Project number	**:**	**160101588**
Approval number	:	E4-110R-010399-L
Report date	:	03-02-2016
Author	:	Regina Adelmann
Description	:	Extension 02 The following modifications are included: - The LNG Excess flow valve NG303 series are extended with the new NG303 version.

Report number	**:**	**150201368**
Project number	**:**	**180101484**
Approval number	:	E4-110R-010399-L
Report date	:	25-01-2018
Author	:	Regina Adelmann
Description	:	Extension 03 The following modifications are included: - The currently homologated LNG Excess flow valve NG303 is updated to the latest Supplement version of the ECE Regulation 110. - The certificate number for the Regulation 110 has been rewritten to the updated 1958 Agreement revision 3.

Report number	**:**	**150201368**
Project number	**:**	**180101484**
Approval number	:	E4-110R-010399-L
Report date	:	22-04-2020
Author	:	Henry Rooks
Description	:	Extension 04 The following modifications are included: - The currently homologated LNG Excess flow valve series has been extended with two new models with new poppet orifice sizes (1.5mm/0.59” and 0.8 mm/0.31”). - Change of body and bonnet material of the Stainless steel NG303 Check Valve Series from UNS S30300 to UNS S30400.

Report number	**:**	**150201368**
Project number	**:**	**210600173**
Approval number	:	E4-110R-010399-L
Report date	:	11-11-2021
Author	:	Henry Rooks
Description	:	Extension 05 The following modifications are included: - Addition of new type NG303S3F3 (stainless steel). Changes are: - New spring that allows a different closing flow than the original model (NG303 stainless steel). The flow is the same, just the closing flow for the check will be different. - Inlet thread changed from male to female NPT.

Report number	**:**	**150201368**
Project number	**:**	**210600173**
Approval number	:	E4*110R02/01*0399*05 corr01
Marking number		E4-110R-010399-L
Report date	:	20-01-2022
Author	:	Regina Adelmann
Description	:	Reason of correction of extension 05: Revision of drawing NG000303S3F3 due to a typo Extension 05 The following modifications are included: - Addition of new type NG303S3F3 (stainless steel). Changes are: - New spring that allows a different closing flow than the original model (NG303 stainless steel). The flow is the same, just the closing flow for the check will be different. - Inlet thread changed from male to female NPT.

Report number	**:**	**150201368**
Project number	**:**	**210600173**
Approval number	:	E4*110R02/01*0399*05 corr02
Marking number		E4-110R-010399-L
Report date	:	20-01-2022
Author	:	Regina Adelmann
Description	:	Reason of correction 02 of extension 05: - Revision of P/N numbers Reason of correction 01 of extension 05: Revision of drawing NG000303S3F3 due to a typo Extension 05 The following modifications are included: - Addition of new type NG303S3F3 (stainless steel). Changes are: - New spring that allows a different closing flow than the original model (NG303 stainless steel). The flow is the same, just the closing flow for the check will be different. - Inlet thread changed from male to female NPT.

Report number	**:**	**150201368**
Project number	**:**	**P000277091**
Approval number	:	E4*110R05/00*0399*06
Marking number	:	E4-110R-050399 “L”
Report date	:	01-02-2023
Author	:	Eric Harmsen
Description	:	Extension 06 The following modifications are included: The currently homologated LNG Excess Flow Valve NG303 series is updated to the latest Revision of the ECE Regulation 110.

4 Measurement uncertainty

Measurement uncertainty of testing in the context of ISO/IEC 17025

Applied equipment

The applied equipment in the department Automotive are in the calibration database ICS2000, in this database the equipment of the department is stated with the applicable measurement uncertainty. This database is controlled by the calibration department.

Applied measurement uncertainty

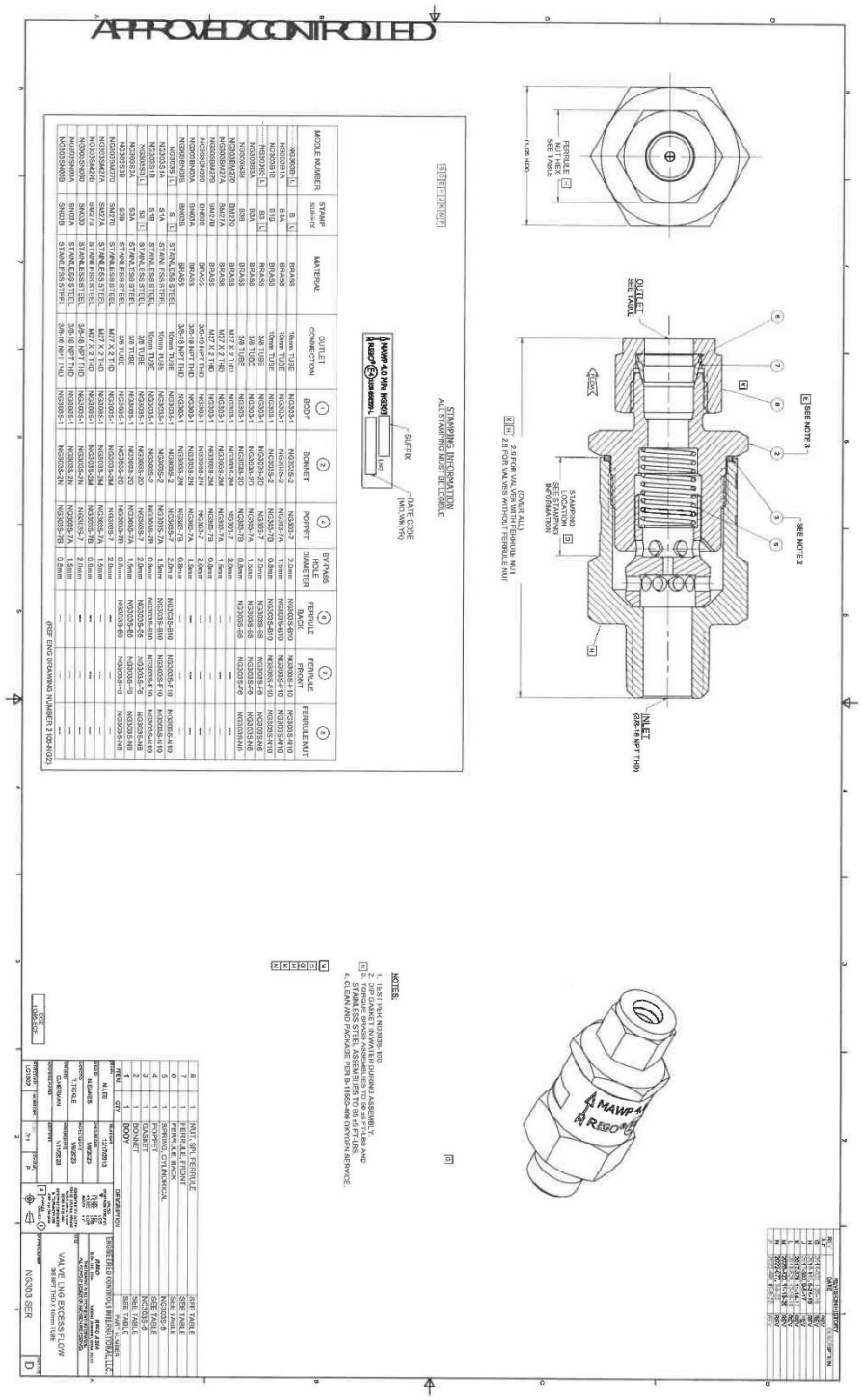
In the laboratory the OM 3.10.7 applies.

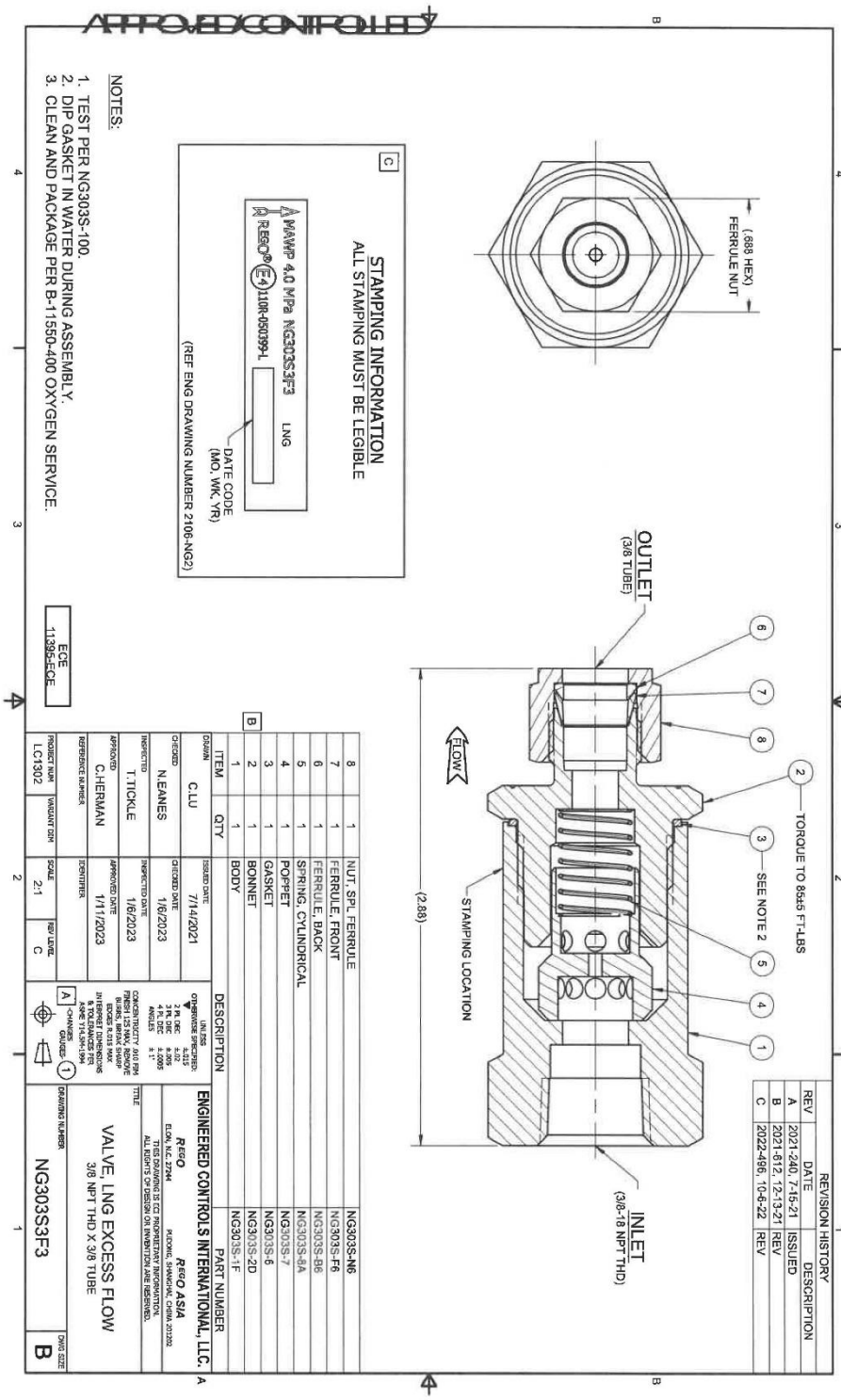
Unless otherwise specified in the test specifications the measurement uncertainty and conditions applied are:

Voltage	± 2 % Reading
High voltage test device (SPS) 500 – 3750 Vac	± 5 % Reading
Resistance	± 2 % Reading
Protective wire and insulation test device	± 5 % Reading
Sliding gauge	± 0.1 mm
Measuring tape	± 1 mm
Cooling and heating < -10 °C	± 5 °C
Cooling and heating –10 °C / +100 °C	± 3 °C
Cooling and heating > 100 °C	± 5 % Reading
Climate chamber	± 2 °C / ± 3 %RV
Ambient temperature	± 1 °C (10-30)
Time =< 1 hour	± 0.2 s
Time > 1 hour	± 0.1 % Reading
Torque	± 5 % Reading
Bending moment	± 5 % Reading
Standard weight	± 5 % Reading
Weighing < 30 g	± 0.1 % Reading
Weighing > 30 g	± 2 % Reading
Pressure (gas + air) general	± 5 % Reading
Barometer reading	± 5 mbar
Pressure (water)	± 5 % Reading
Burst water pressure	± 1 % Reading
Gas tightness 0-100 cm^3/h	± 5 cm^3/h
Gas tightness > 100 cm3/h	± 5 % Reading
Actual Flow rate (general)	± 5 % Reading

5 Appendices

Appendix 1 – Drawings




APPROVED CONTROLLED
REVISION HISTORY
REV | DATE | DESCRIPTION
A | 2021-240, 7-15-21 | ISSUED
B | 2021-612, 12-13-21 | REV
C | 2022-496, 10-6-22 | REV
(.688 HEX) FERRULE NUT
OUTLET (3/8 TUBE)
INLET (3/8-18 NPT THD)
TORQUE TO 85±5 FT-LBS
SEE NOTE 2
STAMPING LOCATION
FLOW
(2.88)
STAMPING INFORMATION
ALL STAMPING MUST BE LEGIBLE
MAWP 4.0 MPa NG303S3F3 LNG
REGO E4 110R-050399-L
DATE CODE (MO, WK, YR)
(REF ENG DRAWING NUMBER 2106-NG2)
NOTES:
1. TEST PER NG303S-100.
2. DIP GASKET IN WATER DURING ASSEMBLY.
3. CLEAN AND PACKAGE PER B-11550-400 OXYGEN SERVICE.
ECE 11395-ECE
ITEM | QTY | DESCRIPTION | PART NUMBER
8 | 1 | NUT, SPL. FERRULE | NG303S-N6
7 | 1 | FERRULE, FRONT | NG303S-F6
6 | 1 | FERRULE, BACK | NG303S-B6
5 | 1 | SPRING, CYLINDRICAL | NG303S-8A
4 | 1 | POPPET | NG303S-7
3 | 1 | GASKET | NG303S-6
2 | 1 | BONNET | NG303S-2D
1 | 1 | BODY | NG303S-1F
DRAWN C.LU 7/14/2021
CHECKED N.EANES 1/6/2023
INSPECTED T.TICKLE 1/6/2023
APPROVED C.HERMAN 1/11/2023
PROJECT NUM LC1302
VARIANT DRN
REFERENCE NUMBER
IDENTIFIER
SCALE 2:1
REV LEVEL C
ENGINEERED CONTROLS INTERNATIONAL, LLC.
REGO
REGO ASIA
ELON, N.C. 27244
PUDONG, SHANGHAI, CHINA 201202
THIS DRAWING IS CCI PROPRIETARY INFORMATION.
ALL RIGHTS OF DESIGN OR INVENTION ARE RESERVED.
TITLE
VALVE, LNG EXCESS FLOW
3/8 NPT THD X 3/8 TUBE
DRAWING NUMBER
NG303S3F3
DWG SIZE
B

6 End of report