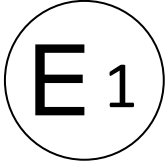




# Kraftfahrt-Bundesamt

DE-24932 Flensburg

## MITTEILUNG



ausgestellt von:

**Kraftfahrt-Bundesamt**

über die Erweiterung einer Genehmigung für einen Typ eines CNG-Bauteils nach der Regelung Nr. 110 einschließlich der Änderung Nr. 04 Ergänzung 02

## COMMUNICATION

issued by:

**Kraftfahrt-Bundesamt**

concerning the extension of an approval of a type of CNG component pursuant to Regulation No. 110 including amendment No. 04 supplement 02

Nummer der Genehmigung: **E1\*110R04/02\*0046\*03**  
Approval No.

1. Betreffendes CNG-Bauteil:  
CNG component considered:  
**Sperr- oder Rückschlagventil(e)**  
**Non-return valve(s)**
- 1.1. Typ:  
Type:  
**SS-CHXX**
2. Fabrik- oder Handelsmarke:  
Trade name or mark:  
**Swagelok**
3. Name und Anschrift des Herstellers:  
Manufacturer's name and address:  
**Swagelok Company**  
**US-Solon, OH 44139**
4. Name und Anschrift des Vertreters des Herstellers (gegebenenfalls):  
Name and address of manufacturer's representative (if any):  
**Entfällt**  
**Not applicable**
5. Zur Genehmigung vorgelegt am:  
Submitted for approval on:  
**19.07.2023**



# Kraftfahrt-Bundesamt

DE-24932 Flensburg

2

Nummer der Genehmigung: **E1\*110R04/02\*0046\*03**

Approval No.

6. Technischer Dienst, der die Prüfungen für die Genehmigungen durchführt:  
Technical service responsible for conducting approval tests:  
**TÜV SÜD Auto Service GmbH**  
**DE-80686 München**
7. Datum des Gutachtens des Technischen Dienstes:  
Date of report issued by that service:  
**15.06.2023**
8. Nummer des Gutachtens des Technischen Dienstes:  
Number of report issued by that service:  
**21-00006-IS-MUC-03**
9. **Die Genehmigung wird erweitert**  
**Approval extended**
10. Grund oder Gründe für die Erweiterung der Genehmigung:  
Reason(s) of extension of approval:  
**Reaktionelle Änderungen**  
**Editorial modifications**
11. Bemerkung(en):  
Remark(s):  
**Entfällt**  
**Not applicable**
12. Ort: **DE-24932 Flensburg**  
Place:
13. Datum: **26.07.2023**  
Date:
14. Unterschrift: **Im Auftrag**  
Signature:

Tag Aldeen Hussein Agha





# Kraftfahrt-Bundesamt

DE-24932 Flensburg

---

3

Nummer der Genehmigung: **E1\*110R04/02\*0046\*03**

Approval No.

15. Die mit dem Antrag auf Erteilung einer Genehmigung oder Erweiterung eingereichten Unterlagen sind auf Antrag erhältlich.  
The documents filed with the application or extension of approval can be obtained upon request.

Anlagen:

Enclosures:

**Gemäß Inhaltsverzeichnis**

**According to index**



# Kraftfahrt-Bundesamt

DE-24932 Flensburg

---

## Anlage Appendix

zur ECE-Typgenehmigungs Mitteilung Nr.: **E1\*110R04/02\*0046\*03**  
to ECE type-approval certificate No.:

1. Zusätzliche Angaben zur Typgenehmigung eines Typs eines CNG/LNG-Bauteils nach der Regelung Nr. 110  
Additional information concerning the type approval of a type of CNG/LNG components pursuant to Regulation No. 110
- 1.8. Sperr- oder Rückschlagventil(e)  
Non-return valve(s)
- 1.8.1. Arbeitsdruck (Arbeitsdrücke):  
Working pressure(s):  
**26 MPa**
- 1.8.2. Werkstoff:  
Material:  
**Edelstahl 316SS/A479 – X5CrNiMo17122 (1.4401)**  
**Stainless steel**



# Kraftfahrt-Bundesamt

DE-24932 Flensburg

---

Zu: E1\*110R04/02\*0046\*03

To:

## Erklärung über die Einhaltung der Anforderungen hinsichtlich der Übereinstimmung der Produktion gemäß dem Übereinkommen von 1958

### Statement of compliance with the conformity of the production requirements of the 1958 Agreement

1. Name des Herstellers:

Manufacturer's name:

**Swagelok Company**

**US-Solon, OH 44139**

2. Datum der Anfangsbewertung:

Date of the initial assessment:

**27.03.2002**

3. Datum aller durchgeführten Überwachungstätigkeiten:

Date of any surveillance activities:

Aktenzeichen

Datum der Begehung

Genehmigungsnummer

Register number

Date of inspection

Approval number

CoP-Q:

**Entfällt**

**Not applicable**

CoP-P:

**Entfällt**

**Not applicable**



# Kraftfahrt-Bundesamt

DE-24932 Flensburg

Zu: **E1\*110R04/02\*0046\*03**

To:

## Inhaltsverzeichnis zu den Beschreibungsunterlagen Index to the information package

Ausgabedatum: **09.01.2003**                      Letztes Änderungsdatum: **26.07.2023**  
Date of issue:    Last date of amendment:

Nebenbestimmungen und Rechtsbehelfsbelehrung  
Collateral clauses and instruction on right to appeal

Prüfbericht(e) Nr.:	Datum:
Test report(s) No.:	Date:
<b>351-0838-02-FBTP</b>	<b>10.12.2002</b>
<b>11-00011-UA-GBM-01</b>	<b>13.06.2011</b>
<b>21-00006-IS-MUC-02</b>	<b>28.09.2021</b>
<b>21-00006-IS-MUC-03</b>	<b>15.06.2023</b>

Beschreibungsbogen Nr.:	Datum:
Information document No.:	Date:
<b>SS-CH**-BC</b>	<b>28.11.2002</b>
<b>SS-CHXX</b>	<b>08.06.2023</b>

Liste der Änderungen:	Datum:
List of modifications:	Date:
<b>Siehe Punkt 0 des Prüfberichtes</b>	<b>08.06.2023</b>
<b>See item 0 of the test report</b>	



# Kraftfahrt-Bundesamt

DE-24932 Flensburg

---

Nummer der Genehmigung: **E1\*110R04/02\*0046\*03**

- Anlage -

## Nebenbestimmungen und Rechtsbehelfsbelehrung

### Nebenbestimmungen

Jede Einrichtung, die dem genehmigten Typ entspricht, ist gemäß der angewendeten Vorschrift zu kennzeichnen.

Die Einzelerzeugnisse der reihenweisen Fertigung müssen mit den Genehmigungsunterlagen genau übereinstimmen. Änderungen an den Einzelerzeugnissen sind nur mit ausdrücklicher Zustimmung des Kraftfahrt-Bundesamtes gestattet.

Änderungen der Firmenbezeichnung, der Anschrift und der Fertigungsstätten sowie eines bei der Erteilung der Genehmigung benannten Zustellungsbevollmächtigten oder bevollmächtigten Vertreters sind dem Kraftfahrt-Bundesamt unverzüglich mitzuteilen.

Verstöße gegen diese Bestimmungen können zum Widerruf der Genehmigung führen und können überdies strafrechtlich verfolgt werden.

Die Genehmigung erlischt, wenn sie zurückgegeben oder entzogen wird, oder der genehmigte Typ den Rechtsvorschriften nicht mehr entspricht. Der Widerruf kann ausgesprochen werden, wenn die für die Erteilung und den Bestand der Genehmigung geforderten Voraussetzungen nicht mehr bestehen, wenn der Genehmigungsinhaber gegen die mit der Genehmigung verbundenen Pflichten - auch soweit sie sich aus den zu dieser Genehmigung zugeordneten besonderen Auflagen ergeben - verstößt oder wenn sich herausstellt, dass der genehmigte Typ den Erfordernissen der Verkehrssicherheit oder des Umweltschutzes nicht entspricht.

Das Kraftfahrt-Bundesamt kann jederzeit die ordnungsgemäße Ausübung der durch diese Genehmigung verliehenen Befugnisse, insbesondere die genehmigungsgerechte Fertigung sowie die Maßnahmen zur Übereinstimmung der Produktion, nachprüfen. Es kann zu diesem Zweck Proben entnehmen oder entnehmen lassen. Dem Kraftfahrt-Bundesamt und/oder seinen Beauftragten ist ungehinderter Zutritt zu Produktions- und Lagerstätten zu gewähren.

Die mit der Erteilung der Genehmigung verliehenen Befugnisse sind nicht übertragbar. Schutzrechte Dritter werden durch diese Genehmigung nicht berührt.

### Rechtsbehelfsbelehrung

Gegen diese Genehmigung kann innerhalb eines Monats nach Bekanntgabe Widerspruch erhoben werden. Der Widerspruch ist beim **Kraftfahrt-Bundesamt, Fördestraße 16, DE-24944 Flensburg**, schriftlich oder zur Niederschrift einzulegen.



# Kraftfahrt-Bundesamt

DE-24932 Flensburg

---

2

Approval No.: **E1\*110R04/02\*0046\*03**

- Attachment -

## **Collateral clauses and instruction on right to appeal**

### **Collateral clauses**

All equipment which corresponds to the approved type is to be identified according to the applied regulation.

The individual production of serial fabrication must be in exact accordance with the approval documents. Changes in the individual production are only allowed with express consent of the Kraftfahrt-Bundesamt.

Changes in the name of the company, the address and the manufacturing plant as well as one of the parties given the authority to delivery or authorised representative named when the approval was granted is to be immediately disclosed to the Kraftfahrt-Bundesamt.

Breach of this regulation can lead to recall of the approval and moreover can be legally prosecuted.

The approval expires if it is returned or withdrawn or if the type approved no longer complies with the legal requirements. The revocation can be made if the demanded requirements for issuance and the continuance of the approval no longer exist, if the holder of the approval violates the duties involved in the approval, also to the extent that they result from the assigned conditions to this approval, or if it is determined that the approved type does not comply with the requirements of traffic safety or environmental protection.

The Kraftfahrt-Bundesamt may check the proper exercise of the conferred authority taken from this approval at any time. In particular this means the compliant production as well as the measures for conformity of production. For this purpose samples can be taken or have taken. The employees or the representatives of the Kraftfahrt-Bundesamt may get unhindered access to the production and storage facilities.

The conferred authority contained with issuance of this approval is not transferable. Trade mark rights of third parties are not affected with this approval.

### **Instruction on right to appeal**

This approval can be appealed within one month after notification. The appeal is to be filed in writing or as a transcript at the **Kraftfahrt-Bundesamt, Fördestraße 16, DE-24944 Flensburg.**





Technical Report No.:	21-00006-IS-MUC-03	2023.06.08
Manufacturer:	Swagelok Company	USA-AF/MUC-PG
Type:	Non-Return Valve (Check Valve) SS-CHXX (Versions: SS-CH4; SS-CH8; SS-CH16)	Page 1 of 5

# TEST REPORT

## 21-00006-IS-MUC-03

About the Tests of a Non-Return Valve for CNG vehicles

According to:

### **ECE-Regulation No. 110** **04 Series of Amendments, Supplement 2**

UNIFORM PROVISIONS CONCERNING THE APPROVAL OF:

- I. SPECIFIC COMPONENTS OF MOTOR VEHICLES USING COMPRESSED NATURAL GAS (CNG) OR/AND LIQUIFIED NATURAL GAS (LNG) IN THEIR PROPULSION SYSTEM
  
- II. VEHICLES WITH REGARD TO THE INSTALLATION OF SPECIFIC COMPONENTS OF AN APPROVED TYPE FOR THE USE OF COMPRESSED NATURAL GAS (CNG) OR/AND LIQUIFIED NATURAL GAS (LNG) IN THEIR PROPULSION SYSTEM

**Date of entry into force: 25 September 2020.**

Approval status	
<input type="checkbox"/>	Granting of a type approval – N/A
<input checked="" type="checkbox"/>	Extension/correction to type approval no. E1*110R04/02*0046*02

R110 E1\*110R04/02\*0046\*03



Technical Report No.:	21-00006-IS-MUC-03	2023.06.08
Manufacturer:	Swagelok Company	USA-AF/MUC-PG
Type:	Non-Return Valve (Check Valve) SS-CHXX (Versions: SS-CH4; SS-CH8; SS-CH16)	Page 2 of 5

**0 Reason of Extension:**

The reason of this extension no. 03 consists of drawing updates to the components marking to show the supplement 2 to the 04 series of amendments.

**I General and Description**

The Specific Component:

1.	CNG-component considered:	Non-Return Valve
2.	Make:	Swagelok Company
3.	Type: Variant(s):	SS-CHXX SS-CH4; SS-CH8; SS-CH16
4.	Name and address of the manufacturer:	Swagelok Company 29500 Solon Rd. Solon, Ohio 44139 USA
5.	Name and Address of Manufacturing/Assembly plant(s):	Swagelok Company - Order Fulfillment Center 29495 F.A. Lennon Drive Solon, Ohio 44139 USA
6.	Operating Conditions of the overall Multifunctional Component:	Maximum Working Pressure: 26 MPa @ 85°C Operating Temperature: -40°C to +85 °C
7.	Drawings:	SS-CH4-X-ECE-APPROVAL Rev. B, dated 6/05/2023 SS-CH8-X-ECE-APPROVAL Rev. B, dated 6/05/2023 SS-CH16-X-ECE-APPROVAL Rev. B, dated 6/05/2023

was tested according to the requirements of the mentioned test basis.

**II Information Folder**

This Test Report is based on the following information:

- Application for granting/extension of a type approval by Swagelok Company, dated 2023.06.12 (file: VG2023.06.08\_Swagelok\_21-00006-IS-MUC-03\_SS-CHXX)
- Essential Characteristics acc. to ECE R 110 Annex 1A dated 2023.06.08 (file: BB2023.06.08\_Swagelok\_21-00006-IS-MUC-03\_SS-CHXX)
- Drawings (file: DO2023.06.08\_Swagelok\_21-00006-IS-MUC-03\_SS-CHXX)

R110 E1\*110R04/02\*0046\*03



Technical Report No.:	21-00006-IS-MUC-03	2023.06.08
Manufacturer:	Swagelok Company	USA-AF/MUC-PG
Type:	Non-Return Valve (Check Valve) SS-CHXX (Versions: SS-CH4; SS-CH8; SS-CH16)	Page 3 of 5

### III Test Samples, Performed Tests and Test Results

Given the nature of this current extension, no testing is required.

### IV Approval History

Overview of the extensions for the type SS-CHXX Non-Return Valve:

	Content of Extension	MAWP (MPa)	Temp (°C)	Report No. and Date
Initial Component Testing	N/A	26	-40 to +85	351-0838-02-FBTP (TÜV SÜD Automotive GmbH), dated 10.12.2002
Extension 01	<ul style="list-style-type: none"> <li>On the SS-CH4-X-ECE-APPROVAL drawing: 1/4" Swagelok, 1/4" ST, and 6mm Swagelok ABT end connections were added</li> <li>On the SS-CH8-X-ECE-APPROVAL drawing: 3/8" Swagelok, 1/2" Swagelok, 3/8" ST, and 1/2" ST end connections were added</li> <li>On the CH16-X-ECE-APPROVAL drawing: 1" Swagelok end connection was added</li> <li>The nomenclature of the part number was simplified from "SS-CHXX-BC" to "SS-CHXX" where the "XX" indicates the Non-Return (Check Valve) body size (replaced by 4, 8 or 16)</li> </ul>	26	-40 to +85	11-00011-UA-GBM-01 (TÜV SÜD Automotive GmbH), dated 13.06.2011

R110 E1\*110R04/02\*0046\*03



Technical Report No.:	21-00006-IS-MUC-03	2023.06.08
Manufacturer:	Swagelok Company	USA-AF/MUC-PG
Type:	Non-Return Valve (Check Valve) SS-CHXX (Versions: SS-CH4; SS-CH8; SS-CH16)	Page 4 of 5

Extension 02	<ul style="list-style-type: none"> <li>Updating the approval to the current ECE R110 Supplement 2 to the 04 series of amendments</li> <li>Apply drawing clerical updates</li> <li>Added a new SS-CH4 – 6mm Swagelok/6mm tube adapter configuration</li> </ul>	26	-40 to +85	21-00006-IS-MUC-02 (TÜV SÜD Auto Service GmbH), dated 15.08.2021
Extension 03	<ul style="list-style-type: none"> <li>Drawing updates to the components marking to show the supplement 2 to the 04 series of amendments</li> </ul>	26	-40 to +85	21-00006-IS-MUC-03 (TÜV SÜD Auto Service GmbH), dated 2023.06.08.

R110 E1\*110R04/02\*0046\*03



Technical Report No.:	21-00006-IS-MUC-03	2023.06.08
Manufacturer:	Swagelok Company	USA-AF/MUC-PG
Type:	Non-Return Valve (Check Valve) SS-CHXX (Versions: SS-CH4; SS-CH8; SS-CH16)	Page 5 of 5

**V Statement of conformity**

The mentioned information folder and the type described therein are in accordance with the test basis mentioned above. Sampling plan or method result from the requirements of the test basis. The worst-case configuration was selected in accordance with process description "Requirements for Test Reports (AS-PB-T-02)". Valid decision rule in accordance with ILAC G8:2019, 4.2.1: in question of meeting the limits the measurement uncertainty was ignored.

The test report may be reproduced and published in full and by the client only. It can be reproduced partially with the written permission of the test laboratory only.

Test report no. 11-00011-UA-GBM-01 and the previous test report(s) issued by the Technical Service of TÜV SÜD Automotive GmbH plus all documents and measurement results necessary for evaluation had been submitted. The above test reports continue to apply to the type of vehicle/vehicle component. This test report provides a summary of, and covers the full scope of, type testing, including the documentation of the vehicle/vehicle component.

*TÜV SÜD Auto Service GmbH is designated as Technical Service by:*

<b>Approval authority</b>	<b>Country</b>	<b>Registration number</b>
Kraftfahrt-Bundesamt (KBA)	Deutschland <i>Germany</i>	KBA-P 00100-10
Vehicle Certification Agency (VCA)	Vereinigtes Königreich <i>United Kingdom</i>	VCA-TS-006
Approval Authority of the Netherlands (RDW)	Niederlande <i>The Netherlands</i>	RDWT-082-xx
National Standards Authority of Ireland (NSAI)	Irland <i>Ireland</i>	Technical Service Number: 49
Vehicle Safety Certification Center (VSCC)	Taiwan/Taiwan	DE04-06-2
Société Nationale de Certification et d'Homologation s.à	Luxemburg <i>Luxembourg</i>	13/B(g)
Swedish Transport Agency (STA)	Schweden <i>Sweden</i>	TT 0024

Munich, 2023.06.15



Annexes:  
N/A.

**Dipl. Ing. J. Knell**

R110 E1\*110R04/02\*0046\*03

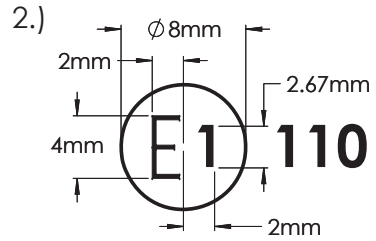
**Swagelok – Non-Return Valve (Check Valve) SS-CHXX**  
2023.06.08

<b>Essential Characteristics of the CNG-Component acc. Annex 1A of ECE R 110</b>	
Name and address of the manufacturer:	Swagelok Company 29500 Solon Road Solon, Ohio 44139, USA.
Name and address of the manufacturing plant:	Swagelok Company – Order Fulfillment Center 29495 F.A. Lennon Drive Solon, Ohio 44139, USA.
Test Specification:	ECE-Regulation No. 110 04 Series of Amendments, Supplement 2.
1.2.4.5.14. Component:	Non-Return Valve (Check Valve).
1.2.4.5.14.1. Make:	Swagelok.
1.2.4.5.14.2. Type: Variant(s):	SS-CHXX SS-CH4; SS-CH8; SS-CH16).
1.2.4.5.14.3. Description:	Non-Return Valve (Check Valve) for CNG vehicular applications.  Drawings: SS-CH4-X-ECE-APPROVAL Rev. B, dated 6/05/2023 SS-CH8-X-ECE-APPROVAL Rev. B, dated 5/10/2021 SS-CH16-X-ECE-APPROVAL Rev. B, dated 6/05/2023
1.2.4.5.14.4. Working Pressure:	26 MPa @ +85°C.
1.2.4.5.14.5. Material:	Stainless steel 316SS/A479 - X5CrNiMo 17122 (1.4401).
1.2.4.5.14.6. Operating Temperatures:	-40 °C to +85 °C.

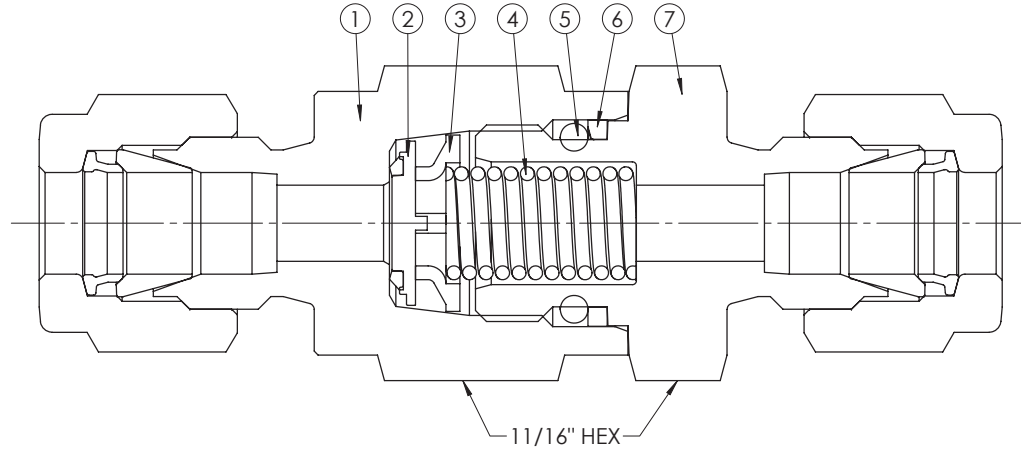
R110 E1\*110R04/02\*0046\*03

NOTE(S):

1.) MARKING METHOD: LASER ETCHED

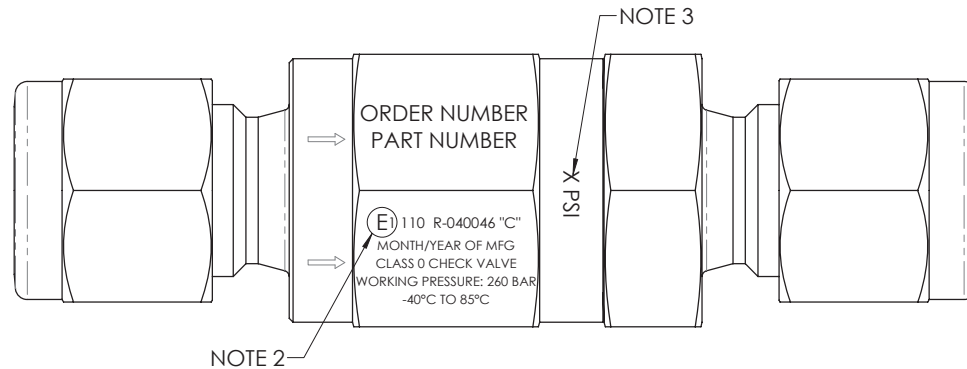


3.) X=SPRING SIZE



CATALOG NO.	END CONNECTION
SS-CHS4	1/4" SWAGELOK
SS-CHM4ST	1/4" MALE SAE
SS-CHS6MM	6mm SWAGELOK
SS-CHS6MM-ABT	6mm ABT SWAGELOK
SS-CHS6MMTA6MM	6mm SWAGELOK/6mm TUBE ADAPTER

SWAGELOK		
BILL OF MATERIAL		
ITEM	NAME	MATERIAL GRADE/ASTM SPEC
1	INLET BODY	316 SS/A479
2	BONDED POPPET	LOW TEMP NITRILE BONDED
3	POPPET STOP	316 SS/ A240
4	SPRING	302 SS/A313
5	O-RING	LOW TEMP NITRILE
6	BACK-UP RING	PTFE/D1710
7	OUTLET BODY	316 SS/A479



THIS PRINT IS THE EXCLUSIVE PROPERTY OF SWAGELOK COMPANY. IT MUST BE RETURNED ON REQUEST ALONG WITH ANY DOCUMENTS CONTAINING INFORMATION OBTAINED FROM THIS PRINT. NEITHER THIS PRINT NOR ANY PART OF IT NOR ANY INFORMATION CONCERNING IT MAY BE COPIED, DISCLOSED TO OTHERS OR USED FOR ANY PURPOSE EXCEPT IN FURTHERANCE OF YOUR BUSINESS WITH SWAGELOK. THE PARTS REFERRED TO ON THIS PRINT MAY BE THE SUBJECT OF PATENTS AND/OR PENDING APPLICATIONS AND MAY NOT BE MANUFACTURED WITHOUT PERMISSION FROM SWAGELOK COMPANY.

TOLERANCE ON ENGLISH DIMENSIONS UNLESS OTHERWISE SPECIFIED  
 .XX ±.031  
 .XXX ±.015  
 ANGLES ±1 DEGREE  
 -- DIMENSIONS ARE INCHES NEXT TO [MILLIMETERS]

TITLE APPROVAL DRAWING			
© Swagelok Company All Rights Reserved	SAP CHANGE NUMBER DCN-00240292	SCALE 3:1	
	DATE 6/5/2023	DWG. NO. SS-CH4-X-ECE-APPROVAL	

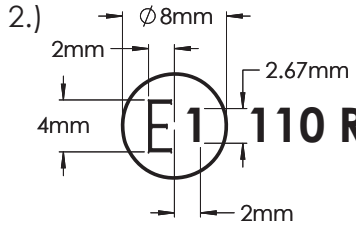


SHEET 1 of 1  
 VS. 02  
 REV. B

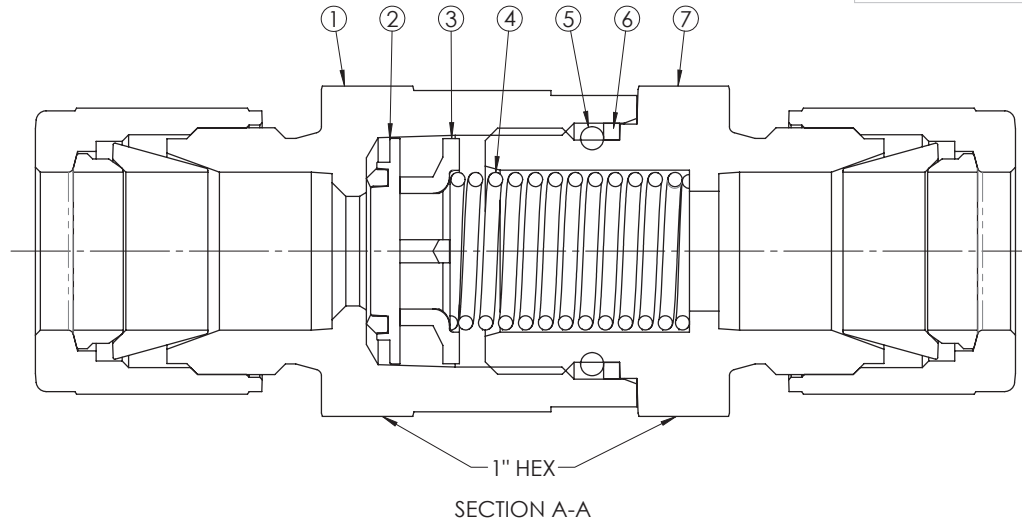
R110 E1\*110R04/02\*0046\*03

NOTE(S):

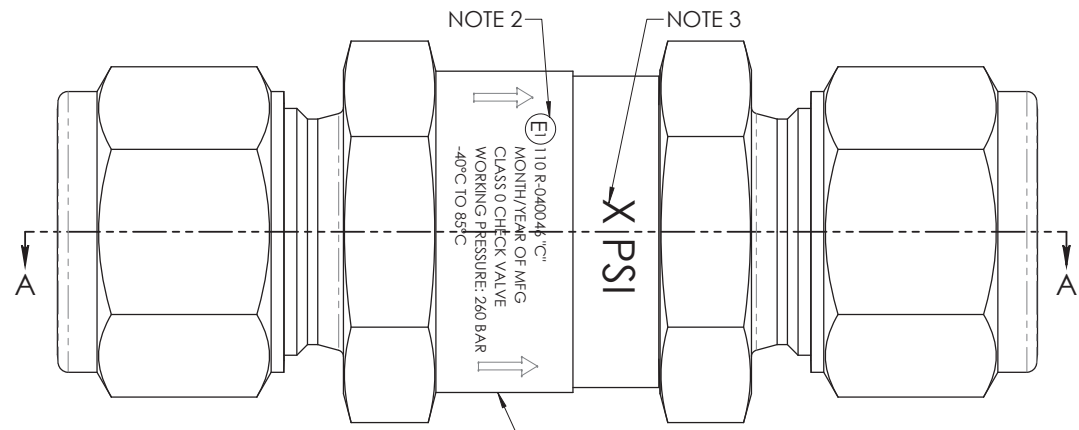
1.) MARKING METHOD: LASER ETCHED



3.) X = SPRING SIZE



CATALOG NO.	END CONNECTION
SS-CHS6	3/8" SWAGELOK
SS-CHS8	1/2" SWAGELOK
SS-CHM6ST	3/8" MALE SAE
SS-CHM8ST	1/2" MALE SAE
SS-CHS8MM	8MM SWAGELOK
SS-CHS10MM	10MM SWAGELOK
SS-CHS12MM	12MM SWAGELOK
SS-CHS14MM	14MM SWAGELOK
SS-CHS16MM	16MM SWAGELOK



BILL OF MATERIAL		
ITEM	NAME	MATERIAL GRADE / ASTM SPEC
1	INLET BODY	316 SS / A479
2	BONDED POPPET	LOW TEMP NITRILE BONDED
3	POPPET STOP	316 SS / A240
4	SPRING	302 SS / A313
5	O-RING	LOW TEMP NITRILE
6	BACK-UP RING	PTFE / D1710
7	OUTLET BODY	316 SS / A479

THIS PRINT IS THE EXCLUSIVE PROPERTY OF SWAGELOK COMPANY. IT MUST BE RETURNED ON REQUEST ALONG WITH ANY DOCUMENTS CONTAINING INFORMATION OBTAINED FROM THIS PRINT. NEITHER THIS PRINT NOR ANY PART OF IT NOR ANY INFORMATION CONCERNING IT MAY BE COPIED, DISCLOSED TO OTHERS OR USED FOR ANY PURPOSE EXCEPT IN FURTHERANCE OF YOUR BUSINESS WITH SWAGELOK. THE PARTS REFERRED TO ON THIS PRINT MAY BE THE SUBJECT OF PATENTS AND/OR PENDING APPLICATIONS AND MAY NOT BE MANUFACTURED WITHOUT PERMISSION FROM SWAGELOK COMPANY.

TOLERANCE ON ENGLISH DIMENSIONS UNLESS OTHERWISE SPECIFIED  
 .XX ±.031  
 .XXX ±.015  
 ANGLES ±1 DEGREE  
 -- DIMENSIONS ARE INCHES NEXT TO [MILLIMETERS]

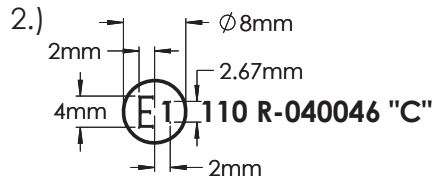
TITLE APPROVAL DRAWING			
© Swagelok Company All Rights Reserved	SAP CHANGE NUMBER DCN-00240292	SCALE 2.5:1	
	DATE 6/5/2023	DWG. NO.	

	SHEET 1 of 1
	VS. 02
	REV. B

R110 E1\*110R04/02\*0046\*03



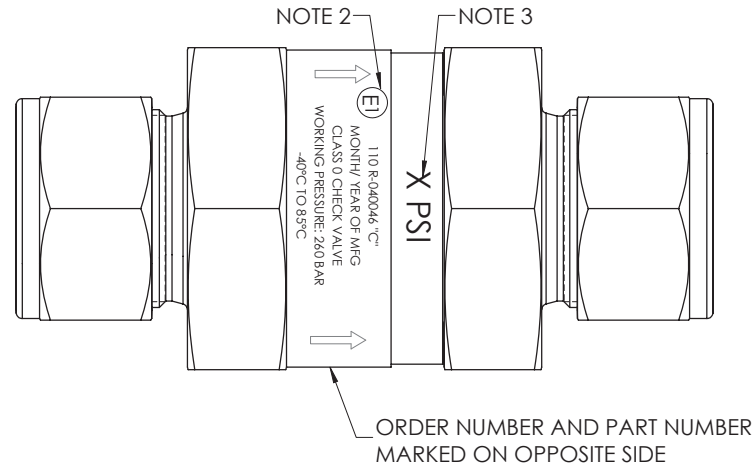
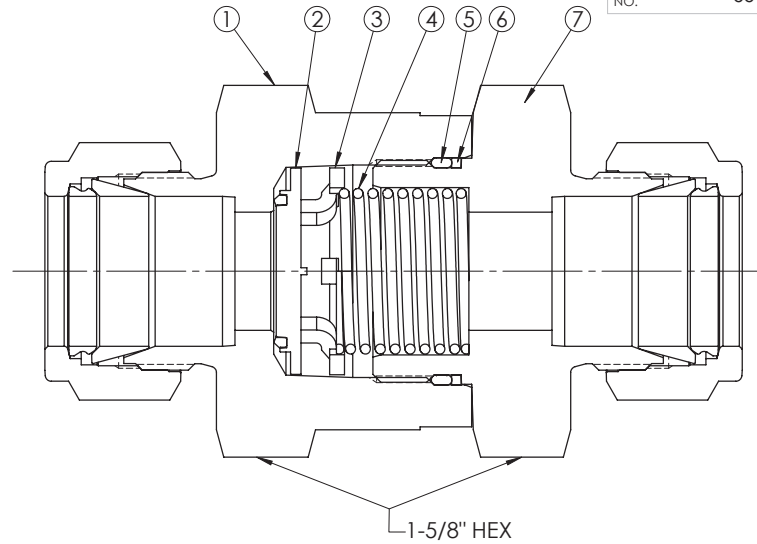
NOTE(S):  
 1.) MARKING METHOD: LASER ETCHED



3.) X = SPRING SIZE

CATALOG NO.	END CONNECTION
SS-CHS12	3/4" SWAGELOK
SS-CHS14	7/8" SWAGELOK
SS-CHS16	1" SWAGELOK
SS-CHS20MM	20MM SWAGELOK
SS-CHS22MM	22MM SWAGELOK
SS-CHS25MM	25MM SWAGELOK

BILL OF MATERIAL		
ITEM	NAME	MATERIAL GRADE/ ASTM SEPC
1	INLET BODY	316 SS/A479
2	BONDED POPPET	LOW TEMP NITRILE BONDED
3	POPPET STOP	316 SS/A420
4	SPRING	302 SS/A313
5	O-RING	LOW TEMP NITRILE
6	BACK UP RING	PTFE/ D 1710
7	OUTLET BODY	316 SS/A479



THIS PRINT IS THE EXCLUSIVE PROPERTY OF SWAGELOK COMPANY. IT MUST BE RETURNED ON REQUEST ALONG WITH ANY DOCUMENTS CONTAINING INFORMATION OBTAINED FROM THIS PRINT. NEITHER THIS PRINT NOR ANY PART OF IT NOR ANY INFORMATION CONCERNING IT MAY BE COPIED, DISCLOSED TO OTHERS OR USED FOR ANY PURPOSE EXCEPT IN FURTHERANCE OF YOUR BUSINESS WITH SWAGELOK. THE PARTS REFERRED TO ON THIS PRINT MAY BE THE SUBJECT OF PATENTS AND/OR PENDING APPLICATIONS AND MAY NOT BE MANUFACTURED WITHOUT PERMISSION FROM SWAGELOK COMPANY.

TOLERANCE ON ENGLISH DIMENSIONS UNLESS OTHERWISE SPECIFIED  
 .XX ±.031  
 .XXX ±.015  
 ANGLES ±1 DEGREE  
 -- DIMENSIONS ARE INCHES NEXT TO [MILLIMETERS]

TITLE		APPROVAL DRAWING	
© Swagelok Company All Rights Reserved		SAP CHANGE NUMBER DCN-00240292	SCALE 1.5:1
DATE 6/5/2023		DWG. NO. SS-CH16-X-ECE-APPROVAL	



SHEET 1 of 1
VS. 02
REV. B

R110 E1\*110R04/02\*0046\*03