

**Declaratie de conformitate****In conformitate cu Directiva privind Echipamentele sub Presiune 97/23/EG (pana la 18.07.2016)****In conformitate cu Directiva privind Echipamentele sub Presiune 2014/68/EU (din 19.07.2016)**

Alaturat noi declaram:

**ARI-Armaturen Albert Richter GmbH & Co. KG,
Mergelheide 56-60, D-33758 Schloß Holte-Stukenbrock**

că produsele enumerate mai jos întrunesc cerintele esentiale de siguranta ale Directivei privind echipamentele sub presiune mentionate mai sus

Descrierea produselor:

Regulator de presiune ARI-PRESO®							Tabel 8
Tip	Presiune nominala	Diametru Nominal	Grupa fluid	Modul	Diagrama	Certificat-Nr.	Standarde aplicate
753	PN 16	15-100	1	H	6	50003/1	1, 2
Nota: Produsele ≤DN25 sunt acoperite de cerintele Directivei privind Echipamentele sub presiune 97/23/EG (articolul 3, paragraful 3) si nu trebuie sa poarte o marca CE Produsele ≤DN25 sunt acoperite de cerintele Directivei privind Echipamentele sub presiune 2014/68/EU (articol 4, paragraf 3) si nu trebuie sa poarte o marca CE							

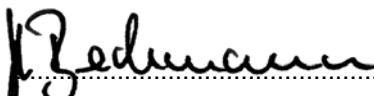
1) DIN EN 12516 / DIN 3840

2) AD 2000 prospect A4 (toate cu exceptia EN-JL1040)

Numele organismului de autorizare, monitorizare, notificare: Nr. Certificat CE:

**Lloyd's Register Quality Assurance GmbH
Am Sandtorkai 41, D-20457 Hamburg****0525**

Schloß Holte-Stukenbrock, 16.03.2016


(Brechmann, Managing director)

The declaration certifies the conformity with the mentioned directives, it does not contain any warranty of properties in the sense of the product liability lay, however. The safety hints of the product information supplied with the product must be observed. In case of a modification of the appliance not agreed with the manufacturer and of non-observance of the safety hints this declaration loses its validity

Declaratie de conformitate

In conformitate cu Directiva privind Echipamentele sub Presiune 97/23/EG (pana la 18.07.2016)

In conformitate cu Directiva privind Echipamentele sub Presiune 2014/68/EU (din 19.07.2016)

Alaturat noi declaram:

ARI-Armaturen Albert Richter GmbH & Co. KG,
Mergelheide 56-60, D-33758 Schloß Holte-Stukenbrock

că produsele enumerate mai jos intrunesc cerințele esențiale de siguranță ale Directivei privind echipamentele sub presiune menționate mai sus și cu evaluarea riscurilor în conformitate cu Directiva privind echipamentele tehnice.

Descrierea produselor:

Regulator de presiune ARI-PREDU® Regulator de suprapresiune ARI-PREDEX®							Tabel 9
Tip	Presiune nominala	Diametru nominal	Grupa fluid	Modul	Diagrama	Certificat-Nr.	Standarde aplicate
701	PN 16-40	15-150	2	H	6	50003/1	1, 2, 6
701 ANSI	Class 150-300	1"-6"					
705	PN 16-40	15-150					
705 ANSI	Class 150-300	1"-6"					
Nota: Produsele ≤DN25 sunt acoperite de cerintele Directivei privind Echipamentele sub presiune 97/23/EG (articolul 3, paragraful 3) si nu trebuie sa poarte o marca CE Produsele ≤DN25 sunt acoperite de cerintele Directivei privind Echipamentele sub presiune 2014/68/EU (articol 4, paragraf 3) si nu trebuie sa poarte o marca CE							

1) DIN EN 12516 / DIN 3840

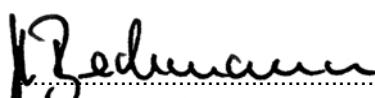
2) AD 2000 prospect A4 (toate cu exceptia EN-JL1040) 6) DIN EN 60534-1

Numele organismului de autorizare, monitorizare, notificare: Nr. Certificat CE:

Lloyd's Register Quality Assurance GmbH
Am Sandtorkai 41, D-20457 Hamburg

0525

Schloß Holte-Stukenbrock, 16.03.2016


 (Brechmann, Managing director)

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**Declaratie tradusa a partilor complete mecanice incorporate
in acord cu Directiva 2006/42/EC**

pentru produsele mentionate în tabelul 9:

ARI-Armaturen GmbH & Co. KG in calitate de producator declara, ca produsele mentionate mai sus indeplinesc urmatoarele cerinte de baza ale Directivei privind echipamentele tehnice (2006/42/EC):

Anexa I, Articolele 1.1.2, 1.1.3, 1.1.5, 1.3.1, 1.3.2, 1.3.7, 1.3.8, 1.5.4, 1.5.8, 1.7.1, 1.7.3, 1.7.4

Au fost aplicate urmatoarele standarde armonizate:

EN ISO 12100: 2010

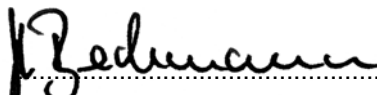
Produsele ARI sunt proiectate pentru a fi asamblate cu actionari electrice, pneumatice si hidraulice.

Produsele ARI nu trebuie puse in functiune pana cand echipamentul final, in care urmeaza a fi incorporate, a fost declarat in conformitate cu dispozitiile Directivei 2006/42/EC

In ceea ce priveste echipamentele tehnice partial finalizate, producatorul se angajeaza sa prezinte documentele autoritatii nationale competente prin intermediul transmisiei electronice, la cerere. Documentatia tehnica relevanta, referitoare la echipamentele tehnice descrise in anexa VII partea B a fost pregatita.

Persoana autorizata pentru documentatie: Dieter Richter

Schloß Holte-Stukenbrock, 16.03.2016



(Brechmann, Managing director)

The declaration certifies the conformity with the mentioned directives, it does not contain any warranty of properties in the sense of the product liability law, however. The safety hints of the product information supplied with the product must be observed. In case of a modification of the appliance not agreed with the manufacturer and of non-observance of the safety hints this declaration loses its validity

Declaratie de conformitate

In conformitate cu Directiva privind Echipamentele sub Presiune 97/23/EG (pana la 18.07.2016)

In conformitate cu Directiva privind Echipamentele sub Presiune 2014/68/EU (din 19.07.2016)

Alaturat noi declaram:

**AWH Armaturenwerk Halle GmbH,
Turmstraße 118, D-06110 Halle/Saale**

că produsele enumerate mai jos întrunesc cerintele esențiale de siguranță ale Directivei privind echipamentele sub presiune menționate mai sus

Descrierea produselor:

Regulator direct de temperatura ARI-TEMPROL®							Tabel 10
Tip	Presiune nominala	Diametru nominal	Grupa fluid	Modul	Diagrama	Certificat-Nr.	Standarde aplicate
771	PN 16-40	15-150	1	A	6	--	1, 2, 8
	PN 16/40	G 1/2"-2"					
772	PN 40	G 1/2"-2"					
773	PN 16-40	15-100					
	PN 16	G 1/2"-2"					
774	PN 16-40	15-100					
775	PN 16-40	15-100					
	PN 16	G 1/2"-2"					
Nota: Produsele ≤DN25 sunt acoperite de cerintele Directivei privind Echipamentele sub presiune 97/23/EG (articolul 3, paragraful 3) si nu trebuie sa poarte o marca CE Produsele ≤DN25 sunt acoperite de cerintele Directivei privind Echipamentele sub presiune 2014/68/EU (articol 4, paragraf 3) si nu trebuie sa poarte o marca CE							

În legătură cu controler / detector / dispozitiv de control manual / buzunar sensor

Tip	
9900386011 bis 990038361	Aceste produse sunt acoperite de cerințele Directivei 97/23/EG privind echipamentele sub presiune (articolul 3 alineatul (3) și nu trebuie să poarte o marcă CE.
9900387461 bis 9900387601	
9900387611 bis 9900387961	Aceste produse sunt acoperite de cerințele echipamentului sub presiune Directiva 2014/68/UE (articolul 4 alineatul (3) și nu trebuie să efectueze o marcă CE
990038600Z21 bis 990038600Z36	
9900390011	

1) DIN EN 12516 / DIN 3840

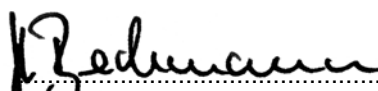
2) AD 2000 prospect A4 (toate cu excepția EN-JL1040) 8) DIN EN 14597

Numele organismului de autorizare, monitorizare, notificare: Nr. Certificat CE:

**Lloyd's Register Quality Assurance GmbH
Am Sandtorkai 41, D-20457 Hamburg**

0525

Halle/Saale, 16.03.2016


(Brechmann, Managing director)

The declaration certifies the conformity with the mentioned directives, it does not contain any warranty of properties in the sense of the product liability law, however. The safety hints of the product information supplied with the product must be observed. In case of a modification of the appliance not agreed with the manufacturer and of non-observance of the safety hints this declaration loses its validity

**Declaratie tradusa a partilor complete mecanice incorporate
in acord cu Directiva 2006/42/EC**

pentru produsele menționate in tabelul 10:

ARI-Armaturen GmbH & Co. KG in calitate de producator declara, ca produsele mentionate mai sus indeplinesc urmatoarele cerinte de baza ale Directivei privind echipamentele tehnice (2006/42/EC):

Anexa I, Articolele 1.1.2, 1.1.3, 1.1.5, 1.3.1, 1.3.2, 1.3.7, 1.3.8, 1.5.4, 1.5.8, 1.7.1, 1.7.3, 1.7.4

Au fost aplicate urmatoarele standarde armonizate:

EN ISO 12100: 2010

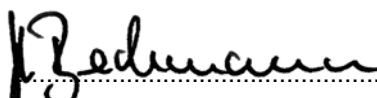
Produsele ARI sunt proiectate pentru a fi asamblate cu actionari electrice, pneumatice si hidraulice.

Produsele ARI nu trebuie puse in functiune pana cand echipamentul final, in care urmeaza a fi incorporate, a fost declarat in conformitate cu dispozitiile Directivei 2006/42/EC

In ceea ce priveste echipamentele tehnice partial finalizate, producatorul se angajeaza sa prezinte documentele autoritatii nationale competente prin intermediul transmisiei electronice, la cerere. Documentatia tehnica relevanta, referitoare la echipamentele tehnice descrise in anexa VII partea B a fost pregatita.

Persoana autorizata pentru documentatie: Dieter Richter

Schloß Holte-Stukenbrock, 16.03.2016


(Brechmann, Managing director)

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In conformitate cu Directiva privind Echipamentele sub Presiune 2014/68/EU (din 19.07.2016)

Alaturat noi declaram:

ARI-Armaturen Albert Richter GmbH & Co. KG,

Mergelheide 56-60, D-33758 Schloß Holte-Stukenbrock

că produsele enumerate mai jos întrunesc cerintele esentiale de siguranta ale Directivei privind echipamentele sub presiune mentionate mai sus

Descrierea produselor:

Clapeta de sens ARI-CHECKO®V / CHECKO®D							Tabel 11
Tip	Presiune nominala	Diametru nominal	Grupa fluid	Modul	Diagrama	Certificat-Nr.	Standarde aplicate
001	PN 40	15-100	1	H	6	50003/1	1, 2
003	PN 6-40	15-500					
	PN 63-160	10-100					
004	PN 16-40	15-500					
030	PN 40	15-300					
	PN 63-160	10-100					
039	PN 40	15-200					
063		15-250					
303	PN 16-40	15-500					
304							
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1) DIN EN 12516 / DIN 3840

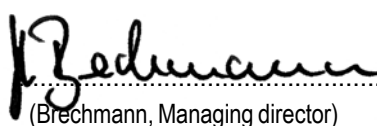
2) AD 2000 prospect A4 (toate cu exceptia EN-JL1040)

Numele organismului de autorizare, monitorizare, notificare: | Nr. Certificat CE:

Lloyd's Register Quality Assurance GmbH
Am Sandtorkai 41, D-20457 Hamburg

0525

Schloß Holte-Stukenbrock, 16.03.2016


 (Brechmann, Managing director)

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In conformitate cu Directiva privind Echipamentele sub Presiune 2014/68/EU (din 19.07.2016)

Alaturat noi declaram:

ARI-Armaturen Albert Richter GmbH & Co. KG,
Mergelheide 56-60, D-33758 Schloß Holte-Stukenbrock

că produsele enumerate mai jos întrunesc cerintele esentiale de siguranta ale Directivei privind echipamentele sub presiune mentionate mai sus

Descrierea produselor:

Filtre in Y ARI							Tabel 12
Tip	Presiune nominala	Diametru nominal	Grupa fluid	Modul	Diagrama	Certificat-Nr.	Standarde aplicate
050	PN 6-40	15-500	1	H	6	50003/1	1, 2
	PN 63-160	10-100					
059	PN 16-40	15-200					
080	PN 40	15-300					
	PN 63-160	10-100					
Nota: Produsele ≤DN25 sunt acoperite de cerintele Directivei privind Echipamentele sub presiune 97/23/EG (articolul 3, paragraful 3) si nu trebuie sa poarte o marca CE Produsele ≤DN25 sunt acoperite de cerintele Directivei privind Echipamentele sub presiune 2014/68/EU (articol 4, paragraf 3) si nu trebuie sa poarte o marca CE.							

1) DIN EN 12516 / DIN 3840

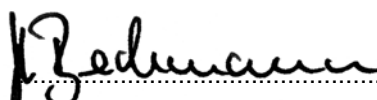
2) AD 2000 prospect A4 (toate cu exceptia EN-JL1040)

Numele organismului de autorizare, monitorizare, notificare: Nr. Certificat CE:

Lloyd's Register Quality Assurance GmbH
Am Sandtorkai 41, D-20457 Hamburg

0525

Schloß Holte-Stukenbrock, 16.03.2016


 (Brechmann, Managing director)

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Certificate

Management system as per
DIN EN ISO 9001:2015



The Certification Body TÜV NORD CERT GmbH hereby confirms as a result of the audit, assessment and certification decision according to ISO/IEC 17021-1:2015, that the organization

ARI-Armaturen Albert Richter GmbH & Co. KG
Mergelheide 56-60
33758 Schloß Holte-Stukenbrock
Germany



Your valve made by ARI®
ari-armaturen.com

with the locations according to the annex

operates a management system in accordance with the requirements of DIN EN ISO 9001:2015 and will be assessed for conformity within the 3 year term of validity of the certificate.

Scope

Design, manufacturing, sales and service of valves and systems

Certificate Registration No. 44 100 137637
Audit Report No. 3538 0173

End of validity of previous certificate: 2024-11-17
Valid from 2024-12-03
Valid until 2027-11-17
Initial certification 1992



Visit our database to
verify the validity of
this certificate.

Essen, 2024-12-03

A handwritten signature in blue ink, appearing to read 'O. Jansen-Lindell', is placed over a horizontal line.

Certification Body at TÜV NORD CERT GmbH

TÜV NORD CERT GmbH
Am TÜV 1, 45307 Essen
www.tuev-nord-cert.com



Deutsche
Akkreditierungsstelle
D-ZM-12007-01-00

TÜV®

Annex

to Certificate Registration No. 44 100 137637
DIN EN ISO 9001:2015

ARI-Armaturen Albert Richter GmbH & Co. KG
Mergelheide 56-60
33758 Schloß Holte-Stukenbrock
Germany



Your valve made by ARI®
 ari-armaturen.com

Certificate Registration No.	Location	Scope
44 100 137637-001	ARI-Armaturen Albert Richter GmbH & Co. KG Am Eisenwerk 10 34576 Homberg (Efze) Germany	Manufacturing of valves
44 100 137637-002	AWH Armaturenwerk Halle GmbH Turmstraße 118 06110 Halle (Saale) Germany	Design, manufacturing, sales and service of valves and systems
44 100 137637-004	ARI-Armaturen A/S Strevelinsvej 26 7000 Fredericia Denmark	Assembly, setting, sales and service of valves and systems
44 100 137637-005	ARI-Armaturen GmbH Lichtblaustrasse 10 a 1220 Wien Austria	Assembly, setting, sales and service of valves and systems
44 100 137637-006	ARI-Armaturen France S.A.R.L 9 Chaussée Jules César, Lot 323 95520 OSNY France	Assembly, setting, sales and service of valves and systems

Page 1 of 2

TÜV NORD CERT GmbH
 Am TÜV 1, 45307 Essen
 www.tuev-nord-cert.com



TÜV®

Annex

to Certificate Registration No. 44 100 137637
DIN EN ISO 9001:2015

Certificate Registration No.	Location	Scope
44 100 137637-007	ARI-Armaturen UK Ltd. Energy House Formal Industrial Park Northway Lane Tewkesbury GL20 8GY United Kingdom	Design, manufacturing, sales and service of valves and systems

End of the List

Essen, 2024-12-03



Certification Body at TÜV NORD CERT GmbH

Certificate

Management system as per
DIN EN ISO 14001:2015



The Certification Body TÜV NORD CERT GmbH hereby confirms as a result of the audit, assessment and certification decision according to ISO/IEC 17021-1:2015, that the organization

ARI-Armaturen Albert Richter GmbH & Co.KG
Mergelheide 56-60
33758 Schloß Holte-Stukenbrock
Germany



with the locations according to the annex

operates a management system in accordance with the requirements of DIN EN ISO 14001:2015 and will be assessed for conformity within the 3 year term of validity of the certificate.

Scope

Design, manufacturing, sales and service of valves, actuators and systems

Certificate Registration No. 44 104 137637
Audit Report No. 3534 6622

Valid from 2023-04-28
Valid until 2026-04-27

Essen, 2023-04-27

A. G. Richter

Certification Body at TÜV NORD CERT GmbH



Visit our database to verify the validity of this certificate.

TÜV NORD CERT GmbH
Am TÜV 1, 45307 Essen
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Akkreditierungsstelle
D-ZM-12007-01-00

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Annex

to Certificate Registration No. 44 104 137637
DIN EN ISO 14001:2015

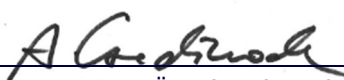
ARI-Armaturen Albert Richter GmbH & Co.KG
Mergelheide 56-60
33758 Schloß Holte-Stukenbrock
Germany



Certificate Registration No.	Location	Scope
44 104 137637-001	ARI-Armaturen Albert Richter GmbH & Co. KG Werk Homberg-Holzhausen Am Eisenwerk 10 34576 Homberg Holzhausen Germany	Manufacturing of valves
44 104 137637-002	AWH Armaturenwerk Halle GmbH Turmstraße 118 06110 Halle Germany	Design, manufacturing, sales and service of valves and systems

End of the List

Essen, 2023-04-27


 Certification Body at TÜV NORD CERT GmbH

TÜV NORD CERT GmbH
 Am TÜV 1, 45307 Essen
www.tuev-nord-cert.com

TÜV®



Page 1 of 1

Certificate

Management system as per
DIN EN ISO 50001:2018



The Certification Body TÜV NORD CERT GmbH hereby confirms as a result of the audit, assessment and certification decision according to ISO/IEC 17021-1:2015, that the organization

ARI-Armaturen Albert Richter GmbH & Co.KG
Mergelheide 56-60
33758 Schloß Holte-Stukenbrock
Germany



with the locations according to the annex

operates a management system in accordance with the requirements of DIN EN ISO 50001:2018 and will be assessed for conformity within the 3 year term of validity of the certificate.

Scope

Design, manufacturing, sales and service of valves, actuators and systems

Certificate Registration No. 44 764 137637
Audit Report No. 3534 6623

Valid from 2023-04-28
Valid until 2026-04-27



Visit our database to verify the validity of this certificate.

Essen, 2023-04-27

Certification Body at TÜV NORD CERT GmbH

TÜV NORD CERT GmbH
Am TÜV 1, 45307 Essen
www.tuev-nord-cert.com

TÜV®



Deutsche
Akkreditierungsstelle
D-ZM-12007-01-00

TÜVNORDGROUP

Annex

to Certificate Registration No. 44 764 137637
DIN EN ISO 50001:2018

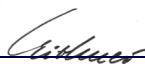
ARI-Armaturen Albert Richter GmbH & Co.KG
Mergelheide 56-60
33758 Schloß Holte-Stukenbrock
Germany



Certificate Registration No.	Location	Scope
44 764 137637-001	ARI-Armaturen Albert Richter GmbH & Co. KG Werk Homberg-Holzhausen Am Eisenwerk 10 34576 Homberg Holzhausen Germany	Manufacturing of valves
44 764 137637-002	AWH Armaturenwerk Halle GmbH Turmstraße 118 06110 Halle Germany	Design, manufacturing, sales and service of valves and systems

End of the List

Essen, 2023-04-27



Certification Body at TÜV NORD CERT GmbH

TÜV NORD CERT GmbH
 Am TÜV 1, 45307 Essen
 www.tuev-nord-cert.com



Page 1 of 1

Manufacturers declaration

**ARI-Armaturen Albert Richter GmbH & Co. KG,
Mergelheide 56-60, D-33758 Schloß Holte-Stukenbrock**

Declaration of the manufacturer

**regarding ATEX 2014/34/EU
not being relevant**

(Equipment and protective systems intended
for use in potentially explosive atmospheres)

Herewith we declare,

that according to the above mentioned ATEX-directive, the products underwent an ignition analysis with the following result (with exception of the valve series EURO-WEDI, ASTRA, ASTRA-Plus, ZESA/GESA, ARI-SAFE, ARI-REYCO, ZETRIX, CONA and electric actuators):

- **The equipment does not have a potential ignition source and can be actuated manually as well as mechanically/electrically.
ATEX 2014/34/EU is not applicable to this equipment.**
- **The valves may be used in the EX range.**

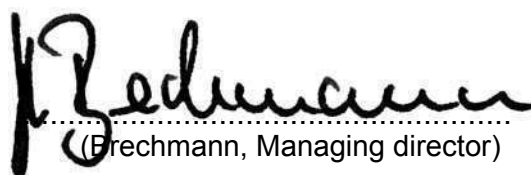
Supplementary note:

- **Electrical/mechanical actuators have to undergo a separate assessment of conformity.**
- **For the above excluded valve series, a conformity to these rules is available.**

Applied harmonized standards:

DIN EN 1127-1:2008-02, DIN EN 13463-1:2009-07, DIN EN 13463-5:2004-03

Schloß Holte-Stukenbrock, 17.02.2017



(Frechmann, Managing director)

ZERTIFIKAT

In Übereinstimmung mit den Anforderungen der Druckgeräterichtlinie DGR 2014/68/EU

Certificate in accordance with the requirements of the Pressure Equipment Directive 2014/68/EU

Hiermit wird bescheinigt, dass das Qualitätsmanagement des Unternehmens

This is to certify that the Quality Assurance System of

Name des Herstellers/Antragstellers:

Name of Manufacturer/Applicant:

ARI /Armaturen Albert Richter GmbH

Anschrift:

Address:

Mergelheide 56-60, D-33758 Schloß Holte-Stukenbrock

entsprechend den Forderungen des Anhangs III, Modul H1 der Druckgeräterichtlinie 2014/68/EU durch die LRQA Deutschland GmbH geprüft und bewertet wurde und in Übereinstimmung mit den Anforderungen für die folgenden Produkte ist:

has been assessed by LRQA Deutschland GmbH against the requirements of Annex III, Module H1 of the Pressure Equipment Directive 2014/68/EC and conforms to the requirements for the products shown below:

Art des Druckgerätes/der Baugruppe:

Type of Pressure Equipment/Assembly:

Ausrüstungsteile mit Sicherheitsfunktion

Produktbeschreibung:

Product description:

Sicherheitsventile in Übereinstimmung mit den jeweiligen EU-Entwurfsprüfbescheinigungen

Typ:

Type:

SAFE

Die Zulassung gilt unter der Voraussetzung, dass das Qualitätssystem fortlaufend aufrechterhalten wird und die Forderungen obiger Richtlinie erfüllt.

Approval is subject to the continued maintenance of the quality system in accordance with the requirements of the above-mentioned Directive.

Weiterhin wird die Genehmigung erteilt, folgende Kennnummer von LRQA Deutschland GmbH als notifizierte Stelle in Übereinstimmung mit der obigen Richtlinie und den Vorschriften in Bezug auf die Produkte zu verwenden:

Authorisation is hereby given to use the under noted LRQA Deutschland GmbH Notified Body Identification Number in accordance with the requirements of the specified Directive in relation to the products as identified above.

CE 0525

Erstmalige Zulassung:

Initial Approval:

01.09.2006

Zertifikatsgültigkeit bis:

Certificate expiry date:

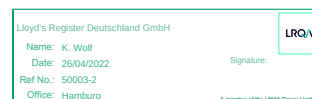
31.08.2024

LRQA Deutschland GmbH Kenn-Nr. 0525

LRQA Deutschland GmbH Ident-No. 0525

Hamburg, 26.04.2022

Ort und Datum
Place and Date



K. Wolf

Name, Unterschrift und Stempel
Name, Signature and Stamp

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ZERTIFIKAT

In Übereinstimmung mit den Anforderungen der Druckgeräterichtlinie DGR 2014/68/EU

Certificate in accordance with the requirements of the Pressure Equipment Directive 2014/68/EU

Hiermit wird bescheinigt, dass das Qualitätsmanagement des Unternehmens

This is to certify that the Quality Assurance System of

Name des Herstellers/Antragstellers:

Name of Manufacturer/Applicant:

ARI-Armaturen Albert Richter GmbH & Co. KG

Anschrift:

Address:

Mergelheide 56-60, D-33758 Schloß Holte-Stukenbrock

entsprechend den Forderungen des Anhangs III, Modul H der Druckgeräterichtlinie 2014/68/EU durch die LRQA Deutschland GmbH geprüft und bewertet wurde und in Übereinstimmung mit den Anforderungen für die folgenden Produkte ist:

has been assessed by LRQA Deutschland GmbH against the requirements of Annex III, Module H of the Pressure Equipment Directive 2014/68/EC and conforms to the requirements for the products shown below:

Art des Druckgerätes/der Baugruppe:

Type of Pressure Equipment/Assembly:

Drucktragende Ausrüstungsteile, Druckreduzierstationen (Baugruppen)

Produktbeschreibung:

Product description:

Stellventile, Druckminderer, Überströmventile, Überströmregler, Absperr-, Strangregulier, Rückschlagventile, Schmutzfänger, Klappen STEVI, PRESO, PREDU, PREDEX, FABA, STOB, ASTRA, EURO-WEDI, CHECKO, STRAINER, ZESA/GESA/ZIVA, ZETRIX; PRESys-S, -W, -A

Typ:

Type:

Einzelheiten siehe Anhang I.

for details see Annex I.

Die Zulassung gilt unter der Voraussetzung, dass das Qualitätssystem fortlaufend aufrechterhalten wird und die Forderungen obiger Richtlinie erfüllt.

Approval is subject to the continued maintenance of the quality system in accordance with the requirements of the above-mentioned Directive.

Weiterhin wird die Genehmigung erteilt, folgende Kennnummer von LRQA Deutschland GmbH als notifizierte Stelle in Übereinstimmung mit der obigen Richtlinie und den Vorschriften in Bezug auf die Produkte zu verwenden:

Authorisation is hereby given to use the under noted LRQA Deutschland GmbH Notified Body Identification Number in accordance with the requirements of the specified Directive in relation to the products as identified above.

CE 0525

Erstmalige Zulassung:

Initial Approval:

17.04.2000

Zertifikatsgültigkeit bis:

Certificate expiry date:

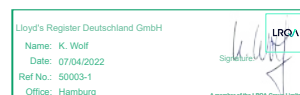
30.11.2024

LRQA Deutschland GmbH Kenn-Nr. 0525

LRQA Deutschland GmbH Ident-No. 0525

Hamburg, 07.04.2022

*Ort und Datum
Place and Date*



K. Wolf

*Name, Unterschrift und Stempel
Name, Signature and Stamp*

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Baureihe Product	Typen Types	Fluidgruppe Fluidgroup	Nennweite / Druckstufe nominal diameter / pressure rating
STEVI (2-way)	405, 460; 425, 426; 440, 441; 445, 446; 448, 449; 470, 471; 422, 462; 480; 452	1	DN 32 – 500 / PN 16 – 160 ANSI 150 – 600
STEVI (2-way)	415	2	DN 40 – 50 / PN 40
STEVI (3-way)	423, 463; 450, 451; 453; 483	1	DN 32 – 300 / PN 16 – 40
STEVI HLK	485, 486	2	DN 65 – 250 / PN 16
PRESO	753	1	DN 32 – 100 / PN 16 ANSI 150 – 300
PREDU / PREDEX	701 / 705	2	DN 40 – 150 / PN 40 DN 50 – 150 / PN 25 DN 65 – 150 / PN 16 2" – 6" / ANSI 150 1½" – 6" / ANSI 300
FABA-Plus FABA - SUPRA FABA-LA FABA - SUPRA	040, 041, 046, 047, 049, 066, 069 140, 141, 146, 147, 149, 166, 169 044, 067, 068, 140, 146	1	DN 32 – 500 / PN 16 – 40 ANSI 150 – 300 DN 32 – 100 / PN 63 – 160
STOBU STOBU	005, 006, 007, 009, 017, 306, 307 005, 006	1	DN 32 – 500 / PN 16 – 40 DN 32 – 100 / PN 63 – 160
ASTRA / ASTRA Plus	020, 042	1	DN 32 – 500 / PN 16
EURO-WEDI	070, 071, 072, 073, 076, 078	1	DN 32 – 200 / PN 6 – 16
CHECKO CHECKO	001, 003, 004, 030, 039, 063, 303, 304 003, 030	1	DN 32 – 500 / PN 6 – 40 DN 32 – 100 / PN 63 – 160
STRAINER STRAINER	050, 059, 080 050, 080	1	DN 32 – 500 / PN 6 – 40 DN 32 – 100 / PN 63 – 160
ZESA / GESA / ZIVA	012, 013, 014, 015	1	DN 32 – 600 / PN 6 – 16
ZETRIX / ZETRIX-DBB	016, 018, 019	1	DN 80 – 1200 / PN 6 – 100 ANSI 150 – 600
Druckreduzierstationen	PREsys-S, PREsys-W, PREsys-A	2	mit Komponenten Kategorie ≥ 1

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Fisa tehnica: IT-IG- încălzitor de gaz

Nr. Crt.	Specificații tehnice oferite	Producător
0	1	2
1	Conditii generale: - Utilizare:incalzirea gazului natural. - Utilajul se va monta in statii de reglare si masura proiectate si exploatare conform SR EN 12186:2015 steme de alimentare cu gaz. Statii de reglare a presiunii gazelor pentru transport si distributie.	Armax Gaz Medias
2	Conditii de lucru: - Fluidul de lucru: - gaz natural conform SR 3317:2015 densitatea (p)- 0,717 Kg/Nm³ - Amestec de gaze naturale cu Hidrogen in proportie de 10% - temperatură mediu ambiant: -29°C ÷ +55°C - temperatură de lucru: -20°C ÷ +55°C - Montaj : suprateran, in zona Ex, in cofret termoizolat - Debit de gaze vehiculate: 10000 Nm³/h - Presiune nominala: ANSI 600 - Presiunea de proiectare: ANSI 600 - Presiunea de operare: ANSI 600	
3	Parametrii constructivi: - Tip incalzitor: indirect, cu schimbator de caldura din fascicul de tevi, montaj suprateran orizontal in aer liber , in zona EX - Proiectare si executie echipament in conformitate cu Directiva 2014/68/EU - Pozitie de montaj: vertical - Racordare la proces: cu flanse, contraflanse, organe de asamblare si garnituri (SR EN 1092-1). - Racorduri si caracteristici dimensionale ale acestora: • de conectare la gaz: DN150 • de conectare la agent termic: DN80 • de golire: DN25 • supapa de siguranta: DN32.	
4	Dotari minime: - Dispozitive de blocare pe circuitul de apă: DN80 - Supapă de siguranță cu arc: DN32 - Robinete cu sferă pentru golire: DN 25 - Protecție exterioară anticorozivă: un strat de grund și două straturi de vopsea de înaltă rezistență, - Izolație termică manta	
5	Cracteristici functionale - putere termica: conform schema tehnologica	

6	Teste si certificari puse la dispozitia beneficiarului	
	-Certificate de inspectie materiale si echipamente din componenta incalzitorului de tip 3.1 -Certificat de calitate si de conformitate, insotit de documente care sa ateste efectuarea testelor: • probe de presiune, • probe de etanseitate, • buletine de analiza, prin metode nedestructive a imbinarilor sudate 100%, • probe de functionare	
7	Marcare si identificare	
	-Placa de timbru, in conformitate cu normele in vigoare. -Pe o eticheta nedemontabila se vor regasi minim urmatoarele date: • numele sau simbolul fabricantului • nr. Serie si tipul/modelul • anul fabricatiei • debitul maxim de gaz • diametrul nominal racorduri • presiunea nominala • marcaj de conformitate CE	
8	Mod de ofertare:	
	Documentatia care va fi prezenta la ofertare:	
	-Declarație de conformitate producător. -Caracteristicile tehnice ale produselor oferite trebuie sa fie identificate și evidențiate, în cataloage sau specificații tehnice de producător, strict pentru produsul oferit, aceste vor fi parte integrantă din oferta tehnică. Cataloage și specificații tehnice vor fi asumate de către ofertantul echipamentului (original sau copie conform cu originalul). -Se vor pune la dispoziție desene de ansamblu la scară (secțiuni, detalii, etc.) se vor detalia componentele până la nivel de repere folosite -Ofertantul are obligația de a face dovada conformității produselor care urmează să fie furnizate cu cerințele prevăzute în această fișă tehnică. În acest scop, propunerea tehnică va conține corespondența, pentru fiecare articol al cerințelor prevăzute în această fișă tehnică, cu articolul paragraful sau pagina din oferta tehnică care atestă îndeplinirea respectivei cerințe. -Produsul se va livra complet echipat -Se vor oferta si livra numai echipamente noi, de ultima generatie si originale, conform cu specificatiile si documentele specifice ale producatorului. Nu se vor oferta produse demo, reconditionate sau refuzate de alti beneficiari. -Pentru produs: Certificat de tip CE, conform HG nr. 123/2015 (PED 2014/68/EU), privind stabilirea condițiilor pentru punerea pe piață a echipamentelor sub presiune;	

9	Documentatia care va insoti produsul - Cartea tehnica si manualul de exploatare a echipamentului(inclusiv a echipamentelor din dotare) - Desene de ansamblu la scara (sectiuni, detalii, etc.) - Instructiuni de montaj in instalatie, - Instructiuni de punere in functiune si exploatare, - Instructiuni de scoatere din functiune - Instructiuni de mentenanta - Raport de Trasabilitate - Certificat de inspectie pentru materiale tip 3.1 SR EN 10204 - Certificate/ Raport pentru teste de presiune/etanseitate, - Certificate/ Teste protectii anticorozive. - Buletine de analiza suduri (100%).	
10	Conditii de livrare: -Utilajul se va livra complet echipat. -Utilajul va fi livrat insotit de certificate de conformitate emis de producator si de carte tehnica in original si in limba romana. -Produsele vor fi livrate, receptionate, inspectate si testate, in conditii care vor fi stabilite de comun acord prin contractul de achizitie. -Echipamentele livrate vor fi complet echipate cu toate accesoriile necesare pentru punerea în funcțiune si vor respecta cerințele impuse privind proiectarea și execuția instalațiilor tehnologice -Ofertantul va asigura integritatea produselor livrate, până la sediul achizitorului. Produsele vor fi ambalate pentru a face față transportului, manipulării și depozitării până la destinația finală.	
11	Condiții de garanție și post garanție: -Producătorul va garanta calitatea și buna funcționare timp de 24 luni de la punerea în funcțiune sau de 36 luni de la data livrării.	

INCALZITOR ORIZONTAL INDIRECT PENTRU GAZ METAN DN200 CLASA300

UTILIZARE :

Incalzitorul orizontal pentru gaz metan este destinat incalzirii gazelor inainte de intrarea in prima treapta de reglare a presiunii la SRM predare. Temperatura gazului la iesirea din incalzitor va fi impusa atat de temperatura, debitul si presiunea gazului care intra in SRM cat si de factorii climatici.

CONDIȚII DE LUCRU:

- Fluidul de lucru: gaz natural conform SR 3317:2015 densitatea (p) - 0,717 Kg / Nm³ amestec de gaze naturale cu Hidrogen în proporție de 10%.
- Temperatura mediului ambiant: -29...+55°C
- Temperatura de lucru: -20...+120°C
- Montaj: suprateran, în zona Ex, 5 l
- Debit de gaze vehiculate: 32000 Smc/h
- Agent termic: apă caldă
- Presiune minima ieșire : 2 bar
- Presiunea de proiectare: 45 bar
- Temperatura agentului termic: +70°C
- Putere termică: 200 kw

DESCRIERE:

Incalzitorul orizontal pentru gaz metan este un schimbator de caldura format dintr-un registru de tevi.

Din punct de vedere constructiv incalzitorul este alcatuit din urmatoarele subansamble principale:

- manta prevazuta cu racorduri tur-retur apa calda si supapa de siguranta
- manta prevazuta cu racorduri de intrare-iesire gaz tehnologic si purjare
- schimbator de caldura orizontal in constructie nedemontabila

Subansamblele principale ale incalzitorului si schimbatorul de caldura sunt realizate in constructie sudata din tabla si teava de otel.

PRINCIPIU DE FUNCTIONARE :

Functionarea incalzitorului are ca principiu schimbul de caldura dintre agentul termic produs de un cazan de incalzire centrala si gazele care circula prin registrul de tevi al incalzitorului. Incalzitorul se montează în instalație înaintea regulatorului.

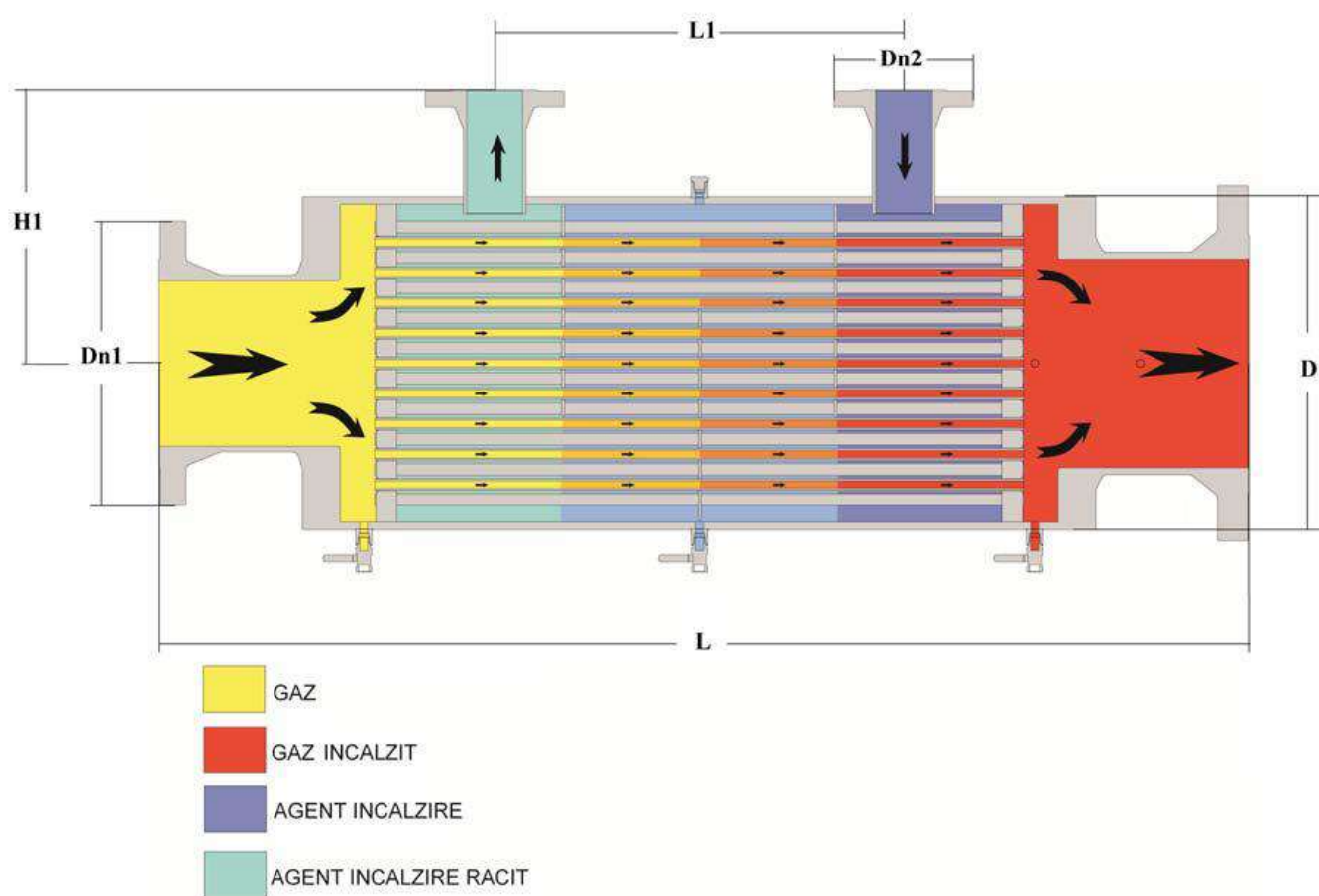
MATERIALE :

- Manta, corp încălzitor: oțel carbon sudat
- Tevi pentru gaz: țevi fără sudură din oțel carbon pentru temp.inalte
- Flanșe: oțel carbon

DOTARI MINIME :

- dispozitiv blocare circuit apă
- regulator de temperatură (vană cu 3 căi):
- supapă de siguranță cu arc
- robinete purjare
- supapă aerisire automată
- protecție exterioară anticorozivă: un strat de grund și două straturi de vopsea de înaltă rezistență
- izolație termică manta

Echipamentul va purta marcaj CE conform HG nr. 123/2015 (PED 2014/68/EU), privind stabilirea condițiilor pentru punerea pe piață a echipamentelor sub presiune;



CERTIFICAT

CERTIFICATE

Se atesta faptul ca organizatia/*It is certified that the organization*

ARMAX GAZ S.A.

cu sediul social in/*with headquarter in*
Str Aurel Vlaicu, nr 35A, Medias, Judetul Sibiu

are implementat un/*has implemented a*

SISTEM DE MANAGEMENT AL CALITATII

QUALITY MANAGEMENT SYSTEM

in conformitate cu cerintele standardului/*in compliance with the standard*

SR EN ISO 9001:2015/ISO 9001:2015

pentru urmatoarele domenii de activitate/*for the following scope*

Proiectarea, confectionarea, repararea si comercializarea de utilaj tehnologic petrolier si gazifer, confectii metalice, echipamente sub presiune, automatizari, echipamente de separare, filtrare, incalzire, reglare, siguranta, masurare si ardere gaze naturale. Proiectarea si executia de instalatii tehnologice, statii de compresoare, inclusiv racorduri la reseaua de distributie pentru producerea si depozitarea gazului natural, retele de transport si racorduri la SNT(Sistemul National de Transport), sisteme de distributie, instalatii de gaz pentru utilizatori casnici si industriali.

Design, manufacturing, repairing and selling of technological equipment for petroleum and gas fire, steel constructions and pressure installations, pressure equipment, automation, separating equipment, filtration, heating, regulation, safety, measurement and burning of natural gas. Design and execution of technological installations, stations compressors, including connections to the distribution network for the production and storage of natural gas, transmission and connection networks at SNT (National Transport System), distribution systems, gas installations for household and industrial users.

Certificat nr/Certificate no: 204R1 C

Certificare initiala/First certification: 08.08.2019

Emitere curenta/Current issue: 05.08.2022

Data expirarii/Expiry date: 04.08.2025

Mariana IONESCU

Administrator

CERTINSPECT REGISTER SRL



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The validity of this certificate is conditioned by the performance of periodic annual supervisions and by the complete re-evaluation of the management system at 3 years. Falsification of this certificate is punishable by law.

CERTINSPECT REGISTER SRL, Bucuresti, ROMANIA, str. Zambilelor nr. 96, etaj 1, Sector 2, J40/13045/2017, C.U.I.: RO37991905

Tel.: +40 726.368.707, office@certinspect.ro, www.certinspect.ro

Formular P-01-3-F-09/vers. 2

CERTIFICAT

CERTIFICATE

Se atesta faptul ca organizatia/It is certified that the organization

ARMAX GAZ S.A.

cu sediul social in/with headquarter in
Str Aurel Vlaicu, nr 35A, Medias, Judetul Sibiu

are implementat un/has implemented a

SISTEM DE MANAGEMENT DE MEDIU
ENVIRONMENTAL MANAGEMENT SYSTEM

in conformitate cu cerintele standardului/in compliance with the standard

SR EN ISO 14001:2015/ISO 14001:2015

pentru urmatoarele domenii de activitate/for the following scope

Proiectarea, confectionarea, repararea si comercializarea de utilaj tehnologic petrolier si gazifer, confectii metalice, echipamente sub presiune, automatizari, echipamente de separare, filtrare, incalzire, reglare, siguranta, masurare si ardere gaze naturale. Proiectarea si executia de instalatii tehnologice, statii de compresoare, inclusiv racorduri la reseaua de distributie pentru producerea si depozitarea gazului natural, retele de transport si racorduri la SNT(Sistemul National de Transport), sisteme de distributie, instalatii de gaz pentru utilizatori casnici si industriali.

Design, manufacturing, repairing and selling of technological equipment for petroleum and gas fire, steel constructions and pressure installations, pressure equipment, automation, separating equipment, filtration, heating, regulation, safety, measurement and burning of natural gas. Design and execution of technological installations, stations compressors, including connections to the distribution network for the production and storage of natural gas, transmission and connection networks at SNT (National Transport System), distribution systems, gas installations for household and industrial users.

Certificat nr/Certificate no: 204R1 M
Certificare initiala/First certification: 08.08.2019
Emitere curenta/Current issue: 05.08.2022
Data expirarii/Expiry date: 04.08.2025

Mariana IONESCU
Administrator
CERTINSPECT REGISTER SRL



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Tel.: +40 726.368.707, office@certinspect.ro, www.certinspect.ro

Formular P-01-3-F-09/vers. 2

CERTIFICAT

CERTIFICATE

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ARMAX GAZ S.A.

cu sediul social in/*with headquarter in*
Str Aurel Vlaicu, nr 35A, Medias, Judetul Sibiu

are implementat un/*has implemented a*

SISTEM DE MANAGEMENT AL SANATATII SI SECURITATII IN MUNCA

OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT SYSTEM

in conformitate cu cerintele standardului/*in compliance with the standard*

SR ISO 45001:2018/ISO 45001:2018

pentru urmatoarele domenii de activitate/*for the following scope*

Proiectarea, confectionarea, repararea si comercializarea de utilaj tehnologic petrolier si gazifer, confectii metalice, echipamente sub presiune, automatizari, echipamente de separare, filtrare, incalzire, reglare, siguranta, masurare si ardere gaze naturale. Proiectarea si executia de instalatii tehnologice, statii de compresoare, inclusiv racorduri la retea de distributie pentru producerea si depozitarea gazului natural, retele de transport si racorduri la SNT(Sistemul National de Transport), sisteme de distributie, instalatii de gaz pentru utilizatori casnici si industriali.

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Certificat nr/*Certificate no:* 204R1 S
Certificare initiala/*First certification:* 08.08.2019
Emitere curenta/*Current issue:* 05.08.2022
Data expirarii/*Expiry date:* 04.08.2025

Mariana IONESCU
Administrator
CERTINSPECT REGISTER SRL



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Valabilitatea prezentului certificat este conditionata de efectuarea supravegheilor periodice anuale si de reevaluarea completa a sistemului de management la 3 ani. Falsificarea acestui certificat se pedepseste conform legilor.
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CERTINSPECT REGISTER SRL, Bucuresti, ROMANIA, str. Zambilelor nr. 96, etaj 1, Sector 2, J40/13045/2017, C.U.I.: RO37991905

Tel.: +40 726.368.707, office@certinspect.ro, www.certinspect.ro

Formular P-01-3-F-09/vers. 2

Fisa tehnica: IT - PD– DISPOZITIV DE BLOCARE CIRCUIT APA

Nr. crt.	Specificațiile tehnice oferite	Producător
0	1	2
1.	Parametri tehnici si functionali: - Fluidul de lucru: apă, antigel (agent termic lichid) - Presiunea nominală: ANSI600 - Diametru nominal: DN 80 - Temperatura mediului ambiant: -29....+55°C - Temperatura fluidului de lucru: 0...+120°C - Presiunea maximă de lucru: PN16 - Presiunea de blocare: 2,5 bar	ARMAX GAZ Medias
2.	Parametri constructivi: - Conectare la instalația tehnologică: între flanșe - Tratament specific organe de asamblare: zincare la cald - Dimensiuni constructive: conform SR ISO 14382+A1:2009 - Elemente componente: • Corp dispozitiv: alamă • Elemente componente: alamă, oțel inoxidabil • Etanșare: EPDM, Viton	
3.	Actionare: - Tip acționare: declanșare automată, reanșare manuală - Funcționare: normal deschis - suprapresiune închis	
4.	Teste si certificari puse la dispozitia beneficiarului: - Condiții generale conform SR EN 14380+A1 - Certificate de inspecție materiale și echipamente de tip 2.1	
5	Mod de ofertare: Documentația care va fi prezentată la ofertare: - Pentru produs: Certificatul de conformitate cu EN 14382+A1:2009 - Pentru produs: Certificat de tip CE, conform HG nr. 123/2015 (PED 2014/68/EU), privind stabilirea condițiilor pentru punerea pe piață a echipamentelor sub presiune; - Certificat de atestare a managementului, conform EN ISO 14001:2004 - Certificat de atestare a managementului siguranței și sănătății ocupaționale, conform SR OHSAS 18001/2004 - Caracteristicile tehnice ale produselor oferite trebuie să fie identificate și evidențiate în cataloage sau specificații tehnice de producător, strict pentru produsul oferit, aceste vor fi parte integrantă din oferta tehnică. Cataloage si specificații tehnice vor fi asumate de către ofertantul echipamentului (original sau copie conform cu originalul). - Ofertantul are obligația de a face dovada conformității produsului care urmează să fie furnizat cu prezenta cerință tehnică. - Se vor oferta și livra numai echipamente noi, de ultimă generație și originale, conform cu specificațiile și documentele specifice ale producătorului. Nu se vor oferta produse demo, recondiționate sau refuzate de alți beneficiari.	
6.	Documentație care va însoți produsul - Cartea tehnică a produsului (în limba română) - Fișa tehnică a produsului, - Instrucțiuni de montaj în instalație, - Instrucțiuni de punere în funcțiune și exploatare,	

	- Instrucțiuni de scoatere din funcțiune,	
	- Instrucțiuni/manuale de operare și întreținere, • operare, verificare etanșeități, • ungere, drenare, gresare, • cauze defecte, remedieri, verificări, • lista piese de schimb de mare uzură,	
	- Listă de componente și desene de ansamblu/subansamblu (secțiuni, detalii)	
	- Certificate /Teste Materiale componente,	
	- Certificate/Raport pentru Teste de presiune/etanșeitate,	
7.	Marcare si identificare	
	– Conf. SR EN 14382+A1:2009 – Numele și simbolul producătorului – Tipul/modelul, – Număr/serie produs – Anul de fabricație – Sensul de curgere marcat pe corpul dispozitivului	
8.	Condiții de livrare:	
	- Se acceptă standarde de produse și/sau fabricație europene sau internaționale echivalente.	
	- Utilajul se va livra complet echipat.	
	- Produsele vor fi ambalate pentru a face față transportului, manipulării și depozitării până la destinația finală, fără deteriorări.	
	- Ofertantul va asigura integritatea produselor livrate, până la locația de livrare.	
	- Produsele se vor recepționa la sediul achizitorului, ele putând fi inspectate și/sau testate, după caz, în condiții ce vor fi stabilite de comun acord prin contractul de achiziție.	
	- Toate materialele de ambalare a produselor, precum și toate materialele necesare protecției coletelor (paleți de lemn, folii de protecție, etc.) vor rămâne în proprietatea achizitorului	
	- Echipamentele livrate vor fi complet echipate cu toate accesoriile necesare pentru punerea în funcțiune și vor respecta cerințele impuse privind proiectarea și execuția instalațiilor tehnologice	
	- Locația de livrare conform comenzii.	
9.	Condiții de garanție și postgaranție:	
	- Garanția produsului: 36 luni de la punerea în funcțiune dar nu mai mult de 48 luni de la data livrării .	
	- Furnizorul va asigura piese de schimb pe perioada de garanție	
10.	Alte conditii:	
	- Furnizorul va acorda asistență tehnică și instruirea personalului de exploatare după un program convenit de părți. - Beneficiarul poate solicita furnizorului participarea pe fluxul de fabricație a produsului. - Condiții de livrare conform comenzii.	

CE **SUPAPĂ DE BLOCARE A AGENTULUI TERMIC TIP „SBA 25/50/80”**



UTILIZARE:

Supapa de blocare a agentului termic numită pe scurt SBA se utilizează la schimbătoare de caldură pentru gaze naturale cu scopul evitării creșterii presiunii și pătrunderii de gaze în circuitul de apă al instalației de încălzire. Se execută în gama de dimensiuni DN 25, DN 50 și DN 80 pentru presiuni între PN 10 și PN 64.

Montarea se face între flanșe cu prezoane și piulițe.



T= Transport

DESCRIERE:

Supapa de blocare SBA este o supapă de siguranță comandată, formată dintr-o supapă principală normal deschisă și o supapă pilot normal închisă.

Forma constructivă, părțile componente și dimensiunile de gabarit sunt prezentate în figura 1 și tabelul 1.

PRINCIPIU DE FUNCȚIONARE:

Supapa de blocare SBA se montează pe turul și returul circuitului de apă la schimbătoarele de caldură gaze naturale.

La o neetanșitate a fasciculului de țevi de gaze și deci pătrunderea gazului în mantaua de apă, presiunea din circuitul apei crește. La depășirea presiunii de declanșare a supapei pilot cu 0,3 –1 bar, supapa de blocare izolează schimbătorul de căldură defect, de instalația cu cazan.

CARACTERISTICI FUNCȚIONALE:

Presiunea maximă admisă PS	63 bar
Temperatura maximă admisă TS	95 °C
Agentul termic (fluidul de lucru)	66% apa + 34% glicol
Presiunea de declanșare a supapei pilot	2,5 bar
Presiunea de închidere a supapei de blocare	max. 3,5 bar
Presiunea din circuitul de apă al schimbătorului de căldură gaze	0,5 – 2 bar

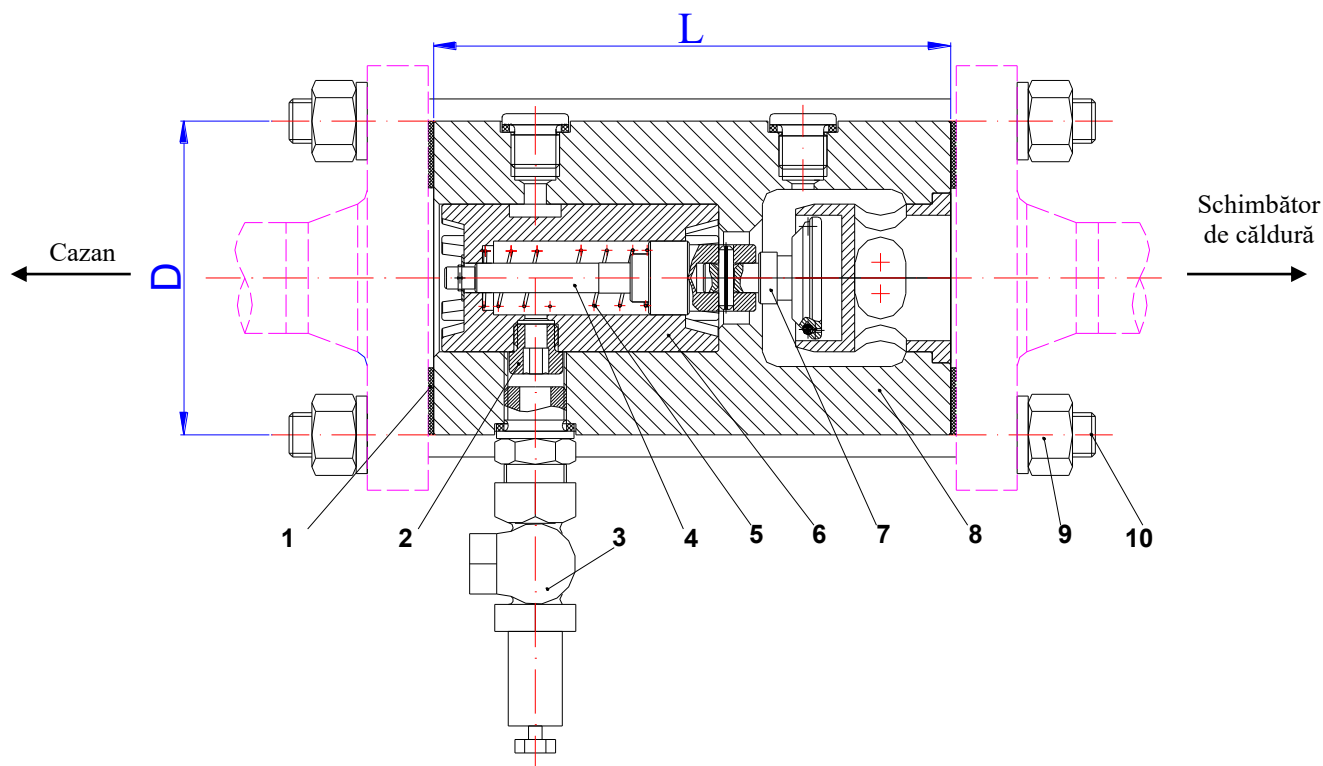


Fig. 1-Schema SBA

COMPONENTE:

- | | |
|--------------------------|-----------------|
| 1. Corp protecție supapă | 6. Cilindru |
| 2. Dop filetat G.1/4" | 7. Taler supapă |
| 3. Supapă pilot | 8. Corp supapă |
| 4. Piston | 9. Piuliță |
| 5. Arc | 10. Prezon |

NOTĂ: Flanșele se livrează la cererea beneficiarului

TABEL 1

SUPAPA SBA	ACCESORII PENTRU MONTAJ ÎN INSTALAȚIE						
	Tip flansa		ANSI 600 RF				
	Dimensiuni		Elemente de asamblare	Tija filetată	Bucăți	Piulițe	Bucăți
	D[mm]	L[mm]					
25	Ø 90	140		M 16 x 240	4	M 16	8
50	Ø127	160		M 16 x 280	8	M 16	16
80	Ø160	160		M 20 x 300	8	M 20	16



ARMAX GAZ

GAS & OIL EQUIPMENT

3/3

SIMBOLIZARE:

SBA - DN

Diametrul nominal [mm]

Supapa de blocare a agentului termic

FORMULAREA COMENZII:

Pentru formularea comenzii se vor indica următoarele date:

- denumire
- diametrul nominal [mm]

Exemplu:

Supapă de blocare SBA - 25

CERTIFICAT DE CONFORMITATE

Certificate of Conformity

Referitor la examinarile si incercarile efectuate

Addressing the examinations and testing performed

Verificarea unității de produs (Modul G) conform directivei 2014/68/UE (HG 123/2015)

Unit verification (Module G) according to Directive 2014/68/EU (GD 123/2015)

Nr. certificat: G – 2022 SX PP 20.5

Certificate No.:

Nume și adresă **ARMAX GAZ SA**

producător:

Str. Aurel Vlaicu, nr. 35A, Medias, Jud. Sibiu

Name and Address of
Manufacturer:

Produs:

Product: (denumire,
proiect, serie
fabricatie)

SUPAPA BLOCARE SBA-50 /G09-035-00-00-00 rev. 1, SF 67, 68; Dn
in/out=50; PS=63 bar; TSmax=+95°C

Nr. raport evaluare: RE – 2022 SX PP 20

Assessment report no:

**Rezultatele examenilor și încercărilor efectuate atestă că produsul respectă cerințele esențiale de
securitate din directiva 2014/68/UE (HG123/2015).**

The results of examinations and the testing performed attest that the product fulfills the essential safety requirements from Directive 2014/68/EU (GD 123/2015).

Punct de lucru:

Production unit:

C € 2028

Marcaj aplicat:

Applied mark:

Data si locatie emitere initiala: 02.02.2024/Bucuresti

Date and place of the initial issue:

Data actualizare: -

Review date:

Valabil pana la: -

Valid until:

RINA SIMTEX OC SRL

Str. Splaiul Independentei 319L
SEMA Parc, cladirea Bruxelles, Intrarea A, Et. 1
Sect.6, Cod poștal 060044, București, România

RINA SIMTEX - OC SRL

Director Departament Certificare Prodeuse

Product Certification Department Director

Ing. Mircea Vasile ZEGREAN

Număr organism notificat: 2028

Notified Body Number

tel: (004) 021 619 06 51/54

fax: (004) 021 619 03 53

web: www.rinaromania.ro

CERTIFICAT

CERTIFICATE

Se atesta faptul ca organizatia/*It is certified that the organization*

ARMAX GAZ S.A.

cu sediul social in/*with headquarter in*
Str Aurel Vlaicu, nr 35A, Medias, Judetul Sibiu

are implementat un/*has implemented a*

SISTEM DE MANAGEMENT AL CALITATII

QUALITY MANAGEMENT SYSTEM

in conformitate cu cerintele standardului/*in compliance with the standard*

SR EN ISO 9001:2015/ISO 9001:2015

pentru urmatoarele domenii de activitate/*for the following scope*

Proiectarea, confectionarea, repararea si comercializarea de utilaj tehnologic petrolier si gazifer, confectii metalice, echipamente sub presiune, automatizari, echipamente de separare, filtrare, incalzire, reglare, siguranta, masurare si ardere gaze naturale. Proiectarea si executia de instalatii tehnologice, statii de compresoare, inclusiv racorduri la reseaua de distributie pentru producerea si depozitarea gazului natural, retele de transport si racorduri la SNT(Sistemul National de Transport), sisteme de distributie, instalatii de gaz pentru utilizatori casnici si industriali.

Design, manufacturing, repairing and selling of technological equipment for petroleum and gas fire, steel constructions and pressure installations, pressure equipment, automation, separating equipment, filtration, heating, regulation, safety, measurement and burning of natural gas. Design and execution of technological installations, stations compressors, including connections to the distribution network for the production and storage of natural gas, transmission and connection networks at SNT (National Transport System), distribution systems, gas installations for household and industrial users.

Certificat nr/Certificate no: 204R1 C

Certificare initiala/First certification: 08.08.2019

Emitere curenta/Current issue: 05.08.2022

Data expirarii/Expiry date: 04.08.2025

Mariana IONESCU

Administrator

CERTINSPECT REGISTER SRL



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CERTINSPECT REGISTER SRL, Bucuresti, ROMANIA, str. Zambilelor nr. 96, etaj 1, Sector 2, J40/13045/2017, C.U.I.: RO37991905

Tel.: +40 726.368.707, office@certinspect.ro, www.certinspect.ro

Formular P-01-3-F-09/vers. 2

CERTIFICAT

CERTIFICATE

Se atesta faptul ca organizatia/It is certified that the organization

ARMAX GAZ S.A.

cu sediul social in/with headquarter in
Str Aurel Vlaicu, nr 35A, Medias, Judetul Sibiu

are implementat un/has implemented a

SISTEM DE MANAGEMENT DE MEDIU
ENVIRONMENTAL MANAGEMENT SYSTEM

in conformitate cu cerintele standardului/in compliance with the standard

SR EN ISO 14001:2015/ISO 14001:2015

pentru urmatoarele domenii de activitate/for the following scope

Proiectarea, confectionarea, repararea si comercializarea de utilaj tehnologic petrolier si gazifer, confectii metalice, echipamente sub presiune, automatizari, echipamente de separare, filtrare, incalzire, reglare, siguranta, masurare si ardere gaze naturale. Proiectarea si executia de instalatii tehnologice, statii de compresoare, inclusiv racorduri la reseaua de distributie pentru producerea si depozitarea gazului natural, retele de transport si racorduri la SNT(Sistemul National de Transport), sisteme de distributie, instalatii de gaz pentru utilizatori casnici si industriali.

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Certificat nr/Certificate no: 204R1 M
Certificare initiala/First certification: 08.08.2019
Emitere curenta/Current issue: 05.08.2022
Data expirarii/Expiry date: 04.08.2025

Mariana IONESCU
Administrator
CERTINSPECT REGISTER SRL



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cu sediul social in/*with headquarter in*
Str Aurel Vlaicu, nr 35A, Medias, Judetul Sibiu

are implementat un/*has implemented a*

SISTEM DE MANAGEMENT AL SANATATII SI SECURITATII IN MUNCA

OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT SYSTEM

in conformitate cu cerintele standardului/*in compliance with the standard*

SR ISO 45001:2018/ISO 45001:2018

pentru urmatoarele domenii de activitate/*for the following scope*

Proiectarea, confectionarea, repararea si comercializarea de utilaj tehnologic petrolier si gazifer, confectii metalice, echipamente sub presiune, automatizari, echipamente de separare, filtrare, incalzire, reglare, siguranta, masurare si ardere gaze naturale. Proiectarea si executia de instalatii tehnologice, statii de compresoare, inclusiv racorduri la reseaua de distributie pentru producerea si depozitarea gazului natural, retele de transport si racorduri la SNT(Sistemul National de Transport), sisteme de distributie, instalatii de gaz pentru utilizatori casnici si industriali.

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Certificat nr/*Certificate no:* 204R1 S
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Fișă tehnică: IT-RP - Regulator de presiune cu acționare indirectă cu dispozitiv blocare încorporat.

Nr. crt.	Specificațiile tehnice oferite	Producător
0	1	2
1.	Condiții generale: - Utilizare: echipamentul se va utiliza pentru reducerea și reglarea presiunii gazelor naturale din conducte. Sunt echipamente proiectate pentru utilizare industrială, în rețeaua de transport gaze naturale. - Componentele și dimensiunile constructive ale acestora se vor alege în funcție de domeniul de lucru. Echipamentul se va dimensiona să atingă capacitatea maximă de debit la presiunea minimă de intrare. - Echipamentul asigură menținerea constantă a presiunii de ieșire în limitele grupei de reglare, eliminând perturbațiile cauzate de: • variația presiunii de intrare • modificarea debitului vehiculat - Regulatorul de presiune va fi cu acționare indirectă, orice variație a presiunii de intrare este transmisă prin mecanismul de comandă unui element de execuție, care prelucreează semnalul de comandă, acesta se transmite membranei regulatorului, care modifică poziția unui ansamblu mobil care va deschide/închide calea gazului reglat. - Constructiv regulatorul de presiune va fi alcătuit din: a) mecanismul de comandă i. filtru • un element filtrant suplimentar, pe circuitul de comanda a reglării ii. microregulator • realizează o primă reducere a presiunii gazelor, înainte de elementul de pilotare • presiunea de ieșire din acesta va fi aplicată pe intrarea elementului de pilotare iii. echipamentul de pilotare • la ieșirea acestuia va fi obținută presiunea care se aplică elementului de execuție (membrana regulatorului) • în el se va compune presiunea primită de la microregulator cu o presiune de comprimare a unui arc, presiune reglabilă prin rotirea unui șurub • prin modificarea poziției șurubului se va prescrie presiunea aplicată elementului de execuție și, implicit, valoarea presiunii reglate b) elementul de execuție • regulator cu membrană și sistem mobil (tijă, piston, ventil, scaun)	Pietro Florentini

	• prin aplicarea presiunilor pe cele două suprafețe ale membranei se va modifica poziția ansamblului mobil care va închide/deschide calea de curgere a gazului c) supapă de blocare, va închide circuitul la depășirea ieșirea valori presiunii de intrare dintr-un interval normal de funcționare • conform EN 14382:2019 “Dispozitive de siguranță pentru stațiile de reglare a presiunii gazelor. Dispozitive de blocare pentru presiuni de intrare până la 100 bar”. d) încălzitor al gazelor de comandă a echipamentului de pilotare • este un echipament intern, integrat regulatorului • va asigura încălzirea gazelor din circuitul echipamentului de pilotare pentru prevenirea fenomenelor de înghețare • pentru încălzire folosește energia electrică e) amortizor de zgomot (dacă este necesar) • este un echipament intern, integrat regulatorului • va asigura reducerea zgomotului cu minim 20 dB • se va ține cont de la ofertare de influența pe care acesta o are asupra factorului de debit	
	- Caracteristici regulator: • de tip pilotat • în construcție normal închis • sistemul de pilotare trebuie să fie alimentat cu gaz din fluxul principal de gaze • echilibrate • autoacționate • fără emisii de gaz în atmosferă	
	- Regulatele vor funcționa corespunzător la o diferență de presiune intrare / ieșire mai mare de 0,5bar.	
	- Regulatele se vor monta în stații de reglare și măsură proiectate și exploatate conform EN 12186:2015 Infrastructura pentru gaze. Stații de reglare a presiunii gazelor pentru transport și distribuție. Cerințe funcționale”	
2.	Condiții de lucru:	
	- Fluidul de lucru:	
	- gaz natural cu densitatea (ρ) - 0,717 Kg / Nm³	
	- amestec de gaze naturale cu Hidrogen în proporție de 10%.	
	- Presiune nominală: conform schema tehnologică	
	- Diametru nominal: conform schema tehnologică	
	- Domeniul presiunii de intrare: conform schema tehnologică	
	- Domeniul presiunii de ieșire: conform schema tehnologică	
	- Domeniul presiunilor reglate: conform diagramă de reglaj	
	- Debit: conform schema tehnologică	
	- Temperatura mediului ambiant: conform schema tehnologică	
	- Viteza fluidului de lucru prin conductă amonte - aval de regulator: max. 20 m/s	

	- Viteza fluidului de lucru la flanșa regulatorului: max. 65 m/s	
	- Poziție de montaj: orizontal / vertical	
	- Montaj: suprateran, în zona Ex, în cofret termoizolat	
	- În conductele de impuls, care comandă regulatorul, va circula gaz preluat din circuitul de gaze naturale reglate	
3.	Parametri constructivi	
	- Regulatele vor fi fabricate în conformitate cu EN 334:2019 "Aparate de reglare a presiunii gazelor pentru presiuni de intrare de până la 100 bar".	
	- Regulatorul va fi în construcție de tipul „normal închis”	
	- Material corp regulator: oțel turnat	
	- Material conducte impuls: inox, conform EN 10216-5:2021 sau EN 10217-7:2021	
	- Material racorduri conducte impuls: inox, conform EN ISO 8434-1:2019	
	- Diametru conducte de impuls: 10, 12 sau 16mm	
	- Diametrul racordurilor la proces: conform schema tehnologică	
	- Protecție anticorozivă: vopsea	
	- Racord la proces: flanșe cu gât conform EN 1092-1 / flanșe conform ASME B16.5 respectiv ASME 16.47 Seria B (se va livra contraflanșe, prezoane, garnituri), suprafața de etanșare a flanșelor va fi de tip B (Raised face (B1 sau B2));	
	- Se vor avea în vedere soluții constructive care să permită cât mai ușor montarea regulatelor oferite în instalație (dimensiuni de gabarit, flanșe, număr găuri de prindere, etc.)	
	- Echipamentele electrice și aparatura de măsură și control vor fi livrate în construcție antiex, compatibile cu ATEX categoria II 2 G, Ex Zona 1	
	- Echipamentul va funcționa între debitul minim și maxim fără înlocuirea componentelor	
	- Se va asigura soluție tehnică pentru intervenția asupra organelor interne	
	- Regulatele de presiune vor îndeplini următoarele condiții: • să asigure un mod simplu și accesibil de a prescrie mărirea reglată, respectiv presiunea de ieșire; • să asigure o viteză mare de răspuns la apariția perturbațiilor; • un coeficient de debit adaptat cerințelor; • fiabilitate ridicată, prin folosirea unor materiale de calitate, prelucrare precisă și un control riguros al fazelor de execuție și a echipamentului în ansamblu; • dimensiuni de gabarit adaptate cerințelor de utilizare și a domeniului de lucru; • întreținere ușoară, accesibilă.	
4.	Dotări minime:	

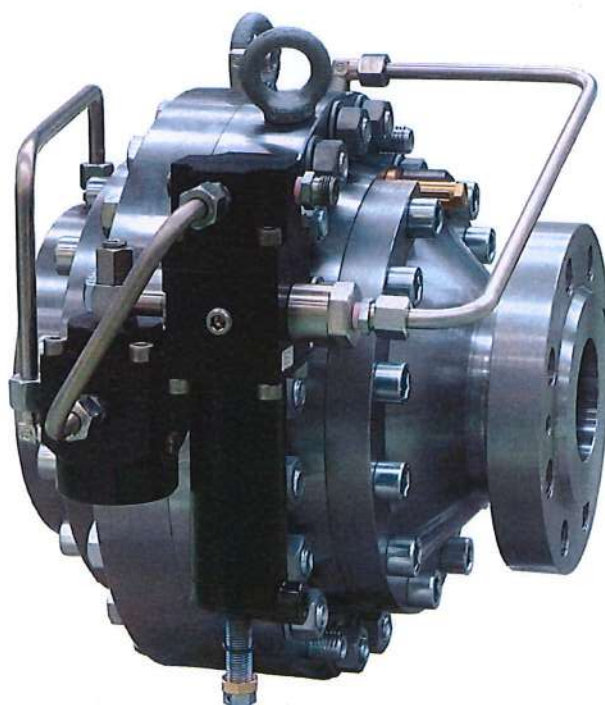
	- Amortizor de zgomot;	
	- Dispozitiv de blocare încorporat.	
5.	Caracteristici funcționale:	
	- Grupa de reglare GR: max. 2,5	
	- Grupa de închidere GI: max. 5	
	Nivelul de zgomot: max. 70 dB la un metru distanță	
6.	Teste și certificări puse la dispoziția beneficiarului:	
	- Certificate de inspecție materiale și echipamente din componența regulatorului de tip 3.1.	
	- Certificat de calitate și de conformare, însoțit de documente care să ateste efectuarea testelor: • probe de presiune (presiunea de probă 1,5 X PN), • probe de etanșeitate, • buletine de analiză, prin metode nedestructive a îmbinărilor sudate 100%, • probe de funcționare,	
7	Marcare și identificare:	
	- Placa de timbru, în conformitate cu normele în vigoare cu următoarele date: • producătorul • tipul regulatorului • seria și anul de fabricație • domeniul presiunii de intrare • domeniul presiunii de ieșire • debitul maxim de gaz • coeficientul de debit • grupa de reglare • grupa de închidere • etichetarea conformă ATEX, • marcaj de conformitate CE	
	- Pe corpul utilajului trebuie să apară marcat, prin turnare sau poansonare: • sensul de curgere al fluidelor, cu săgeată • diametrul nominal • presiunea nominală	
	- Se vor indica unitățile de măsură, acolo unde este cazul.	
8.	Mod de ofertare:	
	Documente solicitate la ofertare:	
	- Certificat EN ISO 9001:2015 (sistemul de management al calității) pentru producătorul echipamentului	
	- Certificat EN ISO 14001:2015 (sistemul de management al mediului) pentru producătorul echipamentului	
	- Certificat ISO 45001:2018 (managementul siguranței și sănătății ocupaționale) pentru producătorul echipamentului	
	- Pentru produs: Certificat de tip CE, conform PED 2014/68/EU, privind stabilirea condițiilor pentru punerea pe piață a echipamentelor sub presiune;	

	- Certificat de tip CE pentru reglatoare conform directivei ATEX 2014/34/EU, anexa3 cu privire la introducerea pe piață a echipamentelor și sistemelor protectoare destinate utilizării în atmosfere cu potențial exploziv.	
	- Declarație conformitate producător.	
	- Caracteristicile tehnice ale produselor oferite trebuie sa fie identificate și evidențiate, în cataloage sau specificații tehnice de producător, strict pentru produsul oferat, aceste vor fi parte integrantă din oferta tehnică. Cataloage și specificații tehnice vor fi asumate de către ofertantul echipamentului (original sau copie conform cu originalul).	
	- Se vor pune la dispoziție desene de ansamblu la scară (secțiuni, detalii, etc.) se vor detalia componentele până la nivel de repere folosite.	
	- Ofertantul are obligația de a face dovada conformității produselor care urmează să fie furnizate cu cerințele prevăzute în această fișă tehnică. În acest scop, propunerea tehnică va conține corespondența, pentru fiecare articol al cerințelor prevăzute în această fișă tehnică, cu articolul paragraful sau pagina din oferta tehnică care atestă îndeplinirea respectivei cerințe.	
	- Se vor oferta și livra numai echipamente noi, de ultimă generație și originale, conform cu specificațiile și documentele specifice ale producătorului. Nu se vor oferta produse demo, recondiționate sau refuzate de alți beneficiari.	
9.	Documentație care va însoți produsul	
	- Cartea tehnică și manualul de exploatare a echipamentului (inclusiv a echipamentelor din dotare)	
	- Desene de ansamblu la scară (secțiuni, detalii, etc.)	
	- Instrucțiuni de montaj în instalație,	
	- Instrucțiuni de punere în funcțiune și exploatare,	
	- Instrucțiuni de scoatere din funcțiune,	
	- Instrucțiuni de mentenanță.	
	- Raport de Trasabilitate	
	- Certificat de inspecție pentru materiale tip 3.1 EN 10204	
	- Certificate/Raport pentru Teste de presiune/etanșeitate,	
	- Certificate/ Teste protecții anticorozive.	
	- Buletine de analiză suduri (100%).	
10.	Condiții de livrare:	
	- Produsul se va livra complet echipat.	
	- Se vor oferta și livra echipamente noi.	
	- Utilajul va fi livrat însoțit de certificat de conformitate emis de producător și de carte tehnică în original și în limba română	
	- Produsele se vor livrate, recepționate , inspectate și testate, în condiții care vor fi stabilite de comun acord prin contractul de achiziție.	

	- Ofertantul va asigura integritatea produselor livrate, până la sediul achizitorului. Produsele vor fi ambalate pentru a face față transportului, manipulării și depozitării până la destinația finală.	
	- Echipamentele livrate vor fi complet echipate cu toate accesoriile necesare pentru punerea în funcțiune și vor respecta cerințele impuse privind proiectarea și execuția instalațiilor tehnologice	
11.	Condiții de garanție și postgaranție:	
	- Producătorul va garanta calitatea și buna funcționare a produsului timp de 24 luni de la punerea în funcțiune sau de 36 luni de la data livrării.	

ASX 176

High Medium Pressure Gas Regulator



TECHNICAL BROCHURE

Pietro Fiorentini S.p.A.

Via E.Fermi, 8/10 | 36057 Arcugnano, Italy | +39 0444 968 511
sales@fiorentini.com

The data are not binding. We reserve the right
to make changes without prior notice.

asx176_technicalbrochure_ENG_revA

www.fiorentini.com

Who we are

We are a global organization specialized in designing and manufacturing technologically advanced solutions for natural gas treatment, transmission and distribution systems.

We are the ideal partner for operators in the Oil & Gas sector, with a business offer that goes across the whole natural gas chain.

We are in constant evolution to meet our customers' highest expectations in terms of quality and reliability.

Our aim is to be a step ahead of the competition, with customized technologies and an after-sale service program undertaken with the highest grade of professionalism.



Pietro Fiorentini advantages



Localised technical support

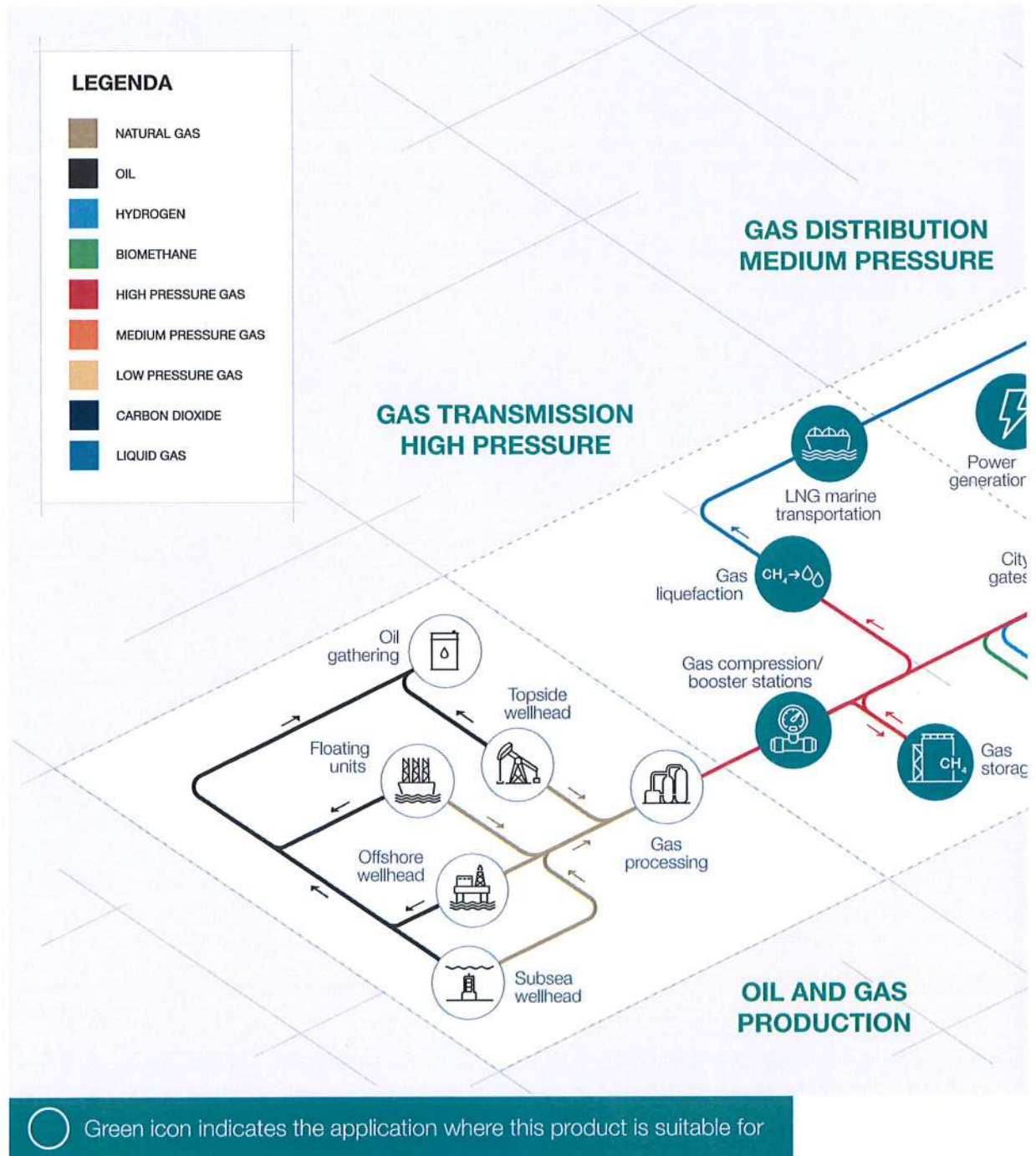


Experience since 1940



We operate in over 100 countries

Area of Application



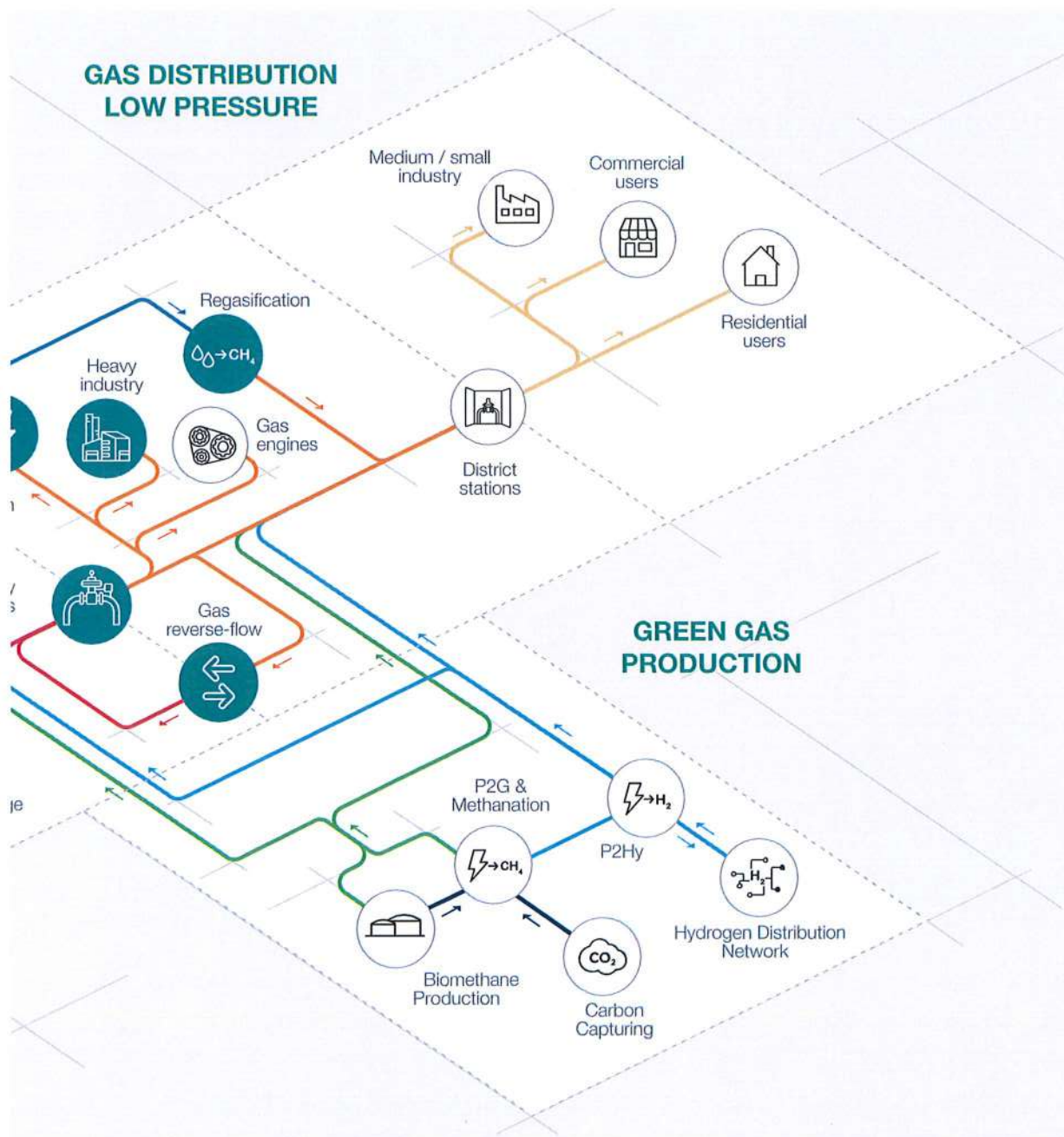


Figure 1 Area of Application Map



Introduction

ASX 176 is one of the **pilot-operated gas pressure regulators** designed and manufactured by Pietro Fiorentini.

This device is suitable for use with previously filtered non-corrosive gases, and it is mainly used for high-pressure transmission systems and for medium pressure natural gas distribution networks.

According to the European Standard EN 334, it is classified as **Fail Close**.

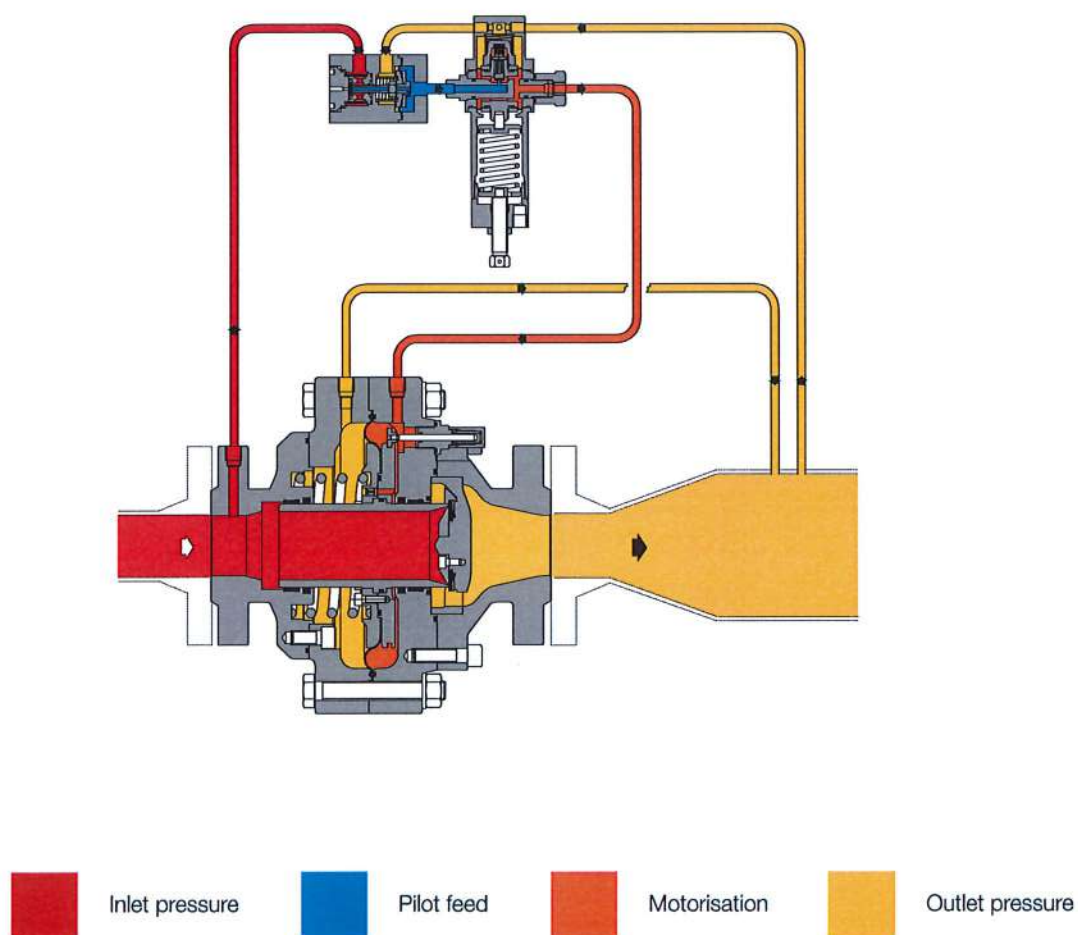


Figure 2 ASX 176

Features and Calibration ranges

ASX 176 is a **pilot-operated** device for high pressure and medium pressure with a unique **dynamic balancing system** which ensures an **outstanding turn down ratio** combined with an extremely **accurate outlet pressure control**.

This regulator is suitable to be used with previously filtered, non corrosive gases, in natural gas transmission and distribution networks as well as high load industrial application.

Set point adjustment of the regulator is achieved via a pilot, controlling the motorization pressure to the diaphragm chamber.

It is an axial flow regulator with higher capacity compared to the same size top entry body regulators.

The **body form factor** makes it very **reliable** for applications with high **elemental sulphur** presence in the gas stream.

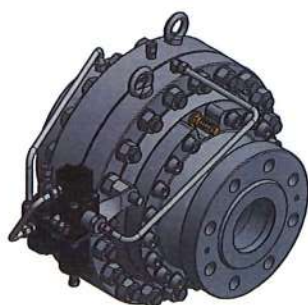


Figure 3 ASX 176 with silencer LDB/176

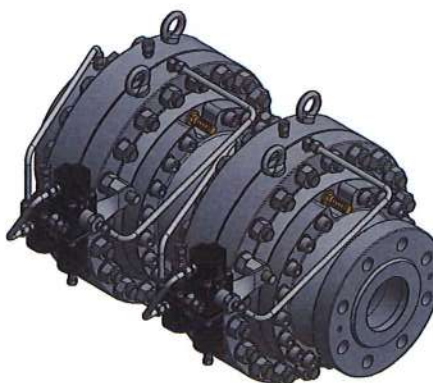


Figure 4 ASX 176 with PM/176



ASX 176 competitive advantages



Balanced type



Operates with low differential pressure



High accuracy



High turn-down ratio



Built-in pilot filter



High capacity



High reliability vs elemental sulphur presence



Biomethane compatible and available with specific versions for full Hydrogen or blending

Features

Features	Values
Design pressure*	up to 10.2 MPa up to 102 barg
Ambient temperature*	from -20 °C to +60 °C from -4 °F to +140 °F
Inlet gas temperature range*	from -20 °C to +60 °C from -4 °F to +140 °F
Inlet pressure range bpu (MAOP)	from 0.08 to 10 MPa from 0.8 to 100 barg
Range of downstream pressure Wd	from 0.03 to 7.4 MPa from 0.3 to 74 barg
Available Accessories	LDB/176 Silencer, PM/176 Monitor, SSX/176 Slam shut
Minimum differential pressure	0.05 MPa 0.5 barg
Accuracy class AC	up to 1 (depending on working conditions)
Lock-up pressure class SG	up to 5 (depending on working conditions)
Nominal dimensions DN	DN 25 / 1"; DN 50 / 2"; DN 80 / 3"; DN 100 / 4"; DN 150 / 6"
Connections*	Class 300, 600 RF or RTJ according to ASME B16.5
(*) REMARK: Different functional features and/or extended temperature ranges available on request. Stated temperature ranges are the maximum for which the equipment's full performance, including accuracy, are fulfilled. Standard product may have a narrower range.	

Table 1 Features

Materials and Approvals

Part	Material
Body	Steel ASTM A350 LF2
Plug	ASTM A 350 LF2 Nickel coated on sealing surface
Seat	Polimer / Nitril rubber vulcanized on a metal support
Diaphragm	Rubberized canvas (performed by hot-pressing process)
Sealing ring	Nitrile rubber
Compression fittings	In zinc-plated carbon steel according to DIN 2353; Stainless steel on request
REMARK: The materials indicated above refer to the standard models. Different materials can be provided according to specific needs.	

Table 2 Materials

Construction Standards and Approvals

ASX 176 regulator is designed according to European standard EN 334.
The regulator reacts in closing (Fail Close) according to EN 334.

The product is certified according to European Directive 2014/68/EU (PED).
Leakage class: bubble tight, better than VIII according to ANSI/FCI 70-3.



EN 334



PED-CE



Pilot ranges and types

Type	Model	Operation	Range Wh		Spring Table web link
			MPa	barg	
Main pilot	204/A	Manual	0.03 - 4.3	0.3 - 43	IT 433
Main pilot	205/A	Manual	2 - 6	20 - 60	IT 799
Main pilot	207/A	Manual	4.1 - 7.4	41 - 74	IT 1146

Table 3 Settings table

Types of pilot adjustment	
Pilot type .../A	Manual setting
Pilot type .../D	Electric remote setting control
Pilot type .../CS	Pneumatic remote setting control
Pilot type .../FIO	Smart unit for remote setting, monitoring, flow limitation

Table 4 Pilot adjustment table

General link to the calibration tables: [PRESS HERE](#) or use the QR code:



Accessories

For the pressure regulators:

- Cg limiter
- Limit switches
- Position transmitter
- Silencer
- Slam shut valve
- Monitor

For the pilot circuit:

- R14/A/S preregulator for the high pressure circuit (differential pressure > 3.5 MPa | 35 barg)
- Heating cable for preheating pilot circuit
- Electrical heater PPH200
- Supplementary filter CF14 or CF14/D
- ATF 15 antifreeze

In-line Monitor

The in-line monitor is generally installed upstream of the active regulator.

Although the function of the monitor regulator is different, the two regulators are virtually identical from the point of view of their mechanical components.

The only difference is that monitor is set at a higher pressure than active regulator.

The Cg coefficient of the active regulator is the same, however during the sizing process, the differential pressure drop generated by the fully open in-line monitor shall be considered.

As a general practise to incorporate this effect, a 20% reduction of the Active regulator's Cg value can be applied.

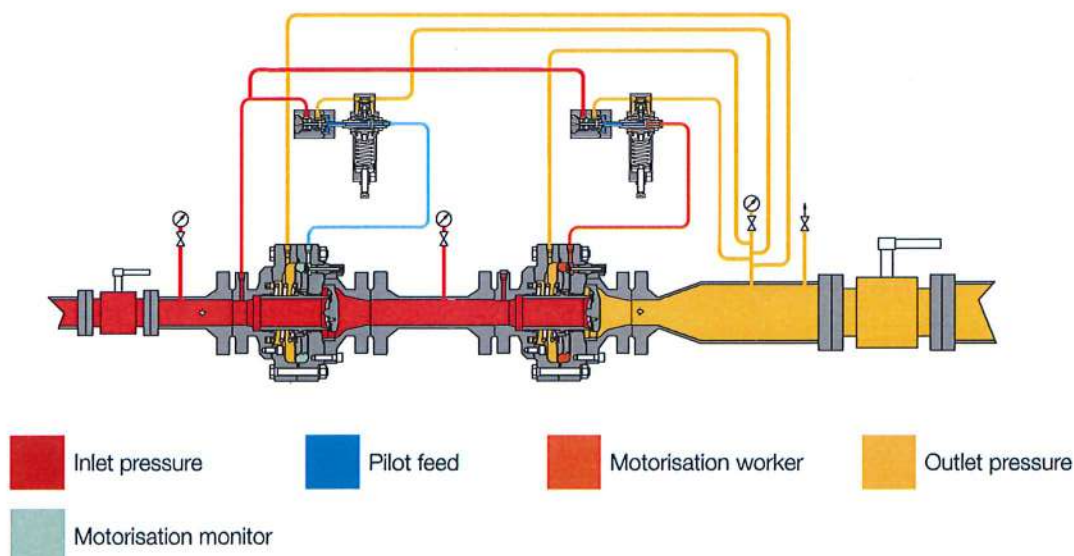


Figure 5 ASX 176 with in-line monitor setup



PM/176 monitor

This emergency regulator (monitor) is attached onto the body of the main regulator. Both pressure regulators, therefore, use the same valve body, although they have independent actuators, pilots and valve seats.

The monitor is in the fully open position during normal operation of the active regulator and takes over on in the event of its failure.

The functional characteristics of the PM/176 monitor are the same of the basic regulator ASX 176.

The Cg coefficients of regulator having an incorporated monitor is 16% lower than those for standard version.

This solution allows the construction of pressure reduction lines with compact dimensions.

Another great advantage offered by the incorporated monitor regulator is that **it can be installed at any time**, even on an existing regulator, **but it requires changes to the pipework**.

-  Completely independent
-  "Fail to close" action
-  Built-in pilot filter
-  Visual opening indicator
-  Limit switch option
-  Accelerator option

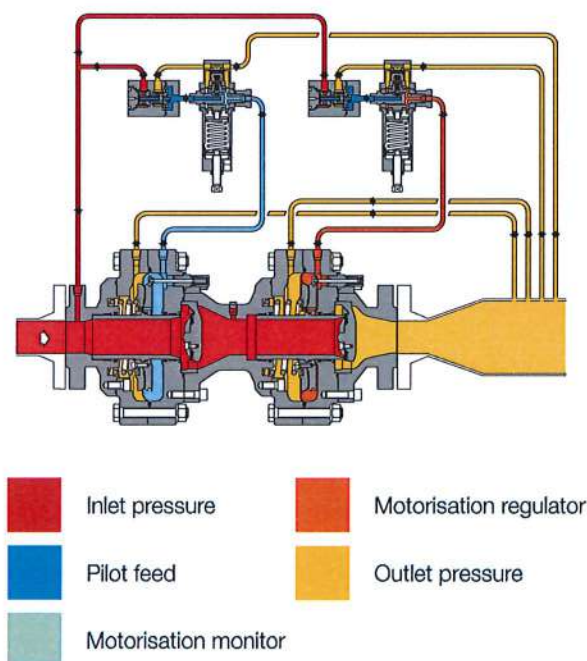


Figure 6 ASX 176 with PM/176

Type	Model	Operation	Range Wh		Spring Table web link
			MPa	barg	
Main pilot	204/A	Manual	0.03 - 4.3	0.3 - 43	TT 433
Main pilot	205/A	Manual	2 - 6	20 - 60	TT 799
Main pilot	207/A	Manual	4.1 - 7.4	41 - 74	TT 1146

Table 4 Settings Table

Types of pilot adjustment	
Pilot type .../A	Manual setting
Pilot type .../D	Electric remote control setting
Pilot type .../CS	Pneumatic remote control setting
Pilot type .../FIO	Smart unit for remote setting, monitoring, flow limitation

Table 5 Pilot adjustment table

The monitor regulator can be equipped with an additional pilot called "accelerator" to enable a quick response time during the monitor take over. According to PED the accelerator is required on the monitor when acting as a safety accessory.

Type	Model	Operation	Range Wh		Spring Table web link
			MPa	barg	
Accelerator	M/A	Manual	0.03 - 2	0.3 - 20	TT 354
Accelerator	M/A1	Manual	2 - 6.3	20 - 63	TT 892
Accelerator	M/A2	Manual	4 - 7.5	40 - 75	TT 892

Table 6 Accelerator adjustment table

General link to the calibration tables: [PRESS HERE](#) or use the QR code:





LDB/176 silencer

Whenever certain noise limit is desired, an additional silencer allows to considerably reduce the noise level (dBA).

ASX 176 pressure regulator can be supplied with an **incorporated silencer** in either the standard version or version with incorporated slam shut or monitor regulator.

The high efficiency noise absorption takes place at the point where the noise is generated, thus preventing its propagation.

With the built-in silencer, the Cg valve coefficient is 10% lower than the corresponding version without.

Given the modular arrangement of the regulator, the silencer may be retrofitted to both standard ASX 176 version as well as those with incorporated slam shut or monitor, **without any need to modify the main piping**.

Pressure reduction and control operate in the same manner as in the standard version.

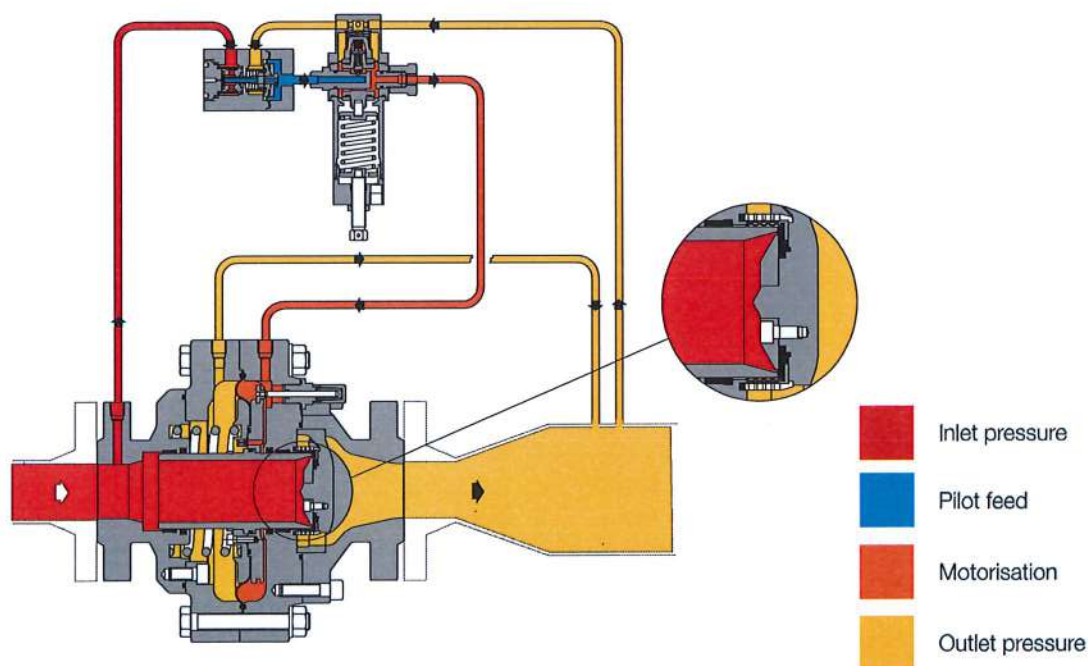


Figure 7 ASX 176 with LDB/176 silencer

The charts below represent the silencer effectiveness based on some common reference conditions for 2", 4" and 6". For actual calculations at specific desired conditions please refer to the online sizing tool or contact your closest Pietro Fiorentini representative.

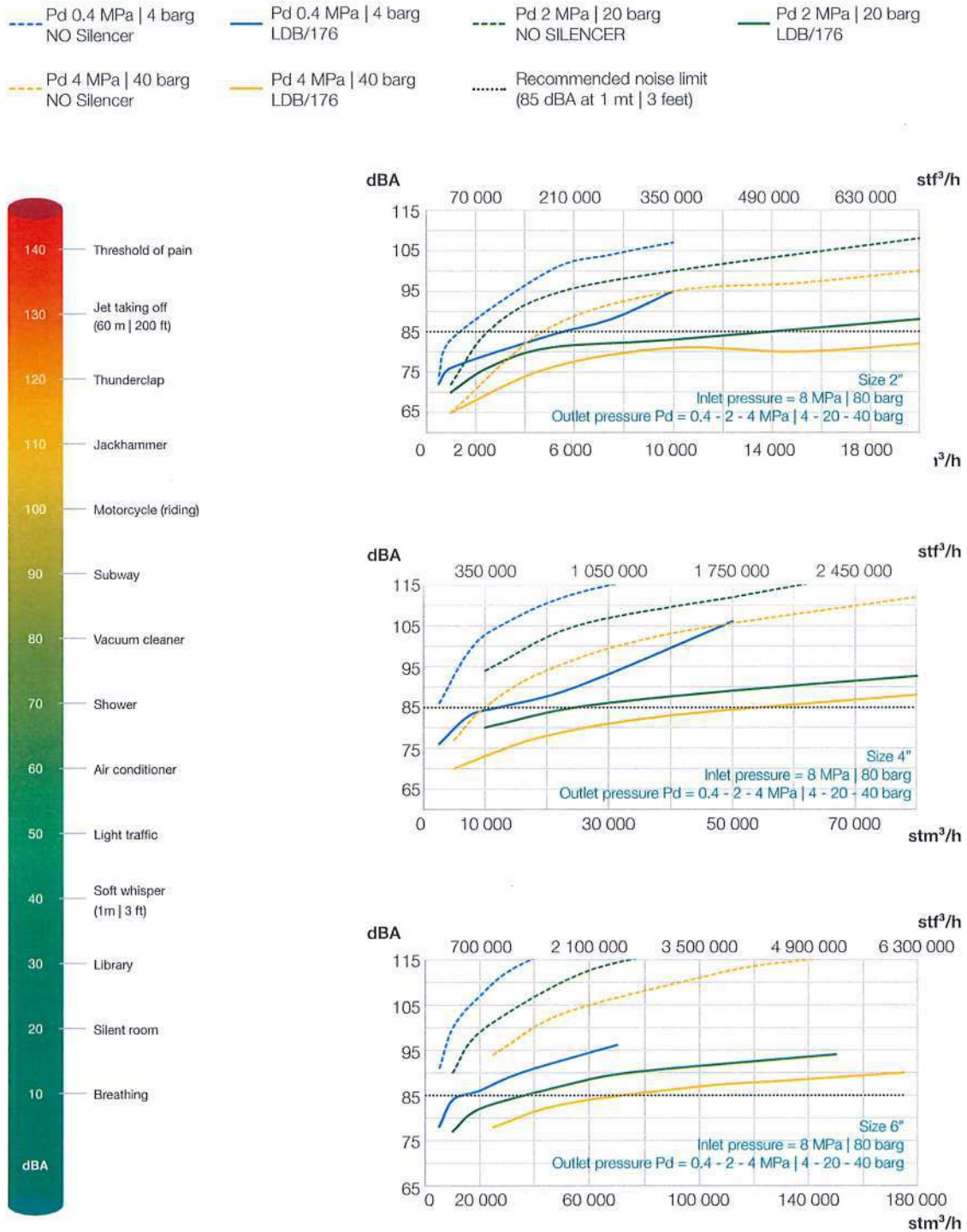


Chart 1 ASX 176's silencer efficiency charts

SSX/176 slam shut

ASX 176 pressure regulator offers the possibility of installing an **SSX/176 incorporated slam shut valve**, depending on the regulator size, and this can be done either during the manufacturing process or be retrofitted in the field.

Retrofitting can be done without modifying the pressure regulator assembly, but it requires piping modification.

With the built-in slam shut, the Cg valve coefficients is 20% lower than the corresponding version without.

The main characteristics of this device are:

-  OPSO Over Pressure Shut-Off
-  UPSO Under Pressure Shut-Off
-  Internal by-pass
-  Push button for tripping test
-  Compact dimensions
-  Remote tripping option
-  Limit switch option

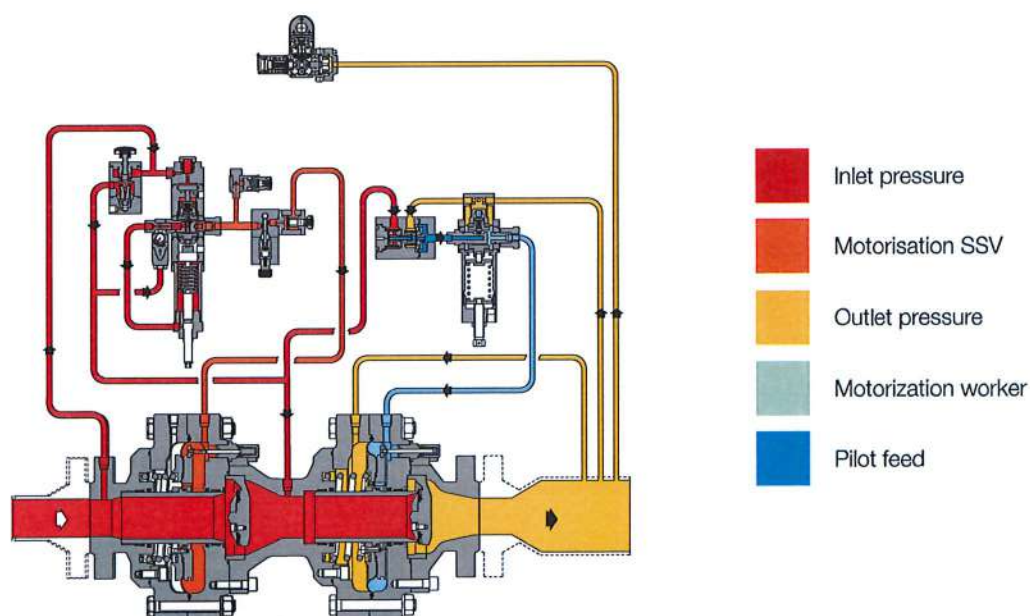


Figure 8 ASX 176 with SSX/176

Pressure switch types and ranges					
SSV Type	Model	Operation	Range Wh		Spring Table web link
			MPa	barg	
SSX/176	103M	OPSO	0.2 - 2.2	2 - 22	IT 1331
		UPSO	0.02 - 0.8	0.2 - 8	
SSX/176	104M	OPSO	1.5 - 4.5	15 - 45	IT 1331
		UPSO	0.16 - 1.8	1.6 - 18	
SSX/176	105M	OPSO	3 - 9	30 - 90	IT 1331
		UPSO	0.3 - 4.4	3 - 44	

Table 7 Setting table

General link to the calibration tables: [PRESS HERE](#) or use the QR code:





Weights and Dimensions

ASX 176 with or without silencer LDB/176

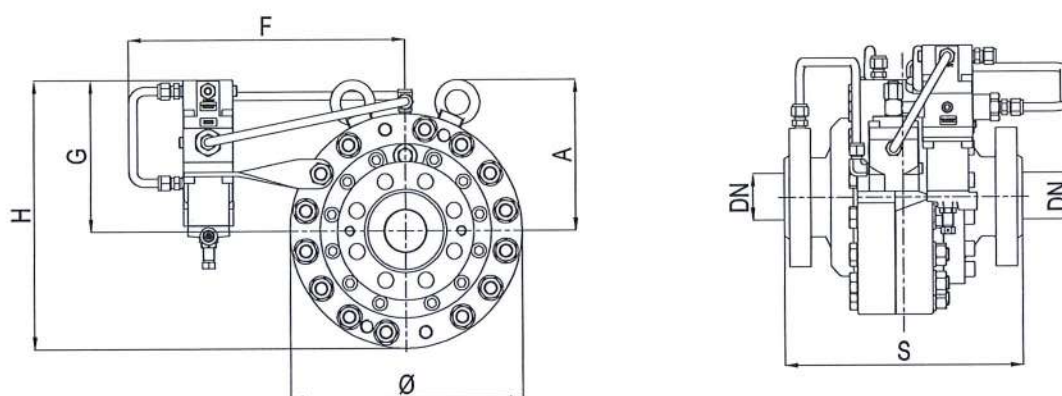


Figure 9 ASX 176 dimensions

Weights and Dimensions (for other connections please contact your closest Pietro Fiorentini representative)					
	(mm) inches	(mm) inches	(mm) inches	(mm) inches	(mm) inches
Size (DN)	25 1"	50 2"	80 3"	100 4"	150 6"
S - ANSI 300	197 7.76"	267 10.51"	317 12.48"	368 14.49"	473 18.62"
S - ANSI 600	210 8.27"	286 11.26"	336 13.23"	394 15.51"	508 20"
Ø	279 10.98"	279 10.98"	359 14.13"	440 17.32"	550 21.65"
A	180 7.09"	180 7.09"	223 8.78"	263 10.35"	318 12.52"
F	335 13.19"	335 13.19"	375 14.76"	409 16.10"	465 18.31"
G	181 7.13"	181 7.13"	186 7.32"	203 7.99"	201 7.91"
H	321 12.64"	321 12.64"	365 14.37"	425 16.73"	476 18.74"
Tubing connections	Øe 10 x ØI 8 (on request imperial sizing)				
Weight	Kg lbs	Kg lbs	Kg lbs	Kg lbs	Kg lbs
ANSI 300	55 121	72 159	123 271	214 472	333 734
ANSI 600	55 121	74 163	126 278	225 496	365 805

Table 8 Weight and dimensions

ASX 176 + PM/176 with or without silencer LDB/176

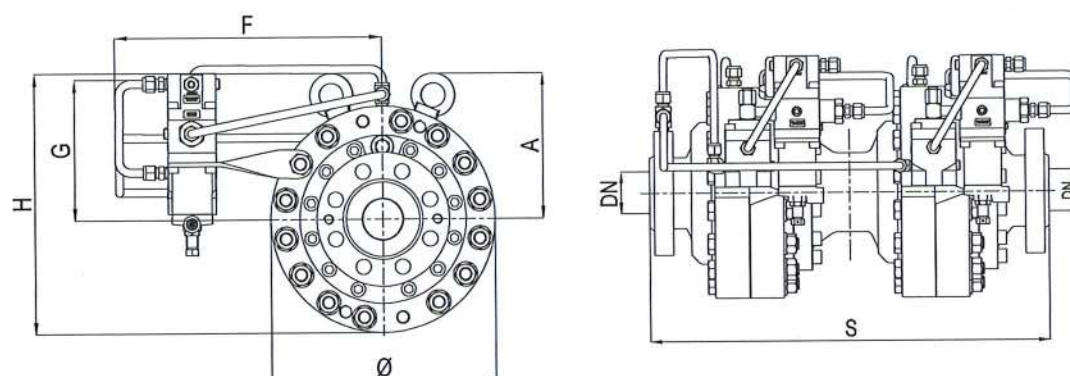


Figure 10 ASX 176 + PM/176 dimensions

Weights and Dimensions (for other connections please contact your closest Pietro Fiorentini representative)					
	[mm] inches	[mm] inches	[mm] inches	[mm] inches	[mm] inches
Size (DN)	25 1"	50 2"	80 3"	100 4"	150 6"
S - ANSI 300	372 14.65"	516 20.31"	581 22.87"	694 27.32"	901 35.47"
S - ANSI 600	385 15.16"	535 21.06"	600 23.62"	720 28.34"	936 36.85"
Ø	279 10.98"	279 10.98"	359 14.13"	440 17.32"	550 21.65"
A	180 7.09"	180 7.09"	223 8.78"	263 10.35"	318 12.52"
F	335 13.19"	335 13.19"	375 14.76"	409 16.10"	318 12.52"
G	181 7.13"	181 7.13"	186 7.32"	203 7.99"	201 7.91"
H	321 12.64"	321 12.64"	365 14.37"	425 16.73"	476 18.74"
Tubing connections	Øe 10 x Øi 8 (on request imperial sizing)				

Weight	Kg lbs	Kg lbs	Kg lbs	Kg lbs	Kg lbs
ANSI 300	110 242	137 302	239 527	425 937	656 1446
ANSI 600	110 242	139 306	242 534	445 981	730 1609

Table 9 Weight and dimensions

ASX 176 + SSX/176 with or without silencer LDB/176

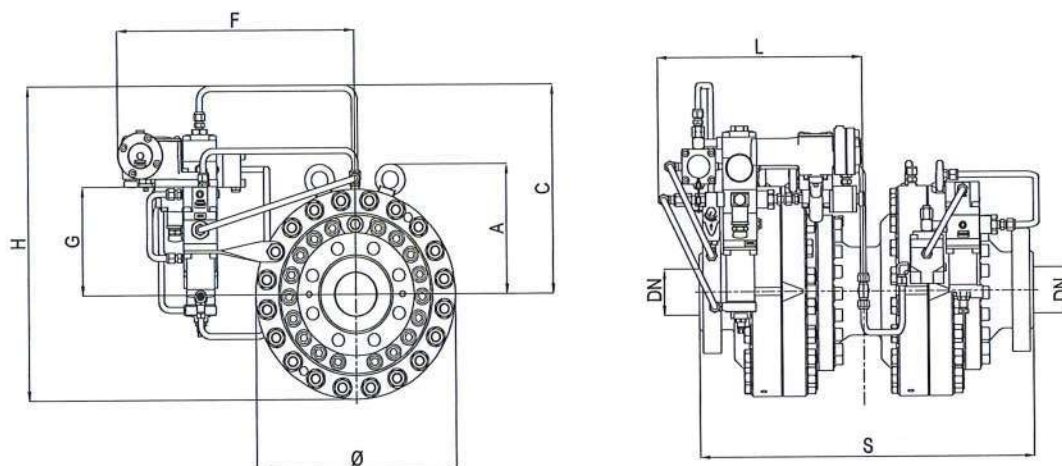


Figure 11 ASX 176 + SSX/176 dimensions

Weights and Dimensions (for other connections please contact your closest Pietro Fiorentini representative)					
	[mm] inches	[mm] inches	[mm] inches	[mm] inches	[mm] inches
Size (DN)	25 1"	50 2"	80 3"	100 4"	150 6"
S - ANSI 300	372 14.65"	516 20.31"	581 22.87"	694 27.32"	901 35.47"
S - ANSI 600	385 15.16"	535 21.06"	600 23.62"	720 28.34"	936 36.85"
Ø	279 10.98"	279 10.98"	359 14.13"	440 17.32"	550 21.65"
A	180 7.09"	180 7.09"	223 8.78"	263 10.35"	318 12.52"
C	346 13.62"	346 13.62"	352 13.85"	369 14.52"	388 15.27"
F	348 13.70"	348 13.70"	389 15.31"	425 16.73"	460 18.11"
G	181 7.13"	181 7.13"	186 7.32"	203 7.99"	201 7.91"
H	489 19.25"	489 19.25"	532 20.94"	590 23.22"	653 25.70"
L	284 11.18"	308 12.12"	365 14.37"	443 17.44"	523 20.59"
Tubing connections	Øe 10 x Øi 8 (on request imperial sizing)				

Weight	Kg lbs	Kg lbs	Kg lbs	Kg lbs	Kg lbs
ANSI 300	115 253	142 313	244 537	429 945	661 1457
ANSI 600	115 253	144 317	246 542	449 990	735 1620

Table 10 Weight and dimensions

Sizing and Cg

In general, the choice of a regulator is made based on the calculation of the flow rate determined by the use of formulae using the flow rate coefficients (Cg) and the form factor (K1) as indicated by the EN 334 standard.

Flow rate coefficient					
Nominal size	25	50	80	100	150
Inches	1"	2"	3"	4"	6"
Cg	630	2300	5000	8800	19000
K1	145	145	145	145	145

Table 11 Flow rate coefficient

For sizing [PRESS HERE](#) or use the QR code:



Note: In case you do not have the proper credentials to access, feel free to contact your closest Pietro Fiorentini representative.

In general, the online sizing considers multiple variables as the regulator is installed in a system, enabling a better and multiperspective approach to the sizing.

For different gases, and for natural gas with a different relative density other than 0.61 (compared to air), the correction coefficients from the following formula shall be applied:

$$F_c = \sqrt{\frac{175,8}{S \times (273,16 + T)}}$$

S = relative density (refer to table 12)
T = gas temperature (°C)

Correction Factor Fc

Gas Type	Relative Density S	Correction Factor Fc
Air	1.00	0.78
Propane	1.53	0.63
Butane	2.00	0.55
Nitrogen	0.97	0.79
Oxygen	1.14	0.73
Carbon Dioxide	1.52	0.63

Note: the table shows the Fc correction factors valid for Gas, calculated at a temperature of 15°C and at the declared relative density.

Table 12 Correction factor Fc

Flow rate conversion

$$\text{Stm}^3/\text{h} \times 0,94795 = \text{Nm}^3/\text{h}$$

Nm³/h reference conditions T= 0 °C; P= 1 barg

Stm³/h reference conditions T= 15 °C; P= 1 barg

Table 13 Flow rate conversion

CAUTION:

In order to get optimal performance, to avoid premature erosion phenomena and to limit noise emissions, it is recommended to check that the gas speed at the outlet flange does not exceed the values of the graph below. The gas speed at the outlet flange may be calculated by means of the following formula:

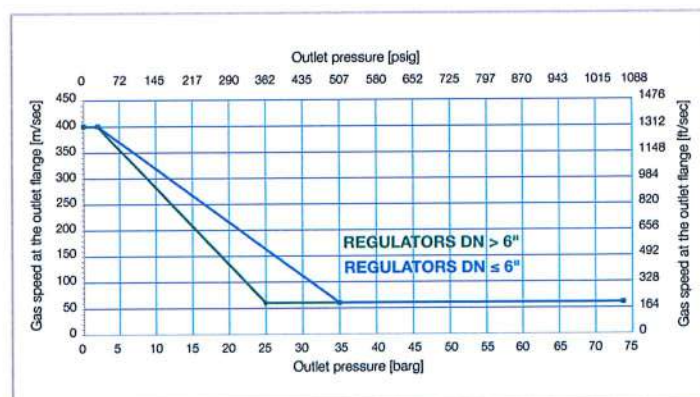
$$V = 345,92 \times \frac{Q}{\text{DN}^2} \times \frac{1 - 0,002 \times \text{Pd}}{1 + \text{Pd}}$$

V = gas speed in m/s

Q = gas flow rate in Stm³/h

DN = nominal size of regular in mm

Pd = outlet pressure in barg



Sizing of regulators is usually made based on valve Cg value (table 11).

Flow rates at fully open position and various operating conditions are related by the following formulae where:

Q = flow rate in Stm³/h

Pu = inlet pressure in bar (abs)

Pd = outlet pressure in bar (abs).

- **A** > when the Cg value of the regulator is known, as well as Pu and Pd, the flow rate can be calculated as follows:

- **A-1** in sub critical conditions: (Pu < 2 x Pd)

$$Q = 0.526 \times C_g \times P_u \times \sin \left(K1 \times \sqrt{\frac{P_u - P_d}{P_u}} \right)$$

- **A-2** in critical conditions: (Pu ≥ 2 x Pd)

$$Q = 0.526 \times C_g \times P_u$$

- **B** > vice versa, when the values of Pu, Pd and Q are known, the Cg value, and hence the regulator size, may be calculated using:

- **B-1** in sub-critical conditions: (Pu < 2xPd)

$$C_g = \frac{Q}{0.526 \times P_u \times \sin \left(K1 \times \sqrt{\frac{P_u - P_d}{P_u}} \right)}$$

- **B-2** in critical conditions (Pu ≥ 2 x Pd)

$$C_g = \frac{Q}{0.526 \times P_u}$$

NOTE: The sin value is understood to be DEG.



Pietro Fiorentini

TB0003ENG



The data are not binding. We reserve the right
to make changes without prior notice.

[asx176_technicalbrochure_ENG_revA](#)

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ASX 176

ASX 176 is one of the **pilot-operated gas pressure regulators** designed and manufactured by Pietro Fiorentini.

This device is suitable for use with previously filtered non-corrosive gases, and it is mainly used for high-pressure transmission systems and for medium pressure natural gas distribution networks.

According to the European Standard EN 334, it is classified as **Fail Close**.



Gas liquefaction



City gates



Power generation



Gas compression /
booster stations



Heavy industries



LNG marine



Gas storage



Regasification



Gas reverse-flow

Features	Values
Design pressure*	up to 10.2 MPa up to 102 barg
Ambient temperature*	from -20 °C to +60 °C from -4 °F to +140 °F
Inlet gas temperature range*	from -20 °C to +60 °C from -4 °F to +140 °F
Inlet pressure range bpu (MAOP)	from 0.08 to 10 MPa from 0.8 to 100 barg
Range of downstream pressure Wd	from 0.03 to 7.4 MPa from 0.3 to 74 barg
Available Accessories	LDB/176 Silencer, PM/176 Monitor, SSX/176 Slam shut
Minimum differential pressure	0.05 MPa 0.5 barg
Accuracy class AC	up to 1 (depending on working conditions)
Lock-up pressure class SG	up to 5 (depending on working conditions)
Nominal dimensions DN	DN 25 / 1"; DN 50 / 2"; DN 80 / 3"; DN 100 / 4"; DN 150 / 6"
Connections*	Class 300, 600 RF or RTJ according to ASME B16.5

(*) **REMARK:** Different functional features and/or extended temperature ranges available on request. Stated temperature ranges are the maximum for which the equipment's full performance, including accuracy, are fulfilled. Standard product may have a narrower range.

Table 1 Features

Materials and Approvals

Part	Material
Body	Steel ASTM A350 LF2
Plug	ASTM A 350 LF2 Nickel coated on sealing surface
Seat	Polimer / Nitril rubber vulcanized on a metal support
Diaphragm	Rubberized canvas (performed by hot-pressing process)
Sealing ring	Nitrile rubber
Compression fittings	In zinc-plated carbon steel according to DIN 2353; Stainless steel on request
REMARK: The materials indicated above refer to the standard models. Different materials can be provided according to specific needs.	

Table 2 Materials

ASX 176 regulator is designed according to the European standard EN 334.
The regulator reacts in closing (Fail Close) according to EN 334.
The product is certified according to European Directive 2014/68/EU (PED).
Leakage class: bubble tight, better than VIII according to ANSI/FCI 70-3.



EN 334



PED-CE

ASX 176 competitive advantages



Balanced type



Operates with low differential pressure



High accuracy



High turn-down ratio



Built-in pilot filter



High capacity



High reliability vs elemental sulphur presence



Biomethane compatible and available with specific versions for full Hydrogen or blending

Fisa tehnica: IT-RTC - REGULATOR DE TEMPERATURA (VANA CU 3 CAI)

Nr. crt.	Specificațiile tehnice oferite	Producător
0	1	2
1.	Parametri tehnici și funcționali: - Fluidul de lucru: apă, antigel (agent termic lichid) - Tip: Regulator direct temperatura cu 3 cai cu senzor de temperatură ce permite reglajul mecanic al temperaturii din instalațiile tehnologice. Senzorul de temperatură este umplut cu un lichid de dilatare care își modifica volumul în funcție de temperatura. - Schema de montaj: diverting service - Mod de instalare: heating - in the flow pipe - Presiunea nominală: 16bar - Diametru nominal: DN80 - Temperatura mediului ambiant: -29...+55°C - Flanșe de conectare conform EN1092 - Domeniul termostat -10...90°C - Conexiune la proces termostat: filet G1"; - Lungime tub capilar: 10m - Temperatura fluidului de lucru: -10 ÷ +120°C	Samson
2.	Parametri constructivi: - Conectare la instalația tehnologică: flanșe - Tratament specific organe de asamblare: zincare la cald - Dimensiuni constructive: conform SR ISO 14382+A1:2009 Materiale elemente componente: • material corp: oțel • scaun și plug: inox • tijă plug și arc: inox • senzor: bronz nichelat nichelat • teacă: bronz / cupru	
3.	Acționare: Tip acționare: Senzorul de temperatură este umplut cu un lichid de dilatare care își modifica volumul în funcție de temperatura - Funcționare: normal deschis - suprapresiune închis	
4.	Teste și certificări puse la dispoziția beneficiarului - Condiții generale conform SR EN 14380+A1 - Certificate de inspecție materiale și echipamente de tip 2.1	
5.	Mod de ofertare: Documentația care va fi prezentată la ofertare: - Pentru produs: Certificatul de conformitate cu EN 14382+A1:2009	
	- Pentru produs: Certificat de tip CE, conform HG nr. 123/2015 (PED 2014/68/EU), privind stabilirea condițiilor pentru punerea pe piață a echipamentelor sub presiune;	

	- Certificat de atestare a managementului, conform EN ISO 14001:2004	
	- Certificat de atestare a managementului siguranței și sănătății ocupaționale, conform SR OHSAS 18001/2004	
	- Caracteristicile tehnice ale produselor oferite trebuie să fie identificate și evidențiate în cataloage sau specificații tehnice de producător, strict pentru produsul oferit, aceste vor fi parte integrantă din oferta tehnică. Cataloage și specificații tehnice vor fi asumate de către ofertantul echipamentului (original sau copie conform cu originalul).	
	- Ofertantul are obligația de a face dovada conformității produsului care urmează să fie furnizat cu prezenta cerință tehnică.	
	- Se vor oferta și livra numai echipamente noi, de ultimă generație și originale, conform cu specificațiile și documentele specifice ale producătorului. Nu se vor oferta produse demo, recondiționate sau refuzate de alți beneficiari.	
6.	Documentație care va însoți produsul	
	Cartea tehnică a produsului (în limba română)	
	- Fișa tehnică a produsului,	
	- Instrucțiuni de montaj în instalație,	
	- Instrucțiuni de punere în funcțiune și exploatare,	
	- Instrucțiuni de scoatere din funcțiune,	
	- Instrucțiuni/manuale de operare și întreținere,	
	• operare, verificare etanșeități,	
	• ungere, drenare, gresare,	
	• cauze defecte, remedieri, verificări,	
	• lista piese de schimb de mare uzură,	
	- Listă de componente și desene de ansamblu/subansamblu (secțiuni, detalii)	
	- Certificate /Teste Materiale componente,	
	- Certificate/Raport pentru Teste de presiune /etanșeitate,	
7.	Marcare și identificare	
	• Conf. SR EN 14382+A1:2009 • Numele și simbolul producătorului • Tipul/modelul, • Număr/serie produs • Anul de fabricație • Sensul de curgere marcat pe corpul dispozitivului	
8.	Condiții de livrare:	
	- Se acceptă standarde de produse și/sau fabricație europene sau internaționale echivalente.	
	- Utilajul se va livra complet echipat.	
	- Produsele vor fi ambalate pentru a face față transportului, manipulării și depozitării până la destinația finală, fără deteriorări.	
	- Ofertantul va asigura integritatea produselor livrate, până la locația de livrare.	

	- Produsele se vor recepționa la sediul achizitorului, ele putând fi inspectate si/sau testate, după caz, în condiții ce vor fi stabilite de comun acord prin contractul de achiziție.	
	- Toate materialele de ambalare a produselor, precum și toate materialele necesare protecției cotețelor (paleți de lemn, folii de protecție, etc.) vor rămâne în proprietatea achizitorului	
	- Echipamentele livrate vor fi complet echipate cu toate accesoriile necesare pentru punerea în funcțiune si vor respecta cerințele impuse privind proiectarea și execuția instalațiilor tehnologice	
	- Locația de livrare conform comenzii.	
9.	Condiții de garanție și post-garanție	
	- Garanția produsului: 36 luni de la punerea în funcțiune dar nu mai mult de 24 luni de la data livrării .	
	- Furnizorul va asigura piese de schimb pe perioada de garanție	
10.	Alte condiții:	
	- Furnizorul va acorda asistență tehnică si instruirea personalului de exploatare după un program convenit de părți.	
	- Beneficiarul poate solicita furnizorului participarea pe fluxul de fabricatie a produsului.	
	- Conditii de livrare conform comenzii.	

Application

Temperature regulator with either mixing or flow-diverting valve for heating or cooling installations, with control thermostats for **set points** from **−10 °C** to **+250 °C** · **Three-way valves** in **nominal sizes DN 15 to DN 150** · **Nominal pressures PN 16 to PN 40** and **temperatures** up to **350 °C**

Conversion of valve sizing coefficients:

C_v (in U.S. gallons/min) = $1.17 \cdot K_{vs}$ (in m³/h)

K_{vs} (in m³/h) = $0.86 \cdot C_v$ (in U.S. gallons/min).

Note

Typetested temperature regulators (TR), temperature limiters (TL), safety temperature monitors (STM) and safety temperature limiters (STL) are available.



The regulators consist of a balanced three-way valve and a control thermostat comprising a temperature sensor, a set point adjuster with an excess temperature safety device, a capillary tube and an operating element.

Special features

- Low-maintenance P regulators requiring no auxiliary energy
- Wide set point range and convenient set point adjustment
- Three-way valve with plug balancing¹⁾ by means of a stainless steel bellows, optionally available with a plug arrangement for mixing or diverting liquids
- Flow rate across the cross-sectional area AB is practically independent of the valve plug position
- Valve body optionally made of cast iron, cast steel or stainless cast steel
- Versions with double adapter and manual adjuster are available for attachment of a temperature limiter or a second thermostat. For details, see Data Sheet T 2036 EN.

Versions

Temperature Regulator with Type 9 Three-way Valve

DN 15 to DN 25 not pressure balanced · DN 32 to 150 pressure balanced · PN 16 to PN 40 · Types 2231 to 2235 Control Thermostats.

Three-way valve optionally available with plug arrangement for mixing or flow-diverting service. For more details on the application of the thermostats, refer to Information Sheet T 2010 EN.

Type 9/2231 (Fig. 1) · With Type 2231 Control Thermostat for liquids · Set points from **−10** to **+150 °C** · Set point adjustment at the sensor.

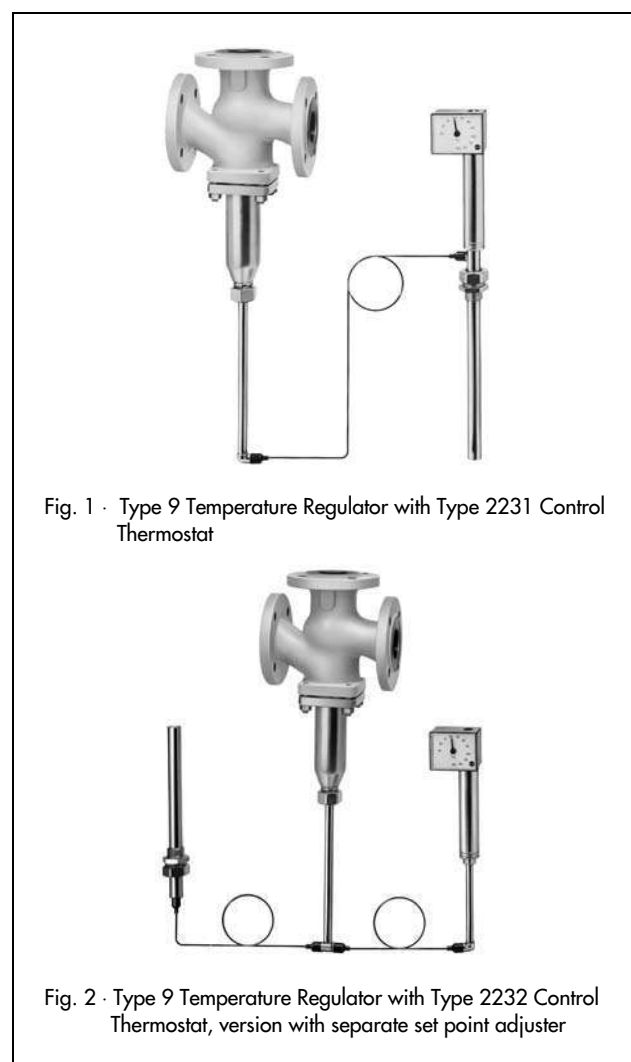
Type 9/2232 (Fig. 2) · With Type 2232 Control Thermostat for liquids and steam · Set points from **−10** to **+250 °C** · Separate set point adjustment.

Type 9/2233 · With Type 2233 Control Thermostat for liquids, air and other gases · Set points from **−10** to **+150 °C** · Set point adjustment at the sensor.

Type 9/2234 · With Type 2234 Control Thermostat for liquids, air and other gases · Set points from **−10** to **+250 °C** · Separate set point adjustment.

Type 9/2235 · With Type 2235 Control Thermostat for air-heated storage rooms, drying, climatic and heating cabinets · Set points from **−10** to **+250 °C** · Separate set point adjustment and a sensor tube which can be installed by the user.

¹⁾ DN 15 to 25: not pressure balanced



Special version

- Longer capillary tube 5, 10, 15 m
- Capillary tube made of CrNiMo steel/Cu-plastic coated
- Sensor made from CrNiMo steel
- Valve made completely from stainless steel (min. material WN 1.4301)
- Version according to ANSI on request

Principle of operation (Figs. 3 and 4)

The regulators operate according to the liquid expansion principle. The temperature sensor (11), capillary tube (8) and operating element (7) are filled with an expansion liquid. The temperature-dependent change in volume of this liquid causes the operating element to move and, as a result, also the plug stem (5) of the control valve with the attached plug (3).

The position of the plug determines the flow rate of the heat transfer medium across the free area between the plug (3) and the seat (2). With a key (9), the set point can be adjusted to a value which is indicated on the dial (10).

With pressure balanced valves of nominal sizes DN 32 to 150, the pressure at port B acts through a hole in the plug stem (5) onto the outer surface of the balancing bellows ¹⁾ (4.1), whereas the pressure at port A acts onto the inner bellows area which equalizes the forces acting onto the valve plugs (3).

In mixing valves (see Fig. 3 with plug arrangement I), the process media to be mixed flow through valve ports A and B. The combined flow is discharged from common port AB. The flow rate from A or B to common valve port AB depends on the free area of flow between the seats (2) and the plugs (3), i.e. on the position of the plug stem (5). When the temperature rises, port A opens and port B closes.

In flow-diverting valves, in contrast, the process medium flows through common valve port AB, and the partial flows are discharged from ports A or B. The flow rate from AB to A or B depends on the position of the plug stem. Flow-diverting valves are supplied with plug arrangement II (Fig. 4). In this case, port A closes and port B opens when the temperature rises.

¹⁾ Valve sizes DN 15 to 25 are without pressure balancing.

Three-way valve

- 1 Valve body
- 2 Seat (replaceable)
- 3 Plug
- 4 Bellows housing
- 4.1 Balancing bellows
- 5 Plug stem with spring
- 6 Nipple with coupling nut

Control thermostat

- 7 Operating element
- 8 Capillary tube
- 9 Key for set point adjustment
- 10 Set point dial
- 11 Temperature sensor (bulb sensor)

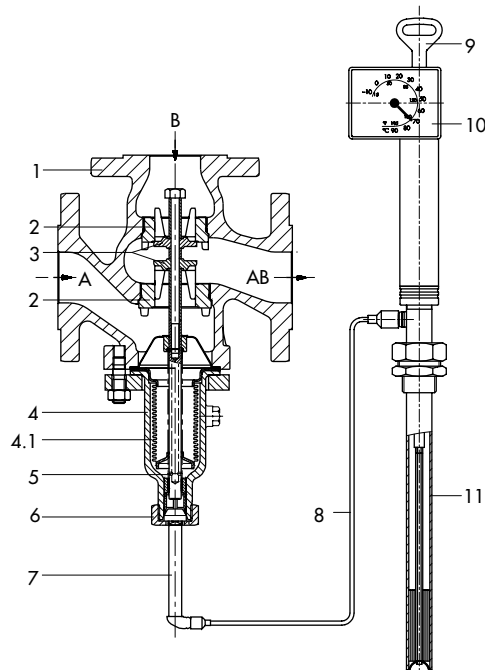


Fig. 3 · Temperature regulator with Type 9 Three-way Valve (DN 50) and Type 2231 Control Thermostat, three-way valve with plug arrangement I, arrows indicate mixing service

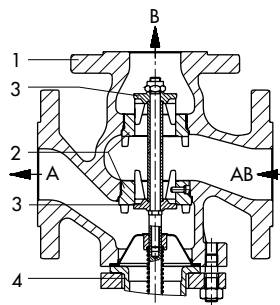


Fig. 4 · Type 9 Three-way Valve with plug arrangement II, arrows indicate flow-diverting service

Pressure-Temperature Diagram

The pressures specified are limited by the data indicated by the Pressure-Temperature Diagram.

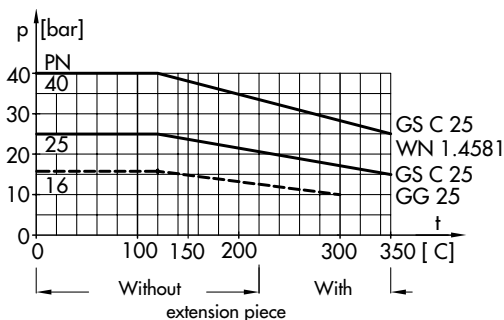


Fig. 5 · Pressure-Temperature Diagram

Installation

- Install in horizontal pipelines with the thermostat connection vertically suspended. Match the direction of the medium flow as indicated by the arrow on the body.
- Install capillary tube so as to avoid exposure to large temperature fluctuations. Prevent mechanical damage. Minimum bending radius must be 50 mm.
- The bulb sensor may be installed in any desired position, however, make sure its entire length is immersed in the medium to be controlled. Install in a location where overheating or considerable idle times do not occur.
- Be sure to only combine the same kind of materials, for example stainless-steel heat exchangers should only be fitted with thermowells made of stainless steel WN 1.4571.

Table 1 · Technical data · All pressures in bar (gauge). The permissible pressures and differential pressures specified are limited by the data given in the Pressure-Temperature Diagram and the pressure ratings (according to DIN 2401).

Type 9 Three-way Valve		Nom. pressure ratings			PN 16 to PN 40								
K _{VS} values and max. perm. differential pressures Δp ¹⁾													
Connection	DN	15	20	25	32	40	50	65	80	100	125	150	
Mixing valve	K _{VS} value	4	6.3	8	16	20	32	50	80	125	160	200	
For p in B > p in A	Δp	10			16			10				8	
For p in A > p in B	Δp	2			3.5				3		2		
Flow-diverting valve	K _{VS}	4	6.3	8	16	20	32	40	64	100	125	160	
	Δp	2			3.5			3			2		
Permissible valve temperature		See Fig. 5 · Pressure-Temperature Diagram											
Types 2231 to 2235 Thermostat		Size 150											
Set point range (each set point span 100 °C)		-10 to +90 °C, 20 to 120 °C or 50 to 150 °C For Types 2232, 2234, 2235 also 100 to 200 °C, 150 to 250 °C											
Perm. ambient temperature at the set point adjuster		-40 to +80 °C											
Perm. temperature at the sensor		100 °C above the adjusted set point											
Perm. pressure at the sensor	Types 2231/2232	Without thermowell: PN 40 · With thermowell: PN 40 (copper version: PN 16) or PN 63 With thermowell with flange: PN 40/DN 32 or PN 100/DN 40											
	Types 2233/2234	Without thermowell: PN 40 · With thermowell: PN 6 (external Ø 140) or PN 40/DN 32											
Length of capillary tube		3 m (special version: 5, 10 or 15 m)											

¹⁾ For liquids, the differential pressure corresponds to the pressure head of the pump

Table 2 · Materials (WN = Material Number acc. to DIN)

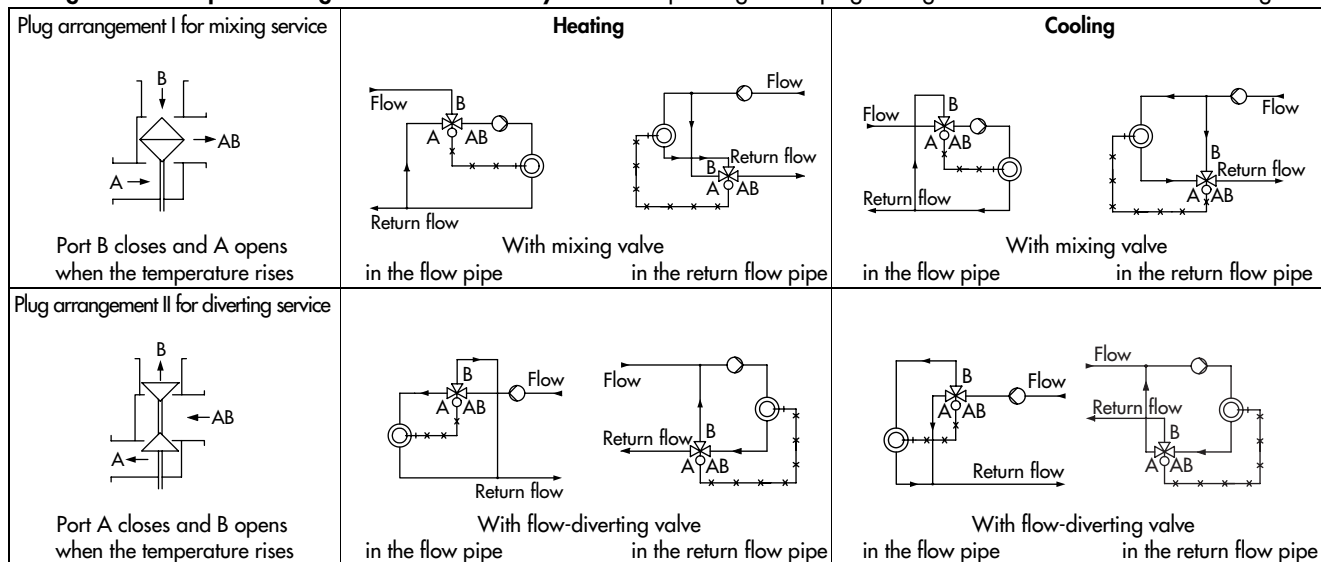
Type 9 Three-way Valve			
Connection	DN 15 to DN 150		Up to DN 100
Nominal pressure	PN 16	PN 25/40	
Body	Cast iron GG 25 WN 0.6025	Cast steel GS C 25 WN 1.0619	Stainless cast steel WN 1.4581
Seat and plug	Steel WN 1.4006 (WN 1.4301 for DN 125 and 150)		WN 1.4571
Plug stem/spring	WN 1.4301/WN 1.4310		
Balancing bellows ¹⁾	WN 1.4571		
Bellows housing	St 35.8 (WN 1.0305)		WN 1.4571
Sealing ring	Graphite on metal core		
Extension piece/distance piece	Brass (special version: stainless steel WN 1.4301)		WN 1.4301
Types 2231, 2232, 2233, 2234 and 2235 Thermostat ²⁾			
	Standard version	Special version	
Operating element	Brass, nickel-plated		
Types 2231/2231	Bronze, nickel-plated	–	Stainless steel WN 1.4571
Sensor Types 2233/2234	Copper, nickel-plated		
Type 2235	Copper		
Capillary tube	Copper, nickel-plated	Copper, plastic-coated	
Thermowell with threaded connection			
Immersion tube	Bronze, nickel-plated	Copper	WN 1.4571
Threaded nipple	Brass, nickel-plated	Copper	WN 1.4571
... with flanged connection			
Immersion tube	Steel	Plastic-coated or PTFE ³⁾	WN 1.4571
Flange	Steel		WN 1.4571

¹⁾ DN 15 to 25: without balancing bellows

²⁾ Type 2235 not available in stainless steel

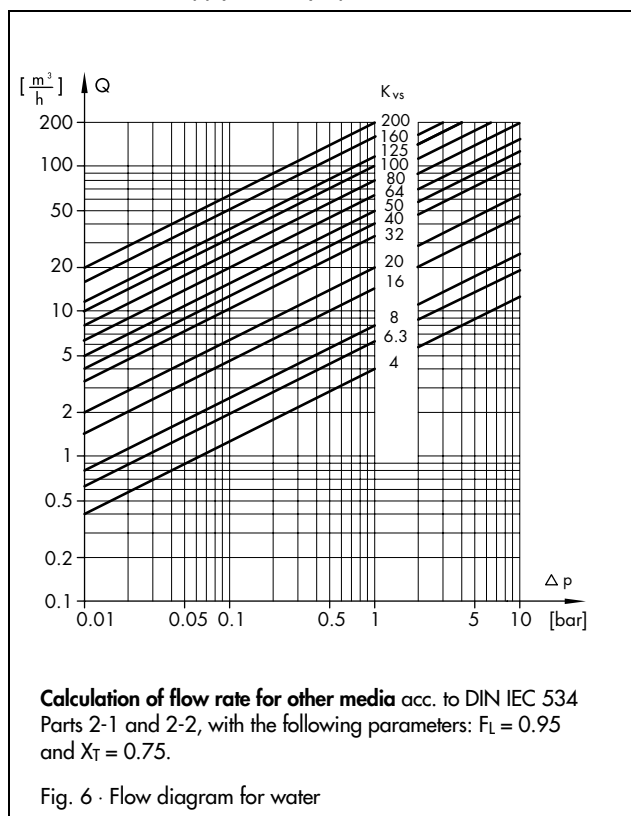
³⁾ Plastic coating - for temperatures up to 80 °C - · PVC or PPH coating. PTFE version · Immersion tube: PTFE · Flange: Steel with PTFE bushing.

Arrangement of temperature regulators with three-way valves - depending on the plug arrangement in the valve - schematic diagram



Flow diagram for water

The values shown apply to a fully open valve.



Ordering text

Temperature Regulator Type 9/..., DN ..., PN ..., mixing or flow-diverting valve, body material ..., with Thermostat Type ..., set point range ...°C, capillary tube ... m, optional special version ..., optional accessories ...

Typetested safety devices

The register number is available on request. Available are:

Temperature regulators (TR) with a Type 2231, 2232, 2233, 2234 or 2235 Thermostat and a Type 9 Three-way Valve, sizes DN 15 to DN 150, for which the max. operating pressure should not exceed the max. permissible differential pressure Δp specified in the "Technical data".

Sensor without thermowell: Applicable up to 40 bar

With thermowell: Only use SAMSON version G1, of bronze and WN 1.4571 up to 40 bar, of copper up to 16 bar.

Temperature limiters (TL) with a thermostat and three-way valve as specified above and a double adapter DoL (see Data Sheet T 2036 EN).

For further details on the selection and application of typetested devices, see Information Sheet T 2040 EN.

Safety temperature monitors (STM) and safety temperature limiters (STL) are also available. For details, see Data Sheets T 2043 EN and T 2046 EN.

Accessories

Extension piece and/or distance piece. For mounting between the three-way valve and the operating element when the operating conditions affect the reliability of the operating element.

The **extension piece** is required for temperatures exceeding 220 °C (see Fig. 5 · Pressure-Temperature Diagram).

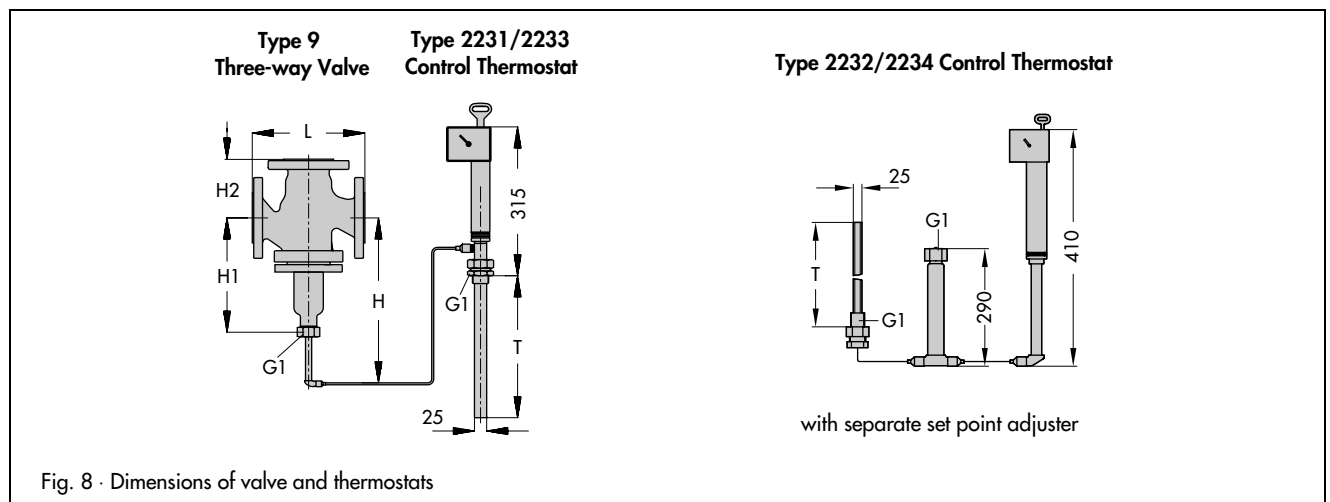
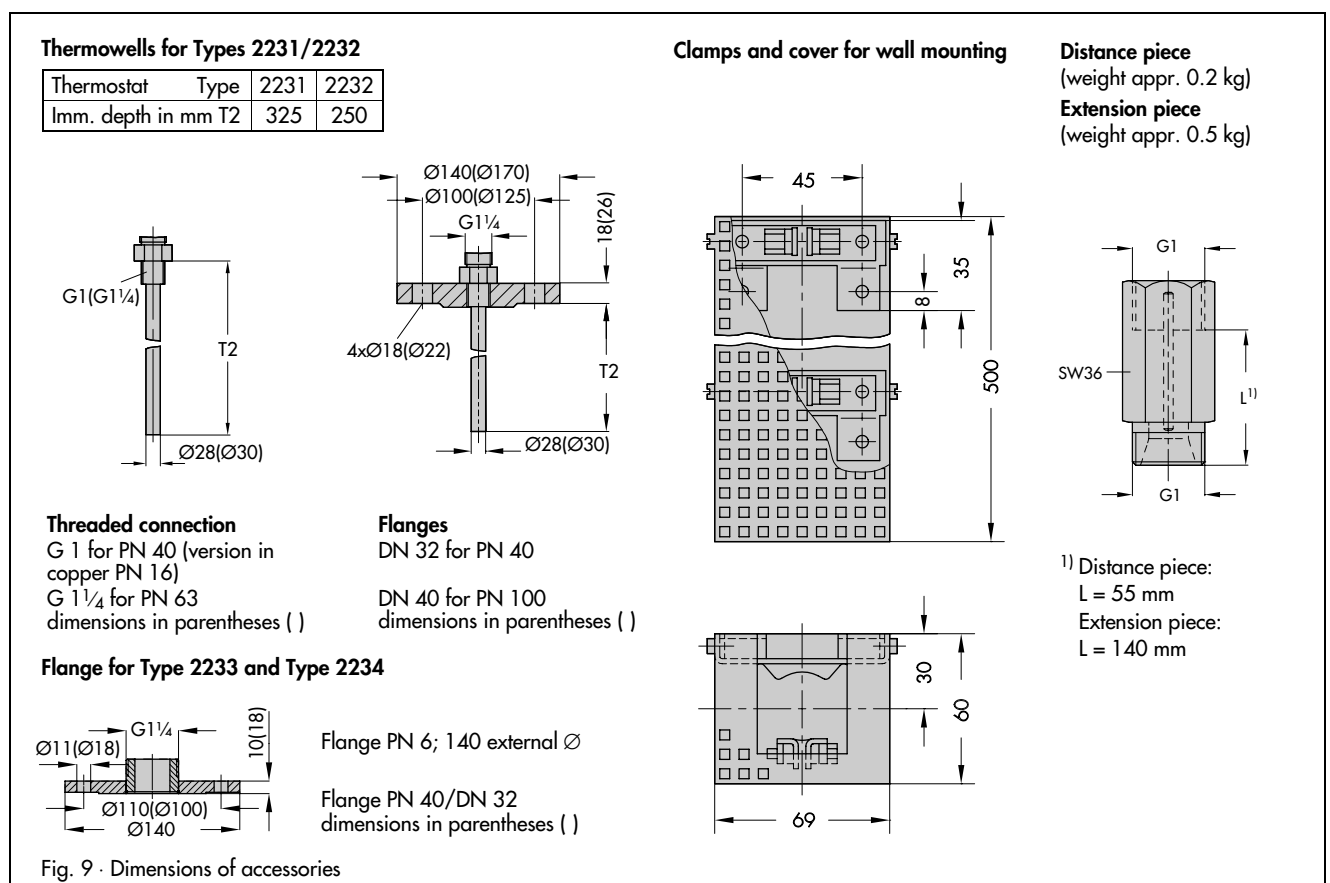
The **distance piece** is used for the stainless steel version to isolate the non-ferrous metal parts of the operating element from the medium flowing through the valve. In addition, it prevents medium leakage when the thermostat is exchanged.

For Types 2231 and 2232 Control Thermostat: Thermowells with threaded connection or flange.

For Types 2233 and 2234 Control Thermostat: Clamps and cover for wall mounting.

Table 3 · Dimensions in mm and weights

Type 9 Three-way Valve		DN	15	20	25	32	40	50	65	80	100	125	150
Length L			130	150	160	180	200	230	290	310	350	400	480
H2			70	80	85	100	105	120	130	140	150	200	210
H1	Up to 220 °C (without extension piece)		235			240		245	320		355	395	500
	Up to 350 °C (with extension piece)		375			380		385	460		495	535	640
H	Up to 220 °C (without extension piece)		525			530		535	610		645	685	790
	Up to 350 °C (with extension piece)		665			670		675	750		785	825	930
Weight (body PN 16) ¹⁾		approx. kg	6	7	8.5	15	17	19	32	50	71	On request	
Thermostat		Type	2231			2232		2233		2234		2235	
Immersion depth T			290			235		430		460		3460	
Weight		approx. kg	3.2			4.0		3.4		3.7		3.6	

¹⁾ +15% for PN 25/40

Fig. 8 · Dimensions of valve and thermostats

Fig. 9 · Dimensions of accessories

Specifications subject to change without notice.



SAMSON AG · MESS- UND REGELTECHNIK
Weismüllerstraße 3 · D-60314 Frankfurt am Main
Postfach 10 19 01 · D-60019 Frankfurt am Main
Telefon (069) 4 00 90 · Telefax (069) 4 00 95 07

MOUNTING AND OPERATING INSTRUCTIONS



EB 2133 EN

Translation of original instructions



Self-operated Temperature Regulators **Type 9 Temperature Regulator**

Edition November 2022



Note on these mounting and operating instructions

These mounting and operating instructions assist you in mounting and operating the device safely. The instructions are binding for handling SAMSON devices. The images shown in these instructions are for illustration purposes only. The actual product may vary.

- ➔ For the safe and proper use of these instructions, read them carefully and keep them for later reference.
- ➔ If you have any questions about these instructions, contact SAMSON's After-sales Service (aftersaleservice@samsongroup.com).



Documents relating to the device, such as the mounting and operating instructions, are available on our website at **www.samsongroup.com** > **Service & Support > Downloads > Documentation.**



Testing according to DIN EN

The Types 2231 to 2234 Control Thermostats have been tested together with valves by the German Technical Inspectorate (TÜV) in accordance with DIN EN 14597. The register number is available on request.

Definition of signal words

DANGER

Hazardous situations which, if not avoided, will result in death or serious injury

WARNING

Hazardous situations which, if not avoided, could result in death or serious injury

NOTICE

Property damage message or malfunction

Note

Additional information

Tip

Recommended action

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1 General safety instructions

- The device must be mounted, started up or serviced by fully trained and qualified personnel only; the accepted industry codes and practices are to be observed. Make sure employees or third parties are not exposed to any danger.
- All safety instructions and warnings given in these mounting and operating instructions, particularly those concerning installation, start-up, and maintenance, must be strictly observed.
- According to these mounting and operating instructions, trained personnel refers to individuals who are able to judge the work they are assigned to and recognize possible dangers due to their specialized training, their knowledge and experience as well as their knowledge of the applicable standards.
- The devices comply with the requirements of the European Pressure Equipment Directive 2014/68/EU. Devices with a CE marking have an EU declaration of conformity, which includes information about the applied conformity assessment procedure. This EU declaration of conformity can be provided on request.
- To ensure appropriate use, only use the device in applications where the operating pressure and temperatures do not exceed the specifications used for sizing the device at the ordering stage.
- The manufacturer does not assume any responsibility for damage caused by external forces or any other external factors.
- Any hazards that could be caused in the temperature regulator by the process medium, operating pressure or by moving parts are to be prevented by taking appropriate precautions.
- Proper transport, storage, installation, operation and maintenance are assumed.

Note: Non-electric control valve versions whose bodies are not lined with an insulating material coating do not have their own potential ignition source according to the risk assessment stipulated in Clause 5.2 of ISO 80079-36, even in the rare incident of an operating fault. Therefore, such valve versions do not fall within the scope of Directive 2014/34/EU (ATEX). For connection to the equipotential bonding system, observe the requirements specified in Clause 6.4 of EN 60079-14 (VDE 0165-1).

2 Process medium and scope of application

Temperature regulator with three-way valve for mixing and diverting service. For plants that are heated or cooled using liquids. With Type 2231 to Type 2234 Control Thermostats for set points from -10 to $+250$ °C. Valve sizes DN 15 to 150. Pressure rating PN 16 to 40 Suitable for temperatures up to 350 °C.

2.1 Transportation and storage

The temperature regulators must be carefully handled, transported and stored. Protect the regulator against adverse influences, such as dirt, moisture, frost or heat, during storage and transportation before being installed.

When temperature regulators are too heavy to be lifted by hand, fasten the lifting sling to a suitable place on the valve body.

⚠ WARNING

Incorrectly attached lifting slings or rigging equipment will lead to injury or property damage due to valve falling.

Securely fasten slings and rigging equipment to the valve body and secure against slipping.

3 Design and principle of operation

See Fig. 2.

The temperature regulators consist of the valve (1), control thermostat with temperature sensor (16) and capillary tube (10).

The valve (1) mainly consists of the body with two seats (2), plugs (3) and the plug stem (5). Depending on the application, different thermostats can be attached to the valve. The thermostat comprises the temperature sensor (16), set point adjuster (11), capillary tube (10) and operating element (8). The temperature regulators operate according to the liquid expansion principle. The temperature sensor (16) is filled with an expansion liquid. The temperature-dependent change in volume of this liquid causes the double plug (3) to move over the capillary tube (10) and the operating element (8), which is connected to the valve by a coupling nut (7). For example, when the temperature at the sensor (16) rises, the liquid contained in the sensor expands and causes the pin of the operating element to move upwards. This movement is transmitted to the plug stem (5). As a result, the double plug (3) in the valve body is pushed upwards against the force of the return spring (5.1). The plug reduces the inflow at port B at the top seat (2) and increases the inflow at port A at the bottom seat (mixing valve). The Type 9 Temperature Regulator in DN 32 and larger is balanced by a metal bellows (4.1). The pressure at port A is applied to the bottom side of the double plug and transmitted

onto the inside of the metal bellows through the plug stem guide.

The pressure at port B is applied to the top of the double plug and transmitted to the outside of the metal bellows through the hollow plug stem (5). As a result, the forces acting on the valve plug are balanced out and the valve is fully balanced. Consequently, any pressure changes in the process medium do not affect the position of the valve plug.

When used as a mixing valve, port B closes when the temperature at the sensor rises. In diverting valves, port A closes when the temperature at the sensor rises.

The set point can be adjusted using a key (11). By turning the key, a spindle moves the piston (15) up or down. The resulting change in volume in the sensor (16) causes the valve plug to travel according to the adjusted set

point within a higher or lower temperature range measured by the sensor.

Legend for Fig. 2

Valve		Control thermostat	
1	Valve body	7	Coupling nut
2	Seat	8	Operating element
3	Plug	9	Pin of operating element
4	Bottom section	10	Capillary tube
4.1	Balancing bellows	11	Set point adjustment key
5	Plug stem	12	Set point dial
5.1	Spring	13	Coupling nut
6	Threaded connection for operating element	14	Double nipple
		15	Piston (inside)
		16	Temperature sensor

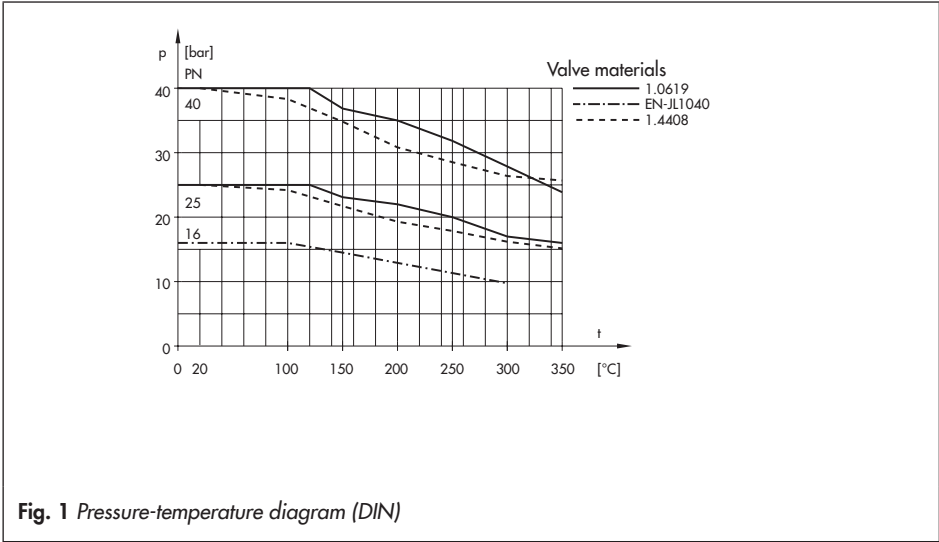
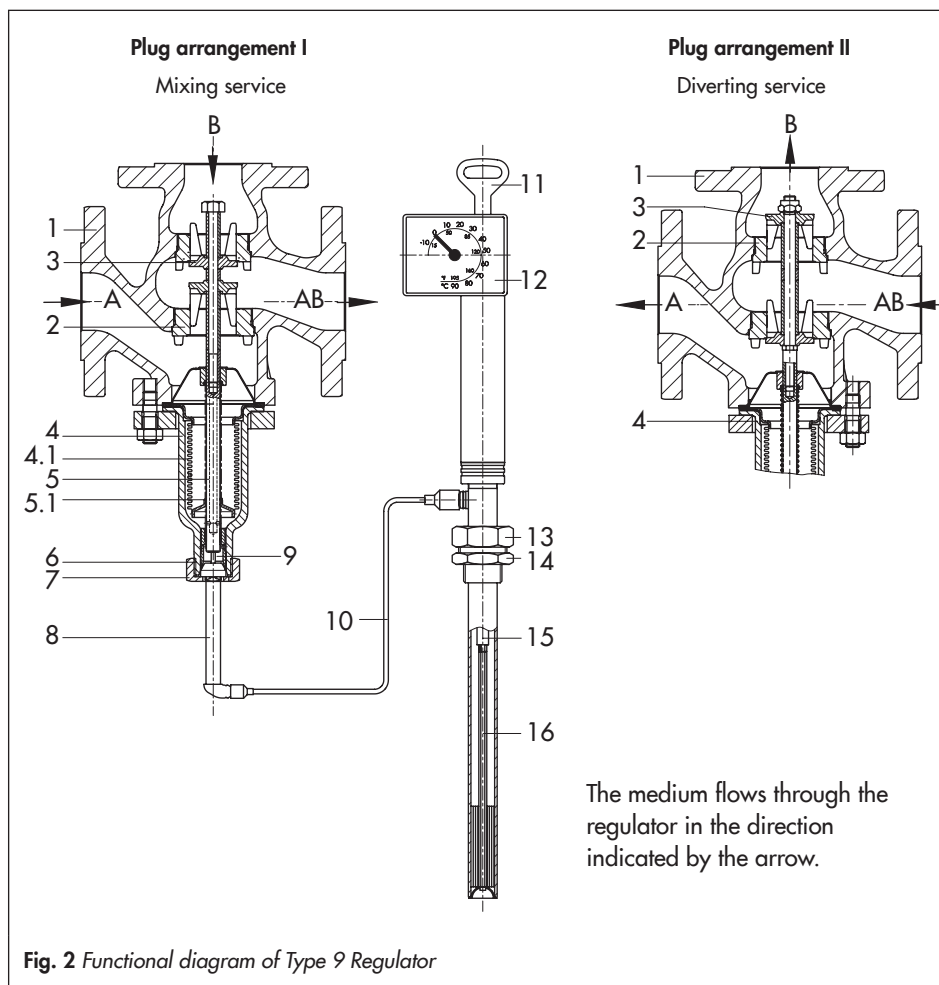


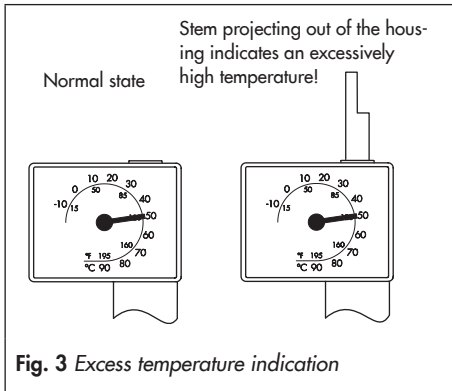
Fig. 1 Pressure-temperature diagram (DIN)



3.1 Excess temperature indication

If the temperature at the sensor exceeds 100 K, the inside piston (15) with the attached stem is pushed out of the housing of the set point dial (10).

If the stem does not move back after the temperature had dropped again, the operating element (8) has been damaged due to excessively high temperature. Send the thermostat back to SAMSON for repair.



4 Installation

Installation instructions provided by the manufacturer of the plant must be observed.

If necessary, contact the manufacturer or supplier.

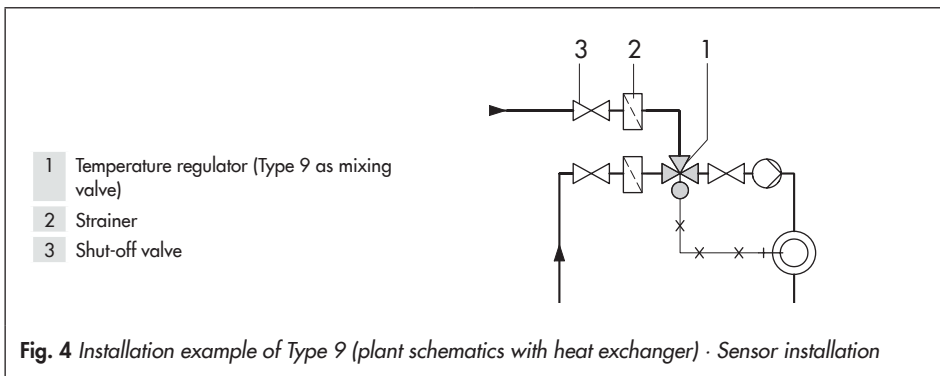
The following points must be observed during installation:

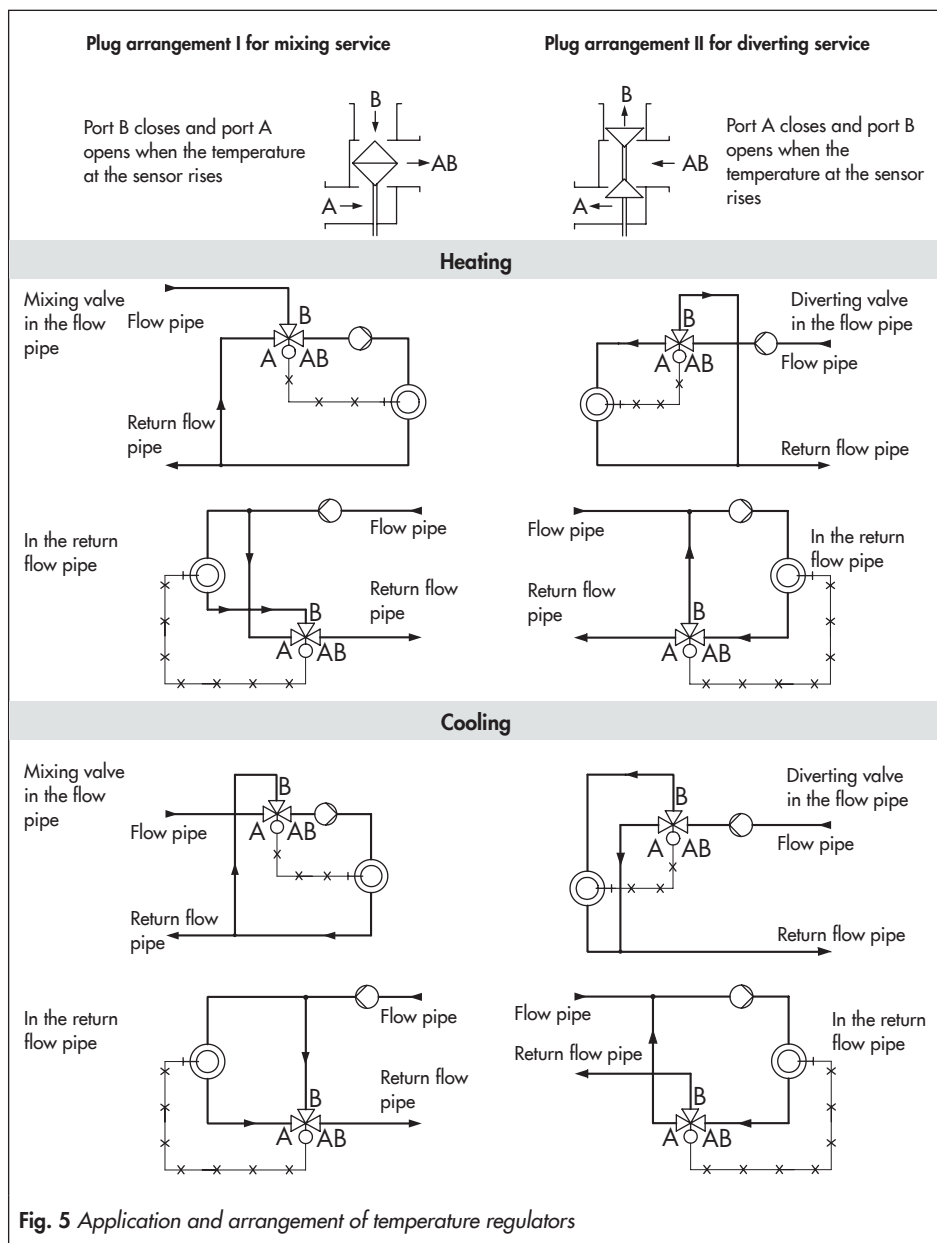
- First open the shut-off valves in the plant after the thermostat has been mounted on the valve.
- The temperature regulator is first sealed when the operating element is fastened onto the bottom section.

⚠ WARNING

Risk of injury due to process medium escaping possibly under pressure.

Screw the operating element of the thermostat tightly to the valve to seal the body connection! Afterwards, open the shut-off valves!





4.1 Installing the valve

Choose a place of installation that allows you to freely access the regulator even after the entire plant has been completed.

Note

Do **not** install the temperature regulator between a pressure reducing valve and its control line connection.

Flush the pipeline thoroughly before installing the temperature regulator. Install a strainer (see section 4.1.1) upstream of the regulator to prevent any sealing parts, weld spatter and other impurities carried along by the process medium impairing the proper functioning of the valve, above all the tight shut-off.

Note

Install the valve in a horizontal pipeline with the operating element connection suspended downward.

- Install the valve free of stress and with the least amount of vibrations as possible. If necessary, support the pipelines near the connections.
- When regulating steam, install upstream steam pipes with a slight upward slope and downstream steam pipes with a slight downward slope to prevent excessive amounts of condensed water from collecting.

NOTICE

Malfunction and damage due to adverse weather conditions (temperature, humidity).

Do not install the temperature regulator outdoors or in rooms prone to frost. If such a location cannot be avoided, protect the regulator against freezing up if the process medium flowing through the valve can freeze up. Either heat the regulator or remove it from the plant and completely drain the residual medium.

4.1.1 Strainer

Install a strainer (e.g. SAMSON Type 2 NI) upstream of the temperature regulator.

- The flow of direction must correspond with the direction indicated by the arrow on the valve body.
- The filter element must be installed to hang downwards or sideways for applications with steam.

Tip

Remember to leave enough space to remove the filter element for cleaning.

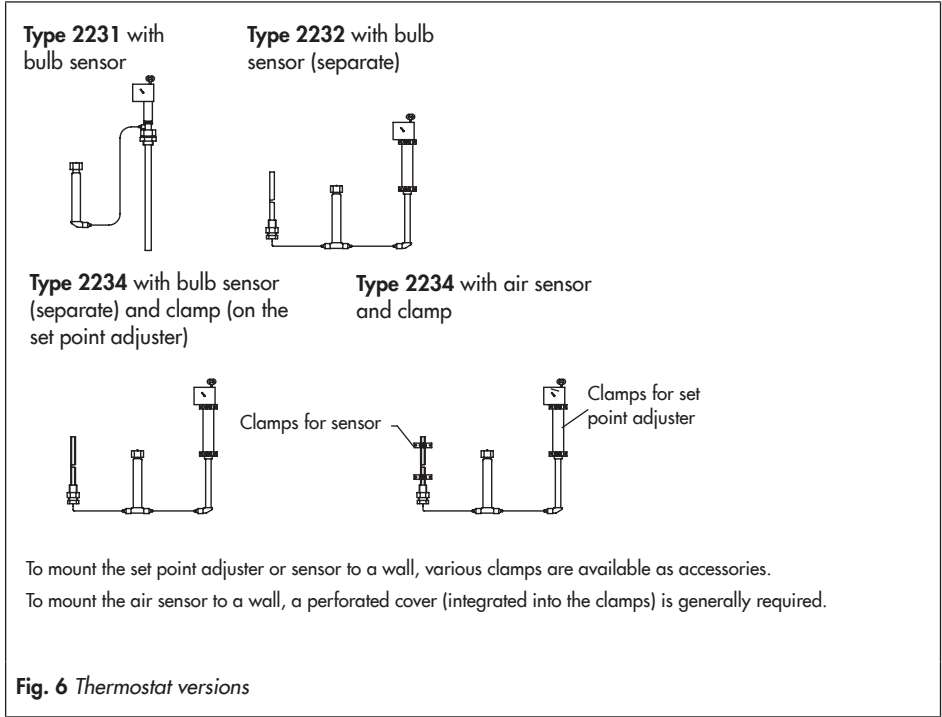
4.1.2 Additional components

We recommend installing a hand-operated shut-off valve both upstream of the strainer and downstream of the temperature regulator. This allows the plant to be shut down for cleaning and maintenance, and when the plant is not used for longer periods of time.

To check the adjusted set point, we recommend installing a thermometer near the sensor.

4.2 Thermostat installation

See Fig. 2.



Size specifications for SAMSON thermostats

Table 1: *Assignment of thermostat sizes and valves*

Size	Thermostat fitting ...	Types 2111/2422/2119 Valves
150	Types 2231, 2232, 2234	DN 15 to 150
	Type 2213 for STM	
	Type 2212 for STL	DN 65 to 150

4.2.1 Types 2231 and 2232 (bulb sensor)

Bulb sensors are used to measure the temperature of liquids. They are designed for installation in pipelines, heat exchangers, boilers, baths, tanks etc.

Note

The entire length of the sensor must be immersed in the process medium. Observe the permissible mounting position as illustrated in Fig. 7.

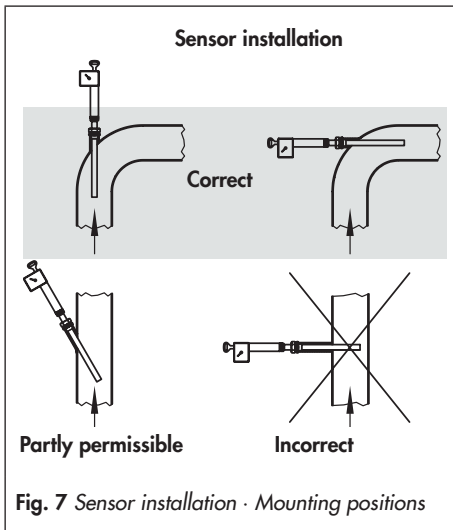


Fig. 7 Sensor installation · Mounting positions

Installation recommendations

Select the place of installation ensuring that the sensor is installed as close as possible to the heat source, but avoid exposing it to overheating.

When mounted in a boiler, install the sensor in the top third of the boiler.

When mounted in a counterflow heat exchanger, install the sensor in a pipe elbow, directly behind the pipe end socket piece.

In plants with only temporary heat consumption, install the temperature sensor so that it is totally immersed in the heat exchanger. If this is not possible, a circulating pipe must be provided to allow the sensor to always respond to temperature changes even when no medium is discharged from the heat exchanger.

1. Weld on a pipe socket with female thread (socket-weld design) of approx. 40 mm in length at the place of installation (this also applies when a thermowell is used).
2. Remove the double nipple (14) or thermowell (if used) from the sensor (16) and seal it into the welded socket.
3. Adjust the highest possible set point on the set point dial (12) using the key (11).
4. Insert the sensor with the associated seal into the double nipple or thermowell. Secure it with the coupling nut (7). The entire length of the temperature sensor (16) or thermowell must be immersed in the process medium.

Thermowell

When a thermowell is used, we recommend filling the free space between sensor and thermowell with oil or, when installed horizontally, with grease or any other heat transfer medium to avoid delays during heat transmission. This prevents heat transfer delays. Observe the thermal expansion of the filling medium. Allow some space for expansion and do not fill the entire free space or slightly loosen sensor nut for pressure compensation.

! NOTICE

Galvanic corrosion due to incorrectly selected materials of the mounting parts.
On installing the sensor or thermowell, only combine the same kind of materials (e.g. stainless steel with stainless steel or copper together with other copper materials).

4.2.2 Type 2234 (air sensor)

Type 2234 is designed for installation in air heaters, air ducts, drying cabinets etc. Install the sensor from the outside into the room and secure it with a special flange (accessories). The entire length of the sensor must be immersed in the air flow to be regulated.

For Type 2234, install the set point adjustment in an easily accessible location.

Avoid locations with considerable ambient temperature fluctuations.

Installation recommendations

Mount the sensor protected by a perforated cover to a suitable location on the middle of the wall.

Type 2234 with clamps (or perforated cover) is suitable for installation in drying chambers, dryers, air heaters, incubators etc.

In case of forced air circulation, install the sensor near the supply air inlet.

Mount the set point adjustment outside the room to be controlled in an easily accessible location. The set point adjustment must be exposed to a constant as possible temperature.

When regulating the temperature in greenhouses, make sure that the thermostat and set point adjuster are not exposed to direct sunlight.

When the temperature regulating system is shut down during the summer, adjust a high set point to protect the thermostat.

4.2.3 Capillary tube

Carefully run the capillary tube (10) without bending or twisting it. Avoid locations with considerable ambient temperature fluctuations along the entire length of the tube.

i Note

Do not damage or shorten the capillary tube. Roll up any capillary tube that is not used. The smallest permissible bending radius is 50 mm.

4.3 Operating element

Attach the operating element (8) to the valve body using the coupling nut (7). If necessary, use the key (11) to adjust the highest possible set point, causing the pin of the operating element (9) to retract.

4.4 Dynamic behavior of the thermostats

The dynamics of the regulator are mainly determined by the response of the sensor with its characteristic time constant. The response times of SAMSON thermostats operating according to different principles measured in water are listed below.

Table 2: Time constants of SAMSON thermostats

Principle of operation	Type ... Thermostat	Time constant [s]	
		Without	With Thermowell
Liquid expansion	2231	70	120
	2232	65	110
	2234	15	– ¹⁾
	2213	70	120
Adsorption	2212	– ¹⁾	40

¹⁾ Not permissible

5 Operation

See Fig. 2 on page 7.

5.1 Start-up

The temperature regulator is first sealed when the operating element is fastened onto the bottom section.

First open the shut-off valves in the plant after the thermostat has been mounted on the valve.

WARNING

Risk of injury due to process medium escaping possibly under pressure.

Screw the operating element of the thermostat tightly to the valve to seal the body connection! Afterwards, open the shut-off valves!

Fill the plant slowly with the process medium.

5.2 Set point adjustment

Only use the key (11) to adjust the required temperature set point at the set point dial (12).

5. Slowly open the hand-operated shut-off valve downstream of the valve and then the shut-off valve upstream of the valve.
6. Check the adjusted temperature set point at the thermometer installed near the temperature sensor.
7. Slowly turn the key clockwise (↻) to increase the temperature and counterclockwise (↺) to reduce it.

Tip

Higher set point temperatures can be adjusted in increments as required. However, to lower the set point temperature, proceed in steps of 10 to 20 °C. When doing so, wait for the process medium to cool down before continuing. Watch the thermometer.

5.2.1 Correcting the set point dial

There are many ways to combine the temperature regulators with thermostats that have varying proportional control action. As a result, the temperature adjusted on the dial often deviates from the actual temperature (measured by a reference thermometer).

The temperature can be corrected by turning the dial housing:

1. Undo the screw labeled "Korrektur" on the back of the dial housing.
2. Turn the entire dial housing until the dial shows the same temperature as the reference thermometer.
3. Retighten the screw marked "Korrektur".

Viewed from the front with the dial housing on top. A 360° turn corresponds to a set point change of approx. 1.5 °C.

- Turn clockwise ☺:
To increase the set point.
- Turn counterclockwise ☹:
To reduce the set point.

6 Mounting additional parts

See Fig. 8 on page 17.

6.1 Extension piece

An extension piece is installed between valve and thermostat to protect the operating element of the thermostat against high temperatures.

An extension piece is required: from 220 °C to max. 350 °C (max. 300 °C when EN-GJL-250 is used).

A thermostat can be changed on site to install an extension piece, separating piece or double adapter.

Remember that process medium can escape while unscrewing the operating element. Therefore, take necessary precautions to prevent this.

WARNING

Risk of injury due to process medium escaping possibly under pressure.

Depressurize the relevant section of the pipeline and, if necessary, drain it as well. When used at high temperatures, allow the plant section to cool down to ambient temperature.

How to proceed:

1. Adjust the highest possible temperature set point, causing the pin of operating element to detach itself from the plug stem of the valve.

2. Unscrew the operating element.
3. Screw extension piece onto the valve body. Remount the operating element.
4. Adjust the set point as described in section 5.2 on page 15.

6.2 Intermediate piece

Mounted between the operating element and valve. In stainless steel regulators, it separates the operating element made free of non-ferrous metals from the medium in the valve. In addition, it prevents the medium from escaping on removing the thermostat.

Version I: The spindle (2) is fitted with O-rings which seals the operating element against the process medium.

Version II: A metal bellows is used as a sealing element.

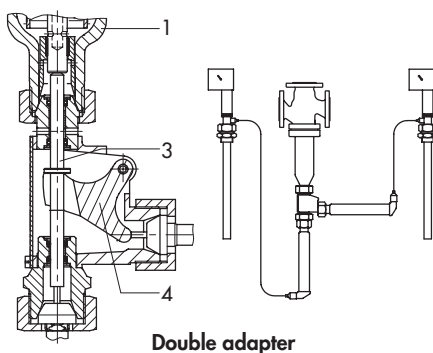
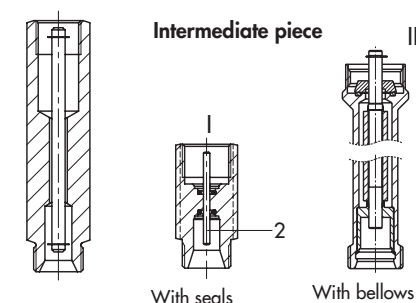
For mounting, proceed as described in section 6.1.

6.3 Double adapter

The double adapter allows a further thermostat to be connected to achieve additional temperature regulation.

For mounting, proceed as described in section 6.1.

Extension piece – Temperature –



- | | |
|-----------|----------------|
| 1 Valve | 5 Wooden bolt |
| 2 Spindle | 6 Washer |
| 3 Stem | 7 Coupling nut |
| 4 Lever | 8 Spring |

Fig. 8 Additional parts

7 Maintenance – Replacing parts

See Fig. 2 on page 7.

The temperature regulators do not require any maintenance. Nevertheless, they are subject to natural wear, particularly at the seat and plug.

Depending on the operating conditions, check the valve and thermostat at regular intervals to avoid possible malfunctions.

If the temperature exceeds the value adjusted at the temperature sensor, possible causes for this are:

- The thermostat is defective due to excessive temperatures.
- Valve seat and plug are contaminated with dirt.
- Seat and plug leak due to natural wear.

On replacing the thermostat, remember that process medium can escape while unscrewing the operating element. Therefore, take necessary precautions to prevent this.

WARNING

Risk of injury due to process medium escaping possibly under pressure.

Depressurize the relevant section of the pipeline and, if necessary, drain it as well. When used at high temperatures, allow the plant section to cool down to ambient temperature.

How to proceed:

Exchanging the thermostat and checking the seat and plug

1. If the thermostat still works, adjust the highest possible temperature set point, causing the pin (9) of operating element to detach itself from the plug stem of the valve.
2. Unscrew the coupling nut (7) and remove the operating element (8). Process medium still in the valve may escape.
 - Mount new thermostat and fasten it tightly to the bottom section (4) using the coupling nut (7).

Checking the seat and plug

3. Unscrew the valve flange together with the bottom section (4) from the valve body and pull them out downward.
4. Clean the seat (2) and plug (4) and, if necessary, renew them.

7.1 Troubleshooting

The listed examples of malfunctions are caused by mechanical faults in the valve or thermostat as well as incorrect regulator sizing.

In the simplest case, the functioning can be restored following the recommended action. To repair the regulator, read the operating instructions for the corresponding regulator.

As in many cases, special tools are required, we advise you to contact SAMSON after-sales service to find out how to proceed to repair the regulator or replace a component.

Exceptional operating and installation conditions can lead to changed situations that may affect the control response and lead to malfunctions. In such cases, check the installation conditions, process medium, temperature and pressure conditions. A thorough analysis may often require the on-site assistance of SAMSON's After-sales Service.

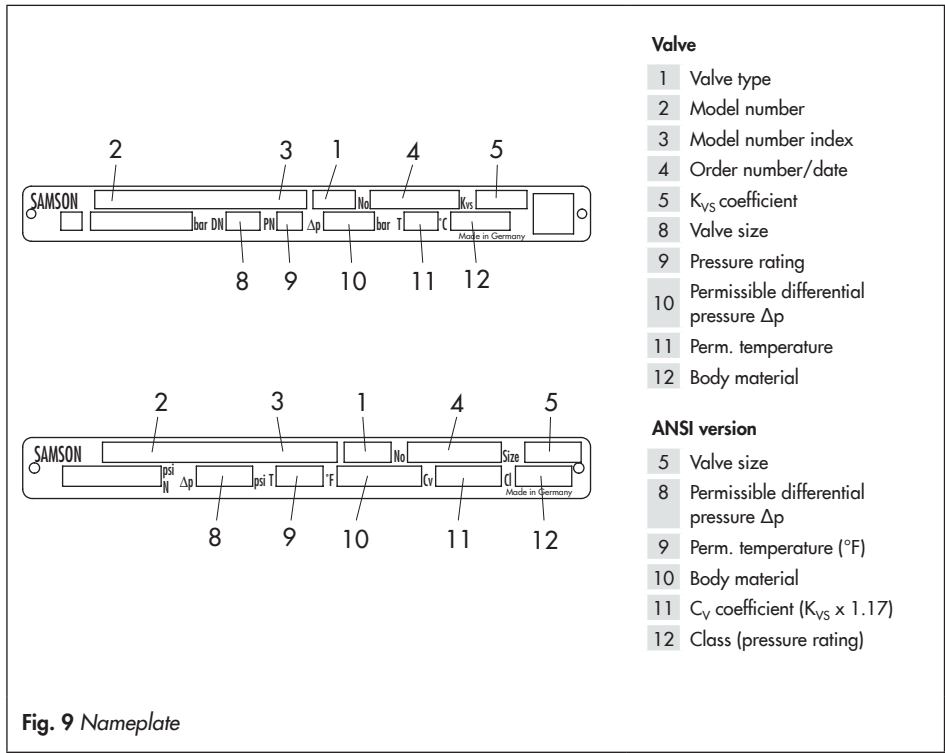
Table 3 is not intended to be exhaustive as there are diverse reasons for malfunctions.

Table 3: *Troubleshooting*

Temperature regulators for heating applications	
Possible reasons	Recommended action
Temperature at the sensor exceeds the set point.	
Leak at seat and plug	Remove valve from the pipeline and clean seat and plug. Renew plug, if necessary. If this is not possible, return regulator to SAMSON for repair.
Valve too large for control task	Recalculate K_{VS} coefficient. Contact SAMSON.
Sensor installed in the wrong location.	The entire length of the temperature sensor must be immersed in the process medium and where idle times cannot occur. Change mounting position accordingly.
The temperature at the sensor has exceeded the permissible excess temperature (100 K). The stem stands out of the housing of the set point dial and does move back into the housing after the temperature has dropped again.	The operating element has been damaged due to an excessively high temperature. Repair by SAMSON. In mixing valves: port A opens In diverting valves: port B is closed.
Temperature at the sensor does not reach the set point.	
Valve size (DN) of the valve is too small for the control task.	Recalculate K_{VS} coefficient. Contact SAMSON.
A safety device (e.g. STL, STM etc.) has been triggered. Mixing valve: Port B closed Diverting valve: Port A closed	Check plant. Unlock safety device.
Insufficient heating energy available	Draw up an energy balance.
Strainer blocked	Drain and clean filter of the strainer.
Incorrectly installed valve	During installation, observe the correct direction of flow and arrangement of the ports A/B/AB (see Fig. 2 on page 7).
Control loop hunts.	
Valve size (DN) of the valve is too large for the control task.	Recalculate K_{VS} coefficient. Contact SAMSON.
Time constant is too large for the control loop.	Fill the thermowell with thermal paste, remove thermowell or use sensor with smaller time constant.

Temperature regulators for cooling applications	
Possible reasons	Recommended action
Temperature at the sensor does not reach the set point.	
Leak at seat and plug	Remove valve from the pipeline and clean seat and plug. Renew plug, if necessary. If this is not possible, return regulator to SAMSON for repair.
Valve too large for control task	Recalculate K_{VS} coefficient. Contact SAMSON.
Sensor installed in the wrong location.	The entire length of the temperature sensor must be immersed in the process medium and where idle times or heat buildup cannot occur. Change mounting position accordingly.
A safety device (e.g. STL, STM etc.) has been triggered. Mixing valve: Port B closed Diverting valve: Port A closed	Check plant. Unlock safety device.
Temperature at the sensor exceeds the set point.	
Valve size (DN) of the valve is too small for the control task.	Recalculate K_{VS} coefficient. Contact SAMSON.
Thermostat defective	Mixing valve: port A closed · Diverting valve: port B is closed. Send the thermostat back to SAMSON for repair.
Insufficient cooling energy available	Draw up an energy balance.
Strainer blocked	Drain and clean filter of the strainer.
Incorrectly installed valve	During installation, observe the correct direction of flow and arrangement of the ports A/B/AB (see Fig. 2 on page 7).
Control loop hunts.	
Valve size (DN) of the valve is too large for the control task.	Recalculate K_{VS} coefficient. Contact SAMSON.
Time constant is too large for the control loop.	Fill the thermowell with thermal paste, remove thermowell or use sensor with smaller time constant.

8 Nameplate



9 Disposal



We are registered with the German national register for waste electric equipment (stiftung ear) as a producer of electrical and electronic equipment, WEEE reg. no.: DE 62194439

- ➔ Observe local, national and international refuse regulations.
- ➔ Do not dispose of components, lubricants and hazardous substances together with your other household waste.

i Note

We can provide you with a recycling passport according to PAS 1049 on request. Simply e-mail us at aftersalesservice@samsongroup.com giving details of your company address.

💡 Tip

On request, we can appoint a service provider to dismantle and recycle the product.

10 After-sales service

If malfunctions or defects occur, contact the SAMSON's After-sales Service for support.

Please send your inquiries to: kundendienst@samson.de

The addresses of SAMSON AG, its subsidiaries, representatives and service facilities worldwide can be found on the SAMSON website

(▶ www.samsongroup.com), in all SAMSON product catalogs or on the back of these Mounting and Operating Instructions.

To assist diagnosis, specify the following details (see Fig. 9):

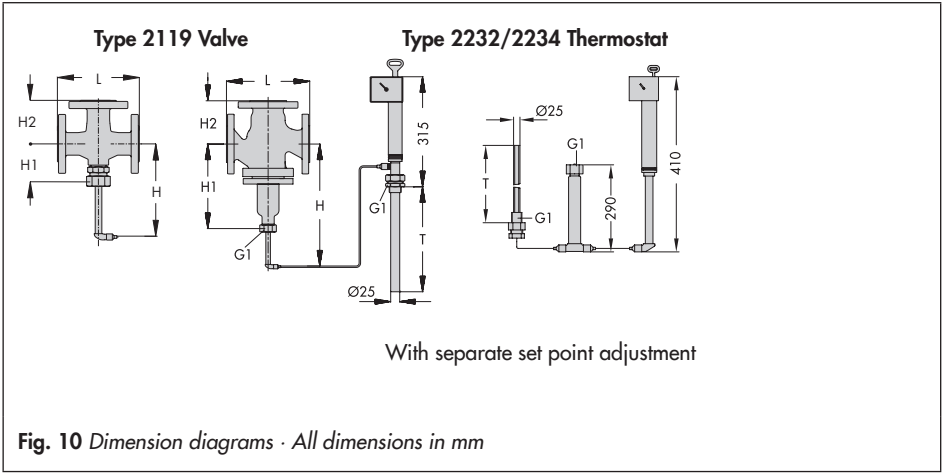
- Type and valve size, Type ... Thermostat
- Model number with index
- Upstream and downstream pressure
- Temperature and process medium
- Min. and max. flow rate
- Is a strainer installed?
- Installation drawing showing the exact location of the regulator and all the additionally installed components (shut-off valves, thermometer etc.).

11 Dimensions and weights

Table 4: Dimensions in mm and weights in kg

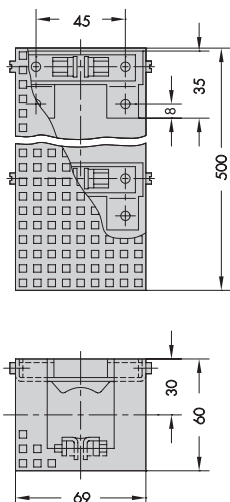
Type 9 Temperature Regulator														
Valve size	DN	Type 2119 Valve	15	20	25	32	40	50	65	80	100	125	150	
Length L	mm		130	150	160	180	200	230	290	310	350	400	480	
H	mm		525			530		535		610		645	685	790
H1 ¹⁾	mm		235			240		245		320		355	395	500
H2 ¹⁾	mm		70	80	85	100	105	120	130	140	150	200	210	
Weight ²⁾ , approx. kg			6	7	8.5	15	17	19	32	50	71	On request		
¹⁾ Change in length with extension piece: +55 mm and with separating piece: +140 mm/180 mm														
²⁾ For PN 16; PN 25/40: +15 %														

Thermostat	Type	2231	2232	2234
Immersion depth T	mm	290	235	460
Weight, approx.	kg	3.2	4	3.7



11.1 Accessories

Types 2232/2234 Clamps and perforated cover for wall mounting



To mount the set point adjuster or sensor to a wall, suitable clamps (photo) are available.

The clamps for the sensor are integrated into the perforated cover.

Clamp with bracket

For set point adjuster
(Ø40 mm)

Order no.: 8395-0039

For sensor (Ø25 mm)

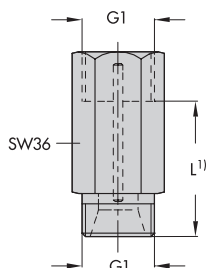
Order no.: 8395-0037

1 pair of clamps for set point
adjuster (Types 2232, 2234)

Order no.: 1400-5592



Extension piece/separating piece



Extension piece

Standard version

L = approx. 140 mm, approx. 0.5 kg

With bellows seal (special version)

L = approx. 180 mm, approx. 0.6 kg

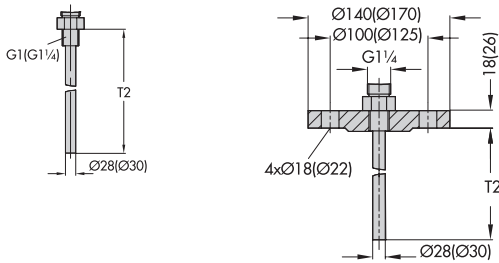
Separating piece with seals

L = approx. 55 mm, approx. 0.2 kg

¹⁾ Add the dimension L to H and H1 (see Table 4) when these accessories are used.

Fig. 11 Dimensions of accessories · Dimensions in mm

Type 2231/2232 · Thermowells



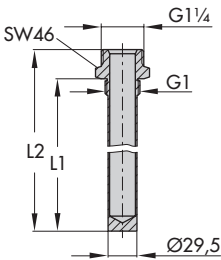
Dimensions for PN 100 (in parentheses)

With threaded connection G 1 for PN 40 and PN 100

With **flanges** DN 32 for PN 40 · DN 40 for PN 100

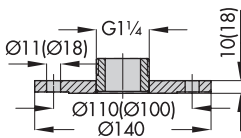
Thermostat	Type 2231	Type 2232
Immersion depth T2	325 mm	250 mm

Type 2231/2232 · Thermowells for flammable gases (G 1/PN 100)



Thermostat	Type 2231	Type 2232
Length L1	315 mm	255 mm
Length L2	340 mm	280 mm

Type 2234 · Flange



Flange PN 6, 140 Outside Ø · Flange PN 40/DN 32 (dimensions in parentheses)

Fig. 12 Dimensions of accessories · Dimensions in mm



SAMSON AKTIENGESELLSCHAFT
Weismüllerstraße 3 · 60314 Frankfurt am Main, Germany
Phone: +49 69 4009-0 · Fax: +49 69 4009-1507
samson@samsongroup.com · www.samsongroup.com

BUREAU VERITAS
Certification



Certificate

awarded to

SAMSON AKTIENGESELLSCHAFT

Weismüllerstr: 3
60314 Frankfurt am Main, Germany

Bureau Veritas Certification certifies that the Management System of the above organisation has been assessed and found to be in accordance with the requirements of the standards detailed below.

Standard

DIN EN ISO 9001:2015

Scope of application

Development, manufacturing and marketing of products and systems to control all kinds of media. These products and systems include valves, self-operated regulators, actuators, valve accessories, signal converters, controllers and automation systems, sensors and thermostats, digital solutions.

Certification cycle start date: **08.December.2022**

Subject to the continual satisfactory operation of the organisation's Management System,
this certificate expires on: **07.December.2025**

Certificate n° : **DE012444-1**

Date: **08.December.2022**



Certification Manager (M Beau)



Certification body address: Bureau Veritas Certification Germany GmbH, Veritaskai 1, 21079 Hamburg

To check this certificate validity you may contact Bureau Veritas Certification. Further clarifications regarding the scope of this certificate and the applicability of the Management Systems requirements may be obtained by consulting the organisation.

BUREAU VERITAS
Certification



Certificate

awarded to

SAMSON AKTIENGESELLSCHAFT

Weismüllerstr: 3
60314 Frankfurt am Main, Germany

Bureau Veritas Certification certifies that the Management System of the above organisation has been assessed and found to be in accordance with the requirements of the standards detailed below.

Standard

DIN EN ISO 14001:2015

Scope of application

Development, manufacturing and marketing of products and systems to control all kinds of media. These products and systems include valves, self-operated regulators, actuators, valve accessories, signal converters, controllers and automation systems, sensors and thermostats, digital solutions.

Certification cycle start date: **20. December 2022**

Subject to the continual satisfactory operation of the organisation's Management System,
this certificate expires on: **19. December 2025**

Certificate n° : **DE012445-1**

Date: **08. December .2022**

Certification Manager (M. Beau)

DAkkS
Deutsche
Akkreditierungsstelle
D-ZM-16024-01-00

Certification body address: Bureau Veritas Certification Germany GmbH, Veritaskai 1, 21079 Hamburg

To check this certificate validity you may contact Bureau Veritas Certification. Further clarifications regarding the scope of this certificate and the applicability of the Management Systems requirements may be obtained by consulting the organisation.

BUREAU VERITAS
Certification



Certificate

awarded to

SAMSON AKTIENGESELLSCHAFT

Weismüllerstr. 3
60314 Frankfurt am Main, Germany

Bureau Veritas Certification certifies that the Management System of the above organisation has been assessed and found to be in accordance with the requirements of the standards detailed below.

Standard

DIN EN ISO 50001:2018

Scope of application

Development, manufacturing and marketing of products and systems to control all kinds of media. These products and systems include valves, self-operated regulators, actuators, valve accessories, signal converters, controllers and automation systems, sensors and thermostats, digital solutions.

Certification cycle start date: **20. December 2022**

Subject to the continual satisfactory operation of the organisation's Management System,
this certificate expires on: **19. December 2025**

Certificate n° : **DE012442-1**

Date: **08. December 2022**

Certification Manager (M.Beau)

Certification body address: Bureau Veritas Certification Germany GmbH, Veritaskai 1, 21079 Hamburg

DAkKS
Deutsche
Akkreditierungsstelle
D-ZM-16024-01-00

To check this certificate validity you may contact Bureau Veritas Certification. Further clarifications regarding the scope of this certificate and the applicability of the Management Systems requirements may be obtained by consulting the organisation.



**BUREAU
VERITAS**

Certificate

awarded to



SAMSON AKTIENGESELLSCHAFT

Weismüllerstraße 3
60314 Frankfurt am Main, Germany

Bureau Veritas Certification certifies that the Management System of the above organisation has been assessed and found to be in accordance with the requirements of the standards detailed below.

Standard

DIN EN ISO/IEC 27001:2017

Scope of application

All connected processes and interfaces of SAM DIGITAL's cloud-based products

Statement of Applicability Version number and release date: V1.1/05.11.2021

Certification cycle start date: **17. January 2022**

Subject to the continual satisfactory operation of the organisation's Management System,
this certificate expires on: **16. January 2025**

Certificate n° : **DE012411-3**

Rev. Date: 26. June 2023

Certification Manager (M.Beau)

DAkKS
Deutsche
Akkreditierungsstelle
D-ZM-16024-01-00

Certification body address: Bureau Veritas Certification Germany GmbH, Veritaskai 1, 21079 Hamburg.

To check this certificate validity and the applicability of the Management Systems requirements may be obtained by consulting the organisation.

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BUREAU
VERITAS

Bureau Veritas Certification

Certificate

awarded to



Samson AG

Meß- und Regeltechnik, Weismüllerstr. 3
60314 Frankfurt, Germany

Bureau Veritas Certification Germany GmbH certifies that the Management System of the above organisation has been assessed and found to be in accordance with the requirements of the standards detailed below

Standard

ISO 45001:2018

Scope of Certification

Development, manufacturing and marketing of products and systems to control all kinds of media. These products and systems include valves, selfoperated regulators, actuators, valve accessories, signal converters, controllers and automation systems, sensors and thermostats, digital solutions.

Certification Cycle Start Date:

21-January-2024

Subject to the continued satisfactory operation of the organization's Management System, this certificate expires on:

20-January-2027

Certificate No.: **DE012443**

Version: **2**

Issue date: **12-January-2024**

Certification Manager
Monica Beau

Certification Body Address: Bureau Veritas Certification Germany GmbH,
Veritaskai 1, 21079 Hamburg, Germany

Further clarifications regarding the scope and validity of this certificate, and the applicability of the management system requirements, please call: +49 40 2362 50.





TÜVRheinland®

DIN CERTCO

Genau. Richtig.

DATENBLATT

DATASHEET

Register-Nr. **STB1207**
Reg. No.

Temperaturregeleinrichtungen und Temperaturbegrenzer DIN EN 14597: 2015-02

Temperature control devices and temperature limiters according to DIN EN 14597:2015-02

Zertifikatinhaber: Samson AG
Certificate Holder:

Straße, Hausnummer: Weismüllerstraße 3
Street, number:

PLZ / Ort: 60314 Frankfurt am Main
Postal code / City:

Land: Deutschland
Country:

Typ/Modell: 5345-...
Type/model:

Technische Daten:

Technical data:

Bauart: Tensionsmesswerk mit Flüssigkeitsfüllung, Aufbaugerät. Schaltwerk mit
Type of construction: Temperaturkompensation. Gerät besonderer Bauart.

Kurzzeichen:
Abbreviation:

- | | | | |
|-------------------------------|--|---|---|
| ☐ TR | Temperaturregler
Temperature regulator | ☐ FR | Feuerungsregler
Firing regulator |
| ☐ TW | Temperaturwächter
Temperature controller | ☐ STW | Sicherheitstemperaturwächter
Safety Temperature Monitor |
| ☐ ASW | Abgas- Temperaturwächter
Waste gas temperature controller | ☐ Th | Thermische Ablaufsicherung
Thermal discharge safety device |
| ☐ TB | Temperaturbegrenzer
Temperature limiter | ☒ STB | Sicherheitstemperaturbegrenzer
Safety temperature limiter |
| ☐ ASTB | Abgas-Sicherheitstemperaturbegrenzer
Waste gas - Safety temperature limiter | | |

Grenzwertbereiche: Zwischen 0°C und 350°C, verschiedene Bereiche / fest eingestellt
Setpoint value ranges / limit value ranges

Schaltdifferenz: Entriegelung nach ca 10%
Switching difference:

Betriebsmedium am Fühler: flüssiges Medium ☒ gasförmiges Medium ☒
Operating medium at the sensor: Liquid medium Gaseous

Zulässige Umgebungstemperatur für den Fühler: entsprechend für das Schaltwerk: Max. 80 °C
Permitted operating ambient temperature des jeweiligen Endwertes des Fort he switching device:
Grenzwertbereiches +15 %
For the sensor:

Zeitkonstante: Wasser: <= 45s; Öl: <= 60s; Luft: <= 120s
Time constant:

Elektrische Kenngrößen: Eingang: 230 V, 16(2.5) A Ausgang: 230 V, 2(0.4) A
Electrical parameters: Input (NC-contact): Output (NO-contact):

Frankfurt, 07.06.2023

Ort / Datum
Place / date

SAMSON AG

Firmenstempel / rechtsverbindliche Unterschrift
Stamp / Signature

DIN CERTCO • Albo 253 • Be 56 • 12103 Berlin

Tel: +49 30 7562-1131 • Fax: +49 30 7562-1141 • E-Mail: info@dincertco.de • www.dincertco.de

Fișă tehnică: IT-MDC - Manometru diferențial cu contact.

Nr. crt.	Specificațiile tehnice oferite	Producător
0	1	2
1.	Parametrii tehnici și funcționali:	
	- Fluidul de lucru: - gaz natural cu densitatea (ρ) - 0,717 Kg / Nm³ - amestec de gaze naturale cu Hidrogen în proporție de 10%. - Destinație: măsurarea presiunii diferențiale a gazelor naturale - Amplasare / montaj: instalațiile tehnologice exterioare - Principiul de lucru: mecanic, cu piston sau cu diafragma, cu ac indicator, prevăzut cu martor (marcaj roșu pe cadran) cadran rotund și cu contacte electrice Exd. - Domeniul de măsurare (bar): 0 – 1 bar - Temperatura mediului ambiant: -29 ÷ + 55°C - Temperatura gazului: -20° ... +55°C - Umiditatea mediului ambiant: 40 ÷ 75% - Clasa de precizie ± 2 % - Diametrul cadranelor: minim 80 mm - Materialul carcasei: tablă de oțel acoperită cu vopsea neagră sau inox - Material componente principale: element elastic, mecanism, racord cuplare din aliaj metalic inoxidabil - Racordare la proces: filet exterior G 1/4" - Marcaj conform ATEX 2014/34/EU	HIRLEKAR
2.	Specificații de performanță și condiții privind siguranța în exploatare:	
	- Grad de protecție mecanică: minim IP 65	
3.	Condiții privind conformitatea cu standarde relevante:	
	- Conformitate cu directiva europeană 2014/68/EU privind introducerea pe piață a echipamentelor sub presiune - Construcție conform EN 837-1, 2 - EN 60529 pentru grad de protecție	
4.	Mod de ofertare:	
	Documente solicitate la ofertare:	
	- Certificările de tip ISO 9001 ale producătorului, - Declarație de conformitate producător. - Omologare de către BRML - Agreement tehnic - Pentru produs: Certificat de tip CE, conform PED 2014/68/EU, privind stabilirea condițiilor pentru punerea pe piață a echipamentelor sub presiune; - Pentru produs: certificat de tip CE conform directivei ATEX 2014/34/EU, cu privire la introducerea pe piață a echipamentelor și sistemelor destinate utilizării în atmosfere cu potențial exploziv.	

	- Caracteristicile tehnice ale produselor oferite trebuie să fie identificate și evidențiate, în cataloage sau specificații tehnice de producător, strict pentru produsul oferit, aceste vor fi parte integrantă din oferta tehnică. Cataloage și specificații tehnice vor fi asumate de către ofertantul echipamentului (original sau copie conform cu originalul).	
	- Ofertantul are obligația de a face dovada conformității produsului care urmează să fie furnizat cu prezenta cerință tehnică. În acest scop, propunerea tehnică va conține corespondența, pentru fiecare articol al cerințelor prevăzute în această fișă tehnică, cu articolul paragraful sau pagina din oferta tehnică care atestă îndeplinirea respectivei cerințe.	
	- Se vor oferta și livra numai echipamente noi, de ultimă generație și originale, conform cu specificațiile și documentele specifice ale producătorului. Nu se vor oferta produse demo, recondiționate sau refuzate de alți beneficiari.	
5.	Condiții de livrare:	
	- Fiecare manometru va avea inscripționată seria de fabricație. Aceasta va fi consemnată în documentele de calitate și certificatele de testare însoțitoare	
	- Utilajul va fi livrat însoțit de certificat de conformitate emis de producător și de carte tehnică în original și în limba română	
	- Echipamentele livrate vor fi complet echipate cu toate accesoriile necesare pentru punerea în funcțiune și vor respecta cerințele impuse privind proiectarea și execuția instalațiilor tehnologice	
6.	Condiții de garanție și postgaranție:	
	- Producătorul va garanta calitatea și buna funcționare a produsului timp de 24 luni de la punerea în funcțiune sau de 36 luni de la data livrării	



Hirlekar Precision manufactures quality differential pressure instruments designed to measure the difference in pressure between two points in a system and show it on a single dial instrument. A magnetic movement senses the differential pressure.

These piston instruments can indicate small values of differential pressure even when used at high line pressures. They provide instantaneous and continuous information regarding system conditions helping in eliminating premature servicing of equipment, avoid unscheduled down time of costly processes and detect abnormal system conditions.

Switching Facility : Instruments can be supplied with reed switches to initiate alarms, activate other equipment, or shut the system down. Two switches are used when high and low limits are desired. Gauge-switch models provide the user with both, gauge readout and switch operation.

APPLICATIONS :

Filters, Hydraulic systems, Water treatment plants, Chemical plants, Natural gas processing, Heat exchangers, Gasoline / Diesel engine filters, Pumps and Valves, Compressors.

200 DPG

Piston Instruments

SALIENT FEATURES

Cost effective and reliable.
Simple and compact design.
Easy to read dial instrument eliminates accumulated errors of two instrument installations.

High operating pressure up to 200 bar.
Differential pressure range up to 10 bar.

Over pressure safe from either side to maximum working pressure.

Adjustable reed contact switching.

Indicating mechanism isolated from pressure chamber.

Only switch is also available.

Wide applications in air, gas and liquid media.

Manufactured in ISO certified plant.

Exported worldwide.

HIRLEKAR PRECISION

Hirlekar Precision Engineering Private Limited

67 Industrial Town planning scheme II,

Ramtekadi, Pune 411 013 INDIA

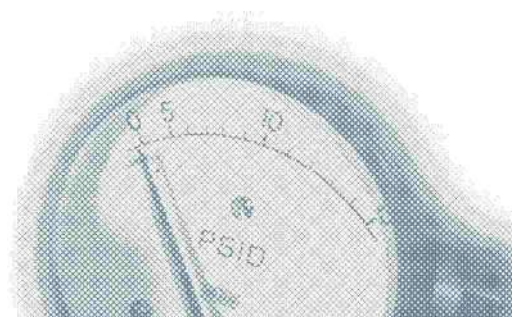
Phone : +91 20 26823648 / 26823649

Fax : +91 20 26871153

Email : hirlekar@vsnl.com

website : www.hirlekarprecision.com

MAGNETIC PRINCIPLE

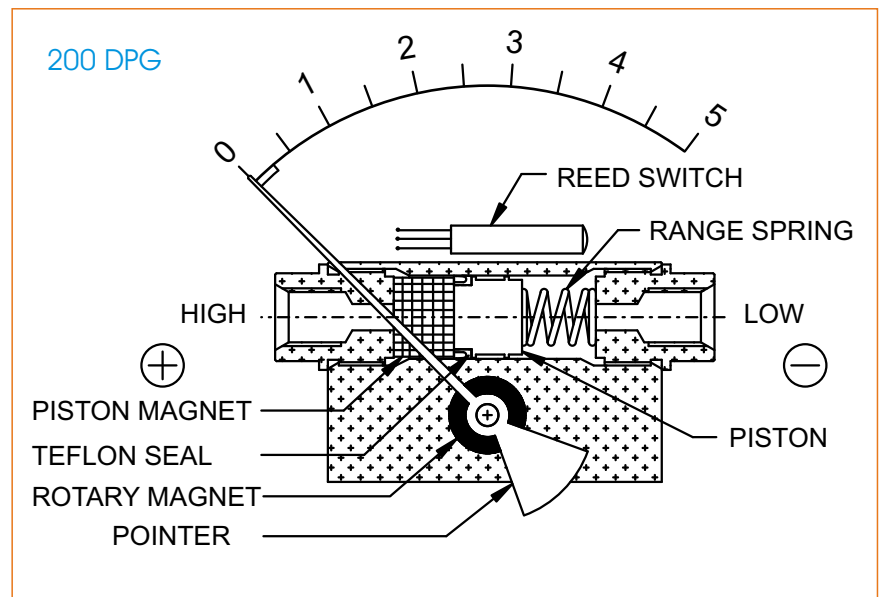


OPERATING PRINCIPLE

High and Low pressures are separated by a sensor assembly consisting of a magnet, piston, Teflon seal and a range spring. The difference in pressure causes the sensor assembly to move in proportion to the change against a range spring.

A rotary magnet, located in a separate body cavity and isolated from the acting pressures, is rotated by magnetic coupling as per the linear movement of the sensor assembly. A pointer attached to the rotary magnet indicates differential pressure on the dial.

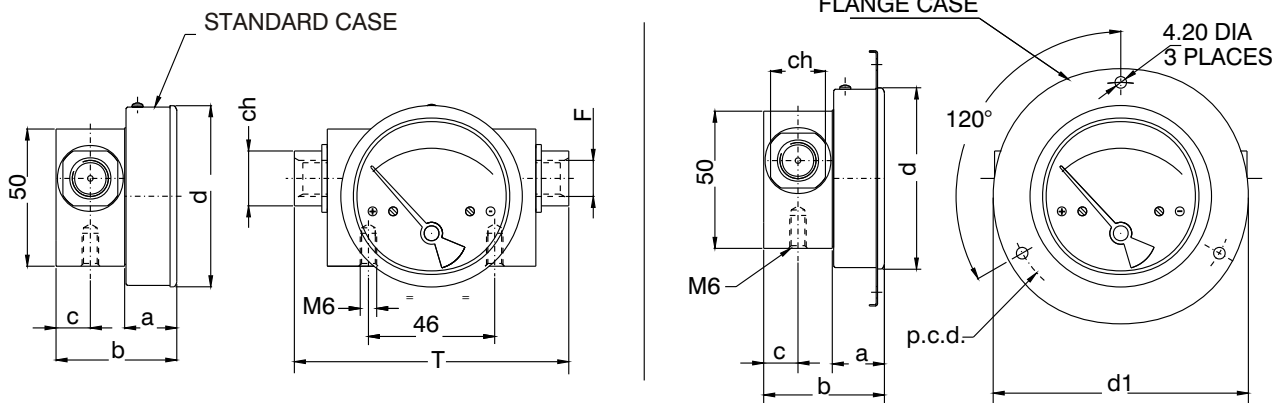
Switch : Reed switches are located adjacent to the pressure chamber and are activated by the magnetic field of the sensor assembly.



TECHNICAL DATA (MODEL 200 DPG)

Ranges	: 0-0.25 to 0-10 bar
Units of calibration	: Kg/cm ² , kPa, bar, mbar, psi.
Operating principle	: Magnetic coupling using piston & spring.
Working pressure	: 200 bar / 3000 psi for Aluminium & 400 bar / 6000 psi for SS-316
Accuracy	: ± 2 % of FSD (Ascending)
Dial sizes	: 2"(50mm), 2.5" (63mm), 3.5"(80mm), 4"(100mm), 4.5"(115mm), & 6" (150mm)
Body Material	: Aluminium, SS-316, & Brass
Temperature	: 80°C Max. for the media.
Protection	: IP 65 for gauge.
Migration of media	: Marginal
Connections	: ¼" NPT(F) or ¼" BSP(F) (on request, longer lead time)
Wetted parts	: Body material, PTFE, SS 304 spring, screw, and ceramic magnet.
Seals	: Buna-N (Standard), Viton
Porting	: In-line, Bottom, or Back
Switch	: SPST or SPDT, one or two. Switches are field adjustable. The set points can be increased or decreased externally with simple screwdriver adjustments. When two switches are used, either switch can be adjusted independently. These switches are CE certified.
Switch unit can also be installed later on gauges with in-line and bottom porting.	
Dial case	: Stainless steel case and flange (Standard)
Window	: Glass (Standard) Acrylic, Toughened glass on request.
Mounting	: Direct, front panel flange, 2" pipe.
Other options	: Glycerine filling, red resettable follower pointer, dual scale, strainer in (+) connection, dual scale.

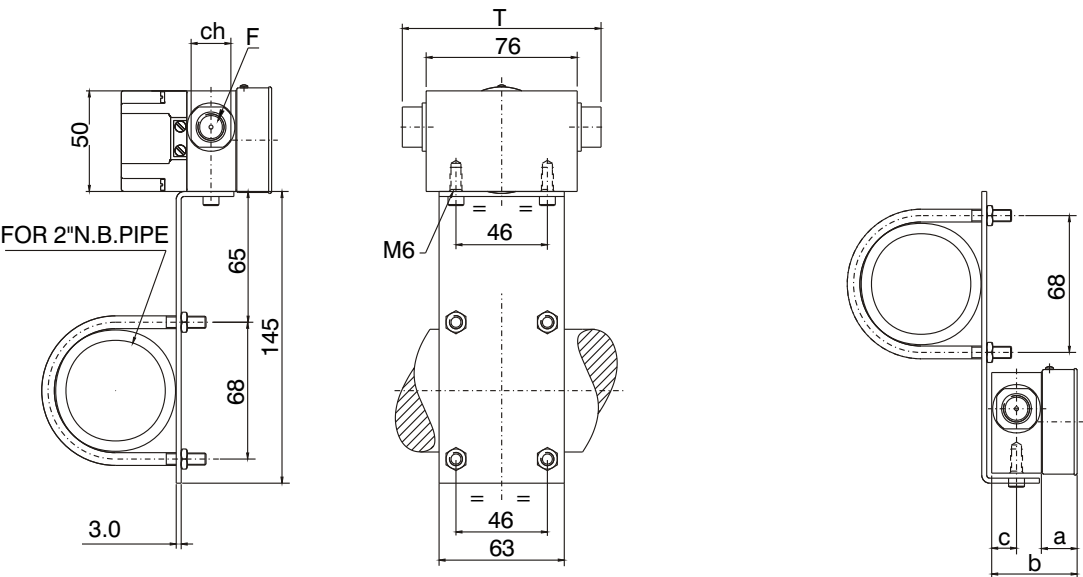
STANDARD DIMENSIONS (MODEL 200 DPG)



DIAL Ø	F	a	b	c	d	d1	T	ch	p.c.d.
50 (2")	1/4"BSP - 1/4"NPT	18	43	12.5	53	79	100	20	69
63 (2.5")	1/4"BSP - 1/4"NPT	19	44	12.5	66	93	100	20	83
80 (3.5")	1/4"BSP - 1/4"NPT	19	44	12.5	83	109	100	20	99
100 (4")	1/4"BSP - 1/4"NPT	19	44	12.5	104.3	131	100	20	121
115 (4.5")	1/4"BSP - 1/4"NPT	19	44	12.5	119.7	146	100	20	136
150 (6")	1/4"BSP - 1/4"NPT	19	44	12.5	154.3	181	100	20	171

* PANEL CUT OUT = d+ 1

MOUNTING BRACKETS (MODEL 200 DPG)

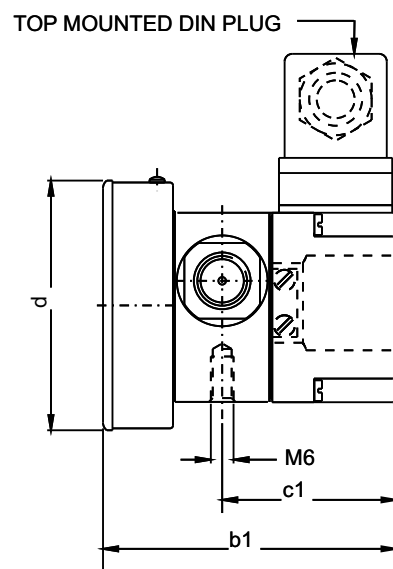
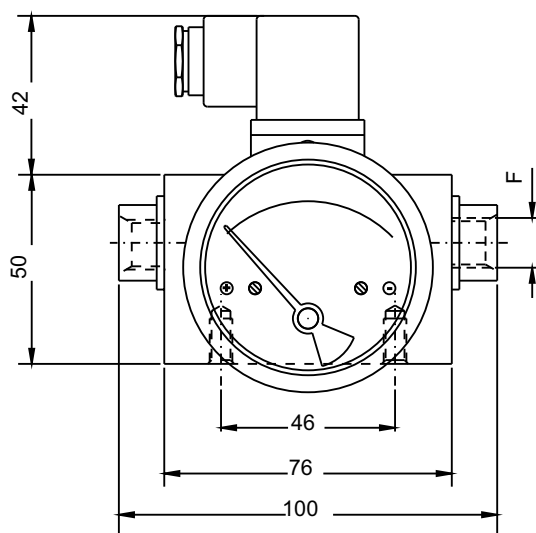
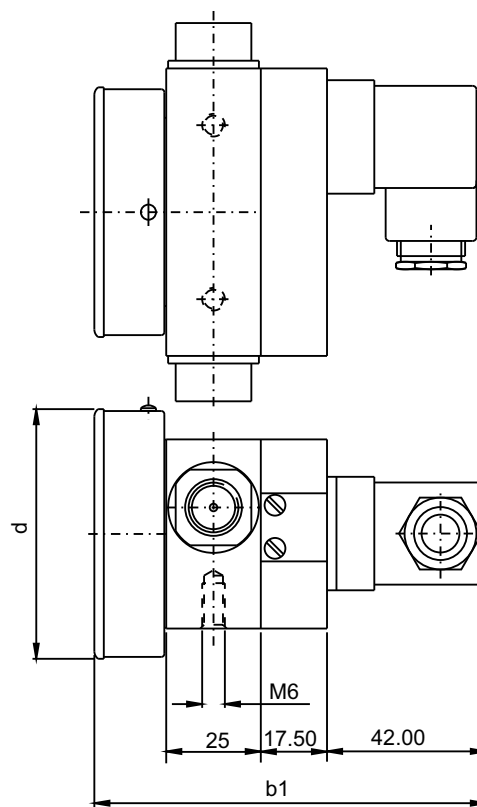
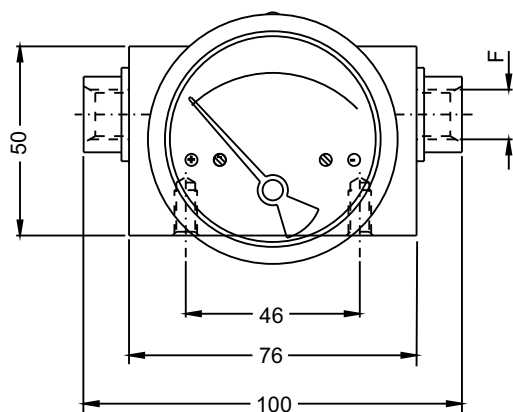


BRACKET MOUNTING FOR GAUGE+ SWITCH

BRACKET MOUNTING FOR GAUGE

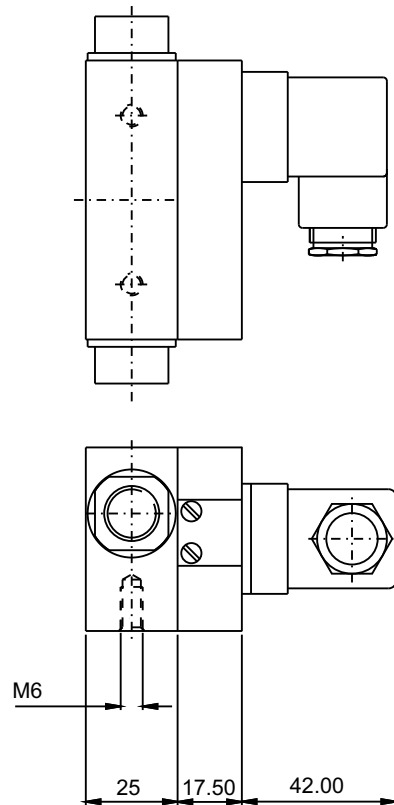
DIAL Ø	F	a	b	c	T	ch
50 (2")	1/4"BSP - 1/4"NPT	18	43	12.5	100	20
63 (2.5")	1/4"BSP - 1/4"NPT	19	44	12.5	100	20
80 (3.5")	1/4"BSP - 1/4"NPT	19	44	12.5	100	20
100 (4")	1/4"BSP - 1/4"NPT	19	44	12.5	100	20
115 (4.5")	1/4"BSP - 1/4"NPT	19	44	12.5	100	20
150 (6")	1/4"BSP - 1/4"NPT	19	44	12.5	100	20

DIAL ø	F	d	b1
50 (2")	1/4"BSP - 1/4"NPT	53	102.5
63 (2.5")	1/4"BSP - 1/4"NPT	66	103.5
80 (3.5")	1/4"BSP - 1/4"NPT	83	103.5
100 (4")	1/4"BSP - 1/4"NPT	104.3	103.5
115 (4.5")	1/4"BSP - 1/4"NPT	119.7	103.5
150 (6")	1/4"BSP - 1/4"NPT	154.3	103.5



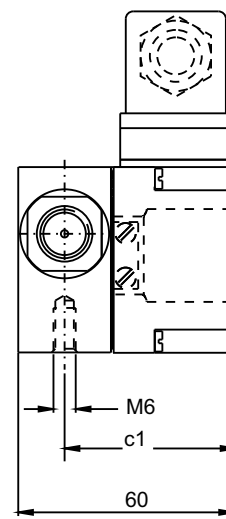
DIAL Ø	F	b1	c1	d
50 (2")	1/4"BSP - 1/4"NPT	78	47.5	53
63 (2.5")	1/4"BSP - 1/4"NPT	79	47.5	66
80 (3.5")	1/4"BSP - 1/4"NPT	79	47.5	83
100 (4")	1/4"BSP - 1/4"NPT	79	47.5	104.3
115 (4.5")	1/4"BSP - 1/4"NPT	79	47.5	119.7
150 (6")	1/4"BSP - 1/4"NPT	79	47.5	154.3

F=1/4"NPT - 1/4"BSP



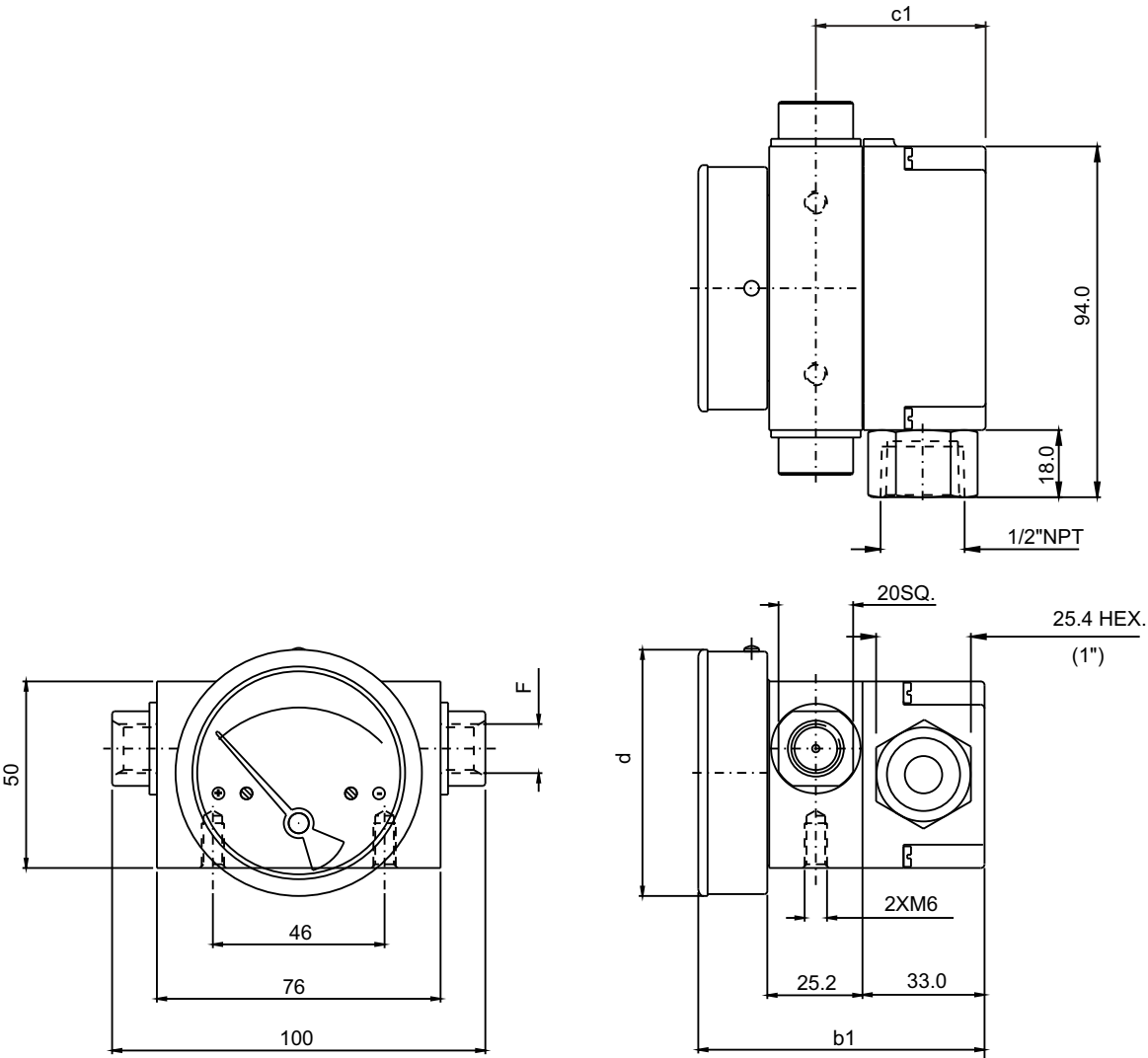
Technical drawing of a 2-position, 3-way solenoid valve. The drawing shows the valve body with two solenoid actuators. Dimensions are provided in millimeters (mm):

- Overall width: 100 mm
- Overall height: 92 mm (42 mm + 50 mm)
- Distance between solenoid mounting points: 76 mm
- Distance between the two internal ports: 46 mm
- Port diameter: 1/2" (indicated by the symbol $\frac{1}{2}$)
- Actuator force: 10 N (indicated by the symbol F_{10N})



Form MKT:019/Ver 3

GAUGE + SWITCH WITH REED CONTACTS WITH TERMINAL STRIP & 1/2" NPT CONDUIT CONNECTION (MODEL 200 DPG)



DIAL ø	F	b1	c1	d
50 (2")	1/4"BSP - 1/4"NPT	78	47.5	53
63 (2.5")	1/4"BSP - 1/4"NPT	79	47.5	66
80 (3.5")	1/4"BSP - 1/4"NPT	79	47.5	83
100 (4")	1/4"BSP - 1/4"NPT	79	47.5	104.3
115 (4.5")	1/4"BSP - 1/4"NPT	79	47.5	119.7
150 (6")	1/4"BSP - 1/4"NPT	79	47.5	154.3

HOW TO ORDER A DIFFERENTIAL PRESSURE INSTRUMENT, MODEL 200 DPG

Example		Code Descriptions																		
Series	200 DPG																			
Type	GS	G	Gauge																	
		S	Switch																	
		GS	Gauge + Switch																	
Body material	B	A	Aluminium (anodized)																	
		B	Brass																	
		S	SS-316																	
		H	Heavy duty Al. (5000 psi) with 32mm thick body.																	
Dial size	3.5	2.0	2.0" (50 mm)		4.0	4.0" (100 mm)														
		2.5	2.5" (63 mm)		4.5	4.5" (115 mm)														
		3.5	3.5" (80 mm)		6.0	6.0" (150 mm)														
Connection	4N	4B	¼" BSP (Female) (on request,longer lead time)																	
		4N	¼" NPT (Female)																	
		4T	¼" BSPT (Female) (on request,longer lead time)																	
		ZZ	Special connection sizes using adaptor																	
Porting	1	1	In-line (Standard)																	
		2	Rear / Back																	
		3	Bottom																	
		6	In-line & Bottom																	
Case type	SS	SS	SS 304 with a rubber ring (standard)																	
		SF	SS 304 flange with a rubber ring (standard flange)																	
Window	A	F	Glass (standard)																	
		A	Acrylic																	
		T	Toughened glass																	
Seal	B	B	Buna-N (standard)																	
		V	Viton																	
		E	EPDM																	
Switch	3	0	None																	
		1	One SPST, with a DIN plug*																	
		2	One SPST, with a terminal strip																	
		2A	One SPST, with built in relay																	
		3	Two SPSTs, with a DIN plug*																	
		4	Two SPSTs, with a terminal strip																	
		4A	Two SPSTs, with built in relay																	
		5	One SPDT, with a DIN plug*																	
		6	One SPDT, with a terminal strip																	
		7	Two SPDTs, with two DIN plugs*																	
		8	Two SPDTs, with a terminal strip																	
		* DIN plug : we mount it on the top, on the plastic switch cover. However we can give it at the back as a request.)																		
		Switch applicable for "S" & "GS" types only. Switches operate from 20 to 100% of the range & mounted at the back. Switches are in a plastic enclosure, they are factory set, field adjustable.																		
Standard Ranges	0-100 psi	Kg/cm ²	0.25	-	0.5	0.75	1	-	1.6	2	2.5	3	3.5	4	5	-	6	7	9	10
		bar	0.25	-	0.5	0.75	1	-	1.6	2	2.5	3	3.5	4	5	-	6	7	9	10
		Mbar	250	-	500	750	1000	-	-	-	-	-	-	-	-	-	-	-	-	-
		psi	-	5	8	-	15	20	25	30	-	40	50	60	-	80	-	100	-	-
		Kpa	25	-	50	75	100	-	160	200	250	300	350	400	500	-	600	700	900	1000
		Other ranges on request.																		
Options	BC	0	None																	
		A	Glycerine filling (Affects accuracy)																	
		B	Red follower pointer on acrylic window (Affects accuracy)																	
		C	Customer Logo																	
		D	Dual scale																	
		E	Colour band																	
		F	Strainer in (+) connection																	
		G	Reverse port																	
		H	Descending calibration (longer lead time)																	
Ordering Sequence Code (Example)																				
200 DPG GS B 3.5 4N 1 SS A B 3 (0-100 psi) BC																				
Limitations for making combinations:																				
Glycerine filling will not have follower pointer. For bottom or back porting no mounting holes are given and hence can not be mounted using a bracket. Gauge with back porting cannot have a switch. (However, only switch with back porting is available.) Toughened glass and follower pointer not available in 2" (50 mm) dial. No follower pointer available in 6" (150 mm).																				
Specifications and dimensions given in this leaflet represent the state of engineering at the time of printing, modifications may take place and materials specified may be replaced by others without prior notice.																				

CE
EU – Declaration of Conformity

Manufacturer's name : Hirlekar Precision

Manufacturer's address : Plot No.67, Hadapsar Industrial Estate, T.P. Scheme II, Ramtekadi,
Pune 411 013, India.

Product description : Differential pressure instruments (with or without reed switch)

Model No. : 100DPG, 100DGC, 150DPG, 200DPG, DX10, D200DPG, 200DGR, 300DGC,
320DGC, 370DGC, 400DGC, 600DGC, 700DGC, DX20, PR10, PR20,
EX200DPG, EX200DGR, EX300DGC, EX400DGC, CZ300DGC, CZ400DGC.

Manufacturer's Quality System : **TÜV AUSTRIA** ISO 9001:2015
Certificate No. 20100131335223
TUV AUSTRIA CERT GMBH

Applicable EU Directives : (1) 2014/68/EU: Pressure Equipment Directives
(2) 2014/30/EU: Electromagnetic Compatibility Directive.
(3) Directive 2015/863 amending Annex II of Directive 2011/65/EU Restriction of Hazardous Substances.
(4) 2014/35/EU: Voltage limit, for instruments with reed switches.

Test standards used : We follow the guidelines listed in ASME B40.100, IS:3624 partially.

Statement of Conformity : (1) We declare that the product specified above confirms to the requirements of applicable EU directives 2014/68/EU, Article 4, paragraph 3, fluid group I & II where PS ≤ 200 bar and fluid group II where PS ≤ 400 bar, no CE marking as per sound engineering practice.
(2) Instruments with reed switches (models are mentioned above) are considered as benign instruments as they do not require any electrical power to operate and have no active electronic components to generate or be susceptible to electromagnetic field. As such, they have not been tested for EMI/EMC. If the instrument/s with reed switch is used as a component in a larger electrical installation, then the entire installation has to comply with the EMI/EMC directives and undergo required testing.
(3) Hirlekar Precision declares that the above mentioned gauge models do not contain beyond specified limits the hazardous substances listed in the European Directive for Restriction of use of certain Hazardous Substances (RoHS) including directive 2015/863 published in 2015 amending Annex II of Directive 2011/65/EU. Our declaration is based on certificates and information provided to us by our suppliers.
(4) We declare that instruments with reed switches specified above confirms to applicable EU directives of 2014/35/EU,

- Where voltage limit for reed switches is between 50-240 VAC and VDC.
- Does not apply to instruments with voltage rating below 50 VAC/VDC. No CE marking allowed.

Note : It shall, however, be the responsibility of the System Assembler / End User to ensure that the product is suitable for its intended process applications and compliance with all the directives mentioned above as appropriate.

Signed

Name
Designation
Place
Date

Tanaji D Ahiwale
Development Engineer
Pune, India
13 April 2023



Factory: Plot No. 67, Hadapsar Industrial Estate
T.P. Scheme II, Ramtekadi, Pune 411 013 INDIA
Mobile : +91 98230 43051 / +91 98230 83317

Office: 427/18 + 19 Gultekadi Industrial Estate
Pune 411 037, INDIA
Tel.: +91 20 2426 5743 / 2427 4000



CERTIFICATE

**Management system as per
EN ISO 9001:2015**

In accordance with TÜV AUSTRIA procedures, it is hereby certified that

Hirlekar Precision

**Plot No. 67, Hadapsar Industrial Estate, T. P. Scheme No. II, Ramtekadi,
Pune - 411013, Maharashtra, India**

applies a management system in line with the above standard for the
following scope

Manufacture and Supply of Differential Pressure Instruments

Certificate Registration No. 20100131335223

Valid until: 2027-08-27
Initial certification: 2013-09-11

Certification Body
at TÜV AUSTRIA GMBH

Vienna, 2024-07-22

This certification was conducted in accordance with TÜV AUSTRIA auditing and certification
procedures and is subject to regular surveillance audits.
TÜV AUSTRIA GMBH Deutschstraße 10 A-1230 Wien www.tuv.at



Fișă tehnică: IT-RAE - Robinet cu sferă, corp demontabil, montaj suprateran, acționare electrică.

Nr. crt.	Specificațiile tehnice oferite	Producător
0	1	2
1.	Parametri tehnici și funcționali: - Fluidul de lucru: - gaz natural cu densitatea (ρ) - 0,717 Kg / Nm³ - amestec de gaze naturale cu Hidrogen în proporție de 10%. - Clasa de presiune/Presiunea nominală: ANSI150 - Diametru nominal: DN100, DN250 - Temperatura mediului ambiant: -29....+55°C - Temperatura gazului: -20....+55°C - Presiunea maximă gaz în conductă: ANSI150 - Amplasare instalații tehnologice: exterioare - Montaj: suprateran, orizontal / vertical - Se vor respecta prevederile: EN 12186:2015 Infrastructura pentru gaze. Stații de reglare a presiunii gazelor pentru transport și distribuție. Cerințe funcționale	BOTELI VALVE GROUP
2.	Parametrii constructivi robinet: - Conectare la instalația tehnologică: flanșe cu gât conform EN 1092-1 sau flanșe cu gât conform ASME B 16.5 respectiv ASME 16.47 Seria B funcție de diametrul robinetului (robinetul se va livra cu contraflanșe, organe de ansamblare, garnituri). - Materialul conductei pe care se montează: L360NE conf. EN ISO 3183:2020 - Tratament specific organe de ansamblare: zincare la cald - Tip garnituri pentru flanșe: spirometalice cu umplutură de carbon conform ASME B 16.20 respectiv ASME 16.47 Seria B. - Dimensiuni constructive: conform ISO 14313 (API 6D) - tip robinet: cu sferă "full bore" montaj trunnion conform EN 1983 - Tip DIB-1 conform API6D (ISO 14313) (la robinetele Dn≥150) - Tip etanșare: PMSS - Material etanșare soft: PTFE / VITON. - Tip scaun de etanșare: DPE (Duble Piston Efect / Scaune bidirecționale la robinetele DN≥150) - Corpul robinetului: oțel carbon sau oțel aliat, construcție demontabilă în trei părți conform EN 1983 - Materialul tijei: oțel aliat - Material scaune de etanșare: oțel carbon cu acoperire metalică de înaltă rezistență cu carbură de tungsten (WC) - Materialul sferei: oțel carbon cu acoperire metalică de înaltă rezistență cu carbură de tungsten (WC) - Tip sferă conform EN 1983: bilă masivă (solid ball) dintr-o singură bucată - Clasa B de etansare conform ISO 15848-1 (emisii în atmosferă) - Protecție anticorozivă: vopsire, culoare: RAL 7044. - Deschidere la Δp maxim	

3.	Dotări minime robinet:	
	- Proiectare anti-ejectare ax antrenare (Blow out proof stem) conform EN 736-3	
	- Proiectare anti-statică conform EN 736-3, EN 1983	
	- Proiectare fire safe conform ISO-10497	
	- Etanșare ax antrenare schimbabilă sub presiune	
	- Racord auxiliar de golire conform EN 1983 (la robinetele DN≥150)	
	- Sistem de injecție pastă de etanșare la obturator și ax de acționare complet echipat (la robinetele DN≥150)	
4.	Acționare:	
	- Conform ISO 12490	
4.1.	Caracteristici tehnice	
	- Tip acționare: Servomotor electric, cu panou local de comandă și semnalizare integrate pe acționarea electrică.	
	- Reductor.	
	- Montaj pe robinet tip: Sfert de tură.	
	- Funcționare: Închis-Deschis.	
	- Sistem unități de măsură: Metric.	
	- Montaj: Suprateran, orizontal.	
	- Tip de protecție la explozie conf. ATEX100a: II3G EEx de IIC T4.	
	- Grad de protecție mecanică a acționării: IP67.	
	- Tensiune de alimentare: conform schema tehnologică	
	- Funcționare la variații ale tensiunii de alimentare: "+ - 10%"	
	- Funcționare la variații ale variații ale frecvenței: "+ - 5%"	
	- Dispozitiv corectarea automata a fazei: (dacă este cazul)	
	- Timp de închidere/deschidere:: 4 secunde / inch.	
	- Comandă: 24Vc.c.	
	- Intrări digitale pentru comenzile ÎNCHIS, DESCHIS	
	- Manevrare de siguranță (rezervă): Posibilitate de acționare manuală.	
	- Acționare manuală: Cu conectare prin intermediul unui mecanism care să asigure decuplare automată a motorului electric.	
	- Presetupe cu dublă strângere pentru cablu armat: Φ 7...11mm – 2 buc; Φ 13...17mm – 2 buc;	
	- Tip serviciu motor: S2-15min (pentru robinete on/off, pentru funcționare de scurtă durată).	
	- Clasa de izolație motor: F.	
	- Sistem de încălzire acționare electrică: Implicită, fără cabluri separate de alimentare a încălzirii (alimentarea sistemului de încălzire se va face din cablurile de alimentare cu energie electrică de forță ale acționării).	
	Protecții motor: • protecția motorului în cazul blocării robinetului, • protecția motorului la lipsa unuia sau a mai multor faze de alimentare cu energie electrică (dacă este cazul) • protecția termică a motorului,	

	• protecție anticondens.	
	- Setări (limite de capăt de cursă, cuplu): Non-intruzive.	
	- Indicarea locală a funcționării servomotorului.	
	- Protecție la coroziune: Vopsire în câmp electrostatic.	
	- Culoare: RAL 7044.	
	- Selector pentru alegere comandă manuală și electrică locală sau la distanță.	
	- Indicator mecanic al poziției obturatorului.	
	- Blocare acces local (selector) pentru a asigura menținerea setărilor configurate.	
	- Afișaj local digital.	
	- Acționarea să permită poziționarea panoului de comandă din 90 în 90 grade pentru a asigura accesibilitatea.	
	- Menținerea valorilor setate în lipsa alimentării electrice, memorie nevolatilă.	
	- Operare la distanță (închidere/deschidere, indicare poziție, alarme, etc.),	
	- Protocol de comunicație: Modbus RTU	
	- Topologie inelară: Da	
	- Posibilitate activare/dezactivare terminator bus RS 485 fără intervenția producătorului: Da	
	- Produsul se va livra cu harta protocolului de comunicare înregistrată/instalată de către producătorul acționării	
	- Se va pune la dispoziție harta protocolului de comunicare în format tipărit și electronic.	
	- Meniu panou de comandă implementat pe acționarea electrică: În limba engleză și română.	
	- Date ce vor fi memorate în acționare: minim 1000 de evenimente / parametri (logguri)	
	- Capacitate de autodiagnosticare și alarmare.	
	- Posibilitate de închidere/deschidere procentuală.	
	- Interfața locală de operare trebuie să permită: • controlul acționării, • configurarea acționării, • vizualizarea parametrilor acționării, • vizualizare alarme.	
	- Semnalizare prin leduri de culori distincte: Apariție eroare, atingerea capătului de cursă.	
4.2.	Norme și aprobări solicitate pentru acționare – documente doveditoare anexate la oferta tehnică, marcaj corespunzător la predarea produsului.	
	- Conformitate cu directiva ATEX 2014/34/EU (protecție antiexplozivă): II 3G EEx de IIC T4.	
	- Protecție mecanică (EN 60529): IP67	
	- Siguranța în funcționare conf. 72/23/EEC completată cu 93/68/EEC conform EN 60204-1 1993 sau echivalent.	
	- Compatibilitate electromagnetica conf. 89/336/EEC completată cu 92/31/EEC sau echivalent.	

	- Test nivel de vibrații pentru acționare conf. EN 60068 sau echivalent.	
	- Teste de zgomot al acționării conform EN 21680 (grad A) sau echivalent.	
	- Teste FAT (Factory Acceptance Test)	
5.	Teste și certificări puse la dispoziția beneficiarului:	
	- Pentru robinet: Condiții generale conform API6D (ISO 14313)	
	- Pentru robinet: Încercări suplimentare conform API6D (ISO 14313): • etanșeitate cu gaze la presiune joasă (H3), • etanșeitate cu gaze la presiune înaltă (H4), • încercare antistatică (H5) • momentului maxim de acționare (H6). Presiunea corespunzătoare clasei de presiune a robinetelor din tabel 1. • încercarea cavității la suprapresiune – DIB-1 (H10).– funcție de tipul robinetului. • încercarea DIB (H12) – funcție de tipul robinetului.	
	- Analiza îmbinărilor sudate cu radiații penetrante 100%.	
	- Test de capăt de cursă (0% închis, 100% deschis) cu acționarea montată.	
	- Se vor avea în vedere cerințe prevăzute la punctul 4.3.	
	- Teste FAT (Factory Acceptance Test)	
6.	Documentația care va fi prezentată la ofertare:	
	- Pentru producătorul robinetului: Certificatul de conformitate cu ISO 14313 (API 6D).	
	- Pentru tipul de robinet din ofertă: Certificat și raport de încercare la foc ("fire safe") conform ISO 10497 (API 607, API 6FA).	
	- Pentru tipul de robinet din ofertă: Certificat și raport de încercare conform ISO 15848-1	
	- Pentru tipul de robinet din ofertă: Rapoarte de comportare în exploatare de la beneficiar în calitate de utilizator final strict pentru tipul de produsul oferat, cu diametrul similar.	
	- Pentru tipul de acționare din ofertă: Certificare ATEX 2014/34/EU	
	- Pentru tipul de acționare din ofertă: Certificare protecție mecanică (60529).	
	- Pentru produs: Certificat de tip CE, conform PED 2014/68/EU privind stabilirea condițiilor pentru punerea pe piață a echipamentelor sub presiune;	
	- Caracteristicile tehnice ale produselor oferite vor fi identificate și evidențiate, în cataloage sau specificații tehnice de producător, strict pentru produsul oferat, aceste vor fi parte integrantă din oferta tehnică. Cataloage și specificații tehnice vor fi asumate de către ofertantul echipamentului.	
	- Se vor oferta și livra numai echipamente noi, de ultimă generație și originale, conform cu specificațiile și documentele	

	specifice ale producătorului. Nu se vor oferta produse demo, recondiționate sau refuzate de alți beneficiari.	
7.	Documentație care va însoți produsul:	
	- Pentru robinet: Condiții generale conform (ISO 14313)	
	Cartea tehnică a produsului:	
	- Fișa Tehnică (robinet/acționare): • coeficient de debit Kv (Cv), • forța sau momentul maxim de acționare pentru robinetul în stare nouă, • forța sau momentul maxim admisibil la tija robinetului, • momentul maxim admisibil de intrare la reductor (unde este cazul).	
	- Instrucțiuni de montaj în instalație (robinet/acționare).	
	- Instrucțiuni de punere în funcțiune și exploatare (robinet/acționare).	
	- Instrucțiuni de scoatere din funcțiune (robinet/acționare).	
	- Instrucțiuni/manuale de operare și întreținere (robinet/acționare): • operare, verificare etanșeități, • ungere, drenare, gresare, • cauze defecte, remedieri, verificări, • lista piese de schimb de mare uzură.	
	- Listă de componente și desene de ansamblu/subansamblu (secțiuni, detalii) (robinet/acționare).	
	- Schemele de interconectare a acționării (funcție de tipul robinetului).	
	- Certificat de conformitate cu ISO 14313 (robinet).	
	- Certificat de management al calității existent (robinet).	
	- Certificat și rapoart de încercare la foc ("fire safe") pentru tipul de robinet livrat.	
	- Documente de trasabilitate pentru componente.	
	- Document de inspecție tip 3.1 conform EN 10204 pentru materiale componente (corp robinet, obturator robinet, ax antrenare robinet, flanșe, organe de asamblare).	
	- Document de inspecție emise de producător și certificate de un organism abilitat, independent de producător, pentru încercările: • etanșeitate cu gaze la presiune joasă (H3), • etanșeitate cu gaze la presiune înaltă (H4), • încercare antistatică (H5) • momentului maxim de acționare (H6). Presiunea corespunzătoare clasei de presiune a robinetelor din tabel 1. • încercarea cavității la suprapresiune – DIB-1 (H10).– funcție de tipul robinetului. • încercarea DIB (H12) – funcție de tipul robinetului.	
	- Certificare acoperire sferă.	
	- Certificare acoperire scaune de etanșare.	
	- Certificare/Teste protecții anticorozive (robinet).	

	- Buletine de analiză suduri.	
8.	Marcare și identificare:	
	- Confom ISO 14313. - Marcaje corespunzătoare punctului 4.2. "Norme și aprobări solicitate pentru acționare".	
9.	Condiții de livrare:	
	- Furnizorul robinetului va dimensiona și va livra inclusiv acționarea.	
	- Robinetul se va livra complet echipat, cu acționarea montată.	
	- Furnizorul va asigura integritatea produselor livrate, până la locația de livrare.	
	- Produsele vor fi ambalate individual, pentru a face față transportului, manipulării și depozitarii până la locația de montaj. - Componentele electronice vor fi protejate obligatoriu cu ambalaj etanș (pungi / folie de polietilenă) împreună cu suficient material desicant (ex. silicagel) pentru a evita apariția condensului.	
	- Se vor prevedea etichete autocolante din material rezistent la apă, cu cod de bare tip 128 conform standard ISO/IEC 15417. Fiecare livrare va fi însoțit de fisa centralizatoare care va cuprinde codul de bare alocat utilajului corelat cu date identificare ale utilajului: tip, diametru, clasa presiune, serie, data livrare de la producător, locație livrare. Aceste etichete vor fi poziționate astfel: pe partea laterală și superioară a ambalajului (2bucăți), pe părțile laterale ale utilajului (2bucăți).	
	- Toate materialele de ambalare a produselor, precum și toate materialele necesare protecției coletelor (paleți de lemn, folii de protecție, etc.) vor rămâne în proprietatea entității contractante.	
	- Produsele (utilaj și ambalaj) se vor recepționa la locația de livrare, ele vor fi inspectate și/sau testate.	
	- Locația și termenul de livrare: se vor asigura condiții DDP. - Descărcarea produselor la locul de livrare este în sarcina furnizorului - Produsele vor fi însoțite de instrucțiuni de manipulare, transport și depozitare.	
	- Teste SAT (Site Acceptance Test)	
	- Echipamentele livrate vor fi complet echipate cu toate accesoriile necesare pentru punerea în funcțiune și vor respecta cerințele impuse privind proiectarea și execuția instalațiilor tehnologice	
10.	Condiții de garanție și postgaranție:	
	- Producătorul va garanta calitatea și buna funcționare a produsului timp de 24 luni de la punerea în funcțiune sau de 36 luni de la data livrării.	
11.	Alte condiții:	
	- Furnizorul va acorda asistență tehnică și instruirea personalului de exploatare la locația indicată de beneficiar.	

BOTELI VALVE GROUP CO.,LTD



Seria BTL AK4 & AK7

Robinet cu sfera montata trunnion Construcție forjată

2" - 56"/Dn50-Dn1450

Clasa ASME 150-2500 /Pn16-Pn450

Corp sudat & demontabil

Capete sudate & cu flanse

API 6D/EN1983

Protecție la foc

NACE
Marcaj CE



Boteli Valve Group

www.boteli.com

Create A National Brand

Seriile BTL AK4 & AK7, robinete cu bila din trei piese forjate montate pe tronsoane

Toate robinetele cu bilă BTL din trei piese, cu corp sudat și cu bolțuri, destinate montării pe tronsoanele de conducte sunt proiectate astfel încât să satisfacă cerințele proceselor de petrol și gaze, depozitarea și transportul acestora, distribuția, GLN, din industria petrochimică și alte ramuri conexe.

Toate robinetele cu bilă BTL cu montaj pe tronson sunt proiectate și fabricate în strictă conformitate cu standardele industriale și cu specificații de proiectare ale produselor BTL.

Robinetele cu bilă BTL sunt utilizate în toate aplicațiile on-shore, off-shore, supra și subteran.

Baza de producție în Sanqiao Industry Zone ,suprafata:26600M²,suprafata cladiri:31700M²



Baza de producție în Ludong Industry Zone, suprafata:58400 M², suprafata cladiri: 56600M²



Sisteme de calitate și asigurarea calității



Fiabilitate ridicată la cost competitiv al proprietății la nivel global

Sistemele de management al calității al seriilor BTL la unitățile de producție AK4, AK7 sunt menținute la toate nivelurile de producție în conformitate cu ISO 9001 și API Q1.

Inspecțiile critice sunt efectuate la fabrica Sanqiao.

Fiecare robinet este serializat în mod unic, asigurând trasabilitatea principalelor etape de producție.

Rapoartele de testare a materialelor, inclusiv caracteristicile chimice, mecanice ale materialelor și rezultatele testelor de presiune, sunt disponibile pentru fiecare robinet conform EN.10204 de tip 3.1.

Se efectuează ingineria BTL, precum și serviciile de vânzare, service al produsului, service în teren și servicii legate de garanție pentru toate produsele BTL.



Seriile BTL AK4 & AK7, robinete cu bila din trei piese forjate montate pe conducte

Robinetele cu bilă BTL pentru conducte sunt fabricate în strictă conformitate cu standardele de calitate API 6D, API Q1 și ISO 9001, cu criterii de proiectare pentru API 6D, ASME B16.34 și standardele industriale aplicabile. Toate robinetele cu bilă AK4, AK7 din seria BTL sunt monogramate API 6D.

Proiectarea, standarde si specificatii ale produselor in acest buletin :

API 6D— Specificații pentru robinete de conducte	ASME B16.34—Robinete oțel-cu flanșe și sudate cap-cap
API 607/ISO 10497— Testul de incendiu pt robinete	EN ISO 5211 —Robinete partial industriale, atașamente de acționare rotative
API 6FA— Specificații pt testul de incendiu pt robinete	EN 558-1,2 – Dimensiuni față-față pentru robinete
API Q1— Specificații pentru programe de calitate.	EN 1092-1 – Flanșe pt conducte, robinete, fittinguri și accesorii. ISO 5208— Testarea presiunii pt robinete.
API 608— Robinete cu bilă metalică	NACE MR- 01-75 /ISO 15156
ASME B16. 5— Flanșe conducte de oțel și fittinguri	ASME B16.25— Capete sudate cap la cap
ASME B16. 10 – Dim. față-n față & capăt la capăt.	MSS SP-44— Flanșe conducte de oțel
ASME B16. 47— Flanșe de oțel cu diametru mare : NPS- 26 60	

Specificând robinete cu bilă BTL de trei piese montate pe conducte

Exemplu figura BTL număr : AK4-F-030-1-09-1-RF-2

Describe un robinet cu bilă montat pe tronson de clasa ASME 300, proiectat cu 3 piese cu bolțuri, trecere completă, capete cu flanșe laterale ridicate, materialul corpului fiind A105, bilă și tijă de oțel carbon, placate cu nichel, inserții scaun RPTFE, operat de un angrenaj.

A	K	4	F	0	3	0	1	0	9	1	R	F	2	XXX
1	2	3	4	5	6	7	8	9	10					

1. Tipul de robinet		2. Design corp		3. Bore		4. Evaluare presiune		5. Material corp		6. Trim Material	
Cod	Tip	Cod	stilul corpului	Cod	Trecere	Cod	Clasă	Cod	Material	Cod	Material
AK	Robinet cu bilă montat pe conductă	4	corp forjat, corp cu bolt secționat	R	Trecere redusă	015	Class 150	1	A105	09	A105+ENP
		7	corp forjat, corp complet sudat	F	Trecere completă	030	Class 150	2	LF2	10	LF2+ENP
				S	Trecere Standard	040	Class 400	3	304SS	11	304SS
						060	Class 600	4	316SS	12	316SS
						900	Class 900	5	F51 DSS	13	F51 DSS
						150	Class 1500	6	Inconel	14	Inconel
						250	Class 2500	7	410 SS	15	410 SS
								8	altele	16	altele

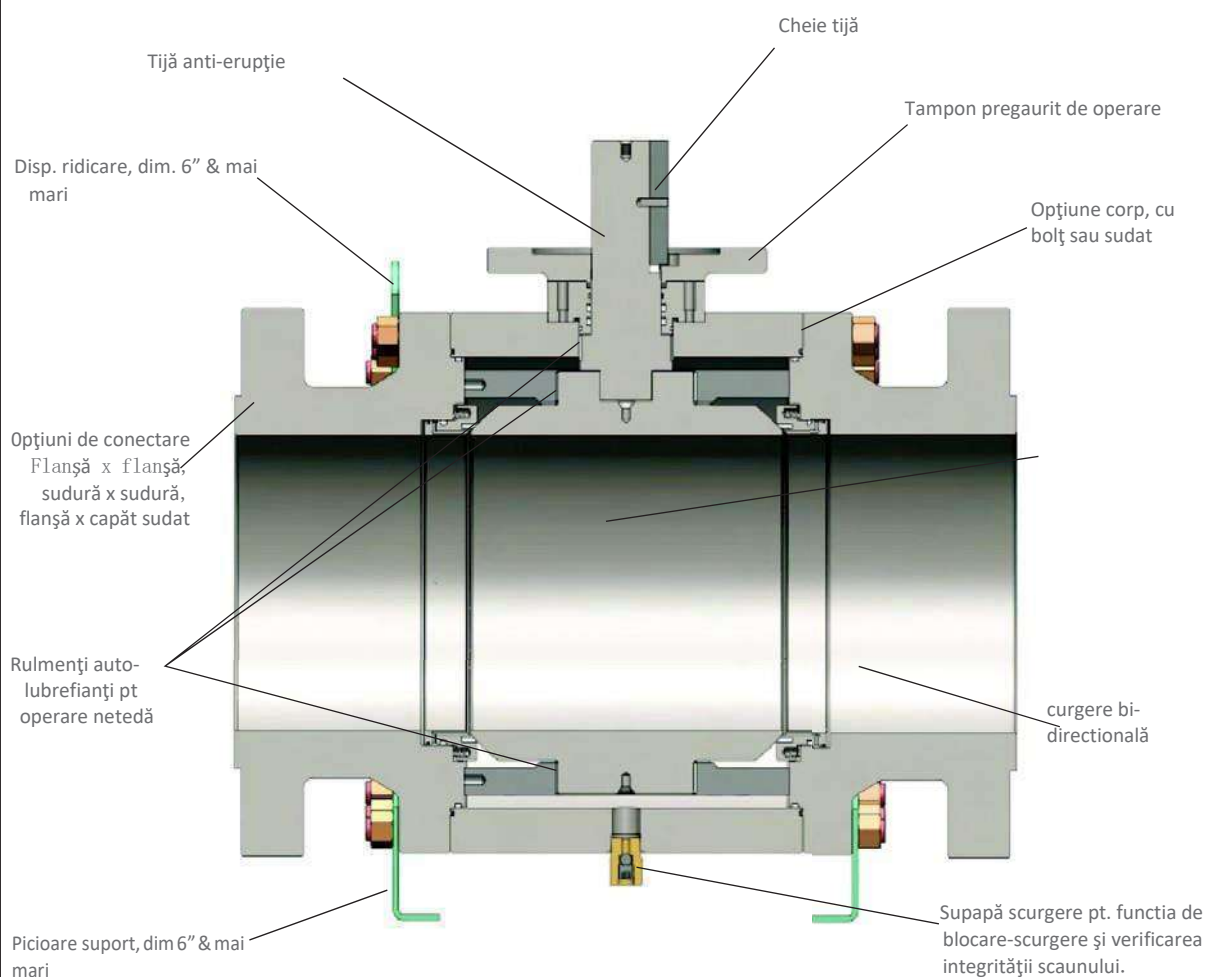
7. Material etanșare scaun		8. Conexiune capăt		9. Operator		10. Modificator cod	
Cod	Material scaun	Cod	Capete	Cod	Material	Cod	Descriere
1	R-PTFE (PMSS)	RF	Flg-RF	1	Pârghie	xxx	configurare specială cum ar fi material exotic, scaun specific sau compuși de etanșare, consultați reprezentantul BTL pentru modificări identificare cod
2	NYLON (PMSS)	RJ	Flg-RTJ	2	Angrenaj		
3	DEVILON (PMSS)	FF	Flg-FF	3	Acționare electrică		
4	VITON (PMSS)	WW	WE x WE	4	Acționare pneumatică		
5	HNBR (PMSS)	WF	WE x RF	6	Tijă goală		
6	Tung.Carbide (scaun metalic)	WJ	WE x RTJ	7	altele		
7	Ni55/Ni60 bazat pe Ni (scaun metalic)						
8	Stellite (scaun metalic)						

Standarde de proiectare aplicabile	
Proiectare de bază	API 6D, API 608
	ASME B16. 34
Test presiune	API 6D
Capăt la capăt	ASTM B16.10, EN558-1
	API 6D
Capete flanșate	B16. 5, B16. 47, EN1092-1
Capete sudate	ASME B16. 25



Certificare produs
API 6D
API 607 / API6FA
PED 2014/68/UE, ISO15848-1

CARACTERISTICI PROIECTARE :



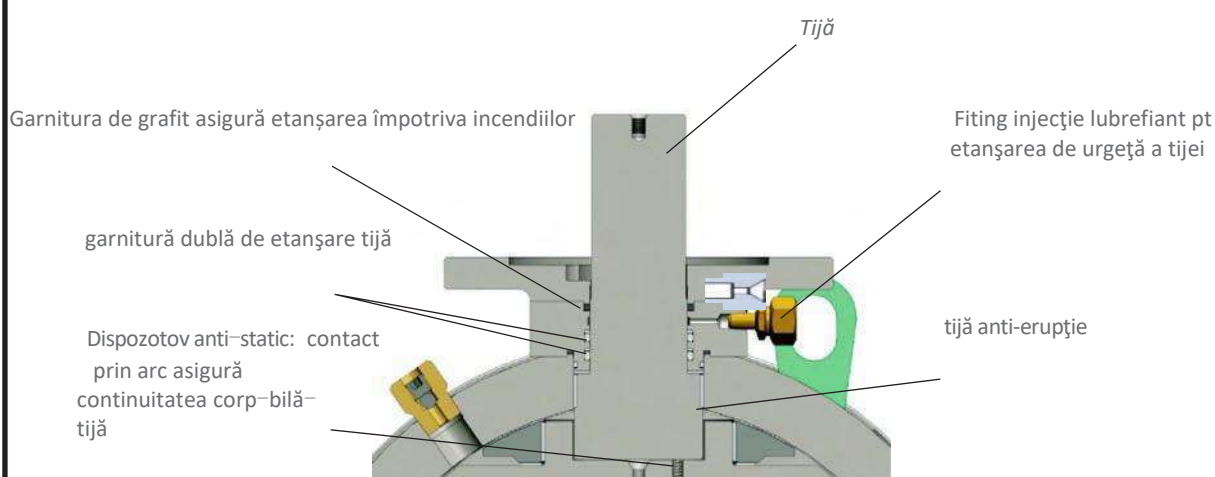
Configurație tipică

Dim. 6" - 12" trecere completă, se arată corp cu bolțuri. Designul corpului sudat este similar

Gama de producție dimensiune corp (inci)																									
Class	2	3	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	42	46	46	48	56
150	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
300	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
600	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
900	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	—	—	—	—	—	—
1500	X	X	X	X	X	X	X	X	X	X	X	X	x	X	X	X	X	X	X	—	—	—	—	—	—
2500	X	X	X	X	X	X	X	X	X	X	X	—	—	—	—	—	—	—	—	—	—	—	—	—	—

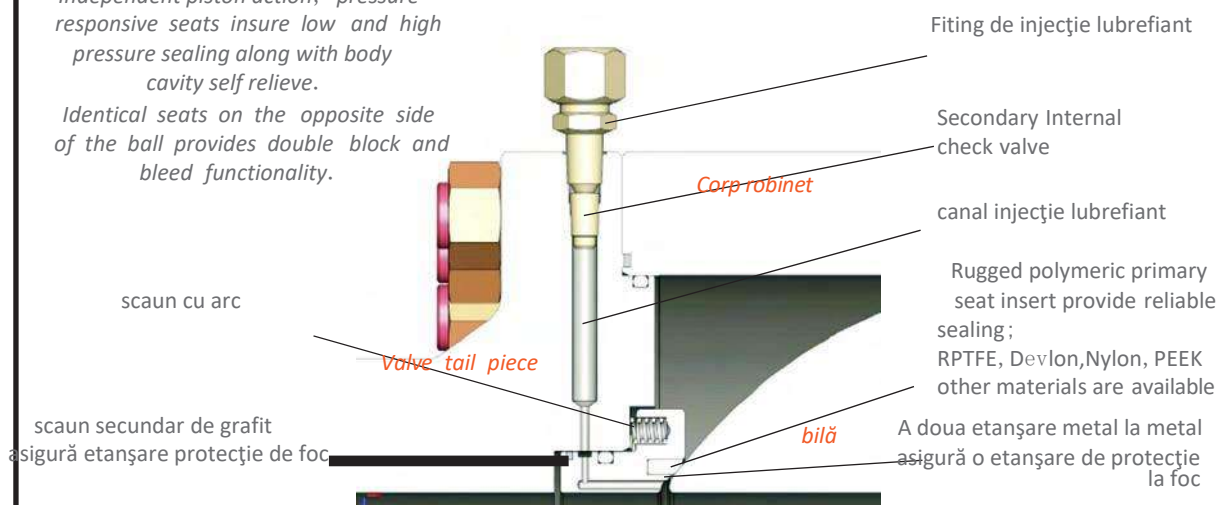
CARACTERISTICI DESIGN-DETALII

Detaliu tijă & system de injecție de etanșare de urgență tijă



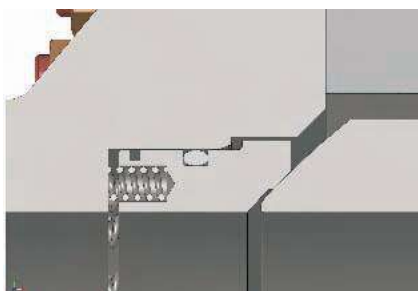
Detaliu scaun & sistem de injecție pentru etanșarea de urgență a scaunului

Double Block & Bleed Seats:
Independent piston action, pressure responsive seats insure low and high pressure sealing along with body cavity self relieve.
Identical seats on the opposite side of the ball provides double block and bleed functionality.

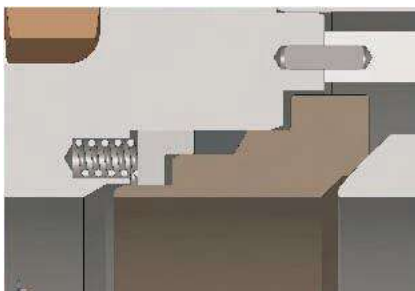


SERIILE AK4,AK7 CARACTERISTICI STANDARD DE PROIECTARE

- * Construcția corpului – corpul este făcut din trei piese forjate unde piesele individuale sunt înșurubate sau sudate laolaltă
- * Construcția bilei, montată pe tronson și făcută dintr-o singură piesă forjată, suprafața bilei poate fi acoperită cu un strat de ENP, suprastrat de metal dur sau TCC sau acoperire bazată pe Ni
- * Tijă anti-erupție, proiectare anti-statică la AK4,AK7
- * Fire safe, Standard BTL Serii AK4,AK7 Ball valves are fire safe to API 6FA and API607, Contact BTL for Specific information
- * PMSS- (primul metal al doilea moale)-Prima etanșare scaun bilă de metal și a doua etanșare moale la AK4,AK7
- * Etanșare scaun metal-la-metal



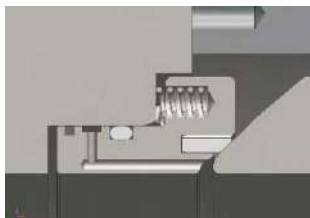
* Scaun de metal pentru o temperatură normală. Service



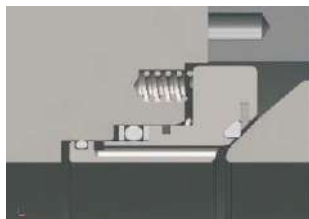
* Scaun de metal pentru o temperatură ridicată. Service

- * Dublă blocare și scurgere (DBB) - asigura integritatea robinetului și protejează munca în aval, un singur robinet cu două scaune care asigură etanșarea din ambele capete ale robinetului cu funcția de aerisire/scurgere a cavității dintre suprafețele scaunelor (API6D) Caracteristica DBB este standard la robinetele AK4, și Ak7)

- * Efect de piston singular (SPE)- Asigură etanșare din direcția conductei. Vezi mai jos proiectarea tipică BTL pt scaun SPE



- * Efect de piston dublu (DPE) – Barieră dublă de etanșare în ambele direcții. Vezi mai jos proiectarea tipică BTL pt scaun DPE



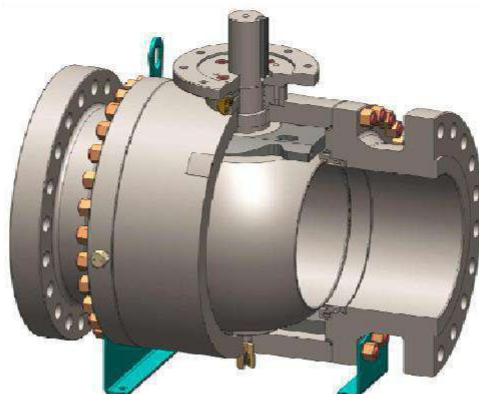
- * Dublă etanșare și scurgere- Un singur robinet cu două scaune, fiecare dintre ele, în poziția închisă, asigură etanșarea împotriva presiunii dintr-o singură sursă, cu funcția de aerisire/scurgere a cavității dintre scaune (API6D), DIB-ul este standard la seriile Ak4,AK7 cu scaune cu efect de dublu piston.

- * Notă: sunt două tipuri de proiectare pentru DIB, unul este DIB-1 (ambele scaune bidirecționale), celălalt DIB-2 (un scaun uni-direcțional, un scaun bi-direcțional)

Typical Configurations – Series AK 4 & Ak7

Se arată trecerea completă. Caracteristicile și configurarea robinetelor cu trecere redusă sunt similare, când sunt aplicabile.

Seria AK4 , corp cu bolțuri, montat pe tronson



Seria AK7 , corp complet sudat, montat pe tronson



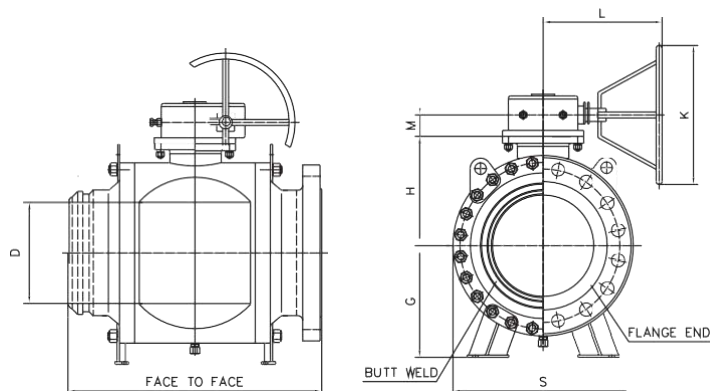
Nr.	Descrierea piesei	Materiale standard			
		Util. la petrol & gaz la temp. normală	Temp. joasă	ajustare corozivă	S. S. corp & ajustare
1	Corp	A105N	A350 LF2	A105N	F316SS
2	Capac	A105N	A350 LF2	A105N	F316SS
3	Bilă	A105N+ENP	A350 LF2+ENP	F316SS	F316SS
4	Tijă	AISI 4140+ENP	A350 LF2+ENP	F316SS	F316SS
5	Inel scaun	A105N+ENP	A350 LF2+ENP	F316SS	F316SS
7	Insertie scaun	RPTFE ,NYLON,DEVLON,VITON,HNBR, or PEEK			
8	Etanșări	VITON	HNBR	HNBR	HNBR
9	Bolț	A193 B7	A320 L7	A193 B7M	A193 B8M
10	Piuliță	A194 2H	A194 7	A194 2HM	A194 8M
11	Fiting de aerisire	C. S. + zinc	S.S.	C. S. + zinc	316SS
12	Fiting de scurgere	C. S. + zinc	S.S.	C. S. + zinc	316SS
13	Fiting de injecție scaun	C. S. + zinc	S.S.	C. S. + zinc	316SS
14	Fiting de injecție tijă	C. S. + zinc	S.S.	C. S. + zinc	316SS

Notă: 1. Alte materiale disponibile la cerere

2. Pentru tipul metal cu metal, material de etanșare scaun și bilă : TCC, bazat pe Ni, Stellite...etc)

3 . În vederea îmbunătățirii produsului, designul și materialele pot fi modificate fără notificări

Date dimensiuni
pentru corpuri sudate
și cu șuruburi



Clasa 150- (PN16,PN25)

mm

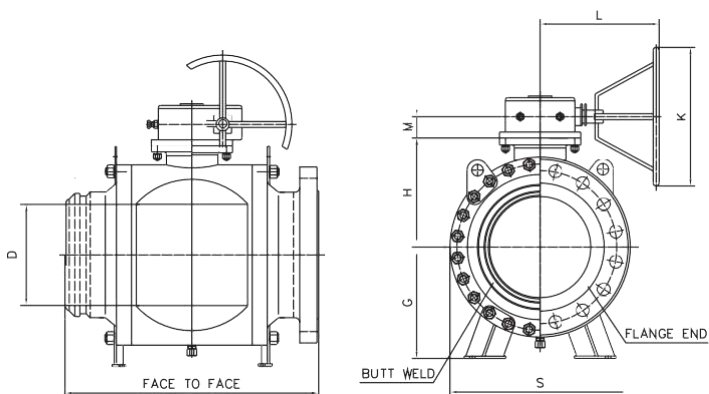
SIZE		FACE TO FACE			S	G	H	M	L	K
NPS	DN	WE	RF	RTJ						
1.5"	38	191	165	178	160.5	103.5	124	28	143	160
2"x 1.5"	38	216	178	191	160.5	103.5	124	28	143	160
2"	49	216	178	191	178	113.5	134	28	143	160
3"x 2"	49	283	203	216	178	113.5	134	28	143	160
3"	74	283	203	216	220	139.5	160	28	143	160
4"x 3"	74	229	305	241	220	139.5	160	28	143	160
4"	100	229	305	241	268	167	178	32	162	240
6"x 4"	100	457	394	406	268	167	178	32	162	240
6"	150	457	394	406	310	215	204.5	45	182	280
8"x 6"	150	521	457	470	310	235	204.5	45	182	280
8"	201	521	457	470	385	255	257	54	336	350
10"x8"	201	559	533	546	385	285	257	54	336	350
10"	252	559	533	546	460	300	294.5	54	336	350
12"x10"	252	635	610	622	460	330	294.5	54	336	350
12"	303	635	610	622	537	340	331	54	500	460
14"x12"	303	762	686	699	537	370	331	54	500	460
14"	334	762	686	699	586	365	356	54	500	460
16"x14"	334	838	762	775	586	395	356	54	500	460
16"	385	838	762	775	658	406	392	54	500	600
18"x16"	385	914	864	876	658	440	392	54	500	600
18"	436	914	864	876	738	465	437	54	500	600
20"x18"	436	991	914	927	738	500	437	54	500	600
20"	487	991	914	927	811	490	474	77	645	600
24"x20"	487	1143	1067	1080	811	550	474	77	645	600
22"	538	♣	991	♣	899	535	517	77	645	600
24"	589	1143	1067	1080	968	565	552	77	645	600
30"x24"	589	1397	1295	♣	968	650	552	77	645	600
26"	633	1245	1143	♣	1050	620	603	77	645	600
28"	684	1346	1245	♣	1134	680	644	77	645	600
30"x28"	684	1524	1372	♣	1134	750	644	77	645	600
30"	735	1397	1295	♣	1217	730	686	77	645	600
36"x30"	735	1727	1524	♣	1217	820	686	77	645	600
32"	779	1524	1372	♣	1288	780	722	87	753	600
34"	830	1626	1473	♣	1372	820	772	87	753	600
36"	874	1727	1524	♣	1444	850	817	87	753	600
38"	925	♣	1600	♣	1523	900	857	87	753	600
40"	976	♣	1670	♣	1604	9300	898	87	753	600
42"	1020	♣	1740	♣	1677	980	940	95	785	600
44"	1070	♣	1810	♣	1752	1015	978	95	785	600
46"	1116	♣	1870	♣	1828	1060	1016.5	95	785	600
48"	1166	♣	1960	♣	1903	1100	1054	95	785	600
56"	1360	♣	2240	♣	2222	1280	1244.5	191	568	600
60"	1458	♣	2400	♣	2377	1360	1322.5	206	590	600



De confirmat după plasarea comenzii

* Consultați un reprezentant BTL pentru informații specifice

Date dimensiuni
pentru corpuri sudate
și cu șuruburi



Clasa 300- (PN40)

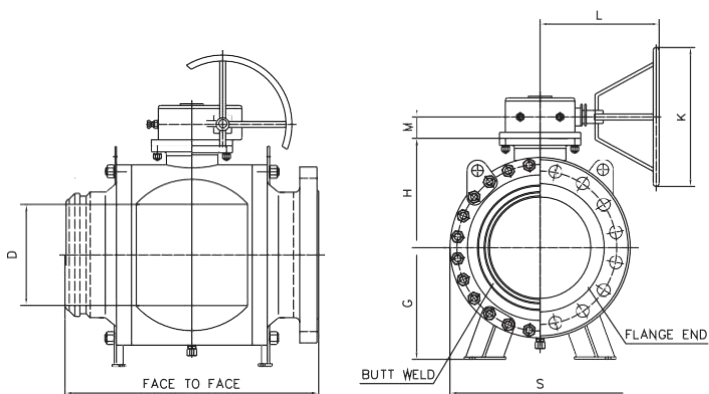
mm

SIZE		FACE TO FACE			S	G	H	M	L	K
NPS	D	WE	RF	RTJ						
1.5"	38	191	191	203	160.5	103.5	124	28	143	160
2"x 1.5"	38	216	216	232	160.5	103.5	124	28	143	160
2"	49	216	216	232	178	113.5	134	28	143	160
3"x 2"	49	283	283	298	178	113.5	134	28	143	160
3"	74	283	283	298	220	139.5	160	28	143	160
4"x 3"	74	305	305	321	220	139.5	160	28	143	160
4"	100	305	305	321	268	167	178	32	162	240
6"x 4"	100	457	403	419	268	167	178	32	162	240
6"	150	457	403	419	310	215	204.5	45	182	280
8"x 6"	150	521	502	518	310	235	204.5	45	182	280
8"	201	521	502	518	385	255	257	54	336	350
10"x8"	201	559	568	584	385	285	257	54	336	350
10"	252	559	568	584	460	300	294.5	54	336	350
12"x10"	252	635	648	664	460	330	294.5	54	336	350
12"	303	635	648	664	537	340	331	54	500	460
14"x12"	303	762	762	778	537	370	331	54	500	460
14"	334	762	762	778	586	365	356	54	500	600
16"x14"	334	838	838	854	586	395	356	54	500	600
16"	385	838	838	854	669	410	402	54	500	600
18"x16"	385	914	914	930	669	435	402	54	500	600
18"	436	914	914	930	750	455	441	77	645	600
20"x18"	436	991	991	1010	750	490	441	77	645	600
20"	487	991	991	1010	824	490	479	77	645	600
24"x20"	487	1143	1143	1165	824	550	479	77	645	600
22"	538	1092	1092	1114	920	555	535	77	645	600
24"	589	1143	1143	1165	990	575	571	77	645	600
30"x24"	589	1397	1397	1422	990	645	571	77	645	600
26"	633	1245	1245	1270	1064	595	608.5	87	753	600
28"	684	1346	1346	1372	1164	660	658	87	753	600
30"x28"	684	1524	1524	1553	1164	720	658	87	753	600
30"	735	1397	1397	1422	1235	730	711	87	753	600
36"x30"	735	1727	1727	1756	1235	820	711	87	753	600
32"	779	1524	1524	1553	1307	770	747.5	95	785	600
34"	830	1626	1626	1654	1386	810	792	95	785	600
36"	874	1727	1727	1756	1464	850	832	95	785	600
38"	925	♣	1680	♣	1540	890	870	95	785	600
40"	976	♣	1760	♣	1627	940	937.5	191	568	600
42"	1020	♣	1840	♣	1697	980	973	191	568	600
44"	1070	♣	1920	♣	1785	1015	1023.5	191	568	600
46"	1116	♣	1980	♣	1855	1050	1058.5	206	590	600
48"	1166	♣	2070	♣	1933	1080	1098	206	590	600
56"	1360	♣	2400	♣	2250	1280	1271	215	674	800
60"	1458	♣	2560	♣	2410	1390	1362.5	170	726	800

♣ De confirmat după plasarea comenzii

* Consultați un reprezentant BTL pentru informații specifice

Date dimensiuni
pentru corpuri sudate
și cu șuruburi



Clasa 400- (PN64)

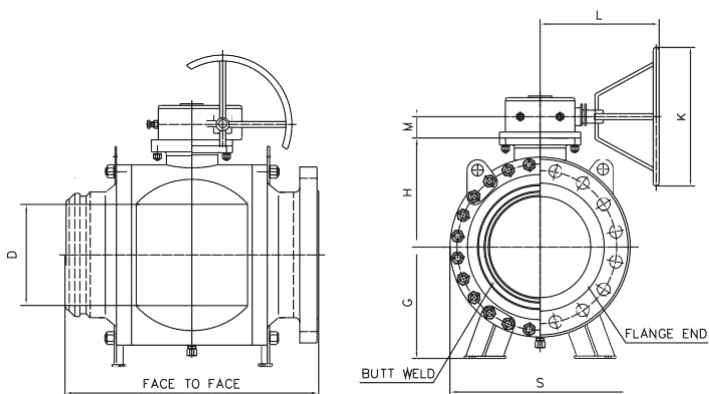
mm

SIZE		FACE TO FACE			S	G	H	M	L	K
NPS	D	WE	RF	RTJ						
1.5"	38	241	241	241	130	75	88	28	143	160
2"x 1.5"	38	292	292	295	130	75	88	28	143	160
2"	49	292	292	295	155	87.5	117	32	162	240
3"x 2"	49	356	356	359	155	87.5	117	32	162	240
3"	74	356	356	359	205	116	150.5	35	182	280
4"x 3"	74	406	406	410	205	116	150.5	35	182	280
4"	100	406	406	410	245	137	171	35	182	280
6"x 4"	100	495	495	498	245	137	171	35	182	280
6"	150	495	495	498	315	220	216	54	336	350
8"x 6"	150	597	597	600	315	240	216	54	336	350
8"	201	597	597	600	388	255	252	54	500	460
10"x 8"	201	673	673	676	388	280	252	54	500	460
10"	252	673	673	676	475	310	304	54	500	600
12"x 10"	252	762	762	765	475	340	304	54	500	600
12"	303	762	762	765	552	345	342	77	645	600
14"x 12"	303	826	826	829	552	380	342	77	645	600
14"	334	826	826	829	598	370	360	77	645	600
16"x 14"	334	902	902	905	598	405	360	77	645	600
16"	385	902	902	905	680	415	413	77	645	600
18"x 16"	385	978	978	981	680	450	413	77	645	600
18"	436	978	978	981	765	460	460	77	645	600
20"x 18"	436	1054	1054	1060	765	495	460	77	645	600
20"	487	1054	1054	1060	848	495	497	87	753	600
24"x 20"	487	1232	1232	1241	848	535	497	87	753	600
22"	538	1143	1143	1153	935	545	555	87	753	600
24"	589	1232	1232	1241	1000	585	590	87	753	600
30"x 24"	589	1524	1524	1537	1000	625	590	87	753	600
26"	633	1308	1308	1321	1090	650	632	87	753	600
28"	684	1397	1397	1410	1165	680	688	95	785	600
30"x 28"	684	1651	1651	1667	1165	720	688	95	785	600
30"	735	1524	1524	1537	1255	725	735	95	785	600
36"x 30"	735	1880	1880	1895	1255	765	735	95	785	600
32"	779	1651	1651	1667	1335	765	780	95	785	600
34"	830	1778	1778	1794	1410	810	835	191	568	600
36"	874	1880	1880	1895	1490	865	880	206	590	600
38"	925	♣	♣	♣	1570	910	925	206	590	600
40"	976	♣	♣	♣	1655	950	970	215	674	800
42"	1020	♣	♣	♣	1725	1005	1020	215	674	800
44"	1070	♣	♣	♣	1820	1045	1060	170	726	800
46"	1116	♣	♣	♣	1900	1085	1110	170	726	800
48"	1166	♣	♣	♣	2000	1150	1152	170	726	800
56"	1360	♣	♣	♣	2310	1320	1336	♣	♣	♣
60"	1458	♣	♣	♣	2500	1400	1435	♣	♣	♣

♣ De confirmat după plasarea comenzii

* Consultați un reprezentant BTL pentru informații specifice

Date dimensiuni
pentru corpuri sudate
și cu șuruburi



Clasa 600- (PN100)

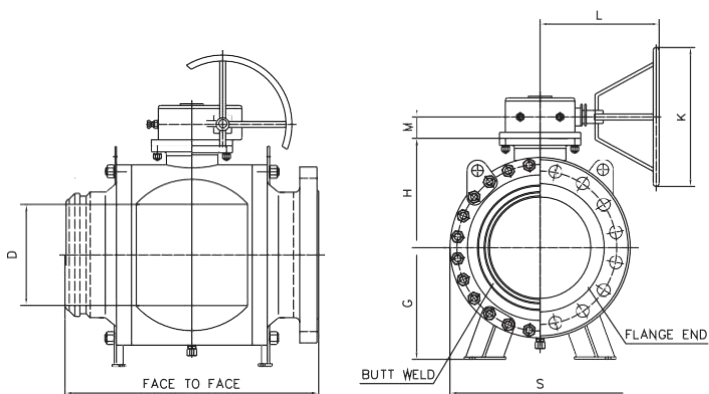
mm

SIZE		FACE TO FACE			S	G	H	M	L	K
NPS	D	WE	RF	RTJ						
1.5"	38	241	241	241	130	75	88	28	143	160
2"x 1.5"	38	292	292	295	130	75	88	28	143	160
2"	49	292	292	295	155	87.5	117	32	162	240
3"x 2"	49	356	356	359	155	87.5	117	32	162	240
3"	74	356	356	359	205	116	150.5	35	182	280
4' x 3"	74	432	432	435	205	116	150.5	35	182	280
4"	100	432	432	435	245	137	171	35	182	280
6"x 4"	100	559	559	562	245	137	171	35	182	280
6"	150	559	559	562	315	220	216	54	336	350
8"x 6"	150	660	660	664	315	240	216	54	336	350
8"	201	660	660	664	388	255	252	54	500	460
10"x8"	201	787	787	791	388	280	252	54	500	460
10"	252	787	787	791	475	310	304	54	500	600
12"x10"	252	838	838	841	475	340	304	54	500	600
12"	303	838	838	841	552	345	342	77	645	600
14"x12"	303	889	889	892	552	380	342	77	645	600
14"	334	889	889	892	605	375	366	77	645	600
16"x14"	334	991	991	994	605	410	366	77	645	600
16"	385	991	991	994	693	420	421.5	77	645	600
18"x16"	385	1092	1092	1095	693	460	421.5	77	645	600
18"	436	1092	1092	1095	776	465	470	77	645	600
20"x18"	436	1194	1194	1200	776	500	470	77	645	600
20"	487	1194	1194	1200	860	505	513.5	87	753	600
24"x20"	487	1397	1397	1407	860	550	513.5	87	753	600
22"	538	1295	1295	1305	945	550	565	87	753	600
24"	589	1397	1397	1407	1024	590	609	87	753	600
30"x24"	589	1651	1651	1664	1024	655	609	87	753	600
26"	633	1448	1448	1461	1105	660	650	87	753	600
28"	684	1549	1549	1562	1185	690	698.5	95	785	600
30"x28"	684	1778	1778	1794	1185	730	698.5	95	785	600
30"	735	1651	1651	1664	1275	735	745	95	785	600
36"x30"	735	2083	2083	2099	1275	770	745	95	785	600
32"	779	1778	1778	1794	1352	775	797	95	785	600
34"	830	1930	1930	1946	1438	825	841	191	568	600
36"	874	2083	2083	2099	1514	870	885	206	590	600
38"	925	♣	1840	♣	1600	920	928.5	206	590	600
40"	976	♣	1920	♣	1680	960	969.5	215	674	800
42"	1020	♣	2000	♣	1761	1010	1023	215	674	800
44"	1070	♣	2080	♣	1845	1050	1065	215	674	800
46"	1116	♣	2160	♣	1925	1100	1116	170	726	800
48"	1166	♣	2260	♣	2010	1155	1159.5	170	726	800
56"	1360	♣	2610	♣	2350	1325	1343	♣	♣	♣
60"	1458	♣	2800	♣	2524	1415	1443	♣	♣	♣

♣ De confirmat după plasarea comenzii

* Consultați un reprezentant BTL pentru informații specifice

Date dimensiuni
pentru corpuri sudate
și cu șuruburi



Clasa 900- (PN150)

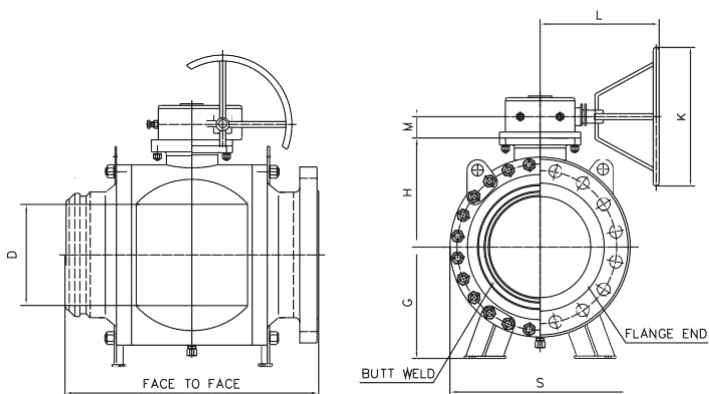
mm

SIZE		FACE TO FACE								
NPS	D	WE	RF	RTJ	S	G	H	M	L	K
1.5"	38	305	305	305	150	83	110	32	162	240
2"x 1.5"	38	369	369	371	150	83	110	32	162	240
2"	49	369	369	371	175	100	134	35	182	280
3"x 2"	49	381	381	384	175	100	134	35	182	280
3"	74	381	381	384	210	118.5	152	35	182	280
4"x 3"	74	457	457	460	210	118.5	152	35	182	280
4"	100	457	457	460	255	140.5	189	54	336	350
6"x 4"	100	610	610	613	255	140.5	189	54	336	350
6"	150	610	610	613	327	220	220	54	500	460
8"x 6"	150	737	737	740	327	240	220	54	500	460
8"	201	737	737	740	414	270	272	54	500	600
10"x8"	201	838	838	841	414	295	272	54	500	600
10"	252	838	838	841	501	320	315	54	645	600
12"x10"	252	965	965	968	501	350	315	54	645	600
12"	303	965	965	968	589	370	368	77	645	600
14"x12"	303	1029	1029	1038	589	400	368	77	645	600
14"	332	1029	1029	1038	630	390	387	77	645	600
16"x14"	332	1130	1130	1140	630	425	387	77	645	600
16"	373	1130	1130	1140	730	440	446	87	753	600
18"x16"	373	1219	1219	1132	730	475	446	87	753	600
18"	423	1219	1219	1132	818	485	500	87	753	600
20"x18"	423	1321	1321	1334	818	520	500	87	753	600
20"	471	1321	1321	1334	910	530	550	87	753	600
24"x20"	471	1549	1549	1568	910	580	550	87	753	600
24"	570	1549	1549	1568	1089	630	649	95	785	600
30"x24"	570	♣	1880	1920	1089	690	649	95	785	600
26"	617	♣	1651	1673	1220	750	710	95	785	600
28"	665	♣	♣	♣	1300	790	755	191	568	600
32"x28"	665	♣	♣	♣	1300	840	755	191	568	600
30"	712	♣	1880	1902	1365	850	815	206	590	600
36"x30"	712	♣	2286	2315	1365	900	815	206	590	600
32"	760	♣	♣	♣	1465	910	850	215	674	800
34"	808	♣	♣	♣	1555	960	885	215	674	800
36"	855	♣	2286	2315	1650	1020	970	215	674	800
40"	956	♣	♣	♣	1815	1120	1060	170	726	800
42"	1006	♣	♣	♣	1915	1200	1110	♣	♣	♣
48"	1149	♣	♣	♣	2160	1330	1250	♣	♣	♣

♣ De confirmat după plasarea comenzii

* Consultați un reprezentant BTL pentru informații specifice

Date dimensiuni
pentru corpuri sudate
și cu șuruburi



Clasa 1500- (PN250)

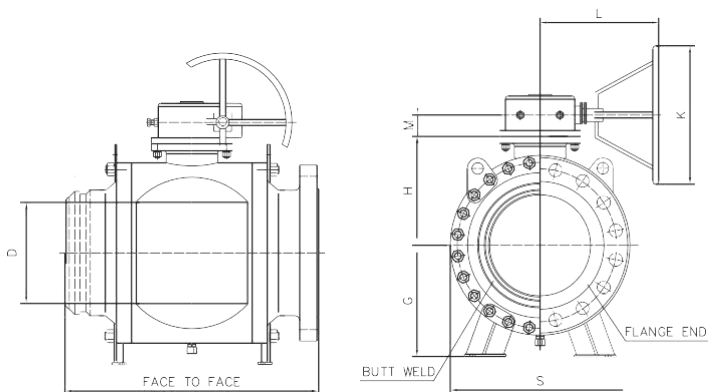
mm

SIZE		FACE TO FACE			S	G	H	M	L	K
NPS	D	WE	RF	RTJ						
1.5"	38	305	305	305	150	83	110	32	162	240
2"x 1.5"	38	369	369	371	150	83	110	32	162	240
2"	49	369	369	371	175	100	134	35	182	280
3"x 2"	49	470	470	473	175	100	134	35	182	280
3"	74	470	470	473	224	126.5	166.5	54	336	350
4"x 3"	74	546	546	549	224	126.5	166.5	54	336	350
4"	100	546	546	549	280	153	199.5	54	336	350
6"x 4"	100	705	705	711	280	153	199.5	54	336	350
6"	144	705	705	711	366	245	246.5	54	500	600
8"x 6"	144	832	832	841	366	270	246.5	54	500	600
8"	192	832	832	841	473	300	300.5	77	645	600
10"x 8"	192	991	991	1000	473	330	300.5	77	645	600
10"	239	991	991	1000	580	360	363	77	645	600
12"x 10"	239	1130	1130	1146	580	395	363	77	645	600
12"	287	1130	1130	1146	690	420	425.5	87	753	600
14"x 12"	287	1257	1257	1276	690	460	425.5	87	753	600
14"	315	1257	1257	1276	750	450	465	87	753	600
16"x 14"	315	1384	1384	1407	750	490	465	87	753	600
16"	360	1384	1384	1407	855	510	521.5	87	753	600
18"x 16"	360	♣	1537	1559	855	545	521.5	87	753	600
18"	406	♣	1537	1559	1020	635	642	87	753	600
20"x 18"	406	♣	1664	1686	1020	695	642	87	753	600
20"	454	♣	1664	1686	1132	690	703	95	785	600
24"x 20"	454	♣	♣	1972	1132	740	703	95	785	600
24"	546	♣	♣	1972	1380	820	832	206	590	600
30"x 24"	546	♣	♣	♣	1380	860	832	206	590	600
26"	594	1943	♣	♣	1458	860	878	215	674	800
28"	641	♣	♣	♣	1580	920	935	215	674	800
32"x 28"	641	♣	♣	♣	1580	980	935	215	674	800
30"	686	♣	♣	♣	1690	980	995	170	726	800
36"x 30"	686	♣	♣	♣	1690	1040	995	170	726	800
32"	730	♣	♣	♣	1800	1030	1045	♣	♣	♣
34"	775	♣	♣	♣	1920	1100	1123	♣	♣	♣
36"	819	♣	♣	♣	2030	1145	1165	♣	♣	♣

♣ De confirmat după plasarea comenzii

* Consultați un reprezentant BTL pentru informații specifice

Date dimensiuni
pentru corpuri sudate
și cu șuruburi



Clasa 2500- (PN420)

mm

SIZE		FACE TO FACE			S	G	H	M	L	K
NPS	D	WE	RF	RTJ						
1.5"	38	384	384	384	172	99	134	35	182	280
2"x 1.5"	38	451	451	454	172	99	134	35	182	280
2"	42	451	451	454	190	108.5	162	40	214	320
3"x 2"	42	578	578	584	190	108.5	162	40	214	320
3"	62	578	578	584	260	149	201.5	54	500	460
4"x 3"	62	673	673	683	260	149	201.5	54	500	460
4"	87	673	673	683	330	192.5	246	54	500	460
6"x 4"	87	914	914	927	330	192.5	246	54	500	460
6"	131	914	914	927	475	300	321	77	645	600
8"x 6"	131	1022	1022	1038	475	300	321	77	645	600
8"	179	1022	1022	1038	635	387.5	411	77	645	600
10"x 8"	179	1270	1270	1292	635	387.5	411	77	645	600
10"	223	1270	1270	1292	775	470	475.5	87	753	600
12"x 10"	223	1422	1422	1445	775	470	475.5	87	753	600
12"	265	1422	1422	1445	900	530	560	95	785	600
14"x 12"	265	♣	♣	♣	900	530	560	95	785	600
14"	292	♣	♣	♣	1005	575	615.5	95	785	600
16"x 14"	292	♣	♣	♣	1005	575	615.5	95	785	600
16"	333	♣	♣	♣	1200	675	731	206	590	600
20"x 16"	333	♣	♣	♣	1200	675	731	206	590	600



De confirmat după plasarea comenzii



* Consultați un reprezentant BTL pentru informații specifice

	CLASA 150		CLASA 300		CLASA 600		CLASA 900		CLASA 1500		CLASA 2500	
NPS	Tors.nominală N.M	ISO	Tors.nominală N.M	ISO	Tors.nominală N.M	ISO	Tors.nominală N.M	ISO	Tors.nominală N.M	ISO	Tors.nominală N.M	ISO
2	40	F07	70	F07	120	F10	320	F12	500	F12	500	F14
3	70	F07	130	F07	260	F12	450	F12	700	F12	1300	F25
4	140	F10	250	F10	430	F12	700	F16	1200	F16	2400	F25
6	320	F12	600	F12	950	F16	1600	F16	3000	F16	6000	F25
8	600	F16	1000	F16	1700	F16	3000	F25	5300	F25	12000	F30
10	1000	F16	1800	F16	3000	F25	5300	F25	9000	F25	23000	F35
12	1800	F25	2800	F25	5000	F25	8500	F25	16000	F25	35000	F40
14	2200	F25	3600	F25	6300	F25	10000	F30	20000	F30	*	*
16	3000	F25	5000	F25	9000	F25	15000	F30	28000	F30	*	*
18	4500	F25	6500	F25	13000	F30	20000	F35	*	*	*	*
20	5500	F25	8800	F25	17000	F30	28000	F35	*	*	*	*
24	8800	F25	14000	F30	28000	F35	47000	F40	*	*	*	*
26	10000	F32	17000	F30	33000	F35	*	*	*	*	*	*
28	12000	F32	21000	F35	42000	F40	*	*	*	*	*	*
30	14000	F32	26000	F35	50000	F40	*	*	*	*	*	*
32	17000	F32	31000	F35	60000	F40	*	*	*	*	*	*
34	20000	F35	37000	F40	70000	F40	*	*	*	*	*	*
36	23000	F35	43000	F40	82000	F48	*	*	*	*	*	*
38	26000	F35	49000	F40	95000	F48	*	*	*	*	*	*
40	30000	F35	56000	F40	108000	F48	*	*	*	*	*	*
42	35000	F40	63000	F40	130000	F60	*	*	*	*	*	*
46	43000	F40	82000	F48	170000	F60	*	*	*	*	*	*
48	49000	F40	90000	F48	190000	F60	*	*	*	*	*	*
56	70000	F48	135000	F60	300000	F70	*	*	*	*	*	*
60	90000	F48	170000	F60	370000	F80	*	*	*	*	*	*

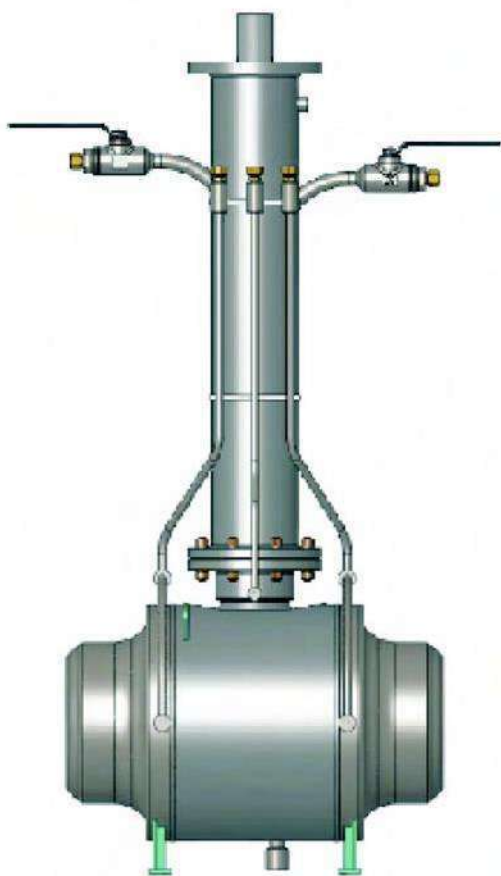
* Consultați BTL pentru moment de torsiune la anumite presiuni

* Torsiunile sunt date pentru robinete cu scaune moi;

* Nu este inclus nici un factor de siguranță.

Sisteme de acoperire externe specifice clienților, extensii ale tije pentru utilizare subterană, fiind disponibile prelungiri ale conductei. La momentul comenzii vă rugăm să specificați lungimea prelungirii conductei precum și lungimea extensiei tije.

EXTENSII pentru SERVICIUL SUBTERAN



Schițe tridimensionale

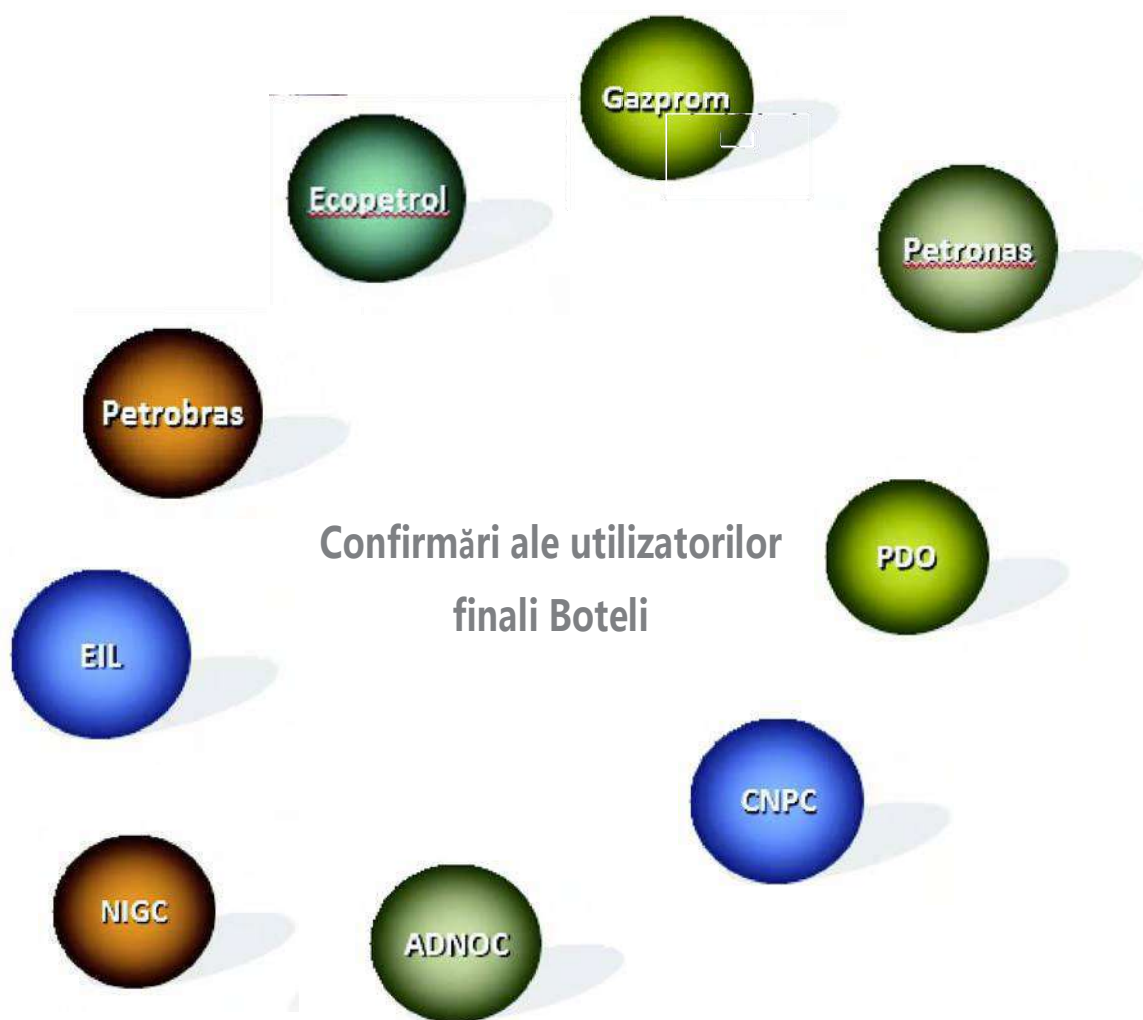


48" 600# robinete cu bilă complet sudate



Texas





Boteli Valve Group Co.,LTD

Tel: 0086 577 6737 6662 _____

Buletin Nr. BTL-B7001 – ediția 1/2017

AUMA NORM

Technical data Part-turn actuators for open-close duty with 3-phase AC motors

Type	Operating time for 90° in seconds		Torque range ¹⁾		Run torque ²⁾	Valve attachment		Valve shaft			Handwheel		Weight
	50 Hz	60 Hz	Min. [Nm]	Max. [Nm]	Max. [Nm]	Standard EN ISO 5211	Option EN ISO 5211	Cylindrical max. [mm]	Square max. [mm]	Two-flat max. [mm]	Ø mm	Turns for 90°	approx. [kg]
SQEx 05.2	4	3	50	150	52.5	F05/F07	F10	25.4	22	22	160	11	29 ³⁾ 34 ⁴⁾
	5.6	4.5										16	
	8	6										11	
	11	9										16	
	16	12										11	
	22	17										16	
	32	25										11	
	63	50										11	
SQEx 07.2	4	3	100	300	105	F05/F07	F10	25.4	22	22	160	11	29 ³⁾ 34 ⁴⁾
	5.6	4.5										16	
	8	6										11	
	11	9										16	
	16	12										11	
	22	17										16	
	32	25										11	
	63	50										11	
SQEx 10.2	8	6	200	450	157.5	F10	F12	38	30	27	200	11	34 ³⁾ 38 ⁴⁾
	11	9		600	210							15	
	16	12										11	
	22	17										15	
	32	25										11	
	45	35										15	
	63	50										11	
SQEx 12.2	11	9	400	900	315	F12	F14	50	36	41	200	30	42 ³⁾ 50 ⁴⁾
	16	12		1200	420							22	
	22	17										30	
	32	25										22	
	45	35										30	
	63	50										22	
	90	75										30	
	125	108										22	
SQEx 14.2	24	20	800	1800	630	F14	F16	60	46	46	200	70	51 ³⁾ 62 ⁴⁾
	36	30		2400	840							51	
	48	40										70	
	72	60										51	
	100	85										70	

General information

Part-turn actuators AUMA NORM require external controls.

For sizes SQEx 05.2 – SQEx 14.2, AUMA offers AMExC or ACExC actuator controls. These can also easily be mounted to the actuator at a later date.

Notes on table

1) Torque range	The tripping torque is adjustable for directions OPEN and CLOSE within the indicated torque range.
2) Run torque	Maximum permissible torque for 15 min. running time.
3) Weight	Indicated weight includes AUMA NORM part-turn actuator with 3-phase AC motor, standard electrical connection, unbored coupling and handwheel
4) Weight with base and lever	Indicated weight includes AUMA NORM part-turn actuator with 3-phase AC motor, standard electrical connection, and handwheel, including base and lever

Features and functions

Explosion protection	Standard:	II2G Ex de IIC T4 or T3 Gb II2G c IIC T4 or T3 II2D Ex tb IIIC T130 °C or T190 °C Db IP6x
	Option:	II2G Ex d IIC T4 or T3 Gb
EC type test certificate	DEKRA 13 ATEX 0016 X	
Type of duty	Short-time duty S2 - 15 min, classes A and B according to EN 15714-2	
	For nominal voltage and +40 °C ambient temperature and at run torque load.	
Motors	3-phase AC asynchronous motor, type IM B9 according to IEC 60034-7, IC410 cooling procedure according to IEC 60034-6	

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Mains voltage, mains frequency	Standard voltages:	
	3-phase AC current Voltages/frequencies	
	Volt	380 400 415 440 460 480 500
	Hz	50 50 50 60 60 60 50
	Special voltages:	
	3-phase AC current - Voltages/frequencies	
	Volt	220 230 240 525 575 600 660 690
	Hz	50 50 50 50 60 60 50 50
	Further voltages on request	
	Permissible variation of mains voltage: $\pm 10\%$	
Overvoltage category	Category III according to IEC 60364-4-443	
Insulation class	Standard:	F, tropicalized
	Option:	H, tropicalized
Motor protection	Standard:	PTC thermistors (according to DIN 44082) PTC thermistors additionally require a suitable tripping device in the controls.
	Option:	Thermoswitches (NC) According to EN 60079-14, a thermal overcurrent protection device (e.g. motor protection switch) must be installed for explosion-proof actuators in addition to the thermoswitches.
Motor heater (option)	Voltages:	110 – 120 V AC, 220 – 240 V AC or 380 – 480 V AC
	Power:	12.5 W
Swing angle	Standard:	Adjustable between 75° and < 105°
	Options:	15° to < 45°, 45° bis < 75°, 105° to < 135°, 135° to < 165°, 165° to < 195°, 195° to < 225°
Self-locking	Yes, part-turn actuators are self-locking if the valve position cannot be changed from standstill while torque acts upon the output drive.	
Manual operation	Manual drive for setting and emergency operation, handwheel does not rotate during electrical operation	
	Options:	Handwheel lockable Handwheel stem extension Power tool for emergency operation with square 30 mm or 50 mm
Indication for manual operation (option)	Indication whether manual operation is active/not active via single switch (1 change-over contact)	
Electrical connection	Standard:	AUMA Ex plug/socket connector with screw-type terminals (KP), max. 38 control terminals / max. power supply 525 V AC
	Options:	AUMA Ex plug/socket connector with terminal blocks (KES) AUMA Ex plug/socket connector (KT); screw-type motor terminals; push-in type control terminals
Threads for cable entries	Standard:	Metric threads
	Options:	Pg-threads, NPT-threads, G-threads
Terminal plan	TPA 00R2AA-101-000 (basic version in combination with PTC thermistors)	
	TPA 00R2AA-101-000 (basic version in combination with thermoswitches)	
Splined coupling for connection to the valve shaft	Standard:	Coupling without bore
	Options:	Machined coupling with bore and keyway, square bore or bore with two-flats according to EN ISO 5211
Valve attachment	Dimensions according to EN ISO 5211 without spigot	

With base and lever (option)

Swing lever	Made of spheroidal cast iron with two or three bores for fixing a lever arrangement. Considering the installation conditions, the lever may be mounted to the output shaft in any desired position.
Ball joints (option)	Two ball joints matching the lever, including lock nuts and two welding nuts, suitable for pipe according to dimension sheet
Fixing	Base with four holes for fastening screws

Electromechanical control unit		
Limit switching	Counter gear mechanism for end positions OPEN and CLOSED	
	Standard:	Single switches (1 NC and 1 NO) silver contact (Ag) for each end position, not galvanically isolated
	Options:	Tandem switches (2 NC and 2 NO) for each end position, switches galvanically isolated Triple switches (3 NC and 3 NO) for each end position, switches galvanically isolated Intermediate position switch (DUO limit switching), adjustable for each direction of operation Gold plated contacts (Au), recommended for low voltage actuator controls
Torque switching	Torque switching adjustable for directions OPEN and CLOSE	
	Standard:	Single switches (1 NC and 1 NO) silver contact (Ag) for each direction, not galvanically isolated
	Options:	Tandem switches (2 NC and 2 NO) for each direction, switches galvanically isolated Gold plated contacts (Au), recommended for low voltage actuator controls
Position feedback signal, analogue (options)	Potentiometer or 0/4 – 20mA (electronic position transmitter)	
Mechanical position indicator	Continuous indication, adjustable indicator disc with symbols OPEN and CLOSED	
Running indication	Blinker transmitter	
Heater in switch compartment	Standard:	Self-regulating PTC heater, 5 – 20 W, 110 – 250 V AC/DC
	Options:	24 – 48 V AC/DC or 380 – 400 V AC
	A resistance type heater of 5 W, 24 V AC is installed in the actuator in combination with AMExC or ACExC actuator controls.	

Electronic control unit (only in combination with ACExC actuator controls)	
Non-intrusive setting (option)	Magnetic limit and torque transmitter (MWG)
Position feedback signal	Via actuator controls
Torque feedback signal	Via actuator controls
Mechanical position indicator	Continuous indication, adjustable indicator disc with symbols OPEN and CLOSED
Running indication	Blinking signal via controls
Heater in switch compartment	Resistance type heater with 5 W, 24 V AC

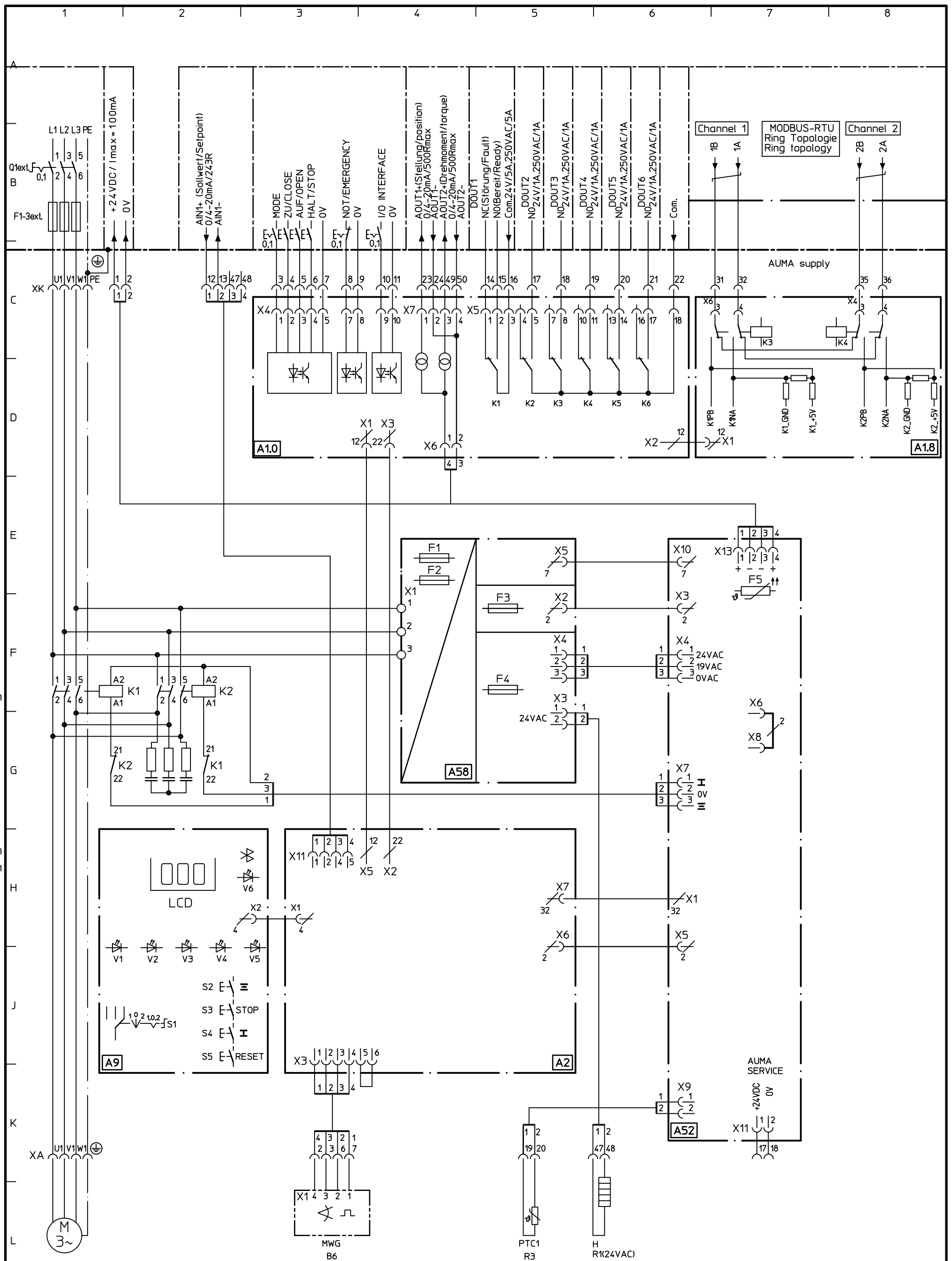
Service conditions		
Use	Indoor and outdoor use permissible	
Mounting position	Any position	
Installation altitude	≤ 2,000 m above sea level	
	> 2,000 m above sea level on request	
Ambient temperature	Standard:	–30 °C to +60 °C
	Options:	–40 °C to +60 °C
		–60 °C to +60 °C
Humidity	Up to 100 % relative humidity across the entire permissible temperature range	
Enclosure protection according to EN 60529	IP68 with AUMA 3-phase AC motor	
	Terminal compartment additionally sealed against interior of actuator (double sealed)	
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: maximum 8 m head of water • Duration of continuous immersion in water: Max. 96 hours • Up to 10 operations during continuous immersion	
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)	
Vibration resistance according to IEC 60068-2-6	2 g, 10 to 200 Hz (AUMA NORM), 1g, 10 to 200 Hz (for actuators with AMExC or ACExC integral controls) Resistant to vibration during start-up or for failures of the plant. However, a fatigue strength may not be derived from this. Valid for part-turn actuators in version AUMA NORM and in version with integral actuator controls, each with AUMA plug/socket connector. Not valid in combination with gearboxes.	

Technical data Part-turn actuators for open-close duty with 3-phase AC motors

Corrosion protection	Standard:	KS	Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Options:	KX	Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.
		KX-G	Same as KX, however aluminium-free version (outer parts)
Coating	Double layer powder coating Two-component iron-mica combination		
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)	
	Option:	Available colours on request	
Lifetime	AUMA part-turn actuators meet or exceed the lifetime requirements of EN 15714-2. Detailed information can be provided on request.		

Further information	
EU Directives	ATEX Directive: (2014/34/EU) Electromagnetic Compatibility (EMC): (2014/30/EU) Low Voltage Directive: (2014/35/EU) Machinery Directive: (2006/42/EC)
Reference documents	Brochure Electric actuators for the automation of valves in the oil and gas industry Electrical data Part-turn actuators SQEx 05.2 – SQEx 14.2 with 3-phase AC motors Dimensions Part-turn actuators SQEx 05.2 – SQEx 14.2 Technical data Electronic position transmitter/potentiometer Technical data for switches

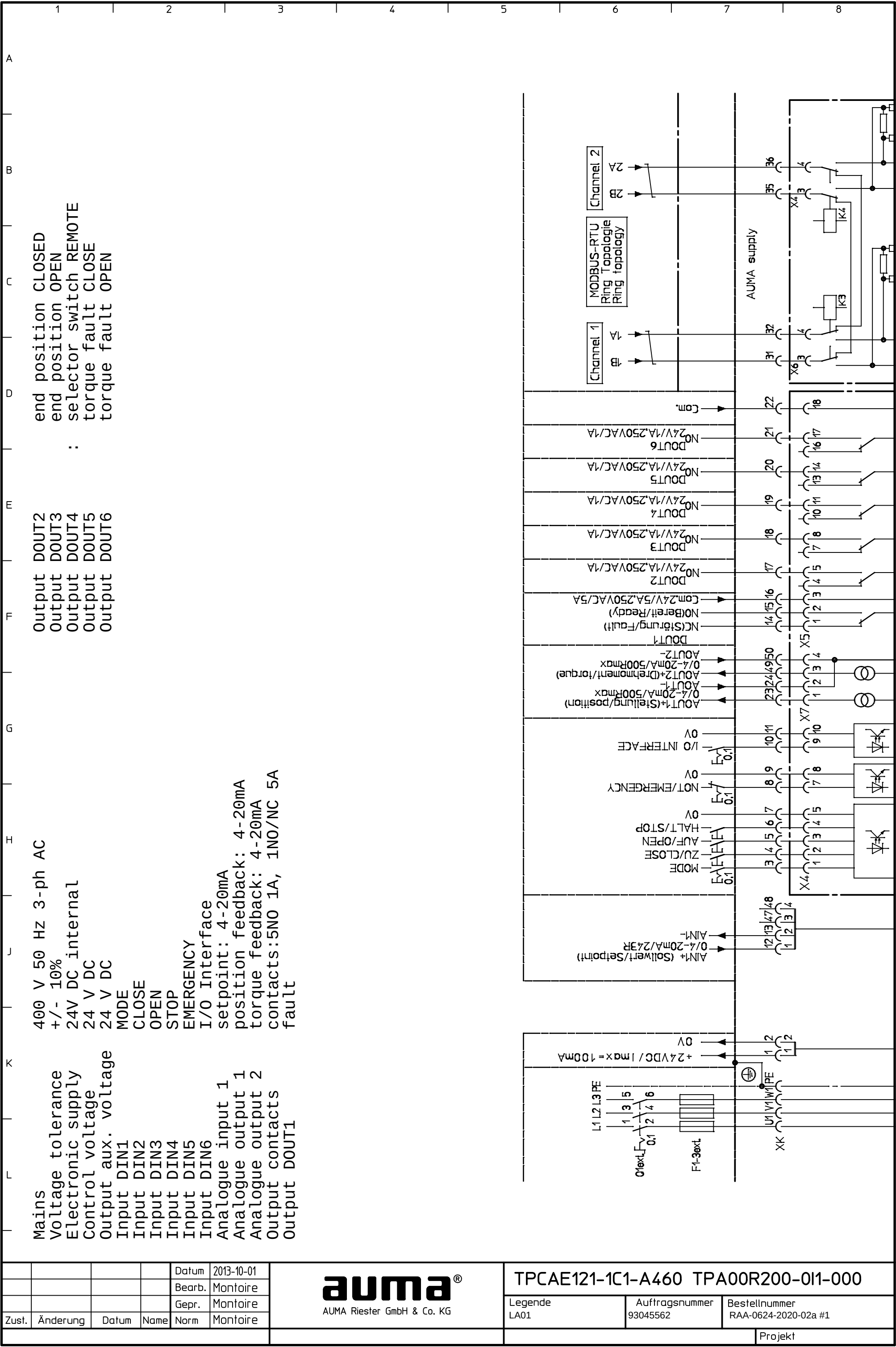
Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht.



For explosion-proof actuators terminals / cage clamps are used instead of plug / socket connector !

				Datum	2013-10-01	auma[®] AUMA Riester GmbH & Co. KG	TPCAE121-1C1-A460 TPA00R200-011-000		
				Bearb.	Montoire		Legende LA01	Auftragsnummer 93045562	Bestellnummer RAA-0624-2020-02a #1
				Gepr.	Montoire				
Zust.	Änderung	Datum	Name	Norm	Montoire				
									Projekt

Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht.



Technical data Actuator controls

General information

ACExC 01.2 actuator controls for controlling multi-turn actuators of the SAEx/SAREx .2 type range and part-turn actuators of the SQEx/SQREx .2 type range with Modbus RTU interface.

Features and functions

Explosion protection	Standard: II2G Ex de IIC T4 or T3 Gb II2D Ex tb IIIC T130 °C or T190 °C Db IP6x Option: II2G Ex d IIC T4 or T3 Gb																																																													
EC type test certificate	In combination with SAEx: DEKRA 11ATEX0008 X In combination with SQEx: DEKRA 13ATEX00016 X																																																													
Power supply	Standard voltages AC: 3-phase AC current Voltages/frequencies <table><tr><td>Volt</td><td>220</td><td>230</td><td>380</td><td>380</td><td>400</td><td>400</td><td>415</td><td>440</td><td>460</td><td>480</td><td>500</td></tr><tr><td>Hz</td><td>60</td><td>50</td><td>50</td><td>60</td><td>50</td><td>60</td><td>50</td><td>60</td><td>60</td><td>60</td><td>50</td></tr></table> 1-phase AC current Voltages/frequencies <table><tr><td>Volt</td><td>110 – 120</td><td>110 – 120</td><td>220 – 240</td><td>220 – 240</td></tr><tr><td>Hz</td><td>50</td><td>60</td><td>50</td><td>60</td></tr></table> Special voltages AC: 3-phase AC current Voltages/frequencies 1-phase AC current Voltages/frequencies <table><tr><td>Volt</td><td>220</td><td>440</td><td>525</td><td>575</td><td>600</td><td>660</td><td>690</td><td>Volt</td><td>208</td></tr><tr><td>Hz</td><td>50</td><td>50</td><td>50</td><td>60</td><td>60</td><td>50</td><td>50</td><td>Hz</td><td>60</td></tr></table> Permissible variation of mains voltage: ±10 % Permissible variation of mains voltage: ±30 % (option) Permissible variation of mains frequency: ±5 % Special voltages DC: (on request) DC current Voltages <table><tr><td>Volt</td><td>24</td><td>48</td><td>60</td><td>110</td><td>125</td><td>220</td></tr></table> Permissible voltage deviation: (on request)	Volt	220	230	380	380	400	400	415	440	460	480	500	Hz	60	50	50	60	50	60	50	60	60	60	50	Volt	110 – 120	110 – 120	220 – 240	220 – 240	Hz	50	60	50	60	Volt	220	440	525	575	600	660	690	Volt	208	Hz	50	50	50	60	60	50	50	Hz	60	Volt	24	48	60	110	125	220
Volt	220	230	380	380	400	400	415	440	460	480	500																																																			
Hz	60	50	50	60	50	60	50	60	60	60	50																																																			
Volt	110 – 120	110 – 120	220 – 240	220 – 240																																																										
Hz	50	60	50	60																																																										
Volt	220	440	525	575	600	660	690	Volt	208																																																					
Hz	50	50	50	60	60	50	50	Hz	60																																																					
Volt	24	48	60	110	125	220																																																								
External supply of the electronics (option)	24 V DC: +20 %/–15 %, Current consumption: Basic version approx. 250 mA, with options up to 500 mA External power supply must have reinforced insulation against mains voltage in accordance with IEC 61010-1 and may only be supplied by a circuit limited to 150 VA in accordance with IEC 61010-1.																																																													
Current consumption	Current consumption of controls depending on mains voltage: For permissible variation of mains voltage of ±10 %: 100 to 120 V AC = max. 740 mA 208 to 240 V AC = max. 400 mA 380 to 500 V AC = max. 250 mA 515 to 690 V AC = max. 200 mA For permissible variation of mains voltage of ±30 %: 100 to 120 V AC = max. 1,200 mA 208 to 240 V AC = max. 750 mA 380 to 500 V AC = max. 400 mA 515 to 690 V AC = max. 400 mA																																																													
Overvoltage category	Category III according to IEC 60364-4-443																																																													
Rated power	Actuator controls are designed for nominal motor power, refer to Electrical data pertaining to the actuator																																																													

Technical data Actuator controls

Switchgear	Standard: Reversing contactors (mechanically and electrically interlocked) for AUMA power classes A1/A2 Options: Reversing contactors (mechanically and electrically interlocked) for AUMA power class A3 Thyristor unit for mains voltage up to 500 V AC (recommended for modulating actuators) for AUMA power classes B1, B2 and B3 The reversing contactors are designed for a lifetime of 2 million starts. For applications requiring a high number of starts, we recommend the use of thyristor units. For the assignment of AUMA power classes, please refer to electrical data on actuator.
Control and feedback signals	Via Modbus RTU interface
Fieldbus interface with additional input signals (options)	2 free analogue inputs (0/4 – 20 mA), 4 free digital inputs - Signal transmission is made via fieldbus interface - Inputs OPEN, STOP, CLOSE, EMERGENCY, I/O interface, MODE (via opto-isolator thereof OPEN, STOP, CLOSE, MODE with one common and EMERGENCY, I/O interface respectively without common) - Control inputs: OPEN, STOP, CLOSE, EMERGENCY - I/O interface: Selection of control type (fieldbus interface or additional input signals) - MODE: Selection between open-close duty (OPEN, STOP, CLOSE) or modulating duty (0/4 – 20 mA position setpoint) - Additionally 1 analogue input (0/4 – 20 mA) for position setpoint - Inputs OPEN, STOP, CLOSE, EMERGENCY, I/O interface, MODE (via opto-isolator thereof OPEN, STOP, CLOSE, MODE with one common and EMERGENCY, I/O interface respectively without common) - Control inputs: OPEN, STOP, CLOSE, EMERGENCY - I/O interface: Selection of control type (fieldbus interface or additional input signals) - MODE: Selection between open-close duty (OPEN, STOP, CLOSE) or modulating duty (0/4 – 20 mA position setpoint) - Additionally 1 analogue input (0/4 – 20 mA) for setpoint position and 1 analogue input (0/4 – 20 mA) for actual process value
Control voltage and current consumption of optional, digital additional inputs	Standard: 24 V DC, current consumption: approx. 10 mA per input Options: 48 V DC, current consumption: approx. 7 mA per input 60 V DC, current consumption: approx. 9 mA per input 115 V DC, current consumption: approx. 15 mA per input 100 – 120 V AC, current consumption : approx. 15 mA per input All input signals must be supplied with the same potential.
Status signals	Via Modbus RTU interface
Fieldbus interface with additional output signals (options)	Additional, binary output signals (only available in combination with additional input signals (option)) 6 programmable output contacts: 5 potential-free NO contacts with one common, max. 250 V AC, 1 A (resistive load) Default configuration: End position CLOSED, end position OPEN, selector switch REMOTE, torque fault CLOSE, torque fault OPEN 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) Default configuration: Collective fault signal (torque fault, phase failure, motor protection tripped) 6 programmable output contacts: 5 potential-free change-over contacts with one common, max. 250 V AC, 1 A (resistive load) 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) 6 programmable output contacts: 6 potential-free change-over contacts without one common, max. 250 V AC, 5 A (resistive load) 6 programmable output contacts: 4 mains failure proof potential-free NO contacts with one common, max. 250 V AC, 1 A (resistive load), 1 potential-free NO contact, max. 250 V AC, 1 A (resistive load), 1 potential-free change-over contact, max. 250 V AC, 5 A (resistive load) 6 programmable output contacts: 4 mains failure proof potential-free NO contacts, max. 250 V AC, 5 A (resistive load), 2 potential-free change-over contacts, max. 250 V AC, 5 A (resistive load), All binary output signals must be supplied with the same potential. - Analogue output signal for position feedback - Galvanically isolated position feedback 0/4 – 20 mA (load max. 500 Ω)
Voltage output	Standard: Auxiliary voltage 24 V DC: max. 100 mA for supply of control inputs, galvanically isolated from internal voltage supply. Option: Auxiliary voltage 115 V AC: max. 30 mA for supply of control inputs, galvanically isolated from internal voltage supply (Not possible in combination with PTC tripping device)

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document.

Technical data Actuator controls

Redundancy (option)	Redundant line topology with universal redundancy behaviour according to AUMA redundancy I or II Redundant loop topology in combination with SIMA Master Station • Max. number of actuators with actuator controls per redundant loop: 247 units • Max. possible cable length between the actuators equipped with controls without external repeater: 1,200 m • Max. possible total length per redundant ring: approx. 290 km • Automatic commissioning of the redundant ring by means of the SIMA Master Station
FO cable connection (option)	• Connector types: FSMA connector • FO cables - Multi-mode: 62,5(50)/125 µm, range approx. 2.6 km (max. 3.0 dB/km) • Topologies: Line and star • Baud rate: up to 115.2 kbit/s • Optical budget: - Multi-mode: 8.0 dB for 62.5 µm/4.0 dB for 50 µm • Wave length: 850 nm • FO coupler by Bartec required at DCS, reference addresses: AUMA or www.bartec.de
Local controls	Standard: • Selector switch: LOCAL - OFF - REMOTE (lockable in all three positions) • Push buttons: OPEN, STOP, CLOSE, RESET - Local STOP The actuator can be stopped via push button STOP of local controls if the selector switch is in position REMOTE. (Not activated when leaving the factory.) • 6 indication lights: - End positions and running indication CLOSED (yellow), torque fault CLOSE (red), motor protection tripped (red), torque fault OPEN (red), end position and running indication OPEN (green), Bluetooth (blue) • Graphic LC display: illuminated Option: • Special colours for the indication lights: - End position CLOSED (green), torque fault CLOSE (blue), torque fault OPEN (yellow), motor protection tripped (violet), end position OPEN (red)
Bluetooth communication interface	Bluetooth class II chip, version 2.1: With a range up to 10 m in industrial environments, supports the SPP Bluetooth profile (Serial Port Profile). Required accessories: • AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) • AUMA Assistant App (Commissioning and Diagnostic Tool for Android devices)
Application functions	Standard: • Selectable type of seating, limit or torque seating for end position OPEN and end position CLOSED • Torque by-pass: Adjustable duration (with adjustable peak torque during start-up time) • Start and end of stepping mode as well as ON and OFF times: can be set individually for directions OPEN and CLOSE, 1 to 1,800 seconds • Any 8 intermediate positions between 0 and 100 %, reaction and signal behaviour programmable • Running indication blinking: can be set • Positioner: - Position setpoint via fieldbus interface - Automatic adaptation of dead band (adaptive behaviour selectable) - Change-over between OPEN-CLOSE control and setpoint control via fieldbus Options: • PID process controller: with adaptive positioner, via 0/4 – 20 mA analogue inputs and Modbus for process setpoint and actual process value • Multipoint valve: Up to 16 positions, signals (pulse or edge) • Automatic deblocking: Up to 5 operation trials, travel time in opposite direction can be set

Technical data Actuator controls

Safety functions	Standard:	- EMERGENCY operation (programmable behaviour) - Via additional input (option, low active) or via fieldbus interface - Reaction can be selected: Stop, run to end position CLOSED, run to end position OPEN, run to intermediate position - Torque monitoring can be by-passed during EMERGENCY operation - Thermal protection can be by-passed during EMERGENCY operation (only in combination with thermoswitch within actuator, not with PTC thermistor).
	Options:	- Release of local controls via fieldbus interface: Thus, actuator operation can be enabled or disabled via push buttons on local controls. - Local STOP: - The actuator can be stopped via push button STOP of local controls if the selector switch is in position REMOTE. (Not activated when leaving the factory.) - Interlock for main/by-pass valve: Enabling the operation commands OPEN or CLOSE via fieldbus interface - PVST (Partial Valve Stroke Test): programmable to check the function of both actuator and actuator controls: Direction, stroke, operation time, reversing time
Monitoring function		- Valve overload protection: adjustable, results in switching off and generates fault signal - Motor temperature monitoring (thermal monitoring): results in switching off and generates fault indication - Monitoring the heater within actuator: generates warning signal - Monitoring of permissible on-time and number of starts: adjustable, generates warning signal - Operation time monitoring: adjustable, generates warning signal - Phase failure monitoring: results in switching off and generates fault signal - Automatic correction of rotation direction upon wrong phase sequence (3-ph AC current)
Diagnostic function		- Electronic device ID with order and product data - Logging of operating data: A resettable counter and a lifetime counter each for: - Motor running time, number of starts, torque switch trippings in end position CLOSED, limit switch trippings in end position CLOSED, torque switch trippings in end position OPEN, limit switch trippings in end position OPEN, torque faults CLOSE, torque faults OPEN, motor protection trippings - Time-stamped event report with history for setting, operation and faults - Status signals according to NAMUR recommendation NE 107: "Failure", "Function check", "Out of specification", "Maintenance required" - Torque characteristics (for version with MWG in actuator): 3 torque characteristics (torque-travel characteristic) for opening and closing directions can be saved separately. - Torque characteristics stored can be shown on the display.
Motor protection evaluation	Standard:	PTC tripping device in combination with PTC thermistors within actuator motor
	Option:	Thermal overload relay in controls combined with thermoswitches within actuator
Overvoltage protection (option)		Protection of the actuator and control electronics against overvoltages on the fieldbus cables of up to 4 kV
Electrical connection	Standard:	AUMA Ex plug/socket connector with screw-type terminals (KP), max. 38 control terminals / max. supply voltage 525 V AC
	Options:	- AUMA Ex plug/socket connector with terminal blocks (KES), increased safety Ex e - AUMA Ex plug/socket connector with terminal blocks (KES), flameproof enclosure Ex d - AUMA Ex plug/socket connector (KT); screw-type motor terminals; push-in type control terminals
Threads for cable entries	Standard:	Metric threads
	Options:	Pg-threads, NPT-threads, G-threads
Wiring diagram (basic version)		TPCAC000-1A1-A410 TPA00R2AA-0A1-000

Further options for version with MWG in actuator

Setting of limit and torque switching via local controls

Torque feedback signal	Via fieldbus interface
	Galvanically isolated analogue output 0/4 – 20 mA (load max. 500 Ω) Option, only possible in combination with output contacts.
Wiring diagram (basic version)	TPCAC000-1A1-A410 TPA00R200-0I1-000

Setting/programming the Modbus RTU interface

Setting the Modbus RTU interface	Baud rate, parity and Modbus address are set via the display of actuator controls
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Technical data Actuator controls

General data of the Modbus RTU interface		
Communication protocol	Modbus RTU according to IEC 61158 and IEC 61784	
Network topology	- Line (fieldbus) structure. When using repeaters, tree structures can also be implemented. - Coupling and uncoupling of devices during operation without affecting other devices is possible.	
Transmission medium	Twisted, screened copper cable according to IEC 61158	
Modbus RTU interface	EIA-485 (RS-485)	
Transmission rate/cable length	Redundant line topology:	
	Baud rate (kbit/s)	Max. cable length (segment length) without repeater
	9.6 – 115.2	1,200 m
	Possible cable length with repeater (total network cable length)	
	Approx. 10 km	
	Redundant loop topology:	
	Baud rate (kbit/s)	Max. cable length between actuators (without repeater)
	9.6 – 115.2	1,200 m
	Max. possible cable length of redundant loop	
	Approx. 290 km	
Device types	Modbus slave, e.g. devices with digital and/or analogue inputs/outputs such as actuators, sensors	
Number of devices	32 devices without repeater, with repeater expandable to 247	
Fieldbus access	Polling between master and slaves (query response).	
Supported Modbus functions (services)	01	Read Coil Status
	02	Read Input Status
	03	Read Holding Registers
	04	Read Input Registers
	05	Force Single Coil
	15 (0FHex)	Force Multiple Coils
	06	Preset Single Register
	16 (10Hex)	Preset Multiple Registers
	17 (11Hex)	Report Slave ID
	08	Diagnostics:
	• 00 00	Loopback
	• 00 10 (0AHex)	Clear Counters and Diagnostic Register
	• 00 11 (0BHex)	Return Bus Message Count
	• 00 12 (0CHex)	Return Bus Communication Error Count
	• 00 13 (0DHex)	Return Bus Exception Error Count
	• 00 14 (0EHex)	Return Slave Message Count
	• 00 15 (0FHex)	Return Slave No Response Count
	• 00 16 (10Hex)	Return Slave NAK Count
	• 00 17 (11Hex)	Return Slave Busy Count
	• 00 18 (12Hex)	Return Character Overrun Count

Commands and signals of the Modbus RTU interface	
Process representation output (command signals)	OPEN, STOP, CLOSE, position setpoint, RESET, EMERGENCY operation command, enable local controls, Interlock OPEN/CLOSE
Process representation input (feedback signals)	- End positions OPEN, CLOSED - Actual position value - Actual torque value, requires MWG in actuator - Selector switch in position LOCAL/REMOTE - Running indication (directional) - Torque switches OPEN, CLOSED - Limit switches OPEN, CLOSED - Manual operation by handwheel or via local controls - Analogue (2) and digital (4) customer inputs

Technical data Actuator controls

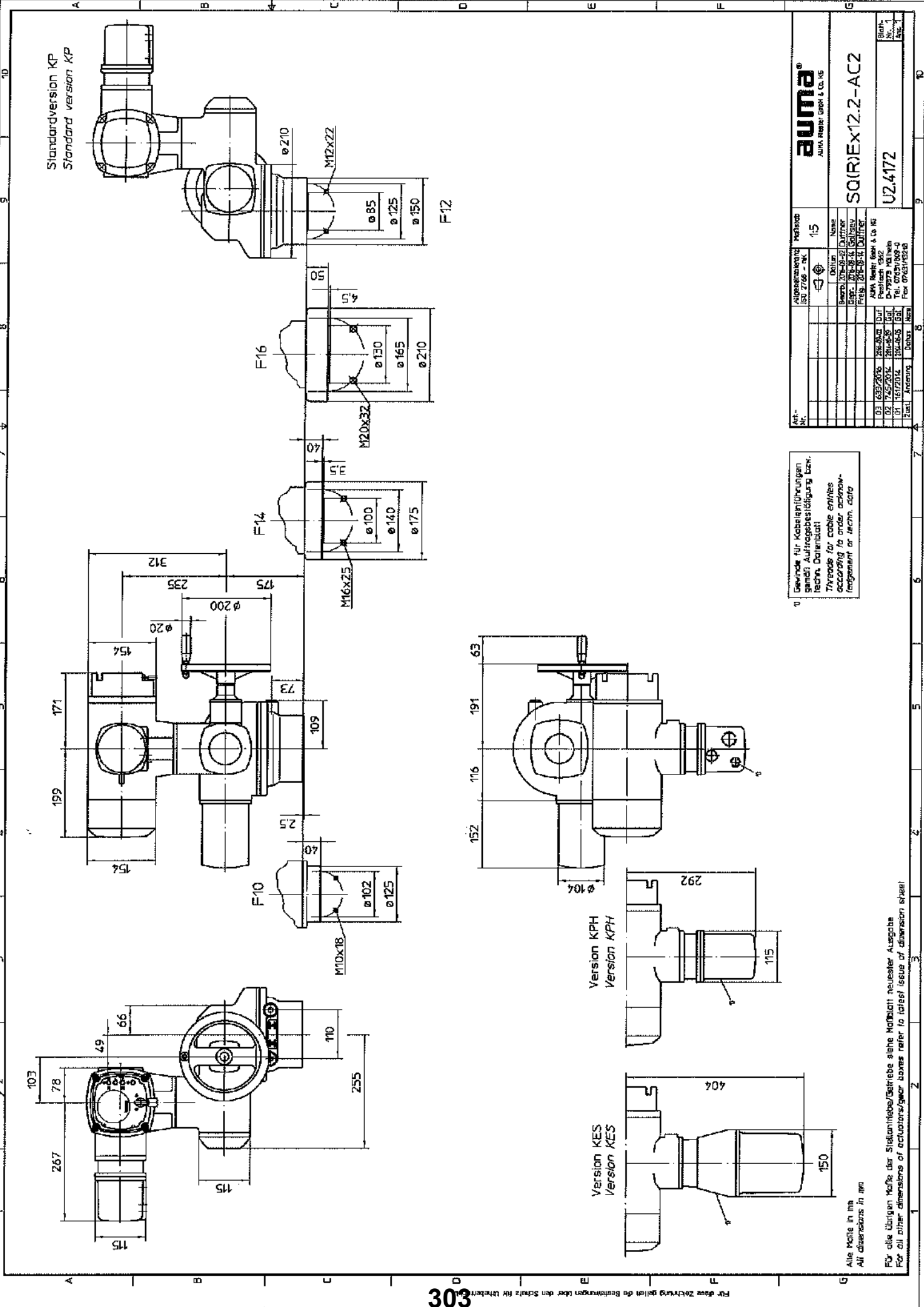
Process representation input (fault signals)	• Motor protection tripped • Torque switch tripped in mid-travel • One phase missing • Failure of analogue customer inputs
Behaviour on loss of communication	The behaviour of the actuator is programmable: • Stop in current position • Travel to end position OPEN or CLOSED • Travel to any intermediate position • Execute last received operation command

Service conditions	
Use	Indoor and outdoor use permissible
Mounting position	Any position
Installation altitude	≤ 2,000 m above sea level > 2,000 m above sea level on request
Ambient temperature	Standard: -30 °C to +40 °C/+60 °C (with internal FO coupler: -25 °C) Options: -40 °C to +40 °C/+60 °C, extreme low temperature version Low temperature versions incl. heating system for connection to external power supply 230 V AC or 115 V AC or internal version 400 V AC
Humidity	Up to 100 % relative humidity across the entire permissible temperature range
Enclosure protection according to EN 60529	IP68 Terminal compartment additionally sealed against interior of actuator controls (double sealed) According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: maximum 8 m head of water • Duration of continuous immersion in water: Max. 96 hours • Up to 10 operations during continuous immersion • Modulating duty is not possible during continuous immersion.
Pollution degree according to IEC 60664-1	Pollution degree 4 (when closed), pollution degree 2 (internal)
Vibration resistance according to IEC 60068-2-6	1 g, from 10 Hz to 200 Hz Resistant to vibration during start-up or for failures of the plant. However, a fatigue strength may not be derived from this. (Not valid in combination with gearboxes)
Corrosion protection	Standard: KS Suitable for use in areas with high salinity, almost permanent condensation, and high pollution. Option: KX Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.
Coating	Double layer powder coating Two-component iron-mica combination
Colour	Standard: AUMA silver-grey (similar to RAL 7037) Option: Available colours on request

Accessories	
Wall bracket	For actuator controls mounting separately from the actuator, including plug/socket connector, connecting cable on request Recommended for high ambient temperatures, difficult access, or heavy vibration during service. Cable length between actuator and actuator controls is max. 100 m (Not suitable for version with potentiometer in the actuator). Instead of the potentiometer, the actuator has to be equipped with an electronic position transmitter. (MWG requires a separate data cable.)
Programming software	AUMA CDT (Commissioning and Diagnostic Tool for Windows-based PC) AUMA Assistant App (Commissioning and Diagnostic Tool for Android devices)

Technical data Actuator controls

Further information	
Weight	Approx. 12 kg (including Ex-plug/socket connector with screw-type terminals)
EU Directives	ATEX Directive: (2014/34/EU) Electromagnetic Compatibility (EMC): (2014/30/EU) Low Voltage Directive: (2014/35/EU) Machinery Directive: (2006/42/EC)
Reference documents	Brochure Electric actuators for the automation of valves in the oil and gas industry Dimensions Multi-turn actuators with AUMATIC integral controls Dimensions Part-turn actuators with AUMATIC integral controls



PANOU DE COMANDA AUMA ACExC 01.2 MODBUS RTU

- Alimentare: Tensiuni standard: curent alternativ trifazat, 3x400V la 50 Hz, Toleranță de tensiune: $\pm 10\%$, Toleranță de frecvență: $\pm 5\%$, Alimentare electronică: Alimentare internă cu 24 V DC
- Comutator: Contactoare de inversare (blocate mecanic și electric), pentru clasa de putere A1
- Protecția motorului: monitorizarea temperaturii motorului prin dispozitivul de declanșare PTC (termistor PTC în motorul actuatorului)
- Comenzi locale: Elemente de funcționare: selector LOCAL - OFF - REMOTE (blocabil în toate cele trei poziții) Apăsăți butoanele OPEN, STOP, CLOSE, RESET, Indicatoare luminoase: 6 lumini indicatoare: Poziție finală ÎNCHIS (galben), defect cuplu ÎNCHIS (roșu), protecția motorului declanșată (roșu), defect de cuplu DESCHIS (roșu), poziția finală DESCHIS (verde), Bluetooth (albastru)
- Afișaj: Afișaj grafic pentru indicarea textului complet al informațiilor actuatorului, setare și solicitare date, Interfață de comunicație: Bluetooth
- Protecție împotriva coroziunii: KS
- Culoare: Culoare specială (culori disponibile la cerere) = RAL 7044
- Protecție carcasă: IP68 conform EN 60529 (în poziție montată)
- Protecție împotriva exploziei: Ex de IIC T4 în combinație cu conexiunea electrică versiunea "Ex e"
- Fieldbus - conform IEC 61158 și IEC 61784
- Control: DESCHIS, STOP, punct de referință poziție ÎNCHIS prin interfață fieldbus, semnale de stare: prin interfață fieldbus, Modbus RTU, redundant, topologie buclă redundantă în combinație cu SIMA Master Station, poziționar: poziționator adaptiv (setpoint de poziție prin fieldbus), fără analog / intrări digitale
- Semnale de intrare / ieșire suplimentare: Semnale de intrare: MOD, ÎNCHIS, DESCHIS, STOP, URGENTĂ, interfață I / O, intrare 0/4 - 20 mA pentru valoarea de referință a poziției Contacte de ieșire (numai în combinație cu semnalul de intrare, cod de comandă R30.02):

- 5 contacte NO fără potențial cu un singur comun (max. 250 V c.a., 1 A), 1 contact de comutare fără potențial (max. 250 V c.a., 5, A) semnal de feedback de poziție 0/4 - 20 mA
- Temperatura ambiantă: -30 ° C până la +60 ° C
- Conexiune electrică: Compartimentul terminalului este închis suplimentar dublu împotriva interiorului în versiunea "Ex e" (siguranță sporită) Conector KT Ex / priză cu suport terminal, de ex.
- Instrucțiuni de utilizare: 1 copie în limba română

7. Date tehnice

Informație În tabelele următoare sunt indicate și opțiunile, pe lângă versiunile standard. Pentru versiunea exactă trebuie consultată fișa tehnică aferentă comenzii. Fișa tehnică aferentă comenzii o găsiți pe pagina de internet <http://www.auma.com>, de unde poate fi descărcată în limbile engleză și germană (este necesară indicarea numărului de comandă).

7.1. Interfața Modbus

Setări/programarea interfeței modbus RTU

Setarea interfeței modbus RTU | Setarea baudrate, parității și adresa Modbus se realizează la display-ul AUMATIC

Comenzi și mesaje ale interfeței Modbus RTU

Imagine de proces - ieșire (comenzi de acționare)	DESCHIS, OPRIT, ÎNCHIS, valoare nominală poziție, RESET comandă de deplasare URGENTĂ, validarea panoului de comandă integrat, interlock DESCHIS/ÎNCHIS
Imagine de proces intrare (notificări)	• Poziție finală DESCHIS, ÎNCHIS • Poziție valoare efectivă • Moment de rotație valoare efectivă¹⁾ • Comutator selectiv în poziția LOCAL/DISTANȚĂ • Indicator de parcurs (depedent de direcție) • Comutator moment de rotație DESCHIS/ÎNCHIS • Limitator de cursă DESCHIS/ÎNCHIS • Acționare manuală prin roata de mână sau panou de comandă integrat • 2 intrări analogice și 4 digitale pentru clienți
Imagine de proces - intrare (mesaje de eroare)	• Protecție motor activată • Comutatorul de moment a fost acționat înaintea atingerii poziției finale • Căderea unei faze • Căderea intrărilor analogice ale clienților
Comportament la întreruperea comunicării	Reacția servomotorului este programabilă: • oprire în poziția actuală • continuarea deplasării spre poziția finală DESCHIS sau ÎNCHIS • executarea deplasării într-o poziție intermediară arbitrară • executarea ultimei comenzi de deplasare primite

1) Este necesar un traductor magnetic de poziție și cuplu (MWG) în acționarea electrică

Date generale Modbus RTU

Protocol de comunicare	Modbus RTU conform IEC 61158 și IEC 61784
Topologia rețelei	• Structură liniară (Bus). Cu repetoare se pot realiza și structuri arborescente. • Cuplarea și decuplarea altor periferice, fără reacții negative, în timpul funcționării.
Mediu de transmisie	Conectoare de cupru ecranate, răsucite conform IEC 61158
Interfața fieldbus	EIA-485 (RS485)
Rată de transfer/lungime conductor	• Rată Baud: 9,6 – 115,2 kBit/s • Lungime maximă a conductorului (lungimea segmentului, resp. între două acționări electrice) fără repeto: 1 200 m • Posibile lungimi ale conductorului: - la topologie în linie cu repeto: cca. 10 km (întreaga lungime a conectorului în rețea) - la topologie în inel: cca. 290 km (inel redundant)
Tipuri periferice	Modbus-Slave, de ex. dispozitive cu intrări și ieșiri digitale și/sau analogice, precum actuatori, senzori

Date generale Modbus RTU	
Numărul perifericelor	32 periferice în fiecare segment fără repeater, cu repeater extensibil până la 247
Acces la Bus	Tehnologie Polling între master și slaves (query-response)
Funcții Fieldbus suportate	01 Read Coil Status 02 Read Input Status 03 Read Holding Registers 04 Read Input Registers 05 Force Single Coil 15 (0FHex) Force Multiple Coils 06 Preset Single Register 16 (10Hex) Preset Multiple Registers 17 (11Hex) Report Slave ID 08 Diagnostics: • 00 00 Loopback • 00 10 (0AHex) Clear Counters and Diagnostic Register (Ștergere contoare și registru de diagnostic) • 00 11 (0BHex) Return Bus Message Count (Returnare contor mesaje bus) • 00 12 (0CHex) Return Bus Communication Error Count (Returnare contor erori comunicare bus) • 00 13 (0DHex) Return Bus Exception Error Count (Returnare contor erori excepție bus) • 00 14 (0EHex) Return Slave Message Count (Returnare contor mesaje Slave) • 00 15 (0FHex) Return Slave No Response Count (Returnare contor non-răspunsuri Slave) • 00 16 (10Hex) Return Slave NAK Count (Returnare contor Slave NAK) • 00 17 (11Hex) Return Slave Busy Count (Returnare contor Slave Busy) • 00 18 (12Hex) Return Character Overrun Count (Returnare contor depășire caractere)



®

**American
Petroleum
Institute**



2018-151 | Digital

Certificate of Authority to use the Official API Monogram

License Number: 6D-1840

ORIGINAL

The American Petroleum Institute hereby grants to

ZHEJIANG BOTELI TECHNOLOGY CO., LTD
Sanjiang Industrial Zone, Yongjia County
Wenzhou
People's Republic of China

the right to use the Official API Monogram® on manufactured products under the conditions in the official publications of the American Petroleum Institute entitled API Spec Q1® and **API-6D** and in accordance with the provisions of the License Agreement.

In all cases where the Official API Monogram is applied, the API Monogram shall be used in conjunction with this certificate number: **6D-1840**

The American Petroleum Institute reserves the right to revoke this authorization to use the Official API Monogram for any reason satisfactory to the Board of Directors of the American Petroleum Institute.

The scope of this license includes the following: Check Valves, Ball Valves, Plug Valves, Gate Valves

QMS Exclusions: No Exclusions Identified as Applicable

Effective Date: AUGUST 29, 2024

Expiration Date: AUGUST 29, 2027

To verify the authenticity of this license, go to www.api.org/compositelist.

Senior Vice President of Global Industry Services

Certificate

Certificate of Conformity with Fire Testing
Acc. to API 607: Seventh Edition, June 2016

Certificate no.: **01 202 CHN/K-180146**

Name and address of
the applicant / license
holder : **ZHEJIANG BOTELI TECHNOLOGY CO., LTD**
Sanjiang Industrial Zone, Yongjia County
Wenzhou City, Zhejiang Province, P. R. China

We hereby certify that the results of tests carried out under our monitor on the industrial valve(s) below meeting the requirements in the standard mentioned above.

This certificate does not imply assessment of the production of the product, reflects only our monitor findings at the time and the place of test and does not refer to any other matters

Model Identification: **BTL Ball Valve**
Type of Valve : **3 PC Trunnion Mounted Ball Valve**
Description of tested
valve: **NPS 4", Class 400, A105, (with actuator- gear box)**
Refer to Appendix 1 to this certificate
Manufacturing
Drawing No./Rev.: **4"Q347X-400Lb Rev.01**
Test Report No.: **FT154337146-18**
Qualified Range: **NPS 4; 5; 6; 8, Class 400; 600; 800,**
Name, Address of
Manufacturer : **ZHEJIANG BOTELI TECHNOLOGY CO., LTD**
Sanjiang Industrial Zone, Yongjia County
Wenzhou City, Zhejiang Province, P. R. China
Valid until: **July 10, 2028**

TÜV Rheinland (Shanghai) Co., Ltd.
Industrial Services

Shanghai/P.R.China,
July 10, 2018

William Weifeng YU



Test Report No.

FT154337146-18



Test Report

Fire Test for Ball Valves

Report No. : FT154337146-18

Manufacturer: ZHEJIANG BOTELI TECHNOLOGY CO., LTD

Address: Sanjiang Industrial Zone, Yongjia County, Wenzhou City
Zhejiang Province, P. R. ChinaValve Type : 3 PC Trunnion Mounted
Ball ValveModel Identification: BTL Ball Valve
(Dwg. No.: 4"Q347X-400Lb Rev.01)

Nominal Size: NPS 4

Nominal Pressure: Class 400

Test Standard: API 607 Seventh Edition
June 2016

Date of Test: April 26, 2018

Test Location: Quality Inspecting Center of Pump and
Valve Products of Zhejiang ProvinceTest Report No.:
FM201804170

Test Method : Low Pressure Test

Test Result : The above mentioned specimen *PASSED*Qualifications: Additional Qualification of other valves, covered by the valves tested
(The range of qualification is according table 2 to 4, API 607 Seventh
Edition, June 2016)

- a) Class Qualified : 400; 600; 800
- b) NPS Qualified : 4; 5; 6; 8
- c) Materials (Body) : A105
- d) Others : --

Test Monitored by: Chen Jizhang

Reviewed by: William Waifeng Yu

2018/06/29

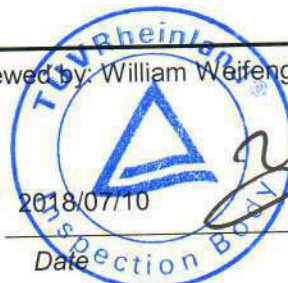
Date

Chen Jizhang

Signature

2018/07/10

Date



Signature

This test report relates to the a. m. test item. Without permission of the test center this test report is not permitted to be duplicated
in extracts. This test report does not entitle to carry any safety mark on this or similar products.