



WNIOSEK

O PRZEPROWADZENIE BADANIA / ~~ZMIANĘ DANYCH~~
przed wydaniem pierwszej decyzji zezwalającej na eksploatację / ~~doraźnego~~
~~eksploatacyjnego~~ / ~~po zmianie eksploatującego~~ / ~~po modernizacji~~ / ~~po naprawie~~ /
~~sprawdzającego / okresowego~~ ¹⁾

1. Eksploatujący (podmiot, na który będzie wydana decyzja)

- nazwa: Narodowy Instytut Geriatrii, Reumatologii i Rehabilitacji im. prof. dr hab. med. Eleonory Reicher
- NIP: 525-001-10-42
- PESEL ²⁾: -----
- adres siedziby: 02-637 Warszawa, ul. Spartańska 1
- kontakt (telefon, fax, e-mail): 500 401 297
andrzej.snopek@spartanska.pl
- adres zamieszkania ³⁾: -----
- członek zarządu ⁴⁾: -----

2. Przedmiot zgłoszenia ⁵⁾

- urządzenie / typ: Zbiornik magazynowy na ciekły tlen C10-17 bar
- wytwórca: CRYOLOR, ARGANCY Zone Industrielle des Jonquières BP 7, 57365 ENNERY, FRANCJA
- nr fabryczny / rok budowy / udźwig ¹⁾: 275117 / 2022
- nr ewidencyjny UDT ⁶⁾: -----

3. miejsce przeprowadzenia badania: Narodowy Instytut Geriatrii, Reumatologii i Rehabilitacji im. prof. dr hab. med. Eleonory Reicher, 02-637 Warszawa, ul. Spartańska 1

4. Adres do korespondencji (jeżeli inny niż wyżej)

5. Eksploatującego reprezentuje pracownik / pełnomocnik ⁷⁾

- imię i nazwisko: Andrzej Snopek
- PESEL, dowód osobisty: -----
- kontakt (telefon, fax, e-mail): 500 401 297 andrzej.snopek@spartanska.pl

Za czynności jednostek dozoru technicznego pobierane są opłaty, których wysokość określa Rozporządzenie Ministra Gospodarki z dnia 26 listopada 2010 r. (Dz. U. z 2010 r. poz. 1502), zmienione rozporządzeniem z dnia 28 listopada 2014 r. (Dz. U. 2014 poz. 1675).

28.06.2022
Miejscowość, data

A. Suspel
Czytelny podpis i pieczęć eksploatującego
KIEROWNIK
DZIAŁU TECHNICZNEGO
Narodowy Instytut Geriatrii, Reumatologii
i Rehabilitacji w Warszawie

Wykaz załączników:

- dokumentacja techniczna w 2 egz.
- dokumenty rejestrowe (KRS, CEIDG)
- pismo od zarządcy (dot. wspólnot mieszkaniowych)
- inne: -----

Andrzej Snopek

¹⁾ niepotrzebne skreślić, dla badania okresowego składanie wniosku nie jest wymagane

²⁾ PESEL dotyczy osób fizycznych, indywidualnej działalności gospodarczej, współników spółek cywilnych

³⁾ dotyczy eksploatujących będących osobami fizycznymi lub współnikami spółek cywilnych

⁴⁾ dotyczy wspólnot mieszkaniowych

⁵⁾ dla większej ilości urządzeń należy załączyć do wniosku ich wykaz

⁶⁾ dotyczy urządzeń zarejestrowanych w ewidencji UDT

⁷⁾ w przypadku składania wniosku w imieniu eksploatującego, należy do wniosku załączyć pełnomocnictwo podpisane przez osobę upoważnioną do reprezentacji

* dotyczy osób fizycznych

1. Administratorem Pani/Pana danych osobowych jest Prezes Urzędu Dozoru Technicznego z siedzibą w Warszawie ul. Szczęśliwicka 34, kod pocztowy 02-353,
2. Kontakt z wyznaczonym przez Administratora Danych Osobowych – Inspektorem Ochrony Danych, możliwy jest za pośrednictwem poczty elektronicznej (adres: iod@udt.gov.pl), oraz strony internetowej (www.udt.gov.pl),
3. Pani/Pana dane osobowe będą przetwarzane w celu realizacji wniosku, na podstawie art. 6 ust. 1 lit. e) Rozporządzenia Parlamentu Europejskiego i Rady z dnia 27 kwietnia 2016 r. w sprawie ochrony osób fizycznych w związku z przetwarzaniem danych osobowych i w sprawie swobodnego przepływu takich danych oraz uchylenia dyrektywy 95/46/WE (Dz. Urz. UE L 119 z 4.05.2016),
4. Odbiorcami Pani/Pana danych osobowych będą jedynie podmioty przewidziane przepisami powszechnie obowiązującego prawa,
5. Pani/Pana dane osobowe będą przetwarzane przez okres przewidziany przepisami prawa,
6. Posiada Pani/Pan prawo dostępu do treści swoich danych oraz prawo do ich sprostowania, usunięcia, ograniczenia przetwarzania, prawo do przenoszenia danych (jeśli ma zastosowanie), prawo wniesienia sprzeciwu. Ponadto posiada Pani/Pan prawo do cofnięcia zgody w dowolnym momencie bez wpływu na zgodność z prawem przetwarzania, którego dokonano na podstawie zgody przed jej cofnięciem,
7. Ma Pani/Pan prawo do wniesienia skargi do Prezesa Urzędu Ochrony Danych Osobowych gdy uzna Pani/Pan, iż przetwarzanie danych osobowych dotyczących Pani/Pana osoby narusza przepisy Rozporządzenia Parlamentu Europejskiego i Rady z dnia 27 kwietnia 2016 r. w sprawie ochrony osób fizycznych w związku z przetwarzaniem danych osobowych i w sprawie swobodnego przepływu takich danych oraz uchylenia dyrektywy 95/46/WE (Dz. Urz. UE L 119 z 4.05.2016),
8. Podanie przez Pani/Pana danych osobowych jest obligatoryjne i jest warunkiem zadania realizowanego w interesie publicznym.

Zapoznałem się

TAK

NIE

Opis techniczny stałego zbiornika ciśnieniowego

DANE IDENTYFIKACYJNE I PARAMETRY ZBIORNIKA

Eksploatujący / Użytkownik zbiornika: Narodowy Instytut Geriatrii, Reumatologii i Rehabilitacji im. prof. dr hab. med. Eleonory Reicher, 02-637 Warszawa, ul. Spartańska 1

Miejsce eksploatacji zbiornika i jego rodzaj ze względu na sposób zabudowy lub konstrukcję oraz przeznaczenie:

Narodowy Instytut Geriatrii, Reumatologii i Rehabilitacji im. prof. dr hab. med. Eleonory Reicher, 02-637 Warszawa, ul. Spartańska 1

Zbiornik kriogeniczny C10-17bar, magazynowy na ciekły tlen (azot, argon), przymocowany do fundamentu

Wytwórca zbiornika: CRYOLOR, ARGANCY Zone Industrielle des Jonquières BP 7, 57365 ENNERY, FRANCJA.....

Nr fabryczny: 275117	Rok wytworzenia: 2022
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Ilość przestrzeni ciśnieniowych*):	1-sza	2-ga	3-cia
Najwyższe ciśnienie dopuszczalne (bar):	-1 bar	17 bar	
Najwyższa / najniższa temperatura dopuszczalna (° C)	-40/+50°C	-196/+20°C	
Rodzaj gazu wypełniającego przestrzeń:	Perlit i próżnia		
Pojemność (m ³):		9,445	

Na zbiorniku przymocowana jest tabliczka fabryczna o treści:

CRYOLOR		ZI DES JONQUIERES BP7 57365 ENNERY - FRANCE		CE	
EQUIPEMENT SOUS PRESSION CONFORME A PRESSURE EQUIPMENT IN ACCORDANCE WITH DRUCKGERAT HERGESTELLT GEMASS 2014/68/UE EN 13458				MADE IN FRANCE	
GROUPE PRODUIT PRODUCT GROUP PRODUKTGRUPPE		1	NATURE DU GAZ TYPE OF GAS ART DES GASES		02 N2 AR
TYPE TYPE TYP		EPV C10 PRESSURE STRENGTHENED			
N° FABRICATION SERIAL NUMBER HERSTELLNUMMER		275117	ANNEE FABRICATION MANUFACTURING YEAR HERSTELLAHR		2022
MASSE A VIDE WEIGHT EMPTY LEERGEWICHT		5100 Kg	DATE DE TEST FINAL FINAL TEST DATE DATUM ENDTEST		20/04/2022
RECIPIENT INTERIEUR / INNER VESSEL / INNENBEHALTER		T° MIN ADMISSIBLE MINI WORKING T° ZUL. BETRIEBSTEMP.		PRESSION SERVICE WORKING PRESSURE ZUL. BETRIEBSUEBERDRUCK	
		-196°C		Ps 17.00 bar	
CAPACITE EN EAU WATER CAPACITY WASSER RAUMINHALT		9445 L		PRESSION CALCUL DESIGN PRESSURE BERECHNUNGSDRUCK	
				Pc 18.4 bar	
ENVELOPPE EXTERIEURE / OUTER VESSEL / AUSSENBEHALTER		T° DE SERVICE WORKING T° BETRIEBSTEMPERATUR		PRESSION EPREUVE TEST PRESSURE PRUEFDRUCK	
		-40/+50°C		Pt 27.70 bar	
NUMERO CLIENT CUSTOMER NUMBER KUNDNUMMER				PRESSION SERVICE WORKING PRESSURE ZUL. BETRIEBSUEBERDRUCK	
				-1 bar	
				PRESSION TAR. DISQ. RUPTURE SET PRESS. BURSTING DISC EINSTELLD RUCK BERSTICHERUNG	
				+0.5 bar	
		N° HOMOLOGATION APPROVAL N° BAUMUSTERKENNZ		2F1909 7398	

OSPRZĘT ZBIORNIKA

Osprzęt zabezpieczający przed wzrostem ciśnienia powyżej dopuszczalnego (wytwórca, typ, wymiar nominalny, zakres nastaw, miejsce zabudowy):

Zawory bezpieczeństwa: Herose, typ 06388, 1/2", 17 bar – 2 szt. (numery seryjne: 3773061, 3773070)

Płytki bezpieczeństwa: Witzenmann 1/2", 24 bar – 2 szt. (numery seryjne: 21-39-02, 22-10-03)

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Aparatura kontrolno-pomiarowa i automatyka (wytwórca, rodzaj i typ, zakres pomiarowy):

Manometry ciśnienia (Wika 0-60 bar) oraz manometr różnicy ciśnień (poziomu cieczy w zbiorniku) Wika (0-100%).....

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Armatura zaporowa, zwrotna (typ, wymiar nominalny, ciśnienie nominalne):

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Pozostały osprzęt (rodzaj, typ, wymiar nominalny, ciśnienie nominalne):

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Urządzenia zasilające (rodzaj, typ, wydajność, ciśnienie maksymalne):

Pompa kriogeniczna Cryostar typ – odśrodkowa, model: GBS 155/4,5/6,8C/3,
wydajność: 400 l/min, wysokość podnoszenia: 175m, moc silnika 22kW, zasilanie: 400 V

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UWAGA 1. W przypadku braku miejsca na druku do wpisania danych technicznych należy je zamieścić na dodatkowych stronach dołączonych do niniejszego opisu.

UWAGA 2. W przypadku stosowania ochrony katodowej należy dołączyć do opisu odpowiednie informacje.

Opis pracy zbiornika:

Zbiornik jest napełniany ciekłym tlenem ze specjalnej cysterny, która posiada pompę.

Zbiornik stanowi magazyn na ciekły tlen. Ciekły tlen poprzez zawór W8 i cieczowy rurociąg kriogeniczny wędruje do parownic (atmosferyczne wymienniki ciepła) gdzie zmienia swój stan skupienia z ciekłego na gazowy. Następnie rurociągiem DN25 gaz płynie do układu redukcji ciśnienia w tlenowni szpitala a następnie do sieci szpitalnej, gdzie jest pobierany do urządzeń tlenowych używanych w szpitalu.

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KIEROWNIK
DZIAŁU TECHNICZNEGO
Narodowy Instytut Geriatrii, Reumatologii
(pieczęć Rejonu I Okręgu Leczącego)

Andrzej Słopek

*) Dane w tablicy podać dla każdej przestrzeni ciśnieniowej. W przypadku zbiornika o większej ilości przestrzeni ciśnieniowych ich dane należy zamieścić na dodatkowych stronach dołączonych do opisu.



CRYOLOR

ARGANCY Z.I. des Jonquières - BP 7 - 57365 ENNERY France
 Tel : 33.3.87.70.85.50 - 33.3.87.70.85.44
www.cryolor.com

TANK
Appareil

275117

EFV C10 DN2200 17 bar CS rev2

PRESSURE EQUIPMENT DIRECTIVE DATA REPORT / DOSSIER P.E.D.

DOC N°

- 10 **CONTENTS / Descriptif des documents**
- 20 **DECLARATION OF CONFORMITY ACCORDING TO 2014/68/EU DIRECTIVE FOR PRESSURE EQUIPMENT (Original)**
Déclaration de conformité à la directive 2014/68/UE d'un équipement sous pression
- ↳ **Pressure equipment description / Description de l'équipement sous pression**
 - ↳ **Technical data sheet / Fiche technique**
 - ↳ **Control certificates / Certificats de contrôle**
- 30 **INSPECTION CARD / Plan d'inspection**
- 40 **IDENTITY PLATE / Plaque d'identité**
- 50 **IDENTIFICATION SKETCH OF WELDS, RADIOGRAPHICS, MATERIALS, WELDERS OR OPERATORS /**
Croquis de repérage des lignes de soudures, radiographies, matières, soudeurs ou opérateurs
- 60 **RADIOGRAPHIC EXAMINATION / Procès-verbal d'examen radiographique**
- 70 **WELDS PRODUCTION / Procès-verbal essais coupon témoin soudage**
- 80 **MATERIAL AND ACCESSORIES LIST "AS BUILT" / Liste des matières et accessoires "tel que construit"**
- 90 **SAFETY EQUIPMENTS / Accessoires de sécurité :**
- ↳ **Bursting discs inspection certificate(s) / Certificat(s) disques de rupture**
 - ↳ **Level gauge certificate / Certificat cellule de niveau**
 - ↳ **Line valves inspection certificate(s) / Certificat(s) soupape(s) de ligne**
 - ↳ **Safety valves inspection certificate(s) / Certificat(s) soupapes de sécurité**
 - ↳ **Shell safety device inspection certificate(s) / Certificat(s) clinquant(s) de sécurité**
- OPTION COLD STRETCHING TEST REPORT / Rapport épreuve écrouissage à l'eau**
- LEVEL GAUGE OPERATING INSTRUCTIONS / Notice cellule de niveau**



ARGANCY Z.I. des Jonquières - 57365 ENNERY France

Tel : 33.3.87.70.85.50 - 33.3.87.70.85.44

www.cryolor.com

**DECLARATION UE DE CONFORMITE
A LA DIRECTIVE 2014/68/UE
D'UN ENSEMBLE SOUS PRESSION
EU DECLARATION OF CONFORMITY
ACCORDING TO 2014/68/EU DIRECTIVE
FOR PRESSURE VESSEL ASSEMBLY**

La présente déclaration de conformité est établie sous la seule responsabilité du fabricant.

L'objet de la déclaration décrit ci-dessus est conforme à la législation communautaire d'harmonisation applicable 2014/68/UE du 15/05/2014. Cette déclaration certifie que l'ensemble sous pression décrit ci-dessous a été vérifié et qu'il est conforme, aux exigences de la Directive Européenne Equipement sous pression 2014/68/UE du 15/05/2014, aux indications du présent document, aux plans, aux notes de calculs, aux spécifications, approuvés par l'Organisme Notifié désigné ci-dessous ainsi qu'aux termes de la commande du client.

This declaration of conformity is issued under the sole responsibility of manufacturer.

The object if the declaration described above is in conformity with the relevant Community harmonisation legislation 2014/68/EU dated 05/15/2014. This declaration certifies that the pressure vessel assembly as below has been inspected and is in accordance with the requirements of the 2014/68/EU Pressure Equipment Directive dated 05/15/2014 ; with the present document's indications, drawings, calculation sheets, specifications approved by Notified Body as below and with terms of customer's order.

Description de l'ensemble sous pression

Type :	EFV C10 DN2200 17 bar CS rev2
Type	
Certificat Annexe III Module D	DGR-0036-QS-781-21
Annexe III Module D Certificate	
Attestation d'examen "UE de type"	ZF1909...7308
EU type-examination certificate	
N° de fabrication :	275 117
Serial number	
Année de fabrication :	2022
Manufacturing year	
Fabriquant :	CRYOLOR / F-57365 ENNERY
Manufacturer	
Pression maximale de service "PS":	17,00 bar
Maximal working pressure	
Pression de calcul "PC" :	18,49 bar
Design pressure	
Pression d'essai hydraulique "PT" :	27,70 bar
Hydraulic Test pressure	
Date d'épreuve Hydraulique :	06/12/2021
Hydraulic test date	
Températures min./max. admissibles :	-196°C / +20°C
Min./max. working temperature	
Température de calcul :	+20°C
Design temperature	
Surépaisseur de corrosion :	0 mm
Corrosion allowance thickness	

Pressure vessel assembly description

Organisme Notifié :	TÜV SUD Industrie Service GmbH	
Notified Body	D 80686 Munich	
Masse à vide :	5100 kg	
Weight empty		
Masse max. en service :	17600 kg	
Max. weight full		
Capacité en eau :	9445 lts	
Water capacity		
Fluides / Medium		
350	1073	Oxygène Liquide réfrigéré / Oxygen, refrigerated liquid
37A	1977	Azote Liquide réfrigéré / Nitrogen, refrigerated liquid
37A	1951	Argon Liquide réfrigéré / Argon, refrigerated liquid
Contrôle :	2014/68/EU-Mod.B+D-Cat.IV	
Approval		
Norme :	EN 13458	
Standart		
N° Plan Qualité :	S0000036 (F)	
Quality plan number		
N° Plan descriptif approbation :	H0007976 (B)	
Drawing for approval		
Date de vérification finale :	20/04/2022	
Final inspection date		
Marquage :	 0036	
Identity mark		
Nota :	Réservoir Intérieur Ecroui à l'eau / Inner Vessel Cold stretched	
Note		

Ensemble sous pression destiné au stockage de gaz liquides réfrigérés, composé d'un ensemble à double enveloppe isolé sous vide d'air et équipé de tuyauteries inter-parois, d'accessoires de remplissage, de vidange, de contrôle et de sécurité permettant son bon fonctionnement.

Fiche technique, instructions et précautions d'utilisation : Voir au dos.

This is a pressure vessel assembly for the storage of refrigerated liquefied gases, which consists of a double wall vessel isolated under vacuum, with piping and accessories for filling, draining, controlling and operate under safety.

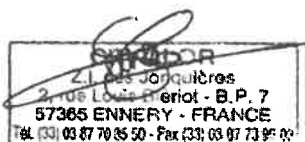
Technical data sheet, carefull uses and instructions : See overleaf

Fait à Ennery le / At Ennery the , 20/04/2022

Pour le Constructeur / For the Manufacturer

Nom / Name : IUNG C.

Visa :



FICHE TECHNIQUE
INSTRUCTIONS ET PRECAUTIONS D'UTILISATION
L'ENSEMBLE SOUS PRESSION
SOU MIS A LA DIRECTIVE 2014/68/UE

Caractéristiques particulières de conception

Voir documents annexés : Liste des matières et accessoires, plan "Tel que construit", Copie résultats des contrôles destructifs et non-destructifs.

Informations apposées sur la paroi de l'ensemble

1 plaque autocollante reprenant le schéma de principe de l'armoire de commande et les recommandations de transport et de manutention, 1 plaque constructeur acier inoxydable reprenant les marques d'identités réglementaires de l'ensemble sous pression, (Copie jointe en annexe).

Etat de livraison

L'ensemble sous pression est livré conditionné sous 0,5 bar d'azote. La robinetterie est plombée fermée.

Manuel d'utilisation

Vous trouverez dans les différents chapitres du "Manuel d'utilisation" de l'ensemble, les informations concernant les consignes de sécurité, la mise en place, l'utilisation, la maintenance et la réparation, le dépannage, les spécifications techniques et la liste des pièces de rechange.

Informations

De par la nature du fluide cryogénique, sa température et les matériaux de construction utilisés et comme le réservoir est inclus dans une enveloppe isolée sous vide, des dégradations intérieures ou extérieures de l'équipement sous pression ne doivent pas être envisagées. Aussi, aucune surépaisseur de corrosion n'est appliquée sur les surfaces directement en contact avec le fluide contenu ni sur les parties en contact avec le vide interparoi. Des orifices de visite permettant la réalisation de l'inspection de ces parois ne sont donc pas requis.

Mise en garde

La déclaration de conformité "UE" ne couvre que l'ensemble sous pression décrit ci-contre. Elle n'est valable que dans les états membres de la communauté européenne. Pour tout autre pays, consulter la réglementation locale en vigueur. Il est de la responsabilité de l'exploitant de l'ensemble sous pression d'effectuer ou de faire effectuer des visites périodiques en conformité avec la législation du pays d'installation. Cependant, CRYOLOR recommande d'effectuer au minimum les contrôles indiqués au chapitre 7.6 de la norme EN ISO 21009-2.

CERTIFICATS DE CONTRÔLE

Visite avant épreuve

Nous Ste. CRYOLOR certifions que le réservoir intérieur de l'ensemble sous pression désigné ci-contre a été vérifié intérieurement et extérieurement conformément aux recommandations de l'EN13458

Date de la visite / Nom : 22/11/2021 RACCO F.

Epreuves

L'ensemble sous pression désigné ci-contre a été éprouvé dans les conditions énumérées ci-dessous.

Pression d'épreuve / Fluide utilisé : 27,70 bar Eau

Date et lieu épreuve : 06/12/2021 CRYOLOR / F-57365 ENNERY

Contrôleur : RACCO F.

Vérification finale, pression / Fluide utilisé : 5,00 bar Azote

Date et lieu vérif. finale : 20/04/2022 CRYOLOR / F-57365 ENNERY

Contrôleur : ZAPALA P.

Constatation : aucune fuite, ni déformation décelée. Conformément à l'EN13458.

Étanchéité hélium

L'équipement sous pression désigné ci-contre a subi un test hélium dans les conditions suivantes : Réservoir intérieur mis sous pression d'hélium $\geq 0,3$ bar pendant une heure, sensibilité de détection $\leq 2,10 \cdot 9 \text{ mb/l/s}^{-1}$, fuite maxi admissible $\leq 5,10 \cdot 7 \text{ ml/s}$. Enveloppe extérieure sous housse prévue sous atmosphère d'hélium pendant une heure, sensibilité de détection $\leq 2,10 \cdot 9 \text{ mb/l/s}$ -1 fuite maxi admissible $\leq 5,10 \cdot 7 \text{ ml/s}$

Résultats : aucune fuite détectée, valeur du vide satisfaisante, résultats conformes à l'EN13458.

Nettoyage

L'ensemble sous pression désigné ci-contre a été nettoyé aux fins d'utilisation OXYGENE en conformité avec EN 12300

TECHNICAL DATA SHEET
INSTRUCTIONS AND CAREFULL USES
PRESSURE VESSEL ASSEMBLY
2014/68/EU DIRECTIVE SUBMITTED

Specific design characteristics

See enclosed documents : Listing of materials and accessories, "As built" drawing . Copy of non-destructive and destructive tests.

Informations sticked on both side pressure vessel assembly

1 self-adhesive plate with flow diagram and transportation/handling instructions.
 1 manufacturer identification plate in stainless steel with mandatory pressure vessel assembly identity marks (refer to copy in annexure).

Delivery conditions

The pressure vessel assembly is delivered under 0,5 bar of nitrogen . The valves are closed and sealed.

User's handbook

You will find enclosed in the different chapters of the pressure vessel assembly user handbook, information about safety tips, installation, operation, maintenance and repair, troubleshooting, technical specification and spare parts list.

Notes

From the nature of the cryogenic fluid, its temperature and the building materials used and because the inner vessel is set inside a vacuum insulated envelope, there shall be no degradations interior or external to the pressure equipment. Therefore no corrosion allowance in surfaces in contact with the operating fluid or exposed to the vacuum interspace is required as well as no inspection openings in the inner vessel or the outer jacket.

Warning

This "EU" declaration of conformity covers only the pressure vessel assembly as above. It is only valid in the European Community. For any other country, please consider local applicable rules. The user of the pressure vessel assembly is responsible for the periodical checkings by his own Inspection department, or by an Authorized Body, in accordance with the rules of the country. CRYOLOR recommends to perform at least the checkings as referred to in chapter 7.6 of the EN ISO 21009-2 standard.

CONTRÔLE CERTIFICATES

Inner and outer inspection before testing

We the undersigned, CRYOLOR certify that the inner vessel of the pressure vessel assembly as above was subjected to inner and outer inspection in accordance with EN 13458

Check date / Name : 22/11/2021 RACCO F.

Tests pressure

The pressure vessel assembly as above has been tested under the conditions as below.

Test pressure / Pressure fluid : 27,70 bar Water

Date and Test place : 06/12/2021 CRYOLOR / F-57365 ENNERY

Controller : RACCO F.

Final test pressure / Pressure fluid : 5,00 bar Nitrogen

Date and Test place : 20/04/2022 CRYOLOR / F-57365 ENNERY

Controller : ZAPALA P.

Result : no leak nor deformation observed. In accordance with tEN 13458

Helium tightness test

The pressure vessel assembly as above was helium tested as defined : Inner vessel under helium pressure $\geq 0,3$ bar during one hour, sensitivity material $\leq 2,10 \cdot 9 \text{ mb/l/s}^{-1}$, maximal permissible leak $\leq 5,10 \cdot 7 \text{ ml/s}$. Outer jacket under covering in helium atmosphere during one hour sensitivity material $\leq 2,10 \cdot 9 \text{ mb/l/s}$, maximal permissible leak $\leq 5,10 \cdot 7 \text{ ml/s}$

Results : No leakage was stated, vacuum leak satisfactory, results in compliance with EN 13458.

Cleaning

The pressure vessel assembly as above was cleaned to be used for OXYGEN service in accordance with Specification EN 12300

CRYOLOR

ZI DES JONQUIERES
BP7
57365 ENNERY - FRANCE



0036

EQUIPEMENT SOUS PRESSION CONFORME A
PRESSURE EQUIPMENT IN ACCORDANCE WITH
DRUCKGERAT HERGESTELLT GEMASS
2014/68/UE EN 13458

MADE IN FRANCE

GROUPE PRODUIT
PRODUCT GROUP
PRODUKTGRUPPE

1

NATURE DU GAZ
TYPE OF GAS
ART DES GASES

O2 N2 AR

TYPE
TYPE
TYP

EFU C10 "PRESSURE STRENGTHENED"

N° FABRICATION
SERIAL NUMBER
HERSTELLNUMMER

275117

ANNEE FABRICATION
MANUFACTURING YEAR
HERSTELLJAHR

2022

MASSE A VIDE
WEIGHT EMPTY
LEERGEWICHT

5100 Kg

DATE DE TEST FINAL
FINAL TEST DATE
DATUM ENDTEST

28/04/2022

RECIPIENT INTERIEUR /
INNER VESSEL /
INNENBEHALTER

PRESSION SERVICE
WORKING PRESSURE
ZUL. BETRIEBSUEBERDRUCK

Ps 17.00 bar

T° MIN ADMISSIBLE
MINI WORKING T°
ZUL. BETRIEBSTEMP.

-196°C

PRESSION CALCUL
DESIGN PRESSURE
BERECHNUNGSDRUCK

Pc 18.40 bar

CAPACITE EN EAU
WATER CAPACITY
WASSER RAUMINHALT

9445 L

PRESSION EPREUVE
TEST PRESSURE
PRUEFDRUCK

Pt 27.70 bar

ENVELOPPE EXTERIEURE /
OUTER VESSEL /
AUSSENBEHALTER

PRESSION SERVICE
WORKING PRESSURE
ZUL. BETRIEBSUEBERDRUCK

-1 bar

T° DE SERVICE
WORKING T°
BETRIEBSTEMPERATUR

-40/+50°C

PRESSION TAR. DISQ. RUPTURE
SET PRESS. BURSTING DISC
EINSTELDRUCK BERSTSICHERUNG

+0.5 bar

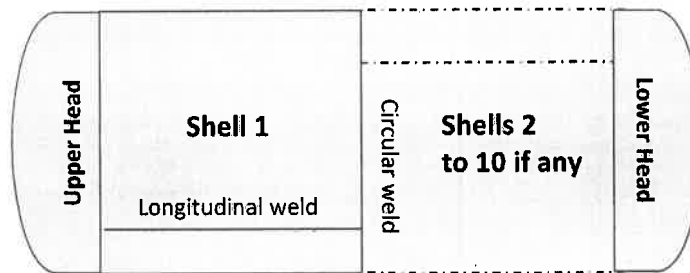
NUMERO CLIENT
CUSTOMER NUMBER
KUNDNUMMER

N° HOMOLOGATION
APPROVAL N°
BAUMUSTERKENNZ

7F1989...7388

Constructeur : <i>Manufacturer</i>	CRYOLOR / F-57365 ENNERY	N° plan descriptif : H0007976 (B) <i>Construction drawing</i>	DOC 50
Type d'appareil: <i>Vessel Type</i>	EFV C10 DN2200 17 bar CS rev2		ANNEXE <i>Appendix</i>
N° de fabrication : <i>Manufacturing number</i>	275 117		S0000127 TQC

CROQUIS DE REPERAGE DES SOUDURE, RADIOGRAPHIES, MATIERES, SOUDEURS ET/OU OPERATEURS, "TEL QUE CONSTRUIT"
Identification sketch of welds, radiographs, materials, welders or operators, "as built"



<i>Position</i>	<i>Type de soudure / Type of weld</i>	<i>Soudeur ou opérateur / Welder or operator</i>	<i>RT Identification if any</i>
Nozzles or piping on upper head	27 A	AA	N/A
Nozzles or piping on lower head	27 A	AA	N/A
Inner vessel supporting on shell	28 C	BA	N/A
Circular between upper head and shell	4A	GP	C1
Circular between upper head and shell	4A	GP	C2
Longitudinal shell 1	1A	BF	L1

Coulées / Heats

Virole 1 / Shell 1 : 79541 - 397472 - 002

Fond Sup. / Upper head : 69631 - 380323 - 003 - A768

Fond Inf. / Lower head: 78621 - 391687 - 001 - A790

CLIENT : CRYOLOR
Customer

REFERENCE DE L'AFFAIRE : G0000237
Contract reference

MATERIEL EXAMINE : SP275117 – EFV C10New (1L 2C)
Inspected equipment
Ø1836mm inférieur – épaisseur 6mm

PLAN DE REFERENCE : Non communiqué
Reference drawing

OBJECTIF DE L'EXAMEN : Recherche de défaut(s) de compacité
Subject of the examination
10% longi + 10% circulaire + 100% noeuds

STADE D'EXAMEN : Après soudage
Stage of examination

DATE D'EXAMEN : Du 16/11/2021 au 25/11/2021
Date of examination

N° DE COMMANDE : -
Order N°

MATERIAU : Acier inoxydable
Material

LIEU D'EXAMEN : Ennery
Place of examination

OPERATEUR(S) : J. PINTEAUX
Operator(s)

CONDITIONS D'EXECUTION SUIVANT : NF EN ISO 17636-1 classe A
Conditions of execution to 1.C00.T.115

Version : 2013
Version 2

SOURCE DE RAYONNEMENT / APPAREIL : ERESCO
Radiation source / Apparatus

DIMENSIONS FOYER OU RADIOELEMENT : 3x3 mm
Size of radioactive source

Rayons X X rays **I max : 3 mA** **U max : 300 kV**

Rayons gamma Gamma rays **Iridium 192** **Autre :** Other : **Activité :** Activity : TBq

TRAITEMENT FILM : Manuel : Manual t min/T°C **Automatique :** Automatic t min/T°C

EMPLACEMENT FILM DESIGNÉ PAR : Client Apave
Location of radiographs decided by Customer

REPÈRE PIÈCE / SOUDURE Workpiece / weld mark	FILM		TYPE DE PRISE DE VUE (1) Positioning of source end film	NOMBRE DE PRISES DE VUE Number of exposure	ÉPAISSEUR FILTRE ANTERIEUR (Pb) Thickness of front (lead) filter (mm)	ÉPAISSEUR ECRAN Pb (mm) Lead Screens thickness			BLOCAGE RETRODIFFUSION (mm) Thickness of backscattering barrier	MARQUAGE FILM LUMINEUX L, PLOMB P Film marking light L, Lead P	INDICATEUR DE QUALITÉ D'IMAGE Image quality IQI				CONDITIONS DE PRISES DE VUE Operating technique								
	TYPE Type	CLASSE SYSTEME ISO 11699-1 System class ISO 11699-1				ANTERIEUR Front	INTERMEDIAIRE Intermediate	POSTERIEUR Back			TYPE Type	CARACTERISTIQUE Characteristic	POSITION S=source, F = film Position S=source, F = film	SENSIBILITE REQUISE Sensitivity required	ÉPAISSEUR TRAVERSEE Thickness traversed (mm)	ÉPAISSEUR RADIOGRAPHIE Thickness of object (mm)	DISTANCE SOURCE - FILM Source - Film distance (mm)	DISTANCE SOURCE - OBJET Source - Object distance (mm)	DISTANCE OBJET - FILM Object - Film distance (mm)	TENSION (kV) Voltage	INTENSITE (mA) Current	TEMPS D'EXPOSITION Exposure time	
L1, CTL	D7	C5	S	1	2	-	0,03	-	0,03	2	P	EN	10 FE	S	W14	10	10	700	690	10	200	4	17"
C1, C2	D7	C5	S	3	1	-	0,03	-	0,03	2	P	EN	10 FE	F	W11	24	18	2000	1982	18	300	3	3'00"



Nom Name	Qualification	Date	Signature Visa
J. PINTEAUX B02-017487	COFREND RT 2	25/11/2021	



EXAMEN PAR RADIOGRAPHIE
Radiographic Examination

Rapport N° : A533680286.1 -
Report N° SP275117

INTERPRETATION SUIVANT : NF EN 13458-2
Interpretation to

Version : 2003
Version

Classe / coefficient : Tableau 8
Class or coefficient

L'évaluation des défauts de forme, dimensionnels et divers doivent faire l'objet d'un contrôle plus spécifique / Impact shape, dimensions & miscellaneous imperfections evaluation shall be subject to more specific testing

	REPERE PIECE / SOUDURE Workpiece / weld mark	REPERE FILM Film mark	DENSITE MAX / MIN MAX / min density	QUALITE D'IMAGE OBTENUE Image quality	DESIGNATION DES DEFAUTS SELON ISO 6520-1 - Imperfection designation according to ISO 6520-1 -										RESULTATS Results		INTERPRETE PAR : Interpreted by		
					FISSURE (100) Crack	SOUFFLURE SPHEROÏDALE (2011) Porosity	SOUFFLURES UNIFORMEMENT REPARTIES (uniformly distributed porosity) (2012)	NID DE SOUFFLURES (2013) Clustered porosity	SOUFFLURES ALIGNEES (2014) Linear porosity	SOUFFLURE ALLONGEE / VERMICULAIRE (Elongated cavity / worm hole) (2015) (2016)	RETASSURE (202) (2024) Shrinkage cavity	INCLUSION (301) (302) (303) Inclusion	INCLUSION METALLIQUE (304) (3042) Metallic inclusion	MANQUE DE FUSION / COLLAGE (401) Lack of fusion	MANQUE DE PENETRATION (402) Lack of penetration	CANIVEAU / MORSURE (501) à (5013) Undercut	RETASSURE A LA RACINE (510) Root concavity	ROCHAGE (516) Root porosity	CONFORME Conform
1	Le 16/11/2021 (JP)																		Date : 16/11/2021
2	L1	121	0-30	2.7	0.16												X		 OBSERVATIONS Remarks
3			230-260	3.0	0.16												X	DF	
4																			
5	CTL	121	265-295	2.7	0.16												X		
6			290-320	2.8	0.16												X		
7																			
8	Le 25/11/2021 (JP)																		
9	C1	121	0-35	2.9	0.20												X	506	
10			35-70	2.9	0.20												X	506 / DF	
11			70-105	2.8	0.20												X	506	
12																			
13	C2	121	0-35	2.6	0.20										X	X		604 / 506 / 5013 sur latte	
14			35-70	2.8	0.20												X	506 / 5013 sur latte / FR	
15			70-105	2.7	0.20												X		
16																			
17																			
18																			
19																			
20																			

FR : Film rayé / Scratched film interpretation DF : Défaut développement / Development flow NF : Non Fourni / Not supplied SD : Interpretation Simple et Double film / Double & Single film

CONCLUSION : Les soudures examinées sont conformes.

Nombre de films joints : 10 Simple(s) Double(s) Annexe : Annex

DESIGNATION DEFAUTS SELON ISO 6520-1 - Groupe n°1 Fissures. Groupe n°2 Cavités : Retassures (202), Retassure de cratère (2024), Groupe n°3 Inclusions : Inclusion de laitier (301), Inclusion de flux (302), Inclusion d'oxyde (303), inclusion de tungstène (3041), inclusion de cuivre (3042), Groupe n°5 Défauts de forme et défauts dimensionnels : caniveau continu (5011), caniveau discontinu / morsure (5012), caniveau à la racine (5013), surépaisseur excessive (502), excès de pénétration (504), débordement (506), défaut d'alignement (507), défaut angulaire (508), effondrement (509), manque d'épaisseur (511), mauvaise reprise (517); Groupe n°6 Défauts divers : coup d'arc (601), projection (602), coup de meule (604), coup de burin (605)



ARGANCY Z.I. des Jonquières - BP 7 - 57365 ENNERY France
 Tel : 33.3.87.70.85.50 - 33.3.87.70.85.44
 www.cryolor.com

AS BUILT / Tel que construit

EFV C10 DN2200 17 bar CS rev2

N° TANK or PROJECT
 N° appareil/projet

275117

SHELL/TOLE	REF.	MATERIAL/NUANCE	Emin (mm)	N° HEAT/COULEE N° SHELL/TOLE
Shell/Virole 1	A0002583	1.4315 - X5CrNiN19-9	5,8	79541 - 397472 - 002
SUPPLIER/Provenance des viroles			INDUSTEEL	

HEAD/FOND	REF.	MATERIAL/NUANCE	Emin (mm)	N° HEAT/COULEE N° SHELL/TOLE
Upper head	H0006659	1.4315 - X5CrNiN19-9	6	69631 - 380323 - 003 - A768
Lower head	H0006659	1.4315 - X5CrNiN19-9	6	78621 - 391687 - 001 - A790
SUPPLIER/Provenance des fonds			AFFLERBACH	

SAFETY EQUIPMENTS / ACCESSOIRES ARMOIRE DE COMMANDE

ARTICLE	SUPPLIER / FOURN.	SET / TARAGE	REP.	N° SERIE / N° HEAT	DATE
LINE AND SAFETY VALVE / SOUPEPE					
Safety valve 1/2" - Type 06388 - 17 bar	HEROSE	17 Bar	S1	3773061	01/2022
Safety valve 1/2" - Type 06388 - 17 bar	HEROSE	17 Bar	S1	3773070	01/2022
Line safety valve 1/4" - Type 06001 - 40 bar	HEROSE	40 Bar	S3	3839229	03/2022
Line safety valve 1/4" - Type 06001 - 40 bar	HEROSE	40 Bar	S4	3839205	03/2022
SHELL SAFETY DEVICE / CLINQUANT SECURITE					
Safety disc/Clinq. DN50 type A	BS&B	0,5 Bar	DR1	21380935-1	09/2021
Safety disc/Clinq. DN50 type B	BS&B	0,5 Bar	DR2	21380935-2	09/2021
SAFETY BURSTING DISC/ DISQUE DE RUPTURE					
Bursting discs 24 bar	WITZENMANN	24 Bar	DR3	21-39-02	10/2021
Bursting discs 24 bar	WITZENMANN	24 Bar	DR3	22-10-03	02/2022
LEVEL GAUGE / CELLULE					
Level gauge WIKA	WIKA	/	N1	110HPFLE	03/2022

DECLARATION UE DE CONFORMITE EU declaration of conformity

N° : 61229
Rev. : /

Le fabricant soussigné : WITZENMANN France SARL (WI-F)
The undersigned manufacturer : 4, allée des Rousselets - ZAC des Vallières
77400 Thorigny Sur Marne
tél. : (+33) 1 60 94 31 31
fax : (+33) 1 60 94 30 40

déclare que le matériel désigné ci après
hereby certify that the following product:

désignation : BDRD.NI.18.24.1TF
description: Réf : 1078 / E
PE : 24 bar \pm 10% à 20°C
Lot : 21.39.02 * DR3

No. d'identité : 88385 Quantité : 100
Identity no.: Quantity:

qui a fait l'objet du contrat no. 30764 du 12/08/2021
object of the Purchase Order no.:

de la part de la société : CRYOLOR
from the company:

et traité sous commande interne AR no. : 158900
and which was manufactured under the order acknowledgment no.:

est conforme aux exigences essentielles de sécurité de la directive 2014/68/UE transposée en droit français par les articles du code de l'environnement R557-9-1 à R557-9-10
is compliant with the essential safety requirements of the directive 2014/68/EU translating in the french law by the environment code R557-9-1 à R557-9-10

EN ISO 4126-2

Evaluation de la conformité du dispositif effectué par l'ASAP C E 0851 suivant module B + D
Conformity evaluation achieved by ASAP C E 0851 according to the module B + D

Attestation délivrée par l'ASAP N° 13-B-08792, complément 13-B Cpltt-09670, 312999-Bf-12426 et
Certificate delivered by ASAP N° 319011-Bf-12504 + 20-SQ_Eval-13701

ASAP - 40 Avenue du Maréchal Joffre - 60 500 Chantilly - France
Phone : +33:3:44583274 - Fax : -
Email : as@asap-pression.com - Website : www.asap-pression.com

Le responsable désigné :
The designated responsible:

Nom et fonction : P. ROBIDEL - Assistant Qualité
Name and function

Visa  Date.: 05/10/2021

**PROCES VERBAL D'ESSAIS DE RUPTURE
TEST REPORT BURST DISKS**

Selon norme NF EN ISO 4126-2 indice en vigueur / According to NF EN ISO 4126-2 standard

Client : **CRYOLOR**
CustomerN° AR : **158900**
AR N°Identité : **88385**
P/NN° cde : **30764**
PO n°Réf. Client : **A0002744**
Customer P/NType disque : **BDRD.NI.18.24.1TF**
Disk typRéférence : **1078**
ReferenceMatière disque : **Nickel**
Disk raw materialMatière monture : **Inox**
Part materialPression de rupture : **24 bar ± 10%**
Burst pressurePression maxi : **26.4 bar**
Max pressureQté : **100**
QtyDimension : **DN 18**
DimensionRévision : **E**
RevisionN° lot matière : **FNI 2078**
Batch raw materialRevêtement : **Téflon**
CoatingTempérature : **20 °C**
TemperaturePression mini : **21.6 bar**
min pressureN° Lot : **21.39.02**
Batch number**TEST DE RUPTURE / BURST TEST**Couple de serrage : **5 daN**
assembly torqueCapteur utilisé : **CP 107**
Pressure sensorRésultats :
ResultsQté à éclater : **6**
Burst qty

n° Pièce n° / Pièce number	Valeur / Value	n° Pièce n° / Pièce number	Valeur / Value
1	24.6 bar		
2	24.8 bar		
3	23.8 bar		
4	24.7 bar		
5	25.1 bar		
6	24.7 bar		

INFORMATIONS COMPLEMENTAIRES / COMPLEMENTARY INFORMATIONNous certifions que le matériel a été fabriqué et testé suivant les informations ci-dessus
We certify that the material has been manufactured and tested according to the above informationNom : **ROBIDEL**
NameDate : **05/10/21**
Date

**PROCES VERBAL D'ESSAIS DE RUPTURE
TEST REPORT BURST DISKS**

Selon norme NF EN ISO 4126-2 indice en vigueur / According to NF EN ISO 4126-2 standard

Client : **CRYOLOR**
*Customer*N° AR : **159997**
*AR N°*Identité : **88385**
*P/N*N° cde : **31344**
*PO n°*Réf. Client : **A0002744**
*Customer P/N*Type disque : **BDRD.NI.18.24.1TF**
*Disk typ*Référence : **1078**
*Reference*Matière disque : **NICKEL**
*Disk raw material*Matière monture : **INOX**
*Part material*Pression de rupture : **24b ± 10%**
*Burst pressure*Pression maxi : **26,4 bar**
*Max pressure*Qté : **100**
*Qty*Dimension : **DN18**
*Dimension*Révision : **E**
*Revision*N° lot matière : **FNI2078**
*Batch raw material*Revêtement : **TEFLON**
*Coating*Température : **20°C**
*Temperature*Pression mini : **21,6 bar**
*min pressure*N° Lot : **22.10.03**
*Batch number***TEST DE RUPTURE / BURST TEST**Couple de serrage : **5 daN**
*assembly torque*Résultats :
*Results*Capteur utilisé : **CP107**
*Pressure sensor*Qté à éclater : **6**
Burst qty

n° Pièce n° / Pièce number	Valeur / value	n° Pièce n° / Pièce number	Valeur / value
1	23,8 bar		
2	23,8 bar		
3	24,2 bar		
4	23,7 bar		
5	23,9 bar		
6	23,5 bar		

INFORMATIONS COMPLEMENTAIRES / COMPLEMENTARY INFORMATIONNous certifions que le matériel a été fabriqué et testé suivant les informations ci-dessus
*We certify that the material has been manufactured and tested according to the above information*Nom : **L. MARTINEZ**
*Name***J. HAERING**
*P.D.*Date : **02/02/2022**
Date

DECLARATION UE DE CONFORMITE EU declaration of conformity

N° : 61574
Rev.: /

Le fabricant soussigné : WITZENMANN France SARL (WI-F)
The undersigned manufacturer : 4, allée des Rousselets - ZAC des Vallières
77400 Thorigny Sur Marne
tél. : (+33) 1 60 94 31 31
fax : (+33) 1 60 94 30 40

déclare que le matériel désigné ci après .
hereby certify that the following product:

désignation : **BDRD.NI.18.24.1TF**
description: **Réf : 1078 / E**
PE : 24 bar ± 10% à 20°C
Lot : 22.10.03 * DR3

No. d'identité : **88385** Quantité : **100**
identity no.: *Quantity:*

qui a fait l'objet du contrat no. **31344**
object of the Purchase Order no.:

de la part de la société : **CRYOLOR**
from the company:

et traité sous commande interne AR no. : **159997**
and which was manufactured under the order acknowledgment no.:

est conforme aux exigences essentielles de sécurité de la directive 2014/68/UE transposée en droit français par les articles du code de l'environnement R557-9-1 à R557-9-10
is compliant with the essential safety requirements of the directive 2014/68/EU translating in the french law by the environment code R557-9-1 à R557-9-10

EN ISO 4126-2

Evaluation de la conformité du dispositif effectué par l'ASAP C € 0851 suivant module B + D
Conformity evaluation achieved by ASAP C € 0851 according to the module B + D

Attestation délivrée par l'ASAP N° 13-B-08792 + 20-SQ_Eval-13701
Certificate delivered by ASAP N°

ASAP - 40 Avenue du Maréchal Joffre - 60 500 Chantilly - France
Phone : +33:3:44583274 - Fax : -
Email : as@asap-pression.com - Website : www.asap-pression.com

Le responsable désigné :
The designated responsible:

Nom et fonction : **J. HAELLING - Contrôleur Qualité**
Name and function :

Visa :



Date : **02/02/2022**

MONTAGE

Avant le démontage de l'ensemble du système, nettoyer soigneusement l'environnement immédiat.

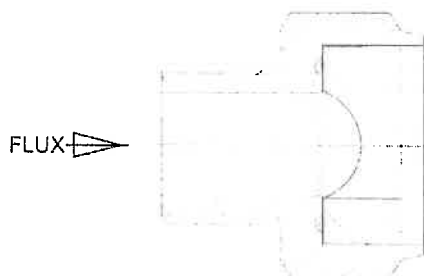
- Oter le dispositif d'éclatement, ainsi que son joint en cuivre.
- Nettoyer la portée de joint.
- Mettre en place le joint en cuivre neuf sur le nouveau dispositif. (si le système d'étanchéité le prévoit)
- Positionner le système dans l'installation.
- Serrer à un couple suffisant le disque de rupture.
- Utiliser pour le serrage une clé à œil ou à tube afin d'éviter tout risque de déformation de la monture du disque.

Serrer d'une manière suffisante et vérifier l'étanchéité

Nota : Le dispositif d'éclatement ne doit être sorti de son conditionnement qu'au dernier moment, afin d'éviter tout risque de détérioration du disque.

Attention :

- 1° L'utilisation de produit de type " mille bulles " pour tester le système en service est déconseillée car ces produits peuvent percer le disque.
- 2° Les ensembles doivent être montés sur le réservoir suivant les règles de l'art ou la réglementation en vigueur ; il convient d'empêcher tout contact entre l'ensemble de rupture et le liquide cryogénique.



IDENTIFICATION DE LA MONTURE EQUIPEE

TYPE	BDRD-NI-18-24-1TF
REF	1078 / E
PE	24 bar ± 10% à 20°C
TS monture	-196°C +65°C
LOT N°	22-10-03

Date de fabrication du disque de rupture

Elle est précisée dans le N° de lot marqué sur le disque
La construction du numéro de lot est la suivante : LOT N° : année-semaine-N°chronologique

WITZENMANN France - 4, allée des Rousselets - ZAC des Vallières - 77404 Thorigny sur Marne - Tél. : (+33)1.60.94.31.31 – Fax : (+33)1.60.94.30.40

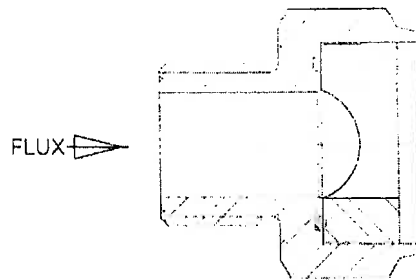
Révision	Date	Nom	Page
G	29/07/2020	FTD10	1/2

**INSTALLATION INSTRUCTION
FOR THE USE OF BURST DISCS
TYPE CAP DISCS (for single-use only)**

- Before the removal of the old system, clean carefully the area around.
- Remove the burst disc, together with the copper gasket.(if need by the sealing system)
- Clean the sealing surface.
- Put the new copper gasket on the system.
- Place the new system into the installation.
- Screw and tighten the assembly with a box or ring spanner in order to avoid any deformation of the disc support.

Beware the torque tightening is efficient & no leak allowed

- Nota : The burst disc assembly must be removed from its package only at the latest moment in order to avoid any damage on the disc.
- **Attention :**
 - 1° The use of products such as « bubble leak detection fluids» for testing the product in use is not recommended as those liquid materials can attack andhole the disc !
 - 2° The systems must be set on vessels according to the sound engineering practise or in conformance with the rules in force ; pay attention to avoid any direct contact between the burst disc assembly and the cryogenic fluid !



Date of manufacturing of the burst disc

The date is indicated in the batch number

Detail of batch number : batch N° :year-week -N°chrono

Révision	Date	Nom	Page
G	29/07/2020	FTD10	2/2



Testreport according to EN 10204 - 2.2
Rapport d'essai selon EN 10204 - 2.2

Page
Page 1 / 2

Customer:
Client: **CRYOLOR SA**
Magasin Général Cryolor
Z.I. des Jonquières
FR 57365 ENNERY

Certificate No.
Certificat N° **06005103**

Date
Date **11.03.2022**

Customer Order No. **31591 / AN1** Customer Part. No. **A0003604** Order Date **16.02.2022**
N° de commande client N° d'article du client Date de commande

Order No. / Item **CC435754/3** Part No. **48699983** Quantity **5,00**
N° de commande N° d'article Quantité

Model **712.15** Scale range **418 mbar**
Type étendue d'échelle

Serial number **[1*]** Class **2.5**
Numéro de série Classe

Tag No.
Etiquette n°

We herewith certify that above mentioned unit(s) complied with state-of-the-art technology at the time of supply. The order specifications were adhered to. The quality of the unit(s) was confirmed by the Quality Management System. The quality inspection has been successfully passed.

The class accuracy of the aforementioned unit(s) complies with class 2.5.

We herewith certify that above unit(s) is/are manufactured "free of oil and grease" for use with oxygen.

Par le présent document, nous certifions que l'unité ou les unités précitée(s) sont conformes à l'état actuel de la technique au moment de leur mise en circulation. Les critères définis à la commande ont été respectés. La qualité de l'unité / des unités a été confirmée dans le cadre du système de gestion de la qualité. Les appareils ont passé avec succès les tests de qualité.

La précision de l'indication de l'unité (des unités) mentionnée(s) ci-avant correspond à la classe 2.5.

Nous certifions que l'unité ou les unités précitée(s) a / ont été fabriquée(s) « sans huile ou graisse » pour des applications avec de l'oxygène.

[1*]
110HPFLC # 110HPFLD # 110HPFLE # 110HPFLF # 110HPFLG

*
N1



Testreport according to EN 10204 - 2.2
Rapport d'essai selon EN 10204 - 2.2

Page 2 / 2
Page

Customer: **CRYOLOR SA**
Client: **Magasin Général Cryolor**
Z.I. des Jonquières
FR 57365 ENNERY

Certificate No. **06005103**
Certificat N°

Date **11.03.2022**
Date

Inspection Representative
Spécialiste

Thorsten Roth 

This document was created automatically and needs no signature.
Etabli automatiquement, pas de signature requise

DE
EU-Konformitätserklärung Nr.001SV
nach Druckgeräterichtlinie 2014/68/EU (CE-Kennzeichen)
EN
EU-Declaration of Conformity No.001SV
in acc. to the pressure equipment directive 2014/68/EU (CE-mark)
PL
Deklaracja zgodności UE Nr 001SV
zgodnie z Dyrektywą ciśnieniową 2014/68/UE (znak CE)

HEROSE GMBH
ARMATUREN UND METALLE
 Elly-Heuss-Knapp-Str. 12
 D-23843 Bad Oldesloe / Germany

Name und Anschrift des Herstellers
 Name and address of the manufacturer
 Nazwa i adres producenta

- Kategorie IV-2014/68/EU
 Categorie IV-2014/68/EU
 Kategoria IV-2014/68/UE
- Angewandte Kategorie nach Artikel 4 Anhang II
 Applied category in acc. to article 4 annex II
 Zastosowane kategorie wg Artykułu 4 Załącznik II

Modul Module Moduł	Konformitätsbewertungsverfahren Conformity assessment procedures Procedura badawcza zgodności	Bescheinigungsnummer Certificate number Numer zaświadczenia
B	EU-Baumusterprüfung (Baumuster und Entwurfsmuster) EU type-examination (Type and Design Examination) Kontrola wzoru konstrukcyjnego UE (wzór konstrukcyjny i typ projektu)	Siehe Tabelle See table Patrz tabela
D	Qualitätssicherung Produktion quality control production Kontrola jakości produkcji	0045/202/1204/Z/00242/20/D/001(00)

Angewandte Konformitätsbewertungsverfahren nach Artikel 14
 Conformity assessment procedures in acc. to article 14
 Zastosowane procedury badawcze zgodności wg Artykułu 14

TÜV NORD Systems GmbH & Co. KG,
 Große Bahnstrasse 31,
 D-22525 Hamburg / Germany

Identifikations-Nr. / Identification number / Numer identyfikacyjny: 0045

Name und Anschrift der notifizierten Stelle
 Name and address of the notified body
 Nazwisko i adres certyfikowanej jednostki

Der unterzeichnende Hersteller bescheinigt, dass Konstruktion, Herstellung und Prüfung der in der folgenden Übersicht genannten Druckgeräte den Anforderungen der Druckgeräterichtlinie entspricht und er die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt.

The signing manufacturer confirms that the design, manufacturing and inspection of the pressure equipment mentioned in the table below complies with the requirements of the pressure equipment directive and that he shall be solely responsible for issuing this declaration.

Producent, który złożył pod niniejszą deklaracją swój podpis zaświadcza, że konstrukcja, produkcja i kontrola podanych w przeglądzie urządzeń ciśnieniowych spełnia wymogi dyrektywy ciśnieniowej i ponosi on samodzielną odpowiedzialność za wystawienie niniejszego zaświadczenia.

Beschreibung des Druckgerätes
Description of the pressure equipment
Opis urządzenia ciśnieniowego

Sicherheitsventil-Typ Safety Valve Type Zawór bezpieczeństwa - typ	Nennweite Nominal size Średnica znamionowa (G; R; RC; NPT; M)	TÜV-SV- Bauteilkennzeichen ⁽¹⁾ TÜV-SV-type-test approval mark No. Oznaczenie podzespołu TÜV-SV	EU-Baumusterbescheinigung-Nr ⁽²⁾ EC-type examination No. Zaświadczenie dla wzoru konstrukcyjnego UE nr	Angewandte harmonisierte Normen Applied harmonized standards Zastosowane normy zharmonizowane
06370, 06372, 06376 06380	1/2 - 2	749	07 202 1321 Z 0004/2/13rev.1 07 202 1321 Z 0004/2/12	DIN EN ISO 4126-1: 2013-12
06381, 06383, 06386, 06387, 06388, 06389, 06413, 06416, 06417, 06418, 06430, 06435	1/2 - 2	780	0045/202/1201/Z/00232/20/D/001(00)	DIN EN ISO 4126-1: 2016-12
06474, 06478	1/4 - 3/4	836	0045/202/1201/Z/00233/20/D/001(00)	DIN EN ISO 4126-1: 2016-12
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06205, 06216, 06217, 06218, 06219	1/4 - 2	1090	0045/202/1201/Z/00619/20/D/001(00) 07 202 1321 Z 0006/13/D/01	DIN EN ISO 4126-1: 2013-12
06800, 06801, 06805, 06806	1/2 - 1	1105	07 202 1423 Z 0131 /14/D/0109	DIN EN ISO 4126-1: 2016-12
06420, 06421, 06425, 06426, 06440, 06441, 06445, 06446	1/2 - 1 1/4	1111	07 202 1409 Z 0137 /15/D/0109	DIN EN ISO 4126-1: 2016-12
06810; 06815 (d010) 06850, 06855 (d010, 14, 18) 06810, 06815, 06820 (d06)	3/8 - 2	1130	07 202 1321 Z 0035/13/D/001 07 202 1409 Z 0125/15/D/0109 07 202 1201 Z 0121/18/D/0089	DIN EN ISO 4126-1: 2016-12

⁽¹⁾ siehe Federhaube / see bonnet / patrz pokrywa

⁽²⁾ Gemäß DGRL 2014/68/EU, Artikel 48 bleiben die von der Konformitätsbewertungsstelle ausgestellten Bescheinigungen und gefassten Beschlüsse gemäß DGRL 97/23/EG weiterhin gültig.

⁽²⁾ According PED 2014/68/EU, Article 48 certificates and decisions acc. PED 97/23/EC issued by the conformity assessment bodies retain valid.

⁽²⁾ Zgodnie z DGRL 2014/68/UE, Artykuł 48 zaświadczenia i uchwały wydane przez jednostkę badającą zgodność wg DGRL 97/23WE pozostają dalej w mocy.

Sonstige angewandte Normen, technische Spezifikationen oder Prüfgrundlagen
Other applied standards or technical rules
Pozostałe zastosowane normy, specyfikacja techniczna lub podstawy kontroli

AD 2000-A2; VdTÜV SV 100; DIN EN ISO 23208, DIN EN 12516

HEROSE GMBH
ARMATUREN UND METALLE
Elly-Heuss-Knapp-Straße 12
23843 Bad Oldesloe

07.12.2020



Datum
Date
Data

M. Zaubitzer – Qualitätsmanagement
M. Zaubitzer – Quality Management
M. Zaubitzer – Zarządzania Jakością

Stempel des Herstellers
Manufacturer's stamp
Stempel producenta

Anmerkung: Etwaige Änderungen an dem oben beschriebenen Erzeugnis lassen die Gültigkeit dieser Erklärung erlöschen
Remarks: The validation of this declaration expires in the case of any modifications at the above mentioned product.
Uwaga: jakiegokolwiek zmiany w powyżej opisanym wyrobie powodują nieważność niniejszego oświadczenia

Beschreibung des Druckgerätes
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Opis urządzenia ciśnieniowego

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06810; 06815 (d010) 06850, 06855 (d010, 14, 18) 06810, 06815, 06820 (d06)	3/8 – 2	1130	07 202 1321 Z 0035/13/D/001 07 202 1409 Z 0125/15/D/0109 07 202 1201 Z 0121/18/D/0089	DIN EN ISO 4126-1: 2016-12

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HEROSE GMBH
ARMATUREN UND METALLE
Elly-Heuss-Knapp-Straße 12
23843 Bad Oidesloe

07.12.2020

M. Zaubitzer 

Datum
Date
Data

M. Zaubitzer – Qualitätsmanagement
M. Zaubitzer – Quality Management
M. Zaubitzer – Zarządzania Jakością

Stempel des Herstellers
Manufacturer's stamp
Stempel producenta

Anmerkung: Etwaige Änderungen an dem oben beschriebenen Erzeugnis lassen die Gültigkeit dieser Erklärung erlöschen

Remarks: The validation of this declaration expires in the case of any modifications at the above mentioned product.

Uwaga: jakiegokolwiek zmiany w powyżej opisanym wyrobie powodują nieważność niniejszego oświadczenia

Test Inspection certificate / Abnahmeprüfzeugnis**EN 10204 – 3.1**for setting and testing of safety valves acc. to / über die Einstellung und Prüfung von Sicherheitsventilen gemäß/
AD2000-A2; DIN EN ISO 4126-1

Customer Auftraggeber	CRYOLOR Zone Ind. des Jonquières F-57365 ENNERY	Order-No. Bestell-Nr.	31194	Item-No. Pos.-Nr.		Date Datum	19.11.2021
Customer Ref.-No Kunden Ref.-Nr.		HEROSE-Ref-No. HEROSE-Kom-Nr.	1000714037	Item-No. Pos.-Nr.	50	Certificate No. Zertifikat-Nr.	2022 - 68
Test Object Prüfgegenstand	Safety Valve angle type, type tested for cryogenic gases Eck-Sicherheitsventil bauteilgeprüft für tieftkalte Gase	Custom. Mat.-No. Kunden Mat.-Nr.	A0002168	Tolerance	+-3% of set pressure or +-0,1 bar whichever is greater		
Set Pressure Einstelldruck	17,00 bar 247 PSI	Flow area A0 [mm²] Strömungsquerschnitt A0 [mm²]	87	Part-No. Artikel-Nr.	06388.1004.0800	Serial-No. Serien-Nr. gemäß Anhang	
Coefficient of discharge Ausflussziffer	α_w / K_d 0,58 rated slope 1.517	Flow diameter d0 [mm] Strömungsdurchmesser d0 [mm]	10,5	Quantity Stückzahl	20		
Capacity / Leistung	651Nm³/h (AD 2000) 434SCFM (ASME)	Nominal Size Nennweite	Inlet / Eintritt male thread BSPP 1/2" Outlet / Austritt BSPP female_thread 1"	Nominal Pressure Nennndruck	Inlet / Eintritt PN 50 Outlet / Austritt PN 16		
Lift Hub	2,2 mm	Temperature range Temperaturbereich	-196 °C till/bis +185 °C	Function Funktion	Full lift / Vollhub (5%) Standard lift / Normalhub (10%)		X
Approval / Zulassung	EC-Type Examination / EG-Baumusterprüfung	Approval / Zulassung	CRN Registration / CRN Zulassung	Standard / Standard	CRN (Canada)		
Ventilnorm / valve standard	EN ISO4126-1:2016	Approval No. / Zulassg. Nr.	0045/202/1201/Z/00232/20/D/001(00)	Approval No. / Zulassg. Nr.	CRN 0G7343.5246		
Approval / Zulassung	ASME Code	Approval / Zulassung	TUEV Bauteilprüfung	Standard / Standard	VdTUEV SV100		
Standard / Standard	UVNB	Approval No. / Zulassg. Nr.	M 91088	Approval No. / Zulassg. Nr.	17-780		
Notified Body benannte Stelle	TÜV NORD	Category IV acc. PED 2014/68/EU Kategorie IV nach DGRL 2014/68/EU		Modul B + D			
Identification-No. Identifikations-Nr.	0045						

HEROSE GmbH
ARMATUREN UND METALLEElly-Heuss-Knapp-Str. 12
D-23843 Bad OldesloeContact:
Ansprechpartner:Authority of Certification
authority_of_cert@herose.comTel. (+49) 4531/509-0
Fax (+49) 4531/509-120

page 1 of 3

Customer Auftraggeber	CRYOLOR Zone Ind. des Jonquières F-57365 ENNERY	Order-No. Bestell-Nr.	31194	Item.-No. Pos.-Nr.		Date Datum	19.11.2021
Customer Ref.-No Kunden Ref.-Nr.		HEROSE-Ref-No. HEROSE-Kom-Nr.	1000714037	Item.-No. Pos.-Nr.	50	Certificate No. Zertifikat-Nr.	2022 - 68

The testing was done with **Luft / Air** at ambient temperature
 Die Einstellung erfolgte mit **Water / Wasser** bei Umgebungstemperatur

Testing of Valve / Prüfung der Armatur	
Description / Beschreibung	Remark / Bemerkung
Shell strength test with water 1,5 x PN Festigkeit des drucktrag. Gehäuses mit Wasser 1,5 x PN	Test acc. to / gemäß EN ISO 4126-1 Kap. 6.3 + 6.4
Seat tightness test Sitzdichtheit von Armaturen	Test acc. to / gemäß EN ISO 4126-1 Kap. 6.6 API 527, QMVA 10-006
Operability Funktionsfähigkeit	Test acc. to / gemäß EN ISO 4126-1 Kap. 6.5
cleaned for oxygen service gereinigt für den Betrieb mit Sauerstoff	In acc. / entsprechend ISO 23208 - O2

Results of the inspection / Ergebnis der Prüfungen:

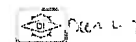
The inspections marked with x were carried out on each valve. No faults were observed.

Die mit x gekennzeichneten Prüfungen wurden an jeder Armatur durchgeführt. Es wurden keine Mängel festgestellt.

seal marked with
Plombe gekennzeichnet mit



body marked with
Gehäuse gekennzeichnet mit



country of origin / Ursprungsland

Germany / Deutschland

Bad Oldesloe, 03.01.2022

Authorized inspection representative/ Abnahmebeauftragter

HEROSE GmbH
ARMATUREN UND METALLE

Elly-Heuss-Knapp-Str. 12
D-23843 Bad Oldesloe

Contact:
Ansprechpartner:

Authority of Certification
authority_of_cert@herose.com

Tel. (+49) 4531/509-0
Fax (+49) 4531/509-120

Customer Auftraggeber	CRYOLOR Zone Ind. des Jonquières F-57365 ENNERY	Order-No. 31194 Bestell-Nr.	Item.-No. Pos-Nr.	Date 19.11.2021 Datum
Customer Ref.-No Kunden Ref.-Nr.	HEROSE-Ref.No. 1000714037 HEROSE-Kom-Nr.	Item.-No. 50 Pos.-Nr.	Certificate No. 2022 - 68 Zertifikat-Nr.	

Materials / Materialien			
Serial-No. Serien-Nr.	TAG-No. 1 TAG-Nr. 1	TAG-No. 2 TAG-Nr. 2	TAG-No. 3 TAG-Nr. 3
3773059			
3773060			
3773061			
3773062			
3773063			
3773064			
3773065			
3773066			
3773067			
3773068			
3773069			
3773070			
3773071			
3773072			
3773073			
3773074			
3773075			
3773076			
3773077			
3773078			

HEROSE GmbH
ARMATUREN UND METALLE

Elly-Heuss-Knapp-Str. 12
D-23843 Bad Oldesloe

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DE
EU-Konformitätserklärung Nr.001SV
nach Druckgeräterichtlinie 2014/68/EU (CE-Kennzeichen)
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EU-Declaration of Conformity No.001SV
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Deklaracja zgodności UE Nr 001SV
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HEROSE GMBH
ARMATUREN UND METALLE
Elly-Heuss-Knapp-Str. 12
D-23843 Bad Oldesloe / Germany

Name und Anschrift des Herstellers
Name and address of the manufacturer
Nazwa i adres producenta

- Kategorie IV-2014/68/EU
Categorie IV-2014/68/EU
Kategoria IV-2014/68/UE
- Angewandte Kategorie nach Artikel 4 Anhang II
Applied category in acc. to article 4 annex II
Zastosowane kategorie wg Artykułu 4 Załącznik II

Modul Module Moduł	Konformitätsbewertungsverfahren Conformity assessment procedures Procedura badawcza zgodności	Bescheinigungsnummer Certificate number Numer zaświadczenia
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D	Qualitätssicherung Produktion quality control production Kontrola jakości produkcji	0045/202/1204/Z/00242/20/D/001(00)

Angewandte Konformitätsbewertungsverfahren nach Artikel 14
Conformity assessment procedures in acc. to article 14
Zastosowane procedury badawcze zgodności wg Artykułu 14

TÜV NORD Systems GmbH & Co. KG,

Große Bahnstrasse 31,
D-22525 Hamburg / Germany

Identifikations-Nr. / Identification number / Numer identyfikacyjny: 0045

Name und Anschrift der notifizierten Stelle
Name and address of the notified body
Nazwisko i adres certyfikowanej jednostki

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06001, 06002, 06006, 06011, 06012, 06016	1/4 - 1/2	1048	0045/202/1201/Z/0616/20/D/001(00) 0045/202/1201/Z/0617/20/D/001(00)	DIN EN ISO 4126-1: 2016-12
06601, 06602, 06603, 06604, 06605	1/2	1080	07 202 1321 Z 0007/13/D/01rev.1	DIN EN ISO 4126-1: 2013-12
06205, 06216, 06217, 06218, 06219	1/4 - 2	1090	0045/202/1201/Z/00619/20/D/001(00) 07 202 1321 Z 0006/13/D/01	DIN EN ISO 4126-1: 2013-12
06800, 06801, 06805, 06806	1/2 - 1	1105	07 202 1423 Z 0131 /14/D/0109	DIN EN ISO 4126-1: 2016-12
06420, 06421, 06425, 06426, 06440, 06441, 06445, 06446	1/2 - 1 1/4	1111	07 202 1409 Z 0137 /15/D/0109	DIN EN ISO 4126-1: 2016-12
06810; 06815 (d010) 06850, 06855 (d010, 14,18) 06810, 06815, 06820 (d06)	3/8 - 2	1130	07 202 1321 Z 0035/13/D/001 07 202 1409 Z 0125/15/D/0109 07 202 1201 Z 0121/18/D/0089	DIN EN ISO 4126-1: 2016-12

⁽¹⁾ siehe Federhaube / see bonnet / patrz pokrywa

⁽²⁾ Gemäß DGRL 2014/68/EU, Artikel 48 bleiben die von der Konformitätsbewertungsstelle ausgestellten Bescheinigungen und gefassten Beschlüsse gemäß DGRL 97/23/EG weiterhin gültig.

⁽²⁾ According PED 2014/68/EU, Article 48 certificates and decisions acc. PED 97/23/EC issued by the conformity assessment bodies retain valid.

⁽²⁾ Zgodnie z DGRL 2014/68/UE, Artykuł 48 zaświadczenia i uchwały wydane przez jednostkę badającą zgodność wg DGRL 97/23WE pozostają dalej w mocy.

Sonstige angewandte Normen, technische Spezifikationen oder Prüfgrundlagen

Other applied standards or technical rules

Pozostałe zastosowane normy, specyfikacja techniczna lub podstawy kontroli

AD 2000-A2; VdTÜV SV 100; DIN EN ISO 23208, DIN EN 12516

HEROSE GMBH
ARMATUREN UND METALLE
Elly-Heuss-Knapp-Straße 12
23843 Bad Oidesloe

07.12.2020

Datum
Date
Data

M. Zaubitzer – Qualitätsmanagement
M. Zaubitzer – Quality Management
M. Zaubitzer – Zarządzania Jakością

Stempel des Herstellers
Manufacturer's stamp
Stempel producenta

Anmerkung: Etwaige Änderungen an dem oben beschriebenen Erzeugnis lassen die Gültigkeit dieser Erklärung erlöschen
Remarks: The validation of this declaration expires in the case of any modifications at the above mentioned product.
Uwaga: jakiegokolwiek zmiany w powyżej opisanym wyrobie powodują nieważność niniejszego oświadczenia



BURST TEST CERTIFICATE
& CERTIFICATE OF CONFORMANCE



CUSTOMER: L.A.A. LES AUTOMATISMES APPLIQ
CERTIFIED TO:
L.A.A. LES AUTOMATISMES APPLIQ
PARC DE BACHASSON
BATIMENT C RUE DE LA CARRIERE DE
13590 MEYREUIL
FRANCE
FRANCE

DATE: 29/09/2021
P.O. NUMBER: CFZ51898
BS & B LOT NO: 21380935-1 * DR1
SIZE: 2" DN 50
TYPE: Welded LPS
HOLDER TYPE: N/A
MATERIAL: 316,316,316,316
HEAT NOs: 526236

QTY. OF UNITS SHIPPED: 160
QTY. OF UNITS TESTED: 8

We certify that the Assemblies covered by this data have been manufactured, inspected, tested and packaged in accordance with the purchase order requirements. Test results are on file available for examination.

BURST TEST RESULTS

NUMERICAL VALUE	PRESSURE UNIT	@TEMPERATURE
0.45, 0.45, 0.45, 0.44	bar(G)	20° C
0.44, 0.45, 0.45, 0.45		

RATED RUPTURE PRESSURE

NUMERICAL VALUE	PRESSURE UNIT	@TEMPERATURE
MIN 0.36 - MAX 0.50	bar(G)	20° C

OTHER DETAILS:-

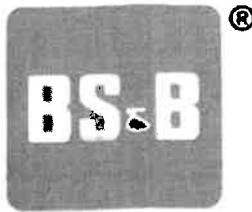
TAG NUMBERS:

DRAWING NO. JS-0-5334-000



Per Pro BS & B Safety Systems Ltd.

Quality Assurance Department



SAFETY SYSTEMS LTD.

DECLARATION OF CONFORMITY

EU Pressure Equipment Directive PED 2014/68/EU

BS&B Safety Systems Ltd declare that the products described below have been assessed by the Notified Body, Det Norske Veritas-GL, under conformity assessment Module B of the Directive and have been certified by the Notified Body as conforming to the Pressure Equipment Directive PED 2014/68/EU for Category IV safety accessories.

Bursting Disk Type	Bursting Disk Holder Type	EC Type Examination Certificate Number
FRS, FRL, GLP-S, JRS, LPS, MRB, NBC-S, RLS, S-90, S90 Welded Cassette, S90-HP, SHP, Sigma, Sigma EXL, SKr, SKr-S, SKR-ST, SLP-S, SLP-SE, SLP-SM, SLP-N, SLP-NS, SVI Assembly, SSR, UBR, VSP-RV, VSP-SH, SRD, SRD-L, CCS, CCS-L, SKi	SRB-7RS, SRB-7RS DD, SRB-7FS, SRB-7HP, S90-7R, S90-7R DD, SMR-7R, SR-C, SR-7R, SPR-7R, GR-C, FMC, FTC, NA-Connect, NBC-7RS, SRI-7RS, SRB-7RS-TR, SRB-7RS-TR DD, SRB-7FS-TR, S90-7R-TR, S90-7R-TR DD	PEDB000000U
XN, XN-85, LCN, LCN Plus, LCN SPCL, AV, AVV, GFN, XT	NX-7R, NXV-7R NF-7R, NF-7RS, TLP-7R, TL-7R	PED-B-145
B, BR, BRR, BV, BRV, BSV, BRSV, D, DR, DRR, DV, D RV, DSV, DRSV, PLD, PLDV, FRB, Scored B, LPS, Skr, JRS & QRB Welded Assemblies,	FA, FF, SA/SE, STA-KUL, UA, Lo-To-Flo	PED-B-147
GCR-S, GCR-SS, GCR-SM, GCR-SMS, GCR-SE, GCR-N, GCR-NS	GR-C, FM-C	PED-B-151
RB-90	RB-7R, RB-7F, RB-7FF, RB-7FS, RB7	1425-2012-CE-NOR-DNV
SKr-U, ITC	UR-2	1298-2012-CE-NOR-DNV
Safety Accessories	Particular Material Appraisal	1814-2012-CE-NOR-DNV
GFR-S, GFR-SM, GFR-SE, GFR-SS, GFR-SMS	GR-C, FN-C & FT-C	1595-2012-CE-NOR-DNV
VAC-SAF & AV-ST	FF-C	1426-2012-CE-NOR-DNV

BS&B Safety Systems Ltd declare that our quality system has been assessed by the Notified Body, Det Norske Veritas-GL, under conformity assessment Module D of the Directive and has been certified by the Notified Body as conforming to the Pressure Equipment Directive PED 2014/68/EU under certificate number 12199-2018-CE-USA-ACCREDIA.

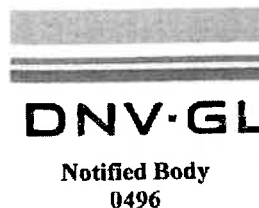
Signed on behalf of BS&B Safety Systems Ltd,

Conor Noonan
Quality Assurance Manager EMEA

QD 190 Rev 27 20th July, 2020



BS&B Safety Systems Ltd.
Raheen Business Park
Limerick
Ireland
Tel: 00 353 61 484700
Fax: 00 353 61 227987



Det Norske Veritas - GL
Business Assurance Italia S.r.l.
Via Energy Park,
14,
20871 Vimercate (MB),
Italy.

Zapp Precision Metals GmbH, P.O. Box 21 29, 59411 Unna/GER

Zapp Precision Metals GmbH

BS&B Safety Systems Ltd.
Bay G1 Raheen Industrial Estate
LIMERICK
V94 N4V2
IRELAND

Hochstraße 32
59425 Unna
Germany
Phone +49 2304 79-0
Fax +49 2304 79-7911
www.zapp.com

Managing Directors:
Dr. Stefan Seng
Gerald Zwickel
Edo Ollermann
Dr. Ali Reza Ghandehari

March 31, 2021

Copy of the Inspection certificate to EN 10204/3.1

Certificate No. 10362069000020 01

Your purchase Order 33596 dated March 30, 2021
Sales Order 9216715 Delivery Note 10362069
Production Lot 4711027 Inspection Lot 020000400001
Item 20 STAINLESS STEEL
Grade SS316L
Size 0.0762 mm x 927.000 mm
Thickn. tolerance -0.0038 mm / 0.0038 mm
Width tolerance 0.000 mm / 1.588 mm
Coil inner diameter 200.00 mm
Edges slit edges
Surface BA
Finish ANN
Coil weight 0 kg - 25 kg
HS-Code / Tariff 72193510
Techn. Specification ASTM A240/A240M-20A AMS 5507 REV. H
Techn. Specification AMS 5524 REV. M SA-240/SA-240M
Techn. Specification DIN EN 10088-2:2014 (EXC)7.2.3 DIN EN 10028-7:2016-10
Techn. Specification ASTM A666-15 NACE MR0103/ISO 17945:2015(E)
Techn. Specification NACE MR0175/ISO15156-3:2020(E)
Cust. Specification GRAIN SIZE PER ASTM E112
Specifications ASTM A 240 AMS 5507 AMS 5524 ASME SA240
DIN EN 10088-2 DIN EN 10088-2
Grain Size per ASTM E112
Material 8800520
Customer part no 01-092-09K-01
Quantity / Weight 24.000 KG

003



18073
MP
7/4/21

Chemical composition

Heat 526236

C (%)	Si (%)	Mn (%)	S (%)	P (%)	Cr (%)
0.027	0.420	1.54	0.0008	0.0390	16.70
Ni (%)	Mo (%)	Cu (%)	N (%)		
10.01	2.02	0.460	0.041		

Melt Source OU-US

1/2 10362069000020

Zapp Precision Metals GmbH, P.O. Box 21 29, 59411 Unna/GER

BS&B Safety Systems Ltd.
Bay G1 Raheen Industrial Estate
LIMERICK
V94 N4V2
IRELAND

March 31, 2021

Quality inspection results MHU D03635200

Tensile Strength trans. 95.10 - 97.60 KSI
.2% Yield Strength trans. 42.50 - 45.20 KSI
Elongation 2" trans. 55.80 - 59.10 %
Tensile Strength trans. 656 - 673 MPa
Grain Size 9.5
.2%Yield Strength trans. 293 - 311 MPa
Hardness 74.8 - 78.0 HRB

Batch D036608007

Bending test 180° HW bend diameter: 1x thickness PASS

Corrosion testing acc. to ASTM A 262 Practice E: PASS

Sizes and Quality identification test examined and in order.

Surface visual inspection at finish; without objection.

In compliance with the conditions mentioned in the acknowledgement of order.

#####

This certificate signifies that the material meets the appropriate requirements defined in the current revision of the following specifications:

Strip-Products: ISO 9445-1; ISO 9445-2; ASTM A480/480M and DIN EN 10140.

Wire/Bar-Products: ASTM A370; ASTM A555/A555M; ASTM A580/A580M.

This certificate has been issued by computer and is valid without signature.

ZPS / JIM SCHEUNEMAN +1 508-998-6300

Abnahme / Abn.Beauftragter	Telefon
Acceptance / Inspection representative	Phone
Contrôle / Contrôleur	Téléphone

ZAPP Precision Strip Inc. does not use mercury in the testing or production of material.
ZAPP Precision Strip Inc. is certified to ISO 9001, AS 9100 and is approved as a manufacturer according to AD2000-MERKBLATT W0 and the Pressure Equipment Directive PED 2014/68/EU. To view certificates go to customer information www.zapp.com



BURST TEST CERTIFICATE
& CERTIFICATE OF CONFORMANCE



CUSTOMER: L.A.A. LES AUTOMATISMES APPLIQ
CERTIFIED TO:
L.A.A. LES AUTOMATISMES APPLIQ
PARC DE BACHASSON
BATIMENT C RUE DE LA CARRIERE DE
13590 MEYREUIL
FRANCE
FRANCE

DATE: 29/09/2021
P.O. NUMBER: CFZ51898
BS & B LOT NO: 21380935-1 * DR1
SIZE: 2" DN 50
TYPE: Welded LPS
HOLDER TYPE: N/A
MATERIAL: 316,316,316,316
HEAT NOs: 526236

QTY. OF UNITS SHIPPED: 160
QTY. OF UNITS TESTED: 8

We certify that the Assemblies covered by this data have been manufactured, inspected, tested and packaged in accordance with the purchase order requirements. Test results are on file available for examination.

BURST TEST RESULTS

NUMERICAL VALUE	PRESSURE UNIT	@TEMPERATURE
0.45 , 0.45 , 0.45 , 0.44	bar(G)	20° C
0.44 , 0.45 , 0.45 , 0.45		

RATED RUPTURE PRESSURE

NUMERICAL VALUE	PRESSURE UNIT	@TEMPERATURE
MIN 0.36 - MAX 0.50	bar(G)	20° C

OTHER DETAILS:-

TAG NUMBERS:

DRAWING NO. JS-0-5334-000



Per Pro BS & B Safety Systems Ltd.

Quality Assurance Department



SAFETY SYSTEMS LTD.

DECLARATION OF CONFORMITY

EU Pressure Equipment Directive PED 2014/68/EU

BS&B Safety Systems Ltd declare that the products described below have been assessed by the Notified Body, Det Norske Veritas-GL, under conformity assessment Module B of the Directive and have been certified by the Notified Body as conforming to the Pressure Equipment Directive PED 2014/68/EU for Category IV safety accessories.

Bursting Disk Type	Bursting Disk Holder Type	EC Type Examination Certificate Number
FRS, FRL, GLP-S, JRS, LPS, MRB, NBC-S, RLS, S-90, S90 Welded Cassette, S90-HP, SHP, Sigma, Sigma EXL, SKr, SKr-S, SKR-ST, SLP-S, SLP-SE, SLP-SM, SLP-N, SLP-NS, SVI Assembly, SSR, UBR, VSP-RV, VSP-SH, SRD, SRD-L, CCS, CCS-L, SKI	SRB-7RS,SRB-7RS DD, SRB-7FS, SRB-7HP,S90-7R, S90-7R DD, SMR-7R,SR-C, SR-7R, SPR-7R, GR-C, FMC, FTC, NA-Connect, NBC-7RS, SRI-7RS, SRB-7RS-TR, SRB-7RS-TR DD, SRB-7FS-TR, S90-7R-TR, S90-7R-TR DD	PEDB000000U
XN, XN-85, LCN, LCN Plus, LCN SPCL, AV, AVV, GFN, XT	NX-7R, NXV-7R NF-7R, NF-7RS, TLP-7R,TL-7R	PED-B-145
B,BR,BRR,BV,BRV,BSV,BRSV,D,DR,DRR,DV,D RV,DSV,DRSV,PLD,PLDV, FRB, Scored B, LPS, Skr, JRS & QRB Welded Assemblies,	FA,FF,SA/SF,STA-KUL,UA, Lo-To-Flo	PED-B-147
GCR-S,GCR-SS,GCR-SM,GCR-SMS,GCR-SE, GCR-N, GCR-NS	GR-C,FM-C	PED-B-151
RB-90	RB-7R, RB-7F, RB-7FF, RB-7FS, RB7	1425-2012-CE-NOR-DNV
SKr-U, ITC	UR-2	1298-2012-CE-NOR-DNV
Safety Accessories	Particular Material Appraisal	1814-2012-CE-NOR-DNV
GFR-S,GFR-SM,GFR-SE,GFR-SS,GFR-SMS	GR-C,FN-C & FT-C	1595-2012-CE-NOR-DNV
VAC-SAF & AV-ST	FF-C	1426-2012-CE-NOR-DNV

BS&B Safety Systems Ltd declare that our quality system has been assessed by the Notified Body, Det Norske Veritas-GL, under conformity assessment Module D of the Directive and has been certified by the Notified Body as conforming to the Pressure Equipment Directive PED 2014/68/EU under certificate number 12199-2018-CE-USA-ACCREDIA.

Signed on behalf of BS&B Safety Systems Ltd,

Conor Noonan
Quality Assurance Manager EMEA

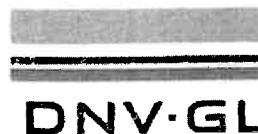
QD 190 Rev 27 20th July, 2020



SAFETY SYSTEMS LTD

BS&B Safety Systems Ltd.

Raheen Business Park
Limerick
Ireland
Tel: 00 353 61 484700
Fax: 00 353 61 227987



Notified Body
0496

Det Norske Veritas - GL
Business Assurance Italia S.r.l.
Via Energy Park,
14,
20871 Vimercate (MB),
Italy.

Zapp Precision Metals GmbH, P.O. Box 21 29, 59411 Unna/GER

Zapp Precision Metals GmbH

BS&B Safety Systems Ltd.
Bay G1 Raheen Industrial Estate
LIMERICK
V94 N4V2
IRELAND

Hochstraße 32
59425 Unna
Germany
Phone +49 2304 79-0
Fax +49 2304 79-7911
www.zapp.com

Managing Directors:
Dr. Stefan Seng
Gerald Zwickel
Edo Ollermann
Dr. Ali Reza Ghandehari

March 31, 2021

Copy of the Inspection certificate to EN 10204/3.1

Certificate No. 10362069000020 01

Your purchase Order 33596 dated March 30, 2021
Sales Order 9216715 Delivery Note 10362069
Production Lot 4711027 Inspection Lot 020000400001
Item 20 STAINLESS STEEL
Grade SS316L
Size 0.0762 mm x 927.000 mm
Thickn. tolerance -0.0038 mm / 0.0038 mm
Width tolerance 0.000 mm / 1.588 mm
Coil inner diameter 200.00 mm
Edges slit edges
Surface BA
Finish ANN
Coil weight 0 kg - 25 kg
HS-Code / Tariff 72193510
Techn. Specification ASTM A240/A240M-20A AMS 5507 REV. H
Techn. Specification AMS 5524 REV. M SA-240/SA-240M
Techn. Specification DIN EN 10088-2:2014 (EXC)7.2.3 DIN EN 10028-7:2016-10
Techn. Specification ASTM A666-15 NACE MR0103/ISO 17945:2015(E)
Techn. Specification NACE MR0175/ISO15156-3:2020(E)
Cust. Specification GRAIN SIZE PER ASTM E112
Specifications ASTM A 240 AMS 5507 AMS 5524 ASME SA240
DIN EN 10088-2 DIN EN 10088-2
Grain Size per ASTM E112
Material 8800520
Customer part no 01-092-09K-01
Quantity / Weight 24.000 KG

003



18073
MP
7/4/21

Chemical composition

Heat 526236

C (%)	Si (%)	Mn (%)	S (%)	P (%)	Cr (%)
0.027	0.420	1.54	0.0008	0.0390	16.70
Ni (%)	Mo (%)	Cu (%)	N (%)		
10.01	2.02	0.460	0.041		
Melt Source	OU-US				

1/2 10362069000020

Zapp Precision Metals GmbH, P.O. Box 21 29, 59411 Unna/GER

BS&B Safety Systems Ltd.
Bay G1 Raheen Industrial Estate
LIMERICK
V94 N4V2
IRELAND

March 31, 2021

Quality inspection results MHU D03635200

Tensile Strength trans. 95.10 - 97.60 KSI
.2% Yield Strength trans. 42.50 - 45.20 KSI
Elongation 2" trans. 55.80 - 59.10 %
Tensile Strength trans. 656 - 673 MPa
Grain Size 9.5
.2%Yield Strength trans. 293 - 311 MPa
Hardness 74.8 - 78.0 HRB

Batch D036608007

Bending test 180° HW bend diameter: 1x thickness PASS

Corrosion testing acc. to ASTM A 262 Practice E: PASS

Sizes and Quality identification test examined and in order.
Surface visual inspection at finish: without objection.
In compliance with the conditions mentioned in the acknowledgement of order.

This certificate signifies that the material meets the appropriate requirements defined in the current
revision of the following specifications:
Strip-Products: ISO 9445-1; ISO 9445-2; ASTM A480/480M and DIN EN 10140.
Wire/Bar-Products: ASTM A370; ASTM A555/A555M; ASTM A580/A580M.

This certificate has been issued by computer and is valid without signature.

ZPS / JIM SCHEUNEMAN +1 508-998-6300

Abnahme / Abn.Beauftragter	Telefon
Acceptance / Inspection representative	Phone
Contrôle / Contrôleur	Téléphone

ZAPP Precision Strip Inc. does not use mercury in the testing or production of material.
ZAPP Precision Strip Inc. is certified to ISO 9001, AS 9100 and is approved as a manufacturer
according to AD2000-MERKBLATT W0 and the Pressure Equipment Directive PED 2014/68/EU. To view
certificates go to customer information www.zapp.com



BURST TEST CERTIFICATE
& CERTIFICATE OF CONFORMANCE



CUSTOMER: L.A.A. LES AUTOMATISMES APPLIQ
CERTIFIED TO:
L.A.A. LES AUTOMATISMES APPLIQ
PARC DE BACHASSON
BATIMENT C RUE DE LA CARRIERE DE
13590 MEYREUIL
FRANCE
FRANCE

DATE: 24/09/2021
P.O. NUMBER: CFZ51898
BS & B LOT NO: 21380935-2 * DR2
SIZE: 2" DN 50
TYPE: Welded LPS
HOLDER TYPE:

QTY. OF UNITS SHIPPED: 160
QTY. OF UNITS TESTED: 7

MATERIAL: 316,316,316,316
HEAT NOs: 526236

We certify that the Assemblies covered by this data have been manufactured, inspected, tested and packaged in accordance with the purchase order requirements. Test results are on file available for examination.

BURST TEST RESULTS

NUMERICAL VALUE	PRESSURE UNIT	@TEMPERATURE
0.441 , 0.441 , 0.443 , 0.443 0.441 , 0.440 , 0.443	bar(G)	20° C

RATED RUPTURE PRESSURE

NUMERICAL VALUE	PRESSURE UNIT	@TEMPERATURE
MIN: 0.360 - MAX: 0.500	bar(G)	20° C

OTHER DETAILS:-

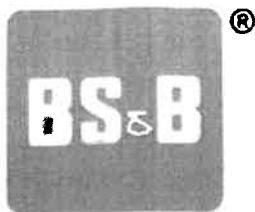
TAG NUMBERS:

DRAWING NO. JS-0-5335-000



Per Pro BS & B Safety Systems Ltd.

Quality Assurance Department



SAFETY SYSTEMS LTD.

DECLARATION OF CONFORMITY

EU Pressure Equipment Directive PED 2014/68/EU

BS&B Safety Systems Ltd declare that the products described below have been assessed by the Notified Body, Det Norske Veritas-GL, under conformity assessment Module B of the Directive and have been certified by the Notified Body as conforming to the Pressure Equipment Directive PED 2014/68/EU for Category IV safety accessories.

Bursting Disk Type	Bursting Disk Holder Type	EC Type Examination Certificate Number
FRS, FRL, GLP-S, JRS, LPS, MRB, NBC-S, RLS, S-90, S90 Welded Cassette, S90-HP, SHP, Sigma, Sigma EXL, SKr, SKr-S, SKR-ST, SLP-S, SLP-SE, SLP-SM, SLP-N, SLP-NS, SVI Assembly, SSR, UBR, VSP-RV, VSP-SH, SRD, SRD-L, CCS, CCS-L, SKI	SRB-7RS, SRB-7RS DD, SRB-7FS, SRB-7HP, S90-7R, S90-7R DD, SMR-7R, SR-C, SR-7R, SPR-7R, GR-C, FMC, FTC, NA-Connect, NBC-7RS, SRI-7RS, SRB-7RS-TR, SRB-7RS-TR DD, SRB-7FS-TR, S90-7R-TR, S90-7R-TR DD	PEDB000000U
XN, XN-85, LCN, LCN Plus, LCN SPCL, AV, AVV, GFN, XT	NX-7R, NXV-7R NF-7R, NF-7RS, TLP-7R, TL-7R	PED-B-145
B, BR, BRR, BV, BRV, BSV, BRSV, D, DR, DRR, DV, D RV, DSV, DRSV, PLD, PLDV, FRB, Scored B, LPS, Skr, JRS & QRB Welded Assemblies,	FA, FF, SA/SF, STA-KUL, UA, Lo-To-Flo	PED-B-147
GCR-S, GCR-SS, GCR-SM, GCR-SMS, GCR-SE, GCR-N, GCR-NS	GR-C, FM-C	PED-B-151
RB-90	RB-7R, RB-7F, RB-7FF, RB-7FS, RB7	1425-2012-CE-NOR-DNV
SKr-U, ITC	UR-2	1298-2012-CE-NOR-DNV
Safety Accessories	Particular Material Appraisal	1814-2012-CE-NOR-DNV
GFR-S, GFR-SM, GFR-SE, GFR-SS, GFR-SMS	GR-C, FN-C & FT-C	1595-2012-CE-NOR-DNV
VAC-SAF & AV-ST	FF-C	1426-2012-CE-NOR-DNV

BS&B Safety Systems Ltd declare that our quality system has been assessed by the Notified Body, Det Norske Veritas-GL, under conformity assessment Module D of the Directive and has been certified by the Notified Body as conforming to the Pressure Equipment Directive PED 2014/68/EU under certificate number 12199-2018-CE-USA-ACCREDIA.

Signed on behalf of BS&B Safety Systems Ltd,

Conor Noonan
Quality Assurance Manager EMEA

QD 190 Rev 27 20th July, 2020



SAFETY SYSTEMS LTD

BS&B Safety Systems Ltd.
Raheen Business Park
Limerick
Ireland
Tel: 00 353 61 484700
Fax: 00 353 61 227987



DNV-GL

Notified Body
0496

Det Norske Veritas - GL
Business Assurance Italia S.r.l.
Via Energy Park,
14,
20871 Vimercate (MB),
Italy.

Zapp Precision Metals GmbH, P.O. Box 21 29, 59411 Unna/GER

Zapp Precision Metals GmbH

BS&B Safety Systems Ltd.
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V94 N4V2
IRLAND

Hochstraße 32
59425 Unna
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Phone +49 2304 79-0
Fax +49 2304 79-7911
www.zapp.com

Managing Directors:
Dr. Stefan Seng
Gerald Zwickel
Edo Ollermann
Dr. Ali Reza Ghandehari

March 31, 2021

Copy of the Inspection certificate to EN 10204/3.1

Certificate No. 10362069000020 01

Your purchase Order 33596 dated March 30, 2021
 Sales Order 9216715 Delivery Note 10362069
 Production Lot 4711027 Inspection Lot 020000400001
Item 20 STAINLESS STEEL
 Grade SS316L
 Size 0.0762 mm x 927.000 mm
 Thickn. tolerance -0.0038 mm / 0.0038 mm
 Width tolerance 0.000 mm / 1.588 mm
 Coil inner diameter 200.00 mm
 Edges slit edges
 Surface BA
 Finish ANN
 Coil weight 0 kg - 25 kg
 HS-Code / Tariff 72193510
 Techn. Specification ASTM A240/A240M-20A AMS 5507 REV. H
 Techn. Specification AMS 5524 REV. M SA-240/SA-240M
 Techn. Specification DIN EN 10088-2:2014 (EXC)7.2.3 DIN EN 10028-7:2016-10
 Techn. Specification ASTM A666-15 NACE MR0103/ISO 17945:2015(E)
 Techn. Specification NACE MR0175/ISO15156-3:2020(E)
 Cust. Specification GRAIN SIZE PER ASTM E112
 Specifications ASTM A 240 AMS 5507 AMS 5524 ASME SA240
 DIN EN 10088-2 DIN EN 10088-2
 Grain Size per ASTM E112
 Material 8800520
 Customer part no 01-092-09K-01
 Quantity / Weight 24.000 KG

003



180-73
NP
7/4/21

Chemical composition

Heat 526236

	C (%)	Si (%)	Mn (%)	S (%)	P (%)	Cr (%)
	0.027	0.420	1.54	0.0008	0.0390	16.70
	Ni (%)	Mo (%)	Cu (%)	N (%)		
	10.01	2.02	0.460	0.041		
Melt Source	OU-US					

Zapp Precision Metals GmbH, P.O. Box 21 29, 59411 Unna/GER

BS&B Safety Systems Ltd.
Bay G1 Raheen Industrial Estate
LIMERICK
V94 N4V2
IRLAND

March 31, 2021

Quality inspection results MHU D03635200

Tensile Strength trans. 95.10 - 97.60 KSI
.2% Yield Strength trans. 42.50 - 45.20 KSI
Elongation 2" trans. 55.80 - 59.10 %
Tensile Strength trans. 656 - 673 MPa
Grain Size 9.5
.2% Yield Strength trans. 293 - 311 MPa
Hardness 74.8 - 78.0 HRB

Batch D036608007

Bending test 180° HW bend diameter: 1x thickness PASS

Corrosion testing acc. to ASTM A 262 Practice E: PASS

Sizes and Quality identification test examined and in order.

Surface visual inspection at finish: without objection.

In compliance with the conditions mentioned in the acknowledgement of order.

#####

This certificate signifies that the material meets the appropriate requirements defined in the current revision of the following specifications:

Strip-Products: ISO 9445-1; ISO 9445-2; ASTM A480/480M and DIN EN 10140.

Wire/Bar-Products: ASTM A370; ASTM A555/A555M; ASTM A580/A580M.

This certificate has been issued by computer and is valid without signature.

ZPS / JIM SCHEUNEMAN +1 508-998-6300

Abnahme / Abn.Beauftragter	Telefon
Acceptance / Inspection representative	Phone
Contrôle / Contrôleur	Téléphone

ZAPP Precision Strip Inc. does not use mercury in the testing or production of material.
ZAPP Precision Strip Inc. is certified to ISO 9001, AS 9100 and is approved as a manufacturer according to AD2000-MERKBLATT W0 and the Pressure Equipment Directive PED 2014/68/EU. To view certificates go to customer information www.zapp.com



COLD STRETCHING TEST REPORT

ARGANCY Z.I. des Jonquières BP 7 57365 ENNERY France

Vessel Type / Type de réservoir

EFV C10 DN2200 17 bar CS rev2

Serial Number / N° appareil/projet

275117

Test date / Date épreuve

06/12/2021

Specification

EN13458

Inspector Code / Contrôleur

RACCO F.

Observations

Fluide utilisée / used fluid: EAU

Température: + 20°C

N° des manomètres / Number of manomètres: 2121 RK4

Montée et maintien en pression (Palier de 30 minutes ou 60 minutes si DN>2000 mm) /

First pressurisation and stabilisation (30minutes or 60 minutes if ND >2000 mm).

Heure/Time	09H00	09H30	H + 15 or 30 min.	H + 15 or 30 min.	E < 0,1% C/h	Descente à 0 bar / Pressure schut down to 0 barg	10H15	% Ecroissage / Cold Stretching results %
Pression / Pressure	Etat initial / Basic Status	27,7 bar	27,7 ≥ P > 26,31 Bar	27,7 ≥ P > 26,31 Bar			Etat final / Final Status	
Virole / Shell n°1	5816	6011	6012	6012	1		6002	3,20%

Nota / Note : 1/ - Cold Stretching % / Pourcentage d'écroissage

(Final dimensions at 0 barg - Initial dimension at 0 barg) / Initial dimension at 0 barg

(Développé final à 0bar - Développé initial à 0bar) / Développé initial à 0bar

2/ - Pressure between : Pk et 0,95Pk / Pression comprise entre

Relevé des épaisseurs et Caractéristiques mécaniques / Thickness values checked and Mechanical characteristics:

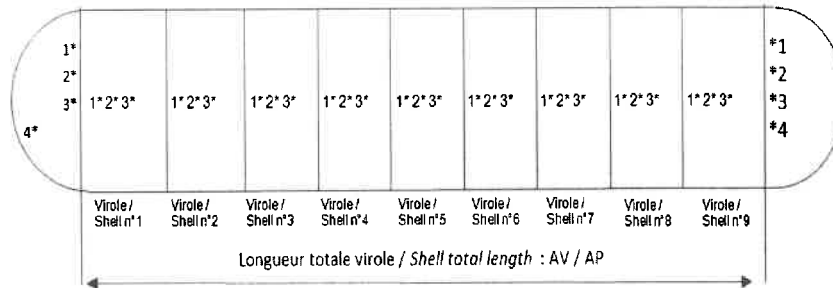
Fond Sup/Up.Head.

Lg.V AV:

2671

Lg.V AP:

2671



Fond Inf/Low.Head.

Point	Ep. Avant / Th. Before				Ep. Après / Th. After				N° Coulée / N° Tôle Heat nb. / Plate nb.	Re 0,2%	Re 1%
	1	2	3	4	1	2	3	4			
Fond Supérieur / Upper Head	7,54	7,21	7,57	7,49	7,52	7,16	7,55	7,49	69631 - 380323 - 003 - A768	361	422
Virole / Shell n°1	6,40	6,43	6,34		6,23	6,30	6,18		79541 - 397472 - 002	351	402
Fond Inférieur / Lower Head	7,13	7,39	7,12	7,45	7,09	7,36	7,12	7,45	78621 - 391687 - 001 - A790	380	430

Vol. Initial à 0b selon S0001709

Initial capacity at 0barg by selon S0001709

8960

Vol. Ajouté

Add Capa.

485

Vol. Final selon S0001709

Final Capa. by S0001709

9445

Quality Inspector / le Contrôleur Qualité

Name / Nom RACCO F.

Visa



Notified Body / Organisme notifié

Name / Nom

Visa

Ennery le,

06/12/2021

Differential pressure gauge, models 712.15.160, 732.15.160, optional for hazardous areas

Differenzdruckmanometer, Typen 712.15.160, 732.15.160, optional für explosionsgefährdete Bereiche

Manomètre différentiel, types 712.15.160, 732.15.160, en option pour zones explosives

Manómetro de presión diferencial, modelos 712.15.160, 732.15.160, opcional para zonas potencialmente explosivas

EN	EN	Operating Instructions for models 712.15.160, 732.15.160, optional for hazardous areas	Page	3 - 28
DE	DE	Betriebsanleitung für Typen 712.15.160, 732.15.160, optional für explosionsgefährdete Bereiche	Seite	29 - 54
FR	FR	Mode d'emploi pour les types 712.15.160, 732.15.160, en option pour zones explosives	Page	55 - 80
ES	ES	Manual de instrucciones para modelos 712.15.160, 732.15.160, opcional para zonas potencialmente explosivas	Página	81 - 106



Cryo Gauge



Example: Model 712.15.160 with transmitter and compact valve manifold with working pressure indication



Part of your business

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All rights reserved. / Alle Rechte vorbehalten.
WIKAI® is a registered trademark in various countries.
WIKAI® ist eine geschützte Marke in verschiedenen Ländern.

Prior to starting any work, read the operating instructions!
Keep for later use!

Vor Beginn aller Arbeiten Betriebsanleitung lesen!
Zum späteren Gebrauch aufbewahren!

Lire le mode d'emploi avant de commencer toute opération !
A conserver pour une utilisation ultérieure !

¡Leer el manual de instrucciones antes de comenzar cualquier trabajo!
¡Guardar el manual para una eventual consulta!

2 Differential pressure gauge models 712.15.160, 732.15.160, optional for hazardous areas

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Declarations of conformity can be found online at www.wika.com.

1. General information

1. General information

- The instrument described in the operating instructions has been designed and manufactured using state-of-the-art technology. All components are subject to stringent quality and environmental criteria during production. Our management systems are certified to ISO 9001 and ISO 14001.
- EN EN These operating instructions contain important information on handling the instrument. Working safely requires that all safety instructions and work instructions are observed.
- Observe the relevant local accident prevention regulations and general safety regulations for the instrument's range of use.
- The operating instructions are part of the product and must be kept in the immediate vicinity of the instrument and readily accessible to skilled personnel at any time.
- Skilled personnel must have carefully read and understood the operating instructions prior to beginning any work.
- The manufacturer's liability is void in the case of any damage caused by using the product contrary to its intended use, non-compliance with these operating instructions, assignment of insufficiently qualified skilled personnel or unauthorised modifications to the instrument.
- The general terms and conditions contained in the sales documentation shall apply.
- Subject to technical modifications.
- Further information:
 - Internet address: www.wika.de / www.wika.com
 - EN 837-2 Selection and installation recommendations for pressure measuring instruments

Model	Ex version	Description	Data sheet
712.15.160, 732.15.160	Option	Differential pressure gauge	PM 07.30
891.44	No	Integrated transmitter electronics (option)	PM 07.30
892.44	Yes	Integrated transmitter electronics (option)	PM 07.30
828	No	Magnetic snap-action contact (option)	PM 07.30
212.20.100	No	Pressure gauge for working pressure indication (option)	PM 02.01
232.50.100	Option	Pressure gauge for working pressure indication (option)	PM 02.02
232.50.100	Option	Pressure gauge for working pressure indication (option)	PM 02.04
A-10	No	Pressure sensor for working pressure (option)	PE 81.60
IS-3	Yes	Pressure sensor for working pressure (option)	PE 81.58

Depending on the version, observe the additionally enclosed operating instructions!

2. Safety

2.1 Explanation of symbols

**WARNING!**

... indicates a potentially dangerous situation that can result in serious injury or death, if not avoided.

**CAUTION!**

... indicates a potentially dangerous situation that can result in light injuries or damage to property or the environment, if not avoided.

**DANGER!**

... identifies hazards caused by electrical power. Should the safety instructions not be observed, there is a risk of serious or fatal injury.

**WARNING!**

... indicates a potentially dangerous situation in the hazardous area that results in serious injury or death, if not avoided.

**WARNING!**

... indicates a potentially dangerous situation that can result in burns, caused by hot surfaces or liquids, if not avoided.

**Information**

... points out useful tips, recommendations and information for efficient and trouble-free operation.

2.2 Intended use

Mechanical differential pressure measuring instruments are used for the display of levels on closed vessels, particularly in cryotechnology. Depending on the version, integrated transmitter electronics can be used to output an electrical output signal for control. An optionally mounted valve manifold facilitates commissioning and maintenance of the instrument. Optionally, the working pressure can be measured additionally with a pressure gauge or a pressure sensor.

The instrument offers many application possibilities, in particular for gaseous and liquid gases, and also for media that are non-aggressive, not highly viscous and non-crystallising.

Only use the instrument in applications that lie within its technical performance limits (e.g. temperature limits, material compatibility, ...).

→ For performance limits see chapter 8 "Specifications"

Differential pressure gauge models 712.15.160, 732.15.160, optional for hazardous areas

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The instrument has been designed and built solely for the intended use described here, and may only be used accordingly. The manufacturer shall not be liable for claims of any type based on operation contrary to the intended use.

2.3 Improper use

**WARNING!****Injuries through improper use**

Improper use of the instrument can lead to hazardous situations and injuries.

- ▶ Refrain from unauthorised modifications to the instrument.
- ▶ Do not use the instrument with abrasive or viscous media.

Any use beyond or different to the intended use is considered as improper use.

2.4 Responsibility of the operator

The instrument is used in the industrial sector. The operator is therefore responsible for legal obligations regarding safety at work.

The safety instructions within these operating instructions, as well as the safety, accident prevention and environmental protection regulations for the application area must be maintained.

The operator is obliged to maintain the product label in a legible condition.

To ensure safe working on the instrument, the operating company must ensure

- that suitable first-aid equipment is available and aid is provided whenever required.
- that the operating personnel are regularly instructed in all topics regarding work safety, first aid and environmental protection and know the operating instructions and in particular, the safety instructions contained therein.
- that the instrument is suitable for the particular application in accordance with its intended use.
- that personal protective equipment is available.



On the wetted parts of the instrument, small residual amounts of the adjustment medium (e.g. compressed air, water, oil) can adhere from production. With increased requirements for technical cleanliness, suitability for the application must be checked by the operator before commissioning.

Differential pressure gauge models 712.15.160, 732.15.160, optional for hazardous areas

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2.5 Personnel qualification

**WARNING!****Risk of injury should qualification be insufficient!**

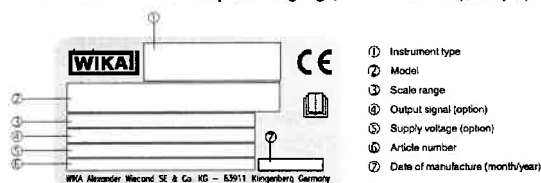
Improper handling can result in considerable injury and damage to property. The activities described in these operating instructions may only be carried out by skilled personnel who have the qualifications described below.

Skilled personnel

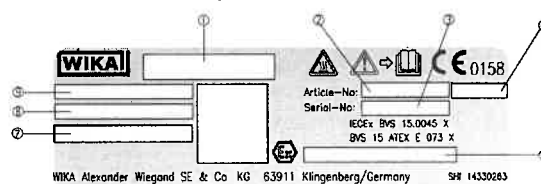
Skilled personnel are understood to be personnel who, based on their technical training, knowledge of measurement and control technology and on their experience and knowledge of country-specific regulations, current standards and directives, are capable of carrying out the work described and independently recognising potential hazards.

2.6 Labelling, safety marks

Product label for differential pressure gauge, non-Ex version (example)



Product label for differential pressure gauge, Ex version (example)



- ① Model + transmitter electronics
- ② Article number
- ③ Serial number
- ④ Date of manufacture (month/year)

- ⑤ Ex marking
- ⑥ Supply voltage
- ⑦ Output signal
- ⑧ Scale range



Before mounting and commissioning the instrument, ensure you read the operating instructions!

Differential pressure gauge models 712.15.160, 732.15.160, optional for hazardous areas

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**Risk of burns!**

Potentially dangerous situation caused by hot surfaces.

EN

EN



The instrument bearing this mark is a safety pressure gauge with a solid baffle wall in accordance with EN 837, safety version "S3".



Do not dispose of with household waste. Ensure a proper disposal in accordance with national regulations.

2.7 Ex version

The Ex version of the models 712.15.160 and 732.15.160 consists exclusively of a mechanical differential pressure gauge with integrated transmitter electronics, model 892.44.

**DANGER!****Danger to life due to loss of explosion protection**

Non-observance of these instructions and their contents may result in the loss of explosion protection.

- ▶ Observe the safety instructions in this chapter and further explosion protection instructions in these operating instructions.
- ▶ Observe the information given in the applicable type examination certificate and the relevant country-specific regulations for installation and use in hazardous areas (e.g. IEC 60079-14, NEC, CEC).

Check whether the classification is suitable for the application. Observe the relevant national regulations.

Ex marking

ATEX

IECEx

II 2G Ex ia IIC T4/T5/T6 Gb

Permissible temperature range

For determining the maximum temperature at the instrument, besides the medium temperature also other influences such as the ambient temperature and, if applicable, the solar irradiation must be taken into account.

Required temperature class (Ignition temperature)	Permissible temperature range at the instrument
T6 and T5	-40 ... +60 °C
T4	-40 ... +80 °C

Differential pressure gauge models 712.15.160, 732.15.160, optional for hazardous areas

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The installation should be made in such a way that the temperature range of the instrument, also considering the effects of convection and thermal radiation, neither exceeds nor falls below the permissible limits.

The permissible temperature ranges must not be exceeded at the instrument either. If necessary, measures for cooling (e.g. syphon, instrumentation valve) have to be taken.

2.8 Special conditions for safe use (X conditions)

1. Safe use of the instrument requires observance of all data given in the chapters of these operating instructions, in particular the data regarding the Ex version.
2. The Ex version of the instrument can be used in the following **ambient temperature range T_a** :
 -40 °C ≤ T_a ≤ +60 °C for temperature class T6 and T5
 -40 °C ≤ T_a ≤ +80 °C for temperature class T4
3. The permissible **medium temperature range T_m** must be observed on the instrument:
 -40 °C ≤ T_m ≤ +60 °C for oxygen
 -40 °C ≤ T_m ≤ +60 °C for temperature class T6 and T5
 -40 °C ≤ T_m ≤ +80 °C for temperature class T4

3. Transport, packaging and storage

3.1 Transport

Check the instrument for any damage that may have been caused by transport. Obvious damage must be reported immediately.



CAUTION!

Damage through improper transport

- With improper transport, a high level of damage to property can occur.
- ▶ When unloading packed goods upon delivery as well as during internal transport, proceed carefully and observe the symbols on the packaging.
 - ▶ With internal transport, observe the instructions in chapter 3.2 "Packaging and storage".

3.2 Packaging and storage

Do not remove packaging until just before mounting. Keep the packaging as it will provide optimum protection during transport (e.g. change in installation site, sending for repair).

Permissible conditions at the place of storage:

Storage temperature: -20 ... +60 °C

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Avoid exposure to the following factors:

- Direct sunlight or proximity to hot objects
- Mechanical vibration, mechanical shock (putting it down hard)
- Soot, vapour, dust and corrosive gases
- Hazardous environments, flammable atmospheres



Store the instrument in its original packaging in a location that fulfils the conditions listed above.

4. Commissioning, operation

Personnel: Skilled personnel

Before installation, commissioning and operation, ensure that the appropriate instrument has been selected in terms of scale range, design and specific measuring conditions.



DANGER!

Danger to life from explosion!

Through working in flammable atmospheres, there is a risk of explosion which can cause death.

- ▶ Only carry out set-up work in non-hazardous environments!



WARNING!

Physical injuries and damage to property and the environment caused by hazardous media

Upon contact with hazardous media (e.g. oxygen, acetylene, flammable or toxic substances), harmful media (e.g. corrosive, toxic, carcinogenic, radioactive), there is a danger of physical injuries and damage to property and the environment.

- ▶ Should a failure occur, aggressive media with extremely high temperature and under high pressure may be present at the instrument.
- ▶ For these media, in addition to all standard regulations, the appropriate existing codes or regulations must also be followed.
- ▶ Wear the requisite protective equipment.



WARNING!

Physical injuries and damage to property and the environment caused by media escaping under high pressure

With the pressurisation of the instrument, as a result of poor sealing of the process connection, media under high pressure can escape.

- ▶ Due to the high energy of the media that can escape in the event of a failure, the possibility of physical injuries and damage to property exists.
- ▶ The sealing of the process connection must be carried out expertly and checked for leak tightness.

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4. Commissioning, operation

Requirements for the installation point

If the line to the measuring instrument is not adequately stable, an instrument mounting bracket should be used for fastening. The instruments should be protected against coarse dirt and wide fluctuations in ambient temperature.

4.1 Mechanical mounting

The installation of the differential pressure gauge is made following the installation recommendations for pressure measuring instruments in accordance with EN 837-2 / 7.

- Prior to the installation, clean the measuring lines thoroughly by tapping and blowing or flushing.
- Mount and operate the instruments free from vibration. Fasten them using rigid measuring lines and/or 4 M8 mounting holes in the measuring flange.
- Protect pressure gauges from contamination and high temperature changes.
- The maximum permissible medium/ambient temperature must not be exceeded.
- Mounting of the process connection according to affixed symbols ⊕ and ⊖.
 ⊕ high pressure = bottom pressure (p_B)
 ⊖ low pressure = working pressure/overlay pressure (p_C)

$$p_B = p_{FL} + p_0$$

(where p_{FL} = hydrostatic pressure of the liquid = $r \cdot g \cdot h$)

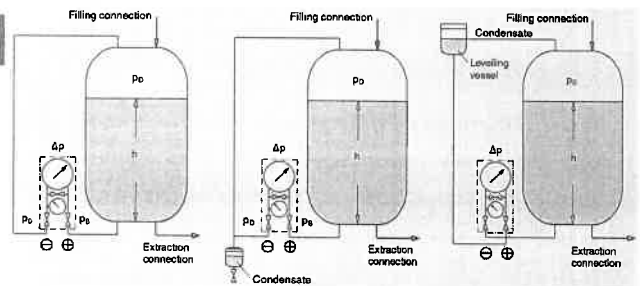
11285191.12.05/2021 EN/DE/FRES

4. Commissioning, operation

Mounting types for level measurement

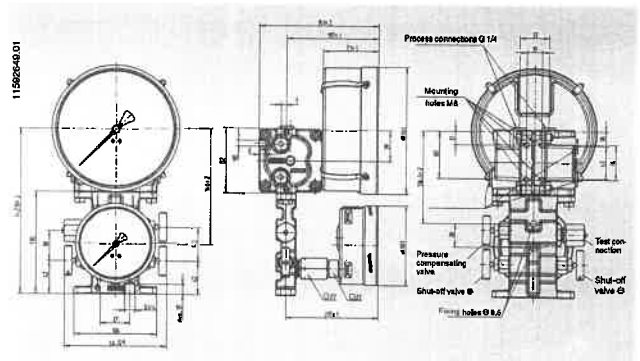
Standard for cryo containers (liquefied gases)

2 examples for containers with separate condensate vessel



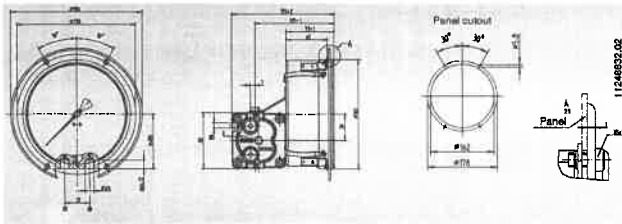
Wall mounting

Fasten to 4 M8 mounting holes or using 2 fixing holes of Ø 8.5 mm



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Panel mounting (option)



4.2 Differential pressure display

The measuring span of the differential pressure gauge can, depending on the measuring cell, be adjusted within the measuring range limits given in the table. Ideally, this adjustment should be made on a test bench, though it can also be carried out at the measuring point using a hand test pump.

Measuring range limits

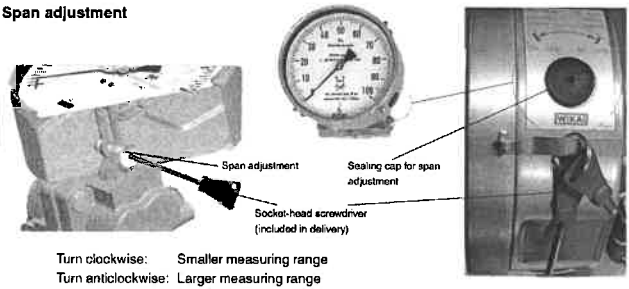
Measuring cell	Adjustable scale ranges	
	from	to
140 mbar	0 ... 40 mbar	0 ... 140 mbar
280 mbar	0 ... 80 mbar	0 ... 280 mbar
560 mbar	0 ... 160 mbar	0 ... 560 mbar
1,130 mbar	0 ... 320 mbar	0 ... 1,130 mbar
2,300 mbar	0 ... 650 mbar	0 ... 2,300 mbar
4,000 mbar	0 ... 1,150 mbar	0 ... 4,000 mbar

11265101.12.05/2021 EN/DE/FRES

Differential pressure gauge models 712.15.160, 732.15.160, optional for hazardous areas

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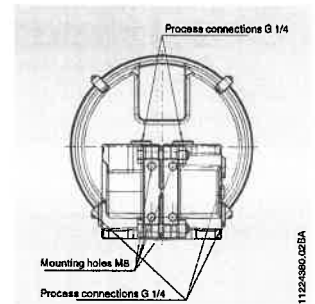
Span adjustment



1. The span adjustment, situated at the 4 o'clock point on the case circumference, is accessible by removing the sealing cap.
2. Pressurise the instrument to the desired nominal pressure.
3. Insert a socket-head screwdriver (SW 3 mm) into the funnel guide, and adjust the pointer to the end value by turning it clockwise (smaller measuring range) or anti-clockwise (larger measuring range). The instrument will then be fully adjusted to the required measuring range.
4. If the instrument is equipped with a model 89x.44 transmitter, then this procedure will also adjust the output signal to the new measuring range.
5. After completing the adjustment the instrument should be re-sealed with the sealing cap.

Additional process connections

- Three additional G 1/4 female threads on the minus media chamber (right measuring cell flange when viewing the instrument from behind), e.g. for connecting a pressure switch, safety valve or a model A-10 or IS-3 pressure sensor
- Two G 1/4 female threads on the plus media chamber (left measuring cell flange when viewing the instrument from behind), e.g. for recalibration

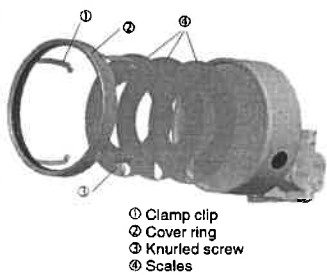


Differential pressure gauge models 712.15.160, 732.15.160, optional for hazardous areas

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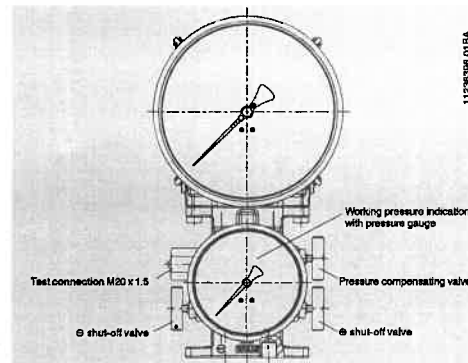
4.3 Replaceable plug-in scales (option)

1. Loosen the clamp clip on the case of the differential pressure gauge and remove the cover ring complete with the lens.
2. Loosen and remove the knurled screw.
3. Remove all three scales, place the desired scale on top and put them back in place.
4. Reinsert the knurled screw and tighten it.
5. Mount the cover ring and lens and the clamp clips again.



4.4 Valve manifold with working pressure indication (option)

Expansion with a compact valve manifold with pressure gauge connectable via a flange allows, in addition to the level detection, the measurement of the working pressure at a central measuring point.



Pressure gauge for working pressure indication (option)

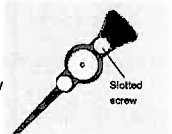
Non-Ex version: Model 212.20.100
Ex version: Models 232.50.100, 232.30.100

Differential pressure gauge models 712.15.160, 732.15.160, optional for hazardous areas

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Functions of valve manifold

- Shut-off of the process line without interrupting operations:
 - For instrument mounting and testing
 - For protecting the instrument from impermissible overpressure load of n-times rated pressure of the plant
- Protection of the instrument against pressure surges and shocks and thus against unspecified operating conditions
- Instrument shutdown, for example, if measurements are only sporadically required over prolonged operating periods (to increase the service life of the instrument at high pressure change frequency)
- Recalibration of the differential pressure gauge (level indication)
 1. Close shut-off valves for ⊕ and ⊖ side
 2. Then open pressure compensating valve, wait for a short period and close the pressure compensating valve again
 3. The pressure standard and pressure generator are connected in the plus chamber of the measuring system via an additional G 1/4 female thread.
 4. In the valve manifold, remove the test connection screw on the ⊖ side
 5. The plus side can now be pressurised
 After completed adjustment:
 - Close test connection screw again
 - Remove pressure standard and pressure generator again and seal connection
 - Slowly open first ⊕ shut-off valve, then ⊖ shut-off valve
- M20 x 1.5 test connection for checking the measuring instrument for the working pressure. The pressure compensating valve allows a zero point check during operation (with the valve open).
 1. Close shut-off valves for ⊕ and ⊖ side
 2. Then open the pressure compensating valve
- The medium will flow from the higher pressure side to the opposite side, the differential pressure on the instrument falling to zero (differential pressure display must be at zero, i.e. within the zero tolerance range, which shows that the instrument is working correctly).
- In case of deviation, the zero point can be set via the adjustable pointer installed as standard (prior to that, loosen bayonet ring plus window and remove window and sealing). The zero point setting is achieved by turning the slotted screw on the adjustable pointer. After completed zero point setting, re-fit bayonet ring plus window and sealing and close pressure compensating valve.
- For versions with integrated transmitter electronics, the electrical zero point must be set.
 3. Close pressure compensating valve again.
 4. Slowly open first ⊕ shut-off valve, then ⊖ shut-off valve.



Differential pressure gauge models 712.15.160, 732.15.160, optional for hazardous areas

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Adapter for process connection (option)

The adapters can be flange mounted either directly to the differential pressure gauge or to the valve manifold.

- 4 different process connections are available:
- 2 x G 1/2, female, centre distance 31 mm or 54 mm
 - 2 x 1/4 NPT, female, centre distance 31 mm or 54 mm



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With a single order, all parts necessary for the fitting to the differential pressure gauge or to the valve manifold are included in the delivery:

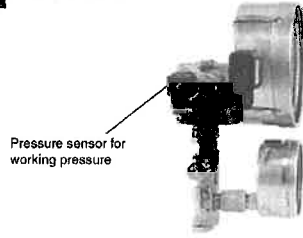
- 2 x hexagon screws M8 x 16
- 2 x hexagon screws M8 x 28
- 2 x nut M8
- 2 x O-ring sealing

4.5 Electrical connection

The electrical connection must only be made by qualified skilled personnel. The instrument must be connected to the equipotential bonding of the plant.

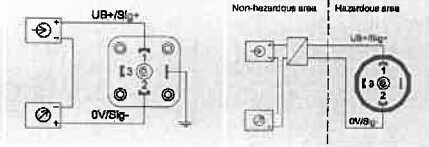
Pressure sensor for working pressure (option)

Non-Ex version: Model A-10
Ex version: Model IS-3



The pressure sensors for the working pressure are screwed in sideways, on the left side of the G media chamber and can, if necessary, be retrofitted on site.
Pressure connection of the pressure sensor: G 1/4 male

Specifications	A-10	IS-3
Data sheet	PE 81.60	PE 81.58
For Ex area	No	Yes, intrinsically safe
Measuring ranges	0 ... 2.5 bar to 0 ... 60 bar	0 ... 2.5 bar to 0 ... 60 bar
Outputs	4 ... 20 mA	4 ... 20 mA (repeater power supply required)
Medium temperature	-30 ... +100 °C	-20 ... +60 °C
Ambient temperature	-30 ... +80 °C	-20 ... +60 °C
Wetted parts	Stainless steel	Stainless steel
Supply voltage U _B	DC 10 V < U _B ≤ 30 V	DC 10 V < U _B ≤ 30 V
Permissible max. load R _A	R _A ≤ (U _B - 8 V) / 0.02 A	R _A ≤ (U _B - 10 V) / 0.02 A
Accuracy, best fit straight line, BFSL	≤ 0.5 % of span	≤ 0.2 % of span
Compensated temperature range	0 ... +80 °C	0 ... +60 °C
Designation of connection terminals, 2-wire	UB+/SIG+ 0V/SIG-	Non-hazardous area: UB+/SIG+ Hazardous area: UB-/SIG-



Please observe the separately enclosed operating instructions for each pressure sensor!

Magnetic snap-action contacts (option)

Electrical switch contacts for level indicators and/or working pressure open circuits as a function of the pointer position of the indicating measuring instruments.

Version

Single and double magnetic snap-action contact, model 828

The modular switch contact is an add-on unit, which can be built onto the pressure gauge within a few minutes. The switch contacts provide IP65 ingress protection. The connection to the actual value pointer is made by means of a special yoke so that a carrier pin at the pointer itself is not needed. Due to this simple mounting, the instrument can be converted into a contact pressure gauge extremely quickly and at low cost.

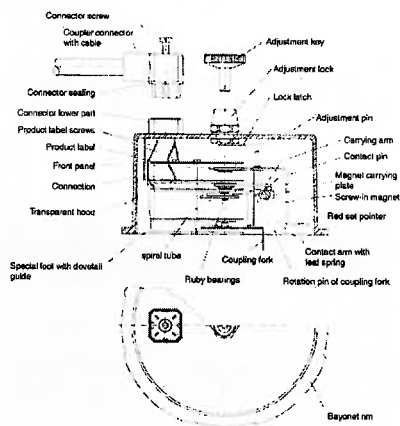
The switch contacts mainly comprise:

- the already wired switch contact equipped with a special foot and a fork coupling
- a transparent hood (polycarbonate) with dovetail guide into which the switch contact containing the special foot is slid and fastened by means of a cross-head screw
- a connector lower part (4-pin) moulded or welded to the transparent hood
- an adjustment lock mounted in the centre of the transparent hood

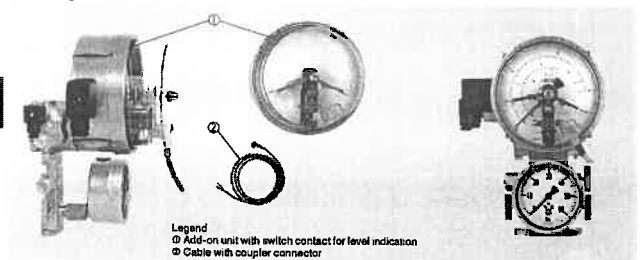
The set value pointer of the installed switch contacts are adjusted, from the outside, to the value at which the switching operation is to take place, using the adjustment lock with a separate or integral key.

The switch contacts are designed to allow the instrument pointer to move beyond the adjusted actual value pointer after contact actuation takes place, with the contact remaining actuated.

This design guarantees a stable switching status corresponding to the position of the actual value pointer in case of power failure.



Mounting of the switch contacts

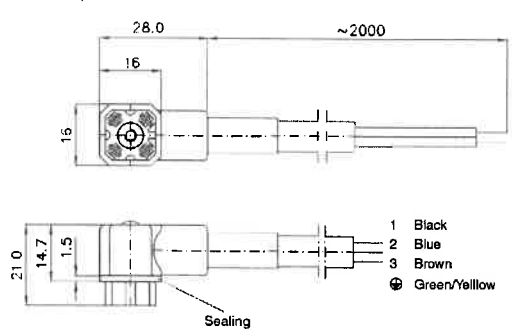


Legend
⊕ Add-on unit with switch contact for level indication
⊙ Cable with coupler connector

Pin assignment

See Annex „Pin assignment for magnetic snap-action contacts“.

Cable with coupler connector



4.6 Integrated transmitter electronics (option)

Non-Ex version: Model 891.44

Ex version: Model 892.44

See chapter 8 "Specifications"

WIKA differential pressure gauges with an integrated model 89x.44 transmitter combine all the advantages of an on-site mechanical display with the demands modern industry makes for electrical signal transmission for the acquisition of measured values.

The transmitter electronics are integrated into the case of the level indicator. The measuring span (electrical output signal) is adjusted automatically with the mechanical display, i.e. the scale over 270 angular degrees corresponds to 4 ... 20 mA (see differential pressure display).

Supply voltage non-Ex version

Suitable supply voltage

Model KFA6-STR-1.24.500, AC 115/230 V, for DIN rail, order number: 7305636

Supply voltage Ex version

The instrument must only be used in conjunction with a corresponding Ex repeater power supply.

Suitable Ex repeater power supplies:

■ Model KFD2-STC4-Ex1, DC 20 ... 35 V, for DIN rail, order number: 234 1268

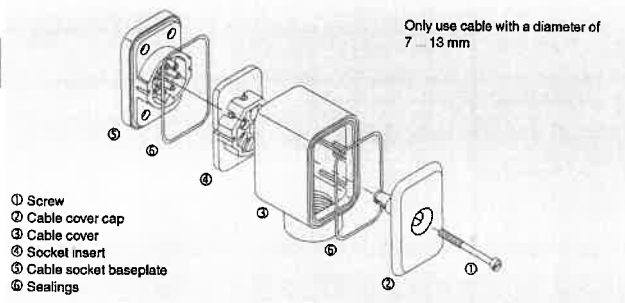
■ Model IS Barrier, DC 19,2 ... 30 V, for DIN rail, order number: 14117118

Safety instructions for installation

- Install instruments in accordance with the manufacturer's instructions and the valid standards and regulations.
- Only connect circuits with the same voltage and type of protection to the connection leads of the instrument.
- Size the connection leads for the largest current strength in the circuits and ensure sufficient UV resistance and mechanical stability.
- With flexible connection leads, use isolated end splices. Max. permissible conductor cross-section 1.5 mm².
- Connecting cables must be suited to the ambient temperature range of the application.
- The connection leads must also be suitable for the supplied cable gland (for diameter range, see below).
- Seal the cable entry with the appropriate approved cable glands.
- Install the connection cables securely.

Dismounting cable socket

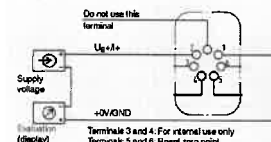
The cable socket is prefitted and must be dismantled as described below.



- Fully loosen the screws on the cable cover cap with a slotted screwdriver (0.6 x 3.5 mm) and remove them.
- Pull the cable cover, along with the socket insert, out from the cable socket baseplate (joined permanently with the instrument).
- Take the cable cover cap and push the socket insert out, downwards, completely through the cable cap.

Pin assignment cable socket

4 ... 20 mA, 2-wire

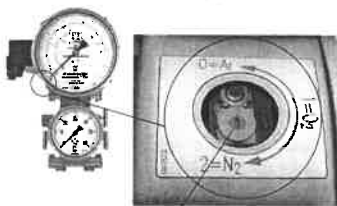


With multiple scales or replaceable plug-in scales (option), the output signal of 4 ... 20 mA corresponding to each scale can be stored in a microprocessor.

The output signal can be changed over to the desired fluid type by rotating the optional BCD switch (accessible through a sealing cap on the left side of the case) using a screwdriver.

Electrical zero point with BCD switch option

If a zero point adjustment is required (e.g. after mechanical zero point setting), the instrument must first be de-energised (pull the plug). Afterwards re-establish the voltage supply (insert the plug) and press the zero point button for approx. 1 second within 30 seconds.



Electrical zero point without BCD switch option

If the mechanical zero point has been altered via the adjustable pointer, the electrical zero point must be matched to the mechanical one. To do this, apply the pressure value of the scale start. The scale start corresponds to the smallest electrical signal.

With a small piece of stranded wire (maximum permissible resistance 30 Ω), stripped at both ends, bridge terminals 5 and 6 on the socket insert.

Mounting cable socket

- Connect the socket insert to the cable cover and assemble the cable cover cap with the sealing and screw (see cable socket drawing).
- Insert the assembly, which has just been assembled, onto the cable socket baseplate with sealing.
- Screw the screws on the cable cover cap in fully with a slotted screwdriver (0.6 x 3.5 mm).



In order that the ingress protection is maintained, the seals must be refitted.

After switching on the supply voltage, within a max. 30 seconds, the new zero point will be saved in the transmitter electronics. As a check, during this time, a current increase to 9.5 mA can be measured in the current loop on a display unit (e.g. ammeter).

- Switch off supply voltage and display unit.
- Carry out the "Dismounting cable socket" described above.
- Remove the stranded wire for bridging terminals 5 and 6 from the socket insert.
- Carry out the "Mounting cable socket" described above.

The electrical output signal will once more match the display of the mechanical pointer. Close all valves opened for the zero point setting again.

5. Faults

Faults	Causes	Measures
No input pressure.	Pressure compensating valve open.	Close the pressure compensating valve.
No output signal.	Insufficient supply voltage or cable break.	Check voltage supply and cables.
	Wrong pin assignment.	Check pin assignment.
	Defective transmitter electronics due to overvoltage.	Replace instrument.
Constant output signal upon change in pressure	Pressure port blocked at process connection.	Clean pressure port at process connection.
	Supply voltage connected the wrong way (I = ca. 4.5 mA).	Check pin assignment.
Too high, constant output signal upon change in pressure.	Defective transmitter electronics.	Replace instrument.
	Bridge on terminals 5 and 6 not removed (I = approx. 9.5 mA).	Remove the terminal bridge. Set the zero point.
	Defective transmitter electronics due to overvoltage.	Replace instrument.
Signal span too small.	Insufficient supply voltage.	Check voltage supply and cables.
	Load too high.	Maintain permissible load.
Zero point signal too low or too high.	Zero point maldjusted.	Set the zero point.
	Zero point maldjusted.	Set the zero point.
	Mechanical overload.	Replace instrument.

For the replacement of the instrument chapters 7 "Dismounting, return and disposal" and 4 "Commissioning, operation" must be observed.

6. Maintenance and cleaning

6.1 Maintenance

The instruments are maintenance-free.

The indicator and switching function should be checked once or twice every year. For this the instrument must be disconnected from the process to check with a pressure testing device.