VSH XPress

90° Elbow, press-fit x press-fit

SS12 Elbow

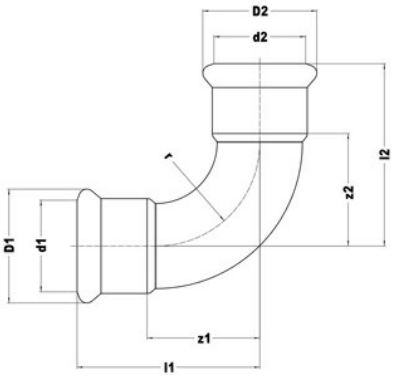


General Information

Size	Pattern No.	Pack 1 Qty	Pack 2 Qty	Code	Barcode	Price (£) each ex VAT
15mm (A)	SS12	10	150	11620	8711985201413	£11.56
18mm (A)	SS12	10	90	11621	8711985201420	£13.29
22mm	SS12	10	60	11622	8711985201437	£16.19
28mm	SS12	5	30	11623	8711985201444	£20.41
35mm	SS12	5	20	11624	8711985201451	£32.11
42mm	SS12	2	8	11625	8711985201468	£53.61
54mm	SS12	2	8	11626	8711985201475	£74.03
76.1mm (C)	SS12	2	0	20406	8711985125252	£178.85
88.9mm (C)	SS12	2	0	20407	8711985125269	£217.38
108mm (C)	SS12	2	0	20408	8711985125276	£297.21
139.7mm	SS12	1	0	11479	5022050582263	£498.79
168.3mm	SS12	1	0	11480	5022050582454	£662.53

(C) Not LPCB Approved

SS12 Elbow



Dimensions

Code	Description	l1	d1	D1	es1	z1	l2	d2	D2	es2	z2	DN1	DN2
11620	15mm SS12	41	15	23	20	21	41	15	23	20	21	DN12	DN12
11621	18mm SS12	45	18	27	20	25	45	18	27	20	25	DN15	DN15
11622	22mm SS12	51	22	32	21	30	51	22	32	21	30	DN20	DN20
11623	28mm SS12	60	28	38	23	37	60	28	38	23	37	DN25	DN25
11624	35mm SS12	71	35	45	26	45	71	35	45	26	45	DN32	DN32
11625	42mm SS12	86	42	54	30	56	86	42	54	30	56	DN40	DN40
11626	54mm SS12	105	54	65	35	70	105	54	65	35	70	DN50	DN50
20406	76.1mm SS12	150	76	94	55	95	150	76	94	55	95	DN65	DN65
20407	88.9mm SS12	174	89	109	63	111	174	89	109	63	111	DN80	DN80
20408	108mm SS12	215	108	133	77	138	215	108	133	77	138	DN100	DN100
11479	139.7mm SS12	314	140	166		216	314	140	166		216	DN125	DN125
11480	168.3mm SS12	386	168	195		268	286	168	195		268	DN150	DN150

Pegler Yorkshire reserve the right to change specifications

Guarantee

Pegler Yorkshire XPress Copper, Gas, Stainless and Solar fittings Guarantee - Terms and Conditions

Products are subject to a guarantee that is between Pegler Yorkshire and the final purchaser of the product. When correctly assembled with the stated tubes and pipe the length of guarantee is as follows:

25 Years
The Xpress Copper, Gas, Stainless and Solar ranges are guaranteed for 25 years when installed along with other manufacturers' pipeline components conforming to the specified standard.

30 Years
Where pipelines are constructed exclusively from compatible XPress Copper, Gas, Stainless and Solar fittings and tubes, the resulting installations will be deemed XPress Systems and qualify for a 30 year guarantee. Qualifying systems are:

- Xpress Copper fittings and Yorkex* copper tube
- Xpress Gas fittings and Yorkex* copper tube

- Xpress Stainless fittings and stainless steel 316 System tube
- Xpress Solar fittings and Kuterlon* copper tube

* Yorkex and Kuterlon are brand names of Yorkshire Copper Tube/KME Group

The guarantee is subject to proof of purchase being supplied.

This guarantee does not affect any statutory rights the consumer may have in law.

The guarantee covers manufacturing or material defects when installed in accordance with our instructions on specified tube materials and applications, and does not cover parts subject to normal wear and tear.

This product range has been designed for the use of homeowners, domestic and commercial applications and therefore the Guarantee is subject to the product being properly selected for their intended service conditions.

The guarantee is not applicable where the product is fitted contrary to the conditions in the fitting instructions.

This is reinforced where valves are covered by the European Pressure Equipment Directive (PED97/23/EC) where Installation, Operating and Maintenance Instructions are supplied with each product and/or carton.

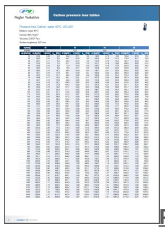
Provided it is installed correctly and receives adequate preventative maintenance it should give years of trouble–free service.

Abusive behaviour and accidental damage to the product are not covered by this guarantee.

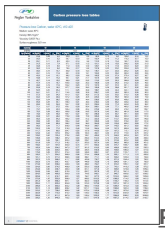
The extent of this liability is limited to the cost of the replacement of the defective item and not to installation or consequential damages.

Pressure and Temperature

XPress Fitting	Tube/pipe used with	Min temperature and pressure	Max temperature and pressure
XPress Stainless	Stainless Steel (12-108mm)	-35˚C at 16bar	135˚C at 16bar
XPress Stainless	Stainless Steel (139.7 -168.3mm)	-20˚C at 16bar	110˚C at 16bar



Pressure Loss Tables: Stainless Steel Water



Pressure Loss Tables: Stainless Steel Compressed Air

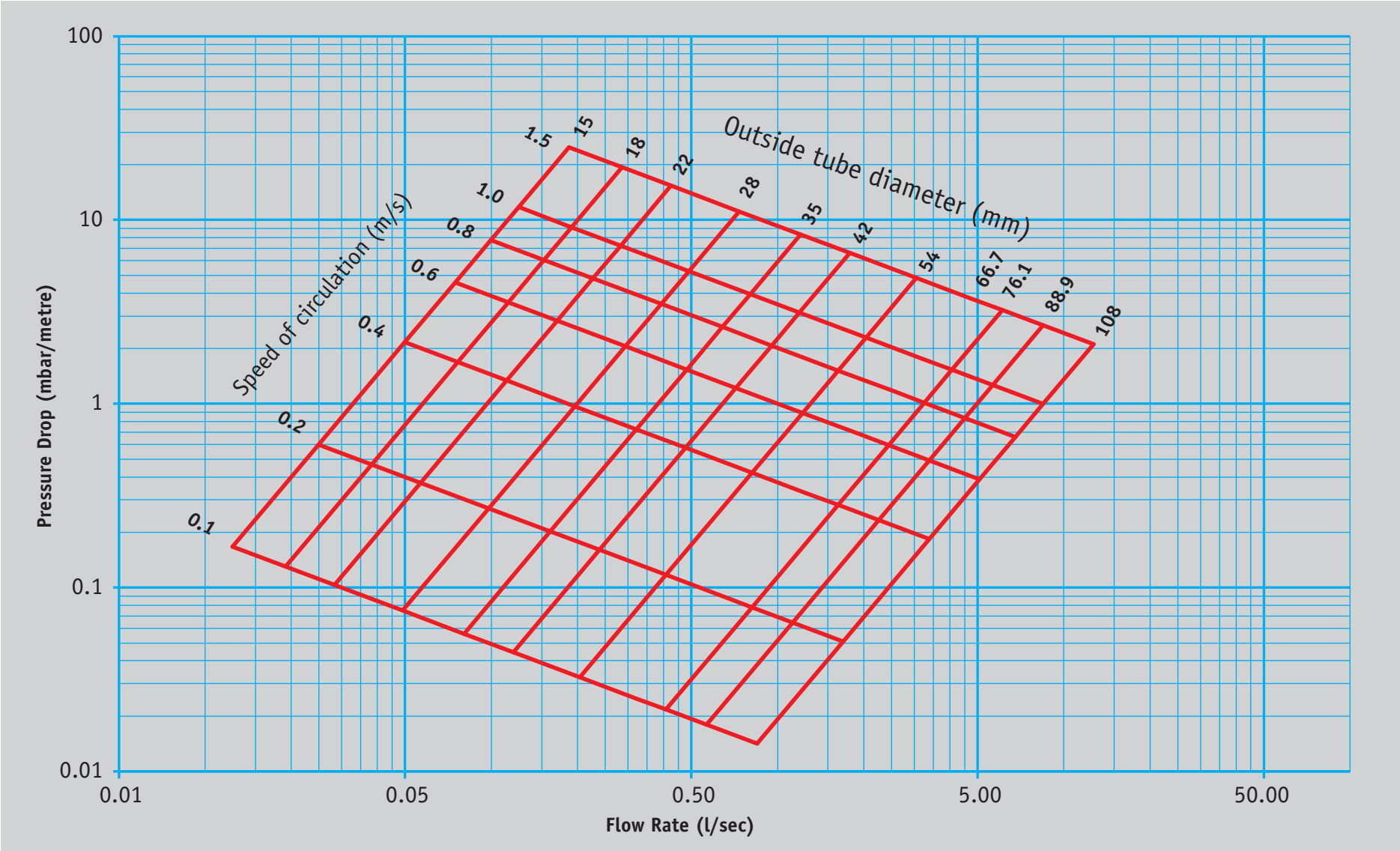
Care and Maintenance

Care
No regular aesthetic care is required for this product

Maintenance
No regular maintenance is required for this product.

For any further help please contact the Service Support Team on: 0800 1560050.

Flow charts - Head loss/Pressure loss





installation instructions

1. mark the socket depth:
Ensuring full socket depth is achieved is vital for the integrity of the joint. To check that the tube and fitting remains in the correct position throughout the pressing process you must mark the socket depth with a 'V-Tail' mark.

If using slip sockets elongate the V (as per picture) as the depth mark and V can be inserted past this mark.



Size	Depth
12mm	17mm
15mm	20mm
18mm	20mm
22mm	21mm
28mm	23mm
35mm	26mm
42mm	30mm
54mm	35mm
66.7mm	50mm
76.1mm copper	50mm
76.1mm stainless/carbon	55mm
88.9mm	64mm
108mm copper	64mm
108mm stainless/carbon	78mm



S110 - orange socket depth tool for copper tube



S111 - blue socket depth tool for carbon and stainless steel tube



by hand

2. check the O-ring seal:
Insert the tube into the fitting until it meets the tube stop, using the insertion depth mark as a visual aid.

Only when the tube reaches the tube stop should the pressing operation be commenced.

3. prepare the press-fit tool:
Select the correct combination of Press-tool, Jaws, Slings and adaptors for the joint being made.

note:

- always refer to the manufacturer's instructions for detailed information on how to operate your press-tool safely
- check that the press tool and relevant jaws/slings have been maintained in accordance with their servicing/ calibration schedule

Make the tool safe by isolating it from the power supply. Select the correct jaws/sling jaws/sling jaw adaptor for the joint being made, checking that they are free from damage. Attach the jaws/sling jaws/sling jaw adaptor to your press-tool, following the instructions for your particular press-tool, and reconnect the power supply when ready.

66.7mm (67mm) Sling (S330 Snap on sling)
Novopress offers alternative slings for use on different press systems. As such Pegler Yorkshire reinforces the following instruction.

Where 66.7mm slings are required for crimping XPress fittings, installers must only use the following XPress/ Novopress slings and adaptors:

Novopress reference	Sling marking	Novopress adaptor
36516-50	"Woeste" 67mm	ZB302 42-66.7mm
45184-50	"XPress" 66.7mm	ZB323 66.7-108mm

Under no circumstances should any other brand of sling be used with our 66.7mm fittings as these will lead to an incorrect crimp resulting in an immediate joint failure and invalidate the Pegler Yorkshire warranty.

XPress 66.7mm fittings that have inadvertently been crimped with the wrong brand of sling cannot be successfully re-crimped with the XPress 66.7 sling and will unfortunately have to be cut out and replaced with a new fitting using the correct sling.





note:

- Pegler Yorkshire 66.7mm will be referred to as 66.7mm and/or 67mm



note:

- Jaws for copper and steel differ at 108mm when pressing the sling stays in place and a second pressing operation is required

4. Dri-Slide lubricant

Use of S135 Dri-Slide lubricant is essential when jointing large sized fittings. The pressing profile groove of the sling jaws should be cleaned and lightly lubricated after every 50 joints for 42mm to 76.1mm sizes, and every 5 joints for 108mm. Dri-Slide should also be applied between the main sling arms and the moving segments; and along the pivot pins between the arms. Wipe clean any excess lubricant so that it does not come into contact with the fitting "O" ring.



When to lubricate

Size of fitting	42-76	108
Interval	50 joints	5 joints

note:

- Dri-Slide lubricant should never be used to lubricate the "O" ring

5. press the joint:

Mount the jaws/sling jaws over the bead at the mouth of the fitting. With the tool fully supported and not hanging from the pipework, and with your hands safelyaway from the joint, press the trigger or button to start the jointing cycle. When the jaws/sling jaws fully enclose the mouth of the fitting, the joint is complete. The jaw should then be released from around the fitting.



15 to 35mm



Pegler Yorkshire recommend the use of Sling Jaws for sizes 42 to 108mm



6. check the joint:

Inspect the finished joint making sure all is in order, when satisfied the joint has been made correctly mark the joint as complete.

- the socket depth mark you made indicates that full socket depth has been maintained throughout the pressing cycle
- the fitting and pipe bear the witness marks from your jaws/sling jaws

note:

- the 108mm joint is not fully made until the fitting has been through two pressing operations (Novopress only)
- maintain a 90° angle between the tube and jaws at all times, this is to ensure the integrity of the joint as well as protect the operator from 'kickback'
- the pressing operation should only be carried out when the tube is adequately supported by brackets, not when the tube is suspended in the fitting socket alone
- allow press-fit jaws to be attached without hindrance



- we recommend all systems are thoroughly pressure tested before hand over to end user. Refer to www.pegleryorkshire.co.uk for detailed recommendations, particularly regarding Carbon Steel installations



further details

Pegler Yorkshire Group Limited
St. Catherine's avenue / Doncaster
South Yorkshire / DN4 8DF / England
tel: +44 (0) 800 1560 050
email: tech.help@pegleryorkshire.co.uk
www.pegleryorkshire.co.uk

Loss Prevention Certification Board

LPCB

This is to certify

VSH Fittings BV
Oude Amersfoortseweg 99, 1212 AA Hilversum, Netherlands

is authorised to use the LPCB mark in association with the product(s) listed in this certificate and appendix.

VSH XPress Lightweight Stainless Steel Sprinkler Pipework Systems
(refer to attached appendix for details)

which have complied with the requirements of the following:

TS1599: Issue draft 5

Certificate No. 1033b Issue No. 03

Date of Issue 11 October 2012

This certificate is valid until withdrawn by LPCB.
To check the validity and the authenticity of this certificate please visit our website www.RedBookLive.com or contact us.

Signed on behalf of LPCB

M A Chaplin

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Loss Prevention Certification Board

LPCB

APPENDIX TO CERTIFICATE NO. 1033b

VSH Fittings BV

Certificate No 1033b to TS1599 Issue draft 5

VSH XPress Lightweight Stainless Steel Sprinkler Pipework System

Product Code	Description	Size/mm	LPCB Ref
R 2750 R 2752 R 2753	Stainless steel tube 1.4401 Stainless steel tube 1.4521 Stainless steel tube 1.4520	22, 28, 35, 42, 54	1033b/01
R 2701	Straight Coupling (2 x press)	22, 28, 35, 42, 54	1033b/02
R 2703	Slip Coupling (2 x press)	22, 28, 35, 42, 54	1033b/03
R 2708	90° Elbow (2 x press)	22, 28, 35, 42, 54	1033b/04
R 2711	90° Elbow (press x plain end)	22, 28, 35, 42, 54	1033b/05
R 2713	45° Elbow (2 x press)	22, 28, 35, 42, 54	1033b/06
R 2712	45° Elbow (press x plain end)	22, 28, 35, 42, 54	1033b/07
R 2725	90° Bend (2 x plain end)	22, 28, 35, 42, 54	1033b/08
R 2724	60° Bend (2 x plain end)	28, 35, 42, 54	1033b/09

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APPENDIX TO CERTIFICATE NO. 1033b

VSH Fittings BV

Product Code	Description	Size/mm	LPCB Ref
R 2723	30° Bend (2 x plain end)	28, 35, 42, 54	1033b/10
R 2722	15° Bend (2 x plain end)	28, 35, 42, 54	1033b/11
R 2717	Cross over (2 x plain end)	22, 28	1033b/12
R 2714	Tee equal (3 x press)	22, 28, 35, 42, 54	1033b/13
R 2715	Tee reduced (3 x press)	28x22x28, 35x22x35, 35x28x35, 42x22x42,42x28x42, 42x35x42, 54x22x54, 54x28x54, 54x35x54, 54x42x54	1033b/14
R 2718	Tee threaded (press x fem. thread x press)	22x1/2"x22, 22x3/4"x22, 28x1/2"x28, 28x3/4"x28, 28x1"x28, 35x1/2"x35, 35x3/4"x35, 35x1"x35, 42x1/2"x42, 42x3/4"x42, 42x1"x42, 54x1/2"x54, 54x3/4"x54, 54x1"x54, 54x2"x54	1033b/15
R 2707	Reducer (press x plain end)	28x22, 35x22, 35x28, 42x28, 42x35, 54x35, 54x42,	1033b/16
R 2702	Straight connector (press x female thread)	22x½", 22x¾", 22x1", 28x½", 28x¾", 28x1", 28x1¼", 35x1", 35x1¼", 35x1½", 42x1¼", 42x1½", 54x1½", 54x2"	1033b/17
R 2705	Straight connector (press x male thread)	22x½", 22x¾", 22x1", 28x¾", 28x1", 28x1¼", 35x1", 35x1¼", 35x1½", 42x1¼", 42x1½", 54x1½", 54x2"	1033b/18
R 2735	Straight union (press x male thread)	22x½", 22x¾", 22x1", 28x1", 35x1¼", 42x1½", 54x2"	1033b/19

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Date of Issue 11 October 2012

Issue No. 03

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APPENDIX TO CERTIFICATE NO. 1033b

VSH Fittings BV

Product Code	Description	Size/mm	LPCB Ref
R 2738	Straight union (press x female thread)	22x¾", 22x1", 28x1", 35x1¼", 42x1½", 54x2"	1033b/20
R 2728	90° Angle adaptor (press x male thread)	22x¾", 28x1", 35x1¼", 42x1½", 54x2"	1033b/21
R 2709	90° Angle adaptor (press x female thread)	22x½", 22x¾", 28x½", 28x¾", 28x1", 35x½", 35x¾", 35x1", 35x1¼"	1033b/22
R 2704	Coupling with nut (press x female thread)	22, 28, 35, 42, 54	1033b/23
R 2726	Flanged connector (press x flange)	22, 28, 35, 42, 54	1033b/24
R 2748	Transition connector (press x grooved)	28x33.7, 35x42.4, 42x48.3, 54x60.3	1033b/25
R 2729	Stop end (1 x press)	22, 28, 35, 42, 54	1033b/26
R 2741	Slip coupling (press x female thread)	22x½", 22x¾", 28x½", 28x¾"	1033b/27
R 2736	Coupling (press x flat seal)	22x1¼", 22x1½", 28x1½", 35x2", 42x2¼", 54x2¾"	1033b/28

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APPENDIX TO CERTIFICATE NO. 1033b

VSH Fittings BV

Notes

1. The above VSH XPress pipework and fittings are to be installed using the Novopress ECO301, ACO201, ACO202, ECO201, ECO202, EFP2, EFP202 and Klauke UAP2 pressing tools in accordance with the VSH User Manual. These tools shall be serviced and maintained in accordance with the manufacturer's stated guidelines.
2. VSH XPress pipework and fittings may only be installed by LPCB Approved Sprinkler Contractors who have undergone adequate training by the manufacturer.
3. VSH XPress pipework and fittings shall be installed in accordance with the VSH User Manual: XPress Sprinkler EN-12-1.0.
4. VSH XPress pipework and fittings shall be installed and maintained in conformance with the LPC Rules for Automatic Sprinkler Installations.
5. The use of VSH XPress Sprinkler System pipework and fittings shall be recorded on LPS1048 certificates of conformity.
6. Where a VSH Reducer is installed, a pipe hanger shall be used adjacent to the reducer on the larger pipe.
7. Where VSH system pipework is connected to sprinklers in suspended ceilings, only LPCB Approved flexible drops shall be used.
8. VSH XPress pipework and fittings are not compatible with lightweight piping systems from other manufacturers.

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M A Chaplin

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Date of Issue 11 October 2012

Issue No. 03

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WRAS APPROVED PRODUCT

This certifies that

PEGLER YORKSHIRE GROUP LTD

has had the undermentioned product examined, tested and found, when correctly installed, to comply with the requirements of the United Kingdom Water Supply (Water Fittings) Regulations and Scottish Water Byelaws.

VSH XPRESS RANGE OF STAINLESS STEEL CRIMP FITTINGS FOR USE WITH 316 444 & 304 STAINLESS STEEL PIPE (FOR SIZES COVERED PLEASE CONSULT THE WRAS ONLINE DIRECTORY AND/OR ACCOMPANYING WRAS APPROVAL LETTER)

The certificate by itself is not evidence of a valid WRAS Approval. Confirmation of the current status of an approval must be obtained from the WRAS Directory (www.wras.co.uk/directory)

The product so mentioned will be valid until the end of:

July 2024

1907002

Certificate No.

J Furnival

Secretary

Chairman, Product Assessment Group

June 2017

DVGW type examination certificate

DVGW-Baumusterprüfzertifikat

DW-8511BR0536
Registration Number
Registriernummer

Field of Application ***Anwendungsbereich***	products of water supply *Produkte der Wasserversorgung*
Distributor ***Vertreiber***	SEPPELFRICKE Armaturen GmbH Haldenstraße 27, D-45881 Gelsenkirchen
Product Category ***Produktart***	installation systems and system joints: pipe joint for pipes in drinking water installation systems (8511)
Product Description ***Produktbezeichnung***	system connector as compression connector made of stainless steel for pipes made of stainless steel (1.4401 or 1.4521) according to DVGW working sheet GW 541, unpressed leaky
Model ***Modell***	XPress Edelstahl
Test Reports ***Prüfberichte***	type testing: 120004274 from 30.06.2014 (MPM) type testing: 120004546 from 01.06.2015 (MPM) mechanical test: 120000418-16 from 04.04.2016 (MPM) mechanical test: 120003423 from 22.01.2010 (MPM) mechanical test: 120003236 from 11.02.2009 (MPM) mechanical test: 120002967 from 25.06.2008 (MPM) type testing: 120002579 from 05.12.2006 (MPM)
Test Basis ***Prüfgrundlagen***	DVGW W 534 (01.05.2004) BGA KTW (12.12.1985) DVGW W 270 (01.11.2007)
Date of Expiry / File No. ***Ablaufdatum / Aktenzeichen***	05.12.2021 / 16-0457-WNV

70028-04-A-DE

10.10.2016 GI B-1/2
Date, Issued by, Sheet, Head of Certification Body
Datum, Bearbeiter, Blatt, Leiter der Zertifizierungsstelle

DVGW CERT GmbH is an accredited body by DAkkS according to DIN EN ISO/IEC 17065:2013 for certification of products for energy and water supply industry.

DVGW CERT GmbH ist von der DAkkS nach DIN EN ISO/IEC 17065:2013 akkreditierte Stelle für die Zertifizierung von Produkten der Energie- und Wasserversorgung.

DAkkS
Deutsche Akkreditierungsstelle
D-ZE-16028-01-05

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53123 Bonn
Tel. +49 228 91 88 - 888
Fax +49 228 91 88 - 993
www.dvgw-cert.com
info@dvgw-cert.com

Type *Typ*	Technical Data *Technische Daten*	Remarks *Bemerkungen*
XPress Edelstahl	diameter: 12,0 mm	
XPress Edelstahl	diameter: 15,0 mm	
XPress Edelstahl	diameter: 18,0 mm	
XPress Edelstahl	diameter: 22,0 mm	
XPress Edelstahl	diameter: 28,0 mm	
XPress Edelstahl	diameter: 35,0 mm	
XPress Edelstahl	diameter: 42,0 mm	
XPress Edelstahl	diameter: 54,0 mm	
XPress Edelstahl	diameter: 76,1 mm	
XPress Edelstahl	diameter: 88,9 mm	
XPress Edelstahl	diameter: 108,0 mm	

certified Components
zertifizierte Bauteile / Werkstoffe

Registr. No. *Registr.-Nr.*	Component *Bauteil (Produktart)*	Model/Type *Modell/Typ*	Manufacturer *Hersteller*
NW-5253BP5648	sealing material for drinking water installations	EP 1/1/5/EP 1/1/5	Superior Seals Limited
DW-5253CL0320	sealing material for drinking water installations	EP 7/3/7/EP 7/3/7	Superior Seals Limited
DW-5253CL0321	sealing material for drinking water installations	EP11/7/4/EP11/7/4	Superior Seals Limited

Hints of Utilization / Remarks
Verwendungshinweise / Bemerkungen

The testing was made with pipes made of stainless steel according to DVGW working sheet GW 541, table 2.

Strojírenský zkušební ústav, s.p.
(Engineering Test Institute, Public Enterprise), Authorized Body 202
Hudcova 424/56b, 621 00 Brno, Czech Republic
Authorization Decision 27/2006 of 2006-08-29

DECISION

on the validity period extension of Construction Technical Certificate

STO-30-00426-11-rev. 1

Manufacturer:	Pegler Yorkshire Group Limited St. Catherines Avenue, DN4 8D Doncaster, South Yorkshire United Kingdom
Products:	XPress press-fit fittings
Type designation: Versions:	see Pages 2 to 7 see Pages 2 to 7
Place of manufacture:	YORKSHIRE Fittings Gyártó Kft. Maglódi út 16., H-1106 Budapešť Hungary

In accordance with the provisions of Section 10 of Act 22/1997 Coll., on technical requirements for products and on amendment to certain Acts, as amended, the abovementioned Authorized Body has verified Construction Technical Certificate STO-30-00426-11-rev. 1, issued on 2011-09-26. Whereas the data of the physical properties of the said products, their level and the ascertainment procedures with regard to essential requirements of Government 163/2002 Coll., as amended, have not changed, its validity is hereby extended until **2017-09-30**.

The rules for using the Decision are specified on Page 7.

This Decision shall become effective on 2014-10-01.

Brno, 2014-07-01

AUTORIZOVANÁ OSOBA 202 STROJÍRENSKÝ ZKUŠEBNÍ ÚSTAV, s.p. ÚNMZ 1

.....
Ing. Jiří Rozsíval, MBA
Deputy Director

Specification of types and versions:

XPress Copper press-fit fittings with pressed joints are made of CW024A (Cu-DHP) copper.
Press-fit fittings combined with threaded joints are made of CW617N (CuZn40Pb2) copper alloy.

Application: Domestic and commercial not directly buried installations inside or outside of buildings, for assembling of distribution systems transporting water (including potable water pursuant to Decree 409/2005 Coll.), heating water, pressure air and other non-corrosive fluids in copper pipes, at maximum operating pressure of 16 bar (1.6 MP) and operating temperatures from -24 °C to 110 °C. Fitting sizes from 12 mm up to 108 mm are intended for distribution of fluids.

Threads as per ČSN EN 10226-1:2005 (ČSN ISO 7-1:1996) or ČSN EN ISO 228-1:2003, according to the joint type.
Cap nut threads as per ČSN EN ISO 228-1:2003; fitting ends for flat seals.

Specification of versions:

Type	Description	Size
LBP press-fit fittings for jointing copper tube		
S1/7270	Straight coupling	12÷108
S1/7270S Slip	Straight coupling slip pattern	15÷108
S1R/7240	Straight reducing coupling	15÷54x12÷42
S2/6270G	Straight female connector	12÷64x3/8"÷2 ½"
S3/6243G	Straight male connector	12÷108x3/8"÷4"
S6/7243	Reducer	15÷108x12÷89
S7/6246G	Female adaptor	15÷54x1/2"÷2"
S8/6280G	Male adaptor	15÷42x1/2"÷1 ½"
S11/6330	Union coupling	15÷54
S12/7002A	Elbow	12÷108
S12S/7001A	Street elbow	12÷108
S13/6092G	Male elbow	12÷54x3/8"÷2"
S14/6090G	Female elbow	12÷54x3/8"÷2"
S15/6472G	Backplate elbow	12÷22x1/2"÷3/4"
S15L/6472L	Backplate elbow	15x1/2"
S19/7005	90°bend	15÷28
S21/7041	Obtuse elbow	12÷108
S21S/7040	Obtuse street elbow	12÷108
S22/7086	Partial crossover	15, 18, 22
S22S/7087	Street crossover	15, 18, 22
S23/7085	Full crossover	15, 18, 22
S24/7130	Equal tee	12÷108
S25/7130	Tee, reduced branch	15÷108x12÷76x15÷108
S26/7130	Tee, one end reduced	15÷35x15÷35x12÷28
S27/7130	Tee, one end and branch reduced	15÷54x12÷42x12÷42
S28/7130	Tee, both ends reduced	12÷28x15÷35x12÷28
S30/6130G	Female branch tee	12÷108x1/2"÷3/4"x12÷108
S32/6130G	Female branch tee with multi ports	67÷108x1/2"÷3/4"

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Type	Description	Size
S60/S302	Stop end	35, 42, 54
S61/7301	Stop end	12÷108
S65F/6096G	Straight female union elbow connector	12÷54x1/2"÷2"
S68FF/6359	Union	15÷42x3/4"÷1 ¾"
S69/6331G	Straight male union connector	12÷54x3/8"÷2"
S69F/6330G	Straight female union connector	12÷54x1/2"÷2"
Chromium plated press-fit fittings for jointing chromium plated copper tube		
S1CP/7270CP	Straight coupling	12÷22
S1SCP/7270SCP	Slip Straight reducing coupling	15
S1RCP/7240SCP	Straight reducing coupling	15x12, 22x15
S2CP/6270GCP	Straight female connector	12÷15x3/8"÷1/2"
S3CP/6243GCP	Straight male connector	12÷15x3/8"÷1/2"
S6CP/7243	Reducer	15÷22x12÷15
S8CP/6280GCP	Male adaptor	15x1/2"
S12CP/7002ACP	Elbow	12, 15, 22
S12SCP/7001ACP	Street elbow	12, 15, 22
S13CP/6092GCP	Male elbow	12x1/2", 15x1/2"
S14CP/6090GCP	Female elbow	12x3/8", 15x1/2"
S15CP/6472GCP	Backplate elbow	12x1/2", 15x1/2"
S21CP/7041CP	Obtuse elbow	12, 15
S21SCP/7040CP	Obtuse street elbow	12, 15
S22CP/7086CP	Partial crossover	15
S23CP/7085CP	Full crossover	15
S24CP/7130CP	Equal tee	12, 15, 22
S25CP/7130CP	Tee, reduced branch	15x12x15, 22x15x22
S26CP/7130CP	Tee, one end reduced	15x15x12
S27CP/7130CP	tee, one end and branch reduced	15x12x12
S30CP/6130GCP	Female branch tee	15x1/2"x15
S61CP/7301CP	Stop end	15
S68FFCP/6359CP	Union	15x3/4"



XPress Copper Gas press-fit fittings with pressed joints are made of CW024A (Cu-DHP) copper. Press-fit fittings combined with threaded joints are made of CW617N (CuZn40Pb2) copper alloy.

Application: Domestic and commercial not directly buried installations inside or outside of buildings, for assembling of distribution systems transporting gases of the first, second and third family specified in ČSN EN 437+A1:2009 in copper pipes, at maximum operating pressure of 5 bar and operating temperature from -20 °C to 70 °C. Fitting sizes from 15 mm up to 54 mm are intended for distribution of gaseous fuels.

Nominal diameter of the fitting end = outside diameter of the joined pipe, in mm: 15, 18, 22, 28, 35, 42, and 54.
Thread sizes in inches: ½, ¾, 1, 1¼, 1½, 2. Threads as per ČSN EN 10226-1:2005 (ČSN ISO 7-1:1996) or ČSN EN ISO 228-1:2003, according to the joint type.
Cap nut thread sizes in inches: ⅞, 1⅛, 1⅝. Threads as per ČSN EN ISO 228-1:2003, fitting ends for flat seals.

Specification of versions:

Copper press-fit fittings for gas services		
SG1/G7270	Straight coupling	15÷54
SG1S/G7270SG Slip	Straight coupling slip pattern	15÷54
SG2/G6270G	Straight female connector	15÷54x1/2"÷2"
SG3/G6243G	Straight male connector	15÷54x1/2"÷2"
SG6/G7243	Reducer	18÷54x15÷42
SG11/G6330	Union coupling	15÷54
SG12/G7002A	Elbow	15÷54
SG12S/G7001A	Street elbow	15÷54
SG13/G6092G	Male elbow	15÷54x1/2"÷2"
SG14/G6090G	Female elbow	15÷54x1/2"÷2"
SG15/G6471G	Backplate elbow	15÷22x1/2"÷3/4"
SG21/G7041	Obtuse elbow	15÷54
SG21S/G7040	Obtuse street elbow	15÷54
SG22/G7086	Street crossover	15, 18, 22
SG22S/7087	Full crossover	15, 18, 22
SG23/G7085	Crossover	15, 18, 22
SG24/G7130	Equal tee	15÷54
SG25	Tee, reduced branch	18÷54x15÷42x18÷54
SG26/G7130	Tee, one end reduced	22x22x15
SG27/G7130	Tee, one end and branch reduced	22x15x15
SG30/G6130G	Female branch tee	15÷54x1/2"÷3/4"x15÷54
SG61/G7301	Stop end	15÷54
SG68FF/G6360	Union	15x7/8",22x1 1/8", 28x1 3/8"

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XPress Stainless press-fit fittings with pressed and threaded joints are made of AISI 316-DIN 1.4401 stainless steel.

Application: Domestic and commercial not directly buried installations inside or outside of buildings, for assembling of distribution systems transporting water (including potable water pursuant to Decree 409/2005 Coll.), heating water, pressure air and other non-corrosive fluids in steel pipes, at maximum operating pressure of 16 bar (1.6 MPa) and operating temperature from -20 °C to 110 °C. Fitting sizes from 15 mm up to 108 mm are intended for distribution of fluids.

Threads as per ČSN EN 10226-1:2005 (ČSN ISO 7-1:1996) or ČSN EN ISO 228-1:2003, according to the joint type.
Cap nut threads as per ČSN EN ISO 228-1:2003, fitting ends for flat seals.

Specification of versions:

Type	Description	Size
LBP 316 stainless steel press-fit jointing system		
SS1	Straight coupling	15÷108
SS1S	Slip	15÷108
SS2	Straight female connector	15÷54x1/2"÷2"
SS3	Straight male connector	15÷54x1/2"÷2"
SS6	Reducer	18÷108x15÷89
SS12	Elbow	15÷108
SS12S	Street elbow	15÷108
SS13	Male elbow	15÷54x1/2"÷2"
SS14	Female elbow	15÷35x1/2"÷1 1/4"
SS19S	30° bend	35, 42, 54
SS21	Obtuse elbow	15÷108
SS21S	Obtuse street elbow	15÷108
SS24	Equal tee	15÷108
SS25	Tee, reduced branch	18÷108x15÷89x18÷108
SS30	Female branch tee	15÷108x1/2"÷2"x15÷108
SS61	Stop end	15÷108
SS69	Straight male union connector	12÷54x1/2"÷2"
SS69F	Straight female union connector	12÷54x1/2"÷2"



XPress Carbon press-fit fittings with pressed and threaded joints are made of RSt 34-2 (1.0034) carbon steel.

Application: Domestic and commercial not directly buried installations inside or outside of buildings, for assembling of distribution systems carrying water not intended for human consumption, heating water, pressure air and other non-corrosive fluids in steel pipes, at maximum operating pressure of 16 bar (1.6 MPa) and operating temperature from -20 °C to 110 °C. Fitting sizes from 15 mm up to 108 mm are intended for distribution of fluids.

Threads as per ČSN EN 10226-1:2005 (ČSN ISO 7-1:1996) or ČSN EN ISO 228-1:2003, according to the joint type.
Cap nut threads as per ČSN EN ISO 228-1:2003, fitting ends for flat seals.

Specification of versions:

Type	Description	Size
LBP 316 stainless steel press-fit jointing system		
SC1	Straight coupling	15÷108
SC1S	Slip	15÷108
SC2	Straight female connector	15÷28x1/2"÷1"
SC3	Straight male connector	15÷67x3/8"÷2 1/2"
SC6	Reducer	18÷108x15÷89
SC12	Elbow	15÷108
SC12S	Street elbow	15÷108
SC13	Male elbow	15÷54x3/8"÷2"
SC21	Obtuse elbow	15÷108
SC22S	Partial crossover	15÷28
SC24	Equal tee	15÷108
SC25	Tee, reduced branch	18÷108x15÷89x18÷108
SC28	Tee, both ends reduced	15x18x15, 15x22x15, 22x28x22
SC30	Female branch tee	15÷108x1/2"÷3/4"x15÷108
SC61	Stop end	15÷108
SC69	Straight male union connector	15÷54x1/2"÷2"
SC69F	Straight female union connector	15÷54x1/2"÷2"

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XPress Stainless gas press-fit fittings with pressed and threaded joints are made of AISI 316-DIN 1.4401 stainless steel.

Application: Domestic and commercial not directly buried installations inside or outside of buildings, for assembling of distribution systems transporting gases of the first, second and third family specified in ČSN EN 437+A1:2009 in steel pipes, at maximum operating pressure of 5 bar and operating temperature from -20 C to 70 C. Fitting sizes from 15 mm up to 54 mm are intended for distribution of gaseous fuels.

Threads as per ČSN EN 10226-1:2005 (ČSN ISO 7-1:1996) or ČSN EN ISO 228-1:2003, according to the joint type.
Cap nut threads as per ČSN EN ISO 228-1:2003, fitting ends for flat seals.

Specification of versions:

Copper press-fit fittings for gas services		
SSG1	Straight coupling	15÷54
SSG1S	Straight coupling slip pattern	15÷54
SSG2	Straight female connector	15÷54x1/2"÷2"
SSG3	Straight male connector	15÷54x1/2"÷2"
SSG6	Reducer	122÷54x15÷42
SSG12	Elbow	15÷54
SSG12S	Street elbow	15÷54
SSG13	Male elbow	15÷35x1/2"÷1 1/4"
SSG14	Female elbow	15÷35x1/2"÷1 1/4"
SSG15	Backplate elbow	15÷22x1/2"÷3/4"
SSG21	Obtuse elbow	15÷54
SSG21S	Obtuse street elbow	15÷54
SSG24	Equal tee	15÷54
SSG25	Tee, reduced branch	22÷54x15÷42x22÷54
SSG30	Female branch tee	15÷54x1/2"÷2"x15÷54
SSG61	Stop end	15÷54

RULES FOR USING THE DECISION:

This Decision shall only be used in conjunction with Construction Technical Certificate STO-30-00426-11-rev.1 of 2011-09-26.

Unauthorised or deceptive use of the Decision may result in its withdrawal.

It is prohibited to change, amend or overwrite the data contained in the Decision.

This Decision may not be used for the products changed without the consent of the Engineering Test Institute, Public Enterprise, in such a way that conformity with the Construction Technical Certificate has been affected.

The Construction Technical Certificate and the Decision on its validity period extension cannot be used as documents of conformity assessment.

AUTORIZOVANÁ OSOBA 202 STROJÍRENSKÝ ZKUŠEBNÍ ÚSTAV, S.P. ÚNMZ 1

DNV·GL

Certificate No:
TAP000006B

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Pipe System with Couplings

with type designation(s)
VSH XPress

Issued to
VSH Fittings B.V.
Hilversum Noord-Holland, Netherlands

is found to comply with
DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Temperature range:	**Dependent on the sealing (see certificate)**
Max. pressure:	**10 / 12,5 / 16 bar (dependent on size - see certificate)**
Design:	**Pipes and press fitting system**

This Certificate is valid until **2020-06-30**.
Issued at **Høvik** on **2015-12-08**

for **DNV GL**

DNV GL local station: **Rotterdam**

Approval Engineer: **Adel Samiei**

Marianne Spæren Marveng
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

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Product description

Carbon steel and stainless steel pipes and press fittings with O-ring seals

XPress Carbon steel systems:

Outer diameter (in mm):

12 – 15 – 18 – 22 – 28 – 35 – 42 – 54 - 76,1 – 88,9 – 108

Material:

Press fittings: E195 (1.0034) acc. to EN10305-3.

Pipes: Galvanized and polypropylene coated unalloyed steel pipes E195 (1.0034) acc. to EN10305. Externally and complete galvanized versions acc. to EN10305, material E195 (1.0034) and E190 (1.0031).

XPress Stainless Steel:

Outer diameter (in mm):

15 – 18 – 22 – 28 – 35 – 42 – 54 – 76,1 – 88,9 - 108

Material:

Press fittings: 1.4404 according to EN10088-2

Pipes: Stainless steel 1.4401 and 1.4521 acc. to EN10312.

O-rings: EPDM black - Viton Green - Viton Grey

Dimensional data:

Outer diameter	Carbon Steel thickness (1)	Stainless Steel thickness (2)
12 mm	1,2 mm	-
15 mm	1,2 mm	1,0 mm
18 mm	1,2 mm	1,0 mm
22 mm	1,5 mm	1,2 mm
28 mm	1,5 mm	1,2 mm
35 mm	1,5 mm	1,5 mm
42 mm	1,5 mm	1,5 mm
54 mm	1,5 mm	1,5 mm
76,1 mm	2,0 mm	2,0 mm
88,9 mm	2,0 mm	2,0 mm
108 mm	2,0 mm	2,0 mm

(1) Tolerances shall be in accordance with EN10305-3.

(2) Tolerances shall be in accordance with EN10312.

Application/Limitation

The XPress pipe system with couplings covered by this certificate is only approved for use in non-class systems.

Below Stainless steel couplings are to be considered approved fire resistant type:

- Stainless steel couplings (O.D. 15 to 108 mm) with Viton sealing (1)
- Stainless steel couplings (O.D. 15 to 108 mm) with EPDM sealing
- Carbon steel couplings (O.D. 12 to 108 mm) with EPDM sealing

(1) Dry test: In the fire test and during the first 8 min the pipe was without water flushing (dry run)

Stainless steel & Carbon steel couplings may be used in the following class III piping systems:

- Flammable fluids (flash point ≤60°C):
  - Cargo oil lines, Crude oil washing lines (In pump rooms and open decks - only approved fire resistant types)
  - Vent lines (only approved fire resistant types)
- Inert gas:

  - Water seal effluent lines, scrubber effluent lines
  - Main lines (Not inside machinery spaces of category A or accommodation spaces) & (In pump rooms and open decks - only approved fire resistant types)
  - Distributions lines (In pump rooms and open decks - only approved fire resistant types)
- Flammable fluids (flash point > 60°C)
  - Cargo oil lines (In pump rooms and open decks - only approved fire resistant types)
  - Fuel, lubricating, hydraulic and thermal oil lines (Not inside machinery spaces of category A or accommodation spaces and only approved fire resistant types)
- Fresh water
  - Cooling water system, condensate return (Inside machinery spaces of category A - only approved fire resistant types)
  - Fire main and water spray, foam system (only approved fire resistant types)
  - Dry and wet Sprinkler systems(*) (only approved fire resistant types)
  - Non-essential system
- Sanitary/drains/scuppers
  - Deck drain (internal) (Inside machinery spaces of category A - only approved fire resistant types)
  - Scuppers and discharge (overboard), sanitary drains
- Sounding/Vent
  - Water tanks/Dry spaces
  - Oil tanks (flash point>60°C) (Not inside machinery spaces of category A or accommodation spaces and only approved fire resistant types)
- Miscellaneous
  - Service air (non-essential), brine, Steam
  - Starting/control air, CO2 system (Inside machinery spaces of category A)

(*) There are not any differences between requirements for dry and wet sprinkler systems in DNV GL ship rules Pt.4 Ch.6. Therefore all fire resistant couplings can be used in all sprinkler systems – both dry and wet.

Design pressure:

- XPress carbon steel couplings and pipings:
  - 15, 18, 22, 28, 35, 42, 54mm: 16 bar
  - 76.1mm: 12.5 bar (compressed air max. 10 bar)
  - 88.9, 108mm: 10 bar
- XPress stainless steel couplings and pipings:
  - 15, 18, 22, 28, 35, 42, 54, 76.1mm: 16 bar
  - 88.9mm: 12.5 bar (compressed air max. 10 bar)
  - 108mm: 10 bar

Design temperatures:

- EPDM black: -35°C to +135°C
- Viton green: -30°C to +200°C
- Viton grey: -20°C to +150°C

EPDM is not to be used for hydrocarbon service.

Each coupling is to be hydraulic pressure tested to at 1.5 times of maximum working pressure.

The components are to be mounted according to manufacturer's instructions.

The components shall not be used in sea water systems.

The approval is only valid when the couplings are assembled with tubing of correct temper and tolerances as recommended by the manufacturer.

Pipe penetrations through watertight bulkheads, fire bulkheads or shell plating shall be approved in each separate case. When penetrating a watertight bulkhead there shall be remotely operated valves secured to each bulkhead. The valves and control system shall be located outside the damage zone of the ship.

Type Approval documentation

- Xpress catalogue Pr-EN-10-1.0 – 2010
- IMA Dresden test reports No. C099/10.1 dated 2010-12-14 (test reports on Stainless steel couplings) witnessed by GL surveyor
- IMA Dresden test reports No. C099/10.2 dated 2011-04-07 (test reports on Carbon steel couplings) witnessed by GL surveyor
- IHA fire test reports numbers 002, 003, 006 dated 2010-12-15 on stainless steel couplings with EPDM sealing witnessed by GL surveyor
- IHA fire test reports numbers 001, 004, 005 dated 2011-04-07 on Carbon steel couplings with EPDM sealing witnessed by GL surveyor
- IHA fire test reports numbers 144-15 dated 2015-10-06 / 138-15 dated 2015-10-05 / 140-15 dated 2015-10-05 / 142-15 dated 2015-10-06 on stainless steel couplings with Viton sealing
- Assembly drawings dated 2010-12-03

Tests carried out

These tests have been carried on stainless steel couplings according to DNV TAP 5-792.20 (and IACS UR P2) : Vacuum, burst, tightness, vibration, pull-out, fire test

Marking of product

For traceability to this type approval, each product is at least to be marked clearly with:

- Manufacturer’s name or trademark
- Type designation

The identification marking shall be located in low stressed areas.

Periodical assessment

For retention of the type approval, a DNV GL surveyor shall perform a periodical assessment – every second year and before expiry date of this certificate – to verify that the conditions for the type approval are complied with and to witness burst testing of samples of couplings selected at random from stock or from the running production.

Lloyd's Register

Type Approval Certificate

This is to certify that the undernoted product(s) has/have been tested with satisfactory results in accordance with the relevant requirements of the LR Type Approval System.

This certificate is issued to:

PRODUCER	VSH Fittings B.V. Oude Amersfoortseweg 99 1212 AA Hilversum The Netherlands
DESCRIPTION	Stainless steel pipes (1.4401 and 1.4521) and compression (press type) couplings (1.4404) sealed by butyl rubber (EPDM) or Viton O-ring. Compression and reshape to be achieved with special crimping tools.
TYPE	XPRESS STAINLESS STEEL
APPLICATION	Use in non-essential piping systems on ships, classed or intended for classification with Lloyd's Register.

RATINGS

Pipe and Fitting sizes:	15 x 1.0 mm to 108 x 2.0 mm
Max Pressure:	16 bar (15-76.1 mm)
	12.5 bar (88.9 mm)
	10 bar (108 mm)
	10 bar (for compressed air, 15-108 mm)
Temperature Range:	-20°C to +200°C (15-108 mm)
	(max. allowable working temperature is dependant upon O-ring material)

Certificate No.	14/30008
Issue Date	20 February 2015
Expiry Date	19 February 2020
Sheet	1 of 2

M.P. Breel
Machinery Department
Rotterdam Technical Support Office

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Lloyd's Register

STANDARDS	LR Rules and Regulations for the Classification of Ships, July 2014 IACS Unified Requirements P2.11 2001 (Corr.1, April 2007) (vacuum, burst, tightness, fire endurance, vibration, pull-out tests) EN 10312, EN 10246-2
RESTRICTIONS	Use for fuel piping systems (vapour or liquid) in domestic applications (heating, fireplace, galley, etc.) is not allowed. Application in non-essential systems conveying flammable liquids is not allowed.

"This Certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register EMEA of any modification or changes to the equipment in order to obtain a valid certificate."

The attached Design Appraisal Document No. RTS.T.1290302-B and its supplementary Type Approval Terms and Conditions form part of this Certificate.

Certificate No.	14/30008
Issue Date	20 February 2015
Expiry Date	19 February 2020
Sheet	2 of 2

M.P. Breel
Machinery Department
Rotterdam Technical Support Office

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Document number ROT.TA/1290302-B

Issue number 0

DESIGN APPRAISAL DOCUMENT

Date	Quote this reference on all future communications
20 February 2015	RTS/ENG/141852/MPB

LLOYD'S REGISTER TYPE APPROVAL SYSTEM, 2002.

Issued to: : VSH Fittings B.V.

for: X-PRESS STAINLESS STEEL SYSTEM

TYPE APPROVAL CERTIFICATE No. 14/30008

The undernoted documents have been reviewed for compliance with the requirements of the Lloyd's Register Type Approval System, 2002 and this Design Appraisal Document forms part of the Certificate.

TYPES, RATINGS & SIZES

Pipe and Press Fitting sizes:	O.D. (mm)	Wallthickness (mm)	Max.pressure (PN)
	15	1.0	16
	18	1.0	16
	22	1.2	16
	28	1.2	16
	35	1.5	16
	42	1.5	16
	54	1.5	16
	76.1	2.0	16
	88.9	2.0	12.5
	108	2.0	10

Bend radius of fittings is 1,2 times the outer diameter.

Xpress fittings and configurations, as submitted with CD-ROM '120416_1542',..... received on 16 April 2012

APPROVAL DOCUMENTATION

Xpress Technical Manual 12-1.0 EN, as submitted with CD-ROM '120416_1542',..... received on 16 April 2012
Drawings Xpress stainless, as submitted with CD-ROM '120416_1542', ... received on 16 April 2014
Materials specifications Xpress stainless, as submitted with CD-ROM '120416_1542', ... received on 16 April 2014

TEST REPORTS

IHA Testreport No.2, as submitted with CD-ROM '120416_1542',..... received on 16 April 2014
IHA Testreport No.3, as submitted with CD-ROM '120416_1542',..... received on 16 April 2014
IHA Testreport No.6, as submitted with CD-ROM '120416_1542',..... received on 16 April 2014
IMA Testreport C099_10.1, as submitted with CD-ROM '120416_1542',..... received on 16 April 2014
LR Report of Inspection and Surveillance of Production Facilities, No. AMS1203023, ... dated 06 June 2012

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Document number ROT.TA/1290302-B

Issue number 0

DESIGN APPRAISAL DOCUMENT

Date	Quote this reference on all future communications
20 February 2015	RTS/ENG/141852/MPB

OPERATIONAL LIMITATIONS

These notes are based on the requirements of Lloyd's Register's Rules and Regulations for the Classification of Ships, July 2014.

1. Use for fuel piping systems (vapour or liquid) in domestic applications (heating, fireplace, galley, etc.) is not allowed. Application in non-essential systems conveying flammable liquids is not allowed.
2. For application in non-essential compressed air systems (working air) max. allowed pressure is 10 bar.
3. Stainless steel pipe, ferritic grade 1.4520, is excluded from this type approval.
4. Welding connection of flange to pipe is to comply with Part 5, Chapter 12, Fig. 12.2.2 (b), (d) or (f) of the Rules for Ships. For non-essential services proposed butt-weld connection is specially considered.
5. All welding joints of pipe to fittings are to be of butt-weld type.
6. Bend radius of carbon steel pipes to be not less than 3D (D = external diameter of pipe)
7. Maximum allowable working temperature is dependant upon O-ring material;-
   - Black EPDM -35°C to +135°C
   - Green Viton -20°C to +200°C
   - Grey Viton -20°C to +150°C
8. The manufacturer's list of the chemical list of the chemical resistance of the piping components is to be observed.
9. The selection of fittings, pipes and O-rings for the corresponding application and the right mounting with the stipulated pressing tools is to be in accordance with the instructions of the manufacturer.

The issue within the scope of this Type Approval shall not prejudice any future action that Lloyd's Register may wish to take regarding the use of the subject X-Press Stainless Steel on board ships or other applications.

Supplementary Type Approval Terms and Conditions

Type Approval certifies that a representative sample of the product(s) referred to herein has/have been found to meet the applicable design criteria for the use specified herein. It does not mean or imply approval for any other use, nor approval of any product(s) designed or manufactured otherwise than in strict conformity with the said representative sample.

Type Approval is based on the understanding that the manufacturer's recommendations and instructions and any relevant requirements of the Rules and Regulations are complied with.

Type Approval does not eliminate the need for normal inspection and survey procedures required by the Rules and Regulations.

Lloyd's Register EMEA reserves the right to cancel or withdraw this Type Approval Certificate in accordance with the Lloyd's Register Type Approval System Procedure.

M.P. Breel
Senior Specialist
Machinery Department
Rotterdam Technical Support Office

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BUREAU VERITAS

Marine & Offshore

Certificate number: 28304/B0 BV
File number: ACM 135/2710/01-02
Product code: 2170H

This certificate is not valid when presented without the full attached schedule composed of 7 sections

www.veristar.com

TYPE APPROVAL CERTIFICATE

This certificate is issued to

VSH FITTINGS BV

HILVERSUM - NETHERLANDS

for the type of product

PIPE COUPLING WITH O-RING SEAL

XPress System
XPress Galvanized Steel & XPress Stainless Steel

Requirements:
BUREAU VERITAS Rules for the Classification of Steel Ships

This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: 14 Dec 2022

For Bureau Veritas Marine & Offshore,
At BV GRONINGEN, on 14 Dec 2017,
John Mondt

BUREAU VERITAS SURVEYORS AT PARIS 1828 GRONINGEN INTERNATIONAL REGISTER

This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION

XPress System: XPress Galvanized Steel & XPress Stainless Steel

1.1 Design (compression couplings, press type)

- XPress Galvanized Steel tubes are thin-walled precision tubes
- XPress Stainless Steel tubes are thin-walled precision tubes

1.2 Technical characteristics

XPress Galvanized Steel tube - File Number ACM 135/2710/01

Nominal size DN	10	12	15	20	25	32	40	50	65	80	100
Outside Pipe Diameter (mm)	12	15	18	22	28	35	42	54	76.1	88.9	108
Pipe thickness (mm)	1.2	1.2	1.2	1.5	1.5	1.5	1.5	1.5	2.0	2.0	2.0
Max. Working Pressure (bar)	16	16	16	16	16	16	16	16	12.5	10	10

XPress Stainless Steel tube - File Number ACM 135/2710/02

DN	12	15	20	25	32	40	50	65	80	100
Outer Pipe Diameter (mm)	15	18	22	28	35	42	54	76.1	88.9	108
Pipe thickness (mm)	1.0	1.0	1.2	1.2	1.5	1.5	1.5	2.0	2.0	2.0
Max. Working Pressure (bar)	16	16	16	16	16	16	16	16	12.5	10

1.3 Temperature range (°C) depending on sealing material according to manufacturer's recommendation

- EPDM black -35/135 (150 peak)
- Viton Green -20/200 (230 peak)
- Viton Grey -20/175 (190 peak)

1.4 Material specification

Part	Material
Tubes	Galvanized and polypropylene coated unalloyed steel E195 (1.0034/RSt34-2) according to EN 10305 Externally and complete galvanized versions E195 (1.0034/RSt34-2) and E190 (1.0031) according to EN 10305 Stainless steel 1.4401(AISI 316) and 1.4521 (AISI 444) according to EN 10312
Fittings	Carbon steel, galvanized E195 (1.0034/RSt34-2) according to EN 10305 Stainless steel 1.4404 according to EN 10312
O-ring seal	EPDM black, Viton Green and Viton Grey

When other choices of materials are used per manufacturer's recommendations, the BV agreement is to be obtained.

2. DOCUMENTS AND DRAWINGS

- Catalogue VSH Technical Manual XPress-EN-12-1.0

No departure from the above documents shall be made without the prior consent of the Society. The manufacturer must inform the Society of any modification or changes to these documents and drawings.

3. TEST REPORTS

3.1 Tests carried out: Tightness test, vibration test and pressure pulsation test, burst pressure test, pull-out test, vacuum test and fire endurance test.

3.2 XPress Galvanized Steel: IMA Dresden test report C099/10.2 dated 12/01/2011, IHA test reports N° 001 (DN10), N° 004 (DN50) dated 20/10/2010 and N° 005 dated 27/10/2010 (DN100).

3.3 XPress Stainless Steel: IMA Dresden test report C099/10.1 dated 15/11/2010, IHA test reports N° 002 (DN12), N° 003 (DN50) dated 20/10/2010 (DN10) and N° 006 dated 27/10/2010 (DN100).

4. APPLICATION / LIMITATION

4.1 The XPress fittings with O-ring may be used for class III piping systems:

- **Flammable fluids (flash point ≤ 60°C)** - cargo oil (2), crude oil washing (2), vent lines
- **Inert gas** - water seal/scrubber effluent, main lines (1+2), distributions lines (2)
- **Flammable fluids (flash point > 60°C)** - cargo oil (2), fuel oil (1), lubricating oil (1), hydraulic oil (1), thermal oil lines (1)
- **Sea water** - bilge/ballast/cooling water, water/non-water filled fire extinguishing systems, fire main, tank cleaning/non-essential lines
- **Fresh water** - cooling water, condensate return, non-essential lines
- **Deck drains (internal)** (3), sanitary drains, scuppers and discharge (overboard)
- **Sounding and venting** - water tanks/dry spaces, oil tanks (flash point > 60°C) (1)
- **Miscellaneous** - service air (non-essential), brine, steam, starting/control air, C02 system

(1)- Not inside machinery spaces of category A or accommodation spaces. May be accepted in other machinery space provided the joints are located in easily visible and accessible positions.

(2)- Only in pump rooms and open decks

(3)- Only above bulkhead deck of passenger ships and freeboard deck of cargo ships.

4.2 The sealing material is to be compatible with the fluid to be conveyed and the maximum working temperature in accordance with the manufacturer's instructions.

4.3 The galvanized pipes (XPress Galvanized Steel) are not to be used for flammable fluids.

4.4 In all cases, the associated pipes are to be suitably supported and anchored. The joints are to be at any time accessible, excepting inside tanks where permitted by the Bureau Veritas rules.

4.5 Couplings and O-rings are to be assembled with pipes in accordance with the assembly instructions given by the manufacturer.

4.6 The approval does not cover any pipes penetration through watertight bulkheads and fire divisions.

5. PRODUCTION SURVEY REQUIREMENTS

5.1 The products are to be supplied by **VSH FITTINGS BV** in compliance with the type described in this certificate.

5.2 This type of product is within the category HBV of Bureau Veritas Rule Note NR320 and as such does not require a BV product certificate.

5.3 **VSH FITTINGS BV** has to make the necessary arrangements to have its works recognised by Bureau Veritas in compliance with the requirements of NR320 for HBV products.

For information, **VSH FITTINGS BV** has declared to Bureau Veritas the following production site:

VSH FITTINGS BV
PO BOX 498
1200 AL HILVERSUM
NETHERLANDS

6. MARKING OF PRODUCT

Each XPress fitting is to be clearly marked with at least:

- Manufacturer's name or logo
- Type designation
- Size

7. OTHERS

It is **VSH FITTINGS BV**'s responsibility to inform shipbuilders or their sub-contractors of the proper methods of fitting, use and general maintenance of the approved equipment and the conditions of this approval.

This certificate supersedes the Type Approval Certificate N° 28304/A0 BV issued by the Society.

***** END OF CERTIFICATE *****