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FLEXIBLE PIPES AND HOSES

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PRODUCT OVERVIEW

BROEN-LAB offers BROEN-LAB UniFlex™ hoses and flexible Stainless Steel pipes as an easy way to make the installation in the laboratory where safety and efficiency are required. BROEN-LAB UniFlex™ hoses are the ideal solution where there is a higher requirement for flexibility. Installation with flexible hoses saves time and labour - in other words - reduced installation costs.

Select the right product to ensure safe installation and long service life!

Hose material Media	SPX (braided)	PEX	LLDPE	PVDF	Rubber (Nitrile), polyester reinforced	Stainless Steel	PTFE (braided)	Stainless Steel (braided)
Potable / non-potable / coolant water*	93V	93P						
Special water sorts*	93D		93K	93F		93Z		
Burning gases					93G	93Y		
Non-burning 2.0 gases/ Vacuum	93T	93B						
Non-burning 4.0 gases/ Oxygen						93Q	93R	
High purity 5.0 gases						93Q	93R	
High purity 6.0 gases								93S

* Remember to use insulation material for coolant water and similar cold surfaces in order to avoid water condensation!

INSULATION MATERIAL FOR BROEN-LAB UNIFLEX™ HOSES FOR COOLANT WATER



SPECIFICATIONS

Item No: 95F0015

Standard length: 2m

Hose material: Highly flexible, closed-cell insulation, FEF (Flexible Elastometric Foam)

Inside diameter: 12 mm

Outside diameter: 34 mm

The insulating material needs to be secured with a cable strip (BROEN-LAB item no. 96M0208) on both ends in order to avoid any warm air to have access to the surface of the hose. Other components such as valves and fittings should be insulated on site.

SELECTION GUIDE

The total design of the system must be taken into consideration when selecting the type of BROEN-LAB UniFlex™ flexible hose or pipe for specific media. Only then products will provide safe, trouble-free operation.

Please always check local requirements/regulations regarding installation and maintenance of hoses/flexible pipes!

A very high quality of materials applied for production of hoses and Stainless Steel flexible pipes, which are supplied by BROEN-LAB, and a long-time experience in making installations worldwide, combined with optimal installation conditions, may assure a lifetime for a hose to be more than 10 years. Expected lifetime can only be achieved under normal use and proper installation methods, which are described in technical specifications, i.e. max. working pressure, max. temperature, physical installation methods and other. Any nonconformity to specifications decreases the lifetime of a hose/flexible pipe.

Which hose/flexible pipe to select?

In the table below you find the summary of the factors that are necessary to consider when selecting a BROEN-LAB UniFlex™ flexible hoses/pipes.

Hose Factors*	SPX 93V, 93D, 93T	PEX 93P, 93B	LLDPE PVDF 93K, 93F	Rubber 93G	SS 93Z, 93Y, 93Q	PTFE 93R	SS (Braided) 93S
Inner hose material with media contact	SPX	PEX	LLDPE (93K) PVDF (93F)	Nitrile (NBR)	Corrugated Stainless Steel AISI 316	PTFE**	Corrugated Stainless Steel AISI 316
Outer hose material / braiding	Stainless Steel AISI 304	None	None	EPDM (polyester reinforced)	None	Stainless Steel AISI 304	Stainless Steel AISI 304
Sealing material	EPDM (93V, 93D) FKM (93T)	EPDM (93P) FKM (93B)	None	Nitrile (NBR)	EPDM (93Z) Nitrile (NBR) (93Y) FKM (93Q)	FKM	None
Inside diameter	8.2 mm	6.4 mm	7 mm	6.3 mm	8.5 mm	6.3 mm	8.2 mm
Outside diameter	12 mm	10 mm	10 mm	12.9 mm	12 mm	9.5 mm	12.2 mm
Max. working pressure	10 bar (water) 16 bar (gases)	10 bar	10 bar by 23°C 6 bar by 65°C	10 bar	21 bar (93Z, 93Q) 16 bar, DVGW (93Y)	21 bar	21 bar
Max. working temperature	90°C	70°C	65°C	50°C	50°C	50°C	50°C***
Min. bending radius (inner)	40 mm	50 mm	90 mm	40 mm	15 mm (Single bend) 130 mm (Dynamic bend)	60 mm	32 mm (Single bend)
Leakage rate	-	-	-	**	<1x10 ⁻³ mbar l/s [He] (93Y, 93Z) <1x10 ⁻⁷ mbar l/s [He] (93Q)	**	<1x10 ⁻⁹ mbar l/s [He]
UV resistance	++	+	+	+	+++	++	+++
Range of connections	+++	+	+	+++	++	+++	+

* Values shown in the table are valid for hoses and flexible Stainless Steel pipes only.

For more information please refer to individual pages in this catalogue or contact your BROEN-LAB representative.

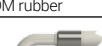
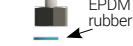
** PTFE and rubber are penetrable materials meaning that gases, vapors, and liquids may diffuse through them. Therefore, for applications where a defined gas content is required, or absorbed gases might disturb applications, alternative materials could be considered. Check compatibility with gases in application!

*** For applications requiring higher temperatures please contact your BROEN-LAB representative.

93V - BROEN-LAB UNIFLEX™ SPX HOSES FOR WATER

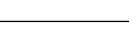
INLET CONNECTIONS

93 V **XX** XX XXXX

61	3/8" NPT swivel connection	
32	Male G3/8" fixed connection	
31	Male G1/2" fixed connection	
33	Male G3/4" fixed connection	
34	3/8" NPT fixed connection	
35	3/8" NPT swivel connection	
41	Female G3/8" union nut connection	
46	90° Female G3/8" union nut connection	
40	Female G1/2" union nut connection	
45	90° Female G1/2" union nut connection	
42	Female G3/4" union nut connection	
09	OD3/8" connection compression fitting	
10	OD10mm connection for compression fittings	
12	OD12mm connection for compression fittings	
13	OD1/2" connection for compression fittings	
15	OD15mm connection for compression fittings	
65	OD15mm connection for press fittings	
20	Straight BROEN-LAB UniFlex™ connection with EPDM O-ring	
25	45° BROEN-LAB UniFlex™ connection with EPDM O-ring	
30	90° BROEN-LAB UniFlex™ connection with EPDM O-ring	

OUTLET CONNECTIONS

93 V XX **XX** XXXX

20	Straight BROEN-LAB UniFlex™ connection with EPDM O-ring	
25	45° BROEN-LAB UniFlex™ connection with EPDM O-ring	
30	90° BROEN-LAB UniFlex™ connection with EPDM O-ring	
51	M10x1mm short connection with EPDM O-ring	
Please note: M10 connections can only be used for mixers and multimedia fittings		
52	M10x1mm long connection with EPDM O-ring	
Please note: M10 connections can only be used for mixers and multimedia fittings		
*All O-rings are lubricated with silicone based lubricant		

SPECIFICATIONS

Inner hose material: SPX (soft PEX)
Braiding: Stainless Steel with one green stripe
Materials with media contact: SPX, brass, EPDM with silicone based lubricant
Sealing: EPDM, Aramid fiber/NBR
Inside diameter: 8.2 mm
Outside diameter: 12 mm
Max. working pressure: 10 bar
Max. working temperature: 90°C
Bending radius (inner): ≥ 40 mm
Min. length with connections: 160 mm

LENGTH

93 V XX XX **XXXX**

SPX hose with braiding in Stainless Steel



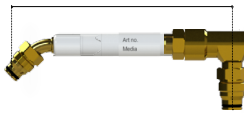
Marking for water with Part no. and Media indication

HOSE LENGTHS

Definition of length (L)



Definition of length (L)



If 45° and 90° elbows occur on the same hose, it will as default be mounted in U-form

**Standard lengths of hoses (L):

- 0500** = 500 mm
- 0700** = 700 mm
- 1000** = 1000 mm
- 1200** = 1200 mm
- 1500** = 1500 mm
- 2000** = 2000 mm
- 2500** = 2500 mm
- 3000** = 3000 mm

Length tolerance of hoses:
L = ≤400 mm (- 0, +10 mm)
L = 401 mm to 1000 mm (- 0, + 20 mm)
L = >1000 mm (- 0, + 30 mm)

** Other lengths are available on request

EXAMPLE OF HOSE CONFIGURATION

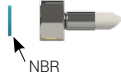
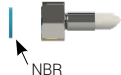
1200 mm hose with OD 12 mm inlet connection and straight UniFlex™ outlet connection



93V12201200

93P - BROEN-LAB UNIFLEX™ PEX HOSES FOR WATER

INLET CONNECTIONS
93 P **XX** XX XXXX

00	OD10 mm hose connection	
41	Female G3/8" union nut connection	
40	Female G1/2" union nut connection	
20	Straight BROEN-LAB UniFlex connection with EPDM O-ring	

OUTLET CONNECTIONS
93 P XX **XX** XXXX

51	M10x1 mm short connection with EPDM O-ring	
20	Straight BROEN-LAB UniFlex connection with EPDM O-ring	

*All O-rings are lubricated with silicone based lubricant

LENGTH
93 P XX XX **XXXX**

PEX hose



Marking for water with Part no. and Media indication

HOSE LENGTHS

Definition of length (L)



If 45° and 90° elbows occur on the same hose, it will as default be mounted in U-form

**Standard lengths of hoses (L):

- 0500** = 500 mm
- 0700** = 700 mm
- 1000** = 1000 mm
- 1200** = 1200 mm
- 1500** = 1500 mm
- 2000** = 2000 mm
- 2500** = 2500 mm
- 3000** = 3000 mm

Length tolerance of hoses:
L = ≤400 mm (- 0, +10 mm)
L = 401 mm to 1000 mm (- 0, + 20 mm)
L = >1000 mm (- 0, + 30 mm)

** Other lengths are available on request

SPECIFICATIONS

Inner hose material: PEX
Braiding: None
Materials with media contact: PEX, brass, EPDM with silicone based lubricant
Sealing: EPDM, Aramid fiber/NBR
Inside diameter: 6.4 mm
Outside diameter: 10 mm
Max. working pressure: 10bar
Max. working temperature: 70°C
Bending radius (inner): ≥ 50 mm
Min. length with connections: 160 mm

EXAMPLE OF HOSE CONFIGURATION

1200 mm hose with OD10 mm inlet connection and straight UniFlex™ outlet connection



93P00201200

93D - BROEN-LAB UNIFLEX™ SPX HOSES FOR SPECIAL WATER

INLET CONNECTIONS
93 D **XX** XX XXXX

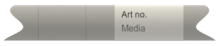
50	Female G1/2" union nut connection	
20	Straight BROEN-LAB UniFlex™ connection with EPDM O-ring	

OUTLET CONNECTIONS
93 D XX **XX** XXXX

50	Female G1/2" union nut connection	
20	Straight BROEN-LAB UniFlex™ connection with EPDM O-ring	

LENGTH
93 D XX XX **XXXX**

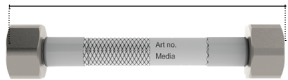
SPX hose with braiding in Stainless Steel



Marking for special water with Part no. and Media indication

HOSE LENGTHS

Definition of length (L)



If 45° and 90° elbows occur on the same hose, it will as default be mounted in U-form

****Standard lengths of hoses (L):**

- 0500** = 500 mm
- 0700** = 700 mm
- 1000** = 1000 mm
- 1200** = 1200 mm
- 1500** = 1500 mm
- 2000** = 2000 mm
- 2500** = 2500 mm
- 3000** = 3000 mm

Length tolerance of hoses:
L = ≤400 mm (- 0, +10 mm)
L = 401 mm to 1000 mm (- 0, + 20 mm)
L = >1000 mm (- 0, + 30 mm)

**** Other lengths are available on request**

SPECIFICATIONS

Inner hose material: SPX (soft pex)
Braiding: Stainless Steel with one green stripe
Materials with media contact: SPX, Stainless Steel AISI 316, EPDM
Inside diameter: 8.2 mm
Outside diameter: 12 mm
Max. working pressure: 10 bar
Max. working temperature: 90°C
Bending radius (inner): ≥ 40 mm
Min. length with connections: 160 mm

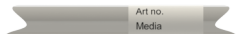
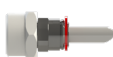
EXAMPLE OF HOSE CONFIGURATION

1200 mm hose with 1/2" union inlet connection and 1/2" union outlet connection



93D50501200

93K - BROEN-LAB UNIFLEX™ LLDPE HOSES FOR SPECIAL WATER

INLET CONNECTIONS 93 K XX XX XXXX			OUTLET CONNECTIONS 93 K XX XX XXXX			LENGTH 93 K XX XX XXXX		
00	OD10 mm pipe connection incl. support bushing		00	OD10 mm pipe connection incl. support bushing		LLDPE hose  Marking for special water with Part no. and Media indication HOSE LENGTHS Definition of length (L)  **Standard lengths of hoses (L): 0500 = 500 mm 0700 = 700 mm 1000 = 1000 mm 1200 = 1200 mm 1500 = 1500 mm 2000 = 2000 mm 2500 = 2500 mm 3000 = 3000 mm Length tolerance of hoses: L = ≤400 mm (- 0, +10 mm) L = 401 mm to 1000 mm (- 0, + 20 mm) L = >1000 mm (- 0, + 30 mm) ** Other lengths are available on request		
32	Male R3/8" fixed connection							
31	Male R1/2" fixed connection							
33	Male G3/4" fixed connection							

SPECIFICATIONS

Hose material: LLDPE
Braiding: None
Materials with media contact: LLDPE, PSU, EPDM
Inside diameter: 7 mm
Outside diameter: 10 mm
Max. working pressure:
• 10 bar by 23°C
• 6 bar by 65°C
Max. working temperature: 65°C
Bending radius (inner): ≥ 90 mm
Min. length with connections: 150 mm

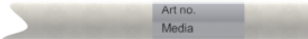
EXAMPLE OF HOSE CONFIGURATION

1200 mm hose with G3/8" fixed inlet connection and OD10 mm pipe outlet connection



93K32001200

93F - BROEN-LAB UNIFLEX™ PVDF HOSES FOR SPECIAL WATER

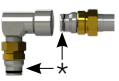
INLET CONNECTIONS 93 F XX XX XXXX			OUTLET CONNECTIONS 93 F XX XX XXXX		LENGTH 93 F XX XX XXXX
00	OD10 mm pipe connection incl. support bushing		00	M10x1 mm short connection with EPDM O-ring	
32	ISO 7/1-R3/8" fixed connection		PVDF hose  Marking for special water with Part no. and Media indication HOSE LENGTHS Definition of length (L) 		
31	ISO 7/1-R1/2" fixed connection				
			**Standard lengths of hoses (L): 0500 = 500 mm 0700 = 700 mm 1000 = 1000 mm 1200 = 1200 mm 1500 = 1500 mm 2000 = 2000 mm 2500 = 2500 mm 3000 = 3000 mm Length tolerance of hoses: L = ≤400 mm (- 0, +10 mm) L = 401 mm to 1000 mm (- 0, + 20 mm) L = >1000 mm (- 0, + 30 mm) ** Other lengths are available on request		
			EXAMPLE OF HOSE CONFIGURATION 1200 mm hose with RG3/8" fixed inlet connection and OD10 mm pipe outlet connection  93F32001200		

SPECIFICATIONS

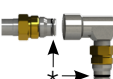
Hose material: PVDF
 Braiding: None
 Materials with media contact: PVDF, PSU
 Inside diameter: 7 mm
 Outside diameter: 10 mm
 Max. working pressure:
 • 10 bar by 23°C
 • 6 bar by 65°C
 Max. working temperature: 65°C
 Bending radius (inner): ≥ 90 mm
 Min. length with connections: 150 mm

93Z - BROEN-LAB UNIFLEX™ FLEXIBLE STAINLESS STEEL PIPES FOR SPECIAL WATER

INLET CONNECTIONS 93 Z **XX** XX XXXX

10	OD10 mm connection for compression fittings	
12	OD12 mm connection for compression fittings	
15	OD15 mm connection for compression	
09	OD3/8" connection for compression fittings	
20	Straight BROEN-LAB UniFlex™ connection with EPDM O-ring	
34	3/8" NPT fixed male connection	
70	1/4" NPT fixed male connection	
41	Female G3/8" union nut connection	
40	Female G1/2" union nut connection	
30	90° BROEN-LAB UniFlex™ connection with EPDM O-ring	

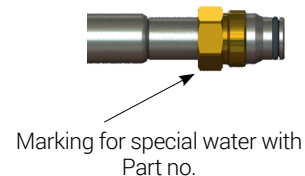
OUTLET CONNECTIONS 93 Z XX **XX** XXXX

20	Straight BROEN-LAB UniFlex™ connection with EPDM O-ring	
30	90° BROEN-LAB UniFlex™ connection with EPDM O-ring	

*All O-rings are lubricated with silicone based lubricant

LENGTH 93 Z XX XX **XXXX**

Stainless Steel 1.4404 flexible pipe



HOSE LENGTHS

Definition of length (L)



**Standard lengths of hoses (L):

0500	= 500 mm
0700	= 700 mm
1000	= 1000 mm
1200	= 1200 mm
1500	= 1500 mm
2000	= 2000 mm
2500	= 2500 mm
3000	= 3000 mm

Length tolerance of hoses:
 L = ≤400 mm (- 0, +10 mm)
 L = 401 mm to 1000 mm (- 0, + 20 mm)
 L = >1000 mm (- 0, + 30 mm)

** Other lengths are available on request

SPECIFICATIONS

Inner hose material: Stainless Steel 1.4404 similar to AISI 316L

Braiding: None

Materials with media contact: Stainless Steel 1.4404, EPDM, Aramide fibre/NBR gasket

Inside diameter: 8.5 mm

Outside diameter: 12 mm

Max. working pressure: 21 bar

Max. working temperature: 50°C

Bending radius (inner):

- ≥ 15 mm (static)
- ≥ 130 mm (dynamic)

Min. length with connections: 500 mm

Max. movements (Bending radius 130 mm): 10.000**

Leakage rate: <1x10⁻³ mbar l/s [He]

EXAMPLE OF HOSE CONFIGURATION

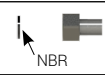
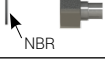
1200 mm hose with OD 12 mm inlet connection and straight UniFlex™ outlet connection



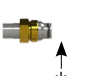
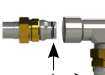
93Z12201200

93Y - BROEN-LAB UNIFLEX™ FLEXIBLE STAINLESS STEEL PIPES FOR BURNING GASES

INLET CONNECTIONS 93 Y **XX** XX XXXX

10	OD10 mm connection for compression fittings	
12	OD12 mm connection for compression fittings	
15	OD15 mm connection for compression	
09	OD3/8" connection for compression fittings	
20	Straight BROEN-LAB UniFlex™ connection with NBR O-ring	
34	3/8" NPT fixed male connection	
70	1/4" NPT fixed male connection	
41	Female G3/8" union nut connection	
40	Female G1/2" union nut connection	
30	90° BROEN-LAB UniFlex™ connection with NBR O-ring	

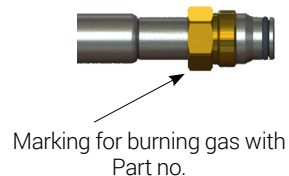
OUTLET CONNECTIONS 93 Y XX **XX** XXXX

20	Straight BROEN-LAB UniFlex™ connection with NBR O-ring	
30	90° BROEN-LAB UniFlex™ connection with NBR O-ring	

*All O-rings are lubricated with mineral oil based lubricant

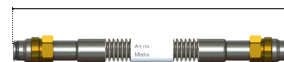
LENGTH 93 Y XX XX **XXXX**

Stainless Steel 1.4404 flexible pipe



HOSE LENGTHS

Definition of length (L)



**Standard lengths of hoses (L):

0500	=	500 mm
0700	=	700 mm
1000	=	1000 mm
1200	=	1200 mm
1500	=	1500 mm
2000	=	2000 mm
2500	=	2500 mm
3000	=	3000 mm

Length tolerance of hoses:
 $L \leq 400 \text{ mm}$ (- 0, +10 mm)
 $L = 401 \text{ mm to } 1000 \text{ mm}$ (- 0, + 20 mm)
 $L > 1000 \text{ mm}$ (- 0, + 30 mm)

** Other lengths are available on request

SPECIFICATIONS

Inner hose material: Stainless Steel 1.4404 similar to AISI 316L

Braiding: None

Materials with media contact: Stainless Steel 1.4404, NBR (Nitrile) lubricated with mineral oil based lubricant

Inside diameter: 8.5 mm

Outside diameter: 12 mm

Max. working pressure: 16 bar according to DVGW

Max. working temperature: 50°C

Bending radius (inner):

- $\geq 15 \text{ mm}$ (static)
- $\geq 130 \text{ mm}$ (dynamic)

Min. length with connections: 500 mm

Max. movements (Bending radius 130 mm): 10.000**

Leakage rate: $< 1 \times 10^{-3} \text{ mbar l/s [He]}$

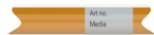
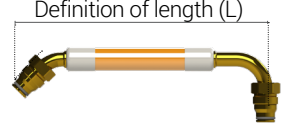
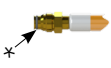
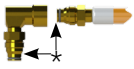
EXAMPLE OF HOSE CONFIGURATION

1200 mm hose with OD 12 mm inlet connection and straight UniFlex™ outlet connection



93Y12201200

93G - BROEN-LAB UNIFLEX™ RUBBER HOSES FOR BURNING GASES

INLET CONNECTIONS			OUTLET CONNECTIONS		LENGTH
93 G XX XX XXXX			93 G XX XX XXXX		93 G XX XX XXXX
32	Male G3/8" fixed connection		20	Straight BROEN-LAB UniFlex™ connection with NBR O-ring	Rubber hose (polyester reinforced)  Marking for burning gases with Part no. and Media indication HOSE LENGTHS Definition of length (L)  Definition of length (L)  If 45° and 90° elbows occur on the same hose, it will as default be mounted in U-form **Standard lengths of hoses (L): 0500 = 500 mm 0700 = 700 mm 1000 = 1000 mm 1200 = 1200 mm 1500 = 1500 mm 2000 = 2000 mm 2500 = 2500 mm 3000 = 3000 mm Length tolerance of hoses: L = ≤400 mm (- 0, +10 mm) L = 401 mm to 1000 mm (- 0, + 20 mm) L = >1000 mm (- 0, + 30 mm) ** Other lengths are available on request
31	Male G1/2" fixed connection		25	45° BROEN-LAB UniFlex™ connection with NBR O-ring	
40	Female G1/2" union nut connection		30	90° BROEN-LAB UniFlex™ connection with NBR O-ring	
10	OD10 mm connection for compression fittings		*All O-rings are lubricated with mineral oil based lubricant		
12	OD12 mm connection for compression fittings				
15	OD15 mm connection for compression fittings				
20	Straight BROEN-LAB UniFlex™ connection with NBR O-ring				
25	45° BROEN-LAB UniFlex™ connection with NBR O-ring				
30	90° BROEN-LAB UniFlex™ connection with NBR O-ring				

SPECIFICATIONS

Inner hose material: Nitrile (NBR)
 Outer hose material: EPDM
 Materials with media contact: brass, NBR
 Sealing material: Nitrile (NBR) with mineral oil based lubricant
 Inside diameter: 6.3 mm
 Outside diameter: 12.9 mm
 Max. working pressure: 10 bar
 Max. working temperature: 50°C
 Bending radius (inner): ≥ 40 mm
 Min. length with connections: 160 mm

EXAMPLE OF HOSE CONFIGURATION

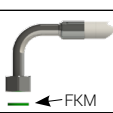
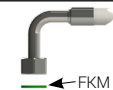
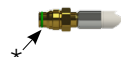
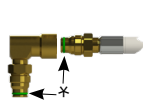
1200 mm hose with OD12 mm inlet connection and straight Uniflex™ outlet connection



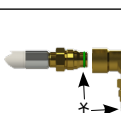
93G12201200

93T - BROEN-LAB UNIFLEX™ HOSES FOR NON-BURNING 2.0 GASES/VACUUM

INLET CONNECTIONS 93 T **XX** XX XXXX

61	3/8" NPT swivel connection	
36	Male G1/4" fixed connection	
32	Male G3/8" fixed connection	
31	Male G1/2" fixed connection	
34	3/8" NPT fixed connection	
35	3/8" NPT Swivel connection	
46	90° female G3/8" Union nut connection	
41	Female G3/8" union nut connection	
40	Female G1/2" union nut connection	
45	90° female G1/2" union nut connection	
09	OD3/8" connection for compression fittings	
10	OD10 mm connection for compression fittings	
12	OD12 mm connection for compression fittings	
13	OD1/2" connection for compression fittings	
15	OD15 mm connection for compression fittings	
65	OD15 mm connection for press fittings	
20	Straight BROEN-LAB UniFlex™ connection with FKM O-ring	
25	45° BROEN-LAB UniFlex™ connection with FKM O-ring	
30	90° BROEN-LAB UniFlex™ connection with FKM O-ring	

OUTLET CONNECTIONS 93 T XX **XX** XXXX

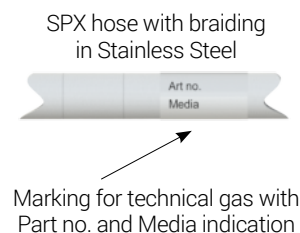
20	Straight BROEN-LAB UniFlex™ connection with FKM O-ring	
25	45° BROEN-LAB UniFlex™ connection with FKM O-ring	
30	90° BROEN-LAB UniFlex™ connection with FKM O-ring	

*All O-rings are lubricated with perfluoropolyether based lubricant

SPECIFICATIONS

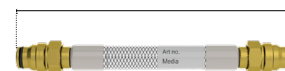
Inner hose material: SPX (soft pex)
Braiding: Stainless Steel with one green stripe
Materials with media contact: PEX, brass, FKM and perfluoropolyether based lubricant
Inside diameter: 8.2 mm
Outside diameter: 12 mm
Max. working pressure: 16 bar
Max. working temperature: 90°C
Bending radius (inner): ≥ 40 mm
Min. length with connections: 160 mm

LENGTH 93 T XX XX **XXXX**



HOSE LENGTHS

Definition of length (L)



Definition of length (L)



If 45° and 90° elbows occur on the same hose, it will as default be mounted in U-form

**Standard lengths of hoses (L):

0500 = 500 mm
0700 = 700 mm
1000 = 1000 mm
1200 = 1200 mm
1500 = 1500 mm
2000 = 2000 mm
2500 = 2500 mm
3000 = 3000 mm

Length tolerance of hoses:
L = ≤400 mm (- 0, +10 mm)
L = 401 mm to 1000 mm (- 0, + 20 mm)
L = >1000 mm (- 0, + 30 mm)

** Other lengths are available on request

EXAMPLE OF HOSE CONFIGURATION

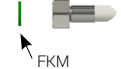
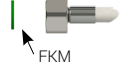
1200 mm hose with OD 12 mm inlet connection and straight UniFlex™ outlet connection



93T12201200

93B - BROEN-LAB UNIFLEX™ PEX HOSES FOR NON-BURNING 2.0 GASES/VACUUM

INLET CONNECTIONS 93 B **XX** XX XXXX

00	OD10 mm hose connection	
41	Female G3/8" union nut connection	
40	Female G1/2" union nut connection	
20	Straight BROEN-LAB UniFlex™ connection with FKM O-ring	

OUTLET CONNECTIONS 93 B XX **XX** XXXX

20	Straight BROEN-LAB UniFlex™ connection with FKM O-ring	
----	--	---

LENGTH 93 B XX XX **XXXX**

Pex hose



Marking for technical gas with Part no. and Media indication

HOSE LENGTHS

Definition of length (L)



**Standard lengths of hoses (L):

0500 = 500 mm

0700 = 700 mm

1000 = 1000 mm

1200 = 1200 mm

1500 = 1500 mm

2000 = 2000 mm

2500 = 2500 mm

3000 = 3000 mm

Length tolerance of hoses:

L = ≤400 mm (- 0, +10 mm)

L = 401 mm to 1000 mm (- 0, + 20 mm)

L = >1000 mm (- 0, + 30 mm)

** Other lengths are available on request

SPECIFICATIONS

Inner hose material: PEX
 Braiding: None
 Materials with media contact: PEX, brass
 Sealing material: FKM with perfluoropolyether based lubricant
 Inside diameter: 6.4 mm
 Outside diameter: 10 mm
 Max. working pressure: 10bar
 Max. working temperature: 70°C
 Bending radius (inner): ≥ 50 mm
 Min. length with connections: 160 mm

EXAMPLE OF HOSE CONFIGURATION

1200 mm hose with OD10 mm inlet connection and straight UniFlex™ outlet connection



93B00201200

93R - BROEN-LAB UNIFLEX™ HOSES FOR OXYGEN AND HIGH PURITY GASES UP TO 5.0

INLET CONNECTIONS

93 R **XX** XX XXXX

41	Female G3/8" union nut connection	
40	Female G1/2" union nut connection	
10	OD10 mm connection for compression fittings	
12	OD12 mm connection for compression fittings	
15	OD15 mm connection for compression fittings	
20	Straight BROEN-LAB UniFlex™ connection with FKM O-ring	
25	45° BROEN-LAB UniFlex™ connection with FKM O-ring	
30	90° BROEN-LAB UniFlex™ connection with FKM O-ring	

OUTLET CONNECTIONS

93 R XX **XX** XXXX

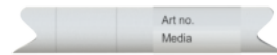
20	Straight BROEN-LAB UniFlex™ connection with FKM O-ring	
25	45° BROEN-LAB UniFlex™ connection with FKM O-ring	
30	90° BROEN-LAB UniFlex™ connection with FKM O-ring	

*All O-rings are lubricated with perfluoropolyether based lubricant

LENGTH

93 R XX XX **XXXX**

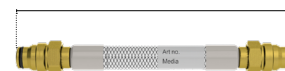
PTFE hose with braiding in Stainless Steel



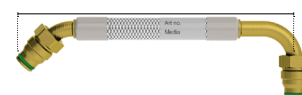
Marking for clean gas with Part no. and Media indication

HOSE LENGTHS

Definition of length (L)



Definition of length (L)



If 45° and 90° elbows occur on the same hose, it will as default be mounted in U-form

**Standard lengths of hoses (L):

0500	=	500 mm
0700	=	700 mm
1000	=	1000 mm
1200	=	1200 mm
1500	=	1500 mm
2000	=	2000 mm
2500	=	2500 mm
3000	=	3000 mm

Length tolerance of hoses:

L = ≤400 mm (- 0, +10 mm)
L = 401 mm to 1000 mm (- 0, + 20 mm)
L = >1000 mm (- 0, + 30 mm)

** Other lengths are available on request

SPECIFICATIONS

Inner hose material: PTFE***
Braiding: Stainless Steel
Materials with media contact: PTFE, Brass, FKM*** with perfluoropolyether based lubricant (Oxygen approved)
Inside diameter: 6.3 mm
Outside diameter: 9.5 mm
Max. working pressure: 21 bar
Max. working temperature: 50°C
Bending radius (inner): ≥ 60 mm
Min. length with connections: 160 mm
Packaging: individually packed in sealed bags

*** PTFE and FKM are penetrable materials meaning that gases, vapors, and liquids may diffuse through them. Therefore, for applications where a defined gas content is required, or absorbed gases might disturb applications, alternative materials could be considered i.e.
• 93Q Flexible Stainless Steel pipe on page 16
• 93S Flexible Stainless Steel pipe on page 17

Check compatibility with gases in application!

EXAMPLE OF HOSE CONFIGURATION

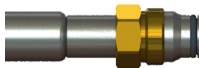
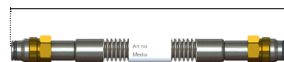
1200 mm hose with OD 12 mm inlet connection and straight UniFlex™ outlet connection



93R12201200

93Q - BROEN-LAB UNIFLEX™ FLEXIBLE STAINLESS STEEL PIPES FOR OXYGEN AND HIGH PURITY GASES UP TO 5.0

INLET CONNECTIONS			OUTLET CONNECTIONS		LENGTH
93 Q XX XX XXXX			93 Q XX XX XXXX		93 Q XX XX XXXX
10	OD10 mm connection for compression fittings		20	Straight BROEN-LAB UniFlex™ connection with FKM O-ring	 *
12	OD12 mm connection for compression fittings		30	90° BROEN-LAB UniFlex™ connection with FKM O-ring	
15	OD15 mm connection for compression				
09	OD3/8" connection for compression fittings				
20	Straight BROEN-LAB UniFlex™ connection with FKM O-ring	 *			
34	3/8" NPT fixed male connection				
70	1/4" NPT fixed male connection				
41	Female G3/8" union nut connection	 FKM			
40	Female G1/2" union nut connection	 FKM			
30	90° BROEN-LAB UniFlex™ connection with FKM O-ring	 *			
			*All O-rings are lubricated with perfluoropolyether based lubricant		

Stainless steel 1.4404 flexible pipe	
	
Marking for clean gas with Part no.	
HOSE LENGTHS	
Definition of length (L)	
	
**Standard lengths of hoses (L):	
0500	= 500 mm
0700	= 700 mm
1000	= 1000 mm
1200	= 1200 mm
1500	= 1500 mm
2000	= 2000 mm
2500	= 2500 mm
3000	= 3000 mm
Length tolerance of hoses:	
L = ≤400 mm (- 0, +10 mm)	
L = 401 mm to 1000 mm (- 0, + 20 mm)	
L = >1000 mm (- 0, + 30 mm)	
** Other lengths are available on request	

SPECIFICATIONS

Inner hose material: Corrugated*** Stainless Steel 1.4404 similar to AISI 316L (acc. to EN 10028-7). Cleaned for use with gases having purity coefficient 6.0 (99,9999% pure gases)
 Braiding: None
 Materials with media contact: Stainless Steel 1.4404, FKM (Viton) with Perfluoropolyether based lubricant
 Inside diameter: 8.5 mm
 Outside diameter: 12 mm
 Max. working pressure: 21bar
 Max. working temperature: 50°C
 Bending radius (inner):

- ≥ 15 mm (static)
- ≥ 130 mm (dynamic)

Min. length with connections: 500 mm
 Max. movements (Bending radius 130 mm): 10.000**
 Leakage rate: <1x10⁻⁷ mbar l/s [He]

** In accordance with ISO 10380

EXAMPLE OF HOSE CONFIGURATION

1200 mm hose with OD 12 mm inlet connection and straight UniFlex™ outlet connection

93Q12201200

*** Corrugated hoses have a large inner surface with media contact, therefore extended flushing may be required before taking into use! BROEN-LAB recommends purging by pressurizing a system by 10 bar to be repeated for 5-7 times.

93S - BROEN-LAB UNIFLEX™ FLEXIBLE STAINLESS STEEL PIPES FOR HIGH PURITY GASES UP TO 6.0

SPECIFICATIONS

Inner hose material: Corrugated*** Stainless Steel 1.4404 similar to AISI 316L (acc. to EN 10028-7). Cleaned for use with gases having purity coefficient 6.0 (99,9999% pure gases)

Braiding: Stainless Steel 1.4301 similar to AISI 304

Hose connections: Stainless Steel 1.4404 and 1.4541
(acc. to EN 10216-5 CFA D4/T4 (DIN 17458 D4/T4))

Leakage rate: $<1 \times 10^{-9}$ mbar l/s [He]

Surface roughness of the raw material: Ra max. - 1.5 μm , Ra - 0.12 μm

Inside diameter: 8.3 mm

Outside diameter: 13.7 mm

Max. working pressure: 21 bar

Max. working temperature: 50°C

Bending radius (inner): ≥ 32 mm

Min. length with connections: 350 mm

Packaging: individually packed in sealed bags

EXAMPLE OF HOSE CONFIGURATION

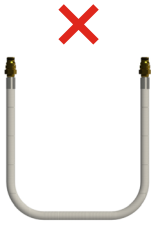
1200 mm hose with male 1/4" NPT inlet connection and OD 10 mm pipe outlet connection

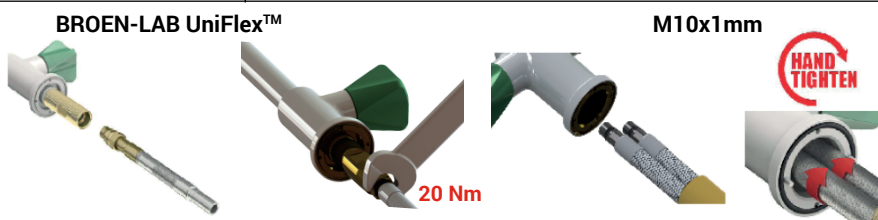


93S70801200

*** Corrugated hoses have a large inner surface with media contact, therefore extended flushing may be required before taking into use! BROEN-LAB recommends purging by pressurizing a system by 10 bar to be repeated for 5-7 times.

INSTALLATION OF HOSES

		UK: The hose/flexible pipe must have a soft bend. For information about pressure, temperature and bending radius see page 4. DK: Slangen/fleksibelt rør skal have en blød bue. For information omkring tryk, temperatur og bukeradier, se side 4. D: Der Schlauch/die flexible Verbindungsleitung muss eine weiche Kurve haben. Information zu Druck, Temperatur und Beugeradius finden Sie am Seite 4.
		UK: The hose/flexible pipe may not be stretched completely. DK: Slangen/fleksibelt rør må ikke strækkes helt ud. D: Der Schlauch/flexible Rohr darf nicht ganz ausgestreckt werden.
		UK: The hose/flexible pipe may not get a s-shaped bend. DK: Slangen/fleksibelt rør må ikke få et s-formet bøj. D: Der Schlauch/flexible Rohr darf nicht wie ein S gebogen werden.
		UK: Avoid torsion of the hose/flexible pipe. DK: Undgå at vride slangen/fleksibelt rør. D: Vermeiden Sie den Schlauch/flexible Rohr zu verdrehen.
		UK: Select counter fittings in such way that the hose line is prevented from bucking (insert angular parts, elbows etc.). DK: Vælg fittings der sørger for at slangens linje ikke bukkes (indsæt vinkel dele, albueled m.m.). D: Die Anschlüsse sind so zu wählen, das ein Abknicken der Schlauchleitung verhindert wird, gegebenenfalls sind Winkel oder Knieverbindungen für die Montage zu wählen.
		UK: Make sure there is enough room to move the hose; avoid collision during operation. DK: Vær sikker på at det er nok plads til at bevæge slangen, undgå kollision under brug. D: Stellen Sie sicher, das genügend Platz vorhanden ist, so das sich der Schlauch im Betrieb eventuell bewegen kann, Der Schlauch sollte nicht an Wänden oder anderen Gegenständen anliegen.
		UK: Mount hose line preferably at one level; avoid torsional stress in case of movement. DK: Monter helst slangelinjen på ét niveau; undgå torsionsstress i tilfælde af bevægelse. D: Der Schlauch sollte vorzugsweise auf gleichem Niveau montiert werden; Torsionsbelastungen bei Bewegungen sind zu vermeiden.
		UK: The installer is responsible for complying with laws and standards. DK: Installatøren er ansvarlig for at overholde gældende love og standarder. D: Der Installateur ist dafür verantwortlich, dass geltende Gesetze und normen eingehalten werden.



UK: Hose connection must be tightened as shown.
DK: Slangetilslutningen skal spændes som vist.
D: Schlauchverbindung müssen angezogen werden, wie gezeigt.

INSTALLATION OF HOSES

English

When mounting flexible connection hoses/pipes from BROEN-LAB a few basic rules must be followed to ensure a safe and durable connection.

Keeping and transport

- Leave the connection hose/pipe in the original packing until installation.
- Avoid clamping and breaking the flexible hose/pipe during transport.

Before the mounting

- The hose/pipe must be mounted accessible for following inspection.
- The scope of application of the connection hose/pipe must be according to the installation planned.
- Use the correct tools. Use appropriate opened spanner. Do not use pipe wrench or similar.

During mounting

- Install the flexible connection hose/pipe so that torsion, breaking and stretching of the hose is avoided.
- Install the flexible connection hose/pipe, so that physical stress is avoided, e.g. wear and tear of the surface of the hose/pipe.
- The hose/pipe may not be installed in strongly corrosive environments.
- The hose/pipe must be mounted in a suitable suspension.
- Avoid UV-light.

After mounting

- Test the tightness of the hose/pipe before start using the product.

Inspection

- The installation must be inspected according to local regulations, but min. once a year. Defects are to be replaced.
- Inspect for corrosion, exposures, deformities, crackings, cracks and other damage.

Dansk

Ved montage af fleksible koblingsledninger fra BROEN-LAB A/S er der få enkle grundregler, som bør følges, herved opnås en sikker og langtidsholdbar tilslutning.

Opbevaring og transport

- Lad koblingsledningen blive i original emballage indtil ledningen skal monteres.
- Undgå klemning og knækning af koblingsledningen under transport.

Forud for montering

- Koblingsledningen skal være monteret let tilgængelig for efterfølgende tilsyn.
- Koblingsledningens anvendelses-område skal være i overensstemmelse med den påtænkte installation.
- Brug korrekt værktøj. Anvend passende fastnøgler og ikke rørtænger eller lign.

Under montage

- Monter den fleksible koblingsledning så vridning, knækning og strækning af ledningen undgås.
- Koblingsledningen skal være monteret sådan at fysisk påvirkning undgås f.eks. i form af slitage af ledningens overflade.
- Koblingsledningen må ikke monteres i stærkt korrosive miljøer.
- Slangen monteres i passende ophæng.
- Undgå UV-lys påvirkning.

Efter installation

- Tæthedsprøv den monterede koblingsledning inden den tages i brug.

Inspektion

- Installationen skal inspiceres ifølge gældende lokale regler, dog min. en gang årligt. Evt. defekter udskiftes.
- Se efter korrosion, udposninger, deformationer, knæk, revner og andre skader.

Deutsch

Bei Montage von flexiblen Verbindungsleitungen von BROEN-LAB gibt es einige einfache Grundregeln für eine sichere und haltbare Verbindung.

Aufbewahrung und Transport

- Die Verbindungsleitung muss bis zur Montage in der Originalverpackung aufbewahrt werden.
- Drücken und Knicken der Verbindungsleitung während des Transports muss vermieden werden.

Vor der Montage

- Für spätere Inspektionen muss die Verbindung leicht zugänglich montiert werden.
- Der Anwendungsbereich der Verbindungsleitung muss in Übereinstimmung mit der geplanten Installation sein.
- Verwenden Sie korrektes Werkzeug. Verwenden Sie passende Festschlüssel und KEINE Rohrzangen oder ähnliches.

Während der Montage

- Montieren Sie die flexible Verbindungsleitung so, dass Verdrehen, Knicken und Strecken der Leitung vermieden werden.
- Die Verbindungsleitung muss so montiert werden, dass physische Einwirkung, z.B. Verschleiß der Oberfläche, vermieden wird.
- Die Leitung darf in stark korrosiver Umgebung nicht montiert werden.
- Die Montage der Verbindungsleitung muss mit passenden Aufhängungen erfolgen.
- Vermeiden Sie UV-Licht.

Nach Installation

- Die montierte Verbindungsleitung muss vor Inbetriebnahme auf Dichtigkeit überprüft werden.

Inspektion

- Die Inspektion muss gemäß gelten den Regeln vor Ort vorgenommen werden, jedoch mindestens einmal jährlich. Defekte Teile sind auszutauschen.
- Überprüfen Sie, ob Korrosion, Ausbeulungen, Verformungen, Bruchstellen, Risse oder andere Schäden vorliegen.

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BROEN-LAB develops, manufactures and sells Laboratory Fittings, Emergency Shower Systems and Eye Wash Systems into a broad spectrum of laboratories and industrial locations; sectors include Pharmaceutical, Food&Beverage and Academia. Our expertise and product quality ensure optimal solutions compliant to all relevant international norms setting new standards in risk mitigation in modern research and development facilities.

BROEN-LAB offers solutions that ensure the functionality, compliance, hygiene, durability and safety are of the highest priority. For more than 50 years our products have been integrated into a wide variety of workplaces, laboratories, hospitals and industrial locations, with features that are assessed and designed to be flexible, durable and compliant offering a broad range of options tailored to each location. This inherent design integrity provides confidence in the solution adopted wherever in the world these are applied.

BROEN-LAB is a collaboration partner in the design and layout of your next laboratory and it's integrated safety



BROEN-LAB A/S ISO 9001 certification

In September 1991 BROEN-LAB A/S was certified according to ISO 9001 as one of the first Danish companies. The certification was carried out by Bureau Veritas, Denmark, for our Danish site in Assens.

The quality management system of BROEN-LAB A/S now complies with detailed specifications laid down by the internationally acknowledged EN ISO 9001:2015. This certification will further contribute to reputation for quality and reliability of BROEN-LAB A/S.

BROEN-LAB A/S ISO 14001:2015 certification

In December 2022 we got certified according to ISO 14001 in Environmental certification. The new certification was carried out by Bureau Veritas, Denmark, for Danish site in Assens. The Environment ISO14001 management system of BROEN-LAB A/S is included in internationally acknowledged EN ISO 9001:2015. Both certifications furthermore contribute to reputation for quality and reliability of BROEN-LAB A/S.