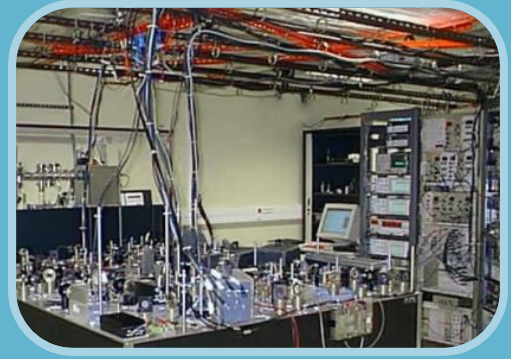


Laboratory High Pressure components

Standard Range Laboratory High Pressure components



Nova Swiss designs and produces a full range of High Pressure Laboratory (LHP) components. Most asked valves, fittings, adaptors and tubing references are in the following tables. Contact us for the full list or any specific demand.

These reduced-sized components have minimal dead volumes, and can be connected to all Nova Swiss® High Pressure systems or to your own BSPP, BSPT or NPT equipment.

Nova Swiss propose two standard ranges of components :

- Stainless steel range for all High Pressure regular applications
- Nickel alloy range for high corrosive applications (petrochemicals, etc.)

Technical data :

- Minimal dead volumes : up to 19 mm³ for a valve type I
- LHP connections for 1/8" or 1/16" tubing
- Fluid : liquids or gases ⁽¹⁾
- Working temperature : -50°C to +180°C
- Maximal admissible pressure (Ps) : up to 1.000 bar (15 kpsi)
- Materials in contact with fluid in each range :
 - Stainless steel : **AISI 316L** (bodies), **AISI 304** and **17-4PH®** (parts)
 - Nickel alloy : **Hastelloy® C276** (bodies) and **Inconel® 718** (parts)

Tests and provided documentation :

- Hydraulic and leakage (N₂) tests
- Technical instructions and compliancy certificates (English or French)

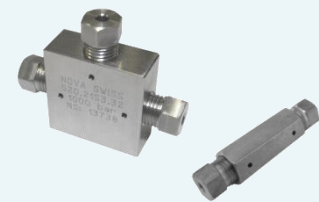
Specific requests :

- Materials : Titanium, Monel®, AISI 316Ti, CuBe2, valve packing in Vespel®, etc.
- Particular connection, location, type, or mixed arrangements, etc.
- Additional tests (fatigue life, fluid, temperature, etc.), material certificates, etc.

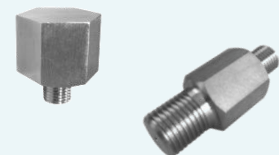
(1) The fluid used by the customer has to be communicated in order to check its compatibility with each material.



LHP Valves



LHP Fittings



LHP Adaptors



LHP Tubing



Ask for our technical booklets :

Standard components

Specific systems

Nova Swiss SARM is the French subsidiary of Nova Werke AG, a Swiss independent company located on Effretikon / Switzerland. With the quality trade mark Nova Swiss®, it develops, produces, and supplies everywhere in the world, standard and specific High Pressure equipments, and complete systems for applications in the following main domains : military industries, hydrogen use and production, R&D (Energetics, Biologics, etc.) and food processing.

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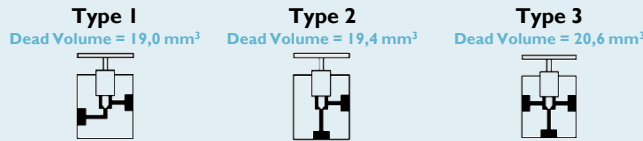
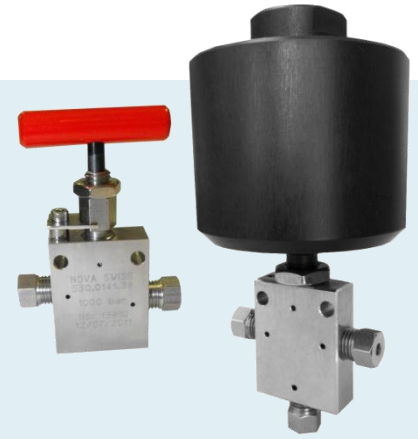


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www.novaswiss.fr

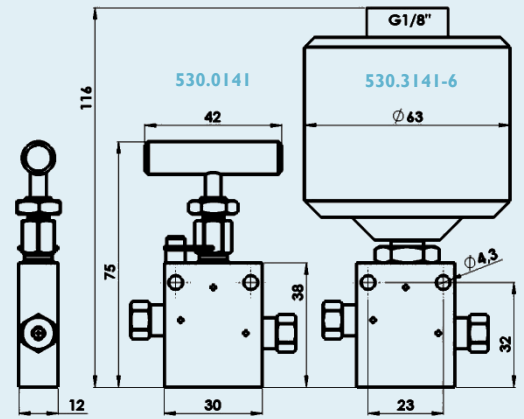
Nova Swiss® LHP Valves

The design of this laboratory valve is a further development of our reliable High Pressure mini-valve :

- Minimal dead volume, orifice 1 mm only
- Small outside dimensions (75x42x12 mm including handle)
- Non-rotating lower stem for a longer life of the stem and seat
- Mounting and vent holes (above the packing) on each connection
- Delivered with stainless steel gland nuts (Hastelloy® C276 on request only)
- Valves packing material : teflon® / graphite
- Suitable for 1/8" and 1/16" capillary tubing
- 3 types available with metering stem or air operated actuator :



	Tube-Ø	Type	P (bar)	Standard		Air operated valve	
				Standard	Metering	Normally Closed	Normally Open
Stainless steel	1/8"	I	1000	530.0141	530.5141	530.3141-6	530.3141-7
		3.2 mm II	1000	530.0142	530.5142	530.3142-6	530.3142-7
		III	1000	530.0143	530.5143	530.3143-6	530.3143-7
	1/16"	I	1000	530.0191	530.5191	530.3191-6	530.3191-7
		1.6 mm II	1000	530.0192	530.5192	530.3192-6	530.3192-7
		III	1000	530.0193	530.5193	530.3193-6	530.3193-7
Nickel alloy	1/8"	I	1000	530.0141.39	530.5141.39	530.3141.39-6	530.3141.39-7
		3.2 mm II	1000	530.0142.39	530.5142.39	530.3142.39-6	530.3142.39-7
		III	1000	530.0143.39	530.5143.39	530.3143.39-6	530.3143.39-7
	1/16"	I	1000	530.0191.39	530.5191.39	530.3191.39-6	530.3191.39-7
		1.6 mm II	1000	530.0192.39	530.5192.39	530.3192.39-6	530.3192.39-7
		III	1000	530.0193.39	530.5193.39	530.3193.39-6	530.3193.39-7



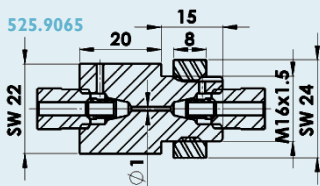
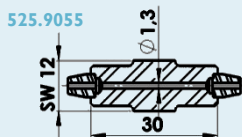
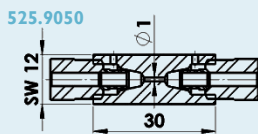
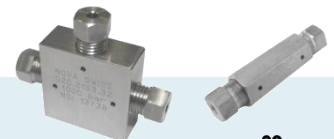
Handle valve and air operated LHP valves interfaces

Blue references : on request only.

Contact us for type 4 (3 connections with 2 under stem), type 5 (3 connections and 2 stems / handles) and for any specific arrangement.

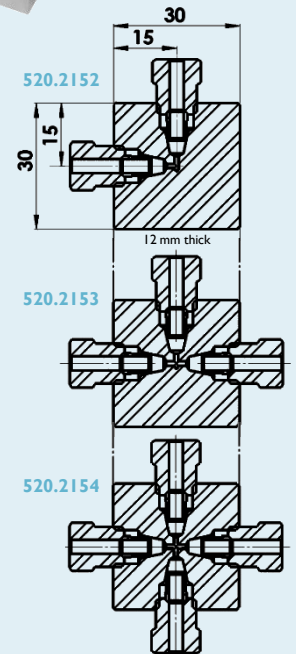
Nova Swiss® LHP Fittings

- Tubing connection with ferrule and gland nut (correct number delivered)
- Delivered with standard stainless steel gland nuts (Hastelloy® C276 on request only)



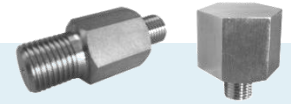
Nova Swiss® LHP unions						
Ref.	Stainless steel P (bar)	Nickel alloy Ref.	Nickel alloy P (bar)	inlet / outlet	DV mm ³	Ref.
525.9050	1000	525.9050.32	1000	1/8" LHP F	8,6	
525.9150	1000	525.9150.32	1000	1/16" LHP F	8,6	
525.9055	1000	525.9055.32	1000	1/8" LHP M	23,5	
				1/16" LHP		
Nova Swiss® LHP bulkhead couplings						
Ref.	Stainless steel P (bar)	Nickel alloy Ref.	Nickel alloy P (bar)	inlet / outlet	DV mm ³	Ref.
525.9065	1000	525.9065.32	1000	1/8" LHP F	12,3	
525.9165	1000	525.9165.32	1000	1/16" LHP F	12,3	
Nova Swiss® LHP elbows, tees and crosses						
Ref.	Stainless steel P (bar)	Nickel alloy Ref.	Nickel alloy P (bar)	inlet / outlet	DV mm ³	Ref.
520.2152	1000	520.2152.32	1000	1/8" LHP F	8,7	
520.2172	1000	520.2172.32	1000	1/16" LHP F	8,7	
520.2153	1000	520.2153.32	1000	1/8" LHP F	12,1	
520.2173	1000	520.2173.32	1000	1/16" LHP F	12,1	
520.2154	1000	525.2154.32	1000	1/8" LHP F	15,9	
520.2174	1000	525.2174.32	1000	1/16" LHP F	15,9	

DV = Dead Volume / F = Female / M = Male



Nova Swiss® LHP Adaptors

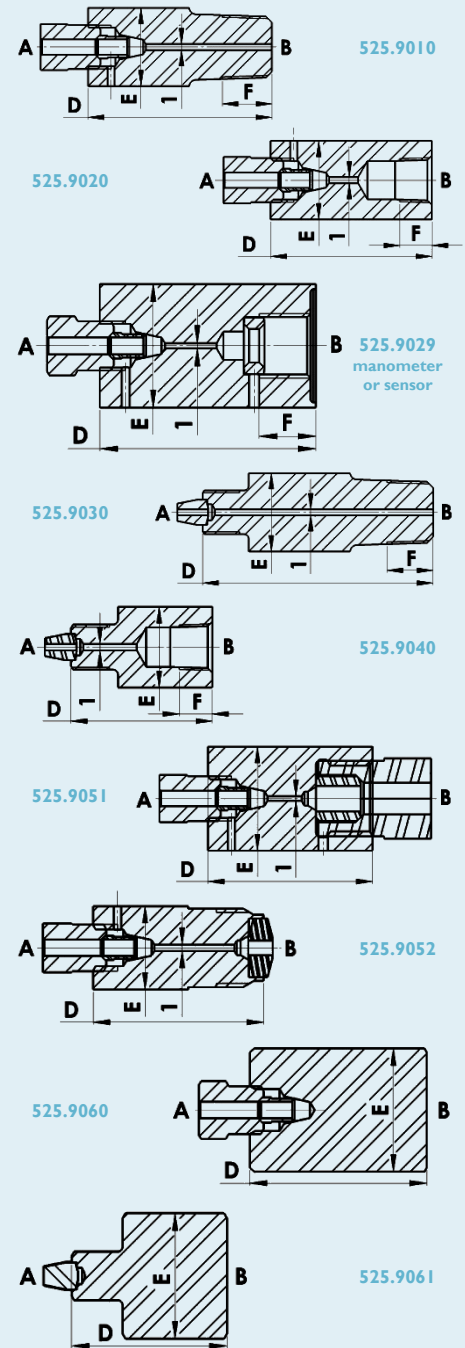
Each adaptor has a standard Nova Swiss® LHP connection on the first side, and a NPT, R, G, E, or specific connection machined on the opposite side.



Standard Range Laboratory High Pressure components

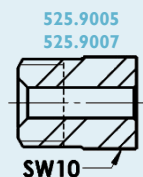
Nova Swiss® LHP male/female – NPT, R or G male/female									
Stainless steel Ref.	Nickel alloy Ref.	P (bar)	A inlet	B outlet	D mm	E mm	F mm	DV mm ³	
525.9010	525.9010.32	1000	650	1/8" LHP F	1/8" NPTF M	35	12	10	19.9
525.9110	525.9110.32	1000	650	1/16" LHP F	1/8" NPTF M	35	12	10	19.9
525.9011	525.9011.32	1000	650	1/8" LHP F	1/4" NPTF M	40	17	14	23.9
525.9111	525.9111.32	1000	650	1/16" LHP F	1/4" NPTF M	40	17	14	23.9
525.9012	525.9012.32	1000	650	1/8" LHP F	3/8" NPTF M	40	22	14	23.9
525.9013	525.9013.32	1000	650	1/8" LHP F	1/2" NPTF M	43	22	17	26.2
525.9015	525.9015.32	1000	650	1/8" LHP F	1/8" R M	35	12	10	19.9
525.9016	525.9016.32	1000	650	1/8" LHP F	1/4" R M	40	17	11	23.9
525.9116	525.9116.32	1000	650	1/16" LHP F	1/4" R M	40	17	11	23.9
525.9017	525.9017.32	1000	650	1/8" LHP F	3/8" R M	40	22	12	23.9
525.9020	525.9020.32	1000	650	1/8" LHP F	1/8" NPTF F	35	17	7	8.9
525.9021	525.9021.32	1000	650	1/8" LHP F	1/4" NPTF F	35	17	10	4.3
525.9025	525.9025.32	1000	650	1/8" LHP F	1/8" R F	35	17	12	1.1
525.9029	525.9029.32	600	400	1/8" LHP F	1/4" B F	42	24	11	10.2
525.9129	525.9129.32	600	400	1/16" LHP F	1/4" B F	42	24	11	10.2
525.9030	525.9030.32	1000	650	1/8" LHP M	1/8" NPTF M	45	12	10	27.8
				1/16" LHP M					
525.9031	525.9031.32	1000	650	1/8" LHP M	1/4" NPTF M	50	17	14	31.7
				1/16" LHP M					
525.9035	525.9035.32	1000	650	1/8" LHP M	1/8" R M	45	12	10	27.8
				1/16" LHP M					
525.9036	525.9036.32	1000	650	1/8" LHP M	1/4" R M	45	17	11	27.8
				1/16" LHP M					
525.9040	525.9040.32	1000	650	1/8" LHP M	1/8" NPTF F	30	17	7	7.8
				1/16" LHP M					
525.9041	525.9041.32	1000	650	1/8" LHP M	1/4" NPTF F	30	17	10	4.3
				1/16" LHP M					
525.9042	525.9042.32	1000	650	1/8" LHP M	3/8" NPTF F	35	22	12.7	5.0
				1/16" LHP M					
Nova Swiss® LHP female – 4E (HP 1/4") male/female									
Stainless steel Ref.	Nickel alloy Ref.	P (bar)	A inlet	B outlet	D mm	E mm	F mm	DV mm ³	
525.9051	525.9051.32	1000	650	1/8" LHP F	4E F	35	22	-	29.3
525.9151	525.9151.32	1000	650	1/16" LHP F	4E F	35	22	-	29.3
525.9052	525.9052.32	1000	650	1/8" LHP F	4E M	35	17	-	9.3
525.9152	525.9152.32	1000	650	1/16" LHP F	4E M	35	17	-	9.3
Nova Swiss® LHP male/female – unmachined side									
Stainless steel Ref.	Nickel alloy Ref.	P (bar)	A inlet	B outlet	D mm	E mm	F mm	DV mm ³	
525.9060	525.9060.32	-	-	1/8" LHP F	unmachined	35.5	22	-	-
525.9160	525.9160.32	-	-	1/16" LHP F	unmachined	35.5	22	-	-
525.9061	525.9061.32	-	-	1/8" LHP M	unmachined	30.5	22	-	-
525.9161	525.9161.32	-	-	1/16" LHP M	unmachined	30.5	22	-	-

DV = Dead Volume / F = Female / M = Male / R = BSPT (tightness in connection) / B = BSPP (tightness with ring) / 4E = metric 1/4" HP
 Nova Swiss guarantee the mechanical resistance of these components under 180°C at the pressures given, and the tightness of our LHP connections in these conditions. Tightness of common connections (NPT, R, B) has to be checked by the customers in the needed conditions.



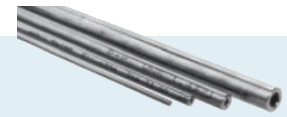
Nova Swiss® LHP Spare parts

Stainless steel	Nickel alloy	Product
521.9905 (1)	521.9905.32 (2)	Gland nuts 1/8" LHP
521.9907 (1)	521.9907.32 (2)	Gland nuts 1/16" LHP
521.9906	521.9906.32	Ferrules 1/8" LHP
521.9908	521.9908.32	Ferrules 1/16" LHP
521.9909	521.9909.32	Plug 1/8"-1/16" LHP



(1) Stainless steel version used by default for all products.
 (2) Nickel alloy version on request only (for external high corrosive applications).

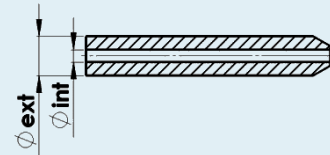
Nova Swiss® LHP Tubing



Nova Swiss stainless steel High Pressure tubing, seamless and cold drawn :

- Materials : stainless steel AISI and nickel alloy Hastelloy® C276
- High strength with high corrosion resistance (seamless and cold drawn)
- Manufactured to exact specifications, inspected and tested to ensure uniform quality and safety
- Controls : dimensions, chemical composition, mechanical characteristics, surface and bore finish, cracks (Foucault curant)
- Straight lengths available up to 6 m, by reels up to 50 m or in shorter lengths with prepared ends on request
- Compatible systems may be constructed using Nova Swiss® tubing, with Nova Swiss® valves and fittings⁽¹⁾

Stainless steel	AISI 316L	Nickel alloy	Hastelloy® C276	minimum		
Ref. (2)	P _{max@20°C} (3)	Ref. (2)	P _{max@20°C} (3)	Ø _{ext}	Ø _{int}	bending radius
TBG-28-1-M103 previous ref. : 510.1356	28 kpsi 1900 bar	TBG-22-1-M205 previous ref. : 510.1356.32	22 kpsi 1500 bar	1/16"	1/28"	10/17"
TBG-44-1-M103 previous ref. : 510.1156	44 kpsi 3000 bar			1/16"	1/50"	10/17"
TBG-50-1-M103 previous ref. : 510.1360	50 kpsi 3400 bar			1/16"	1/85"	10/17"
TBG-16-2-M103 previous ref. : 510.1248	16 kpsi 1100 bar			1/8"	1/12"	10/17"
TBG-16-2-M103 previous ref. : 510.1346	26 kpsi 1750 bar	TBG-26-2-M205 previous ref. : 510.1346.32	26 kpsi 1750 bar	1/8"	1/16"	10/17"
TBG-35-2-M103 previous ref. : 510.1246	35 kpsi 2400 bar			1/8"	1/25"	10/17"
TBG-40-2-M103 previous ref. : 510.1646	40 kpsi 2750 bar	TBG-40-2-M205 previous ref. : 510.1646.32	40 kpsi 2750 bar	1/8"	1/50"	10/17"



Comments :

- (1) We recommend to use only Nova Swiss 1/8" or 1/16" tubing for a better tightness of your LHP assemblies
- (2) M103 : AISI 316L / M205 : Hastelloy® C276 (see Nova Swiss specific system booklet page 3)
- (3) Values based on Nova Swiss specifications, and bursting tests results at room temperature
- (4) Values based on norms and tensile strength tests at high temperatures
- (5) Inter-crystalline corrosion can appear at 500°C (932°F)

- P_{max@20°C} : maximum working pressure at 20°C (static)
- Test pressure = P_{max@20°C} x 1,3 (certificate on request)
- Rupture pressure = P_{max@20°C} x 2
- Maximum pressures at high temperatures :

	Material	100°C	200°C	300°C	400°C	500°C
% of P _{max@20°C} (4)	AISI 316L	83%	69%	60%	54%	50% (5)
	Hastelloy® C276	85%	81%	76%	73%	71%

Specific requests :

- Other materials (AISI 304, AISI 316Ti, etc.) or special dimensions and lengths
- Test certificates, proof test and autofrettage tubing up to 150.000 psi (10.000 bar)
- Contact us for use by dynamic strain, or thermal processes

Nova Swiss® LHP Connection

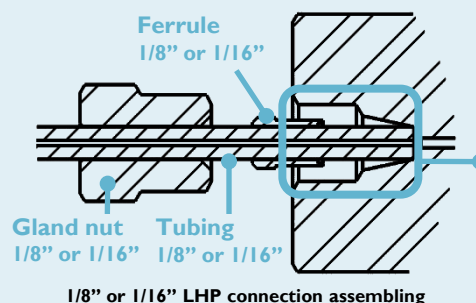
The Nova Swiss® LHP connections are based on a proven ferrule type system. The ferrule, slid on a 1/8" or 1/16" tubing, will be pressed by the gland-nut. The sealing takes place on the ferrule and the cone in the body connection.

Main advantages :

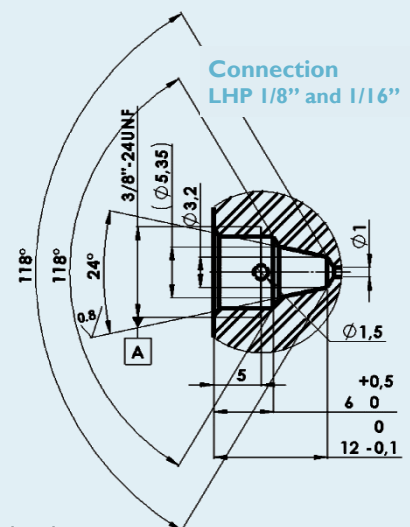
- Simple and fast mounting of capillary tubing with at least 0,5 mm wall thickness
- No Tubing end preparation
- Guaranteed remounting
- Perfectly tight up to 1000 bar

Assembling :

1. Cut exact tubing in a right-angle and deburr
2. Slide gland nut and ferrule onto tubing
3. Push tubing to the stop into valve body or fitting
4. Tighten gland nut by hand only
5. Pull-out tubing approx. 1 mm
6. Now tighten gland nut with spanner, 1 ½ turns



1/8" or 1/16" LHP connection assembling



Connection LHP 1/8" and 1/16"

Reassembling :

1. Tighten gland nut by hand
2. Tighten with spanner 1/2-turn

Caution : do not loosen connection while tubing is under pressure : it could detach violently.