

NOVA SWISS

NOVA SWISS is proud member of



**UP TO 20'000 PSI (1'380 BAR)
HYDROGEN COMPONENTS**



The Evolution of Technology

ENTER THE POST CARBON ERA

Like evolution, research and development is a continuous process of change, adaptation and pursuit for new approaches. Nova Swiss has developed high expertise and performed intensive in-house research in material research to mitigate and minimise embrittlement of high-pressure components in contact with hydrogen, being the market leader in this segment.

Therefore products and services from Nova Swiss are highly developed and extremely reliable.

Nova Swiss manufactures components for hydrogen from 350 bar (5'075 psi) up to 1'380 bar (20'000 psi).





DEVELOPMENT AND CONSULTING

We create the basis for sophisticated, new and optimized products in the areas of Hydrogen Technology via the continual expansion of our expertise and results-oriented research.

Our material laboratory is equipped with state-of-the-art technology, and it is here that we analyse a wide range of substances in our search for suitable materials and manufacturing processes. Our service spectrum also includes complex calculations of our customers' requirements. Furthermore, we

can also offer interdisciplinary partnerships in the area of surface technology in the form of complex analysis and test procedures for quality testing of coatings.

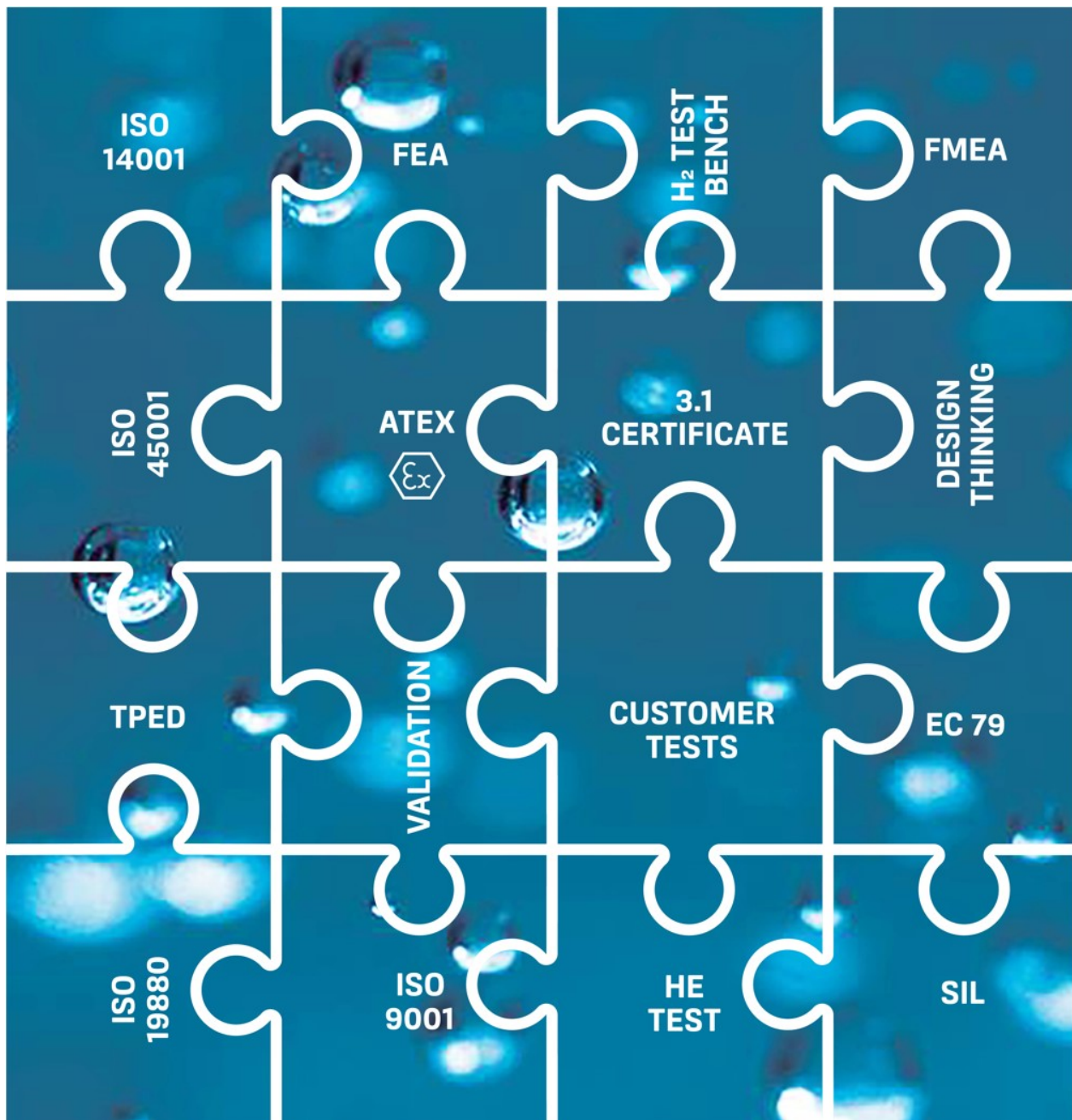
We constantly ensure that all Nova Swiss products meet the latest requirements of the market as well as all statutory regulations.

Focus on Safety and Reliability

In order to meet today's safety requirements Nova Swiss high-pressure components are designed and manufactured under strongest quality guidelines.

- **Comprehensive safety:** Highest quality standards, deep knowledge and extensive testing are the indispensable pieces of the whole puzzle
- **Peace of mind:** Swiss precision, many years of experience in high-pressure technology lead to low failure probability & outstanding tightness
- **Plug & Play:** Nova Swiss products are validated and can be used without extra test
- **Low maintenance cost:** Less maintenance and a longer lifespan and high number of open-close -cycles make Nova Swiss products more economic and sustainable.

Only a complete puzzle ...



... leads to comprehensive safety.

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Manual Needle Valves H₂

Nova Swiss medium pressure needle valves for hydrogen offer, even with extremely hard operating conditions, maximum safety and reliability up to 20'000 psi (1'380 bar). All valves allow bidirectional flow.

Extremely robust and simple sealing technology combined with specially shaped seat and the two-piece non-rotating lower stem increases the longevity of the valve.

All pressure containing parts are manufactured of high-grade corrosion resistant stainless steel. As part of our stringent QA-system, each single valve body has a unique serial number. Valves are available, at request, with complete traceability of all pressure-retaining parts.

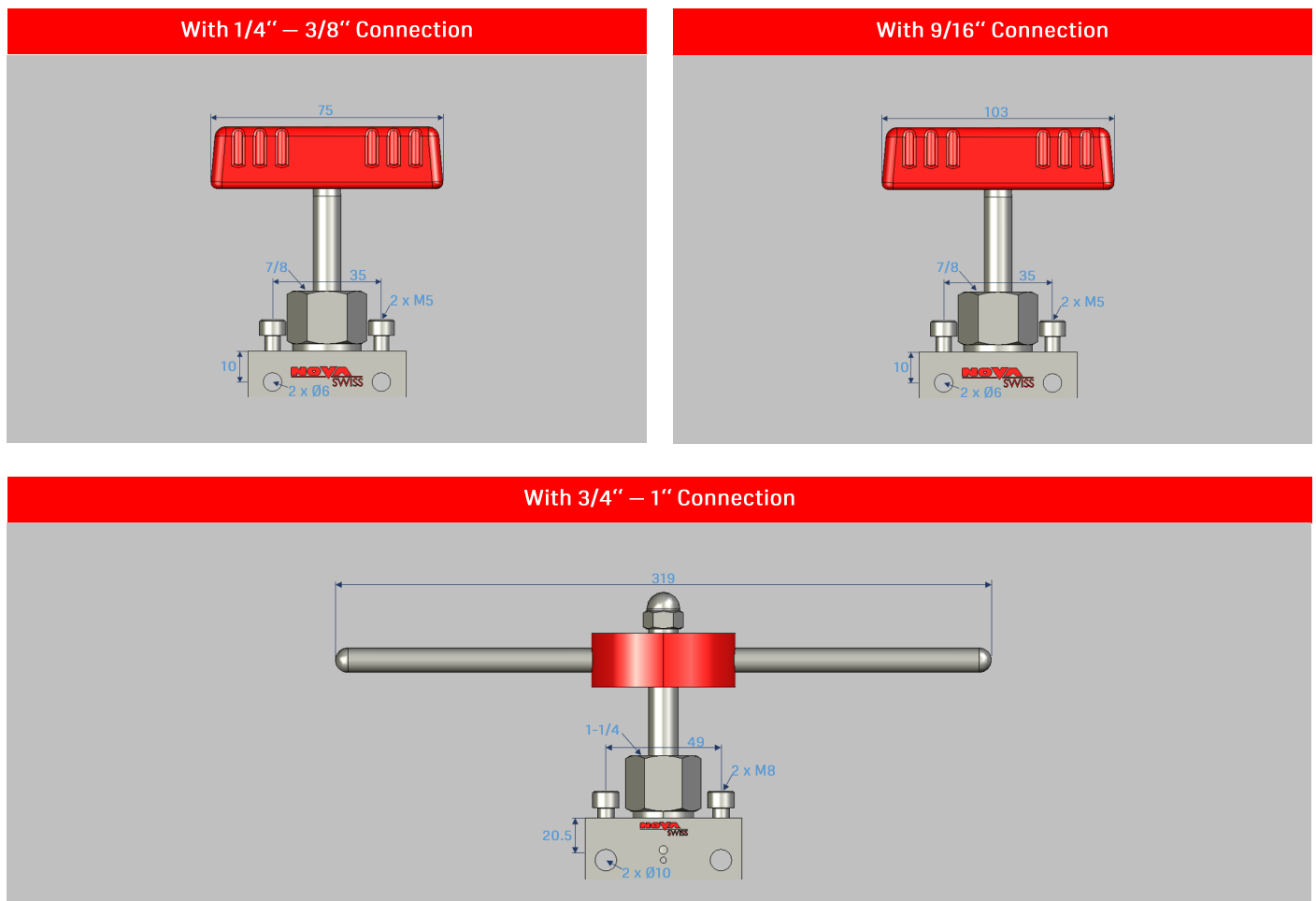
Medium-pressure connections can be installed and disconnected arbitrary number of times without any damage.



Needle Valve Features:

- MAWP 20'000 psi (1'380 bar)
- Bi-directional flow
- 2-way straight, -angle & -angle with replaceable seat
- Connections for tubing Ø 1/4", 3/8", 9/16", 3/4" & 1"
- Actuation: -ATC (air to close) & ATO (air to open)
- Non rotating two-piece stem
- Complete of weep holes
- Temperature range -50°C / +200°C
- Compliant with PED 2014/68/EU
- Atex compliant
- Full traceability of manufactured parts
- Unique serial number

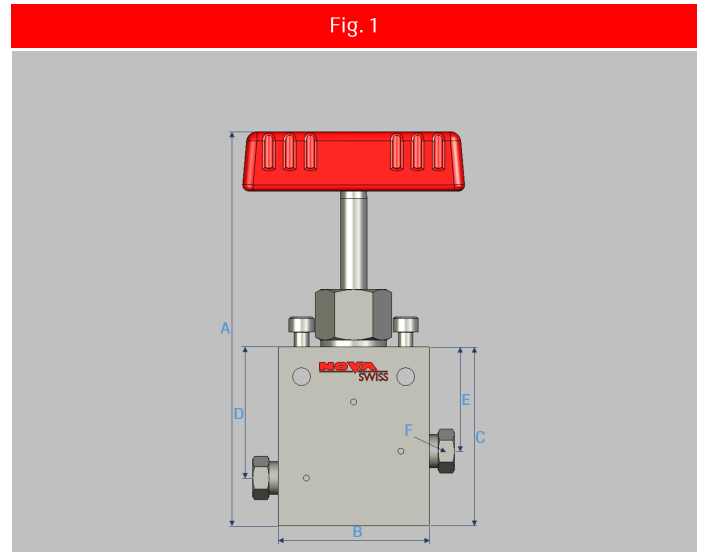
Needle Valve Panel Mounting Connection & Handle Dimensions



Manual Needle Valves H₂

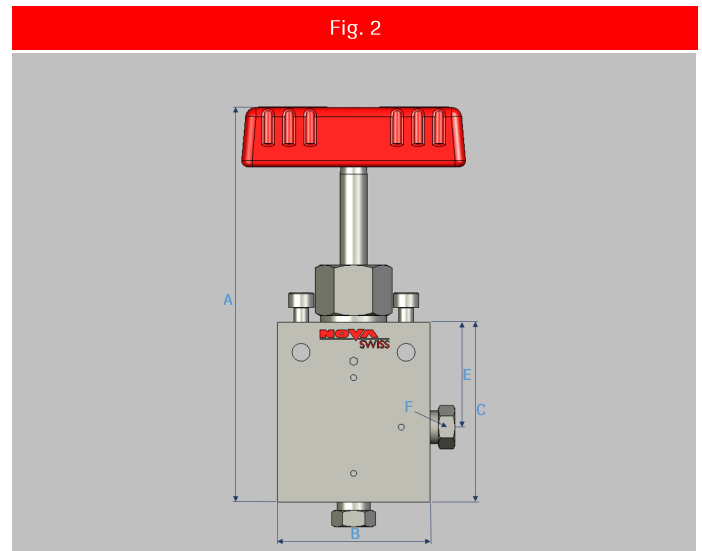
2-Way Straight – MAWP 20'000 psi

Nova Ref.	Conn.	A	B	C	D	E	F	Th.	Fig.
NV1204M-4	1/4	132.5	50.8	60	44	35	1/2	28.6	1
NV1206M-4	3/8	138.2	50.8	66	46	35	5/8	28.6	1
NV1209M-4	9/16	144.2	63.5	72	50	35	7/8	28.6	1



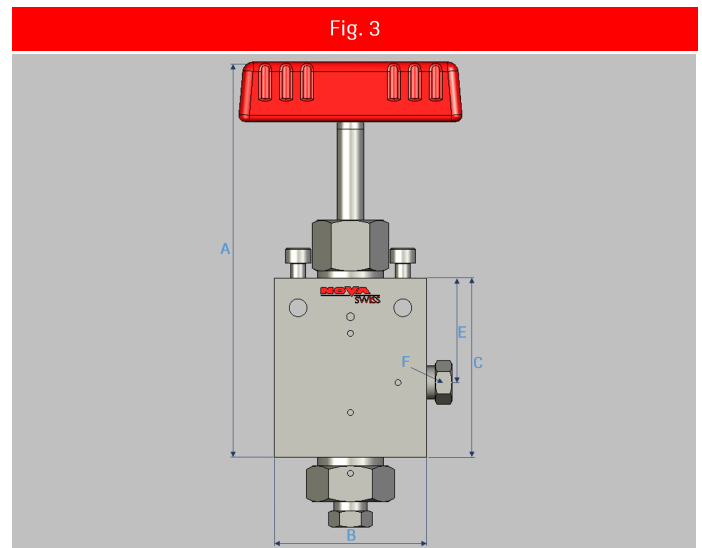
2-Way Angle – MAWP 20'000 psi

Nova Ref.	Conn.	A	B	C	D	E	F	Th.	Fig.
NV2204M-4	1/4	132.5	50.8	60	-	35	1/2	28.6	2
NV2206M-4	3/8	138.2	50.8	66	-	35	5/8	28.6	2
NV2209M-4	9/16	144.2	63.5	72	-	35	7/8	28.6	2



2-Way Replaceable Seat – MAWP 20'000 psi

Nova Ref.	Conn.	A	B	C	D	E	F	Th.	Fig.
NV5204M-4	1/4	132.5	50.8	60	-	35	1/2	29.3	3
NV5206M-4	3/8	138.2	50.8	66	-	35	5/8	29.3	3
NV5209M-4	9/16	144.2	63.5	72	-	35	7/8	29.3	3

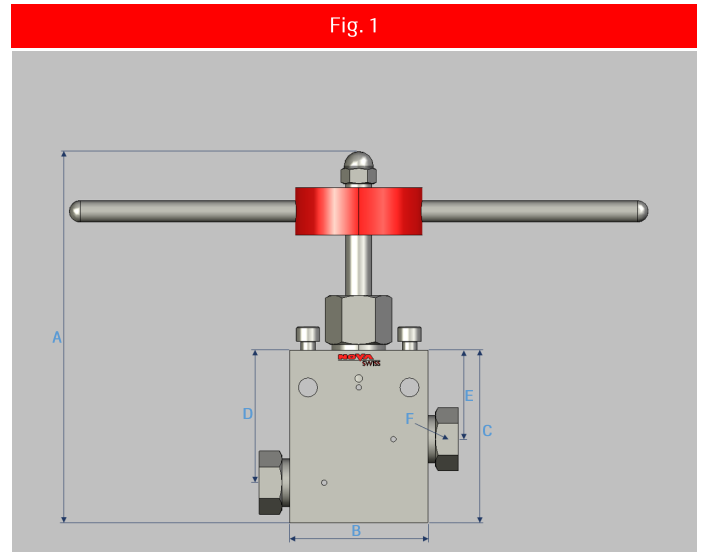


Manual Needle Valves H₂

2-Way Straight – MAWP 20'000 psi

Nova Ref.	Conn.	A	B	C	D	E	F	Th.	Fig.
NV12012M-4 *	3/4	204.5	76.2	95	73	49	1-3/16	34.9	1
NV12016M-4 *	1	214.4	104.8	105	73	49	1-3/8	41.3	1

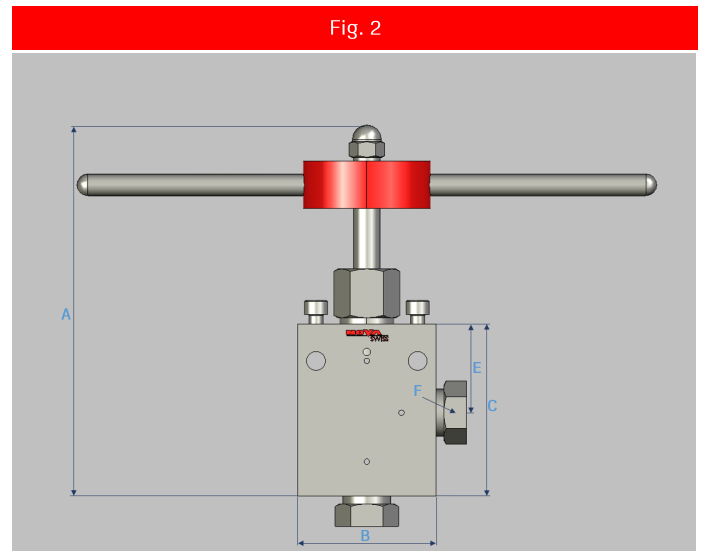
* Available at request, minimum order quantity applies.



2-Way Angle – MAWP 20'000 psi

Nova Ref.	Conn.	A	B	C	D	E	F	Th.	Fig.
NV22012M-4 *	3/4	204.5	76.2	95	-	49	1-3/16	34.9	2
NV22016M-4 *	1	214.4	104.8	105	-	49	1-3/8	41.3	2

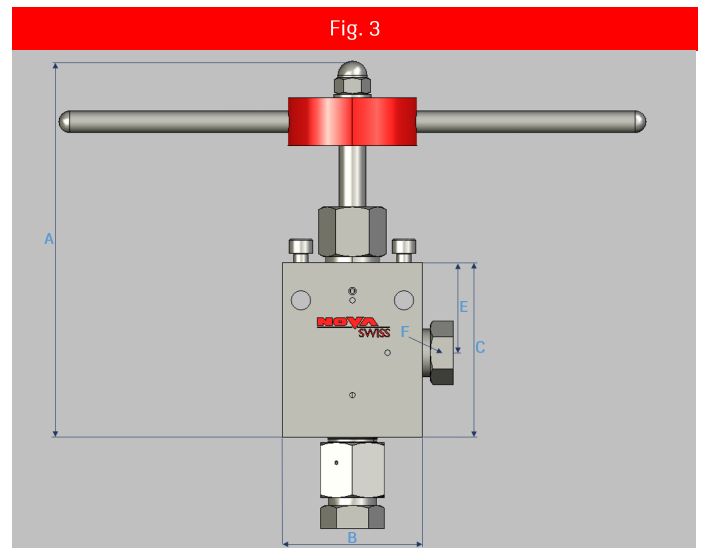
* Available at request, minimum order quantity applies.



2-Way Replaceable Seat – MAWP 20'000 psi

Nova Ref.	Conn.	A	B	C	D	E	F	Th.	Fig.
NV52012M-4 *	3/4	204.5	76.2	95	-	49	1-3/16	40.3	3
NV52016M-4 *	1	214.4	104.8	105	-	49	1-3/8	47.7	3

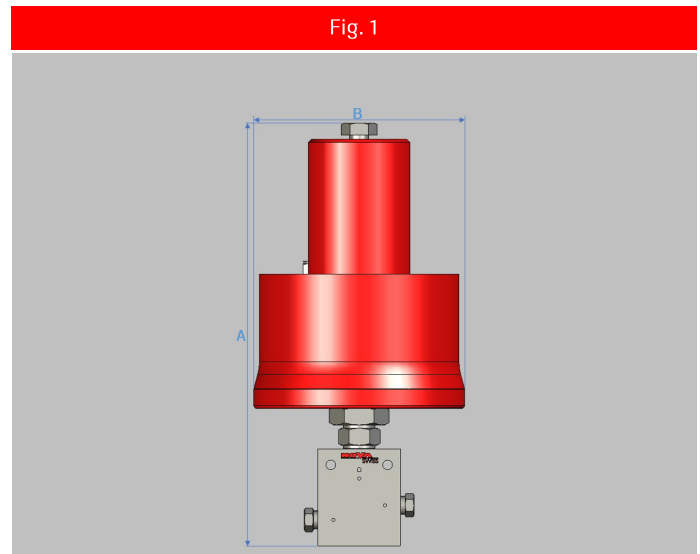
* Available at request, minimum order quantity applies.



Actuated Needle Valves H₂

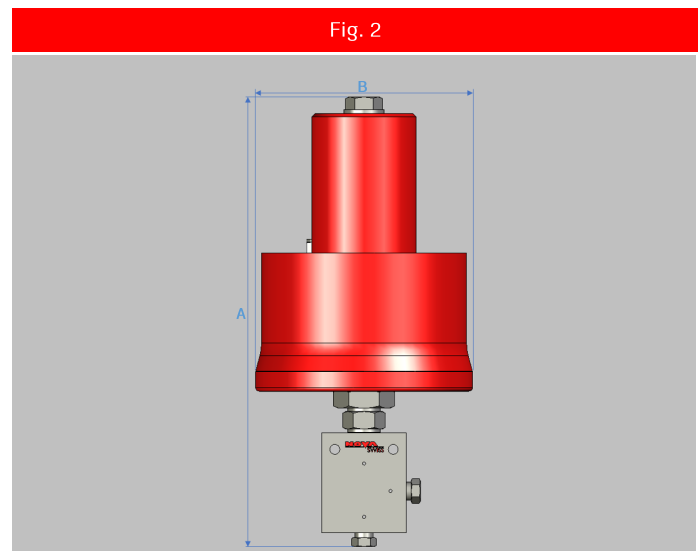
2-Way Straight – MAWP 20'000 psi
-ATO (Air-to-Open) Normally Closed

Nova Ref.	Conn.	A min/max	B	Air bar min/max	Fig.
NV1204MATO-4	1/4	261.5–267.0	130	4.8/5.5	1
NV1206MATO-4	3/8	267.5–272.5	194	4.5/5.2	1
NV1209MATO-4	9/16	273.5–278.5	194	6.6/6.9	1



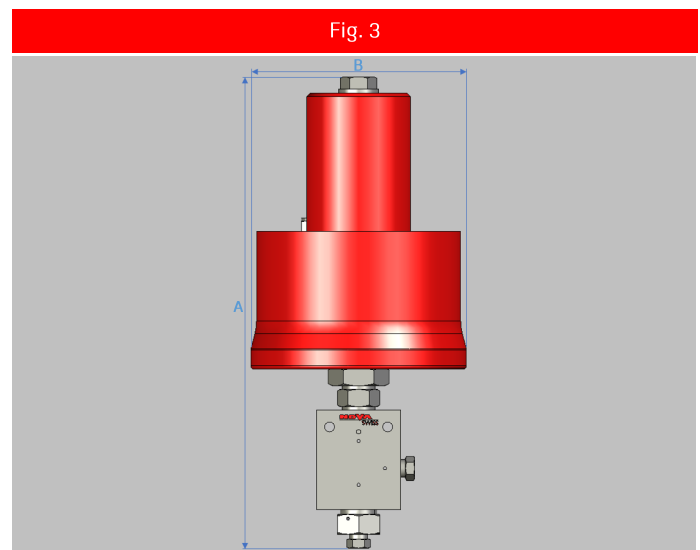
2-Way Angle – MAWP 20'000 psi
-ATO (Air-to-Open) Normally Closed

Nova Ref.	Conn.	A min/max	B	Air bar min/max	Fig.
NV2204MATO-4	1/4	269.9–274.9	130	4.8/5.5	2
NV2206MATO-4	3/8	279.1–283.0	194	4.5/5.2	2
NV2209MATO-4	9/16	288.0–293.0	194	6.6/6.9	2



2-Way Replaceable Seat – MAWP 20'000 psi
-ATO (Air-to-Open) Normally Closed

Nova Ref.	Conn.	A min/max	B	Air bar min/max	Fig.
NV5204MATO-4	1/4	284.7–289.7	130	4.8/5.5	3
NV5206MATO-4	3/8	294.1–299.1	194	4.5/5.2	3
NV5209MATO-4	9/16	314.9–319.9	194	6.6/6.9	3

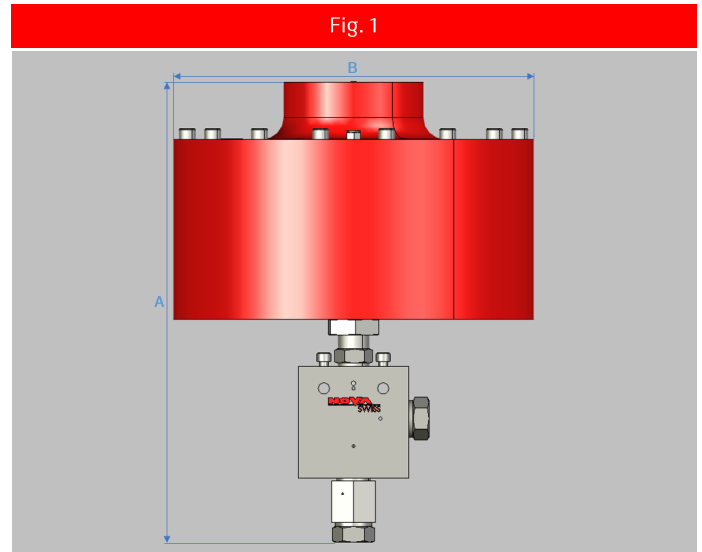


Actuated Needle Valves H₂

2-Way Replaceable Seat— MAWP 15'000 psi
 -ATO (Air-to-Open) Normally Closed

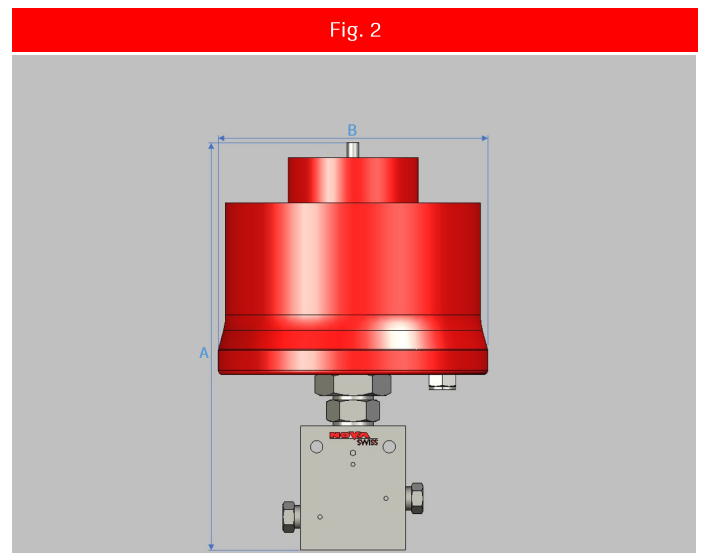
Nova Ref.	Conn.	A min/max	B	Air bar min/max	Fig.
NV51516MATO-4*	1	445	340	-	1

* Available at request, minimum order quantity applies.



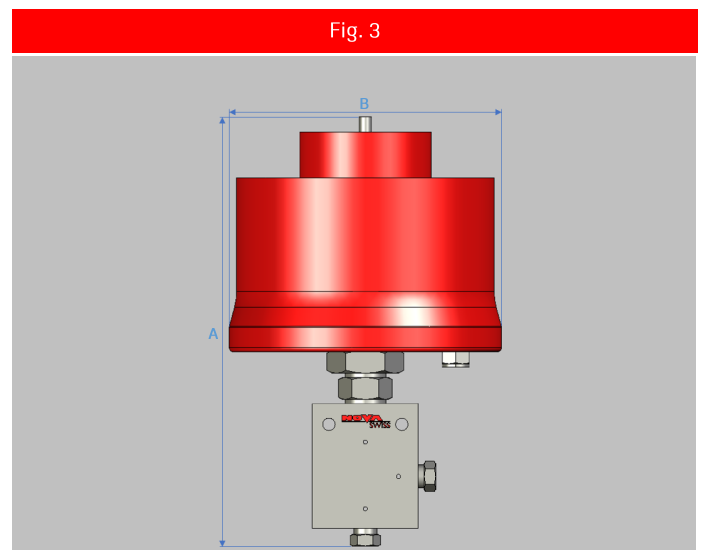
2-Way Straight — MAWP 20'000 psi
 -ATC (Air-to-Close) Normally Open

Nova Ref.	Conn.	A min/max	B	Air bar min/max	Fig.
NV1204MATC-4	1/4	max.197.3	130	4.5/5.2	2
NV1206MATC-4	3/8	max. 200.2	194	4.5/5.2	2
NV1209MATC-4	9/16	max. 206.2	194	5.9/6.6	2



2-Way Angle — MAWP 20'000 psi
 -ATC (Air-to-Close) Normally Open

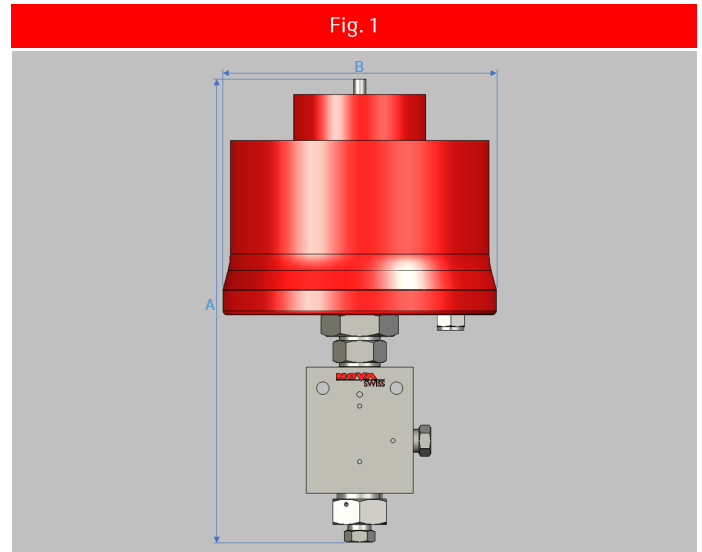
Nova Ref.	Conn.	A min/max	B	Air bar min/max	Fig.
NV2204MATC-4	1/4	max. 205.6	130	4.5/5.2	3
NV2206MATC-4	3/8	max. 211.8	194	4.5/5.2	3
NV2209MATC-4	9/16	max. 220.7	194	5.9/6.6	3



Actuated Needle Valves H₂

2-Way Replaceable Seat— MAWP 20'000 psi
 -ATC (Air-to-Close) Normally Open

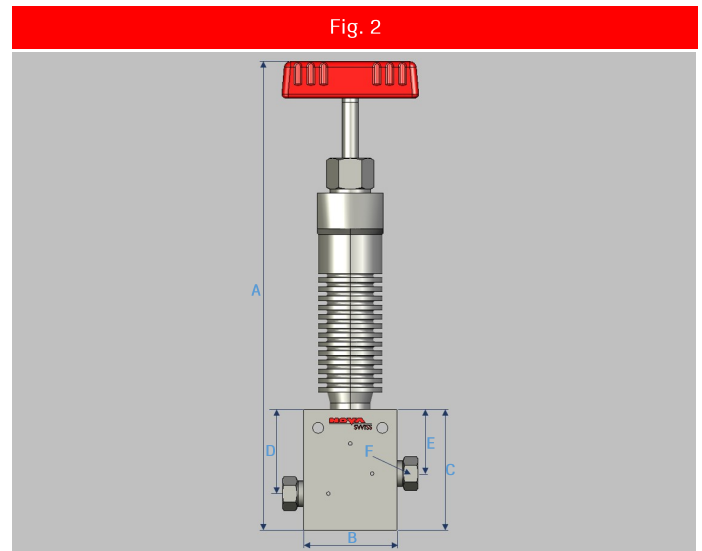
Nova Ref.	Conn.	A min/max	B	Air bar min/max	Fig.
NV5204MATC-4	1/4	max. 220.5	130	4.5/5.2	1
NV5206MATC-4	3/8	max. 226.8	194	4.5/5.2	1
NV5209MATC-4	9/16	max. 247.6	194	5.9/6.6	1



Extreme Temp. Needle Valves H₂

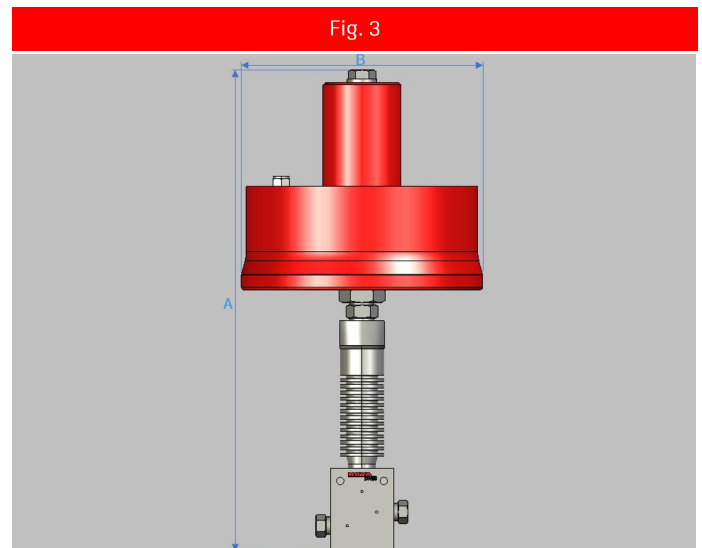
Manual 2-Way Straight – MAWP 15'000 psi

Nova Ref.	Conn.	A	B	C	D	E	F	Th.	Fig.
NV1156MET-4	3/8	256.6	50.8	66	46	35	5/8	28.6	2



2-Way Straight – MAWP 15'000 psi
 -ATO (Air-to-Open) Normally Closed

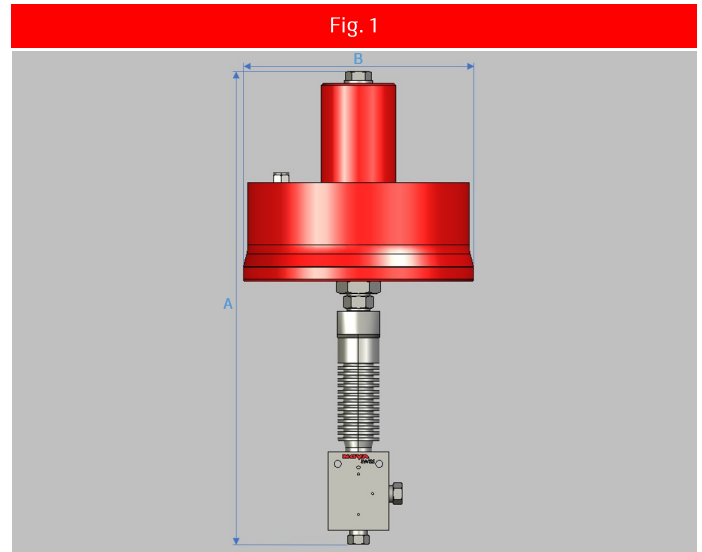
Nova Ref.	Conn.	A min/max	B	Air bar min/max	Fig.
NV1154MATOET-4	1/4	380.2–386.3	130	4.8/5.5	3
NV1156MATOET-4	3/8	385.9–391.7	194	4.8/5.5	3



Extreme Temp. Needle Valves H₂

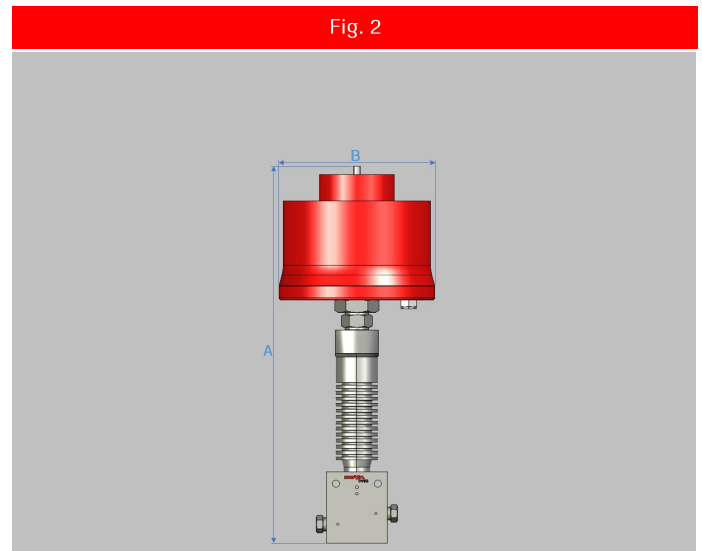
2-Way Angle – MAWP 15'000 psi
 -ATO (Air-to-Open) Normally Closed

Nova Ref.	Conn.	A min/max	B	Air bar min/max	Fig.
NV2156MATOET-4	3/8	397.6–402.7	194	4.8/5.5	1



2-Way Straight – MAWP 15'000 psi
 -ATC (Air-to-Close) Normally Open

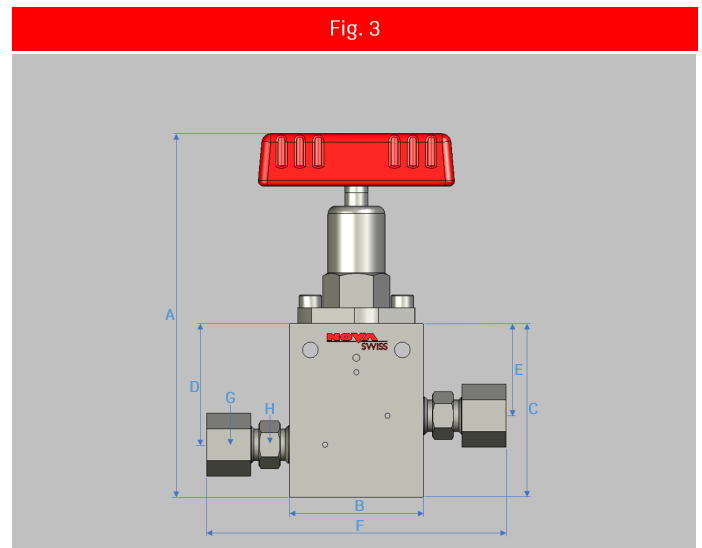
Nova Ref.	Conn.	A min/max	B	Air bar min/max	Fig.
NV1154MATCET-4	1/4		130	4.5/5.2	2
NV1156MATCET-4	3/8		194	4.5/5.2	2



TPED Needle Valves H₂

Manual 2-Way Straight – MAWP 875 bar

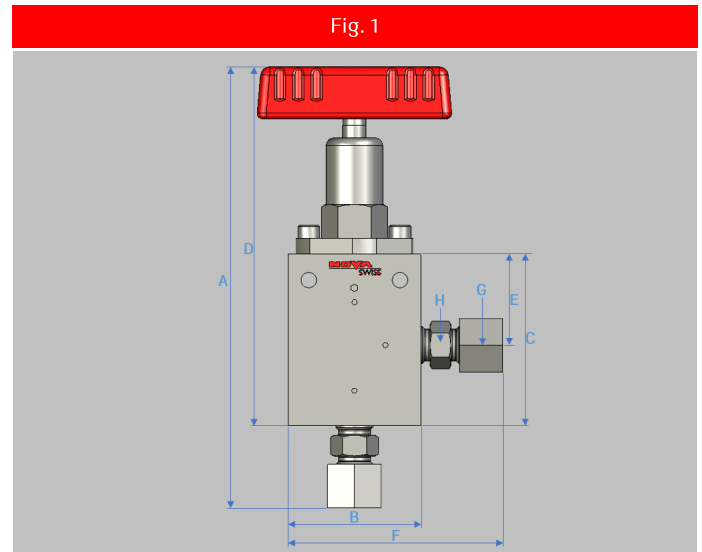
Nova Ref.	Conn.	A	B	C	D	E	F	G	H	Th.	Fig.
NV1086M-104	3/8	138.2	50.8	66	46	35	114	13/16	5/8	28.6	3



TPED Needle Valves H₂

Manual 2-Way Angle – MAWP 875 bar

Nova Ref.	Conn.	A	B	C	D	E	F	G	H	Th.	Fig.
NV1086M-104	3/8	169.5	50.8	66	138	35	82.4	13/16	5/8	28.6	1



Technical Information Needle Valves

Valve orifice diameter in mm

4M	6M	9M	12M	16M
2.80	5.20	7.90	11.1	14.2

Kv value (DIN EN 60543-2-3)

	4M	6M	9M	12M	16M
NV1	0.17	0.53	1.02	-	-
NV2/NV5	0.20	0.79	1.30	-	4.68

Pressure Connections Assembly Torques ±10% (Nm)

4M	6M	9M	12M	16M
15	35	75	145	310

Replaceable Seat Assembly Torques (Nm)

4M	6M	9M	12M	16M
60	60	60	250	350

Temperature vs. Maximum Working Pressure

Nova Ref.	Pressure range at -50°C ...+30°C	Pressure range at +30°C ...+120°C	Pressure range at +120°C ...+300°C	Temperature range of the media *
NVx20...	0...20'000 psi (0...1'380 bar)	77%	67%	-50°C...+200°C

* +300°C allowed for a short time (consult Nova Swiss)

SP-series Solenoid Valves H₂

The ultra-compact and extremely light Nova Swiss piloted solenoid valve is designed for hydrogen gas applications for an operating pressure of up to 1'000 bar.

Your applications can now be realised even more cost-efficiently thanks to its minimal dimensions. The piloted 2-way on/off valve, manufactured from stainless steel, is monostable (normally closed or open).



Solenoid Valve Features:

- From 10 bar up to MAWP 1'000 bar (14'500 psi)
- Stainless steel construction
- 2-way
- Uni-directional flow
- Medium / Ambient temperature -40°C ... +80°C (-40°F ... 176°F)
- Flow coefficient (Kv) : 0.6 m³/h (6M connection)
- Switching time < 0.5 sec.
- Atex II 2 G Ex h IIC T3 Gb
- Test / Burst pressure >1500 / 2400 bar (21'750 / 34'800 psi)
- Differential pressure min. 10 bar (14.5 psi)
- Normally closed & normally open
- Light weight < 1.5 kg (6M connection)
- Atex coil II 2 G Ex mb IIC T3/T4/T5
- Life Span 10 years or 100'000 cycles
- Power supply 24VDC (or PWM, other options upon request)
- Power consumption 14W
- IP code 65

2-Way Straight (normally closed) - Fig.1

Nova Ref.	Conn.	Orif. Ø	A	B	C	D	E	F	Th.
mm									
SP1146MNC-4	3/8	5.2	129.6	74.0	63.5	15.5	21	5/8	28.6
SP1149MNC-4 *	9/16	7.9	-	-	-	-	-	-	-
SP11412MNC-4 *	3/4	11.1	-	-	-	-	-	-	-
SP11416MNC-4 *	1	14.3	-	-	-	-	-	-	-

2-Way Straight (normally open) - Fig.1

Nova Ref.	Conn.	Orif. Ø	A	B	C	D	E	F	Th.
mm									
SP1146MNO-4	3/8	5.2	129.6	74.0	63.5	15.5	21	5/8	28.6
SP1149MNO-4 *	9/16	7.9	-	-	-	-	-	-	-
SP11412MNO-4 *	3/4	11.1	-	-	-	-	-	-	-
SP11416MNO-4 *	1	14.3	-	-	-	-	-	-	-

2-Way Angle (normally closed) - Fig.2

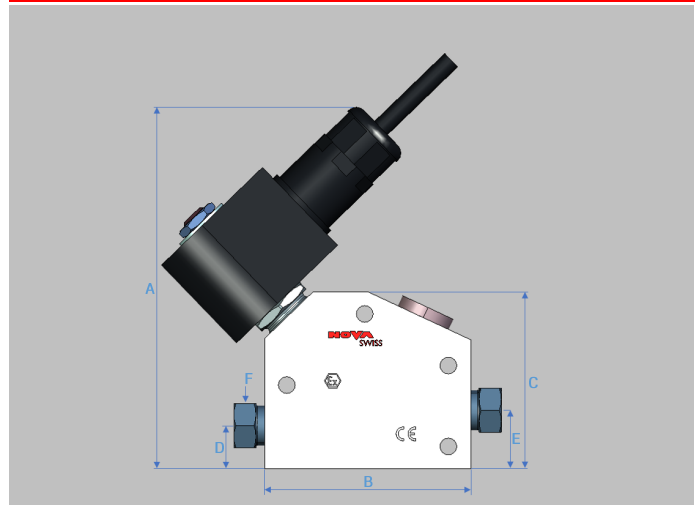
Nova Ref.	Conn.	Orif. Ø	A	B	C	D	E	F	Th.
mm									
SP2146MNC-4	3/8	5.2	133.0	6.5	72.0	-	28.0	5/8	28.6
SP2149MNC-4 *	9/16	7.9	-	-	-	-	-	-	-
SP21412MNC-4 *	3/4	11.1	-	-	-	-	-	-	-
SP21416MNC-4 *	1	14.3	-	-	-	-	-	-	-

2-Way Angle (normally open) - Fig.2

Nova Ref.	Conn.	Orif. Ø	A	B	C	D	E	F	Th.
mm									
SP2146MNO-4	3/8	5.2	133.0	6.5	72.0	-	28.0	5/8	28.6
SP2149MNO-4 *	9/16	7.9	-	-	-	-	-	-	-
SP21412MNO-4 *	3/4	11.1	-	-	-	-	-	-	-
SP21416MNO-4 *	1	14.3	-	-	-	-	-	-	-

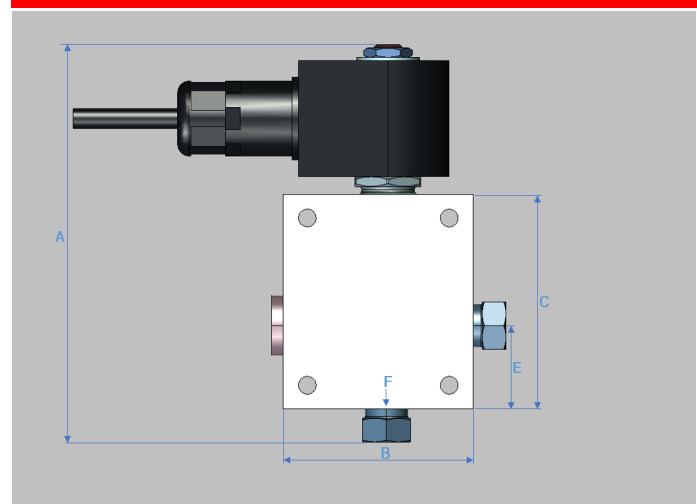
* Available at request, minimum order quantity applies.

Fig. 1



* Available at request, minimum order quantity applies.

Fig. 2



SD-series Solenoid Valves H₂

Nova Swiss extremely ultra-compact and low weight direct solenoid valves are suitable for complex systems with best-in-class customer value with low electrical power consumption.



Solenoid Valve Features:

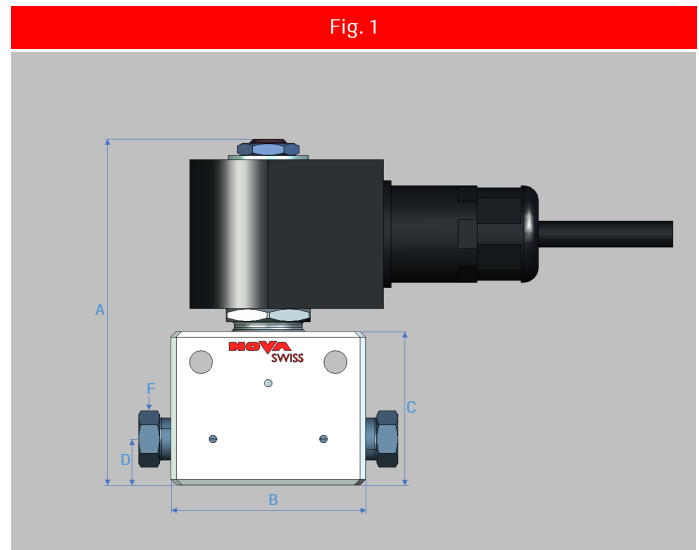
- MAWP up to 1'000 bar (14'500) psi
- Stainless steel construction
- 2-way
- Bi-directional flow
- Medium / Ambient temperature -40°C ... +80°C (-40°F ... 176°F)
- Flow coefficient (Kv) 0.006 m³ / h (0.007 Cv)
- Switching time < 0.05 sec.
- Atex II 2 G Ex h IIC T3 Gb
- Normally closed & normally open
- Light weight < 0.8 kg
- Atex coil II 2 G Ex mb IIC T3/T4/T5
- Life Span 10 years or 100'000 cycles
- Test / Burst pressure >1500 / 2400 bar (21'750 / 34'800 psi)
- Power supply 24VDC (or PWM, other options upon request)
- Power consumption 14W
- IP code 65

2-Way Straight (normally closed) - Fig.1

Nova Ref.	Conn.	Orif. Ø	A	B	C	D	E	F	Th.
mm									
SD1144MNC-4	1/4	0.35	90.0	50.8	40.0	12.0	-	1/2	28.6

2-Way Straight (normally open) - Fig.1

Nova Ref.	Conn.	Orif. Ø	A	B	C	D	E	F	Th.
mm									
SD1144MNO-4	1/4	0.35	90.0	50.8	40.0	12.0	-	1/2	28.6

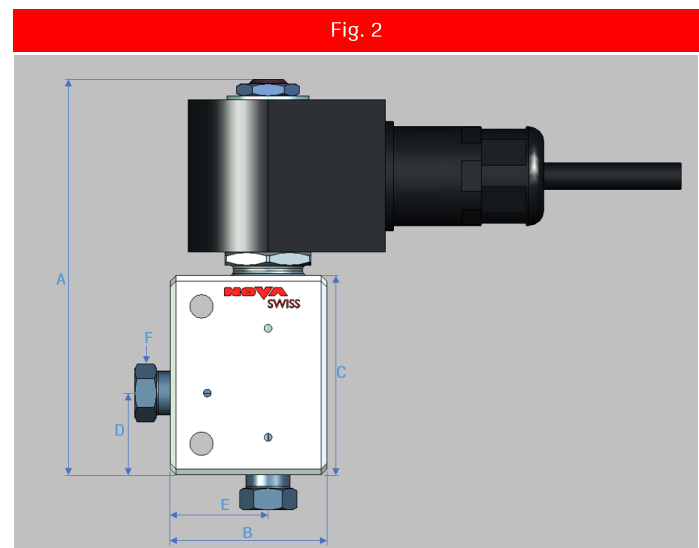


2-Way Angle (normally closed) - Fig.2

Nova Ref.	Conn.	Orif. Ø	A	B	C	D	E	F	Th.
mm									
SD2144MNC-4	1/4	0.35	109.8	40.0	50.8	20.8	25.0	1/2	28.6

2-Way Angle (normally open) - Fig.2

Nova Ref.	Conn.	Orif. Ø	A	B	C	D	E	F	Th.
mm									
SD2144MNO-4	1/4	0.35	109.8	40.0	50.8	20.8	25.0	1/2	28.6



Safety Valves H₂

Set pressures are available from 80 bar (1'160 psi) up to 1'900 bar (27'560 psi).

The versatility of Nova Swiss safety valves can further accommodate a wide spread of temperatures and are available also for explosive environments.

Compatibility of all components in contact with circuit fluid, temperature and connections are checked and validated and possibly customized.

Exhaust port is pipeable, increasing the safety of high-pressure circuits.

Each valve supplied is set and certified based on customer specification and factory lead sealed.



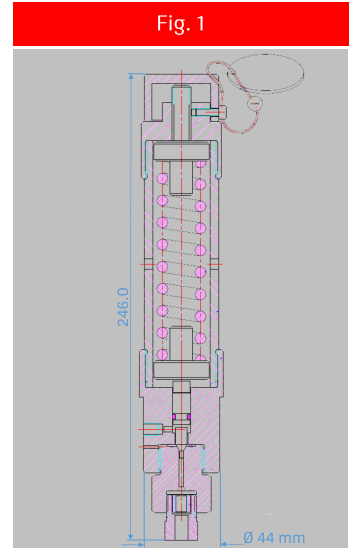
Safety Valve Features:

- 4E (1/4" metric) M16 x 1.5 female pressure connection
- 1/4" NPT-F (4N) exhaust connection
- Orifice Ø 0.75 mm (0.0012 inch)
- Flow rates, H₂O, from 45 to 235 l/h (11.9 to 62.1 usg/h)
- Flow rates, air, from 750 to 3'750 l/h (198.1 to 990.6 usg/h)
- Std. materials 1.4404, 1.4980
- Temperature range -10°C—+320°C (-4F – 608 F)
- Compliant with PED 2014/68/EU
- Atex compliant
- Full traceability of manufactured parts
- Unique serial number
- Lead sealed—CE marked
- Calculations according CODAP

Nova Ref.	Material *	Setting range bar	Temperature °C	Orifice Ø mm	Flow rate H ₂ O l/h**	Flow rate air l/h **
HPSV2-12-M103-AT	1.4404 (316L)	80-800	-10/+250	0.75	45-150	750-2400
HPSV2-30-M207-ET-AT	1.4980 (Incoloy A286)	80-1900	-20/+320	0.75	45-235	750-3750

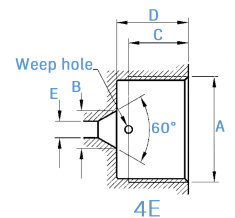
* Other materials on request, consult Nova Swiss

** Flow rate at min./max. setting of the range, temp. +15°C, according to ISO 4126 Standard



Pressure Connection Details

A Thread	B mm (inch)	C mm (inch)	D mm (inch)	E mm (inch)
M16 x 1.5	5.0 (0.20)	9.7 (0.38)	11.5 (0.45)	2.4 (0.09)

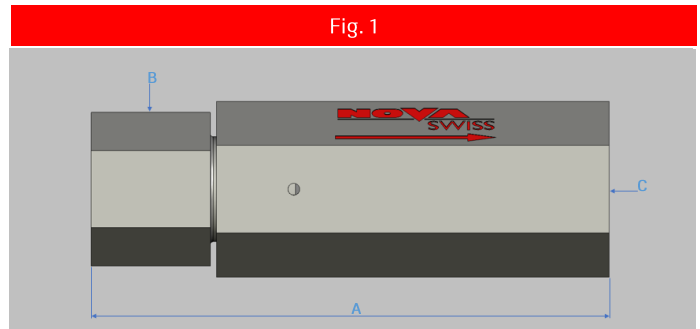


Check Valves H₂

Female / Female – BSPF – MAWP 10'000 psi

Nova Ref.	Conn.	Orif. Ø mm	A mm	B Hex.	C Hex.	D Hex.	E Thread	Fig.
CVP104B-4	1/4	4.5	87.0	7/8	1	-	-	1
CVP106B-4*	3/8	6.5	87.0	1	1	-	-	1
CVP108B-4	1/2	9.0	103.0	1-3/16	1-3/8	-	-	1

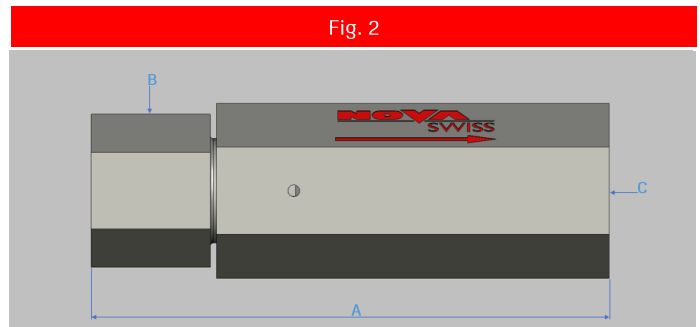
* Available at request, minimum order quantity applies.



Female / Female – NPT – MAWP 10'000 psi

Nova Ref.	Conn.	Orif. Ø mm	A mm	B Hex.	C Hex.	D Hex.	E Thread	Fig.
CVP104N-4	1/4	4.5	87.0	7/8	1	-	-	2
CVP106N-4*	3/8	6.5	87.0	7/8	1	-	-	2
CVP108N-4	1/2	9.0	103.0	1	1-3/8	-	-	2

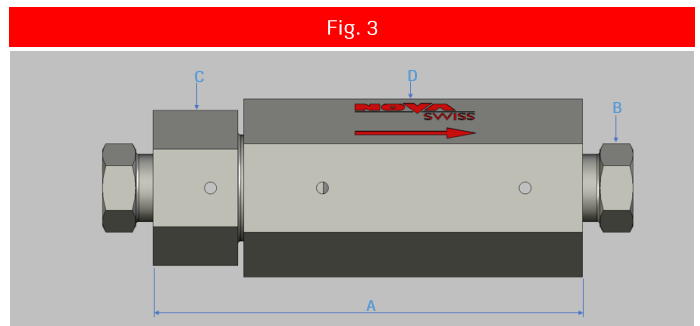
* Available at request, minimum order quantity applies.



Female / Female – MPCT – MAWP 20'000 psi

Nova Ref.	Conn.	Orif. Ø mm	A mm	B Hex.	C Hex.	D Hex.	E Thread	Fig.
CVP204M-4	1/4	2.8	71.0	1/2	7/8	1	-	3
CVP206M-4	3/8	5.2	87.0	5/8	7/8	1	-	3
CVP209M-4	9/16	9.0	103.0	7/8	1	1-3/8	-	3
CVP2012M-4*	3/4	13.1	128.5	1-3/16	1-5/8	1-3/4	-	3
CVP2016M-4*	1	17.5	161.0	1-3/8	1-3/4	2-1/8	-	3

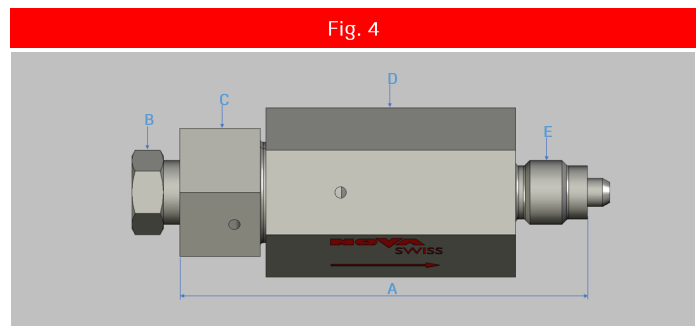
* Available at request, minimum order quantity applies.



Female / Male – MPCT – MAWP 20'000 psi

Nova Ref.	Conn.	Orif. Ø mm	A mm	B Hex.	C Hex.	D Hex.	E Thread	Fig.
CVP204M-4-M	1/4	2.8	71.0	1/2	7/8	1	7/16-20	4
CVP206M-4-M	3/8	5.2	87.0	5/8	7/8	1	9/16-18	4
CVP209M-4-M	9/16	9.0	103.0	7/8	1	1-3/8	13/16	4
CVP2012M-4-M*	3/4	13.1	128.5	1-3/16	1-5/8	1-3/4	3/4-14	4

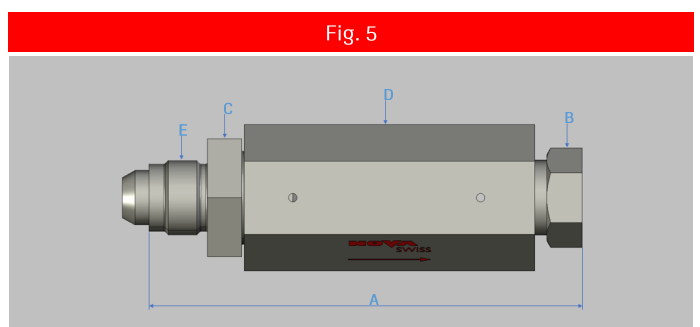
* Available at request, minimum order quantity applies.



Male / Female – MPCT – MAWP 20'000 psi

Nova Ref.	Conn.	Orif. Ø mm	A mm	B Hex.	C Hex.	D Hex.	E Thread	Fig.
CVM2012M-4-F*	3/4	13.1	135.4	1-3/16	1-5/8	1-3/4	3/4-14	5

* Available at request, minimum order quantity applies.

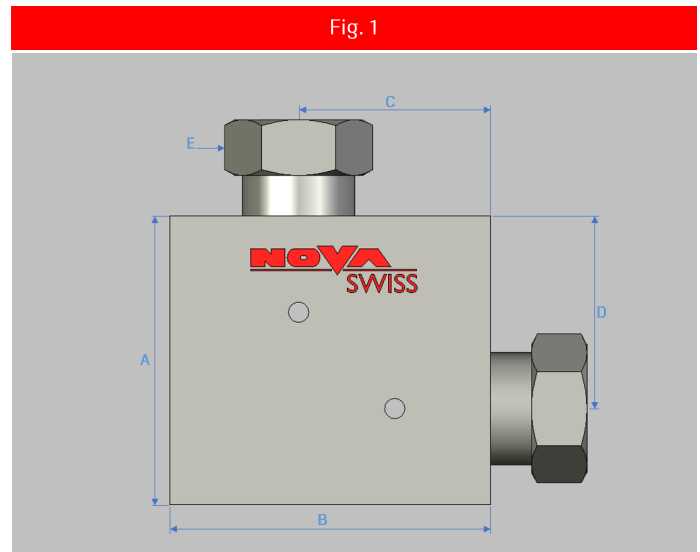


Fittings H₂

Elbow – MPCT – MAWP 20'000 psi

Nova Ref.	Conn.	Orif. Ø mm	A mm	B mm	C mm	D mm	E	Th.	Fig.
ELB204M	4M	2.8	31.8	28.5	19.0	19.0	1/2	19.1	1
ELB206M	6M	5.2	38.0	38.1	25.4	25.4	5/8	19.1	1
ELB209M	9M	9.0	44.5	50.8	31.8	31.8	7/8	28.6	1
ELB2012M *	12M	13.1	57.0	76.2	38	38.2	1-3/16	35.0	1
ELB2016M *	16M	17.5	76.0	104.8	52.3	52.3	1-3/8	41.3	1

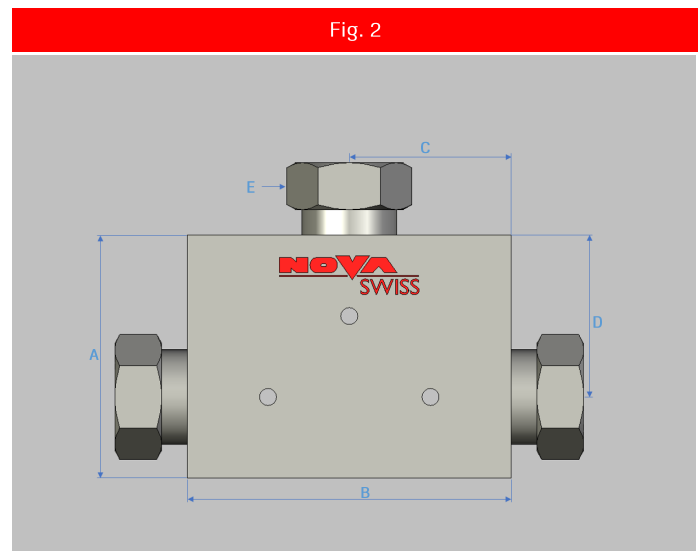
* Available at request, minimum order quantity applies.



Tee – MPCT – MAWP 20'000 psi

Nova Ref.	Conn.	Orif. Ø mm	A mm	B mm	C mm	D mm	E	Th.	Fig.
TEE204M	4M	2.8	28.5	38.1	19.0	19.0	1/2	19.1	2
TEE206M	6M	5.2	35.0	50.8	25.4	25.4	5/8	19.1	2
TEE209M	9M	9.0	44.5	63.5	31.8	31.8	7/8	28.6	2
TEE2012M *	12M	13.1	57.0	76.2	38.1	38.1	1-3/16	34.9	2
TEE2016M *	16M	17.5	76.0	104.8	52.4	52.3	1-3/8	41.3	2

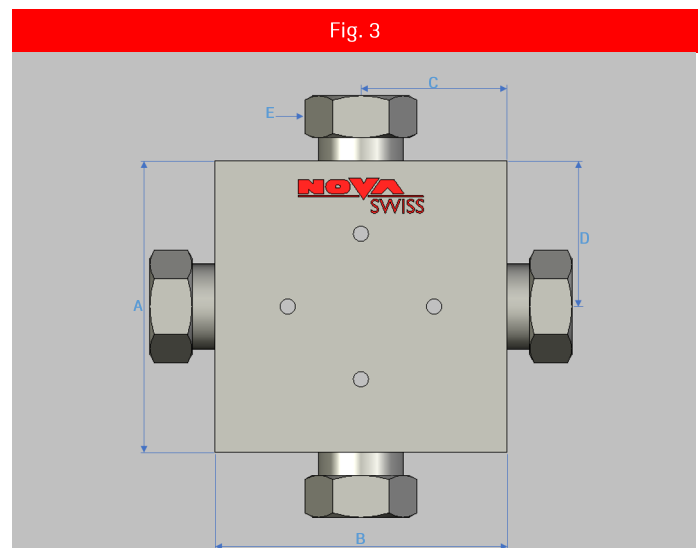
* Available at request, minimum order quantity applies.



Cross – MPCT – MAWP 20'000 psi

Nova Ref.	Conn.	Orif. Ø mm	A mm	B mm	C mm	D mm	E	Th.	Fig.
CRS204M	4M	2.8	38.0	38.1	19.1	19.1	1/2	19.1	3
CRS206M	6M	5.2	50.8	50.8	25.4	25.4	5/8	19.1	3
CRS209M	9M	9.0	63.5	63.5	31.8	31.8	7/8	28.6	3
CRS2012M *	12M	13.1	76.0	76.2	38.1	38.0	1-3/16	34.9	3
CRS2016M *	16M	17.5	105.0	104.8	52.5	52.4	1-3/8	41.3	3

* Available at request, minimum order quantity applies.

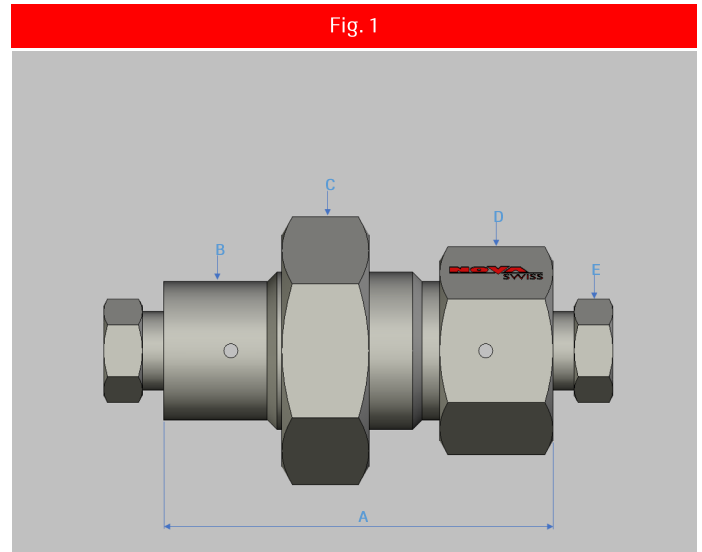


Fittings H₂

Bulkheads – MPCT – MAWP 20'000 psi

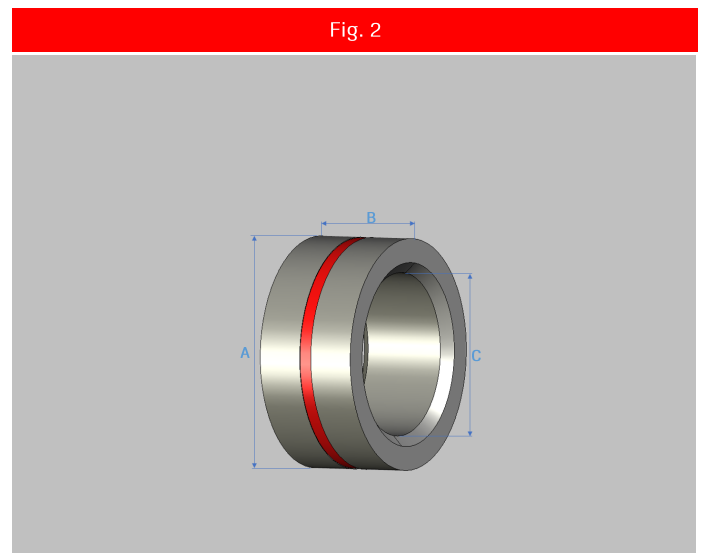
Nova Ref.	Conn.	Orif. Ø mm	A mm	B	C	D	E	Fig.
BLK204M	4M	2.8	55.0	7/8-14	1-5/16	1	1/2	1
BLK206M	6M	5.2	55.0	7/8-14	1-5/16	1	5/8	1
BLK209M	9M	9.0	64.0	1-1/8	1-11/16	1-3/8	7/8	1
BLK2012M *	12M	13.1	74.0	1-5/8	2-9/16	1-3/4	1-3/16	1
BLK2016M *	16M	17.5	92.0	2-12	3-1/8	2-1/8	1-3/8	1

* Available at request, minimum order quantity applies.



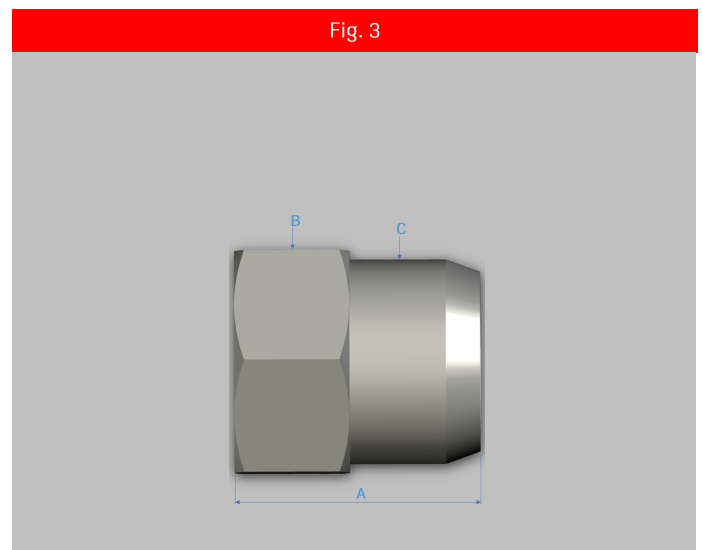
Collars – MPCT – MAWP 20'000 psi

Nova Ref.	Conn.	A mm	B mm	C	Fig.
COL-204-10P	4M	9.5	5.6	1/4-28	2
COL-206-10P	6M	12.4	6.3	3/8-24	2
COL-209-10P	9M	18.2	8	9/16-18	2
COL-2012-10P	12M	23.8	9.6	3/4-16	2
COL-2016-10P	16M	31.8	12.9	1-14	2



Glands – MPCT – MAWP 20'000 psi

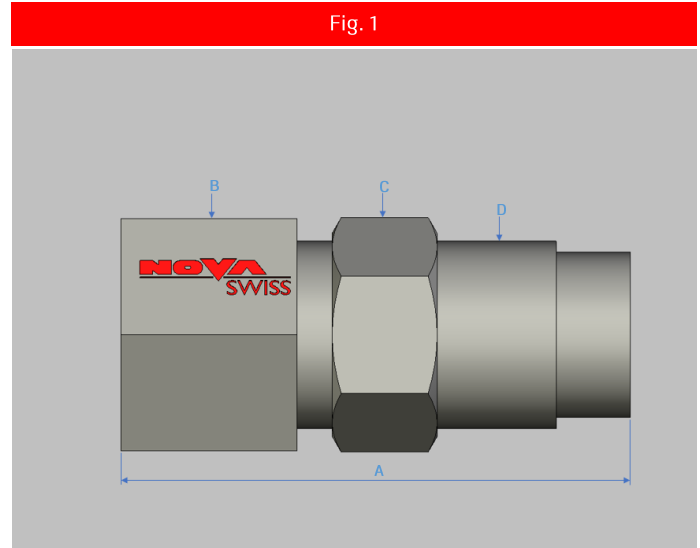
Nova Ref.	Conn.	A mm	B	C	Fig.
GLN-204M-10P	4M	14.5	7/16-20	1/2	3
GLN-206M-10P	6M	19.0	9/16-18	5/8	3
GLN-209M-10P	9M	24.5	13/16-16	7/8	3
GLN-2012M-10P	12M	28.0	3/4-14	1-3/16	3
GLN-2016M-10P	16M	38.0	1-3/8-12	1-3/8	3



Fittings H₂

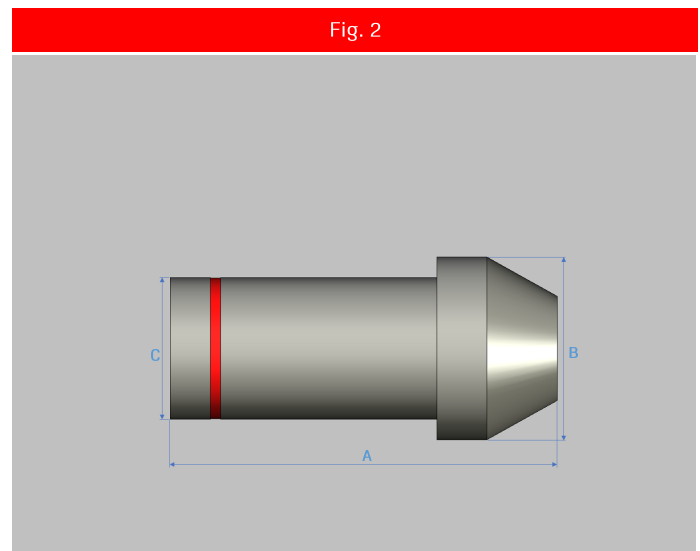
Anti-Vibration Ass. – MPCT – MAWP 20'000 psi

Nova Ref.	Conn.	A mm	B	C	D	Fig.
AVA204M-10P	4M	37.2	5/8	1/2	7/16-20	1
AVA206M-10P	6M	45.4	13/16	5/8	9/16-18	1
AVA209M-10P	9M	55.7	1	7/8	13/16-16	1
AVA2012M-10P	12M	64.2	1-3/8	1-3/16	3/4-14	1
AVA2016M-10P	16M	87.8	1-5/8	1-3/8	1-3/8-12	1



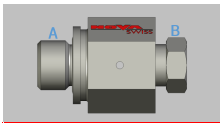
Plugs – MPCT – MAWP 20'000 psi

Nova Ref.	Conn.	A mm	B mm	C	Fig.
PLG204-10P	4M	25.0	9.5	6.3	2
PLG206-10P	6M	31.0	12.4	9.5	2
PLG209-10P	9M	38.5	18.2	14.1	2
PLG2012-10P	12M	45.0	23.8	18.9	2
PLG2016-10P	16M	59.5	31.8	25.2	2



Adapters H₂

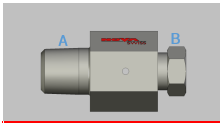
Male BSPP / Female MPCT (MAWP 10'000 psi)



Available at request, minimum order quantity applies.

		B				
		1/4 (4M)	3/8 (6M)	9/16 (9M)	3/4 (12M)	1 (16M)
A	1/4 (4B)	AMF104B4M	AMF104B6M	AMF104B9M	AMF104B12M	AMF104B16M
	3/8 (6B)	AMF106B4M	AMF106B6M	AMF106B9M	AMF106B12M	AMF106B16M
	1/2 (8B)	AMF108B4M	AMF108B6M	AMF108B9M	AMF108B12M	AMF108B16M

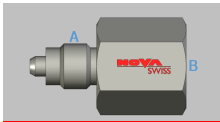
Male NPT / Female MPCT (MAWP 10'000 psi)



Available at request, minimum order quantity applies.

		B				
		1/4 (4M)	3/8 (6M)	9/16 (9M)	3/4 (12M)	1 (16M)
A	1/4 (4N)	AMF104N4M	AMF104N6M	AMF104N9M	AMF104N12M	AMF104N16M
	3/8 (6N)	AMF106N4M	AMF106N6M	AMF106N9M	AMF106N12M	AMF106N16M
	1/2 (8N)	AMF108N4M	AMF108N6M	AMF108N9M	AMF108N12M	AMF108N16M

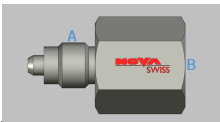
Male MPCT / Female BSPP (MAWP 10'000 psi)



Available at request, minimum order quantity applies.

		B		
		1/4 (4B)	3/8 (6B)	1/2 (8B)
A	1/4 (4M)	AMF104M4B-4	AMF104M6B-4	AMF104M8B-4
	3/8 (6M)	AMF106M4B-4	AMF106M6B-4	AMF106M8B-4
	9/16 (9M)	AMF109M4B-4	AMF109M6B-4	AMF109M8B-4
	3/4 (12M)	AMF1012M4B-4	AMF1012M6B-4	AMF1012M8B-4
	1 (16M)	AMF1016M4B-4	AMF1016M6B-4	AMF1016M8B-4

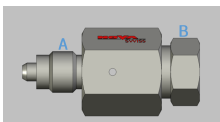
Male MPCT / Female NPT (MAWP 10'000 psi)



Available at request, minimum order quantity applies.

		B		
		1/4 (4N)	3/8 (6N)	1/2 (8N)
A	1/4 (4M)	AMF104M4N-4	AMF104M6N-4	AMF104M8N-4
	3/8 (6M)	AMF106M4N-4	AMF106M6N-4	AMF106M8N-4
	9/16 (9M)	AMF109M4N-4	AMF109M6N-4	AMF109M8N-4
	3/4 (12M)	AMF1012M4N-4	AMF1012M6N-4	AMF1012M8N-4
	1 (16M)	AMF1016M4N-4	AMF1016M6N-4	AMF1016M8N-4

Male MPCT / Female MPCT (MAWP 20'000 psi)

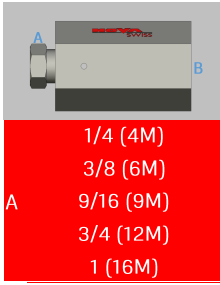


Available at request, minimum order quantity applies.

		B				
		1/4 (4M)	3/8 (6M)	9/16 (9M)	3/4 (12M)	1 (16M)
A	1/4 (4M)	-	AMF204M6M-4	AMF204M9M-4	AMF204M12M-4	AMF204M16M-4
	3/8 (6M)	AMF206M4M-4	-	AMF206M9M-4	AMF206M12M-4	AMF206M16M-4
	9/16 (9M)	AMF209M4M-4	AMF209M6M-4	-	AMF209M12M-4	AMF209M16M-4
	3/4 (12M)	AMF2012M4M-4	AMF2012M6M-4	AMF2012M9M-4	-	AMF2012M16M-4
	1 (16M)	AMF2016M4M-4	AMF2016M6M-4	AMF2016M9M-4	AMF2016M12M-4	-

Adapters H₂

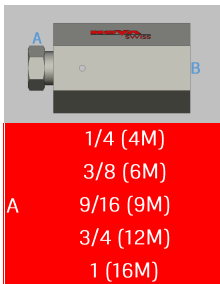
Female MPCT / Female BSPP (MAWP 10'000 psi)



Available at request, minimum order quantity applies.

		B		
		1/4 (4B)	3/8 (6B)	1/2 (8B)
A	1/4 (4M)	AFF104M4B	AFF104M6B	AFF104M8B
	3/8 (6M)	AFF106M4B	AFF106M6B	AFF106M8B
	9/16 (9M)	AFF109M4B	AFF109M6B	AFF109M8B
	3/4 (12M)	AFF1012M4B	AFF1012M6B	AFF1012M8B
	1 (16M)	AFF1016M4B	AFF1016M6B	AFF1016M8B

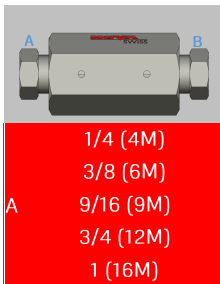
Female MPCT / Female NPT (MAWP 10'000 psi)



Available at request, minimum order quantity applies.

		B		
		1/4 (4N)	3/8 (6N)	1/2 (8N)
A	1/4 (4M)	AFF104M4N	AFF104M6N	AFF104M8N
	3/8 (6M)	AFF106M4N	AFF106M6N	AFF106M8N
	9/16 (9M)	AFF109M4N	AFF109M6N	AFF109M8N
	3/4 (12M)	AFF1012M4N	AFF1012M6N	AFF1012M8N
	1 (16M)	AFF1016M4N	AFF1016M6N	AFF1016M8N

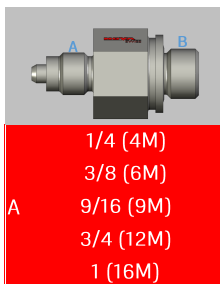
Female MPCT / Female MPCT (MAWP 20'000 psi)



Available at request, minimum order quantity applies.

		B				
		1/4 (4M)	3/8 (6M)	9/16 (9M)	3/4 (12M)	1 (16M)
A	1/4 (4M)	AFF204M4M	AFF204M6M	AFF204M9M	AFF204M12M	AFF204M16M
	3/8 (6M)	AFF206M4M	AFF206M6M	AFF206M9M	AFF206M12M	AFF206M16M
	9/16 (9M)	AFF209M4M	AFF209M6M	AFF209M9M	AFF209M12M	AFF209M16M
	3/4 (12M)	AFF2012M4M	AFF2012M6M	AFF2012M9M	AFF2012M12M	AFF2012M16M
	1 (16M)	AFF2016M4M	AFF2016M6M	AFF2016M9M	AFF2016M12M	AFF2016M16M

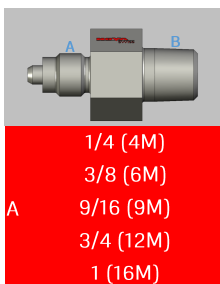
Male MPCT / Male BSPP (MAWP 10'000 psi)



Available at request, minimum order quantity applies.

		B		
		1/4 (4B)	3/8 (6B)	1/2 (8B)
A	1/4 (4M)	AMM104M4B-4	AMM104M6B-4	AMM104M8B-4
	3/8 (6M)	AMM106M4B-4	AMM106M6B-4	AMM106M8B-4
	9/16 (9M)	AMM109M4B-4	AMM109M6B-4	AMM109M8B-4
	3/4 (12M)	AMM1012M4B-4	AMM1012M6B-4	AMM1012M8B-4
	1 (16M)	AMM1016M4B-4	AMM1016M6B-4	AMM1016M8B-4

Male MPCT / Male NPT (MAWP 10'000 psi)

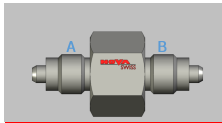


Available at request, minimum order quantity applies.

		B		
		1/4 (4N)	3/8 (6N)	1/2 (8N)
A	1/4 (4M)	AMM104M4N-4	AMM104M6N-4	AMM104M8N-4
	3/8 (6M)	AMM106M4N-4	AMM106M6N-4	AMM106M8N-4
	9/16 (9M)	AMM109M4N-4	AMM109M6N-4	AMM109M8N-4
	3/4 (12M)	AMM1012M4N-4	AMM1012M6N-4	AMM1012M8N-4
	1 (16M)	AMM1016M4N-4	AMM1016M6N-4	AMM1016M8N-4

Adapters H₂

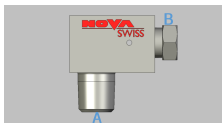
Male MPCT / Male MPCT (MAWP 20'000 psi)



Available at request, minimum order quantity applies.

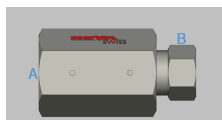
		B				
		1/4 (4M)	3/8 (6M)	9/16 (9M)	3/4 (12M)	1 (16M)
A	1/4 (4M)	AMM204M4M-4	AMM204M6M-4	AMM204M9M-4	AMM204M12M-4	AMM204M16M-4
	3/8 (6M)	AMM206M4M-4	AMM206M6M-4	AMM206M9M-4	AMM206M12M-4	AMM206M16M-4
	9/16 (9M)	AMM209M4M-4	AMM209M6M-4	AMM209M9M-4	AMM209M12M-4	AMM209M16M-4
	3/4 (12M)	AMM2012M4M-4	AMM2012M6M-4	AMM2012M9M-4	AMM2012M12M-4	AMM2012M16M-4
	1 (16M)	AMM2016M4M-4	AMM2016M6M-4	AMM2016M9M-4	AMM2016M12M-4	AMM2016M16M-4

Elbow Adapter Male NPT / Female MPCT (MAWP 10'000 psi)



		B		
		1/4 (4M)	3/8 (6M)	9/16 (9M)
A	1/4 (4N)	ELA104N4M	ELA104N6M	ELA104N9M
	3/8 (6N)	ELA106N4M	ELA106N6M	ELA106N9M
	1/2 (8N)	ELA108N4M	ELA108N6M	ELA108N9M

Gauge Coupling Female BSPP / Female HPCT (MAWP 20'000 psi)



		B		
		1/4 (4E)	3/8 (6E)	9/16 (9M)
A	1/4 (4B)	GFF204B4E-4	GFF204B6E-4	-
	1/2 (8B)	GFF208B4E-4	GFF208B6E-4	GFF208B9M-4

High-Pressure Tubing H₂

Nova Swiss offers a wide range of high-pressure tubing, from 10'000 psi (700 bar) up to 20'000 psi (1'380 bar) for leak-free transfer of gases and liquids.

All the tubing is made and tested according to strict criteria of high-grade stainless steel, seamless, cold drawn, and hardened to achieve high strength and corrosion resistance.



Tubing Features:

- Available from outer tube Ø of 1/4" up to 1"
- Standard material Din 1.4404 / AISI 316L
- Length sticks 6-7 meter (19.7–23 ft)
- MAWP from 10'000 psi (690 bar) up to 20'000 psi (1'380 bar)
- For imperial and metric pressure connections
- Anti-vibration applications

Nova Swiss Tubing Range:

MAWP	Nova Ref.	Tube O.D. Ø inch (mm)	Tube I.D. Ø mm (inch)	Pressure connection
10'000 psi (690 bar)	TBG109	9/16 (14.3)	9.1 (0.36)	9M
	TBG1012	3/4 (19.1)	13.1 (0.52)	12M
	TBG1016	1 (25.4)	17.5 (0.69)	16M
20'000 psi (1'380 bar)	TBG204	1/4 (6.4)	2.8 (0.11)	4M
	TBG206	3/8 (9.5)	5.2 (0.2)	6M
	TBG209	9/16 (14.3)	7.9 (0.31)	9M
	TBG2012	3/4 (19.1)	11.1 (0.44)	12M
	TBG2016	1 (25.4)	14.3 (0.56)	16M

Straight & Radius Nipples H₂

Nova Swiss nipples are manufactured from our standard tubing, available either straight (SNP) or 90° curved (RNP) pattern, upon request to a customized size and geometry.

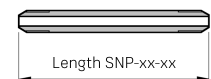
Tube-end preparation of the thread and tapers are machined according to the exact specification for each pressure range and tube diameter. The quality of machined surfaces provides the assurance of a leak-free high-pressure connection.



Straight Nipples *

* Available at request, minimum order quantity applies.

MAWP	Nova Ref.	Tube O.D. Ø inch (mm)	Length mm (inch)	Pressure connection
10'000 psi	SNP109	9/16 (14.3)	88 (3.46)	9M
	SNP1012	3/4 (19.1)	104 (4.09)	12M
	SNP1016	1 (25.4)	138 (5.43)	16M
20'000 psi	SNP204	1/4 (6.4)	56 (2.20)	4M
	SNP206	3/8 (9.5)	72 (2.83)	6M
	SNP209	9/16 (14.3)	88 (3.46)	9M
	SNP2012	3/4 (19.1)	104 (4.09)	12M
	SNP2016	1 (25.4)	138 (5.43)	16M

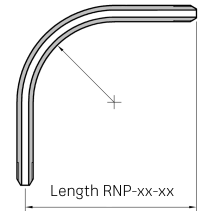


High-Pressure Tubing H₂

Radius Nipples *

*Available at request, minimum order quantity applies.

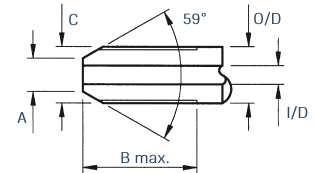
MAWP	Nova Ref.	Tube O.D. Ø inch (mm)	Length mm (inch)	Radius mm inch	Pressure connection
10'000 psi	RNP109	9/16 (14.3)	124 (4.88)	67 (2.62)	9M
	RNP1012	3/4 (19.1)	158 (6.22)	89 (3.50)	12M
	RNP1016	1 (25.4)	210 (8.27)	117 (4.62)	16M
	RNP204	1/4 (6.4)	68 (2.68)	32 (1.25)	4M
20'000 psi	RNP206	3/8 (9.5)	90 (3.54)	44 (1.75)	6M
	RNP209	9/16 (14.3)	124 (4.88)	67 (2.62)	9M
	RNP2012	3/4 (19.1)	158 (6.22)	89 (3.50)	12M
	RNP2016	1 (25.4)	210 (8.27)	117 (4.62)	16M



Pressure Connections

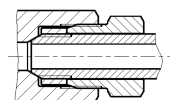
Tube-end connections are high precision, made to fit connections with well established geometries and ease of use. Leakage-free connections are assured by precision surface machining and fitting accuracy of the connection components.

The tightness of medium-pressure connections with components is achieved by a metal-to-metal seal forcing two slightly offset tapers onto another, without using a gasket or a seal ring. The connection can be installed and disconnected an arbitrary number of times without damaging the connection.



10'000 - 20'000 psi Medium Pressure Connections (MPCT)

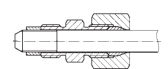
MPCT connections, with imperial UNF thread, guarantee a leak-free operation up to 20'000 psi (1'380 bar). The collar and gland compression nut are positioned in-line.



Nova Ref.	Tube O.D. Ø Inch (mm)	Tube I.D. Ø mm (inch)	A mm (inch)	B mm (inch)	C Left handed	Pressure Connection
TBG109	9/16 (14.3)	9.1 (0.36)	11.1 (0.44)	12.7 (0.50)	9/16-18 UNF	9M
TBG1012	3/4 (19.1)	13.1 (0.52)	14.7 (0.58)	15.9 (0.63)	3/4-16 UNF	12M
TBG1016	1 (25.4)	17.5 (0.69)	20.6 (0.81)	19.8 (0.78)	1-14 UNS	16M
TBG204	1/4 (6.4)	2.8 (0.11)	3.6 (0.14)	8.7 (0.34)	1/4-28 UNF	4M
TBG206	3/8 (9.5)	5.2 (0.20)	6.4 (0.25)	11.1 (0.44)	3/8-24 UNF	6M
TBG209	9/16 (14.3)	7.9 (0.31)	1.4 (0.41)	12.7 (0.50)	9/16-18 UNF	9M
TBG2012	3/4 (19.1)	11.1 (0.44)	14.3 (0.56)	15.9 (0.63)	3/4-16 UNF	12M
TBG2016	1 (25.4)	14.3 (0.56)	18.3 (0.72)	19.8 (0.78)	1-14 UNS	16M

Anti Vibration Connections MPCT

For application with vibrations, Nova Swiss has developed anti-vibration connections, reducing and preventing to minimum, with additional radial seizure forces, the gland compression nut loosening.



Diaphragm Compressors H₂

Nova Swiss diaphragm compressors are particularly suitable for the compression of ultra-pure gases.

The compression space is separated from the crank mechanism by double diaphragms, thereby preventing the gas from becoming contaminated by oil. The parts in contact with the medium are made from corrosion-resistant steel.

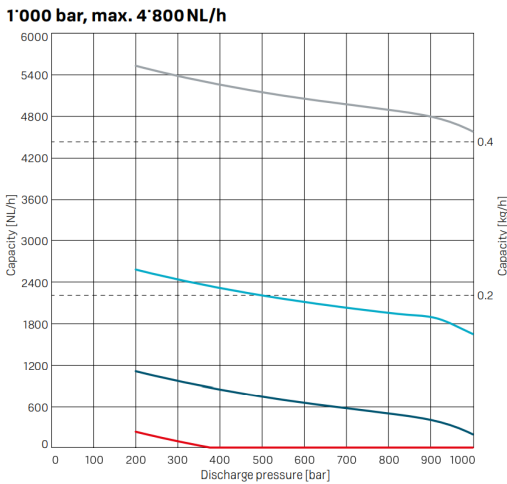
The compressor is characterized by extreme reliability, ease of use and low maintenance requirements. The compressor features overpressure protection on the oil side. The compressor is equipped with a diaphragm breakage detector.



Compressor Features:

- 1000 bar MAWP
- Start / Stop function
- Asynchron or servo drive motor
- Min. suction pressure 20 bar
- Precise pressure control
- Maximal tightness
- ATEX compliant

Performance Diagram



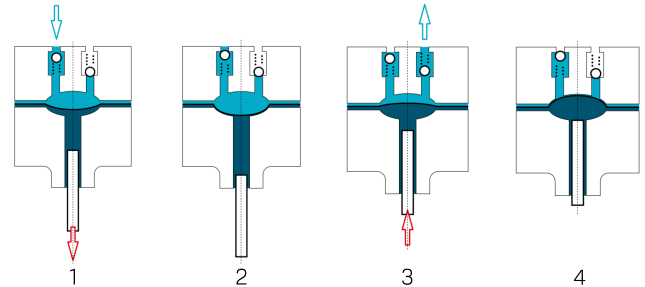
Suction pressure

- 200 bar
- 100 bar
- 50 bar
- 20 bar

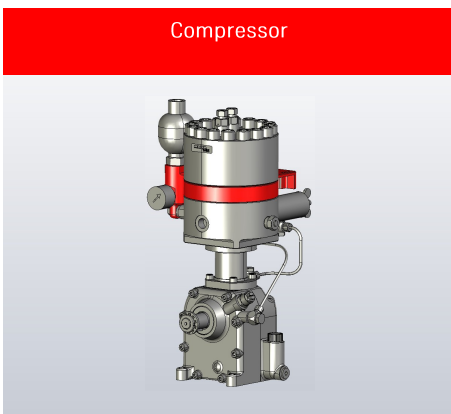
Functional Principle

In a double concave chamber the gas is compressed by an oscillating membrane insert consisting of three membranes, which is hydromechanically set in motion from one side.

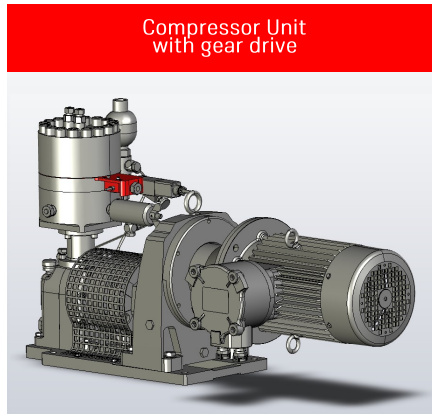
The diaphragm »seals and separates« the gas chamber hermetically against the drive unit. The three-part diaphragm insert is clamped between two diaphragm plates on the outer circumference and set in motion by the hydraulic pressure



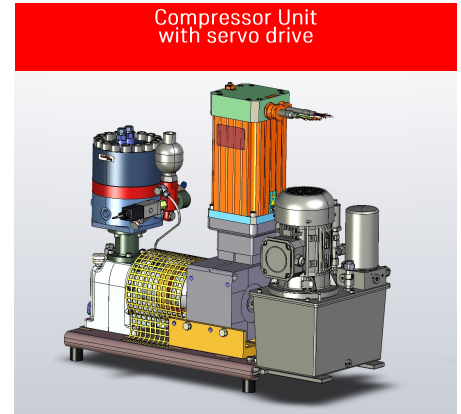
1. Suction phase
2. Bottom dead center, inlet valve closed
3. Compression phase, outlet valve opens
4. Top dead center



Nova Ref. 555.0218-001



Nova Ref. 555.0230-001



Nova Ref. 555.0230-003

Hydrogen Pipes EC 79 Compliant

Available for hydrogen service levels HSL35 and HSL70.

Contact Nova Swiss for more details.

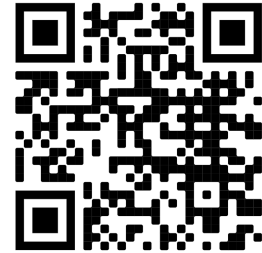


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