High Pressure Technology

NOVA SWISS

www.novaswiss.com

Certificate

SQS herewith certifies that the company named below has a management system which meets the requirements of the normative bases specified below.

Nova Werke AG
CH-8307 Effretikon

Certified area

Whole Company

Field of activity

Valve Service, Development and Manufacture of Diesel Engine Components, Development and Manufacture of High Pressure Components and Systems, Surface Coatings

Normative bases

ISO 9001:2008	Quality Management System
ISO 14001:2004	Environmental Management System

Swiss Association for Quality and Management Systems SQS
Bernstrasse 103, CH-3052 Zollikofen
Issue date: July 10, 2009

This SQS Certificate is valid up to and including February 9, 2011
Scope number 17
Registration number 12122

X. Edelmann, President SQS

T. Zahner, Managing Director SQS

SCESm 001

Swiss Made

Partner of IQNet

GENERAL SALES AND DELIVERY TERMS (01/2006)

1. General Provisions

The following terms exclusively are applicable to our offers, sales and deliveries. The placing of an order demonstrates the purchaser's complete agreement with them. Divergent terms are only valid when they are specifically agreed upon and are confirmed by us in writing. The alteration of any individual term does not affect any other. The purchase terms of the buyer are not binding on us, even when we do not expressly oppose them. Rights and duties stemming from the sales agreement shall not be transferred to other persons without our express consent.

2. Offers

Offers shall be fixed for 60 days; thereafter, they are no longer binding, even when not specifically agreed upon.

3. Orders

Orders shall only be deemed to be accepted when the yare confirmed in writing; oral acceptances are only valid insofar as they are confirmed in writing.

4. Prices

Our prices are not binding and are ex works, excluding packaging (Incoterms 2000) If material or labor expenses, or other costs, undergo substantial change between the conclusion of the contract and delivery, we reserve the right to increase prices for additional costs when subsequent delivery delays occur for which we are not responsible, or the size of deliveries, i.e. performances, agreed upon changes because the documents delivered by the purchaser do not correspond to the actual circumstances or are incomplete.

We reserve the right to charge a minimum amount for small deliveries.

5. Delivery

For each order, the agreement on the term of delivery remains reserved. When making a shipment is impossible without our having been at fault, the delivery term is deemed to have been observed upon the announcement of shipping readiness. Partial deliveries may not be rejected by the buyer. Deliveries larger or smaller than the amount ordered, varying by up to 10 percent of the ordered amount, are admissible. An obligation to comply with the delivery term agreed upon can only be assumed under the presumption of an uninterrupted manufacturing process. The consequences of force majeure, breakdown of the operation, official measures, lack or raw or auxiliary material, the failure of important supplies to be delivered to us or to our suppliers, or any other unforeseen circumstances entitle us to completely or partially suspend our delivery obligations. The nonobservance of confirmed delivery terms shall not justify claiming indemnification or withdrawal of orders. When obstacles to delivery have occurred which cannot be removed within a reasonable time, we reserve the right to cancel the agreement with corresponding notice to the purchaser. Indemnification claims due to nonperformance or delayed performance are excluded. Upon leaving the factory, the full risk passes to the purchaser, namely in the moment of the beginning of the loading process.

6. Notices of Defects

We shall only take into consideration complaints arising from deficient or incomplete delivery or performance when the yare brought to our attention no later than 8 days after receipt of the delivery. We are liable for defects only within the framework of the following terms.

7. Warranty

We guarantee our good quality and careful manufacture of our products for a period of twelve months (calculated as of shipping date) and repairs for a period of three months. This warranty exclusively covers material and manufacturing defects that appear during this period. Our warranty does not cover the natural war and tear of parts as well as any damage, nor the consequences therefrom caused by improper handling, negligence, excessive usage or nonobservance of installation and service provisions. Our warranty expires immediately and fully when modifications or repairs are undertaken without our consent.

7.1 Additional Functional Warranty for Engineering Orders

This relates to the performance of a technical function of a control, corresponding to the amended and confirmed duties record book. Such a functional warranty is granted only under the following conditions:

1. A written order for the design of a control has been given.
2. All technical information for the design as well as the desired functions of the control are stated in writing in a duties record book and conveyed to us.
3. We have confirmed the technical functions according to the duties record book or informed the purchaser in writing of the necessary corrections and their causes prior to the realization of the control.

If the functions agreed upon have not been achieved subsequent to the acceptance of the control, we shall remove the cause of the problem. If the cause of the problem is traced to a defective part, the warranty provisions for the delivery of product are applicable. When, however, the source of the problem can be traced to the purchaser, the purchaser must bear the cost of replacement and the investigation into the problem.

If the problem can be traced to an incorrect interpretation of the control, we will also carry the assembly cost in addition to that for the diagnosis of the problem and its remedy, as long as the object in question is located in Switzerland or with the principal.

If the problem can be traced to improper assembly, we are liable only if we have undertaken the assembly on behalf of the customer.

The warranty term commences on the day of shipping readiness in our operation or, when the assembly is performed by us as well, on the day such assembly begins.

8. Liability for Defects

We are liable for defects only according to the legal provisions. Our liability for defects is limited exclusively to the obligation to replace defective parts,

insofar as this is possible, without charge. The parts in question shall be sent back to us at our request and shall revert to our ownership. We do not grant indemnification of any kind, especially indemnification for loss of profit and consequential costs, etc. The buyer also has no right to a reduction of the price, replacement, rescission or revocation. For parts supplied by other companies delivered as elements of our products, only those obligations are accepted which our suppliers have entered into themselves. The return of defective products requires our prior approval.

9. Retention of Title

The delivered product remains our property until complete payment has been made therefor. The buyer may, however, further process the product within the framework of an orderly business operation and dispose thereof.

10. Treatment

Customers' goods disposed for treatment process which are damaged or destroyed during the treatment and handling process in our factory, we will pay for damage up to the maximum amount of the agreed price of the order. Any exceeding liability is excluded.

11. Payment

Domestic deliveries are payable net without deduction within thirty days after the invoice issue date. For export transactions, the payment terms determined in the order confirmation are applicable. The purchase price is payable forthwith if the buyers is overdue with other payments owed to us or if we hear of the instability of the purchaser's financial situation or bankruptcy, settlements, in or out of court, or protest of a bill of exchange. In these cases, we are entitled to make deliveries still outstanding only upon prepayment as well as to cancel the contract or to request indemnification due to nonperformance.

The buyer is not entitled to withhold payments in view of any counterclaims or to offset them against such counterclaims.

12. Drawings, Samples, Tools and Forms

Drawings, prototypes, samples, documents and draft belonging to our company may not be made known to any third parties by the recipient and remain our property. Violation of this provision requires full indemnification. Drawings or documents sent with offers are to be immediately returned by the recipient when no order is made. Tools and forms remain our property, even when pro rata costs are charged.

13. Cancellation and Storage

In the case of cancellation on the part of the purchaser, we are entitled to charge the purchaser for the costs incurred. Products that cannot be shipped after expiration of the delivery term at the request of the purchaser shall be charged by us and payment therefor shall be demanded after expiration of the payment term. Storage of the products at our facilities shall be the risk of the purchaser.

14. Place of performance and litigation

The place of delivery is the agreed named place of destination. The place of payment is our business domicile. The contract is based on Swiss material law. The applicability of International commercial terms follows the conditions of Incoterms 2000. The applicability of the conditions of UN agreement of April 11, 1980 is excluded. The place of litigation for all litigation arising from the agreement is our business domicile. We furthermore reserve the right to file suit against the purchaser at his domicile.

SAFETY NOTES

GENERAL

The safety of the users of Nova High Pressure Components and Equipment is our prime concern.

High pressure fluids can be dangerous when handled without care. Nova products enable the user to ensure maximum safety in system design and pressure handling.

Read these safety notes and reference material carefully, as well as all notes, product data sheets and individual manuals, before using any Nova High Pressure Products.

In addition to these safety notes the user should also be aware of:

- state and/or company safety regulations, design codes and other applicable regulations, codes and standards.
- these notes alone are not sufficient to be used as a guide to the design and manufacture of high pressure installations.
- any “machine”, installation or equipment designed and built with Nova High Pressure Components is subject to CE-Regulations and country, state or local codes or regulations.
- design responsibility rests with the system designer.
- safety regulation for explosion proof zone.

ACCIDENT PREVENTION REGULATIONS

Users of Nova High Pressure Components should be familiar with the state, local and company accident prevention regulations, and operators should be trained in these periodically.

EMERGENCY REGULATIONS

In situations where testing of equipment or dangerous fluids are involved users should be aware of the potential dangers and take suitable precautions. Country, state or local codes or regulations may be relevant.

PERSONNEL

Nova High Pressure Products should only be used by experienced personnel trained in correct use. Users should be aware of the potential dangers of high pressure fluids.

Operators should wear adequate ear and eye protection and all other suitable protective equipment, depending on the type of work undertaken.

DESIGN CODES AND SAFETY MARGINS FOR NOVA HIGH PRESSURE COMPONENTS

There are no specific international or national design codes for the Nova High Pressure Products shown within this catalogue. As such it is the manufacturers decision and responsibility to select appropriate calculation and design methods.

Nova has been designing and building high pressure equipment for over 25 years, and our experience and record are evidence of the reliable design and calculation methods selected.

CE-COMFORMITY

All Nova High Pressure Components and Equipment are designed, built and marked according to CE- Regulation 98/37/EG.

Every product has been subject to an extensive safety analysis.

Each product is packed in sealed plastic bag where practically feasible with a users manual.

Please contact your supplier should the users manual be wrong or be missing.

LOCATION OF HIGH PRESSURE EQUIPMENT

Users should satisfy themselves that the location of high pressure products does not lead to potentially dangerous situations arising. Particular care should be taken when pressure testing equipment, pressure vents should be directed away from test personnel and plugged or flanged ports adequately rated and correctly made up. Protective screens or walls are recommended where large volumes of fluid under pressure are involved or in situations where the behaviour of the equipment under test is unpredictable.

ENERGY POTENTIAL

All fluids under pressure contain energy i.e. they expand when the pressure is released. Liquids may contain air or other dissolved gases. Pure gases require far more energy to compress them to the desired pressure and are therefore considerably more dangerous than liquids when allowed to expand freely.

Liquids however can be dangerous as a result of their density. If allowed to escape under pressure a jet results which is able to cut materials such as steel and concrete.

No matter what the fluid under pressure the user should ensure that fluid is not allowed to escape in an uncontrolled manner.

BUILDING AND FIRE REGULATIONS

For permanent test or experimental installations, users should make themselves aware of country, state and local building regulations.

PROPER USE

It is essential that Nova High Pressure Products are used properly.

PRESSURE

Never use Nova High Pressure Products above their design pressure. The component with the lowest design pressure in a system determines the maximum pressure allowable for the entire system.

The maximum allowable working pressure (MAWP) is marked on each product.

When controlling fluctuating or varying pressures, always use equipment or components designed to the highest pressure peak expected in your system (see Dynamics).

Ensure that pressure in a system is indicated at all points within a system that can be isolated.

FLUID

Always be aware of the nature, attributes and dangers of the working fluid and when ordering Nova High Pressure Products, always specify the working fluid to be used!

When H_2 (Hydrogen) or O_2 (Oxygen) is specified for use with Nova High Pressure Products, our assembly department will use a special cleaning/degreasing process. Special care must be taken that these products, and any other products used in the same system, are not contaminated with grease, lubricant or any other product that will react or oxidise with H_2 or O_2.

Special care must be taken that any voluntary or accidental (bursting disc, relief valve or control valve) venting of these fluids will not cause fires, explosions or other damage.

CORROSION

A process fluid can adversely affect the integrity of pressure containing products in two ways. It can result in bulk corrosion or erosion of the internal surfaces and secondly, it can change the properties of the internal surfaces of the material which may lead to unpredictable and premature failure.

Operating at high pressures can enhance the rate of corrosion, particularly when elevated temperatures are involved.
Hydrogen Sulphide and Pure Hydrogen have a particularly serious potential impact on Stainless Steel in certain hardness conditions.

The user is responsible for identifying the potential for corrosion in the system and taking adequate precautions to mitigate its affect.

TEMPERATURE

Nova High Pressure Product maximum allowable pressure ratings are at room temperature.

Should you wish to use the equipment at other than room temperature, either higher or lower, temperature usage charts and information is included in the catalogue.

The physical properties of the product materials, sealing materials and gaskets are affected substantially by temperature.

Temperature indication should be installed in systems operating at reduced or elevated temperatures.

DYNAMICS

Where fluctuating pressures are involved, such as on the outlet from a reciprocating pump, care should be taken to ensure that pressure peaks do not exceed the maximum pressure ratings for high pressure products.

Pressure ratings i.e. the maximum allowable working pressure relates to static or near static applications.
Fluctuating pressures, i.e. dynamic fluids will, depending on rate and speed of the cycles, greatly affect the life of high pressure products. Generally, where high cyclic rates are to be expected, components and equipment with a considerably higher pressure rating than the system pressure should be used. Please consult your agent or the factory for enhancing measures such as auto-frettage or electro-polishing.

CONNECTIONS

High and medium pressure coned and threaded connections are specifically designed to safely contain fluids under high pressures in critical applications.

All connection types should never be interfered with when pressure is held within the system.

Weep holes should never be obstructed or welded shut.

When connecting Nova Swiss High Pressure Equipment/ Components to any other non-Nova Swiss Equipment, always ensure that there is a weep hole in that part.

NOVA SWISS

NEEDLE VALVES

VALVES, FITTINGS AND TUBING FOR **CRITICAL SERVICE**

THE NEW APPROACH FROM NOVA SWISS

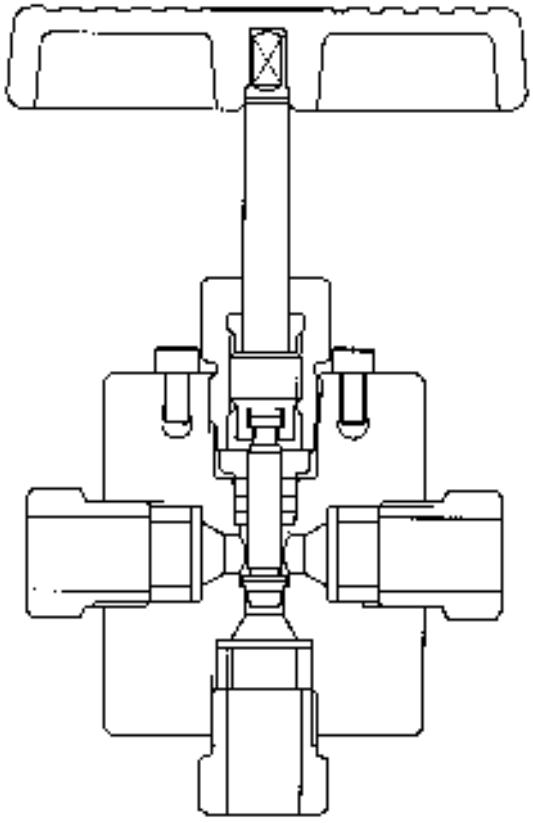
Simplicity is the key.

- The New Nova range combines 25 years experience of supplying the highest quality valve products that have been subjected to rigorous testing combined with elegant simplicity in design.
- Nova Swiss have produced a range of products that better meet the needs of critical service applications, where safety reliability and leak tight sealing are paramount.
- With modern sealing technology and less parts than similar products, the valves offer maximum ease of use and simple maintenance.
- All needle valves are supplied with glands and collars as required by the products, except BSPP and NPT connections.
- Innovations include the decision to produce **all needle valves rated upto and including 30000 psi with pressure bearing parts in NACE MR-01-75 approved material.** This is of particular benefit to the oil and gas exploration and production industries, where significant cost benefits will result.
- Considerable effort has also been put into the thorough testing of all products specifically cyclic service and fatigue pressure testing which we believe is unique to Nova Swiss.
- All valves are bidirectional which simplifies system design.
- **Everything is aimed at better serving the needs of our customers.**

ERGONOMIC HANDLE DESIGN – POSITIVE GRIP
Ease of operation

2 PIECE NON ROTATING STEM
Avoids seat/stem galling to provide optimum reliability

60° STEM TIP AND RADIUSSED SEAT
Optimum sealing characteristics and dependable, reliable and repeatable sealing with gases and liquids



MOUNTING SCREWS INCLUDED
Ease of installation

VENT HOLES ON ALL CONED AND THREADED CONNECTIONS/SEAL AREAS
To provide a safe discharge of pressure in the event of an inadvertant leak

CONED AND THREADED CONNECTIONS
For Reliability & Safety,
Repeatable sealing make/break

SEAL BELOW STEM THREADS
Safety-leakage vented

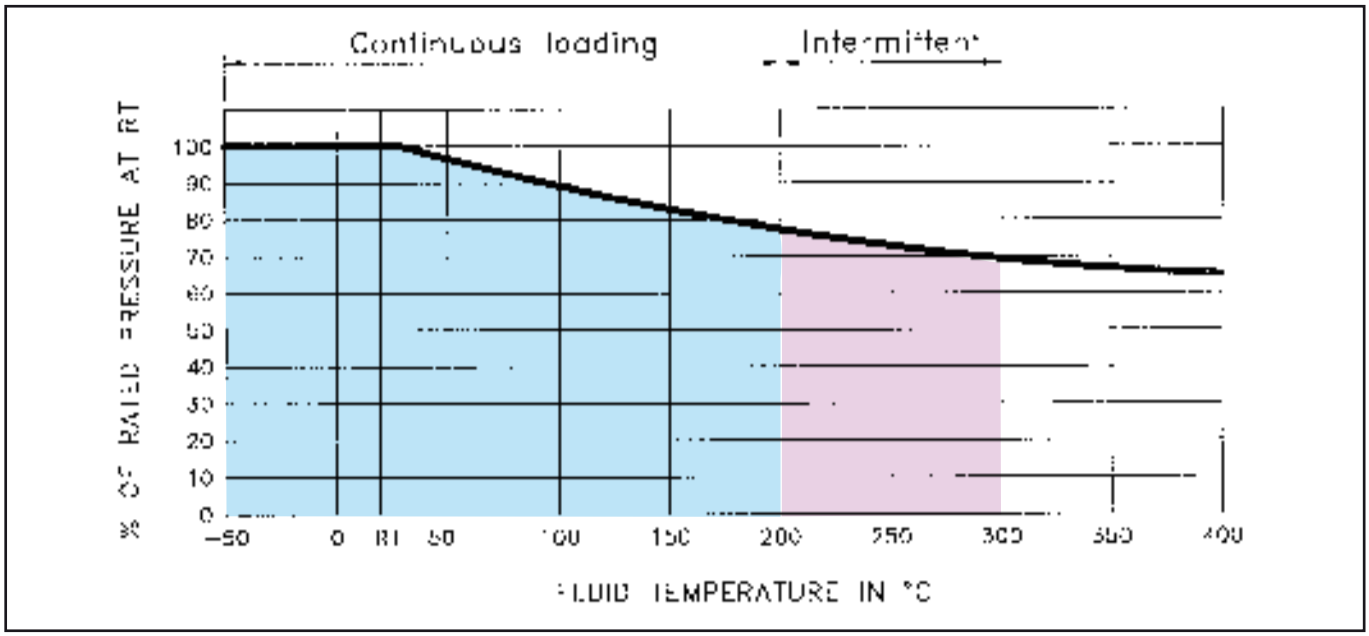
EACH BATCH TESTED PRIOR TO DESPATCH To ensure your product doesn't let you down	**ALTERNATIVE MATERIALS AVAILABLE** **CUSTOM DESIGN SERVICE TO MATCH YOUR NEEDS**	**BODY & PRESSURE BEARING PARTS TO NACE MR-01-75 AS STANDARD UP TO 30,000 psi** Easier to specify Less inventory Peace of mind Interchangeability	**TOTAL TRACEABILITY CERTIFICATE** Upon request all pressure retaining parts fully traceable to better meet your quality control requirements	**TRACEABILITY CERTIFICATE** As standard for body material certificate accredited to EN 1024 3.1 to meet your quality control and certification requirements

Elevated Temperature Usage

The following graph is for use with the Nova range of 316 stainless steel needle valves. The thick line depicts the reduction in yield stress of the 316 and the corresponding reduction in valve rated pressure (some valves may be operated in the area above the line – consult agent or factory for specific cases).

The allowable operating temperature range is governed by the stem packing material and this range is shown coloured on the graph.

The graph should be used for reference only as other considerations such as fatigue, creep, corrosion etc can affect performance at elevated temperatures. Please consult agent or factory for unusual operating conditions.



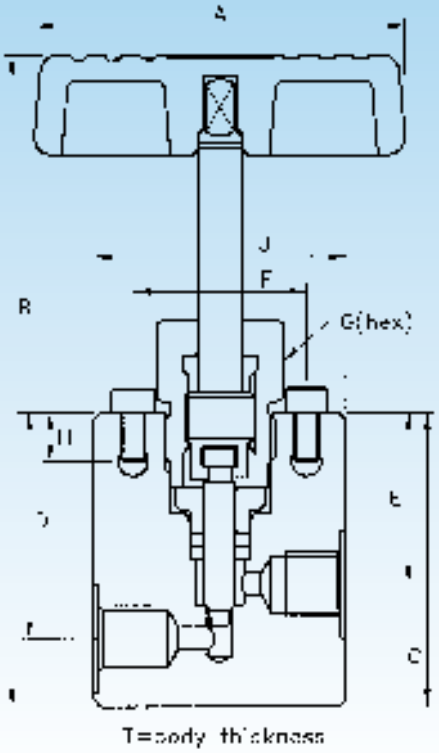
Standard Materials of Construction

Valve body (10, 20, 30,000 psi)	AISI 316 L/DIN 1.4404 to NACE MR-01-75
Valve body (60,000 psi/4000 bar/7000 bar)	AISI 316 L/DIN 1.4404
Upper stem	AISI 416 L/DIN 1.4005
Bonnet	Aluminium bronze NES 833
Lower stem	17-4 PH/DIN 1.4542
Stem guide	17-4 PH/DIN 1.4542
Stem washer	17-4 PH/DIN 1.4542
Packing	Glass filled PTFE
Screws	A2
Glands	AISI 316 L/DIN 1.4404 (to NACE MR-01-75)*
Collars	AISI 316 L/DIN 1.4404 (to NACE MR-01-75)*
	*(MPCT and HPCT connection components)

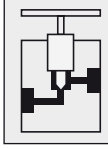
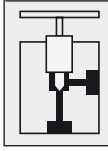
10000 psi

NEEDLE VALVES

BSPP & NPT CONNECTIONS



BSPP CONNECTIONS

	Catalogue Number	Port Size	Orifice Dia	A	B	C	D	E	F	G	H	J	T
STRAIGHT													
	NV1-10-4B	1/4	0.18	2.95	5.24	2.36	1.81	1.38	1.38	0.88	0.39	2.00	1.13
		6.4	4.5	75	133	60	46	35	35	22.2	10	50.8	28.6
	NV1-10-6B	3/8	0.26	2.95	5.47	2.60	1.97	1.46	1.38	0.88	0.39	2.00	1.13
		9.5	6.5	75	139	66	50	37	35	22.2	10	50.8	28.6
	NV1-10-8B	1/2	0.30	4.06	5.71	2.83	1.97	1.42	1.38	0.88	0.39	2.50	1.50
		12.7	7.5	103	145	72	50	36	35	22.2	10	63.5	38.1
ANGLE													
	NV2-10-4B	1/4	0.18	2.95	5.24	2.36		1.38	1.38	0.88	0.39	2.00	1.13
		6.4	4.5	75	133	60		35	35	22.2	10	50.8	28.6
	NV2-10-6B	3/8	0.26	2.95	5.47	2.60		1.46	1.38	0.88	0.39	2.00	1.13
		9.5	6.5	75	139	66		37	35	22.2	10	50.8	28.6
	NV2-10-8B	1/2	0.30	4.06	5.71	2.83		1.42	1.38	0.88	0.39	2.50	1.50
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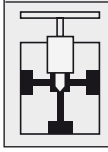
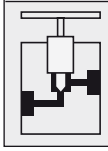
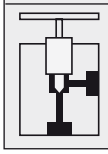
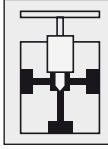
TEE													
	NV3-10-4B	1/4	0.18	2.95	5.24	2.36		1.38	1.38	0.88	0.39	2.00	1.13
		6.4	4.5	75	133	60		35	35	22.2	10	50.8	28.6
	NV3-10-6B	3/8	0.26	2.95	5.47	2.60		1.46	1.38	0.88	0.39	2.00	1.13
		9.5	6.5	75	139	66		37	35	22.2	10	50.8	28.6
	NV3-10-8B	1/2	0.30	4.06	5.71	2.83		1.42	1.38	0.88	0.39	2.50	1.50
		12.7	7.5	103	145	72		36	35	22.2	10	63.5	38.1

NPT CONNECTIONS

	Catalogue Number	Port Size	Orifice Dia	A	B	C	D	E	F	G	H	J	T
STRAIGHT													
	NV1-10-4N	1/4	0.18	2.95	5.24	2.36	1.81	1.38	1.38	0.88	0.39	2.00	1.13
		6.4	4.5	75	133	60	46	35	35	22.2	10	50.8	28.6
	NV1-10-6N	3/8	0.26	2.95	5.47	2.60	1.97	1.46	1.38	0.88	0.39	2.00	1.13
		9.5	6.5	75	139	66	50	37	35	22.2	10	50.8	28.6
	NV1-10-8N	1/2	0.30	4.06	5.71	2.83	1.97	1.42	1.38	0.88	0.39	2.50	1.13
		12.7	7.5	103	145	72	50	36	35	22.2	10	63.5	28.6
ANGLE													
	NV2-10-4N	1/4	0.18	2.95	5.24	2.36		1.38	1.38	0.88	0.39	2.00	1.13
		6.4	4.5	75	133	60		35	35	22.2	10	50.8	28.6
	NV2-10-6N	3/8	0.26	2.95	5.47	2.60		1.46	1.38	0.88	0.39	2.00	1.13
		9.5	6.5	75	139	66		37	35	22.2	10	50.8	28.6
	NV2-10-8N	1/2	0.30	4.06	5.71	2.83		1.42	1.38	0.88	0.39	2.50	1.13
		12.7	7.5	103	145	72		36	35	22.2	10	63.5	28.6
TEE													
	NV3-10-4N	1/4	0.18	2.95	5.24	2.36		1.38	1.38	0.88	0.39	2.00	1.13
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	NV3-10-8N	1/2	0.30	4.06	5.71	2.83		1.42	1.38	0.88	0.39	2.50	1.13
		12.7	7.5	103	145	72		36	35	22.2	10	63.5	28.6

NOTES

1 Refer to Needle Valve graph for elevated temperature usage.
Environmental temperature range -50°C to +65°C.

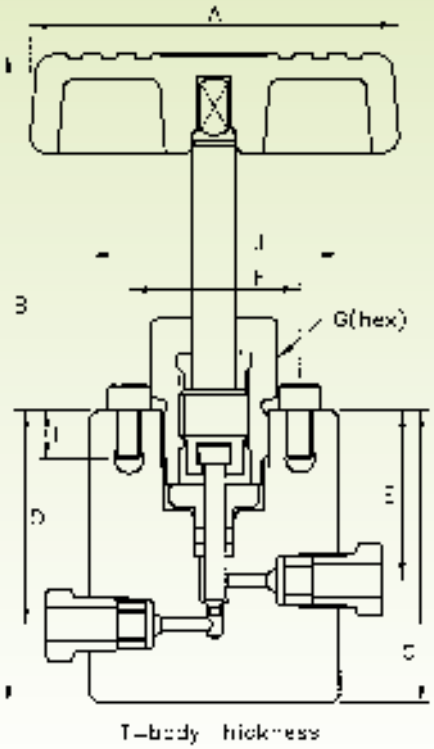
2 All valves in Stainless Steel Grade 316 suitable for sour gas service.

3 All valves are bi-directional.

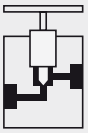
4 Top mounting screw size = M5 x 0.8.
Side mounting holes = Ø6 (0.24").

5 Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

20000 psi
NEEDLE VALVES
MEDIUM PRESSURE C+T CONNECTIONS



MP C+T CONNECTIONS

	Catalogue Number	Tube O/D	Orifice Dia	A	B	C	D	E	F	G	H	J	T
STRAIGHT													
	NV1-20-4M	1/4	0.11	2.95	5.24	2.36	1.73	1.38	1.38	0.88	0.39	2.00	1.13
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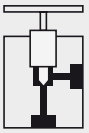
	NV1-20-6M	3/8	0.20	2.95	5.47	2.60	1.81	1.38	1.38	0.88	0.39	2.00	1.13
		9.5	5.0	75	139	66	46	35	35	22.2	10	50.8	28.6
	NV1-20-9M	9/16	0.30	4.06	5.71	2.83	1.97	1.42	1.38	0.88	0.39	2.50	1.13
		14.3	7.5	103	145	72	50	36	35	22.2	10	63.5	28.6
	NV1-20-12M	3/4	0.44	9.84	6.97	3.74	2.87	1.93	2.20	1.25	0.81	3.00	1.38
		19.1	11.1	250	177	95	73	49	56	31.8	20.5	76.2	34.9
	NV1-20-16M	1	0.56	9.84	7.36	4.13	2.87	1.93	2.20	1.25	0.81	4.13	1.63
		25.4	14.3	250	187	105	73	49	56	31.8	20.5	105	41.3
ANGLE													
	NV2-20-4M	1/4	0.11	2.95	5.24	2.36		1.38	1.38	0.88	0.39	2.00	1.13
		6.4	2.8	75	133	60		35	35	22.2	10	50.8	28.6
	NV2-20-6M	3/8	0.20	2.95	5.47	2.60		1.38	1.38	0.88	0.39	2.00	1.13
		9.5	5.0	75	139	66		35	35	22.2	10	50.8	28.6
	NV2-20-9M	9/16	0.30	4.06	5.71	2.83		1.42	1.38	0.88	0.39	2.50	1.13
		14.3	7.5	103	145	72		36	35	22.2	10	63.5	28.6
	NV2-20-12M	3/4	0.44	9.84	6.97	3.74		1.93	2.20	1.25	0.81	3.00	1.38
		19.1	11.1	250	177	95		49	56	31.8	20.5	76.2	34.9
	NV2-20-16M	1	0.56	9.84	7.36	4.13		1.93	2.20	1.25	0.81	4.13	1.63
		25.4	14.3	250	187	105		49	56	31.8	20.5	105	41.3
TEE													
	NV3-20-4M	1/4	0.11	2.95	5.24	2.36		1.38	1.38	0.88	0.39	2.00	1.13
		6.4	2.8	75	133	60		35	35	22.2	10	50.8	28.6
	NV3-20-6M	3/8	0.20	2.95	5.47	2.60		1.38	1.38	0.88	0.39	2.00	1.13
		9.5	5.0	75	139	66		35	35	22.2	10	50.8	28.6
	NV3-20-9M	9/16	0.30	4.06	5.71	2.83		1.42	1.38	0.88	0.39	2.50	1.13
		14.3	7.5	103	145	72		36	35	22.2	10	63.5	28.6
	NV3-20-12M	3/4	0.44	9.84	6.97	3.74		1.93	2.20	1.25	0.81	3.00	1.38
		19.1	11.1	250	177	95		49	56	31.8	20.5	76.2	34.9
	NV3-20-16M	1	0.56	9.84	7.36	4.13		1.93	2.20	1.25	0.81	4.13	1.63
		25.4	14.3	250	187	105		49	56	31.8	20.5	105	41.3
REPLACEABLE SEAT													
	NV5-20-4M	1/4	0.11	2.95	5.24	2.36		1.38	1.38	0.88	0.39	2.00	1.13
		6.4	2.8	75	133	60		35	35	22.2	10	50.8	28.6
	NV5-20-6M	3/8	0.20	2.95	5.47	2.60		1.36	1.38	0.88	0.39	2.00	1.13
		9.5	5.0	75	139	66		34.5	35	22.2	10	50.8	28.6
	NV5-20-9M	9/16	0.30	4.06	5.71	2.83		1.40	1.38	0.88	0.39	2.50	1.13
		14.3	7.5	103	145	72		35.5	35	22.2	10	63.5	28.6
	NV5-20-12M	3/4	0.44	9.84	6.97	3.74		1.93	2.20	1.25	0.81	3.00	1.38
		19.1	11.1	250	177	95		49	56	31.8	20.5	76.2	34.9
	NV5-20-16M	1	0.56	9.84	7.36	4.13		1.93	2.20	1.25	0.81	4.13	1.63
		25.4	14.3	250	187	105		49	56	31.8	20.5	105	41.3

NOTES

1 Refer to Needle Valve graph for elevated temperature usage.
Environmental temperature range -50°C to +65°C.
2 All valves in Stainless Steel Grade 316 suitable for sour gas service.
3 All valves are bi-directional.
4 Top mounting screw size = M5 x 0.8 (1/4, 3/8, 9/16 V/Vs), M8 x 1.25 (3/4, 1 V/Vs)
Side mounting holes = Ø6 (0.24") (1/4, 3/8, 9/16 V/Vs), Ø10.5 (0.41") (3/4, 1 V/Vs)
5 All coned and threaded connection valves supplied with glands and collars.
6 Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

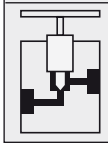
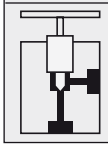
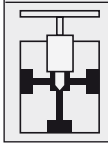
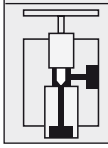
30000 psi

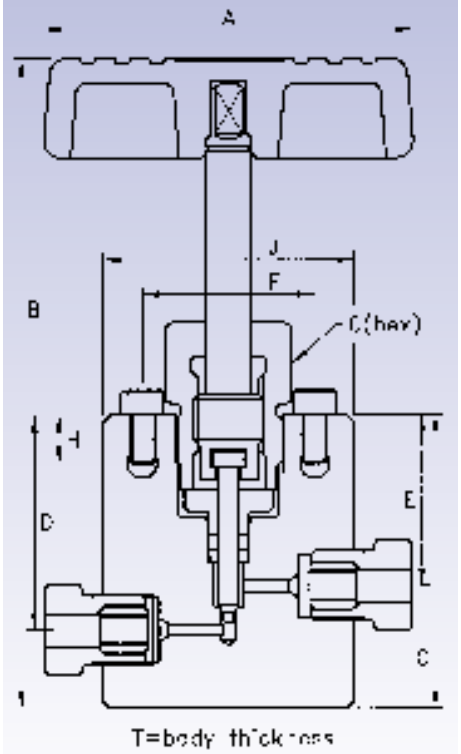
NEEDLE VALVES

HIGH PRESSURE C+T CONNECTIONS

NOVA SWISS

HP C+T CONNECTIONS

	Catalogue Number	Tube O/D	Orifice Dia	A	B	C	D	E	F	G	H	J	T
STRAIGHT													
	NV1-30-4H	1/4	0.09	2.95	5.24	2.36	1.73	1.38	1.38	0.88	0.39	2.00	1.13
		6.4	2.4	75	133	60	44	35	35	22.2	10	50.8	28.6
	NV1-30-6H	3/8	0.12	2.95	5.47	2.60	1.77	1.38	1.38	0.88	0.39	2.00	1.13
		9.5	3.0	75	139	66	45	35	35	22.2	10	50.8	28.6
	NV1-30-9H	9/16	0.12	4.06	5.71	2.83	1.81	1.38	1.38	0.88	0.39	2.50	1.50
		14.3	3.0	103	145	72	46	35	35	22.2	10	63.5	38.1
ANGLE													
	NV2-30-4H	1/4	0.09	2.95	5.24	2.36		1.38	1.38	0.88	0.39	2.00	1.13
		6.4	2.4	75	133	60		35	35	22.2	10	50.8	28.6
	NV2-30-6H	3/8	0.12	2.95	5.47	2.60		1.38	1.38	0.88	0.39	2.00	1.13
		9.5	3.0	75	139	66		35	35	22.2	10	50.8	28.6
	NV2-30-9H	9/16	0.12	4.06	5.71	2.83		1.38	1.38	0.88	0.39	2.50	1.50
		14.3	3.0	103	145	72		35	35	22.2	10	63.5	38.1
TEE													
	NV3-30-4H	1/4	0.09	2.95	5.24	2.36		1.38	1.38	0.88	0.39	2.00	1.13
		6.4	2.4	75	133	60		35	35	22.2	10	50.8	28.6
	NV3-30-6H	3/8	0.12	2.95	5.47	2.60		1.38	1.38	0.88	0.39	2.00	1.13
		9.5	3.0	75	139	66		35	35	22.2	10	50.8	28.6
	NV3-30-9H	9/16	0.12	4.06	5.71	2.83		1.38	1.38	0.88	0.39	2.50	1.50
		14.3	3.0	103	145	72		35	35	22.2	10	63.5	38.1
REPLACEABLE SEAT													
	NV5-30-4H	1/4	0.09	2.95	5.24	2.36		1.38	1.38	0.88	0.39	2.00	1.13
		6.4	2.4	75	133	60		35	35	22.2	10	50.8	28.6
	NV5-30-6H	3/8	0.12	2.95	5.47	2.60		1.30	1.38	0.88	0.39	2.00	1.13
		9.5	3.0	75	139	66		33	35	22.2	10	50.8	28.6
	NV5-30-9H	9/16	0.12	4.06	5.71	2.83		1.34	1.38	0.88	0.39	2.50	1.50
		14.3	3.0	103	145	72		34	35	22.2	10	63.5	38.1



NOTES

1 Refer to Needle Valve graph for elevated temperature usage.
Environmental temperature range -50°C to +65°C.

2 All valves in Stainless Steel Grade 316 suitable for sour gas service.

3 All valves are bi-directional.

4 Top mounting screw size = M5 x 0.8.
Side mounting holes = Ø6 (0.24").

5 All coned and threaded connection valves supplied with glands and collars.

6 Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

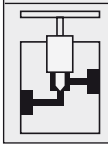
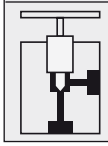
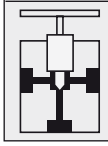
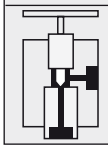
60000 psi

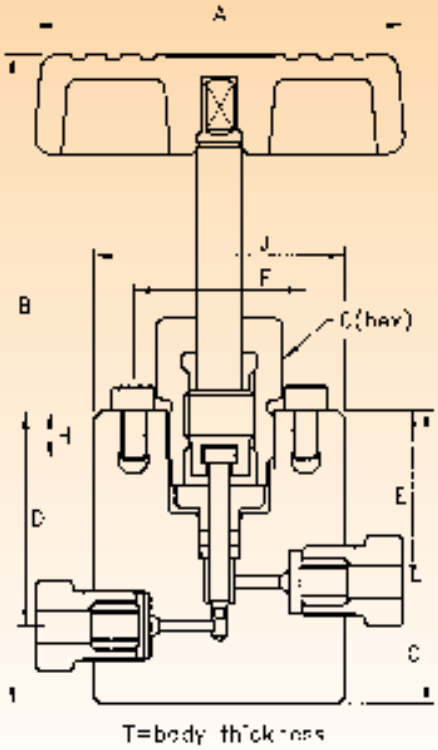
NEEDLE VALVES

HIGH PRESSURE C+T CONNECTIONS

NOVA SWISS

HP C+T CONNECTIONS

	Catalogue Number	Tube O/D	Orifice Dia	A	B	C	D	E	F	G	H	J	T
STRAIGHT													
	NV1-60-4H	1/4	0.09	4.06	5.24	2.36	1.73	1.38	1.38	0.88	0.39	2.00	1.13
		6.4	2.4	103	133	60	44	35	35	22.2	10	50.8	28.6
	NV1-60-6H	3/8	0.12	4.06	5.47	2.60	1.77	1.38	1.38	0.88	0.39	2.00	1.13
		9.5	3.0	103	139	66	45	35	35	22.2	10	50.8	28.6
	NV1-60-9H	9/16	0.12	4.06	5.71	2.83	1.81	1.38	1.38	0.88	0.39	2.50	1.50
		14.3	3.0	103	145	72	46	35	35	22.2	10	63.5	38.1
ANGLE													
	NV2-60-4H	1/4	0.09	4.06	5.24	2.36		1.38	1.38	0.88	0.39	2.00	1.13
		6.4	2.4	103	133	60		35	35	22.2	10	50.8	28.6
	NV2-60-6H	3/8	0.12	4.06	5.47	2.60		1.38	1.38	0.88	0.39	2.00	1.13
		9.5	3.0	103	139	66		35	35	22.2	10	50.8	28.6
	NV2-60-9H	9/16	0.12	4.06	5.71	2.83		1.38	1.38	0.88	0.39	2.50	1.50
		14.3	3.0	103	145	72		35	35	22.2	10	63.5	38.1
TEE													
	NV3-60-4H	1/4	0.09	4.06	5.24	2.36		1.38	1.38	0.88	0.39	2.00	1.13
		6.4	2.4	103	133	60		35	35	22.2	10	50.8	28.6
	NV3-60-6H	3/8	0.12	4.06	5.47	2.60		1.38	1.38	0.88	0.39	2.00	1.13
		9.5	3.0	103	139	66		35	35	22.2	10	50.8	28.6
	NV3-60-9H	9/16	0.12	4.06	5.71	2.83		1.38	1.38	0.88	0.39	2.50	1.50
		14.3	3.0	103	145	72		35	35	22.2	10	63.5	38.1
REPLACEABLE SEAT													
	NV5-60-4H	1/4	0.09	4.06	5.24	2.36		1.38	1.38	0.88	0.39	2.00	1.13
		6.4	2.4	103	133	60		35	35	22.2	10	50.8	28.6
	NV5-60-6H	3/8	0.12	4.06	5.47	2.60		1.30	1.38	0.88	0.39	2.00	1.13
		9.5	3.0	103	139	66		33	35	22.2	10	50.8	28.6
	NV5-60-9H	9/16	0.12	4.06	5.71	2.83		1.34	1.38	0.88	0.39	2.50	1.50
		14.3	3.0	103	145	72		34	35	22.2	10	63.5	38.1



NOTES

1 Refer to Needle Valve graph for elevated temperature usage.
Environmental temperature range -50°C to +65°C.

2 All valves in Stainless Steel Grade 316.

3 All valves are bi-directional.

4 Top mounting screw size = M5 x 0.8.
Side mounting holes = Ø6 (0.24").

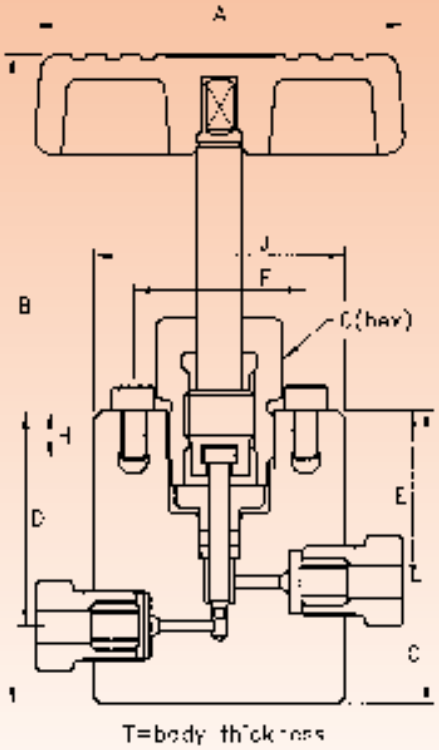
5 All coned and threaded connection valves supplied with glands and collars.

6 Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

4000 bar

NEEDLE VALVES

HIGH PRESSURE METRIC CONNECTIONS E



NOVA SWISS

E CONNECTIONS

Catalogue Number	Tube O/D	Orifice Dia	A	B	C	D	E	F	G	H	J	T
STRAIGHT												
NV1-40-4E	1/4	0.09	4.06	5.24	2.36	1.73	1.38	1.38	0.88	0.39	2.00	1.13
	6.4	2.4	103	133	60	44	35	35	22.2	10	50.8	28.6
NV1-40-6E	3/8	0.12	4.06	5.47	2.60	1.77	1.38	1.38	0.88	0.39	2.00	1.13
	9.5	3.0	103	139	66	45	35	35	22.2	10	50.8	28.6
NV1-40-9E	9/16	0.12	4.06	5.71	2.83	1.81	1.38	1.38	0.88	0.39	2.50	1.50
	14.3	3.0	103	145	72	46	35	35	22.2	10	63.5	38.1
ANGLE												
NV2-40-4E	1/4	0.09	4.06	5.24	2.36		1.38	1.38	0.88	0.39	2.00	1.13
	6.4	2.4	103	133	60		35	35	22.2	10	50.8	28.6
NV2-40-6E	3/8	0.12	4.06	5.47	2.60		1.38	1.38	0.88	0.39	2.00	1.13
	9.5	3.0	103	139	66		35	35	22.2	10	50.8	28.6
NV2-40-9E	9/16	0.12	4.06	5.71	2.83		1.38	1.38	0.88	0.39	2.50	1.50
	14.3	3.0	103	145	72		35	35	22.2	10	63.5	38.1
TEE												
NV3-40-4E	1/4	0.09	4.06	5.24	2.36		1.38	1.38	0.88	0.39	2.00	1.13
	6.4	2.4	103	133	60		35	35	22.2	10	50.8	28.6
NV3-40-6E	3/8	0.12	4.06	5.47	2.60		1.38	1.38	0.88	0.39	2.00	1.13
	9.5	3.0	103	139	66		35	35	22.2	10	50.8	28.6
NV3-40-9E	9/16	0.12	4.06	5.71	2.83		1.38	1.38	0.88	0.39	2.50	1.50
	14.3	3.0	103	145	72		35	35	22.2	10	63.5	38.1
REPLACEABLE SEAT												
NV5-40-4E	1/4	0.09	4.06	5.24	2.36		1.38	1.38	0.88	0.39	2.00	1.13
	6.4	2.4	103	133	60		35	35	22.2	10	50.8	28.6
NV5-40-6E	3/8	0.12	4.06	5.47	2.60		1.30	1.38	0.88	0.39	2.00	1.13
	9.5	3.0	103	139	66		33	35	22.2	10	50.8	28.6
NV5-40-9E	9/16	0.12	4.06	5.71	2.83		1.34	1.38	0.88	0.39	2.50	1.50
	14.3	3.0	103	145	72		34	35	22.2	10	63.5	38.1
3-WAY/2-STEM MANIFOLD												
NV6-40-4E	1/4	0.09	4.06	6.97	4.09	2.05	1.38	1.38	0.88	0.39	2.00	1.13
	6.4	2.4	103	177	104	52	35	35	22.2	10	50.8	28.6
NV6-40-6E	3/8	0.12	4.06	6.97	4.09	2.05	1.38	1.38	0.88	0.39	2.00	1.13
	9.5	3.0	103	177	104	52	35	35	22.2	10	50.8	28.6

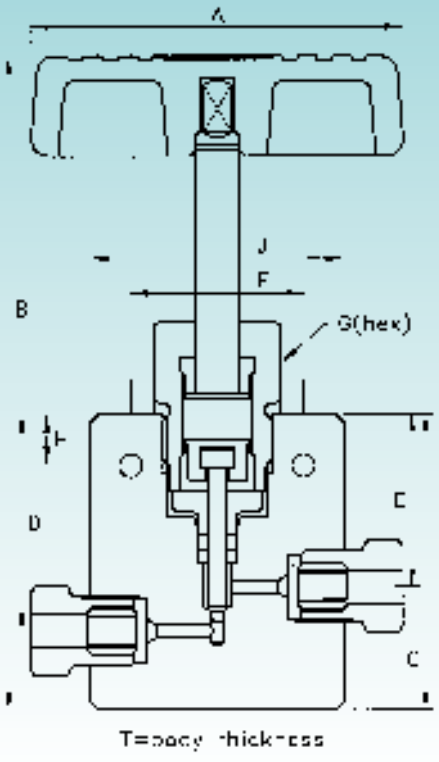
NOTES

1. Refer to Needle Valve graph for elevated temperature usage. Environmental temperature range -50°C to +65°C.
2. All valves in Stainless Steel Grade AISI 316L/DIN 1.4404.
3. All valves are bi-directional.
4. Top mounting screw size = M5 x 0.8. Side mounting holes = Ø6 (0.24").
5. All coned and threaded connection valves supplied with glands and collars.
6. Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

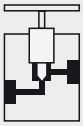
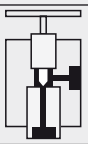
7000 bar

NEEDLE VALVES

HIGH PRESSURE METRIC CONNECTIONS E



E CONNECTIONS

	Catalogue Number	Tube O/D	Orifice Dia	A	B	C	D	E	F	G	H	J	T
STRAIGHT													
	NV1-70-4E	1/4	0.06	4.06	5.59	2.76	2.09	1.73	1.38	1.06	0.39	2.00	1.13
		6.4	1.6	103	142	70	53	44	35	27	10	50.8	28.5
REPLACEABLE SEAT													
	NV5-70-4E	1/4	0.06	4.06	5.59	2.76		1.73	1.38	1.06	0.39	2.00	1.13
		6.4	1.6	103	142	70		44	35	27	10	50.8	28.5

NOTES

1 Refer to Needle Valve graph for elevated temperature usage. Environmental temperature range -50°C to +65°C.
2 All valves in Stainless Steel Grade AISI 316L/DIN 1.4404.
3 All valves are bi-directional.
4 Side mounting holes = Ø6 (0.24").
5 All coned and threaded connection valves supplied with glands and collars.
6 Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

SAFETY NOTES

As your safety is our prime concern and we want you to enjoy reliable service from our products we give the following advice on the safe use of Needle Valves.

- High pressure fluids particularly gases are potentially hazardous and should always be treated with the greatest respect. Do not vent fluid without knowing where vent is directed
- Always be aware of whether pressure is contained by a valve
- Do not loosen connection components when system pressure is present
- Ensure valves are open and that no system pressure is present and isolated prior to carrying out maintenance

NEEDLE VALVE SELECTION

Suitability of individual valves for chosen application is dependant on a number of parameters which should be given careful consideration prior to use. To assist our customers in selection we have compiled a list of selection criteria which takes account of many of the most important factors to consider. As all systems are different and user requirements vary greatly this information should not be considered comprehensive. Should you have any doubts as to the suitability of a chosen valve please contact the local agent or the factory directly. Either will be delighted to assist.

PRESSURE

System pressure should always be less than the maximum allowable working pressure for the valve. Where fluctuating pressures are involved such as on the outlet from a reciprocating pump, care should be taken to ensure that pressure peaks do not exceed this maximum.

We recommend that where fluctuating pressure is occurring over long periods then the valve pressure rating should be considerably higher than the maximum nominal system working pressure. Please note that the operating life will be reduced.

TEMPERATURE

Valve maximum operating temperature is based on the working fluid temperature i.e. the temperature that the valve will see internally. Should you wish to operate valves in an environment outside the specified operating temperature range please consult the local agent or factory as the seals used within the valve stem assembly may need to be changed to a higher temperature tolerant grade.

Valve pressure rating is based on temperature not exceeding the maximum allowable working value and is reduced should this temperature be exceeded. Working pressure versus operating temperature is shown graphically on the data page.

In all cases where the intended operating temperature will or could even temporarily exceed the maximum limit, the user should consult the local agent or factory directly.

SYSTEM FLUID

There are two principal considerations, firstly the nature of the fluid and its compatibility with the materials of construction and secondly the level of cleanliness of the fluid.

The customer should satisfy themselves that the materials of construction including stem seals are compatible with the working fluids with respect to corrosion and/or other chemical reaction.

System fluid should be clean and in particular not contain any debris which is abrasive. Cleanliness levels of NAS 1638 (National Aerospace Standard 1638) level 10 or better are optimum.

CONNECTIONS

Nova valves are supplied with a variety of connection options with pressure limitations for each design.

These are the limitations:-

BSPP - Parallel thread connection relies on an externally clamped seal to hold pressure. Threads are exposed to pressure and working fluids so careful consideration to corrosion on stressed threads should be given. Pressures up to 10000PSI are considered appropriate because there is little if any deformation of threads, BSPP connections are preferable to NPT in cases where no sealing compound can be used with NPT.

NPT - The most common screwed connection type used extensively up to 10000PSI.
We strongly recommend that this connection is **not used above 10000PSI** as per the guidelines in API 6A (American Petroleum Institute standard 6A). This connection is heavily dependent on the technician for successful make-up and care should be taken that all users are trained in the correct installation of these connections.

MPCT - This coned and threaded connection commonly referred to as The Medium Pressure Connection is rated up to 20000PSI in standard catalogue items. It is compact with the gland nut and collar being in line and is highly tolerant to repeated make and break.

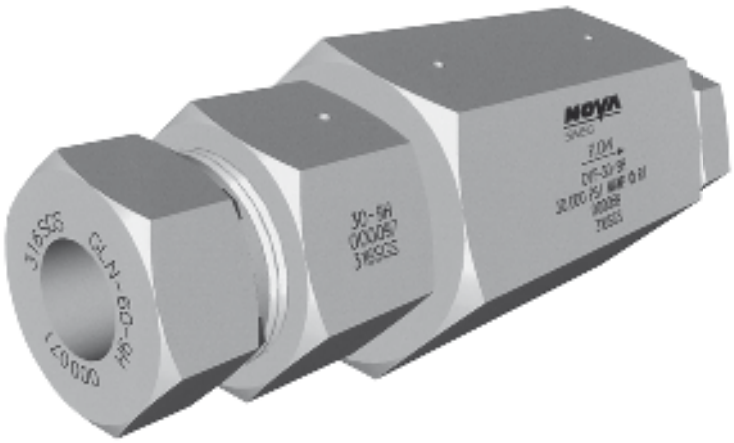
HPCT- and E These high pressure coned and threaded connections are less compact than the medium pressure variation as a result of the collar being inside the gland. The benefit is that the gland supports the collar at the maximum stress point and provides greater resistance to fatigue.
E high pressure connections are identical to HPCT connections in concept. The differences are the threads on glands and ports.
HPCT: imperial UNF threads
E: metric threads according to ISO
For details please refer to technical section

Note that for coned and threaded connections that experience vibration in the pipework, the use of anti-vibration collars and glands is strongly recommended.

We do not recommend screwed connections (NPT, BSPP) in situations where there could be vibration of the pipework.

Note that the nova 9/16" high pressure coned and threaded connection is equivalent to the American Petroleum Institute specification 6A – Wellhead and Christmas tree equipment type 1,2 and 3 connections.

NOVA SWISS



CHECK VALVES

VALVES, FITTINGS AND TUBING FOR **CRITICAL SERVICE**

THE NEW APPROACH FROM NOVA SWISS

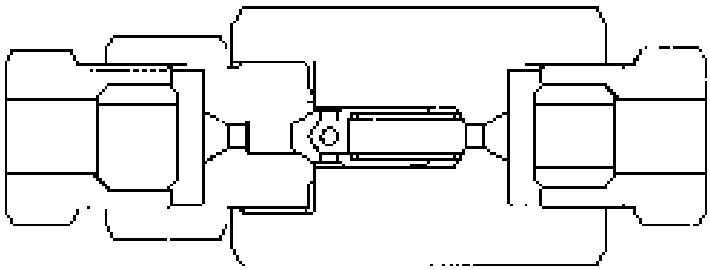
Simplicity is the key.

- The New Nova range combines 25 years experience of supplying the highest quality check valves products that have been subjected to rigorous testing with elegant simplicity in design.
- Nova Swiss have produced a range of products that better meet the needs of critical service applications, where safety, reliability and leak tight sealing are paramount.
- A totally new semi-soft seat arrangement provides the ultimate in sealing capability and allows just one design to be used reliably for both gas and liquid applications, saving your money and simplifying system specification and spares.
- Thorough testing has shown the check valves to be rugged and highly reliable giving you peace of mind for long-term maintenance free service.
- All check valves are supplied with glands and collars as requested by the product except BSPP and NPT connections.
- Check valves have wetted parts in NACE MR-01-75 approved materials for applications up to 30000 psi providing a significant cost reduction over other suppliers.
- **Everything is aimed at better serving the needs of our customers.**

COMPOSITE METAL/PEEK SEAT
Optimum, reliable, repeatable sealing of gases & liquids

CONED AND THREADED CONNECTIONS
For Reliability & Safety,
Repeatable sealing make/break

VENT HOLES ON ALL CONED AND THREADED CONNECTIONS/SEAL AREAS
To provide a safe discharge of pressure in the event of an inadvertant leak



ONE DESIGN FOR GASES & LIQUIDS
To provide interchangeability and reduced inventory
Simpler system specification

REPLACEABLE SEAT
For simple maintenance

SPRING LOADED POPPET DESIGN
Positive sealing with optimum flow *characteristics*

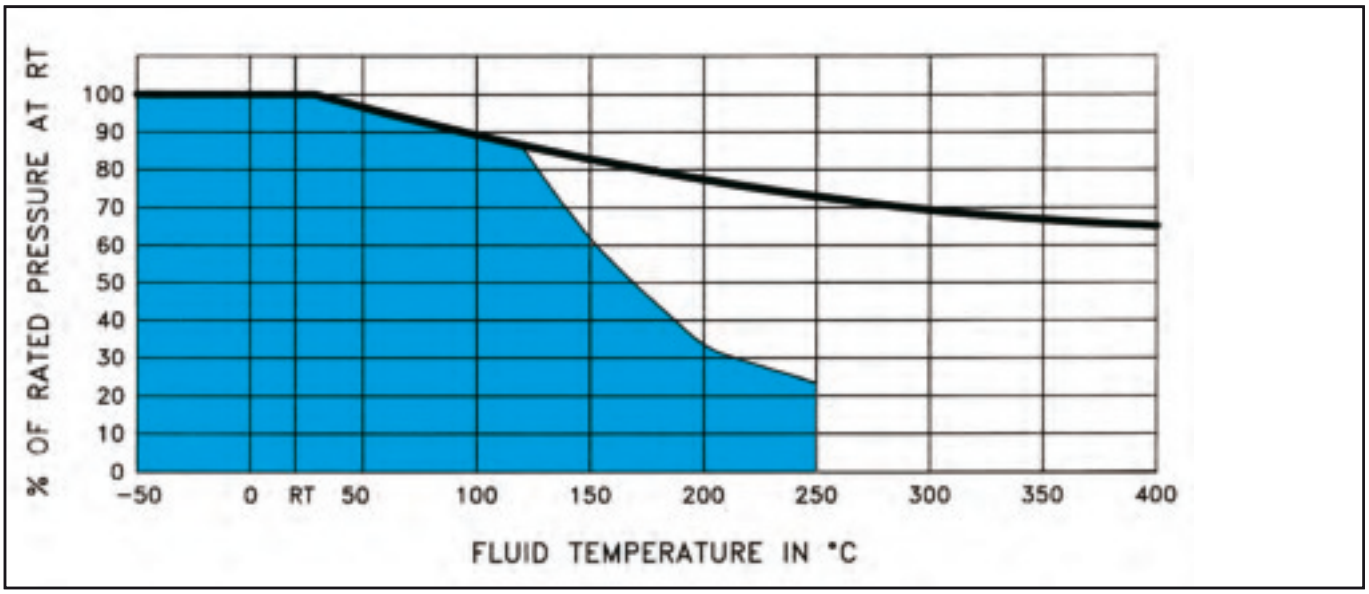
EACH BATCH TESTED PRIOR TO DESPATCH To ensure your product doesn't let you down	**ALTERNATIVE MATERIALS AVAILABLE** **CUSTOM DESIGN SERVICE TO MATCH YOUR NEEDS**	**BODY & WETTED PARTS TO NACE MR-01-75 AS STANDARD UP TO 30,000 psi** Easier to specify Less inventory Peace of mind Interchangeability	**ORIFICE SIZES-MATCH TUBING** To provide constant flow area with minimum flow restriction	**CERTIFICATION** Upon request material certificate accredited to EN 10204 3.1 for all pressure bearing components

Elevated Temperature Usage

The following graph is for use with the Nova range of 316 stainless steel check valves. The thick line depicts the reduction in yield stress of the 316 and the corresponding reduction in valve rated pressure (some valves may be operated in the area above the line – consult agent or factory for specific cases).

The allowable operating temperature range is governed by the poppet seal material and this range is shown coloured on the graph (valves can be used above this range but the poppet may not be leak tight at low pressure).

The graph should be used for reference only as other considerations such as fatigue, creep, corrosion etc can affect performance at elevated temperatures. Please consult agent or factory for unusual operating conditions.



Standard Materials of Construction

Valve body (10, 20, 30,000 psi)	AISI 316 L/DIN 1.4404 to NACE MR-01-75
Valve body (60,000 psi/4000 bar)	AISI 316 L/DIN 1.4404
Valve body (100,000 psi/7000 bar)	17-4 PH / DIN 1.4542
Valve seat (10, 20, 30,000 psi)	AISI 316 L/DIN 1.4404 to NACE MR-01-75
Valve seat (60,000 psi/4000 bar)	AISI 316 L/DIN 1.4404
Valve seat (100,000 psi/7000 bar)	17-4 PH / DIN 1.4542
Poppet	17-4 PH DH1150/DIN 1.4542
Seal	Peek 450G
Spring	AISI 316 S19/DIN 1.4401
Glands	AISI 316 L/DIN 1.4404 (to NACE MR-01-75)*
Collars	AISI 316 L/DIN 1.4404 (to NACE MR-01-75)*

*(MPCT and HPCT connection components)

10000 psi

CHECK VALVES

BSPP & NPT CONNECTIONS

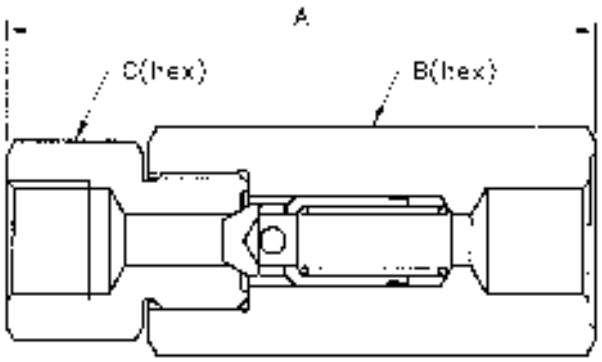
NOVA SWISS

BSPP CONNECTIONS

Catalogue Number	Port Size	Orifice Dia	A	B	C
CVP-10-4B	1/4	0.18	3.43	1.00	0.88
	6.4	4.5	87	25.4	22.2
CVP-10-6B	3/8	0.26	3.43	1.00	1.00
	9.5	6.5	87	25.4	25.4
CVP-10-8B	1/2	0.35	4.06	1.37	1.19
	12.7	9.0	103	34.9	30.2

NPT CONNECTIONS

Catalogue Number	Port Size	Orifice Dia	A	B	C
CVP-10-4N	1/4	0.18	3.43	1.00	0.88
	6.4	4.5	87	25.4	22.2
CVP-10-6N	3/8	0.26	3.43	1.00	0.88
	9.5	6.5	87	25.4	22.2
CVP-10-8N	1/2	0.35	4.06	1.37	1.00
	12.7	9.0	103	34.9	25.4



NOTES

1. Refer to Check Valve graph for elevated temperature usage. Environmental temperature range -50°C to +65°C.
2. All valves in Stainless Steel Grade 316 suitable for sour gas service.
3. Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

20000 psi

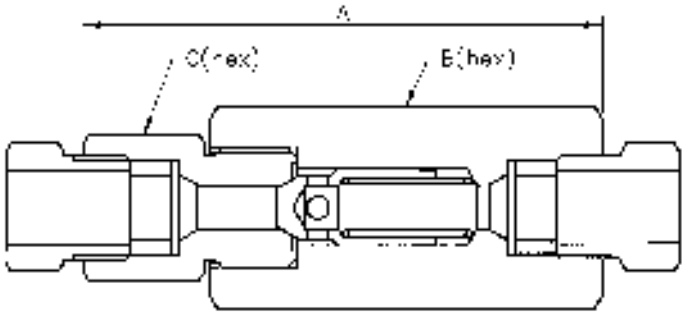
CHECK VALVES

MEDIUM PRESSURE C+T CONNECTIONS

NOVA SWISS

MP C+T CONNECTIONS

Catalogue Number	Tube O/D	Orifice Dia	A	B	C
CVP-20-4M	1/4	0.11	2.80	1.00	0.88
	6.4	2.8	71	25.4	22.2
CVP-20-6M	3/8	0.20	3.43	1.00	0.88
	9.5	5.2	87	25.4	22.2
CVP-20-9M	9/16	0.35	4.06	1.37	1.00
	14.3	9.0	103	34.9	25.4
CVP-20-12M	3/4	0.52	5.06	1.75	1.63
	19.1	13.1	128.5	44.5	41.3
CVP-20-16M	1	0.69	6.34	2.13	1.75
	25.4	17.5	161	54	44.5



NOTES

1. Refer to Check Valve graph for elevated temperature usage. Environmental temperature range -50°C to +65°C.
2. All valves in Stainless Steel Grade 316 suitable for sour gas service.
3. All coned and threaded connection valves supplied with glands and collars.
4. Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

30000 psi

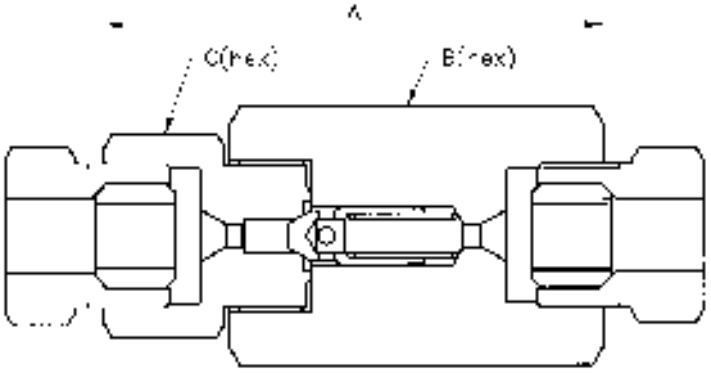
CHECK VALVES

HIGH PRESSURE C+T CONNECTIONS

NOVA SWISS

HP C+T CONNECTIONS

Catalogue Number	Tube O/D	Orifice Dia	A	B	C
CVP-30-4H	1/4	0.09	3.27	1.37	1.00
	6.4	2.4	83	34.9	25.4
CVP-30-6H	3/8	0.13	3.27	1.37	1.00
	9.5	3.2	83	34.9	25.4
CVP-30-9H	9/16	0.18	3.90	1.75	1.37
	14.3	4.5	99	44.5	34.9



NOTES

1 Refer to Check Valve graph for elevated temperature usage.
Environmental temperature range -50°C to +65°C.

2 All valves in Stainless Steel Grade 316 suitable for sour gas service.

3 All coned and threaded connection valves supplied with glands and collars.

4 Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

60000 psi

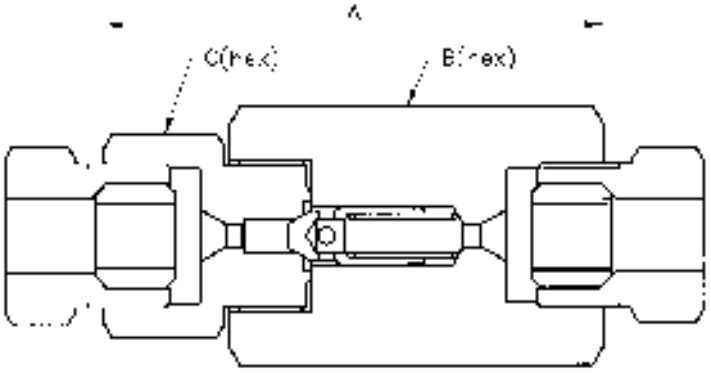
CHECK VALVES

HIGH PRESSURE C+T CONNECTIONS

NOVA SWISS

HP C+T CONNECTIONS

Catalogue Number	Tube O/D	Orifice Dia	A	B	C
CVP-60-4H	1/4	0.09	3.27	1.37	1.00
	6.4	2.4	83	34.9	25.4
CVP-60-6H	3/8	0.13	3.27	1.37	1.00
	9.5	3.2	83	34.9	25.4
CVP-60-9H	9/16	0.18	3.90	1.75	1.37
	14.3	4.5	99	44.5	34.9



NOTES

1 Refer to Check Valve graph for elevated temperature usage. Environmental temperature range -50°C to +65°C.
2 All valves in Stainless Steel Grade 316.
3 All coned and threaded connection valves supplied with glands and collars.
4 Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

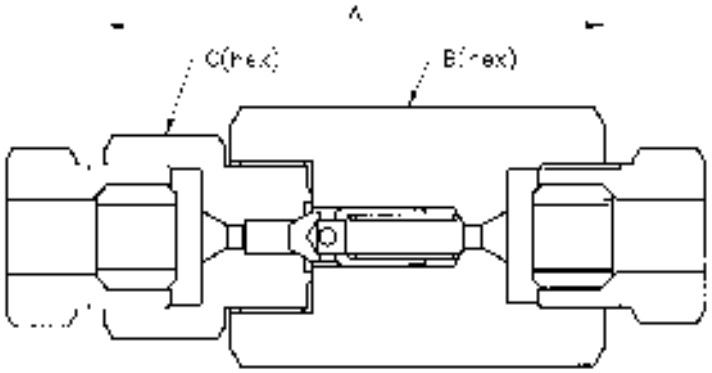
4000 bar

CHECK VALVES

HIGH PRESSURE METRIC CONNECTIONS E

E CONNECTIONS

Catalogue Number	Tube O/D	Orifice Dia	A	B	C
CVP-40-4E	1/4	0.09	3.31	1.41	1.06
	6.4	2.4	84	36	27
CVP-40-6E	3/8	0.13	3.31	1.41	1.06
	9.5	3.2	84	36	27
CVP-40-9E	9/16	0.18	3.90	1.61	1.42
	14.3	4.5	99	41	36



7000 bar

CHECK VALVES

HIGH PRESSURE METRIC CONNECTIONS E

E CONNECTIONS

Catalogue Number	Tube O/D	Orifice Dia	A	B	C
CVP-70-4E	1/4	0.06	3.27	1.06	1.06
	6.4	1.6	83	27	27

NOTES

1 Refer to Check Valve graph for elevated temperature usage.
Environmental temperature range -50°C to +65°C.
2 All check valves rated up to 4000 bar in Stainless Steel Grade AISI 316 L/DIN 1.4404.
Check Valve rated to 7000 bar in Stainless Steel Grade 17-4 PH (1.4542)
3 All coned and threaded connection valves supplied with glands and collars.
4 Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

SAFETY NOTES

As your safety is our prime concern and we want you to enjoy reliable service from our products we give the following advice on the safe use of check valves.

- High pressure fluids particularly gases are potentially hazardous and should always be treated with the greatest respect. Do not vent fluid without knowing where vent is directed
- Always be aware of whether pressure is contained by a valve
- Do not loosen connection components when system pressure is present
- Ensure that no system pressure is present and isolated prior to carrying out maintenance

CHECK VALVE SELECTION

Suitability of individual check valves for a chosen application is dependant on a number of parameters which should be given careful consideration prior to use. To assist our customers in selection we have compiled a list of selection criteria which takes account of many of the most important factors to consider. As all systems are different and user requirements vary greatly this information should not be considered comprehensive. Should you have any doubts as to the suitability of a chosen valve please contact the local agent or the factory directly. Either will be delighted to assist.

PRESSURE

System pressure should always be less than the maximum allowable working pressure for the check valve. Where fluctuating pressures are involved such as on the outlet from a reciprocating pump, care should be taken to ensure that pressure peaks do not exceed this maximum.

We recommend that where fluctuating pressure is occurring over long periods then the valve pressure rating should be considerably higher than the maximum nominal system working pressure. Please note that the operating life will be reduced.

TEMPERATURE

Valve maximum operating temperature is based on the working fluid temperature i.e. the temperature that the check valve will see internally. Should you wish to operate valves in an environment outside the specified operating temperature range please consult the local agent or factory.

Check Valve pressure rating is based on temperature not exceeding the maximum allowable working value and is reduced should this temperature be exceeded.

In all cases where the intended operating temperature will or could even temporarily exceed the maximum limit, the user should consult the local agent or factory directly.

SYSTEM FLUID

There are two principal considerations, firstly the nature of the fluid and its compatibility with the materials of construction and secondly the level of cleanliness of the fluid.

The customer should satisfy themselves that the materials of construction including soft seat material are compatible with the working fluids with respect to corrosion or other chemical reaction.

System fluid should be clean and in particular not contain any debris which is abrasive. Cleanliness levels of NAS 1638 (National Aerospace Standard 1638) level 10 or better are optimum.

CONNECTIONS

Nova Check Valves are supplied with a variety of connection options with pressure limitations for each design.

These are the limitations:-

BSPP - Parallel thread connection relies on an externally clamped seal to hold pressure. Threads are exposed to pressure and working fluids so careful consideration of corrosion on stressed threads should be made. Pressures up to 10000PSI are considered appropriate because there is little if any deformation of threads, BSPP connections are preferable to NPT in cases where no sealing compound can be used with NPT.

NPT - The most common screwed connection type used extensively up to 10000PSI.
We strongly recommend that this connection is **not used above 10000PSI** as per the guidelines in API 6A (American Petroleum Institute standard 6A). This connection is heavily dependent on the technician for successful make-up and care should be taken that all users are trained in the correct installation of these connections.

MPCT - This coned and threaded connection commonly referred to as The Medium Pressure Connection is rated up to 20000PSI in standard catalogue items. It is compact with the gland nut and collar being in line and is highly tolerant to repeated make and break.

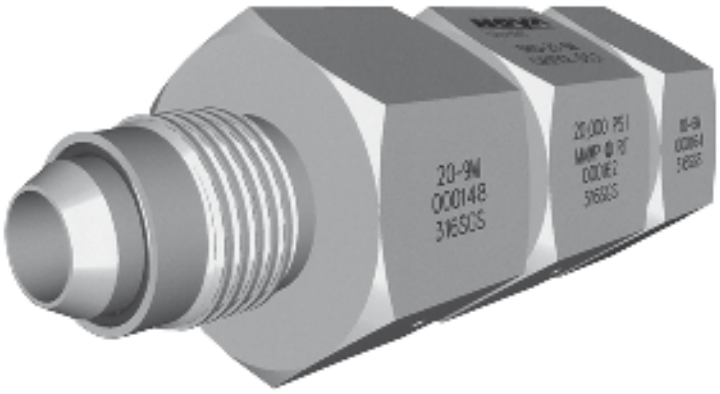
HPCT- and E - These high pressure coned and threaded connections are less compact than the medium pressure variation as a result of the collar being inside the gland. The benefit is that the gland supports the collar at the maximum stress point and provides greater resistance to fatigue.
E high pressure connections are identical to HPCT connections in concept. The differences are the threads on glands and ports.
HPCT: imperial UNF threads
E: metric threads according to ISO
For details please refer to technical section

Note that for coned and threaded connections that experience vibration in the pipework, the use of anti-vibration collars and glands is strongly recommended.

We do not recommend screwed connections (NPT, BSPP) in situations where there could be vibration of the pipework.

Note that the Nova 9/16" high pressure coned and threaded connection is equivalent to the American Petroleum Institute specification 6A - Wellhead and Christmas tree equipment type 1,2 and 3 connections.

NOVA SWISS



SAFETY HEADS

& BURSTING DISCS

VALVES, FITTINGS AND TUBING FOR **CRITICAL SERVICE**

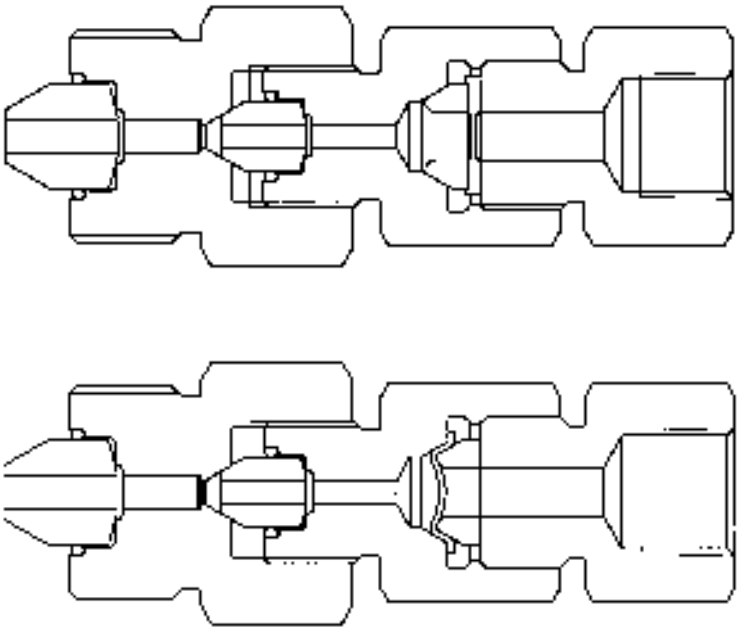
THE NEW APPROACH FROM NOVA SWISS

Simplicity is the key.

- The New Nova range combines 25 years experience of supplying the highest quality safety head and burst disc products that have been subjected to rigorous testing with elegant simplicity in design.
- Nova Swiss have produced a range of products that better meet the needs of critical service applications where safety, reliability and leak tight sealing are paramount.
- Our safety head assemblies come complete with the adaptor components required to fit the selected connection.
- Considerable effort has also been put into the thorough testing of all products specifically cyclic service and fatigue pressure testing which we believe is unique to Nova Swiss.
- Safety heads are supplied in NACE MR-01-75 approved materials suitable for sour gas applications up to 30000 psi providing a significant cost reduction over other suppliers.
- **Everything is aimed at better serving the needs of our customers.**

SINGLE DESIGN FOR ALL APPLICATIONS
To make specification easier

ANGLED & FLAT DISCS
For optimum reliability and long-life



VENT HOLES ON ALL CONED AND THREADED CONNECTIONS/SEAL AREAS
To provide a safe discharge of pressure in the event of an inadvertant leak

LARGE DIAMETER VENT OUTLET
To minimise back pressure should disc operate relieving pressure in system quickly and safely

EACH BATCH TESTED PRIOR TO DESPATCH To ensure your product doesn't let you down	**ALTERNATIVE MATERIALS AVAILABLE** **CUSTOM DESIGN SERVICE TO MATCH YOUR NEEDS**	**BODY & WETTED PARTS TO NACE MR-01-75 AS STANDARD UP TO 30,000 psi** Easier to specify Less inventory Peace of mind Interchangeability	**ORIFICE SIZES-MATCH TUBING** To provide constant flow area with minimum flow restriction	**CERTIFICATION** Upon request material certificate accredited to EN 10204 3.1 for all pressure bearing components

20000 psi

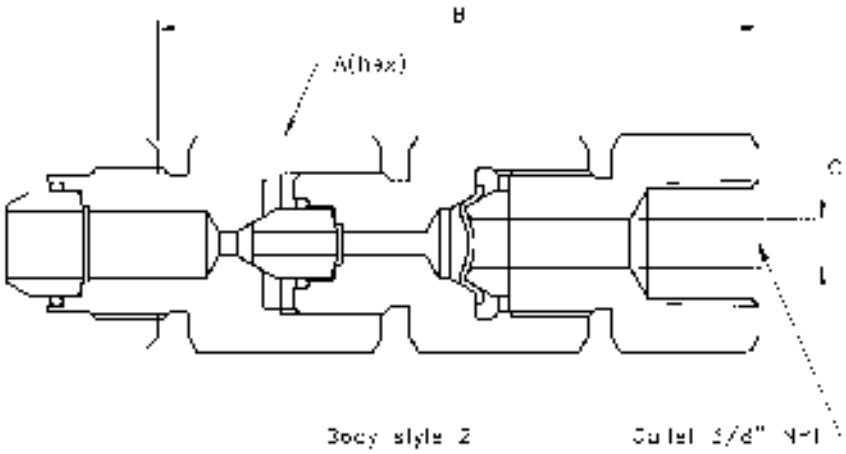
SAFETY HEADS

MEDIUM PRESSURE C + T CONNECTIONS

NOVA SWISS

MP C+T CONNECTIONS

Catalogue Number	Tube O/D	Orifice Dia	A	B	C	Body Style
SHD-20-4M	1/4	0.11	1.00	3.31	0.25	2
	6.4	2.8	25.4	84	6.4	
SHD-20-6M	3/8	0.13	1.00	3.27	0.25	2
	9.5	3.2	25.4	83	6.4	
SHD-20-9M	9/16	0.13	1.00	3.15	0.25	2
	14.3	3.2	25.4	80	6.4	



NOTES

1 All safety heads are rated to 430°C max operating temperature for process fluid Refer to graph in technical section for elevated temperature usage. Environmental temperature range -50°C to +65°C.
2 All safety heads in Stainless Steel Grade 316 suitable for sour gas service.
3 Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

30000 psi

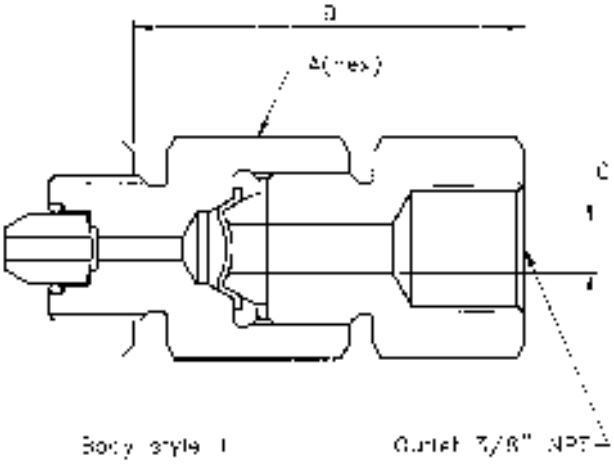
SAFETY HEADS

HIGH PRESSURE C+T CONNECTIONS

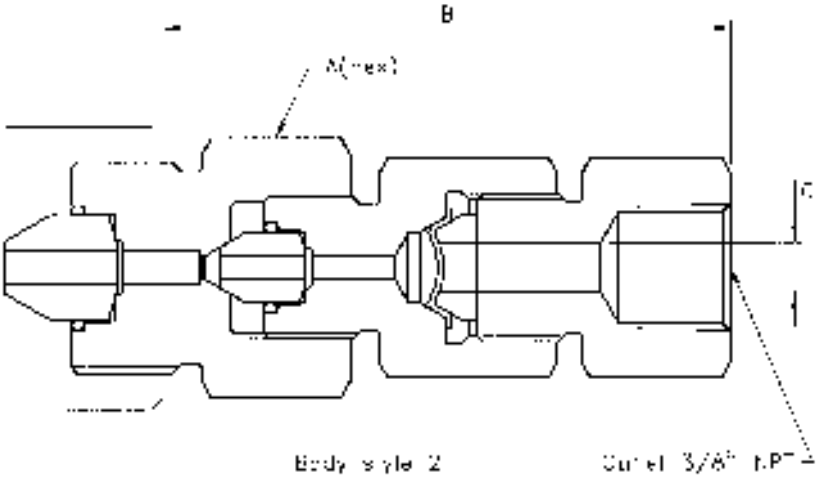
NOVA SWISS

HP C+T CONNECTIONS

Catalogue Number	Tube O/D	Orifice Dia	A	B	C	Body Style
SHD-30-4H	1/4	0.09	1.00	3.27	0.25	2
	6.4	2.4	25.4	83	6.4	
SHD-30-6H	3/8	0.13	1.00	2.01	0.25	1
	9.5	3.2	25.4	51	6.4	
SHD-30-9H	9/16	0.13	1.19	2.95	0.25	2
	14.3	3.2	30.2	75	6.4	



Body style 1 Outlet 3/8" NPT



Body style 2 Outlet 3/8" NPT

NOTES

1 All safety heads are rated to 430°C max operating temperature for process fluid. Refer to graph in technical section for elevated temperature usage. Environmental temperature range -50°C to +65°C.

2 All safety heads in Stainless Steel Grade 316 suitable for sour gas service.

3 Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

60000 psi

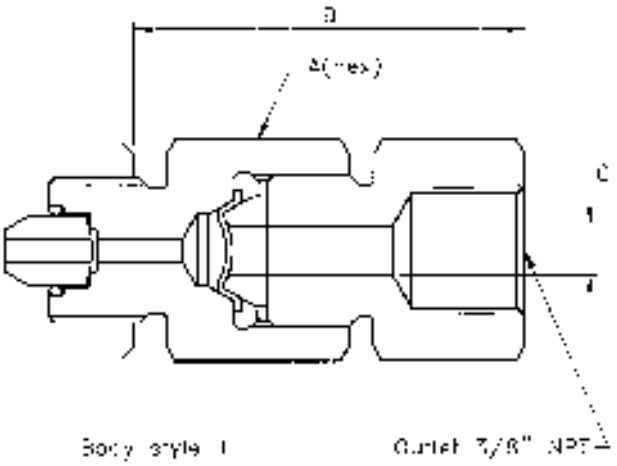
SAFETY HEADS

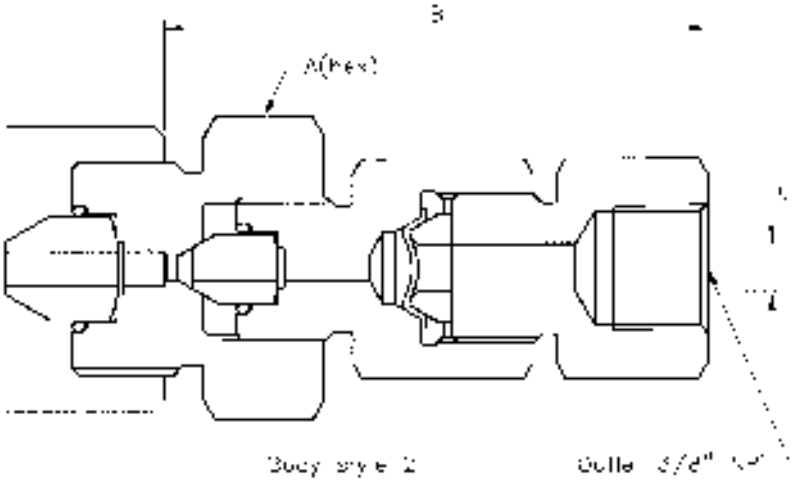
HIGH PRESSURE C+T CONNECTIONS

NOVA SWISS

HP C+T CONNECTIONS

Catalogue Number	Tube O/D	Orifice Dia	A	B	C	Body Style
SHD-60-4H	1/4	0.09	1.00	2.95	0.25	2
	6.4	2.4	25.4	75	6.4	
SHD-60-6H	3/8	0.13	1.00	2.01	0.25	1
	9.5	3.2	25.4	51	6.4	
SHD-60-9H	9/16	0.13	1.37	2.80	0.25	2
	14.3	3.2	34.9	71	6.4	





NOTES

1 All safety heads are rated to 430°C max operating temperature for process fluid. Refer to graph in technical section for elevated temperature usage. Environmental temperature range -50°C to +65°C.

2 All safety heads in Stainless Steel Grade 316.

3 Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

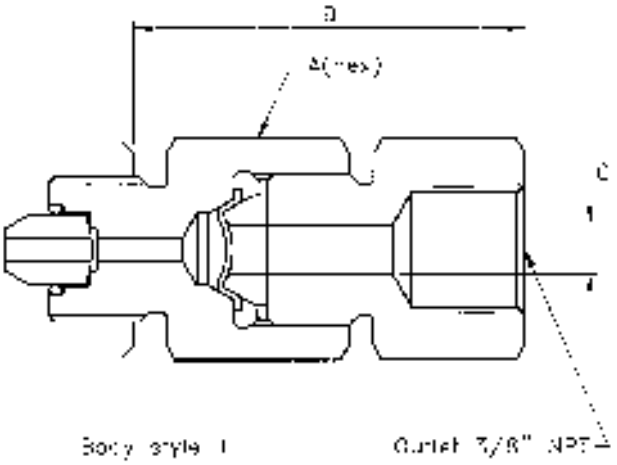
4000 bar

SAFETY HEADS

HIGH PRESSURE METRIC CONNECTIONS E

E CONNECTIONS

Catalogue Number	Tube O/D	Orifice Dia	A	B	C	Body Style
SHD-40-4E	1/4	0.09	1.06	3.07	0.25	2
	6.4	2.4	27	78	6.4	
SHD-40-6E	3/8	0.13	1.06	2.09	0.25	1
	9.5	3.2	27	53	6.4	
SHD-40-9E	9/16	0.13	1.42	2.83	0.25	2
	14.3	3.2	36	72	6.4	

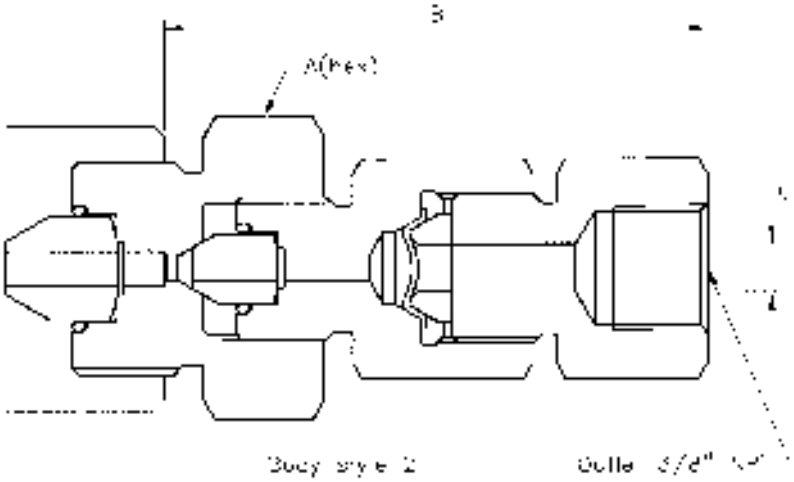


Body style 1

7000 bar

SAFETY HEADS

HIGH PRESSURE METRIC CONNECTIONS E



Body style 2

E CONNECTIONS

Catalogue Number	Tube O/D	Orifice Dia	A	B	C	Body Style
SHD-70-4E	1/4	0.06	1.06	2.22	0.26	1
	6.4	1.6	27	56.3	6.5	

NOTES

1 All safety heads are rated to 430°C max operating temperature for process fluid. Refer to graph in technical section for elevated temperature usage. Environmental temperature range -50°C to +65°C.

2 All safety heads rated to 4000 bar in Stainless Steel Grade AISI 316 L/DIN 1.4404. Safety head rated to 7000 bar in Stainless Steel Grade 17-4 PH (DIN 1.4542)

3 Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

BURSTING DISCS FOR SAFETY HEAD HOLDERS

Bursting discs are available in the following pressure ratings.

Should you require a disc not shown in the table please contact your local distributor or our factory direct.

Note that bursting discs are affected by many system parameters particularly corrosion, pressure fluctuation and temperature. Disc ratings are quoted at 20°C. Discs may fail prematurely due to the effects of these factors. Disc burst pressure rating is accurate to ±10%.

Discs must be ordered seperately – Safety Head Holders do not include discs.

To prevent premature burst it is recommended that the nominal burst pressure be selected at 20% above normal working pressure, but not greater than system maximum allowable working pressure.

Catalogue Number	Nominal Burst Pressure bar	Nominal Burst Pressure psi
521.9590-2	50	725
521.9590-36	80	1160
521.9590-3	100	1450
521.9590-4	150	2175
521.9590-5	200	2900
521.9590-6	250	3625
521.9590-7	300	4350
521.9590-8	350	5075
521.9590-9	400	5800
521.9590-48	450	6525
521.9590-10	500	7250
521.9590-12	700	10160
521.9590-13	800	11600
521.9590-14	1000	14500
521.9590-15	1050	15225
521.9590-16	1250	18125
521.9590-17	1500	21750
521.9590-46	1600	23200
521.9590-18	1750	25375
521.9590-19	2000	29000
521.9590-20	2250	32625
521.9590-21	2500	36250
521.9590-23	3000	43500
521.9590-25	3250	47125
521.9590-26	3500	50750
521.9590-28	4000	58000
521.9590-29	4250	61625
521.9590-30	4500	65250
521.9590-47	6000	87000
521.9590-38	7000	101500

SAFETY NOTES

As your safety is our prime concern and we want you to enjoy reliable service from our products we give the following advice on the safe use of safety heads.

- High pressure fluids particularly gases are potentially hazardous and should always be treated with the greatest respect. Do not vent fluid without knowing where vent is directed.
- Always be aware of whether pressure is contained by a component.
- Do not loosen connection components when system pressure is present.
- Ensure valves are open and that no system pressure is present and supply isolated prior to carrying out maintenance.

SAFETY HEAD SELECTION

Suitability of individuals safety heads for a chosen application is dependant on a number of parameters which should be given careful consideration prior to use. To assist our customers in selection we have compiled a list of selection criteria which takes account of many of the most important factors to consider. As all systems are different and user requirements vary greatly this information should not be considered comprehensive. Should you have any doubts as to the suitability of a chosen safety head please contact the local agent or the factory directly. Either will be delighted to assist.

PRESSURE

System pressure should always be less than the maximum allowable working pressure for the safety head. Where fluctuating pressures are involved such as on the outlet from a reciprocating pump, care should be taken to ensure that pressure peaks do not exceed this maximum.

We recommend that where fluctuating pressure is occurring over long periods then the safety head pressure rating should be considerably higher than the maximum nominal system working pressure. Please note that the operating life will be reduced.

TEMPERATURE

Safety heads maximum operating pressure is based on the strength of the material at a given temperature whether this is internal or external. This is graphed in the technical section.

As Nova safety heads are all metal sealing they are designated fire safe.

In all cases where the intended operating temperature will or could even temporarily exceed the maximum limit, the user should consult the local agent or factory directly.

SYSTEM FLUID

There are two principal considerations, firstly the nature of the fluid and its compatibility with the materials of construction and secondly the level of cleanliness of the fluid.

The customer should satisfy themselves that the materials of construction are compatible with the working fluids with respect to corrosion or other chemical reaction.

System fluid should be clean and in particular not contain any debris which is abrasive. Cleanliness levels of NAS 1638 (National Aerospace Standard 1638) level 10 or better are optimum.

CONNECTIONS

Nova safety heads are supplied with either medium or high pressure coned and threaded connection options with pressure limitations for each design.

These are the limitations:-

MPCT - This coned and threaded connection commonly referred to as The Medium Pressure Connection is rated up to 20000PSI in standard catalogue items. It is compact with gland nut and collar being in line and is highly tolerant to repeated make and break.

HPCT and E - These high pressure coned and threaded connections are less compact than the medium pressure variation as a result of the collar being inside the gland. The benefit is that the gland supports the collar at the maximum stress point and provides greater resistance to fatigue.

E high pressure connections are identical to HPCT connections in concept. The differences are the threads on glands and ports.

HPCT: imperial UNF threads

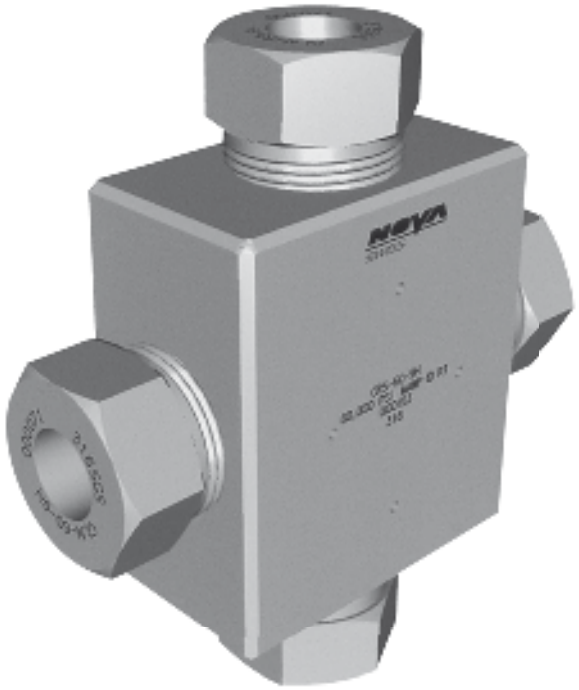
E: metric threads according to ISO

For details please refer to technical section

Note that for coned and threaded connections that experience vibration in the pipework, the use of anti-vibration collars and glands is strongly recommended.

Note that the nova 9/16" high pressure coned and threaded connection is equivalent to the American Petroleum Institute specification BA - Wellhead and Christmas tree equipment type 1,2 and 3 connections.

NOVA SWISS



FITTINGS & CONNECTION COMPONENTS

- ELBOWS
- TEES
- CROSSES
- FILTERS
- BULKHEADS
- GLANDS
- COLLARS
- PLUGS
- ANTI VIBRATION ASSEMBLIES

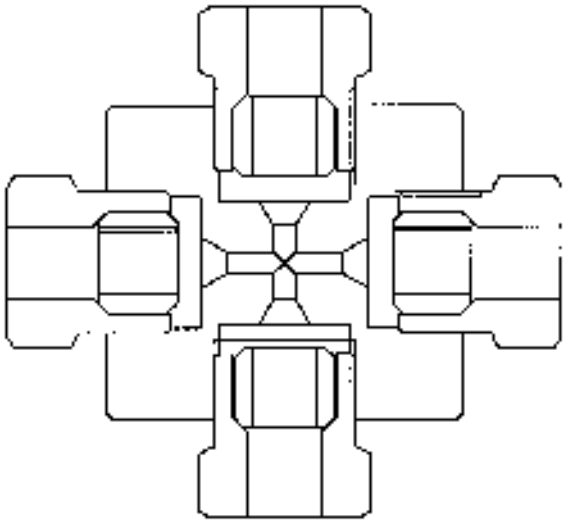
VALVES, FITTINGS AND TUBING FOR **CRITICAL SERVICE**

THE NEW APPROACH FROM NOVA SWISS

Simplicity is the key.

- The New Nova range combines 25 years experience of supplying the highest quality fittings that have been subjected to rigorous testing combined with elegant simplicity in design.
- Nova Swiss have produced a range of products that better meet the needs of critical service applications, where safety reliability and leak tight sealing are paramount.
- All fittings are supplied with glands and collars.
- Considerable effort has also been put into the thorough testing of all products specifically cyclic service and fatigue pressure testing which we belive is unique to Nova Swiss.
- Fittings and connection components are supplied in materials suitable for sour gas applications according to NACE MR-01-75 up to 30000 psi providing a significant cost reduction over other suppliers.
- **Everything is aimed at better serving the needs of our customers.**

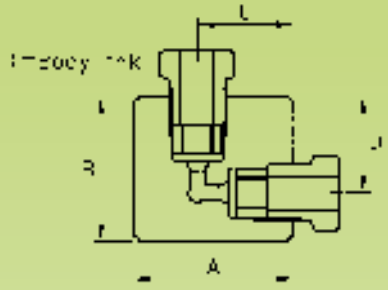
VENT HOLES ON ALL CONED AND THREADED CONNECTIONS
To provide a safe discharge of pressure in the event of an inadvertant leak

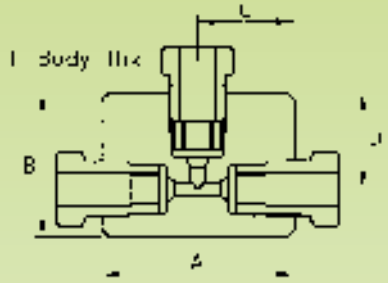


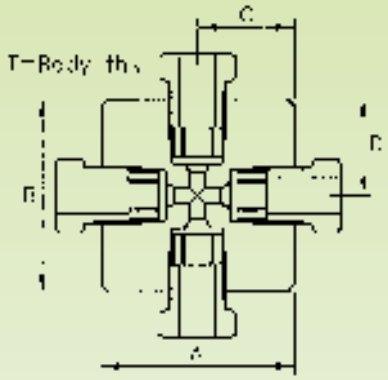
CONED AND THREADED CONNECTIONS
For Reliability & Safety,
Repeatable sealing make/break

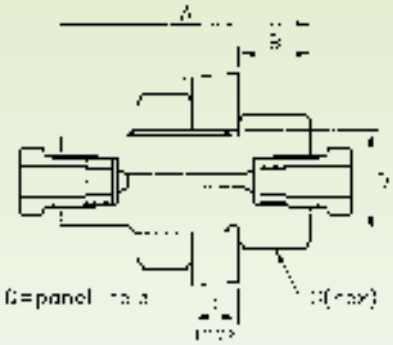
EACH BATCH TESTED PRIOR TO DESPATCH To ensure your product doesn't let you down	**ALTERNATIVE MATERIALS AVAILABLE** **CUSTOM DESIGN SERVICE TO MATCH YOUR NEEDS**	**BODY & WETTED PARTS TO NACE MR-01-75 AS STANDARD UP TO 30,000 psi** Easier to specify Less inventory Peace of mind Interchangeability	**ORIFICE SIZES- MATCH TUBING** To provide constant flow area with minimum flow restriction	**CERTIFICATION** Upon request material certificate accredited to EN 10204 3.1 for all pressure bearing components

20000 psi
FITTINGS
MEDIUM PRESSURE
C + T CONNECTIONS









ELBOWS

Catalogue Number	Tube O/D	Orifice Dia	A	B	C	D	T
ELB-20-4M	1/4	0.11	1.25	1.12	0.75	0.75	0.75
	6.4	2.8	31.8	28.5	19	19	19.1
ELB-20-6M	3/8	0.20	1.50	1.50	1.00	1.00	0.75
	9.5	5.2	38.1	38	25.4	25.4	19.1
ELB-20-9M	9/16	0.35	2.00	1.75	1.25	1.25	1.13
	14.3	9.0	50.8	44.5	31.8	31.8	28.6
ELB-20-12M	3/4	0.52	3.00	2.24	1.50	1.50	1.37
	19.1	13.1	76.2	57	38.2	38	34.9
ELB-20-16M	1	0.69	4.13	2.99	2.06	2.06	1.63
	25.4	17.5	104.8	76	52.3	52.3	41.3

TEES

Catalogue Number	Tube O/D	Orifice Dia	A	B	C	D	T
TEE-20-4M	1/4	0.11	1.50	1.12	0.75	0.75	0.75
	6.4	2.8	38.1	28.5	19	19	19.1
TEE-20-6M	3/8	0.20	2.00	1.38	1.00	1.00	0.75
	9.5	5.2	50.8	35	25.4	25.4	19.1
TEE-20-9M	9/16	0.35	2.50	1.75	1.25	1.25	1.13
	14.3	9.0	63.5	44.5	31.8	31.8	28.6
TEE-20-12M	3/4	0.52	3.00	2.24	1.50	1.50	1.37
	19.1	13.1	76.2	57	38.1	38	34.9
TEE-20-16M	1	0.69	4.13	2.99	2.06	2.06	1.63
	25.4	17.5	104.8	76	52.4	52.3	41.3

CROSSES

Catalogue Number	Tube O/D	Orifice Dia	A	B	C	D	T
CRS-20-4M	1/4	0.11	1.50	1.50	0.75	0.75	0.75
	6.4	2.8	38.1	38	19	19	19.1
CRS-20-6M	3/8	0.20	2.00	2.01	1.00	1.00	0.75
	9.5	5.2	50.8	51	25.4	25.4	19.1
CRS-20-9M	9/16	0.35	2.50	2.50	1.25	1.25	1.13
	14.3	9.0	63.5	63.5	31.8	31.8	28.6
CRS-20-12M	3/4	0.52	3.00	2.99	1.50	1.50	1.37
	19.1	13.1	76.2	76	38.1	38	34.9
CRS-20-16M	1	0.69	4.13	4.13	2.07	2.06	1.63
	25.4	17.5	105	104.8	52.5	52.4	41.3

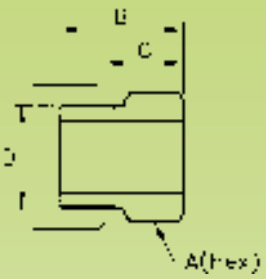
BULKHEADS

Catalogue Number	Tube O/D	Orifice Dia	A	B	C	D	T
BLK-20-4M	1/4	0.11	2.17	0.63	1.00	0.94	0.39
	6.4	2.8	55	16	25.4	24	10
BLK-20-6M	3/8	0.20	2.17	0.63	1.00	0.94	0.39
	9.5	5.2	55	16	25.4	24	10
BLK-20-9M	9/16	0.35	2.52	0.75	1.37	1.18	0.39
	14.3	9.0	64	19	34.9	30	10
BLK-20-12M	3/4	0.52	2.91	0.87	1.75	1.65	0.39
	19.1	13.1	74	22	44.5	42	10
BLK-20-16M	1	0.69	3.62	1.06	2.13	2.05	0.39
	25.4	17.5	92	27	54	52	10

NOTES

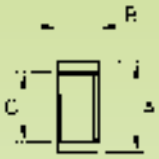
1 All fittings are rated to 430°C max operating temperature for process fluid. Refer to graph in technical section for elevated temperature usage. Environmental temperature range -50°C to +65°C.
2 All fittings in Stainless Steel Grade 316 suitable for sour gas service.
3 All coned and threaded connection fittings supplied with glands and collars.
4 Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

20000 psi
CONNECTION COMPONENTS
MEDIUM PRESSURE



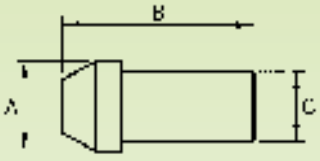
GLANDS

Catalogue Number	Tube O/D	A	B	C	Thread D
GLN-20-4M	1/4	0.50	0.57	0.35	7/16-20 UNF
	6.4	12.7	14.5	9	
GLN-20-6M	3/8	0.63	0.75	0.45	9/16-18 UNF
	9.5	15.9	19	11.5	
GLN-20-9M	9/16	0.88	0.96	0.59	13/16-16 UN
	14.3	22.2	24.5	15	
GLN-20-12M	3/4	1.19	1.10	0.69	3/4-14 NPSM
	19.1	30.2	28	17.5	
GLN-20-16M	1	1.37	1.50	0.79	1-3/8-12 UNF
	25.4	34.9	38	20	



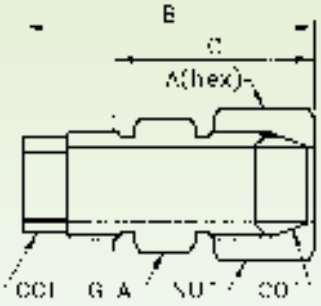
COLLARS

Catalogue Number	Tube O/D	A	B	Thread (LH) C
COL-20-4	1/4	0.37	0.22	1/4-28 UNF
	6.4	9.5	5.6	
COL-20-6	3/8	0.49	0.25	3/8-24 UNF
	9.5	12.4	6.3	
COL-20-9	9/16	0.72	0.31	9/16-18 UNF
	14.3	18.2	8	
COL-20-12	3/4	0.94	0.38	3/4-16 UNF
	19.1	23.8	9.6	
COL-20-16	1	1.25	0.51	1-14 UNS
	25.4	31.8	12.9	



PLUGS

Catalogue Number	Tube O/D	A	B	C
PLG-20-4	1/4	0.37	0.98	0.25
	6.4	9.5	25	6.3
PLG-20-6	3/8	0.49	1.22	0.37
	9.5	12.4	31	9.5
PLG-20-9	9/16	0.72	1.52	0.56
	14.3	18.2	38.5	14.1
PLG-20-12	3/4	0.94	1.77	0.74
	19.1	23.8	45	18.9
PLG-20-16	1	1.25	2.34	0.99
	25.4	31.8	59.5	25.2



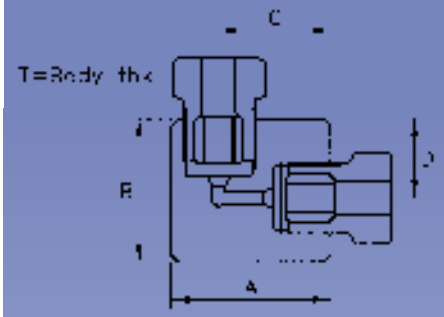
ANTI VIBRATION ASSEMBLIES

Catalogue Number	GLA Part No.	COT Part No.	NUT Part No.	Tube O/D	A	B	C
AVA-20-4M	GLA-20-4M	COT-20-4	NUT-20-4	1/4	0.63	1.44	1.00
				6.4	15.9	36.6	25.4
AVA-20-6M	GLA-20-6M	COT-20-6	NUT-20-6	3/8	0.81	1.76	1.22
				9.5	20.6	44.8	31
AVA-20-9M	GLA-20-9M	COT-20-9	NUT-20-9	9/16	1.00	2.16	1.48
				14.3	25.4	55	37.5
AVA-20-12M	GLA-20-12M	COT-20-12	NUT-20-12	3/4	1.37	2.50	1.71
				19.1	34.9	63.6	43.5
AVA-20-16M	GLA-20-16M	COT-20-16	NUT-20-16	1	1.63	3.44	2.22
				25.4	41.3	87.5	56.5

NOTES

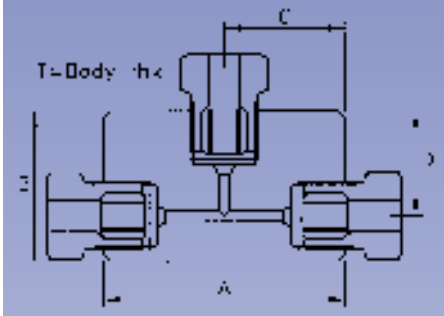
1 All connection components are rated to 430°C max operating temperature for process fluid. Refer to graph in technical section for elevated temperature usage. Environmental temperature range -50°C to +65°C.
2 All connection components in Stainless Steel Grade 316 suitable for sour gas service.
3 Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

30000 psi
FITTINGS
HIGH PRESSURE
C + T CONNECTIONS



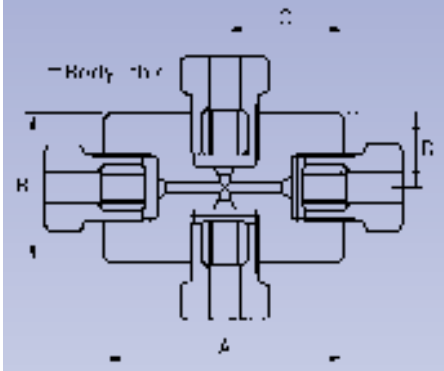
ELBOWS

Catalogue Number	Tube O/D	Orifice Dia	A	B	C	D	T
ELB-30-4H	1/4	0.09	1.25	1.12	0.88	0.62	0.75
	6.4	2.4	31.8	28.5	22.2	15.8	19.1
ELB-30-6H	3/8	0.13	2.00	1.56	1.25	1.00	1.13
	9.5	3.2	50.8	39.5	31.8	25.4	28.6
ELB-30-9H	9/16	0.18	2.50	2.13	1.81	1.12	1.50
	14.3	4.5	63.5	54	46	28.5	38.1



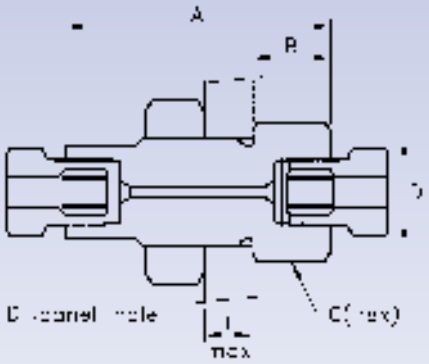
TEES

Catalogue Number	Tube O/D	Orifice Dia	A	B	C	D	T
TEE-30-4H	1/4	0.09	2.01	1.25	1.00	0.88	0.75
	6.4	2.4	51	31.8	25.4	22.2	19.1
TEE-30-6H	3/8	0.13	2.00	1.56	1.00	1.06	1.13
	9.5	3.2	50.8	39.5	25.4	27	28.6
TEE-30-9H	9/16	0.18	2.50	2.13	1.25	1.38	1.50
	14.3	4.5	63.5	54	31.8	35	38.1



CROSSES

Catalogue Number	Tube O/D	Orifice Dia	A	B	C	D	T
CRS-30-4H	1/4	0.09	2.01	1.25	1.00	0.62	0.75
	6.4	2.4	51	31.8	25.4	15.9	19.1
CRS-30-6H	3/8	0.13	2.00	2.13	1.00	1.06	1.13
	9.5	3.2	50.8	54	25.4	27	28.6
CRS-30-9H	9/16	0.18	2.83	2.50	1.42	1.25	1.50
	14.3	4.5	72	63.5	36	31.8	38.1



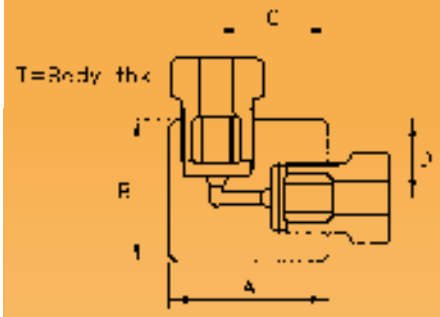
BULKHEADS

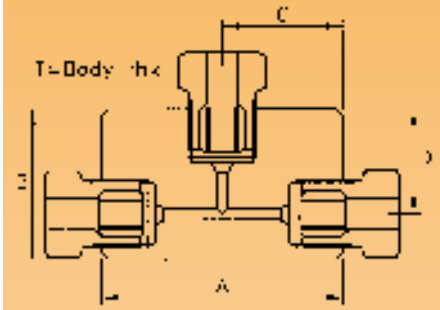
Catalogue Number	Tube O/D	Orifice Dia	A	B	C	D	T
BLK-30-4H	1/4	0.09	2.17	0.63	1.00	0.94	0.39
	6.4	2.4	55	16	25.4	24	10
BLK-30-6H	3/8	0.13	2.52	0.75	1.37	1.18	0.39
	9.5	3.2	64	19	34.9	30	10
BLK-30-9H	9/16	0.18	2.91	0.87	1.75	1.65	0.39
	14.3	4.5	74	22	44.5	42	10

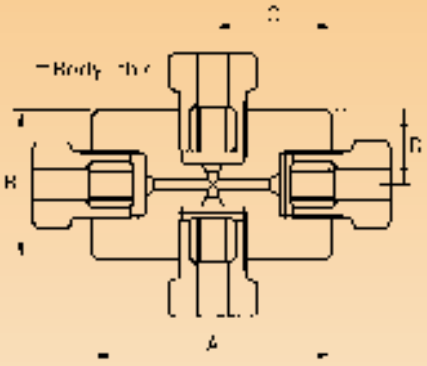
NOTES

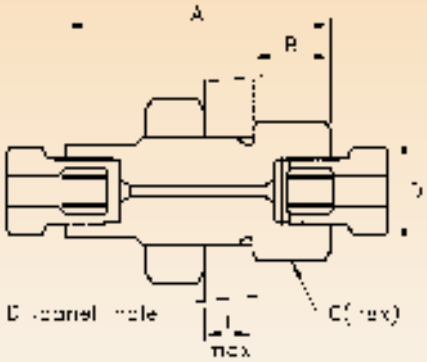
1. All fittings are rated to 430°C max operating temperature for process fluid. Refer to graph in technical section for elevated temperature usage. Environmental temperature range -50°C to +65°C.
2. All fittings in Stainless Steel Grade 316 suitable for sour gas service.
3. All coned and threaded connection fittings supplied with glands and collars.
4. Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

60000 psi
FITTINGS
HIGH PRESSURE
C + T CONNECTIONS









ELBOWS

Catalogue Number	Tube O/D	Orifice Dia	A	B	C	D	T
ELB-60-4H	1/4	0.09	1.25	1.12	0.88	0.62	0.75
	6.4	2.4	31.8	28.5	22.2	15.8	19.1
ELB-60-6H	3/8	0.13	2.00	1.56	1.25	1.00	1.13
	9.5	3.2	50.8	39.5	31.8	25.4	28.6
ELB-60-9H	9/16	0.18	2.50	2.13	1.81	1.12	1.50
	14.3	4.5	63.5	54	46	28.5	38.1

TEES

Catalogue Number	Tube O/D	Orifice Dia	A	B	C	D	T
TEE-60-4H	1/4	0.09	2.01	1.25	1.00	0.88	0.75
	6.4	2.4	51	31.8	25.4	22.2	19.1
TEE-60-6H	3/8	0.13	2.00	1.56	1.00	1.06	1.13
	9.5	3.2	50.8	39.5	25.4	27	28.6
TEE-60-9H	9/16	0.18	2.50	2.13	1.25	1.38	1.50
	14.3	4.5	63.5	54	31.8	35	38.1

CROSSES

Catalogue Number	Tube O/D	Orifice Dia	A	B	C	D	T
CRS-60-4H	1/4	0.09	2.01	1.25	1.00	0.62	0.75
	6.4	2.4	51	31.8	25.4	15.9	19.1
CRS-60-6H	3/8	0.13	2.00	2.13	1.00	1.06	1.13
	9.5	3.2	50.8	54	25.4	27	28.6
CRS-60-9H	9/16	0.18	2.83	2.50	1.42	1.25	1.50
	14.3	4.5	72	63.5	36	31.8	38.1

BULKHEADS

Catalogue Number	Tube O/D	Orifice Dia	A	B	C	D	T
BLK-60-4H	1/4	0.09	2.17	0.63	1.00	0.94	0.39
	6.4	2.4	55	16	25.4	24	10
BLK-60-6H	3/8	0.13	2.52	0.75	1.37	1.18	0.39
	9.5	3.2	64	19	34.9	30	10
BLK-60-9H	9/16	0.18	2.91	0.87	1.75	1.65	0.39
	14.3	4.5	74	22	44.5	42	10

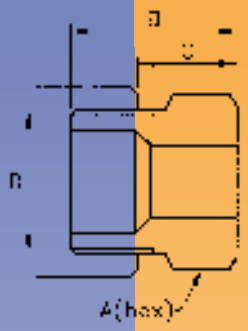
NOTES

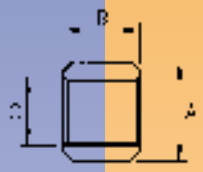
1 All fittings are rated to 430°C max operating temperature for process fluid. Refer to graph in technical section for elevated temperature usage. Environmental temperature range -50°C to +65°C.
2 All fittings in Stainless Steel Grade 316.
3 All coned and threaded connection fittings supplied with glands and collars.
4 Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

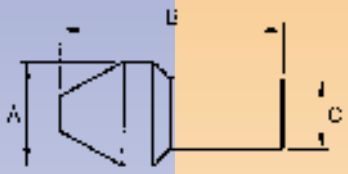
30000 psi
60000 psi

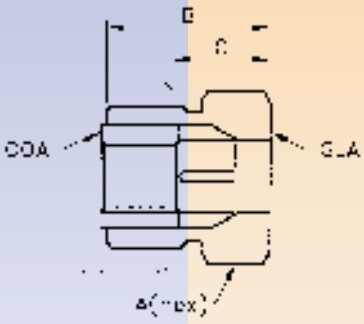
CONNECTION COMPONENTS

HIGH PRESSURE









GLANDS

Catalogue Number	Tube O/D	A	B	C	Thread D
GLN-60-4H	1/4	0.63	0.81	0.47	9/16-18 UNF
	6.4	15.9	20.5	12	
GLN-60-6H	3/8	0.81	1.06	0.59	3/4-16 UNF
	9.5	20.6	27	15	
GLN-60-9H	9/16	1.19	1.30	0.77	1-1/8-12 UN
	14.3	30.2	33	19.5	

COLLARS

Catalogue Number	Tube O/D	A	B	Thread (LH) C
COL-60-4	1/4	0.37	0.37	1/4-28 UNF
	6.4	9.5	9.4	
COL-60-6	3/8	0.50	0.53	3/8-24 UNF
	9.5	12.7	13.4	
COL-60-9	9/16	0.81	0.62	9/16-18 UNF
	14.3	20.6	15.8	

PLUGS

Catalogue Number	Tube O/D	A	B	C
PLG-60-4	1/4	0.37	1.04	0.25
	6.4	9.5	26.5	6.3
PLG-60-6	3/8	0.50	1.38	0.37
	9.5	12.7	35	9.5
PLG-60-9	9/16	0.81	1.73	0.56
	14.3	20.6	44	14.1

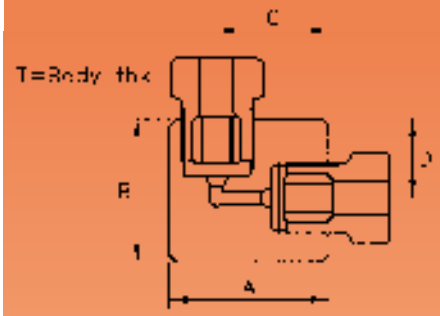
ANTI VIBRATION ASSEMBLIES

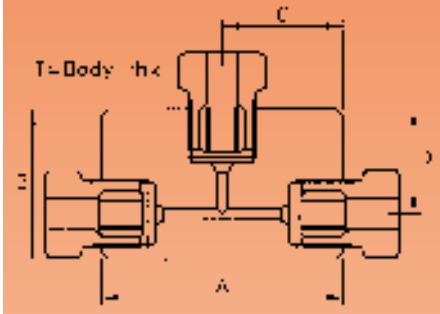
Catalogue Number	GLA Part No.	COA Part No.	Tube O/D	A	B	C
AVA-60-4H	GLA-60-4H	COA-60-4	1/4	0.63	0.81	0.47
			6.4	15.9	20.5	12
AVA-60-6H	GLA-60-6H	COA-60-6	3/8	0.81	1.06	0.59
			9.5	20.6	27	15
AVA-60-9H	GLA-60-9H	COA-60-9	9/16	1.19	1.30	0.77
			14.3	30.2	33	19.5

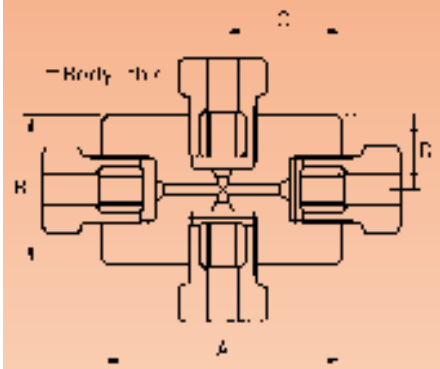
NOTES

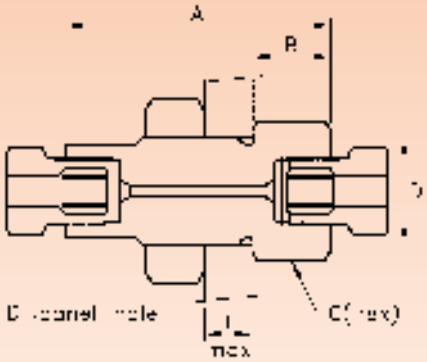
1 All connection components are rated to 430°C max operating temperature for process fluid. Refer to graph in technical section for elevated temperature usage. Environmental temperature range -50°C to +65°C.
2 All connection components in Stainless Steel Grade 316 suitable for sour gas service.
3 Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

4000 bar
FITTINGS
HIGH PRESSURE METRIC CONNECTIONS
E









ELBOWS

Catalogue Number	Tube O/D	Orifice Dia	A	B	C	D	T
ELB-40-4E	1/4	0.09	1.25	1.12	0.88	0.62	0.75
	6.4	2.4	31.8	28.5	22.2	15.8	19.1
ELB-40-6E	3/8	0.13	2.00	1.56	1.25	1.00	1.13
	9.5	3.2	50.8	39.5	31.8	25.4	28.6
ELB-40-9E	9/16	0.18	2.50	2.13	1.81	1.12	1.50
	14.3	4.5	63.5	54	46	28.5	38.1

TEES

Catalogue Number	Tube O/D	Orifice Dia	A	B	C	D	T
TEE-40-4E	1/4	0.09	2.01	1.25	1.00	0.88	0.75
	6.4	2.4	51	31.8	25.4	22.2	19.1
TEE-40-6E	3/8	0.13	2.00	1.56	1.00	1.06	1.13
	9.5	3.2	50.8	39.5	25.4	27	28.6
TEE-40-9E	9/16	0.18	2.50	2.13	1.25	1.38	1.50
	14.3	4.5	63.5	54	31.8	35	38.1

CROSSES

Catalogue Number	Tube O/D	Orifice Dia	A	B	C	D	T
CRS-40-4E	1/4	0.09	2.01	1.25	1.00	0.62	0.75
	6.4	2.4	51	31.8	25.4	15.9	19.1
CRS-40-6E	3/8	0.13	2.00	2.13	1.00	1.06	1.13
	9.5	3.2	50.8	54	25.4	27	28.6
CRS-40-9E	9/16	0.18	2.83	2.50	1.42	1.25	1.50
	14.3	4.5	72	63.5	36	31.8	38.1

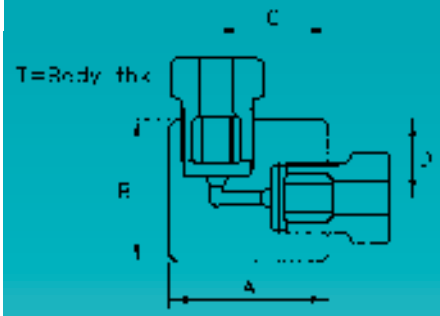
BULKHEADS

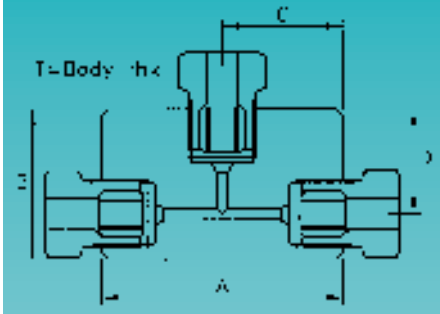
Catalogue Number	Tube O/D	Orifice Dia	A	B	C	D	T
BLK-40-4E	1/4	0.09	2.17	0.63	1.06	0.91	0.39
	6.4	2.4	55	16	27	23	10
BLK-40-6E	3/8	0.13	2.52	0.75	1.26	1.10	0.47
	9.5	3.2	64	19	32	28	12
BLK-40-9E	9/16	0.18	2.91	0.87	1.61	1.46	0.59
	14.3	4.5	74	22	41	37	15

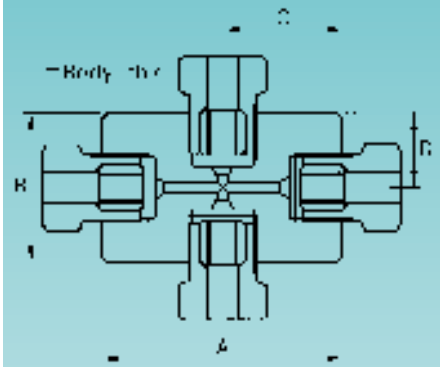
NOTES

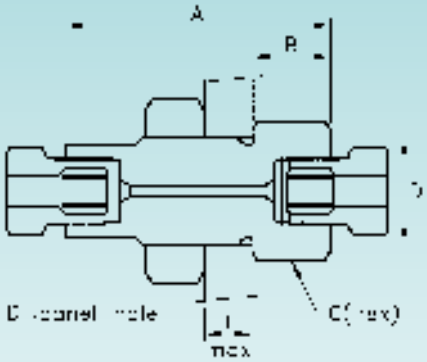
1 All fittings are rated to 430°C max operating temperature for process fluid. Refer to graph in technical section for elevated temperature usage. Environmental temperature range -50°C to +65°C.
2 All fittings in Stainless Steel Grade AISI 316 L/DIN 1.4404.
3 All coned and threaded connection fittings supplied with glands and collars.
4 Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

7000 bar
FITTINGS
HIGH PRESSURE METRIC CONNECTIONS
E









ELBOWS

Catalogue Number	Tube O/D	Orifice Dia	A	B	C	D	T
ELB-70-4E	1/4	0.06	1.25	1.12	0.88	0.62	0.75
	6.4	1.6	31.8	28.5	22.2	15.8	19.1

TEES

Catalogue Number	Tube O/D	Orifice Dia	A	B	C	D	T
TEE-70-4E	1/4	0.06	2.01	1.25	1.00	0.88	0.75
	6.4	1.6	51	31.8	25.4	22.2	19.1

CROSSES

Catalogue Number	Tube O/D	Orifice Dia	A	B	C	D	T
CRS-70-4E	1/4	0.06	2.01	1.25	1.00	0.62	0.75
	6.4	1.6	51	31.8	25.4	15.9	19.1

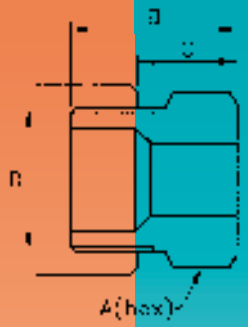
BULKHEADS

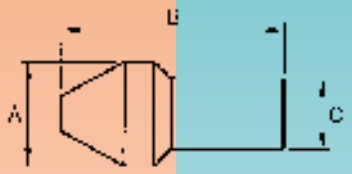
Catalogue Number	Tube O/D	Orifice Dia	A	B	C	D	T
BLK-70-4E	1/4	0.06	2.17	0.63	1.06	0.91	0.39
	6.4	1.6	55	16	27	23	10

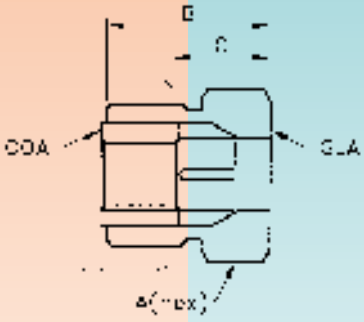
NOTES

1 All fittings are rated to 430°C max operating temperature for process fluid. Refer to graph in technical section for elevated temperature usage. Environmental temperature range -50°C to +65°C.
2 All fittings in Stainless Steel Grade AISI 316 L/DIN 1.4404.
3 All coned and threaded connection fittings supplied with glands and collars.
4 Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

4000/7000 bar
CONNECTION COMPONENTS HIGH PRESSURE METRIC CONNECTIONS E







GLANDS

Catalogue Number	Tube O/D	A	B	C	Thread D	Pressure
GLN-70-4E	1/4	0.67	0.94	0.57		4000/7000 bar
	6.4	17	24	14.5	M16x1.5	
GLN-40-6E	3/8	0.87	1.06	0.53		4000 bar
	9.5	22	27	13.5	M20x1.5	
GLN-40-9E	9/16	1.26	1.26	0.63		4000 bar
	14.3	32	32	16	M30x2	

COLLARS

Catalogue Number	Tube O/D	A	B	Thread (LH) C	Pressure
COL-70-4E	1/4	0.37	0.37	1/4-28 UNF	4000/7000 bar
	6.4	9.4	9.4		
COL-60-6	3/8	0.50	0.53	3/8-24 UNF	4000 bar
	9.5	12.7	13.4		
COL-60-9	9/16	0.81	0.62	9/16–18 UNF	4000 bar
	14.3	20.6	15.8		

PLUGS

Catalogue Number	Tube O/D	A	B	C	Pressure
PLG-70-4E	1/4	0.37	1.04	0.25	4000/7000 bar
	6.4	9.5	26.5	6.3	
PLG-60-6	3/8	0.50	1.38	0.37	4000 bar
	9.5	12.7	35	9.5	
PLG-60-9	9/16	0.81	1.73	0.56	4000 bar
	14.3	20.6	44	14.1	

ANTI VIBRATION ASSEMBLIES

Catalogue Number	GLA Part No.	COA Part No.	Tube O/D	A	B	C	Pressure
AVA-70-4E	GLA-70-4E	COA-70-4E	1/4	0.67	0.94	0.57	7000 bar
			6.4	17	24	14.5	
AVA-40-6E	GLA-40-6E	COA-60-6	3/8	0.87	1.06	0.53	4000 bar
			9.5	22	27	13.5	
AVA-40-9E	GLA-40-9E	COA-60-9	9/16	1.26	1.26	0.63	4000 bar
			14.3	32	32	16	

NOTES

1 All connection components are rated to 430°C max operating temperature for process fluid. Refer to graph in technical section for elevated temperature usage. Environmental temperature range -50°C to +65°C.

2 All connection components in Stainless Steel Grade AISI 316 L/DIN 1.4404

3 Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

4000 bar
FILTERS
HIGH PRESSURE METRIC CONNECTIONS
E

Catalogue Number	Tube O/D	Orifice Dia	A	B	T	Sintert filter insert	pore
FIL-40-4E	1/4	0.12	2.60	2.00	1.13	5.2027.014	5µ
	6.4	3	66	50.8	28.7		
FIL-40-6E	3/8	0.12	2.60	2.00	1.13	5.2027.014	5µ
	9.5	3	66	50.8	28.7		

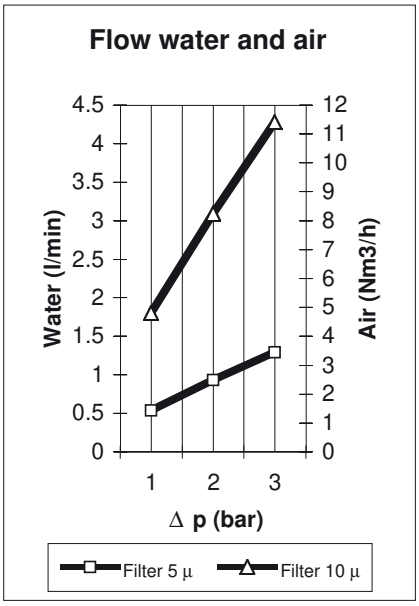
Catalogue Number	Tube O/D	Orifice Dia	A	B	T	Sintert filter insert	pore
FIL-40-4E-10	1/4	0.12	2.60	2.00	1.13	5.2027.015	10µ
	6.4	3	66	50.8	28.7		
FIL-40-6E-10	3/8	0.12	2.60	2.00	1.13	5.2027.015	10µ
	9.5	3	66	50.8	28.7		

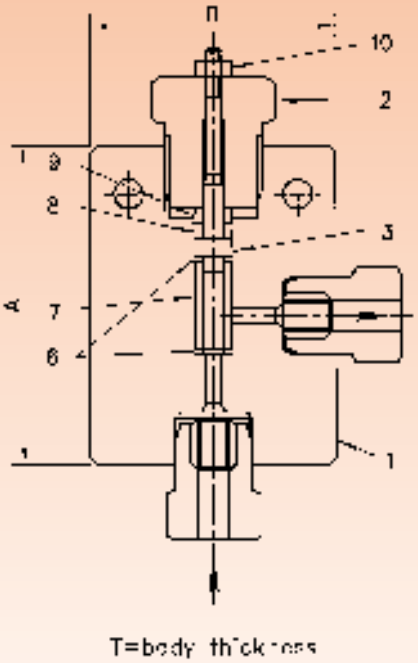
Part List

1 Body
2 Screw
3 Drawbar
6 Packing
7 Filter insert
8 Packing
9 Packing follower
10 Nut

Interchange of filter insert

1 Slacken nut (10) two turns
2 Remove screw (2)
(Packing (8) is withdrawn with it)
5 Introduce clean filter insert
6 Refit screw (2) together with packing (8)
and tighten up gently with 50 Nm
7 Tighten nut (10) by hand





NOTES

1 All filters are rated to 200°C max operating temperature for process fluid.
Refer to graph in technical section for elevated temperature usage.
Environmental temperature range -50°C to +65°C.
2 All filters in Stainless Steel Grade AISI 316 L/DIN 1.4404.
3 All coned and threaded connection filters supplied with glands and collars.
4 It is recommended not to wash used inserts but to dispose them
5 Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

SAFETY NOTES

As your safety is our prime concern and we want you to enjoy reliable service from our products we give the following advice on the safe use of fittings.

- High pressure fluids particularly gases are potentially hazardous and should always be treated with the greatest respect. Do not vent fluid without knowing where vent is directed.
- Always be aware of whether pressure is contained by a component.
- Do not loosen connection components when system pressure is present.
- Ensure that no system pressure is present and isolated prior to carrying out maintenance.

FITTING SELECTION

Suitability of individual fittings for a chosen application is dependant on a number of parameters which should be given careful consideration prior to use. To assist our customers in selection we have compiled a list of selection criteria which takes account of many of the most important factors to consider. As all systems are different and user requirements vary greatly this information should not be considered comprehensive. Should you have any doubts as to the suitability of a chosen fitting please contact the local agent or the factory directly. Either will be delighted to assist.

Fittings are essentially connection components and play a static role in system design and do not have a function other than to convey fluids without leakage, facilitate connection make up or plug ports.

PRESSURE

System pressure should always be less than the maximum allowable working pressure for the fitting. Where fluctuating pressures are involved such as on the outlet from a reciprocating pump, care should be taken to ensure that pressure peaks do not exceed this maximum.
We recommend that where fluctuating pressure is occurring over long periods then the fitting pressure rating should be considerably higher than the maximum nominal system working pressure. Please note that the operating life will be reduced.

TEMPERATURE

Fitting maximum operating pressure is based on the strength of the material at a given temperature whether this is internal or external. This is graphed in the technical section.
As Nova fittings are all metal sealing they are designated fire safe.
In all cases where the intended operating temperature will or could even temporarily exceed the maximum limit, the user should consult the local agent or factory directly.

SYSTEM FLUID

There are two principal considerations, firstly the nature of the fluid and its compatibility with the materials of construction and secondly the level of cleanliness of the fluid.
The customer should satisfy themselves that the materials of construction are compatible with the working fluids with respect to corrosion or other chemical reaction.
System fluid should be clean and in particular not contain any debris which is abrasive. Cleanliness levels of NAS 1638 (National Aerospace Standard 1638) level 10 or better are optimum.

CONNECTIONS

Nova fittings are supplied with either medium or high pressure coned and threaded connection options with pressure limitations for each design.
These are the limitations:-

MPCT- This coned and threaded connection commonly referred to as the medium pressure connection is rated up to 20000PSI in standard catalogue items. It is compact with the gland nut and collar being in line and is highly tolerant to repeated make and break.

HPCT- and E These high pressure coned and threaded connections are less compact than the medium pressure variation as a result of the collar being inside the gland. The benefit is that the gland supports the collar at the maximum stress point and provides greater resistance to fatigue.
E high pressure connections are identical to HPCT connections in concept. The differences are the threads on glands and ports.
HPCT: imperial UNF threads
E: metric threads according to ISO
For details please refer to technical section

Note that for coned and threaded connections that experience vibration in the pipework, the use of anti-vibration collars and glands is strongly recommended.
Note that the Nova 9/16" high pressure coned and threaded connection is equivalent to the American Petroleum Institute specification 6A - Wellhead and Christmas tree equipment type 1,2 and 3 connections.

NOVA SWISS

ADAPTORS

Imperial Connections

- **STRAIGHT**
- **ANGLE**
- **BULKHEAD**

VALVES, FITTINGS AND TUBING FOR **CRITICAL SERVICE**

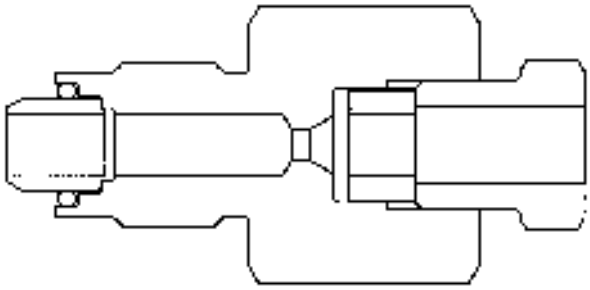
THE NEW APPROACH FROM NOVA SWISS

Simplicity is the key.

- The New Nova range combines 25 years experience of supplying the highest quality adaptor products that have been subjected to rigorous testing combined with elegant simplicity in design.
- Nova Swiss have produced a range of products that better meet the needs of critical service applications, where safety reliability and leak tight sealing are paramount.
- Adaptor products are designed to provide a comprehensive range of cross-over options for the user.
- Considerable effort has also been put into the thorough testing of all products specifically cyclic service and fatigue pressure testing which we believe is unique to Nova Swiss.
- All adaptors are supplied with glands and collars as required by the product, except BSPP and NPT connections.
- **Everything is aimed at better serving the needs of our customers.**

DOUBLE CONED PLUG
For CT connections prevents galling and promotes long life

RETAINING RING
Holds double cone plug in position to avoid loss when installing in vertical position



CONNECTION OPTIONS
All connection cross over options are covered*

VENT HOLES ON ALL CONED AND THREADED CONNECTIONS/SEAL AREAS
To provide a safe discharge of pressure in the event of an inadvertant leak

* Note – Except a small number of impractical options

EACH BATCH TESTED PRIOR TO DESPATCH To ensure your product doesn't let you down	**ALTERNATIVE MATERIALS AVAILABLE** **CUSTOM DESIGN SERVICE TO MATCH YOUR NEEDS**	**BODY & WETTED PARTS TO NACE MR-01-75 AS STANDARD UP TO 30,000 psi** Easier to specify Less inventory Peace of mind Interchangeability	**ORIFICE SIZES- MATCH TUBING** To provide constant flow area with minimum flow restriction	**CERTIFICATION** Upon request material certificate accredited to EN 10204 3.1 for all pressure bearing components

MALE TO FEMALE ADAPTOR RANGE

NOVA SWISS

STRAIGHT

FEMALE CONNECTION	MALE CONNECTION BSPP	NPT	MPCT	HPCT
BSPP			A	B
NPT			C	D
MPCT	E	F	G	H
HPCT	J	K	L	M / N

ANGLE

FEMALE CONNECTION	MALE CONNECTION NPT
MPCT	P
HPCT	Q

BULKHEAD

FEMALE CONNECTION	MALE CONNECTION BSPP*
MPCT	R
HPCT	S

* 60° HOSE CONNECTION

PRESSURE RATING

10000psi	20000psi
30000psi	60000psi

NOTES

1 All adaptors are rated to 430°C max operating temperature for process fluid.
(BSPP standard seal -15°C to 225°C)
Refer to graph in technical section for elevated temperature usage.
Environmental temperature -50°C to +65°C.

2 All adaptors in Stainless Steel Grade 316. Suitable for sour gas service up to 30,000 psi.
All wetted parts up to 30,000 psi comply with NACE MR0175 (latest revision).

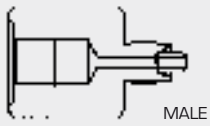
3 All coned and threaded adaptors supplied with glands and collars.

4 Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

NOVA SWISS

A 10000psi MAWP

FEMALE BSPP

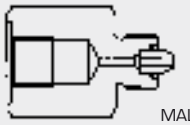


MALE MPCT

FEMALE BSPP	MALE MPCT 1/4	3/8	9/16
1/4	AMF-10-4M4B	AMF-10-6M4B	AMF-10-9M4B
3/8	AMF-10-4M6B	AMF-10-6M6B	AMF-10-9M6B
1/2	AMF-10-4M8B	AMF-10-6M8B	AMF-10-9M8B

B 10000psi MAWP

FEMALE BSPP

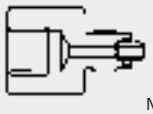


MALE HPCT

FEMALE BSPP	MALE HPCT 1/4	3/8	9/16
1/4	AMF-10-4H4B	AMF-10-6H4B	AMF-10-9H4B
3/8	AMF-10-4H6B	AMF-10-6H6B	AMF-10-9H6B
1/2	AMF-10-4H8B	AMF-10-6H8B	AMF-10-9H8B

C 10000psi MAWP

FEMALE NPT

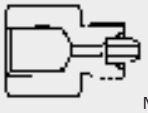


MALE MPCT

FEMALE NPT	MALE MPCT 1/4	3/8	9/16	3/4	1
1/4	AMF-10-4M4N	AMF-10-6M4N	AMF-10-9M4N	-	-
3/8	AMF-10-4M6N	AMF-10-6M6N	AMF-10-9M6N	-	-
1/2	AMF-10-4M8N	AMF-10-6M8N	AMF-10-9M8N	AMF-10-12M8N	AMF-10-16M8N

D 10000psi MAWP

FEMALE NPT

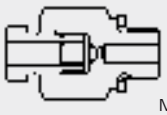


MALE HPCT

FEMALE NPT	MALE HPCT 1/4	3/8	9/16
1/4	AMF-10-4H4N	AMF-10-6H4N	AMF-10-9H4N
3/8	AMF-10-4H6N	AMF-10-6H6N	AMF-10-9H6N
1/2	AMF-10-4H8N	AMF-10-6H8N	AMF-10-9H8N

E 10000psi MAWP

FEMALE MPCT

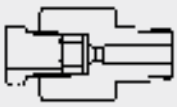


MALE BSPP

FEMALE MPCT	MALE BSPP 1/4	3/8	1/2
1/4	AMF-10-4B4M	AMF-10-6B4M	AMF-10-8B4M
3/8	AMF-10-4B6M	AMF-10-6B6M	AMF-10-8B6M
9/16	AMF-10-4B9M	AMF-10-6B9M	AMF-10-8B9M

F 10000psi MAWP

FEMALE MPCT

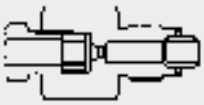


MALE NPT

FEMALE MPCT	MALE NPT 1/4	3/8	1/2
1/4	AMF-10-4N4M	AMF-10-6N4M	AMF-10-8N4M
3/8	AMF-10-4N6M	AMF-10-6N6M	AMF-10-8N6M
9/16	AMF-10-4N9M	AMF-10-6N9M	AMF-10-8N9M
3/4	-	-	AMF-10-8N12M
1	-	-	AMF-10-8N16M

G 20000psi MAWP

FEMALE MPCT

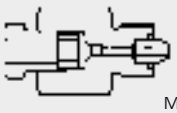


MALE MPCT

FEMALE MPCT	MALE MPCT 1/4	3/8	9/16	3/4	1
1/4	-	AMF-20-6M4M	AMF-20-9M4M	AMF-20-12M4M	AMF-20-16M4M
3/8	AMF-20-4M6M	-	AMF-20-9M6M	-	-
9/16	AMF-20-4M9M	AMF-20-6M9M	-	AMF-20-12M9M	AMF-20-16M9M
3/4	-	-	AMF-20-9M12M	-	-
1	-	-	AMF-20-9M16M	-	-

H 20000psi MAWP

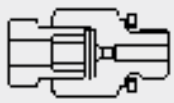
FEMALE MPCT

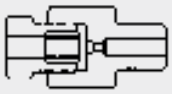


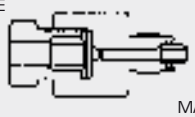
MALE HPCT

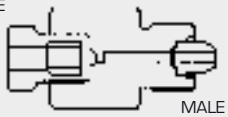
FEMALE MPCT	MALE HPCT 1/4	3/8	9/16
1/4	AMF-20-4H4M	AMF-20-6H4M	AMF-20-9H4M
3/8	AMF-20-4H6M	AMF-20-6H6M	AMF-20-9H6M
9/16	AMF-20-4H9M	AMF-20-6H9M	AMF-20-9H9M

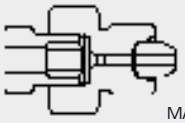
NOVA SWISS

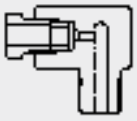
J 10000psi MAWP	FEMALE HPCT	MALE BSPP		
FEMALE HPCT  MALE BSPP		1/4	3/8	1/2
	1/4	AMF-10-4B4H	AMF-10-6B4H	AMF-10-8B4H
	3/8	AMF-10-4B6H	AMF-10-6B6H	AMF-10-8B6H
	9/16	AMF-10-4B9H	AMF-10-6B9H	AMF-10-8B9H

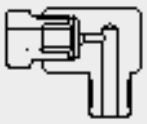
K 10000psi MAWP	FEMALE HPCT	MALE NPT		
FEMALE HPCT  MALE NPT		1/4	3/8	1/2
	1/4	AMF-10-4N4H	AMF-10-6N4H	AMF-10-8N4H
	3/8	AMF-10-4N6H	AMF-10-6N6H	AMF-10-8N6H
	9/16	AMF-10-4N9H	AMF-10-6N9H	AMF-10-8N9H

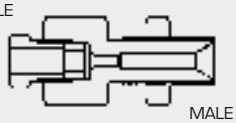
L 20000psi MAWP	FEMALE HPCT	MALE MPCT		
FEMALE HPCT  MALE MPCT		1/4	3/8	9/16
	1/4	AMF-20-4M4H	AMF-20-6M4H	AMF-20-9M4H
	3/8	AMF-20-4M6H	AMF-20-6M6H	AMF-20-9M6H
	9/16	AMF-20-4M9H	AMF-20-6M9H	AMF-20-9M9H

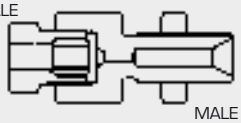
M 30000psi MAWP	FEMALE HPCT	MALE HPCT		
FEMALE HPCT  MALE HPCT		1/4	3/8	9/16
	1/4	–	AMF-30-6H4H	AMF-30-9H4H
	3/8	AMF-30-4H6H	–	AMF-30-9H6H
	9/16	AMF-30-4H9H	AMF-30-6H9H	–

N 60000psi MAWP	FEMALE HPCT	MALE HPCT		
FEMALE HPCT  MALE HPCT		1/4	3/8	9/16
	1/4	–	AMF-60-6H4H	AMF-60-9H4H
	3/8	AMF-60-4H6H	–	AMF-60-9H6H
	9/16	AMF-60-4H9H	AMF-60-6H9H	–

P 10000psi MAWP	FEMALE MPCT	MALE NPT		
FEMALE MPCT  MALE NPT		1/4	3/8	1/2
	1/4	ELA-10-4N4M	–	–
	3/8	–	ELA-10-6N6M	–
	9/16	–	–	ELA-10-8N9M

Q 10000psi MAWP	FEMALE HPCT	MALE NPT		
FEMALE HPCT  MALE NPT		1/4	3/8	1/2
	1/4	ELA-10-4N4H	–	–
	3/8	–	ELA-10-6N6H	–
	9/16	–	–	ELA-10-8N9H

R 10000psi MAWP	FEMALE MPCT	MALE BSPP		
FEMALE MPCT  MALE BSPP		1/4	3/8	1/2
	1/4	BLA-10-4B4M	–	–
	3/8	–	BLA-10-6B6M	–
	9/16	–	–	BLA-10-8B9M

S 10000psi MAWP	FEMALE HPCT	MALE BSPP		
FEMALE HPCT  MALE BSPP		1/4	3/8	1/2
	1/4	BLA-10-4B4H	–	–
	3/8	–	BLA-10-6B6H	–
	9/16	–	–	BLA-10-8B9H

SAFETY NOTES

As your safety is our prime concern and we want you to enjoy reliable service from our products we give the following advice on the safe use of adapters, couplings and connectors.

- High pressure fluids particularly gases are potentially hazardous and should always be treated with the greatest respect. Do not vent fluid without knowing where vent is directed.
- Always be aware of whether pressure is contained by a component.
- Do not loosen connection components when system pressure is present.
- Ensure that no system pressure is present and isolated prior to carrying out maintenance.

ADAPTERS, COUPLINGS AND CONNECTORS SELECTION

Suitability of individual adapters, couplings and connectors for chosen application is dependant on a number of parameters which should be given careful consideration prior to use. To assist our customers in selection we have compiled a list of selection criteria which takes account of many of the most important factors to consider. As all systems are different and user requirements vary greatly this information should not be considered comprehensive. Should you have any doubts as to the suitability of a chosen adapter, coupling and connector please contact the local agent or the factory directly. Either will be delighted to assist.

Adapters, couplings and connectors are essentially connection components and play a static role in system design and do not have a function other than to convey fluids without leakage, facilitate connection make up or allow crossover between different connection types.

PRESSURE

System pressure should always be less than the maximum allowable working pressure for the adapters, couplings and connectors. Where fluctuating pressures are involved such as on the outlet from a reciprocating pump, care should be taken to ensure that pressure peaks do not exceed this maximum.

We recommend that where fluctuating pressure is occurring over long periods then the adapters, couplings and connectors pressure rating should be considerably higher than the maximum nominal system working pressure. Please note that the operating life will be reduced.

Note that the maximum rated pressure for an adapter, coupling or connector is the lowest of either end connection e.g. an adapter, coupling or connector which has both NPT and MPCT connections is rated at the lower value which is 10000 PSI for the NPT. Similarly if MPCT and HPCT connections are provided then the lower value is for the MPCT which is 20000 PSI.

TEMPERATURE

Adapters, couplings and connectors maximum operating pressure is based on the strength of the material at a given temperature whether this is internal or external. This is graphed in the technical section.

As Nova adapters, couplings and connectors are all metal sealing they are designated fire safe.

In all cases where the intended operating temperature will or could even temporarily exceed the maximum limit, the user should consult the local agent or factory directly.

SYSTEM FLUID

There are two principal considerations, firstly the nature of the fluid and its compatibility with the materials of construction and secondly the level of cleanliness of the fluid.

The customer should satisfy themselves that the materials of construction are compatible with the working fluids with respect to corrosion or other chemical reaction.

System fluid should be clean and in particular not contain any debris which is abrasive. Cleanliness levels of NAS 1638 (National Aerospace Standard 1638) level 10 or better are optimum.

CONNECTIONS

Nova adapters, couplings and connectors are supplied with a variety of connection options with pressure limitations for each design.

These are the limitations:-

BSPP - Parallel thread connection relies on an externally clamped seal to hold pressure. Threads are exposed to pressure and working fluids so careful consideration to corrosion on stressed threads should be made. Pressures up to 10000PSI are considered appropriate because there is little if any deformation of threads, BSPP connections are preferable to NPT in cases where no sealing compound can be used with NPT.

NPT - The most common screwed connection type used extensively up to 10000PSI.
We strongly recommend that this connection **is not used above 10000PSI** as per the guidelines in API 6A (American petroleum institute standard 6A). This connection is heavily dependent on the technician for successful make-up and care should be taken that all users are trained in the correct installation of these connections.

MPCT - This coned and threaded connection commonly referred to as The Medium Pressure Connection is rated up to 20000PSI in standard catalogue items. It is compact with the gland nut and collar being in line and is highly tolerant to repeated make and break.

HPCT - This high pressure coned and threaded connection is less compact than the medium pressure variation as a result of the collar being inside the gland. The benefit is that the gland supports the collar at the maximum stress point and provides greater resistance to fatigue.

Note that for coned and threaded connections that experience vibration in the pipework, the use of anti-vibration collars and glands is strongly recommended.

We do not recommend screwed connections (NPT, BSPP) in situations where there could be vibration of the pipework.

Note that the Nova 9/16" high pressure coned and threaded connection is equivalent to the American Petroleum Institute specification 6A - Wellhead and Christmas tree equipment type 1,2 and 3 connections.

NOVA SWISS

ADAPTORS

Metric Connections according to ISO

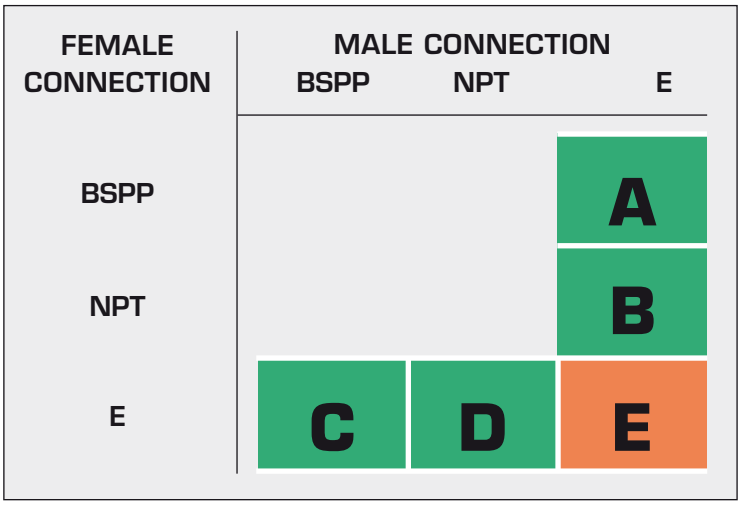
VALVES, FITTINGS AND TUBING FOR **CRITICAL SERVICE**

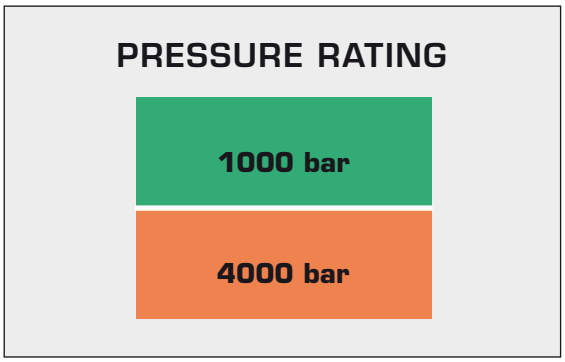
MALE TO FEMALE ADAPTOR RANGE

METRIC CONNECTIONS E

NOVA SWISS

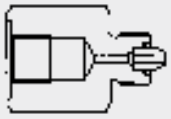
STRAIGHT

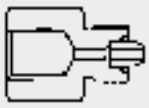


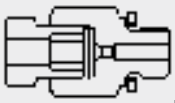


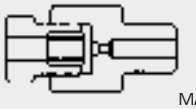
NOTES

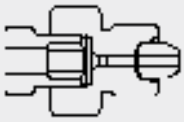
1 All adaptors are rated to 430°C max operating temperature for process fluid. (BSPP standard seal -15°C to 225°C)
Refer to graph in technical section for elevated temperature usage.
Environmental temperature -50°C to +65°C.
2 All adaptors in Stainless Steel Grade AISI 316 L/DIN 1.4404
3 All coned and threaded adaptors supplied with glands and collars.
4 Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

A 1000 bar MAWP	FEMALE BSPP	MALE E 1/4	MALE E 3/8	MALE E 9/16
FEMALE BSPP  MALE E	1/4	AMF-10-4E4B		
	3/8			
	1/2			AMF-10-9E8B

B 1000 bar MAWP	FEMALE NPT	MALE E 1/4	MALE E 3/8	MALE E 9/16
FEMALE NPT  MALE E	1/4	AMF-10-4E4N		
	3/8			
	1/2			

C 1000 bar MAWP	FEMALE E	MALE BSPP 1/4	MALE BSPP 3/8	MALE BSPP 1/2
FEMALE E  MALE BSPP	1/4	AMF-10-4B4E	AMF-10-6B4E	AMF-10-8B4E
	3/8	AMF-10-4B6E	AMF-10-6B6E	AMF-10-8B6E
	9/16	AMF-10-4B9E	AMF-10-6B9E	AMF-10-8B9E

D 1000 bar MAWP	FEMALE E	MALE NPT 1/4	MALE NPT 3/8	MALE NPT 1/2
FEMALE E  MALE NPT	1/4	AMF-10-4N4E	AMF-10-6N4E	AMF-10-8N4E
	3/8	AMF-10-4N6E	AMF-10-6N6E	AMF-10-8N6E
	9/16			AMF-10-8N9E

E 4000 bar MAWP	FEMALE E	MALE E 1/4	MALE E 3/8	MALE E 9/16
FEMALE E  MALE E	1/4	-	AMF-40-6E4E	AMF-40-9E4E
	3/8	AMF-40-4E6E	-	AMF-40-9E6E
	9/16	AMF-40-4E9E	AMF-40-6E9E	-

SAFETY NOTES

As your safety is our prime concern and we want you to enjoy reliable service from our products we give the following advice on the safe use of adapters, couplings and connectors.

- High pressure fluids particularly gases are potentially hazardous and should always be treated with the greatest respect. Do not vent fluid without knowing where vent is directed.
- Always be aware of whether pressure is contained by a component.
- Do not loosen connection components when system pressure is present.
- Ensure that no system pressure is present and isolated prior to carrying out maintenance.

ADAPTERS, COUPLINGS AND CONNECTORS SELECTION

Suitability of individual adapters, couplings and connectors for chosen application is dependant on a number of parameters which should be given careful consideration prior to use. To assist our customers in selection we have compiled a list of selection criteria which takes account of many of the most important factors to consider. As all systems are different and user requirements vary greatly this information should not be considered comprehensive. Should you have any doubts as to the suitability of a chosen adapter, coupling and connector please contact the local agent or the factory directly. Either will be delighted to assist.

Adapters, couplings and connectors are essentially connection components and play a static role in system design and do not have a function other than to convey fluids without leakage, facilitate connection make up or allow crossover between different connection types.

PRESSURE

System pressure should always be less than the maximum allowable working pressure for the adapters, couplings and connectors. Where fluctuating pressures are involved such as on the outlet from a reciprocating pump, care should be taken to ensure that pressure peaks do not exceed this maximum.

We recommend that where fluctuating pressure is occurring over long periods then the adapters, couplings and connectors pressure rating should be considerably higher than the maximum nominal system working pressure. Please note that the operating life will be reduced.

Note that the maximum rated pressure for an adapter, coupling or connector is the lowest of either end connection e.g. an adapter, coupling or connector which has both NPT and E connections is rated at the lower value which is 1000 bar for the NPT.

TEMPERATURE

Adapters, couplings and connectors maximum operating pressure is based on the strength of the material at a given temperature whether this is internal or external. This is graphed in the technical section.

As Nova adapters, couplings and connectors are all metal sealing they are designated fire safe.

In all cases where the intended operating temperature will or could even temporarily exceed the maximum limit, the user should consult the local agent or factory directly.

SYSTEM FLUID

There are two principal considerations, firstly the nature of the fluid and its compatibility with the materials of construction and secondly the level of cleanliness of the fluid.

The customer should satisfy themselves that the materials of construction are compatible with the working fluids with respect to corrosion or other chemical reaction.

System fluid should be clean and in particular not contain any debris which is abrasive. Cleanliness levels of NAS 1638 (National Aerospace Standard 1638) level 10 or better are optimum.

CONNECTIONS

Nova adapters, couplings and connectors are supplied with a variety of connection options with pressure limitations for each design.

These are the limitations:-

BSPP - Parallel thread connection relies on an externally clamped seal to hold pressure. Threads are exposed to pressure and working fluids so careful consideration to corrosion on stressed threads should be made. Pressures up to 1000 bar are considered appropriate because there is little if any deformation of threads, BSPP connections are preferable to NPT in cases where no sealing compound can be used with NPT.

NPT - The most common screwed connection type used extensively up to 1000 bar.
We strongly recommend that this connection **is not used above 1000 bar**. This connection is heavily dependent on the technician for successful make-up and care should be taken that all users are trained in the correct installation of these connections.

E- The high pressure E connection is a coned and threaded connection for high strength and repeated make and break. The collar is inside the gland with the benefit that the gland supports the collar at the maximum stress point and provides greater resistance to fatigue.

Note that for coned and threaded connections that experience vibration in the pipework, the use of anti-vibration collars and glands is strongly recommended.

We do not recommend screwed connections (NPT, BSPP) in situations where there could be vibration of the pipework.

NOVA SWISS

COUPLINGS

Imperial Connections

VALVES, FITTINGS AND TUBING FOR **CRITICAL SERVICE**

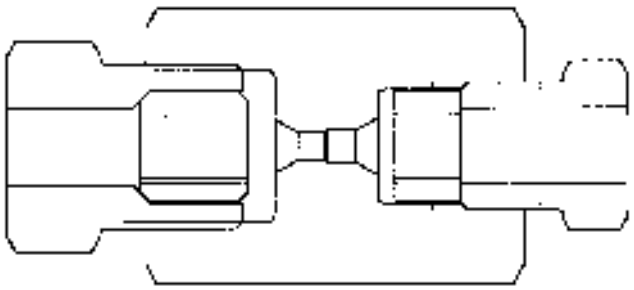
THE NEW APPROACH FROM NOVA SWISS

Simplicity is the key.

- The New Nova range combines 25 years experience of supplying the highest quality coupling products that have been subjected to rigorous testing combined with elegant simplicity in design.
- Nova Swiss have produced a range of products that better meet the needs of critical service applications, where safety reliability and leak tight sealing are paramount.
- Coupling products are designed to provide a comprehensive range of cross-over options for the user.
- Considerable effort has also been put into the thorough testing of all products specifically cyclic service and fatigue pressure testing which we believe is unique to Nova Swiss.
- All couplings are supplied with glands and collars as required by the product, except BSPP and NPT connections.
- **Everything is aimed at better serving the needs of our customers.**

CONNECTION OPTIONS
All connection cross over options are covered*

VENT HOLES ON ALL CONED AND THREADED CONNECTIONS/SEAL AREAS
To provide a safe discharge of pressure in the event of an inadvertant leak



* Note – Except a small number of impractical options

EACH BATCH TESTED PRIOR TO DESPATCH To ensure your product doesn't let you down	**ALTERNATIVE MATERIALS AVAILABLE** **CUSTOM DESIGN SERVICE TO MATCH YOUR NEEDS**	**BODY & WETTED PARTS TO NACE MR-01-75 AS STANDARD UP TO 30,000 psi** Easier to specify Less inventory Peace of mind Interchangeability	**ORIFICE SIZES-MATCH TUBING** To provide constant flow area with minimum flow restriction	**CERTIFICATION** Upon request material certificate accredited to EN 10204 3.1 for all pressure bearing components

FEMALE TO FEMALE COUPLING RANGE

NOVA SWISS

FEMALE CONNECTION	FEMALE CONNECTION			
	BSPP	NPT	MPCT	HPCT
MPCT	A	C	E	F
HPCT	B	D		G / H

PRESSURE RATING

10000psi	20000psi
30000psi	60000psi

NOTES

1 All couplings are rated to 430°C max operating temperature for process fluid.
Refer to graph in technical section for elevated temperature usage.
Environmental temperature -50°C to +65°C.

2 All couplings in Stainless Steel Grade 316. Suitable for sour gas service up to 30,000 psi.
All wetted parts up to 30,000 psi comply with NACE MR0175 (latest revision).

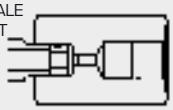
3 All coned and threaded couplings supplied with glands and collars.

4 Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

NOVA SWISS

A 10000psi MAWP

FEMALE MPCT

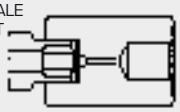


FEMALE BSPP

FEMALE MPCT	FEMALE BSPP 1/4	3/8	1/2
1/4	AFF-10-4M4B	AFF-10-4M6B	AFF-10-4M8B
3/8	AFF-10-6M4B	AFF-10-6M6B	AFF-10-6M8B
9/16	AFF-10-9M4B	AFF-10-9M6B	AFF-10-9M8B

B 10000psi MAWP

FEMALE HPCT

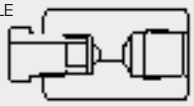


FEMALE BSPP

FEMALE HPCT	FEMALE BSPP 1/4	3/8	1/2
1/4	AFF-10-4H4B	AFF-10-4H6B	AFF-10-4H8B
3/8	AFF-10-6H4B	AFF-10-6H6B	AFF-10-6H8B
9/16	AFF-10-9H4B	AFF-10-9H6B	AFF-10-9H8B

C 10000psi MAWP

FEMALE MPCT

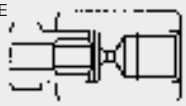


FEMALE NPT

FEMALE MPCT	FEMALE NPT 1/4	3/8	1/2
1/4	AFF-10-4M4N	AFF-10-4M6N	AFF-10-4M8N
3/8	AFF-10-6M4N	AFF-10-6M6N	AFF-10-6M8N
9/16	AFF-10-9M4N	AFF-10-9M6N	AFF-10-9M8N

D 10000psi MAWP

FEMALE HPCT

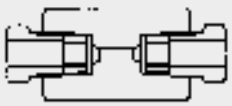


FEMALE NPT

FEMALE HPCT	FEMALE NPT 1/4	3/8	1/2
1/4	AFF-10-4H4N	AFF-10-4H6N	AFF-10-4H8N
3/8	AFF-10-6H4N	AFF-10-6H6N	AFF-10-6H8N
9/16	AFF-10-9H4N	AFF-10-9H6N	AFF-10-9H8N

E 20000psi MAWP

FEMALE MPCT

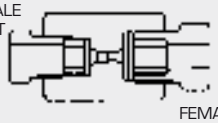


FEMALE MPCT

FEMALE MPCT	FEMALE MPCT 1/4	3/8	9/16	3/4	1
1/4	AFF-20-4M4M	AFF-20-4M6M	AFF-20-4M9M	-	-
3/8	-	AFF-20-6M6M	AFF-20-6M9M	-	-
9/16	-	-	AFF-20-9M9M	-	-
3/4	-	-	-	AFF-20-12M12M	-
1	-	-	-	-	AFF-20-16M16M

F 20000psi MAWP

FEMALE MPCT

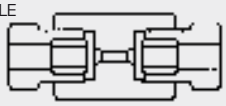


FEMALE HPCT

FEMALE MPCT	FEMALE HPCT 1/4	3/8	9/16
1/4	AFF-20-4M4H	AFF-20-4M6H	AFF-20-4M9H
3/8	AFF-20-6M4H	AFF-20-6M6H	AFF-20-6M9H
9/16	AFF-20-9M4H	AFF-20-9M6H	AFF-20-9M9H

G 30000psi MAWP

FEMALE HPCT

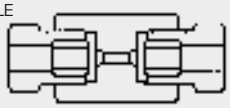


FEMALE HPCT

FEMALE HPCT	FEMALE HPCT 1/4	3/8	9/16
1/4	AFF-30-4H4H	AFF-30-4H6H	AFF-30-4H9H
3/8	-	AFF-30-6H6H	AFF-30-6H9H
9/16	-	-	AFF-30-9H9H

H 60000psi MAWP

FEMALE HPCT



FEMALE HPCT	FEMALE HPCT 1/4	3/8	9/16
1/4	AFF-60-4H4H	-	-
3/8	AFF-60-6H4H	AFF-60-6H6H	-
9/16	AFF-60-9H4H	AFF-60-9H6H	AFF-60-9H9H

SAFETY NOTES

As your safety is our prime concern and we want you to enjoy reliable service from our products we give the following advice on the safe use of adapters, couplings and connectors.

- High pressure fluids particularly gases are potentially hazardous and should always be treated with the greatest respect. Do not vent fluid without knowing where vent is directed.
- Always be aware of whether pressure is contained by a component.
- Do not loosen connection components when system pressure is present.
- Ensure that no system pressure is present and isolated prior to carrying out maintenance.

ADAPTERS, COUPLINGS AND CONNECTORS SELECTION

Suitability of individual adapters, couplings and connectors for chosen application is dependant on a number of parameters which should be given careful consideration prior to use. To assist our customers in selection we have compiled a list of selection criteria which takes account of many of the most important factors to consider. As all systems are different and user requirements vary greatly this information should not be considered comprehensive. Should you have any doubts as to the suitability of a chosen adapter, coupling and connector please contact the local agent or the factory directly. Either will be delighted to assist.

Adapters, couplings and connectors are essentially connection components and play a static role in system design and do not have a function other than to convey fluids without leakage, facilitate connection make up or allow crossover between different connection types.

PRESSURE

System pressure should always be less than the maximum allowable working pressure for the adapters, couplings and connectors. Where fluctuating pressures are involved such as on the outlet from a reciprocating pump, care should be taken to ensure that pressure peaks do not exceed this maximum.

We recommend that where fluctuating pressure is occurring over long periods then the adapters, couplings and connectors pressure rating should be considerably higher than the maximum nominal system working pressure. Please note that the operating life will be reduced.

Note that the maximum rated pressure for an adapter, coupling or connector is the lowest of either end connection e.g. an adapter, coupling or connector which has both NPT and MPCT connections is rated at the lower value which is 10000 PSI for the NPT. Similarly if MPCT and HPCT connections are provided then the lower value is for the MPCT which is 20000 PSI.

TEMPERATURE

Adapters, couplings and connectors maximum operating pressure is based on the strength of the material at a given temperature whether this is internal or external. This is graphed in the technical section.

As Nova adapters, couplings and connectors are all metal sealing they are designated fire safe.

In all cases where the intended operating temperature will or could even temporarily exceed the maximum limit, the user should consult the local agent or factory directly.

SYSTEM FLUID

There are two principal considerations, firstly the nature of the fluid and its compatibility with the materials of construction and secondly the level of cleanliness of the fluid.

The customer should satisfy themselves that the materials of construction are compatible with the working fluids with respect to corrosion or other chemical reaction.

System fluid should be clean and in particular not contain any debris which is abrasive. Cleanliness levels of NAS 1638 (National Aerospace Standard 1638) level 10 or better are optimum.

CONNECTIONS

Nova adapters, couplings and connectors are supplied with a variety of connection options with pressure limitations for each design.

These are the limitations:-

BSPP - Parallel thread connection relies on an externally clamped seal to hold pressure. Threads are exposed to pressure and working fluids so careful consideration to corrosion on stressed threads should be made. Pressures up to 10000PSI are considered appropriate because there is little if any deformation of threads, BSPP connections are preferable to NPT in cases where no sealing compound can be used with NPT.

NPT - The most common screwed connection type used extensively up to 10000PSI.
We strongly recommend that this connection **is not used above 10000PSI** as per the guidelines in API 6A (American petroleum institute standard 6A). This connection is heavily dependent on the technician for successful make-up and care should be taken that all users are trained in the correct installation of these connections.

MPCT - This coned and threaded connection commonly referred to as The Medium Pressure Connection is rated up to 20000PSI in standard catalogue items. It is compact with the gland nut and collar being in line and is highly tolerant to repeated make and break.

HPCT - This high pressure coned and threaded connection is less compact than the medium pressure variation as a result of the collar being inside the gland. The benefit is that the gland supports the collar at the maximum stress point and provides greater resistance to fatigue.

Note that for coned and threaded connections that experience vibration in the pipework, the use of anti-vibration collars and glands is strongly recommended.

We do not recommend screwed connections (NPT, BSPP) in situations where there could be vibration of the pipework.

Note that the Nova 9/16" high pressure coned and threaded connection is equivalent to the American Petroleum Institute specification 6A - Wellhead and Christmas tree equipment type 1,2 and 3 connections.

NOVA SWISS

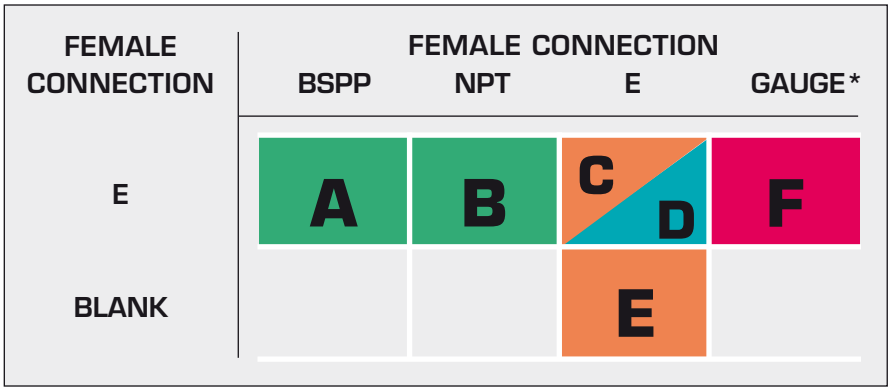
COUPLINGS

Metric Connections according to ISO

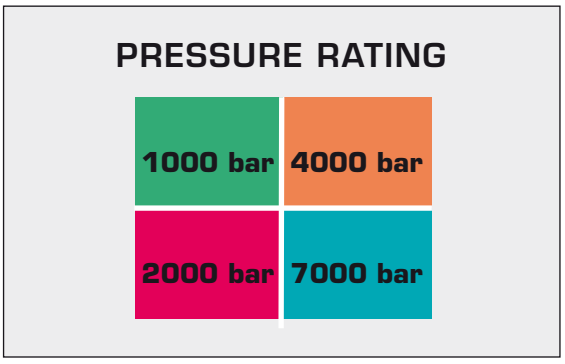
VALVES, FITTINGS AND TUBING FOR **CRITICAL SERVICE**

FEMALE TO FEMALE COUPLING RANGE

METRIC CONNECTIONS E



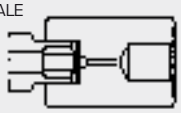
* BSPP Gauge Connection

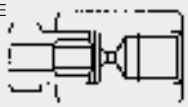


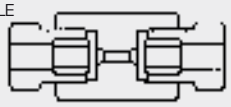
NOTES

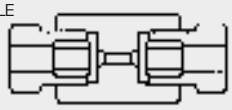
1 All couplings are rated to 430°C max operating temperature for process fluid. Refer to graph in technical section for elevated temperature usage. Environmental temperature -50°C to +65°C.
2 All couplings in Stainless Steel Grade AISI 316 L/DIN 1.4404.
3 All coned and threaded couplings supplied with glands and collars.
4 Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

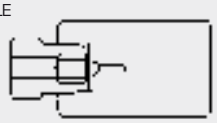
NOVA SWISS

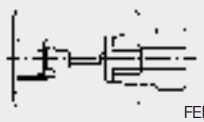
A 1000 bar MAWP	FEMALE E	FEMALE BSPP 1/4	3/8	1/2
FEMALE E  FEMALE BSPP	1/4	AFF-10-4E4B		
	3/8			
	9/16			

B 1000 bar MAWP	FEMALE E	FEMALE NPT 1/4	3/8	1/2
FEMALE E  FEMALE NPT	1/4	AFF-10-4E4N		
	3/8			
	9/16			

C 4000 bar MAWP	FEMALE E	FEMALE E 1/4	3/8	9/16
FEMALE E  FEMALE E	1/4	AFF-40-4E4E	–	
	3/8	AFF-40-6E4E	AFF-40-6E6E	
	9/16	AFF-40-9E4E	AFF-40-9E6E	AFF-40-9E9E

D 7000 bar MAWP	FEMALE E	FEMALE E 1/4	–	–
FEMALE E  FEMALE E	1/4	AFF-70-4E4E	–	
	–			
	–			

E 4000 bar MAWP	FEMALE E	BLANK	LENGTH mm	HEX mm
FEMALE E  BLANK	1/4	AFX-40-4E	50	27
	3/8	AFX-40-6E	55	27
	9/16	AFX-40-9E	53	36

F 2000 bar MAWP	FEMALE BSPP*	FEMALE E 1/4	3/8	–
FEMALE BSPP*  FEMALE E	R 1/4	GFF-20-4B4E	–	
	R 1/2	GFF-20-8B4E	GFF-20-8B6E	

* BSPP Gauge Connection

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PRESSURE

System pressure should always be less than the maximum allowable working pressure for the adapters, couplings and connectors. Where fluctuating pressures are involved such as on the outlet from a reciprocating pump, care should be taken to ensure that pressure peaks do not exceed this maximum.

We recommend that where fluctuating pressure is occurring over long periods then the adapters, couplings and connectors pressure rating should be considerably higher than the maximum nominal system working pressure. Please note that the operating life will be reduced.

Note that the maximum rated pressure for an adapter, coupling or connector is the lowest of either end connection e.g. an adapter, coupling or connector which has both NPT and E connections is rated at the lower value which is 1000 bar for the NPT.

TEMPERATURE

Adapters, couplings and connectors maximum operating pressure is based on the strength of the material at a given temperature whether this is internal or external. This is graphed in the technical section.

As Nova adapters, couplings and connectors are all metal sealing they are designated fire safe.

In all cases where the intended operating temperature will or could even temporarily exceed the maximum limit, the user should consult the local agent or factory directly.

SYSTEM FLUID

There are two principal considerations, firstly the nature of the fluid and its compatibility with the materials of construction and secondly the level of cleanliness of the fluid.

The customer should satisfy themselves that the materials of construction are compatible with the working fluids with respect to corrosion or other chemical reaction.

System fluid should be clean and in particular not contain any debris which is abrasive. Cleanliness levels of NAS 1638 (National Aerospace Standard 1638) level 10 or better are optimum.

CONNECTIONS

Nova adapters, couplings and connectors are supplied with a variety of connection options with pressure limitations for each design.

These are the limitations:-

BSPP - Parallel thread connection relies on an externally clamped seal to hold pressure. Threads are exposed to pressure and working fluids so careful consideration to corrosion on stressed threads should be made. Pressures up to 1000 bar are considered appropriate because there is little if any deformation of threads, BSPP connections are preferable to NPT in cases where no sealing compound can be used with NPT.

NPT - The most common screwed connection type used extensively up to 1000 bar.
We strongly recommend that this connection **is not used above 1000 bar**. This connection is heavily dependent on the technician for successful make-up and care should be taken that all users are trained in the correct installation of these connections.

E- The high pressure E connection is a coned and threaded connection for high strength and repeated make and break. The collar is inside the gland with the benefit that the gland supports the collar at the maximum stress point and provides greater resistance to fatigue.

Note that for coned and threaded connections that experience vibration in the pipework, the use of anti-vibration collars and glands is strongly recommended.

We do not recommend screwed connections (NPT, BSPP) in situations where there could be vibration of the pipework.

NOVA SWISS

CONNECTORS

Imperial Connections

VALVES, FITTINGS AND TUBING FOR **CRITICAL SERVICE**

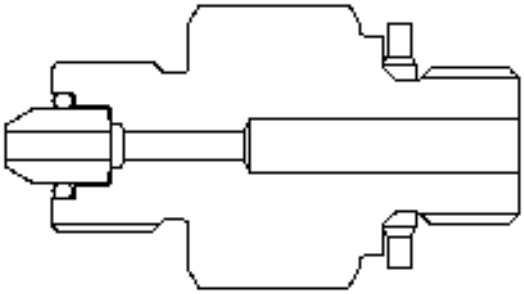
THE NEW APPROACH FROM NOVA SWISS

Simplicity is the key.

- The New Nova range combines 25 years experience of supplying the highest quality connectors that have been subjected to rigorous testing combined with elegant simplicity in design.
- Nova Swiss have produced a range of products that better meet the needs of critical service applications, where safety, reliability and leak tight sealing are paramount.
- Considerable effort has also been put into the thorough testing of all products specifically cyclic service and fatigue pressure testing which we believe is unique to Nova Swiss.
- Connectors are supplied in materials suitable for sour gas applications according to NACE MR-01-75 up to 30000 psi providing a significant cost reduction over other suppliers.
- **Everything is aimed at better serving the needs of our customers.**

DOUBLE CONED PLUG
For CT connections prevents galling and promotes long life

RETAINING RING
Holds double cone plug in position to avoid loss when installing in vertical position



CONNECTION OPTIONS
All connection cross over options are covered*

* Note – Except a small number of impractical options

EACH BATCH TESTED PRIOR TO DESPATCH To ensure your product doesn't let you down	**ALTERNATIVE MATERIALS AVAILABLE** **CUSTOM DESIGN SERVICE TO MATCH YOUR NEEDS**	**BODY & WETTED PARTS TO NACE MR-01-75 AS STANDARD** Easier to specify Less inventory Peace of mind Interchangeability	**ORIFICE SIZES-MATCH TUBING** To provide constant flow area with minimum flow restriction	**CERTIFICATION** Upon request material certificate accredited to EN 10204 3.1 for all pressure bearing components

MALE TO MALE CONNECTOR RANGE

NOVA SWISS

MALE CONNECTION	MALE CONNECTION			
	BSPP	NPT	MPCT	HPCT
MPCT	A	C	E	
HPCT	B	D		F

PRESSURE RATING

10000psi	20000psi
30000psi	

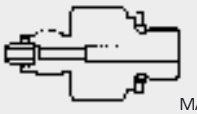
NOTES

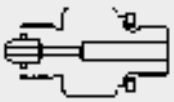
1 All connectors are rated to 430°C max operating temperature for process fluid.
(BSPP standard seal -15°C to 225°C)
Refer to graph in technical section for elevated temperature usage.
Environmental temperature -50°C to +65°C.

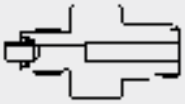
2 All connectors in Stainless Steel Grade 316 suitable for sour gas service.
All wetted parts comply with NACE MR0175 (latest revision).

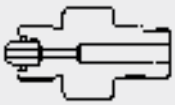
3 Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

NOVA SWISS

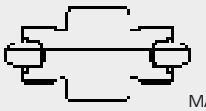
A 10000psi MAWP	MALE MPCT	MALE BSPP 1/4	MALE BSPP 3/8	MALE BSPP 1/2
MALE MPCT  MALE BSPP	1/4	AMM-10-4M4B	–	–
	3/8	–	AMM-10-6M6B	–
	9/16	–	–	AMM-10-9M8B

B 10000psi MAWP	MALE HPCT	MALE BSPP 1/4	MALE BSPP 3/8	MALE BSPP 1/2
MALE HPCT  MALE BSPP	1/4	AMM-10-4H4B	–	–
	3/8	–	AMM-10-6H6B	–
	9/16	–	–	AMM-10-9H8B

C 10000psi MAWP	MALE MPCT	MALE NPT 1/4	MALE NPT 3/8	MALE NPT 1/2
MALE MPCT  MALE NPT	1/4	AMM-10-4M4N	–	–
	3/8	–	AMM-10-6M6N	–
	9/16	–	–	AMM-10-9M8N

D 10000psi MAWP	MALE HPCT	MALE NPT 1/4	MALE NPT 3/8	MALE NPT 1/2
MALE HPCT  MALE NPT	1/4	AMM-10-4H4N	–	–
	3/8	–	AMM-10-6H6N	–
	9/16	–	–	AMM-10-9H8N

E 20000psi MAWP	MALE MPCT	MALE MPCT 1/4	MALE MPCT 3/8	MALE MPCT 9/16
MALE MPCT  MALE MPCT	1/4	AMM-20-4M4M	–	–
	3/8	–	AMM-20-6M6M	–
	9/16	–	–	AMM-20-9M9M

F 30000psi MAWP	MALE HPCT	MALE HPCT 1/4	MALE HPCT 3/8	MALE HPCT 9/16
MALE HPCT  MALE HPCT	1/4	AMM-30-4H4H	–	–
	3/8	–	AMM-30-6H6H	–
	9/16	–	–	AMM-30-9H9H

SAFETY NOTES

As your safety is our prime concern and we want you to enjoy reliable service from our products we give the following advice on the safe use of adapters, couplings and connectors.

- High pressure fluids particularly gases are potentially hazardous and should always be treated with the greatest respect. Do not vent fluid without knowing where vent is directed.
- Always be aware of whether pressure is contained by a component.
- Do not loosen connection components when system pressure is present.
- Ensure that no system pressure is present and isolated prior to carrying out maintenance.

ADAPTERS, COUPLINGS AND CONNECTORS SELECTION

Suitability of individual adapters, couplings and connectors for chosen application is dependant on a number of parameters which should be given careful consideration prior to use. To assist our customers in selection we have compiled a list of selection criteria which takes account of many of the most important factors to consider. As all systems are different and user requirements vary greatly this information should not be considered comprehensive.
Should you have any doubts as to the suitability of a chosen adapter, coupling and connector please contact the local agent or the factory directly. Either will be delighted to assist.
Adapters, couplings and connectors are essentially connection components and play a static role in system design and do not have a function other than to convey fluids without leakage, facilitate connection make up or allow crossover between different connection types.

PRESSURE

System pressure should always be less than the maximum allowable working pressure for the adapters, couplings and connectors. Where fluctuating pressures are involved such as on the outlet from a reciprocating pump, care should be taken to ensure that pressure peaks do not exceed this maximum.
We recommend that where fluctuating pressure is occurring over long periods then the adapters, couplings and connectors pressure rating should be considerably higher than the maximum nominal system working pressure. Please note that the operating life will be reduced.
Note that the maximum rated pressure for an adapter, coupling or connector is the lowest of either end connection e.g. an adapter, coupling or connector which has both NPT and MPCT connections is rated at the lower value which is 10000 PSI for the NPT. Similarly if MPCT and HPCT connections are provided then the lower value is for the MPCT which is 20000 PSI.

TEMPERATURE

Adapters, couplings and connectors maximum operating pressure is based on the strength of the material at a given temperature whether this is internal or external. This is graphed in the technical section.
As Nova adapters, couplings and connectors are all metal sealing they are designated fire safe.
In all cases where the intended operating temperature will or could even temporarily exceed the maximum limit, the user should consult the local agent or factory directly.

SYSTEM FLUID

There are two principal considerations, firstly the nature of the fluid and its compatibility with the materials of construction and secondly the level of cleanliness of the fluid.
The customer should satisfy themselves that the materials of construction are compatible with the working fluids with respect to corrosion or other chemical reaction.
System fluid should be clean and in particular not contain any debris which is abrasive. Cleanliness levels of NAS 1638 (National Aerospace Standard 1638) level 10 or better are optimum.

CONNECTIONS

Nova adapters, couplings and connectors are supplied with a variety of connection options with pressure limitations for each design.
These are the limitations:-

BSPP - Parallel thread connection relies on an externally clamped seal to hold pressure. Threads are exposed to pressure and working fluids so careful consideration to corrosion on stressed threads should be made. Pressures up to 10000PSI are considered appropriate because there is little if any deformation of threads, BSPP connections are preferable to NPT in cases where no sealing compound can be used with NPT.

NPT - The most common screwed connection type used extensively up to 10000PSI.
We strongly recommend that this connection **is not used above 10000PSI** as per the guidelines in API 6A (American petroleum institute standard 6A). This connection is heavily dependent on the technician for successful make-up and care should be taken that all users are trained in the correct installation of these connections.

MPCT - This coned and threaded connection commonly referred to as The Medium Pressure Connection is rated up to 20000PSI in standard catalogue items. It is compact with the gland nut and collar being in line and is highly tolerant to repeated make and break.

HPCT - This high pressure coned and threaded connection is less compact than the medium pressure variation as a result of the collar being inside the gland. The benefit is that the gland supports the collar at the maximum stress point and provides greater resistance to fatigue.

Note that for coned and threaded connections that experience vibration in the pipework, the use of anti-vibration collars and glands is strongly recommended.
We do not recommend screwed connections (NPT, BSPP) in situations where there could be vibration of the pipework.
Note that the Nova 9/16" high pressure coned and threaded connection is equivalent to the American Petroleum Institute specification 6A - Wellhead and Christmas tree equipment type 1,2 and 3 connections.

NOVA SWISS

CONNECTORS

Metric Connections according to ISO

VALVES, FITTINGS AND TUBING FOR **CRITICAL SERVICE**

MALE TO MALE CONNECTOR RANGE METRIC CONNECTIONS E

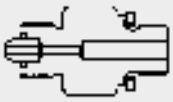
MALE CONNECTION	MALE CONNECTION			
	BSPP	NPT	BLANK	E
E	A	B	C	D

PRESSURE RATING

- 1000 bar
- 4000 bar

A 1000 bar MAWP

MALE E

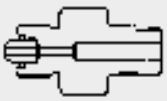


MALE BSPP

MALE E	MALE BSPP		
	1/4	–	–
1/4	AMM-10-4E4B	–	
–			
–			

B 1000 bar MAWP

MALE E

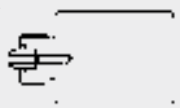


MALE NPT

MALE E	MALE NPT		
	1/4	–	–
1/4	AMM-10-4E4N	–	
–			
–			

C 4000 bar MAWP

MALE E

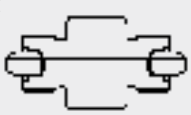


BLANK

MALE E	BLANK	LENGTH mm	HEX mm
1/4	AMX-40-4E	39	27
3/8	AMX-40-6E	35	27
9/16	AMX-40-9E	37.5	36

D 4000 bar MAWP

MALE E



MALE E

MALE E	MALE E		
	1/4	–	–
1/4	AMM-40-4E4E	–	
–			
–			

NOTES

1 All connectors are rated to 430°C max operating temperature for process fluid.
(BSPP standard seal -15°C to 225°C)
Refer to graph in technical section for elevated temperature usage.
Environmental temperature -50°C to +65°C.

2 All connectors in Stainless Steel Grade AISI 316 L/DIN 1.4404.

3 Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

NOVA SWISS

HIGH PRESSURE TUBING

& NIPPLES

VALVES, FITTINGS AND TUBING FOR **CRITICAL SERVICE**

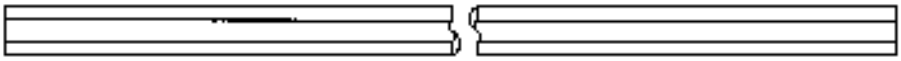
THE NEW APPROACH FROM NOVA SWISS

Simplicity is the key.

- The New Nova range combines 25 years experience of supplying the highest quality tubing products that have been subjected to rigorous testing.
- 20,000 and 30,000 psi also supplied in the NACE MR-01-75 condition. This is of particular benefit in the oil and gas industry where significant cost benefits will result.
- Considerable effort has also been put into the thorough testing of all products specifically cyclic service and fatigue pressure testing which we believe is unique to Nova Swiss.
- **Everything is aimed at better serving the needs of our existing and potential customers.**

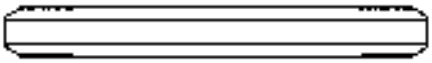
PRE-CUT & CONED & THREADED NIPPLES
Providing a ready made solution

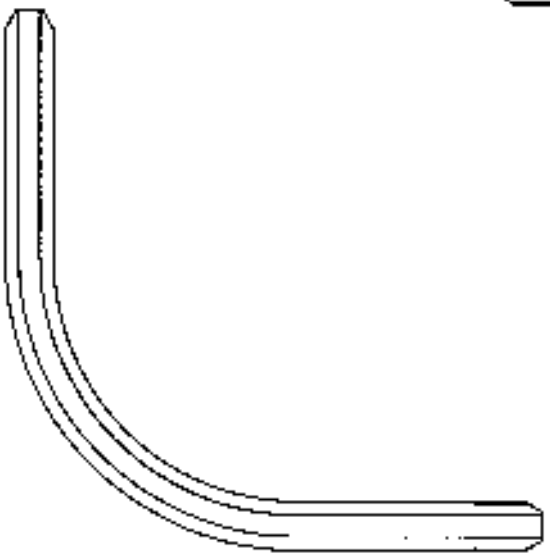
AVAILABLE IN LONG LENGTHS AND COILS
To assist you in the most demanding applications



MATERIAL CERTIFICATION TO EN 10204 3.1.
To satisfy your quality control requirements

MARKING
To enable you to readily trace material to source



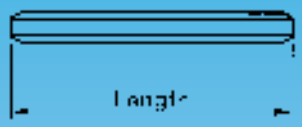


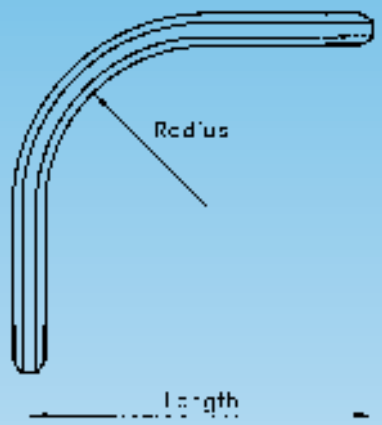
HIGH SURFACE FINISH – INTERNAL & EXTERNAL
To promote long life particularly in potential fatigue application

10000 psi
690 bar

TUBING & NIPPLES

MEDIUM PRESSURE C+T CONNECTIONS





STANDARD SERVICE TUBING

Catalogue Number	Tube O/D	Tube I/D	Pressure psi	C+T Connection
TBG-10-9	9/16	0.36	10000	9M
	14.3	9.1		
TBG-10-12	3/4	0.52	10000	12M
	19.1	13.1		
TBG-10-16	1	0.69	10000	16M
	25.4	17.5		

STANDARD SERVICE STRAIGHT NIPPLES

Catalogue Number	Tube O/D	Tube I/D	Pressure psi	C+T Connection	Length
SNP-10-9	9/16	0.36	10000	9M	3.46
	14.3	9.1			88
SNP-10-12	3/4	0.52	10000	12M	4.09
	19.1	13.1			104
SNP-10-16	1	0.69	10000	16M	5.43
	25.4	17.5			138

STANDARD SERVICE RADIUS NIPPLES

Catalogue Number	Tube O/D	Tube I/D	Pressure psi	C+T Connection	Length	Radius
RNP-10-9	9/16	0.36	9200	9M	4.88	2.62
	14.3	9.1			124	67
RNP-10-12	3/4	0.52	9200	12M	6.22	3.50
	19.1	13.1			158	89
RNP-10-16	1	0.69	9200	16M	8.27	4.62
	25.4	17.5			210	117

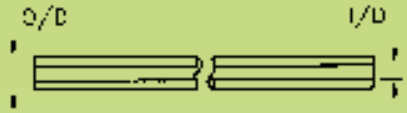
NOTES

1. All tubes and nipples are rated to 430°C max operating temperature for process fluid. Refer to graph in technical section for elevated temperature usage. Environmental temperature -50°C to +65°C.
2. All tubes and nipples in Stainless Steel Grade 316.
3. Rated pressure will be reduced if tubing is bent. Refer to radius nipple data for minimum bend radius and corresponding pressure.
4. Longer nipples are made to order – contact agent or factory.
5. Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

20000 psi
1380 bar

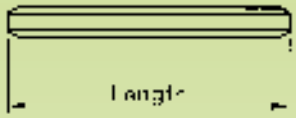
TUBING & NIPPLES

MEDIUM PRESSURE C+T CONNECTIONS



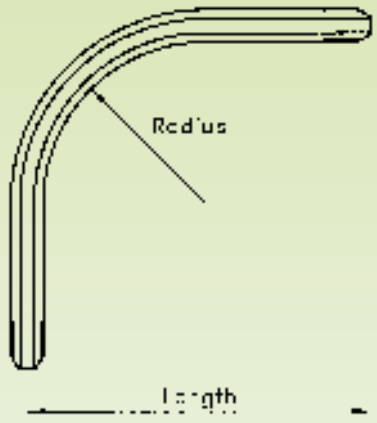
STANDARD SERVICE TUBING

Catalogue Number	Tube O/D	Tube I/D	Pressure psi	C+T Connection
TBG-20-4	1/4	0.11	20000	4M
	6.4	2.8		
TBG-20-6	3/8	0.20	20000	6M
	9.5	5.2		
TBG-20-9	9/16	0.31	20000	9M
	14.3	7.9		
TBG-20-12	3/4	0.44	20000	12M
	19.1	11.1		
TBG-20-16	1	0.56	20000	16M
	25.4	14.3		



STANDARD SERVICE STRAIGHT NIPPLES

Catalogue Number	Tube O/D	Tube I/D	Pressure psi	C+T Connection	Length
SNP-20-4	1/4	0.11	20000	4M	2.20
	6.4	2.8			56
SNP-20-6	3/8	0.20	20000	6M	2.83
	9.5	5.2			72
SNP-20-9	9/16	0.31	20000	9M	3.46
	14.3	7.9			88
SNP-20-12	3/4	0.44	20000	12M	4.09
	19.1	11.1			104
SNP-20-16	1	0.56	20000	16M	5.43
	25.4	14.3			138



STANDARD SERVICE RADIUS NIPPLES

Catalogue Number	Tube O/D	Tube I/D	Pressure psi	C+T Connection	Length	Radius
RNP-20-4	1/4	0.11	18700	4M	2.68	1.25
	6.4	2.8			68	32
RNP-20-6	3/8	0.20	18700	6M	3.54	1.75
	9.5	5.2			90	44
RNP-20-9	9/16	0.31	18700	9M	4.88	2.62
	14.3	7.9			124	67
RNP-20-12	3/4	0.44	18700	12M	6.22	3.50
	19.1	11.1			158	89
RNP-20-16	1	0.56	18700	16M	8.27	4.62
	25.4	14.3			210	117

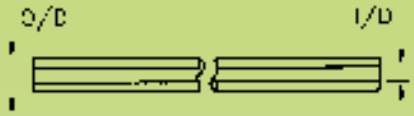
NOTES

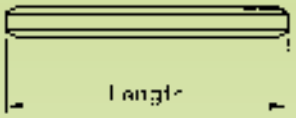
1. All tubes and nipples are rated to 430°C max operating temperature for process fluid. Refer to graph in technical section for elevated temperature usage. Environmental temperature -50°C to +65°C.
2. All tubes and nipples in Stainless Steel Grade 316.
3. Rated pressure will be reduced if tubing is bent. Refer to radius nipple data for minimum bend radius and corresponding pressure.
4. Longer nipples are made to order – contact agent or factory.
5. Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

20000 psi
1380 bar

TUBING & NIPPLES

MEDIUM PRESSURE C+T CONNECTIONS





SOUR SERVICE TUBING

Catalogue Number	Tube O/D	Tube I/D	Pressure psi	C+T Connection
TBG-20-4A	1/4	0.11	20000	4M
	6.4	2.8		
TBG-20-6A	3/8	0.19	20000	6M
	9.5	4.7		
TBG-20-9A	9/16	0.28	20000	9M
	14.3	7.0		
TBG-20-12A	3/4	0.37	20000	12M
	19.1	9.5		
TBG-20-16A	1	0.50	20000	16M
	25.4	12.6		

SOUR SERVICE STRAIGHT NIPPLES

Catalogue Number	Tube O/D	Tube I/D	Pressure psi	C+T Connection	Length
SNP-20-4A	1/4	0.11	20000	4M	2.20
	6.4	2.8			56
SNP-20-6A	3/8	0.19	20000	6M	2.83
	9.5	4.7			72
SNP-20-9A	9/16	0.28	20000	9M	3.46
	14.3	7.0			88
SNP-20-12A	3/4	0.37	20000	12M	4.09
	19.1	9.5			104
SNP-20-16A	1	0.50	20000	16M	5.43
	25.4	12.6			138

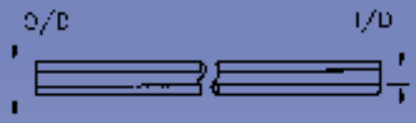
NOTES

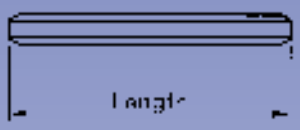
1. All tubes and nipples are rated to 430°C max operating temperature for process fluid. Refer to graph in technical section for elevated temperature usage. Environmental temperature -50°C to +65°C.
2. All tubes and nipples in Stainless Steel Grade 316 complying to NACE MR 0175 (latest revision) suitable for sour gas service.
3. Bending of annealed tubing is **not** recommended.
4. Longer nipples are made to order – contact agent or factory.
5. Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

30000 psi
2070 bar

TUBING & NIPPLES

HP C+T and E CONNECTIONS





STANDARD & SOUR SERVICE TUBING

Catalogue Number	Tube O/D	Tube I/D	Pressure	C+T Connection
TBG-30-4A	1/4	0.09	30000 psi	4H
	6.4	2.4	2070 bar	4E
TBG-30-6A	3/8	0.13	30000 psi	6H
	9.5	3.2	2070 bar	6E
TBG-30-9A	9/16	0.19	30000 psi	9H
	14.3	4.8	2070 bar	9E

STANDARD & SOUR SERVICE STRAIGHT NIPPLES

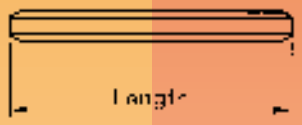
Catalogue Number	Tube O/D	Tube I/D	Pressure	C+T Connection	Length
SNP-30-4A	1/4	0.09	30000 psi	4H	2.52
	6.4	2.4	2070 bar	4E	64
SNP-30-6A	3/8	0.13	30000 psi	6H	3.23
	9.5	3.2	2070 bar	6E	82
SNP-30-9A	9/16	0.19	30000 psi	9H	4.09
	14.3	4.8	2070 bar	9E	104

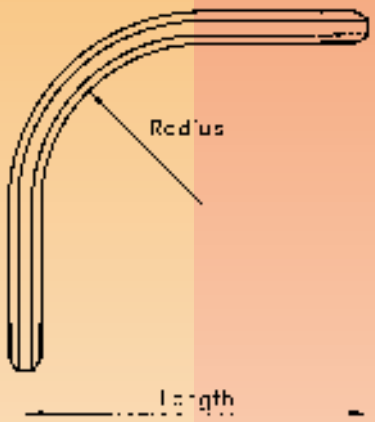
NOTES

1. All tubes and nipples are rated to 430°C max operating temperature for process fluid. Refer to graph in technical section for elevated temperature usage. Environmental temperature -50°C to +65°C.
2. All tubes and nipples in Stainless Steel Grade 316 complying to NACE MR 0175 (latest revision) suitable for sour gas service.
3. Bending of annealed tubing is **not** recommended.
4. Longer nipples are made to order – contact agent or factory.
5. Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

60000 psi
4140 bar

TUBING & NIPPLES HP C+T and E CONNECTIONS





STANDARD SERVICE TUBING

Catalogue Number	Tube O/D	Tube I/D	Pressure	C+T Connection
TBG-60-4	1/4	0.09	60000 psi	4H
	6.4	2.4	4140 bar	4E
TBG-60-6	3/8	0.13	60000 psi	6H
	9.5	3.2	4140 bar	6E
TBG-60-9	9/16	0.19	60000 psi	9H
	14.3	4.8	4140 bar	9E

STANDARD SERVICE STRAIGHT NIPPLES

Catalogue Number	Tube O/D	Tube I/D	Pressure	C+T Connection	Length
SNP-60-4	1/4	0.09	60000 psi	4H	2.52
	6.4	2.4	4140 bar	4E	64
SNP-60-6	3/8	0.13	60000 psi	6H	3.23
	9.5	3.2	4140 bar	6E	82
SNP-60-9	9/16	0.19	60000 psi	9H	4.09
	14.3	4.8	4140 bar	9E	104

STANDARD SERVICE RADIUS NIPPLES

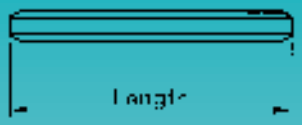
Catalogue Number	Tube O/D	Tube I/D	Pressure	C+T Connection	Length	Radius
RNP-60-4	1/4	0.09	57600 psi	4H	2.83	1.25
	6.4	2.4	3970 bar	4E	72	32
RNP-60-6	3/8	0.13	57600 psi	6H	3.86	1.75
	9.5	3.2	3970 bar	6E	98	44
RNP-60-9	9/16	0.19	57600 psi	9H	5.28	2.62
	14.3	4.8	3970 bar	9E	134	67

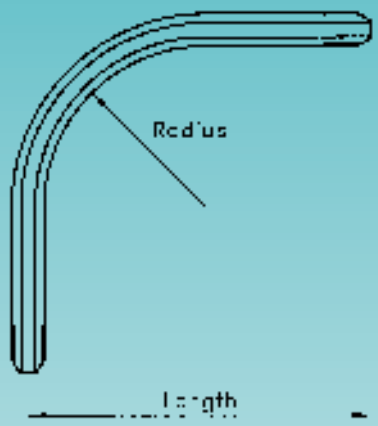
NOTES

1. All tubes and nipples are rated to 430°C max operating temperature for process fluid. Refer to graph in technical section for elevated temperature usage. Environmental temperature -50°C to +65°C.
2. All tubes and nipples in Stainless Steel Grade AISI 316 L/DIN 1.4404.
3. Rated pressure will be reduced if tubing is bent. Refer to radius nipple data for minimum bend radius and corresponding pressure.
4. Longer nipples are made to order – contact agent or factory.
5. Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

101500 psi
7000 bar

TUBING & NIPPLES HP C+T and E CONNECTIONS





STANDARD SERVICE TUBING

Catalogue Number	Tube O/D	Tube I/D	Pressure	C+T Connection
TBG-100-4	1/4	0.063	101500 psi	4H
	6.4	1.6	7000 bar	4E

STANDARD SERVICE STRAIGHT NIPPLES

Catalogue Number	Tube O/D	Tube I/D	Pressure	C+T Connection	Length
SNP-100-4	1/4	0.063	101500 psi	4H	2.52
	6.4	1.6	7000 bar	4E	64

STANDARD SERVICE RADIUS NIPPLES

Catalogue Number	Tube O/D	Tube I/D	Pressure	C+T Connection	Length	Radius
RNP-100-4	1/4	0.063	101500 psi	4H	3.94	0.98
	6.4	1.6	7000 bar	4E	100	25

NOTES

1 All tubes and nipples are rated to 430°C max operating temperature for process fluid. Refer to graph in technical section for elevated temperature usage. Environmental temperature -50°C to +65°C.
2 All tubes and nipples in Stainless Steel Grade AISI 316 L/DIN 1.4404.
3 Rated pressure will be reduced if tubing is bent. Refer to radius nipple data for minimum bend radius and corresponding pressure.
4 Longer nipples are made to order – contact agent or factory.
5 Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

SAFETY NOTES

As your safety is our prime concern and we want you to enjoy reliable service from our products we give the following advice on the safe use of tubing and nipples.

- High pressure fluids particularly gases are potentially hazardous and should always be treated with the greatest respect. Do not vent fluid without knowing where vent is directed.
- Always be aware of whether pressure is contained by a component.
- Do not loosen connection components when system pressure is present.
- Ensure that no system pressure is present and isolated prior to carrying out maintenance.

TUBING SELECTION

Suitability of individual tubing and nipples for chosen application is dependant on a number of parameters which should be given careful consideration prior to use. To assist our customers in selection we have compiled a list of selection criteria which takes account of many of the most important factors to consider. As all systems are different and user requirements vary greatly this information should not be considered comprehensive. Should you have any doubts as to the suitability of a chosen tubing and nipple please contact the local agent or the factory directly. Either will be delighted to assist.
Tubing and nipples play a static role in system design and do not have a function other than to convey fluids without leakage.

BENDING

STANDARD TUBING

During the bending operation the thickness of the outer tube wall is reduced and there is a consequential reduction in the maximum operating pressure that the bent tube can safely withstand. This reduction is tabulated in the data section.

NACE TUBING

Tubing that is NACE approved is supplied in the annealed condition. Stainless steels generally harden as they are worked such as occurs during the bending operation. The increase in hardness is such that the bent section of tubing is outside of NACE limits and therefore should not be used for sour gas applications.
The problem can be overcome by re-annealing the tubes following bending however this is a specialist operation and should only be carried out following consultation with the factory.
In general we do not recommend bending NACE tubing.

PRESSURE

System pressure should always be less than the maximum allowable working pressure for the tubing and nipple. Where fluctuating pressures are involved such as on the outlet from a reciprocating pump, care should be taken to ensure that pressure peaks do not exceed this maximum.
We recommend that where fluctuating pressure is occurring over long periods tubing and nipple pressure rating should be considerably higher than the maximum nominal system working pressure. Please note that the operating life will be reduced.

TEMPERATURE

Tubing and nipples maximum operating pressure is based on the strength of the material at a given temperature whether this is internal or external. This is graphed in the technical section.
In all cases where the intended operating temperature will or could even temporarily exceed the maximum limit, the user should consult the local agent or factory directly.

SYSTEM FLUID

There are two principal considerations, firstly the nature of the fluid and its compatibility with the materials of construction and secondly the level of cleanliness of the fluid.
The customer should satisfy themselves that the materials of construction are compatible with the working fluids with respect to corrosion or other chemical reaction.
System fluid should be clean and in particular not contain any debris which is abrasive. Cleanliness levels of NAS 1638 (National Aerospace Standard 1638) level 10 or better are optimum.

NOVA SWISS

AIR OPERATED VALVES

VALVES, FITTINGS AND TUBING FOR **CRITICAL SERVICE**

THE NEW APPROACH FROM NOVA SWISS

Simplicity is the key.

- The New Nova range combines 25 years experience of supplying the highest quality valve products that have been subjected to rigorous testing combined with elegant simplicity in design.
- Nova Swiss have produced a range of products that better meet the needs of critical service applications, where safety reliability and leak tight sealing are paramount.
- With modern sealing technology and less parts than similar products, the valves offer maximum ease of use and simple maintenance.
- All products are supplied with glands and collars as required by the products, except BSPP and NPT connections.
- Innovations include the decision to produce **all needle valves rated upto and including 30000 psi with pressure bearing parts in NACE MR-01-75 approved material.** This is of particular benefit to the oil and gas exploration and production industries, where significant cost benefits will result.
- Considerable effort has also been put into the thorough testing of all products specifically cyclic service and fatigue pressure testing which we believe is unique to Nova Swiss.
- All valves are bidirectional which simplifies system design.
- **Everything is aimed at better serving the needs of our customers.**

SIMPLE SCREW IN MOUNTING
For ease of use, compactness and lower weight

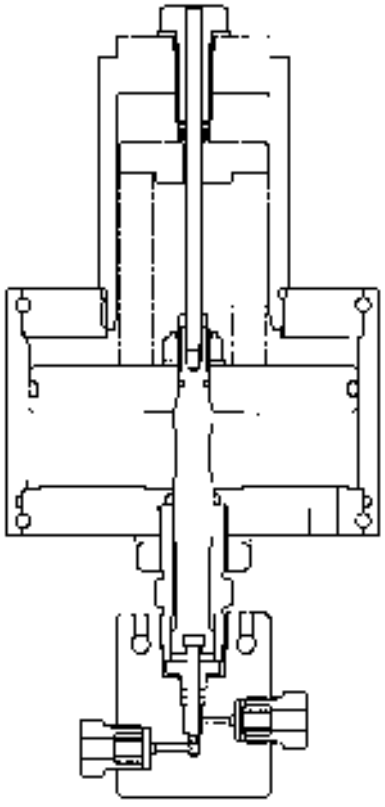
2 PIECE NON ROTATING STEM
Avoids seat/stem galling to provide optimum reliability

VISUAL OPEN/CLOSE INDICATION
For safety, ease of use and automation

60° STEM TIP AND RADIUSSED SEAT
Optimum sealing characteristics and dependable, reliable and repeatable sealing with gases and liquids

PISTON DESIGN
Rugged, reliable, ease of maintenance. Wider operating range - easier selection process

SEAL BELOW STEM THREADS
Safety-leakage vented



ATC AND ATO OPTIONS
To provide complete system solutions

INTERNALLY ADJUSTED
To prevent inadvertent (unauthorised) adjustment

VENT HOLES ON ALL CONED AND THREADED CONNECTIONS/SEAL AREAS
To provide a safe discharge of pressure in the event of an inadvertent leak

CONED AND THREADED CONNECTIONS
For Reliability & Safety,
Repeatable sealing make/break

LIMIT SWITCH ASSEMBLY OPTIONAL
For remote operation

NON BOLTED CONSTRUCTION
For ease of maintenance and lower weight

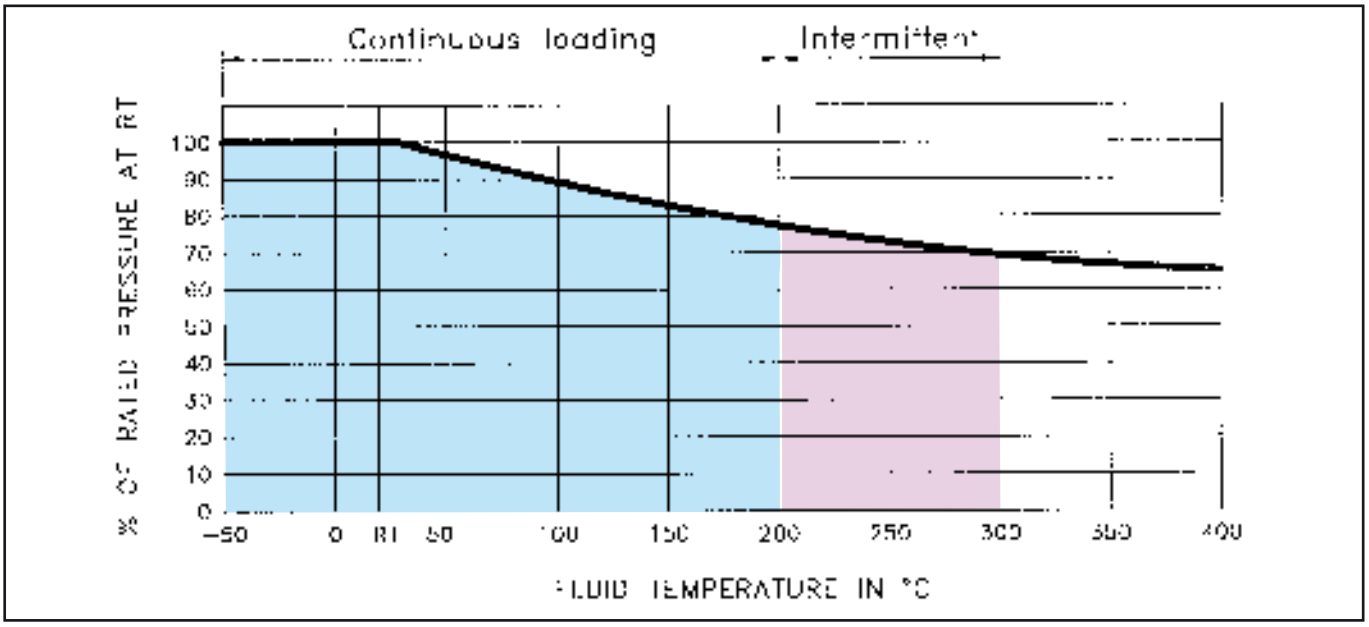
EACH BATCH TESTED PRIOR TO DESPATCH To ensure your product doesn't let you down	**ALTERNATIVE MATERIALS AVAILABLE** **CUSTOM DESIGN SERVICE TO MATCH YOUR NEEDS**	**BODY & PRESSURE BEARING PARTS TO NACE MR-01-75 AS STANDARD UP TO 30,000 psi** Easier to specify Less inventory Peace of mind Interchangeability	**TOTAL TRACEABILITY CERTIFICATE** Upon request All pressure retaining parts fully traceable to better meet your quality control requirements	**TRACEABILITY CERTIFICATE** As standard for body material certificate accredited to EN 10204 3.1 to meet your quality control and certification requirements

Elevated Temperature Usage

The following graph is for use with the Nova range of 316 stainless steel air operated needle valves. The thick line depicts the reduction in yield stress of the 316 and the corresponding reduction in valve rated pressure (some valves may be operated in the area above the line – consult agent or factory for specific cases).

The allowable operating temperature range is governed by the stem packing material and this range is shown coloured on the graph.

The graph should be used for reference only as other considerations such as fatigue, creep, corrosion etc can affect performance at elevated temperatures. Please consult agent or factory for unusual operating conditions.



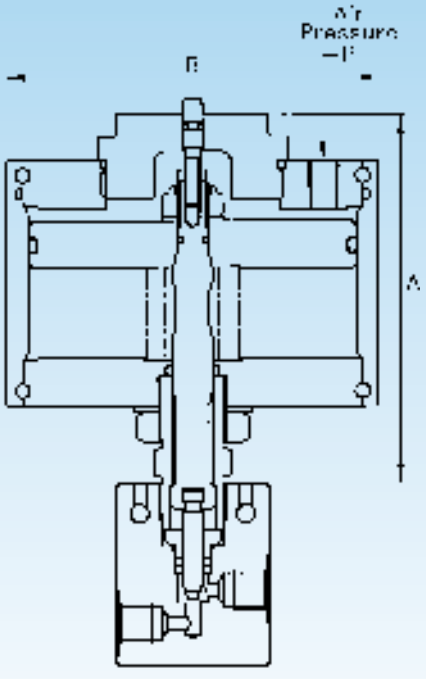
Standard Materials of Construction

Valve body (10, 20, 30,000 psi)	AISI 316 L/1.4404 to NACE MR-01-75
Valve body (60,000 psi/4000 bar)	AISI 316 L/1.4404
Upper stem	AISI 416 L/1.4005
Bonnet	Aluminium bronze NES 833
Lower stem	17-4 PH/1.4542
Stem guide	17-4 PH/1.4542
Stem washer	17-4 PH/1.4542
Packing	Glass filled PTFE
Screws	A2 S.S.
O-rings	Viton
Glands	AISI 316 L/1.4404 (to NACE MR-01-75)*
Collars	AISI 316 L/1.4404 (to NACE MR-01-75)*
	*(MPCT and HPCT connection components)
Air operator components	Aluminium alloy 6061-T6
Air operator spring	Chrome vanadium steel ASTM A232
Air operator end retainers	AISI 316 L/1.4404

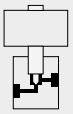
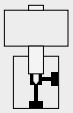
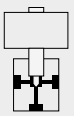
10000 psi

AIR TO CLOSE (ATC) NORMALLY OPEN NEEDLE VALVES

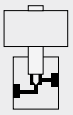
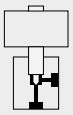
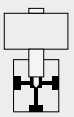
BSPP & NPT CONNECTIONS



BSPP CONNECTIONS

	Catalogue Number	Port Size	Orifice Dia	A	B	Operating P (psi)	Maximum P (psi)
	STRAIGHT						
	NV1-10-4B-ATC	1/4	0.18	4.80	4.84	65-75	100
		6.4	4.5	122	123		
	NV1-10-6B-ATC	3/8	0.26	4.80	4.84	80-90	100
		9.5	6.5	122	123		
	NV1-10-8B-ATC	1/2	0.30	4.80	4.84	80-90	100
		12.7	7.5	122	123		
	ANGLE						
	NV2-10-4B-ATC	1/4	0.18	4.80	4.84	65-75	100
		6.4	4.5	122	123		
	NV2-10-6B-ATC	3/8	0.26	4.80	4.84	80-90	100
		9.5	6.5	122	123		
	NV2-10-8B-ATC	1/2	0.30	4.80	4.84	80-90	100
		12.7	7.5	122	123		
	TEE						
	NV3-10-4B-ATC	1/4	0.18	4.80	4.84	65-75	100
		6.4	4.5	122	123		
	NV3-10-6B-ATC	3/8	0.26	4.80	4.84	80-90	100
		9.5	6.5	122	123		
	NV3-10-8B-ATC	1/2	0.30	4.80	4.84	80-90	100
		12.7	7.5	122	123		

NPT CONNECTIONS

	Catalogue Number	Port Size	Orifice Dia	A	B	Operating P (psi)	Maximum P (psi)
	STRAIGHT						
	NV1-10-4N-ATC	1/4	0.18	4.80	4.84	65-75	100
		6.4	4.5	122	123		
	NV1-10-6N-ATC	3/8	0.26	4.80	4.84	80-90	100
		9.5	6.5	122	123		
	NV1-10-8N-ATC	1/2	0.30	4.80	4.84	80-90	100
		12.7	7.5	122	123		
	ANGLE						
	NV2-10-4N-ATC	1/4	0.18	4.80	4.84	65-75	100
		6.4	4.5	122	123		
	NV2-10-6N-ATC	3/8	0.26	4.80	4.84	80-90	100
		9.5	6.5	122	123		
	NV2-10-8N-ATC	1/2	0.30	4.80	4.84	80-90	100
		12.7	7.5	122	123		
	TEE						
	NV3-10-4N-ATC	1/4	0.18	4.80	4.84	65-75	100
		6.4	4.5	122	123		
	NV3-10-6N-ATC	3/8	0.26	4.80	4.84	80-90	100
		9.5	6.5	122	123		
	NV3-10-8N-ATC	1/2	0.30	4.80	4.84	80-90	100
		12.7	7.5	122	123		

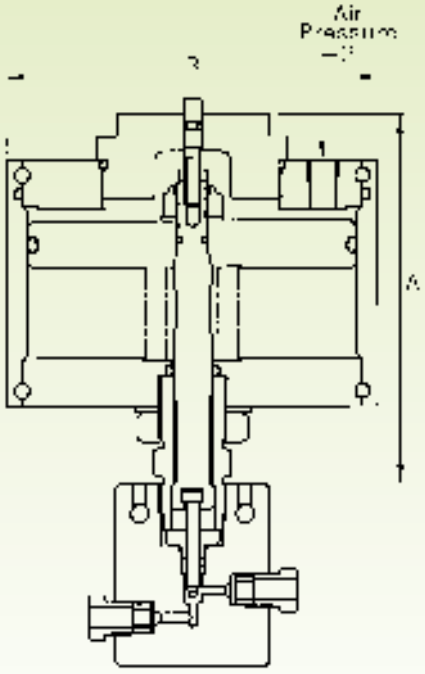
NOTES

1 Refer to Air Operated Needle Valve graph for elevated temperature usage. Environmental temperature range -25°C to +65°C.
2 All valves in Stainless Steel Grade 316 suitable for sour gas service.
3 All valves are bi-directional.
4 Side mounting holes = Ø6 (0.24").
5 Refer to needle valve section for body sizes.
6 Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

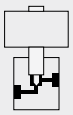
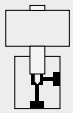
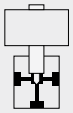
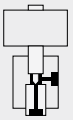
20000 psi

AIR TO CLOSE (ATC) NORMALLY OPEN NEEDLE VALVES

MEDIUM PRESSURE C+T CONNECTIONS



MP C+T CONNECTIONS

	Catalogue Number	Tube O/D	Orifice Dia	A	B	Operating P (psi)	Maximum P (psi)
STRAIGHT							
	NV1-20-4M-ATC	1/4	0.11	4.80	4.84	65-75	100
		6.4	2.8	122	123		
	NV1-20-6M-ATC	3/8	0.20	4.80	7.32	65-75	100
		9.5	5.0	122	186		
	NV1-20-9M-ATC	9/16	0.30	4.80	7.32	85-95	100
		14.3	7.5	122	186		
ANGLE							
	NV2-20-4M-ATC	1/4	0.11	4.80	4.84	65-75	100
		6.4	2.8	122	123		
	NV2-20-6M-ATC	3/8	0.20	4.80	7.32	65-75	100
		9.5	5.0	122	186		
	NV2-20-9M-ATC	9/16	0.30	4.80	7.32	85-95	100
		14.3	7.5	122	186		
TEE							
	NV3-20-4M-ATC	1/4	0.11	4.80	4.84	65-75	100
		6.4	2.8	122	123		
	NV3-20-6M-ATC	3/8	0.20	4.80	7.32	65-75	100
		9.5	5.0	122	186		
	NV3-20-9M-ATC	9/16	0.30	4.80	7.32	85-95	100
		14.3	7.5	122	186		
REPLACEABLE SEAT							
	NV5-20-4M-ATC	1/4	0.11	4.80	4.84	65-75	100
		6.4	2.8	122	123		
	NV5-20-6M-ATC	3/8	0.20	4.80	7.32	65-75	100
		9.5	5.0	122	186		
	NV5-20-9M-ATC	9/16	0.30	4.80	7.32	85-95	100
		14.3	7.5	122	186		

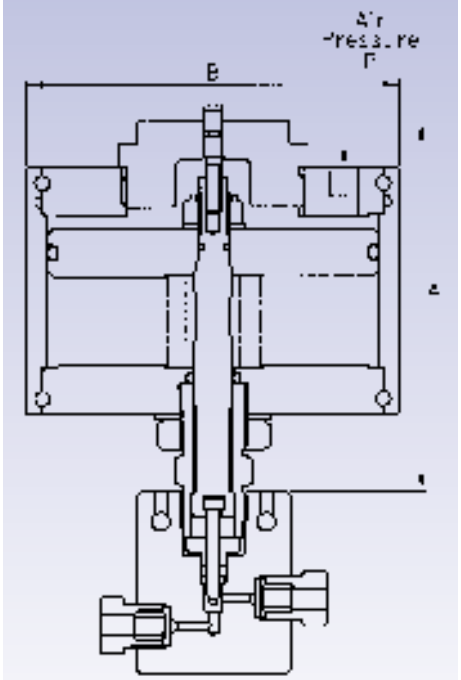
NOTES

1 Refer to Air Operated Needle Valve graph for elevated temperature usage. Environmental temperature range -25°C to +65°C.
2 All valves in Stainless Steel Grade 316 suitable for sour gas service.
3 All valves are bi-directional.
4 Side mounting holes = Ø6 (0.24") (1/4, 3/8, 9/16, V/Vs), Ø10.5 (0.41"), (3/4, 1 V/Vs).
5 All coned and threaded connection valves supplied with glands and collars.
6 Refer to needle valve section for body sizes.
7 Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

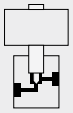
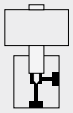
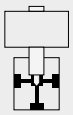
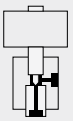
30000 psi

AIR TO CLOSE (ATC) NORMALLY OPEN NEEDLE VALVES

HIGH PRESSURE C+T CONNECTIONS



HP C+T CONNECTIONS

	Catalogue Number	Tube O/D	Orifice Dia	A	B	Operating P (psi)	Maximum P (psi)
	STRAIGHT						
	NV1-30-4H-ATC	1/4	0.09	4.80	4.84	70-80	100
		6.4	2.4	122	123		
	NV1-30-6H-ATC	3/8	0.12	4.80	4.84	70-80	100
		9.5	3.0	122	123		
	NV1-30-9H-ATC	9/16	0.12	4.80	4.84	70-80	100
		14.3	3.0	122	123		
	ANGLE						
	NV2-30-4H-ATC	1/4	0.09	4.80	4.84	70-80	100
		6.4	2.4	122	123		
	NV2-30-6H-ATC	3/8	0.12	4.80	4.84	70-80	100
		9.5	3.0	122	123		
	NV2-30-9H-ATC	9/16	0.12	4.80	4.84	70-80	100
		14.3	3.0	122	123		
	TEE						
	NV3-30-4H-ATC	1/4	0.09	4.80	4.84	70-80	100
		6.4	2.4	122	123		
	NV3-30-6H-ATC	3/8	0.12	4.80	4.84	70-80	100
		9.5	3.0	122	123		
	NV3-30-9H-ATC	9/16	0.12	4.80	4.84	70-80	100
		14.3	3.0	122	123		
	REPLACEABLE SEAT						
	NV5-30-4H-ATC	1/4	0.09	4.80	4.84	70-80	100
		6.4	2.4	122	123		
	NV5-30-6H-ATC	3/8	0.12	4.80	4.84	70-80	100
		9.5	3.0	122	123		
	NV5-30-9H-ATC	9/16	0.12	4.80	4.84	70-80	100
		14.3	3.0	122	123		

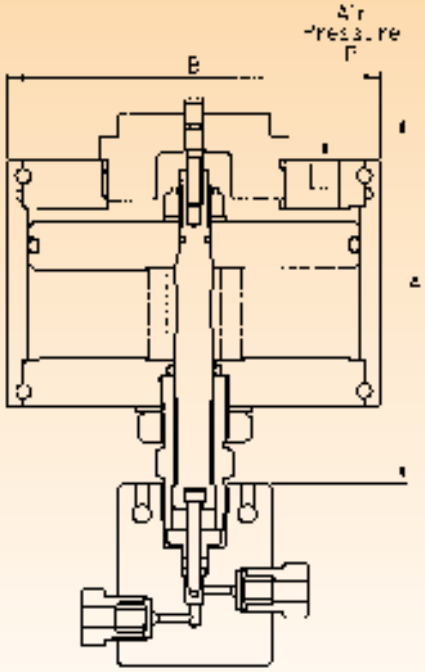
NOTES

1 Refer to Air Operated Needle Valve graph for elevated temperature usage. Environmental temperature range -25°C to +65°C.
2 All valves in Stainless Steel Grade 316 suitable for sour gas service.
3 All valves are bi-directional.
4 Side mounting holes = Ø6 (0.24").
5 All coned and threaded connection valves supplied with glands and collars.
6 Refer to needle valve section for body sizes.
7 Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

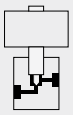
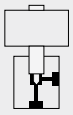
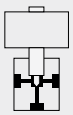
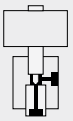
60000 psi

AIR TO CLOSE (ATC) NORMALLY OPEN NEEDLE VALVES

HIGH PRESSURE C+T CONNECTIONS



HP C+T CONNECTIONS

	Catalogue Number	Tube O/D	Orifice Dia	A	B	Operating P (psi)	Maximum P (psi)
STRAIGHT							
	NV1-60-4H-ATC	1/4	0.09	4.80	7.32	70-80	100
		6.4	2.4	122	186		
	NV1-60-6H-ATC	3/8	0.12	4.80	7.32	70-80	100
		9.5	3.0	122	186		
	NV1-60-9H-ATC	9/16	0.12	4.80	7.32	70-80	100
		14.3	3.0	122	186		
ANGLE							
	NV2-60-4H-ATC	1/4	0.09	4.80	7.32	70-80	100
		6.4	2.4	122	186		
	NV2-60-6H-ATC	3/8	0.12	4.80	7.32	70-80	100
		9.5	3.0	122	186		
	NV2-60-9H-ATC	9/16	0.12	4.80	7.32	70-80	100
		14.3	3.0	122	186		
TEE							
	NV3-60-4H-ATC	1/4	0.09	4.80	7.32	70-80	100
		6.4	2.4	122	186		
	NV3-60-6H-ATC	3/8	0.12	4.80	7.32	70-80	100
		9.5	3.0	122	186		
	NV3-60-9H-ATC	9/16	0.12	4.80	7.32	70-80	100
		14.3	3.0	122	186		
REPLACEABLE SEAT							
	NV5-60-4H-ATC	1/4	0.09	4.80	7.32	70-80	100
		6.4	2.4	122	186		
	NV5-60-6H-ATC	3/8	0.12	4.80	7.32	70-80	100
		9.5	3.0	122	186		
	NV5-60-9H-ATC	9/16	0.12	4.80	7.32	70-80	100
		14.3	3.0	122	186		

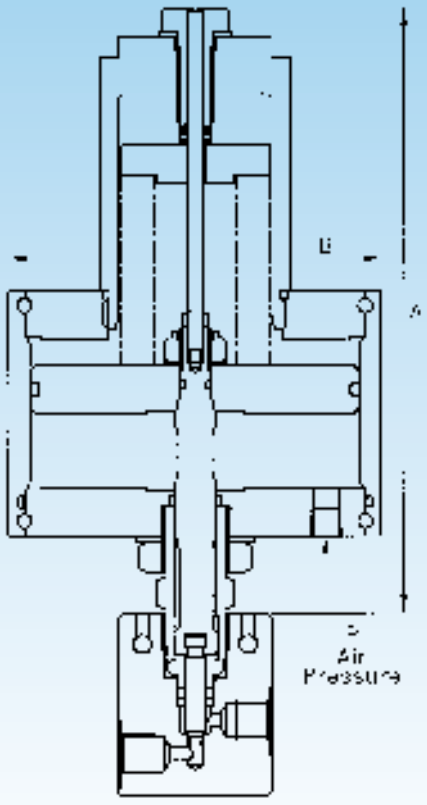
NOTES

1 Refer to Air Operated Needle Valve graph for elevated temperature usage. Environmental temperature range -25°C to +65°C.
2 All valves in Stainless Steel Grade 316.
3 All valves are bi-directional.
4 Side mounting holes = Ø6 (0.24").
5 All coned and threaded connection valves supplied with glands and collars.
6 Refer to needle valve section for body sizes.
7 Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

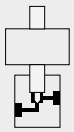
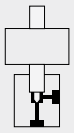
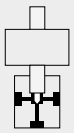
10000 psi

AIR TO OPEN (ATO) NORMALLY CLOSED NEEDLE VALVES

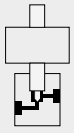
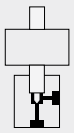
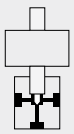
BSPP & NPT CONNECTIONS



BSPP CONNECTIONS

	Catalogue Number	Port Size	Orifice Dia	A	B	Operating P (psi)	Maximum P (psi)
	STRAIGHT						
	NV1-10-4B-ATO	1/4	0.18	7.87	4.84	70-80	100
		6.4	4.5	200	123		
	NV1-10-6B-ATO	3/8	0.26	7.87	7.32	40-50	100
		9.5	6.5	200	186		
	NV1-10-8B-ATO	1/2	0.30	7.87	7.32	40-50	100
		12.7	7.5	200	186		
	ANGLE						
	NV2-10-4B-ATO	1/4	0.18	7.87	4.84	70-80	100
		6.4	4.5	200	123		
	NV2-10-6B-ATO	3/8	0.26	7.87	7.32	40-50	100
		9.5	6.5	200	186		
	NV2-10-8B-ATO	1/2	0.30	7.87	7.32	40-50	100
		12.7	7.5	200	186		
	TEE						
	NV3-10-4B-ATO	1/4	0.18	7.87	4.84	70-80	100
		6.4	4.5	200	123		
	NV3-10-6B-ATO	3/8	0.26	7.87	7.32	40-50	100
		9.5	6.5	200	186		
	NV3-10-8B-ATO	1/2	0.30	7.87	7.32	40-50	100
		12.7	7.5	200	186		

NPT CONNECTIONS

	Catalogue Number	Port Size	Orifice Dia	A	B	Operating P (psi)	Maximum P (psi)
	STRAIGHT						
	NV1-10-4N-ATO	1/4	0.18	7.87	4.84	70-80	100
		6.4	4.5	200	123		
	NV1-10-6N-ATO	3/8	0.26	7.87	7.32	40-50	100
		9.5	6.5	200	186		
	NV1-10-8N-ATO	1/2	0.30	7.87	7.32	40-50	100
		12.7	7.5	200	186		
	ANGLE						
	NV2-10-4N-ATO	1/4	0.18	7.87	4.84	70-80	100
		6.4	4.5	200	123		
	NV2-10-6N-ATO	3/8	0.26	7.87	7.32	40-50	100
		9.5	6.5	200	186		
	NV2-10-8N-ATO	1/2	0.30	7.87	7.32	40-50	100
		12.7	7.5	200	186		
	TEE						
	NV3-10-4N-ATO	1/4	0.18	7.87	4.84	70-80	100
		6.4	4.5	200	123		
	NV3-10-6N-ATO	3/8	0.26	7.87	7.32	40-50	100
		9.5	6.5	200	186		
	NV3-10-8N-ATO	1/2	0.30	7.87	7.32	40-50	100
		12.7	7.5	200	186		

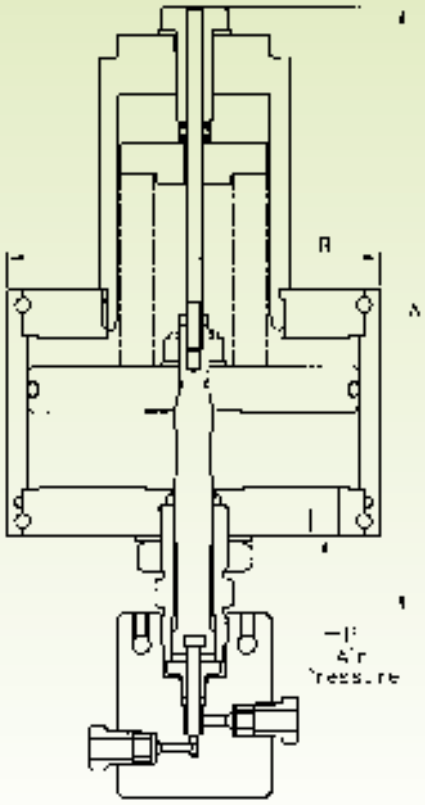
NOTES

1 Refer to Air Operated Needle Valve graph for elevated temperature usage. Environmental temperature range -25°C to +65°C.
2 All valves in Stainless Steel Grade 316 suitable for sour gas service.
3 All valves are bi-directional.
4 Side mounting holes = Ø6 (0.24").
5 Refer to needle valve section for body sizes.
6 Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

20000 psi

AIR TO OPEN (ATO) NORMALLY CLOSED NEEDLE VALVES

MEDIUM PRESSURE C+T CONNECTIONS



MP C+T CONNECTIONS

Catalogue Number	Tube O/D	Orifice Dia	A	B	Operating P (psi)	Maximum P (psi)
STRAIGHT						
NV1-20-4M-ATO	1/4	0.11	7.87	4.84	70-80	100
	6.4	2.8	200	123		
NV1-20-6M-ATO	3/8	0.20	7.87	7.32	65-75	100
	9.5	5.0	200	186		
NV1-20-9M-ATO	9/16	0.30	7.87	7.32	95-100	100
	14.3	7.5	200	186		
NV1-20-12M-ATO	3/4	0.44	*	*	*	*
	19.1	11.1	*	*		
NV1-20-16M-ATO	1	0.56	*	*	*	*
	25.4	14.3	*	*		
ANGLE						
NV2-20-4M-ATO	1/4	0.11	7.87	4.84	70-80	100
	6.4	2.8	200	123		
NV2-20-6M-ATO	3/8	0.20	7.87	7.32	65-75	100
	9.5	5.0	200	186		
NV2-20-9M-ATO	9/16	0.30	7.87	7.32	95-100	100
	14.3	7.5	200	186		
NV2-20-12M-ATO	3/4	0.44	*	*	*	*
	19.1	11.1	*	*		
NV2-20-16M-ATO	1	0.56	*	*	*	*
	25.4	14.3	*	*		
TEE						
NV3-20-4M-ATO	1/4	0.11	7.87	4.84	70-80	100
	6.4	2.8	200	123		
NV3-20-6M-ATO	3/8	0.20	7.87	7.32	65-75	100
	9.5	5.0	200	186		
NV3-20-9M-ATO	9/16	0.30	7.87	7.32	95-100	100
	14.3	7.5	200	186		
NV3-20-12M-ATO	3/4	0.44	*	*	*	*
	19.1	11.1	*	*		
NV3-20-16M-ATO	1	0.56	*	*	*	*
	25.4	14.3	*	*		
REPLACEABLE SEAT						
NV5-20-4M-ATO	1/4	0.11	7.87	4.84	70-80	100
	6.4	2.8	200	123		
NV5-20-6M-ATO	3/8	0.20	7.87	7.32	65-75	100
	9.5	5.0	200	186		
NV5-20-9M-ATO	9/16	0.30	7.87	7.32	95-100	100
	14.3	7.5	200	186		
NV5-20-12M-ATO	3/4	0.44	*	*	*	*
	19.1	11.1	*	*		
NV5-20-16M-ATO	1	0.56	*	*	*	*
	25.4	14.3	*	*		

NOTES

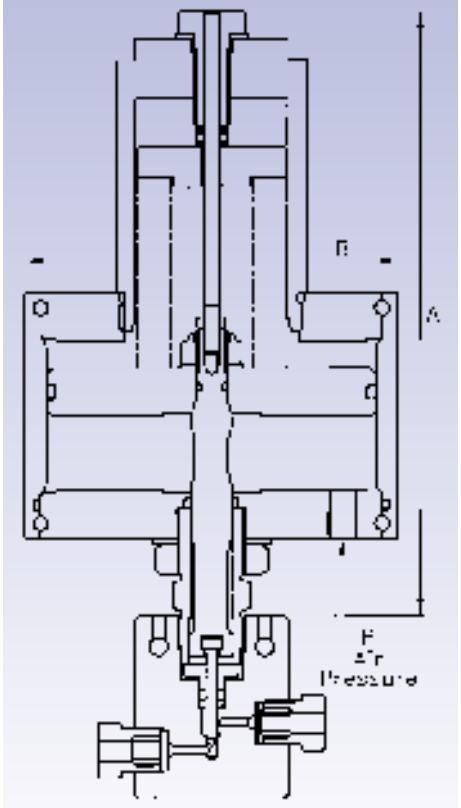
1 Refer to Air Operated Needle Valve graph for elevated temperature usage. Environmental temperature range -25°C to +65°C.
2 All valves in Stainless Steel Grade 316 suitable for sour gas service.
3 All valves are bi-directional.
4 Side mounting holes = Ø6 (0.24") (1/4, 3/8, 9/16, V/Vs), Ø10.5 (0.41"), (3/4, 1 V/Vs).
5 All coned and threaded connection valves supplied with glands and collars.
6 Refer to needle valve section for body sizes.
7 Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

* Contact Factory for details.

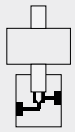
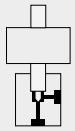
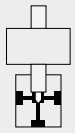
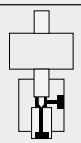
30000 psi

AIR TO OPEN (ATO) NORMALLY CLOSED NEEDLE VALVES

HIGH PRESSURE C+T CONNECTIONS



HP C+T CONNECTIONS

	Catalogue Number	Tube O/D	Orifice Dia	A	B	Operating P (psi)	Maximum P (psi)
	STRAIGHT						
	NV1-30-4H-ATO	1/4	0.09	7.87	7.32	45-55	100
		6.4	2.4	200	186		
	NV1-30-6H-ATO	3/8	0.12	7.87	7.32	45-55	100
		9.5	3.0	200	186		
	NV1-30-9H-ATO	9/16	0.12	7.87	7.32	45-55	100
		14.3	3.0	200	186		
	ANGLE						
	NV2-30-4H-ATO	1/4	0.09	7.87	7.32	45-55	100
		6.4	2.4	200	186		
	NV2-30-6H-ATO	3/8	0.12	7.87	7.32	45-55	100
		9.5	3.0	200	186		
	NV2-30-9H-ATO	9/16	0.12	7.87	7.32	45-55	100
		14.3	3.0	200	186		
	TEE						
	NV3-30-4H-ATO	1/4	0.09	7.87	7.32	45-55	100
		6.4	2.4	200	186		
	NV3-30-6H-ATO	3/8	0.12	7.87	7.32	45-55	100
		9.5	3.0	200	186		
	NV3-30-9H-ATO	9/16	0.12	7.87	7.32	45-55	100
		14.3	3.0	200	186		
	REPLACEABLE SEAT						
	NV5-30-4H-ATO	1/4	0.09	7.87	7.32	45-55	100
		6.4	2.4	200	186		
	NV5-30-6H-ATO	3/8	0.12	7.87	7.32	45-55	100
		9.5	3.0	200	186		
	NV5-30-9H-ATO	9/16	0.12	7.87	7.32	45-55	100
		14.3	3.0	200	186		

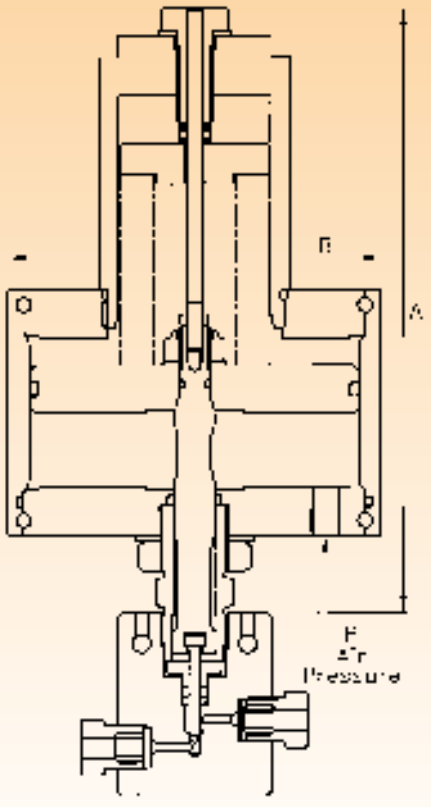
NOTES

1 Refer to Air Operated Needle Valve graph for elevated temperature usage. Environmental temperature range -25°C to +65°C.
2 All valves in Stainless Steel Grade 316 suitable for sour gas service.
3 All valves are bi-directional.
4 Side mounting holes = Ø6 (0.24").
5 All coned and threaded connection valves supplied with glands and collars.
6 Refer to needle valve section for body sizes.
7 Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

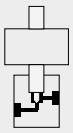
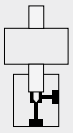
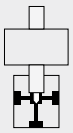
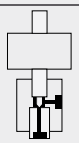
60000 psi

AIR TO OPEN (ATO) NORMALLY CLOSED NEEDLE VALVES

HIGH PRESSURE C+T CONNECTIONS



HP C+T CONNECTIONS

	Catalogue Number	Tube O/D	Orifice Dia	A	B	Operating P (psi)	Maximum P (psi)
STRAIGHT							
	NV1-60-4H-ATO	1/4	0.09	7.87	7.32	70-80	100
		6.4	2.4	200	186		
	NV1-60-6H-ATO	3/8	0.12	7.87	7.32	70-80	100
		9.5	3.0	200	186		
	NV1-60-9H-ATO	9/16	0.12	7.87	7.32	70-80	100
		14.3	3.0	200	186		
ANGLE							
	NV2-60-4H-ATO	1/4	0.09	7.87	7.32	70-80	100
		6.4	2.4	200	186		
	NV2-60-6H-ATO	3/8	0.12	7.87	7.32	70-80	100
		9.5	3.0	200	186		
	NV2-60-9H-ATO	9/16	0.12	7.87	7.32	70-80	100
		14.3	3.0	200	186		
TEE							
	NV3-60-4H-ATO	1/4	0.09	7.87	7.32	70-80	100
		6.4	2.4	200	186		
	NV3-60-6H-ATO	3/8	0.12	7.87	7.32	70-80	100
		9.5	3.0	200	186		
	NV3-60-9H-ATO	9/16	0.12	7.87	7.32	70-80	100
		14.3	3.0	200	186		
REPLACEABLE SEAT							
	NV5-60-4H-ATO	1/4	0.09	7.87	7.32	70-80	100
		6.4	2.4	200	186		
	NV5-60-6H-ATO	3/8	0.12	7.87	7.32	70-80	100
		9.5	3.0	200	186		
	NV5-60-9H-ATO	9/16	0.12	7.87	7.32	70-80	100
		14.3	3.0	200	186		

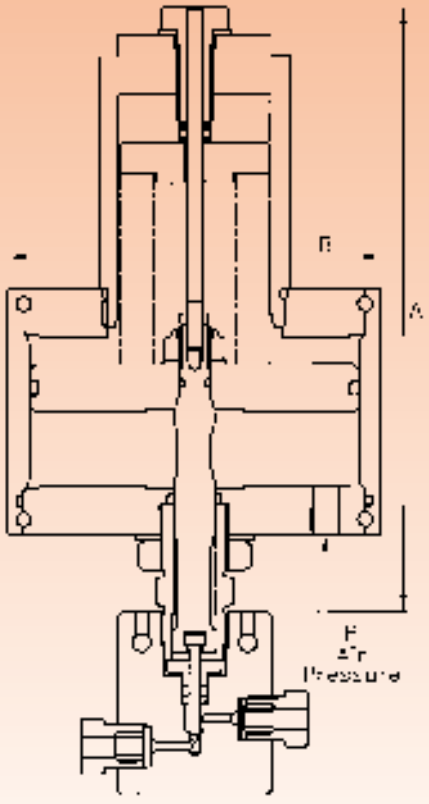
NOTES

1 Refer to Air Operated Needle Valve graph for elevated temperature usage. Environmental temperature range -25°C to +65°C.
2 All valves in Stainless Steel Grade 316.
3 All valves are bi-directional.
4 Side mounting holes = Ø6 (0.24").
5 All coned and threaded connection valves supplied with glands and collars.
6 Refer to needle valve section for body sizes.
7 Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

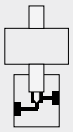
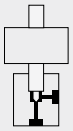
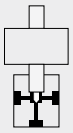
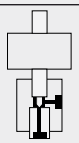
4000 bar

AIR TO OPEN (ATO) NORMALLY CLOSED NEEDLE VALVES

HIGH PRESSURE METRIC CONNECTIONS E



E CONNECTIONS

	Catalogue Number	Tube O/D	Orifice Dia	A	B	Operating P (bar)	Maximum P (bar)
STRAIGHT							
	NV1-40-4E-ATO	1/4	0.09	7.87	7.32	4.9 - 5.5	6.9
		6.4	2.4	200	186		
	NV1-40-6E-ATO	3/8	0.12	7.87	7.32	4.9 - 5.5	6.9
		9.5	3.0	200	186		
	NV1-40-9E-ATO	9/16	0.12	7.87	7.32	4.9 - 5.5	6.9
		14.3	3.0	200	186		
ANGLE							
	NV2-40-4E-ATO	1/4	0.09	7.87	7.32	4.9 - 5.5	6.9
		6.4	2.4	200	186		
	NV2-40-6E-ATO	3/8	0.12	7.87	7.32	4.9 - 5.5	6.9
		9.5	3.0	200	186		
	NV2-40-9E-ATO	9/16	0.12	7.87	7.32	4.9 - 5.5	6.9
		14.3	3.0	200	186		
TEE							
	NV3-40-4E-ATO	1/4	0.09	7.87	7.32	4.9 - 5.5	6.9
		6.4	2.4	200	186		
	NV3-40-6E-ATO	3/8	0.12	7.87	7.32	4.9 - 5.5	6.9
		9.5	3.0	200	186		
	NV3-40-9E-ATO	9/16	0.12	7.87	7.32	4.9 - 5.5	6.9
		14.3	3.0	200	186		
REPLACEABLE SEAT							
	NV5-40-4E-ATO	1/4	0.09	7.87	7.32	4.9 - 5.5	6.9
		6.4	2.4	200	186		
	NV5-40-6E-ATO	3/8	0.12	7.87	7.32	4.9 - 5.5	6.9
		9.5	3.0	200	186		
	NV5-40-9E-ATO	9/16	0.12	7.87	7.32	4.9 - 5.5	6.9
		14.3	3.0	200	186		

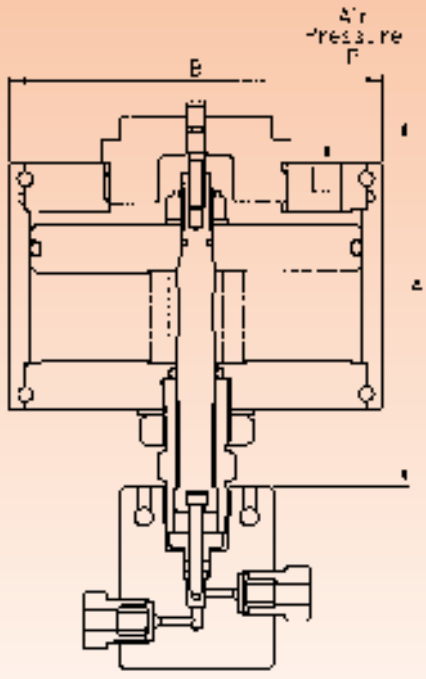
NOTES

1 Refer to Air Operated Needle Valve graph for elevated temperature usage. Environmental temperature range -25°C to +65°C.
2 All valves in Stainless Steel Grade AISI 316 L/1.4404.
3 All valves are bi-directional.
4 Side mounting holes = Ø6 (0.24").
5 All coned and threaded connection valves supplied with glands and collars.
6 Refer to needle valve section for body sizes.
7 Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

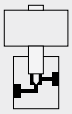
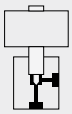
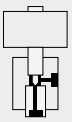
4000 bar

AIR TO CLOSE (ATC) NORMALLY OPEN NEEDLE VALVES

HIGH PRESSURE METRIC CONNECTIONS E



E CONNECTIONS

	Catalogue Number	Tube O/D	Orifice Dia	A	B	Operating P (bar)	Maximum P (bar)
STRAIGHT							
	NV1-40-4E-ATC	1/4	0.09	4.80	7.32	4.9 - 5.5	6.9
		6.4	2.4	122	186		
	NV1-40-6E-ATC	3/8	0.12	4.80	7.32	4.9 - 5.5	6.9
		9.5	3.0	122	186		
	NV1-40-9E-ATC	9/16	0.12	4.80	7.32	4.9 - 5.5	6.9
		14.3	3.0	122	186		
ANGLE							
	NV2-40-4E-ATC	1/4	0.09	4.80	7.32	4.9 - 5.5	6.9
		6.4	2.4	122	186		
	NV2-40-6E-ATC	3/8	0.12	4.80	7.32	4.9 - 5.5	6.9
		9.5	3.0	122	186		
	NV2-40-9E-ATC	9/16	0.12	4.80	7.32	4.9 - 5.5	6.9
		14.3	3.0	122	186		
TEE							
	NV3-40-4E-ATC	1/4	0.09	4.80	7.32	4.9 - 5.5	6.9
		6.4	2.4	122	186		
	NV3-40-6E-ATC	3/8	0.12	4.80	7.32	4.9 - 5.5	6.9
		9.5	3.0	122	186		
	NV3-40-9E-ATC	9/16	0.12	4.80	7.32	4.9 - 5.5	6.9
		14.3	3.0	122	186		
REPLACEABLE SEAT							
	NV5-40-4E-ATC	1/4	0.09	4.80	7.32	4.9 - 5.5	6.9
		6.4	2.4	122	186		
	NV5-40-6E-ATC	3/8	0.12	4.80	7.32	4.9 - 5.5	6.9
		9.5	3.0	122	186		
	NV5-40-9E-ATC	9/16	0.12	4.80	7.32	4.9 - 5.5	6.9
		14.3	3.0	122	186		

NOTES

1 Refer to Air Operated Needle Valve graph for elevated temperature usage. Environmental temperature range -25°C to +65°C.
2 All valves in Stainless Steel Grade AISI 316 L/1.4404.
3 All valves are bi-directional.
4 Side mounting holes = Ø6 (0.24").
5 All coned and threaded connection valves supplied with glands and collars.
6 Refer to needle valve section for body sizes.
7 Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

Specialities

Air operated Needle Valves for special application

Air operated needle valves 7000 bar

Maximum allowable working pressure 7000 bar (100'000 psi). The very rugged and dependable pneumatic actuator is available in two different version:

- ATO (air to open) normally closed
- ATC (air to close) normally open

Technical features:

- piston design to assure reliable working up to nominal pressure
- visual open/close indication, for safety, ease of use and automation
- limit switch assembly available on request
- orifice 1,6 mm
- connection: 4E (1/4" tubing)
- high pressure part in stainless steel
- air operator in aluminium

Valves for special applications

NOVA SWISS have long experience in special applications. We offer valves for:

- hydrogen applications
- oxygen applications
- pure gas applications
- others

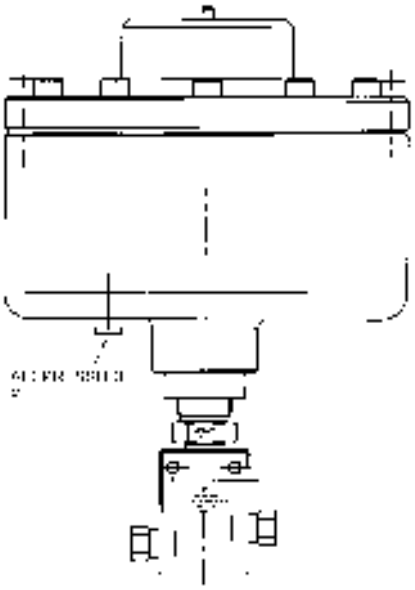
Air operated needle valves for high cycling application

NOVA SWISS have long experience in high cycling applications. We have developed a special high cycling kit for air operated valves. The maximum cycling life time of valves equipped with this special kit can be improved dramatically. In specific applications these valves have reached cycle times of 0.5 to over 1 million cycles without changing stem or packing.

NOVA SWISS have supplied high cycling valves for different application:

- test benches
- cycling testing
- automated production
- hydrogen fuel station

Please contact factory for pressure rating, material of construction, dimension and other details.



SAFETY NOTES

As your safety is our prime concern and we want you to enjoy reliable service from our products we give the following advice on the safe use of air operated valves.

- High pressure fluids particularly gases are potentially hazardous and should always be treated with the greatest respect. Do not vent fluid without knowing where vent is directed
- Always be aware of whether pressure is contained by a air operated valve either in the valve itself or in the air operator
- Do not loosen connection components when system pressure is present
- Ensure that no system pressure is present and isolated prior to carrying out maintenance

AIR OPERATED VALVE SELECTION

Suitability of individual air operated valves for a chosen application is dependant on a number of parameters which should be given careful consideration prior to use. To assist our customers in selection we have compiled a list of selection criteria which takes account of many of the most important factors to consider. As all systems are different and user requirements vary greatly this information should not be considered comprehensive. Should you have any doubts as to the suitability of a chosen air operated valve please contact the local agent or the factory directly. Either will be delighted to assist.

CONFIGURATION

There are two styles of air operated valves available air to close (normally open) and air to open (normally closed). Both configurations are available for any standard needle valve to replace the manual handle.

In both configurations, a pre-determined air pressure is required to either open or close the valve. If this air pressure is exceeded then the valve life will be compromised particularly in the case of air to close valves with which excessive needle to seat loading will occur.

PRESSURE

System pressure should always be less than the maximum allowable working pressure for the air operated valve. Where fluctuating pressures are involved such as on the outlet from a reciprocating pump, care should be taken to ensure that pressure peaks do not exceed this maximum.

We recommend that where fluctuating pressure is occurring over long periods then the air operated valve pressure rating should be considerably higher than the maximum nominal system working pressure. Please note that the operating life will be reduced.

TEMPERATURE

Valve maximum operating temperature is based on the working fluid temperature i.e. the temperature that the air operated valve will see internally. Should you wish to operate air operated valves in an environment outside the specified operating temperature range please consut the local agent or factory as the seals used within the valve stem assembly may need to be changed to a higher temperature tolerant grade.

Air operated valve pressure rating is based on temperature not exceeding the maximum allowable working value and is reduced should this temperature be exceeded. Working pressure versus operating temperature is shown graphically on the data page.

In all cases where the intended operating temperature will or could even temporarily exceed the maximum limit, the user should consult the local agent or factory directly.

SYSTEM FLUID

There are two principal considerations, firstly the nature of the fluid and its compatibility with the materials of construction and secondly the level of cleanliness of the fluid.

The customer should satisfy themselves that the materials of construction including stem seals are compatible with the working fluid with respect to corrosion and/or other chemical reaction.

System fluid should be clean and in particular not contain any debris which is abrasive. Cleanliness levels of NAS 1638 (National Aerospace Standard 1638) level 10 or better are optimum.

CONNECTIONS

Nova air operated valves are supplied with a variety of connection options with pressure limitations for each design. These are the limitations:-

BSPP - Parallel thread connection relies on an externally clamped seal to hold pressure. Threads are exposed to pressure and working fluids so careful consideration to corrosion on stressed threads should be given. Pressures up to 10000PSI are considered appropriate because there is little if any deformation of threads, BSPP connections are preferable to NPT in cases where no sealing compound can be used with NPT.

NPT - The most common screwed connection type used extensively up to 10000PSI.
We strongly recommend that this connection is **not used above 10000PSI** as per the guidelines in API 6A (American Petroleum Institute standard 6A). This connection is heavily dependent on the technician for successful make-up and care should be taken that all users are trained in the correct installation of these connections.

MPCT - This coned and threaded connection commonly referred to as The Medium Pressure Connection is rated up to 20000PSI in standard catalogue items. It is compact with the gland nut and collar being in line and is highly tolerant to repeated make and break.

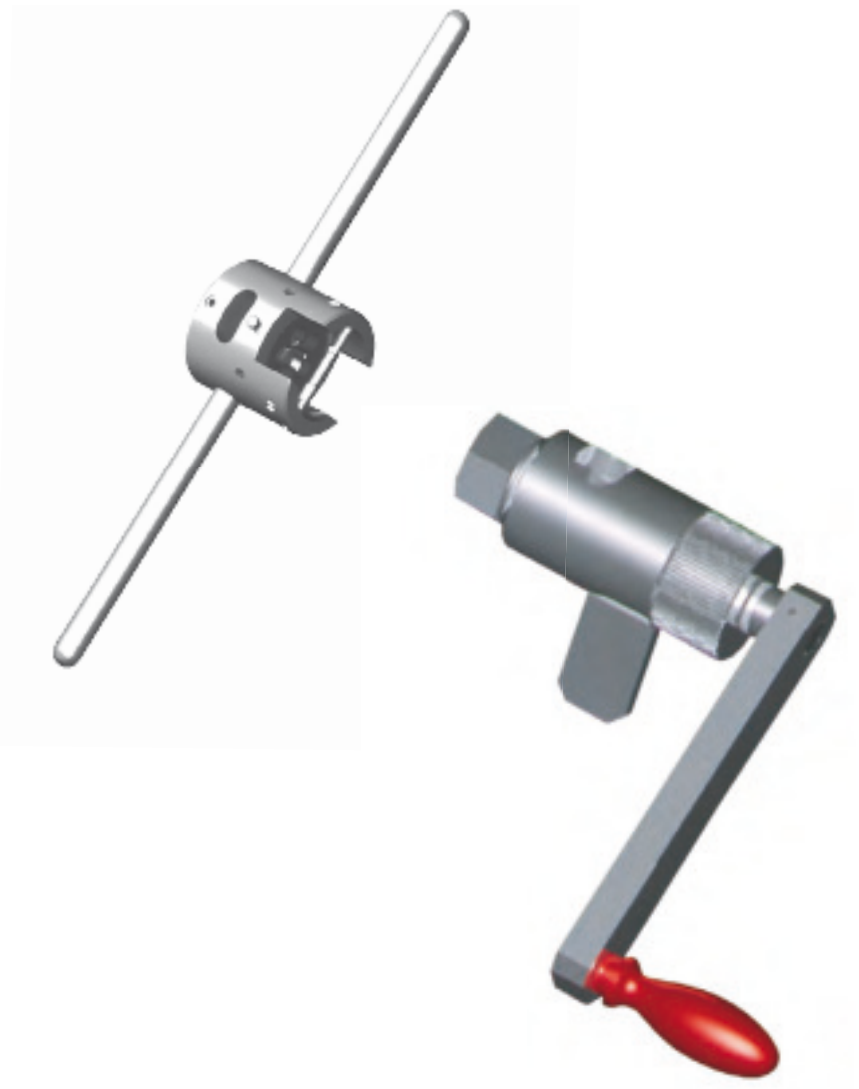
HPCT- and E - These high pressure coned and threaded connections are less compact than the medium pressure variation as a result of the collar being inside the gland. The benefit is that the gland supports the collar at the maximum stress point and provides greater resistance to fatigue.
E high pressure connections are identical to HPCT connections in concept. The differences are the threads on glands and ports.
HPCT: imperial UNF threads
E: metric threads according to ISO
For details please refer to technical section

Note that for coned and threaded connections that experience vibration in the pipework, the use of anti-vibration collars and glands is strongly recommended.

We do not recommend screwed connections (NPT, BSPP) in situations where there could be vibration of the pipework.

Note that the Nova 9/16" high pressure coned and threaded connection is equivalent to the American Petroleum Institute specification 6A - Wellhead and Christmas tree equipment type 1, 2 and 3 connections.

NOVA SWISS



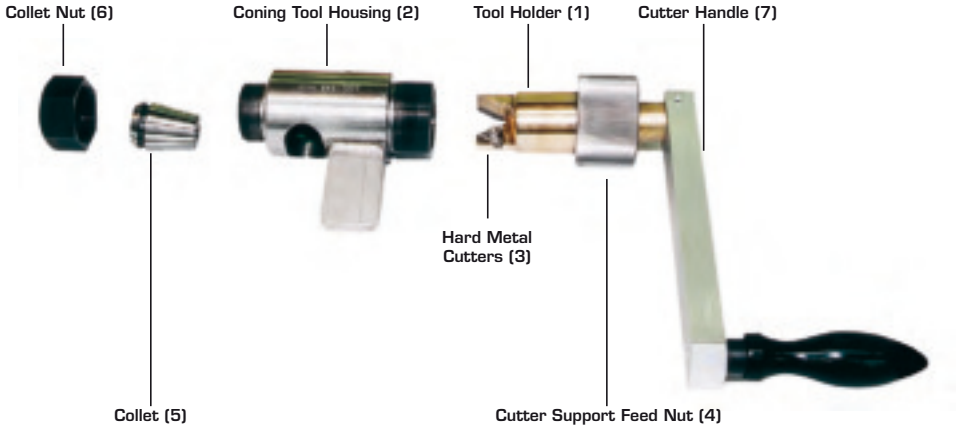
TOOLING

VALVES, FITTINGS AND TUBING FOR **CRITICAL SERVICE**

NOVA SWISS MANUAL CONING TOOL FOR HIGH PRESSURE TUBING END PREPARATION

Features:

- One tool with interchangeable collets permits coning of up to 9/16" high pressure tubing ends.
- Triangular cutter with 3 cutting edges increases operating life. The same cutter is used for all sizes of tubing.
- Precise and flexible collets ensure proper centering of tubing.
- Openings in body for easy inspection of cut, checking of position of tubing versus stop plate, addition of cutting fluid and chips to drop out.
- Tool, not tubing, is held in vice, by means of rectangular tongue on body.
- Tool produces smooth and chatter-free cones on stainless steel tubing. The depth of cut is controlled by the nut feeding the cutter. This nut has a fine pitched thread.
- Positioning of cutter in cutter holder results in correct cone angle of 57°-59°.
- One tube of cutting fluid is furnished with each tool. Use it freely and keep tool clean at all times.
- All stainless steel construction.
- Tools and components are available from stock.



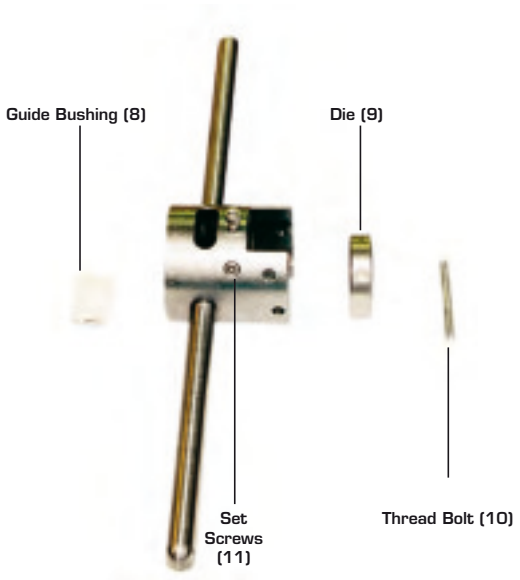
Tubing O/D	Catalogue Number			
	Coning tool without collet	Collet	Cutter	Cutting fluid
9/16˝ – 14.3/14–15 mm	580.1000	581.9124	5.5646.003	581.9119
3/8˝ – 9.53/9–10 mm	580.1000	581.9125	5.5646.003	581.9119
1/4˝ – 6.35/6– 7 mm	580.1000	581.9128	5.5646.003	581.9119
3/16˝ – 4.76/4– 5 mm	580.1000	581.9138	5.5646.003	581.9119
1/8˝ – 3.2 /3– 4 mm	580.1000	581.9137	5.5646.003	581.9119
/7– 8 mm	580.1000	581.9126	5.5646.003	581.9119

NOTE: Specifications subject to change without notice.

NOVA SWISS MANUAL THREADING TOOL FOR HIGH PRESSURE TUBING END PREPARATION

Features:

- Same tool holder for the threading of up to 9/16" high pressure tubing.
- The tool may be converted from one size to another by merely replacing the interchangeable bushing and die.
- Built-in stop insures correct thread length being produced.
- Split-type adjustable dies, specially ground for stainless steel. The cutting fluid furnished with each tool should be used freely. Keep tool clean and dies in good condition.
- Guide bushing centers tube in die resulting in the required precise thread. Threading should always follow the coning operation.
- Snap-in device permits quick switching of bushings.
- The coning tool body with collet may be used to hold the tubing when threading.
- Two openings are provided for inspection and chip removal.
- All stainless steel construction.
- Tools and components are available from stock.



Tubing O/D	Catalogue Number			
	Complete Assembly	Bushing	Die	Cutting fluid
9/16˝ – 14.3 mm	580.2010	581.9217	581.9210	581.9119
3/8˝ – 9.53 mm	580.2020	581.9218	581.9211	581.9119
1/4˝ – 6.35 mm	580.2040	581.9219	581.9212	581.9119
3/16˝ – 4.76 mm	580.2060	581.0133	581.9232	581.9119
1/8˝ – 3.20 mm	580.2050	581.9221	581.9214	581.9119
M14 x 1.5	580.2090	581.9217	581.9231	581.9119
M10 x 1	580.2070	581.0091	581.0027	581.9119

NOTE: Specifications subject to change without notice.

MANUAL CONING

Step 1

Cut tube to length and deburr.
(see fig. 1)

Step 2
If the hard metal cutters have not yet been fitted, proceed with step 2. Otherwise continue directly with step 3. Remove tool holder (1) from flaring tool housing (2) and install cutters (3). Reinstall tool holder (1) and screw cutter support feed nut (4) 2-3 rotations onto flaring tool housing (2)
(see fig. 2)

Step 3
Turn cutter support feed nut (4) counter-clockwise until it is approximately 10 mm from the stop position. Screw in collet (5) with collet nut (6).
(see fig. 2)

Step 4
Clamp the flaring tool into a vice horizontally by the rectangular tongue on the body.

Step 5
Slide the tube through the collet nut to the opening of the flaring tool housing. Make sure that there is enough clearance (5mm) between the tube end and the cutters and that the tube end does not press against the cutters.
Tighten down collet nut firmly. (Attention, tightening the collet nut (6) will move the tube in the direction of the cutters! The tube end may not be forced against the cutters!)
(see fig. 3)

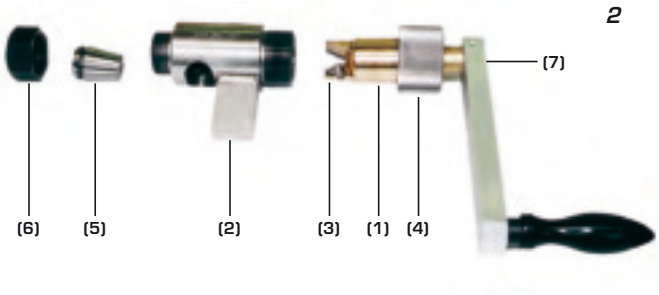
Step 6
Rotate the cutters support feed nut (4) clockwise until the cutters come up to but do not contact the tube end. Do not rotate the feed nut any further at this point.

Step 7
Supply cutting oil through the opening in the tool housing to the tube end and to the cutting surface. Supply ample amounts of cutting oil.
(see fig. 4)

Step 8
Turn the cutter handle clockwise quickly, at the same time turning the cutter support feed nut (cutter feed) slowly and continuously in clockwise direction. For a good surface finish smooth rotation and adequate cutting fluid are essential. Never turn the cutter handle in the counter-clockwise direction during the cutting operation as that may result in breakage of the hard metal cutters.
When the tube has the correct flare, while the cutter handle is still rotating turn the cutter support feed nut backwards by rotation to avoid a shoulder being cut on the cone.
(see fig. 5)

Step 9
Loosen the collet nut, remove the tube and visually inspect the flare. Check flare diameter. If the diameter is too small, file the end of the tube with a flat file to enlarge the diameter. Deburr the flare with fine emery paper and the inside of the tube with a deburring tool.
(tube end diameter see technical section of our catalogue)

1



2

3

4

5

INSTALLATION

MANUAL THREADING

Step 10
Fit guide bushing (8) and die (9) in the tapping tool. Turn thread bolt (10) into the appropriate tap hole. Make sure not to tighten the die fixing screw excessively (danger of thread diameter being cut too small).
(see fig. 6)

To ensure that the thread is cut correctly we recommend test threading first be made on a unneeded piece of tubing. Check the thread with a gauge and adjust the die accordingly.

Step 11
Clamp the tube in a vice with soft jaws. Do not tighten excessivley.
(see fig. 7)

Step 12
Place the threading tool over the tube through the guide bushing. Apply cutting fluid to the threading area.

Step 13
Cut the thread by simultaneously applying pressure on and turning the threading tool (left-hand thread), making sure to lubricate well at all times.
Periodically screw back the threading tool to remove chips. Continue the thread cutting until the limit stop is reached.
(see figs. 7 and 8)

Step 14
Remove the threading tool from the tube by screwing it back in clockwise direction. Inspect the thread visually and check it with a gauge.

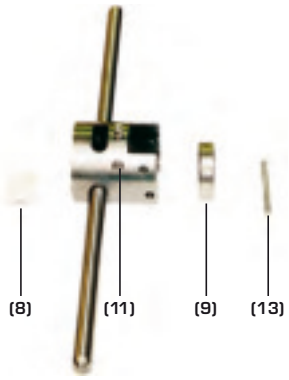
Step 15
Deburr the tube and make sure that there are no metal chips or other foreign objects on the thread or in the tubing.

INSTALLATION

Step 16
Lubricate the thread of the gland with a suitable thread lubricant. Place the gland on the tube, screw the collar fully onto the tube end and back off one turn.
(see fig. 9)

Step 17
Insert the tube into the connection flare, screw in the gland and tighten to the appropriate torque with a torque wrench.
(see fig. 10)
(See table in technical section of our catalogue)

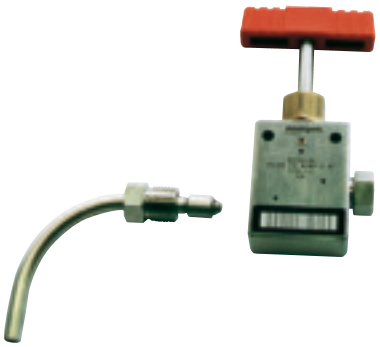
6



7

8

9



10

NOVA SWISS

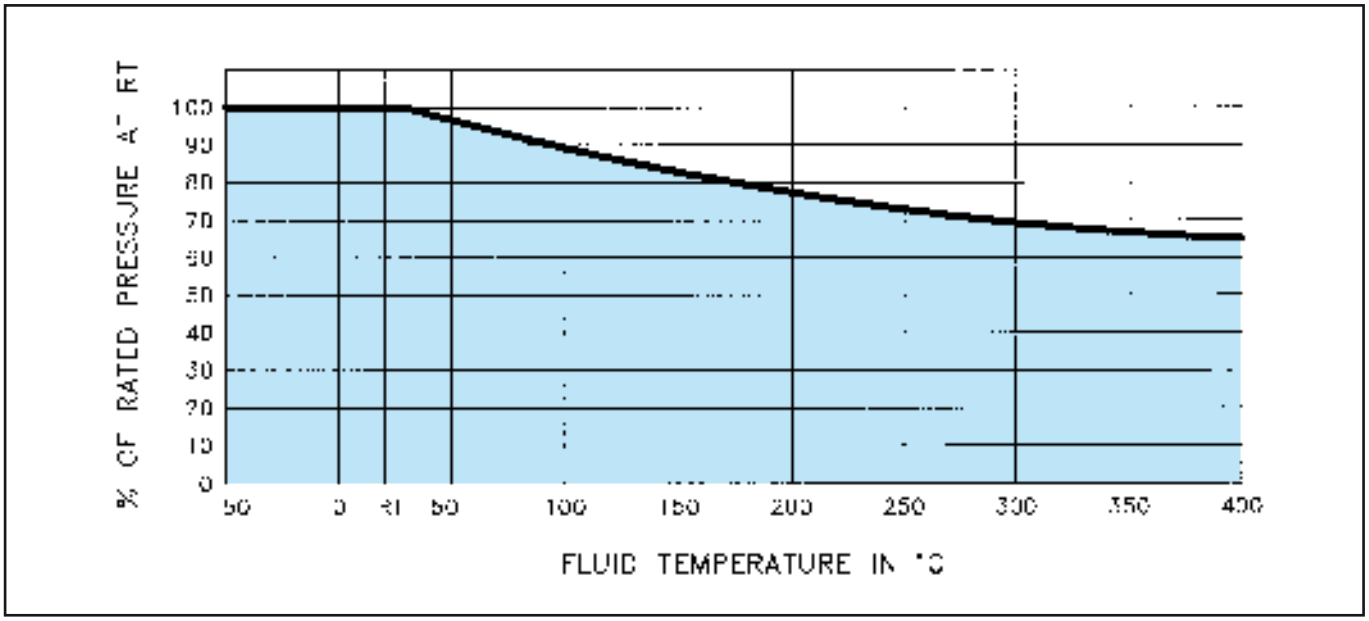
TECHNICAL

VALVES, FITTINGS AND TUBING FOR **CRITICAL SERVICE**

Elevated Temperature Usage

The following graph is for use with the Nova range of 316 stainless steel fittings and tubing. The thick line depicts the reduction in yield stress of the 316 and the corresponding reduction in valve rated pressure (some items may be used in the area above the line – consult agent or factory for specific cases).

The graph should be used for reference only as other considerations such as fatigue, creep, corrosion etc can affect performance at elevated temperatures. Please consult agent or factory for unusual operating conditions.

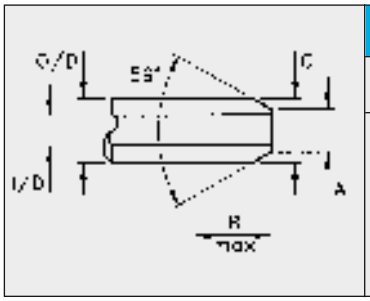


Standard Materials of Construction

Fittings	(10,20,30,000 psi)	AISI 316 L/DIN 1.4404 to NACE MR-01-75
Fittings	(60,000 psi/4000 bar/ 100,000 psi/7000 bar)	AISI 316 L/DIN 1.4404
Tubing	(20, 30,000 psi)	AISI 316 L/DIN 1.4404 to NACE MR-01-75
Tubing	(10, 20, 60,000 psi/4000 bar/ 100,000 psi/7000 bar)	AISI 316 L/DIN 1.4404
Filters	(4000 bar)	AISI 316 L/DIN 1.4404

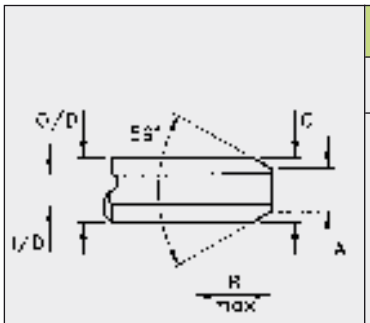
TUBE ENDS

NOVA SWISS



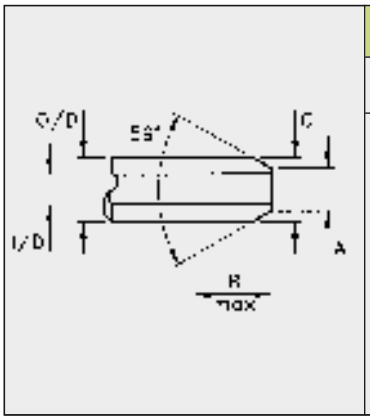
MP C+T 10000psi STANDARD SERVICE

Catalogue Number	Tube O/D	Tube I/D	C+T Connection	A	B	Thread (LH) C
TBG-10-9	9/16	0.36	9M	0.44	0.50	9/16-18 UNF
	14.3	9.1		11.1	12.7	
TBG-10-12	3/4	0.52	12M	0.58	0.63	3/4-16 UNF
	19.1	13.1		14.7	15.9	
TBG-10-16	1	0.69	16M	0.81	0.78	1-14 UNS
	25.4	17.5		20.6	19.8	



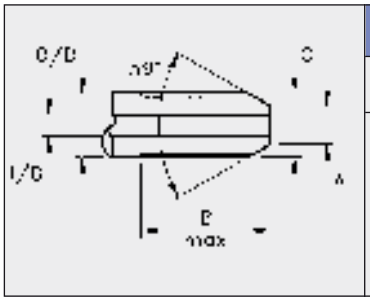
MP C+T 20000psi STANDARD SERVICE

Catalogue Number	Tube O/D	Tube I/D	C+T Connection	A	B	Thread (LH) C
TBG-20-4	1/4	0.11	4M	0.14	0.34	1/4-28 UNF
	6.4	2.8		3.6	8.7	
TBG-20-6	3/8	0.20	6M	0.25	0.44	3/8-24 UNF
	9.5	5.2		6.4	11.1	
TBG-20-9	9/16	0.31	9M	0.41	0.50	9/16-18 UNF
	14.3	7.9		10.4	12.7	
TBG-20-12	3/4	0.44	12M	0.56	0.63	3/4-16 UNF
	19.1	11.1		14.3	15.9	
TBG-20-16	1	0.56	16M	0.72	0.78	1-14 UNS
	25.4	14.3		18.3	19.8	



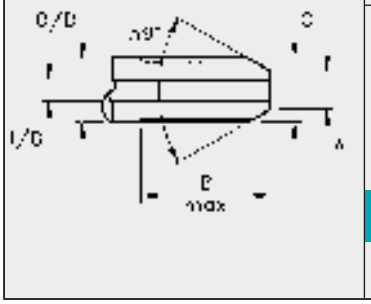
MP C+T 20000psi SOUR SERVICE

Catalogue Number	Tube O/D	Tube I/D	C+T Connection	A	B	Thread (LH) C
TBG-20-4A	1/4	0.11	4M	0.14	0.34	1/4-28 UNF
	6.4	2.8		3.6	8.7	
TBG-20-6A	3/8	0.19	6M	0.25	0.44	3/8-24 UNF
	9.5	4.7		6.4	11.1	
TBG-20-9A	9/16	0.28	9M	0.41	0.50	9/16-18 UNF
	14.3	7.0		10.4	12.7	
TBG-20-12A	3/4	0.37	12M	0.56	0.63	3/4-16 UNF
	19.1	9.5		14.3	15.9	
TBG-20-16A	1	0.50	16M	0.72	0.78	1-14 UNS
	25.4	12.6		18.3	19.8	



HP C+T 30000psi STANDARD AND SOUR SERVICE

Catalogue Number	Tube O/D	Tube I/D	C+T Connection	A	B	Thread (LH) C
TBG-30-4A	1/4	0.09	4H	0.14	0.56	1/4-28 UNF
	6.4	2.4		3.6	14.3	
TBG-30-6A	3/8	0.13	6H	0.22	0.75	3/8-24 UNF
	9.5	3.2		5.6	19.1	
TBG-30-9A	9/16	0.19	9H	0.28	0.94	9/16-18 UNF
	14.3	4.8		7.1	23.8	



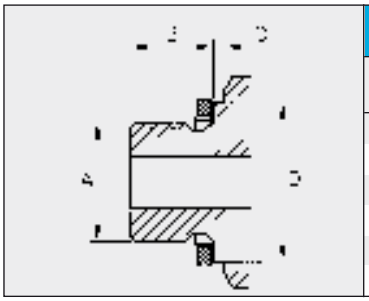
HP C+T 60000psi and E 4000 bar STANDARD SERVICE

Catalogue Number	Tube O/D	Tube I/D	C+T Connection	A	B	Thread (LH) C
TBG-60-4	1/4	0.09	4H/4E	0.14	0.56	1/4-28 UNF
	6.4	2.4		3.6	14.3	
TBG-60-6	3/8	0.13	6H/6E	0.22	0.75	3/8-24 UNF
	9.5	3.2		5.6	19.1	
TBG-60-9	9/16	0.19	9H/9E	0.28	0.94	9/16-18 UNF
	14.3	4.8		7.1	23.8	

E 101500psi/7000 bar STANDARD SERVICE

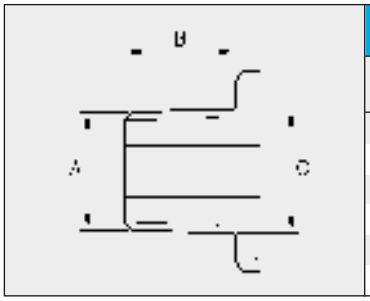
TBG-100-4	1/4	0.06	4E	0.1	0.56	1/4-28 UNF
	6.4	1.6		2.5	14.3	

MALE ENDS



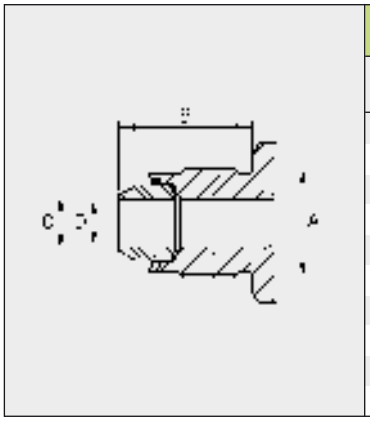
BSPP 10000psi

Port Size	Connection Type	Thread A	B	C	D
1/4	4B	1/4-19 BSPP	0.45	0.08	0.75
6.4			11.5	2	19
3/8	6B	3/8-19 BSPP	0.45	0.08	0.91
9.5			11.5	2	23.2
1/2	8B	1/2-14 BSPP	0.57	0.08	1.11
12.7			14.5	2	28.2



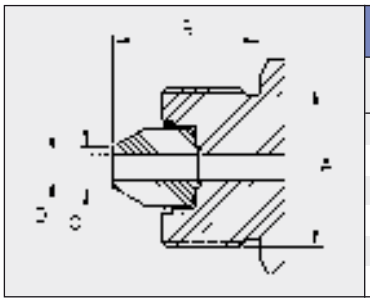
NPT 10000psi

Port Size	Connection Type	Thread A	B	C
1/4	4N	1/4-18 NPT	0.57	0.55
6.4			14.5	13.9
3/8	6N	3/8-18 NPT	0.57	0.68
9.5			14.5	17.3
1/2	8N	1/2-14 NPT	0.75	0.85
12.7			19	21.5



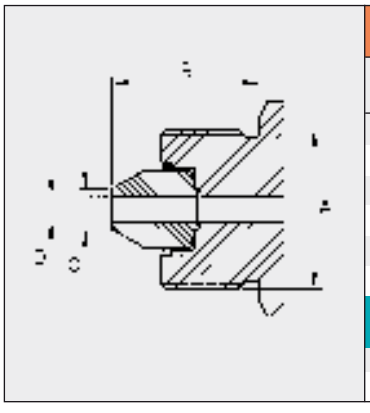
MP C+T 20000psi

Tube O/D	Connection Type	Thread A	B	C	D
1/4	4M	7/16-20 UNF	0.65	0.14	0.11
6.4			16.5	3.6	2.8
3/8	6M	9/16-18 UNF	0.81	0.25	0.20
9.5			20.5	6.4	5.2
9/16	9M	13/16-16 UN	0.98	0.41	0.35
14.3			25	10.4	9.0
3/4	12M	3/4-14 NPSM	1.18	0.56	0.44
19.1			30	14.3	11.1
1	16M	1-3/8-12 UNF	1.65	0.72	0.56
25.4			42	18.3	14.3



HP C+T 30000psi/60000psi

Tube O/D	Connection Type	Thread A	B	C	D
1/4	4H	9/16-18 UNF	0.61	0.14	0.09
6.4			15.5	3.6	2.4
3/8	6H	3/4-16 UNF	0.83	0.22	0.13
9.5			21	5.6	3.2
9/16	9H	1-1/8-12 UNF	1.02	0.28	0.19
14.3			26	7.1	4.8



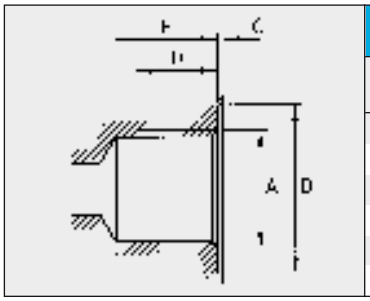
E 4000 bar

Tube O/D	Connection Type	Thread A	B	C	D
1/4			0.61	0.14	0.09
6.4	4E	M16 x 1.5	15.5	3.6	2.4
3/8			0.83	0.22	0.13
9.5	6E	M20 x 1.5	21	5.6	3.2
9/16			1.02	0.28	0.19
14.3	9E	M30 x 2	26	7.1	4.8

E 7000 bar

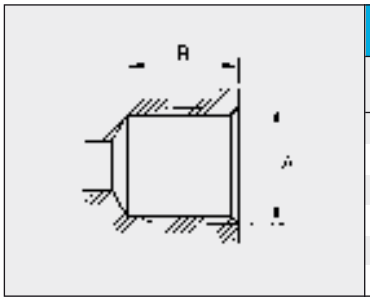
1/4			0.61	0.14	0.06
6.4	4E	M16 x 1.5	15.5	3.6	1.6

PORTS



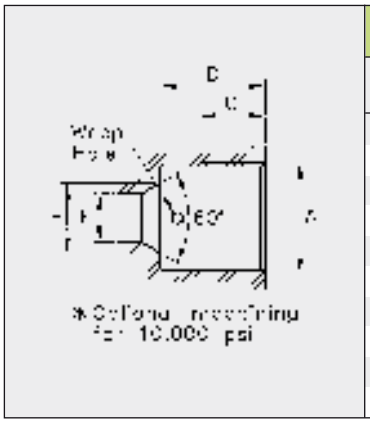
BSPP 10000psi

Port Size	Connection Type	Thread A	B	C	D	E
1/4	4B	1/4-19 BSPP	0.87	0.04	0.43	0.55
6.4			22	1	11	14
3/8	6B	3/8-19 BSPP	1.00	0.04	0.43	0.55
9.5			25.5	1	11	14
1/2	8B	1/2-14 BSPP	1.18	0.04	0.57	0.71
12.7			30	1	14.5	18



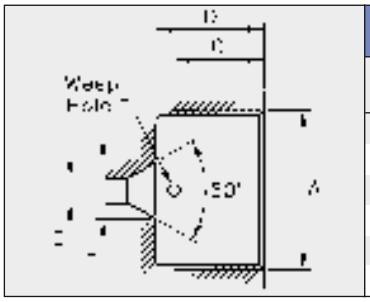
NPT 10000psi

Port Size	Connection Type	Thread A	B
1/4	4N	1/4-18 NPT	0.59
6.4			15
3/8	6N	3/8-18 NPT	0.59
9.5			15
1/2	8N	1/2-14 NPT	0.79
12.7			20



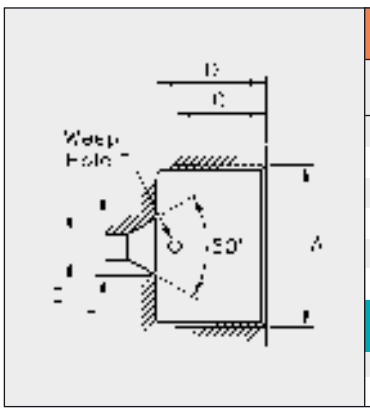
MP C+T 20000psi

Tube O/D	Connection Type	Thread A	B	C	D	E	E*
1/4	4M	7/16-20 UNF	0.20	0.31	0.50	0.11	–
6.4			5	8	12.7	2.8	
3/8	6M	9/16-18 UNF	0.32	0.39	0.63	0.20	–
9.5			8.2	10	15.9	5.2	
9/16	9M	13/16-16 UN	0.51	0.47	0.75	0.31	0.36
14.3			13	12	19.1	7.9	9.1
3/4	12M	3/4-14 NPSM	0.64	0.50	0.94	0.44	0.52
19.1			16.3	12.7	23.9	11.1	13.1
1	16M	1-3/8-12 UNF	0.90	0.83	1.31	0.56	0.69
25.4			22.8	21	33.3	14.3	17.5



HP C+T 30000psi/60000psi

Tube O/D	Connection Type	Thread A	B	C	D	E
1/4	4H	9/16-18 UNF	0.19	0.39	0.44	0.09
6.4			4.7	10	11.3	2.4
3/8	6H	3/4-16 UNF	0.28	0.53	0.63	0.13
9.5			7.2	13.5	15.9	3.2
9/16	9H	1-1/8-12 UNF	0.41	0.63	0.75	0.18
14.3			10.3	16	19.1	4.5



E 4000 bar

Tube O/D	Connection Type	Thread A	B	C	D	E
1/4			0.20	0.38	0.45	0.09
6.4	4E	M16 x 1.5	5	9.7	11.5	2.4
3/8			0.28	0.53	0.59	0.13
9.5	6E	M20 x 1.5	7	13.5	15	3.2
9/16			0.43	0.63	0.35	0.18
14.3	9E	M30 x 2	11	16	19	4.5

E 7000 bar

1/4			0.20	0.38	0.45	0.06
6.4	4E	M16 x 1.5	5	9.7	11.5	1.6

ASSEMBLY TORQUES

NOVA SWISS

	10 kpsi						20 kpsi					30 kpsi			60 kpsi			101.5 kpsi
	1/4	3/8	1/2	1/4	3/8	1/2	1/4	3/8	9/16	3/4	1		3/8		1/4		9/16	1/4
	1000 bar											2000 bar			4000 bar			7000 bar
NEEDLE VALVE																		
Bonnet	25 Nm			25 Nm			25 Nm	40 Nm		125 Nm		30 Nm			45 Nm			60 Nm
Seat							60 Nm			180 Nm	350 Nm	100 Nm			140 Nm			
C & T Fitting							(Refer To Tubing and Connections)											
NEEDLE VALVE WITH AIR OPERATORS																		
Bonnet/Valve	25 Nm			25 Nm			25 Nm	40 Nm		125 Nm		30 Nm			45 Nm			60 Nm
Bonnet/Plate	40 Nm																	
FITTINGS																		
C & T Fitting							(Refer To Tubing and Connections)											
CHECK VALVES																		
Seat	80 Nm		100 Nm	80 Nm		100 Nm	80 Nm	100 Nm	190 Nm	385 Nm	645 Nm	100 Nm		190 Nm	160 Nm		380 Nm	
C & T Fitting							(Refer To Tubing and Connections)											
TUBING AND CONNECTIONS, COUPLINGS																		
C & T Fitting							15 Nm	35 Nm	75 Nm	145 Nm	310 Nm	30 Nm	65 Nm	145 Nm	30 Nm	65 Nm	145 Nm	45 Nm
ANTIVIBRATION FOR TUBING AND CONNECTIONS, COUPLINGS																		
GLA							15 Nm	35 Nm	75 Nm	145 Nm	310 Nm	35 Nm	75 Nm	170 Nm	35 Nm	75 Nm	170 Nm	52 Nm
NUT							12 Nm	30 Nm	60 Nm	110 Nm	250 Nm							
SAFETY HEADS																		
Gland	See Mark on Plate of Rupture disk																	
ADAPTORS																		
Body							15 Nm	35 Nm	75 Nm	145 Nm	310 Nm	30 Nm	65 Nm	145 Nm	30 Nm	65 Nm	145 Nm	45 Nm
C & T Fitting							(Refer To Tubing and Connections)											
CONNECTORS																		
Body							15 Nm	35 Nm	75 Nm			30 Nm	65 Nm	145 Nm				

	10 kpsi						20 kpsi					30 kpsi			60 kpsi			101.5 kpsi
	1/4	3/8	1/2	1/4	3/8	1/2	1/4	3/8	9/16	3/4	1	1/4	3/8	9/16	1/4	3/8	9/16	1/4
	1000 bar											2000 bar			4000 bar			7000 bar

Note: Due to our policy of continuous development we reserve the right to modify products and specifications without notice.

SPARES KITS

To order spares kits, insert SK- in front of the valve catalogue number (see examples below).
To order individual connection components, use the catalogue numbers in the Fittings section.
To order any other individual components, contact factory or local agent.

NEEDLE VALVE

SK-NV1-20-4M spares kit consists of:

1-off	lower stem
1-off	stem guide
2-off	stem washer
1-off	stem packing

NEEDLE VALVE

SK-NV5-20-4M spares kit consists of:

1-off	lower stem
1-off	stem guide
2-off	stem washer
1-off	stem packing
1-off	replaceable seat

AIR OPERATED VALVE (ATO)

SK-NV1-20-4M-ATO spares kit consists of:

1-off	lower stem
1-off	stem guide
2-off	stem washer
1-off	stem packing
1-off	piston outer o-ring
1-off	piston inner o-ring
1-off	can o-ring
1-off	upper stem o-ring
1-off	die spring
10-off	shim washers
1-off	piston lock nut

AIR OPERATED VALVE (ATC)

SK-NV5-20-4M-ATC spares consists of:

1-off	lower stem
1-off	stem guide
2-off	stem washer
1-off	stem packing
1-off	replaceable seat
1-off	piston outer o-ring
1-off	piston inner o-ring
1-off	can o-ring
1-off	upper stem o-ring
1-off	die spring
1-off	piston lock nut
1-off	indicator o-ring

FILTER

Type	Spare Kit consists of:	Packing	Filter insert	Packing
FIL-40-4E/6E	SK-FIL-5	2 off XX.0826-30	1 off 5.2027.014	1 off XX.0600-30
FIL-40-4E-10/6E-10	SK-FIL-10	2 off XX.0826-30	1 off 5.2027.015	1 off XX.0600-30

CHECK VALVE

Type	Spare Seal
CVP104B	XX.0225-64
CVP104N	XX.0225-64
CVP106B	XX.0225-64
CVP106N	XX.0225-64
CVP206M	XX.0652-64
CVP309H	XX.0653-64
CVP609H	XX.0653-64
CVP108B	XX.0224-64
CVP108N	XX.0224-64
CVP209M	XX.0654-64
CVP204M	XX.0226-64
CVP304H	XX.0651-64
CVP306H	XX.0651-64
CVP604H	XX.0651-64
CVP606H	XX.0651-64
CVP404E	XX.0651-64
CVP406E	XX.0651-64
CVP409E	XX.0653-64

PLUG AND O-RING FOR CONED AND THREADED MALE ENDS

Male	Tube O/D	Pressure	plug	o-ring
4M	1/4	10–20 kpsi	XX.0380-2	3.6934.126
6M	3/8	10–20 kpsi	XX.0379-2	3.6934.042
9M	9/16	10-20 kpsi	XX.0378-2	3.6934.129
12M	3/4	10–20 kpsi	XX.0479-6	3.6934.130
16M	1	10–20 kpsi	XX.0509-6	3.6934.125
4H	1/4	10–30 kpsi	XX.0377-6	3.6934.127
6H	3/8	10–30 kpsi	XX.0376-6	3.6934.128
9H	9/16	10–30 kpsi	XX.0375-6	3.6934.129
4H	1/4	60 kpsi	XX.0377-10	3.6934.127
6H	3/8	60 kpsi	XX.0376-10	3.6934.128
9H	9/16	60 kpsi	XX.0375-10	3.6934.129
4E	1/4	1000/4000 bar	XX.0377-10	3.6934.127
6E	3/8	1000/4000 bar	XX.0376-10	3.6934.128
9E	9/16	1000/4000 bar	XX.0375-10	3.6934.129

BONDED SEAL FOR BSPP MALE ENDS

Male	Tube O/D	bonded seal
4B	1/4	5.1332.008
6B	3/8	5.1332.007
8B	1/2	5.1332.006

LIQUID FLOW COEFFICIENTS KV IN M3/H

Kv values according to DIN EN 60543-2-3 for flow of water.
kv: flow of water in m3/h, temperature +5 to +30°C at a pressure drop of 1 bar (14.5 psi), in a determined direction through an object. Instruments in fully open position.

NEEDLE VALVES			
orifice of Needle Valve	straight valve Kv-value (m3/h)	angle valve Kv-value (m3/h)	connection
0.09"/2.4 mm	0.13	0.19	4H, 4E
0.11"/2.8 mm	0.17	0.20	4M
0.12"/3.0 mm	0.24	0.29	6H, 9H, 6E, 9E
0.18"/4.5 mm	0.41	0.55	4B, 4N
0.20"/5.0 mm	0.53	0.79	6M
0.26"/6.5 mm	0.82	1.07	6B, 6N
0.30"/7.5 mm	1.02	1.30	9M
0.56"/14.2 mm	–	4.68	16M

FITTINGS						
Orifice	Elbow	Tee		Cross		Connection
	Kv value 90° (m3/h)	Kv value180° (m3/h)	Kv value 90° (m3/h)	Kv value 180° (m3/h)	Kv value 90° (m3/h)	
0.06"/1.6 mm	0.06	0.11	0.07	0.11	0.06	4E (7000 bar)
0.09"/2.4 mm	0.16	0.26	0.16	0.26	0.16	4H, 4E
0.11"/2.8 mm	0.2	0.32	0.20	0.32	0.20	4M
0.13"/3.2 mm	0.31	0.51	0.29	0.50	0.29	6H, 6E
0.18"/4.5 mm	0.44	1.04	0.61	0.97	0.54	9H, 9E
0.20"/5.2 mm	0.78	1.52	0.85	1.50	0.83	6M
0.35"/9.0 mm	2.14	3.88	2.25	3.96	2.19	9M

FLOW THROUGH CHECK VALVES AT VARIOUS PRESSURE

CHECK VALVES							
Orifice	Pressure difference					Kv value without spring (m3/h)	Connection
	1 bar/14.5 psi (m3/h)	2 bar/29 psi (m3/h)	3 bar/43.5 psi (m3/h)	4 bar/58psi (m3/h)	5 bar/72.5 psi (m3/h)		
0.09"/2.4 mm	0.00	0.00	0.01	0.02	0.03	0.17	4H, 4E
0.11"/2.8 mm	0.00	0.03	0.09	0.12	0.15	0.18	4M
0.13"/2.3 mm	0.00	0.01	0.04	0.06	0.08	0.23	6H, 6E
0.18"/4.5 mm	0.00	0.10	0.25	0.34	0.40	0.46	9H, 9E, 4B, 4N
0.20"/5.2 mm	0.00	0.02	0.08	0.19	0.28	0.68	6M
0.26"/6.5 mm	0.00	0.15	0.43	0.58	0.70	0.73	6B, 6N
0.35"/9.0 mm	0.00	0.15	1.46	1.46	1.46	1.47	9M, 8B, 8N

Note: Due to our policy of continuos development we reserve the right to modify products and specifications without notice.

Hochdruck-technik

Haute pression

High-pressure equipment

510

Rohre	Tubes	Tubing
Rohre	Tubes	Tubing

520

Fittings	Raccords	Fittings
Fittings	Raccords	Fittings
Rohranschlüsse	Eléments de raccordement	Connectors
Rückschlagklappe	Clapets anti-retour	Check Valves
usw.	etc.	etc.

530

Ventile	Vannes	Valves
Laborventile	Vannes de laboratoire	Laboratory valves
Mini-Ventile	Mini-Vannes	Mini-Valves
Magnetventile	Electrovannes	Solenoid valves
usw.	etc.	etc.

550

Druck-Erzeuger	Générateurs de pression	Pressure Generators
Pumpen	Pompes	Pumps
Kompressoren	Compresseurs	Compressors
usw.	etc.	etc.

580

Zubehör	Accessoires	Accessories
Thermoelemente	Thermocouples	Thermocouples
Manometer	Manomètres	HP Gauges
Anzeigegerät	Affichage digital	Digital display unit
Druckaufnehmer	Capteur	Pressure sensors
usw.	etc.	etc.

NOVA SWISS

Rohre
Tubes
Tubing

NOVA SWISS-Hochdruck-Rohre, in rostfreiem Stahl, nahtlos und kaltgezogen, erhältlich in verschiedenen Dimensionen.

- NOVA SWISS-Hochdruck-Rohre werden nach genauen Vorschriften hergestellt und eingehenden Prüfungen unterzogen, um gleichbleibende Qualität und Sicherheit für Hochdruckanlagen sicherzustellen.

- Die Rohre werden nahtlos kaltgezogen. Dadurch ergibt sich hohe Festigkeit gepaart mit guter Korrosionsbeständigkeit.

- Prüfungen umfassen folgende Punkte: Festigkeitseigenschaften, Druckprobe, Dimensionen, Oberflächengüte, Rissfreiheit, Chemische-Materialzusammensetzung.

- Die Rohre werden in Längen von 4 - 6 Metern geliefert, oder auf gewünschte Länge mit Rohrendbearbeitung.

- NOVA SWISS-Rohre eignen sich zum Aufbau von Hochdrucksystemen zusammen mit dem NOVA SWISS-Programm von Ventilen und Verbindungselementen.

- Qualität Mat. W. Nr. 1.4571 oder 1.4301 ab Lager lieferbar.

- Rohre in anderen Werkstoffen und Dimensionen auf Anfrage erhältlich.

- Für Anwendungen bei dynamischen Belastungen wenden Sie sich bitte an uns.

Zubehör:
- Rohrkonus-Schneidwerkzeug.
- Gewinde-Schneidwerkzeug.

Achtung:
NOVA SWISS Hochdruckrohre dürfen keinen thermischen Behandlungen (Schweissen, Glühen, Wärmen) unterzogen werden, da die mech. und chem. Eigenschaften verändert werden.

Tubes NOVA SWISS pour hautes pressions en acier inoxydable. Ces tubes écrouis, sans soudure sont tenus en stock dans les dimensions courantes.

- Les tubes NOVA SWISS pour hautes pressions sont fabriqués en conformité avec des spécifications strictes.

- Des tests sur prélèvement sont exécutés sur tous les tubes NOVA SWISS afin d'assurer la qualité uniforme, impérative pour la sécurité des installations à haute pression.

- Ces tests comprennent: les propriétés mécaniques, essais sous pression, les tolérances dimensionnelles, la finition intérieure et extérieure, absence de fissures, composition des matériaux.

- Les tubes NOVA SWISS sans soudure sont écrouis, combinant l'excellente résistance à la corrosion avec une bonne résistance mécanique.

- Les tubes sont fournis en longueur de 4 à 6 m ou sur demande, en coupes plus courtes avec les bouts préparés.

- Les tubes NOVA SWISS s'appliquent dans les systèmes de haute pression avec le programme de vannes et raccords NOVA SWISS.

- Les tubes en acier Z6 CNDT 17-12 (AISI 316 Ti) ou Z6 CN 18-09 (AISI 304) sont livrables du stock.

- Veuillez nous consulter pour les tubes en matériaux hors standard et en autres dimensions.

- Pour usage sous effort dynamique veuillez nous consulter s'il vous plaît.

Accessoires:
- Outil d'usinage de cônes.
- Outil de filetage.

Attention:
Les tubes NOVA SWISS pour hautes pressions ne peuvent pas être soumits à des procès thermiquent, parce que laut propriétés méch. et chemiques changerout.

NOVA SWISS stainless steel high pressure tubing, seamless and cold-drawn, available in several dimensions.

- NOVA SWISS high pressure tubing is manufactured to exact specifications and is thoroughly inspected and tested, to ensure uniform quality and safety for high pressure installations.

- The tubing is seamless and cold drawn. High strength with corrosion resistance.

- Tests and inspections include the following: mechanical properties, test pressure, dimensions, surface and bore finish, cracks, material composition.

- Tubing is furnished in lengths of 13 to 20 feet, or in shorter lengths with prepared ends if desired.

- Compatible systems may be constructed using NOVA SWISS tubing, together with NOVA SWISS valves and fittings.

- AISI 316 Ti tubing or 304 is available from stock.

- For tubing in other materials and dimensions please contact us.

- For use by dynamic strain please contact us.

Accessories:
- Tube coning tool.
- Tube threading tool.

Attention:
N.S. high pressure tubing must not be subjected to thermal processes, because their mechnical and chemical properties will change.

max. 10'000 bar
max. 145'000 psi

Max. 1'000 MPa

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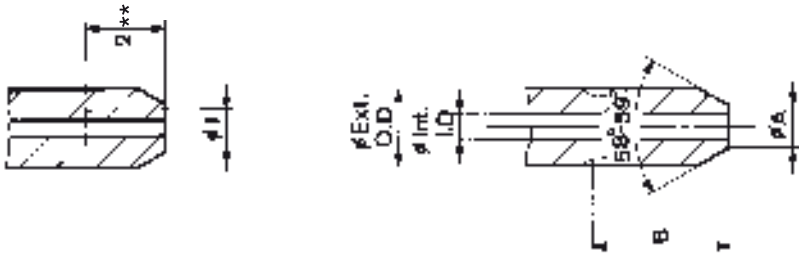
NOVA SWISS

Rohre
Tubes
Tubing



- Weitere Rohrdimensionen auf Anfrage.
- Veuillez nous consulter pour autre dimensions.
- For other dimensions please contact us.

Mat.:W.Nr.1.4404 Mat.: Z3CND18-12-02 Mat.:AISI 316 L	Mat.:W.Nr. 1.4571 Mat.:Z6CND18-12-02 Mat.: AISI 316 Ti	Mat.:W.Nr.1.4301 Mat.:Z6CN18-09 Mat.: AISI 304	Rohrdimensionen Dimensions Tubing Size		*Max. Betriebsdruck *Pression d. service max. *Max. Pressure rating	Rohrende Bout de tubes Tubing end		Biegeradius Rayon de cintrage Bending radius
STANDARD-ART.			Ø EXT./O.D .	Ø Int./I.D.	20°C - 70°F	Ø A	B	minimum
		510.1318	**14,3 mm** 9/16"	**6,35 mm** 1/4"	**3'200 bar** 46'400 psi	**8,8 mm** 0,347"	**23 mm** 0,91"	**75 mm** 3"
		510.1312	**14,3 mm** 9/16"	**4,76 mm** 3/16"	**4'000 bar** 58'000 psi	**5,6 mm** 0,221"	**23 mm** 0,91"	**75 mm** 3"
		510.1323	**9,52 mm** 3/8"	**3,2 mm** 1/8"	**4'000 bar** 58'000 psi	**5,5 mm** 0,22"	**18,5 mm** 0,73"	**50 mm** 2"
	511.1525		**9,52 mm** 3/8"	**1,6 mm** 1/16"	**8'700 bar** 126'150 psi	**3,0 mm** 0,12"	**18,5 mm** 0,73"	**50 mm** 2"
	511.1666		**4,76 mm** 3/16"	**0,6 mm** 0,02"	**10'000 bar** 145'000 psi	****1,6 mm** 1/16"	****14mm** 0,55"	**25mm** 1"
TBG-30-2			**3,2 mm** 1/8"	**1,0 mm** 0,04"	**2'070 bar** 30'000 psi	**1,6 mm** 1/16"	**14 mm** 0,55"	**15 mm** 0,59"
		510.1156	**1,6 mm** 1/16"	**0,5 mm** 0,02"	**1'000 bar** 14'500 psi	**--**	**--**	**15 mm** 0,59"

	100°C	200°C	300°C	400°C	***500°C	
Max. Betriebsdruck für Rohre: Pression de service max. pour tubes: Max. Pressure rating of tubing:	88 %	79 %	69 %	64 %	61 %	des Betriebsdruckes bei 20°C de la pression de service à 20°C of the pressure rating at 70°F

***bei 500°C kann interkristalline Korrosion auftreten.

***la corrosion intercristalline peut apparaître à 500°C (932°F)

***at 500°C (932°F) intercristalline corrosion can occur.

Achtung: Dynamische Belastungen beeinflussen die Lebensdauer.
Attention: Mise sous pression dynamique influence la durée de vie.
Attention: Dynamic strain influences life of tubing.

*** Angabe Betriebsdruck:** **quasi statisch.**
Prüfdruck: Max. Betriebsdruck x 1,3 (Zertifikat auf Anfrage).
Berstdruck: Max. Betriebsdruck x 2.

*** Pression de service:** **statique.**
Pression d'essai: Pression de service max. x 1,3 (Certificat sur demande).
Pression de rupture: Pression de service max. x 2.

*** Working pressure:** **static.**
Test pressure: Max. Working pressure x 1,3 (Certificate on request).
Rupture pressure: Max. Working pressure x 2.

Wir sind eingerichtet zum hydraulischen Abpressen und Autofrettieren der Rohre bis 10'000 bar. -Auf Anfrage.
Nous sommes équipés pour les épreuves hydrauliques et l'autofrettage jusqu'à 10'000 bar. -Sur demande.
We are equipped to hydraulically test and autofrettage tubing up to 150'000 psi. -On request.

- Technische Änderungen jederzeit vorbehalten.
- Les caractéristiques techniques sont sujet à des changements sans préavis.
- Specifications are subject to change without notice.

Rückschlagklappen
Clapets anti-retour
Check valves

NOVA SWISS-Rückschlag-klappen für Flüssigkeiten und Gase bis 7'000 bar

- Drei verschiedene Varianten, aufgebaut auf bewährten Grund-elementen.
- Alle Teile aus rostfreiem Stahl, daher hohe Korrosionsfestig-keit.
- Keine nichtmetallischen Ele-mente, d.h. geeignet für den Einsatz mit ultra-reinen Medien.
- Ansaug- und Auslasstypen. Siehe Übersicht auf der Rück-seite.
- Zu verwenden mit allen NOVA SWISS-Hochdruck-Komponenten.
- Alle Rückschlagklappen werden mit der entsprechenden Anzahl Druckschrauben und Druck-ringen geliefert.

Clapets anti-retour NOVA SWISS pour liquides et gaz jusqu'à 700 MPa

- Trois variantes. Toutes basées sur des éléments éprouvés.
- Construction en acier inoxy-dable avec une excellente résistance à la corrosion.
- Aucun élément non métallique. Apte à l'emploi des sub-stances ultra-pures.
- Des clapets d'aspiration et de décharge.
- A appliquer sur toutes les vannes, raccords, tubes, etc. du système haute pression.
- Tous les clapets anti-retour sont fournis avec le nombre corres-pondant de vis de serrage et bagues.

NOVA SWISS check valves for liquids and gases up to 101'500 psi

- Three different types, construct-ed with proven components.
- All stainless steel construction for high corrosion resistance.
- No non-metallic parts, hence suitable for ultra-pure media.
- Inlet- and discharge valves.
- For use with all NOVA SWISS High Pressure components.
- All check valves are furnished with the gland nuts and sleeves.

7'000 bar
101'500 psi

700 MPa

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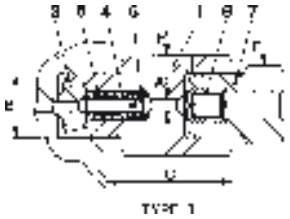
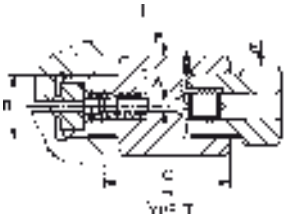
NOVA SWISS

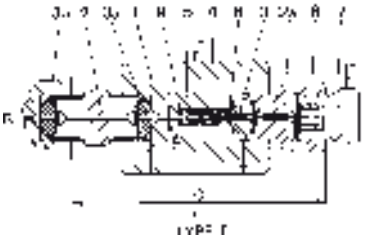
Rückschlagklappen
Clapets anti-retour
Check valves

1	Körper	Corps	Body
2	Übergangsstück	Raccord	Coupling
3	Linse	Lentille	Lens
4	Führung	Guide	Guide piece

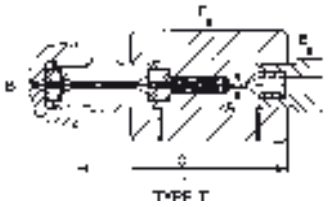


4'000 bar

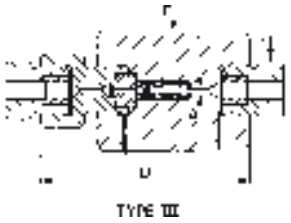




7'000 bar



7'000 bar



Kat.Nr. No. de cat. Cat. No.			Max. Betriebsdruck Pression de service Pressure rating	Rohr Tube Tube	A	B* Anschluss für Raccordement pour Connection for	C	D	E Hex.	F Hex.
Type I	Type II	Type III	40°C - 100°F	ØExt./O.D.	mm in.		mm in.	mm in.	mm in.	mm in.
520.3321	520.3322	–	**4'000 bar** 60'000 psi	**9.52 mm** 3.8"	**3** 0.12	HP Tubing O.D. 3.8"	**33** 1.30	**81** 3.19	**22** 0.87	**27** 1.06
520.3331	520.3332	–	**4'000 bar** 60'000 psi	**6.35 mm** 1/4"	**3.2** 0.13	1/4"	**31** 1.22	**73** 2.87	**17** 0.67	**22** 0.87
520.3431	520.3432	3433-1	**7'000 bar** 100'000 psi	**6.35 mm** 1/4"	**1.6** 0.06	1/4"	**97 I** **76 II** 3.46	**88** **17** 0.67	**36** 1.42	

- Technische Änderungen jederzeit vorbehalten.
- Les caractéristiques techniques sont sujet à des changements sans préavis.
- Specifications are subject to change without notice.

Labor-Ubergangsstücke
Réductions de laboratoire
Laboratory adaptors

Übergangsstücke zur Anpassung jedes beliebigen Systems an das NOVA SWISS-HP-System

- NOVA SWISS-Übergangsstücke ermöglichen jede denkbare Erweiterung des NOVA SWISS-Programmes durch Fremdfabrikate.

- Jedes Stück trägt auf seiner Primär-Seite einen zum NOVA SWISS-Programm passenden Anschluss (Standard LHP), auf der Sekundär-Seite dagegen einen beliebigen Anschluss entsprechend den speziellen Bedürfnissen.

- Material der Körper: W.Nr. 1.4404.

Raccords de réduction permettant d'adapter n'importe quel système au système HP-NOVA SWISS

- Les réductions NOVA SWISS permettent des adaptations illimitées du système HP-NOVA SWISS avec des produits étrangers.

- Sur le côté primaire, chaque raccord possède une connexion standard LHP-NOVA SWISS tandis que le côté secondaire peut être équipé d'une connexion au choix.

- Matériau du corps: AISI 316 L (Acier Z2 CND 17-12).

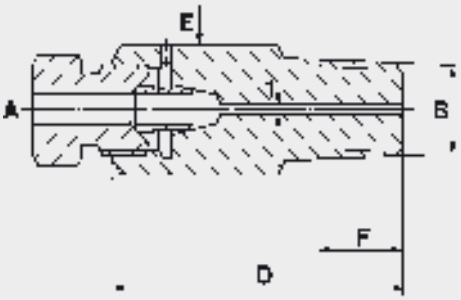
Adaptors for the interconnection of any given system to the NOVA SWISS HP-System

- NOVA SWISS adaptors make it possible to connect the NOVA SWISS HP-System to your own BSP- or NPT-equipment.

- Each adaptor has on its primary side a standard LHP-NOVA SWISS bodyopening. On the secondary side, any type of connection can be machined.

- Body material: AISI 316 L.

LHP weiblich - NPT/R männlich
LHP femelle - NPT/R mâle
LHP female - NPT/R male



	A	B	D	E	F
525.9010 525.9110	LHP 1/8" LHP 1/16"	1/8" NPTF	35	12	10
525.9011 525.9111	LHP 1/8" LHP 1/16"	1/4" NPTF	40	17	14
525.9012	LHP 1/8"	3/8" NPTF	40	22	14
525.9013	LHP 1/8"	1/2" NPTF	43	22	17
525.9015	LHP 1/8"	R 1/8"	35	12	10
525.9016 525.9116	LHP 1/8" LHP 1/16"	R 1/4"	40	17	11
525.9017	LHP 1/8"	R 3/8"	40	22	12

Material der Körper: W.Nr. 1.4404 oder 1.4571
Matériau du corps: Z2CND17-12 ou Z2CNDT17-12
Body material: AISI 316 L or 316 Ti

max. 1'000 bar
max. 14'500 psi

Max. 100 MPa

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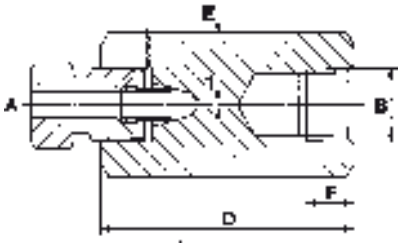
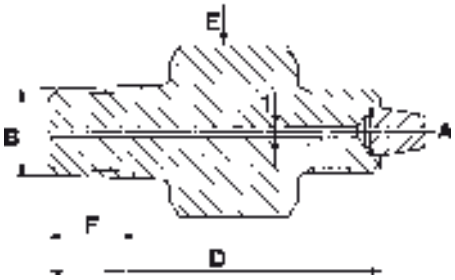
NOVA SWISS

LHP weiblich - NPT/R weiblich
LHP femelle - NPT/R femelle
LHP female - NPT/R female



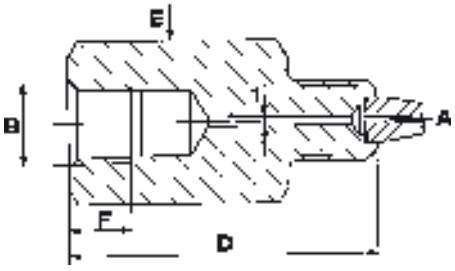
	A	B	D	E	F
525.9020	LHP 1/8"	1/8" NPTF	35	17	7
525.9021	LHP 1/8"	1/4" NPTF	35	17	10
525.9025	LHP 1/8"	R 1/8"	35	17	12

LHP männlich - NPT/R männlich
LHP mâle - NPT/R mâle
LHP male - NPT/R male



	A	B	D	E	F
525.9030 525.9030	LHP 1/8" LHP 1/16"	1/8" NPTF	45	12	10
525.9031 525.9031	LHP 1/8" LHP 1/16"	1/4" NPTF	50	17	14
525.9035 525.9035	LHP 1/8" LHP 1/16"	R 1/8"	45	12	10
525.9036 525.9036	LHP 1/8" LHP 1/16"	R 1/4"	45	17	11

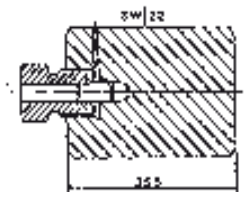
LHP männlich - NPT/R weiblich
LHP mâle - NPT/R femelle
LHP male - NPT/R female



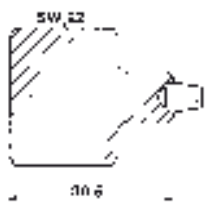
	A	B	D	E	F
525.9040 525.9040	LHP 1/8" LHP 1/16"	1/8" NPTF	30	17	7
525.9041 525.9041	LHP 1/8" LHP 1/16"	1/4" NPTF	30	17	10
525.9042 525.9042	LHP 1/8" LHP 1/16"	3/8" NPTF	35	22	12,7

Material der Körper: W.Nr. 1.4404
Matériaux du corps: Z2CND 17-12
Body material: AISI 316 L

Halbfertige Übergangsstücke
Réductions à côté secondaire brut
Adaptor with unmachined secondary side



LHP 1/8" 525.9060
LHP 1/16" 525.9160



LHP 1/8" 525.9061
LHP 1/16" 525.9061

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Laborfittinge
Raccords de laboratoire
Laboratory-fittings

- Minimales Totvolumen.
- Geeignet für 1/8" und 1/16" Kapillar-Rohre.
- Rohrverschraubung mit Schneidring und Druckschraube.
- Stark reduzierte Körperaussenmasse.
- Gas- bzw. flüssigkeitsdicht.
- Körperwerkstoff: Edelstahl (1.4404 oder 1.4571).
- Alle Fittinge werden mit der entsprechenden Anzahl Druckschrauben und Schneidringen geliefert.

Auf Wunsch lieferbar:

- Sondermaterialien wie z.B. Hastelloy, weitere auf Anfrage.

- Très faible volume interne.
- Dimensionnés pour tubes capillaires 1/8" et 1/16".
- Connexions avec olive et vis de serrage.
- Dimensions extérieures minimales.
- Etanches sous liquides et gaz.
- Matériaux des corps: Z 2 CND 17-12 ou U-2 CNDT 17 12.
- Tous les raccords sont fournis avec le nombre correspondant de vis de serrages et olives.

Livrable sur demande:

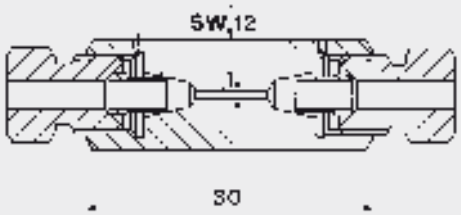
- Matériaux spéciaux comme Hastelloy, etc.

- Minimal total volume
- Suitable for 1/8" and 1/16" capillary tube.
- Tubing connection per ferrule and gland nut.
- Very reduced outside dimensions.
- Fittings are gas- and liquid-tight.
- Body material: AISI 316 L or 316 Ti.
- All fittings are furnished with the necessary number of gland nuts and ferrules.

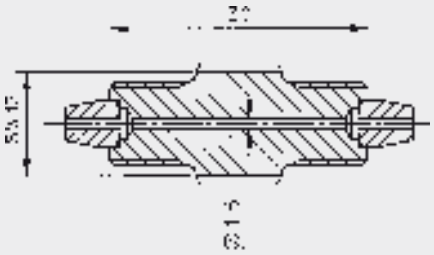
Available on request:

- other materials such as hastelloy etc. upon request.

Verbindungsstücke
Raccords droits
Unions

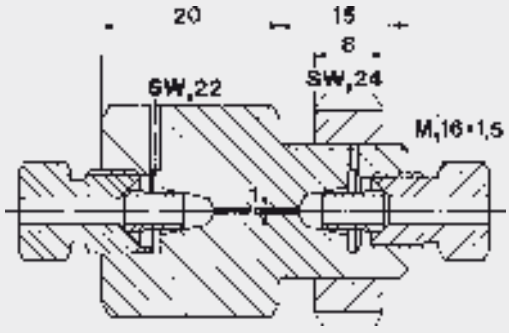


LHP 1/8"	525.9050
LHP 1/16"	525.9150
v:	8,6 mm³



LHP 1/8"	525.9055
LHP 1/16"	525.9055

Schottverschraubung
Raccords passe-cloison
Bulkhead couplings



LHP 1/8"	525.9065
LHP 1/16"	525.9165
v:	12,5 mm³

max. 1'000 bar
max. 14'500 psi

Max. 100 MPa

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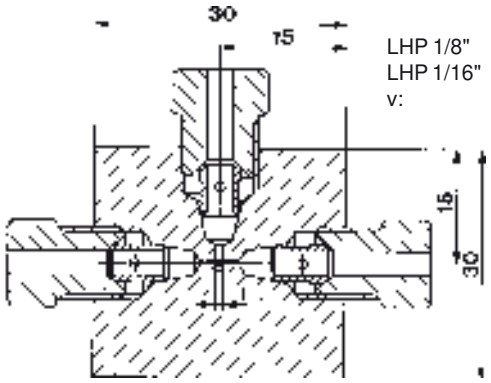
NOVA SWISS

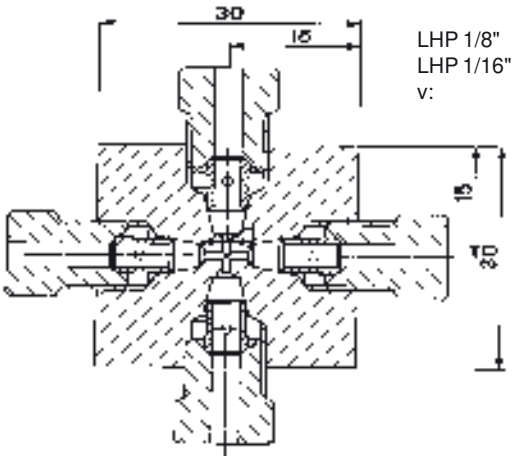
Laborfittinge
Raccords de laboratoire
Laboratory-fittings

T - Stücke
Raccords en T
Tees



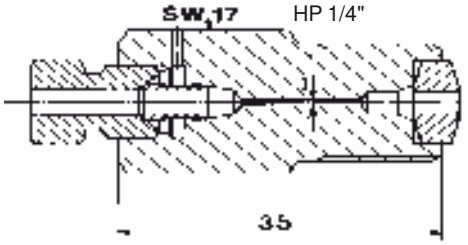
LHP 1/8"	520.2153
LHP 1/16"	520.2173
v:	12,1 mm³

Kreuzstücke
Raccords en croix
Crosses

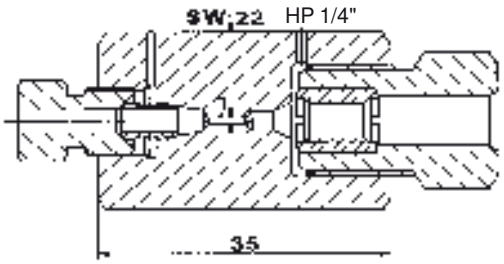


LHP 1/8"	520.2154
LHP 1/16"	520.2174
v:	16,4 mm³

Reduktionsstücke
Raccords de réduction
Reducers

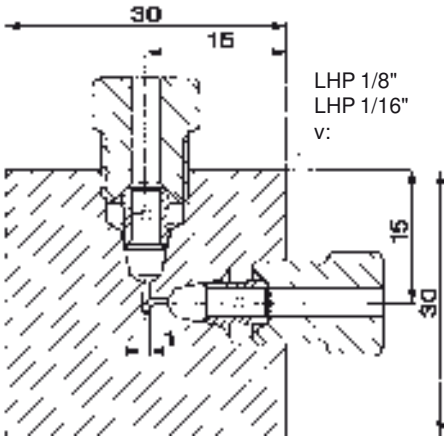


LHP 1/8"	525.9052
LHP 1/16"	525.9152
v:	29,3 mm³



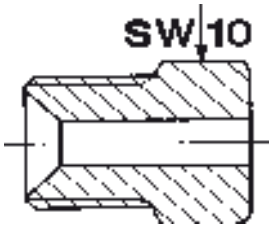
LHP 1/8"	525.9051
LHP 1/16"	525.9151
v:	29,3 mm³

Winkelstücke
Raccords à angle droit
Elbows



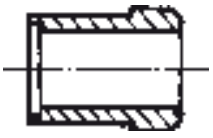
LHP 1/8"	520.2152
LHP 1/16"	520.2172
v:	8,2 mm³

Druckschrauben
Vis de serrage
Gland nuts



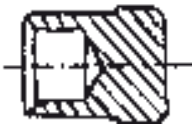
LHP 1/8"	521.9905
LHP 1/16"	521.9907

Schneidringe
Olives
Ferrules



LHP 1/8"	521.9906
LHP 1/16"	521.9908

Stopfen
Bouchons
Plugs



LHP 1/8"	521.9909
LHP 1/16"	521.9909

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Laborventile
Vannes de Laboratoire
Laboratory Valves

Dieses Kleinstventil für Hochdruckanwendungen entspricht in seinem konstruktiven Aufbau weitgehend unserem bewährten Miniventil.

Vergleichen Sie folgende Vorteile:

- Minimalstes Totvolumen, Nennweite 1mm
- Geeignet für 1/8" und 1/16" Kapillar-Rohre
- Stark reduzierte Aussenmasse (76 x 30 x 12 inkl. Handgriff)
- Geteilte Spindel, keine Drehbewegung im Ventilsitz, somit lange Lebensdauer des Ventilsitzes.
- Gas- bzw. Flüssigkeitsdicht
- Ventilkörper aus kaltverfestigtem Edelstahl AISI 316 (1.4401) oder 316 Ti (1.4571) für höchste Korrosionsbeständigkeit, harten Ventilsitz (metallgedichtet) und Rohrkonen.
- Entlastungslöcher an den Rohranschlüssen und oberhalb der Packung.
- Betriebstemperatur: -50° bis 180°
- Packung: PTFE / Graphit
- Alle Ventile mit Montagelöchern für Gerüstmontage.

Auf Wunsch lieferbar:

- Dosierspindel (2° Spitze)
- Pneumatischer Antrieb
- Laborventile aus Materialien wie Hastelloy usw.
- Materialzertifikate nach EN 10204-3.1 erhältlich.

Cette vanne miniaturisée pour applications haute pression se base sur la conception de notre mini-vanne éprouvée.

Comparez ces avantages:

- Très faible volume mort, passage 1mm
- Adaptée aux tubes capillaires 1/8" et 1/16"
- Dimensions extérieures minimales (76 x 30 x 12, poignée incl.)
- Le système pointeau non-rotatif assure la longévité du siège et du pointeau lui-même.
- Etanche aux gaz et liquides (garniture métallique).
- Corps de vanne en acier inoxydable AISI 316 (Z 2 CND 17-11 ou 316 Ti (Z6 CNDT 17-12) écroui, avec excellente résistance à la corrosion et dureté du siège.
- Alésage de sécurité sur toutes les connexions et au-dessus de la garniture.
- Température de service: -50° jusqu'à 180°C.
- Garniture: Teflon / Graphite
- Toutes les vannes comportent des trous de fixation.

Livrable sur demande:

- Pointeau de dosage (pointe 2°)
- Commande pneumatique
- Vannes de laboratoire en hastelloy, etc.
- Certificats de matériaux EN 10204-3.1 peuvent être fournis.

The constuction of this super-mini-valve for high pressure applications is a further development of our reliable Mini-Valve

Compare these features:

- Minimal dead volume, orifice 1mm only
- Suitable for 1/8" and 1/16" capillary tube
- Even smaller outside dimensions (76 x 30 x 12, incl.handle.)
- Non-rotating lower stem for a longer life of the stem and seat.
- All valves are gas tight
- Valve body made of cold-drawn stainless steel AISI 316 (1.4401) or 316 Ti.
- For high corrosion resistance, hard walve seat and connection cones.
- Relief hole in each connection bore and above the packing.
- Working temperature: -50° up to 180°C
- Packing: PTFE / Graphite
- All valves with mounting holes.

Available upon request:

- Metering lower stem (2° point)
- Air operated actuator
- Laboratory valves made of hastelloy etc.
- Material certificates EN 10204-3.1 available.

max. 1'000 bar
max. 14'500 psi

Max. 100 MPa

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NOVA SWISS

Laborventile
Vannes de Laboratoire
Laboratory Valves

Dieses Bulletin gibt eine Übersicht der NOVA SWISS Laborventile der untenstehenden Grundtypen inkl. deren Ausbauvarianten.

Ce bulletin décrit les types de base des vannes de laboratoire NOVA SWISS, représentées ci-dessous, leurs variantes d'exécution inclues.

This bulletin describes the basic types of NOVA SWISS laboratory valves including extension variations.

Ventil-Grundtypen:
Types de base:
Basic types:

Type I

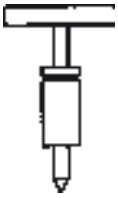
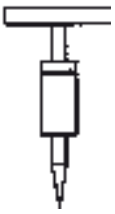
Tot volume
Volume mort 19,0 mm³
Dead volume

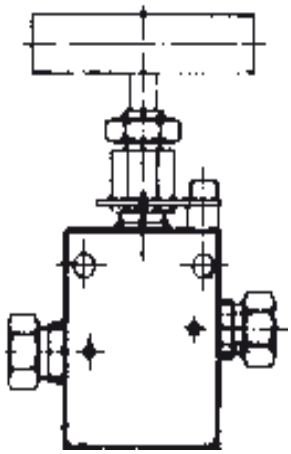
Type II

Tot volume
Volume mort 19,4 mm³
Dead volume

Type III

Tot volume
Volume mort 20,6 mm³
Dead volume

HD-Rohr A Ø Tube HP Ø ext. HP Tubing O.D.	Type			
1/8"	I	530.0141	530.5141	530.3141-
3,2 mm	II	530.0142	530.5142	530.3142-
	III	530.0143		
1/16"	I	530.0191	530.5191	
1,6 mm	II	530.0192	530.5192	

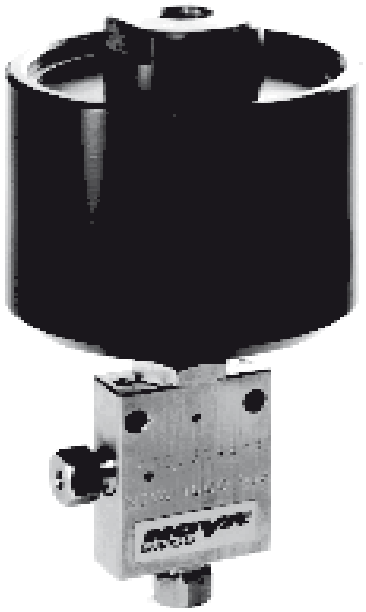


1 : 1

- pneumatischer Antrieb norm. geschl. -6
- pneumatischer Antrieb norm. offen -7

- commande pneum. fermée au repos -6
- commande pneum. ouverte au repos -7

- air operated actuator norm. closed -6
- air operated actuator norm. open -7



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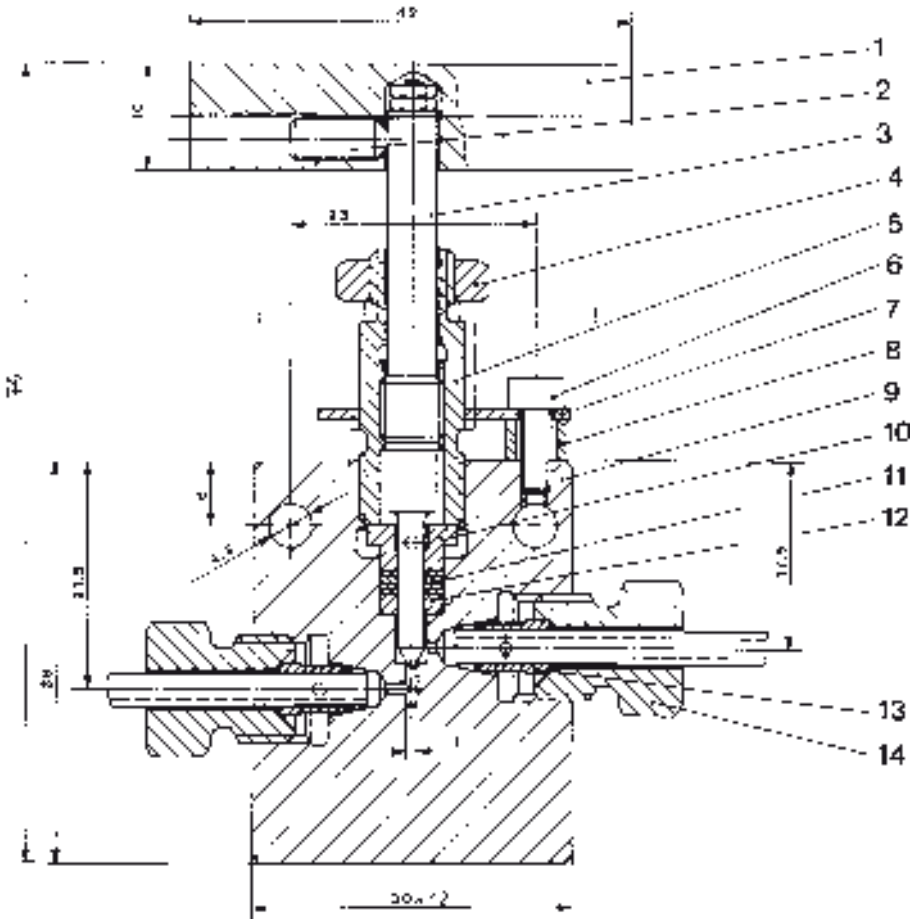
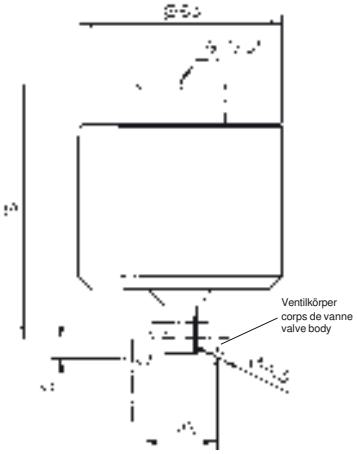
Labor Ventile
Vannes laboratoires
Laboratory valves

Ersatzteile / Pièces de rechange / Spare parts



1	Griff	Poignée	Handle	531.9564
2	Gew. Stift	Vis	Set screw	3.7712.003
3	Spindel	Pointeau	Stem	532.0108
4	Mutter	Ecrou	Nut	3.5052.003
5	Dichtungsmutter	Presse-étoupe	Packing nut	531.9567
6	Schraube	Vis	Screw	3.7119.004
7	Fixierplatte	Plaque de fixation	Tab washer	531.9571
8	Distanzrohr	Tube	Tube	531.9572
9	Körper	Corps	Body	--
10	Druckscheibe	Lunette	Thrust washer	531.9568
11	Dichtung	Garniture	Packing	531.9569
12	Stützscheibe	Bague d'appui	Packing follower	531.9570
13	Schneidring	Olive	Ferrule	--
14	Druckschraube	Vis de serrage	Gland nut	--



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Labor-Verschraubung
Connexion de laboratoire
Laboratory connection

Labor-Verschraubungen 1'000 bar

Die NOVA LHP-Verschraubungen basieren auf einem bewährten Schneidring-Verfahren. Der auf das 1/8" oder 1/16"-Rohr geschobene Schneidring, wird durch die Druckschraube in das Kapillarrohr gedrückt. Das Dichten erfolgt über den Schneidring und den 24°-Konus im Anschlusskörper.

Vorteile:

- Keine Rohrendbearbeitung.
- Einfache und schnelle Montage von Kapillarrohr mit mindestens 0,5 mm Wanddicke.
- Wiedermontage garantiert.

Achtung: Verschraubungen nicht lösen, wenn das Rohr unter Druck steht.
Verletzungsgefahr durch hinausschnellendes Rohr!

Connexions de laboratoire 100 MPa

Les connexions NOVA-LHP se basent sur le procédé epprouvé d'anneau déformable (olive). L'olive enfilée sur un tube 1/8" ou 1/16" est serrée dans le tube capillaire par une bague. L'étanchéité est réalisée par l'olive et le cône 24° dans la pièce de raccordement.

Avantages:

- On ne doit pas travailler les tubes.
- Montage rapide et facile du microtube de paroi minimale 0,5 mm.
- Remontage garanti.

Attention: Ne pas démonter le bouchon lorsque le tube est sous pression.
Danger de détachement violemment du tube.

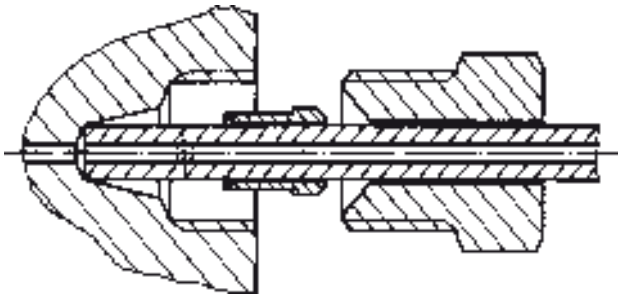
Laboratory connections 14'500 psi

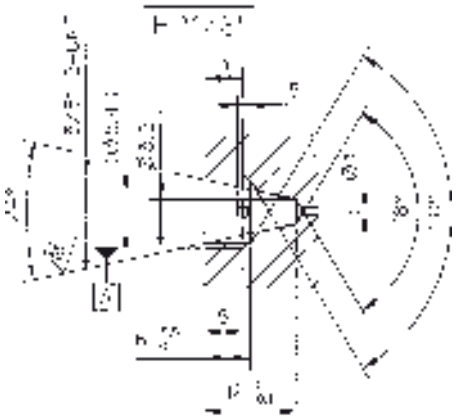
The NOVA LHP-connections are based on a proven ferrule type system. The ferrule, slided on the 1/8" or 1/16" tubing, will be pressed into the tubing by the gland-nut. The sealing takes place on the ferrule and the 24°-cone in the body connection.

Advantages:

- No tubing end preparation
- Simple and fast mounting of capillary tubing with at least 0,5 mm wall thickness.
- Remounting garanteed.

Caution: Do not loosen connection while tube is under pressure.
Danger tube will detach violently.





- Technische Änderungen jederzeit vorbehalten.
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Mini - Ventile
Mini - vannes
Mini - valves

Miniventil NOVA SWISS
2'000 bar

Dieses miniaturisierte Ventil entspricht in seinem konstruktiven Aufbau weitgehend unseren bewährten Standardventilen.

Vergleichen Sie folgende Vorteile:

- Stark reduzierte Aussenmasse.
- Hohe Sicherheit durch robuste Ausführung, beste Materialien und hohe Präzisionsarbeit.
- Gas- und flüssigkeitsdicht.
- Ventilkörper aus kaltverfestigtem Stahl AISI 316 (1.4401) oder 316 TI (1.4571) für höchste Korrosionsfestigkeit.
- Entlastungslöcher an den Rohranschlüssen und oberhalb der Packung.
- Betriebstemperatur -50 bis 200°C.
- Dosierspindel (2°-Spitze).
- Mikrodosieraufsatz.
- Pneum. Antrieb mit und ohne elekr. Kontakte, nur für 1'000 bar.

Mini-vanne NOVA SWISS
2'000 bar

La construction de cette vanne correspond à la conception de nos vannes standard éprouvées.

Comparez ces avantages:

- Les dimensions extérieures sont considérablement réduites.
- Haute sécurité grâce à une exécution robuste, meilleurs matériaux et haute précision.
- Etanches aux gaz et liquides.
- Corps en acier inoxydable AISI 316 (Z 2 CND 17 - 11) ou 316 TI (Z 2 CND 17 - 12) écroui, avec excellente résistance à la corrosion.
- Alésages de sécurité sur les raccords et au-dessus de la garniture.
- Température de service: -50 jusqu'à 200°C.
- Pointeau de dosage (l'angle 2°).
- Dispositif de dosage micrométrique.
- Commande pneumatique, aussi avec contactes électriques seul pour 1'000 bar.

NOVA SWISS mini valve
29'000 psi

The construction of this valve is based on the layout of our proven standard valves.

Compare these features:

- Its outside dimensions are considerably reduced.
- Sturdy construction in specially selected materials and precision manufacture assure maximum possible safety and reliability.
- All valves are tight for liquid and gas.
- Valve body made from cold-drawn AISI 316 or 316 Ti stainless steel, for high corrosion resistance.
- Weep hole on each connection and over the packing.
- Max. working temperature -50 up to 200°C (392°F).
- Metering lower stem (2° point).
- Fine metering device.
- Air-operated actuator / electr. contacts only for 14'500 psi.

max. 2'000 bar
max. 29'000 psi

Max. 200 MPa

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NOVA SWISS

Mini - Ventile 2'000 bar
Mini - vannes 200 MPa
Mini - valves 30'000 psi

Dieses Bulletin gibt eine Übersicht der NOVA SWISS-Miniventile der untenstehenden Grundtypen inkl. deren Ausbauvarianten.

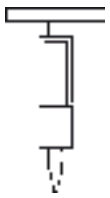
Ce bulletin décrit les types de base des mini-vannes NOVA SWISS, représentés ci-dessous, les variantes d'exécution incluses.

This bulletin describes the basic types of NOVA SWISS mini valves including extension variations.

Type I

Type II

Type III

Betriebsdruck Pression de service Pressure rating	NW / Orifice	Type mm	U				**1'000 bar** 
2'000	2,5	I	47	530.0131	530.5131	530.6131	530.3131-.*
		II	51	530.0132	530.5132	530.6132	
		III	51	530.0133			

* pneumatischer Antrieb norm. geschl. -6 — norm. geschl. mit elektr. Kont. -8
* pneumatischer Antrieb norm. offen -7 — norm. offen mit elektr. Kont. -9

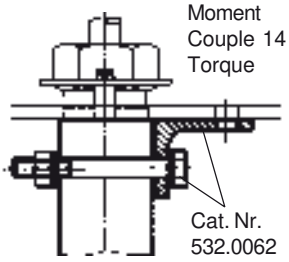
* commande pneum. norm. fermée -6 — norm. fermée à cont. électr. -8
* commande pneum. norm. ouverte -7 — norm. ouverte à cont électr. -9

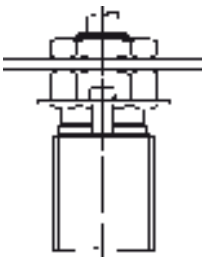
* air-operated actuator norm. closed -6 — norm. closed with el. cont. -8
* air-operated actuator norm. open -7 — norm. open with el. cont. -9

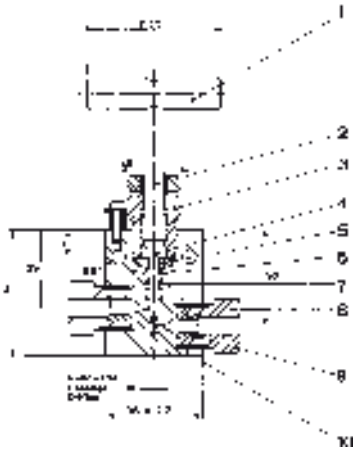
Die Montage der Ventile in eine Frontplatte erfolgt mit oder ohne Hilfe eines Winkels.

Le montage des vannes sur un tableau peut se faire sans ou avec l'aide d'une équerre.

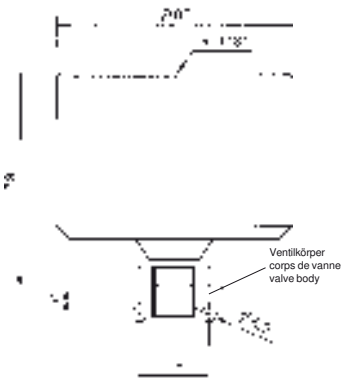
The panel mounting of the valves can be done with or without the help of an angle.







1	Knebelgriff	Poignée droite	Handle straight	531.9451-10
2	Obere Spindel	Tige	Upper stem	532.0145
3	Dichtungsmutter	Vis d'étanchéité	Packing nut	531.9461
4	Untere Spindel	Pointeau	Lower stem	532.0145
5	Druckscheibe	Lunette	Thrust washer	531.9301
6	Stützscheibe	Rondelle d'appui	Packing follower	531.8141
7	Dichtung	Garniture	Packing	531.9302-1
8	Druckschraube	Vis de serrage	Gland nut	520.1031
9	Druckring	Bague	Sleeve	520.1032
10	Körper	Corps	Body	



Technische Änderungen jederzeit vorbehalten.
Les caractéristiques sont sujet à des changements sans préavis.
Specificatios aer subject to change without notice.

Koaxial - Magnetventil
Electrovanne
Coaxial Solenoid Valve

Das NOVA 500 bar Koaxial-Ventil ist ein Magnetventil, das sich für Anwendungen in komplexen Systemen und in schwieriger Umgebung vorzüglich eignet.

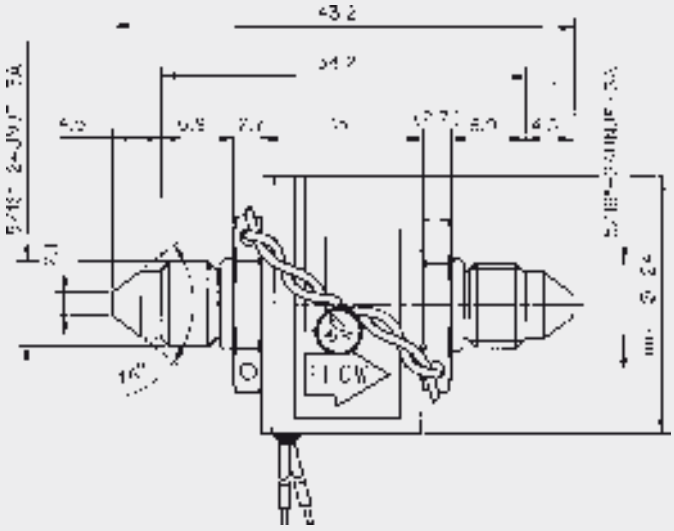
- Es besteht vollständig aus rostfreiem Material und ist gegen alle Umwelteinflüsse (inklusiv Salzsprühnebel) geeicht.
- Seine besondere Konzeption garantiert hohe Gasdichtheit.
- Der kleine Platzbedarf und das geringe Gewicht ermöglichen ein breit gefächertes Anwendungsgebiet.
- Das Koaxial-Ventil ist normal geschlossen und öffnet mit einer 24 V Gleichspannung in kürzester Zeit.
- Es wurde auf die militärischen Spezifikationen MIL 810 C/D abgestimmt.

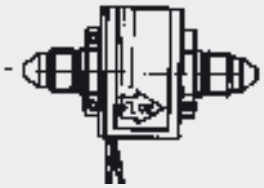
L'électrovanne 500 bar NOVA est conçue pour être utilisée dans des systèmes complexes et dans des environnements difficiles, par tous les gaz usuels.

- Elle est entièrement réalisée en matériaux inoxydables et est adaptée à tous les environnements, y compris le brouillard salin.
- Sa conception particulière lui permet de présenter une étanchéité grande dans toutes conditions et une très grande plage d'utilisation.
- L'electrovanne 500 bar NOVA se caractérise par un encombrement et un poids très réduits qui permettent une utilisation dans des systèmes compacts et légers.
- Normalement fermée, elle possède un temps de réaction à l'ouverture très bref (alimentation 24 VDC).
- Elle a été conçue pour répondre aux spécifications militaires MIL 810 C/D.

The NOVA 500 bar coaxial valve is a solenoid valve suitable for complex systems in severe environments.

- It consists only of noncorrosive materials and resists all environmental conditions inclusive salty fog.
- Its particular conception guarantees high gas tightness.
- The coaxial valve is very small and light which enables wide usage in various applications.
- The solenoid valve is normally closed and opens very fast (supply voltage 24 VDC).
- It has been tested according to the military specification MIL 810 C/D.





500 bar
7'250 psi

50 MPa

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NOVA SWISS

Koaxial - Magnetventil
Electrovanne
Coaxial Solenoid Valve

Anschlüsse Raccordement Connection	Spannung Alimentation Voltage	Kat.Nr. Nr. de cat. Cat.No.	Länge Longueur Length
5/16"-24UNJF-3A	24 VDC	535.0178-24D	43,4 mm

Technische Daten: Kat. Nr. 535.0178-24D

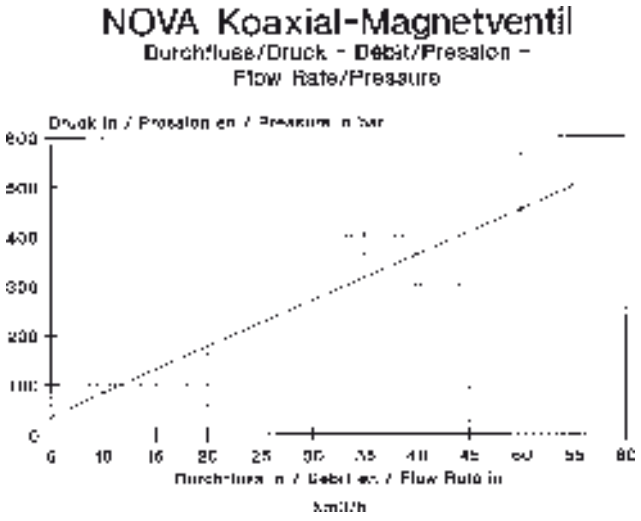
Aussendurchmesser	:	24 mm
Nennweite	:	0,5 mm
Länge	:	43,4 mm
Gewicht	:	52 g
Betriebsdruck	:	bis 500 bar
Durchfluss	:	350 lt/min. (Argon bei 200 bar)
Min. Durchfluss bei Dauerbetrieb	:	15 lt/min. bei 20° C
Max. Helium Leckage	:	10^{-5} cm³/sec.
Betriebstemperatur	:	-46° C bis 71° C
Speisespannung	:	23 bis 31 V Gleichstrom
Widerstand	:	39 bis 42 Ohm
Arbeitsleistung	:	max. 20 Watt bei 28 VDC während max. 60 sec.
Öffnungszeiten	:	max. 20 msec. (23 VDC/500 bar)
Schliesszeiten	:	max. 20 msec.
MTBF (-46° C / 71° C)	:	5'200 Std.
Anschlüsse	:	5/16"-24UNJF-3A Übergangsstück auf Hoke Gyrolok 1/8": 2AAN2 - 316

Données techniques: Nr. de Cat. 535.178-24D

Diamètre extérieur	:	24 mm
Diamètre de passage	:	0,5 mm
Longueur	:	43,4 mm
Poids	:	52 g
Pression d'utilisation	:	jusqu'à 500 bar
Débit	:	350 lt/min. (argon à 200 bar)
Débit mini en cas d'utilisation continue	:	15 lt/min à 20° C
Etanchéité helium	:	10^{-5} cm³/sec.
Température d'utilisat.	:	de -46° C à 71° C
Alimentation	:	de 23 à 31 V courant continu
Résistance	:	de 39 à 42 Ohm
Puissance	:	max. 20 Watt à 28 V pendant max. 60 sec.
Temps d'ouverture	:	max. 20 msec. (23 VDC/500 bar)
Temps de fermeture	:	max. 20 msec.
MTBF (-46° C / 71° C)	:	5'200 heures
Raccordement	:	5/16"-24UNJF-3A Raccord à Hoke Gyrolok 1/8": 2AAN2 - 316

Specifications: Cat. No 535.0178-24D

Outside diameter	:	24 mm
Orifice	:	0,5 mm
Length	:	43,4 mm
Weight	:	52 g
Working pressure	:	max. 500 bar
Flow rate	:	350 lt/min. (argon at 200 bar)
Minimal flow for continuous use	:	15 lt/min. at 20°C
Helium leakage rate	:	10^{-5} cm³/sec.
Working temperature	:	-46°C to 71°C
Voltage	:	23 to 31 VDC
Resistance	:	39 to 42 Ohm
Power	:	max. 20 Watt at 28 VDC during max. 60 sec.
Response time (opening)	:	max. 20 msec. (23 VDC/500 bar)
Response time (closing)	:	max. 20 msec.
MTBF (-46° C / 71° C)	:	5'200 hours
Connection	:	5/16"-24UNJF-3A Connector to Hoke Gyrolok 1/8": 2AAN2-316



- Technische Änderungen jederzeit vorbehalten.
- Les caractéristiques techniques sont sujet à des changements sans préavis.
- Specifications are subject to change without notice.

Magnetventil
Electrovanne
Solenoid Valve

Das NOVA 900 bar Ventil ist ein Magnetventil, das sich für Anwendungen in komplexen Systemen und in schwieriger Umgebung vorzüglich eignet.

- Aussen besteht es vollständig aus rostfreiem Material.
- Der kleine Platzbedarf und das geringe Gewicht ermöglichen ein breit gefächertes Anwendungsgebiet.
- Das Ventil ist normal geschlossen und öffnet mit einer 24 V Gleichspannung in kürzester Zeit.
- Verwendung für Gase, Stickstoff und Argon.

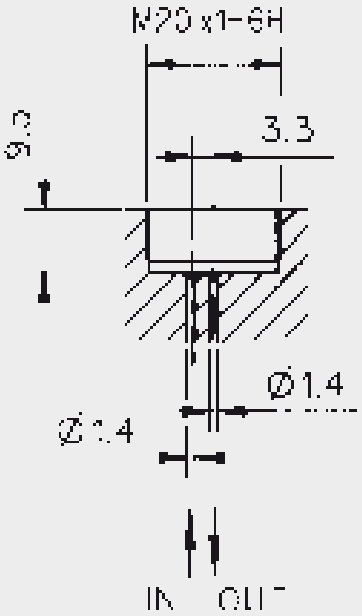
L'électrovanne 900 bar NOVA est conçue pour être utilisée dans des systèmes complexes et dans des environnements difficiles.

- Elle est entièrement réalisée en matériaux inoxydables.
- L'electrovanne 900 bar NOVA se caractérise par un encombrement et un poids très réduits qui permettent une utilisation dans des systèmes compacts et légers.
- Normalement fermée, elle possède un temps de réaction à l'ouverture très bref (alimentation 24 VDC).
- Utilisation pour gaz seulement, Azote et Argon.

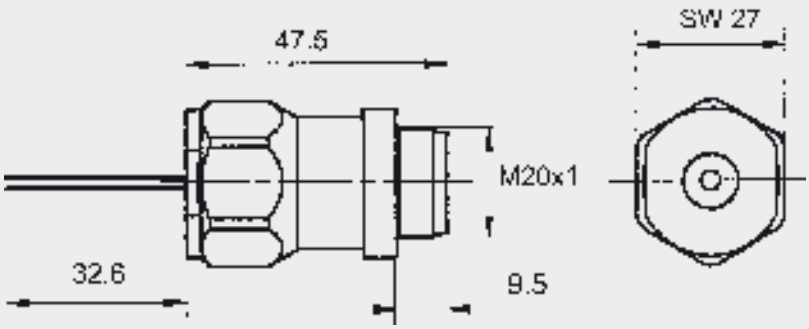
The NOVA 900 bar valve is a solenoid valve suitable for complex systems in severe environments.

- It consists only of noncorrosive materials.
- The valve is very small and light which enables wide usage in various applications.
- The solenoid valve is normally closed and opens very fast (supply voltage 24 VDC).
- Only to be used for gases, nitrogen and argon.

Anschluss:
Connection:
Connection:



Dimension:
Dimension:
Dimension:



900 bar
13'000 psi

90 MPa

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NOVA SWISS

Magnetventil
Electrovanne
Solenoid Valve

Anschlüsse Raccordement Connection	Spannung Alimentation Voltage	Kat.Nr. Nr. de cat. Cat.No.	Länge Longueur Length
M20 x 1 6g	24 VDC	535.0200-3	47,5 mm

Technische Daten: Kat. Nr. 535.0200-3

Aussendurchmesser	:	SW 27
Nennweite	:	0,5 mm
Länge	:	47,5 mm
Gewicht	:	160 g
Betriebsdruck	:	bis 900 bar
Durchfluss	:	3.0 Nm^3/h (Argon bei 90 bar)
Min. Durchfluss bei Dauerbetrieb	:	15 lt/min. bei 20° C
Betätigungszeit ohne Durchfluss	:	max. 3 sec.
Betriebstemperatur	:	-20° C bis 50° C
Speisespannung	:	20 bis 30 V Gleichstrom
Widerstand	:	51 bis 54 Ohm
Öffnungszeiten	:	max. 50 msec. (24 VDC/900 bar)
Schliesszeiten	:	max. 50 msec.
Max. Schaltzyklen	:	30 / min.
Anschlüsse	:	M20 x 1 6g

Données techniques: Nr. de Cat. 535.0200-3

Diamètre extérieur	:	SW 27
Diamètre de passage	:	0,5 mm
Longueur	:	47,5 mm
Poids	:	160 g
Pression d'utilisation	:	jusqu'à 900 bar
Débit	:	3.0 Nm^3/h (argon à 90 bar)
Débit mini en cas d'utilisation continue	:	15 lt/min à 20° C
Durée max. d'action-nement sans débit	:	max. 3 sec.
Température d'utilisat.	:	de -20° C à 50° C
Alimentation	:	de 20 à 30 V courant continu
Résistance	:	de 51 à 54 Ohm
Temps d'ouverture	:	max. 50 msec. (24 VDC/900 bar)
Temps de fermeture	:	max. 50 msec.
Nombre max. de cycles	:	30 / min.
Raccordement	:	M20 x 1 6g

Specifications: Cat. No 535.0200-3

Outside diameter	:	SW 27
Orifice	:	0,5 mm
Length	:	47,5 mm
Weight	:	160 g
Working pressure	:	max. 900 bar
Flow rate	:	3.0 Nm^3/h (argon at 90 bar)
Minimal flow for continuous use	:	15 lt/min. at 20°C
Max. duration of actuation without flow	:	max. 3 sec.
Working temperature	:	-20°C to 50°C
Voltage	:	20 to 30 VDC
Resistance	:	51 to 54 Ohm
Response time (opening)	:	max. 50 msec. (24 VDC/900 bar)
Response time (closing)	:	max. 50 msec.
Max. no. of cyles	:	30 / min.
Connection	:	M20 x 1 6g

Zubehör:	Flachdichtung	Ø 4	5.1326.002
Accessoires:	Joint plat	Ø 13	5.1326.001
Accessories:	Flat packing		

- Technische Änderungen jederzeit vorbehalten.
- Les caractéristiques techniques sont sujet à des changements sans préavis.
- Specifications are subject to change without notice.

Handpumpen
Pompes manuelles
Hand pumps

NOVA SWISS-Hochdruckpumpe

Diese Handpumpe mit Spindelantrieb ist der günstigste Druckerzeuger für kleine Hochdrucksysteme und hat bereits eine grosse Zahl von Anwendungen gefunden.

Merkmale:
- Nicht drehende Spindel ergibt längere Lebensdauer der Dichtung.
- Packung jederzeit einfach nachstellbar.
- Unabhängig von Pressluft- oder Stromanschluss.
- 3 lange Antriebshebel zur Erleichterung der Bedienung.
- Grosszügige Dimensionierung ergibt hohen Sicherheitsfaktor und minimales aufzuwendendes Drehmoment.
- Konstruktion in rostfreiem Stahl.
- Feingewindespindel ermöglicht Feineinstellung jedes gewünschten Druckes.
- Vollkommen geschlossene Konstruktion, ohne vorstehende Spindel.
- Volles, nicht durch eine Keilbahn unterbrochenes Spindelgewinde.
- Solider Fuss mit zwei Befestigungslöchern zum Aufspannen auf die Werkbank.
- Geeignet für Anwendungen mit allen üblichen Hochdruckflüssigkeiten auch geringer Viskosität.

Pompe haute pression NOVA SWISS

Cette pompe manuelle à vis est le générateur de pression le plus pratique pour les petits systèmes haute pression. Elle a déjà trouvé un grand nombre d'applications surtout dans la recherche.

Caractères:
- Arbre non rotatif assurant la longévité du presse-étoupe.
- Etanchéité simple à resserrer.
- Opération indépendante d'une source électrique ou pneumatique.
- 3 grands leviers pour faciliter la manoeuvre.
- Dimensionnement en vue d'un facteur de sécurité élevé et d'un couple minimum à exercer.
- Construction en acier inoxydable.
- Le pas de vis fin de la tige d'entraînement permet l'ajustage précis de la pression demandée.
- Construction enfermée sans tige saillissante.
- Pas de vis plein, non interrompu par une rainure de clavettes.
- Support solide avec deux trous de fixation pour le montage sur établi.
- Apte pour toutes les applications avec les fluides haute pression communs, aussi à faible viscosité.

NOVA SWISS Pressure Generator

This screw-type positive displacement pressure generator is very useful in small high pressure systems, it has already found a wide range of applications specially in the research field.

Features:
- Non-rotating spindle for longer packing life.
- Easy retightening of the seal.
- Independent operation without electrical or pneumatic power source.
- 3 large handles for easy operation.
- Ample sizing of all components resulting in high safety factor and moderate required torque.
- Stainless steel construction.
- The fine pitch thread on the plunger allows a precise adjustment of the required pressure.
- All enclosed design, no protruding spindle.
- Spindle thread not interrupted by keyway.
- Large baseplate with two boltholes to attach generator to flat surface.
- Recommended for all common high pressure fluids even of low viscosity.

2'000 - 7'000 bar
29'000 - 101'500 psi

200 - 700 MPa

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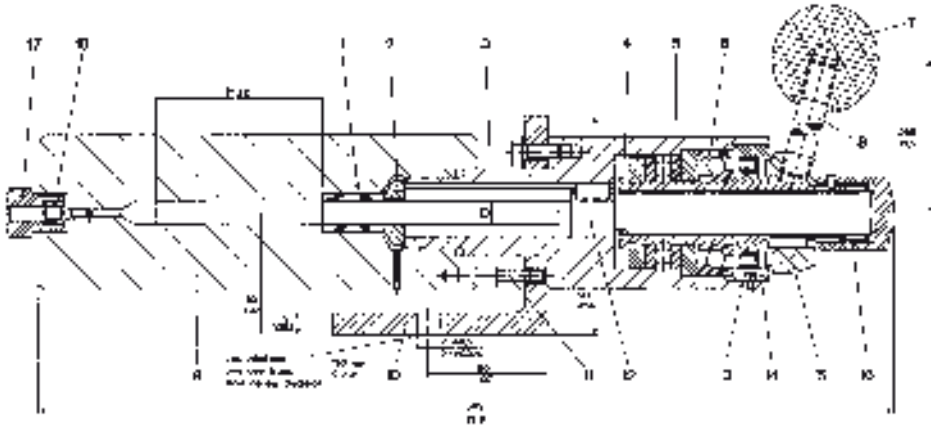
NOVA SWISS



Kat. Nr. No de cat. Cat. No.	Max. Betriebsdruck Pression de service Pressure rating	Hubvolumen Capacité Displacement	pro Umdrehung par tour per turn	HD-Rohr Tube-HP HP Tubing	Dim. Dim. Dim.	D
550.0400-2	7'000 bar 101'500 psi	2.5 ccm	0.08 ccm	1 x 1/4"	mm in.	7.5 0.3
550.0301.1	4'000 bar 58'000 psi	5 ccm	0.15 ccm	3 x 1/4"	mm in.	10.1 0.4
550.0202.1	2'000 bar 29'000 psi	10 ccm	0.3 ccm	3 x 1/4"	mm in.	14.3 0.56

Mit dem Medium in Kontakt kommende Teile sind aus einem rostfreien, strukturhärtenden Stahl. Zusätzlich zu Chrom und Nickel enthält er Molybdän und Kupfer zur Erhöhung der Korrosionsbeständigkeit. Im Zweifelsfalle soll die Verträglichkeit spezieller Flüssigkeiten mit Körpermaterialien und Packung vom Werk bestätigt werden.

Les pièces en contact avec le fluide sont exécutées en acier inoxydable à durcissement structural. A part du nickel et du chrome il contient du molybdène et du cuivre, ce qui lui confère une très bonne résistance à la corrosion.
En cas de doute, veuillez faire confirmer la compatibilité des matériaux de construction par le constructeur s.v.p.

Parts in contact with fluid pumped are made a precipitation hardening stainless steel, containing Nickel, Chromium, Molybdenum and Copper for better corrosion resistance.
If doubtful the compatibility of the materials should be confirmed.

Wie sie funktioniert:

- Das Drehmoment wird von den Antriebshebeln (8) auf die Gewindebüchse (4) übertragen, die die Spindel (12) axial bewegt. Der Keil auf der Spindel verhindert ein Drehen derselben. Der Schub des verdichteten Mediums wird über die Gewindebüchse (4) und die Kugellager (5, 6) von der Justiermutter (3) aufgenommen.

- Zum Nachziehen der Dichtung sind die drei Schrauben zu lösen und die Justiermutter (3) um 90° im Uhrzeigersinn anzuziehen. Schrauben wieder anziehen. Der Stift (11) hält den Zylinder (9) in seiner Position.

- Die Spindel (12) kann leicht durch eine aus anderem Werkstoff gefertigte ausgewechselt werden. Die Stellschraube ist zu lösen und die Justiermutter (3) loszuschrauben. Die ganze rechte Seite der Pumpe kann nun weggezogen und die Spindel herausgeschraubt werden. Zum Lösen der Dichtungspackung (1) kann die Justiermutter (3) um ca. 3 Umdrehungen gelöst und der Zylinder (9) unter Druck gesetzt werden.

Comment elle fonctionne:

- Le couple exercé sur les leviers (8) est transmis à l'écrou de tige (4) qui mouve la tige (12) latéralement. La clavette sur la tige empêche celle-ci de tourner. La poussée du fluide comprimé est transmise à l'écrou d'ajustage stationnaire (3) par l'écrou de tige (4) et les roulements (5, 6).

- Pour reserrer le presse-étoupe, dévissez les trois vis et tournez l'ajustage (3) de 90° dans le sens de la montre. Serrez les trois vis. La goupille (11) maintient le corps (9) dans sa position.

- La tige (12) peut facilement être remplacée par une tige de matériau différent. Libérez la vis sans tête et dévissez l'écrou d'adjustage (3). Toute la partie droite peut maintenant être sortie et la tige dévissée. Pour débloquer la garniture (1), dévissez l'ajustage (3) de 3 tours env. et appliquez de la pression sur le corps (9).

How it works:

- The torque applied to the handles (8) is transmitted to the spindle nut (4) which moves the spindle (12) axially. The key on the spindle prevents it from rotating. The thrust from the compressed fluid is transmitted to the stationary adjusting nut (3) through spindle nut (4) and the bearings (5, 6).

- To tighten the packing, loosen the 3 screws and turn adjusting nut (3) 90° in the clockwise direction. Retighten the 3 screws. Pin (11) keeps the body (9) in position.

- The spindle (12) may easily be replaced by one of different material. Loosen the set -screw and unscrew the adjusting nut (3). The right-hand assembly can now be pulled away and the spindle unscrewed. To free the packing (1) unscrew the adjusting nut (3) by approx. 3 turns and apply pressure to the body (9).

- Technische Änderungen jederzeit vorbehalten.
- Les caractéristiques techniques sont sujet à des changements sans préavis.
- Specifcations subject to change without notice.

Membrankompressoren
Compresseurs à membranes
Diaphragm-type compressors

Zum Verdichten von Gasen bis 300 MPa
Pour comprimer les gases jusqu'à 3'000 bar
To pressurize gases up to 45'000 psi

Vorteile:

- Absolute Sauberkeit des zu verdichtenden Gases. Durch Membranen wird ein Kontakt zwischen Gas und Öl vollkommen ausgeschlossen.

- Medienberührte Teile aus rostfreiem Stahl mit teflonisierter Membranoberfläche: Beständig auch gegen agressive Gase. Geeignet für den Einsatz mit ultrareinen Medien.

- Als Option, Membranleckageüberwachung erhältlich.

- Keine dynamischen Dichtprobleme: Präzis eingeläppter Kolben ohne zusätzliche Dichtung.

- Hohe Sicherheit: Gegen Überdruck abgesichert auf Öl-Seite.

- Einwandfreie Füllung des Ölraumes garantiert durch interne Ölpumpe.

- Grosse Zuverlässigkeit durch robuste, bewährte Konstruktion. Einfach in der Handhabung, anspruchslos im Unterhalt.

- Minimaler Platzbedarf, geringes Gewicht.

- Spezialausführungen für Wasserstoff (H_2) und Sauerstoff (O_2) erhältlich.

Avantages:

- Propreté absolue des gaz à comprimer, les membranes empêchent tout contact entre le gaz et l'huile.

- Les pièces en contact avec le fluide sont en acier inoxydable; membranes avec revêtement en téflon: Résistant également contre des gaz agressifs. Convient pour l'emploi avec des fluides ultrapurs.

- Détecteur de rupture de membranes en option.

- Pas de problèmes d'étanchéité dynamique: Piston rodé à haute précision sans joint.

- Haute sécurité: Protégé contre les surpressions du côté huile.

- Lubrification assurée grâce à la pompe à huile incorporée.

- Grande fiabilité, grâce à une construction robuste qui a fait ses preuves. Mise en oeuvre facile, entretien simple.

- Encombrement et poids réduits.

- Exécutions spéciales pour hydrogène (H_2) et oxygène (O_2) disponibles.

Advantages:

- Absolute cleanliness of compressed gas. The diaphragm completely prevents any contact between gas and oil.

- Gas wetted components of stainless steel with teflon membrane surface: Resistant against agressive gases. Appropriate for use with ultrapure medium.

- Diaphragm leakage detector available.

- No dynamic sealing problems: Precisely-lapped piston without additional gasket.

- High security: Self-protecting against excess pressure by relief valve on oil side.

- Correct filling of oil chamber guaranteed at all times due to internal oil pump.

- High reliability due to sturdy, proven construction. Easy to operated and to maintain.

- Compact size, low weight.

- Special models for hydrogen (H_2) and oxygen (O_2) available.

max. 3'000 bar
max. 43'500 psi

Max. 300 MPa

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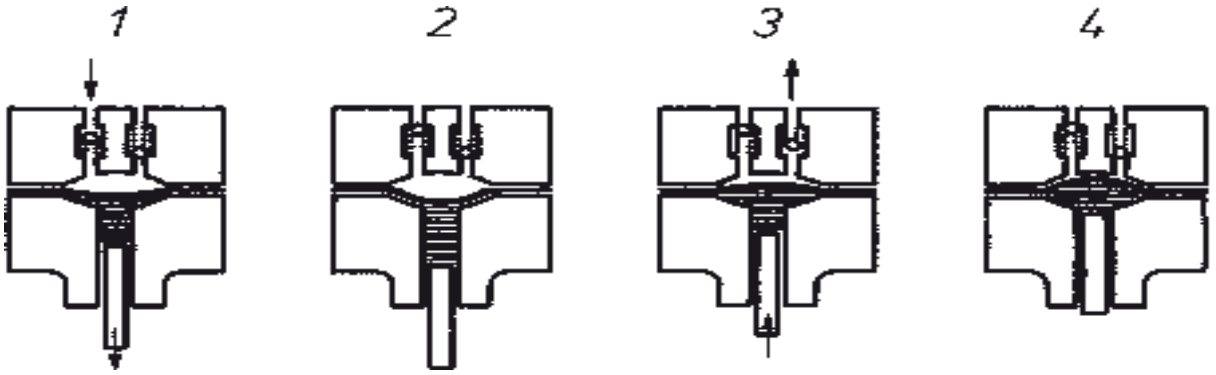
NOVA SWISS

Funktionsweise



1. Ansaugen: Der durch einen konventionellen Kurbeltrieb angetriebene Kolben vergrössert im Abwärtshub den mit Öl gefüllten Raum unterhalb der Membrane. Das unter Vor-druck stehende Gas dringt durch das Einlass-Ventil in den Gasraum ein und drückt die Membrane, dem Öl folgend, nach unten.

2. Gasraum gefüllt: Der Kolben befindet sich im unteren Totpunkt. Die Membrane hat, sich auf dem stützenden Kavitätsgrund "abrollend", ihre tiefste Lage erreicht.

3. Verdichten und Ausstossen: Der Kolben verdrängt im Aufwärtshub das Öl, wodurch die Membrane nach oben gepresst wird. Das Gas im oberen Kavitätsraum wird komprimiert und bei Erreichen des Gegendruckes ausgestossen.

4. Gasraum entleert: Der Kolben befindet sich im oberen Totpunkt. Die Membrane hat sich der Kavitätsdecke bis auf einen minimalen Abstand genähert.

Fonctionnement

1. Aspiration: Le mouvement vers le bas du piston (entraîné par un embiellage conventionnel) agrandit le volume de l'enceinte d'huile. Le gaz, comprimé à pression primaire, pénètre par la vanne d'admission dans l'enceinte de gaz et pousse la membrane vers le bas en suivant le mouvement de l'huile.

2. Remplissage: Le piston se trouve au point mort bas, les membranes ont également atteint la position la plus basse et prennent appui contre la cavité hémispherique qui fait fonction de siège inférieur.

3. Compression: Le piston comprime l'huile en remontant et repousse ainsi les membranes vers le haut. Le gaz est comprimé dans l'enceinte supérieure et refoulé au moment où sa pression dépasse la contrepression appliquée.

4. Refoulement: Le piston atteint le point mort haut, les membranes ont pratiquement atteint le siège supérieur de la cavité, et le gaz a ainsi été refoulé complètement de l'enceinte.

Operation

1. Intake: The piston, driven by a conventional crank mechanism, expands the oilfilled volume below the diaphragm on its downstroke.The slightly pressurized gas penetrates through the suction valve into the gas chamber, pressing the diaphragm downwards.

2. Gas chamber filled: The piston is now at its lower rest point. By "rolling" along the supporting cavity, the membrane has reached its lowest point.

3. Compression and expulsion: On its upstroke, the piston expells the oil, pressing the diaphragm upward. The gas in the upper cavity chamber compresses, and discharges when the counterpressure has been exceeded.

4. Gas chamber evacuated: The piston is at its upper rest point. The diaphragm has made its closest approach to the top cavity.

Membrankompressoren (Forts.)
Compresseurs à Membrane (Suite)
Diaphragm-Type Compressors (Cont.)

- Alle NOVA SWISS Membrankompressoren sind mit elektrischem Antrieb erhältlich.

- Doppelköpfige Membrankompressoren werden parallel, für doppelte Fördermengen, oder in Serie, für hohe Drucksteigerungen geschaltet.

- Ein minimaler Vordruck von 20 bar ist erforderlich.

- Alle NOVA SWISS Membrankompressoren sind mit Anschlüssen für 1/4" Rohr (A Ø 1/4") ausgerüstet (Details siehe 520.02).

-Tous les compresseurs à membranes NOVA SWISS sont disponibles en version électrique.

- Les compresseurs à double tête sont couplés en parallèle pour les volumes doubles, ou en série pour obtenir un taux de compression élevé.

- Une pression d'alimentation minimale de 20 bar est nécessaire.

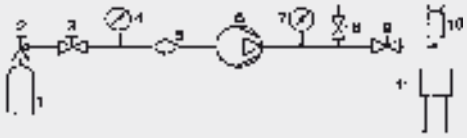
- Tous les compresseurs à membranes NOVA SWISS sont équipés de raccords pour tube 1/4" (Ø E 1/4", voir détails feuille 520.02).

- All NOVA SWISS diaphragm compressors can be powered electrically.

- Doublehead diaphragm compressors are connected in parallel for double capacity or in serie for large pressure increase.

- A minimum prepressure level of 300 psi is necessary.

- All NOVA SWISS diaphragm compressors have HP 1/4" tube-connections (Ø 1/4", see details 520.02).



Minimalsystem:

Das dargestellte Minimalsystem erfüllt die Anforderungen an die Betriebssicherheit und die Funktionstüchtigkeit. Es besteht aus den folgenden Komponenten:

1 Gasflasche
2 Reduzierventil
3 Absperrventil
4 Niederdruckmanometer
5 Feinfilter (10 Poren)
6 Kompressor
7 Hochdruckmanometer
8 Ablassventil
9 Absperrventil
10 Berstscheibe
11 Verbraucher

Système minimal:

Le système minimal représenté répond aux exigences de sécurité d'exploitation et d'aptitude fonctionnelle. Il se compose des organes suivants:

1 Bouteille de gaz
2 Réducteur de pression
3 Vanne d'arrêt
4 Manomètre basse pression
5 Filtre fin (porosité 10)
6 Compresseur
7 Manomètre haute pression
8 Vanne de purge
9 Vanne d'arrêt
10 Disque de rupture
11 Récepteur

Minimum system:

The illustrated system fulfills all requirements for safety and easy handling. It consists of the following components:

1 Gas bottle
2 Reducing valve
3 Stop valve
4 Low-pressure gauge
5 Fine-micron filter (10 my pores)
6 Compressor
7 High-pressure gauge
8 Vent valve
9 Stop valve
10 Rupture disc
11 Receiving unit

max. 3'000 bar
max. 43'500 psi

Max. 300 MPa

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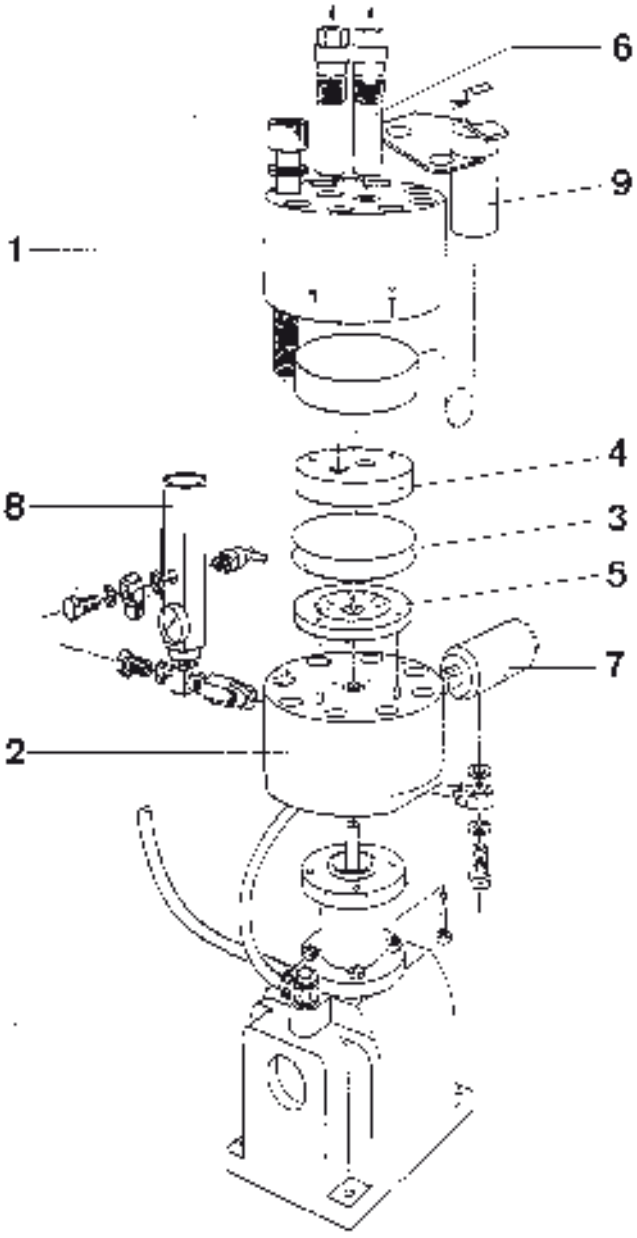
Membrankopf
Tête de membrane
Head assembly

1. Kopfoberteil
2. Kopfunterteil
3. Membranen
4. Obere Membranplatte
5. Untere Membranplatte
6. Gassaug-/ druck Ventil
7. Oel - Sicherheitsventil
8. Oel - Saugventil
9. Membranleckage-überwachung

1. Bride supérieure
2. Bride inférieure
3. Membranes
4/5. Plaques de membranes
6. Clapet d'aspiration /refoulement
7. Soupape de sécurité de l'huile
8. Réservoir avec clapet
9. Détecteur de rupture de membrane

1. Upper head assembly
2. Lower head assembly
3. Diaphragms
4. Upper diaphragm plate
5. Lower diaphragm plate
6. Gas inlet / delivery valve
7. Oil safety valve
8. Oil suction valve
9. Diaphragm leakage detector



- Technische Änderungen jederzeit vorbehalten.
- Les caractéristiques techniques sont sujet à des changements sans préavis.
- Specifications are subject to change without notice.

NOVA SWISS

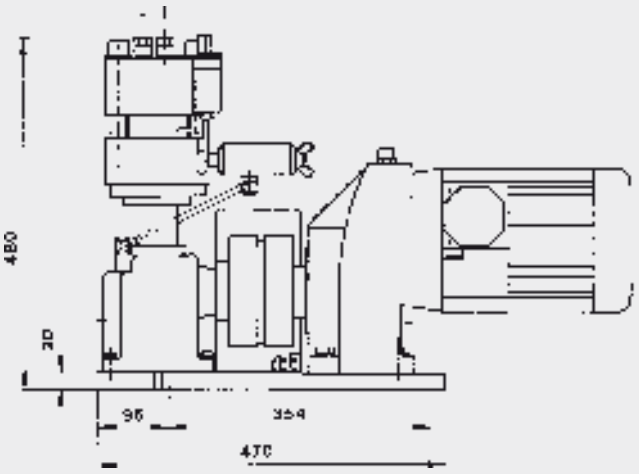
Membrankompressoren **1'000 bar**
Compresseurs à membranes **100 MPa**
Diaphragm type compressors **14'500 psi**

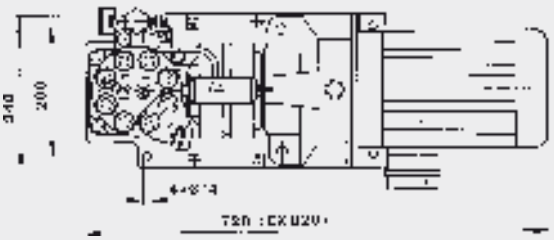
Antrieb: Elektrisch
Alimentation: Electrique
Power: Electric

Kat.Nr. No cat. Cat. No.	H_2 - Type	O_2 - Type	Leakage-Detector	Anzahl Membranköpfe No tête de membrane Diaphragm assemblies	Getriebemotor Moteur à engrenages Geared motor	Vordruck Press. d'alim. Prepressure bar min. / max.
554.2121	-1	-3	-4	1	380V/50 Hz, 2.2 kW, 330 r.p.m.	20 200
554.2122	-1	-3	-4	2 parallel	380V/50 Hz, 4kW, 330 r.p.m.	20 200
554.2181	-1	-3	-4	1	380V/50 Hz, 2.2 kW mit Keilriemenantrieb	20 200

Rohranschlüsse HP 1/4"
Eléments de raccordement HP 1/4"
Connections HP 1/4"

Masse in mm Cotes en mm Dimensions in mm





554.2121

1'000 bar
14'500 psi

100 MPa

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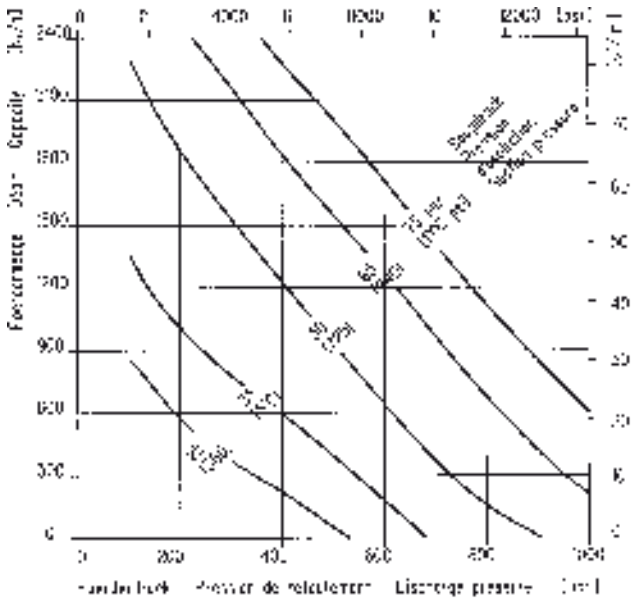
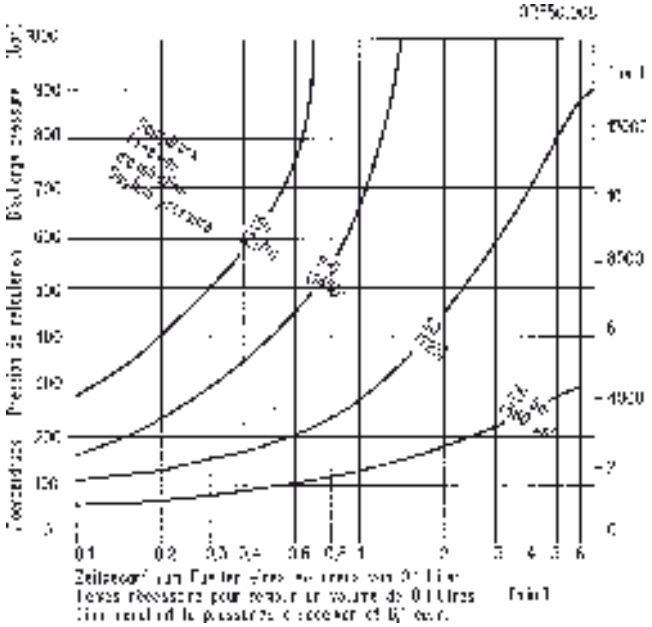
Diagramme Diagrammes Diagrams

1'000 bar Cat. No. 554.2121

Elektrisch Electrique Electric



Gas: Stickstoff Temperatur: 20° C Gaz: Azote Température: 20° C



Gas: Nitrogen Temperature: 70°F

Für die 2-köpfigen Ausführungen in Parallelschaltung gelten für jeden Kopf einzeln die Betriebsdiagramme der entsprechenden 1-Kopf-Version.

Pour les modèles à deux têtes en parallèle, les diagrammes de fonctionnement de la version à une tête correspondants sont valables pour chacune des deux têtes.

For the double-head models in parallel, the operating diagrams for the corresponding single-head model apply to each diaphragm assembly.

- Technische Änderungen jederzeit vorbehalten.
- Les caractéristiques techniques sont sujet à des changements sans préavis.
- Specifications are subject to change without notice.

Membrankompressoren 3'000 bar
Compresseurs à membranes 300 MPa
Diaphragm type compressors 43'500 psi

Antrieb: Elektrisch
Alimentation: Electrique
Power: Electric

Kat.Nr. No.cat. Cat.No.	H_2 - Type	O_2 - Type	Leakage-Detector	Anzahl Membranköpfe No têtes de membrane Diaphragm assemblies	Getriebemotor Moteur engrenages Geared motor	Vordruck press. d'alim. prepressure bar min. / max.
554.2320	-1	-3	-4	1	380V/50 Hz., 2,2 kW, 330 r.p.m.	20 200
554.3122	-1	-3	-4	2 serie	380V/50 Hz, 4 kW, 340 r.p.m.	20 80

Rohranschlüsse HP 1/4"
Eléments de raccordement HP 1/4"
Connections HP 1/4"

- Die Stahlmembranen der 3'000 bar Kompressoren müssen periodisch ausgewechselt werden. Sie sind für den Betrieb über 1'000 bar ausgelegt.

- Die Masse der 3'000 bar Kompressoren entsprechen denjenigen der 1'000 bar Kompressoren (siehe 550.30).

- Il faut échanger périodiquement les membranes des compresseurs de 3'000 bar. Ils sont dimensionnées pour une pression de service supérieure à 1'000 bar.

- Les dimensions du compresseur 3'000 bar correspondent à celles du compresseur 1'000 bar (voir 550.30).

- The diaphragms of the 45'000 psi compressors have to be replaced periodically. They are designed for use above 15'000 psi.

- The dimensions of the 45'000 psi compressors are equal to those of the 15'000 psi compressors (see 550.30).

3'000 bar
43'500 psi

300 MPa

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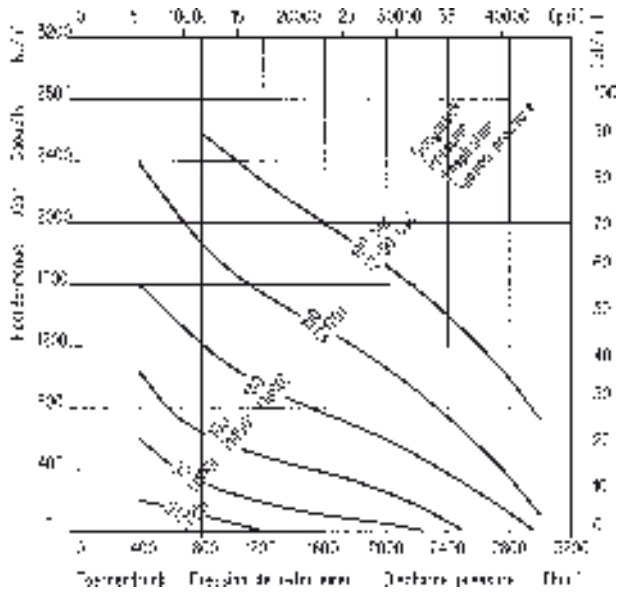
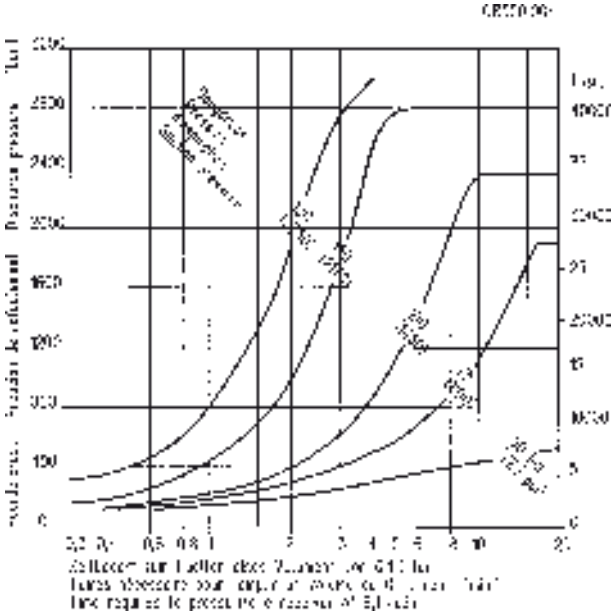
Diagramme der 1-köpfigen Ausführungen 3'000 bar
Diagrammes pour les version à une tête 3'000 bar
Diagrams for single head models 45'000 psi

Elektrisch Electrique Electric 3'000 bar Cat. No. 554.2320



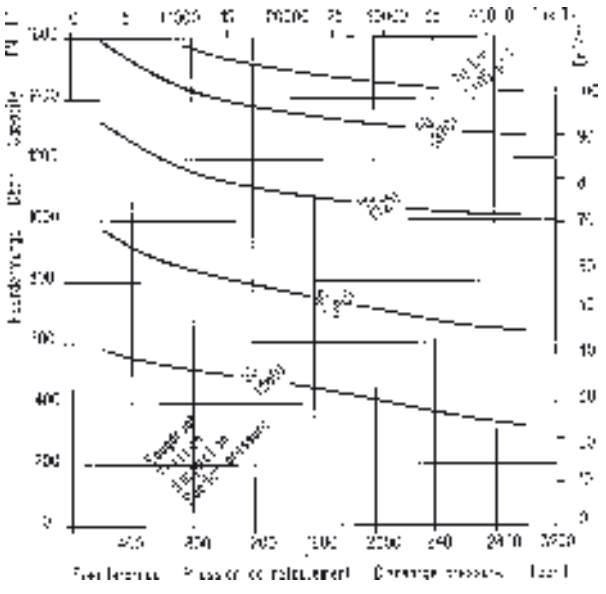


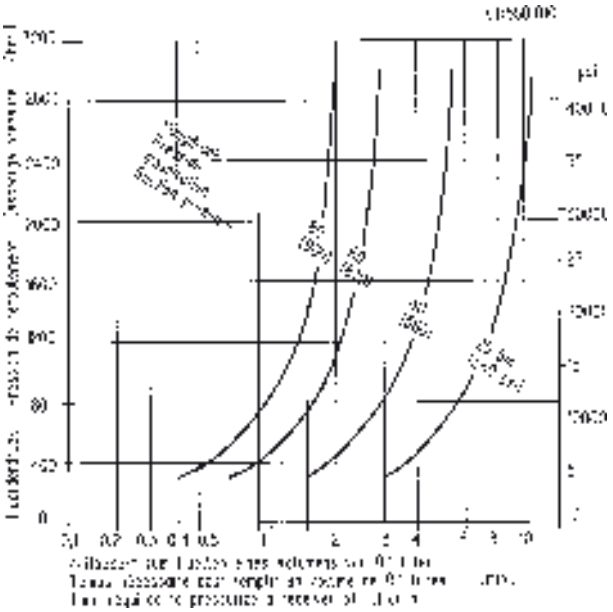
Gas: Stickstoff Temperatur: 20° C Gaz: Azote Température: 20° C

Gas: Nitrogen Temperature: 70°F

Diagramme der 2-köpfigen Ausführungen 3'000 bar in Serieschaltung.
Diagrammes pour les version à deux têtes en serie 3'000 bar.
Diagramms for double head models 45'000 psi in Serie.

Elektrisch Electrique Electric 3'000 bar Cat. No. 554.3122





Gas: Stickstoff Temperatur: 20° C Gaz: Azote Température: 20° C

Gas: Nitrogen Temperature: 70°F

- Technische Änderungen jederzeit vorbehalten.
- Les caractéristiques techniques sont sujet à des changements sans préavis.
- Specifications are subject to change without notice.

Thermoelemente
Thermocouples
Thermocouples

Kat. Nr. / No. de cat / Cat. No.:	5.1815. ...
Länge "L": Longueur "L": Length "L":	6 - 500 mm, Sonderlängen möglich 6 - 500 mm, longueur spéciale sur demande 6 - 500 mm, special lengths on request
Anschluss / Raccord / Connection:	HP 1/4"
max. Druckbereich: Pression de service max.: max. pressure range:	7'000 bar (100'000 psi) bei 20°C
Nippellänge: Longueur du tube de jonction: Length of nipple:	107 mm, Standard
Klasse / Classe / Class:	2 ICE 584-1
Grenzabweichung (±): Tolérance (±): Tolerance (±):	2,5°C / 0,0075 x T
max. Temperatur:	Typ J: Fe/Const: -40°C bis 700°C Typ K: Ni/Cr Ni: -40°C bis 1200°C
1) Kabel für T/E: Cable pour T/C: Cable to T/C:	Ni/Cr Ni 5.3888.001 (Glasfaserisolation bis 360°C Ni/Cr Ni 5.3888.015 (Silikonisolation bis 150°C) Ni/Cr Ni 5.3888.017 (PVC-Isolation bis 80°C) Fe/Const 5.3888.002 (Glasfaserisolation bis 360°C) Fe/Const 5.3888.016 (Silikonisolation bis 150°C) Fe/Const 5.3888.018 (PVC-Isolation bis 80°C)

1) Kabel muss separat bestellt werden
Il faut commander le cable séparément
Cable must be ordered separately

Thermoelemente mit Lemo-Stecker auf Anfrage
Thermocouple avec Fiche-Lemo sur demande
Thermocouple with Lemo-Plug on request

NOVA SWISS Thermoelemente eignen sich für Temperatur-Messungen im inneren eines Druckbehälters bis max. 7'000 bar. Sie können direkt in den NOVA HP 1/4" Anschluss geschraubt werden. Die Sensor-Länge (Länge=L) kann je nach Bedarf bestimmt werden.

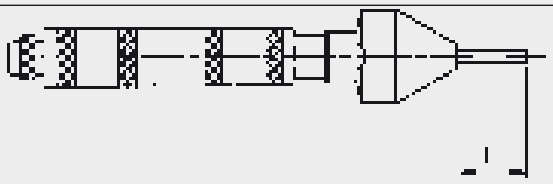
Les thermocouples NOVA SWISS permettent de mesurer la température à l'intérieur d'une enceinte jusqu'à une pression maximum de 7'000 bar. On peut les visser directement dans un raccord NOVA HP 1/4". La longueur du couple est définie à la demande, selon l'application du client.

NOVA SWISS thermocouples are suitable for temperature measurements inside of a pressure vessel up to max. 100'000 psi. They fit directly in to the NOVA HP 1/4" connnection. The sensor length (length=L) can be determined according to your application.

Widerstandthermometer (auf Anfrage)
Thermomètre de résistance (sur demande)
Resistance thermometer (on request)

PT 100 (5.1816....)

max. Druckbereich: Pression de service max.: max. pressure range:	700 bar (10'000 psi)
max. Temperatur:	-200°C bis 200°C
Klasse / Classe / Class:	B
Grenzabweichung: Tolérance: Tolerance:	+0,3°C bei 0°C +0,3 à 0°C +0,3% at 0°C
Anschluss / connexion / conection:	9/16"



*Achtung: Lemo-Kupplung ist bei Bedarf separat zu bestellen (5.7911.001)
*Attention: Lemo prise femelle doit être commandée séparément (5.7911.001)
*Attention: Lemo femelle plug to be ordered separately if required (5.7911.001)

max. 7'000 bar
max. 101'500 psi

Max. 700 MPa

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NOVA SWISS

Mat.:	D	Länge	Art.Nr.
Fe / Const	1,5	95	5.1815.001
Fe / Const	1,5	430	5.1815.002
Ni / Cr Ni	1,5	11	5.1815.003
Ni / Cr Ni	1,5	430	5.1815.007
Fe / Const	1,5	212	5.1815.008
Ni / Cr Ni	1,5	245	5.1815.009
Fe / Const	1,5	6	5.1815.013
Fe / Const	1,5	18,5	5.1815.014
Ni / Cr Ni	1,5	20	5.1815.015
Fe / Const	1,5	145	5.1815.016
Fe / Const	1,5	60	5.1815.017
Fe / Const	1,5	280	5.1815.020
Fe / Const	1,5	120	5.1815.021
Ni / Cr Ni	1,5	155	5.1815.025
Fe / Const	1,5	27,5	5.1815.033
Fe / Const	1,5	15	5.1815.034
Ni / Cr Ni	1,5	30	5.1815.038
Ni / Cr Ni	1,5	320	5.1815.041
Ni / Cr Ni	1,5	50	5.1815.043
Ni / Cr Ni	1,5	60	5.1815.044
Ni / Cr Ni	1,5	17	5.1815.048
Ni / Cr Ni	1,5	100	5.1815.050
Ni / Cr Ni	1,5	75	5.1815.056
Fe / Const	1,5	155	5.1815.060
Ni / Cr Ni	1,5	500	5.1815.062
Ni / Cr Ni	1,5	225	5.1815.063
Fe / Const	1,5	85	5.1815.064
Fe / Const	1,5	240	5.1815.065
Ni / Cr Ni	1,5	230	5.1815.067
Ni / Cr Ni	1,5	147	5.1815.068

Informators with microprocessor

3½-digit or 5-digit LED display
with or without limit contacts

Description

Informators are electronic devices designed for digital display of sensor signals. They also supply the sensor with the power required and, with the aid of additional facilities such as limit contacts and analog output, provide information on the status of the process being monitored.

The informators can be set to the desired measuring range on site by program-control. The physical unit (mbar, bar, psi, etc.) is indicated by a small label inserted behind the front lens.

Programming is carried out with the function keys on the front of the device. The instantaneous value memory function (HOLD) allows to analyse varying measuring signals. More detailed analyses are possible with the peak value memory (MIN/MAX). The serial interface option enables the measured data to be transferred to a PC.

The choice of the device depends on the measuring accuracy of the sensor to which it is connected. The informators are available with a 5-digit display.

Features

- Freely programmable by microprocessor
- Scale setting on site, without external calibration equipment
- Input 4...20 mA, 0...20mA or 0...10VDC
- Integrated sensor supply
- Option: Analog output: 4...20 mA
- Option: Freely programmable limit contacts, contact function and hysteresis
- Instantaneous value memory (HOLD)
- Peak memory (MIN and MAX)
- Option: serial interface (RS232)

Applications

Chemical and petrochemical industry,

Pharmaceutical industry,

Food and beverage industry,

Machine tools or plastics die casting machines,

Presses,

Development and testing laboratory.

NOVA SWISS

Technical Data

Model	1997	1998
Display	red 7-Segment-LED-display	
– Height	10 mm high	
– Range	-9999...+99999 (5 digits)	
Accuracy	0,05% of FS ± 1 digit	
– Conversion rate	10/sec.	
Measuring range	freely programmable	
– Units	bar or psi	
Input	selectable: 4...20 mA - 2-wire system	
Channel number	1	
– Input resistance	current input: ca. 47 Ω	
Temperature influence	voltage input: ca. 600 kΩ	
	≤ 0.1% of F.S. /10K	
Sensor supply	16 VDC + 5 % - 2 %; 40 mA	
Analog output	see options	
– Resolution	for current output:20 µA	
Accuracy	± 0,2% of F.S	
– Load resistance	for current output:max. 700 Ω	
Temperature influence	≤ 0,1% of FS./10K	
Measured value memory	Instantaneous value memory (Hold) peak value memory (MAX and MIN)	
Limit switch		2 floating changeover contacts
– Function		programmable via hysteresis
Switching point		upper (MAX) or lower limit value
– Hysteresis		(MIN)adjustable by program control
Load rating		in entire display range 500VA; 240 VAC; 2 A at ohmic load
Mains supply	230 / 110 VAC ± 6%; 50...60 Hz; selectable with internal jumpers	
Power input	ca. 10 VA; depending on options	
electrical connection	2 plug-in screw terminals	
Temperature ranges		
– operation	0...50 °C	
– storage	-30...75 °C (air humidity not condensing)	
Protection type	front side IP54	
Case	DIN 43700, 96 x 48, see drawings for dimensions	
– Material	Noryl; front frame ABS	
Mounting	screw clamps to DIN 43835	
Weight	approx. 0,8 kg including all options	

Options

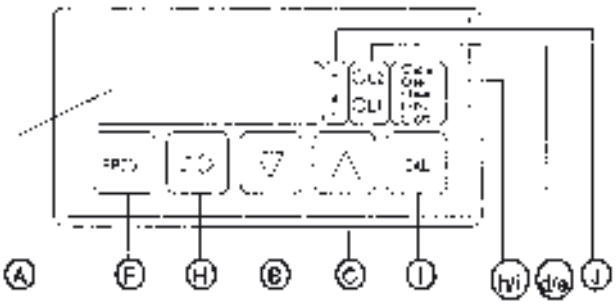
Models	1997
Analog output	4...20 mA
Serial interface	RS232 (V.24)

(Specifications can change without notice.)

of F.S.= of full scale value

Operating and connection elements

Frontview models 1997 and 1998



A LED-display panel
B Functionkey, counting downwards
C Functionkey, counting upwards
d Displays for limit value 1
- Δ LED = MAX-limit value
- ∇ LED = MIN-limit value
- flashing = limit value exceeded
- L1 = limit value exceeded

e Displays for limit value 2
- Δ LED = MAX-limit value
- ∇ LED = MIN-limit value
- flashing = limit value exceeded
- L2 = limit value exceeded

F Functionkey, programming mode during programming
H Selectkey, display mode
h REAL-LED = read value display
- HOLD-LED = instantaneous value memory
- MIN-LED = minimum value display
- MAX-LED = maximum value display

I Selectkey calibration mode
i CAL-LED = calibration of full scale value
- ZERO-LED = calibration of zero point

J panel for labels with the engineering unit

Technical data and Order details for Nova Indicator

Indicator:	LED Indicator, 5 digit, mounted in table case, IP 65
Sensorconnection:	5 pins sensor plug
Measured value memory:	min-, max- and actual value
Powersupply:	230 VAC/0.5A

Model	Options	Nova Part Nr.
1997	----	5.0406.025
1997	Analogoutput 4 – 20 mA	5.0406.026
1997	Serial interface RS 232	5.0406.027
1998	Limit switch two contacts	5.0406.028
Cable from sensor to unit (3m)	----	5.3888.019

(Specifications can change without notice.)

Attachable Indicator

for pressure sensors with output 4 ... 20 mA
4-digit LCD display

Description

The new attachable indicator provides an ideal solution for a local indication with simultaneous signal transmission. Due to its easy programming and simple mounting the attachable indicator can be installed even to pressure transmitters which are already in use.

The display range can be adjusted by flush-mounted keys behind the front cover. A programmable damping ensures a stable reading of the pressure value in case of pulsation or if pressure peaks occur.

All programmable parameters are stored in an EEPROM and are kept in the event of a power failure.

The attachable indicator ensures a high operation safety by monitoring upper or lower deviations to the range and by the integrated self diagnosis.

The sturdy and compact plastic case meets IP 65 weather protection, making the instrument ideally suitable for a large variety of industrial applications.

The attachable indicator meets the electronic magnetic compatibility (EMC) requirements according to EN 50 081-1 and EN 50 082-2.

Features

- Easy to program through microprocessor control
- Range setting on site, no external calibration equipment needed
- For pressure transmitters with 4 ... 20 mA output and right angle plug to DIN 43650
- Protection type IP 65
- Stable and accurate indication

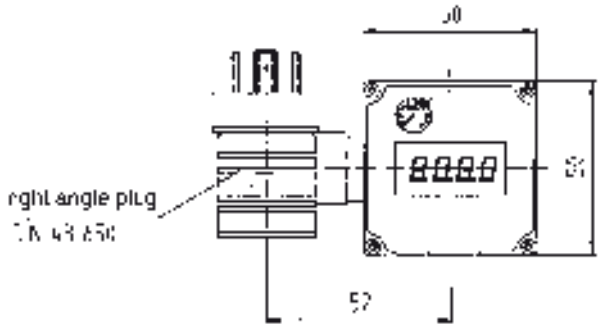
Technical data

Model	5.0406.024
Display	LCD display, height 10 mm
Range	-1999 ... 9999 (4 digits)
– Accuracy	0,2% of F.S. + 1 digit
– Conversion rate	5/s
Damping	programmable in 3 steps
Measuring range	free programmable
– Input	4 ... 20 mA, 2-wire
– Temperature influence	0,1% of F.S./10K
Power supply	none, sensor is supplied by 4 ... 20 mA-loop
Voltage drop	3 V
– Currency load	max. 40 mA
Electrical connection	sensor with 4 ... 20 mA output and right angle plug to DIN 43 650
mounting	polarity safe
Temperature ranges	
Ambient	0 ... 150 °C [1]
– Storage	-30 ... +60 °C (relative air humidity max. 90%, non condensing)
Protection type	IP 65 (acc. to EN 60 529/IEC 529)
Emission [2]	to EN 50 081-1
Interference [2]	to EN 50 082-2
Case	dimensions 50x50x35
Material	ABS
– Front panel	polycarbonate
Weight	approx. 80 g

of F.S. = of full scale value

[1] extended ambient temperature range on request
[2] declaration of conformity on request

Dimensions in mm



Indicator	Nova Part Number
0...600, 1000, 1600, 2500, 4000 bar	5.0406.074

(Specifications can change without notice.)

Pressure Sensors

Measuring ranges: **0…600 bar to 0… 4000 bar**

Accuracy: **0,5%**

Standard output: **4…20 mA; 2-wire system**

Description

Due to the flexible construction of both the electrical and the mechanical connections the pressure sensor is the perfect choice in the field of hight pressure measurement. Reliability, safety, resistance to corrosion and hight mechanical load make them suitable for almost all high pressure measuring tasks. The case and wetted parts are made of stainless steel and are thus resistant to chemically aggressive media.

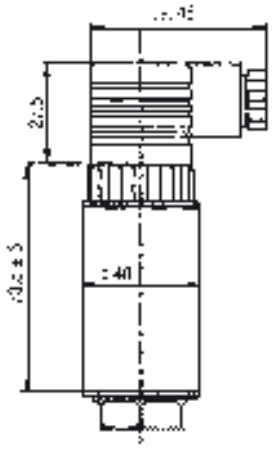
The pressure sensors meet the electronic magnetic compatibility (EMC) requirements to EN 50 0801-1, EN 50 081-2 and EN 50 082-2.

Sensore Type	Nova Part Number
0…600 bar / 0…8700 psi	5.1539.015
0…1000 bar / 0…14500 psi	5.1539.016
0…1600 bar / 0…23200 psi	5.1539.017
0…2500 bar / 0…36000 psi	5.1539.018
0…4000 bar / 0…58000 psi	5.1539.019

Features

- high mechanical load rating
- high peak pressure resistance
- high alternating load resistance
- high long-term stability
- corrosion resistant stainless steel design
- mechanical safety conception
  EMC-protection to EN 50 081 and 50 082.

Dimension in mm
Model with plug according to DIN 43 650



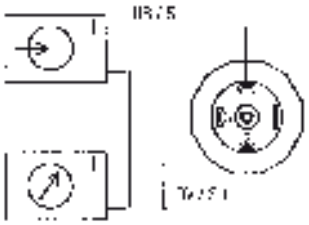
Technical data

Model	5.1539.015 / 016 / 017 / 018 / 019
Pressure type	positive gauge pressure
Output signal	4…20 mA – 2-wire system
Accuracy % of E.W.[1]	0,5 %
Ranges accord to DIN	0–600 bar to 0–4000 bar
Sensor element	Thin film
Repeatability	≤ ± 0.05% of F.S.
Stability per year	≤ ± 0.2% of F.S. in rated conditions
Case	stainless steel 1.4301
Pressure connection	G 1/2" A to DIN 16288 0…600 bar to…1600 bar M16x1.5 HP 0…2500 bar to 0…4000 bar
Wetted parts	stainless steel 1.4571 and 1.4534
Overload limit	4000 bar 1.2-fold;
Electrical connection	plug according to DIN 43650 with junction box
Power supply	10…30 VDC
Power consumption	output 4…20 mA: signal current
Load –4…20 mA	R_A Ω ≤ (U_B V -10V)/0.02A
Temp. compens. range	-20… +80°C
Temperature influence	± 0,2% / 10 K, on zero and span
Response time	≤ 10 ms (within 10% to 90% of F.S.)
Protection type	IP 65 for plug DIN 43650 / EN 60529 / IEC 529
Emission [2]	according to EN 50081-1 and EN 50081-2
Interference [2]	according to EN 50082-2
Electrical protection types	polarity, overload and short-circuit protection
Temperature ranges – Storage – Medium – Ambient	 -40… + 85°C -30… + 80°C -20… + 80°C
Weight	approx. 0,3 kg

Electrical connection

Two-wire system

DIN 43 650 plug



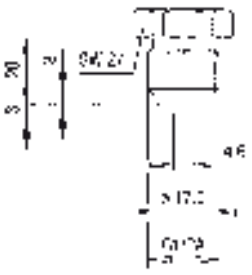
Connection table for DIN plug

	4…20 mA (2-wire)
Supply: +UB	1
Supply: OV	2

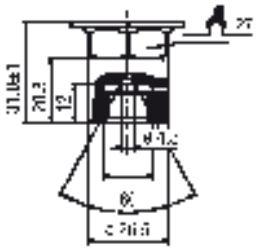
[1]) Terminal point adjustment according to DIN 16086, incl. linearity and hysteresis, of F.S. = of full scale value
[2]) Declaration of conformity on request

Pressure connections:

Pressure connections according to DIN 16288 G 1/2" A

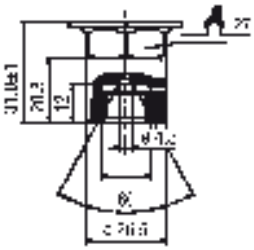


High pressure connection M16x1,5 female

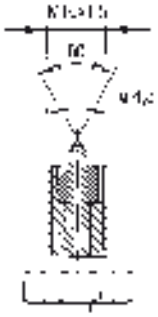


Screw-in aperture:

according to DIN 16288 G 1/2" B



High pressure connection M16x1,5 male



All stainless steel safety pressure gauges with or without glycerine filling

according to EN 837-1/S3 and ANSI/ASME B 40.1

Nominal size ND 160

Description

The all stainless steel pressure gauges are ideal for the hard conditions and the resulting high demands on pressure measurement in production facilities in chemical industry and other comparable branches. Resistance to aggressive media and environments is achieved by using high-grade materials such as stainless steel both for the measuring system and the case.

The measuring system is of accuracy class 1.0, has over range protection amounting to 1.3 times the max. rating and can be loaded up to the full scale value.

The safety execution of the pressure gauges comprises a burst-proof solid front between bourdon tube and window, a laminated safety glass as well as a blow-out back (according to EN 837-1/S3).

Features

- Stainless steel measuring system
- Resistant to chemicals
- Rugged construction
- Fulfils highest safety requirements
- Solid front between measuring system and window

Ranges

0 ... 600 bar to 0 ... 1600 bar

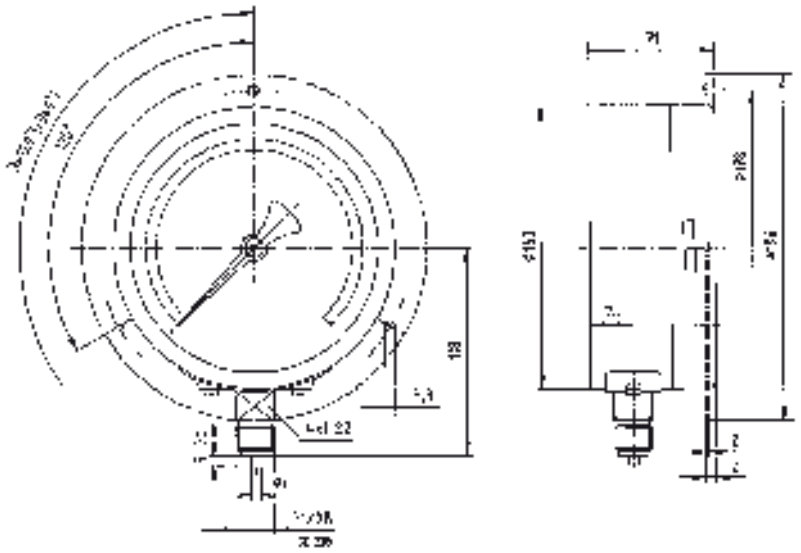
Applications

Chemical and petrochemical industry;
Plastics and paper industry;
Food and beverages industry;
Machine and apparatus construction;
Plant construction;
Research and development;
High pressure test benches;
Burst test benches;
Compressors

Technical data

Model	5.4914.062/063/064
Nominal size	160
Symbol	
Accuracy class	1,0 to EN 837-1
Ranges	0 ... 600 bar to 0 ... 1000 bar, double scale bar / psi positive gauge pressure
Applications	Constant load: up to full scale value Alternating load: up to 0,9 x full scale value
Over range protection	1,3 x, short-time
Case	stainless steel 1.4301 with blow-out back and solid front, stainless steel 1.4301
Bezel	Stainless steel 1.4301 bayonet ring
Mounting	Front flange, stainless steel 1.4301
Window	Laminated safety glass 6mm
Dia	Aluminium, white, scale and imprint black, dual scale bar/psi
Pointer	Aluminium, black
Movement	Stainless steel
Measuring element	stainless steel 1.4571 helical tube
Connection - position thread	Stainless steel 1.4571 bottom G 1/2" A to DIN ISO 228
Temperatures - Medium - Ambient	 Tmin. -25°C, Tmax. 100°C Tmin. -25°C, Tmax. 60°C
Liquid filling	none
Protection	IP 54 EN 60 529/IEC 529
Weight approx.	1,6 kg

Dimensions



Gauge Type	Nova Part Number
0....600 bar / 0....8700 psi	5.4914.062
0....1000 bar / 0....14500 psi	5.4914.063
0....1600 bar / 0....23200 psi	5.4914.064

(Specifications can change without notice.)

All stainless steel safety gauges for ultra high pressures

According EN 837-1

Nominal size ND 160

Description

The ultra high pressure gauge program covers ranges of 0 ... 2500 bar to 0 ... 7000 bar. The instruments are available in accuracy class 1,0 .

The use of special materials with highest durability is one of the main requirements for the production of pressurized instrument parts.

The measuring element is a helical Bourdon tube for Cobalt-Chrome-Nickel-Molybdenum-alloy with a concentric shape. The connection is made of Nickel-Chrome-Titanium alloy.

The solid front between measuring system and dial and the blow-out back (acc. to EN837-1/S3) are part of the safety features of the ultra high pressure gauges.

Features

- Measuring system of high corrosion-resistant materials
- Corrosion resistant
- Rugged construction
- Fulfills highest safety requirements
- Solid front between measuring system and dial

Ranges

0 ... 2500 bar to 0 ... 7000 bar

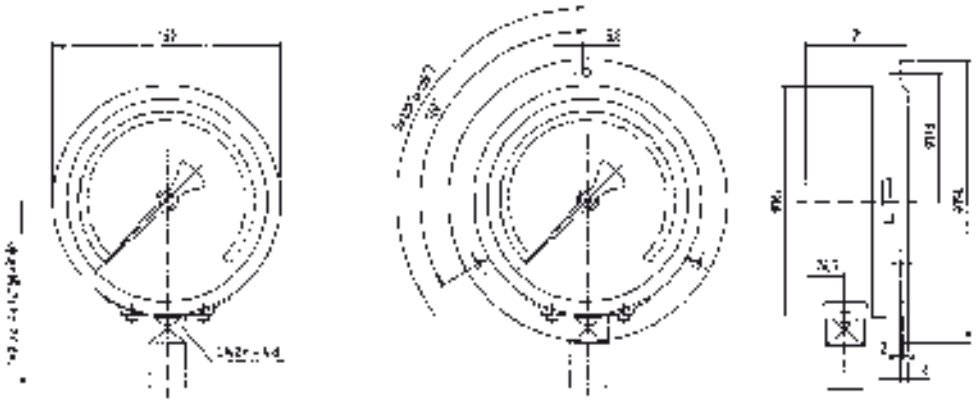
Applications

Research and development;
Processing technology;
Machine building;
High pressure test benches;
Burst test benches;
Liquid jet cutting equipment;
Ballistics

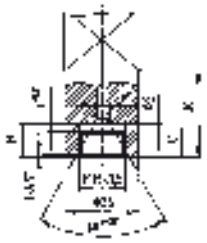
Technical data

Models	5.4914.065/066/067
Nominal size	160
Symbol	
Accuracy class	1,0 to EN 837-1
Ranges	0 ... 2500; 4000; 7000 bar double scale bar / psi
Applications	3/4 full scale value
Overrange protection	1,05 full scale value
Housing	1.4301 with blow-out back, solid front
Bezel	Stainless steel 1.4301 bayonet ring
Mounting	Front flange, Stainless steel polished
Window	Laminated safety glass
Dial	Aluminium white, black imprint
Pointer	Aluminium, black
Movement	Stainless steel
Measuring element	CO-Ni-Cr-alloy
Connection - position - thread	Cr Ni steel radial bottom M 16 x 1.5 female with cone 60°;
Liquid filling	none
Protection Temperatures - Ambient	IP 65 EN 60 529/IEC 529 Tmin. -25°C, Tmax. 60°C
Weight	2,0 kg

Dimensions



Thread connection for ultra high pressure gauges



Gauge Type	Nova Part Number
0....2500 bar / 0....36000 psi	5.4914.065
0....4000 bar / 0....58000 psi	5.4914.066
0....7000 bar / 0....101500 psi	5.4914.067

(Specifications can change without notice.)