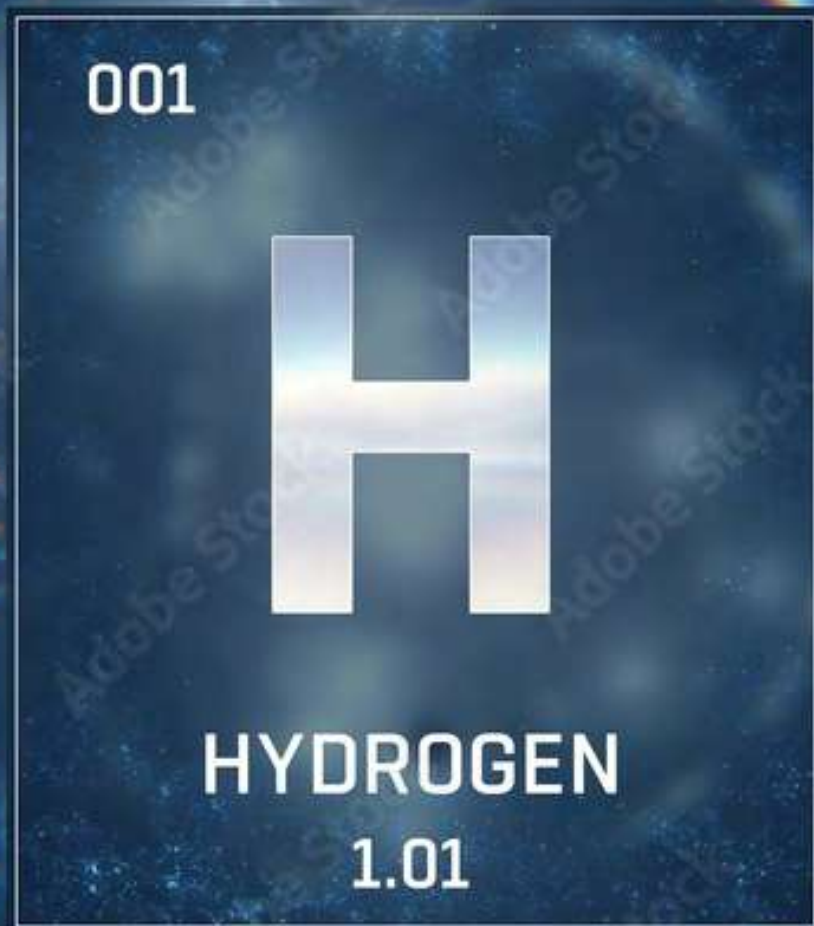




Products for Hydrogen Applications from Maximator GmbH & Maxpro Technologies



Content	Page
Maximator worldwide - At your side, everywhere	2
Medium Pressure Valves - Pressures to 22,500 psi (1,550 bar)	5
Double Block and Bleed Needle Valves - Pressures to 22,500 psi (1,550 bar)	7
Double Block and Bleed Needle Valves with full bore - Pressures to 22,500 psi (1,550 bar)	8
Air Actuated Valves - Pressures to 15,200 psi (1,050 bar)	
» Air Actuated Compact Valves	9
» 4-Way Air Actuated Valves for Dispenser	11
» Air Actuated Valves 1/4" - 3/8"	13
» Air Actuated Valves 9/16"	15
» Air Actuated Valves 3/4"	17
Medium Pressure Fittings - Pressures to 22,500 psi (1,550 bar)	
» Medium Pressure Fittings 1/4" - 1"	19
» Medium Pressure Fittings with variable connections 1/4" - 1"	21
Anti-vibration collet gland assemblies - Pressures to 22,500 psi (1,550 bar)	22
Check Valves - Pressures to 22,500 psi (1,550 bar)	
» Ball Check Valves & Cone Check Valves	23
Filters - Pressures to 22,500 psi (1,550 bar)	
» Line Filters	24
» Angle Filters	25
Safety Head Assembly - Pressures to 22,500 psi (1,550 bar)	26
1/4" Rupture Discs	27
Medium Pressure Tubing & Coned and threaded nipples - Pressures to 22,500 psi (1,550 bar)	28
Tools - Cone & Threading-Toobox	30
Gas Boosters	31

MAXIMATOR has been designing and manufacturing high pressure equipment for more than thirty years and has a worldwide reputation for quality and reliability, backed by one of the best service organizations in the industry.

Medium Pressure Valves to 22,500 psi (1,550 bar)

Maximator Medium Pressure Valves with metal to metal seats have a high level of safety and reliability under adverse operating conditions.

» **Sizes 1/4 to 1 inch**

Double Block and Bleed Valves to 22,500 psi (1,550 bar)

Double Block and Bleed Needle Valves are three stem manifold valves designed for blocking and bleeding in test and pressure monitoring applications as well as for chemical injection or drain line isolation up to 22,500 psi (**1,550 bar**).

Air Actuated Valves to 15,200 psi (1,050 bar)

Air Actuated Valves are a great option for process automation, pressure control or safety devices in high pressure test and production systems.

» **From slow fill processes in compact filling stations up to high flow rates for hydrogen refilling stations for busses, trucks and trains**

Medium Pressure Fittings to 22,500 psi (1,550 bar)

Maximator Medium Pressure Fittings are designed for use with the 15V series air actuated hydrogen valves and 21V series medium pressure valves and medium pressure tubing

» **Sizes 1/4 to 1 inch, also available with variable connections**

Check Valves to 22,500 psi (1,550 bar)

Especially for hydrogen applications, where best of class sealing ability is required, Maximator developed their Cone Check Valve series design with a highly media compatible soft sealing system and improved spring guide.

Filters to 22,500 psi (1,550 bar)

Cup-Type Filters are used when maximum filtration surface area down to a single micron size is required. They are used to filter gases or liquids in high pressure systems. Angle type filters allow easy in-situ replacement of the filter elements.

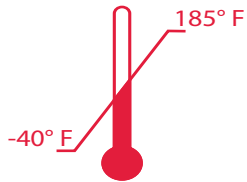
Tubing & Tools

Precise tools are necessary for manually coning and threading tubing. Maxpro offers these tools, allowing for the coning and threading of medium and high pressure tubing up to 9/16" O.D.

Gas Boosters

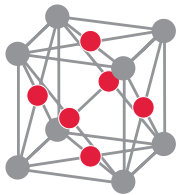
The Maximator high pressure gas boosters are suitable for the oil free compression of gases and air. Industrial gases like argon, helium, nitrogen and hydrogen can be compressed to operating pressures of 2,400 bar (**36,000 psi**).





Temperature range

- Selection of seal materials for a temperature range of -40° F to +185° F
- Temperature range according to ISO19880-3 and ANSI/SAE HG 4.7



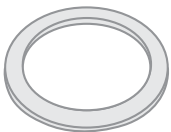
Choice of material

- Predominantly use of austenitic stainless steels, evaluated for their suitability in high pressure hydrogen applications
- Use of 1.4404 (SST 316L) as body material with minimized risk of hydrogen embrittlement for high durability
- Material 1.4980 (A286) and 1.4542 (17-4PH) for valves stems where compression stresses prevail



Leakage

- Internal leakage of seat/stem as well as external leakage over seal are bubble tight
- Leak testing of valves with helium for internal and external leakage for air operated valves
- Valves are in the qualification process in order to meet the requirements of ISO 19880-3



Seals

- Special seal designs are used for air operated valves instead of conventional packings in order to maintain their initial tension
- Lifetime related to opening and closing cycles is much higher compared to conventional packing designs



Lubrication

- Lubricant used for functionality of valves has been selected especially for hydrogen applications
- No chemical reactions with the media are going to happen



Cleaning

- Use of special cleaning process in order to reduce hydrocarbons and particles
- Avoidance of fuel cell contamination which would effect the life time

Ordering Information
Typical catalog number:
21V16M071



Medium pressure valves

Maximator Medium pressure valves with metal to metal seats have a high level of safety and reliability under adverse operating conditions. These valves may be used both with gases and liquids.

Traceability is ensured through extensively documented data (batch number, maximum pressure, material number, type designation). All medium pressure valves include glands and collars.

» Materials:

Valve body: 1.4404 (SST 316L)

Valve stem: 1.4542 (17-4PH)

21 V Valve Series	4M O.D. Tube Size	07 Stem Type	1 Body Pattern	Options
21 V	4M – 1/4"	07 – VEE stem	1 – two-way straight	Extended
	6M – 3/8"	87 – VEE stem with replaceable seat	2 – two-way angle	temperature
	9M – 9/16"			option, see
	12M – 3/4"			information
	16M – 1"			below.

Options for Medium pressure valves

Special Designs for Extreme Temperatures

Standard valves are supplied with Teflon / Carbon packing and may be operated to 450°F (**230°C**). High temperature packing and / or extended stuffing box are available for service from -423°F to 1200°F (**-252°C to 650°C**) by adding the following suffixes to catalog order number.

- **B** – standard valve with cryogenic trim materials and Teflon packing to -100°F (**-73°C**).
- **LT** – extended stuffing box valve with teflon packing and cryogenic trim materials to -423°F (**-252°C**).

For further available options and more detailed information please refer to our VFT catalogue.

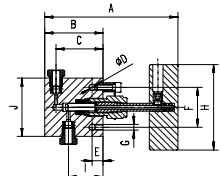
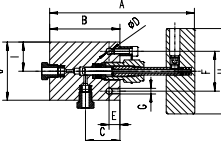
O.D. Size in. (mm)	Connec- tion Type	Orifice Size in. (mm)	Rated Cv**	Pressure Rating @ R.T. psi (bar)***
1/4 (6.35)	4MF	0.106 (2.7)	0.31	22,500 (1,550)
3/8 (9.53)	6MF	0.201 (5.1)	0.75	22,500 (1,550)
9/16 (14.29)	9MF	0.307 (7.8)	1.30	22,500 (1,550)
3/4 (19.05)	12MF	0.438 (11.1)	2.50	22,500 (1,550)
1 (25.4)	16MF	0.562 (14.3)	4.40	22,500 (1,550)

Consult your MAXIMATOR representative for **repair kits** and valve bodies. Refer to the Tools and Installation section for proper maintenance procedures.

** Cv values shown are for 2-way straight pattern vee stem valves. For 2-way angle patterns, increase the Cv value by 50%. For Flow coefficient reference curves, please refer to chapter Technical Informations.

*** See page 2 in the Technical Section of our VFT catalogue for Pressure/Temperature Rating Chart.

All technical and dimensional information subject to change. All general Terms and Conditions of sale, including limitations of our liability, apply to all products and services sold.

Valve Pattern	Catalog Number	Stem Type	O.D. Tube in.	Orifice in. (mm)	Dimensions in. (mm)										Valve Panel Hole	Block Thickness
2-Way Straight																
	21V4M071	Vee	1/4	0.106 (2.7)	4.61 (117)	2.01 (51)	1.62 (41.1)	0.22 (5.6)	0.37 (9.5)	1.24 (31.5)	2.95 (75)	1.19 (30.2)	2.01 (51)		0.75 (19.1)	0.79 (20.1)
	21V6M071	Vee	3/8	0.201 (5.1)	4.61 (117)	2.01 (51)	1.62 (41.1)	0.22 (5.6)	0.37 (9.5)	1.24 (31.5)	2.95 (75)	1.19 (30.2)	2.01 (51)		0.75 (19.1)	0.79 (20.1)
	21V9M071	Vee	9/16	0.307 (7.8)	5.87 (149)	2.88 (73.2)	2.38 (60.5)	0.37 (9.5)	0.45 (11.5)	1.38 (35)	3.94 (100)	1.75 (44.5)	2.50 (63.5)		1.00 (25.4)	1.02 (25.9)
	21V12M071	Vee	3/4	0.438 (11.1)	7.05 (179)	3.74 (95)	3.00 (76)	0.43 (11)	0.63 (16)	1.76 (44.7)	10.31 (262)	2.25 (57.2)	3.00 (76)		1.25 (31.8)	1.38 (35)
	21V16M071	Vee	1	0.562 (14.3)	8.98 (228)	4.65 (118)	3.75 (95.3)	0.53 (13.5)	1.13 (28.7)	2.50 (63.5)	10.31 (262)	2.81 (71.4)	4.13 (105)		1.62 (41.1)	1.77 (45)
2-Way Angle																
	21V4M072	Vee	1/4	0.106 (2.7)	5.00 (127)	2.43 (61.7)	1.19 (30.2)	0.22 (5.6)	0.37 (9.5)	1.24 (31.5)	2.95 (75)	1.00 (25.4)	2.01 (51)		0.75 (19.1)	0.79 (20.1)
	21V6M072	Vee	3/8	0.201 (5.1)	5.00 (127)	2.43 (61.7)	1.19 (30.2)	0.22 (5.6)	0.37 (9.5)	1.24 (31.5)	2.95 (75)	1.00 (25.4)	2.01 (51)		0.75 (19.1)	0.79 (20.1)
	21V9M072	Vee	9/16	0.307 (7.8)	6.36 (161.5)	3.38 (85.9)	1.75 (44.5)	0.37 (9.5)	0.45 (11.5)	1.38 (35)	3.94 (100)	1.25 (31.8)	2.50 (63.5)		1.00 (25.4)	1.02 (25.9)
	21V12M072	Vee	3/4	0.438 (11.1)	7.56 (192)	4.25 (108)	2.25 (57.2)	0.43 (11)	0.63 (16)	1.76 (44.7)	10.31 (262)	1.50 (38)	3.00 (76)		1.25 (31.8)	1.38 (35)
	21V16M072	Vee	1	0.562 (14.3)	9.45 (240)	5.12 (130)	2.81 (71.4)	0.53 (13.5)	1.13 (28.7)	2.50 (63.5)	10.31 (262)	2.07 (52.5)	4.13 (105)		1.62 (41.1)	1.77 (45)

G - Panel mounting screw thread size 10-24 UNC (screw included). All dimensions are for reference only and are subject to change.



Ordering Information
Typical catalog number:
21DBBNV4M4P

Double Block and Bleed Needle Valves

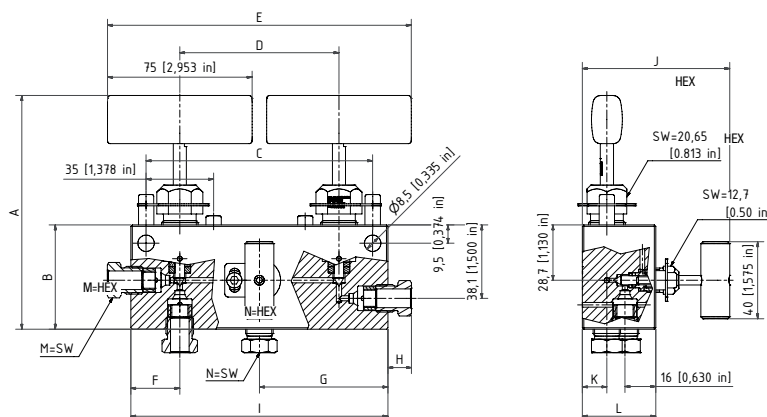
Maximator series DBBNV Double Block and Bleed Needle Valves with metal to metal seats have a high level of safety and reliability under adverse operating conditions. Double Block and Bleed Needle Valves are three stem manifold valves designed for blocking and bleeding in test and pressure monitoring applications as well as for chemical injection or drain line isolation up to 22,500 psi (1,550 bar).

Due to the standard valve packing and Vee stem design, Maximator double block and bleed needle valves are very compact and easy to use. In addition, manifold style valves reduce the number of fittings and space required for installation.

» Materials:

Valve body: 1.4404 (SST 316L)

Valve stem: 1.4542 (17-4PH)



21 DBBNV Valve Series	4M Connection	4P Vent Connection
21 DBBNV	4M – 1/4"	4P – 1/4" NPT
	6M – 3/8"	6P – 3/8" NPT
	9M – 9/16"	8P – 1/2" NPT
	9H – 9/16"	4M – 1/4"

Catalog Number	Stem Type	O.D. Tube in.	Orifice in. (mm)	Dimensions in. (mm)													
				A	B	C	D	E	F	G	H	I	J	K	L	M	N
21DBBNV4M	Vee	1/4	0.11 (2.7)	4.882 (124)	2.13 (54.1)	4.63 (117.6)	3.252 (82.6)	6.205 (157.6)	1.00 (25.4)	2.626 (66.7)	0.378 (9.6)	5.252 (133.4)	3.012 (76.5)	0.50 (12.7)	1.50 (38.1)	0.50 (12.7)	0.50 (12.7)
21DBBNV4M4P	Vee	1/4	0.11 (2.7)	4.882 (124)	2.13 (54.1)	4.63 (117.6)	3.252 (82.6)	6.205 (157.6)	1.00 (25.4)	2.626 (66.7)	0.378 (9.6)	5.252 (133.4)	3.012 (76.5)	0.50 (12.7)	1.50 (38.1)	0.50 (12.7)	
21DBBNV6M	Vee	3/8	0.11 (2.7)	4.776 (121.3)	2.13 (54.1)	4.63 (117.6)	3.252 (82.6)	6.205 (157.6)	1.00 (25.4)	2.626 (66.7)	0.48 (12.2)	5.252 (133.4)	3.012 (76.5)	0.50 (12.7)	1.50 (38.1)	0.625 (15.88)	0.625 (15.88)
21DBBNV6M6P	Vee	3/8	0.11 (2.7)	4.776 (121.3)	2.13 (54.1)	4.63 (117.6)	3.252 (82.6)	6.205 (157.6)	1.00 (25.4)	2.626 (66.7)	0.48 (12.2)	5.252 (133.4)	3.012 (76.5)	0.50 (12.7)	1.50 (38.1)	0.625 (15.88)	
21DBBNV9M	Vee	9/16	0.11 (2.7)	5.646 (143.4)	3.00 (76.2)	4.638 (117.8)	3.26 (82.8)	6.213 (157.8)	1.311 (33.3)	2.941 (74.7)	0.63 (16)	5.882 (149.4)	3.283 (83.4)	0.752 (19.1)	1.772 (45)	0.937 (23.8)	0.937 (23.8)
21DBBNV9M8P	Vee	9/16	0.11 (2.7)	5.646 (143.4)	3.00 (76.2)	4.638 (117.8)	3.26 (82.8)	6.213 (157.8)	1.311 (33.3)	2.941 (74.7)	0.63 (16)	5.882 (149.4)	3.283 (83.4)	0.752 (19.1)	1.772 (45)	0.937 (23.8)	
21DBBNV9H4M	Vee	9/16	0.11 (2.7)	5.646 (143.4)	3.00 (76.2)	4.638 (117.8)	3.26 (82.8)	6.213 (157.8)	1.311 (33.3)	2.941 (74.7)	0.941 (23.9)	5.882 (149.4)	3.283 (83.4)	0.752 (19.1)	1.772 (45)	1.187 (30.16)	0.50 (12.7)

Panel mounting screw thread size 10-24 UNC (screw included).

A - Stem in closed position.

All dimensions are for reference only and are subject to change.

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Ordering Information Typical catalog number:
21DBBV9M4P

Double Block and Bleed Needle Valves - full bore

Maximator Double Block and Bleed Needle valves with full bore will allow you to control the entire flow of your application combined with the proven benefits of an integrated solution.

21 DBBV Valve Series	9M Connection	4P Vent Connection
21 DBBV	6M – 3/8"	4P – 1/4" NPT
	9M – 9/16"	4M – 1/4"
	12M – 3/4"	
	16M – 1"	

Stem Type Vee		Catalogue Number			
		21DBBV6M	21DBBV9M	21DBBV12M	21DBBV16M
O.D. Tube in.		3/8	9/16	3/4	1
Orifice in. (mm)		0.201 (5.1)	0.307 (7.8)	0.438 (11.1)	0.562 (14.3)
Dimensions in. (mm)					
	A	4.796 (121.81)	6.231 (158.27)	7.42 (188.47)	9.23 (234.5)
	B	2.362 (60)	3.346 (85)	4.134 (105)	4.921 (125)
	C	4.587 (116.5)	5.709 (145)	12.551 (318.79)	13.13 (333.5)
	D	3.346 (85)	4.331 (110)	10.787 (274)	10.63 (270)
	E	6.299 (160)	8.268 (210)	21.102 (536)	20.906 (531)
	F	1.319 (33.5)	1.319 (33.5)	1.496 (38)	2.067 (52.5)
	G	2.992 (76)	3.484 (88.5)	6.89 (175)	7.382 (187.5)
	H	0.48 (12)	0.591 (15)	0.793 (20)	0.843 (21.4)
	I	5.984 (152)	6.969 (177)	13.78 (350)	14.764 (375)
	J	3.25 (82.54)	3.25 (82.54)	3.25 (82.54)	3.762 (95.54)
	K	0.551 (14)	0.551 (14)	0.681 (17.3)	0.886 (22.5)
	L	1.752 (44.5)	1.752 (44.5)	1.752 (44.5)	2.264 (57.5)
	M	0.63 (16)	0.63 (16)	0.63 (16)	0.63 (16)
	N	1.189 (30.2)	1.752 (44.5)	2.252 (57.2)	2.693 (68.4)
	O	1.618 (41.1)	2.382 (60.5)	3 (76.2)	3.752 (95.3)
	P	0.374 (9.5)	0.374 (9.5)	0.63 (16)	1.13 (28.7)
	Q	0.335 (8.5)	0.335 (8.5)	0.433 (11)	0.531 (13.5)
	R	1.24 (31.5)	1.378 (35)	1.76 (44.7)	2.5 (63.5)
	S	2.953 (75)	3.937 (100)	10.315 (262)	10.276 (261)
	T	0.625 (15.88)	0.937 (23.8)	0.681 (30.16)	1.375 (34.93)
	U	0.625 (15.88)	0.813 (20.65)	0.937 (23.8)	1.375 (34.93)

All technical and dimensional information subject to change. All general Terms and Conditions of sale, including limitations of our liability, apply to all products and services sold.

Air Actuated Compact H₂ Valves

- Slow fill processes for compact filling stations
- Hydrogen filling of two-wheelers
- Pressure release of dispenser filling hoses

Ordering Information
Typical catalog number:
15V4M071-H2-3MNC



15 V Valve Series	4M O.D. Tube Size	07 Stem Type	1 Body Pattern	Configuration
15 V	4M – 1/4"	07 – VEE stem	1 – two-way straight	3MNC = Compact air-drive normally closed
15,200 psi (1,050 bar)				3MNO = Compact air-drive normally open

Technical Data and Dimensions

Technical Data

Operating temperature: -40° F / 185° F
Drive pressure: 58 psi-116 psi (4-8 bar)
Operating pressure: 15,200 psi (1,050 bar)

Materials

Valve body: 1.4404 (SST 316L)
Valve stem: 1.4980 (A-286)
Seal: UHMWPE

Dimensions

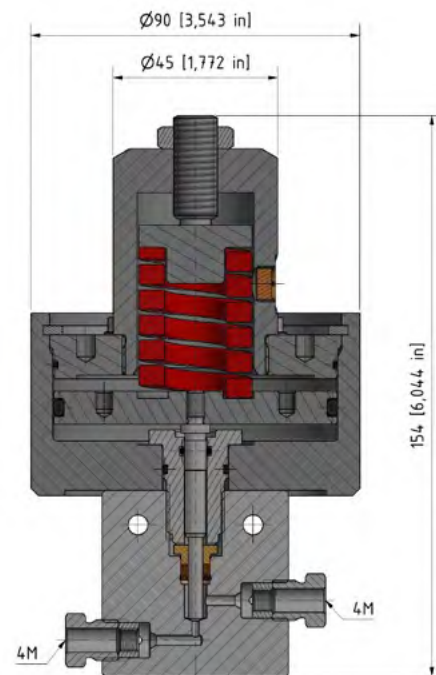
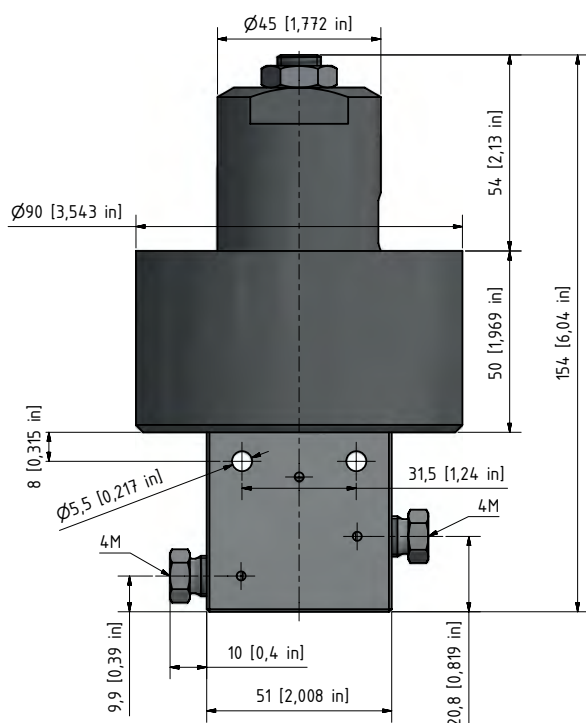
Height: Normally closed: 6.04 in. (154 mm)
Normally open: 3.917 in. (99.5 mm)
Diameter: 3.543 in. (90 mm)
Orifice: 0.78 in. (2.0 mm)



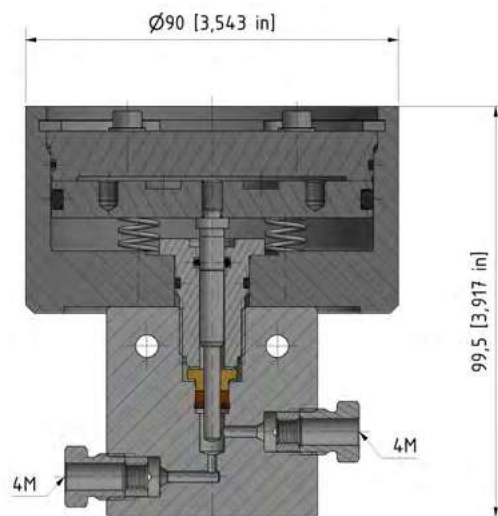
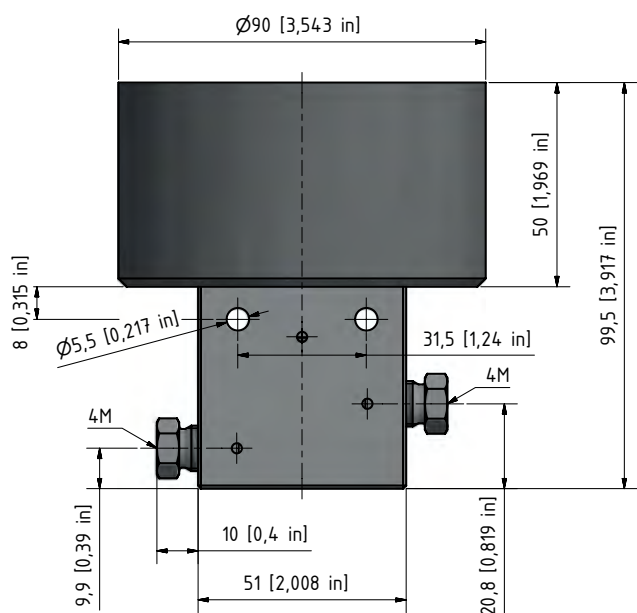
The valves are marked with an EX sign and are in conformity to Group II Category 2G Explosion group IIC constructive safety.

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15V4M071-H2-3MNC

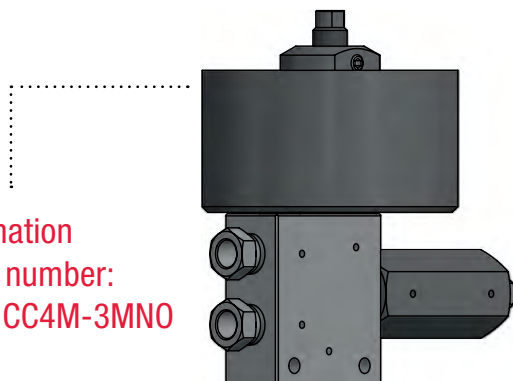


15V4M071-H2-3MNO



All technical and dimensional information subject to change. All general Terms and Conditions of sale, including limitations of our liability, apply to all products and services sold.

Ordering Information
Typical catalog number:
15V6M-H2-AS-CC4M-3MNO



4-Way Air Actuated H₂ Valves for Dispenser includes Adjustable Stroke and Check Valve

Air Actuated H₂ Valve Manifolds

- Pressure release of dispenser filling hoses
- Adjustable orifice to limit noise emissions
- Compact design with multiple functions integrated

15 V Valve Series	6M O.D. Tube Size	AS Stem Type	Body Pattern	Configuration
15 V	6M – 3/8"	AS – Vee Stem with adjustable stroke	4-way valve	3MNO = Compact air-drive normally open

Characteristics

- Compact integrated design for high leak integrity
- Flow through function to dispenser filling hose
- Double porting on left hand side eliminates need for Tee type fitting
- Normally open valve for pressure release after filling
- Bottom port for optional pressure relief valve or rupture disc installation
- Adjustable orifice to limit noise emissions during pressure release
- Cone check valve at outlet in order to avoid contamination from vent line
- Low wear because of optimal choice of materials of construction

Technical Data and Dimensions

Technical Data

Operating temperature:	-40° F / 185° F
Drive pressure:	58 psi-116 psi (4-8 bar)
Operating pressure:	15,200 psi (1,050 bar)

Materials

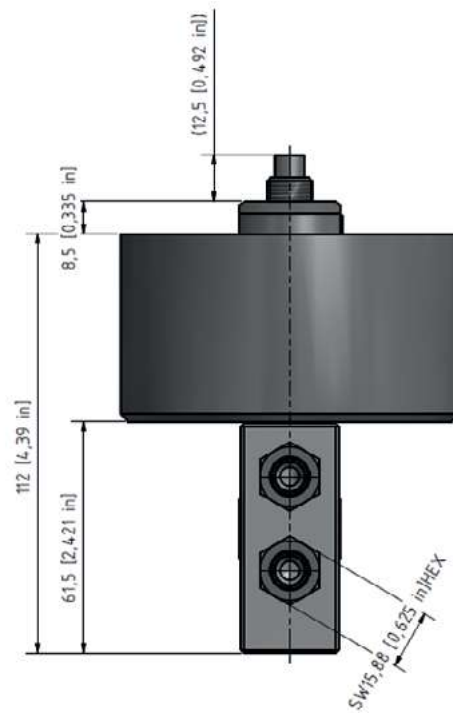
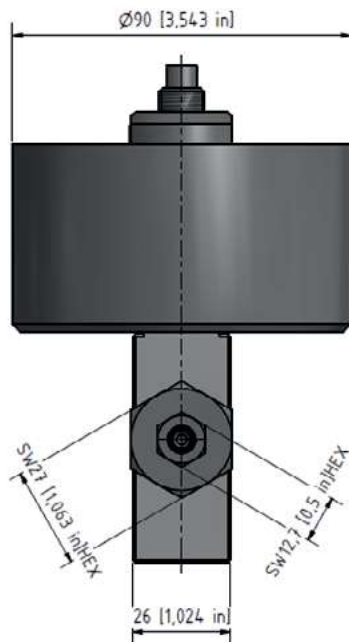
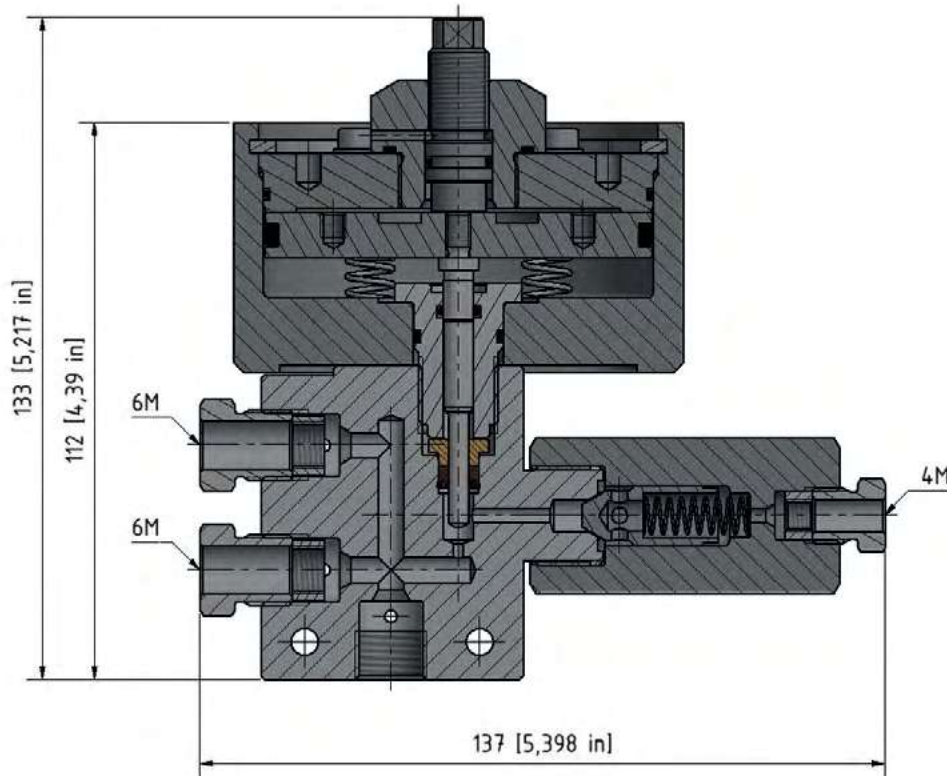
Valve body:	1.4404 (SST 316L)
Valve stem:	1.4980
Seal needle valve:	UHMWPE
Seal check valve:	PEEK

Dimensions

Height:	5.217 in. (133 mm)
Net weight:	2.9 kg (6.39 lbs)
Diameter:	3.543 in. (90 mm)
Orifice:	0.787 in (2.0 mm)
Actuator:	3MNO



The valves are marked with an EX sign and are in conformity to Group II Category 2G Explosion group IIC constructive safety.



Ordering Information
Typical catalog number:
15V4M071-H2-5MNC



Air Actuated H₂ Valves

- Standard type for hydrogen refilling stations for passenger cars
- Use for shut-off at compressor, distribution at gas storage banks
- Shut-off function for dispenser filling hose

15 V Valve Series	4M O.D. Tube Size	07 Stem Type	1 Body Pattern	Configuration
15 V	4M – 1/4"	07 – VEE stem	1 – two-way straight	5MNC = Air-drive normally closed
	6M – 3/8"		2 – two-way angle	5MNO = Air-drive normally open
				B = Packing for cold applications (-73°)

Technical Data and Dimensions

Technical Data

Operating temperature:	-40° F / 185° F (-99.4° F / 185° F *)
Drive pressure:	73 psi-145 psi (5-10 bar)
Operating pressure:	15,200 psi (1,050 bar)

Materials

Valve body:	1.4404 (SST 316L)
Valve stem:	1.4980 (A-286)
Seal:	UHMWPE

Dimensions

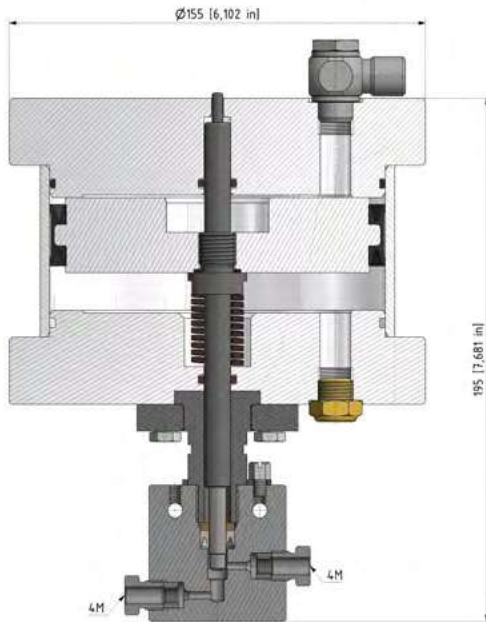
Height:	245 mm (9.64 in)
Net weight:	5.6 kg (12.34 lbs)
Diameter:	155 mm (6.1 in)
Orifice:	4M: 2.7 mm (0.106in) 6M: 5.1 mm (0.200 in)

* B-Type with extended connection for
low temperature applications

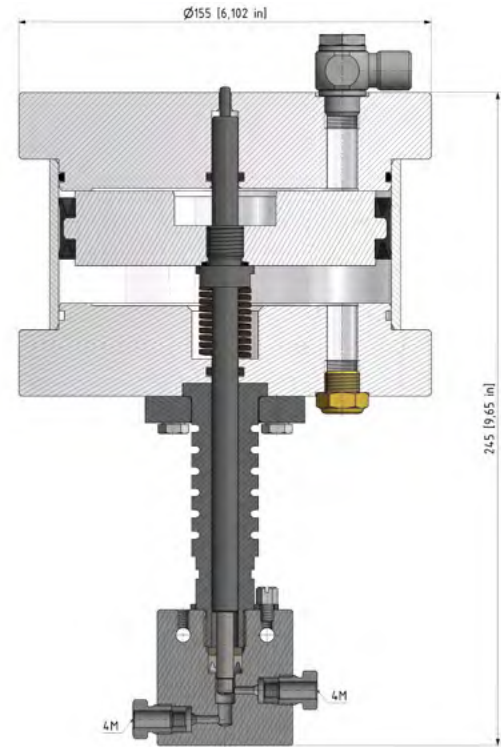


The valves are marked with an EX sign and are in conformity to Group II Category 2G Explosion group IIC constructive safety.

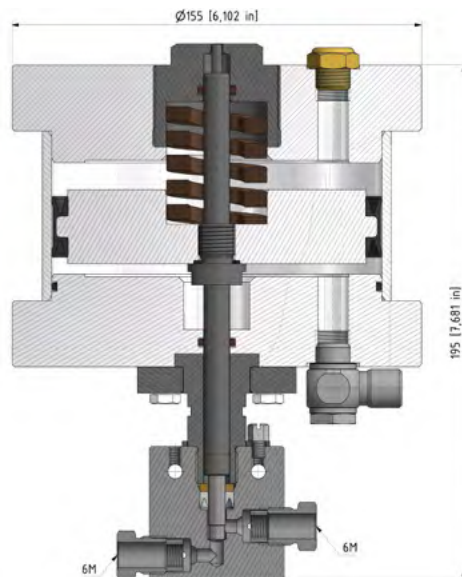
15V4M071-H2-5MNO



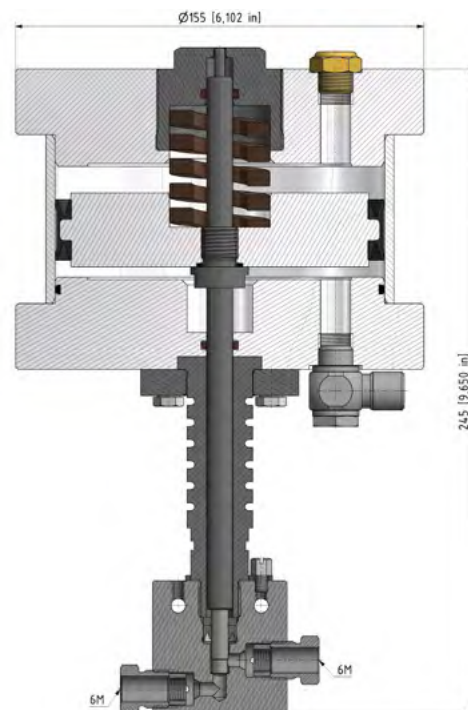
15V4M071-B-H2-5MNO



15V6M071-H2-5MNC



15V6M071-B-H2-5MNC



Air Actuated H₂ Valves

Air Actuated High Flow Valves

- Standard type for hydrogen refilling stations for busses, trucks and trains
- Use for shut-off at compressor, distribution at gas storage banks
- Shut-off function for dispenser filling hose



Ordering Information
Typical catalog number:
15V9M071-H2-8MNC

15 V Valve Series	9M O.D. Tube Size	07 Stem Type	1 Body Pattern	Configuration
15 V	9M – 9/16"	07 – VEE stem	1 – two-way straight	8MNC = Air-drive normally closed
			2 – two-way angle	

Technical Data and Dimensions

Technical Data

Operating temperature: -40° F / 185° F
Drive pressure: 73 psi-145 psi (5-10 bar)
Operating pressure: 15,200 psi (1,050 bar)

Materials

Valve body: 1.4404 (SST 316L)
Valve stem: 1.4980 (A-286)
Seal: UHMWPE

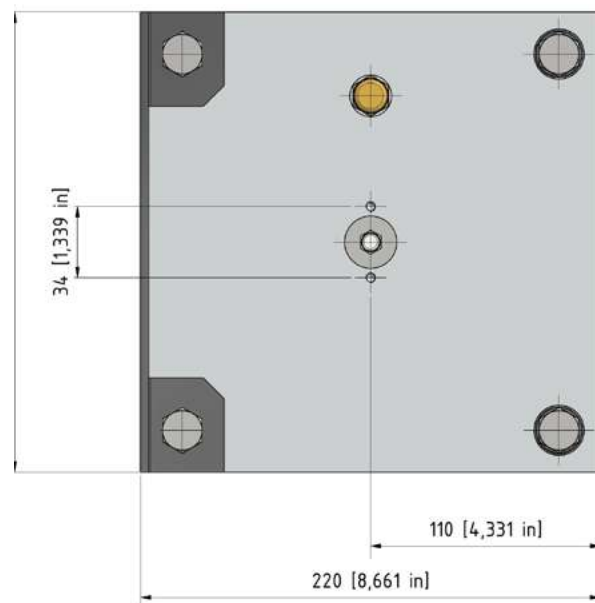
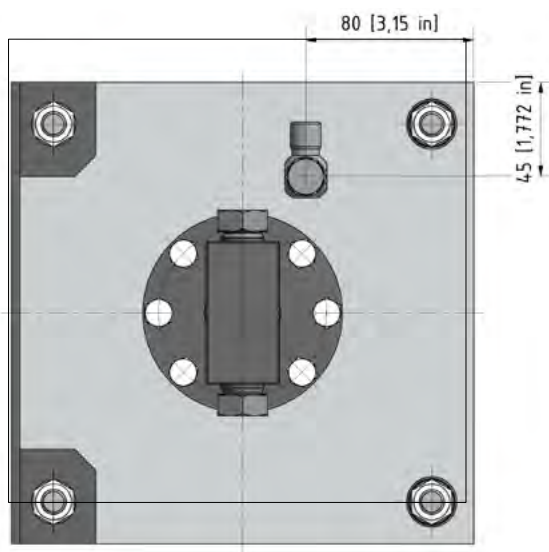
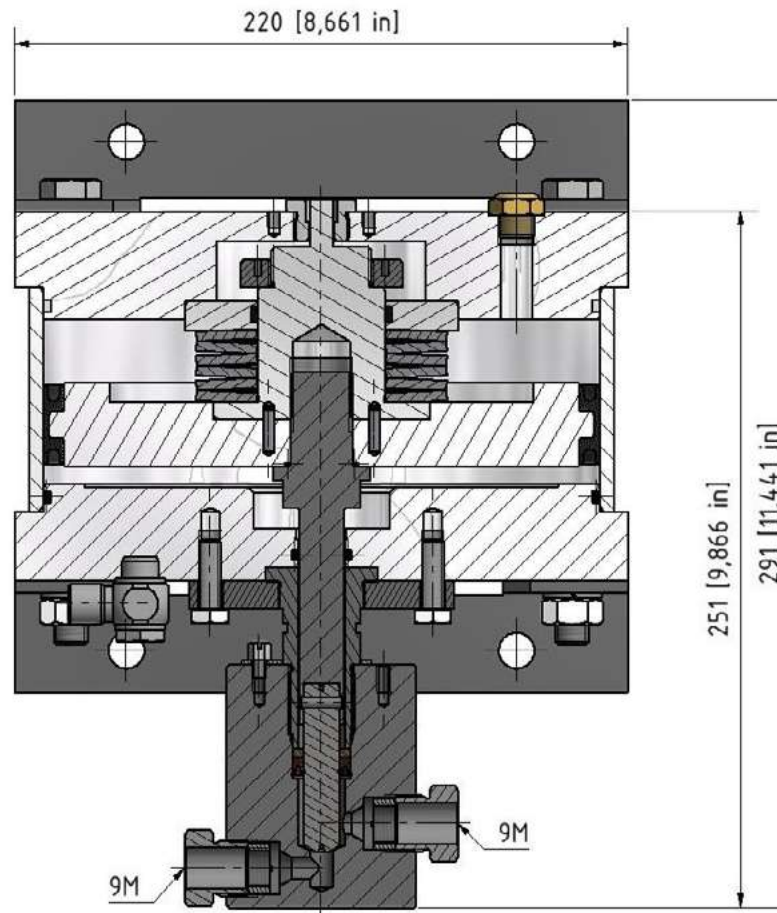
Dimensions

Height: 291 mm (11.45 in)
Net weight: 16.8 kg (37 lbs)
Width: 220 mm x 220 mm (8.66 in x 8.66 in)
Orifice: 7.8 mm (0.307 in)
Actuator: 8MNC



The valves are marked with an EX sign and are in conformity to Group II Category 2G Explosion group IIC constructive safety.

All technical and dimensional information subject to change. All general Terms and Conditions of sale, including limitations of our liability, apply to all products and services sold.



Air Actuated H₂ Valves

Air Actuated High Flow Valves

- Standard type for hydrogen refilling stations for busses, trucks and trains
- Use for shut-off at compressor, distribution at gas storage banks
- Shut-off function for dispenser filling hose

Ordering Information
Typical catalog number:
15V12M071-H2-8MNC



15 V Valve Series	12M O.D. Tube Size	07 Stem Type	1 Body Pattern	Configuration
15 V	12M – 3/4"	07 – VEE stem	1 – two-way straight	8MNC = Air-drive normally closed
			2 – two-way angle	

Technical Data and Dimensions

Technical Data

Operating temperature: -40° F / 185° F
Drive pressure: 102 psi-145 psi (7-10 bar)
Operating pressure: 15,200 psi (1,050 bar)

Materials

Valve body: 1.4404 (SST 316L)
Valve stem: 1.4980 (A-286)
Seal: UHMWPE

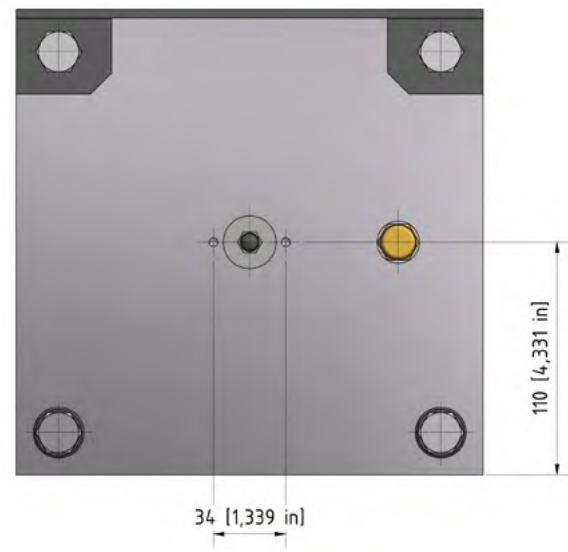
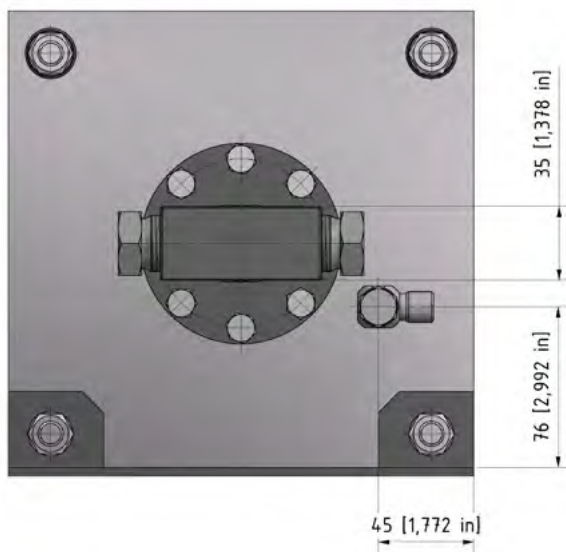
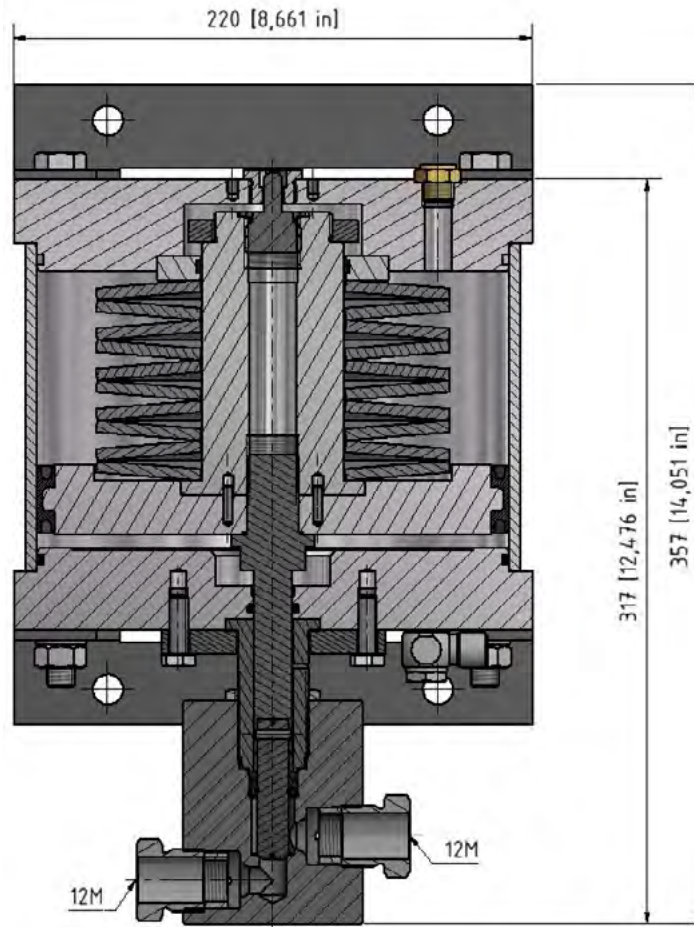
Dimensions

Height: 357 mm (14 in)
Net weight: 24.4 kg (53.79 lbs)
Width: 220 mm x 220 mm (8.66 in x 8.66 in)
Orifice: 11.1 mm (0.43 in)
Actuator: 8MNC



The valves are marked with an EX sign and are in conformity to Group II Category 2G Explosion group IIC constructive safety.

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Medium pressure fittings

Maximator medium pressure fittings are designed for use with the 15V series hydrogen valves and 21V series medium pressure valves and medium pressure tubing. All medium pressure fittings have coned and threaded type connections. Mounting holes are standard on all elbows, tees and crosses.



Tubing Size in. (mm)	Gland	Collar	Plug	Tubing Cap
1/4 (6.35)	21G4M	21C4M	21P4M	21TC4M
3/8 (9.53)	21G6M	21C6M	21P6M	21TC6M
9/16 (14.29)	21G9M	21C9M	21P9M	21TC9M
3/4 (19.05)	21G12M	21C12M	21P12M	21TC12M
1 (25.4)	21G16M	21C16M	21P16M	21TC16M

Connection Components

All medium pressure fittings are supplied with glands and collars. Refer to the adjacent chart for ordering any of the connection components individually. When using the plug, the collar is not needed.

» Materials:

Fitting body: 1.4404 (SST 316L)

Gland, collar: 1.4404 (SST 316L)

Fitting Pattern	Catalog Number	Connection Type	O.D. Tube Size in.	Orifice in. (mm)	Dimensions in. (mm)							Block Thickness
					A	B	C	D	E	F	G	
Elbow												
	21L4M	4MF	1/4	0.106 (2.7)	0.75 (19.1)	1.10 (28)	1.54 (39.1)	0.75 (19.1)	0.49 (12.5)	0.49 (12.5)	0.22 (5.6)	0.63 (16)
	21L6M	6MF	3/8	0.201 (5.1)	1.00 (25.4)	1.38 (35)	2.00 (50.8)	1.00 (25.4)	0.63 (16)	0.63 (16)	0.26 (6.6)	0.79 (20.1)
	21L9M	9MF	9/16	0.307 (7.8)	1.25 (31.8)	1.75 (44.5)	2.50 (63.5)	1.25 (31.8)	0.84 (21.3)	0.84 (21.3)	0.33 (8.4)	1.02 (25.9)
	21L12M	12MF	3/4	0.438 (11.1)	1.50 (38.1)	2.25 (57.2)	3.00 (76)	1.50 (38.1)	1.00 (25.4)	1.00 (25.4)	0.35 (8.9)	1.38 (35)
	21L16M	16MF	1	0.562 (14.3)	2.06 (52.3)	3.00 (76)	4.13 (105)	2.06 (52.3)	1.38 (35)	1.38 (35)	0.53 (13.5)	1.77 (45)
Tee												

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Fitting Pattern	Catalog Number	Connection Type	O.D. Tube Size in.	Orifice in. (mm)	Dimensions in. (mm)							Block Thickness
Cross												
	21X4M	4MF	1/4	0.106 (2.7)	0.77 (19.5)	1.54 (39.1)	1.54 (39.1)	0.77 (19.5)	0.49 (12.5)	0.98 (25)	0.22 (5.6)	0.63 (16)
	21X6M	6MF	3/8	0.201 (5.1)	1.00 (25.4)	2.00 (50.8)	2.00 (50.8)	1.00 (25.4)	0.63 (16)	1.26 (32)	0.26 (6.6)	0.79 (20.1)
	21X9M	9MF	9/16	0.307 (7.8)	1.25 (31.8)	2.50 (63.5)	2.50 (63.5)	1.25 (31.8)	0.84 (21.3)	1.67 (42.6)	0.33 (8.4)	1.02 (25.9)
	21X12M	12MF	3/4	0.438 (11.1)	1.50 (38.1)	3.00 (76)	3.00 (76)	1.50 (38.1)	1.00 (25.4)	2.00 (50.8)	0.35 (8.9)	1.38 (35)
	21X16M	16MF	1	0.562 (14.3)	2.06 (52.3)	4.13 (105)	4.13 (105)	2.06 (52.3)	1.38 (35)	2.76 (70)	0.53 (13.5)	1.77 (45)
Straight Coupling / Union Coupling												
	21F4M	4MF	1/4	0.106 (2.7)	1.62 (41.1)	0.69 (17.5)	Straight Coupling					
	21UF4M						Union Coupling					
	21F6M	6MF	3/8	0.201 (5.1)	1.75 (44.5)	0.88 (22.3)	Straight Coupling					
	21UF6M						Union Coupling					
	21F9M	9MF	9/16	0.307 (7.8)	2.12 (53.8)	1.06 (27)	Straight Coupling					
	21UF9M						Union Coupling					
	21F12M	12MF	3/4	0.438 (11.1)	2.50 (63.5)	1.44 (36.5)	Straight Coupling					
	21UF12M						Union Coupling					
	21F16M	16MF	1	0.562 (14.3)	3.50 (88.9)	2.00 (50.8)	Straight Coupling					
	21UF16M						Union Coupling					
Bulkhead Coupling												
	21BF4M	4MF	1/4	0.106 (2.7)	1.88 (47.8)	1.06 (27)	1.06 (27)	0.94 (23.9)	0.67 (17)			
	21BF6M	6MF	3/8	0.201 (5.1)	2.01 (51)	1.06 (27)	1.06 (27)	0.94 (23.9)	0.39 (9.9)			
	21BF9M	9MF	9/16	0.307 (7.8)	2.38 (60.5)	1.44 (36.5)	1.44 (36.5)	1.12 (28.5)	0.39 (9.9)			
	21BF12M	12MF	3/4	0.438 (11.1)	2.81 (71.4)	1.62 (41.3)	1.62 (41.3)	1.37 (34.8)	0.47 (11.9)			
	21BF16M	16MF	1	0.562 (14.3)	3.54 (89.9)	2.00 (50.8)	2.00 (50.8)	1.68 (42.6)	0.51 (13)			
Manifold Block												
	21MB64M	4MF	1/4	0.106 (2.7)	3.39 (86)	1.54 (39.1)	2.6 (66)	0.22 (5.5)	0.28 (7)	3.11 (79)	0.77 (19.5)	0.63 (16)
	21MB66M	6MF	3/8	0.201 (5.1)	3.39 (86)	2.00 (50.8)	2.38 (60.5)	0.26 (6.5)	0.37 (9.5)	3.01 (76.5)	1.00 (25.5)	0.79 (20.1)
	21MB69M	9MF	9/16	0.307 (7.8)	5.12 (130)	2.50 (63.5)	3.86 (98)	0.33 (8.5)	0.41 (10.5)	4.7 (119.5)	1.25 (31.75)	1.02 (25.9)
	21MB612M	12MF	3/4	0.438 (11.1)	6.50 (165)	3.00 (76)	5.00 (127)	0.35 (9)	0.49 (12.5)	6.00 (152.5)	1.5 (38)	1.38 (35)
	21MB616M	16MF	1	0.562 (14.3)	7.25 (191)	4.13 (105)	5.45 (138.5)	0.53 (13.5)	0.69 (17.5)	6.83 (173.5)	2.07 (52.5)	1.77 (45)

All dimensions are for reference only and are subject to change.

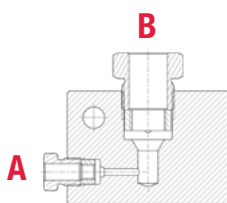
All technical and dimensional information subject to change. All general Terms and Conditions of sale, including limitations of our liability, apply to all products and services sold.

Medium pressure fittings with variable connections

Maximator also offers medium pressure elbow, tee and cross fittings with variable connections. The dimensions depend on the largest connection type. All medium pressure fittings have coned and threaded type connections. Mounting holes are standard on all elbows, tees and crosses.

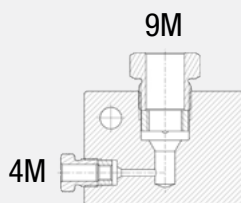
Elbow

Body structure



Catalog Number **21L A B**

Example:



Catalog Number

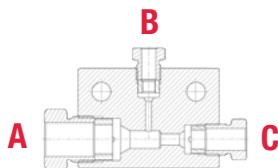
21L 4M 9M

A B

Largest connection type*

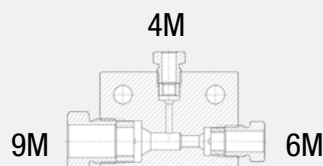
Tee

Body structure



Catalog Number **21T A B C**

Example:



Catalog Number

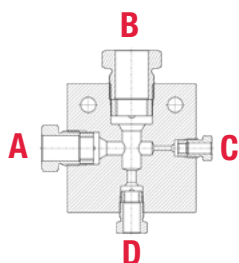
21T 9M 4M 6M

A B C

Largest connection type*

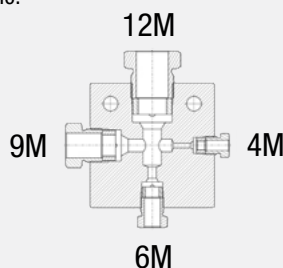
Cross

Body structure



Catalog Number **21X A B C D**

Example:



Catalog Number

21X 9M 12M 4M 6M

A B C D

Largest connection type*

* All dimensions can be found on the previous pages.

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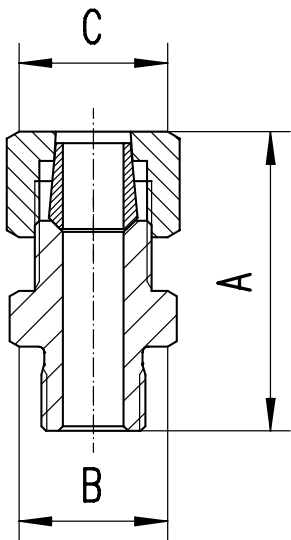
Anti-vibration collet gland assemblies

Maximator anti-vibration collet gland assemblies are for use in applications where there could be extreme external mechanical vibrations or shock in tubing lines. These collet gland assemblies are interchangeable with the standard medium pressure coned and threaded tube connections.

In a normal coned and threaded tube connection, any external mechanical loading on the tubing lines, valves or fittings would be concentrated on the first thread of the tube. This can cause failure of the tube at this thinner cross-section. The anti-vibration collet gland assembly grips the tube behind the connection, supporting the tube at the full cross-section and straight area, moving the loading away from the threaded area.

The back part of the assembly has a gland nut that, when tightened properly, compresses a split collet on the tube, providing the beneficial gripping action. All anti-vibration collet gland assemblies come with a Molybdenum Disulfide Coating to guard against galling of the stainless components.



Gland Pattern	Catalog Number	Part	O.D. Tubing Size in.	Dimensions in. (mm)		
				A	B (Hex.)	C (Hex.)
	21AVA4M	Complete Assembly	1/4	1.27	0.50	0.62
	21AVB4M	Collet Body		(32.2)	(12,7)	(15.7)
	21AVC4M	Slotted Collet				
	21AVG4M	Gland Nut				
	21AVA6M	Complete Assembly	3/8	1.54	0.62	0.81
	21AVB6M	Collet Body		(39.1)	(15.7)	(20.6)
	21AVC6M	Slotted Collet				
	21AVG6M	Gland Nut				
	21AVA9M	Complete Assembly	9/16	1.82	0.94	0.94
	21AVB9M	Collet Body		(46.2)	(23.9)	(23.9)
	21AVC9M	Slotted Collet				
	21AVG9M	Gland Nut				
	21AVA12M	Complete Assembly	3/4	2.01	1.19	1.25
	21AVB12M	Collet Body		(51)	(30.2)	(31.8)
	21AVC12M	Slotted Collet				
	21AVG12M	Gland Nut				
	21AVA16M	Complete Assembly	1	2.44	1.38	1.50
	21AVB16M	Collet Body		(62)	(35)	(38.1)
	21AVC16M	Slotted Collet				
	21AVG16M	Gland Nut				

All dimensions are for reference only and are subject to change.

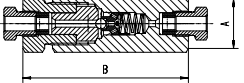
All technical and dimensional information subject to change. All general Terms and Conditions of sale, including limitations of our liability, apply to all products and services sold.

Ball Check Valves

Ball Check Valves prevent reverse flow where bubble tight shut-off is not mandatory. These check valves are designed with a ball cradled floating poppet to assure positive inline seating. This poppet design allows full flow around the ball to minimize pressure drop. Check valves are rated to 660°F (350°C). All check valves are supplied with glands and collars. These check valves are not to be used as a relief device. The opening pressure of the Ball Check Valves is approx. 20 psi (1.5 bar).



» **Materials:** Body, cover, poppet, cover gland: 1.4404 (SST 316L)
Ball: SST 400 series Spring: SST 300 series

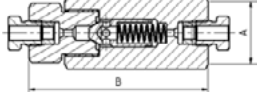
Valve Pattern	Catalog Number	Connection Type	Pressure Rating psi (bar)	Orifice in. (mm)	Rated (Cv)	Dimensions in. (mm)		
							A (Hex.)	B
Ball Check Valves								
	21BC4M	4MF	22,500 (1,550)	0.106 (2.7)	0.28	0.88 (22.3)	2.91 (73.9)	
	21BC6M	6MF	22,500 (1,550)	0.201 (5.1)	0.84	1.06 (27)	3.31 (84.1)	
	21BC9M	9MF	22,500 (1,550)	0.307 (7.8)	2.30	1.44 (36.5)	4.29 (109)	
	21BC12M	12MF	22,500 (1,550)	0.438 (11.1)	4.70	2.00 (50.8)	5.46 (138.7)	
	21BC16M	16MF	22,500 (1,550)	0.562 (14.3)	7.40	2.00 (50.8)	6.57 (166.9)	



» **Materials:** Body, sealing cone: 1.4404 (SST 316L) Seal: PEEK

Cone Check Valves

Especially for hydrogen applications, where best of class sealing ability is required, Maximator developed their cone check valve series design with a highly media compatible soft sealing system and improved spring guide. This series is available for Medium Pressure applications up to 22,500 psi (1,550 bar) with 4M to 16M connection.

Valve Pattern	Catalog Number	Connection Type	Pressure Rating psi (bar)	Orifice in. (mm)	Rated (Cv)	Dimensions in. (mm)		
							A (Hex.)	B
Cone Check Valves								
	21CC4M-H2	4MF	22,500 (1,550)	0.106 (2.7)	0.28	0.88 (22.3)	2.91 (73.9)	
	21CC6M-H2	6MF	22,500 (1,550)	0.201 (5.1)	0.84	1.06 (27)	3.31 (84.1)	
	21CC9M-H2	9MF	22,500 (1,550)	0.307 (7.8)	2.30	1.44 (36.5)	4.29 (109)	
	21CC12M-H2	12MF	22,500 (1,550)	0.438 (11.1)	4.70	2.00 (50.8)	5.35 (136)	
	21CC16M-H2	16MF	22,500 (1,550)	0.562 (14.3)	7.40	2.00 (50.8)	6.88 (175)	

All dimensions are for reference only and are subject to change.



Line Filters

» Pressures to 22,500 psi (1,550 bar)



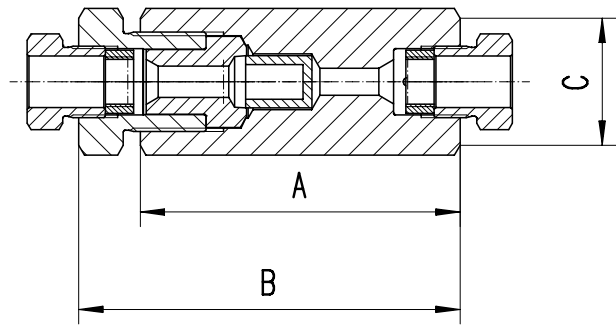
Cup-Type Line Filters

Maximator Cup-Type Line Filters are used when maximum filtration surface area and a single micron size element is preferred. This design increases the filter area as much as 6 times the area of the disc type filter, and will permit higher flow rates with a lower pressure drop, and longer intervals between element changes. Filter elements come standard in 5, 30, or 56 micron sizes and are easily replaced. Filters are rated for temperatures -423°F to 660°F (-252°C to 350°C). All line filters come with glands and collars.

» Materials:

Body, cover, cover gland: 1.4404 (SST 316L)

Element: 1.4404 (SST 316L)



Catalog Number	Pressure Rating psi (bar)	Orifice in. (mm)	Micron Size	Connection Type	Filter Element Area in. ² (mm) ²	Dimensions in. (mm)				
A									B	C (Hex.)
Cup-Type Line Filters										
21CF4M-5	22,500 (1,550)	0.106 (2.7)	5	4MF	0.82 (530)	2.38 (60.5)	2.87 (72.9)	0.88 (22.3)		
21CF4M-30			30							
21CF4M-56			56							
21CF6M-5	22,500 (1,550)	0.201 (5.1)	5	6MF	0.82 (530)	2.83 (71.8)	3.35 (85.1)	1.06 (27)		
21CF6M-30			30							
21CF6M-56			56							
21CF9M-5	22,500 (1,550)	0.307 (7.8)	5	9MF	1.55 (1,000)	3.63 (92.2)	4.33 (110)	1.44 (36.5)		
21CF9M-30			30							
21CF9M-56			56							
21CF12M-5	22,500 (1,550)	0.438 (11.1)	5	12MF	6.14 (3,960)	5.75 (146)	6.57 (166.9)	2.00 (50.8)		
21CF12M-30			30							
21CF12M-56			56							
21CF16M-5	22,500 (1,550)	0.562 (14.3)	5	16MF	6.14 (3,960)	5.75 (146)	6.57 (166.9)	2.00 (50.8)		
21CF16M-30			30							
21CF16M-56			56							

It is recommended that all fluids entering a high pressure system be thoroughly cleaned.

Maximator filters are designed to remove small amounts of process particles. Pressure differential should not exceed 1000 psi across the filter elements.

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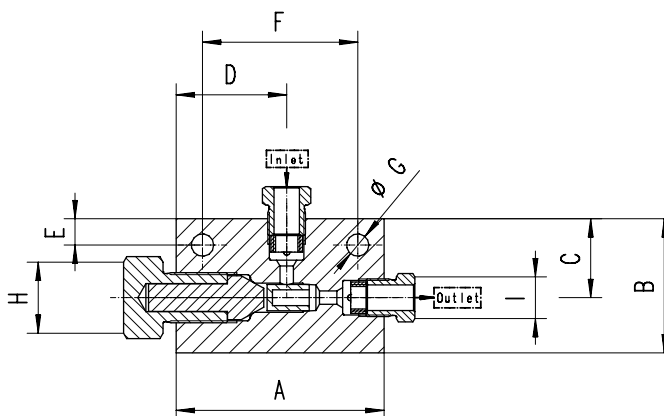
Angle Filters

Maximator Angle Filters are used to filter gases or liquids in high pressure systems. The filter elements can be easily changed in-situ. The special design allows the exchange of the filter element without the need to first disassemble the filter in front of the tubing. Filter elements are made of sintered material with pore sizes of 5 µm, 30 µm or 56 µm. Filters are rated for temperatures -423°F to 660°F (-252°C to 350°C). All angle filters come with glands and collars.

» Materials:

Body, cover, cover gland: 1.4404 (SST 316L)

Element: 1.4404 (SST 316L)



Catalog Number	Pressure Rating psi (bar)	Orifice in. (mm)	Connection Type	Micron Size	Filter Element Areas in. ² (mm ²)	Dimensions in. (mm)										Block thick- ness
Angle Filter																
21AF4M-5	22,500 (1,550)	0.106 (2.7)	4M	5	0.82 (530)	3.11 (79)	2.01 (51)	1.18 (30)	1.65 (42)	0.39 (10)	2.32 (59)	0.34 (8.5)	1.06 (27)	0.50 (12.7)	1.02 (26)	
21AF4M-30				30												
21AF4M-56				56												
21AF6M-5	22,500 (1,550)	0.201 (5.1)	6M	5	0.82 (530)	3.11 (79)	2.01 (51)	1.18 (30)	1.65 (42)	0.39 (10)	2.32 (59)	0.34 (8.5)	1.06 (27)	0.50 (12.7)	1.02 (26)	
21AF6M-30				30												
21AF6M-56				56												
21AF9M-5	22,500 (1,550)	0.307 (7.8)	9M	5	1.55 (1,000)	3.62 (92)	2.64 (67)	1.61 (41)	1.81 (46)	0.51 (13)	2.17 (55)	0.34 (8.5)	1.19 (30.2)	0.94 (23.8)	1.54 (39)	
21AF9M-30				30												
21AF9M-56				56												
21AF12M-5	22,500 (1,550)	0.438 (11.1)	12M	5	6.14 (3,960)	5.71 (145)	3.54 (90)	2.3 (57.2)	2.44 (62)	0.39 (10)	4.92 (125)	0.34 (8.5)	2.00 (50.8)	1.19 (30.2)	2.25 (57.15)	
21AF12M-30				30												
21AF12M-56				56												
21AF16M-5	22,500 (1,550)	0.562 (14.3)	16M	5	6.14 (3,960)	5.71 (145)	3.54 (90)	2.3 (57.2)	2.44 (62)	0.39 (10)	4.92 (125)	0.34 (8.5)	2.00 (50.8)	1.38 (34.9)	2.25 (57.15)	
21AF16M-30				30												
21AF16M-56				56												

It is recommended that all fluids entering a high pressure system be thoroughly cleaned.

Maximator filters are designed to remove small amounts of process particles. Pressure differential should not exceed 1000 psi across the filter elements.

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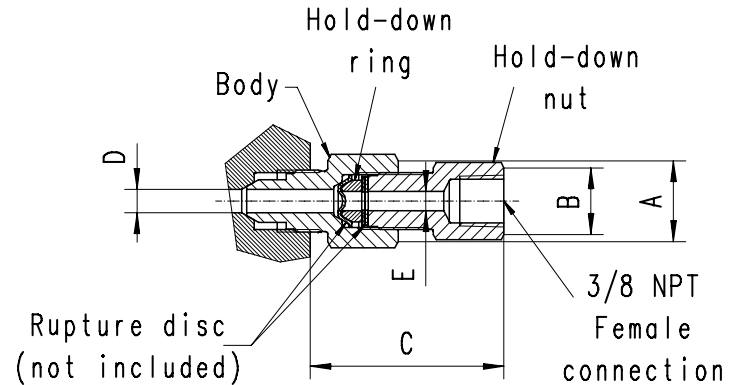
Safety Head Assembly

» Pressures to 22,500 psi (1,550 bar)



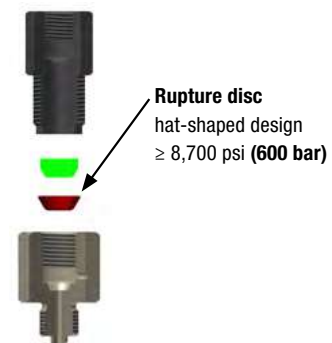
Safety head assemblies

Maximator safety head assemblies are used to provide over-pressure protection to high pressure systems. These safety head assemblies are to be used with the appropriate 1/4" angular rupture disc listed on the next page.



Safety Head Assembly Catalog Number without Disc	Fits Connection Type	Pressure Rating psi (bar)	Body Torque ft - lbs. (Nm)	Dimensions in. (mm)				
				A (Hex.)	B (Hex.)	C (LG.)	D (I.D.)	E (I.D.)
21SH4M	4MF	22,500 (1,550)	20 (30)	1.06 (27)	0.88 (22.3)	2.48 (63)	0.109 (2.8)	0.250 (6.3)
21SH6M	6MF	22,500 (1,550)	30 (40)	1.06 (27)	0.88 (22.3)	2.72 (69.1)	0.203 (5.1)	0.250 (6.3)
21SH9M	9MF	22,500 (1,550)	55 (75)	1.06 (27)	0.88 (22.3)	2.51 (63.7)	0.255 (6.5)	0.250 (6.3)
21SH12M	12MF	22,500 (1,550)	90 (120)	1.19 (30.2)	0.88 (22.3)	2.72 (69.1)	0.307 (7.8)	0.250 (6.3)
21SH16M	16MF	22,500 (1,550)	150 (200)	1.44 (36.6)	0.88 (22.3)	2.72 (69.1)	0.307 (7.8)	0.250 (6.3)

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1/4" Rupture discs

1/4" angular rupture discs are designed to be used with MAXIMATOR safety head assemblies. Minimum rupture disc pressure ratings should be at least 110% of system operating pressure. The standard material is 1.4404 (SST 316L). The pressure ranges indicated in the table below are at room temperature (22°C/72°F).

Other materials and pressure ranges are available upon request.



Catalog Number	Pressure range psi (bar)
RD-1000-H2	970 - 1,060 (66.9 - 73.1)
RD-1200-H2	1,164 - 1,272 (80.3 - 87.7)
RD-1500-H2	1,455 - 1,590 (99.7 - 109.7)
RD-1750-H2	1,697 - 1,855 (117 - 127.9)
RD-2000-H2	1,940 - 2,120 (133.8 - 146.2)
RD-2500-H2	2,425 - 2,650 (167.2 - 182.8)
RD-3000-H2	2,910 - 3,180 (200.7 - 219.3)
RD-3500-H2	3,395 - 3,710 (234.1 - 255.9)
RD-4000-H2	3,880 - 4,240 (267.6 - 292.4)
RD-4500-H2	4,365 - 4,770 (301 - 329)
RD-5000-H2	4,850 - 5,300 (334.5 - 365.5)

Catalog Number	Pressure range psi (bar)
RD-5500-H2	5,335 - 5,830 (367.9 - 402.1)
RD-6000-H2	5,820 - 6,360 (401.4 - 438.6)
RD-6500-H2	6,305 - 6,890 (434.8 - 475.2)
RD-7000-H2	6,790 - 7,420 (468.3 - 511.7)
RD-7500-H2	7,275 - 7,950 (501.7 - 548.3)
RD-8000-H2	7,760 - 8,480 (535.2 - 584.8)
RD-8500-H2	8,245 - 9,010 (568.6 - 621.4)
RD-9000-H2	8,730 - 9,540 (602.1 - 657.9)
RD-9500-H2	9,215 - 10,070 (635.5 - 694.5)
RD-10000-H2	9,700 - 10,600 (669 - 731)
RD-11000-H2	10,670 - 11,660 (735.9 - 804.1)

Catalog Number	Pressure range psi (bar)
RD-12000-H2	11,640 - 12,720 (802.8 - 877.2)
RD-13000-H2	12,610 - 13,780 (869.7 - 950.3)
RD-14000-H2	13,580 - 14,840 (936.6 - 1023.4)
RD-15000-H2	14,550 - 15,900 (1,003.4 - 1,096.6)
RD-16000-H2	15,520 - 16,960 (1,070.3 - 1,169.7)
RD-17000-H2	16,490 - 18,020 (1,137.2 - 1,242.8)
RD-18000-H2	17,460 - 19,080 (1,204.1 - 1,315.9)
RD-19000-H2	18,430 - 20,140 (1,271 - 1,389)
RD-20000-H2	19,400 - 21,200 (1,337.9 - 1,462.1)
RD-21000-H2	20,370 - 22,260 (1,404.8 - 1,535.2)
RD-22000-H2	21,340 - 23,320 (1,471.7 - 1,608.3)

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Medium Pressure Tubing

» Pressures to 22,500 psi (1,550 bar)



Medium Pressure Tubing

MAXPRO offers a line of cold drawn thick wall tubing, with flow areas to compliment the large orifice medium pressure valves and fittings. This tubing is made under strict manufacturing and quality control standards and inspections, with dimensional tolerances to match the requirements of the medium pressure coned and threaded connections.

The standard material is 1.4404 (SST 316L). Other materials may be provided on special request, depending on the specific material, diameters and lengths.

Tubing Tolerances

Normal Tubing Size in. (mm)	Tolerance O.D in. (mm)
1/4	0.248 / 0.243 (6.299 / 6.172)
3/8	0.370 / 0.365 (9.398 / 9.271)
9/16	0.557 / 0.552 (14.147 / 14.021)
3/4	0.745 / 0.740 (18.923 / 18.796)
1	0.995 / 0.990 (25.273 / 25.174)



Catalog Number	Tube Material	Fits Connection Type	Tube Size in. (mm)		Working Pressure psi (bar)				
			O.D.	I.D.	-325°F to 100°F (-198°C to 37°C)	200°F (93°C)	400°F (204°C)	600°F (315°C)	800°F (426°C)
21TU4M-316	1.4404 SST 316L	4MF	1/4	0.109 (2.77)	22,500 (1,550)	18,900 (1,300)	17,430 (1,200)	15,960 (1,100)	15,120 (1,040)
21TU6M-316		6MF	3/8	0.203 (5.17)	22,500 (1,550)	18,900 (1,300)	17,430 (1,200)	15,960 (1,100)	15,120 (1,040)
21TU9M-316		9MF	9/16	0.312 (7.93)	22,500 (1,550)	18,900 (1,300)	17,430 (1,200)	15,960 (1,100)	15,120 (1,040)
15TU9M-316		9MF	9/16	0.359 (9.12)	15,200 (1,050)	13,680 (940)	12,616 (870)	11,552 (790)	10,944 (750)
21TU12M-316		12M	3/4	0.438 (11.13)	22,500 (1,550)	18,900 (1,300)	17,430 (1,200)	15,960 (1,100)	15,120 (1,040)
15TU12M-316				0.516 (13.11)	15,200 (1,050)	13,680 (940)	12,616 (870)	11,552 (790)	10,944 (750)
21TU16M-316		16MF	1	0.562 (14.27)	22,500 (1,550)	18,900 (1,300)	17,430 (1,200)	15,960 (1,100)	15,120 (1,040)
15TU16M-316				0.688 (17.48)	15,200 (1,050)	13,680 (940)	12,616 (870)	11,552 (790)	10,944 (750)

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Coned and threaded nipples

MAXPRO offers a line of coned and threaded medium pressure tube nipples in a variety of lengths for all standard tube sizes. The coned and threaded medium pressure tube nipples are available in 1.4404 (SST 316L).

They are also available in the 15,200 psi (1,050 bar) or 22,500 psi (1,550 bar) versions for the 9/16", 3/4" and 1" OD tube sizes. See chart below for ordering information.

Special length coned and threaded nipples are available upon request. Consult MAXPRO for availability and price



Catalog Numbers are 1.4404 (SST 316L) material							Fits Con- nection Type	Tube Size in. (mm)		Working Pressure at 100°F psi (bar)
2.75" (69.85) Length	3" (76.2) Length	4" (101.6) Length	6" (152.4) Length	8" (203.2) Length	10" (254) Length	12" (304.8) Length		O.D.	I.D.	
21N4M-2.75-316	21N4M-3-316	21N4M-4-316	21N4M-6-316	21N4M-8-316	21N4M-10-316	21N4M-12-316	4MF	1/4	0.109 (2.77)	22,500 (1,550)
	21N6M-3-316	21N6M-4-316	21N6M-6-316	21N6M-8-316	21N6M-10-316	21N6M-12-316	6MF	3/8	0.203 (5.17)	22,500 (1,550)
		21N9M-4-316	21N9M-6-316	21N9M-8-316	21N9M-10-316	21N9M-12-316	9MF	9/16	0.312 (7.93)	22,500 (1,550)
		15N9M-4-316	15N9M-6-316	15N9M-8-316	15N9M-10-316	15N9M-12-316	9MF	9/16	0.359 (9.12)	15,200 (1,050)
			21N12M-6-316	21N12M-8-316	21N12M-10-316	21N12M-12-316	12MF	3/4	0.438 (11.13)	22,500 (1,550)
			15N12M-6-316	15N12M-8-316	15N12M-10-316	15N12M-12-316	12MF	3/4	0.516 (13.11)	15,200 (1,050)
			21N16M-6-316	21N16M-8-316	21N16M-10-316	21N16M-12-316	16MF	1	0.562 (14.27)	22,500 (1,550)
			15N16M-6-316	15N16M-8-316	15N16M-10-316	15N16M-12-316	16MF	1	0.688 (17.48)	15,200 (1,050)

Standard nipples are not supplied with glands and collars.

For further available options and more detailed information please refer to our VFT catalogue.

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The Coning and Threading Tool Kits:

Maxpro offers a complete line of coning and threading tool kits for manually coning and threading 1/4" O.D. to 9/16" O.D. tubing. There are three different tool kit versions, "Medium" pressure, "High" pressure, and the "Complete Kit" that contains both the Medium and the High Pressure tools. All items are conveniently packaged in a sturdy hand carry tool case with removable top tray. The unique coning and threading tool design allows for interchangeability between components, eliminating multiple tool inventories.

The Coning and Threading Tool Kit contains:

- Coning Tool Assembly
- 1/4, 3/8, 9/16 Threading Dies
- 1/4, 3/8, 9/16 Collets
- Allen Wrenches
- Collet Wrench
- Complete Deburring Tool
- 1/4, 3/8, 9/16 Cutting Blades
- Suflo Cutting Oil
- Threading Tool Assembly
- Laminated Instruction Manual
- 1/4, 3/8, 9/16 Guide Bushing



Tubing Size	Tubing Pressure (psi @ R.T.)	Connection Type	Coning & Threading Tool Kits Catalog Number	Coning & Threading Tool Kit Complete Catalog Number
1/4 x .109	22,500	4MM	CTK-M (medium Pressure Kit)	CTK-C (Both Medium & High Pressure Kits)
3/8 X .203	22,500	6MM		
9/16 X .312	22,500	9MM		
9/16 X .359	15,200	9MM		
1/4 X .083	65,000/101,000	4HM/4UM	CTK-H (High Pressure Kit)	
3/8 X .125	65,000/101,000	4HM/4UM		
9/16 X .188	65,000	9HM		
5/16 X .062	152,000	5UM	CTK-5U (5/16 Ultra High Pressure Kit)	

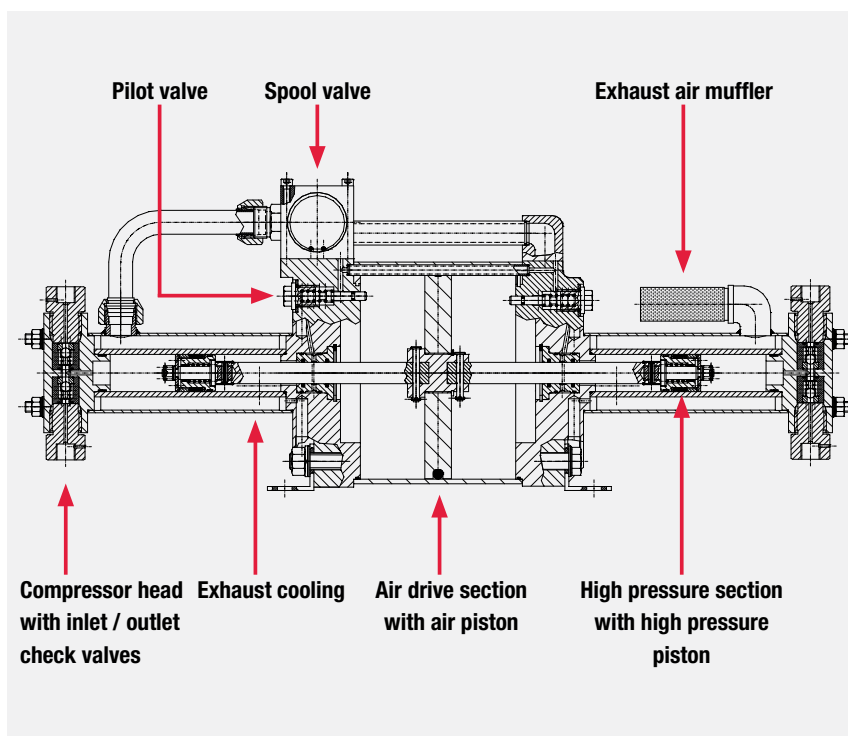
High pressure gas boosters – the Maximator concept

The Maximator high pressure gas boosters are suitable for the oil free compression of gases and air. Industrial gases like argon, helium, nitrogen and hydrogen can be compressed to operating pressures of 2,400 bar (36,000 psi) and oxygen up to 350 bar (5,075 psi), depending on the application. Air driven gas boosters are an efficient alternative instead of electrically driven products and can be used in explosion-proof areas (according to 2014/34/EU)

The Gas boosters in detail

Features at a glance

- » Pressure regulation via manual pressure regulator or pneumatically actuated valve
- » Operation with compressed air allows use in explosion-proof areas
- » Gas booster automatically stops operating upon reaching pre-selected final pressure
- » Gas booster restarts automatically to compensate leaks
- » No power consumption during long pressure holding periods
- » No heat generation during pressure holding period
- » Easy installation and trouble-free handling of gas boosters
- » Low maintenance thanks to reliable, easy-to-install devices
- » Effective cooling of the high pressure cylinders through integrated exhaust air cooling



Function and operation

The Maximator gas boosters' operating principle is similar to a pressure intensifier. A large air piston is charged with low pressure (air piston) and works on a small area with high pressure (high pressure piston).

The continuous operation is achieved by a pilot operated 4/2 way valve (spool valve). The spool valve applies the drive air alternately to the upper and bottom surface of the air piston.

The spool is piloted through two 2/2 way valves (pilot valves) which are mechanically actuated through the air piston in its end positions. The pilot valves charge and discharge the spool chamber.

The high pressure piston supported by the check valves (inlet check valve and outlet check valve) delivers the flow.

The outlet pressure is directly related to the set air drive pressure. According to the formulas indicated in the technical features table for the gas boosters, the static end pressure can be calculated.

At this pressure a force balance between drive section and gas section is achieved. The booster stalls when this end pressure is reached, and does not consume any further air.

A pressure drop at the high pressure side or a pressure increase at the drive side starts the booster automatically until the force balance is achieved again.

Additionally the Maximator boosters can be switched on and off automatically through Maximator air pilot switches, contact gauges or external control devices.

Notice:

Purging plans for compression of combustible gases using Maximator gas boosters are explained in detail in the operators manual available on our website www.maximator.de.

The series and its functions

Maximator gas boosters offer the right solution for every application. As a result of the wide range of models it is possible to select the optimum booster for each application. Single stage or two stage boosters, single acting, double acting, quadruple acting or a combination of these models can be used to achieve different operating pressures and flow capacities. They are suitable for different or stepped flow rates as well as for different maximum allowable operating pressures. In addition to gas boosters with a Ø 160 mm drive (DLE series), Maximator also offers various models with a Ø 200 mm drive (8DLE series) for high volume flows.

160 mm - Drive (Standard DLE-Series):

One Air Drive Section		Two Air Drive Sections	
Pattern	Design Pressure ratio max. working pressure Type	Pattern	Design Pressure ratio max. working pressure Type
	Single stage - single acting from 1:2 up to 1:75 max. 750 bar DLE 2-1, DLE 5-1, DLE 15-1, DLE 30-1, DLE 75-1		Single stage - single acting from 1:4 up to 1:150 max. 1,500 bar DLE 2-1-2, DLE 5-1-2, DLE 15-1-2, DLE 30-1-2, DLE 75-1-2
	Single stage - double acting from 1:2 up to 1:75 max. 1,500 bar DLE 2, DLE 5, DLE 15, DLE 30, DLE 75		Single stage - double acting from 1:4 up to 1:150 max. 1,500 bar DLE 2-2, DLE 5-2, DLE 15-2, DLE 30-2, DLE 75-2
	Two stage from 1:2 / 1:5 up to 1:30 / 1:75 max. 1,500 bar DLE 2-5, DLE 5-15, DLE 5-30, DLE 15-30, DLE 15-75, DLE 30-75		Two stage - double acting from 1:4/1:10 up to 1:60/1:150 max. 2,100 bar DLE 2-5-2, DLE 5-15-2, DLE 5-30-2, DLE 15-30-2, DLE 15-75-2, DLE 30-75-2
Three Air Drive Sections			
	Two stage - double acting 1:30 / 1:75 max. 2,400 bar DLE 30-75-3		

200 mm - Drive (8DLE-Series for high volume flow applications):

One Air Drive Section		Two Air Drive Sections	
	Single stage - quadruple acting 1:1,65 max. 300 bar 8DLE 1,65		Single stage - quadruple acting 1:3 max. 40 bar 8DLE 3

For further available options and more detailed information please refer to our Gas Booster catalogue.

AIR DRIVEN FROM 30 PSI TO 36,000 PSI

Pa - Drive air pressure (psi)
 PS = Gas supply pressure (psi)
 Po = Gas outlet pressure (psi)
 F = Gas flow (SCFM)

CATALOG NUMBER	Pa - 90 psi		
	Ps	Po	F
DLE2-1	60	90	6.68
	60	120	5.29
	90	120	7.44
	90	150	4.35
DLE5-1	80	200	3.94
	80	350	2.17
	120	200	5.58
	120	350	3.60
DLE15-1	250	500	4.62
	250	1,000	2.69
	500	500	8.82
	500	1,000	5.26
DLE30-1	500	1,500	3.74
	500	2,500	0.92
	1,000	1,500	7.41
	1,000	2,500	1.77
DLE75-1	750	3,000	2.51
	750	5,000	1.55
	1,500	3,000	5.00
	1,500	5,000	3.08
DLE2	60	120	12.10
	60	200	5.00
	90	150	17.00
	90	250	3.85
DLE5	80	250	7.22
	80	450	2.60
	120	250	11.00
	120	500	3.23
DLE15	250	500	8.50
	250	1,250	4.14
	500	750	16.70
	500	1,500	8.00
DLE30	500	1,000	8.28
	500	3,000	1.08
	1,250	1,500	21.30
	1,250	3,000	11.40
DLE75	750	1,000	5.98
	750	5,000	3.13
	1,500	2,000	11.10
	1,500	6,000	5.68
DLE2-2	80	200	15.5
	80	350	7.3
	120	200	23.9
	120	350	14.1

CATALOG NUMBER	Pa - 90 psi		
	Ps	Po	F
DLE5-2	125	500	9.3
	125	750	5.7
	250	1,000	6.3
	500	1,250	12.2
DLE15-2	500	1,000	13.80
	500	3,000	1.88
	1,250	1,500	35.50
	1,250	3,000	19.10
DLE30-2	750	1,000	10.90
	750	5,000	3.74
	1,500	2,000	21.30
	1,500	6,000	5.91
DLE75-2	1,000	2,000	5.73
	1,000	10,000	2.95
	1,500	2,000	8.68
	1,500	12,500	2.61
DLE2-5	35	100	5.10
	35	400	3.03
	70	100	8.71
	70	500	4.85
DLE5-15	60	100	3.38
	60	1,000	2.38
	120	250	6.10
	120	1,500	2.07
DLE5-30	30	100	1.98
	30	2,250	0.96
	45	100	2.71
	45	2,500	1.05
DLE15-30	150	250	2.71
	150	2,250	1.51
	220	500	3.86
	220	2,250	1.90
DLE15-75	120	250	2.72
	150	5,000	1.83
	220	500	3.88
	220	6,000	2.16
DLE730-75	250	500	2.18
	250	6,000	0.95
	1,000	1,500	8.40
	1,000	7,500	4.55
DLE2-5-2	60	500	4.2
	60	1,000	0.6
	120	750	6.8
	120	1,000	4.0

CATALOG NUMBER	Pa - 90 psi		
	Ps	Po	F
DLE5-15-2	150	1,000	4.4
	150	2,250	2.9
	250	3000	2.7
	500	4,000	2.6
DLE5-30-2	60	200	2.04
	60	4,000	1.27
	80	200	2.61
	80	5,000	0.94
DLE15-30-2	250	500	2.43
	250	4,000	1.58
	1,000	1,500	9.35
	1,000	5,000	7.21
DLE15-75-2	250	500	2.43
	250	10,000	1.58
	400	750	3.81
	400	12,500	1.78
DLE30-75-2	500	1,000	2.36
	500	10,000	1.55
	1,500	2,000	6.98
	1,500	15,000	2.58
DLE30-75-2-25	1,750	10,000	7.1
	1,750	15,000	3.9
	3,000	15,000	9.9
	3,000	20,000	2.5
DLE30-75-2-30 Pa-145psi	3,500	20,000	14.1
	3,500	30,000	3.5
	5,000	20,000	21.9
	5,000	30,000	14.1
DLE30-75-3-36 Pa-120psi	2,320	25,000	4.4
	2,320	30,000	2.1
	3,480	25,000	7.9
	3,480	30,000	5.3
8 DLE 3	100	250	49.2
	100	350	22.6
	200	350	92.2
	200	450	42.2
8 DLE 6	100	250	29.6
	100	450	22.3
	200	450	50.5
	200	550	41.8

Note:

- Drive air pressure operating range is 15-145 psi. Flows above are with 90 psi air drive, unless noted.
- Drive air flow requirements are up to 70 SCFM per air head, and up to 280 SCFM (total) for 8DLE models. Reduced air drive flow will produce lower gas flow.
- Drive air should be filtered to between 5µ and 40µ and have a dew point between 0° F and 50° F.
- Consult Maxpro for performance values on specific application parameters.



Overview of technical features and connections



STYLE	CATALOG NUMBER	PRESSURE RATIO	COMPRESSION RATIO	SUPPLY PRESSURE (PSI)			
				MIN.*	MIN.**	MAX.	
SINGLE ACTING SINGLE STAGE	DLE2-1	2:1	10:1	0	30	290	
	DLE5-1	5:1	15:1	30	50	725	
	DLE15-1	15:1	20:1	100	110	2,175	
	DLE30-1	30:1	20:1	220	220	4,350	
	DLE75-1	75:1	20:1	500	550	10,875	
DOUBLE ACTING SINGLE STAGE	DLE2	2:1	10:1	0	290	580	
	DLE5	5:1	15:1	30	725	1,450	
	DLE15	15:1	20:1	100	2,175	4,350	
	DLE30	30:1	20:1	220	4,350	8,700	
	DLE75	75:1	20:1	500	10,875	21,750	
DOUBLE ACTING SINGLE STAGE DOUBLE AIR HEAD	DLE2-2	4:1	10:1	0	60	580	
	DLE5-2	10:1	15:1	30	100	1,450	
	DLE15-2	30:1	20:1	145	220	4,350	
	DLE30-2	60:1	20:1	290	440	8,700	
	DLE75-2	150:1	20:1	650	1,100	21,750	
HIGH FLOW DOUBLE ACTING SINGLE STAGE DOUBLE AIR HEAD	8DLE3	3.3:1	15:1	0	100	580	
	8DLE6	6.6:1	15:1	0	50	580	
DOUBLE ACTING TWO STAGE	DLE2-5	5:1	25:1	0	116	0.8xPa	
	DLE5-15	15:1	45:1	30	232	1.6xPa	
	DLE5-30	30:1	90:1	30	75	0.5xPa	
	DLE15-30	30:1	40:1	100	1,088	7.5xPa	
	DLE15-75	75:1	100:1	100	363	2.5xPa	
	DLE30-75	75:1	50:1	220	1,740	12.0xPa	
DOUBLE ACTING TWO STAGE DOUBLE AIR HEAD	DLE2-5-2	10:1	25:1	0	232	1.6xPa	
	DLE5-15-2	30:1	45:1	30	100	3.2xPa	
	DLE5-30-2	60:1	90:1	30	100	1.0xPa	
	DLE15-30-2	60:1	40:1	100	220	15xPa	
	DLE15-75-2	150:1	100:1	100	220	5.0xPa	
	DLE30-75-2	150:1	50:1	220	440	24.0xPa	
	DLE30-75-2-25	150:1	50:1	220	1,300	40.0xPa	
	DLE30-75-2-30	150:1	50:1	220	3,300	40.0xPa	
DOUBLE ACTING TWO STAGE TRIPLE AIR HEAD	DLE30-75-3-36	225:1	50:1	435	1,350	30.0xpa	

- *=Minimum required for basic operation
- **= Minimum required to achieve maximum outlet pressure with 145 psi drive air
- Pa=Drive air pressure, 145 psi maximum, 15 psi minimum Ps=Gas supply (suction) pressure
- The 9/16"-18 is a 1/4" O.D. tubing, high pressure coned and threaded connection
- Stall pressure must not be allowed to exceed outlet pressure rating.

	OUTLET PRESSURE (PSI) MAX.	STALL PRESSURE	CONNECTIONS		MAX. FREQ. STROKES/ MIN.	DISPLPER DOUBLE STROKE (IN.3)	MAX. TEMP. F	WEIGHT (LBS.)
			INLET	OUTLET				
	290	2Pa	1	3/4	100	56.2	140	34
	725	5Pa	3/8	3/8	110	22.7	140	
	2,175	15Pa	1/4	1/4	130	7.4	210	29
	4,350	30Pa	1/4	1/4	130	3.6	210	
	10,875	75Pa	9/16"-18	9/16"-18	130	1.5	210	
	580	2Pa+Ps	1	3/4	90	112.5	140	45
	1,450	5Pa+Ps	3/8	3/8	110	45.5	140	
	4,350	15Pa+Ps	1/4	1/4	120	14.8	210	40
	8,700	30Pa+Ps	1/4	1<4	120	7.3	210	
	21,750	75Pa+Ps	9/16"-18	9/16"-18	120	3.0	210	
	580	4Pa+Ps	1	3/4	90	112.5	140	55
	1,450	10Pa+Ps	3/8	3/8	100	45.5	140	
	4,350	30Pa+Ps	1/4	1/4	100	14.8	210	51
	8,700	60Pa+Ps	1/4	1/4	100	7.3	210	
	21,750	150Pa+Ps	9/16"-18	9/16"-18	100	3.0	210	
	580	3.3Pa+Ps	1/2	1/2	80	250	210	121
	580	6.6Pa+Ps	1/2	1/2	80	125	210	
	1,015	5Pa+2.5Ps	1	3/8	100	56.2	140	45
	2,871	15Pa+3Ps	3/8	1/4	110	22.7	210	42
	4,785	30Pa+6Ps	3/8	1/4	110	22.7	210	
	6,525	30Pa+2Ps	1/4	1/4	120	7.4	210	
	12,687	75Pa+5Ps	1/4	9/16"-18	20	7.4	210	
	15,225	75Pa+2.5Ps	1/4	9/16"-18	120	3.6	210	
	1,450	10Pa+2.5Ps	1	3/8	90	56.2	140	55
	4,350	30Pa+3Ps	3/8	1/4	0	22.7	210	53
	8,700	60Pa+6Ps	3/8	1/4	100	22.7	210	
	8,700	60Pa+2Ps	1/4	1/4	100	7.4	210	
	21,750	150Pa+5Ps	1/4	9/16"-18	100	7.4	210	
	21,750	150Pa+2.5Ps	1/4	9/16"-18	100	3.6	210	
	25,000	150Pa+2.5Ps	9/16"-18	9/16"-18	110	3.6	210	56
	30,000	150Pa+2.5Ps	9/16"-18	9/16"-18	110	3.6	210	
	36,000	225Pa+2.5Ps	9/16"-18	9/16"-18	110	3.6	210	56

- Compression ratio is the minimum required ratio of outlet pressure/supply pressure.
- Compression ratios and the control of heat generated are especially important on pure oxygen systems. Consult Maxprotor safety considerations.
- Adapter (15A4H4P) is available to convert the 9/16"-8 connection to 1/4"FNPT. Order separately, Maximum working pressure: 15,000 psi
- Contact Maxpro for arrangement and installation drawings.

About Us

MAXPRO® Technologies Inc. was founded in December of 1995 to serve as the exclusive North American distributor for quality Maximator® products. High-pressure air driven liquid pumps, gas boosters and air amplifiers along with high-pressure valves, fittings, and tubing make up our core product line. Our mission is to provide competitively priced, high-quality products backed by excellent customer service.

Our employees are our greatest asset. With more than 250 years of collective experience in high pressure, our employees are passionate about finding the best solution for your high-pressure requirements.

We stock a full range of standard high-pressure air driven liquid pumps, air amplifiers, gas boosters, and valves, fittings, and tubing for quick shipment. If we do not have a standard product or system to meet your requirements, our talented engineers will gladly design a custom solution. We have extensive experience taking your ideas and making them reality utilizing quality power products from Maximator® GmbH.

To better serve our customers, we recently completed an extensive addition to our Fairview, PA location. Our MAXPRO® South locations in Humble, TX, and Lafayette, LA stand ready to serve customers in Texas and Louisiana.

Please contact us today to discuss your high-pressure requirements.



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