#04

INDUSTRIAL VALVES

Ball Valves

LIQUIfit®

Needle and Butterfly Valves

Axial Valves


legris

How to choose your ball valves?

Which kind of valve do you need ?

- **Ball Valves**

- **Needle Valves**

- **Butterfly Valves**

Represents an interesting economical alternative compared with a ball valve

- **Axial Valves**

What are the conditions of use ?

- Pressure
- Temperature inside the system
- Sealing requirements
- Flow requirements
- 2 ways or 3 ways
- Normally closed / Normally open ?

What type of fluid is being conveyed ?

- Compatibility of materials with the fluid : body & seals

Which technology is required to connect your ball valves ?

- Compression
- Threaded
- Push-in connection

Have you considered the additional product requirements ?

- Compression fittings
- Tubing
- Solenoid valves

What is your application environment ?

- Internal or external environment
- Risk of shocks
- Air quality
- Regulations
- Corrosion risk
- Frequency of operation

What other functions are required ?

- Lockable
- Vented
- Frequency of operation
- Electric or pneumatic

Part Number Identification

0402 04 10

Valve type	O.D. tube	Thread
0400	**04** = 4 mm	**10** = 1/8”
0401	**05** = 5 mm	**13** = 1/4”
0402	...	...
...	**40** = 40 mm	**48** = 2”

Product Specifications Overview

	Materials	Fluids	Maximum Pressure (bar)	Temperature		Page
				Min.	Max.	
Industrial Valves						
Universal and Customised Series Ball Valves 	Nickel-plated forged brass	Compressed air Other fluids (see compatibility chart)	40	-40°C	+80°C +100°C: please contact us	**444**
Universal Series, Vented 	Nickel-plated forged brass	Compressed air Other fluids (see compatibility chart)	40	-20°C up to -40°C with no handle operation	+80°C	**447**
Universal Series, Lockable 	Nickel-plated forged brass, galvanised steel and epoxy locking system	Compressed air Other fluids (see compatibility chart)	40	-40°C	+80°C	**448**
Universal Light Series 	Forged brass or nickel-plated forged brass	Compressed air Other fluids (see compatibility chart)	20	-20°C	+80°C	**449**
DVGW Series Ball Valves 	Nickel-plated brass	Compressed air Other fluids (see compatibility chart)	40	-40°C	+170°C	**451**
Standard Series Ball Valves 	Nickel or chromium plated brass	Compressed air Other fluids (see compatibility chart)	30	-20°C	+130°C	**452**
Stainless Steel Series Ball Valves 	Stainless steel 316L	All fluids	35	-20°C	+150°C	**454**
High Pressure Ball Valves 	Zinc-plated brass	Compressed air, lubricants, gases	300	-15°C	+80°C	**456**
Mini Series Ball Valves 	Technical polymer/ Nickel-plated brass	Compressed air	10	-20°C	+80°C	**457**
LIQUIfit® **Ball Valves** 	Polypropylene	Beverages, water, industrial water, CO^2, inert gases	10	-15°C	+100°C	**459**
Brass Needle Ball Valves 	Shot-blasted forged brass nickel-plated	Compressed air, water, industrial fluids Other fluids: please contact us	120	-20°C	+100°C	**461**
Stainless Steel Needle Valves 	Stainless steel 316L	All fluids	400	-20°C	+180°C	**460**
Butterfly Valves 	Shot-blasted forged brass nickel-plated	Compressed air, abrasive fluids	16	-20°C	+80°C	**462**
Axial Valves 	Nickel-plated brass	Compressed air, water, industrial fluids Other fluids: please contact us	10	-20°C	+135°C	**463**

Compatibility Table

The chart below shows the compatibility between valves and fluids along with their pressure and temperature characteristics.

Certain models have a maximum working pressure which differs from that given in this table. In this case, the pressure is shown in the heading for the model number in question.

N.B.: Above 32 mm or 1¼" diameters, divide the maximum pressure by 2.

If the fluid you are using is not shown in this chart, please contact us.

Chemical Description	Maximum Pressure (bar)	Temperature °C		Universal and Light Series	Standard Series	DVGW series
		Min.	Max.			
"Aromatic" hydrocarbons	20	-20	+60			
Acetone and other ketones	20	-20	+60			
Acetophenone	20	-20	+60			
Acetylene - Acetone	20	-20	+60			
Acetylene (gas)	20	-20	+60	●	●	●
Alcohol (100%)	20	-20	Boiling			
Aluminium (liquid suspension, thick)	40	-20	+90	●	●	●
Amyl alcohol	20	-20	Boiling			
Animal fats, greases	20	+5	+200		●	●
Antifreeze or glycol (diluted)	40	-20	+40	●	●	●
Argon (gas) Ar	20	-20	+60	●	●	●
Barium - Hydroxide	20	-20	+40			
Benzaldehyde	20	-20	+60			
Benzene	20	-20	+60			
Benzyl alcohol	20	-20	Boiling			
Borax (pastes or solutions)	20	-20	+60			
Brake fluids (automobile)	20	-20	+90			
Bromochlorotrifluorethane	20	-20	+60		●	●
Butadiene (hydrocarbon)	20	-20	+60			
Butane	20	-20	+60	●	●	●
Butanol	20	-20	Boiling			
Butyl alcohol	20	-20	Boiling			
Butylene (hydrocarbon)	20	-20	+60			
Carbon dioxide gas CO_2	40	-20	+60	●	●	
Castor oil	40	-20	+90	●	●	
Compressed air	20	-25	+180	●	●	●
Creosotes	20	-20	+60			
Cresols	20	-20	+60			
Crude oil	20	-20	+40			
Cutting oil	40	-20	+90	●	●	
Decalin (hydrocarbon, solvent)	20	-20	+60			
Detergents (solutions)	20	-20	+100			
Diacetone alcohol	20	-20	Boiling			
Diesel oils	40	-20	+90	●	●	
Di-Esters	20	-20	+90			
Di-Isobutylene	20	-20	+60			
Di-Pentane	20	-20	+60			

The above recommendations are given in good faith. However, since each application is different, it is advisable to undertake tests in actual working conditions.

Compatibility Table

Chemical Description	Max. Pressure (bar)	Temperature °C		Universal and Light Series	Standard Series	DVGW Series
		Min.	Max.			
Di-Pentene (solvents, varnish)	20	-20	+60			
Di-Phenyl-Oxide (thin detergents)	20	-20	+60			
Distilled water	40		+90	●	●	●
Edible fats	20	+5	+200		●	
Edible oils	20	+5	+200		●	
Erytrene (see Butadiene)	20	-20	+60			
Ethane (gas) CH_2CH_3	20	-20	+60	●	●	
Ethane (hydrocarbon gas)	20	-20	+60			
Ethyl alcohol	20	-20	+60			
Ethylene glycol (antifreeze) - see Glycols	20	-20	+120			
Fatty alcohols	20	-20	Boiling			
Fuel oils	40	-20	+40	●	●	●
Fuels-Diesels	40	-20	+40	●	●	
Gaseous oxygen (ambient air)	20	-20	+40			
Glycerine	20	-20	+40	●	●	
Glycol (for antifreeze, lubricants)	40	-20	+40	●	●	
Graphite in suspension in water, oils and greases	40	-20	+90	●	●	
Greases (from petroleum)	40	-20	+90	●	●	
Helium (gas)	20	-20	+60			
Heptanal	20	-20	+50	●	●	
Hexane (solvent)	20	-20	+60			
Hydraulic oils (petroleum-based)	40	-20	+90	●	●	
Hydrogen (gas)	20	-20	+60			
Inks	20	-20	+60			
Insecticides	20	0	+40	●	●	●
Iso-Butane (aliphatic hydrocarbon)	20	-20	+60			
Iso-Octane	20	-20	+60			
Isopropyl alcohol	20	-20	Boiling			
Krypton (gas) Kr	20	-20	+60	●	●	●
Light water	40		+80	●	●	●
Lighting gas	20	-20	+40			●
Methane (gas) CH_4	20	-20	+60	●	●	●
Methanol	20	-20	Boiling			
Methyl alcohol	20	-20	Boiling			
Methylated spirit	40	-20	+40	●	●	●
Mineral oils	40	-20	+90	●	●	●
Natural gas	20	-20	+40			●
Natural waxes (vegetable, beeswax, carnauba, Chinese, lignite)	40	-20	+90			
Neatsfoot oil	40	-20	+90	●	●	●
Neon (Gas) Ne	20	-20	+60	●	●	●
Nitrogen (gas) N^2	40	-20	+90	●	●	●
Oil (petroleum-based) and water emulsions	40	-20	+90	●	●	●

The above recommendations are given in good faith. However, since each application is different, it is advisable to undertake tests in actual working conditions.

Compatibility Table

Chemical Description	Max. Pressure (bar)	Temperature °C		Universal and Light Series	Standard Series	DVGW Series
		Min.	Max.			
Oils "synthetic"	20	-20	+100			
Ordinary petrol	20	-20	+40	●	●	
Oxygenated water	40	-20	+30			
Paints and relevant solvents	20	-20	+60		●	●
Paraffin oil	40	-20	+90	●	●	●
Paraffins	20	-20	+60	●	●	●
Pentane (liquid hydrocarbon)	20	-20	+60	●	●	●
Pentanols 1 and 2	20	-20	Boiling			
Petrol "super"	20	-20	+40			
Petroleum mineral oils	20	-20	+160			
Phenol (aqueous or alcoholic)	20	-20	+60		●	●
Propane	20	-20	+60	●	●	●
Propanols 1 and 2	20	-20	Boiling			
Propanone 2	20	-20	+60			
Propene or Propylene	20	-20	+60			
Propyl alcohol	20	-20	Boiling			
Propylene or Propene	20	-20	+60			
Rapeseed oil	40	-20	+90	●	●	
Saponifying liquids	20	-20	+30	●	●	●
Seawater	40		+80	●	●	●
Seawater (high temperature)	20		+150			●
Soaps	20	-20	+100			
Soaps (liquid or paste)	40	-20	+40	●	●	●
Sodium carbonate (with water)	20	0	+40	●	●	●
Starch (gels or pastes)	40	+10	+40	●	●	●
Steam	20	-20	+150			
Toluene (terpenic hydrocarbon)	20	-20	+60		●	●
Trichlorethylene	20	-20	+65			
Turpentine	20	-20	+50	●	●	●
Varnish and paints	20	-20	+60		●	●
Vaseline	40	-20	+60	●	●	●
Vaseline oil	40	-20	+90	●	●	●
Water (carbonated)	40		+90	●	●	●
Water (high temperature)	20		+150			●
Xenon (gas) Xe	20	-20	+60	●	●	●
Xylene	20	-20	+60			

The above recommendations are given in good faith. However, since each application is different, it is advisable to undertake tests in actual working conditions.

Universal Series

The seal wear compensating technology offers reliable and durable sealing, whether under pressure or vacuum.

Technical Characteristics

- **Compatible Fluids:** Compressed air
  Other fluids: see compatibility chart at the end of this chapter
- **Working Pressure:** Vacuum up to 40 bar, depending on the model
- **Working Temperature:** -20°C to + 80°C
  up to -40°C with no handle operation

Reliable performance is dependent upon the type of fluid conveyed, component materials and tubing being used.

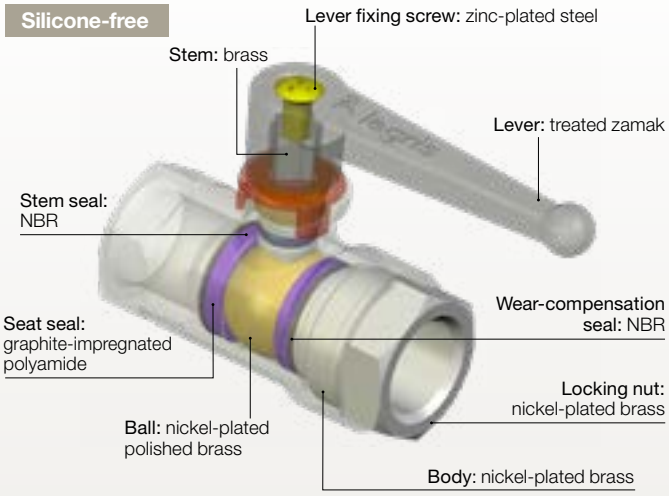
Guaranteed for use with a vacuum of 755 mm Hg (99 % vacuum).

Advantages

- Automatic seal wear compensation
- Vacuum resistance
- Ease of operation
- Short, repositionable and exchangeable handles

Component Materials

Silicone-free



Regulations

- **PED**
- **REACH**
- **RoHS**

Installation Options

Lockable Valves

Our lockable ball valves have been developed in order to prevent potentially dangerous consequences caused by unintended operation. Lockable in different positions, this range meets international safety requirements, such as ISO 4414.

The valves are lockable:

- at one point: models 0432 and 0439, open or closed position
- at three points: models 0436, 0437 and 0438, closed position only

Vented Valves

To stop fluid circulation and vent the circuit, 2 venting systems are provided:

- with threaded exhaust, to allow discharge of downstream media
- with pin-hole vent, for applications with no special discharge requirement

Fluid flow direction is indicated by an arrow on the valve body.

Mountable Valves

On steel plate:

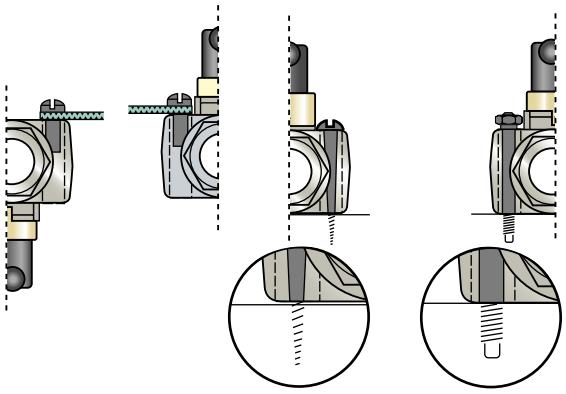
- bulkhead fixing
- complete valve below bulkhead

On frame:

- assemble with bolts

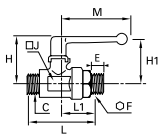
On wooden panel:

- assemble with woodscrews



0400 2/2 In-Line Ball Valve, Male BSPP Thread

Nickel-plated brass, NBR

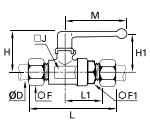


DN	C		E	F	H	H1	J	L	L1	M	Kg
4	G1/8	**0400 04 10**	7	14	35	29	14	45	25	48	0.094
7	G1/4	**0400 07 13**	9	19	38	31	19	60	36	48	0.166
10	G3/8	**0400 10 17**	11	24	45	43	24	70	43	69	0.252
13	G1/2	**0400 13 21**	12	27	47	44	27	78	45	69	0.324
18	G3/4	**0400 18 27**	12	38	63	54	39	90	50	108	0.714

Maximum working pressure: 40 bar

0411 2/2 In-Line Ball Valve with Connections for Use with Steel Tubing

Nickel-plated brass, NBR

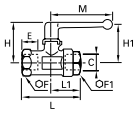


DN	ØD		F	F1	H	H1	J	L	L1	M	Kg
4	6	**0411 04 06**	14	19	38	31	19	76	30	48	0.173
6	8	**0411 06 08**	17	19	38	31	19	77	30	48	0.195
7	10	**0411 07 10**	19	19	38	31	19	78	31	48	0.210
10	12	**0411 10 12**	22	24	45	43	24	85	36	69	0.310

Maximum working pressure: 40 bar

0402 2/2 In-Line Ball Valve, Female BSPP Thread

Nickel-plated brass, NBR

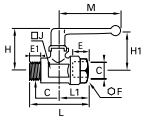


DN	C		E	F	F1	H	H1	L	L1	M	Kg
4	G1/8	**0402 04 10**	8		14	35	29	44	25	48	0.094
7	G1/8	**0402 07 10**	8	19	19	38	31	51	27	48	0.165
	G1/4	**0402 07 13**	12	19	19	38	31	53	28	48	0.156
10	G3/8	**0402 10 17**	12	24	24	45	43	59	31	69	0.244
13	G1/2	**0402 13 21**	15	27	27	47	44	67	34	69	0.292
20	G3/4	**0402 20 27**	16.5	32	38	63	54	80	39	108	0.655
23	G1	**0402 23 34**	19	41	46	67	57	94	47	108	1.036
32	G1 1/4	**0402 32 42***	21.5	55	60	97	115	112	59	180	2.467
	G1 1/2	**0402 32 49***	22	55	60	97	115	120	62	180	2.340
40	G1 1/2	**0402 40 49***	22	55	55	104		111	55	190	2.445
	G2	**0402 40 48***	26	70	70	104		122	61	190	2.614

*Models with EC marking
Maximum working pressure: 40 bar

0401 2/2 In-Line Ball Valve, Male/Female BSPP Thread

Nickel-plated brass, NBR

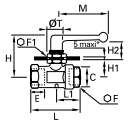


DN	C		E	E1	F	H	H1	J	L	L1	M	Kg
4	G1/8	**0401 04 10**	8	7	14	35	29	14	45	25	48	0.094
5	G1/8	**0401 05 10**	8	7	19	38	31	19	51	27	48	0.160
7	G1/4	**0401 07 13**	12	9	19	38	31	19	52	28	48	0.150
10	G3/8	**0401 10 17**	12	11	24	45	43	24	58	31	69	0.234
13	G1/2	**0401 13 21**	15	12	27	47	44	27	66	34	69	0.286
18	G3/4	**0401 18 27**	16.5	12	38	63	54	39	79	39	108	0.652
23	G1	**0401 23 34**	19	15	46	67	57	48	91	47	108	0.952
32	G1 1/4	**0401 32 42***	21.5	18	60	97	115	55	113	59	108	2.385

*Models with EC marking
Maximum working pressure: 40 bar

0446 2/2 In-Line Panel-Mountable Ball Valve, Female BSPP Thread

Nickel-plated brass, NBR

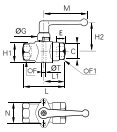


DN	C		E	F	F1	H	H1	H2	L	L1	M	T	Kg
4	G1/8	**0446 04 10***	8	14	22	37	14	12	44	25	48	16.5	0.112
7	G1/4	**0446 07 13**	12	19	24	45	19	14	53	28	48	20.5	0.188
10	G3/8	**0446 10 17**	12	24	24	50	21	21	59	31	69	20.5	0.294
13	G1/2	**0446 13 21**	15	27	24	51	23	21	67	34	69	20.5	0.338

Maximum working pressure: 20 bar
*For G1/8 version, maximum panel thickness = 3 mm

6402 2/2 In-Line Ball Valve for Screw Fixing, Female BSPP Thread

Nickel-plated brass, NBR

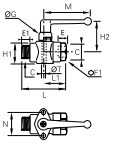


DN	C		E	F	F1	G	H1	H2	L	L1	M	N	T	Kg
4	G1/8	**6402 04 10**	8	14	14	18	18	30	44	25	48	25	470	0.132
7	G1/4	**6402 07 13**	12	19	19	19	24	31	53	28	48	31	580	0.216
10	G3/8	**6402 10 17**	12	24	24	20	30	45	59	31	69	31	580	0.324
13	G1/2	**6402 13 21**	15	27	27	20	34	47	67	34	69	34	6100	0.404
20	G3/4	**6402 20 27**	16.5	32	38	27	44	52	80	39	108	43	8125	0.830
23	G1	**6402 23 34**	19	41	46	27	53	56	94	47	108	51	8125	1.290

Maximum working pressure: 40 bar

6401 2/2 In-Line Ball Valve for Screw Fixing, Male/Female BSPP Thread

Nickel-plated brass, NBR

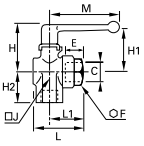


DN	C		E	E1	F	G	H1	H2	L	L1	M	N	T	Kg
4	G1/8	**6401 04 10**	8	7	14	18	18	30	45	25	48	25	470	0.127
7	G1/4	**6401 07 13**	12	9	19	19	24	31	52	28	48	31	580	0.212
10	G3/8	**6401 10 17**	12	11	24	20	30	45	58	31	69	31	580	0.306
13	G1/2	**6401 13 21**	15	12	27	20	34	47	67	34	69	34	6100	0.394

Maximum working pressure: 40 bar

0472 2/2 Right-Angled Ball Valve, Female BSPP Thread

Nickel-plated brass, NBR

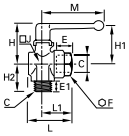


DN	C		E	F	H	H1	H2	J	L	L1	M	Kg
4	G1/8	**0472 04 10**	8	14	35	29	18	14	34	25	48	0.096
6	G1/4	**0472 06 13**	12	19	38	31	24	22	38	28	48	0.191
9	G3/8	**0472 09 17**	12	24	45	43	27	25	46	31	69	0.260
12	G1/2	**0472 12 21**	15	27	47	44	33	29	49	34	69	0.312
18	G3/4	**0472 18 27**	16.5	38	59	51	40	39	60	39	108	0.704
23	G1	**0472 23 34**	19	46	63	55	47	48	72	47	108	1.062

Maximum working pressure: 20 bar

0471 2/2 Right-Angled Ball Valve, Male/Female BSPP Thread

Nickel-plated brass, NBR

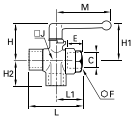


DN	C		E	E1	F	H	H1	H2	J	L	L1	M	Kg
4	G1/8	0471 04 10	8	7	14	35	29	19	14	34	25	48	0.096
6	G1/8	0471 06 10	8	7	19	38	31	22	22	37	27	48	0.182
	G1/4	0471 06 13	12	9	19	38	31	25	22	38	28	48	0.187
9	G3/8	0471 09 17	12	11	24	45	43	28	25	46	31	69	0.256
12	G1/2	0471 12 21	15	12	27	47	44	32	29	49	34	69	0.303
18	G3/4	0471 18 27	16.5	12	38	59	51	37	39	60	39	108	0.682
23	G1	0471 23 34	19	15	46	63	55	44	48	72	47	108	1.020

Maximum working pressure: 20 bar

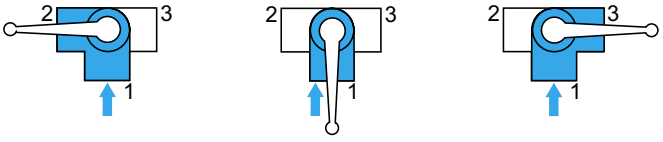
0482 3/3 Right-Angle Ported Ball Valve, Female BSPP Thread

Nickel-plated brass, NBR



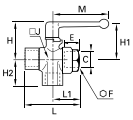
DN	C		E	F	H	H1	H2	J	L	L1	M	Kg
4	G1/8	0482 04 10	8	14	35	29	18	14	44	25	48	0.102
6	G1/4	0482 06 13	12	19	38	31	24	22	53	28	48	0.200
9	G3/8	0482 09 17	12	24	45	43	27	25	59	31	69	0.284
12	G1/2	0482 12 21	15	27	47	44	33	29	67	34	69	0.346
18	G3/4	0482 18 27	16.5	38	59	51	40	39	80	39	108	0.742
23	G1	0482 23 34	19	46	63	55	47	48	94	47	108	1.160

Maximum working pressure: 20 bar



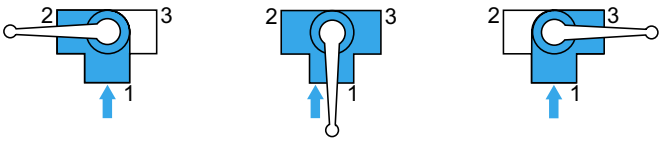
0483 3/3 Right-Angle Ported Ball Valve Without Closed Position, Female BSPP Thread

Nickel-plated brass, NBR



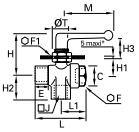
DN	C		E	F	H	H1	H2	J	L	L1	M	Kg
4	G1/8	0483 04 10	8	14	35	29	18	14	44	25	48	0.102
6	G1/4	0483 06 13	12	19	38	31	24	22	53	28	48	0.196
9	G3/8	0483 09 17	12	24	45	43	27	25	59	31	69	0.278
12	G1/2	0483 12 21	15	27	47	44	33	29	67	34	69	0.340
18	G3/4	0483 18 27	16.5	38	59	51	40	39	80	39	108	0.716
23	G1	0483 23 34	19	46	63	55	47	48	94	47	108	1.066

Maximum working pressure: 20 bar



0448 3/3 Panel-Mountable Right-Angled Ball Valve, Female BSPP Thread

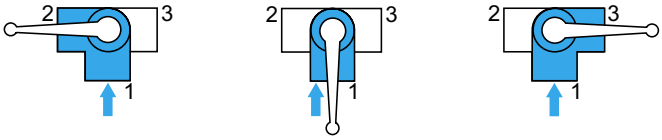
Nickel-plated brass, NBR



DN	C		E	F	F1	H	H1	H2	H3	J	L	L1	M	T	Kg
4	G1/8	0448 04 10*	8	14	22	37	14	18	12	14	44	25	48	16.5	0.126
6	G1/4	0448 06 13	12	19	24	45	19	24	14	22	53	28	48	20.5	0.230
9	G3/8	0448 09 17	12	24	27	50	21	27	21	25	59	31	69	20.5	0.328
12	G1/2	0448 12 21	15	24	27	51	23	33	21	29	67	34	69	20.5	0.392

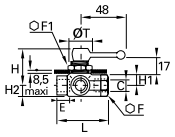
Maximum working pressure: 20 bar

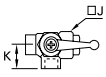
*For G1/8 version: maximum panel thickness = 3 mm



0452 3/2 Panel-Mountable Equal Plane Ball Valve, Female BSPP Thread

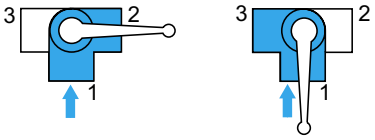
Nickel-plated brass, NBR





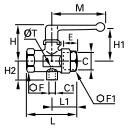
DN	C		E	F	F1	H	H1	H2	J	K	L	T	Kg
4	G1/8	0452 04 10	8	14	22	39	10	8	16	18	25	19	0.130
6	G1/4	0452 06 13	12	19	22	40	11	11	23	24	28	20	0.206

Maximum working pressure: 20 bar



0489 3/2 In-Line Threaded Exhaust Port Ball Valve, Female BSPP and Metric Thread

Nickel-plated brass, NBR

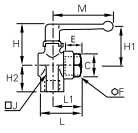


DN	C1	C		E	F	F1	H	H1	H2	L	L1	M	T	Kg
7	M5x0.8	G1/4	**0489 07 13**	12	24	24	46	43	17	59	31	69	2	0.270
10	M5x0.8	G3/8	**0489 10 17**	12	24	24	46	43	17	59	31	69	2	0.243
13	G1/8	G1/2	**0489 13 21**	15	27	27	47	44	24	67	34	69	2	0.310
18	G1/4	G3/4	**0489 18 27**	16.5	32	38	63	54	33	80	39	108	2.5	0.670
23	G1/4	G1	**0489 23 34**	19	41	46	67	57	37	94	47	108	3	1.050

Maximum working pressure: 40 bar

0462 3/2 Right-Angled Ball Valve with Vent, Female BSPP Thread

Nickel-plated brass, NBR

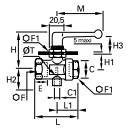


DN	C		E	F	H	H1	H2	J	L	L1	M	Kg
6	G1/8	**0462 06 10**	8	19	38	31	20	22	37	27	48	0.192
	G1/4	**0462 06 13**	12	19	38	31	24	22	38	28	48	0.185
9	G3/8	**0462 09 17**	12	24	45	43	27	25	46	31	69	0.261
12	G1/2	**0462 12 21**	15	27	47	44	33	29	49	34	69	0.311
18	G3/4	**0462 18 27**	16.5	38	59	51	40	39	60	39	108	0.698
23	G1	**0462 23 34**	19	46	63	55	47	48	72	47	108	1.066

Maximum working pressure: 20 bar

0449 3/2 Panel-Mountable In-Line Threaded Exhaust Port Ball Valve, Female BSPP and Metric Thread

Nickel-plated brass, NBR

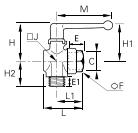


DN	C1	C		E	F	F1	H	H1	H2	H3	L	L1	M	T	Kg
7	M5x0.8	G1/4	**0449 07 13**	12	24	24	50	20	17	21	59	31	69	2.5	0.313
10	M5x0.8	G3/8	**0449 10 17**	12	24	24	50	20	17	21	59	31	69	2.5	0.291
13	G1/8	G1/2	**0449 13 21**	15	27	24	52	23	24	21	67	34	69	4	0.352

Maximum working pressure: 20 bar

0461 3/2 Right-Angled Ball Valve with Vent, Male/Female BSPP Thread

Nickel-plated brass, NBR

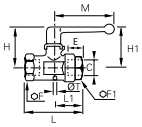


DN	C		E	E1	F	H	H1	H2	J	L	L1	M	Kg
6	G1/8	**0461 06 10**	8	7	19	38	31	20	22	37	27	48	0.182
	G1/4	**0461 06 13**	12	9	19	38	31	24	22	38	28	48	0.186
9	G3/8	**0461 09 17**	12	11	24	45	43	27	25	46	31	69	0.257
12	G1/2	**0461 12 21**	15	12	27	47	44	33	29	49	34	69	0.304
18	G3/4	**0461 18 27**	16.5	12	38	59	51	40	39	60	39	108	0.648

Maximum working pressure: 20 bar

0469 3/2 In-Line Vented Ball Valve, Female BSPP Thread

Nickel-plated brass, NBR

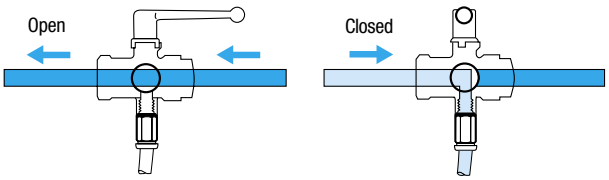


DN	C		E	F	F1	H	H1	L	L1	M	T	Kg
4	G1/8	**0469 04 10**	8	14	14	35	29	44	25	48	1.5	0.092
7	G1/4	**0469 07 13**	12	24	24	46	43	59	31	70	2	0.268
10	G3/8	**0469 10 17**	12	24	24	46	43	59	31	70	2	0.246
13	G1/2	**0469 13 21**	15	27	27	47	44	67	34	70	2	0.294
18	G3/4	**0469 18 27**	16.5	32	38	63	54	80	39	108	2.5	0.668
23	G1	**0469 23 34**	19	41	46	67	57	94	47	108	3	1.026

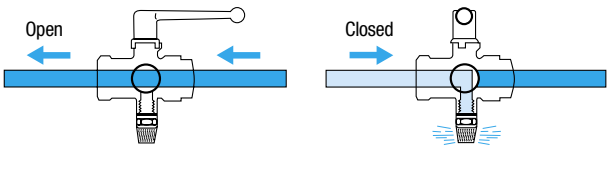
Maximum working pressure: 40 bar

Operation of Vented Ball Valves

With vent connected to a tube = collection of purged media

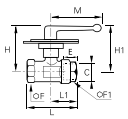


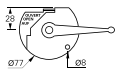
With vent connected to a silencer = noiseless discharge to atmosphere



0432 2/2 In-Line Lockable Ball Valve, Female BSPP Thread

Nickel-plated brass, NBR



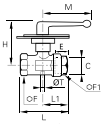


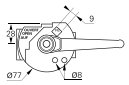
DN	C		E	F	F1	H	H1	L	L1	M	Kg
4	G1/8	**0432 04 10**	8	19	19	59	54	51	27	69	0.415
7	G1/4	**0432 07 13**	12	19	19	59	54	59	28	69	0.396
10	G3/8	**0432 10 17**	12	24	24	60	55	59	31	69	0.460
13	G1/2	**0432 13 21**	15	27	27	62	57	67	34	69	0.510
20	G3/4	**0432 20 27**	16.5	32	38	66	56	80	39	108	0.800
23	G1	**0432 23 34**	19	41	46	70	59	94	47	108	1.186

Maximum working pressure: 40 bar
Handle is not removable.
Fixed and mobile plates: zinc-plated steel.

0437 3/2 In-line Vented 3-Point Lockable Ball Valve, Female BSPP Thread

Nickel-plated brass, NBR



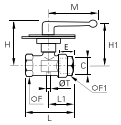


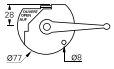
DN	C		E	F	F1	H	L	L1	M	T	Kg
7	G1/4	**0437 07 13**	12	24	24	60	59	32	69.5	2	0.476
10	G3/8	**0437 10 17**	12	24	24	60	60	32	69.5	2	0.447
13	G1/2	**0437 13 21**	15	27	27	60	67.5	34.5	69.5	2	0.510
18	G3/4	**0437 18 27**	16.5	32	38	69.5	80	39.5	108.5	2.5	0.820
23	G1	**0437 23 34**	19	41	46	73	94.5	47.5	108.5	3	1.192

Maximum working pressure: 40 bar
Handle is not removable
Locking plates are zinc-plated steel

0439 3/2 In-line Vented Lockable Ball Valve, Female BSPP Thread

Nickel-plated brass, NBR



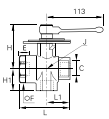


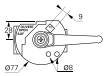
DN	C		E	F	F1	H	H1	L	L1	M	T	Kg
4	G1/8	**0439 04 10**	8	19	19	59	54	51	27	69	2	0.410
7	G1/4	**0439 07 13**	12	24	24	60	55	59	31	69	2	0.480
10	G3/8	**0439 10 17**	12	24	24	60	55	59	31	69	2	0.460
13	G1/2	**0439 13 21**	15	27	27	62	57	67	34	69	2	0.514
18	G3/4	**0439 18 27**	16.5	32	38	66	56	80	39	108	2.5	0.810
23	G1	**0439 23 34**	19	41	46	70	59	94	47	108	3	1.185

Maximum working pressure: 40 bar
Handle is not removable, locking plates are zinc-plated steel.

0438 3/2 Right-Angled 3-Point Lockable Ball Valve, Female BSPP Thread

Nickel-plated brass, NBR



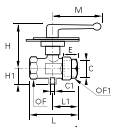


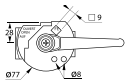
DN	C		E	F	H	H1	J	L	L1	Kg
9	G3/8	**0438 09 17**	12	38	76	34	39	73	35	0.970
12	G1/2	**0438 12 21**	15	38	76	37	39	78	38	0.947
18	G3/4	**0438 18 27**	16.5	38	76	40	39	80	40	0.905
23	G1	**0438 23 34**	19	46	80	47	48	94	47	1.295

Maximum working pressure: 20 bar
Fixed plate: zinc-plated steel, mobile plate: zinc-plated steel
Removable handle: where the handle is obstructed in its movement, it can be refitted opposite the original position.

0436 3/2 In-Line 3-Point Lockable Ball Valve with Threaded Exhaust Port, Female BSPP and Metric Thread

Nickel-plated brass, NBR





DN	C1	C		E	F	F1	H	H1	L	L1	M	Kg
10	M5x0.8	G3/8	**0436 10 17**	12	24	24	60	17	60	32	69	0.475
13	G1/8	G1/2	**0436 13 21**	15	27	27	60	24.5	67.5	34.5	69	0.500
18	G1/4	G3/4	**0436 18 27**	16.5	32	38	69.5	33	80	39.5	108	0.850
23	G1/4	G1	**0436 23 34**	19	41	46	73.5	47.5	94.5	47.5	108.5	1.215

Maximum working pressure: 40 bar
Handle is not removable.
Fixed and mobile plates: zinc-plated steel

Suitable for small, compact and resistant spaces, these ball valves are easy to operate.

Technical Characteristics

- **Compatible Fluids:** Industrial fluids
- **Working Pressure:** Vacuum to 12 bar
- **Working Temperature:** -20°C to +80°C

Reliable performance is dependent upon the type of fluid conveyed, component materials and tubing being used.

Guaranteed for use with a vacuum of 755 mm Hg (99% vacuum).

Advantages

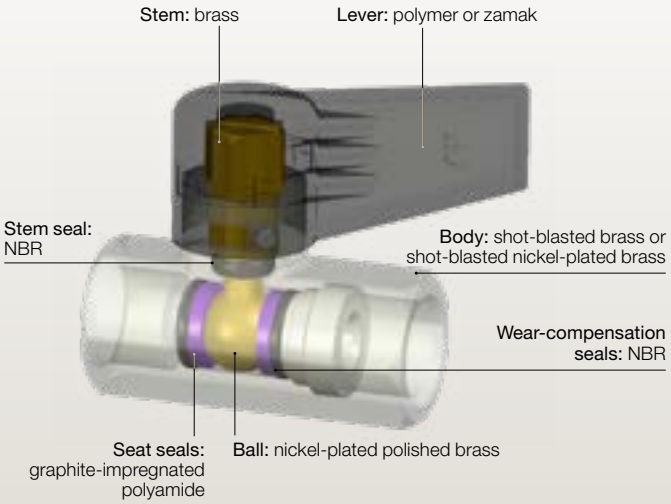
- Compactness
- Corrosion resistance due to chemical nickel plating
- Automatic compensation of seal wear
- Repositionable and exchangeable handles

Regulations

- **PED**
- **REACH**
- **RoHS**

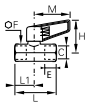
Component Materials

Silicone-free



0492 2/2 In-Line Ball Valve, Female BSPP Thread

Nickel-plated brass, NBR

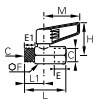


DN	C		E	F	H	L	L1	M	Kg
4	G1/4	**0492 04 13**	9	17	34	39.5	17	35	0.073
7	G3/8	**0492 07 17**	11	22	38	45	20	43	0.128
10	G1/2	**0492 10 21**	12	24	44	54	25	50	0.150
13	G3/4	**0492 13 27**	14	30	46	62	28	50	0.240

Technical polymer handle

0491 2/2 In-Line Ball Valve, Male/Female BSPP Thread

Nickel-plated brass, NBR

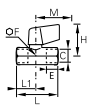


DN	C		E	E1	F	H	L	L1	M	Kg
4	G1/4	**0491 04 13**	9	7	17	34	39.5	17	35	0.070
7	G3/8	**0491 07 17**	11	8	22	38	45	20	43	0.124
10	G1/2	**0491 10 21**	12	10	24	44	53	24	50	0.160
13	G3/4	**0491 13 27**	14	12	30	46	59	25	50	0.238

Technical polymer handle

0492..64 2/2 In-Line Ball Valve, Short Handle, Female BSPP Thread

Nickel-plated brass, NBR

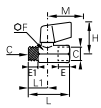


DN	C		E	F	H	L	L1	M	Kg
4	G1/4	**0492 04 13 64**	9	17	36	39.5	17	25	0.090

Short handle in zamac

0491..64 2/2 In-Line Ball Valve, Short Handle, Male/Female BSPP Thread

Nickel-plated brass, NBR

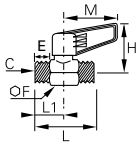


DN	C		E	E1	F	H	L	L1	M	Kg
4	G1/4	**0491 04 13 64**	9	7	17	36	39.5	17	25	0.092

Short handle in zamac

0490 2/2 In-Line Ball Valve, Male BSPP Thread

Nickel-plated brass, NBR

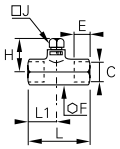


DN	C		E	F	H	L	L1	M	Kg
4	G1/4	**0490 04 13**	7	17	34	39	17	35	0.070
7	G3/8	**0490 07 17**	8	22	38	44	20	43	0.109
10	G1/2	**0490 10 21**	10	24	44	53	24	50	0.160
13	G3/4	**0490 13 27**	12	30	46	59	25	50	0.233

Technical polymer handle

0497 2/2 Ball Valve, Square Stem, Female BSPP Thread

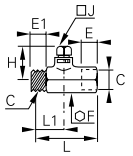
Brass, NBR



DN	C		E	F	H	J	L	L1	Kg
4	G1/4	**0497 04 13**	9	17	25	7	39	17	0.063
7	G3/8	**0497 07 17**	11	22	26	7	45	20	0.122
10	G1/2	**0497 10 21**	12	24	29	10	54	25	0.141
13	G3/4	**0497 13 27**	14	30	30	10	62	28	0.230

0496 2/2 Ball Valve, Square Stem, Male/Female BSPP Thread

Brass, NBR



DN	C		E	E1	F	H	J	L	L1	Kg
4	G1/4	**0496 04 13**	7	9	17	25	7	39	17	0.065
7	G3/8	**0496 07 17**	8	11	22	26	7	45	20	0.118
10	G1/2	**0496 10 21**	10	12	24	29	10	53	24	0.150
13	G3/4	**0496 13 27**	12	14	30	30	10	59	28	0.222

Compliant with DVGW certification, standardized threads, these valves ensure the transport of gas and water.

Technical Characteristics

- **Compatible Fluids:** Compressed air, water, gas
- **Working Pressure:** 1/4" to 2": 0 to 40 bar
- **Working Temperature:** -50°C to +170°C

Reliable performance is dependent upon the type of fluid conveyed.

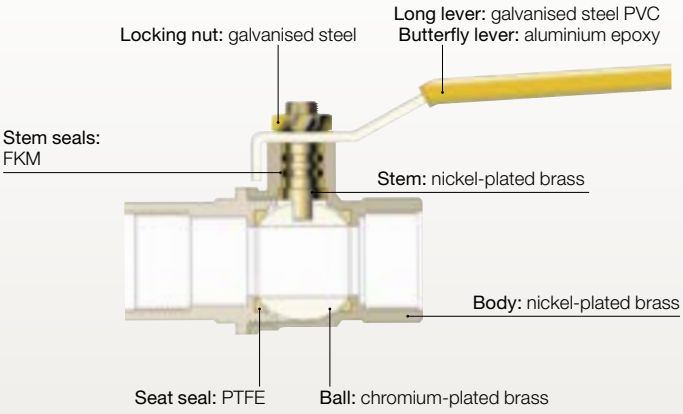
Products have been tested at -50°C in static sealing and after 5 operations for a leak rate < 0,05Nl/h.

Advantages

- Stem prevented from being ejected in the event of overpressure
- Two stem seal to prevent leakage
- Corrosion resistance, increased chemical compatibility thanks to chemical nickel plating
- Can be operated at very low temperatures: -50°C

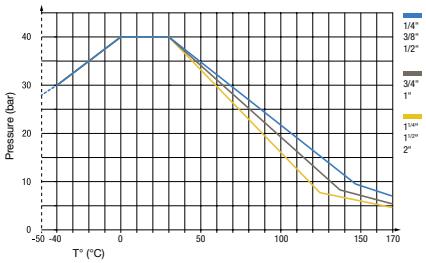
Component Materials

Silicone-free

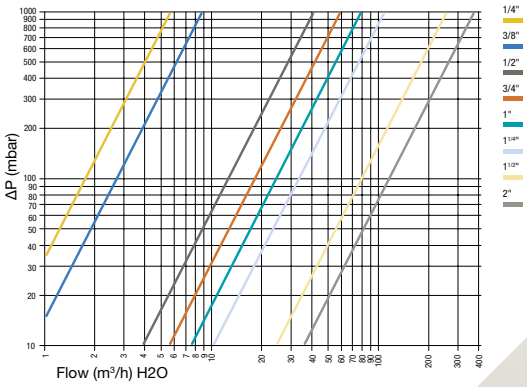


Working Pressure and Temperature

Pressure - Temperature



Pressure Drop



Regulations

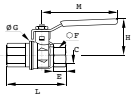
Industrial
DI: 97/23/EC
(PED B+D module EC 1115)

Water
DVGW: W 570-1
DIN EN 13228
BGA KTW
DVGW: W270

Gas
DIN EN 33

BVG4-L 2/2 In-Line Ball Valve, Female BSPP Thread

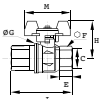
Nickel-plated brass



DN	C		E	F	G	H	L	M	Kg
8	G1/4	**BVG4-1/4L**	12	17	25	38	50	82	0.150
10	G3/8	**BVG4-3/8L**	12	20	25	38	60	82	0.161
15	G1/2	**BVG4-1/2L**	15.5	25	32.5	43	75	100	0.256
20	G3/4	**BVG4-3/4L**	17	32	39	50	80	120	0.397
25	G1	**BVG4-1L**	21	41	47.5	54	90	120	0.641
32	G1 1/4	**BVG4-1.1/4L**	23	50	59	73	110	158	0.980
40	G1 1/2	**BVG4-1.1/2L**	23	55	71.5	79	120	158	1.205
50	G2	**BVG4-2L**	26.5	70	86	86	140	158	1.960

BVGT4-L 2/2 In-Line Ball Valve, Female BSPP Thread, Butterfly Handle

Nickel-plated brass



DN	C		E	F	G	H	L	M	Kg
8	G1/4	**BVGT4-1/4L**	12	17	25	39	50	50	0.137
10	G3/8	**BVGT4-3/8L**	12	20	25	39	60	50	0.129
15	G1/2	**BVGT4-1/2L**	15.5	25	32.5	43	75	50	0.231
20	G3/4	**BVGT4-3/4L**	17	32	39	47	80	60	0.348
25	G1	**BVGT4-1L**	21	41	47.5	51	90	60	0.546

Compact lever

Standard Series

For common industrial applications, these ball valves are equipped with fluoropolymer seals and a lockable system.

Technical Characteristics

Model	Standard and Lockable Series	Compact Series
Compatible Fluids	Compressed air Other fluids : see compatibility chart at the end of this chapter	
Working Pressure	0 to 40 bar up to 2'' 0 to 30 bar over 2'' excepted BVG4P-LOCK and BVG4-LOCK: 0 to 14 bar	0 to 30 bar
Working Temperature	-20°C to +170°C Excepted BVG4P-LOCK: -10°C to + 100°C	-10°C to +90°C

Reliable performance is dependent upon the type of fluid conveyed.

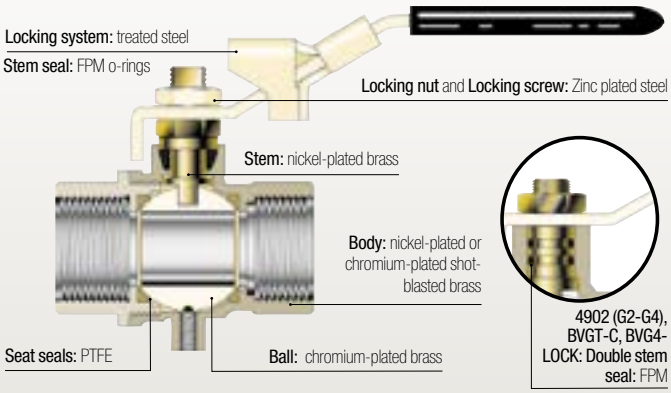
Advantages

- Long or butterfly handle
- Full fluid flow
- A lockable version for safety in use
- Corrosion resistance thanks to chemical nickel plating

Component Materials

Silicone-free

Long lever: Geomet® plated steel
Compact Series lever: technical polymer
Butterfly lever: Aluminium



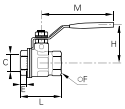
Regulations

Industrial:

- **PED**
- **REACH**
- **RoHS**

4902 2/2 Standard In-Line Ball Valve, Female BSPP Thread

Nickel-plated brass, PTFE

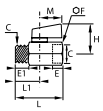


DN	C		E	F	H	L	M	PN	Kg
8	G1/4	**4902 10 13**	9	17	38	39	82	40	0.131
10	G/8	**4902 10 17**	9	20	38	39	82	40	0.117
15	G1/2	**4902 15 21**	11	25	43	50	100	40	0.204
20	G3/4	**4902 20 27**	12	31	50	54	120	40	0.329
25	G1	**4902 25 34**	14	38	54	67	120	40	0.468
32	G1 1/4	**4902 32 42***	15	48	73	77	158	30	0.770
40	G1 1/2	**4902 40 49***	17	54	79	90	158	30	1.040
50	G2	**4902 50 48***	19	66	86	106	158	30	1.760
65	G2 1/2	**4902 65 47***	22	85	132	136	255	30	4.500
80	G3	**4902 80 46***	25	99	140	157	255	30	5.840
100	G4	**4902 01 45***	29	125	154	191	255	30	9.040

*Models with EC marking
Model from 2 1/2": double stem seal in FPM
Working temperature: -20°C to +170°C

4991 2/2 Standard Compact In-Line Ball Valve, Male/Female BSPP Thread

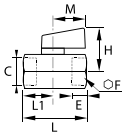
Chromium brass, PTFE



DN	C		E	E1	F	H	L	L1	M	Kg
6	G1/8	**4991 00 10**	10	10	21	30	41.5	10	24	0.089
8	G1/4	**4991 00 13**	11	11	21	30	41.5	11	24	0.082
	G3/8	**4991 00 17**	11	11	21	30	41.5	10.5	24	0.087
10	G1/2	**4991 00 21**	13	13	25	32	49	12.5	24	0.134

4992 2/2 Standard Compact In-Line Ball Valve, Female BSPP Thread

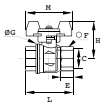
Chromium brass, PTFE



DN	C		E	F	H	L	L1	M	Kg
6	G1/8	**4992 00 10**	10	21	30	41.5	10	24	0.111
8	G1/4	**4992 00 13**	11	21	30	41.5	11	24	0.100
	G3/8	**4992 00 17**	11	21	30	41.5	10.5	24	0.094
10	G1/2	**4992 00 21**	13	25	32	49	12.5	24	0.142

BVGT4-C 2/2 Standard In-Line Ball Valve, Female BSPP Thread, Butterfly Handle

Nickel-plated brass

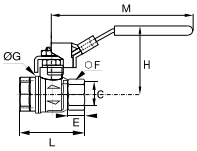


DN	C		E	F	G	H	L	M	Kg
8	G1/4	BVGT4-1/4C	9	17	25	40	39	50	0.130
10	G3/8	BVGT4-3/8C	9	20	25	40	39	50	0.120
15	G1/2	BVGT4-1/2C	11	25	32.5	44	50	50	0.180
20	G3/4	BVGT4-3/4C	12	31	39	49	54	50	0.265
25	G1	BVGT4-1C	14	38	47.5	53	67	50	0.390

Compact lever

BVG4-LOCK 2/2 In-Line Lockable Ball Valve, Female BSPP Thread

Nickel-plated brass

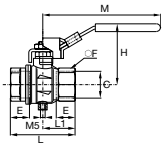


DN	C		E	F	H	L	M	Kg
8	G1/4	BVG4-1/4LOCK	9	17	46	39	96	0.150
10	G3/8	BVG4-3/8LOCK	9	20	46	39	96	0.150
15	G1/2	BVG4-1/2LOCK	11	25	51	50	96	0.255
19	G3/4	BVG4-3/4LOCK	12	31	59	54	117	0.390
25	G1	BVG4-1LOCK	14	38	63	67	117	0.590

Double stem seal in FPM
Working temperature -40°C to +170°C

BVG4P-LOCK 3/2 In-Line Lockable Vented Ball Valve, Female BSPP Thread

Nickel-plated brass



DN	C		E	F	H	L	L1	M	Kg
8	G1/4	BVG4P-1/4LOCK	12	17	47.5	45	22.5	96	0.155
10	G3/8	BVG4P-3/8LOCK	12	20	47.5	45	22.5	96	0.172
15	G1/2	BVG4P-1/2LOCK	15.5	25	52	59	29.5	96	0.239
20	G3/4	BVG4P-3/4LOCK	17	31	59.5	64	32	117	0.371
25	G1	BVG4P-1LOCK	21	40	63.5	81	40.5	117	0.581

Working pressure: 14 bar
Working temperature: -10°C to +100°C

Stainless Steel Series

For severe food or industrial process applications, a series with a 316L stainless steel body that withstands aggressive environments, as well as high pressures and temperatures.

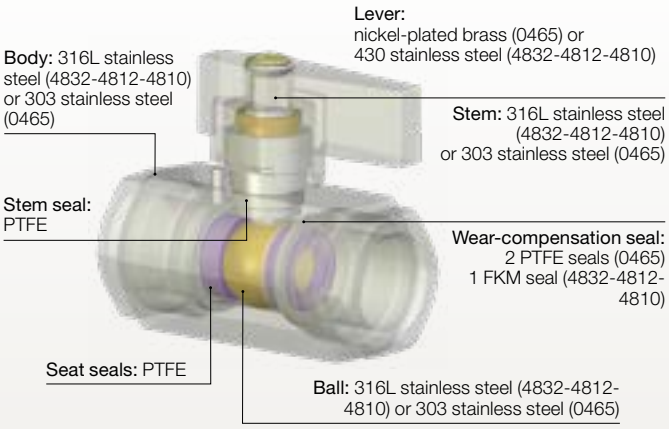
Technical Characteristics

Compatible Fluids	Types 4810, 4812 and 4832	Type 0465
	All fluids	All fluids
Working Pressure	0 to 65 bar (see details in product tables below)	Vacuum to 20 bar
Working Temperature	-20°C to +150°C	-20°C to +120°C

Reliable performance is dependent upon the type of fluid conveyed, component materials and tubing being used.

Guaranteed for use with a vacuum of 755 mm Hg (99% vacuum).

Component Materials



Advantages

- Chemical compatibility
- High temperature operation: up to +150°C
- 3 straight versions :
  - Compact type cannot be disassembled
  - 3-piece can be disassembled
  - Light series for more compactness

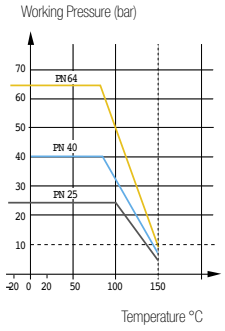
Regulations

Industrial:

- **PED**
- **REACH**
- **RoHS**

Pressure and Temperature Resistance

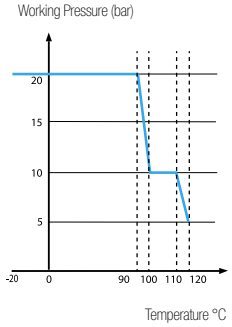
Version 4810, 4812 and 4832



Examples at +100°C:
PN 64: 48 bar
PN 40: 30 bar
PN 25: 24 bar

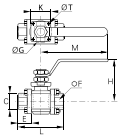
For temperatures between +150°C and +200°C, please contact us.

Version 0465



4832 2/2 In-Line 3-Piece Ball Valve with Fixing Plate, Female BSPP Thread

Stainless steel 316L, PTFE

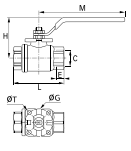


DN	C		NP	E	F	G	H	K	L	M	T	Kg
10	Rp1/4	**4832 10 13****	64	18	22	36	50	36	57	110.5	5.5	0.272
15	Rp1/2	**4832 15 21**	64	20.5	27	36	64	36	65	131.5	6	0.478
20	Rp3/4	**4832 20 27**	40	22.5	32	42	68	42	76	131.5	5.5	0.568
25	Rp1	**4832 25 34**	40	27	41	42	78.5	42	92	174.5	6	1.229
32	Rp1 1/4	**4832 32 42***	25	30	50	42	83.5	42	106.5	174.5	5.5	1.530
40	Rp1 1/2	**4832 40 49***	25	31	55	50	100	50	116	250.5	6.5	2.146
50	Rp2	**4832 50 48***	25	36	70	50	107	50	136	250.5	6.5	3.140

*Models with EC marking **
Without Fixing Plate
Threads conformed to ISO 7/1

4812 2/2 In-Line Ball Valve with Fixing Plate, Female BSPP Thread

Stainless steel 316L, PTFE

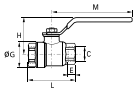


DN	C		NP	E	G	H	L	M	T	Kg
10	Rp1/4	**4812 10 13**	140	10	36	50	55	110	5.5	0.263
	Rp3/8	**4812 10 17**	140	11	36	50	55	110	5.5	0.254
15	Rp1/2	**4812 15 21**	140	15	36	53	66	110	5.5	0.336
20	Rp3/4	**4812 20 27**	105	16	42	67	79	130	5.5	0.574
25	Rp1	**4812 25 34**	105	19	42	79	93	175	5.5	1.010
32	Rp1 1/4	**4812 32 42***	64	21	42	83	100	175	5.5	1.337
40	Rp1 1/2	**4812 40 49***	64	21	50	100	110	250	6.5	2.161
50	Rp2	**4812 50 48***	64	26	70	107	131	250	6.5	3.262

*Models with EC marking
Threads conformed to ISO 7/1

4810 2/2 In-Line Ball Valve, Female BSPP Thread

Stainless steel 316L, PTFE

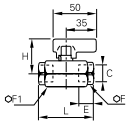


DN	C		E	G	H	L	M	Kg
8	G1/4	**4810 08 13**	10	30	44.5	53.5	110.5	0.206
10	G3/8	**4810 10 17**	10	30	44.5	53.5	110.5	0.190
15	G1/2	**4810 15 21**	13	32.5	47	60	110.5	0.245
20	G3/4	**4810 20 27**	14	40	54.5	70	131.5	0.418
25	G1	**4810 25 34**	17	49	58.5	79	131.5	0.648

Threads conformed to ISO 228/1-G

0465 2/2 In-Line Light Series Ball Valve, Female BSPP Thread

Stainless steel 303, PTFE



DN	C		E	F	F1	H	L	Kg
4	G1/4	**0465 04 13**	13	19	24	36	50	0.226
7	G3/8	**0465 07 17**	13	24	27	39	55	0.278
10	G1/2	**0465 10 21**	16	27	30	40	62	0.322

Silicone-free
Threads conformed to ISO 228/1-G

High Pressure Series

Designed for applications up to 300 bar, these carefully manufactured ball valves guarantee safe operation.

Technical Characteristics

- **Compatible Fluids:** Compressed air, lubricants, gases
- **Working Pressure:** Vacuum to 300 bar
- **Working Temperature:** -15°C to +80°C

Reliable performance is dependent upon the type of fluid conveyed, component materials and tubing being used.

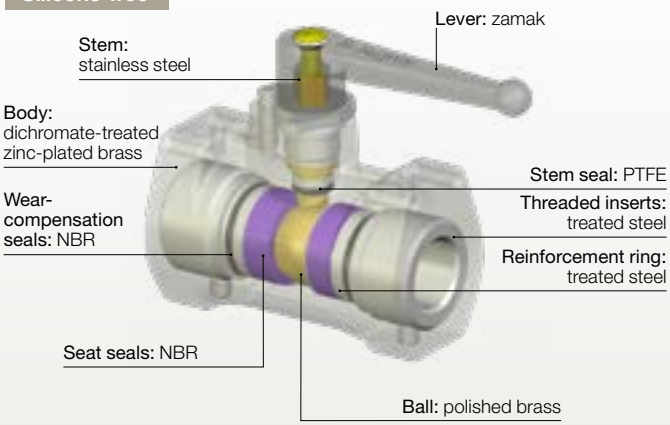
Guaranteed for use with a vacuum of 755 mm Hg (99% vacuum).

Advantages

- Low operating torque, even at high pressure
- Repositionable and exchangeable handles
- Robust design resistant to high tightening torques
- Fixing screws for through-bulkhead mounting

Component Materials

Silicone-free



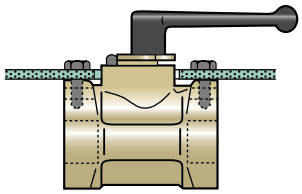
Regulations

- **PED**
- **REACH**
- **RoHS**

Installation Options

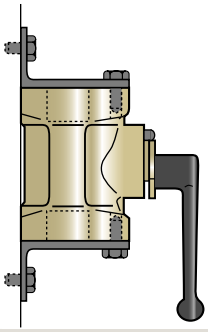
Bulkhead Mounting

Through bulkhead with screws



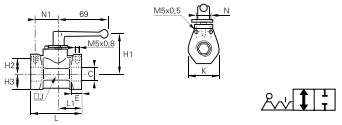
Surface Mounting

With brackets and screws



4402 2/2 In-Line High Pressure Ball Valve, Female BSPP Thread

Treated brass, NBR



DN	C		E	H1	H2	H3	J	K	L	L1	N	N1	Kg
7	G1/4	**4402 07 13**	12	50	13	15	30	30	58	25	15	20	0.402
10	G3/8	**4402 10 17**	12	54	23	19	36	39	72	36	20	30	0.722
13	G1/2	**4402 13 21**	15	56	23	21	40	42	79	36	20	30	0.870

Equipped with push-in connections and a technical polymer body, this series combines lightness on the equipment, speed of installation.

Technical Characteristics

- **Compatible Fluids:** Compressed air, neutral gases
- **Working Pressure:** Vacuum to 10 bar
- **Working Temperature:** -20°C to +80°C

Tightening Torques	Threads	G1/8	G1/4	G3/8	G1/2
	daN.m	0.8	1.2	3	3.5

Reliable performance is dependent upon the type of fluid conveyed, component materials and tubing being used.

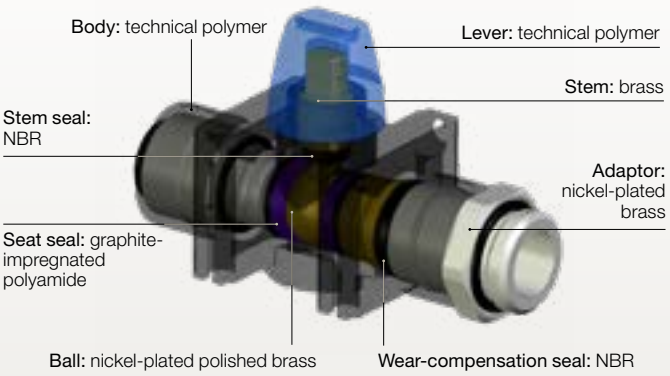
Guaranteed for use with a vacuum of 755 mm Hg (99 % vacuum).

Advantages

- Lightweight and compact
- LF 3000® push-in connections, static and dynamic sealing
- Automatic seal wear compensation for long-term reliability
- Ultra-compact handle, easy operation, screwdriver slot for difficult access

Component Materials

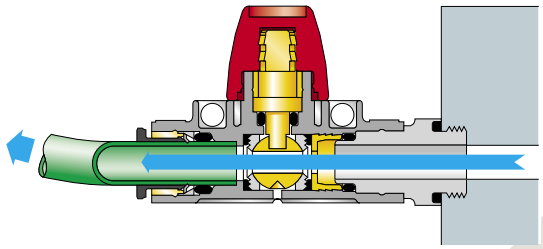
Silicone-free



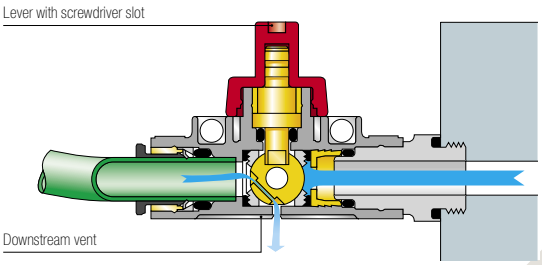
Installation Options

Vented Valve, Open Position

3/2 model with vent

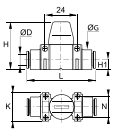


Vented Valve, Closed Position



7910 2/2 In-Line Mini-Ball Valve

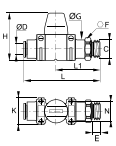
Technical polymer, NBR



ØD		G	H	H1	K	L	N	Kg
4	7910 04 00	15	37	7.5	22	51	16	0.039
6	7910 06 00	15	37	7.5	22	52	16	0.034
8	7910 08 00	15	37	7.5	22	52	16	0.025
10	7910 10 00	20	43	11	30	66	22	0.060
12	7910 12 00	20	43	11	30	66	22	0.040

7911 2/2 In-Line Mini-Ball Valve, Male BSPP Thread

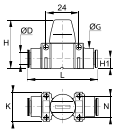
Technical polymer, Nickel-plated brass, NBR



ØD	C		E	F	G	H	K	L	L1	N	Kg
6	G1/8	7911 06 10	5	13	14	37	22	62	37	16	0.045
8	G1/4	7911 08 13	5.5	16	17.5	37	22	61	35	16	0.040
10	G3/8	7911 10 17	5.5	20	22	43	30	74	41	22	0.075
12	G1/2	7911 12 21	7.5	24	26	43	30	75	42	22	0.075

7913 3/2 In-Line Mini-Ball Valve with Vent

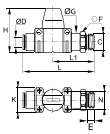
Technical polymer, NBR



ØD		G	H	H1	K	L	N	Kg
4	7913 04 00	15	37	7.5	22	51	16	0.040
6	7913 06 00	15	37	7.5	22	52	16	0.035
8	7913 08 00	15	37	7.5	22	52	16	0.025
10	7913 10 00	20	43	11	30	66	22	0.060
12	7913 12 00	20	43	11	30	66	22	0.045

7914 3/2 In-Line Mini-Ball Valve with Vent, Male BSPP Thread

Technical polymer, Nickel-plated brass, NBR



ØD	C		E	F	G	H	K	L	L1	N	Kg
6	G1/8	7914 06 10	5	13	14	37	22	62	37	16	0.045
8	G1/4	7914 08 13	5.5	16	17.5	37	22	61	35	16	0.040
10	G3/8	7914 10 17	5.5	20	22	43	30	74	41	22	0.058
12	G1/2	7914 12 21	7.5	24	26	43	30	75	42	22	0.075

7000 Joining Clips

Technical polymer

ØD		Kg
4	7000 00 04	0.001
6-8	7000 00 05	0.005
10-12	7000 00 06	0.001

Complementary Products for Mini Series

LF 3000®

PA Tubing

PU Tubing

Flow Regulators

As an integral part of the LIQUIfit® range, these ball valves are designed for water and beverage handling circuits. FDA, NSF and WQA standards are a guarantee of safety for the health of consumers. These ball valves offer sealing and cleanliness to the equipment.

Technical Characteristics

- **Compatible Fluids:** Water, drinks, beverages, industrial water, CO_2, inert gases
- **Working Pressure:** 0 to 10 bar at 20°C
- **Working Temperature:** -15°C to +100°C

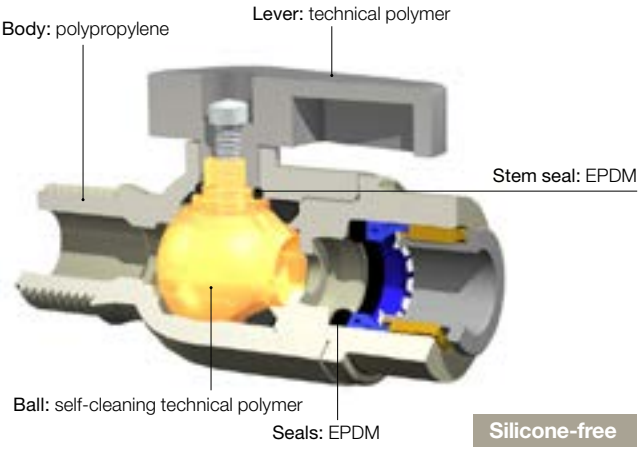
Advantages

- Technical polymer body
- Full flow self-sealing ball maintains the cleanliness of the circuit
- LIQUIfit® push-in connection, static and dynamic sealing. No pumping effect. Resistant to water hammer.

Regulations

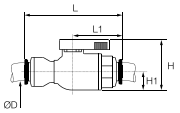
- **FDA: 21 CFR**
- **NSF 51**

Component Materials



4020 2/2 In-Line Ball Valve

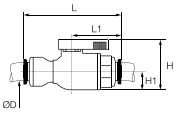
Polypropylene with fibreglass, EPDM



ØD		H	H1	L	L1	Kg
6	4020 06 00WP2	36	13	57	27	0.019
8	4020 08 00WP2	36	13	60	27	0.020
10	4020 10 00WP2	36	13	70	33	0.023
12	4020 12 00WP2	36.5	13	88	43	0.034

4020 2/2 In-Line Ball Valve Inch

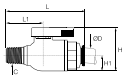
Polypropylene with fibreglass, EPDM



ØD		H	H1	L	L1	Kg
1/4	4020 56 00WP2	36	13	57	27	0.015
3/8	4020 60 00WP2	36	13	70	33	0.028

4021 2/2 In-Line Ball Valve, Male NPTF Thread Inch

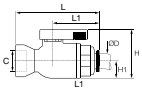
Polypropylène with fibreglass, EPDM



ØD	C		H	H1	L	L1	Kg
1/4	NPTF1/4	4021 56 14WP2	36	13	61	31	0.029
3/8	NPTF3/8	4021 60 18WP2	36	13	64	33.5	0.028

4023 2/2 In-Line Ball Valve, Female NPTF Thread Inch

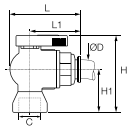
Polypropylène with fibreglass, EPDM



ØD	C		H	H1	L	L1	Kg
3/8	NPTF3/8	4023 60 18WP2	36	13	64	33.5	0.028

4022 2/2 Right- Angled Ball Valve, Female NPTF Thread Inch

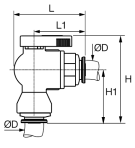
Polypropylène with fibreglass, EPDM



ØD	C		H	H1	L	L1	Kg
1/4	NPTF1/4	4022 56 14WP2	52	29	44	31	0.016

4024 2/2 Right-Angled Ball Valve

Polypropylene with fibreglass, EPDM



ØD		H	H1	L	L1	Kg
6	4024 06 00WP2	54	31	41	27	0.020
10	4024 10 00WP2	61	38	47	33	0.024

Needle Valves

Made of nickel-plated brass or stainless steel, the needle valves are designed for applications that require manual flow adjustment.

Technical Characteristics

	Brass	Stainless Steel
Compatible Fluids	Compressed air, water, industrial fluids, etc. Other fluids: contact us	Many fluids
Working Pressure	0 to 120 bar	0 to 400 bar
Working Temperature	-20°C to +100°C (except model 0510)	-20°C to +180°C

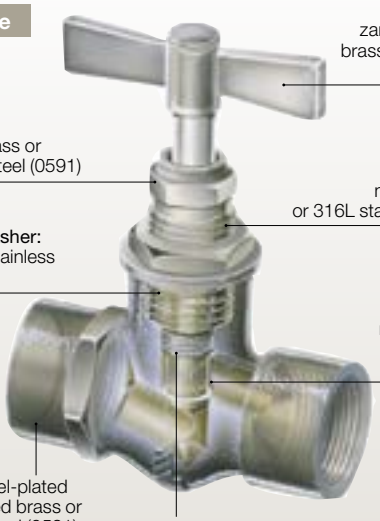
Reliable performance is dependent upon the type of fluid conveyed.

Advantages

- Manual flow adjustment
- Numerous valve and safety accessory configurations

Component Materials

Silicone-free



Lever: zamak, nickel-plated brass or 316L stainless steel (0591)

Stem nut: nickel-plated brass or 316L stainless steel (0591)

Locking nut: nickel-plated brass or 316L stainless steel (0591)

Top packing washer: brass or 316L stainless steel (0591)

Needle: nickel-plated brass or 316L stainless steel (0591)

Body: nickel-plated shot-blasted brass or stainless steel (0591)

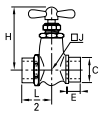
Bottom packing washer: mineral fibre

Regulations

- **PED**
- **REACH**
- **RoHS**

0502 In-Line Needle Valve, Female BSPP Thread

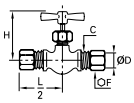
Nickel-plated brass



DN	C		E	H	H max	J	L/2	Kg
4	G1/8	**0502 04 10**	9	56	50	17	23	0.133
	G1/4	**0502 04 13**	11	56	50	17	23	0.120
6	G3/8	**0502 06 17**	12	67	60		26	0.171
9	G3/8	**0502 09 17**	12	82	70		33	0.426

0510 In-Line Needle Valve with Compression Connections

Nickel-plated brass

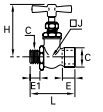


DN	ØD	C		F	H min	H max	L/2	Kg
4	6	M10x1	**0510 04 06**	13	42	46	29	0.083
8	8	M12x1	**0510 05 08**	14	42	46	30	0.083
5	10	M16x1.5	**0510 05 10**	19	42	46	31	0.134

The needle is sealed by an O-ring.
Maximum operating pressure: Ø4: 100 bar, Ø5: 60 bar
Working temperature: -15°C to +70°C
Tightening torques: please refer to the Compression Fittings chapter of this catalogue.

0501 In-Line Needle Valve, Male/Female BSPP Thread

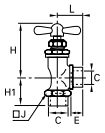
Nickel-plated brass



DN	C		E	E1	H	H max	J	L	Kg
4	G1/8	**0501 04 10**	9	7	56	50	17	44	0.118
	G1/4	**0501 04 13**	11	9.5	56	50	17	46	0.115
6	G3/8	**0501 06 17**	12	9.5	67	60		48	0.158

0532 Right-Angle Needle Valve, Female BSPP Thread

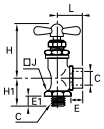
Nickel-plated brass



DN	C		E	H min	H max	H1	J	L	Kg
4	G1/8	**0532 04 10**	9	46	52	46	19	17	19	0.093
	G1/4	**0532 04 13**	11	46	52	46	21	17	21	0.087
6	G1/4	**0532 06 13**	11	55	63	55	26	22	26	0.171

0531 Right-Angle Needle Valve, Male/Female BSPP Thread

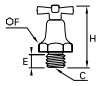
Nickel-plated brass



DN	C		E	E1	H min	H max	H1	J	L	Kg
4	G1/8	0531 04 10	7	9	46	52	46	19	17	19	0.082
	G1/4	0531 04 13	9.5	11	46	52	46	21	17	21	0.090
6	G1/4	0531 06 13	9.5	11	55	63	55	25	22	26	0.155
	G3/8	0531 06 17	9.5	12	55	63	55	25	22	27	0.153
10	G1/2	0531 10 21	13	16	62	72	62	34	26	33	0.329

0562 Needle Drain Valve, Male BSPP and Metric Thread

Brass



DN	C		E	F	H min	H max	Kg
5	G1/8	0562 05 10	8	16	36	40	36	0.032
	G1/4	0562 05 13	10	19	38.5	42.5	38.5	0.040
	M10x1	0562 05 60	8	16	37.5	40	37.5	0.031

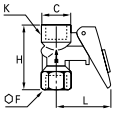
0563 Needle Drain Valve, BSPT Thread

Brass

DN	C		F	H min	H max	Kg
5	R1/4	0563 05 14	14	28.5	32.5	28.5	0.021

0627 Automatic Vent Pressure Gauge Valve, Female BSPP Thread

Nickel-plated brass, NBR

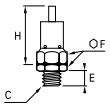


C		F	H	K	L	Kg
G1/4	0627 00 13	19	43.5	20	40	0.097

Pressure: 10 bar
This isolating valve is used to connect a pressure gauge to a circuit.
Resetting the lever isolates and vents the gauge.
A locking pin can be used to enable the gauge to be fitted permanently.

0630 Pressure Relief Valve, Male BSPP Thread

Brass

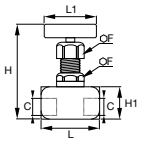


C		E	F	H	Kg
G1/4	0630 06 13	9	17	42.5	0.050

This valve is delivered without calibration, but can be adjusted by inserting metal washers into the hexagon (F).
Maximum working pressure: 10 bar
Calibration from 1 to 10 bar (not below)

0591 Needle Valve, Female BSPP Thread

Stainless steel 316L, PTFE



DN	C		F	H min	H max	H1	L	L1	Kg
3	G1/8	0591 03 10	22	90	99	90	25	45	48	0.342
4	G1/4	0591 04 13	22	90	99	90	25	50	48	0.354
5	G3/8	0591 05 17	22	90	104	90	30	56	48	0.430
6	G1/2	0591 06 21	22	90	104	90	30	62	48	0.478

Butterfly Valves

The butterfly valve allows frequent operation with very low torque on circuits without retention zones.

Technical Characteristics

- **Compatible Fluids:** Compressed air, abrasive fluids
- **Working Pressure:** 0 to 16 bar
- **Working Temperature:** -20°C to +80°C

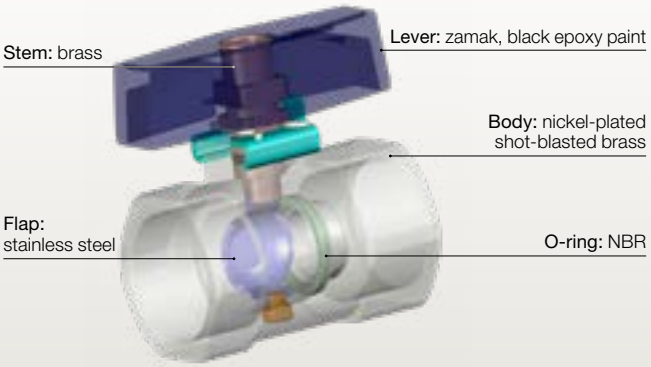
Reliable performance is dependent upon the type of fluid conveyed.

Advantages

- Compatible with abrasive fluids (including solid particles)
- Fluid flow direction marked (uni-directional)
- Small size
- Simple and efficient design

Component Materials

Silicone-free

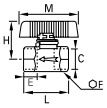


Regulations

- **PED**
- **REACH**
- **RoHS**

4602 2/2 Butterfly Shut-Off Valve, Female BSPP Thread

Nickel-plated brass, NBR



DN	C		E	F	H	L	M	Kg
6	G1/4	**4602 06 13**	9	17	35	34	54	0.102
7	G3/8	**4602 07 17**	11	22	35	39	54	0.136
10	G1/2	**4602 10 21**	12	24	37	42	54	0.140
13	G3/4	**4602 13 27**	14	30	40	49	54	0.208
18	G1	**4602 18 34**	15	41	46	55	54	0.412

This valve is equipped with a pneumatic or electro-pneumatic actuator, so it can be integrated into simple automated systems.

Technical Characteristics

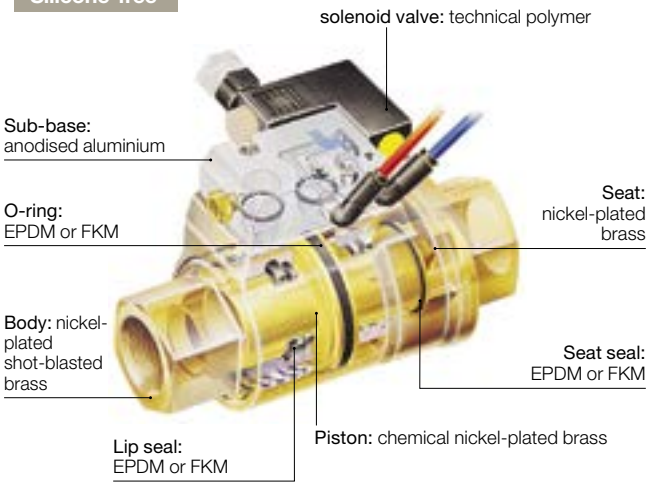
- **Compatible Fluids:** Compressed air, water, industrial fluids...
  Other fluids: please consult us
- **Working Pressure:** 10 bar max.
- **Pilot Pressure:** NC and NO: 4.2 to 8 bar
  Double-acting: 3 to 8 bar
- **Working Temperature:** -20°C to +150°C (suffix 20 FKM)
  -20°C to +150°C (suffix 30 EPDM)

Reliable performance is dependent upon the type of fluid conveyed, component materials and tubing being used.

Guaranteed for use with a vacuum of 740 mm Hg (97% vacuum).

Component Materials

Silicone-free

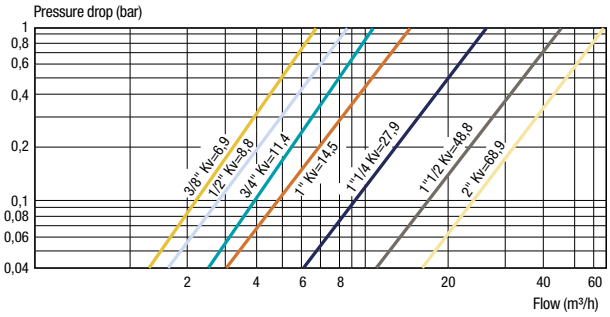


Advantages

- Very compact
- Simple to install: ready-to-use
- Two seal materials (FKM, EPDM) for a wider chemical and temperature range
- Pneumatic or electro-pneumatic
- Three versions: normally closed, normally open and double-acting

Flow Curve and Pressure Drop (Kv)

Kv in m³/h (ambient water temperature, under a differential pressure of 1 bar)



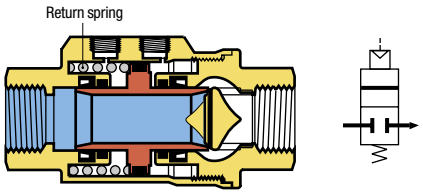
Regulations

- **PED**
- **REACH**
- **RoHS**

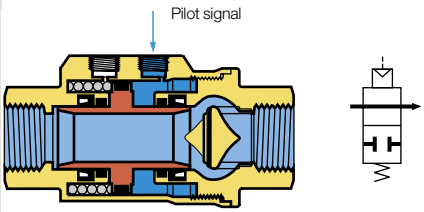
Operation

Depending on operational requirement, air is passed into the actuation chamber to open or close the valve.

Normally Closed Axial Valve (NC)

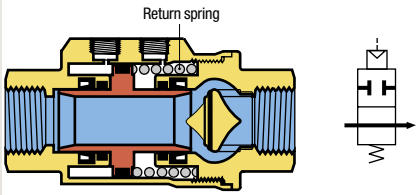


Rest State (valve closed)

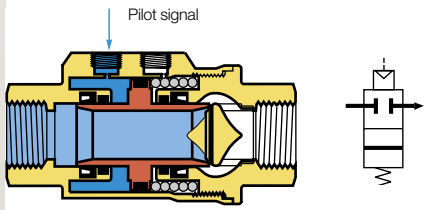


Piloted State (valve open)

Normally Open Axial Valve (NO)

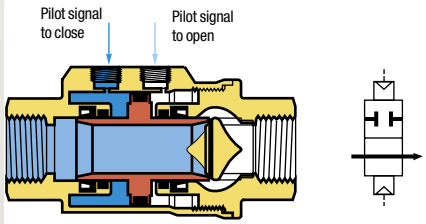


Rest State (valve open)



Piloted State (valve closed)

Double-Acting Axial Valve (DA)



Piloted State (valve closed)

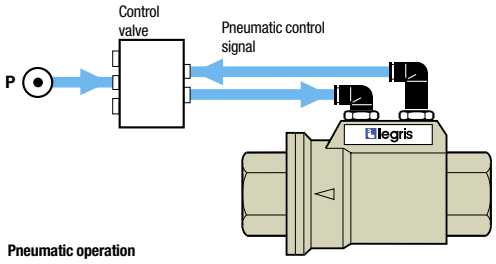
Installation Options

The Parker Legris axial valve offers 3 different control methods dependant on the requirements of the installation:

Pneumatic Control

Example: Double-acting axial valve 4222

- local compressed air control
- for repetitive on/off cycles
- remote control where access to the machine is difficult
- for explosive or explosion prevention areas

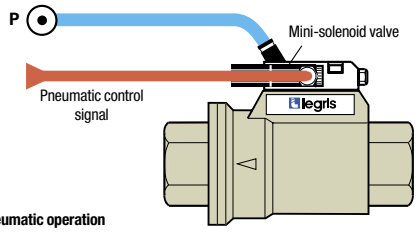


Pneumatic operation

Electro-Pneumatic Control

Example: Normally closed axial valve 4202 + sub-base and Mini-solenoid valve 4298

- for automated industrial systems requiring remote control
- Namur seating plane solenoid valve

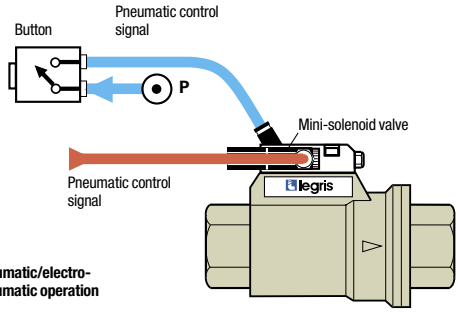


Electro-pneumatic operation

Dual Pneumatic and Electro-Pneumatic Control

Example: Normally open axial valve 4212 + sub-base and Mini-solenoid valve 4298 + Pneumatic push-button 4299

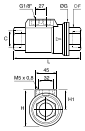
- dual control structure
- for increased safety: prevents localised operating errors
- Namur seating plane solenoid valve



Pneumatic/electro-pneumatic operation

4202..20 Normally Closed Axial Valve with FKM Seal, Female BSPP Thread

Nickel-plated brass, FKM

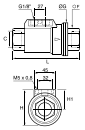


C		F	G	H	H1	L	Kg
G3/8	4202 10 17 20	22	46	54	31	98	0.834
G1/2	4202 15 21 20	27	52	60	35	112	1.075
G3/4	4202 20 27 20	33	64	70	38	135	1.624
G3/4	4202 20 27 30	33	64	70	38	135	1.606
G1	4202 25 34 20	41	69	76	41.5	143	2.033
G1 1/4	4202 32 42 20*	50	86	91	48	165	3.266
G1 1/2	4202 40 49 20*	60	96	102	54	180	4.195
G2	4202 50 48 20*	75	109	115	60.5	207	6.465

Pilot port: G1/8
Delivered with a silencer
*Models with EC marking

4202..30 Normally Closed Axial Valve with EPDM seal, Female BSPP Thread

Nickel-plated brass, EPDM

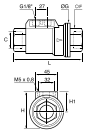


C		F	G	H	H1	L	Kg
G3/8	4202 10 17 30	22	46	54	31	98	0.818
G1/2	4202 15 21 30	27	52	60	35	112	1.071
G1	4202 25 34 30	41	69	76	41.5	143	2.013
G1 1/4	4202 32 42 30*	50	86	91	48	165	3.315
G1 1/2	4202 40 49 30*	60	96	102	54	180	4.195
G2	4202 50 48 30*	75	109	115	60.5	207	6.360

Pilot port: G1/8
Delivered with a silencer
*Models with EC marking

4212..20 Normally Open Axial Valve with FKM Seal, Female BSPP Thread

Nickel-plated brass, FKM

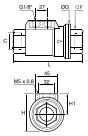


C		F	G	H	H1	L	Kg
G3/8	**4212 10 17 20**	22	46	54	31	98	0.824
G1/2	**4212 15 21 20**	27	52	60	35	112	1.096
G3/4	**4212 20 27 20**	33	64	70	38	135	1.637
G1	**4212 25 34 20**	41	69	76	41.5	143	2.025
G1 1/2	**4212 40 49 20***	60	96	102	54	180	4.188
G2	**4212 50 48 20***	75	109	115	60.5	207	6.555

Pilot port: G1/8
Delivered with a silencer
*Models with EC marking

4222..20 Double-Acting Axial Valve with FKM Seal, Female BSPP Thread

Nickel-plated brass, FKM

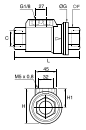


C		F	G	H	H1	L	Kg
G3/8	**4222 10 17 20**	22	46	54	31	98	0.802
G1/2	**4222 15 21 20**	27	52	60	35	112	1.042
G3/4	**4222 20 27 20**	33	64	70	38	135	1.571
G1	**4222 25 34 20**	41	69	76	41.5	143	1.942
G1 1/2	**4222 40 49 20***	60	96	102	54	180	3.995
G2	**4222 50 48 20***	75	109	115	60.5	207	6.275

Pilot port: G1/8
*Models with EC marking

4222..30 Double Acting Axial Valve with EPDM seal, Female BSPP Thread

Nickel-plated brass, EPDM

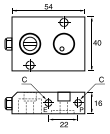


C		F	G	H	H1	L	Kg
G1/2	**4222 15 21 30**	27	52	60	35	112	1.046
G1 1/4	**4222 32 42 30***	50	86	91	48	165	3.301

Pilot port: G1/8
*Models with EC marking

4298 Sub-Base for Solenoid Pilot Valve

Treated aluminium, NBR



C		Kg
M5x0.8	**4298 00 01**	0.095

The sub-base is fitted directly to the axial valve and alows the mounting of a 15x15 solenoid valve.
Supplied with 2 fixing bolts, silencer and seats.

4298 Mini-Solenoid Valve 1W/12VA

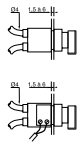
Anodized aluminium

	Voltage	Kg
4298 01 01	24V = CC*	0.051
4298 01 02	24V ~ CA**	0.058
4298 02 01	110V ~ CA**	0.051
4298 02 02	220V ~ CA**	0.054

*Direct current
**Alternating current

4299 Pneumatic Button

Nickel-plated brass, technical polymer



	Contact	Kg
4299 01 01		0.090

Bulkhead fixing hole diameter: Ø22 mm

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	Profile	DN	Series	KF	KA	KB	KL	Plugs
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	German	2,5	Series 50		P. 204			Series 50
	EURO	2,7	Series 20		P. 206	P. 208		Series 20
		3	Mini Series	P. 211				Mini Series
		5	Standard Series		P. 212			Standard Series
	British	5	Series 17		P. 214			Series 17
	EURO	5	Series 21		P. 216	P. 219	P. 222	Series 21
	ARO	5,5	Series 14		P. 225			Series 22
	ISO C	5,5	Series 18		P. 227			Series 18
	British	5,5	Series 19		P. 229			Series 19
	ARO	5,5	Series 22		P. 231			Series 22
	ISO B	5,5	Series 24		P. 233			Series 23
	ISO B	5,5	Series 23		P. 235			Series 23
	ISO B	5,5	Series 1400		P. 237			Series 23
	German	6	Series 52		P. 239	P. 239		Series 52
	EURO	7,2	Series 26		P. 241	P. 243		Series 25/26
	Japanese	7,5	Series 13		P. 245			Series 13
	EURO	7,8	Series 25		P. 247	P. 249		Series 25
	EURO	7,8	Series 1600		P. 251			Series 25
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	Scandinavian	8	Series 33		P. 255			Series 33
	ISO B	8,5	Series 30		P. 257			Series 30
	ARO	9	Series 40		P. 259			Series 40
	EURO	10	Series 27		P. 260	P. 261		Series 27
	EURO	10	Series 1700		P. 263			Series 27
	EURO	10	Series 1727		P. 265			Series 27
	Scandinavian	10	Series 34		P. 267			Series 34
	various	10	Series 41	P. 269				Series 41
	ISO B	11	Series 37		P. 271			Series 37
	German	12	Series 57		P. 273	P. 273		Series 57
	American	15	Series 38		P. 275	P. 275		Series 38
	American	19	Series 39		P. 277	P. 277	P. 278	Series 39
	ISO 7241-1 B	4,3-20	Series 70			P. 280		Series 70
Stainless Steel	EURO	2,7	Series 20		P. 281	P. 282		Series 20
	ISO C	3	Series 303			P. 284		Series 303
	EURO	5	Series 21		P. 286	P. 288		Series 21
	EURO	7,4	Series 25		P. 290	P. 291		Series 25
	EURO	10	Series 27		P. 293	P. 294		Series 27
	ISO 7241-1 B	4,3-20	Series 70			P. 296		Series 70

		Profile	DN	Series	KF	KA	KB	KL	Plugs
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			7	Series 48		P. 303	P. 303		Series 48
			4,3-20	Series 70			P. 307		Series 70
				Components					
Flat sealing			4-9	Series 200KL				P. 309	Series 200
			3-12	Series 200KLEK				P. 311	Series 200KLEK
Safety	Standard		5	Series 21KS		P. 313	P. 314		Series 21
			7,8	Series 25KS		P. 316	P. 317		Series 25
	Breathing Air		7,4	Series 95KS		P. 318			Series 95
			7,4	Series 96KS		P. 320			Series 96
	Self-Venting with Push Button Technology	ISO 6150 C	5,5	Series 18KP		P. 322			Series 18
		ISO 6150 B	5,5	Series 24KP		P. 324			Series 23
		EURO	7,4	Series 26KP		P. 326			Series 25
		ISO 6150 B	8	Series 30KP		P. 328			Series 30
		ISO 6150 C	8	Series 84KP		P. 330			Series 84
	Self-Venting with Sleeve Technology	ARO	5,5	Series 14KE		P. 332			Series 22
		ISO B	5,5	Series 1400KE		P. 334			Series 23
		ISO B	5,5	Series 24KE		P. 336			Series 23
		EURO	7,4	Series 26KE		P. 338			Series 25
		EURO	7,8	Series 1600KE		P. 340			Series 25
		EURO	10	Series 1700KE		P. 342			Series 27
		ISO B, ARO, EURO	5,5/7,2/8	C 9000		P. 344			C 9000
Coded Sys-tems			5	Series 21		P. 349	P. 350		Series 21
			7,8	Series 25		P. 352	P. 354		Series 25
Accessories		Components							
Mold		International	6 / 9 / 13	Series 86 / 87 / 88	P. 358	P. 360	P. 360		Series 86/87/88
		International	6 / 9	Series 86 / 87 Safe Lock Technology	P. 363	P. 364	P. 364		Series 86/87/88
		European	6 / 9 / 13	Series 10 / 11/ 12	P. 365	P. 367	P. 367		Series 10/11/12
		European	6 / 9	Series 10 / 11 Safe Lock Technology	P. 370	P. 371	P. 371		Series 10/11/12
		European	6 / 9	Series 10 / 11 Safety Locking Technology	P. 372	P. 373	P. 373		Series 10/11/12
		French	8	Series 608	P. 375				Series 608
		Multi-Matic	8,1	Series 93	P. 377			P. 377	Series 93
	Accessories			Components					
	Hoses								
Water			12	Midi Series	P. 381	P. 381			Midi Series
			19	Maxi Series	P. 384				Maxi Series

WARNING: Failure or improper selection or improper use of hose, tubing, fittings, assemblies, valves, connectors, conductors or related accessories ("Products") can cause death, personal injury and property damage. Possible consequences of failure or improper selection or improper use of these Products include but are not limited to:

- Fittings thrown off at high speed.
- High velocity fluid discharge.
- Explosion or burning of the conveyed fluid.
- Electrocution from high voltage electric powerlines.
- Contact with suddenly moving or falling objects that are controlled by the conveyed fluid.
- Injections by high-pressure fluid discharge.
- Dangerously whipping Hose.
- Tube or pipe burst.
- Weld joint fracture.
- Contact with conveyed fluids that may be hot, cold, toxic or otherwise injurious.
- Sparking or explosion caused by static electricity buildup or other sources of electricity.
- Sparking or explosion while spraying paint or flammable liquids.
- Injuries resulting from inhalation, ingestion or exposure to fluids.

Before selecting or using any of these Products, it is important that you read and follow the instructions below. No product from any division in Fluid Connector Group is approved for in-flight aerospace applications. For hoses and fittings used in in-flight aerospace applications, please contact Parker Aerospace Group

1.0 GENERAL INSTRUCTIONS

1.1 Scope: This safety guide provides instructions for selecting and using (including assembling, installing, and maintaining) these Products. For convenience, all rubber and/or thermoplastic products commonly called "hose" or "tubing" are called "Hose" in this safety guide. Metallic tube or pipe are called "tube". All assemblies made with Hose are called "Hose Assemblies". All assemblies made with Tube are called "Tube Assemblies". All products commonly called "fittings", "couplings" or "adapters" are called "Fittings". Valves are fluid system components that control the passage of fluid. Related accessories are ancillary devices that enhance or monitor performance including crimping, flaring, flanging, presetting, bending, cutting, deburring, swaging machines, sensors, tags, lockout handles, spring guards and associated tooling. This safety guide is a supplement to and is to be used with the specific Parker publications for the specific Hose, Fittings and Related Accessories that are being considered for use. Parker publications are available at www.parker.com. SAE J1273 (www.sae.org) and ISO 17165-2 (www.ansi.org) also provide recommended practices for hydraulic Hose Assemblies, and should be followed.

1.2 Fail-Safe: Hose, Hose Assemblies, Tube, Tube Assemblies and Fittings can and do fail without warning for many reasons. Design all systems and equipment in a fail-safe mode, so that failure of the Hose, Hose Assembly, Tube, Tube Assembly or Fitting will not endanger persons or property.

1.3 Distribution: Provide a copy of this safety guide to each person responsible for selecting or using Hose, Tube and Fitting products. Do not select or use Parker Hose, Tube or Fittings without thoroughly reading and understanding this safety guide as well as the specific Parker publications for the Products.

1.4 User Responsibility: Due to the wide variety of operating conditions and applications for Hose, Tube and Fittings. Parker does not represent or warrant that any particular Hose, Tube or Fitting is suitable for any specific end use system. This safety guide does not analyze all technical parameters that must be considered in selecting a product. The user, through its own analysis and testing, is solely responsible for:

- Making the final selection of the Products.
- Assuring that the user's requirements are met and that the application presents no health or safety hazards.
- Following the safety guide for Related Accessories and being trained to operate Related Accessories.
- Providing all appropriate health and safety warnings on the equipment on which the Products are used.
- Assuring compliance with all applicable government and industry standards.

1.5 Additional Questions: Call the appropriate Parker technical service department if you have any questions or require any additional information. See the Parker publication for the Products being considered or used, or call 1-800-CPARKER, or go to www.parker.com, for telephone numbers of the appropriate technical service department.

2.0 HOSE, TUBE AND FITTINGS SELECTION INSTRUCTIONS

2.1 Electrical Conductivity: Certain applications require that the Hose be nonconductive to prevent electrical current flow. Other applications require the Hose and the Fittings and the Hose/Fitting interface to be sufficiently conductive to drain off static electricity. Extreme care must be exercised when selecting Hose, Tube and Fittings for these or any other applications in which electrical conductivity or nonconductivity is a factor. The electrical conductivity or nonconductivity of Hose, Tube and Fittings is dependent upon many factors and may be susceptible to change. These factors include but are not limited to the various materials used to make the Hose and the Fittings, Fitting finish (some Fitting finishes are electrically conductive while others are nonconductive), manufacturing methods (including moisture control), how the Fittings contact the Hose, age and amount of deterioration or damage or other changes, moisture content of the Hose at any particular time, and other factors. The following are considerations for electrically nonconductive and conductive Hose. For other applications consult the individual catalog pages and the appropriate industry or regulatory standards for proper selection.

2.1.1 Electrically Nonconductive Hose: Certain applications require that the Hose be nonconductive to prevent electrical current flow or to maintain electrical isolation. For applications that require Hose to be electrically nonconductive, including but not limited to applications near high voltage electric lines, only special nonconductive Hose can be used. The manufacturer of the equipment in which the nonconductive Hose is to be used must be consulted to be certain that the Hose, Tube and Fittings that are selected are proper for the application. Do not use any Parker Hose or Fittings for any such application requiring nonconductive Hose, including but not limited to applications near high voltage electric lines or dense magnetic fields, unless (i) the application is expressly approved in the Parker technical publication for the product, (ii) the Hose is marked "nonconductive", and (iii) the manufacturer of the equipment on which the Hose is to be used specifically approves the particular Parker Hose, Tube and Fittings for such use.

2.1.2 Electrically Conductive Hose: Parker manufactures special Hose for certain applications that require electrically conductive Hose. Parker manufactures special Hose for conveying paint in airless paint spraying applications. This Hose is labeled "Electrically Conductive Airless Paint Spray Hose" on its layline and packaging. This Hose must be properly connected to the appropriate Parker Fittings and properly grounded in order to dissipate dangerous static charge buildup, which occurs in all airless paint spraying applications. Do not use any other Hose for airless paint spraying, even if electrically conductive. Use of any other Hose or failure to properly connect the Hose can cause a fire or an explosion resulting in death, personal injury, and property damage. All hoses that convey fuels must be grounded. Parker manufactures a special Hose for certain compressed natural gas ("CNG") applications where static electricity buildup may occur. Parker CNG Hose assemblies comply with the requirements of ANSI/IAS NGV 4.2; CSA 12.52, "Hoses for Natural Gas Vehicles and Dispensing Systems" (www.ansi.org). This Hose is labeled "Electrically Conductive for CNG Use" on its layline and packaging. This Hose must be properly connected to the appropriate Parker Fittings and properly grounded in order to dissipate dangerous static charge buildup, which occurs in, for example, high velocity CNG dispensing or transfer. Do not use any other Hose for CNG applications where static charge buildup may occur, even if electrically conductive. Use of other Hoses in CNG applications or failure to properly connect or ground this Hose can cause a fire or an explosion resulting in death, personal injury, and property damage. Care must also be taken to protect against CNG permeation through the Hose wall. See section 2.6, Permeation, for more information. Parker CNG Hose is intended for dispenser and vehicle use within the specified temperature range. Parker CNG Hose should not be used in confined spaces or unventilated areas or areas exceeding the specified temperature range. Final assemblies must be tested for leaks. CNG Hose Assemblies should be tested on a monthly basis for conductivity per ANSI/IAS NGV 4.2; CSA 12.52. Parker manufactures special Hose for aerospace in-flight applications.

Aerospace in-flight applications employing Hose to transmit fuel, lubricating fluids and hydraulic fluids require a special Hose with a conductive inner tube. This Hose for in-flight applications is available only from Parker's Stratoflex Products Division. Do not use any other Parker Hose for in-flight applications, even if electrically conductive. Use of other Hoses for in-flight applications or failure to properly connect or ground this Hose can cause a fire or an explosion resulting in death, personal injury and property damage. These Hose assemblies for inflight applications must meet all applicable aerospace industry, aircraft engine and aircraft requirements.

2.2 Pressure: Hose, Tube and Fitting selection must be made so that the published maximum working pressure of the Hose, Tube and Fittings are equal to or greater than the maximum system pressure. The maximum working pressure of a Hose, or Tube Assembly is the lower of the respective published maximum working pressures of the Hose, Tube and the Fittings used. Surge pressures or peak transient pressures in the system must be below the published maximum working pressure for the Hose, Tube and Fitting. Surge pressures and peak pressures can usually only be determined by sensitive electrical instrumentation that measures and indicates pressures at millisecond intervals. Mechanical pressure gauges indicate only average pressures and cannot be used to determine surge pressures or peak transient pressures. Published burst pressure ratings for Hose is for manufacturing test purposes only and is no indication that the Product can be used in applications at the burst pressure or otherwise above the published maximum recommended working pressure.

2.3 Suction: Hoses used for suction applications must be selected to insure that the Hose will withstand the vacuum and pressure of the system. Improperly selected Hose may collapse in suction application.

2.4 Temperature: Be certain that fluid and ambient temperatures, both steady and transient, do not exceed the limitations of the Hose, Tube, Fitting and Seals. Temperatures below and above the recommended limit can degrade Hose, Tube, Fittings and Seals to a point where a failure may occur and release fluid. Tube and Fittings performances are normally degraded at elevated temperature. Material compatibility can also change at temperatures outside of the rated range. Properly insulate and protect the Hose Assembly when routing near hot objects (e.g. manifolds). Do not use any Hose in any application where failure of the Hose could result in the conveyed fluids (or vapors or mist from the conveyed fluids) contacting any open flame, molten metal, or other potential fire ignition source that could cause burning or explosion of the conveyed fluids or vapors.

2.5 Fluid Compatibility: Hose, and Tube Assembly selection must assure compatibility of the Hose tube, cover, reinforcement, Tube, Plating and Seals with the fluid media used. See the fluid compatibility chart in the Parker publication for the product being considered or used. This information is offered only as a guide. Actual service life can only be determined by the end user by testing under all extreme conditions and other analysis. Hose, and Tube that is chemically compatible with a particular fluid must be assembled using Fittings and adapters containing likewise compatible seals. Flange or flare processes can change Tube material properties that may not be compatible with certain requirements such as NACE

2.6 Permeation: Permeation (that is, seepage through the Hose or Seal) will occur from inside the Hose or Fitting to outside when Hose or Fitting is used with gases, liquid and gas fuels, and refrigerants (including but not limited to such materials as helium, diesel fuel, gasoline, natural gas, or LPG). This permeation may result in high concentrations of vapors which are potentially flammable, explosive, or toxic, and in loss of fluid. Dangerous explosions, fires, and other hazards can result when using the wrong Hose for such applications. The system designer must take into account the fact that this permeation will take place and must not use Hose or Fitting if this permeation could be hazardous. The system designer must take into account all legal, government, insurance, or any other special regulations which govern the use of fuels and refrigerants. Never use a Hose or Fitting even though the fluid compatibility is acceptable without considering the potential hazardous effects that can result from permeation through the Hose or Tube Assembly. Permeation of moisture from outside the Hose or Fitting to inside the Hose or Fitting will also occur in Hose or Tube assemblies, regardless of internal pressure. If this moisture permeation would have detrimental effects (particularly, but not limited to refrigeration and air conditioning systems), incorporation of sufficient drying capacity in the system or other appropriate system safeguards should be selected and used. The sudden pressure release of highly pressurized gas could also result in Explosive Decompression failure of permeated Seals and Hoses.

2.7 Size: Transmission of power by means of pressurized fluid varies with pressure and rate of flow. The size of the components must be adequate to keep pressure losses to a minimum and avoid damage due to heat generation or excessive fluid velocity.

2.8 Routing: Attention must be given to optimum routing to minimize inherent problems (kinking or flow restriction due to Hose collapse, twisting of the Hose, proximity to hot objects or heat sources). For additional routing recommendations see SAE J1273 and ISO 17165-2. Hose Assemblies have a finite life and should be installed in a manner that allows for ease of inspection and future replacement. Hose because of its relative short life, should not be used in residential and commercial buildings inside of inaccessible walls or floors, unless specifically allowed in the product literature. Always review all product literature for proper installation and routing instructions.

2.9 Environment: Care must be taken to insure that the Hose, Tube and Fittings are either compatible with or protected from the environment (that is, surrounding conditions) to which they are exposed. Environmental conditions including but not limited to ultraviolet radiation, sunlight, heat, ozone, moisture, water, salt water, chemicals and air pollutants can cause degradation and premature failure.

2.10 Mechanical Loads: External forces can significantly reduce Hose, Tube and Fitting life or cause failure. Mechanical loads which must be considered include excessive flexing, twist, kinking, tensile or side loads, bend radius, and vibration. Use of swivel type Fittings or adapters may be required to insure no twist is put into the Hose. Use of proper Hose or Tube clamps may also be required to reduce external mechanical loads. Unusual applications may require special testing prior to Hose selection.

2.11 Physical Damage: Care must be taken to protect Hose from wear, snagging, kinking, bending smaller that minimum bend radius and cutting, any of which can cause premature Hose failure. Any Hose that has been kinked or bent to a radius smaller than the minimum bend radius, and any Hose that has been cut or is cracked or is otherwise damaged should be removed and discarded. Fittings with damages such as scratches on sealing surfaces and deformation should be replaced.

2.12 Proper End Fitting: See instructions 3.2 through 3.5. These recommendations may be substantiated by testing to industry standards such as SAE J517 for hydraulic applications, or MIL-A-5070, AS1339, or AS3517 for Hoses from Parker's Stratoflex Products Division for aerospace applications.

2.13 Length: When determining the proper Hose or Tube length of an assembly take into consideration. The Hose length change due to pressure. The Tube length change due to thermal expansion or contraction, and the Hose or Tube machine tolerances and movements. When routing short hose assemblies, it is recommended that the minimum free hose length is always used. Consult the hose manufacturer for their minimum free hose length recommendations. Hose assemblies should be installed in such a way that any motion or flexing occurs within the same plane.

2.14 Specifications and Standards: When selecting Hose, Tube and Fittings, government, industry, and Parker specifications and recommendations must be reviewed and followed as applicable.

2.15 Hose Cleanliness: Hose and Tube components may vary in cleanliness levels. Care must be taken to ensure that the Hose and Tube Assembly selected has an adequate level of cleanliness for the application.

2.16 Fire Resistant Fluids: Some fire resistant fluids that are to be conveyed by Hose or Tube require use of the same type of Hose or Tube as used with petroleum base fluids. Some such fluids require a special Hose, Tube, Fitting and Seal, while a few fluids will not work with any Hose at all. See instructions 2.5 and 1.5. The wrong Hose, Tube, Fitting or Seal may fail after a very short service. In addition, all liquids but pure water may burn fiercely under certain conditions, and even pure water leakage may be hazardous.

2.17 Radiant Heat: Hose and Seals can be heated to destruction without contact by such nearby items as hot manifolds or molten metal. The same heat source may then initiate a fire. This can occur despite the presence of cool air around the Hose or Seal. Performance of Tube and Fitting subjected to the heat could be degraded.

2.18 Welding or Brazing: When using a torch or arc welder in close proximity to hydraulic lines, the hydraulic lines should be removed or shielded with appropriate fire resistant materials. Flame or weld spatter could burn through the Hose or Seal and possibly ignite escaping fluid resulting in a catastrophic failure. Heating of plated parts, including Hose Fittings and adapters, above 450°F (232°C) such as during welding, brazing or soldering may emit deadly gases. Any elastomer seal on fittings shall

be removed prior to welding or brazing, any metallic surfaces shall be protected after brazing or welding when necessary. Welding and brazing filler material shall be compatible with the Tube and Fitting that are joined.

2.19 Atomic Radiation: Atomic radiation affects all materials used in Hose and Tube assemblies. Since the long-term effects may be unknown, do not expose Hose or Tube assemblies to atomic radiation. Nuclear applications may require special Tube and Fittings.

2.20 Aerospace Applications: The only Hose, Tube and Fittings that may be used for in-flight aerospace applications are those available from Parker's Stratoflex Products Division. Do not use any other Hose or Fittings for in-flight applications. Do not use any Hose or Fittings from Parker's Stratoflex Products Division with any other Hose or Fittings, unless expressly approved in writing by the engineering manager or chief engineer of Stratoflex Products Division and verified by the user's own testing and inspection to aerospace industry standards.

2.21 Unlocking Couplings: Ball locking couplings or other Fittings with quick disconnect ability can unintentionally disconnect if they are dragged over obstructions, or if the sleeve or other disconnect member, is bumped or moved enough to cause disconnect. Threaded Fittings should be considered where there is a potential for accidental uncoupling.

3.0 HOSE AND FITTINGS ASSEMBLY AND INSTALLATION INSTRUCTIONS

3.1 Component Inspection: Prior to assembly, a careful examination of the Hose and Fittings must be performed. All components must be checked for correct style, size, catalog number, and length. The Hose must be examined for cleanliness, obstructions, blisters, cover looseness, kinks, cracks, cuts or any other visible defects. Inspect the Fitting and sealing surfaces for burrs, nicks, corrosion or other imperfections. Do NOT use any component that displays any signs of nonconformance.

3.2 Hose and Fitting Assembly: Do not assemble a Parker Fitting on a Parker Hose that is not specifically listed by Parker for that Fitting, unless authorized in writing by the engineering manager or chief engineer of the appropriate Parker division. Do not assemble a Parker Fitting on another manufacturer's Hose or a Parker Hose on another manufacturer's Fitting unless (i) the engineering manager or chief engineer of the appropriate Parker division approves the Assembly in writing or that combination is expressly approved in the appropriate Parker literature for the specific Parker product, and (ii) the user verifies the Assembly and the application through analysis and testing. For Parker Hose that does not specify a Parker Fitting, the user is solely responsible for the selection of the proper Fitting and Hose Assembly procedures. See instruction 1.4. To prevent the possibility of problems such as leakage at the Fitting or system contamination, it is important to completely remove all debris from the cutting operation before installation of the Fittings. The Parker published instructions must be followed for assembling the Fittings on the Hose. These instructions are provided in the Parker Fitting catalog for the specific Parker Fitting being used, or by calling 1-800-CPARKER, or at www.parker.com.

3.3 Related Accessories: Do not crimp or swage any Parker Hose or Fitting with anything but the listed swage or crimp machine and dies in accordance with Parker published instructions. Do not crimp or swage another manufacturer's Fitting with a Parker crimp or swage die unless authorized in writing by the engineering manager or chief engineer of the appropriate Parker division. 3.4 Parts: Do not use any Parker Fitting part (including but not limited to socket, shell, nipple, or insert) except with the correct Parker mating parts, in accordance with Parker published instructions, unless authorized in writing by the engineering manager or chief engineer of the appropriate Parker division.

3.5 Field Attachable/Permanent: Do not reuse any field attachable Hose Fitting that has blown or pulled off a Hose. Do not reuse a Parker permanent Hose Fitting (crimped or swaged) or any part thereof. Complete Hose Assemblies may only be reused after proper inspection under section 4.0. Do not assemble Fittings to any previously used hydraulic Hose that was in service, for use in a fluid power application.

3.6 Pre-Installation Inspection: Prior to installation, a careful examination of the Hose Assembly must be performed. Inspect the Hose Assembly for any damage or defects. DO NOT use any Hose Assembly that displays any signs of nonconformance.

3.7 Minimum Bend Radius: Installation of a Hose at less than the minimum listed bend radius may significantly reduce the Hose life. Particular attention must be given to preclude sharp bending at the Hose to Fitting juncture. Any bending during installation at less than the minimum bend radius must be avoided. If any Hose is kinked during installation, the Hose must be discarded.

3.8 Twist Angle and Orientation: Hose Assembly installation must be such that relative motion of machine components does not produce twisting.

3.9 Securement: In many applications, it may be necessary to restrain, protect, or guide the Hose to protect it from damage by unnecessary flexing, pressure surges, and contact with other mechanical components. Care must be taken to insure such restraints do not introduce additional stress or wear points.

3.10 Proper Connection of Ports: Proper physical installation of the Hose Assembly requires a correctly installed port connection insuring that no twist or torque is transferred to the Hose when the Fittings are being tightened or otherwise during use.

3.11 External Damage: Proper installation is not complete without insuring that tensile loads, side loads, kinking, flattening, potential abrasion, thread damage or damage to sealing surfaces are corrected or eliminated. See instruction 2.10.

3.12 System Checkout: All air entrapment must be eliminated and the system pressurized to the maximum system pressure (at or below the Hose maximum working pressure) and checked for proper function and freedom from leaks. Personnel must stay out of potential hazardous areas while testing and using.

3.13 Routing: The Hose Assembly should be routed in such a manner so if a failure does occur, the escaping media will not cause personal injury or property damage. In addition, if fluid media comes in contact with hot surfaces, open flame or sparks, a fire or explosion may occur. See section 2.4.

3.14 Ground Fault Equipment Protection Devices (GFEPDs): WARNING! Fire and Shock Hazard. To minimize the danger of fire if the heating cable of a Multitube bundle is damaged or improperly installed, use a Ground Fault Equipment Protection Device. Electrical fault currents may be insufficient to trip a conventional circuit breaker. For ground fault protection, the IEEE 515: (www.ansi.org) standard for heating cables recommends the use of GFEPDs with a nominal 30 milliampere trip level for "piping systems in classified areas, those areas requiring a high degree of maintenance, or which may be exposed to physical abuse or corrosive atmospheres".

4.0 TUBE AND FITTINGS ASSEMBLY AND INSTALLATION INSTRUCTIONS

4.1 Component Inspection: Prior to assembly, a careful examination of the Tube and Fittings must be performed. All components must be checked for correct style, size, material, seal, and length. Inspect the Fitting and sealing surfaces for burrs, nicks, corrosion, missing seal or other imperfections. Do NOT use any component that displays any signs of nonconformance.

4.2 Tube and Fitting Assembly: Do not assemble a Parker Fitting with a Tube that is not specifically listed by Parker for that Fitting, unless authorized in writing by the engineering manager or chief engineer of the appropriate Parker division. The Tube must meet the requirements specified to the Fitting. The Parker published instructions must be followed for assembling the Fittings to a Tube. These instructions are provided in the Parker Fitting catalog for the specific Parker Fitting being used, or by calling 1-800-CPARKER, or at www.parker.com.

4.3 Related Accessories: Do not preset or flange Parker Fitting components using another manufacturer's equipment or procedures unless authorized in writing by the engineering manager or chief engineer of the appropriate Parker division. Tube, Fitting component and tooling must be check for correct style, size and material. Operation and maintenance of Related Accessories must be in accordance with the operation manual for the designated Accessory.

4.4 Securement: In many applications, it may be necessary to restrain, protect, or guide the Tube to protect it from damage by unnecessary flexing, pressure surges, vibration, and contact with other mechanical components. Care must be taken to insure such restraints do not introduce additional stress or wear points.

4.5 Proper Connection of Ports: Proper physical installation of the Tube Assembly requires a correctly installed port connection insuring that no torque is transferred to the Tube when the Fittings are being tightened or otherwise during use.

4.6 External Damage: Proper installation is not complete without insuring that tensile loads, side loads, flattening, potential abrasion, thread damage or damage to sealing surfaces are corrected or eliminated. See instruction

2.10.

4.7 System Checkout: All air entrapment must be eliminated and the system pressurized to the maximum system pressure (at or below the Tube Assembly maximum working pressure) and checked for proper function and freedom from leaks. Personnel must stay out of potential hazardous areas while testing and using.

4.8 Routing: The Tube Assembly should be routed in such a manner so if a failure does occur, the escaping media will not cause personal injury or property damage. In addition, if fluid media comes in contact with hot surfaces, open flame or sparks, a fire or explosion may occur. See section 2.4.

5.0 HOSE AND FITTING MAINTENANCE AND REPLACEMENT INSTRUCTIONS

5.1 Even with proper selection and installation, Hose life may be significantly reduced without a continuing maintenance program. The severity of the application, risk potential from a possible Hose failure, and experience with any Hose failures in the application or in similar applications should determine the frequency of the inspection and the replacement for the Products so that Products are replaced before any failure occurs. Certain products require maintenance and inspection per industry requirements. Failure to adhere to these requirements may lead to premature failure. A maintenance program must be established and followed by the user and, at minimum, must include instructions 5.2 through 5.7
5.2 Visual Inspection Hose/Fitting: Any of the following conditions require immediate shut down and replacement of the Hose Assembly:
- Fitting slippage on Hose;
- Damaged, cracked, cut or abraded cover (any reinforcement exposed);
- Hard, stiff, heat cracked, or charred Hose;
- Cracked, damaged, or badly corroded Fittings;
- Leaks at Fitting or in Hose;
- Kinked, crushed, flattened or twisted Hose; and
- Blistered, soft, degraded, or loose cover.

5.3 Visual Inspection All Other: The following items must be tightened, repaired, corrected or replaced as required:
- Leaking port conditions;
- Excess dirt buildup;
- Worn clamps, guards or shields; and
- System fluid level, fluid type, and any air entrapment.

5.4 Functional Test: Operate the system at maximum operating pressure and check for possible malfunctions and leaks. Personnel must avoid potential hazardous areas while testing and using the system. See section 2.2.

5.5 Replacement Intervals: Hose assemblies and elastomeric seals used on Hose Fittings and adapters will eventually age, harden, wear and deteriorate under thermal cycling and compression set. Hose Assemblies and elastomeric seals should be inspected and replaced at specific replacement intervals, based on previous service life, government or industry recommendations, or when failures could result in unacceptable downtime, damage, or injury risk. See section 1.2. Hose and Fittings may be subjected to internal mechanical and/or chemical wear from the conveying fluid and may fail without warning. The user must determine the product life under such circumstances by testing. Also see section 2.5.

5.6 Hose Inspection and Failure: Hydraulic power is accomplished by utilizing high pressure fluids to transfer energy and do work. Hoses, Fittings and Hose Assemblies all contribute to this by transmitting fluids at high pressures. Fluids under pressure can be dangerous and potentially lethal and, therefore, extreme caution must be exercised when working with fluids under pressure and handling the Hoses transporting the fluids. From time to time, Hose Assemblies will fail if they are not replaced at proper time intervals. Usually these failures are the result of some form of misapplication, abuse, wear or failure to perform proper maintenance. When Hoses fail, generally the high pressure fluids inside escape in a stream which may or may not be visible to the user. Under no circumstances should the user attempt to locate the leak by “feeling” with their hands or any other part of their body. High pressure fluids can and will penetrate the skin and cause severe tissue damage and possibly loss of limb. Even seemingly minor hydraulic fluid injection injuries must be treated immediately by a physician with knowledge of the tissue damaging properties of hydraulic fluid. If a Hose failure occurs, immediately shut down the equipment and leave the area until pressure has been completely released from the Hose Assembly. Simply shutting down the hydraulic pump may or may not eliminate the pressure in the Hose Assembly. Many times check valves, etc., are employed in a system and can cause pressure to remain in a Hose Assembly even when pumps or equipment are not operating. Tiny holes in the Hose, commonly known as pinholes, can eject small, dangerously powerful but hard to see streams of hydraulic fluid. It may take several minutes or even hours for the pressure to be relieve so that the Hose Assembly may be examined safely. Once the pressure has been reduced to zero, the Hose Assembly may be taken off the equipment and examined. It must always be replaced if a failure has occurred. Never attempt to patch or repair a Hose Assembly that has failed. Consult the nearest Parker distributor or the appropriate Parker division for Hose Assembly replacement information. Never touch or examine a failed Hose Assembly unless it is obvious that the Hose no longer contains fluid under pressure. The high pressure fluid is extremely dangerous and can cause serious and potentially fatal injury.

5.7 Elastomeric seals: Elastomeric seals will eventually age, harden, wear and deteriorate under thermal cycling and compression set. Elastomeric seals should be inspected and replaced.

5.8 Refrigerant gases: Special care should be taken when working with refrigeration systems. Sudden escape of refrigerant gases can cause blindness if the escaping gases contact the eye and can cause freezing or other severe injuries if it contacts any other portion of the body.

5.9 Compressed natural gas (CNG): Parker CNG Hose Assemblies should be tested after installation and before use, and at least on a monthly basis per instructions provided on the Hose Assembly tag. The recommended procedure is to pressurize the Hose and check for leaks and to visually inspect the Hose for damage and to perform an electrical resistance test. Caution: Matches, candles, open flame or other sources of ignition shall not be used for Hose inspection. Leak check solutions should be rinsed off after use.

6.0 HOSE STORAGE

6.1 Age Control: Hose and Hose Assemblies must be stored in a manner that facilitates age control and first-in and first-out usage based on manufacturing date of the Hose and Hose Assemblies. Unless otherwise specified by the manufacturer or defined by local laws and regulations:

6.1.1 The shelf life of rubber hose in bulk form or hose made from two or more materials is 28 quarters (7 years) from the date of manufacture, with an extension of 12 quarters (3 years), if stored in accordance with ISO 2230;

6.1.2 The shelf life of thermoplastic and polytetrafluoroethylene hose is considered to be unlimited;

6.1.3 Hose assemblies that pass visual inspection and proof test shall not be stored for longer than 2 years.

6.1.4 Storage: Stored Hose and Hose Assemblies must not be subjected to damage that could reduce their expected service life and must be placed in a cool, dark and dry area with the ends capped. Stored Hose and Hose Assemblies must not be exposed to temperature extremes, ozone, oils, corrosive liquids or fumes, solvents, high humidity, rodents, insects, ultraviolet light, electromagnetic fields, or radioactive materials.

Notes