

>> **Industrial Valves**

2007 **es**



ENOLGAS

THE COMPANY

Enolgas Bonomi was founded in 1960 as a family business. Initially it had been manufacturing valves for gas and wine industry.

The company soon specialized in the production of cocks and valves for plumbing, as well as for natural gas distribution network.

In 1970 it started production of ball valves for building and industrial installations.

In 1991 Enolgas Bonomi Quality System obtained ISO 9001 certification for design, manufacturing and service. Every step of the full cycle production is then controlled by the skilled staff of the company's Quality Assurance department.

Before being packed and delivered, all components and finished products must pass a series of tests to ensure that they are both correctly manufactured and fully functional.

They are then shipped all over the world and stocked by an international network of distributors, who by means of efficient logistics can make these goods available in every place of the globe.

Enolgas Bonomi S.p.A. offers its clients a comprehensive range of standard products, plus a skillful technology and staff devoted to research and design new products, to be developed in co-operation with customers.



THE COMPANY

Enolgas Bonomi S.p.A. strives to maintain product excellence and innovation, collaborating with Universities departments and editing its R&D achievements.

Enolgas Bonomi S.p.A. also holds several European and international product certifications and patents, incorporated into its advanced technologies and products.

Thanks to its long and continuously renovated experience in the field, today Enolgas Bonomi S.p.A. markets products which are a landmark on international marketplaces.

These products include a wide range of valves and gas safety devices, as well as manually, pneumatically and electrically operated ball valves in brass, stainless steel and carbon steel, for plumbing installations, HVAC applications and several industrial automations to be used with gas, water, air, hydrocarbons and oil.

The constant dedication to the improvement of the products and the cooperative relationship with customers and suppliers are the steady foundation towards future positive developments of Enolgas Bonomi S.p.A. to meet the challenges of the current globalization.



THE COMPANY QUALITY SYSTEM

ENOLGAS BONOMI S.p.A. has always been considering Quality a strategic factor and had been one of the first firms in its field to implement a Quality Assurance System, in accordance with the ISO 9000.

Consequently, as early as in 1991 ENOLGAS BONOMI S.p.A. obtained the approval of its Quality Assurance System, in compliance with ISO 9000, as per the certificates issued respectively by ICIM-CISQ, the Italian Certification Institute and IQNET, the International Certification Network.

ENOLGAS BONOMI S.p.A., aware of the fact that Quality has no time and space limits, is steadily committed with the constant improvement of the products, the service and the collaboration with suppliers and customers.

The primary goal of ENOLGAS BONOMI S.p.A. is the user safety and the customer satisfaction, in line with the Quality Vision 2000. To keep and improve this goal, ENOLGAS BONOMI S.p.A. dedicates persistent care in selecting and training the staff and its professional qualification, being convinced that human resources are the priority.



INDEX

page 6



TENAX

page 22



DIAMOND

page 8



SAPHIR

page 24



CAST DIAMOND

page 10



TENAX • WP

page 26



TOPAZ

page 12



JADE

page 28



TOPAZ ANSI 300

page 14



JADE ANSI 300/PN64

page 30



CAST TOPAZ

page 16



CAST JADE

page 32



CORAL

page 18



JACKET JADE

page 34

**TABLE OF CHEMICAL
RESISTANCE - METALS**

page 20



JADE 3W

page 38

**TABLE OF CHEMICAL
RESISTANCE - PLASTICS**

Ball valves in stainless steel, of solid and advanced design is backed by the twenty-year experience gained by ENOLGAS in the production of ball valves.

In order to keep tolerances and material quality constant, investment casting of body and end adapter was preferred to forging, with careful subsequent toolings on CNC machines, which guarantee a high quality standard.

Leading design and accurate machining and finishing of the valves guarantee a perfect tightness and lifetime troubleless working operations.



TECHNICAL FEATURES

Triple sealing blow out-proof stem.

Two spring washers on top of the stem packing.

Quarter turn stop working also without lever.

Full bore.

END CONNECTIONS

Female screwed to ISO 7/1
Rp = DIN 2999.

Male screwed to ISO 228/1
= DIN 259.

Special threads (BSPT, NPT, etc.) available on request.

WORKING PRESSURE

PN 100 (1/4") to PN 40
(2").

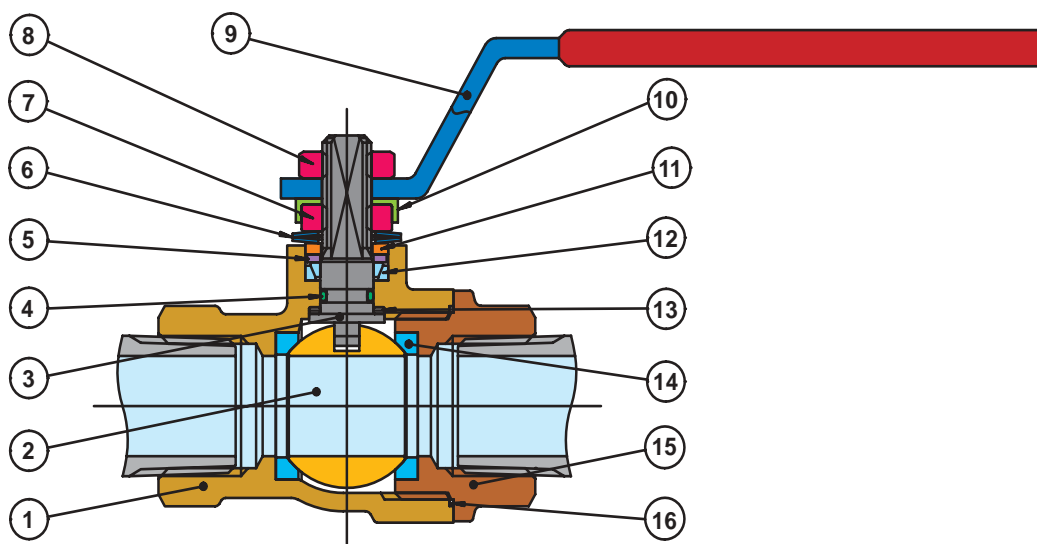
TEMPERATURE LIMITS

From -20°C to +150°C.

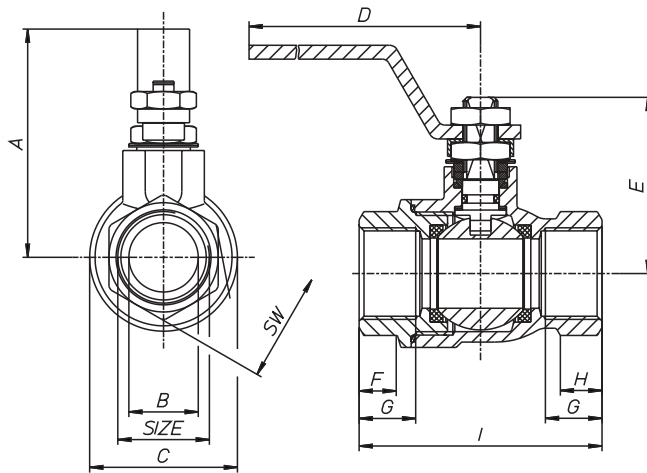
UTILISATION

Chemicals, oil derivatives, hydraulics, pneumatics, water, gases, steam and vacuum.

For special uses, see the table of chemical resistance.



Item	Description	Material
1	Body	Investment casting AISI 316 D 1.4408
2	Ball	Forged AISI 316 D 1.4401
3	Stem	From bar AISI 316 D 1.4401
4	O-ring	Green or black Fluoroelastomer
5	Packing washer	From bar AISI 304 D 1.4301
6	Spring washers	Drawn AISI 301 D 1.4310
7	Stem retaining nut	Forged AISI 304 D 1.4301
8	Locking nut	Forged AISI 304 D 1.4301
9	Lever handle	P.V.C. insulated red color AISI 304 D 1.4301
10	Fixing-nut plate	Blanked AISI 304 D 1.4301
11	Operation-stop	Blanked AISI 304 D 1.4301
12	Stem packing	From bar Virgin P.T.F.E.
13	Thrust washer	From bar Virgin P.T.F.E.
14	Ball seats	From bar Virgin P.T.F.E.
15	End adapter	Investment casting AISI 316 D 1.4408
16	Static gasket	From bar Virgin P.T.F.E.



- 15% GLASS-FILLED PTFE Temperature limits -20°C + 175°C
- PTFE+CARBOGRAPHITE: use up to 180°C
- Stems with antistatic device from 3/4" to 2"
- Degreased version
- On request the valve is available with ATEX certificate (from 3/4" to 2")
- For further special request please consult our technical/commercial service

AVAILABLE ACCESSORIES

- Extended stem for insulated pipes.

Size	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	SW. EXA.	SW. OCT.	MF weight gr.	FF weight gr.
1/4"	52	8	29	110	37	8,5	11,4	8	50	21,5	-	230	220
3/8"	52	10	29	110	37	8,5	11,4	8	50	21,5	-	230	205
1/2"	55	15	34	110	42	10	15	9,5	60	26,5	-	315	275
3/4"	66	20	42,5	140	52	11,5	16,3	11,5	70	31,5	-	535	465
1"	70	25	50,5	140	56	14	19,1	13,5	85	40,5	-	805	710
1 1/4"	85	32	63	180	68	15,5	21,4	16	95	-	49,5	1320	1180
1 1/2"	91	40	75,5	180	74	18,5	21,4	16	105	-	54,5	1875	1740
2"	105	50	91	230	87	22,5	25,7	23,5	125	-	69,5	3130	2930

Breaking Torque in Nm

DN size	10	15	20	25	32	40	50	
	1/4-3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	
PN - bar	0	1,6	3,2	3,6	4,6	11,5	19	27,5
	16	1,8	4,3	4,9	5,9	15	24	38
	40	2,5	5,1	6	6,9	16,7	28,6	42
	64	3,2	5,6	6,8	8			
	100	3,8	6,5					

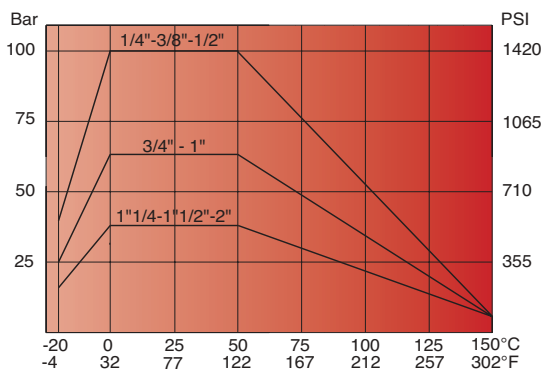
Nm

Values in Nm can change depending on the material used for seats, on temperature and on the fluid used.

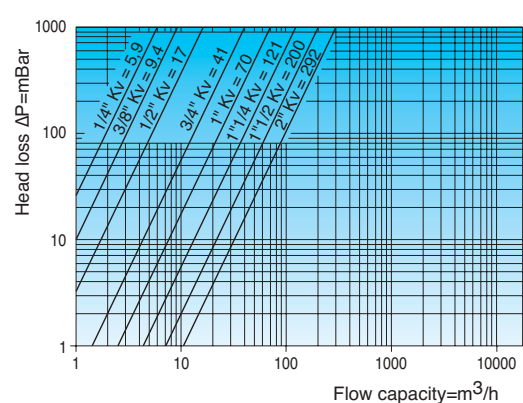
For a safe working of the various sorts of servocontrol, it is necessary to consider a

safety factor = 1,5 in each condition. While the valve is working, with frequent on/off cycles, the operating torque can become extremely low in comparison with the beginning one.

PRESSURE/TEMPERATURE DIAGRAM



LOSS OF HEAD DIAGRAM



Ball valves in stainless steel, of solid and advanced design is backed by the twenty-year experience gained by ENOLGAS in the production of ball valves.

In order to keep tolerances and material quality constant, investment casting of body and end adapter was preferred to forging, with careful subsequent toolings on CNC machines, which guarantee a high quality standard.

Leading design and accurate machining and finishing of the valves guarantee a perfect tightness and lifetime troubleless working operations.



TECHNICAL FEATURES

Triple sealing blow out-proof stem.

Two spring washers on top of the stem packing.

Quarter turn stop working also without lever.

Full bore.

END CONNECTIONS

Female screwed to ISO 7/1
Rp = DIN 2999.

Male screwed to ISO 228/1
= DIN 259.

Special threads (BSPT, NPT, etc.) available on request.

WORKING PRESSURE

PN 100 (1/4") to PN 40
(2").

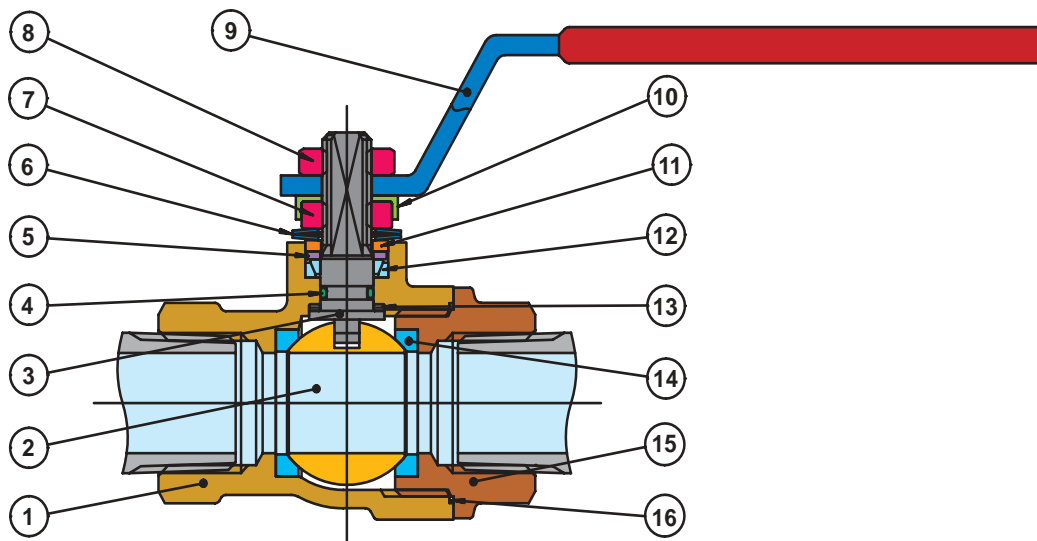
TEMPERATURE LIMITS

From -20°C to +150°C.

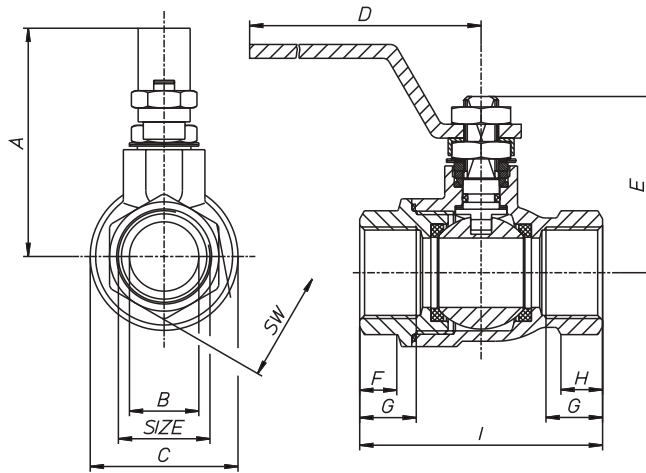
UTILISATION

Chemicals, oil derivatives, hydraulics, pneumatics, water, gases, steam and vacuum.

For special uses, see the table of chemical resistance.



Item	Description	Material
1	Body	Investment casting AISI 316 D 1.4408
2	Ball	Forged AISI 316 D 1.4401
3	Stem	From bar AISI 316 D 1.4401
4	O-ring	Green or black Fluoroelastomer
5	Packing washer	From bar AISI 304 D 1.4301
6	Spring washers	Drawn AISI 301 D 1.4310
7	Stem retaining nut	Forged AISI 304 D 1.4301
8	Locking nut	Forged AISI 304 D 1.4301
9	Lever handle	P.V.C. insulated red color AISI 304 D 1.4301
10	Fixing-nut plate	Blanked AISI 304 D 1.4301
11	Operation-stop	Blanked AISI 304 D 1.4301
12	Stem packing	From bar Virgin P.T.F.E.
13	Thrust washer	From bar Virgin P.T.F.E.
14	Ball seats	From bar Virgin P.T.F.E.
15	End adapter	Investment casting AISI 316 D 1.4408
16	Static gasket	From bar Virgin P.T.F.E.



- 15% GLASS-FILLED PTFE Temperature limits -20°C + 175°C
- PTFE+CARBOGRAPHITE: use up to 180°C
- Stems with antistatic device from 3/4" to 2"
- Degreased version
- On request the valve is available with ATEX certificate (from 3/4" to 2")
- For further special request please consult our technical/commercial service

AVAILABLE ACCESSORIES

- Extended stem for insulated pipes.

Size	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	SW. EXA.	SW. OCT.	MF weight gr.	FF weight gr.
1/4"	52	8	29	110	37	8,5	11,4	8	50	21,5	-	230	220
3/8"	52	10	29	110	37	8,5	11,4	8	50	21,5	-	230	205
1/2"	55	15	34	110	42	10	15	9,5	60	26,5	-	315	275
3/4"	66	20	42,5	140	52	11,5	16,3	11,5	70	31,5	-	535	465
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1 1/4"	85	32	63	180	68	15,5	21,4	16	95	-	49,5	1320	1180
1 1/2"	91	40	75,5	180	74	18,5	21,4	16	105	-	54,5	1875	1740
2"	105	50	91	230	87	22,5	25,7	23,5	125	-	69,5	3130	2930

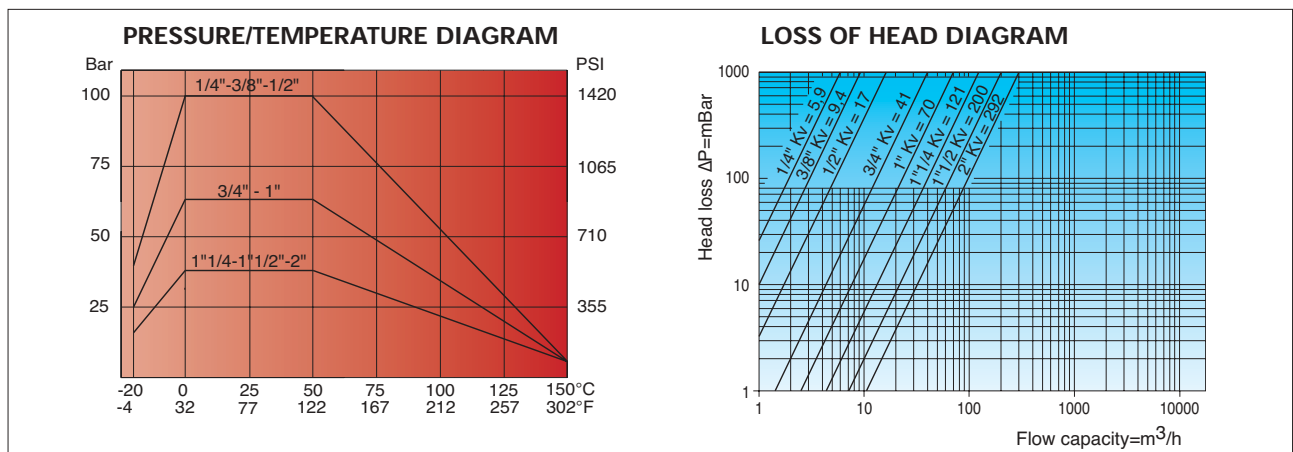
Breaking Torque in Nm

DN size	10	15	20	25	32	40	50
	1/4-3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
0	1,6	3,2	3,6	4,6	11,5	19	27,5
16	1,8	4,3	4,9	5,9	15	24	38
40	2,5	5,1	6	6,9	16,7	28,6	42
64	3,2	5,6	6,8	8			
100	3,8	6,5					

Nm

Values in Nm can change depending on the material used for seats, on temperature and on the fluid used. For a safe working of the various sorts of servocontrol, it is necessary to consider a

safety factor = 1,5 in each condition. While the valve is working, with frequent on/off cycles, the operating torque can become extremely low in comparison with the beginning one.



Ball valve in stainless steel, of solid and advanced design is backed by the twenty-year experience gained by ENOLGAS in the production of ball valves.

In order to keep tolerances and material quality constant, investment casting of body and end adapter was preferred to forging, with careful subsequent toolings on CNC machines, which guarantee a high quality standard.

Leading design and accurate machining and finishing of the valves guarantee a perfect tightness and lifetime troubleless working operations.



TECHNICAL FEATURES

Triple sealing blow out-proof stem.

Two spring washers on top of the stem packing.
Quarter turn stop working also without lever.

Full bore.

The TENAX•WP ball valves is supplied with an ISO plate for the direct assembly of an actuator.

According to ISO 5211 standard

END CONNECTIONS

Female screwed to ISO 7/1
Rp = DIN 2999.

Male screwed to ISO 228/1
= DIN 259.

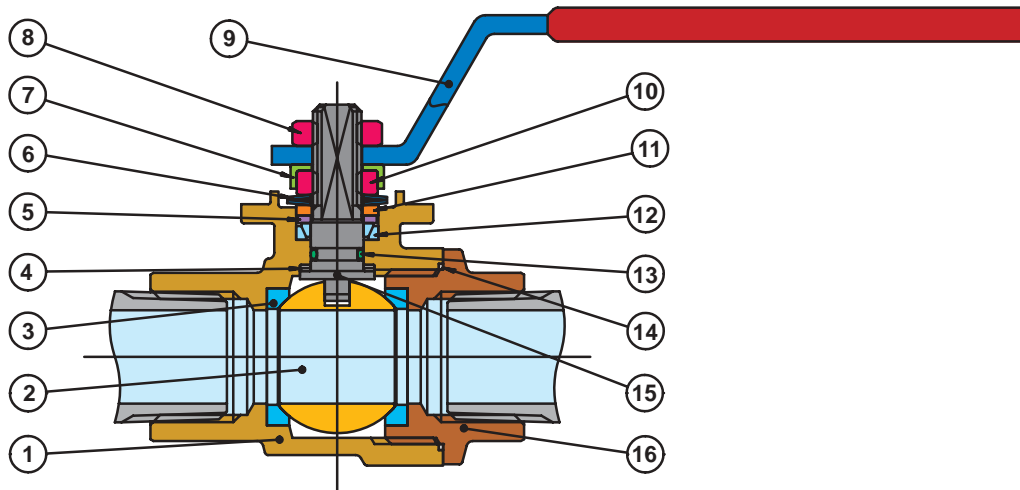
Special threads (BSPT, NPT, etc.) available on request.

WORKING PRESSURE

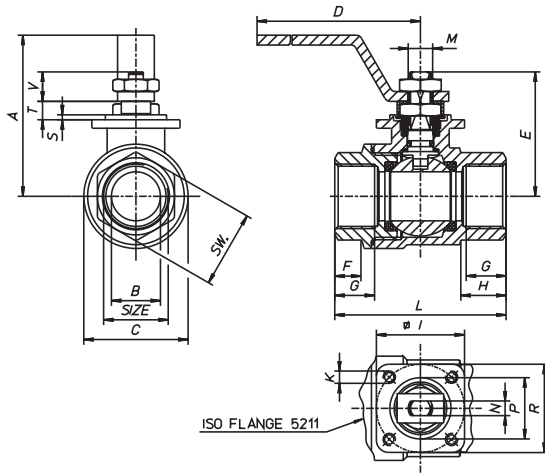
PN 160 (3/8") to PN 40 (2")

TEMPERATURE LIMITS

From -20°C to +150°C.



Item	Description	Material
1	Body	AISI 316 D 1.4408
2	Ball	Forged AISI 316 D 1.4401
3	Ball seats	From bar Virgin P.T.F.E.
4	Thrust washer	From bar Virgin P.T.F.E.
5	Packing washer	From bar AISI 304 D 1.4301
6	Spring washers	Drawn AISI 301 D 1.4310
7	Fixing-nut plate	Blanked AISI 304 D 1.4301
8	Locking nut	Forged AISI 304 D 1.4301
9	Lever handle	P.V.C. insulated red color AISI 304 D 1.4301
10	Stem retaining nut	Forged AISI 304 D 1.4301
11	Operation-stop	Blanked AISI 304 D 1.4301
12	Stem packing	From bar Virgin P.T.F.E.
13	O-ring	green or black Fluoroelastomer
14	Static gasket	From bar Virgin P.T.F.E.
15	Stem	From bar AISI 316 D 1.4401
16	End adapter	Investment casting AISI 316 D 1.4408



- 15% GLASS-FILLED PTFE. Temperature limits -20°C + 175°C
- PTFE+CARBOGRAPHITE: use up to 180°C
- Stems with antistatic device from 3/4" to 2"
- Degreased version
- On request the valve is available with ATEX certificate (from 3/4" to 2")
- Polished Version
- For further special request please consult our technical/commercial service

• AVAILABLE ACCESSORIES

Extended stem for insulated pipes.

Size	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	K mm	L mm	M mm	N mm	P mm	R mm	S mm	T mm	V mm	SW. EXA.	SW. OCT.	ISO FLANGE	weight gr.
3/8"	52	10	29	110	37	8,5	11,4	13,5	36	M5	55	M8	4	25	36	2	6	9,5	21,5	-	F03	245
1/2"	55	15	34	110	42	10	15	18	36	M5	65	M8	4	25	36	2	6	9,5	26,5	-	F03	325
3/4"	66	20	42,5	140	52	11,5	16,3	18	36	M5	70	M10	6	25	36	2	7,5	12	31,5	-	F03	510
1"	70	25	50,5	140	56	14	19,1	27,5	36	M5	85	M10	6	25	36	2	7,5	12	40,5	-	F03	765
1 1/4"	85	32	63	180	68	15,5	21,4	28,5	42	M5	95	M12	8	30	42	3	9,5	13,5	-	49,5	F04	1270
1 1/2"	91	40	75,5	180	74	18,5	21,4	23	42	M5	105	M12	8	30	42	3	9,5	13,5	-	54,5	F04	1810
2"	105	50	91	230	87	22,5	25,7	35	50	M6	125	M16	10	35	50	3	11,3	17,8	-	69,5	F05	3160

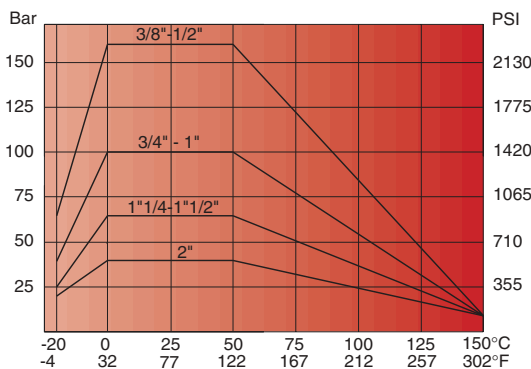
Breaking Torque in Nm

DN size	10	15	20	25	32	40	50	
	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	
PN - bar	0	1,6	3,2	3,6	4,6	11,5	19	27,5
	16	1,8	4,3	4,9	5,9	15	24	38
	40	2,5	5,1	6	6,9	16,7	28,6	42
	64	3,2	5,6	6,8	8	18,4	32	
	100	3,8	6,5	8,5	10			
160	5	8						
Nm								

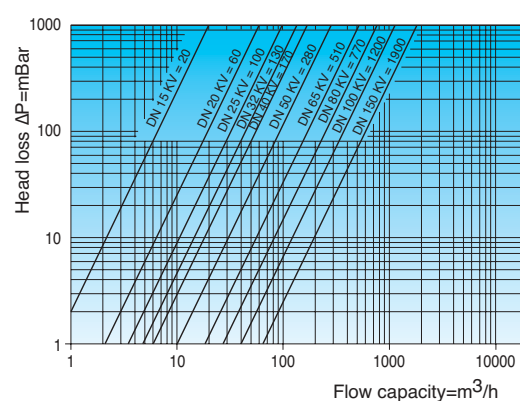
Values in Nm can change depending on the material used for seats, on temperature and on the fluid used.
For a safe working of the various sorts of servocontrol, it is necessary to consider a

safety factor = 1,5 in each condition. While the valve is working, with frequent on/off cycles, the operating torque can become extremely low in comparison with the beginning one.

PRESSURE/TEMPERATURE DIAGRAM



LOSS OF HEAD DIAGRAM



JADE

Wafer ball valve in stainless steel or carbon steel, of solid and advanced design is backed by the twenty-year experience gained by ENOLGAS in the production of ball valves. In order to keep tolerances and material quality constant, investment casting of body and end adapter was preferred to forging, with careful subsequent toolings on CNC machines, which guarantee a high quality standard. Leading design and accurate machining and finishing of the valves guarantee a perfect tightness and lifetime troubleless working operations.



INDUSTRIAL VALVES

TECHNICAL FEATURES

Triple seal blow out-proof stem.
Two spring washers on top of the stem packing.
Quarter turn stop working also without lever.
Full bore.

JADE

Is available in stainless steel and carbon steel.
ISO mounting holes for actuators.
Fire safe BS 6755, API 6FA, API 607.
General prescription BS 5351.
Connetion with actuator ISO 5211.

END CONNECTIONS

Flanges to UNI 2223-2229
DIN 2501 BL.1
ANSI B16.5.

WORKING PRESSURE

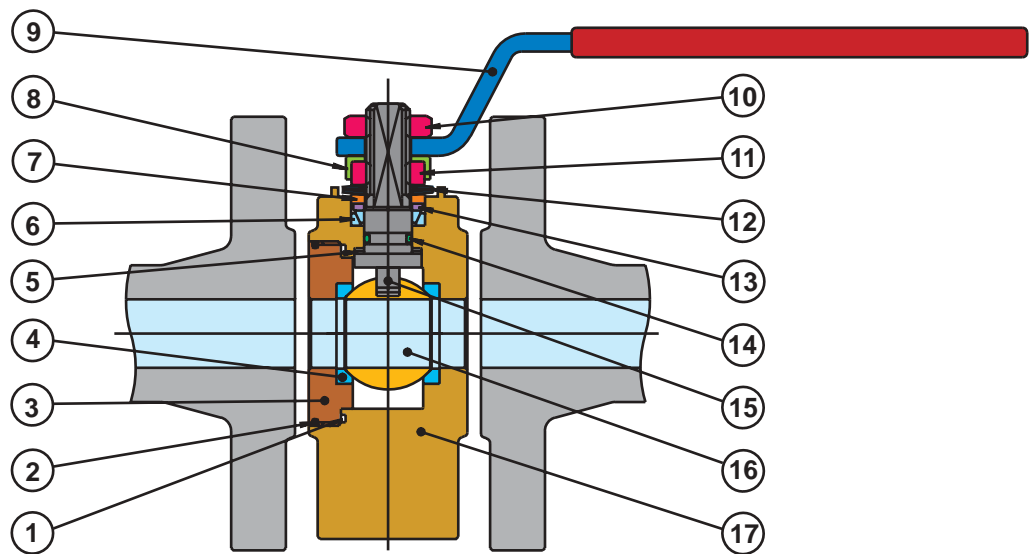
Standard PN 16
On request PN 25/PN 40 and ANSI 150.

TEMPERATURE LIMITS

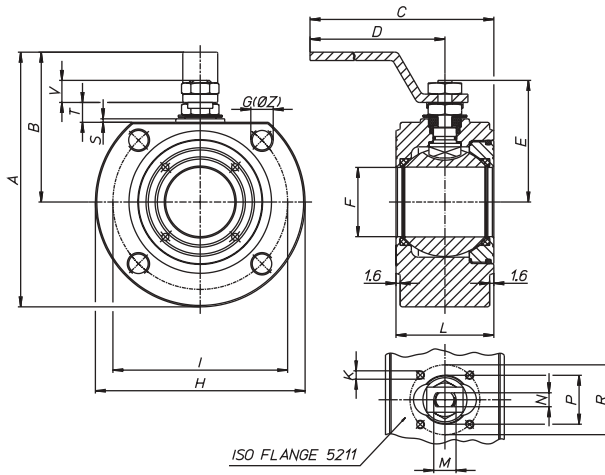
From -20°C to +180°C

UTILISATION

Chemicals, oil derivatives, hydraulics, pneumatics, water, gases and vacuum.
For special uses, see the table of chemical resistance.



Item	Description	JADE stainless steel	JADE carbon steel
1	Static gasket	From bar	Virgin P.T.F.E.
2	Static O-Ring	Black	NBR
3	Body insert	From bar	AISI 316 D 1.4401
4	Ball seats	From bar	Virgin P.T.F.E.
5	Thurst washer	From bar	Virgin P.T.F.E.
6	Stem packing	From bar	Virgin P.T.F.E.
7	Operation-stop	Blanked	AISI 304 D 1.4301
8	Fixing-nut-plate	Blanked	AISI 304 D 1.4301
9	Lever handle	P.V.C. insulated red color	Fe PO2 Zinc. plated steel
10	Locking nut	Forged	AISI 304 D 1.4301
11	Stem retaining-nut	Forged	AISI 304 D 1.4301
12	Spring washers	Drawn	AISI 301 D 1.4310
13	Packing washers	From bar	AISI 303 D 1.4305
14	O-ring	Green or black	Fluoroelastomer
15	Stem	From bar	AISI 316 D 1.4401
16	Ball	Forged	AISI 316 D 1.4401
			DN 15/40 AISI 316 D 1.4401
			DN 50/100 AISI 304 D 1.4301
17	Body	From bar	AISI 316 D 1.4401



- 15% GLASS-FILLED PTFE Temperature limits -10°C + 195°C
- PTFE+CARBOGRAPHITE with temperature limits -10°C + 210°C
- Integral seats in PTFE from DN 15 to DN 100
- Reduction gear with manual operation
- Drilled ball and unidirectional valve
- Antistatic device from DN 15 to DN 32
- ATEX certificate
- Body in LF2 up to -20°C
- Construction AISI 304
- Ball in brass
- Degreased version
- Also available with contained ball

Size	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	K mm	I mm	L mm	M mm	N mm	P mm	R mm	S mm	T mm	V mm	Z mm	N° holes	PN	ISO FLANGE	weight gr.
DN15	110	65	160	140	48	15	M12	90	M5	65	35	M10	6	25	36	2	8	9	14	4	40	F03	1345
DN20	120	70	160	140	51	20	M12	100	M5	75	38	M10	6	25	36	2	8	9	14	4	40	F03	1810
DN25	137	82	200	180	62,5	25	M12	110	M5	85	43	M12	8	30	42	2	11,5	11,5	14	4	40	F04	2505
DN32	150	85	205	180	67	32	M16	130	M5	100	50	M12	8	30	42	2	9,5	11,5	18	4	40	F04	3995
DN40	172	102	260	230	80	40	M16	140	M6	110	60	M16	10	35	50	2,5	14	16	18	4	40	F05	5540
DN50	185	110	265	230	87	50	M16	150	M6	125	70	M16	10	35	50	2,5	14	16	18	4	40	F05	7300
DN65	225	137,5	400	350	119,5	65	M16	175	M8	145	95	M22	14	55	70	3	18,7	20,8	18	4/8	16/40	F07	15000
DN80	245	150	410	350	129,5	78	M16	190	M8	160	118	M22	14	55	70	3	18,7	20,8	18	8	40	F07	19500
DN100	275	165	580	508	148,5	96	M16	220	M10	180	140	M27	16	70	102	3	22,2	25,3	18	8	16	F10	31500

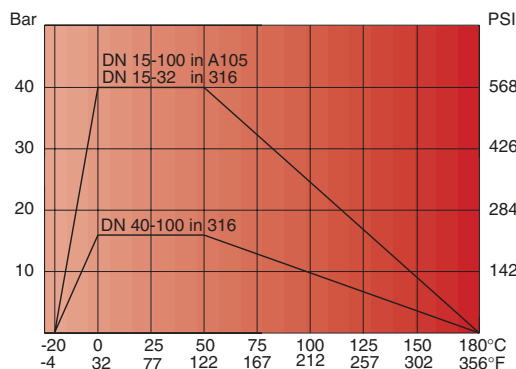
Breaking Torque in Nm

DN size	15	20	25	32	40	50	65	80	100	
PN - bar	0	4	7	10	16	25	35	55	75	150
	16	4,8	8,5	11,3	19	28	39	59	84,5	168
	25	5,2	9,1	12	20,5	29,5	41,5	62,5	92	180
	40	6	10,5	13	22,5	31,5	44	67	99	195

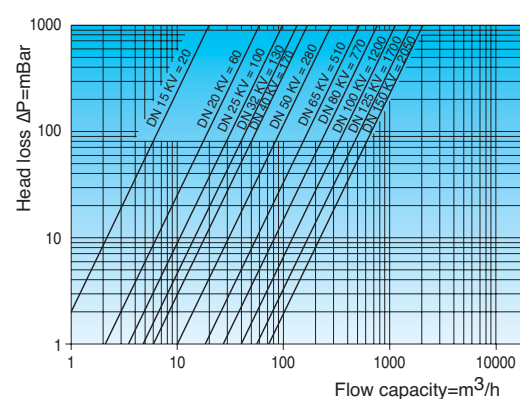
Values in Nm can change depending on the material used for seats, on temperature and on the fluid used.
For a safe working of the various sorts of servocontrol, it is necessary to consider a

safety factor = 1,5 in each condition. While the valve is working, with frequent on/off cycles, the operating torque can become extremely low in comparison with the beginning one.

PRESSURE/TEMPERATURE DIAGRAM



LOSS OF HEAD DIAGRAM



JADE

ANSI 300 / PN64

Wafer ball valve in stainless steel or carbon steel, of solid and advanced design is backed by the twenty-year experience gained by ENOLGAS in the production of ball valves. In order to keep tolerances and material quality constant, investment casting of body and end adapter was preferred to forging, with careful subsequent toolings on CNC machines, which guarantee a high quality standard. Leading design and accurate machining and finishing of the valves guarantee a perfect tightness and lifetime troubleless working operations.



INDUSTRIAL VALVES

TECHNICAL FEATURES

Triple seal blow out-proof stem.
Two spring washers on top of the stem packing.
Quarter turn stop working also without lever.
Full bore.

JADE

Is available in stainless steel and carbon steel.
ISO mounting holes for actuators.
Fire safe BS 6755, API 6FA, API 607.
General prescription BS 5351.
Connetion with actuator ISO 5211.

END CONNECTIONS

Flanges to UNI 2223-2229
DIN 2501 BL.1
ANSI B16.5.

WORKING PRESSURE

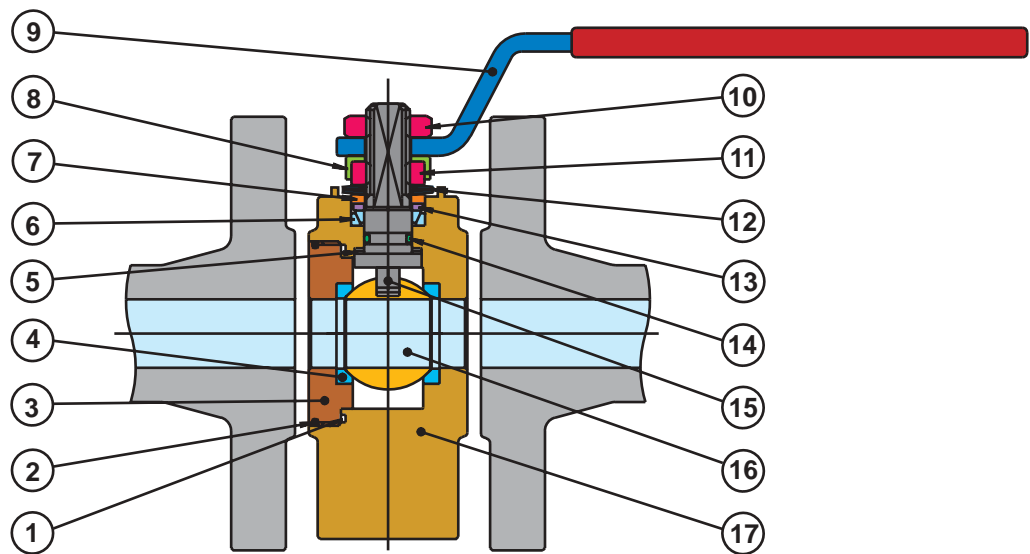
PN 64 or ANSI 300

TEMPERATURE LIMITS

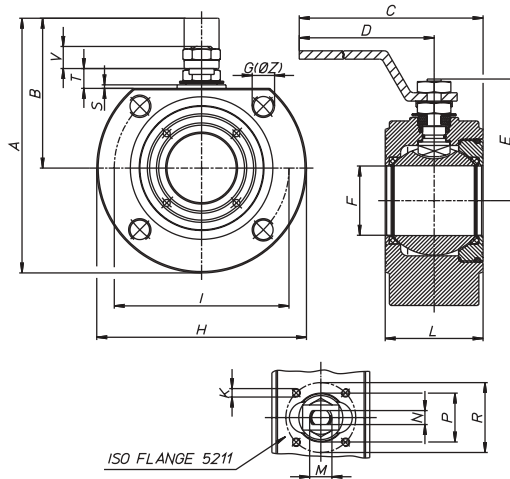
From -20°C to +180°C

UTILISATION

Chemicals, oil derivatives, hydraulics, pneumatics, water, gases and vacuum.
For special uses, see the table of chemical resistance.



Item	Description	JADE stainless steel	JADE carbon steel
1	Static gasket	From bar	Virgin P.T.F.E.
2	Static O-Ring	Black	NBR
3	Body insert	From bar	AISI 316 D 1.4401
4	Ball seats	From bar	Virgin P.T.F.E.
5	Thurst washer	From bar	Virgin P.T.F.E.
6	Stem packing	From bar	Virgin P.T.F.E.
7	Operation-stop	Blanked	AISI 304 D 1.4301
8	Fixing-nut-plat	Blanked	AISI 304 D 1.4301
9	Lever handle	P.V.C. insulated red color	AISI 304 D 1.4301
10	Locking nut	Forged	AISI 304 D 1.4301
11	Stem retaining-nut	Forged	AISI 304 D 1.4301
12	Spring washers	Drawn	AISI 301 D 1.4310
13	Packing washers	From bar	AISI 303 D 1.4305
14	O-ring	Green or black	Fluoroelastomer
15	Stem	From bar	AISI 316 D 1.4401
16	Ball	Forged	AISI 316 D 1.4401
			DN 15/40 AISI 316 D 1.4401
			DN 50/100 AISI 304 D 1.4301
17	Body	From bar	AISI 316 D 1.4401



- 15% GLASS-FILLED PTFE with temperature limits -20°C + 195°C
- PTFE+CARBOGRAPHITE with temperature limits -20°C + 210°C
- Integral sealing in PTFE from DN 15 to DN 50
- Reduction gear with manual operation
- Drilled ball and unidirectional valve
- Degreased version
- Antistatic device from DN 15 to DN 32
- On request the valve is available with ATEX certificate
- Extended stem for insulated pipes
- For further special requests please consult our technical/commercial service

Size	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	K mm	I mm	L mm	M mm	N mm	P mm	R mm	S mm	T mm	V mm	Z mm	N° holes	PN	ISO FLANGE	weight gf.	
PN 64	DN15	119	66	161	140	48	15	M12	105	M5	75	42	M10	6	-	36	-	3	9	14	4	64	F03	2310
	DN20	138	73	163	140	55,5	20	M16	130	M5	90	46	M10	6	-	36	-	3	9	18	4	64	F03	3660
	DN25	160	90	205	180	70,5	25	M16	140	M5	100	50	M12	8	-	42	-	9,5	11,5	18	4	64	F04	4750
	DN32	173	95	207	180	75	32	M20	155	M5	110	54	M12	8	-	42	-	9,5	11,5	22	4	64	F04	6050
	DN40	194	109	263	230	87,5	40	M20	170	M6	125	66	M16	10	35	50	2,5	14	16	22	4	64	F05	8950
	DN50	206	116	272	230	94,5	50	M20	180	M6	135	83	M16	10	35	50	2,5	14	16	22	4	64	F05	12620

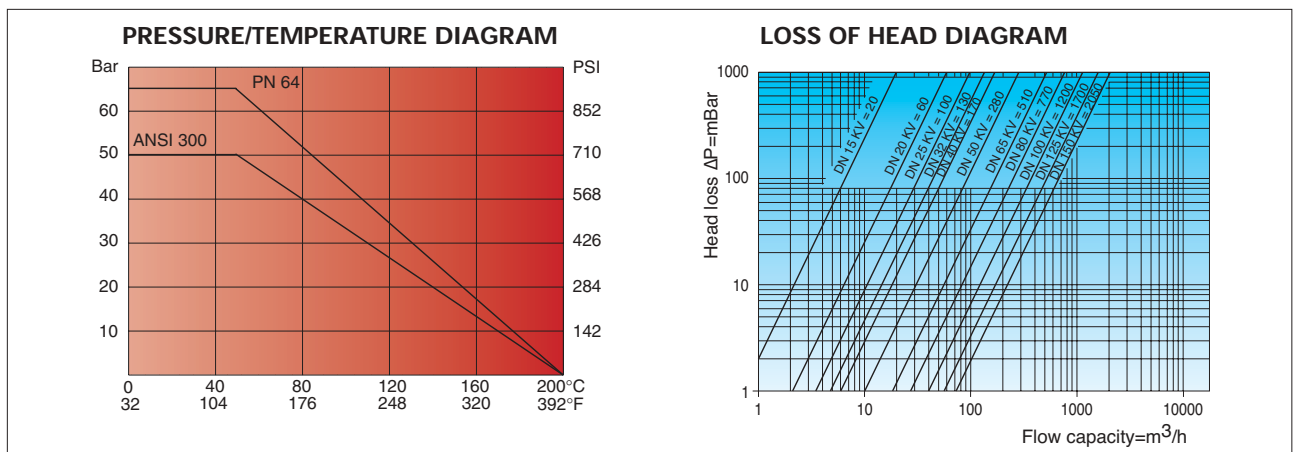
ANSI 300	1/2"	113	66	161	140	48	15	1/2"	95,2	M5	66,7	42	M10	6	-	36	-	3	9	16	4	-	F03	1725
	3/4"	130	73	163	140	55,5	20	5/8"	117,5	M5	82,5	46	M10	6	-	36	-	3	9	19	4	-	F03	2770
	1"	152	90	205	180	70,5	25	5/8"	123,8	M5	88,9	50	M12	8	-	42	-	9,5	11,5	19	4	-	F04	3700
	1 1/2"	187	109	263	230	87,5	40	3/4"	155,6	M6	114,3	66	M16	10	35	50	2,5	14	16	22	8	-	F05	7110
	2"	199	116	272	230	94,5	50	5/8"	165,1	M6	127	83	M16	10	-	50	-	2,5	16	19	4	-	F05	10430

Breaking Torque in Nm

DN size	15	20	25	32	40	50			
	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"			
PN - bar	0	4	7	10	16	25	35		
	16	4,8	8,5	11,3	19	28	39		
	25	5,2	9,1	12	20,5	29,5	41,5		
	40	6	10,5	13	22,5	31,5	44		
	Nm								

Values in Nm can change depending on the material used for seats, on temperature and on the fluid used.
For a safe working of the various sorts of servocontrol, it is necessary to consider a

safety factor = 1,5 in each condition. While the valve is working, with frequent on/off cycles, the operating torque can become extremely low in comparison with the beginning one.



CAST JADE

Wafer ball valve in stainless steel or carbon steel, of solid and advanced design is backed by the twenty-year experience gained by ENOLGAS in the production of ball valves. In order to keep tolerances and material quality constant, investment casting of body and end adapter was preferred to forging, with careful subsequent toolings on CNC machines, wich guarantee a high quality standard.

Leading design and accurate machining and finishing of the valves guarantee a perfect tightness and lifetime troubleless working operations.



INDUSTRIAL VALVES

TECHNICAL FEATURES

Triple seal blow out-proof stem.
Two spring washers on top of the stem packing.
Quarter turn stop working also without lever.
Full bore.

JADE

Line is available in stainless steel and carbon steel. ISO mounting holes for actuators.
Fire safe BS 6755, API 6FA, API 607.
General prescription BS 5351.
Connetion with actuator ISO 5211.

END CONNECTIONS

Flanges to UNI 2223-2229
DIN 2501 BL.1
ANSI B16.5.

WORKING PRESSURE

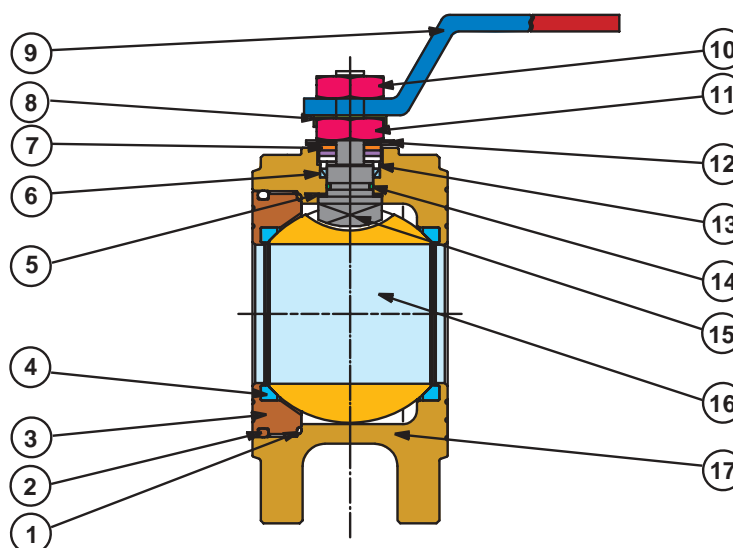
Standard PN 16
On request PN 25/PN 40 and ANSI 150.

TEMPERATURE LIMITS

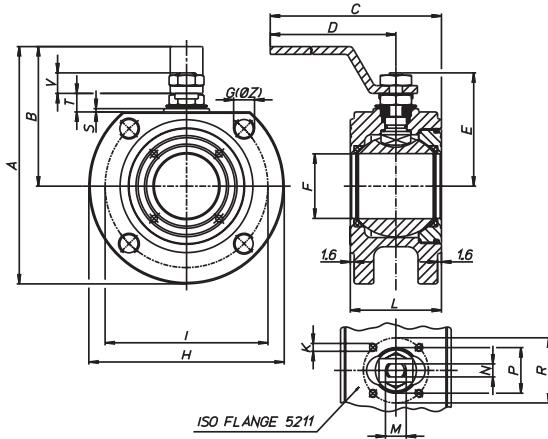
From -20°C to +180°C

UTILISATION

Chemicals, oil derivatives, hydraulics, pneumatics, water, gases and vacuum. For special uses, see the table of chemical resistance.



Item	Description	JADE stainless steel	JADE carbon steel
1	Static gasket	From bar	Virgin P.T.F.E.
2	Static O-Ring	Black	NBR
3	Body insert	From bar	AISI 316 D 1.4401
4	Ball seats	From bar	Virgin P.T.F.E.
5	Thurst washer	From bar	Virgin P.T.F.E.
6	Stem packing	From bar	Virgin P.T.F.E.
7	Operation-stop	Blanked	AISI 304 D 1.4301
8	Fixing-nut-plat	Blanked	AISI 304 D 1.4301
9	Lever handle	P.V.C. insulated red color	AISI 304 D 1.4301
10	Locking nut	Forged	AISI 304 D 1.4301
11	Stem retaining-nut	Forged	AISI 304 D 1.4301
12	Spring washers	Drawn	AISI 301 D 1.4310
13	Packing washers	From bar	AISI 303 D 1.4305
14	O-ring	Green or black	Fluoroelastomer
15	Stem	From bar	AISI 316 D 1.4401
16	Ball	Forged	AISI 316 D 1.4401
17	Body	Investement casting	AISI 316 D 1.4408



- 15% GLASS-FILLED PTFE Temperature limits -10°C + 195°C
- PTFE+CARBOGRAPHITE with temperature limits -10°C + 210°C
- Integral seats in PTFE from DN 15 to DN 100
- Reduction gear with manual operation
- Yellow lever handle for gas
- Drilled ball and unidirectional valve
- Antistatic device from DN 15 to DN 32
- On request the valve is available with ATEX certificate
- Body in LF2 up to -20°C
- Construction AISI 304
- Ball in brass
- Degreased version

AVAILABLE ACCESSORIES

Extended stem for insulated pipes.

Size	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	K mm	I mm	L mm	M mm	N mm	P mm	R mm	S mm	T mm	V mm	Z mm	N° holes	PN	ISO FLANGE	weight gr.
DN32	150	85	205	180	67	32	M16	130	M5	100	50	M12	8	30	42	2	9,5	11,5	18	4	40	F04	4040
DN40	172	102	260	230	80	40	M16	150	M6	110	60	M16	10	35	50	2,5	14	16	18	4	16/40	F05	4230/5540
DN50	193	110	265	230	87	50	M16	165	M6	125	70	M16	10	35	50	2,5	14	16	18	4	16/40	F05	5840/7250
DN65	230	137,5	380	333	119,5	65	M16	185	M8	145	95	M22	14	55	70	3	18,7	20,8	18	4	16/40	F07	10280
DN80	250	150	395	333	129,5	78	M16	200	M8	160	122	M22	14	55	70	3	18,7	20,8	18	8	40	F07	13790
DN100	275	165	440	370	148,5	96	M16	220	M8	180	140	M27	16	70	102	3	22,2	25,3	18	8	16	F10	20110

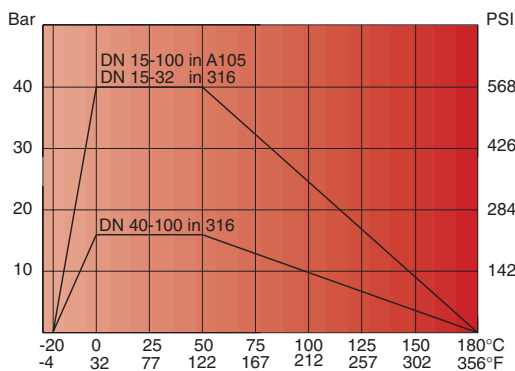
Breaking Torque in Nm

DN size	32	40	50	65	80	100			
PN - bar	0	16	25	35	55	75	150		
	16	19	28	39	59	84,5	168		
	25	20,5	29,5	41,5	62,5	92	180		
	40	22,5	31,5	44	67	99	195		
Nm									

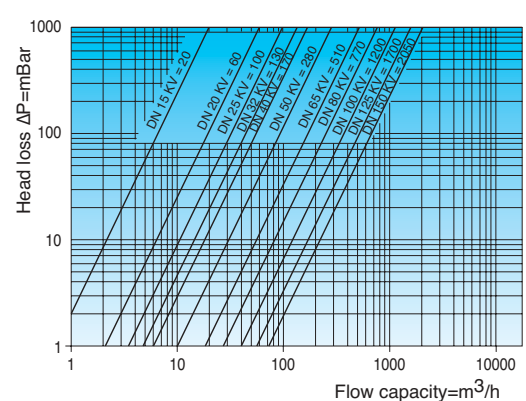
Values in Nm can change depending on the material used for seats, on temperature and on the fluid used.
For a safe working of the various sorts of servocontrol, it is necessary to consider a

safety factor = 1,5 in each condition. While the valve is working, with frequent on/off cycles, the operating torque can become extremely low in comparison with the beginning one.

PRESSURE/TEMPERATURE DIAGRAM



LOSS OF HEAD DIAGRAM



JACKET JADE

Wafer ball valve in stainless steel or carbon steel, of solid and advanced design is backed by the twenty-year experience gained by ENOLGAS in the production of ball valves. In order to keep tolerances and material quality constant, investment casting of body and end adapter was preferred to forging, with careful subsequent toolings on CNC machines, which guarantee a high quality standard. Leading design and accurate machining and finishing of the valves guarantee a perfect tightness and lifetime troubleless working operations.



INDUSTRIAL VALVES

TECHNICAL FEATURES

Triple seal blow out-proof stem.
Two spring washers on top of the stem packing.
Quarter turn stop working also without lever.
Full bore.

JADE

Line is available in stainless steel and carbon steel. ISO mounting holes for actuators.
Fire safe BS 6755, API 6FA, API 607.
General prescription BS 5351.
Connection with actuator ISO 5211.

END CONNECTIONS

Flanges to UNI 2223-2229
DIN 2501 BL.1
ANSI B16.5.

WORKING PRESSURE

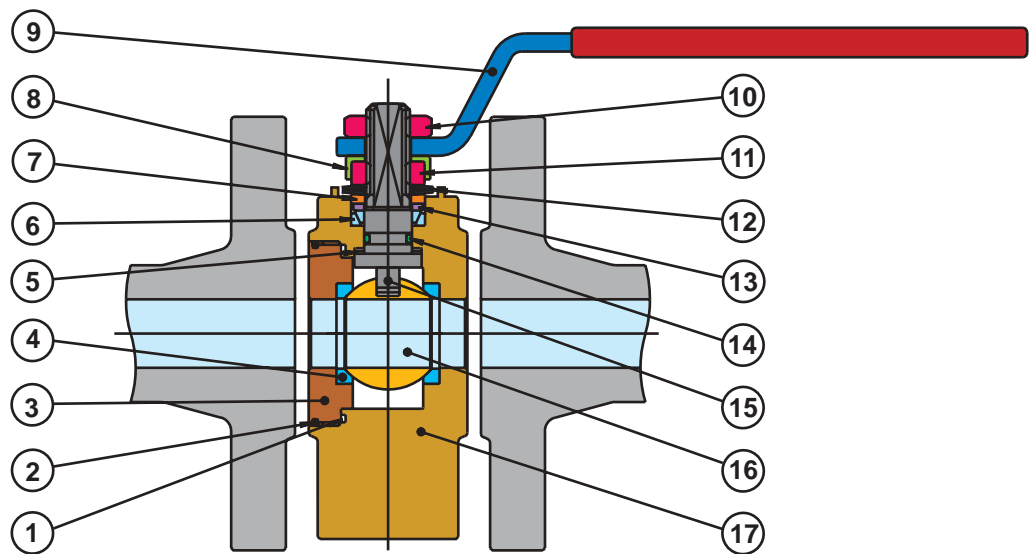
PN 16 on request PN 25 and PN 40

TEMPERATURE LIMITS

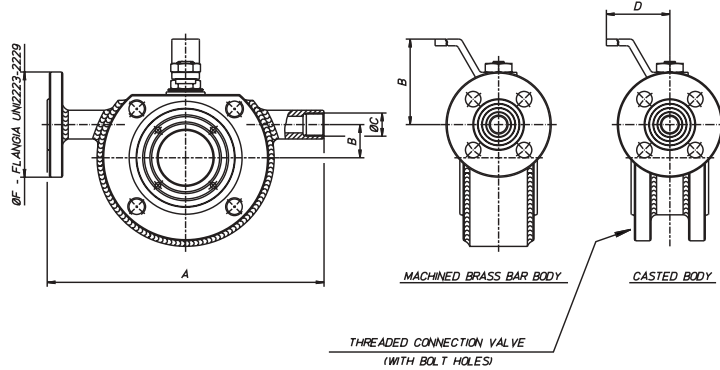
From -20°C to +180°C

UTILISATION

Chemicals, oil derivatives, hydraulics, pneumatics, water, gases and vacuum. For special uses, see the table of chemical resistance.



Item	Description	JADE stainless steel	JADE carbon steel
1	Static gasket	Virgin P.T.F.E.	Virgin P.T.F.E.
2	Static O-Ring	NBR	NBR
3	Body insert	AISI 316 D 1.4401	A 105
4	Ball seats	Virgin P.T.F.E.	Virgin P.T.F.E.
5	Thurst washer	Virgin P.T.F.E.	Virgin P.T.F.E.
6	Stem packing	Virgin P.T.F.E.	Virgin P.T.F.E.
7	Operation-stop	AISI 304 D 1.4301	AISI 304 D 1.4301
8	Fixing-nut-plate	AISI 304 D 1.4301	AISI 304 D 1.4301
9	Lever handle	P.V.C. insulated red color	Fe PO2 Zinc. plated steel
10	Locking nut	Forged AISI 304 D 1.4301	Zinc. plated steel
11	Stem retaining-nut	Forged AISI 304 D 1.4301	Zinc. plated steel
12	Spring washers	Drawn AISI 301 D 1.4310	50 CrV4
13	Packing washers	From bar AISI 303 D 1.4305	AISI 303 D 1.4305
14	O-ring	Green or black Fluoroelastomer	Fluoroelastomer
15	Stem	From bar AISI 316 D 1.4401	AISI 304 D 1.4301
16	Ball	Forged AISI 316 D 1.4401	DN 15/40 AISI 316 D 1.4401 DN 50/100 AISI 304 D 1.4301
17	Body	Investment casting/From bar AISI 316 D 1.4408/D 1.4401	



- Heating jackets in stainless steel AISI 304
- End connections NPT to ANSI B 1.20.1 (taper threads)
- On request the valve is available with
- ATEX certificate
- For further special request please consult our technical/commercial service

AVAILABLE ACCESSORIES

Extended stem for insulated pipes.

Size	A mm	B mm	Ø C	D mm	E mm	Ø F														
DN15	160	0	G1/2	140	65	DN15														
DN20	160	0	G1/2	140	70	DN15														
DN25	190	0	G1/2	180	82	DN15														
DN32	210	25	G1/2	180	85	DN15														
DN40	230	30	G1/2	230	102	DN15														
DN50	250	10	G1/2	230	110	DN15														
DN65	270	45	G1/2	350	137,5	DN15														
DN80	300	50	G1/2	350	150	DN15														
DN100	340	70	G1	508	165	DN25														

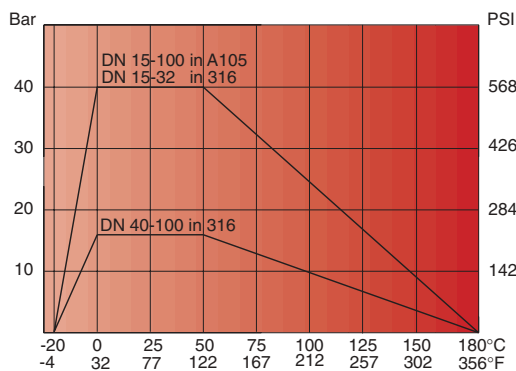
Breaking Torque in Nm

DN size	15	20	25	32	40	50	65	80	100	
PN - bar	0	4	7	10	16	25	35	55	75	150
	16	4,8	8,5	11,3	19	28	39	59	84,5	168
	25	5,2	9,1	12	20,5	29,5	41,5	62,5	92	180
	40	6	10,5	13	22,5	31,5	44	67	99	195
	Nm									

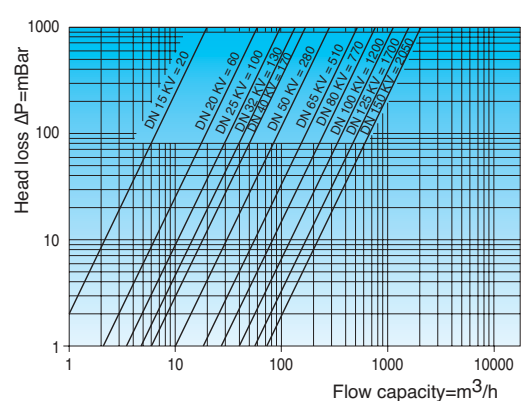
Values in Nm can change depending on the material used for seats, on temperature and on the fluid used.
For a safe working of the various sorts of servocontrol, it is necessary to consider a

safety factor = 1,5 in each condition. While the valve is working, with frequent on/off cycles, the operating torque can become extremely low in comparison with the beginning one.

PRESSURE/TEMPERATURE DIAGRAM



LOSS OF HEAD DIAGRAM



JADE 3W

Wafer ball valve in stainless steel or carbon steel, of solid and advanced design is backed by the twenty-year experience gained by ENOLGAS in the production of ball valves. In order to keep tolerances and material quality constant, investment casting of body and end adapter was preferred to forging, with careful subsequent toolings on CNC machines, which guarantee a high quality standard. Leading design and accurate machining and finishing of the valves guarantee a perfect tightness and lifetime troubleless working operations.



INDUSTRIAL VALVES

TECHNICAL FEATURES

Triple seal blow out-proof stem.
Two spring washers on top of the stem packing.
Quarter turn stop working also without lever.
Full bore.

JADE

Line is available in stainless steel and carbon steel. ISO mounting holes for actuators.
Fire safe BS 6755, API 6FA, API 607.
General prescription BS 5351.
Connection with actuator ISO 5211.

END CONNECTIONS

Flanges to UNI 2223-2229
DIN 2501 BL.1
ANSI B16.5.

WORKING PRESSURE

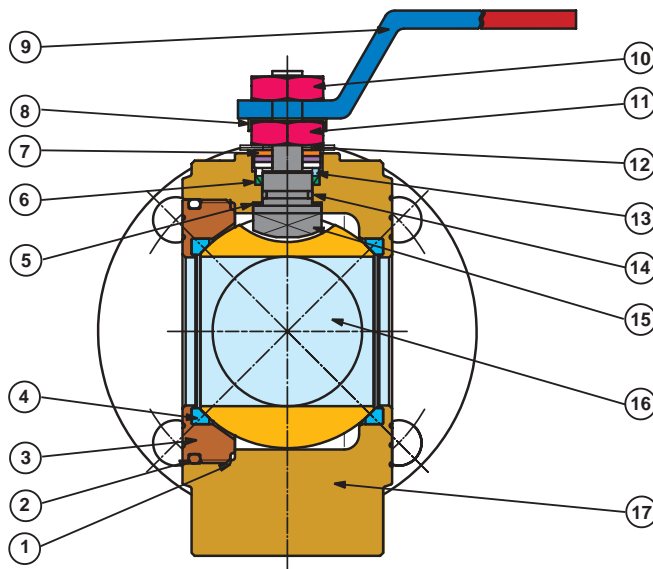
PN 16 on request PN 25 and PN 40

TEMPERATURE LIMITS

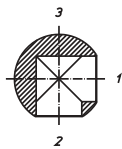
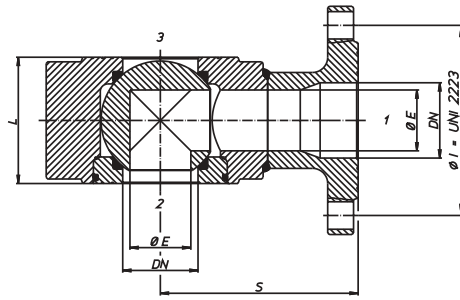
From -20°C to +180°C

UTILISATION

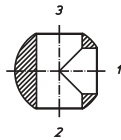
Chemicals, oil derivatives, hydraulics, pneumatics, water, gases and vacuum. For special uses, see the table of chemical resistance.



Item	Description	JADE stainless steel	JADE carbon steel
1	Static gasket	From bar	Virgin P.T.F.E.
2	Static O-Ring	Black	NBR
3	Body insert	From bar	AISI 316 D 1.4401
4	Ball seats	From bar	Virgin P.T.F.E.
5	Thrust washer	From bar	Virgin P.T.F.E.
6	Stem packing	From bar	Virgin P.T.F.E.
7	Operation-stop	Blanked	AISI 304 D 1.4301
8	Fixing-nut-plate	Blanked	AISI 304 D 1.4301
9	Lever handle	P.V.C. insulated red color	AISI 304 D 1.4301
10	Locking nut	Forged	AISI 304 D 1.4301
11	Stem retaining-nut	Forged	AISI 304 D 1.4301
12	Spring washers	Drawn	AISI 301 D 1.4310
13	Packing washers	From bar	AISI 303 D 1.4305
14	O-ring	Green or black	Fluoroelastomer
15	Stem	From bar	AISI 316 D 1.4401
16	Ball	Forged	AISI 316 D 1.4401
			DN 15/40 AISI 316 D 1.4401
			DN 50/100 AISI 304 D 1.4301
17	Body	Investment casting/From bar	AISI 316 D 1.4408/D 1.4401



L-TYPE BALL
POSSIBLE OPERATIONS:
1-2, 1-3



T-TYPE BALL
POSSIBLE OPERATIONS:
1-2-3, 1-2, 1-3

- 15% GLASS-FILLED PTFE with temperature limits -20°C + 195°C
- PTFE+CARBOGRAPHITE with temperature limits -20°C + 210°C
- DN 65 and DN 100 PN 25/40: metric flange drilling
- Reduction gear with manual operation
- Antistatic device from DN 15 to DN 32
- On request the valve is available with ATEX certificate
- For further special requests please consult our technical/commercial service

AVAILABLE ACCESSORIES

Extended stem for insulated pipes.

Size	Ø E	Ø I	L mm	S mm
DN15	10	65	35	85
DN20	15	75	38	90
DN25	20	85	43	90
DN32	25	100	54	105
DN40	32	110	66	120
DN50	40	125	83	130
DN65	50	145	103	150
DN80	65	160	122	175
DN100	78	180	153	185

For all other dimensions, please refer to Jade series.

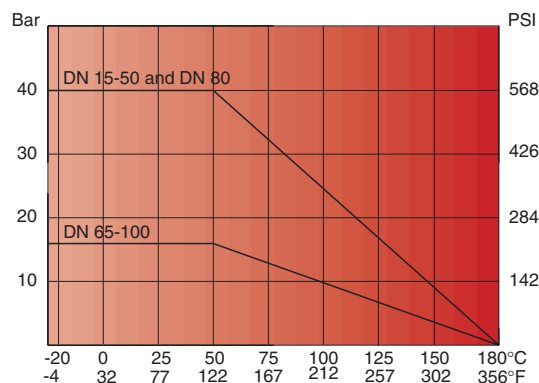
Breaking Torque in Nm

DN size	15	20	25	32	40	50	65	80	100	
PN - bar	0	4	7	10	16	25	35	55	75	150
	16	4,8	8,5	11,3	19	28	39	59	84,5	168
	25	5,2	9,1	12	20,5	29,5	41,5	62,5	92	180
	40	6	10,5	13	22,5	31,5	44	67	99	195

Values in Nm can change depending on the material used for seats, on temperature and on the fluid used.
For a safe working of the various sorts of servocontrol, it is necessary to consider a

safety factor = 1,5 in each condition. While the valve is working, with frequent on/off cycles, the operating torque can become extremely low in comparison with the beginning one.

PRESSURE/TEMPERATURE DIAGRAM

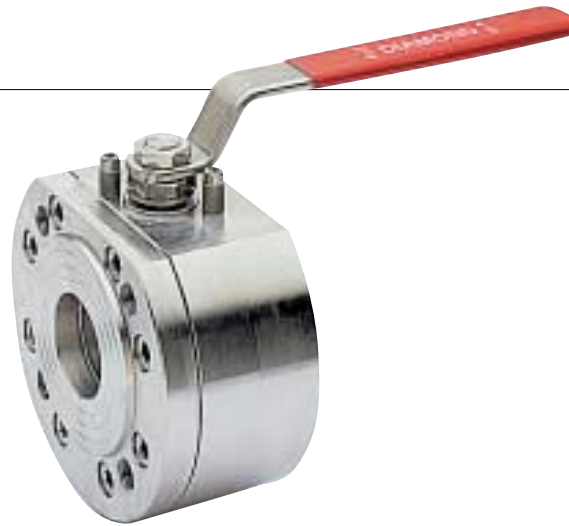


DIAMOND

Is a wafer type ball valve with flanged connections. DIAMOND ball valves in stainless steel, of solid and advanced design is backed by the twenty-year experience gained by ENOLGAS in production of ball valves.

In order to keep tolerances and material quality constant, investment casting of body and end adapter was preferred to forging, with careful subsequent toolings on CNC machines, which guarantee a high quality standard.

Leading design and accurate machining and finishing of the valves guarantee a perfect tightness and lifetime troubleless working operations.



INDUSTRIAL VALVES

TECHNICAL FEATURES

- Full bore
- Blow-out proof stem
- Antistatic device
- Stem sealing o-ring
- Sealing packings interchangeable
- Blow-out proof stem with triple labyrinth sealing system adjustable by Belleville washers.
- Low pressure and vacuum stem sealing through Fluoroelastomer O-ring.
- The sealing between body and flange is obtained through a triple barrier: a first resilient seal in PTFE, a second metallic seal and a third seal in pure graphite.
- Self-adjusting stem sealing
- Equipped with wrapping seats ensuring long life cycles, with perfect air bubble-free sealing.
- Maintenance free.
- All valves are tested at 25 bar pressure, for a period exceeding 48 hours.
- Fire safe to BS 6755, API 6FA, API 607.
- Connection with actuators to ISO 5211.
- General prescriptions to BS 5351.

END CONNECTIONS

Flanges to UNI 2223-2229
DIN 2501 BL. 1
ANSI B16.5.

WORKING PRESSURE

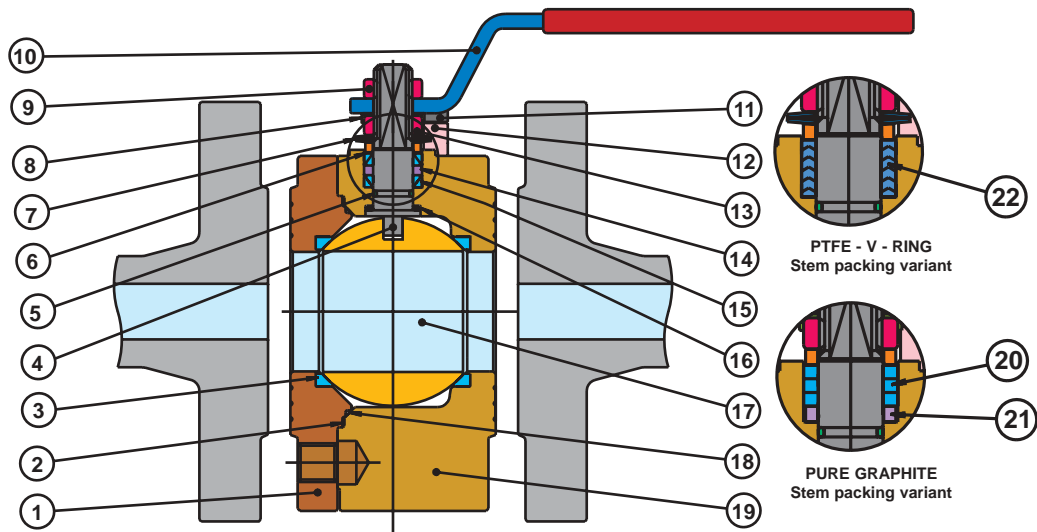
Standard PN 16
On request PN 25/PN 40
and ANSI 150.

TEMPERATURE LIMITS

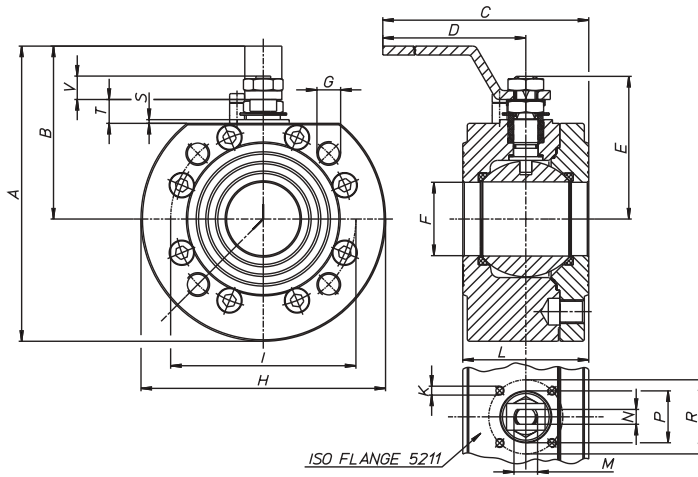
From -20°C to +180°C.

UTILISATION

DIAMOND is suitable for air, gas, water, oil and for industrial plants.
For special uses, see the table of chemical resistance.



Item	Description	DIAMOND stainless steel		DIAMOND carbon steel		
1	Metal ring	From bar	AISI 316	D 1.4401	A 105	
2	Outside static ring	From bar	Pure graphite		Pure graphite	
3	Ball seats	From bar	Virgin P.T.F.E.		Virgin P.T.F.E.	
4	Stem	From bar	AISI 316	D 1.4401	AISI 304	D 1.4301
5	O-ring	Green or black	Fluoroelastomer		Fluoroelastomer	
6	Packing washer	From bar	AISI 304	D 1.4301	AISI 304	D 1.4301
7	Spring washers	Drawn	AISI 301	D 1.4310	50CrV4	
8	Fixing nut plat	Blanked	AISI 304	D 1.4301	AISI 304	D 1.4301
9	Locking nut	Forged	AISI 304	D 1.4301	A 105	
10	Lever handle	P.V.C. insulated red color	AISI 304	D 1.4301	A 105	
11	Screw for oper. stop	Forged	AISI 304	D 1.4301	A 105	
12	Operation stop	Blanked	AISI 304	D 1.4301	A 105	
13	Stem retaining nut	Forged	AISI 304	D 1.4301	A 105	
14	Upper ring	From bar	Virgin P.T.F.E.		Virgin P.T.F.E.	
15	Stem packing	From bar	Virgin P.T.F.E.		Virgin P.T.F.E.	
16	Thrust washer	From bar	Virgin P.T.F.E.		Virgin P.T.F.E.	
17	Ball	Forged	AISI 316	D 1.4401	AISI 304	D 1.4301
18	Static gasket	From bar	Virgin P.T.F.E.		Virgin P.T.F.E.	
19	Body	From bar	AISI 316	D 1.4401	A 105	
20	Upper stem packing	From band	Pure graphite		Pure graphite	
21	Packing gland	From bar	AISI 304	D 1.4301	AISI 304	D 1.4301
22	Chevron type seals	From bar	P.T.F.E.+graphite		P.T.F.E.+graphite	



ISO FLANGE 5211

- 15% GLASS-FILLED PTFE with temperature limits -20°C + 195°C
- PTFE+CARBOGRAPHITE with temperature limits -20°C + 210°C
- Integral seats in PTFE up to DN 100
- DN 125 to DN 200 PN 25/40
- Reduction gear with manual operation
- Degreased version
- Body in LF2
- For further special requests please consult our technical/commercial service

AVAILABLE ACCESSORIES

Extended stem for insulated pipes.

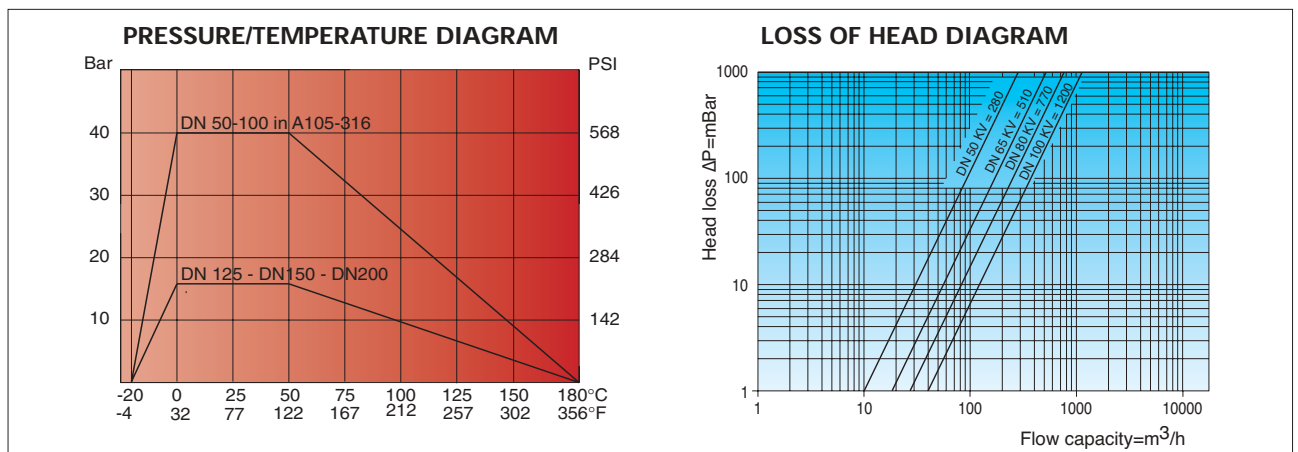
Size	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	K mm	I mm	L mm	M mm	N mm	P mm	R mm	S mm	T mm	V mm	Z mm	N° holes	PN	ISO FLANGE	weight gr.
DN50	199	117	273	230	94,5	49,5	M16	165	M6	125	85	M16	10	35	50	2,5	16	14	-	4	40	F05	11000
DN65	232	239	372	320	119,5	65	M16	185	M8	145	103	M22	14	55	70	3	19	20,5	-	4	16	F07	17500
DN65	232	139	372	320	119,5	65	M16	185	M8	145	103	M22	14	55	70	3	19	20,5	-	8	40	F07	17300
DN80	249	149	381	320	129,5	78	M16	200	M8	160	122	M22	14	55	70	3	19	20,5	-	8	40	F07	22800
DN100	277	167	448	370	148,5	96	M16	220	M10	180	155	M27	16	70	102	3	22,2	25,3	-	8	16	F10	34500
DN100	284	167	448	370	148,5	96	M20	235	M10	190	155	M27	16	70	102	3	22,2	25,3	-	8	40	F10	39000
DN125	309	181	455	370	166,5	118	M16	255	M10	210	185	M27	16	70	102	3	22,2	25,3	-	8	16	F10	54200
DN125	316	181	455	370	166,5	118	M22	270	M10	220	185	M27	16	70	102	3	22,2	25,3	-	8	40	F10	61720
DN150	396	249	689	584	200	144	M20	295	M12	240	235	M42	26	-	125	-	4	31,5	650	8	16	F12	90570
DN150	396	249	702	584	200	144	M24	295	M12	250	235	M42	26	-	125	-	4	31,5	650	8	16	F12	91900
DN200	475	288	739	584	235	192	M20	365	M12	295	310	M42	26	-	125	-	4	27	650	12	16	F12	177060
DN200	475	288	739	584	235	192	M27	373	M12	320	310	M42	26	-	125	-	4	27	650	12	16	F12	183000

Breaking Torque in Nm

DN size	50	65	80	100	125	150	200
PN - bar							
0	35	55	75	150	240	310	600
16	39	59	84,5	168	300	400	800
25	41,5	62,5	92	180			
40	44	67	99	195			

Values in Nm can change depending on the material used for seats, on temperature and on the fluid used.
For a safe working of the various sorts of servocontrol, it is necessary to consider a

safety factor = 1,5 in each condition. While the valve is working, with frequent on/off cycles, the operating torque can become extremely low in comparison with the beginning one.



CAST DIAMOND

Is a wafer type ball valve with flanged connections. DIAMOND ball valves in stainless steel, of solid and advanced design is backed by the twenty-year experience gained by ENOLGAS in production of ball valves.

In order to keep tolerances and material quality constant, investment casting of body and end adapter was preferred to forging, with careful subsequent toolings on CNC machines, which guarantee a high quality standard.

Leading design and accurate machining and finishing of the valves guarantee a perfect tightness and lifetime troubleless working operations.



INDUSTRIAL VALVES

TECHNICAL FEATURES

Full bore
 Blow-out proof stem
 Antistatic device
 Stem sealing o-ring
 Sealing packings interchangeable
 Blow-out proof stem with triple labyrinth sealing system adjustable by Belleville washers.
 Low pressure and vacuum stem sealing through Fluoroelastomer O-ring.
 The sealing between body and flange is obtained through a triple barrier: a first resilient seal in PTFE, a second metallic seal and a third seal in pure graphite.
 Self-adjusting stem sealing
 Equipped with wrapping seats ensuring long life cycles, with perfect air bubble-free sealing.
 Maintenance free.
 All valves are tested at 25 bar pressure, for a period exceeding 48 hours.
 Fire safe to BS 6755, API 6FA, API 607.
 Connection with actuators to ISO 5211.
 General prescriptions to BS 5351.

END CONNECTIONS

Flanges to UNI 2223-2229
 DIN 2501 BL. 1
 ANSI B16.5.

WORKING PRESSURE

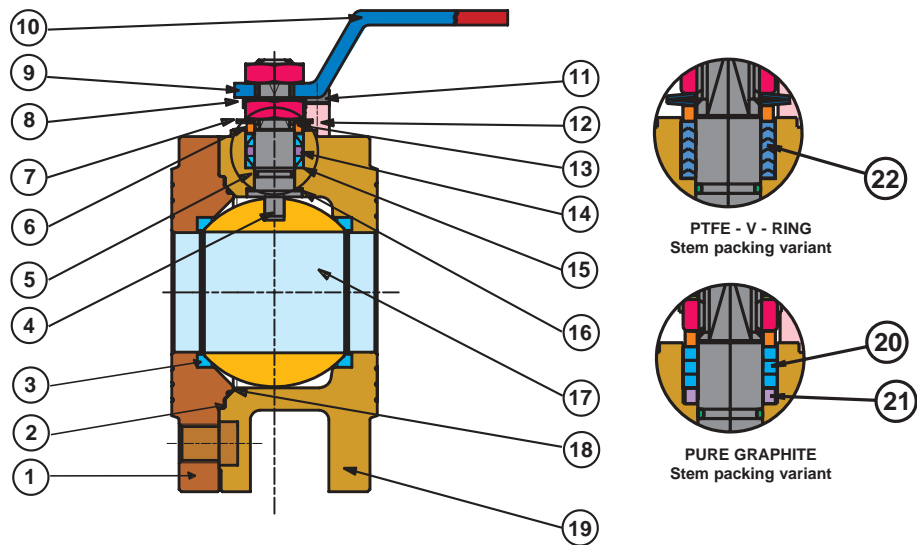
Standard PN 16
 On request PN 25/PN 40 and ANSI 150.

TEMPERATURE LIMITS

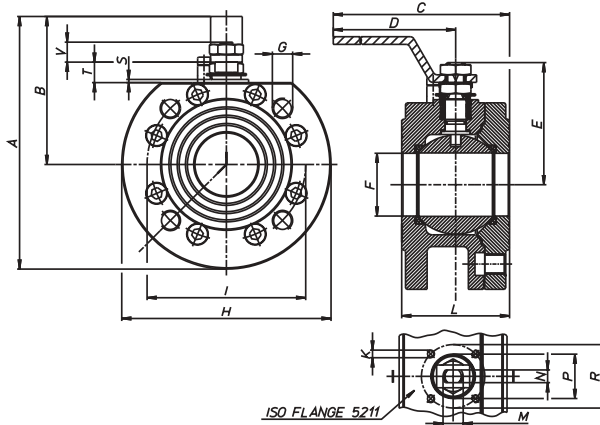
From -20°C to +180°C.

UTILISATION

DIAMOND is suitable for air, gas, water, oil and for industrial plants.
 For special uses, see the table of chemical resistance.



Item	Description	DIAMOND stainless steel		DIAMOND carbon steel		
1	Metal ring	From bar	AISI 316	D 1.4401	A 105	
2	Outside static ring	From bar	Pure graphite		Pure graphite	
3	Ball seats	From bar	Virgin P.T.F.E.		Virgin P.T.F.E.	
4	Stem	From bar	AISI 316	D 1.4401	AISI 304	D 1.4301
5	O-ring	Green or black	Fluoroelastomer		Fluoroelastomer	
6	Packing washer	From bar	AISI 304	D 1.4301	AISI 304	D 1.4301
7	Spring washers	Drawn	AISI 301	D 1.4310	50CrV4	
8	Fixing nut plat	Blanked	AISI 304	D 1.4301	AISI 304	D 1.4301
9	Locking nut	Forged	AISI 304	D 1.4301	A 105	
10	Lever handle	P.V.C. insulated red color	AISI 304	D 1.4301	A 105	
11	Screw for oper. stop	Forged	AISI 304	D 1.4301	A 105	
12	Operation stop	Blanked	AISI 304	D 1.4301	A 105	
13	Stem retaining nut	Forged	AISI 304	D 1.4301	A 105	
14	Upper ring	From bar	Virgin P.T.F.E.		Virgin P.T.F.E.	
15	Stem packing	From bar	Virgin P.T.F.E.		Virgin P.T.F.E.	
16	Thrust washer	From bar	Virgin P.T.F.E.		Virgin P.T.F.E.	
17	Ball	Forged	AISI 316	D 1.4401	AISI 304	D 1.4301
18	Static gasket	From bar	Virgin P.T.F.E.		Virgin P.T.F.E.	
19	Body	Investment casting	AISI 316	D 1.4408	A 105	
20	Upper stem packing	From band	Pure graphite		Pure graphite	
21	Packing gland	From bar	AISI 304	D 1.4301	AISI 304	D 1.4301
22	Chevron type seals	From bar	P.T.F.E.+graphite		P.T.F.E.+graphite	



- 15% GLASS-FILLED PTFE with temperature limits -20°C + 195°C
- PTFE+CARBOGRAPHITE with temperature limits -20°C + 210°C
- Integral seats in PTFE up to DN 100
- DN 125 to DN 200 PN 25/40
- Reduction gear with manual operation
- Degreased version
- Body in LF2
- For further special requests please consult our technical/commercial service

AVAILABLE ACCESSORIES

Extended stem for insulated pipes.

Size	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	K mm	I mm	L mm	M mm	N mm	P mm	R mm	S mm	T mm	V mm	N° holes	PN	ISO FLANGE	weight gf.
DN50	199	117	273	230	94,5	49,5	M16	165	M6	125	85	M16	10	35	50	2,5	16	14	4	40	F05	7980
DN65	232	239	385	333	119,5	65	M16	185	M8	145	103	M22	14	55	70	3	19	20,5	4	16	F07	17500
DN65	232	139	385	333	119,5	65	M16	185	M8	145	103	M22	14	55	70	3	19	20,5	8	40	F07	17300
DN80	249	149	394	333	129,5	78	M16	200	M8	160	122	M22	14	55	70	3	19	20,5	8	40	F07	16950
DN100	277	167	448	370	148,5	96	M16	220	M10	180	155	M27	16	70	102	3	22,2	25,3	8	16	F10	25550
DN100	284	167	448	370	148,5	96	M20	235	M10	190	155	M27	16	70	102	3	22,2	25,3	8	40	F10	39000
DN125	306	181	455	370	166,5	118	M16	250	M10	210	185	M27	16	70	102	3	22,2	25,3	8	16	F10	39820
DN125	316	181	455	370	166,5	118	M24	270	M10	220	185	M27	16	70	102	3	22,2	25,3	8	40	F10	61720
DN150	392	249	689	584	200	144	M20	285	M12	240	235	M42	26	-	125	-	4	31,5	8	16	F12	63100
DN150	399	249	702	584	200	144	M24	300	M12	250	235	M42	26	-	125	-	4	31,5	8	40	F12	74650
DN200	458	288	739	584	235	192	M20	340	M12	295	310	M42	26	-	125	-	4	27	12	16	F12	139000
DN200	476	288	739	584	235	192	M27	375	M12	320	310	M42	26	-	125	-	4	27	12	40	F12	145000

Breaking Torque in Nm

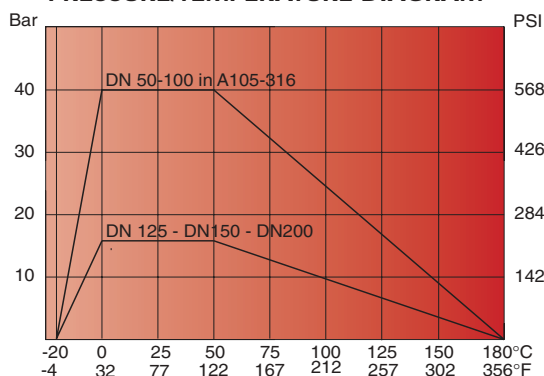
DN size	50	65	80	100	125	150	200		
PN - bar	0	35	55	75	150	240	310	600	
	16	39	59	84,5	168	300	400	800	
	25	41,5	62,5	92	180				
	40	44	67	99	195				
Nm									

Values in Nm can change depending on the material used for seats, on temperature and on the fluid used.

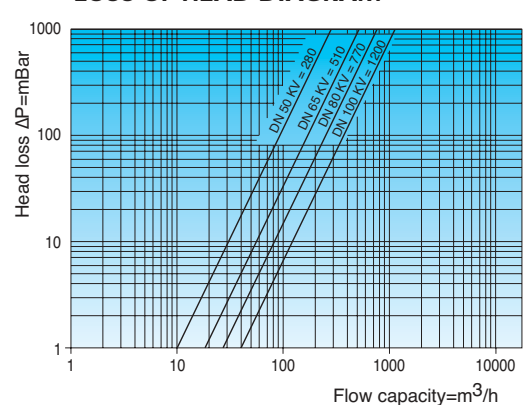
For a safe working of the various sorts of servocontrol, it is necessary to consider a

safety factor = 1,5 in each condition. While the valve is working, with frequent on/off cycles, the operating torque can become extremely low in comparison with the beginning one.

PRESSURE/TEMPERATURE DIAGRAM



LOSS OF HEAD DIAGRAM



Ball valve in stainless steel, of solid and advanced design is backed by the twenty-year experience gained by ENOLGAS in production of ball valves.

In order to keep tolerances and material quality constant, investment casting of body and end adapter was preferred to forging, with careful subsequent toolings on CNC machines, which guarantee a high quality standard.

Leading design and accurate machining and finishing of the valves guarantee a perfect tightness and lifetime troubleless working operations.



TECHNICAL FEATURES

Full bore.

The machining of the body takes place on CNC high precision machines, so as to guarantee the compliance with the design specifications.

Possibility of stops at 90° by operation without lever.

Blow-out proof stem with labyrinth sealing system adjustable by Belleville washers.

Equipped with wrapping seats ensuring long life cycles.

Perfect air bubble-free sealing.

Maintenance free.

All valves are tested at 25 bar pressure, for a period exceeding 48 hours.

Fire safe to BS 6755, API 6FA, API 607.

General prescriptions to BS 5351.

Connection with actuators to ISO 5211.

END CONNECTIONS

Flanges to UNI 2223-2229

DIN 2501 BL. 1

DIN 3202

ANSI B 16.5

ANSI B 16. 10.

WORKING PRESSURE

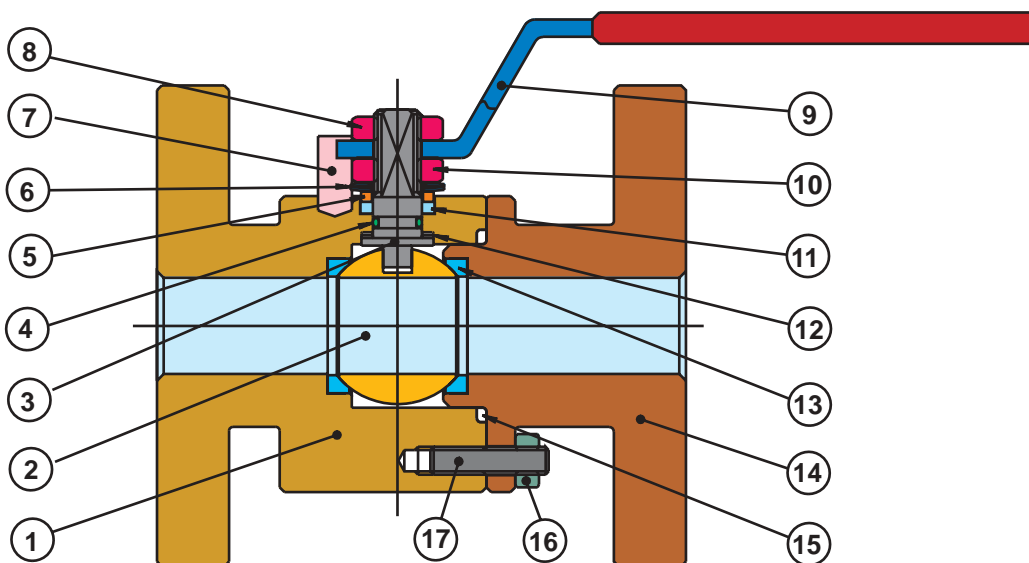
PN 16/40 and ANSI 150.

TEMPERATURE LIMITS

From -20°C to +180°C.

UTILISATION

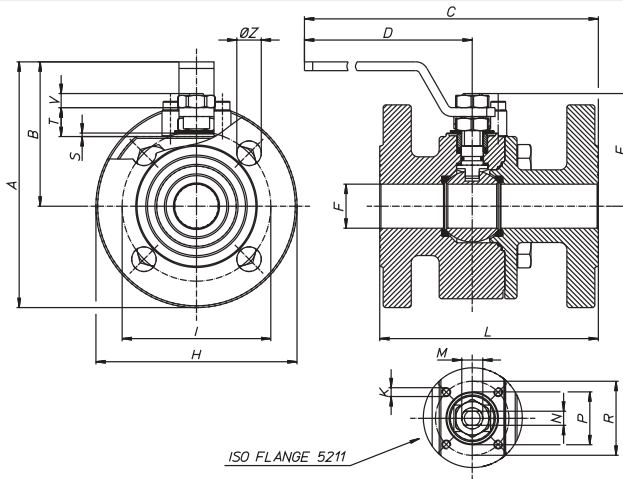
TOPAZ is suitable for air, gas, water, oil and for industrial plants.



Item	Description	TOPAZ stainless steel		TOPAZ carbon steel	
1	Body	From bar	AISI 316 D 1.4401	A 105	
2	Ball	Forged	AISI 316 D 1.4401	AISI 304	D 1.4301
3	Stem	From bar	AISI 316 D 1.4401	AISI 304	D 1.4301
4	O-ring	Green or black	Fluoroelastomer	Fluoroelastomer	
5	Packing washer	From bar	AISI 316 D 1.4401	AISI 304	D 1.4301
6	Spring washers	Drawn	AISI 301 D 1.4310	50CrV4	
7	Operation stop pin	From bar	AISI 304 D 1.4301	Carbon steel 8.8	
8	Locking nut	Forged	AISI 304 D 1.4301	A 105 Nickel-plated	
9	Lever handle	P.V.C. insulated red color	A 105 Nickel-plated	A 105 Nickel-plated	
10	Stem retaining nut	Forged	AISI 304 D 1.4301	A 105 Nickel-plated	
11	Upper stem packing	From bar	Virgin P.T.F.E.*	Virgin P.T.F.E.*	
12	Thrust washer	From bar	Virgin P.T.F.E.*	Virgin P.T.F.E.*	
13	Ball seats	From bar	Virgin P.T.F.E.	Virgin P.T.F.E.	
14	Body flange	From bar	AISI 316 D 1.4401	A 105	
15	Static gasket	From bar	Virgin P.T.F.E.*	Virgin P.T.F.E.*	
16	Locking nut	Forged	AISI 304 D 1.4301	A 105 Nickel-plated	
17	Stud bolt	From bar	A 193 B8	A 193 B7	

* Graphite, for fire safe.





- 15% GLASS-FILLED PTFE with temperature limits -20°C + 195°C
- PTFE+CARBOGRAPHITE with temperature limits -20°C + 210°C
- From DN 65 to DN 150 PN 25/40
- From DN 15 to DN 100 PN 16/40, DIN3202 face to face F1
- Degreased version
- Antistatic device from DN15 to DN32
- ATEX certificate
- Body in LF2
- For further special requests please consult our technical/commercial service

AVAILABLE ACCESSORIES

Extended stem for insulated pipes.

Size	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	K mm	I mm	L mm	M mm	N mm	P mm	R mm	S mm	T mm	V mm	N° holes	PN	ISO FLANGE	weight gf.
DN15	113,5	66	207	140	48	15	14	95	M5	65	115	M10	6	-	36	-	5	9	4	40	F03	3600
DN20	121,5	69	210	140	51	20	14	105	M5	75	120	M10	6	25	36	2	8	9	4	40	F03	4635
DN25	139,5	82	252	180	62,3	25	14	115	M5	85	125	M12	8	30	42	2	11,5	11,5	4	40	F04	5750
DN32	157	87	257	180	67	32	18	140	M5	100	130	M12	8	30	42	2	10	11	4	40	F04	8320
DN40	183	108	312	230	87,3	40	18	150	M6	110	140	M16	10	35	50	2,5	14,5	15,5	4	40	F05	11160
DN50	197,5	115	317	230	94,5	49,5	18	165	M6	125	150	M16	10	35	50	2,5	14,5	15,5	4	40	F05	14900
DN65	231	139	418	320	119,5	65	18	185	M8	145	170	M22	14	55	70	3	18,7	20,8	4	16	F07	23750
DN80	250	150	425	320	130	78	18	200	M8	160	180	M22	14	55	70	3	18,7	20,8	8	40	F07	28530
DN100	273	163	484	370	148,5	96	18	220	M10	180	190	M27	16	-	102	-	1,5	26	8	16	F10	35560
DN150	392	249	771	584	200	144	22	285	M12	240	350	M42	26	-	125	-	4	31,5	8	16	F12	108900
DN200	460	288	784	584	235	192	22	343	M12	295	400	M42	26	-	125	-	4	27	12	16	F12	194650

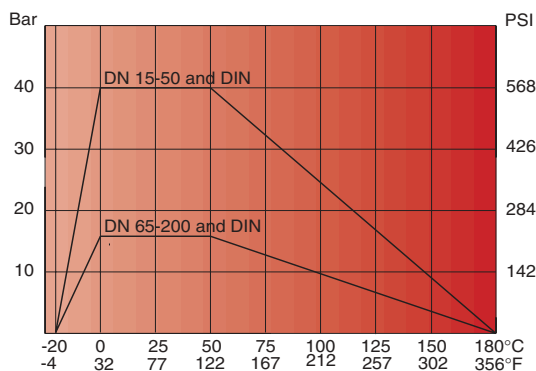
Breaking Torque in Nm

DN size	15	20	25	32	40	50	65	80	100	
PN - bar	0	4	7	15	21	26	36	51	81	130
	16	5	8	17	23	28	39	54	86	150
	40	6	10	22	28	32	45	62	120	200
Nm										

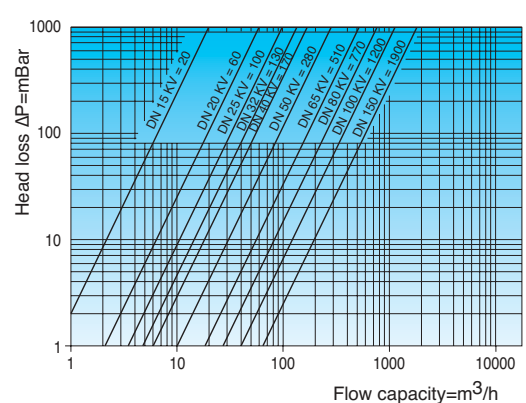
Values in Nm can change depending on the material used for seats, on temperature and on the fluid used.
For a safe working of the various sorts of servocontrol, it is necessary to consider a

safety factor = 1,5 in each condition. While the valve is working, with frequent on/off cycles, the operating torque can become extremely low in comparison with the beginning one.

PRESSURE/TEMPERATURE DIAGRAM



LOSS OF HEAD DIAGRAM



TOPAZ ANSI 300

Ball valve in stainless steel, of solid and advanced design is backed by the twenty-year experience gained by ENOLGAS in production of ball valves.

In order to keep tolerances and material quality constant, investment casting of body and end adapter was preferred to forging, with careful subsequent toolings on CNC machines, which guarantee a high quality standard.

Leading design and accurate machining and finishing of the valves guarantee a perfect tightness and lifetime troubleless working operations.



INDUSTRIAL VALVES

TECHNICAL FEATURES

Full bore.

The machining of the body takes place on CNC high precision machines so as to guarantee the compliance with the design specifications.

Possibility of stops at 90° by operation without lever.

Blow-out proof stem with labyrinth sealing system adjustable by Belleville washers.

Equipped with wrapping seats ensuring long life cycles.

Perfect air bubble-free sealing.

Maintenance free.

All valves are tested at 25 bar pressure, for a period exceeding 48 hours.

Fire safe to BS 6755, API 6FA, API 607.

General prescriptions to BS 5351.

Connection with actuators to ISO 5211.

END CONNECTIONS

Flanges to UNI 2223-2229
DIN 2501 BL. 1
DIN 3202
ANSI B 16.5
ANSI B 16. 10.

WORKING PRESSURE

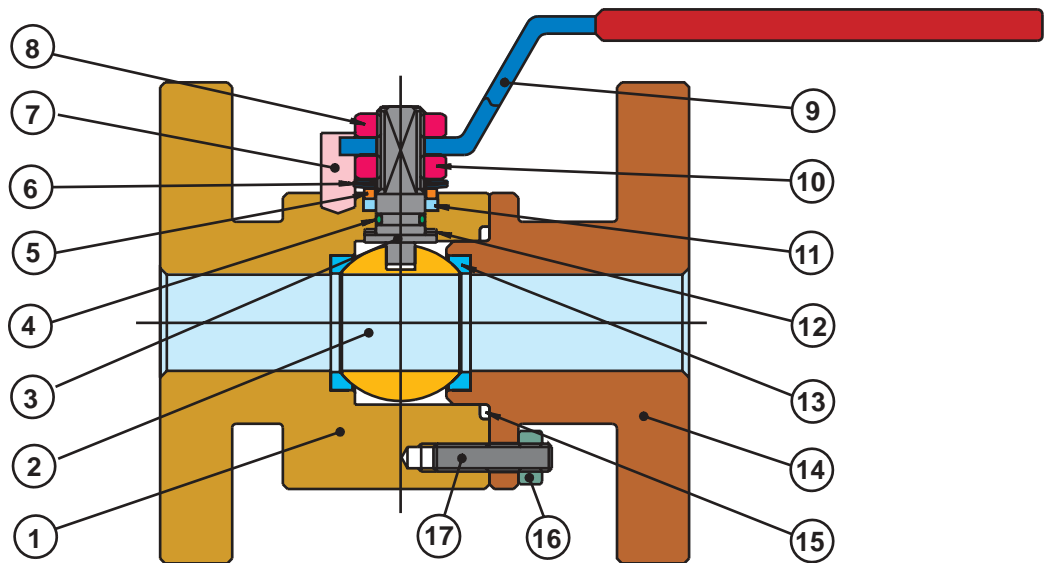
PN 64 and ANSI 300.

TEMPERATURE LIMITS

From -20°C to +180°C.

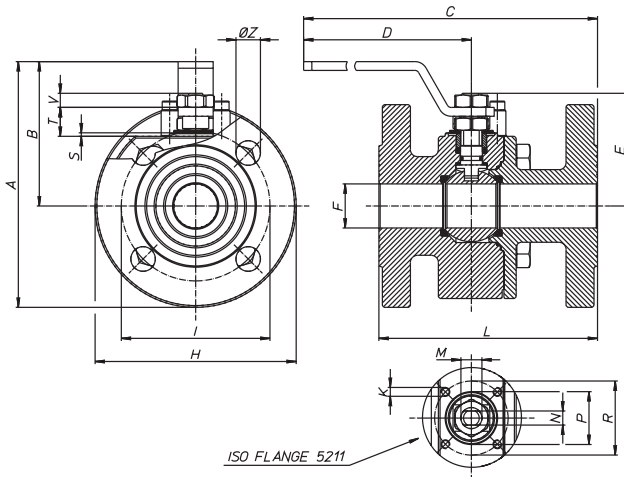
UTILISATION

TOPAZ is suitable for air, gas, water, oil and for industrial plants.



Item	Description	TOPAZ stainless steel		TOPAZ carbon steel	
1	Body	From bar	AISI 316 D 1.4401	A 105	
2	Ball	Forged	AISI 316 D 1.4401	AISI 304	D 1.4301
3	Stem	From bar	AISI 316 D 1.4401	AISI 304	D 1.4301
4	O-ring	Green or black	Fluoroelastomer	Fluoroelastomer	
5	Packing washer	From bar	AISI 316 D 1.4401	AISI 304	D 1.4301
6	Spring washers	Drawn	AISI 301 D 1.4310	50CrV4	
7	Operation stop pin	From bar	AISI 304 D 1.4301	Carbon steel 8.8	
8	Locking nut	Forged	AISI 304 D 1.4301	A 105 Nickel-plated	
9	Lever handle	P.V.C. insulated red color	A 105 Nickel-plated	A 105 Nickel-plated	
10	Stem retaining nut	Forged	AISI 304 D 1.4301	A 105 Nickel-plated	
11	Upper stem packing	From bar	Virgin P.T.F.E.*	Virgin P.T.F.E.*	
12	Thrust washer	From bar	Virgin P.T.F.E.*	Virgin P.T.F.E.*	
13	Ball seats	From bar	Virgin P.T.F.E.	Virgin P.T.F.E.	
14	Body flange	From bar	AISI 316 D 1.4401	A 105	
15	Static gasket	From bar	Virgin P.T.F.E.*	Virgin P.T.F.E.*	
16	Locking nut	Forged	AISI 304 D 1.4301	A 105 Nickel-plated	
17	Stud bolt	From bar	A 193 B8	A 193 B7	

* Graphite, for fire safe.



- 15% GLASS-FILLED PTFE with temperature limits -20°C + 195°C
- PTFE+CARBOGRAPHITE with temperature limits -20°C + 210°C
- Degreased version
- Antistatic device from DN15 to DN32
- On request the valve is available with ATEX certificate
- Body in LF2
- For further special requests please consult our technical/commercial service

AVAILABLE ACCESSORIES

Extended stem for insulated pipes.

Size	A mm	B mm	C mm	D mm	E mm	F mm	H mm	K mm	I mm	L mm	M mm	N mm	P mm	R mm	S mm	T mm	V mm	Z mm	N° holes	ISO FLANGE	weight gr.
1/2"	113,5	66	232,1	140	48	15	89	M5	66,7	140	M10	6	-	36	-	5	9	16	4	F03	3600
3/4"	127,8	69	241,1	140	51	20	117,5	M5	82,5	151	M10	6	25	36	2	8	9	14	4	F03	5605
1"	144	82	292,1	180	62,5	25	124	M5	88,9	165	M12	8	30	42	2	11,5	11,5	19	4	F04	6245
1 1/4"	153,5	87	303,4	180	67	32	133	M5	98,4	178	M12	8	30	42	2	10	11	19	4	F04	8560
1 1/2"	186	108	358,5	230	87,5	40	156	M6	114,3	189	M16	10	35	50	2,5	14,5	15,5	22	4	F05	13185
2"	197,5	115	381	230	94,5	49,5	165	M6	127	216	M16	10	35	50	2,5	14,5	15,5	19	4	F05	16555
2 1/2"	234,5	139	485,4	320	119,5	65	191	M8	149,2	241	M22	14	55	70	3	18,7	20,8	22	8	F07	27825
3"	255	150	523,5	320	130	78	210	M8	168,3	283	M22	14	55	70	3	18,7	20,8	22	8	F07	36150
4"	290	163	559	370	148,5	96	254	M8	200	305	M27	16	-	102	-	1,5	26	22	8	F10	60055

Breaking Torque in Nm

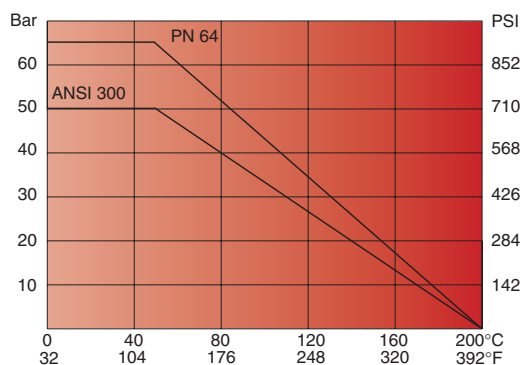
DN size	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	
PN - bar	0	4	7	15	21	26	36	51	81	130
	16	5	8	17	23	28	39	54	86	150
	40	6	10	22	28	32	45	62	120	200

Nm

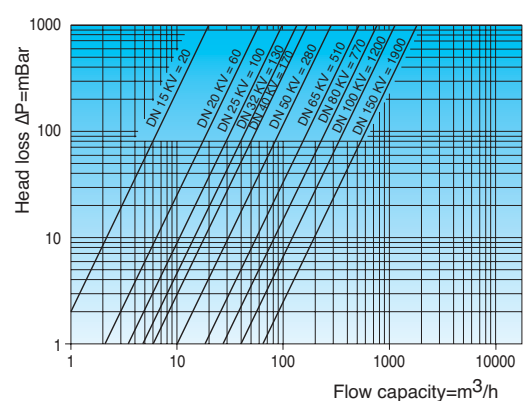
Values in Nm can change depending on the material used for seats, on temperature and on the fluid used.
For a safe working of the various sorts of servocontrol, it is necessary to consider a

safety factor = 1,5 in each condition. While the valve is working, with frequent on/off cycles, the operating torque can become extremely low in comparison with the beginning one.

PRESSURE/TEMPERATURE DIAGRAM



LOSS OF HEAD DIAGRAM



CAST TOPAZ

Ball valve in stainless steel, of solid and advanced design is backed by the twenty-year experience gained by ENOLGAS in production of ball valves.

In order to keep tolerances and material quality constant, investment casting of body and end adapter was preferred to forging, with careful subsequent toolings on CNC machines, which guarantee a high quality standard.

Leading design and accurate machining and finishing of the valves guarantee a perfect tightness and lifetime troubleless working operations.



INDUSTRIAL VALVES

TECHNICAL FEATURES

Full bore.

The machining of the body takes place on CNC high precision machines so as to guarantee the compliance with the design specifications.

Possibility of stops at 90° by operation without lever.

Blow-out proof stem with labyrinth sealing system adjustable by Belleville washers.

Equipped with wrapping seats ensuring long life cycles.

Perfect air bubble-free sealing.

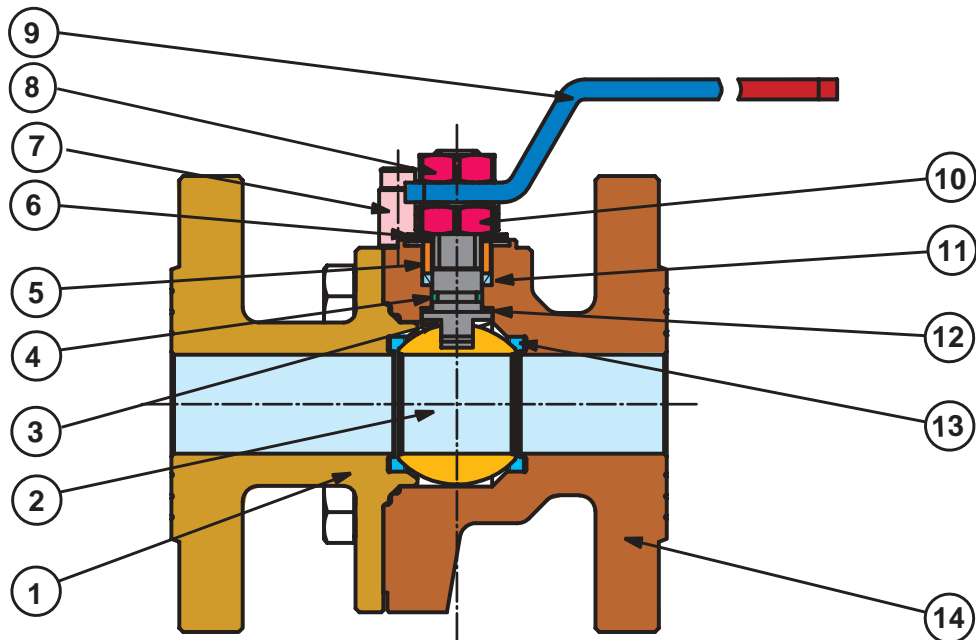
Maintenance free.

All valves are tested at 25 bar pressure, for a period exceeding 48 hours.

Fire safe to BS 6755, API 6FA, API 607.

General prescriptions to BS 5351.

Connection with actuators to ISO 5211.



END CONNECTIONS

Flanges to UNI 2223-2229
DIN 2501 BL. 1
DIN 3202
ANSI B 16.5
ANSI B 16. 10.

WORKING PRESSURE

PN 16/40 and ANSI 150.

TEMPERATURE LIMITS

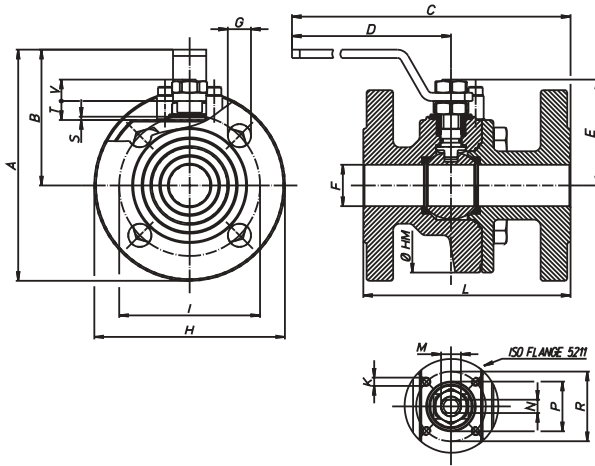
From -20°C to +180°C.

UTILISATION

TOPAZ is suitable for air, gas, water, oil and for industrial plants.

Item	Description	TOPAZ stainless steel		TOPAZ carbon steel	
1	Body	From bar	AISI 316 D 1.4401	A 105	
2	Ball	Forged	AISI 316 D 1.4401	AISI 304	D 1.4301
3	Stem	From bar	AISI 316 D 1.4401	AISI 304	D 1.4301
4	O-ring	Green or black	Fluoroelastomer	Fluoroelastomer	
5	Packing washer	From bar	AISI 316 D 1.4401	AISI 304	D 1.4301
6	Spring washers	Drawn	AISI 301 D 1.4310	50CrV4	
7	Operation stop pin	From bar	AISI 304 D 1.4301	Carbon steel 8.8	
8	Locking nut	Forged	AISI 304 D 1.4301	A 105 Nickel-plated	
9	Lever handle	P.V.C. insulated red color	A 105 Nickel-plated		A 105 Nickel-plated
10	Stem retaining nut	Forged	AISI 304 D 1.4301	A 105 Nickel-plated	
11	Upper stem packing	From bar	Virgin P.T.F.E.*	Virgin P.T.F.E.*	
12	Thrust washer	From bar	Virgin P.T.F.E.*	Virgin P.T.F.E.*	
13	Ball seats	From bar	Virgin P.T.F.E.	Virgin P.T.F.E.	
14	Body flange	From bar	AISI 316 D 1.4401	A 105	

* Graphite, for fire safe.



- 15% GLASS-FILLED PTFE with temperature limits -20°C + 195°C
- PTFE+CARBOGRAPHITE with temperature limits -20°C + 210°C
- Degreased version
- Antistatic device from DN15 to DN32
- On request the valve is available with ATEX certificate
- Body in LF2
- For further special requests please consult our technical/commercial service

AVAILABLE ACCESSORIES

Extended stem for insulated pipes.

Size	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	K mm	I mm	L mm	M mm	N mm	P mm	R mm	S mm	T mm	V mm	HM mm	N° holes	PN	ISO FLANGE	weight gf.
DN15	113,5	66	207	140	48	15	14	95	M5	65	115	M10	6	-	36	-	5	9	-	4	40	F03	3600
DN20	121,5	69	210	140	51	20	14	105	M5	75	120	M10	6	25	36	2	8	9	-	4	40	F03	4635
DN25	139,5	82	252	180	62,3	25	14	115	M5	85	125	M12	8	30	42	2	11,5	11,5	105	4	40	F04	4930
DN32	157	87	257	180	67	32	18	140	M5	100	130	M12	8	30	42	2	10	11	-	4	40	F04	8320
DN40	183	108	312	230	87,3	40	18	150	M6	110	140	M16	10	35	50	2,5	14,5	15,5	140	4	40	F05	8700
DN50	197,5	115	317	230	94,5	49,5	18	165	M6	125	150	M16	10	35	50	2,5	14,5	15,5	155	4	40	F05	12930
DN65	231	139	418	320	119,5	65	18	185	M8	145	170	M22	14	55	70	3	18,7	20,8	183	4	16	F07	19204
DN80	250	150	425	320	130	78	18	200	M8	160	180	M22	14	55	70	3	18,7	20,8	198	8	40	F07	23520
DN100	273	163	484	370	148,5	96	18	220	M10	180	190	M27	16	-	102	-	1,5	26	218	8	16	F10	30230
DN125	306	181	603	370	166,5	118	18	250	M10	210	325	M27	16	70	102	3	22	26	246	8	16	F12	56100
DN150	392	249	771	584	200	144	22	285	M12	240	350	M42	26	-	125	-	4	31,5	287	8	16	F12	85200
DN200	460	288	784	584	235	192	22	343	M12	295	400	M42	26	-	125	-	4	27	377	12	16	F12	150200

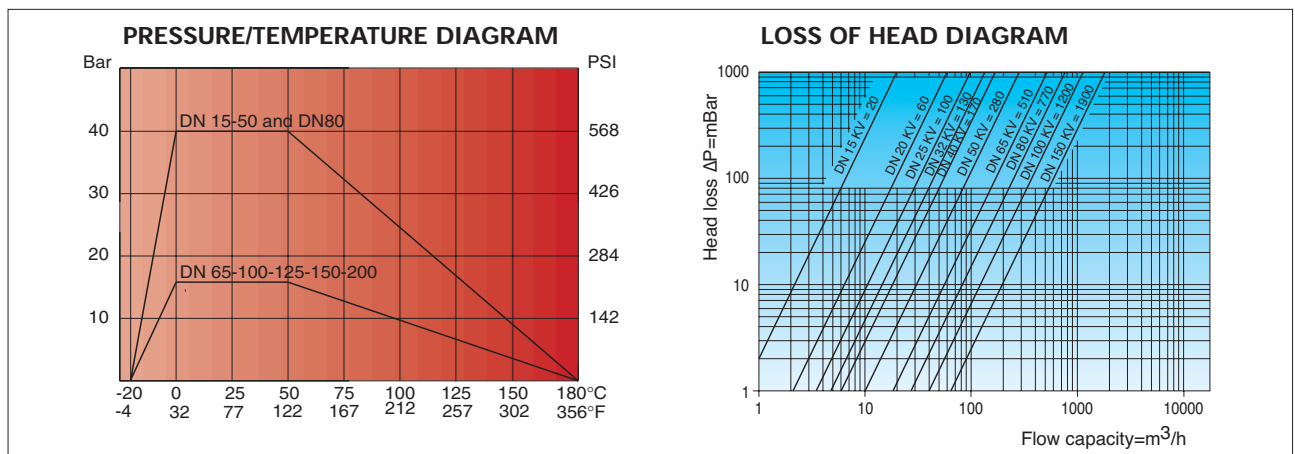
Breaking Torque in Nm

DN size	15	20	25	32	40	50	65	80	100	
PN - bar	0	4	7	10	16	25	35	55	75	150
	16	4,8	8,5	11,3	19	28	39	59	84,5	168
	25	5,2	9,1	12	20,5	29,5	41,5	62,5	92	180
	40	6	10,5	13	22,5	31,5	44	67	99	195

Nm

Values in Nm can change depending on the material used for seats, on temperature and on the fluid used.
For a safe working of the various sorts of servocontrol, it is necessary to consider a

safety factor = 1,5 in each condition. While the valve is working, with frequent on/off cycles, the operating torque can become extremely low in comparison with the beginning one.



CORAL

Ball valve in stainless steel, of solid and advanced design is backed by the twenty-year experience gained by ENOLGAS in production of ball valves.

In order to keep tolerances and material quality constant, investment casting of body and end adapter was preferred to forging, with careful subsequent toolings on CNC machines, which guarantee a high quality standard.

Leading design and accurate machining and finishing of the valves guarantee a perfect tightness and lifetime troubleless working operations.



INDUSTRIAL VALVES

TECHNICAL FEATURES

Full bore.

The machining of body and end connection takes place on CNC high precision machines so as to guarantee the compliance with the design specifications.

Possibility of stops at 90° by operation without lever.

Blow-out proof stem with labyrinth sealing system.

Equipped with wrapping seats ensuring long life cycles. Perfect air bubble-free sealing.

Maintenance free.

Fire safe to BS 6755, API 6FA, API 607.

General prescriptions BS 5351.

END CONNECTIONS

Female screwed to ISO 7/1 Rp = DIN 2999
NPT

ANSI B 1.20.1.

Socket-weld ends to SW ANSI B16.11

Butt-weld ends to BW ANSI B16.25 schedule 40.

WORKING PRESSURE

PN 105 series 1500
PN 64 series 800

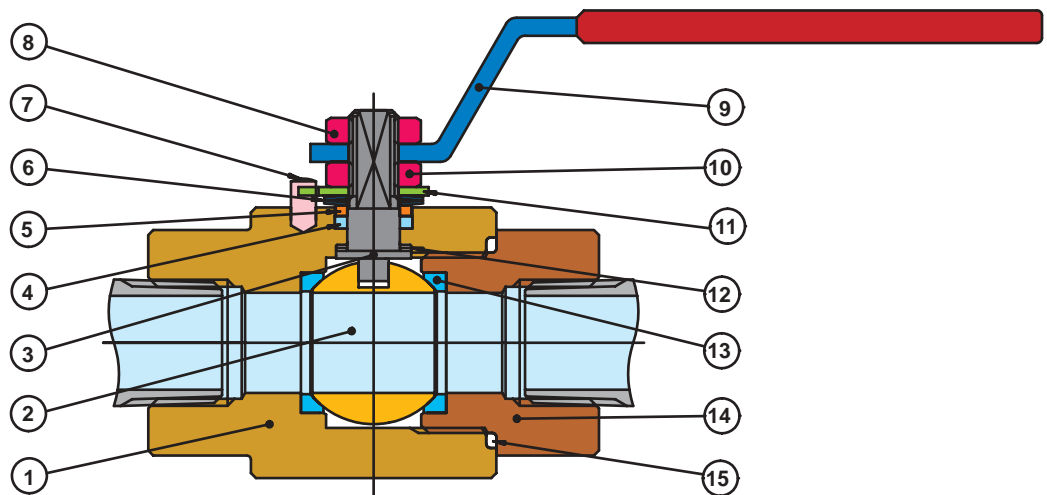
TEMPERATURE LIMITS

From -20°C to +150°C

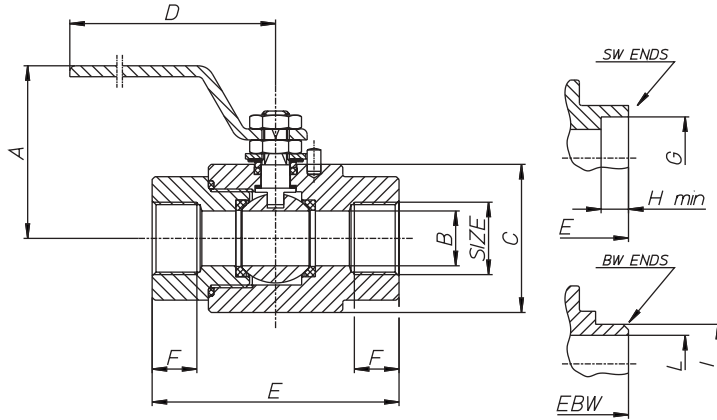
UTILISATION

CORAL is suitable for use in high pressure and high temperature condition.

For special uses, see the table of chemical resistance.



Item	Description	CORAL stainless steel		CORAL carbon steel	
1	Body	From bar	AISI 316	D 1.4401	A 105 D 1.4301
2	Ball	Forged	AISI 316	D 1.4401	AISI 304
3	Stem	From bar	AISI 316	D 1.4401	AISI 304/F6
4	Upper stem packing	From bar	Virgin P.T.F.E.		Virgin P.T.F.E.
5	Packing gland	From bar	AISI 304	D 1.4301	A 105
6	Spring washers	Drawn	AISI 301	D 1.4310	50 CrV4
7	Stop pin	From bar	AISI 304	D 1.4301	A 105
8	Locking nut	Forged	AISI 304	D 1.4301	A 105 Nickel-plated
9	Lever handle	P.V.C. insulated red color	A 105 Nickel-plated		A 105 Nickel-plated
10	Stem retaining nut	Forged	AISI 304	D 1.4301	A 105 Nickel-plated
11	Operation stop	Blanked	A 105 Nickel-plated		A 105 Nickel-plated
12	Thrust washer	From bar	Virgin P.T.F.E.		Virgin P.T.F.E.
13	Ball seats	From bar	Virgin P.T.F.E.		Virgin P.T.F.E.
14	End connection	From bar	AISI 316	D 1.4401	A 105
15	Static gasket	From bar	Virgin P.T.F.E.		Virgin P.T.F.E.



- Integral weld-on extension nipples SW or BW up to 2"
- FEMALE CONNECTIONS: NPT ANSI B1.20.1
- Degreased version
- PN 210 (Delrin)
- For further special requests please consult our technical/commercial service

Size	A mm	B mm	C mm	D mm	E mm	EBW mm	F mm	G mm	H mm	I mm	Q mm	weight gr.GAS	weight gr.SW	weight gr.BW
1/4"	72	10	42	148	67	95	11	14,3	9,53	13,7	9,3	610	610	630
3/8"	72	10	42	148	67	95	11,4	17,8	9,53	17,5	12,5	615	615	650
1/2"	75	15	50	148	75	105	15	22	9,53	21,3	16	930	930	1050
3/4"	85	20	60	180	90	125	16,3	27,3	12,7	26,7	21	1550	1550	1600
1"	95	25	68	180	105	140	19,1	34	12,7	33,4	27	2265	2265	2350
1 1/4"	100	30	81	240	120	160	21,4	42,8	12,7	43	35	3300	3300	3400
1 1/2"	105	38	94	240	135	180	21,4	48,9	12,7	48,3	41	4850	4850	5400
2"	115	48	105	280	155	220	25,7	61,4	115,88	60,3	53	6490	6490	6800
3"	145	73	150	380	205	280	33,3	90	15,878	88,9	78	17000	17000	17500
4"	200	94	185	470	230	330	39,3	115,7	19,1	114,3	103	24000	24000	24500

Breaking Torque in Nm

DN size	10	15	20	25	32	40	50	80	100
	1/4-3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	3"	4"
0	10	12	16	21	54	65	86	183	270
64	15	18,6	23	27	80	83,6	126,6	240	350
105	17	22,6	25,2	29,6	88	92,9	131	260	389
160	19,5	24,7	26,6	31,3					
210	23,4	27,6	30	34,8					

Nm

Values in Nm can change depending on the material used for seats, on temperature and on the fluid used. For a safe working of the various sorts of servocontrol, it is necessary to consider a

safety factor = 1,5 in each condition. While the valve is working, with frequent on/off cycles, the operating torque can become extremely low in comparison with the beginning one.

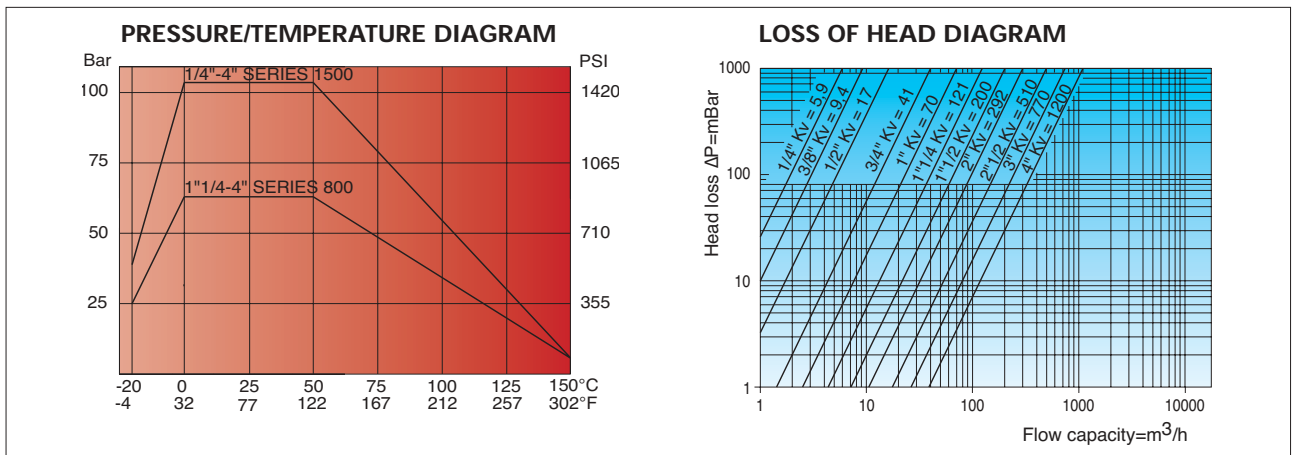


TABLE OF CHEMICAL RESISTANCE - METALS

E EXCELLENT G GOOD P POOR N NOT RECOMMENDED - =NO INFORMATION AVAILABLE B = BOILING C = HOT Ta= ROOM TEMPERATURE	CONCENTRATION	TEMPERATURE °C						CAST IRON	BRASS	E EXCELLENT G GOOD P POOR N NOT RECOMMENDED - =NO INFORMATION AVAILABLE B = BOILING C = HOT Ta= ROOM TEMPERATURE	CONCENTRATION	TEMPERATURE °C						CAST IRON	BRASS
			AISI 304 18/8/2 CF8M 1.4401-1.4408	AISI 316 18/8/2 CF8M 1.4401-1.4408	CARBON STEEL A 105/A216WCB								AISI 304 18/8/2 CF8M 1.4401-1.4408	AISI 316 18/8/2 CF8M 1.4401-1.4408	CARBON STEEL A 105/A216WCB				
Acetaldehyde		Ta	E	F	P	P	—		Barium Sulphate	+20	P	G	G	G	G	E			
Acetilene		+20	E	F	E	E	N		Barium Sulphate	+20	G	G	G	G	G	G			
Acetic Acid	10%	+20	E	F	N	N	G		Barium Sulphate	Ta	G	G	G	P	P	E			
Acetic Acid	10%	B	G	N	N	N	N		Benzaldehyde	Ta	E	E	E	E	—				
Acetic Acid	20-80%	+20	E	G	N	N	N		Benzoic Acid	+20	G	G	G	G	G	G			
Acetic Acid (vapours)	80%	B	G	G	N	N	N		Benzol	C	G	G	G	G	G	E			
Acetic Anhydride	30%	C	P	P	N	N	N		Borax	+20	E	E	G	G	G	E			
Acetic Ester	concentrated	B	G	G	P	P	P		Boric Acid	5% C	G	G	N	N	G				
Acetic Solvents		+20	E	E	G	G	—		Brine	Ta	G	G	P	P	G				
Acetone		Ta	E	E	E	G	—		Bromine	+20	N	N	N	N	N				
Acido Cresilico		B	E	E	G	G	E		Butadiene	Ta	E	E	E	E	E	E			
Acido Idrofluorosilicico		+20	E	E	G	G	G		Butane	Ta	E	E	E	E	E	E			
Acrylonitrile		Ta	P	P	N	N	G		Butyric Acid	5% Ta	G	G	P	P	N				
Alcool Diacetone		Ta	E	E	E	E	—		Butyl Alcohol	Ta	E	E	G	G	E				
Alum	10%	B	G	G	N	N	G		Butylene	Ta	E	E	E	E	—				
Alum	saturaded	B	P	G	N	N	—		Butyl Acetate	+20	G	G	E	E	—				
Aluminium Chloride	25%	+20	N	P	N	N	N		Calcium Bisulphite	+20	P	G	N	N	G				
Aluminium (Chloride)	25%	+20	N	P	N	N	—		Calcium Bisulphite	+20	P	G	N	N	G				
Aluminium (Chloride)	25%	B	N	N	N	N	—		Calcim Carbonate	+20	G	G	G	G	E				
Aluminium (Fluoride)	5%	+20	N	P	N	N	—		Calcium Carbonate	+20	G	G	G	G	E				
Aluminium Sulfate		+20	G	G	N	N	—		Calcium Chloride	+20	P	G	P	P	N				
Aluminium Sulfate		B	P	G	N	N	—		Calcium Chloride	concentrated	+20	N	P	P	P	N			
Aluminium Sulphate		Ta	G	E	P	P	P		Calcium Chloride	concentrated	B	N	N	N	N	N			
Ammines		+20	E	E	E	E	—		Calcium Hydroxide	5%	+20	G	G	G	G	G			
Ammonia	concentrated	+20	E	E	G	G	E		Calcium Hydroxide	10%	B	G	G	N	N	G			
Ammonia	acquarosa	Ta	E	E	E	E	N		Calcium Hydroxide	50%	B	N	G	N	N	G			
Ammonia	gaseous	C	N	N	P	P	—		Calcium Hypochlorite	2%	+20	P	P	N	N	N			
Ammonium Bicarbonate		Ta	G	G	P	P	—		Calcium Hydroxide		Ta	E	E	E	E	—			
Ammonium Carbonate		+20	G	G	G	G	—		Calcium Hydroxide		+20	G	G	G	G	G			
Ammonium Carbonate		Ta	G	G	G	G	—		Calcium Hydroxide		+20	G	G	N	N	G			
Ammonium Chloride	10%	+20	G	G	P	P	N		Calcium Hypochlorite		+20	P	P	N	N	N			
Ammonium Chloride	10%	+20	G	G	P	P	—		Calcium Sulphate		Ta	G	G	P	P	E			
Ammonium Chloride	10%	B	P	G	N	N	—		Calcium Sulphate	saturaded	+20	G	G	G	G	—			
Ammonium Disulphate		+20	E	E	P	P	—		Carbolic Acid	saturaded	B	G	G	P	P	—			
Ammonium Hydroxide		C	E	E	G	G	—		Carbonic Acid		+20	G	G	N	N	—			
Ammonium Hydroxide	concentrated	Ta	E	E	G	G	—		Carbon Dioxide		Ta	E	E	E	E	E			
Ammonium Hydroxide		C	E	E	G	G	N		Carbon Disulphide		+20	G	G	G	G	G			
Ammonium Monophosphate		+20	E	E	N	N	—		Carbon Disulphide		Ta	G	G	G	N	E			
Ammonium Monophosphate		+20	E	E	N	N	—		Carbon Monoxide		B	E	E	E	E	—			
Ammonium Nitrate		+20	G	G	G	G	—		Carbon Tetrachloride		+20	G	G	G	G	P			
Ammonium Nitrate	saturaded	B	G	G	P	P	—		Carbon Tetrachloride		B	P	P	N	N	P			
Ammonium Nitrate		+20	G	G	G	G	N		Carbon Tetrachloride	dry	Ta	E	E	G	G	P			
Ammonium Persulphate	5%	+20	G	G	N	N	—		Carbon Tetrachloride	wet	Ta	G	G	N	N	N			
Ammonium Phosphate		Ta	G	G	N	N	—		Caustic Soda	5%	+20	G	G	G	G	—			
Ammonium Sulphate	5%	+20	P	G	P	P	—		Caustic Soda	20%	B	E	E	G	G	—			
Ammonium Sulphate	10%	B	N	P	N	N	—		Caustic Soda	50%	B	G	G	P	P	—			
Ammonium Sulphate	saturaded	B	N	P	N	N	—		Caustic Soda	75%	B	P	P	N	N	—			
Ammonium Trisulphate		+20	P	G	P	P	N		Chlorinated Solvents	dry	Ta	G	G	P	P	—			
Amyl Acetate	concentrated	+20	G	E	G	G	—		Chloroacetic Acid		+20	N	N	N	N	N			
Amyl Acetate		Ta	G	G	P	P	G		Chlorobenzene	concentrated	+20	E	E	E	E	E	—		
Amyl Alcohol	concentrated	+20	E	E	N	N	E		Chloroform		+20	E	E	E	E	E	E		
Aniline	3%	+20	E	E	G	G	P		Chlorous Acid		+20	N	N	N	N	N			
Aniline (dyes)	concentrated	+20	G	G	G	G	P		Chlorosulfonic Acid	10%	+20	P	G	N	N	P			
Animal Oil		Ta	E	E	E	E	—		Chlorosulfonic Acid	concentrated	+20	G	G	N	N	P			
Antimony Trichloride		+20	N	N	N	N	—		Chromic Acid	5%	+20	G	G	G	G	N			
Antimony Trichloride		Ta	N	N	N	N	—		Chromic Acid	50% com.	B	N	N	N	N	N			
Apple Juice		Ta	G	G	N	N	N		Citric Acid	5%	+20	E	E	N	N	P			
Asphalt		Ta	E	E	G	G	E		Citric Acid	15%	B	G	G	N	N	P			
Barium Cholid	saturaded	+20	P	G	P	P	P		Citric Acid	concentrated	B	N	G	N	N	P			
Barium Cholid	water sol.	C	N	P	N	N	P		Colophony		Ta	E	E	N	N	—			
Barium Carbonate		Ta	G	G	G	G	E		Coke-oven Gas		Ta	E	E	G	G	—			
BariumChloride	5%	+20	G	G	P	P	N		Copper Acetate		Ta	E	E	N	N	—			
Barium Hydroxide		Ta	G	G	P	P	G		Copper Acetate	saturaded	+20	G	G	N	N	—			
									Copper Chloride	19%	+20	P	G	P	G	N			
									Copper Chloride	1%	+20	P	G	N	N	—			
									Copper Chloride	5%	B	N	N	N	N	—			

TABLE OF CHEMICAL RESISTANCE - METALS

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AISI 304 18/8/2 CF8M 1.4401-1.4408	AISI 316 18/8/2 CF8M 1.4401-1.4408	CARBON STEEL A 105/A216WCB	CAST IRON	BRASS	AISI 304 18/8/2 CF8M 1.4401-1.4408	AISI 316 18/8/2 CF8M 1.4401-1.4408	CARBON STEEL A 105/A216WCB	CAST IRON	BRASS																																						
Copper Nitrate	5%	+20	E	F	N	N	P	Hydrofluoric Acid	concentrated	+20	N	N	N	N	N																																
Copper Nitrate	5%	220	E	F	N	N	—	Hydrofluoric Acid	dry	+20	P	P	P	P	N																																
Copper Nitrate	50%	C	G	G	N	N	—	Hydrofluoric Acid	wet	+20	N	N	N	N	N																																
Copper Sulphate		+20	G	G	N	N	—	Hydrofluoric Acid		+20	N	N	N	N	N																																
Copper Sulphate	saturated	B	G	G	N	N	N	Hydrogen Gas	cold	Ta	E	E	G	G	—																																
Copper Sulphate		+20	G	G	N	N	N	Hydrogen Dioxide		+20	E	E	N	N	N																																
Creosote		C	G	G	G	G	—	Hydrogen Dioxide		B	G	G	N	N	N																																
Creosote Oil		Ta	G	G	G	G	E	Illuminating Gas		Ta	E	E	E	E	—																																
Cyclohexane		Ta	E	E	E	E	—	Ink		Ta	E	E	N	N	—																																
Dichloroethane		B	G	G	N	N	—	Iodine	dry	+20	N	N	P	N	—																																
Diethylamine		Ta	E	E	E	E	—	Iodine	wet	+20	N	N	N	N	—																																
Diethyl Ether		+20	E	E	E	G	—	Iodoform		+20	E	E	N	N	—																																
Distilled Water		Ta	E	E	P	P	E	Isooctane		Ta	E	E	E	E	—																																
Epsom Salt		Ta	G	G	P	P	—	Isopropyl Ether		Ta	E	E	E	G	—																																
Ethane		Ta	G	G	G	G	E	Isopropyl Alcohol		Ta	G	G	G	G	—																																
Ethyl Acrylate		Ta	E	E	P	P	—	Juices		B	G	E	N	N	N																																
Ethyl Alcohol		B	G	G	G	G	E	Ketone		Ta	E	E	E	E	—																																
Ethyl Acetate		Ta	G	G	G	G	E	Kerosene		Ta	E	E	G	G	—																																
Ethyl Chloride	dry	+20	E	E	E	E	—	Lactic Acid	1%	B	G	G	N	N	P																																
Ethyl Chloride		+20	E	E	E	E	G	Lactic Acid	5%	+70	G	G	N	N	P																																
Ethylene Glycol		+20	E	E	E	E	G	Lactic Acid	5-10%	B	N	G	N	N	P																																
Ethylene Oxide		Ta	G	G	G	G	E	Lactic Acid	10%	+20	G	E	N	N	P																																
Fatty Acids		B	G	G	P	P	N	Lactic Acid	10%	+70	P	G	N	N	P																																
Ferric Chloride	1%	+20	N	P	N	N	N	Lactic Acid	concentrated	B	N	P	N	N	P																																
Ferric Chloride	5%	+20	N	N	N	N	N	Latex		+20	E	E	N	N	—																																
Ferric Nitrate		Ta	P	P	N	N	N	Latex Emulsions		Ta	E	E	G	G	—																																
Ferric Nitrate	5%	+20	G	G	N	N	N	Lead Acetate		+20	G	G	N	N	—																																
Ferric Sulphate		+20	G	E	N	N	N	Lead Acetate		Ta	G	G	N	N	—																																
Ferric Sulphate	5%	B	G	G	N	N	N	Lemon Juice		Ta	G	G	N	N	N																																
Ferrous Chloride		Ta	N	N	N	N	N	Linoleic Acid		Ta	E	E	G	G	—																																
Ferrous Sulphate	saturated	+20	G	G	N	N	N	Linseed Oil		Ta	G	G	E	E	G																																
Ferrous Sulphate	10%	+20	G	G	N	N	N	Liquefied Gas (LPG)		Ta	G	G	G	G	—																																
Fertilizers		Ta	G	G	G	G	—	Lithium		+150	E	E	E	G	G																																
Fish Oil		Ta	E	E	G	G	—	Lubricating Oil		Ta	E	E	E	E	—																																
Fluorine	dry	+20	G	G	N	N	—	Lye		B	G	G	N	N	N																																
Formaldehyde		Cold	E	E	E	G	P	Lysol		+20	P	P	N	N	—																																
Formaldehyde		Hot	P	P	N	N	P	Magnesium Chloride	5%	+20	G	G	N	N	N																																
Formic Acid	5-50%	+20	G	G	N	N	N	Magnesium Chloride	5%	C	N	N	N	N	N																																
Formic Acid	10-50%	B	N	N	N	N	N	Magnesium Chloride	10-30%	+20	P	G	N	N	N																																
Formic Acid	100%	+20	P	P	N	N	N	Magnesium Chloride	saturated	+20	P	G	N	N	N																																
Formic Acid	100%	B	N	N	N	N	N	Magnesium Chloride	5%	+20	G	G	N	N	N																																
Freon	dry	Ta	E	E	E	E	E	Magnesium Disulphate		Ta	E	E	G	G	—																																
Freon	wet	Ta	P	P	P	P	E	Magnesium Hydroxide		C	E	E	G	G	G																																
Fuel Oil		Ta	E	E	G	G	E	Magnesium Oxide		+20	G	G	G	G	—																																
Furfuraldehyde		+20	G	G	G	G	E	Magnesium Sulphate		+20	G	G	G	G	P																																
Gallic Acid	5%	+70	G	G	N	N	—	Magnesium Sulphate		+20	G	G	G	G	P																																
Gas Chlorate	dry	+20	N	P	G	G	—	Maleic Acid		Ta	G	G	G	G	—																																
Gas Chlorate	wet	+100	N	N	N	N	—	Malic Acid		C	G	G	N	N	—																																
Gaseous Methyl Chloride		+20	G	G	N	N	—	Mercury		+150	P	P	N	G	N																																
Gelatine		Ta	E	E	N	N	G	Mercury	500	+500	N	N	N	N	N																																
Glue		Ta	G	G	E	E	—	Mercury Bichloride	2%	+20	N	N	N	N	N																																
Glucose		Ta	G	G	G	G	E	Mercury Cyanide		+20	G	G	N	N	N																																
Glycerol		+20	E	E	E	E	E	Mercury Cyanide		+20	G	G	N	N	—																																
Glycols		Ta	G	G	G	G	—	Mercuric Chloride		Ta	N	P	N	N	—																																
Heptane		Ta	E	E	G	G	—	Methane		Ta	G	G	G	G	E																																
Hexane		Ta	G	G	G	G	—	Methyl Acetate		Ta	E	E	G	G	—																																
Hexanol		Ta	E	E	E	E	—	Methyl Alcohol		B	P	G	G	G	E																																
Hydraulic Oil		Ta	E	E	E	E	—	Methylacetone		Ta	E	E	G	G	—																																
Hydriodic Acid (iodidrico)	diluted	+20	N	N	N	N	—	Methylamine		Ta	E	E	G	G	—																																
Hydrocarbons		+20	E	E	E	E	E	Methyl Chloride		+20	G	G	N	N	G																																
Hydrobromic Acid		+20	N	N	N	N	N	Methylene Chloride		Ta	E	E	G	G	G																																
Hydrocyanic Acid		+20	G	G	P	P	—	Methyl Formate		Ta	G	G	P	P	—																																
Hydrochloric Acid	1%	+20	N	P	N	N	N	Milk		+20	E	E	N	N	G																																
Hydrochloric Acid	1%	B	N	N	N	N	N	Mineral Naphtha		+20	G	G	G	G	G																																
Hydrochloric Acid	5%	+20	N	N	N	N	N	Mineral Oil		Ta	E	E	G	G	E																																
Hydrochloric Acid		+20	N	N	N	N	N																																								

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Mineral Water		Ta	G	G	P	P	G	Potassium Chloride	1-5%	+20	P	G	N	N	N
Mixed Acid-turpentine		+20	N	N	N	N	N	Potassium Chloride	1-5%	B	N	N	N	N	N
Muriatic Acid		+20	N	P	N	N	N	Potassium Cyanide		+20	G	G	G	G	N
Naphthalene		Ta	G	G	E	E	—	Potassium Cyanide		+20	G	G	G	G	N
Natural Gas		Ta	E	E	G	G	E	Potassium Dichromate		+20	G	G	P	P	N
Neon		+20	G	G	G	G	—	Potassium Diphosphate		Ta	E	E	E	E	—
Nickel Chloride		+20	P	G	N	N	P	Potassium Disulphide	saturated	+20	G	G	P	P	G
Nichel Chloride		+20	P	G	N	N	P	Potassium Ferricyanide		Ta	G	G	P	P	N
Nichel Sulphate		C	P	G	N	N	P	Potassium Ferricyanide	5%	+20	G	G	P	P	N
Nickel Sulphate		C	P	G	N	N	P	Potassium Hydroxide	5%	+20	G	G	G	G	N
Nickel Nitrate		Ta	G	G	N	N	—	Potassium Hypochlorite		+20	N	P	N	N	—
Nicotinic Acid		Ta	E	E	G	G	—	Potassium Iodide	2%	Ta	G	G	P	P	—
Nitric Acid	5-50%	+20	E	E	N	N	N	Potassium Nitrate	1-5%	+20	G	G	G	G	G
Nitric Acid	10-50%	B	G	P	N	N	N	Potassium Nitrate	1-5%	C	G	G	G	G	—
Nitric Acid	85%	+20	G	G	G	G	N	Potassium Permanganate		+20	E	E	E	E	—
Nitric Acid	85%	C	G	P	N	N	N	Potassium Permanganate		+20	E	E	E	E	—
Nitric Acid	concentrated	+20	G	G	G	G	N	Potassium Sulphate	1-5%	+20	G	G	G	G	G
Nitric Acid	concentrated	B	P	P	N	N	N	Potassium Sulphate	saturated	+20	G	G	P	P	—
Nitric Acid	anhydrous	Ta	E	E	E	E	N	Potassium Sulphite		+20	G	G	G	G	G
Nitrobenzene		Ta	G	G	G	G	—	Potassium Sulphite		Ta	E	E	G	E	G
Nitrogen		Ta	E	E	E	E	E	Propane		Ta	G	G	G	G	E
Nitrous Acid	5%	+20	G	G	N	N	—	Propanol		Ta	E	E	G	G	—
Nitrous Gases		Ta	E	E	G	G	—	Propylene Glycol		Ta	G	G	G	G	—
Nitrous Oxide		Ta	G	G	G	G	—	Propionic Acid		+20	G	G	N	N	—
Oil		Ta	E	E	G	G	G	Prussic Acid		+20	G	G	P	P	—
Oleic Acid	crude	+20	G	G	P	P	—	Pyrogalllic Acid		+20	G	G	G	G	—
Oleum		Ta	G	G	G	G	—	Pyroligneous Acid		+20	E	E	N	N	—
Olive Oil		Ta	E	E	G	G	P	Quinine Bisulphate	dry	+20	G	G	N	N	—
Oxalic Acid	5%	C	P	P	N	N	—	Resins		Ta	E	E	P	P	—
Oxalic Acid	10%	+20	G	G	P	P	—	Sal Ammoniac		+20	G	G	P	P	—
Oxalic Acid		B	N	N	N	N	—	Salicylic Acid		+20	G	G	N	N	—
Oxalic Acid	saturated	+20	G	G	P	P	—	Sea Water		+20	G	G	N	N	P
Oxalic Acid	saturated	B	N	N	N	N	—	Shellac		Ta	E	E	E	E	—
Oxygen	cold		E	E	G	G	E	Silver Bromide		+20	P	G	N	N	—
Oxygen		+250	G	G	G	G	—	Silver Chloride		+20	N	N	N	N	—
Ozone	dry	Ta	E	E	P	P	—	Silver Nitrate		+20	G	G	N	N	—
Ozone	wet	Ta	E	E	E	E	—	Silver Nitrate		+20	G	G	N	N	N
Paint Varnish		Ta	E	E	P	P	—	Sludge		Ta	E	E	G	G	—
Palm Oil		Ta	G	G	P	P	—	Soap		+20	G	G	G	G	G
Palmitic Acid		+20	G	G	P	P	P	Sodium Acetate	wet	+20	G	G	P	P	—
Paraformaldehyde		Ta	G	G	G	G	—	Sodium Acetate		Ta	G	G	P	P	—
Paraffin Wax		Ta	E	E	E	E	E	Sodium Bicarbonate		+20	G	G	P	P	P
Pentane		Ta	E	E	G	G	—	Sodium Bicarbonate		+20	G	G	P	P	P
Perchloroethylene		Ta	E	E	G	G	P	Sodium Bisulphite		Ta	E	E	N	N	G
Peroxide		Ta	G	G	N	N	N	Sodium Borate		Ta	G	G	P	P	—
Petrol		Ta	E	E	E	E	E	Sodium Bromide		Ta	G	G	P	N	—
Petrol (Crude)		+20	E	E	P	P	E	Sodium Carbonate	5%	+70	G	G	G	G	—
Phenol		B	G	G	P	P	—	Sodium Carbonate		+20	G	G	G	G	N
Phosphoric Acid	C.P. 1%	+20	G	G	N	N	N	Sodium Chlorate	10%	+20	G	G	P	P	—
Phosphoric Acid	5%	+20	G	G	N	N	N	Sodium Chloride		+20	G	G	P	P	—
Phosphoric Acid	10%	+20	P	G	N	N	N	Sodium Chloride	saturated	B	P	G	N	N	—
Phosphoric Acid	20-45%	B	N	P	N	N	N	Sodium Chlorate		+20	G	G	P	P	N
Phosphoric Acid	45-85%	+20	N	G	N	N	N	Sodium Chloride	5%	+20	G	G	P	P	P
Phosphoric Acid	85%	B	N	N	N	N	N	Sodium Cyanide		+20	G	G	G	G	N
Phthalic Acid		Ta	G	G	P	P	—	Sodium Cyanide		+20	G	G	G	G	—
Phthalic Anhydride			E	E	P	P	—	Sodium Disulphate		+20	G	G	N	N	G
Picric Acid	water sol.	+20	E	E	P	P	N	Sodium Disulphate		+20	G	G	N	N	—
Potassium Bichromate		+20	G	G	P	P	—	Sodium Disulphite		+20	G	G	G	G	G
Potassium Bisulphite		Ta	G	G	N	N	—	Sodium Disulphite		C	G	G	P	P	G
Potassium Bromide		+20	P	G	N	N	—	Sodium Fluoride		Ta	G	G	N	N	—
Potassium Bromide		+20	P	G	N	N	—	Sodium Fluoride	5%	+20	G	E	N	N	—
Potassium Carbonate	1%	+20	E	G	G	G	P	Sodium Hydroxide		+20	E	E	E	E	—
Potassium Carbonate	1%	+20	G	G	G	G	—	Sodium Hypochlorite		Ta	P	P	N	N	N
Potassium Chlorate		+20	G	G	G	G	—	Sodium Hypochlorite		+20	G	G	N	N	N
Potassium Chloride	1-5%	+20	P	G	N	N	P	Sodium Hypochlorate	5%	+20	N	P	N	N	N
Potassium Chlorate		+20	G	G	G	G	N	Sodium Hyposulphite		+20	G	G	N	N	N

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Sodium Metaphosphate	cold	Ta	E	F	G	G	N			Varnish	+20	E	E	P	P	E																			
Sodium Metasilicate		C	E	F	P	P	—			Varnish	C	G	G	N	N	E																			
Sodium Metasilicate				E	F	N	N	—			Vaseline	Ta	G	G	P	P	—																		
Sodium Nitrate	cold	+20	E	F	G	G	—			Vinegar (vapors)	Ta	G	G	N	N	—																			
Sodium Nitrate		Ta	G	G	G	G	P			Viscose	Ta	G	G	G	G	—																			
Sodium Perborate		Ta	G	G	G	G	—			Waste Water	+20	G	G	P	P	—																			
Sodium Peroxide	cold	Ta	G	G	P	P	P			Wax	Ta	E	E	E	E	—																			
Sodium Phosphate		Ta	G	G	P	P	—			Wax Emulsions	Ta	E	E	E	E	—																			
Sodium Silicate		Ta	G	G	G	G	G			Xylene	Ta	E	E	G	G	—																			
Sodium Silicate	cold	C	G	G	P	P	G			Zinc Chloride	+20	P	G	N	N	—																			
Sodium Silicate		Ta	G	G	G	G	—			Zinc Chloride	5%	B	N	P	N	N	—																		
Sodium Sulphate		+20	P	G	G	G	G			Zinc Chloride	5%	+20	P	G	N	P	N	—																	
Sodium Sulphate	10%	+20	P	G	G	G	G			Zinc Hydrosulphite	Ta	E	E	E	E	—																			
Sodium Sulphite		+65	P	G	G	G	G			Zinc Sulphate	+20	G	E	G	G	G																			
Sodium Sulphite		B	P	G	N	N	G			Zinc Sulphate	B	P	G	N	N	N	G																		
Sodium Sulphite	saturated	+20	G	G	G	G	G			Zinc Sulphate	Ta	G	G	N	N	N																			
Sodium Trisulphate		+20	G	G	N	N	—																												
Sodium Thiosulphate		Ta	E	E	G	G	—																												
Soft Water	cold	Ta	E	E	P	P	N																												
Solvent		Ta	E	E	G	G	E																												
Spirit Vinegar		+20	E	E	N	N	—																												
Starci	cold	Ta	G	G	P	P	—																												
Stannic Chloride		5%	+20	N	P	N	N	—																											
Stannic Chloride		5%	B	N	N	N	N	—																											
Stannic Chloride	saturated	+20	N	P	N	N	—																												
Stannous Chloride		+20	N	P	N	N	—																												
Stearic Acid		+20	G	E	P	P	P																												
Strontium Nitrate	cold	+20	E	E	N	N	—																												
Styrene		Ta	E	E	E	E	—																												
Suds (Stearate)		Ta	E	E	E	G	—																												
Sugary Juices in general	dry and liquefied	+70	G	G	N	N	N																												
S Sulphur		+230	G	G	G	G	N																												
S Sulphur		wet and liquefied	+230	P	G	N	N	N																											
Sulphuric Anhydride	dry	Ta	E	E	G	G	G																												
Sulphuric Acid		+20	E	E	E	E	—																												
Sulphuric Acid		wet	+20	P	G	P	P	—																											
Sulphuric Acid	5%	+20	P	G	N	N	N																												
Sulphuric Acid		B	N	P	N	N	N																												
Sulphuric Acid		+20	N	P	N	N	N																												
Sulphuric Acid	10%	+20	N	N	N	N	N																												
Sulphuric Acid		B	N	N	N	N	N																												
Sulphuric Acid		+20	N	N	N	N	N																												
Sulphuric Acid	50%	+20	N	N	N	N	N																												
Sulphuric Acid		B	N	N	N	N	N																												
Sulphuric Acid		+20	G	G	G	G	N																												
Sulphuric Acid	concentrated	B	N	N	N	N	N																												
Sulphuric Acid		+20	P	G	P	P	N																												
Sulphur Chloride		Ta	P	G	N	N	—																												
Sulphur Dioxide	dry	+250	G	G	G	G	E																												
Sulphur Dioxide		+230	G	G	G	G	N																												
Sulphur Dioxide		wet	+20	P	G	N	N	N																											
Sulphurous Acid	saturated	+20	N	G	N	N	P																												
Syngas		Ta	G	G	G	G	—																												
Tannic Acid		+20	G	G	N	N	G																												
Tar	cold	Ta	E	E	E	E	G																												
Tartaric Acid		+20	E	E	N	N	P																												
Tartaric ACid		10%	C	P	G	N	N	P																											
Tetraethyl Lead	wet	Ta	G	G	P	P	—																												
Titanium Tetrachloride		+20	N	N	N	N	—																												
Tomato Juice		Ta	E	E	P	P	N																												
Toluene	dry	Ta	E	E	E	E	E																												
Tributyl Phosphate		Ta	E	E	E	E	—																												
Trichloroethylene		Ta	G	G	G	P	E																												
Trichloroacetic Acid	dry	+20	N	N	N	N	P																												
Tung Oil		Ta	G	G	P	P	—																												
Turpentine		+20	E	E	E	E	G																												
Urea	concentrated	Ta	G	G	P	P	—																												
Uric Acid		+20	G	G	N	N	—																												

TABLE OF CHEMICAL RESISTANCE - PLASTICS

	DELIRIN	EPDM	NBR	VITON	PTFE		DELIRIN	EPDM	NBR	VITON	PTFE
E EXCELLENT						E EXCELLENT					
G GOOD						G GOOD					
P POOR						P POOR					
N NOT RECOMMENDED						N NOT RECOMMENDED					
--NO INFORMATION AVAILABLE						--NO INFORMATION AVAILABLE					
Acetaldehyde	G	—	N	N	E	Barium Carbonate	—	E	—	—	E
Acetal	—	—	—	—	E	Barium Chloride	E	E	G	G	E
Acetamide	—	E	G	G	E	Barium Hydroxide	—	E	G	G	E
Acetate Solvent	—	—	N	N	E	Barium Nitrate	—	E	G	G	E
Acetilene	E	E	G	G	E	Barium Sulphate	—	E	G	G	E
Acetic Acid 10-20%	N	E	E	E	E	Barium Sulphide	—	—	G	G	E
Acetic Acid 50%	N	—	E	E	E	Beer	—	—	G	G	E
Acetic Acid 80%	N	E	G	G	E	Benzaldehyde	—	—	N	N	E
Acetic Anhydride	N	—	N	N	E	Benzene, Benzol	—	—	N	N	E
Acetylene Chloride	—	—	N	E	E	Benzoic Acid	—	E	N	G	E
Acetoacetato di Etile	—	—	N	N	E	Benzykl Alcohol	—	—	N	E	E
Acetofenone	—	—	N	N	E	Benzyl Chloride	—	—	N	—	E
Acetone	E	E	N	N	E	Black Liquor	—	—	E	G	E
Acetone 50% water	—	—	N	—	E	Borax	E	E	G	G	E
Acetonitrile	—	—	—	—	E	Boric Acid	E	E	G	G	E
Acid Chloric 20%	—	—	N	N	E	Brine	—	G	E	—	E
Acid Laisileico	—	—	G	G	E	Bromine Water	—	—	N	E	E
Acido Cresilico	N	—	N	E	E	Butyl Acetate	—	—	—	—	E
Acrylonitrile	—	—	N	N	E	Butyl Alcohol	E	E	N	E	E
Adipic Acid	—	—	N	—	E	Butyric Acid	E	N	N	—	E
Air	—	E	E	E	E	Butyl Chloride	—	—	—	—	E
Alumed Chrome	—	E	G	G	E	Butyl Phenol	—	—	—	—	E
Alumed Potassium	—	E	G	G	E	Butyl Phthalate	—	—	N	—	E
Alumed Potassium Sulphate	—	E	—	—	E	Butter	—	—	E	—	E
Alumina	—	E	E	G	E	Butadiene	E	—	E	E	E
Aluminium Chloride	E	E	G	G	E	Butane	E	E	N	E	E
Aluminium Fluoride	—	E	G	G	E	Butylene	E	—	N	G	E
Aluminium Hydroxide	E	E	G	G	E	Calcium Bisulphite	E	E	G	G	E
Aluminium Nitrate	—	E	G	G	E	Calcium Bicarbonate	—	—	—	—	E
Aluminium Sulphate	E	E	G	G	E	Calcium Carbonate	E	E	G	G	E
Alum. (All. Potassium Sulphate)	E	—	E	—	E	Calcium Chlorate	—	—	G	G	E
Amyl Alcohol	E	E	—	—	E	Calcium Chloride	E	E	G	G	E
Amyl Acetate	E	N	N	N	E	Calcium Disulphate	—	—	—	—	E
Ammonium Acetate	—	E	N	—	E	Calcium Fluoride	—	—	—	—	E
Ammonia (Anhydrous)	—	E	G	N	E	Calcium Hydroxide	E	E	G	G	E
Ammonia (Gas)	—	—	G	N	E	Calcium Htpochlorite	E	E	N	G	E
Ammonium Chloride	P	E	G	G	E	Calcium Nitrate	—	E	G	G	E
Ammonium Sulphate	E	E	G	N	E	Calcium Oxide 20°C	—	—	—	—	E
Ammonium Sulphite 50°C	—	—	E	—	E	Calcium Sulphate	E	E	—	—	E
Ammonium Sulphide	—	E	G	N	E	Cane Sugar Liquor	—	E	G	G	E
Ammonium Hydroxide	—	E	G	G	E	Carbolic Acid (phenol)	—	—	N	N	E
Ammonium Fluoride 25%	—	E	—	—	E	Carbonic Acid	N	E	G	G	E
Ammonium Phosphate	—	E	G	G	E	Carbon Bisulphide	—	—	N	G	E
Ammonium Metaphosphate	—	—	G	G	E	Carbon Dioxide	—	—	E	—	E
Ammonium Nitrate	E	E	G	N	E	Carbon Monoxide	—	E	G	G	E
Ammonium Oxalate	—	E	—	—	E	Castor Oil	E	E	G	G	E
Ammonium Bicarbonate	P	E	—	—	E	Caustic Soda	—	E	P	—	E
Ammonium Bifluoride	—	E	—	—	E	Cellulose Acetate	—	E	N	N	E
Ammonium Carbonate	P	E	G	G	E	Cellosolve	—	E	N	N	E
Amyl Chloride 77°C	—	—	N	E	—	Cement	—	E	G	—	E
Anhydrous Formic Acid	N	—	N	G	E	Cereal Syrup (Glucose)	—	—	G	G	E
Aniline	E	N	N	E	E	Chloroacetic Acid	—	—	N	N	E
Aqua Regia	—	—	N	E	E	Chloroform	E	N	N	G	E
Arsenic Acid	—	E	G	G	E	Chlorosulfonic Acid	—	—	—	—	E
Artificial Gas	—	—	G	—	E	Chlorine Dioxide	—	—	N	—	—
Asphalt	E	—	N	E	E	Chlorine Water	—	—	N	E	E

STABLE OF CHEMICAL RESISTANCE - PLASTICS

	DELTRIN	EPDM	NBR	VITON	PTFE		DELTRIN	EPDM	NBR	VITON	PTFE
E EXCELLENT						E EXCELLENT					
G GOOD						G GOOD					
P POOR						P POOR					
N NOT RECOMMENDED						N NOT RECOMMENDED					
--NO INFORMATION AVAILABLE						--NO INFORMATION AVAILABLE					
Chlorine Water	—	—	N	—	E	Ethyl Glycol	—	E	E	E	E
Chlorobenzene	E	N	N	G	E	Ethylene Bromide	—	—	N	—	E
Chromic Acid	N	—	G	E	E	Ethylene Chloride	—	—	N	E	E
Chromic Anhydride	—	—	G	E	E	Ethylene Diamine	—	—	E	E	E
Chrome Potassium Sulphate	—	—	G	—	E	Ethylene Glycol	—	E	G	E	E
Citric Acid	—	E	G	G	E	Ethylene Oxide	—	—	N	N	E
Coconut Oil	E	—	G	E	E	Epichlorohydrin	—	—	N	N	E
Coffee	—	E	N	E	E	Fats	—	N	E	—	E
Coke-oven Gas	—	E	N	G	E	Fatty Acids	—	—	G	G	E
Copper Acetate	—	—	—	N	E	Ferric Chloride	E	E	G	G	E
Copper Chloride	E	E	G	G	E	Ferric Nitrate 10-50%	—	E	G	G	E
Copper Nitrate	E	—	G	G	E	Ferric Sulphate	E	E	G	G	E
Copper Sulphate	E	E	G	G	E	Feerous Chloride	E	E	G	—	E
Corn Oil	E	—	N	—	E	Ferrous Sulphate	E	E	G	G	E
Cotton seeds Oil	—	—	G	E	E	Fluorinated Hydrogen	—	—	G	G	E
Creosote	—	N	Y	E	E	Fluorine Gas	—	—	N	N	E
Cresol	—	—	N	N	E	Fluorosilicic Acid	—	E	Y	—	—
Cromil Chloride	—	—	—	—	E	Formaldehyde 35-50%	E	E	N	N	E
Crotonaldehyde	—	—	—	—	E	Formic Acid 10-85%	N	E	N	G	E
Crude Oil	—	—	G	E	E	Freon F 11-12	—	—	G	G	—
Cyanoacetic Acid	—	—	—	—	E	Freon F 22	—	—	N	N	—
Cyanogen Gas	—	E	—	—	E	Fuel Oil	E	N	G	E	E
Cyclohexane	—	N	G	G	E	Fuel for aircrafts (JP4 or JP5)	—	N	G	E	E
Demineralized Water	—	E	G	G	E	Furfural	—	—	N	N	E
Detergents	—	E	G	G	E	Furfuraldehyde	E	—	N	N	E
Dextrite	—	—	N	N	E	Gallic Acid	E	E	—	G	E
Dextrose	—	—	G	G	E	Galvanizing Solution	—	E	G	G	E
Diacetone	—	E	N	N	E	Gaseous Bromine	G	N	N	—	E
Diacetone Alcohol	—	—	N	—	E	Gaseous Oxygen	E	—	N	G	E
Dibutylphthalate	—	—	—	G	E	Gas Oil	—	—	G	G	E
Dichloroethane	—	—	N	E	E	Gelatine	E	—	G	G	E
Dichlorobenzene max 40°C	—	—	—	G	E	Glucose	E	—	G	G	E
Dichloroethane	—	—	N	G	E	Glue	—	E	Y	—	E
Dichloroethylene	—	—	N	G	E	Glycerol	Y	—	G	E	E
Diethyl Ether	—	—	N	N	E	Glycols 60°C	—	—	E	E	E
Diethyl Ether 40°C	—	—	G	N	E	Glycotic Acid	—	E	—	—	E
Diethylcellosolve	—	—	—	—	E	Green Liquor	—	E	G	—	E
Diethylamine max 40°C	—	—	N	—	E	Helium	—	G	G	—	E
Dimethyl	—	—	—	N	E	Heptane	—	E	G	E	E
Dimethylphthalate	—	—	N	E	E	Hexane	—	N	G	E	E
Dimethyl Ether	—	—	—	—	E	Hexanol	—	—	G	E	E
Dioxan	—	N	N	N	E	Hydraulic Fluid	—	—	G	E	E
Diphenil (Dowtherms)	—	—	N	E	E	Hydrobromic Acid	—	—	N	G	E
Disodium Phosphate 20°C	—	—	N	G	E	Hydrocyanic Acid	—	E	G	G	E
Distiller Water	E	E	G	G	E	Hydrochloric Acid max 50%	—	E	—	G	E
Dry Sulphur Dioxide	N	—	N	N	E	Hydrofluoric Acid max 70%	—	—	N	E	—
Drilling Sludge	—	N	E	—	E	Hydrofluoric Acid 100%	—	—	N	—	—
Drilling Sludge	—	N	E	—	E	Hydrogen Dioxide	E	E	N	E	E
Dry Sulphurized Hydrogen	—	E	—	N	E	Hydrogen Chloride	—	—	—	—	E
Dry Sulphurized Hydrogen	—	E	—	N	E	Hydrogen	—	E	G	G	—
Dyes	—	N	N	—	E	Hydrogen Sulphide	—	—	N	N	E
Dyes	—	N	N	—	E	Hydroquinone	—	E	N	G	E
Ethyl Acetate	E	N	N	N	E	Ink	—	E	—	—	—
Ethyl Acrylate	—	E	G	G	E	Industrial Oils	—	—	—	—	E
Ethyl Alcohol	E	E	Y	E	E	Iodoform	E	—	N	E	E
Ethyl Chloride	E	—	G	G	E	Isobutyl-Methyl-Ketone	—	—	N	N	E

TABLE OF CHEMICAL RESISTANCE - PLASTICS

	DELIRIN	EPDM	NBR	VITON	PTFE		DELIRIN	EPDM	NBR	VITON	PTFE
E EXCELLENT G GOOD P POOR N NOT RECOMMENDED --NO INFORMATION AVAILABLE						E EXCELLENT G GOOD P POOR N NOT RECOMMENDED --NO INFORMATION AVAILABLE					
Isooctane	E	N	E	E	E	Nickel Nitrate	E	—	G	G	E
Isopropyl Alcohol	E	E	P	G	E	Nickel Salt	—	—	G	—	E
Isopropyl Ether	—	—	N	N	E	Nickel Sulphate	E	E	G	G	E
Juices	E	G	G	—	E	Nicotine	—	—	—	—	E
Kerosene	—	—	G	E	E	Nicotinic Acid	—	E	—	—	E
Lactic Acid	N	—	N	G	E	Nitric Acid	N	N	N	G	E
Lard Oil	—	—	E	E	E	Nitrobenzene 25°C	—	G	N	N	E
Lead Acetate	E	—	N	N	E	Nitrobenzene over 25°C	—	—	N	N	E
Lead Chloride max 20°C	—	—	—	G	E	Nitrogen	E	E	G	—	E
Lead Sulphate	—	—	P	—	E	Nitromethane	—	—	N	—	E
Leaded Petrol	E	—	G	G	E	Nitrous Oxide 40°C	—	—	N	P	E
Lemon Oil	—	G	P	—	E	Oleum	N	—	N	E	E
Lime	—	E	N	—	E	Oleic Acid	E	—	E	N	E
Lime Sulphur	—	E	N	G	E	Oli Vegetali	—	E	G	G	E
Linseed Oil	E	—	G	E	E	Olive Oil	—	G	E	E	E
Liquid Chlorine	—	—	N	G	E	Oxalic Acid	P	E	E	G	E
Liquid Soap	—	E	G	—	E	Oxygen	E	E	P	G	E
Lithium Bromine	—	E	G	G	E	Ozone	—	—	N	G	E
Lubricating Oil	—	—	G	G	E	Paint Solvents	—	N	N	N	E
Maleic Acid	E	E	N	G	E	Palmitic Acid	E	—	G	G	E
Malic Acid	E	—	G	G	E	Paraffin Wax	E	—	G	—	E
Manganese Chloride max 20°C	—	—	G	G	E	Perchloric Acid	—	—	N	G	E
Magnesium Carbonate	—	—	G	—	E	Perchloroethylene	—	N	N	E	E
Magnesium Chloride	E	E	G	G	E	Persolfato di Ammonio	—	E	G	—	E
Magnesium Hydroxide	E	E	G	G	E	Petrol Oils (acid or refined oils)	—	—	G	G	E
Magnesium Nitrate	—	E	G	—	E	Petrolatum (Vaseline)	—	—	—	—	E
Magnesium Oxide	—	G	G	—	E	Phenil Chloride (Chlorobenzene)	—	—	N	E	E
Machine Oil	—	—	—	—	E	Phenylhydrazine	—	—	N	G	E
Magnesium Sulphate	E	E	G	—	E	Phenol (Carbolic Acid)	N	—	N	E	—
Methane	E	E	G	E	E	Phosphate 50°C	—	—	—	—	E
Methanol	—	E	G	N	E	Phosphoric Acid 10%	N	—	N	G	E
Methyl Acetate	—	P	N	N	E	Phosphoric Acid 25/50%	N	—	N	G	E
Methyl Alcohol	E	E	G	N	E	Phosphoric Acid 50/80%	N	E	N	G	E
Methyl Bromine	—	—	—	G	E	Phosphorous Oxychloride	—	—	—	—	E
Methyl Chloride	—	—	N	G	E	Phosphorous Pentoxide 20°C	—	—	—	—	E
Methyl Methacrylate	—	—	G	G	E	Phosphorous Pentoxide	—	—	N	N	E
Methylene Chloride	—	N	N	N	E	Phthalic Acid	E	—	N	—	E
Methylacetone	—	G	N	N	E	Phthalic Anhydride	—	—	N	G	E
Methylcellosolve	—	—	P	N	E	Picric Acid	—	E	P	G	E
Methyl-Ethyl-Ketone	—	—	N	N	E	Pickling solution	—	N	—	—	E
Mercury	E	—	G	G	E	Polyvinyl Acetate	—	E	—	—	E
Mercuric Chloride	—	E	G	G	E	Potassium Bicarbonate	—	—	G	G	E
Mercuric Nitrate	—	E	—	—	E	Potassium Bichromate (30%)	—	—	N	N	E
Milk	E	—	G	G	E	Potassium Bromide	E	E	G	G	E
Mineral Oil	E	—	G	G	E	Potassium Carbonate 50%	E	—	G	G	E
Mineral Water	E	E	G	—	E	Potassium Chlorate	—	E	G	G	E
Mineral Naphtha (Combustible Oil)	E	N	G	E	E	Potassium Chloride	E	E	G	G	E
Mixed Acids (°T max 32°C)	—	E	E	E	E	Potassium Chromate 30%	—	E	—	—	E
Molasses Monoclorobenzene	—	E	G	G	E	Potassium Cyanide 30%	E	E	G	G	E
20°C	—	—	N	E	E	Potassium Ferricyanide 30%	—	—	G	G	E
Motor Oil	—	—	G	G	E	potassium Fluoride	—	—	G	G	E
n Butyl Mercaptan	—	—	—	—	E	Potassium Hydroxide	—	—	G	G	E
Naphthalene	E	—	N	G	E	Potassium Hydroxide 5-30%	—	E	N	—	E
Natural Gas	E	E	G	G	E	potassium Hydroxide 50-90%	—	E	G	N	E
Nickel Ammonium Sulphate	—	—	—	—	E	PotassiumHypochlorite 30°C	—	—	N	G	E
Nickel Chloride	E	E	G	—	E	Potassium Hypochlorite 90°C	—	—	N	—	E

TABLE OF CHEMICAL RESISTANCE - PLASTICS

	DELIRIN	EPDM	NBR	VITON	PTFE		DELIRIN	EPDM	NBR	VITON	PTFE
E EXCELLENT						E EXCELLENT					
G GOOD						G GOOD					
P POOR						P POOR					
N NOT RECOMMENDED						N NOT RECOMMENDED					
--NO INFORMATION AVAILABLE						--NO INFORMATION AVAILABLE					
Potassium Iodide 70%	E	E	—	—	E	Suds	—	E	G	—	E
Potassium Nitrate 80%	—	E	G	G	E	Sugarbeet Liquor	—	—	—	G	E
Potassium Nitrate 1-5%	—	E	G	G	E	Sulphuric Acid 10-50%	P	E	P	E	E
Potassium Oxalate 20%	—	—	—	—	E	Sulphuric Acid 60-70%	P	E	N	E	E
Potassium Permanganate	—	E	N	P	E	Sulphuric Acid 80-100%	N	—	N	E	E
Potassium Phosphate	—	—	E	E	E	Sulphurous Acid	P	—	N	G	E
Potassium Sulphate 10%	E	E	G	G	E	Sulphamic Acid	—	E	—	—	E
Potassium Sulphite	—	G	P	—	E	Sulphur 20°C	—	—	N	N	E
Potassium Sulphite	—	—	—	N	E	Sulphur Chloride	—	—	N	G	E
Propane	E	E	G	E	E	Swimming pool Water	—	E	G	—	E
Propanol	—	—	G	G	E	Tannic Acid	E	—	N	P	E
Propylene Oxide	—	—	N	—	E	Tar	E	N	N	G	E
propylene Glycol	—	—	G	G	E	Tartaric Acid	E	—	G	G	E
Pyridine	—	—	N	N	E	Tetraphosphoric Acid	—	—	—	—	E
Pyrogalllic Acid	E	—	P	P	E	Tetrachydrofuran	—	—	N	N	E
Resins	—	—	—	G	E	Tetraethyl Lead	—	—	N	G	E
Salicylic Acid	E	—	N	G	E	Thionyl Chloride	—	—	N	N	E
Salt Water	—	E	G	G	E	Toluene	E	N	N	G	E
Sea Water	E	E	G	G	E	Tomato Juice	—	—	G	G	E
Sewage	—	G	G	G	E	Trichloroacetic Acid	—	—	N	G	E
Sewage	—	—	G	G	E	Trisodium Phosphate	—	—	G	G	E
Silver Nitrate	E	E	G	G	E	Tributyl Phosphate 30°C	—	—	N	N	E
Silicone Oil	—	—	G	G	E	Trichloroethylene	—	—	N	E	E
Sodium Acetate	E	E	—	N	E	Transformer Oil	—	—	G	G	E
Sodium Bicarbonate	E	E	G	G	E	Turpentine	E	N	G	G	E
Sodium Bichromate	—	—	—	G	E	Unleaded Petrol	E	—	G	G	E
Sodium Bisulphite	E	E	G	G	E	Urea	—	—	N	E	E
Sodium Borate	E	—	G	G	E	Various Esters	—	—	—	—	E
Sodium Bromide	—	—	E	E	E	Various Ethers 40°C	—	—	G	N	E
Sodium Carbonate	E	—	G	G	E	Various Soaps	—	—	G	G	E
Sodium Chlorate	—	E	G	G	E	Various Ketones	—	—	N	N	E
Sodium Chlorite	—	—	—	—	E	Vaseline	—	—	P	P	E
Sodium Chloride	E	E	G	G	E	Vegetable Oil	—	—	G	E	E
Sodium Disulphate	—	—	G	G	E	Vinyl Acetate	—	—	N	G	E
Sodium Fluoride	—	E	—	—	—	Wet Chlorine Gas	—	E	N	G	E
Sodium Hydroxide (Caustic Soda)	—	E	P	—	E	Wet Sulphurized hydrogen	—	E	N	E	E
Sodium Hypochlorite	E	E	N	G	E	Wet Sulphur Dioxide	E	E	G	N	E
Sodium Hypochlorite	—	E	G	G	E	White Liquor	—	E	N	G	E
Sodium Metaphosphate	—	—	G	G	E	Wine	—	—	G	G	E
Sodium Nitrate	E	E	P	N	E	Xylene, Xylol	—	—	N	G	E
Sodium Nitrite	—	—	—	—	E	Zinc Chloride	E	E	G	G	E
Sodium Perborate 10%	E	—	G	G	E	Zinc Nitrate	—	—	—	G	E
Sodium Peroxide 10%	—	E	G	G	E	Zinc Sulphate 30%	—	E	G	G	E
Sodium Phosphate	—	—	G	G	E						
Sodium Silicate	E	E	G	G	E						
Sodium Sulphate	E	E	G	G	E						
Sodium Sulphite 10%	—	E	G	G	E						
Sodium Sulphide 50%	E	E	G	G	E						
Sodium Thiosulphate	E	E	G	G	E						
Soft Water	E	E	E	—	—						
Spirit Vinegar	N	—	N	G	E						
Stannic Chloride	—	E	G	G	E						
Stannous Chloride	—	E	G	G	E						
Starci	—	G	G	—	E						
Steam 130°C	N	E	N	N	E						
Stearic Acid	E	—	G	—	E						

INTERNATIONAL UNIT SYSTEM (SI)

CONVERSION FACTORS

In order to pass from the measure expressed in SI system to those expressed in the units of other systems, you have to multiply per K; inversely you have to multiply per 1/K.

Size	Unit System	Unit of other misurement systems					
		Technic	factors K	1/K	Anglo-Saxson	factors K	1/K
length	m(metro)	m	1	1	in (inch) ft (foot)	39,370 3,281	0,0254 0,305
area	m ²	m ²	1	1	in ² (sq. in) ft ² (sq. ft)	1550 10,764	0,000645 0,0929
volume	m ³ 10 ⁻³ m ³ = dm ³ = 1 (litro)	m ³ dm ³ = 1	1 1	1 1	ft ³ (cu. ft) gal US (gallon)	35,315 0,264	0,0283 3,785
time	s (second)	s	1	1	sec (second)	1	1
rotation speed	turn/s	h (ora) turn/min	0,000278 60	3600 0,0167	hr (hour) rpm(rev/min)	0,000278 60	3600 0,0167
speed	m/s	m/s	1	1	fpm(ft/min)	196,85	0,0051
frequency	Hz (hertz)	Hz (period/s)	1	1	Hz (cycle/sec)	1	1
mass	kg(kilogram) g (gram)	kg(kilogram) g (gram)	1 1	1 1	lb (pound) gr (grain)	2,205 15,432	0,454 0,0648
volumetric mass	kg/m ³	(**)			lb/ft ³	0,0624	16,018
head capacity	kg/s	(**)					
force, weight(*)	N (newton)	kgf=kp (kg force)	0,102	9,807	lb (pound force)	0,225	4,448
specific, weight	(**)	kgf/ m ³			lb/ft ³		
weight capacity	(**)	kgf/s			lbf/sec		
volum capacity	m ³ /s l/h	m ³ /h l/h	8600 1	0,000278 1	cfm (cu.ft/min) gpm (gal/min)	2118,9 0,0044	0,000472 227
force moment, torque (*)	N-m	kgf- m	0,102	9,807	lb-ft	0,738	1,356
moment of inertia (MR ²) (*)	kg-m ²	kgf-s ² -m(****)	0,102	9,807	lb-ft ² (****)	23,73	0,0421
pressure	Pa (pascal) = N/m ² 10 ⁵ Pa=bar	kgf/m ² = mmH ₂ O kgf/cm ² = at (****) torr = mmHg	0,102 0,0000102 0,0075	9,807 98070 133,322	in wg(inch water gage) psi (ibf/in ²) lbf/ft ²	0,00401 0,000145 0,0209	249,09 6895 47,88
stress	N-mm ² = MPa	kgf/mm ²	0,102	9,807	psi (ibf/in ²)	145	0,0069
material resistance (*)							
work , energy	J (joule)	kgf- m Wh (Watt x hour) kcal (calory)	0,102 0,000278 0,000239	9,807 3600 4186,7	lb-ft BTU (British Thermal Unit)	0,738 0,000948	1,356 1055
mechanic power (*)	W (Watt)	HP (Horse power)	0,00136	735,5	BHP (Brake Horse Power)	0,00134	745,7
electric power	W	W	1	1	W	1	1
thermic power	W	kcal/h	0,86	1,163	BTU/hr	3,413	0,293
temperature	K (kelvin) °C (celsius)	K (****) °C	1 1	1 1	°R (Rankine) °F (fahrenheit)	1,8 (****)	0,555 (****)
specific heat	J/kg K	kcal/kgf°C	0,000239	4186,7	BTU/lbf°F	0,000239	4186,7
content of mass heat/heat power	J/kg	kcal/kgf	0,000239	4186,7	BTU/lbf°F	0,00043	2326
total heat		kcal/kgf					
content of volumetric heat	J/m ³	kcal/m ³	0,000239	4186,7	BTU/ft ³	2,68E ⁻⁵	37260
conductivity	W/m K	kcal/m h°C	0,86	1,163	BTU in/ft ² hr °F BTU/ft hr °F	6,933 0,5778	0,14423 1,7308
thermic coefficient of trasmission	W/m ² K	kcal/m ² h°C	0,86	1,163	BTU/ft ² hr °F	0,176	5,679
specific thermal power	W/m ²	kcal/m ² h	0,86	1,163	BTU/ft ² hr	0,317	3,1546
dynamics viscosity (*)	Pa s = N s/m ²	kgf s/m ² cP (centipoise)	0,102 1000	9,807 0,001	lbf sec/ft ²	0,0209	47,88
kinematics viscosity	m ² /s	m ² /s cSt (centistoke)	1 10 ⁶	1 10 ⁶	ft ² /sec	10,764	0,0929
gas constant	J/kg K	m /K	0,102	9,807	ft /°R	0,602	1,661

Multiples and submultiples of SI unities

Multiplication factor	10 ¹²	10 ⁹	10 ⁶	10 ³	10 ²	10 ¹	10 ⁻¹	10 ⁻²	10 ⁻³	10 ⁻⁶	10 ⁻⁹	10 ⁻¹²	10 ⁻¹⁵	10 ⁻¹⁸
Prefix	tera	giga	mega	kilo	etto	deca	deci	centi	milli	micro	nano	pico	femto	atto
Symbol	T	G	M	K	h	da	d	c	m	μ	n	p	f	a

Notes

(*) Conversion factors are valid only if acceleration of gravity has the value g = 9,807 (m/s²) equivalent to 32,17 (ft/sec²)

(**) Specific weight and weight capacity are not considered in SI system: their numeric values in technic system do correspond, respectively, to those of volumetric mass and mass capacity in SI system.

The volumetric mass of the air in standard conditions (t = 20°C; pa = 100.000 Pa) has the value of 1,20/Kg/m³, same as 0,075 lb/ft³ in Anglo-Saxon system.

(***) Technic system prefers dynamic moment PD2 (kgf·m²).

Moment of inertia in SI system results MR2 (Kg·M²) = PD2/4. Anglo-Saxon system uses the fly wheel effect WR2(lb·ft²) = 23,73 MR2

(****) at = metric or technic atmosphere = 736 torr. - atm = normal or physical atmosphere = 760 torr.

(*****) t (°C) = T(K) - 273,15 t (°C) = 5/9 [t(°F) - 32] - t(°F) = 9/5 t(°C) + 32

CONVERSION TABLE

