KDM®

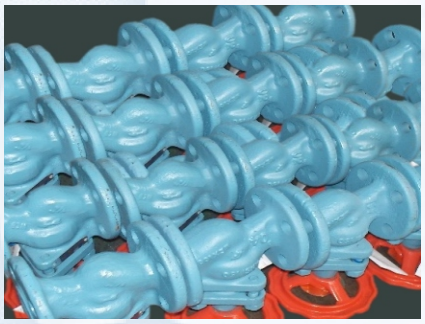
INTERTEK ISO 9001:2000

ANAB ACCREDITED

PISTON VALVES
ANSI Standard

KDM Piston valves= BEST PERFORMANCE

KDM piston valves are considered the high performance in globe & gate type valves in the industry. Thanks to its sealing system, maintenance is minimum and it warranties 0 (zero) leaks, this means, install and forget.



Reliably tight to the atmosphere

Thank to the K-Graf sealing rings made of treated graphite, (asbestos free), the KDM piston valve will not present leaks to the atmosphere, which means you will not have environment pollution.

Valve maintenance in line

The KDM piston valve is absolutely maintenance free for long time. In case used-up valve rings have to be changed, this is very simply made while the valve does not have to be dismounted from the line.

Long term minimal maintenance

A stainless piston and two semi-elastic valve ring make up the sealing element. The upper K-Graf valve ring provides the seal to the exterior. The lower K-Graf valve ring seals the port across the valve. When closing, the piston sweeps any impurities which may have adhered to the piston or ring. Damage to the sealing surfaces is avoided. Funcionality of the KDM piston valve is kept intact.

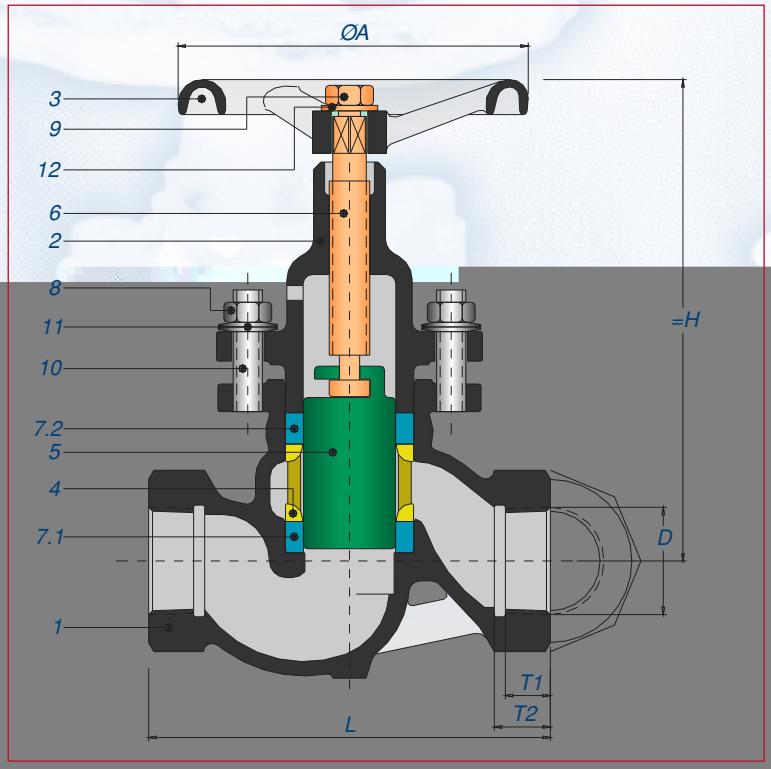
Excellent control characteristics

KDM piston valves

The double guidance of the piston in closed position prevents fluttering and vibration in the control setting, and oscillations in the pipe. The KDM piston valve can be easily automated with double acting or simple acting KDM actuators.

Flexible installation

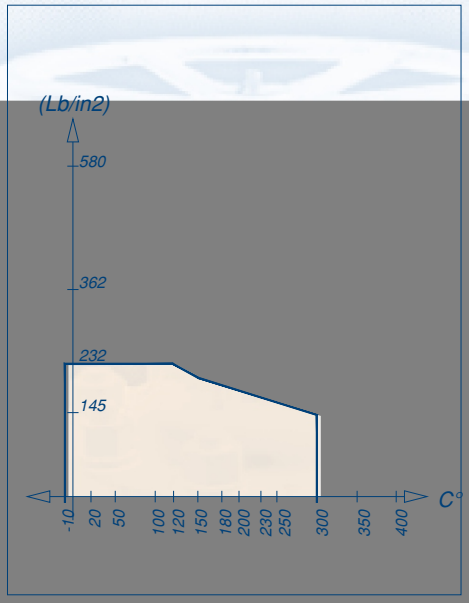
Another distinction with generic valves, KDM piston valves can be installed in any position, included upside down, whithout affecting its performance.



Piston valve with female screwed ends NPT ANSI B1.20.1
Material: Cast iron A126 Class B
Sealing element : K-Graf module

1000 SERIES

Model 1100
¼" to 2"
232 Psi



	PART NAME	MATERIAL
1	Body	ASTM A126 Class B
2	Bonnet	ASTM A126 Class B
3	Handwheel	ASTM A126 Class B
4	Lantern bush	ASTM A126 Class B
5	Piston	AISI 304
6	Spindle	Steel
7.1	Lower valve ring	K-Graf
7.2	Upper valve ring	K-Graf
8	bonnet nut	ASTM 194 Grade 2H
9	Handwheel nut	ASTM 194 Grade 2H
10	Bolts	ASTM A193 Grade B7
11	Belleville washer	AISI 1075
12	Lock washer	Carbon steel

CONNECTIÓN:
NPT ANSI B 1.20.1

HIDROSTATIC TEST::
ANSI B 16.37

INSPECTION AND TESTING:
API 598

TEMPERATURE:
-10° C a 300° C (steam)

PRESSURE (máx)
232 Psi

ORDERING EXAMPLE:
KDM-1100-1/2"-ANSI

Piston valves in all size may be provided with pneumatic actuators.

DN	A	L	STROKE	H	WEIGHT (Kgs.)	Connection NPT	T1	T2
1/4"	3.90	3.30	1.00	5.00	1.520	1/4" - 18 NPT	0.51	0.62
3/8"	3.90	3.30	1.00	5.00	1.500	3/8" - 18 NPT	0.51	0.62
1/2"	3.90	3.90	1.00	5.00	1.600	1/2" - 14 NPT	0.53	0.76
3/4"	4.70	4.70	1.20	5.80	2.500	3/4" - 14 NPT	0.55	0.78
1"	5.50	5.30	1.40	6.80	3.510	1" - 11 1/2 NPT	0.66	0.94
1 1/4"	6.30	6.30	1.60	7.70	5.900	1 1/4" - 11 1/2 NPT	0.68	0.96
1 1/2"	7.10	7.30	1.90	8.90	8.200	1 1/2" - 11 1/2 NPT	0.68	0.96
2"	7.50	8.60	2.20	9.80	12.800	2" - 11 1/2 NPT	0.70	0.98

*** Overall dimension in Inches ***

In the interest of technical progress, designs and dimensions are subject to modification.

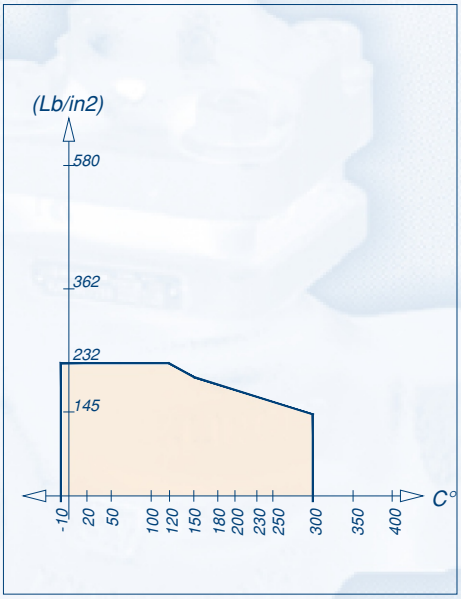
1000 SERIES

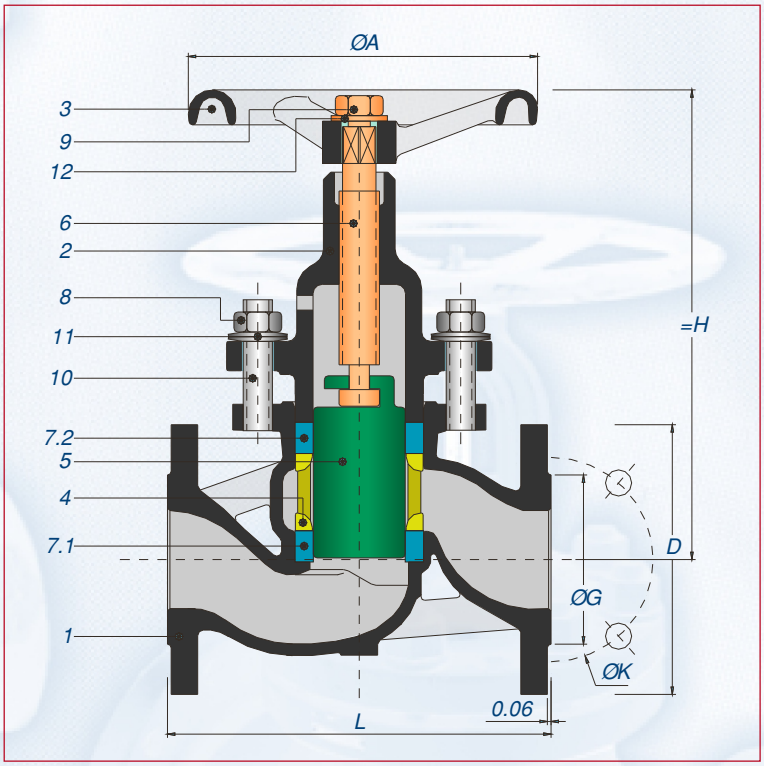
Model 1200

½" to 2"

232 Psi

Piston valve with flanges
ANSI class 150 R.F.
Material: Cast iron A126 Class B
Sealing element : K-Graf module





DRILLING:
ANSI B16.5 Class 150 R.F.

OVERALL LENGTH:
DIN EN 558-1

HIDROSTATIC TEST:
ANSI B 16.37

INSPECTIÓN AND TESTING:
API 598.

TEMPERATURE:
-10° C a 300° C (Steam)

PRESSURE (máx)
232 Psi

	PART NAME	MATERIAL.
1	Body	ASTM A126 class B
2	Bonnet	ASTM A126 class B
3	Handwheel	ASTM A126 class B
4	Lantern bush	ASTM A126 class B
5	Piston	AISI 304
6	Spindle	Steel
7.1	Lower valve ring	K- Graf
7.2	Upper valve ring	K- Graf
8	Bonnet nut	ASTM A194 Grade 2H
9	Handwheel nut	ASTM A194 Grade 2H
10	Bolts	ASTM A193 Grade B7
11	Belleville washer	AISI 1075
12	Lock washer	Carbon steel

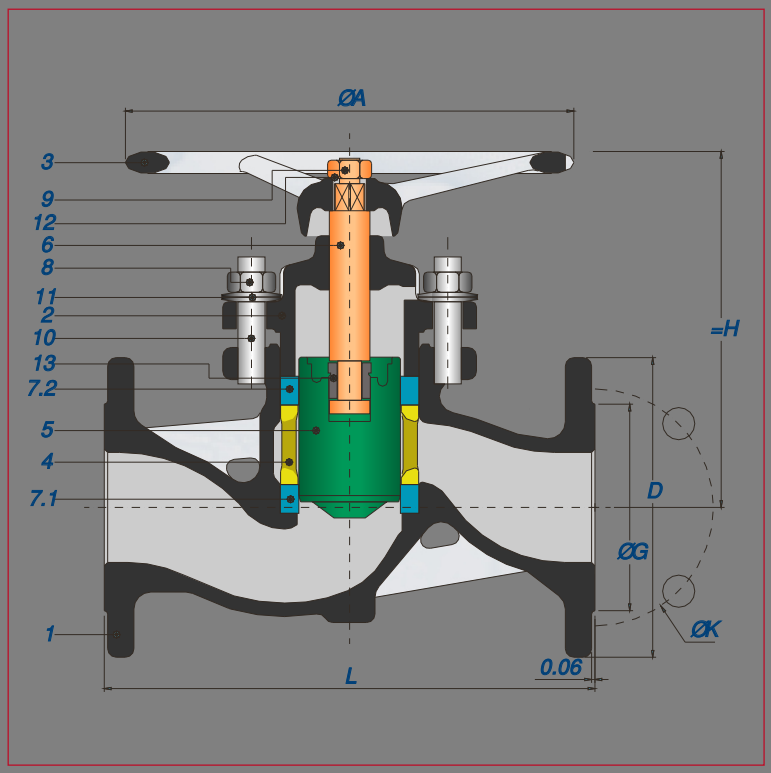
ORDERING EXAMPLE:
KDM-1200-1/2"-ANSI

Piston valves in all size may be provided with pneumatic actuators.

DN	A	L	STROKE	H	WEIGHT (Kgs.)
1/2"	3.90	5.10	1.00	5.00	2.900
3/4"	4.70	5.90	1.20	5.80	4.200
1"	5.50	6.30	1.40	6.80	5.400
1 1/4"	6.30	7.10	1.60	7.70	9.300
1 1/2"	7.10	7.90	1.90	8.90	12.100
2"	7.50	9.00	2.20	9.80	16.600

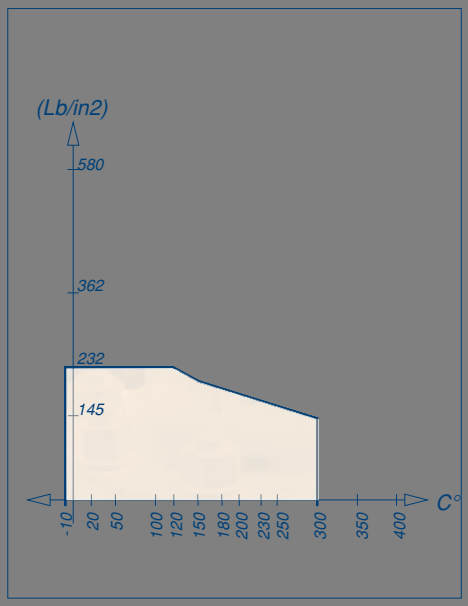
*** Overall dimensions in inches ***

In the interest of technical progress, designs and dimensions are subject to modification.



Piston valve with flanges
ANSI class 150 R.F.
Material: Cast iron A126 Class B
Sealing element : K-Graf module

1000 SERIE
Model 1200
2½" to 6"
232 Psi



	PART NAME	MATERIAL
1	Body	ASTM A126 class B
2	Bonnet	ASTM A126 class B
3	Handwheel	ASTM A126 class B
4	Lantern bush	ASTM A126 class B
5	Piston	AISI 304
6	Spindle	Steel
7.1	Lower valve ring	K-Graf
7.2	Upper valve ring	k-Graf
8	Bonnet nut	ASTM A194 Grade 2H
9	Handwheel nut	ASTM A194 Grade 2H
10	Bolt	ASTM A193 Grade B7
11	Belleville washer	AISI 1075
12	Lock washer	Carbon steel
13	Split nut	Steel

ORDERING EXAMPLE:
KDM-1200- 2 1/2"-ANSI

Piston valves in all size may be provided with pneumatic actuators.

DRILLING
ANSI B16.5 Class 150 R.F.

OVERALL LENGTH.
DIN EN 558-1

HIDROSTATIC TEST:
ANSI B 16.37

INSPECTIÓN AND TESTING:
API 598.

TEMPERATURE
-10° C a 300° C (Steam)

PRESSURE (máx)
232 Psi

DN	A	L	STROKE	H	WEIGHT (Kgs.)
2 1/2"	10.40	11.40	2.00	7.80	20.400
3"	10.40	12.60	2.30	8.70	27.700
4"	11.80	13.80	2.90	10.40	41.300
6"	15.70	17.70	3.80	13.30	83.000

*** Overall dimensions in inches ***

In the interest of technical progress, designs and dimensions are subject to modification.

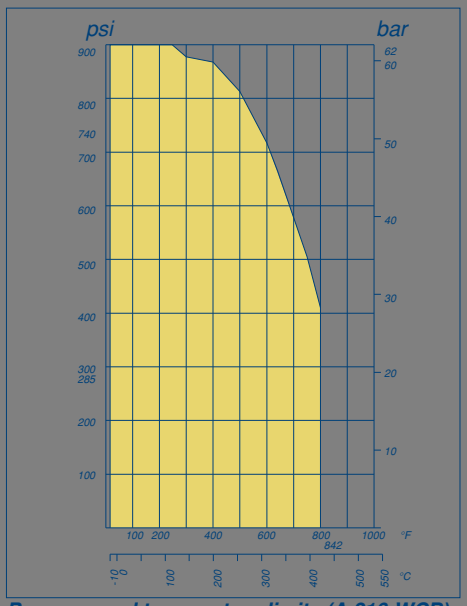
2000 SERIES

Model 2100

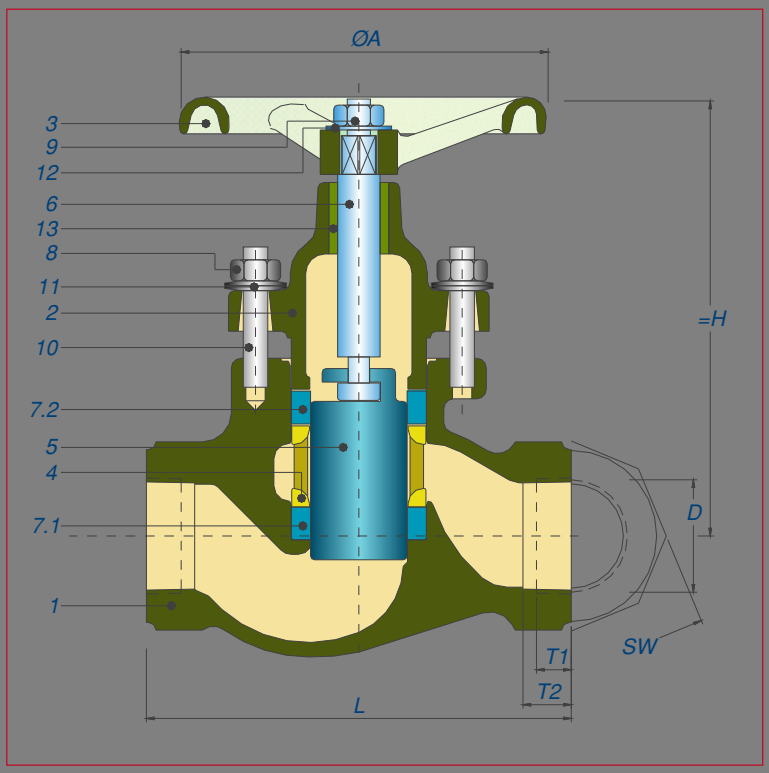
½" to 2"

900 Psi CWP

Piston valve
with female screwed ends
NPT / ANSI B1.20.1, Class 150
Material: Cast steel A-216, Class WCB
Sealing element : K-Graf module



Pressure and temperature limits (A 216-WCB)



Mod. 2100
900 CWP

CONNECTION:
NPT ANSI B1.20.1

HIDROSTATIC TEST:
ANSI B 16.37

INSPECTION AND TESTING:
API 598

TEMPERATURE (máx)
427° C (WCB)

PRESSURE (máx)
900 Psi CWP

	PART NAME	MATERIAL
1	Body	ASTM A216 Grade WCB
2	Bonnet	ASTM A216 Grade WCB
3	Handwheel	ASTM A126 Class B
4	Lantern bush	ASTM A126 Class B
5	Piston	AISI 304
6	Spindle	ASTM A416
7.1	Lower valve ring	K-Graf
7.2	Upper valve ring	K-Graf
8	Bonnet nut	ASTM 194 Grade 2H
9	Handwheel nut	ASTM 194 Grade 2H
10	Stud bolt	ASTM A193 Grade B7
11	Belleville washer	AISI 1075
12	Lock washer	Carbon steel
13	Threaded bush	ASTM A48 Class 40

Ordering example:
KDM-2100-1/2"-ANSI

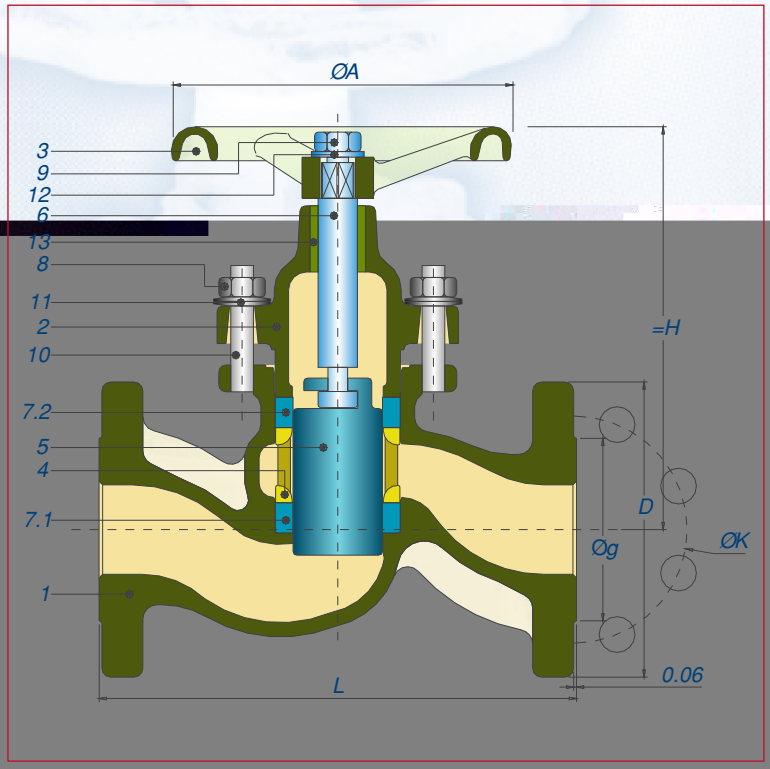
Piston valves in all size may be provided with pneumatic actuators.

Connection NPT (D)	T1	T2
1/2" - 14 NPT	0.53	0.76
3/4" - 14 NPT	0.55	0.78
1" - 11 1/2 NPT	0.66	0.94
1 1/2" - 11 1/2 NPT	0.68	0.96
2" - 11 1/2 NPT	0.70	0.98

DN	A	L	STROKE	H	SW	WEIGHT (Kgs.)
1/2"	3.90	3.93	1.00	4.20	1.40	1.900
3/4"	4.70	4.70	1.20	4.80	1.60	2.700
1"	5.50	5.30	1.40	5.60	1.96	4.200
1 1/2"	7.10	7.30	1.90	7.60	2.95	9.600
2"	7.50	8.66	2.20	8.60	3.55	13.600

*** Overall dimensions in inches***

In the interest of technical progress, designs and dimensions are subjet to modification.

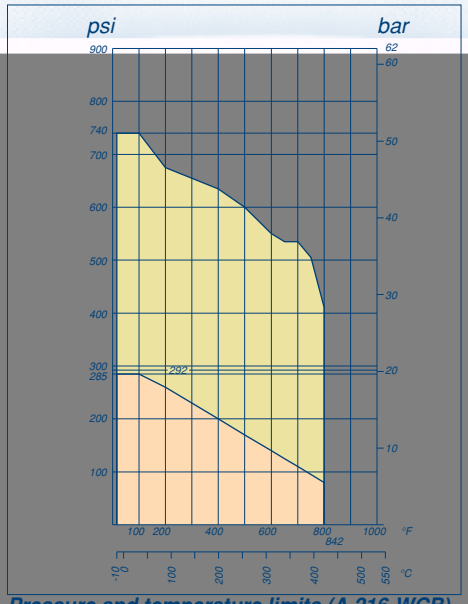


Piston valve with flanges
Flanges to ANSI B16.5
Class 150 model 2200
Class 300 model 2400
Material: Cast steel A216 Class WCB
Sealing element : K-Graf module

2000 SERIE

Model 2200/2400
½" to 2"

570Psi



Pressure and temperature limits (A 216-WCB)

Mod. 2200 ANSI 150
Mod. 2400 ANSI 300

	PART NAME	MATERIAL
1	Body	ASTM A216 Grade WCB
2	Bonnet	ASTM A216 Grade WCB
3	Handwheel	ASTM A126 Class B
4	Lantern bush	ASTM A126 Class B
5	Piston	AISI 304
6	Spindle	ASTM A416
7.1	Lower valve ring	K-Graf
7.2	Upper valve ring	K-Graf
8	Bonnet nut	ASTM 194 Grade 2H
9	Handwheel nut	ASTM 194 Grade 2H
10	Stud bolt	ASTM A193 Grade B7
11	Belleville washer	AISI 1075
12	Lock washer	AISI 304
13	Threaded bush *	ASTM A48 Class 40

Ordering example:
KDM-2200-1/2"-ANSI
** only size 1 1/2" , 2"*

Piston valves in all size may be provided with pneumatic actuators.

DRILLING:
ANSI B16.5 Class 150 R.F.
ANSI B16.5 Class 300 R.F.

OVERALL DIMENSIONS
DIN EN 558-1

HIDROSTATIC TEST:
ANSI B 16.37

INSPECTION AND TESTING
API 598

FIRE TEST:
API 6FA

TEMPERATURE (máx)
427°C

PRESSURE (máx)
570 Psi

DN	A	L 150	L 300	STROKE	H	WEIGHT (Kgs.) 150	WEIGHT (Kgs.) 300
1/2"	3.90	4.20	6.00	1.00	4.20	2.300	3.100
3/4"	4.70	4.60	7.00	1.20	4.80	3.500	5.100
1"	5.50	5.00	8.00	1.40	5.60	4.900	6.650
1 1/2"	7.10	6.50	9.00	1.90	7.60	10.500	13.600
2"	7.50	8.00	10.50	2.20	8.60	15.600	19.300

DN	ØK 150	ØK 300	150 #	150 Ø	300 #	300 Ø
1/2"	2.38	2.62	4	5/8"	4	5/8"
3/4"	2.75	3.25	4	5/8"	4	3/4"
1"	3.12	3.50	4	5/8"	4	3/4"
1 1/2"	3.88	4.50	4	5/8"	4	7/8"
2"	4.75	5.00	4	3/4"	8	3/4"

*** Overall dimensions in inches***

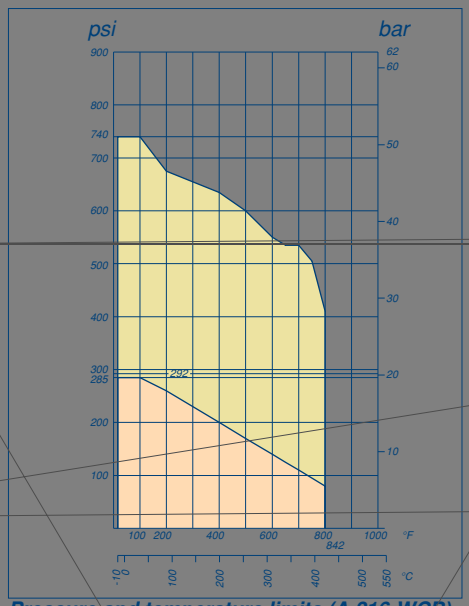
In the interest of technical progress, designs and dimensions are subject to modification.

2000 SERIE

Model 2200/2400
2½" to 6"

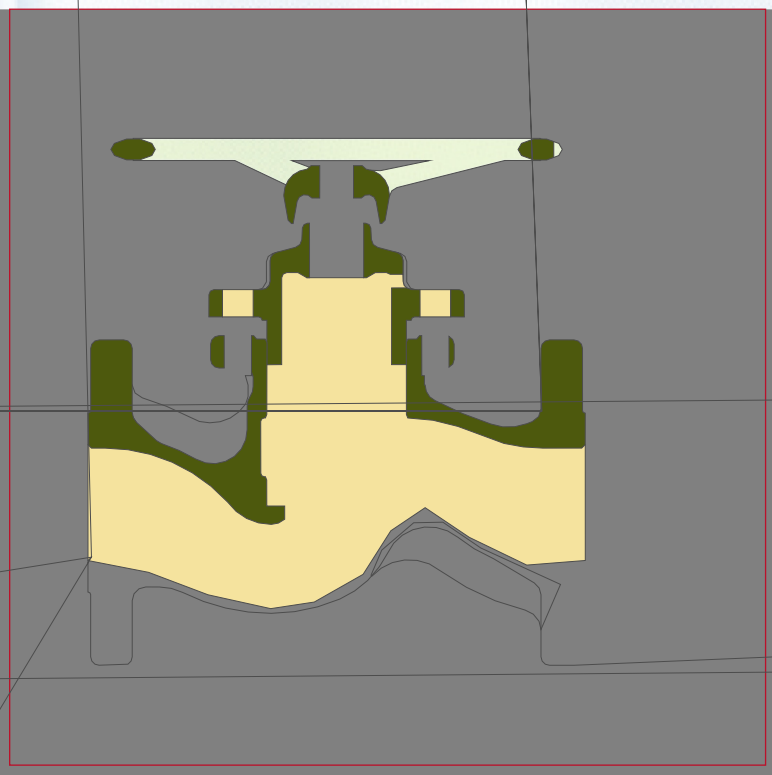
570Psi

Piston valve with flanges
Flanges to ANSI B16.5
Class 150 model 2200
Class 300 model 2400
Material: Cast steel A216 Class WCB
Sealing element : K-Graf module



Pressure and temperature limits (A 216-WCB)

Mod. 2200 ANSI 150
Mod. 2400 ANSI 300



DRILLING:
ANSI B16.5 Class 150 R.F.
ANSI B16.5 Class 300 R.F.

OVERALL DIMENSIONS
DIN EN 558-1

HIDROSTATIC TEST:
ANSI B 16.37

INSPECTION AND TESTING
API 598

FIRE TEST:
API 6FA

TEMPERATURE (máx)
427°C

PRESSURE (máx)
570 Psi

	PART NAME	MATERIAL
1	Body	ASTM A216 Grade WCB
2	Bonnet	ASTM A216 Grade WCB
3	Handwheel	ASTM A126 Class B
4	Lantern bush	ASTM A126 Class B
5	Piston	AISI 304
6	Spindle	ASTM A416
7.1	Lower valve ring	K-Graf
7.2	Upper valve ring	K-Graf
8	Bonnet nut	ASTM 194 Grade 2H
9	Handwheel nut	ASTM 194 Grade 2H
10	Stud bolt	ASTM A193 Grade B7
11	Belleville washer	AISI 1075
12	Lock washer	AISI 304
13	Threaded bush *	ASTM A48 Class 40
14	Split nut	AISI 1213

Ordering example:
KDM-2200-1/2"-ANSI
** only size 1 1/2" , 2"*

Piston valves in all size may be provided with pneumatic actuators.

DN	ØK		150		300	
	150	300	#	Ø	#	Ø
2 1/2"	5.50	5.88	4	3/4"	8	7/8"
3"	6.00	6.62	4	3/4"	8	7/8"
4"	7.50	7.88	8	3/4"	8	7/8"
6"	9.50	10.62	8	7/8"	12	7/8"

DN	A	L			H		
		150	300				
2 1/2"	10.40	8.50	11.50	1.90	12.40	25.100	30.700
3"	10.40	9.50	12.50	2.20	13.20	35.000	38.900
4"	11.80	11.50	14.00	2.50	15.30	53.000	60.500
6"	15.70	16.00	17.50	3.60	19.60	102.600	117.500

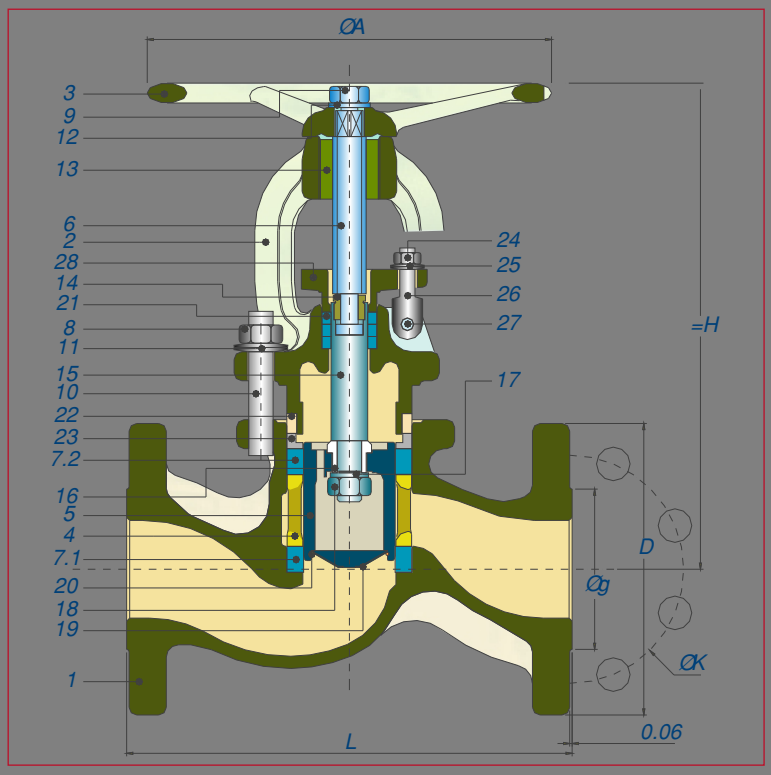
*** Overall dimensions in inches***

In the interest of technical progress, designs and dimensions are subject to modification.

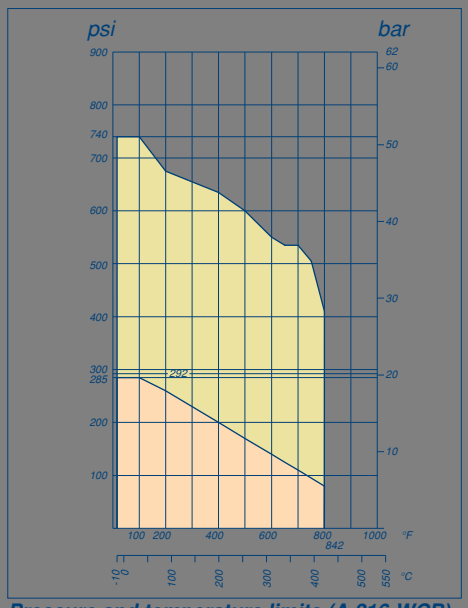
2000 SERIES

Model 2300/2500
2½" to 8"

570 Psi



Piston valve with flanges
Flanges to ANSI B16.5
Class 150, Model 2300
Class 300, Model 2500
Material: Cast steel A-216 Class WCB
Sealing element : K-Graf module



Pressure and temperature limits (A 216-WCB)

Mod. 2300 ANSI 150
Mod. 2500 ANSI 300

	PART NAME	MATERIAL
1	Body	ASTM A216 Grade WCB
2	Bonnet	ASTM A216 Grade WCB
3	Handwheel	ASTM A126 Class B
4	Lantern bush	ASTM A126 Class B
5	Piston	AISI 304
6	Spindle	ASTM A416
7.1	Lower valve ring	K-Graf
7.2	Upper valve ring	K-Graf
8	Bonnet nut	ASTM 194 Grade 2H
9	Handwheel nut	ASTM 194 Grade 2H
10	Stud bolt	ASTM A193 Grade B7
11	Belleville washer	AISI 1075
12	Lock washer	Stainless steel
13	Threaded bush	ASTM A48 Class 40
14	Split nut	AISI 1213
15	Piston shaft	ASTM A416
16	Back seat	ASTM A416
17	Disc	ASTM A416
18	Hexagon nut notched	ASTM A416
19	Piston nose cone	AISI 316
20	Securing ring	ASTM A416
21	Stuffing-box ring	K-Graf
22	OT valve ring	K-Graf
23	Thrust piece	ASTM A416
24	Hexagon nut	ASTM A194 Grade 2H
25	Belleville washer	AISI 1075
26	Swing bolt	ASTM A193 Grade B7
27	Notched parallel pin	ASTM A193 Grade B7
28	Gland retainer	ASTM A216 Grade WCB

DRILLING:
ANSI B16.5 Class 150 R.F.
ANSI B16.5 Class 300 R.F.

OVERALL DIMENSIONS
ASME B16.10

HIDROSTATIC TEST:
ANSI B 16.37

INSPECTION AND TESTING
API 598

FIRE TEST:
API 6FA

TEMPERATURE (máx)
400°C

PRESSURE (máx)
570 Psi

Ordering example:
KDM 2300 to 2 1/2"

Piston valves in all sizes may be provided with pneumatic actuators.

*** Overall dimensions in inches ****

DN	A	L		STROKE	H	WEIGHT (Kgs)	
		150	300			150	300
2 1/2"	10.40	8.50	11.50	1.90	12.40	25.100	26.900
3"	10.40	9.50	12.50	2.20	13.20	35.000	37.200
4"	11.80	11.50	14.00	2.50	15.30	53.000	54.500
6"	15.70	16.00	17.50	3.60	19.60	102.600	103.700
8"	15.70	19.50	22.00	4.65	22.75	210.000	230.500

DN	ØK		150		300	
	150	300	#	Ø	#	Ø
2 1/2"	5.50	5.88	4	3/4"	8	7/8"
3"	6.00	6.62	4	3/4"	8	7/8"
4"	7.50	7.88	8	3/4"	8	7/8"
6"	9.50	10.62	8	7/8"	12	7/8"
8"	11.75	13.00	8	7/8"	12	1"

In the interest of technical progress, designs and dimensions are subject to modification.

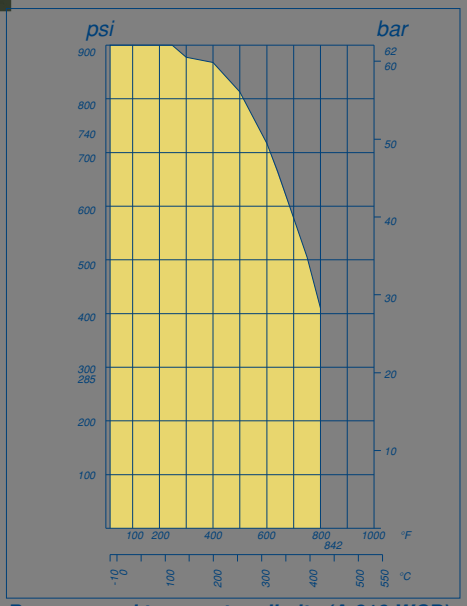
2000 SERIES

MODEL 2600

½" to 2"

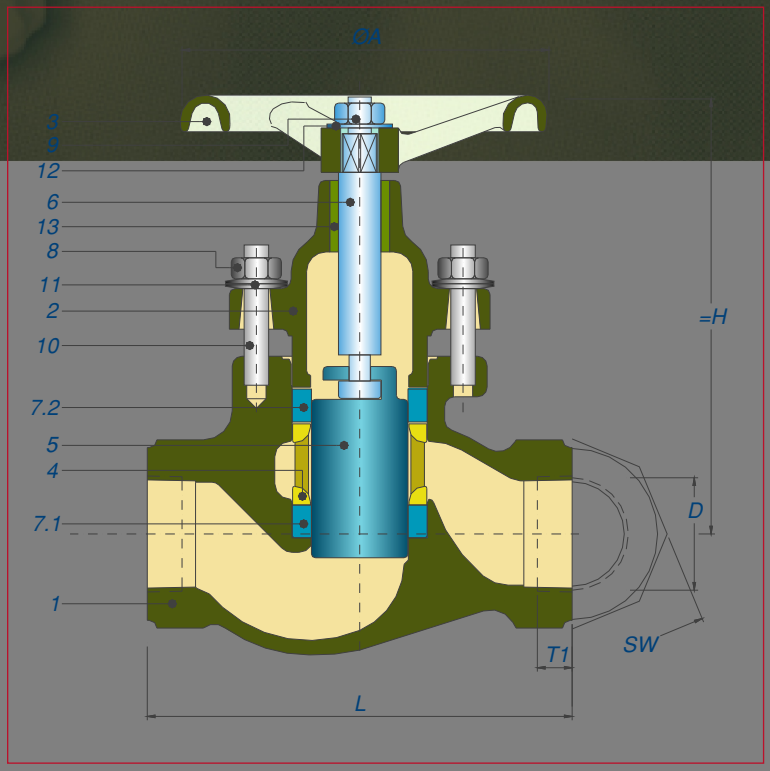
900 Psi CWP

Piston valve weld end
socket weld to ANSI B16.11
Material: Cast steel A-216 Class WCB
Class 150 Model 2600
Sealing element :K-Graf module



Pressure and temperature limits (A 216-WCB)

Mod. 2600
900 CWP



CONNECTION:
Socket weld ANSI B16.11

HIDROSTATIC TEST:
ANSI B 16.37

INSPECTION AND TESTING:
API 598

TEMPERATURE (máx)
427° C (WCB)

PRESSURE (máx)
900 Psi CWP

	PART NAME	MATERIAL
1	Body	ASTM A216 Grade WCB
2	Bonnet	ASTM A216 Grade WCB
3	Handwheel	ASTM A126 Class B
4	Lantern bush	ASTM A126 Class B
5	Piston	AISI 304
6	Spindle	ASTM A416
7.1	Lower valve ring	K-Graf
7.2	Upper valve ring	K-Graf
8	Bonnet nut	ASTM 194 Grade 2H
9	Handwheel nut	ASTM 194 Grade 2H
10	Stud bolt	ASTM A193 Grade B7
11	Belleville washer	AISI 1075
12	Lock washer	Carbon steel
13	Threaded bush	ASTM A48 Class 40

Ordering example:
KDM-2600-1/2"

Piston valves in all size may be provided with pneumatic actuators.

DN	Connection /socket weld (D)	T1
1/2"	0.85	0.53
3/4"	1.06	0.55
1"	1.33	0.66
1 1/2"	1.92	0.68
2"	2.40	0.70

DN	A	L	STROKE	H	SW	WEIGHT (Kgs.)
1/2"	3.90	4.00	1.00	4.20	1.40	1.700
3/4"	4.70	4.75	1.20	4.80	1.60	2.500
1"	5.50	5.30	1.40	5.60	1.96	4.100
1 1/2"	7.10	7.25	1.90	7.60	2.95	9.500
2"	7.50	8.62	2.20	8.60	3.55	13.500

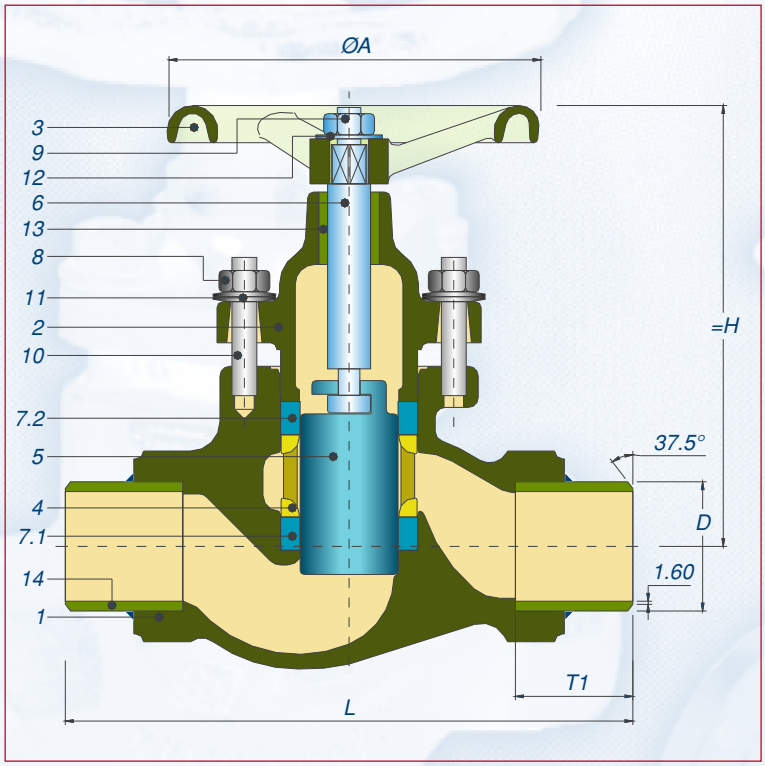
** Overall dimensions in inches **

In the interest of technical progress, designs and dimensions are subjet to modification.

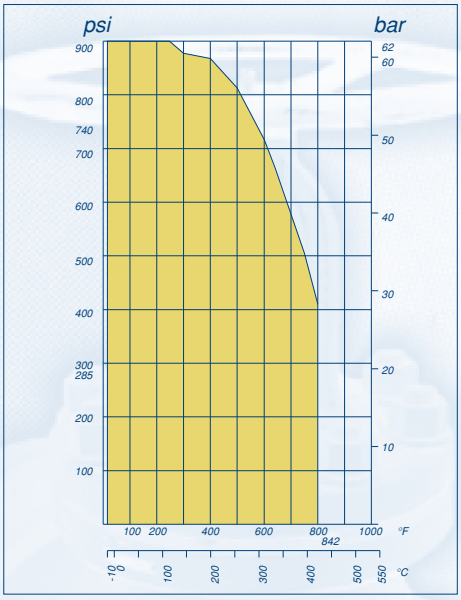
2000 SERIES

Model 2700
½" to 2"

900 Psi CWP



Piston valve weld
Connetión butt weld to ANSI B16.25
Material: Cast steel A-216 Class WCB
Sealing element : K-Graf module



Pressure and temperature limits (A 216-WCB)

	PART NAME	MATERIAL
1	Body	ASTM A216 Gr WCB
2	Bonnet	ASTM A216 Gr WCB
3	Handwheel	ASTM A126 Class B
4	Lantern bush	ASTM A126 Class B
5	Piston	AISI 304
6	Spindle	ASTM A416
7.1	Lower valve ring	K-Graf
7.2	Upper valve ring	K-Graf
8	Bonnet nut	ASTM 194 Gr 2H
9	Handwheel nut	ASTM 194 Gr 2H
10	Stud bolt	ASTM A193 GR B7
11	Belleville washer	AISI 1075
12	Lock washer	Carbon steel
13	Threaded bush	ASTM A48 Class 40
14	Tube	Cast steel

CONNECTION:
Butt weld ANSI B16.25

ALL DIMENSIONS
ANSI B16.10 Clase 300

HIDROSTATIC TEST
ANSI B 16.37

INSPECTION AND TESTING:
API 598

FIRE TEST:
API 6FA

TEMPERATURE (máx)
427° C (WCB)

PRESSURE (máx)
900 Psi CWP

Ordering example:
KDM-2700-1/2"

Piston valves in all size may be provided with pneumatic actuators.

DN	A	L	STROKE	H	WEIGHT (Kgs.)
1/2"	3.90	6.00	1.00	4.20	2.000
3/4"	4.70	7.00	1.20	4.80	2.800
1"	5.50	8.00	1.40	5.60	4.500
1 1/2"	7.10	9.00	1.90	7.60	9.800
2"	7.50	10.50	2.20	8.60	13.800

DN	Connetión butt weld (D)	T1
1/2"	0.83	1.41
3/4"	1.05	1.65
1"	1.33	1.85
1 1/2"	1.74	1.37
2"	2.37	1.55

*** Overall dimensions in inches ***

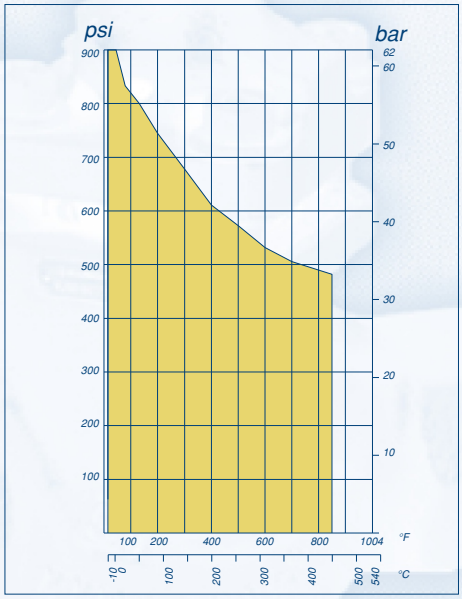
In the interest of technical progress, designs and dimensions are subjet to modification.

3000 SERIES

Model 3100
½" to 2"

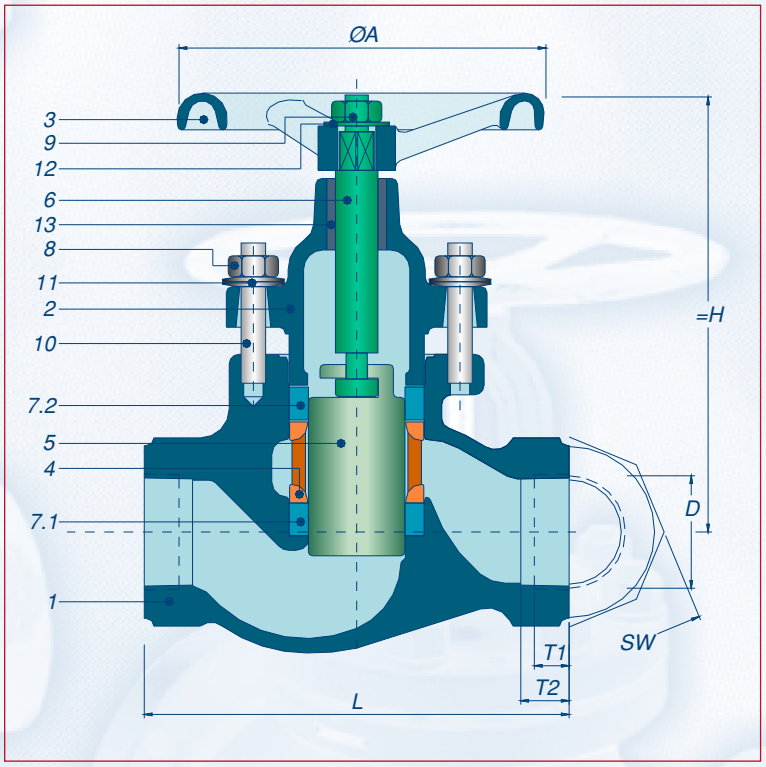
900 Psi CWP

Piston valve
with female screwed ends
Material: Stainless steel A351-CF8M
Sealing element: K-Graf module



Pressure and temperature limits (A 351 CF8M)

Mod. 3100
900 CWP



	PART NAME	MATERIAL
1	Body	ASTM A351 Grade CF8M
2	Bonnet	ASTM A351 Grade CF8M
3	Handwheel	ASTM A351 Grade CF8M
4	Lantern bush	ASTM A351 Grade CF8M
5	Piston	AISI 316
6	Spindle	AISI 316
7.1	Lower valve ring	K-Graf
7.2	Upper valve ring	K-Graf
8	Bonnet nut	ASTM 194 Grade 6F
9	Handwheel nut	ASTM 194 Grade 6F
10	Stud bolt	ASTM A193 Grade B8
11	Belleville washer	AISI 316
12	Lock washer	Stainless steel
13	Threaded bush	AISI 304

CONNETIÓN:
NPT ANSI B1.20.1

HIDROSTATIC TEST:
ANSI B 16.37

INSPECTIÓN AND TESTING:
API 598

FIRE TEST:
API 6FA

TEMPERATURE (máx)
454° C (CF8M)

PRESSURE (máx)
900 Psi CWP

Ordering example:
KDM-3100-1/2"

Piston valves in all size may be provided with pneumatic actuators.

Connectión NPT (D)	T1	T2
1/2" - 14 NPT	0.53	0.76
3/4" - 14 NPT	0.55	0.78
1" - 11 1/2 NPT	0.66	0.94
1 1/2" - 11 1/2 NPT	0.68	0.96
2" - 11 1/2 NPT	0.70	0.98

DN	A	L	STROKE	H	SW	WEIGHT (Kgs.)
1/2"	3.90	3.93	1.00	4.20	1.40	1.80
3/4"	4.70	4.70	1.20	4.80	1.60	2.90
1"	5.50	5.30	1.40	5.60	1.96	4.00
1 1/2"	7.10	7.30	1.90	7.60	2.95	9.80
2"	7.50	8.66	2.20	8.60	3.55	15.80

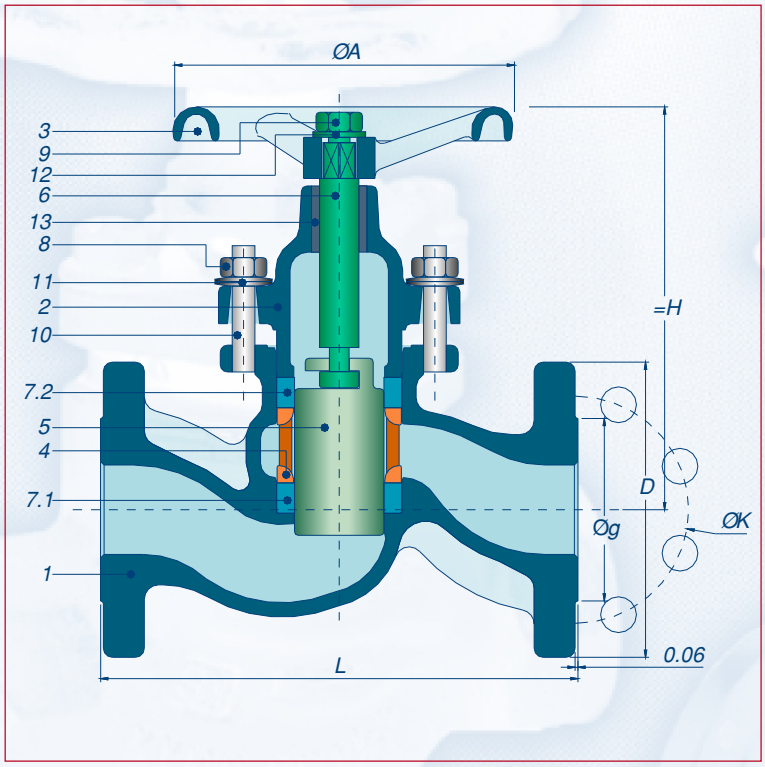
*** Overall dimensions in inches ***

In the interest of technical progress, designs and dimensions are subject to modification.

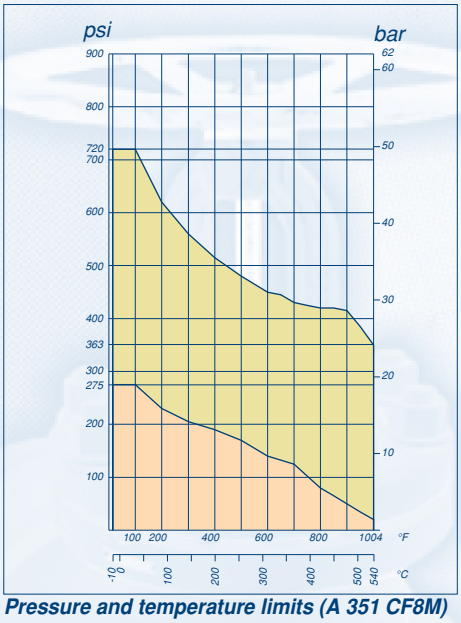
3000 SERIES

Model 3200/3400
½" to 2"

720 Psi



Piston valves with flanges
flanges to ANSI B16.5
Class 150 model 3200
Class 300 model 3400
Material: Stainless steel- A351- CF8M
Sealing element : K-Graf module



Pressure and temperature limits (A 351 CF8M)

Mod. 3200 ANSI 150
Mod. 3400 ANSI 300

	PART NAME	MATERIAL
1	Body	ASTM A351 Grade CF8M
2	Bonnet	ASTM A351 Grade CF8M
3	Handwheel	ASTM A351 Grade CF8M
4	Lantern	ASTM A351 Grade CF8M
5	Piston	AISI 316
6	Spindle	ASTM A316
7.1	Lower valve ring	K- Graf
7.2	Upper valve ring	K- Graf
8	Bonnet nut	ASTM 194 Grade 6F
9	Handwheel nut	ASTM 194 Grade 6F
10	Stud bolt	ASTM A193 Grade B8
11	Belleville washer	AISI 1075
12	Lock washer	Stainless steel
13	Threaded bush *	AISI 304

Ordering example:
KDM 3200-1/2"
** size only 1 1/2" , 2"*

Piston valves in all sizesmay be provided with pneumatic actuators.

DRILLING:
ANSI B 16.5 Clase 150 R.F.
ANSI B 16.5 Clase 300 R.F.

OVERALL DIMENSIONS:
DIN EN 558-1

HIDROSTÁTIC TEST:
ANSI B 16.37

INSPECTIÓN AND TESTING:
API 598

FIRE TEST:
API 6FA

TEMPERATURE (máx)
538° C

PRESSURE (máx)
720 Psi

DN	A	L		STROKE	H	WEIGHT (Kgs.)	
		150	300			150	300
1/2"	3.90	4.20	6.00	1.00	4.20	2.50	3.50
3/4"	4.70	4.60	7.00	1.20	4.80	3.50	5.00
1"	5.50	5.00	8.00	1.40	5.60	5.00	7.00
1 1/2"	7.10	6.50	9.00	1.90	7.60	10.60	13.80
2"	7.50	8.00	10.50	2.20	8.60	16.50	20.20

DN	ØK		150		300	
	150	300	#	Ø	#	Ø
1/2"	2.38	2.62	4	5/8"	4	5/8"
3/4"	2.75	3.25	4	5/8"	4	3/4"
1"	3.12	3.50	4	5/8"	4	3/4"
1 1/2"	3.88	4.50	4	5/8"	4	7/8"
2"	4.75	5.00	4	3/4"	8	3/4"

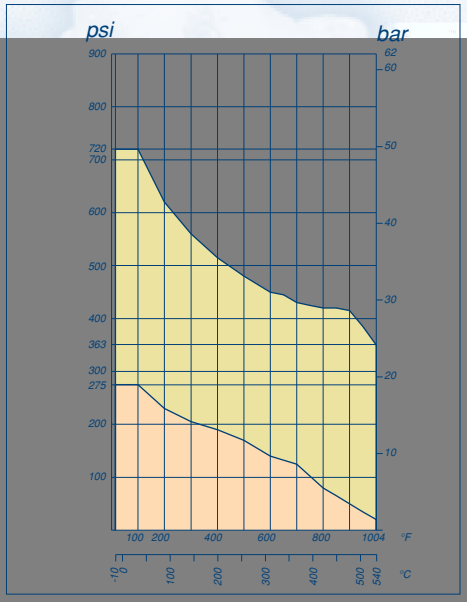
*** Overall dimensions in inches ***
In the interest of technical progress, designs and dimensions are subject to modification.

3000 SERIES

Model 3300/3500
½" to 2"

720 Psi

Piston valves with flanges
Flanges to ANSI B16.5
Class 150 model 3300
Class 300 model 3500
Material: Stainless steel A 351-CF8M
Sealing element: K-Graf Module



Pressure and temperature limits (A 351 CF8M)

Mod. 3200 ANSI 150
Mod. 3400 ANSI 300

DRILLING:
ANSI B 16.5 Clase 150 R.F.
ANSI B 16.5 Clase 300 R.F.

OVERALL DIMENSIONS
DIN EN 558-1

HIDROSTÁTIC TEST:
ANSI B 16.37

INSPECTIÓN AND TESTING:
API 598

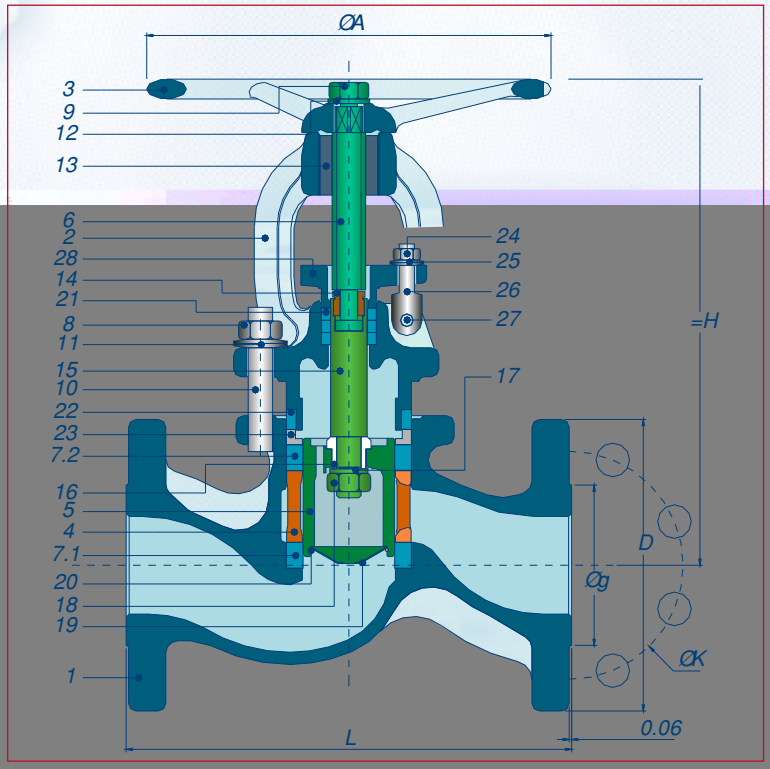
FIRE TEST:
API 6FA

TEMPERATURE (máx)
538° C

PRESSURE (máx)
720 Psi

Ordering example
KDM 3300-1/2"

Piston valves in all sizes may be provided with pneumatic actuators.



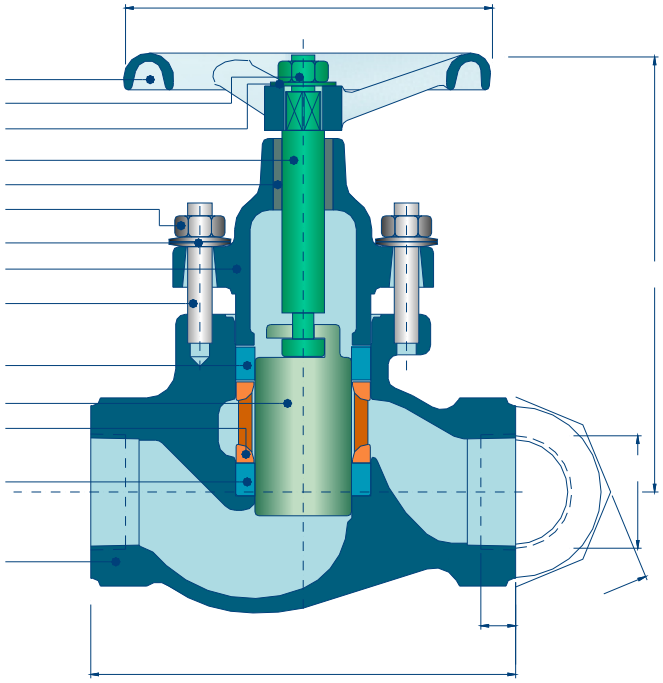
	PART NAME	MATERIAL
1	Body	ASTM A351 Grade CF8M
2	Bonnet	ASTM A351 Grade CF8M
3	Handwheel	ASTM A351 Grade CF8M
4	Lantern bush	ASTM A351 Grade CF8M
5	Piston	AISI 316
6	Spindle	AISI 316
7.1	Lower valve ring	K-Graf
7.2	Upper valve ring	K-Graf
8	Bonnet nut	ASTM 194 Grade 6F
9	Handwheel nut	ASTM 194 Grade 6F
10	Stud bolt	ASTM A193 Grade B8
11	Belleville washer	AISI 316
12	Lock washer	Stainless steel
13	Threaded bush	AISI 304
14	Split nut	AISI 316
15	Piston shaft	AISI 316
16	Back seat	AISI 316
17	Disc	AISI 316
18	Hexagon nut notched	AISI 316
19	Piston nose cone	AISI 316
20	Securing ring	ASTM A416
21	Stuffing-box ring	K-Graf
22	OT valve ring	K-Graf
23	Thrust piece	ASTM A416
24	Hexagon nut	ASTM A194 Grade 6F
25	Belleville washer	AISI 316
26	Swing bolt	ASTM A193 Grade B8
27	Notched parallel pin	ASTM A193 Grade B8
28	Gland retainer	ASTM A351 Grade CF8M

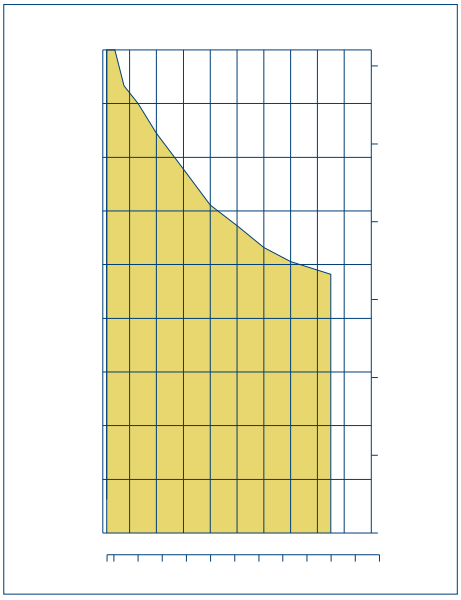
DN	ØK		150		300	
	150	300	#	Ø	#	Ø
2 1/2"	5.50	5.88	4	3/4"	8	7/8"
3"	6.00	6.62	4	3/4"	8	7/8"
4"	7.50	7.88	8	3/4"	8	7/8"
6"	9.50	10.62	8	7/8"	12	7/8"
8"	11.75	13.00	8	7/8"	12	1"

DN	A	L		STROKE	H	WEIGHT (Kgs.)	
		150	300			150	300
2 1/2"	10.40	8.50	11.50	1.90	12.40	25.10	30.60
3"	10.40	9.50	12.50	2.20	13.20	35.00	39.00
4"	11.80	11.50	14.00	2.50	15.30	53.00	60.50
6"	15.70	16.00	17.50	3.60	19.60	105.50	117.50
8"	15.70	19.50	22.00	4.65	22.75	196.00	218.00

*** Overall dimensions in inches***

In the interest of technical progress, designs and dimensions are subject to modification.

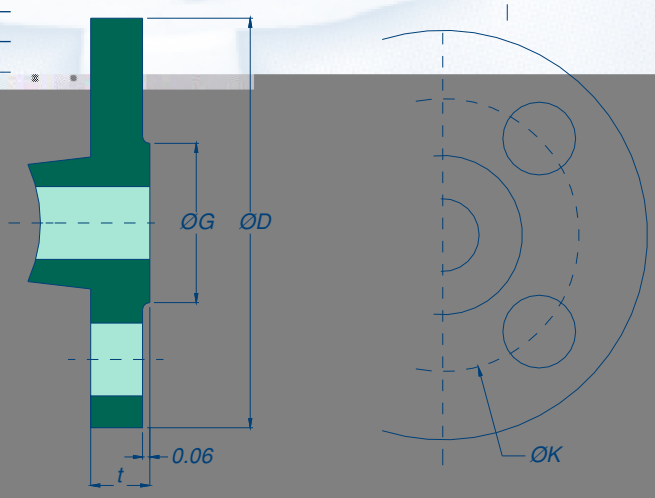


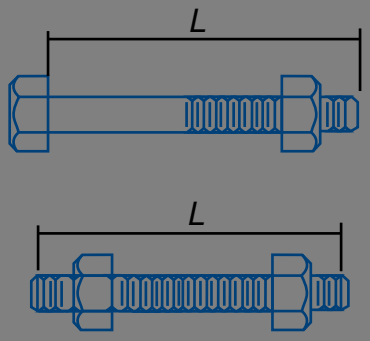


Flanges ANSI B-16.5

ANSI 150

ANSI 300





FLANGES ANSI 150					BOLT			
DN	ØD	t	ØK	ØG	NUMBER	DIAM.	DRILL	LONG (L)
1/2”	3.50	0.43	2.38	1.37	4	1/2”	5/8”	2.25
3/4”	3.88	0.43	2.75	1.68	4	1/2”	5/8”	2.50
1”	4.25	0.43	3.12	2.00	4	1/2”	5/8”	2.50
1 1/4”	4.62	0.50	3.50	2.50	4	1/2”	5/8”	2.75
1 1/2”	5.00	0.56	3.88	2.87	4	1/2”	5/8”	2.75
2”	6.00	0.62	4.75	3.62	4	5/8”	3/4”	3.25
2 1/2”	7.00	0.68	5.50	4.12	4	5/8”	3/4”	3.50
3”	7.50	0.75	6.00	5.00	4	5/8”	3/4”	3.50
4”	9.00	0.93	7.50	6.18	8	5/8”	3/4”	3.50
6”	11.00	1.00	9.50	8.50	8	3/4”	7/8”	4.00
8”	13.50	1.12	11.75	10.62	8	3/4”	7/8”	4.25
10”	16.00	1.18	14.25	12.75	12	7/8”	1”	4.50
12”	19.00	1.25	17.00	15.00	12	7/8”	1”	4.75
14”	21.00	1.37	18.75	16.25	12	1”	1 1/8”	5.25
16”	23.50	1.43	21.25	18.50	16	1”	1 1/8”	5.25
18”	25.00	1.56	22.75	21.00	16	1 1/8”	1 1/4”	5.75
20”	27.50	1.68	25.00	23.00	20	1 1/8”	1 1/4”	6.25

FLANGES ANSI 300					BOLT			
DN	ØD	t	ØK	ØG	NUMBER	DIAM.	DRILL	LONG (L)
1/2”	3.75	0.56	2.62	1.37	4	1/2”	5/8”	2.50
3/4”	4.62	0.62	3.25	1.68	4	5/8”	3/4”	3.00
1”	4.88	0.68	3.50	2.00	4	5/8”	3/4”	3.00
1 1/4”	5.25	0.75	3.88	2.50	4	5/8”	3/4”	3.25
1 1/2”	6.12	0.81	4.50	2.87	4	3/4”	7/8”	3.50
2”	6.50	0.87	5.00	3.62	8	5/8”	3/4”	3.50
2 1/2”	7.50	1.00	5.88	4.12	8	3/4”	7/8”	4.00
3”	8.25	1.12	6.62	5.00	8	3/4”	7/8”	4.25
4”	10.00	1.25	7.88	6.18	8	3/4”	7/8”	4.50
6”	12.50	1.43	10.62	8.50	12	3/4”	7/8”	4.75
8”	15.00	1.62	13.00	10.62	12	7/8”	1”	5.50
10”	17.50	1.87	15.25	12.75	16	1”	1 1/8”	6.25
12”	20.50	2.00	17.75	15.00	16	1 1/8”	1 1/4”	6.75
14”	23.00	2.12	20.25	16.25	20	1 1/8”	1 1/4”	7.00
16”	25.50	2.25	22.50	18.50	20	1 1/4”	1 3/8”	7.50
18”	28.00	2.37	24.75	21.00	24	1 1/4”	1 3/8”	7.75
20”	30.50	2.50	27.00	23.00	24	1 1/4”	1 3/8”	8.00

*** Overall dimensions in inches ***

In the interest of technical progress, designs and dimensions are subject to modification.

VALVE FLOW COEFFICIENTS = Cv

Travel Percentage		10	20	30	40	50	60	70	80	90	100
DN	Inherent Characteristic	RANGE Cv (gpm)									
1/2"	lineal	0.5	1.1	1.7	2.4	3.1	3.8	4.4	4.7	4.9	5.0
	=%	0.09	0.17	0.30	0.48	0.77	1.21	1.83	2.67	3.76	5.0
3/4"	lineal	0.8	1.8	2.90	4.2	5.3	6.5	7.6	8.2	8.7	9.0
	=%	0.16	0.31	0.52	0.86	1.39	2.18	3.29	4.80	6.76	9.0
1"	lineal	1.2	2.7	4.4	6.4	8.2	10	11	12	13	14
	=%	0.25	0.48	0.81	1.34	2.16	3.39	5.12	7.46	10.6	14
1 1/2"	lineal	2.8	6.6	11	16	20	24	29	32	34	36
	=%	0.64	1.24	2.09	3.44	5.56	8.71	13.1	19.2	27.1	36
2"	lineal	4.0	9.9	17	25	32	39	45	50	53	55
	=%	0.97	1.9	3.2	5.3	8.5	13.3	20.1	29.3	41.3	55
2 1/2"	lineal	10	20	30	40	50	60	70	80	90	100
	=%	1.76	3.45	5.80	9.60	16	24	36	53	75	100
3"	lineal	14	28	43	57	71	85	99	114	128	142
	=%	2.50	4.90	8.30	14	22	35	52	76	107	142
4"	lineal	21	43	64	85	107	128	149	170	192	213
	=%	3.80	7.40	12	20	33	52	78	114	160	213
6"	lineal	43	85	128	170	213	255	298	340	383	425
	=%	7.50	15	25	41	65	103	155	226	319	425
8"	lineal	68	135	202	269	336	403	470	538	605	672
	=%	12	23	39	64	104	163	246	358	505	672

ACTUATORS RANGE

SIZE = DN			1/2"	3/4"	1"	1 1/2"	2"	2 1/2"	3"	4"	6"	8"
STROKE			25	30	30	45	45	65	65	65	90	90
Cv MAX.			5.0	9.0	14	36	55	100	142	210	309	670
Actuator Type	Actuating pressure (Bar) Mín.	Máx.	ACTUATORS RANGE									
NC - NA - DA 01	4.0	6.0	40	30	20	-	-	-	-	-	-	-
NC - NA - DA 02	3.0	6.0	-	40	40	-	-	-	-	-	-	-
NC - NA - DA 03	4.0	6.0	-	-	-	25	20	-	-	-	-	-
NC - NA - DA 04	3.0	6.0	-	-	-	40	40	-	-	-	-	-
NC - NA - DA 05	4.0	6.0	-	-	-	-	-	20	20	10	-	-
NC - NA - DA 06	3.0	6.0	-	-	-	-	-	40	40	40	-	-
NC - NA - DA 07	4.0	6.0	-	-	-	-	-	-	-	-	20	20

The recomendations given here are intended to help in selecting suitable material and valve types. No guarantee can be given perfomance and service life of products depend on a series of factors on which the manufacturer has no influence. Special regulations must be observed. Please contact us in cases of doubt.

Solid media listed in the table, are to be understood as aqueos solutions or suspensions.

Explanation of symbols

for metalic materials of constrccion
0 = Practically resistant
loss in weight less than 2.4 gm/m²/day
1 = fairly resistant
loss in weight 2.4 -24 gm/m²/day
2 = low resisttance
loss in weight more than 24-72 gm/m²/day
3 = non-resistant
los in weight more than 72 gm/m²/day
- = not tested or not costomary

for valve rings:
x = suitable
- = not suitable

Abbreviations:
Bp = boiling point
Satd = Saturade
Hyd. Sol = hydrous solution
Conc = Concentrated

Fluid	Chemical formula	Temperature and concentration		Sealing element		Materials			
		%	°C	K-Graf Module	PTFE	A 126 30B	A216 WCB	A351 CF8M	
Linseed oil			20	X	X	--	--	0	Aceite de linaza
Linseed oil			100	X	X	--	--	0	Aceite de linaza
Paraffin oil			20	X	X	0	0	0	Aceite de parafina (queroseno)
Oil				X	X	0	0	0	Aceite de transferencia de calor
Oils (minerals, lubricants)			20	X	X	0	0	0	Aceite (minerales, Lubricantes)
Oil(vegetable)			20	X	X	0	0	0	Aceites (vegetales)
Silicon oil				X	X	0	0	0	Aceites de silicon
Copper acetate Hyd. Sol.	$(CH_3COO)_2Cu$		20	X	X	0	0	0	Acetato de cobre Hyd. Sol.
Copper acetate Hyd. Sol.	$(CH_3COO)_2Cu$		BP	X	X	2	2	0	Acetato de cobre Hyd. Sol.
Ethyl acetate	$CH_3COOC_2H_5$			X	X	0	0	0	Acetato de etilo
Plumb acetate	$Pb(CH_3COO)_2$	100	BP	X	X	3	3	2	Acetato de plomo
Potassium acetate	CH_3COOK		BP	X	X	0	0	0	Acetato de potasio
Sodium acetate	CH_3COONa			X	X	1	1	0	Acetato de sodio
Acetylene	C_2H_2			--	X	0	0	0	Acetileno
Acetone	CH_3COCH_3		20	X	X	0	0	0	Acetona
Methyl ethyl ketones (MEK)	$CH_3COC_2H_5$		BP	X	X	1	1	0	Acetona Metil etilica (MEK)
Acetic acid	CH_3COOH	10	20	X	X	2	2	0	Acido acético
Acetic acid	CH_3COOH	10	BP	X	X	2	2	0	Acido acético
Acetic acid	CH_3COOH	50	20	X	X	3	2	0	Acido acético
Acetic acid	CH_3COOH	50	BP	X	X	3	2	1	Acido acético
Acetic acid	CH_3COOH	80	20	X	X	3	2	1	Acido acético
Acetic acid	CH_3COOH	80	BP	X	X	3	2	1	Acido acético
Acetic acid, glacial	CH_3COOH		20	X	X	3	2	0	Acido acético, glacial
Arcenic acid	H_3AsO_4			X	X	2	2	0	Acido arsénico
Boric acid	H_3BO_3	4	20	X	X	2	2	0	Acido bórico
Boric acid	H_3BO_3	4	100	X	X	2	2	0	Acido bórico
Boric acid	H_3BO_3	100	100	X	X	2	2	0	Acido bórico
Citric acid	$(CH_2COOH)_2C(OH)COOH$		20	X	X	3	3	0	Ácido citrico
Citric acid	$(CH_2COOH)_2C(OH)COOH$		BP	X	X	3	3	0	Ácido citrico
Clorhidic acid	HCl	0.20	20	X	X	3	3	0	Ácido clorhidrico
Clorhidic acid	HCl	0.20	50	X	X	3	3	1	Ácido clorhidrico
Clorhidic acid	HCl	1	20	X	X	3	3	1	Ácido clorhidrico
Clorisulfonic acid	$HOSO_2Cl$	10	20	X	X	1	1	3	Acido clorisulfonico
Chromic acid	H_2CrO_4	10	20	X	X	1	0	0	Ácido cromico
Chromic acid	H_2CrO_4	10	BP	--	X	-	-	0	Ácido cromico
Chromic acid	H_2CrO_4	50	20	--	X	0	0	0	Ácido cromico
Esteraic acid	$C_{17}H_{35}COOH$			X	X	2	2	0	Ácido esteárico

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Fluid	Chemical formula	Temperature and concentration		Sealing element		Materials			
		%	°C	K-Graf Module	PTFE	A 126 30B	A216 WCB	A351 CF8M	
Borax	$Na_2B_4O_{71}0H_2O$			X	X	--	--	0	Bórax
Butane	C_4H_{10}			X	X	0	0	0	Butano
Butyl acetate	$CH_3COOC_4H_9$			X	X	0	0	0	Butilacetato
Slaked lime	$Ca(OH)_2$		20	X	X	0	0	0	Cal apagada
Slaked lime	$Ca(OH)_2$		BP	X	X	0	0	0	Cal apagada
Ammonium carbonate	$(NH_4)_2CO_3$		BP	X	X	2	2	0	Carbonato de amonio
Potassium carbonate	K_2CO_3	50	20	X	X	1	0	0	Carbonato de potasio
Potassium carbonate (potasa)	K_2CO_3		BP	X	X	1	0	0	Carbonato de potasio (potasa)
Sodium carbonate	Na_2CO_3		BP	X	X	1	1	0	Carbonato de sodio (solución)
Sodium carbonate(solution, cold)	Na_2CO_3		20	X	X	0	0	0	Carbonato de sodio (solución, Frío)
Beer				X	X	3	3	0	Cerveza
Potassium cyanide	KCN	5	20	X	X	1	1	0	Cianuro de potasio
Clophen T64				X	X	0	0	0	Clophen T64
Aluminium chlorate	$Al(ClO_3)_3$			X	X	--	--	0	Clorato de aluminio
Potassium chlorate (100°, satd.)	$KClO_3$		BP	--	X	2	2	0	Clorato de potasio (100°, satd.)
Chlorine (wet)	Cl_2		80	X	X	0	0	0	Clorina, humeda
Chlorine (dry)	Cl_2		20	X	X	0	0	0	Clorina, seca
Chloroform	$CHCl_3$		20	X	X	0	0	0	Cloroformo
Chloroform	$CHCl_3$		BP	X	X	0	0	0	Cloroformo
Ammonium chloride	NH_4Cl	5	20	X	X	1	1	0	Cloruro de amonio
Ammonium chloride	NH_4Cl	10	20	X	X	1	1	0	Cloruro de amonio
Ammonium chloride	NH_4Cl	10	100	X	X	3	3	0	Cloruro de amonio
Ammonium chloride	NH_4Cl	50	20	X	X	1	1	0	Cloruro de amonio
Calsium chloride	$CaCl_2$		20	X	X	1	1	0	Cloruro de calcio
Calsium chloride	$CaCl_2$		100	X	X	2	2	1	Cloruro de calcio
Ethylene chloride	$(CH_2Cl)_2$	20		X	X	0	0	0	Cloruro de etileno
Manganese chloride	$MnCl_2$		20	X	X	2	2	0	Cloruro de manganeso
Manganese chloride	$MnCl_2$		BP	X	X	2	2	0	Cloruro de manganeso
Mercuric chloride (II)	$HgCl_2$		20	X	X	3	3	0	Cloruro de mercurio (II)
Methylene chloride	CH_2Cl_2		20	X	X	1	1	0	Cloruro de metileno
Methylene chloride	CH_2Cl_2		BP	X	X	1	1	0	Cloruro de metileno
Coloring, organic acid			20	X	X	--	--	0	Colorante, ácido orgánico
Coloring, organic acid			BP	X	X	--	--	0	Colorante, ácido orgánico
Coloring, sulphuric acid	H_2SO_4 less than0.3%		BP	X	X	--	--	0	Colorante, ácido sulfúrico débil
Coloring , sulphuric acid	H_2SO_4 less than0.3%		20	X	X	--	--	0	Colorante, ácido sulfúrico fuerte
Coloring, sulphuric acid	H_2SO_4 more than 0.3%		BP	X	X	--	--	1	Colorante, ácido sulfúrico fuerte
Coloring, alcaline or neutral			20	X	X	--	--	0	Colorante, alcalino o neutro
Coloring, alcaline or neutral			BP	X	X	--	--	0	Colorante, alcalino o neutro
Creosote			20	--	X	--	--	0	Creosota
Creosote			BP	--	X	--	--	0	Creosota
Diesel			20	X	X	0	0	0	Diesel
Ammonium diphosfate	$(NH_2)_2HPO_4$			X	X	1	1	0	Difosfato de amonio
Sulfur dioxide	So_2		20	X	X	3	3	0	Dióxido de azufre
Carbon dioxide, dry	Co_2	Up than	150	X	X	0	0	0	Dióxido de carbono, seco
Carbon dioxide, dry	Co_2		400	X	X	0	0	0	Dióxido de carbono, seco
Diphyl				X	X	0	0	0	Diphyl
Carbon disulfure	Cs_2		20	X	X	0	0	0	Disulfuro de carbono
Ethane	C_2H_6			X	X	0	0	0	Etano
Ethylic ether	$Al(OC_2H_5)_2$		BP	--	X	1	1	0	Éter etílico
Ethylene	C_2H_4		BP	--	X	0	0	0	Etileno

In the interest of technical progress, designs and dimensions are subject to modification.

CHEMICAL RESISTENCE

Fluid	Chemical formula	Temperature and concentration		Saling element	materials				
		%	°C	K-Graf module PTFE	A 126 30B	A216 WCB	A351 CF8M		
Aluminum ethylene	$Al(OC_2H_5)_2$			X	X	0	0	0	Etileno de aluminio
Phenol	C_6H_5OH		100	X	X	2	2	0	Fenol
Aluminum fluoride	AlF_3			X	X	0	0	3	Fluoruro de aluminio
Formaldehyde	HCHO	40	20	X	X	3	3	0	Formaldehido
Formaldehyde	HCHO	40	BP	X	X	3	3	0	Formaldehido
Freón 12				X	X	0	0	0	Freón 12
Hydrogen chloride (gas) dry	Hcl		20	X	X	1	1	1	Gas cloruro de hidrógeno, seco
Hydrogen chloride (gas) dry	Hcl		100	X	X	1	1	2	Gas cloruro de hidrógeno, seco
Natural gas			20	X	X	0	0	0	Gas natural
City gas				X	X	0	0	0	Gas para iluminación (gas de ciudad)
Hydrogen sulfide, gas (wet)	H_2S		20	X	X	--	--	0	Gas sulfuro de hidrogeno, humedo
Hydrogen sulfide, gas (dry)	H_2S		20	X	X	--	--	0	Gas sulfuro de hidrogeno, seco
Glycerine	$(CH_2OH)_2CHOH$		20	X	X	2	2	0	Glicerina
Glycerine	$(CH_2OH)_2CHOH$		100	X	X	2	2	0	Glicerina
Hydrogen	H_2		20	X	X	0	0	0	Hidrógeno
Potassium Hydrogen (100°, sat.)	$COOH(CHOH)_2COOK$		BP	X	X	--	--	1	Hidrogeno de potasio (100°, sat.)
Potassium hydrogen, acid	$COOH(CHOH)_2COOK$		20	X	X	--	--	0	Hidrogeno de potasio ácido
Ammonium hydroxide	NH_4OH	10	20	X	X	0	0	0	Hidróxido de amonio
Ammonium hyadroxide	NH_4OH	10	100	X	X	0	0	0	Hidróxido de amonio
Calcium hydroxide	$Ca(OH)_2$		80	X	X	0	0	0	Hidróxido de calcio
Potassium hydroxide	KOH	25	20	X	X	0	0	0	Hidróxido de potasio (potasa caustica)
Potassium Hydroxide	KOH	25	BP	X	X	--	--	0	Hidróxido de potasio (potasa caustica)
Potassium hydroxide	KOH	50	20	X	X	0	0	0	Hidróxido de potasio (potasa caustica)
Potassium hydroxide	KOH	50	BP	X	X	3	3	0	Hidróxido de potasio (potasa caustica)
Sodium hydroxide	NaOH	20	20	X	X	0	0	0	Hidróxido de sodio (sosa cáustica)
Sodium hydroxide	NaOH	20	BP	X	X	--	--	0	Hidróxido de sodio (sosa cáustica)
Sodium hydroxide	NaOH	35	20	X	X	0	0	0	Hidróxido de sodio (sosa cáustica)
Sodium hydroxide	NaOH	35	BP	X	X	3	3	0	Hidróxido de sodio (sosa cáustica)
Calcium hypochlorito	$Ca(ClO)_2$			--	X	2	2	1	Hipoclorito de calcio
Calcium hypochlorito	KOCl		20	X	X	2	2	1	Hipoclorito de potasio
Potassium hypochlorito	KOCl		20	X	X	2	2	1	Hipoclorito de potasio
Potassium Iodide	KI		BP	X	X	2	2	0	Ioduro de potasio
Potassium Iodide	KI		20	X	X	1	1	0	Ioduro de potasio
milk				X	X	2	2	0	Leche
Mercury	Hg		20	X	X	1	1	0	Mercurio
Ammonium nitrate	NH_4NO_3		BP	X	X	2	2	0	Nitrato de amonio
Mercury nitrate (II)	$Hg(NO_3)_2$		20	X	X	3	3	0	Nitrato de mercurio (II)
Potassium nitrate	KNO_3		20	--	X	0	0	0	Nitrato de potasio
Potassium nitrate	KNO_3		BP	--	X	2	2	0	Nitrato de potasio
Potassium nitrate	KNO_3			X	X	0	0	0	Nitrato de potasio
Nitrogen	N_2			X	X	0	0	0	Nitrogeno
Aluminum oxide	Al_2O_3			X	X	0	0	0	Oxido de aluminio
Oxigen	O2		20	X	X	0	0	0	Oxígeno
Acetate pentil	$CH_3COOC_5H_{11}$			X	X	0	0	0	Pentil acetato
Potassium permanganate	$KMnO_4$		20	X	X	0	0	0	Permanganato de potasio
Potassium permanganate	$KMnO_4$		BP	--	X	3	3	0	Permanganato de potasio
Hydrogen peroxide	H_2O_2			X	X	3	3	0	Peróxido de hidrógeno
Peróxido de hidrógeno	H2O2		50	--	X	3	3	0	Peróxido de hidrógeno
Petróleum (gasoline)			20	X	X	0	0	0	Petróleo (gasolina)

CHEMICAL RESISTENCE

Fluid	Chemical formula	Temperature and concentration		Sealing element		Materiale			
		%	°C	K-Graf Module	PTFE	A 126 30B	A216 WCB	A351 CF8M	
Propane	C_3H_8		20	X	X	0	0	0	Propano
Brine	NaCl		20	X	X	3	3	1	Salmuera
Sodium silicate	$K_2SiO_3Na_2SiO_3$		20	X	X	0	0	0	Silicato de sodio
Detergent solution				X	X	0	0	0	Solución detergente
Diazotizing solution			20	X	X	2	2	1	Solucion diazotizing (ácido debil)
Diazotizing solution			80	X	X	2	2	1	Solucion diazotizing (ácido debil)
Sulfide solution	$Ca(HSO_3)_2$		20	X	X	--	--	0	Soluciones de sulfito
Sulfide solution	$Ca(HSO_3)_2$		80	X	X	--	--	0	Soluciones de sulfito
Milk serum			20	X	X	--	--	0	Suero de leche
Potassium chromium sulphate	$KCr(SO_4)_{212}H_2O$		20	X	X	--	--	0	Sulfato cromico de potasio
Potasium chromium sulphate	$KCr(SO_4)_{212}H_2O$		BP	X	X	--	--	3	Sulfato cromico de potasio
Amonium sulfate	$(NH_4)_2SO_4$		BP	X	X	3	3	0	Sulfato de amonio
Calcium sulfate	$CaSO_4$			X	X	0	0	0	Sulfato de calcio
Copper sulfate	$CuSO_4$		20	X	X	3	2	0	Sulfato de cobre (vitriolo azul)
Copper sulfate	$CuSO_4$		BP	X	X	3	2	0	Sulfato de cobre (vitriolo azul)
Hidroxilamina sulfate	$(NH_2OH)H_2SO_4$	10	20	X	X	--	--	0	Sulfato de hidroxilamina
Hidroxilamina sulfate	$(NH_2OH)H_2SO_4$	10	BP	X	X	--	--	0	Sulfato de hidroxilamina
Magnesium sulfate	$MgSO_4$		20	X	X	1	1	0	Sulfato de magnesio
Magnesium sulfate	$MgSO_4$		BP	X	X	1	1	0	Sulfato de magnesio
Sodium sulfate	Na_2SO_4			X	X	0	0	0	Sulfato de sodio
Carbon tetrachlorure	Ccl_4			X	X	1	1	0	Tetracloruro de carbono
Toluene or toluol	$C_6H_5CH_3$		20	X	X	0	0	0	Tolueno
trichloroethylene	C_2HCl_3			X	X	1	1	0	Tricloruetileno
Turpentine			20	X	X	0	0	0	Turpentina
Urea	$(NH_2)_2CO$		20	X	X	1	1	0	Urea
Steam				X	X	0	0	0	Vapor
Wine vinegar			20	X	X	--	--	0	Vinagre de vino
Xylene	$C_6H_4(CH_3)_2$		20	X	X	0	0	0	Xileno

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Valve Sizing Calculation

LIQUIDS

Flow in m^3/h

$$Cv = 1.16q\sqrt{\frac{G_f}{\Delta P}}$$

Flow in ton/h

$$Cv = \frac{1.16W}{\sqrt{G_f \Delta P}}$$

Cv = Valve sizing coefficient (gpm)
$\Delta P = P_1 - P_2$
P_1 = Upstream pressure
P_2 = Downstream pressure
G_f = Density (water =1kg/dm @ 15°C)
q = Liquid flow (m^3/h)
q = Liquid flow (ton/h)

SATURATE STEAM

Sub-critic flow
$¥P < P_1/2$

$$Cv = \frac{72.4W}{\sqrt{¥P(P_1+P_2)}}$$

Critic flow
$¥P \geq P_1/2$

$$Cv = \frac{104.2W}{P_1}$$

Cv = Valve sizing coefficient (gpm)
$\Delta P = P_1 - P_2$
P_1 = Upstream pressure
P_2 = Downstream pressure
W = Steam flow (ton/h)

GASES

Sub-critic flow
$¥P < P_1/2$

$$Cv = \frac{Q}{295}\sqrt{\frac{GT}{¥P(P_1+P_2)}}$$

Critic flow
$¥P \geq P_1/2$

$$Cv = \frac{Q}{257}\sqrt{\frac{GT}{P_1}}$$

Cv = Valve sizing coefficient (gpm)
$\Delta P = P_1 - P_2$
P_1 = Upstream pressure
P_2 = Downstream pressure
Q = Flow (Nm^3/h)
G = Relative density
T = Gas absolute temperature (°C + 273)

IMPORTANT:
Control valve parameter:

0.2 x (Cv of valves) < (Cv calculater) < 0.8 x (Cv of valves)

In the interest of technical progres design and dimensions are subject to modification.

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