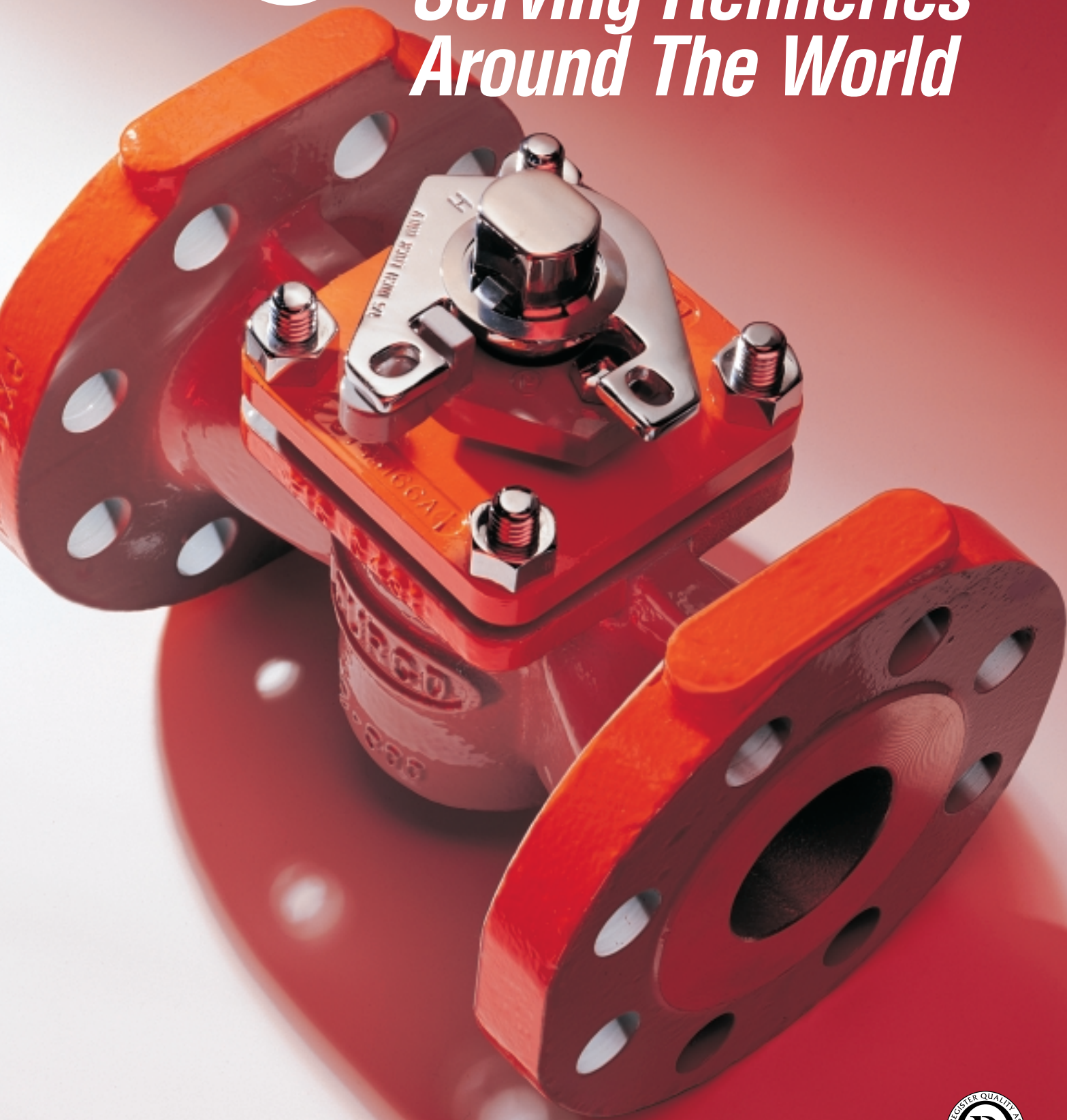




# *Serving Refineries Around The World*



*Durco® SleeveLine® Valves For Alkylation Service*



Quality  
System  
Certificate

Bulletin V-25m (E)

# Durco G4Z-HF Alkylation Valves

**P**hillips Licensing Listed and UOP Process Division Approved, Flowserve's Flow Control Division has provided thousands of Durco HF Alkylation valves to refineries throughout the world. They are a best choice where drop-tight shutoff is an absolute requirement.

**Durco G4Z-HF Alkylation Valves are available in the following sizes and end configurations:**

**G4Z32-HF: 300 lb Screwed End**  
 1/2 in (15 mm), 3/4 in (20 mm),  
 1 in (25 mm), 1-1/2 in (40 mm),  
 2 in (50 mm)

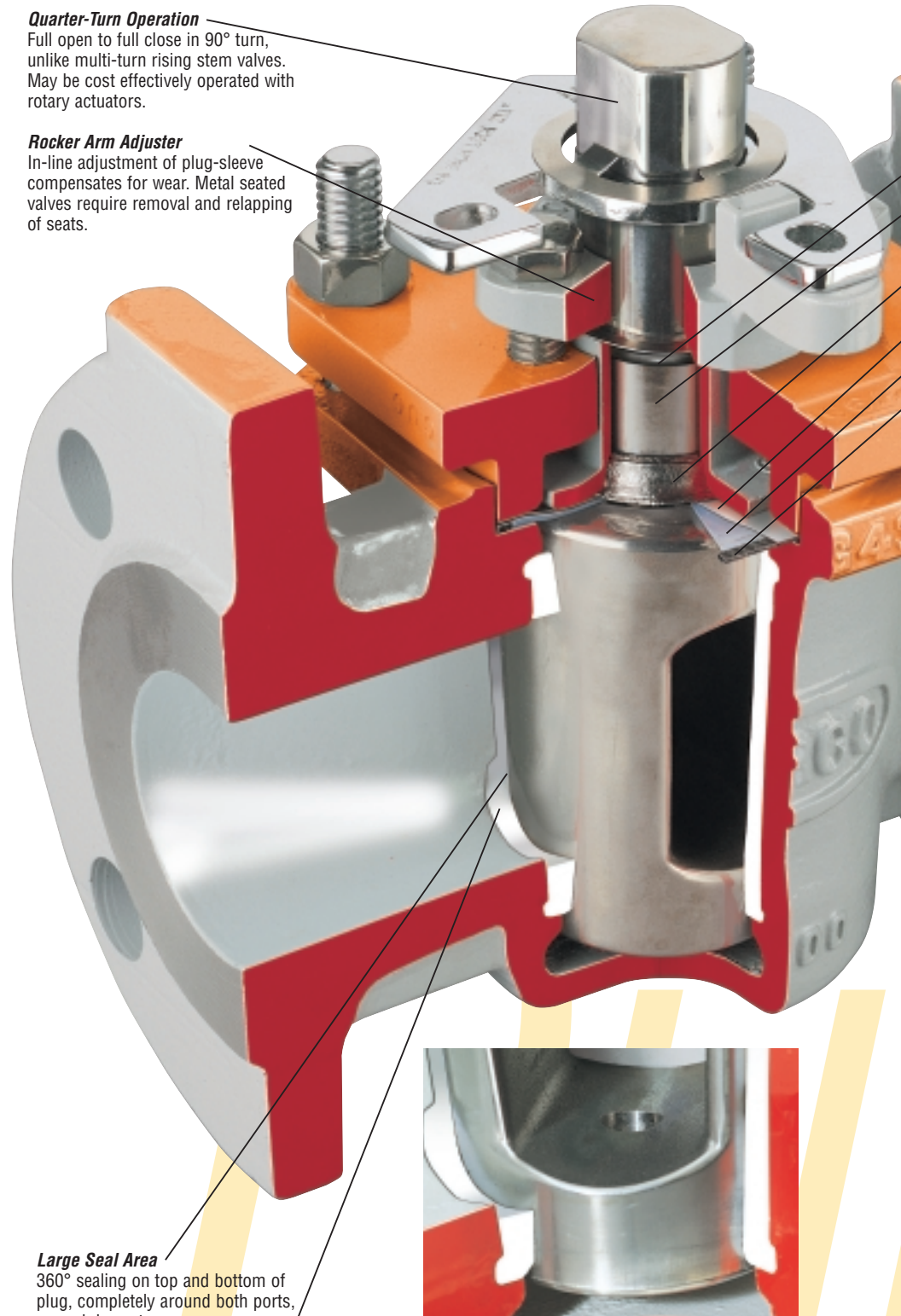
**G4Z31-HF: 300 lb Flanged End**  
 1/2 in (15 mm), 3/4 in (20 mm),  
 1 in (25 mm), 1-1/2 in (40 mm),  
 2 in (50 mm), 3 in (80 mm),  
 4 in (100 mm), 6 in (150 mm),  
 8 in (200 mm), 10 in (250 mm),  
 12 in (300 mm), 14 in (350 mm),  
 16 in (405 mm), 18 in (455 mm)

**G4Z61-HF: 300 lb (Class 600 lb Flanges And Face-To-Face) – 2 in (50 mm)**

**G4Z35-HF: 300 lb Screwed/Socket End**  
 1/2 in (15 mm), 3/4 in (20 mm),  
 1 in (25 mm), 1-1/2 in (40 mm),  
 2 in (50 mm)

**Quarter-Turn Operation**  
 Full open to full close in 90° turn, unlike multi-turn rising stem valves. May be cost effectively operated with rotary actuators.

**Rocker Arm Adjuster**  
 In-line adjustment of plug-sleeve compensates for wear. Metal seated valves require removal and relapping of seats.

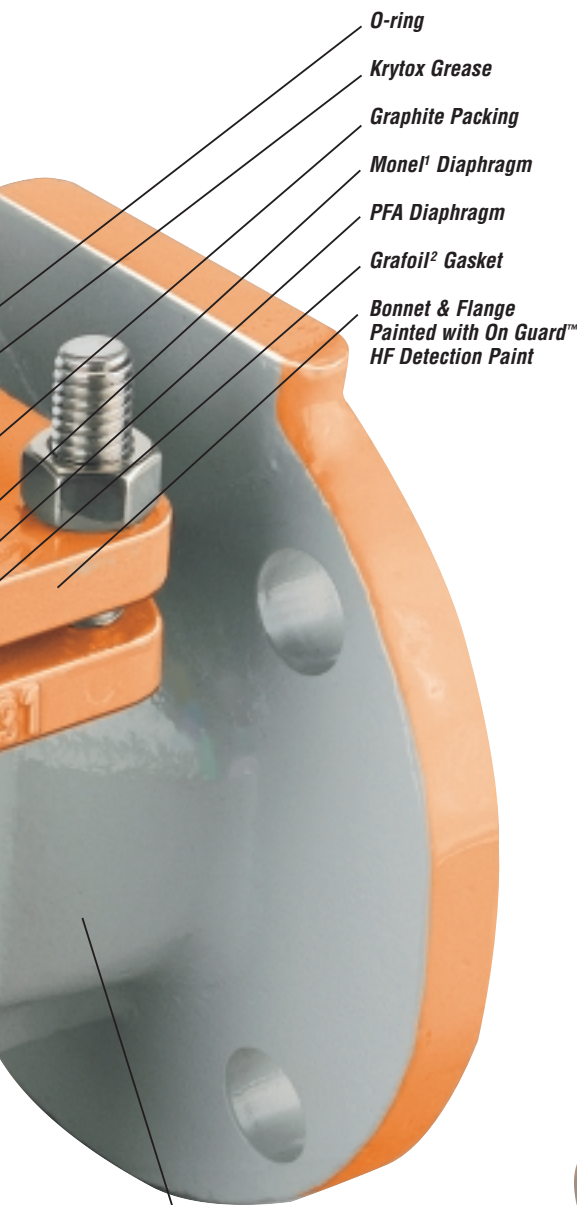


**Large Seal Area**  
 360° sealing on top and bottom of plug, completely around both ports, up and downstream.

**Positive Shut-Off**  
 PTFE sleeve (seats/seals) provides positive shut-off. Metal seated valves can gall, causing through leakage.

**Vented Plug**  
 Reduces possibility of pressure build-up under the plug caused by heating and expansion. (See ANSI B16.34 Par. 2.33, Fluid Thermal Expansion.)



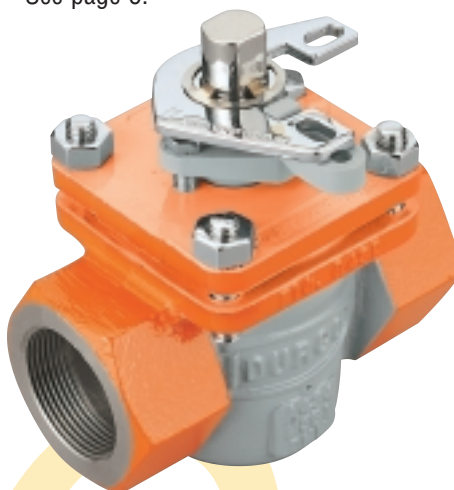


**G4BZ-HF Marathon™**

High cycle/low emission valve offers an extra measure of positive stem sealing reliability. See pages 4 and 5.

**Special End Connections**

In addition to ANSI and DIN flanged designs, Durco HF alkylation valves are available with screwed end connections. See page 6.



**EG4Z-HF Control Valves**

Characterized plug available for modulating applications. See page 5.



**D**urco G4Z-HF valves are refinery proven and recommended for:

- HF Alkylation
- H<sub>2</sub>SO<sub>4</sub> Alkylation
- Caustic & Salt Slurries
- Light Ends
- Flare Gas
- Fuel Oil
- Propane/Butane
- Gasoline
- Jet Fuel
- Heavy Sour Crude
- Utilities

**All Monel Construction**

Solid M35-1 grade Monel body and plug for longer valve life and unit operation. No carbon steel to contribute to iron fluoride build-up.

**Radiography**

All bodies radiographed to ensure sound castings.

**Non-Lubricated**

No grease required for operation or sealing ability of this valve. This means no possibility of fouling flow meters and other instrumentation with lubricant.

<sup>1</sup>Registered trademark of the International Nickel Company, Inc.

<sup>2</sup>Registered trademark of Union Carbide

# Durco G4BZ-HF Marathon™ Valves

**T**he G4BZ-HF Marathon Valve can be used with confidence in applications where tight shutoff and emissions containment are priority requirements. Its very design also assures long-lived, high cycle performance.

**Durco G4BZ-HF Alkylation Valves are available in the following sizes and end configurations:**

**G4BZ32-HF: 300 lb Screwed End**  
1/2 in (15 mm), 3/4 in (20 mm),  
1 in (25 mm), 1-1/2 in (40 mm),  
2 in (50 mm)

**G4BZ31-HF: 300 lb Flanged End**  
1/2 in (15 mm), 3/4 in (20 mm),  
1 in (25 mm), 1-1/2 in (40 mm),  
2 in (50 mm), 3 in (80 mm),  
4 in (100 mm), 6 in (150 mm),  
8 in (200 mm)

**3-Year Performance Guarantee**

If the G4BZ-HF Marathon stem seal fails within three years after installation, it will be repaired or replaced free-of-charge.

**Viton<sup>1</sup> O-rings**

Full pressure containment stem seal. Also protects thrust collar from atmospheric corrosion. Kalrez<sup>1</sup> and other elastomers are available. PTFE backup rings help prevent extrusion of Viton O-rings under pressure.

**Integral Thrust Collar/Alloy Diaphragm**

Self-sealing, dynamic bellows-like diaphragm moves with plug adjustment to eliminate potential leak path. Hastelloy<sup>2</sup> (or optional materials) diaphragm welded to alloy thrust collar.

**Unique Locking**

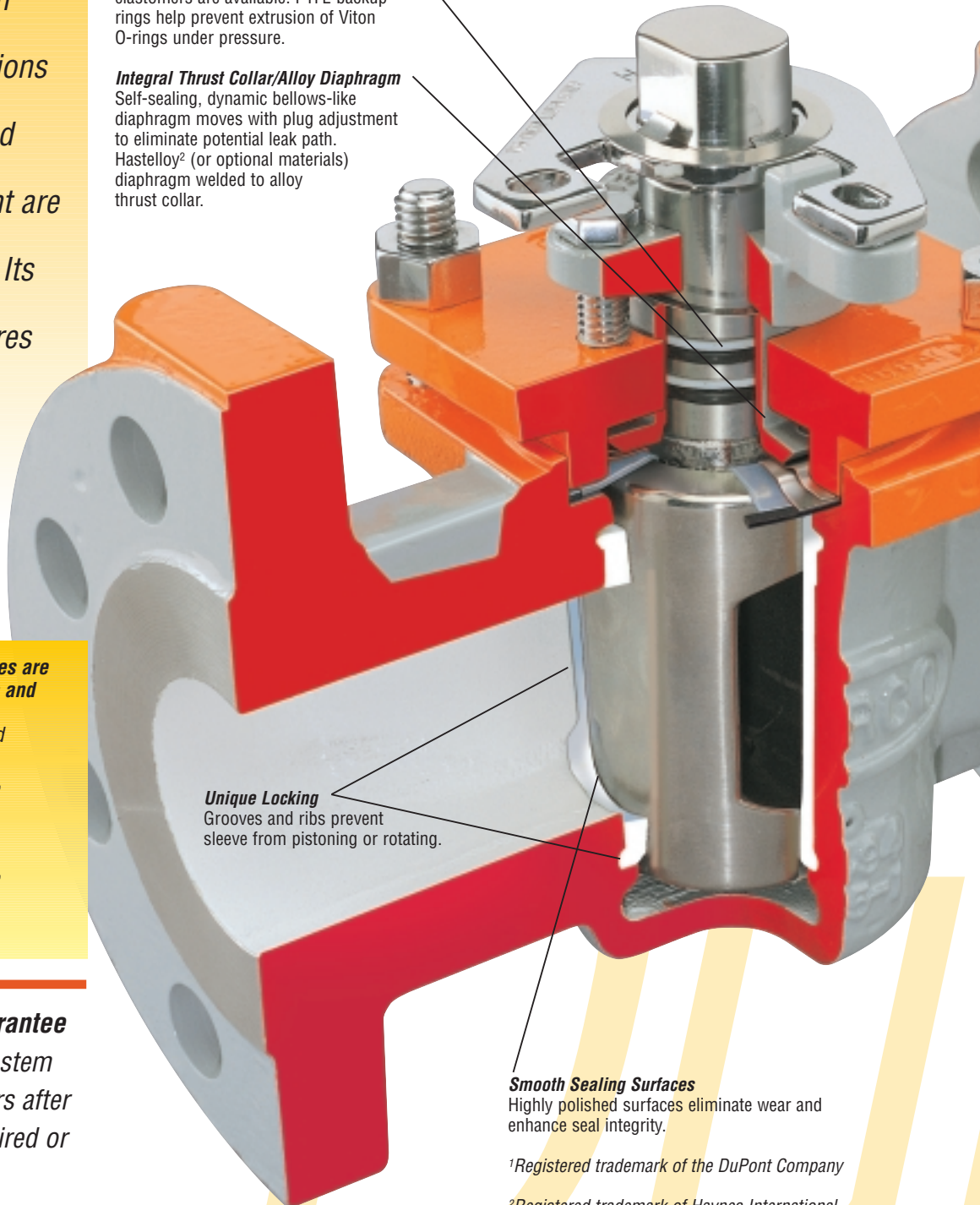
Grooves and ribs prevent sleeve from pistoning or rotating.

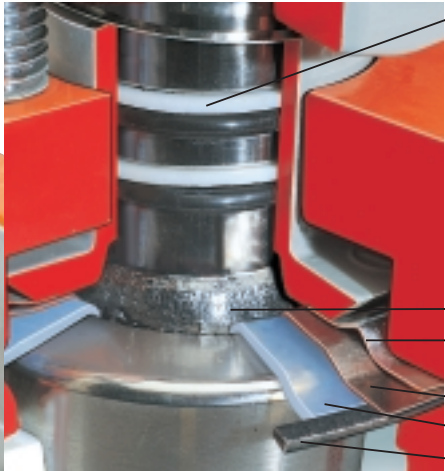
**Smooth Sealing Surfaces**

Highly polished surfaces eliminate wear and enhance seal integrity.

<sup>1</sup>Registered trademark of the DuPont Company

<sup>2</sup>Registered trademark of Haynes International





**Unique Stem Sealing Design**

A pair of Viton O-rings prevents stem leakage while containing line pressure. Fugitive emission containment is often equal to more expensive severe or toxic service valves.

**Positive Stem Sealing Assurance**

- Graphite Packing
- Integral Thrust Collar/ Alloy Diaphragm
- Monel Diaphragm
- PFA Diaphragm
- Grafoil Gasket



**Durco V-Port Control Valves**

Durco EG4Z V-port control valves are available in a variety of trim configurations to satisfy your exact flow control needs. Specially trimmed EG4 V-port SoundTrim® control valves reduce noise, cavitation and flashing while improving flow and pressure performance. Unique self-cleaning design prevents particulate build-up and clogging.

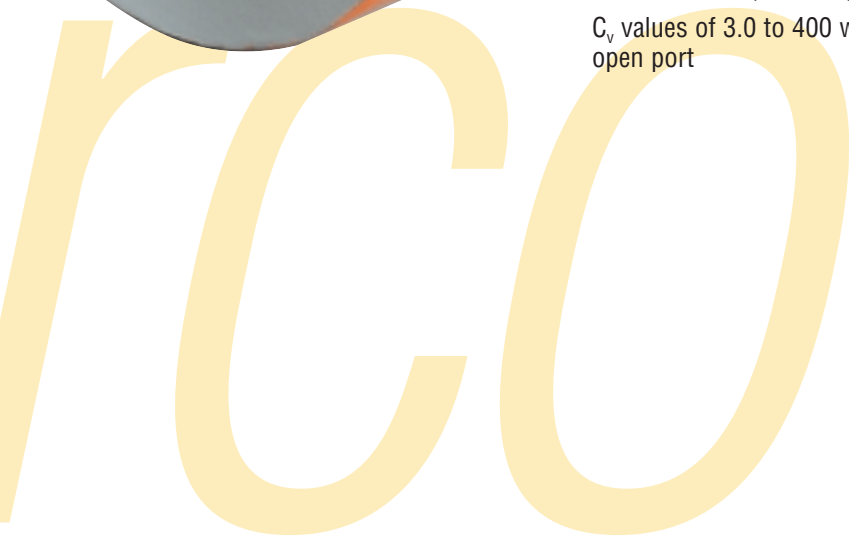
**Characterized V-port HF-Alkylation control valves are available as follows:**

- G4Z-1/2 in (15 mm) through 6 in (150 mm)
- G4BZ-1/2 in (15 mm) through 6 in (150 mm)

C<sub>v</sub> values of 3.0 to 400 with full open port

**Durco Alkylation Valves**

may be fitted with V-port plugs for precise modulating control services.





# Durco G4Z-HF Alkylation Valves Phillips Listed

Dimensions And Flow Rates									
	Size		Face to Face		Weight		Port Area		C <sub>v</sub>
	in	(mm)	in	(mm)	lbs	(kg)	sq in	(sq cm)	
G4Z32	1/2	(15)	3 1/2	(89)	3 3/4	(1.7)	.248	(1.59)	7.4
G4Z32	3/4	(20)	3 1/2	(89)	3 1/2	(1.6)	.248	(1.59)	19.6
G4Z32	1	(25)	4 5/8	(117)	7	(3.2)	.785	(5.1)	48.8
G4Z31	2	(50)	8 1/2	(216)	29 1/2	(13.3)	2.0	(13.0)	153.4
G4Z31	3	(80)	11 1/8	(283)	69	(31.0)	4.6	(30.0)	322
G4Z31	4	(100)	12	(305)	164 1/2	(74.0)	7.4	(48.0)	555
G4Z31	6	(150)	15 7/8	(403)	231 1/2	(104.2)	16.1	(104.0)	955
G4Z31	8	(200)	16 1/2	(419)	328	(147.6)	27.7	(179.0)	1859
G4Z31	10	(250)	18	(457)	455	(204.8)	44.6	(288.0)	2361
G4Z31	12	(300)	19 3/4	(502)	736	(331.2)	57.8	(373.0)	3400 <sup>①</sup>
G4Z31	14	(350)	30	(762)	916	(412.2)	57.8	(373.0)	3430 <sup>①</sup>
G4Z31	16	(405)	33	(838)	2097	(951.2)	121.0	(784.8)	7000 <sup>①</sup>
G4Z31	18	(455)	36	(914)	2183	(990.2)	121.0	(784.8)	7000 <sup>①</sup>
G4Z61	2	(50)	11 1/2	(292)			2.0	(13.0)	

\*For complete dimensional information refer to Durco Bulletin V-24

<sup>①</sup>Calculated Value

Phillips Licensing Listed Order By These Drawing Numbers		
Size	Valve Number	Drawing Number*
0.50 inch	G4Z32-HF.50	CY77644A
0.75 inch	G4Z32-HF.75	CY77643A
1 inch	G4Z32HF-1	CY77646A
2 inch	G4Z31HFB-2	DY77648A
3 inch	G4Z31HFB-3	DY78272A
4 inch	G4Z31HFA-4	DY78273A
6 inch	G4Z31HFA-6	DY78274A
8 inch	G4Z31HFA-8	DY78275A
10 inch	G4Z31HFA-10	DY78276A
12 inch	G4Z31HF-12	DY78277A
14 inch	G4Z31HF-14	DY79037A
16 inch	G4Z31HF-16	DY82071A
18 inch	G4Z31HF-18	DY82072A
2 inch	G4Z61HF (Class 600# Flanges and face-to-face)	DY81807A

\*Refer to Phillips licensing for current revision number

Applicable Standards	
ANSI B16.10	Face-to-face dimension
ANSI B16.34	Steel valves, flanged & butt weld
ANSI B16.5	Flange & flange fitting
ANSI B1.20.1	Screwed ends
API 607	Fire safe valve testing
API 598	Valve inspection & test
M.S.S. SP-54	Radiographic
M.S.S. SP-55	Visual quality
M.S.S. SP-61	Hydrostatic testing

# Durco G4Z-HF Alkylation Valves UOP Listed

## Dimensions And Flow Rates

	Size		Face to Face		Weight		Port Area		C <sub>v</sub>
	in	(mm)	in	(mm)	lbs	(kg)	sq in	(sq cm)	
G4Z31	1/2	(15)	5 1/2	(140)	7 3/4	(3.5)	.248	(1.59)	7.4
G4Z31	3/4	(20)	6	(152)	10	(4.5)	.248	(1.59)	19.6
G4Z31	1	(25)	6 1/2	(165)	17 3/4	(7.8)	.785	(5.1)	48.8
G4Z31	1 1/2	(40)	7 1/2	(190)	26	(11.7)	1.21	(7.8)	83.5
G4Z31	2	(50)	8 1/2	(216)	29 1/2	(13.3)	2.0	(13.0)	153.4
G4Z31	3	(80)	11 1/8	(283)	69	(31.0)	4.6	(30.0)	322
G4Z31	4	(100)	12	(305)	164 1/2	(74.0)	7.4	(48.0)	555
G4Z31	6	(150)	15 7/8	(403)	231 1/2	(104.2)	16.1	(104.0)	955
G4Z31	8	(200)	16 1/2	(419)	328	(147.6)	27.7	(179.0)	1859
G4Z31	10	(250)	18	(457)	455	(204.8)	44.6	(288.0)	2361
G4Z31	12	(300)	19 3/4	(502)	736	(331.2)	57.8	(373.0)	3400 <sup>Ⓢ</sup>
G4Z31	14	(350)	30	(762)	916	(412.2)	57.8	(373.0)	3430 <sup>Ⓢ</sup>
G4Z31	16	(405)	33	(838)	2097	(951.2)	121.0	(784.8)	7000 <sup>Ⓢ</sup>
G4Z31	18	(455)	36	(914)	2183	(990.2)	121.0	(784.8)	7000 <sup>Ⓢ</sup>

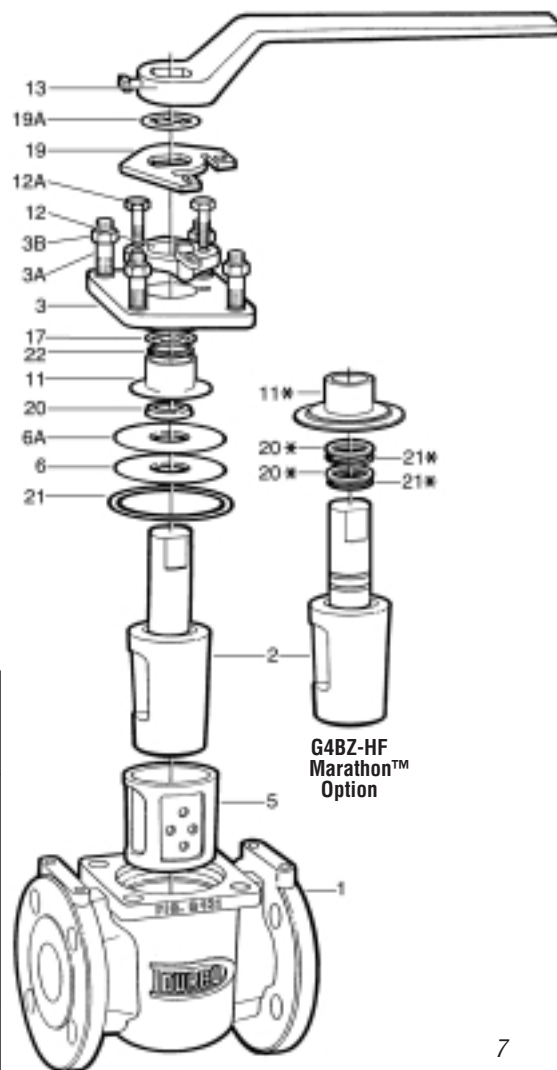
\*For complete dimensional information refer to Durco Bulletin V-24

Ⓢ Calculated Value

## UOP Listed – Order By These Drawing Numbers and Valve Size for Pipe Class HF2

Size	Valve Number	Drawing Number*
1/2 inch	G4Z31-HF	CY82500A
3/4 inch	G4Z31-HF	CY82500A
1 inch	G4Z31-HF	CY82500A
1 1/2 inch	G4Z31-HF	CY82500A
2 inch	G4Z31-HF	CY82500A
3 inch	G4Z31-HF	CY82500A
4 inch	G4Z31-HF	CY82500A
6 inch	G4Z31-HF	CY82500A
8 inch	G4Z31-HF	CY82500A
10 inch	G4Z31-HF	CY82500A
12 inch	G4Z31-HF	CY82500A
14 inch	G4Z31-HF	CY82500A
16 inch	G4Z31-HF	CY82500A
18 inch	G4Z31-HF	CY82500A

\*Refer to UOP licensing for current revision number



## Materials of Construction

1	Body	ASTM Grade A494 M35-1	Monel <sup>®</sup>	11	Thrust Collar	ASTM Grade A744 CD-4MCu
2	Plug	ASTM Grade A494 M35-1	Monel <sup>®</sup>	12	Adjuster	ASTM Grade A744 CD-4MCu
3	Top Cap	ASTM Grade A744 CD-4MCu		12A	Adjuster Bolts	B7M
3A	Top Cap Studs		B7M	17	Grounding Spring	302 S.S.
3B	Top Cap Nuts		7M	19	Stop Collar	CAD Plated Steel
5	Sleeve		PTFE	19A	Stop Collar Retainer	302 S.S.
6	Diaphragm		PFA	20	Packing	Graphite
6A	Diaphragm		Monel <sup>®</sup> 400	21	Gasket	Graphite
21A	O-ring*		Viton (Kalrez opt.)	22	O-ring	
11A	Integral Thrust Collar/Diaphragm		CD-4MCu/Hastelloy	20A	Back-up Ring*	PTFE

\*G4BZ-HF only

# Additional Durco G4Z-HF Valves\* and Accessories

## Durco G4Z3-HFT Try-Cock

This sampling valve consists of a 3/4 in (20 mm) valve with screwed end connections. The plug utilizes a characterized or V-port with a  $C_v$  of 3.8. The valve is built and tested in accordance with the same specifications and procedures as our standard HF valves.



## Special HF Alkylation Valves

Upon request, Flowserve can provide special valves, such as 3-way (transflow) mixing valves, relief valve isolation valves, and either fire sealed or metal seated Big Max® high performance butterfly valves.

\*Not listed by Phillips or UOP

For more information, contact:

Flowserve Corporation  
Flow Control Division  
Cookeville, Tennessee 38501  
(931) 432-4021



## Actuation

Flowserve's Automax® operation is a specialist in valve automation systems offering rack and pinion, heavy-duty and electric actuators along with positioners, limit switches, engineered special control circuits and related accessories.

## Selection, Installation, Operation and Maintenance

Although Flowserve can, and often does, provide general guidelines, it is obviously not possible to provide application specific data and warnings for all conceivable applications. The purchaser/end user must therefore assume the ultimate responsibility for the proper selection, installation, operation and maintenance of the products. Read the appropriate IOM available from Cookeville, TN 38501 before installing, operating or repairing any valve. The purchaser/end user should train its employees and/or contractors in the safe use of the Durco products in connection with the purchaser's manufacturing processes.

## Design Changes

In order to follow Flowserve's commitment to continuous improvement, we reserve the right to change product and performance specifications without notice.

Or Consult Your Local Stocking Distributor

Duriron GmbH  
Atomac Division  
D-48661 Ahaus, Germany  
49-2561-6860

Durco Valtek (Asia Pacific) Pte. Ltd.  
Singapore 638824  
Republic of Singapore  
65-862-3332