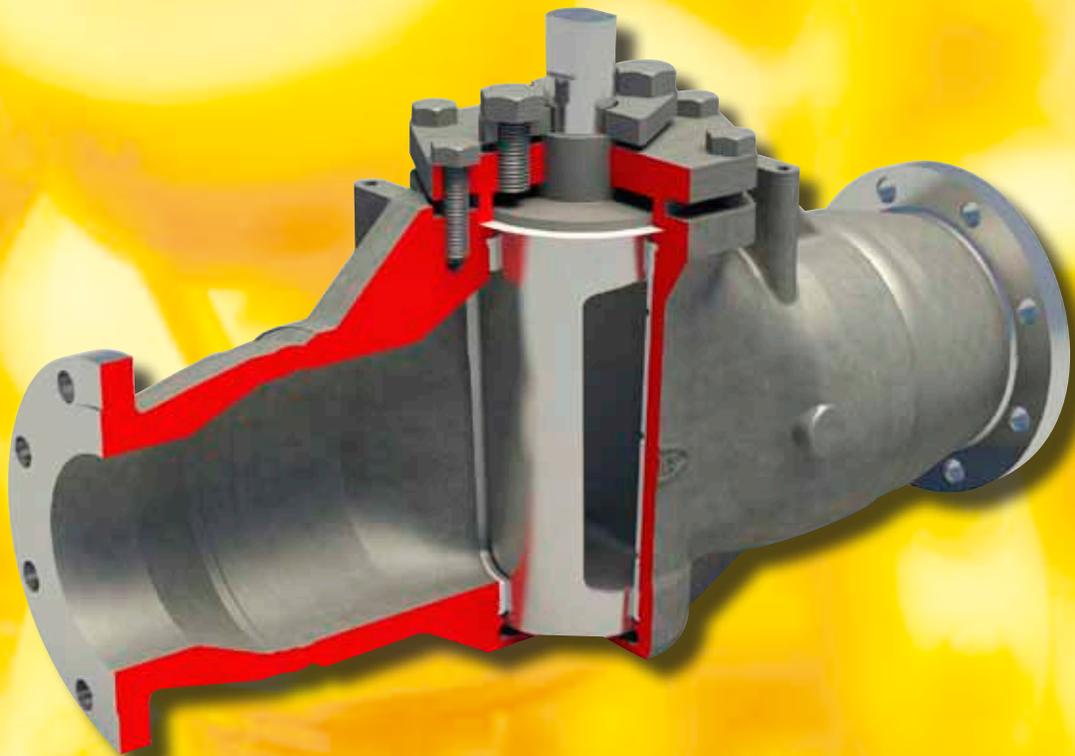




***Durco<sup>®</sup> G4 Full Area Plug Valves***  
*Non-Lubricated Plug Valves*  
*for Chemical Service*



***Experience In Motion***

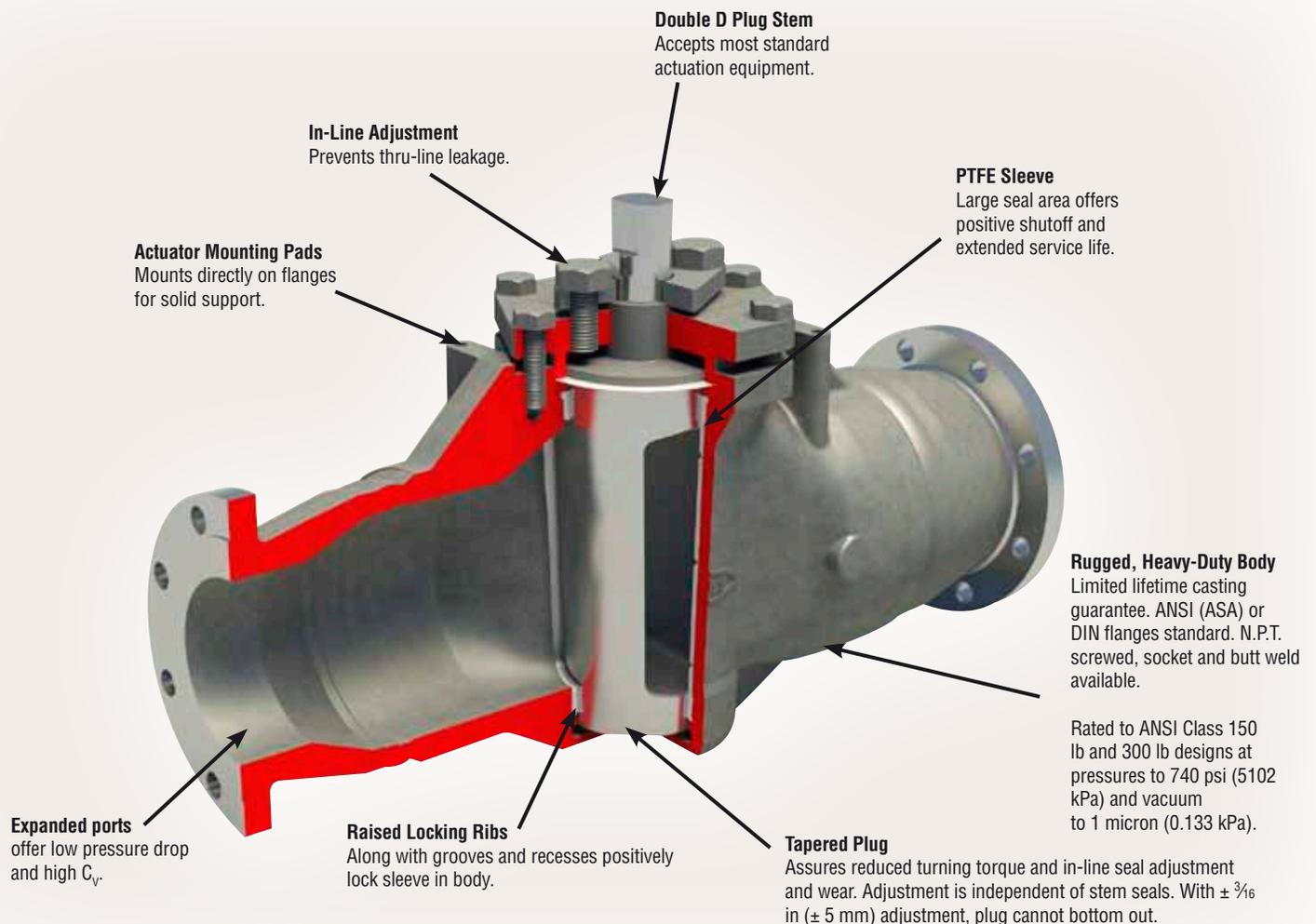
## Durco® G4 Full Area Plug Valves

Flowserve, which has supplied the highest quality plug valves for the most corrosive and difficult chemical services, is now pleased to offer the Durco G4 Full Area Sleeveless Plug Valves. These valves offer greatly expanded port areas to permit greatly increased flow of process fluid. All of the proven features of the standard G4 remain with the full area model.

### Special Configuration Valves

The G4 Full Area valve is available in a wide number of variations including designs for the following:

- Firesealed
- Chlorine service
- HF alkylation
- Weld end
- 3-way configurations



## Marathon Option offers High Cycle Positive Stem Sealing

### 3-Year Performance Guarantee

Unprecedented limited warranty. The valve will be repaired or replaced if stem seal fails within 3 years after installation.

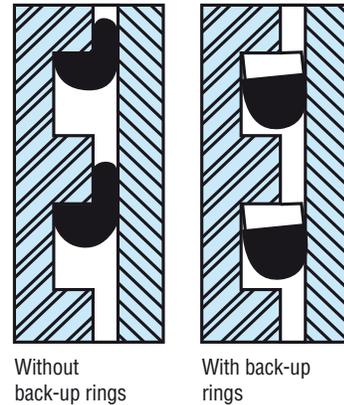
### Unique Stem-Sealing Design

The G4B Marathon valve can be used with confidence in chemical processing applications where tight shutoff and emissions containment are priority requirements. As a bonus, its very design assures long-lived, high cycle performance.



### Viton O-Rings

A pair of Viton O-rings prevents stem leakage while containing line pressure. They also protect the thrust collar against attack from atmospheric corrosion. PTFE back-up rings firmly lock the Viton O-rings in the stem grooves and serve as anti-extrusion devices.



Optional Kalrez O-rings are available for special services.

### New Welded Diaphragm

The integral thrust collar/alloy diaphragm is a third line of defense against leakage to the atmosphere. The underside of the metal bellows-like diaphragm acts as an expansion joint by allowing the PFA diaphragm to adjust to plug movement and pressure changes. The Hastelloy C diaphragm provides an impermeable barrier to chlorine as well as many other services.



Available for G4Z, MG4, FJG and other models.

### Proven High Cyclability

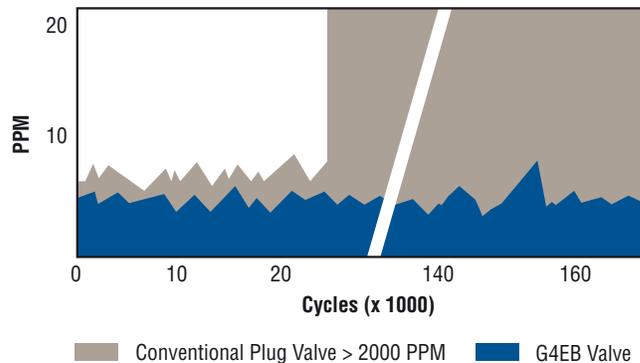
Lab and field tests have proven that the G4B Marathon can cycle as many as three-to-five times more than a standard PTFE sleeved quarter-turn valve before it begins to show stem seal wear.

### Passing The Test

Lab technicians defeated the PTFE sleeve and PFA diaphragm, the G4B's primary and secondary stem seals, by cutting both of them in four places. They operated the valve to 160,000 cycles. Rather than using the standard Method 21 methane emissions test, they chose the more demanding helium emissions test. The results were impressive.

### G4B Marathon Valve

Viton O-Rings and welded metal diaphragm stem seals  
Sleeve and diaphragm cut in four places



## Automated Systems

FLOWERVE offers Automax, Norbro and Worcester Actuators and Instrumentation allowing us to supply complete automated on-off or modulating packages to meet exacting technical requirements.

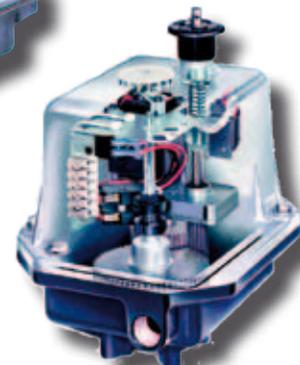
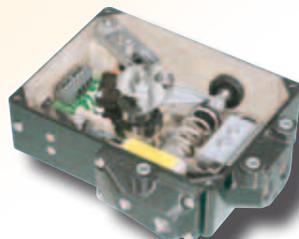
Durco Sleevevalves are readily adaptable for automatic operation because the torque is relatively constant and lubrication is not required.

Flowserve, a specialist in complete automation systems, produces a broad line of rack and pinion, heavy duty, electric and linear actuators. In addition, a comprehensive line of engineered special control circuits, solenoid valves, limit switches positioners and actuator mounting kits is offered.

Our wide range of electrical and pneumatic instrumentation incorporates:

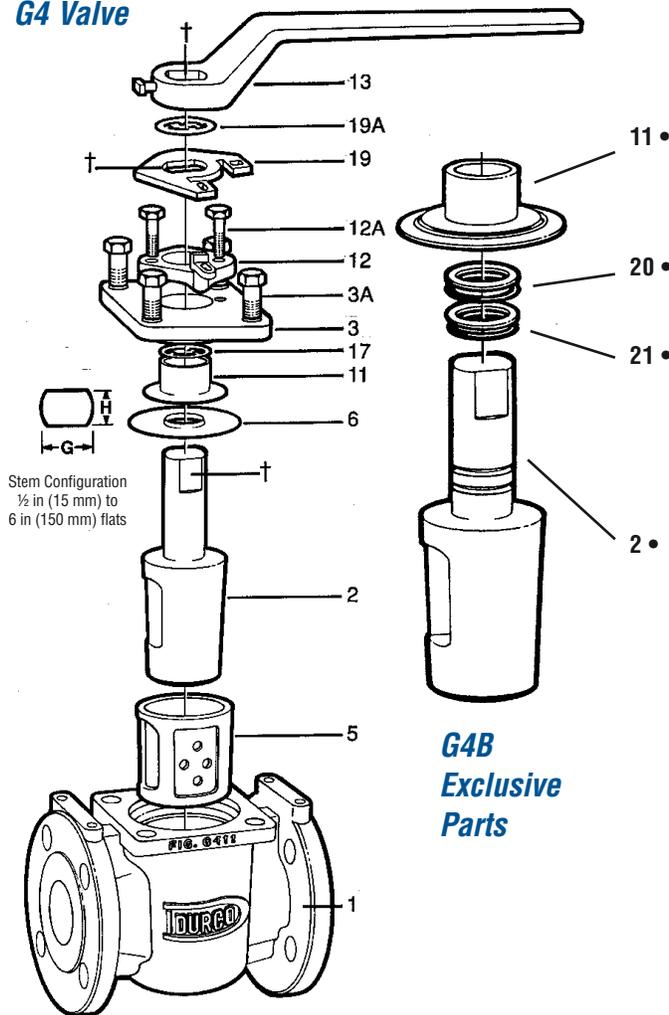
- Digital network communication
- Superior diagnostics
- Intelligent valve controllers
- Comprehensive user-friendly software
- On-line accessible automated drawing system
- Control sizing software
- Actuator sizing software

For complete tables of torque and Cv (Kv) values, please refer to the Instrument Engineers Handbook for Durco Quarter-Turn Control Valves



## Parts and Materials

### G4 Valve



### G4 & G4B

| Item No.        | Description                 | Material of Construction        | No. Req. |
|-----------------|-----------------------------|---------------------------------|----------|
| 1               | Body                        | *                               | 1        |
| 2               | Plug                        | *                               | 1        |
| 2 •             | Plug                        | *                               | 1        |
| 3               | Top Cap                     | Durcomet 100**/<br>Ductile Iron | 1        |
| 3A              | Top Cap Fastener            | B8M3 SS/B7 (CR-MO)<br>Steel     | 4        |
| 5               | Sleeve                      | PTFE***                         | 1        |
| 6               | Diaphragm                   | PFA or TM***                    | 1        |
| 11              | Thrust Collar               | Durcomet 100                    | 1        |
| 11 •            | Thrust Collar/<br>Diaphragm | Durcomet 100/Hastelloy®         | 1        |
| 12              | Adjuster                    | Durcomet 100                    | 1        |
| 12A             | Adjuster Fastener           | B8-40 SS/B7 (CR-MO)<br>Steel    | 2        |
| 13              | Wrench                      | Ductile Iron                    | 1        |
| 17              | Grounding Spring            | 304 SS                          | 1        |
| 19 <sup>+</sup> | Stop Collar                 | Zinc Plated Carbon Steel        | 1        |
| 19A             | Stop Collar Retainer        | 302 SS                          | 1        |
| 20 •            | Back-up Ring                | PTFE                            | 2        |
| 21 •            | O-ring                      | Viton (Kalrez optional)         | 2        |

\* Body (Item No. 1) and Plug (Item No. 2) available in the following cast materials: Ductile Iron; Carbon Steel; CF-8 SS; Durcomet 100; Durimet 20; Chlorimet 2 and 3; Nickel; Monel; Inconel; Titanium and Zirconium.

\*\* Durcomet 100 is a high alloy stainless steel, CD4M Cu.

\*\*\* Other materials available on request.

• Parts exclusive to G4B.

<sup>+</sup> locking stop collar is standard for valves ½ - 3"

### Applicable Valve Standards

| Specification | Title                                     |
|---------------|---|
| ASME B16.10   | Face-to-face dimension                    |
| ASME B16.34   | Steel valves, flanged & butt weld         |
| ASME B16.5    | Flange & flange fitting                   |
| ASME B1.20.1  | Screwed ends                              |
| API 607       | Fire safe valve testing                   |
| API 598       | Valve inspection & test                   |
| ASME B16.11   | Forged fittings, socket weld and threaded |
| M.S.S. SP-54  | Radiographic                              |
| M.S.S. SP-55  | Visual quality                            |
| M.S.S. SP-61  | Hydrostatic testing                       |

### Standard Materials Selection Chart A

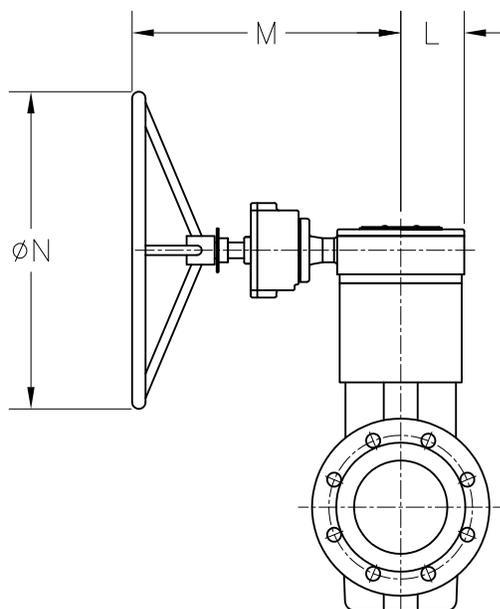
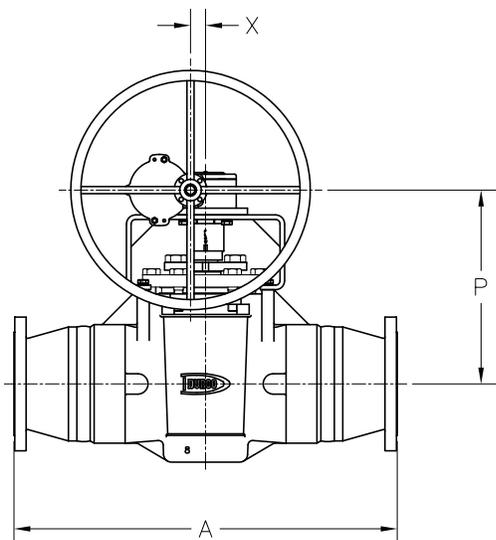
|   |  |
|---|--|
| ASTM A395 Ductile Cast Iron                       | ASTM A351/A744 Gr. CK-3MCuN (254 SMO) <sup>1</sup> |
| Ductile Cast Iron Nickel Plated (Plug Only)       | ASTM A494 Gr. CY-40 (Inconel 600) <sup>2</sup>     |
| ASTM A216 Gr. WCB (Cast Steel)                    | ASTM A494 Gr. M35-2 (Monel 400) <sup>2</sup>       |
| Cast Steel Nickel Plated (Plug Only 3" or larger) | ASTM A494 Gr. M35-1 (Monel 400) <sup>2</sup>       |
| ASTM A351/A744 Gr. CF8 (304 S.S.)                 | ASTM A494 Gr. CZ-100 (Nickel 200)                  |
| ASTM A351/A744 Gr. CF3 (304L S.S.)                | ASTM A494 Gr. N-7M (Chlorimet 2)                   |
| ASTM A351/A744 Gr. CF8M (316 S.S.)                | STM A494 Gr. CW-6M (Chlorimet 3)                   |
| ASTM A351/A744 Gr. CF3M (316L S.S.)               | ASTM B367 Gr. C-3 (Titanium)                       |
| Durcomet 5 (Durco's High Silicon S.S.)            | ASTM B752 Gr. 702C (Zirconium)                     |
| ASTM A351/A744 Gr. CD4MCuN (Duplex S.S.)          | ASTM B752 Gr. 705C (Zirconium)                     |
| ASTM A351/A744 Gr. CN-7M (Alloy 20)               | ASTM A995 Gr. 5A (CE3MN) Super Duplex SS           |

1. Registered trademark of Avesta AB

2. Registered trademark of the International Nickel Company, Inc.

This list shows several of our common materials; however, any of the wide range of Flowserve materials is available.

## Dimensions (in.)



| Size | 150# Drilling |        |     | 300# Drilling |        |     | A      | M       | N  | P       | X      |
|------|---------------|--------|-----|---------------|--------|-----|--------|---------|----|---------|--------|
|      | Hole          | B.C.   | No. | Hole          | B.C.   | No. |        |         |    |         |        |
| 1    | 5/8           | 3 1/8  | 4   | 3/4           | 3 1/2  | 4   | 11 1/2 |         |    |         |        |
| 1.5  | 5/8           | 3 7/8  | 4   | 7/8           | 4 1/2  | 4   | 12 3/4 |         |    |         |        |
| 2    | 3/4           | 4 3/4  | 4   | 3/4           | 5      | 8   | 17     |         |    |         |        |
| 3    | 3/4           | 6      | 4   | 7/8           | 6 5/8  | 8   | 22 1/4 | 12 1/16 | 12 | 8 3/8   | 3      |
| 4    | 3/4           | 7 1/2  | 8   | 7/8           | 7 7/8  | 8   | 24     | 12 1/16 | 12 | 10 3/8  | 3      |
| 6    | 7/8           | 9 1/2  | 8   | 7/8           | 10 5/8 | 12  | 31 1/2 | 16      | 18 | 14 5/8  | 5/16   |
| 8    | 7/8           | 11 3/4 | 8   | 1             | 13     | 12  | 39 1/4 | 16      | 18 | 18 3/16 | 1 5/16 |
| 10   |               |        |     |               |        |     |        |         |    |         |        |

## Cv Values

| Size | Cv   |
|------|------|
| 1    | 61   |
| 1.5  | 96   |
| 2    | 223  |
| 3    | 300  |
| 4    | 644  |
| 6    | 1096 |
| 8    | 1677 |
| 10   | C/F  |

C/F contact Factory

## Sizing Torques (inch-pounds)

| Size | Clean service | Slurry |
|------|---------------|--------|
| 1    | 497           | 671    |
| 1.5  | 675           | 911    |
| 2    | 1180          | 1458   |
| 3    | 2400          | 3240   |
| 4    | 6000          | 8100   |
| 6    | 9300          | 12555  |
| 8    | 39900         | 42000  |
| 10   | 60000         | C/F    |

For values with PTFE sleeve

C/F-contact factory

## Testing and Pressure/Temperature Ratings

G4 valves have been extensively tested to ensure the highest level of reliability possible.

The unique reverse lip stem seal has been tested from -50°F (-46°C) to 450°F (232°C) maximum, and with pressures up to 720 psig (4960 kPa).

High temperature throttling tests at 450°F (232°C) with pressure drops of 175 psig (1205 kPa) have proven the superiority of G4 valves over other soft-seated valves. Ask your Durco Valve Sales Representative for specific test results.

The valves have been temperature cycled to 450°F (232°C), and have provided performance superior to any other soft-seated valve available for cyclical temperature situations.

We believe the G4 valve is the best soft-seated valve on the market today, and will outlast and outperform all competitive valves.

### Pressure-Temperature Ratings

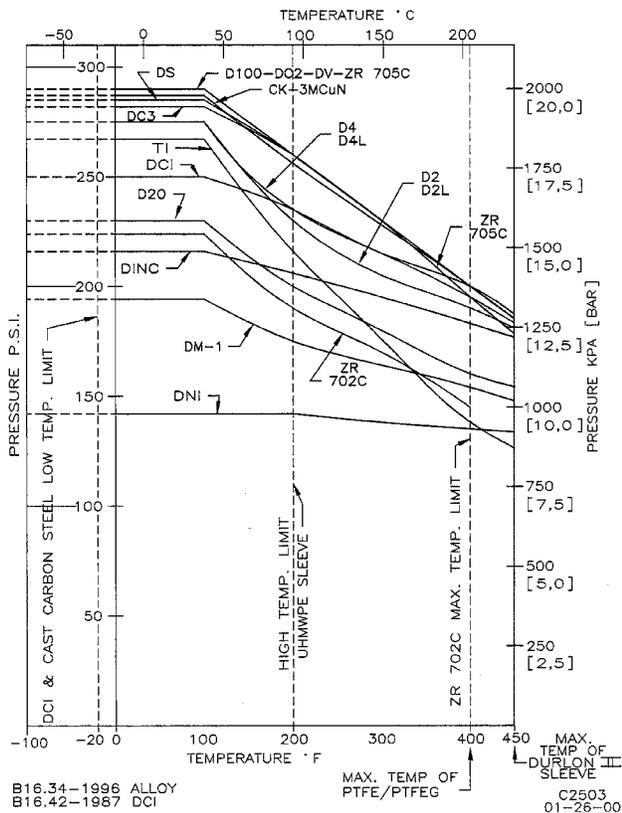
The pressure-temperature ratings of all the materials below are based on mechanical property requirements cited in the latest ASME specifications.

The pressure-temperature rating for ductile iron is in agreement with ASME B16.42, 1998.

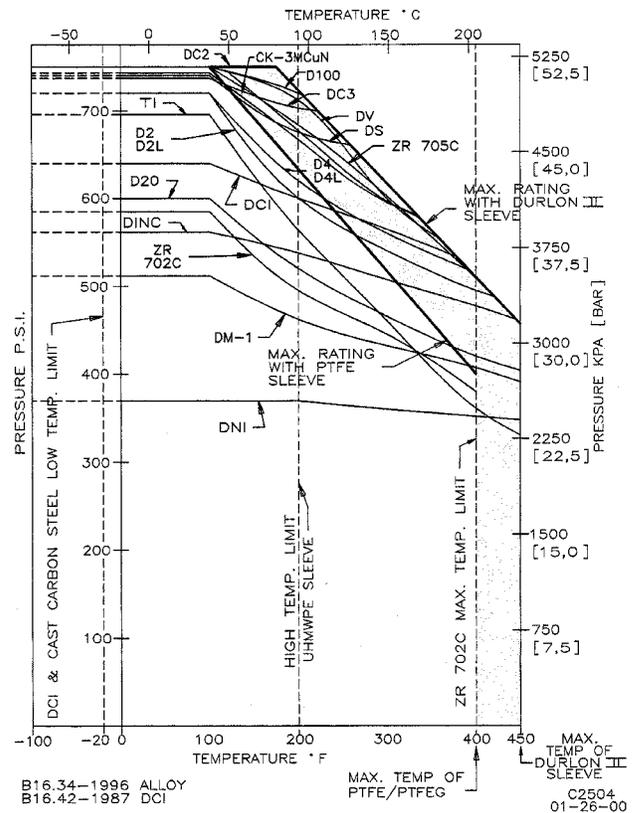
Valves may require adjustment to remain drop tight at the lower end of temperature range when operating below 0°F (-17°C) or during extreme temperature cycles.

### G4 Pressure/Temperature Ratings

#### Class 150 Valves



#### Class 300 Valves



D-20 = Durimet 20 (CN-7M), CD4M = Durcomet 100 (CD-4MCu), D4 = Cast 316 SS (CF-8M), D4L = Cast 316L SS (CF-3M), D2 = Cast 304 SS (CF-8), D2L = Cast 304L SS (CF-3), DC2 = Chlorimet 2 (N-7M), DC3 = Chlorimet 3 (CW-6M), DINC = Cast Inconel (CY-40), DS = Cast Carbon Steel (WCB), DCI = Ductile Cast Iron (60-40-18), DNI = Cast Nickel (CZ-100), DM-1 = Cast Monel (M-35-1), Zr-705C = Zirconium 705C, Zr-702C = Zirconium 702C, Ti = Titanium, CK-3MCuN = 254 SMO



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