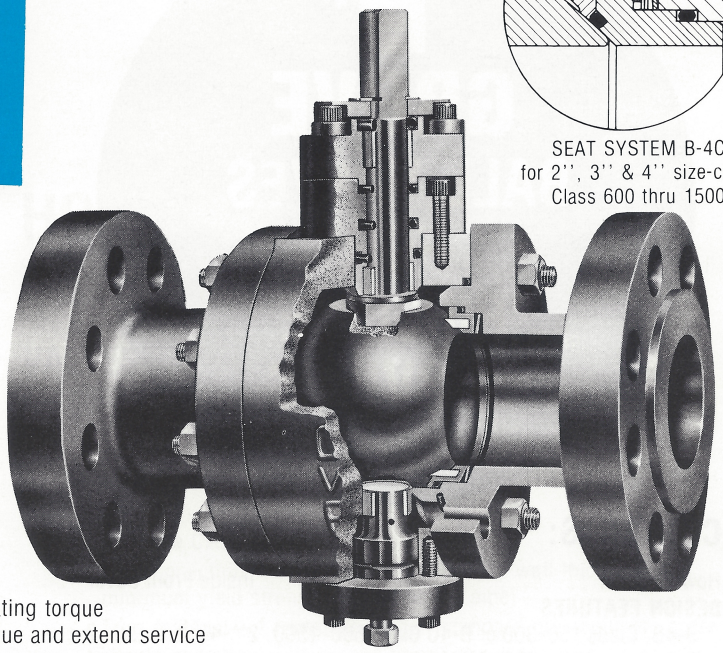
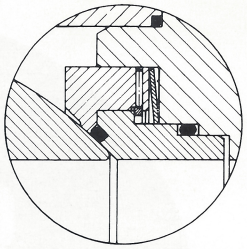
GROVE B-4B & B-4C BALL VALVES 2"-4"

Model B-4B Class 150 & 300
Model B-4C Class 600 thru 1500
End Connections:
Flanged, Weld, Weld x Flange





SEAT SYSTEM B-4C
for 2'', 3'' & 4'' size-class
Class 600 thru 1500

FEATURES:

- Through conduit, full opening, or venturi
- Bubble tight seal
- Nickel plated mirror finish smooth ball
- Double block and bleed
- Trunnion mounted ball for ease of operation at high pressure
- Short coupled trunnions to minimize unit bearing loads and operating torque
- Metal-backed DU® * sleeve bearing and trust washers reduce torque and extend service life.
- Free floating stem and rigid bearing construction eleminates cocking of stem and trunnion due to side pressure loads at the ball.
- Double barrier stem seals. Upper seal can be replaced with the valve in the line and under pressure
- Valve is designed to permit field conversion to gear or power operators while valve is in the line and under pressure
- Bolted construction permits disassembly on job-site for repairs
- Locking devices available
- Automatic internal body relief to downstream on B-4B
- Independent sealing on upstream and downstream seats on B-4C
- Rugged factory positioned external stops

SEAT SEALS

Grove B-4B & B-4C Ball Valves feature a trunnion-mounted, fixed ball design, employing floating seats which achieve bubble tight sealing. The ball rotates about its vertical axis between the stem and bottom trunnion. The initial seal, at extremely low pressure differential, is obtained by the spring-loaded floating seats, which are free to move slightly along the longitudinal axis of the valve. Line pressure behind the upstream seat ring supplements the seat spring load to force the upstream seat tightly against the ball. The valve body cavity, with the valve in closed position, is sealed from line flow and pressure by the upstream and downstream seats. This type of sealing assures double block and bleed service. The 2'', 3'', and 4'', class 600 thru 1500, use a synthetic ''O'' ring seal in a two-piece metal seat ring (see insert) while all others have a reinforced synthetic seal of trapezoidal cross section imbedded within a one-piece metal seat ring.

STEM & TRUNNION CONSTRUCTION

The stem and trunnion are separate from the ball. The top entry stem-to-ball connection is achieved by close tolerance hex in the ball socket drive. The stem shoulder bears against a DU® * thrust washer. A hex socket in the ball transmits torque from stem to ball. The stem rotates in a pair of DU® * bearings with a wide separation to afford maximum rigidity. The lower trunnion is rigidly bolted to the body, with a long DU® * bearing in the ball. This system effectively eliminates cocking tendencies, which results in lower torques.

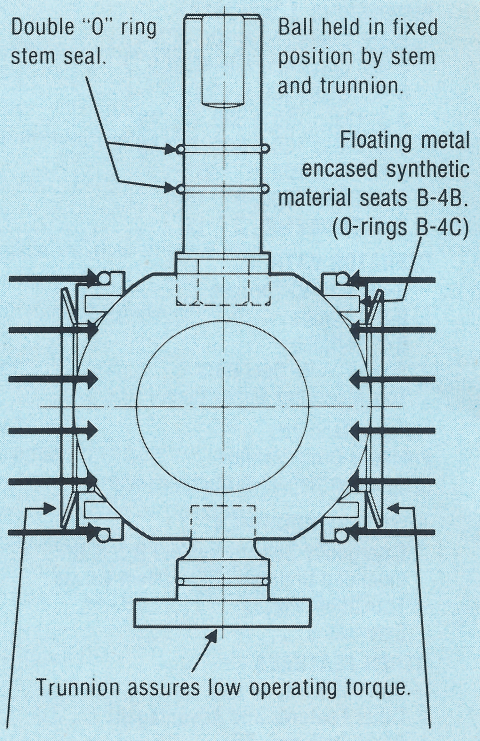
STEM SEALS

A needle valve is provided in the area between the two stem ''O'' rings to check the integrity of the stem seals. If the bottom stem ''O'' ring fails it will blow thru the middle needle valve. Sealing integrity is then renewed by closing the needle valve, thereby energyzing the top stem ''O'' ring.

FLANGED VALVES

In order to meet API-6D face-to-face dimensions, the end flanges of some CL. 150 & 300 valves are supplied with bolt holes drilled and tapped to receive studs. The use of end flanges with tapped holes is permitted by a recent supplement to API Spec. 6D.

Sealing Principle

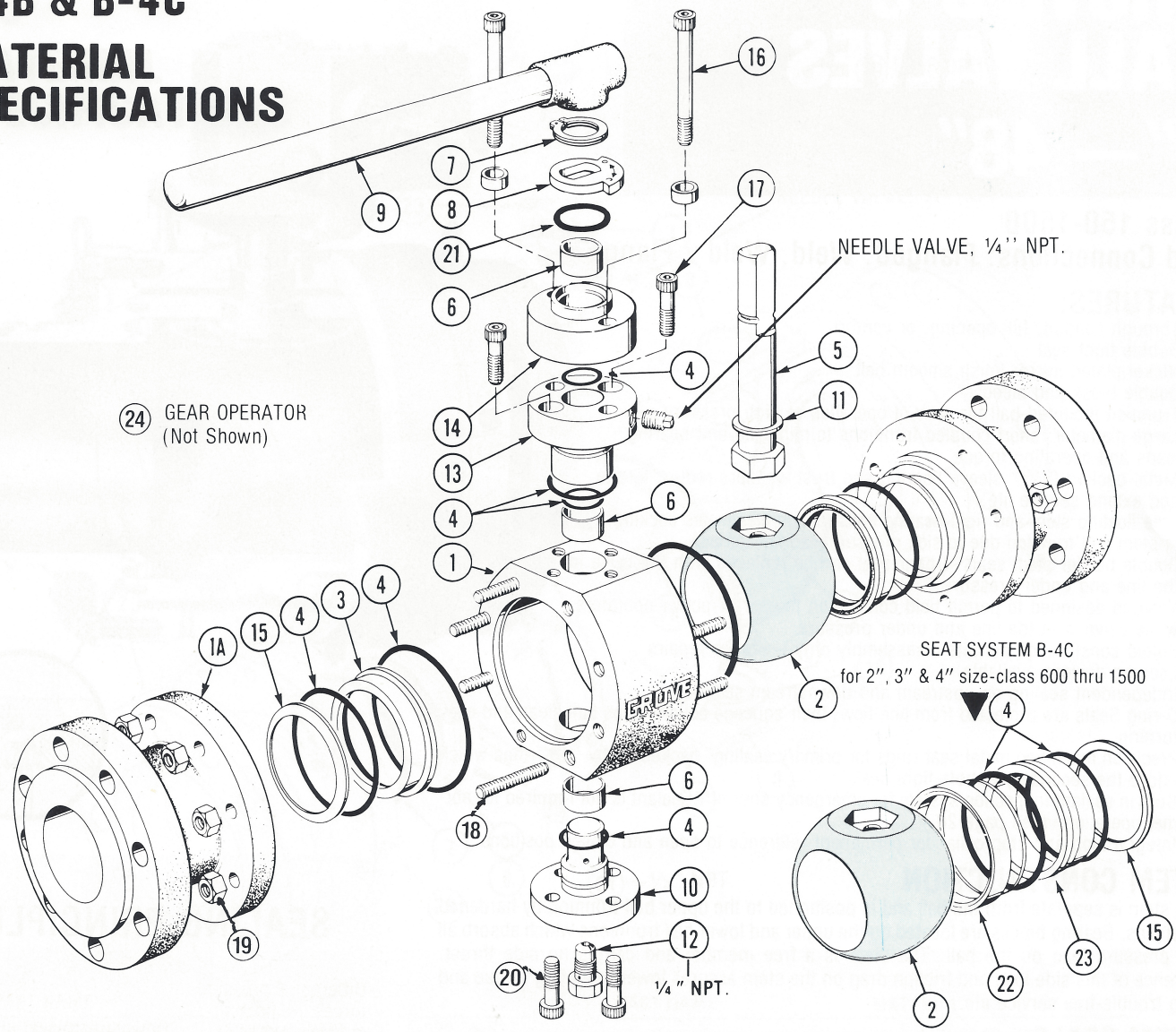


AT LOW OR NO DIFFERENTIAL PRESSURE—
force of Belleville spring (or coil spring on B-4C) assures bubble-tight seal.
INCREASED DIFFERENTIAL PRESSURE—
forces the seat against the ball—assuring an upstream and downstream seal for block and bleed.

* Trademark of The Garlock Company

NOTE: For class 400 B-4C dimensions see page 12.

B-4B & B-4C
MATERIAL SPECIFICATIONS



PART NAME	MATERIAL
1. Body 1A. Closure	Steel-ASTM A-106 Gr. B Steel-ASTM A-216 Gr. WCB
2. Ball	Steel-AISI 1018 or 4140 Electroless Nickel Plated
3. Seat Unit	Steel-AISI 1015 Electroless Nickel Plated & Synthetic material
4. ''O'' Rings	Grovex®* Composition
5. Stem	Steel-AISI 1018 or 4140 Electroless Nickel Plated
6. Bearings	DU® Self lubricated TFE fluorocarbon resin bonded to low carbon steel backing
7. Stop Retaining Ring	Steel-AISI 1075 Cadmium plated
8. Stop Collar	Steel-AISI 1020
9. Wrench	Steel-ASTM A-216 Gr. WCB; Nodular Iron ASTM A-395; Pipe-ASTM A-106
10. Trunnion	Steel-AISI 4140 Electroless Nickel Plated

*GROVEX covers a variety of elastometric materials

NOTE: Always consult Grove direct for an exact description of materials currently being used or available.

PART NAME	MATERIAL
11. Thrust Washer	DU® Self lubricated TFE fluorocarbon resin bonded to low carbon steel backing
12. Drain Valve	Steel-AISI 1018 and AISI 4140
13. Gland Plate	Steel-AISI 1018
14. Bearing Housing	Steel-AISI 1018
15. Spring Washer	Steel-AISI 4130 H.T. Electroless nickel plated
16. Capscrew (Bearing Housing)	Alloy Steel ASTM A-574
17. Capscrew (Gland Plate)	Alloy Steel ASTM A-574
18. Stud	Steel ASTM A-193 B7M
19. Nut	Steel ASTM A-194 2HM
20. Capscrew (Trunnion)	Alloy Steel ASTM A-574
21. Weather Seal	Grovex Composition
22. Outer Seat Ring	Steel-ASTM A-36, A-572, A-537, Electroless nickel plated
23. Inner Seat Ring	Steel-ASTM A-36, A-572, A-537, Electroless nickel plated
24. Gear Operator	See Page 18 for Material Spec. on Grove SY Operators