

# Elite Valve Maintenance & Operation Manual



# Elite E9100 & E9200 Ball Valves

## Table of Contents & Information

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<b>Table of Contents</b>	Information- - - - -	-2
	Description - - - - -	-3
	Installation - - - - -	3
	Operation - - - - -	-3
	Packing & Packing Adjustment - - - - -	-4
	Packing Replacement - - - - -	5
	Seat Replacement - - - - -	6
	Installation Actuator - - - - -	-7
	Troubleshooting - - - - -	7
	Material List - - - - -	8

**Instructions** These instructions are intended for personnel who are responsible for the installation, operation and maintenance of your Elite ball valve.

**Safety Messages** All safety messages in the instructions are flagged with the word Caution, Warning or Danger. These messages must be followed exactly to avoid equipment damage, personal injury or death.

Personnel involved in the installation or maintenance of valves should be constantly alert to potential emission of process material and take appropriate safety precautions. Always wear suitable protection when dealing with hazardous process materials. Handle valves, which have been removed from service with the assumption of process material within the valve.

**Inspection** Your Elite ball valve has been packaged to provide protection during shipment. Carefully inspect the unit for damage upon arrival and file a claim with the carrier if damage is apparent.

**Parts** Order parts from your local sales representative. Recommended spare parts are listed on the assembly drawing. These parts should be stocked to minimize downtime.

## Elite E9100 & E9200 Ball Valves

### Description & Installation & Operation

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**Description** The Elite E9100 & E9200 are available as ANSI Class 150 & 300 flanged, ISO-5211 mounting pads ball valves. E9100 is available in size ½” to 4” and E9200 is available in size ½” to 12”.

- ❖ Full port design for maximum flow. Highest CV per valve size means the smallest possible valve can be used, resulting in easier installation and lower costs.
- ❖ Broad range of body and trim options provide a possibility to handle a wide variety of applications and demanding critical services.
- ❖ Simple, rugged construction for long maintenance-free cycle life.
- ❖ Blowout proof stem design is to prevent the loosening of stem when exceeding the maximum pressure.
- ❖ Valves are easily and economically automated with a complete line of actuators and accessories, providing single source responsibility.

**Installation** Install valve between ANSI Class 150 or Class 300 pipeline flanges with appropriate gaskets, in compliance with applicable piping codes and standards. Before installation, place the valve in the fully open position and remove any foreign material such as the plastic covers, which are used to protect the face of the valve body, and dirt from the pipeline. Although both E9100 and E9200 ball valve are bi-directional, the E9100 is recommended that the valve is installed with the insert facing upstream and the E9200 can be installed for flow in either direction.

Observe the following points to prevent distortion of the valve body:

- Align the mating pipeline flanges.
- Stem must be centered in ball slot.
- Align horizontal for the pipeline and the valve.
- Make sure the pipeline and the valve contact completely.

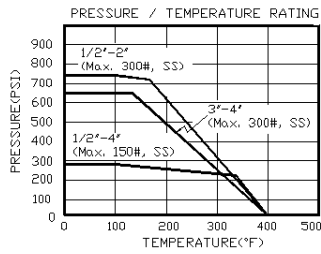
**Operation** Based on the valve size and different services, choose one of lever, hand-wheel or actuator to operate the ball valve. Each of them, no matter manual & automatic, could fully open and fully close the ball valve.

Periodic observation is necessary to ensure the valve is functioning well. Routine maintenance indicates the packing adjustment. Overhaul Maintenance consists of replacing seats and seals. They will be described in detailed as following.

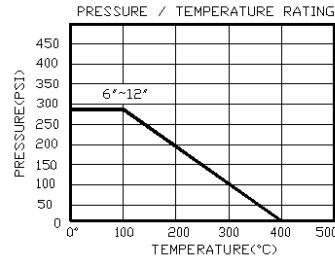
**Note:**

- ❖ The ball valve locking handle (15) also serves as a ball/flow position indicator. If the valve handle is parallel to the pipe the valve is open, then a valve handle is perpendicular to the pipe the valve is closed.
- ❖ To provide optimum service life, a hand-operated ball valve should be operated in its fully open or fully closed position. Valves that are left in the part open or throttling position will experience premature wear of the ball & soft materials.
- ❖ During the limited time of operation of a safety valve, the pressure shall not exceed the allowable pressure given in this standard, for the appropriate temperature.

## Elite E9100 & E9200 Ball Valves Packing & Packing Adjustment



**E9100 & E9200 1/2" to 4" Ball Valve**



**E9200 6" to 12" Ball Valve**

**Packing** The ball packing is contained and compressed by the packing gland.

**Adjustment** Periodically tighten the stem nut to compensate for stem packing wear. If ball packing leaks, just tighten the stem nut (10) under the locking handle (15) evenly and gently— just enough to stop the leak. Over-tightening will cause excessive operating forces, and will decrease the life of the packing. Retighten the stem nut (10) on the top of locking handle.

**Note:**

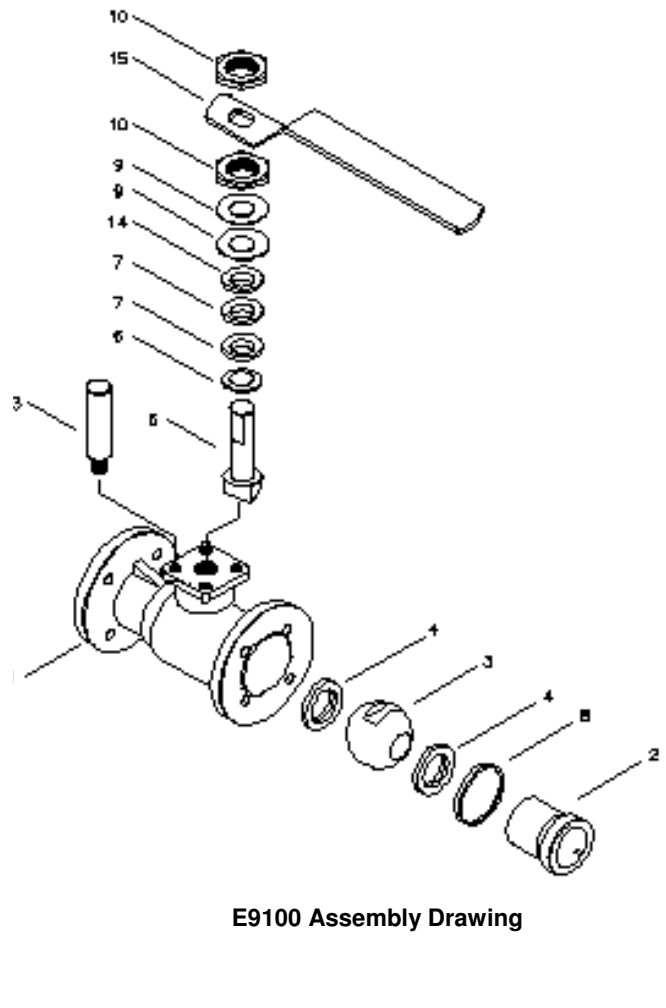
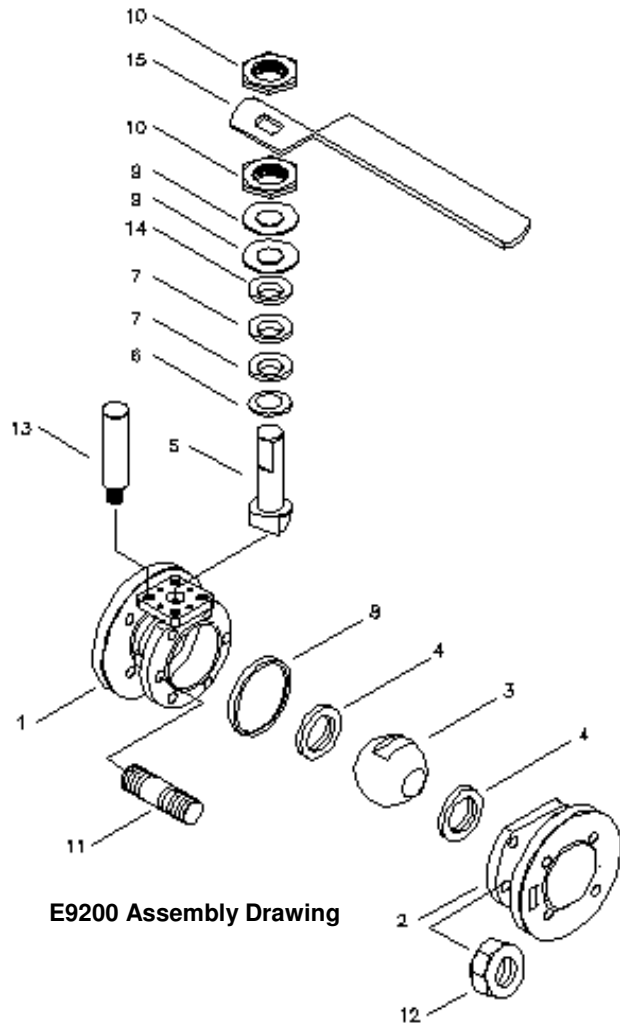
- ❖ Several factors influence the stem adjustment.
- ❖ It is Imperative that stem leaks are not left unattended.
- ❖ Lack of stem packing maintenance could result in a premature need to replace stem packing.
- ❖ If operating temperature of system is substantially higher or lower than 26°C then a stem-packing adjustment maybe is necessary.

**Caution:**

For your safety and protection, it is important that the following precautions be taken prior to removing the valve from service or before any disassembly of the valve.

1. At all times during this entire procedure, keep hands out of the valve, a remotely actuated valve could close at any time and result in serious injury.
2. Know what media is in the line. If there is any doubt, check with the proper authority.
3. Depressurize the line and valve as follows
  - Open the valve and drain the line.
  - Close and open the valve to relieve any residual pressure that may be in the valve prior to removing the valve from service. Leave the valve in the open position.
  - After removing and prior to any disassembly, drain any remaining media by placing the valve in the vertical position and carefully open and close the valve several times.

## Elite E9100 & E9200 Ball Valves Packing Replacement



**Table A: Parts List for the E9100 & E9200 Ball Valve**

No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
<b>Part</b>	Body	Insert or Cap	Ball	Body Seat	Stem	Thrust washer	Stem Packing	Body Seal	Belleville Disc	Stem Nut	Hex Cap Screw	Hex Nut	Stop Pin	Gland Ring	Locking Handle	
<b>Q'TY</b>	<b>E9100</b>	1	1(Insert)	1	2	1	1	2	1	2	2	N/A	N/A	1	1	1
	<b>E9200</b>	1	1(Cap)	1	2	1	1	2	1	2	2	4-8	4-8	1	1	1

### Packing Replacement

1. Relieve the pressure in the pipeline and fully open the valve.
2. Remove the stem nut (10) on the top of the locking handle; locking handle (15), stem nut (10) under the locking handle, Belleville disc (9) and gland ring (14). If using actuator, then remove the actuator. This is to expose the stem.
3. Remove the used stem packing (7) and thrust washer (6).

## Elite E9100 & E9200 Ball Valves

### Seat Replacement

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#### Packing Replacement *(Continue)*

4. Install the thrust washer (6) and new stem packing (7) over the stem. Reinstall gland ring (14), Belleville disc (9), one stem nut under the locking handle (15), locking handle (15) or hand-wheel, another stem nut (10) on the top of the handle (15) over the stem in sequence or place an actuator on the stem once the packing nut is installed.
5. Pressurize the pipeline and inspect the stem for leaks.
6. If the packing leaks, tighten the stem nut (10).

#### Seat Replacement

1. Relieve the pressure in the pipeline and fully open the valve.
2. Remove one stem nut (10) on the top of locking handle, locking handle (15).
3. If using an actuator and it is powered, disconnect and lock out power to prevent accidental operation of the actuator. Remove the actuator assembly.
4. Loosen the valve between flanges and remove the valve from the pipeline.
5. For E9100 ball valve:
  - (a) Rotate the insert (2) with a counterclockwise turning motion until the notch on the insert is aligned with the OPEN mark on the valve flange.
  - (b) Pull out the insert.
  - (c) Place the valve in the vertical position with insert end up.
  - (d) Lift out the body seal (8), seat (4), and ball (3). Rotate the stem so that the ball is in the closed position for removal.
  - (e) Remove the second seat (4).

#### For E9200 ball valve:

- (a) Loosen all the hex nuts (12) and remove hex cap screw (11) from the valve.
- (b) Split the valve and turn the anti-static stem (5) so that the valve is in the fully closed position. Remove the body seal (8) from the end cap (2) and the two body-seat (4) from the body (3).

#### **Note:**

- ❖ If the insert does not come out easily, close the ball, and with a piece of soft material such as Teflon surface gently tap the ball from the end opposite the insert
  - ❖ If seal is tightly compressed in its groove then uses extreme care when prying it out. Any damage such as scratches to the bottom of the groove will cause leaks.
  - ❖ If the seats are not easily removed, gently tap the ball (3) with a piece of soft material such as brass or Teflon.
  - ❖ If condition of the seal surface allows for its re-use, take care to handle and take care to handle and store the ball in such a manner so as to prevent subsequent damage to the balls critical surfaces.
6. Inspect the body seal and the seat; replace as required.

## Elite E9100 & E9200 Ball Valves Installation Actuator & Troubleshooting

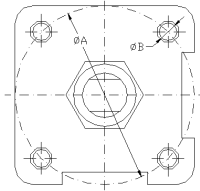
7. Inspect the body seal and the seat; replace as required.
8. Reinstall all of parts in opposite sequence.
9. Pressurize the pipeline and inspect ball for leakage.
10. For E9200, if the valve leaks at the body joint, tighten the hex nut (12) with evenly and gently — just enough to stop the leak. Over-tightening will cause excessive operating forces, and will decrease the life of the seat.

### Installation of Actuator

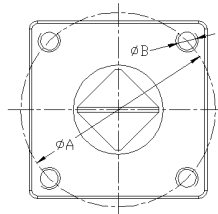
- 1) Relieve the pressure in the pipeline, fully open the valve and drain the line.
- 2) Remove the stem nut (10) that is on the top of locking handle and locking handle (15) to expose the anti-static stem (5).
- 3) Choose a suitable coupling, which clamps the stem between the valve stem and actuator. Place the coupling over the stem.
- 4) Choose a suitable bracket that suits both the top of flange of the ball valve and the actuator as per ISO-5211 dimension completely.
- 5) Install the bracket bolts tightly and make sure there are no visible space present between the bracket & the valve of the actuator.
- 6) Check the actuator several times, make sure the actuator could open & close the ball valve fully.

**Table B: Dimension for ISO-5211 Top Flange**

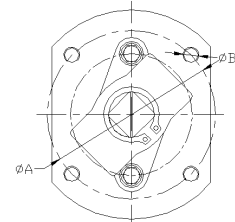
Valve Size	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	6"	8"	10"	12"
<b>A</b>	42	42	50	50	50	70	70	102	102	125	125	140	140
<b>B</b>	M5	M5	M6	M6	M6	M8	M8	M10	M10	M12	M12	M16	M16
<b>ISO-5211</b>	F04	F04	F05	F05	F05	F07	F07	F10	F10	F12	F12	F14	F14



**E9100 1/2" – 4" Valve Top Flange**



**E9200 1/2" – 4" Valve Top Flange**



**E9200 6" – 12" Valve Top Flange**

### Troubleshooting

**Table C: Troubleshooting for E9100 & E9200**

Condition	Possible Cause	Corrective Action
Packing leaks, with no evidence of galling on ball	Packing is loose.	Adjust packing gland.
	Packing is worn or torn.	Replace packing.
Packing leaks, and ball is galled	Packing is worn or torn.	Replace packing and ball, check seat for damage.
Valve leaks when fully closed, with no evidence of galling on ball	Seats are worn or torn.	Replace seats.
Valve leaks when fully closed, and ball is galled.	Seats are worn or torn.	Replace seats and ball.

## Material List for E9100 & E9200

Table D: *Material List for E9100 & E9200 Valve*

	Material Availability	Symbol
<b>Body</b>	316SS	1
	WCB	2
	Alloy 20	3
	Hastelloy	4
	Other	X
<b>Ball</b>	316SS	1
	Alloy 20	2
	Hastelloy	3
	Other	X
<b>Seat Option</b>	RPTFE	R
	PTFE	T
<b>Packing</b>	Teflon	T
	Graphite	G
<b>End</b>	ANSI 150# Flanged	15
<b>Connection</b>	ANSI 300# Flanged	30

### Sales and Service

For information about our worldwide locations, approvals and certifications, please visit our website:

Web site: [www.elitevalve.com](http://www.elitevalve.com)



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