QUADROSPHERE® BALL VALVE
Val-Matic® Specification

1 Scope
1.1 This specification covers the design, manufacture, and testing of QuadroSphere® Trunnion Mounted Ball Valves furnished in sizes 2 to 24 NPS, in ASME Pressure Classes 150 thru 2500.

2 Specific Design Considerations
2.1 Valve to incorporate QuadroSphere® high integrity ball element to promote self-flushing feature and minimize seat wear.
2.2 Valve ball element to be relieved on top and bottom adjacent to trunnions to minimize seat and ball element engagement and promote self-flushing feature.
2.3 Valve ball element to be truncated on upstream and downstream ends to minimize seat and ball element engagement.
2.4 Ball engagement with seat shall be less than that of standard spherical ball during interim valve travel to promote sealing integrity.
2.5 Geometry of ball element shall allow (5) separate and distinct flow paths to maximize efficiency of flow during interim valve travel.
2.6 Valve seat and ball contact shall be minimized during interim travel such that minimal contact exists between ball and seat.
2.7 Valve seat and ball contact shall be reduced to four (4) independent line contact points on each seat during interim valve travel.

3 Other Design Considerations
3.1 Valve to be trunnion mounted design to provide bi-directional sealing and to reduce running torque.
3.2 Valve ball to be 316 SS with Hard Chrome applied as minimum standard.
3.3 Valve seat and stem to be 316 SS construction as minimum standard.
3.4 Valve seats shall be a spring loaded/pressure energized design. They shall have an insert with a secondary metal seat back up.
3.5 The stem shall be anti-blowout design with anti-static devices.
3.6 4 NPS valves and smaller to have drain, vent, and stem injection ports.
3.7 6 NPS valves and larger to have drain, vent, stem, and two injection ports.
3.8 Valve shall incorporate double block and bleed sealing design (DBB).
3.9 Valve shall be capable of bi-directional flow.
3.10 Valve shall be capable of bi-directional shut-off.
3.11 Valve shall exhibit zero leakage per section 11 of API 6D.
3.12 Valve seat assemblies shall be field replaceable.
3.13 Valve body and ball shall be forged material.

4 Standards and Approvals
4.1 Valve to be manufactured per ASME B16.34 & API 6D.
4.2 Valve to carry API 6D Monogram.
4.3 Valve face-to-face dimensions to be per API 6D.
4.4 Valve flanged end dimensions to be per ASME B16.5.
4.5 Valve butt weld end dimensions to be per ASME B31.4.
4.6 Valve to be available in anti-static and fire-safe design to API 607.
4.7 Valve top works shall have ISO 5211 compliant mounting pad.
4.8 Valve bolting material shall conform to be ASME B16.34.
4.9 Valve shall be permanently marked in accordance with API 6D. Valve shall not be marked on the flanges.
4.10 Manufacturer shall have a quality management system that is certified to ISO 9001 by an accredited, certifying body.
4.11 Valve shall meet Fugitive Emission Standard ISO-15848-2.

5 Actuations
5.1 Manual, electric or pneumatic actuation shall be provided as specified.
5.2 Lever handles are available for certain valve sizes and pressure classes. Consult factory.
5.3 Manual actuators shall be worm gear design with externally adjustable stops. Actuators shall be lubricated and fully enclosed against the entry of water.
5.4 Pneumatic actuators shall be provided as specified.
5.5 Electric actuators shall be provided as specified.
5.6 Other types of actuation shall be provided as specified.

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VAL-MATIC® VALVE AND MANUFACTURING CORP.	DRWG. NO. VM-4700-S

6 Options
6.1 Seating surface options are available for the ball and metal seats: Stellite, Electroless Nickel Plating, Tungsten Carbine Coating.
6.2 Seat materials include: RPTFE, PTFE, PEEK, Nylon, Devlon®, Carbon Fiber Filled PEEK, Graphite and Metal.
6.3 Seal Materials include: Aflas®, HNBR, Kalrez®, Chemraz®, Markez®, Viton®, and Viton® AED and FF200.
6.4 NACE compliant trims are as specified for special services.
6.5 Double piston effect seating available on one or both ends (DIB).
6.6 Special coatings for exterior and interior of the valve are available per application.
6.7 On NPS6 and larger sizes for high solids service, a Ring Master® seating system shall be provided.

7 Manufacture
7.1 Valve exteriors on carbon steel valves shall be coated with a rust inhibiting coating.
7.2 Valve shall be seat and shell tested in accordance with API 6D requirements.
7.3 Valve shall be cycle tested and stops set for manual, pneumatic or electric actuators.
7.4 QuadroSphere® Ball Valve shall be Val-Matic® Model 4700, Trunnion Mounted Full Port Ball Valve as manufactured by Val-Matic® Valve & Mfg. Corporation, Elmhurst, IL, USA or approved equal.