



GS 162-1

STEEL GATE, GLOBE AND CHECK VALVES

June 1992

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BP Group Engineering Standards Forum

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SCOPE AND PURPOSE This document specifies requirements for steel gate, globe and check valves with flanged, weld, or screwed ends for use in the petroleum, petrochemical and associated industries. It is intended to cover all general applications involving specified types including refining, process and production (topsides)											
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FOREWORD

Introduction to BP Group Recommended Practices and Specifications for Engineering

The Introductory volume contains a series of documents that provide an introduction to the BP Group Recommended Practices and Specifications for Engineering (RPSEs). In particular, the 'General Foreword' sets out the philosophy of the RPSEs. Other documents in the Introductory volume provide general guidance on using the RPSEs and background information to Engineering Standards in BP. There are also recommendations for specific definitions and requirements.

Value of this Guidance for Specification

This Guidance for Specification sets down BP general requirements and collates and disseminates options for valves within its scope.

Application

This Guidance for Specification is intended to guide the purchaser in the use or creation of a fit-for-purpose specification for enquiry or purchasing activity.

Text in *italics* is Commentary. Commentary provides background information which supports the requirements of the Specification, and may discuss alternative options.

This document may refer to certain local, national or international regulations but the responsibility to ensure compliance with legislation and any other statutory requirements lies with the user. The user should adapt or supplement this document to ensure compliance for the specific application.

Specification Ready for Application

A Specification (BP Spec 162-1) is available which may be suitable for enquiry or purchasing without modification. It is derived from this BP Group Guidance for Specification by retaining the technical body unaltered but omitting all commentary, omitting the data page and inserting a modified Foreword.

Principal Changes from Previous Edition

This document replaces BP Standards 150 and 181. It has been revised to include BP latest requirements, references latest standards and replaces BP Standard 180 for Requirements for Gland Packings for use with valves to this Guidance for Specification.



Feedback and Further Information

Users are invited to feed back any comments and to detail experiences in the application of BP RPSE's, to assist in the process of their continuous improvement.

For feedback and further information, please contact Standards Group, BP Engineering or the Custodian. See Quarterly Status List for contacts.



1. SCOPE

This BP Standard specifies requirements for standard pattern cast or forged carbon and alloy steel valves of the following types, sizes and pressure ratings:-

(a) Gate Valves

- (i) Outside screw and yoke, rising stem, solid wedge (plain or flexible), split wedge, parallel double disc and parallel slide gate valves with flanged or butt weld ends in sizes DN 25 to DN 600 (1 in to 24 in) and pressure classes 150 to 2500.
- (ii) Outside screw and yoke, rising stem, solid wedge (plain) with flanged, butt weld, socket weld or threaded ends in sizes DN8 to DN50 (1/4 in to 2 in) and pressure classes 150 to 1500 including [API 800](#).

(b) Globe Valves

- (i) Outside screw and yoke globe valves of straight, angle and oblique ('Y') patterns and globe stop and check valves with flanged or butt weld ends in sizes DN 15 to DN 200 (1/2 in to 8 in) and pressure class 150 to 2500.
- (ii) Outside screw and yoke globe valves of straight, angle and oblique 'Y' pattern and globe stop and check valves with flanged, butt weld, socket weld or threaded ends in sizes DN8 to DN50 (1/4 in to 2 in) and pressure classes 150 to 1500 including [API 800](#).

(c) Check Valves

- (i) Swing, tilting disk, piston, ball and disc type check valves with flanged or butt welding ends in sizes DN 15 to DN 600 (1/2 in to 24 in). Wafer style valves are not covered by this standard.
- (ii) Piston and ball type check valves with flanged, butt weld, socket weld and threaded ends in sizes DN8 to DN50 (1/2 in to 2 in) and pressure classes 150 to 1500 including [API 800](#).

Note: The above size and pressure rating ranges do not imply availability in each size and pressure rating combination.

Both metal seated and soft seated valves of the above types are covered.

Wellhead, subsea, pipeline and specialist refinery and chemical applications (eg. cat cracker duty) are not covered by this standard, nor are slab type gate valves or wafer style check valves.



2. GENERAL REQUIREMENTS

Valves are intended to comply with the requirements of the appropriate international, national or industry standard applicable to a given valve type in addition to the particular requirements of this Specification. Where there is a conflict, this Specification shall take precedence. Appropriate standards are listed below:-

Gate Valves

- [API 600](#) Steel Gate Valves, Flanged and Butt-Welding Ends.
- [API 602](#) Compact Carbon Steel Gate Valves.
- [BS 1414](#) Steel Wedge Gate Valves (Flanged and Butt-Welding Ends) for the Petroleum, Petrochemical and Allied Industries.
- [BS 5157](#) Steel Gate (parallel slide) Valves.
- [BS 5352](#) Specification for Steel Wedge Gate, Globe & Check Valves 50 mm and Smaller for the Petroleum, Petrochemical and Allied Industries.

Globe Valves

- [BS 1873](#) Steel Globe and Globe Stop and Check Valves (Flanged and Butt-Welding Ends).
- [BS5352](#) Specification for Steel Wedge Gate, Globe & Check Valves 50mm and Smaller for the Petroleum, Petrochemical and Allied Industries.

Check Valves

- [BS 1868](#) Steel Check Valves (Flanged and Butt-Welding Ends).
- [BS5352](#) Specification for Steel Wedge Gate, Globe & Check Valves 50 mm and Smaller for the Petroleum, Petrochemical and Allied Industries.

3. DESIGN REQUIREMENTS

3.1 General

3.1.1 Pressure Temperature Ratings

The pressure/temperature rating of the pressure retaining boundary shall be in accordance with the standard rating tables of [ANSI B16.34](#) except for API Class 800 rated valves which shall be in accordance with the rating tables of [API 602](#) or [BS 5352](#).



Where the inclusion of non-metallic materials in the design limits the maximum working temperature this limitation shall be clearly indicated on the valve nameplate.

Where applications of weld end valves are plant specific, consideration may be given to the potential benefits of using valves having 'intermediate' or 'special' ratings. All such valves shall be clearly identified by their nameplates and 'special' class valves shall be subject to the additional NDE required by [ANSI B16.34](#).

3.1.2 Minimum Wall Thickness

The minimum thickness of the valve body shall be in accordance with the requirements of [ANSI B16.34](#), except for API Class 800 valves which shall meet the requirements of [API 602](#) or [BS 5352](#). Where valves are offered which do not meet this requirement, justification shall be provided by appropriate, supporting analysis or a proof test in accordance with [ASME VIII](#).

Class 2500 rated valves purchased to the requirements of [API 600](#) or [BS 1414](#) etc. may not meet the requirements of [ANSI B16.34](#). In such cases, further assurance of suitability is required.

3.1.3 Body/Bonnet Joint

(a) Sizes Greater than DN50 (2 in)

'Pressure seal' designs, incorporating a split ring and seal ring may be used on sizes greater than DN50 (2 in) and pressure ratings greater than CL 600. Otherwise, body/ bonnet joints shall be flanged, incorporating a fully trapped, controlled compression, spiral wound gasket or, for Class 600 and above, a ring type joint. On Class 150 only, a flat face gasket may be used. Alternative designs of joint may be proposed for the purchaser's approval where there is evidence of satisfactory performance under conditions comparable to those of the application.

Where 'pressure seal' type joints are used, seal rings shall be of fully retained, exfoliated graphite except where operating temperatures exceed 450°C in oxydising environments or where chemical oxydisers are being contained.

(b) Size DN50 (2 in) and Smaller



Body bonnet joints shall be flanged, welded or screwed and seal welded. Flanged joints shall incorporate a fully trapped, controlled compression, spiral wound gasket.

Where welding is the sole means of attachment welds shall be full strength type and shall meet the requirements of [API 602](#).

Union bonnets are not permitted.

- (c) Flanged body/bonnet joints shall meet the requirements for bolting of [ANSI B16.34](#).

'Pressure seal' type joints can offer considerable savings in weight and cost in the higher pressure ratings. However, designs incorporating metal seal rings can be difficult to dismantle in the larger sizes leading to increased maintenance costs.

Ring type joints are not essential at ratings as low as Cl 600 and Cl 900 and add considerably to the weight and required bolt load of the joint.

3.1.4 Stem Packing

The use of lantern rings with split packing arrangements should be avoided whenever possible. Where a gland leak-off connection is a necessity the packing shall be divided so that the principal seal is made by the lower set with a reduced quantity of packing above the lantern ring sealing the leak-off chamber (contrary to the packing arrangements shown in [API 600](#), [BS 1414](#) etc.).

The ideal arrangement will depend on the material selected but, in general, the main packing set should incorporate no more than five or six rings and back-up packings should be restricted to two or three rings.

Where environmental, safety or other considerations require the highest integrity, or where fugitive emissions must be minimised, consideration should be given to employing live (spring) loading on one of the proprietary designs of packing which offer tight sealing combined with long, maintenance free life.

Valve stem finish shall be better than or equal to 0.4 mm (16 m in) CLA. Stuffing box wall finish shall be better than or equal to 1.6 mm (3 m in) CLA.

The bottom of the stuffing box shall be flat and square to the stem axis.

Recent investigations have shown that the packing arrangements shown in [API 600](#), [BS 1414](#) etc. result in the sealing force applied by the gland being largely



dissipated in friction etc. before it reaches the primary packing beneath the lantern ring.

Users intending to specify a split packing arrangement with lantern ring in order to facilitate later injection of emergency gland sealant should consider whether the specification of a high integrity design of one piece packing would be more likely to result in greater overall integrity.

3.1.5 End Flanges

On Class 150 to Class 900 valves inclusive flanges shall be raised face except where a ring type joint is necessary for compatibility or where Class 900 is specified for hydrogen service.

On Class 1500 and Class 2500 valves and on Class 900 for hydrogen service flanges shall be ring type joint.

The contact surface of raised face flanges shall be finished as required by BP Group [GS 142-12](#).

3.1.6 Butt-Weld Ends

Butt weld ends of valves shall be profiled in accordance with [ANSI B16.34](#) and shall match the nominal size (or outside dia.) and schedule (or thickness) specified on the order.

3.1.7 Auxiliary Body Tappings

These shall not be provided unless specified on the order. If required they shall preferably terminate in a flanged connection or (where permanently connected auxiliary pipework is envisaged, eg. integral by pass arrangements) in a butt weld preparation. Alternatively, socket welds may be used where conditions (temperature/corrosion etc) permit.

Where screwed body penetrations are unavoidable, they shall be of ISO parallel thread form and incorporate a seal. Ideally this should be at the bottom of the thread but face seals are acceptable where it can be demonstrated that crevice corrosion is not a consideration.

There have been several incidents within BP where taper threaded plugs have been ejected on gas service owing either to excessive use of sealing tape or corrosion.

The British Standards listed in 2. provide guidance on location of tappings.

3.1.8 Body/Bonnet Bolting

Bolting shall be ISO metric or unified inch in accordance with the relevant valve standard. Metric bolting shall be suitably identified.



The bolting of flanged joints shall meet the minimum cross section area requirements of [ANSI B16.34](#) Para 6.4.1.

3.1.9 Operation

Hand operated valves with handwheels located in a normally accessible position shall not require a force at the handwheel rim greater than 350N (80 lbf) to operate the valve.

Where valves will be located such that access to the handwheel is restricted and for all valves DN50 (2 in) and less, the maximum rim force should be further limited to 220N (50 lbf).

Where necessary, valves shall be provided with manual spur or bevel gear boxes in order to meet the above requirement. (Bevel gearing is preferred for gate valves and spur gearing for globe valves). Gate valves in larger sizes and pressure ratings shall be provided with motor operators to avoid unacceptably long stroking times.

Power operated valves may utilise electric, pneumatic or hydraulic actuators as required. Electric actuators shall meet the requirements of BP Group [GS 112-2](#).

3.1.10 Line Clearing/Pigging

Provision for accommodating pipe scrapers or pigs shall only be made if required by the purchase order.

3.1.11 Dimensions

Dimensions for face to face, centre to face, end to end and centre to end of valves shall be in accordance with [ISO 5752](#), [BS 2080](#) or [ANSI B16.10](#) as appropriate.

There are minor differences between [BS 2080](#) and [ANSI B16.10](#) in certain specific cases but otherwise, they coincide. [EN558](#) (which, at time of writing, is in draft form) has different coverage from [BS 2080](#) but, where scope is common, they coincide.

3.2 Gate Valves

The wedge design of wedge gate valves shall be solid unless otherwise noted on the order.

Wedge gate and parallel slide valves used in situations where heat (process, fire etc.) may be applied to a closed valve shall be provided



with a means of relieving pressure built up in the body cavity. Where this involves making the valve uni-directional, the flow direction shall be clearly marked.

Where small (<DN50) parallel slide valves are used on liquid systems, similar measures shall be taken to relieve cavity overpressure regardless of heat considerations.

Drilling of discs to obtain cavity relief is not acceptable.

Parallel slide valve stems continue to be inserted into the body cavity after a seat seal has been made. In small size valves this can result in high pressures being generated.

3.3 Globe Valves

Globe valves shall be mounted in the line such that flow is in a direction from beneath the disk.

3.4 Check Valves

The disk or clapper retaining nut of swing check valves and, where a hinge pin penetrates the valve body, the hinge pin plug shall be mechanically locked. In the case of swing and tilting disc check valves the supplier shall state the minimum flow velocity necessary to keep the valve in a fully open condition.

Swing check valve failures often result from sizing for a larger than normal flow such that, during most of the operating life, the valve disc is not fully opened against the stop. This results in instability and mechanical damage. To avoid this problem the user should advise the manufacturer of the minimum flow velocity at which the valve is required to be fully open.

4. MATERIALS

4.1 General

Materials of construction shall be specified in the Purchase Order and shall be generally in accordance with the requirements of the appropriate valve standard.

When carbon steel valves are specified for low temperature service charpy impact tests should be carried out to demonstrate adequate toughness.

Test temperature should be the minimum operating temperature or less.

Minimum average impact energy (Joules) should be numerically equal to minimum specified yield strength (MN/m²) ÷ 10.



Minimum individual impact energy should be 75% of the minimum average value.

4.2 Pressure Retaining Boundary

'Free cutting' (resulphurised) steels shall not be used for pressure boundary parts or parts which are welded.

4.3 Sour or Chloride Service

The requirements of [NACE MR-0175](#) and the additional requirements of BP Group [GS 136-1](#) shall be met by all materials in services where stress corrosion cracking may occur.

4.4 Weld End or Welded Bonnet Valves

The carbon content shall be restricted as follows:

0.25% max. for carbon, carbon/manganese or carbon/ molybdenum steels

0.15% max. for 5% Cr. 1/2 % Mo steel

0.35% max for type 304 austenitic stainless steel.

4.5 Body/Bonnet and Gland Bolting

Low carbon steels and 'free cutting' steels shall not be used.

Bolting materials for alloy steel valves shall be compatible with the material of the shell.

4.6 Trim Material

Trim combinations should be selected from the alternatives in the appropriate valve standard, when these are included, having regard to service conditions and required operating characteristics. However, the presence of listed materials should not be allowed to preclude the use of superior alternatives which may become available.

Where trim materials are not listed in the standard or where unusual service conditions exist, selection should take into account previous experience and the manufacturers recommendations.

Valve wedges, disks and seats shall be hard faced with Stellite 6, tungsten carbide or equivalent for the following duties:-

- (i) Steam (above 3 bar - 40 psig).
- (ii) Hydrogen.



- (iii) Gasses, where high integrity is required.
- (iv) Gasses or liquids containing abrasive particles, where metal to metal seated valves are specified.
- (v) Duties where wire drawing, seizure, galling or high rates of wear are expected.
- (iv) Class 1500 rating and above.

Adherence to the trim selections to be found in [API 600](#) or [BS 1414](#) etc. will usually result in adequate performance. Such lists of materials can, however, inhibit improvements (eg. the use of precipitation hardening stainless steel for valve stems) and it is not BP's intention that this should be allowed to happen. Where doubt exists over the merit of an 'improvement' proposed by a supplier, specialist advice should be sought.

4.7 Soft Seal Materials

Soft (plastic, elastomer) sealing materials shall only be used in the seat/disc area when specified by the purchase order. When such valves are specified for hazardous applications they shall be provided with fire - test certificates.

4.8 Stem Packing Material

4.8.1 Packing material for general service (oil, vapour, gas, steam, air and water) at temperatures between -75°C and 650°C with pH between 2 and 11 shall be selected from the following alternatives:-

- (a) Exfoliated graphite with braided graphite anti-extrusion rings and incorporating a corrosion inhibitor. This material shall not be used in oxydising environments at temperatures above 450°C nor with processes involving chemical oxydisers.
- (b) Where chemical oxydisers are present and operating temperatures do not exceed 220°C PTFE multi-filament or chevron type packings or PTFE spring reinforced lip seals.
- (c) Braided and re-inforced white asbestos yarn impregnated with oil proof compound and lubricated with mica or graphite incorporating a corrosion inhibitor.

All packing shall consist of individual, die formed rings. Exfoliated graphite shall be 95% pure and contain no binders or additives other than corrosion inhibitor (zinc wire or powder). Leachable chlorides



content shall be less than 50 ppm and sulphur content less than 1000 ppm. Density shall be 1.6g/cc min.

This material should not be used with 13% Cr. valve stems (eg. 410 s.s.) in water service since the stems may be prone to graphitic attack.

Most valves are tested with water regardless of their intended service, and many valves are stored for a lengthy period before use. In such cases consideration should be given to removing the packing after hydrostatic testing, drying the stem and stuffing box and fitting a new set of dry packing before despatch.

Although legislation and local company policy are affecting the use of white asbestos it is still an extremely effective material under a wide variety of operating conditions and, for this reason, has been retained within this Specification.

4.8.2 Packing material for use where pH is less than 2 or greater than 11 shall be selected from the following alternatives:-

- (a) PTFE multi-filament or chevron type packings.
- (b) PTFE spring re-inforced lip seals.

Note: Both these alternatives are subject to a maximum temperature limitation of 220°C.

- (c) Braided white asbestos impregnated with PTFE.

4.8.3 For all other services, the manufacturers recommendation should be sought.

4.8.4 The use of so called 'asbestos replacement' materials should be restricted to those applications where tests have shown that the required performance is attained.

4.8.5 The use of 'O' rings without a 'back-up' packing is not permitted.

4.8.6 Where valves are used with hazardous or flammable fluids in fire risk areas stem packing shall be restricted to the types listed in 4.8.1 (a) and (b) or a secondary packing shall be provided in these materials.

5. WELDING

5.1 All welding, cladding, hard facing or repair of castings etc. shall be performed in accordance with written procedures qualified in accordance with [ASME IX](#) or [BS 4870](#).



- 5.2 In the case of hard facing, the qualification test report shall include a hardness survey and finished surface chemical analysis check.
- 5.3 Welders shall be qualified in accordance with [ASME IX](#) or [BS 4870](#).
- 5.4 The storage and control of welding consumables shall be covered by appropriate procedures.
- 5.6 All repair gouges shall be examined to ensure complete removal of the defect and completed repairs shall be examined as required for the original material.
- 5.7 Post weld heat treatment shall be carried out as appropriate to the material except in the case of local excavations not exceeding 10 mm in depth or 25% of the wall thickness or as otherwise agreed by BP.
- 5.8 Plate and pipe (or tube) materials shall not be repaired by welding.

6. NON-DESTRUCTIVE EXAMINATION

The selection of appropriate tests and acceptance standards requires care.

In general, cast valves should always be procured with at least a visual inspection in accordance with [MSS-SP-55](#), [EEMUA Publication No1S67](#) 'Specification for Quality Levels for Carbon Steel Valve Castings' provides excellent guidance on further tests.

Where surface examination is being specified, magnetic particle examination in two mutually perpendicular directions should be applied to ferro-magnetic materials in preference to liquid penetrant techniques. The dry powder method should not be used. When selecting acceptance standards it should be noted that some of those to be found in commonly used standards (e.g. [ANSI B16.34](#)) permit linear defects which would be unacceptably large for small valves.

- 6.1 The minimum level of non-destructive examination required shall be as specified in the purchase order having regard to the criticality of the valve and the method of manufacture.
- 6.2 When volumetric or surface examination is applied to less than 100% of the pressure retaining boundary the areas to be examined shall be as indicated in [ANSI B16.34](#).
- 6.3 Where valves are required to be volumetrically examined, surface examination shall be applied to at least the same extent.
- 6.4 Repairs to pressure boundary parts shall be examined to at least the same degree as the original material.



7. INSPECTION & TESTING

- 7.1 Inspection and testing of valves shall be carried out in accordance with the requirements of the appropriate valve standard and the additional requirements of this Specification. Any special requirements shall be noted in the purchase order.
- 7.2 As a minimum, all valves shall be subject to a shell hydrostatic test at 1.5 times the max. pressure rating and a hydrostatic seat test at 1.1 times the maximum pressure rating. Valves shall be fully assembled for these tests. Subsequent disassembly shall necessitate a repetition of the tests.
- 7.3 All gate valves shall be seat tested with the body cavity full of water.
- 7.4 Wedge or parallel double disk gate valves intended for double block and bleed duty shall be tested across each seat independently.
- 7.5 Parallel slide valves may be seat tested by pressurising the body cavity and observing leakage across each seat.
- 7.6 Where valves are provided with a back seat, one in five valves (or a minimum of one valve) from each batch shall be tested without stem packing.
- 7.7 Tests shall be carried out in accordance with written procedures by appropriately trained personnel. A test certificate shall be issued in each case and witnessed by the manufacturer's inspection engineer and any witnessing inspection engineer.
- 7.8 Test durations shall be as specified in the Purchase Order.

The test durations included in commonly used standards are often inadequate. The following is recommended as a minimum requirement.

Valve Size (in)	Minimum Test Duration (Minutes)		
	Shell Test	Seat Test	
		Stabilisation	Test
Up to 4 incl.	2	2	2
6 to 10 incl.	5	5	5
12 to 18 incl.	15	10	5
20 and above	30	15	5

- 7.9 Acceptance standards shall be in accordance with the appropriate valve standard or [ISO 5208](#). The applicable leakage rate shall be specified in the purchase order.



- 7.10 Hydrostatic tests shall be carried out using kerosine or water containing 1% by volume of BP NID 260S liquid or an equivalent biodegradable wetting agent.
- 7.11 Where water is used and is in contact with austenitic stainless steel, the maximum chloride content shall be limited to 20 ppm (20 mg/kg) and the pH shall fall within the range 6 to 8.5.
- 7.12 The degree to which tests are witnessed shall be determined by the purchaser having regard to the criticality of the valves and the record of the manufacturer.

8. MARKING, PROTECTION & PACKAGING

- 8.1 Marking, protection and packaging of valves shall be in accordance with the requirements of the appropriate valve specification and any additional requirements included in the purchase order.

The amount of packing material should be minimised and be capable of being recycled where practicable.

- 8.2 Valves containing asbestos shall be supplied with a corrosion resistant metal tag attached by wire and bearing the words 'Warning. Contains asbestos. Breathing asbestos dust can be injurious to health. Follow safety instructions .

9. CERTIFICATION AND TRACEABILITY

- 9.1 All valves shall be supplied with a certificate of compliance with the requirements of the order.
- 9.2 Certification of the pressure retaining boundary (including body/bonnet bolting) of valves for hazardous service (or as required by the purchase order) shall meet the requirements of [EN 10204](#) 3.1B (material test report) as a minimum.
- 9.3 All other valve parts shall be provided with a certificate of compliance with material specifications as a minimum.
- 9.4 Traceability of all materials for the pressure retaining boundary (including body/bonnet bolting) of hazardous service valves shall be maintained throughout all manufacturing processes including assembly. Documentation which cross references component parts of assemblies to material certificates shall be maintained by the manufacturer.



10. DOCUMENTATION

Documentation requirements shall be as specified in the purchase order. In every case the supplier shall arrange to retain copies of material test certificates and pressure test certificates as required by the purchase order.

The purchaser needs to define the documentation that is required to be retained, and by whom. In many countries, regulations require documentation to be available for defined periods of time.

11. QUALITY ASSURANCE

Verification of the vendor's quality system is normally part of the pre-qualification procedure, and is therefore not specified in the core text of this specification. if this is not the case, clauses should be inserted to require the vendor to operate and be prepared to demonstrate the quality system to the purchaser.

Further suggestions may be found in the BP Group RPSEs Introductory volume.



DEFINITIONS AND ABBREVIATIONS**Definitions**

Standardised definitions may be found in the BP Group RPSEs Introductory volume.

Manufacturer: A manufacturer of valves or valve stem seals.

Abbreviations

ANSI	American National Standards Institute
API	American Petroleum Institute
ASME	American Society of Mechanical Engineering
BS	British Standard
CLA	Centre line average
EEMUA	Engineering Equipment and Material Users Association
EN	Euro Norm
DN	Nominal Diameter
ISO	International Standards Organisation
MSS	Manufacturers Standardization Society of the Valve and Fittings Industry
NACE	National Association of Corrosion Engineers
NDE	Non-destructive Examination
PPM	Part Per Million
PTFE	Polytetrafluoroethylene



LIST OF REFERENCED DOCUMENTS

A reference invokes the latest published issue or amendment unless stated otherwise.

Referenced standards may be replaced by equivalent standards that are internationally or otherwise recognised provided that it can be shown to the satisfaction of the purchaser's professional engineer that they meet or exceed the requirements of the referenced standards.

International Documents

EN 10204	Metallic Products: Types of Inspection Documents
ISO 5208	Industrial Valves: Pressure Testing for valves
ISO 5752	Specification for face-to-face, centre-to-face, end-to-end and centre-to-end dimensions of valves

National and Industry Documents

ANSI B16.10	Face-to-face and end-to-end dimensions of valves
ANSI B16.34	Valves - Flanged and butt - welding end
ASME IX	Qualification standard for Welding and Brazing Procedures, Welders, Brazers and Welding and Brazing Operators (Non-Interfilled)
API 600	Steel gate valves, flanged and butt-welding ends
API 602	Compact steel gate valves
BS 1414	Steel wedge gate valves (flanged and butt-welding ends) for the petroleum, petrochemical and allied industries
BS 1868	Steel check valves (flanged and butt-welding ends) for the petroleum, petrochemical and allied industries
BS 1873	Steel globe and globe stop and check valves (flanged and butt-welding ends) for the petroleum, petrochemical and allied industries
BS 2080	Specification for face-to-face, centre-to-face, end-to-end and centre-to-end dimensions of valves



BS 4870	Specification for Approval Testing of Welding Procedures
BS 5157	Steel gate (parallel slide) valves for general purposes
BS 5352	Specification for steel, wedge gate, globe and check valves 50mm and smaller for the petroleum, petrochemical and allied industries
EEMUA Pub. No 167	Specification for quality levels for carbon steel valve castings
MSS-SP-55	Quality Standard for Steel Castings for Valves, Flanges and Fittings and other Piping Components
NACE Std MR-0175	Material Requirements - Sulphide Stress Cracking Resistant Metallic Materials for Oil Field Equipment

BP Documents

BP Group GS 112-2	Electric motor operated valve actuators for intermittent operation of isolation valves (was BP Std 152)
BP Group GS 136-1	Materials for Sour Service to NACE Standard MR017590 (was BP Std 153)
BP Group GS 142-12	Pipe flanges and fittings (was BP Std 260)

