



NACE AND NORSOK COMPLIANT VALVES

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1.0 SCOPE

The purpose of this document is to define part numbering for general industrial valves used in NACE MR0175 (ref 2.1), NACE MR0103 (ref 2.3) and NORSOK (ref 2.2) compliant applications.

2.0 REFERENCES

- | | | |
|------------|-----------------------------|--|
| 2.1 | NACE MR0175/
ISO 15156-3 | “National Association of Corrosion Engineers” Standard Material Requirements –
Metals for Sulfide Stress Cracking and Stress Corrosion Cracking Resistance in Sour
Oilfield Environments |
| 2.2 | NORSOK M-630 | Material Data Sheets for Piping |
| 2.3 | NACE MR0103/
ISO 17495 | Petroleum, petrochemical and natural gas industries – Metallic materials resistant
to sulfide stress cracking in corrosive petroleum refining environments |
| 2.4 | PS-14185 | PROCESS SHEET |
| 2.5 | PS-14187 | PROCESS SHEET |
| 2.6 | PS-40789 | PROCESS SHEET |
| 2.7 | PS-41253 | PROCESS SHEET |
| 2.8 | PS-49151 | PROCESS SHEET |

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3.0 PRODUCT CONFIGURATIONS

3.1 N Series and HN Series

- 3.1.1 The components that are wetted by the system media are the body, bonnet, stem and stem tip.
- 3.1.2 Although the stem tip is wetted by the system media, the wetted portion of this component is not exposed to tensile stresses and is therefore a permitted exclusion of NACE MR0175 (ref. 2.1) and NACE MR0103 (ref 2.3) requirements.
- 3.1.3 For 2507 NACE MR0175/ISO 15156-3 (ref. 2.1) compliant valves, customers must use PS-49151 (ref. 2.8). It will have alloy 400 stem and stem tip instead of 2507.
- 3.1.4 Process sheet PS-41253 (ref. 2.7) should no longer be required for NORSOK M-630 (ref. 2.2) 2507 valves as all 2507 raw material should be purchased from NORSOK approved suppliers. Verify material specifications and certifications as necessary.
- 3.1.5 The materials used to manufacture alloy 600 and titanium N Series valves are not defined as complaint materials in NACE MR0175 (ref. 2.1) or NACE MR0103 (ref 2.3).

Valve Material Designator	Material	NACE MR0175 / MR0103 Compliant Available?	-SG Designator Required	NORSOK M-630/M-650 Available?	NACE Compliant Example Part Number	Compliant with NACE Table # / Section
SS	316	YES	YES	NO	SS-3NBS4-SG	A.2 / 13.5.1, A.13 / 14.1.1.6
SSD	316/316L	YES	YES	NO	SSD-3NBS4-SG	A.2 / 13.5.1, A.13 / 14.1.1.6
M (N Series Only)	alloy 400	YES	NO	NO	M-3NBS4-M	A.13 / 14.1.1.6
HC (N Series Only)	alloy C-276	YES	NO	NO	HC-3NBS4-HC	A.14 / 14.1.1.5, A.13 / 14.1.1.6
625	alloy 625	YES	NO	NO	625-3NBS4-625	A.14 / 14.1.1.5, A.13 / 14.1.1.6
825	alloy 825	YES	NO	NO	825-3NBS4-825	A.14 / 14.1.1.5, A.13 / 14.1.1.6
2507	2507	YES	See 3.1.3	Note 1 (see 3.1.4)	2507-3NBS4-49151	A.24 / 13.8.1, A.14 / 14.1.1.5
6MO (N Series Only)	6-moly	YES	NO	Note 1	6MO-6NBS8-6MO	A.8 / 13.7, A.9 / 13.7

Note 1: NORSOK may be available for this configuration. Please contact VSG technical service for additional information.

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3.2 60 Series

- 3.2.1 The components that are wetted by the system media are the center body, flanges, support rings, disc springs, stem and ball.
- 3.2.2 The materials used to manufacture alloy 600 and titanium valves are not defined as complaint materials in NACE MR0175 (ref. 2.1) or NACE MR0103 (ref 2.3).
- 3.2.3 Certificates of compliance to NACE MR0175 (ref. 2.1) or NACE MR0103 (ref 2.3) are not offered for carbon steel and brass valves.

Valve Material Designator	Material	NACE MR0175 / MR0103 Compliant Available?	-SG Designator Required	NORSOK M-630/M-650 Available?	NACE Compliant Example Part Number	Compliant with NACE Table # / Section
SS	316	YES	YES	NO	SS-63TS8-SG	A.2 / 13.5.1, A.13 / 14.1.1.6, A.36 / 18.3.3
M	alloy 400	YES	NO	NO	M-63TS8	A.13 / 14.1.1.6
HC	alloy C-276	YES	NO	NO	HC-63TS8	A.14 / 14.1.1.5, A.13 / 14.1.1.6
625	alloy 625	YES	NO	NO	625-63TS8	A.14 / 14.1.1.5, A.13 / 14.1.1.6, A.36 / 18.3.3
825	alloy 825	YES	NO	NO	825-63TS8	A.14 / 14.1.1.5, A.13 / 14.1.1.6, A.36 / 18.3.3
2507	2507	YES	YES	Note 1	2507-63TS8-SG	A.24 / 13.8.1, A.14 / 14.1.1.5, A.36 / 18.3.3
6MO	6-moly	YES	NO	Note 1	6MO-63TS8	A.8 / 13.7, A.9 / 13.7, A.14 / 14.1.1.5, A.36 / 18.3.3

Note 1: NORSOK may be available for this configuration. Please contact VSG technical service for additional information.

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3.3 83 Series

- 3.3.1 The components that are wetted by the system media are the body, ball, end screws, seat carriers, seat carrier springs and seat carrier guides. The stem is wetted in the 3-way only.
- 3.3.2 NORSOK M-630 (re. 2.2) compliant 2507 valves should be ordered with PS-40789 (ref. 2.6).
- 3.3.3 **H83 valves are not available with NACE MR0175 (ref. 2.1) or NACE MR0103 (ref 2.3) compliance.**

Valve Material Designator	Material	NACE MR0175 / MR0103 Compliant Available?	-SG Designator Required	NORSOK M-630/M-650 Available?	NACE Compliant Example Part Number	Compliant with NACE Table # / Section
SS	316	YES	YES	NO	SS-83PS4-SG	A.2 / 13.5.1, A.13 / 14.1.1.6, A.36 / 18.3.3
M	alloy 400	YES	NO	NO	M-83PS4	A.13 / 14.1.1.6, A.36 / 18.3.3
625	alloy 625	YES	NO	NO	625-83PS4	A.13 / 14.1.1.6, A.14 / 14.1.1.5 A.36 / 18.3.3
825	alloy 825	YES	NO	NO	825-83PS4	A.13 / 14.1.1.6, A.14 / 14.1.1.5 A.36 / 18.3.3
2507	2507	YES	NO	Note 1 (see 3.3.2)	2507-83PS4	A.24 / 13.8.1, A.14 / 14.1.1.5, A.36 / 18.3.3
6MO	6-moly	YES	NO	Note 1	6MO-83PS4	A.8 / 13.7, A.14 / 14.1.1.5, A.36 / 18.3.3

Note 1: NORSOK may be available for this configuration. Please contact VSG technical service for additional information.

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3.4 CH Series

- 3.4.1 The components that are wetted by the system media are the inlet and outlet body, poppet, poppet stop and spring.
- 3.4.2 For 316 SS NACE MR0175 (ref. 2.1) and NACE MR0103 (ref 2.3) compliant CH check valves, customers must use PS-14185 (ref. 2.4) for valves with Swagelok end connections and PS-14187 (ref. 2.5) for valves with non-Swagelok end connections instead of the -SG suffix.
- 3.4.3 6MO material sour gas option is available with 1/4" size (CH4) only. Other sizes are available without NACE MR0175 (ref. 2.1) or NACE MR0103 (ref 2.3) compliance.

Valve Material Designator	Material	NACE MR0175 / MR0103 Compliant Available?	-SG Designator Required	NORSOK M-630/M-650 Available?	NACE Compliant Example Part Number	Compliant with NACE Table # / Section
SS	316	YES	see 3.4.2	NO	SS-CHS4-1-14185 SS-CHF4-1-14187	A.2 / 13.5.1, A.13 / 14.1.1.6, A.36 / 18.3.3
M	alloy 400	YES	NO	NO	M-CHS4-1	A.13 / 14.1.1.6
625	alloy 625	YES	NO	NO	625-CHS4-1	A.14 / 14.1.1.5, A.36 / 18.3.3
825	alloy 825	YES	NO	NO	825-CHS4-1	A.14 / 14.1.1.5, A.36 / 18.3.3
2507	2507	YES	NO	NO	2507-CHS4-1	A.24 / 13.8.1, A.14 / 14.1.1.5, A.36 / 18.3.3
6MO	6-moly	YES (see 3.4.3)	NO	Note 1	6MO-CHS4-1	A.8 / 13.7, A.14 / 14.1.1.5, A.36 / 18.3.3

Note 1: NORSOK may be available for this configuration. Please contact VSG technical service for additional information.

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3.5 GB Series

- 3.5.1 The components that are wetted by the system media are the body, end screws, gasket, stem, stem bearing and ball.
- 3.5.2 Although the stem bearing and gasket components are wetted, they are not exposed to tensile stresses and are therefore a permitted exclusion of NACE MR0175 (ref. 2.1) and NACE MR0103 (ref 2.3) requirements.

Valve Material Designator	Material	NACE MR0175 / MR0103 Compliant Available?	-SG Designator Required	NORSOK M-630/M-650 Available?	NACE Compliant Example Part Number	Compliant with NACE Table # / Section
SS	316	YES	YES	NO	SS-8GBS8-SG	A.2 / 13.5.1, A.13 / 14.1.1.6
HC	Alloy C-276	YES	NO	NO	HC-8GBS8	A.13 / 14.1.1.6, A.14 / 14.1.1.5
625	alloy 625	YES	NO	NO	625-8GBS8	A.13 / 14.1.1.6, A.14 / 14.1.1.5
825	alloy 825	YES	NO	NO	825-8GBS8	A.13 / 14.1.1.6, A.14 / 14.1.1.5
2507	2507	YES	NO	Note 1	2507-8GBS8	A.14 / 14.1.1.5, A.24 / 13.8.1
6MO	6-moly	YES	NO	Note 1	6MO-8GBS8	A.8 / 13.7, A.14 / 14.1.1.5

Note 1: NORSOK may be available for this configuration. Please contact VSG technical service for additional information.

3.6. 40 Series and 40G Series Ball Valves

- 3.6.1. The components that are wetted by the system media are the body, ball stem, side rings and side discs.

Valve Material Designator	Material	NACE MR0175 / MR0103 Compliant Available?	-SG Designator Required	NACE Compliant Example Part Number	Compliant with NACE Table # / Section
SS	316	YES	YES	SS-43GS6MM-SG	A.2 / 13.5.1 A.13 / 14.1.1.6
M	Alloy 400	YES	NO	M-43S4	A.13 / 14.1.1.6
HC	Alloy C-276	YES	NO	HC-43F6	A.14 (4e) / 14.1.1.5 A.13 (4b) / 14.1.1.1



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3.7. 50 Series Lift Check

3.7.1. The components that are wetted by the system media are the body, poppet, and bonnet.

Valve Material Designator	Material	NACE MR0175 / MR0103 Compliant Available?	-SG Designator Required	NACE Compliant Example Part Number	Compliant with NACE Table # / Section
SS	316	YES	YES	SS-53S4-SG	A.2 / 13.5.1 A.13 / 14.1.1.6
M	Alloy 400	YES	NO	M-53S4	A.13 / 14.1.1.6
HC	Alloy C-276	YES	NO	HC-53S4	A.14 (4e) / 14.1.1.5 A.13 (4b) / 14.1.1.1

3.8 6P Gauge Root Valve

3.8.1 The components that are wetted by the system media are the body, ball, stem, and bonnet.

3.8.2 Although the ball is a wetted component it is not exposed to tensile stresses and is therefore a permitted exclusion of NACE MR0175 (ref. 2.1) and NACE MR0103 (ref. 2.3) requirements.

Valve Material Designator	Material	NACE MR0175 / MR0103 Compliant Available?	-SG Designator Required	NACE Compliant Example Part Number	Compliant with NACE Table # / Section
SS	316	YES	YES	SS-6PNBGMPW12L-F8-SG	A.2 / 13.5.1 A.13 / 14.1.1.6
M	Alloy 400	YES	NO	M-6PNDGM12-F8	A.13 / 14.1.1.6
HC	Alloy C-276	YES	NO	HC-6PNBGM8-F8-HC	A.14 (4e) / 14.1.1.5

3.9 0, 1, 18, 20, 26 series Needle valves

3.9.1 The components that are wetted by the system media are the body, stem, and lower gland.

Valve Material Designator	Material	NACE MR0175 / MR0103 Compliant Available?	-SG Designator Required	NACE Compliant Example Part Number	Compliant with NACE Table # / Section
SS	316	YES	YES	SS-1RS4-SG	A.2 / 13.5.1 A.13 / 14.1.1.6
M	Alloy 400	YES	NO	M-1GS4	A.13 / 14.1.1.6

3.10 D series Needle valve

3.10.1 The components that are wetted by the system media are the body, stem, packing bolt, washer and machine screw.

Valve Material Designator	Material	NACE MR0175 / MR0103 Compliant Available?	-SG Designator Required	NACE Compliant Example Part Number	Compliant with NACE Table # / Section
SS	316	YES	YES	SS-16DKM4-F4-SG	A.2 / 13.5.1 A.13 / 14.1.1.6



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3.11 L,31 Needle Valves

3.11.1 The components that are wetted by the system media are the body, stem, lower gland and bonnet.

Valve Material Designator	Material	NACE MR0175 / MR0103 Compliant Available?	-SG Designator Required	NACE Compliant Example Part Number	Compliant with NACE Table # / Section
M	Alloy 400	YES	NO	M-31RS4	A.13 / 14.1.1.6

3.12 OG, 1G, 92 Needle Valves

3.12.1 The components that are wetted by the system media are the body and stem.

Valve Material Designator	Material	NACE MR0175 / MR0103 Compliant Available?	-SG Designator Required	NACE Compliant Example Part Number	Compliant with NACE Table # / Section
M	Alloy 400	YES	NO	M-92S4-C	A.13 / 14.1.1.6

3.13 GU, F10 Needle Valves

3.13.1 The components that are wetted by the system media are the body, bonnet and needle.

Valve Material Designator	Material	NACE MR0175 / MR0103 Compliant Available?	-SG Designator Required	NACE Compliant Example Part Number	Compliant with NACE Table # / Section
SS	316	YES	NO	SS-4GUF4	A.2 / 13.5.1 A.27 / 13.9.2

3.14 V2, V3, V5, VB, VC, VL Instrumentation Manifolds

3.14.1 The components that are wetted by the system media are the body, ball tip, stem, bonnet and lower gland.

Valve Material Designator	Material	NACE MR0175 / MR0103 Compliant Available?	-SG Designator Required	NACE Compliant Example Part Number	Compliant with NACE Table # / Section
SS	316	YES	YES	SS-V2NBM8-F8-SG-11486	A.2 / 13.5.1 A.13 / 14.1.1.6
HC	Alloy C-276	YES	NO	HC-V2BF8-HC	A.14 / 14.1.1.5 A.13 / 14.1.1.6
2507	2507	YES	NO	2507-V2BF8-M-37776	A.24 / 13.8.1 A.13 / 14.1.1.6



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3.15 BV Bleed Valves

3.15.1 The components that are wetted by the system media are the stem and body. The back screw and vent tube are wetted when the valve is opened but are not exposed to system pressure.

Valve Material Designator	Material	NACE MR0175 / MR0103 Compliant Available?	-SG Designator Required	NACE Compliant Example Part Number	Compliant with NACE Table # / Section
6MO	6-moly	YES	NO	6MO-BVM4-SH-54515	A.8 / 13.7
M	Alloy 400	YES	NO	M-BVM4	A.13 / 14.1.1.6
HC	Alloy C-276	YES	NO	HC-BVM8	A.14 / 14.1.1.5
625	Alloy 625	YES	YES	625-BVM8-SG	A.13 (4b) / 14.1.1.1

4.0 PROCESS SHEET SCOPES

- 4.1** PS-14185 (ref. 2.4): This is for CH series check valves with Swagelok end connections made from annealed stainless steel material for sour gas applications. The internals are alloy 400, except for the alloy 600 spring. The raw material used in manufacturing of the body can be from an assortment of shapes, i.e. hex bar, round bar, square bar, etc.
- 4.2** PS-14187 (ref. 2.5): This is a non-Swagelok ended stainless steel CH Series check valve and XS flow valve that will be used in sour gas applications. The valve contains inlet and outlet bodies which are annealed after manufacturing, alloy 400 internal components and an alloy 600 spring.
- 4.3** PS-40789 (ref. 2.6): Applicable to any 2507 83 or 83X valve with all 2507 components made from raw material that meets NORSOK M-650 requirements.
- 4.4** PS-41253 (ref. 2.7): Applicable to any 2507 N or HN series valve with all 2507 components made from raw material that meets NORSOK M-650 requirements. This process sheet should no longer be required as standard 2507 material should be sourced from NORSOK M-650 compliant suppliers. Check material specification and material certifications as necessary.
- 4.5** PS-49151 (ref. 2.8): This Process Sheet is applicable to any 2507 N series needle valve with NACE compliance. A bonnet manufactured from annealed bar or forge rod is required. Stem components will be alloy 400 as standard for stainless steel N series with -SG designator.

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