Application of NACE Standards for Farris Pressure Relief Valves

NACE Standards MR-01-75 ISO 15156 and MR-01-03 deal with material requirements for Hydrogen Sulfide (H2S) Service. NACE MR-01-75 ISO 15156 is used in upstream process where the oil is being taken from the ground. NACE MR-01-03 applies to downstream (refining and gas processing) environments (broader range of sour environments).

NACE MR-01-75 (2002) - Old Specification

- This is an old standard and has been replaced with NACE MR-01-75 ISO 15156.
- Customer requests for this specification can only be built from Spartan Controls facility. A standard NACE Compliance document can be provided from Spartan Controls upon request.
- Material of Construction:

  For Carbon Steel Body & Bonnet Material
  - B7H & 2HM Studs and Nuts
  - Inconel Spring for Standard Valves and Chrome Alloy Spring for Bellows Valves.
  - Model Number suffix will end in S7 (ie: 26DA10-120/S7)

  For Stainless Steel Body & Bonnet Material
  - B8MA and 8MA Studs and Nuts
  - Inconel Spring for Standard Valves and Stainless Steel Spring for Bellows Valves.
  - Model Number suffix will end in S7/SP (ie: 26DA10-120/S7/SP)

NACE MR-01-75 (2003) - Old Specification

- Applicable for equipment used in a Sour Oilfield Environment Used in upstream processes where the oil is being taken from the ground.
- This has been replaced with NACE MR-01-75 ISO 15156.
- Material of Construction:

  For Carbon Steel Body & Bonnet Material
  - Maximum Hardness of 22 HRC
  - Specific Weld material is required when foundries are performing weld repairs. This weld material has to have hardness values verified and documented for its use. After all the Weld Repair has been performed the material must go through a final Post Weld Heat Treatment.
  - 316 Stainless Steel components can only be used up to 140 F with restriction on chloride content and H2S partial pressure.

  For Stainless Steel Body & Bonnet Material
  - Maximum Hardness of 22 HRC
  - Specific Weld material is required when foundries are performing weld repairs. This weld material has to have hardness values verified and documented for its use. After all the Weld Repair has been performed the material must go through a final Post Weld Heat Treatment.
  - 316 Stainless Steel components can only be used up to 140 F with restrictions on chloride content and H2S partial pressure.

  For Other Material Options such as Duplex Stainless Steel, and Hastelloy consult factory. Monel is NOT Allowed.

Calgary 403-207-0700 ▪ 305 - 27 St SE
Edmonton 780-468-5463 ▪ 8403 - 51 Av
Fort McMurray 780-790-0440 ▪ 300B MacKenzie Blvd
Grande Prairie 780-539-1161 ▪ 11419 - 98 Av
Regina 306-721-6925 ▪ 475 Maxwell Cres
Saskatoon 306-934-3484 ▪ 206B-2750 Faithful Av
Fort St John 250-785-0285 ▪ 9603 -112 St
Surrey 604-539-7250 ▪ 104-19329 Enterprise Way

NACE MR-01-03 (2005)

- Applicable for equipment used in Corrosive Petroleum Refining Environments (processing and refining plants). Used in downstream processes (refineries).
- Special Order from Farris Factory. Pricing per Farris's Standard NACE adders previously used for S7.
- Material Test Reports with Hardness Testing can be provided where required by the NACE standard.
- Delivery is factory shipping in 14 weeks.
- Future Inventory will be Dual Certified for NACE MR-01-03 and NACE MR-01-75 ISO Version. Stock completion estimated by end of 2007.
- Material of Construction (See Chart Page 4)

For Carbon Steel Body & Bonnet Material

- No base metal Hardness requirements
- Specific Weld material is required when foundries are performing weld repairs. This weld material has to have hardness values verified and documented for its use. After all the Weld Repair has been performed the material must go through a final Post Weld Heat Treatment.
- Model Number suffix will end in N1 (ie: 26DA10-120/N1)

For 316 Stainless Steel Body & Bonnet Material

- Maximum Hardness of 22 HRC
- Specific Weld material is required when foundries are performing weld repairs. This weld material has to have hardness values verified and documented for its use. After all the Weld Repair has been performed the material must go through a final Post Weld Heat Treatment.
- Model Number suffix will end in N4 (ie: 26DA10-120/N4)

For Other Material Options such as Duplex Stainless Steel, Hastelloy and Monel consult factory.

NACE MR-01-75 ISO 15156 (2005 Addenda)

- Applicable for equipment used in Sour Oilfield Environment. Used in upstream processes where the oil is being taken from the ground
- Special Order from Farris Factory. Pricing per Farris's Standard NACE adders previously used for S7
- Material Test Reports with Hardness Testing can be provided where required by the NACE Standard
- Delivery is factory shipping in 14 weeks
- Future Inventory will be Dual Certified for NACE MR-01-03 and NACE MR-01-75 ISO Version. Stock completion estimated by end of 2007
- Material of Construction (See Chart Page 4)

For Carbon Steel Body & Bonnet Material

- Maximum Hardness of 22 HRC
- Specific Weld material is required when foundries are performing weld repairs. This weld material has to have hardness values verified and documented for its use. After all the Weld Repair has been performed the material must go through a final Post Weld Heat Treatment.
- Model Number suffix will end in N1 (ie: 26DA10-120/N1)

For Stainless Steel Body & Bonnet Material

- Maximum Hardness of 22 HRC
- Specific Weld material is required when foundries are performing weld repairs. This weld material has to have hardness values verified and documented for its use. After all the Weld Repair has been performed the material must go through a final Post Weld Heat Treatment.
- Model Number suffix will end in N4 (ie: 26DA10-120/N4)

For Other Material Options such as Duplex Stainless Steel, and Hastelloy consult factory. Monel is NOT Allowed

Material Code Specifications with the A9 Suffix Noted on the Below Tables Require Hardness Testing for NACE Compliance

Table A: 2600 Series

Part Name	Material Grade	Material Code
N1 Suffix - Carbon Steel Body/Bonnet		
Body & Bonnet	WCB	023A9
Nozzle	CF8M/316 SS	010A9
Disc	316 SS	010A9
"O" Ring Retainer	316 SS	010A9
Spring	Inconel X750[1] Chrome Alloy[2]	[3]
Bellows	Inc 625/316LSS	061
Studs	B7M	235
Nuts	2HM	236
N4 Suffix - S3 or S4 Construction		
Body & Bonnet	CF8M	010A9
Nozzle	CF8M/316 SS	010A9
Disc	316 SS	010A9
"O" Ring Retainer	316 SS	010A9
Spring	Inconel X750[1] CRN or 316SS[2]	
Bellows	Inc 625/316LSS	061
Studs	B8MA Cl 1A	269
Nuts	8MA	505

Notes:
1. Spring used in conventional valves
2. Spring used in bellow valves
3. ----- = Not Applicable.

Table B : 2700 Series

Part Name	Material Grade	Material Code
N1 Suffix - Carbon Steel Bonnet		
Body	CF8M	010A9
Bonnet	WCB	023A9
Disc	316 SS	010A9
O-Ring Retainer	316 SS	010A9
Spring	Inconel X750	___[1]
Inlet Stub End Or Nipple	316 SS	010A9
Outlet Stub End Or Nipple[2]	316 SS WPB	010A9 167A9
Inlet Flange	SA-105	097A9
Outlet Flange	SA-105	097A9
N4 Suffix - S4 Construction		
Body/Bonnet	CF8M/316 SS	010A9
Disc	316 SS	010A9
"O" Ring Retainer	316 SS	010A9
Inlet Stub End Or Nipple	316 SS	010A9
Outlet Stub End Or Nipple	316 SS	010A9
Inlet Flange	F316 SS	010A9
Outlet Flange	F316 SS	010A9

Notes:
1. ----- = Not Applicable.
2. Depending on valve size, the outlet stub end or nipple may be stainless or carbon steel. Consult poolsheets.

Table C: 3800 Series: N1 Suffix - Carbon Steel Body

Part Name	Material Grade	Material Code
Body	WCB	023A9
Cover	SA-105	097A9
Guide/Guide-Cover	CF8M	010A9
Nozzle	CF8M	010A9
Seat Retainer	316	010A9
Piston	316	010A9
Studs	B7M	235
Nuts	2HM	236
Preload Spring	Inconel X750	**1**
Body (Control)	CF8M	010A9
N4 Suffix - S4 Construction		
Body & Cover	CF8M	010A9
Cover	F316	010A9
Guide/Guide-Cover	CF8M	010A9
Nozzle	CF8M	010A9
Seat Retainer	316	010A9
Piston	316	010A9
Studs	B8MA Cl 1A	269
Nuts	8MA	505
Preload Spring	Inconel X750	
Body (Control)	CF8M	010A9
Spool Return Spring	Inconel X750	
Lower Return Spring	Inconel X750	

Notes:
1. ----- = Not Applicable.