PIP PN03NM0B01
Piping Material Specification
3NM0B01 Class 300, Alloy 400 (UNS N04400),
Butt Weld, 0.000" C.A. Process
PURPOSE AND USE OF PROCESS INDUSTRY PRACTICES

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Piping Material Specification Line Class 3NM0B01

**SERVICE:** Process

**TEMPERATURE LIMIT:** -29°C to 400°C (-20°F to 750°F) (Note 09)

**NOMINAL CORROSION ALLOWANCE:** None

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**PRESSURE - TEMPERATURE RATINGS – METRIC UNITS**

Full flange rating per ASME B16.5, Table 2-3.4

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**PRESSURE - TEMPERATURE RATINGS – US CUSTOMARY UNITS**

Full flange rating per ASME B16.5, Table II-2-3.4

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**ITEM** | **NOTES** | **NPS** | **SCH/RAT** | **ENDS** | **DESCRIPTION** | **USER CODE**
---|---|---|---|---|---|---
**PIPE** | 01 | ½ – 2 | 40S | Weld | Alloy 400, SMLS, ASTM B165-N04400, annealed | |
| 01 | 3 – 6 | 10S | Weld | Alloy 400, SMLS, ASTM B165-N04400, annealed | |
| 01 | 8 – 20 | 20 | Weld | Alloy 400, SMLS, ASTM B165-N04400, annealed | |
| 01 | 10 – 24 | Calc | Weld | Alloy 400, EF W, ASTM B725-N04400, annealed, Cat. 2 (Ej=0.80) | |

**NIPPLES**

- **Branch** | ½ – 1½ | 1½ | 40S | Weld | Alloy 400, SMLS, ASTM B165, annealed | |
- **Swage (CONC)** | ½ – 1½ | 1½ | 40S | Weld | Alloy 400, ASTM B366-WPNC-S, annealed, MSS SP-95 | |
- **Swage (ECC)** | ½ – 1½ | 1½ | 40S | Weld | Alloy 400, ASTM B366-WPNC-S, annealed, MSS SP-95 | |

**FITTINGS**

- **BW Pipe** | 1½ – 20 | Weld | Alloy 400, ASTM B564-N04400, annealed | |
- **90 LR ELL** | ½ – 8 | Weld | Alloy 400, ASTM B366-WPNC-S, annealed, ASME B16.9 | |
- **90 LR ELL** | 10 – 24 | Weld | Alloy 400, ASTM B366-WPNC-W, annealed, ASME B16.9 | |
- **45 LR ELL** | ½ – 8 | Weld | Alloy 400, ASTM B366-WPNC-S, annealed, ASME B16.9 | |
- **45 LR ELL** | 10 – 24 | Weld | Alloy 400, ASTM B366-WPNC-W, annealed, ASME B16.9 | |
- **Tee** | ½ – 8 | Weld | Alloy 400, ASTM B366-WPNC-S, annealed, ASME B16.9 | |
- **Tee** | 10 – 24 | Weld | Alloy 400, ASTM B366-WPNC-W, annealed, ASME B16.9 | |
- **Cap** | ½ – 24 | Weld | Alloy 400, ASTM B366-WPNC-S, annealed, ASME B16.9 | |
- **Stub End LJ** | ½ – 8 | Weld | Alloy 400, ASTM B366-WPNC-S, annealed, ASME B16.9 | |
- **Stub End LJ** | 10 – 24 | Weld | Alloy 400, ASTM B366-WPNC-W, annealed, ASME B16.9, short pattern | |

**VALVES**

- **Gate** | ½ – 24 | Class 300 | RF | Alloy 400 body w/ Alloy 400 trim, HF ST | GA03NM500 |
- **Globe** | ½ – 12 | Class 300 | RF | Alloy 400 body w/ Alloy 400 trim, HF ST | GL03NM500 |
- **Swing Check** | 62 | ½ – 24 | Class 300 | RF | Alloy 400 body w/ Alloy 400 trim, HF ST | CS03NM500 |
- **Lug Dual PLT Check** | 63, 64, 65 | 3 – 24 | Class 300 | RF | Alloy 400 body w/ Alloy 400 disc, HF ST | CDN03NM702 |
- **Dual PLT Check** | 26, 63 | 12 – 24 | Class 300 | RF | Alloy 400 body w/ Alloy 400 disc, HF ST | CDN03NM700 |
- **Ball** | 09 | ½ – 4 | Class 300 | RF | Alloy 400 body w/ Alloy 400 trim, RTFE ST | BA03NM500 |
- **Ball** | 08, 09 | ½ – 4 | Class 300 | RF | Alloy 400 body w/ Alloy 400 trim, RTFE ST, FP | BA03NM501 |
- **Ball** | 09 | 6 – 10 | Class 300 | RF | Alloy 400 body w/ Alloy 400 trim, RTFE ST, GO | BA03NM502 |
- **Ball** | 08, 09 | 6 – 8 | Class 300 | RF | Alloy 400 body w/ Alloy 400 trim, RTFE ST, GO, FP | BA03NM503 |
- **Ball** | 09 | 12 – 24 | Class 300 | RF | Alloy 400 body w/ Alloy 400 trim, RTFE ST, GO | BA03NM504 |
- **Ball** | 08, 09 | 10 – 24 | Class 300 | RF | Alloy 400 body w/ Alloy 400 trim, RTFE ST, GO, FP | BA03NM505 |
- **Plug** | 1 – 4 | Class 300 | RF | Alloy 400 body w/ Alloy 400 plug | PL03NM502 |

**FLANGES**

- **Blind** | ½ – 3/4 | Class 300 | RF | Alloy 400, ASTM B564-N04400, annealed ASME B16.5 | |
- **Blind** | 1 – 24 | Class 300 | RF | CS, ASTM A105 w/ 1/8" Alloy 400 plate welded, serrated to 250 Ra finish, ASTM B675-N04400, annealed, ASME B16.5 | |
- **Lap Joint** | 22 | ½ – 24 | Class 300 | RF | CS, ASTM A105, ASME B16.5 | |
- **Weld Neck** | 22 | ½ – 24 | Class 300 | RF | Alloy 400, ASTM B564-N04400, annealed, ASME B16.5 | |
- **Pair WN Orifice** | 2 – 24 | Class 300 | RF | Alloy 400, ASTM B564-N04400, annealed, ASME B16.36, SW taps | |

**GASKETS**

- ½ – 24 | Class 300 | Spiral wound Alloy 400 w/ flexible graphite filler, ASME B16.20 | |

**BOLTING**

- **Stud Bolts** | ASTM A193, Gr B7 stud w/ 2 heavy hex nuts ASTM A194, Gr 2H | |
### 90° BRANCH CONNECTION

#### Legend and Chart

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#### HEADER SIZE

| 24 | 20 | 18 | 16 | 14 | 12 | 10 | 8 | 6 | 4 | 3 | 2 | 1-1/2 | 1 | 3/4 | 1/2 |

- A 0.180” (Note 59)
- C 0.200” (Note 59)
- D 0.240” (Note 59)
- E Reducing Tee
- P Branch Weld w/ Reinforcing Pad (Pad thickness equals run pipe thickness. Pad width equals ½ branch OD.)
- T Tee
- W BW Pipet (Note 81)

### NOTES:

01 If a pipe schedule is shown under "SCH/RAT," it shall be adequate for the full flange rating. If "CALC" is shown, the pressure limit may be lower than full flange rating.

02 All butt-welded component thicknesses shall match the pipe thickness.

07 These valves have no flanges but are installed between line flanges with extra-length bolts.

08 Full-port valves shall be used if indicated on the P&ID.

09 Pressure and temperature rating can be limited by certain components permitted by this Practice. Manufacturer's recommended pressure-temperature restrictions shall be consulted.

22 Stub ends with lap-joint back-up flanges may be used for temperatures up to 500°F (260°C). For higher temperatures, weld-neck flanges shall be used.

26 To be used only if indicated on the P&ID.

59 Branch weld shall be used with reinforcement pad if the minimum wall thickness (specified or measured) of the header at the branch location exceeds xxx where xxx equals the wall thickness value for the letter symbol shown in the legend. Full encirclement reinforcement (length equals twice branch pipe OD) shall be used if the wall is less than or equal to xxx.

63 These check valves shall be installed in a horizontal position with hinge pin vertical or in a vertical position with upward flow.

81 Integrally reinforced branch connections, tees, and reducing tees are permitted as an acceptable alternative branch connection.

170 These items should be qualified for use in this specification in accordance with ASME B31.3, Paragraph 304.7.2.

### REFERENCES:

Process Industry Practices (PIP)

- PIP PNF0200 – Vents, Drains, and Instrument Connection Details
- PIP PNSMV053 – Nickel and Nickel Alloy Gate Valve Descriptions
- PIP PNSMV054 – Nickel and Nickel Alloy Globe Valve Descriptions
- PIP PNSMV055 – Nickel and Nickel Alloy Check Valve Descriptions
- PIP PNSMV056 – Nickel and Nickel Alloy Ball Valve Descriptions
- PIP PNSMV058 – Nickel and Nickel Alloy Plug Valve Descriptions