

SERVICE: HYDROCARBON PROCESS, LOW TEMPERATURE, SWEET SERVICE

| | | |
|---|--|------------------------|
| TEMPERATURE: -45 to 149°C (-50 to 300°F) | DESIGN CODE: ASME B31.3 | PRESSURE CLASS: CL 900 |
| DESIGN PRESSURE: 15306 kPag (2220 psig) @ 38°C (100°F) (Note 1) | CORROSION ALLOWANCE: 1.6 mm (0.063") | |
| PRESSURE TEST: Recorded Hydrotest (Note 2) | PWHT: (Note 14) | |
| HYDROTEST PRESSURE: 22959 kPag (3330 psig) minimum for 1 hour | JOINT NDE: 10% of all joints to be visually inspected (Note 3) 10% of all socket welds per welder to undergo MT 10% of all butt welds per welder to undergo RT | |

| ITEM | NPS | RATING | CONN. | DESCRIPTION | NOTES |
|-----------------------|-------------|-------------|----------------|--|------------|
| PIPE | ½ to 1½ | SCH 160 | SCRD / SW | ASTM A333 Grade 6 (SMLS) PE | 7, 8 |
| | 2 to 3 | SCH 80 (XS) | BW / RF or RTJ | ASTM A333 Grade 6 (SMLS) BE | 25 |
| | 4 to 6 | SCH 160 | BW / RF or RTJ | ASTM A333 Grade 6 (SMLS) BE | 25 |
| | 8 to 24 | Calculate | BW / RF or RTJ | ASTM A333 Grade 6 (SMLS) BE | 25 |
| FITTINGS | ½ to 1½ | Class 6000 | SCRD / SW | ASTM A350 LF2 Class 1 | 7, 8 |
| | 2 to 24 | Match Pipe | BW | ASTM A420 Grade WPL6 | 9 |
| FLANGES | 2 to 24 | Class 900 | RF or RTJ (WN) | ASTM A350 LF2 Class 1, Bored to Match Pipe | 11, 25 |
| BLIND FLANGES | 2 to 24 | Class 900 | RF or RTJ | ASTM A350 LF2 Class 1 | 11, 25 |
| NIPPLES | ½ to 1½ | SCH 160 | SCRD | ASTM A333 Grade 6 (SMLS) | 5, 6, 7 |
| SWAGES | ½ to 1½ | SCH 160 | SCRD | ASTM A350 LF2 Class 1 or A333 Grade 6 (SMLS) | 5, 7 |
| SOCKOLETS | ¾ to 1½ | Class 6000 | SW | ASTM A350 LF2 Class 1 | |
| THREDOLETS | ½ to 1½ | Class 6000 | SCRD | ASTM A350 LF2 Class 1 | 7 |
| UNIONS | ½ to 1½ | Class 6000 | SCRD / SW | ASTM A350 LF2 Class 1 | 7, 8, 10 |
| WELDOLETS | 2 to 6 | Match Pipe | BW | ASTM A350 LF2 Class 1 | |
| SPEC. BLINDS | 2 to 24 | Class 900 | RF or RTJ | ASTM A516 Grade 70N | 11, 17, 25 |
| GASKETS | 2 to 12 | Class 900 | RF | ASME B16.20 Spiral Wound, 304 SS / Flexible Graphite | 11, 18 |
| | 14 to 24 | Class 900 | RF | ASME B16.20 Spiral Wound, 304 SS / Flexible Graphite, 304 SS Inner Ring | 11, 18 |
| | 2 to 24 | Class 900 | RTJ | ASME B16.20 Ring-Joint, Iron Oval Ring | 11, 18, 25 |
| STUDS | | | | ASTM A193 Grade B7 | |
| NUTS | | | | ASTM A194 Grade 2H | |
| ORIFICE FLANGES | 2 to 12 | Class 900 | RF or RTJ (WN) | ASTM A350 LF2 Class 1, Bored to suit pipe c/w ½" taps and jack bolts | 11, 25 |
| PLUGS | ½ to 1 | Class 6000 | SCRD | Hex Head, ASTM A350 LF2 Class 1 | 7 |
| | 1½ | Class 6000 | SCRD | Solid Round, ASTM A350 LF2 Class 1 | 7, 13 |
| TUBING | ¼" to ¾" OD | 0.035" WT | PE | ASTM A269, 304 Stainless Steel, annealed (SMLS) | 7, 12, 15 |
| | ½" OD | 0.049" WT | PE | ASTM A269, 304 Stainless Steel, annealed (SMLS) | 7, 12, 15 |
| FLANGE ISOLATION KITS | 2 to 24 | Class 900 | RF or RTJ | Pikotek VCS or PSI LineSeal, Type F, G-10 retainer, Teflon seal material, full length G-10 sleeves, and G-10 single set washers (1/8" thick) | 16, 18, 25 |

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| ITEM | NPS | TAG | DESCRIPTION |
|---------------------------|---------|----------------------|---|
| BALL VALVES (Note 25) | ½ to 1½ | B-40S200 | 4000 psig CWP, SW, regular port, floating, lever operated, bolted or threaded body, A350 LF2 or A352 LCC body, 316 stainless steel ball and stem, A193 B7 bolts, A194 2H nuts, manufacturer's standard seats, fire safe to API 607, ASME B16.34 |
| | ½ to 1½ | B-40S210 | 4000 psig CWP, SW, full port, floating, lever operated, bolted or threaded body, A350 LF2 or A352 LCC body, 316 stainless steel ball and stem, A193 B7 bolts, A194 2H nuts, manufacturer's standard seats, fire safe to API 607, ASME B16.34 |
| | ½ to 1½ | B-40T200 | 4000 psig CWP, THD, regular port, floating, lever operated, bolted or threaded body, A350 LF2 or A352 LCC body, 316 stainless steel ball and stem, A193 B7 bolts, A194 2H nuts, manufacturer's standard seats, fire safe to API 607, ASME B16.34 |
| | ½ to 1½ | B-40T210 | 4000 psig CWP, THD, full port, floating, lever operated, bolted or threaded body, A350 LF2 or A352 LCC body, 316 stainless steel ball and stem, A193 B7 bolts, A194 2H nuts, manufacturer's standard seats, fire safe to API 607, ASME B16.34 |
| | 2 to 4 | B-09J200 | Class 900 RF or RTJ, regular port, floating, lever operated, bolted body, A350 LF2 or A352 LCC body, electroless nickel plated (1-1.5 mil) A350 LF2 ball and stem, A193 B7 bolts, A194 2H nuts, manufacturer's standard seats, fire safe to API 607, ASME B16.34 |
| | 2 to 4 | B-09J201 | Class 900 RF or RTJ, regular port, floating, lever operated, bolted body, A350 LF2 or A352 LCC body, 316 stainless steel ball and stem, A193 B7 bolts, A194 2H nuts, manufacturer's standard seats, fire safe to API 607, ASME B16.34 |
| | 2 to 3 | B-09J210 | Class 900 RTJ, full port, floating, lever operated, bolted body, A350 LF2 or A352 LCC body, electroless nickel plated (1-1.5 mil) A350 LF2 ball and stem, A193 B7 bolts, A194 2H nuts, manufacturer's standard seats, fire safe to API 607, ASME B16.34 |
| | 2 to 3 | B-09J211 | Class 900 RF or RTJ, full port, floating, lever operated, bolted body, A350 LF2 or A352 LCC body, 316 stainless steel ball and stem, A193 B7 bolts, A194 2H nuts, manufacturer's standard seats, fire safe to API 607, ASME B16.34 |
| | 6 to 24 | B-09J220 | Class 900 RF or RTJ regular port, trunnion mounted, gear operated, bolted body, A350 LF2 or A352 LCC body, electroless nickel plated (1-1.5 mil) A350 LF2 ball and stem, A193 B7 bolts, A194 2H nuts, manufacturer's standard seats, fire safe to API 607, ASME B16.34 |
| | 4 to 24 | B-09J230 | Class 900 RF or RTJ, full port, trunnion mounted, gear operated, bolted body, A350 LF2 or A352 LCC body, electroless nickel plated (1-1.5 mil) A350 LF2 ball and stem, A193 B7 bolts, A194 2H nuts, manufacturer's standard seats, fire safe to API 607, ASME B16.34 |
| CHECK VALVES (Note 25) | ½ to 1½ | C-15S200 | Class 1500, SW, swing check, A350 LF2 or A352 LCC body, bolted or screwed cap, A193 B7 bolts, A194 2H nuts, API trim #8 (F6 and HF), ASME B16.34, API 602 |
| | ½ to 1½ | C-15S220 | Class 1500, SW, piston check, A350 LF2 or A352 LCC body, bolted or screwed cap, A193 B7 bolts, A194 2H nuts, API trim #8 (F6 and HF), ASME B16.34, API 602 |
| | ½ to 1½ | C-15T200 | Class 1500, THD, swing check, A350 LF2 or A352 LCC body, bolted or screwed cap, A193 B7 bolts, A194 2H nuts, API trim #8 (F6 and HF), ASME B16.34, API 602 |
| | ½ to 1½ | C-15T220 | Class 1500, THD, piston check, A350 LF2 or A352 LCC body, bolted or screwed cap, A193 B7 bolts, A194 2H nuts, API trim #8 (F6 and HF), ASME B16.34, API 602 |
| | 3 to 14 | C-09R220 C-09J220 | Class 900, RF or RTJ; piston type (non-slam, pulse dampened); A352-LCC body; bolted cap with graphite filled spiral wound or RTJ gasket; API Trim #8 (Piston: 13Cr; Seats: renewable HF); A193-B7 / A194-2H bolting; temperature -29°C to 400°C; per ASME B16.34, API 598 (and API 600 as applicable). Note: Use C-15R220 or C-15J220 for sizes NPS 2 ½ and smaller as ASME 1500 flanges are equivalent to ASME 900 flanges in these sizes. |
| | 2 to 24 | C-09J200 | Class 900 RF or RTJ, swing check, A350 LF2 or A352 LCC body, bolted cap, A193 B7 bolts, A194 2H nuts, API trim #8 (F6 and HF), ASME B16.34 |
| | 2 to 24 | C-09J230 | Class 900 RF or RTJ, tilting disc check, A350 LF2 or A352 LCC body, bolted cap, A193 B7 bolts, A194 2H nuts, API trim #8 (F6 and HF), ASME B16.34 |

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| GATE VALVES (Note 25) | ½ to 1½ | G-15S200 | Class 1500, SW, OS&Y, A350 LF2 or A352 LCC body, bolted bonnet, solid wedge, handwheel operated, A193 B7 bolts, A194 2H nuts, API trim #8 (F6 and HF), ASME B16.34, API 602 |
| | ½ to 1½ | G-15T200 | Class 1500, THD, OS&Y, A350 LF2 or A352 LCC body, bolted bonnet, solid wedge, handwheel operated, A193 B7 bolts, A194 2H nuts, API trim #8 (F6 and HF), ASME B16.34, API 602 |
| | ½ to 1½ | G-15X200 | Class 1500, SW x THD, OS&Y, A350 LF2 or A352 LCC body, bolted bonnet, solid wedge, handwheel operated, A193 B7 bolts, A194 2H nuts, API trim #8 (F6 and HF), ASME B16.34, API 602 |
| | 2 to 4 | G-09J210 | Class 900 RF or RTJ, OS&Y, A350 LF2 or A352 LCC body, bolted bonnet, flexible wedge, handwheel operated, A193 B7 bolts, A194 2H nuts, API trim #8 (F6 and HF), ASME B16.34, API 600 |
| | 6 to 24 | G-09J211 | Class 900 RF or RTJ, OS&Y, A350 LF2 or A352 LCC body, bolted bonnet, flexible wedge, gear operated, A193 B7 bolts, A194 2H nuts, API trim #8 (F6 and HF), ASME B16.34, API 600 |
| GLOBE VALVES (Note 25) | ½ to 1½ | O-15S200 | Class 1500, SW, OS&Y, A350 LF2 or A352 LCC body, bolted bonnet, standard body, handwheel operated, A193 B7 bolts, A194 2H nuts, API trim #8 (F6 and HF), ASME B16.34, API 602 |
| | ½ to 1½ | O-15T200 | Class 1500, THD, OS&Y, A350 LF2 or A352 LCC body, bolted bonnet, standard body, handwheel operated, A193 B7 bolts, A194 2H nuts, API trim #8 (F6 and HF), ASME B16.34, API 602 |
| | ½ to 1½ | O-15X200 | Class 1500, SW x THD, OS&Y, A350 LF2 or A352 LCC body, bolted bonnet, standard body, handwheel operated, A193 B7 bolts, A194 2H nuts, API trim #8 (F6 and HF), ASME B16.34, API 602 |
| | 2 to 4 | O-09J200 | Class 900 RF or RTJ, OS&Y, A350 LF2 or A352 LCC body, bolted bonnet, standard body, handwheel operated, A193 B7 bolts, A194 2H nuts, API trim #8 (F6 and HF), ASME B16.34 |
| | 6 to 24 | O-09J201 | Class 900 RF or RTJ, OS&Y, A350 LF2 or A352 LCC body, bolted bonnet, standard body, gear operated, A193 B7 bolts, A194 2H nuts, API trim #8 (F6 and HF), ASME B16.34 |
| NEEDLE VALVES (Note 25) | ¼ to ¾ | N-60T500 | 6000 psig CWP, FNPT x FNPT, 316 SS body and trim, threaded bonnet, NACE MR-0175 / ISO 15156 |
| | ¼ to ¾ | N-60M500 | 6000 psig CWP, MNPT x FNPT, 316 SS body and trim, threaded bonnet, NACE MR-0175 / ISO 15156 |
| | ¾ x ½ | N-60M501 | 6000 psig CWP, ¾" MNPT x ½" FNPT, 316 SS body and trim, threaded bonnet, NACE MR-0175 / ISO 15156 |
| BUTTERFLY VALVES | - | - | None listed at this time |