

GP 03-19-01	Piping Erection, Leak Testing, Flushing, and Cleaning	April 2005
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Piping Erection, Leak Testing, Flushing, and Cleaning

GP 03-19-01

Scope

- 1) [I] This Global Practice (GP) covers field erection, leak testing, flushing, and cleaning of piping systems.
 - 2) [I] An asterisk (*) indicates that additional information is required. If a job is contracted, this additional information is specified in the Job Specification.
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1. Additional Requirements

* [I] The following Practices and Standards shall be used with this GP as specified by the Owner's Engineer.

1.1. Global Practices–ExxonMobil Engineering Practices

GP 18-08-01	Precommission Cleaning of Steam Generating Equipment and Piping Systems for Rotating Equipment
GP 18-10-01	Additional Requirements for Materials

1.2. ASME–American Society of Mechanical Engineers

ASME B16.5	Pipe Flanges and Flanged Fittings NPS 1/2 Through NPS 24 Metric/Inch Standard
ASME B31.1	Power Piping
ASME B31.3	Process Piping

2. Erection

- 1) [R] Field routed small piping ($NPS \leq 1\frac{1}{2}$ [40 mm]) shall be supported in a manner that minimizes excessive vibration and accommodates thermal expansion of terminal equipment.
- 2) [R] Temporary shipping braces, stops, or other protective devices for expansion joints shall not be removed until installation is complete, including any required adjustments to tie-rods, etc.

2.1. Flange Jointing Practice

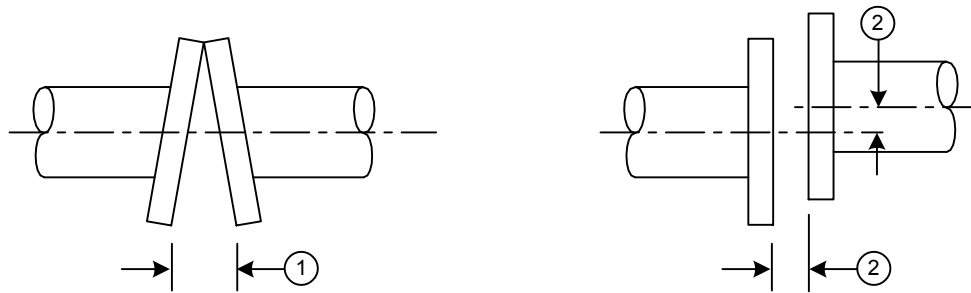
- 1) [R] Alignment tolerances of mating flanges shall be per the applicable code (ASME B31.1 or ASME B31.3) and Figure 1.

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Figure 1: Flange Alignment Tolerances

Item	Total Tolerance Per Flanged Joint	
	Normal Service	Special Services
		a. Design Temperature $\geq 850^{\circ}\text{F}$ (454°C) or Flange Rating $\geq$ ASME Class 900. b. Where plastic or elastomeric liner (lapped over the flange faces) provides the gasket for the joint.
①	Per the applicable Code	1/32 in. (1 mm) maximum out of parallel alignment of flanges, measured across any diameter.
②	Per the applicable Code	1/8 in. (3 mm) maximum translation of branches or connections.

- 2) [R] Flange "makeup" shall be done without the use of gasket sealing compounds.
- 3) [R] All flange bolting shall be assembled with thread lubricating compound.
- 4) [R] Regarding flanged pipe joints of cement lined type valves, it may be necessary to grind the lining at the pipe ends to avoid interference with the action of the valve disc (or plate). In this case, the lining shall be taper ground and coated with epoxy cement.
- 5) [R] Flange "bolt-up" procedures shall be approved by the Owner's Engineer.

3. Additional Requirements for Piping Over NPS 3 (80 mm) Connected to Rotating Machinery

3.1. Piping Erection and Flange Alignment

- 1) * [R] A detailed piping erection and alignment procedure shall be prepared for each rotating equipment machinery category and for each special purpose machinery train. Each procedure shall include the following and shall be submitted to the Owner's Engineer for review and approval:
 - a) Piping erection sequence
 - b) Flange alignment techniques
 - c) Flange bolt up and driver(s) to driven machine(s) alignment pipe strain checks

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