

GP 10-14-01	Lube and Seal Oil Systems for Machinery	March 2002
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Lube and Seal Oil Systems for Machinery

GP 10-14-01

Scope

- 1) [I] This Global Practice (GP) covers lubrication, shaft sealing systems, and control oil systems for:
 - a) Centrifugal compressors and axial compressors.
 - b) Rotary screw compressors.
 - c) Special purpose centrifugal fans.
 - d) Special purpose and generator drive steam turbines.
 - e) Gas turbines and expanders.
 - f) High speed special purpose gears.
 - g) Motors for compressors and fans (Items a–c above).

Exception: The requirements for general purpose machinery lube oil systems shall be as specified in the Global Practice(s) covering the specific type of general purpose machinery.

- 2) [I] All requirements specified in this Practice are additions to those of API STD 614-4, Fourth Edition, April 1999, unless specifically noted as exceptions. Paragraph numbers in this Practice which do not appear in API STD 614-4 are new paragraphs.
- 3) An asterisk (*) indicates that a decision by Purchaser is required or that additional information is furnished by Purchaser.
- 4) Note: A bullet (•) is shown in API STD 614-4, indicating that a Purchaser decision is required.

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1. Required References

[I] This Section lists Practices and Standards that are generically referenced and assumed to be a part of this document. Unless otherwise specified herein, use the latest edition.

1.1. Global Practices–ExxonMobil Engineering Practices

GP 02-01-01	Plant Noise Design Criteria
GP 03-06-01	Piping for Instruments
GP 03-06-02	Piping at Control and Protective System Valve Stations
GP 03-12-01	Valve Selection
GP 03-12-09	General Requirements for Valves
GP 03-18-01	Piping Fabrication Shop or Field
GP 15-01-02	Instrumentation for Compressors and Drivers
GP 15-02-01	Temperature Instruments
GP 15-03-01	Pressure Instruments
GP 15-05-01	Level Instruments
GP 15-09-01	Control Valves
GP 16-09-01	Low Voltage AC Motors Up to 200 HP (150 kW)
GP 16-09-02	AC Motors: Medium Voltage and Low Voltage Over 200 HP (150 kW)
GP 17-05-01	Human Factors in Plant Design
GP 18-07-01	Welding Procedures
GP 18-10-01	Additional Requirements for Materials
GP 18-12-01	Positive Material Identification
GP 20-01-01	Inspection of Equipment and Materials

1.2. API–American Petroleum Institute

API STD 614-4	Lubrication, Shaft-Sealing, and Control-Oil Systems and Auxiliaries for Petroleum, Chemical and Gas Industry Services Fourth Edition
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1.3. ASME–American Society of Mechanical Engineers

ASME B31.3	Process Piping
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1.4. ASTM–American Society for Testing and Materials

ASTM B 151/B 151M	Standard Specification for Copper-Nickel-Zinc Alloy (Nickel Silver) and Copper-Nickel Rod and Bar
ASTM B 466/B 466M	Standard Specification for Seamless Copper-Nickel Pipe and Tube

2. Additional Requirements

* [I] The following Practices and Standards shall be used with this Practice as specified by Purchaser.

2.1. Global Practices–ExxonMobil Engineering Practices

GP 03-16-01	Flanged Joints, Gaskets, and Bolting
GP 05-01-01	Pressure Vessels
GP 15-07-01	Electric Power Branch Circuit Design for Instrumentation
GP 15-07-02	Protective Systems

2.2. ASTM–American Society for Testing and Materials

ASTM B 111	Standard Specification for Copper and Copper-Alloy Seamless Condenser Tubes and Ferrule Stock
ASTM B 169/B 169M	Standard Specification for Aluminum Bronze Sheet, Strip, and Rolled Bar
ASTM B 171/B 171M	Standard Specification for Copper-Alloy Plate and Sheet for Pressure Vessels, Condensers, and Heat Exchangers
ASTM B 584	Standard Specification for Copper Alloy Sand Castings for General Applications

3. Revisions to API Standard 614, Chapter 1: General Requirements

[I] All Item numbers contained in this Section correspond to paragraph numbering within Chapter 1 of API STD 614-4 Fourth Edition, April 1999. All requirements specified in this GP are additions to those of API STD 614-4 unless specifically noted as exceptions. Paragraph numbers which do not appear in API STD 614-4 are new paragraphs.

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Modifications to Section 4: General

4.3.2. Addition: System Selection

- a) [M] Special purpose systems shall be provided for the equipment types specified under Scope in Par. 1a through 1g.
- b) [M] For general purpose machinery, this Practice applies only when specified in the Global Practice(s) covering the specific type of general purpose machinery. See Scope Par. 1.
- c) [M] Auxiliary piping and wiring within the baseplates and console, furnished and mounted by Vendor shall terminate in flanged connections and terminal boxes, respectively, suitable for Purchaser's connections.

Modifications to Section 5: Piping

5.1.1. Addition: General

[I] Piping design and joint fabrication, examination, and inspection shall be in accordance with ASME B31.3 and the additional requirements of [GP 03-18-01](#) and [GP 18-07-01](#).

5.1.2. Addition: General

- a) [I] The piping requirements of this Practice are applicable to auxiliary piping provided by the Vendor and to auxiliary piping which may be supplied by Purchaser to interconnect Vendor furnished components.
- b) * [I] Unless otherwise specified, for salt or brackish cooling water, carbon steel piping and 90 Cu 10 Ni ASTM B466 Alloy C70600 tubing in sizes 1/2 to 1 in. (12 to 25 mm) shall be used. Fittings shall be per ASTM B151 Alloy C70600.
- c) [S] Piping and components between double block valves shall be suitable for the more severe line classification on either side of the double block valve.
- d) [C], [O] Unexposed oil piping in bearing housings, crankcases, and similar applications may be Vendor's standard for lube and control oil.

5.1.2.e. Exception: General

[R], [M] Gaskets shall be per [GP 03-16-01](#) for Groups I, II, and III. For Group IV, gaskets shall be spiral wound Type 304 stainless steel with non-asbestos filler. An internal and external centering ring shall be provided.

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5.1.5. Addition: General

- a) [I], [O] Bracing of connections shall be per [GP 03-18-01](#). Block valves shall not be installed in small piping connections where interruption of flow will result in machine damage or shutdown (e.g., lube oil laterals to bearings).
- b) [M] Flanges or other removable connections shall be provided throughout the piping system to permit complete removal of the piping and shall be located close to machinery to permit removal or assembly of the equipment. Blind flanges shall be installed at dead ends of all piping.

5.1.7. Addition: General

[C] For line sizes greater than 1 in. NPS, slip-on flanges may be used on oil supply lines upstream of the filters and on oil drain lines.

5.1.9. Exception: General

[R] Except as permitted by [GP 03-06-01](#), tubing shall not be used.

5.1.14. Addition: General

[R] The root pass of all butt welds on stainless steel pipe shall employ an inert gas welding process such as GTAW or GMAW. Only solid wire filler metal may be used. Joints shall be back purged with pure argon during the entire welding operation.

5.1.17. Addition: General

- a) [R], [M] Sealwelding is also required for pressurized lube, seal, and control oil lines and gas services under vacuum.
- b) [R], [M] There shall be no sealwelding on connecting piping and tubing for instruments downstream of the valved take off connection.

5.1.18. Exception: General

- a) [R], [M] Valves shall be per [GP 03-12-01](#) and [GP 03-12-09](#).
- b) [R], [M] Soft sealed and wafer type valves shall not be used.
- c) [R], [M] Carbon steel valves used in stainless steel piping systems shall be removable for cleaning (e.g., either flanged ends or threaded ends) and furnished with nipples and flanges.

5.1.23. Exception: General

[I] Bolting selection shall be per [GP 03-16-01](#).

5.1.25. Addition: General

[C] Each utility shall be manifolded to a common connection.

5.1.26. Addition: General

[R], [M] Steel flanges mating to cast iron flanges shall be flat faced. Full-faced gaskets shall be used.

5.2.2. Addition: Oil Piping

- a) [R] Pressurized control, lube, and seal oil piping downstream of oil filters shall be butt welded.

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