



NATIONAL PETROCHEMICAL COMPANY
STANDARDS

MATERIAL STANDARD
FOR
RECIPROCATING COMPRESSORS FOR
GENERAL REFINERY SERVICES
NPCS-MS-RE-10
REVISION : 0

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1 GENERAL

1.1 This standard covers the minimum requirements of reciprocating compressors and their drivers used in process services.

1.2 This standard is supplemented by the data sheets on which the operating conditions and minimum special requirements are listed in detail.
In case of conflicts between documents listed below, the one appearing earlier in the list shall take precedence over those appearing later:

- a) Purchase order.
- b) Data sheets.
- c) The requirements of the requisition.
- d) This standard.

1.3 Compliance with the provisions of this standard does not relieve the vendor of the responsibility of furnishing unit of proper design, mechanically suited to meet mechanical and performance guarantees at the specified operating conditions.

2 MODIFICATION TO API 618

Each of the following paragraphs denotes an addition, substitution, modification or deletion of the corresponding paragraph of API 618, Third Edition, February 1986.

(Substitution)

The API Standard clause is deleted and replaced by the new clause.

(Deletion).

The API Standard clause is deleted without any replacement.

(Addition)

A new clause with a new number is added.

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(Modification)

part of the API Standard clause is modified, and/or a new description and/or condition is added to that clause.

3 SECTION 1 - GENERAL

1.1 SCOPE

1.1.1 (Addition)

This standard covers the minimum requirements of reciprocating compressors and their drivers used in process services.
This standard supplements and modifies the general requirements of the API 618, Third Edition, February 1986.

1.1.2 (Addition)

The metric international system of units (SI) shall be used for sizing of equipment and for all information in equipment data sheets, flow schemes, drawings and other documents.

1.2 ALTERNATIVE DESIGNS

(Modification)

Vendor may offer alternative design if obtaining improvement over the specified equipment at the same cost or advantages in cost operation or maintenance without decrease in quality-.
The alternative should be clearly marked so, and complete information/data as per API 618, paragraph 5.1, should be provided for.

1.3 CONFLICTING REQUIREMENTS

(Modification)

In case of conflicts between documents listed below, the one appearing earlier in the list shall take precedence over those appearing later:

- a) Purchase order.
- b) Data sheets.
- c) The "requirements" of the requisition.
- d) This standard.

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e) Other specification and standards referred to in the above documents.

f) Vendor drawings.

Any conflict between the above documents and details generally agreed upon during meetings, conversations or correspondence with vendor, shall be brought to purchaser's attention and written approval obtained before proceeding with the manufacturer or any work on the part or equipment in question.

4 SECTION 2 - BASIC DESIGN

2.1.2 (Modification)

The maximum permissible sound level shall not exceed 85 dBA measured at 1 m from surface of compressor and driver for the recommended range of operation.

2.1.5 (Modification)

Including 10% accumulation and shall be suitable for a fully loaded shut-down.

2.1.7 (Substitution)

All electrical components and installations shall be suitable for the area classification (class, group and division) specified by purchaser on the data sheets.

Electric motors shall comply with the electrical motor project specification.

2.1.12 (Substitution)

The capacity at the performance point certified by the manufacturer shall have no negative tolerance. The compressor vendor shall submit the design tolerance between the compressor's rated capacity and the required capacity. This tolerance shall not be more than 3%.

2.1.14e (Addition)

Review all compressor unit components for suitability under all specified start-up, loading and shut-down conditions.

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2.1.15 (Modification)

All equipment shall be designed for outdoor installation.

2.2 (Substitution)

Average piston speed shall not exceed 5 m/s for lubricated compressors or 3.5 m/s for non-lubricated compressors. Vendor's recommended speed is acceptable unless otherwise shown on the specification sheets. The compressor speed shall not exceed 500 rpm unless explicitly approved by purchaser.

2.3 2 (Modification)

Where high temperature alarm or shut-down is specified, each cylinder (or cylinder nozzle of the discharge pulsation suppressor¹ of a stage shall be provided with one or two thermowells and switches.

2.4 1 (Modification for the 2nd Sentence)

The combined rod loads shall be calculated on the basis of the stage discharge relief valve including 10% accumulation, part load operation and minimum specified suction pressure.

2.5 2 (Modification)

Change 10% in the 2nd sentence to 20%.

Vendor shall furnish results of torsional analysis for the purchaser's review and comments.

2.6 1.2 (Modification)

Vertical cylinders require purchaser's explicit approval. When vertical cylinders are specifically allowed, these shall be designed such that complete drainage of the cylinder is possible.

2.6.2.1 (Modification)

Vendor shall furnish a cylinder support for each compressor cylinder. Cylinder supports shall be independent of the piping.

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