

Recommended Practice for Installation, Maintenance, and Operation of Internal-Combustion Engines

API RECOMMENDED PRACTICE 7C-11F
FIFTH EDITION, NOVEMBER 1, 1994

REAFFIRMED: APRIL 2008



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FOREWORD

This recommended practice is under the jurisdiction of the API Committee on Standardization of Production Equipment.

A related specification issued by the Division of Production, American Petroleum Institute, is: "Spec7B-11C Specification for Internal-Combustion Reciprocating Engines for Oil-Field Service". It covers methods of testing and rating internal-combustion reciprocating engines for application to specific oil-field service.

This standard shall become effective on the date printed on the cover but may be used voluntarily from the date of distribution.

Recommended Practice for Installation, Maintenance, and Operation of Internal-Combustion Engines

1 Scope

1.1 The purpose of this recommended practice for installation, maintenance, and operation of internal-combustion engines is threefold, viz.:

- a. To present information of a general nature pertaining to their installation and to emphasize installation recommendations for specific types of service, observation of which is often overlooked.
- b. To present maintenance check-off lists for daily, weekly, and monthly maintenance of such engines.
- c. To present trouble-shooting recommendations with which the causes of most common engine troubles can be determined. This publication does not purport to be a detailed instruction manual; and, in cases where additional information is required on a particular piece of equipment, the manufacturer should be consulted.

1.2 To present (see Appendix A) recommendations for minimizing potential fires and/or explosions.

1.3 The information presented under installation and maintenance has been classified as:

- a. Applicable generally to all types of internal-combustion engines in all types of service.
- b. Particularly applicable to engines in drilling or semi-portable plant service.

1.4 Particularly applicable to engines in oil-well pumping, oil-pump, or similar service where the engines may or may not be under daily observation. Both multiple-cylinder and single- or two-cylinder engines are considered in the latter category.

2 General

2.1 MOUNTING

All engines should have solid vibration-free mounting. Installation of box-base type engines without full-length support of the base is not desirable. Shims or other precision methods should be used to avoid uneven support and distortion of the engine structure.

2.2 LEVELLING

Engines, particularly the box-base type, should be as level as possible.

2.3 ALIGNMENT

The alignment of the engine with the driven equipment

should comply with the recommendations of the manufacturer for both the engine and the driven equipment. Before aligning, both engine flywheel and flywheel housing, as well as the driven equipment, should be checked for runout resulting from handling or service.

2.4 FLEXIBLE COUPLINGS

In the initial installation of equipment, flexible couplings should be used when checking the correct belt tension and the gap between shafts.

2.5 SHEAVES, BEARINGS, AND CLUTCH SHAFTS

Drive pulleys should be mounted as close to the engine as possible. This places the load near the clutch main bearing and tends to reduce the side-pull load on the bearings. Heavy tools should not be used to drive sheaves or similar equipment on the clutch shafts. Such procedure can damage bearings and cause difficulty in the removal of sheaves. Caution should be exercised in installing excessively large-diameter or heavy drive pulleys. The recommendations of the manufacturer for such installation should be carefully followed.

2.6 ENGINE EXHAUST

Each engine-exhaust system should be of sufficient size that back pressure at the engines does not exceed that recommended by the manufacturer, and each engine should have a separate exhaust. It is required to include in the exhaust piping a short section of flexible tubing for vibration isolation, thermal expansion, and ease of alignment on installation. Exhaust piping should be independently supported to prevent damage to the engine. Care should be exercised to prevent welding slag or any foreign material from entering the engine during installation. Do not connect exhaust from several engines to a common header. All exhaust systems should be protected against water entry and a suitable trap and drain provided to prevent condensate from returning to the engine.

2.7 PROTECTION AGAINST WEATHER

Proper protection against weather should be provided during storage or installation. For storage longer than a few days, use the protective materials and methods recommended by the engine manufacturer.

2.8 ENGINE COOLING SYSTEM

Only clean water, soft or treated, should be used in the engine cooling system. The use of corrosion inhibitors should