

SPECIFICATION: COUPLERS FOR THE BOTTOM LOADING
OF PETROLEUM ROAD TANKERS

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FOREWORD

This publication has been prepared under the direction of the EI's Distribution & Marketing Committee.

It provides recommended minimum performance and mechanical specifications for the design of bottom loading couplers for use at distribution installation loading gantries with petroleum road tankers fitted with adaptors meeting the requirements of EN 13083 *Tanks for transport of dangerous goods. Service equipment for tanks. Adaptor for bottom loading and unloading.*

This publication also provides dimensions, coupling action, actuation and other requirements that need to be met to achieve full interchangeability between loading couplers and adaptors of various manufacturers.

The design, construction and testing requirements of this publication are intended to be implemented by loading gantry coupler manufacturers. It is recognised that the alignment of existing manufacturing company-specific requirements with those in this publication will take time. When couplers meeting the requirements of this publication are made available, operators of distribution installations may decide whether they need to/should specify the use of such equipment.

The requirements of this publication are not intended to be applied retrospectively. Whilst operating experience within the industry indicates that the current coupler designs in service are fit-for-purpose, users of existing loading gantry couplers should decide what action to take if couplers in current use do not conform to the requirements of this specification. Due consideration should be taken of the safety implications of non-conformance, particularly if new information identifies concerns associated with specification non-conformance.

It is likely that this publication will have a wider scope of usage and will encompass differing operating practices and safety and environmental legislation to those that apply in the UK. Therefore, this publication should be read in conjunction with any statutory operating requirements that apply at the point of intended use. It is recommended that if procedures defined in this publication are more stringent than those at the point of use then those in this publication should be followed.

Suggested revisions are invited and should be submitted to the Technical Department, Energy Institute, 61 New Cavendish Street, London W1G 7AR, UK (e: technical@energyinst.org).

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1 INTRODUCTION AND SCOPE

The European Directive 94/63/EC¹ on the control of volatile organic compound (VOC) emissions lays down an obligation (with minor exemptions) that bottom loading is undertaken for road tankers transporting motor gasolines.

A bottom loading coupler allows the transfer of product from the loading arm or hose at the loading gantry through a mating adaptor fitted to the bottom loading pipework on the road tanker into the transport tank. There has been a coherent standards programme undertaken by CEN covering the adaptor and other bottom loading and vapour collection system components fitted to petroleum road tankers since the introduction of this directive. That programme did not, however, include publication of a standard for the bottom loading coupler installed at the loading facility.

This publication specifies dimensions, coupling action, actuation and other requirements to achieve the necessary operational requirements and full interchangeability between bottom loading couplers and the loading adaptors designed to EN 13083, mounted on petroleum road tankers.

EN 13083 specifies different maximum working pressures (MWP) for adaptors depending upon the type of footvalve installed on the road tanker. For adaptors fitted to road tankers which have pressure balanced footvalves the MWP is 1 000 kPa whereas the MWP for adaptors fitted to tankers with non-pressure balanced footvalves is 500 kPa. Correspondingly, this publication specifies MWP for couplers depending on the pressure rating of the adaptors to which they will be connected in use.

Note: The Safe Loading Pass Scheme in use in the UK requires petroleum road tankers to be fitted with non-pressure balanced footvalves.

The scope of this publication covers couplers that are connected to loading arms and associated product pipework at the loading gantry that are provided with thermal pressure relief.

The equipment specified is suitable for use with liquid petroleum products and other dangerous substances of Class 3 of ADR² which have a vapour pressure not exceeding 110 kPa at 50 °C and which have no sub-classification as toxic or corrosive. These include, but are not limited to, the following fuels: automotive gasoline, diesel, gasoil, kerosene, aviation turbine fuel and aviation gasoline, and fuels blended with those components permitted under EU legislation (e.g. Directives 85/536/EEC, 98/70/EC and 2003/30/EC) e.g. methanol, ethanol, TPA, IBA, isobutanol, MTBE and other ethers with five or more carbon atoms, and fatty acid methyl ester (FAME). If the coupler is to be used for handling aviation fuel, users should satisfy themselves that there will be no adverse effects on the product being handled through the coupler.

This publication references the standards included in Annex A.

¹ European Parliament and Council Directive 94/63/EC of 20 December 1994 on the control of volatile organic compound (VOC) emissions resulting from the storage of petrol and its distribution from terminals to service stations.

² European Agreement concerning the International Carriage of Dangerous Goods by Road