

El Specification 1584

Four-inch hydrant system components and arrangements

4th edition

EI SPECIFICATION 1584
FOUR-INCH HYDRANT SYSTEM COMPONENTS AND ARRANGEMENTS

4th edition

May 2017

Published by
Energy Institute, London

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Registered charity number 1097899

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The EI gratefully acknowledges the financial contributions towards the scientific and technical programme from the following companies

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ISBN 978 0 85293 966 6

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CONTENTS

	Page
Legal notices and disclaimers.	6
Foreword.	7
Acknowledgements	9
1 Introduction and scope	10
1.1 Introduction	10
1.2 Scope	10
1.2.1 General	10
1.2.2 Organisation	10
2 General arrangements and features.	11
2.1 Typical arrangement of hydrant pit equipment and controls.	11
2.2 Mandatory requirements	11
2.2.1 Dimensions and hydrant coupler/hydrant pit valve assembly mating	11
2.2.2 Outlet adapter actuation	11
2.2.3 Coupling action	16
2.2.4 Hydrant pit arrangement and mounting	16
2.2.5 Fuel sense and air/fuel reference lines.	17
2.2.6 Flow rate	17
2.2.7 Pressure rating	17
2.2.8 Pilot device actuation	18
2.2.9 Operating temperature range.	21
2.2.10 Pilot-operated valve closing and opening times	21
2.2.11 Deadman control	21
2.2.12 Overshoot	22
2.2.13 Pressure loss.	22
2.2.14 Pilot-operated valve leakage.	22
2.2.15 Vacuum testing	23
2.2.16 Catastrophic excess flow	23
2.2.17 Materials of construction	23
2.2.18 Serviceability	24
2.2.19 Decoupling spillage	24
2.2.20 Stoneguard	24
2.2.21 Wear gauges	24
2.2.22 Pilot device override	26
2.2.23 Dust covers	26
2.3 Optional items.	27
2.3.1 Reverse flow	27
2.3.2 Intermediate strainer	27
2.3.3 Automatic excess flow control	27
2.3.4 Secondary breakaway features.	27
2.3.5 Product selectivity.	27
2.3.6 Pressure control (regulation).	28
2.3.7 Other mechanical means of closing the pilot-operated valve.	28

Contents continued

	Page
3 Qualification performance criteria and testing procedures	29
3.1 Mechanical strength	29
3.2 Test fluid	29
3.3 Dimensional checks	29
3.4 Proof and burst pressure	29
3.4.1 Proof pressure	29
3.4.2 Burst pressure	30
3.5 Pressure loss	30
3.6 Opening and closing times and overshoot	31
3.7 Vacuum test	31
3.8 Pilot device override test	31
3.9 External load resistance and failure mode	32
3.9.1 Hydrant coupler shock resistance test.	32
3.9.2 Hydrant coupler run-over resistance test.	32
3.9.3 Hydrant coupler breakaway test.	33
3.9.4 Hydrant pit valve assembly – Steady load test.	35
3.10 Catastrophic excess flow	35
3.11 Decoupling spillage	35
3.12 Pressure, surge and flow control	36
4 Type approval testing and production quality assurance.	37
4.1 Approval testing	37
4.2 Production quality assurance	37
4.3 Inspection and acceptance.	38
4.4 Shipment.	38
4.5 Documentation and instruction	39
 Annexes	
Annex A Glossary of terms and abbreviations	40
A.1 Terms and definitions	40
A.2 Abbreviations.	44
Annex B Catastrophic excess flow	45
Annex C Hydrant pit valve assemblies in small pit boxes	46
Annex D Air/fuel-operated pilot devices	47
Annex E Referenced publications	48

LIST OF FIGURES

Figures	Page
Figure 1	Typical arrangement of hydrant pit equipment (deadman and pressure regulating valve in coupler) 12
Figure 2	Typical arrangement of hydrant pit equipment (deadman and pressure regulation in pit valve) 12
Figure 3A	Hydrant pit outlet adapter conforming to API RP 1004, SI measurements 13
Figure 3B	Hydrant pit outlet adapter conforming to API RP 1004, customary measurements . . 14
Figure 4A	Outlet adapter and coupler interface dimensions, SI measurements 15
Figure 4B	Outlet adapter and coupler interface dimensions, customary measurements 15
Figure 5A	Fuel sense and air reference lines accommodation for regulating type hydrant valves (valve installation), SI measurements 19
Figure 5B	Fuel sense and air reference lines accommodation for regulating type hydrant valves (valve installation), customary measurements 20
Figure 6	Schematic of test rig to be used for pressure loss, opening and closing times and overshoot 23
Figure 7	Example of pit valve wear gauge reference points (dimensions in mm). 25
Figure 8	Steady load test set-up (hydrant couplers and pit valve assemblies) 34
Figure 9	Suggested impact load test rig. 36

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FOREWORD

This publication provides recommended minimum performance and mechanical specifications for the design of aviation fuel hydrant system pit valves and associated couplers.

This publication also specifies requirements that need to be met to achieve universal interchangeability between components of various manufacturers and requirements for optional features which component manufacturers may be requested by users to provide.

This publication has been produced by the EI Aviation Equipment Sub-Committee. It replaces EI Specification 1584 third edition, April 2001 and includes the EI Safety Bulletin EI08/026 *Aviation fuel hydrant pit valves and hydrant pit couplers*, October 2008.

The main revisions incorporated in this 4th edition of EI 1584 are:

- Providing greater emphasis on the need for universal interchangeability between hydrant pit valve and hydrant pit coupler combinations between any manufacturer.
- Including the requirement for the hydrant pit valve manufacturer to provide detailed instructions for the mounting of the valve to hydrant riser flanges.
- Specifying the maximum permissible wear measured across any point on the diameter of the hydrant pit valve adapter ring and the distance from the top seal face of the adapter ring to the underside of the 45 ° angled face that a pit valve wear gauge shall be able to assess.
- Clarifying that standard fittings are to be attached to the hydrant pit coupler during the hydrant coupler shock resistance test.
- An expansion of the requirements for production quality assurance, inspection and acceptance and shipment.
- Deletion of Annex C (post-impact recommendations can now be found in EI 1560).
- Deletion of Annex E inspection and testing of hydrant pit valves.

The qualification testing requirements that were included in the 3rd edition of this publication have not been significantly amended in this 4th edition. Therefore existing qualifications to the 3rd edition are recognised as also meeting the requirements of this 4th edition.

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

Whilst the use of hydrant pit valve assemblies designed for use with 150 mm (6 in.) hydrant riser flanges is preferred, requirements for valves that are able to mate with other flanges are also included.

The requirements of this publication are not retroactive. Users of existing equipment should decide what action to take if equipment in current use does not conform to the requirements of this edition. Due consideration should be taken of the safety implications of non-conformance with this specification.

Note: It is recommended that pit couplers that conform to the requirements of this edition are only used in combination with pit valves that also conform to the requirements of this edition. At some locations into-plane refuelling companies may need to discuss this with hydrant operators.

Any manufacturer wishing to offer aviation hydrant system pit valves and couplers that comply with this specification is responsible for complying with all of the mandatory provisions included herein.

This publication uses the *Système International d'Unités* (International System of Units or SI). In this system, the decimal point is a comma (,). In writing numbers of greater than three digits, e.g. thousands, tens of thousands etc. a comma may not be used to demarcate the thousands. Thousands are demarcated by the use of a space.

Within this publication SI Units are used with US Customary Units following in parentheses. Internationally agreed conversions have been applied to these values.

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Although it is hoped and anticipated that this publication will assist both the manufacturers and purchasers of aviation fuel hydrant system pit valves and couplers, the EI cannot accept any responsibility, of whatever kind, for damage or loss, or alleged damage or loss, arising or otherwise occurring as a result of the application of the specifications or qualification procedures contained herein.

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).

Note for users of equipment covered by this publication. This publication includes a requirement for couplers to break away cleanly from the pit valve adapter if struck with a force as defined herein. It is recommended that, if a pit valve/coupler assembly is struck with sufficient force to remove the coupler during refuelling operations, the pit valve and coupler should be immediately removed from service for inspection or replacement in accordance with recommendations from the valve and coupler manufacturer. Details of post-impact recommendations can be found in EI 1560 *Recommended practice for the operation, inspection, maintenance and commissioning of aviation fuel hydrant systems and hydrant system extensions*.

ACKNOWLEDGEMENTS

This edition of EI 1584 has been prepared by the EI Equipment Sub-Committee on behalf of the EI Aviation Committee. Much of the redrafting was undertaken by Richmond Hannah (Aviation Refuelling Compliance Solutions Ltd¹) and Nic Mason (Kuwait Petroleum International Aviation Co Ltd) and includes input from hydrant pit valve and coupler manufacturers.

Draft versions of this fourth edition were reviewed by representatives of the following companies:

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Phillips 66
Shell Aviation Ltd.
Shell Global Solutions
Vitol Aviation
World Fuel Services
Zodiac Aerospace

Project coordination and editing was undertaken by Martin Hunnybun (EI).

¹ <http://www.aviationrefuellingcompliance.com>

1 INTRODUCTION AND SCOPE

1.1 INTRODUCTION

The performance requirements and optional recommendations included in this publication are intended to achieve the following:

- a. Establish the acceptable structural and operating integrity of the components involved.
- b. Provide a compatible coupling configuration and arrangement at the hydrant pit that will permit universal interchangeability between the components of different manufacturers.
- c. Assist component manufacturers in their design efforts by detailing operational, maintenance and ergonomic features of components that are considered desirable based upon experience in aircraft fuelling.
- d. Describe the alternative arrangements of hydrant pit components that are typical for four inch hydrant systems and thereby assist component manufacturers and aircraft fuelling system designers and operators in their efforts.
- e. Provide mechanical strength criteria for normal handling loads and failure modes for excess mechanical loadings and impact damage.

1.2 SCOPE

1.2.1 General

This publication specifies dimensions, coupling action, activation, and other requirements to achieve the necessary operational requirements and universal interchangeability between components from manufacturers of hydrant pit valve assemblies and couplers. It also includes requirements for other optional features which component manufacturers may be requested to provide by purchasers. The performance specifications are for equipment intended for systems in aviation turbine fuel service. They do not apply to aviation gasoline (Avgas).

1.2.2 Organisation

As universal interchangeability is to be attained, certain features of the mating components shall be standardised. Other features, although desirable, are not so critical, but are pointed out to assist manufacturers in the design of these components.

The pit valve and coupler, along with any other features attached, are considered to be as a whole for the purposes of this publication.

Section 2 covers general arrangement and features, specifying those features of the hydrant pit valve and coupler components that are mandatory, as well as those that are optional. They are listed as 'Mandatory' and 'Optional' respectively.

Section 3 describes performance criteria and test requirements for the hydrant pit valve assembly and hydrant coupler.

Section 4 contains the quality assurance and information requirements.

Annex A provides a glossary of terms and definitions as used in this publication. Annexes B to E are included for information only.