	First Issued	19 August 2013
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	Review date	1/04/2015
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	Version	2.0
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SOUTH AUSTRALIAN FIRE AUTHORITIES

EQUIPMENT SPECIFICATION 001

Storz Couplings, Adaptors & Reducers

Acknowledgment

This specification is based on the joint NSW Rural Fire Service and Fire and Rescue New South Wales *Emergency Services Equipment Specification – ESE-0605-2012 for Storz Couplings, Adaptors & Reducers*, Version 1, issued March 2011, © 2010, with their express permission.

Revision History:

Version	Revision Description	Date
1.0	First revision	19 August 2013
2.0	Second revision, inclusion of CFS-specific requirements	1 April 2015

List of Amendments:

Clause	Amendment
Title page	CFS logo added, and “South Australian Metropolitan Fire Service” changed to “South Australian Fire Authorities”
1.3	Included reference to the CFS.
2.1.1	Included details on Storz coupling sizes used by the CFS.

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1 OUTLINE

- 1.1 This specification details the technical requirements for Storz couplings, adaptors and reducers (fittings) to be used for firefighting by the South Australian Metropolitan Fire Service (MFS) and South Australian Country Fire Service (CFS). Storz fittings form part of the inventory carried on firefighting appliances.
- 1.2 Fittings are used to connect hose lengths to hydrants, fire appliances, firefighting branches (a shut-off, director and nozzle assembly) and fire fighting systems in buildings to efficiently carry water and firefighting solutions under pressure for firefighting purposes, minimising waste and limiting damage.
- 1.3 This specification is based on the end user requirements of the MFS and CFS. Except where necessary to ensure compatibility with equipment currently in use, it is not based on any particular manufacturer's product.
- 1.4 Nothing in this specification shall be construed to waive or modify any obligations imposed by the *Work Health and Safety Act 2012* and any subsequent Legislation or Regulations.

2 DESCRIPTION

2.1 General

- 2.1.1 Fittings shall use 38, 52, 65, 75, 100, 125 and 150mm Storz couplings (the MFS utilises 38, 52 and 65mm 2 lug Storz couplings, and 150mm 3 lug Storz couplings, while the CFS utilises 65, 100 and 125mm 2 lug couplings).
- 2.1.2 Storz couplings consist of a:
 - a) Clamp fitting with two or three lugs;
 - b) Sealing ring; and
 - c) Tail.

2.2 Clamp Fitting

- 2.2.1 Clamp fittings shall have lug spacing according to Annexure A "Hose Couplings".
- 2.2.2 Couplings with the same lug spacing shall be able to be connected regardless of any variation in tail diameter.
- 2.2.3 When two clamp fittings are completely coupled, the axial grip ribs shall be directly opposite each other.
- 2.2.4 38 and 65mm Storz couplings used for delivery shall be fitted with black delivery seals and be capable of being coupled and uncoupled by fire fighters wearing gloves and without using tools.
- 2.2.5 All clamping systems must be able to withstand the pressures nominated to operate fire safety systems.

2.3 Sealing Rings

- 2.3.1 Sealing rings shall have a flared foot.
- 2.3.2 Sealing rings shall be secured in a recess so that:
 - a) The sealing ring does not escape even when fluid flows at pressure from an open coupling; and
 - b) There is no seal-on-seal rotation.
- 2.3.3 65mm (for exception see clause 2.3.4), 100, 125 and 150mm couplings used for suction shall have a sealing ring and be white in colour. Tools will be required to couple and uncouple these couplings.
- 2.3.4 38, 52 and 65mm couplings with 70mm hose tails used for delivery shall have delivery sealing rings, black in colour, to facilitate easier hand coupling.

2.4 Hose Tail

- 2.4.1 Hose tails shall be suitable for delivery and suction operation.
- 2.4.2 The tail shall be mounted inside the clamp fitting and be swivel.
- 2.4.3 When the clamp fitting is turned during coupling, the tail shall remain stationary and the hose shall not twist.
- 2.4.4 A circlip shall secure the tail in the clamp fitting and prevent the clamp fitting sliding back.
- 2.4.5 There shall be a slot on the tail collar for inserting a screwdriver or circlip remover to remove the circlip.
- 2.4.6 There shall be three circumferential ribs on the tail to improve hose anchorage when binding with band clamps.
- 2.4.7 There shall be three recesses on the tail piece between the ribs that are of sufficient width to accommodate the binding clamps.
- 2.4.8 The outside diameter of the tail shall be accurately machined and finished smooth.

2.5 Adaptors

- 2.5.1 Adaptors shall effectively and efficiently enable hydrants, hoses, appliances, branches and other fittings with Storz couplings to be joined to equipment with couplings of another design.
- 2.5.2 Storz – female threaded adaptors shall have a gasket at the base of the thread.
- 2.5.3 Storz – male threaded adaptors shall have the end of the thread machined smooth to be a gasket face.
- 2.5.4 Required adaptors are detailed in Annexure B “Adaptors Storz – Female SA Round Thread”, Annexure C “Adaptors Storz – Male SA Round Thread” and Annexure D “Adaptors Storz – Other”.

2.6 Reducers

- 2.6.1 Reducers shall effectively and efficiently enable hydrants, hoses, appliances, branches and other fittings with Storz couplings to be joined to equipment with Storz couplings of a different diameter.
- 2.6.2 Reducers shall be swivel. The reducer section piece shall rotate independently of the clamp fittings so that there is no seal on seal rotation.
- 2.6.3 Reducers shall be low profile and the section piece shall be tapered and smooth.
- 2.6.4 Required reducers are detailed in Annexure E “Storz Reducer”.

2.7 Blanking Caps

- 2.7.1 Blanking caps shall make a dust and water tight seal against open Storz couplings.
- 2.7.2 Blanking caps shall be swivel. The cap shall rotate independently of the clamp fitting so that there is no seal on seal rotation.
- 2.7.3 Required blanking caps are detailed in Annexure F “Blanking Caps”.
- 2.7.4 Blanking caps shall be fitted with a retention chain. The free length of the chain (length not including any loop for attachment) shall not be less than the value stated in Annexure F, F.1 “Minimum Free Length of Chain”.

3 MATERIALS

- 3.1 Clamp fittings shall be manufactured from aluminium alloy using forged processes. Cast aluminium clamp fittings shall not be permitted. This is a mandatory requirement.
- 3.2 Unless otherwise stated in applicable standards:
 - a) Clamp fittings should be AlMgSi 1 F28 according to DIN 1749 Part 1 with a composition according to DIN 1725 Part 1, but with a copper content by weight of maximum 0.05%;
 - b) Tails should be AlSiMg with a composition according to DIN 1725 Part 2, but with a copper content by weight of maximum 0.05% and an iron content by weight of maximum 0.5%;
 - c) Circlip should be spring steel wire according to DIN 2076, dimensional accuracy C, and shall be rust and corrosion proof;
 - d) Seals shall be nitrile rubber. They shall be resistant to water, seawater, steam, oils, greases on mineral, vegetable or animal bases, light heating oil, diesel fuel, petrol, acids and bases.
- 3.3 It is an expectation that any supplier of components identified above can and will provide written confirmation of the product’s compliance with clauses 3.1 and 3.2 on request. This extends to any tender for supply, and to any installation seeking testing by the MFS Community Safety & Resilience Department.
- 3.4 The MFS currently uses “Feuer-Vogel” Storz couplings and recommend an equivalent or higher standard of coupling be specified.

4 MARKINGS

4.1 The clamp fitting shall have the following raised embossing:

- a) The symbol of the manufacturing company;
- b) The coupling size e.g. "STORZ 65"; and
- c) The standard manufactured to e.g. "NEN 3374".

5 PERFORMANCE

5.1 Notwithstanding these requirements, fittings shall comply with the following standards for:

- a) 65mm hose couplings – NEN 3374 FIRE FIGHTING EQUIPMENT Fire hose Couplings and ancillary equipment 1971.
 - b) 75mm hose couplings – DIN 14322–1989 Aluminium alloy suction coupling type B; nominal pressure 16.
 - c) 100 and 125mm hose couplings - NFPA 1963 Standard for Fire Hose Connections, Chapter 6 Non threaded Connections.
 - d) 150mm hose couplings – Pressure Equipment Directive 97/23/EC of the European Parliament and of the Council of 29 May 1997.
- 5.2 Indicative dimensions for 38mm clamp fittings are described in Annexure G "38mm Storz Coupling".
- 5.3 Indicative dimensions for 150mm (3 lug) clamp fittings are described in Annexure H "150mm Storz Coupling - 3 Lug".
- 5.4 The torque required to couple and uncouple 38mm couplings with delivery suction seals and 65mm Storz couplings with delivery seals shall be between 1.5 and 7.0 Nm.
- 5.5 Seals shall have a permissible temperature range of -25°C to +100°C and up to +130°C for short intervals.
- 5.6 Seals and fittings shall be PN16 rated with a standard nominal working pressure of 1600kPa.
- 5.7 Fittings shall be compatible with all grades of water quality (turbid, brackish, saline, etc) and solutions (foams, wetting agents, dispersants etc.) used in fire fighting.
- 5.8 Fittings shall be compatible with all equipment and appliance configurations currently in use.
- 5.9 Fittings shall be free from imperfections in materials, manufactured processes and assembly.

ANNEXURE A HOSE COUPLINGS

A.1 Sizes for couplings and tails:

Clamp		Hose tail		
Clamp	Lug spacing (mm)	For hose with internal diameter (mm)	Tail length (mm)(indicative only)	Minimum internal diameter (mm)
Storz 38mm	51	38	90	30
Storz 65mm	81	65	98	57
Storz 75mm	89	75	115	65
Storz 100mm	115	100	150	90
Storz 125mm	148	125	200	113
Storz 150mm (3 lug)	160	150	180	130

ANNEXURE B ADAPTORS STORZ – FEMALE SA ROUND THREAD

B.1 Sizes for couplings and female thread:

Storz Size	Minimum Internal Dia. Storz (mm)	Thread size BSP-P (inches)	Face to face length (mm)(indicative)
38 mm	32	1 ¼	35
38 mm	32	1 ½	35
65 mm	58	2 ½	42
75 mm	64.5	2 ½	42
75 mm	64.5	3	39
100 mm	89.5	4	47
125 mm	115	5	52
150 mm	130	6	96

ANNEXURE C ADAPTORS STORZ – MALE SA ROUND THREAD

C.1 Sizes for couplings and male thread:

Storz Size	Minimum Internal Dia. Storz (mm)	Thread size BSP-P (inches)	Face to face length (mm)(indicative)
38 mm	32	1 ¼	32
38 mm	32	1 ½	32
65 mm	58	2 ½	42
75 mm	65	2 ½	40
75 mm	65	3	40
100 mm	90	4	47
125 mm	115	5	52
150 mm	130	6	96

ANNEXURE D ADAPTORS STORZ – OTHER

D.1 Sizes for couplings

Storz Size (min. 58mm I.D.)	Connector	Sex	Diameter	Face to Face Length (mm) (indicative)
65 mm	Fire Brigade 5-1/5 TPI	Female	2-3/4in	42
65 mm	Fire Brigade 5-1/5 TPI	Male	2-3/4in	43
65 mm	International Shore Connection (ISC)	n/a	65mm	–
65 mm	British Instantaneous Coupling (BIC)	Female	65mm	–
65 mm	British Instantaneous Coupling (BIC)	Male	65mm	–
65 mm	Camlock	Female	65mm	–
65 mm	Camlock	Male	65mm	–
65 mm	CFA Round Thread	Female	65mm	–
65 mm	CFA Round Thread	Male	65mm	–
65 mm	Queensland Round Thread	Female	65mm	–
65 mm	Queensland Round Thread	Male	65mm	–
65 mm	Forestry Quick Connect (ULC Standard)	n/a	38mm	–

ANNEXURE E STORZ REDUCER

E.1 Sizes for Storz – Storz reducers:

Storz Size	Storz Size	Face to Face Length (mm) (indicative only)	Minimum Internal Dia. Storz (mm)
38 mm	25 mm	34	18
65 mm	38 mm	37	32
75 mm	65 mm	76	58
100 mm	75 mm	47	65
150 mm	100 mm	84	90
150 mm	125 mm	120	115

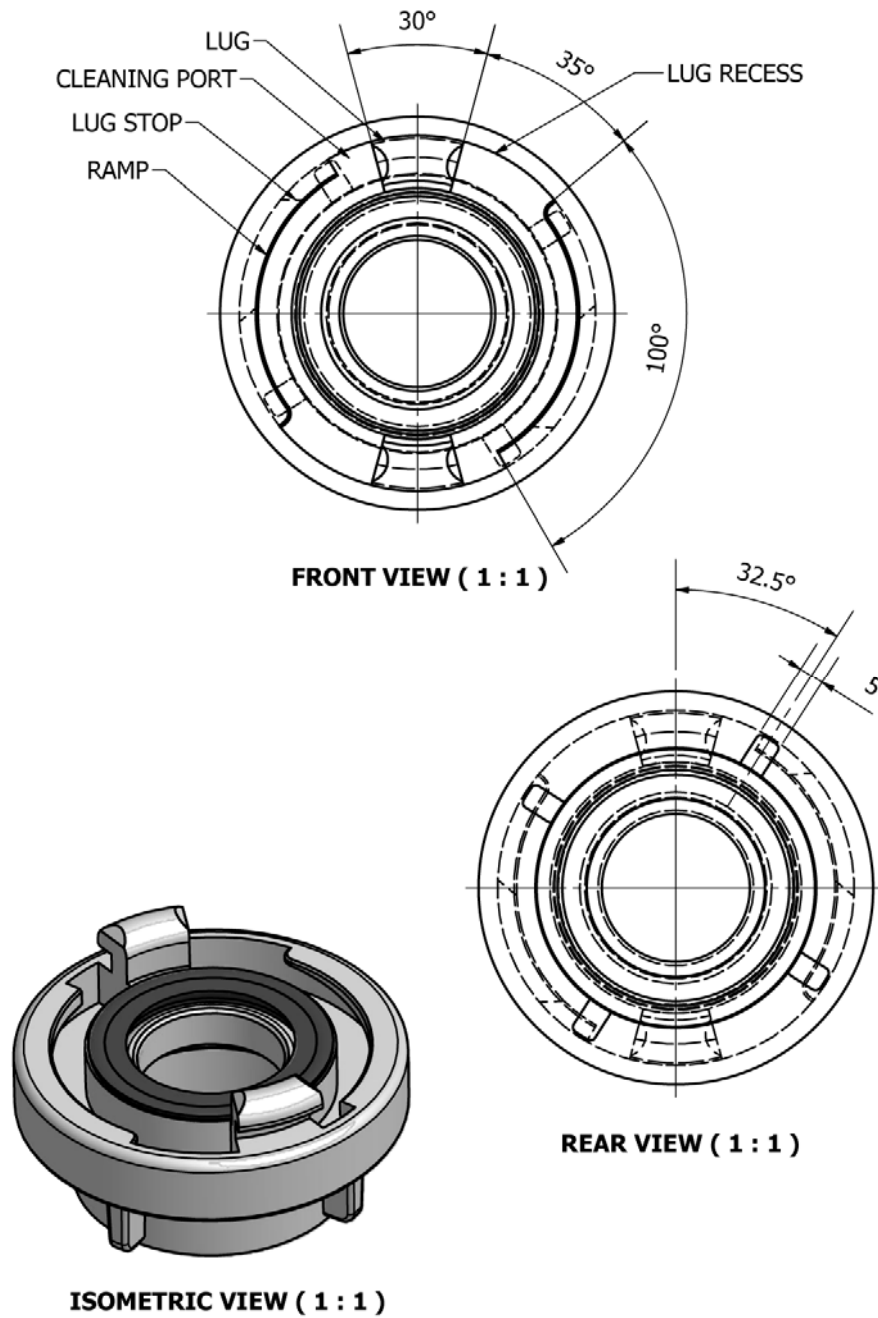
The MFS utilises 150mm 3 lug to 125mm 2 lug reducers in Mutual Aid areas.

ANNEXURE F BLANKING CAPS

F.1 Sizes for Storz Blanking Caps:

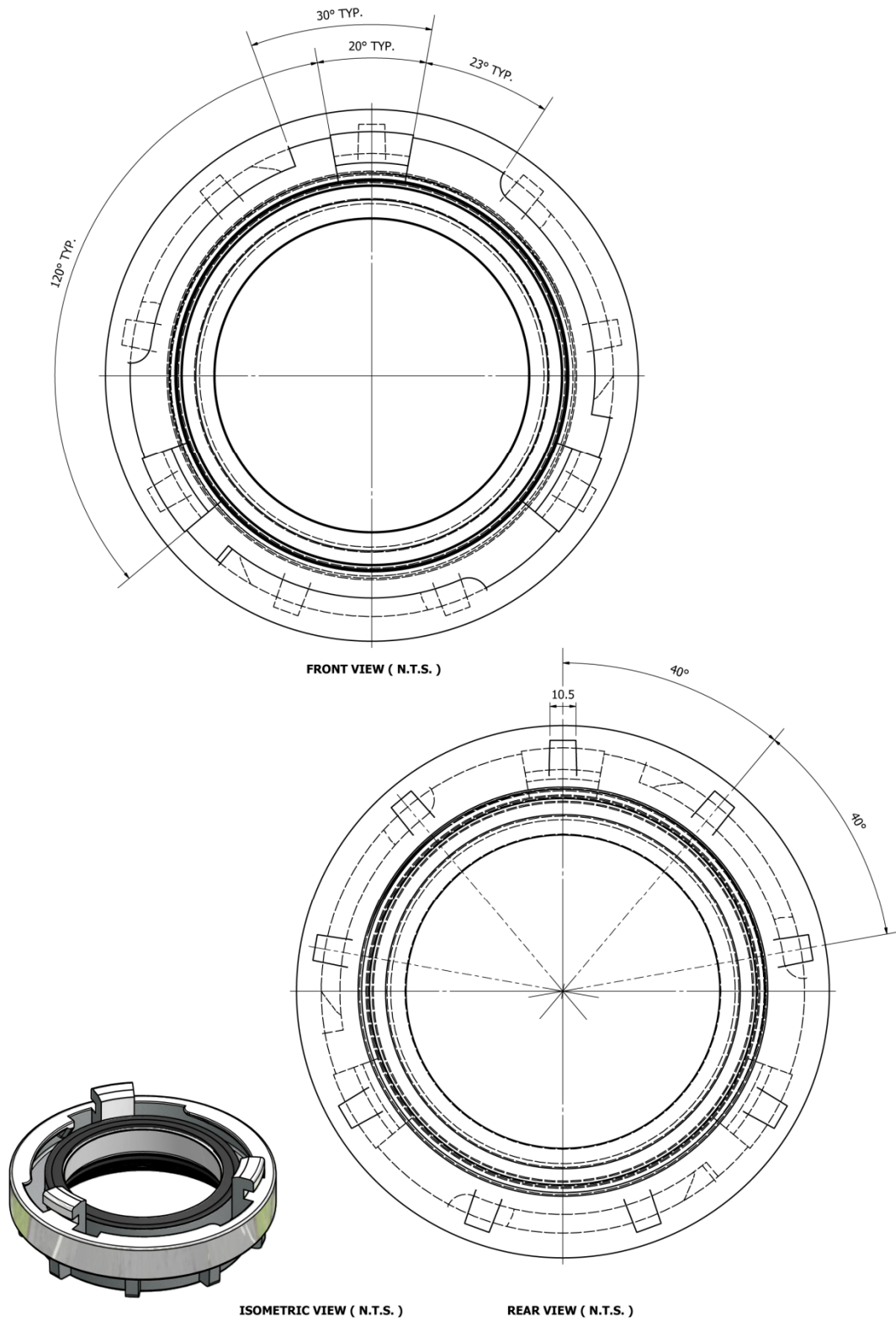
Blanking Cap Size (mm)	Minimum Free Length of Chain (mm)
38	150
65	220
75	220
100	330
125	330
150	330

ANNEXURE G 38MM STORZ COUPLING (INDICATIVE)



38mm Storz Clamp Fitting (indication only)

ANNEXURE H 150MM STORZ COUPLING - 3 LUG



150mm (3 lug) Storz Clamp Fitting (indication only)