Style 40A

Manhole Covers

Installation and Maintenance Manual

(Technical Manual No SDM01)

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1.0 Important Notes

1.1 Regarding Silos

There have been a number of incidents in past years in which silos have been over-pressurised as a result of the pneumatic filling operation.
It is essential that all constructors and users of silos carry out an assessment into the venting required during pneumatic filling. It should be noted that the operating characteristics of each silo are likely to be different. Therefore the assessment should include all relevant features of each system (eg vessel strength, existence of pressure operated isolation systems, other pressure relief valves, etc).

1.2 Regarding Manlids

WARNING: **Dependant upon the product carried, there may be a residual pressure in the tank compartment. Before opening the manhole cover or carrying out any inspection or maintenance, ensure that this pressure has been safely relieved (see operator's maintenance procedure).**

1.2.1 The Style 40A manhole cover has been designed for tanks and silos with a maximum working pressure of 0.35 bar (5 psi).

1.2.2 We have used our best endeavours to provide these guidelines for the inspection and replacement of the main operating parts. Please note, it is not possible to quantify exactly the condition of any component of the manhole cover, (in particular the condition of the fill cover seal or baseplate sealing face), that will guarantee a vapour and liquid tight seal, together with the correct operation of the 10" fill cover. If there is any doubt with regard to the condition of any component, in the interest of safety, we would recommend the replacement of that component. Similarly, if there is any doubt with regard to the vapour or liquid tightness of the manhole cover, we would recommend that it must be subjected to a pressure test.

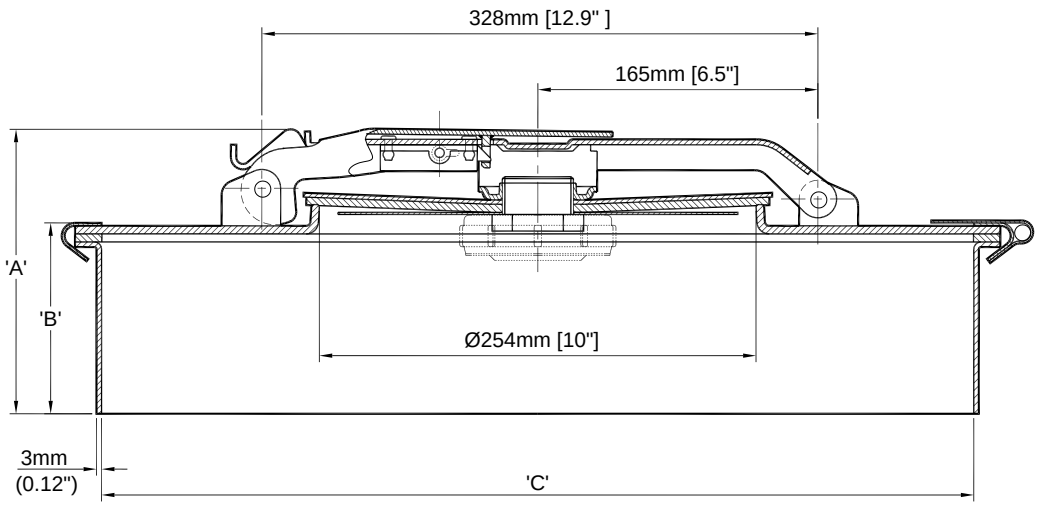
1.2.3 Operators may like to use this manual as a basis for their own written scheme, but should note that it will need to be amended as appropriate to take account of individual operating conditions.

NOTE 2: *This manual covers Style 40A manhole covers. A list of spare parts is shown on page 7 of this manual. Please do not hesitate to contact our Sales Department if you require further information or guidance.*

2.0 Description

2.1 Suitable for tanks and silos with a maximum working pressure of 0.35 bar (5 psi)

Fig 1 – Sketch showing dimensions



Dimension	16"	18"	20"	24"
'A'	143mm (5.6")	168mm (6.6")	168mm (6.6")	218mm (8.6")
'B'	86mm (3.4")	111mm (4.4")	111mm (4.4")	163mm (6.4")
'C'	406mm (16")	457mm (18")	508mm (20")	610mm (24")

2.2 The Style 40A manhole cover has a 255mm (10 inch) diameter opening with a hinged lid on a baseplate. The baseplate is secured to the neckring by the locking band and the compression of the gasket ensures an efficient seal. The neckring is designed for welding directly into the tank shell.

2.3 These manhole covers are not tested after assembly and must be tested after installation as any distortion caused by welding the neckring to the tank may affect the sealing faces.

2.4 The cam action of the lid clamp and hinge provides a positive closing and sealing arrangement. A security lock may be fitted to manhole covers when requested.

2.5 Manufactured in mild steel (zinc electro-plated, except for the neckring), or stainless steel (parts in contact with tank content grade 316, other parts grade 304). A stainless steel 1-16 type breather vent can be fitted if required (not suitable for powders or hazardous liquids). The standard gaskets are nitrile bonded cork.

NOTE: Before installation check that the materials stated above are compatible with the product to be carried/stored in the tank.

WARNING: Before opening or removing any manhole cover or inspection hatch, ensure that all pressure in the tank has been relieved. This will eliminate the possibility of a potentially dangerous "kick-back" and the risk of injury.

3.0 Installation

Suitable for tanks and silos with a maximum working pressure of 0.35 bar (5 psi)

NOTE 1: *Style 40A manhole covers are supplied assembled for final inspection and to facilitate packing and handling during despatch. The standard gaskets are nitrile bonded cork; before installation, check that this material is compatible with the products to be stored or carried in the tank.*

3.1 Before fitting the neckring to the tank the baseplate assembly should be removed from the neckring. Release the lid clamp (using a key if a lock is fitted). Remove the locking band bolt and lift off the locking band. Separate the neckring, gasket and baseplate assembly.

3.2 Insert the neckring into the tank aperture, adjust the height as required, and tack-weld into position.

3.3 Check that the top face of the neckring is flat, and that the shape is round before welding.

3.4 After welding, re-assemble the manhole cover as follows.

3.5 Check that the neckring and baseplate faces are clean and free from damage. Release the lid clamp on the baseplate assembly and place the assembly on the neckring with the gasket between the baseplate and the neckring. Do not allow the gasket to fall into the tank.

3.6 Fit the locking band with the lugs in the most suitable position, usually in-line with the hinges. Fit the bolt and tighten up the locking band until it just starts to grip.

3.7 Open the lid and check that the neckring gasket is fitted correctly by feeling inside and pushing the gasket into position. Tighten the locking band and, at the same time, assist it to fit snugly by tapping gently with a soft mallet around the periphery. **DO NOT OVERTIGHTEN.**

3.8 New manlids tend to be a little stiff to close when the lid gasket is new, but this will ease off as the gasket 'beds in'. Apply a smear of lubricant to the lid hinge (where the clamp rubs the arm), to make latching easier.

NOTE 2: *These manhole covers are not tested before despatch. We therefore recommend that a pressure test should be carried out after installation.*
We are unable to advise on the appropriate procedure for this test as these manhole covers are designed for use on a wide variety of tanks.

4.0 Protection against corrosion

4.1 Stainless steel manlids do not need any additional protection against corrosion. Mild steel manlids are zinc electro-plated (except for the neckring) for added protection against rust. The zinc electro-plating provides a sound base on which to apply a protective paint finish.

5.0 Recommended Inspection and Maintenance

WARNING

Dependant upon the product carried, there may be a residual pressure in the tank compartment. Before carrying out any inspection or maintenance on the manhole cover, ensure that this pressure has been safely relieved (see operator's maintenance procedure).

NOTE: *If at any time there are signs of physical damage, wear, or signs of leakage of product through the manhole cover (or any other tank top fitting) these should be investigated and repaired at the earliest opportunity.*

5.1 Monthly Maintenance

5.1.1 Manhole assemblies should be inspected with sufficient frequency and with due regard to the products carried, to ensure a liquid and vapour tight closure. If the manhole cover is closed, release all tank pressure, open the 10" fill cover and carry out the following procedure:

5.1.2 Inspect the entire manhole assembly for damage, corrosion or other conditions that could impair its function or product retention capabilities. Check the hinge / hinge pins for wear.

5.1.3 Check the condition of all manhole assembly gaskets and replace if their effectiveness as a seal is impaired in any way. Worn, torn or deteriorated gaskets may result in product or vapour leakage. Seal surfaces must be free of nicks, rust, product deposit or other foreign material. Replacement gaskets must be compatible with the product in the tank. Failure to follow the above procedure can result in liquid or vapour leakage.

5.1.4 Check that the vent valve (or plug if a vent valve is not fitted) is screwed in tight, and that the seal between the vent and the fill cover is in good condition. Check for visual signs of damage to the valve body. Check that the valve is clean.

6.0 Fitting replacement parts

6.1 Removing the fill cover assembly and lid clamp

6.1.1 If the manhole cover is closed, relieve all tank pressure, then open the 10" fill cover.

6.1.2 Remove the circlip and washer from one end of the fill cover hinge pin, taking care that the circlip and washer do not fall into the tank compartment. Then, whilst holding the fill cover assembly in one hand, withdraw the hinge pin from the lugs in the baseplate, taking care that the circlip and washer on the other end of the hinge pin do not fall into the tank compartment.

6.1.3 Repeat the above process for the lid clamp, if this component is also being replaced.

6.2 Replacing the fill cover assembly and lid clamp

6.2.1 Before fitting the replacement fill cover assembly or lid clamp, we recommend that the manhole baseplate is inspected for signs of damage or wear, particularly on the sealing face of the 10" aperture.

6.2.2 Using the hinge pin previously removed from the manhole cover, fit the replacement fill cover assembly to the baseplate. Re-fit the washers and circlips to the hinge pin

6.2.3 Using the other hinge pin previously removed from the manhole cover, fit the replacement lid clamp. Re-fit the washers and circlips to the hinge pin.

6.3 Replacing the fill cover gasket

6.3.1 Open the fill cover and unscrew the vent valve (or the plug if a vent valve is not fitted). The vent valve (or plug) secures the lid, gasket and gasket retaining plate. Before re-assembly, wipe all the surfaces clean. Apply a thread sealant to the thread of the vent valve (or plug) and re-assemble the lid with the new gasket. Tighten the valve (or plug) to secure the lid. The replacement gasket must be compatible with the products carried in the tank.

6.4 Changing the neckring gasket

6.4.1 Remove the locking band clamp bolt and the locking band. Lift off the baseplate assembly and old gasket. Do not allow the gasket to fall inside the tank. Clean the faces of the baseplate and the neckring.

6.4.2 Release the lid clamp on the baseplate assembly and place the assembly on the neckring, with the new gasket between the baseplate and the neckring. Do not allow the gasket to fall into the tank.

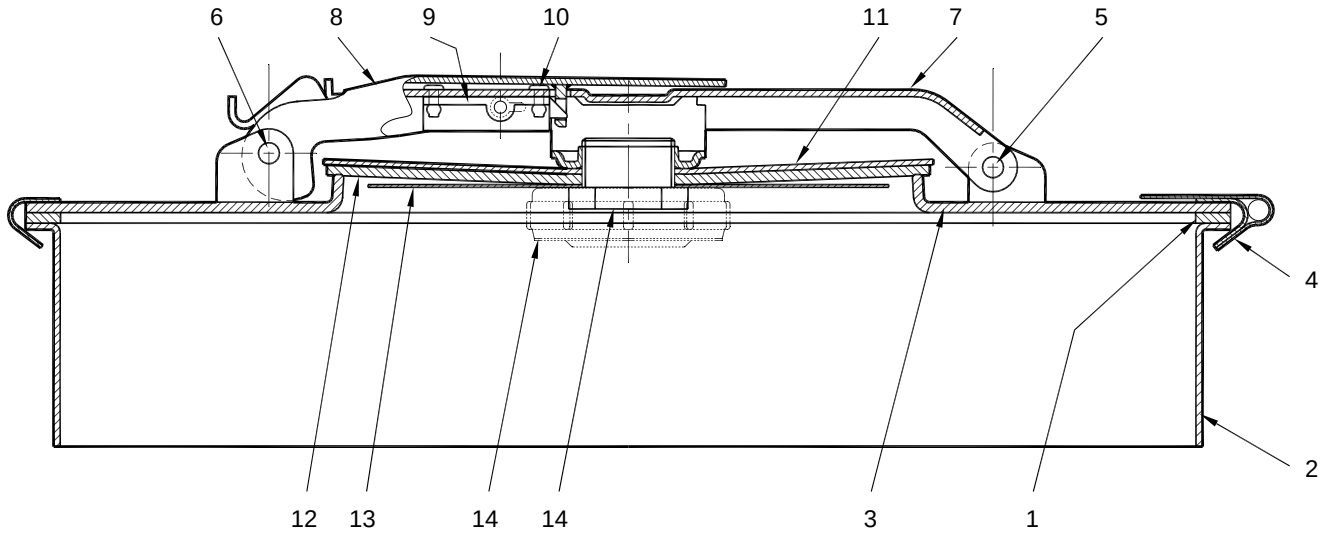
6.4.3 Fit the locking band with the lugs in the most suitable position, usually in line with the hinges. Fit the bolt and tighten up the locking band until it just starts to grip

6.4.5 Open the fill cover and check that the neckring gasket is fitted correctly by feeling inside the tank and pushing the gasket into position. Tighten the locking band, and at the same time assist it to fit snugly by tapping it gently with a soft mallet around the periphery. DO NOT OVERTIGHTEN

NOTE: Please do not hesitate to contact our technical staff at any time for assistance

Appendix 1

Style 40A - Parts Breakdown



Item	Size	Part No.		Description	Quantity
		Mild Steel	Stainless Steel		
1	16"	1064.00.N	1064.00.N	Neckring gasket (nitrile bonded cork)	1
1	18"	5036.01.N	-	Neckring gasket (nitrile bonded cork)	1
1	20"	5038.01.N	5038.01.N	Neckring gasket (nitrile bonded cork)	1
1	24"	5039.02.N	-	Neckring gasket (nitrile bonded cork)	1
2	16"	1062.00.M	1064.00.S	Neckring	1
2	18"	5036.10.M	-	Neckring	1
2	20"	5038.02.M	5038.02.S	Neckring	1
2	24"	5039.01.M	-	Neckring	1
3	16"	1065.21.M	1065.21.S	Baseplate	1
3	18"	5036.21.M	-	Baseplate	1
3	20"	5038.21.M	5038.21.S	Baseplate	1
3	24"	5039.03.M	-	Baseplate	1
4	16"	1073.00A.M	1073.00A.Z	Locking band assembly	1
4	18"	5036.04.M	-	Locking band assembly	1
4	20"	5038.04.M	5038.04.Z	Locking band assembly	1
4	24"	5039.05.M	-	Locking band assembly	1
5	All sizes	9122.13.Z	9122.13.Z	Hinge pin c/w circlips (hinge)	1
6	All sizes	9122.14.Z	9122.14.Z	Hinge pin c/w circlips (clamp)	1
7	All sizes	1077.07.M	1077.07.Z	Lid hinge without lock	1
8	All sizes	9128.04.M	U.9128.00.Z	Lid clamp without lock lug	1
		9128.03.M	-	Lid clamp with lock lug	1
9	All sizes	9125.09.S	9125.09.S	Lock	1
10	All sizes	9125.15.Z	9125.15.Z	Lock Rivets	4
11	All sizes	1061.00.M	1061.00.S	Manhole lid	1
12	All sizes	1063.00.N	1063.00.N	Joint washer (nitrile bonded cork)	1
13	All sizes	1059.00.M	1059.00.S	Joint retaining plate	1
14	All sizes	N/A	3088.00.S	1-16 vent valve (shown dotted)	1
14	All sizes	1635.00.A	1635.00.S	Plug	1

Key:- "M" indicates mild steel parts. "S" indicates 316 stainless steel. "Z" indicates 304 stainless steel.