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MIDLAND
PART OF OPW A DOVER COMPANY

Bottom Equipment Washout

B-50 Series

Installation, Operation & Maintenance (IOM) Manual

Manual content is subject to change.
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1 Regulations and Safety Requirements

1.1 Regulations

Midland fittings and accessories are used in connection with a variety of commodities. Many of those are hazardous materials and could cause serious injury or damage if mishandled.

This Midland product should only be installed, operated and maintained by qualified personnel. Read all of these instructions carefully before proceeding.

1.2 Safety Warnings and Precautions

Please carefully read each of the following warnings and cautions prior to performing any work.


WARNING

WARNING: Toxic Hazard. Always use extreme caution and proper equipment when involved with hazardous materials. To avoid exposure to toxic or hazardous materials, make sure the tank car is empty and clean, and that the work area is free of hazardous chemicals before removing or installing any fitting or assembly.

- **Wear protective clothing and equipment suitable for withstanding the materials to which you may be exposed**
- **Position yourself on the upwind side of the valve when possible**
- **Work in a well-ventilated area**
- **Work with a partner who can help you in the event of an emergency**
- **Follow approved safety precautions for hazardous or toxic materials**


CAUTION

CAUTION: Be sure that the railcar is empty and clean, and the work area is free of hazardous chemicals that may have been in the car, before removing a valve or installin a new one.


NOTICE

NOTICE: To ensure best practices and consistency of your qualification procedure, O-rings should always be replaced.


CAUTION

CAUTION: Under no circumstances should the washout be removed unless the tank car is empty and the valve free of product.


CAUTION

CAUTION: Do not scratch the O-ring grooves, as a scratch could cause a leak path around the O-ring.

2 Introduction

The B-50 Series Washout is used on tank cars when the bottom outlet connection is not in use. The simple design of the washout maintains a positive seal at the bottom outlet opening while maintaining the flexibility to change back to a bottom outlet valve in future applications.

Features include:

- Body construction available in Steel, 304L Stainless Steel and 316L Stainless Steel
- Buna-N O-ring construction
- PTFE Wiper Ring construction

2.1 Washout Dimensions

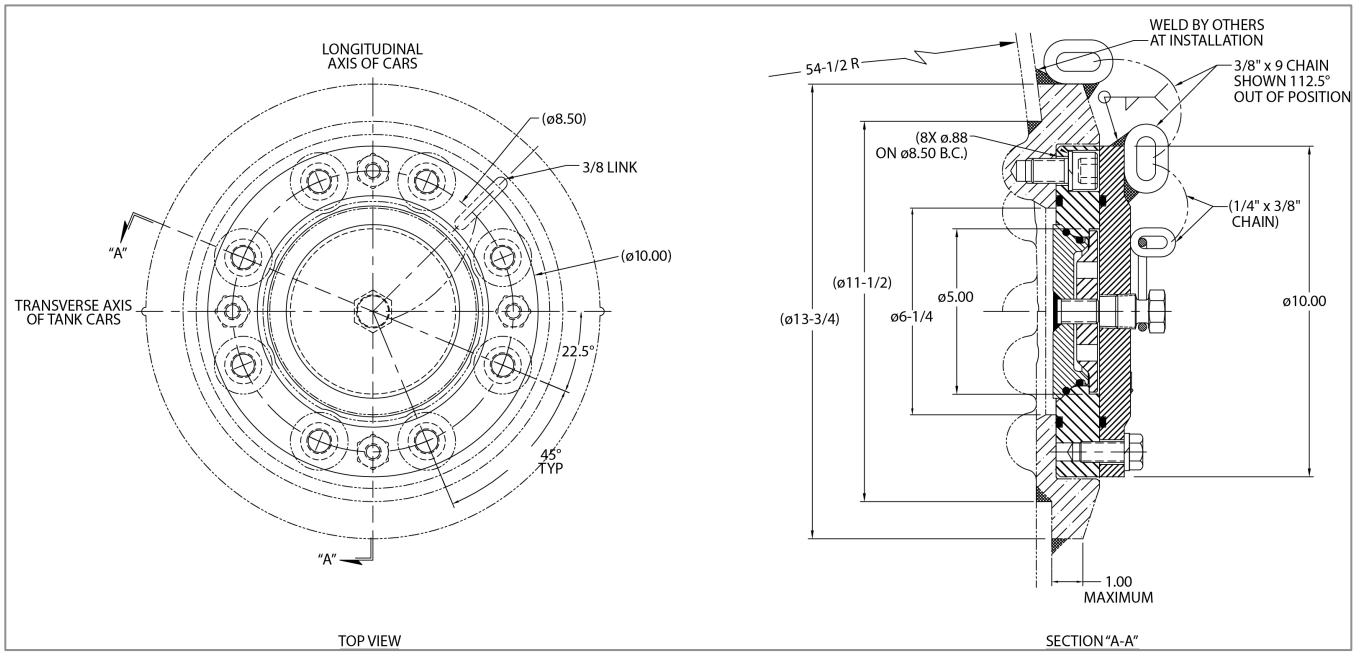

Figure 2-1 Dimensions – B-50

2.2 Washout Details – Component Identification and Parts Listing

ITEM	QTY.	PART DESCRIPTION	B-50-CS		B-50-SS (TYPE 304)		B-50-MO (TYPE 316)	
			MATERIAL	PART NO.	MATERIAL	PART NO.	MATERIAL	PART NO.
1	1	PLUG RETAINER	STAINLESS STEEL	50-1-CS	STAINLESS STEEL	50-1-SS	STAINLESS STEEL	50-1-MO
2	1	SADDLE**	STAINLESS STEEL	B-363-CS	STAINLESS STEEL	B-363-SS	STAINLESS STEEL	B-363-MO
3	1	WASHOUT PLUG	STAINLESS STEEL	50-3-CS	STAINLESS STEEL	50-3-SS	STAINLESS STEEL	50-3-MO
4	1	NOZZLE FLANGE	STAINLESS STEEL	50-4-CS	STAINLESS STEEL	50-4-SS	STAINLESS STEEL	50-4-MO
5	2	O-RING	BUNA-N*	545-11-BN	BUNA-N*	545-11-BN	BUNA-N*	545-11-BN
6	2	O-RING	BUNA-N*	547-33-BN	BUNA-N*	547-33-BN	BUNA-N*	547-33-BN
7	1	BLANK FLANGE	STAINLESS STEEL	50-7-CS	STAINLESS STEEL	50-7-SS	STAINLESS STEEL	50-7-SS
8	1	PIPE PLUG ASSEMBLY	STAINLESS STEEL	23-CS-25-25-10-CS	STAINLESS STEEL	23-SS-25-25-10-CS	STAINLESS STEEL	23-SS-25-25-10-CS
9	8	LOCK WASHER	STEEL*	363-21-AS	STEEL*	363-21-AS	STEEL*	363-21-AS
	8	BODY BOLT	STEEL*	363-22-AS	STEEL*	363-22-AS	STEEL*	363-22-AS
10	4	5/8-11 SHEAR BOLT W/LOCK WASHER	STEEL*	547-32-CS	STEEL*	547-32-CS	STEEL*	547-32-CS
11	4	NAMEPLATE	STAINLESS STEEL	50-11-SS	STAINLESS STEEL	50-11-SS	STAINLESS STEEL	50-11-SS
12	1	WIPER RING	TEFLON	545-14-TF	TEFLON	545-14-TF	TEFLON	545-14-TF
13	1	CHAIN	STEEL	55-311-CS	STEEL	55-311-CS	STEEL	55-311-CS

* ALTERNATE MATERIALS AVAILABLE
** OPTIONAL, SOLD SEPARATELY

Table 2-1 Parts Listing – B-50

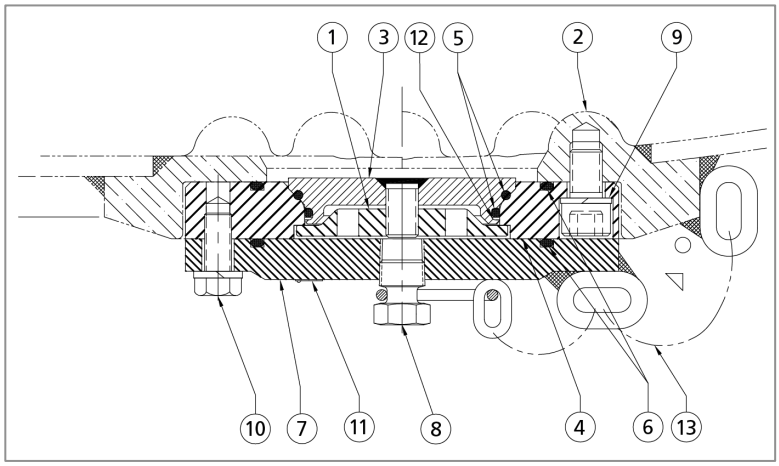

Figure 2-2 Component Identification – B-50

3 Installation Instructions

CAUTION

CAUTION: Be sure that the railcar is empty and clean, and the work area is free of hazardous chemicals that may have been in the car, before removing a valve or installin a new one.

The Washout may be mounted ion the tank car's universal flange, or on a Midland tank saddle, such as the B-363, or on saddles furnished by other companies. These mounting have different bolt circles, so the mounting flanges on the washouts are different.

3.1 Installation Procedure & Required Tools

Before arriving at the installation site, obtain the required tools and supplies prior to performing the procedures indicated in this guide.

Recommended Wrenches			
SAE	Component	Torque (ft-lb)	Item #
3/4"	Cap Screws	225	9
5/8"	Shear Bolts	90	10

Table 3-2 Required Tools with Torque Specifications

Other Tools and Supplies	
Torque Wrenches (0 – 225 ft-lb)	Lint-free Cloth
Loctite® (or equivalent)	

Table 3-3 Additional Recommended Tools and Supplies

3.1.1 Thoroughly clean the inside of the universal flange or mounting saddle. Be sure that there are no nicks, burrs, grit, paint or coatings or any other residue on this surface, or on the top flanged surface of the valve's upper section. Saddle surfaces should be flat to within 0.015" TIR after welding.

3.1.2 Remove the shear bolts and lock washers (item 10) and disassemble flange (item 7) and pipe-plug assembly (item 8).

CAUTION

CAUTION: It will be necessary to have mechanical assistance or additional manpower available to position the washout.

3.1.3 Orient the upper flange (item 4) so that the 5/8" shear-bolt holes on the universal flange or saddle (item 2) are on the longitudinal and transverse axes of the car.

NOTICE

NOTICE: The Midland saddles contain a special lock thread, but the universal flanges and saddles made but other companies frequently do not. For these flanges, it is desirable to use a thread sealant, such as Loctite®, on the ends of the threads of the 3/4-10 screws.

3.1.3.1 Install the socket-head cap screws with lock washers (item 9).

3.1.3.2 For the O-ring sealed flanges designed for metal-to-metal contact, torque the 3/4-10 socket-head cap screws (item 9) to 225 ft.-lbs.

3.1.4 Using a straight edge, check the exposed surface of the socket-head cap screws (item 9) to be sure they are screwed completely inside the recessed counter-bore in the flange.

3.1.5 Install the flange (item 4) and pipe-plug assembly (item 8). Secure it with four (4) 5/8" shear bolts and lock washers (item 10). Torque the 5/8" shear bolts to 90 ft-lb.

NOTICE: The upper flange (item 4) is tapped with a special lock thread, so it is not necessary to use a thread sealant, such as Loctite®. These two (2) flanges are bolted together metal-to-metal.

3.1.6 Be sure to test the washout for leakage in accordance with Section 4.1 Testing Process.

4 Washout Qualification

NOTICE: To ensure best practices and consistency of your qualification procedure, O-rings should always be replaced.

4.1 Testing Process

4.1.1 With the washout closed and the bottom flange in place, pressurize the railcar to check for leaks between the universal flange or saddle (item 2) and the upper flange (item 7) of the valve. Then slightly back off the pipe plug (item 8) to see if any air was trapped. If air escapes, this would indicate there was a leak in the orifice area of the valve.

5 Routine Maintenance

CAUTION

CAUTION: Under no cisrumstances should the washout be removed unless the tank car is empty and the valve free of product.

5.1 Leakage Through the Washout

The most likely cause for leakage through the washout is due to deteriorated O-rings. The procedure for replacing O-rings in the gasket retainer (item 1) is as follows:

5.1.1 Be sure there is no product or pressure in the railcar.

5.1.2 Carefully loosen the pipe plug to verify that there is no pressure or product present.

5.1.3 Remove the bolts and lockwashers (item 10) and disassemble the flange (item 7).

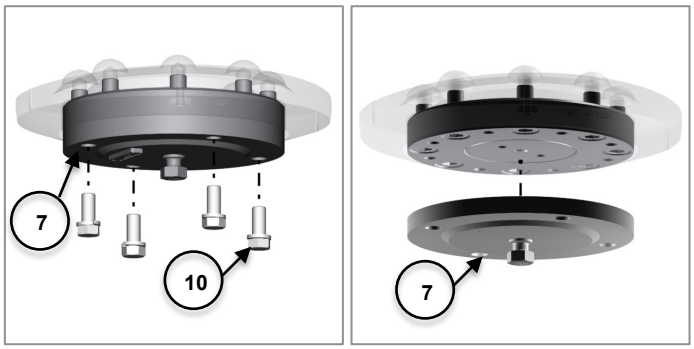

Figure 5-1 Remove Bolts and Disassemble Flange

5.1.4 Remove upper-half of washout by unscrewing the eight (x8) 3/4-10 socket-head cap screws (item 9). The upper half of the washout can now be taken off the railcar and placed on a clean surface.

Figure 5-2 Remove Cap Screws

5.1.5 Remove the plug retainer (item 1). Use a spanner wrench to unscrew the retainer (item 1). Inspect the outside surface of the O-rings for any cracks, brittleness, abnormal swelling or surface discontinuities.

Figure 5-3 Remove Gasket Retainer

5.1.6 If the O-rings need replacement, carefully take them out of the grooves with the rounded end of a 6” scale, s small screwdriver or other blunt-end tool.

CAUTION

CAUTION: Do not scratch the O-ring grooves, as a scratch could cause a leak path around the O-ring..

5.1.7 O-rings (item 5) are interchangeable. Clean out the grooves. Lubricate the replacement O-rings with an appropriate grease to ease installation. Be sure the O-rings are replaced without twisting. The wiper ring (item 13) is to be installed with the lower O-ring. The wiper is to be facing the valve body. Do not reuse the wiper ring.

5.1.8 Also, look carefully at the 45º tapered valve seat and the cylindrical surface of the valve orifice or bore. The O-rings seal on both surfaces, so any nicks, scratches, product deposits or other imperfections will permit pressure to pass around the O-ring seal. Running your fingernail over these surfaces should be adequate to identify any imperfections.

CAUTION

CAUTION: For electro-less nickel-plated valves, clean any dirt and debris with soap and water only; sandblasting is not recommended.

5.1.9 Replace O-rings (item 6) and reassemble the valve following the above steps in reverse. Install the valve following the installation instructions, including testing.

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