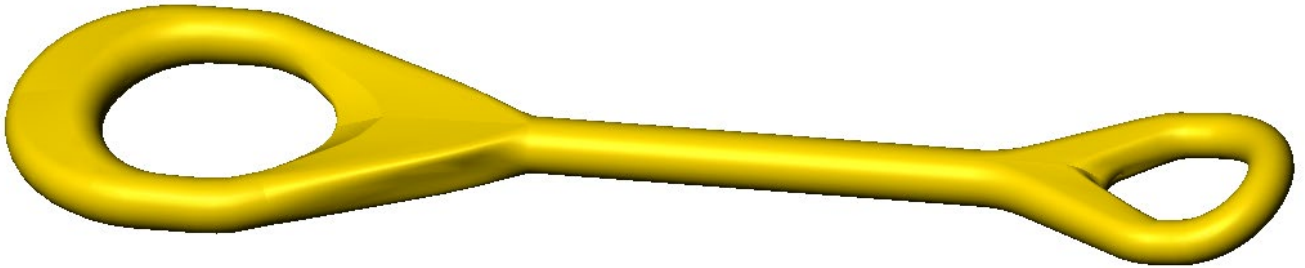


# BVM Corporation Elevator & Workover Link Set

## Maintenance Manual

For Model \_\_\_\_\_ S/N \_\_\_\_\_ - \_\_\_\_ & - \_\_\_\_



### Confidentiality Statement

This document contains proprietary and confidential information, which is the property of BVM Corporation. No use or disclosure is to be made without the express written consent of BVM Corporation.

**Note:** Original Instructions are published in English; in the event the end-user may wish to obtain a translation of these in the official language of the country in which the machinery is to be used please contact your local BVM representative or BVM directly. Please note that this service may not be free of charge. Original Instruction can be downloaded from [www.bvmcorp.com](http://www.bvmcorp.com)

### CE Marking (if applicable):

The link complies with the Machinery Directive 2006/42/EC (lifting accessories).



### Operating Instructions:

Whenever a link set is in use the following precautions must be observed.

- The links are designed to hang elevators from Top Drive Systems, Hooks, Becketts, and Link Adapters.
- Always ensure that the links are in good condition and properly rated for the application in use. The operator of the equipment shall be responsible for determination of the Safe Working Load (SWL) for any hoisting operation. The SWL is equal to the design load minus the dynamic load.
- Check to verify that the links are a matched set of equal rating.
- Check to see that the eyes are properly seated with the mating components and secondary retention is used when applicable.
- When applicable, install links with the offset end pointing inward at the attaching point.
- Always use caution and wear all applicable safety gear whenever working with links.

## **Operating Instructions for Link Extenders:**

- Follow all of the above standard operating instructions
- Check to verify that the link extenders are a matched set of equal rating.
- Use extreme pressure, lithium based, multi-purpose grease on the Link Extender Pin
- Ensure the Retaining Plate is properly holding the Link Extender Pin in place.
- Torque bolts holding the retaining plate in place with included locking washers, then safety wire the bolts together for secondary retention per API 8C.
- Recommended spares include:
  - 2x PN 22503 – Washer
  - 2x PN 22504 – Hex head bolt
  - 2' PN 13163 – Lockwire

## **Daily Maintenance:**

1. Clean with rag, wash if necessary.
2. Visually check for cracks. If cracks are found, **DO NOT USE**.
3. Check for wear in the upper eye, lower eye and shank. Using the attached chart re-rate or replace if wear is present.

**Safety Warning:** Ensure that all secondary hardware (bolts, nuts, wire, cotter pins) is in good condition. Replace as needed. Do not reuse lockwire.

**Note:** Elevator links are matched sets of two pieces measured to within 1/8” of length (inside lower eye to inside upper eye). They are serial numbered per set with an identification number followed by a -1A and -1B. Please insure that after “Yearly Inspection”, all links are matched in sets of two pieces with measurement of each piece being within 1/8” of the other. If elevator links are re-rated (see wear chart) because of wear, insure that each link set is a matched set with the same rating.

## **Yearly Maintenance:**

1. Remove all paint from elevator links.
2. Magnetic Particle inspect each link for cracks per ASTM E 709. If cracks are found, DO NOT USE. Consult factory or replace.
3. Inspect the upper eye, lower eye, and shank for wear and markings. Re-rate or replace if wear is present.

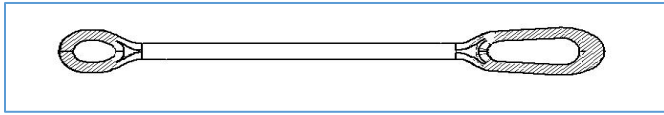
**Note:** If wear is present upon inspection of elevator link (in upper eye, lower eye, Or shank, DO NOT WELD TO REPAIR. Special alloy metal is used for “Arctic Service” and “Standard Service” elevator links. **Welding on links is not allowed for any reason.**

4. Matched sets are to be within 1/8”.
5. Paint Links.

## **Inspection and Wear Data:**

**Safety Warning:** BVM does not allow welding of links. Links cannot be reconditioned or repaired by welding!

**Critical Areas are shown shaded:**



- The entire link extender pin is critical

**Component Steel Grade: E4340**

**NOTE:** No additional components are included nor are any spare parts recommended to support this product, therefore no assembly drawings exist. Product drawings may be requested from the factory.

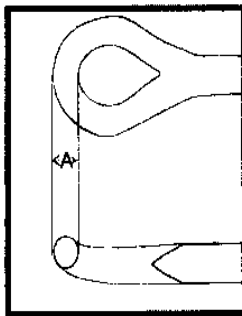
**Wear Chart Shaft (Shank):**

Wear or damage may result in a reduced section of the material. This will lead to a de-rating of the link according to the tables below.

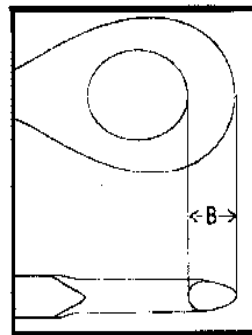
250 Ton Link		350 Ton Link		500 Ton Link		750 Ton Link		1000 Ton Link	
Diameter	Rating	Diameter	Rating	Diameter	Rating	Diameter	Rating	Diameter	Rating
2.875"	250	3.500"	350	4.750"	500	6.125"	750	6.625"	1000
2.650"	215	3.350"	325	4.500"	480	6.000"	725	6.125"	962
2.560"	200	3.280"	312	4.400"	450	5.900"	700	6.000"	915
2.460"	185	3.160"	288	4.250"	415	5.750"	662	5.875"	870

**Wear Chart Forged Links:**

Lower eye (A)



Upper eye (B)



Link	Lower Eye (A) <greater or equal to>	Upper Eye (B) <greater or equal to>	Rating (Short ton)
1 3/4"- 150 Ton	1.625"	3.38"	150
	1.50"	3.25"	125
	1.44"	3.13"	112.5
	Less than 1.44"	Less than 3.13"	Scrap

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<b>Link</b>	<b>Lower Eye (A) &lt;greater or equal to&gt;</b>	<b>Upper Eye (B) &lt;greater or equal to&gt;</b>	<b>Rating (Short ton)</b>
2 1/4"- 250 Ton	2.06"	4.75"	250
	1.88"	4.63"	200
	1.75"	4.50"	180
	Less than 1.75"	Less than 4.50"	Scrap

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<b>Link</b>	<b>Lower Eye (A) &lt;greater or equal to&gt;</b>	<b>Upper Eye (B) &lt;greater or equal to&gt;</b>	<b>Rating (Short ton)</b>
2 3/4"- 350 Ton	2.56"	4.75"	350
	2.38"	4.63"	290
	2.25"	4.50"	260
	Less than 2.25"	Less than 4.50"	Scrap

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<b>Link</b>	<b>Lower Eye (A) &lt;greater or equal to&gt;</b>	<b>Upper Eye (B) &lt;greater or equal to&gt;</b>	<b>Rating (Short ton)</b>
3 1/2"- 500 Ton	3.25"	5.625"	500
	3.00"	5.25"	440
	2.72"	5.00"	375
	Less than 2.72"	Less than 5.00"	Scrap

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<b>Link</b>	<b>Lower Eye (A) &lt;greater or equal to&gt;</b>	<b>Upper Eye (B) &lt;greater or equal to&gt;</b>	<b>Rating (Short ton)</b>
750 Ton	7.00"	7.00"	750
	6.75"	6.75"	700
	6.5"	6.5"	600
	Less than 6.50"	Less than 6.50"	Scrap

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<b>Link</b>	<b>Lower Eye (A) &lt;greater or equal to&gt;</b>	<b>Upper Eye (B) &lt;greater or equal to&gt;</b>	<b>Rating (Short ton)</b>
1000 Ton	7.875"	7.875"	1000
	7.50"	7.50"	900
	7.125"	7.125"	800
	Less than 7.125"	Less than 7.125"	Scrap

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NOTE: The capacity of a set is that of the weakest link.

**Link Extender Wear Data:**

- Pin minimum diameter = Ø4.18
- Maximum clearance between pin and link extender = 0.09