

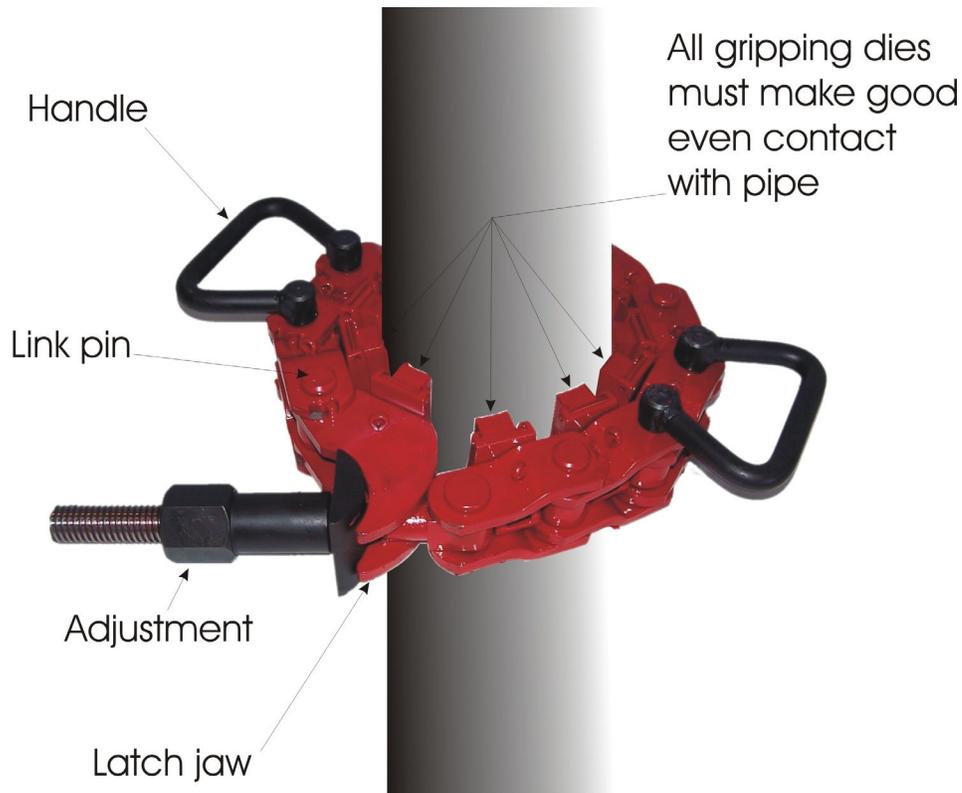
BVM Corporation Maintenance Manual

“C”, “T”, & “MP” SERIES SAFETY CLAMPS

For 1-1/8” through 43”

Part number: _____

Serial Number: _____



Safety

CAUTION: Practice safety in the operation and maintenance and use only approved safety methods, materials and tools. Keep hands away from any pinch point or undesignated areas; use only the provided handles for operating the Safety Clamp.

WARNING: Safety Clamps which have experienced wear beyond established wear criteria set by OEM, or are found to have cracks must be replaced or repaired by a BVM authorized repair facility.

WARNING: Only original BVM parts may be used. Safety Clamps are produced from cast alloy heat treated steel and must not be welded in the field. Improper welding can cause cracks and brittleness in heat-affected areas which can result in dramatic weakening of the part and possible failure. Repairs involving welding and/or machining should be

performed only by a BVM authorized repair facility. Using a Safety Clamp that has been improperly welded or repaired is dangerous.

NOTE: The owner and user together with the manufacturer should jointly develop and update inspection, maintenance, repair and remanufacture procedures consistent with equipment application, loading, work environment, usage and other operational conditions. These factors may change from time to time as a result of new technology, equipment history, product improvements, new maintenance techniques and changes in service conditions.

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

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Purpose

This manual contains operation, inspection and service instructions for Type “C”, “T”, and “MP” Safety Clamps.

Description

BVM offers safety clamps for tubing (T) and casing (C). Multipurpose (MP) safety clamps are adjustable to a variety of tubular. The clamp has its own box with a nut wrench and an allen wrench. Manual clamps are equipped with screw and nut combination. The nut secures the

clamp around the pipe and should be tightened with the supplied nut wrench. The clamp grips uniformly by design. The individual links give the clamp flexibility to wrap around the pipe and the inserts are spring loaded.

CE Marking (if applicable):



Operation

To open the T and C type clamp, pull the end link pin. On the MP, loosen the nut, releasing tension so it can swing open. Holding the handles, wrap the clamp around the pipe like a belt. Insert pin or on MP, push the screw back into the screw latch link segment, turning the nut to tighten. Use wrench to torque nut. The end user determines the clamping torque necessary to prevent marking/damaging tubular.

With the clamp installed, the spring loaded tapered inserts are designed to firmly grip and wedge against the tubular as the load increases or as the tubular slips down. As the load increases, the spring tension will result in a tighter grip that prevents further travel.

Warning:

- Safety Clamps are not designed to hold or hoist the string weight – use in conjunction with slips.
- Safety Clamps are made from cast alloy steel and should not be welded in the field. Improper welding can cause cracks and brittleness in repaired area and can result in drastic weakening of the Safety Clamp and Parts and possible Failure.
- Repairs which involve welding and or machining by others that is not authorized by BVM will void the warranty.
- Using Safety Clamp which has been improperly welded can result in serious bodily harm and property damage.
- Use the handles for lifting the Safety Clamp.
- Only use the Safety Clamp within the specified temperature rating, which is -4°F to 150°F unless otherwise specified.

Note: If a Safety Clamp is used despite the above warnings BVM voids all warranties.

Lubrication

Lubricate the Safety Clamp regularly during usage and storage to prevent corrosion. Use a high grade multi-purpose lubricant which is compatible with the expected ambient temperatures on:

- Intermediate/End/Screw Pins
- Insert/link contact surfaces
- Screw

Unpainted surfaces should be coated with a rust preventing agent.

Inspection & Maintenance

Safety should be practiced at all times when servicing the equipment always use BVM Corporation, approved safety methods, material and tools. Always wear protective gear for eyes, head and hands.

This is a suggested PM schedule. The tool owner has the responsibility to adjust the program according to actual tool usage.

Daily Inspection (when in use)

1. Check for any worn and damaged parts.
2. Check for loose and missing parts.
3. Check to make sure all cotter pins are in place and installed properly with the ends spread out to prevent pull out.
4. Clean inserts and inspect for wear and missing teeth – if found, replace.
5. Inspect the contact surface of the insert slots.
6. Press inserts down and release – inserts should come up if springs are operational – replace spring or clean further if necessary.
7. Check for any visible cracks.
8. Check for any corrosion.
9. Check state of lubrication.
10. Open and close the clamp completely several times to check for binding. The clamp should open and close with little force. If binding does occur, isolate the area and check links and pins for corrosion or excessive wear.

Semi-annual inspection

1. Perform daily PM.
2. Check for corrosion and breakage on pins and springs – if found, replace.
3. Perform MPI (magnetic particle inspection) on critical areas.

Caution:

- Use only parts manufactured and sold by BVM Corporation
- Re-machining of parts should be performed only at BVM Corporation. Improper machining could result in increased stress (Decreased Load carrying capability) or improper alignment of component parts. Either condition could be hazardous to personnel and equipment.
- Always wear gloves and eye protection when striking or handling parts.
- Do not use any safety clamp with wear in link, pin, or insert areas. Wear in these areas will cause Safety Clamp to function improperly and may cause failure.

Magnetic Particle Inspection (MPI)

Carry out MPI according to ASTM E709 or ASME BPVC sub section A, article 7 and subsection B, article 25; determine the type of defects and the degree by comparing defects to ASTM E125 reference photographs to the acceptance criteria.

Only cracks may develop and as such need to be reviewed. All other indication types have been addressed by the manufacturer during production. As such, the Safety Clamp has left the factory

with indication (if at all) which were deemed acceptable. All cracks which have developed in service are relevant and need to be examined.

Evaluation of indications:

Relevant indications: Only those indications with major dimensions greater than 1/16 Inch (1.6mm) and associated with a surface rupture shall be considered relevant. Relevant indications are indications that results from, discontinuities within the test part. Non relevant indications are indications that results from excessive magnetizing current, structural design or permeability variances within the test parts. Any indication believed to be non-relevant shall be regarded as relevant and shall be re-examined to determine whether an actual defect exists. Linear indications shall be considered as those having a length of more than three times the width. Rounded indications shall be considered as those having a length less than three times the width. A lined indication shall be considered as a group of three more indications which touch an imaginary straight line connecting any two of the group.

For equipment certified in accordance with API 8A & 8C PSL 1:

	Maximum Allowable Degree		
Type	Discontinuity Descriptions	Critical Areas	Non-critical Areas
I	Hot tears, cracks	None	Degree 1
II	Shrinkage	Degree 2	Degree 2
III	Inclusions	Degree 2	Degree 2
IV	Internal chills, chaplets	Degree 1	Degree 1
V	Porosity	Degree 1	Degree 2

For equipment certified in accordance with API 8A & 8C PSL 2:

	Maximum Allowable Degree		
Type	Discontinuity Descriptions	Critical Areas	Non-critical Areas
I	Hot tears, cracks	None	None
II	Shrinkage	None	Degree 1
III	Inclusions	Degree 1	Degree 2
IV	Internal chills, chaplets	None	Degree 1
V	Porosity	Degree 1	Degree 2

Note: Only BVM authorized repair facilities are allowed to repair safety clamps with indications outside the acceptance criteria.

Wear data

The inspection data and maximum wear tolerances are only valid if the equipment is in otherwise good condition and has not been mis-used, does not exhibit excessive wear, cracks or other defects. Additionally any weld repairs – not done at a BVM authorized repair facility – shall require examination and re-certification by a BVM authorized repair facility before being used further. These data and tolerances only apply to certain critical components and cannot on their own determine the overall condition of the equipment or its suitability for continued use. These data and tolerances are what is required to retain 100% ratings.

Table 1: Wear table

Type	T	C	MP
Part Number	8800x	Cx995xx	330xx
Size (")	1-1/8 - 4-1/2	3-3/4 - 43	2-7/8 - 36-1/8
Pin Clearance (A)	.045	.045	.040
Insert Clearance (B)	.060	.085	.060

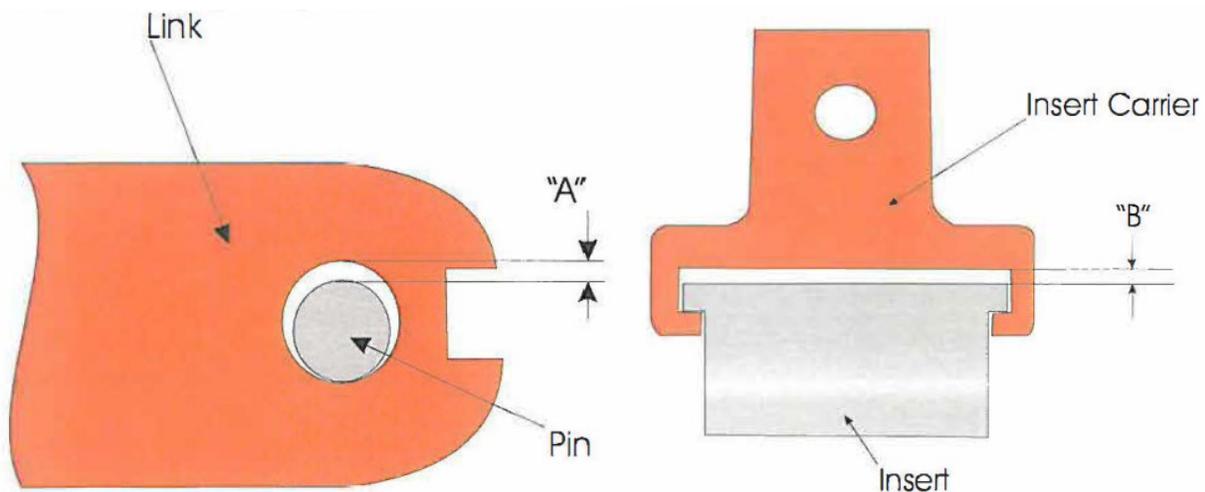


Figure 1: Wear variables

Critical Area Drawings

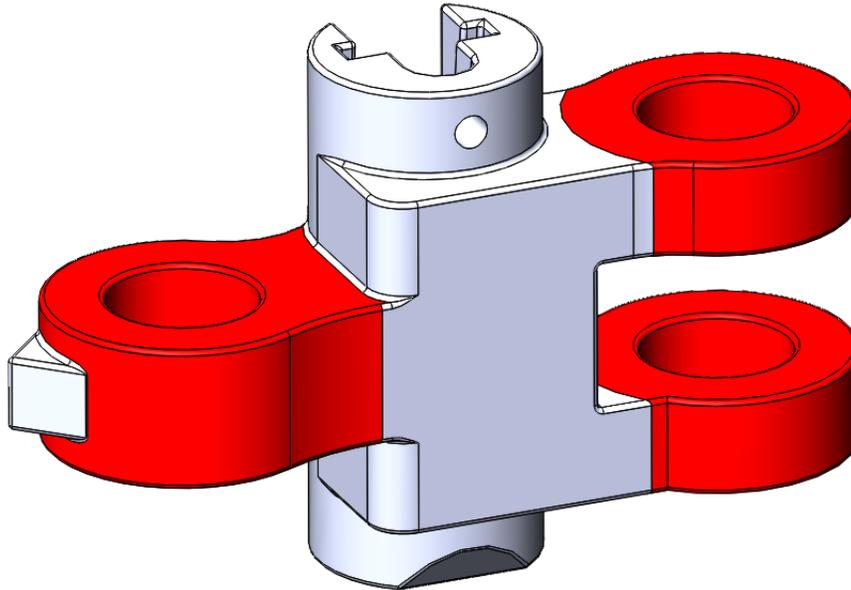


Figure 2: Link critical area (red) drawings

Troubleshooting

When problems cannot be solved, contact an authorized BVM repair facility.

Overview possible problems:

Problem	Possible cause	Possible solution
Clamp does not open	Corrosion	Pry open, clean, and lubricate
Bent/deformed pins	Wear	Verify pin clearance
Clamp does not hold	Undersized tubular	Select proper sized clamp
Damaged tubing	Overtightened	End user to establish suitable torque range

Risk Assessment According to EN-ISO 12100:2010

The conclusion of the risk assessment is that in general, the crew must:

- Wear person safety protection like safety glasses, hard hats, etc.
- Follow instructions as stated in the manual.
- Have knowledge of rig procedures.
- Must have been instructed for safe use of the tool.
- Perform maintenance and inspection according to this manual.

Applicable standards:

- EN-ISO 12100:2010 Safety of machinery – Basic concepts, general principles for design – Risk assessment and risk reduction
- Machinery Directive: 2006/42/EC
- API 7K

Assembly drawing and List of Parts

See data sheets at www.bvmcorp.com.