



Tool Operating Manual

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589-7433, 589-7434, 589-7435, 589-7436, 589-7437, and 589- 7438 Link Bracket Assemblies (Formerly 439-3938, 439-3939, 439-3940, 439-3941, 439-3942, 439-3943 Link Bracket Assemblies)

SMCS Code: 0374; 0599; 0632; 0700; 7000

Caterpillar Products All

Table of Contents

Introduction	1
Safety Information.....	2
Safety Signal Words	2
Mandatory Action and Personal Protection Identification	2
Product Safety Information	3
General Information	4
Parts List	5
Operation Section	6
Recommendations for Usage	8
Maintenance Section	10
Inspection	10
Cleaning	11
Storage	11
Tool Disposal	11
References	11
Standards Certificate of Compliance	12

Introduction

This manual contains safety information, operation instructions, and maintenance information and should be stored with the tool group.

The information, specifications, and illustrations in this publication are based on information that was available at the time that the publication was written. The specifications, torques, pressures, measurements, adjustments, illustrations, and other items can change at any time. These changes can affect the service that is given to the product. Obtain the complete and most current information before you start any job.

Some photographs or illustrations in this publication may show details that can be different from your service tool due to updates. Guards and covers might have been removed for illustrative purposes.

Caterpillar cannot anticipate every possible circumstance that might involve a potential hazard. The warnings in this publication and on the product, are therefore, not all inclusive. If a tool, procedure, work method, or operating technique that is not recommended by Caterpillar is used, the operator is responsible for ensuring that the procedures used are safe. The operator must also be sure that the product will not be damaged or made unsafe by any unspecified procedures.

When replacement parts are required for this product, Caterpillar recommends using CAT replacement parts or parts with equivalent specifications including, but not limited to physical dimensions, type, strength, and material.

Whenever a question arises regarding your service tool or this publication, contact the Global Dealer Solutions Network hot line at:

USA: 1-877-228-2420

International: 1-309-578-7372

Safety Information

Most accidents that involve product operation, maintenance, and repair are caused by failure to observe basic safety rules or precautions. An accident can often be avoided by recognizing potentially hazardous situations before an accident occurs. The operator should also have the necessary training, skills, and tools to perform these functions properly.

Safety precautions and warnings are provided in this manual and on the product. If these hazard warnings are not heeded, bodily injury or death could occur to you or to other persons



Illustration 1 g06350515

Improper operation, lubrication, maintenance, or repair of this product can be dangerous and could result in injury or death.

Safety Signal Words

The following safety signal words can be found throughout this publication. Review the image below to understand the severity of bodily harm that can occur during certain operational steps. Refer to ANSI Z535.1-2002 - American National Standard For Safety Color Code and ANSI Z535.6-2011 - American National Standard - Product Safety Information in Product Manuals, Instructions, and Other Collateral Materials for more information.

⚠ DANGER	DANGER INDICATES A HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, WILL RESULT IN DEATH OR SERIOUS INJURY.
⚠ WARNING	WARNING INDICATES A HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, COULD RESULT IN DEATH OR SERIOUS INJURY.
⚠ CAUTION	CAUTION INDICATES A HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, COULD RESULT IN MINOR OR MODERATE INJURY.
NOTICE	NOTICE IS USED TO ADDRESS PRACTICES NOT RELATED TO PHYSICAL INJURY.
SAFETY INSTRUCTIONS	SAFETY INSTRUCTIONS FOR EQUIPMENT SHOW INDICATE SPECIFIC SAFETY-RELATED INSTRUCTIONS OR PROCEDURES.

Illustration 2 g06358515

Mandatory Action and Personal Protective Identification

The personal protective equipment symbols shown in this section are all not used with this tool. Read and understand the manual fully to know which personal protective equipment should be used during tool operation. Always use the appropriate personal protective equipment when operating the tool.

MANDATORY ACTIONS		
	INSPECT EQUIPMENT	READ THE OPERATION AND MAINTENANCE MANUAL
	READ THE SERVICE MANUAL	
PERSONAL PROTECTIVE EQUIPMENT		
	WEAR PROTECTIVE GLOVES	
	WEAR SAFETY FOOTWEAR	
	WEAR EAR PROTECTION	
	WEAR RESPIRATORY PROTECTION	
	WEAR EYE PROTECTION	
	WEAR A FACE SHIELD	

Illustration 3 g06346202

Product Safety Information

General Safety Hazards

- Read and understand this and all other manuals before installing, operating, repairing, maintaining, or working near the machine.
- Only trained operators should install, adjust, or use this tool. Do not allow unauthorized personnel to operate tool.
- It is your responsibility to make this information available to others that will operate this product.
- The warnings given in this manual are for identified hazards that are foreseeable in the general use of this tool.
- Never use a tool that has been damaged or is malfunctioning.
- Do not modify the tool, safety devices, and accessories. Doing so will increase hazards to the operator and others.
- Perform preventative maintenance on the tool regularly. Keep tool clean of fluids, grease, dust, and debris found around the workspace.
- Do not wear loose clothing or jewelry that can snag on controls or on other parts of the equipment.

Crushing and Cutting Hazard

- Moving parts are found on this tool. Keep hands, fingers, and loose clothing away when tool parts are in motion.
- Use of the tool can expose the operator's hands to hazards, including crushing, impacts, cuts, abrasions, and heat. Wear suitable gloves to protect your hands.
- Personal injury or death can result from improper use of this tool and from improperly supporting and bracing of the load.
- Do not work under any supported load.
- Stand a safe distance back when lifting load.

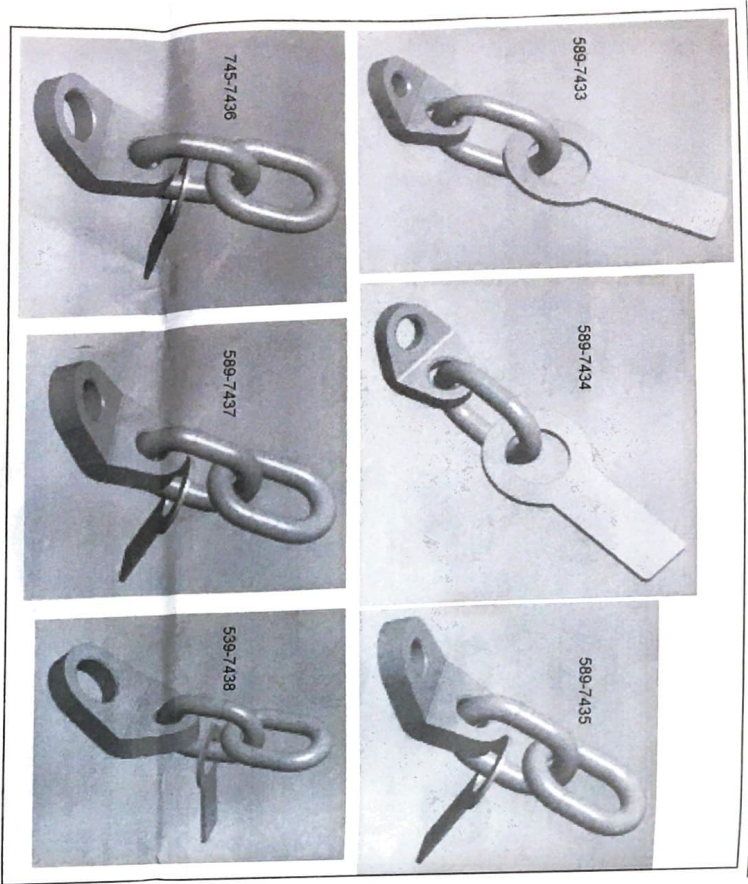


Illustration 4
589-7433, 589-7434, 589-7435, 589-7436, 589-7437, and 589-7438 Link Bracket Assemblies (Formerly 439-3938, 439-3939, 439-3940, 439-3941, 439-3942, 439-3943 Link Bracket Assemblies)

WARNING

Link Bracket Assemblies are used to remove or install large components. Link Bracket Assemblies require use of a bolt and a washer to secure assembly to component being lifted. Failure to use CAT specified hardware called out in this manual, may result in serious injury or death.

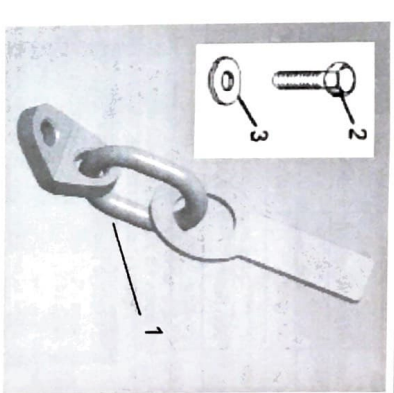


Illustration 6
589-7433

Table 1

Working Load limit (WLL) 1021 kg (2,250 lb)		
Item	Part Number	Description
1	589-7433	Link Bracket (439-3938)
2	0T-0320	Bolt (7/16-14 x 32 mm)
3	SP-8244	Washer (Thickness - 2.5 mm)
Optional Hardware		
2	6V-1820	Bolt (M10 x 1.5 x 30 mm)
3	6V-5839	Washer (Thickness - 2.5 mm)

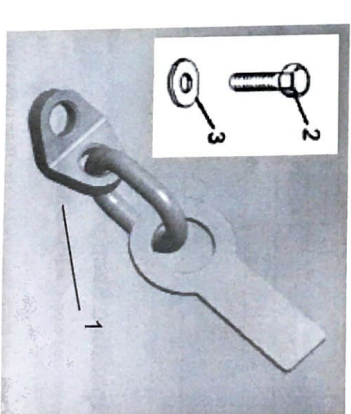


Illustration 7
589-7434

Table 2

Working Load limit (WLL) 1814 kg (4,000 lb)		
Item	Part Number	Description
1	589-7434	Link Bracket (439-3940)
2	9X-6380	Bolt (5/8-11 x 3.8 mm)
3	SP-8247	Washer (Thickness - 3.5 mm)
Optional Hardware		
2	290-7296	Bolt (M16 x 2 x 40 mm)
3	9X-8268	Washer (Thickness - 3.5 mm)

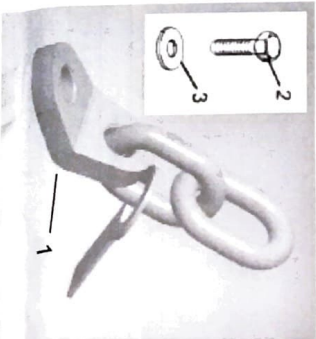


Illustration 8
589-7435

Table 3

Working Load limit (WLL) 4082 kg (9,000 lb)		
Item	Part Number	Description
1	589-7435	Link Bracket (439-3939)
2	7X-0382	Bolt (7/8-9 x 57 mm)
3	SP-8249	Washer (Thickness - 4.0 mm)
Optional Hardware		
2	6V-3531	Bolt (M20 x 2.5 x 50 mm)
3	8T-3282	Washer (Thickness - 3.5 mm)

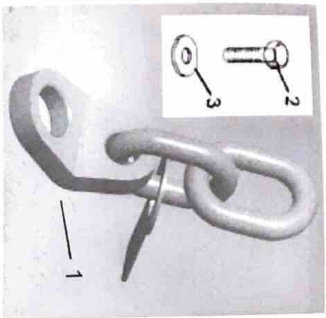


Illustration 9
589-7436 g06535976

Table 4

Working Load Limit (WLL) 4082 kg (9,000 lb)	
Item	Part Number Description
1	589-7436 Link Bracket (439-3941)
2	7Y-5232 Bolt (M30-3.5 x 70 mm)
3	9X-8399 Washer (Thickness - 6 mm)
Optional Hardware	
2	3R-2299 Bolt (1 1/4" - 7 x 76 mm)
3	4K-0684 Washer (Thickness - 6 mm)

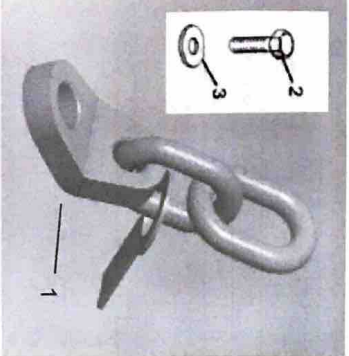


Illustration 10
589-7437 g06535977

Table 5

Working Load Limit (WLL) 4536 kg (10,000 lb)	
Item	Part Number Description
1	589-7437 Link Bracket (439-3942)
2	6I-6371 Bolt (1" - 8 x 63.5 mm)
3	5P-8250 Washer (Thickness - 5 mm)
Optional Hardware	
2	520-7851 Bolt (M24 x 3 x 60 mm)
3	6V-8237 Washer (Thickness - 4 mm)

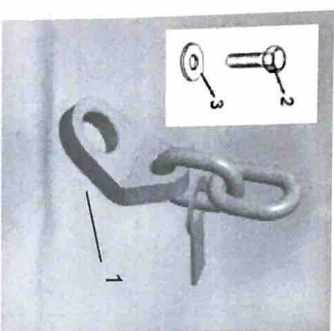


Illustration 11
589-7438 g06535978

Table 6

Working Load Limit (WLL) 5443 kg (12,000 lb)	
Item	Part Number Description
1	589-7438 Link Bracket (439-3943)
2	160-6513 Bolt (M36 x 4 x 80 mm)
3	146-1799 Washer (Thickness - 6 mm)
Optional Hardware	
2	519-2276 Bolt (1 1/2" - 6 x 88.9 mm)
3	3S-6162 Washer (Thickness - 6 mm)

Operation Section

Never use Non-Caterpillar Bolts, Nuts, or Washers.

Never use Bolts that are shorter than those listed in this Tool Operating Manual.

Never use Bolts that are a smaller diameter than those listed in this Tool Operating Manual.

Minimum thread engagement length for steel and cast iron base materials is 1.5 times thread diameter. All Caterpillar Bolts listed in this Tool Operating Manual meet/exceed this requirement for threaded holes in steel/cast iron base materials.

Minimum thread engagement length for aluminum and aluminum alloy base materials is 2 times thread diameter.

Utilize Caterpillar One Safe Source - PECP9067 to identify longer Hex Head Bolts for each respective Link Bracket as necessary.

The use of a Caterpillar Nut and Washer on opposing side of base material in through-hole applications is approved. Nut and Washer must be engaged 100% onto Bolt and torqued to same respective specification as listed in Table 7. Caterpillar Nuts may be found in Caterpillar One Safe Source - PECP9067.

All Bolts, Nuts, and Washers should only be used once due to High Torque specification requirements. Once a Bolt/Nut/Washer has been used once with a link bracket, discard as damaged. Utilize new Bolt/Nut/Washer with each new use of a Link Bracket.

Never remove Part Number/Load Rating Tag from Link Bracket Assembly.

Never attach lifting device bail (hook) to Part Number/Load Rating Tag.

Refer to the below Load Rating Chart - Table 7 for load limit information need throughout this section.

Table 7

Link Bracket Load Rating Chart			
Link Bracket Part No.	Bolt Part No.	Washer Part No.	Bolt Torque Spec. Working Load Limit (WLL)
589-7433 (439-3938)	0T-0320	5P-8244	80 ± 15 N m (60 ± 10 lb ft) 1021 kg (2250 lb)
	6V-1820	6V-5839	60 ± 12 N m (45 ± 8 lb ft) 1021 kg (2250 lb)
	9X-6380	5P-8247	240 ± 40 N m (175 ± 30 lb ft) 1814 kg (4000 lb)
589-7434 (439-3940)	290-7296	9X-8268	270 ± 40 N m (200 ± 30 lb ft) 1814 kg (4000 lb)
		5P-8249	700 ± 90 N m (515 ± 65 lb ft) 4082 kg (9000 lb)
589-7435 (439-3939)	6V-3531	8T-3282	520 ± 70 N m (380 ± 50 lb ft) 4082 kg (9000 lb)
		9X-8399	1800 ± 200 N m (1300 ± 150 lb ft) 4082 kg (9000 lb)
589-7436 (439-3941)	7Y-5232		

(continued)

Table 7 (cont)

3R-2299	4K-0684	2100 ± 250 N·m (1550 ± 175 lb·ft)	4082 kg (9000 lb)
6L-6371	5P-8250	1050 ± 150 N·m (775 ± 110 lb·ft)	4536 kg (10000 lb)
589-7437 (439-3942)	6V-8237	900 ± 100 N·m (660 ± 75 lb·ft)	4536 kg (10000 lb)
	160-6513	3100 ± 350 N·m (2300 ± 250 lb·ft)	5443 kg (12000 lb)
589-7438 (439-3943)	146-1799	3600 ± 400 N·m (2650 ± 300 lb·ft)	5443 kg (12000 lb)
	519-2276	3S-6162	

1. Identify and use correct Link Brackets (1) for capacity of load being lifted.
2. Use Link Brackets (1) in pairs, attached at approved lifting points. Never stack Link Brackets (1) at the same attachment point.
3. Use only Caterpillar Bolts (2) and Washers (3) to attach Link Bracket (1) to component.
4. Connect Link Brackets (1) to component with correct Bolt (2) and Washer (3). Tighten Bolts (2) to specified torque.

Recommendations for Usage



Illustration 14

Using incorrect methods of attaching Link Bracket (1) to components may result in failure of Bolt (2) securing link bracket to a component. This action could cause severe injury or death.

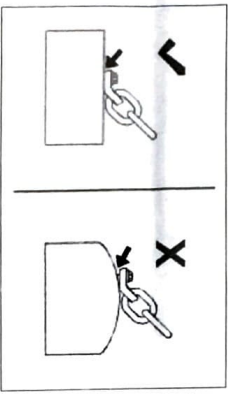


Illustration 12

g02763886

Illustration Correct Method - Show the correct method of attaching and using Link Brackets (1).



Illustration 13

g02763889

Illustration Incorrect Method - Show the incorrect method of attaching and using Link Brackets (1).

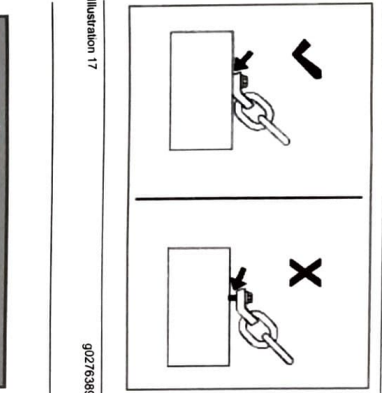


Illustration 17

g02763892



Illustration 18

Tighten the Bolt (2) and Washer (3) completely against Link Bracket (1) and component to be lifted. Refer to Load Rating Chart - Table 7 for correct torque specification. Under or over torquing the Bolt (2) could cause the Bolt (2) to snap, causing serious injury or death.



Illustration 19

g06358530

Never stack spacers between Link Bracket (1) and component to be lifted.

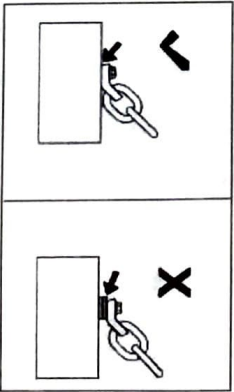


Illustration 20

g02763895

Use Link Brackets (1) in pairs, at approved lifting points with lifting chain, wire rope, or slings. Use correct Link Bracket (1) and chains for capacity of load being lifted.

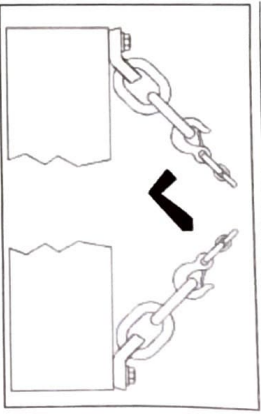


Illustration 21

g02763899

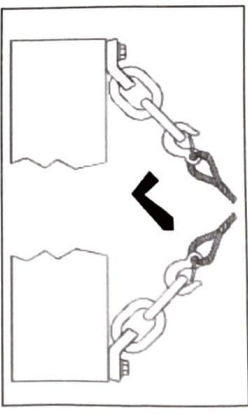


Illustration 22

g02763902

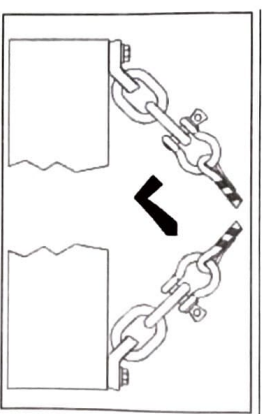


Illustration 23

g02763904



Illustration 24

g06358515

Ensure lifting device ball (hook) is correctly sized and is fully engaged in the Link Bracket (1).

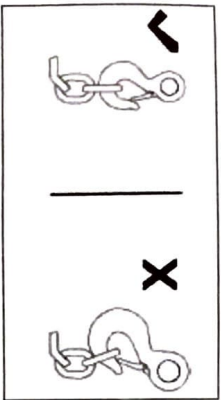


Illustration 25 g06763907

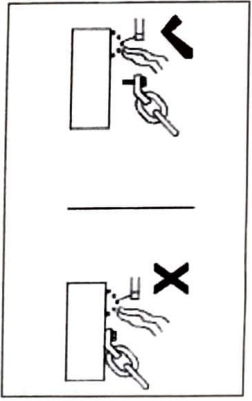


Illustration 29 g02763920

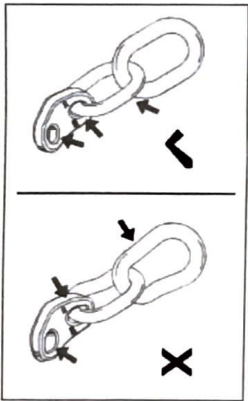


Illustration 32 g02763979



Illustration 26 g06350515

Crushing hazard - Use Link Brackets (1) only in pairs at approved lift points. Safe operating lift angle is between 0° and 45°.



Illustration 30 g06350515

Never stack Link Brackets (1) together at the same attachment point. Use Two Link Brackets (1) spaced apart at approved lifting points. Doing so can cause the Bolt (2) to weaken, which could cause serious injury or death.

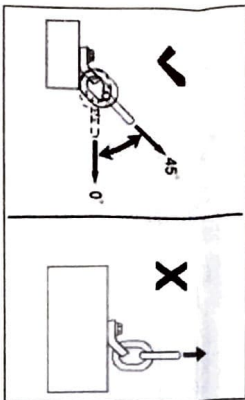


Illustration 27 g02763918

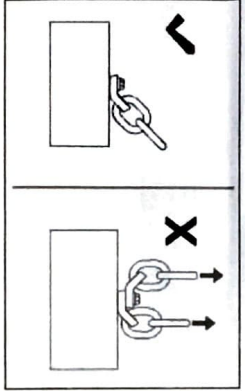


Illustration 31 g02763923



Illustration 28 g06350515

Never weld on a component while component is supported by Link Brackets (1). Welding with a load attached to the Link Brackets (1) could create the Bolt (2) to weaken, dropping the load, which would cause serious injury or death.

Maintenance Section

Inspection

Heed all warnings and safety practices that go along with the maintenance, cleaning, storage, and disposal.

1. Inspect link brackets prior to each use for nicks, burrs, dents, cracks, bent, or worn parts. If damaged is found, discontinue use, destroy tool, and dispose of as scrap. Do not use link brackets if links or holes are elongated or deformed.

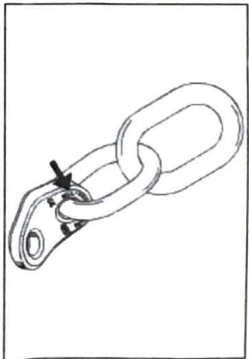


Illustration 33 g02763976

3. Do not use with bolts or washers that are worn, bent, or damaged.

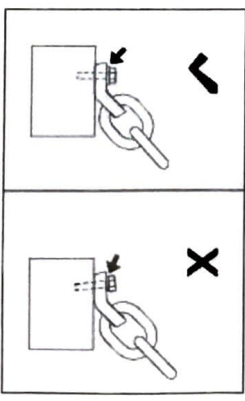


Illustration 34 g02763996

4. Have tooling inspected annually by an approved dealership inspector.

Cleaning

Clean the tooling using a non-solvent based cleaner.

Storage

Store tooling indoors in a clean, dry location to prevent rust or corrosion.

Tool Disposal

At the end of the tools operational life, destroy tool and dispose of as scrap.

References

1. ANSI Z535.1-2002 - American National Standard For Safety Color Code
2. ANSI Z535.6-2011 - American National Standard - Product Safety Information in Product Manuals, Instructions, and Other Collateral Materials
3. Disassembly and Assembly Service Manual for specific instructions on the use of link brackets.



ORIGINAL EU DECLARATION OF CONFORMITY

Manufacturer Columbus McKinnon Corp. - 205 Crosspoint Parkway Getzville NY 14068 USA

Person authorized to compile the Technical File and to communicate relevant part (s) of the Technical File to the Authorities of European Union Member States on request:

Standards & Regulations Manager, Caterpillar France S.A.S
40 Avenue Leon-Blum 38000 Grenoble, France

I, the undersigned, John J. Karson, hereby certify that the equipment specified hereunder,

Description:

Generic Denomination: General Purpose
Function: Lifting Device
Part Number(s): 439-3938, 439-3939, 439-3940, 439-3941,
439-3942, 439-3943
Commercial Name: Link Bracket

fulfills all the relevant provisions of the following Directives:

Directive	Document No
ASME B30.20-2006	Below-The-Hook Lifting Device
EN 13155:2009	Cranes-Safety-Non-Fixed Load Lifting Attachments
AS 4991:2004	Lifting Devices

Technical Documentation accessible through person listed above authorized to compile the Technical File.

Note 1:

Each of the listed part numbers have been proof tested at two (2) times the working load limit.

Note 2:

Harmonized Standards Taken Into Consideration: N/A

Done at:
501 S.W. Jefferson Avenue
Peoria, IL 61630

Signature

Date:
Nov 19th, 2019

Name/Position

John J. Karson
Engineering Manager