

# C-231 Cutter

P/N: ART.593.345.5

Technical Report Number

71.308.593



**“A”  
A-36 HR  
Round Bar**

1	2	3	4	5	6	7	8	9
3/8"	1/2"	5/8"	3/4"	7/8"	1"	1 1/4"	1 1/2"	1 3/4"

**“B”  
A-36 HR  
Flat Bar**

1	2	3	4	5	6	7	8	9
1/4 x 1/2	1/4 x 1	1/4 x 2	1/4 x 3	1/4 x 4	3/8 x 3	3/8 x 4	3/8 x 5	3/8 x 6

**“C”  
Sch. 40 A-53 Gr. B  
Round Pipe**

1	2	3	4	5	6	7	8	9
3/8"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	3 1/2"

**“D”  
A-500 Grade B  
Square Tubing**

1	2	3	4	5	6	7	8	9
1/2 x .06	1 3/4 x .06	1 x .08	1 1/4 x .12	1 1/2 x .12	1 3/4 x .12	2 x .15	2 1/2 x .19	3 x .19

**“E”  
A-36  
Angle Iron**

1	2	3	4	5	6	7	8	9
1/2 x 1/8	1 x 1/8	1 1/4 x 3/16	1 1/2 x 3/16	1 1/2 x 1/4	1 3/4 x 1/4	1 1/2 x 3/8	2 x 3/8	2 1/2 x 3/8

## Specifications

Length (in/mm):	31.8/808
Width (in/mm):	10/253
Height (in/mm):	8.7/221
Weight ( lbs/kg):	41.7/18.9
Max. Opening (in/mm):	6.5/167
Max. Cutting Force (lbs/kN):	231,000/1030
Max. Op. Pressure (psi/bar):	10,500/720
NFPA Compliant:	Yes
NFPA 1936 Level Rating:	A8/B9/C7/D9/E9
Opening Time (sec):	3.4
Closing Time (sec):	3.9

Independently Tested  
and Certified to  
NFPA 1936 by:



# The Added Value of NFPA 1936 Compliance

When purchasing a new rescue tool system you are making a ten year commitment to your department. The system you choose will be in use for at least ten years. Certainly our tools will last much longer than ten years, but after this period of time new advances make these tools obsolete. Over this ten year period you will use your rescue system hundreds, if not thousands of times. Each time you go out on a call you need to know your rescue tool system is going to perform as well as it did when it was first purchased.

## The Intent of NFPA 1936

After seven years of work, on August 13, 1999, the NFPA issued *NFPA 1936 Standard on Powered Rescue Tool Systems, 1999 Edition*. This standard was designed to ensure fire & rescue departments a better way to compare rescue tool systems and to guarantee the quality of compliant systems. To be compliant a tool must undergo rigorous testing. The following are a few of the tests our cutters had to endure to receive NFPA 1936 compliance.

### Overload Test

To ensure user safety and proof of proper design, the cutter is put through an overload test. This test is achieved by applying 150% of the rated system pressure to the cutter. On a 10,000 psi system the input pressure is raised to 15,000 psi. After this pressure is applied, the tool is operated. The tool shall be operational for one operation cycle. This cycle is from the fully opened position to the fully closed position then back to fully opened. During this operation the tool shall be fully functional with no leaks. This tests all internal seals and pressure vessels (ie. cylinder body).

### Cutting Test

The cutting test was devised to give a standardized way of evaluating cutters. The results allow the department to evaluate the performance of a cutter. This test requires that the cutter cuts 12 pieces of the largest material in each of the five categories. The tool is only allowed one set of cutting blades and each cut is made in a single continuous motion completely severing the piece of material. In order to pass this test a cutter must cut a minimum of 60 pieces of material of at least the minimum size in each category.

This is an example of a cutting test result as you see below. If the cutter cuts . . .

“A”: a 3/4” round bar

“B”: a 1/4” x 4” flat bar

“C”: a 2” ID schedule 40 pipe

“D”: a 1” x .08” wall thickness square tubing

“E”: a 1 1/2” x 3/16” thick angle iron

the performance level of the cutter would be:

## A4/B5/C6/D3/E4

On the front of this document you will find the performance level of our cutter.

Though this test gives you a good idea of the power of the cutter, there are more things to consider. Balance, features, weight, ergonomics . . . etc. need to be considered. A cutter that can cut the largest material in each category would be very powerful, but if it weighed 150 lbs. it would be worthless for our uses.

### Endurance Test

This test is designed to prove the integrity of the dead-man control and the cutter over its lifetime. The tool is subjected to 5000 cycles at no-load. A cycle is defined as the activation of the control for opening and closing the tool and its release, allowing the control to return to the neutral position. After this test the tool is subjected to the integrity test.

### Integrity Test

This test ensures the quality of the blades, linkage, and pivot points of the cutter. For this test the cutter is pressurized to 150% of the rated input pressure and used to cut into a steel bar, that is beyond the cutters capacity, for 1 minute. After this overload test the tool is required to cut one piece of each of the five categories of material at the performance level that the cutter is rated.

### Overpressurization Relief Device

According to the NFPA 1936 standard, only tools with an extension area of the activating piston rod assembly that is greater than 1.5 times the retract area of the piston rod assembly, is required to have an overpressurization relief device. In general what this means is that usually only hydraulic rams will need this device. As an added feature all Genesis rescue tools come with an overpressurization relief device built into the control assembly. At American Rescue Technology we believe that this relief device is essential to all rescue tools. This device protects the rescuer against catastrophic failures of the tool and personal injury.

It is a requirement of NFPA 1936 that the manufacturer publish the performance specifications of each tool in accordance with the standard, therefore if you're considering purchasing new rescue tools be sure to request the NFPA performance of each tool. If they cannot supply you this information rest assured those tools are not NFPA compliant. You should require all rescue tool companies to give detailed performance specifications, printed by the manufacturer, that conform to NFPA 1936. If their tools are not compliant ask why. NFPA 1936 was issued to stop companies from providing misleading performance figures, and help departments purchasing rescue equipment to get a high quality rescue system that performs as specified, from the first day it is put into service until the day it is replaced. This standard was written for you, use it and feel assured that you have purchased a high quality rescue tool system.



2780 Culver Ave

Kettering, OH 45429

(937) 293-6240 Tel. (937) 293-7049 Fax

[www.genesisrescue.com](http://www.genesisrescue.com)