



**Homeland
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System Assessment and Validation for Emergency Responders

The U.S. Department of Homeland Security (DHS) established the System Assessment and Validation for Emergency Responders (SAVER) Program to assist emergency responders making procurement decisions.

Located within the Science and Technology Directorate (S&T) of DHS, the SAVER Program conducts objective assessments and validations on commercial equipment and systems, and provides those results along with other relevant equipment information to the emergency responder community in an operationally useful form. SAVER provides information on equipment that falls within the categories listed in the DHS Authorized Equipment List (AEL).

The SAVER Program is supported by a network of technical agents who perform assessment and validation activities. Further, SAVER focuses primarily on two main questions for the emergency responder community: "What equipment is available?" and "How does it perform?"

For more information on this and other technologies, contact the SAVER Program Support Office.

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Summary

Gasoline-Powered Rotary Rescue Saws

(AEL reference number 03SR-02-TPGS)

Rotary rescue saws are high-speed cutting tools that provide a means for responders to quickly and effectively cut through various materials during firefighting and rescue operations. During firefighting operations, responders use rotary rescue saws to cut ventilation openings, to force entry into structures, and for overhaul operations. During rescue operations, responders use rotary rescue saws to assist in extricating people trapped by fire or rubble or as a result of a vehicle accident.

In order to provide responders with information on currently available gasoline-powered rotary rescue saws, Science Applications International Corporation conducted a comparative assessment of these saws for the System Assessment and Validation for Emergency Responders (SAVER) Program in June 2012. Detailed findings are provided in the *Gasoline-Powered Rotary Rescue Saws Assessment Report*, which is available by request at <https://www.rkb.us/saver>.

Assessment Methodology

Prior to the assessment, eight responders were chosen from various jurisdictions to participate in a focus group. All participants were firefighters with experience using rotary rescue saws. The focus group identified evaluation criteria and recommended product selection criteria and possible scenarios for assessment.

After identifying evaluation criteria, the focus group assigned each criterion to one of five SAVER categories—affordability, capability, deployability, maintainability, and usability—and then assigned a weight for its level of importance. Once the criteria were weighted, the five SAVER categories were assigned a percentage value to represent the level of each category's importance relative to the other categories.



Based on focus group recommendations, market research, and system availability, the following rotary rescue saws were selected for assessment:

- Stihl, TS 500i Cutquik®;
- Super Vacuum (Super Vac) Manufacturing Company Inc., SVC3 Power Pro Cutoff Saw;
- Husqvarna Construction Products, K760;
- Unifire Inc., Univent PS-COS14;
- Tempest Technology Corporation, VentMaster 375K Cutoff Saw; and
- Cutters Edge, Multi-Cut® CE970R-14A.

Six responders served as evaluators for this assessment. All evaluators had at least 8 years of experience in firefighting, emergency rescue, and rotary rescue saw operation.

During the assessment, evaluators rated the rotary rescue saws based on evaluation criteria established by the focus group. The assessment was separated into two phases: the specification assessment and the operational assessment. Evaluators assessed the systems based on vendor-provided information during the specification assessment. Hands-on experience using the rotary rescue saws to cut through different materials at different heights using various cutting patterns served as the basis for the operational assessment. During the operational assessment, evaluators also had the opportunity to use the rotary rescue saws in both daylight and low-light conditions.

Assessment Results

Table 1 displays the composite assessment scores as well as the category scores for each rotary rescue saw. Higher scores indicate a higher rating by evaluators. For specifications, see table 2. The advantages and disadvantages of each rotary rescue saw, as identified by evaluators, are listed in table 3. To view how each rotary rescue saw scored against the evaluation criteria assigned to the SAVER categories, see table 4.

Analysis of evaluator feedback revealed that they placed a high value on or had a preference for rotary rescue saws with the following features or characteristics:

- Easy access to controls;
- Consistent power when cutting various materials at different angles;
- High-visibility handles;
- Slip-resistant handles that are easy to use with gloved hands;
- Easy-to-adjust blade guard;
- Stable, wide base and footing;
- Compact, lightweight, and easy to deploy;
- Anchor points that accommodate slings or straps for carrying or hoisting;
- Easy-to-see fuel gauge;
- Responsive throttle;
- Durable construction;
- Low maintenance costs;
- Reasonable warranty; and
- Necessary tools attached to the saw.

Responder agencies that may be considering the purchase of a gasoline-powered rotary rescue saw should review the detailed findings in the *Gasoline-Powered Rotary Rescue Saws Assessment Report* and carefully consider each saw's overall capabilities and limitations in relation to their jurisdiction's operational needs. All reports in this series, as well as reports on other technologies, are available in the SAVER section of the Responder Knowledge Base (RKB) website, <https://www.rkb.us/saver>.

SAVER Category Definitions
Affordability groups criteria related to life-cycle costs of a piece of equipment or system.
Capability groups criteria related to the power, capacity, or features available for a piece of equipment or system to perform or assist the responder in performing one or more relevant tasks.
Deployability groups criteria related to the movement, installation, or implementation of a piece of equipment or system by responders at the site of its intended use.
Maintainability groups criteria related to the maintenance and restoration of a piece of equipment or system to operational condition by responders.
Usability groups criteria related to the quality of the responders' experience with the operational employment of a piece of equipment or system. This includes the relative ease of use, efficiency, and overall satisfaction of the responders with the equipment or system.

Table 1. Gasoline-Powered Rotary Rescue Saw Assessment Results

Product	Composite Score	Affordability (15% Weighting)	Capability (25% Weighting)	Deployability (10% Weighting)	Maintainability (10% Weighting)	Usability (40% Weighting)
Stihl	4.0	4.0	3.8	4.1	3.5	4.3
Super Vac	3.8	3.6	4.1	3.1	3.6	4.0
Husqvarna	3.6	3.9	3.3	3.4	3.4	3.8
Unifire	3.6	3.8	3.7	3.3	3.4	3.6
Tempest	3.4	3.6	3.7	3.2	3.0	3.2
Cutters Edge	3.3	3.0	3.4	3.4	3.0	3.4

Table 2. Gasoline-Powered Rotary Rescue Saw Specifications¹

Specification	Stihl	Super Vac	Husqvarna	Unifire	Tempest	Cutters Edge
Blade size/speed	14 in. 5,350 rpm	14 in. 5,500 rpm	14 in. 5,400 rpm	14 in. 5,400 rpm	14 in. 4,650 rpm	14 in. 5,400 rpm
Blade provided	14-in. general purpose abrasive	SVC310-14 Tiger Tooth	Select blade type at purchase ²	Select blade type at purchase ²	Select blade type at purchase ²	Cutters Edge Black Diamond
Cutting depth	5 in.	5 in.	5 in.	5 in.	5 in.	5 in.
Power output	5.2 horsepower	6.0 horsepower	6.0 horsepower	6.0 horsepower	6.0 horsepower	6.4 horsepower
Displacement	4.4 cu. in. (72 cc)	4.5 cu. in. (74 cc)	4.5 cu. in. (74 cc)	4.5 cu. in. (74 cc)	4.5 cu. in. (74 cc)	5.7 cu. in. (94 cc)
Dry weight	23 lbs	22 lbs	23 lbs	21 lbs	22 lbs	25 lbs
MSRP	\$1,200	\$2,140	\$1,099	\$1,722	\$1,700	\$2,143

Notes:

¹ Information was provided by manufacturers and has not been independently verified by the SAVER Program.

² Not included in the MSRP.

cc = cubic centimeter
cu. in. = cubic inches
in. = inch(es)

lbs = pounds
MSRP = manufacturer's suggested retail price
rpm = revolutions per minute

Table 3. Gasoline-Powered Rotary Rescue Saw Advantages and Disadvantages
























































































































































































































Product	Advantages	Disadvantages
 <p>Stihl Composite Score: 4.0</p>	<ul style="list-style-type: none"> • Easy to refuel without placing on its side • Easy to maneuver with wide handles • Stable base • Thin profile, compact size • Starting controls in a row; easily accessible on handle • Can adjust water flow without taking hand off throttle • Responsive throttle • Fuel injected; automatically adjusts to environment • Solid, durable blade guard • Fuel injection system allows operation in any position • Numerous dealers available 	<ul style="list-style-type: none"> • Does not accept other blade sizes, types, brands • No rubber gripping on handle • Numerous primes required for cold starts • Screws on air filter box not capped, easily lost
<p>Super Vac Composite Score: 3.8</p>	<ul style="list-style-type: none"> • Sturdy handle and guards • Body consists of durable materials • Decompression valve button large and easy to feel/find • One button for choke, run, turn-off • Wide base with stable ground contact • Easy-to-adjust blade guard 	<ul style="list-style-type: none"> • No fuel gauge • Needs ruggedized bottom (plastic will wear out after repeated use) • Rubber foot fell off easily and repeatedly
<p>Husqvarna Composite Score: 3.6</p>	<ul style="list-style-type: none"> • Thin profile, compact size • Sufficient, consistent power • Easy-to-see fuel level window • Stable base • Least expensive • Good value for price 	<ul style="list-style-type: none"> • T-handle more difficult to use than D-handle • Routing of exhaust system
 <p>Unifire Composite Score: 3.6</p>	<ul style="list-style-type: none"> • Easy-to-see fuel level window • Thin profile, compact size • Sufficient spacing between body and handle • External throttle lock • Body made of durable materials • Durable aluminum D-handle 	<ul style="list-style-type: none"> • Routing of exhaust • Routing of water hose • Possibility of pull cord being overextended
<p>Tempest Composite Score: 3.4</p>	<ul style="list-style-type: none"> • Thin profile, compact size • Sufficient, consistent power • Easy-to-see fuel level window 	<ul style="list-style-type: none"> • Roller on base allows saw to “walk” and fall over • Depth gauge blocks sight of blade and limits maneuverability • Depth gauge limits access to handle
 <p>Cutters Edge Composite Score: 3.3</p>	<ul style="list-style-type: none"> • Visibility of glow-in-the-dark handles • Location of decompression valve (same side as pull handle) • Strong power • Good spacing between handle and body of saw (accommodates gloved hands) • Stable, wide front feet • Combination tool attached to saw • 2-year warranty 	<ul style="list-style-type: none"> • Ingestion of metal shavings in filtration systems • Numerous steps required for startup • Plastic housing, belt guard, and base of handle not durable • Handle cushion came off

Table 4. Gasoline-Powered Rotary Rescue Saw Criteria Ratings¹

KEY							
Least Favorable	Most Favorable						
							
Affordability							
Cost vs. quality							
Cost vs. performance							
Maintenance costs							
Cost of accessories and options							
Training costs							
Initial cost							
Cost of repair parts							
Warranty							
Capability							
Safety features							
Blade adaptability							
Endurance and efficiency							
Adaptability to environments							
Adjustability							
Ability to accommodate accessories							
Deployability							
Size of saw							
Weight of saw							
Ease of changing blades							
Anchor points							
Ease of refueling							
Maintainability							
Ability to perform field maintenance and repair							
Ease of cleaning							
User serviceability							
Manuals							
Ease of preventive maintenance							
Special tools requirement							
Maintenance contracts							
Usability							
Maneuverability							
Ease of starting							
Neutral balance							
Ease of using handles							
Ease of using controls							
Base stability							
Saw reaction and vibration reduction							
Ease of checking fuel tank level							

Note:

¹ Averaged criteria ratings for each assessed product are graphically represented by colored and shaded circles. Highest ratings are represented by full green circles.