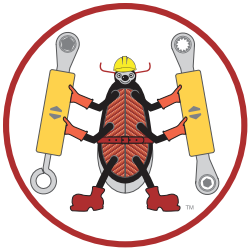


BUGWRENCH™ is setting tool standards for utility linemen.



Our new Heavy-Duty BW-244 offers a unique combination of 4-in-1 wrenches.

This reversing ratchet Bugwrench has two separate sizes on each end (1/2" & 9/16" on one and 5/8" & 3/4" on the other). These sizes are the most common on T&D apparatus and connectors.



With Heavy-Duty Forged Head.

BW-244
Patent Pending

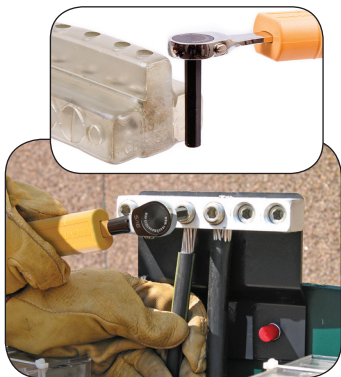
NEW



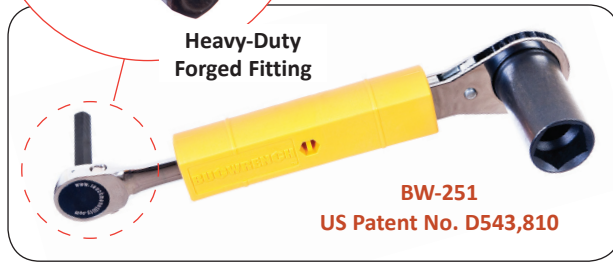
Also Available in All-Metal Model BW-044

Penta sockets combined with hex (Allen) wrenches are made for working on pad-mount transformers and secondary pedestals.

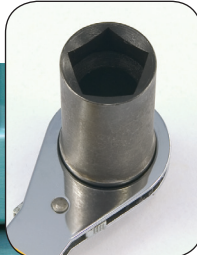
The 2" working length of the Hex (Allen) of the BW-251 is just right for the transformer bars with covers.



Heavy-Duty Forged Fitting



BW-251
US Patent No. D543,810



BW-251 comes with Ratchet Penta fitting with built-in 3/8" hex socket for "Twist-Off" equipment locks and Heavy-Duty Forged 5/16" Hex (Allen) with a 2" working length for insulated or non-insulated transformer secondary bars.



BW-223

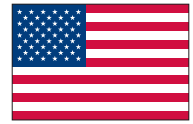
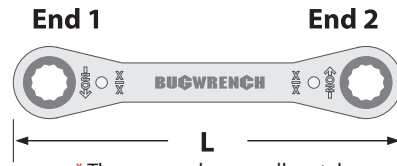
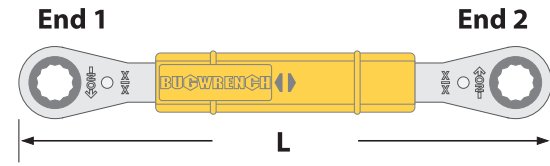
BW-223HD

HEAVY DUTY

Our popular BW-223HD and BW-223 offer 3/4" and 9/16" combination that is just right when installing or performing maintenance on overhead transformers.



BUGWRENCH Fittings Options



Made in the USA

* These wrenches are all metal without insulating handles.

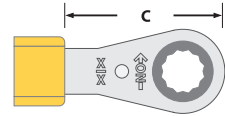


Figure 1 Ratchet

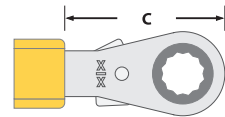


Figure 2 Reversible Ratchet

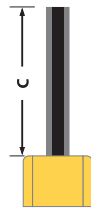


Figure 3 Allen Bar

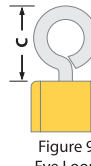


Figure 9 Eye Loop



Figure 4 Allen Ratchet

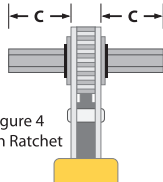


Figure 5 Reversible Allen Ratchet

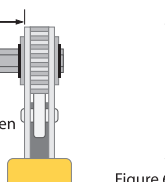


Figure 6 Penta Socket

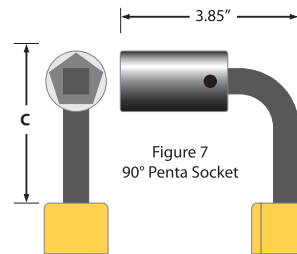


Figure 7 90° Penta Socket

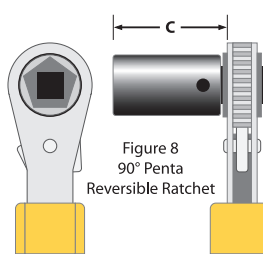


Figure 8 90° Penta Reversible Ratchet

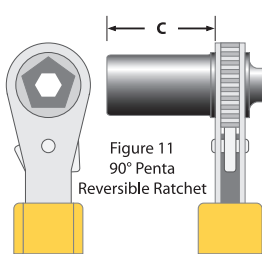


Figure 11 90° Penta Reversible Ratchet

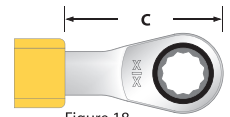


Figure 18 Heavy-Duty Ratchet

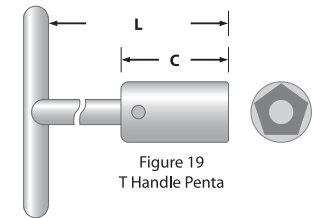


Figure 19 T Handle Penta

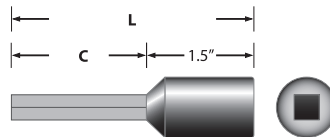


Figure 20 Allen Bar Drive

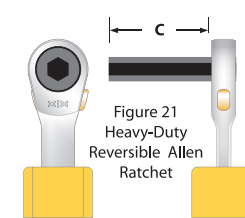


Figure 21 Heavy-Duty Reversible Allen Ratchet



Figure 22 Heavy-Duty All-Metal Ratchet

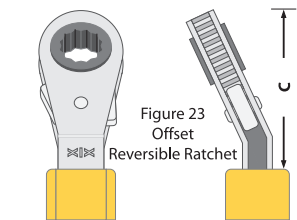


Figure 23 Offset Reversible Ratchet

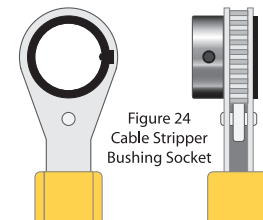


Figure 24 Cable Stripping Bushing Socket

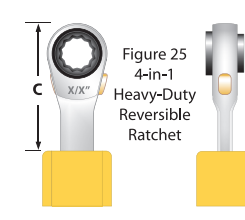


Figure 25 4-in-1 Heavy-Duty Reversible Ratchet

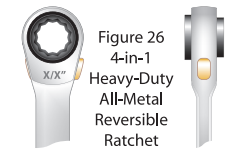


Figure 26 4-in-1 Heavy-Duty All-Metal Reversible Ratchet



BW-203HD Heavy-Duty 9/16" x 3/4"



BW-223F Offset 9/16" x 3/4"



BW-223HD Heavy-Duty 9/16" x 3/4"



BW-400 Cable Stripping pictured with a Ripley 4x4 Bushing (Bushing Not Included)



BUGWRENCH Catalog No. List

Catalog No.	End 1 Fitting	Fig.	C Dim.	End 2 Fitting	Fig.	C Dim.	Wgt. Ea.	L Dim.
BW-044*	1/2" & 9/16" Rev. Ratchet	26	NA*	5/8" & 3/4" Rev. Ratchet	26	NA*	0.7 lbs	6.25"
BW-201*	3/8" Ratchet	1	NA*	9/16" Ratchet	1	NA*	0.7 lbs	6.75"
BW-203*	9/16" Ratchet	1	NA*	3/4" Ratchet	1	NA*	0.7 lbs	6.25"
BW-203HD*	9/16" Heavy-Duty Ratchet	22	NA*	3/4" Heavy-Duty Ratchet	22	NA*	0.7 lbs	6.25"
BW-203F*	9/16" R. Ratchet, Offset	23	NA*	3/4" R. Ratchet, Offset	23	NA*	0.7 lbs	6.25"
BW-2031*	1/2" Ratchet	1	NA*	9/16" Ratchet	1	NA*	0.7 lbs	6.75"
BW-204*	3/4" Ratchet	1	NA*	7/8" Ratchet	1	NA*	0.7 lbs	9.25"
BW-209	3/8" Allen Ratchet	4	1.21"	Eye Loop	9	1.00"	0.7 lbs	7.50"
BW-2090P	3/8" Allen Ratchet	4	1.21"	Penta Socket	6	2.00"	1.0 lbs	8.75"
BW-2090P4	3/8" Allen Ratchet	4	1.71"	Penta Socket	6	2.00"	1.0 lbs	8.75"
BW-2090P90	3/8" Allen Ratchet	4	1.21"	90° Penta Socket	7	2.50"	1.0 lbs	9.25"
BW-2091P	Penta Socket	6	1.91"	Eye Loop	9	1.00"	0.7 lbs	7.50"
BW-2091P90	90° Penta Socket	7	2.37"	Eye Loop	9	1.00"	0.7 lbs	8.00"
BW-2092M	3/8" Allen Ratchet	4	1.21"	3/8" Allen Bar	3	1.25"	0.7 lbs	8.00"
BW-2093	5/16" Allen Ratchet	4	1.46"	Eye Loop	9	1.00"	0.7 lbs	7.75"
BW-2093P	5/16" Allen Ratchet	4	1.46"	Penta Socket	6	2.00"	1.0 lbs	9.00"
BW-2093P90	5/16" Allen Ratchet	4	1.46"	90° Penta Socket	7	2.50"	1.0 lbs	9.25"
BW-2093-2	5/16" Allen Ratchet	4	1.97"	Eye Loop	9	1.00"	0.7 lbs	7.75"
BW-2093-3	9/16" Ratchet	1	2.25"	5/16" Allen Ratchet	4	1.46"	1.0 lbs	9.00"
BW-209375P90	5/16" Allen Ratchet	4	0.75"	90° Penta Socket	7	2.50"	1.0 lbs	9.25"
BW-210	3/16" Allen Bar	3	1.25"	Eye Loop	9	1.00"	0.5 lbs.	6.75"
BW-2101	1/4" Allen Bar	3	1.88"	Eye Loop	9	1.00"	0.5 lbs.	7.38"
BW-211	3/8" Allen Bar	3	1.25"	Eye Loop	9	1.00"	0.5 lbs.	6.75"
BW-212	5/16" Allen Bar	3	1.25"	Eye Loop	9	1.00"	0.5 lbs.	6.75"
BW-216*	11/16" Ratchet	1	NA*	15/16" Ratchet	1	NA*	0.7 lbs.	9.25"
BW-221	3/8" Ratchet	1	2.25"	9/16" Ratchet	1	2.25"	0.7 lbs	9.00"
BW-2210	3/8" Ratchet	1	2.25"	7/16" Ratchet	1	2.25"	0.7 lbs	9.00"
BW-2212	1/2" Ratchet	1	2.25"	9/16" Ratchet	1	2.25"	0.7 lbs	9.00"
BW-2213	5/16" Ratchet (6 pt)	1	2.00"	3/8" Ratchet (6 pt)	1	2.00"	0.7 lbs	8.50"
BW-2213AR	3/8" Allen Ratchet	4	1.21"	5/16" Allen Ratchet	4	1.21"	0.7 lbs	9.00"
BW-2214	3/8" Ratchet (6 pt)	1	2.00"	1/2" Ratchet (6 pt)	1	2.00"	0.7 lbs	8.50"
BW-2215P	3/8" Reversible Ratchet	2	2.25"	Penta Socket	6	2.00"	1.0 lbs	8.75"
BW-223	9/16" Ratchet	1	2.25"	3/4" Ratchet	1	2.25"	0.7 lbs	9.00"
BW-223HD	3/4" Heavy-Duty Ratchet	18	2.63"	9/16" Heavy-Duty Ratchet	18	2.38"	0.6 lbs	9.50"
BW-223F	9/16" R. Ratchet, Offset	23	2.50"	3/4" R. Ratchet, Offset	23	2.75"	0.7 lbs	9.00"
BW-2231	9/16" Ratchet	1	2.25"	11/16" Ratchet	1	2.25"	0.7 lbs	9.00"
BW-2232	3/4" Ratchet	1	2.25"	11/16" Ratchet	1	2.25"	0.7 lbs	9.00"
BW-2233	9/16" Ratchet	1	2.25"	5/8" Ratchet	1	2.25"	0.7 lbs	9.00"
BW-2234	1/2" Ratchet	1	2.25"	5/8" Ratchet	1	2.25"	0.7 lbs	9.00"
BW-2235	5/8" Ratchet	1	2.25"	11/16" Ratchet	1	2.25"	0.7 lbs	9.00"

* These wrenches are all metal without insulating handles.

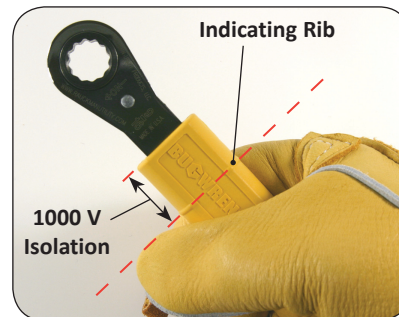


Catalog No.	End 1 Fitting	Fig.	C Dim.	End 2 Fitting	Fig.	C Dim.	Wgt. Ea.	L Dim.
BW-2236	5/8" Ratchet	1	2.25"	13/16" Ratchet	1	2.75"	0.7 lbs	9.50"
BW-2237	5/8" Ratchet	1	2.25"	3/4" Ratchet	1	2.25"	0.7 lbs	9.00"
BW-2238	3/4" Ratchet	1	2.25"	13/16" Ratchet	1	2.75"	0.7 lbs	9.50"
BW-2239	3/8" Reversible Ratchet	2	2.25"	3/8" Rev. Allen Ratchet	5	2.25"	1.0 lbs	9.00"
BW-2239-2	3/4" Ratchet	1	2.25"	5/16" HD R. Allen Ratchet	21	2.00"	1.0 lbs	9.00"
BW-224	3/4" Ratchet	1	2.25"	7/8" Ratchet	1	2.75"	0.7 lbs	9.50"
BW-2240	13/16" Ratchet	1	2.75"	7/8" Ratchet	1	2.75"	1.0 lbs	10.00"
BW-2241P90	13/16" Ratchet	1	2.75"	90° Penta Socket	7	2.50"	1.0 lbs	9.75"
BW-2242	11/16" Ratchet	1	2.25"	15/16" Ratchet	1	2.75"	1.0 lbs	9.50"
BW-2243	13/16" Ratchet	1	2.75"	15/16" Ratchet	1	2.75"	1.0 lbs	10.00"
BW-2245	7/8" Ratchet	1	2.75"	15/16" Ratchet	1	2.75"	1.0 lbs	10.00"
BW-239	5/16" Rev. Allen Ratchet	5	1.00"	5/16" Rev Allen Ratchet	5	1.00"	1.0 lbs	9.00"
BW-240	5/16" Rev. Allen Ratchet	5	1.38"	3/8" Rev. Allen Ratchet	5	1.50"	1.0 lbs	9.00"
BW-240B	5/16" HD R. Allen Ratchet	21	2.00"	3/8" R. Allen Ratchet	5	2.00"	1.0 lbs	9.00"
BW-240P1	3/8" Rev. Allen Ratchet	5	1.00"	Penta Socket	6	2.00"	1.0 lbs	8.75"
BW-241P	5/16" Rev. Allen Ratchet	5	1.50"	Penta Socket	6	2.00"	1.0 lbs	8.75"
BW-241P1	5/16" HD R. Allen Ratchet	21	2.00"	Penta Socket	6	2.00"	1.0 lbs	8.75"
BW-241P2	5/16" Rev. Allen Ratchet	5	1.00"	Penta Socket	6	2.00"	1.0 lbs	8.75"
BW-241P90	5/16" Rev. Allen Ratchet	5	1.50"	90° Penta Socket	7	2.50"	1.0 lbs	9.25"
BW-241P90B	5/16" HD R. Allen Ratchet	21	2.00"	90° Penta Socket	7	2.50"	1.0 lbs	9.25"
BW-241PS-58	5/16" Rev. Allen Ratchet	5	0.63"	Penta Socket	6	2.00"	1.0 lbs	8.75"
BW-241S	5/16" Rev. Allen Ratchet	5	1.50"	Eye Loop	9	1.00"	0.7 lbs	7.75"
BW-241SB	5/16" HD R. Allen Ratchet	21	2.00"	Eye Loop	9	1.00"	0.7 lbs	7.75"
BW-241S2	5/16" Rev. Allen Ratchet	5	1.00"	Eye Loop	9	1.00"	0.7 lbs	7.75"
BW-241S3GP	3/8" Rev. Allen Ratchet	5	1.00"	Eye Loop	9	1.00"	0.7 lbs	7.75"
BW-241S-58	5/16" Rev. Allen Ratchet	5	0.63"	Eye Loop	9	1.00"	0.7 lbs	7.75"
BW-243P	5/16" Rev. Allen Ratchet	5	1.00"	90° Penta Socket	7	2.50"	1.0 lbs	9.25"
BW-243PB	5/16" HD R. Allen Ratchet	21	2.00"	90° Penta Socket	7	2.50"	1.0 lbs	9.25"
BW-244	1/2" & 9/16" Rev. Ratchet	25	2.38"	5/8" & 3/4" Rev. Ratchet	25	2.63"	0.6 lbs	9.50"
BW-250	90° Penta Rev Ratchet	11	2.00"	Eye Loop	9	1.00"	0.8 lbs	8.25"
BW-251	90° Penta Rev Ratchet	11	2.00"	5/16" R. Allen Ratchet	21	2.00"	1.0 lbs	9.00"
BW-252	90° Penta Rev Ratchet	11	2.00"	3/8" R. Allen Ratchet	5	2.00"	1.0 lbs	9.00"
BW-400	Cable Stripping - Accepts a Ripley 4x4 Bushing (Bushings Not Included)	24	NA	Eye Loop	9	2.00"	1.0 lbs	9.00"
51612BT*	5/16" Allen Bar	20	2.00"	1/2" Drive	20	NA*	0.3 lbs	3.50"
3812BT*	3/8" Allen Bar	20	2.00"	1/2" Drive	20	NA*	0.3 lbs	3.50"
51638BT*	5/16" Allen Bar	20	2.00"	3/8" Drive	20	NA*	0.3 lbs	3.50"
3838BT*	3/8" Allen Bar	20	2.00"	3/8" Drive	20	NA*	0.3 lbs	3.50"
BW-99*	T Handle All Metal Penta	19	2.00"	NA	NA*	NA*	0.8 lbs	5.50"

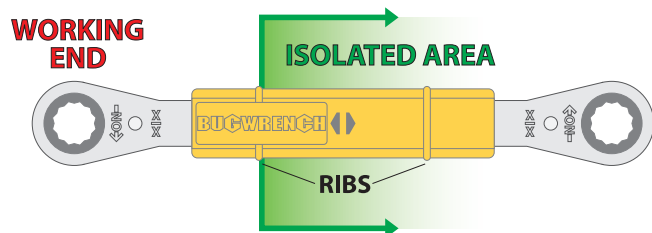
* These wrenches are all metal without insulating handles.

Electrical Testing — 1000 V Rating

The BugWrench handle is designed with a visual and physical indicator permanently molded (in a shape of a rib) in 2 positions on the handle. This rib provides an indication of the “isolated area” of the handle. Holding the wrench behind the appropriate rib (see photo) provides a 1,000 V rating between the metal working end and the operator’s hand.

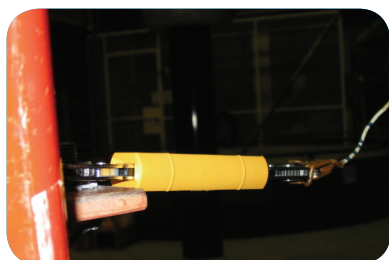


Holding a BUGWRENCH Properly with Hand Behind the Rib

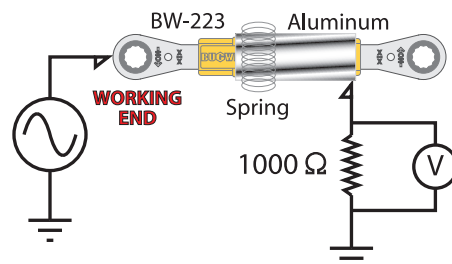
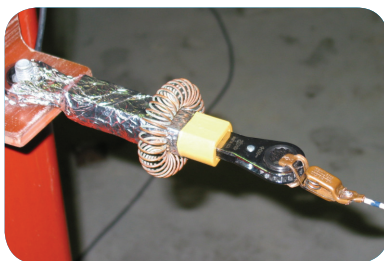


Independent dielectric tests as shown below have demonstrated that the fiberglass reinforced nylon handle used on all non-conductive BugWrench models meet or exceed all electrical requirements contained in ASTM 1505-10.

Dielectric Test



Dielectric Test Setup for End-to-End Isolation

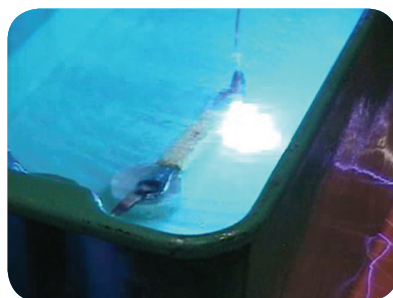


Dielectric Test Setup with Aluminum Sheet and Spring representing the mass of an operator’s hand

Ultimate Dielectric Strength Test

The wrench was submerged in high dielectric (transformer) oil. One working end of the wrench was energized and the other working end was grounded. The voltage was raised until puncture occurred.

Oil must be used to force the failure (puncture) through the center of the wrench, otherwise the flashover would occur over the surface of the handle.

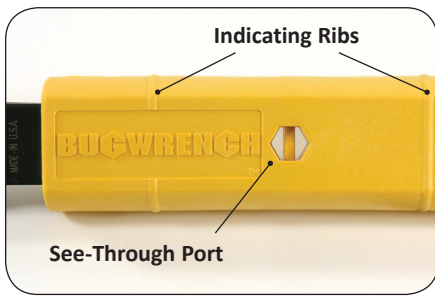


Actual Video Screen Captures of BW-223 During the Puncture Test. Note the corona on the outside of the test tank.



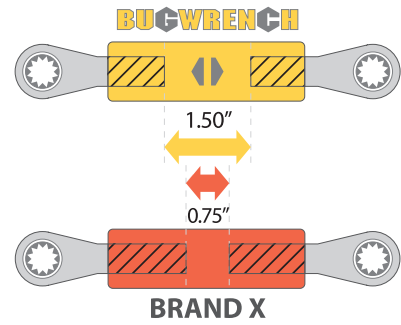
⚠ DANGER

These wrenches are NOT intended to provide primary electrical protection. Workers should always wear appropriate personal protective equipment including properly rated rubber gloves with leather protectors.



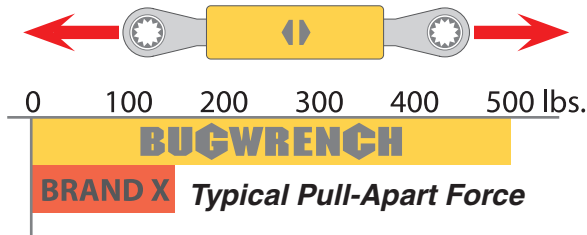
The BugWrench handle is formulated of a high strength and high dielectric polymer. All BugWrench tools equipped with the high dielectric handle include the following features:

- A see-through port in the center of the handle to confirm that the two ends are not electrically connected
- Tool metal-to-metal electrical isolation superior to others
- Pull-Apart Strength greater than others
- Indicator Ribs for improved safety
- High visibility yellow color



Twice the Metal-to-Metal Electrical Isolation

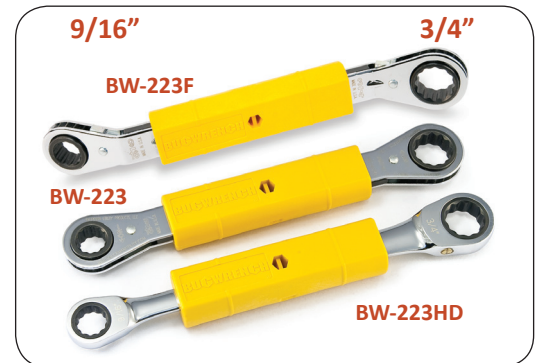
9/16" x 3/4" model data



The unique design and manufacturing process ensures maximum metal-to-metal separation, with unmatched mechanical strength.



BW-99 the "T" Handle Penta



Rauckman Utility Products, LLC.

33 Empire Drive
 Belleville, IL 62220
 phone: 618-234-0001
 fax: 618-234-0003
 www.rauckmanutility.com

