

HAMMERHEAD®

Static Pipe Bursting Systems

**Faster, productive trenchless
pipe rehabilitation with minimal
above ground disruption.**

**For contractors paid by the foot,
not by the hour.**



HAMMERHEAD
Mole

The Problem:

Worldwide deteriorating infrastructure

On an international scale, water, sewer, gas and other utilities are in need of replacement. Most are located in congested urban areas, under buildings, roadways or expensive landscape, and are surrounded by other utilities. Worldwide, many systems have exceeded their useful life, have deteriorated and are in need of replacement.

Estimated cost of utility replacement in the U.S. is a trillion dollars within the next 20 years. Replacement by traditional open-trench methods is often not a viable or cost effective alternative.



Water and Gas Lines

- Are encrusted, capacity is reduced
- Are corroded and leak - some systems experience a 40 percent water loss
- A 1/4" (6.4 mm) hole can leak more than 3,000 gallons (11,356 L) of water per day
- Are under capacity because of population growth



Sewer Lines

- Offset pipes, root intrusion and crowned and cracked pipes are causing system backups
- Are under capacity due to urban growth
- Infiltration and inflow (often from rain) are taxing treatment plant capacities - increasing treatment costs and creating outflows of untreated sanitary sewage into lakes and streams



Traditional open cut pipe replacement project

The Solution:

Pipe Bursting



Pipe Bursting can reduce excavation up to 85%



Advantages of Pipe Bursting include:

- Follows the existing utility path
- Reduces potential damage to adjacent utilities
- The preferred technology for up sizing existing pipes
- Reduces social costs and traffic disruption
- Installs new pipe versus repairing the existing pipe
- Reduces costs associated with utility relocation design

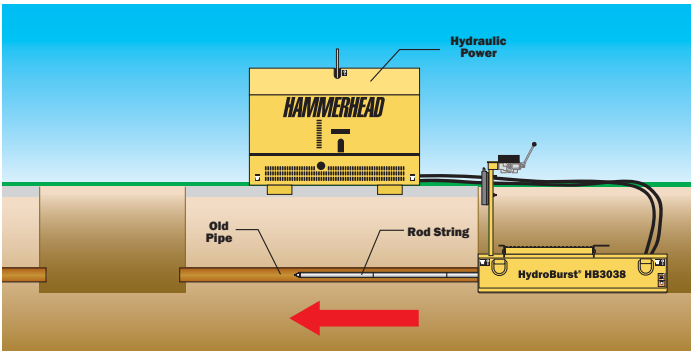
Water System Estimated Flow Rate Comparison†

Cast Iron Pipe	AC Pipe	New DIPS HDPE SDR11 Pipe	New DIPS HDPE SDR17 Pipe
4" ID = 96 gpm	4" ID = 109 gpm	4" = 113 gpm 6" = 234 gpm	4" = 132 gpm 6" = 272 gpm
6" ID = 217 gpm	6" ID = 247 gpm	6" = 234 gpm 8" = 405 gpm	6" = 272 gpm 8" = 472 gpm
8" ID = 340 gpm	8" ID = 388 gpm	8" = 405 gpm 10" = 606 gpm	8" = 472 gpm 10" = 705 gpm
10" ID = 511 gpm	10" ID = 583 gpm	10" = 606 gpm 12" = 857 gpm	10" = 705 gpm 12" = 997 gpm
12" ID = 723 gpm	12" ID = 824 gpm	12" = 857 gpm	12" = 997 gpm

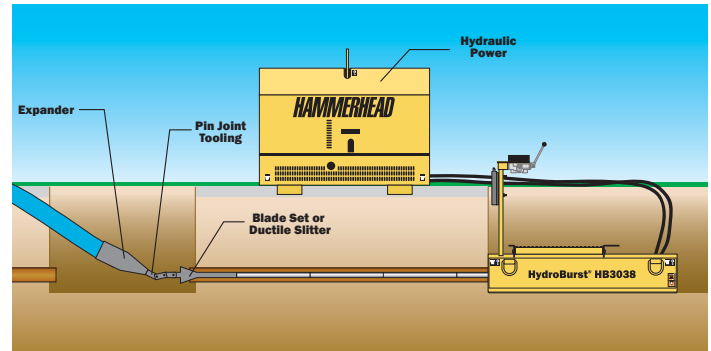
†Estimates based on flow estimate formula $Q = 2.449VD^2$ (where Q = gpm, V = velocity in ft/min, D = I.D. of HDPE DIPS pipe) Velocity calculated at a nominal 3 ft/sec (city mains operating at 2 - 3 ft/sec). Pressure drop per 1000' ranges from .32 psi/100' for 4" pipe to .10 psi/100' for 12" pipe.

Static Pipe Bursting Method and Pre-Chlorination

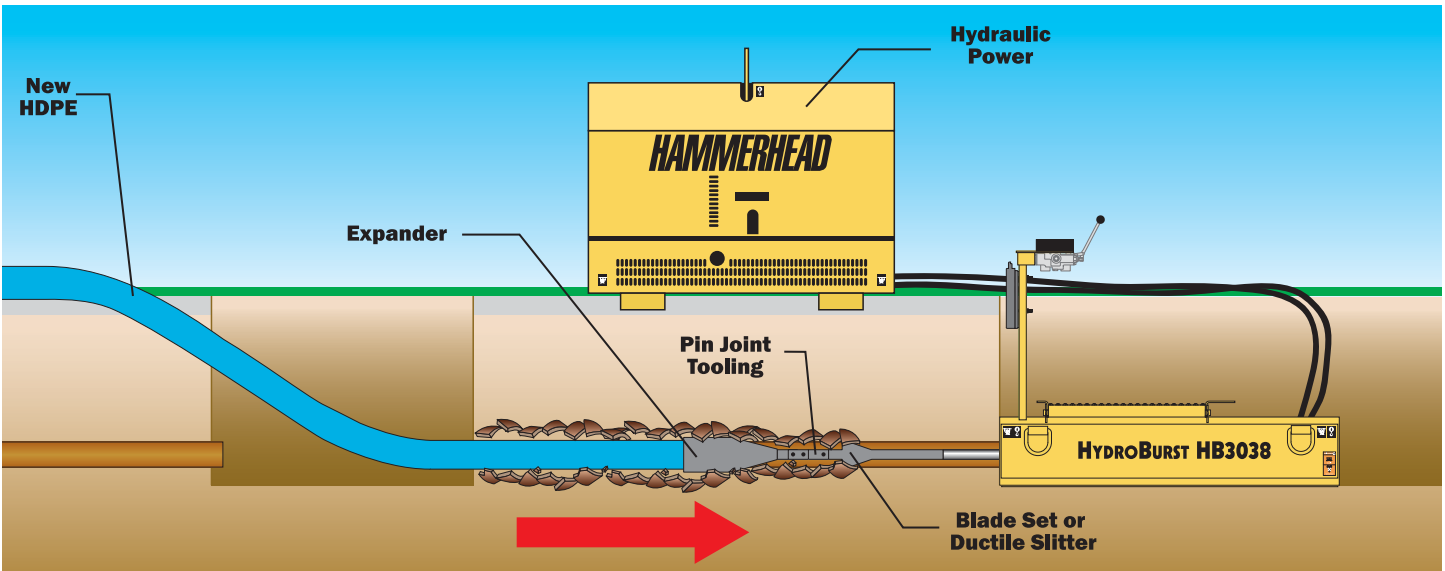
Pipe Replacement as Simple as 1 - 2 - 3



1 Payout Rod - payout the rod down the existing pipe. 350 feet of rod can be pushed out in approximately one hour. Rods can pass through sweeping bends in pressure pipe systems.



2 Attach to Tooling - Attach bursting blades or ductile slitter to the rod end. HDPE pipe is attached to an expander which is between 20 - 29% larger than the outside diameter of the pipe being installed.



3 Pull Back Product - During pull back, old pipe is fractured or split and pushed out into the surrounding soil. The new pipe is installed simultaneously. Pullback operation takes approximately one hour to install 350 feet of pipe.



The pre-chlorination method has been an industry standard in the UK and is rapidly gaining acceptance in North America. The pre-chlorination method is guided by AWWA standards for chlorinating and pressure testing HDPE water mains. What is the difference? The HDPE water main is chlorinated, pressure tested and sealed prior to installation. Once the new HDPE pipe passes bacterial and pressure testing, it can be installed via pipe bursting.*

Designed for the contractor that's paid by the foot, not by the hour. Compact hydraulically operated HydroBurst® systems can burst fractureable pipes and slit non fractureable pipes (ductile iron and steel). Systems are simple to set up and operate and provide some of the most advanced features in the trenchless industry. With HammerHead®, you have an expert global trenchless partner with service, support and training second to none.

*Please refer to AWWA standards for HDPE chlorination and pressure testing specifications.

HydroBurst® HB3038 and HB5058 Systems

Designed specifically for 2" (50 mm) - 8" (200 mm) gas and water line replacement. HB3038 and HB5058 systems are highly efficient, simple to set up, easy to operate and require a small pit for the machine. HB3038 and HB5058 systems are fast, a typical 400' (122 m) job takes only a two hour round trip from payout to completion.

HB3038 and HB5058 machines feature quick replacement jaw inserts, on board pressure gauges and an auto rod grip and release feature. Specially designed slitters are available for use when slitting 3" (75 mm), 4" (100 mm), and 6" (150 mm) ductile iron or steel.



HydroBurst® HB80 Bursting System 80 Tons of Static Pull Back Power

A powerful Static Machine for 85% of the Pipe Bursting Market (sewer, water, gas) 3" (75 mm) to 12" (300 mm) diameters

The HydroBurst® HB80 Pipe Bursting system is strategically designed for the contractor looking for a reliable and simple to operate machine that can be towed on a 12,000 lb (5,443 kg) trailer with a 1 ton truck and can complete 85% (both water and sewer projects) of the pipe bursting jobs bidding today.

The HB80 is very easy to transport to the job and on the job with a low weight of 2,800 lb (1,270 kg) for the pulling unit. The HB80 is designed with high productivity in mind with features like the auto rod spinner, fast 16 second payout per 35" (90 cm) rod shuttle speed, light weight rod, and 148' (45 m) of on board rod storage to provide a two hour calculated round trip 400' (122 m) burst. To maximize job performance the HB80 is coupled with a locked and sound proofed 73 HP Kubota® power supply with a 41 gpm (155 lpm) variable displacement pump for maximum pull power and cylinder shuttle speed.

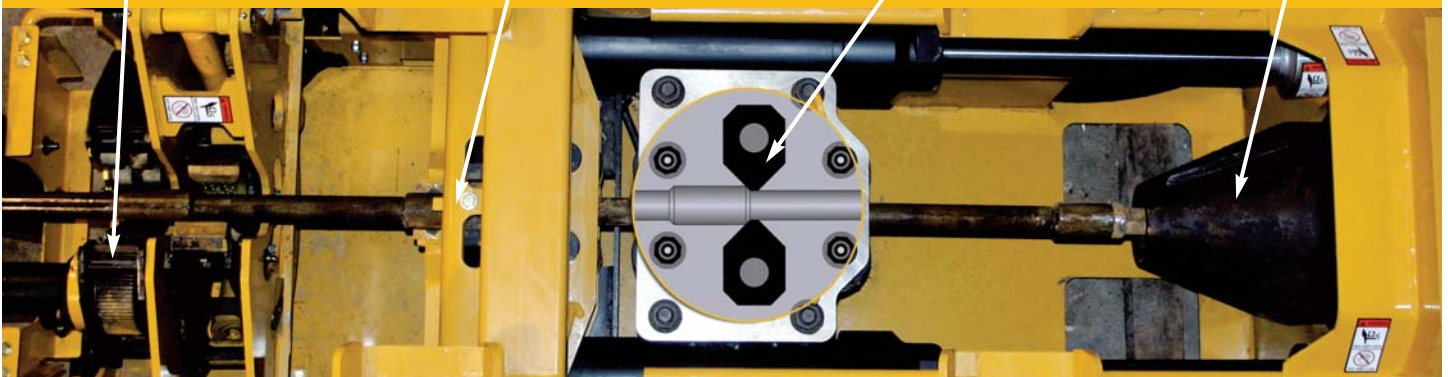


The optional Auto Rod Spinner quickly spins rods together to form a uniform pipe string.

Rod lock vice holds rod in place for constant tension on pipe string and shoring increasing overall production.

LIGHT WEIGHT ROD (27 lb/12.2 kg) proven API style threaded, heat treated rods include an upset OD feature for rod lock and positive grip systems.

On board burst head docking reduces pit length requirements (Up to 12")



HydroBurst® HB125: Another Industry First

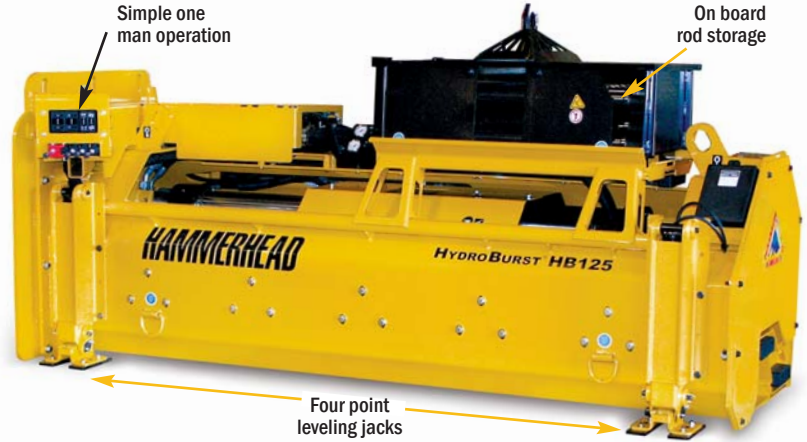
125 Tons of Power for Your Big Jobs

The HydroBurst HB125 static Pipe Bursting system is designed for the contractor who wants **ONE** machine versatile enough to replace 4" (100 mm) to 20" (500 mm) diameter pipe, in water, gas and sewer markets.

The HB125 is considered the premier Pipe Bursting machine with many time saving features that reduce labor and improve job speed. Much of the design platform is based on a Pit-Launch HDD design using 125 tons of pull back with a simple one man operation.

The HB125 design targets the ability to quickly set the machine in place, hydraulically adjust the height and shore the rear of the machine, allowing you to rapidly begin rod payout.

The HydroBurst HB125 uses many of the proven designs from both the HDD market and oil field industries to provide a simple, reliable, high production machine that can handle most Pipe Bursting jobs on the market.



High Production System

- Simple one man operation
- On board rod basket
- 19 second rod payout per 39.37" (1 m) rod
- Three hour calculated burst time for a 400' (120 m) burst
- Quick set up with Hydraulic leveling jacks and rear stabilizer



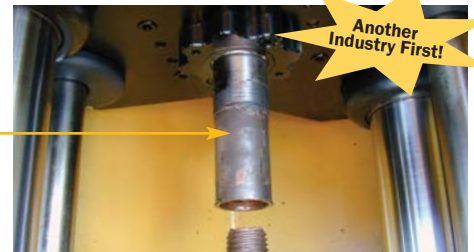
Burst Head Docking

Retractable vices can dock burst heads on projects up to 12" (300 mm) HDPE inside the machine at the end of a burst which allows for smaller pit requirements.



Proven Rod Design API Torque Joint

- LIGHT WEIGHT (52 lb/23.6 kg) and easy to load into machine
- 62.5' (19.0 m) bend radii for projects with sweeping bends
- Upset OD feature for rod lock system grip location
- Torqued joint design for high THRUST and PULLBACK capabilities



Auto Rod Spinner

- Quickly spins rods together to form a uniform pipe string
- Provides 800 ft/lbs (1,085 N-m) of rotational torque to rotate through collapsed lines (1,100 ft/lb breakout torque)



Rod Lock Vice

- Holds rod in place for constant tension on pipe string and shoring
- Increases production

Rear hydraulic stabilizer

- Quick rear shoring with one lever
- 36" (91.4 cm) of travel

Why Use HammerHead® Torqued Joint Rods?



Torqued rod strings are flexible for bursts around sweeping bends.

HydroBurst HB80 and HB125 static Pipe Bursting systems feature an API style threaded joint and heat treated alloy rod that has been proven in the oil fields and directional drilling for decades under thrust, pullback and bend radii conditions.

Durability for long life — A torqued joint rod string lends itself to the ability to handle thrust loads encountered when pushing around sweeping bends, through encrusted lines, line collapses and long burst lengths.

CAUTION: Other “loose joint” designs can buckle if not supported by the host pipe.

Typically when contractors look to purchase a static pipe bursting system, burst lengths of 400' (122 m) to 800' (244 m) are common and the cost and life of the rod weighs heavily in the cost of the equipment package. The nature of a round rod design lends itself to economical manufacturing costs which can be passed on to the contractor allowing for more competitive bidding and less equipment investment without compromising quality, durability and performance when compared to other rod concepts that use “loose joint” designs.

Rotation ability — Bending torque is placed on the rod string when loads are applied by sweeping bends or unaccounted for internal pipe conditions. In addition, rotational torque can be applied when the burst head, blade or cutter follows a pipe fracture. As compared to a loose joint system, threaded round rod systems have the advantage of being unaffected by these torque loads since the rods can be gripped at any location or orientation.

CAUTION: In a “loose joint” system, any torque induced in the rod string during pull back has the potential to jam the pullback machine.

HydroBurst® Rod (Minimum Bend Radii)

Rod Diameter	HydroBurst® Model	Minimum Bend Radii*	Minimum Calculated Tensile Yield Strength
1.38" (3.5 cm)	HB3038/HB5058	16.3' (5.0 m)	41.6 tons
1.75" (4.4 cm)	HB3038	45.0' (13.7 m)	67.4 tons
2.00" (5.1 cm)	HB5058	31.3' (9.5 m)	89.6 tons
2.25" (5.7 cm)	HB80	26.3' (8.0 m)	148.7 tons
2.75" (7.0 cm)	HB125	62.5' (19.0 m)	179.5 tons

*Bend radius calculation includes a 25% design allowance factor.

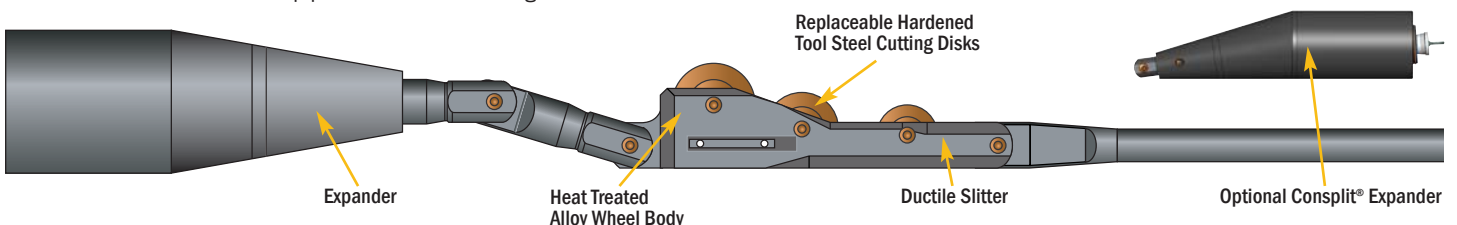
HydroBurst® Rod Design: Proven API style thread, torqued joint design provides a uniform rod string.



Ductile Iron and Steel Slitters and Consplit® Expanders

Specially designed slitters are available in 2" (50 mm) - 12" (300 mm) and feature hardened tool steel cutting disks that are durable and can slice through non-fracturable pipe such as ductile iron, steel and PVC while reducing required tonnage. The first cutting disk pre-slits the pipe, the second slits or bursts the pipe and the third cutting disk cuts

through bells, repair clamps and bolted style cast couplers. Consplit® Expanders have a conical design and help keep the expander in line with the host pipe. Consplit Expanders are available in a wide range of sizes to replace many pipe types and diameters.



More than 4 Million Feet of Pipe Installed in 34 Countries with HammerHead® Pipe Bursting Systems!



Everglades National Park, Florida

Pipe sizes: 2", 4", 6" (5, 10 and 15 cm) up sized to 4", 6" and 8" (10, 15 and 20 cm)
 Pipe type: Cast iron to HDPE
 Total footage: 25,000' (7,620 m)
 Equipment: HydroBurst HB3038



Mexico City, Mexico

Pipe sizes: 7.5 cm, 10 cm and 15 cm
 Pipe type: AC to HDPE
 Total footage: 43.5 Miles (70 km)
 Equipment: HydroBurst HB5058



Vancouver, Washington

Pipe sizes: 4" (10 cm) to 4" (10 cm) gas service with two locating wires
 Pipe type: Steel to HDPE
 Total footage: 700' (213 m)
 Equipment: HydroBurst HB5058 and 4" (10 cm) Ductile Slitter



Reims, France

Pipe sizes: 4" (10 cm) to 4.3" (11 cm)
 Pipe type: Cast iron to HDPE
 Total footage: 443' (135 m)
 Equipment: HydroBurst HB5058



Altendorf, Switzerland

Pipe sizes: 4" (10 cm) up sized to 5" (13 cm)
 Pipe type: Ductile iron to HDPE
 Total footage: 1,800' (549 m)
 Equipment: HydroBurst HB5058



Las Vegas, New Mexico

Pipe sizes: 6" (15 cm) up sized to 12" (30 cm)
 Pipe type: AC and cast-iron to HDPE
 Total footage: 625' (191 m)
 Equipment: HydroBurst HB125



Liverpool, United Kingdom

Pipe sizes: 3" (7.5 cm), 4" (10 cm) and 6" (15 cm)
 Pipe type: Cast iron to HDPE
 Total footage: 110 miles (177 km) per year
 Equipment: HB3038 & HB5058



Jubail, Saudi Arabia

Pipe sizes: 12" (30 cm) to 18" (45 cm)
 Pipe type: UPVC to HDPE
 Total footage: 14,764' (4,500 m)
 Equipment: HydroBurst HB125



Madison, Alabama

Pipe sizes: 8" (15 cm) to 8" (15 cm)
 Pipe type: Clay to HDPE
 Total footage: 5,000' (1,524 m)
 Equipment: HydroBurst HB80

HammerHead HydroBurst Static Pipe Bursting Systems



Choose the Right System for Your Next Job

HydroBurst® Static Pipe Bursting Machine Specifications

Specification	HydroBurst® HB3038	HydroBurst® HB5058	HydroBurst® HB80	HydroBurst® HB125
Pipe replacement range - in (mm)	2 - 6 (50 - 150)	4 - 8 (100 - 200)	3 - 12 (75 - 300)	4 - 20 (100 - 500)
Rig Size L/W/H - in (cm)	60/20/12 (152/51/30)	65/22/13 (165/56/33)	82/33/36 (208/84/91)	125/47/min - 42, max - 49 (318/119/min - 107, max - 124)
Minimum Pit Size L/W/H* - in (cm)	80/20/7 (203/51/18)	85/22/7 (216/56/18)	106/40/18.5 (269/102/47)	125/47/18 (318/119/46)
Weight - lb (kg)	762 (345)	928 (421)	3,060 lb (1,388 kg)*	7,500 (3,402)
Max. pulling force	38 tons	50 tons	80 tons	125 tons @ 4,420 psi
Shuttle speed (no-load, one cycle, approx. 1 m rod)	18 seconds	22 seconds	16 seconds	19 seconds
Spindle Torque - ft/lb (N-m)	n/a	n/a	250 (339) (approximate)	800 (1,085)
Rotational Speed (RPM)	n/a	n/a	n/a	250
Stabilizers	n/a	n/a	Manual Rear Stabilizer	Hydraulic Vertical and Rear Stabilizers
Rod Spinner	n/a	n/a	Optional Accessory	Standard
Rod Dia.(s)/Length(s) - in (cm)	a. 1.38/39.38 (3.5/100) b. 1.75/39.38 (4.5/100)	a. 1.38/39.38 (3.5/100) b. 2.00/39.38 (5.0/100)	2.25/35.44 (90/5.7)	2.75/39.4 (7/100)
Rod Weight(s) - lb (kg)	a. 17.2 (7.8), b. 27.0 (12.2)	a. 17.2 (7.8), b. 35.0 (15.9)	27 (12.2)	ONLY 52 (23.6)

*Below pipe center line

HydroBurst® Static Pipe Bursting Machine Specifications

Model	Engine	Pump Flow	Hydraulic Pressure Max (psi)	Used With	Length in (cm)	Width in (cm)	Height in (cm)	Weight lb (kg)
	Kubota 20.3 hp (15.1 kw) @ 2,800 RPM	24 gpm (91 L/min) @ 2,800 RPM	3,000	HB3038 HB5058	52.5 (133)	23.5 (60)	41.5 (105)	690 (313)
	Kubota 73 hp (54.4 kw) @ 2,600 RPM	41 gpm (155 L/min) @ 2,600 RPM	4,500	HB80 HB125	72 (183)	41 (104)	58 (147)	2,410 (1,093)



Toll Free 800.331.6653 (USA only) • +1 262.567.8833 (International) • web: hammerheadmole.com • info@hammerheadmole.com