

# FREQUENTLY ASKED TECHNICAL QUESTIONS

## IN WHAT TYPE OF SOIL WILL UTILITY AIRSPADE® WORK?

Because of the focused air-jet generated from the supersonic nozzle, Utility AirSpade works in most soils, including compacted soils, and hard clays. In general, Utility AirSpade will not cut through rock. However, shales may be broken apart by Utility AirSpade if the jet is directed between the laminations of the rock. Similarly, Utility AirSpade will not dislodge hard frozen soil which tends to behave like pavement or concrete.

## WHAT SIZE NOZZLE SHOULD I USE?

This depends on the desired rate of soil excavation which is in turn dependent upon the air delivered from the AirSpade nozzle. Soil excavation rates are summarized in the table below:

### Soil Excavation Rates

Nozzle Size (cfm)	Soil Excavation Rates (cubic ft / min)
105	0.9 to 1.5
150	1.2 to 1.8

## WHAT SIZE AIR HOSE DO I NEED FOR THE UTILITY AIRSPADE?

Generally a 1 inch ID air supply hose is recommended for use with the Utility AirSpade.

## WILL HIGHER AIR PRESSURE MAKE THE UTILITY AIRSPADE WORK BETTER?

All AirSpade nozzles are developed to operate optimally at 90 psi. Supplying higher air pressure to the AirSpade supersonic nozzle that has been optimized for 90 psi actually de-focuses the air jet, thus degrading performance while consuming more air. In addition, energy required to operate the compressor at higher air pressure increases dramatically due to increased fuel consumption.

## WHAT SIZE AIR COMPRESSOR DO I NEED TO PROPERLY RUN THE UTILITY AIRSPADE?

Portable air compressors have model numbers that nominally reflect the approximate air delivery in cubic feet per minute (cfm) at a gauge delivery pressure of 100 pounds per square inch (psi). For example, a 185 compressor will deliver 185 cfm at 100 psi. AirSpade nozzles are rated at 90 psi and are designated by their air consumption at this pressure. To size an AirSpade nozzle to a given compressor simply ensure the compressor size is larger than the nozzle size.

### Recommended Compressor Size

Nozzle Size (cfm)	Minimum Compressor Size (cfm @ 100 psi)
105	125
150	175 - 185

## HOW SHOULD I DIG WITH THE UTILITY AIRSPADE?

Each pass of the Utility AirSpade dislodges material up to several inches deep in a medium to stiff soil. Unless the soil is highly compacted, dwelling on the same spot is unnecessary and tends to increase spray. Ideally, the Utility AirSpade should be moved laterally at a rate of about 1 to 2 feet per second. When several inches of soil have been loosened, soil should be physically removed to expose a fresh working surface for the nozzle. Vacuum suction, as provided by the AirVac® Vacuum Unit, is an excellent way to remove loosened soil.

# PRODUCTS, PARTS & ACCESSORIES

Part #	Description
ASU4105G4	Utility AirSpade 105 cfm w 4 ft Barrel
ASU4150G4	Utility AirSpade 150 cfm w 4 ft Barrel
ASU4105KT	Utility AirSpade 105 cfm Kit
ASU4150KT	Utility AirSpade 150 cfm Kit
ASU4004BD	Utility AirSpade 4 Ft Barrel w Dirt Shield
ASU4002EX	Utility AirSpade 2 Ft Extension w Coupler
ASU4003EX	Utility AirSpade 3 Ft Extension w Coupler
ASU4004EX	Utility AirSpade 4 Ft Extension w Coupler
ASU4005EX	Utility AirSpade 5 Ft Extension w Coupler
ASU4000CP	Utility AirSpade Barrel/Extension Coupler
ASU4105NZ	Utility AirSpade 105 cfm Nozzle
ASU4150NZ	Utility AirSpade 150 cfm Nozzle
ASU4045AA	Utility AirSpade 45 Degree Angled Adapter
HT133	Sliding Dirt Shield
HT180	Auxiliary Handle
ASU4000HA	Utility AirSpade Handle Assembly
ASU4000HR	Utility AirSpade Handle Repair Kit



# UTILITY AIRSPADE 4000 AIR EXCAVATION TOOL

## AIRSPADE®

## AIRSPADE®

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**GUARDAIR®**  
CORPORATION

Distributed by:



Always wear eye and ear protection when operating air tools and related equipment.

PHONE 413-594-4400

FAX 413-594-4884

www.airspade.com

# THE NEW INDUSTRY STANDARD

Utility AirSpade® sets a new standard for air-excavation tools. Engineered with safety in mind, Utility AirSpade features AirSpade's patented supersonic nozzle for rapid digging in the toughest of soils. Combined with a high-voltage insulated barrel and non-sparking components, the rugged Utility AirSpade provides the highest degree of protection when working around underground electric, gas and other utility lines.

## UTILITY APPLICATIONS

Sensitive underground pipes and cables can often be punctured or damaged by traditional digging methods. Utility AirSpade offers a safe non-damaging alternative method of soil excavation. Ideal for digging holes or shallow trenches for pipes or cables, Utility AirSpade is used in the following applications:

- Utility locating and repair • Keyholing • Potholing • Valve box cleaning • Cable trenching



Electric Power Lines



Gas Pipes



Water and Sewer Lines



Telecommunication Lines and Fiber Optics

## SAFETY AND PERFORMANCE BUILT IN

Working around underground gas and electric lines demands the safest equipment. Constructed from high-pressure, insulated inner air hose surrounded by non-conductive, fiberglass outer barrel, a Utility AirSpade with a 4 ft. barrel is rated up to 300kV.

Non-sparking brass nozzle and brass barrel sleeves provide protection when digging in and around utility lines.



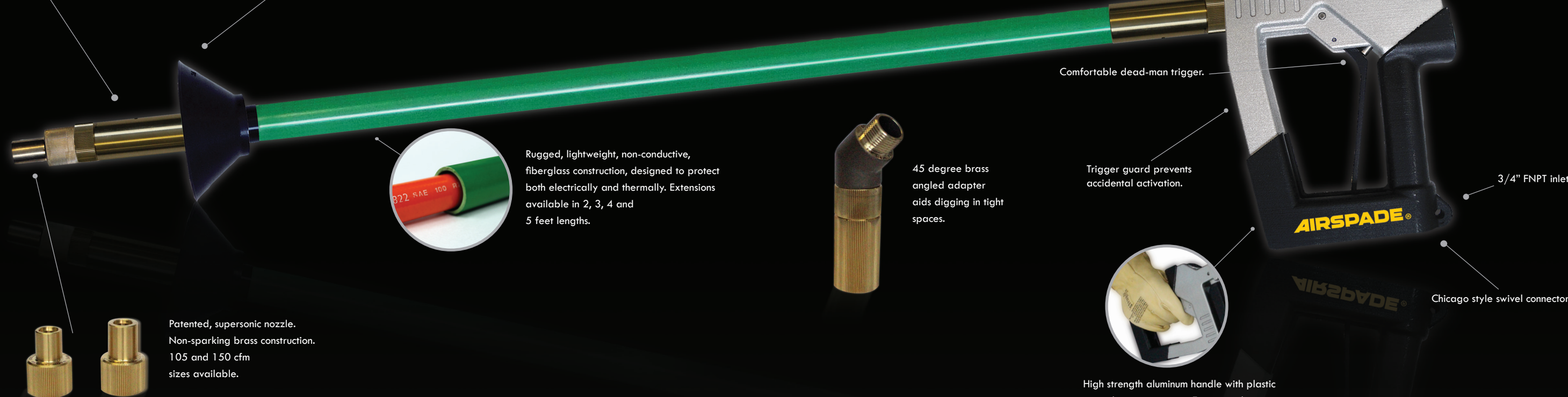
INNER AIR HOSE rated to 75kV per ft. for 5 minutes per SAE 100R7  
OUTER FIBERGLASS TUBE rated to 100kV per ft. for 5 minutes per ASTM F711

# EXCAVATION USING THE POWER OF COMPRESSED AIR

Soil is an unconsolidated assemblage of solid particles including clay, sand, and rock and sometimes organic matter. Voids between the particles are occupied by air and/or water. When compressed air is directed into soil at close range, air enters the voids where it expands, thereby fracturing the soil. Stronger, non-porous materials such as metal or plastic pipes, cables, or even tree roots are unaffected.

Non-sparking brass sleeves with threaded connections.

Adjustable dirt shield protects operator from flying debris.



Rugged, lightweight, non-conductive, fiberglass construction, designed to protect both electrically and thermally. Extensions available in 2, 3, 4 and 5 feet lengths.

45 degree brass angled adapter aids digging in tight spaces.

Comfortable dead-man trigger.

Trigger guard prevents accidental activation.

3/4" FNPT inlet.

Chicago style swivel connector.

High strength aluminum handle with plastic coated ergonomic grip. Engineered to accommodate linesman's gloves.

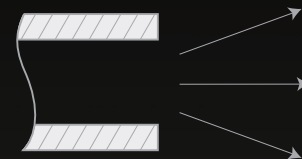
Retractable stabilizer bar provides superior operator control.

Pressure gauge ensures optimal digging performance.

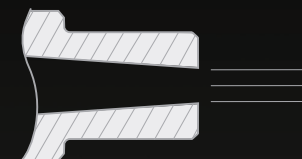
## PATENTED SUPERSONIC NOZZLE

Utility AirSpade's patented supersonic nozzle turns compressed air into a high-speed, laser-like jet moving at twice the speed of sound – Mach 2. All of the energy and momentum of air moving at approximately 1,200 mph is focused into the soil – dislodging it in a fraction of a second.

Air exiting from an improperly designed nozzle diffuses outward rapidly to 3 to 4 times the area versus the focused air-jet from the patented AIRSPADE supersonic nozzle. The result is faster, safer, more efficient soil excavation.



UNFOCUSED AIR FLOW FROM IMPROPERLY DESIGNED NOZZLE



FOCUSED AIR FLOW FROM AIRSPADE SUPERSONIC NOZZLE



### Utility AirSpade® 4000 KIT includes:

- Utility AirSpade® 4000 handle with Chicago style connector
- 4 ft barrel with dirt shield
- 45 degree brass angled adapter
- 105 cfm or 150 cfm brass nozzle
- 10 ft x 1" ID lightweight air hose with Chicago style connectors
- Heavy duty locking storage case

