

Pneumatic Thrust Boring Machines / Tools

Catalog & User Guide



- Operating Instructions
- Start -Up
- Depth And Target Determination Running
- Periodic Maintenance and Repair Instructions

albme®

www.thrustboring.com



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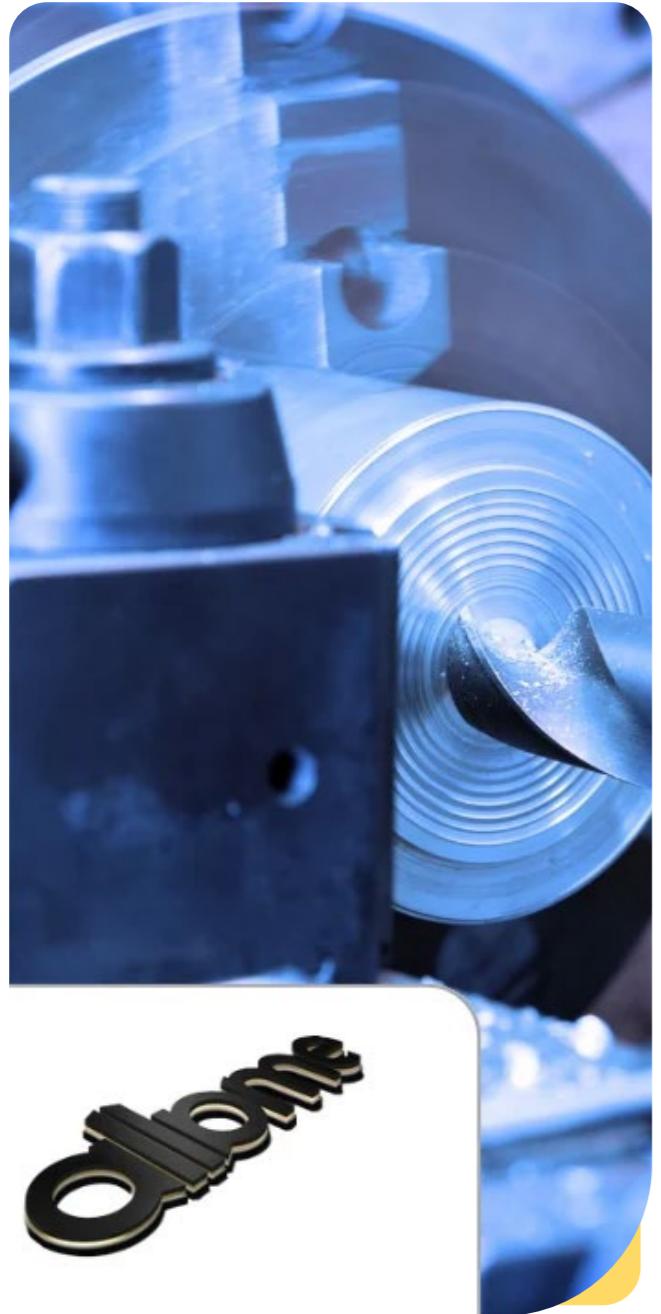
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About Us

At ALLAME Thrust Boring Machines, we specialize in trenchless horizontal boring solutions with a focus on accuracy, durability, and reliability. With nearly 25 years of engineering and manufacturing experience, we've become a trusted name in the field of ground mole technology.

Our machines are designed to perform underground horizontal bores beneath roads, railways, and urban infrastructures—without the need for open trenching. This allows the installation of gas, water, communication, and power lines with minimal disruption to surface structures and daily life.

We combine local manufacturing power with global quality standards. Each machine we produce undergoes strict quality control and is tested under tough field conditions to ensure long-term performance.

Our range of products is both user-friendly and adaptable to custom project requirements.

OPERATION AREAS

The THRUST BORING MACHINE is designed to create precise horizontal bores beneath roads and railways without surface excavation. This method allows underground installation while keeping the ground above fully intact.

Using a THRUST BORING MACHINE, underground utility lines such as gas pipelines, water pipes, communication lines, and energy cables can be installed safely below ground.

The process avoids damage to existing surface structures and surrounding infrastructure.

Since trenching is not required, daily activities, traffic flow, and urban life continue without interruption during operation. This makes the system ideal for use in busy city centers and sensitive areas.

The THRUST BORING MACHINE operates fully underground and advances in a controlled horizontal direction. Forward and backward motion ensures stable progress and accurate alignment throughout the boring process.

Thanks to its simple working principle and reliable impact force, the machine provides a practical solution for fast and clean underground installations across a wide range of projects.



TECHNICAL SPECIFICATIONS

PNEUMATIC UNDEGROUND MOLE SERIES

MODELS	Diameter		Length		Weight		Air Consumption			
	Inch	mm	Inch	mm	lbs	kg	psi	bar	cfm	m ³ /min
ALM-50	1.97	50	41	1040	26	12	100	7	21	0.6
ALM-75	2.95	75	41.5	1055	53	24	100	7	35	1.0
ALM-97	3.82	97	60.1	1528	143	65	87	6	52	1.5
ALM-132	5.20	132	63.6	1615	231	105	87	6	105	3.0
ALM-160	6.30	160	73.1	1857	411	187	87	6	140	4.0
ALM-190	7.48	190	73.2	1859	528	240	87	6	210	6.0
ALM-232	9.13	232	73.7	1873	935	425	87	6	262	7.5



USER GUIDE

A) APPLICATION AREAS / WHERE IT WORKS

ALLAME Thrust Boring Machines are designed for trenchless horizontal boring applications in a wide range of stable underground conditions.

They operate efficiently in:

- Natural soil
- Clay formations
- Compacted and stabilized ground
- Underground crossings beneath roads, highways, and railway lines

Thanks to the trenchless working principle, underground installations can be completed without surface excavation, ensuring:

- No damage to existing infrastructure
- No interruption to traffic or daily life
- Clean and controlled underground operation

Limitations:

Thrust boring machines are not suitable for:

- Solid rock or reinforced concrete
- Loose sand formations
- Boggy or water-saturated ground

Correct soil assessment before operation ensures maximum performance and long service life.



B) AIR COMPRESSOR REQUIREMENTS

ALLAME Thrust Boring Machines operate with compressed air and require a properly selected air compressor for safe and efficient performance.

Recommended Compressor Capacity (Minimum)

Model	Air Consumption (m ³ /min)
ALM-50	0.6
ALM-75	1.0
ALM-97	1.5
ALM-132	3.0
ALM-160	4.0
ALM-190	6.0
ALM-232	7.5

The selected air compressor must:

- Deliver stable airflow at operating pressure
- Maintain continuous performance without pressure drop
- Be suitable for industrial heavy-duty use

Insufficient air supply may reduce boring speed and overall efficiency.



C) OPERATING AIR PRESSURE

ALLAME Thrust Boring Machines are engineered to operate at specific air pressure levels, depending on the model.

Operating Pressure Guidelines:

- ALM-50 & ALM-75:

Operating pressure up to 7 bar (100 psi)

- ALM-97 and above:

Operating pressure 6 bar (87 psi)

Important Notice:

Exceeding the specified air pressure limits may cause:

- Internal component damage
- Reduced service life
- Loss of warranty coverage

ALLAME shall not be held responsible for damage caused by operation beyond recommended pressure values.



D) AIR HOSE SELECTION

For optimal airflow and safe operation, heavy-duty industrial air hoses must be used.

Recommended Air Hose Inner Diameters

Model	Hose Diameter
ALM-50	5/8 inch
ALM-75	3/4 inch
ALM-97	3/4 inch
ALM-132	1 inch
ALM-160	1 1/4 inch
ALM-190	1 1/4 inch
ALM-232	1 1/2 inch

Correct hose selection ensures:

- Stable air flow
- Reduced pressure loss
- Safe and continuous operation

Using undersized hoses may lead to performance loss and overheating of the pneumatic system.



E) EQUIPMENT

For optimal airflow and safe operation, heavy-duty industrial air hoses must be used.



F) DEPTH, TARGET DETERMINATION, ALIGNMENT AND OPERATION

Accurate depth setting, precise alignment, and proper operation are critical for achieving maximum performance and service life from ALLAME Thrust Boring Machines.

General Operating Precautions

During preparation, operation, and after completion, special care must be taken to prevent dust, soil, or foreign particles from entering the machine through the air hose.

After completing the operation:

- Seal the air hose inlet with a protective nylon cover
- Prevent even microscopic particles from entering the pneumatic system

Failure to follow these precautions may result in internal damage.

ALLAME does not accept responsibility for damage caused by improper handling or contamination.

1) Manpower Requirement

Target determination, alignment, and startup operations are designed to be performed with minimum manpower, allowing fast and efficient site preparation.



2) Depth Determination

The starting and finishing pits must be excavated to an appropriate depth to ensure stable horizontal boring.

Recommended depth (h):

The machine axis must be positioned at a depth equal to 12–15 times the outer diameter of the selected Thrust Boring Machine.

Recommended Minimum Depths

Model	Diameter (mm)	Recommended Depth (m)
ALM-50	50	0.60 – 0.75
ALM-75	75	0.90 – 1.13
ALM-97	97	1.16 – 1.46
ALM-132	132	1.58 – 1.98
ALM-160	160	1.92 – 2.40
ALM-190	190	2.28 – 2.85
ALM-232	232	2.78 – 3.48

Correct depth positioning ensures:

- Stable forward movement
- Accurate horizontal alignment
- Reduced deviation risk



3) Target Sensitivity and Alignment Accuracy

As the boring distance increases, target determination becomes more sensitive.

For longer crossings, precise observation and careful alignment are essential to maintain accuracy.

4) Boring Distance Capability

The achievable boring distance depends on:

- Air pressure stability
- Ambient air temperature
- Soil structure and consistency

Under normal operating conditions, boring distances of up to 100 meters can be achieved.

5) Starting Table Positioning

- The Starting Table is placed on the ground following the direction arrow marked on the table.
- The Thrust Boring Machine is positioned on the table in the same direction.
- The front tip must rest firmly against the boring surface.
- The roller is tightened securely using the roller bolt.

6) Pre-Alignment and Fixing

After preliminary alignment:

- The Starting Table is fixed to the ground using four ground spikes
- This ensures vibration-free and stable operation

7) Alignment Procedure

- The Sighting Frame is placed on the cylindrical surface of the machine.
- Two spirit levels are used:
- One for horizontal alignment
- One for vertical alignment
- Fine adjustments are made using the alignment screws until perfect positioning is achieved.

8) Target Setting

The target is established by sighting through the Sighting Frame toward a Target Stick placed at the exit point of the bore.

9) Final Check

Before operation:

- Re-check both alignment and target
- Confirm stability of the Starting Table and air hose connections

10) Operating Direction

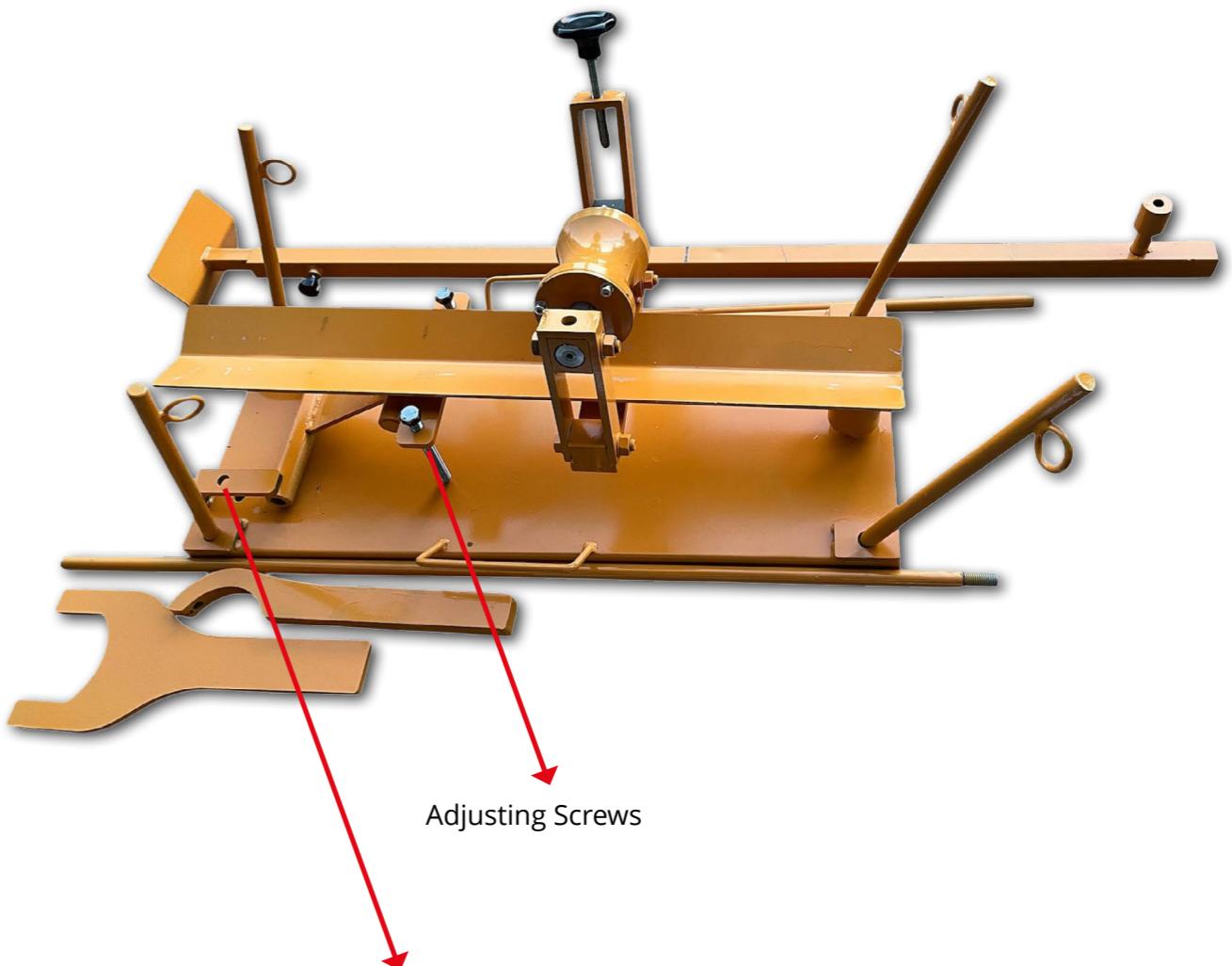
- Forward movement: Turn the air hose fully to the right
- Backward movement: Turn the air hose fully to the left

This directional control allows precise positioning and safe withdrawal of the machine.

11) Operating Direction

It must be checked that the air hose is turned to the right while the Rocket is on the Starting Table. Otherwise, the gear part and other moving parts of the roller can be damaged.

ADJUSTING SCREWS



These screws are loosened in order to tight or to loose the adjusting screws for alignment ,after alignment these screws are tightened again.





Quiet Power. Precise Control. Reliable Progress.

Success in underground operations is not defined by raw force alone, but by controlled and predictable thrust. Thrust boring systems play a critical role in projects where alignment accuracy, steady pushing power, and operational reliability are essential. A job that starts with proper positioning can only succeed with the right machine behind it.

The thrust boring machines presented in this catalog are designed for small to medium diameter horizontal installations, combining a compact footprint with a robust steel structure and operator-friendly mechanical layout. By eliminating the need for open excavation, they reduce surface disruption, simplify job sites, and significantly shorten project timelines.

Every component is shaped by real field experience. Balanced thrust force, a stable starting frame, and long-lasting mechanical parts allow pipe pushing operations to remain smooth, controlled, and repeatable. This consistency not only improves installation quality but also gives operators confidence throughout the process.

From urban infrastructure projects to industrial facility crossings, these systems offer practical solutions where precision matters more than brute strength. Thrust boring remains one of the most efficient methods for contractors who value low noise, minimal vibration, and clean, organized work environments.

Within this catalog, you will find solutions that move underground not with excess force, but with engineering discipline, stability, and purpose.

12) Machine Start-Up Procedure

To operate the Thrust Boring Machine, shock air must be applied at the initial stage. For this purpose, the air hose is firmly bent close to the air inlet of the machine, and the air supply valve is fully opened. The hose is then released suddenly to create the required shock air effect.

After the machine starts operating, the air supply valve is partially opened until the machine completely leaves the starting table. Once the machine is fully off the table, the air valve is opened fully, and normal boring operation continues.

13) Boring Performance

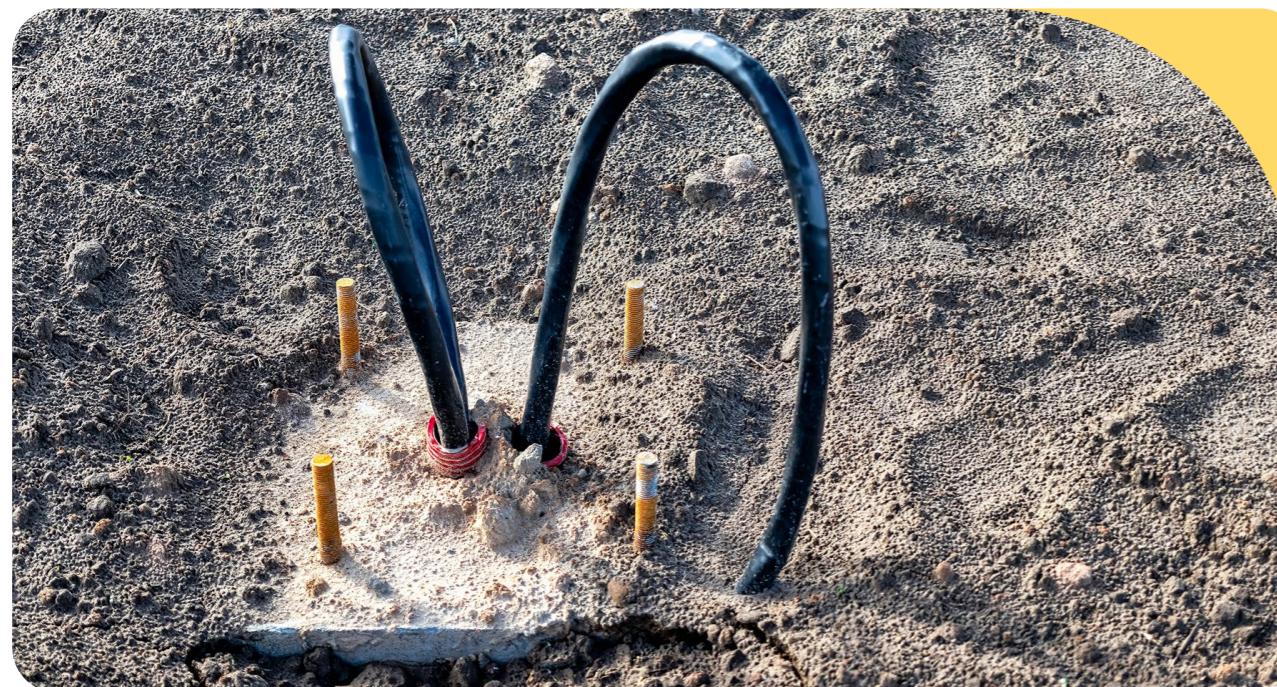
The boring speed of the Thrust Boring Machine is approximately 5-10 meters per hour when operating in suitable soil or clay formations at an air pressure of 6 bar (87 PSI).

Boring performance may vary depending on soil conditions, air temperature, compressor capacity, and operating technique.

14) Machine Retrieval Procedure

To remove the Thrust Boring Machine from the bore, the starting table is first removed, and the air supply valve is closed. The air hose is then rotated fully to the left to activate reverse motion.

After reopening the air supply valve, the machine begins to move backward and can be safely extracted from the bore.



G) LUBRICATION

Proper lubrication is essential for the performance, service life, and operational reliability of the Thrust Boring Machine. Only suitable air tool lubricants should be used to ensure smooth operation and to prevent internal wear and corrosion.

Recommended Oil Types

The following air tool oils are recommended for optimal performance:

- Mobil Almo 525 – Air Tool Oil
- Mobil Almo 527 – Air Tool Oil
- Shell Air Tool Oil Series

Equivalent Oil Option

If the recommended air tool oils are not available, a temporary alternative mixture may be used:

- Diesel fuel and SAE No. 30 oil, mixed at an equal ratio
- Mixing ratio: 50% diesel / 50% oil

This mixture should only be used when standard air tool oils cannot be sourced.



PERIODIC MAINTENANCE

Regular maintenance significantly increases machine lifespan and ensures consistent performance under demanding site conditions.

Daily Maintenance

- Always keep the lubrication reservoir full.
- During operation, the lubricator must continuously contain oil.
- Check the oil level frequently and refill immediately if the level drops.
- Operating the machine without sufficient lubrication may cause serious internal damage.

Weekly Maintenance

- Pneumatic systems are sensitive to corrosion caused by moisture in compressed air.
- For this reason, weekly maintenance is critical, especially when the machine is not in regular use.
 - Even if the Thrust Boring Machine is not required for active projects, it should be operated at least once per week for a minimum of one minute.
 - This procedure ensures that all internal components are fully lubricated and protected against corrosion.

Proper weekly lubrication prevents rust formation and maintains internal component integrity over long storage periods.



DO NOT LIST – IMPORTANT OPERATING WARNINGS

To ensure safe operation, long service life, and warranty protection, the following rules must be strictly observed when using the Thrust Boring Machine.

DO NOT attempt to drill concrete, rock, sand, or bog

The Thrust Boring Machine is designed for use in soil, clay, and stabilized underground formations, such as beneath roads or railways. It is not suitable for concrete, rock, loose sand, or boggy ground conditions. Using the machine outside these ground types may cause serious damage.

DO NOT allow dust, soil, or foreign particles to enter through the air hose

Foreign materials entering the machine through the air hose can damage internal components. After completing the operation, always secure a nylon protective bag to the air hose inlet. Failure to do so may result in internal wear or malfunction.

DO NOT use high-density oil for lubrication

Only suitable air tool oils should be used for lubrication.

- Use appropriate air tool oil at temperatures 0°C and above
- Use cold-weather equivalent oil at temperatures below 0°C

Always keep the lubrication reservoir full during operation.

Incorrect lubrication may reduce performance and shorten machine life.



DO NOT exceed 6 bar operating pressure

The Thrust Boring Machine is designed to operate at a maximum air pressure of 6 bar (87 PSI).

Operating above this limit may cause permanent damage to the machine.

Such damage is not covered by manufacturer responsibility.

DO NOT use an air compressor with insufficient air capacity

The air compressor must supply the minimum required air volume for safe operation.

Operating with insufficient air flow can reduce performance and damage internal mechanisms.

Always ensure the compressor meets or exceeds the required air consumption values.

DO NOT start operation before checking the air hose position

Before operation, confirm that the air hose is fully turned to the right while the machine is on the starting table.

Incorrect hose position may damage the roller system, gear parts, or moving components during startup.



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thank you

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