

Pipejacking Tunnel Boring Machines



Akkerman's manned Tunnel Boring Machines (TBM) are the epitome of pipejacking power, control and accuracy in an array of soil conditions. TBMs are suitable where manned entry is permissible. Akkerman TBMs can be used with any jacking pipe up to 14-feet (4.3 m) in diameter and a multitude of drive lengths. Designed for unequaled ease of set-up, the Akkerman system can typically be set up and ready to launch in one day.

The TBM steering joint allows for full articulation and active steering control while the torque wings provide an anti-roll function. The operator console, located near the face of the machine, permits constant monitoring of soil conditions and line and grade. Hydraulic motors rotate the inner drum and cutter face to excavate soils. The laser, positioned down the tunnel from the laser stand at the tunnel entrance to the target on the face of the TBM, provides articulation precision.

When pipejacking, the TBM is advanced by cylinders at the rear of the system or by an intermediate jacking station for tough ground conditions or longer drives. When tunneling, a tunnel liner section is attached to the rear of the machine. Its cylinders, positioned around the barrel, advance the TBM off the stationary tunnel liner section. After full extension, the cylinders retract in order to assemble another ring of tunnel. Four cutter head configurations are available for our TBMs. The dirt cutter head, carbide cutter head and sand shelves come

standard with each TBM purchase. Exclusive to Akkerman, these three cutter head configurations can be changed underground, thus allowing the operator to change heads as soil conditions dictate. The optional, closed faced attachment performs best in unstable ground conditions and features hydraulic closeable doors to reduce subsidence.

Specifications

Product	Minimum Pipe OD	Maximum Torque	Speed	Cutting Diameter
TBM 420	51" (1,295 mm)	26,660 lbf-ft (36,065 N-m)	0-19 rpm w/ 60 gpm (273 L/min)	52.5" (1,334 mm)
TBM 480	58" (1,473 mm)	47,400 lbf-ft (64,266 N-m)	0-11 rpm w/ 60 gpm (273 L/min)	59.5" (1,511 mm)
TBM 48 Steel	48" (1,219 mm)	22,140 lbf-ft (30,018 N-m)	0-23 rpm w/ 60 gpm (273 L/min)	49.5" (1,257 mm)
TBM 540	65" (1,651 mm)	52,890 lbf-ft (71,709 N-m)	0-15 rpm w/ 120 gpm (546 L/min)	66.5" (1,689 mm)
TBM 600	72" (1,829 mm)	59,980 lbf-ft (81,322 N-m)	0-13 rpm w/ 120 gpm (546 L/min)	73.5" (1,867 mm)
TBM 720	86" (2,184 mm)	96,588 lbf-ft (130,956 N-m)	0-8 rpm w/ 120 gpm (546 L/min)	87.5" (2,223 mm)
TBM 780	93" (2,362 mm)	105,760 lbf-ft (143,392 N-m)	0-7 rpm w/ 120 gpm (546 L/min)	94.5" (2,500 mm)

*Note: Akkerman standard sizes can be customized to suit project needs.



Shown here is a typical 5000 series in-shaft job site set-up.



The outer ring of the thrust yoke provides a 360-degree surface to minimize point loading on the pipe. Contractors are returning the dirt bucket back to the haul unit after it has been emptied.



The operator's station is located along the inside of the TBM wall beside the conveyor. From this position, the operator can control the TBM steering and monitor or adjust as necessary.



The interior of the TBM allows the operator full control over the forward movement and spoil removal processes while maintaining the cutter face excavation. The conveyor is installed in the center of the machine.



The optional closed face cutter head is ideal for unstable ground conditions.



Akkerman TBMs are equipped with three cutter head configurations. Cutter heads can be changed underground as soil conditions vary. The dirt cutter head is pictured here.