ACCESSORIES
FOR A COMPLETE RAMMING SYSTEM

Segmented Ram Cones
These cones ensure a tight fit between the GRUNDORAM and the pipe as well as help minimize pipe flaring. They are especially useful for thin wall pipe in drives of less than 50 feet or when used in combination with soil removal cones.

Tapered Locking Ram Cones
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Soil Removal Cone
Adapts the GRUNDORAM to the pipe and provides an escape route for spoils.

Adjustable Bearing Stand
Heavy-duty stand provides support and alignment for the Grundoram and casing in the start pit. Features an air bladder to easily raise assembly to correct grade.

PERCUSSIVE POWER
FOR DIRECTIONAL DRILLING ASSIST

Conductor Barrel™
A sure start for your bore even in the worst soil.

Pullback Assist
Overcome hydrolock with a pipe rammer.

Pipe Removal
Remove stuck product pipe and bore again.

Pipe Ramming Strike Force!
For trenchless casing installations from 4 to 147 inches in diameter, choose the proven performance & power of GRUNDORAM. No open cutting or surface slump, just straight, accurate pipe rams. The GRUNDORAM is also ideal for assistance in directional drilling. Use it for conductor barrel installation, pipe pullback assist, pipe removal, & drill stem recovery.

Pipe Ramming Strike Force!
Recover stuck drill stems.

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Casings are installed without surface slump.

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THE GRUNDORAM® SYSTEM

THE PROVEN RAMMING SYSTEM
MORE POWER. MORE POSSIBILITIES.

Grundoram® Advantages
Grundoram pipe ramming tools are ideal for the trenchless installation of steel pipe through a wide variety of soil types, without any rise or fall in the ground’s surface.

While some casing installation methods are impaired or even rendered inoperable by rock or boulder-filled soils, boulders and rocks as large as impaired or even rendered inoperable by rock- or ground’s surface.

Built for Power & Performance
Grundoram pipe ramming tools are manufactured from the highest quality steel alloys. The one-piece Grundoram casing is made from a solid block of steel alloy giving it extremely high anti-corrosion properties and a long life expectancy. The inside of the casing is perfectly machined to prevent any metal-to-metal friction. During manufacturing, the piston goes through a special heat treatment process that optimizes the strength and durability of the steel alloy and increases its resistance to corrosion.

Versatile Method & Powerful Tool
Sixteen Grundoram models are available for installing casings from 4 to 167 inches in diameter! Individual tools can be used to install a range of casing diameters. Powered by compressed air the ramming tool attaches to the rear of the casing or pipe, pushing the casing into the ground with repeated percussive blows. As the pipe rammer pushes the pipe through the soil, rocks, boulders and other obstacles are “swallowed” into it.

Fast, Effective Pipe Clean-out
Depending on soil conditions, vacuum excavation equipment can be used to remove spoil. And, depending on the casing size, mini-excavators and skid steers are ideal for large diameter rams. Augers work well too.

THE RIGHT TOOL FOR THE JOB

THE GRUNDORAM CAN BE USED FOR A WIDE RANGE APPLICATIONS INCLUDING:

- Gas & Oil Pipeline Installation
- Bike Paths
- Telecommunications
- Casings for Water, Gas, Electric Utilities
- Culverts, Drainage
- More!

DRIVE IN ANY DIRECTION
In addition to horizontal pipe ramming beneath roads and railroad lines, Grundoram can also be used for angled ramming and vertical pile driving. Several Grundoram models are specifically designed for operation in confined areas.

VERTICAL RAMMING
Use GRUNDORAM for vertical pipe and pile driving.

Mini-Grundoram
Powerful percussion to drive steel casings, even in confined spaces.

TECHNICAL DETAILS

<table>
<thead>
<tr>
<th></th>
<th>Model</th>
<th>Tool Diameter (in.)</th>
<th>Length (in.)</th>
<th>Weight (lbs.)</th>
<th>Strokes/Minute</th>
<th>Air Cons. (cfm) (m³/min)</th>
<th>Recomm. Pipe Dia. (In.)</th>
<th>Max. Bore Length (ft. (m))</th>
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<tbody>
<tr>
<td>Mini-Atlas</td>
<td>5.75 (146)</td>
<td>57 (1440)</td>
<td>34 (980)</td>
<td>300</td>
<td>70 (2.0)</td>
<td>5–12 (200–300)</td>
<td>50 (15)</td>
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<tr>
<td>Titan</td>
<td>8.8 (224)</td>
<td>79 (2010)</td>
<td>945 (429)</td>
<td>310</td>
<td>141 (4.0)</td>
<td>8–15 (200–400)</td>
<td>80 (25)</td>
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<tr>
<td>Mini-Olympus</td>
<td>7 (180)</td>
<td>66 (1690)</td>
<td>397 (233)</td>
<td>280</td>
<td>117 (3.5)</td>
<td>6–16 (100–400)</td>
<td>80 (25)</td>
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<tr>
<td>Olympus</td>
<td>7 (180)</td>
<td>66 (1690)</td>
<td>409 (250)</td>
<td>260</td>
<td>117 (3.5)</td>
<td>6–16 (100–400)</td>
<td>80 (25)</td>
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<td>Hercules</td>
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<td>75 (1913)</td>
<td>811 (368)</td>
<td>240</td>
<td>82 (2.5)</td>
<td>12–20 (300–500)</td>
<td>115 (35)</td>
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<td>HV 220</td>
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<td>945 (429)</td>
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<td>Megahercules</td>
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<td>323 (9.5)</td>
<td>8–24 (200–600)</td>
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<td>Giant</td>
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<td>88 (2235)</td>
<td>1014 (406)</td>
<td>310</td>
<td>424 (12.0)</td>
<td>15–22 (400–600)</td>
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<td>PCG 270</td>
<td>11 (280)</td>
<td>84 (2134)</td>
<td>1540 (699)</td>
<td>280</td>
<td>442 (13.0)</td>
<td>15–22 (400–600)</td>
<td>160 (50)</td>
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<td>Goliath</td>
<td>11.5 (292)</td>
<td>92 (2341)</td>
<td>2601 (1180)</td>
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<td>706 (20.0)</td>
<td>20–30 (600–1200)</td>
<td>200 (60)</td>
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<tr>
<td>18&quot; Dia. Taurus®</td>
<td>15 (381)</td>
<td>102 (2591)</td>
<td>3375 (1531)</td>
<td>220</td>
<td>706 (20.0)</td>
<td>20–30 (600–1200)</td>
<td>230 (70)</td>
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<tr>
<td>18&quot; Dia. Galath®</td>
<td>18 (457)</td>
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<td>1200 (350)</td>
<td>24–48 (600–1400)</td>
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<td>32&quot; Dia. Apollo®</td>
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<td>1750 (500)</td>
<td>36–72 (1000–2200)</td>
<td>300 (90)</td>
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</tr>
</tbody>
</table>

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<td>5.75 (148)</td>
<td>61 (154)</td>
<td>302 (120)</td>
<td>310</td>
<td>141 (4.0)</td>
<td>8–15 (200–400)</td>
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<td>177 (5.0)</td>
<td>8–20 (200–500)</td>
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<td>Mini-Olympus</td>
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<td>Hercules</td>
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<td>HV 220</td>
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<td>Hercules</td>
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<td>Goliath</td>
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<td>442 (13.0)</td>
<td>24–56 (600–1400)</td>
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<td>Apollo</td>
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<td>753 (21.5)</td>
<td>56–78 (1400–2000)</td>
<td>285 (90)</td>
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