

TIP SHEETS FOR SCREEDING

Tip sheet #1

Tip Sheet

Concrete Screeding – Motorized Screed

Problem:

In its simplest form, concrete is a mixture of paste and aggregate (sand and rock). The paste, composed of cement and water, coats the surface of the fine (sand) and coarse aggregates (rocks) and binds them together into a rock-like mass known as concrete. This mixture and the ratios are critical to the workability, integrity and quality of the end product. The increased forces needed to screed/rod and rake can take their toll on the worker.

Screeding/rodding is the first step in the process of leveling and smoothing just-poured concrete. In one way or another, screeding/rodding involves pulling a device over the concrete in order to even out and fill in the surface prior to the completion of finer finishing processes such as floating or troweling. The awkward torso bending, high wrist/hand forces could lead to an overuse injury to the back, arm, wrist or hand.



One Solution:

The motorized screed consists of a blade or plow that floats on the concrete, one or two fuel powered motors that vibrate the blade, and the metal support tubing and handles to hold when pulling/guiding it backwards.



| | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>FACTORS:</p> <ul style="list-style-type: none"> ? Lots of forward bending causes awkward torso posture 79% of the time ? Holding the “rod” (2” x 4” board) requires a pinch grip with extreme wrist flexion ? Repetitive hand/arm activity (exceeds the ACGIH TLV for HAL) ? High hand forces are required to pull the “rod” to smooth the concrete ? Frequent arm reaching (greater than 90 degrees) is required | <p>FACTORS:</p> <ul style="list-style-type: none"> ? The design allows for an upright posture 92% of the time ? Pinch grips are eliminated ? Hand arm repetition is reduced to within moderate risk (ACGIH TLV for HAL) ? Carrying the motorized unit is required and forces for lifting are increased |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Concrete Screeding

| | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>How much does the motorized screed cost?</p> <p>The cost of a twin engine motorized screed is approximately \$3800 - \$4000 and requires 2 operators.</p> | <p>What type of jobs are best suited for using the motorized screed?</p> <p>The single or twin engine motorized screed can be used in medium to large jobs that may have some electrical or plumbing stubbing. If rebar and/or Styrofoam insulation under the slab is called for, the motorized screed is ideal.</p> |
| <p>How much difference does the motorized screed make?</p> <p>It is much faster than manual rodding and much less physically demanding.</p>  <p>The handle makes carrying easier...</p> | <p>What are the ergonomic features of the motorized screed?</p> <p>Rotating, height adjustable handles are available to accommodate differing height operators. Additionally, an anti-vibration system and a carrying handle are options.</p>  <p>Adjustable handle angles allow for different sized operators to maintain a more neutral wrist posture.</p> |

operators to maintain a more neutral wrist posture.

Where is it available?

Allen Engineering Corporation
866.462.5536
www.alleneng.com

Contact Information:

This Tip Sheet was sponsored by NIOSH Project #29278419

It was produced by StewartPrezant Ergonomics Group and Build It Smart.

Thanks to Rainier Floors, Lease Crutcher Lewis and Hoffman Construction.

Contact:

Build It Smart 360.596.9200
builditsmart@qwest.net