

# Toolbox Talk



## Mixing with a Cement Mixer

Cement mixers have been used in construction projects for many years and take a lot of the hard work out of this activity.

Make sure the mixer has been set up correctly and sufficient materials are stored nearby to minimize lifting and twisting.

Make sure the operators are familiar with the mixer and know how to stop it in case of an emergency.

Make sure the operators know the concrete or mortar mix quantities.

Make sure everyone has the correct PPE.

### Using the mixer:

- The first mix may require some measuring out of ingredients, so use a dry bucket or a dry shovel to measure out the ingredients. For consistent mortar gauge the quantities for each mix. Make a note of how many shovelfuls are required. Put water in a bucket and keep a note of water usage for each mix.
- With the mixer drum rotating, shovel in the ingredients. For lime mortar dry mix the ingredients and allow to mix thoroughly for 5 minutes. Do not allow the shovel to enter the drum. For concrete and cement mortar a small amount of water may be added before adding the dry ingredients.
- Allow to mix, add water in small amounts until correct consistency is achieved. Proper mixing takes time (allow 20 minutes), **do not be impatient!**
- When mortar is properly mixed, position a wheelbarrow under the arc of the drum. Operate the tilt mechanism **slowly** to discharge the mixing drum. Do not overfill the barrow (manual handling of the barrow). Keep thumbs out the way.
- With an electric mixer pivot the drum using the handles.
- When drum is empty, start the next mix. If the deflectors inside the drum appear to be clogged then switch the machine off and clear them with an old trowel (or similar) or the next load will not mix properly.

### Cleaning after use:

- The mixer will need cleaning at the end of each working day, so allow enough time for this.
- Empty out as much mortar as possible, then put an assortment of brickbats, stones and water in the drum and allow mixer to run for 10 minutes or so. Splashes of wash water will come out of the drum, so keep volunteers away from the opening.
- Pivot the mixer drum so that the deflectors are hit by the brickbats and all the old mortar is knocked off.
- Empty out into a barrow and flush out the drum with clean water. Dispose of the debris safely, not into a watercourse. There should be no residual sediment left in the drum as this will stick and prevent the next load mixing correctly, if there is, repeat the cleaning process until it is completely clean. Knock lumps of mortar off the blades with a lump hammer.
- Stop the mixer, switch off the fuel. With an electric mixer, turn off the power and neatly coil the power cable and extension lead. Leave the drum facing down so it drains out and does not fill with rainwater.
- **Never bang the drum with a shovel**, you will damage the drum and possibly damage the drive mechanism. Hire companies will charge for damage.

### Key points:

Always familiarise yourself with the exact piece of equipment to identify key components.

Make sure you know how to stop it in an emergency

### Health and Safety:

Hazards from mixer:

- Pinch points between mixer and drum.
- The rotating drum can snatch anything placed inside, so keep arms and tools outside.
- Put towbar away to prevent runaway and trip hazard.
- Make sure cables are not damaged and routed safely.

COSHH:

- Lime and cement can give rise to burns and dermatitis and can lead to respiratory problems if dust is inhaled.
- Fuel and lubricating oil are irritants and flammable.

Manual handling:

- Position materials to minimize lifting, twisting and having to walk to and from mixer.
- Rotating drum will snatch a shovel if it enters the drum.
- Don't overdo, take frequent breaks to avoid fatigue.
- Moving the mixer may require more than one person.

Personal Protective Equipment (PPE):

- Additional PPE; dust mask, safety eyewear, gloves, long sleeves and ear defenders.
- No loose clothing.

# Toolbox Talk



## Mixing with a Cement Mixer (contd)

### TYPICAL MORTAR AND CONCRETE MIXES

These are “typical” mixes; always follow any site specific instructions for mixes.

#### A. Lime Mortar Mix:

Hydraulic Lime Mortar (NHL5)	Sharp Sand	Building Sand (smooth)	Water	Notes
1 part	1½ parts	1 part	Enough to give correct consistency, add slowly, bit at a time whilst mixer is rotating	Cover up with wet sack cloth at end of day, finish joints whilst “green” with flat trowel for traditional flat joints

#### B. Cement Mortar Mix:

**Note:** Plasticiser can be added, follow manufacturer’s instructions.

Portland Cement	Sharp Sand	Building Sand (smooth)	Water	Notes
1 part	Nil	3 or 4 parts	Enough to give correct consistency add slowly, bit at a time whilst mixer is rotating.	Cover up at end of day, finish joints whilst “green” with a flat trowel or a radius tool (“frenchman”) for radiused joints.

#### C. Concrete Mix:

**Note:**

- 1. The strength of a concrete can be adjusted by increasing/decreasing the amount of cement that is added.**
- 2. Generally sand and stone will be supplied together as ballast, so the ratios below will be combined.**

Portland Cement	Sharp Sand	Coarse Aggregate (max size)	Water	Notes
1 part	2 parts	3 parts	Enough to make it workable, max of 15%	Mix the dry ingredients first. Cover up at end of day,

#### General Points:

- With concrete, the more water that is added the weaker the concrete, however the concrete workability increases with water content. So there may have to be a compromise.
- Proper additives (plasticisers) added to cement mortar make it more workable. Washing-up liquid must not be added.