



# GRAIN TECH LTD

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OFFERS TOTAL CAPABILITY IN  
EQUIPMENT SYSTEMS & PROCESSORS FOR  
Particle Size Reduction, Milling, Crushing, Sifting  
Classifying, Pelleting, Agglomeration, Extruding,  
Bulk Material Handling, Drying, Cooling,  
Conveying & Packaging

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## General Installation Manual

### Bolt Together Silos

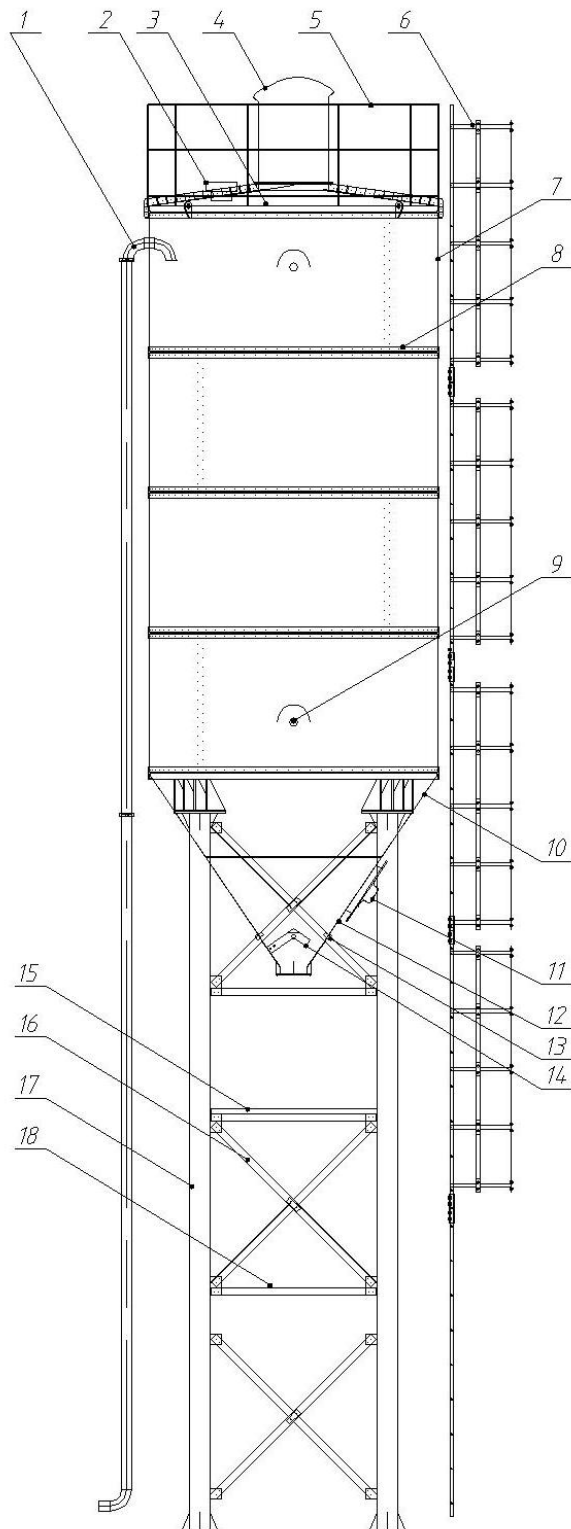


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## Product Description

The figure below shows a standard silo arrangement



### Legend

Item No.	Description
1	Pneumatic infill piping
2	Pressure relief valve
3	Silo roof assembly
4	Dust filter collector
5	Safety hand railing
6	Access ladder and cage assembly
7	Silo body ring
8	Base plate
9	Level sensor
10	Large outlet cone section
11	Maintenance access hatch
12	Small outlet cone section
13	Arch breaker
14	Decompression device
15	Maintenance platform
16	Horizontal bracing
17	Leg section
18	Cross bracing

## **Preparation before installation**

### **Unloading**

The silo components are shipped well packaged and bolted together for added stability. The devanning staff are to examine the goods and in the case where it is found to be unstable, extra care needs to be taken in unloading the panels. The situation is to be assessed and the safest solution decided upon. A crane may be used where the panels are carefully removed using a chain, a hook and a shackle. A safety officer is to be present during the process to ensure all safety procedures are adhered to during the devanning process. Note: all staff are to wear related personal protective equipment before undertaking any work.

Before installation:

1. Consider crane parking position and coverage area
2. Lay components out on the principle of the first to be used in front
3. Place components tidily and in a compact manner to take up less space
4. Place similar components together as it would be easier to find
5. Avoid component collision in order to prevent scratching and deformation/damage

### **Recommended tools:**

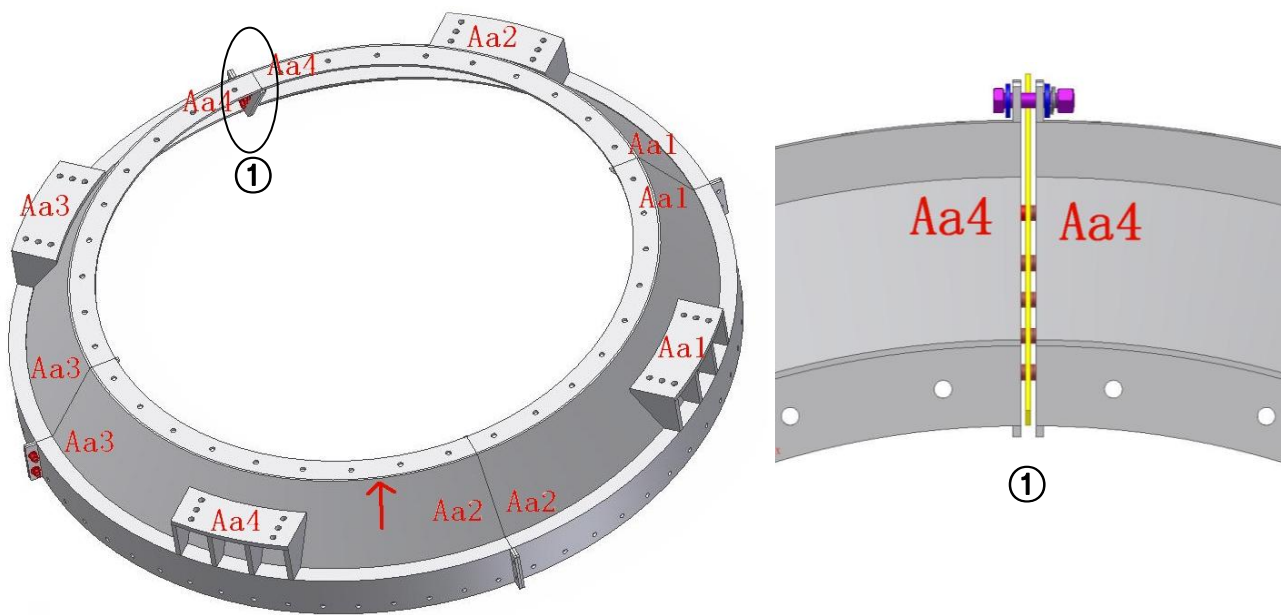
Recommended tools required are as follows:

1. Two-five air wrenches
2. Six manual wrenches
3. Two welding machines
4. One gas cutter
5. Three iron bars
6. Three crow bars

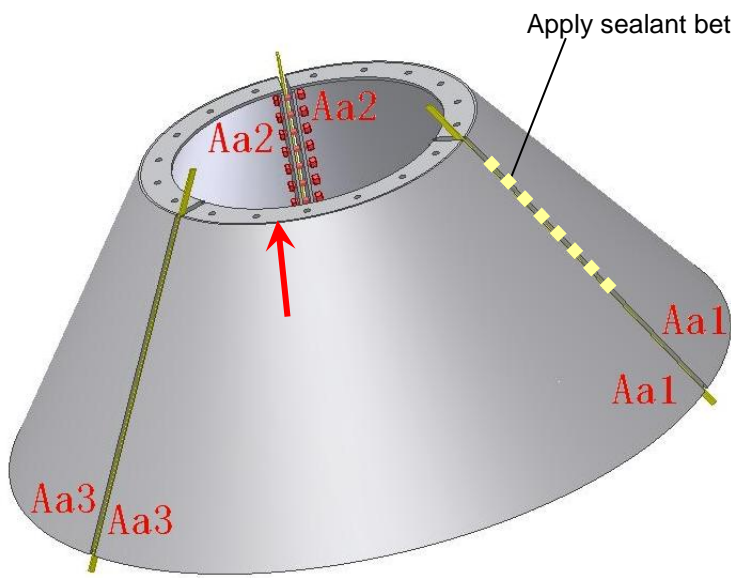
## Cone assembly

The first step in the silo assembly is to assemble the hopper cone outlet section. The following steps explain the assembly procedure:

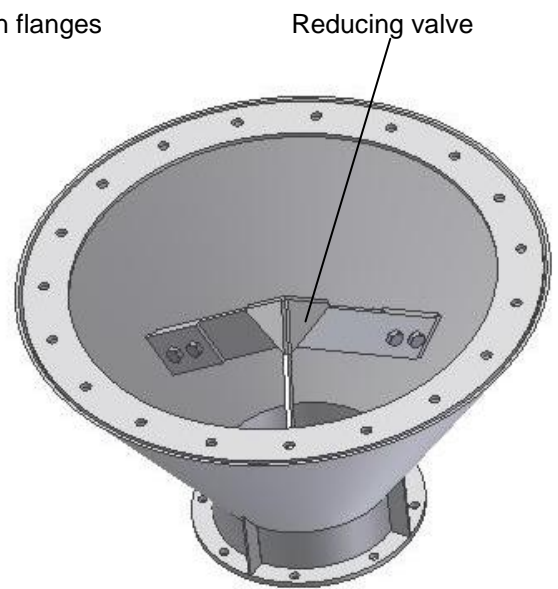
1. Start with the assembly of the large diameter section (the top section)
2. Layout the components as shown in the diagram below
3. place the bolts and nuts on the flange for location
4. Add silica gel on the mating faces and tighten the bolts
5. Apply glass cement between the flanges
6. Repeat process for the middle section of the cone hopper
7. Repeat process for the small (outlet) section of the cone hopper
8. Install reducing valve to the small (outlet) section of the cone hopper (if provided)
9. Lift the small section of the cone onto the middle section
10. Insert the necessary fasteners for alignments then apply silica gel on the mating flange faces prior to tightening
11. Apply glass cement into the gap between the flanges
12. Repeat process to connect the middle (and outlet) cone sections to the large cone section



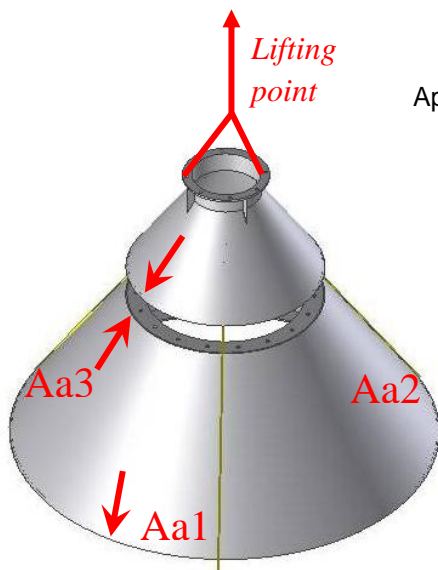
Large cone assembly



Medium cone assembly

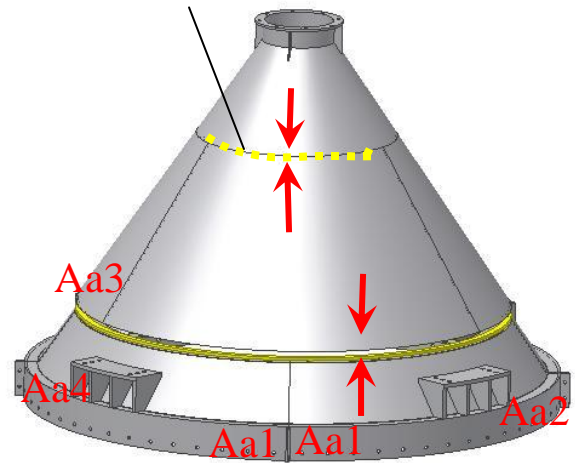


Small cone assembly



Assembling small cone onto the medium cone assembly

Apply sealant between flanges

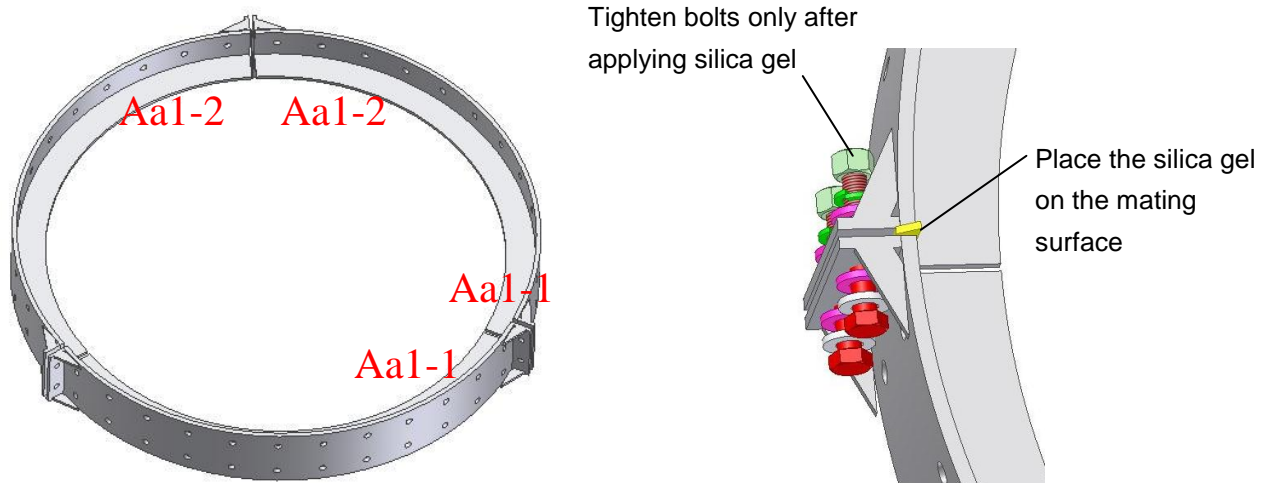


Assembling medium cone onto the large cone assembly

## Base plate assembly

For the assembly of the base plate, follow the instructions and refer to the diagram below:

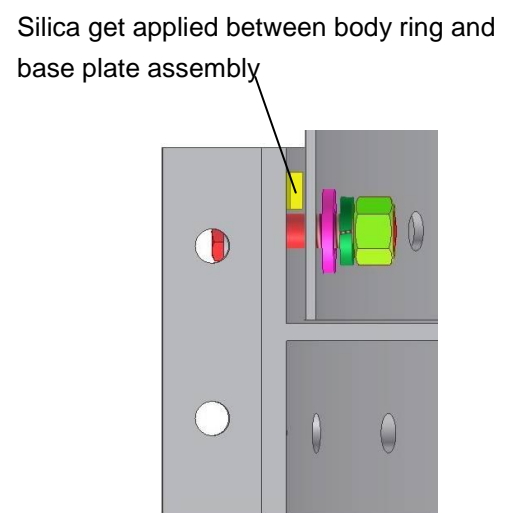
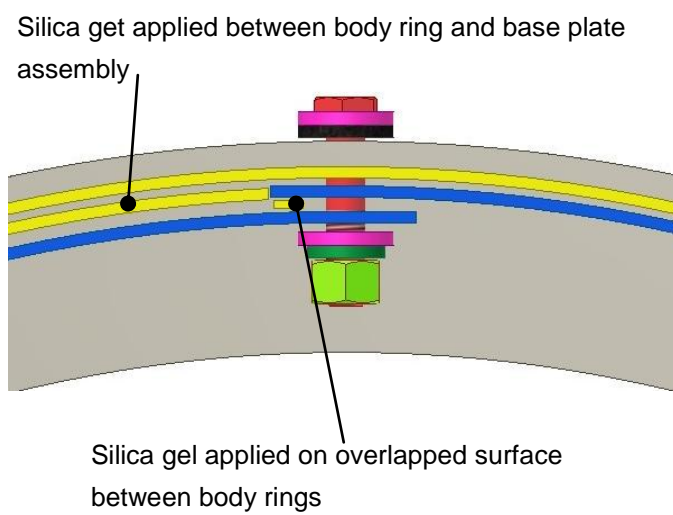
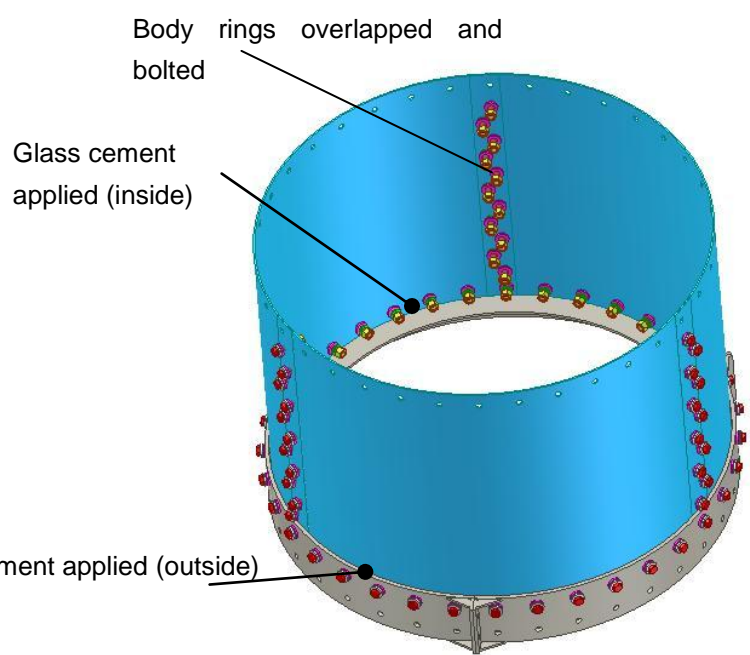
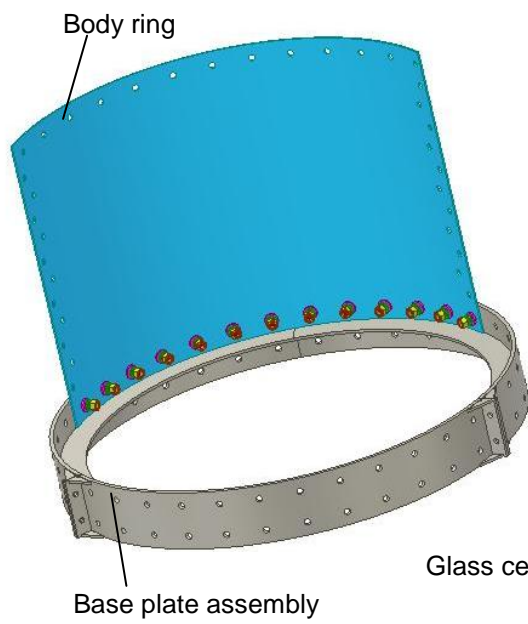
1. Lay out the components as shown in the diagram below
2. place the bolts and nuts on the flange for location
3. Add silica gel on the mating faces and tightening the bolts



## Body ring assembly

For the assembly of the body rings, follow the instructions and refer to the diagram below:

1. Place the base plate assembly on the ground ready to take the body rings
2. Place the first body ring on the base plate and insert the necessary fasteners (connecting ring to base plate) for location but do not tighten.
3. Ensure that the bolt head is facing outward and that a flat and spring washer is used on the bolt head and nut sides
4. Place the second body ring onto the base plate and place the fasteners as per the first ring.  
Note: the body rings overlap to create a complete seal
5. Continue to the third body ring completing the full circle
6. Insert silica gel between the base plate and the body rings as well as on the overlapped section of body rings face before fully tightening the bolts
7. Insert glass cement on the inside and outside faces of where the base plate and body ring join
8. Complete the assembly of body rings and base plates until the full silo body is completed

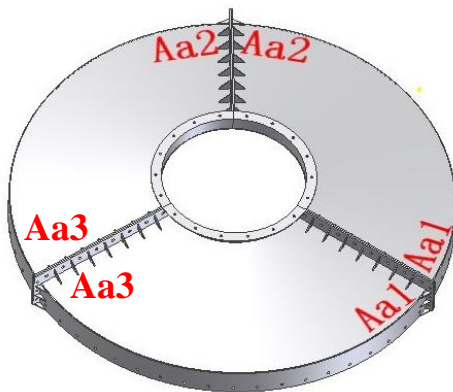




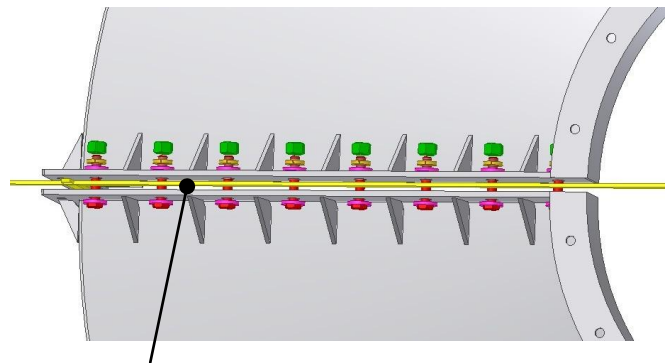
## Silo roof assembly

For the assembly of the roof, follow the instructions and refer to the diagram below:

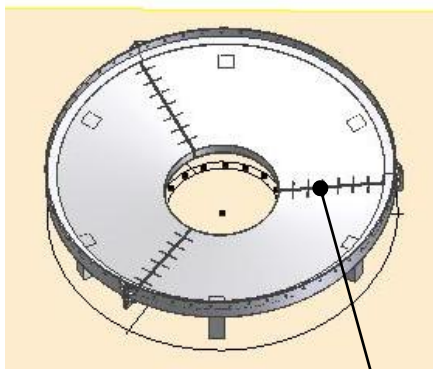
1. Lay the silo roof panels on the floor
2. Place fasteners for location but do not tighten
3. Apply silica gel on mating faces between flanges and tighten bolts
4. Turn the roof assembly upside down and apply glass cement to seal the flange faces
5. fix body rings as per previous assembly



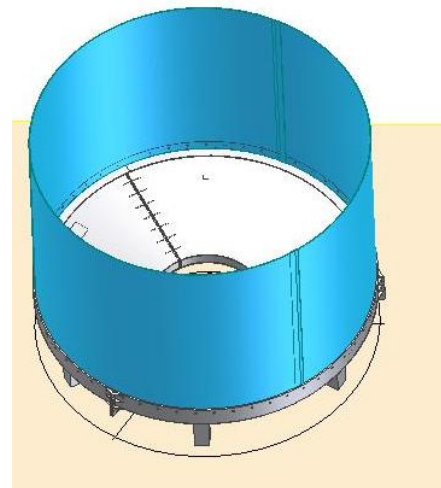
Lay roof panel and align



Apply silica gel between mating faces



Apply glass cement

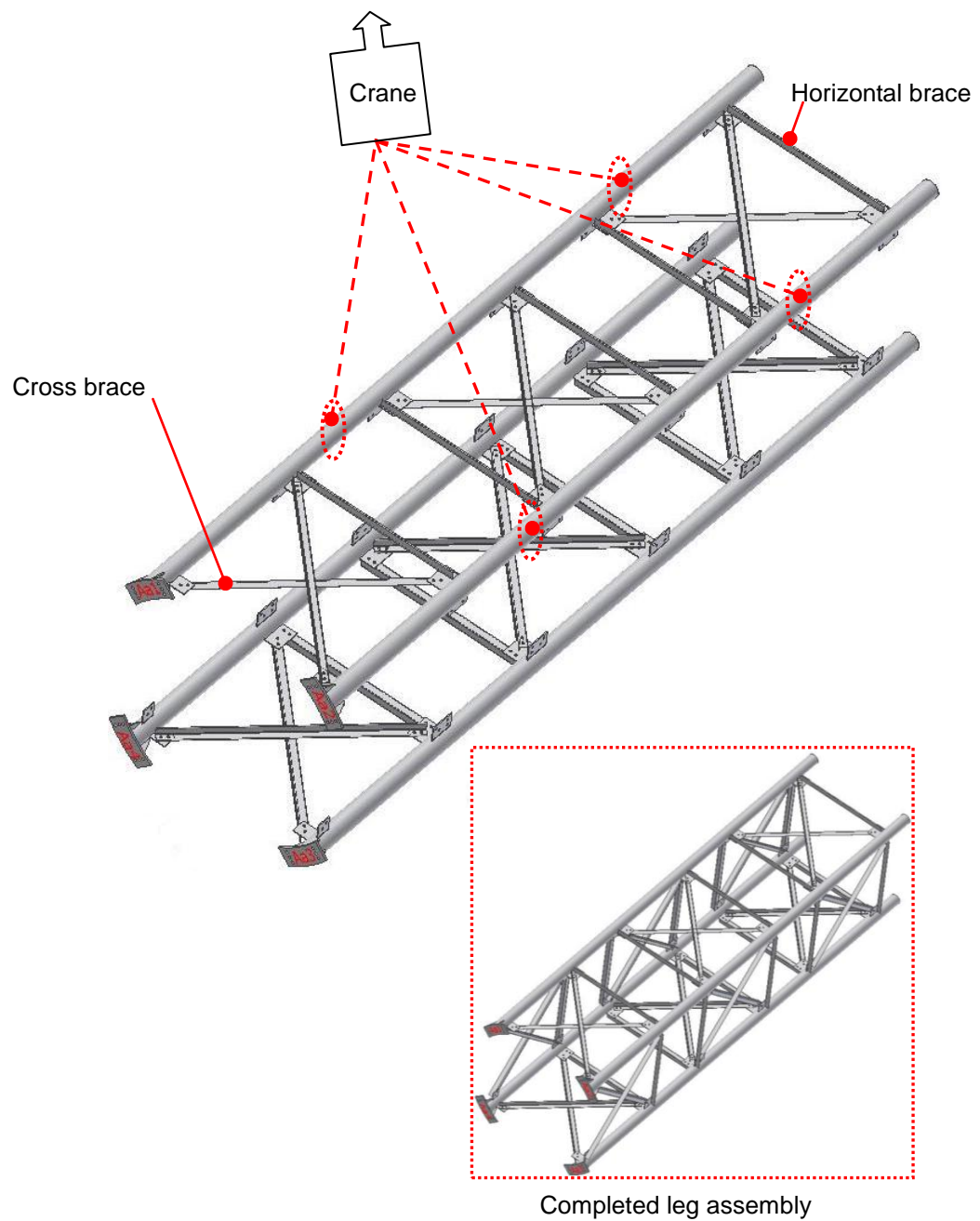


Install body ring panels

## Leg frame assembly:

For the assembly of the leg section, follow the instructions and refer to the diagram below:

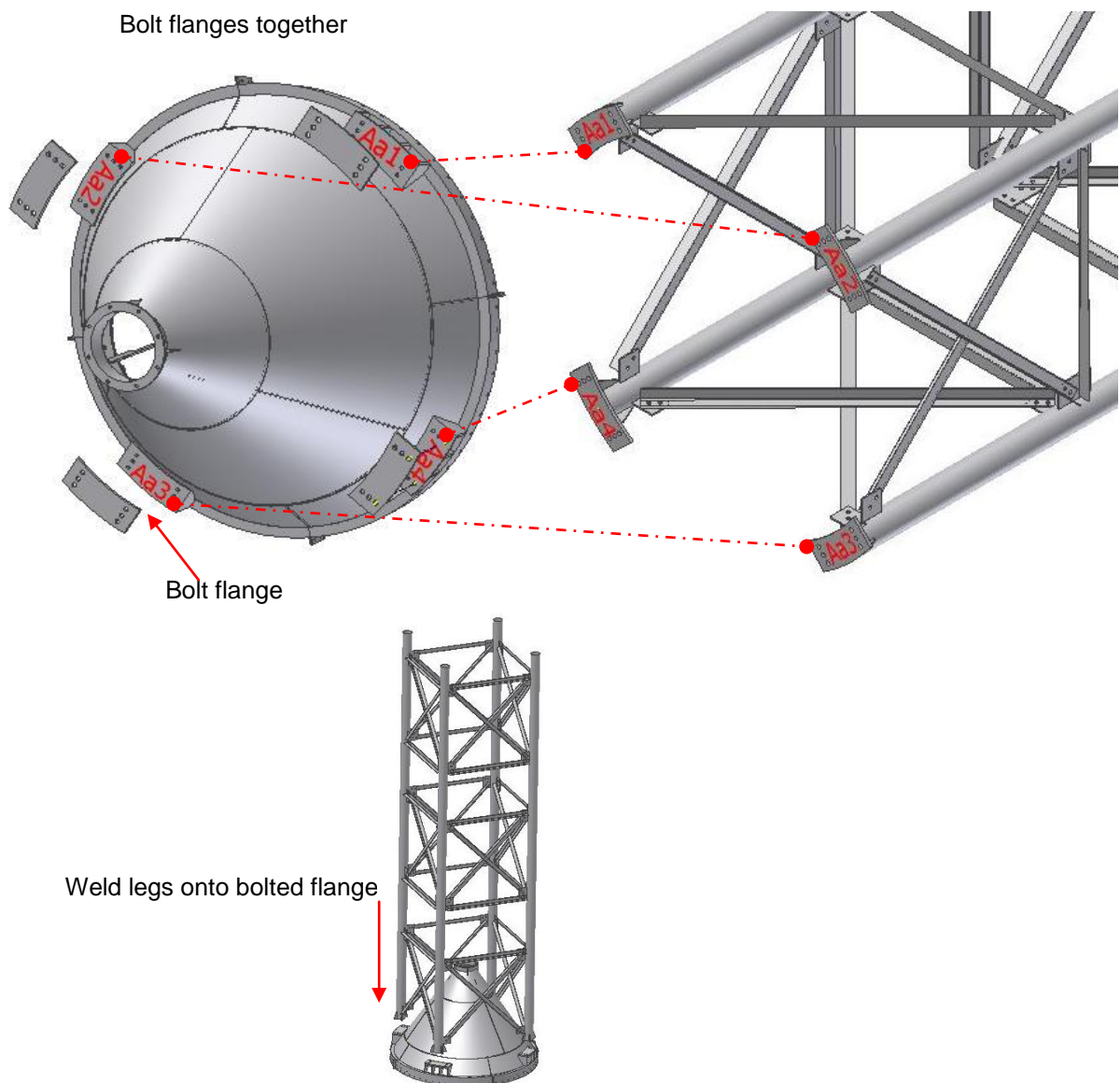
1. Lay two leg sections on the floor
2. Connect all cross and horizontal bracing between them
3. Repeat the above process for the other 2 legs
4. Lift one set of legs above the second and connect the bracing between the two



## Connecting leg assembly onto hopper

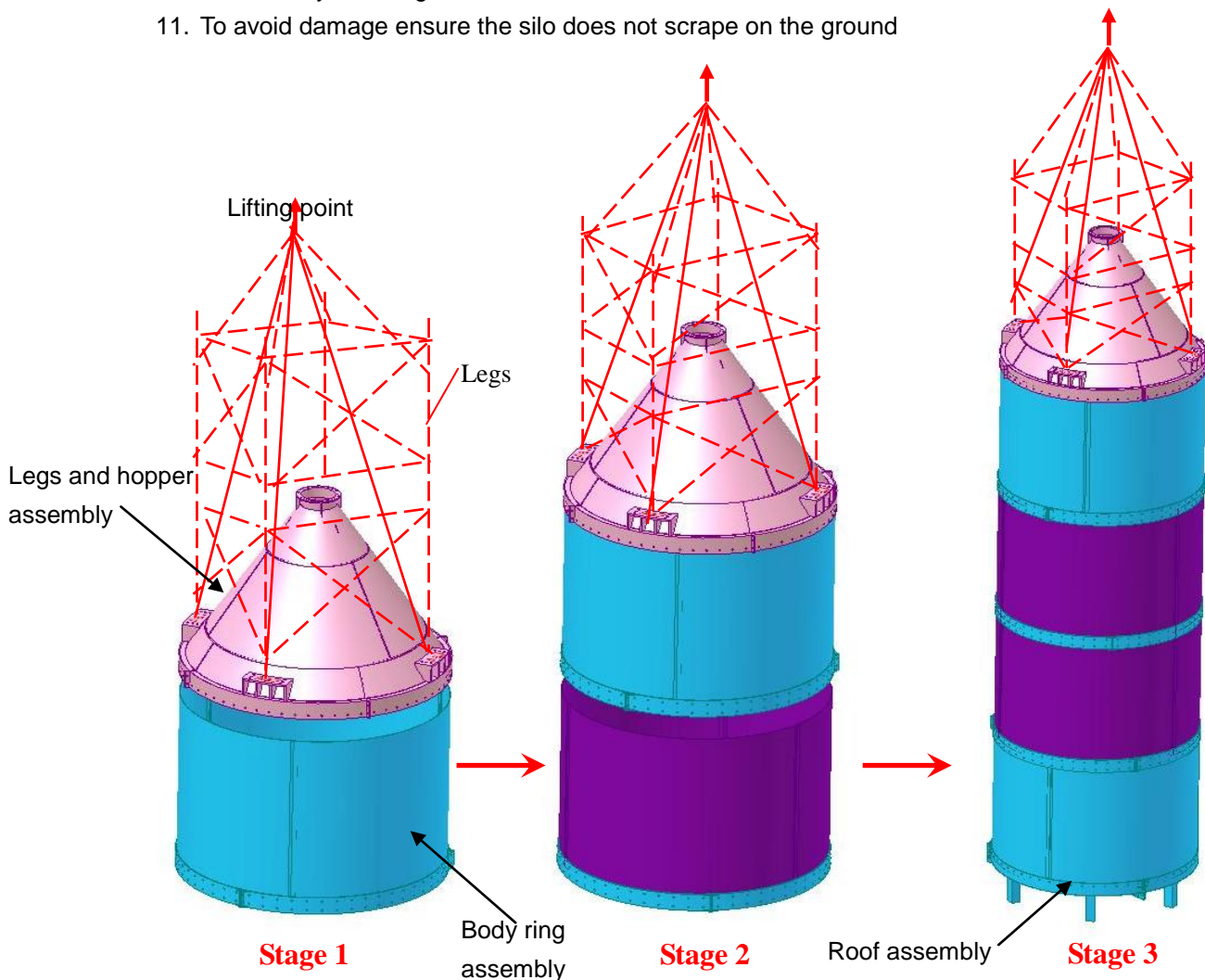
For connecting the legs to the cone section, follow the instructions and refer to the diagram below:

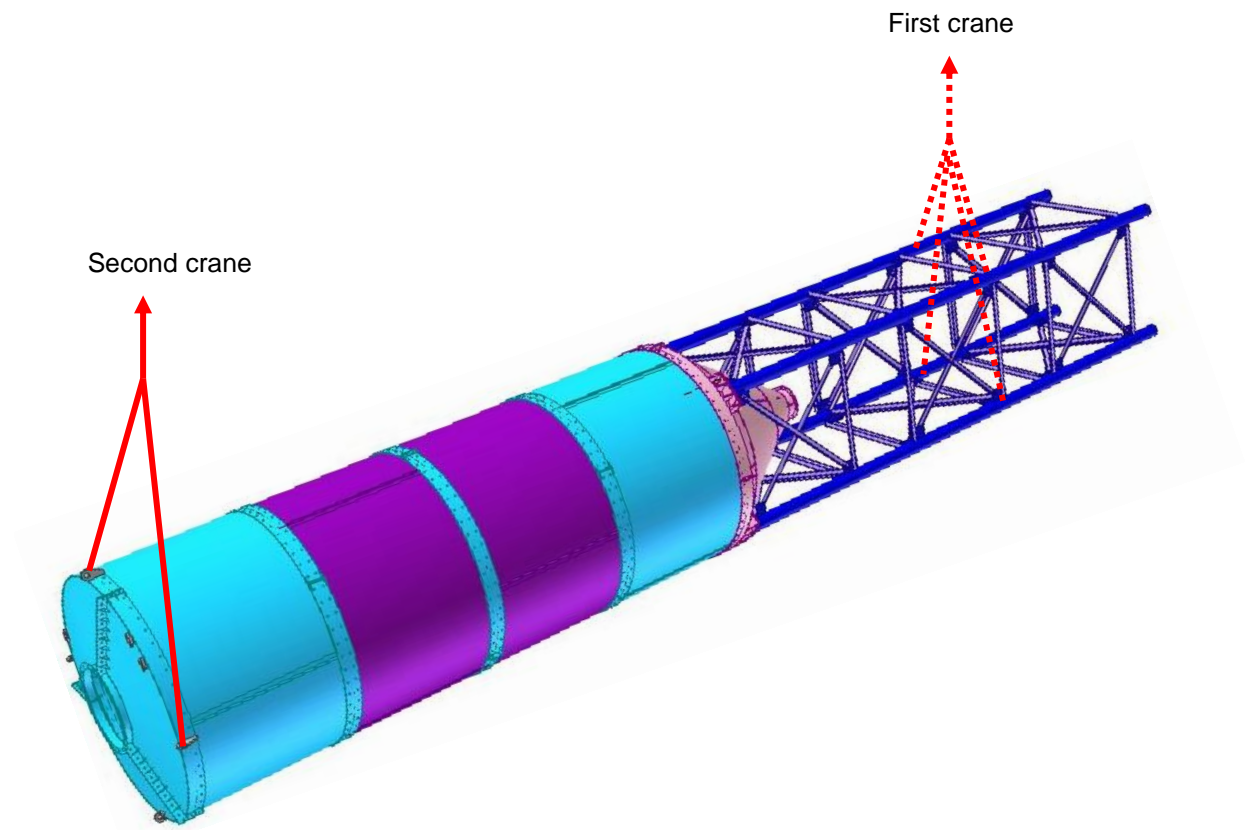
1. Bolt the leg mounting flange onto the hopper cone section
2. Lift the leg assembly onto the flange
3. Weld the mounting flange and leg section



## Silo Assembly

1. Find the most appropriate lifting points on the legs (or cone section) and connect to the crane
2. Lift the legs and cone section assembly onto the first body ring assembly complete with the base plate. NOTE: the body ring with the thicker plate is to be the lowest (attached to the hopper)
3. Align the body ring holes with the cone hopper section holes and place bolts for location but do not tighten until silica gel has been applied between the two faces
4. Apply glass cement on the outside face
5. Lift the assembly onto the next body ring assembly
6. Align the base plate holes with the body ring holes and place bolts for location but do not tighten until silica gel has been applied between the two faces
7. Apply glass cement on the outside of the mating faces
8. Repeat process until all body ring assemblies have been connected
9. Lift silo onto roof assembly and connect as per the process above
10. Once all panels are assembled a second crane is to be connected to the roof section and both cranes may work together to turn the silo around
11. To avoid damage ensure the silo does not scrape on the ground





## Accessory Installation

The following accessory items may be installed prior to silo rotation, this depends on the situation and the most convenient approach is to be taken.

### Safety hand rail installation

1. Lay out and align the hand railing onto the roof panel
2. Bolt down the hand railing onto the silo roof

### Platform Installation

Insert the platform between the silo leg sections and rest onto the bracing. Weld platform in place.

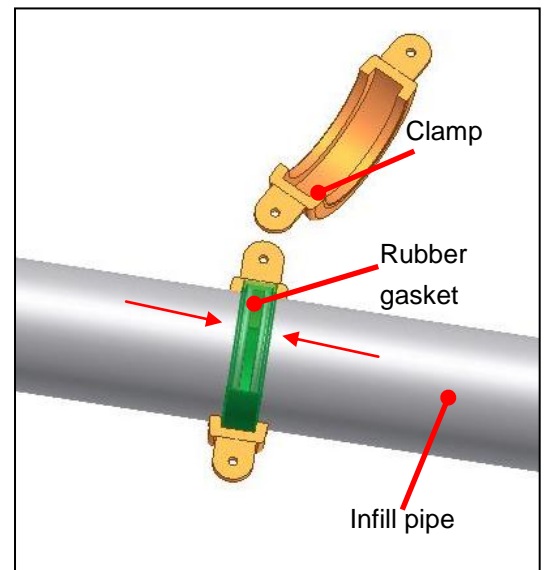
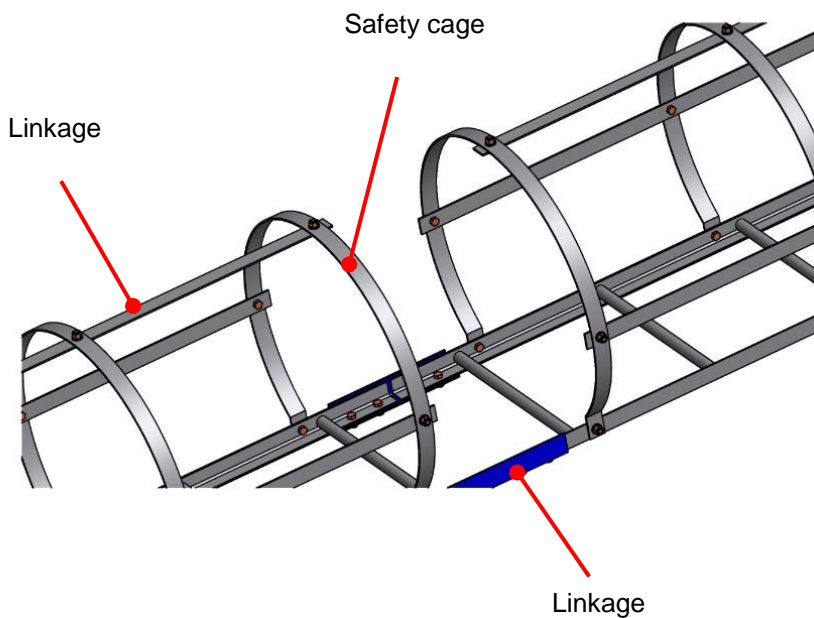
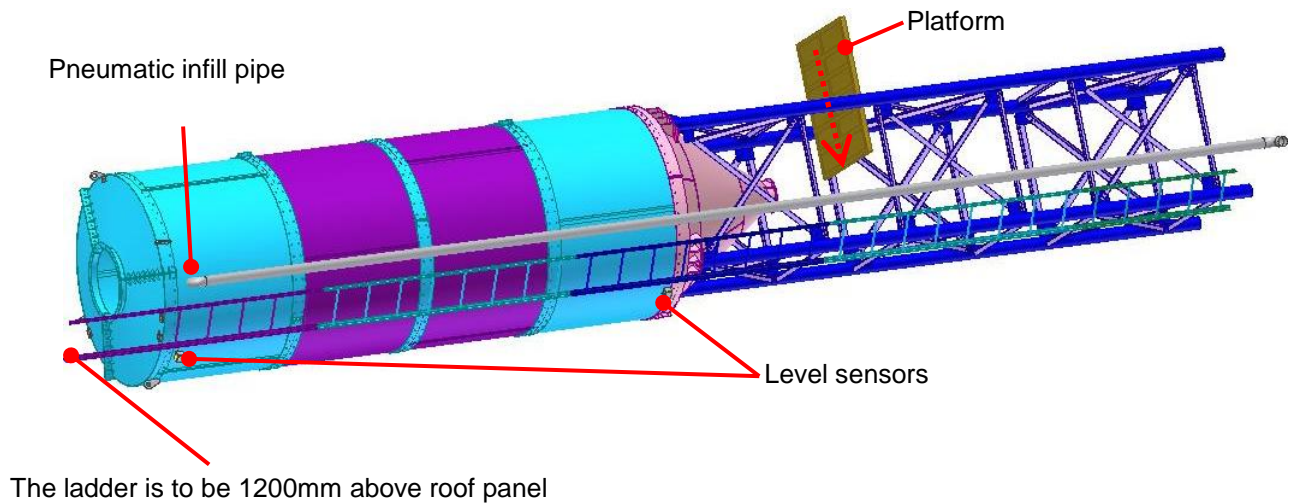
### Ladder Installation

1. Place the ladder between the gap in the safety hand railing and ensure that it is 1200mm above the silo roof
2. Weld the ladder mount onto the allocated spot on the roof
3. Build up the ladder by placing the sections and welding the linking angle to join. Repeat process until ladder is complete
4. Attach safety cage onto ladder



### Pneumatic infill pipe

1. Cut a hole (size to suit) into the silo 300mm to the side of the ladder and 300mm below the roof panel and insert the pipe in it
2. Use the clamp arrangement provided to secure the pipe by welding onto the silo body. Ensure that the rubber gasket is placed between the pipe and the clamp
3. Weld the pipe onto the hole cut in step 1



**Level sensor installation**

1. Cut a hole that is 5mm larger than the sensor paddle
2. Drill mounting holes with centers to suit the level sensor
3. Install the sensor ensuring that the rubber gasket is used

**Relief valve installation**

1. Cut a hole on the roof panel 5mm larger than the relief valve, position is to be opposite to the infill pipe and 500mm from the edge of the silo wall
2. Insert the relief valve and weld in place

**Filter dust collector installation**

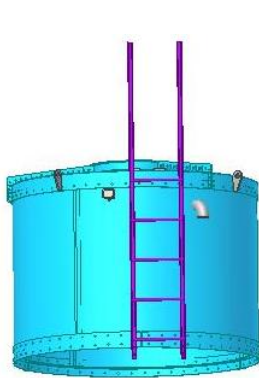
1. Weld dust collector mounting flange onto silo roof
2. Bolt filter dust collector onto the flange

**Arch breaker installation**

The arch breaker is simply screwed into the cone section

## Alternative assembly method

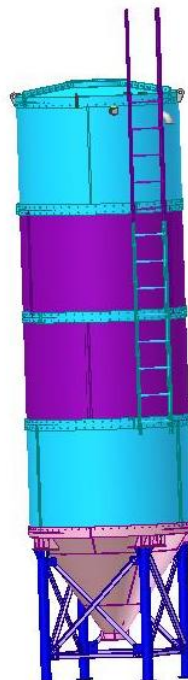
1. Complete roof section assembly
2. Install safety hand railing and other accessories present on the roof
3. Complete body ring assembly
4. Lift the roof assembly over the first body ring assembly complete with the base plate
5. Align the body ring holes with the roof ring mounting holes and place bolts for location but do not tighten until silica gel has been applied between the two faces
6. Apply glass cement on the outside face
7. Install the top section of the ladder, high level sensor, infill pipe and other accessories present
8. Lift the assembly onto the next body ring assembly
9. Align the base plate holes with the body ring holes and place bolts for location but do not tighten until silica gel has been applied between the two faces
10. Apply glass cement on the outside of the mating faces
11. Install next section of ladder and infill pipe including clamp every two body ring assemblies
12. Repeat process until all body ring assemblies have been connected
13. Complete cone assembly
14. Complete leg frame assembly
15. Complete leg to cone hopper assembly
16. Stand leg and hopper assembly and lower the completed silo body assembly onto it. NOTE: the body ring with the thicker plate is to be the lowest (attached to the hopper)
17. Align the body ring holes with the cone hopper section holes and place bolts for location but do not tighten until silica gel has been applied between the two faces
18. Apply glass cement on the outside face
19. Complete ladder and infill pipe assembly



Stage 1



Stage 2



Stage 3



Stage 4



# **Health and safety**

**Employee and contractors safety handbook  
(pages 4 to 57)**

## PASSPORT TO SAFETY

Very little effort is required to keep out of harm's way provided this effort is applied at the right time and in the right place. Life is difficult enough without adding to it by failing to invest this minimum effort from which a maximum return is gained.

Sitting on the sidelines and waiting for things to happen to you will not do any good. Looking the other way, hoping it will go away will not do any good. Paying lip service will not do any good.

You must take determined and positive action. You must DO something at the right time to be able to prevent accidents from happening.

What you must do is:-

**A - LOOK      B - SEE      C - DO**

This booklet will help guide you to see by showing you where to look. Only you know what you must and can then do under the given circumstances. Accidents to you or your mates will only happen "if you let them". If you think that you are unimportant to us and your family, then you are wrong - you are important.

Give yourself a break - it doesn't take much effort to try.

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## LOOK AT SAFEGUARDS FOR

- Missing or inadequate guards against "struck by"
- Missing or inadequate guards against "contact with"
- Missing or inadequate guards against "fall from or into"
- Lack of or faulty support, bracing, shoring, etc.
- Missing or faulty warning or signal device
- Missing or faulty automatic control device
- Missing or faulty safety device

and do something about it if you see anything wrong - tell your foreman/supervisor.

## LOOK AT CLOTHING FOR

- Use of prescribed personal protective equipment
- Use of defective personal protective equipment
- Clothing inadequate against being "struck by"
- Clothing inadequate against "contact with"
- Clothing likely to cause "catching on, in or between"
- Clothing likely to cause falls
- Clothing inadequate against "exposure" - and correct any shortcomings you see.

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## LOOK AT EQUIPMENT FOR

- Danger from susceptibility to break, collapse, etc. (will easily break, collapse, etc.)
- Danger from susceptibility to tipping over, falling, etc. (will it tip over, fall easily, etc.)
- Danger from susceptibility to rolling, sliding, slipping, etc. (will it easily roll, slide, slip, etc.)
- Leakages of gas, fumes or fluids
- Malfunction signs, like excessive heat, noise, vibration, fumes, sparking, etc.
- Failure of portion to operate
- Erratic unpredictable performance
- Lack of adequate electrical earthing
- Operation that is too fast or too slow
- Low voltage leaks
- Signals excessively high or low pressure
- Throwing off of parts, particles, materials, etc.
- Indications of need for special attention, and take all necessary action if you see anything wrong - tell your foreman/supervisor.

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## UNSAFE ACTS GUIDE

A Practical Guide for the Investigation of Unsafe Acts.

## OBSERVE WORK AREA FOR OTHERS

### a) Operating Without Authority or Failing to Signal or Wait

#### LOOK FOR

- Starting, stopping, using, moving, etc., equipment without authority
- Starting, stopping, using, moving, etc., without giving required signal or warning
- Failure to place or heed warning signs, etc.
- Improper and ineffective placement of warning signs - and take positive action if you see anything wrong - tell your foreman/supervisor

### b) Failing to Secure and take Positive Action

#### LOOK FOR

- Failure to lock, block, tie or otherwise secure materials or equipment against unexpected movement
- Failure to stop flow of electric current, steam, water, gases, compressed air, etc. - and take corrective action in connection with what you see - tell your foreman/supervisor

### c) Taking Unsafe Position or Posture

#### LOOK FOR

- Exposure of self under suspended loads
- Exposure of self to objects slipping, sliding, rolling, splashing, etc.

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- Lifting with bent back
- Entering enclosures that are unsafe because of gases, fumes, heat, etc. without protection
- Riding vehicles in unsafe position
- Exposure of self to electric shock — and do something about it as soon as you see it — tell your foreman/supervisor

d) Operating or Working at Unsafe Rate

**LOOK FOR**

- Running
- Jumping from vehicles, platforms, ladders, etc.
- Throwing or dropping instead of hoisting, carrying, lowering
- Operating equipment at excessive speed
- Rushing work — and rectify the danger as soon as you see it — tell your foreman/supervisor

**LOOK FOR**

- Overloading
- Crowding — work area congested with objects
- Lifting or carrying excessive heavy loads
- Arranging or placing equipment and materials unsafely
- Injecting, mixing or combining substances so as to create hazards, e.g., naked lights into explosive atmosphere — and take positive rectifying action as soon as you see — tell your foreman/supervisor.

## INDUCTION

The word "Induction" means the art of introducing a new worker to his job. About 1/3 of industrial accidents are caused by workers in their first month to three month period. Most new workers are nervous during the first couple of days and require constant supervision. If in doubt as to the correct and safe way to do a job or operate a machine do not hesitate to ask your supervisor.

## SAFE JOB INTRODUCTION

Graintech Ltd attaches tremendous importance to site safety.

You — and your associates are the site's most valuable assets. Ways are being sought all the time to ensure your safety and protection.

## YOUR SUPERVISOR

Your supervisor is interested in your safety and health. Protect yourself and your workmates by reporting to your supervisor any working conditions, practices or machines which appear unsafe.

In this way you protect yourself and others.

## THE EMPLOYEE'S SAFETY RESPONSIBILITY

Any question or comments concerning safe practices or specific unsafe conditions is to be directed to your foreman/supervisor/safety representative.

Report all accidents, injuries and potential hazards to your foreman/supervisor/safety representative.

**BE SAFETY  
CONSCIOUS...**



## SAFETY RULES

In order to help you ensure your own safety, you must become familiar with the following general safety rules which you are required to observe carefully:

- Follow instructions — take no chances, if you do not know, ask for safe job instructions.
- Report immediately to your foreman/supervisor any condition or practice you think may cause INJURY to employees or damage equipment.
- Put everything you use or handle in its proper place. Disorder causes injury, wastes time, energy and material, keep your work area clean and orderly.

## CONCENTRATION

Do not relax your attention as you become familiar with your job. The new man is not always the one who gets hurt. Always leave your job in a safe condition. A job is not complete unless it has been made safe for the next man to work on it.

## REPORTING OF INJURIES

All injuries no matter how slight are to be reported to your foreman/supervisor.

The foreman/supervisor will arrange for first aid and/or further medical treatment as required.

## KEEP ALERT

Keep a sharp lookout well ahead so as to become aware quickly of approaching vehicles and changing road conditions. Do not follow too closely behind the vehicle in front. Under good conditions allow

yourself at least one car length's distance for every 10 kilometres per hour road speed. You will need much more under bad weather conditions (wet and slippery surfaces, etc.).

### WALKING

Use walkways where provided in the works area and when walking to and from work. Avoid unrecognised shortcuts. Never move across in front of an oncoming vehicle, as a slip may be fatal. Beware of reversing vehicles as the driver may not know that you are behind the vehicle.

Look BOTH ways before you cross roads.

### PERSONAL PROTECTION

On some jobs protective clothing equipment such as goggles, safety helmets, gloves, rubber boots and the like are provided as a personal issue, or are available from a common pool. Your foreman/supervisor will tell you what is needed on each type of job. Care must be taken in touching metal objects heated by the sun as these can burn.

Always wear the correct equipment for each job and take good care of it so it can do its job to protect you.

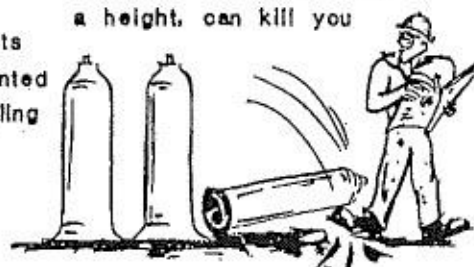


• safety glasses are not 'sleazy'

... they protect your eyes

• a small object such as a half inch bolt falling from a height, can kill you

• safety boots have prevented many crippling accidents



USE THE PROTECTIVE EQUIPMENT PROVIDED

### SAFETY HELMETS

It is compulsory to wear your safety helmet on construction sites at all times and is a condition of employment. Safety helmets are provided to protect you from falling airborne (flying) objects. Make sure that the headband and harness are properly adjusted so that the helmet is clear of the top of your head and is comfortable. This will allow the harness to absorb the shock of any falling object.

You should wear the chin strap around the back of your head. This will prevent the strap choking you should the hat be knocked off your head.

When working aloft, remember that a dropped hat can injure persons working below. Never put cigarettes, lighter, etc., inside the net on top of your head.

### EYE PROTECTION

Protection of sight is a very important matter. No employee can afford to scorn eye protection. Eye protection must be worn when working on any of the following:

- Welding — electric or oxy-acetylene or LP gas
- Burning — oxy-acetylene or LP gas
- Chipping steel, concrete, brick, etc.
- Grinding
- Drilling
- Operating any metal working machine
- While using any acid or caustic solution
- When operating any portable power saw
- When operating any explosive powered tool.

An employee is expected to take reasonable care of his eye protection. You are wearing your last pair of eyes now — look after them.

### EAR PROTECTION

Of the many causes of deafness, exposure to excessive noise is one that can be guarded against. Investigations have shown that exposure to high noise levels, whether at work or elsewhere, can cause damage to the ear mechanism, and if unheeded may lead to permanent deafness.

High noise levels may be caused by a single operation or process such as grinding or drilling or the operation of a pneumatic drill or explosive power tool or may be produced by machinery such as turbines in power stations, etc.

When noise on a job is excessive suitable ear protection such as ear plugs or ear muffs will be provided. Wear the ear protection provided whenever it is necessary.

### CLOTHING

All employees must wear suitable and adequate clothing. Torn or loose fitting clothes must not be worn. Keep them as clean as possible. Avoid loose sleeves, ties and beltends. Finger rings are dangerous and must not be worn at work. If clothing and/or footwear is not suitable, the employee will be sent off the job.

### DUST

Dust can add to hazards. Keep it down as much as possible at all times. Goggles will protect your eyes in dusty conditions.

## GLOVES

Wear gloves to protect your hands when handling rough, splintery or sharp objects. Wear plastic or rubber gloves when handling cement, concrete, chemicals or acids. Do not wear gloves near moving machinery because they may get caught and cause you an injury.

## WET WORK

Rubber boots and waterproof coats are available for use in wet conditions. Do not wear rubber boots on outside dry jobs. Leather boots are more comfortable and are much safer. Waterproof coats and similar articles are also likely to get caught in plant and machinery so be extra careful when wearing them.

## SAFETY FOOTWEAR

Safety boots with steel toe caps and stout deep treaded soles are recommended for general wear. All footwear must be your correct fit to prevent chafing and to ensure a good foothold.

Bare feet, sandals, carpet slippers, thongs or any soft soled shoes are not acceptable on construction sites. Employees not wearing acceptable footwear will not be permitted to commence work.

Clean, dry, woollen socks give more protection than nylon stretch socks, even in tropical zones.

The use of footpowder is recommended to prevent tinea or other skin diseases.

(See Special Reference - Riggers)

## HOUSEKEEPING

Good housekeeping is the first principle of Accident Prevention and is vital to the safety of all persons working on a construction site.

- Walkways, stairways, passageways and exits must be kept clear to provide unimpeded access or egress at all times.
- Work areas are to be clean and free from debris and all waste material.
- Spillages of oil or other similar liquids are to be cleared up immediately.
- Roadways and scaffolding must not be obstructed by any materials or standing vehicles.
- Protruding nails must be withdrawn or bent over as soon as they are exposed.
- Food scraps, wood scraps and rubbish must be placed in receptacles which are to be emptied daily.
- Tools and equipment are to be returned to their proper places in clean and serviceable condition after use. If damaged or in any way faulty the piece is to be marked and the fact reported to your foreman/supervisor.
- Waste combustible materials must be placed in metal receptacles with a metal lid and emptied daily.

Work areas must be cleaned up progressively by all employees concerned. No job is complete until this is done.

Orderliness is not a "once in a while" thing - it is a continual operation. "A place for everything and everything in its place" makes the construction site a safer, happier and easier to work in environment.



CLEAN IT UP, PICK IT UP,

HANG IT UP, WIPE IT UP

—YOU'LL PREVENT ACCIDENTS IF YOU DO

## SANITATION, INFECTION AND PERSONAL HYGIENE

Always use the sanitary facilities provided. Carelessness is not only unpleasant but attracts flies and spreads infection.

To avoid the spread of infection, do not come to work if you are ill. Notify your supervisor and see a doctor as soon as possible.

This section is intended as advice to all employees:

- When falling sick employees must report to their foreman/supervisor.
- On returning to work after a work induced illness or injury, a medical clearance must be produced before re-commencement.
- Employees should:
  - Wash hands thoroughly before crib.
  - Keep clothes clean and in good order.
  - Discard clothes which are dangerously torn and may catch in moving machinery.
- Crib rooms, toilets and change rooms must be kept clean. This is the responsibility of each employee. Report uncleanness immediately to your foreman/supervisor.



## SPECIAL HAZARDS

### Hand Tools

Use the proper tool for the job. Makeshift tools are unsafe.

- Do not use damaged or defective tools such as hammers, chisels or punches with mushroomed heads, spanners with spread or loose jaws, axes, shovels, picks or other tools with loose, cracked or splintered handles. Report defective tools to your foreman/supervisor and request replacement.
- All tools must be maintained in a safe working condition.
- Grind off mushroom heads of chisels, gads, etc.
- Keep cutting edges sharp.
- Use wrenches correctly — pull do not push. Never use a wrench as a hammer.
- Do not use a packer or shim to make a spanner fit the nut — get the correct size of spanner.
- While shovelling or using sharp pointed or sharp edged tools, avoid working in confined space or crowding too close to other men.
- Do not leave tools on walkways, aisles, stairways or elevated places.

Keep all tools properly stored when not in use, so that they will not fall or cause persons to trip over them.

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### Grinding Tools

If an abrasive wheel must be used, grind only a small amount at a time, with the tool rest not more than 1.5mm from the wheel. Hold tool lightly against the wheel to prevent overheating. Dip frequently in water to keep tool cool. This retains hardness, cutting edge and stops overheating. Goggles must be worn.

### Compressed Air and Pneumatic Tools

Use compressed air only for air driven tools and such other uses as your supervisor directs — always use care.

- At pressure air is dangerous and its improper use will cause injury.
- Do not discharge compressed air against any part of the body or any other person or use it to blow dust off clothes, as these practices can cause serious injury. Your skin tissue can only stand the very maximum of 28 kPa — the force of the direct air pressure will drive small foreign material through the skin and cause you many problems.
- Under no circumstances should a jet of air be directed toward the body of another person.
- When disconnecting or connecting equipment from an air hose, don't crimp the hose, turn off the valve.
- Handle pneumatic tools with care, if in doubt regarding their operation check with your foreman/supervisor.
- Never point a pneumatic tool at another person and operate mechanism. Use tools only for the purpose for which they were made.

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### Confined Spaces

Always think of your workmates safety when using hammers, picks, shovels, axes and similar tools in confined space. They can inflict nasty injuries. See that there is adequate clearance between you and any other persons.

### Grinding

- Eye protection is to be worn even if the floor standing machine is fitted with protective shields.
- Always check the work rest, it must be secure. The distance between the rest and the wheel must not exceed 1.5mm. The rest must not be adjusted while the wheel is in motion.
- Check that the wheel is true before starting the machine. If it is out of true, report it to your foreman/supervisor.
- If there is any doubt about the condition and/or speed of the wheel, report it immediately to your foreman/supervisor.
- Never apply heavy pressure to the work. Allow the wheel and speed to do the cutting. Keep work cool to avoid overheating.
- Portable machines must not be used without a guard.
- Ensure that a firm stance is maintained when using a portable machine and be careful to see that the wheel does not touch the body or clothes.
- Do not grind wood or soft metals on normal machines as it may clog the wheel and cause overheating which if prolonged can cause the wheel to burst.
- Gloves must not be worn.

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- When using the interlocking type of connection on an air line tie the connectors together with wire using the holes provided. This prevents accidental disconnection.
- Where provided, ensure that safety chains on couplings are connected.
- Care must be exercised before turning the air supply off or on so that other employees who have equipment connected to the same main are not endangered through the failure of/or unexpected supply of air.

### Drills

- Always provide a starter mark for the drill point.
- Select the correct bit and speed for the material being drilled. If the drill will pass through the materials, provide against damage to the other side.
- Small pieces are to be clamped down to prevent spinning if caught by the drill.
- Care should be taken to prevent hair, sleeves or other clothing from being wound in the drill.
- Use a hand broom to wipe swarf from the job, NOT your hand.

### Electrical Equipment

Remember that electricity out of control can kill. Handling electrical equipment and wiring is an electrician's job. Instructions given here to other workmen are confined to the precautions they must take when working near electrical equipment.

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- Only authorised electricians are permitted to inspect or repair electrical faults. If electrically operated equipment fails, report it to your foreman/supervisor.
- No spike, peg, shovel or pick must ever be driven into the ground or any excavation started without first finding out whether any electric cables are likely to be encountered.
- Do not carry long metal objects on your shoulder in an upright position when passing under electric wires.
- When operating electrical switches, controllers or starters, if possible stand to one side and use the hand nearest the switch to perform the operation and turn your head away to avoid an unexpected flash.
- Do not tamper with any starter, fuse or electrical equipment. Report all faults or suspected faults to your foreman/supervisor.
- Before operating an electrical switch, make sure no one will be endangered.
- **A Danger — Do Not Operate Tag** — signed by an authorised person must be placed on the isolating switch when a machine is stopped for repairs or alterations. Where possible the isolating switch is to be locked out and the fuses drawn. On completion of the job, the person who signed and placed the tag in position must be the person to remove it, replace the fuses and unlock the switch. **NEVER** remove the tag put on by someone else — you are liable for instant dismissal.

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- Clean mud or greasy substances from footwear before climbing.
- Lash to top of ladder to prevent movement before working on it.
- Face the ladder and use both hands when climbing or descending. Carry tools in special pockets or hoist/lower them with a rope. Use canvas bag not hessian.
- Work facing the ladder and hold on with one hand. If both hands are required for working, use a safety belt.
- It is dangerous to reach out too far in any direction from a ladder. Move the ladder as the work requires it.
- Two ladders must never be spliced together. Do not use a ladder as a horizontal member or working platform for any purpose.
- When using ladders on roofs or other high places, lash them securely.
- Only one person at a time is allowed on a ladder.
- Never work above the second top rung of a ladder. Do not straddle a ladder.
- Do not use metal ladders or wooden ladders with wire or metal strip reinforcing near electrical wires, circuits, fixtures or power lines.
- If necessary have an assistant hold the bottom of a ladder against movement and to warn any drivers of vehicles in the area.
- Folding steps, platform steps and trestles should be checked for soundness and that hinges, cords or restraining stays are in good order.

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## Scaffolding

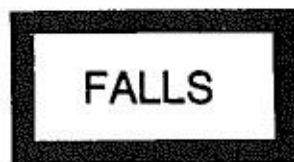
- All scaffolds must comply with the regulations laid down by the various State Departments of Labour and Industry
- In placing equipment on scaffold make sure it is secure from falling.
- Do not obstruct scaffolding with cables, welders leads, hoses or other material.
- Keep scaffold clean. Do not leave loose material such as bolts, hand tools or scrap lying on it.
- Keep them clear at all times.
- Throwing material from a scaffold is dangerous and must not be done except when authorised and then the area beneath must be roped off and a spotter positioned to warn personnel in the area.
- Never use makeshift or defective scaffolding.
- Any defects, loose knots or cracks in a scaffold plank make it unsound and it cannot be used.

## Ladders

Avoid falls from ladders by observing the following rules:

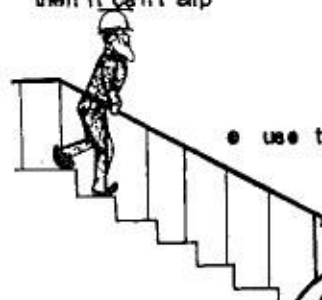
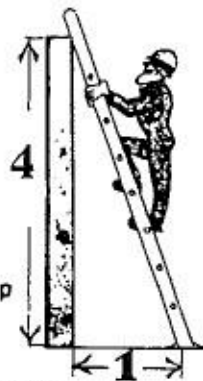
- Before using a ladder inspect it for damage. Do not use ladders with splintered or broken side rails, loose, broken or missing rungs. Report any that are damaged to your foreman/supervisor. Make sure the ladder is reared at the correct angle — 300mm out for every 1200mm rise and that ladder extends one metre beyond edge of landing place.

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THE PERSON WHO STOPS  
YOU FALLING ... IS YOU

- always face a ladder when climbing up or down & hold it with both hands
- make sure it's in good repair
- place it at a safe angle 4 up, 1 across — then it can't slip



- use the handrails provided on stairs

- walk — don't run

BE ALERT WHEN MOVING  
ABOUT THE WORK AREA



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- Do not stand on top step of folding steps.
- Extension ladders should not be used for heights over 12 metres.
- Permanent vertical ladders over two metres must have safety hoops.

#### Rigging

- Riggers working on scaffolding and steel erection are permitted to wear softer shoes/boots (only where aloft).
- Gloves are to be worn when handling wire rope.
- Ropes must be inspected before use for defects such as:
  - Broken or severed wires and strands
  - Rust and corrosion
  - Kinks and doglegs
  - Broken seizing wires
  - Signs of damage or abuse generally
 and if any doubt exists as to the soundness of a rope it must be condemned and destroyed (cut into sections).
- Any sling which has been condemned must be cut in half so that it cannot be used again.
- All slings (fibre and wire) must be protected from sharp corners by means of corner irons or blocks, bags or lagging.
- Finished surfaces of machinery must be protected by bags or lagging when being lifted to stop damage.

### POWER AND ELECTRIC TOOLS

#### Power Tools

The majority of power tool accidents are caused by improper handling and poor maintenance of equipment. The following rules apply to all types of power tools:

- Good housekeeping is essential to good workmanship. All tools must be neatly stowed when not in use. Work areas must be maintained in neat and orderly fashion.
- Maintenance of equipment shall be systematic. All worn or damaged equipment is to be replaced or repaired immediately. All tools must be cleaned and inspected regularly.
- Safety equipment such as guards and fuses must be left in place.
- Gloves, safety footwear and safety glasses are to be worn where necessary.

#### Electrical Tools

- Power cables must be checked frequently for breaks or damage to the insulation especially at the connecting points. Replace immediately where faulty.
- The use of a number of short extension leads on one tool is to be avoided where possible, one long lead is more practical and safer.
- When making connections begin at the tool end and work towards the power source.
- When using electrical tools in wet areas check that all insulation is sound and where necessary insulate the platform and wear rubber gloves and footwear.

- Because wire ropes are lubricated with oil they must be kept away from fire and fire hazards. If slightly burnt the rope will dangerously weaken and render it unsafe for future use.
- Ropes and slings must be kept coiled and off the ground to minimise damage from dirt and the movement of vehicles, etc., over them.

#### Steel Erection

- Cranes and derricks must not be operated within reach of power lines.
- Sheets or small bundles of material must be slung so they cannot slip out.
- In setting steel, each piece must be securely bolted before the line is removed.
- When setting steel trusses or portal frames, they must be securely side or cross braced until permanent braces are fitted because wind pressure or jarring may topple them.
- When using two chairs or slings it must be remembered that the stress in them is increased as you increase the distance between lifting points.
- Unless necessary, material must not be hoisted to a structure until it is ready to be fastened into position.
- Hand lines are to be used to control material while in the air.
- When lifting or carrying loads on the crane all workmen must move out from under the path of the load.

#### Floor Openings

All floor openings, whether temporary or permanent, must be provided with a firmly attached cover, or be adequately fenced and otherwise protected to prevent anyone falling down the hole.

#### Excavations

When working in and around excavations observe the following rules:

- Erect a barrier as close as practicable to the edge of the excavation and at least one metre high.
- Any portion of the barricade that has been removed to allow movement of material and machines must be replaced at the end of the days work.
- Slope sides of excavation back to reduce earth falls. Bar down dry earth that may fall.
- Shore walls of excavation where necessary, or where it exceeds 2.5 metres in length at two metre intervals or closer.
- Ladder access must be provided at regular intervals and ladders must protrude 1.5 metres above excavation.
- Do not stack materials too close to the edge.
- Where necessary all excavations to have warning signs and warning lights.

#### Cranes

- Only authorised persons are permitted to operate and/or drive a mobile crane.



- Use extreme care when getting on and off mobile cranes. Use the hand grips provided.
- Report all unsafe conditions immediately to your foreman/supervisor.
- Do not oil or grease while machine is running.
- All mobile crane drivers shall use outriggers as needed. Cranes to operate from ground level.
- All mobile crane booms shall be equipped with boom stops which shall be maintained in operating condition.
- Crane hooks to be fitted with safety bar.
- All lifting gear to be marked with safe working load.
- No mobile crane work shall be allowed near power lines unless under the supervision of a foreman/supervisor.
- When travelling, crane boom must be in the down position unless slowly moving with slung load within its capacity.
- Crane drivers shall operate only on the signal given by the crane chaser or dogman assigned to his crane.
- The S.A.A. crane signals shall be used by all crane chasers and dogmen.
- When slinging or assisting to sling a load, place the slings and as the crane takes the weight, keep your hands and fingers clear of the slings and load.
- In lowering a load, wait till the lift comes to rest and the weight is off the slings before moving in to release the slings from the hook.

### Parking

Vehicles must always be parked in parking areas where these are provided. Always park a vehicle or equipment item clear of all traffic ways, across any slope and set your brakes on and the gear lever in low or reverse. It is good practice to chock the wheels if you can. Never park a diesel vehicle in gear.

### Starting Machines

Do not start any machinery in motion or turn on any electricity, gas, steam, air, oil, acid or water unless you are authorised to do so and then only after you have made sure that no one is in a position of danger.

Where remote lubrication is not provided, the machinery must be stopped before attempting to lubricate it. Repairs in the vicinity of, or to moving parts, must only be carried out with machinery stopped or stationary where mobile plant.

### Starting Up Conveyors

Make sure that everyone is clear of the machinery and belts before you start a conveyor. Never ride a conveyor. Keep clear of the sides of moving conveyor belts; material can fall over the sides.

### Machine Guards

Machine guards are for protection and must not be removed, or made inoperative, except by authorised persons for the purpose of carrying out repairs and adjustments.

All guards must be replaced before restarting machinery.

### Suspended Loads

Do not allow loads to hang any longer than is necessary. Do not talk to a crane driver while he is operating the crane. Never suspend a load over people.

### Manhails

When driving a manhaul, check on road and weather conditions before you start. Make sure that the passengers are riding safely and are not overcrowded. Do not allow the passengers to get off or on while the vehicle is moving.

### Lower Blades

Always lower blades, buckets and other similar objects to the ground so they cannot fall whenever you are parked or stationary. If these have to be lifted for maintenance, block them securely so they cannot fall.

### Embankments

Do not work on embankments or slopes below operating mobile equipment.

### Fueling

Switch off all engines while refueling. Smoking and naked lights are prohibited at fueling points and fuel storage dumps to prevent explosions or fires.

### Radio

Radio transmission is dangerous near explosives because the signal could explode the charge. Do not use your radio near explosives. Switch it off.

### Equipment not to be used without Authority

No employee is to operate, move or otherwise interfere with machines, power tools, mobile equipment, motor lorries or other vehicles unless instructed and/or licensed to do so.

### Table Bench Saws

- The operating table must be kept clean and clear of all debris.
- Blade guards must be in place and operate freely.
- Operators must wear appropriate eye protection and a "kickback" apron.
- When ripping short stock or finishing a cut, a pusher stick is to be used.
- Saw shall be turned off when not in use.
- Materials being cut must be firmly held against back guide or fence. All material must be cut in a single steady pass, to stop the saw before the cut is completed is dangerous. If this is necessary the blade must be running freely at full speed before the cut is resumed.
- When cutting board, be sure it is touching the table at the point of the cut.
- On the conventional saw table a long fence is necessary. A trailer out must assist in handling long timber.

### Portable Handsaws

- Both the fixed guard over the upper half of the blade and the movable guard covering the lower half of the blade, must be left in place when using the saw. Blocking of the lower half guard is prohibited.

- Small pieces of timber being cut must be secured by bench clamps or by some other means.
- Saw blade must be regularly checked and kept in good condition.
- If portable saw is adapted to bench top use, it must be securely clamped to a firm support before using. When rigging in this fashion, use a push stick to finish the cut, never push the work right through by hand.
- A saw must not be jammed or crowded into work. Green or wet materials must be cut slowly and with extra caution.

#### Explosive Power Tools

- Only authorised operators to use these tools.
- Warning signs to be used at all access ways to the area.
- When not in use the tool must be locked in the case.
- Cartridges must be kept in a separate compartment marked "explosives", which can be locked. Cartridges must be kept in their individual boxes and not mixed with other equipment.
- Eye protection must be worn when using the gun.
- Do not use the tool on any readily shattered surface, high tensile steel or other unyielding substance.
- The tool is not to be used in the presence of any explosive or flammable gas, dust or vapour, in compressed air or any similar place.
- Clean the gun after every 100 shots and/or at the end of the shift.

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- No person under the age of 18 years is permitted to operate an explosive powered tool.

#### Hooking On

Drivers and all personnel associated with cranes or hoists must be particularly careful to see that all loads are securely attached and properly slung.

#### Ropes

Never handle moving steel wire ropes near pulleys or sheaves; you may lose a finger.

#### Earth Moving Equipment/Roadworks

- Blades and buckets to be lowered to the ground when operators leave their machine unattended at any time.
- If pushing down trees with dozer a special canopy is to be fitted to the machine.
- When operators leave their machines parked, they must make sure that the brakes are on. Petrol engine vehicles are to be left in gear. Diesel vehicles must not be parked in gear. If parked on a slope, chocks are to be used as well.
- No smoking when in fuel storage areas or when refuelling machines.
- Road Traffic Rules to be obeyed at all times by all vehicles and machines.
- No passengers are allowed on machines.
- All vehicular tyres are to be inflated in a steel cage or by some other protective method.

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- All lifting gear to be marked with the safe working load. Roadworks possess as many safety problems as any other in the field of heavy construction. The hazards are multiplied by the fact that the work area is either shared by or in close proximity to other road users.
- Safety must be provided for:—
  - Pedestrians and drivers on the road
  - The construction equipment
  - The workmen
  - The completed work
  - Care must be taken to ensure that sufficient safety and directional signs are available and on the job before it starts.
  - Signs and warning lights must be positioned and where necessary adequate lighting shall be arranged so that the condition of the road is obvious to all users
  - Warning signs shall be erected to warn road users of the movement of earthmoving equipment in confined and/or unusual places
  - Where necessary a spotter will be located to warn and direct road traffic.

#### General

All moving machinery is potentially dangerous. Treat it with respect and keep your distance.

#### Rescue Breathing

When a person cannot breathe for himself, you must carry out this necessary function. Irreparable damage will result if a person ceases to breathe for longer

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than four minutes. In the event of a person ceasing to breathe due to unconsciousness, electric shock, etc., act quickly — every minute counts. The procedure is as follows:

- Extend the patient's head and if possible have somebody place something under his shoulders to assist in keeping his head extended.
- Open the patient's mouth and place your fingers in the mouth to check for false teeth — if worn remove where practicable to do so. Place your mouth over the patient's mouth, pinch his nose between thumb and finger of your hand to seal his airways.
- Blow your air into the patient's lungs until you see his chest rise. Pause. Remove your mouth and let air come out. Give six quick breaths to start, then settle into a routine of approximately the same rate as your normal breathing, 12 breaths per minute. Do not over inflate the patient's lungs with air or attempt to maintain a rate faster than your normal breathing as this will tire you unnecessarily.

#### WELDING AND BURNING

##### Electric Welding

- Only authorised persons are permitted to use electric welding equipment.
- Where welding must be carried out near combustible material, a helper shall be on hand to guard against the spreading of fire by using suitable fire extinguisher, fire blanket or other suitable control device.

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- Do not weld so that hot sparks will fall on oxygen-acetylene, L.P. gas cylinders, hoses, machinery, conveyor belts, combustible materials, or onto the bodies of other personnel. Warn personnel, clear and/or barricade the area or cover with a suitable protective covering before starting to weld.

- Before welding on drums, barrels, tanks or other containers first make sure nothing inflammable has been stored in them.

Petrol and Oil Drums are extremely hazardous and should not be cut or welded.

- No welding is to be done in hazardous areas unless all necessary safety precautions have been taken.
- Never strike an arc on a cylinder.
- Make sure there is plenty of fresh air when working in confined space.
- Do not overload welding cables or operate with poor connections.
- Make welding machine ground connections directly to ground where possible.
- Make sure an appropriate fire extinguisher is on a petrol welding machine.
- Where possible screen welding from other personnel.
- In the event of a flash get medical attention as soon as possible.

#### Burning Equipment

- Only authorised persons are permitted to use oxy-acetylene or burning and welding equipment.

- Where burning must be carried out near combustible material, a helper shall be on hand to guard the spreading of fire using a suitable fire extinguisher, fire blanket or other suitable control device.

- Do not burn so that hot sparks, hot metal or severed sections of steel may fall on cylinders, hoses, machinery, conveyor belts, combustible material or the bodies of personnel who may be working nearby or below. Warn personnel, clear and/or barricade the area, or cover with suitable protective covering before commencing to burn.

- Before burning on drums, barrels, tanks or other containers, first make sure that nothing inflammable has been stored in them.

Petrol and Oil Drums are extremely hazardous and should not be cut or welded.

- No burning is to be done in hazardous areas without permission from foreman/supervisor.
- Never use cylinders as bench tops nor allow an arc to be struck on them.
- Never use matches to light torches. Use a spark lighter or stationary pilot light.
- Do not permit oil or grease to come in contact with oxygen bottles. A serious explosion may result. Lubrication of oxygen equipment is unnecessary.
- Make sure there is plenty of fresh air when working in a confined space and never use oxygen for cleaning a job or for ventilation purposes.
- Always refer to acetylene as "Acetylene" not "Gas". Refer to oxygen as "Oxygen" not "Air".

- Always consider cylinders as full and handle accordingly. Never drop or permit cylinders to strike each other.

- When cylinders are empty, turn them off, remove gauges, fit protective cap and mark "Empty".

- In keeping "Empties" and "Full" separate, use a chain across the storage racks.

- Always transport, store and use acetylene cylinders in a vertical position.

- When using cylinders tie the bottles or use a buggy.

- Do not use torches as a hammer or lever.

- When not in use coil hoses tidily near the cylinders to avoid damage.

Do not use welding equipment unless you have been trained to use it.

When working as a welder or helper always wear the proper eye protection. Wear clear goggles when chipping welds.

#### Oxygen — Acetylene — L.P. Gas

- These are the three gases chiefly used for cutting steel, brazing or welding and every employee is likely to come in contact with them at some time. Only authorised persons are permitted to operate this equipment, but in the interests of safety there are a number of important points associated with the use and handling of the oxygen, acetylene or L.P. gas equipment that every employee should know.

- The cylinders are not to be used for rollers or supports for any work whatsoever.

- Cylinders must be removed from close contact with any heat source because overheating produces increased pressure within cylinders and while designed to safely withstand high pressure overheating is to be avoided.

- Direct contact with a heat source is prohibited and cylinders must be moved to safety in the event of an emergency.

- No electric arcs to be struck on the cylinders and any evidence of such is to be reported to your foreman/supervisor.

- Do not allow cylinders of oxygen to remain in areas where they can be contaminated with grease, oil or oil bearing fluids, e.g., paint. Oxygen under pressure in contact with oil forms an explosive mixture — report any instances of oil or grease in oxygen cylinders to your foreman/supervisor.

- Acetylene or L.P. gas mixed with air is explosive over a wide range of concentrations, therefore if the characteristic smell of acetylene or L.P. gas is located in any working locations report immediately to your foreman/supervisor — turn all equipment off — warn other workmen in the area and see that no naked flame or spark is produced in that location.

- Do not use oxygen, acetylene or L.P. gas for any purpose other than the legitimate application of the gases with the approved equipment.

- Avoid damage to the hoses through which the gases pass. Always coil the hoses or remove them from any location where they are likely to be harmed.



- Never bind a fractured or leaky hose with tape.
- Blowing down work or machinery with these gases is prohibited.
- Acetylene cylinders must be stored and used in an upright position and secured against falling.

### Protective Clothing for Welders

This varies with the size, nature and location of the job. The following recommendations are made:

- Flame resistant gloves and aprons of leather, or other suitable material to be worn where necessary as a protection against radiant heat and sparks.
- Clothing to be free of oil and grease. Woollen clothing is recommended for this type of work. Nylon or similar material is prohibited.
- Pockets and cuffs readily catch sparks. Button up collars, turn cuffs the other way and remove pockets from the front of clothes or cover them with button flaps.
- Fire resistant leggings or spats and also the wearing of boots are best for foot and leg protection.

Safety footwear, preferably boots, is recommended. Low cut shoes with unprotected tips must not be worn.

- For overhead work wear leather capes and leather skull caps, where possible hat-n-shield combinations are to be worn.
- When welding in confined space as well as overhead, ear protection is sometimes necessary.
- Welders assistants are to wear suitable eye protection to avoid "welders flash".

## Fires from Welding

Sparks from welding and burning operations may be showered 6-9 metres and may retain heat for several seconds which is sufficient to ignite combustible material. Precautions which must be observed are:—











- Good housekeeping — remove all loose, easily combustible materials such as wood shavings and scraps, paper, rags and especially oil and grease soaked material.
- Remove all highly volatile materials such as petrol and solvents.
- Shield timber, etc., which cannot be moved.
- Where combustible materials cannot be moved or covered have an assistant stand by with a fire extinguisher.
- Conveyor belts — when welding or burning above conveyor belts cover them with wet bag, bed of sand or a spray of water and have an assistant stand by with a fire extinguisher.
- Deposit electrode stubs in a bucket or container — do not throw them away.

### Turn Off and Drain

When you leave an oxygen welding or cutting torch turn off the oxygen and the acetylene/L.P. gas at the cylinders and bleed the gas from the hoses through the torch. This will avoid any danger of a gas leak if the hose is damaged while you are away.

### Fire Precautions

If specific fire procedures apply to your work area these will govern the emergency steps to be taken in

TYPE OF EXTINGUISHER		TYPE OF FIRE	
		<b>(E)</b> live electrical equipment	<b>A</b> paper wood textiles etc.
			
		<b>HALON (1211) BCF</b> vapourising liquid (umes may be dangerous in confined spaces)	<b>YES</b>  <b>YES</b> limited effectiveness
			
			
			

**ELECTRICAL FIRES – Switch off power or disconnect battery**  
**IN ALL CASES – CALL THE FIRE BRIGADE**

<b>B</b> petrol kerosene paints	<b>B</b> cooking oils fats etc	<b>B</b> motor vehicles	<p><b>CLASSIFICATION</b> Extinguishers shall be classified by letter(s) designating the general class or classes of fire for which the extinguisher has been found to be effective.</p> <p>For the purpose of classification, the following letters apply:</p> <p><b>Class A</b> — fires in ordinary combustible materials such as wood, cloth, paper, rubber and many plastics.</p> <p><b>Class B</b> — Fires in flammable and combustible liquids and greases.</p> <p>Where an extinguishant has been shown to be electrically non-conductive as discharged from a given extinguisher, the extinguisher shall be identified with the marking (E).</p> <p><b>RATINGS</b></p> <p>Fire extinguishers are rated by the Standards Association. The rating indicates the relevant extinguishing potential of the particular extinguisher.</p>
<b>YES</b>	<b>NO</b>	<b>YES</b> engine carburettor etc.	

**ELECTRICAL FIRES – Switch off power or disconnect battery**  
**IN ALL CASES – CALL THE FIRE BRIGADE**

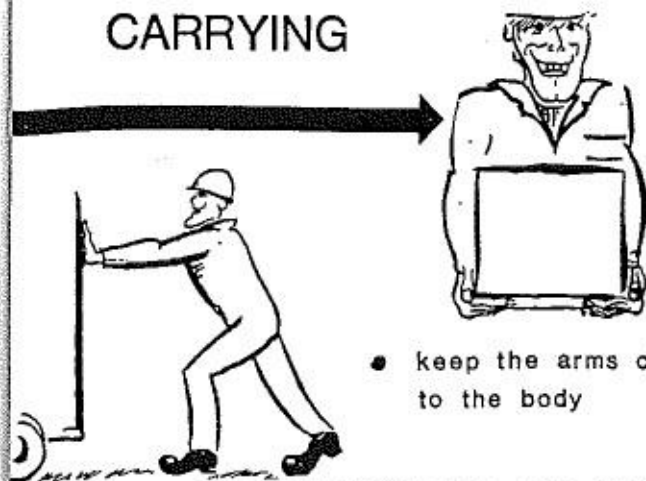
the event of fire. Otherwise an alarm should be raised immediately if a fire is detected. If relevant the local fire brigade should be called. Make yourself familiar with the location of fire extinguishers in your work place, the type of fire they are designed to fight and their methods of operation.

If you use a fire extinguisher inform your foreman/supervisor who will arrange for a replacement.

Fire hydrants, hose boxes and extinguishers must be kept free of obstruction at all times.

- At no time will you try to combat a fire which is in such a position that it will cause you, or other persons close by, personal risk. Do not attempt to control the fire unless it can be dealt with quickly.

## CARRYING



- keep the arms close to the body

- when pushing keep arms straight -- push with the back leg

IF YOU THINK  
IT'S TOO HEAVY  
FOR YOU ALONE  
-- GET HELP



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### MANUAL HANDLING (Lifting by hand)

For greater safety in handling of material and preventing the common "industrial bad back" the following must be observed:

- Get a good footing and never try to lift anything which you consider is too heavy or bulky for you.
- Place feet about shoulder width apart in a good comfortable balanced position.
- Bend at the knees to grasp the load.
- Keep back straight -- not vertical but straight. It should not be arched or bent.
- Take a firm hold on the load with the palms of the hands -- not just the fingers (N.B. -- you need gloves to protect against any sharp protruding objects).
- Keep back as straight as possible -- tucking chin in to "lock" the spine.
- Lift gradually by straightening legs -- let the strong thigh muscles do the work -- not the low back muscles.
- If you think, or, the object is too heavy or bulky, get help -- either from one or more persons or some mechanical lifting device.
- Do not twist the body when lifting, or turn one of your feet. If you have to change direction turn your feet, not your trunk (body).
- Carry the object close to your body (if you can) and watch where you are going.
- When lowering, maintain a good grip and keep the back straight. Watch out for pinching of your fingers.

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### RULES AND REGULATIONS

When large groups of people live or work together, whether in industrial or community life, it has been found best for all to establish reasonable rules for the orderly and safe conduct of their affairs. There are certain standards of honesty and accepted good behaviour which Grintech Ltd assumes you will observe.

However, for the minority few exceptions found in any large group of people, Grintech Ltd finds it necessary to have in effect and establish from time to time certain rules of conduct. These are designed to ensure the orderly and efficient conduct of the business, to maintain good order and discipline on construction sites, to assure the safety of both employees and company property and to comply with all public laws.

Any employee will be subject to dismissal if he breaches any of the rules set out in this book or commits any of the following acts:

- Falsification of any reports, communications or records, including employment application, safety, personnel or construction records.
- Obtaining material, tools or supplies at store or warehouse facilities, or other assigned places on fraudulent orders or by misrepresentation.
- Stealing or malicious mischief, such as destroying, hiding or theft of any property of any other employee or of the company.
- Refusal to carry out lawful directions or the use of abusive or threatening language or action.
- Violation of any public law.

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- Wanton neglect or carelessness resulting in damage to equipment, plant or property, wilful neglect in care, or use of Company property, defacing or marking buildings, locker rooms or construction plant property with chalk, paint, felt pens or any other substance.
- Site immoral conduct or indecency, creating or contributing to unhygienic conditions, or the harbouring of any disease which can endanger fellow employees.
- Falsifying, covering up or refusing to give truthful, factual information or testimony when accidents are being investigated.
- Unwarranted failure to stay on the job or assigned place of work during working hours (including any authorised overtime hours).
- Possessing alcohol (or narcotics, except those legally prescribed by your medical practitioner) on construction sites, or bringing alcohol or illegal narcotics onto construction sites.
- Reporting to your place of work in an intoxicated condition or under the influence of illegal narcotics.
- Carrying concealed weapons of any description, or that which could be misunderstood as a concealed weapon. Carrying firearms onto the site.
- Tampering with or unauthorised use of fire extinguishers or any fire fighting or protection equipment.
- Sleeping on the job.
- Gambling on the job.
- Fighting or being involved in horseplay on the job.

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## GENERAL SAFETY RULES

- Follow instructions; take no chances; if you don't know ask for safe job instructions from your foreman/supervisor.
- Report immediately to your foreman/supervisor any conditions or practices you think might cause injury to employees or damage to property or equipment.
- Put everything you use or handle in its proper place. Disorder causes injury and wastes time, energy and material. Keep your work area clean and orderly.
- Use the right tools and equipment for the job; use them in a safe manner.
- Whenever you or the equipment you operate are involved in any accident that results in personal injury or damage to property regardless of how minor, you must report it immediately to your foreman/supervisor.
- Use, adjust, alter and repair equipment only when authorised.
- Wear proper eye protection at all times whenever your eyes are exposed to danger. Use all other prescribed equipment regularly. Wear safe foot protection and safe clothing. Keep them in good condition.
- Horseplay — fooling around — is dangerous practice at any time, but even more so on a construction site, and will not be tolerated. A practical joke can cause you or someone else a lifetime of sorrow.

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- Offering or receiving money or other valuable consideration in exchange for unlawful duties.
- Smoking or the use of naked lights (cigarette lighters, matches, candles, oxy torches, etc.) where such practice is prohibited and clearly defined by signs giving warning to the dangers involved.
- Disorderly conduct on the construction site.
- Violation of any established safety rules.
- Gross neglect of responsible duty.
- Repeatedly reporting late for work or leaving work before knock off time.

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- When lifting, bend your knees, grasp the load firmly, then raise the load steadily and carefully, keeping your back as straight as possible. Get help with any load which you know is too heavy or too bulky — we do not expect any adult person over the age of 18 years to try and lift more than that which they are physically capable of.
- Obey all specific rules, signs and instructions — these are made and placed for your safety and continued well being.

## RESPONSIBILITY

Graintech Limited accepts certain responsibilities with regard to safety management. However, it is emphasised that everyone on the construction sites is responsible for safety, particularly his own, and the machinery and equipment around him. It is a co-operative action that pays mutual dividends. Each employee has a responsibility to become informed and adopt fully the safe operating procedures implemented by Graintech Ltd. In addition he is expected to use the protective equipment and devices provided whether instructed or not. It is a condition of employment that an employee takes an active interest in his own safety and the safety of his workmates as well as careful attention to all property and equipment irrespective of its owner.

## PERSONAL HYGIENE

Employees should:

- Wash and dry hands thoroughly before eating.

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- Keep toilets and washrooms clean. Where unhygienic and unsanitary use is made of toilets, the possibilities of infectious hepatitis is very possible, therefore it is essential that all ablution areas be kept as clean as is physically possible and no foul use of the ablutions is made by any employee on site.
- Skin diseases and other irritations, such as dermatitis and tinea of the foot or crotch, can be prevented by care with personal hygiene, both before commencing work and after washing.
- Dermatitis of the hands and arms can often be prevented by the use of barrier creams, before handling any oils or chemicals. In addition, thorough drying of the hands will assist in preventing sores and irritations. When hands become particularly dirty (through grease, oil, paint, etc.) an industrial hand cleaner should be used before using soap and water.
- Abrasives and industrial solvents should be avoided. Tinea of the foot can be infectious, particularly where large groups utilise the washing facilities. In hot and humid conditions foot powder such as "Tinederm" should be used and living fibre — woollen socks and cotton underwear worn instead of synthetics such as nylon or rayon. Tinea can be prevented by thoroughly drying the area between the toes and legs and then apply talc powder or "Tinederm" powder.

## REMEMBER SAFETY IS YOUR RESPONSIBILITY

You must realise that there are many dangerous situations that can arise in the work environment. Some easily recognisable, others lie in wait for you — the unwary. Loose ground, slippery or rough surfaces underfoot, projecting nails, standing or riding improperly on a moving vehicle and poor visibility are some examples. You must always be vigilant and assess the situation and you must advise your mates to look for hidden hazards and be equally vigilant so that they too, will avoid injuries to themselves and not cause injuries to you and other workmates.

## AS A REMINDER

Accidents do not just happen.  
In each accident there is a cause.  
Behind each cause there is a hazard.  
Use this handbook to look for the hazard.  
Which can exist — then

## TO PREVENT ACCIDENTS REMOVE OR ISOLATE THE HAZARD

## THROUGH YOUR FOREMAN OR SUPERVISOR