


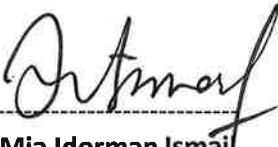



DIMENSION BID

WIRELINE INTERVENTION | PERFORATION SERVICES

MATERIAL HANDLING, LIFTING AND STORAGE DBSB-HSE-06

ORIGINAL ISSUE : 25/06/2012
REVISION NUMBER : 02
REVISION DATE : 01/12/2014

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AMENDMENT RECORDS

This sheet will record all amendment of this Procedure. All particulars of the amendment shall be stated clearly. The HSE Department of Dimension Bid (M) Sdn. Bhd. (DBSB) shall be responsible for the maintenance and update of this record sheet.

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HSE-MS	MATERIAL HANDLING,LIFTING AND STORAGE General Safety	DBSB-HSE-06-01	
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Subject **General Safety**

Problem Definition To gain insight into the injury problem, the following practices should be considered:

- 1) Can the job be engineered to eliminate manual handling?
- 2) Can material be conveyed or moved manually or mechanically?
- 3) In what way do the materials being handled cause injury?
- 4) Can employees be given handling aids that will make their job safer?
- 5) Will PPE help to prevent injury?

Material handling Handling of material accounts for about 25% of all occupational injuries.

Storage Facilities Temporary and permanent storage should be neat and orderly to eliminate hazards:

- 1) Rigid containers should be neatly stacked within regulated height restrictions.
- 2) Barrels should be symmetrical and stable, preferably in shape of pyramid.
- 3) Lumber should be kept indoors except if needed immediately.
- 4) Bagged materials should be stored cross-tied with mouths of bags toward the inside of pile.
- 5) All tools and equipment shall be stored in the containers.

Hazardous Materials Hazardous material present in a special handling and storage problems. For liquid chemicals including oils or flammable materials which are heavily used, is better to install pipeline outside storage tanks and stored in specific designated area with the safety precaution taken.

Refer to DBSB-HSE-06-02 (Drum Handling) for details

Refer to OSHA Regulation 1997 (Classification, Packaging & Labeling of Hazardous Chemical) for details.

Portable containers When it is necessary to use portable containers such as drums/barrels/carboys/etc., certain precaution are necessary:

- 1) Clean up spillage instruction/plans.
- 2) Floors for corrosive or flammable material storage area should be made from concrete to decrease solubility or fire resistant materials.
- 3) Storage area must be well ventilated.
- 4) Full drums must be stacked in rack for easy access and inspection.
- 5) The safe way to handle drums is to use mechanical lifting equipment.
- 6) When transporting on pallet ensure to prevent leaks.
- 7) Material should be stored in separated area.
- 8) Highly toxic/flammable material should be kept in container of

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distinctive shape and labeled.

- 9) Worker must use suitable PPE.

Refer to DBSB-HSE-06-02 (Drum Handling) for details

Hoist

Inspection of hoist with special attention to load hooks / slings / ropes / break / etc. is required:

- 1) Overhead support must exceed hoist capacity.
- 2) Slings capacity must exceed hoist capacity.
- 3) Safe Working Load (SWL) should be clearly display and complied.
- 4) Hoist must never be used to transport people unless specifically designed to do so.

Refer to DBSB-HSE-06-03 (Manual Handling & Lifting) for details

Refer to DBSB-HSE-06-04 (Mechanical Handling & Lifting - General Guidelines) for details

Refer to DBSB-HSE-06-05 (Mechanical Handling & Lifting – Forklift) for details

Refer to DBSB-HSE-06-06 (Mechanical Handling & Lifting – Crane) for details

Refer to DBSB-HSE-06-07 (Mechanical Handling & Lifting –Taglines) for details

Refer to DBSB-HSE-06-08 (Mechanical Handling & Lifting - Chain Blocks) for details

HSE-MS	MATERIAL HANDLING,LIFTING AND STORAGE Drum Handling	DBSB-HSE-06-02	
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Subject **Drum Handling**

Introduction Drums are normally filled with liquids. There are 2 types of drums which are metal and plastic drums.
It come in various shape and sizes, the shape is more or less the same and require similar nature of handling.

Storage temperature Under hot condition, all material expands. Liquid in the drum would also expand if heated or left under the sun.

Expansion may cause the drum to over –pressure and bulge. This resulting damage and weaken the drum and accelerate corrosion.

When the temperatures drop, a vacuum will be created inside the drum. If the drum being left standing, the chances is that it would collect water on the top. Water can be vacuumed into the drum under these circumstances and contaminated the drum content.

Lie down or cover steel drum if they have to be stored in open areas. Plastic drums can be left standing.

Plastic drums are normally not strong enough to be stacked horizontally. Never put plastic drum on seats designed for metal drum.

Stacking Drum can only be stacked safely in a lay down style if a correct method is used.

Use proper drum stacking racks. If drums are intended to be used as is and where is basis, only 2 layers is allowed to be stacked.

Drum lifting Drum can only be lifted in following manners:

- 1) Putting drums in cargo basket.
- 2) Individually, using a proper synthetic canvas sling specially designed or suitable for drum lifting.
- 3) Individually, using drum lifting clamps.
- 4) On pallets using forklift.

Manual lifting An average of 45 gallon (204.6 liter) drum of liquid will weight between 350 lbs (158.8 kg) to 500 lbs (226.8 kg).

This weight is too great for manual lifting.

Drum truck Dollies or drum truck which is specially designed for moving drum must be used to move or place drums.

Open top drum Open top drum can only be used as storage containers.

Cut drum shall not be lifted directly, but placed in cargo basket or pallet and fully secured.

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Drip pan

Drip pan are necessary for drums that being used as a day tank or as a temporary supply tank.

Put the drip pan at a place where the contents are most likely to drip.

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Subject **Manual handling & lifting**

The importance of posture Poor posture during manual handling introduces the additional risk of loss of control of the load and a sudden, unpredictable increase in physical stress.

The risk of injury is increased if the feet and hands are not well placed to transmit forces efficiently between the floor and the load.

An example of this is when the body weight is forward on the toes, the heels are off the ground and the feet are too close together.

Task involve twisting the trunk Stress on the lower back is increase significantly if twisted trunk postures are adopted.

Still worse is to twist while supporting load.

Stooping Stooping can also increase the stress on the lower back. This happens whether the handler stoops by bending the back or by leaning forward with the back straight.

In each case, the trunk is thrown forward and its weight is added to the load being handled.

Reaching upward Reaching upward places additional stresses on the arms and back. Control of the load becomes more difficult and, because the arms are extended, they are more prone to injury.

The effect of combination risk factor Individual capability can be reduced substantially if twisting is combined with stooping or stretching. Such combinations should be avoided wherever possible, especially since their effect on the individual capability can be worse than a simple addition of their individual effects might suggest.

A requirement to position of the load with precision can also add to the risk of injury.

Excessive lifting or lowering distances The distance through which load is lifted and lowered can also be important.

Large distances are considerably more demanding physically than small distance.

Moreover lifting or lowering through a large distance is likely to necessitate a change of grip part way, further increasing the risk of injury.

Lifts commencing at floor level should be avoided where possible, where unavoidable, they should preferably terminate no higher than waist height.

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Excessive carrying distance

In general, if a load can safely lifted and lowered, it can also be carried without endangering the back.

If a load is carried for an excessive distance, physical stresses are prolonged leading to fatigue and increase risk of injury.

As a guide, if load is carried further than 10 meters, then the physical demands of carrying the load will tend to predominate over those of lifting and lowering and individual capability will be reduced.

Excessive pushing or pulling

The pushing and pulling of a load may be injurious to the handler. The risk of injury is increased if pushing or pulling is carried out with hands much below knuckle height or above shoulder height.

HSE-MS	MATERIAL HANDLING,LIFTING AND STORAGE Mechanical Handling/Lifting - Forklift	DBSB-HSE-06-04	
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Subject Forklift Safe Guide

Introduction Forklift is commonly used by DB operation in warehouse or operation base. Care and precaution must be taken so that the forklift will be operated by the forklift driver in a manner that would not cause injury to personnel or damage to property.

Authorized personnel Only authorized personnel are allowed to operate the forklift. The authorized personnel is the forklift owner or any selected personnel authorized by the Site Supervisor, Warehouse Manager and / or Operation Manager.

If a third party forklift is use together with the forklift driver, the operation must be monitored by DB personnel to ensure there will be no wrong doing or unsafe act done by the driver. The pathway must be cleared from any personnel or equipment to avoid any incident from happening.

Driving rules The same rules for driving or operating forklift, in terms of which side to drive on, rules of the right-of-way and many more, must be exactly the same as the rules governing vehicles traffic on public roadways.

Weight of load It is very important that the weight of the load to be carried by the forklift be assess before the lift.

The forklift shall not carry more than it designed capacity; otherwise it would become unstable and will result in incident of injury or damage of property.

Load stability The driver and the DB personnel or supervisor must ensure that the load is stable before it being lifted.

If the materials need to be stacked, ensure that it is checked for stability before moving it.

Passenger on forklift Forklift shall not carry passenger and this is totally not permitted. Working or standing on the forks is strictly not allowed.

Speed limit Forklift is not designed to drive fast. The speed shall always be sensible by considering nature of load, road condition and work area.

Always observe the speed limit.

Lifting personnel Personnel must never be lifted by a forklift by simply having people standing on a pallet or the forks. People may be lifted by forklift provided a proper working basket or any stable secured platform attached to the forklift.

Line of sight Line of sight shall be maintained at all time. In cases whereby a load that blocking the line of sight has to be carried, extra precaution need to be taken.

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An assistant or signal man will be required to help in observing the path.

**Loading and
unloading**

Only one job at one time. Do not lower or lift while moving. Load and unload only when the forklift is fully stopped. Always the load is always stable.

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Subject **Crane Safe Guide**

General All lifting operations, no matter how simple or routine, need to be planned by a competent person who has an understanding of the principles involved, the equipment to be used, the nature of the load, the environment in which the lift is to be made and any other factors which will affect the operation. The person planning the lift should be appropriately trained and have the requisite knowledge and expertise of planning lifting operations.

In all cases, supervision is necessary to ensure that the lifting operation is being carried out safely and to monitor the need to amend procedures. The level of supervision will depend on the nature and extent of the operation, the experience and competence of the operatives and the risk involved. Basic repetitive lifting should be monitored to ensure operatives adhere to the work plan and do not adopt bad, or unapproved practices. It may also be necessary to review the procedures from time to time.

Operatives performing routine lifts should be similarly monitored to ensure that they maintain a safe system of work. Refresher training should also be considered to ensure that they remain up to date, and this is essential if new equipment or safety procedures are introduced.

Information Required to Plan a Lifting Operation There are four important matters to consider when planning a lifting operation:

The Load The initial stage of planning any lifting operation will be to establish the details of the load. In particular the following questions should be considered:

- What constitute the load?
- Is the load one piece or likely to fall apart? Are there any parts of the load that need to be removed or secured before the lift is commenced?
- Does the load have built in lift points? If not, does it lend itself to being slung in a choke or basket hitch? Are there any features that can be utilized, e.g. tapped holes to connect the lifting gear to or is it necessary to attach the lifting gear by other means?
- Can the load be lifted using standard equipments or is special lifting equipments necessary?
- Is the load strong enough to support itself

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from the lifting/sliding points or will it need support to be lifted?

- If it has multi-lift points, is the load capable of withstanding the crushing effect of a multi-leg slings or is it necessary to use a spreader to ensure vertical loading conditions?
- If it is to be lifted using a grab with a scissor or gripping action is it liable to crush?
- Does the load present any special problem which may affect the choice of lifting gear or the procedures to be adopted, eg. Is it hot, very cold, and corrosive, is it delicate, have a surface which might be damaged by the lifting gear, or are there sharp edges which might damage the lifting gear?
- What is the weight of the load? (If the weight is in doubt, it must be calculated. It is essential that this is not under estimated – ensure an accurate estimation is made.)
- Where is the center of gravity (C of G)?
- Is the load fixed down or free to be lifted?
- If it is fixed down, will the load be stable when the fixing is removed/released or will it need supporting?
- If the load is free, will it need additional force initially to overcome adhesion, eg. due to seals or accumulated oil/grease deposits?

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The Task to be Performed

It is essential that the full requirements of the lift are established and understood. In particular the following questions need to be considered:

- How high the load to be lifted? (Loads should not be raised to a greater height than is essential to complete the intended operation.)
- If the load is only to be raised and suspended, what arrangements are to be made to ensure safety and security of the load? (Load should not be suspended for longer period than is essential. Suspended loads should not be left unattended and should be guarded to prevent any person from approaching or walking under the load.)
- Is the load to be moved or raised? If so, in what direction(s) or over what distance?
- Is the load path included lifting over live operating process equipment? (This is not allowed unless during process shutdown or with written approval from the Production Operation Manager.)
- Are there personnel in the area over which the load is to be moved? (Measures will be necessary to evacuate the immediate area or take other steps to ensure

The Lifting Appliances

- Is there a suitable lifting appliance which can be positioned above the C of G of the load? (To be suitable it must, in particular, be of sufficient capacity and not so fast to make it difficult to control and position the load and it must permit any sideways movement required.)
- If there isn't a suitable lifting appliance, is there a suitable lifting point from which a lifting machine can be attached? (To be suitable it must, be of sufficient strength bearing in mind any other loads imposed on it, be vertically above the C of G of the load and permit such sideways movement as is required.)

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- If there isn't either a suitable lifting appliance of lifting point, is there access for a portable structure?
- The Site**
- Is there a clear and safe path to the landing site or are there exposed persons or obstructions in the way?
 - Are there any special environmental problems e.g. very hot/cold or wet, the presence of fumes, solvents, acids or other chemicals?
 - Is the landing site level and strong enough to take the load? (Watch out for excessive floor loading, soft ground and hidden weak spots such as ducts and drains.)
 - Does the load have to be turned or orientated before landing?
 - Has the landing site been prepared or do you need packing, supports, tools etc.?
 - Does the weather condition allowed the lifting activities to be done?

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Checking the Lifting is Fit to Use

Before assembly, the operative should check that the lifting tackle and accessories are fit to use. In particular a check should be made for:

- Clear identification and Safe Working Load (SWL) marking,
- Freedom from damage, deformation and obvious sign of wears,
- Compatibility with others items of lifting tackle, accessories and lifting appliance.

Assembly of the Slings Arrangement

In order to ensure that the load will be balanced when lifting, the hook of the lifting appliance should be placed vertically above the center of gravity.

The lifting tackle should then be attached to the load and the lifting machine, ensure all pieces are free to align correctly.

The hook of the lifting appliance should then be raised so as to take up the slack and a check made to ensure that the gear is correctly positioned and that the hook of the lifting appliance remains vertically over the center of gravity of the load.

Operatives must be aware of the safety procedures to be adopted when taking up the slack, eg. Keep fingers, toes etc clear to avoid crushing and entrapment.

Crane signals

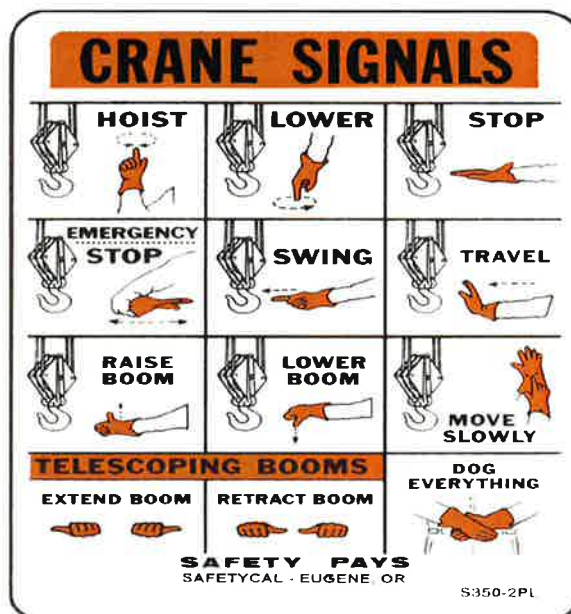


Figure No.2 Crane Signals

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Subject **Mechanical Handling/Tag - Line**

General Lifting appliance operator shall assess and approve the use of tag line. Tag lines should not be used for lifting operations to and from vessels. If, however, it is necessary to use tag lines, this shall be agreed between the vessel and lifting appliance operator, and particular care and attention shall be exercised.

The end of the rope shall be secured against fraying, but knots shall not be used at the free end of the rope.

For internal movement of load, tag line can be used. Tag line should be used to keep control of a load, not to gain control over a load.

If several tag lines are necessary, personnel who are not deck operators can be involved in the operation. JSA shall then be carried out, and the personnel shall have undergone the necessary training related to the use of tag lines.

Tag Line requirement The load suspended by the crane in a static (non-moving) condition swings or is likely to swing back and forth (due to wind or other external factors) creating a control hazard.

- The movement of the crane or boom causes or is likely to cause the load to swing out of control, creating a hazardous condition.
- The load rotates, has rotated, or is likely to rotate in such a manner as to be out of control, creating a hazardous condition.

Exemption of tagline Tag lines are not required when:

- The suspended load can be expected to remain still when in a static (non-moving) condition and does not swing or rotate in a hazardous manner.
- The movement of the crane or boom cannot be expected to cause the load to swing or rotate in an uncontrolled manner that may create a hazard.
- The operator is in control of the movement of the load and a hazardous condition is not created.

Precaution when handling the load using the tagline When loading with the tagline. Some precautionary must be considered are as follows:

- A. Personal Protective Equipment
 - Wear appropriate hand gloves.
- B. Always alert to the surrounding
 - Never loop the line around hand arm and body. It will cause to be dragged along with the load.

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- C. Be sure if guiding a load with a safety tag line that the travel path is clear and safe *before* the load is suspended.

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Subject **Chain Block Safety Guide**

General A tackle which uses an endless chain rather than a rope, often operated from an overhead track to lift heavy weights especially in workshops. Also known as chain fall; chain hoist. (See figure No.03 Chain Block)



. Figure No. 03 Chain Block

Selecting the Correct Block Hand chain blocks are available in a range of capacities and with various types of suspension. Select the block to be used and plan the lift taking the following into account:

- A. Type of suspension - hook, trolley etc.
- B. Capacity, class of use and range of lift.
- C. Chain blocks are designed for vertical lifting only.

Storing and Handling Hand Chain Blocks Never return damaged blocks to storage. They should be dry, clean and protected from corrosion.

Store blocks by their top suspension with chains clear of the ground, the chains may be wrapped together to facilitate this. Non-portable blocks stored outdoors should be covered and protected from corrosion.

Blocks should not be dropped, thrown or dragged across the floor.

Never galvanize or subject the chain, or other load bearing parts, to any other plating process without the express approval of the supplier.

Installing the Chain Block Follow any specific installation instructions issued by the supplier and the general requirements given overleaf. Try the block to ensure that it operates correctly and that the brake is effective.

Ensure the chain is not twisted; it must move freely. The bottom hook must reach the lowest position required without the chain running fully out.

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Using Hand Chain Blocks Safely

- Do not attempt lifting operations unless you understand the use of the equipment and the slinging procedures.
- Do not use defective blocks, slings or accessories and never use the block chain as a sling.
- Check the slinging arrangement, that the block is safely rigged and that chain are not twisted, particularly in the case of multi fall blocks.
- Check the load is free to move before commencing and that the landing area has been prepared.
- Raise the load just clear, and then halt the lift to check the integrity of the block, slinging method etc.
- Check the travel path is clear and that you have a clear view so as to avoid accidental hook engagement or collision. Follow any particular site safety rules applicable to the movement of suspended loads.
- Keep fingers, toes etc. clear when lowering loads.

In-service Inspection and Maintenance of chain block

- Follow any specific maintenance instructions issued by the supplier but in particular keep load chains lubricated and check the operation of the brake. Brakes must be kept free of oil, grease etc. Never replace the load chain with a longer one without consulting the supplier.
- Regularly inspect the block and, in the event of the following defects, refer the block to a Competent Person for thorough examination:
 - A. Wear;
 - B. Damage to trolley, hooks and fittings;
 - C. Damaged or distorted slack end anchor;
 - D. Chains worn, bent, notched, stretched, corroded, do not hang freely, twisted or jump;
 - E. Load slips or will not lift; damaged block casing;
 - F. Illegible markings.