

Telehandlers

I am an instructor for operating telehandlers and several other construction machines. Below are some signs I hang up when I hold safety/instructional seminars.

Operators can kill a lot of people in a short period of time, like one second, one wrong move, one second that you were thinking of something else and you have 4 dead carpenters that won't go home tonight. Bob Johnston

ACCIDENTS DON'T JUST HAPPEN. INJURIES AND DEATHS ARE CAUSED BY SOMEONE or SOMETHING SOMEONE DID WRONG.

Bob Johnston, May 1 988

Teaching Safety is nothing more than teaching people the correct procedure of how to do their job and operate equipment.

I, nor any other instructor, can keep safe working conditions for you on a job; that is your job and can only be done by you, the construction workers. Bob Johnston

I have been running telehandlers for over 40 years and I am still learning. We had some real dinosaurs in the 1960's. A crane and a telehandler are two machines that you had better pay attention to even if you are only an onlooker. They can kill instantly.



I am using this Caterpillar TH62 telehandler to set a roof that we built on the ground.

This machine is better known to most as a skylift, skyhook, boomlift, liftall, Terex skytrack, skyforks, extension lift, forklift and probably many more. Manufacturers call it a telehandler and that is what we operators call it.

When I question a carpenter about using a telehandler (which 99.9% tell me they were born running one) and they call it one of these names, I tell them immediately to stay off and away from it, because if they don't even know the name of it, it usually means they have not read the owner or operators manual and it would be a miracle if they know how to operate it, as it is suppose to operated.

Get on line and contact Cat.com They have some dvd's and online brochures and instructions about the operation of this and other machines. I have trained telehandler operators and I usually have one out of 10 that will become a safe operator, the rest are just cowboys with a piece of paper, and these are the ones to steer clear of.

54 deaths and over 5000 injuries operating telehandlers last year, this is outrageous, and most are from miscommunications, hand signals and horseplay. Today you have to be certified to run one legally.

*It should be a law that every carpenter that lifts a running saw out of a cut be fired immediately. It's not and it won't be. **Safety is taught and preached by most companies, signs all over the job, but it is rarely enforced.**

You absolutely have got to give every tool and piece of machinery 100% of your attention when operating it.

I don't think the rules are strict enough, I think that you should be made to extend a boom to 62' at 60° and see what it feels like when you touch the joy stick and the fork mast moves 2'. Most people haven't done this and the first time they do, they will usually have someone in a basket and the boom jumps 2' and the worker will be on the ground. I have many more certification procedures I would institute in the certification process. The certification process should cover every move you can make with a telehandler, like the ones I am about to give you.

When you learn the proper procedures of operating a telehandler they should teach you the proper hand signals and explain to you that if you have more than one person giving you signals, **stop** the machine and go tell the five people giving you a signal that you are not going to watch but only **one person**, period. Choose someone you trust or someone who is an operator.

I have seen seven or eight people signaling an operator at one time, most

of the time they are all using different signals and usually none are correct.

These following 9 signals are the most important and they are correct. For these nine operations I will safely say there are probably over 50 variations of these International Signals. These are the ones taught and used by the Corp.



This signal is for a crane or a telehandler. **BOOM OUT** Extend the boom out, make it longer. Never extend the boom unless you know that your telehandler/crane is level in both directions.



This is the signal for **BOOM IN**. This is for cranes or telehandlers.

You can buy some orange florescent signal gloves and some have white thumbs, very good tools when it is overcast and you are 80' away from the operator, or paint some gloves.



One handed **BOOM OUT** is for when you are holding a flag or you don't have both hands to make the signal. Thumb is pointed away from your body and you move your hand in and out.



This picture is the one handed **BOOM IN** used for the same reason as a one handed boom out. Thumb is pointed towards the body. I have actually seen this reversed; (Terex signals) they are wrong according to 18 other manufacturers and the International Signal instructions.

Hoist up on a crane is turning your index finger in a circle pointing up. **Hoist down** is the opposite, turning your index finger in a circle pointing down.



This signal is **FORKS DOWN**, fingers tilted down the same as what you want the operator to do with the forks. I've found everyone understands this one.



FORKS UP is this signal. This only makes sense that the hand is in the same position as the fork/bucket position you want. These signals are also used for loaders.

I have seen a hundred different hand signals for forklifts, cranes and telehandlers and most of them are so crazy, especially the one that most do and that is rock their hand with a

thumb and little finger stuck out for forks up **OR** down, they can't tell you which is which. They have no idea what they are doing and neither do you. That is the one that gets people injured and killed.

Most injuries related to a telehandler are caused using the forks!

Most deaths related to a telehandler are caused by miscommunications, horseplay and ignorance of the correct procedures.

Why not use a signal that even a green operator or someone who has never ran a forklift or telehandler can understand.

I saw about 7 different signals online for signaling the operator to adjust the forks. What gets people injured and killed is using different signals that are made up on the job. **Tilted hand (full hand or two fingers)** is, by far, the most simple and most clear for everyone.



This is for **BOOM DOWN** move your forearm up and down 4".



This is for **BOOM UP** movement, forearm up and down 4".



This is the most important one. STOP, Apply foot brake, then, don't move; stop everything; don't move one finger, eyelid or foot. **STOP!** Don't forget this one.

All of these signals and safe procedures apply to a forklift also.

Now I am going to give you some instances that have happened and I hope and pray they don't happen to anyone else. I have been onsite when things like this happened and it is nothing you ever want to see.

Ignorant operators, stupid hand signals and horse play have gotten a lot of people killed. I've seen carpenters riding on a wobbly fork, dumb people do dumb things.

Every time you get on a forklift or any machine, fasten your seat belt, and believe it or not, you need to have a hardhat on and safety glasses. Gravel, dirt and clods hang onto pallets and could come through the mesh on the top of your machine and blind, kill or injure you. Think about the point of a spud wrench coming at your head 50 miles an hour. Hardhat: necessity.

A hardhat, safety glasses, band cutters, safety harness, florescent paint/tape, safety colored vests/belts and seatbelt should always be with any forklift or telehandler.

A telehandler operator got on his machine and didn't know to "cradle the

load", he took off and was running 25 miles an hour across an open lot and the load (pallet of material) vibrated off the forks and wrecked the telehandler driver, forks and mast.

Any time you grab a load with a forklift or telehandler you need to cradle the load. From the level position you tilt your forks back (up) about 6 or 8 degrees. Every time. I have seen many telehandlers and forklifts where that the check valve is worn and slowly bleeds off and lets the forks/boom go down. If you see someone traveling and their forks are tilted down, good chance is that they don't know it, stop them if you can. Repair any fault on any machine, better now than later.

You need to get a good visual picture of your load when you cradle it and remember it. If it moves, you should be able to see it.

***It is your job, as a signalman/ground guide to stay visible to the operator at all times.**

Next one: An operator gets on his machine and attaches a basket (cage, work platform, stage) and he gets the four carpenters in it, lifts them up 24' to the roof of a two story house and in one second the boom shifts 4' to the right and he loses two of the carpenters (no safety belts) out of the basket and they fall to their death. His right front tire blew out. Check the tires every time you go around a machine, if they are bad, (split) replace them or don't use the machine.

If you have the 25-150 thousand dollars to buy a telehandler or forklift, spend 1000 dollars more and get the

tires foamed, better yet get some of the new "no flat" tires.

Check all of your tires (especially on rented equipment) daily or every time you walk around your machine. Everyone who gets in a basket to go up needs to have a safety belt attached to the mast or basket.

It should be a mandatory law of building and designing telehandlers that every one of them has hydraulic outriggers on them. And for the owners of telehandlers there are several companies that sell outrigger kits that you can attach to your telehandler. On top of preventing blowouts it will make the telehandler more stable.

Next: An operator loaded a load of trash and took it to the dumpster and when he got there decided to crush the trash in the dumpster. With the boom extended about 10' he began crushing, he hit the dumpster wall with his boom cylinder, broke a hose and he and 2 others got a bath of 180 degree hydraulic oil. Burns are the worst pain you will ever feel. The healing (if you live) is worst.

A telehandler should not be used for anything except what it was made to be used for. If you need to crush trash in a dumpster, never extend the boom to do this. Never pull something using the boom, that is what you tow hooks are for. Never push a vehicle with your mast or forks; you could hit a gas tank.

Next: An operator left his forks in the air about 6" and a laborer walked by, hit one of the forks and broke his ankle and then his arm when he fell.

Any time you kill your machine leave the forks on the ground, solid. I have seen them left at eye level and this is really

dangerous. Another thing is that it will help your machine to keep from rolling off. Always park on level ground if you can. Apply the emergency brake, and or chock blocks. Don't drive over dirt mounds sideways. Never move a forklift or telehandler with the forks or boom up high. Keep them as low as possible. I also spray my forks with orange florescent when I'm traveling.

Note: If you see the number 433 on a telehandler, this means it is a 4000# lift at the mast and will extend to 33'.

You see a 1255, it is a 12000# lift, and boom extends 55'.

You can't go by this all the time, European telehandlers go by 6k and so on. Ask the dealer about ratings.

Next: An operator is sitting in his seat, waiting for a signal and all of a sudden he is showered with a bucket of frame bolts, spud wrench and other tools, bruising him severely, no broken bones.

If you have a grate on the top of your cab that has bars on 3" centers, get you some 1" expanded metal and cover the top of your cage, and wear your hardhat.

Last one: An operator lifts and cradles a 2-3 100# pallets of cinder blocks using an 842 telehandler. He raises the load to about 30° then because he can't get very close to the stage area he starts his boom extension and gets out to about 32'; his load is 12' from the ground then all of a sudden the boom/load of block goes to the ground, rear wheels come up and he is staring at the ground.

This was the first time he had tried to set 2 pallets of block and he did not weigh his load to get an extension measurement. The other is that he felt a slight movement in the rear of his

telehandler and did nothing about it. He should have stopped immediately and retracted. He didn't. No one hurt and maybe a good lesson learned, maybe not.

If you ever get in this situation, and more than likely you will if you don't listen to me and weigh your loads (takes one minute for me to weigh a load) the first thing not to do is to jump, as most green operators do, just stop and kick your brain in gear, then very slowly lower the load, very slowly. Your machine will come back to rest. This should tell you something else, never stand under a mast or boom. Empty or loaded.

When I am training I purposely let the students lift a load and extend the boom (level) until the rear wheels come off the ground. Good lesson...



This is a Cat TH1255 Telehandler. 12,000# lift, 54½' extension

Your operator's manual should tell you this, but I am going to tell you some things it won't tell you.

The 12,000# lift capacity is at the mast only. Boom has to be in the fully closed position to lift the maximum lift rating. I have a GMC 1500 truck, 5800#, and this machine will lift two of these trucks at the mast only, no extension, period.

The problem is that some operators think they are going to lift these trucks, extend the boom to whatever length they want and set the load. Wrong, and sometimes dead wrong.



This is the results of over extension. Think of you in that cab, I've been there.

If you lift the maximum load of a machine then start extending the boom you can get into deep trouble in a matter of seconds. You can wreck yourself and the machine. It is called leverage, and evaluated with common sense. Common sense is a tool you want to carry with you all the time. When you lift a load and start to extend the boom you are adding leverage to the boom and the further you go out with the load, you increase the tension on the boom, boom pivot and frame. You get your boom extended and start to raise the load and all of a sudden the load goes down, your rear wheels go up into the air. You will never forget this when it happens to you. I haven't and never will. Your body is an amazing piece of work. God uses no second hand parts when he creates us.

When I was 20 years old, working for Brown and Root, I learned how to run a motor grader and the operator who

taught me said "you run this blade with your butt". He was right. When you are running a blade and the blade runs over a small 1" bump/drop in the road you can feel the change. You blade operators know exactly what I am talking about and you learn immediately to automatically adjust your levers. I sometimes stop the blade and backup and creep through this bump/drop and plane it with this cut or fill I am doing. Same thing applies to this telehandler. When you extend a large load (with the boom level) you will feel the slightest movement of the machine (frame). You will feel the movement of the machine raising the rear end just a ¼". You need to do this to know what I am talking about. When you are extending a load while operating a telehandler and you feel this slight movement of the frame, stop the extension immediately. You will automatically learn the reverse the procedure and bring it back in or let the boom down for a safe return operation. You need to learn and practice this.

You can increase the extension as you raise the boom, but if I was you I would not do this until you have few hundred hours under your belt as an operator.

Now I am going to give you some procedures you won't find in your operators manual, at least I have never seen it, these could save your life and others around you.

When you cradle a heavy load, level your boom level and start extending the boom out until you feel the slightest movement of the telehandler frame, and don't worry, you will feel it. This is called weighing a load.

Then stop the extension, read the extension markings on your boom and bring it in about 3', and this is your maximum extension at level with the load you have.

Now, read carefully, when you raise this load at your maximum extension, you are decreasing the tension and increasing the compression on the boom and the load on the front of the machine. You are increasing the load on the rear of the machine.

If you could raise it to 90° (max is about 60°) you would have equal pressure (total compression, no tension) on the boom.

Here is the catch, very few operators realize this. When you raise a load you increase the tilt (sideways, listing) leverage of the boom. If your machine is not dead level (sideways) you're unlevel frame will add leverage to the boom/pivot. Then add a 30 mph wind and it usually ends up turning the machine over on its side with you in it. If your boom is in, the wind won't have much of an effect, but if you're extended 30' you are probably in a lot of trouble and you are probably going to turn it over.

Some machines have listing (tilting, leaning, out of plumb, same as attitude/stall sensors on an airplane) sensors on them, but most machines don't have them.

If your machine is 10-15° out of level, side to side and you raise a 12,000 load up to 60° you could be in a lot of trouble in less than one second, and there will be absolutely nothing you will be able to do about it.

If your machine is 10-15° out of level, side to side and you raise a 12,000

load up to 60° and you blow a tire, you and the machine are history.

If your machine is 10-15° out of level, side to side and you raise a 12,000 load up to 60° and there is a 30 mile an hour wind blowing the same direction as your leaning boom, you have just made the history books again.

If your machine is 10-15° out of level, side to side and you raise a 12,000 load up to 60° and one of the wheels or outriggers are setting on a ditch that's not solid, same result, a machine, load and operator on the ground.



This again is the result of not knowing your extension capabilities and over extension

The TH62 has no tilt cylinders; a TH63 has hydraulic cylinders that will level your frame, sideways, wheels stay on the ground, good equipment.

Stabilizers/outriggers (like on a backhoe) will level the entire machine, lifting the wheels off the ground, better equipment and safer. One 4½"x2'x2' ground block is maximum for stabilizers/outriggers. Level the area where you are going to put a block. Do not stack up a bunch of blocks to stabilize you machine, this is dangerous. They can blow out and injure someone and wreck a telehandler, one block is all you use. 6-¾" plywood pieces

screwed together (rope handles) makes the best support blocks.

Best procedure is to try to stay on level compacted ground.

I am not trying to scare you away from operating a telehandler, but I have tried to instill in you the importance of reading and learning the correct procedures of operating all equipment, read and follow the manufacturer's instructions and learn how to read the possibilities of a situation before you get in trouble.

Read and follow your operators manual, it will tell you the extended boom load limits and could save your life and the lives of others.

Remember, your signalman is also your ground guide, use two or three if needed



This is a telehandler with a container head attached, Rtch, rough terrain container handler, (pronounced wretch) for moving containers (conex, connex, storage box, cubical, just like the telehandler it has many names, but the manufacturers call it a container and that is what we operators call it) that we use for storage. A good rule to go by is that these empty containers weigh about 250# per lineal foot (empty). 20' container "tare" "empty" weight is about 5000#.

You absolutely never use a container head for doing anything except for lifting and moving containers and always check the four dogs (prongs that you insert) for wear. I have rebuilt prongs/dogs but I don't recommend it. Any time you use any piece of equipment for anything but what it was designed for you are asking for trouble, for yourself and others.



This is a picture of a 32' container, same length as some semi-truck trailers, as you can see this is a monster of a machine.

A relatively simple machine to operate (all of these new machines are simple to operate, just learn the basics and remember them, and as we did in the army, do it 22 times and you have it) the only add-on is the signals to tell the operator to swivel the head (large spreader beam you see in the picture). I prefer for the signal man to point the direction I need to swivel the unconnected end to make a connection. Coordinate signals with your signal man or operator. Depth perception is a necessary tool for operating one of these machines.

Another is the signal for telescoping the extension head rails in and out. I use the signal whereas I point my thumb to the palm of my open hand. I do not want to show you this because the best

thing to do concerning this signal is to get the operator to show you what they use. There are a dozen variations of this signal and the rotation of the head signal. International signals use the ones I use. Ask Cat or look them up on internet and study them closely, but remember coordination from signal man to operator is an absolute law when operating any machinery as is having only one signalman.

One variation of having one signalman is when you have a signalman watching and observing the operation of the boom/bucket/forks/head and you have to have a relay signalman when the operator cannot view the primary signalman. Radios are real handy for this blind procedure for an operator.

If I lift a container and one end comes up and one end stays down I know I have an unequal distribution of weight in the container I am watching the computer screen inside the cab (if you are an operator and been in some of the storms I have been in you know you do not need a computer to tell you that you have an unequal load and also a computer is not going to tell you the container is half full of buckets of paint ready to roll to the other end) and when I see that I have a weight reading of 30 tons, (remember how I told you to weigh your load, same process applies to this machine if you don't have a computer, which usually doesn't work) I usually tell the supervisor to redistribute and stabilize the load or I won't move it. I won't move unsecured loads either, dangerous for the load, machine and operator.

If he happens to be your boss, you have to either move the container, as

is, or he will move you to looking for a new job. I had rather have a new job.

If you wreck a machine, twist a boom, kill yourself or someone else because he told you to do something you knew was wrong, believe me, when the story is told, you will be to blame. More than likely he won't remember telling you anything. Most of the people you will be moving materials and buildings for will not be operators, so beware.

Responsibility for one's actions and decisions is becoming a thing of the past, but when I was growing up my Dad preached it continuously; it was taken for granted that you were responsible for your actions and decisions. Not any more, for some of these "shake and bake" superintendents and foremen they are turning out these days.

Another thing is that if the container has barrels of water or solvents and if the barrels happen to turn over and roll they could get you and others in deep trouble in a hurry. Look in the container if they will let you. If they won't means they are responsible for the contents, but not your machine, which they usually are anyway. Five gallon buckets are the worst, when the shrink wrap breaks.

You have controls on this machine to shift your unequal load, to balance the boom load CG (center of gravity, same as an airplane CG) be careful and slow doing this procedure, wide awake at all times, just like most airplane pilots.

But all these procedures won't do any good if you have a container floor full of bowling balls rolling around.

Any extending piece of equipment, whether it be a telehandler, backhoe, extension ladder, crane or even a

large 25' worksite light with a generator you need to make certain you have the machine or piece of equipment level and stable before you do any extension or raising procedure.

I am the operator and it is my responsibility to operate the machine as it is suppose to be operated, safely and correctly, and not listening to some know it all that can get you and others killed. I seldom meet anyone that does not know far more than I about the operation of a telehandler.

Not all of them, but some salesmen, contractors and others could care less about your machine or your life; they just want the material moved for their convenience.

I pray that you don't learn these lessons the hard way like I have. The load limit, extension rating, leveling are the most important parts of your operator's manual. Read and follow all directions.

This is only part of what you need to know about telehandlers. You'll learn the rest (crabwalk/wheel alignment, **highline wires**, computer reading, maintenance, etc) while operating one.

Speaking of commonsense, why should I, or anyone else, have to tell an operator **not** to get the boom close to **highline wires**? Some cowboy probably stuck his boom up in a highline and got him or someone else killed, that's why.

Same goes for Preparation H, why do the manufacturers have to print the warning: **Do not take internally.**

Because someone, like this operator, probably ate some of it.

Read the directions. Read the manual.

Common sense: If it looks dangerous, more than likely it is dangerous, don't do it.

Most of you are good operators but I have probably made some of you operators and telehandler owners a little uneasy about the way I wrote this article, case in point, the last paragraph. That is why I wrote it. I meant for it to bother you and your operators if you are operating a telehandler improperly.

Some of you operators may laugh at these and say "I do that every day", well, I will tell you, I don't and you shouldn't:

1. Allow riders
2. Let unqualified people operate your machine, this could mean you.
3. Go over a berm (dirt mound) sideways, (lateral leverage)
4. Operate a telehandler or forklift without a backup alarm.
5. Operate and move without a signalman/ground guide, and as I have said, this can be the same person, this is when you have a lot of people around and you can't see 360° at all times, get you 2 or even 3 guides.
6. Back up an incline with a load.
7. Carry any load on a highway.
8. Jumping off out of the cab instead of backing down and following the ladder procedure of keeping a 3 point contact.

You don't have to take my word for this information, ask any telehandler, forklift manufacturer, but they won't tell you what I have told you in this article. They will tell you how to operate their machine, not some of

the things that will happen if you don't follow instructions.

Crane and telehandler operators are a lot like preachers, many are called but few are chosen.

This was an extensive, complicated and long article and any article that I write, that concerns more than one person will be extensive and precise.

If you don't listen to me about circular saws you have a real good chance of cutting yourself or losing some fingers, a hand or your life, but with these machines you sometimes will have several lives at stake, all the more reason to use the procedures I have given you in this article or at least use the manufacturer's instructions.

I have told you how to save your life and the lives of others, which is far more important than a replaceable machine.

It not only concerns you but you need to think about all of the lives you will affect if you make a slight 1/8" movement with a joy stick and drop 4 carpenters to their death.

<http://carpenterbooks.com>

Bob Johnston, carpenter

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