MSCA Tailgate Safety Talks

Volume II

Mechanical Service Contractors of America

MSCA

MSCA Tailgate Safety Talks (Volume II)
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The undersigned workers have participated in safety training covered by the MSCA Tailgate Safety Talk that corresponds to the number in the space above.

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Instructions for Tailgate Safety Talk Presenter

Preparation:

1. Select the most appropriate talk for the week.
2. Keep track of the talks you present so you don't inadvertently repeat them.
3. Print the talk you plan to use (one for each participant).
4. Print a copy of the training documentation sheet and write in the number of the Tailgate Talk in the blank at the top.

Presentation:

1. Answer any questions from the previous week's talk that you were unable to answer at the time of the talk. Give a copy of the new talk to each participant.
2. Present the content of the talk slowly and clearly.
3. Relate any experiences you've had that deal with the topic.
4. Ask the participants to share their own experiences that relate to the topic.
5. Ask whether there are any questions or comments.
6. Write down any questions that you can't answer and any comments that you think would be useful to the company.
7. Have each participant sign the training documentation sheet.
8. File the training documentation sheet where you can access it quickly if needed.

Follow-Up:

1. Be sure to re-read the questions and comments you recorded.
2. Find the answers to the questions you were unable to answer. Start the next weeks talk by answering those questions.

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Ladders (General)

#1

Roughly half the falls from elevations in the mechanical service industry are falls from ladders. In many cases it's because we're either reaching out too far, or carrying tools or materials in our hands while we're climbing. There are several other causes of falls as well.

- Always select the proper ladder for the job. For example, you should never use a step ladder as if it were a straight ladder.

- Be extremely careful not to let any ladder contact live wires or other sources of electricity. When you're working near sources of electricity, it's best to use a non-conductive ladder.

- Only use ladders that are in good condition. Inspect each ladder before you use it to ensure that it hasn't been damaged.

- If you see any defects on a ladder such as broken or missing rungs, cracks, bends, large dents, missing feet or rivets, or any other damage, don't use it. Immediately follow your company's procedures for taking defective equipment out of service.

- Ensure that the ladder you're preparing to use is on a firm, level surface.

- Before you start to climb, make sure the ladder doesn't have mud, ice, grease or any other substances on it that could make you slip.

- Always maintain a three point contact while climbing up or down a ladder. This means that you'll have two feet and one hand or two hands and one foot on the ladder at all times while climbing.

- Wear a tool belt or have someone hand your tools up to you while you're working on a ladder. If you're using the ladder to access an upper level, hoist your tools/materials up after you dismount.

- When you get to the point where you would have to reach out too far to get to your work, get down and move the ladder closer to the work.

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Straight Ladders

#2

Some of the common hazards associated with the use of straight ladders are falls from defective ladders, falls from ladders that slip out of place, and electrocutions from ladders that contact overhead power lines.

- Always inspect ladders before you use them. If you find any defects in a ladder, remove it from the work area and follow your company's procedures for taking defective equipment out of service.

- Be sure to check the bases (feet of the ladder). The bases should be in good condition and designed not to slip on the surface that will support them. Use straight ladders only on firm, level surfaces. Never try to level a ladder with boxes, barrels or any other unstable/unsuitable base.

- Make sure the ladder is properly pitched. The foot of the ladder should be pitched out from the vertical plane of its top support ¼ the length of the ladder measured from the ground at the foot of the ladder to where the ladder contacts its top support.

- The ladder should be secured in place. It can be secured at the top, bottom or both if necessary. Have someone hold the ladder in place if you have to climb the ladder to secure it at the top.

- Ensure that the ladder extends at least 3 feet above the landing surface. If the ladder won't extend that far there must be secure grab rails in place.

- Be extremely careful not to let your ladder contact overhead power lines. Use a non-conductive ladder whenever possible and get help setting up the ladder near electrical sources.

- Wear work boots or work shoes with non-slip soles, and be sure the ladder doesn't have ice, mud, grease or other slippery substances on the rungs and/or side rails.

- Never use straight ladders in high winds or other conditions that could increase the risk of a fall.

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Extension Ladders

#3

The same safety procedures that apply to straight ladders apply to extension ladders. However, there are additional safety procedures for extension ladders.

- Always get help carrying and setting up extension ladders.
- Never set the ladder up on ice, snow, mud or other slippery surfaces.
- Make sure extension ladders are working properly before you use them. The sliding part of the ladder should extend freely in its runners, and the locking ladder hooks should be working properly.
- Make sure the ladder's feet are in place and move freely.
- Determine the proper pitch of the ladder based on its height measured from the base of the ladder to where it will rest on its support surface (working length).
- Stand the ladder up (vertical) and extend it to its proper length by using the built-in rope and pulley system. Make sure the locking ladder hooks are firmly in place. Slowly lower the extended ladder onto its support. It should be pitched out at ¼ of the working length.
- Extend the ladder at least 3 feet higher than the landing platform/ ladder support surface.
- Be sure not to overextend the ladder. Check the manufacturer's recommendations and maintain the minimum recommended overlap of the two ladder pieces.
- Avoid stepping up on any of the top three rungs of the ladder.
- Be sure that your work boots or work shoes have non-slip soles, and that there are no slippery substances on the ladder.

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Stepladders

#4

Stepladders are used more frequently in mechanical service than other types of ladders. Many of the safety procedures for stepladders are the same as those for other types of ladders. However, there are some safety procedures that are specific to stepladders.

- Inspect stepladders before you use them. Pay close attention to the ladder's four feet and the spreader bars. If anything in the ladder is broken, bent, cracked, or otherwise defective, immediately follow your company's procedures for taking defective equipment out of service.

- Never use a stepladder as if it were a straight ladder. Make sure the ladder is fully open. Spreader bars should be fully extended.

- Only use stepladders on firm, level surfaces. Make sure all four feet are firmly on the surface before climbing.

- Be sure not to set the ladder up behind a door or in other areas where someone coming through could inadvertently disrupt the ladder.

- Allow only one person on the ladder at a time, and climb only on the steps of the ladder. Never climb on the support braces.

- Position stepladders so that you will be facing straight into your work. Avoid working from the side of the ladder.

- Be sure not to overreach. If you would have to reach out far enough for your belt buckle to extend beyond the stiles, stop. Get down and move the ladder closer to your work.

- Select stepladders that are tall enough to allow you to reach the work safely. Avoid stepping on the top three steps of the ladder.

- Be sure that your work boots or work shoes have non-slip soles, and that there are no slippery substances such as ice, mud, or grease on the ladder.

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Stairways

#5

Whether you're performing work on a stairway, or just using it to access another level, there are several things you should be aware of to keep from slipping, tripping or falling.

- Before using any stairway look it over to make sure it's safe. If you find any problems that could result in slips, trips, or falls, don't start work until they have been corrected.

- Be sure not to use stairways with skeleton metal frame structures and steps where the treads and/or landings will be installed at a later date, unless the stairs are fitted with temporary treads and landings.

- Make sure the stairways have handrails. Handrails are required to prevent you from slipping and/or tripping. On stairways with stairrail systems, the top edge of the system, when properly constructed, can be safely used as a handrail.

- Make sure there is a stairrail system in place on all open sides, including landings. A stairrail system or some other fall prevention or protection system is required to prevent you from falling to a lower level.

- Check the stairway and landing surfaces for water, ice, mud, grease, and other slippery substances. Remove the substances or have them removed before you proceed.

- Look for objects that could cause you to trip such as building materials, tools, garbage, etc. Remove them before accessing the stairway.

- When you're working on a stairway, carefully arrange your power cords, welding hoses, tools, materials, etc. so that other users won't trip on them.

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Driving Under the Influence

#6

The potential consequences of driving under the influence of alcohol and other types of drugs, whether or not they're legal, apply to the operation of all motor vehicles. This includes your personal vehicle and service vehicle.

- After a few drinks in a short period of time, or when using certain types of legal and/or illegal drugs, the user no longer has the ability to recall that driving could be fatal.

- *Stimulants* are drugs such as cocaine, speed, caffeine, and amphetamines. They are referred to as stimulants because they temporarily stimulate the body. Stimulants are dangerous to drivers because they make them feel wide awake. However, they don't really prevent fatigue.

- *Depressants* are drugs such as alcohol, inhalants, tranquilizers, and sedatives. They are dangerous to drivers because they make them extremely relaxed and sluggish. They also significantly reduce drivers' motor coordination.

- *Hallucinogens* are drugs such as LSD and mescaline. They may be the most dangerous of all drugs for drivers because they directly alter the senses, making the process of driving more like guesswork than calculated decision making.

- *Over the counter drugs* are drugs like cough medicine, decongestants and non-prescription pain killers. Many of them will make you drowsy or otherwise impair your judgment, especially if you take more than the recommended dose. Always read the warning label and follow the directions on the container.

- Be extremely diligent about not driving motor vehicles or operating powered equipment while under the influence because doing so may affect passengers, other drivers, pedestrians, coworkers, and many others besides yourself.

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Combining Drugs

#7

The effects of combining drugs are often not recognized or completely understood by the users. Combinations of certain prescription drugs and/or over the counter drugs can result in significant impairment.

- One of the most common, but inadvertently created combinations of drugs is from drinking alcohol while taking over the counter or prescription drugs.

- Many legal drugs come with a label that warns the user not to take them while consuming alcohol. Look for these labels on all over the counter and prescription drugs and follow the instructions on the labels carefully.

- One of the most common reactions to combining alcohol with other drugs is severe drowsiness and loss of perception. These are extremely dangerous states of being for mechanical service technicians performing work on any jobsite. They place others in the work area in danger as well.

- Combining alcohol with cocaine makes the user feel euphoric while he or she is intoxicated. This is also an extremely dangerous state of being for the user and others in his or her work area.

- Combing alcohol with other depressants can be very hazardous. The combination can significantly increase the sedative affects of alcohol alone.

- The effects of alcohol can be bad enough without combining them with illegal drugs. The combination of the two can significantly increase the risk of injury. Likewise, the effects of combining any illegal drugs can be extremely hazardous.

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Seatbelt Use

#8

In the mechanical service industry there is sometimes a lack of willingness to wear seatbelts in motor vehicles while working. Even those who regularly use seatbelts in their own vehicles sometimes won't use them in company vehicles. If you're someone who doesn't wear a seatbelt 100% of the time, take a few minutes to learn more about seatbelts and the physics behind vehicle collisions.

- Vehicles that hit solid objects stop almost instantly. However, the occupants of the vehicle keep going at the same rate of speed until they are stopped by something such as a steering wheel, a windshield, a seat in front of them, or a seatbelt.

- The impact of hitting a solid object at 30 miles per hour with a motor vehicle would be about the same as the impact of a fall from the third story of a building. Imagine the force of impact from a 65 or 70 mile per hour collision.

- Much of the time there is still plenty of room inside a crashed vehicle for the occupants to survive the collision. Occupants who are thrown from a vehicle during a collision are 25 times more likely to be killed than those who stay inside after impact.

- Motor vehicle collisions are the leading cause of death among those who are 44 years of age or younger.

- Motor vehicle collisions are the leading cause of head and spinal cord injuries in all age groups.

- Make sure you wear your seatbelt regardless of:
  -how short a distance you have to travel;
  -how slow you will be traveling;
  -whether you're the driver or the passenger in the vehicle.

- Around 20,000 people could be spared from motor vehicle collision deaths each year if they would wear their seatbelts. We're hoping you'll wear yours 100% of the time.

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Cell Phone Use

#9

Cell phone use in the mechanical service industry has become so popular that it's rare to find anyone on a jobsite without one. Cell phones have helped us increase productivity in the workplace, and they've made dealing with our personal lives much easier. However, cell phone use while driving significantly increases the risk of an accident, regardless of whether we're in a company or personal vehicle.

- The distraction that occurs when using a cell phone while driving equates to the same increase in risk faced by drivers who are above the legal limit for blood alcohol content.

- Text messaging is one of the most distracting, difficult and dangerous things you can do with a cell phone while you're driving, and should never be attempted.

- Most cell phone calls last five minutes or less. It's best to pull over to a safe spot off the road to make the short call. However, if you feel like you must use your cell phone while driving, make sure it's legal, and that it's not a violation of your company's policy.

- If you're going to take on the increased risk of using a cell phone while you're driving there are some things you should do to help make the process a little bit safer:
  -Program the phone so that the most frequently used numbers are on speed dial. This will decrease your level of distraction; and
  -Save calls that will require you to write down or memorize information for times when you're not driving. This applies to calls that require a lot of concentration as well. Doing so may help keep you from becoming dangerously preoccupied.

- It's best not to use a cell phone while driving. And, don't forget, the dates and times of your conversations are being recorded by the cell phone company. If a collision occurs while you're on the phone it will be easy for authorities to prove the phone was in use while you were driving, thereby increasing your liability.

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Distracted Driving

#10

Distracted drivers are seen reading newspapers, putting on make-up, shaving, writing on notepads, etc. It goes without saying that this kind of behavior is inexcusable. However, many other distractions are widely accepted socially even though they may be just as dangerous. Become cognizant of the most common driving distractions. Doing so may help you protect yourself and others from unintended harm.

- Global positioning devices (GPS) can be very distracting. Be sure not to take your eyes off the road to look at the system's map or route while you're driving. It won't take you very long to pull off the road for a minute or two to get your bearings.

- Reading while driving is distracting and extremely hazardous. Even looking at maps while the vehicle is in motion temporarily takes your concentration away from the road.

- Using cell phones while driving can be extremely distracting as well. Especially if you're text messaging, or engaged in an intense, emotional conversation, or one that requires considerable concentration. Most cell phone calls, especially those for business, are extremely short. It's well worth the short amount of time it takes to pull off the road before making or taking a call.

- Vehicle sound systems can be distracting too. Program the stereo system before you start to drive so that you won't have to search for your favorite stations while driving.

- Trying to retrieve a dropped or fallen object while you're driving is distracting and extremely hazardous. Wait until you have parked the vehicle to retrieve the object unless it could interfere with your brake pedal, clutch or accelerator. Regardless of the situation, keep your eyes on the road and keep your attention on driving safely.

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Defensive Driving

#11

Driving defensively means doing all the things necessary to avoid a vehicle collision despite the inappropriate actions of other drivers, and/or the driving conditions. It's really about anticipating what other drivers are about to do before they do it, and taking action to avoid a collision. It's also about anticipating what could result from the driving conditions, and taking safe, appropriate action before an incident can occur.

- Train yourself to be constantly aware of what's happening around you on the road. You want to be cognizant of the road conditions and the drivers around you 100% of the time you're behind the wheel.

- Study the driving conditions such as the type of road surface you're traveling on, the weather, the amount of light, and the amount of traffic.

- Carefully consider the maneuverability of the vehicle you're driving including the weight, center of gravity and the minimum stopping distance needed based on the current road conditions.

- Monitor the vehicles around you, and traffic flow such as the types of vehicles on the road, the time of day, the speed of the traffic in the area, and the distances between the vehicles in traffic.

- Think about what is going to occur, or what could occur as far ahead of the encounter as possible.

- Think about the driving adjustments you may have to make before the anticipated encounter occurs.

- Adjust your lane, speed and following distances accordingly.

- Take whatever action is needed well ahead of time to minimize the need for quick evasive action on the road.

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Aggressive Drivers

#12

It's hard to imagine what could make a driver perform aggressive, dangerous acts on the road. However, it's even more difficult to imagine what makes a driver deliberately conduct aggressive, dangerous acts in retaliation for what he thinks is a wrong committed against him. Understanding what may be behind aggressive driving could help you avoid becoming involved in an accident or a road rage incident.

- There's a difference between aggressive driving and road rage. Aggressive driving is one or more traffic violations usually committed by someone who is in a hurry. Road rage is a criminal offense that occurs when a traffic incident escalates into a deliberate, dangerous and often violent act. Aggressive driving often leads to road rage.

- Recognize that there are many contributing factors to bad human behavior. Some of them include personality types, immaturity, depression or other mental illnesses, chemical or hormone changes that result in mood swings, tragic life altering events, etc.

- When an aggressive driver cuts you off or otherwise makes you angry on the road, remember that he may not be in a normal state of mind that day. Don't take it personally. He would have committed the same offense against anyone who was in that place at that time. In other words, he wasn't singling you out for any reason.

- Remember that the bad driver could be grieving the loss of a loved one, suffering through a failed marriage, or enduring some other painful life altering event. Muster up the courage to let it go. In the scope of things it's an extremely insignificant event in your life. It's just not worth the unintended consequences to pursue it.

- If you inadvertently commit a traffic offense and upset another driver, find a way to let him know you didn't mean it. You could let him merge in, wave in a manner that will let him know you're sorry, slow and let him pass, etc. If he knows you're sorry he will probably let it pass without a confrontation.

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Defensive Driving Tactics

#13

The population is surging, bringing more cars, trucks and work vehicles onto our roads. The country's infrastructure hasn't kept up with the demand for road space. There are more time sensitive demands on us than ever before. The result is an increase in the number of aggressive drivers. Whether you're driving a company vehicle or your own vehicle, it may help you to revisit the basic defenses in common aggressive driving situations.

- When someone around you is driving aggressively immediately remind yourself not to take it personally, and keep your composure at all costs. The aggressive act isn't directed at you specifically. It's directed at anyone in that particular space, at that particular time.

- Check your rear view mirror frequently. When you see an aggressive driver flying up on you, try to change lanes before he gets close to you. When you're being tailgated, tap on your brakes lightly enough to activate your brake light, but not hard enough to slow your vehicle. If the aggressive driver doesn't back off, take your time slowing down, and give him every opportunity to pass.

- When you see an aggressive driver flying up a freeway entrance ramp, slow down to create a space ahead of you so he can merge in without confrontation. This practice is especially applicable at rush hour on freeways and highways that are full of stop and go traffic.

- When a bad driver is trying to force his way into the space in front of you, slow down and let him in. It will save you the aggravation of trying to keep him out, which would also put you dangerously close to the vehicle in front of you.

- When someone pulls out in front of you or cuts you off in traffic, take the necessary evasive action, but don't lean on your horn. Let it go.

- Each time you're irritated by an aggressive driver stay cool so the incident doesn't evolve into a road rage incident. Don't make eye contact, use the horn only as a short duration warning device, and refrain from yelling and gesturing at the aggressive driver.

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Mechanical Industry Incidents

#14

Learning about the most common mechanical service industry vehicle incidents could help you protect yourself and others from involvement in an accident. The most common vehicle incidents in our industry are as follows.

- **Rear end** (*Our vehicles hitting other vehicles from behind*)
  These incidents occur when we're following too closely. With good road conditions you should be at least 4 seconds behind the vehicle in front of you. More time is needed when conditions are bad. When the vehicle in front of you passes a fixed object, count the seconds it takes your vehicle to pass the same mark. Doing so will give you an idea of how many seconds you are behind that vehicle.

- **Backing** (*Our vehicles backing into other vehicles or fixed objects*)
  These incidents occur when we can't see what's behind us. Get out of the vehicle to determine how much room you have. If someone is with you, ask them to get out and spot for you.

- **Clearance** (*Our vehicle/materials hitting a fixed object overhead such as a building overhang, or other vehicles or building openings that are too close or too small)*
  Stay cognizant of low-hanging overhead obstacles and small spaces when you're driving. Preventing this one is about staying aware, staying alert, and making the right decision.

- **Lane Changes** (*Our vehicles hitting others while changing lanes)*
  Always use your turn signals. After signaling, give drivers in the lane plenty of time to see that you're coming over. Check your mirrors carefully. When it's clear, start over, but change lanes very slowly so that drivers you can't see have time to react to your change.

- **Hit from behind** *(Our vehicles being hit by others from behind)*
  Leave a lot of space between your vehicle and the vehicle in front of you. The more time you have to stop, the more time the tailgater will have to stop.

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General Wellness

#15

How we take care of our bodies can affect our safety, health and productivity on the jobsite. It can also affect how well, or how bad, we feel physically, mentally and emotionally throughout each day.

- **Hydration** – Most of us function regularly in a state of dehydration. Proper hydration is critical to normal, healthy body function because our bodies are about 70% water. The negative effects of dehydration can include arthritis, back pain, heart pain (angina), migraine headaches, high blood pressure, and many more health problems. Calculate half your body weight. That number is the approximate, minimum number of ounces you should drink daily. For example, a 200 pound person should drink at least 100 ounces of water daily.

- **Body weight** – In today's rapidly paced fast-food world it's not hard to pick up a few extra pounds, but extra weight can affect our health and how we feel. Eating poorly can lead to hardening of the arteries, high cholesterol, high blood pressure, and many more health problems. Too much body fat can make you feel tired, sluggish, and lethargic. If you're carrying too much weight, watch your food portions. Figure out how many calories you burn each day and eat fewer calories than you're taking in. Also, limit your intake of high fat foods and sugar.

- **Sleep** – Sleep is critical to normal and healthy body function. Without adequate sleep our brains can't regenerate and our bodies can't heal. Most people need at least 8 hours of sleep each night, and some people need more. Do whatever it takes to get adequate sleep.

- **Exercise** – An adequate amount of exercise can have a tremendous positive effect on your health and feeling of well being. It can help you lose body fat, lower your blood pressure, reduce your cholesterol, sleep better, etc. It doesn't have to be extreme either. Some experts say only 30 minutes of brisk walking or 15 minutes of jogging each day is adequate.

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Sleep Deprivation

#16

Before electricity, humans would typically go to sleep as soon as it got dark, and wake up as soon as it got light. However, with the invention of electricity and light bulbs, people started to cut back on their sleep. With today's pace of life, modern electronic inventions, recreational activities, etc. we often get much less sleep than we need. Sleep deprivation is always bad, and it can make mechanical service work hazardous.

- Sleep is a state characterized by a minimal degree of consciousness, and decreased responsiveness to the surroundings. The heart rate slows down and the body relaxes. These physical and psychological states help the body conduct normal maintenance such as regenerating the brain and healing the body. When the human body doesn't get enough sleep these processes don't occur efficiently.

- Lack of sufficient sleep results in fatigue, exhaustion, anxiety, and stress. All of these characteristics can make normal mechanical service work tasks dangerous.

- With sleep deprivation, cognitive work tasks that require speed and accuracy become much more difficult to do.

- Sleep deprivation also results in impaired judgment. Sleep deprived workers are more likely to take risks than they would be otherwise.

- Insufficient sleep makes it difficult to communicate with other workers. It becomes challenging to find the right words to convey exactly what you're thinking. Under the right circumstances, difficulty communicating could result in a harmful incident.

- Long term sleep deprivation can also result in unfavorable health conditions.

- Make sure you do whatever it takes to get enough sleep. Most people need at least 8 hours each night. If you're having trouble getting enough sleep, see your health care provider about it immediately.

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Back Basics

#17

There is a lot of pressure on our backs, especially when we're lifting or carrying heavy or bulky objects. Several things can occur if we're not taking care of our backs, and sometimes even when we are taking proper care of them. Still it's best to know what proper care is, and how to minimize the risk of an injury, and/or back pain.

- Some of the more common back problems include aging discs, herniated discs, bulging discs, and pulled or strained back muscles, tendons or ligaments.

- Aging discs occur because as we age there is a reduction in moisture content in our discs. Without adequate moisture the discs can't properly repair themselves. They lose height and put pressure on the nerves, which can result in pain.

- Herniated discs occur when there is enough traumatic impact on a disc to cause it to rupture. The fluid leaks out, which can cause the disc to press against the nerves. Significant pressure on the nerves causes pain.

- Bulging discs occur when non-ruptured discs slip or bulge out from between the vertebrae. Bulging discs can irritate the nerves, which can cause pain.

- When back muscles, tendons or ligaments are pulled or strained inflammation occurs. The inflammation can cause pain.

- Help protect your back by eating healthy, drinking plenty of water, exercising regularly, stretching before you lift objects, and using proper lifting techniques.

- Get help lifting heavy or bulky objects, and always use material handling equipment, unless it's impossible to do so.

- Follow these same guidelines when you're not working too.

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Back Saving Techniques

#18

Back injuries and back pain can't always be prevented. There are so many contributing factors that lead to these ailments it would be difficult to name them all. Some of the more commonly known contributing factors are the natural aging process, arthritis, old injuries, dehydration, genetic predisposition to back problems, such as degenerative disc disease, etc. The list goes on and on. Mechanical industry work tasks may be a contributing factor as well. It may be beneficial for you to learn some techniques that may help you prevent back injury and/or back pain.

- Always use material handling equipment such as carts, hand trucks, wheel barrows, etc. when possible.

- Always use the proper lifting techniques:
  -Get as close to the object as possible;
  -Position your feet and get a good grip;
  -Keep your butt down and your head up;
  -Lift straight up slowly, but steadily letting your legs do the work;
  -Never twist or turn your torso with your feet planted;
  -When you turn, move your feet and body without twisting; and
  -Remember to keep your butt down and head up when putting the object down.

- When reaching for something small and light on the ground, kneel down on one knee while keeping the natural curves in your back.

- When reaching for something up high, keep your shoulders, hips and feet facing the object. Be sure not to twist your body with your feet planted.

- When you're positioning something heavy like an HVAC unit be sure to push it instead of pulling it. Stay as close to the object as you can so you aren't reaching out too far. Use both arms and keep the natural curves in your back while pushing. Watch where you're going too. If you run into something hard it could result in a back injury.

MSCA Tailgate Safety Talks – Volume II
Muscle Sprains & Strains

#19

Almost everyone has experienced muscle sprains and/or strains at some point in their life. They can be annoying and sometimes outright irritating. This is especially true if they occur on the jobsite, or if you have to work with the accompanying discomfort. If you can learn to recognize whether you have a sprain or a strain, and learn to treat the condition accordingly, you can usually recover quickly.

- Try to prevent sprains and strains by taking good care of your musculoskeletal system. Eat healthy, drink plenty of water, exercise regularly, stretch regularly, work smart, and work carefully.

- A sprain occurs when a joint gets forced beyond its typical range of motion. The ligament in the joint gets stretched too far and sometimes it will tear. You will still be able to use the joint, but there will likely be discomfort due to the swelling.

- A strain occurs when a muscle or tendon is weak, tired or overworked, and somehow gets overexerted. Strains are not as serious as sprains, but they cause discomfort also due to swelling.

- If you incur a sprain or a strain, put a cold pack on it, or ice it right away. The cold treatments will help reduce the swelling, and therefore, the discomfort. Elevate the affected area above the heart if you can. This will also help to reduce the swelling. Use a compression bandage on the affected area to further reduce the swelling.

- If you can safely take an over the counter anti inflammatory such as ibuprofen or common aspirin, take the recommended dose.

- If you believe you have a severe injury, or if you’re not sure, see your health care provider right away. If you experience extreme pain, numbness, inability of the joint to support your weight, or no improvement in the condition, you may have an injury severe enough to warrant professional medical treatment.

MSCA Tailgate Safety Talks – Volume II
Pre-Job Stretching

#20

Stretching before you start work may help you prevent strains, sprains and muscle pulls, especially if you're getting up there in years. If you decide to start a daily stretching regimen, focus on your back, especially your lower back, and your shoulders. Most musculoskeletal problems in the mechanical service industry involve these two areas of the body.

- Start each stretch slowly and easily. Stay relaxed while you're stretching. Be sure not to over stretch. If it hurts, you're probably stretching too far. Perform the stretching regimen on a regular basis, preferably daily.

- Backs:
  -Stand upright with your feet slightly apart. Place your hands in the small of your back. Bend your trunk backwards at the waist as far as you can. Hold it for about 3 seconds. Relax for a few seconds and repeat the process several times.

  -Lie face up. Bend your right leg and pull your knee up to your chest. Hold it for about 3 seconds, relax, and repeat the process with the other leg. Repeat the whole process several times.

- Shoulders:
  -While sitting up straight, raise your shoulders up toward your ears. Hold them up for about 3 seconds. Relax them for a few seconds and repeat the process several times.

  -Clasp your hands up over your head with your palms up. Reach up as high as you can for about 3 seconds. Relax for a few seconds, and repeat the process several times.

  -Hold both arms up with your elbows at 90 degrees and your palms facing away. Push your arms back squeezing your shoulder blades together. Hold for about 3 seconds. Relax for a few seconds, and repeat the process several times.

MSCA Tailgate Safety Talks – Volume II
Rigging (General)

#21

Rigging is a necessary part of material handling. There are a lot of things to consider each time a lift is about to be made. In order to rig it safely you need the proper knowledge about rigging and rigging equipment, and how to communicate properly with the crane operator or the individual directing the lift. Here are some general guidelines to help you remember what to consider before each lift.

- Be sure not to engage in any activity that could distract you from your rigging responsibility. Safe rigging requires your undivided attention.

- Before you start the job establish how you will communicate with the appropriate person such as the crane operator, or the individual directing the lift.

- Determine the weight of the load to be lifted.

- Determine the rated load capacity of the slings, chokers, and/or fittings you will be using, and never exceed the rated load capacity.

- Inspect the slings, chokers, and/or fittings that you will be using. If any of them appear to be defective, don’t use them. Immediately follow your company’s procedures for taking defective equipment out of service.

- Rig the load so that it will move up, and not sideways when the lift begins. Side pulls can lead to slipping loads or damaged rigging equipment.

- Respond only to the signals given by the appropriate person.

- Immediately obey any stop signal regardless of who gives the signal.

- Stay out from under suspended loads, and make sure everyone else does too.

- Never ride the load.

MSCA Tailgate Safety Talks – Volume II
Rigging (Safe Work Practices)

#22

At first glance rigging appears to be a fairly simple task. However, it can be challenging and extremely hazardous if you don't know what the hazards are, and how to protect yourself from them. Some of the most common practices for rigging safely are as follows.

- Make sure that only one person is responsible for communicating with the equipment operator. The signal person should never have the load moved until he has received the "all ready" signal from the rigger, and any others working the load.

- Whenever possible, release the sling or choker before the lift begins.

- If you have to position the sling or choker until tension is applied to the cable, make sure that your hands are positioned so they won't be pinched or crushed when the cable tightens.

- Always use taglines to control the load, unless doing so would somehow create a greater hazard.

- Position the hook as close to the center of the load as possible, but watch carefully for the load to swing or roll as soon as the lift begins.

- Make sure you have plenty of room to get out of the way of the load before the lift begins. Never place yourself between the load and any other objects such as stacks of material or equipment.

- Never stand or work under the load.

- Make sure the area where the load will land is firm, fairly flat and free of objects that could fly up if hit by the load.

- When setting the load down, keep your feet out from under it.

- Set the load down slowly and easily. That way if it rolls on the blocking you will have plenty of time to get away from it.

MSCA Tailgate Safety Talks – Volume II
Alloy Steel Chain Slings

#23

There are many different types of slings for rigging, including alloy steel chain slings. These slings must be in good condition and capable of safely supporting the weight of the intended load. Some guidelines for working with alloy steel chain slings follow.

- Carefully inspect each alloy steel chain sling before you use it.
- Look at each link for signs that the chain has stretched.
- Inspect the chain for other signs of excessive wear such as bent links, nicks or gouges.
- Make sure the hooks are in good condition, and that they are still securely attached to the chain.
- When you come across a damaged sling, or one that you're not sure is safe to use, don't use it. Immediately follow your company's procedures for taking defective equipment out of service.
- Look for the permanently attached identification tag on each sling you're about to use. The tag should state the sling size, grade, rated load capacity, and the name of the sling manufacturer.
- If the identification tag is not attached, or if any of the required information is not legible, don't use it. Immediately follow your company's procedures for taking defective equipment out of service.
- Determine the weight of the load you will be rigging. Then check the rated load capacity of the sling you intend to use. If the weight of the load exceeds the rated load capacity of the sling, don't use it. Select another sling with an adequate load rating.

MSCA Tailgate Safety Talks – Volume II
Wire Rope Slings

#24

Wire rope slings are sometimes used is the mechanical service industry. However, to be used safely they must be in good condition, and they must be used properly. Here are some guidelines for working safely with wire rope slings.

- Carefully inspect each wire rope sling before you use it.

- Look at the whole length of the sling searching for sections that are crushed or corroded.

- Stretch the sling to determine whether it's kinked or starting to kink.

- Make sure the sling doesn't have an excessive number of broken wires. The sling is defective if there are five or more broken wires in one rope lay, or if there are three or more broken wires in one strand of one lay of rope.

- Make sure there are an adequate number of wire rope clips, and that they are properly installed. The dead end of a wire rope is the very end of the rope. Always remember…never saddle a dead horse. The saddle of the wire rope clip should never be installed on the dead end of the rope. The U-bolt goes on the dead end.

- A sling that is crushed, corroded, kinked, has an excessive number of broken wires, has an insufficient or improperly installed number of wire rope clips, or has any other defects, is not safe to use.

- When you come across a damaged sling, or one that you're not sure is safe to use, don't use it. Immediately follow your company's procedures for taking defective equipment out of service.

- Determine the weight of the load you will be rigging. Then check the rated load capacity of the sling you intend to use. If the weight of the load exceeds the rated load capacity of the sling, don't use it. Select another sling with an adequate load rating.

MSCA Tailgate Safety Talks – Volume II
Natural & Synthetic Fiber Rope Slings

#25

Natural and synthetic fiber rope slings are very functional, but like other types of slings they are susceptible to damage and wear. Slings that are not in good condition can be very hazardous. Here are several guidelines, to help you use these types of slings safely.

- Carefully inspect each natural or synthetic fiber rope sling before you use it.

- Look for abnormal wear in the sling. Broken fibers or powdered fibers between the strands mean the sling has experienced excessive wear and shouldn't be used.

- If you see variations in the size of the strands or variations in the roundness of the strands don't use it.

- You should also look for discoloration in the sling and signs of rotting.

- Look carefully at the hardware in the sling too. If there are any distortions such as bends, gouges, corrosion, or any other defects, don't use the sling.

- When you come across a damaged sling, or one that you're not sure is safe to use, don't use it. Immediately follow your company's procedures for taking defective equipment out of service.

- Before using a sling, make sure that any splices made to the rope are in complete accordance with the manufacturer's recommendations.

- Determine the weight of the load you will be rigging. Then check the rated load capacity of the sling you intend to use. If the weight of the load exceeds the rated load capacity of the sling, don't use it. Select another sling with an adequate load rating.

MSCA Tailgate Safety Talks – Volume II
Synthetic Webbing Slings

#26

Slings made of synthetic webbing are very popular in the mechanical service industry. They're strong, easy to use and very durable. However, they wear out over time, and can incur damage even when they're new. Here are a few guidelines to help you use synthetic webbing slings safely.

- Carefully inspect each synthetic webbing sling before you use it.
- Check the sling over carefully for acid or caustic burns. These types of burns can weaken slings.
- Melting or charring on slings can weaken them, too, making them unsafe to use.
- Look carefully for snags, punctures, tears or cuts. Also look for broken or worn stitching. All of these defects weaken slings, rendering them unusable.
- Look carefully at the fittings too. If there are any distortions such as bends, gouges, corrosion, or any other defects, they're not safe to use.
- Check the sling over for marks or codes indicating the name of the manufacturer, its trademark, the rated load capacity for the type of hitch, and the type of material.
- If the required information is missing or is not legible, don't use it. Immediately follow your company's procedures for taking defective equipment out of service.
- Before using a sling, determine the weight of the load you will be rigging. Then check the rated load capacity of the sling you intend to use. If the weight of the load exceeds the rated load capacity of the sling, don't use it. Select another sling with an adequate load rating.

MSCA Tailgate Safety Talks – Volume II
Cranes & Derricks

#27

Part of rigging safety is understanding the operation of cranes and derricks. Here are some guidelines that you should be familiar with when you're working around cranes and derricks.

- Before a crane or derrick is used on a jobsite, make sure it has been inspected by a qualified person. A malfunctioning crane or derrick can be dangerous to the rigger, the operator and others in the lift area.

- Learn the proper crane hand signals so that you can safely communicate with the operator or the individual directing the lift. These signals are important to know even if you're using some other type of communication such as radios or cell phones. If something happens to your electronic communication system, but you can see the operator, you can still communicate with hand signals.

- Make sure the operator has the crane on firm, solid ground, and that the outriggers have been extended before lifting begins.

- Calculate the weight of the load and determine the rated load capacity of the crane and the rigging equipment before you start rigging. Never exceed the rated load capacity of the crane, derrick or rigging equipment.

- Guide the operator to adjust the boom so that it is centered directly over the load. Side pulls can lead to slipping loads or damaged rigging equipment.

- While the lift is in progress, make sure that no part of the crane comes closer than 10 feet from a power line. Power lines pushing more than 50 kV require a space of 10 feet plus .4 inches for each kV over 50 kV.

- Anytime you determine that something's not right with a crane, derrick, rigging equipment, or the lift itself, immediately give the stop signal. Don't proceed until you're confident the issue is solved.

MSCA Toolbox Safety Talks – Volume II
Power Tool Cords

#28

Cords on power tools tend to take a lot of abuse. Even with normal use they'll wear out over time. It's important to take good care of power tool cords while you're using them, but it's equally important not to ever use a power tool with a defective cord. Damaged power tool cords can cause electric shock, severe burns and electrocution. Here are some guidelines to help you work with power tool cords safely.

- Inspect the cord on every power tool before you use it.
- Check the plug to ensure that the ground prong hasn't been removed, and that the plug is securely attached to the cord. There should be no damage to the insulation.
- Look over the full length of the cord for damage such as cuts, tears, kinks, burns or any other damage to the insulation.
- Check the cord where it attaches to the tool to ensure that it hasn't been pulled loose.
- When you come across a power tool with a power cord that is damaged in any manner, don't use it. Immediately follow your company's procedures for taking defective equipment out of service.
- Repairs to damaged cords should be performed only by someone specifically qualified to do so.
- When using a power tool, make sure the cord doesn't rub up against rough or sharp edges.
- Never dangle the tool by the cord, which could lead to a loose connection between the tool and the cord.
- When unplugging the tool, never jerk the plug out of the receptacle by the cord. Grip the plug firmly and pull it out of the receptacle slowly.

MSCA Tailgate Safety Talks – Volume II
Extension Cords

#29

Extension cords take a beating. They're run over, pinched in doorways, dragged across sharp edges, yanked out of receptacles, used as hoists, the list goes on and on. Unfortunately, this kind of treatment results in damaged cords, which can be extremely hazardous to the user, and sometimes to others in the work area. Damaged extension cords can lead to electric shock, severe burns and electrocution. Here are some guidelines for safe use of extension cords.

- Make sure you're using good quality extension cords that are approved by Underwriters' Laboratories or similar testing agencies. The cords must be heavy duty enough to safely draw the amount of current you will be using. Household extension cords have no place on mechanical service job sites.

- Inspect extension cords each time before you use them. Check the male plug to ensure that the ground prong hasn't been removed. Check the male and female plugs where they attach to the wire. There should be no damage to the insulation. Look over the full length of the cord for damage such as cuts, tears, kinks, burns or any other damage to the insulation.

- When you come across an extension cord that is damaged in any manner, don't use it. Immediately follow your company's procedures for taking defective equipment out of service.

- Repairs to damaged cords should be performed only by someone specifically qualified to do so.

- When using extension cords, arrange them so they won't be run over by equipment, pinched in doorways, subject to sharp or rough edges, or subjected to any other potential damage. And, never use an extension cord to hoist up objects.

- When putting cords away, coil them in large loops so they won't kink.

MSCA Tailgate Safety Talks – Volume II

Arc Flash

#30

An arc flash is radiant energy exploding out of electrical equipment. An extremely hot ball of gas is expelled, and the accompanying pressure waves are extremely intense. Temperatures can reach up to 35,000 degrees Fahrenheit. The results of an arc flash can include severe burns, permanent damage to hearing and eyesight, and of course, death. Arc flashes don't occur that often in the mechanical service industry, but you should learn enough about them to keep yourself safe when working near electrical equipment.

- Arc flashes occur when electrical current takes a path we didn't intend for it to take. Some of the common causes of arc flash in our industry are:
  -dust and impurities in electrical equipment;
  -corrosion in electrical wiring and connectors; and
  -moisture from high humidity, condensation, rain, mist, etc.

- Arc faults rarely occur in the open air. In most cases they occur inside an electrical enclosure when something is moving such as a contact switch being opened or closed.

- Much of the electrical equipment on jobsites that is pushing 600 volts or less has an arc flash protection boundary of at least 4 feet. However, some equipment requires an even greater arc flash protection boundary.

- Since it's difficult to determine the minimum safe arc flash protection boundary just by looking at electrical equipment, stay as far away from it as possible when working or passing through.

- If you have to work extremely close to electrical equipment, you may need flame resistant clothing and other specialized personal protective equipment for arc flash protection. Check with your supervisor to make sure you're properly protected.

MSCA Tailgate Safety Talks – Volume II
Arc Flash Protection Boundaries

#31

An arc flash is an explosion that occurs in electrical equipment when electricity takes an unintended path. Arc flashes can be caused by many things including moisture, dust, corrosion, etc. Information about flash protection boundaries for “qualified persons” working on equipment pushing 480 volts or less follows.

- You are considered to be a “qualified person” if you have the skills and knowledge related to the construction and operation of the electrical equipment and installations and have received safety training on the hazards involved. If you are not a qualified person check with your supervisor about the appropriate flash protection boundary for you.

- A Flash Protection Boundary is an approach limit at a distance from exposed live parts within which a person could receive a second degree burn if an electrical arc flash were to occur. Flash protection boundaries are determined by flash hazard analyses. These analyses also determine what personal protective equipment (PPE) is needed when working within an established flash protection boundary.

- In systems pushing 480 volts or less, the flash protection boundary for qualified persons in most cases is 4 feet, based on the product of clearing time of 6 cycles (0.1 seconds) and available bolted fault current of 50 kA or any combination not exceeding 300 kA cycles (5000 ampere seconds). For clearing times and bolted fault currents other than 300 kA cycles, the flash protection boundary is established by a special formula. If you’re not sure about the flash protection boundary, check with your supervisor before you start work.

- Wear the appropriate arc flash PPE when working within a flash protection boundary. Once you have completed trouble shooting, de-energize the unit and lockout the source of electricity. Test it to be sure the power is off. Discharge the stored energy, such as the current in the capacitors. When all of this is done and there are no exposed, live parts, you can remove your arc flash protection PPE to work on the unit.

MSCA Tailgate Safety Talks – Volume II
Electrical Shock

#32

Electrical shock is the potentially dangerous physiological effect of electrical current passing through the body on its way to ground. It's painful and can stop the human heart. The potential for electrical shock in the mechanical service industry comes primarily from our frequent proximity to exposed, live parts while working on HVAC equipment. Here are some things you should know about electrical shock and how to avoid it.

- The amount of current you could be exposed to varies with a number of factors, including voltage and resistance, but don't forget, less than a single amp can kill you. In fact, it only takes 70 to 100 milliamps to stop a human heart.

- Electrical current always takes the easiest pathways to ground. If your body happens to be one of those pathways, you could be in real trouble.

- One of the most frequently occurring situations where we face the potential for contact with exposed live parts occurs when we're troubleshooting energized HVAC units.

- Make sure you have a good quality, UL or equivalent agency approved voltage meter with the appropriate rating for the voltage you will be testing.

- Wear all of the PPE you need for protection from arc flash and electrical shock. For shock protection on units pushing 480 volts or less, wear Class 00 rubber gloves with leather gloves over them.

- Once you have identified the problem, you can eliminate the potential for contact with exposed live parts.

- De-energize the unit and lockout the source of electricity.

- Test it to be sure the power is off.

- Discharge the stored energy, such as the current in the capacitors.

MSCA Tailgate Safety Talks – Volume II
Electrical Shock Protection Boundaries

#33

An electrical shock is the result of electrons, in the form of electrical current, flowing though a body on its way to ground. It occurs when an unprotected part of a body comes into contact with an exposed, energized conductor of electricity. Information about shock protection boundaries for "qualified persons" working on equipment pushing 480 volts or less follows.

- You are considered to be a "qualified person" if you have the skills and knowledge related to the construction and operation of the electrical equipment and installations and have received safety training on the hazards involved. If you are not a qualified person, check with your supervisor about the appropriate shock protection boundary for you.

- A shock protection boundary is a limited, restricted, or prohibited approach boundary. The approach distances are established based on the voltage of the unit/exposed, energized parts and the qualifications of those with the potential for contacting the parts.

- Shock protection boundaries are determined by shock protection analyses. These analyses also determine what personal protective equipment (PPE) is needed when working within an established shock protection boundary.

- Shock protection boundaries apply to any conductive objects you're carrying. In other words, when the shock protection boundary is 4 feet, conductive objects that you're carrying can't come within 4 feet of exposed energized parts unless you're properly insulated or guarded from electrical shock.

- For HVAC pushing 480 volts or less the shock protection boundary for qualified persons is 4 feet in most cases. If you have any questions about the shock protection boundary for the equipment you'll be working on, check with your supervisor before you start work.

MSCA Tailgate Safety Talks – Volume II
Electrical Safety Work Practices

#34

When working with HVAC units, there is always the risk of injury from arc flash and/or electrical shock. However, following safe work practices will significantly reduce that risk. Some of the safe work practices that will help you reduce the risk of injury from electricity follow.

- Wear the appropriate arc flash and electrical shock personal protective equipment (PPE) while you're troubleshooting any energized unit.
- Once you have identified the problem, continue to wear your arc flash and electrical shock PPE.
- De-energize the unit.
- Lockout the source of electricity with the appropriate locking device so that it can't be turned on accidentally while you're working on it.
- Test the unit with your voltage meter to ensure that the power has been turned off.
- Discharge any stored electrical current, such as the current in the capacitors.
- You can now remove your arc flash and electrical shock protection PPE. However, continue to wear your safety glasses and any other PPE that might be required where you are working, such as a hard hat.
- Perform the necessary repairs on the unit.
- Where applicable, close all access doors, panels, etc.
- Put your arc flash and electrical shock PPE back on.
- Remove the locking device and re-energize the unit.

MSCA Tailgate Safety Talks – Volume II
Arc Flash PPE

#35

The personal protective equipment (PPE) you need for protection from arc flash depends on the results of a flash hazard analysis. The minimum PPE that you should use for most of the troubleshooting work you perform on energized HVAC units pushing 480 volts or less follows.

- 4 to 8 cal/cm^2 long sleeve shirt and pants – This flame resistant (FR) clothing will have an Arc Thermal Protective Value (ATPV) of 4 to 8 cal/cm^2. The ATPV is displayed outside the clothing or on a tag inside.

- Standard safety glasses – Safety glasses should be worn at all times by technicians performing mechanical service work. This holds true even when wearing an arc-rated face shield or double layered switching hood.

- Ear canal inserts (ear plugs) – Required due to the extreme noise caused by any arc blast.

- A class E hard hat – Helps protect from electrical shock and arc flash. It also holds the arc-rated face shield in place.

- 8 cal/cm^2 arc-rated face shield – The shield will have an Arc Thermal Protective Value (ATPV) of 8 cal/cm^2.

- Class double zero (00) rubber gloves – Rubber gloves must be dielectrically tested at a certified testing lab at least every 6 months. Be sure to field test your gloves before each use by trapping air inside and looking, listening and feeling for leaks.

- Leather gloves – These gloves are worn over the rubber gloves to protect them from punctures and other damage.

- Double layered switching hood – Any time there is a situation where an arc flash could occur from either side or behind, this hood should be used in place of the Class E hard hat and arc-rated face shield. Safety glasses and ear plugs should always be worn under the hood.

MSCA Tailgate Safety Talks – Volume II
Electrical Shock PPE

#36

Adequate protection from electrical shock comes from more than just personal protective equipment (PPE). Using good quality, properly selected tools, following safe work practices, and maintaining a heightened state of awareness while working near exposed live electrical parts also play a vital role in your safety. However, selecting and using the proper PPE is very important. Information about shock protection PPE follows.

- Some types of hardhats used in our industry provide electrical shock protection while others do not provide adequate shock protection.

- Class G hardhats, which are general use hardhats, are designed and tested to withstand 2,200 volts.

- Class E hardhats, which are required for arc flash protection when working on HVAC units pushing 480 volts or less, also provide excellent shock protection. These hats are designed and tested to withstand 20,000 volts.

- Beware of Class C hardhats, which are conductive and do not provide adequate protection from electrical shock.

- Class Double Zero (00) rubber gloves, which are the minimum required shock protection when working on energized HVAC units pushing 480 volts or less, provide protection up to 500 volts.

- Class Zero (0) rubber gloves provide protection up to 1,000 volts.

- Rubber gloves may not provide adequate protection if they're damaged. Always wear leather protective gloves over the top of your insulated rubber gloves.

- Make sure you use properly insulated tools when troubleshooting energized units. Use a good quality, UL or equivalent agency approved voltage meter with the appropriate rating for the voltage you will be testing.

MSCA Tailgate Safety Talks – Volume II
Standard PPE

#37

Personal protective equipment, which is commonly referred to as PPE, is a fundamental tool for every mechanical service worker. Some PPE is as standard to us as a football helmet is to a football player. Other types of PPE are needed only when you're performing specific tasks. These guidelines describe the standard PPE that should be used on a regular basis in the mechanical service industry.

- Safety glasses should be worn at all times, even when you're wearing a face shield or welding helmet. There's no longer any good reason not to wear them. There are many different brands and types of safety glasses available. Many of them have soft, comfortable nose pieces and adjustable frames for added comfort. The lenses are, or can be treated with anti-fog substances, and most of the designs are very cool looking.

- Hearing protection such as ear plugs should be worn anytime you're working with or around loud, noisy equipment, machinery tools, or processes. You can also wear ear muffs, or a combination of plugs and muffs. Whatever you choose, make sure you can still hear warning sounds.

- Standard work gloves should be worn unless you're performing a task that requires more dexterity than the gloves provide, or you're swapping the standard work gloves for some other type of task specific gloves.

- Good quality leather or similar work boots with built-in toe protection should be worn at all times as well.

MSCA Tailgate Safety Talks – Volume II
Task Specific PPE

#38

Some personal protective equipment (PPE) isn't necessary all the time. It's used for task specific purposes. These guidelines describe what PPE should be used while you're performing some of the more specialized tasks associated with the mechanical service industry.

- Welding:
  -Flame resistant coverall or clothing, and work boots;
  -Welding helmet with proper shade of lens (filter plate);
  -Safety glasses; and
  -Welding gloves.

- Cutting, Brazing, Soldering:
  -Flame resistant clothing;
  -Safety goggles with the proper shade of lenses; and
  -Welding gloves or flame-resistant work gloves.

- The proper shade of lens or lenses depends on the type of hot work.
  -Torch soldering - #2 shaded lenses;
  -Torch brazing - #3 or #4 shaded lenses;
  -Oxy-acetylene cutting - #5 shaded lenses;
  -Electric arc welding - #10, #12, or #14 shaded lens, depending on the size of the electrode, and the amount of current being generated.
  -Gas metal arc welding - #11, #12, or #14 shaded lens, depending on the amount of current being generated. If you're not sure about the shade of lens you need for welding, check with your supervisor.

- Grinding:
  -Face shield;
  -Safety glasses;
  -Standard work gloves;

- Hazardous Chemical Use:
  -Face shield;
  -Safety goggles;
  -Protective coverall or apron; and
  -Appropriate gloves depending on the substance (Check MSDS).

MSCA Tailgate Safety Talks – Volume II
Respiratory Protection

#39

In the mechanical service industry most of our respiratory hazards involve hot work fumes. It's rare that we need respiratory protection, but when we do, air purifying respirators are usually all that's needed. Here are some guidelines for using air purifying respirators.

- Never use a respirator until you have received proper training. Training covers your company's written respiratory protection program, including but not limited to hazard identification, respirator selection, fit testing, seal checks, use, maintenance and storage.

- Check with your supervisor about the hazardous substance exposure assessment. The assessment lets your company know what type of respirator you will need.

- Be prepared to go through a fit testing process. The process ensures that the respirator seals properly to your face. Make sure you are clean shaven wherever the respirator will contact your face.

- Inspect your respirator each time before using it. If you find any damage or defects, don't use it. Immediately follow your company's procedure for taking defective equipment out of service.

- Conduct a seal check each time before using your respirator. A seal check is a process to determine if the respirator is properly sealed to your face. You'll learn and practice the procedure in training.

- Replace the cartridges/filters as soon as you smell or taste any substance through the respirator. Air purifying respirator cartridges/filters used for gases and vapors should have end of service life (ESLI) indicators letting you know when to change them. When conditions don't allow for ESLI, a change schedule should be established.

- Be sure to keep your respirator clean, and keep it in a sealed bag or container when you're not using it. Store it in a cool, dry place.

MSCA Tailgate Safety Talks – Volume II
Gloves

#40

There are different types of gloves that we can use to protect our hands while performing mechanical service work. The type of gloves we need depends on the task, and the potential hazards associated with that task. We may be moving materials, handling sheet metal, working with chemicals, welding, or any number of tasks. Here are some guidelines on work gloves for mechanical service applications.

- Standard leather work gloves work well for material handling, and most other routine work tasks. They will help keep your hands warm, and protect you from cuts, abrasions, and burns from grinding sparks or heated materials. Work gloves come in fabrics other than leather too; whatever you choose, make sure they're capable of protecting your hands from the potential hazards you will face.

- Cut resistant gloves are available in several different materials such as Kevlar. They're great for handling sheet metal and other really sharp objects. The technology is so good that the gloves don't hinder dexterity.

- The type of gloves needed for protection from chemicals depends on the chemical substance. Make sure you know what substance you'll be working with before you select your gloves. Also, check the glove manufacturer's recommendations to ensure that the specific brand and model you'll be using will provide you with the necessary protection. Some of the more common glove materials for chemical protection are Neoprene, Nitrile and Latex. Make sure you don't have Latex allergies before using Latex gloves.

- Hot work gloves such as standard welding gloves are typically made of leather. However, there are many different types of gloves for hot work. Select gloves that afford adequate protection for the type of work you'll be performing. Make sure they fit well and are comfortable to wear.

MSCA Tailgate Safety Talks – Volume II
Working Alone

#41

We would never be able to compete in the marketplace if we sent more than one technician to jobs that only required the service of one. That's why so much of our work is done alone. The downside to working alone is that, if an incident occurs, there may not be anyone close by to help you. There are several things you should know to help you stay safer when working alone.

- Be sure to have a cell phone or two-way radio with you. Keep it charged and readily accessible at all times. Make sure you contact your supervisor or some other responsible person from your company and let him know where you are, when you will start work, and when you expect to finish.

- Check in with your contact as soon as you finish the job. If your contact doesn't hear from you when expected, he can try to contact you. If he can't reach you, he can send help.

- Whenever possible, check in with your client before you start work, and check out with him before you leave for the next job.

- If you wear a medical identification bracelet, remember that you may have to remove it so it won't get caught in moving machinery or when you're working near exposed, live electrical parts. If you remove it, place it where someone will see it if you go down while working alone.

- If you experience severe allergic reactions and carry an EpiPen, make sure the EpiPen is readily accessible and keep it where it can be easily seen by a potential rescuer.

- If you start to choke on something while you're alone and you can't breath, perform the equivalent of the Heimlich maneuver on yourself. Bend over and thrust yourself sharply down on the top edge of a chair back or a similarly shaped solid object. The object should contact you in the abdomen just above the navel in an inward and upward position. Repeat the action until the object becomes dislodged.

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CPR

#42

- **Check the victim for breathing** – Open the airway by tilting the head back and lifting the chin. Look, listen, and feel for breathing for 5-10 seconds. Look for the chest to rise, listen for breath, and feel for breath on your cheek.

- **Rescue breaths** – If the victim is not breathing, place a CPR breathing barrier over his mouth and nose. If the barrier doesn't cover the victim's nose, pinch it closed with your thumb and forefinger. Give the victim two rescue breaths. Each breath should last about 1 second. Make sure the victim's chest is rising with each breath.

- **Repositioning the airway** – If the victim's chest isn't rising with each breath, reposition the airway by re-tilting the head and lifting the chin. Attempt the second rescue breath. If the second breath doesn't go in assume the victim is choking.

- **Chest compressions** – Kneel next to the victim's chest. Whether or not the victim is choking, begin chest compressions by placing the heel of one hand along the breastbone in the center of the chest with your fingers pointing toward the victim's nipple. Place the heel of your other hand directly on top of the first hand, and interlock your fingers. Straighten your arms and lock your elbows with your shoulders directly over your hands. Compress the chest straight down 1 ½ to 2 inches 30 times at a rate of 100 compressions per minute. Count aloud to keep a smooth, steady rate of compressions.

- **Check for objects in the mouth** – If the victim appears to be choking, look inside the mouth for any obstructions. Sweep the inside of the mouth with your index finger to remove any obstructions.

- **Repeat CPR process** – Start with 2 rescue breaths and 30 chest compressions. Continue CPR until an automated external defibrillator (AED) arrives and someone there knows how to use it, the victim begins to move, or emergency medical services (EMS) responders arrive.

MSCA Tailgate Safety Talks – Volume II
Emergency Response First Aid

#43

If you're in the mechanical service business long enough, sooner or later you may be called upon to help an injured victim. Here are some basic, emergency-response first aid guidelines to help you if you're the first responder.

- **Survey the scene** – Carefully survey the scene and call for help. Look for hazards that could harm you or other responders, such as exposed power lines, fires, etc. Don't approach the victim unless it is safe to do so. Send someone to call for emergency medical services (EMS) immediately. As soon as that person leaves the scene, send a second person for EMS.

- **Protect yourself** – Always use medical exam gloves, and a CPR breathing barrier if it's needed.

- **Protect the victim** – Do not move the victim unless it is absolutely necessary to provide life saving treatment, or protect the victim from an imminent hazard.

- **Breathing** – Check the victim for consciousness and breathing. Open the victim's airway by tilting the head back and lifting the chin. Bend down over the victim's mouth, facing his chest. Look, listen and feel for breathing for 5 to 10 seconds.

- **Response** – If the victim is not breathing, immediately start CPR. If the victim is breathing, look for signs of severe bleeding.

- **Bleeding** – Apply direct pressure to wounds to slow the loss of blood. While applying pressure, elevate wounded arms, or legs above the heart, but only if doing so will not cause additional harm to the victim.

- **Shock** – Treat the victim for shock. Lay the victim flat on his back and keep his body temperature in the normal range. You may have to cover the victim with a coat or jacket. Elevate the victim's legs 8 to 13 inches, unless there is a chance of spinal injury. You can prop the feet up on an object to elevate them to the right height. Keep the victim comfortable, but do not give him anything to eat or drink.

MSCA Tailgate Safety Talks – Volume II
Refrigerant Safety

#44

As time goes on, more and more emphasis is placed on safe application of refrigerants. The primary hazards to mechanical service technicians are flammable and/or toxic refrigerants and the extreme pressure of refrigerant systems, regardless of what type of refrigerant is used. Some key safety and health practices for working with refrigerants follow.

- Learn the ASHRAE refrigerant safety group classification system. Many of the refrigerants we use are neither flammable nor toxic. However, it's important to know which ones are and how to protect yourself. To learn the system reference ASHRAE Standard 34.

- Before using a refrigerant that you are not thoroughly familiar with, obtain the material safety data sheet (MSDS). Focus on the hazard warning sections covering flammability and toxicity and the section on personal protection.

- The personal protection section of the MSDS will tell you how to protect yourself from the applicable hazards with personal protective equipment, ventilation, etc. Always wear your safety glasses.

- Read the labels of unfamiliar refrigerants paying close attention to hazard warnings and user instructions.

- Be sure to use a refrigerant sensor capable of monitoring the appropriate refrigerant concentration levels.

- Be sure to use an alarm set to activate when it senses concentrations that are close to, but not over, the acceptable exposure limit (AEL).

- Use adequate mechanical ventilation. If you're not sure how much ventilation is required, consult ASHRAE Standard 15 or check with your supervisor before you start work.

- Make sure you have at least one fully charged, self-contained breathing apparatus readily accessible.

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Refrigerant Safety Group Classifications

#45

There are a few things you should know about safety and health hazards related to refrigerants and how to protect yourself from those hazards. Important information about refrigerant safety and health follows.

- The hazards associated with refrigerants are flammability and toxicity. Not all refrigerants are flammable and/or toxic.
- With regard to toxicity, refrigerants will have one of two letter classifications.
- Class (A) signifies refrigerants for which toxicity has not been identified at less than, or equal to, a specified concentration. Class (B) signifies refrigerants for which toxicity has been identified at below the same specified concentration.
- With regard to flammability, refrigerants will have one of three numeric classifications.
- Class (1) refrigerants showed no flame propagation. Class (2) refrigerants showed lower levels of flammability. Class (3) refrigerants showed higher levels of flammability.
- Look for the safety group classification of the refrigerants you'll be using, and remember how to read them.
- For example, if you see the safety group classification of (A3), you should know that the refrigerant has a low level of toxicity, but the highest level of flammability.
- In contrast, if you see the safety group classification (B1), you should know that the refrigerant has a higher level of toxicity, but no flame propagation. An (A1) denotes low toxicity and no flame propagation, etc.
- Be sure to read the labels on the refrigerants and the material safety data sheets and follow the instructions for safe use of refrigerants.

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Commonly Used Refrigerant Classifications

#46

Many of the refrigerants we use frequently in the mechanical service industry are neither flammable nor toxic. However, some refrigerants are more hazardous than others because they are flammable and/or toxic to some degree. Safety group classifications for some of the most commonly used refrigerants in our industry follow.

Low Toxicity - No Flame Propagation

- Refrigerant 11 (A1)
- Refrigerant 12 (A1)
- Refrigerant 22 (A1)
- Refrigerant 113 (A1)
- Refrigerant 124 (A1)
- Refrigerant 125 (A1)
- Refrigerant 134a (A1)
- Refrigerant 410a (A1)
- Refrigerant 500 (A1)

Higher Toxicity - No Flame Propagation

- Refrigerant 123 (B1)

Higher Toxicity – Lower Flammability

- Refrigerant 717 (B2) (Ammonia)

MSCA Tailgate Safety Talks – Volume II
Fires & Explosions

#47

Fires and explosions that occur in the mechanical service industry are often the result of mishandled flammable or combustible liquids or gases, and improperly isolated ignition sources. Some guidelines for preventing fires and explosions follow.

- Keep flammable or combustible liquids such as gasoline, diesel fuel, benzene, cleaning solvents, etc. only in small quantities.
- Make sure flammable or combustible liquids are kept only in containers specifically designed for them. UL approved metal safety cans with self-closing lids are an excellent choice.
- Label flammable liquid containers stating what's inside. Hazard warnings associated with the liquid must be on the label as well.
- When transferring a flammable or combustible liquid from a drum to a smaller container, ground the drum. Then bond the drum to the container by attaching a bonding wire to each of them. This will prevent static electricity from becoming an ignition source.
- Some of the flammable gases used in mechanical service work include propane, butane and acetylene. Make sure that flammable or combustible gas cylinders are properly stored. Keep oxygen and acetylene separate when they're not in use. Store them at least 20 feet apart or keep a five foot high ½ hour rated noncombustible barrier between them. Don't store LP gas inside of buildings.
- When storing cylinders make sure the valves are turned off, valve covers are securely in place, and the cylinders are secured in an upright position.
- Keep all flammable and combustible liquids and gases and oxygen cylinders away from ignition sources such as welders, torch cutting operations, grinders, brazing and soldering operations, heaters, smoking, etc.

MSCA Tailgate Safety Talks – Volume II
Confined Spaces

#48

A confined space is a space large enough to enter and perform work, but which has limited access, and was never intended for continuous occupancy. Some guidelines for working safely in confined spaces follow.

- The potential hazards in confined spaces are insufficient oxygen (below 19%), too much oxygen (above 23.5%), flammable gases and vapors and toxic substances.

- Make sure a competent person tests the atmosphere in each confined space before you enter.

- When it's safe to enter immediately after initial testing:
  -Make sure the atmosphere inside the space is tested periodically for changes that could make it unsafe.

- When the space requires ventilation for safe entry:
  -Continue monitoring for changes that could make it unsafe;
  -Make sure testing equipment has a built-in hazard detection alarm;
  -If the alarm sounds, exit the space immediately; and
  -Don't reenter until the competent person determines that it's safe.

- When ventilation alone doesn't render the space safe for entry:
  -Continue to ventilate the space;
  -Continue to monitor the atmosphere;
  -Wear the appropriate respirator after proper training;
  -Make sure there is a qualified attendant stationed outside the space;
  -Wear an appropriate safety harness or wristlets and retrieval line;
  -Retrieval lines must be attached outside the space;
  -When entry is vertical, the retrieval line must be attached to a tripod with a wench.
  -Maintain verbal contact with the attendant outside the space.

- If flammable gases are present in the space, make sure you use Class 1, Division 1 electrical equipment.

MSCA Tailgate Safety Talks – Volume II
Clothing & Moving Parts

#49

One of the hazards of working in the mechanical service industry is the potential for clothing to get caught up in equipment, machinery or tools with exposed moving parts. Caught up clothing has resulted in serious worker injuries including lost body parts and fatalities. Here are some guidelines to help you prevent getting caught up in equipment, machinery and tools with exposed moving parts.

- There's no telling what types of equipment, machinery or tools you'll be working with or exposed to on a given work day. It's best to dress for work each day with the assumption that you will be exposed to all types of gear.

- Always wear clothing that fits snugly against your body. Loose clothing is much more likely to get caught.

- No matter what type of shirt you're wearing, keep it tucked in at all times.

- Long sleeves are necessary when we're performing certain tasks such as welding. However, you should roll up your sleeves in a manner that will keep them from getting caught whenever long sleeves are not required.

- Avoid wearing sweatshirts or jackets with attached hoods.

- Before using or working near equipment, machines, or power tools, make sure the guards are in place and operating properly.

- Remove rings, watches, necklaces, bracelets, and other jewelry that could get caught up in moving parts.

- If you have long hair, tuck it up inside a hat before operating equipment, machinery or power tools with exposed, moving parts.

- Weather permitting, wear clothing that will easily tear away from your body if it does get caught.

MSCA Tailgate Safety Talks – Volume II
Dressing for the Job

#50

Being properly dressed for the job each day is important to your comfort and your safety. You have to consider the type of work you'll be performing, whether you will be inside or under roof, weather conditions, whether you'll be working where heat or air conditioning are available, etc. Here are some guidelines for selecting clothing that will help keep you comfortable and safe on the job.

- Select durable, comfortable clothing that fits snugly against your body.

- Since we do some hot work in the mechanical service industry our clothing should be resistant to burning or melting. Natural fibers such as cotton or wool are a good choice.

- Select pants without cuffs and shirts without pockets to that sparks or spatters of slag won't get caught up in them.

- Dress for the conditions. If it's going to be cold, dress in layers so that you can better trap your body heat inside your clothing. You can remove one layer at a time if you start to get too warm.

- It's important to stay dry regardless of whether it's going to be hot or cold in your work area. Wear an outer shell that is breathable, but also water repellant or waterproof.

- Wear sturdy, comfortable work boots that provide plenty of support. Higher top, leather boots are a good choice because they will provide some support for your ankles. Make sure they fit, and be sure to break them in before you wear them regularly.

- Make sure you don't wear loose fitting clothes or jewelry such as watches, rings, necklaces, bracelets or anything else that could get caught up in equipment, machinery or power tools with exposed, moving parts.

MSCA Tailgate Safety Talks – Volume II
LP Gas

#51

We're around liquefied petroleum gas enough in the mechanical service industry that we should know something about it. Especially since some of the work we do could become an ignition source for LP gas that's not handled properly. Here are some guidelines for working around LP Gas.

- LP gas is a mixture of gases that change into liquid under moderate pressure.

- LP gas is extremely flammable, and has moderate health hazards associated with inhalation. However, it is not reactive and there are no special hazards associated with it.

- Low concentrations of LP gas don't appear to be harmful when inhaled. However, LP gas is an asphyxiate and can be extremely harmful if inhaled in high concentrations.

- Before working with LP gas, carefully check the container for damage that could result in a leak.

- Also, carefully inspect the valves, connectors, manifold valve assemblies, hoses, regulators and any other parts to ensure that they are the proper system components, and that there is no visible damage to any of them.

- Confirm that LP gas cylinders have an excess flow valve to minimize the flow of gas if the fuel line becomes ruptured.

- Ensure that LP gas cylinders are kept secured in an upright position.

- Make sure you never store LP gas inside buildings.

- Always make sure there is a Class ABC fire extinguisher wherever LP gas is used or stored.

MSCA Tailgate Safety Talks – Volume II
Basic Safety Checklist

#52

Here are several guidelines to consider for basic, daily jobsite safety.

- Learn to quickly identify potential hazards, especially the most common hazards in the mechanical service industry.
- Establish good housekeeping habits in your work areas.
- Always select the right tool or the right type of equipment for the task.
- Inspect your tools and equipment before you use them. If any of them are damaged or defective, or if you're not sure, don't use them. Immediately follow your company's procedures for taking defective equipment out of service.
- Always get help moving heavy and/or bulky objects, and always use good lifting techniques.
- Be cognizant of warning signs and sounds.
- Obey your company's safety rules, and all hazard warnings.
- Always wear your seatbelt, even if you're only driving a short distance.
- Wear the necessary personal protective equipment all of the time.
- Before working with chemical substances, obtain and read the critical parts of the material safety data sheet (MSDS). Critical parts include, but are not necessarily limited to, the description of the substance, the fire hazards, the health hazards, the reactivity hazards, any special hazards, and how to protect yourself (i.e. PPE, etc).
- Stay alert for unexpected jobsite hazards. When you become aware of a hazard, don't hesitate to address it immediately.
- Whenever you're in doubt about any job safety or health issue stop what you're doing and consult with your supervisor.

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