

# [There serious harm. the pressure equipment regulations and](https://assignbuster.com/there-serious-harm-the-pressure-equipment-regulations-and/)

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There are several legislations that need to befollowed to ensure the minimisations of risks and hazards. Some legislationscould be: ·       Training·       Wearing PPE·       Pressure Equipment directive·       Knowing operating conditions·       Carrying out maintenance When dealing with fluid power systems there areseveral health and safety rules and legislations that need to be followed. Whenworking with high pressure then the Pressure Equipment Directive (PED) needs tobe used which ensures the equipment is used for its intended purpose and isn’texceeding its strength and capabilities. The law states that the pressureequipment have a maximum pressure greater than 0. 5 bar.

This law is from thepressure equipment regulations of 1999 and this was adapted from the 1997regulation. If the limits have been exceeded, then a failsafeis needed and it covers the safe handling of examining and draining theequipment. In a hydraulic system where oil is used then safe measures are neededas high pressures of oil could produce high temperatures as the increased flowcould be explosive and highly dangerous. The same could be said for a pneumaticsystem where air is used as if there was a leak or a hose had been damaged thenthe high pressure of air will move uncontrollably and will be unpredictable andcause serious harm. The Pressure Equipment Regulations and thePressure Systems Safety act are to be followed at all times.

With the pressuresystems safety act, it is important that the operating conditions of theequipment is known and when inspecting or repairing/installing a fluid powersystem then only a competent and trained person should do so whether they arean employee, or an independent person hired because they bring specialisedexpertise. The standards and codes of practice when designing and constructingnew equipment is especially important as it’ll reduce risks and hazards. Knowing the operating conditions include whether a gas or liquid is stored, contained or processed and if it’s a harmful or hazardous substance as thiswould relate to COSHH.

This also relates to knowing whether is a flammable ortoxic substance as this would influence the PPE worn and would also requirespecialised and appropriate training. The temperature and pressure of theequipment should also be known as well as instructions for the operatingequipment and knowledge of how to use the equipment if an emergency occurs. There are several hazards to be aware of and ifthe equipment is upgraded or is too complicated and difficult to use thentraining is necessary to increase experience and improve productivity. Somehazards to be aware of are impacts of blasts and explosions from the liquid orgas. With industrial fluid power systems its vital that the materials aresuitable and can handle the different pressures and conditions. If repairing ormaintaining equipment, then a record of all work is needed, and this shouldinclude if any issues occurred or all still there. If necessary, havesupervision and a safe place to work.

Report any hazards prior to themaintenance in the risk assessment and make sure the equipment is depressurisedand all electrics are off. If the equipment has been poorly repaired or installed, then it is necessary to show this through various ways whether it be a sign orbarriers surrounding the equipment. If designing and testing the equipment, then use it for its intended purpose.  Before using any equipment see that it is in goodcondition with no damage and that it has protective devices fitted and afailsafe device that will shut down the machine when it operates above itscapability. Regular maintenance is required as this reduces the risks ofaccidents. The equipment should be depressurised before maintenance occurs andemployees should look for risks that can be avoided.

Prior to equipment beingused or maintained, a written theme of examination is needed and followed toreduce risks. Ensure the failsafe device is in a safe and closeposition and are noticeable and that they haven’t been tampered with. Afterchecking the equipment before use, check it after it has been used to see ifany damage or potential hazard has occurred. When measuring the oil level, measure using the gauges and not through the senses such as touch and if you dohave to repair the equipment use the correct tools and skills and if needed theinstructions. The equipment should be in the correct settings and should havenot been changed without authorization and if it has been changed then a noticeshould be put up.

When using equipment ensure there is acontingency plan and that you are wearing PPE always. Appropriate PPE is anecessity and mandatory when working near fluid power systems and managers andsupervisors should provide the equipment as it comes from the personalprotective equipment at work act regulations 1992. Appropriate footwear couldbe safety boots, googles and overalls. If it is necessary, wear specialized PPEsuch as a face shield when disconnecting hoses and pipes. PPEs lower the riskof accidents and PPE for the hands are especially important as fluid powersystems can get extremely hot and melt jewellery to the skin.

Oil leaks aresudden and can travel at an extremely fast velocity and if the leak travelsthrough a small hole it can slice through a body part especially if it’s heatedup. This is because of the personal protective equipment at work regulations1992. Another legislation is training, each employeeneeds mandatory training in order to operate fluid power systems, especially ifthere has been a change or an upgrade. Employees have the right to refuse anydangerous or unsuitable work and can consult employers on the safety issues.

Ifthey feel unsafe they should talk to their employer as they are responsible fortheir employee’s safety. The health and safety consultation with employee’sregulations 1996 is due to this. http://www. healthyworkinglives. com/advice/Legislation-and-policy/Workplace-Health-and-Safety/health-safety-legislation http://www. hydraulicspneumatics. com/maintenance/fluid-power-safety-workplace-part-1 http://www. conformance.

co. uk/adirectives/doku. php? id= pressureequipment  http://www. hse. gov. uk/pubns/indg261.

pdf  Task 2 – P2Hydraulic pump What are the hazards and how can it be fixed? One hazard could be that the pump is heavy andthat the support is not working. This is dangerous as if it falls it could senddebris and oil everywhere. It could also fall on someone causing severe harm orit could fall on something causing property damage. This can be fixed throughhaving the correct support from a chain hoist or an industrial jack. Another hazard could be the heat from the fluidas the fluid is under high pressure.

This could cause severe burns and tominimise this make sure all electrics are off and that the pump has time tocool down.  If there are any pinhole leaks wear PPE such aseye protection and gloves. Oil travels through a pinhole leak at a fastvelocity and can puncture skin causing severe injury, gangrene or death. Tominimise this use wood or paper to check for pinhole leaks by moving it along theline. If there is an oil leak, it will create aslippery environment which would be another hazard and the effects would bedangerous as someone could fall and hit their head, or the oil could be at ahigh temperature and could cause burns. This can be fixed by having a suitablecontainer underneath the pump which can collect the oil. If components are being removed, then the pumpneeds to be drained to release pressure. This can be done by moving the controlvalve back and forth and if the oil is overflowing then the accumulator needsto be working in order to relieve pressure from the pump.

Fire is another hazard that can occur if theliquid is flammable or if it has been compressed and to reduce this risk therest of the equipment needs to be examined such as the pipes to see whetherthey can handle the pressure and if it’s the correct material for the type ofliquid the pump has. Another way to reduce this risk is knowing whether it’s asealed (pressurised) or open (unpressurised) pump as this would make you takedifferent precautions as with a sealed pump you can use a hoist and oil won’tbe falling out whereas an open pump oil could be more dangerous as oil would befalling out everywhere. Who might be harmed and How? Anyone involved with maintaining or using thehydraulic system. They could be harmed as the pump could be damaged and oilcould start leaking and the heat could burn them. What are you already doing?  Providing PPE and training as well as maintenanceand new equipment.  Do you need to do anything else too manage thisrisk? No http://fluidpowerjournal. com/2014/02/safety/ http://www.

hydraulicspneumatics. com/maintenance/fluid-power-safety-workplace-part-1 http://nasdonline. org/1100/d000891/hydraulic-systems-safety. html Air compressor Over pressurised air is a hazard that occurs whenthere is a blocked outlet blocking flow or a compressor malfunction orsomething similar.

Over compressed air could explode as there’s a high pressureand if there’s a carbon deposit build up then there’s a higher chance of afire. Carbon deposits build up through the high air temperature and pressurewhich causes the oil vapour and droplets to turn into carbon deposits. This cancause restricted airflow and to mitigate this you can turbo charge thecompressor which lowers the brake system pressure which reduces discharge temperature, and this minimises the carbon build up. This could be minimised by the correctmaintenance of the equipment as well as using the Pressure gauge to see howhigh the Pressure is. This can harm staff and visitors as over compression canlead to an explosion which could cause the equipment to burst out which isincredibly dangerous.

Noise is another hazard as compressed air isincredibly loud and exceeds the 90db limit ruling and this can cause hearingdamage as well as the vibration which could cause the hoses to moveuncontrollably and unpredictably out of control which is a hazard as if it’s anindustrial pneumatic machine the hoses are a lot bigger and more dangerous ifit comes into contact with someone. To reduce this risk, correct PPE is neededas well as a failsafe in case the equipment is out of control. If hoses are ruptured, then the same thing willhappen with the hoses being out of control and being incredibly dangerous. Ifit has a pinhole leak, then the same thing as the hydraulic pump will happenwith the air causing serious injury.

To reduce this risk run paper or woodalong the hoses and report any hazards found. The pressure of an air compressor is incrediblyhigh and can cause severe damage when it is not used for it’s intended purposesuch as using it to clean clothes. This can hurt someone as the pressure couldcreate an air bubble which can travel to the heart or lungs and cause seriousinjury or death. Another hazard for an air compressor could betripping over tangled wires and cables. This is even more dangerous if they aremisplaced and to reduce this risk, untangle the wires and appropriately placewires out of harms way. A safe place to place hoses is overhead as this reducesthe risk of tripping and provides efficient access. Any leaks or breaks in a compressed air systemcan cause minute particles to be blown at extremely high speeds. Safety glassesare required when working with compressed air systems as it can take out aneye.

An oil leak is a dangerous occurrence and if used near flames or flammablesubstance then it can cause a fire or explosion. An oil leak is especiallydangerous when it is undetected and if it traces back to the air container. Any foreign particle that enters the tank of theair compressor is a major hazard and can cause a large explosion.

Oil isflammable and can cause an explosion when under pressure. Water can also causean explosion when it enters the air compressor tank. Dirt and grit can alsoenter an air compressor, but this can be minimised if all seals and holes areclosed and if the filters are in place. Overheating is another hazard as some parts of anair compressor are ignitable, however this can be prevented by keeping the aircompressor away from flames or any equipment that produces heat. Some air compressors can produce staticelectricity and must be grounded or bonded if it is used near fuel, flammablevapours or explosive atmospheres. Anyone could be harmed with air and training hasbeen provided.

Keeping track of the pressure gauge and keeping a clean, space-free environment will minimise the risks and this can be done by allstaff including managers and supervisors. Compressed air safety – HSG39 – HSE www. hse. gov. uk›pubns›books ›hsg39 Compressed Air Safety www. preston. gov. uk›GetAsset http://papers. sae. org/2003-01-3439/https://www. hunker. com/12215924/dangers-of-an-air-compressor