

There serious harm.
the pressure
equipment
regulations and

[Environment](#)



There are several legislations that need to be followed to ensure the minimisations of risks and hazards. Some legislations could be:

Training · Wearing PPE · Pressure Equipment directive · Knowing operating conditions · Carrying out maintenance

When dealing with fluid power systems there are several health and safety rules and legislations that need to be followed. When working with high pressure then the Pressure Equipment Directive (PED) needs to be used which ensures the equipment is used for its intended purpose and isn't exceeding its strength and capabilities. The law states that the pressure equipment have a maximum pressure greater than 0.5 bar.

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

With the pressure systems safety act, it is important that the operating conditions of the equipment is known and when inspecting or repairing/installing a fluid power system then only a competent and trained person should do so whether they are an employee, or an independent

<https://assignbuster.com/there-serious-harm-the-pressure-equipment-regulations-and/>

person hired because they bring specialised expertise. The standards and codes of practice when designing and constructing new 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 this would relate to COSHH.

This also relates to knowing whether is a flammable or toxic substance as this would influence the PPE worn and would also require specialised and appropriate training. The temperature and pressure of the equipment should also be known as well as instructions for the operating equipment and knowledge of how to use the equipment if an emergency occurs. There are several hazards to be aware of and if the equipment is upgraded or is too complicated and difficult to use then training is necessary to increase experience and improve productivity. Some hazards to be aware of are impacts of blasts and explosions from the liquid or gas. With industrial fluid power systems it's vital that the materials are suitable and can handle the different pressures and conditions. If repairing or maintaining equipment, then a record of all work is needed, and this should include if any issues occurred or all still there. If necessary, have supervision and a safe place to work.

Report any hazards prior to the maintenance in the risk assessment and make sure the equipment is depressurised and 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 or barriers 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 good condition with no damage and that it has protective devices fitted and a failsafe device that will shut down the machine when it operates above its capability. Regular maintenance is required as this reduces the risks of accidents. The equipment should be depressurised before maintenance occurs and employees should look for risks that can be avoided.

Prior to equipment being used or maintained, a written theme of examination is needed and followed to reduce risks. Ensure the failsafe device is in a safe and close position and are noticeable and that they haven't been tampered with. After checking the equipment before use, check it after it has been used to see if any 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 do have to repair the equipment use the correct tools and skills and if needed the instructions. The equipment should be in the correct settings and should have not been changed without authorization and if it has been changed then a notice should be put up.

When using equipment ensure there is a contingency plan and that you are wearing PPE always. Appropriate PPE is a necessity and mandatory when working near fluid power systems and managers and supervisors should provide the equipment as it comes from the personal protective equipment at work act regulations 1992. Appropriate footwear could be safety boots, goggles and overalls. If it is necessary, wear specialized PPE such as a face shield when disconnecting hoses and pipes. PPEs lower the risk of 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.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/adirectives/doku. php? id= pressureequipment) [http://www. hse. gov. uk/pubns/indg261.](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

<https://assignbuster.com/there-serious-harm-the-pressure-equipment-regulations-and/>

correct support from a chain hoist or an industrial jack. Another hazard could be the heat from the fluid as the fluid is under high pressure.

This could cause severe burns and to minimise this make sure all electrics are off and that the pump has time to cool down. If there are any pinhole leaks wear PPE such as eye protection and gloves. Oil travels through a pinhole leak at a fast velocity and can puncture skin causing severe injury, gangrene or death. To minimise this use wood or paper to check for pinhole leaks by moving it along the line. If there is an oil leak, it will create a slippery environment which would be another hazard and the effects would be dangerous as someone could fall and hit their head, or the oil could be at a high temperature and could cause burns. This can be fixed by having a suitable container underneath the pump which can collect the oil. If components are being removed, then the pump needs to be drained to release pressure. This can be done by moving the control valve back and forth and if the oil is overflowing then the accumulator needs to be working in order to relieve pressure from the pump.

Fire is another hazard that can occur if the liquid is flammable or if it has been compressed and to reduce this risk the rest of the equipment needs to be examined such as the pipes to see whether they can handle the pressure and if it's the correct material for the type of liquid the pump has. Another way to reduce this risk is knowing whether it's a sealed (pressurised) or open (unpressurised) pump as this would make you take different precautions as with a sealed pump you can use a hoist and oil won't be falling out whereas an open pump oil could be more dangerous as oil would be falling out

everywhere. Who might be harmed and How? Anyone involved with maintaining or using the hydraulic system. They could be harmed as the pump could be damaged and oil could start leaking and the heat could burn them. What are you already doing? Providing PPE and training as well as maintenance and new equipment. Do you need to do anything else to manage this risk? 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 when there is a blocked outlet blocking flow or a compressor malfunction or something similar.

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

<https://assignbuster.com/there-serious-harm-the-pressure-equipment-regulations-and/>

Noise is another hazard as compressed air is incredibly loud and exceeds the 90db limit ruling and this can cause hearing damage as well as the vibration which could cause the hoses to move uncontrollably and unpredictably out of control which is a hazard as if it's an industrial pneumatic machine the hoses are a lot bigger and more dangerous if it comes into contact with someone. To reduce this risk, correct PPE is needed as well as a failsafe in case the equipment is out of control. If hoses are ruptured, then the same thing will happen with the hoses being out of control and being incredibly dangerous. If it has a pinhole leak, then the same thing as the hydraulic pump will happen with the air causing serious injury.

To reduce this risk run paper or wood along the hoses and report any hazards found. The pressure of an air compressor is incredibly high and can cause severe damage when it is not used for its intended purposes such as using it to clean clothes. This can hurt someone as the pressure could create an air bubble which can travel to the heart or lungs and cause serious injury or death. Another hazard for an air compressor could be tripping over tangled wires and cables. This is even more dangerous if they are misplaced and to reduce this risk, untangle the wires and appropriately place wires out of harms way. A safe place to place hoses is overhead as this reduces the risk of tripping and provides efficient access. Any leaks or breaks in a compressed air system can cause minute particles to be blown at extremely high speeds. Safety glasses are required when working with compressed air systems as it can take out an eye.

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

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

Keeping track of the pressure gauge and keeping a clean, space-free environment will minimise the risks and this can be done by all staff 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>