

MPTL Lab Safety Training

Risk Identification

- 1) High pressure hydraulics
- 2) High voltage
- 3) Electromagnetic
- 4) Pressurized storage containers
- 5) High temperatures (furnaces)
- 6) Cold temperatures (liquid nitrogen)
- 7) Chemicals or Hazardous substances (lead, etc...)
- 8) R&D Lab – some systems may not be in normal operational condition!

General

- 1) Protective Equipment
 - a. Safety glasses and shoes required
 - b. Other equipment
 - i. When handling LN2 Dewar use gloves and face safety shield located on the support stand for securing LN2.
- 2) Chemical
 - a. MSDS location on line \\mspdata1\Environmental_Health_and_Safety\MSDS_On-Line_Reference_Materials
 - b. Storage practices (daily usage bottles on work bench and flammable storage cabinet, no bulk storage)
- 3) Spill kits
 - a. Oil rages need to be placed in closed container, waste oil store in tote.



Close Container



Waste Oil Tote

- 4) Testing
 - a. Qualified to run systems with 793 software and controls or with qualified individual.
 - b. Unattended testing (minimum: contact information provided post on the test of display sign).
- 5) Beverage must be in a closed container, no food allowed.

Emergency Action Plan

- 1) When to clear room and call EHS (Call Ext. 6000)
 - a. Jets of hydraulic fluid! activate Global E-Stop, (Call Ext. 6000)
 - b. Electrical fire! activate Global E-Stop, (Call Ext. 6000)
 - c. Chemical spill over 5 Gal. , (Call Ext. 6000)
- 2) Situations to use E-stop, hydraulic shutoffs, power disconnect
 - a. Station E-Stop - to stop specific test equipment
 - b. Global E-Stop - to stop HPU and all MPTL lab hydraulics
 - c. Power disconnect - to electrically isolate specific test equipment, following lockout tag out LMS training, [EHS039_OLT](#)
- 3) Whom to notify if E-Stop, power disconnected
 - a. Project lead (based upon details on project signs).
 - b. Lab manager (lab equipment failure).
 - c. EHS (Safety and electrical disconnect access).
- 4) Fire
 - a. Extinguisher location next to MPTL lab closet, LMS training, [EHS001_OLT](#)
- 5) First aid located within the plant in key locations

E-Stop Shutdown Types

- **Global E-Stops** – There are three global E-stops, one on HPU in the room (fig.1), one global on the inside of the lab (fig.2), and one global on the outside of the lab (fig.3)



Fig. 1



Fig.2



Fig. 3

- **Work Station E-Stop** – Each work station has an E-stop which will stop the work station, such as a load frame or HSM, but not the hydraulic pump unit.



Crane Operation

- **Crane Operation** - Individuals needing to use the crane must be trained or find someone that is trained. Crane needs to be inspected once daily so confirm inspection is complete before using, inspection document is in the orange packet on the chain.



Emergency Equipment

- **Fire Extinguisher** – Fire extinguisher in the back of the lab near the storage room.



Lab Risk

Stored Energy – exist within the MPTL lab recognized the sources and treat with care.

- **Hydraulic Pump Unit** – has various levels of stored energy that need to be addressed when working with the system.

Magnitude of energy and hazards

Type

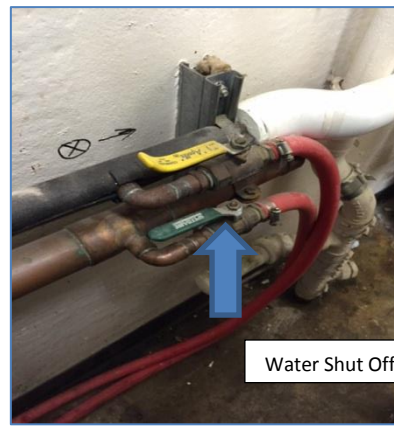
Electrical
Water
Hydraulic

Magnitude

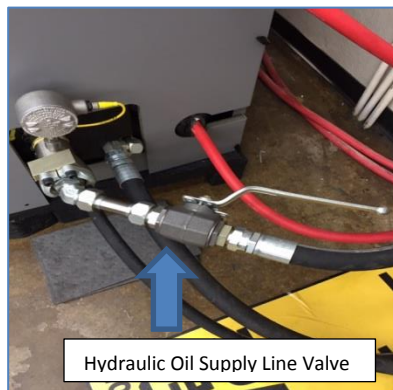
460V
70 psi
3000 psi



460 V disconnect – Switch is “on” in the up position an “off” in the down position. The electrical disconnect for HPU 54 is labeled, see photo.



Water line valves – valves are open when the valve is in line with the piping and closed when at a 90 degree angle to the piping, picture depicts the valve in the open position.



Hydraulic oil supply line valve is depicted in the open condition, 90 degree angle to the piping the valve is closed.



Hydraulic oil flow can be de-energized by depressing the E-Stop button located on the pump control panel or inside or outside of the lab door.

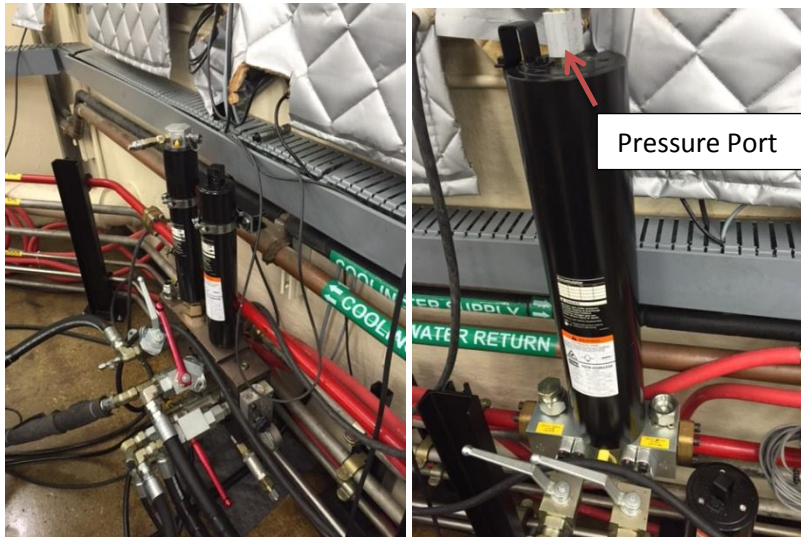
HPU Energy Control Procedure Instructions:

Step 1	Ensure the 480V disconnect (HSP 54) is in the off position. To throw disconnect switch into the off position, stand to the right hand side of the disconnect, turn you back to the disconnect, and shut the disconnect off. Affix a red lockout tag containing your name and the date to the disconnect to protect the integrity of the de-energized system. Depress the E-stop button on the control panel. Attempt to start the pump to verify zero energy potential.
Step 2	Close the supply water valve for the pump by turning the valve 90 degrees to a perpendicular position to the pipe and hose. Lock the valve by using a red lockout tag containing you name and date.
Step 3	Close the hydraulic supply valve for the pump by turning the valve 90 degrees to a perpendicular position to the pipe and hose. Lock the valve using a red lockout tag containing your name and date.

Restoring Power and Utilities:

Step 1	Ensure nobody is working on the system.
Step 2	Remove your lock out and tag from the hydraulic supply valve. Open the supply valve for the pump by turning the valve back 90 degrees, in line with the pipe and hose.
Step 3	Remove your lockout and tag from the supply water valve. Open the supply water valve for the pump by turning the valve back 90 degrees, in line with the pipe and hose.
Step 4	Remove the lockout and tag from the (HSP 46) 460V disconnect. To throw disconnect switch into the on position, stand to the right hand side of the disconnect, turn you back to the disconnect, and throw the switch upward.
Step 5	Turn the E-stop button clockwise to return power to the HPU.

- **Hydraulic Accumulators** – if removing accumulators turn off system oil pressure to zero pressure, and then remove all nitrogen gas charge pressure to zero on the accumulator, at this point the accumulator can be removed.



- **Air Supply** - Air supplies within the lab is stored energy, know the location for air shutoff or pressure regulator.



- **Compressed Gas Storage** – All compressed gas needs to be secured to wall or appropriate cart.
 - Including LN2 Dewar or nitrogen tanks.
 - Chain is preferred securing device to cart or post.



- **Electrical Disconnects** – Electrical disconnects located within the lab are designed to isolate specific equipment and may be locked out by individuals whom have taken the Lockout Tag Out annual training. Any electrical work done to a piece of equipment connected to that disconnect must be reviewed and approved by an electrician before energizing the electrical disconnect.



LMS Training

Associated LMS training modules:

- | | |
|---------------------------|--|
| 1) Fire Extinguisher | EHS001_OLT |
| 2) Lock out tag out | EHS042_OLT |
| 3) Hydraulic spray/jet | EHS011_OLT |
| 4) Chemical | EHS015_OLT |
| 5) High voltage | EHS006_OLT or EHS039_OLT |
| 6) Crane | EHS002_OLT |
| 7) High/low temperatures? | EHS019_OLT |
| 8) Spills? | EHS009_OLT |