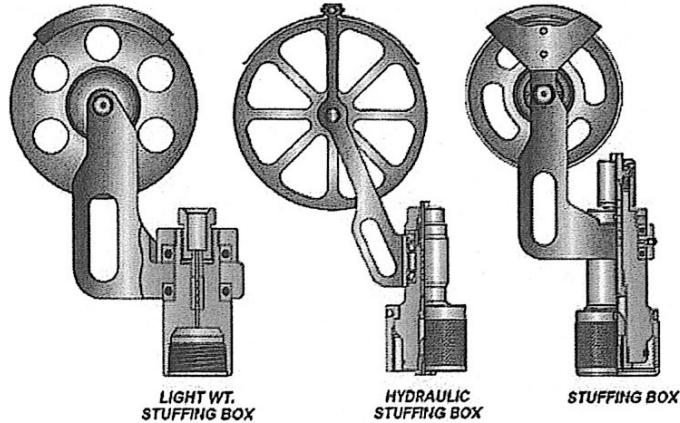


**B. SURFACE EQUIPMENT**

1. Stuffing Box



What is Stuffing Box

- Primary pressur barrier.

What is the purpose of stuffing Box

- Allow wireline to enter the well under pressure and provide seal when the wireline break and be blow out of packing.

How to operate Stuffing Box

- Can be operate either manually or hydraulically without any parts modification.

What is maintenance required for Stuffing Box

- Check the packings to make sure it is not worn out and replace if needed.  
- Check the sheave bearing for free spinning and do replace the bearing if necessary.

What is safety precaution required for Stuffing Box

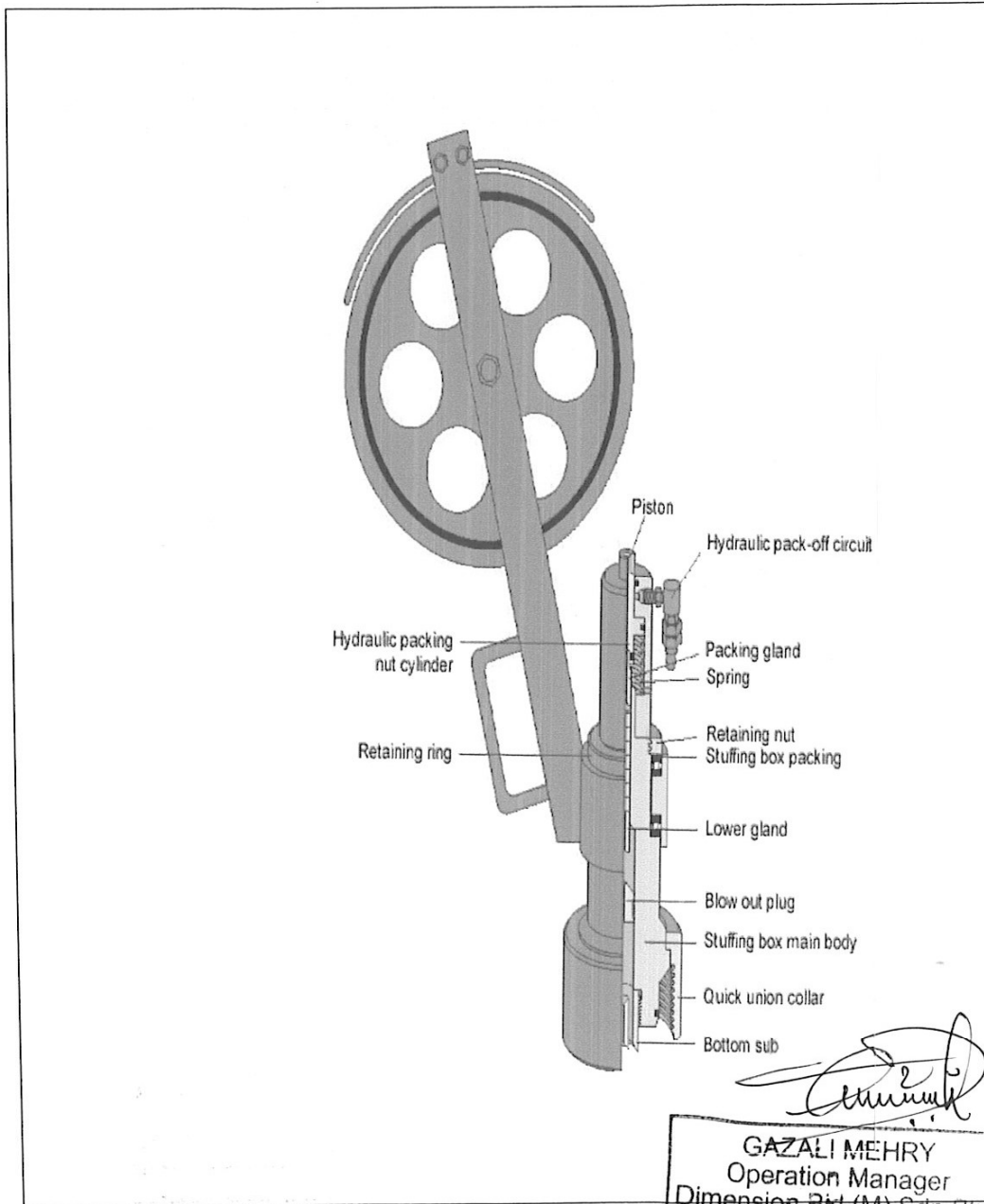
- Avoid the packing from worn out  
- use correct size Sheave for the line in use

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What is potential hazard during handling Stuffing Box

- Leakage
- wireline break .

Draw & name each part of stuffing box



*[Handwritten Signature]*  
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## 2. Lubricator

### What is Lubricator

- Also known as riser.
- A series of inter-connected lengths of pipe.

### What is the purpose of Lubricator

- To provide space for the tool to be contained under pressure when opening and closing the wellhead.

### How to operate Lubricator

- operate by using the chain block, wireline mast, crane or ginpole.

### What is maintenance required for Lubricator


- Hydrotest, Hardness test, thickness test maintenance yearly.
- Visually inspected in a daily basis.
- O-ring must be replaced if expired or wear off.

### What is safety precaution required for Lubricator

- check the quick union condition of O-ring groove, pin and box sealing surface condition and the size of pin and box

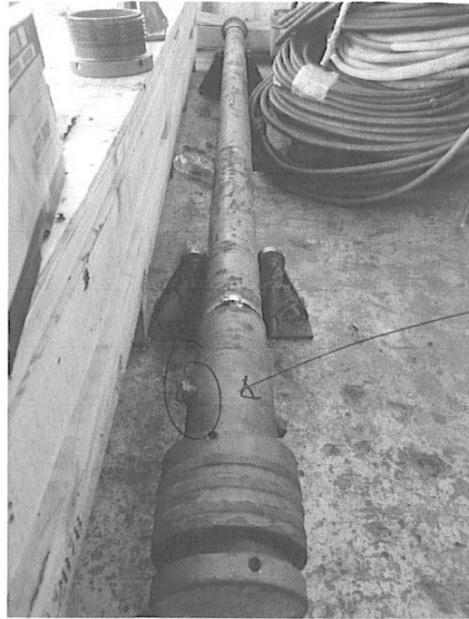
### What is potential hazard during handling Lubricator

- Back injury may occur due to heavy weight object.
- Lack of caution may cause the lubricator to drop and can cause injury.

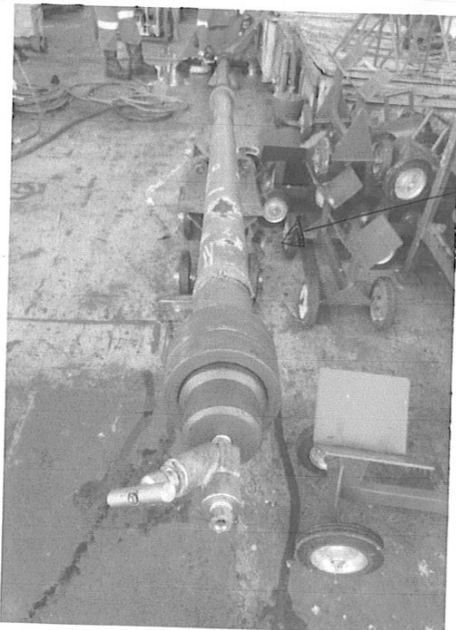
  
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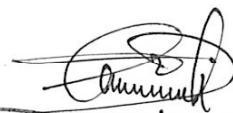
Draw & name each part of Lubricator



Ported  
Lubricator



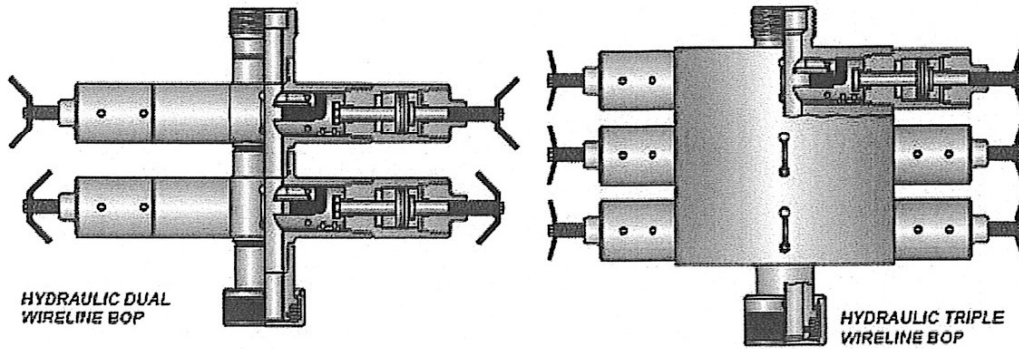
Non - ported  
Lubricator



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3. Blowout Preventer (BOP)



What is BOP

- Also known as wireline Valve.
- Installed between tree connection and the lower lubricator section.

What is the purpose of BOP

- To enable the well pressure to be isolated without cutting the wire by closing the master valve.
- allowing the assembly of wireline cutter above BOP rams and dropping it if toolstring stuck in the well.

How to operate BOP

- Equalising the Pressure due to attempting to open rams without equalising may cause internal damage.
- Keeping the equalising valve closed during emergency it will hold pressure as soon as the rams are close.

What is maintenance required for BOP

- Level 1 service that carried out after every job.
- Level 2 service that carried out once a year
- Level 3 service that carried out every 5 year.

What is safety precaution required for BOP

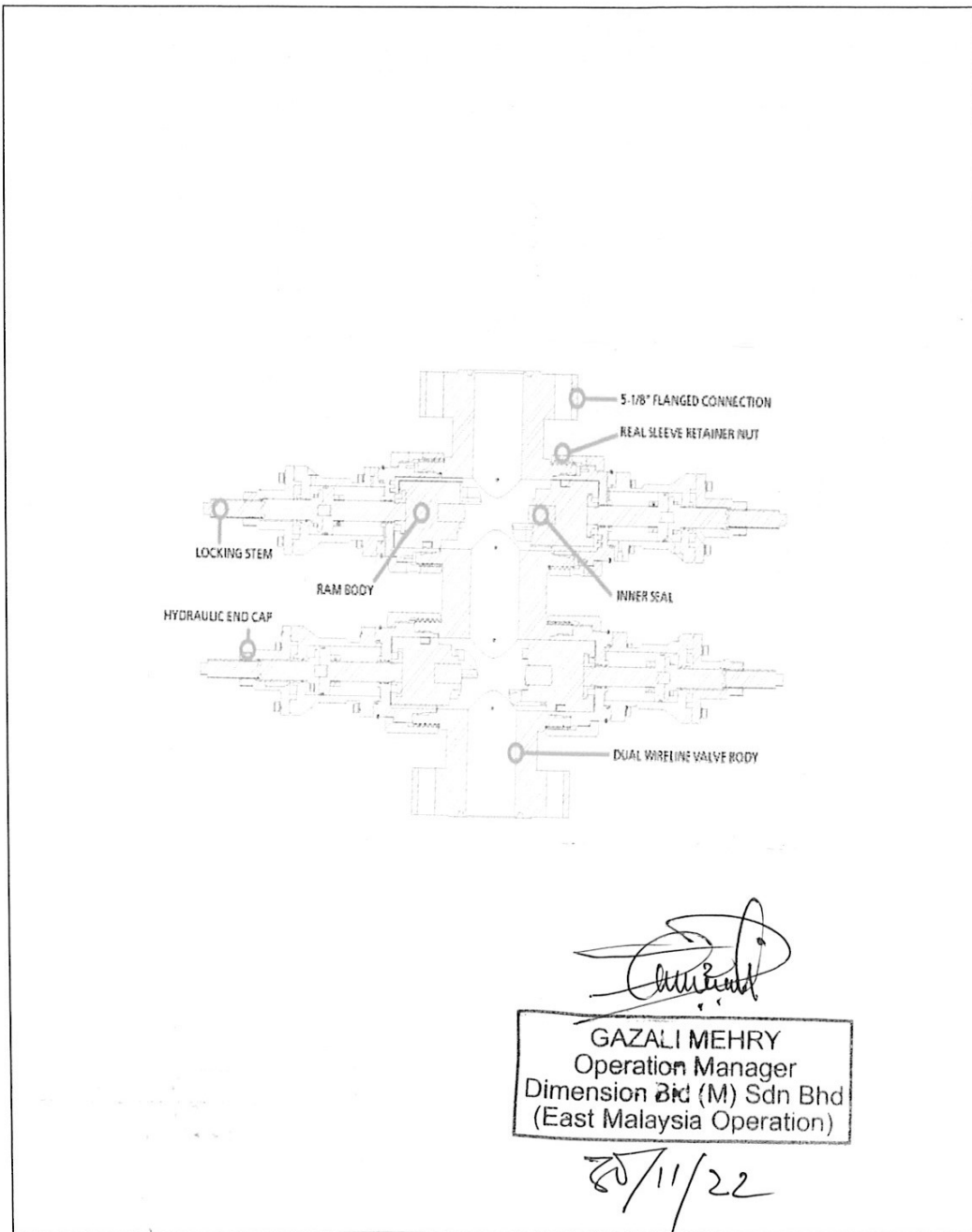
- ~~Back injury due to heavy weight object.~~
- ~~Lack of caution may cause drop object and injury can happen.~~
- Ensure all the O-ring are in good condition to avoid any leakage. 20/11/22
- Ensure the Bop rams to close in less than 30 seconds.

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What is potential hazard during handling BOP

- Back injury can happen
- Drop object due to lack of caution.

Draw & name each part of BOP



#### 4. X-Mas Tree

What is x-mas tree

- Series of valves installed on the wellhead to control flow of fluids from the well and it is located on top of wellhead.
- 3 types : ① Solid Block xmas ② Composite Block xmas ③ Horizontal xmas tree.

What is the purpose of x-mas tree

- To control the flow of fluids from the well.

How to operate x-mas tree

- Operates with 6 valve : ① Lower master valve ② upper master valve ③ Flow wing valve ④ Choke valve ⑤ Kill Wing valve ⑥ Swab valve.
- manually operates

What is maintenance required for x-mas tree

- Visual inspection
- Repaint to avoid corrosion
- Part replacement if needed.


What is safety precaution required for x-mas tree

- Do not overlighten the valve during operation opening and closing.
- Never use the Master Valve to shut in flowing well except in the emergency situations.

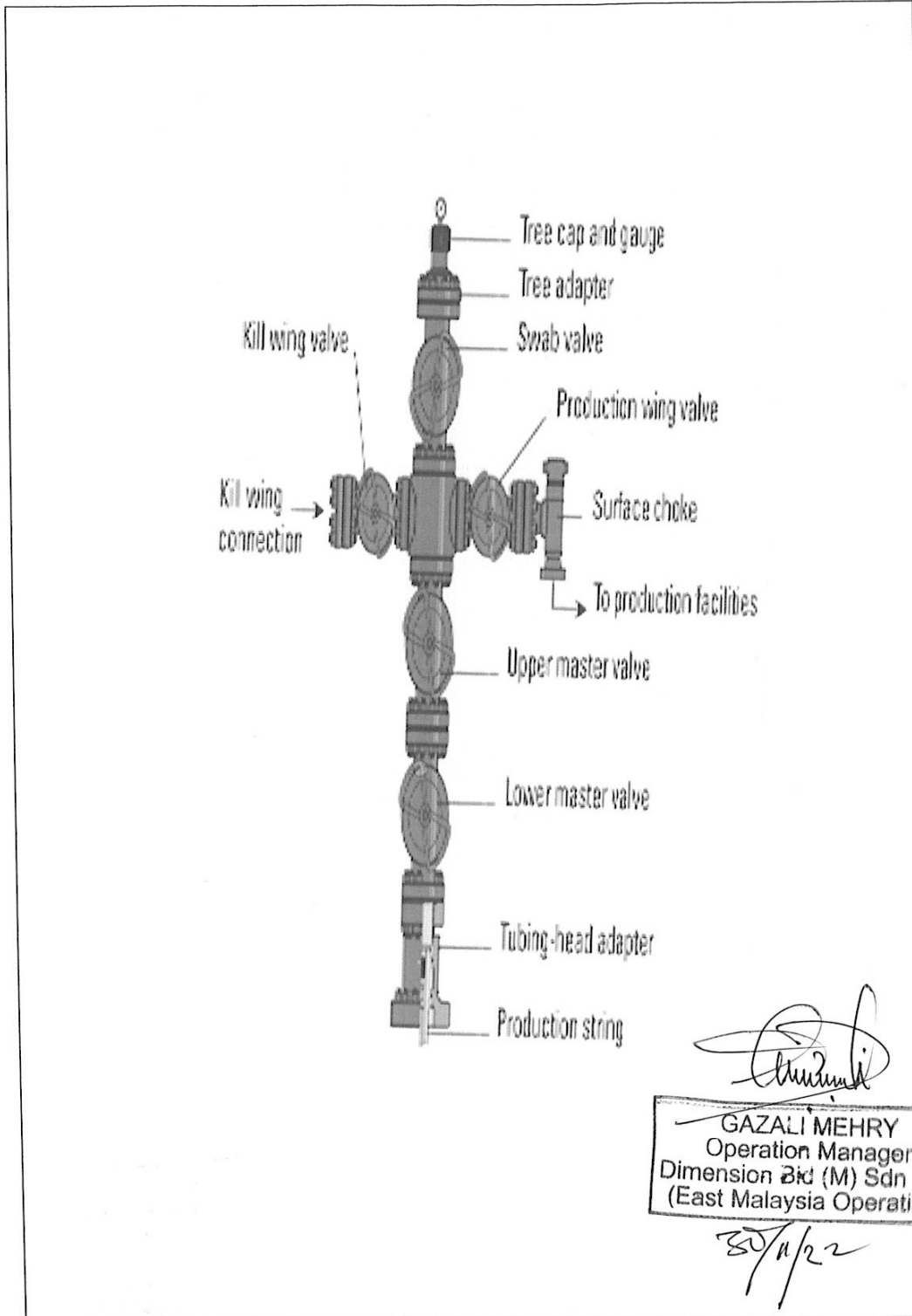
What is potential hazard during handling x-mas tree

- Blowout can happen.

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Draw & name each part of x-mas tree



5. Wireline Reel Skid Unit (RSU) / Winch – Single Drum and Double Drum

What is RSU

- Also known as wireline unit or winch.

What is the purpose of RSU

- used to convey downhole equipment or tools in and out of the wells.

How to operate RSU

- Hydraulic powered by powerpack that provide flow and pressure to the hydraulic drum motor.  
- Winch can fit with one or two wireline drum.

What is maintenance required for RSU

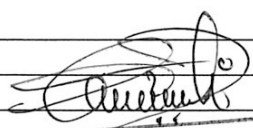
- Daily inspection such as inspecting pipe work, hoses and fitting for damage or leak.  
- Monthly inspection such as cleaning thoroughly and doing general inspection.  
- Yearly inspection such as renew oil in all gear boxes.

What is safety precaution required for RSU

- Ensure wireline unit is chained/anchored to a non-moveable object to prevent any movement while running wireline operation.

What is potential hazard during handling RSU

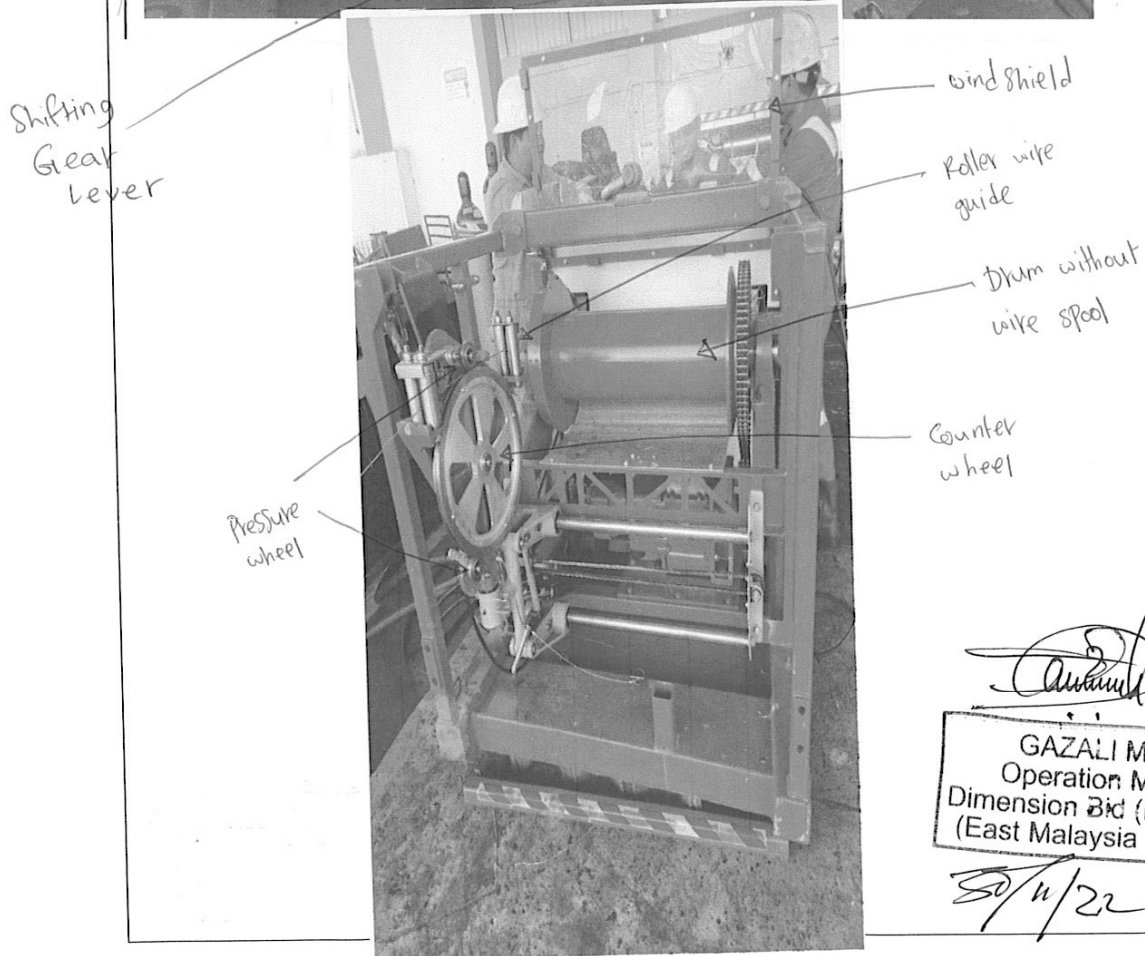
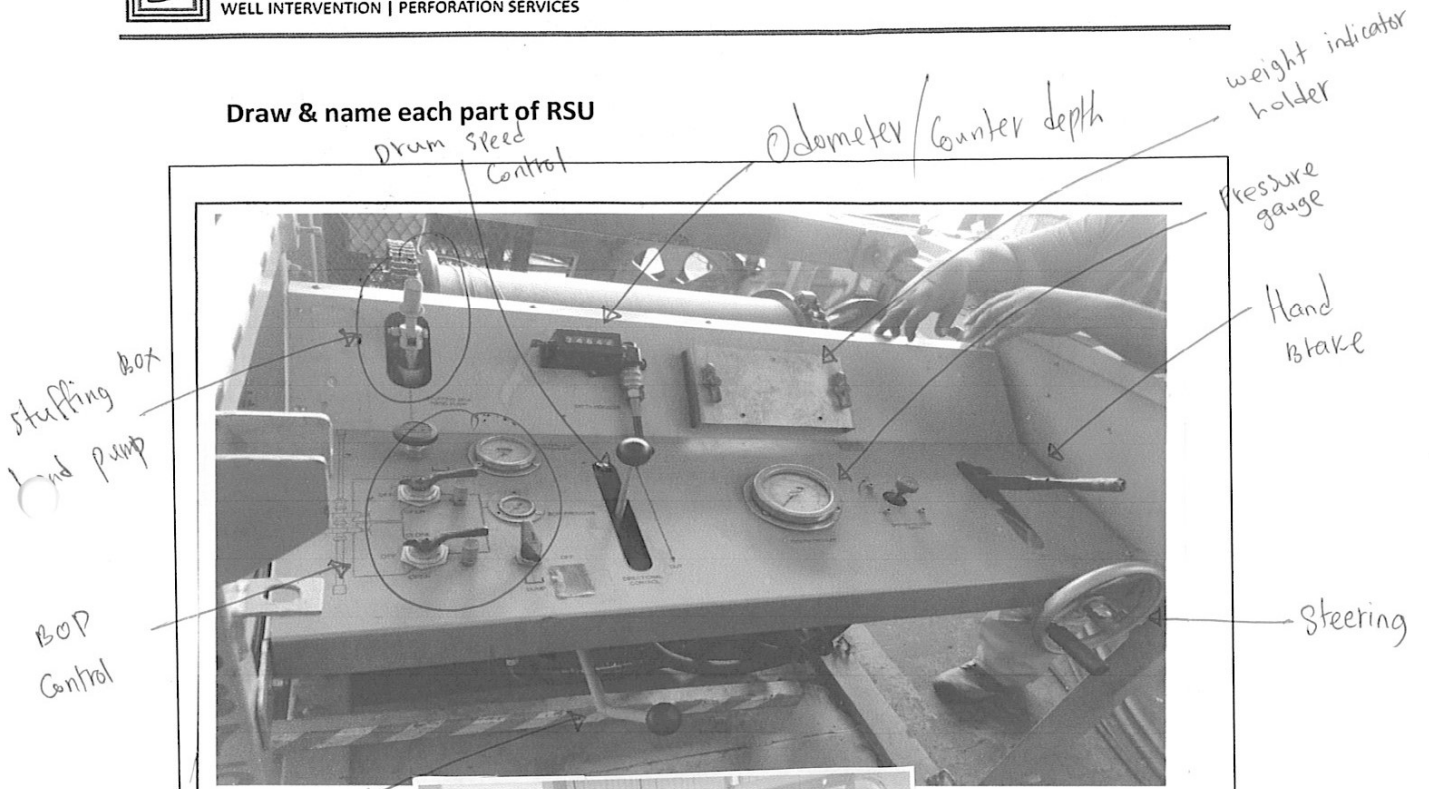
- wire break can happen.

  
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Draw & name each part of RSU



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6. Odometer

What is Odometer

- Also known as Depth Counter or Depth indicator
- Have a five digit meter reading and manual zero rest that connected to the counter head.

What is the purpose of Odometer

- Use to indicate wireline toolstring depth in the hole in feet or meters unit.

How to operate Odometer

- By connecting the odometer hose to the right angle and then the odometer is put at RSU to be monitor.

What is maintenance required for Odometer

- By checking the counter head either it is free to rotate or not.

What is safety precaution required for Odometer

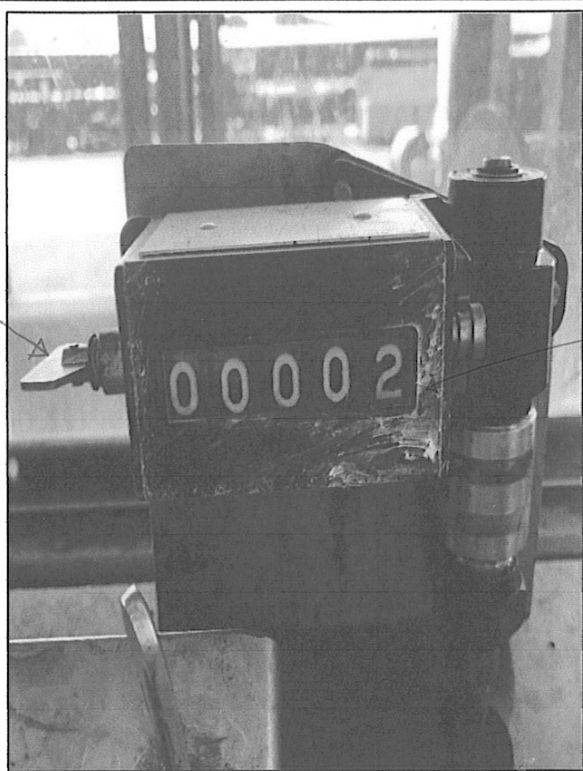
- wear a proper PPE

What is potential hazard during handling Odometer

- Beware for the sharp edges and the pinch point that can cause injury.


  
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Draw & name each part of Odometer



Keset zero knob.

Odometer display in feet, ft.

  
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7. Weight indicator (200 lbs and 4000 lbs)

What is Weight Indicator

- To allow An indicator that describe the weight of the tool string hung at the end of wire.

What is the purpose of Weight Indicator

- To allow the total weight of the tool string hung at the end of wire to be read and reflected by weight indicator.

How to operate Weight Indicator

- The weight indicator (rated at 250) connected to the load cell using a rubber hose filled with hydraulic oil. Then the load cell attached to heavy-duty hose carries the pressure generated to the weight indicator gauge calibrated in lbs.

What is maintenance required for Weight Indicator

- By checking the hose connection and replace if leakage found.
- Refill w-15 fluid with YA 2 pump.

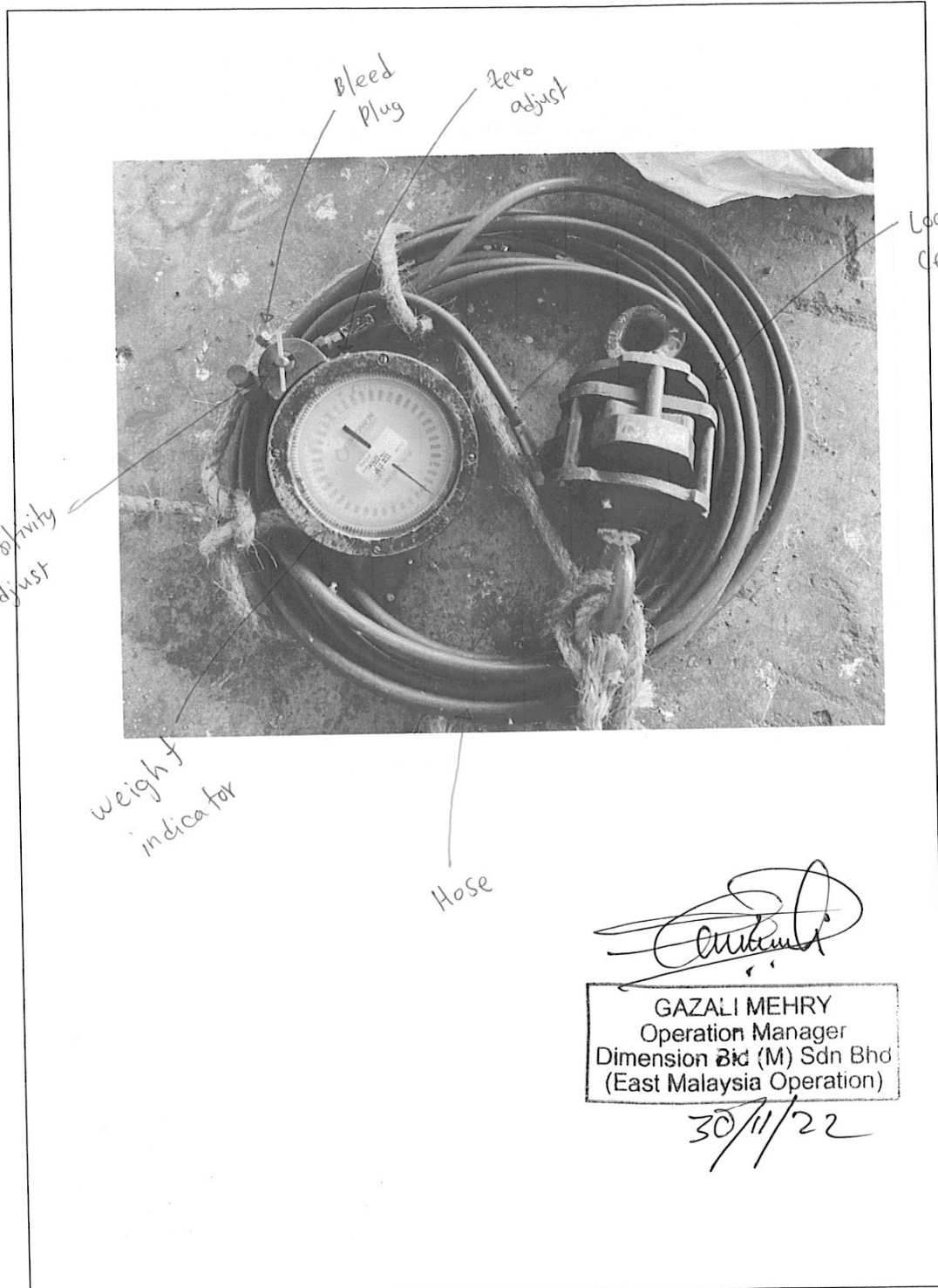
What is safety precaution required for Weight Indicator

- Do not apply force to the hose such as putting something heavy on top of it due to it may damaging the hose.
- Mount the load cell so that the hoses goes from the cells toward the tree and not getting kicked.

What is potential hazard during handling Weight Indicator

- Drop from handling
- If the weight indicator is not give attention it may causing wire tension and possibly to break.

Draw & name each part of Weight Indicator



## 8. Spooling Device

### What is Spooling Device

- A device that has removable drum to allow transport spool to be inserted, allowing the new string to be spool into the reel.

### What is the purpose of Spooling Device

- To hold the reel drum during spooling process.
- Controlling the tension of wire when spooling in process.

### How to operate Spooling Device

- Assemble the reel which is the same as normal operation, with a weight indicator and bag pulley needed.
- Brake lever will help to control the wire spool tension.

### What is maintenance required for Spooling Device

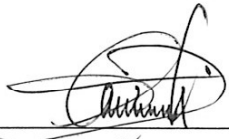
- Blacking maintenance may be needed.
- Always check and monitor the hydraulic system.

### What is safety precaution required for Spooling Device

- Check the glass on ESU to make sure it is in good condition before starting the job.
- Bolts and nuts (shaft) are in good condition.

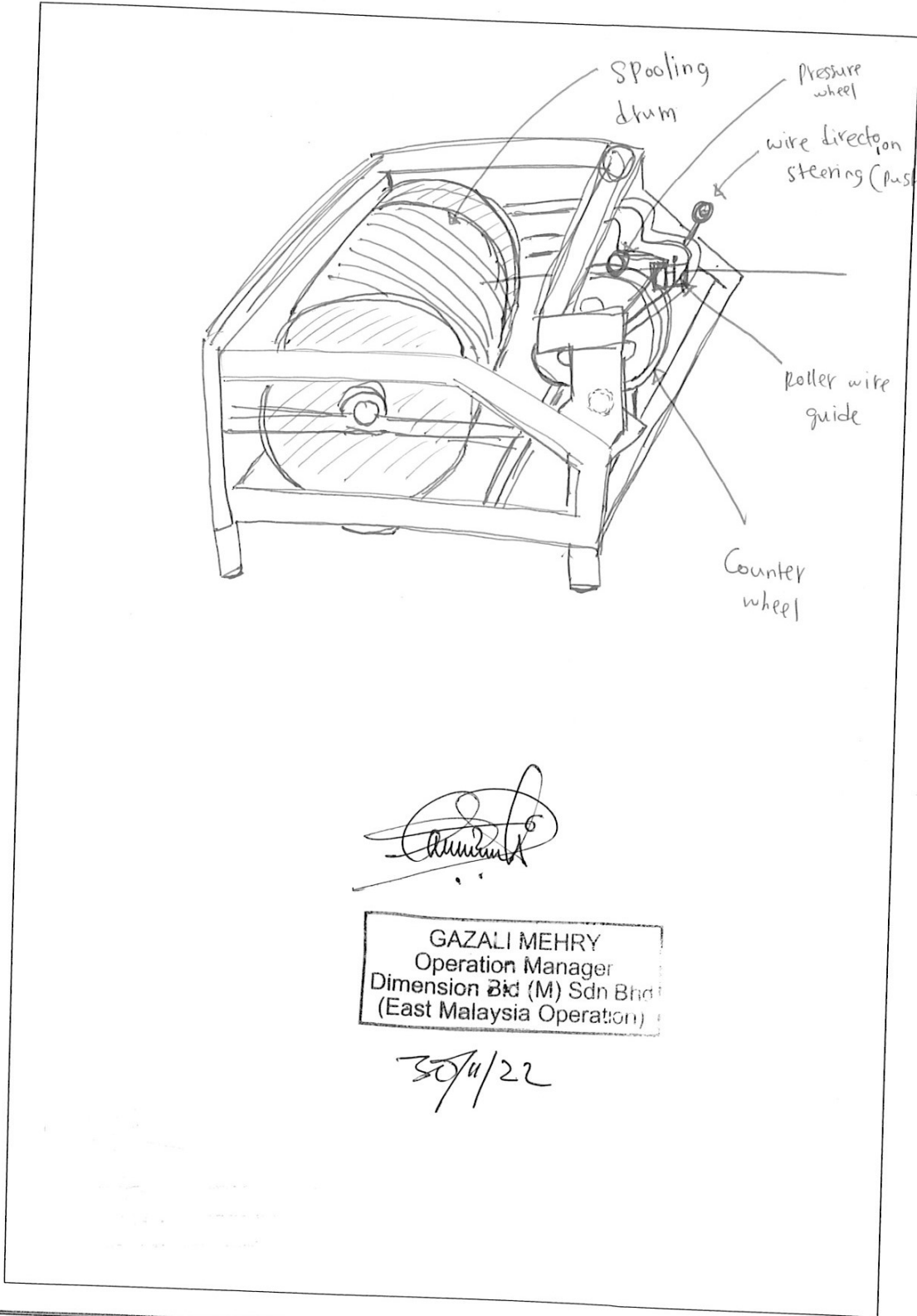
### What is potential hazard during handling Spooling Device

- Pinch point
- wire break
- High decibel operation.

  
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Draw & name each part of Spooling Device



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9. Control Panel

What is Control Panel

- 3 types : (1) Control Panel - to operate BOPrams.
- (2) Single Well Control Panel (SWCP) - to operate master valve and SSCSV
- (3) Well Control Panel (WCP) - An integrated CP that can operate BOP, stuffing Box, MV and SSCSV.

What is the purpose of Control Panel

- used to operate a number of valves normally operated in slickline operations.
- Provide a high pressure oil output from low pressure air or gas input.

How to operate Control Panel

- Connect the control line to the equipment.
- open air supply and use the regulator to control pump out to pressurize the line.

What is maintenance required for Control Panel

- Check for the hydraulic oil fluid level.
- Check the filter and replace if needed.
- Check the hose to make sure that they are no leakage.

What is safety precaution required for Control Panel

- Don't tighten or loose the connection when under pressure.
- Beware of the trap pressure and bleed off fully before opening the connection.

What is potential hazard during handling Control Panel

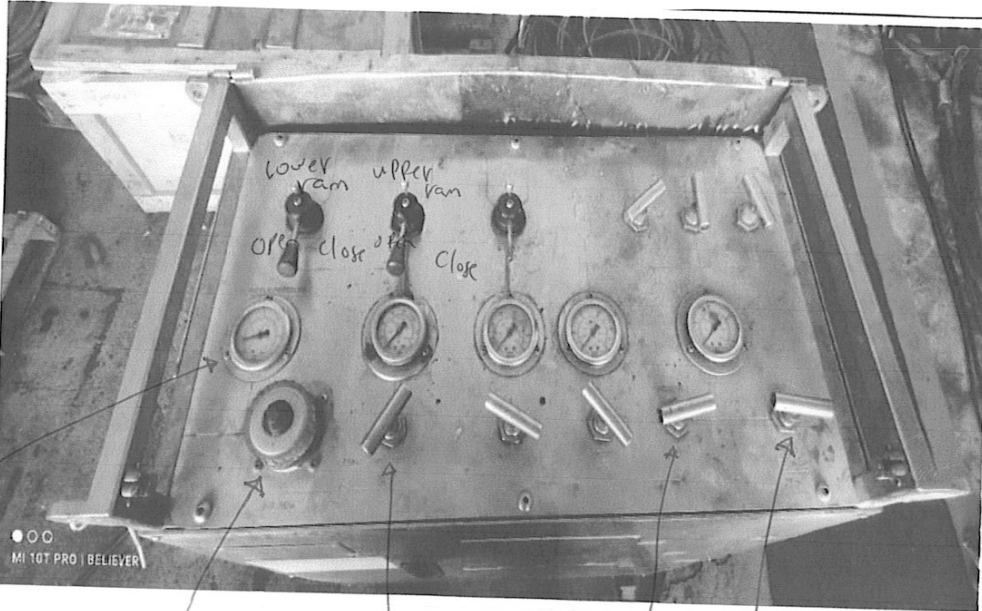
- The connection may loose due to high pressure.
- The hose may burst due to the high pressure.

*Gazali Mehry*

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Draw & name each part of Control Panel



Supply pressure

Air regulator

BOP ram

Crossover

Dump

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10. Huskel <sup>Pump</sup> Drum

What is Huskel <sup>Pump</sup> Drum

- An air driver pump

What is the purpose of Huskel <sup>Pump</sup> Drum

- TO drive the hydraulic / water in control panel / test pump.

How to operate Huskel <sup>Pump</sup> Drum

- Operate on the knob or regulator of the panel.
- Its function is to allow the hydraulic piston to reciprocate without passing the fluid into drive section.

What is maintenance required for Huskel <sup>Pump</sup> Drum

- Check for the O-ring condition.
- Do service for the huskel pump
- Hydraulic check valve and liquid seal repair.

What is safety precaution required for Huskel <sup>Pump</sup> Drum

- Check for the O-ring condition
- make sure the tubing connection is in good condition.

What is potential hazard during handling Huskel <sup>Pump</sup> Drum

- tubing may burst.
- Be careful for the pinch point.

  
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Draw & name each part of Haskel Pump



Inside Pressure Test unit



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11. Power Pack (Electrical & Diesel)

What is Power Pack

- An open loop hydraulic single piece configuration.
- Two types available : (1) Hydraulic  
(2) Spring starter power pack.

What is the purpose of Power Pack

- Used to power up RSU and wireline mast (if has auxiliary pump installed)

How to operate Power Pack

1. Set diesel cut-off valve to start position
2. Pump power pack until pressure reach 2000-3000 psi.
3. Pull and hold inlet over speed shut down valve.
4. Step on foot/pedal starter switch
5. Keep and continue holding the inlet over speed shut down valve (approx. 10 sec) until oil pressure built
6. Release inlet over speed shut down valve.

What is maintenance required for Power Pack

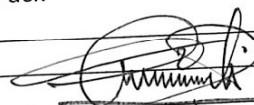
1. Check oil level
2. Check water level
3. Check diesel level
4. Check beltting condition
5. Check for any leaking.

What is safety precaution required for Power Pack

- Wear proper PPE when changing hydraulic/engine oil.
- Beware the rotating fan when engine is running.
- Do not open the radiator cap while power pack is still running.

What is potential hazard during handling Power Pack

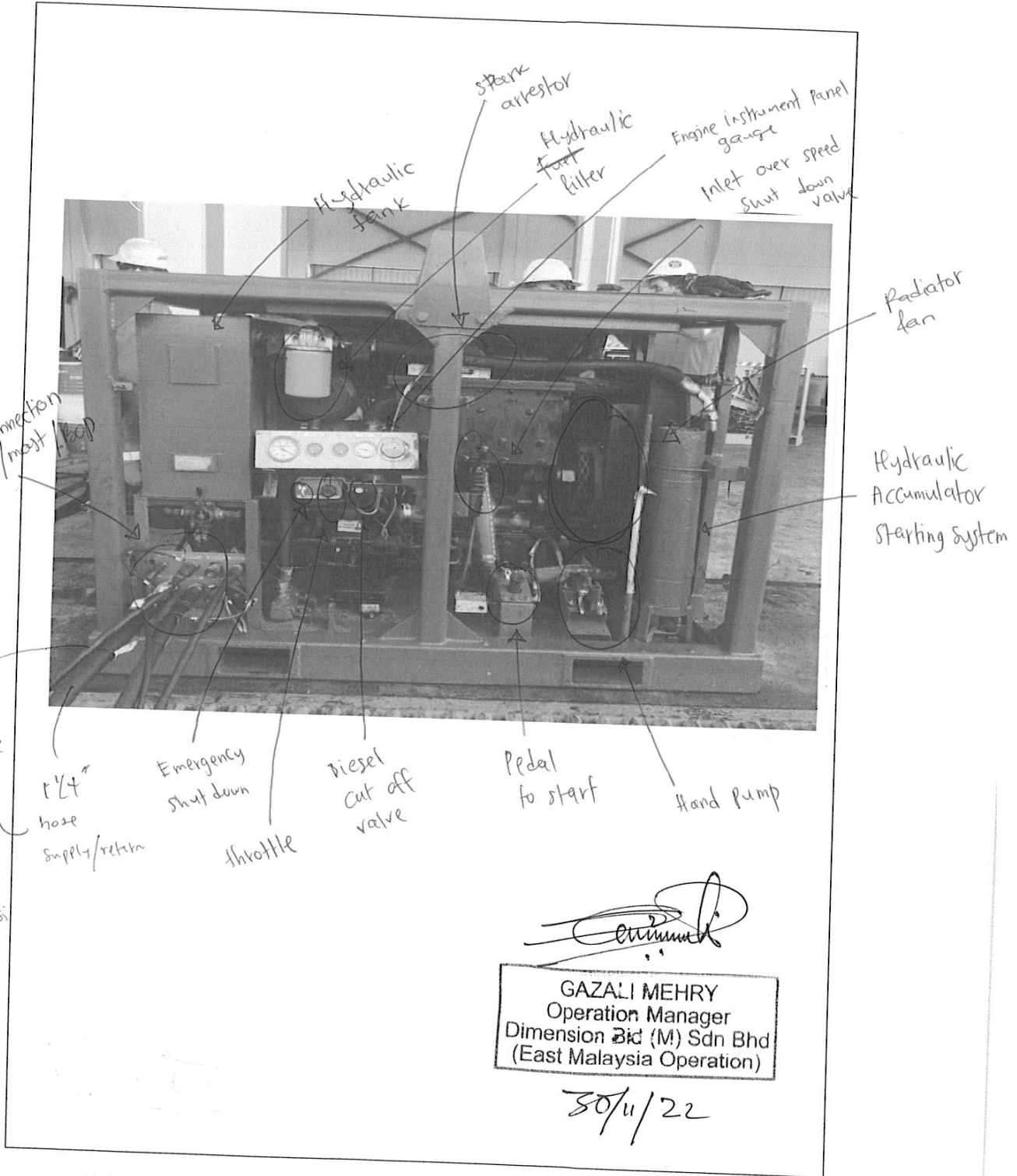
- Potential hose burst
- Hand injury if lack caution.
- Rotating fan



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Draw & name each part of Power Pack



## 12. Air Compressor

### What is Air Compressor

- An open loop hydraulic system unit using the connection Chicago-type.

### What is the purpose of Air Compressor

- used to supply compressed air to control panels when there is no supply on site.
- AC use diesel engine to produce power.

### How to operate Air Compressor

- 1) Keep diesel Cut-off valve in start position
- 2) Recoil spring starter by turning clockwise direction until indicators turn red.
- 3) Start engine by pulling and holding inlet overspeed shut down valve and releasing the spring starter start lever.
- 4) Keep and continue holding the inlet overspeed shut down valve (approx. 10 sec) until oil pressure is built.

### What is maintenance required for Air Compressor

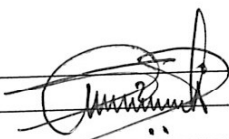
- Change filter
- Change oil compressor
- Check fan beltting condition.

### What is safety precaution required for Air Compressor

- All hose has no connection leakage.
- make sure the fan is covered.

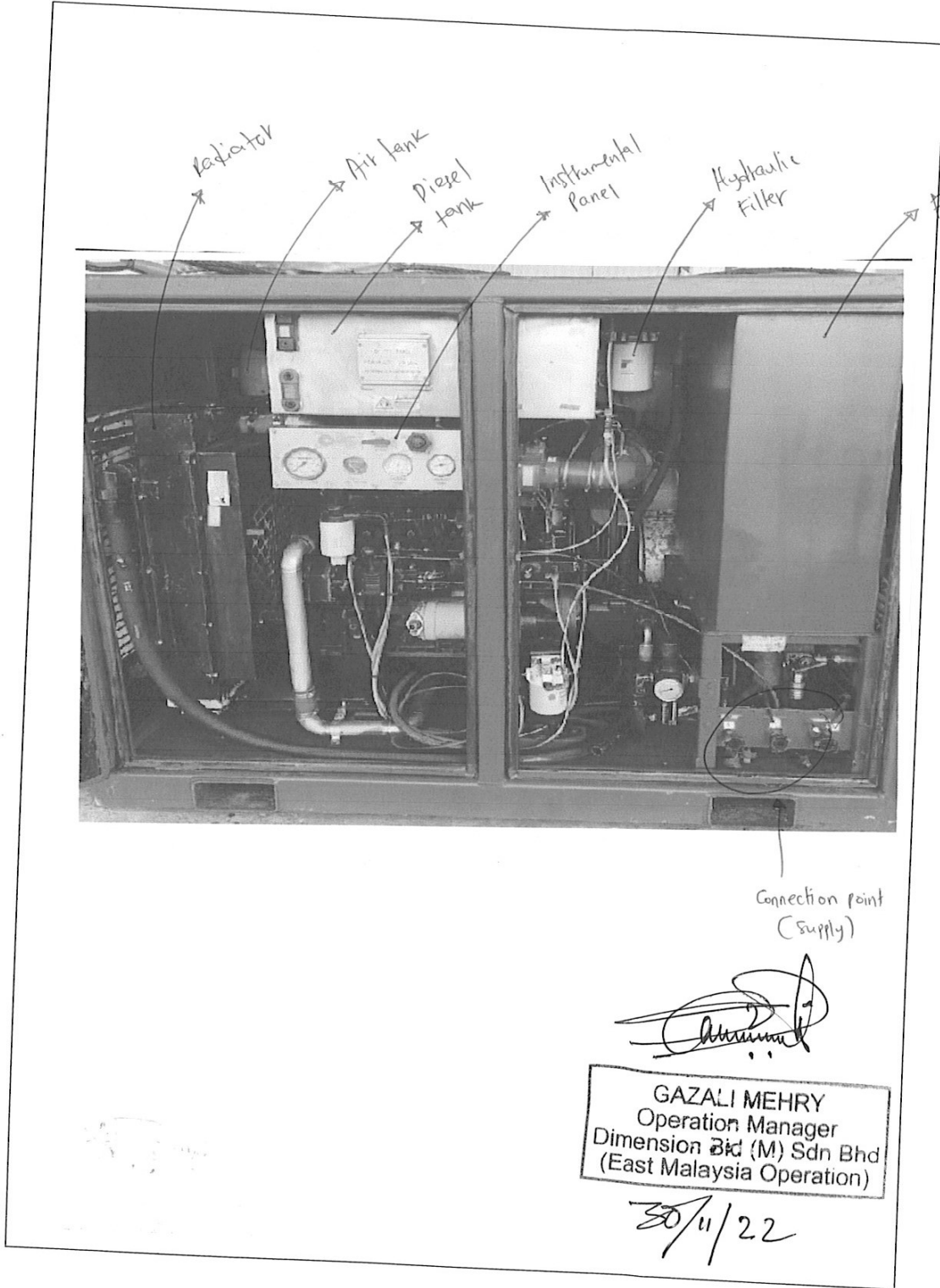
### What is potential hazard during handling Air Compressor

- Hose may burst
- Beware of the pinch point.
- Hot surface.

  
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Draw & name each part of Air Compressor

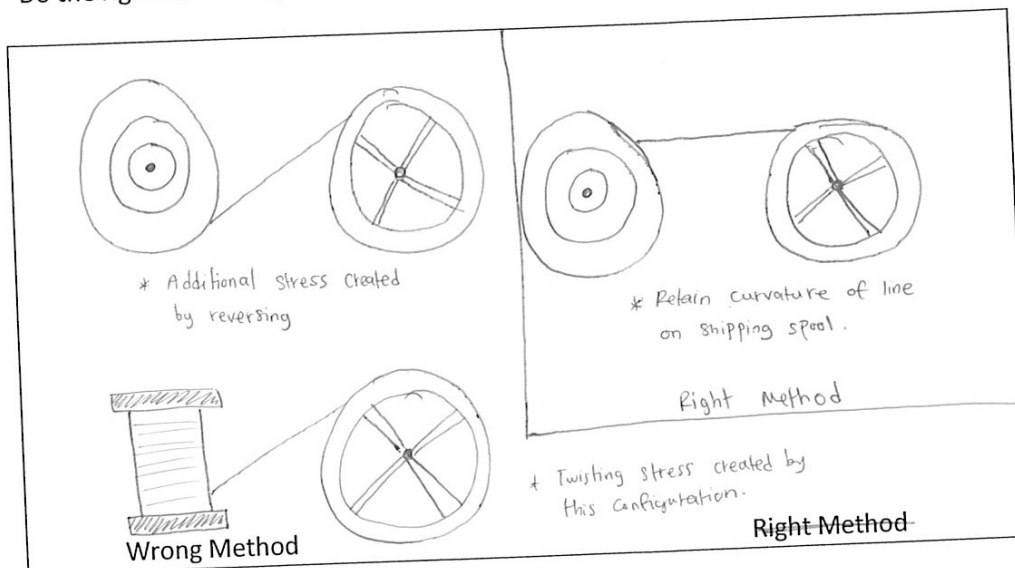


13. Drum

What is the purpose of Drum

- use to spool in wire.

Do the right and wrong wire arrangement from drum to hay pulley



What is maintenance required for Drum

- Servicing the drum and check for the drum bearing, do replace if it is broken. Hockers broken or being damage

What is safety precaution required for Drum

- use tag line or push pull stick  
- make sure to use safety glasses and wear proper PPE.

What is potential hazard during handling Drum

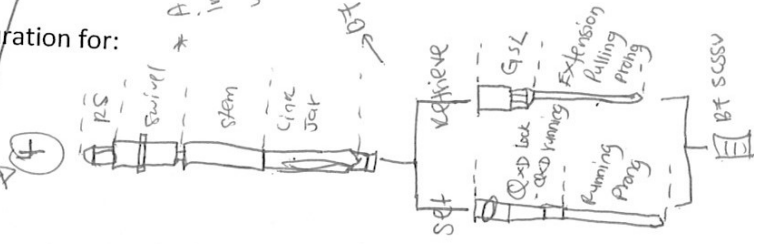
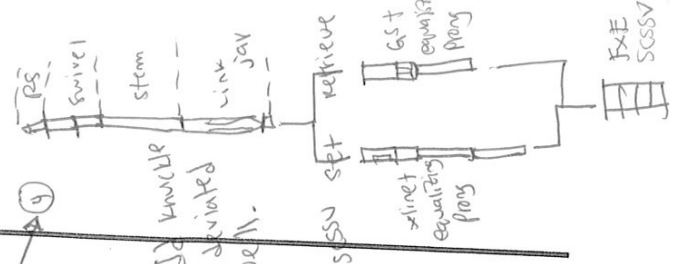
- Rotating drum  
- Pinch point  
- Back injury

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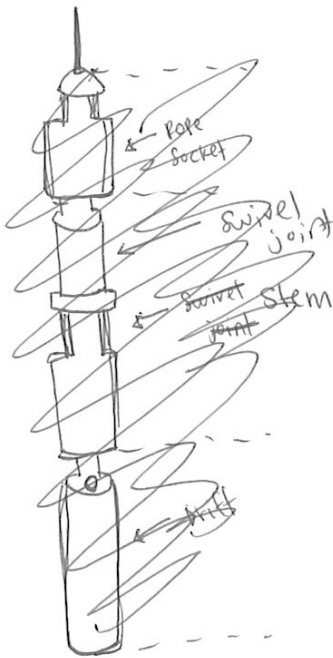
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Please draw/sketch the toolstring configuration for:

- 1) Drift run/tubing clearance check
- 2) Sinker bar run
- 3) Set and retrieve plug
- 4) Set and retrieve insert valve

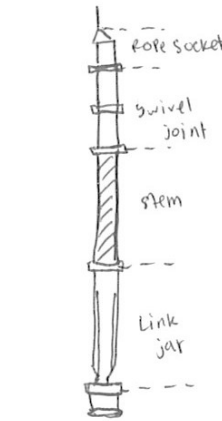
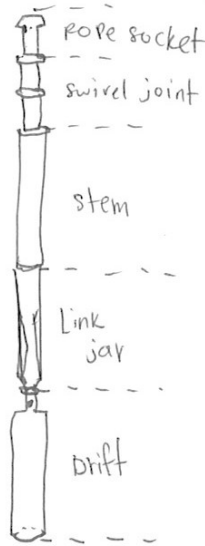


① Drift run / tcc

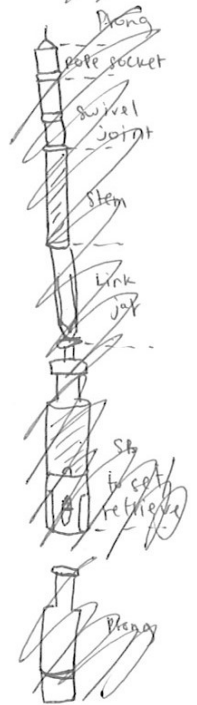


② Set and retrieve plug

\* Set plug / Retrieve Plug



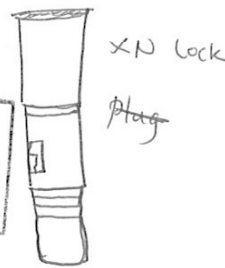
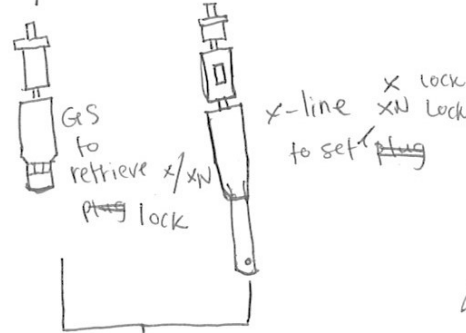
③ ~~Set and retrieve insert valve~~



④ Sinker Bar run



\* Add knuckle in deviated well



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