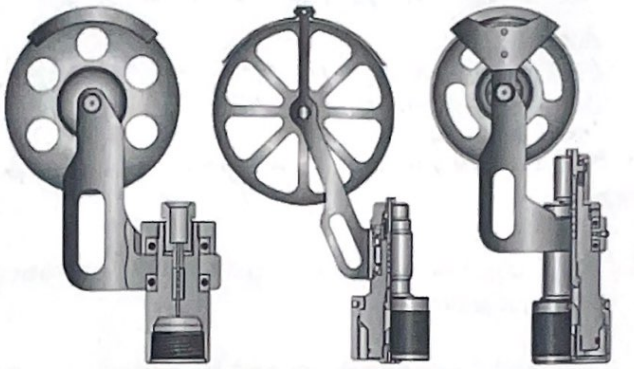
B. SURFACE EQUIPMENT

1. Stuffing Box



What is Stuffing Box

- Stuffing box is to ensure sealing off around moving or stationary solid wireline at the upper end of the lubricator during wireline operations.

What is the purpose of stuffing Box

- Allow the wireline to enter the well under pressure and provide a seal should be wireline break and be blow out of packing. Is a primary pressure barrier.

How to operate Stuffing Box

- Positioned at the uppermost point of the pce string. A cable quick union assembly are supplied with the stuffing box as standard. Available for a full range of wire sizes and from 5,000 psi to 15,000 psi working pressure. Consist of a character which contains packing with an external adjustable nut, wire passes through the packing and the nut is hydraulically tightened to the point. packing nut a gland located at top of stuffing box can be adjusted to compress the packing and seal on wireline. When hydraulic pressure supplied to area above piston. Piston force forward against force spring. Piston is transmitted for upper packing gland.

What is maintenance required for Stuffing Box

- Packings not worn out. Sheave the correct size. Upper and lower glands packing Check for wear, if worn oversized should replace. Bop flanger check for freed war of vertical movement. Sheave shaft check for freedom of swivel movement. Sheave bearing check for free spinig. Sheave guard make sure tight and adjustable to choose.

What is safety precaution required for Stuffing Box

- Check the O'ring before use it.

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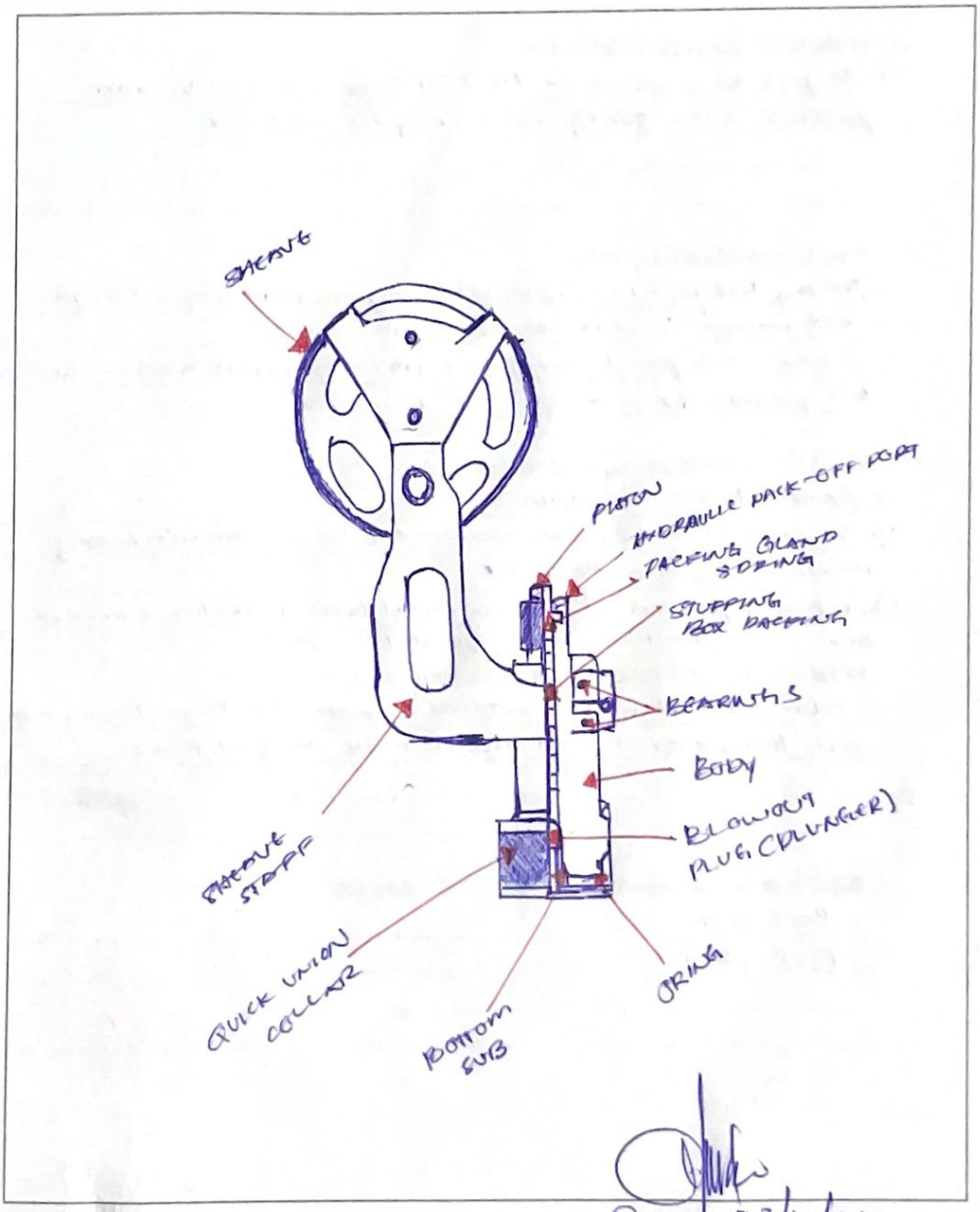
What is potential hazard during handling Stuffing Box

- Back pain
- pinch point

Draw & name each part of stuffing box



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2. Lubricator

What is Lubricator

- lubricators (also known as risers) are an series of inter. Connected lengths of pipe

What is the purpose of Lubricator

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

How to operate Lubricator

- Primary test period (low pressure) raise pressure to 300psi ± 20psi
- Hold pressure for a minimum of 5 min
- Secondry test period (High Pressure) raise to pressure to minimum working pressure.
- Hold pressure for a minimum of 15 minutes.

What is maintenance required for Lubricator

(1) General damage and corrorion.
(2) The condition of the needle valves on the lower section. If necessary redress or peplace the valve.
(3) Visual inspection of the external bore of the for corrosion and "wire tracting" wear grooves.

What is safety precaution required for Lubricator

- lubricator should be enclosed in protective cage during use and trasportation and stored in the trasport frame.

What is potential hazard during handling Lubricator

- Back pain
- Pinch point

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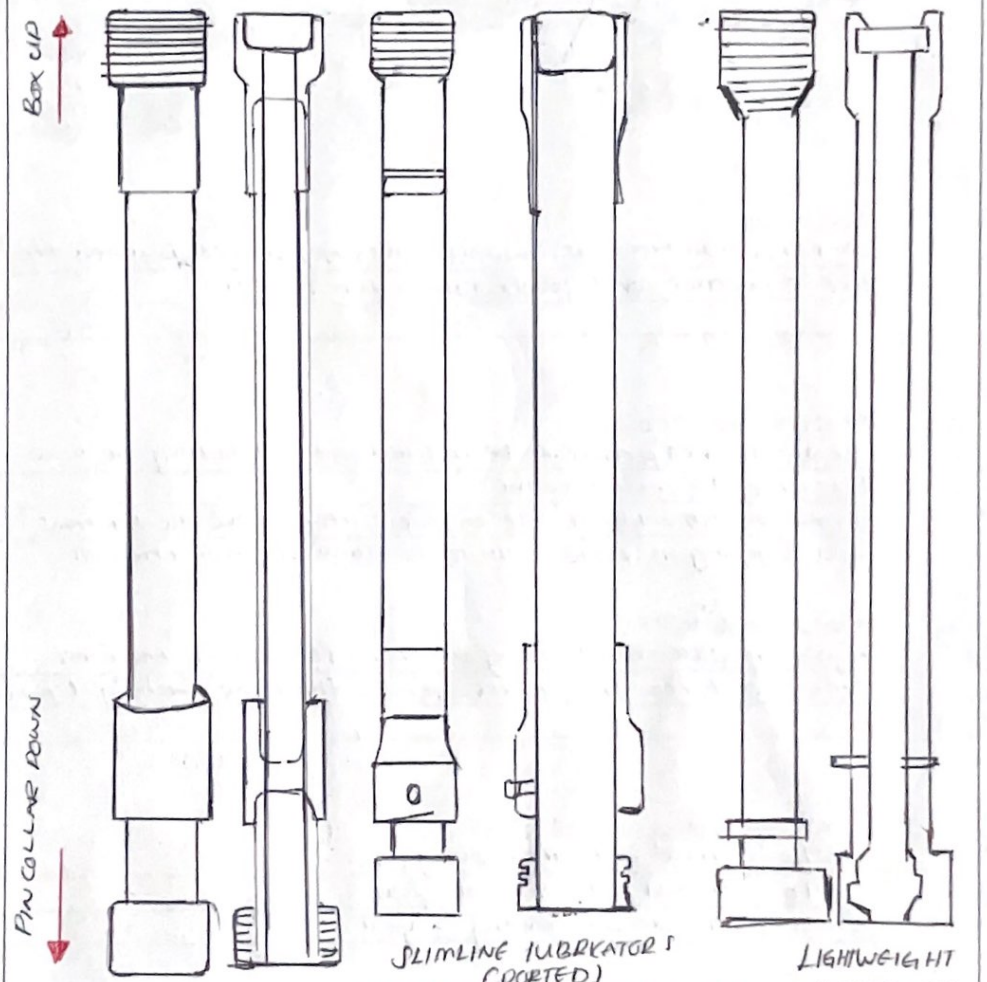
Draw & name each part of Lubricator

Notes : -
ID – 0.15"/0.25" larger than OD Tool
Length – 5FT (Lubricator – 4FT, 2FT CPUP)



PRESSURE RATING OF LUBRICATOR

Working Pressure (WP) PSI	Test Pressure (TP) PSI
3000	4,500
5000	7,500
10,000	15,000
15,000	22,500

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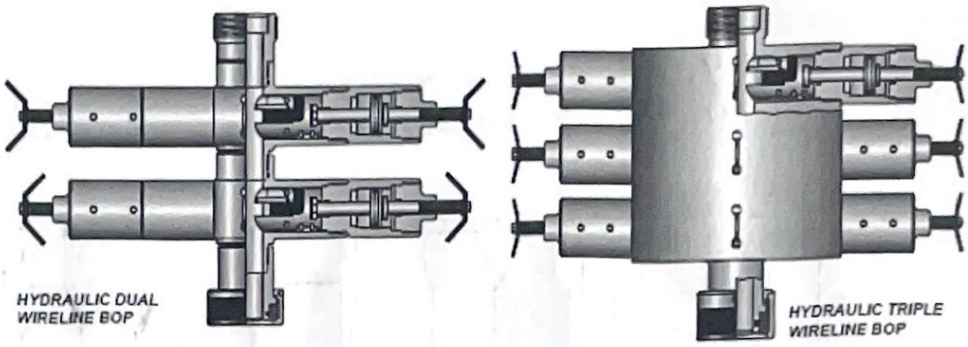
3. Blowout Preventer (BOP)



What is BOP

- A BOP (also known as a wireline valve) is installed between the tree connection and lower lubricator section.

What is the purpose of BOP

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

How to operate BOP

- A pressure differential acting on cross-section of the rams creates a force that makes opening the rams extremly difficult.

What is maintenance required for BOP

- To be carried out after every job -
- To be carriead out once a year.
- To be carried out every 5 year.

What is safety precaution required for BOP

- Ensure the rod has an enlarged diameter below the ram to prevent it being blown out during testing.

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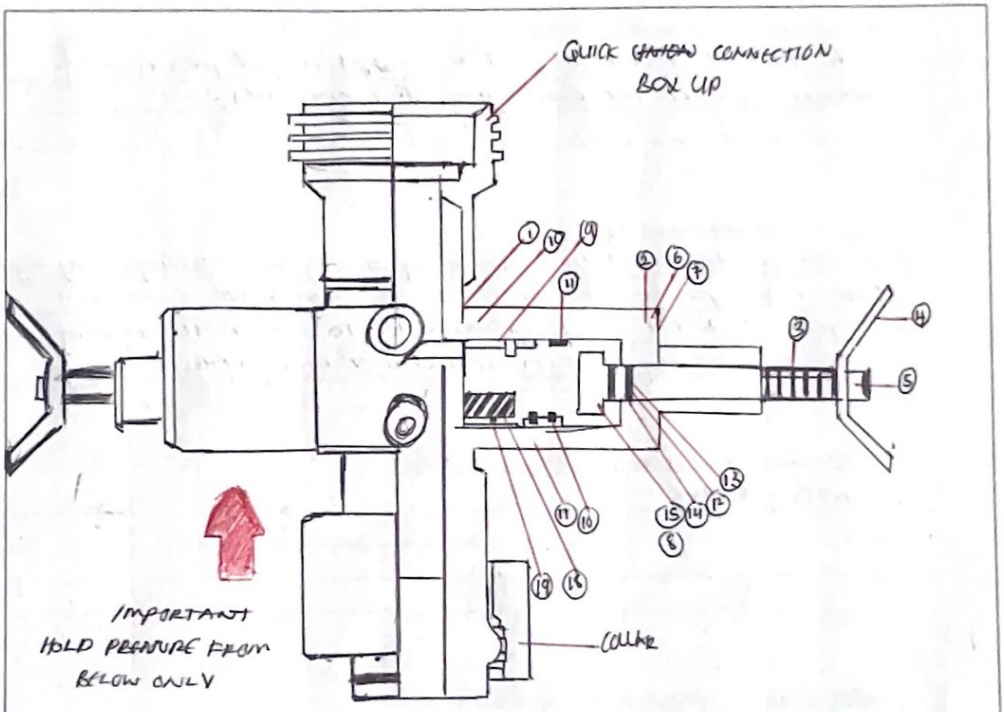
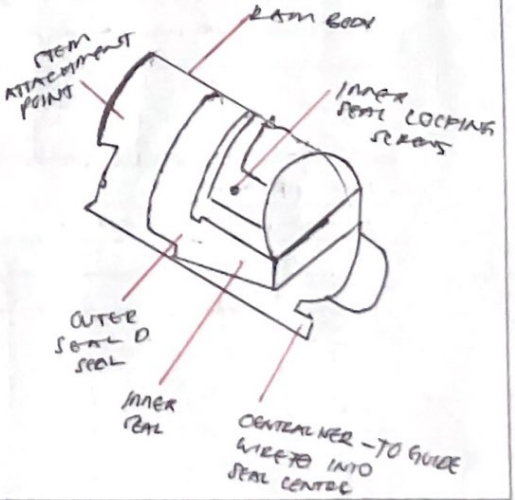
What is potential hazard during handling BOP

- Heavy equipment
- pinch point

Draw & name each part of BOP



1. BODY
2. END CAPS
3. ITEM
4. HANDLE
5. HANDLE NUTS
6. O-RING
7. RAM SUB ASSEMBLY
8. BACKUP O RING
9. SCREW
10. CENTRALISER
11. O-SEAL
12. O RING
13. STEM SEAL BACKUP
14. CUP SEAL
15. RETAINER RING
16. SCREW
17. GUIDE
18. RAM LOCKING SCREW
19. RAM ELEMENT



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4. X-Mas Tree

What is x-mas tree
- valved installed on the wellhead to control the HCN fluids from the wells

What is the purpose of x-mas tree
- surface valve manifold used to control flow of well fluids & ~~process~~ access for well intervention activities.

How to operate x-mas tree
- Do not overtightened the valve during opening and closing many types have a shear pin between the handle and stem valve is internal components. Never use the master valve to shut in the flowing well, expect in emergency situation use swab or wing valve.

What is maintenance required for x-mas tree
- Greasing valve.

What is safety precaution required for x-mas tree
- Always count before and after open or close the valve to make sure the valve fully open and fully close.

What is potential hazard during handling x-mas tree
- Line of wire
- flammable release.

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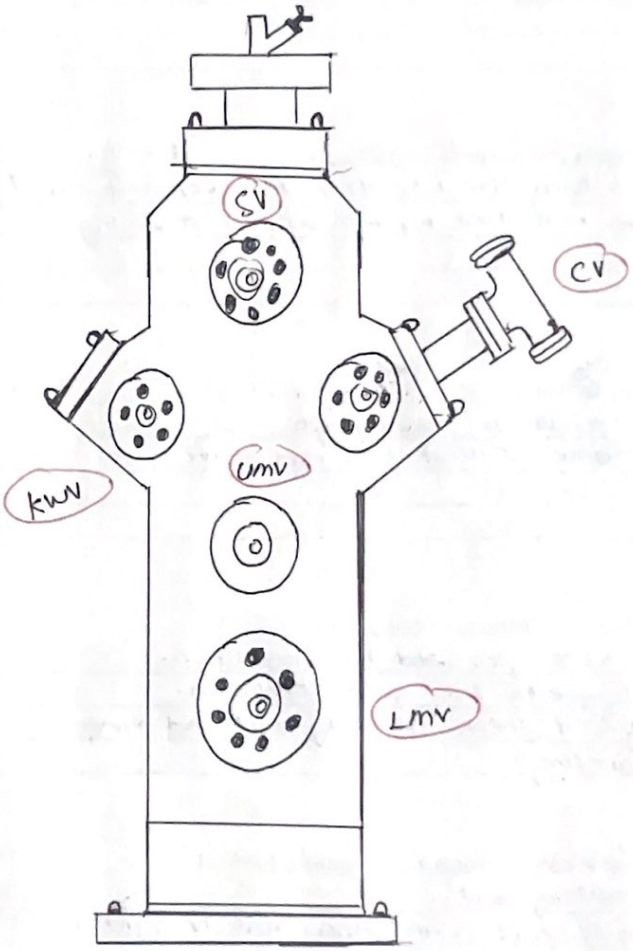
Draw & name each part of x-mas tree



- LMV (LOWER MASTER VALVE)
  - manual, not working valve optimum condition
- UMV or SSV (UPPER MASTER VALVE)
  - emergency valve
- FMV (FLOWLINE VALVE)
  - permit passage of well fluids to cv
- CV (CHOKE valve)
  - restrict control or regulate flow of well fluids.
- KMV (KILL WING VALVE)
  - Permit entry of kill fluids into tubing or equalise.
- SV (SWAB VALVE)
  - Permit entry of well interventions.

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

What is RSU
- To deliver and retriver tool down hole by using slickline wire.

What is the purpose of RSU
- to turn the wire drum to lower and rise tool string in the well that require wireline servicing.

How to operate RSU
- operate by power pack
- manual control gear and valve

What is maintenance required for RSU
- check gear and box condition.
- Hydraulik hose good condition.
- Visual check on body part and frame
- Greasing

What is safety precaution required for RSU
- rotating part.
- make sure connection hose is tighted
- use whip check
- make sure no leak on hose.

What is potential hazard during handling RSU
- hose burst.
- manual handling
- rotating part
- pinch point.

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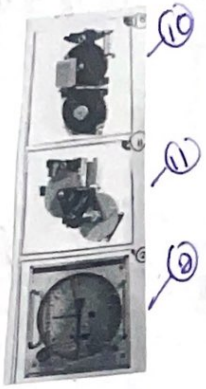
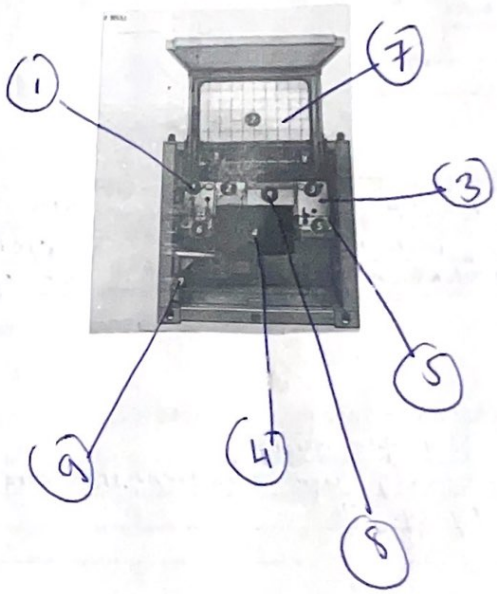
Draw & name each part of RSU





(1) LEFT CONTROL PANEL
(2) COMBI GAUGE
(3) RIGHT CONTROL PANEL
(4) OPERATOR CHAIR
(5) LEVEL WIND WHEEL (ON FRONT OF CHAIR)
(6) OPERATOR SEAT LOCKING PIN
(7) OPERATORS SAFETY SCREEN WITH OPTIONAL PROTECTILE GLAZING.
(8) LINE MINDER (OPTIONAL)
(9) LINE MINDER POWER SUPPLY WITH SWITCH (OPTIONAL)
(10) MPIG IV
(11) MD 80

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6. Odometer

What is Odometer
- use to measuring depth into well

What is the purpose of Odometer
- For operator took depth well and know about depth in well

How to operate Odometer
- can be operated when connect odometer cable into the right angle drive right angle drive connect to counter wheel and odometer perform when counter wheel start spinning.

What is maintenance required for Odometer
- Greasing
- checking meter odometer make sure it function.

What is safety precaution required for Odometer
- Glass odometer should be clear
- make sure odometer number can read
- pin broken

What is potential hazard during handling Odometer
- pinch point
- Glass odometer broke.
- Reading not accurate.

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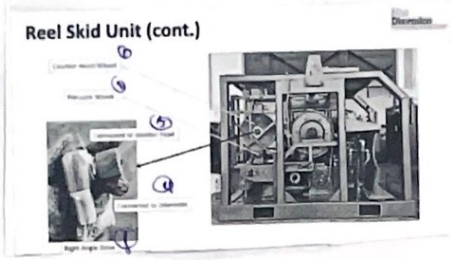
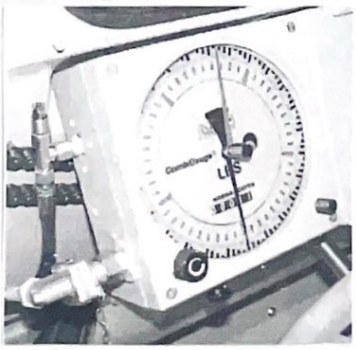
Draw & name each part of Odometer



(1) COUNTER HEAD (4) CONNECTED TO ODOMETER
(2) PRESSURE WHEEL (5) RIGHT ANGLE DRIVE
(3) CONNECTED TO COUNTER HEAD



(1) CONNECTION CABLE ODOMETER TO METER FRAME

(2) ZERO DEPTH

* COUNTER CABLE IS T CABLE THAT CONNECT BOTH ODOMETER AND RIGHT ANGLE DRIVE AT RSU WHICH CONVERTS THE COUNTER WHEEL ROTATATION TO DEPTH UNITH.

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7. Weight indicator (200 lbs and 4000 lbs)

What is Weight Indicator
- weigh indicator is system are designated to provide accurate measurement of downhole tool weight during wireline operation

What is the purpose of Weight Indicator
- As a guide operation during running tool into the well

How to operate Weight Indicator
- Connect weight indicator with load cell
- Load cell connect with hay pulley

What is maintenance required for Weight Indicator
- Callibrate gauge
- Remove bubble in the hose
- Topup oil

What is safety precaution required for Weight Indicator
- Secure proper gauge
- Secure hose properly

What is potential hazard during handling Weight Indicator
- Incorrect reading gauge
- Hose burst.

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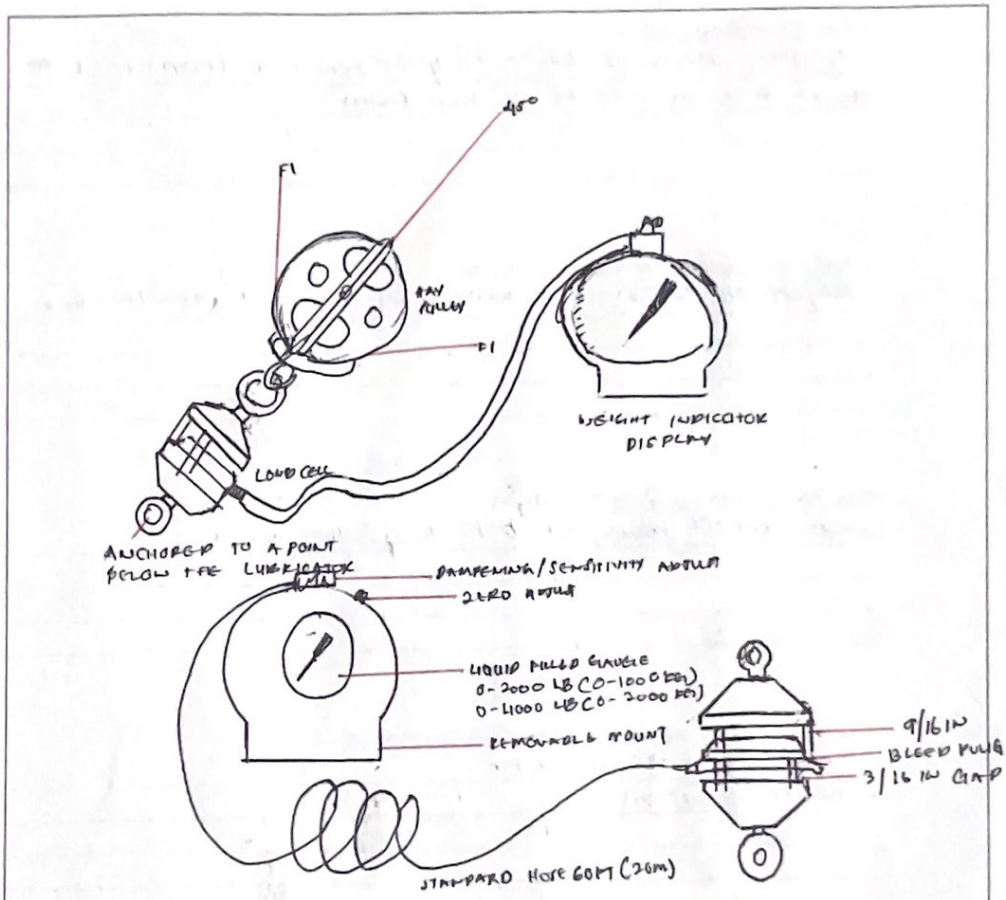
Draw & name each part of Weight Indicator



* TO DETERMINE THE TOTAL WEIGHT OF TOOLS (TUNELS IN TUBING STRING

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8. Spooling Device

What is Spooling Device
- Spooling device is device to spool new wire from reel to down of drum wire to another drum.

What is the purpose of Spooling Device
- Purpose the tension wire while spool new unit into the drum.

How to operate Spooling Device
- must connect powerpack hose to spooling device.

What is maintenance required for Spooling Device
- check hydraulic regulator
- check gear oil

What is safety precaution required for Spooling Device
- Barricade work site area.
- Full ppe.

What is potential hazard during handling Spooling Device
- Hose burst
- fire of wire
- High tension wire.

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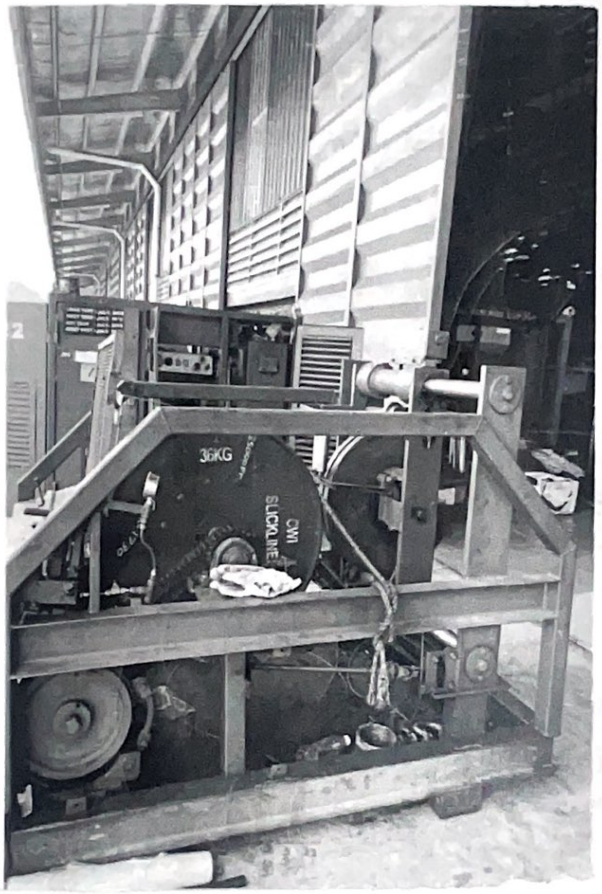
Draw & name each part of Spooling Device



- SPOOLER DRUM
- DRIVE SPOCKET
- PRE-SET SPOOLING
- DOUBLE BRAKE IN BRACKET

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9. Control Panel

What is Control Panel
- Contol panel are supply hydraulic.

What is the purpose of Control Panel
- Used to gurdle a number of valves normally operated in slickline operations. (Hmv, ssv)

How to operate Control Panel
- Connect ac to supply air for control panel.
- Wirg regulator to pressure up line.

What is maintenance required for Control Panel
- Check gauge
- Check hose
- Check all tubing and connection
- Check hydraulic oil.

What is safety precaution required for Control Panel
- Secure all hoses connection.
- Don't stand at line of wire.
- Check all connection and fitting.

What is potential hazard during handling Control Panel
- Hose tubing burst
- Tubing leaking / parted.
- High pressure.

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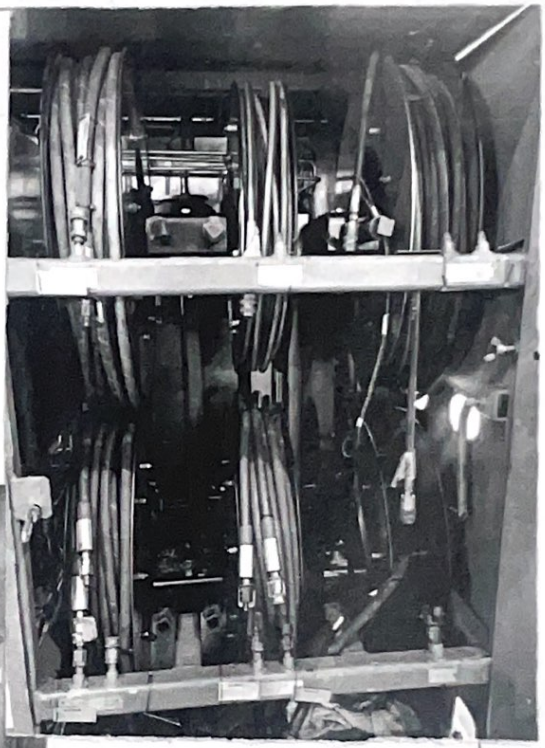
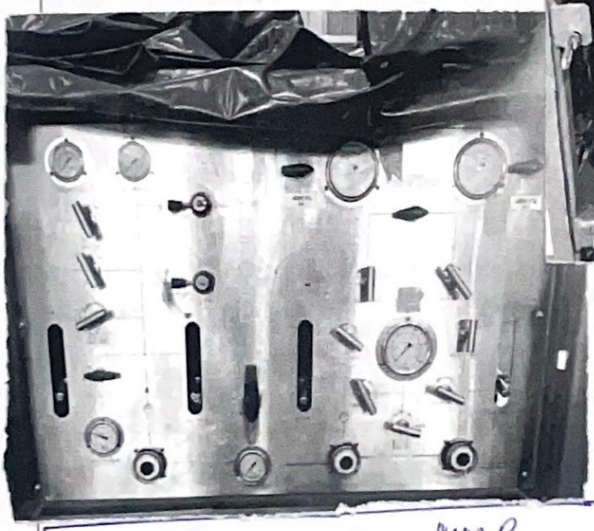
Draw & name each part of Control Panel





SYSTEM	PUMP TYPE	WORKING PRESSURE	
(1) SCSSV	AIR / HYDRAULIK	0-10,000 PSI	(690BAR)
(2) HMV	" "	0-6000 PSI	(415BAR)
(3) TWO BOP	" "	0-5,000 PSI	(345BAR)
(4) STUFFING BOX	MANUAL / HYDRAULIK	0-5000 PSI	(345BAR)
(5) TEST LINE	AIR / HYDRAULIK	0-10,000 PSI	(690BAR)

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10. Huskel Drum

What is Huskel Drum
- Generate fluid pump

What is the purpose of Huskel Drum
- To convert air supply to hydraulic pressure / fluid pressure.

How to operate Huskel Drum
- Air supply to control by air regulator.

What is maintenance required for Huskel Drum
- Service pump
- Redress kit.

What is safety precaution required for Huskel Drum
- Barricade area while function test.

What is potential hazard during handling Huskel Drum
- Air hose burst.
- Trap pressure.
- Like at wire.

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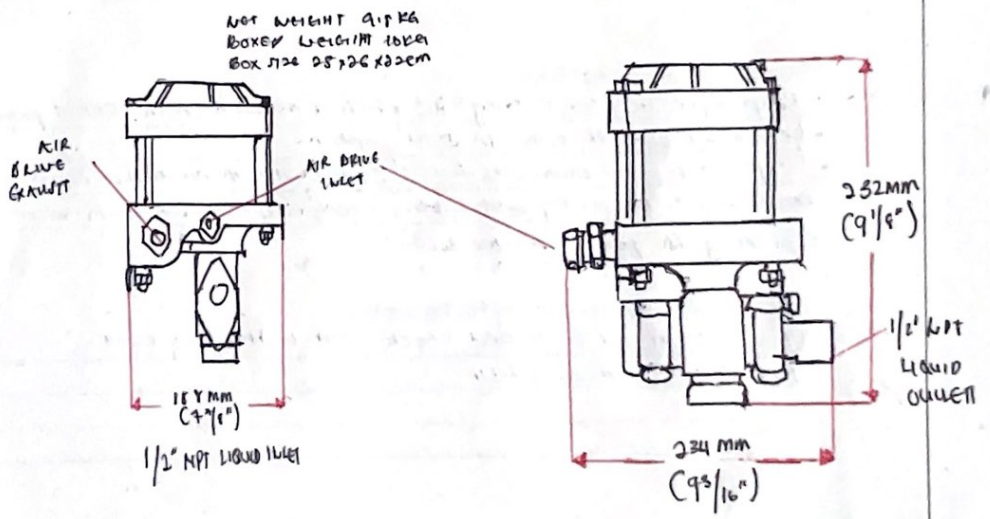
Draw & name each part of Huskel Drum

TEST PUMP –
MAXIMATOR
TP1, L, 3
HUSKEL PUMP –
TP 41, 5, 6



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11. Power Pack (Electrical & Diesel)

What is Power Pack
- Power pack have a engine and use diesel.

What is the purpose of Power Pack
- Supply hidraulik to RSU

How to operate Power Pack
- keep engine stop cable fully "in" which is mounted on the control panel.
- keep diesel cut off valve in start position.
- keep winch unit drum directional control valve in neutral or centre position.
- start engine by pulling and taking inlet overspeed but down valve and depressing the pedal starter switch.

What is maintenance required for Power Pack
- Change engine oil filter and check drain water on tank.
- service when running four.

What is safety precaution required for Power Pack
- check hose in good condition.
- check engine oil level before start.
- check engine in good condition.

What is potential hazard during handling Power Pack
- High pressure
- Noise sound
- Rotating part
- Hot equipment.

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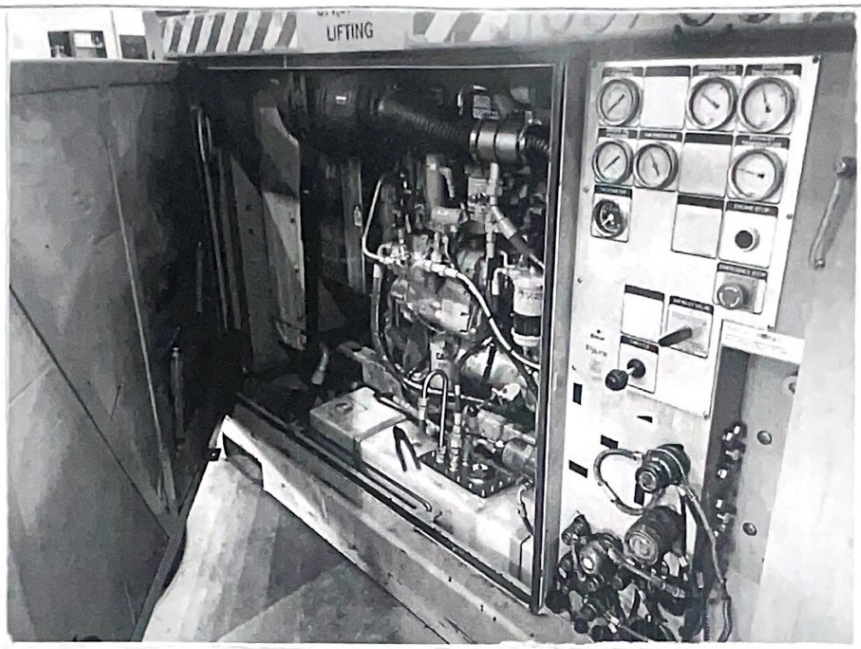
Draw & name each part of Power Pack



1. EXHAUST SILENCER
2. PNUMATIC AND HYDRAULIK CONNECTORS
3. GASOLINE ENGINE TRAP BREATHER VALVE
4. FUEL TANK
5. FUEL SAFETY (SENTINEL) VALVE
6. ENGINE STARTER
7. FUEL DUAL FILTER
8. ELECTRIC JUNCTION BOX
9. ENGINE AIR INTAKE FILTER (NATURALLY ASPIRATED)
10. BATTERY ISOLATION SWITCH
11. CONTROL PANEL
12. FUEL FILTER & WATER SEPERATOR
13. ENGINE STARTER CRANK HANDLE
14. ENGINE OIL SUMP PUMP
15. FUEL PURIFIER
16. ENGINE OIL FILTER
17. ENGINE OIL INTAKE SAFETY VALVE
18. AIR INLET VALVE CONTROL HANDLE

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12. Air Compressor

What is Air Compressor
- Air compressor at a engine and use diesel

What is the purpose of Air Compressor
- Air compressor to supply compressed air

How to operate Air Compressor
- keep diesel cut of valve in start position.
- Recoil spring starter by turning on clock wise direction until the indicator turns red
- start engine by pulling and holding inlet overspeed shutdown valve and releasing the spring starter start level.
- keep old continue holding the inlet overspeed shutdown valve until oil pressure is built.

What is maintenance required for Air Compressor
- Change engine oil, Filter, coolant and water
- Check hose in good condition.

What is safety precaution required for Air Compressor
- make sure engine in good condition
- Be aware when rotating equipment/part

What is potential hazard during handling Air Compressor
- Noise sound
- High pressure air
- Hose burst

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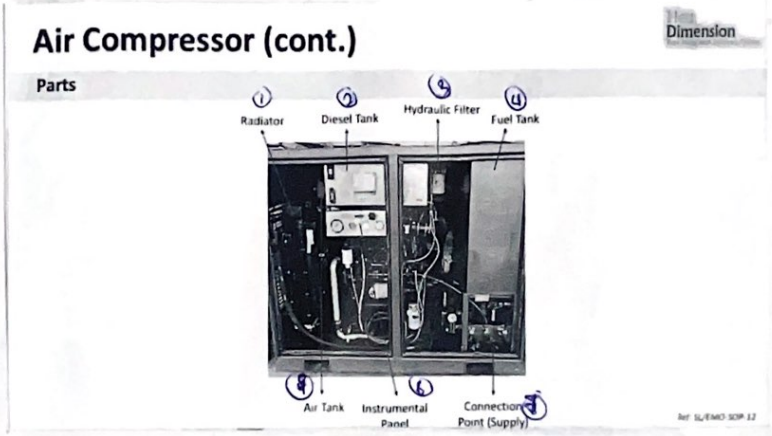
Draw & name each part of Air Compressor



(1) RADIOTAR
(2) DIESEL TANK
(3) HYD FILTER
(4) FUEL TANK
(5) AIR TANK
(6) INSTRUMENTAL PANEL
(7) CONNECTION POINT (SUPPLY)

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