

SLICKLINE ASSISTANT WORKBOOK

IMPORTANT NOTE:

1. Your point of reference to complete this workbook may be obtained from the following
 - Training Manual and any other training materials provided together with this workbook
 - Your Trainer, Assessor (Slickline Operator), Verifier (FSM) or senior colleagues
 - SOP / Quality Procedures & Processors
2. The completion of this Workbook is a joint effort and responsibility between you and your assessor therefore you have the obligation to request from your assessor to be assessed upon your completion of each topic
3. The completion of this Workbook is part of the MANDATORY requirements which you must fulfill to qualify for a promotion
4. Your training program is mostly self-driven, including this Workbook. It requires individual initiatives, dedication and commitment to complete the process.

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DATE COMPLETED	18.03.2024

B. SURFACE EQUIPMENT

B.1. STUFFING BOX



What is Stuffing Box

A primary pressure barrier that positioned at the uppermost point of the PCE string.

What is the purpose of stuffing Box

To ensure sealing off around moving or solid wireline at the upper end of the lubricator during wireline operations.

How to operate Stuffing Box

Stuffing box can be operated either manually or hydraulically without part modification.

What is maintenance required for Stuffing Box

- Packings
 - Not worn out.
- Sheave
 - Use correct size
- Upper and lower gland
 - Check for wear
- BOP plunger
 - Check for wear and freedom of vertical movement
- Sheave bearings
 - Check for free spinning
- Sheave staff
 - Check for freedom of swivel movement
- Sheave guard
 - Tight and adjusted close to the sheave

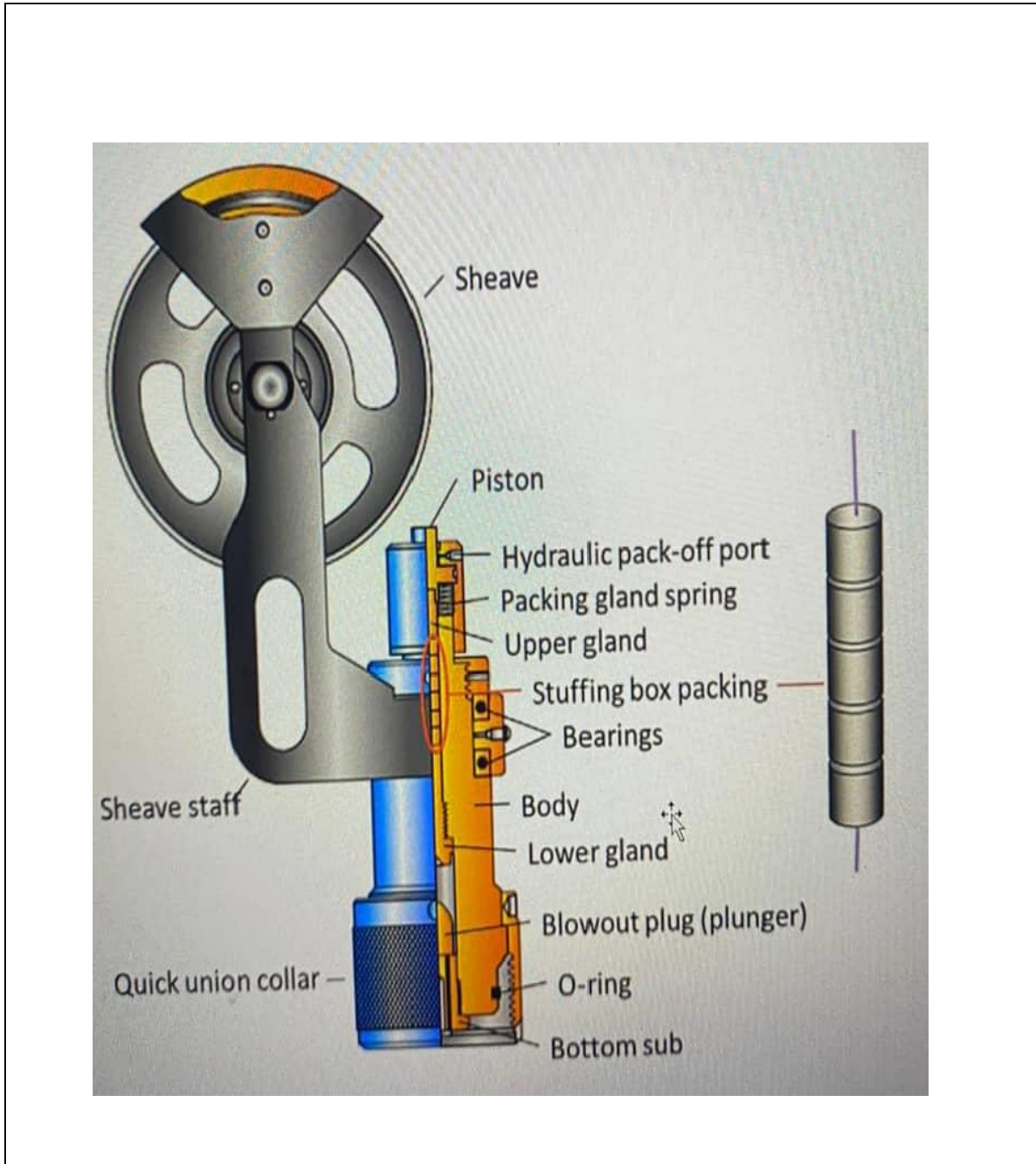
What is safety precaution required for Stuffing Box

- Check the packing whether worn out or not
- Check out the correct size of the sheave

What is potential hazard during handling Stuffing Box

- Drop object
- Pinch point
- Back injury

Draw & name each part of stuffing box



B.2. LUBRICATOR

What is Lubricator

A lubricator, also known as a riser, is a group of pipe parts that are connected to one another. It is a piece of machinery made to make it possible to insert or remove wireline tool string under pressure from a wellbore.

What is the purpose of Lubricator

Provide a space for the tool to be contained in under pressure, when opening and closing the wellhead

How to operate Lubricator

Connect the lubricator section using chain block, wireline mast, crane or gin pole.

What is maintenance required for Lubricator

- Check for any damages and cracks
- Visually inspect at the regular interval
- Check all the o-ring and make sure that it didn't worn out.

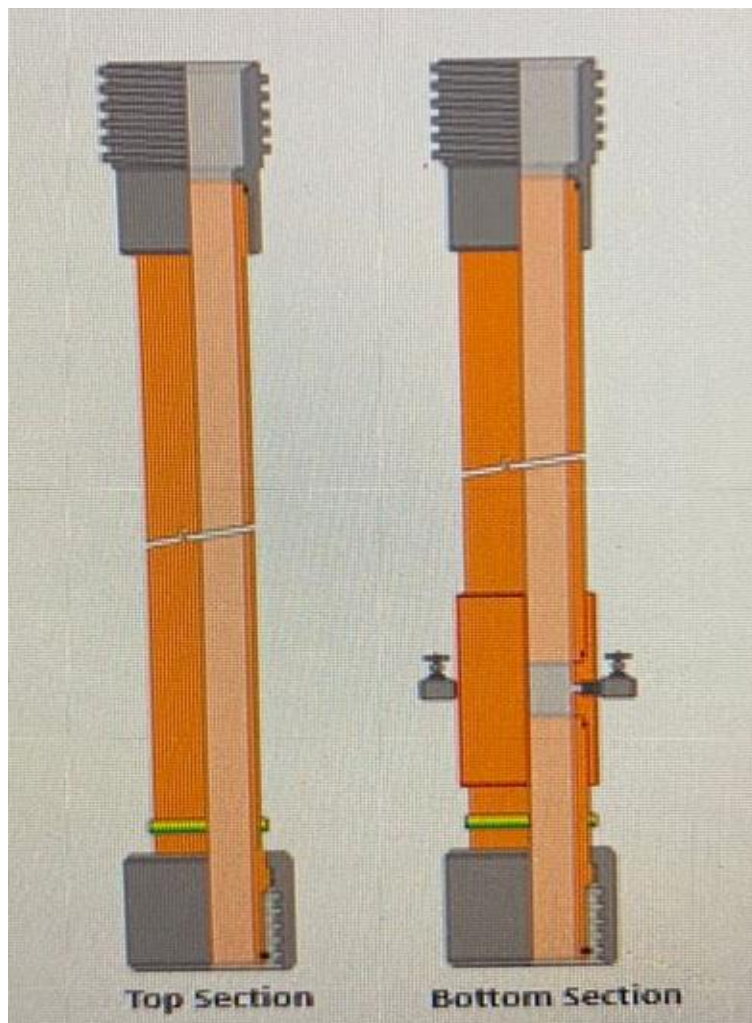
What is safety precaution required for Lubricator

- Lubricator should be x-rayed
- One of the lubricator must have a port to bleed of pressure

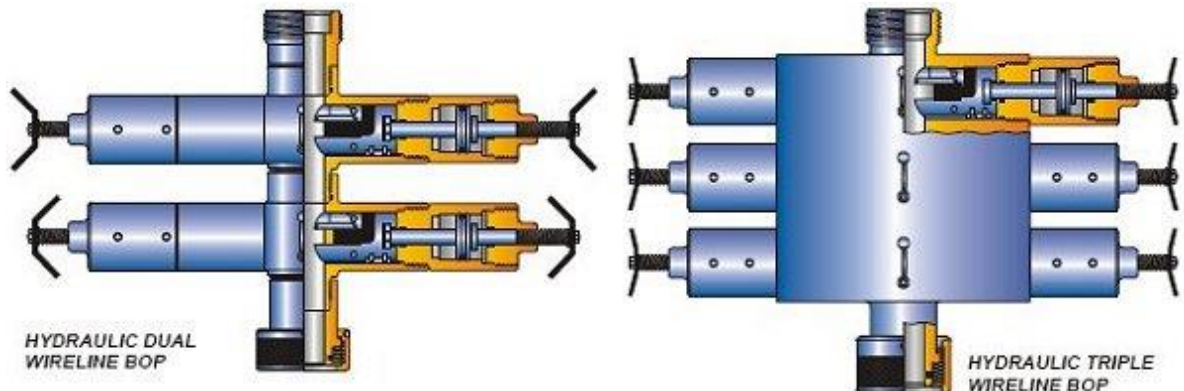
What is potential hazard during handling Lubricator

- Pinch point
- Back injury
- Drop object

Draw & name each part of Lubricator



B.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 dual purpose of BOP

- Enable the well pressure to be isolated without cutting the wire by closing the master valve.
- Permit the assembly of the wireline cutter above the BOP rams and dropping it if the toolstring becomes stuck in the well
- Allow slickline work under the well pressure on surface equipment, while wire in the wellbore

How to operate BOP

- Hydraulically
- Using RSU, control panel

What is maintenance required for BOP

Must be service and need to be pressure tested

- Level 1 Service
 - To be carried out after every job
- Level 2 Service
 - To be carried out once a year
- Level 3 Service
 - To be carried out every 5 years

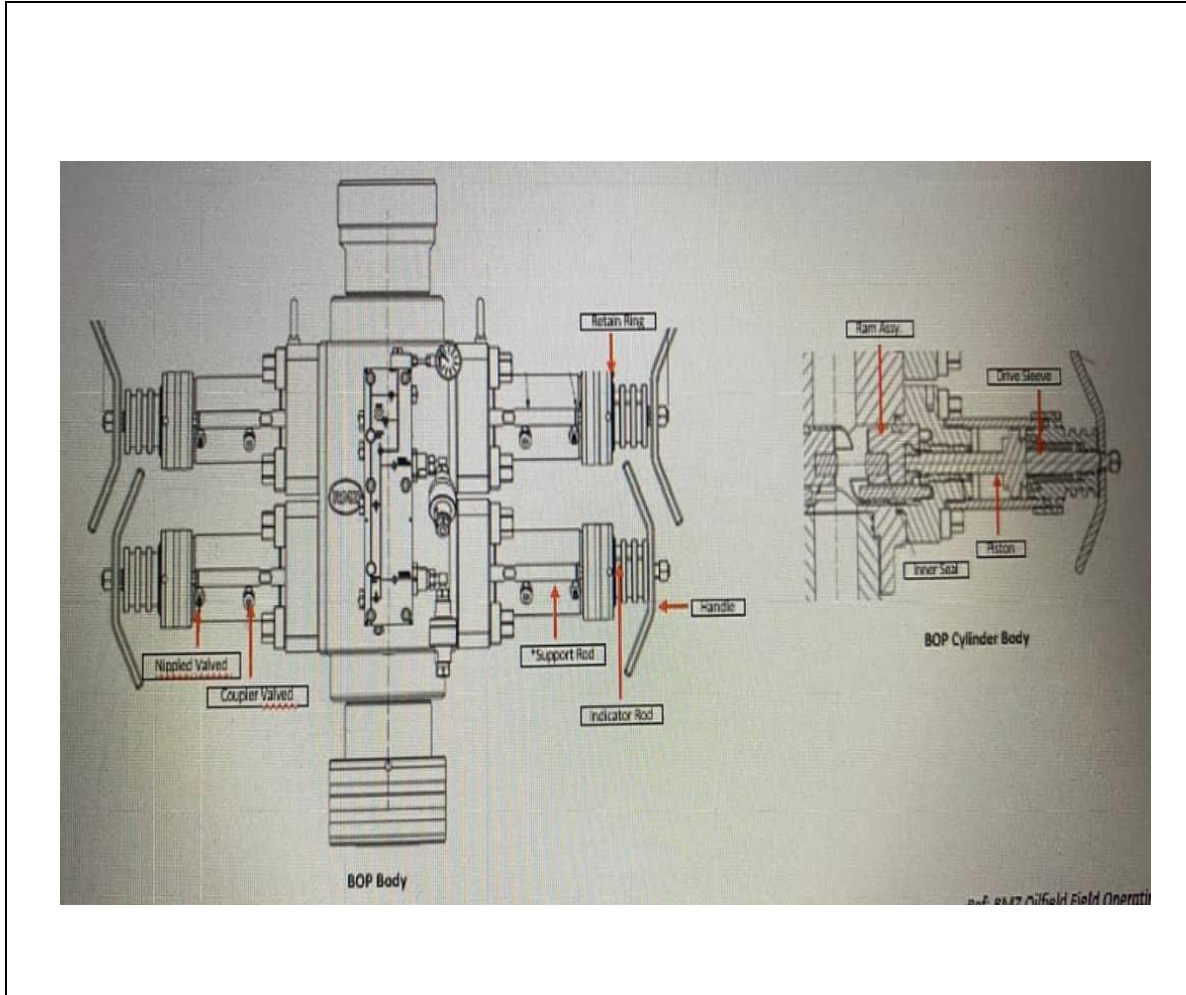
What is safety precaution required for BOP

To avoid it blowing out during testing, make sure the rod has an increased diameter beneath the ram.

What is potential hazard during handling BOP

- High pressure
- Back injury
- Hose burst
- Oil spilled

Draw & name each part of BOP



B.4. X-MAS TREE

What is x-mas tree

Xmas tree is a series of valves installed on the wellhead to control the flow of fluids from the well. Located on top of wellhead.

What is the purpose of x-mas tree

Christmas trees are a vertical assembly of valves with gauges and chokes that allow for adjustments in flow control as well as injections to stimulate production

How to operate x-mas tree

The valves that comprise some of the decorations on the Christmas tree are opened when the oil or gas well is ready to produce and the processing and storage facilities are ready to receive.

What is maintenance required for x-mas tree

- Clean X-mas tree
- Inspect and replace any damaged component
- Do Critical Device Function Test (CDFT) on X-mas tree (check all valves)

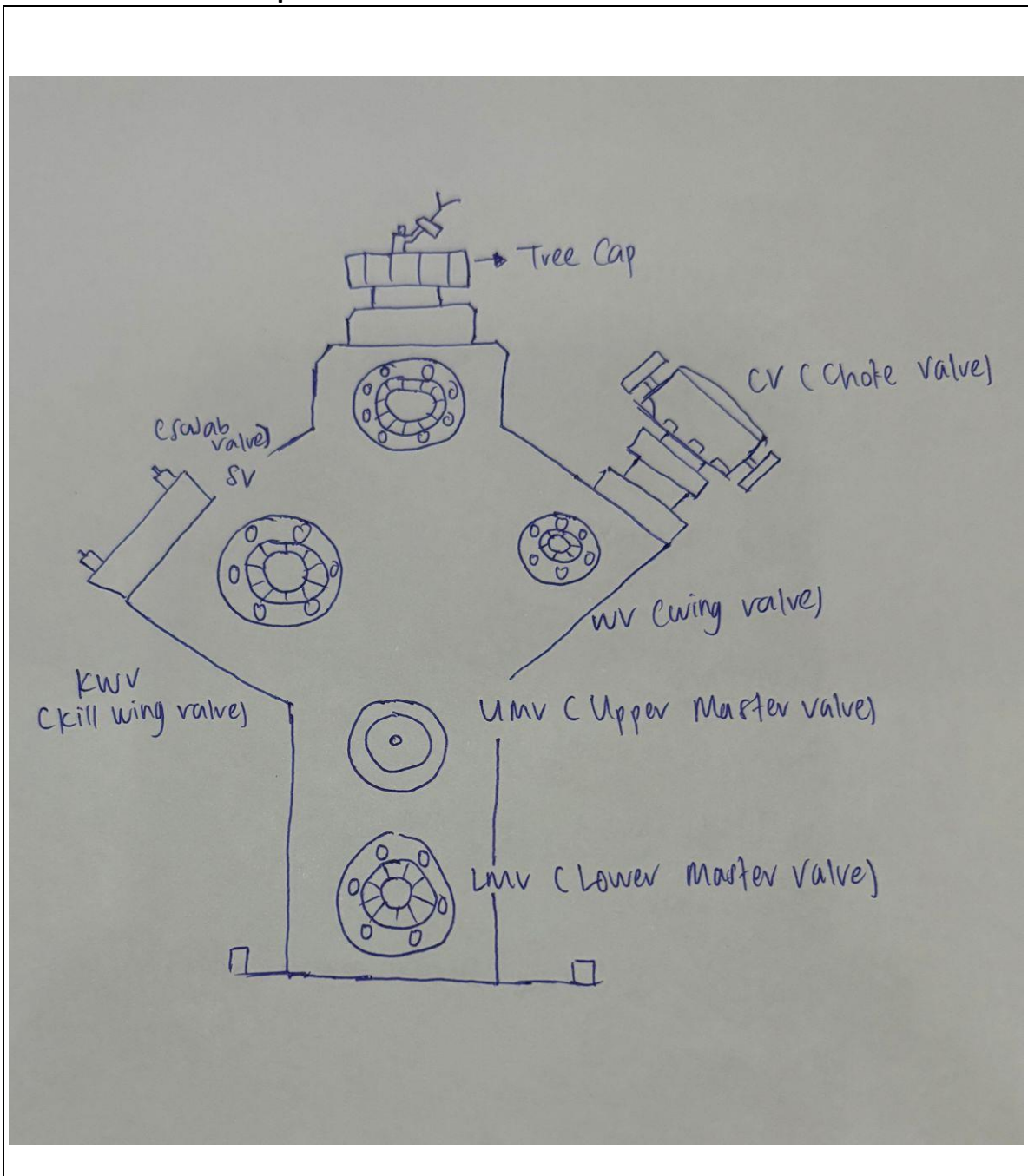
What is safety precaution required for x-mas tree

- Make a count during opening and closing the swab valve.
- Do not overtightened the valves during operation and closing.
- Never use master valve to shut in the flowing well, except in an emergency situation. (use swab or wing valve)

What is potential hazard during handling x-mas tree

- Pinch point
- High pressure
- Work under suspended load
- Line of fire

Draw & name each part of x-mas tree



B.5. WIRELINE REEL SKID UNIT (RSU) / WINCH – SINGLE DRUM AND DOUBLE DRUM

What is RSU

The RSU, generally referred to as a wireline unit or winch, is a device that has the ability to control the movement of wireline tool strings within wells and out of them.

What is the purpose of RSU

It is used to convey downhole equipment or tools in and out of the wells. It can turn the wire drum to lower and rise tool strings in the wells that require wireline servicing.

How to operate RSU

- By using power pack and winch hydraulic system
- Transmission of hydraulic line via line between power pack / RSU

What is maintenance required for RSU

- Check the hand brake system
- Ensure gear in a neutral position
- Check chain tension

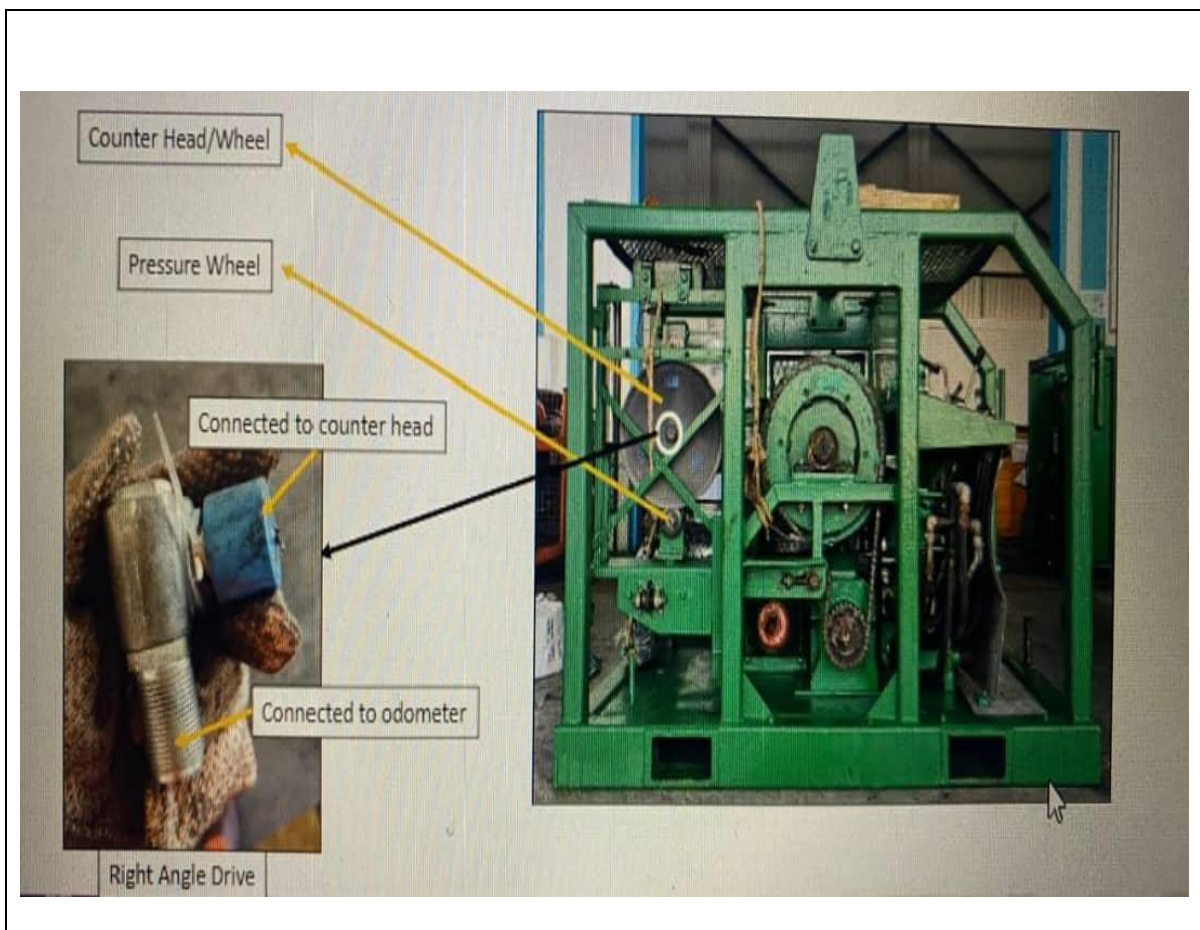
What is safety precaution required for RSU

When running the rotating drum winch or wire, take precautions as it may break.

What is potential hazard during handling RSU

- Wire breaks off
- Pinch point
- Rotating drum winch

Draw & name each part of RSU



B.6. ODOMETER

What is Odometer

Odometer is a depth measuring device and also known as depth counter

What is the purpose of Odometer

To indicate the depth of slickline toolstring hanging in a tubing string in feet or meters.

How to operate Odometer

- Prior to operation, this device should be manually set to zero and start reading from tubing hanger.
- Connect hose to right angle drive and put odometer to RSU for monitoring purposes.

What is maintenance required for Odometer

Check if counter head is free to rotate

What is safety precaution required for Odometer

Wear appropriate PPE

- Safety glove
- Safety glasses

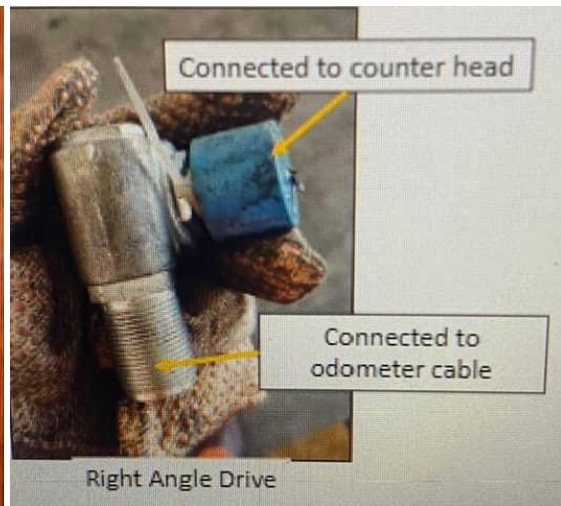
What is potential hazard during handling Odometer

- Sharp edges
- Pinch point

Draw & name each part of Odometer



Odometer



Right Angle Drive

B.7. WEIGHT INDICATOR (2000 LBS AND 4000 LBS)

What is Weight Indicator

Weight indicator is a device to measure weight of tools in tubing string. The device is connected to load cell using a rubber hose filled with hydraulic hose.

What is the purpose of Weight Indicator

To determine the total weight of tools hung in tubing string

How to operate Weight Indicator

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

It is using hydraulic system

What is maintenance required for Weight Indicator

It is necessary to completely flush and re-charge the unit at least once per month. Having recharged the unit, a specific gap should be set between load plate and load cell retaining ring.

- Check for leaks around the hose and priming check valve assembly.
- If additional "W-15" fluid is required, fill through the small port on the upper side of the gauge housing.

What is safety precaution required for Weight Indicator

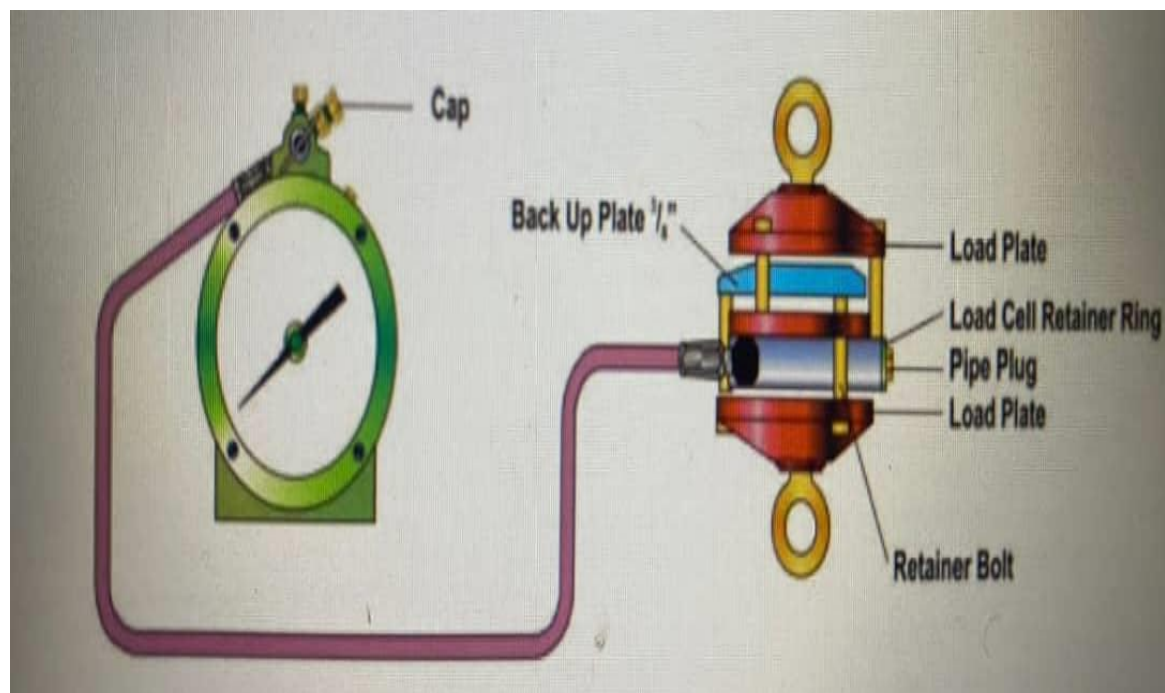
Do not crash the hose
Secure guage and fittings because the load cell is made of aluminum alloy and reasonably strong rough handling can damage it.

What is potential hazard during handling Weight Indicator

Drop object

If the weight indicator is left unchecked while the machine is operating, tension may build up and the wireline may break.

Draw & name each part of Weight Indicator



B.8. SPOOLING DEVICE

What is Spooling Device

Generally, one configured with removable drum that allow transport spools to be inserted, allowing the new string to be spooled into reel

What is the purpose of Spooling Device

- To hold the reel drum during spooling process
- Control the tension of the line as it is spooled

How to operate Spooling Device

Assemble the reel. The setup is almost the same with normal operation, which weight indicator and hay pulley are needed
Brake level will help to control the line tension.

What is maintenance required for Spooling Device

Brake maintenance
Always check the hydraulic system

What is safety precaution required for Spooling Device

- Make sure to check the glass in good condition before start the job
- Bolts and nuts (shaft) are in good condition

What is potential hazard during handling Spooling Device

- Pinch point
- Rotating device

Draw & name each part of Spooling Device



B.9. CONTROL PANEL

What is Control Panel

Device used to operate BOP, safety valve and other PCE equipment

What is the purpose of Control Panel

Control Panels are used to operate a number of valves normally operated in slickline operations. Their types and its functions are:

- Control Panel (CP) – To operate BOP rams
- Single Well Control Panel (SWCP) – To operate Master Valve and SCSSV
- Well Control Panel (WCP) – An integrated CP that can operate BOP, Stuffing Box, MV & SCSSV

How to operate Control Panel

- Connect the control line to the equipment
- Open air supply, use regulator to control pump out pressurized the line.

What is maintenance required for Control Panel

- Check the fluid level of hydraulic oil
- Check the hydraulic hoses for any sign of leakage or damage.

What is safety precaution required for Control Panel

- Do not tighten or loose the connection when under pressure
- Beware of trapped pressure by bleed off fully before open connection

What is potential hazard during handling Control Panel

- Connection loosens
- Hose burst by high pressure

Draw & name each part of Control Panel



B.10. HUSKEL DRUM

What is Huskel Drum

Is an air driver pump

What is the purpose of Huskel Drum

To drive the hydraulic or water in control panel or test pump

How to operate Huskel Drum

Operate from the knob or regulator of the panel

What is maintenance required for Huskel Drum

- Check the condition of the O-ring
- Service haskel pump
- Hydraulic check valve and liquid seal repair

What is safety precaution required for Huskel Drum

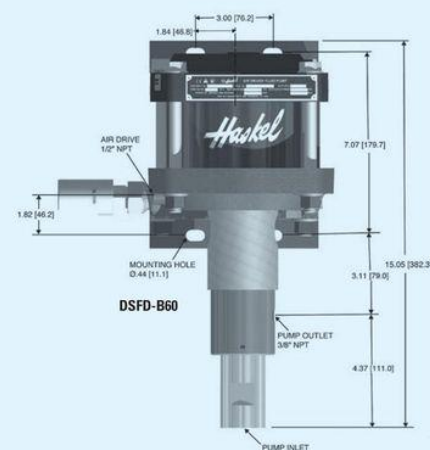
- Check O-ring condition
- Make sure connection tubing is in good condition

What is potential hazard during handling Huskel Drum

- Pinch point
- Tubing burst

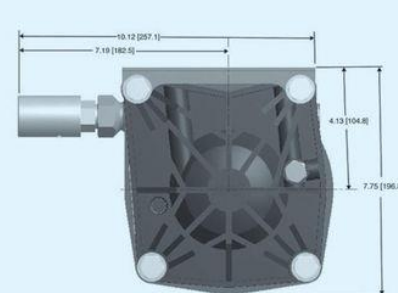
Draw & name each part of Huskel Drum

1.5 hp, 2 & 2.2 hp (1.12, 1.49 & 1.64 kW) Pump Models

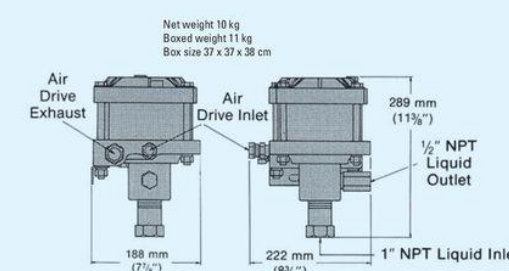


DSFD-B60

Net weight 18 kg
 Boxed weight 20 kg
 Box size 68 x 42 x 50 cm

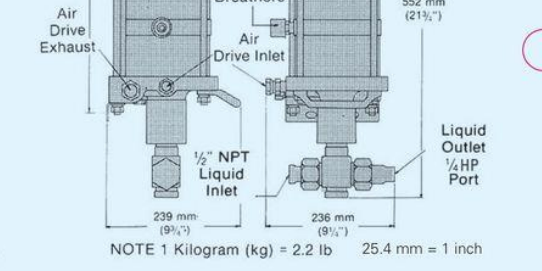


Net weight 18 kg
 Boxed weight 20 kg
 Box size 68 x 42 x 50 cm



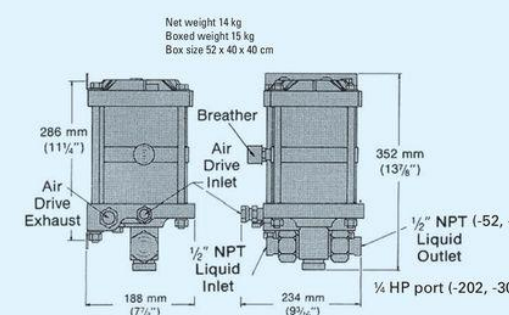
**1.5 and 2 hp low ratio pumps;
 -B10 and -B15 ratios**

Net weight 10 kg
 Boxed weight 11 kg
 Box size 37 x 37 x 38 cm



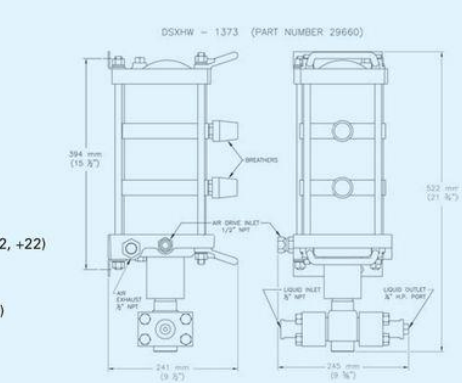
**2 hp high ratio pumps;
 -683 and -903 ratios**

NOTE 1 Kilogram (kg) = 2.2 lb 25.4 mm = 1 inch



**1.5 and 2 hp medium ratio pumps;
 -52, -72, -122, -202 and -302 ratios**

Net weight 14 kg
 Boxed weight 15 kg
 Box size 52 x 40 x 40 cm



**2 hp (1.49 & 1.64 kW) Pump Models;
 -1373 ratio**

DSXHW - 1373 (PART NUMBER 29660)

B.11. POWER PACK (ELECTRICAL & DIESEL)

What is Power Pack

- Power pack is a single piece configuration, skid mounted with integral crash frame, constructed in carbon steel with single point lifting
- Certified with zone 2 equipment

What is the purpose of Power Pack

Provide power to drive hydraulic oil via special hose / hydraulic hose move to drum at winch

Provide the power (hydraulic) to RSU

How to operate Power Pack

By operating several valves, adjust speed, power and rotation of drum

What is maintenance required for Power Pack

- Check oil level
- Check water level
- Check diesel level
- Check condition of belting
- Check any leaking

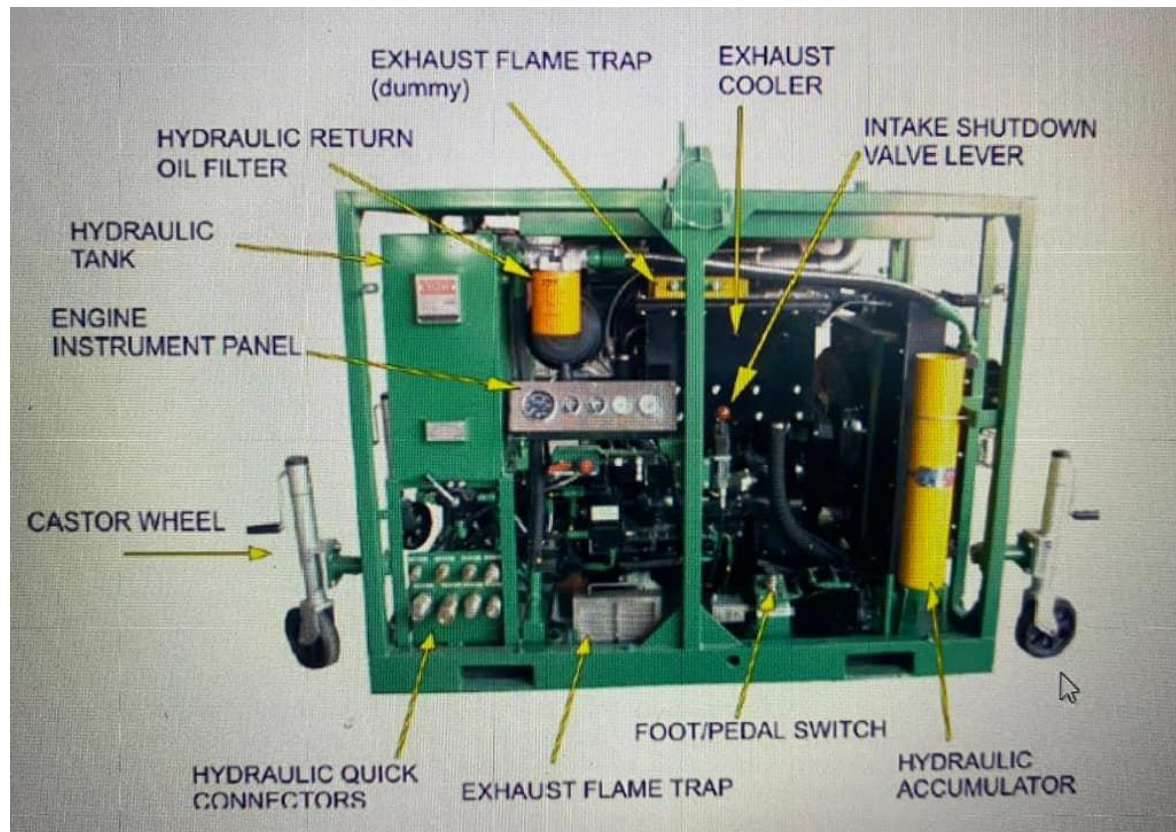
What is safety precaution required for Power Pack

- Wear appropriate PPE when changing hydraulic oil/ engine oil
- Beware of rotating fan when engine is running
- Do not open radiator cap while power pack is still running
- Wear safety glass to avoid oil spill

What is potential hazard during handling Power Pack

- Hose burst
- Hand injury
- Rotating fan
- Hearing damage

Draw & name each part of Power Pack



B.12. AIR COMPRESSOR

What is Air Compressor

A machine that air being compressed driven by diesel engine

What is the purpose of Air Compressor

To supply compressed air for control panel, test pump and air stater engine

How to operate Air Compressor

The power pack starting technique is nearly the same. Typically, an air compressor uses a spring starter. Turn the shaft clockwise until the indicator becomes red to start the starter. To start the engine, replace the spring.

What is maintenance required for Air Compressor

-
- Change filters
- Change oil compressor
- Check fan belting condition

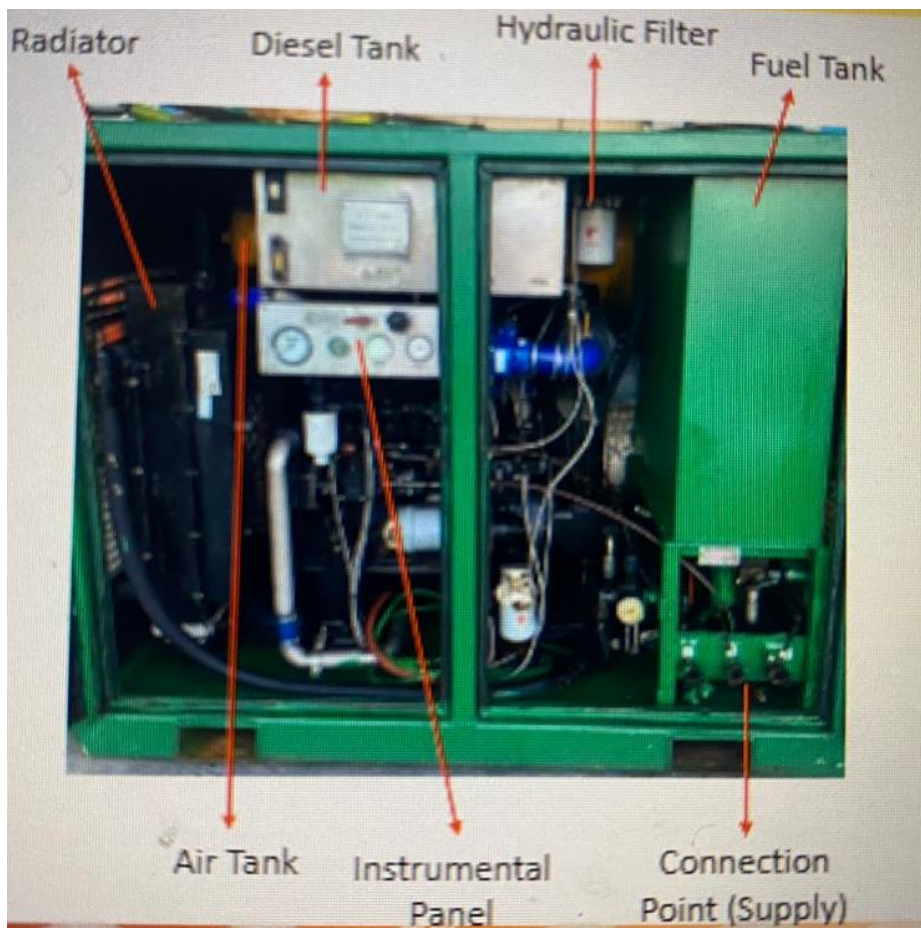
What is safety precaution required for Air Compressor

-
- Make sure all hoses connection no leaking
- Make sure fan is covered

What is potential hazard during handling Air Compressor

- Hose burst
- Pinch point
- Hot surface

Draw & name each part of Air Compressor

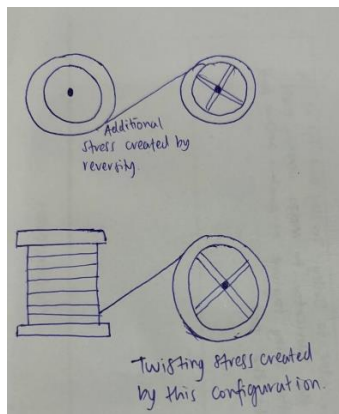


B.13. DRUM

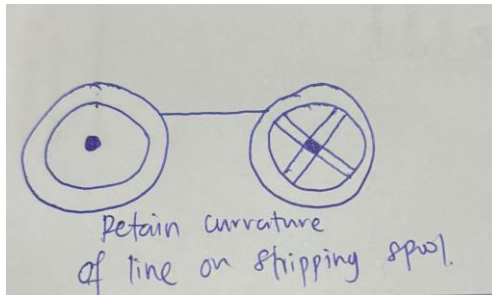
What is the purpose of Drum

To spool the wireline wire

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



Wrong Method



Right Method

What is maintenance required for Drum

Make sure to service and always check the drum bearing, change if there have any broken or damage

What is safety precaution required for Drum

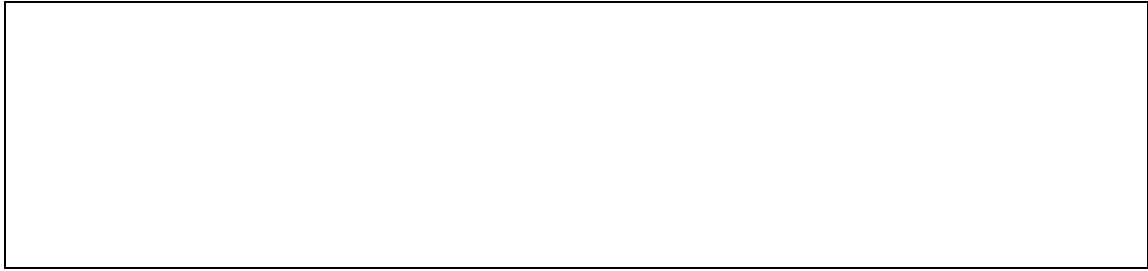
- Use tag line or push pull stick
- Make sure using the safety glasses and appropriate PPE

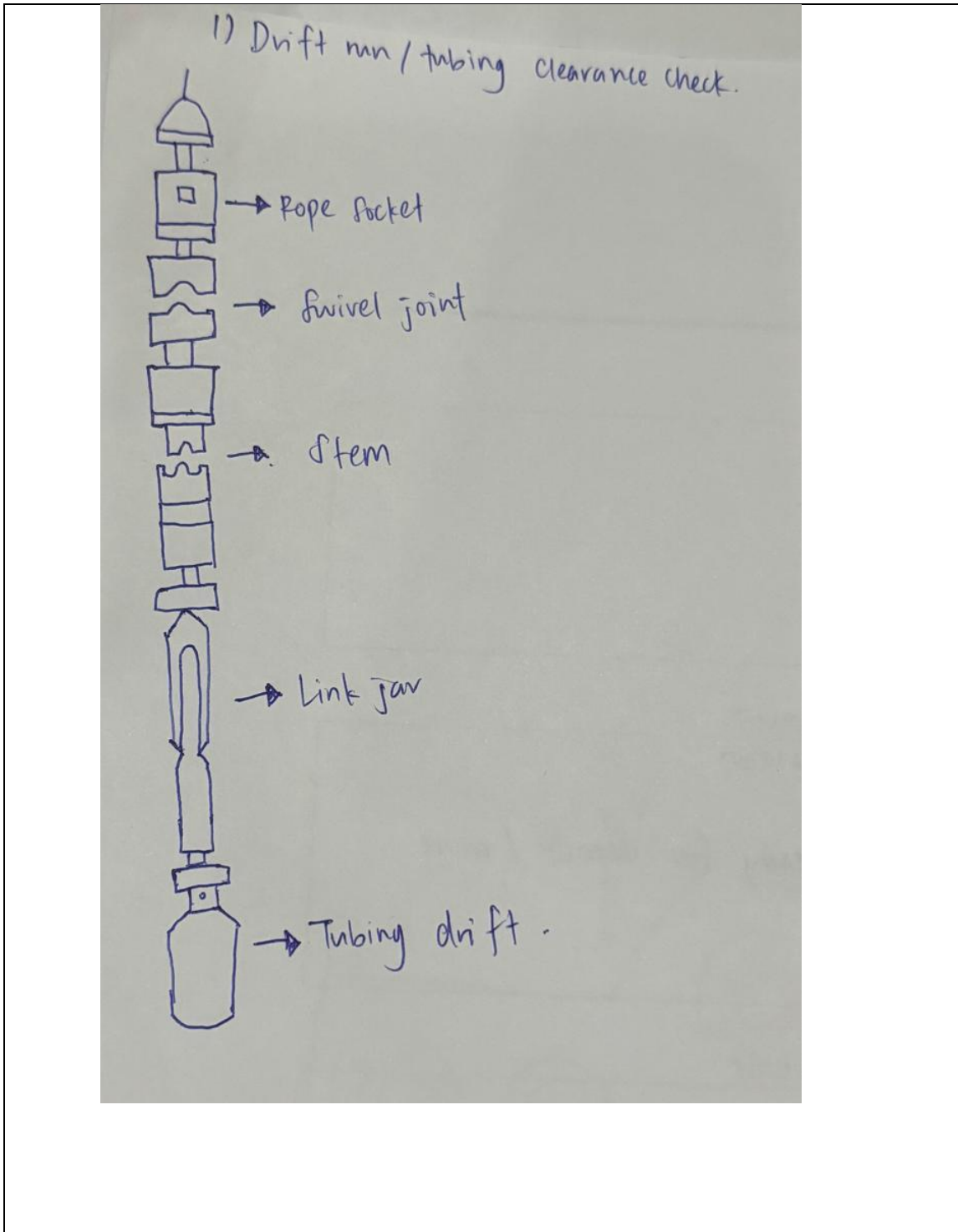
What is potential hazard during handling Drum

- Rotating device
- Pinch point
- Back injury

Please draw/sketch the toolstring configuration for:

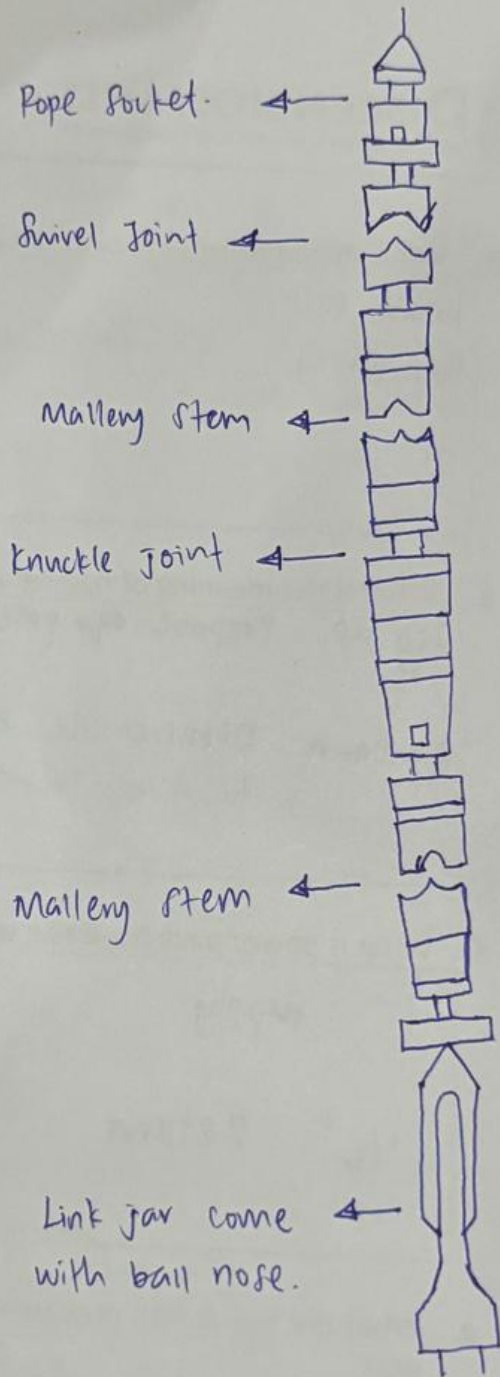
- 1) Drift run/tubing clearance check
- 2) Sinker bar run
- 3) Set and retrieve plug
- 4) Set and retrieve insert valve

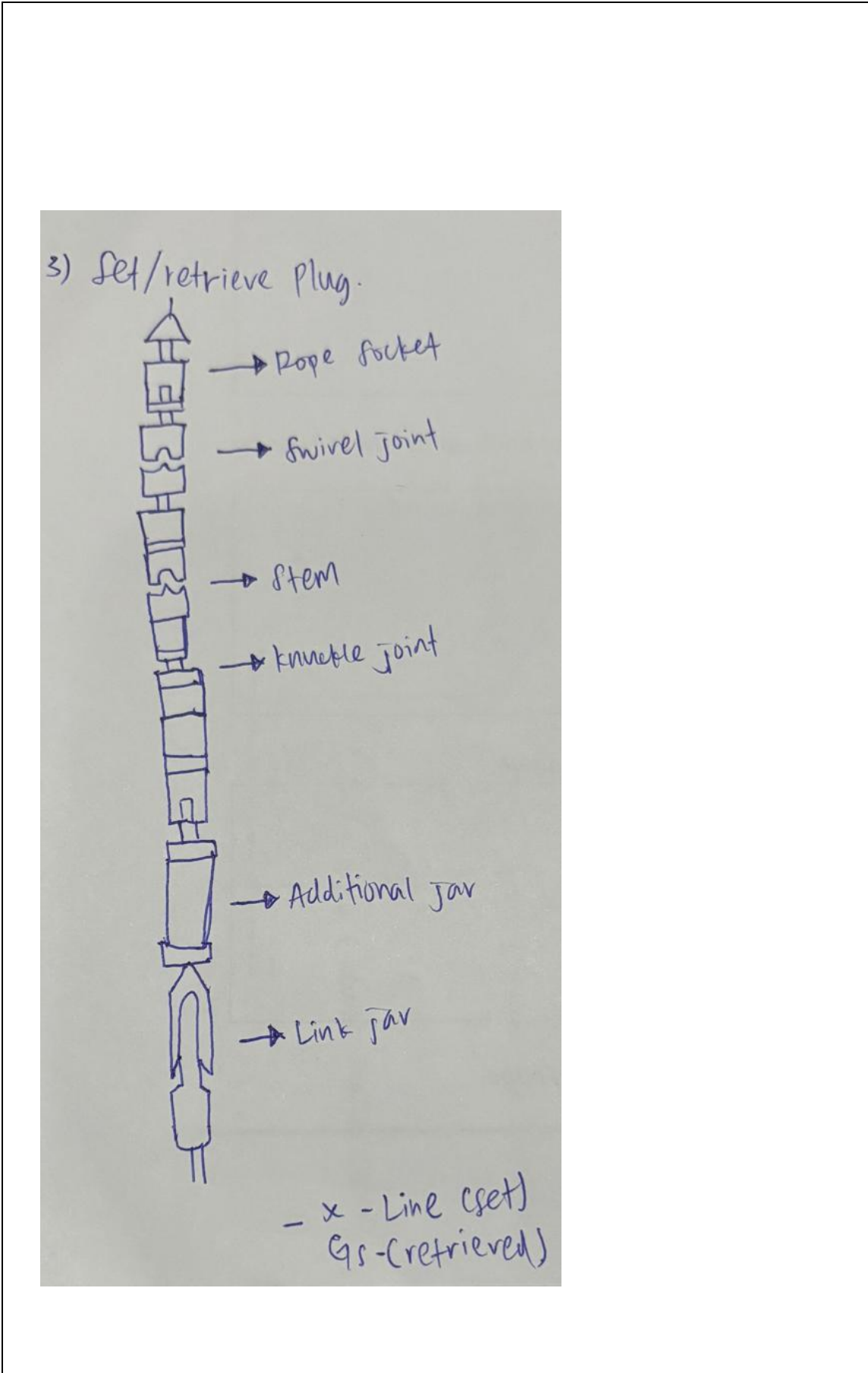




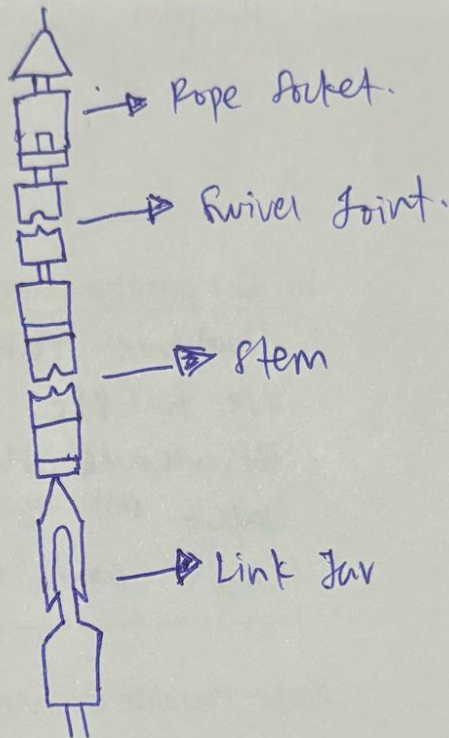


2) Sinter bar run.





4) Set / Retrieve Insert Valve



X-Line come with prong
(set)

GC come with prong
(retrieved)