

# Capacity Building Workshop in Angola

Huambo, 29 to 30 April 2009



REPÚBLICA DE ANGOLA  
SECRETARIA DE ESTADO DAS ÁGUAS  
DIRECÇÃO NACIONAL DE ÁGUAS

## Second Part



Presentation subject of the second part is the Maintenance Interventions for the Afridev Handpump:

**A) Weekly Checks**

**B) Monthly Checks**

**C) Yearly Checks**

**Checking of wearing parts**

**Re-installing plunger & footvalve**

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## A) Weekly Checks

- It is most important to fasten the special nuts of the fulcrum pin tightly.



- Check also the flange bolts for tightness and keep the pump platform and the drainage channel clean.

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## B) Monthly Check

- **Make a Leakage Test**

- Operate pump handle until water is flowing from the spout.**
- Stop operating pump handle for approximately 30 minutes.**
- Then operate the handle again and count exactly how many strokes are required until water is starting to flow again.**

**If more than 5 handle strokes are required to make the water flow again, there must be a leakage in the rising main or in the footvalve.**

**Report to a pump mechanic**

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Monthly Check

## Make a Discharge Test

- a) Operate the pump handle until water is flowing from the spout (pump ratio approximately 40 full strokes per minute).
- b) Place a bucket in the continuous water flow for 1 minute.
- c) Take bucket off the water flow & check amount of water.

If the discharge is less than 15 litres, there might be a problem with the bobbins or the cup seal.

**Report to a pump mechanic**

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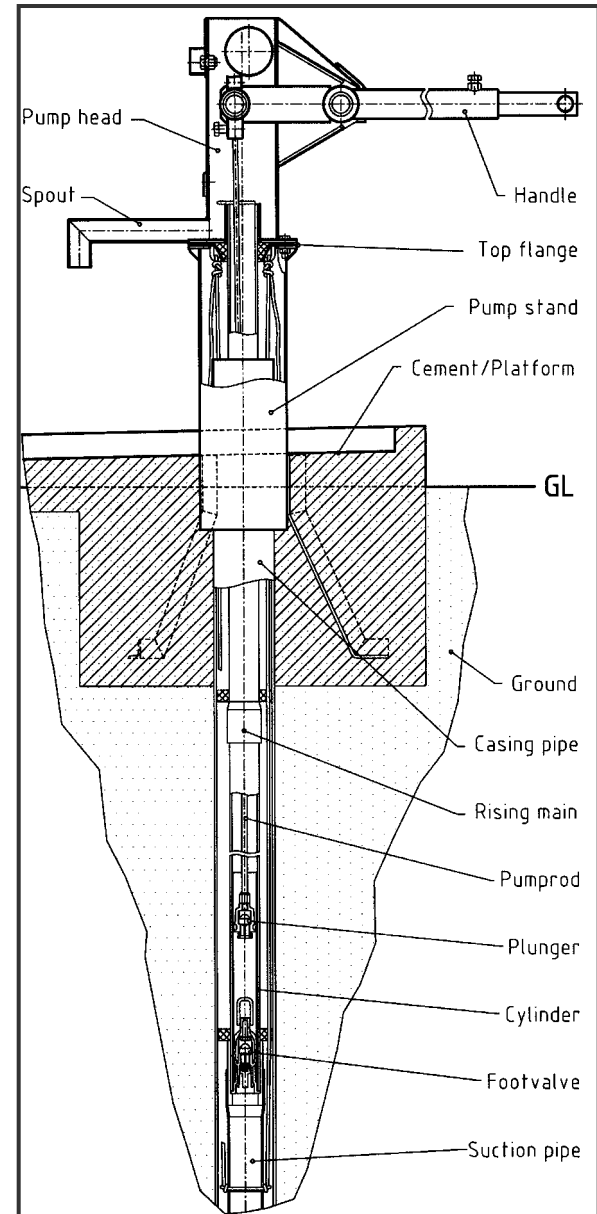
## Afridev Drawing

### Above ground components:

- Pump stand,
- Pump head with spout,
- Pump head cover,
- Pump handle.

### Below ground components:

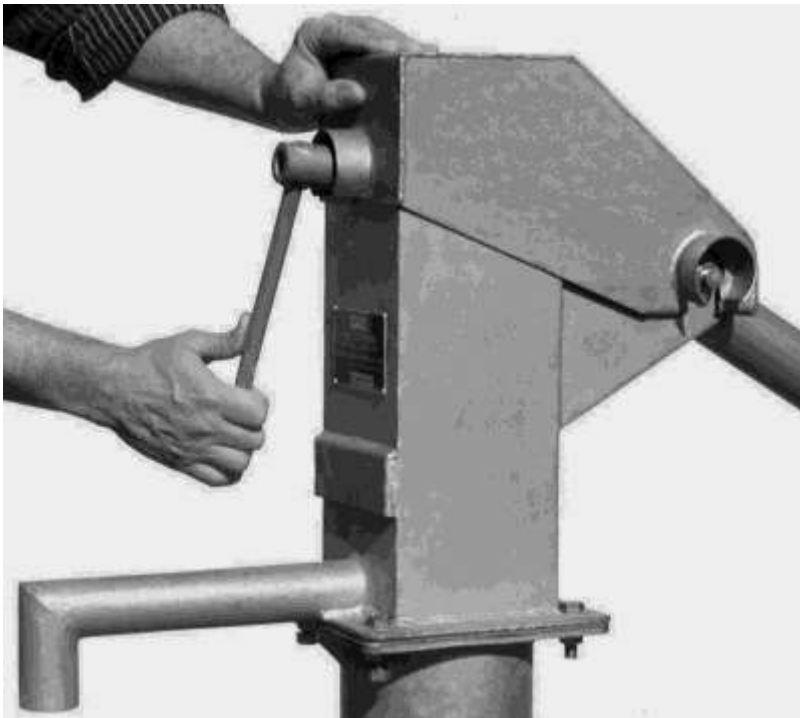
- Pump cylinder with Plunger and Footvalve,
- Rising main pipe,
- Pumprods.



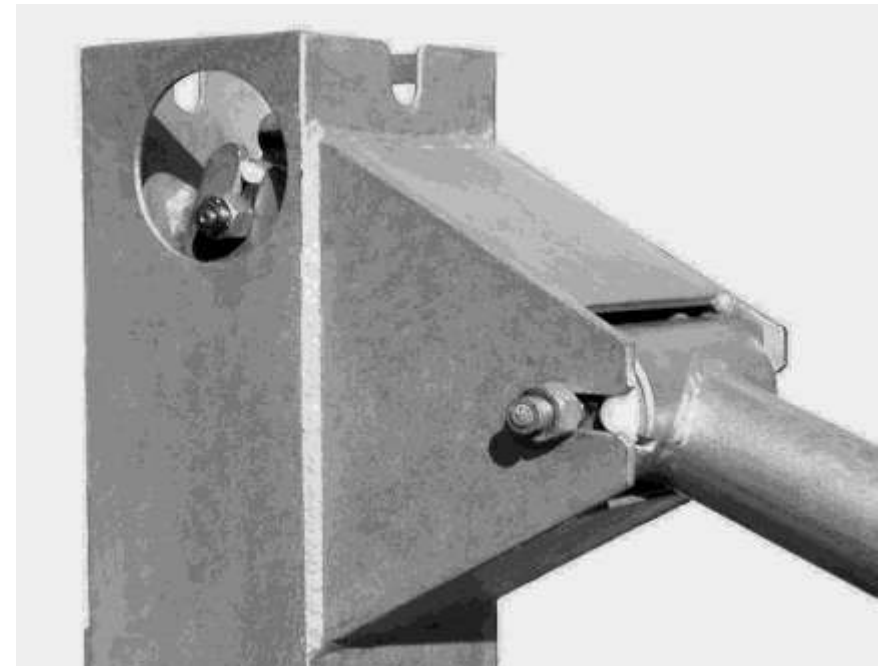
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## C) Yearly Check

Dismantling procedure for  
Plunger and Footvalve



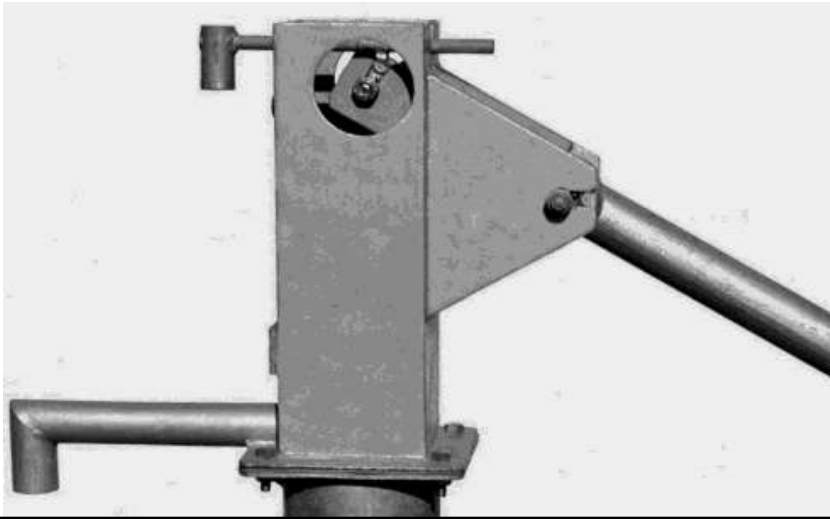
1) Open cover bolt and  
remove head cover



2) Keep handle at lowest  
position, loosen hanger  
pin - & fulcrum pin nuts

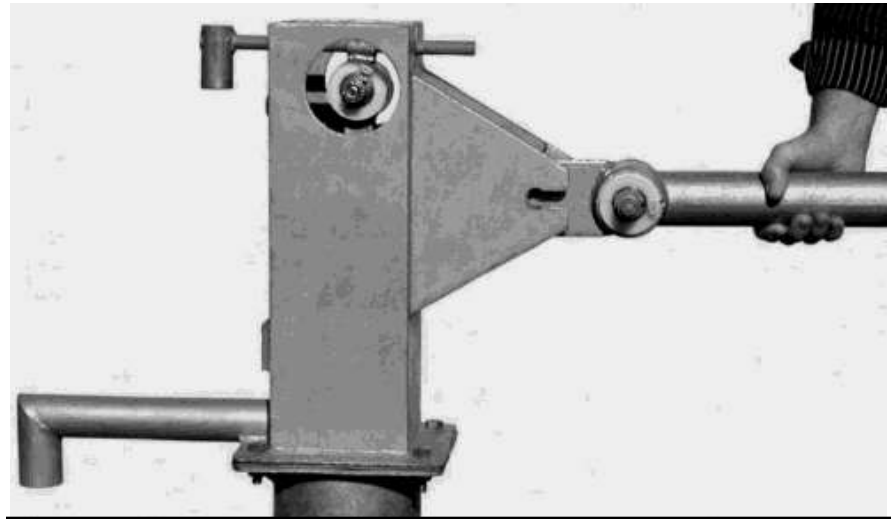
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## Yearly Check



**3) Insert spanner into retainer bush and rest it in the slots provided.**

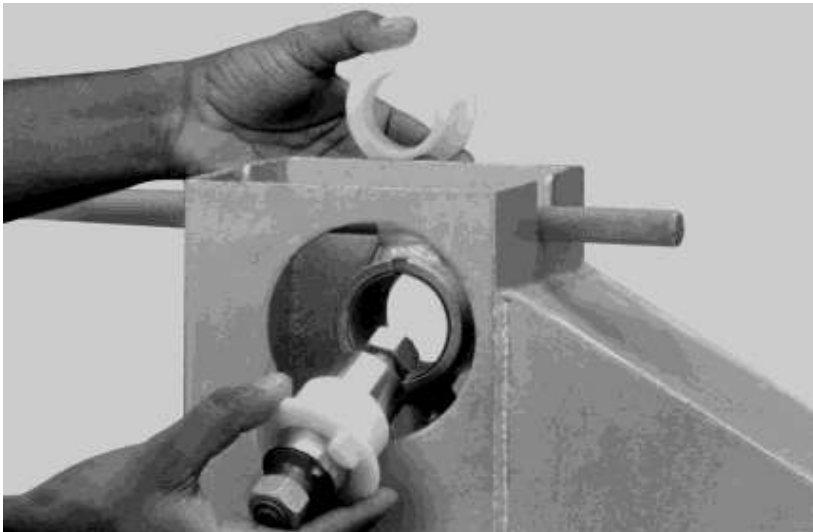
**Then move the handle horizontally.**



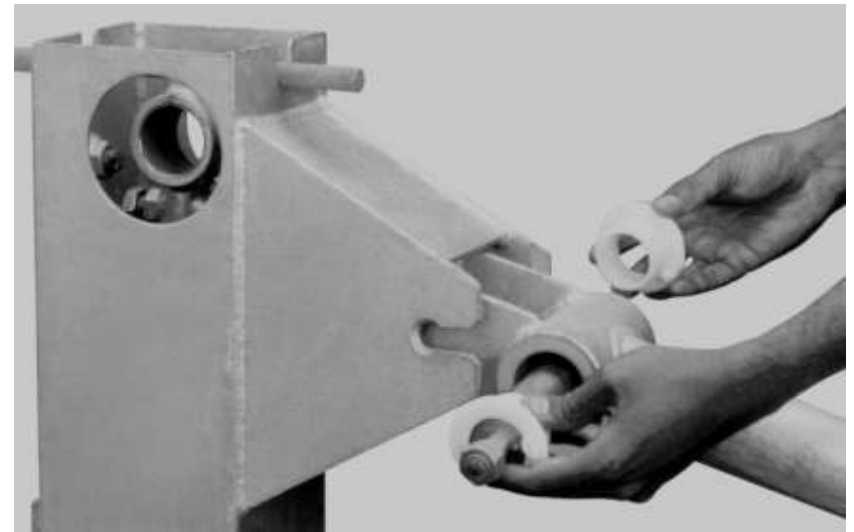
**4) Pull out the handle carefully.**

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## Yearly Check



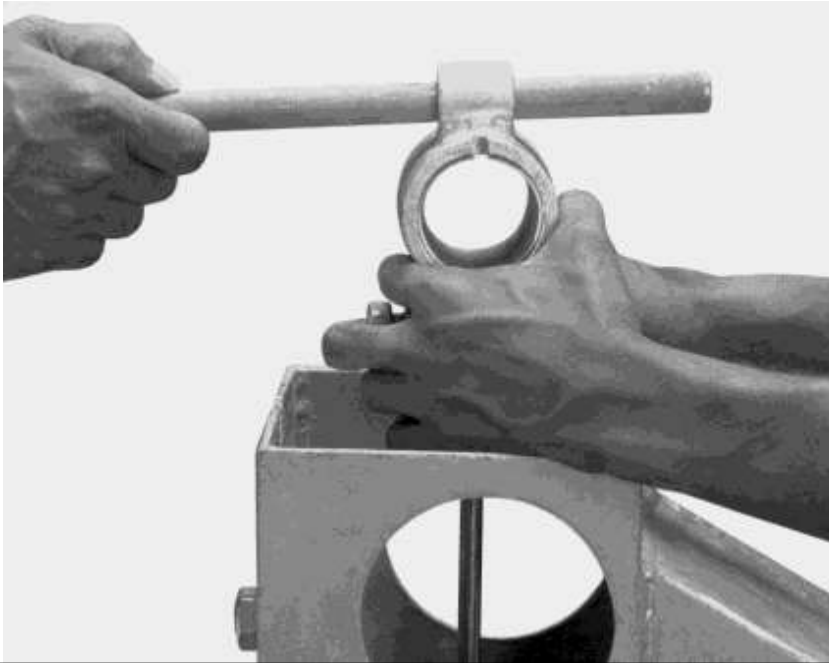
**5) Remove hanger pin and bearing bushes from the roadhanger**



**6) Remove fulcrum pin and bearing bushes from the pump handle**

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## Yearly Check



**7) Lift up the toprod and introduce the resting tool below the pumprod connection.**



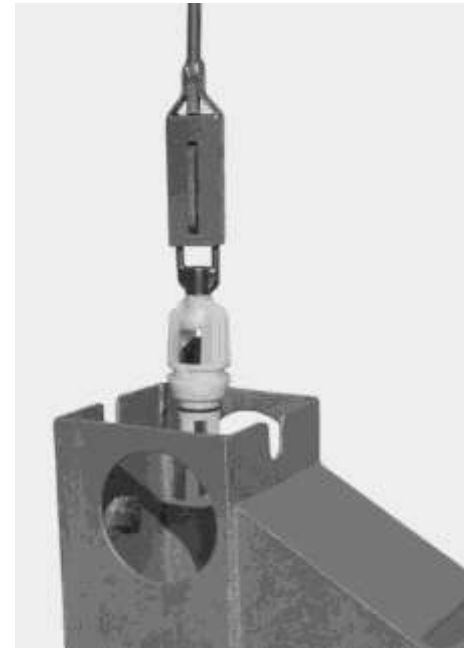
**8) Open all rod connections on top of the resting tool.**

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9) Remove all pumprods and the plunger rod.

Yearly Check



10) Replace plunger rod with fishing tool and re-install all pumprods for fishing the footvalve.

## Checking of wearing parts

**Check wearing parts, replace if worn:**

- a) Bobbin ..... C2088
- b) Cup seal ..... C2758
- c) Bearing bush outer ..... C2044
- d) Bearing bush inner ..... C2045
- e) O-Ring ..... C1021
- f) Pumprod centralisers ..... C2212

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## Checking of wearing parts



**Bearing bush  
inner & outer**



**Bobbin &  
Cup seal**



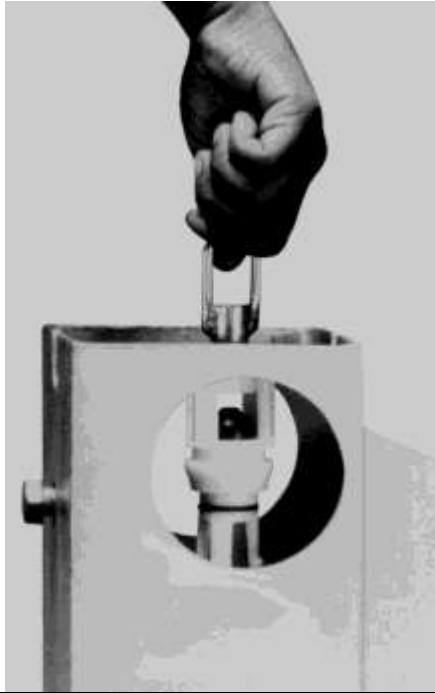
**Bobbin and  
O-Ring**



**Pumprod  
centraliser**

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## Re-installing Plunger & Footvalve



**1) Insert the footvalve into the rising main pipe and let it drop down the hole.**

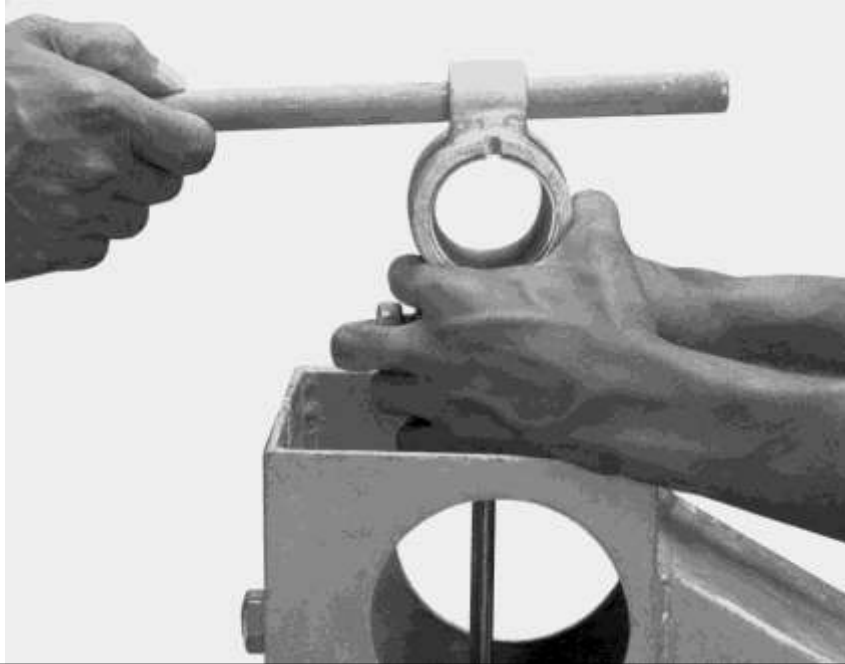


**2) Install the plunger and all pumprods with resting tool.**



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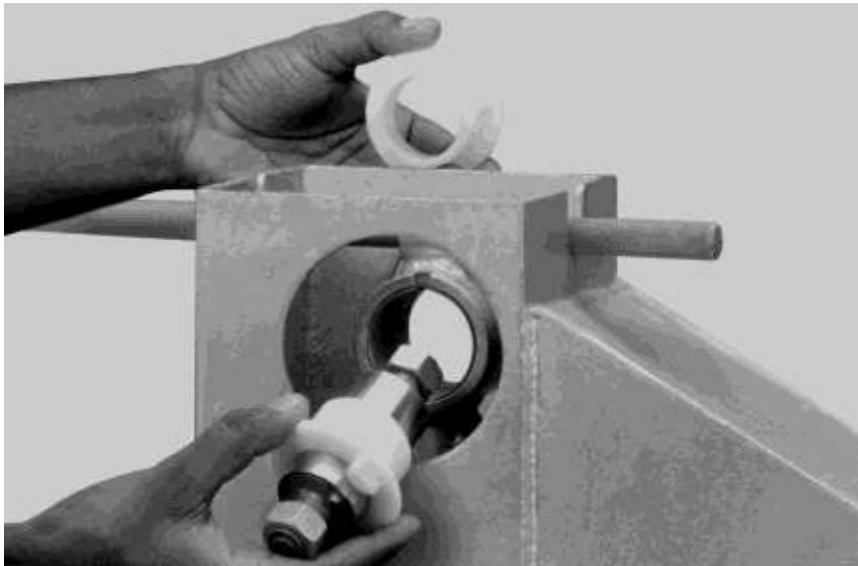
Re-installing



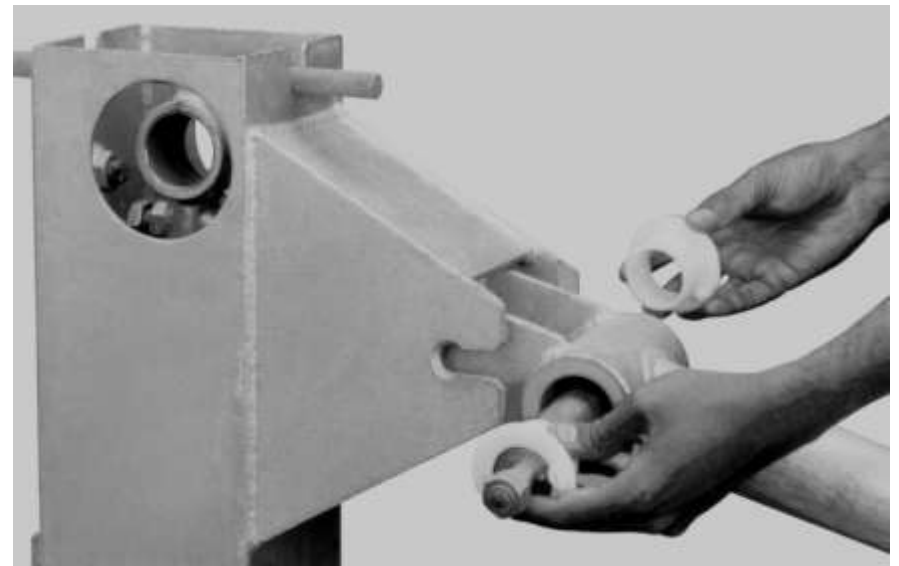
- 3) If top rod is connected, lower the rod assembly until it rests on the footvalve. Push footvalve gently to its end position (an additional pumprod is required).
- 4) Lift top rod, insert spanner into retainer bush and rest it in the slots provided in the pumphead.

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## Re-installing



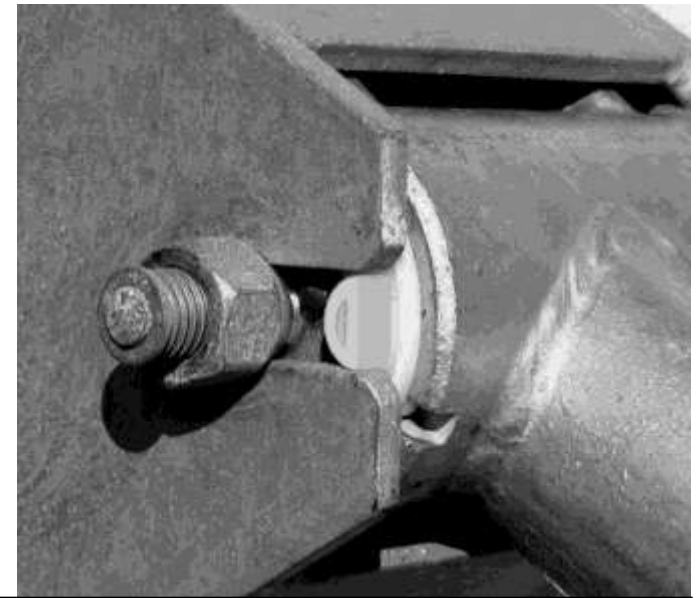
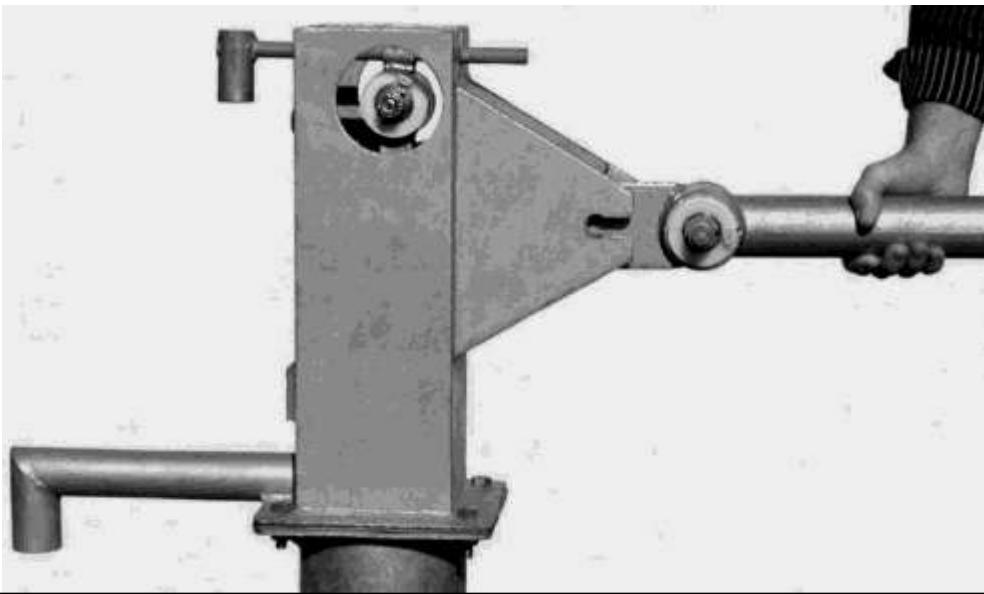
**5) Insert hanger pin and bearing bushes into the rod hanger.**



**6) Insert fulcrum pin and bearing bushes into the pump handle.**

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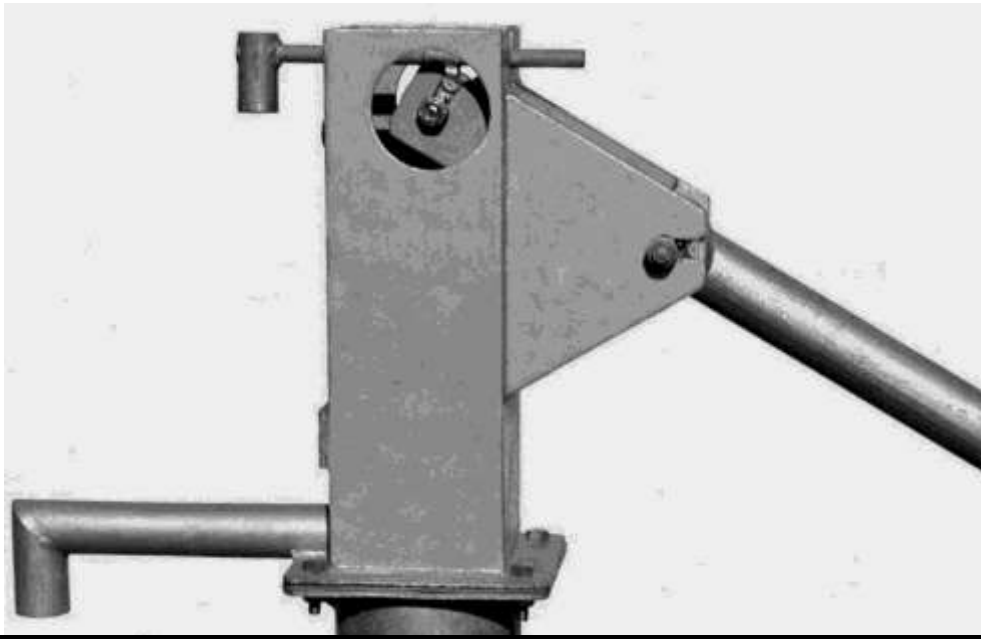
Re-installing



**7) Insert handle gently into pump head (horizontal) and adjust position of lock pin and lug in the slot.**

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Re-installing



**8) Move handle slowly downwards & check/adjust the position of lock pin and the lug in the slot.**

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## Re-installing

- 9) Keep handle at lowest position, remove spanner from the rod housing and fasten all nuts tightly.
- 10) Put the cover back onto the pump head and tighten the cover bolt.
- 11) Operate the pump handle, check for leakage and discharge and hand the pump over to the users.

# Any Questions to the Second Part?

