



European Union

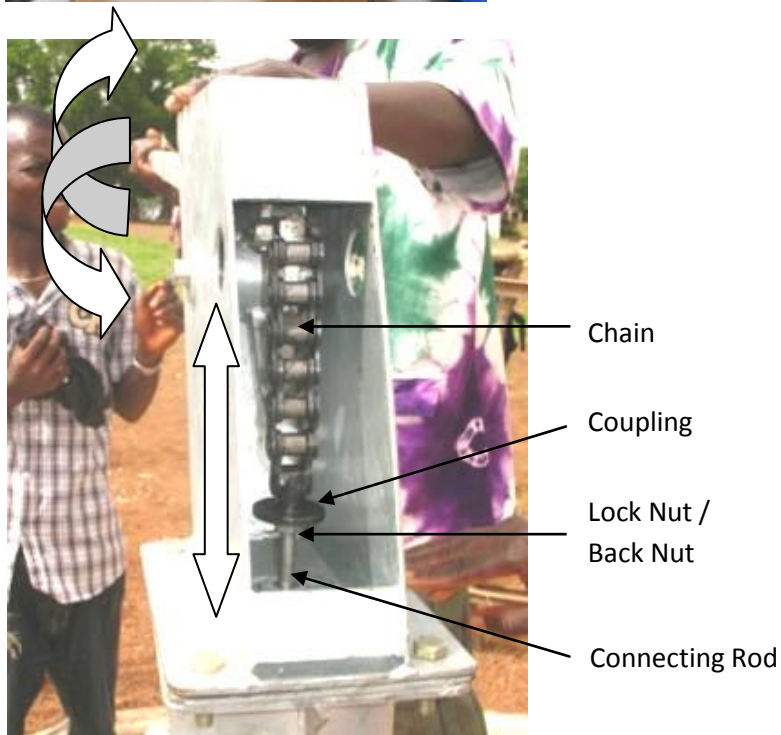
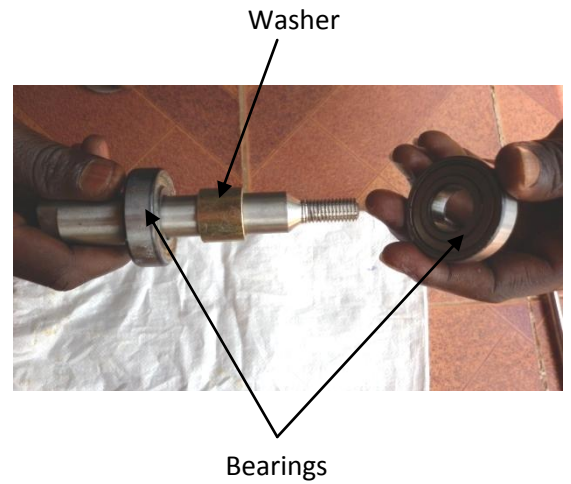


Inter Aide  
Sierra Leone

# India Mark 2 Guideline

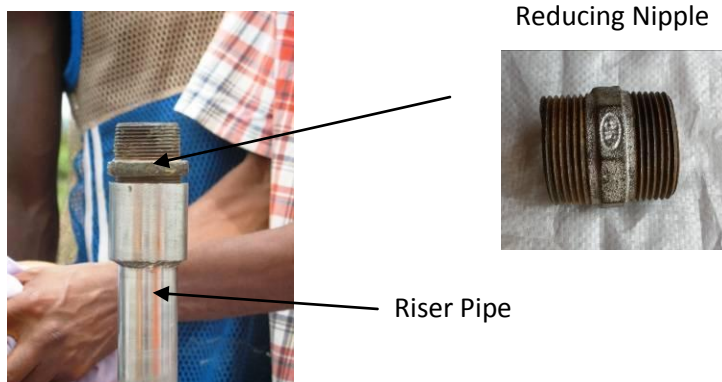


# I. The Head Assembly



*Pumping of the handle drive the chain with coupling fixed to the connecting rod, itself fixed to the plunger rod (piston). This coordinate movement will drive the piston (inside the cylinder) up and down and ensure the water to come up through the riser pipes.*

The reducing nipple is used to fix the pipe of the top to the water tank



## II. The Low Assembly



Riser Pipe

Connecting Rod

For 1 pipe, you have 1 connecting rod of the same size. You can find only three sizes: 3m, 1m, 0.5m.

Inside each pump socket you will find an O-ring Seal (bad quality). We use in general **thread seal** in order to avoid leaks.



Riser Pipe

Connecting Rod

Long Nut

Connecting Rod

Riser Pipe Socket

Riser Pipe



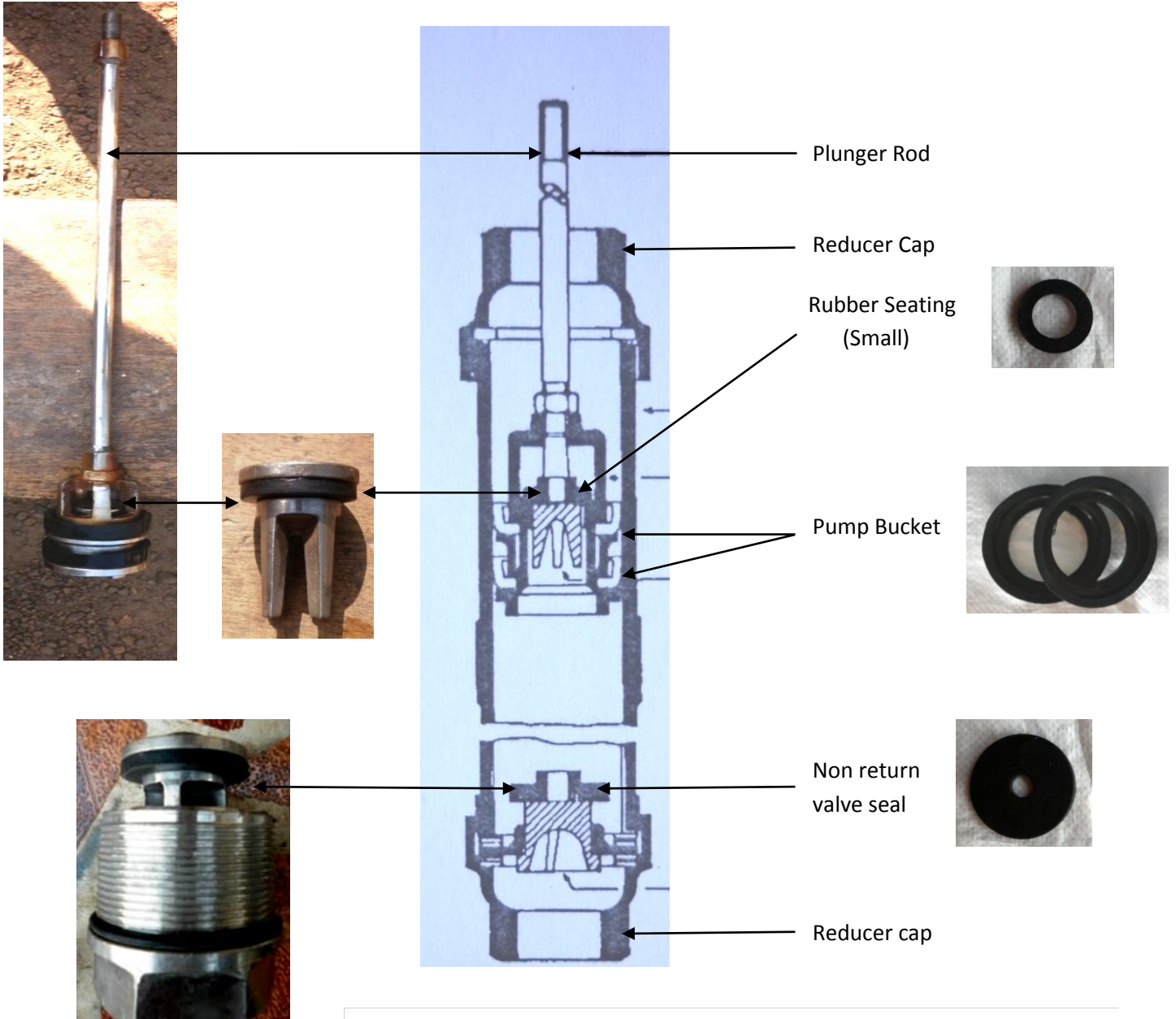
Cylinder

Plunger rod (piston) +  
Connecting rod

Riser Pipe

You can easily spot good or bad quality materials. For example, look at the 2 pictures above. On the first one, the connecting rods are shining, while on the second, they are totally rust. The first ones are stainless and never rust. The second are galvanized and rust very quickly.

### III. The Cylinder

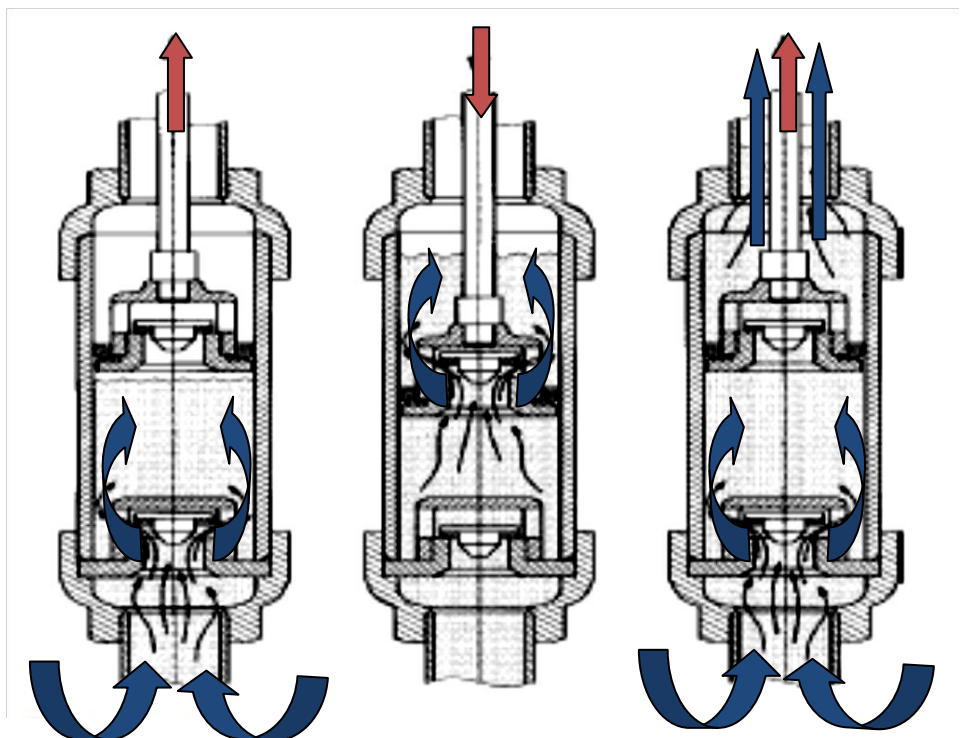


**When the piston is going up:**  
 the non return valve opens in order to let the water go inside the cylinder.

**When the piston is going down:**

-The non return valve seal is stuck at the bottom of the cylinder (no water can go in).

-The water already inside is going up through the small rubber seating.



#### IV. Identification of malfunctions

Defect	Cause	Solution	Who?
<b>The pump is shaking when we try to fletch water</b>	Bolts and Nuts are not well tightened	Tight properly every bolt and nut of the head assembly	<i>Pump Care Taker</i>
	The pedestal is working free	The hand pump need rehabilitation	<i>Technician</i>
<b>No rate of flow</b>			
<b>The handle is free and nothing support it</b>	The Chain is not fixed anymore to the handle or the connecting rod	Fix the chain to the handle or the connecting rod	<i>Pump Care Taker</i>
	Disconnection between the connecting rods	Fix and Tighten with long nut	<i>Pump Officer</i>
	The chain is broken	Change the chain	<i>Pump Care Taker</i>
<b>We can heard a metallic noise</b>	One connecting rod is broken or one long nut is unscrewed	Dismantle everything, change the connecting rod or tighten the long nut	<i>Pump Officer</i>
<b>The connecting rod is not going down anymore</b>	The piston is jammed in up position	Clean the Piston, Pump bucket.	<i>Pump Officer</i>
	The cylinder is not enough deep and cannot go down under its own weight	Add pipes and connecting rod if possible *	<i>Pump Officer</i>
<b>Everything is working</b>	The cylinder is out of the column of water	Dismantle the assembly and add pipes and connecting rod if possible *	<i>Pump Officer</i>
<b>No suspect Noise</b>	The non return valve seal (rubber seating big) is not working	Dismantle everything and change the seal	<i>Pump Officer</i>
<b>The Handle is hard to go down and goes up by itself</b>	Disconnection along the pipe line	Dismantle assembly, check riser pipe and socket, change if necessary and re-tighten	<i>Pump Officer</i>
	The level of water in the well is too low	Rehabilitation or add pipes if possible *	<i>Pump officer</i>
<b>The rate of flow is weak</b>			
<b>It takes time to fletch water</b>	There are leaks on pipes / problem with non return valve seal	Tighten the pipes properly and add some tape	<i>Pump Officer</i>
<b>The water is cloudy</b>	The cylinder is in the mud	Reduce the length of pipe	<i>Pump Officer</i>
<b>One stroke, water is coming but less flow</b>	Problem with the pump buckets	Change them	<i>Pump Officer</i>
<b>The rate of flow is normal</b>			
<b>There are some shocks when we use the pump</b>	The bearings are faulty	Change the bearings	<i>Pump Officer</i>

## Fencing and Soak away

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Insure water is freely flowing away from pump and is not stagnant. The soak away prevent from stagnant water and mosquito laying.

The fence prevents animals to come around the well.



## Price of spare part bought by Inter Aide

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Basic spare part bag	Connecting rod 0,5m stainless	Connecting rod 1m stainless	Connecting rod 3m stainless	Cylinder	Riser pipe 0,5m stainless	Riser pipe 1m stainless	Riser pipe 3m stainless	Handle
120 000 Le	25 000 Le	35 000 Le	55 000 Le	800 000 Le	75 000 Le	94 000 Le	170 000 Le	30 000 Le

### *Content of Basic spare part bag:*

Bearing, axle for handle, chain with coupling, long nut, nuts and bolts, O ring for cylinder, pump bucket, rubber seating, sealing ring, spacer, washer for axle

- Now you can ask different question to the water committee and the village:

Knowing the price of the spare part on local market, according to you...

- **Why yearly maintenance of your pump is important?**

*Maintenance prevents from big break down and so, from important cost.*

- **Why do we ask you to contribute money?**

*It's a strategy to help you to be self sufficient in the management of your water well point. When there will be no more NGO in Sierra Leone, who will take care of your well?*