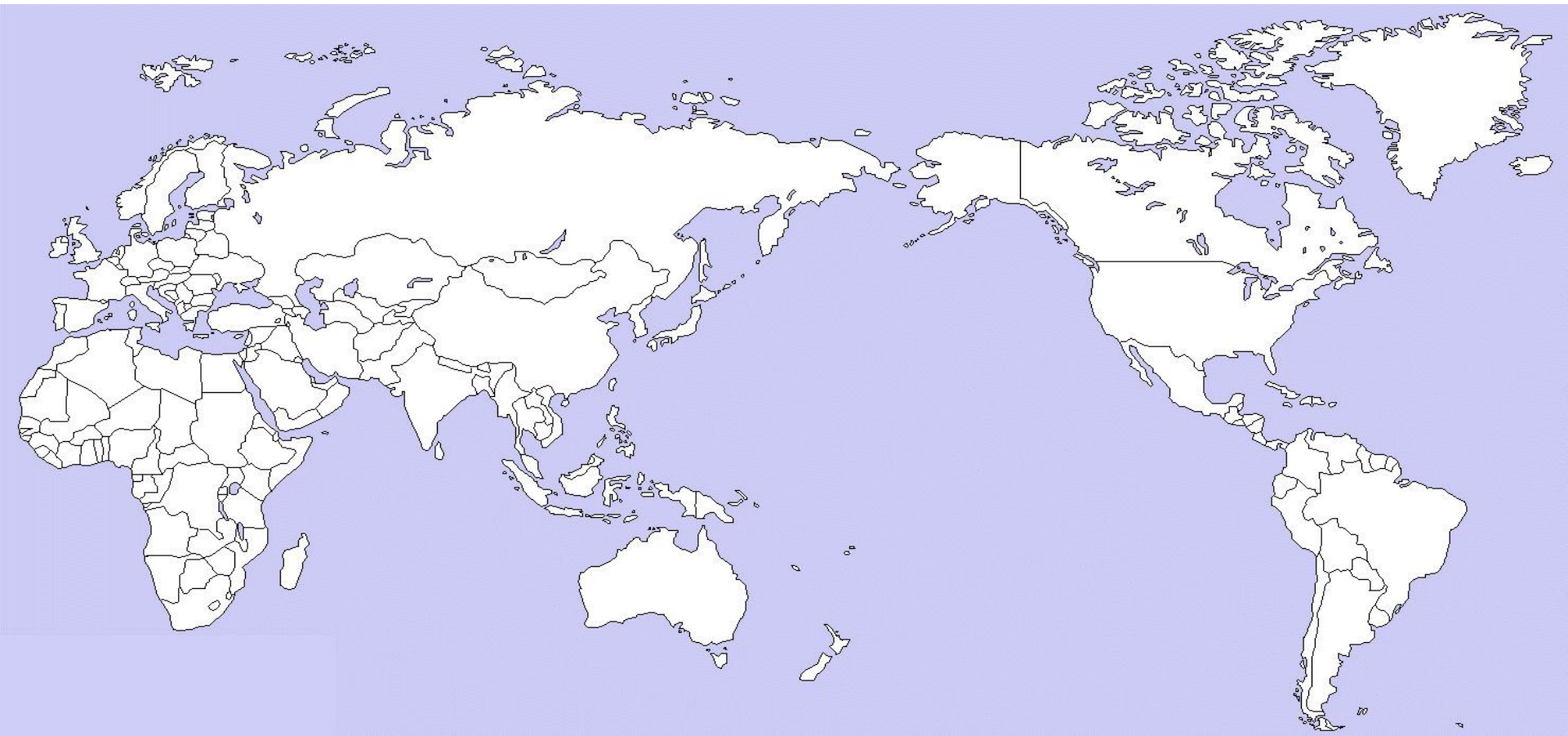


# Best Hammer Industries

*HydroRam HAMMERS*



# Disassembly and Repair of Power Cell

## Basic Safety Rules

**Improper maintenance can be dangerous and could result in injury or death.**

- 1. Disassembly and repair of POWER CELL only can do by authorized service personnel who reads and understands the BHI Service Manual.**
- 2. Never disassemble hydraulic hammer before discharging the nitrogen gas pressure.**
- 3. Use proper lifting equipment and tools when handling or servicing the hammer.**
- 4. Do not alter the hammer without authorization from BHI.**
- 5. Use only BHI tools and replacement parts. BHI specifically disclaims any responsibility for any damage or injury that results from the use of any tool or parts not sold or approved by BHI.**

## Place for disassembly and repair

- 1. Wash the hydraulic hammer with a steam washer, or the like. If the oil hose is connected, cover it with an hose plug, install a union cap, and then wash it.**
- 2. Lift the hydraulic hammer with a hoist and place the accumulator upward on the T-plate or wood blocks. Make sure the hammer is stable.**

# Disassembly and Repair of Power Cell

## Standard accessory Tools

**Spanner : 14, 17, 24, 32, 41, 65mm**

**Allen Key : 5, 6, 10, 14, 17mm**

**Eye Bolt : M12, M20, M24**

**Snap Ring Pliers**

**Hammers**

## Optional Tools

**Power Wrench**

**Torque Wrench**

**N2 Gas Charging Kits**

**Hammer Wrench : 46, 65mm**

# Disassembly and Repair of Power Cell

## CONTENTS

### **Preparation for disassembly**

1. Discharge N2 Gas from the Head Cap.
2. Remove the working tool.

### **Disassembly**

1. Remove Accumulator Ass'y from Power Cell.
2. Remove the Tension Bolts and Head Cap (from Power Cell).
3. Disassembly of the Main Valve Set
4. Disassembly of the Piston and the Cylinder Bushing
5. Disassembly of the Cylinder (Remove from Power Cell.)
6. Disassembly of the Cylinder Bushing ( Disassembly of the components)
7. Disassembly of the Cylinder (Disassembly of the components)
8. Disassembly of Head Cap (Disassembly of Gas Valve)
9. Disassembly of Accumulator
10. Disassembly of Tool Holder



# Disassembly & Repair of Power Cell

## CONTENTS

### Repair

1. Repair of the Tool Holder
2. Repair of the Accumulator
3. Repair of the Head Cap ( Assembly of the Gas Valve)
4. Repair of the Cylinder (Assembly of the components)
5. Repair of the Cylinder Bushing (Assembly of the components)
6. Assembly of the Cylinder
7. Assembly of the Piston and Cylinder Bushing
8. Assembly of the Main Valve Ass'y
9. Assembly of the Tension Bolt and Head Cap
10. Assembly of the Power Cell and Accumulator Ass'y

### Assembly

Assembly of the working tool  
Charging of N2 Gas to the Head Cap

# Disassembly and Repair of Power Cell

## DISASSEMBLY



**Discharge N2 gas from the Head Cap**  
Remove the Plug on the Charging Valve. Using the Head Cap N2 Gas Pressure Gas Gauge, remove the O-Ring on the end and set it the Charging Valve to discharge N2 gas.

Make sure that the gas has been discharged completely, and then assemble the Plug by hand.

- Required Tool:
  - Spanner 17mm
  - Allen Key 5mm
  - N2 Charging kit

# Disassembly & Repair of Power Cell

## DISASSEMBLY



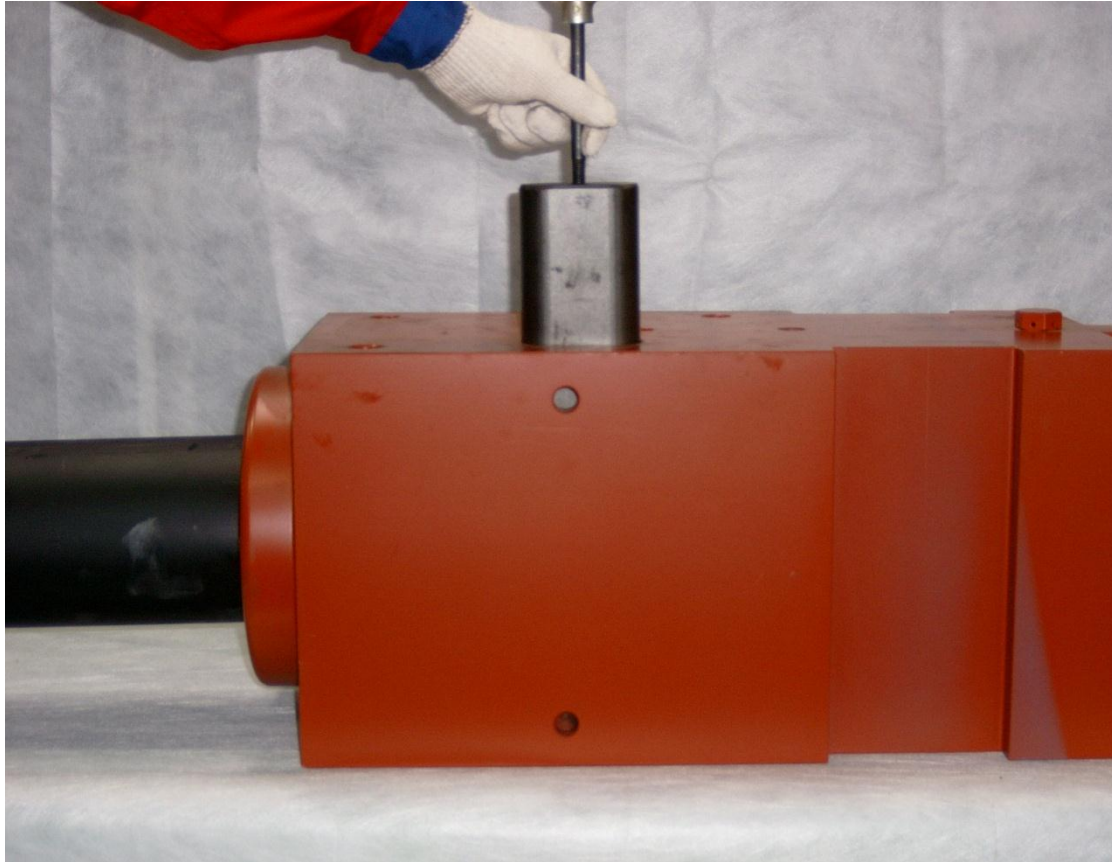
### Remove the Working tool

1. Gouge out the Rubber Plug on the ToolHolder with a minus screwdriver or a pointed tool.
2. Remove the Stop Pin.  
Set the press pin to the hole on the opposite to the Rubber Plug and remove the Stop Pin with a single-hand hammer.

- In case of the replacement of Retainer Pin
- Required Tool:
  - Tool for Rubber Plug
  - Hammer 3kg
  - Small Pin  $\varnothing 15 \times 200\text{mm}$

# Disassembly and Repair of Power Cell

## DISASSEMBLY



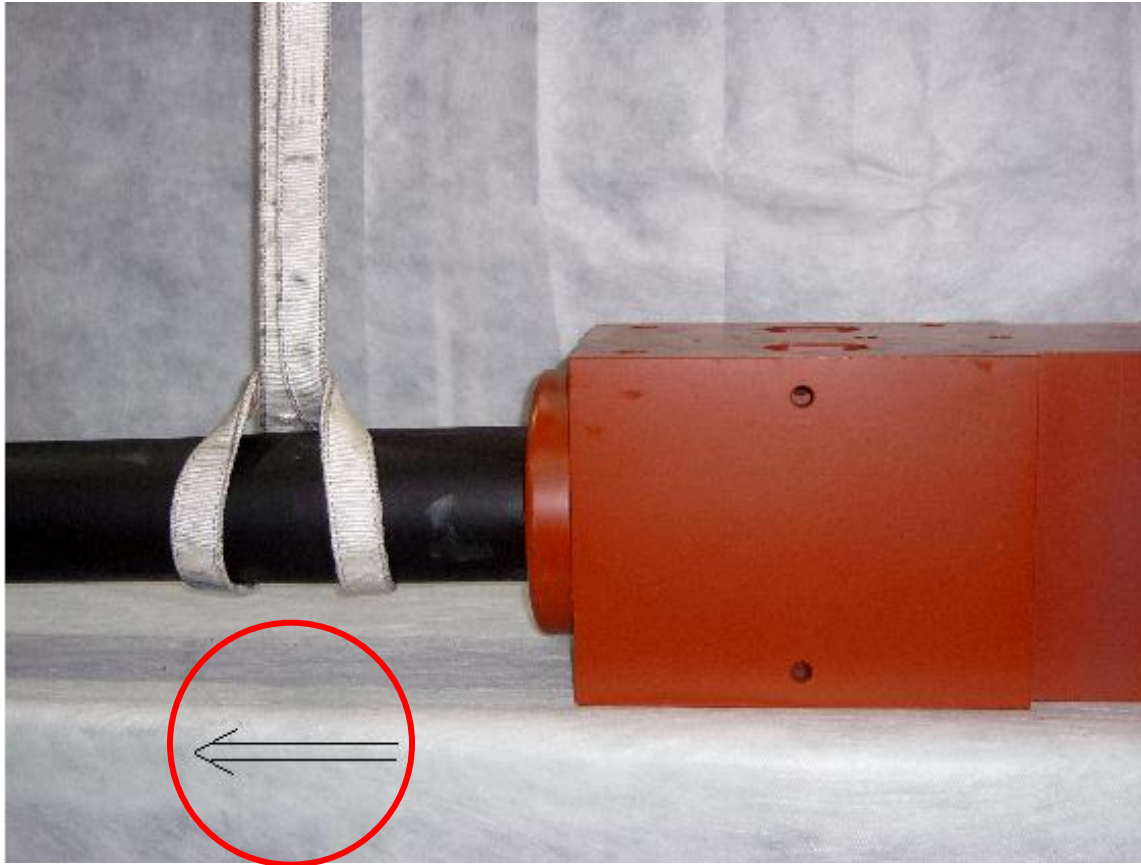
### **Pull out the Retainer Pin.**

- In case of replacement of Working tool
- Required Tool:  
Retainer Pin Handle



# Disassembly & Repair of Power Cell

## DISASSEMBLY

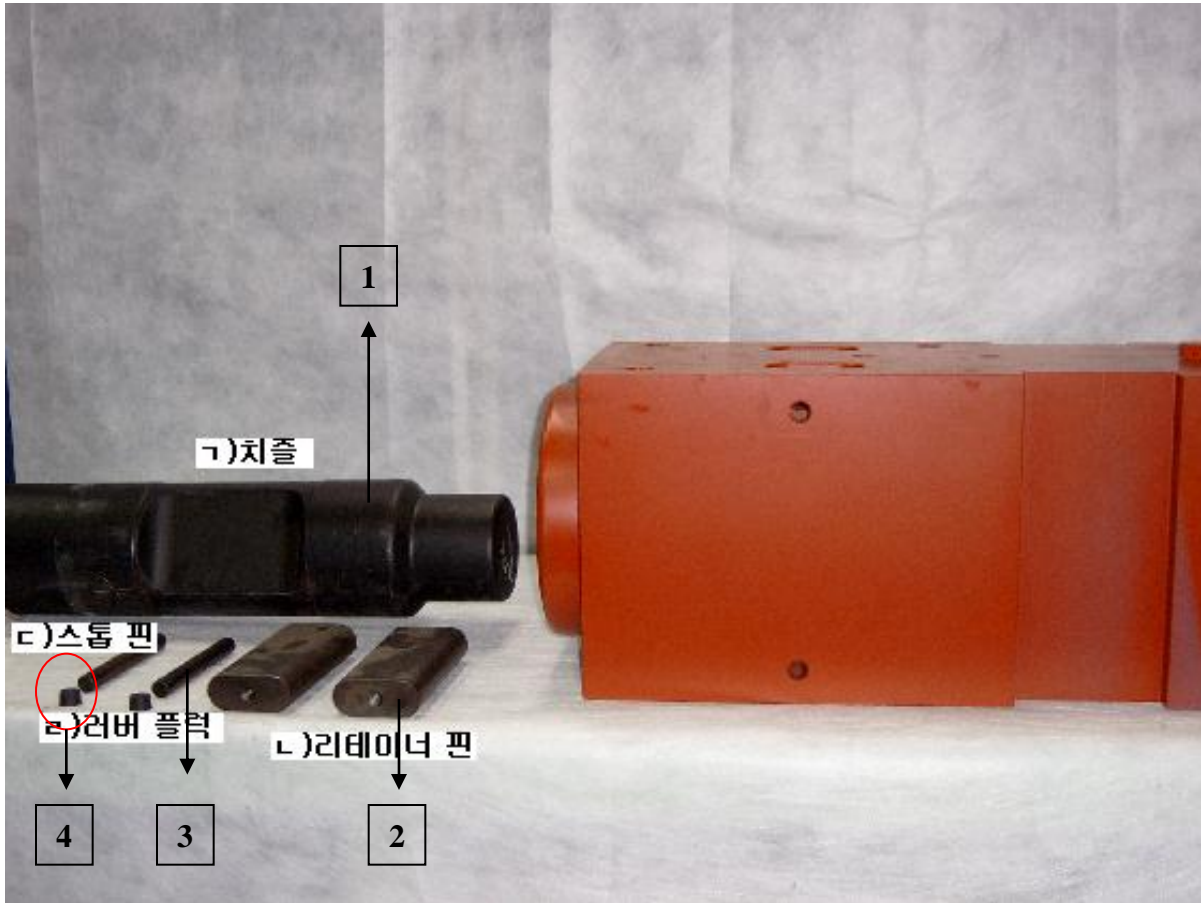


Set a nylon sling in the center of the Working tool and lift the Working tool a little bit to remove it.

- Required Tool  
Hoist - over 3Ton  
Chain or Nylon Sling 2m  
(Work load - over 3ton)

# Disassembly & Repair of Power Cell

## DISASSEMBLY

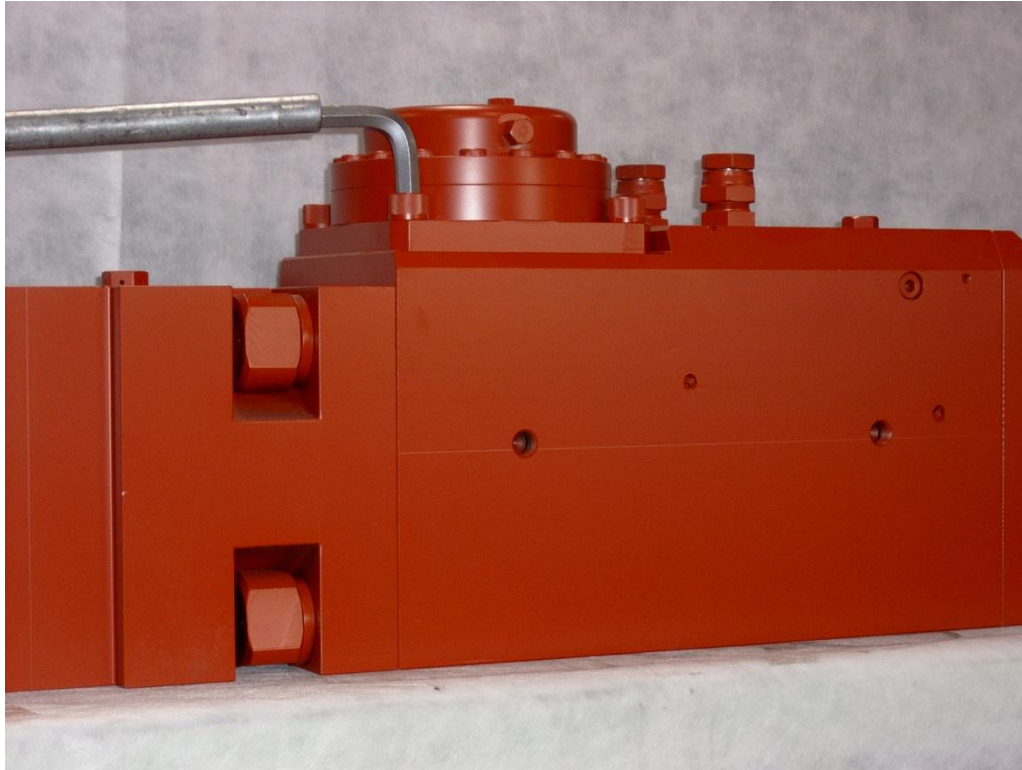


Parts disassembled

- 1 ) WORKING TOOL
- 2 ) RETAINER PIN
- 3 ) STOP PIN
- 4 ) RUBBER PLUG

# Disassembly & Repair of Power Cell

## Repair of Accumulator Ass'y



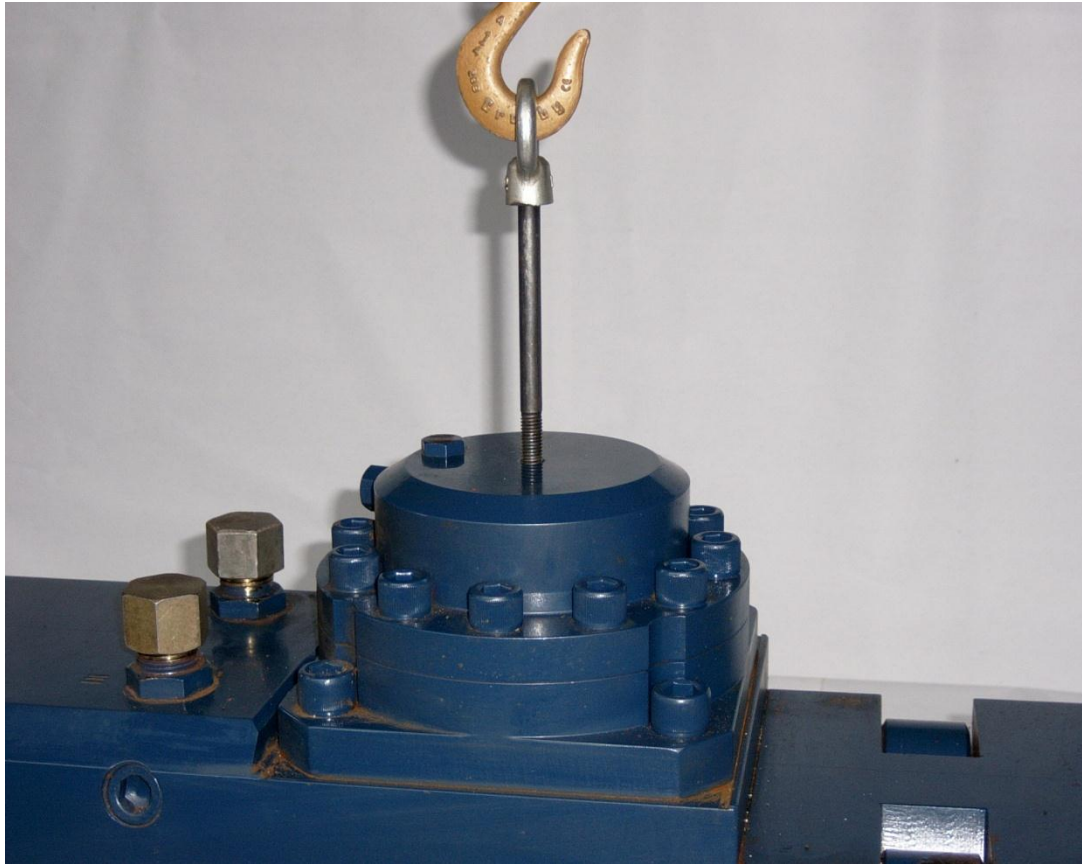
### **Remove the Accumulator Ass'y**

Loosen the four Socket Bolts from the Accumulator with an allen key and a pipe to remove them.

- In case of replacement of Diaphragm or repair of Cylinder
- Required Tool:  
Allen Key 17mm  
Pipe  $\text{Ø}30 \times 1,000\text{mm}$

# Disassembly & Repair of Power Cell

## DISASSEMBLY



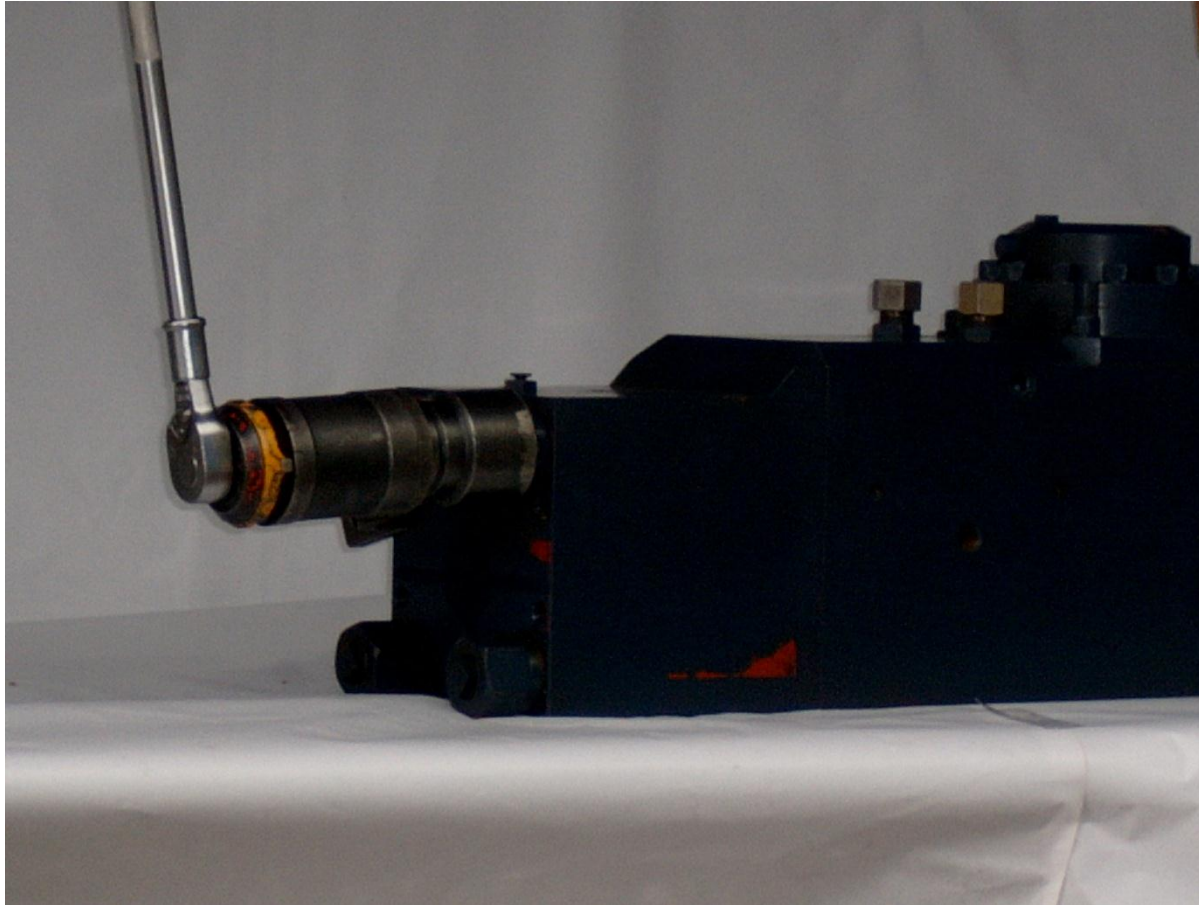
Screw an eye bolt to the threaded part on the top of the accumulator, and remove the accumulator by lifting it vertically with a hoist or chain.

- Required Tool  
Eyebolt M12  
Hoist over 3ton  
Chain 2m: Work Load 3ton



# Disassembly & Repair of Power Cell

## DISASSEMBLY



### **Remove the Tension Bolt and Head Cap.**

Loosen the Tension Bolts by using a power wrench and ring spanner.

- \* Do not completely loosen the Tension Bolt.
- Leave the Nut unloosened.

- In case of disassembly of Cylinder or replacement of seals
- Required Tool:
  - Power Wrench(640kg/m)
  - Hammer 5~7kg
  - Ring Wrench 65mm

# Disassembly & Repair of Power Cell

## DISASSEMBLY



Hook up Eye Bolt at the top of the Head Cap and then stand Power Cell by Hoist or Chain.

● Required Tool:

Eye bolt M20

Chain 2m – Work load 3ton

Hoist - over 3ton

# Disassembly & Repair of Power Cell

## DISASSEMBLY



Remove four Hexagon Nuts and Washers.



# Disassembly & Repair of Power Cell

## DISASSEMBLY



Set Eye bolt to Head Cap and lift it with a hoist or chain to remove it.

- Required Tool:  
Eye Bolt M20  
Chain 2m - Work load 3ton  
Hoist over 3ton

# Disassembly & Repair of Power Cell

## DISASSEMBLY



Remove the O-Ring from the Cylinder.

# Disassembly & Repair of Power Cell

## DISASSEMBLY



Turn the Tension Bolts with spanner counterclockwise. If not easy, tap the bottom nut.

- Required Tool:  
Spanner 24mm  
Hammer 3kg

# Disassembly & Repair of Power Cell

## DISASSEMBLY



### **Remove Main Valve Assembly.**

- In case of trouble in performance or cleaning for the maintenance of Cylinder
- Required Tool:  
Eye Bolt M20



# Disassembly & Repair of Power Cell

## DISASSEMBLY



Take out the Main Valve and Main Valve Case.



# Disassembly & Repair of Power Cell

## DISASSEMBLY



### Disassembly of Piston and Cylinder Bushing

Set an eye bolt to the upper end of the Piston and lift the Piston with a hoist or chain slowly to remove it.

Put a waste cloth or the like on the floor because the remaining hydraulic oil flows out of the Cylinder.

- In case of
  - Weak impact power
  - Replacing of the Piston scratched
  - Replacing of Seals

- Required Tool:

Eye Bolt M20

Chain 2m – Work Load 3ton

Hoist over 3ton

# Disassembly & Repair of Power Cell

## DISASSEMBLY



- Take off the Cylinder Bushing
1. Stand the Piston.
  2. Tap the Cylinder Bushing with plastic or bronze hammer.

● Required Tool:  
Plastic or bronze Hammer 1kg

# Disassembly & Repair of Power Cell

## DISASSEMBLY



### **Disassemble the Cylinder. ( from Power Cell )**

Set M24 eye bolt on both sides of the Cylinder, and lift the Cylinder with a hoist or chain.

- In case of
  - the replacement of Seals
  - repairing the Cylinder
- Required Tool:
  - Eye Bolt M24
  - Chain 2m – Work Load 3ton
  - Hoist over 3ton

# Disassembly & Repair of Power Cell

## DISASSEMBLY



### Disassembly of Cylinder Bushing (Disassembly of the components)

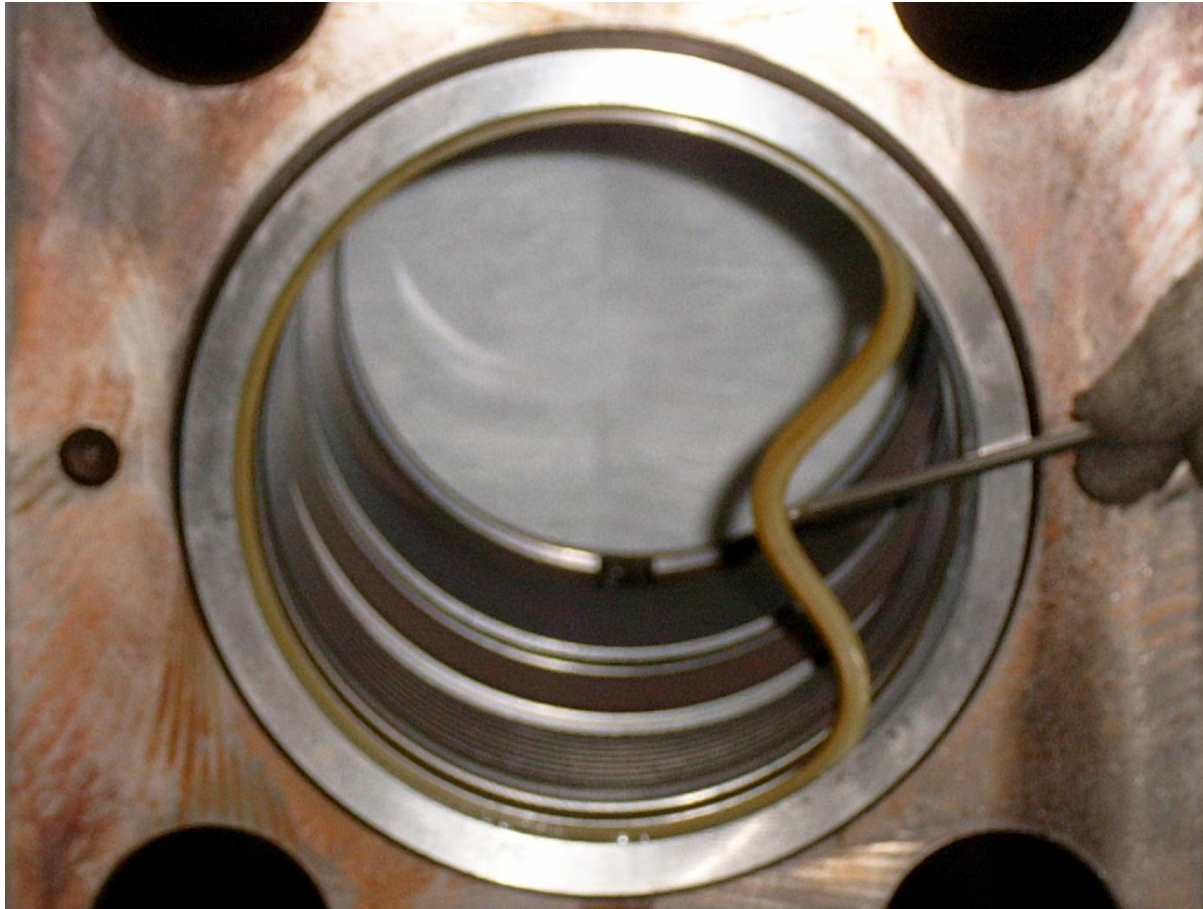
Carefully remove the O-ring, Step Seal and Gas Seal.

- In case
  - Excessive oil in the Head Cap
  - N<sub>2</sub> Gas leaks in the Head Cap
  - Hammer does not start



# Disassembly & Repair of Power Cell

## DISASSEMBLY



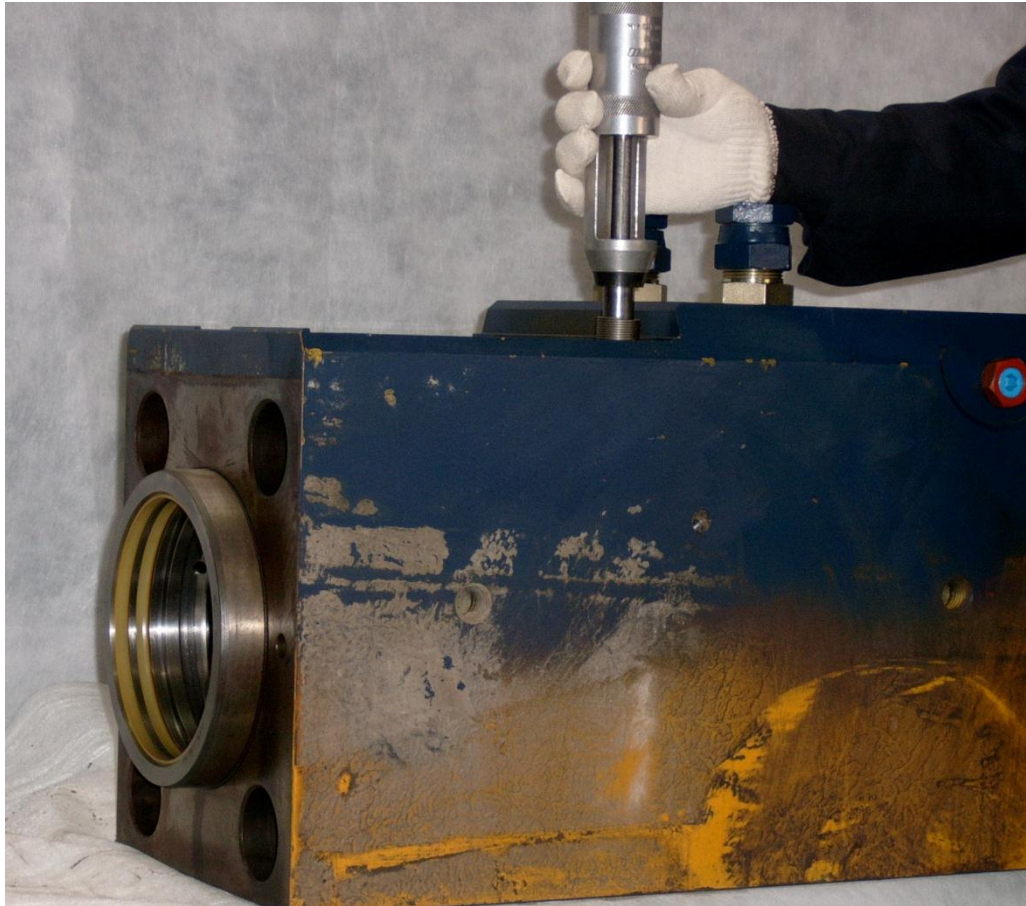
### **Disassembly of Cylinder (Disassembly of the components)**

Carefully remove the Seal  
with tool

- In case oil leaks from  
the Working tool

# Disassembly & Repair of Power Cell

## DISASSEMBLY

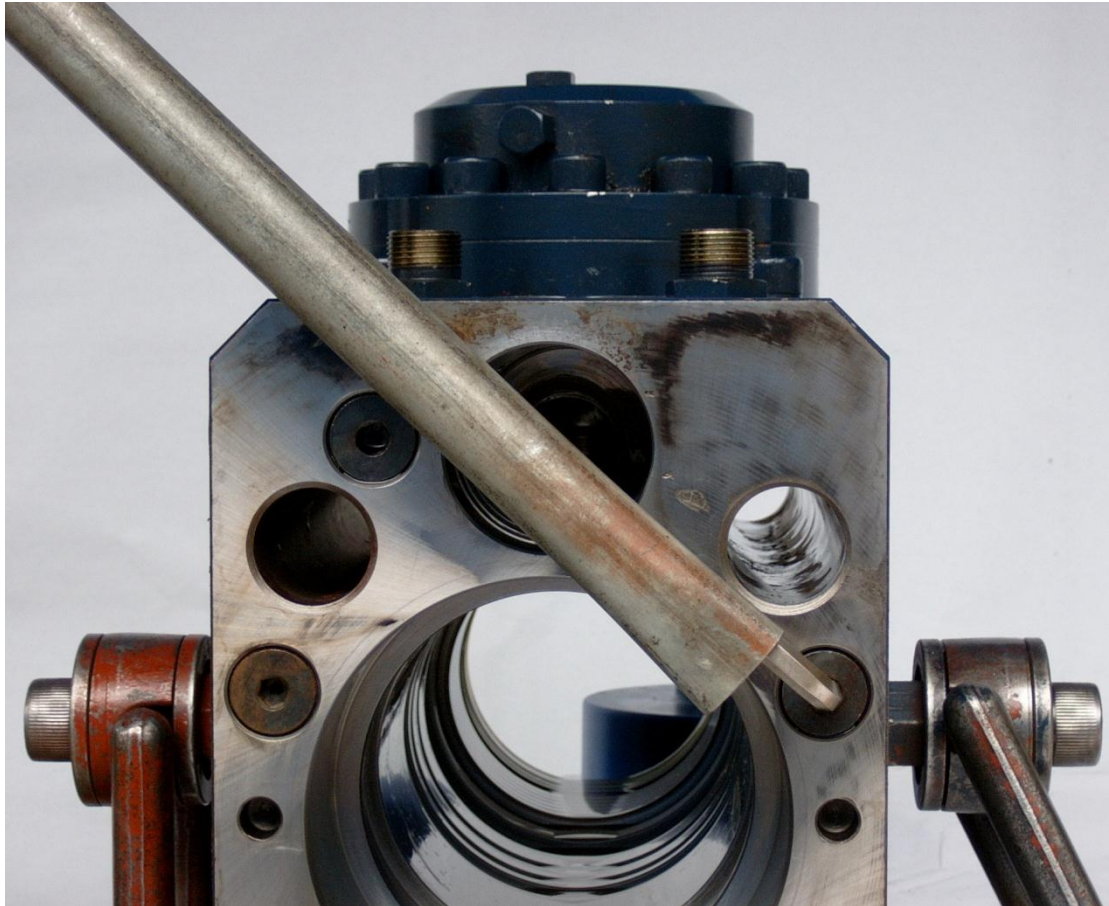


### **Disassembly of Helisert Coil** Remove the Helisert Coil.

- In case  
Helisert Coils are broken

# Disassembly & Repair of Power Cell

## DISASSEMBLY



### Disassembly of Cylinder Plug

Remove the Plugs with a allen key and a pipe.

- In case oil leaks from the each plug
- Required Tool  
Allen Key 10mm  
Pipe  $\text{Ø}20 \times 500\text{mm}$



# Disassembly & Repair of Power Cell

## DISASSEMBLY



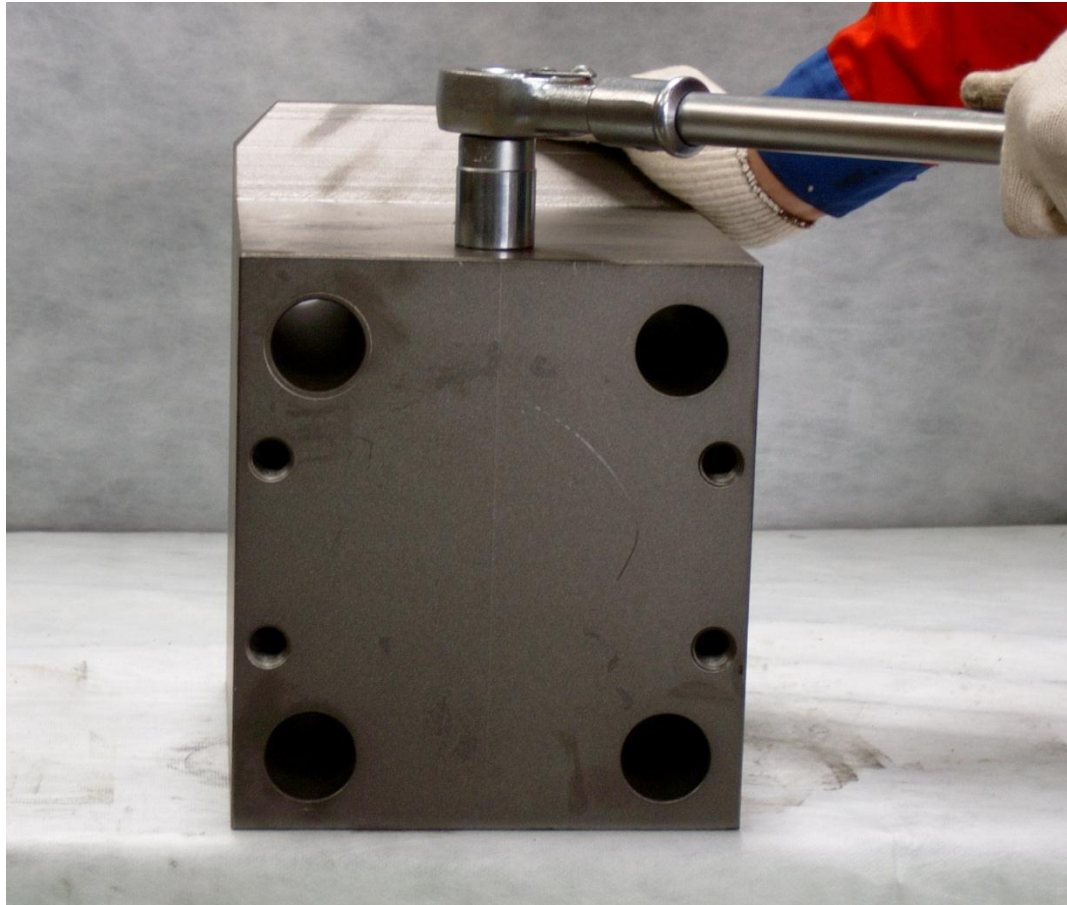
### Loosen the Adjuster Valve.

- In case
  - Blow speed needs to be adjusted.
  - Oil leaks from Adjuster Valve
- Required Tool:
  - Allen Key 10mm
  - Spanner 32mm



# Disassembly & Repair of Power Cell

## DISASSEMBLY



### Disassembly of the Head Cap (Disassembly of Gas Valve)

Disassemble Gas Valve using  
Socket-wrench.

- In case N<sub>2</sub> Gas is leaking
- Required Tool:  
Socket-wrench, Socket 27mm  
Pipe Ø20×500mm

# Disassembly & Repair of Power Cell

## DISASSEMBLY



### Disassembly of the accumulator

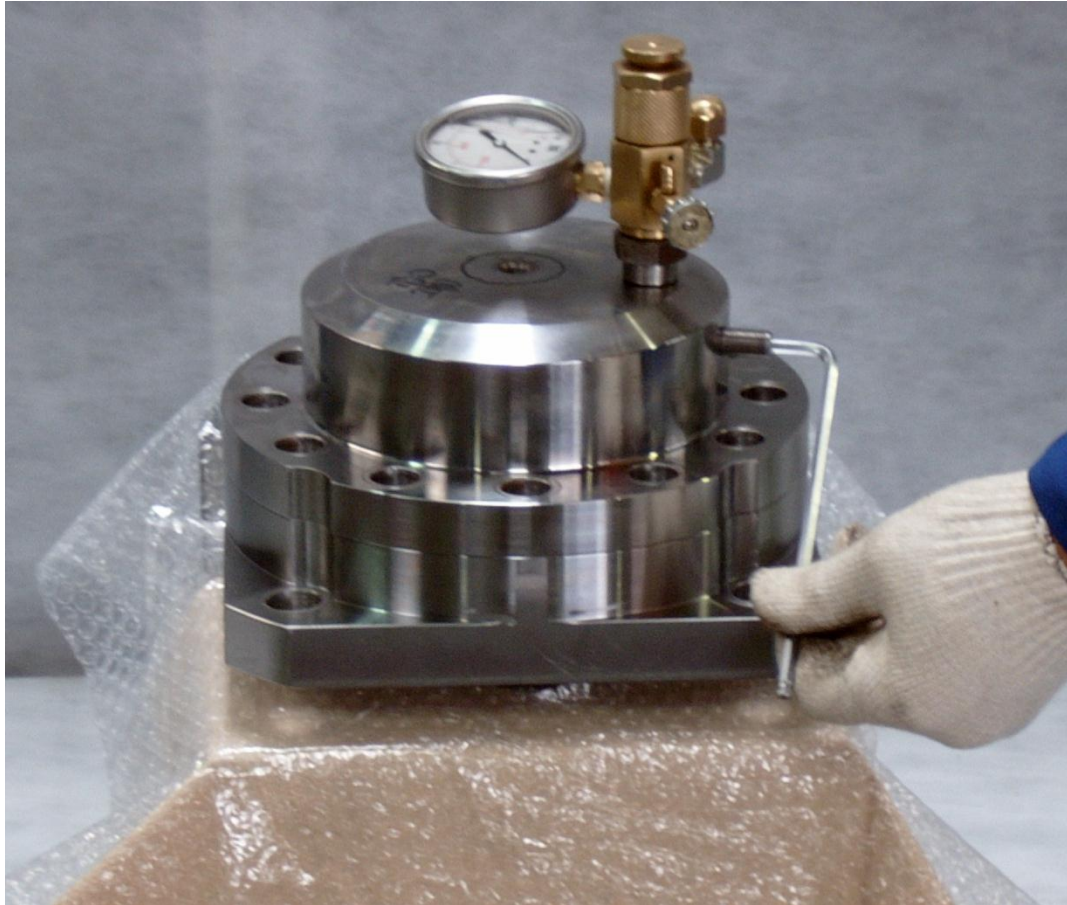
#### Caution:

Before disassembling the accumulator, N<sub>2</sub> Gas must be discharged.

- In case of replacing of the Diaphragm

# Disassembly & Repair of Power Cell

## DISASSEMBLY



### Disassembly of Charging Valve

1. Hold the Accumulator in a vise.
2. Disassemble it with Tools

- In case N2 Gas leaks from the Charging Valve
- Required Tool:  
Allen Key 5mm  
Spanner 22mm



# Disassembly & Repair of Power Cell

## DISASSEMBLY



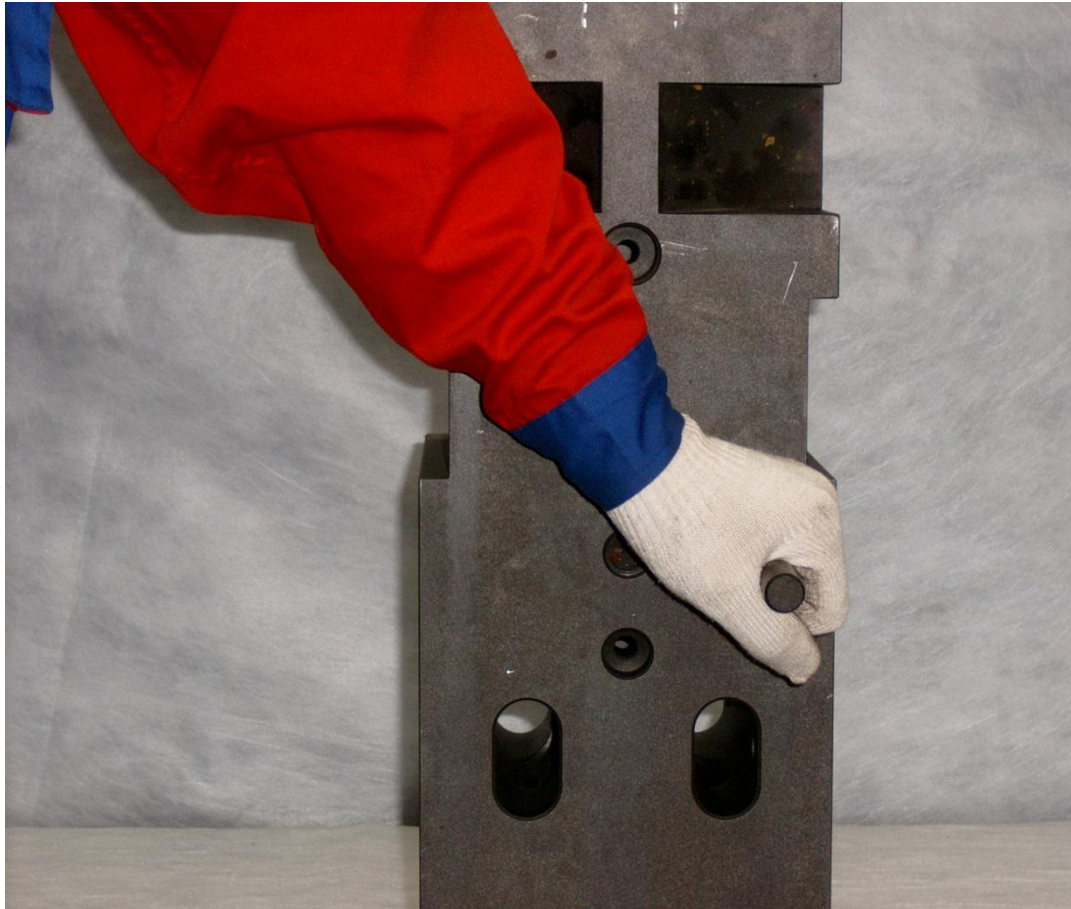
1. Loosen the Bolt and Nut with allen key and long pipe.
2. Remove the diaphragm by hand.

- In case the Diaphragm is damaged

- Required Tool  
Allen Key 14mm  
Eye bolt M12  
Pipe  $\varnothing 20 \times 500\text{mm}$

# Disassembly & Repair of Power Cell

## DISASSEMBLY



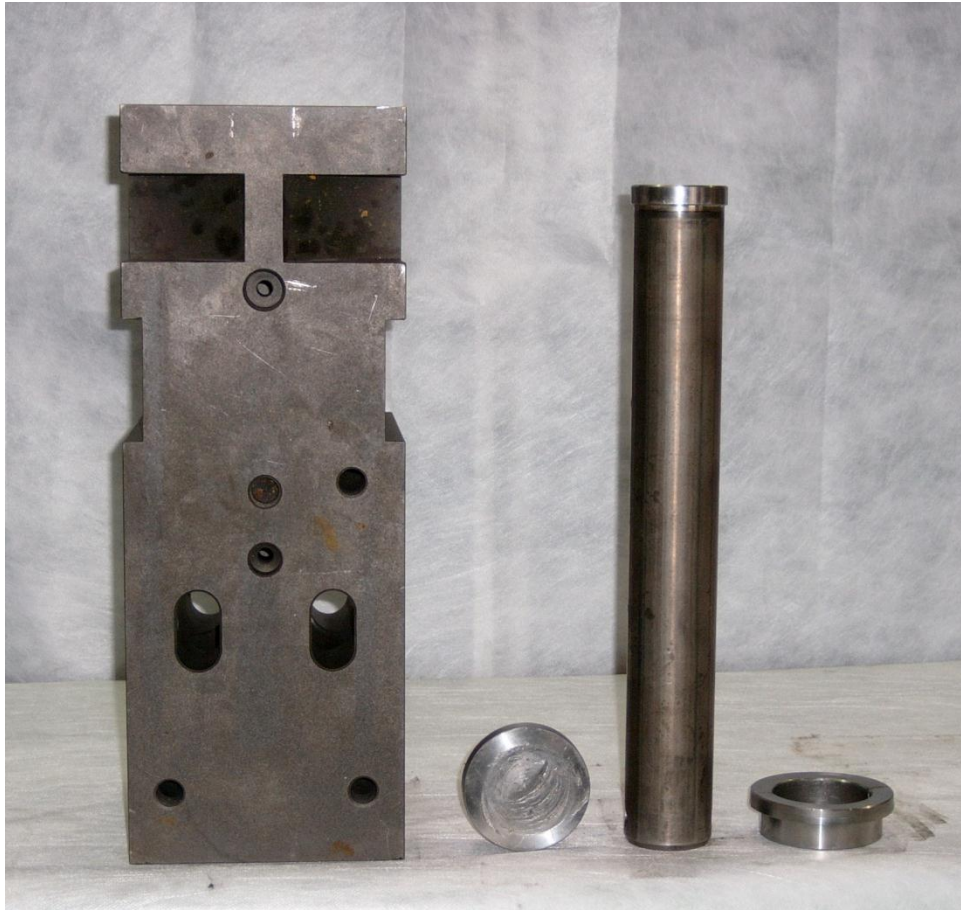
### Disassembly of Tool Holder

Remove the Rubber Plug and Stop Pin.

- In case  
Tool holder Bushing or Round  
Bushing are damaged or worn  
out
- Required Tool  
Hammer 5kg  
Small Pin Ø12×200mm

# Disassembly & Repair of Power Cell

## DISASSEMBLY



Prepare for a Hydraulic Press or Oxyacetylene cutter for disassembly of Round Bushing or Tool Holder Bushing



# Disassembly & Repair of Power Cell

## DISASSEMBLY



Disassemble the Round Bushing and ToolHolder Bushing with press or jig.

# Disassembly & Repair of Power Cell

## ASSEMBLY



### Assembly of Tool Holder

Reset the Tool Holder upside down as shown on the picture.

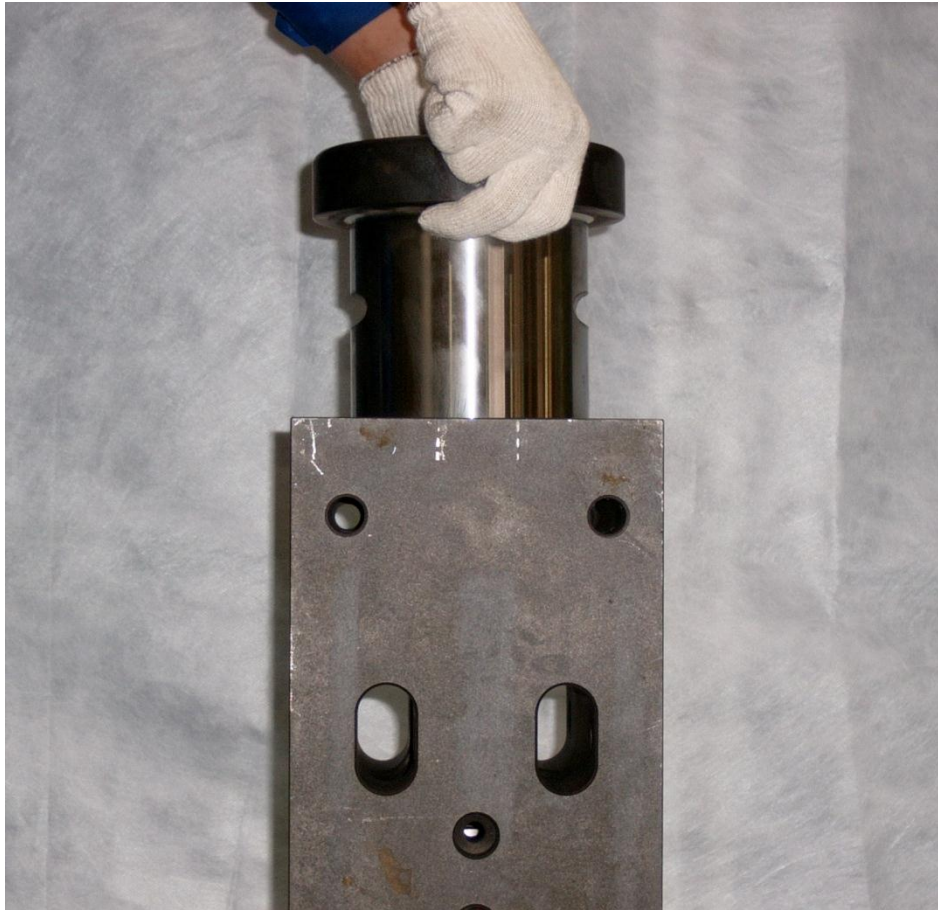
Prepare liquefied Nitrogen Gas.

- \* Tool Holder Bushing
- \* Round Bushing



# Disassembly & Repair of Power Cell

## ASSEMBLY



Put the Round Bushing and ToolHolder Bushing cooled by Nitrogen gas to Tool Holder.

It has to be installed to the Stop-Pin Hole By a thick gloves.

Tool Holder Bushing  
Round Bushing

# Disassembly & Repair of Power Cell

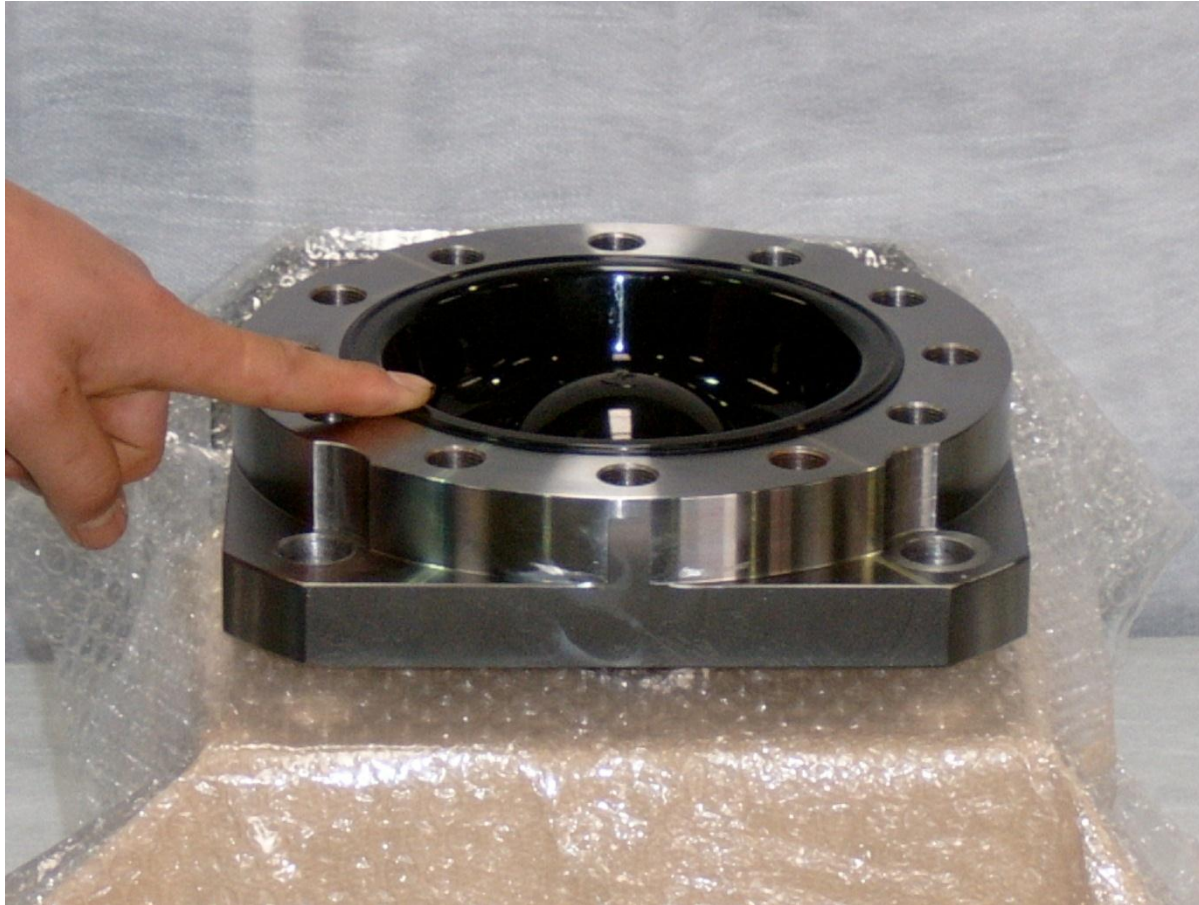
## ASSEMBLY



Set the Stop Pin in  
Tool Holder and then  
install Rubber Plug

# Disassembly & Repair of Power Cell

## ASSEMBLY



### **Assembly of Accumulator**

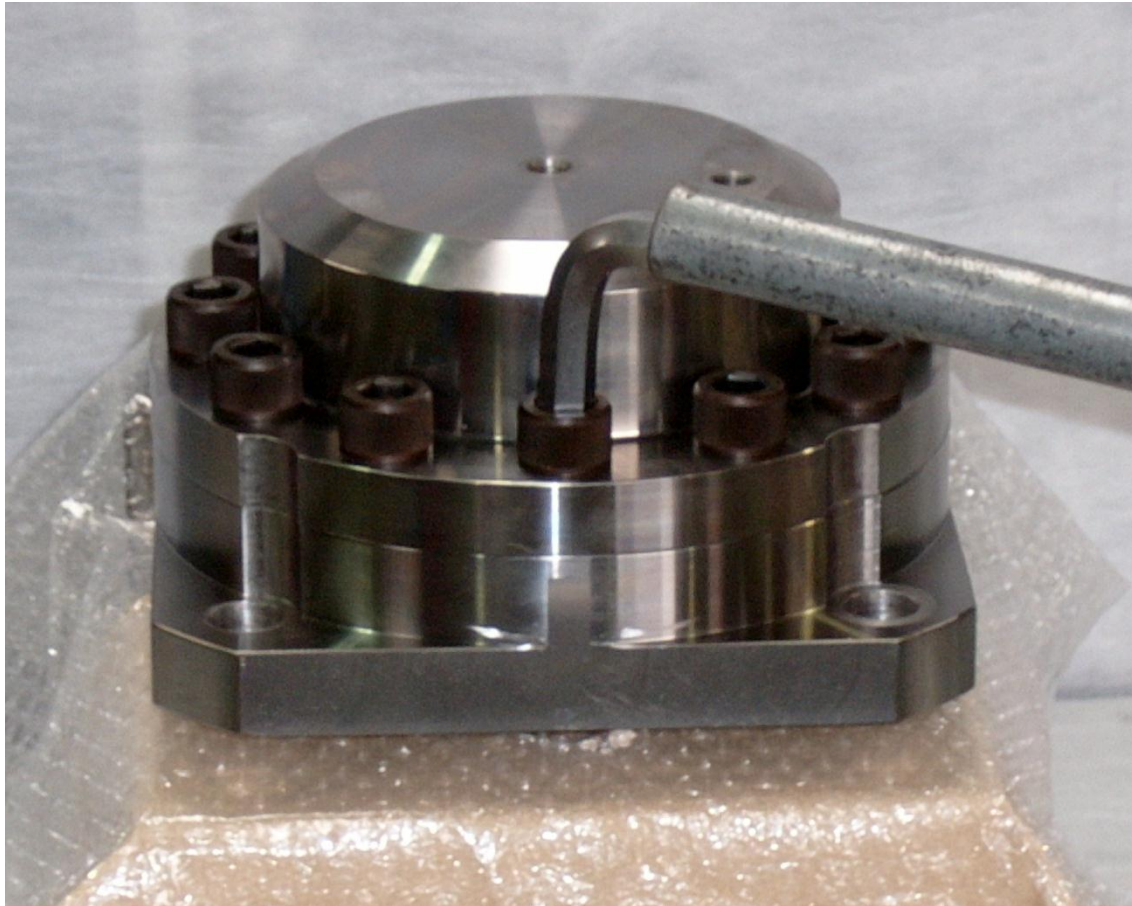
Assembly of Diaphragm

1. Hold the Accumulator Body in the vise.
2. Coat the Diaphragm with hydraulic oil.
3. Push the edge of Diaphragm with the finger to adhere it.



# Disassembly & Repair of Power Cell

## ASSEMBLY



### Assembly of Accumulator Cover

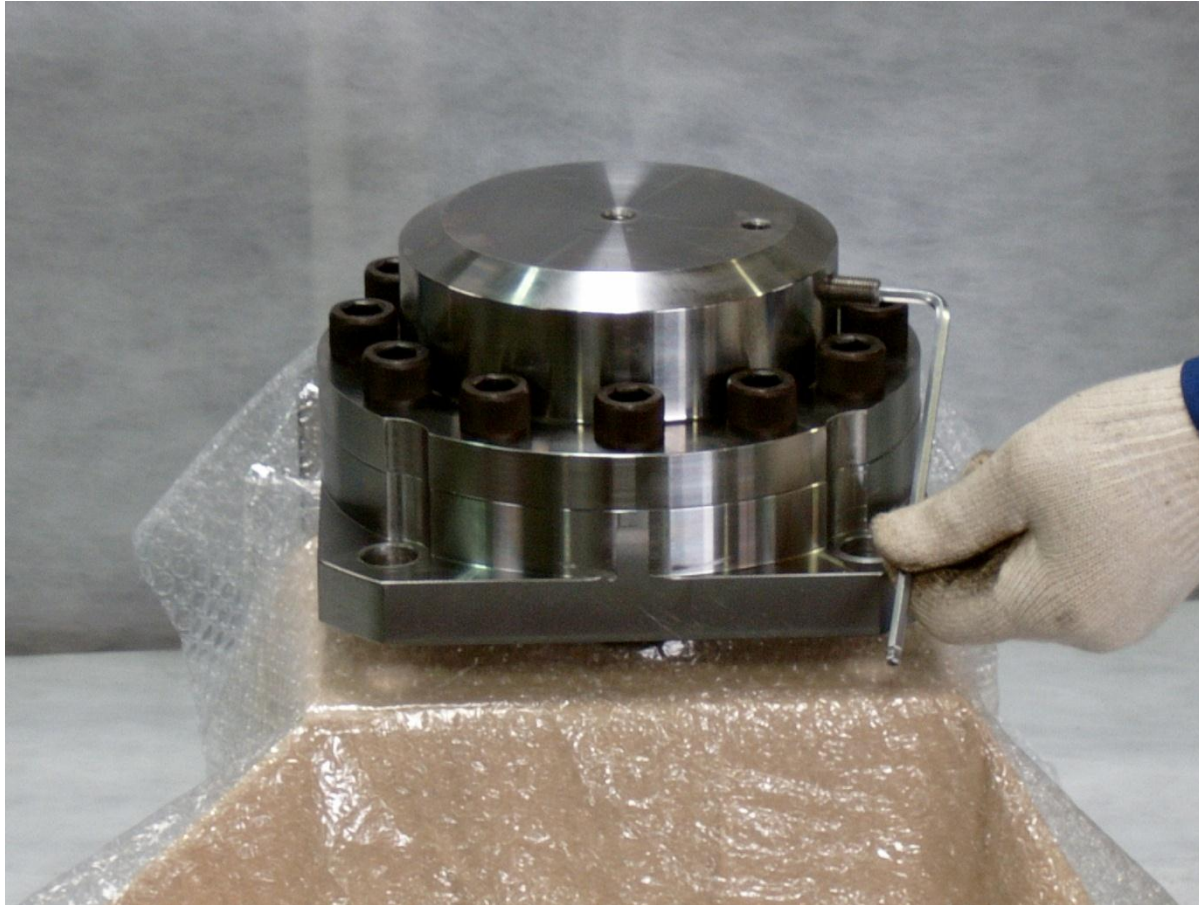
Coat the threaded part around Mounting bolts with anti-seize Lubricant fully and install them in the Accumulator. Set a torque wrench with the specified torque, and tighten the Bolts diagonally, bringing them up to the final torque value in stages so that they take the load evenly.

- Required Tool  
Allen Key 14mm  
Pipe Ø30 × 1,000mm  
Torque wrench  
Eye Bolt M12



# Disassembly & Repair of Power Cell

## ASSEMBLY



### Assembly of Charging Valve

Assemble Charging Valve in the Accumulator Cover with allen key and spanner

- Required Tool:  
Spanner 22mm  
Allen Key 5mm

# Disassembly & Repair of Power Cell

## ASSEMBLY



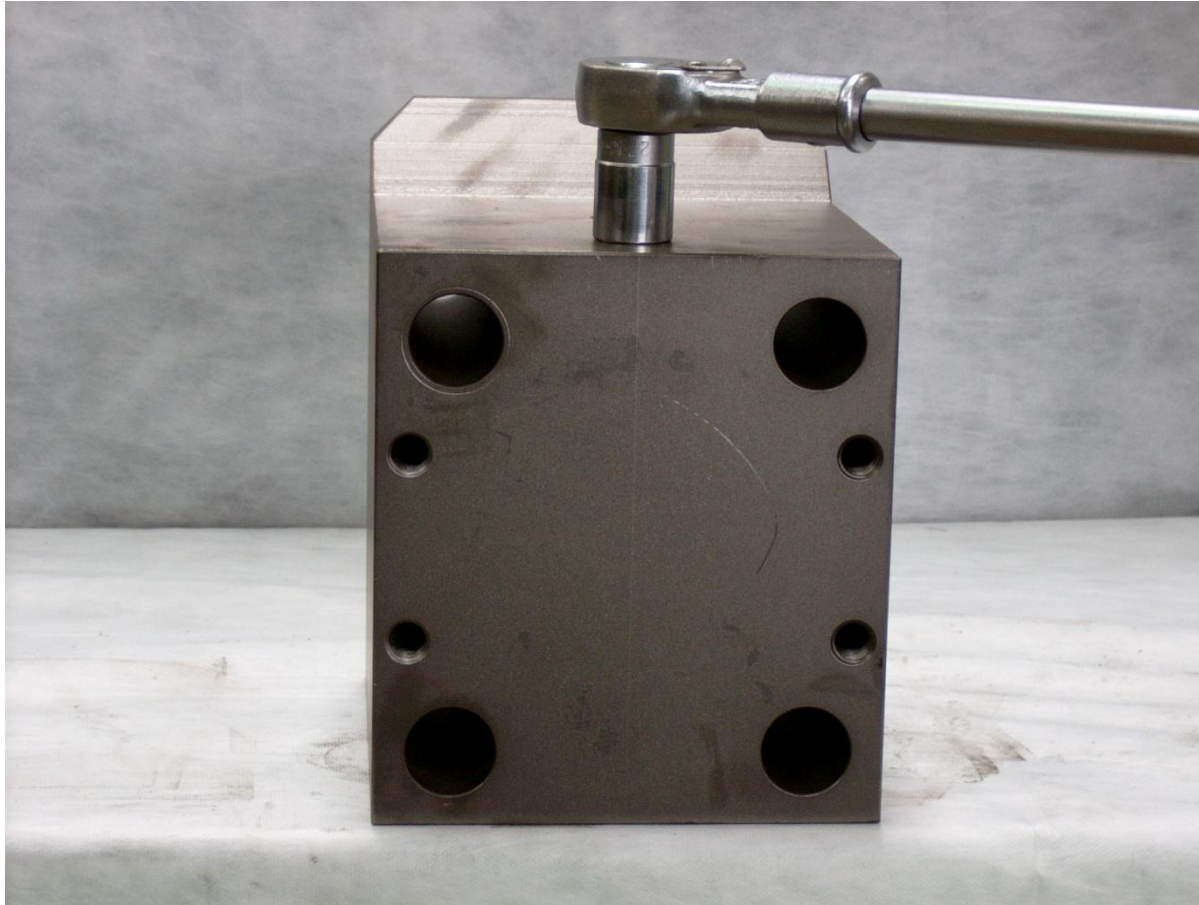
### Charge N2 Gas.

1. Install Adapter to Charging Kit and then connect it to Accumulator Cover.
2. Loosen the Valve with allen key and charge the gas.
3. Turn the Valve clockwise.
4. Tighten the Valve completely and close the Cap

- Required Tool:  
Spanner 17, 22mm  
Allen Key 5mm  
N2 gas charging Kit  
Adapter for charging valve  
N2 gas pressure 60kg/cm<sup>2</sup>

# Disassembly & Repair of Power Cell

## ASSEMBLY



**Assembly of Head Cap  
(Assembly of Gas Valve)**  
Assemble the Gas Valve  
with socket wrench



# Disassembly & Repair of Power Cell

## ASSEMBLY



### **Assembly of Cylinder**

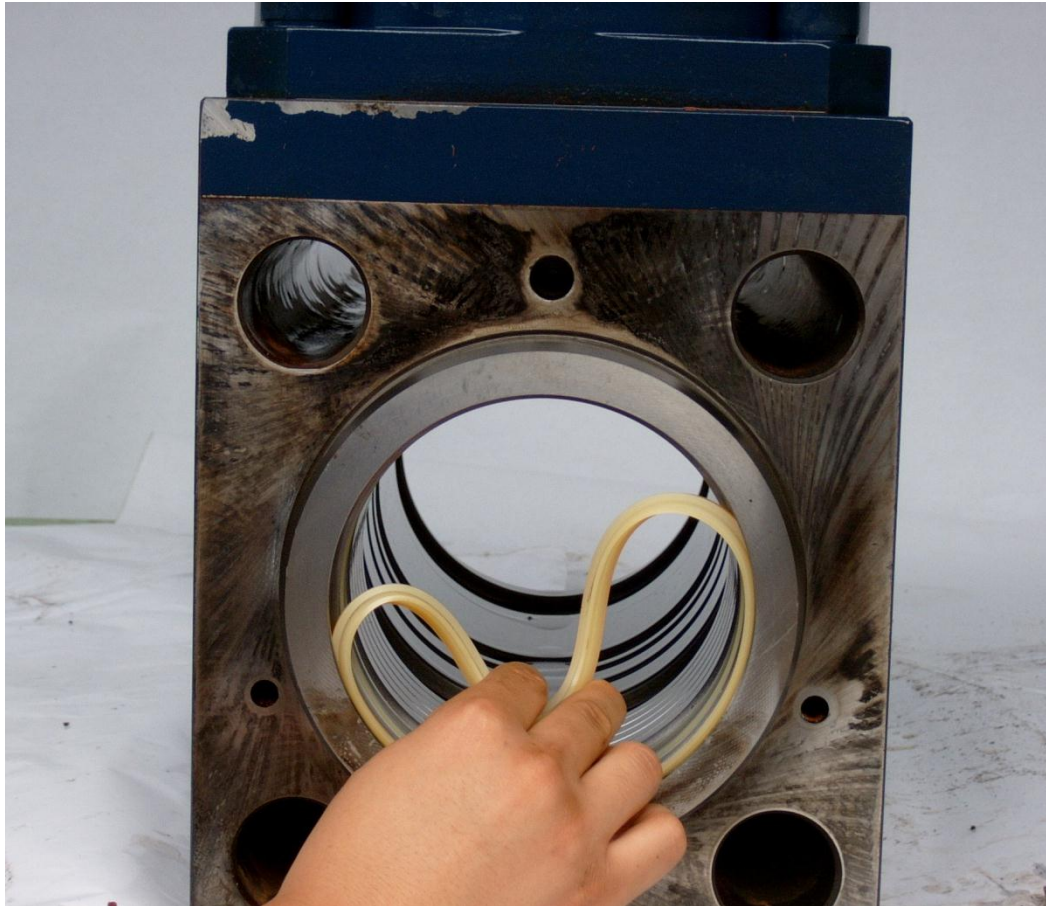
Press the Helisert Coil to the threaded part steadily and vertically with the helisert insertion tool.

Be sure not to leave the broken tang in the Cylinder.



# Disassembly & Repair of Power Cell

## ASSEMBLY



### **Assembly of Cylinder Seal**

When installing the Seal to the seal groove, make a U-shape with your Forefinger so as not to deform the Seal.

Insert the rear end to the groove first, and then push the U-shape into the groove.

# Disassembly & Repair of Power Cell

## ASSEMBLY



### **Assembly of Valve Adjuster**

Coat the O-Ring with hydraulic oil fully and then smoothly assemble to Cylinder.



# Disassembly & Repair of Power Cell

## ASSEMBLY



### **Set the Valve Adjuster.**

1. Regulate the Adjuster.
2. When the turning position is determined, fix the Adjuster with an allen key and tighten the Nut.
3. Turn the Valve Adjuster counterclockwise. Adjuster turning position will be 3 turning (0 turning when fully closed)

- Required Tool:  
Allen Key 10mm  
Spanner 32mm

# Disassembly & Repair of Power Cell

## ASSEMBLY



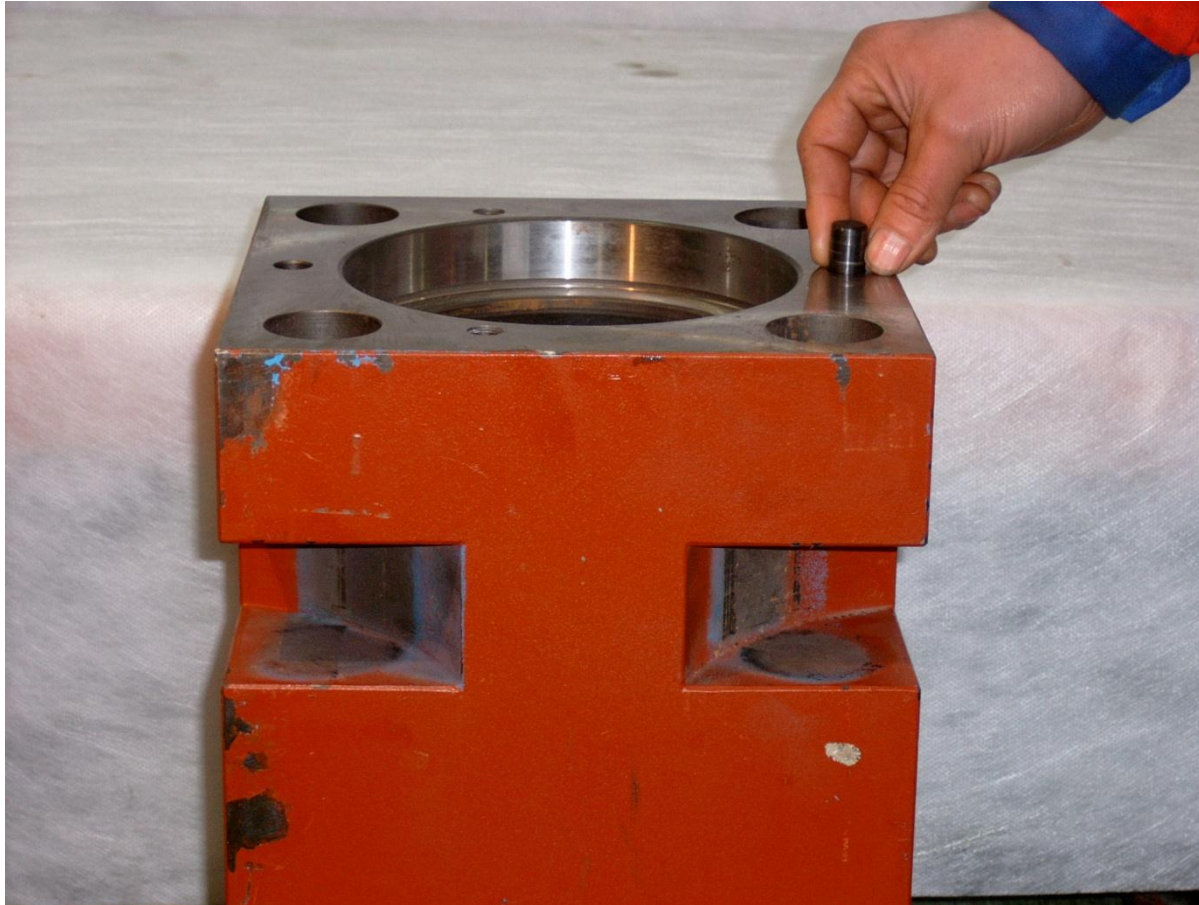
### **Assembly of Cylinder Bushing**

Assembly of Seal  
Install the Seals in the  
inserting direction to the  
Cylinder.



# Disassembly & Repair of Power Cell

## ASSEMBLY



### **Assembly of Cylinder (Assembly to the Power Cell)**

Assemble the Pin set.  
Place Tool Holder on clean  
& flat place.

# Disassembly & Repair of Power Cell

## ASSEMBLY



### Assembly of Cylinder

Set eye bolts to the both sides of the Cylinder and lift it with a crane.

After assembly, coat the inside diameter part of the Cylinder with hydraulic oil.

#### ● Required Tool:

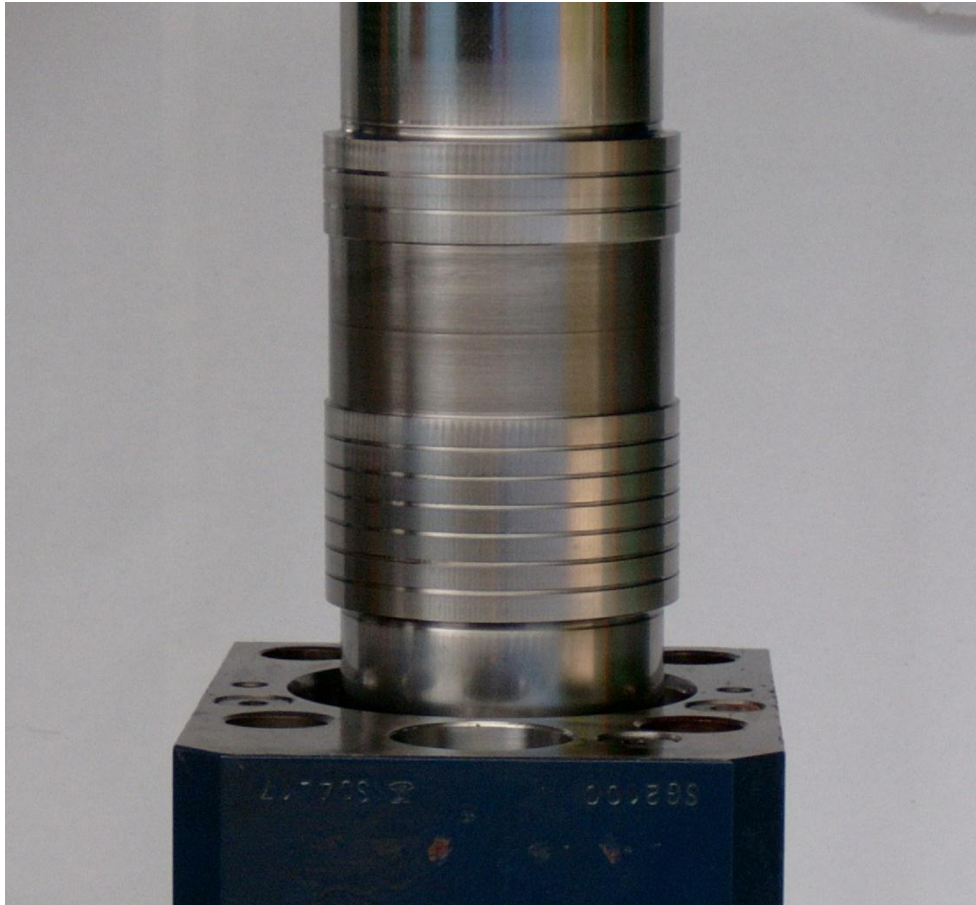
Eye Bolt M24

Chain 2m – Work load 3ton

Hoist over 3ton

# Disassembly & Repair of Power Cell

## ASSEMBLY



### Assembly of Piston and Cylinder Bushing

Assemble the Piston.

Install an eye bolt to the upper end of the Piston and lift the piston with a Crane.

#### ● Required Tool

Eye Bolt M24

Chain 2m – Work load 3ton

Hoist over 3ton



# Disassembly & Repair of Power Cell

## ASSEMBLY



### **Assembly of Cylinder Bushing**

Insert the Cylinder Bushing with plastic hammer or rubber hammer, keeping horizontally Level.

Check the alignment of the Cylinder Bushing and Cylinder head face.

Coat the piston with hydraulic oil.

#### ● Required Tool

Plastic Hammer 3kg

Urethane plate Ø180×50mm



# Disassembly & Repair of Power Cell

## ASSEMBLY

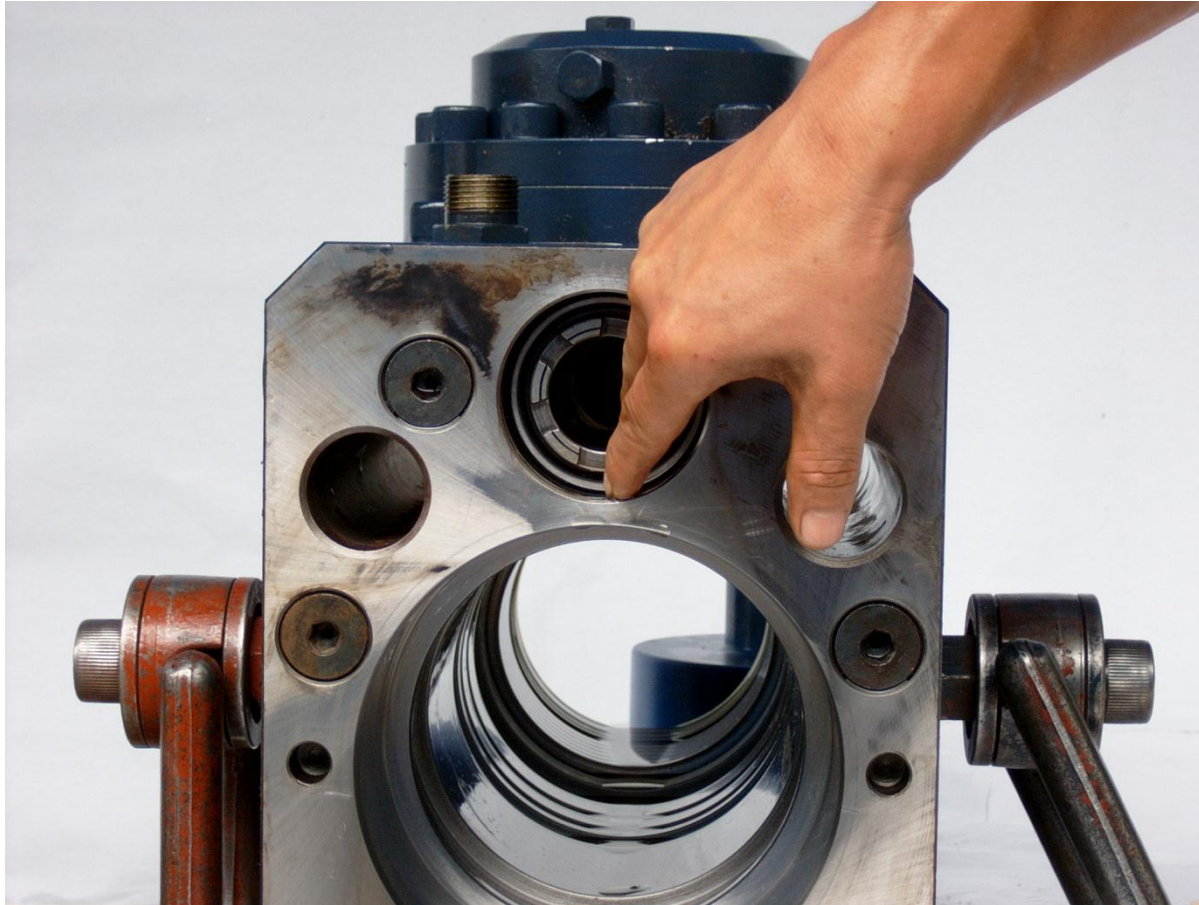


### **Assembly of Main Valve Assembly of Valve**

Coat the valve with hydraulic oil fully and insert it.

# Disassembly and Repair of Power Cell

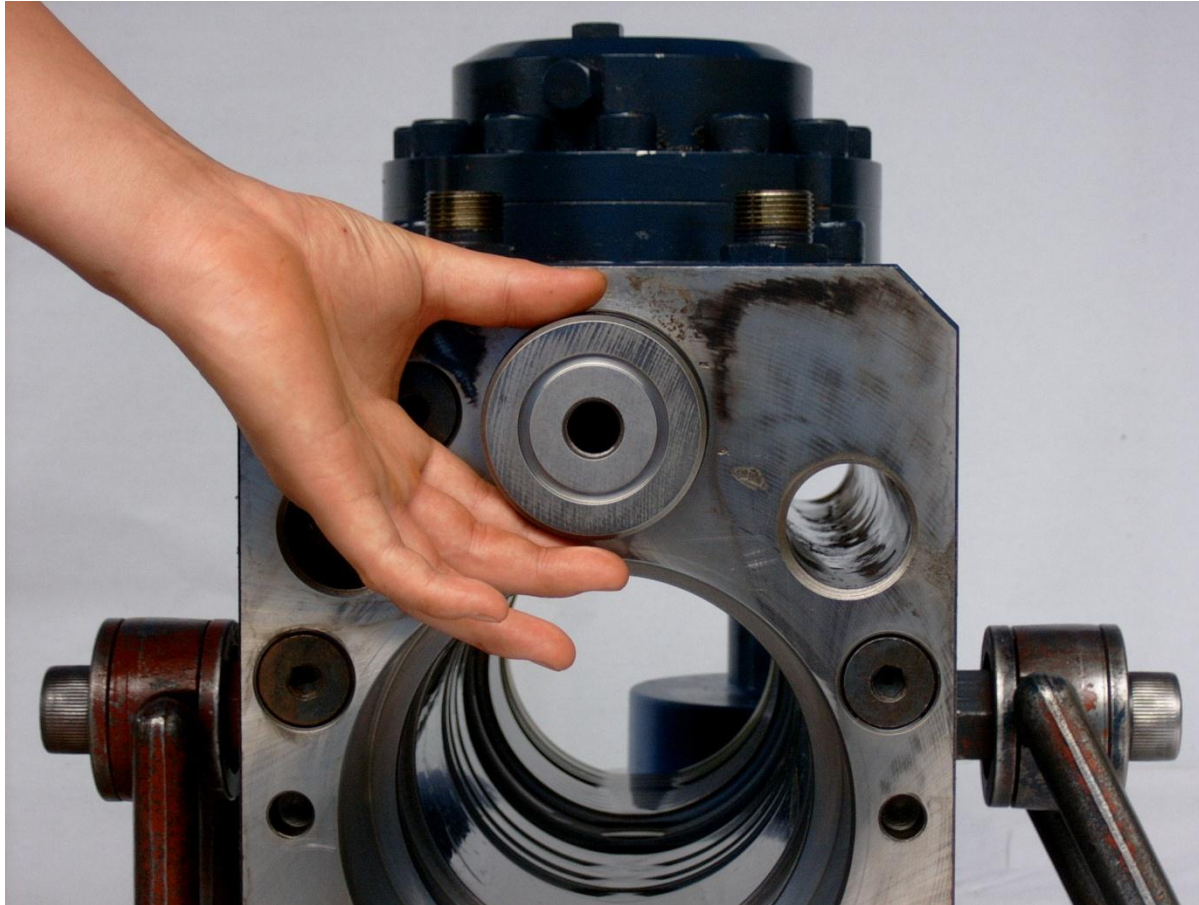
## ASSEMBLY



Check if the Valve is moved by hand in the Valve Case.

# Disassembly and Repair of Power Cell

## ASSEMBLY



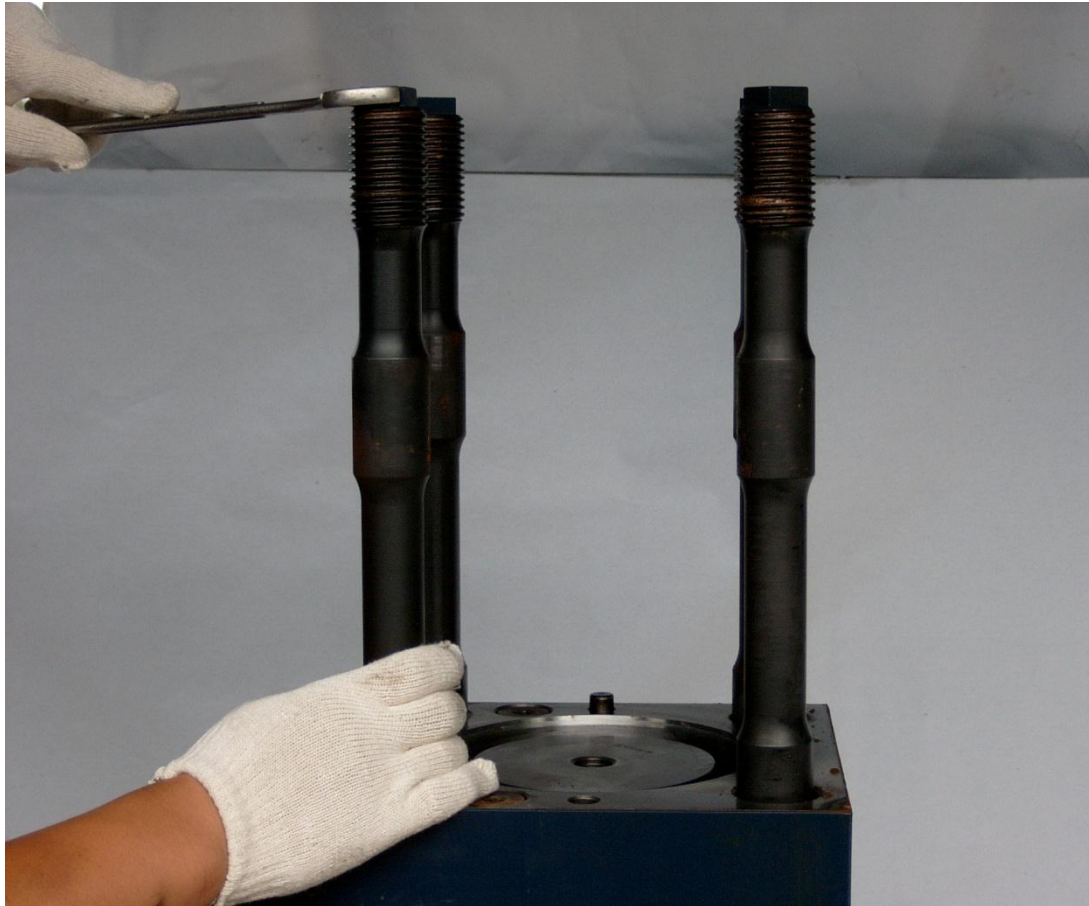
### Assembly of Main Valve Cap

After coating O-ring of Main Valve with grease, install the Cap



# Disassembly and Repair of Power Cell

## ASSEMBLY



### **Set the tension bolts.**

Screw the tension bolts into the lower nuts with a spanner and hand.

- Required Tool:  
Spanner 24mm

# Disassembly and Repair of Power Cell

## ASSEMBLY



**Assembly of Head Cap**  
After installing the O-ring in the Cylinder, coat the O-ring with grease.

# Disassembly and Repair of Power Cell

## ASSEMBLY



### **Install the Head Cap.**

Install a M20 eye bolt to the threaded part on the Head Cap and set the chains. Lift the Head Cap with a crane, and install it to the Cylinder using the Tension Bolt holes as guide

- **Required Tool:**

- Eye Bolt M20

- Chain 2m – Work load 3ton

- Hoist over 3ton



# Disassembly and Repair of Power Cell

## ASSEMBLY



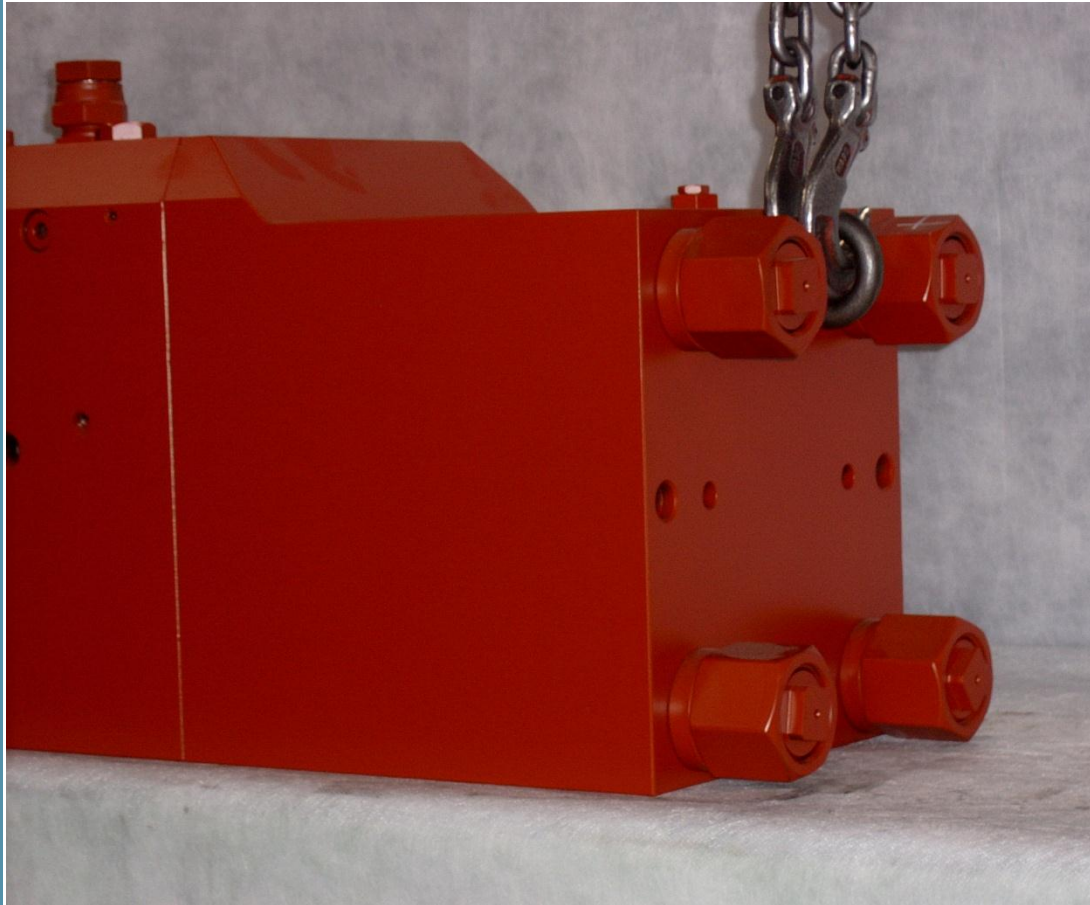
**Set the Tension Bolts, Washers and Hex. Nuts.**

Put four washers and tighten the hexagon nuts by spanner.

● Required Tool:  
Spanner 24, 65mm

# Disassembly and Repair of Power Cell

## ASSEMBLY



### **Lay down the Power Cell.**

Set a nylon sling to the Bolts or eye bolts on the Cylinder sides and lift the Power Cell with a crane to lay it down.

Set it on the wood blocks with its Accumulator mounting face upward.

### ● Required Tool:

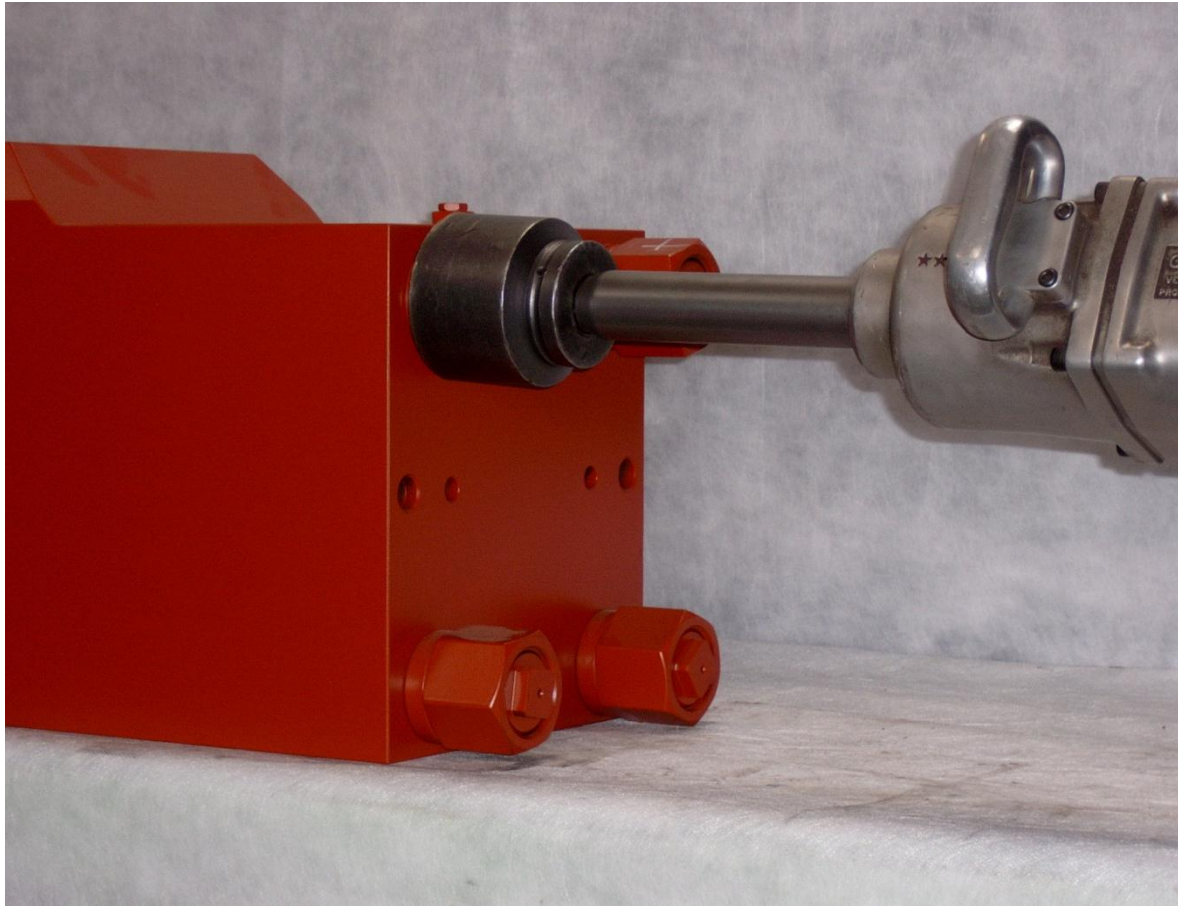
Eye Bolt M24

Chain 2m – Work load 3ton

Hoist over 3ton

# Disassembly and Repair of Power Cell

## ASSEMBLY



### **Set the Tension Bolt position.**

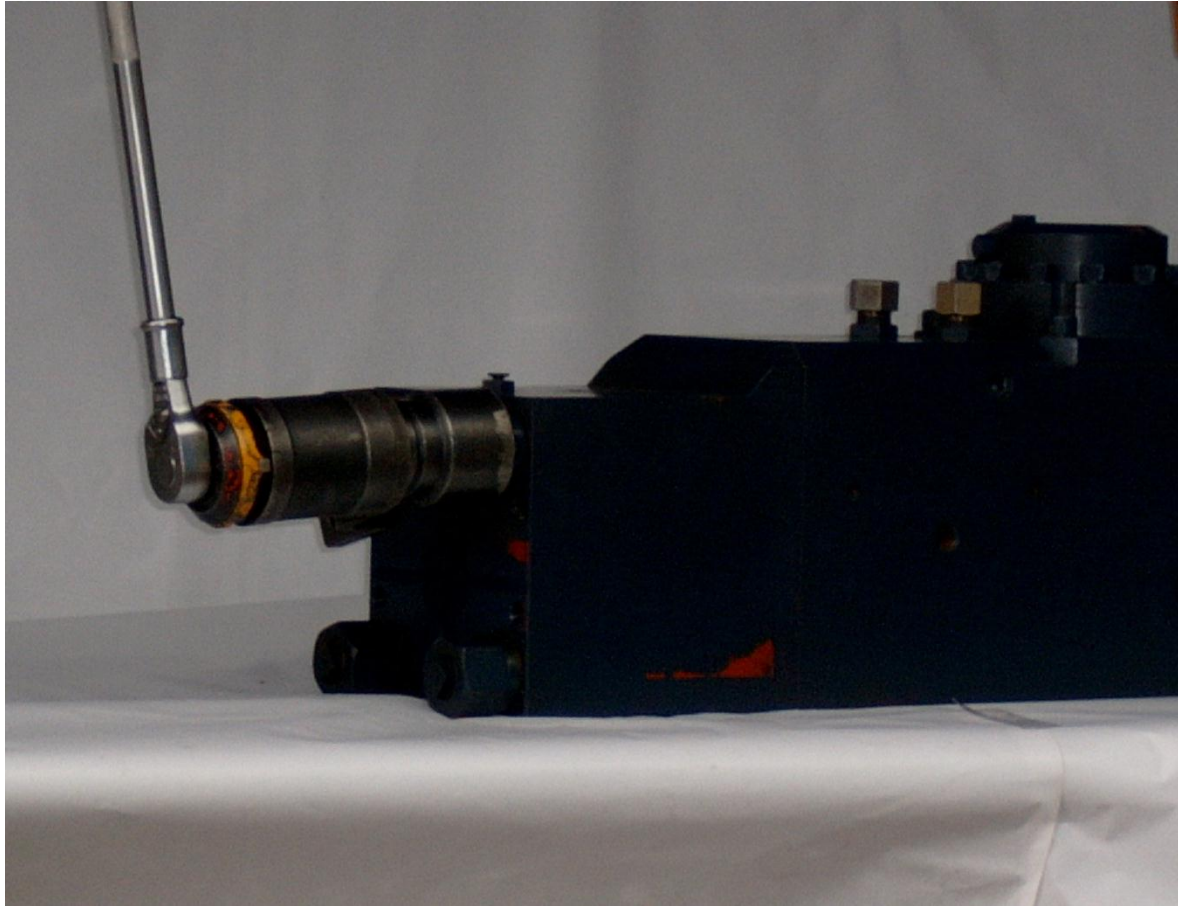
Tighten the Hexagon Nut with a spanner to set the position.

- Required Tool:
  - Power wrench
  - Torque wrench
  - Impact wrench
  - Socket 65mm for Power wrench



# Disassembly and Repair of Power Cell

## ASSEMBLY



**Tighten the Tension Bolts with the specified torque.**

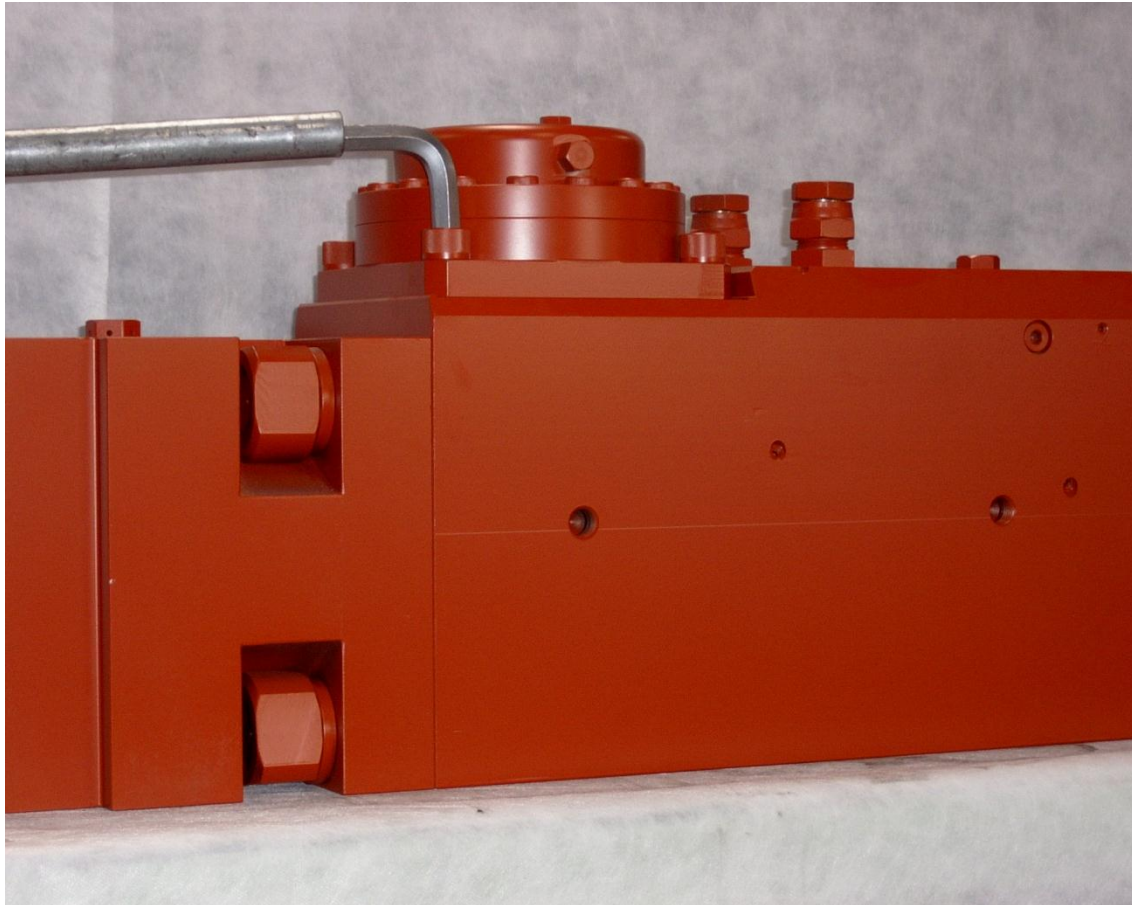
Tighten the Hex. Nut in the diagonal order.

Tighten it twice so that the Tension Bolt should be tightened uniformly.

- Required Tool:  
Power wrench  
Torque wrench  
Socket 65mm for Power wrench

# Disassembly and Repair of Power Cell

## ASSEMBLY



**Tighten Accumulator Mounting Bolt with the specified torque.**

Tighten the bolts diagonally.

**Set the Accumulator to the Cylinder.**

**Notice:**

Make sure that O-ring and Back-up Ring are installed on the base completely.

- **Required Tool:**
  - Allen Key 17mm
  - Torque wrench
  - Eye Bolt M12
  - Pipe  $\varnothing 20 \times 1,000\text{mm}$

# Disassembly and Repair of Power Cell

## ASSEMBLY



### **Set the Working tool.**

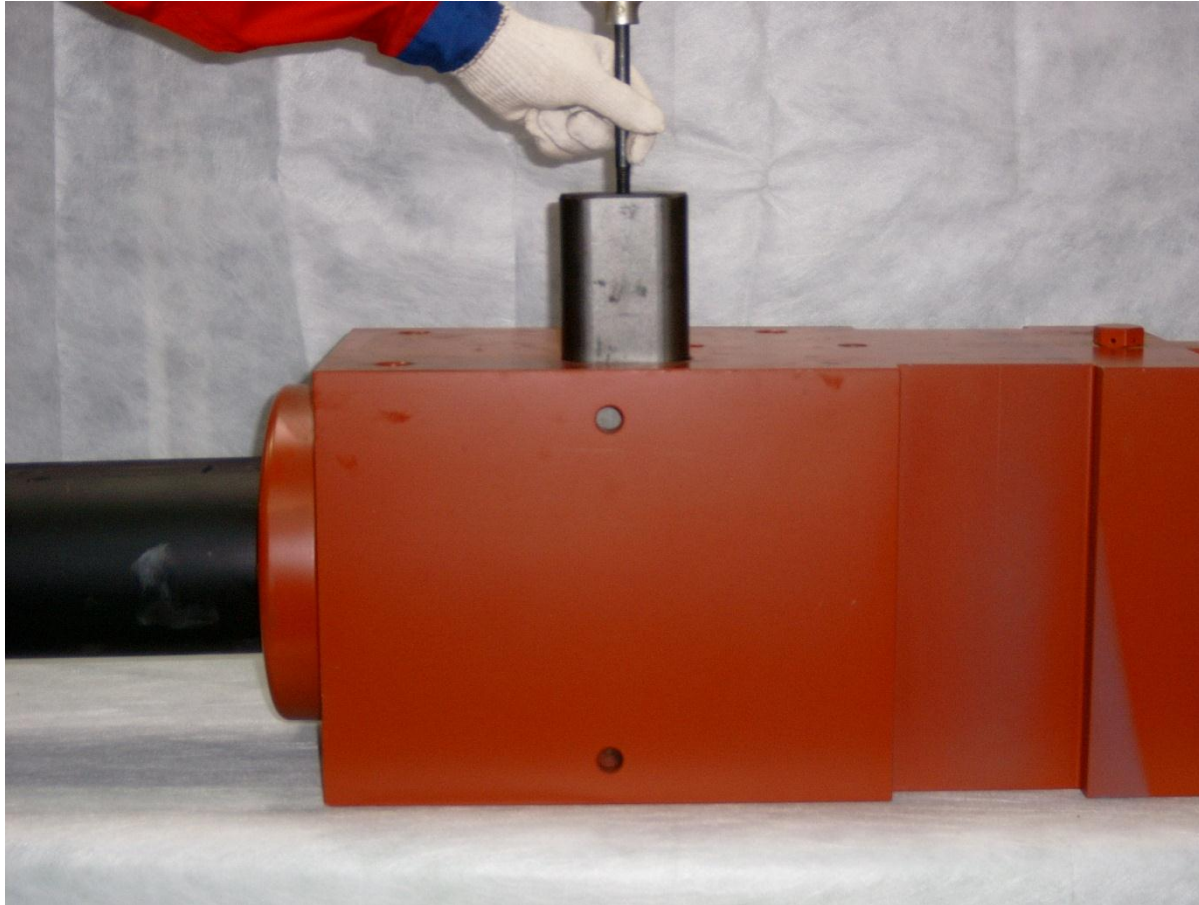
Set a nylon sling to the center of the Working tool, and use a crane to set the Working tool into the Tool Holder. (Coat the contact area with grease.)

- Required Tool:  
Nylon sling 2m  
Hoist over 3ton



# Disassembly and Repair of Power Cell

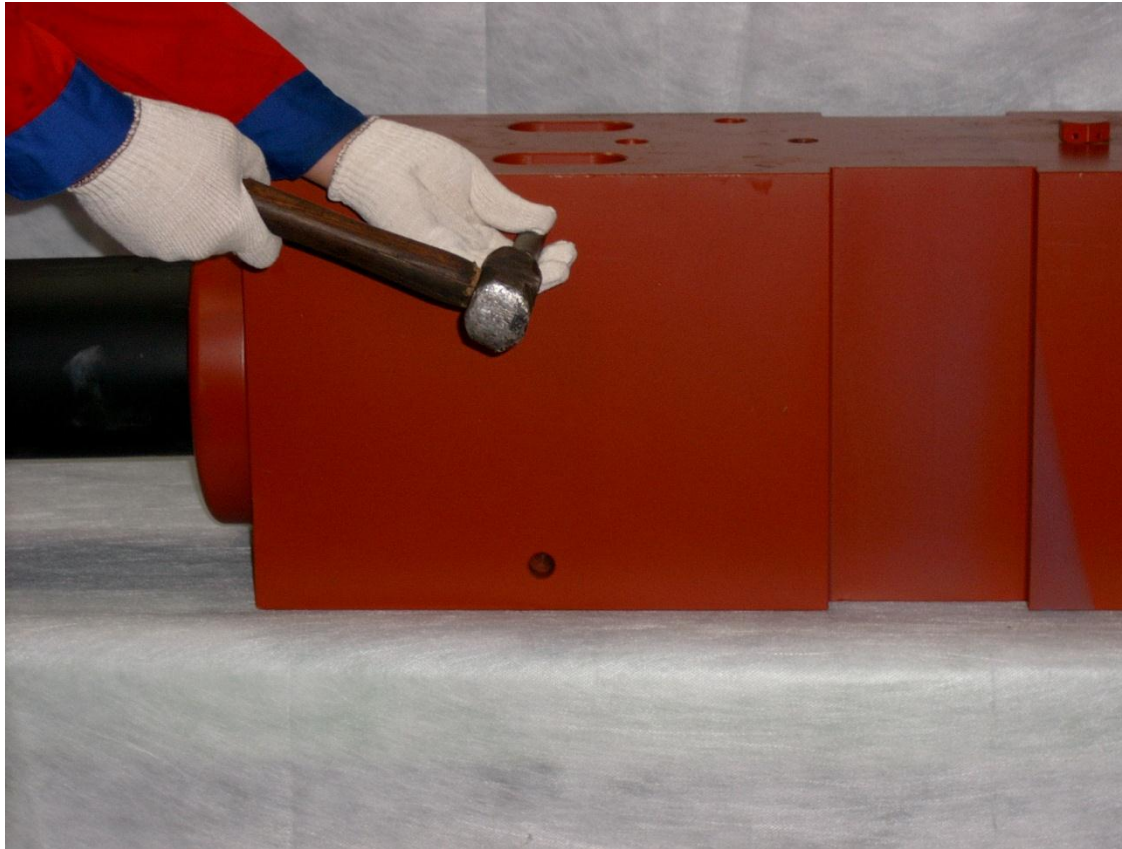
## ASSEMBLY



**Insert the Retainer Pin.**  
Insert the Retainer Pin from the upper side. Turn the Working tool to the right and left lightly to insert easily.

# Disassembly and Repair of Power Cell

## ASSEMBLY



### **Set the Stop Pin.**

Install the Rubber Plug after setting a Stop Pin.

- Required Tool:  
Hammer 3kg

# Disassembly and Repair of Power Cell

## ASSEMBLY



### Charging of N2 gas to Head Cap

Push the Charging Adapter into the Charging Valve and open the cylinder cock. Turn the handle of the regulator clockwise gradually.

- Required Tool:  
Spanner 17mm  
Allen Key 5mm  
N2 gas Charging Kit  
Recommended Pressure:  
17.5kg/cm<sup>2</sup>





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