



# HYDRAULIC HAMMERS USER MANUAL



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SYRACUSE, NEW YORK

## PREFACE


Thank you very much for purchasing our product.

DIESEL "**DE**" series Hydraulic Hammer is a high-performance machine, which is successfully developed with the latest technology and years of our experiences.

This machine is designed and manufactured to ensure durability even under the harshest working conditions. However, if it is not regularly maintained or properly handled, the performance of the machine will not be able to give full play, the service life of each part will be shortened, and finally the entire machine will be damaged.

Before using this machine, please do read carefully this ***User Manual***, which points out the correct operation & maintenance, so as to obtain the best working performance.

Most accidents are caused by failure to observe basic safety rules, so accidents are usually avoidable.

Before any operation, maintenance or repairing, please read and understand all safety rules and warnings. If these warnings are ignored, special dangers may occur, causing injury or death to the operator or others. These warnings are marked with a "" symbol in this manual.

For some operations that may damage the machine, this manual is marked with "Warning".

 Warning!

Improper operation, maintenance or repairing of this machine will be dangerous, which may result in injury or death.

Before reading and understanding this Operating Manual, no operation, maintenance or repairing jobs are allowed to be done on this machine.

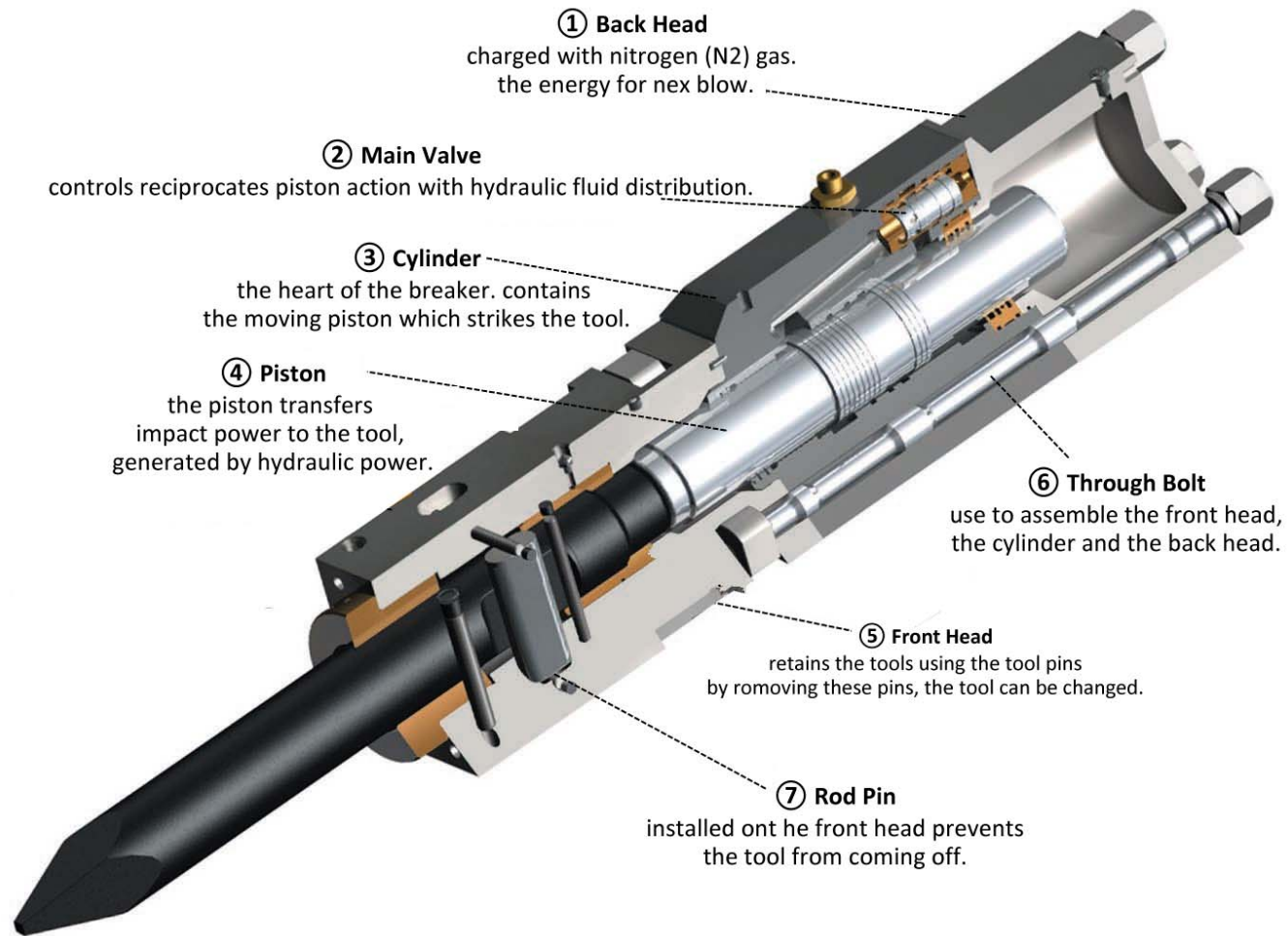
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## CHAPTER 1 MAIN SPECIFICATIONS

Description	Unit	DE-SSL	DE-35	DE-50	DE-80	DE-120	DE-140	DE-200	DE-300
Operating Weight	kg	152	152	295	375	861	861	1795	2635
	lb	335	335	650	827	1898	1898	3957	5809
Weight of Main Body	Kg	86	86	151	210	471	471	846	1283
	lb	190	190	333	463	1038	1038	1865	2828
Required Oil Flow	l/min	25~50	25~50	40~70	50~90	80~110	80~110	120~180	180~240
	gal/min	6.6~13.2	6.6~13.2	10.5~18.5	13~14	21~29	21~29	32~48	48~63
Operating Pressure	bar	90~120	90~120	110~140	120~150	150~170	150~170	160~180	160~180
	psi	1280~1706	1280~1706	1565~1991	1707~21344	2134~2418	2134~2418	2276~2560	2276~2560
Impact Rate	bpm	600~1100	600~1100	550~950	400~800	350~700	350~700	350~500	300~450
Hose Diameter	inch	1/2"	1/2"	1/2"	1/2"	3/4"	3/4"	1"	1 1/4"
Tool Diameter	mm	53	53	68	75	100	100	140	155
	inch	2.087	2.087	2.677	2.953	3.937	3.937	5.511	6.102
Applicable Carrier Weight	ton	2.5~4.5	2.5~4.5	4~7	6~9	11~16	11~16	18~26	28~35
Impact Energy Class	ft.lbs	350	350	500	1100	3250	3250	4900	6500

## CHAPTER 2 STRUCTURE, FEATURES



## CHAPTER 3 INSTALLATION, DISMANTLING, STORING

### 3.1 INSTALLATION

Hydraulic hammer is connected to the excavator with two oil hoses and two pins.

- Lower down the excavator arm slowly, align the pin holes, and fix the pin and pin stopper. Operate the bucket cylinder, so as to fix the other pin.
- Remove the end caps of oil hoses, make sure the hoses clean. Connect to the hammer at one end and to the excavator pipeline at the other end. Finally, open up the Stop Valve on the excavator arm.



**Advise**

If slowing down the engine, it will be much easier to align the pin holes.

### 3.2 DISMANTLING

Shut off the **Stop Valve** on the excavator arm. Remove the two **Oil Hoses** from excavator pipeline. Remove the two **Pins** from hammer shell. **Excavator Arm** goes up slowly, and then the Hammer will be free. Fasten the **End Caps** to the hammer and excavator pipeline to prevent dirt.

### 3.3 STORING

If the Hammer not be used temporarily, please keep it well as per the following instructions:

Remove the chisel. Empty the N2 chamber, and strike piston back to cylinder. Lubricate the Front Head by grease.



**Advise**

After loosening end caps of oil hoses, piston can go back easily.



Place Hammer on crossties, covered by raincoat; or indoor warehoused.

## CHAPTER 4 OPERATION, WARNINGS

### 4.1 BEFORE & AFTER

Checking If	Detailed Items
Bolts & Nuts Loosing, Missing or Damage	Through Bolt, Side Bolt, Accumulator Body Bolt, Accumulator Cover Bolt, etc.
Chisel & Surroundings Missing or damage	Chisel, Chisel Pin, Stop Pin, Inner & Outer Bushes, Rubber Plug, Cir clip, etc.
Pipe & Hose Loosing or Leaking	Steel Pipe, Rubber Hose, Connectors, and the Whole Pipeline, etc.
Oil Leaking	Between Chisel & Bush, Back Head & Cylinder, Accumulator & Cylinder, etc.
Lubrication	Lubricate with grease after every 2 or 3 working hours.
Hydraulic Oil Clean, Sufficient or not  (#46 Hydraulic Oil for hot weather) (#68 Hydraulic Oil for cold weather)	If it is hammer's first running, please change new oil within 250 working hours, and change new oil filter within 50 working hours. After the first changing, please change new oil within 600 working hours, and new oil filter within 100 working hours.

### 4.2 OPERATION

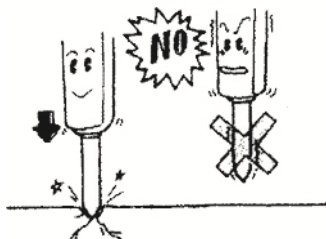
- The Chisel should be pressed hard and vertically to the object to be broken.
- Step on the pedal, the hammer will strike.
- Once object is broken, stop striking immediately.



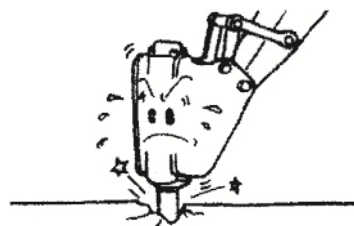
Don't work continuously in hot summer, to prevent too high temperature of hydraulic oil. If oil temperature reaches 80 degrees centigrade, must stop working, until the temperature lowers down.



### 4.3 WARNINGS!



Forbid any idle running of the Hammer. Idle running means, the Hammer strikes while the chisel not yet pressed hard to the object for breaking. It will cause damages to chisel, bush, through bolt, accumulator, etc.



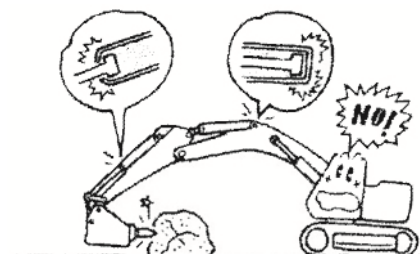
Don't strike the same position continuously, which will cause abnormal wearing & damages. If striking the same position for more than 1 minute and the object still not broken, please try striking another position.



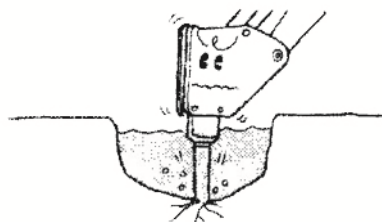
Don't use the chisel to move rock or use as a lever to pry rock. It will damage through bolts, chisel, bush, etc.



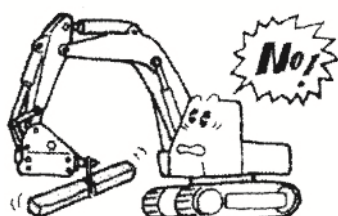
Don't heavily hit the object, which will cause excavator damage. The correct is, slowly press the chisel hard to the object and start striking.



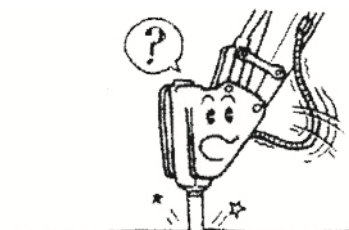
Don't strike when piston is at the stroke limit, otherwise, excavator will be damaged.



Don't locate the Hammer into water, which will cause damages of the Hammer.



Don't use the hammer to lift or carry object, which will damage the hammer or excavator.

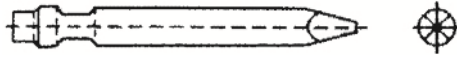


If the oil hose vibrates abnormally, please stop working immediately and find possible problems.

## CHAPTER 5 CHISELS

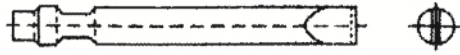
### 5.1 CHISEL TYPE

#### ➤ Moil Point type Chisel



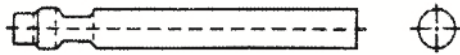
It is specially used for quick breaking very hard object, but not breaking into pieces. If breaking object into pieces, the Blunt type will be more efficient.

#### ➤ Wedge type Chisel



It is usually used for Civil Engineering, such as Trenching, Asphalt Concrete Road, etc., or splitting Rocks. However, if breaking object into pieces, the Blunt type will be more efficient.

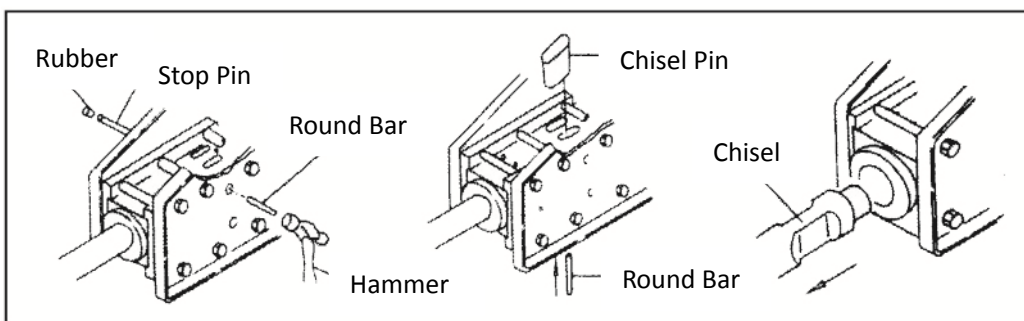
#### ➤ Blunt type Chisel



It is usually used for Demolition Work, such as breaking Rocks, Boulders and Construction Buildings, etc. into pieces quickly. However, if the object is too hard, the Moil Point type will be more efficient.

### 5.2 CHISEL & CHISEL PINS REPLACEMENT

- Clean surroundings of the Chisel Pins. Place the Hammer horizontally, from the opposite side of Rubber, hammer out the Stop Pin, Rubber and Chisel Pin with the Round Bar (packed in the Tool Box). Before fixing new Chisel, please firstly lubricate the groove of Chisel by heat-resisting Albany Grease.



- It'll be difficult to replace new Chisel if the Chisel Pin is badly deformed, thus, every 100~500 working hours, please dismantle and exchange the Chisel Pins to different interfaces, so as to avoid pins' single-face worn or deformation. If the Bush or Chisel Pin is worn or deformed, please firstly repair. It's allowed to grind the deformed parts.

### 5.3 CHISEL QUALITY ASSURANCE

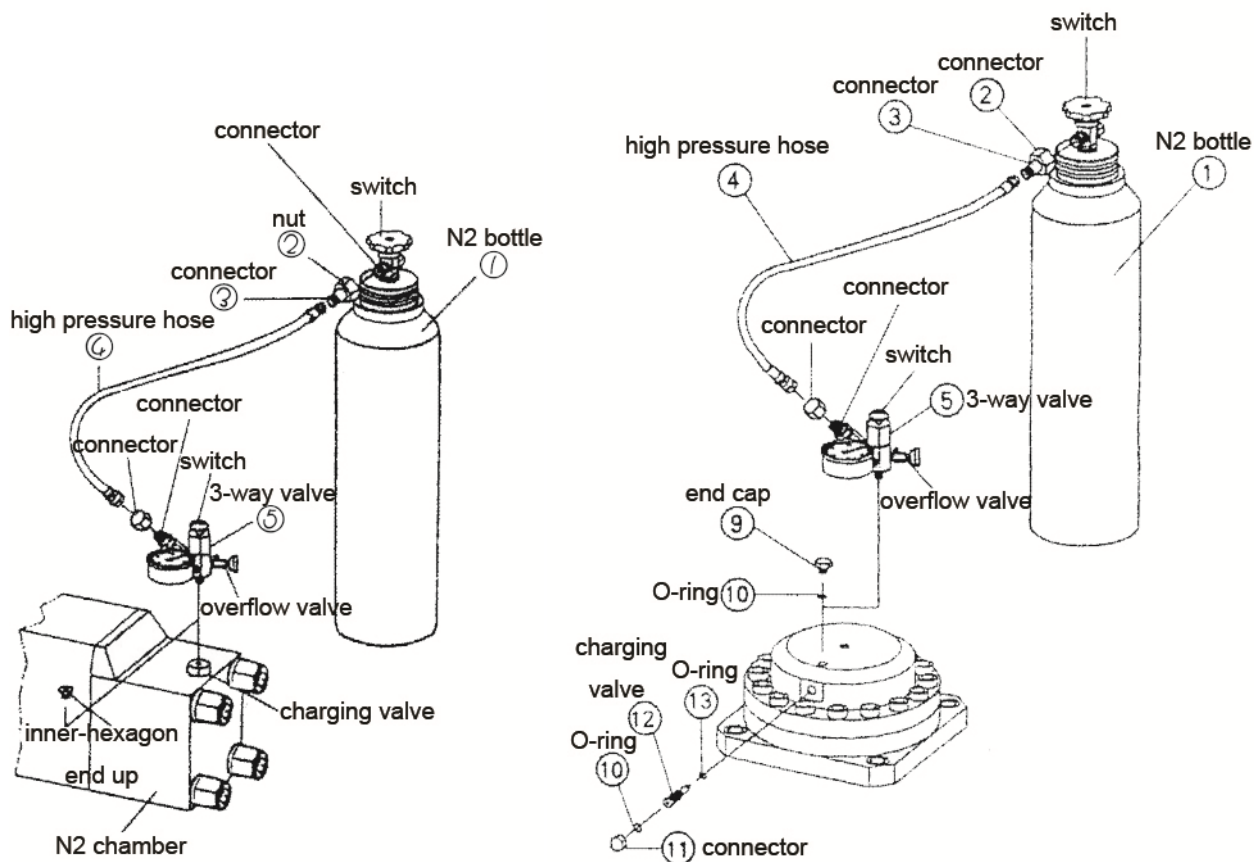
Please refer to our warranty details.

## CHAPTER 6 NITROGEN GAS RECHARGING

Usually, Nitrogen Gas has already been charged and pressure has been adjusted before leaving factory, but it is necessary to check again before first use. Gas Pressure should be checked regularly every two months.

### 6.1 N2 CHAMBER NITROGEN RECHARGING

Screw off anticlockwise the Charging Valve's End Cap, and connect the 3-way Valve to the N2 Chamber. Shut off the Overflow Valve. Keep the N2 Bottle closed, and press the Switch of 3-way Valve to check the pressure. If pressure is too high, please discharge some N2 via the Overflow Valve. If the pressure too low, keep pressing the Switch of 3-way Valve, meanwhile open the N2 Bottle to charge until proper pressure (around 16 Bar). Close the N2 Bottle, and close Charging Valve's End Cap.



### 6.2 ACCUMULATOR NITROGEN RECHARGING

Screw off anticlockwise the End Cap (#9 & #11), and connect the 3-way Valve to #9 position. Shut off the Overflow Valve. Keep the N2 Bottle closed, press the Switch of 3-way Valve, meanwhile loose anticlockwise the Charging Valve (#12) a little to check the pressure. If pressure is too high, discharge it via the Overflow Valve. If the pressure too low, keep pressing the Switch of 3-way Valve, meanwhile open the N2 Bottle to charge until proper pressure (around 60 Bar). Close the N2 Bottle, Charging Valve (#12), and End Caps (#11 & #9).

## CHAPTER 7 MAINTENANCE

### 7.1 BOLTS & NUTS

All bolts & nuts should be checked before every using, please fasten in orders accordingly (Unit: kg.m).

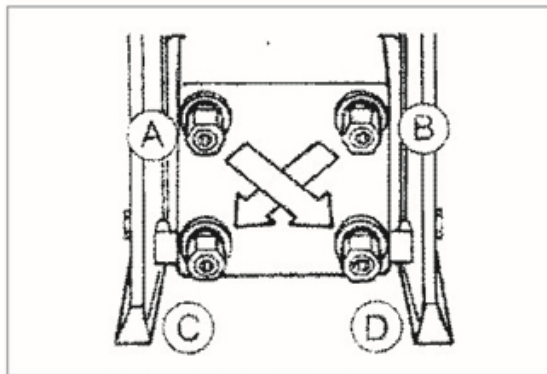
Items	Unit	Through Bolt	Side Bolt	Charging Valve	Acc. Body	Acc. Cover
DE-SSL	Kg.m	40	100	35	*	*
DE-35	Kg.m	40	100	35	*	*
DE-50	Kg.m	40	100	35	*	*
DE-80	Kg.m	40	145	35	*	*
DE-120	Kg.m	40	170	35	*	*
DE-140	Kg.m	160	180	35	*	*
DE-200	Kg.m	240	280	35	*	*
DE-300	Kg.m	280	300	35	60	45



#### Warnings!

When replacing more than two through bolts or dismantling the Hammer, please follow the steps:

- Before all, empty the Nitrogen in the N2 chamber.
- Loose all bolts, including the bolts no replacing needed.
- Fasten the bolts in orders, A→D→B→C.



### 7.2 N2 CHAMBER & ACCUMULATOR

(See Chapter 6)

### 7.3 HYDRAULIC OIL

Please choose **No.68** hydraulic oil for **Cold** weather and **No.46** hydraulic oil for **hot** weather. Oil should be clean & sufficient during working. Dirty oil will cause damages to the Hammer. When oil leaks, please change seal kit in time.

#### 7.4 CHISEL & SURROUNDINGS

Before every using, check if the chisel, chisel pin & bush are in good conditions. Check regularly the clearance between bush and chisel, too much clearance will cause piston & chisel broken. If chisel diameter abrades more than 3mm, or bush inner diameter abrades more than 6mm, please replace new ones.

#### 7.5 LUBRICATION

Lubricate with grease before every using or after every 2 or 3 working hours.

#### 7.6 REPLACE WEARING PARTS REGULARLY

Please replace wearing parts in time. When buying Hammers, customers are suggested to buy extra wearing parts as below for regular replacement.

Item	Replacement
Chisel	According to the actual working conditions
Rod Pin	Every 30 days to change different interfaces to fix the chisel
Stop Pin	Every four months
Rubber Cap	Worn, missing or damaged. Please replace new ones.
Oil Seal	Every six months
Cylinder Through Bolts & Nuts	Every six months
Hammer Shell Bolts & Nuts	Every six months
Hydraulic Hose	Every six months
Outer Bush	Every three months
Inner Bush	Every four months



All wearing parts are not guaranteed in the warranty policy.

## CHAPTER 8. TROUBLE SHOOTING

Problems	Possible causes	Solution
Too weak striking	<ol style="list-style-type: none"> <li>1. Engine rotation speed low.</li> <li>2. Gas pressure too low in N2 Chamber.</li> <li>3. Gas pressure too low in Accumulator.</li> <li>4. Set wrong pressure, or overflow valve broken.</li> <li>5. Chisel broken.</li> <li>6. Hydraulic Oil not enough or not clean</li> </ol>	<ol style="list-style-type: none"> <li>1. Regulate it.</li> <li>2. Check and recharge.</li> <li>3. Check and recharge.</li> <li>4. Check and regulate.</li> <li>5. Grind the damages of chisel or bushing.</li> <li>6. Check, add or change new oil</li> </ol>
No striking	<ol style="list-style-type: none"> <li>1. Wrong pressure of overflow valve.</li> <li>2. Gas pressure too high in N2 chamber.</li> <li>3. Oil leaks to chamber.</li> <li>4. Cylinder, piston or valves damaged.</li> </ol>	<ol style="list-style-type: none"> <li>1. Regulate to proper pressure.</li> <li>2. Regulate to proper pressure.</li> <li>3. Replace oil seal.</li> <li>4. Repair surface by abrasive paper.</li> </ol>
Unsteady striking	<ol style="list-style-type: none"> <li>1. Gas pressure too high in N2 chamber.</li> <li>2. Pressure low of overflow valve.</li> <li>3. Chisel or bush damaged.</li> <li>4. Cylinder, piston or valves damaged.</li> </ol>	<ol style="list-style-type: none"> <li>1. Regulate to proper pressure.</li> <li>2. Regulate to proper pressure.</li> <li>3. Grind to repair the damaged part.</li> <li>4. Repair surface by abrasive paper.</li> </ol>
Nitrogen leaks	<ol style="list-style-type: none"> <li>1. Inlet leaks.</li> <li>2. Air valve leaks.</li> <li>3. N2 chamber leaks.</li> <li>4. Dismantle the oil-return hose, if air bubble exists in the oil, means air seal damaged.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace bushing O seal ring.</li> <li>2. Replace valve O seal ring.</li> <li>3. Fasten the through bolts.</li> <li>4. Replace the seal.</li> </ol>

# DIESEL “DE” SERIES HYDRAULIC HAMMERS

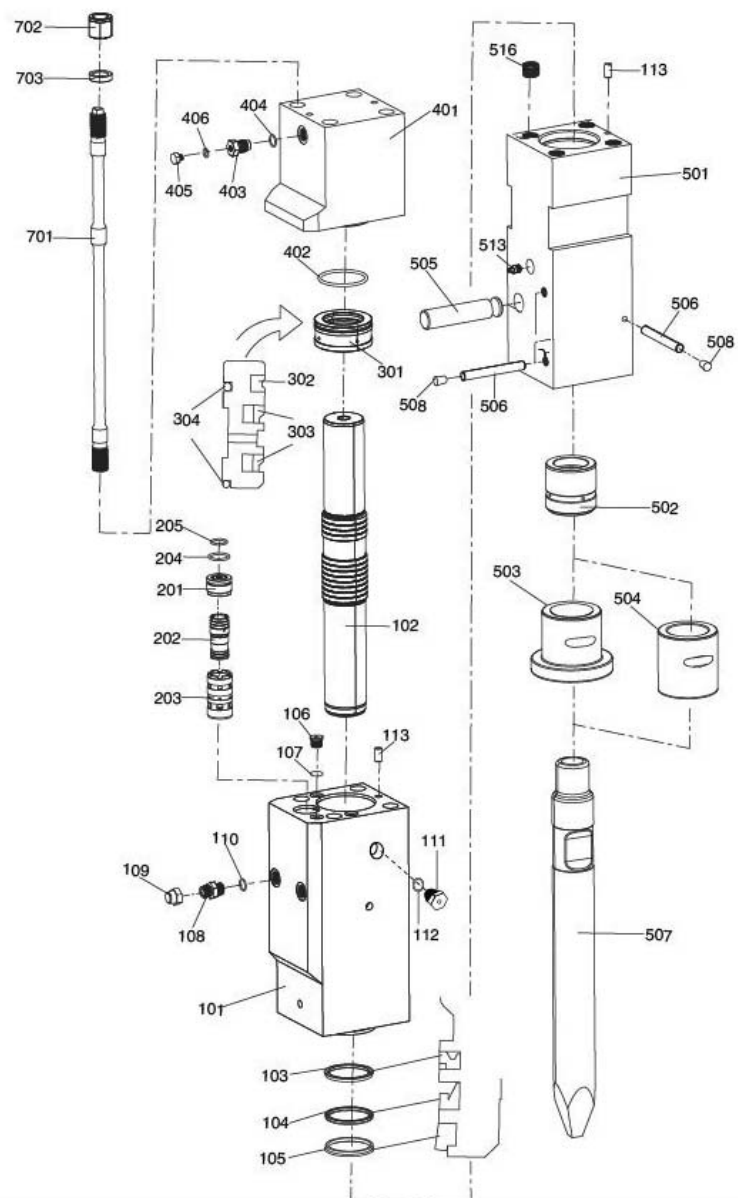
## PART LIST

- DE-SSL Main Body ----- 15
- DE-35 Main Body ----- 15
- DE-50 Main Body ----- 15
- DE-80 Main Body ----- 16
- DE-120 Main Body ----- 17
- DE-140 Main Body ----- 17
- DE-200 Main Body ----- 18
- DE-300 Main Body ----- 19

# DE-SSL, DE-35, DE-50 Main Body Part List

NUMBER	NAME
100	CYLINDER ASSEMBLY
101	CYLINDER
102	PISTON
103	BUFFER RING
104	U-PACKING
105	DUST SEAL
106	CYLINDER PLUG
107	CYLINDER PLUG O-RING
108	IN/OUT ADAPTER
109	IN/OUT ADAPTER COVER
110	IN/OUT ADAPTER O-RING
111	EXHAUST VALVE
112	O-RING
113	GUIDE PIN
200	VALVE ASSEMBLY
201	VALVE COVER
202	VALVE
203	VALVE SLEEVE
204	O-RING
205	O-RING
300	PISTON BUSH ASSEMBLY
301	PISTON BUSH
302	GAS SEAL
303	STEP SEAL
304	O-RING
400	BACK HEAD ASSEMBLY
401	BACK HEAD
402	O-RING
403	GAS CHARGING VALVE
404	O-RING
405	GAS CHARGING VALVE COVER
406	O-RING
500	FRONT HEAD ASSEMBLY
501	FRONT HEAD
502	THRUST BUSH
503	CHISEL BUSH

NUMBER	NAME
504	(SILENCED) CHISEL BUSH
505	CHISEL PIN
506	LOCKING PIN
507	CHISEL
508	RUBBER PLUG
513	GREASE NIPPLE
515	PROCESS PLUG
516	BOLT
700	THROUGH BOLT ASSEMBLY
701	THROUGH BOLT
702	SCREW NUT (UPPER)
703	WASHER

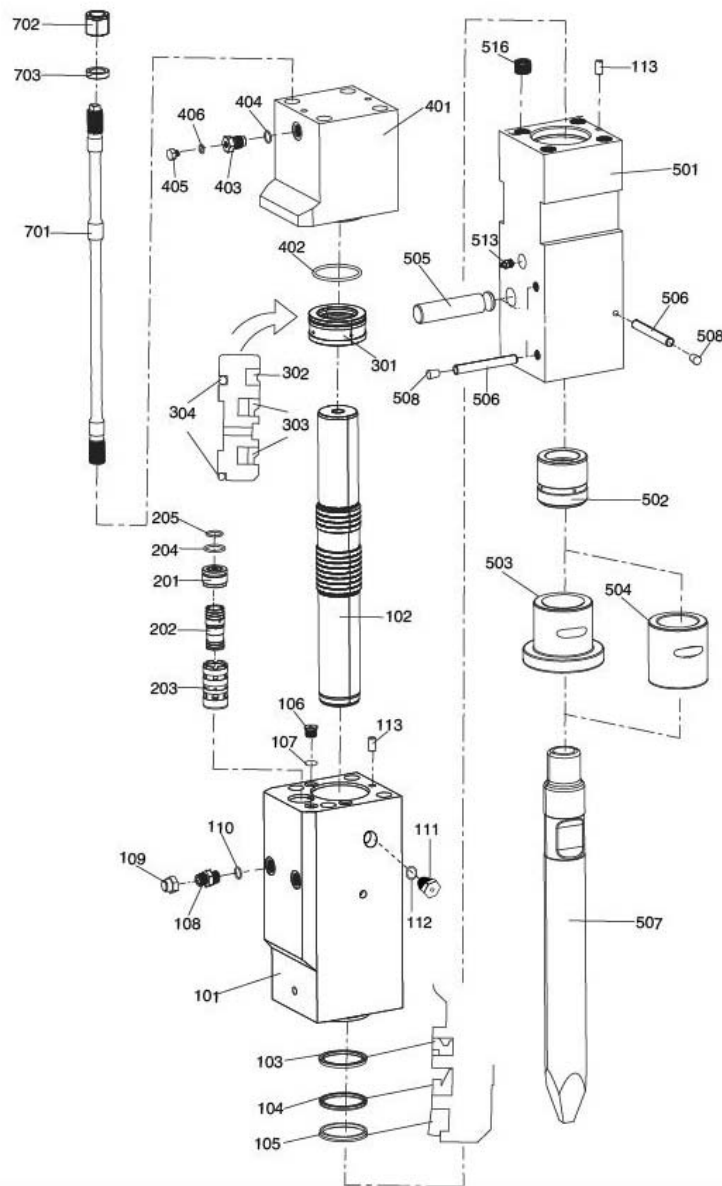




## DE-80 Main Body    Part List

NUMBER	NAME
100	CYLINDER ASSEMBLY
101	CYLINDER
102	PISTON
103	BUFFER RING
104	U-PACKING
105	DUST SEAL
106	CYLINDER PLUG
107	CYLINDER PLUG O-RING
108	IN/OUT ADAPTER
109	IN/OUT ADAPTER COVER
110	IN/OUT ADAPTER O-RING
111	EXHAUST VALVE
112	O-RING
113	GUIDE PIN
200	VALVE ASSEMBLY
201	VALVE COVER
202	VALVE
203	VALVE SLEEVE
204	O-RING
205	O-RING
300	PISTON BUSH ASSEMBLY
301	PISTON BUSH
302	GAS SEAL
303	STEP SEAL
304	O-RING
400	BACK HEAD ASSEMBLY
401	BACK HEAD
402	O-RING
403	GAS CHARGING VALVE
404	O-RING
405	GAS CHARGING VALVE COVER
406	O-RING
500	FRONT HEAD ASSEMBLY
501	FRONT HEAD
502	THRUST BUSH
503	CHISEL BUSH

NUMBER	NAME
504	(SILENCED) CHISEL BUSH
505	CHISEL PIN
506	LOCKING PIN
507	CHISEL
508	RUBBER PLUG
513	GREASE NIPPLE
515	PROCESS PLUG
516	BOLT
700	THROUGH BOLT ASSEMBLY
701	THROUGH BOLT
702	SCREW NUT (UPPER)
703	WASHER

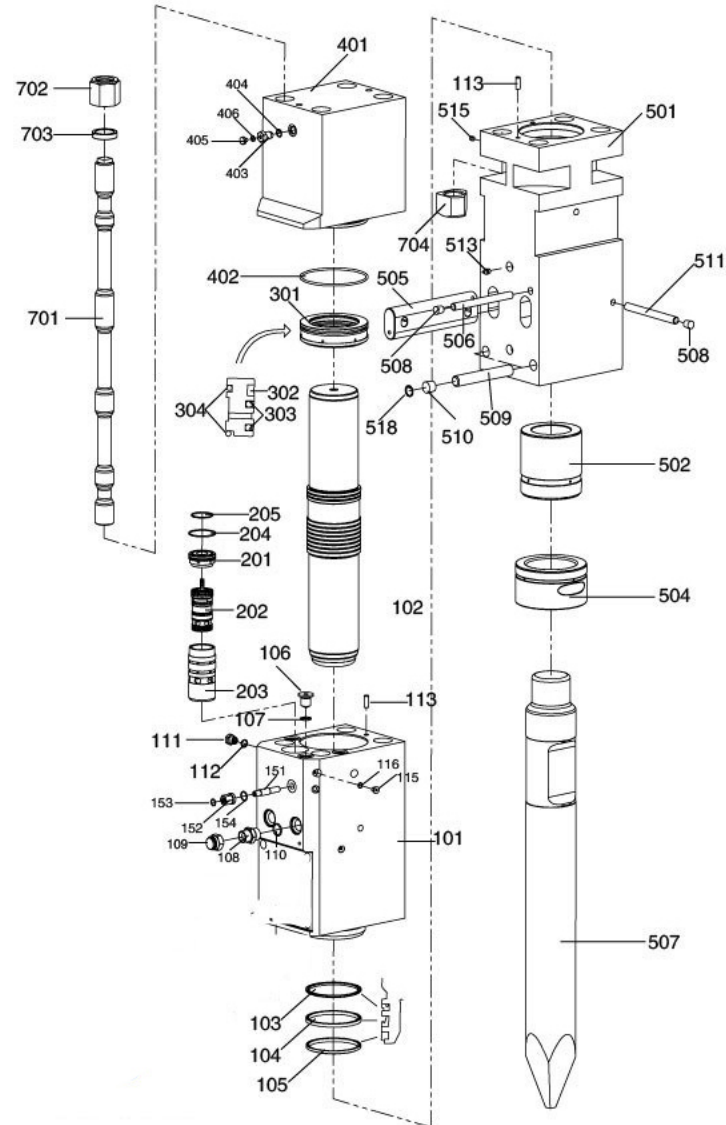


# DE-120, DE-140 Main Body Part List

NUMBER	NAME	NUMBER	NAME
100	CYLINDER ASSEMBLY	504	SILENCED CHISEL BUSH
101	CYLINDER	505	CHISEL PIN
102	PISTON	506	BUSHING PIN
103	BUFFER RING	507	CHISEL
104	U-PACKING	508	RUBBER PLUG1
105	DUST SEAL	509	CHISEL BUSH PIN
106	CYLINDER PLUG	510	RUBBER PLUG2
107	CYLINDER PLUG O-RING	511	LOCKING PIN
108	IN/OUT ADAPTER	513	GREASE NIPPLE
109	IN/OUT ADAPTER COVER	515	PROCESS PLUG
110	IN/OUT ADAPTER O-RING	518	SNAP RING
111	EXHAUST VALVE		
112	EXHAUST VALVE O-RING		
113	GUIDE PIN		

115	PLUG
116	O-RING
150	VALVE ADJUSTER ASSEMBLY
151	FRONT VALVE
152	FRONT VALVE NUT
153	FRONT VALVE O-RING
154	FRONT VALVE O-RING
200	VALVE ASSEMBLY
201	VALVE COVER
202	VALVE
203	VALVE SLEEVE
204	O-RING
205	O-RING
300	PISTON BUSH ASSEMBLY
301	PISTON BUSH
302	GAS SEAL
303	STEP SEAL
304	O-RING
400	BACK HEAD ASSEMBLY
401	BACK HEAD
402	O-RING
403	GAS CHARGING VALVE
404	O-RING
405	GAS CHARGING VALVE COVER
406	O-RING
500	FRONT HEAD ASSEMBLY
501	FRONT HEAD
502	THRUST BUSH

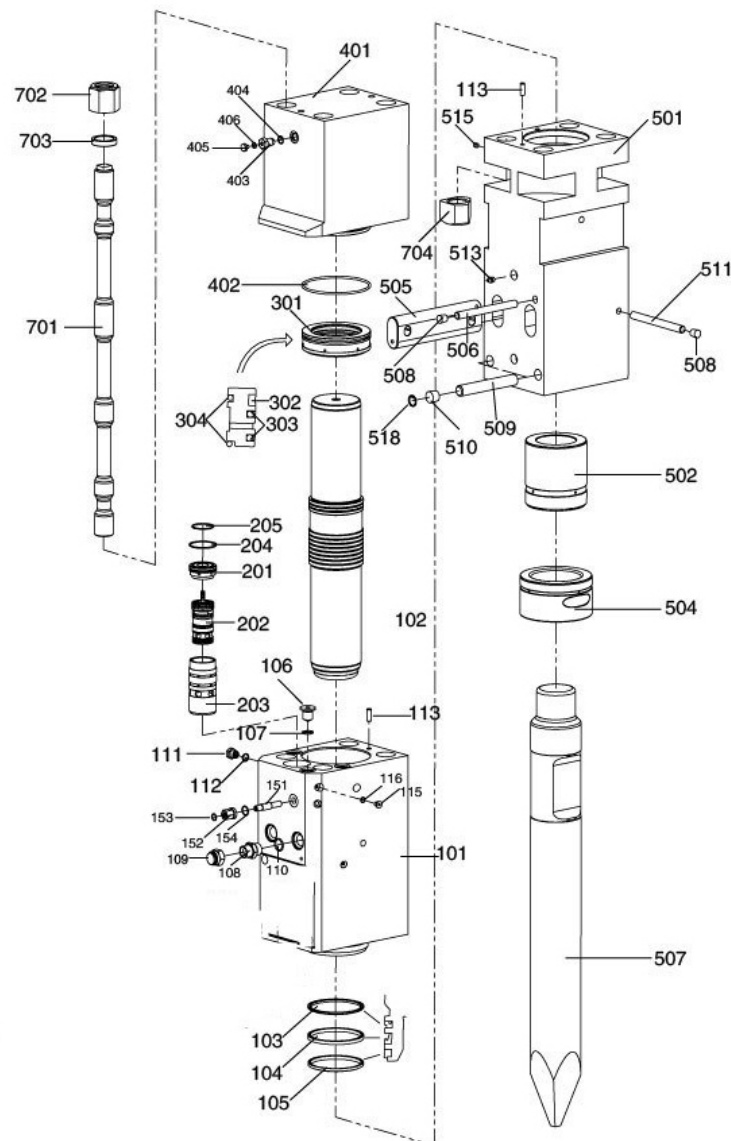
700	THROUGH BOLT ASSEMBLY
701	THROUGH BOLT
702	SCREW NUT(UPPER)
703	WASHER
704	SCREW NUT(LOWER)



## DE-200 Main Body      Part List

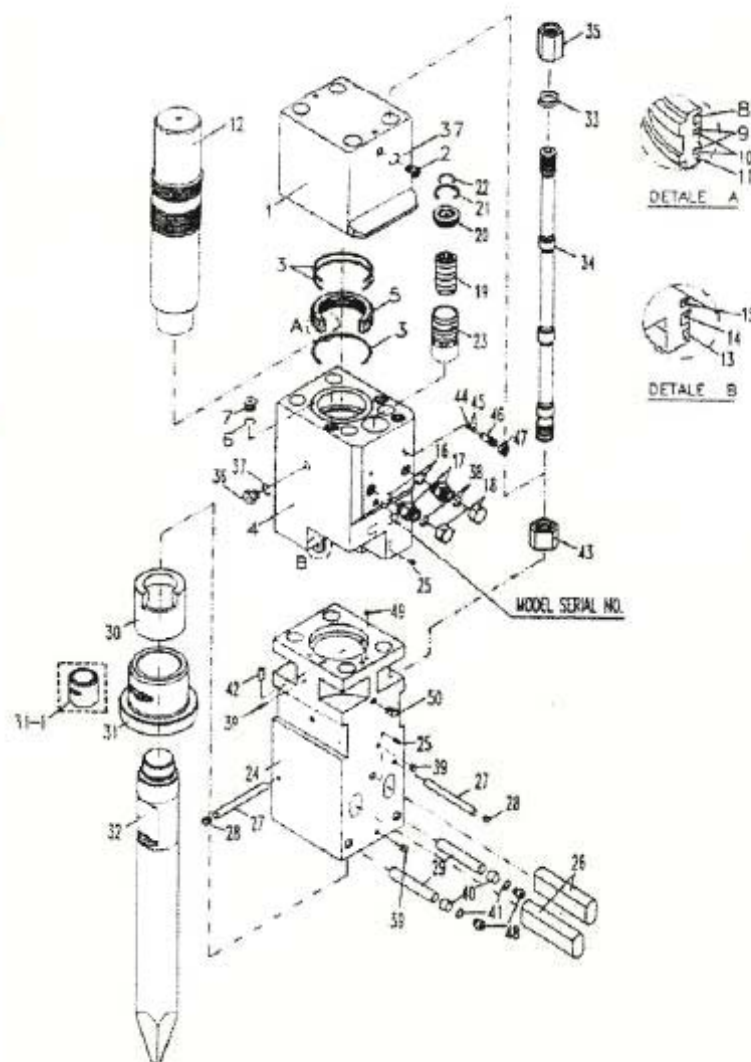
NUMBER	NAME	NUMBER	NAME
100	CYLINDER ASSEMBLY	504	SILENCED CHISEL BUSH
101	CYLINDER	505	CHISEL PIN
102	PISTON	506	BUSHING PIN
103	BUFFER RING	507	CHISEL
104	U-PACKING	508	RUBBER PLUG1
105	DUST SEAL	509	CHISEL BUSH PIN
106	CYLINDER PLUG	510	RUBBER PLUG2
107	CYLINDER PLUG O-RING	511	LOCKING PIN
108	IN/OUT ADAPTER	513	GREASE NIPPLE
109	IN/OUT ADAPTER COVER	515	PROCESS PLUG
110	IN/OUT ADAPTER O-RING	518	SNAP RING
111	EXHAUST VALVE		
112	EXHAUST VALVE O-RING		
113	GUIDE PIN		
115	PLUG		
116	O-RING		
150	VALVE ADJUSTER ASSEMBLY		
151	FRONT VALVE		
152	FRONT VALVE NUT		
153	FRONT VALVE O-RING		
154	FRONT VALVE O-RING		
200	VALVE ASSEMBLY		
201	VALVE COVER		
202	VALVE		
203	VALVE SLEEVE		
204	O-RING		
205	O-RING		
300	PISTON BUSH ASSEMBLY		
301	PISTON BUSH		
302	GAS SEAL		
303	STEP SEAL		
304	O-RING		
400	BACK HEAD ASSEMBLY		
401	BACK HEAD		
402	O-RING		
403	GAS CHARGING VALVE		
404	O-RING		
405	GAS CHARGING VALVE COVER		
406	O-RING		
500	FRONT HEAD ASSEMBLY		
501	FRONT HEAD		
502	THRUST BUSH		

700	THROUGH BOLT ASSEMBLY
701	THROUGH BOLT
702	SCREW NUT(UPPER)
703	WASHER
704	SCREW NUT(LOWER)



## DE-300 Main Body    Part List

NUMBER	NAME	NUMBER	NAME
1	BACK HEAD	32	CHISEL
2	N2 CHARGING NIPPLE	33	WASHER
3	O-RING	34	THROUGH BOLT
4	CYLINDER	35	THROUGH BOLT NUT
5	SEA RING FIXER	36	MOUNTING CAP
6	O-RING	37	O-RING
7	MOUNTING HEAD	38	O-RING
8	N2 SEAL	39	MOUNTING CAP
9	SEAL	40	RUBBER
10	O-RING	41	JUMP RING
11	SEAL	42	PIN
12	PISTON	43	THROUGH BOLT NUT
13	ANTI-DIRT SEAL	44	O-RING
14	U BUSHING	45	BUSHING
15	SEAL	46	VALVE ADJUST
16	O-RING	47	NUT
17	CONNECTOR	48	WASHER
18	END CAP	49	NUT
19	MAIN VALVE	50	O-RING
20	VALVE HAED		
21	O-RING		
22	O-RING		
23	VALVE SHELL		
24	FRONT HAED		
25	CONNECTOR		
26	CHISEL PIN		
27	STOP PIN		
28	RUBBER		
29	PIN		
30	ROUND BUSHING		
31	FIXER BUSHING		
31-1	FIXER BUSHING		



# **DIESEL EQUIPMENT**

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