OPERATION & MAINTENANCE MANUAL

AZEMO EQUIPMENT
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We appreciate your purchasing of Kronn Hammers .

Please read and fully understand this manual before installing, repairing or operating this hydraulic breaker.
The contents of this manual may be subject to change without notice.

Our company does not guarantee any information of this manual, including, but not limited to, implied warranties of commercial activities for a specific purpose, or applicability.

Our company is not liable for the incidental or consequential damage caused by the error in this manual, or, due to provision, operation or use of this manual.

Specification

Form 1

	Model	40	45	53	68	75	80
Body Weight	kg	53	71	89	156	214	215
Total Weight (Side/ Top/ Box)	kg	70/ 72/ 102	95/ 95/ 129	158/ 158/ 180	263/ 343/ 361	334/ 409/ 450	335/ 410/ 451
Length (Side/ Top/ Box)	mm	918	1090	1178	1373	1515	1630
		1086	1235	1344	1684	1706	1738
		1190	1331	1417	1660	1712	1717
Width (Side/ Top/ Box)	mm	226	265	285	385	385	385
		206	226	285	385	390	390
		260	260	350	385	385	385
Height (Side/ Top/ Box)	mm	360	435	500	696	735	760
		189	200	370	486	486	486
		295	295	305	486	486	486
Operating Pressure	kg/cm2 psi bar	90-120 1280-1704 88-117	90-120 1280-1704 88-117	90-120 1280-1704 88-117	110-140 1562-1988 108-137	120-150 1704-2130 118-147	120-150 1704-2130 118-147
Oil Flow	l/min	15-25	20-30	25-50	40-70	50-90	50-90
Impact Frequency	bpm	800-1400	700-1200	600-1100	500-900	400-800	400-800
Diameter of Hose	mm inch	12.7 1/2	12.7 1/2	12.7 1/2	12.7 1/2	12.7 1/2	12.7 1/2
Diameter of Tool	mm	40	45	53	68	75	75/80
Weight of Tool	kg	4	8	9	18	22	26
Suitable Carrier	m3	0.07	0.03-0.1	0.06-0.2	0.15-0.3	0.2-0.35	0.2-0.35
Suitable Carrier	ton	0.8-2.5	1.2-3.0	2.5-4.5	4-7	6-9	6-9
Valve Type		Inward	Inward	Inward	Inward	Inward	Inward
Accumulator exists		No	No	No	No	No	No

Specification

Form 1

	Model	85	100	120	135	135F	138
Body Weight	kg	282	479	620	850	846	854
Total Weight (Side/ Top/ Box)	kg	559/ 637/ 733	761/ 866/ 1007	1277/ 1308/ 1371	1653/ 1847/ 1893	1680/ 1880/ 1930	1721/ 1827/
Length (Side/ Top/ Box)	mm	1735	1994	2285	2423	2427	2400
		2120	2387	2673	2900	2656	3266
		2074	2354	2578	2847	2646	
Width (Side/ Top/ Box)	mm	443	443	555	575	575	590
		458	458	555	575	575	560
		458	458	575	575	575	
Height (Side/ Top/ Box)	mm	910	966	1120	1202	1202	1330
		570	570	600	710	710	710
		570	570	625	710	710	
Operating Pressure	kg/cm2 psi bar	130-160 1846-2272 128-157	150-170 2130-2414 147-166	150-170 2130-2414 147-166	160-180 2272-2556 157-177	160-180 2272-2556 157-177	160-180 2272-2556 157-177
Oil Flow	l/min	60-100	80-110	90-120	130-150	145-180	120-150
Impact Frequency	bpm	400-800	350-700	350-650	400-600	360-460	325-410
Diameter of Hose	mm inch	19.05 3/4	19.05 3/4	25.4 1	25.4 1	25.4 1	25.4 1
Diameter of Tool	mm	85	100	125	135	135	138
Weight of Tool	kg	29	57	94	115	115	120
Suitable Carrier	m3	0.25-0.5	0.4-0.6	0.5-0.7	0.6-0.8	0.6-0.8	0.6-0.8
Suitable Carrier	ton	7-14	10-15	15-18	18-26	18-26	18-26
Valve Type		Inward	Inward	Inward	Outward	Outward	Inward
Accumulator exists		No	No	No	Yes	Yes	No

Specification

Form 1

	Model	140	140A	145	150	155	165
Body Weight	kg	920	956	985	1092	1313	1442
Total Weight (Side/ Top/ Box)	kg	1774/ 2059/ 2011	1809/ 2094/ 2046	1692/ ——— ———	2218/ 2380/ 2457	2577/ 2745/ 2968	2751/ 3156/ 2916
Length (Side/ Top/ Box)	mm	2480	2480	2456	2640	2776	2820
		2866	2866		2897	3102	3286
		2793	2793		3002	3075	3337
Width (Side/ Top/ Box)	mm	575	575	595	665	665	665
		575	575		665	665	665
		575	575		665	665	665
Height (Side/ Top/ Box)	mm	1335	1335	1288	1343	1382	1378
		710	710		760	760	840
		710	710		760	760	840
Operating Pressure	kg/cm2 psi bar	160-180 2272-2556 157-177	160-180 2272-2556 157-177	120-180 1704-2556 117-177	160-180 2272-2556 157-177	160-180 2272-2556 157-177	160-180 2272-2556 157-177
Oil Flow	l/min	120-180	120-180	160-180	150-190	180-240	200-260
Impact Frequency	bpm	350-500	350-500	350-500	350-700	300-450	250-400
Diameter of Hose	mm inch	25.4 1	25.4 1	25.4 1	25.4 1	31.75 $1_{1/4}$	31.75 $1_{1/4}$
Diameter of Tool	mm	140	140	145	150	155	165
Weight of Tool	kg	135	135	140	157	190	224
Suitable Carrier	m3	0.7-0.9	0.7-0.9	0.8-1.0	0.9-1.2	1.1-1.4	1.2-1.5
Suitable Carrier	ton	18-26	18-26	20-26	27-35	28-35	30-40
Valve Type		Inward	Inward	Inward	Outward	Inward	Inward
Accumulator exists		No	Yes	Yes	Yes	Yes	Yes

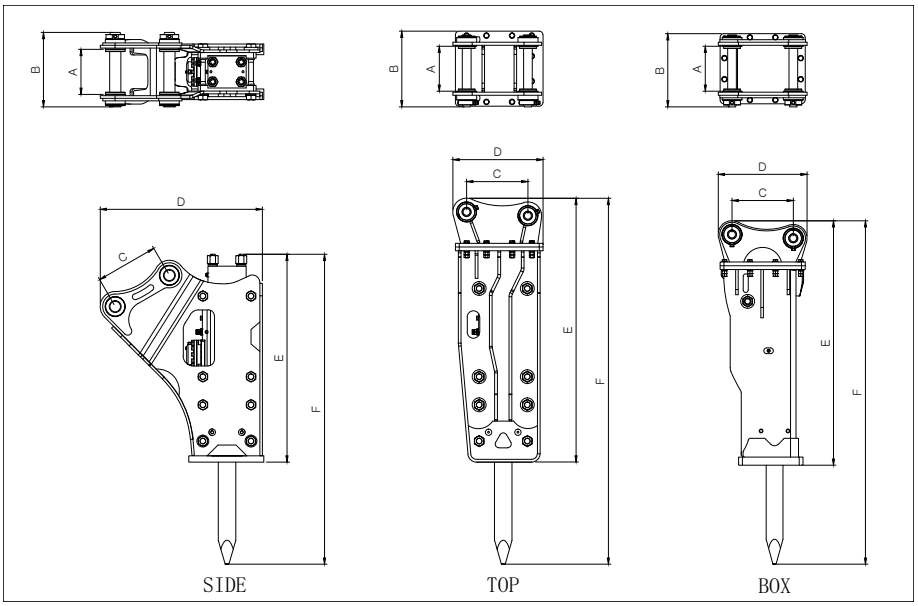
Specification

Form 1

	Model	165F	175	185F	195	210	248
Body Weight	kg lbs	1590	1960	2430	2663	3550	6200
Total Weight (Side/ Top/ Box)	kg	3277/ 3447/ 2975	3905/ 4057/ 3902	4365/ 4844/ ———	4841/ 5374/ ———	6814 7225/ ———	——— 11700
Length (Side/ Top/ Box)	mm	2820	3184	3326	3420	3660	
		3446	3812	3945	4021	4288	
		3460	3723				4848
Width (Side/ Top/ Box)	mm	665	764	764	764	864	
		665	764	790	764	864	
		665	764				964
Height (Side/ Top/ Box)	mm	1445	1670	1567	1635	1945	
		840	920	930	930	1013	
		840	920				1250
Operating Pressure	kg/cm2 psi bar	170-200 2417-2844 167-196	180-210 2556-2986 177-206	200-240 2844-3413 196-235	200-240 2844-3413 196-235	200-240 2844-3413 196-235	200-240 2844-3413 196-235
Oil Flow	l/min	200-250	200-260	220-270	220-290	290-350	450-550
Impact Frequency	bpm	250-380	200-350	200-250	180-200	150-200	200-350
Diameter of Hose	mm inch	31.75 $1_{1/4}$	31.75 $1_{1/4}$	31.75 $1_{1/4}$	31.75 $1_{1/4}$	31.75 $1_{1/4}$	38.1 $1_{1/2}$
Diameter of Tool	mm	165	175	185	195	210	248
Weight of Tool	kg	215	260	283	353	416	580
Suitable Carrier	m3	1.2-1.6	1.4-1.8	1.4-2.0	1.6-2.2	2.4-3.2	3.5-7.0
Suitable Carrier	ton	30-40	35-40	40-55	45-60	60-80	80-140
Valve Type		Inward	Inward	Outward	Outward	Outward	Inward
Accumulator exists		Yes	Yes	Yes	Yes	Yes	Yes

Specification

■ External Dimensions



Form 2

Unit:mm

Spec. \ Model		40	45	53	68	75	80	85	100	120	135	135F	138	140	140A	145	150	155	165	165F	175	185F	195	210
A	SIDE	126	145	165	210	210	210	275	275	340	360	360	360	360	360	360	430	430	430	430	500	500	500	600
	TOP	106	126	165	210	210	210	290	290	340	360	360	360	360	360		430	430	430	430	500	530	500	600
	BOX	145	141	141	210	210	210	290	290	360	360	360		360	360		430	430	430	430	500			
B	SIDE	226	265	285	385	385	385	443	443	555	575	575	590	575	575	595	665	665	665	665	764	764	764	864
	TOP	206	226	285	385	390	390	458	458	555	575	575	560	575	575		665	665	665	665	764	790	764	864
	BOX	260	260	350	385	385	385	458	458	575	575	575		575	575		665	665	665	665	764			
C	SIDE	106	165	240	285	340	340	390	390	420	465	465	500	500	500	500	520	520	520	560	622	600	620	700
	TOP	106	106	180	341	341	341	390	390	420	490	490	490	490	490		520	520	600	600	622	620	620	700
	BOX	187	185	185	341	341	341	390	390	410	490	490		490	490		520	520	500	600	622			
D	SIDE	360	435	500	696	735	760	910	966	1120	1202	1202	1330	1335	1335	1288	1343	1382	1378	1445	1670	1567	1635	1945
	TOP	189	200	370	486	486	486	570	570	600	710	710	710	710	710		760	760	840	840	920	930	930	1013
	BOX	295	295	305	486	486	486	570	570	625	710	710		710	710		760	760	840	840	920			
E	SIDE	667	726	817	980	877	877	1071	1090	1544	1610	1610	1600	1699	1699	1688	1682	1848	1992	2046	2274	2321	2390	2582
	TOP	806	891	1005	1080	1134	1134	1463	1560	1946	2075	2045	2072	2110	2110		2234	2347	2482	2538	2889	2935	3000	3326
	BOX	938	994	1061	1241	1318	1324	1626	1747	1997	2055	2000		2095	2095		2203	2366	2483	2584	2853			
F	SIDE	918	1090	1178	1373	1515	1630	1735	1900	2286	2423	2427	2400	2480	2480	2456	2640	2776	2820	2820	3184	3326	3420	3660
	TOP	1086	1235	1344	1684	1706	1738	2120	2387	2673	2900	2656	3266	2866	2866		2897	3102	3286	3446	3812	3945	4021	4288
	BOX	1190	1331	1417	1660	1712	1717	2074	2354	2578	2847	2646		2793	2793		3002	3075	3337	3460	3723			

To replace parts at regular intervals

1）The below wear parts must be replaced timely, in case they are worn or broken:

Part Name	regular interval for replacement or reparation
Chisel	refer to page 19
Rod Pin	refer to page 22
Stop Pin	4 months
Rubber Plug	worn or lost
Oil Seal	3 months
Through Bolt	6 months
Through Bolt Washer	6 months
Side Bolt	6 months
Hydraulic Hose	6 months
Front Cover	refer to page 23
Ring Bush	refer to page 24

2）Hydraulic oil,first replacement is at 250 hours; afterwards to replace every 800 hours. To replace oil filter at first 50 hours, afterwards to replace every 100 hours.

3）To ensure normal use, customers shall purchase these wear parts together with hydraulic breakers for preparation in stock. Such as chisel, rod pin, stop pin, rubber plug, bolt, hydraulic hose, etc.

4）Oil seal shall be replaced every 500 hours or 3 months.

5）The above mentioned interval is subject to excavator's working time.

※The above mentioned wear parts are not covered under warranty.

Security Information

Most of accidents happen due to overlooking security while operating, checking and repairing.
It is very important to operate hydraulic breaker in correct way while working, because it can directly cause accident and machine breakdown due to wrong operation.

Please follow this manual's requirements to operate while hydraulic breaker working. We will not take responsibility for any accident or machine breakdown which is caused by incorrect operation or incorrect maintenance. Please note these areas marked with ⚠ Danger, Warning, Attention, Indication",  which shall be paid much more attention during working.

* If you have any inquiries on this manual, please contact the local distributor.

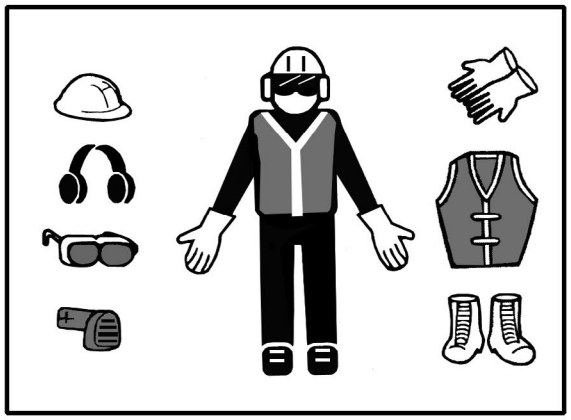
Our company can't foresee all the potential dangers during the whole process of hydraulic breaker's operation, inspection and reparation, so if you adopt different ways and methods during the process of operating the hydraulic breaker, you must ensure security and no mistakes, to avoid machine breakdown.

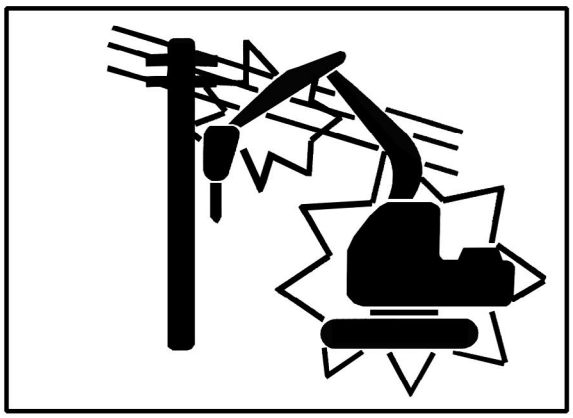
Safety Clothing

Please put on safety cap, shoes, clothing and other safety devices (glasses, gloves, earplugs, etc.) when operating or repairing the machine.

Attention to obstacles

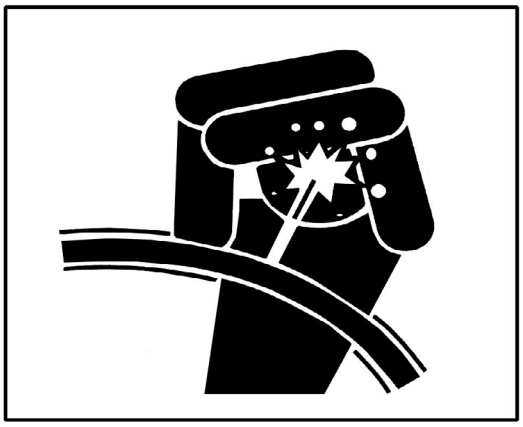
Attention to obstacles when working close to power line.
Must keep the shortest safety distance to power line.
To contact the power company in advance when you have to work close to power line.





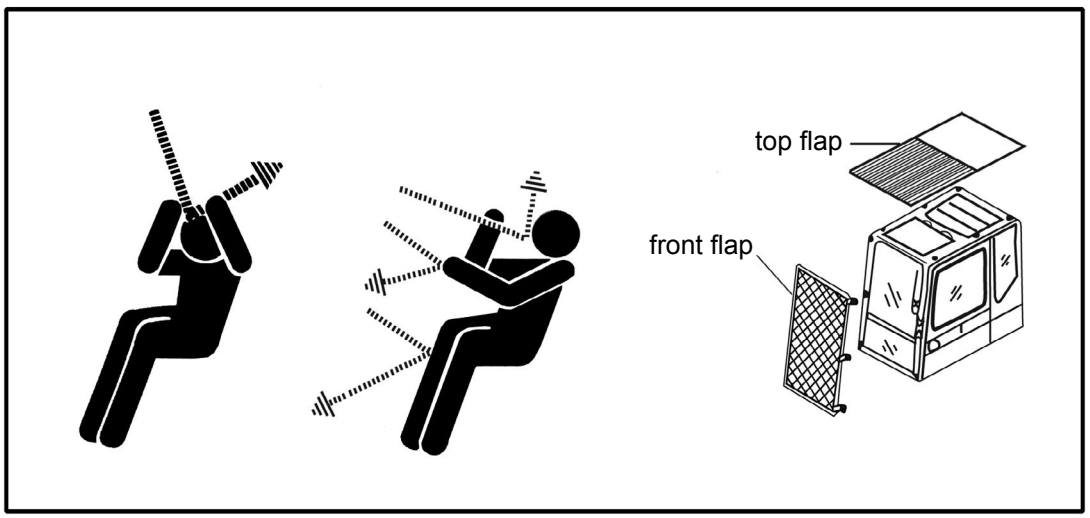
Notice for removal hydraulic breaker

The hydraulic oil after operation is in high temperature and high pressure condition,If you disassemble nut,hose pipe,piping kit and other parts at this moment, it will cause the hydraulic oil to squirt out.So when you disassenble those parts,you must reduce the pressure and temperature of the hydraulic oil in the tank first.



Pay attention to falling broken objects

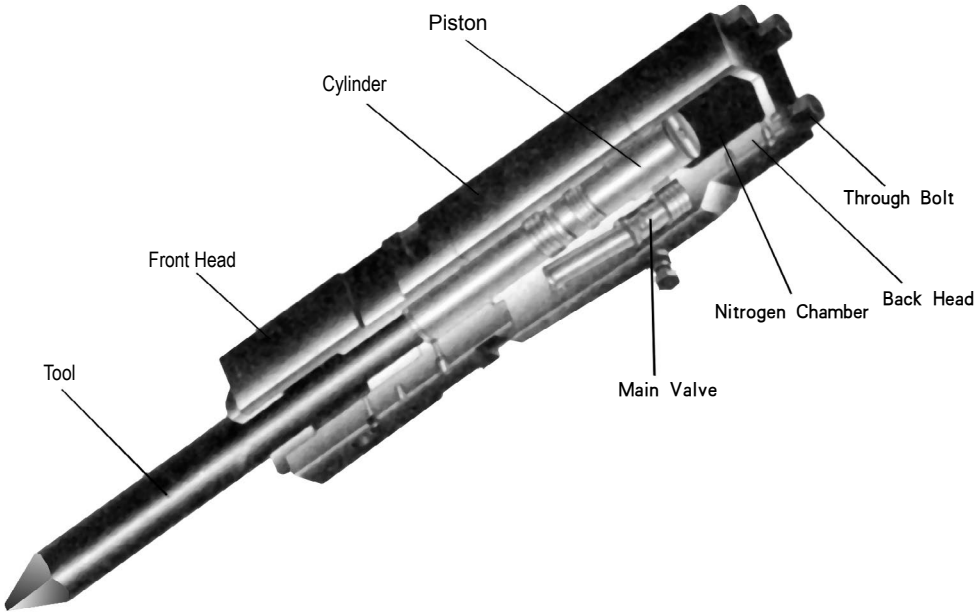
The staff should pay attention to the scattered dangerous objects after striking during the work, and select the suitable location according to the on-site operation.Prepare necessary protective measures.



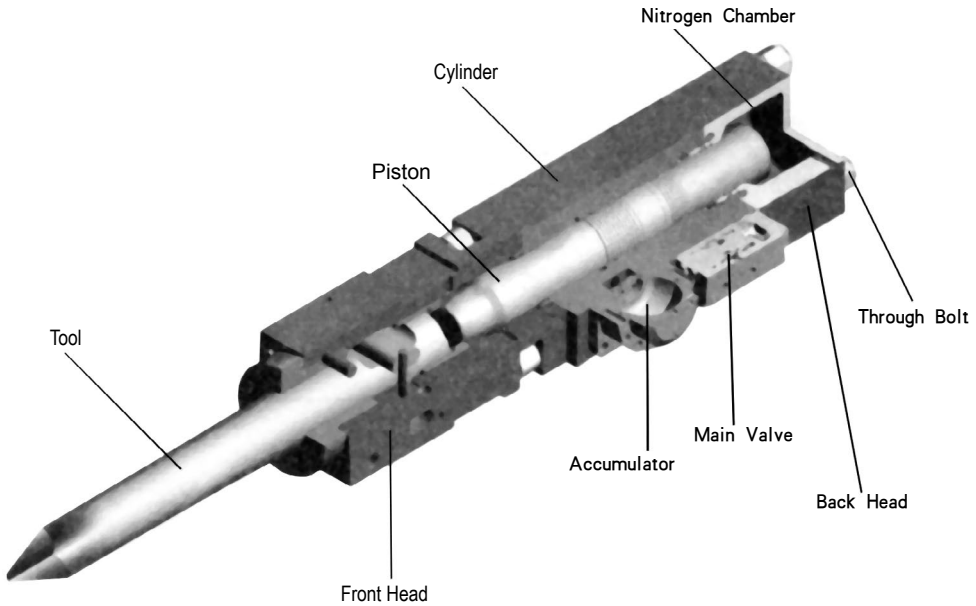
Name of part and its function

■ Structure

40 45 53 68 75 80 85 100 125 140



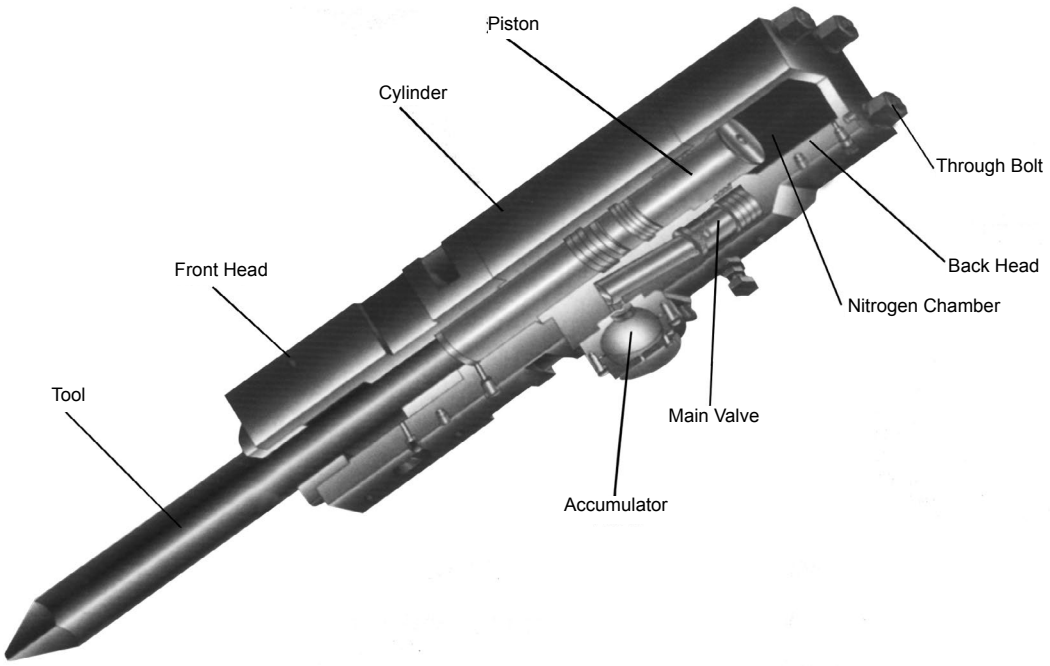
135 135F 150 185F 195 210



Name of part and its function

■ Structure

140A 145 155 165F 165 175



■ Main Valve

The Main Valve controls reciprocates piston action with hydraulic oil distribution.

■ Accumulator

Ensure the gas energy of the impact power
Absorb the vibration pressure caused by the piston rebound
Ensure the stability of hydraulic pressure

■ Nitrogen Chamber

Nitrogen charging
Inject pressure
See Form 4 at Page 29

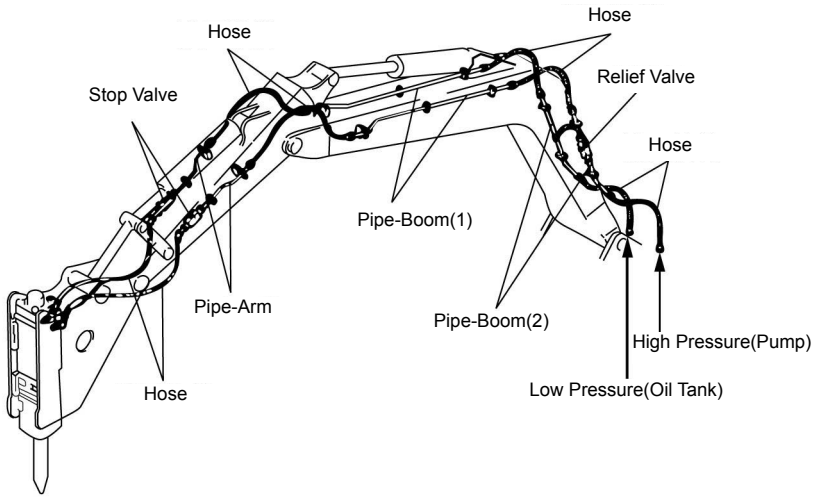
■ Tool

There are five types of tool,such as moil type,blunt type and so on.See page 19 for more details.(Tool Management)
Please select according to the use.

Name of part and its function

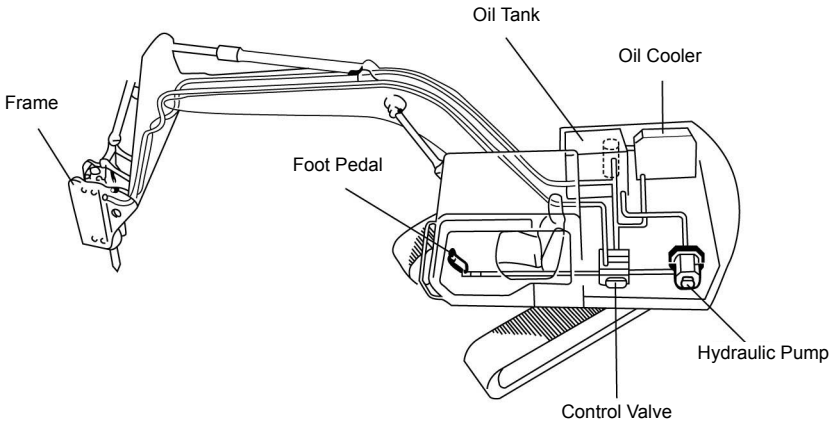
■ Hydraulic Piping Kit

1. When you install hydraulic breaker on hydraulic excavator, be sure to use professional hydraulic pipe.Different excavators need to be equipped with different hydraulic pipelines.(Please contact local dealer.)



2. As the pump energy and control valve form of hydraulic excavator are different, the connection way of pipeline is completely different.There are two main methods:

1. Prepare valve connection
2. Connect pump directly

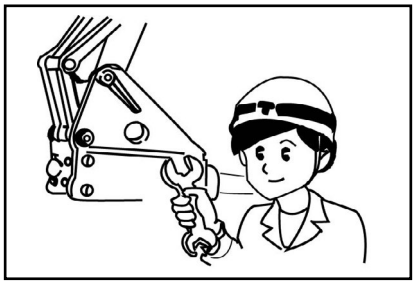


Correct Operation

Safety Inspection before working

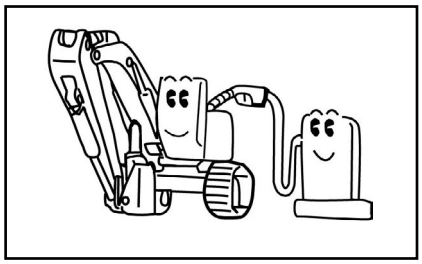
■ Bolts and Nuts

Please check whether all the bolts and nuts are tightened well. If any of them loosens, please tighten it immediately. (tighten torque please see Page 31)



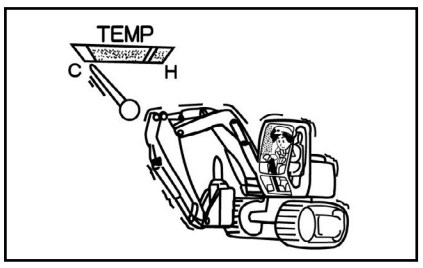
■ Hydraulic Oil

Please check whether the hydraulic oil is enough. If it is very inferior, please change the oil immediately.



■ Warming up the machine Blank operation

Please do not leave the excavator during the warming up of the machine. It will be normal if the needle of the water thermometer is moving.

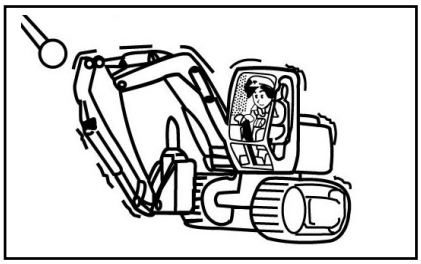


Correct Operation

Safety Inspection before working

■ Running-in operation

Before the first time using the new hydraulic breaker, The Running-in operation should be done for an hour, Everyday before working this operation should be done for 10 minutes, during the running-in operation, the hydraulic oil is 70% of normal working flow; During this operation the impact of the breaker should be perpendicularly, slant impact is forbidden. Full-load working immediately after just starting the machine may cause the damage of the seal kits or other important parts.



■ Greasing

Please inject the grease into the front head of the breaker.
(For more details please see Page 35)

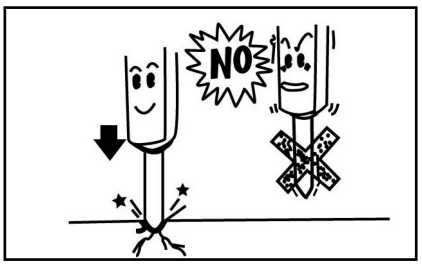
Correct Operation

Safety Inspection before working

Below operation is forbidden

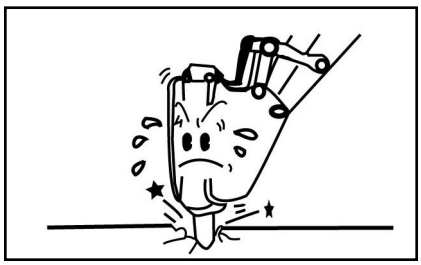
■ Blank Fire is forbidden

The operation while the chisel has not got touch with the breaking object or they are not contacting tightly is called “Blank fire”.Blank fire will cause the damage of the parts, or the broken or loosen of the bolts and nuts.



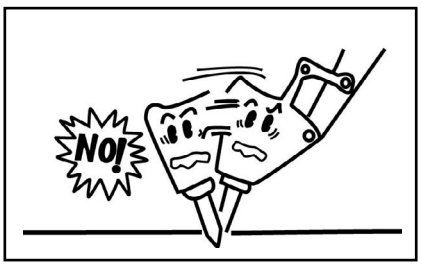
■ Continuous Impact is forbidden

Please do not impact the same point of the breaking object continuously. It will cause the abnormal abrasion of the chisel or the damage of the other parts. Please move the chisel to the other impact point of the object if the current point can not be broken within 1 minute.



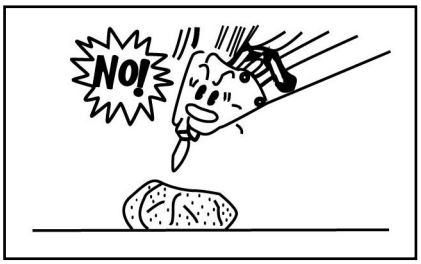
■ Shaking the chisel is forbidden

Please do not shake the chisel, it will cause the damage of the through bolts, chisel and the seal retainer.



■ The sudden severe impact to the breaking object is forbidden

Comparing with the bucket, hydraulic breaker is much heavier, so please operate the excavator slowly. Please do not contact the breaking object fiercely. Otherwise it may cause the damage of the front area of the excavator and the swing parts.

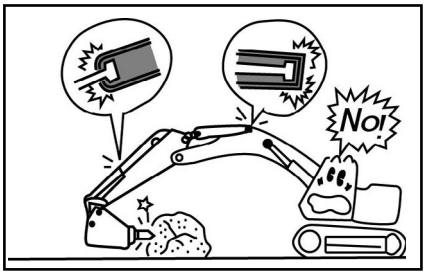


Correct Operation

Safety Inspection before working *Below operation is forbidden!*

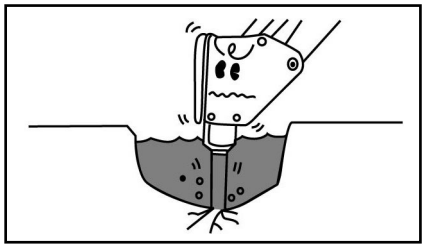
■ Please do not operate hydraulic breaker with boom or arm cylinders fully extended

Please do not operate hydraulic breaker with boom or arm cylinders fully extended, Please keep 100 mm cylinder stroke of base machine at least, otherwise, it may cause the damage of the cylinder and the front part area.



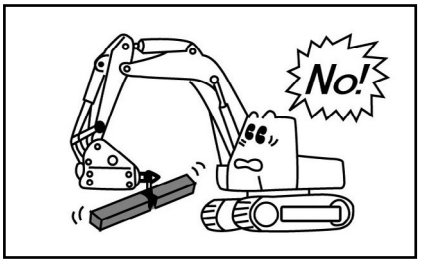
■ Operation under water is forbidden

Please do not use the hydraulic breaker under the water, otherwise, it will damage it.
Please install our under water kit for breaker in case it needs to work under water.



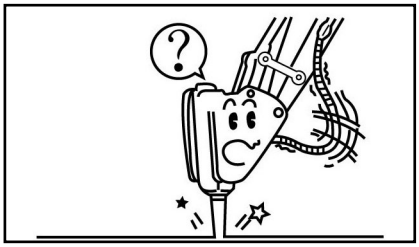
■ Hoisting is forbidden

Please do not hoist weights by using the hydraulic breaker or its tool, it may damage the breaker and the arm of the excavator.



■ Operation during the hydraulic hoses vibrating excessively is forbidden.

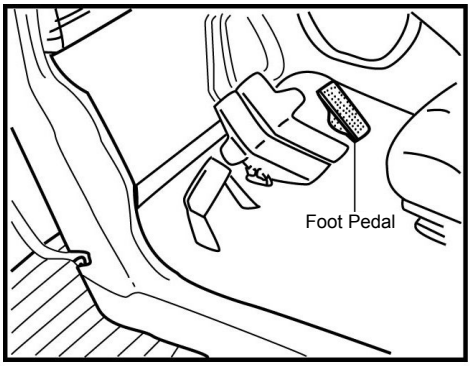
If the hydraulic hoses are vibrating excessively, It indicates gas leaking from the accumulator or back head of the hydraulic breaker. In this case, please check the nitrogen gas pressure, and charge the gas with specified pressure(For more details please see Page 28).



Breaker Operation

■ Operation Method of Breaker

Pedal mode (pump direct connection mode, preparation valve mode): After thread on breaker's pedal, breaker start to work, after release the pedal, breaker will stop work.

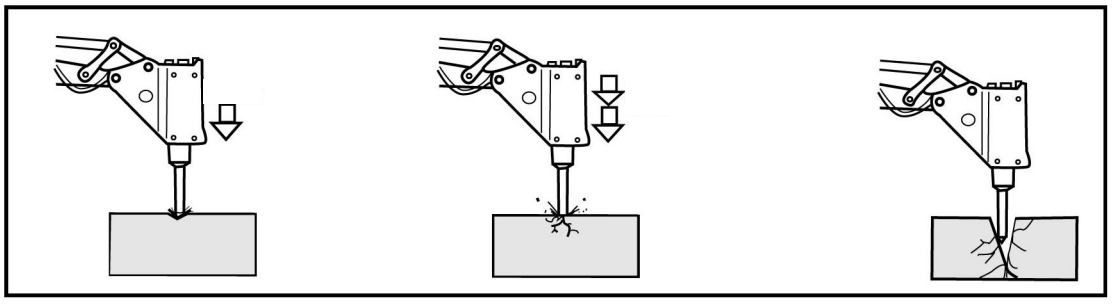


■ Operation of Breaker

Make chisel aim to the working object, then pressit.

Make chisel vertical placed, do break working by hand-operate or pedal-operate.

Once the working object is broken, stop work.



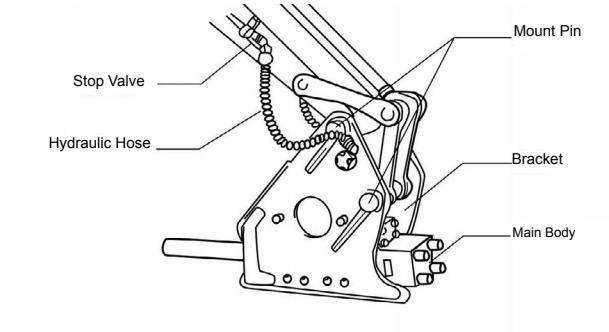
Warning

- 1.First, do mechanical preheating, until the pointer of water thermometer start to move.
- 2.The revolving speed of engine must be below of setting value.
- 3.Don't continuous working in too hot condition in summer, otherwise the temperature of oil will be too high. If the temperature is over 80°, must stop work until the temperature come down.

Disassembly and Installation of Breaker

■ Breaker's Disassembly

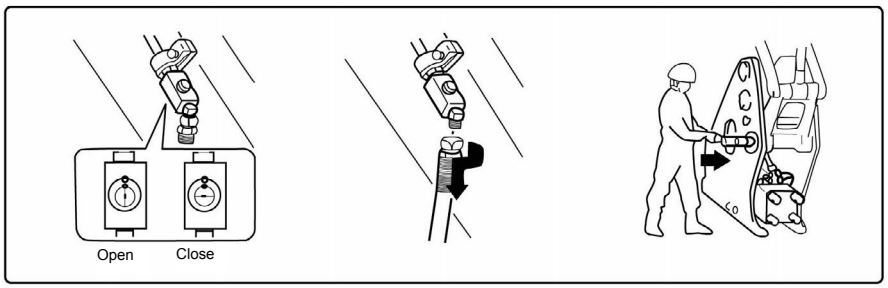
Breaker's status before disassembly



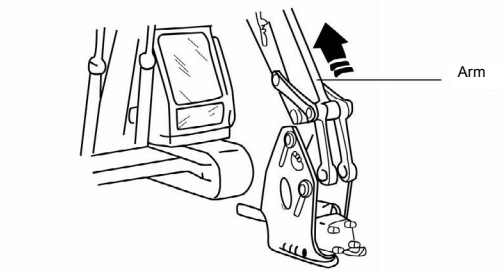
Closed the stop valve.

Take hose off from arm pipe, and inserting plug to prevent sundries drop in main body and piping.

Remove two mount pins from breaker bracket.



Lift up the arm slowly, take off hydraulic breaker.



Warning To avoid sundries or others drop in main body, please must tighten the plug of hose and pipe.

Disassembly and Installation of Breaker

■ Breaker's Installation

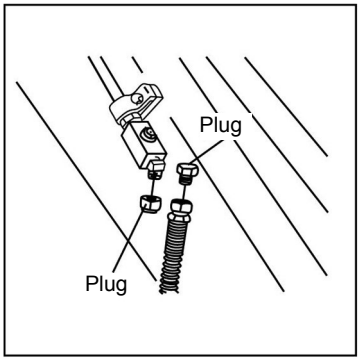
1. Make the center of bracket aimed to the center of arm, then put down the arm slowly, and install mount pin.
2. Install mount pin at arm side, and operate bucket cylinder, then install the mount pin at link side.
3. Take off plugs on each pipe and hose, then connect them.
4. Open the stop valve .

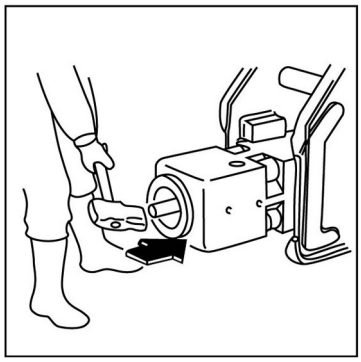
Reminder: When make the center of bracket aimed to the center of arm, engine's rotating speed should be reduced , to make boom's working speed slow down.

■ Breaker Maintenance

If breaker will be unused for more than one week, please follow below method .

1. Hose, pipe must be installed plugs.
2. Release the nitrogen from nitrogen chamber.(refer to P28, "nitrogen chamber pressure adjustment")
3. Remove chisel from breaker.
4. Make hammer aim to the end of piston, and impact it to make piston go back.
5. Apply grease into Front Head.(refer to P35 'Greasing')

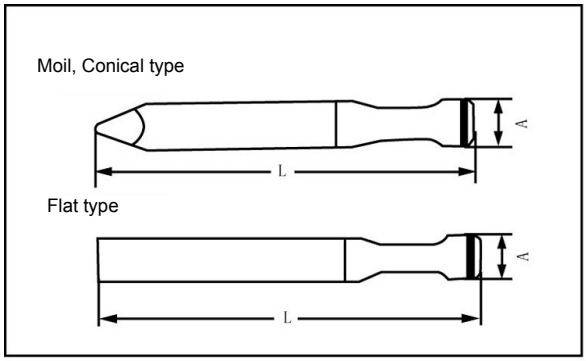




In order to protect breaker, please place it in room, or place it on sleepers, and covered by tarpaulin(to prevent rain)
Reminder:If remove hose plug, piston will be easily draw back

Tool

Please use original tools only.



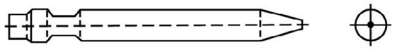
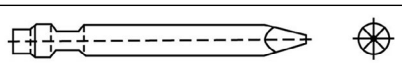
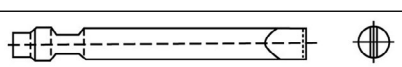
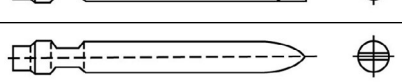
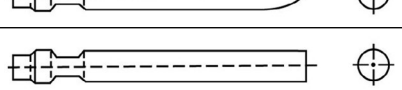
■ Tool Dimension

Form 3

Unit : mm

Model / Item	40	45	53	68	75	80	85	100	125	135	135F
Diameter(A)	40	45	53	68	75	75/80	85	100	125	135	135
Length(L)	450	500	580	702	710	755	745	1055	1130	1200	1200
Front Cover(B)	40	45	53	68	75	75/80	85	100	125	135	135
Model / Item	138	140	140A	145	150	155	165(F)	175	185F	195	210
Diameter(A)	138	140	140	145	150	155	165	175	185	195	210
Length(L)	1300	1300	1300	1300	1300	1500	1500	1600	1700	1800	1800
Front Cover(B)	138	140	140	145	150	155	165	175	185	195	210

■ Tool Type and Application

Sketch Map	Type	Application
	Conical Point (C)	Concrete
	Moil Point (M)	Rock
	H-Wedge (H)	Trenching
	V-Wedge (V)	FINISHING
	Blunt (B)	Rock

※ We're not responsible for the failures of hydraulic breakers caused by non original tools.

■ Replacement of Tool

1.Set the breaker on clean and level ground, clean the hole of Stop Pin, and remove the Stop Pin with pin bar in the opposite side of Rubber Plug.
Note: When removing Stop Pin, Rod Pin may fall down. Take care not to get injury.

2. Remove the Rod Pin with pin bar from underneath, take Tool out of breaker.

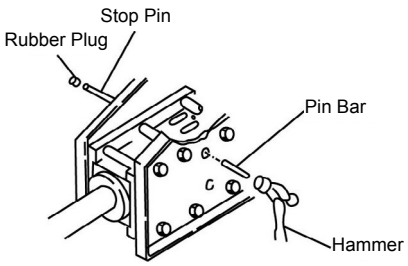
3.Before installing Tool, apply heat-resisting grease onto groove of Tool. And then install the Tool in reverse order of removal.

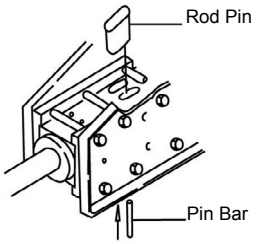
4.Change the face of Rod Pin regularly to avoid excessive deformation.
Note: Check the Rod Pin if there's any broken or wear regularly.

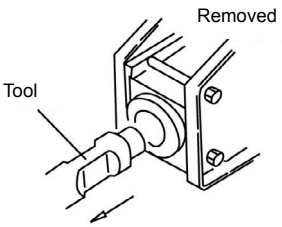
5. The Tool should be replaced after wearing.Please refer to the reject dimensions as per below.

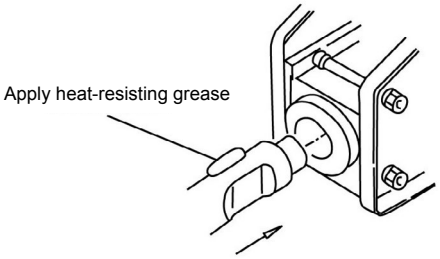
Warning

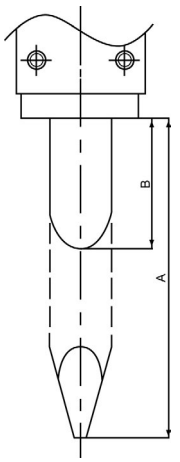
- When remove or install Tool, please pay attention to its weight.
- Knocking the tips of Tool is forbidden.
- Inserting hands into Main Body is forbidden.
- Do not stand near to the Tool when connecting hydraulic hoses or charging gas into Back Head, as the Tool may come out suddenly.
- Do not touch Tool with hands after breaker stops working, as the temperature of Tool may be very high.











B is the outer length when the Tool is fully pushed back into Main Body.

Unit：mm

No.	Model	Original Length (A)	Reject Length (B)
1	40	297	200
2	45	326	200
3	53	330	200
4	68	425	250
5	75	422	250
6	80	427	250
7	85	564	250
8	100	561	250
9	125	650	300
10	135	762	400
11	135F	672	300
12	138	744.5	400
13	140(A)	762	400
14	145	768	400
15	150	777	400
16	155	913	500
17	165	919	500
18	165F	852	450
19	175	918	500
20	185F	1020	600
21	195	1133	600
22	210	943	550

■ Replacement of Rod Pin

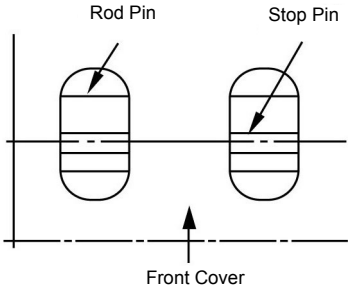
1）If Rod Pin is excessively deformed, it will be difficult to replace Tool. Therefore, after operating the breaker every 100 to 150 hours, change the face of Rod Pin which comes in contact with Tool. (Each face of Rod Pin can be used.

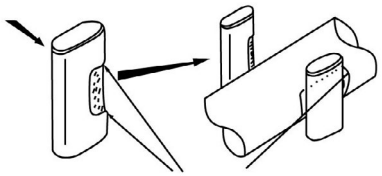
2）When repairing Rod Pin, check if there's any bend or deformation.

3）After grinding the worn area of Front Cover and Rod Pin, replace Tool.

When changing the face of Rod Pin, put the Rod Pin into the groove of Tool and lock it with Stop Pin.

4) The Rod Pin should be replaced after wearing.Please refer to the reject dimensions as per below.

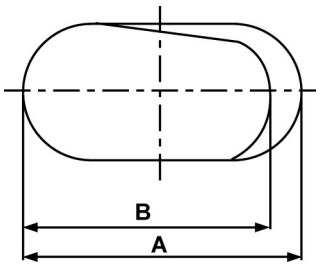


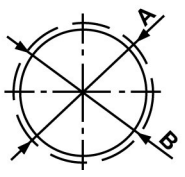


If there's any wear or bend, firstly grind it with grinder or the like.

Unit：mm

No.	Model	Original Width (A)	Reject Width (B)
1	40	28	26
2	45	28	26
3	53	28	26
4	68	38	36
5	75	38	36
6	80	38	36
7	85	54	51
8	100	60	57
9	125	76	73
10	135	80	77
11	135F	80	77
12	138	90	86
13	140(A)	89.5	85.5
14	145	89.5	89.5
15	150	89.5	85.5
16	155	96	92
17	165	96	92
18	165F	96	92
19	175	99	94
20	185F	119	104
21	195	129	123
22	210	139	132

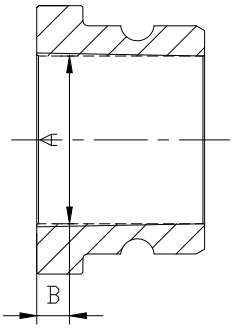




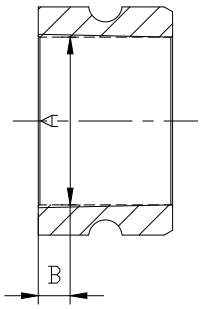
B is the minimum width after worn.

■ Replacement of Front Cover

1）If the clearance between Tool and Front Cover is too big, it could shorten the life of Piston and Tool, even cause the breakage of Tool and Piston.



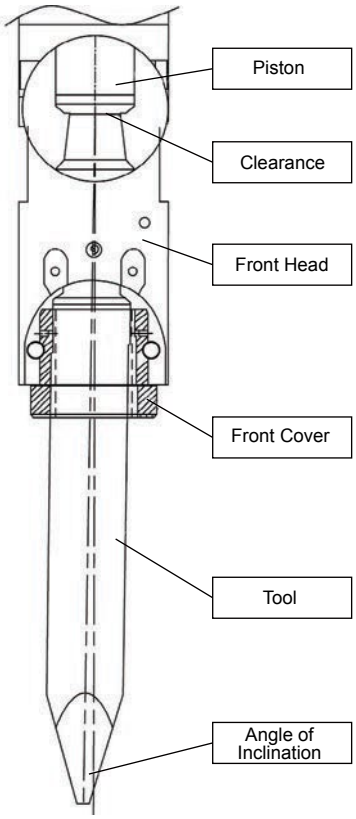
Front Cover(Side/Top)



Front Cover(Box)

Unit：mm

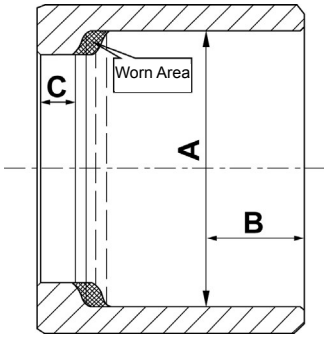
No.	Model	Measure at B	Original Dia. -A	Rejected Dia. -A
1	40	10	40	43
2	45	10	45	48
3	53	10	53	56
4	68	10	68	72
5	75	10	75	80
6	80	10	75/80	80/85
7	85	10	85	90
8	100	10	100	105
9	125	10	125	130
10	135	10	134.5	140.5
11	135F	10	135	140
12	138	10	138.5	143.5
13	140(A)	10	140	146
14	145	10	145	151
15	150	10	150	156
16	155	10	155	161
17	165	10	165	172
18	165F	10	165	172
19	175	10	175	182
20	185F	10	185	193
21	195	10	195	203
22	210	10	210	220



If the clearance between Tool and Front Cover is too big, it could cause following problems,
1. It could cause irregular impact between Piston and Tool, it will shorten the life of Piston.
2. It could cause angle of inclination, and it may lead to breakage of Tool.
The Front Cover should be replaced after wearing.Please refer to the reject dimensions as per below.

■ Replacement of Ring Bush

1.If the clearance between Tool and Ring Bush is too big, it could shorten the life of Piston and Tool, even cause the breakage of Tool and Piston.



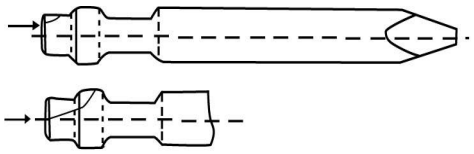
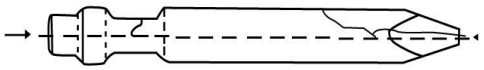
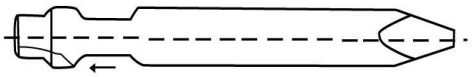
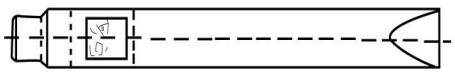
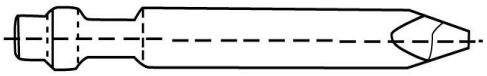
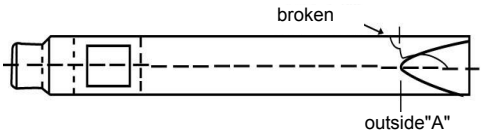
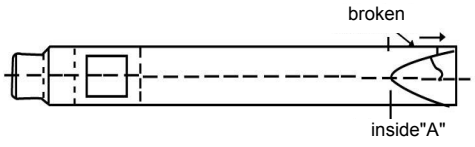
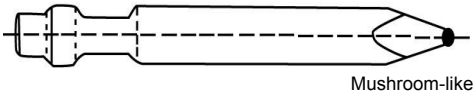
Once A or C meets the Rejected Dimension in below form, the Ring Bush must be replaced immediately.

Unit：mm

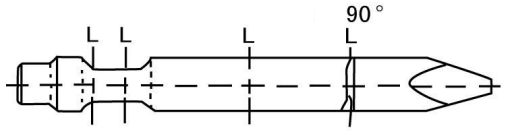
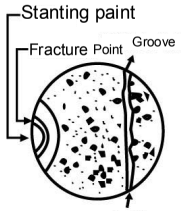
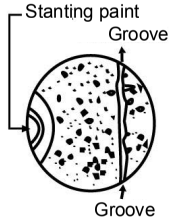
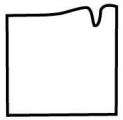
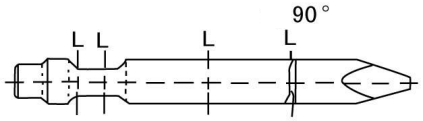
No.	Model	Measure at B	Original Dia. -A	Rejected Dia. -A	Original Height -C	Rejected Height -C
1	40	10	40	42	8.75	6
2	45	10	45	47	10.25	8
3	53	10	53	55	8.5	6
4	68	12	68	71	10.5	8
5	75	12	75	78	13	10.5
6	80	12	75/80	78/83	18	15
7	85	12	85	88	22	19
8	100	15	100	104	17	14
9	120	15	125	129	31	28
10	135	18	135.5	140	29	26
11	135F	18	135	140	25	22
12	138	15	138.5	143.5	40.5	36.5
13	140(A)	15	140	145	40	36
14	145	15	145.5	151	30	26
15	150	20	150	155	32.5	29.5
16	155	15	155	160	46	42
17	165	15	166	172	45	41
18	165F	15	166	172	29.8	25.8
19	175	20	176	182	53.5	49
20	185F	20	185.5	192	53	48
21	195	20	195.5	202	31	25
22	210	20	210.5	219	45	37

Warranty of Tool

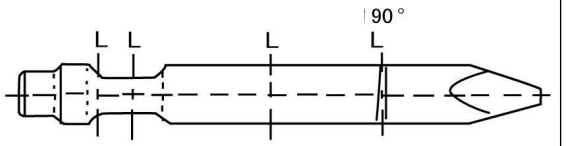
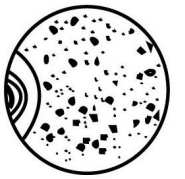
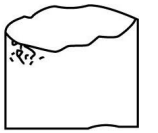
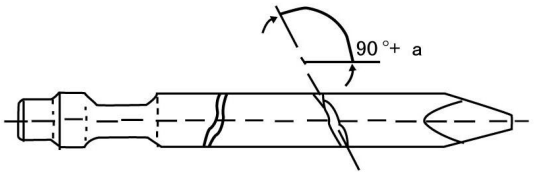
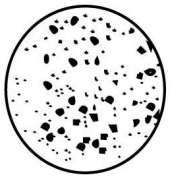
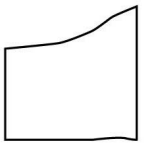
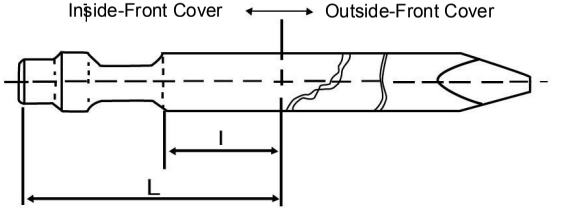
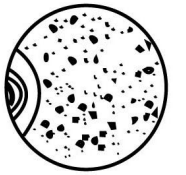
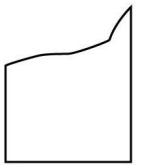
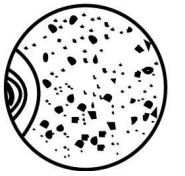
（1）Warranty Standard of Tool

NO.	Damage State	Warranty	Damage Reason & Contents
a		Free for compensation	● bad heat treatment: fracture from outside of tool centerline
b		Free for compensation	● bad material: fracture from tool centerline。
c		Chargeable (not compensable)	● damage and wear caused by blank firing
d		Chargeable (not compensable)	● inner parts wear off for continuous blank firing (eg. rod pin) ● wear occurrs when strike force reaches rod pin during blank firing
e		Chargeable (not compensable)	● wrong operating method: waging from side to side when plugged into object, leveraged operating or not vertical tool operating
f		Free for compensation	● bad material or heat treatment ● damage reach into line A
g		Chargeable (not compensable)	● bad choice of tool and operating method ● damage reach into line A
h		Chargeable (not compensable)	● wrong operating method ● heat produced from prolonged strike(more than one minute) of unbreakable ground makes tool material soft and tool mushroom-like

（2）Warranty Assurance Standard Based on Fracture Face

NO.	Damage State	Fracture Face of Tool		Warranty	Reason of Fracture
a				Chargeable (not compensable)	● wrong operating method: waging from side to side when plugged into object or leveraged operating method ● overbending of tool etc.
				Chargeable (not compensable)	● improper maintenance and operating method ● insufficient lubrication ● trace of deep scratch occurrs where fracture begins
				Chargeable (not compensable)	● wrong operating method: waging from side to side when plugged into object or leveraged operating methodconcave ● occurrs at the fracture part and round mark occurrs where fracture begins
b				Free for compensation	● bad material ● fracture occurrs from the centre of tool
				Free for compensation	● bad material ● bad heat treatment

（3）Warranty Standard Based on Fracture Face

NO.	Damage State	Fracture Face of Tool		Warranty	Reason of Fracture
c				Chargeable (not compensable)	● tool wags from side to side when plugged into object or leveraged operating method or foreign matter sinks in or insufficient oil injection ● defect or scratch from tool surface develops into inner fracture of tool
d				Chargeable (not compensable)	● improper operating method: waging from side to side when plugged into object or leveraged operating ● fracture occurrs by way of tilting from centerline(90+a)
e				Chargeable (not compensable)	● improper operating method: waging from side to side when plugged into object or leveraged operating
				Free for compensation	● bad material and bad heat treatment
				Chargeable (not compensable)	● improper maintenance and operating ● method ● surface defect develops into deep of tool fracture caused by serious surface defect of tool (eg. Scratch)

Gas Charging & Adjustment

■ Adjustment of the pressure of nitrogen chamber

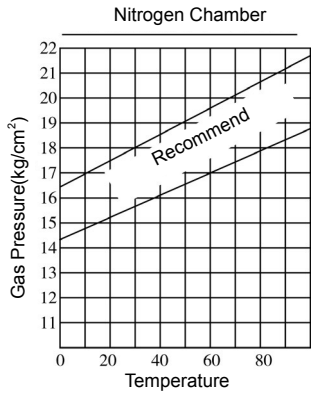
1) Under the nomal tempeture,the nomal pressure range of the nitrogen is as showing in form .
2) The proper pressure of the breaker is already been adjusted when delivered from the factory, but still have to check the pressure before use.
3) The gas pressure should be checked once every two weeks.

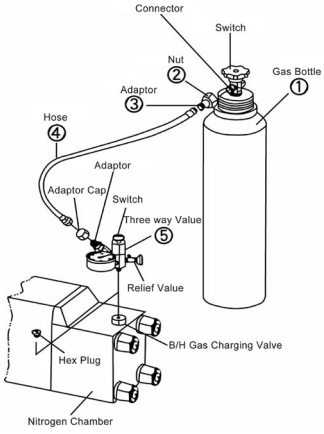
■ The method of checking the gas pressure

1) Take off the plug counter clock wise,Tighten the three-way valve clockwise,Tighten the nitrogen gauge nut,close the relief valve .
2) Press down the switch on the three-way valve with your hand and read the nitrogen meter.
3) If the nitrogen is excessice,release the nitrogen from the overflow valve of the three-way valve to make the nitrogen be standard.

■ The method of charging the gas nitrogen

1) Repeat the method of checking the gas paressure 1 and 2.
2) If the nitrogen is less, connect the high pressure hose of nitrogen to the high pressure hose interface of the nitrogen meter and the interface of the nitrogen bottle.
3) Press the switch of the three-way valve down, turn on the switch of the nitrogen bottle slowly counterclockwise until the pressure of the nitrogen gauge to be normal.
4) Three times of charging and three times of release to ensure the purity of nitrogen.





Warning

- Do not remove the through bolts before release Nitrogen of back head.
- Only use the pure nitrogen, other air could cause the breaker work abnomally.
- The pressure of the gas nitrogen refer to the instruction manual.
- The gas pressure should be checked once every two weeks,change it if necessary.

Gas Charging & Adjustment

■ Set the pressure range of Nitrogen chamber accumulator Relief valve

Form 4：

Item	40	45	53	68	75	80
The pressure of the nitrogen chamber	16.5	16.5	16.5	16.5	16.5	16.5
The pressure of the accumulator						
The pressure of the relief valve	130~140	130~140	150~160	150~160	160~180	160~180
Item	85	100	120	135	135F	138
The pressure of the nitrogen chamber	16.5	16.5	16.5	6	10	17.5
The pressure of the accumulator				55~60	55~60	55~60
The pressure of the relief valve	160~180	180~200	180~200	220	220	220
Item	140	140A	145	150	155	165
The pressure of the nitrogen chamber	16.5	16.5	16.5	6	16.5	16.5
The pressure of the accumulator		55~60	55~60	55~60	55~60	55~60
The pressure of the relief valve	220	220	220	220	220	220
Item	165F	175	185F	195	210	
The pressure of the nitrogen chamber	16.5	16.5	16.5	16.5	16.5	
The pressure of the accumulator	55~60	55~60	55~60	55~60	55~60	
The pressure of the relief valve	240	250	260	260	270	

■ The adjustment of accumulator pressure

The normal range of accumulator pressure at the normal temperature is as the form .

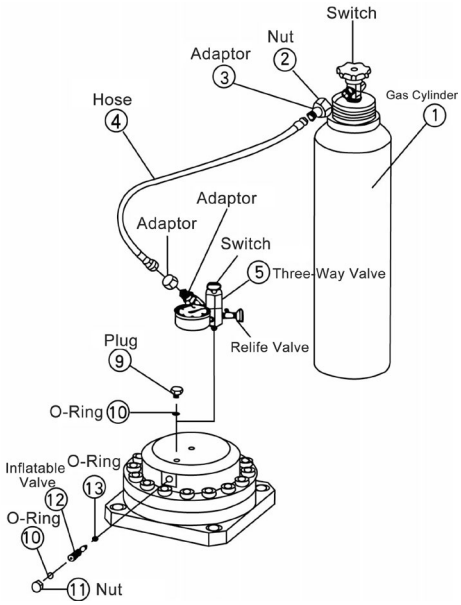
Warning

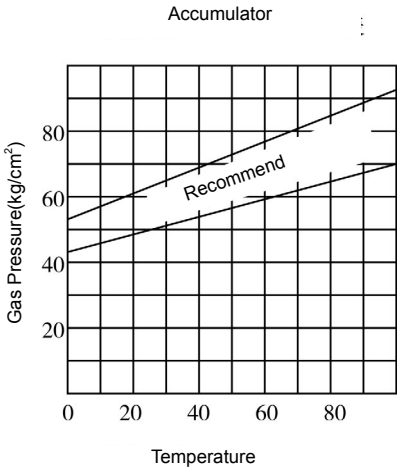
- Do not remove the accumulator cover before the accumulator is deflated.
- Only use the pure nitrogen, other air could cause the breaker work abnomally.
- The charging pressure:55-60bar.
- The gas pressure should be checked once a week, contact the dealer if necessary.

Gas Charging & Adjustment

■ The method of checking the gas pressure(As showing of the drawing)

1) Turn the plug (9) on the accumulator counterclockwise,tighten the nitrogen meter clockwise,tighten the nut of nitrogen meter, close the relief valve.
2) Turn the accumulator nut (11)counterclockwise,Turn the inflatable valve counterclockwise until the pointer of the nitrogen meter move, check the nitrogen meter.
3) If the nitogren is excessiue, release the nitrogen from the relife value of the nitrogen meter to make the nitrogen be standard.
4) Turn the inflatable valve clockwise and tighten the nut(11).





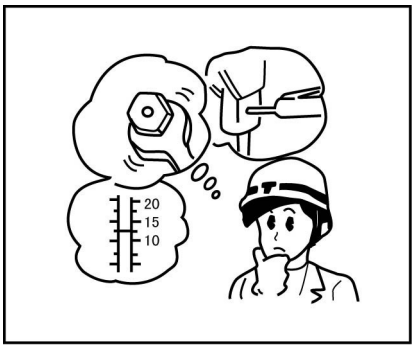
■ The method of charging the gas nitrogen(as showing of the drawing)

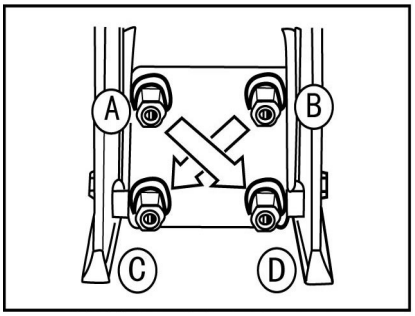
1) Repeat the method of checking the gas pressure 1 and 2.
2) If nitrogen is less, connect the hose of nitrogen to the connector of the nitrogen meter and the gas cylinder(As showing of the drawing)
3) Turn on the switch of the gas cylinder slowly counterclockwise until the pressure of the nitrogen gauge to be normal.
4) Turn off the inflatable valve clockwise,tighten the nut.


Warning

When you replace two or more through bolts or disassemble the breaker, you should release the nitrogen of the nitrogen chamber.

Maintenance





(A-D/B-C)

■ Inspection Items

Checking	Checking before Operation	Regular Checking	Remarks
Whether the nuts are loose	0	0	
Whether the hydraulic oil is dirty, and enough	0	0	
Whether the oil is leaked	0	0	
Whether the hydraulic hoses are damaged	0	0	
Injecting lubricating grease	0	0	
Whether the chisel and rod pins are damaged	0		
The pressure of Nitrogen chamber	once every two weeks	0	Form 4
The pressure of Accumulator	once a month	0	

■ All bolts and Nuts

Before working, please check whether the nuts are loose. If the nuts are loose, it will influence the normal work of bolts, so that it will cause abnormal operation of hydraulic breaker. Besides, please tighten them according to specified torque regularly.

From 5:

● Socket Bolt-Valve Cover (Unit:N.M)						
Spec.	M20XP2.5	M24XP2.0	M24XP3.0	M30XP3.5	M20XP2.5	M30XP3.5
Torque	440	780	780	1400	440	1565
Torque-initial force	330	585	585	1050	330	1175

● Socket Bolt-Flange Adapter (Unit:N.M)				
Spec.	M14XP1.5	M20XP2.5	M24XP3.0	
Torque	150	440	780	
Torque-initial force	110	330	585	

● Socket Bolt-Acc.Body (Unit:N.M)							
Spec.	M20XP2.5	M24XP3.0	M30XP3.5	M30XP2.0	M33XP2.0	M36XP4.0	M48XP5.0
Torque	440	780	1565	1565	1700	1960	2500
Torque-initial force	330	585	1175	1175	1275	1470	1875

● Socket Bolt-Acc.Cover (Unit:N.M)						
Spec.	M12XP2.0	M14XP1.5	M18XP1.5	M20XP2.5	M24XP3.0	M27XP3.0
Torque	100	150	330	440	780	1100
Torque-initial force	75	110	250	330	585	825

● Valve Adjuster Nut (Unit:N.M)						
Spec.	M16XP1.5	M18XP1.5	M22XP1.5	M24XP2.0	M27XP1.5	M33XP2.0
Torque	270	350	700	800	600	600

● Screwed Adapter (Unit:N.M)						
Spec.	PF1/2	PF3/4	PF 1	PF 1 1/4	PF 1 1/2	
Torque	100	160	250	350	400	

From 5：

● Through Bolt (Unit:N.M)					
Model	40	45	53	68	75
Spec.	M20XP1.5	M22XP1.5	M24XP2.0	M27XP2.0	M30XP2.0
Torque	400	500	700	900	1100
Torque-initial force	300	375	525	675	825
Model	80	85	100	120	135/135F
Spec.	M33XP2.0	RD32XP3.175	RD39XP3.175	RD42XP3.175	RD42XP4.233
Torque	200	1300	1700	2500	2700
Torque-initial force	900	975	1275	1875	2025
Model	140(A)/145	150	155	165	165F
Spec.	RD52XP3.175	RD48XP4.233	RD56XP3.175	RD56XP3.175	RD58XP3.175
Torque	3000	3000	3200	3200	3300
Torque-initial force	2250	2250	2400	2400	2475
Model	175/175F	JSB165	185F/JSB175	195/JSB185	210
Spec.	RD58XP3.175	RD56XP3.175	RD62XP3.175	RD65XP3.175	RD70XP3.175
Torque	3300	3200	3400	3400	3700
Torque-initial force	2475	2400	2550	2550	2775

● Side Bolt (Unit:N.M) 68/75/80						
Model	40		45	53	68/75/80	85
Spec.	M16XP1.5		M18XP2.5	M20XP2.5	M27XP2.0	M30XP2.0
Torque	500		600	700	1000	1300
Torque-initial force	375		450	525	750	975
Model	100		120	135/135F/140(A)/145/150	155/165/165F	
Spec.	M36XP3.0		RD42XP3.175	RD48XP3.175	RD56XP3.175	
Torque	1800		2200	3000	3500	
Torque-initial force	1350		1650	2250	2625	
Model	175/175F/185F		195		210	
	Back Head	Front Head	Back Head	Front Head	Back Head	Front Head
Spec.	RD60XP3.175	RD60XP3.175	RD65XP3.175	RD65XP3.175	RD70XP3.175	RD70XP3.175
Torque	3200	3500	3200	3500	3500	3800
Torque-initial force	2400	2625	2400	2625	2625	2850

● Socket Plug-Cylinder (Unit:N.M)						
Spec.	PF 1/4	PF 3/8	PF 1/2	PF 3/4	PF 1	PF 1 1/4
Torque	45	95	200	320	600	1000
Spec.	PF1 1/2	PF1 3/4	M27XP2.0	M36XP3.0	M39XP3.0	
Torque	1200	1300	320	800	1000	
	Air Check Valve		Grease Nipple	B/H Charging Valve	Acc. Hex Plug	Acc. Valve Cover
Spec.	PF 1/2	PF 7/8	PT 1/4	PF 1/2	M10XP1.0	M12XP1.25
Torque	200	600	45	350	65	105

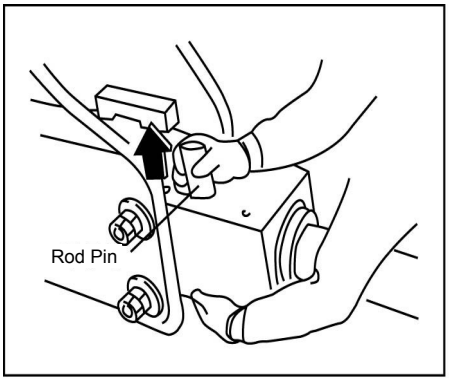
Maintenance

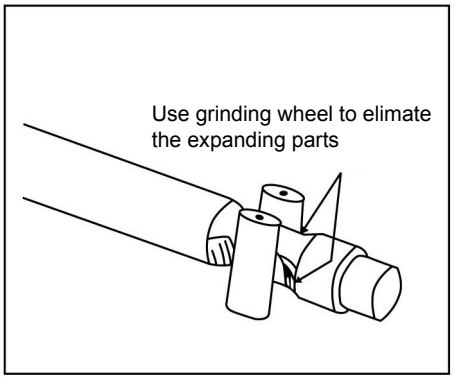
■ Checking wether the rod pins are damaged

If the rod pins are damaged, the chips will be stuck in the surface of piston or cylinder when the hydraulic breaker is working. Please make sure to check it before operation.

■ Chisel and Rod Pins

If the pressure is not enough, or the working objects are fragile when the breaker is working, the chisel and rod pins will be deformed and expanded. During inspection, please use grinding wheel to polish in order to eliminate the expanding parts, or use the rod pin in return.

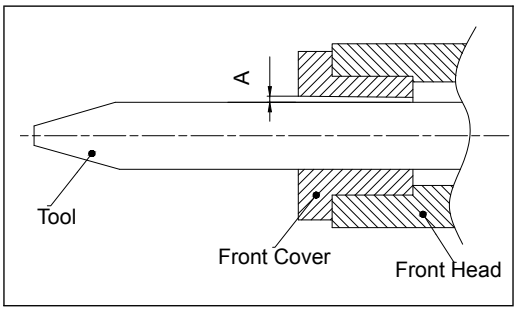




■ Chisel and Front Cover

If the gap between chisel and front cover is oversized, it will cause eccentric wear of piston and chisel, and lead to their unsteady contact, furtherly cause the damage of piston and chisel, and the chisel turn fragile. When the gap is oversized, the front cover must be changed. Detailed standards of replacement are as follows:

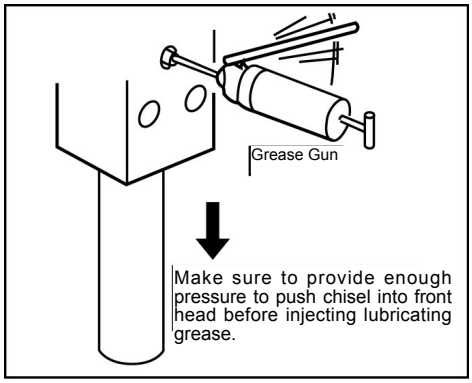
Model	Gap A(mm)
40-53	≥5
68- 85	≥6
100-210 ≥8	



Maintenance

■ Injecting Lubricating Grease

Before working or every two hours: Push chisel into front head, inject lubricating grease from the grease nipple. Refered injection is 5-20 times. The bigger model, the more injection.




Warning

Be sure to make hydraulic breaker standing, and push chisel into front head before injecting lubricating grease to prevent the grease to enter the piston impact chamber.

■ Hydraulic oil

Check the hydraulic oil capacity in oil tank timely, Please replenish the oil in time if it is insufficient.
Please keep the hydraulic oil clean.
If the hydraulic oil is polluted, it will cause the impeded working of valve and do harm to the breaker.

Hydraulic oil	
Winter	Summer
46#	68#
Please use well-known brand oil	

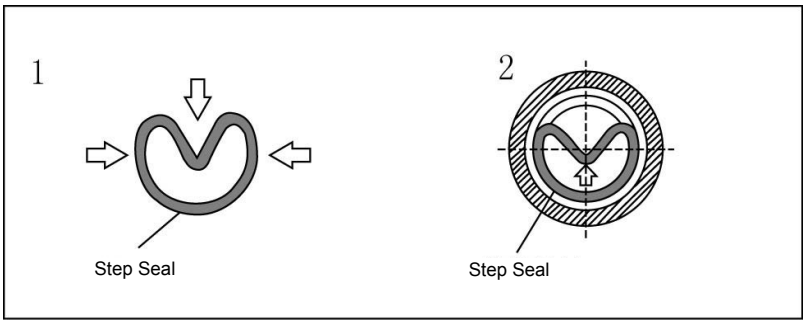

Warning

Please use the same hydraulic oil produced by one company, if different oil is mixed, chemical reaction may be set off.

Maintenance

■ Oil leakage

Check the main body of breaker, accumulator and pipe kits of hydraulic oil to find whether there's any leakage or not.
It is normal that oil leak slightly at the connecting parts between front head and chisel, it lubricates chisel.
If the breaker leak oil, please replace the O-ring and/or oil seal on the leaking parts.
Please replace oil seal(s) by following procedures below:
1.Apply lubricating oil on seal retainer, oil seal and other needed parts.
2.Put O-ring in the groove inside seal retainer.
3.Fold oil seal by hand (as shown in the figure 1), please note not to fold too much to break the oil seal.
4.Put the oil seal in the groove inside the seal retainer, push the folded part from inside to make it recover (as shown in the figure 2).



Warning

- If oil seals is broken, please check carefully whether there are scratches on surface of cylinder and/or piston.
- Check carefully to make sure no chips of broken oil seal remain inside of cylinder.

Trouble-Shooting

■ Please check again before the breaker is sent to be serviced.

⚠ Warning: Nitrogen gas must be released before disassembling the breaker.

Symptom	Cause	Required action
Low impact power	1.Low engine speed. 2.Low nitrogen gas pressure of back head. 3.Low nitrogen gas pressure of accumulator. 4.Wrong pressure setting or adjustment of relief valve. 5.Failure of chisel.	1.Re-adjust engine speed controller. 2.Check nitrogen gas pressure, re-fill gas if it is released. 3.Check nitrogen gas pressure, re-fill gas if it is released. 4.Re-set or re-adjust pressure of relief valve. 5.Smoothen the scored parts of chisel, front cover and ring bush by using abrasive paper or grinder.
No blow out	1.Wrong pressure adjustment of relief valve. 2.Excessive nitrogen gas pressure of back head. 3.Hydraulic oil in back head infection. 4.Scoring of piston, cylinder or valves. 5.Faulty hydraulic hose connection. 6.Stop valve(s) closed. 7.Lack of hydraulic oil.	1.Re-adjust valve adjuster. (see attached form 4) 2.Re-adjust nitrogen gas pressure in back head. (see attached form 4) 3. Replace Gas Seal. 4.In case of a slight scratch, smoothen the scored surface by using abrasive paper or grinder. Replace the damaged part(s) if needed.5.Reconnect hydraulic hose. 6.Open stop valve(s). 7.Fill hydraulic oil.
Irregular impact	1.Excessive nitrogen gas pressure of back head. 2.Low hydraulic oil pressure. 3.Scoring of chisel and/or front cover. 4.Scoring of piston, cylinder or valve(s). 5.Excessive pressure of hydraulic oil returning hose. 6.Excessive temperature of hydraulic oil. 7.Low pressure of relief valve. 8.Lack of hydraulic oil.	1.Release gas till standard pressure. 2.Re-adjust pressure of relief valve. 3. In case of a slight scratch, smoothen the scored parts of chisel and front cover by using abrasive paper or grinder. Replace the damaged part(s) if needed. 4. In case of a slight scratch, smoothen the scored surface by using abrasive paper or grinder. Replace the damaged part(s) if needed. 5.Check filter element and cooler, clean or replace the unit. 6.Clean or replace cooler, or replace hydraulic oil in higher viscosity. 7.Re-adjust pressure of relief valve till standard pressure. 8.Fill hydraulic oil.
Gas leakage (rapidly leaking is abnormal) 1.Gas leaking from gas charging valve. 2.Gas leaking from adjuster valve. 3.Gas leaking from the connecting surface between cylinder and back head. 4.Gas leaking from gas seal.	1.O-ring for charging valve is damaged. 2.O-ring for adjuster valve is damaged. 3.Looseness of through bolt. 4.Gas seal is damaged. (After plucking out oil returning hose, if bubbles can be found in hydraulic oil, it means the gas seal is damaged)	1.Replace. 2.Replace. 3.Tighten. 4.Replace.

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