Post Driver

PD-68-200

Operator's Manual

Release 01/26

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TO THE DEALER:

Assembly and proper installation of this product is the responsibility of the Tar River dealer. Read manual instructions and safety rules. Make sure all items on the Dealer's Pre-Delivery and Delivery Check Lists in the Owner's/Operator's Manual are completed before releasing equipment to the owner.

TO THE OWNER:

Read this manual before operating your Tar River equipment. The information presented will prepare you to do a better and safer job. Keep this manual handy for ready reference. Require all operators to read this manual carefully and become acquainted with all the adjustment and operating procedures before attempting to operate. Replacement manuals can be obtained from your selling dealer. The equipment you have purchased has been carefully engineered and manufactured to provide dependable and satisfactory use. Like all mechanical products, it will require cleaning and upkeep. Lubricate the unit as specified. Observe all safety information in this manual and safety decals on the equipment. For service, your authorized Tar River dealer has trained mechanics, genuine Tar River service parts, and the necessary tools and equipment to handle all your needs. Use only genuine Tar River service parts. Substitute parts will void the warranty and may not meet standards required for safe and satisfactory operation.

Record your implement model and serial number in the space provide below. Your dealer will need this information to give you prompt, efficient service.

Model Number: _____

Serial Number: _____

Date Purchased: _____

TO THE DEALER: Part 1 of 2

Assembly and proper installation of this product is the responsibility of the Belco Resources Dealer. Read manual instructions and safety rules. Make sure all items on the Dealer's Pre-Delivery List and Owners Check List in the Owner's/Operator's Manual are completed before releasing equipment to the owner.

NOTE: The machine must by inspected thoroughly by the dealer prior to delivery of machine to owner. Place a check mark in the box beside each item checked. Contact Belco Recourses Equipment of any damages, issues or shortages to the machine.

Pre-Delivery Checklist - Dealer

- ☐ **Gearbox oil level**
- ☐ **Check all fluids, hydraulic, gear oil, etc.**
- ☐ **Grease fittings properly lubricated**
- ☐ **Guards, shields, attachments securely fastened**
- ☐ **All hardware tightened**
- ☐ **Condition and tension of V-belts (if applicable)**
- ☐ **Blades properly installed, blade hardware tightened to proper torque specifications**
- ☐ **PTO attached to the machine (if applicable)**
- ☐ **All decals are clean, legible and in proper location**
- ☐ **Operator's Manual on machine**

Model #: _____ **Serial #:** _____

Inspected by (Initials): _____ **Date:** _____

TO THE DEALER: Part 2 of 2

Dealer is to review the following items to the owner. Place a check mark in the box beside each item reviewed.

Checklist - Owner

- ☐ **Correct attachment of machine to tractor**
- ☐ **Safe operation of the machine**
- ☐ **Importance of regular lubrication, maintenance and inspection**
- ☐ **Troubleshooting**
- ☐ **Replacing broken or worn parts (importance of using only OEM parts)**
- ☐ **Servicing the machine**
- ☐ **Storage**
- ☐ **Warranty**
- ☐ **Encourage owner to read and understand the Operator's Manual before operating the machine**
- ☐ **Encourage owner to fill out the "Warranty Registration", online warranty@br-equipment.com**

Purchase Date:	_____	**Delivery Date:**	_____
Model #:	_____	**Serial #:**	_____
Dealer Signature	_____	**Date:**	_____
Customer Signature	_____	**Date:**	_____

TO THE OWNER:

Read this manual before operating your Belco Resources equipment. The information presented will prepare you to do a better and safer job. Keep this manual handy for ready reference. Require all operators to read this manual carefully and become acquainted with all the adjustment and operating procedures before attempting to operate. Replacement manuals can be obtained from your selling dealer. The equipment you have purchased has been carefully engineered and manufactured to provide dependable and satisfactory use. Like all mechanical products, it will require cleaning and upkeep. Lubricate the machine as specified. Observe all safety information in this manual and safety decals on the equipment. For service, your authorized Belco Resources dealer has trained mechanics, genuine Belco Resources service parts, and the necessary tools and equipment to handle all your needs. Use only genuine Belco Resources service parts. Substitute parts will void the warranty and may not meet standards required for safe and satisfactory operation.

Table of Contents

Introduction …….. 7

Technical Specifications …….. 7

Safety …… 8-9

Standard Precautions……. 10

Construction and Main Components.…… 11

Post Driver Tools ……. 12

Greasing……..…….. 13

General View of Breaker Installed.…….. 14

Operation……...…… 15-16

Repair & Inspection...……...…… 17

Daily Post Driver Inspection…… 18

Regular Post Driver Inspection & Maintenance…..…….. 19

Inspection & Charging…..……. 20-21

Trouble Shooting Guide…...……. 22-24

Torque Specifications …….. 25

Parts Breakdown …….. 27-31

Warranty ……... 32

Technical Specifications

Thank you for purchasing your Tar River “Machine”. Tar River Manufacturing Post Drivers are designed to efficiently drive posts and break concrete on your skid steer. The vibratory action makes quick work driving posts into the ground.

The action of the “jackhammer” drive allows you to drive posts with minimal post splitting common on typical drivers. The cup design of the post pad keeps the post positioned and allows it to be pulled or pushed straight if it begins to angle off course while being driven.

Technical Specifications

Model:	PD68-200
Ft. lbs. Energy	750 lbs.
GPM	10.5-19
Post Pad Size	8”
Mount	Universal Skid Steer
Weight	1,200 lbs.

Safety Precautions

Safety Precautions

1) This manual contains safety, operation, and routine maintenance instructions.
2) Post driver hammer Operator and maintenance personnel must always comply with the safety precautions given in this manual and on the decal and tags attached to the Post Driver and the hose.
3) These safety precautions are given for your safety. Review them carefully before operating the Post Driver and performing general maintenance or repairs.
4) Supervising personnel or the owner operator precautions relating to the specific work area and local safety regulations. Place the added precautions in the space provided under local safety regulations.

Please read the following warning.

General Safety Precautions

1) The Post Driver will provide safe and dependable performance of operation in accordance with the instructions given in this manual. Read and understand this manual and any decals and tags attached to the Post driver before operation. Failure to do so could result in personal injury, death or equipment damage.
a) Operate the Post Driver in accordance with all laws and regulations which affect you, your equipment and the work site.
b) Do not operate the Post Driver unless you have read the carrier equipment manual and thoroughly understand all safety, operation and maintenance instructions.
c) Ensure that all maintenance procedures recommended in this manual are completed before using the equipment.

Safety Precautions

d) The operator must not operate the Post driver hammer or the tractor/skid loader loader if any people are within the area where they may be injured by flying debris or movement of the equipment.

e) Know the limits of your equipment.

f) Establish a training program for all operators to ensure safe operation.

g) Do not operate the Post Driver unless thoroughly trained or under the supervision of an instructor.

h) Become familiar with the controls before operating the tractor/skid loader and the Post Driver.

i) While learning to operator the Post Driver and tractor/skid loader, do so at a slow pace. If necessary, set the tractor/skid loader mode selector to the slow position.

j) Make sure all controls (levers and pedals) are in the neutral position before starting the tractor/skid loader.

k) Before leaving the tractor/skid loader, always lower the boom and ensure the carrier is stable. Never leave the machine with the engine running. Always engage the parking brake.

l) Stop the engine before attempting to make any repairs, adjustments or servicing to either the tractor/ skid loader or the Post Driver.

m) Do not operate the Post Driver at oil temperatures above 175˚ F/80˚C. Operation at higher temperatures can damage to the internal components of the Post Driver and backhoe/excavator and will result in reduced Post Driver performance.

n) Do not operate a damaged, leaking, improperly adjusted, or incompletely assembled Post Driver.

o) Do not modify this Post Driver in any manner.

p) To avoid personal injury or equipment damage, all Post Driver repairs, maintenance and service must only be performed by authorized and properly trained personnel.

q) If you do not understand how to safely operate your Post Drive, contact an authorized dealer for assistance.

r) Keep this manual with the Post Driver.

s) Do not operate this equipment if you are taking medication which may affect your mental judgment or physical performance.

t) Do not operate the equipment if you are under the influence of drugs or alcohol.

u) Remove the Post Drive from the tractor/skid loader during transport.

Standard Specifications

Model	Unit		
Operating weight	kg	475	
Working Flow Rate	liter /min	40-70	
Oil Relief Pressure	kg/cm2	170	
Working Pressure	kg/cm2	1 10- 140	
Impact rate	bpm	500-900	
Chisel Diameter	mm	¢68-200	
Hose Diameter	inch	1/2	
Back head pressure	kg/cm2	16	

Construction & Main Components

Construction & Main Components

Inner Valve Type

- **Through bolt**
  Front head, cylinder and back head of Post Driver body are tightly fixed with four through bolts.

- **Back head**
  This contains the cushion chamber charged with nitrogen(N2) gas that compresses during upward strokes of the piston, and serves to provide maximum absorption of piston recoil, efficiency storing this energy for the next blow.

- **Valve**
  Cylinder control valve is built in the valve housing and controls piston reciprocation.

- **Cylinder**
  The cylinder is the heart of the Post Driver containing hydraulic circuit for piston reciprocation.

- **Piston**
  Kinetic energy of the piston is converted into hammering energy after hitting the tool. The hammering energy transmitted to the tool breaks rocks.

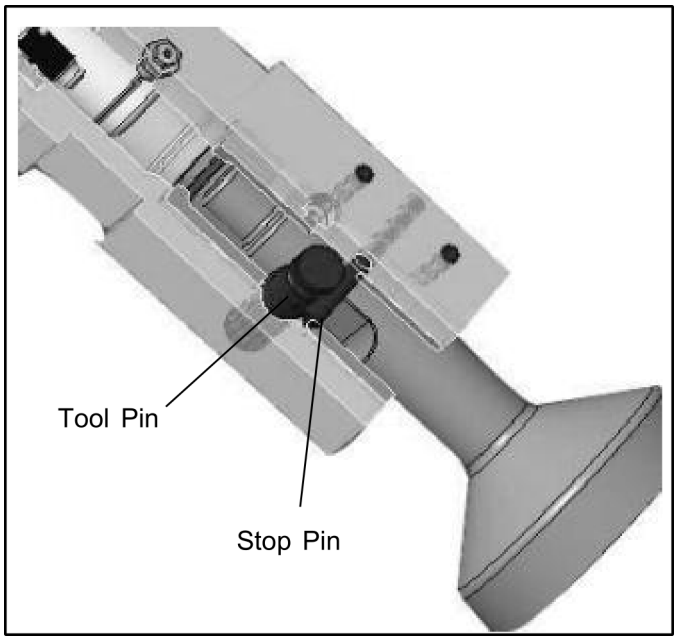
- **Front head**
  The front head supports the whole Post Driver. Upper bushing prevents shock from the tool.

- **Driver chisel/tool**
  This transfers piston impact power to the objects.

Post Driver Tools

Post Driver Tools
Tool Replacement

Remove the stop pin and the tool pin with a 330mm-long steel bar.
When reassembling, align the groove in the tool and the tool pin hole and insert the tool pins.



Reverse disassembly procedures to install a replacement tool.

- Before installing a new tool, check each part for wear, breakage, scores, etc.
- Remove burrs and swellings on each tool pin, apply a coat of grease to the movable areas of the tool pin and the tool and finally install the tool.
- Excessively deformed tool pins will make replacement of the tool difficult. The tool pins must be checked every 100 to 150 hours of operation.

Note: If the replacement tool is not a genuine part, we do not guarantee the performance of other parts of the Post driver hammer.

- Ensure that the tool shank is well lubricated before inserting it into the tool holder.
- Keep tools well-greased and sheltered from the weather when not in use.
  A rusty tool is more likely to suffer fatigue failure.
- The standard inner diameter of the bottom portion of the driver chisel is 7-7/8”.

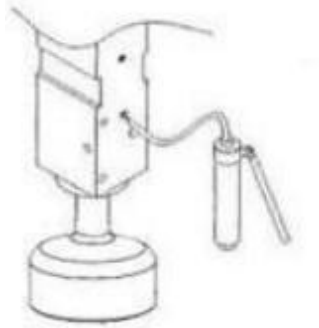
Greasing

Greasing

Manual Greasing System

⚠ WARNING

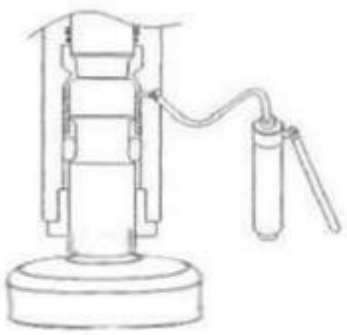
- Insufficient greasing may cause abnormal wear of front cover and tool, and tool breakage



Apply grease to grease nipple on front head every 3 hours.
Adapt grease interval and amounts to tool wear rates and working conditions.

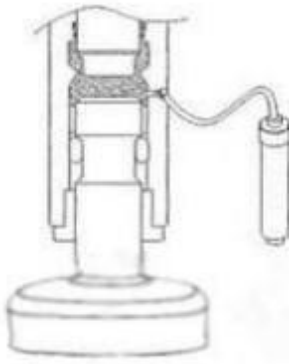
Notice

Tool shank must be well lubricated before installed in front head.
While greasing, hydraulic breaker must be upright against the tool. To ensure that grease will penetrate.



Recommended Lubricant Greases

Brand	Type
Esso	Beacon Q2
Shell	Retinax AM
Mobil 1	Mobil 1 Grease Special

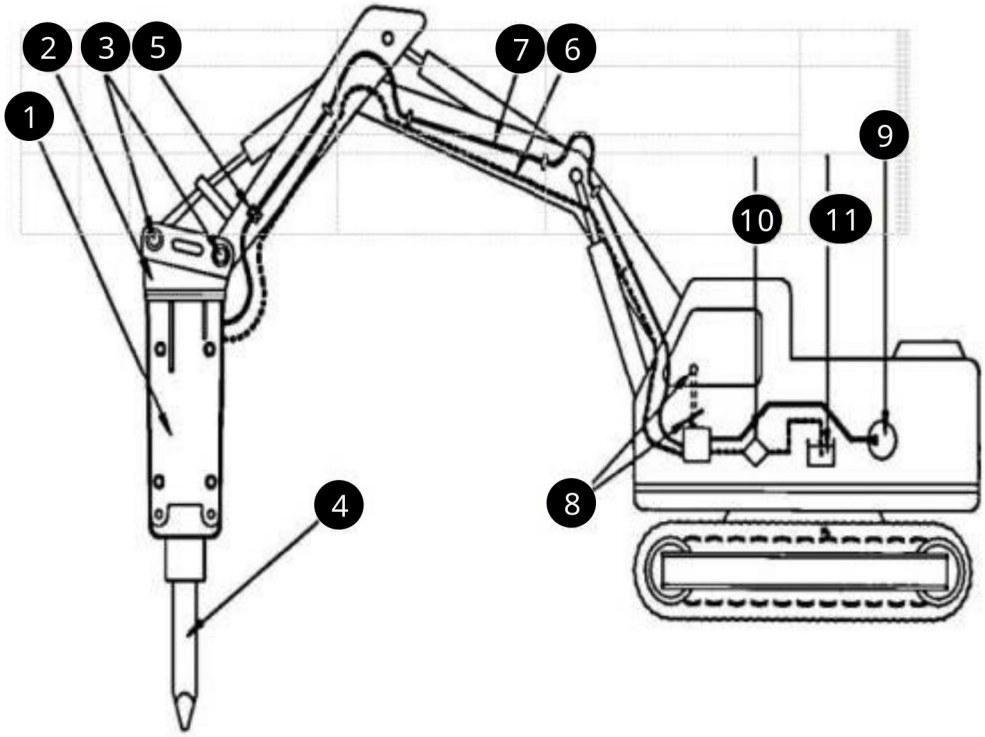


1) The Post driver hammer must be in a vertical position to grease, with enough down-pressure to push the tool up inside the housing.
2) Grease until clean grease oozes out around the tool and retainer pins.
3) Grease the Post driver hammer after every two hours of continuous use, or when the tool appears shiny where it rides inside the front head.

CAUTION!
Grease often. Failure to lubricate regularly reduces the life of the tool, bushings, and front head. If the tool becomes dry and shiny during operation, apply additional grease.

General View of Breaker Installed

General View of Breaker Installed To Base Machine



1	Hydraulic Breaker
2	Bracket
3	Bracket Pin
4	Tool
5	Stop Valve
6	Outlet Piping
7	Inlet Piping
8	Operation Lever
9	Hydraulic Pump
10	Oil Cooler
11	Hydraulic Tank

Operation

Operation
Operation Method

1. Pre-drill a pilot hole if the soil conditions are rocky, frozen, or too difficult to simply drive the post into the ground.

2. A second person is required to position the pile. This person will set the pile at the desired location and grasp the pile securely.

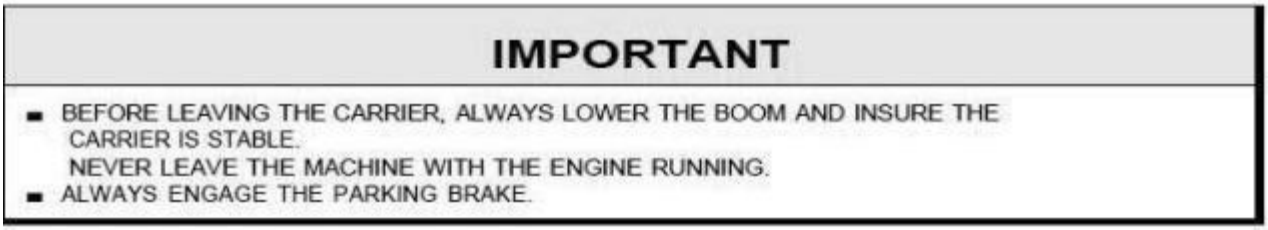
3. After the pile is in position, let the Post Driver onto the top of the pile, ensuring the pile is inside of the bottom portion of the Post Driver, and continue lowering the driver until the weight of the Post Driver is supported by the pile. After the pile is in position, the person who grasp the pile must leave vehicle as soon as possible. Never allow anyone stand under the attachments.

4. Move the vehicle slowly left, right, forward, or backward as needed until the pile is vertical to the ground.

5 . The loader arms should be lowered as the pile is driven into the ground.

6. Drive the pile to the desired depth. Raise the Driver and move on to the next pile.

Operation Precautions



1) Stop operation as soon as hoses vibrate excessively.

Excessive vibration of high and low pressure hoses of the breaker calls for an instant disassembly and repair.

Contact the nearest service station. For caution’s sake, check oil leakage at the bank-head.

2) Avoid all blank hammering.

Continuous blank hammering will not only damage front head and loosen and break bolts, but also adversely affect base machine.

Blank hammering occurs when proper position of the Tool is not applied to the Post Driver or the Tool is used as a lever. (Sound changes during blank hammering.)

Operation

3) Operate the Post driver hammer at proper engine speed.

Driving the pile at the specified engine speed.

Raising engine speed more than necessary does not strengthen the force but increase oil temperature to the detriment of the pistons and the valve.

4) Do not allow the Post driver hammer to fall to drive the pile.

Dropping the Post driver hammer onto the pile will apply excessive force to the Post driver hammer or the base machine, causing damage to many parts of the Post driver hammer and the base machine.

Let the driver press the pile to drive it into the ground.

5) Do not lift things with the Post driver hammer.

Lifting materials by hanging wire in the bracket or the Tool not only causes damage to the Post driver hammer but also is very dangerous when operating.

6) Warm up base machine engine Prior to Operation

Especially in winter, the base machine engine should be warmed up for five to ten minutes (about oil temperature 30C~40C/80°F~ 105°F) before Post driver hammer operation.

Follow the Instruction Book for the Base Machine for warming-up of the engine.

7) Do not touch the Tool during post driver hammer operation.

During Post driver hammer operation, the Post driver hammer parts can reach high temperatures.

8) When operating the Post driver hammer you must use the ear, eye and breathing protection.

9) Greasing danger

With the Post driver hammer mounted on the machine, apply down pressure on the Driver Tool.

And fill cavity with the recommended grease through the marked grease nipple.

10) Always wear the eye protection when removing the stop pin.

Remove the stop pin by doing it in and out with a punch and hammer.

Repair & Inspection

Periodic Maintenance (Every 100 hours)

1) Remove the tool and all grease from the bushing

Do not use a pressure washer, steam or solvents as they damage the seals.

Chuck for chips or cracks inside the housing and on the bushing surfaces.

Cracks and chips could indicate that :

a) Lubrication so insufficient

b) Incorrect grease used

c) Blank hammering and side loading is occurring and hammer is being operated improperly.

2) Check wear on Tool Pin

Examine the shoulders and side surface.

If they are worn or deformed, rotate or replace with OEM parts as required.

3) Check wear on chisel holder bushing

Replace tool, bushing or both where the combined wear exceeds 5mm.

Some bushings are grooved to provide even grease distribution.

Replace the bushings when the grooves are worn through.

Excess bushing wear causes tool misalignment to the piston, causing premature Post Driver failure.

4) Replace damaged or worn parts

Wipe all components clean, including the lubrication port.

Hand grease the tool shank and inside the chuck bushings before placing it back into

the hammer.

Daily Post Driver Inspection

Daily Post driver hammer inspection

Before starting operation, be sure to inspect the Post Driver, referring to the following table.

Inspection Item	Inspection Point	Remedy
Loose, missing and or damaged hard-ware.	Through bolts. Bracket mounting bolts.	Check for tightness. Tighten hardware according to proper torque specs. See "Torque Specifications", page 26.
Loose hose fittings, visible damage to hose and oil leakage. **See Hydraulics Warning Below.**	Hydraulic hose for the post driver. Oil Hoses.	Retighten securely.
Abnormal oil leakage.	Connections of back head and cylin-der. Clearance between front head and tool.	Consult with local service station for further inspection.
Abnormal wear and cracks on toll.	Tool	Deformed, burred and worn out tool should be repaired Excessively worn tool needs replacing.
Greasing	Grease at start of operation and every 2 or 3 hours using the head grease pump. Pumping:5-10 times.	Grease the front head.
Level and contamination of hydraulic oil.	Conditions of the hydraulic oil.	Contamination of hydraulic oil varies with operating conditions, but oil color tells the level of contamination criteria for judging contamination is specifically set by post driver.
Missing rubber plugs and snap rings.	Rubber Plugs and Snap Rings	A seriously damaged one must be replaced.

Hydraulics Warning!

Regular Post Driver Inspection/Maintenance

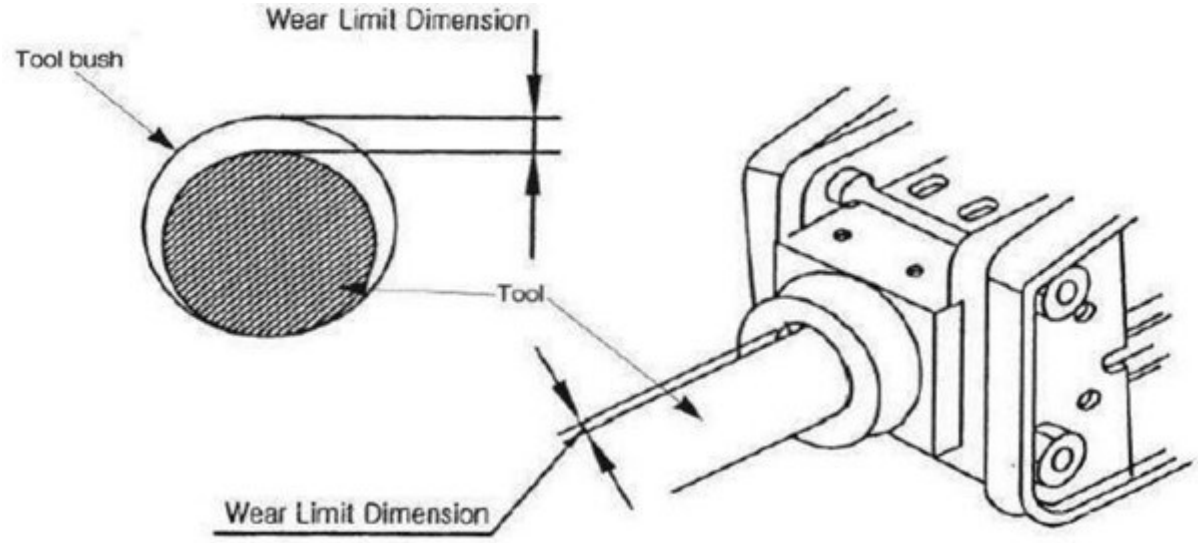
Regular Post Drive Hammer inspection and Maintenance

Regular inspection is essential for keeping the Post Driver operating in the best condition. Consult with an authorized Belco Dealer for regular inspection and maintenance.

Customers are recommended to contact an authorized Belco Dealer for inspection within six months after delivery.

Replacement of the Driver Tool

The Tool is deformed by burrs occurring after long-term use. When a Tool tip is worn out, the Tool is liable to slip. Then, sharpen the Tool tip. Grinding the Tool tip many times to sharpen the edge, but it will make the heat-treated hardened with a new Tool. If the gap between the Tool and the Tool bush becomes large, the piston will fail exactly to hit the upper part of the Tool, resulting in damage. When the gap is found to be over 9mm, replace the Tool bush together with the Tool.



Change Timing of the Tool Bush

Model	Wear Limit(mm)
TMG-PD700S	4

Inspection & Charging

Inspection and Charging

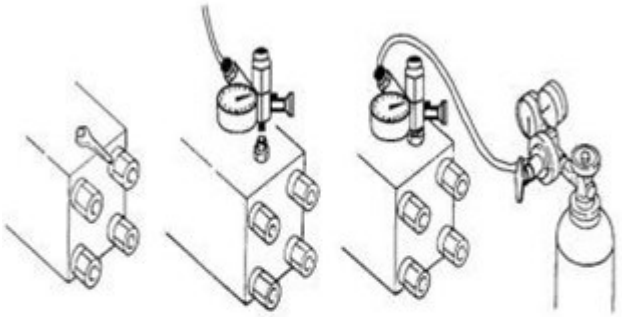
Nitrogen (N2) Gas at the Back-Head

⚠ WARNING

- CHARGING GAS PRESSURE CHANGES ACCORDING TO THE TOOL CONDITION. LAY DOWN THE BREAKER AND LET THE TOOL EXTEND FULLY.
- STAY CLEAR OF THE TOOL WHILE CHARGING THE BREAKER WITH GAS. THE TOOL MAY BE IMPACTED BY THE PISTON AND FORCED OUT ABRUPTLY.
- WHEN THE THROUGH BOLTS ARE CHANGED THE N_2 GAS MUST BE DISCHARGED WITH THE BACK HEAD, AS IT IS HIGHLY PRESSURIZED.
- USE NITROGEN GAS ONLY.
- SEE " CONVERSION TABLE FOR CHARGING N_2 GAS PRESSURE TO THE BACK HEAD "

Charging of N2 Gas into Back Head.

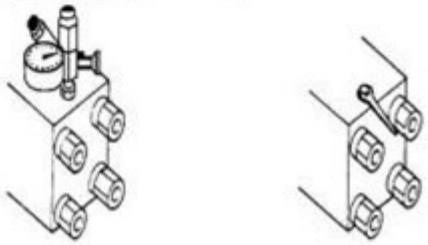
(1) Remove gas valve plug	(2) Insert 3-way valve with pressure gauge assembled (Note. 1)	(3) If gas is insufficient, adjust to specified valve as shown in the previous page (Note. 2)



• NOTE

1. Insert 3-way valve after its handle is fully turned counterclockwise.
2. Turn the 3-way valve handle clockwise slowly. Stop turning it when the needle of the gauge starts to move.
   If it is turned clockwise too tightly, the valve may easily be damaged.
   Pay special attention to ensure that the nitrogen gas is not charged excessively.

(4) Adjust the pressure slowly decreasing by using the pressure gauge if gas is sufficient	(5) Tighten gas valve plug (Do not cut O-ring)



Inspection & Charging

Inspection of N2-Gas in the Back-Head

1. Make sure that the cap and the valve of the gas charging kit are fully tightened. Screw the gas charging kit into the charging valve of the Back- Head after removing the plug.
2. At this time the handle must be short to prevent the gas from coming out.
3. Push the handle into the charging valve fully, so the gas pressure inside the Back-Head is indicated on the pressure gauge.
4. If the gas pressure is normal, unscrew the gas charging kit after discharging gas inside the gas charging kit. Reinsert the plug to the Post driver hammer.
5. If the gas pressure is higher or lower, charge it as described below.

Charging of N2-Gas into the Back-Head

1. Connect the charging hose to N2- gas cylinder after screwing the bomb adapter onto adapter nut and installing than to the N2- gas cylinder.
2. Connect the gas charging kit to the charging hose after unscrewing the cap on the gas charging kit.
3. Install the gas charging kit to the charging valve of the Back- Head. At this time the handle of the gas charging kit must be up position to prevent the gas from coming out.
4. Push the handle of the gas charging kit fully and turn the handle of the N2- gas cylinder counter-clockwise gradually to charge the Back- Head.
5. When the gas pressure exceeds 10 % higher than the specified pressure, close the N2 - gas cylinder by turning the handle clockwise.
6. Leave the handle of gas charging kit up. Generated pressure makes it return to original position naturally.
7. Remove the charging hose from the N2- gas cylinder and the gas charging kit, and the screw the cap onto the gas charging kit.
8. Push the handle of the gas charging kit fully, and the gas pressure inside the Back-Head is indicated on the pressure gauge. When the pressure is higher, discharge a small amount of gas from the Back- Head repeatedly opening and closing the valve and then gas pressure falls to the specified pressure.
9. When the gas pressure reaches the specified pressure, close the valve and release the handle.
10. Open the valve completely and discharge gas inside the gas charging kit. Remove the gas charging kit from the charging valve of the Back- Head and install the plug to the charging valve.

Trouble Shooting Guide

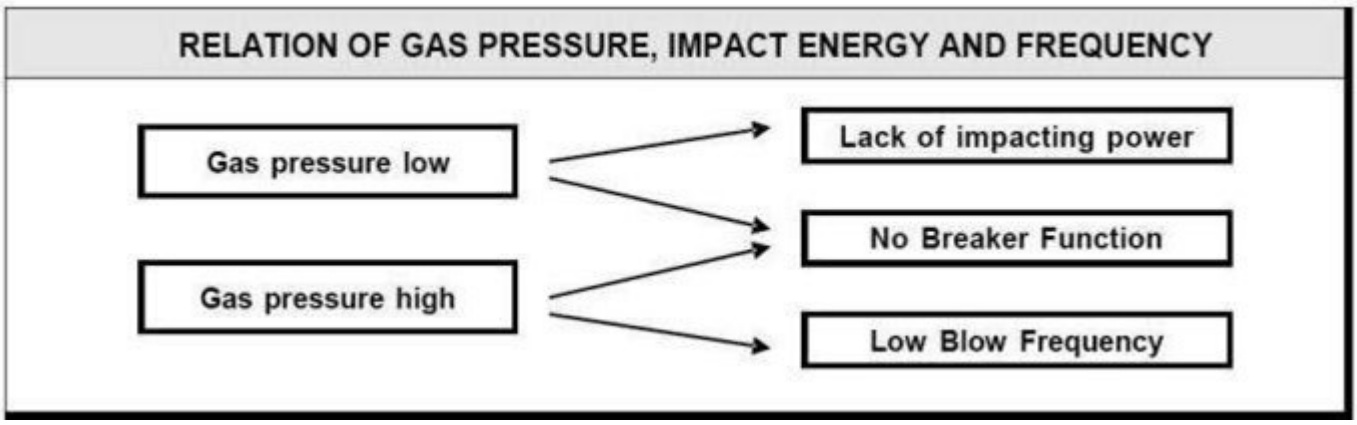
Trouble Shooting Guide

Problems during operation

If the Post driver hammer does not work or blow frequency and blow get worse, check following

Symptom	Cause	Required action
No blow out	1. Excessive back head gas pressure 2. Stop valve (s) closed 3. Lack of hydraulic oil 4. Wrong adjustment of pressure reducing valve 5. Faulty hydraulic hose connection 6. Oil back head infection	1. Re-adjust nitrogen gas pressure 2. Open Stop Valve 3. Fill hydraulic oil 4. Re-adjustment valve 5. Tighten or replace 6. Replace back head O-Ring, or cylinder bush stop seal
Low impact power	1. Line leakage or blockage 2. Clogged tank return line filter 3. Lack of hydraulic oil 4. Hydraulic oil contamination, or heat deterioration 5. Poor main pump performance 6. Back head nitrogen gas low 7. Low flow rate by mis-adjustment of flow control pressure reduction valve 8. Tool out of range for blowing position	1. Check lines 2. Wash fitter, or replace 3. Fill hydraulic oil 4. Replace hydraulic oil, rinse tand and release oil inside lines 5. Contact authorized service shop 6. Refill nitrogen gas 7. Re-adjust reduction valve 8. Rush down tool by excavator
Irregular impact	1. Low accumulator gas pressure, or bad accumulator. 2. Bad piston or valve sliding surface 3. Piston moves down/up to blank blow	1. Refill Nitrogen gas 2. Call an authorized service man. 3. Rush down tool by excavator operation
Bad tool movement	1. Tool diameter incorrect 2. Tool and pin jammed from tool retaine 3. Jammed lower bush and tool 4. Deformed tool and piston contact area	1. Replace tool with genuine replacement parts 2. Smoothen rough surface of tool 3. Smoothen rough surface of lower bush interior 4. Replace tool
Oil leakage between front head and tool	1. Cylinder seal worn	1. Replace seal
Gas leakage	1. O-ring damage in related parts	1. Replace relevant o-ring

Trouble Shooting Guide



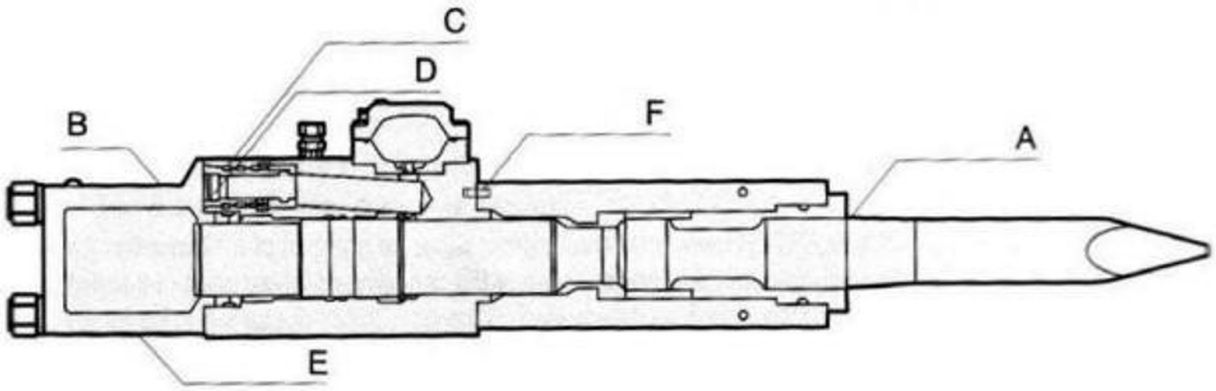
9.2 Gas Leakage

Trouble	Cause	Remedy
Gas leaking from the top of charging valve	• Defective O-ring in charging valve • Defective or damage to charging valve	• Replace O-ring • Repair of replace charging valve
Gas leakage between charging valve and back head	• Defective O-ring in charging valve • Defective valve loose in back head	• Replace O-ring • Re-tighten
Gas leakage between cylinder and back head	• Defective O-ring in back head	• Replace O-ring
Gas leakage from drain plug hole	• Defective gas seal in seal housing • Defective step seal in seal housing • Defective piston and seal housing	• Replace gas seal • Re-tighten • Repair or replace seal housing, NOTE: When repairing, replace packing.

Trouble Shooting Guide

Oil Leakage

Even if oil is leaking, there is no use replacing parts at all times.
Check the following points listed in chart below.
The user can check the marked points before calling dealer.



	Area of oil leakage	Condition	Causes & Remedies
A	Between the tool and lower bush	• A large amount of oil is leaking • Check if it is coming from oil or grease	Seals cam aged REPLACE
B	Surface of breaker	• Oil leaking from the hose & flange adapter portion	☞Loose breaker hoses and bolts RETIGHTEN
C	Valve housing bolts & cap bolts	• Oil leaking from reassembly of valve after overhaul	NORMAL : During assembly from lubrication oil & anti-rust oil applied
D	Between main valve & surface of cylinder	• Oil leaking from reassembly of valve after overhaul	NORMAL : - Clean oil - Check that seal is damaged - Loosen bolts - Replace withe new seal
E	Between cylinder and back head	• Oil leakage	☞Loose tie rod nuts RETIGHTEN
		• Oil leaks again	REPLACE Damaged o-ring
F	Between cylinder and front head	• Oil leaking	Loose plugs assembled on the surface of cylinder RETIGHTEN Replace damaged seals

Torque Specifications

Torque Specifications for Common Bolt Sizes

Inches

Bolt Head Identification

Bolt size (inches)	Thread pitch	Grade 2 N.m	Grade 2 ft-lb	Grade 5 N.m	Grade 5 ft-lb	Grade 8 N.m	Grade 8 ft-lb
1/4"	20	7	5	11	8	16	12
1/4"	28	8	6	13	10	19	14
5/16"	18	15	11	24	17	33	25
5/16"	24	17	13	26	19	37	27
3/8"	16	27	20	42	31	59	44
3/8"	24	31	23	47	35	67	49
7/16"	14	43	32	67	49	95	70
7/16"	20	48	36	75	55	106	78
1/2"	13	66	48	102	75	144	106
1/2"	20	75	55	115	85	163	120
9/16"	12	95	70	147	109	208	154
9/16"	18	106	79	164	121	232	171
5/8"	11	132	97	203	150	287	212
5/8"	18	149	110	230	170	325	240
3/4"	10	233	172	361	266	509	376
3/4"	16	261	192	403	297	569	420
7/8"	9	226	167	582	430	822	606
7/8"	14	249	184	642	473	906	668
1"	8	339	250	873	644	1232	909
1"	12	371	273	955	704	1348	995
1-1/8"	7	480	354	1077	794	1746	1288
1-1/8"	12	539	397	1208	891	1958	1445
1-1/4"	7	677	500	1519	1120	2463	1817
1-1/4"	12	750	553	1682	1241	2728	2012
1-3/8"	6	888	655	1992	1469	3230	2382
1-3/8"	12	1011	746	2268	1673	3677	2712
1-1/2"	6	1179	869	2643	1949	4286	3161
1-1/2"	12	1326	978	2974	2194	4823	3557

Metric

Bolt Head Identification

Bolt size (metric)	Thread pitch	Class 5.8 N.m	Class 5.8 ft-lb	Class 8.8 N.m	Class 8.8 ft-lb	Class 10.9 N.m	Class 10.9 ft-lb
M5	0.08	4	3	6	4	9	7
M6	1	6	4	10	7	15	11
M8	1.25	16	12	25	18	36	27
M8	1	17	13	26	19	38	28
M10	1.5	31	23	48	35	71	52
M10	1.25	33	24	51	38	75	55
M10	1	35	26	53	39	78	58
M12	1.75	54	40	84	62	123	91
M12	1.5	56	41	87	64	128	94
M12	1.25	59	44	90	66	133	98
M14	2	84	62	133	98	195	144
M14	1.5	94	69	142	105	209	154
M16	2	131	97	206	152	302	223
M16	1.5	141	104	218	161	320	236
M18	2.5	181	133	295	218	421	310
M18	2	196	145	311	229	443	327
M18	1.5	203	150	327	241	465	343
M20	2.5	256	189	415	306	592	437
M20	1.5	288	212	454	335	646	476
M22	2.5	344	254	567	418	807	595
M22	1.5	381	281	613	452	873	644
M24	3	444	327	714	526	1017	750
M24	2	488	360	769	567	1095	808
M27	3	656	484	1050	774	1496	1103
M27	2	719	530	1119	825	1594	1176
M30	3.5	906	668	1420	1047	2033	1499
M30	2	1000	738	1600	1180	2250	1659
M36	4	1534	1131	2482	1830	3535	2607

Notes:

This chart is an approximate estimate of torque values.

Always tighten hardware to these values unless a different torque value or tightening procedure is listed for a specific application.

Fasteners must always be replaced with the same grade as specified in the manual.

Always use the proper tool for tightening hardware: SAE for SAE hardware and Metric for Metric hardware.

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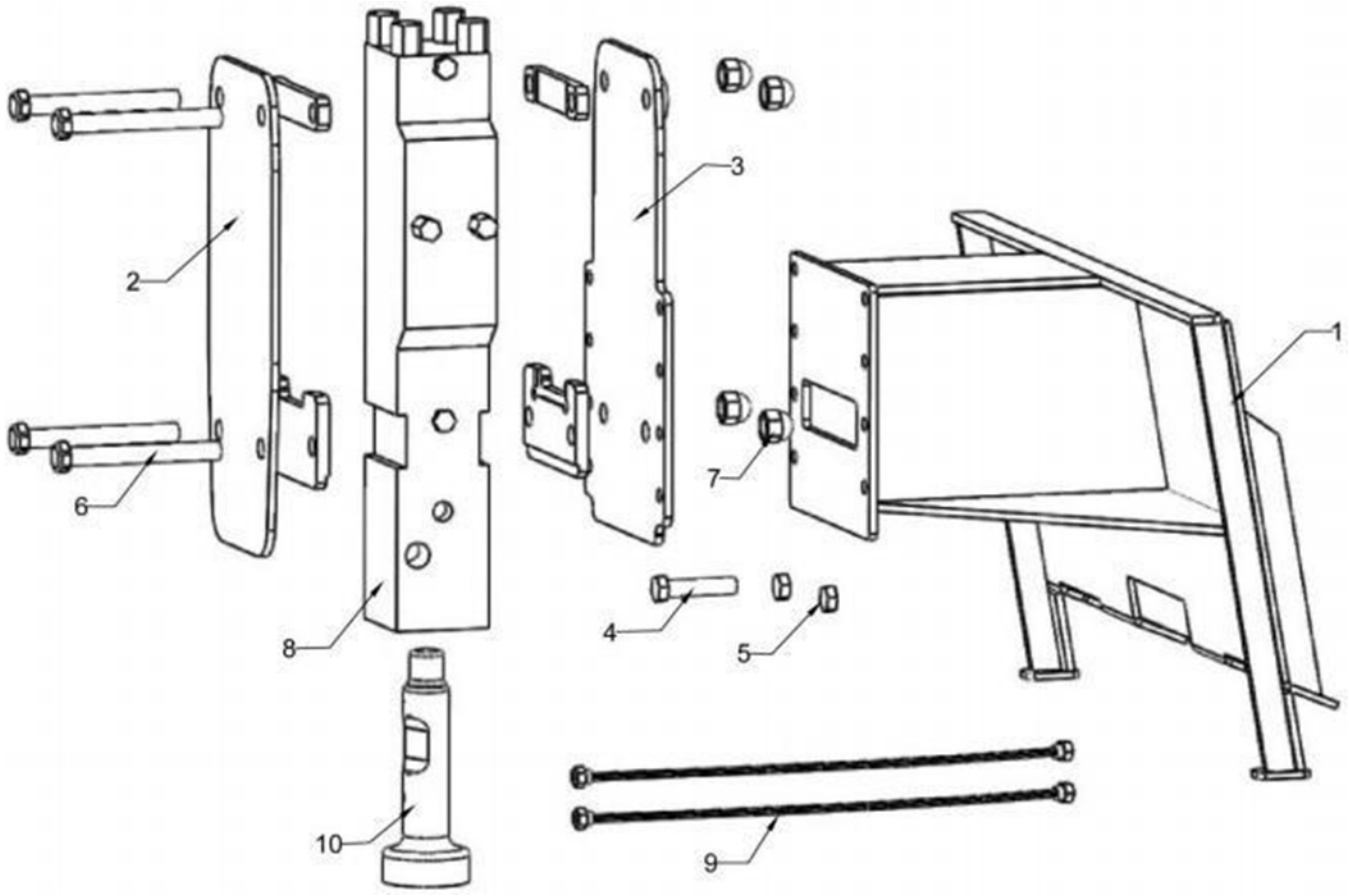
Post Driver

PD-68-200

Parts Manual

Release 01/26

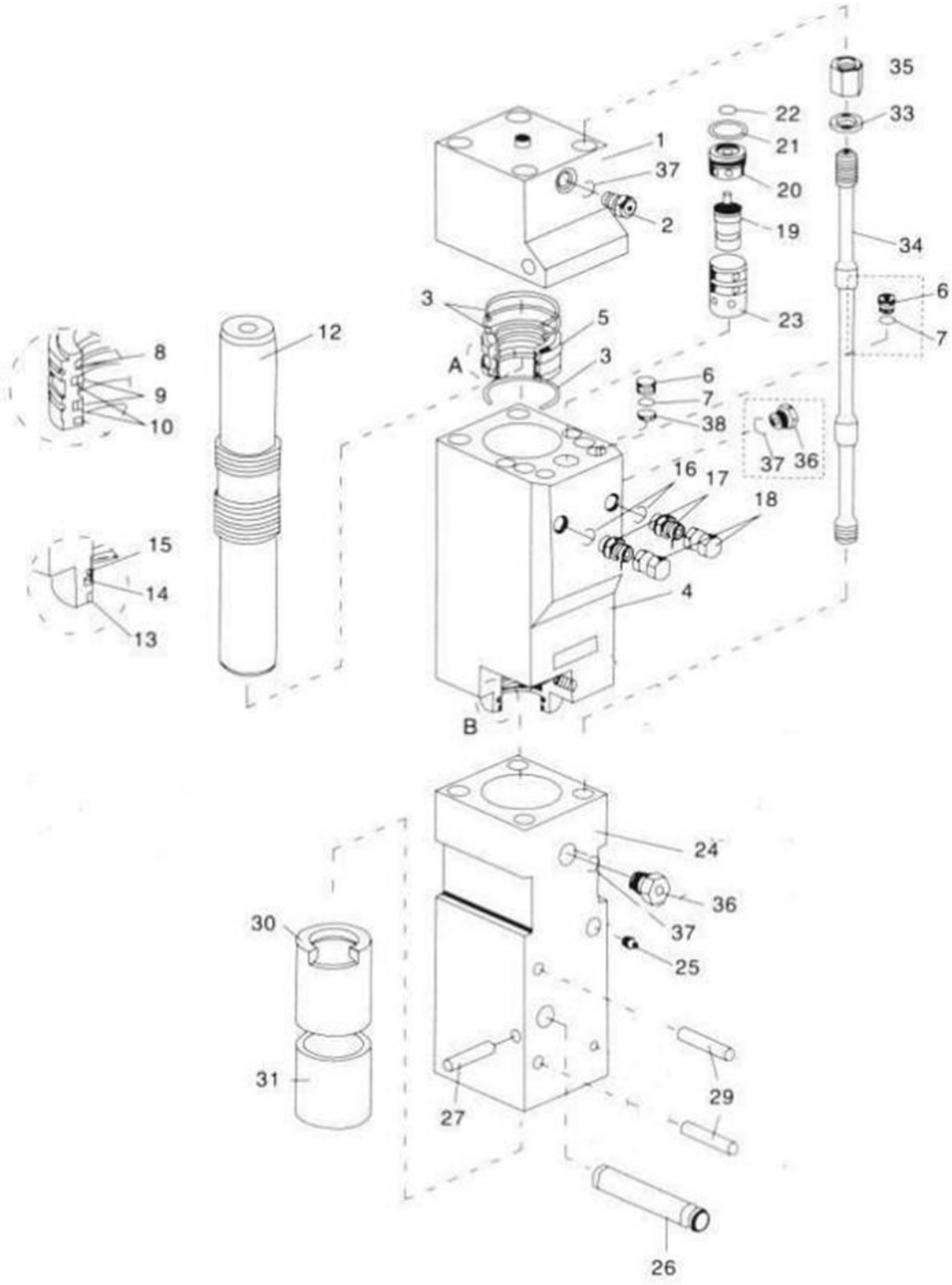
Frame PD-68-200



Frame PD-68-200

Item	Part #	Description	Qty.
1	PD90090	Quick connect	1
2	PD90091	Bracket welder(FR)	1
3	PD90092	Bracket welder(RR)	1
4	PD90093	Stopper Hex Bolt M20*55	8
5	PD90094	Stopper Hex Nut	8
6	PD90095	Side bolt M27*230	4
7	PD90096	Nut, side bolt M27	4
8	PD90097	Hydraulic power unit	1
9	PD90098	Hoses 1/2inch, 2.4m	2
10	PD90099	Post driver chisel	1

Hydraulic Power Unit PD-68-200



Hydraulic Power Unit PD-68-200

Item	Part #	Description	Qty.
1	PD90100	Back head	1
2	PD90101	Charging valve assembly	1
3	PD90102	O-ring	3
4	PD90103	Cylinder	1
5	PD90104	Seal retainer	1
6	PD90105	O-ring	3
7	PD90106	Plug	3
8	PD90107	Gas seal Φ68	1
9	PD90108	U-packing (Step seal) SPNS 68	2
10	PD90109	O-ring	2
11	PD90110	Piston	1
12	PD90111	Dust seal LBI 70*80*6*8	1
13	PD90112	U-packing ISI 70*80*6	1
14	PD90113	U-packing ISI 70*80*6	1
15	PD90114	O-ring	2
16	PD90115	Adapter	2
17	PD90116	Union cap	2
18	PD90117	Valve	1
19	PD90118	Valve plug	1
20	PD90119	O-ring	1
21	PD90120	O-ring	1
22	PD90121	Valve sleeve	1
23	PD90122	Front Head	1
24	PD90123	Grease nipple	1
25	PD90124	Tool pin	1
26	PD90125	Stop pin	1
27	PD90126	Stop pin (bush)	2
28	PD90127	Ring bush	1
29	PD90128	Outer bush	1
30	PD90129	Washer	4
31	PD90130	Through bolt M27*570	4
32	PD90131	Through nut 41mm	4
33	PD90132	Air check valve	1
34	PD90133	O-ring	2

Warranty

LIMITED WARRANTY

Belco Resources Equipment warrants to the original purchaser of any new piece of machinery from Belco Resources Equipment, purchased from an authorized Belco Resources Equipment dealer, that the equipment be free from defects in material and workmanship for a period of one (1) year for non-commercial, state, and municipalities' use, ninety (90) days for commercial use from date of retail sale. Warranty for rental purposes is thirty (30) days. The obligation of Belco Resources Equipment to the purchaser under this warranty is limited to the repair or replacement of defective parts.

Replacement or repair parts installed in the equipment covered by this limited warranty are warranted for ninety (90) days from the date of purchase of such part or to the expiration of the applicable new equipment warranty period, whichever occurs later. Warranted parts shall be provided at no cost to the user at an authorized Belco Resources Equipment dealer during regular working hours. Belco Resources Equipment reserves the right to inspect any equipment or parts, which are claimed to have been defective in material or workmanship.

This limited warranty does not apply to and excludes wear items such as shear pins, tires, tubes knives, blades or other wear items. Oil or grease is not covered by this warranty.

All obligations of Belco Resources Equipment under this limited warranty shall be terminated if:

Proper service is not performed on the machine.
The machine is modified or altered in any way.
The machine is being used or has been used for purposes other than those for which the machine was intended.

DISCLAIMER OF IMPLIED WARRANTIES & CONSEQUENTIAL DAMAGES

Belco Resources Equipment obligation under this limited warranty, to the extent allowed by law, is in lieu of all warranties, implied or expressed, including implied warranties of merchantability and fitness for a particular purpose and any liability for incidental and consequential damages with respect to the sale or use of the items warranted. Such incidental and consequential damages shall include but not be limited to: transportation charges other than normal freight charges; cost of installation other than cost approved by Belco Resources Equipment; duty; taxes; charges for normal service or adjustment; loss of crops or any other loss of income; rental of substitute equipment, expenses due to loss, damage, detention or delay in the delivery.

REGISTRATION

The online Warranty Registration must be completed in order to qualify for coverage on this Limited Warranty. Visit br-equipment.com, click on "Warranty Registration" and completely fill out the form to register the new piece of equipment.

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