

INSTRUCTION
BULLETIN
No. 170-L-9

**CHAMBERSBURG
PNEUMATIC
FORGING HAMMERS
Motor Driven**



CHAMBERSBURG ENGINEERING CO., CHAMBERSBURG, PA. 17201, U.S.A.

**PNEUMATIC
FORGING HAMMERS**
Instruction Bulletin
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CHAMBERSBURG
ENGINEERING
• COMPANY •

Chambersburg, Pa., U.S.A.

TYPES

Chambersburg Pneumatic Hammers are made in three types, namely:

TYPE No. 1

One piece, having the anvil integral with the frame.
Sizes up to 500 lbs. falling weight.

TYPE No. 2

Solid Frame, having separate anvil and a one piece frame.
Sizes 300 lbs. and 500 lbs. falling weight.

TYPE No. 3

Two piece frame, having separate anvil and a frame mounted on a baseplate. Sizes 750 lbs. and up.

SAFETY REQUIREMENTS

Basic safety requirements for this type of equipment are outlined in the National Safety Council's "Forging Safety Manual". Copies may be obtained directly from the National Safety Council, Chicago, Illinois 60611.

ERECTING

HAMMER FOUNDATION should be made of reinforced concrete and must rest on solid ground or piles. Dimensions on Chambersburg Foundation Drawings are based on normal ground conditions and should be modified if hammer is placed on soil of low bearing strength. Foundation bolts and plates must be set in position when building foundation piers.

Foundations for Type No. 1 Hammers are made in one solid block, while foundations for Type No. 2 and Type No. 3 Hammers are made in three independent concrete piers.

Anvil and hammer are mounted on seasoned crossosoted white oak timbers installed in horizontal rows laid alternately at right angles, to the depth shown by Chambersburg Foundation Drawings.

TYPE NO. 1 HAMMER may be mounted on the foundation as an assembled unit: Care must be taken that hammer is level.

TYPE NO. 2 AND TYPE NO. 3 HAMMERS should be assembled as follows:

1. Place anvil, pc. 1, on timbers of anvil pier. See that anvil, pc. 1 is in right position and that die face is level.
2. Lift hammer over anvil, pc. 1, and place on timbers of frame piers.
3. Place anvil cap, pc. 2, and anvil die, pc. 3, on anvil, pc. 1, and wedge in anvil cap, pc. 2, and anvil die keys, pc. 50.
4. Level hammer and see that full contact is obtained between anvil die, pc. 3, and ram die, pc. 4.

5. Place steel wedges between frame and anvil.

6. See that safe distance from lower edge of ram, pc. 5, to lower edge of ram guide, pc. 6, is not exceeded as marked on ram, pc. 5. Anvil, pc. 1, must set higher, as indicated on foundation drawing, to allow for setting. Ram, pc. 5, should never go below safety limit.

7. See that all bolts are tight and that the two halves of flexible coupling, pc. 114, (on Type No. 3 Hammers only) have between $\frac{1}{8}$ and $\frac{3}{16}$ -inch clearance when motor is running on its dynamic center.

LARGE HAMMERS of Type No. 3 are shipped in 3 pieces—base plate, pc. 100, with crank shaft and gear; frame, pc. 7, complete and gear case complete. Lift hammer frame, pc. 7, and place on base plate, pc. 100. Place body bound bolts through base and frame flange. Shrink in front bolts. Connect two-piece connecting rod by means of bolts and see that cotter pins are in place. Place gear case on base, pc. 1, and frame; locate by the taper pins, which are fitted through the bottom flange of gear case and the base. Bolt gear case to base and frame.

Place motor, pc. 113, on bracket and connect flexible coupling, pc. 114. See that the two halves of coupling have between $\frac{1}{8}$ and $\frac{3}{16}$ -inch clearance when motor, pc. 113, runs on dynamic center.
Connect belt, pc. 112, to pinion shaft and oil pump pulley.

OPERATING PRINCIPLE

THE OPERATING PRINCIPLES for all three types are the same. A crank driven power piston (crankshaft is gear driven from the motor) displaces compressed air between piston cylinder and ram cylinder. The action is as follows:
Two forces unite in raising ram, compressed air below ram piston and vacuum above ram piston, while four

forces are united in forcing down the ram, namely—compressed air on the full cylinder area above ram piston created by the power piston, vacuum below ram piston, additional compressed air above ram piston in an air cushioning chamber, which is created by the force of the ascending ram, and the force of gravity.

OPERATING

When Starting Hammer—

1. See that starting valve handle, pc. 89, is directed toward "start".
2. Always place main control handle, pc. 68, in "suspended position" that is, operating lever rests against operating latch, pc. 64, when operating latch, pc. 64, is turned to the right.
3. When the motor, pc. 113, is up to speed, direct starting valve handle, pc. 89, toward "run". The ram, pc. 5, then raises and remains in its highest position until main valves, pc. 19 & 21, are operated by means of control handle, pc. 68, or foot treadle, pc. 75.

causes the ram, pc. 5, to strike a constant number of blows, the intensity of blow depending on amount of control movement.

2. For "hold down" or "squeeze" move operating lever latch, pc. 64, to the left, control handle, pc. 68, to the extreme left position and hold it there. Ram, pc. 5, descends slowly and will remain pressing upon the anvil, pc. 1.
3. Should the motor, pc. 113, be left running between heats, opening the starting valve will effect a saving in power.

NOTE: Safety Feature—

When the motor, pc. 113, is running and hammer is not in use, turn operating latch, pc. 64, to the right and move control handle, pc. 68, to "suspended position". Then turn safety latch, pc. 541, to the left. This locks control handle, pc. 68, or foot treadle, pc. 75,

When Running Hammer—

1. Do not move control handle, pc. 68, suddenly until ram, pc. 5, is oscillating. Moving control handle, pc. 68, from suspended to blow position, that is, counterclockwise, or depressing the foot treadle, pc. 75,

MAINTENANCE

It is important that the hammer receive proper lubrication as specified on the drawings (pages 7, 9, 11, and 13).

ALL BEARINGS are of the heavy anti-friction type. Attention should be given to regular lubrication of these bearings by means of Alemite Gun.

200 LB. & 300 LB. HAMMERS (TYPE 1) AND 300 LB. & 500 LB. HAMMERS (TYPE 2) have three points for lubrication. Crankshaft and connecting rod bearings are lubricated through a coverplate (marked "remove for greasing") on the left side of frame (two fittings). Flywheel shaft bearings are lubricated through one Alemite fitting on end of flywheel shaft through hole in left-hand side of motor bracket.

500 LB. (TYPE 1) HAMMERS have five points for lubrication. Main crankshaft bearing and connecting rod bearing are lubricated through a coverplate (marked "remove for greasing") on the left side of frame (two fittings). One pinion shaft bearing is lubricated through a coverplate (marked "remove for greasing") on left side of gear case (two fittings). The other pinion shaft bearing is lubricated through one Alemite fitting in back of motor shaft

bearing, and the flywheel shaft bearings are lubricated through one Alemite fitting on end of flywheel shaft, mounted between gear case and gear case cover. The anti-friction bearings require lubrication approximately every 500 hours of running, using an anti-friction bearing grease, such as Shell Darina Grease, No. 2.

GEARS OF TYPE NO. 3 AND 500 LB. TYPE 1 HAMMERS operate in an oil bath. Oil is filled through two pipe elbows on left side of frame and on back of gear case. Oil level on top of elbows indicates full oil reservoir. A heavy gear oil such as Shell Valvata Oil J78, or equal, is recommended.

A TWO FEED OIL PUMP, belt driven from the main drive, serves the ram and compression cylinders. It should be filled with Shell Clavis Oil J37, or equal. A hand crank on the pump provides a means of lubricating the cylinders before starting the hammer after a shutdown period. When hammer is new, set automatic force feed lubricator to maximum feed and reduce to 2 to 6 drops per minute (depends on hammer size) after hammer has been worked in. The power piston cylinder should

receive more oil than the ram cylinder, as a part of oil is forced from piston cylinder through valves into ram cylinder. In cold weather it is advisable to warm the oil a little before pouring into oil pump. This permits the oil to flow freely through the strainer. When hammer is new, the oil pump should be checked twice a day; after hammer has worked in, once a day is sufficient. Hand oiled points should be serviced as called for on the drawings using Shell Tellus Oil 72, or equal.

In order to renew the LEATHER PACKING RINGS, pc. 76, in ram guide, pc. 6, remove ram cylinder head, pc. 8, and lift ram, pc. 5, out of guide, pc. 6. When PISTON RINGS, pc. 77 & 78,

on ram piston or power piston are examined or renewed, see that joints of rings are opposite and placed so that the joints do not ride over an air port.

Examine CONNECTING ROD BOLTS, pc. 35, occasionally and see that cotter pins are in place.

KEYS, pc. 59 & 60, should be kept under observation, especially ram die key, pc. 59.

Motors, pc. 113, may run either direction, except on larger hammers, where running direction of motor is indicated on gear case opposite motor face. Rubber cups, pc. 204 & 205, in the motor shock mounts, should be examined every 1000 hrs. and replaced in sets as required. (Type 1 only)

With careful maintenance this hammer will give you long, troublefree service.

Certain parts should be carried on hand at all times in your maintenance department to minimize down time. The suggested list, below, can be modified to suit your anticipated needs.

QUANTITY	PART NAME & NUMBER
2	Ram Guide Plates, pc. 9
1	Pinion, pc. 42 (200 & 300 lb. Type 1 & 300—500 lb. Type 2 only)
4	Leather Rings, pc. 76
2	Ram Rings, pc. 77
1	Spring, pc. 84
1	Spring, pc. 85

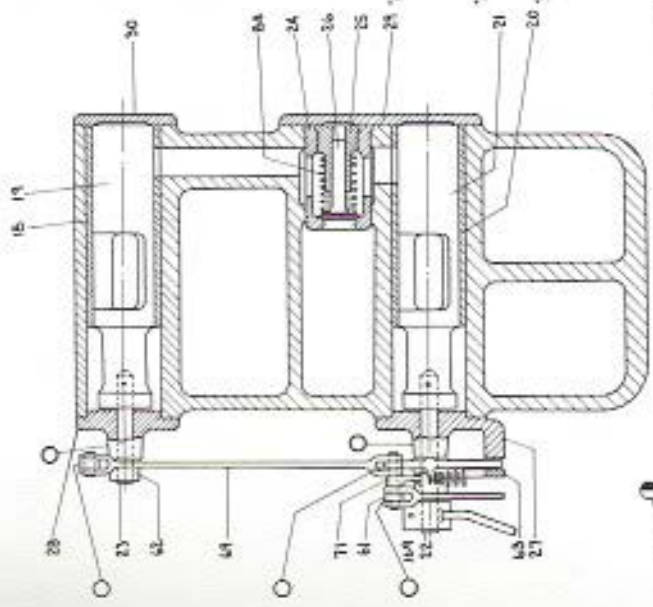
**200 LB. AND 300 LB. CHAMBERSBURG PNEUMATIC
MOTOR DRIVEN FORGING HAMMER, TYPE I**

PARTS LIST

Parts shown with an asterisk (*) should be carried on stock in the quantities specified.

Part No.	Name	Part No.	Name	Part No.	Name
2	Anvil Cap	42 *1	Pinion	86	Spring
3	Anvil Die	43	Retainer Cover	87	Starting Valve
4	Ram Die	44	Retainer Cover	88	Starting Valve Bearing
5	Ram	45	Retainer Cover	89	Starting Valve Handle
6	Ram Guide	46	Retainer Cover	90	Starting Valve Stem
7	Frame	47	Collar	91	Plunger Pin
8	Ram Cylinder Head	48	Thrust Washer	92	Gear Guard Cover
9 *2	Ram Guide Plate	49	Adjusting Collar	110	Lubricator—Manzel
10	Relief Valve Cover	50	Collar	112	Leather Belt
11	Stem	52	Motor Bracket	113	Motor
13	Piston	53	Gear Guard	116	Bolt
14	Piston Cylinder Head	55	Bearing—Hyatt	117	Relief Valve Guide
16	Wrist Pin	56	Bearing—Hyatt	118	Relief Valve Washer
17	Bushing	57	Bearing—Hyatt	120	R. H. Frame Cover
18	Valve Bushing—Upper	58	Bearing—Hyatt	123	Cap
19	Valve—Upper	59	Ram Key	127	Gasket
20	Valve Bushing—Lower	60	Key	128	Gasket
21	Valve—Lower	61	Lever—Lower Valve	129	Stud
22	Valve Stem—Lower	62	Lever—Upper Valve	136	Nut
23	Valve Stem—Upper	63	Segment	137	Key
24	Check Valve Bushing	64	Latch	139	Key
25	Check Valve Guide	65	Latch Pin	150	Pulley
26	Stem	67	Latch Collar	169	Pin
27	Bearing—Lower Valve	68	Control Handle	170	Pin
28	Bearing—Upper	69	Connection	185	Bolt
29	Cover—Lower Valve	70	Connection	188	Gear Guard Plate
30	Cover—Upper Valve	71	Spring Connection	201	Plug
31	Balance Cover	72	Spring Pin	202	Insert
32	L. H. Frame Cover	73	Treadle Shoe	203	Bushing
33	Connection Rod	74	Treadle Cap	204	Rubber Cup
34	Crank Connection	75	Treadle	205	Rubber Cup
35	Bolts	75A	Treadle End	206	Shim
36	Crankshaft	76 *4	Leather Rings	540	Bearing—Timken
37	Shaft	77 *2	Ram Rings	541	Latch
38	Bearing—Crankshaft	78	Piston Rings	1131	Starter
39	Flywheel Gear	83	Spring	1161	Bolt
40	Flywheel Gear	84 *1	Spring	8001	Key (300 lb. ONLY)
41	Gear	85 *1	Spring		

When ordering Replacement Parts give Part Number, Name, Size, Frame, and Machine Number. Machine Number will be found stamped on Anvil Cap and right hand side of Frame above Cover. Part No. 120. Machine Number will also be found on Identification Plate attached to right hand side of Gear Case.



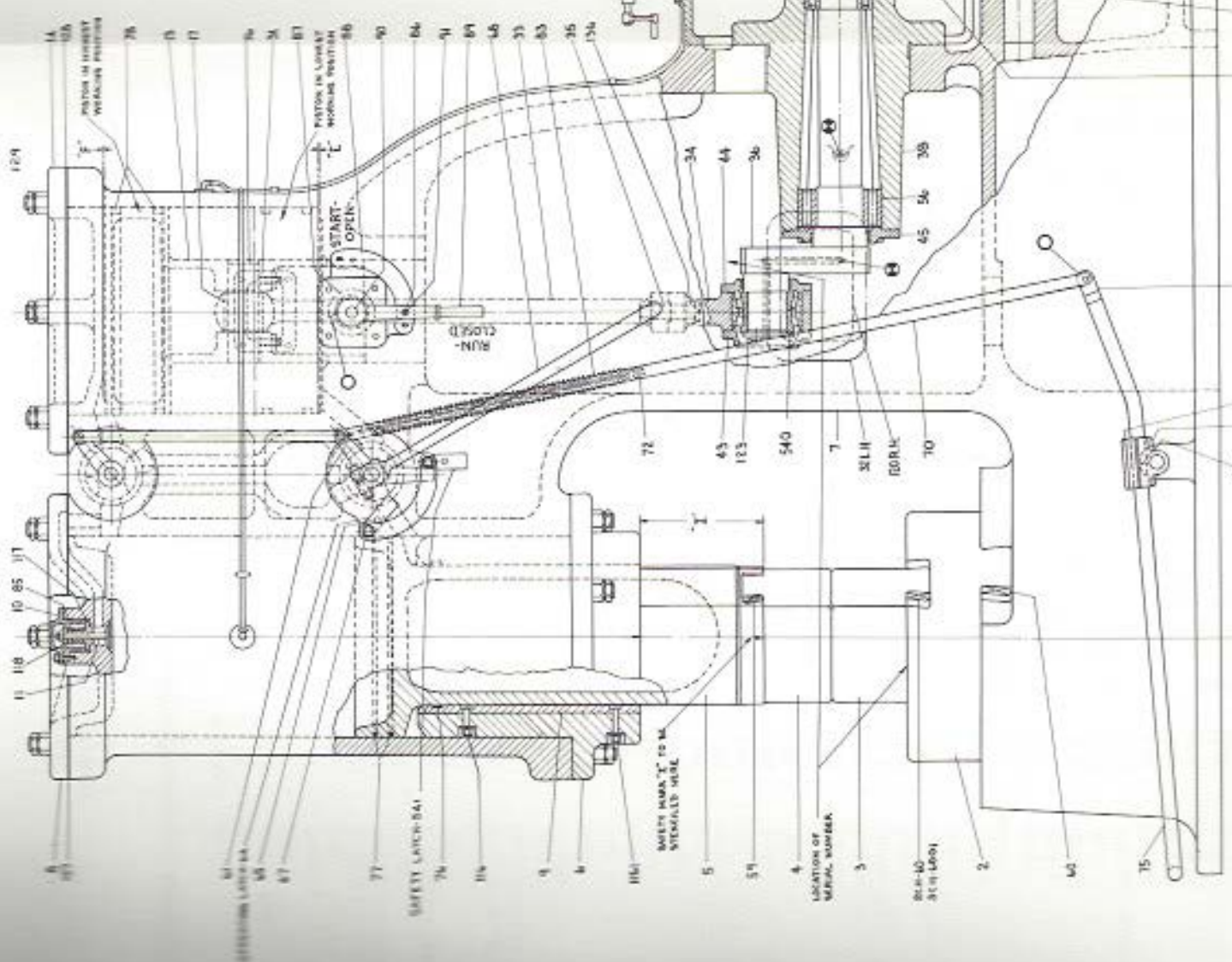
- ⊙ REMOVE COVER - SHAW BARR TESTER WITH GEARSS. EXHAUST SO INSURE.
- ⊙ GEARSS - PRESSURE 100 - 130 PSI. KEEP 100 PSI.
- ⊙ ALL GEARSS MUST HAVE SHUT-OFF POINTS.
- ⊙ LUBRICATION - FILL AS NEEDED. SEE INSTRUCTIONS.

3/4" CLEARANCE BETWEEN PISTON PIN AND BOTTOM OF PISTON SKT. BORE IN PISTON PIN MUST BE FILLER WITH 1/8" CLEARANCE IN LOWEST POSITION.

3/4" CLEARANCE BETWEEN PISTON PIN AND HEAD IN HIGH POSITION. IS IN HIGHEST POSITION.

1/2" SAFETY MARK ON MAIN

SYMBOL	INCHES WT. LBS.	INCHES	POUNDS	INCHES
22H	200	1 1/2	1 1/2	7 1/2
30H	300	1 1/2	1 1/2	7



170 46 47 41 58 57 40 39 41 46 37 52 186

**500 LB. CHAMBERSBURG PNEUMATIC
MOTOR DRIVEN FORGING HAMMER, TYPE I**

PARTS LIST

Parts shown with an asterisk (*) should be carried on stock in the quantities specified.

Part No.	Name	Part No.	Name	Part No.	Name
2	Arnold Cap	47	Collar	111	Oil Seal
3	Arnold Die	48	Thrust Washer	112	Leather Belt
4	Ram Die	49	Adjusting Collar	113	Motor
5	Ram	50	Collar	114	Coupling
6	Ram Guide	52	Motor Bracket	116	Bolt
7	Frame	55	Bearing—Hyatt	117	Relief Valve Guide
8	Ram Cylinder Head	56	Bearing—Hyatt	118	Relief Valve Washer
9*2	Ram Guide Plate	57	Bearing—Hyatt	119	Guard
10	Relief Valve Cover	59	Ram Key	120	R. H. Frame Cover
11	Stem	60	Key	123	Cap
13	Piston	61	Lever—Lower Valve	124	Gear
14	Piston Cylinder Head	62	Lever—Upper Valve	125	Bearing—Hyatt
16	Wrist Pin	63	Segment	126	Bearing—Hyatt
17	Bushing	64	Latch	127	Gasket
18	Valve Bushing—Upper	65	Latch Pin	128	Gasket
19	Valve—Upper	67	Latch Collar	129	Stud
20	Valve Bushing—Lower	68	Control Handle	136	Nut
21	Valve—Lower	69	Connection	137	Key
22	Valve Stem—Lower	70	Connection	139	Key
23	Valve Stem—Upper	71	Spring Connection	150	Pulley
24	Check Valve Bushing	72	Spring Pin	169	Pin
25	Check Valve Guide	73	Treadle Shoe	170	Pin
26	Stem	74	Treadle Cap	181	Pin
27	Bearing—Lower Valve	75	Treadle	185	Bolt
28	Bearing—Upper Valve	75A	Treadle End	201	Plug
29	Cover—Lower Valve	76*4	Leather Rings	202	Insert
30	Cover—Upper Valve	77*2	Ram Rings	203	Bushing
31	Balance Cover	78	Piston Rings	204	Rubber Cup
32	L. H. Frame & Gear Case Cover	83	Spring	205	Rubber Cup
33	Connection Rod	84*1	Spring	206	Shim
34	Crank Connection	85*1	Spring	305	Fabreka Pad
35	Bolts	86	Spring	306	Plat
36	Crankshaft	87	Starting Valve	307	Spring
37	Shaft	89	Starting Valve Bearing	308	Bolts
38	Bearing—Crankshaft	89	Starting Valve Handle	309	Guard
39	Flywheel Gear	90	Starting Valve Stem	310	Guard
40	Flywheel	91	Plunger Pin	311	Washer
41	Connection Gear	93	Motor Shaft Bearing	408	Bolt
42	Pinion Shaft	94	Bearing Collar	540	Bearing—Trinken
43	Retainer Cover	95	Cover	541	Latch
44	Retainer Cover	101	Gear Case	1131	Starter
45	Retainer Cover	102	Gear Case Cap	1161	Bolt
46	Retainer Cover	110	Lubricator—Manzel	1851	Bolt

When ordering Replacement Parts give Part Number, Name, Size, Material, and Machine Number. Machine Number will be found Stenciled on Arnold Cap and right hand side of Frame above Cover. Part No. 120 Machine Number will also be found on Identification Plate attached to right hand side of Gear Case.

**300 LB. AND 500 LB. CHAMBERSBURG PNEUMATIC
MOTOR DRIVEN FORGING HAMMER, TYPE II**

PARTS LIST

Parts shown with an asterisk (*) should be carried on stock in the quantities specified.

Part No.	Name	Part No.	Name	Part No.	Name
1	Anvil	39	Flywheel Gear	76 *4	Leather Rings
2	Anvil Cap	40	Flywheel Gear	77 *2	Ram Rings
3	Anvil Die	41	Gear	78	Piston Rings
4	Ram Die	42 *1	Piston	83	Spring
5	Ram	43	Retainer Cover	84 *1	Spring
6	Ram Guide	44	Retainer Cover	85 *1	Spring
7	Frame	45	Retainer Cover	86	Spring
8	Ram Cylinder Head	46	Retainer Cover	87	Starting Valve
9 *2	Ram Guide Plate	47	Collar	88	Starting Valve Bearing
10	Relief Valve Cover	48	Thrust Washer	89	Starting Valve Handle
11	Stem	49	Adjusting Collar	90	Starting Valve Stem
13	Piston	50	Collar	91	Plunger Pin
14	Piston Cylinder Head	52	Motor Bracket	92	Gear Guard Cover
16	Wrist Pin	53	Gear Guard	110	Lubricator—Manzel
17	Bushing	55	Bearing—Hyatt	112	Leather Belt
18	Valve Bushing—Upper	56	Bearing—Hyatt	113	Motor
19	Valve—Upper	57	Bearing—Hyatt	116	Bolt
20	Valve Bushing—Lower	58	Bearing—Hyatt (300 lb. ONLY)	117	Relief Valve Guide
21	Valve—Lower	59	Ram Key	118	Relief Valve Washer
22	Valve Stem—Lower	60	Key	120	R. H. Frame Cover
23	Valve Stem—Upper	61	Lever—Lower Valve	123	Cap
24	Check Valve Bushing	62	Lever—Upper Valve	127	Gasket
25	Check Valve Guide	63	Segment	128	Gasket
26	Stem	64	Latch	129	Stud
27	Bearing—Lower Valve	65	Latch Pin	136	Nut
28	Bearing—Upper Valve	67	Latch Collar	137	Key
29	Cover—Lower Valve	68	Control Handle	139	Key
30	Cover—Upper Valve	69	Connection	150	Pulley
31	Balance Cover	70	Connection	169	Pin
32	L. H. Frame Cover	71	Spring Connection	170	Pin
33	Connection Rod	72	Spring Pin	185	Bolt
34	Crank Connection	73	Treadle Shoe	540	Bearing—Tinkan
35	Bolts	74	Treadle Cap	541	Latch
36	Crankshaft	75	Treadle	1131	Starter
37	Shaft	75A	Treadle End	1161	Bolt
38	Bearing—Crankshaft				

When ordering Replacement Parts give Part Number, Name, Size Hammer, and Machine Number. Machine Number will be found Stenciled on Anvil Cap and right hand side of Frame above Cover. Part No. 120 Machine Number will also be found on Identification Plate attached to right hand side of Gear Case.

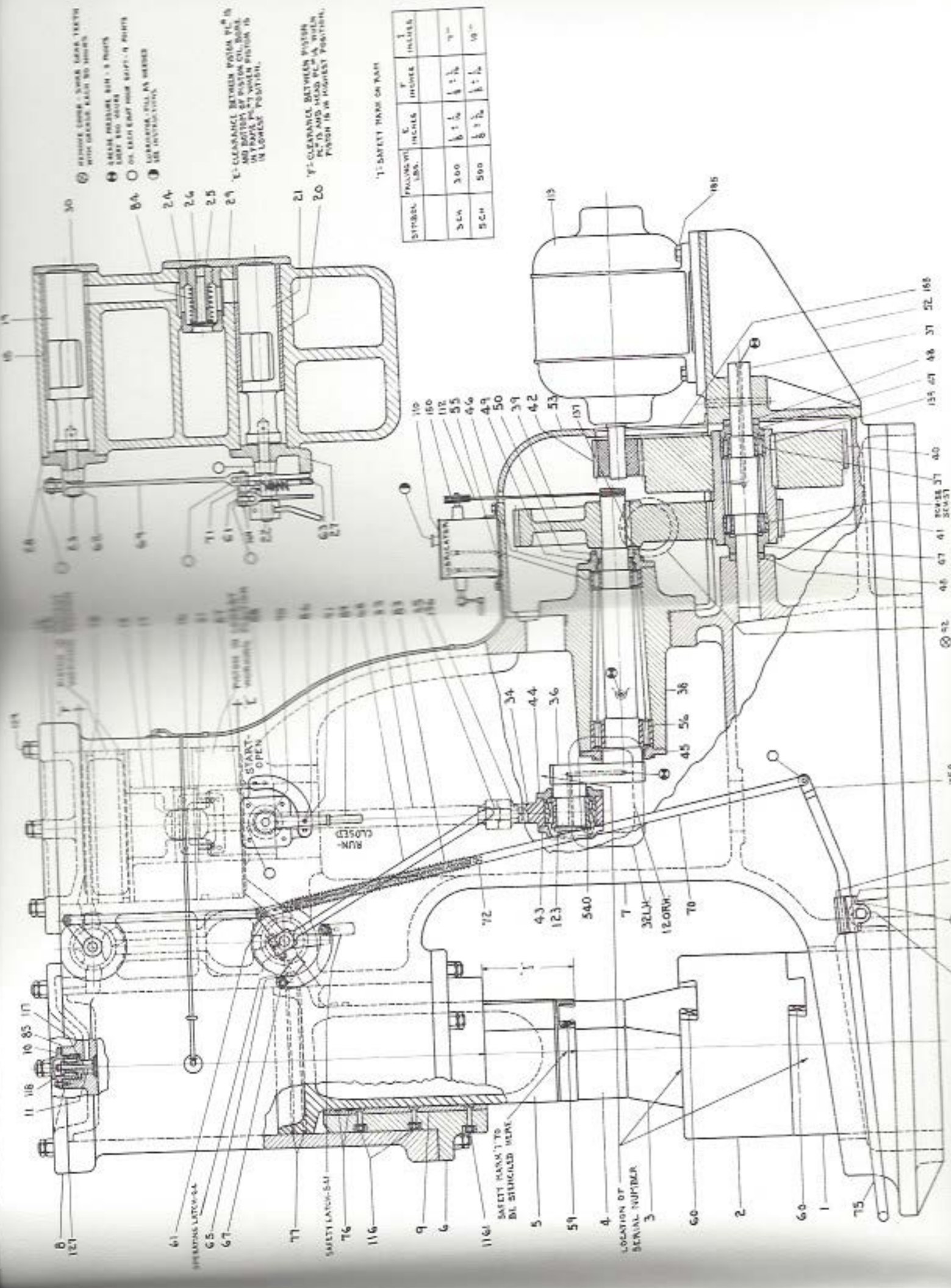
**300 LB. AND 500 LB. CHAMBERSBURG PNEUMATIC
MOTOR DRIVEN FORGING HAMMER, TYPE II**

PARTS LIST

Parts shown with an asterisk (*) should be carried on stock in the quantities specified.

Part No.	Name	Part No.	Name	Part No.	Name
1	Arvill	39	Flywheel Gear	76 * 4	Leather Rings
2	Arvill Cap	40	Flywheel Gear	77 * 2	Ram Rings
3	Arvill Die	41	Gear	78	Piston Rings
4	Ram Die	42 * 1	Pinion	83	Spring
5	Ram	43	Retainer Cover	84 * 1	Spring
6	Ram Guide	44	Retainer Cover	85 * 1	Spring
7	Frame	45	Retainer Cover	86	Spring
8	Ram Cylinder Head	46	Retainer Cover	87	Starting Valve
9 * 2	Ram Guide Plate	47	Collar	88	Starting Valve Bearing
10	Relief Valve Cover	48	Thrust Washer	89	Starting Valve Handle
11	Stem	49	Adjusting Collar	90	Starting Valve Stem
13	Piston	50	Collar	91	Plunger Pin
14	Piston Cylinder Head	52	Motor Bracket	92	Gear Guard Cover
16	Wrist Pin	53	Gear Guard	110	Lubricator—Manzel
17	Bushing	55	Bearing—Hyatt	112	Leather Belt
18	Valve Bushing—Upper	56	Bearing—Hyatt	113	Motor
19	Valve—Upper	57	Bearing—Hyatt	116	Bolt
20	Valve Bushing—Lower	58	Bearing—Hyatt (300 lb. ONLY)	117	Relief Valve Guide
21	Valve—Lower	59	Ram Key	118	Relief Valve Washer
22	Valve Stem—Lower	60	Key	120	R. H. Frame Cover
23	Valve Stem—Upper	61	Lever—Lower Valve	123	Cap
24	Check Valve Bushing	62	Lever—Upper Valve	127	Gasket
25	Check Valve Guide	63	Segment	128	Gasket
26	Stem	64	Latch	129	Stud
27	Bearing—Lower Valve	65	Latch Pin	136	Nut
28	Bearing—Upper Valve	67	Latch Collar	137	Key
29	Cover—Lower Valve	68	Control Handle	139	Key
30	Cover—Upper Valve	69	Connection	150	Pulley
31	Balance Cover	70	Connection	169	Pin
32	L. H. Frame Cover	71	Spring Connection	170	Pin
33	Connection Rod	72	Spring Pin	185	Bolt
34	Crank Connection	73	Trasdie Shoe	540	Bearing—Timken
35	Bolts	74	Treadle Cap	541	Latch
36	Crankshaft	75	Treadle	1131	Starter
37	Shaft	75A	Treadle End	1161	Bolt
38	Bearing—Crankshaft				

When ordering Replacement Parts give Part Number, Name, Size Hammer, and Machine Number. Machine Number will be found Stenciled on Arvill Cap and right hand side of Frame above Cover, Part No. 120. Machine Number will also be found on Identification Plate attached to right hand side of Gear Case.



- ① REMOVE COVER - MAKE SURE TIGHTEN WITH GRASSIE KEYS TO MARKS
- ② MAKE INSURE 811 - 5 POINTS
- ③ USE 500 GRADE
- ④ OIL EACH END OF SHAFTS - 4 POINTS
- ⑤ OPERATOR WILL ASSEMBLE
- ⑥ SEE INSTRUCTIONS

1'- CLEARANCE BETWEEN PISTON P.C. IS AND BOTTOM OF PISTON OIL BOWL IN LOWEST POSITION WHEN PISTON IS IN LOWEST POSITION.

2'- CLEARANCE BETWEEN PISTON P.C. IS AND HEAD P.C. IS WHEN PISTON IS IN HIGHEST POSITION.

1'- SAFETY MARK ON MARK

SIZE	WEIGHT LBS.	INCHES	INCHES	INCHES
300	300	1 1/2	1 1/2	1 1/2
500	500	1 1/2	1 1/2	1 1/2

SAFETY MARK TO BE STENCILED HERE

LOCATION OF SERIAL NUMBER

15A 73 74 60 1 60 2 60 3 70 7 32LJK 12-ORH 540 123 43 72 36 44 34 45 56 36 46 67 61 60 40 135 63 48 37 52 165

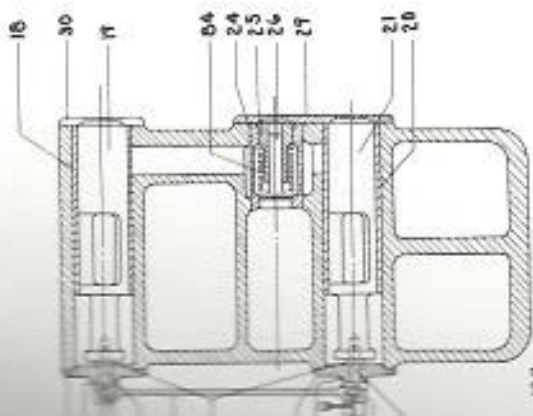
700 LB. TO 5000 LB. CHAMBERSBURG PNEUMATIC
MOTOR DRIVEN FORGING HAMMER, TYPE III

PARTS LIST

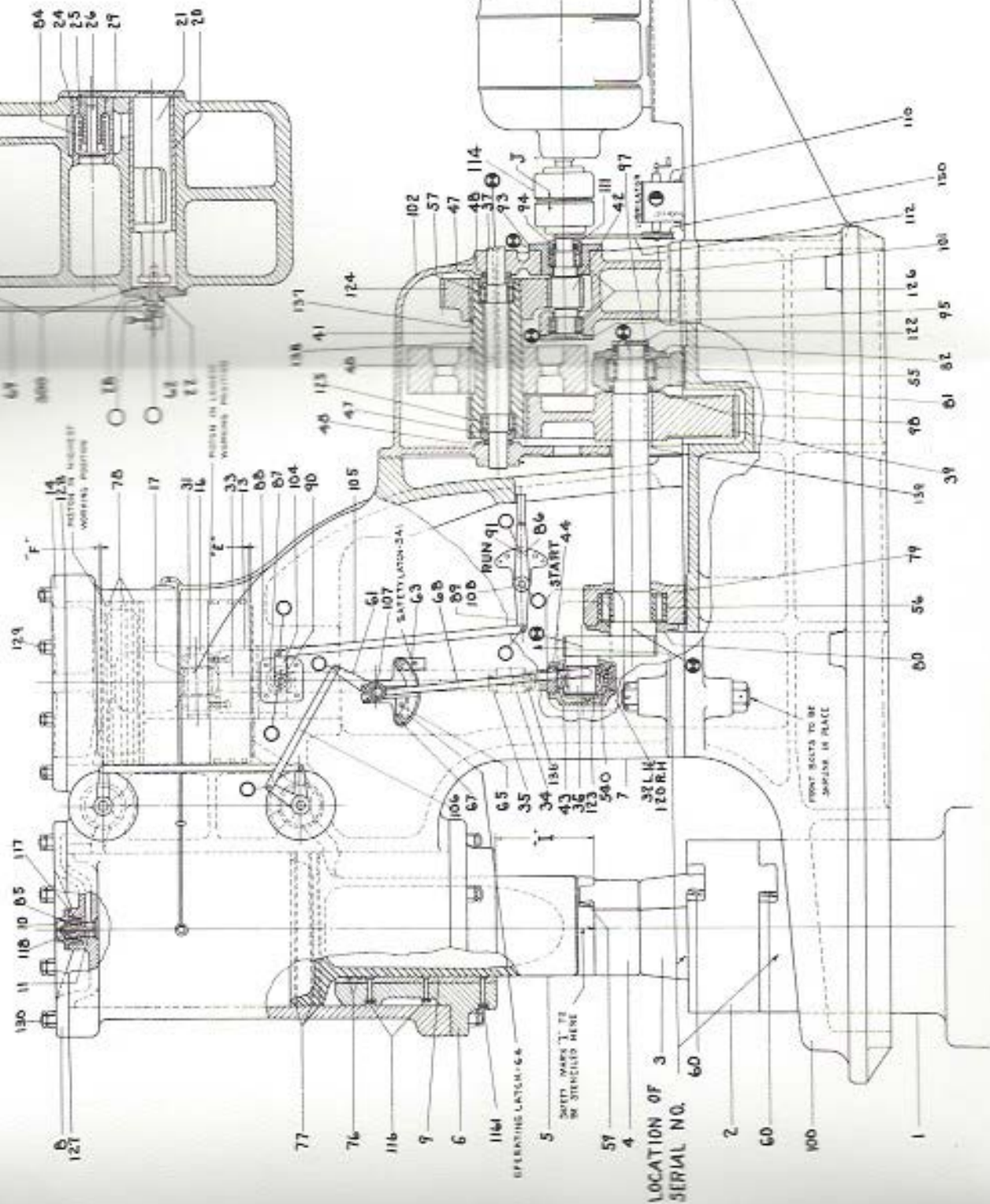
Parts shown with an asterisk (*) should be carried on stock in the quantities specified.

Part No.	Name	Part No.	Name	Part No.	Name
1	Arnvil	44	Retainer Cover	101	Gear Case
2	Arnvil Cap	47	Collar	102	Gear Case Cap
3	Arnvil Die	48	Thrust Washer	103	Gear Case Cover
4	Ram Die	55	Bearing—Hyatt	104	Lever
5	Ram	56	Bearing—Hyatt	105	Connection
6	Ram Guide	57	Bearing—Hyatt	106	Connection
7	Frame	59	Ram Key	107	Segment Stud
8	Ram Cylinder Head	60	Key	108	Stud
9 *2	Ram Guide Plate	61	Lever	110	Lubricator—Manzel
10	Relief Valve Cover	62	Lever	111	Oil Seal
11	Stem	63	Segment	112	Leather Belt
13	Piston	64	Latch	113	Motor
14	Piston Cylinder Head	65	Latch Pin	114	Coupling
16	Whist Pin	67	Latch Collar	116	Bolt
17	Bushing	68	Control Handle	117	Relief Valve Guide
18	Valve Bushing—Upper	69	Connection	118	Relief Valve Washer
19	Valve—Upper	76 *4	Leather Rings	119	Guard
20	Valve Bushing—Lower	77 *2	Ram Rings	120	R. H. Frame Cover
21	Valve—Lower	78	Piston Rings	122	Cap
22	Valve Stem—Lower	79	Block—Front Pillow	123	Cap
23	Valve Stem—Upper	80	Retainer Cover	124	Gear
24	Check Valve Bushing	81	Block—Rear Pillow	125	Bearing—Hyatt
25	Check Valve Guide	82	Retainer Cover	126	Bearing—Hyatt
26	Stem	84 *1	Spring	127	Gasket
28	Bearing	85 *1	Spring	128	Gasket
29	Cover—Lower Valve	86	Spring	129	Stud
30	Cover—Upper Valve	87	Starting Valve	130	Stud
31	Balance Cover	88	Starting Valve	136	Nut
32	L. H. Frame Cover	89	Bearing	137	Key
33	Connection Rod	89	Starting Valve	138	Key
34	Crank Connection	90	Handle	139	Key
35	Bolts	91	Starting Valve Stem	150	Pulley
36	Crankshaft	93	Plunger Pin	300	Bearing
37	Shaft	94	Motor Shaft Bearing	541	Bearing—Timken
39	Flywheel Gear	95	Bearing Collar	1131	Latch
40	Flywheel	97	Cover	1161	Starter
41	Connection Gear	98	Washer		Bolt
42	Pinion Shaft	100	Washer		
43	Retainer Cover		Base		

When ordering Replacement Parts give Part Number, Name, Size Hammer, and Machine Number. Machine Number will be found Stenciled on Arnvil Cap and right hand side of Frame above Cover, Part No. 120. Machine Number will also be found on Identification Plate attached to right hand side of Gear Case.



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OVERALL	MINUS PC	MINUS	MINUS	MINUS	MINUS
7 1/2 CH	1/2	1/2	1/2	1/2	1/2
10 CH	1/2	1/2	1/2	1/2	1/2
15 CH	1/2	1/2	1/2	1/2	1/2
20 CH	1/2	1/2	1/2	1/2	1/2
30 CH	1/2	1/2	1/2	1/2	1/2

- ⊕ GREASE - PRESSURE GUN - 6 POINTS EVERY 500 HOURS
 - OIL - EACH 8 HOUR SHIFT - 11 POINTS
 - Ⓛ FOR LUBRICATOR - SEE INSTRUCTIONS
- FOR GEAR OIL RESERVOIR - SEE INSTRUCTIONS

LOCATION OF 3 SERIAL NO. 60

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