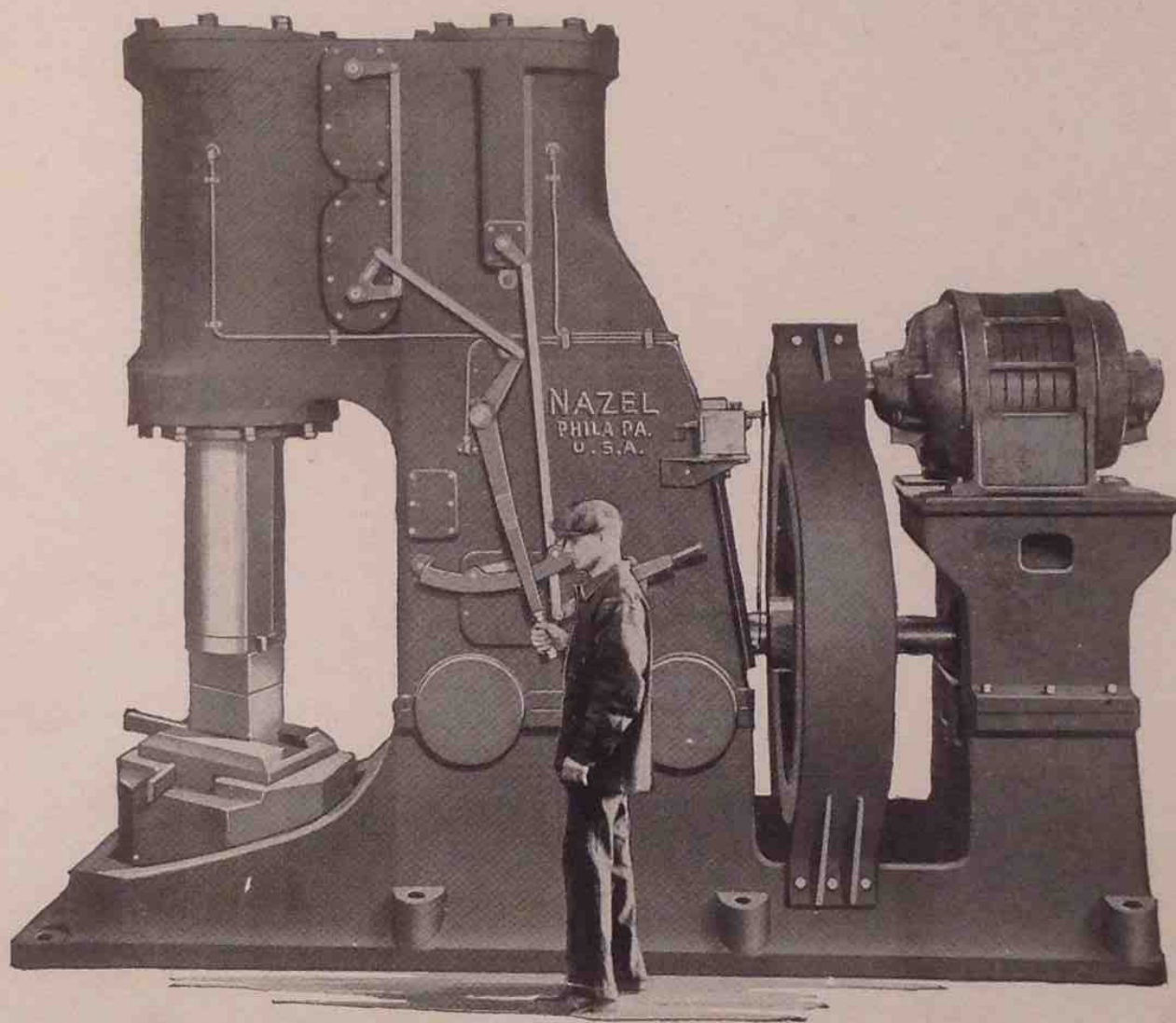


Erecting and Operating Instructions
PARTS INDEX
FOR
Type S Nazel Air Hammers



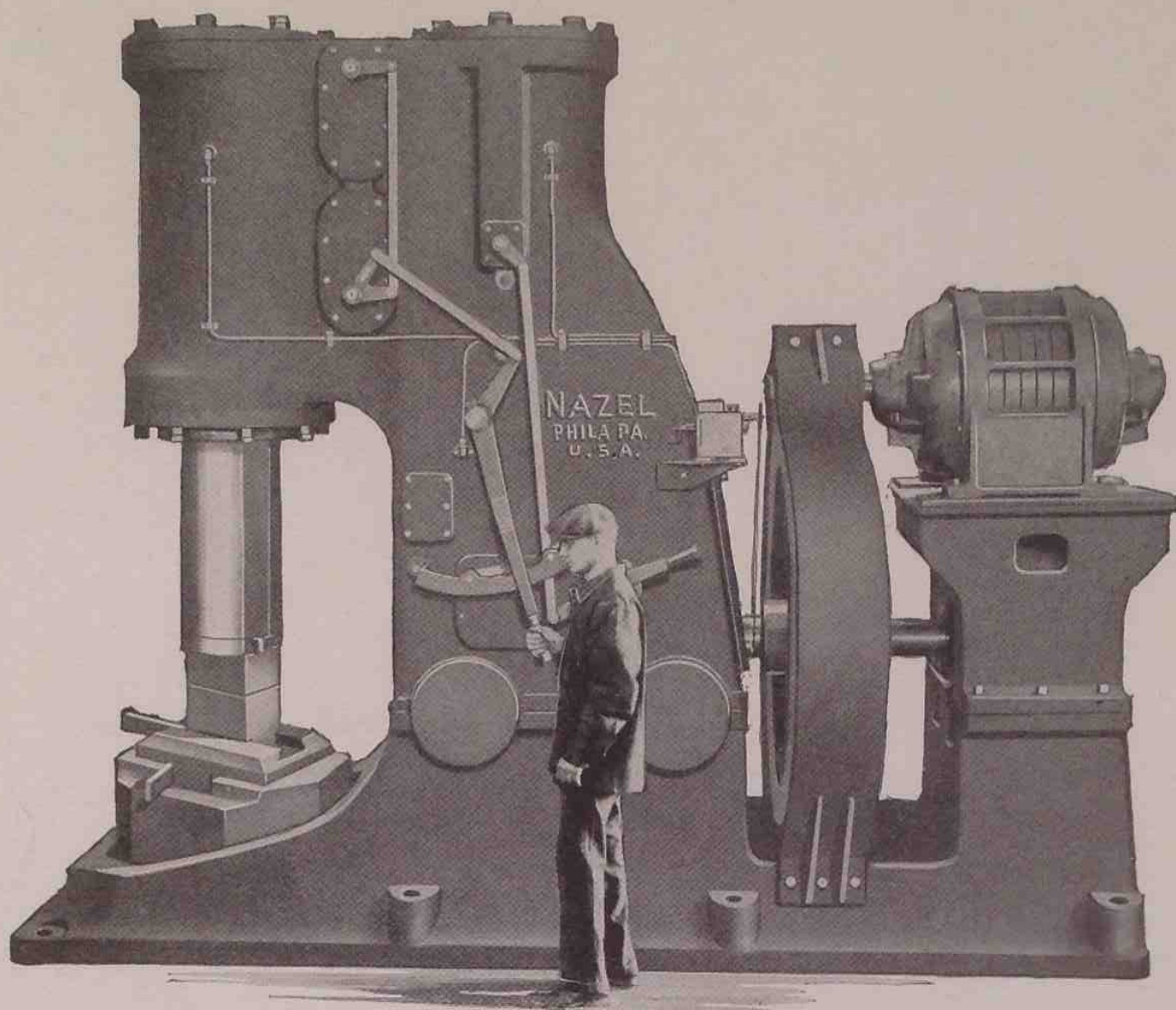
NAZEL ENGINEERING & MACHINE WORKS

Manufacturers

4041-4051 NORTH FIFTH STREET

PHILADELPHIA, PA., U. S. A.

Type S Hammer



Single and Set Blows from any point in the stroke, in addition to its well-known variable automatic blows by the simple movement of control lever has been incorporated in this new design. Another feature is the increased clear working space above and around the Anvil block, the space between dies being equal to the full stroke of the

Ram as the Die does not disappear into the Ram Guide.

These features have been achieved without sacrificing any of the attributes of earlier types and were developed to meet the increased demand for larger motor driven hammers for all kind of general forging.

Specifications	Code Sizes	Roger No. 10	Simon No. 11	Titus No. 12	Ulric No. 13	Waldo No. 14
Mild Steel Worked Efficiently.....inches		4½ x 4½	5½ x 5½	6½ x 6½	10 x 10	13 x 13
Blows per Minute.....		180	150	130	120	100
Stroke of Ram.....inches		16½	20	23½	27½	32¼
Clear Working Space.....inches		16½	20	23½	27½	32¼
From Centre of Ram to Housing.....inches		14	16½	19¼	23	29½
Ram Die Surface, Standard.....inches		3½ x 8	4 x 9	5 x 10	5 x 12	7 x 14
Floor Space Required.....inches		93 x 36	102 x 38	120 x 45	136 x 48	176 x 70
Requisite Motor.....H.P.		10	15	25	40	75
Motor Speed, not over.....R.P.M.		1200	1200	900	900	600
Weight of Hammer less Anvil.....lbs.		8260	9312	14220	22450	46000
Weight of Anvil, Bolster and Die.....lbs.		3300	5600	9000	15000	26000
Shipping Weight.....lbs.		11560	14912	23220	37450	72000
Price.....						

Treadle regularly furnished with No. 10 but can be supplied with Nos. 11 and 12 at an extra cost. Nos. 10, 11, 12 and 13 can be furnished for Belt Drive at same price as for Geared Motor Drive. No. 14 regularly furnished for Geared Motor Drive but can be furnished for Belted Motor Drive at an extra cost. Automatic Force Feed Lubricator regularly furnished with all sizes.

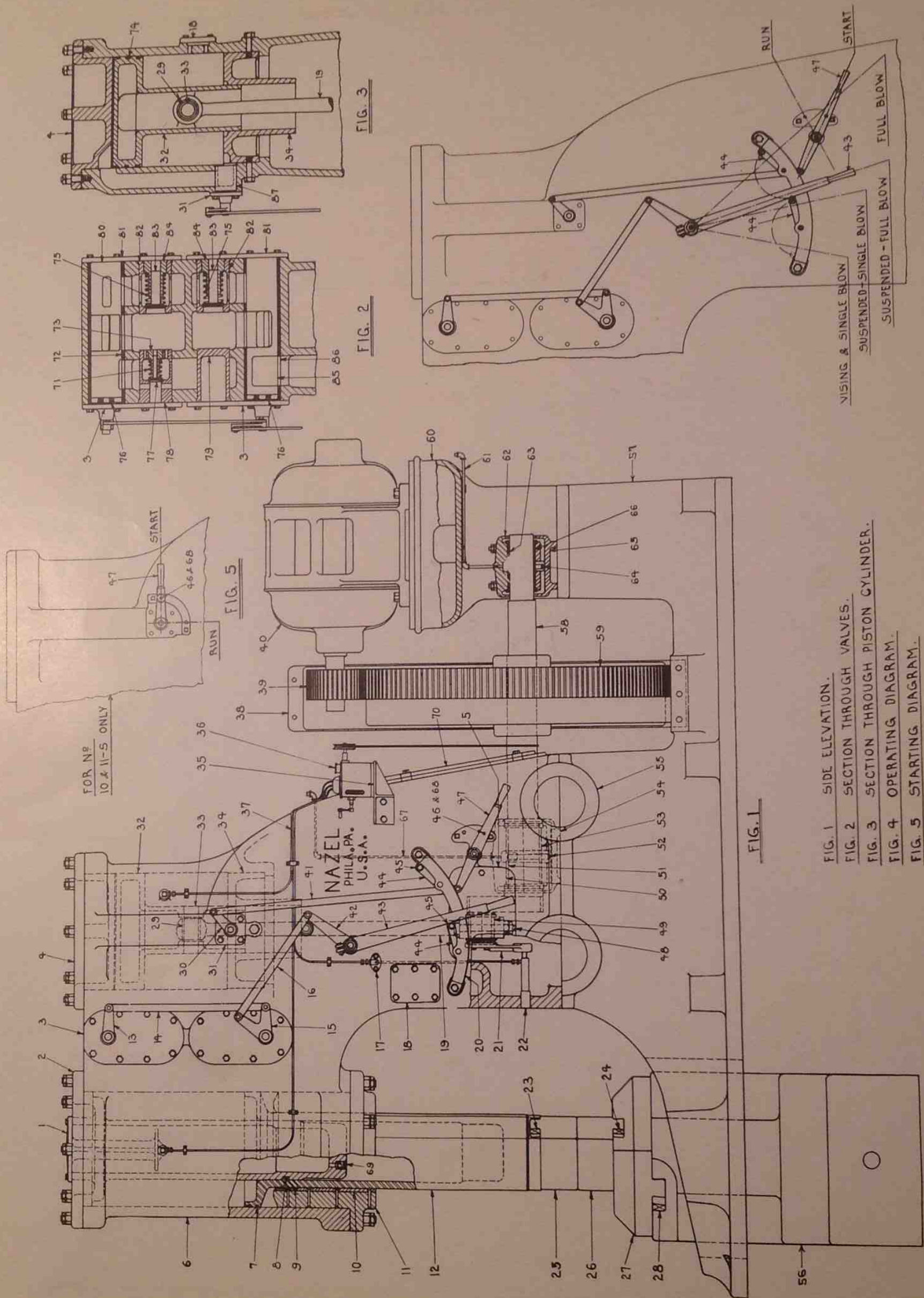


FIG. 1 SIDE ELEVATION.
 FIG. 2 SECTION THROUGH VALVES.
 FIG. 3 SECTION THROUGH PISTON CYLINDER.
 FIG. 4 OPERATING DIAGRAM.
 FIG. 5 STARTING DIAGRAM.

PARTS INDEX

- | | | |
|----------------------------------|-------------------------------|-------------------------------|
| 1. Muffler | 30. Starting Valve Crank | 59. Gear (Flywheel) |
| 2. Ram Cylinder Head | 31. Starting Valve Bearing | 60. Motor Bracket |
| 3. Valve Bearing | 32. Piston | 61. Rear Bearing Oiler Pipe |
| 4. Piston Cylinder Head | 33. Wrist Pin | 62. Rear Bearing Cap |
| 5. Lower Hand Hole Cover | 34. Piston Guide | 63. Rear Bearing Cap Bushing |
| 6. Housing | 35. Lubricator Bracket | 64. Rear Bearing Oiling Ring |
| 7. Ram Head Ring | 36. Lubricator | 65. Rear Bearing |
| 8. Ram Cylinder Head Ring | 37. Lubricator Tubing | 66. Rear Bearing Bushing |
| 9. Ram Guide Ring | 38. Gear Guard | 67. Front Bearing Oiler Pipe |
| 10. Ram Guide Plate | 39. Pinion (Motor) | 68. Plunger Pin Spring |
| 11. Ram Guide | 40. Motor | 69. Ram Check Valve |
| 12. Ram | 41. Starting Control Link | 70. Rear Hand Hole Cover |
| 13. Upper Valve Crank | 42. Running Control Lever | 71. Suction Valve Spring |
| 14. Valve Link | 43. Running Control Handle | 72. Upper Valve Bushing |
| 15. Lower Valve Crank | 44. Quadrant Link | 73. Suction Valve Guide |
| 16. Running Control Lever Link | 45. Quadrant Link Handle | 74. Piston Ring |
| 17. Connecting Rod Oiler Bracket | 46. Plunger Pin | 75. Check Valve Spring |
| 18. By-pass and Reservoir Cover | 47. Starting Control Handle | 76. Valve Thrust Ball Bearing |
| 19. Connecting Rod | 48. Connecting Rod Bolt | 77. Suction Valve Stem |
| 20. Quadrant | 49. Crank Pin Bushing | 78. Suction Valve Bushing |
| 21. Crank Pin Oiler | 50. Front Bearing Cap | 79. Lower Air Chamber Plug |
| 22. Crank Pin Oiler Stud | 51. Front Bearing Cap Bushing | 80. Upper Valve |
| 23. Upper Die Key | 52. Front Bearing Oiling Ring | 81. Valve Cover |
| 24. Lower Die Key | 53. Front Bearing Bushing | 82. Check Valve Bushing |
| 25. Upper Die | 54. Front Bearing | 83. Check Valve Stem |
| 26. Lower Die | 55. Binding Ring | 84. Check Valve Guide |
| 27. Die Bolster | 56. Anvil | 85. Lower Valve |
| 28. Die Bolster Key | 57. Base | 86. Lower Valve Bushing |
| 29. Wrist Pin Bushing | 58. Crankshaft | 87. Starting Valve |

WHEN ORDERING PARTS STATE SIZE AND SERIAL NUMBER OF HAMMER

DIRECTIONS FOR ERECTING.

When dies meet, the ram must project no further than dimensions imprinted on ram between arrow points, and when it is set to these dimensions there is a clearance of about $\frac{3}{4}$ " between the head of the ram and the ram guide.

Care should be taken that blocking under anvil block is of proper dimensions as shown on foundation plan blue print for, if too light, the head of the ram would strike the ram guide and might cause damage; and, if on the other hand, the ram be set higher than the imprinted dimensions, it would reduce its stroke, consequently, the effectiveness of the force of the blow.

After the anvil block is set in place, pieces of hardwood should be inserted in the space between anvil and base and fastened in position with wedges. It is advisable to drive these wedges tighter from time to time and wet them.

After hammer has been erected, fill the two ring oiling crankshaft bearings with a good grade of engine oil, and the automatic force feed lubricator with a good grade of heavy cylinder oil and renew as found necessary.

When hammer is new, set automatic force feed lubricator to feed about 10 drops per minute. After hammer has been worked in, reduce the feed to about 5 drops per minute.

Examine crank pin bearing bolt nuts occasionally. See that cotter pins are in place.

OPERATING DIRECTIONS.

1. When starting hammer see that Starting Control Handle, No. 47, (fig. 4 or 5, page 2) is at Start.
2. Place Running Control Handle, No. 43, either at Suspended Full Blow or Suspended Single Blow positions.
3. After motor has attained its full speed, move Starting Control Handle, No. 47, to position, Run. The ram then elevates and remains suspended until valves are opened by the movement of Running Control Handle, No. 43.
4. By moving Running Control Handle, No. 43, from Suspended - Full Blow to Full Blow Position, the ram begins to operate. When moved suddenly, it will strike a quick, hard blow; when moved gradually, it will strike a light blow, the force of the blow increasing as Running Control Handle is moved toward Full Blow Position.
5. To obtain Single or Set Blows, throw the two Quadrant Links, No. 44, to the left; Running Control Handle, No. 43, moving automatically into Suspended Single Blow Position; then work Running Control Handle, No. 43, quickly between Suspended and Single Blow Position.
6. To obtain short Single and Set Blows, allow Ram to elevate or descend slowly by means of Running Control Handle, No. 43, to any point of the stroke desired, then operate the same as for regular Single or Set Blows.
7. For Vising, move Running Control Handle, No. 43, slowly from Suspended Position to Vising and Single Blow Position and hold it there.
8. After using hammer for Single or Set Blows or Vising, to obtain Automatic Blows, throw the two Quadrant Links, No. 44, to their original position on the right.
9. When hammer is at rest between heats, motor running, move Starting Control Handle, No. 47, to Start Position, this will save power.