

N E B I T Y P E

Instruction Manual  
and  
Parts List

The purpose of this Nebitype Instruction Manual is three-fold:

- 1) Installation and General Operating Instructions
- 2) Adjustments
- 3) Plates and Parts List

The time you devote to a careful study of this booklet will be profitably spent, and will enable you to become familiar with the machine, to keep it fully efficient and always ready to produce first quality material.

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All Nebitype machines are given a series of thorough tests before they are shipped. They are tested with the motor, electric metal pot, mold, etc. that are on the machine when it is delivered. The thorough testing of your Nebitype machine eliminates the necessity for "breaking in" or checking of adjustments before starting actual production on it.

Your Nebitype is a precision-built mechanism and, like all such mechanisms, will give you its best product with fewest mechanical problems if you keep it clean and well lubricated at regular periods.

IMPORTANT - When ordering parts, always list serial number and model of your Nebitype - located on the plate under the Slug Tray Bracket. Also, list the electric specifications when ordering any part of the electrical equipment.

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GENERAL CHARACTERISTICS

Nebitype operation is completely automatic by push-button control.

Your Nebitype produces type from 6 pt. up to 72 pt. on a 42-ems 6 or 12 pt. slug, depending on the size of the type face. In addition to Nebimats, all other slug-machine matrices can be used on it.

Matrices are set in the appropriate composing stick which is inserted into the machine. The starting button is pressed and the finished slug is delivered to the galley in 9 seconds.

During the operating cycle, the slug is cast, the mouthpiece wiped, the foot of slug trimmed, and the slug delivered to galley. Also, during the operating cycle, the mold is water cooled by a self-contained circulating system.

Micro-switches control the Pump Mechanism and unless the Matrices and Mold are correctly locked against the Mouthpiece, the Micro-switches will not release the Pump Mechanism. This safety feature eliminates the possibility of a squirt.

The temperature control of both pot and mouthpiece is electronically achieved by means of Silicon Semi-conductors mounted on printed circuits. This is a Solid State temperature control.  
( S C R )

The solid state temperature control device and the electrical equipment are contained in one box placed on the left side of the machine.

The main switch is fitted with a clamping device which locks the door when the electric circuits are on.

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## INSTALLATION AND GENERAL OPERATING INSTRUCTIONS

The Nebitype machine does not require fastening to the floor, but it is important that the machine is level and resting solidly on the floor. Check for level by using a spirit level on top of the Sorts Tray Bracket on the right side of the machine. Check both ways - right to left and front to rear. Shim with hard wood as may be necessary.

IMPORTANT - Before turning on the pot, it should be filled with molten Linotype metal if available. If not available, slugs or slug shavings can be used to fill the Pot. After turning on the Switch, continue to add slugs or shavings, especially against the Elements until the Pot is full of molten metal. The metal level should be at or slightly above the Elements.

Mold Coolant Tank - The Tank in the rear of the machine base provides an adequate supply of coolant for cooling the mold during each casting cycle. The coolant is water to which has been added 3-5% of water soluble oil. The combination of water and soluble oil is necessary to lubricate the circulating pump as well as to prevent rusting of metal parts. In those areas where the water is known to contain abnormal quantities of lime or minerals, it is suggested that distilled water be used. The Tank holds approximately 6,5 U.S. gallons (24 litres) of water and 0,250 U.S. gallons (1 litre) of soluble oil.

Check the flow of water returning to the Tank occasionally. Efficient cooling of the mold depends on the full flow of coolant through the mold.

Mold - The Mold is applied when the machine is at rest (end of cycle) position. The mold is slid into position on the rear of the elevating slide after making sure that the bearing surfaces on the slide and Mold are clean. Wrench (1094 - Plate 21) is used to tighten the Mold Screws. The Mold Screws position the Mold correctly.

Lubrication - The Nebitype machine has nineteen oil holes (circled in red) on the exterior of the machine. A large oil cup provides centralized oiling to eight bearings, etc., on the Cam Assembly inside the machine.

The large oil cup is under the knurled head screw (2628 - Plate 11) easily accessible by lifting off the sprew trimming tray (D-1021 - Plate 2).

Oil the machine twice a week with a good grade of motor oil S.A.E. 30.

Two grease cups (2632 - Plate 3) should be turned in slightly once a week and refilled, when necessary, with a light weight cup grease.

The Motor is permanently lubricated. The vertical shaft Worm (1102 - Plate 12) and helical tooth Gear (2227 - Plate 12) should have an occasional light application of graphite grease.

Micro-Switch Plug - The Micro-switch Plug is located in the upper lefthand corner of the base of the machine. The three-pronged Plug is inserted with the red arrow on the top in line with the red dot that is on the female part of the Plug.

Caution - Always remove the Plug when making any machine adjustments or at any time when the machine is being run and no cast is wanted. When the Plug is disconnected, the Micro-switches cannot actuate the Plunger - Release solenoid.

Initial Starting of Motor - Before starting the machine, the rotation of the Motor must be checked. Proceed as follows: Make sure the micro-switch plug is disconnected. Lift off the sprew trimmings tray and insert the Handwheel (2851 - Plate 11) in the hole provided - make sure it is seated. Jog the green and red operating buttons quickly and note the Handwheel rotation. It should be clockwise. If not, wiring connections must be shifted, either in the Shunt box or at the wall switch. When the rotation of the Motor is correct, remove the Handwheel and press the green button to let the machine run through a complete cycle to check its operation.

After the green button has been pushed to start the machine, the red button can be pushed at any time during the cycle to stop the machine instantly, if it is found necessary to do so.

Cleaning the Plunger and Pot - The Plunger should be cleaned twice a week or oftener, if necessary. The plunger must operate

freely to produce a good-quality slug. Dirty type metal may necessitate cleaning the Plunger every day.

The Plunger is removed with the Tool (1089 - Plate 21). While the Plunger is still hot, brush it well with the Wire Brush (1092 - Plate 21). If necessary, use the Scraper (1091 - Plate 21) to remove dross from the walls of the well. Clean dross from the surface of the metal, paying attention to the space between the Elements and the sides of the Pot. After cleaning the Plunger should be lubricated with oil O.S.B. 400.

If the Plunger has cooled while performing the above operations, it should be heated in the Pot before replacing it. The plunger must turn easily - if not reclean.

Caution - Slip the Plunger into the well slowly, otherwise metal may be forced out through the Mouthpiece.

Dross accumulation on the Plunger and well wall is reduced by maintaining a constant metal level in the Pot. The use of the automatic Metal Feeder assures such a constant level.

Nebitype Composing Sticks - All Composing Sticks are equipped with Safety Pins (2257 - Plate 20). There are two Pins on the 42-em sticks, one at each end. The Pins actuate the Micro-switches to release the Plunger Mechanism so that a cast will be made when Stick and Mold are correctly locked against the Mouthpiece. The Pins must actuate both Micro-switches, otherwise no cast will be made. The safety Pins must always have free movement in their seats. If, after long use, they become sticky or dirty, they can be freed by washing in kerosene.

The 84-em Sticks contain four Safety Pins.

Setting Type with Nebimats - The Nebitype Composing Stick is held in the left hand with the Locking Screw towards right. The mats are set in the Stick with the type face up in the same way individual types are set. The Locking Screw is tightened to a light bearing, the Stick inserted in the machine and the line of type cast.

Casting Type Lines - Pull out the Rod (located just above the Micro-switch Plug) to engage both Plunger Springs.

Coolant Control : With 6 pt. mould Water -  
With 12 pt. " " +

Normal production of type lines is done by pressing the green button to start each casting cycle. If several lines are required, they can be obtained by using the Repeater Switch - the toggle switch located at the right of the red-green buttons. The Repeater Switch automatically restarts the casting cycle until the switch is turned off.

Casting Blank Slugs - Blank slugs for the use in underpinning type lines can be cast on Nebitype if desired. They are cast by pressing the green button for each casting cycle or by using the Repeater Switch, cast continuously.

Push in the Rod to disconnect one of the Plunger Springs.

Coolant Control : Single slugs 6 or 12 pt. Water -  
Repeat casting 6 pt. Water -  
Repeat casting 12 pt. Water +



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NEBITYPE ADJUSTMENTS

The Nebitype machine is given thorough mechanical tests during and after assembly. It is given severe final mechanical and production tests. After long use, it may be necessary to adjust or check adjustments of parts or assemblies. When necessary to do so, follow the instructions carefully.

IF MACHINE DOES NOT CAST

- 1 - Check for looseness of Set Screws 6 - 3 x 10 that lock the screws (2626 - Plate 6). If the Set Screws are loose, there is a possibility that the Screws (2626) have turned. If so, see Micro-switch Adjustment.
- 2 - Incorrect Lock-up - The Matrices, Stick and Mould must be locked correctly against the Mouthpiece to actuate the Micro-switches. Minute particles of metal adhering to the Mouthpiece, Mold or Matrices will prevent a cast - also, a metal squirt. Make sure all parts are clean - check rear side of the Mold also.
- 3.- Broken Micro-switch Circuit - To check for such a broken circuit, start the machine. Immediately after the casting point and while the Mouthpiece wiper is moving, push the safety guard Micro-switch and, at the same time, press together with thumbs and forefingers, the Micro-switches (E 10053 - Plate 4) and composing stick safety pins (2257 - Plate 20) simultaneously. Two operators are needed for this test. The snap of the Plunger release solenoid should be heard. If the snap is not heard, it indicates a broken circuit or sluggish operation of the Safety Latch (2809 - Plate 14). Such sluggish operation can be eliminated by thoroughly oiling the Latch and moving it by hand while the machine is at rest.

Note - The snap cannot be heard while the machine is at rest because the Micro-switch current is cut off when the machine is idle. Be sure to press the Microswitches after the casting point to prevent the possibility of a squirt.

Micro-switch Adjustment - If, after thoroughly checking the above details, the machine does not cast, check the adjustment of the Micro-switches. This is done by holding a piece of 16-lb. paper or newsprint between one Micro-switch and the blank matrix stick while the machine is running. If the machine does not cast, try the paper between the other Micro-switch.

If this test produces a cast, turn the Micro-switch adjusting screws (2647 - Plate 4) in order to compensate the paper thickness.

Lock-up Adjustment - (Stick, Mold and Mouthpiece). The Lock-up Adjustment is checked while the machine is either power operated or hand-wheel operated.

The Screw (2604 - Plate 5) connects the two levers (1027 and 1028 - Plate 5). When the stick and mold are correctly locked-up against the Mouthpiece, the cup washers (2475 - Plate 5) will compress  $3/64$ " from rest position. The measurement is checked between the red groove in the screw head (2604 - Plate 5) and the top of lever (1028 - Plate 5).

To obtain the correct compression of  $3/64$ ", loosen Lock Nut (2606 - Plate 5) and turn screw (2624 - Plate 5) in or out as required. Recheck adjustment after the Lock Nut has been tightened.

The Cup Washers should be only slightly compressed when in rest position.

Lock-up Release Adjustment - The lower ends of the forked lever (519 - Plate 5) move the mold from the Mouthpiece, after the cast is made and assist in pulling the matrices from the slug. Turn the machine so that the elevator slide is at its highest position but has not started to move horizontally. In this position the distance from the front of the forks to the rear of blocks (2726 and 2727 - Plate 4) should be  $.020$ " to  $.025$ ".

Compensating Slide (Explanation) - The slide (2036 - Plate 4) is a flexible connection through the springs (2905 - Plate 4) between the Bell Crank (1005 - Plate 4) and the Stick Slide (N-527 Plate 4) as well as to synchronize the Elevator Slide and Stick Head movements after a cast is made. The Compensating Slide requires no adjustment.



Matrix Alignment (Left End) - To align the first Matrix with the left end of the slug, loosen screw (1-5 x 15 Plate 4) that locks the elevator head stick safety stop assembly (3201 - Plate 4). Move part 3201 as much as necessary. Make sure the screw is tightened.

Mold Position (Vertical) Adjustments - There are two details to consider: first, the relationship of the slug opening in the Mold to the orifices in the Mouthpiece; second, the relationship of the slug opening to the Ejector Blade (2049 - Plate 3)

First - Put a 12-point Mold on the machine. Remove the fork lever (519 - Plate 5) and the stick slide (N-527 - Plate 4). Turn the machine, by using the hand-wheel (2851 - Plate 11), to the casting point. The double row of orifices can be seen by looking through the Mold- they should be exactly centered. If not, adjust either or both screws (2630 - Plate 5), making sure the lock nuts (7 - 8) are tightened.

Second - Put a 6-point Mold on the machine. Loosen screw (2633 - Plate 13), under plate (2180 - Plate 11), ten (10) turns to take tension from the spring (2813 - Plate 13). Ease out the pin (2207 in bracket 506 - Plate 3) to disconnect elevator slide shock-absorber rod (2001 - Plate 10). Remove the pin (2217 - Plate 3) so that the Ejector Blade can be moved by hand. Push the Ejector Blade out of the Mold and check whether the Blade is exactly centered in the 6-point Mold opening. If not, adjust stop screw (6-10 x 35 in bracket 506 - Plate 3) and lock the nut. If the adjustment of the stop screw has been changed the following adjustment must be checked. Remove the 6-point Mold, re-connect the shock-absorber rod (2001 - Plate 10) with pin (2207 - Plate 3) and re-turn screw (2633 - Plate 13) ten (10) turns to restore the original tension on spring (2813 - Plate 13). Raise the elevator slide and put a thickness of newsprint between the slide and the stop screw. Turn the machine backward by hand so that the slide is in its lowest position. The newsprint should be held firmly, but the slide should not be jammed against the stop screw. If necessary to change the adjustment, turn the machine to rest position and lift the slide by hand, bringing it to the casting position. The shock-absorber sleeve (2454 - Plate 10) can now be seen. Remove the sleeve screw (4-4x8 - Plate 10) and slide the sleeve down. Slip a piece of cord through the screw hole to keep the sleeve from sliding too far down. Loosen lock nut (8 - 14 - Plate 10) and turn the spring abutment (2403 - Plate 10) that will turn the shock-absorber body (2401 - Plate 10) up or down as required until the slide just holds the paper firmly. Be sure to tighten the lock nut before each test of the adjustment.

Ejector Blade Adjustment - If it becomes necessary to adjust the ejector blade, proceed as follows: remove the stick slide (N-527 - Plate 4) for better visibility. Turn the machine backward by hand until the ejector blade is in its extreme forward position.

The blade should: (1) extend beyond the mold from .050" to .060", (2) be parallel to the mold surface.

These two adjustments are made as follows:

- 1) Turn the machine to rest position, loosen lock nuts (D-1562 and 8-14 - Plate 3) and turn the ejector bell crank coupling (D-1561 - Plate 3) in the direction necessary to have the blade extend from .050" to .060". After adjusting tighten lock nuts.
- 2) The ejector blade, in its forward position, is made parallel by adjusting the lever (1004 - Plate 3) only. The screw (1-8 x 45 - Plate 3) is loosened so that lever (1004 - Plate 3) can be positioned by turning the pin (6-8 x 40 - Plate 3) to make the blade parallel with the mold surface. Lock the screw tightly.

Mold and Mouthpiece Adjustment - The metal pot is adjustable horizontally and vertically so that the mold will seat squarely against the mouthpiece.

To check whether the mold seats squarely against the mouthpiece: remove guards (N-1019 and N-1020 - Plate 6), loosen the screws (2714 - Plate 8) and remove the mouthpiece wiper holder (2197 - Plate 8).

Use a lighted pad of cotton, soaked in kerosene, and blacken the mouthpiece or rub a light film of Prussian Blue on the mouthpiece.

Start the machine and stop it just before the mold seats; slip a piece of tissue paper between the mold and mouthpiece; restart the machine and again stop it just after the mold leaves the mouthpiece. Remove the tissue and check the print on it.

To square horizontally, the mold to the mouthpiece, adjust either the right or left screw (2702 - Plate 6) in the front support (1121 - Plate 6).

To square, vertically, adjust screw (2709 - Plate 6) in the rear support (2088 - Plate 6).

If there are high and low spots on the mouthpiece, as indicated by the tissue print, use a fine-grain stone or fine-grain emery cloth to carefully remove the high spots.

Slug Foot Trimmer Adjustment - The trimmer knife (D-2070 - Plate 8) does not control the slug height but merely trims the sprew formed at the mouthpiece. The knife is held, under spring tension, against the mold while trimming the sprew. If necessary to adjust the spring tension loosen lock screw (4-4 x 5 - Plate 8), turn in or out the adjusting screw (2612 - Plate 8) as required.

Mouthpiece Wiper Adjustment - The mouthpiece wiper (2098 - Plate 8) should be adjusted so that if it is removed or as it wears, the metal parts will not touch the mouthpiece. To make the adjustment, loosen the two screws (2714 - Plate 8) and remove the wiper and its holder (2197 - Plate 8). Turn the machine backward by hand until the wiper support bar (D-1108 - Plate 8) is in front of the mouthpiece, loosen lock nut (7 - 4 - Plate 8) and adjust screw (6-4 x 10 - Plate 8) so that there is a clearance of from .020" to .040" between the bar and the mouthpiece and tighten the lock nut.

Plunger Timing Adjustment - When a cast is made, the Plunger Cam Roller (2502 - Plate 13) must not ride on the cam contour but roller and lever (1010 - Plate 13) must raise quickly and without interruption to produce a good cast.

When the machine is in rest position the latch block (2064 - Plate 14) should extend over the latch block (2066 - Plate 13) 1/8". Adjustment is made with screw (6-6 x 30 - Plate 14). Clearance between the latch blocks (2064 - Plate 14) and (2066 - Plate 13) should be .010" to .15". Adjust by loosening screws (1-6 x 20 - Plate 14) and adjusting with screw (6-6 x 12 - Plate 14) as necessary. Make sure the screws (1-6 x 20 - Plate 14) are tightened.

Plunger Safety Latch Adjustment - The latch (2809 - Plate 14) is actuated by the three stick slide micro-switches through a solenoid when the composing stick and mold are correctly locked against the mouthpiece. Clearance between the latch and its block (2067 - Plate 13) should be .020" to .025". The clearance is obtained by varying the thickness of shims under the block (2067 - Plate 13).

End of Cycle Stop Adjustment - At the end of each machine cycle the trip (2075 - Plate 12) automatically stops the machine in rest position (the elevator slide is in its lowest position). The coolant circulating pump provides a braking action to immediately stop the machine. The trip (2075 - Plate 12) presses the microswitch (E-10086 - Plate 16) that actuates the remote control switch (E-10054 - Plate 16) to stop the motor.

Note - Before changing the trip to advance or retard the rest position stop, make sure the circulating pump operates and its belt has good tension.

Cleaning Elevator Slide - If the elevator slide (N-524 - Plate 4) does not move up and down smoothly, there is a possibility that metal slivers or dirt has accumulated in the slide ways. To clean the ways, proceed as follows:

Remove the mold. Lift the slide by hand to the casting position and remove the two top screws (1-6 x 12 - Plate 3) in gibs (1075 and 1076 - Plate 3). Lower the slide by hand to its low (rest) position. Raise the lock plate (2758 - Plate 4), slip out the pin (2216 - Plate 4) and remove bell crank (1005 - Plate 4).

Remove stick slide (N-527 - Plate 4). Take out the remaining four gib screws being careful to hold the elevator slide while taking out the last screw. Pull the top of the slide out to its horizontal position - it will remain there, hold by the lower connecting pin. Clean all the slide surfaces and the mold seating area.

A light coating of oil can be put on the slide ways before reassembly.

Elevator Slide Counterbalance Springs Adjustment - The Spring (2813 - Plate 13) compensates for the weight of the Elevator Slide so that wear and parts-strain are minimized.

To check and adjust the balance of the slide, remove the cotter pin (15-2 x 40 - Plate 3) from the head of screw (2617 - Plate 3) and count the turns required to take all tension from the spring (2812 - Plate 3) so the tension can be correctly restored.

