

## Duties of a Plant Machinist

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HIS ROUND-THE-CLOCK ROUTINES are vital to Linotype maintenance and smooth, profitable operation. Often a conspicuous individualist in the production team, he rates careful study as a factor in sales. His likes and dislikes may carry much weight with the foreman, the mechanical superintendent, and often with the high command when important decisions are made.

AMONG all the personalities we have considered in our studies of the Sales Field, from top to bottom of printing, publishing and typesetting organizations, none has a place more vital to the continuity of a productive sales relationship than the plant machinist. Usually a quiet, inconspicuous individual in overalls, his approval of our products, backed by his operating results, can outweigh competitive prejudices among many important plant executives. Or his dislike of a mechanism, or even of some phase of our business contacts, may result in a quiet antagonism that can block or seriously hinder important business. He is unique among our sales relationships.

This unit of the Sales Manual examines the technical background, the plant duties, and the varied personal traits of these men who keep our machines running. "Machinists, like foremen, are the closest to the details of the *what* and *why* and *how* our products work in the thousands of larger plants around the world."

**The Reader's Background** for this study of the plant machinist should include detailed knowledge of *The Linotype Maintenance Manual*. That book covers the prime duties of a machinist in the cleaning, lubrication and adjustments of a battery of Linotypes. To these major responsibilities (with the understanding of their time factors for fixed routines of daily, weekly or longer periods of recurrence) must be added the machinist's duties in similar maintenance of other typesetting and typecasting machines, TTS and other equipment for automatic operation, strip and spacing material machines, composing-room saws and mitering machines. These are briefly described in the *PIA Composition Manual*.

Frequently of equal importance to Linotype relationships is the machinist's responsibility for the routine remelting and toning of the tons of type metal which are used daily in his composing room. Every Linotype

agency is haunted by the ghosts of metal trouble, due neither to our machines nor to our Company, and yet so woven into operating conditions as to become a grave factor in the sales relationship. Thus the reader's background must cover an understanding of the proper maintenance of metal as a phase of the machinist's duties.

**The Need for a Plant Machinist** is determined primarily by the number of machines in a composing room. With an equipment of only two or three machines, an experienced machinist-operator ("M-O" in the trade) may be employed to care for the machines and operate the keyboard in his remaining available time. But for more machines the maintenance routines require the full time of the specialist. In the larger plants he will need one or more assistants, and always when two or more shifts are worked. Under such conditions he is known as head machinist, with assistants as needed, among whom may be a learner or apprentice.

Union contracts (ITU) define the status of the machinist, based on his responsibility for effective operation of the equipment. It is thus not permissible, for obvious reasons, for other members of the composing room crew in those plants, except his own staff, to repair or adjust any mechanical equipment in the room—even to the changing of magazines in some cases. The rules also forbid the machinist and his assistants to set type or to perform any of the functions of an operator, floorman, proofreader or the like. This restriction to mechanical duties explains the typical machinist's lack of typographic knowledge, as discussed later.

In open-shop plants, where precise rules may not exist, typical operating conditions similarly demand the machinists' full time on mechanical duties.

**The Training of a Machinist**, under today's conditions, is usually based on the traditional journeyman-apprentice relationships. The helper or apprentice is selected

with special consideration for his aptitude for work with tools and mechanisms. Often his first mechanical experience has been on automobile maintenance. Or he may have had a Linotype-Intertype course in one of the various vocational schools across the country, or he may have come through the regular ITU program of apprenticeship, developing a special interest in the machines which he is permitted, under the rules, to tackle during his final year before becoming a full journeyman. Always he must like to work with tools.

In earlier years many plant machinists began as builders of Linotypes in the Brooklyn Factory. At that time they were literally *builders* of the machine, with a corresponding knowledge of the entire machine construction. They were sometimes sent into the field to erect machines, thus developing an interest in plant operations or a change of scene which led them to take positions as plant machinists. Usually they retained a loyal interest in the Company which was a decided help in sales relations. Today relatively few of these old-timers remain.

With the development of modern production in the Factory came refinements of standardization which permit the *assembling* of machines, rather than the filing and fitting which characterized the building methods. Today's machine finishers still have full knowledge of the various models and their component mechanisms. But these men are not often sent into the field and thus we find a constantly decreasing number of plant machinists who have had any factory background, either with Linotypes or Intertypes.

Today's aggregation of plant machinists and their assistants, numbering several thousand among the newspaper, commercial and typesetting plants, have mostly acquired their knowledge and skills under working conditions and by their own study and observation. A considerable number of them will have made brief visits to the Linotype and/or Intertype Factory, where they have studied for a few hours the various models and appurtenances.

The machinist-operator might be defined as a Linotype operator blessed with special aptitude for machine maintenance and the opportunities to learn it. Occasionally a seasoned M-O will have practically all the capability of a plant machinist. Most of them, however, handle only routine cleaning, lubrication and simple adjustments, requiring the services of an outside machinist or a Company Service Engineer to handle major repairs or overhauling.

**As Triggerman for the Machines** the machinist is so located in well-arranged composing rooms as to keep him close to each. A workbench (now commercially made for this special need), tools and accessories, and storage facilities for repair parts and sorts matrices comprise his equipment. For major undertakings (perhaps

requiring power tools) he may use the facilities of a separate machine shop, usually found in larger plants for use on general equipment maintenance. But the typesetting machinist rarely has any responsibilities in the general machine shop—his duties require that he be constantly available for any sudden need in the composing room.

Most larger plants are equipped with a signalling mechanism whereby the operator of any machine can instantly notify the machinist that he is needed. A lighted number on a board above the machinist's bench, a warning bell or buzzer, and a special light on the "down" machine all help to bring prompt action without confusion.

In a well-maintained plant, with machines of modern vintage, the number of calls for machine stops or adjustments is low enough to leave ample time for the routines of maintenance. But wornout and obsolete machines can make such excess demands on the plant machinist as to make it difficult or impossible for him to give proper attention to his remaining equipment. Such conditions are frequently basic sales arguments, for which the support of machinist, foreman and operators can be readily enlisted.

**Maintenance Methods and Schedules** may vary in the sequence of details, as plant conditions may dictate, but they *must* comply with firmly established routines for cleaning, lubrication and adjustments. *The Linotype Maintenance Manual* provides two check-lists (pages 66-72) for *Routine Checkups* which are fundamental. They can be adapted to any local plant condition, always preserving the timing of the daily, weekly and monthly functions they list.

For a big afternoon newspaper plant, the *Machinists' Work Schedule* is a typical and widely used development of these timed items. The plant equipment (*Washington, D.C. Star*) includes:

- 49 Linotypes
- 2 Ludlows
- 1 Monotype Caster
- 6 Monotype Strip Material Casters
- 58 Margach Metal Feeders

This plant operates with a full day crew and a varying night force, with corresponding provision for the availability of machinists at all times. Their duties, for day and night shifts, are indicated for seven-day-and-night working schedules. For any other work-week schemes of operation these duties of plant machinists must be reassorted, always preserving the specified essentials for daily, weekly and monthly action.

When, as sometimes happens, we suspect that machines are suffering from the lack of essential maintenance, then a diplomatic inquiry into the machinists'

schedules may yield information that can be compared with our published fundamentals. Such a review may show that the routines are strung out, with too much elapsed time between their repetition, due to the lack of enough man hours of machinists' time. Or it may be found that essential items are neglected or casually handled.

**A Veteran Machinist** was asked for special comment for the guidance of the users of the Linotype Sales Manual. He is Frank Dimon, a former Linotype Salesman and Service Engineer, with earlier experience on Intertypes also, now Head Machinist of the San Jose (Calif.) *Mercury Herald*. His plant is outstanding for efficient production and the *Mercury* has been a prize-winner in many typographic contests. The equipment includes 23 Linotypes, 3 Intertypes, 2 Elrods, and 1 Monotype Material Maker.

Reviewing the basic outlines emphasized above, Mr. Dimon adds further details of his own efficient philosophy, growing out of an exceptionally well-rounded experience:

"Any shortage in magazines, matrices and spacebands will be decidedly more expensive than their actual cost. Check against this possibility, on every machine, at regular intervals. Matrix sorts, parts and supplies are the responsibility of the machinist. Inventoried and stored systematically they need not be excessive in quantity nor an undue overhead expense. Today's wage scales make it imperative to avoid the lack of such items.

"In scheduling the intervals between cleaning periods for matrices and magazines, remember always that clean matrices and magazines are the most critical essential to smooth, profitable machine operation. *Ask Teletypesetter owners!*

"The specified 'daily' cleaning of spacebands may need action oftener if the plant has a double operation. For high speed operation by tape, spacebands should be cleaned every four hours.

"The weekly cleaning, inspection and oiling of distributor boxes is particularly important. Distributor screws must be kept scrupulously clean and their bearings properly oiled.

"Thorough keyboard cleaning is a tough problem, requiring that the machine be down for the considerable time required by a proper job. Yet a clean and properly oiled keyboard is an absolute must for smooth, trouble-free operation. Keyboards should be cleaned approximately twice a year.

"Mold wipers, front and back, should receive scheduled examination and replacement, if needed.

"All metal pot controls need regular inspection. If electric, check thermostats, relays, rheostats and clean all contact points. With gas, a clean burner depends on proper functioning of the regulator.

"It's easy to overlook the sorts stacker and its matrices. Clean them before they become dirty and the matrix index difficult to read.

"Inspect all belts regularly. Replace the matrix delivery belt when it shows a minimum of wear.

"All electric motors should be on the routine inspection list for proper cleaning.

"Quadders, being precision mechanisms, must be inspected with a frequent routine. Their cleanliness is essential and their lubrication must be not only regular but intelligently applied. When applied in connection with the Mohr Lino-Saw even more attention must be given to the quadder. And the saw itself must have regular, frequent cleaning and oiling, with careful checking of belts and saw blades.

"An equally systematic routine must be maintained for the type casters, material makers and all saws."

**Checking Slug Height and Trim** is a daily item in our published *Routine Checkups*, and that interval is sufficient for newspaper conditions. But trade typesetting plants sometimes check slug heights *once an hour*. The accuracy of their products is a factor of standardization in many composing rooms.

**Type Metal Supervision** by the plant machinist is a related duty which obviously affects the maintenance of machines and the quality of their products. In the Manual unit *Linotype Attachments and Supplies* we have stressed the superior performance of Linotype metal pots and their recognition by plant machinists, leading to their installation on Intertypes in some plants. We have also noted the problems that may develop in metal maintenance through the improper uses of flux, either in remelting metal or around the machines, leading to headaches in sales relationships. See *Type Metal for the Linotype*.

The more obvious effects of run-down or dirty type metal appear in imperfections of the printing surface of slugs, sometimes in hollow spots or bubbles inside the slug that break down under stereotyping or electrotyping molding pressures. Most competent machinists recognize the causes of such substandard slugs and have their type metal analyzed and toned up as needed. This check on metal standards is a normal routine.

**Type Faces and Typography** are merely machine functions to most machinists—a natural result of their lack of actual typesetting experience. They refer to their matrix equipment by triangle numbers rather than type-face names, just as they use part numbers in the routine of ordering supplies.

Since the machinist is usually keeper of matrix sorts he is the normal source of sorts orders. He may handle font orders also, but their need will have originated elsewhere in the organization—changes in dress or new

faces for advertising are rarely promoted with the machinist, though he should be kept informed about such sales activity.

While the machinist may not be a typesetter, we often find him a connoisseur of body and display lines, as demonstrated by the photos and "calendar art" which fill available wall space above his bench. This tribute to his appreciation of the body beautiful is a lingering memory of many calls upon him across the nation.

**The Machinist as an Inventor** may become still a different problem in the sales relationship. His daily job is a constant stimulant to invention—keeping machines running develops ideas on their construction or for new attachments. Numerous features of machine design have originated in this way, but when the machinist becomes an inventor he must be handled with extreme tact and with the observation of certain formalities.

Usually the inventor is fired with enthusiasm. He has developed his idea and put it to work on machines in his own plant. He is satisfied (in his own mind) that it is a real improvement—if properly adopted and marketed it will make him rich!

Often he is suspicious that his idea may be stolen if he submits it to a machinery manufacturer. He may try to get it patented before anybody can see it—then he will discover the time and expenditures required for patent procedure. The search of existing patents (many thousands of them) to see if his idea hasn't been previously developed, the preparation of drawings and descriptions, and the costs of legal advice all become a serious undertaking. Frequently the process can be considerably simplified if the inventor will have confidence in the manufacturer.

The experienced machinist-inventor has learned that his ideas may be unique and of real value. But he knows, too, that there have been many cases of the simultaneous development of identical inventions, by men working thousands of miles apart. And often, such new ideas in the field may be paralleled by earlier developments at the Linotype Factory.

Thus the seasoned machinist, instead of proceeding secretly on his own, submits his ideas for review by the Linotype Research and Patent staffs. He protects his rights and establishes the date (often an important item), by making a simple drawing or drawings of his idea, signing and dating them, with attesting witnesses' signatures. Such drawings (or prints from them) are sometimes accompanied by a working model of the new device and are submitted to the Company.

If the idea survives a first check for possible usefulness, and a further comparison with existing patents to establish its originality, then negotiations follow to establish a purchase agreement. The further routine of actual patent application and issuance might depend upon further developments of the idea—in any event

patent procedure consumes many months, sometimes years. But the inventor's signature and date on his drawings provide every possible advance protection for him. Literally thousands of ideas have been thus handled over the years.

However, there have been occasional difficulties with inventor-machinists, based usually on their unwillingness to enter into such an arrangement as the foregoing. A few have gone into business for themselves—the Monomelt enterprise started in that manner. Again they negotiate with the manufacturers of "non-genuine" supply parts or attachments. Or perhaps the purchase offer by Linotype may have been considered insufficient—such conditions must be based on bargaining. Whatever the cause, when the inventor shows an antagonistic attitude toward the Company, it may be first evidenced in his reactions when the Linotype Salesman calls on him. Tact and diplomacy become the order of the day.

For the guidance of Linotype field men in their contact with inventors, these observations summarize as follows:

1) When you encounter an inventor refrain from any comment as to the practicability or possible value of the invention.

2) Assure the inventor that his wise and safe course is to submit his idea for review against possible similar developments of which he may not be aware.

3) Recommend that he make or procure covering drawings and a simple description of the idea. These papers to be signed by the inventor, dated, and witnessed by two persons.

4) The inventor to send his drawings and description (with working model if he has made one) to the Research and Engineering Division, Mergenthaler Linotype Company, 29 Ryerson St., Brooklyn 5, N. Y.

5) The Company will carry on directly with the inventor, avoiding the involvement of field personnel and such affect on sales or service relationships.

6) Report, via normal channels, any comments or reactions that you may observe during the course of such negotiations—but be careful not to become involved in them unless so instructed.

**Unique Among Our Sales Relationships**—the plant machinist becomes something of a "prima donna" in the light of these observations—and sometimes he is. But his confidence and friendship can be the most valuable single factor in preserving a sound relationship with his plant. In turn his own enthusiasm for Linotypes and Linotype relationships will be infectious throughout the composing room—this becomes a major objective for our continuing contact with every plant.

Finally, never forget that the plant machinist is an important source of sales.